MAY 15
1888

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 43—No. 5. TUESDAY, MAY 1, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
LAW RELATING TO THE SIGNING OF PATENTS	513
FRAUDULENT PRACTICES BY ATTORNEYS	513
MODELS IN REJECTED OR ABANDONED CASES	513
NOTICE	513
ISSUE OF MAY 1, 1888	513
DESIGNS	514
TRADE-MARKS	514
LABELS	514
PATENTS GRANTED	515
REISSUES	694
DECISIONS OF THE COMMISSIONER—	
Ex parte Mason	627
Ex parte Zabel	627
DECISIONS OF THE U. S. COURTS—	
Tilghman *v.* Proctor *et al.* Proctor *et al. v.* Tilghman	628

Law Relating to the Signing of Patents.

AN ACT to amend section four thousand eight hundred and eighty-three of the Revised Statutes to enable the Assistant Secretary of the Interior to sign patents.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section four thousand eight hundred and eighty-three of the Revised Statutes is hereby amended by inserting after the words "Secretary of the Interior," where they occur therein, the following words: "or under his direction by one of the Assistant Secretaries of the Interior," so that the said section as amended will read as follows:

"SECTION 4883. All patents shall be issued in the name of the United States of America, under the seal of the Patent Office, and shall be signed by the Secretary of the Interior or under his direction by one of the Assistant Secretaries of the Interior, and countersigned by the Commissioner of Patents, and they shall be recorded, together with the specifications, in the Patent Office, in books to be kept for that purpose."

Approved February 18, 1888.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Messrs. Horn & Son, No. 606 Eleventh street, Northwest, Washington, D. C.*, have been guilty of the practices set forth in the first paragraph of the above notice, and that *Isaac S. McGehan, No. 135 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado.*

Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models in the custody of this Office, which were received between the years 1870 and 1880, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 486 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of May 1, 1888.

Patents	391	No. 381,898	to No. 382,288,	inclusive.
Designs	17	No. 18,282	to No. 18,298,	inclusive.
Trade-Marks	18	No. 15,399	to No. 15,416,	inclusive.
Labels	13	No. 5,571	to No. 5,583,	inclusive.
Reissues	3	No. 10,925	to No. 10,927,	inclusive.
Total issue	442			

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama		1	Nebraska		1
Arizona Territory			Nevada		
Arkansas	1		New Hampshire	3	
California	7	1	New Jersey	15	4
Colorado	1		New Mexico Territ'y	1	
Connecticut	17	1	New York	66	8
Dakota Territory	1		North Carolina	2	
Delaware	1		Ohio	33	
District of Columbia	14		Oregon		
Florida	3		Pennsylvania	35	3
Georgia	3		Rhode Island	1	
Idaho Territory			South Carolina	1	
Illinois	30		Tennessee	1	
Indian Territory			Texas	7	4
Indiana	12		Utah Territory	1	
Iowa	7	2	Vermont	1	
Kansas	6		Virginia	2	2
Kentucky	5		Washington Territ'y	1	
Louisiana			West Virginia	3	
Maine	1		Wisconsin	10	
Maryland	6	1	Wyoming Territory	1	
Massachusetts	26		United States Army		
Michigan	9	2	United States Navy		
Minnesota	4				
Mississippi			Total to citizens of the United States	378	30
Missouri	5				
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Germany	7	
Australia			Guatemala	1	
Austria-Hungary			Italy	1	
Belgium	1		New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	6		Russia		
Chili			Scotland	2	
Colombia, U. S. of			South Australia	1	
Cuba	1		Sweden		
Denmark			Switzerland	2	
England	6				
Finland			Total to citizens of foreign countries	30	1
France	2	1			

DESIGNS.

18,282 and 18,283.—CLOCK-DIAL.—*Otto Bartel*, New York, N. Y. Applications filed March 21, 1888. Serial Nos. 268,016 and 268,017. Term of patents 3½ years.

18,284.—LADY'S COSTUME.—*Henrietta F. Duke*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 2, 1888. Serial No. 269,861. Term of patent 3½ years.

18,285.—FONT OF COMBINATION TYPE ORNAMENTS.—*Charles E. Heyer*, Chicago, Ill., assignor to *Bernhard Bros. & Spindler*, same place. Application filed February 20, 1888. Serial No. 264,699. Term of patent 14 years.

18,286.—SIDEWALK DEAD-LIGHT FRAME.—*Peter H. Jackson*, San Francisco, Cal. Application filed December 22, 1887. Serial No. 258,770. Term of patent 14 years.

18,287.—GIRL'S STREET-COSTUME.—*Etta L. Jenkins*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 2, 1888. Serial No. 269,864. Term of patent 3½ years.

18,288.—INFANT'S CLOAK.—*Etta L. Jenkins*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 2, 1888. Serial No. 269,865. Term of patent 3½ years.

18,289.—LADY'S COSTUME.—*Minnie B. Kent*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 2, 1888. Serial No. 269,890. Term of patent 3½ years.

18,290.—SPOON.—*Garry I. Mix*, Yalesville, Conn. Application filed November 30, 1887. Serial No. 256,571. Term of patent 14 years.

18,291.—LADY'S PRINCESS COSTUME.—*Ellen Moran*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 2, 1888. Serial No. 269,892. Term of patent 3½ years.

18,292.—LADY'S WRAP.—*Ellen Moran*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 2, 1888. Serial No. 269,893. Term of patent 3½ years.

18,293.—WINDOW-GUARD.—*John Pirkl*, Brooklyn, N. Y. Application filed December 16, 1887. Serial No. 258,139. Term of patent 7 years.

18,294.—CARPET.—*Edward Poole*, Brooklyn, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Application filed March 31, 1888. Serial No. 269,165. Term of patent 3½ years.

18,295.—LADY'S WRAPPER.—*Lizzie Roys*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 2, 1888. Serial No. 269,876. Term of patent 3½ years.

18,296 and 18,297.—CARPET.—*Emil G. Sauer*, Brooklyn, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Applications filed March 31, 1888. Serial Nos. 269,159 and 269,162. Term of patents 3½ years.

18,298.—BOOK-COVER PROTECTOR.—*Charles W. Stiff* and *Joseph Watrous*, Foxborough, Mass. Application filed November 18, 1886. Serial No. 218,770. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 6,191 and upward are registered under the act of March 3, 1881.]

15,399.—ANTI-FRICTION METAL.—*American Improved Anti-Friction Metal Company*, Mobile, Ala.; Bremen, Germany, and Paris, France. Application filed January 25, 1888. Used since April 15, 1887.

"A representation of the globe of the world, showing the Western hemisphere with its axis prolonged and resting on metallic boxes or bearings, associated with the words 'IMPROVED ANTI-FRICTION METAL.'"

15,400.—PHOTOGRAPHIC PAPER FOR MAKING PRINTS.—*E. & H. T. Anthony & Company*, New York, N. Y. Application filed March 22, 1888. Used since 1877.

"The letters 'N. P. A.'"

15,401.—PLUG OR TWIST TOBACCO, OR TOBACCO IN ROLL.—*Arnold & Bell*, Baltimore, Md. Application filed March 29, 1888. Used since August 22, 1887.

"The words 'CITY STOCK.'"

15,402.—ULTRAMARINES.—*Deschamps Frères, Vieux-Jouef-Hours*, Mouse, France. Application filed March 12, 1888. Used since September 10, 1878.

"The letters 'D. F.'"

15,403.—SMOKING AND CHEWING TOBACCO.—*Fishburne Bros.*, Roanoke City, Va. Application filed February 20, 1888. Used since May 1, 1874.

"The words 'ROMAN EAGLE' and the representation of an eagle."

15,404.—RADIATORS.—*A. A. Griffing Iron Company*, Jersey City, N. J., and Chicago, Ill. Application filed March 19, 1888. Used since September, 1874.

"The word 'BUNDY.'"

15,405.—PLUG-TOBACCO FOR CHEWING.—*J. H. Hargrove & Son*, Chatham, Va. Application filed April 6, 1888. Used since April, 1869.

"The picture of a blanketed horse, together with the words 'DARK HORSE.'"

15,406.—COMPOUND FOR PREVENTING INCRUSTATION AND FOR REMOVING SCALE IN BOILERS.—*Lewis Manufacturing Company*, Sioux City, Iowa. Application filed February 13, 1888. Used since January 15, 1888.

"The word 'EUREKA.'"

15,407.—FLOUR.—*Marshall, Kennedy & Co.*, (*Limited*,) Pittsburg, Pa. Application filed April 6, 1888. Used since January 1, 1881.

"The words 'BAYARD AMBER' in connection with the representation of a roller-mill."

15,408.—RIBBONS AND PIECE SILKS.—*Murphy, Grant & Co.*, San Francisco, Cal., and New York, N. Y. Application filed March 7, 1888. Used since December, 1851.

"The letters 'AA.'"

15,409.—ANTHRACITE AND BITUMINOUS COAL.—*North River Coal and Wharf Company*, Jersey City, N. J. Application filed February 27, 1888. Used since October, 1887.

"The word-symbol 'PORT LIBERTY.'"

15,410.—STEAM AND HOT-WATER BOILERS.—*Pierce, Butler & Pierce Manufacturing Company*, Syracuse, N. Y. Application filed March 31, 1888. Used since December 5, 1882.

"The word 'FLORIDA.'"

15,411.—VENTILATORS.—*John H. Reynolds*, Troy, N. Y. Application filed March 3, 1888. Used since February 15, 1877.

"The word 'GLOBE.'"

15,412.—HOSIERY.—*Edward Scheiflin & Co.*, New York, N. Y. Application filed March 9, 1888. Used since November 15, 1887.

"The word 'ELECTRIC.'"

15,413.—STOCKINGS.—*William Stirker*, New York, N. Y. Application filed February 14, 1888. Used since November 1, 1887.

"The words 'THE DARBY.'"

15,414.—RADIATORS.—*Thomas H. Williams* and *Samuel D. Tompkins*, Jersey City, N. J., and Chicago, Ill. Application filed March 29, 1888. Used since March 1, 1888.

"The word 'TRIUMPH.'"

15,415.—COTTON UNDERWEAR.—*Andrew Zerban*, New York, N. Y. Application filed June 22, 1887. Used since May 20, 1887.

"The symbol of a star within two quadrangles covering each other, the corners of each quadrangle projecting beyond the sides of the other."

15,416.—WOOLEN UNDERWEAR.—*Andrew Zerban*, New York, N. Y. Application filed June 22, 1887. Used since May 20, 1887.

"The words 'AFTER DR. JAEGER'S SANITARY WOOLEN SYSTEM' arranged around the symbol of a star within two squares or quadrangles covering each other in such a manner that the corners of each project beyond the sides of the other, the symbol of a star occupying a central position within the two squares."

LABELS.

5,571.—Title: "GLYCERINE BAY RUM."—*Samuel M. Binder*, Boyertown, Pa. Application filed February 20, 1888.

5,572.—Title: "BOWHAM'S CALENDULA OIL COMPOUND."—*John C. Bowham*, Sutherland, Iowa. Application filed March 6, 1888.

5,573.—Title: "SPECIAL." (FOR OINTMENT.)—*Elwood B. Bunting*, Burlington, N. J. Application filed April 7, 1888.

5,574.—Title: "WEST INDIA HAIR TONIC AND DANDRUFFOS."—*I. W. Earnest*, San Antonio, Tex. Application filed April 3, 1888.

5,575.—Title: "WEST INDIA LIVER ELIXIR."—*I. W. Earnest*, San Antonio, Tex. Application filed April 3, 1888.

5,576.—Title: "WEST INDIA TONIC ELIXIR OF SARSAPARILLA."—*I. W. Earnest*, San Antonio, Tex. Application filed April 3, 1888.

5,577.—Title: "WEST INDIA BALSAM OF HOREHOUND AND COLTSFOOT."—*I. W. Earnest*, San Antonio, Tex. Application filed April 3, 1888.

5,578.—Title: "THE BALM OF ZANTHORIZA." (FOR A MEDICINE.)—*Frederick Ives*, Ogdensburg, N. Y. Application filed April 7, 1888.

5,579.—Title: "LOCHER'S RENOWNED RHEUMATIC REMEDY."—*Charles A. Locher*, Lancaster, Pa. Application filed April 9, 1888.

5,580.—Title: "CHEMICO CORN SALVE."—*George L. Mansfield*, New Haven, Conn. Application filed April 6, 1888.

5,581.—Title: "GOLDEN SEAL AND SANDAL WOOD COMBINATION." (FOR A MEDICINE.)—*Millbern & Williamson*, Detroit, Mich. Application filed April 9, 1888.

5,582.—Title: "BEST COUGH SYRUP."—*Millbern & Williamson*, Detroit, Mich. Application filed April 9, 1888.

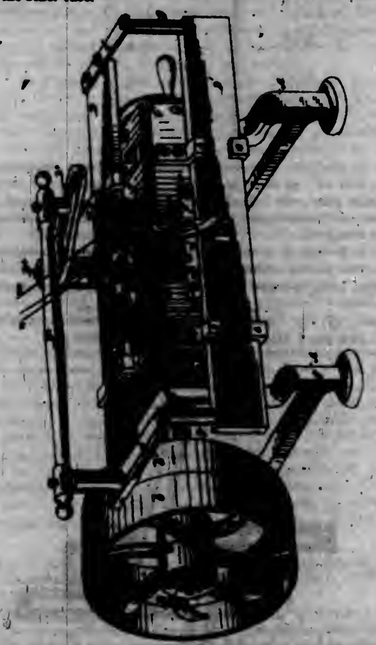
5,583.—Title: "STANDARD STOCK LINIMENT."—*F. E. Sanborn*, Omaha, Nebr. Application filed March 5, 1888.

PATENTS

GRANTED MAY 1, 1888.

381,898. STRAIGHT-KNITTING MACHINE. CHARLES J. APPLEGATE, Elizabeth, N. J., assignor to Ludwig Stehr, New York, N. Y. Filed July 16, 1887. Serial No. 244,446. (No model.)

Brief.—The improved machine includes a set of horizontal and a set of vertical needles, with a yarn-guide for each, and cams for operating the same, which are so constructed and arranged as to cause the needles of each set to form the yarn supplied to them into rows of plain loops and to interlock each loops with the corresponding loops formed by the other set, the loops of one yarn lying wholly upon one face of the fabric and the loops of the other yarn wholly upon the other face.



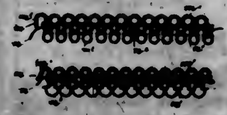
Claim:—1. The combination, substantially as hereinbefore set forth, with two sets of needles of a straight-knitting machine, arranged at an angle to each other, and cams for reciprocating said needles, depend with their spines in different vertical planes, whereby the needles of each set are alternately caused to follow in their movements the needles of the other set and set at distance for them, of independent yarn-supplying devices for each set of needles, devices for throwing back the latches of the needles when such needles are advanced, and mechanism for operating said cams.

2. The combination, as hereinbefore set forth, with a set of vertical and a set of horizontal needles of a straight-knitting machine, independent yarn-supplying devices for each set thereof, and a web-carrier, of a cam for reciprocating each set of needles, arranged with their spines in different vertical planes, and mechanism for operating said cams and web-carrier.

3. The combination, substantially as hereinbefore set forth, with the needle-bars O O, arranged at an angle to each other, the needles *d d*, provided with the butts *d'*, and the cam-bars D D', provided with the needle-actuating grooves E, which have the spines of their V-shaped portions disposed in different vertical planes, whereby the needles carried by each bar are caused alternately to follow in their movements the needles of the other bar and set at distance for them, of yarn-carriers P P', having the eyes *l l* formed in their outer ends, the latch-opener *f*, the take-up H H, and mechanism for reciprocating said cam-bars.

381,899. KNITTED FABRIC. CHARLES J. APPLEGATE, Elizabeth, N. J., assignor to Ludwig Stehr, New York, N. Y. Filed July 16, 1887. Serial No. 244,448. (Specimen.)

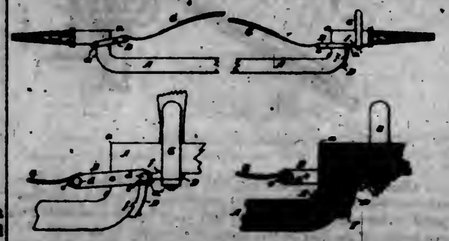
Brief.—The fabric, which is formed of two yarns, is firm and homogeneous, with the loops of one yarn lying wholly upon one face and the loops of the other yarn appearing wholly upon the other face thereof.



Claim.—1. A fabric formed from two distinct yarns, each of which is interlooped with itself and interlocked with the other by extending around each other at points intermediate adjacent loops of the same, substantially as described, whereby the loops composing one face thereof never appear upon the other face, as set forth.

2. A double-faced fabric formed from two distinct yarns, each of which is interlooped with itself to form its respective side of the fabric, and is interlocked with the other by extending around it at points intermediate adjacent loops of the same, substantially as described, whereby the loops composing one face thereof never appear upon the other face, as set forth.

381,900. SPRING-COUPLER FOR VEHICLES. FRANCIS BACON, Waterloo, N. Y. Filed Oct. 1, 1887. Serial No. 251,202. (No model.)



Claim.—1. The combination of the bevel or crank-shaped vehicle-wheel axle, the shackle or link supports or bearings *d' d'*, arranged at the lower or outer angles formed at the junction of the upper horizontal parts of the axle with the vertical parts of the same, the shackle or links having their outer ends extending across said supports at those portions thereof which are along or within said angles, and the vehicle-spring connected at its ends to the inner ends of the said shackles or links, substantially as and for the purposes specified.

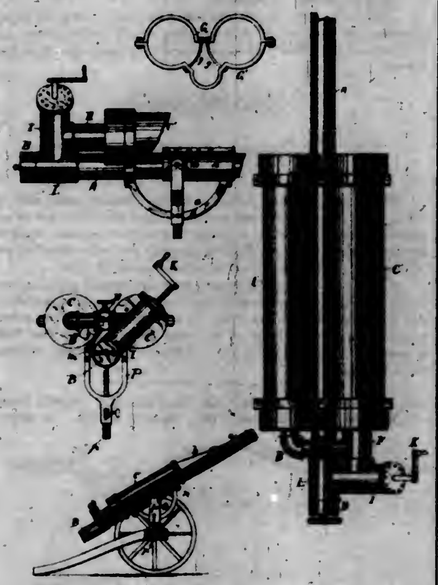
2. The combination of the bevel or crank-shaped vehicle-wheel axle, the detachable shackle or link supports or bearings *d' d'*, arranged in the lower outer angles formed by the upper horizontal parts of the axle and the vertical parts thereof, the shackles or link supports having their outer ends bearing on the said parts *d' d'*, and the vehicle-spring connected at its ends to the inner ends of the said shackles or links, substantially as and for the purposes specified.

3. The combination, with the axle A, of shackle or link supports consisting of detachable angle-shaped irons arranged in the lower outer angles formed by the upper horizontal parts of the axle and its vertical parts, links or shackles having their outer ends supported by the said irons at the angles thereof, and the spring C, connected at its ends to the inner ends of the said links or shackles, substantially as and for the purposes specified.

4. The combination, with the axle A, of the detachable supports or bearings *a' a'*, having one or more lateral arms or extensions and arranged in the angles formed by the upper horizontal parts of the said axle and its vertical portions, vertically-vibrating shackles or links having their outer ends arranged between the said axle and the said supports or bearings, of the spring C, attached at its ends to the inner ends of the said shackles or links, and clips connecting the said supports or bearings detachably to the axle, substantially as and for the purposes specified.

5. The combination of the crank-axle A, the detachable link-supports *a' a'*, arranged underneath the horizontal parts or shanks of the said axle and at or near the outward sides of its vertical parts, the spring C, and the links or couplings connected to the ends of the said spring and having their outer bolts between the said shanks and the said supports, substantially as and for the purposes specified.

381,901. PNEUMATIC CANNON. WALLACE A. BARTLETT, Washington, D. C., assignor to Washington G. Bouldin, Boston, Mass. Filed Sept. 24, 1884. Renewed Sept. 20, 1887. Serial No. 251,088. (No model.)



Claim.—1. The combination, with the gun-tube and its supporting mechanism, of a sectional flask secured to said tube, a valve interposed between the sections of said flask, and a flexible connection from one section of the flask to the source of air-supply, as set forth.

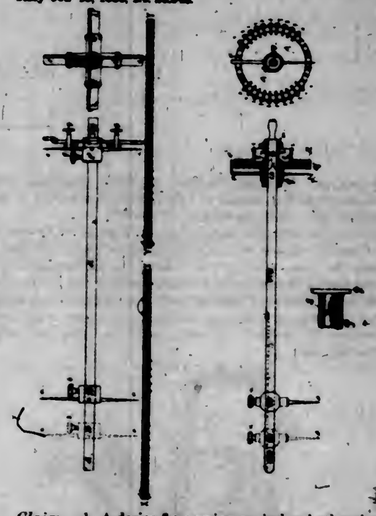
2. The combination, with a sectional flask of a gun-tube, of a single operating-valve, a plurality of supply-pipes leading from the separate compartments of the flask to the valve, and a closing-valve in one of the supply-pipes, substantially as set forth.

3. The combination, with the gun-tube, of a sectional flask secured thereto, a plurality of supply-pipes leading from said sections to the operating-valve, and an operating-valve placed in a vertical plane drawn through the axis of the gun, as set forth.

4. The combination, with the gun-tube, a trunnioned sleeve thereon, and the supporting-yoke, of an arc bar attached to the tube, and a clamp to secure said arc bar against the yoke.

5. The combination, with the gun-tube, of a sectional flask secured thereto, valves between the sections, by which each section may be separated from and rendered independent of the others, a supply-pipe leading from each section to the operating-valve, and a closing-valve in at least one of the supply-pipes.

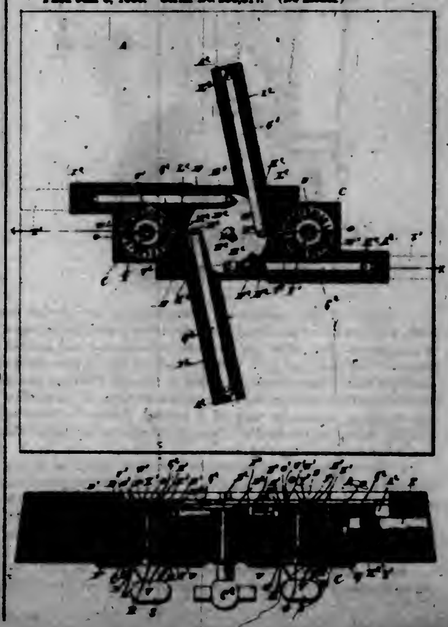
381,902. DEVICE FOR PRINTING MUSICAL AND OTHER CHARACTERS. GUSTAVE BOREL, Lancy, near Geneva, and DAVID MONNIER, Geneva, Canton of Geneva, Switzerland. Filed Nov. 15, 1886. Serial No. 218,942. (No model.) Patented in France Apr. 22, 1886, No. 173,676; in Belgium June 12, 1886, No. 72,686; in England Aug. 12, 1886, No. 10,886; in Austria-Hungary Oct. 9, 1886, No. 17,754, and in Italy Oct. 12, 1886, No. 20,542.



Claim.—1. A device for copying musical and other characters, provided with pointers for resting on the characters to be copied, another pointer for indicating the corresponding positions on another sheet, and a type-carrier which will print the characters on the points thus designated.

2. A shaft, in combination with a type-carrier mounted thereon, and two sleeves adjustable backward and forward thereon, these sleeves being provided with arms carrying pointers, substantially as set forth.

381,903. COMBINATION-LOCK. JOHN BRESNAN, Galveston, Tex. Filed Jan. 6, 1888. Serial No. 260,817. (No model.)



Claim.—1. The combination of the knob-spindle, the inner sleeve secured thereto and having the spindle movable longitudinally thereon, the sign disk or dial loose on the outer end of the spindle and adjustably secured to the knob, the loose tumblers and ring, and the sign-tumbler rigid with the inner end of the inner sleeve and adjustably secured to the ring, substantially as described.

2. The combination of the door, the bolts, the central disk, the arms connecting the bolts thereto, the pivoted detent-arms, the links connecting the same to the central disk, and the knob-spindles on opposite sides of the central disk and having the tumblers provided with notches adapted to be engaged by the detent-arms to lock the central disk, substantially as described.

3. The combination of the door having the rigid outer sleeve, the inner sleeve therein, the knob-spindle secured to the inner sleeve and movable longitudinally therein, the sign-disk loose on the outer end of the spindle and having the series of openings, the knob having the stud to engage one of said openings, the tumblers and ring loose on the outer sleeve, and the sign-tumbler rigid on the inner end of the inner sleeve and adjustably secured to the ring, substantially as described.

4. The combination of the door having the rigid outer sleeve, the knob-spindle, the tumblers loose on the rigid sleeve, the washers between the tumblers and rigid with the said sleeve, the ring loose on the sleeve, and the sign-tumbler revolubly with the spindle, said tumblers and ring having the studs adapted to engage each other, and thereby cause the tumblers to turn when the spindle is rotated, substantially as described.

5. The combination of the bolts X', the disk D', the arms connecting the bolts to the disk, the detents L', having lugs M', the links N', connecting said detents to the disk, and the combination-locks having the notched tumblers adapted to be engaged by the lugs M', for the purposes set forth, substantially as described.

6. In combination with the rigid sleeve D, the inner sleeve, H, swiveled thereto, the knob-spindle movable longitudinally in the sleeve H and independent thereof, but also having a connection with the inner sleeve, whereby said inner sleeve is rotated, the sign-tumbler U', revolubly with the sleeve H, and the tumblers mounted on the outer sleeve, D, and adapted to be turned by the sign-tumblers U', as set forth.

7. In combination with the rigid sleeve D, the inner sleeve, H, swiveled thereto, the knob-spindle movable longitudinally in the sleeve H and independent thereof, but also having a connection with the inner sleeve, whereby said inner sleeve is rotated, the sign-tumblers U', revolubly with the sleeve H, and the tumblers mounted on the outer sleeve, D, and adapted to be turned by the sign-tumblers U', and the sign disk or dial U, loose on the spindle and adjustably secured to the knob, the sign-disk being adjusted to correspond with the sign-tumbler.

8. In combination with the outer rigid sleeve, D, the tumblers and washers thereon, said washers being rigidly fitted to the sleeve, and the tumblers being in engagement with one another, the ring E', in engagement with the tumblers, the inner swiveled sleeve, H, the sign-tumbler U', rigidly fixed to the sleeve H, the adjustable connection between the tumbler U and the ring E', the knob-spindle movable longitudinally within the inner sleeve, and also adapted to turn the latter, and the sign-disk U, loose on the knob-spindle and having an adjustable connection therewith, the adjustable connection between the disk U and the knob-spindle corresponding with the adjustable connection between the ring E' and the sign-tumbler U', as set forth.

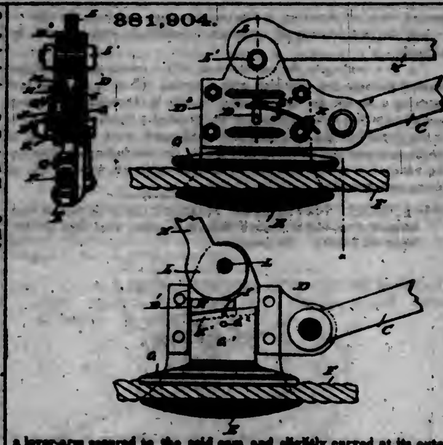
381,904. CABLE-GRIP. WILLIAM J. R. GAGE, Leavenworth, Kans., assignor to himself and John Rathgeber Carr, same place. Filed Apr. 6, 1887. Serial No. 233,733. (No model.)

Claim.—1. In a cable-grip, the combination, with a casing and a fixed jaw formed thereon, of a movable jaw adapted to slide in the said casing, a wedge held on the upper inclined end of the said movable jaw, and a cam pivoted on the said casing and operating on the said wedge, substantially as shown and described.

2. In a cable-grip, the combination, with a casing and a fixed clamp held thereon, of a movable clamp adapted to slide in the said casing, a wedge held adjustable on the upper inclined edge of the said movable jaw, a cam pivoted on the said casing and operating on the said wedge, and a spring operating on the said movable jaw, substantially as shown and described.

3. In a cable-grip, the combination, with a slotted casing carrying a fixed jaw, of a movable jaw fitted in a recess of the casing and provided with a pin projecting through the slot of the casing, a spring secured to the casing and bearing its free end resting under the said pin, and a cam for operating the movable jaw, substantially as herein shown and described.

4. In a cable-grip, the combination, with a casing, a fixed jaw formed thereon, and a movable jaw sliding in the said casing, of a cam pivoted on the said casing and operating on the said movable jaw, and

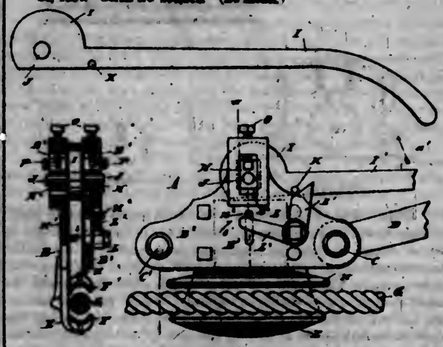


a lever-arm secured to the said cam and slightly curved at its outer end, substantially as shown and described.

5. In a cable-grip, the combination, with the movable jaw G and the plate G', formed on the said jaw G and having an inclined and grooved upper end, of a wedge, H, held on the said inclined end of the plate G' and provided with a tongue, H', fitting into the groove on the plate G', said means for fastening the said wedge H to the said plate G', substantially as shown and described.

6. In a cable-grip, the combination, with the cam L, of the adjustable wedge H, on which operates the said cam L, the plate G', on which the said wedge H is held adjustably, and the jaw G, fixed on the said plate G', substantially as shown and described.

381,905. CABLE-GRIP. WILLIAM J. R. GAGE, Leavenworth, Kans., assignor to himself and Joseph Rathgeber Carr, same place. Filed Dec. 28, 1887. Serial No. 259,312. (No model.)



Claim.—1. In a cable-grip, the combination, with a slotted casing carrying a fixed jaw, of a movable jaw fitted in a recess of the said casing and provided with a pin projecting through the slot of the casing, a cam for pressing the said movable jaw downward, and a bell-crank lever pivoted on the said casing and operating with one arm on the pin of the movable jaw, said bell-crank lever being operated by a pin on the said cam, substantially as shown and described.

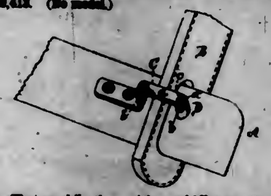
2. In a cable-grip, the combination, with a slotted casing carrying a fixed jaw, of a movable jaw fitted in a recess of the casing and provided with a pin projecting through the said slot of the casing, a cam pivoted in vertically-adjustable bearings and operating on the said movable jaw, a pin or lug secured on the said cam, and a bell-crank lever pivoted on the said casing and provided on one of its arms with an inclined edge on which operates said pin of the cam, while the other arm of the bell-crank lever operates on the said pin of the movable jaw, substantially as shown and described.

3. In a cable-grip, a casing carrying a fixed jaw and a movable jaw fitted in a recess of the said casing, in combination with a cam operating on the said movable jaw and provided with trunnions, bearings carrying the said trunnions and mounted to slide vertically in the recesses formed in the said casing, a set-screw screwing in the said casing, its rounded end passing into a recess of the said bearings, and a

second set-screw screwing in the said bearings and into the said recess of the said first-named set-screw, substantially as shown and described.

4. In a cable-grip, the combination, with a casing and a fixed jaw formed thereon and provided with a curved die, of a movable jaw carrying a similar die and adapted to slide in the said casing, a cam operating on the said movable jaw and pivoted in the said casing, a pin or lug formed on the said cam, and a bell-crank lever, on one arm of which operates said pin, the other arm of the said bell-crank lever being adapted to act on a pin of the said movable jaw, substantially as shown and described.

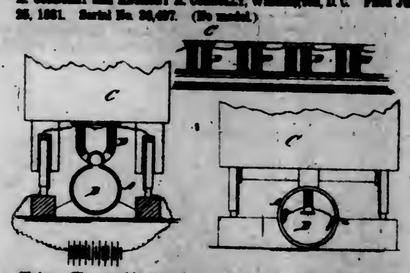
381,906. TUG-FASTENER. FRANKLIN P. CHILD, Springfield, Ohio, assignor of one-half to Albert K. Hahn, same place. Filed Sept. 12, 1887. Serial No. 249,613. (No model.)



Claim.—1. The combination, with a whiffletree, A, a trace, B, slotted and slipped on the end thereof, a bent arm attached to said whiffletree, and a latch pivoted to said arm and allowing the trace to be slipped on the whiffletree, but preventing its removal therefrom, substantially as set forth.

2. The bent arm *c*, having its end bent down and slotted, as shown, in combination with the latch D, pivoted in said slot, the whiffletree to which said arm is attached and the trace slipped on the body of said whiffletree, substantially as set forth.

381,907. PNEUMATIC RAILWAY AND CONVEYER. THOMAS A. CHISHOLM and ANTHONY A. CHISHOLM, Washington, D. C. Filed June 20, 1881. Serial No. 34,497. (No model.)



Claim.—The combination, in a railway or transit system or plant, of a pneumatic tube containing a piston, a car or carrier arranged to travel outside said tube, an electro-magnetic coupling or connection between said car or carrier and said piston, the same consisting of an electro-magnet and armature located the one within the tube and the other upon the car or carrier, a stationary electric generator outside the car, and an electric-current conductor or conductors leading the current through sliding or moving contacts to said magnet, substantially as and for the purpose described.

381,908. DISK HARROW. ADAMS CHEEVER, Jr., Cooperstown, N. Y. Filed Feb. 24, 1888. Serial No. 265,127. (No model.)



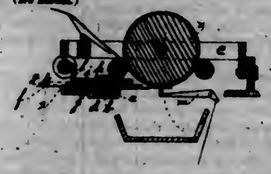
Claim.—The combination, with the concave-convex disk, of the arm G², situated upon the convex side of the disk and adjacent to the edge, the sliding socket G, the depending shank, and the scraper supported upon the shank, substantially as described.

381,909. REVERSIBLE PLOW. ROBERT A. CRAIG, Hale Ward, N. C. Filed Nov. 28, 1887. Serial No. 256,253. (No model.)

Claim.—1. The combination, with a plow-standard having the longitudinal recess T, the double-beveled shoulder D, and the laterally-extended portion, of the wedge-shaped concave casting having the central bolt-rest and the seats P Q, the pivot-bolt, the double-pointed plow-point, the lever fulcrumed in the recess T and provided with the toe for engaging the seats in the toe-plate, the lever-arm provided with a knife-edge, and the rack-plate secured to the plow-beam, substantially as specified.

2. The combination, in a plow, with the recessed plow-standard having the double-beveled shoulders and the laterally-extended enlargement below the same, of the casting I, having seats P Q, the double-pointed plow-point secured to said casting, the lever fulcrumed in a recess in the rear face of the plow-standard and provided with a toe at its lower end and a knife-edge near its upper end, and the rack and guard secured to the plow-beam above the plow-standard, substantially as specified.

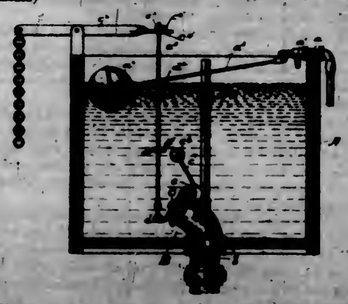
381,910. INKING DEVICE FOR TYPE-WRITING MACHINES. LOUIS S. CRANDALL, Syracuse, N. Y. Filed Dec. 20, 1886. Serial No. 188,511. (No model.)



Claim.—1. In a type-writer, a rotating inking-disk composed of cloth, felt, or other fibrous material interposed between and in combination with the platen and type system of said type-writer, presenting unused or fresh portions of an annular section of said disk between said platen and said type system after each and every impression of said type, substantially as set forth, and an annular ink-containing trough superimposed upon and communicating with said disk for the purpose of supplying ink thereto and moving axially therewith, substantially as described.

2. The combination of means substantially such as the disk *f*, the supporting-flange *e*, the retaining-flange *g*, the ink-supplying trough *i*, and the movable supporting-stud *d*, for the purpose of providing an inking device for a type-writer, substantially as set forth.

381,911. SERVICE-BOX FOR WATER-CLOSETS. JAMES CRAWFORD, Cambridge, Mass. Filed Apr. 26, 1887. Serial No. 236,022. (No model.)



Claim.—1. In a service-box for water-closets, the combination, with the outlet-passage valve G, having the inclined upwardly-extending arm provided with the counter-balancing-weight arranged above the pivot of the valve to hold the latter open or closed, of the operating-lever *e*, a rod which connects the said lever with the said valve and which is provided with a stop, an arm which controls the inlet-cock and which is arranged to engage the said stop, and a float for operating said arm, whereby when the operating-lever is actuated the discharge-valve will be opened and held open by its counter-balancing-weight until the float-arm falls far enough to engage the stop on the connecting-rod, when the said valve will be automatically closed, substantially as set forth.

2. In a service-box for water-closets, the combination, with the valve C, for controlling the outlet-passage from the box, the said valve having the arm *c*², provided with the counter-balancing-weight *c*³, of the operating-lever *e*², the connecting-rod *e*³, having a loose connection with the said lever *e*² and provided with the adjustable stop *d*, the arm *a*² for controlling the inlet-cock, having the loop *a*³ to engage said stop, and the float *a*⁴, attached to said arm, to operate substantially as set forth.

381,912. VIBRATING MECHANISM FOR SEWING-MACHINES. JAMES GIBBONS, Boston, Mass. Filed May 30, 1887. Serial No. 239,716. (No model.)



Claim.—In a thread-tension mechanism, the combination, substantially as described, of the grooved and flanged tension-wheel A, the friction brake or check *n*, the bracket C, the dial E, fixed to such bracket, the spindle F, provided with the screw and nut, and the grooved wheel *b* and revoluble in a bearing, *b*, projecting from the bracket, the disk *c*, fixed on the spindle and provided with the index-pointer or hand D, the washers *d e* and disk *f*, applied to the spindle, and the spiral spring *h*, applied to the bracket, and grooved wheel A, all being arranged and to operate essentially and for use as set forth.

381,913. PIPE-COUPLING. JOHN BOYD, Allegheny, Pa. Filed June 20, 1887. Serial No. 242,202. (No model.)



Claim.—1. In a pipe-coupling, the spigot end of a pipe having a screw-thread thereon, movable metallic rings curved in cross-section on their outer surfaces, an elastic and internally-compressible packing, and a field-chamber between said rings and an aperture communicating with said chamber, in combination with the bell of an adjacent pipe having a curved surface at the inner end of the bell, whereby the packing is expanded by lateral compression and the pressure of the fluid in the pipe and deviations in the alignment provided for, substantially as described.

2. In a pipe-coupling, the spigot end of a pipe having detachable metallic rings curved in cross-section on their outer surfaces, an elastic packing, a spring and a field-chamber between said rings, and an aperture in the pipe communicating with said chamber, in combination with the bell end of an adjacent pipe, the inner wall of which is composed of curved and parallel surfaces, substantially as described.

381,914. CAR-COUPLING. WILLIAM DE GEX, Aylmer, Ontario, Canada. Filed Oct. 31, 1887. Serial No. 253,553. (No model.)



Claim.—1. The pivoted coupling-pin B, pivotal coupling-hook D, and bearing C, in combination with the draw-bar A, formed with a hooked end, *a*², rod F, and spring E, for the purpose specified.

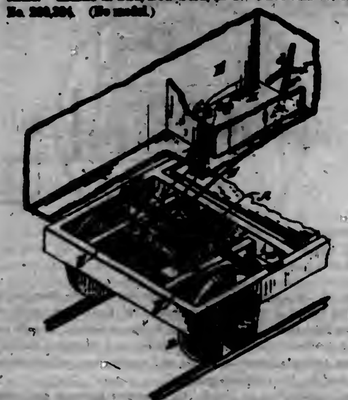
2. The locking-lever H and plate formed with notches or notches K, in combination with the pivotal coupling-pin B, pivotal coupling-hook D, and draw-bar A, formed with a hooked end, *a*², for the purpose specified.

3. A draw-bar, A, moving longitudinally under the frame of the car, in combination with the retracting lever J, for the purpose specified.

4. The pivotal coupling-pin B, pivotal coupling-hook D, bearing C, and forked bearing or guide G, in combination with a draw-bar, A, having a hooked end, *a*², formed round at *a*², rod F, and spring E, for the purpose specified.

5. The pivotal coupling-pin B, pivotal coupling-hook D, bearing C, and forked bearing or guide G, in combination with a draw-bar, A, having hooked end *a*², rod F, spring E, levers H I J, and rod H², formed with elevations H' and H², and a plate formed with notches or notches K, for the purpose specified.

381,915. SIGNING-LIGHTING APPARATUS FOR RAILROAD-CARS. HARRY H. DAY, New York, N. Y. Filed Jan. 10, 1888. Serial No. 260,264. (No model.)

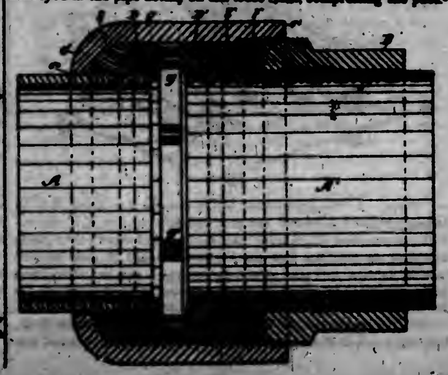


Claim.—1. In combination, the dynamo A, provided with friction-pulleys *a*' *a*² for direct engagement with the car-wheels, the said dynamo being mounted to slide in grooves arranged on the car-trunk, the lever D², provided with pawl and notched bar for retaining the dynamo out of engagement with the car-wheels, and the rod D' and post D, for connecting the lever D² and dynamo-support, and a spring, F, acting in conjunction with the lever D², for retaining the dynamo in engagement with the car-wheels, substantially as described.

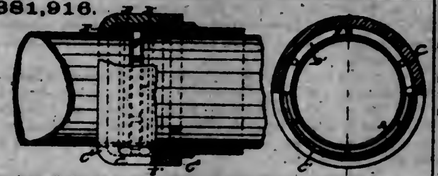
2. In combination, the dynamo A, mounted to slide in grooves arranged on the car-trunk and having its armature provided with friction-wheels for engagement with the car-wheels, the lever D²; provided with pawl and notched bar for retaining the dynamo in or out of engagement with the car-wheels, and the rod D' and post D, as described.

381,916. PIPE-COUPLING. SAMUEL B. DARLING, Bedford, Pa. Filed Feb. 25, 1887. Serial No. 228,858. (No model.)

Claim.—A coupling for plain-end pipes, made in two sections, recessed to put in packing-rings B and B' and brass rings D and D', in which the packing is not only compressed by mechanical means, but is also still further compressed by the pressure of the gas or liquid conveyed in the pipe acting on the brass rings, compressing the pack-

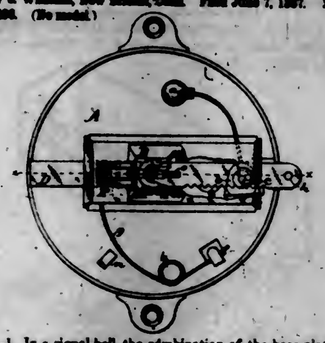


881,916.



ing into all the apertures of the coupling, substantially as shown and set forth.

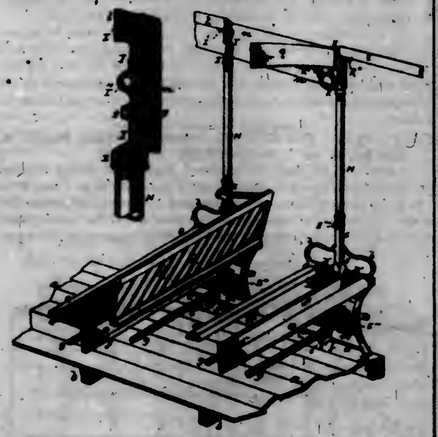
881,917. SIGNAL-BELL. GEORGE W. HART, New London, assignor to Henry C. Williams, New Britain, Conn. Filed June 7, 1887. Serial No. 240,488. (No model.)



Claim.—1. In a signal-bell, the combination of the base-plate A, the vibrating hammer and pallets mounted thereon, the straight rack moving over said base-plate, the frame B, also mounted on said base-plate, the angle-lever mounted on said frame and engaging said slide, and a spring acting against said slide and angle-lever, substantially as described, and for the purpose specified.

2. The combination of a bell, the vibratory hammer and pallets, the slide bearing a straight rack, with the teeth in engagement with said pallets, the spring for moving said slide in one direction, the angle-lever, connecting-rod, and handle for moving said slide in the opposite direction, substantially as described, and for the purpose specified.

881,918. STREET-CAR. JOSEPH W. EVANS, Newburyport, Mass. Filed Nov. 19, 1887. Serial No. 255,572. (No model.)



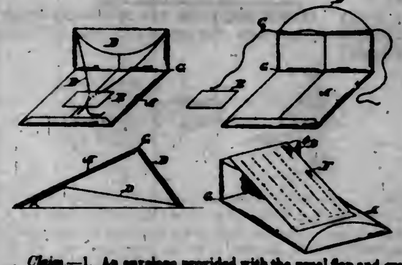
Claim.—1. The combination of the metallic side pieces, B B, internally grooved, as shown, and provided with the feet B' B', the metallic bottom piece, C, provided with the vertical flange C', the metallic top piece, D, provided with the horizontal flange D', and the non-metallic panel A, said side pieces, bottom piece, and top piece being each separate and distinct and bolted together, so as to constitute the frame, substantially as and for the purpose described.

2. The combination of the panel A, side pieces, B B, bottom piece, C C, top piece, D D', and metallic post E, of the shape shown and provided with the groove F', foot F, contact-arms F'', and pivot F''', all made integral and conforming in shape to the shape of the panel, substantially as and for the purpose set forth.

3. The combination of the lower section, E, of substantially the shape described, the central section, H, and the upper section, I, provided with the flange F, said sections being all of metal and rigidly secured together, substantially as and for the purpose set forth.

4. The combination of the lower section, E, of substantially the shape described, the central section, H, and the upper end section, K, provided with the arms K' and K'' and the contacts K''' and K''', said sections being all of metal and rigidly secured together, substantially as and for the purpose described.

881,919. MAKING FOLDING DISPLAY-ENVELOPE. HENRY P. BRINKMAN, Delphos, Ohio. Filed Feb. 15, 1887. Renewed Dec. 22, 1887. Serial No. 258,073. (No model.)



Claim.—1. An envelope provided with the usual flap and creased from side to side and combined with a string or strip secured at the flap end of the envelope and a retaining device for the string or strip upon the body of the envelope, whereby when said envelope is folded at the crease it can be retained in that bent shape, substantially as described.

2. An envelope, A, creased at one end and provided with a cord for opening the end and extending forward and attached to the body of the envelope, so that the envelope may be opened out at any angle for displaying, the whole arranged as and for the purpose substantially as herein set forth and described.

881,920. BUNG-FASTENER. GEORGE A. GRISTMORE and ARTHUR F. GARTSIDE, Savannah, Ga. Filed Aug. 16, 1887. Serial No. 247,048. (No model.)



Claim.—As an appliance to be used with a package and a bung, and as a seal for the latter, the ring B, having the groove *a'*, combined with the disks *b* and *c*, and guard *d*, adapted to be driven into the groove, so as to rest upon the disk *c*, substantially as set forth.

881,921. ADJUSTABLE NIPPLE FOR INCANDESCENT HANGING LAMPS. HIRAM P. GOODRICH, Brooklyn, N. Y. Filed Dec. 2, 1887. Serial No. 256,726. (No model.)

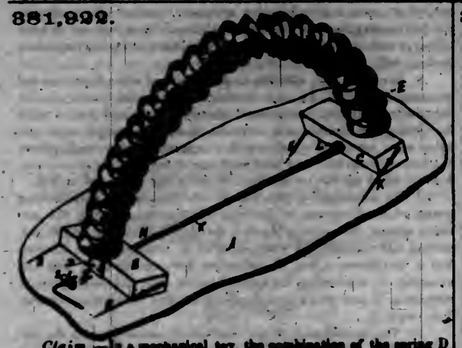


Claim.—1. In lamp appliances for electric lighting, an adjustably-jointed lamp-holder consisting of the combination of a hollow body-bar and a hollow nipple adjustably pivoted together, the hollow of the one communicating with the hollow of the other, and constituting a pivoted joint, having an open way through its interior for free passage of electric conducting-wires, substantially as described.

2. In lamp appliances for electric lighting, the combination of a yoke adapted to embrace a rod or pipe, a body-bar provided with suitable means for the pivoted articulation of a pivot, and a hollow nipple adjustably pivoted to the said body-bar, the hollow of said nipple extending through the pivotal articulation and communicating with the hollow of the body-bar, forming an open way through the interior of the joint for the free passage of electric conducting-wires, substantially as described.

881,922. MECHANICAL TOY. JAMES W. HALL, Newburyport, Mass. Filed Dec. 1, 1887. Serial No. 256,203. (No model.)

881,922.

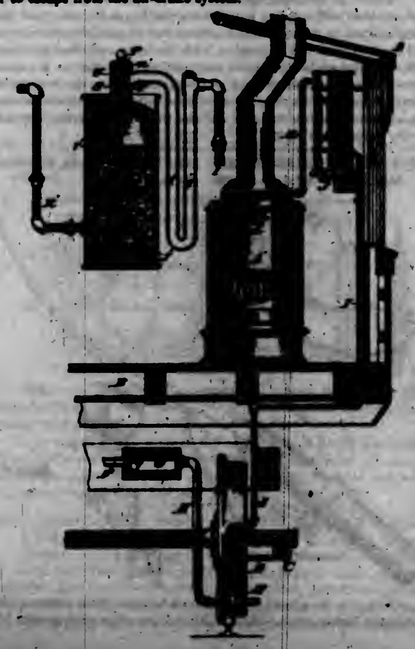


Claim.—In a mechanical toy, the combination of the spring D and foot-pieces C and B, having engaging open, with the cord N, said cord being secured at one end to the rear foot-piece, B, thence passing freely through a loop or eyelet secured to the forward foot-piece, C, and thence back under the foot-piece B, substantially as described, and for the purpose set forth.

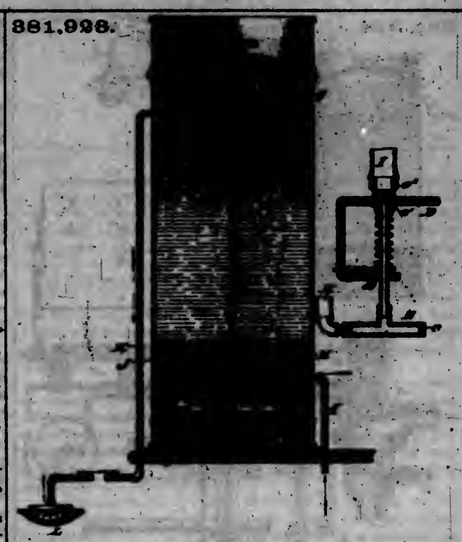
881,923. DEVICE FOR EXTINGUISHING FIRES IN RAILWAY-CARS. SAMUEL H. HARMEYER and EDWARD GRAFTEMEN, Columbus, Ohio. Filed Mar. 12, 1887. Serial No. 230,927. (No model.)

Claim.—1. In combination with a reservoir for storing pneumatic force, a conduit leading therefrom and closed by a valve, a derailment-trip arranged so as to open the valve when actuated, a conduit arranged to connect with the first conduit when the valve is opened by the movement of the trip, an extinguisher-tank provided with inlet and outlet passages, and a receptacle for acid interposed between the conduit opened by the movement of the valve and the inlet-passage of the extinguisher-tank, so that the air or gas from the reservoir when released by the tripping of the valve will pass from the first through the second conduit and force the acid into the extinguisher-tank.

2. In combination with the air-brake system of a railway-car, a conduit leading therefrom and closed by a valve, a derailment-trip arranged to open said valve when actuated, an extinguisher-tank, and a receptacle for acid situated between the tank and conduit, substantially as shown and described, so that the air or gas escaping into the conduit will force the acid into the tank and simultaneously allow the air to escape from the air-brake system.



881,928.



3. In combination with the air-brake system of a railway-car, a storage-tank, G, having a valve, *g*, a conduit, H, leading from said tank and closed by a valve, a derailment-trip arranged to open said valve when actuated, a conduit, I, arranged to connect with conduit H when the valve is opened by the trip, an extinguisher-tank, and an acid-receptacle interposed between the tank and conduit I, substantially as shown and described, so that the escape of air into conduit I will force the acid into the extinguisher-tank.

4. In combination with the air-brake system of a railway-car and a fire-extinguishing tank having inlet and outlet passages, the derailment-trip E, consisting of hollow communicating tubes having the openings *d'* at their upper vertical end, a bracket, D, having a tube, *d''*, a conduit, I, leading from tube *d''* to the extinguisher-tank, and a conduit, H, leading from the brake system into the horizontal arm of trip E, so that when the trip is raised the air from conduit H will pass through the hollow trip into conduit I and thence into the extinguishing-tank.

5. In combination with the air-brake system of a railway-car, a fire-extinguishing tank having inlet and outlet passages and an acid-receptacle interposed in the said inlet-passage, the hollow derailment-trip E, having openings *d'*, the bracket D, having tube *d''*, a conduit, I, leading from tube *d''* to the acid-receptacle, and a conduit, H, leading from the brake system into the horizontal arm of the hollow trip E, all substantially as and for the purpose specified.

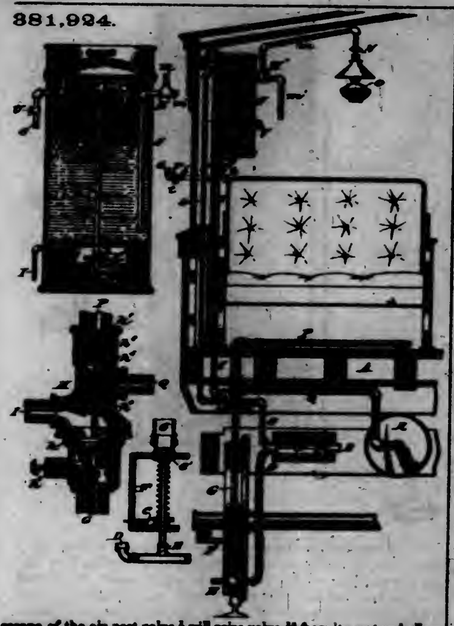
6. In combination with the air-brake system of a railway-car, a fire-extinguishing tank, a conduit leading from the brake system to the tank, and an acid-receptacle interposed in said conduit, the cylinder U, opening into the extinguisher-tank, the open air, and the conduit leading from the acid-receptacle, the weighted rod K, having a large valve, R, at its lower end and a smaller valve, T, at its upper end, all substantially as and for the purpose specified.

881,924. DEVICE FOR EXTINGUISHING FIRES AND PREVENTING THE ESCAPE OF STEAM IN RAILWAY-CARS. SAMUEL H. HARMEYER, Columbus, Ohio. Filed Mar. 17, 1887. Serial No. 231,260. (No model.)

Claim.—1. In combination with the air-brake system and steam-heating system of a railway-car, a conduit leading from the brake system and closed by a valve, a derailment-trip connected with this valve so as to open it when actuated, and a valve-chamber, H, connected by one passage with the steam-pipes and by another with the conduit leading from the air-brake system, said chamber having valves A and A^1, a rod, B^1, uniting said valves, and a discharge-orifice between said valves, so that the escape of the air past valve A will raise valve A^1 from its seat and allow the steam to escape.

2. In combination with the air-brake system and steam-heating system of a railway-car, a conduit leading from the brake system and closed by a valve, a derailment-trip connected with this valve so as to open it when actuated, and a valve-chamber, H, connected by one passage with the steam-pipes and by another with the conduit leading from the air-brake system, said chamber having valves A and A^1, a rod, B^1, uniting said valves, a spring-detent, F^1, to prevent the valves from closing, and a discharge-orifice between said valves, so that the

381,924.



escape of the air past valve A will raise valve A^2 from its seat and allow the steam to escape.

3. In combination with the air-brake system and steam-heating system of a railway-car, a conduit leading from the brake system and closed by a valve, a derailment-trip connected with this valve so as to open it when actuated, and a valve-chamber, H, connected by one passage with the steam-pipes and by another with the conduit leading from the air-brake system, said chamber having valves A and A^2, a rod, A^3, uniting said valves, a tight packing-disk, A^4, separating the air from the steam-passages, a spring-detent, A^5, to prevent the valves from closing, an air-escape passage, I, and a steam-escape passage, Q.

4. In combination with the air-brake system and steam-heating system of a railway-car, a conduit leading from the brake system and closed by a valve, a derailment-trip connected with this valve so as to open it when actuated, and a valve-chamber, H, connected by one passage with the steam-pipes and by another with the conduit leading from the air-brake system, said chamber having valves A and A^2, a rod, A^3, uniting said valves, a tight packing-disk, A^4, separating the air from the steam-passages, a spring-detent, A^5, to prevent the valves from closing, an air-escape passage, I, and a steam-escape passage, Q, and a vessel, R, connected with said steam-passage and filled with absorbent material.

5. In combination with the air-brake system and steam-heating system of a railway-car, a conduit leading from the brake system and closed by a valve, a derailment-trip connected with this valve so as to open it when actuated, and a valve-chamber, H, connected by one passage with the steam-pipes and by another with the conduit leading from the air-brake system, said chamber having valves A and A^2, a rod, A^3, uniting said valves, a tight packing-disk, A^4, separating the air and steam passages, escape-pipes I and Q for air and steam, respectively, and a fire-extinguisher, J, secured to the air-exit pipe I, so that the air, after passing chamber H and releasing the steam, will escape into and actuate the extinguisher.

6. In combination with the air-brake system and steam-heating system of a railway-car, a conduit leading from the brake system and closed by a valve, a derailment-trip connected with this valve so as to open it when actuated, and a valve-chamber, H, connected by one passage with the steam-pipes and by another with the conduit leading from the air-brake system, said chamber having valves A and A^2, a rod, A^3, uniting said valves, a tight packing-disk, A^4, separating the air and steam passages, escape-pipes I and Q for air and steam, respectively, a fire-extinguisher, J, and an cold-receptacle interposed between the extinguisher and air-escape pipe, so that the air after passing chamber H and releasing the steam will force the cold into the extinguisher-tank.

7. In combination with the air-brake system of a railway-car and an extinguisher-tank, a conduit leading from the brake system to the said tank, a valve for closing said conduit, and a derailment-trip arranged to open said valve when actuated, together with a separate conduit leading from the brake system into said tank, and one or more valves in said conduit by which air can be admitted to the extinguisher-tank at will.

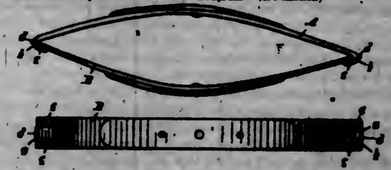
8. In combination with the air-brake system of a railway-car and an extinguisher-tank, a conduit leading from the brake system, an anti-receptacle interposed between said conduit and the said tank, a valve for closing said conduit, and a derailment-trip arranged to open said valve when actuated, together with a separate conduit leading from the brake system into said tank, and one or more valves in said conduit by which air can be admitted to the extinguisher-tank at will.

9. The combination, with the air-brake system and steam-heating system of a railway-car, of the reservoir C, connected with the air-brake system, the conduits D and G, the hollow derailment-trip E, connecting said conduits, the valve-chamber H, connected with the conduit G, and having a rod, A^3, and valves A A^2, secured upon said rod, a conduit, F, connecting the valve-chamber with the steam-pipes, a receptacle, R, and steam-escape pipe Q, leading from valve-chamber H to vessel R.

10. The combination of the reservoir C, connected with the air-brake system, the conduits D G, having the derailment-trip E as a connection, the valve-chamber H, having valves A A^2, tight disk A^4, and conduit I, connecting the pipe G with an extinguisher when valve A is opened, all substantially as and for the purpose specified.

11. The combination of the reservoir C, connected with the air-brake system, the conduits D G, having the derailment-trip E as a connection, the valve-chamber H, having valves A A^2 and tight disk A^4, the steam system F, opening into chamber H when valves A A^2 are raised, the conduit I, connecting pipe G with an extinguisher when valve A is opened, and the conduit S, leading direct to extinguisher and having valves t and U, whereby air can be admitted to the extinguisher at will.

381,925. ELLIPTIC SPRING. WILLIAM G. HARRIS, Detroit, Mich., assignor of one-half to the Detroit Steel and Spring Works, same place. Filed Nov. 10, 1887. Serial No. 255,512. (No model.)



Claim.—In an elliptic spring, the combination of the upper main leaf provided with recesses and downturned lips at its ends, said lips being adapted to embrace the shoulders formed upon the main lower leaf and hold such leaf in position, with the lower main leaf provided with shoulders and tongues at its ends, said tongues being on the same curve with the body of the leaf and adapted to enter the recesses in the upper main leaf for the purpose of holding the leaves against lateral displacement, and free to move endwise therein, substantially as and for the purposes set forth.

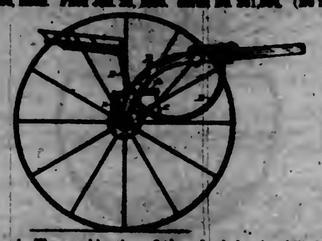
381,926. BAND-CUTTER. JAMES L. HAMM, Oberlin, Pa. Filed Sept. 3, 1888. Serial No. 283,953. (No model.)



Claim.—1. In a band-cutter, the combination of the cutter-blade having the floating cutting-edges A' A^2 and the stable cutting-edge A^3, adapting it to a thrust and draw cut, with the fork-handle F, the clasp E, the levers C C', and the upper flat securing said clasp and levers to the cutter-blade, whereby the cutter-blade is secured to the fork-handle and prevented from longitudinal and lateral displacement, substantially as and for the purposes set forth.

2. A band-cutter blade formed of two segmental parts united at a common point, a, and provided with cutting-edges upon its upper and lower segmental parts, the interior of said blade being cut away, substantially as and for the purposes set forth.

381,927. TWO-WHEELED VEHICLE. HENRY C. H. HOWARD, Kalamazoo, Mich. Filed Jan. 23, 1888. Serial No. 261,894. (No model.)



Claim.—1. The combination of the wheeled axle, thills having the slots with fulcrum-pins therein, the levers passed through the slot of the thills, a vehicle-body or seat-bars, and the hangers and springs, substantially as set forth.

2. The combination of the wheeled axle, body, the fulcrumed levers, the hangers attached at one end to the end of the levers and at the other end to the body, and the spiral springs attached to some suitable connection at one end and to the end of the fulcrumed levers at the other end, substantially as set forth.

3. The combination of a vehicle-body, wheeled axle, thills, the levers having the series of notches and fulcrumed in the slots through the thills, the hangers, and springs, substantially as set forth.

4. The combination of the wheeled axle, thills having the fulcrum-slots, the notched levers in said slots, the fulcrumed body or seat-bars, hangers attached to the body and to the front end of the levers, and spiral springs attached to a projection from the axle at the lower end and to the rear end of the levers at the upper end, substantially as set forth.

5. In a vehicle, the combination of the body fulcrumed at the forward end, the levers transversely to the axle and resting across a suitable fulcrum, said levers being jointedly attached to the body at their forward ends, and springs exerting a resistance against the rise of the rear end of the levers when their forward ends are borne downward, substantially as set forth.

6. In a vehicle, the combination of the body, thills, the fulcrumed levers, the hangers, and springs exerting a resistance against the movement of the levers at each end when the body is borne down, substantially as set forth.

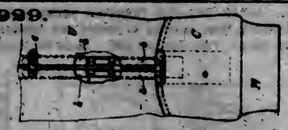
381,928. BIRD-CAGE. WILLIAM HOOF, Baltimore, Md., and HANNA W. HOOF, Philadelphia, Pa. Filed Nov. 22, 1887. Serial No. 255,833. (No model.)



Claim.—1. In egg and fruit carriers, the strips forming the coils suspended from the sides and ends by means of flexible metal strips, constructed as described.

2. In egg and fruit carriers, the sectional trays having two radial sides and the curved sides made conformable to a barrel or any cylindrical package, substantially as described, in combination with coils suspended from the ends and sides by means of metal strips.

381,929. CAN-OPENER. JAMES J. JOHNSON, New York, N. Y. Filed Dec. 6, 1886. Serial No. 220,631. (No model.)



Claim.—In a can-opener provided with a vertical opening, two flexible metal stays, each composed of two parts adapted to slide one upon the other, said stays being pivoted at their lower ends to the plate a and provided at their upper ends with suitable fastening devices, said stays being jointed or otherwise secured within the limits of the sheet at said opening, substantially as described and shown, for the purpose set forth.

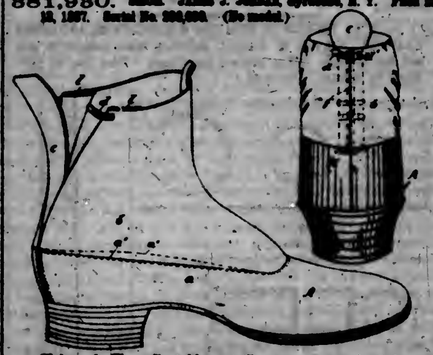
2. In a shoe-fastening device, the attaching-plate a, to which is pivoted the lower ends of the two-part flat metal stays, the parts of both of which are adapted to slide upon each other to compensate for the bending of the shoe in walking, when used in combination with a shoe provided with a vertical opening in the rear of said shoe, and a tongue, T, for the double purpose of assisting in closing said opening and in drawing on the shoe, substantially as described and shown.

3. In a shoe of the class described, the combination of the two-part flexible stays b b and b' b', adapted to slide freely upon each other, pivoted at their lower ends to the plate a and provided at their upper ends with the multiple take-up plate c and spring-stud d, substantially as described.

4. In a shoe of the class herein described, provided with a vertical opening in the rear thereof, the combination of stays secured within the folds of the meeting edges of said opening, adapted to yield to the motion of the foot of the wearer, one of said stays being provided with side extensions adapted to fold over and envelop the other stay, the projection b^2, take-up plate c, and stud d, all substantially as and for the purpose set forth.

5. The combination of the flat metal stays b b', provided with extension b^2, projection b^3, said stays being pivoted to the plate a, and provided with clasp c and spring-stud d, substantially as described and shown.

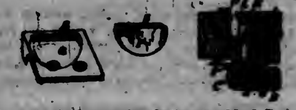
381,930. SHOE. JAMES T. JORMAN, Syracuse, N. Y. Filed May 13, 1887. Serial No. 238,093. (No model.)



Claim.—1. The adjustable metallic stay composed of the parts g g', provided with integral extensions A A, projecting from the lower and upper edges, respectively, of the two parts, and lapped around each other to slide vertically one on the other, whereby the vertical movement of the stay-pieces is determined by the overlapping edges coming when the stay-pieces are extended to the extreme limit of movement, substantially as and for the purpose set forth.

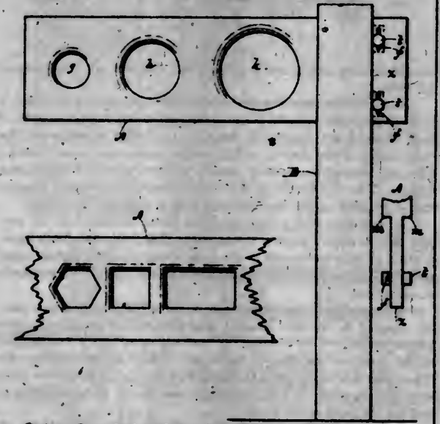
2. The combination of the two stays of adjustable metallic stay-pieces pivoted to the connection N and provided, respectively, with the hinged clasp f and stud e, substantially as and for the purpose set forth.

381,931. PLATFORM-SCALE. WILLIAM G. KELLY, Saratoga, Mich., assignor, by direct and mesne assignments, to Henry Gould, Edward T. Wilcox, and Wickham G. Jackson, same place. Filed Aug. 4, 1887. Serial No. 246,162. (No model.)



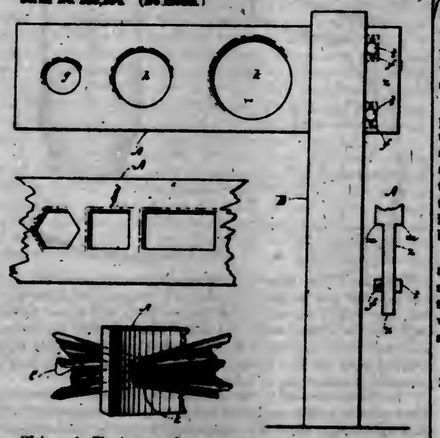
Claim.—In platform-scales, the bearing-block P, the casting Q, attached to the platform and provided with the recess R, to form a bearing for the upper face of block P, in combination with the knife-edge O, which is connected with and operates the scale-beam, the lower face of block P bearing upon the knife-edge O, substantially as described.

881,982. APPARATUS FOR TREATING SKINS. CHARLES M. KENDALL, Haverhill, Mass., assignor to himself and Benjamin Milton Kimball, same place. Filed Dec. 20, 1887. Serial No. 258,352. (No model.)



Claim.—In a device of the character described, the die A, provided with one or more holes and having the tenon *x*, in combination with the standard B, provided with a mortise for receiving said tenon, the keys *f*, passing through said tenon adjacent the outer edge of the standard, and the cross-pins *f'*, passing through said keys, substantially as described.

881,983. PROCESS OF TREATING MOROCCO-SKINS AND OTHER LEATHERS. CHARLES M. KENDALL, Haverhill, Mass., assignor to himself and Benjamin Milton Kimball, same place. Filed Dec. 20, 1887. Serial No. 258,354. (No model.)

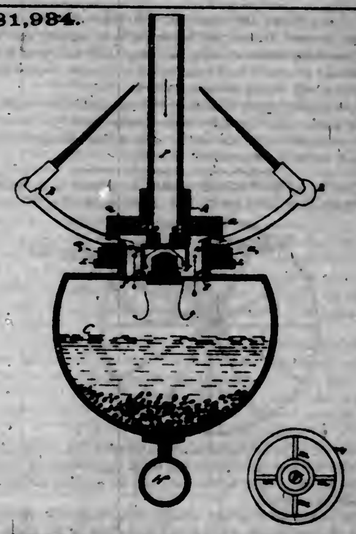


Claim.—1. The improved process of treating morocco and other finished skins herein described, the same consisting, essentially, in forcibly drawing the skin successively through two or more holes in a die, said holes being of different sizes, substantially as described.

2. That improvement in the art of treating morocco and other finished skins which consists, essentially, in forcibly drawing the skin through a hole in a die until the grain is broken or disintegrated, substantially as specified.

3. That improvement in the art of treating morocco and other finished skins which consists, essentially, in forcibly and repeatedly drawing the skin through a hole in a die until the grain is broken or disintegrated, the skin being turned or folded differently between the drawings to present it in different positions to the die, substantially as described.

881,984. CARBURETING GAS-LAMP. ARTHUR EISER, Philadelphia, Pa. Filed Oct. 15, 1887. Serial No. 252,425. (No model.)



Claim.—1. In a carbureting gas-lamp, the combination, with the carbureting-vessel, of a supply-pipe having passage-ways in its sides, and a burner-support attached to said pipe and adapted to open and close said passage-ways.

2. In a carbureting gas-lamp, the combination, with a carbureting-vessel, gas-burners, and burner-support, of a valve situated at or near the burner-support and adapted to open and close simultaneously all of the burner passage-ways leading to the carbureting-vessel and to the gas-supply, substantially as described.

3. In a carbureting gas-lamp, the combination, with a carbureting-vessel, a gas-burner, and a burner-support, of a gas-supply pipe terminating in the neck or mouth of the carbureting-vessel, and a valve placed at the termination of said pipe adapted to admit and shut off the gas from said pipe to the gas-burners and carbureting-vessel, substantially as described.

4. In a carbureting gas-lamp, the combination of a gas-supply pipe, a gas-burner, a burner-support internally grooved and screw-threaded, and an asbestus washer placed at end of said groove, with a carbureting-vessel detachably connected to said burner-support by an elongated screw-threaded neck, which engages the similar screw-threads in said groove, and arranged to make a gas-tight joint with the said washer, and a packed joint or stuffing-box attached to the lower end of burner-support, substantially as and for the purpose herein described.

5. In a carbureting gas-lamp, the combination, with a gas-burner and burner-support, of a carbureting-vessel detachably connected to said burner-support by a neck, said neck forming, with its connection to the burner-support, a valve adapted to open and close the passage-ways leading from the burners to the carbureting-vessel, substantially as described.

881,985. FASTENER FOR GLOVES, &c. EDWIN J. ERASMUS, Boston, Mass., assignor to the International Fastening Company, Portland, Me. Filed Nov. 26, 1887. Serial No. 256,203. (No model.)



Claim.—1. A button member consisting of a flexible struck-up flanged stud, A, having two spring-arms, *b b*, and a flat cabochon base, in combination with a collet, B, embracing said base, and a flanged eyelet, C, whereby the eyelet is rounded out against the base of the stud and under the rounded-in edge of the collet, all arranged as and for the purposes substantially as described.

2. An indestructible socket consisting of the combination of a flaring bell-shaped cup, F, and a flanged lip, G, whose upper portion is pressed around the flaring mouth of said cup, substantially as and for the purposes described.

3. In a fastener, an indestructible button-hole member consisting of a dome-shaped cover, E, having a central opening, a flaring bell-shaped cup, F, having an upwardly-projecting tubular portion, *c*, and a flanged lip, G, whose upper portion is pressed around the flaring mouth of said cup, substantially as described.

881,986. BOWING FOR HOLDING WATCHES. EDWARD JOHN LOUDON, London, County of Middlesex, England, assignor of one-half to A. J. Loudon & Co., New York, N. Y. Filed Sept. 14, 1887. Serial No. 249,659. (No model.)



Claim.—1. As a new article of manufacture, a strap or band provided with a watch-holder having an opening to permit observation of the time, substantially as set forth.

2. A strap or band provided with a watch-holder having an opening to permit observation of the time, and a fastening for securing said holder in place upon the strap or band, substantially as set forth.

3. A strap or band provided with a watch-holder and a loop, as 12, said watch-holder having an opening to permit observation of the time, and a supplemental strap for engagement with said loop, substantially as set forth.

4. A strap or band provided with a watch-holder having an opening to permit observation of the time, and apertures, as 14 and 15, for the passage of the stem and chain-ring of the watch, substantially as set forth.

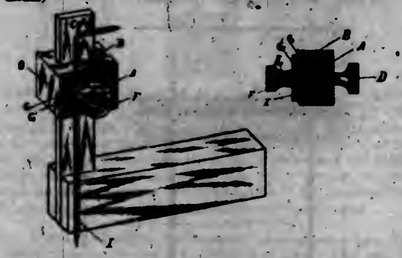
5. A strap or band provided with a watch-holder consisting of a ring tapering from its outer to its inner edge, substantially as set forth.

6. The combination, with a strap or band, of a watch-holder hinged thereto and a fastening device for said watch-holder, substantially as set forth.

7. The combination of the strap 2, perforated, as at 3, at one end and provided with a buckle and loop at the other end, with a watch-holder, 6, provided with a strap, 9, adapted to engage with said loop and buckle, substantially as set forth.

8. The combination of the strap 2 and the watch-holder, the latter provided with a strap, 9, having an extension, 11, substantially as set forth.

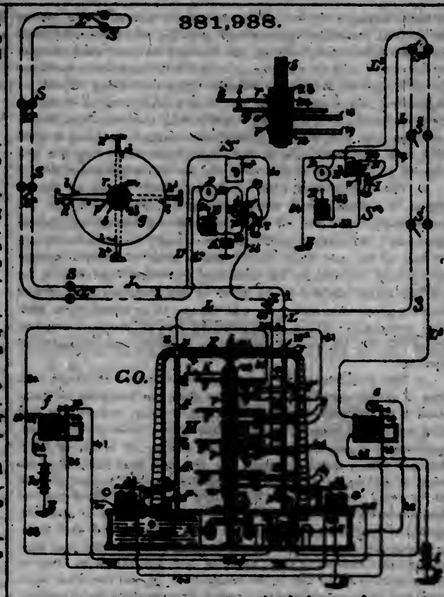
881,987. SURFACE-GAGE. EDWIN LESLEY and CHARLES H. PERRY, Prospect, Ill. Filed Mar. 5, 1887. Serial No. 229,794. (No model.)



Claim.—1. The plane-faced block A, provided with the plane-faced slot B and set-screw D, adapting it to be secured upon a flat bar, in combination with a gage-rod adjustably clamped upon one side of said block and movable only in a plane parallel to said slot, whereby the implement may be readily secured upon a try-square blade or may be used alone with either of its faces serving as the base or working-face.

2. In an implement of the class described, the combination, with a block having a plane face and a slot or groove whose sides and bottom are all plane perpendicular to said face, of a set-screw adapted to secure a flat bar in said slot, and a gage-rod adjustably clamped upon one side of said block, substantially as and for the purpose set forth.

881,988. SYSTEM OF TELEPHONIC INTERCOMMUNICATION. JOHN A. HOYT, Hartford, Mass. Filed July 6, 1887. Serial No. 243,208. (No model.)



Claim.—1. The hereinabove-described improvement in connecting apparatus for automatic telephone-exchanges, comprising a series of disks, one for each line, carried upon a single rotating shaft, a series of rotating arms normally engaged by the said disks and rotating therewith, each of the said arms constituting the terminal of a telephone-line, a series of lifting-rods, one for each line and connected by branch circuits with said lines, disposed around the central shaft and provided with projecting arms equal in number to the number of disks, and a single electro-magnet controlling each of the said lifting-rods and adapted, when energized, to move the said rod longitudinally, whereby the rotating line terminal at the time opposite any one of the projecting arms of the said rod may be engaged, lifted from its disk engagement, and electrically connected with the line represented by said lifting-rod, substantially as and for the purpose described.

2. The combination, in an automatic telephone-exchange system, with a series of telephone-lines centering at a common station, a relay included in the circuit of each line, and a single electro-magnet for each line in a local circuit controlled by said relay, of an automatic connecting apparatus comprising the following instrumentalities: a shaft constantly revolved by a suitable motor, a series of disks mounted thereon rigidly, but insulated therefrom, a series of rotating conducting-arms, each constituting a line terminal mounted loosely upon the said shaft at different points of the periphery thereof and normally participating in the movement thereof by engagement with the said disks, each line being provided normally with a continuation through one of the said disks, and a series of lifting-rods arranged parallel to the said shaft, (one for each line and each connected by a branch circuit with its own line,) provided with projecting arms, one opposite each revolving disk and capable of longitudinal motion, the said rods being each controlled by the local magnet of its own line and adapted, when actuated thereby, to move longitudinally in its bearings and to engage by means of its projecting arms any predetermined terminal arm, thus disconnecting the main line, represented by said arm, from its normal continuation and connecting it through the said lifting-rod to the circuit represented by said rod, substantially as specified.

3. The combination, in an automatic telephone-exchange system, of a series of telephone-lines centering at a common station and radiating therefrom each to one or more sub-stations, and an indicating-dial and circuit-changer at each sub-station, as described herein, with an automatic connecting apparatus at the central station comprising the following instrumentalities: a relay in the main circuit of each line adapted to respond to the operation of the sub-station circuit-changer, a single electro-magnet in a local circuit for each of the said relays and controlled thereby, the longitudinally-movable lifting-rods 15, each connected by a branch with one of the lines actuated by said magnets and each having a series of projecting arms equal in number to the lines of the system, the vertical shaft 5, carrying the disks *g*, and the rotating arms 4, each constituting the terminal of a line and normally rotating with the said disks and shaft, but mounted at different points of the periphery of the latter and adapted to be engaged by one of the projecting arms of the said lifting-rods when actuated by the electro-magnet, whereby the line terminated by said rotating arm may be disconnected from its normal continuation through the disk and connected with the line represented by the lifting-rod, as described.

4. The hereinabove-described appliance for the automatic interconnection of electric lines at a central exchange, consisting of the vertical shaft 5, covered with the insulating-sleeve 22, and maintained in motion by the motor M, the disk *g*, rigidly mounted thereon but insulated therefrom, and each forming the terminal of a normal continuation of one of the main circuits, the rotating arms 4, loosely mounted on the said shaft on different horizontal planes and at different points of the periphery of said shaft and insulated therefrom, each arm forming the terminal of one of the main lines, the said arms being each

normally engaged by one of the said disks, maintained in motion thereby and connected therethrough with the said circuit combination, the vertical lifting-rods 15, one for each line, and each electrically connected with its own line, provided with the arms *a*, one opposite each disk of the series, the said lifting-rods being capable of longitudinal movement, and the said arms *a* being adapted to engage any predetermined rotating arm *k* and to raise the same from its normal connection with the disk *g*, the electro-magnets actuating the said lifting-rods, and relays, one in each loop-circuit, controlling the said magnets, all combined as described, and for the purposes specified.

5. The combination, with a relay in a main circuit, an electro-magnet in a local circuit controlled thereby, and an armature and armature-lever therefor, of a vertical rod capable of longitudinal movement in its bearings and forming a normally-disconnected branch terminal of the said main circuit, and a series of terminal springs representing, respectively, and connected with other main circuits, the said rod being adapted to be lifted by the armature-lever of said electro-magnet when energized, and thereby to be brought into electrical connection with a predetermined one of the said terminal springs for the purpose of establishing through communication, as described.

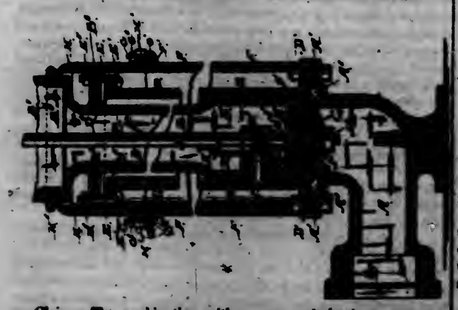
6. The combination, in an automatic telephone-exchange, of a series of spring-arms forming telephone main-line terminals, all maintained in rotary motion, so as to pass a given point successively, and being maintained normally in connection with a series of circuit continuations by engagement with an equal number of revolving disks, combined with a series of relays, one for each line, included in the circuit of said main lines, a series of electro-magnets in local circuits, one for each line, controlled by the said relays, and armatures and armature-levers therefor, and a series of vertical rods, one for each line, capable of longitudinal movement in their bearings, and each forming a normally-disconnected branch terminal of one of the said main lines, the said rods being each actuated and adapted to be lifted by the armature-lever of the electro-magnets of its own line when energized, and being provided with a series of projecting arms extending, when the rod is lifted, into the path of the rotating spring-arms, whereby the said rods may be caused to connect with any of the said spring-terminals (each in its own time) and to disconnect the same from its normal continuation for the purpose of establishing through connection, substantially as described.

381,939. TIES-SHEARER. JOSEPH D. MCGEE, Quigley, Ga. Filed Sept. 17, 1887. Serial No. 249,982. (No model.)



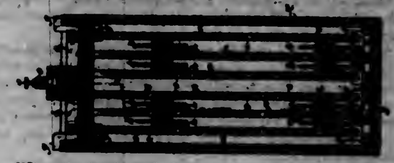
Claim.—The base C, having upright A, in combination with the grasping-arms D, the actuating-lever E, the pin E, and the slotted plate G, the whole co-operating as herein shown and described.

381,940. FIRE-HYDRANT. ALBERT H. HILLIER, Reading, Pa., assignor to the Hilliers Foundry and Machine Company, (Limited), same place. Filed July 15, 1885. Serial No. 172,324. (No model.)



Claim.—The combination, with a goose-neck having a recess on its upper face, a flange, A', and a foot-joint dowel in said recess, of a stand-pipe bolted to the goose-neck and overlapping the foot-joint, a hydrant located in the stand-pipe and having a flange, B', a flange, B'', on the upper end of the stand-pipe, bolt-and-nut connections between the flanges, said hydrant having an abutment, B''', a valve-seat fitting against said abutment, a fitting to hold the valve-seat in place, a valve, and a front-case of two sections removably secured together and inclosing the stand-pipe and hydrant, substantially as set forth.

381,941. SECONDARY BATTERY. ABRAHAM V. HEDGES, New York, N. Y. Filed Nov. 23, 1887. Serial No. 255,677. (No model.)



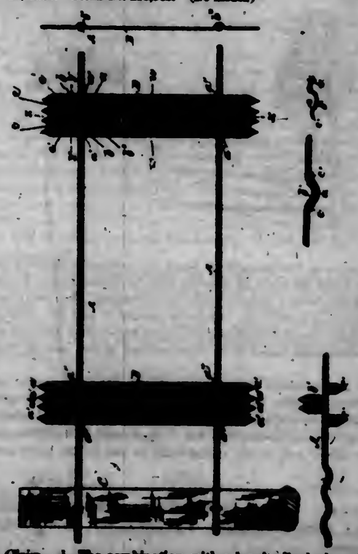
Claim.—1. An electrode for secondary batteries, consisting of a plurality of plates of lead or other suitable material placed face to face in close contact, each plate being provided with funnel-shaped perforations which flare in opposite directions, substantially as described.

2. In a battery-cell, the combination, with a plurality of plates forming the positive electrode, of an insulating-prop, *f*, for grasping and supporting the edges of said plates, and cut away so as to be out of contact with the plates of the other electrode, substantially as described.

3. A battery-cell provided with independent insulating-props *f*, for grasping and supporting the edges of the plates forming the two electrodes, the prop for each electrode being cut away so as to be out of contact with the other electrode, substantially as described.

4. The combination, with the plates *a*, forming the positive and negative electrodes, of the feeders A, provided with the disks *k*, of insulating material, substantially as described.

381,942. FENCE. FRANCIS MEEK, Brooklyn, N. Y. Filed May 27, 1887. Serial No. 239,512. (No model.)



Claim.—1. The combination, with a longitudinal wire, of pickets having slits *a*, perforations *b*, and grooves *a' b'*, for the passage and attachment of the wire, substantially as and for the purposes herein set forth.

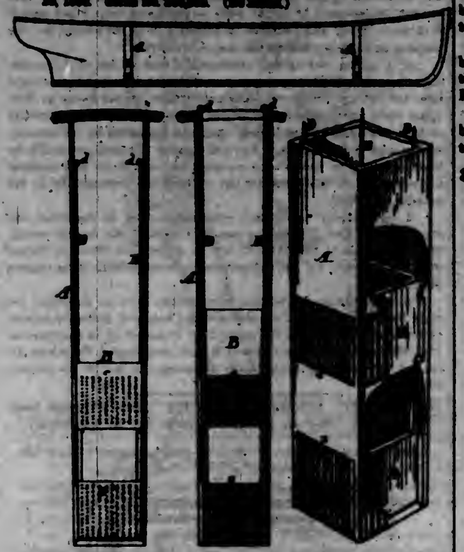
2. A fence composed of longitudinal wires and sheet-metal pales, the latter having three or more terminal fingers, each formed with a cross crimp or groove on alternate sides, and a wire or wires laid between said fingers and bound within the groove of each finger, substantially as described, for the purposes specified.

3. A fence composed of sheet-metal pales and longitudinal wires, the said pales corrugated transversely, having three or more terminal fingers and a cross groove or crimp formed on alternate sides of said fingers, and the said wires having curves *a*, conforming with the corrugations of the pickets and bound alternately between the said fingers

within the cross-grooves, substantially as described, for the purposes specified.

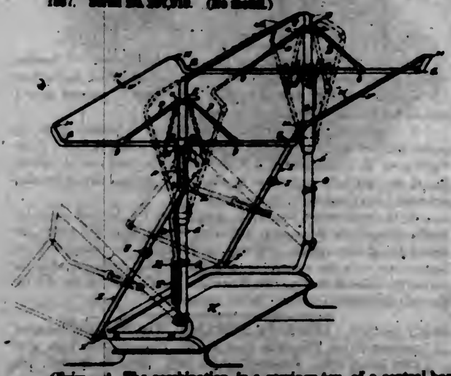
4. A cross-metal pickets for fences, having staples or wires terminal fingers, each formed of or many their bars with a cross groove or crimp, the outer fingers having the grooves or crimp on the same side and the intermediate finger or fingers having the groove or crimp on the opposite side, as shown, and for the purposes stated.

381,943. BOAT. JAMES HOGGAN, Cleveland, Ohio. Filed Feb. 28, 1888. Serial No. 265,956. (No model.)



Claim.—The improvement in ships, consisting in the combination of the casing A, secured between the deck and the bottom of the hold, said casing having the slotted or grated openings *b c* in its sides at and near the bottom, and provided with the valve B, playing inside of the casing for closing the said slots when down, and having the middle openings, whereby when raised by the rods D from openings are made through the slots or gratings, communicating with the interior of the vessel, substantially as described, and for the purpose specified.

381,944. FOLDING CARRIAGE-TOP. JAMES HOGAN, Corry, Pa., assignor of one-half to Frank S. Bentley, same place. Filed Dec. 14, 1887. Serial No. 257,910. (No model.)



Claim.—1. The combination, in a carriage-top, of a central bow hinged to a rabbet, having side-bows secured thereto by means of sliding sleeves and braces, and braces hinged to the back of the rabbet-seat and to said sliding sleeves, substantially as and for the purposes set forth.

2. The combination, in a carriage-top, of a central bow hinged to the front of the seat, with front and back horizontal bows hinged to sleeves adapted to slide up and down on said central bow, and braces hinged to the central and front and back bows above said sliding sleeves, with hinged angle-braces extending from said sliding sleeves to stud-pins on the back of the rabbet-seat, said braces hinged to said angle-braces and to stud-pins in the central bow, A, substantially as and for the purposes set forth.

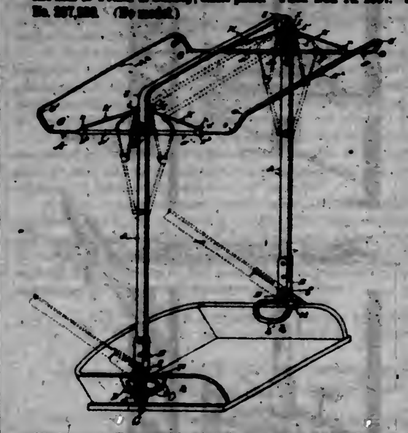
3. The combination, in a carriage-top, of the upright central bow, A, hinged to the seat E, with the horizontal bows F and F' hinged to the sliding sleeves E, and the braces D D and braces I and O, substantially as and for the purposes set forth.

4. In a carriage-top, the combination of the upright bow A with bows F F, having curves G and H thereto, so as to conform to the contour of the top, substantially as and for the purposes set forth.

5. The combination, in a carriage-top, of the upright bow A, the bows F F, hinged to the sleeves E, and the braces D, the braces I, and the slotted braces O with the hooks S and stud-pins T on the sleeves E, substantially as and for the purposes set forth.

6. The combination, in a carriage-top, of the braces I with the braces O for folding together and lowering a carriage-top, substantially as set forth.

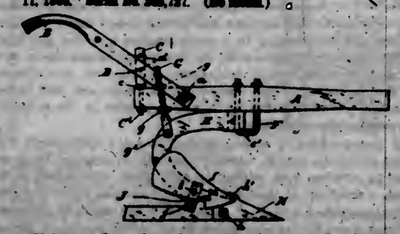
381,945. CARRIAGE-TOP. JAMES HOGAN, Corry, Pa., assignor of one-half to Frank S. Bentley, same place. Filed Dec. 14, 1887. Serial No. 257,911. (No model.)



Claim.—1. The combination, in a carriage-top, of the upright central bow, A, with the side bows, N N, provided with sockets *n*, and connected by a hinge, M, sliding vertically on the bow A, the braces K, the rods N', screwed into sockets *n*, and the hook *l*, substantially as and for the purposes set forth.

2. The combination, in a support for the bows of a carriage-top, of the segments of a circle, D, secured to the vehicle by means of a projection, H, thereon, and having the bearings F therein, and the serrations *d*, with bow-sockets B, having the slots C, the pins E, and an opening on one side for the passage of said projection H, and the set-screws G, substantially as and for the purposes set forth.

381,946. PLOW. FRANZ RUDOLPHAM, Fintonia, Tex. Filed Feb. 11, 1888. Serial No. 263,727. (No model.)

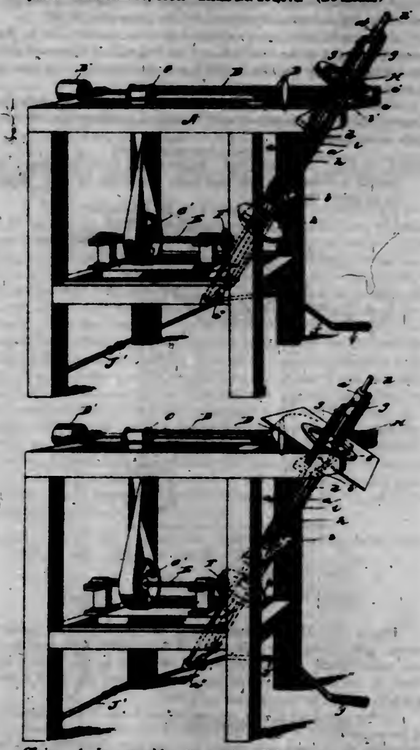


Claim.—1. In a plow, the combination, with the plow-beam, of the staple F, secured to the plow-beam, the curved shank B, provided at its upper front end with the triangular loop *c*, having notches *f* on the lower edge, which engage with the said staple, the bolt G, pivoted in the said plow-beam and connected to the rear portion of the shank under the handles, and the blades secured to the lower front end of shank under the staple, substantially as and for the purpose set forth.

2. In a plow, the combination, with the plow-beam, of the staple F, secured to the plow-beam, the curved shank B, provided at its upper front end with the triangular loop *c*, having notches *f* on its

lower edge, which engage with the said staple, the screw-threaded bolt G, pivoted in the said plow-beam and provided with the adjusting-nuts g, the pin g', pivoting the lower end of said bolt to the rear portion of the shank under the handles, and the blade secured to the lower front end of the shank under the staple, substantially as and for the purpose set forth.

881,947. MACHINE FOR CUTTING DISKS FROM WOOD. CHAS. H. PHELPS, Chicago, Ill., assignor to Gibson, Parish & Company, same place. Filed Feb. 28, 1888. Serial No. 264,972. (No model.)

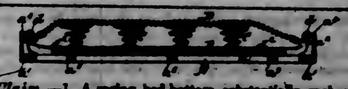


Claim.—1. In a machine for cutting disks from wood, the combination, with a rotatable shaft carrying a concave saw, and a second rotatable shaft carrying a bevel-gear, the position of the saw and bevel-gear with relation to each other being such that a line joining them will form an acute angle with the shaft carrying the saw, of a rotatable and longitudinally-movable shaft parallel to said line and opposite the ends of the shafts, actuated in one direction by spring-pressure and provided with a clamp-plate and beveled gear, a frame longitudinally movable co-operating by a spring-pressure with the said shaft and carrying a shaft in line with the first-named longitudinally-movable shaft, provided with a clamp-plate contiguous to and coacting with the clamp-plate of the other shaft, said frame and shaft having mechanism provided for forcing them in opposition to the spring action, substantially as set forth.

2. In a machine for cutting wooden disks, the combination, with the saw D and the gear F, rotatably mounted on separate shafts and occupying positions with relation to each other, substantially as described, of the frame H, shaft *d* within said frame, having thereon gear *h* and clamp-plate *c*, a shaft, *d'*, supported in the frame in alignment with shaft *d* and having provided at its end the clamp-plate *c'*, springs for actuating the frame and shaft in one direction, and a treadle, J *j*, for operating the frame and shaft in opposition to the spring.

3. In a disk-cutting machine, the combination of shaft B, concave saw D, shaft E, beveled gear F, inclined frame H, shafts *d* and *d'*, clamp-plates *c* and *c'*, respectively, on said shafts, beveled gear *h* on shaft *d*, springs *g g* and J, and treadle J, substantially as set forth.

881,948. BED-BOTTOM. WILLIAM I. PHELPS, Brooklyn, N. Y., assignor to Charles F. Phillips, same place. Filed June 22, 1886. Serial No. 206,267. (No model.)



881,948

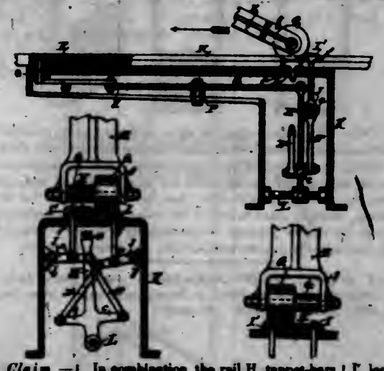
Claim.—1. A spring bed-bottom substantially such as herein designated, consisting of a series of spiral springs secured at their lower ends to a rigid base and having free lateral movement within proper limits at their upper ends, and a covering or mat resting loosely upon and supported by but not connected with the said springs, but held against displacement bodily by loose couplings or links which permit it to move freely and conform to pressure in all directions, for the purpose and substantially in the manner described.

2. A spring bed-bottom substantially such as described, consisting of a series of spiral springs secured at their lower ends to a rigid base and having free lateral movement within proper limits at their upper ends, and a covering or mat of woven-wire cloth, substantially such as described, resting loosely upon and supported by but not connected with the said springs, but held against displacement bodily by loose couplings or links which permit it to move freely and conform to pressure in all directions, for the purpose and substantially in the manner described.

3. In a spring bed-bottom substantially such as described, the combination, with the rigid woven-wire base B, the loosely-resting series of springs C, and cover or mat D, of the rigid frame A, formed with the supports *a a*, for the purpose and substantially in the manner described.

4. In a spring bed-bottom substantially such as described, the rigid frame A, formed of the side and end bars, *a a'*, united by corner-pieces a^2 a^2, formed with the supports a^3 a^3 and a^4 a^4, in combination with the base B, springs C, cover D, and couplings *d*, the whole arranged and operating substantially in the manner and for the purpose described.

881,949. AUTOMATIC CAR-SWITCH. JAMES R. PETTEE, Providence, R. I. Filed Oct. 14, 1887. Serial No. 252,302. (No model.)



Claim.—1. In combination, the rail H, tappet-bars I I', located upon opposite sides of the rail, levers J J, pivoted to the tappet-bars I I', upright lever M, connecting-rods N N, lever O, pivoted arm Q, and switch-bar R, substantially as described.

2. In combination, the rail H, tappet-bars I I', located upon opposite sides of the rail, levers J J, pivoted to the tappet-bars I I', upright lever M, connecting-rods N N, lever O, pivoted arm Q, switch-bar R, and the bell-crank lever E, adapted to depress one of the tappet-bars I I', substantially as described.

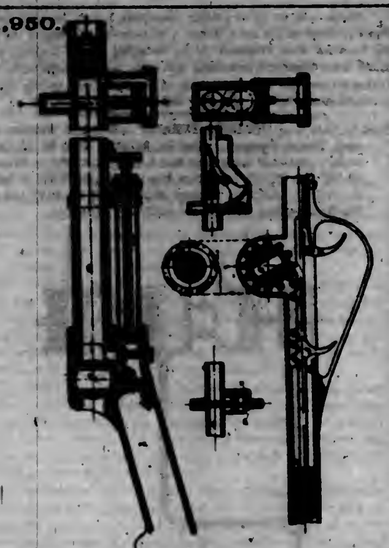
3. In combination, the rail H, tappet-bars I I', located upon opposite sides of the track, one extending higher than the other, the switch-bar R, the system of levers, as described, for connecting the tappet-bars with the switch-bar, and the lever E, provided with the reversible roller G, having two diameters, substantially as and for the purpose specified.

881,950. PNEUMATIC ORDNANCE. HAZ. W. PRATT, Brooklyn, assignor to the Pneumatic Dynamite Gun Company, New York, N. Y. Filed Jan. 4, 1886. Renewed Sept. 29, 1887. Serial No. 251,082. (No model.)

Claim.—1. A gun-barrel provided with a valve for closing the bore situated forward of the charge-chamber thereof and actuated by the passage of the projectile past a predetermined point in the barrel beyond the valve.

2. The combination, in a gun, of the barrel provided with a firing mechanism, and a valve for closing the bore situated forward of the charge-chamber thereof and actuated by the passage of the projectile past a predetermined point in the barrel beyond the valve.

881,950.



3. A pneumatic gun containing the following elements: a pressure-reservoir communicating with a barrel by means of an interposed firing-valve, a cut-off valve situated in the barrel forward of the charge, and a pump communicating with the barrel and pressure-reservoir.

4. In a pneumatic gun, and in combination with the firing-valve thereof, having a gear-wheel upon its shaft, a reciprocating interrupted toothed rack-bar intermittently acting on such gear-wheel when moved in either direction, substantially as described.

5. A pneumatic gun provided with a pressure-reservoir communicating directly with the barrel, and with a pump or compressor and the barrel through a separate passage fitted with suitable check or stop valves.

881,951. FIRE-KINDLER. JAMES RANDALL, San Francisco, Cal. Filed May 12, 1888. Serial No. 273,515. (No model.)



Claim.—The combination, with a series of parallel laths arranged in tiers and leaving spaces between them, of the parallel laths C, arranged diagonally with relation to the laths A B, plait F, passing through the several tiers, the binding-strips E E' between each tier of laths, and the inflammable strips G G', secured between each tier of laths by the plait F, as set forth.

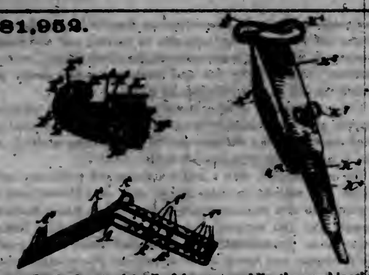
881,952. HARNESS-SADDLE. GEORGE RAST, Salem, Ohio. Filed Oct. 24, 1887. Serial No. 253,327. (No model.)

Claim.—1. In the herein-described harness-saddle tree, the combination of the upwardly-projecting flanges running the full length of the tree, with a series of cross-bars or bridges at the lower ends thereof, substantially as shown and described.

2. The herein-described harness-saddle tree, provided with the projecting flanges running the whole length of the tree, the series of cross-bars or bridges forming the ended ends, and the square central hole between the flanges, substantially as shown and set forth.

3. In the herein-described harness-saddle, the interchangeable or convertible climbing flexible point-piece B, constructed as hereinbefore described, for the purpose of forming two different grades of harness-saddles, as set forth.

881,952.



4. In the herein-described harness-saddle, the combination of the pad-leather casing, the hame-leather for the hay or bead, and the bead-casing, all sewed together and rolled upwardly and inwardly to form the hay bead or welt, substantially as shown and described.

5. In the herein-described harness-saddle, the combination of the cast-metal tree A, the convertible climbing flexible point-piece B, the pad-leather E, the hame-leather E', and the bead-casing F, substantially as shown and described.

6. In the herein-described harness-saddle, the combination of the cast-metal tree A, the convertible climbing flexible point-piece B, the pad-leather E, the hame-leather E', the bead-casing F', the rattan bead F², the skirt K^6, the jockey K', the looking-loop K^5, and the shaft-bearer K^3, substantially as shown and described.

7. In the herein-described harness-saddle, the combination of the cast-metal tree A, the convertible climbing flexible point-piece B, the skirt K^6, with its tongue-piece K^{10}, the shaft-bearer K^3, and the looking-loop K^5, substantially as shown and described.

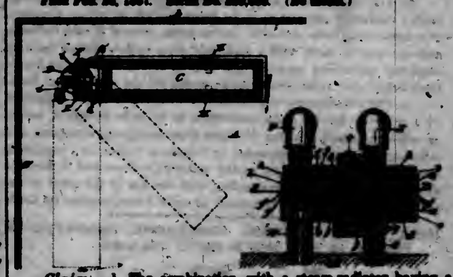
8. In the herein-described harness-saddle, the combination of the cast-metal tree A, the convertible climbing flexible point-piece B, the pad-leather E, the hame-leather E', the bead-casing F', the rattan bead F², the skirt K^6, with its tongue-piece K^{10}, the shaft-bearer K^3, the looking-loop K^5, the jockey K', the terrets K^7, the pad-stops K^8, and the saddle-cast K^9, substantially as shown and described.

881,953. ELECTRIC FISH-BOLSTER. CHARLES W. BRITTAIN, Bedford, Ohio. Filed July 13, 1887. Serial No. 244,093. (No model.)



Claim.—The herein-described improved therapeutic pen-holder, consisting of a shaft having the electrodes or plates *a* and *a* arranged and secured on opposite sides thereof, and an insulating material interposed between the plates and the pen-holder, as set forth.

881,954. STEAM-RADIATOR. STEPHEN B. BROWN, Saratoga Springs, N. Y., assignor of one-half to Edmund S. Brown, same place. Filed Feb. 20, 1887. Serial No. 228,020. (No model.)



Claim.—1. The combination, with a steam-radiator having a steam delivery or supply pipe and an exhaust or water-return pipe, and the stationary steam-supply pipe and stationary exhaust or water-escape pipe, of a swivel-joint connection composed of a stationary piece and a rotary piece which are connected by a pivot-bolt, one of said pieces containing a circular or ring-form steam-chamber and a circular or ring-form water-chamber, which are so arranged as to communicate, respectively, with the said two sets of steam-delivery and water-return pipes, whereby the said swivel-connection will adapt the radiator to be turned horizontally at will in either direction and permit the delivery of live steam to the radiator and a discharge from the latter of the exhaust or water from the condensation of the steam, substantially as and for the purpose set forth.

2. The combination, with a stationary steam-supply pipe and a stationary exhaust or water-escape pipe, and a steam-radiator which has one of its ends free to be moved horizontally in either direction,

of the swivel-joint device D, constructed as described, and adapted to support the end of the radiator opposite its moving end and connect its steam-supply pipe and water-escape pipe, respectively, with the said stationary steam-supply pipe and stationary water-escape pipe, substantially as and for the purposes set forth.

3. The combination, with a steam-radiator and the stationary steam-supply pipe and stationary water-pipe, of the swivel-joint connection at one end of the radiator and the supporting-wheel H, substantially as and for the purposes set forth.

4. The combination, with a steam-radiator and stationary steam-supply pipe and exhaust or water-escape pipe, of a swivel-joint connection composed of a stationary piece connected with said stationary steam-supply pipe and exhaust or water-return pipe, and a horizontally-rotary piece pivoted with said stationary piece, and connected with the live-steam and return-water or exhaust pipe of said radiator, whereby the radiator can be turned at will from one situation to another without uncoupling the said steam-supply and exhaust pipes from the corresponding pipes in the radiator, substantially as and for the purposes set forth.

381,955. RADIATOR. STEPHEN H. REMSEN, Saratoga Springs, N. Y., assignor of one-half to Edmund G. Remsen, same place. Filed Oct. 13, 1887. Serial No. 252,703. (No model.)



Claim.—1. The combination, with a steam-radiator and a stationary pipe for communicating with said radiator, of a swivel-joint connection at or near one end of the radiator and between it and said pipe, so as to support one end of said radiator and allow the body of the latter to be turned horizontally in either direction, and a support to the opposite end of the same, substantially as and for the purposes set forth.

2. The combination, with a swivel or flexible joint connection, of a radiator which will support one end of the same and allow it to be moved horizontally in either direction, and a supporting wheel or roller, one or more, secured to the free end portion of said radiator, of a segmental way of hard or unyielding material and having a uniformly even roller-track surface, and secured to the floor in line corresponding with the line of track of said wheel or roller, substantially as and for the purposes set forth.

3. The combination, with a radiator which is pivoted or jointed with a stationary pipe, so as to be turned at will in either direction, of a supporting roller or wheel, one or more, secured to said radiator, and the way G, made with a uniformly even surface and of hard or relatively unyielding material, and secured to the floor in the line of the track of said roller, substantially as and for the purposes set forth.

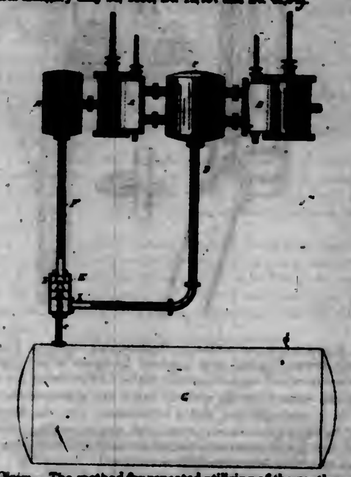
4. The combination, with a radiator which has one end supported by a swivel or flexible joint connection, so as to be turned or moved at will horizontally in either direction from said joint-connection, and which has its free end supported by wheels or rollers, of a segmental way made of a relatively unyielding material, and secured to the floor of the room on a line corresponding with the line of the track of the said supporting-wheels, substantially as and for the purposes set forth.

381,956. VELOCIPEDE. JULIUS SCHMIDT, Chippewa Falls, Wis. Filed Sept. 14, 1887. Serial No. 249,711. (No model.)



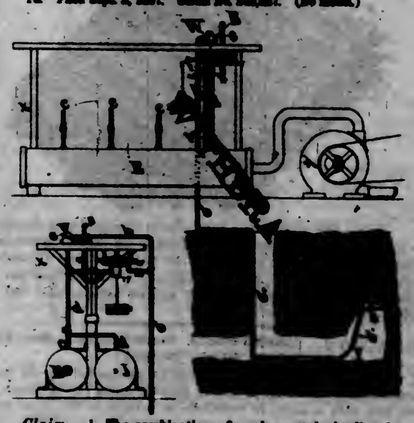
Claim.—In an ice-or similar velocipede, a main frame, a swinging frame pivoted to the main frame, a traction-wheel hung in the swinging frame, a lever attached to the swinging frame, a spring secured to the main frame and extending upwardly, and an adjustable tension device secured to the upper ends of the lever and spring, the parts in combination, for the purposes substantially as set forth.

381,957. UTILIZING EXHAUST. WERNER SIEMENS, Halske-stadt, Prussia, Germany. Filed Oct. 6, 1887. Serial No. 251,893. (No model.) Patented in Germany May 6, 1885, No. 34,393; in France May 16, 1885, No. 167,616; in Belgium May 19, 1885, No. 68,899; in Italy May 31, 1885, No. 18,372; in England May 20, 1885, No. 6,197, and in Austria-Hungary May 30, 1885, No. 19,127 and No. 41,045.



Claim.—The method for repeated utilizing of the partly-expanded exhaust-steam of a compound or receiver steam-engine, consisting in first leading the exhaust-steam of the high-pressure cylinder or cylinders into a receiver-vessel, from whence it is partly guided off into the low-pressure cylinder of the compound or receiver steam-engine, and partly it is driven by the steam of a generator, by means of an injector, back into the high-pressure cylinder for working in the same, substantially for the purpose as described.

381,958. SIGNALING APPARATUS. THOMAS SHAW, Philadelphia, Pa. Filed Sept. 2, 1887. Serial No. 248,627. (No model.)



Claim.—1. The combination of a mine, a tube leading from a chamber thereof to a terminal station, an air-exhauster and air-pressure device at such station, and a valve controlling the communication between said tube and the exhauster and pressure devices, substantially as described.

2. The combination, with a pipe leading to a mine-chamber and with an exhauster communicating therewith, of an alarm communicating with the inner end of said pipe, a second alarm near the outer end communicating with an air-tank through a pipe provided with a valve, and a valve-shifter connected with said valve and in line with the communication between the mine-pipe and exhauster, substantially as described.

3. The combination, with the mine-pipe *b*, alarms B C at the terminal station and in the mine, respectively, and air-pressure and exhaust-pumps with connections with the pipe *b*, of a valve controlling the flow of air between the exhaust-pump and said pipe and between the pressure-pump and the alarm B, substantially as described.

4. The combination, with the mine-pipe *b*, alarms B C at the terminal station and in the mine, respectively, an air-pressure and exhaust-pumps, of reservoirs or tanks connected with said pumps, and a valve controlling the communication between the exhaust-tank and mine-pipe and between the pressure-tank and pipe and also with the alarm B, substantially as described.

5. The combination, with the mine-pipe and pump connected therewith and with the alarm at the station end of the pipe, of a chamber communicating with the pipe and provided with a diaphragm, and connections between the diaphragm and the alarm whereby the latter is sounded on the movement of the diaphragm under the variation of pressure in the pipe, substantially as described.

6. The combination, with a tube leading to a mine, exhaust-pump connected with said tube and with a chamber covered by a diaphragm, a whistle, a valve controlling the passage to the whistle from a reservoir, of air under pressure, and a connection between the valve and the diaphragm, and means for interrupting the flow of air through the mine-tube, substantially as described.

7. The combination of the whistle above ground, a whistle in a mine-chamber, connecting tubes and pump for controlling the flow of air through the mine-tube, a valve for controlling the flow of air to the whistle above ground, a diaphragm in a chamber communicating with the mine-tube and connected to said valve, and a hand-valve constructed to open and close the communication between the exhaust-pump and the mine-tube and also between the exhaust-pump and the chamber covered by the diaphragm, substantially as described.

8. The combination, with a tube leading from a mine-chamber to an outer station and with a pump controlling the flow of air through said tube, of a valve at the inner end of the pipe and a signal at the outer end, and a chamber communicating with the tube and having a movable diaphragm connected to operate said signal, substantially as described.

381,959. PAPER-FILE. ALEXANDER B. SHERWOOD, Chicago, Ill. Filed Feb. 23, 1887. Serial No. 228,670. (No model.)



Claim.—1. In a paper-file, the combination, with the base A and receiving-wire C, of an arched removable transfer-wire, G, and a socket, D, to receive the lower portion of the transfer-wire, and provided with a set-screw, E, substantially as and for the purpose set forth.

2. In a paper-file, the combination, with the base A and receiving-wire C, of an arched removable transfer-wire G, flattened toward its lower end, and a socket, D, to receive the lower portion of the transfer-wire, and provided with a set-screw, E, substantially as and for the purpose set forth.

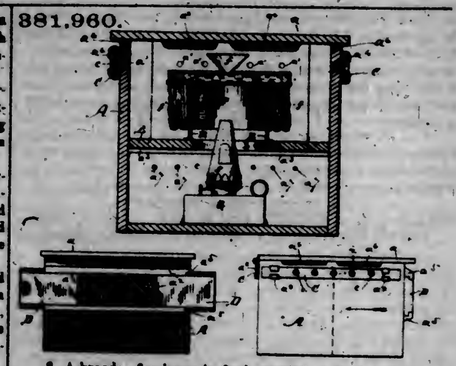
3. In a paper-file, the combination, with the base A and a receiving-wire, C, of an arched removable transfer-wire, G, square toward its lower end, and a socket, D, corresponding internally with the shape of the square portion of the transfer-wire, and provided with a set-screw, E, substantially as and for the purpose set forth.

4. In a paper-file, the combination, with the base A and receiving-wire C, of an arched removable transfer-wire, G, and a socket, D, to receive the lower portion of the transfer-wire, and provided with a lateral leg, *g*, having a screw-threaded opening containing a set-screw, E, substantially as and for the purpose set forth.

381,960. POULTRY-BROODER. GEORGE S. STRONG, Darlington, Ohio. Filed Feb. 9, 1888. Serial No. 263,553. (No model.)

Claim.—1. A brooder for domestic fowls, consisting of a box, A, having lid *a*, exit-orifices a^2, air-orifices a^7, a platform, B, having orifice *b*, slides D, a cylinder, E, a boiler, F, having funnel *f*, and a lamp, G, having flue *g*, the whole constructed and arranged as hereinbefore described, for the purposes set forth.

381,960.

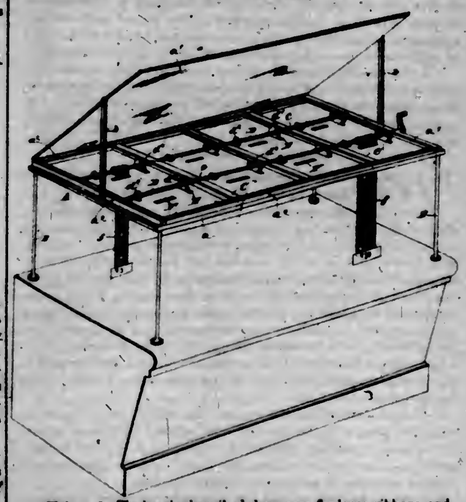


2. A brooder for domestic fowls, consisting of a box, A, having lid *a*, perforations a', exit-orifices a^2, air-orifices a^7, the platform B, having orifice *b*, slides D, a cylinder, E, a boiler, F, having funnel *f*, and a lamp, G, having flue *g*, the whole constructed and arranged as hereinbefore described, for the purposes set forth.

3. A brooder for domestic fowls, consisting of a box, A, having lid *a*, ventilating perforations a', exit-orifices a^2, brackets a^4, clasps a^5, orifices a^7, slides C, having perforations *c*, slides D, a platform, B, having orifice *b*, a cylinder, E, a boiler, F, having funnel *f*, and a lamp, G, having flue *g*, the whole constructed and arranged as hereinbefore described, for the purposes set forth.

4. A brooder for domestic fowls, consisting of a box, A, having lid *a*, exit-orifices a^2, recesses a^3, air-orifices a^7, a platform, B, having orifice *b*, slides D, a cylinder, E, a boiler, F, having funnel *f*, and a lamp, G, having flue *g*, the whole constructed and arranged as hereinbefore described, for the purposes set forth.

381,961. SHOW-CASE. HENRY STERN, Shelbyville, Ky. Filed Jan. 3, 1888. Serial No. 259,669. (No model.)



Claim.—1. The herein-described show-case for laces, ribbons, and fringes, and other goods that are wound on spools, which case comprises a shallow box having a bottom provided with suitable slots for the passage of the goods therethrough, narrow glass sides rising from the edge of the bottom, and a hinged glass lid, spools journaled in bearings made in the bottom, and suitable legs or rods secured to the bottom to support the box a proper distance above the counter or other rest, substantially as specified.

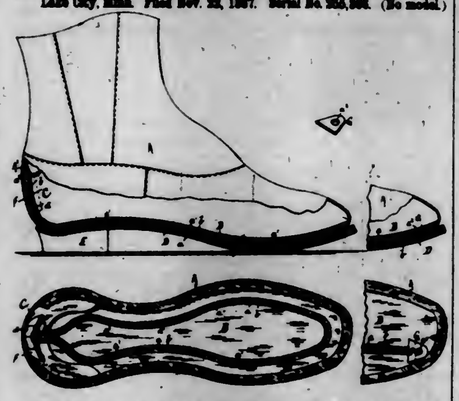
2. In a show-case for laces, fringes, &c., the combination, with the shallow box or casing A, provided with the bottom *a*, having the slots E F, the narrow sides a^2, the legs B B, the strips C C, having the bearing-recesses *c c*, and the spools D, consisting of the spindles *d*, journals d^2, and end pieces, d' d^3, each having the straight portion d^3 on its periphery, substantially as specified.

3. In a show-case for laces, fringes, &c., the combination, with

the legs B B and the shallow box provided with the wooden bottom *d*, having the slots E F, the narrow glass sides d^2, and the hinged glass lid d', of the parallel transverse bearing-strips C, having the bearing-recesses *c*, the coiled bearing-springs G in said recesses, and the spools D, each composed of the spindle *d*, the journals d^3, and the end pieces, d' d^3, each having the straight part d^5 on the periphery, substantially as specified.

4. A show-case comprising a shallow box provided with longitudinal and transverse slots in its bottom, and a spool journaled in the sides of the box and extending over said slots and provided with enlarged end pieces working in the transverse slots, as set forth.

381,962. VENTILATED BOOT OR SHOE. HENRY A. STEVENS, Lake City, Minn. Filed Nov. 23, 1887. Serial No. 255,266. (No model.)



Claim.—1. A boot or shoe having channel *a* formed in its sole and adapted to support a tube, *b*, connecting the interior of said boot or shoe with the open air, in combination with a plate, F, having one or more sockets, *d*, for the reception of the end of said tube and adapted to be held between the counter and heel portion of the upper of said boot or shoe, substantially as and for the purpose set forth.

2. The combination, with a boot or shoe having a channel, *a*, formed in the insole and having communication with the exterior air, of the plate G in the toe of the shoe, and a spiral wire tube, *b*, connecting with the said plate and inserted in the said channel, all substantially as and for the purpose set forth.

381,963. KNITTING-MACHINE. WALTER H. STEWART, Franklin, N. H. Filed June 6, 1887. Serial No. 240,577. (No model.)

Claim.—1. The combination, with the dial, dial-needles, and cam-disk, of the push-out and drawing-in cams pivoted to the cam-disk and provided with studs extending through slots formed in the cam-disk, a lever pivoted on the cam-dial and provided with slots to receive the studs of said push-out and drawing-in cams, the slot in said lever for the reception of the stud from the drawing-in cam being constructed to permit the lever to have a limited movement without acting on said stud, while the slot for the reception of the stud from the push-out cam is constructed to permit of no movement of the lever without operating the last-mentioned cam, and mechanism, substantially as set forth, for intermittingly operating said lever, as and for the purposes set forth.

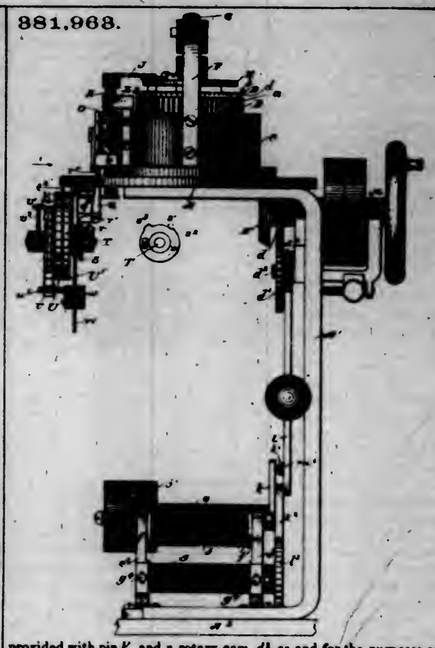
2. The combination, with the dial, dial-needles, cam-disk, and its cams 2 3, pivoted to the cam-dial and provided with studs or pins d' d^3, of lever I, provided with slots *i i'*, levers J and N, arbor K, path-cam O, and mechanism, substantially as set forth, for intermittingly rotating said cam, as and for the purposes set forth.

3. The combination, with the stationary base and rotary cam-cylinder, of the path-cam O, journaled on a stud secured to said cam-cylinder, a ratchet-wheel secured to said path-cam, lever *p*, provided with a pawl to engage said ratchet-wheel, lever R and its support, and rotary cam S, as and for the purposes set forth.

4. The combination, with the needle-cylinder, cylinder-needles, and rotary cam-cylinder, of the stitch-cam *c*, slide *c'*, journal-stud c^3, ratchet-wheel c^4, provided with the cam c^5, block c^6, lever c^8, provided with pawl c^9, and means for intermittingly operating said lever, as set forth.

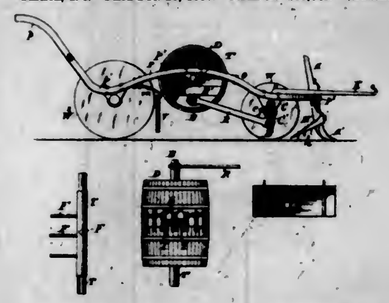
5. The combination, with machine-frame or support, of the fluted take-up rollers, uprights c^3, shaft *d'*, journaled therein, and roller *e*, adapted to turn thereon, arms *f'*, secured by one end to said shaft, roller *f*, journaled in the other end of said arms, weighted arm *j*, lever *l*, pawl P, ratchet-wheel P, weighted arm P, notched lever m^2, arm *k*,

381,968.



provided with pin *k'*, and a rotary cam, d^2, as and for the purposes set forth.

381,964. COTTON-PLANTER. FREDERICK W. STEBBS, George's Station, S. C. Filed Dec. 23, 1887. Serial No. 258,849. (No model.)



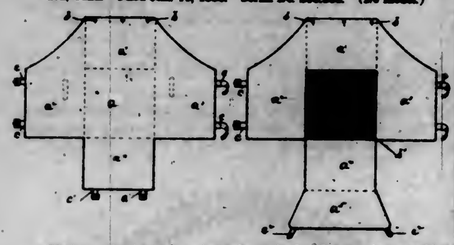
Claim.—1. In a planter, the combination, with a ground-wheel and the furrow-opening shovel, of the oscillating substantially cylindrical or barrel-shaped seed-receptacle having a row of seed-apertures through its periphery on one side of the central vertical line and a row of apertures on the other side of said line, the adjustable slides for the seed-apertures, respectively, and adapted to be made stationary when in operation, the agitator inclosed within the seed-receptacle, and the pitman connecting the receptacle with the said ground-wheel, substantially as set forth.

2. In a cotton-planter, the combination, with the ground-wheel and the furrow-opening shovel, of the oscillating substantially-cylindrical seed-receptacle having seed-apertures situated on arcs of circles transverse to the axis of oscillation, the slides L L, the pitman R, the slotted crank C, adjustably secured to the shaft or wheel W, and the stirring-arms F F, substantially as set forth.

3. In a planter, the combination of an oscillating substantially cylindrical or barrel-shaped seed-receptacle having closed heads and a peripheral wall formed of wooden sections bound together and to said end walls and provided with exit-apertures in the bottom on each side of the central vertical line, the upper part of the periphery being imperforate and the shaft engaging with and supporting said end walls, and the pitman for imparting oscillation to the seed-receptacle, substantially as set forth.

4. The combination, with the front and rear ground-wheels and the furrow-opening shovels, of the main frame formed, substantially as described, of the metal bar bent to provide the handle parts *p*, the depressed parts *p'*, for supporting the rear wheel, the relatively-elevated parts p^2, for supporting the seed-receptacle, and the forward depressed parts, p^3, for supporting the ground-wheel and shovel, the depending bearings secured to the under side of the said frame for supporting the seed-receptacle and ground-wheels, the scraper-bars m, secured to said frame, and the swinging scraper or coverer V between the seed-receptacle and the rear wheel, substantially as set forth.

381,965. BOOT FOR CARRIAGES. JOSEPH W. STORER, New London, Conn. Filed Jan. 16, 1888. Serial No. 260,802. (No model.)



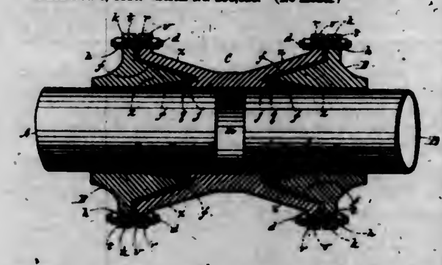
Claim.—1. A carriage-boot formed of a foot-section provided with a flap adapted to pass rearward under the cushion, side flaps with fastenings, as set forth, and a top flap adapted to fold rearward over said side flaps, as herein described, and for the object specified.

2. A carriage-boot formed of a foot-section re-enforced by felt or similar material, a fastening-flap projecting rearward therefrom, as set forth, side flaps, a^2 a^3, top flap, a^4, and straps with fastenings for securing said side and top flaps in their folded positions, substantially as herein described, and for the object specified.

3. A combined cold-weather and storm boot formed of the foot-section *a*, having secured thereto a flap, *a'*, for attaching the said boot to the vehicle, side flaps, a^2 a^3, top flap, a^4, devices, as set forth, for securing said side and top flaps in their folded positions, and an extensible flap, a^5, with straps for securing the same to the vehicle, all being substantially as and for the purpose specified.

4. In combination with a vehicle, a boot having a flap secured to the seat thereof, said boot being formed with foot-section *a*, side flaps, a^3 a^3, top flap, a^4, and with strap-fastenings for securing said side and top flaps in their folded positions, as described, and for the object specified.

381,966. PIPE-COUPLING. JOHN STORY, Castle Shannon, Pa. Filed Dec. 1, 1887. Serial No. 256,632. (No model.)



Claim.—1. In a pipe-coupling, the combination of the following instrumentalities, to wit: a flaring or conical socket containing a packing, a pipe passing longitudinally through said socket and packing into a chamber which connects with a companion pipe, a follower provided with an annular wedge at its inner end and fitted to slide on the pipe which passes through said socket, an annular flange projecting outwardly at the bottom of said socket adjacent to said pipe, and means for advancing said wedge into the packing within said socket to compress the same, and retaining it in its advanced position, said flange being provided on its outer side with an annular bead adjacent to the walls of said socket, substantially as described.

2. In a pipe-coupling, a sleeve provided with a flaring socket and with an outwardly-projecting annular flange at the bottom of said socket integral with the sleeve, in combination with a follower provided with an annular wedge, packing, and bolts for clamping said sleeve and follower, substantially as described.

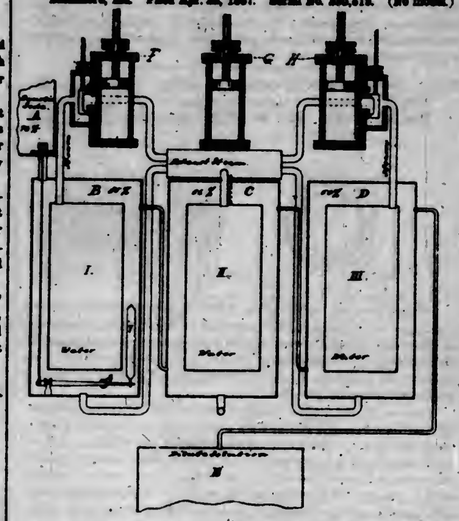
3. In a pipe-coupling, a sleeve provided with a flaring socket and with an outwardly-projecting annular flange at the bottom of said socket integral with said sleeve, said flange having an annular bead, in combination with a follower, a packing, and means for clamping said follower to said sleeve, substantially as described.

4. A pipe-coupling comprising a sleeve having a central chamber and provided with flaring sockets at its opposite ends for receiving packing, and with integral outwardly-projecting annular flanges at the bottoms of said sockets, followers having inwardly-projecting annular wedges, and means for clamping said followers to said sleeve, substantially as described.

5. A pipe-coupling comprising a sleeve having a central chamber and provided with flaring sockets at its opposite ends for receiving packing, and at the bottoms of said sockets with integral outwardly-projecting annular flanges having annular beads, followers having inwardly-projecting annular wedges, and means for clamping said followers to said sleeve, substantially as described.

6. The combination of a sleeve having a central chamber and provided with flaring sockets at its opposite ends and with integral outwardly-projecting annular flanges at the bottoms of said sockets, pipes extending through said sockets into said central chamber, packing inserted in said sockets around said pipes, followers having inwardly-projecting annular wedges for compressing said packing in the sockets against the pipes, and means for clamping said followers to said sleeve substantially as described.

381,967. CAUSTIC-SODA STEAM-ENGINE. ANDREW H. BROWN, Baltimore, Md. Filed Apr. 23, 1887. Serial No. 235,819. (No model.)



Claim.—1. In a caustic-soda steam-generator, the combination of a reservoir, a caustic-soda tank, and a dilute-solution tank, the caustic-soda tank being connected with the reservoir by one pipe and with the dilute-solution tank by another pipe, whereby the stronger solution in the reservoir may flow into the caustic-soda tank, there counteracting the absorption of the spent steam, and at the same time causing an overflow into the dilute-solution tank, as described.

2. In a caustic-soda steam-generator, the combination of a reservoir, two or more caustic-soda tanks, and a dilute-solution tank so arranged and connected together in series by one or more pipes that the solution in each caustic-soda tank may be renewed by the inflowing of a stronger solution, and an equal share of the spent steam being absorbed by the solution in each caustic-soda tank, whereby a concentrated solution of caustic soda in generating steam will undergo a progressive dilution, as described.

3. In a caustic-soda steam-generator, the combination of a reservoir, one or more caustic-soda tanks, and a dilute-solution tank, all so arranged and connected together by pipes that the absorption of spent steam may be counteracted by the inflowing of a stronger solution, all essentially as described.

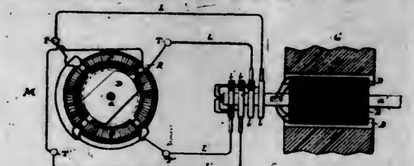
4. In a caustic-soda steam-generator, the combination of a reservoir, one or more caustic-soda tanks, and a dilute-solution tank, a first pipe connecting the reservoir with the first caustic-soda tank; a second pipe connecting the first tank with the second, and so on, if there are more, until all are so connected, a last pipe connecting the last caustic-soda tank with the dilute-solution tank, whereby the absorption of spent steam may be counteracted by the inflowing of a stronger solution, all substantially as set forth.

5. In a caustic-soda steam-generator, the combination of a reservoir for the concentrated solution, one or more caustic-soda tanks, and a tank for the diluted solution, a first pipe connecting the reservoir with the first tank, a second pipe connecting the first tank with the second, and so on until all are so connected, a last pipe connecting the last caustic-soda tank with the dilute-solution tank, whereby the absorption of all the spent steam in the one caustic-soda tank, or of an equal share in each, may be counteracted by the inflowing of a stronger solution, and a constant percentage of caustic soda being automatically maintained in one tank, preferably the last if there are more than one, whereby the pressure of the steam in the single immersed boiler or in each boiler may remain constant, all substantially as described.

6. In a caustic-soda steam-generator, the combination of a reservoir, one or more caustic-soda tanks, and a dilute-solution tank, all so arranged and connected together by pipes that the absorption of all the spent steam in the one caustic-soda tank, or of an equal share in each, may be counteracted by the inflowing of a stronger solution, and a constant percentage of caustic soda being automatically maintained in one tank, preferably the last if there are more than one, whereby the pressure of the steam in the single immersed boiler or in each boiler may remain constant, all substantially as set forth.

7. In a caustic-soda steam-generator, the combination of two or more caustic-soda tanks so arranged and connected together in series by one or more pipes that the solution in each tank may be renewed by the inflowing of a stronger solution, and an equal share of the spent steam being absorbed by the solution in each tank, whereby a concentrated solution of caustic soda in generating steam may undergo a progressive dilution, all as set forth.

381,968. ELECTRO-MAGNETIC MOTOR. NIKOLA TESLA, New York, N. Y., assignor of one-half to Charles F. Peck, Englewood, N. J. Filed Oct. 12, 1887. Serial No. 252,132. (No model.)



Claim.—1. The combination, with a motor containing separate or independent circuits on the armature or field-magnet, or both, of an alternating-current generator containing induced circuits connected independently to corresponding circuits in the motor, whereby a rotation of the generator produces a progressive shifting of the poles of the motor, as herein described.

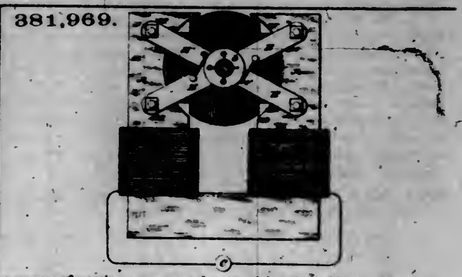
2. In a system for the electrical transmission of power, the combination of a motor provided with two or more independent magnetizing-coils and an alternating-current generator containing induced coils corresponding to the motor-coils, and circuits connecting directly the motor and generator coils in such order that the currents developed by the generator will be passed through the corresponding motor-coils, and thereby produce a progressive shifting of the poles of the motor, as herein set forth.

3. The combination, with a motor having an annular or ring-shaped field-magnet and a cylindrical or equivalent armature, and independent coils on the field-magnet or armature, or both, of an alternating-current generator having correspondingly independent coils, and circuits including the generator-coils and corresponding motor-coils in such manner that the rotation of the generator causes a progressive shifting of the poles of the motor in the manner set forth.

4. In a system for the electrical transmission of power, the combination of the following instrumentalities, to wit: a motor composed of a disk or its equivalent mounted within a ring or annular field-magnet, which is provided with magnetizing-coils connected in diametrically-opposite pairs or groups to independent terminals, a generator having induced coils or groups of coils equal in number to the pairs or groups of motor-coils, and circuits connecting the terminals of said coils to the terminals of the motor, respectively, and in such order that the rotation of the generator and the consequent production of alternating currents in the respective circuits produces a progressive shifting of the poles of the motor, as hereinbefore described.

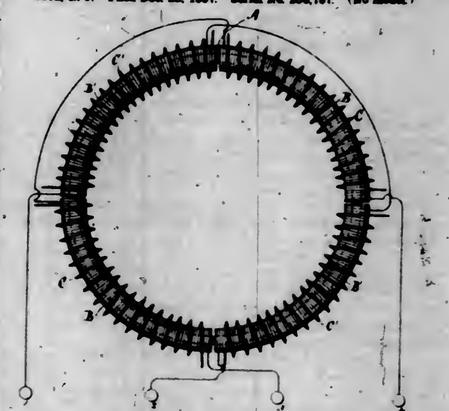
381,969. ELECTRO-MAGNETIC MOTOR. NIKOLA TESLA, New York, N. Y., assignor of one-half to Charles F. Peck, Englewood, N. J. Filed Nov. 30, 1887. Serial No. 256,963. (No model.)

Claim.—The combination, with a motor having independent energizing or armature circuits, of an alternating-current generator with corresponding induced circuits connected with the motor for effecting a progressive shifting of the poles of the motor-armature, and



a source of continuous current for energizing the field of said motor, as set forth.

381,970. SYSTEM OF ELECTRICAL DISTRIBUTION. NIKOLA TESLA, New York, N. Y., assignor of one-half to Charles F. Peck, Englewood, N. J. Filed Dec. 23, 1887. Serial No. 258,787. (No model.)



Claim.—1. The combination, with a core closed upon itself, inducing or primary coils wound thereon and connected up in independent pairs or sets, and induced or secondary coils wound upon or near the primary coils, of a generator of alternating currents and independent connections to the primary coils, whereby by the operation of the generator a progressive shifting of the poles of the core is effected, as set forth.

2. The combination, with an annular or similar magnetic core and primary and secondary coils wound thereon, of an alternating-current generator having induced or armature coils corresponding to the primary coils, and independent circuits connecting the primary coils with the corresponding coils of the generator, as herein set forth.

3. The combination, with independent electric transmission-circuits, of transformers consisting of annular or similar cores wound with primary and secondary coils, the opposite primary coils of each transformer being connected to one of the transmission-circuits, an alternating-current generator with independent induced or armature coils connected with the transmission-circuits, whereby alternating currents may be directed through the primary coils of the transformers in the order and manner herein described.

381,971. FILLING AND POURING BOBBLE. NATHAN THOMPSON, Brooklyn, N. Y.; John C. Thompson administrator of said Nathan Thompson, deceased. Filed Sept. 21, 1887. Serial No. 250,363. (No model.)



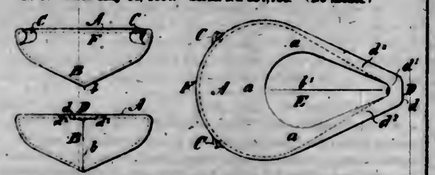
Claim.—1. The combination, with a can or analogous vessel having a pouring-hole, of a hinged cover for the pouring-hole, a cross-piece or clamp sliding upon the cover, and lugs or ears on opposite sides of the pouring-hole, with which the cross-piece is engaged by its sliding movement to hold the cover closed, substantially as herein described.

2. The combination, with a can or vessel having the pouring-hole *b*, of the hinged cover provided with the ribs or bearers *c'*, terminating in inclines, the cross-piece or clamp D, sliding upon the cover and depressed between said bearers to prevent its turning, and lugs or ears on opposite sides of the pouring-hole, with which the cross-piece or clamp is engaged by sliding, substantially as herein described.

3. The combination, with a can having an opening in its top, of the base-plate B, fitted and secured to the can about said opening and having the pouring-hole *b*, and at opposite sides of the pouring-hole the lugs or ears *b'* of the cover C, hinged to the base-piece, and the cross-piece or clamp having a sliding connection with the cover and fitted to said guides, and serving to hold the cover closed, substantially as herein described.

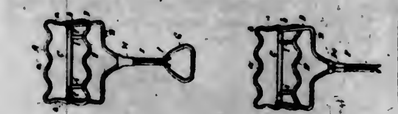
4. The combination, with a can having a pouring-hole in the top and a tubular throat-piece extending inward from the pouring-hole, of a hinged cover closing the pouring-hole, a cross-piece or clamp having a sliding connection with the cover, and lugs or ears on opposite sides of the pouring-hole, with which the cross-piece or clamp engages by sliding to hold the cover closed, substantially as herein described.

381,972. INVALID'S BED-PAN. GEORGE W. TOOKER, New York, N. Y. Filed May 11, 1887. Serial No. 237,793. (No model.)



Claim.—A bed or invalid pan the sides of which converge toward each other and form an angular bottom adapted to sink within the mattress or bed.

381,973. BUCKLE. EDWARD H. WHEELER, Waterbury, Conn. Filed Dec. 30, 1887. Serial No. 259,413. (No model.)



Claim.—1. The combination, with the herein-specified tongue-frame provided with a cross-bar having teeth, of the buckle-frame provided with a resistance-bar having its upper edge serrated to act in opposition to the said teeth, substantially as and for the purpose described.

2. The combination herein described, with the buckle-frame and the tongue-frame, of the supports extending from one frame and loops or eyes on the other frame to receive the said supports, the loops being oppositely inclined or flared to form cam-ways which bear against the sides of the frame having the supports to hold the two parts of the buckle distended or open.

3. The herein-described buckle, composed of two frames hinged together, and a cam-way placed between the frames to bear against the side of one of the frames and hold the frames distended, substantially as and for the purpose described.

4. The herein-described buckle, composed of two frames hinged together and having the sides of a frame flexible, and having the ends of one of the frames made flaring to effect a deflection of the sides of the frame and create a tension when closing the buckles, which will automatically open the buckle when free from any external force, substantially as specified.

5. The combination herein described, with the buckle-frame having loops, of the tongue-frame having supports which are held in the loops and having its sides indented to overlap the said loops, whereby the tongue-frame is prevented from slipping over the buckle-frame, substantially as described.

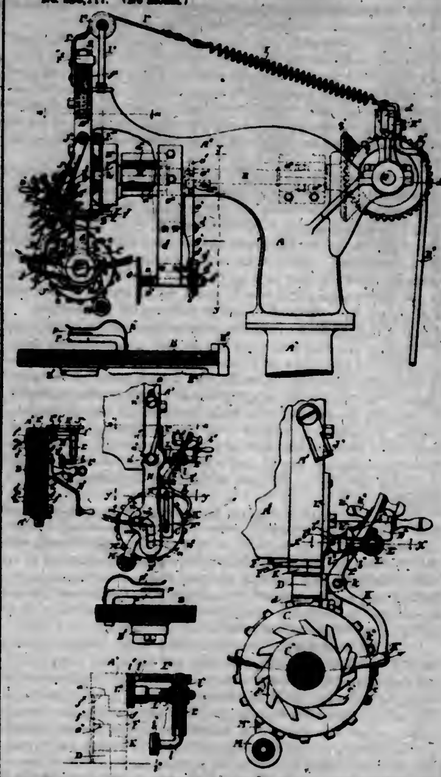
6. The buckle-frame having its side bars folded to form loops and bring the top bar below the cross-bar, for the purpose described, in combination with the tongue-frame journaled in said loops and having its teeth adapted to act in opposition to the said top bar, substantially as and for the purpose described.

7. The herein-described buckle-frame, having its side bars folded to form loops, which loops are flared, in combination with the tongue-frame journaled in the said loops, substantially as described.

8. The herein-described buckle-frame, composed of folded side bars, a resistance-bar, shank and oppositely-disposed hooks made from a single wire, the opposing sides of the hooks being beveled, the clip uniting the wires of the shank, and the tongue-frame journaled in the loops formed by the folded side bars of the buckle-frame, substantially as described.

9. The combination, with the buckle-frame and the tongue-frame having end supports, of the cross-bar secured at its ends to the said supports and having one edge extended and serrated to form teeth, substantially as and for the purpose described.

381,974. NUMBERING-MACHINE. SAMUEL K. WHITE, Chicago, Ill., assignor to Shan Smith, same place. Filed Mar. 31, 1887. Serial No. 233,117. (No model.)



Claim.—1. The combination, with the frame and type-disks of a numbering-machine, of a vertically-reciprocating frame carrying said disks, a bar, D, supporting the said disks and pivoted to the reciprocating frame, and means for locking said bar D in position for operation, substantially as described.

2. The combination, with the machine-frame and type-disks, of a vertically-reciprocating frame carrying said disks, a support for the disks pivoted to the said reciprocating frame, and devices for rotating the disks, comprising a connecting-bar pivoted to the machine-frame, the pivots of the said disk-support and the connecting-bar being located in alignment with each other when the connecting frame is at the upper limit of its vertical movement, whereby the disk-support may be swung about its pivot without turning the disks, substantially as described.

3. The combination, with the machine-frame and type-disks, one of which is provided with ratchet-teeth, of a vertically-reciprocating frame carrying said disks, a support, D, for the disks pivotally connected with said reciprocating frame, a swinging arm, J, pivoted concentrically with the disks, a spring-pawl upon said arm, engaging the ratchet-teeth of the said disk, said a connecting-bar pivoted to the outer end of said arm J and to the machine-frame, the pivots connecting the said disk-support and connecting-bar with the frame F and the machine-frame being located in alignment with each other when the frame is at the upper limit of its movement, substantially as described.

4. The combination, with the machine-frame, the type-disks, and the reciprocating frame carrying said disks, of a roller, P, mounted

upon the machine-frame over the reciprocating frame, a strap attached to the reciprocating frame and passing over the said roller, and a spring, I, attached to the said strap and to the frame, substantially as described.

5. The combination, with the machine-frame, the type-disks, and a reciprocating part or frame carrying said disks, of an upwardly-yielding cam-plate, as l', mounted upon the machine-frame, and a movable part, as lever K, mounted upon the part or frame which carries the disks, and engaging the latter to prevent them from turning, said movable part being provided with a projection or finger located in the path of the said cam-plate, whereby the disks are released at each upward movement thereof, substantially as described.

6. The combination, with the machine-frame, the type-disks, and a vertically-reciprocating frame carrying said disks, of a lever pivotally connected with the frame and provided with a cross-bar engaging the disks, and an upwardly-yielding cam-plate mounted upon the machine-frame, said lever being provided with a projecting part or finger for engaging the cam-plate, whereby the lever is moved to release the disks at each upward movement of the latter, substantially as described.

7. The combination, with the machine-frame, the type-disks, and vertically-reciprocating frame carrying the disks, comprising a lever, K, pivotally connected with the reciprocating frame and provided with a cross-bar, K', and a horizontal finger, k^2, of a rock-shaft, L', mounted upon the machine-frame and provided with an arm supporting a cam-plate, l', located in the path of the finger k^2, said rock-shaft being provided also with an arm, L^2, a stop upon the machine-frame in position to engage said arm L', and a spring applied to hold said cam-plate in the path of the finger k^2, substantially as described.

8. The combination, with the machine-frame, the type-disks, one of which is provided with ratchet-teeth, and a reciprocating frame carrying said type-disks, of a lever, K, pivotally connected with the reciprocating frame and provided with a cross-bar, K', a horizontal finger, k^2, and an arm, k^4, engaging the said ratchet-teeth, a rock-shaft, L', mounted upon the machine-frame and provided with an arm supporting a cam-plate, l', located in the path of the finger k^2, said rock-shaft being provided also with an arm, L^2, a stop upon the machine-frame engaging said arm L^2, and a spring applied to retain the said cam-plate normally in the path of the finger k^2, substantially as described.

9. The combination, with the machine-frame, the type-disks, and the vertically-reciprocating frame carrying said disks, of an inking device comprising an inking-roller, an arm pivoted concentrically with the disks and sustaining the inking-roller, a crank-arm attached to the said roller-supporting arm and provided with a crank-pin, and a stationary part or arm provided with a slot engaging said crank-pin, and constructed to swing the inking-roller about the axis of the disks as the latter are bodily moved, substantially as described.

10. The combination, with the machine-frame, the type-disks, a vertically-reciprocating frame carrying said disks, and a support for the disks, pivotally connected with the frame to allow said disks to be swung upwardly, of an inking device comprising an inking-roller, an arm pivoted concentrically with the disks and sustaining the inking-roller, a crank-arm attached to said arm and provided with a crank-pin, and a part or arm, N, provided with a cam-slot engaging said crank-pin, said arm N being pivoted to the machine-frame, so that it may be swung upwardly with the disks, and means for holding the said arm N in its operative position, substantially as described.

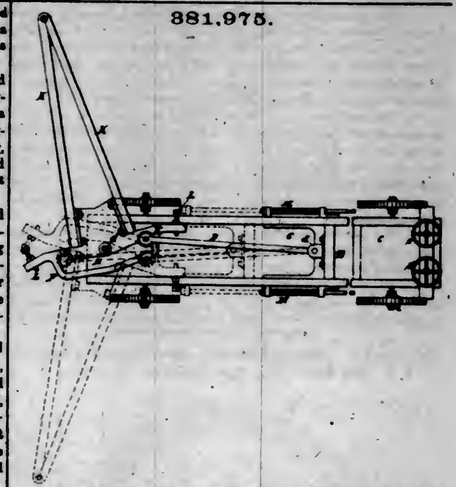
11. The combination, with the machine-frame, the reciprocating frame F, the type-disks, and the bar D, supporting said disks and pivotally connected with said frame, of the inking-roller, the arm M', supporting said roller, the crank-arm m', provided with a crank-pin, and the arm N, pivoted at its upper end to the machine-frame, the pivotal axis of said arm N being located somewhat below the pivot of the bar D when the frame is at the upper limit of its movement, whereby the inking-roller will be moved when the disks are swung bodily upward and forward, substantially as described.

12. The combination, with the machine-frame, the type-disks, the vertically-reciprocating frame carrying said disks, and a bar, D, supporting the disks and pivotally connected with the frame, of an inking device comprising an inking-roller, a pivoted arm carrying said roller, a crank-arm attached to said roller-supporting arm and provided with a crank-pin, an arm, N, pivoted to the machine-frame and provided with a cam-slot engaging the said crank-pin, and means for holding the said arm N in operative position, the said arm N and the bar D being provided with an interlocking slot and pin, whereby the arm N will be moved with the bar D when said bar is swung about its pivotal axis, substantially as described.

881,975. BALING-PRESS. HARVEY B. WOLFE, Louisville, Ky., assignor of one-half to Brennan & Co. Southwestern Agricultural Works, same place. Filed Jan. 23, 1887. Serial No. 225,696. (No model.)

Claim.—1. In a baling-press, the combination of a slotted reversible cam provided with set-screws, a roller moving in the slot, and a pitman pivoted to said roller, whereby as the cam is rotated the pitman forces the plunger into the pressing-chamber and the set-screws release the roller at any desired point to permit it to move to the other end of the slot in the cam for a new stroke, substantially as and for the purpose described.

2. In a portable baling-press, a slotted cam angular in shape and provided with depressions at the ends, and carrying set-screws, in combination with a roller in the cam-slot, a pitman, and springs to force the roller when released to the opposite end of the cam-slot.



881,976. COMBINED POST-OFFICE DATER, CANCELER, AND REGISTER. JOHN T. ARGO, Poindexter, Ky. Filed Oct. 12, 1887. Serial No. 252,154. (No model.)



Claim.—1. The combination, with the hand canceling-stamp and a series of independent registering-wheels, of the yielding frame and the series of independent actuating-pawls connected with said frame, one pawl being provided for each registering-wheel, substantially as and for the purpose described.

2. The combination, with the stamp and the series of independent registering-wheels having ratchet-wheels secured to their sides, of the yielding frame and the corresponding series of independent actuating-pawls connected with the frame and adapted to engage with said ratchet-wheels, substantially as described.

3. The combination, with the stamp, the registering-wheels having ratchet-wheels, and the actuating-pawls, of the yielding frame connected with said pawls and the push-buttons adapted to be pressed upon for projecting the actuating-pawls within the path of said ratchet-wheels, substantially as described.

4. The combination, with the stamp, the registering-wheels having ratchet-wheels, and the actuating-pawls connected with a yielding frame, of the push-buttons having slotted stems and the pins passing through said slots in the stems of the push-buttons for limiting their movements, substantially as set forth.

5. The combination, with the stamp, the registering-wheels having ratchet-wheels, and the actuating-pawls adapted to engage with said ratchet-wheels and having the extended portion n', of the push-buttons connected with said extended portions n' of the actuating-pawls, substantially as and for the purpose described.

6. The combination, with the stamp, the independent registering-wheels, and the actuating-pawls, of the push-buttons connected with the pawls and the springs for normally holding the push-buttons projected and holding the pawls out of the path of the ratchet-wheels, substantially as set forth.

7. The combination, with the frame of the stamp, composed of the side plates, cross-bar, handle, and middle plate, the registering mechanism located between the cross-bar and middle plate, and the actuating-pawls, of the frame H, the standards E, one of said standards carrying the actuating-pawls, the cross-tie e', and the spring interposed between the cross-tie and said middle plate, substantially as set forth, for the purpose specified.

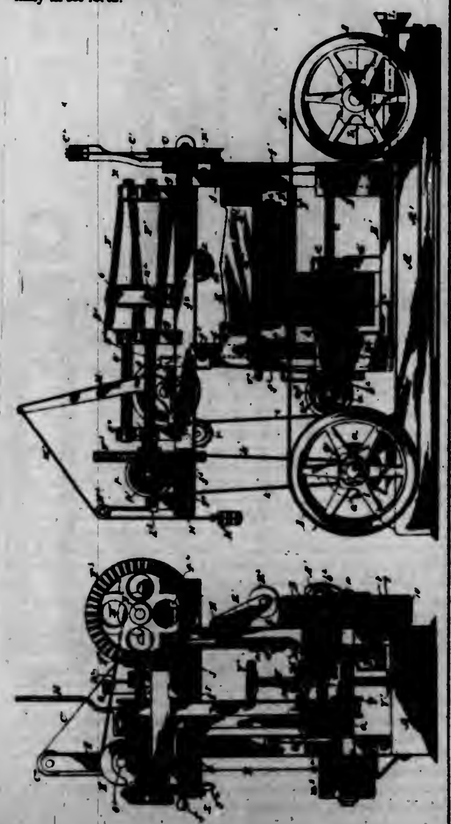
8. The combination, with the side plates, A, of the frame, the registering mechanism, and the dating-wheels mounted on a shaft supported between the side plates, of the standards E, having openings through which the dating-wheels extend, the actuating-pawls carried by one of the standards, and the frame H, substantially as specified.

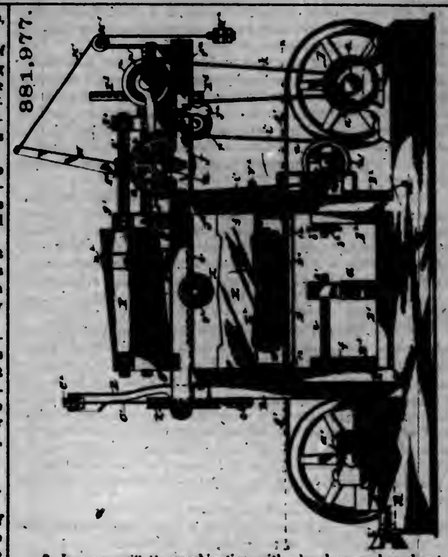
9. The combination, with the stamp, the series of independent registering-wheels having ratchet-wheels, the independent detent-pawls carried by a common plate, and the actuating-pawls connected with a plate common to all, of the standards and the frame H, substantially as and for the purpose specified.

10. The herein-described combined post-office dater, stamp-canceler, and register, composed of side plates having flanges a and lugs a', the cross-bar B, the handle C, the middle plate, D, the independent registering-wheels having ratchet-wheels, the detent-pawls, the actuating-pawls, the push-buttons connected with the actuating-pawls, the springs n^3, the standards having openings, the frame H, the spring for projecting the frame, the rollers F, the ink-ribbon, the dating-wheels, and the plate J, carrying the office-stamp, substantially as described.

881,977. BAND-SAW MILL. HARI W. AVERY, Lowell, Mich. Filed Sept. 20, 1887. Serial No. 250,207. (No model.)

Claim.—1. In a saw-mill, the combination, with a band-saw, of a set of uprights, and a saw-guide extending from one upright to the other, adjustably secured at its ends to said uprights, and adapted to receive and support the saw-blade back of its cutting-edge, substantially as set forth.





2. In a saw-mill, the combination, with a band-saw and an elevating log-carriage, of a set of uprights, and a saw-guide consisting of a pair of thin parallel plates extending between the uprights and adjustably secured thereto, said guide adapted to receive and support the passing saw-blade back of its cutting-edge, substantially as set forth.

3. In a saw-mill, the combination, with a band-saw and an adjustable guide through which the saw passes, of an elevating log-carriage and a gaging-roller adjustably secured to the mill-frame a distance from the guide relative to the thickness of the board to be cut, substantially as set forth.

4. In a saw-mill, the combination, with a band-saw, pulleys for the band-saw, a driving-shaft upon which one of said pulleys is mounted, and a tension-shaft mounted so as to be moved to tighten the band-saw upon its pulleys, of a log-carriage, an adjustable guide, a gaging-roller, a means of elevating the log-carriage, and means for rotating a log supported on the log-carriage, substantially as set forth.

5. In a saw-mill, the combination, with a band-saw actuated by driving-pulleys, of a log-carriage having a vertical movement, a saw-guide adjustably secured to the frame, and a gage-roller located in close proximity to the guide for gaging the thickness of the board being cut, substantially as set forth.

6. In a saw-mill, the combination, with a log-carriage having a vertical feed movement, of a band-saw, mechanism to rotate a log simultaneously with the upward feed movement of the log-carriage, and a gaging-roller having contact with a log being operated upon, substantially as set forth.

7. In a saw-mill, the combination, with a log-carriage having a vertical feed movement, of a band-saw, a guide for said saw, mechanism to rotate a log simultaneously with the upward feed movement of the log-carriage, and an engaging-roller having contact with a log being cut, substantially as set forth.

8. In a band-saw mill, the combination, with a log-carriage having a vertical feed movement, of a band-saw, mechanism to rotate a log simultaneously with the upward feed movement of the log-carriage, and an adjustable saw-guide adapted to receive the saw and pass with it into the kerf of the log, substantially as set forth.

9. In a saw-mill, the combination, with a band-saw, of an adjustable gaging-roller adapted to regulate the thickness of the board being cut and an elevating log-carriage adapted to maintain a steady feed to the saw, substantially as set forth.

10. In a saw-mill, the combination, with a band-saw, of a guide composed of a top and bottom plate, and a slotted spacing-plate adjustably secured between the top and bottom plates by means of screws or similar devices, substantially as set forth.

11. In a saw-mill, the combination, with a band-saw, of a guide for the saw, said guide being composed of a pair of beveled plates, and a slotted spacing-plate adjustably secured between said beveled plates by means of screws passing through the slots, substantially as set forth.

12. In a saw-mill, the combination, with a frame, a vertically-movable log-carriage, and a pair of clamping-bars pivoted on said car-

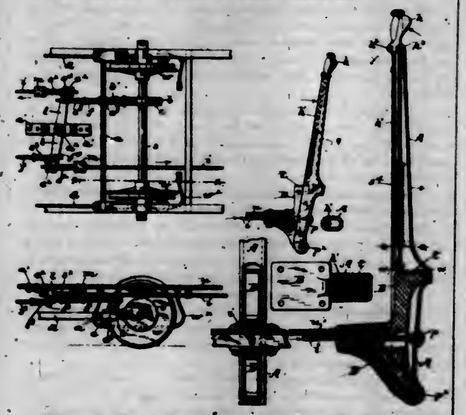
riage, of a screw passing through a threaded hole in the adjacent edges of said bars and thence to the frame, whereby the carriage is raised by the screw, substantially as set forth.

13. In a saw-mill, the combination, with a frame, a vertically-movable log-carriage, a base-plate having a slotted guard formed on its edge, and a pair of clamping-bars pivoted on the base-plate and extending through the slot in the guard, said bars having a threaded hole in their adjacent edges and held together by a sliding link, of a screw passing through said hole in the pivoted bars and adapted to turn therein, thereby elevating or lowering the carriage, substantially as set forth.

14. In a saw-mill, the combination, with a band-saw, pulleys to support the saw, and a driving-shaft to move the saw, of a log-carriage, head and tail stocks on the log-carriage, a mandrel journaled in the head-stock, a shaft geared with said mandrel, a fixed hand-wheel on the end of this shaft to rotate it, and an adjusting-screw extending through the log-carriage and into the frame and adapted to regulate the height and support in position the log-carriage, substantially as set forth.

15. In a saw-mill, the combination, with a frame, an elevating log-carriage, pulleys on the frame, a drive-shaft connected with one of the pulleys, and a band-saw carried on the pulleys, of a secondary shaft, *p*, in position to be driven by a belt from the main drive-shaft, a cone-shaft geared with shaft *p*, a second cone-shaft receiving motion therefrom, the latter having a worm thereon, a transversely-located shaft receiving motion from said worm, a shaft below said transverse shaft receiving motion from the latter, a mandrel journaled in the log-carriage receiving motion from said lower shaft, and a shifting-belt on the cone-shafts, whereby the motion to the mandrel is regulated, substantially as set forth.

881,978. CAR-BRAKE. ELIJAH R. BAKER, Cambridgeport, Mass. Filed Aug. 5, 1887. Serial No. 246,216. (No model.)



Claim.—1. The combination, in a car-brake mechanism, of a pivotally-mounted spring-retracting thrust-lever having pull-rods loosely mounted thereon, adapted to move in unison with said lever and also adapted to move independently thereof, substantially as hereinbefore described, and for the purpose specified.

2. The combination, with brake-bands and brake-levers mounted and arranged substantially as herein described, of a pivoted thrust-lever, as *l*, having its free ends adapted each to freely receive a brake-rod, *i*, collars engaging the lever and loosely mounted on said rod, and springs also engaging the lever, for the purpose specified.

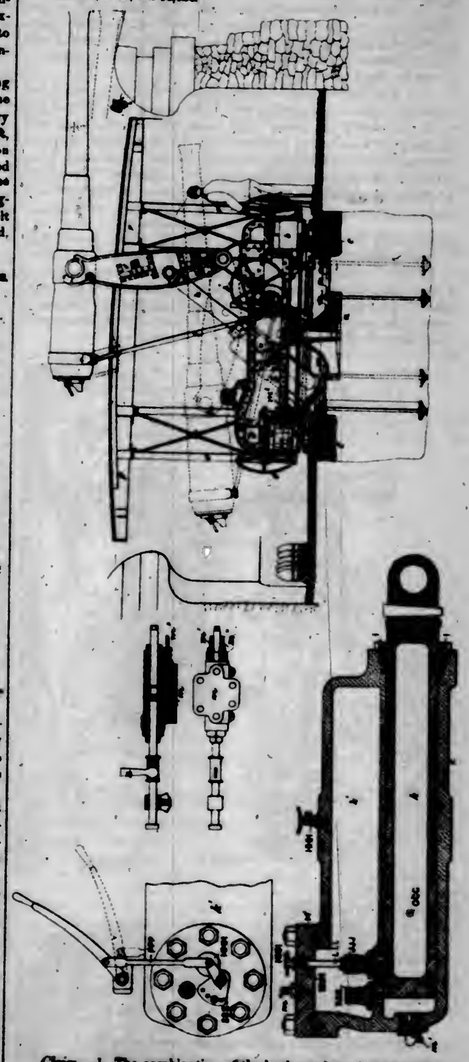
3. The combination, with a brake-wheel, a brake-band, and a pivotally mounted spring-retracting thrust-lever, of a mounted brake-lever as A, a pull-rod jointed thereto and having its other end loosely mounted in said thrust-lever, to travel in unison therewith when pressure is applied and adapted to move independently thereof when the pressure is released, and a pull-rod similarly mounted connecting the brake-band and thrust-lever, substantially as hereinbefore described.

4. The combination, with a mounted brake-wheel, an adjustably-secured band-brake therefor, and bell-crank lever *b'*, of the spring-retracting thrust-lever *l*, a pull-rod, *f*, mounted as described and jointed to the lever *b'*, a brake-rod, *i*, adapted to actuate the thrust-lever, &c., and a pivoted main brake-lever having the latter rod jointed thereto, substantially as shown and described.

5. In a car-brake, the combination of a stationary frame having a series of notches therein, a band-brake having an end thereof notched or corrugated to engage the notched frame, and a bolt passing through the band and frame to adjustably secure the band in position, substantially as described.

6. The combination, in a car-brake mechanism, of the brake-stand B, the hollow brake-lever A, pivoted thereto, a spring locking-catch mounted within said lever and engaging the brake-stand, a pull-rod jointed to the brake-lever, and a pivotally-mounted thrust-lever connected with a brake band and wheel, having the end of said pull-rod mounted therein so as to actuate the thrust-lever in one direction only, substantially as shown and hereinbefore described.

881,979. CARRIAGE FOR HEAVY ORDNANCE FOR LAND DEFENCE. WILLIAM D. BALDWIN, Washington, D. C., administrator of William J. Hoyle, deceased. Filed July 18, 1887. Serial No. 244,698. (No model.) Patented in England Jan. 6, 1885, No. 208, and in Italy Mar. 31, 1886, No. 18,080.

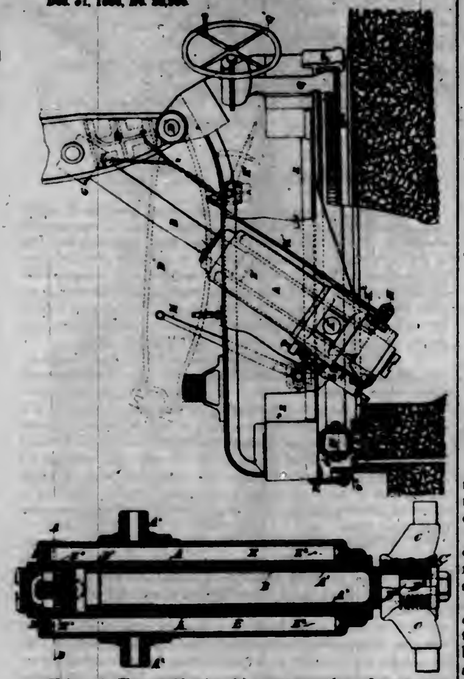


Claim.—1. The combination of the horizontal-turning turn-table, the frame connecting by a joint at its lower end to the turn-table and rocking vertically about said joint, the gun carried at the opposite end of the frame, and the overhead shield supported by and moving with the turn-table and provided with the aperture through which the gun rises and descends, substantially as and for the purpose set forth.

2. The combination of the frame having the pivotal support at its lower end and rocking vertically about such support, the gun at the upper end of the frame, the hydraulic cylinder, the air-vessel adjacent thereto, the ram working in the cylinder and connected with the pivoted frame for raising and lowering the gun, and the pump having its suction and delivery pipes connected with the cylinder and air-vessel, substantially as and for the purpose set forth.

3. The combination, in a gun-carriage, of the hydraulic cylinder, the air-vessel adjacent thereto, the ram working in the cylinder and connected with the support by which the gun is raised and lowered, two or more passages communicating with the cylinder at or near its lower end and with the corresponding end of the air-vessel, and the controlled valves of said passages, substantially as and for the purpose set forth.

881,980. MOUNTING FOR HEAVY ORDNANCE FOR LAND DEFENCE. WILLIAM D. BALDWIN, Washington, D. C., administrator of William J. Hoyle, deceased. Filed July 27, 1887. Serial No. 245,457. (No model.) Patented in England Mar. 6, 1886, No. 3,909, and in Italy Dec. 31, 1886, No. 20,926.



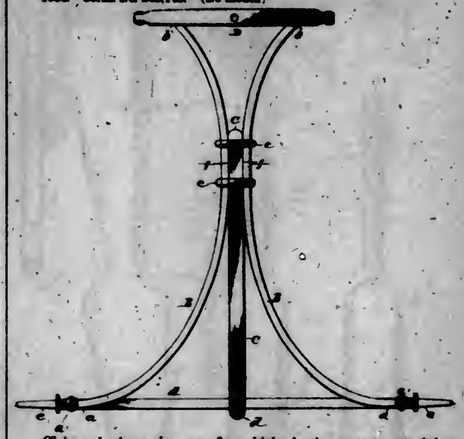
Claim.—1. The combination, in a gun-mounting, of a ram connected with a movable frame which carries the gun, a cylinder into which the ram is driven by the recoil of the gun, an air-receiver formed by communicating cavities in the walls of the cylinder, a passage connecting the interior of the cylinder with the cavities of the air-receiver, a valve in this passage which opens automatically to permit escape of liquid from the cylinder to the air-receiver cavities, but closes to prevent return from the cavities to the cylinder, and a by-pass valve which opens a return-passage between the air-receiver cavities and the cylinder, substantially as and for the purpose set forth.

2. The combination, in a gun-mounting, of a ram connected with a movable frame which carries the gun, a cylinder into which the ram is driven by the recoil of the gun, an air-receiver formed by communicating cavities in the walls of the cylinder, a passage connecting the interior of the cylinder with the cavities in its walls, a valve in this passage which opens automatically to permit escape of liquid from the cylinder to the air-receiver cavities, but closes against return, a by-pass valve which opens a return-passage between the cavities and the cylinder, and a pump with its suction-pipe connected with the interior of the cylinder and its delivery-pipe connected with the cavities in the cylinder-walls, substantially as and for the purpose set forth.

3. The combination, in a gun-mounting, of a ram connected with a pivoted frame which carries the gun, a cylinder into which the ram is driven by the recoil of the gun, an air-receiver adjacent to the cylinder, a passage connecting the cylinder with the air-receiver, a valve in this passage which opens automatically to permit escape of liquid from the cylinder to the air-receiver, but closes against return, a by-pass valve which opens a return-passage between the air-receiver and the cylinder, and gear connecting the by-pass valve with the gun-carrying frame, which gear closes said valve as the gun reaches the firing position, substantially as and for the purpose set forth.

4. The combination, in a gun-mounting, of a ram connected with a pivoted frame which carries the gun, a cylinder into which the ram is driven by the recoil of the gun, an air-receiver adjacent to the cylinder, a passage connecting the cylinder with the air-receiver, a valve in this passage which opens automatically to permit escape of liquid from the cylinder to the air-receiver, but closes against return, a by-pass valve which opens a return-passage between the air-receiver and the cylinder, a pinion on the stem of the by-pass valve, a rack engaging with the pinion, and a chain or like connection between the rack and gun-carrying frame, substantially as and for the purpose set forth.

881,981. RUNNING-GEAR FOR VEHICLES. GEORGE A. ROWE, Oshkosh, Wis., assignor to Herbert M. Hart, same place. Filed Feb. 6, 1888. Serial No. 263,149. (No model.)



Claim.—1. A running-gear for vehicles having a center straight reach and two curved reaches that are adapted to be clamped to a rear axle by their rear ends, and all secured together near the front end of the middle straight reach, substantially as set forth.

2. The combination, with a rear axle and a head-block, of two curved reaches and a straight reach located between the curved reaches and secured to these reaches and the axle, substantially as set forth.

3. The combination, with a rear axle and a head-block, of two curved reaches which are bent toward each other between their ends that are attached to the head-block and axle, and a straight reach having its rear end secured to the rear axle between the points of attachment of the curved reaches thereto, and its forward end secured to the adjacent bodies of the curved reaches, substantially as set forth.

881,982. FIRE-ESCAPE. HENRY L. BOYLE, Grand Rapids, Mich. Filed Aug. 23, 1887. Serial No. 247,977. (No model.)



Claim.—1. In a fire-escape, the combination of a friction-block having transverse cord-holes I passing through it and a guide loop or eye at its upper side, cords passing through said loop or eye and transverse cord-holes from opposite sides, and a strap or support attached to the block, substantially as described.

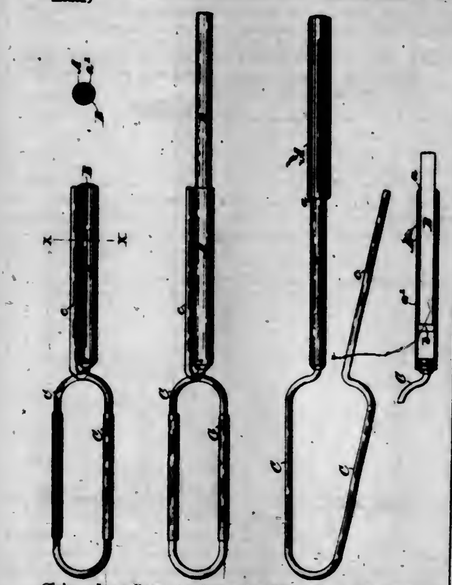
2. In a fire-escape, the friction-block B, having transverse cord-holes passing therethrough, the bail A, and loop E, in combination with the cords C, passing through said loop, and also through the transverse cord-holes, substantially as described.

3. The combination of the friction-block B, provided with the support A and loop E, the cords C C, adapted to pass through the openings in said block, the block D, and the supporting-strap G, all constructed as described.

4. In a fire-escape, a friction-block provided with one or more openings for the cords, in combination with two cords, one cord passing through the opening in one direction and the other cord passing through from the opposite direction, and said block adapted to be retarded in its sliding motion by means of the friction between the cords and the friction-block, as set forth.

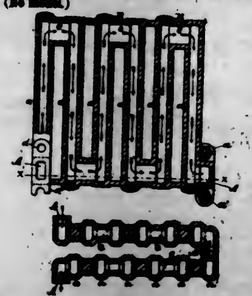
5. The combination of the friction-block B, having transverse cord-holes I, and the cords C, passing through said holes from the opposite sides of said friction-block, with the check-block D, arranged upon the cords below said friction-block and adapted to be moved up or down upon said cords for increasing or decreasing the frictional resistance thereon, substantially as described.

381,983. HAIR CURLING AND CRIMPING DEVICE. MARK CAMPBELL, Chicago, Ill. Filed Jan. 27, 1888. Serial No. 262,125. (No model.)



Claim.—In curling, crimping, or frizzing appliances, the combination of a handle, a heating-core, and a cylinder, tube, casing, or jacket operatively located exterior of said core, the arrangement of said parts being such that either the core or said outer member is fixed to the handle and the other member is capable of movement longitudinally thereof for a distance sufficient to expose the core, substantially as shown, and for the purpose set forth.

381,984. RADIATOR FOR STEAM OR HOT WATER. WILLIAM W. CANFIELD, New York, N. Y., assignor, by mesne assignments, to the National Heating Company, same place. Filed Nov. 18, 1887. Serial No. 255,622. (No model.)



Claim.—1. The combination of a series of radiator-sections, each of which is cast in a single piece, composed of a series of hollow bars, the space within the bars communicating at alternate ends, and the side bars having ingress and egress ports for the heating medium so formed that any number of said sections may be banked by uniting the ports, and when so united the bars of the different sections will be staggered or arranged so that the bars of each successive lower section will be situated in the plane passing vertically through the space between the bars of the section next above it, substantially as shown and described.

2. A radiator-section consisting of a series of hollow bars cast in a single piece, the space within the bars communicating at alternate ends, one of the side bars having a port on one end thereof opening in a direction at right angles to a plane passing longitudinally through the bars of the section, and the opposite side bar having a port formed in a shoulder or lug attached or formed on the side thereof and opening in a direction opposite to that of the first-named port, both of said ports being on the same end of the radiator-section, substantially as shown and described.

381,985. WHEEL-CULTIVATOR. WILLIAM I. GADDABY, South Bend, Ind. Filed Sept. 19, 1887. Serial No. 249,662. (No model.)



Claim.—1. In a wheel-cultivator, the round cross-bar B, rigidly secured to the tongue E, the round upright arms A A, carrying the wheels and provided with sleeve-couplings A' A', adjustably mounted on the bar B and having set-screws a^2 a^2, in combination with the vertically-adjustable brackets C C, loosely mounted and swinging laterally on the arms A A, and the spring H, engaging and traveling on the guide-brackets F, secured to the vertically-swinging plow or cultivator beams pivotally secured to said brackets C C, all constructed, arranged, and operating substantially as shown and described.

2. In a cultivator, and in combination with the supporting-frame, the vertically-adjustable bracket secured thereto, and the plow or cultivator beam pivotally attached to said bracket and movable therewith, an elastic supporting mechanism for the beam, consisting of a spring engaging and traveling on a track or way, substantially as described, said elastic supporting mechanism being interposed between the adjustable bracket and beam and connected to both, whereby the bracket can be raised or lowered on the supporting-frame to adjust the position of the plow or cultivator beam without disturbing or otherwise affecting the action of the supporting mechanism, substantially as set forth.

3. In a cultivator, a suitable supporting-frame and a vertically-adjustable bracket mounted thereon, in combination with a plow or cultivator beam pivotally secured to the adjustable bracket, a track or way on the beam, and a spring secured at one end to the adjustable bracket and movable therewith and having its free end engaging with and traveling on the track or way on the beam, all constructed, arranged, and operating substantially as shown and described, whereby the bracket can be raised or lowered on the frame to adjust the position of the plow or cultivator beams without affecting the tension of the spring.

4. In a cultivator, a supporting-bracket mounted on a suitable frame, a vertically-swinging plow or cultivator beam pivotally secured to said bracket and an adjustable track on the forward end of the beam, and provided with locking-notches in its opposite ends, in combination with a spring secured at one end to the supporting-bracket and having its free end engaging with and traveling on the track or way, all constructed, arranged, and operating substantially as shown and described.

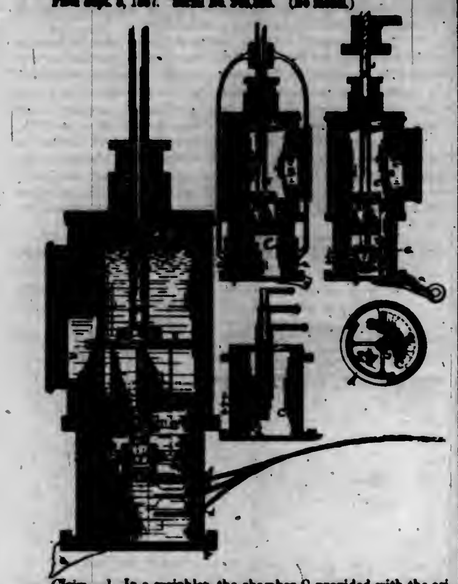
5. In an arched cultivator, a cross-bar rigidly secured to a tongue, upright arms carrying the wheels and provided with sleeve-couplings on their upper ends adjustably mounted on the cross-bar, and supporting-brackets adjustably mounted and swinging laterally on said upright arms, in combination with the vertically-swinging plow or cultivator beams pivotally secured to the supporting-brackets, tracks or ways secured to the plow or cultivator beams, and springs secured at one end to the supporting-brackets and having their free ends engaging with and traveling on the tracks or ways on the beams, all constructed, arranged, and operating substantially as described.

6. In a cultivator, the supporting-bracket C, adjustably mounted on the frame, the vertically-swinging plow or cultivator beam D, pivotally secured to said bracket C, the bracket or yoke F, located on the forward end of the beam, and adjustable track or way G, secured to the bracket or yoke F, in combination with the spring H, secured at one end to the supporting-bracket C and having its free end engaging with the track or way G, all constructed, arranged, and operating substantially as shown and described.

7. In a cultivator, the supporting-bracket C, mounted on the frame, the vertically-swinging plow or cultivator beam D, pivotally secured to said bracket C, the bracket or yoke F, located on the forward end of the beam, and the adjustable track or way G, secured to said bracket or yoke F, and having the locking-notches $G' G^2$ in its opposite ends, in combination with the spring H, secured at one end to the supporting-bracket and provided with a roller, i, on its free end, which engages with the track or way G, all constructed, arranged, and operating substantially as shown and described.

8. In an arched cultivator, a cross-bar rigidly secured to a tongue, upright arms carrying the wheels and provided with sleeve-couplings on their upper ends adjustably mounted on the cross-bar, supporting-brackets adjustably mounted and swinging laterally on said upright arms, and vertically-swinging plow or cultivator beams pivotally secured to the supporting-arms and having tracks or ways secured to their forward ends, in combination with springs secured at one end to the supporting-brackets and having their free ends engaging with the tracks or ways on the beams, all constructed, arranged, and operating substantially as shown and described.

381,986. SPRINKLER. CHARLES H. COLLINS, South Bend, Ind. Filed Sept. 5, 1887. Serial No. 248,888. (No model.)



Claim.—1. In a sprinkler, the chamber C, provided with the orifices *d e f*, arranged at different distances from the end of the chamber in parallel lines and oblique to the axis of said cylinder, and pierced at different angles of obliquity converging toward a point or line upon the outside of said chamber, as and for the purpose set forth.

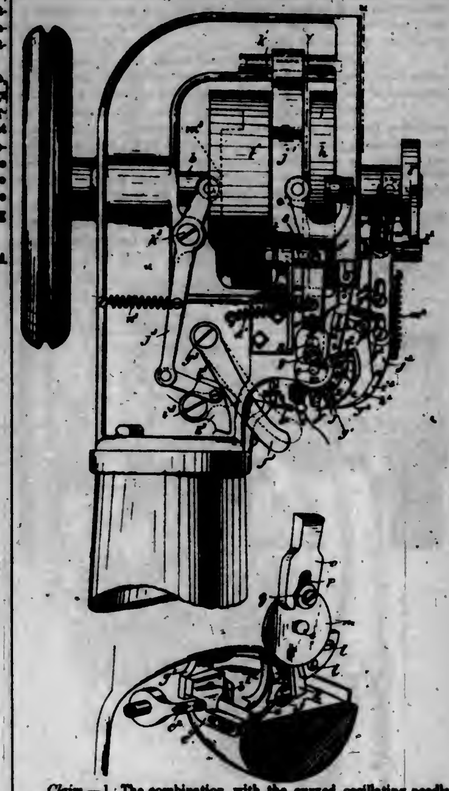
2. In a sprinkler, the upright chamber C, provided with the jet-openings *d e f*, consisting of horizontal slits arranged at different distances from the end of the chamber in parallel lines, combined with a valve, G, actuated by a proper valve-stem parallel with the axis of the chamber, whereby one or more of said openings may be opened or closed at will.

3. In a sprinkler, the chamber C, provided with jet-openings arranged at different distances from the end of the chamber, combined with a slide or rotating valve, G, a puppet-valve, K, and a valve-stem, J, with mechanism to operate the same from the outside of said chamber.

4. In a sprinkler, the chamber C, provided with the jet-openings *d e f*, arranged at different distances from the end of the chamber, a valve-stem, J, a puppet-valve, K, rigidly attached thereto, and a valve, G, loosely attached to said stem, so that the valve K will be actuated in advance of the movement of said slide-valve, as set forth.

5. In a sprinkler, the cylindrical chamber C, having the jet-openings *d e f*, arranged in parallel lines, combined with the spring-valve G, of elastic metal, longitudinally divided and of normally greater diameter than the interior of said chamber, whereby by elastic expansion the valve will compensate wear, said valve being adapted to reciprocate longitudinally of the chamber and provided with a valve-stem parallel with the axis of the chamber, as set forth.

381,987. SEWING-MACHINE FOR CONNECTING SOLES AND UPPERS. FRANK A. CONANT, Boston, and JOSEPH CONANT, Quincy, Mass., assignors to the Leather Lock Sewing Machine Association, Portland, Me. Filed Apr. 30, 1883. Serial No. 268,674. (No model.)



Claim.—1. The combination, with the curved oscillating needle and loop releasing and taking-up devices co-operating therewith, of an independent tongue-forming knife, and mechanism whereby said knife is moved alternately into and out of the path in which the needle moves, substantially as and for the purpose specified.

2. The combination of the curved needle, mechanism to oscillate it, cast-off and take-up devices and operating mechanism therefor, an independent tongue-forming knife, and mechanism alternating in its action with the operative mechanism of the needle, whereby the knife is moved alternately into and out of the path in which the needle moves, as set forth.

3. The combination, with the needle, the cast-off and the take-up, and their operative mechanism, of the knife, the oscillatory and laterally-movable hub supporting the knife, the stud supporting said hub, and mechanism, substantially as described, whereby the hub and knife are successively moved laterally and oscillated, as set forth.

4. The combination of the needle, the independent tongue-forming knife, and the take-up and their operating devices, of the cast-off composed of the slotted arm having the spring-pressed fingers or jaws b^2 b^3, and mechanism, substantially as described, whereby said arm is inserted in the loop formed by the needle and moved upwardly to receive a portion of the needle in its slot, and then depressed to cause its fingers to grasp the loop and separate it from the barb of the needle, as set forth.

5. The combination, with the curved oscillating needle, of the looper-arm pivoted to a fixed support and provided with the arm c^2, and the oscillating swing-piece *f*, pivotally connected to the arm c^2, as set forth.

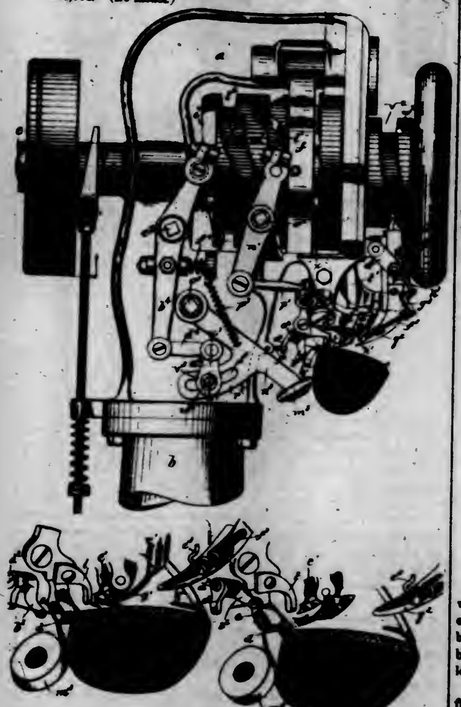
6. The combination, with the curved reciprocating needle and the loop casting-off and taking-up devices, of the swinging rest f^9, the cam A^5, supporting said rest, and the cam m^2, lever j^3, spring n^3, and connecting-rod P, whereby said cam is oscillated and supported with a yielding pressure, whereby it is adapted to support the rest f^9 at various points, as set forth.

7. The combination, with the tongue-forming cutter and the loop-forming mechanism, of the edge gage or rest, c', the pointed dog f', the oscillatory levers supporting said gage and dog, and mechanism, substantially as described, whereby the dog and gage are moved toward and from each other to grasp and release the work and laterally to feed the work, as set forth.

8. The combination of the curved needle, its arm, the reciprocating slide f, and the rod i, connecting the needle-arm and slide and composed of the jointed sections having a locking device, as set forth.

9. The combination of the tongue-forming knife, mechanism for oscillating the same, the needle, looper, and cast-off, and their operative mechanism, the loop-spreader, and operative mechanism therefor, substantially as described, whereby the spreader is moved forward under the needle into the loop, and then downward and held upon the tongue while the loop is being tightened, as set forth.

381,988. SEWING-MACHINE FOR UNITING SOLES TO UPPERS. PETER A. CUPAL, Boston, Mass., assignor to the Leather Lock Sewing Machine Association, Portland, Me. Filed Feb. 23, 1887. Serial No. 228,531. (No model.)



Claim.—1. In a machine for connecting soles and uppers, the combination, with work-feeding and stitch or loop forming mechanism, substantially as described, of the segmental tongue-cutting knife, a holder therefor mounted to oscillate in a plane which is oblique to the plane in which the needle moves, and mechanism for oscillating said holder, the arrangement being such that the knife when at the forward extreme of its movement stands in the path in which the needle moves, as set forth.

2. The combination, with the stitch or loop forming and the work-feeding mechanism, of the segmental tongue-cutting knife, the lever or holder carrying said knife and mounted to oscillate in a plane which is oblique to the plane in which the needle moves, and the cam, lever, and connecting-rod, whereby said knife-holder is oscillated, as set forth.

3. The combination, with the tongue-cutting and loop-forming mechanism, of the swing-piece or carrier, mechanism to oscillate it, the back-gage secured to a lever pivoted to said carrier, the feed-dog fitted to slide in a segmental slot in said carrier, and the slide p, fitted to reciprocate in said carrier and operatively connected with the feed-dog and with the lever supporting the back-gage, as described, and mechanism for reciprocating said slide, whereby the back-gage and feed-dog are moved alternately toward and from each other, as set forth.

4. The combination, with the tongue-cutting and stitch or loop forming mechanism, of the back-gage, the feed-dog, the mechanism whereby said gage and dog are operated, as described, and the depth-gage attached to the pivoted lever v, said lever having a curved slot, w, receiving a stud or pin on the slide p, which oscillates the back-gage and feed-dog, whereby the depth-gage is raised and lowered with the feed-dog, as set forth.

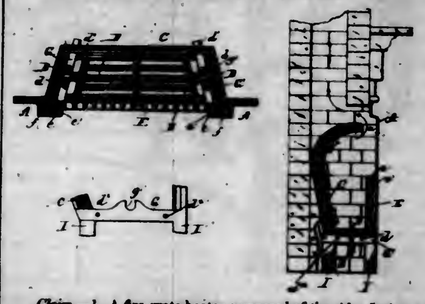
5. The combination, with the tongue-cutting and stitch or loop forming mechanism, of the swing-piece or carrier, the slide p, fitted to reciprocate therein, the feed-dog fitted to reciprocate in a segmental guide in the carrier, the spring-controlled crank journaled in the slide, and the connecting-rod journaled on the wrist-pin of the crank and pivoted to the feed-dog c', said crank being normally held by its spring with its wrist-pin depressed, and adapted to be turned by hand against the pressure of said spring to raise the feed-dog, as set forth.

6. The combination, with the tongue-cutting and loop-forming mechanism, of the swing-piece or carrier, the slide p, fitted to reciprocate therein, the depth-gage, the lever v, supporting said gage, the spring-controlled crank journaled in the slide and having its wrist-pin a' engaged with a slot in said lever v, as set forth.

7. The combination, with the needle, the looper, and the take-up and operating devices therefor, of the loop-spreader, mechanism, substantially as described, for imparting thereto a combined oscillatory and vertical reciprocating movement, the cast-off composed of a bent finger and a rock-shaft, the latter being journaled in bearings on the loop-spreader, and mechanism for oscillating the cast-off, as set forth.

8. The combination of the spring-supported lever n^3, having the rest m^2 and the segmental slotted arm r^4, the fixed stud passing through the slot of said arm, the nut r^5, working on the threaded outer end of the stud, and mechanism, substantially as described, for oscillating said nut and thereby causing it to alternately hold and release the rest, as set forth.

381,989. FIRE-GRATE. DAVID H. CRESSLEY, Steubenville, Ohio. Filed Dec. 21, 1885. Serial No. 186,372. (No model.)



Claim.—1. A fire-grate heater composed of the sides flaring outwardly from back to front, the back rearwardly-inclined at its lower end and outwardly curved at its upper end, the front having a space between it and the top edge of the back, the front grate, and the bottom grate supported at its ends on gudgeons and provided with a lever for shaking, substantially as specified.

2. In a fire-place heater, the combination, with the sides and the front having vertically-grooved keepers, of the front grate fitted in the grooves of the keepers and having its upper edge beveled, substantially as and for the purpose described.

3. In a fire-place heater, the combination, with the cross-bars and the bottom grate having gudgeons and stops at its ends, of the stops d^9, for limiting the movements of the grate, substantially as specified.

4. The combination, with the front A, having integrally formed therewith the vertically-grooved keepers d, and having the vertical grooves f in its rear side, of the front grate fitted in the grooves of the keepers, the sides B, having their front edges seated in the grooves f, the bottom grate, and the back, substantially as described.

5. In a fire-place heater, the combination of the cross-bars, the bottom grate having end gudgeons fitting in openings in the cross-bars, stops projecting from the ends of the grate on each side of the gudgeons, corresponding stops extending from the cross-bars, and the lever fitted to one of the gudgeons for shaking the grate, substantially as set forth.

381,990. CUT-OFF FOR SPOUTS. FRANK DEELER, Port Jervis, N. Y. Filed Apr. 14, 1887. Serial No. 234,703. (No model.)



Claim.—In a cut-off, the combination of the casing A, having the pipes A^2, B, and D, and deflector E, with the conical strainer C, located in the pipe B and having its upper edge flush with the bottom of the receptacle and provided with the screen C^2 and perforations C', each pair of perforations being connected by slots C^3, and having flanges C^4 opening inwardly, substantially as and for the purpose specified.

381,991. REVERSING-GEAR FOR PRINTING-PRESS CYLINDERS. GEORGE D. HAMM, Buffalo, N. Y. Filed June 30, 1886. Serial No. 206,860. (No model.)



Claim.—In a reversing-gear for printing-press cylinders, the combination, with the cylinder A, provided with the cam-route C C', of pivoted lever B, having the pawl f pivoted thereto, said pawl supported upon cam C by means of pin g, and the ratchet-disk c, all arranged and operating in the manner and for the purpose specified.

381,992. WATCHMAN'S TIME-DETECTOR. GEORGE B. FRENCH, Boston, Mass. Filed June 26, 1884. Serial No. 134,655. (No model.)



Claim.—1. In a watchman's time-detector apparatus, a series of branch circuits leading from a receiving-station to different stations to be visited and a return-wire common to several of said stations, combined with a generator of electricity connected in circuit with the branch wire at the station to be visited and a receiving-instrument having a switch or circuit-changer by which the said branch circuits are connected one at a time successively with the said receiving-instrument, substantially as described.

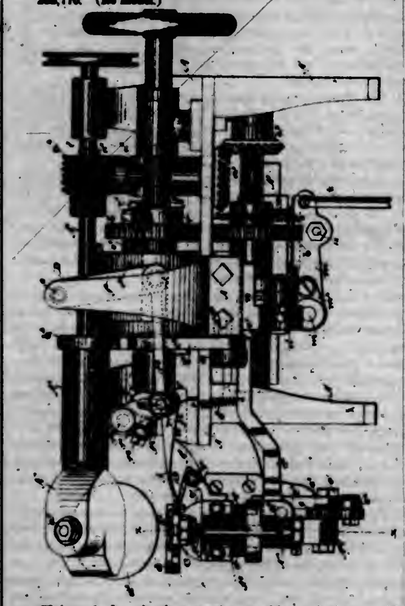
2. A watchman's detector apparatus comprising a magneto-generator consisting of a movable armature and field-magnet at each station, a circuit connecting said station with a receiving-station, and receiving apparatus comprising recording mechanism, the operation of which is controlled by the currents generated at the stations, and a circuit-changer that connects the said branch circuits one at a time successively with the receiving apparatus, substantially as described.

381,993. WATCHMAN'S TIME-DETECTOR. GEORGE B. FRENCH, Boston, Mass. Filed Dec. 22, 1886. Serial No. 222,209. (No model.)

Claim.—1. The combination, with a moving recording-surface, of a series of recording devices and an electro-magnet controlling the operation thereof, and a series of branch circuits corresponding with said recording devices, and each being subdivided and leading to two separate stations, a return-wire common to one series of stations connected with one set of subdivided circuits and another return-wire for the other series of stations, and a commutator controlling the said return-wires, whereby the controlling electro-magnet is connected with one return-wire while records are being made from one series of stations and with the other return-wire while records are being made from the other series, substantially as and for the purpose described.

2. The combination, with a time-motor or clock and recording-surface moved thereby, of a series of recording devices and a number of branch circuits leading from said recording devices, respectively, to the different stations to be visited, and a return-wire common to said stations, and a magneto-electric generator included in the branch wire at each of the stations, substantially as and for the purpose described.

381,994. LEATHER-GOUGING MACHINE. SAMUEL T. FRENCH and WILLIAM C. MEYER, Boston, Mass. Filed Apr. 23, 1887. Serial No. 236,770. (No model.)



Claim.—1. In a leather-gouging machine, a bed over which the leather or other material is passed, combined with a revolving cutter and an oscillating carrying-head for the cutter, substantially as described.

2. In a machine for gouging leather, the bed over which the leather or other material is fed, combined with a cutter, its shaft, and a swiveled or pivoted head carrying the said cutter and lying in a plane parallel with the bed, whereby the cutter may revolve on its own axis, and also move in the arc of a circle above or near the bed, substantially as described.

3. In a machine for gouging leather or other material, the bed having a convexed surface to receive the material, combined with a

revolving cutter, and means, substantially as described, for moving in the arc of a circle above the convex-surfaced bed to remove a piece having one convexed side from the exposed side of the material, substantially as described.

4. The bed to receive the material and the rotary cutter, with means, substantially as described, for moving it in a curved arc over the bed, combined with an intermittent feeding device for automatically feeding the material forward, substantially as described.

5. In a leather-gouging machine, the bed to receive the material, the cutter, and means, substantially as described, for revolving it, combined with a pivoted oscillating head carrying the cutter, and means for oscillating the said head, substantially as described, whereby the revolving cutter is moved in the arc of a circle adjacent to the bed, as set forth.

6. The bed and feeding device to feed the material over the bed, and a holding-down device to hold the material firmly, combined with a cutter arranged to travel over the bed, by means, substantially as described, to remove a small chip from the exposed side of the material, substantially as described.

7. The yielding bed, a locking device for it, the holding-down device, means, substantially as described, for moving it, and an intermittent feeding device arranged to feed the material forward between the bed and the holding-down device when the latter is disengaged from the bed, combined with a cutter arranged to travel over the bed in a curved path, substantially as described.

8. The yielding bed-support and the removable bed proper having a curved bearing-surface, combined with a holding-down plate, and the guides arranged at each end of the bed proper, substantially as described.

9. In a leather-gouging machine, the bed to receive the material, the revolving cutter, and means, substantially as described, for moving in a curved arc over the bed, combined with a holding-down device for the material placed upon the bed, substantially as described.

10. The yielding bed-support and the holding-down plate having an oval-shaped opening therein, combined with an adjustable guide, d^3, and the yielding guide d^3, substantially as described.

11. The yielding bed upon which the material is placed and the holding-down plate, and adjusting mechanism, substantially as described, for moving the holding-down plate to retain the material firmly upon the bed and compensate for different thickness of stock, substantially as described.

12. In a leather-gouging machine, the bed, holding-down device, and cutter, combined with a feeding-finger, and means, substantially as described, moved by the cam-grooved hub for actuating the feeding-finger, and adjusting means for varying the throw of the feeding-finger, substantially as described.

13. In a leather-gouging machine, the bed and oscillating cutter, combined with means, substantially as described, controlled by the shaft A^4, for permitting the cutter to operate, and the clutch mechanism for throwing said means into engagement with the shaft A^4, and a controlling mechanism, substantially as described, for automatically disengaging the clutch mechanism after the said shaft A^4 has made a certain number of revolutions, as set forth.

14. In a leather-gouging machine, the yielding bed the holding-down device for holding the material firmly upon the bed, and an intermittent feeding device, substantially as described, combined with a rotary cutter carried by a swivel or pivoted carrying-head, whereby the cutter is given two movements—viz., about its own axis and about an axis parallel with the surface of the bed—substantially as described.

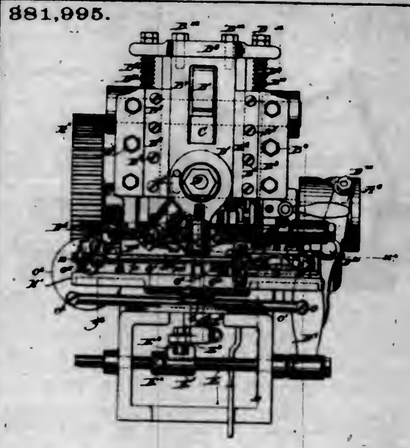
15. In a leather-gouging machine, the bed, and the intermittent feeding device, substantially as described, for feeding the material intermittingly over the bed, combined with a cutter, its shaft, the swivel or pivoted carrying-head for the shaft and cutter, whereby the cutter is both rotated about its own axis and moved in a curved path above the bed, and means for vibrating or swinging the cutter-carrying head back and forth, substantially as described.

16. In a leather-gouging machine, the leather cutting and feeding devices, combined with a controlling mechanism comprising a clutch mechanism and means for releasing it, the lever *o*, controlled by said means for throwing the feed-dogs into engagement with the ratchet-toothed bar *p*, means for moving the ratchet-toothed bar *p* forward step by step, and adjusting mechanism for automatically stopping the rotation of the clutch mechanism and for returning the ratchet-toothed bar *p* to its normal position at any time desired, substantially as described.

381,995. MACHINE FOR CUTTING AND EMBOSSING BUTTON-HOLES. ZACHARY T. FRENCH and WILLIAM C. MEYER, Boston, Mass. Filed Aug. 30, 1887. Serial No. 248,277. (No model.)

Claim.—1. The slide-bar B^7 and guides in which it reciprocates, combined with the tool-carrier carried by it, the button-hole-slit-cutting tool, and the embossing-tool, to operate substantially as described.

2. The slide-bar B^7, guides in which it is reciprocated, and the tool-carrier pivoted on the said slide-bar, combined with the rocker



having the arms B B^6, and with the tongue adapted to be moved into and out of operation when it is desired to reciprocate or leave at rest the said slide-bar, substantially as described.

3. The slide-bar B^7, guides in which it is reciprocated, and the tool-carrier pivoted on the said slide-bar, combined with means, substantially as described, to oscillate the said tool-carrier, for the purposes set forth.

4. The slide-bar B^7, the pivoted tool-carrier and its attached tools, the tongue and the rocker having arms B and B^6, and with the shaft A^4 and the double-throw cam, to operate the said rocker twice during each rotation of the said shaft, substantially as and for the purpose set forth.

5. The slide-bar B^7, the pivoted tool-carrier, its tools and the tongue and rocker having arms B and B^6, the former provided with an adjustable yoke, A^7, having a roller, *a*, combined with the shaft A^4 and cam to act upon the said roll, substantially as described.

6. The slide-bar, the tool-carrier pivoted thereon and provided with tools D^2 and D^3, the rocker, and the tongue adapted to be interposed between an arm of the said rocker and the said slide-bar, combined with locking mechanism, substantially as described, between the said tool-carrier and the said tongue, whereby the tongue is restrained from being moved forward between the slide-bar and arm B^6 of the rocker to reciprocate the said slide-bar when the tool D is in position to descend upon the material, as set forth.

7. The slide-bar, the constantly-moving rocker, and the tongue, combined with means, substantially as described, to automatically withdraw the tongue at the completion of any desired number of reciprocations of the said slide, as set forth.

8. The slide-bar B^7 and its pivoted tool-carrier and tools, combined with the table and the oscillating bed E^9, substantially as described.

9. The slide-bar B^7, its pivoted tool-carrier and tools, the table, and the oscillating bed thereon, having dies to co-operate with the said tools, combined with the strip-carrier and guides therefor, substantially as described.

10. The slide-bar, the tool-carrier, its tools, the table, the oscillating bed therein, and the strip-carrier, combined with an adjustable guide to enable the tools to strike the material in the strip-carrier more or less distant from the edge thereof, substantially as described.

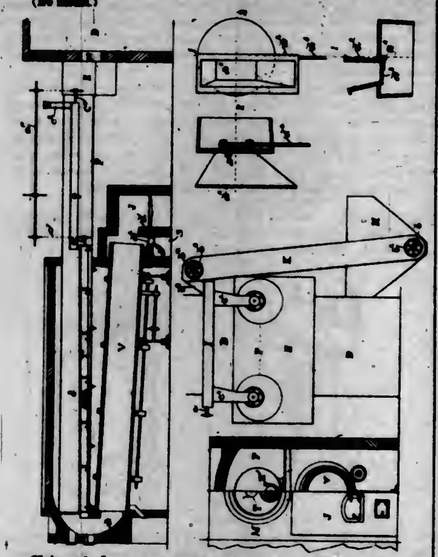
11. The slide-bar, the tool-carrier, its tools, the table, the oscillating bed therein, and the strip-carrier, combined with an adjustable guide to enable the tools to strike the material in the strip-carrier more or less distant from the edge thereof, and with two yielding guides, one at each side the said adjustable guide, substantially as described.

12. In a machine for cutting and embossing button-holes, the ratchet-wheel m^3, means to move it intermittingly, and its attached adjustable wheel m^3, combined with the lever c^{23} and its attached catch to co-operate with the said wheel m^3, substantially as described.

13. The cross-head D^7, rod *d'*, slotted disk e^2, the bearing-block, the clamping-nut, the threaded sleeve, and rod *p*, combined with the slide-block C^7 and its attached feeding-finger, substantially as described.

14. The strip-carrier, the sliding block C^7, the block e^2, pivoted thereon, and the feeding-finger, combined with an adjusting device to turn the feeding-finger more or less upon its fulcrum-pin to correctly enter the holes of the strip-carrier, substantially as described.

381,996. APPARATUS FOR CAUSTICIZING SODA, &c. Gustavus W. Hammond, Boston, Mass. Filed Apr. 5, 1887. Serial No. 233,749. (No model.)



Claim.—1. In an apparatus for the recovery of lime employed in causticizing soda or other chemicals, a filtering apparatus, I, a hopper, H, and a conveyer to carry the carbonate of lime formed in the process of causticizing from the said filtering apparatus to the said hopper, combined with a rotary calcining-furnace and with means, substantially as described, to convey the carbonate of lime from the said hopper to the said rotary calcining-furnace, substantially as described.

2. In an apparatus for the recovery of lime employed in causticizing soda or other chemicals, a filtering apparatus, I, a hopper, H, and a conveyer to carry the carbonate of lime formed in the process of causticizing from the said filtering apparatus to the said hopper, combined with a rotary calcining-furnace and with the chute K and scoops or buckets therein to convey the carbonate of lime from the said hopper to the said calcining-furnace.

3. In an apparatus for the recovery of lime employed in causticizing soda or other chemicals, a filtering apparatus, I, a hopper, H, and a screw conveyer to carry the carbonate of lime formed in the process of causticizing from the said filtering apparatus to the said hopper, a combustion-furnace, and a rotary calcining-furnace having one end extended into the said combustion-furnace, combined with means, substantially as described, to convey the carbonate of lime from the said hopper to the said calcining-furnace, substantially as specified.

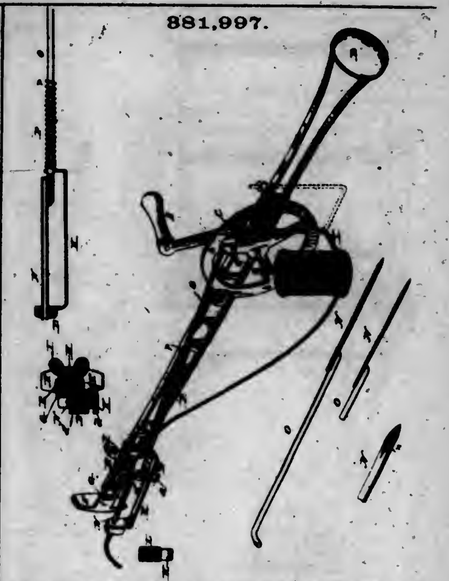
4. In an apparatus for the recovery of lime employed in the causticizing of soda or other chemicals, a filtering apparatus, I, and a rotary calcining-furnace connected therewith, combined with means, substantially as described, to convey the carbonate of lime formed in the process of causticizing from the said filtering apparatus to the calcining-furnace, substantially as described.

381,997. FABRIC-TURFING IMPLEMENT. CARLETON C. HARRIS, Rochester, N. Y. Filed May 2, 1887. Serial No. 236,528. (No model.)

Claim.—1. The frame having a handle attached thereto, the driving-wheel journaled in said frame, a needle and needle-bar having crank-connection with the wheel, the presser-foot supported by the needle and bar, a spring on the bar by which said foot is pressed toward the point of the needle, and the clasp on the frame, serving as guide and fulcrum for the needle and bar, all in combination, substantially as described.

2. The combination, with the frame and its adjustable rest or foot, of a needle and needle-bar and operating mechanism, substantially as described, and the clasp separate from the frame and foot, but secured to the frame by a set-screw, and serving as a guide to said needle and bar and as a clamp to retain the adjustable rest or foot in position, substantially as shown and set forth.

3. The combination, with the frame, of the rest attached thereto, the driving-wheel carried by the frame, the needle and bar rigidly connected, said bar having crank-connection with the driving-wheel,



and a guide for the needle and bar longitudinally adjustable on the frame, substantially as set forth.

4. The combination, with the needle and bar, of the presser-foot carried by said needle and bar and the spring secured on the needle-bar and bearing said foot forward toward the point of the needle.

5. The combination, with the needle and bar, said needle being rigidly attached to but offset from said bar, of a yoke having one end surrounding the needle-bar and the other end surrounding the needle, a presser-foot on the needle end of the yoke, and a spring on the needle-bar pressing the yoke toward the needle-point, the offset of the needle serving as a stop for said yoke, substantially as set forth.

6. The hollow cylindrical needle having a point at one side and an inward projection of the wall of the tube at the heel or side opposite said point, substantially as set forth.

381,998. MACHINE FOR SPLITTING WARPS. FRANK HASKELL, Westbrook, Me. Filed Apr. 9, 1887. Serial No. 234,363. (No model.)

Brief.—The object of the invention is to provide improved mechanism for separating warps or chains after they have been dyed.

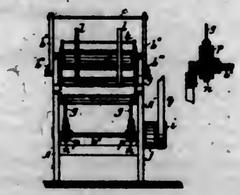
Claim.—1. The combination of a tension device consisting of a series of rods supported by arms, a rod or bar with means for agitating the same, consisting of a lever and an eccentric and rods, and two or more pairs of rollers, substantially as described.

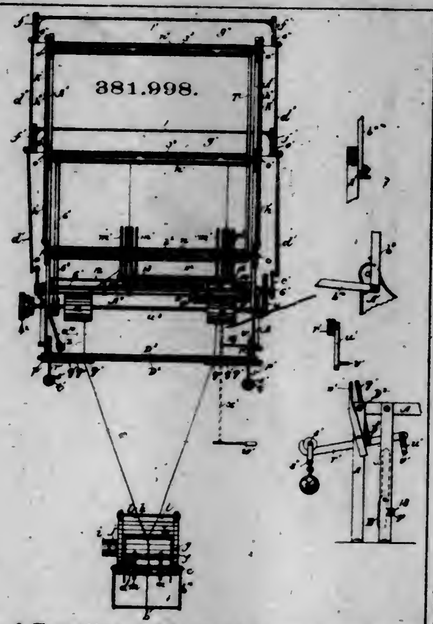
2. The combination of a tension device consisting of a series of rods with supporting-arms and a roller, a rod or bar with means for agitating the same, consisting of a lever and an eccentric and rods, and two or more pairs of rollers, substantially as described.

3. The combination of a tension device consisting of two or more rods with supporting-arms and a roller, a rod or bar with means for agitating the same, consisting of a lever and an eccentric and rod, two or more pairs of rollers, and a guide or guides in front of each pair of rollers, substantially as described.

4. The combination of the rods *b* and *c*, supported by the arms b^{10} and b^9, roller *d*, guides *m m*, bar *f* and means for agitating the same, fingers *g' g'*, and rollers *n* n^9, substantially as described.

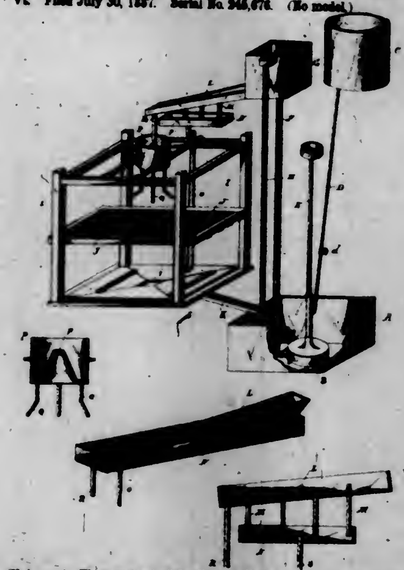
5. The combination of the rods *b* and *c*, supported by the arms b^{10} and b^9, roller *d*, guides *m m*, fingers *g' g'*, guides *p' p'*, and rollers *n* n^9, substantially as described.





6. The combination of the guides p' p', fingers q' q', rod D^2, shaft D^3, lever r', pulley s', weighted carrier s^4, arm s', with pin r', levers E and 18, the framing e, having the slot F, rod x', arm y', rod H, spring I, arm e^{10}, shaft z, arm a', and shipper-guides, substantially as described.

381,999. METHOD OF AND APPARATUS FOR FEEDING CHILLED SHOT IN STONE-SAWING MACHINES. ELI J. HAWLEY, Manchester, Vt. Filed July 30, 1887. Serial No. 245,676. (No model.)

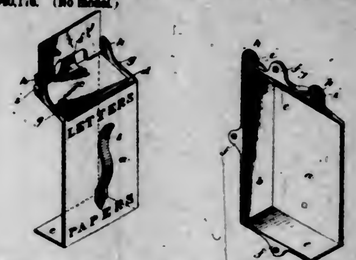


Claim.—1. The method of feeding chilled shot to a stone-sawing machine, consisting in discharging the shot from the reservoir mixed with a sufficient quantity of water to carry them down the feed-trough, gradually diminishing the quantity of water after it leaves the reservoir and while flowing through the trough, and finally discharging the shot and the reduced quantity of water onto the stone.

2. In a stone-sawing machine, the combination, with the gang-frame and a reservoir for mixed chilled shot and water, of a feed-trough provided at its lower end with a discharge-pipe, the said trough being constructed and arranged, substantially as described, so as to retain the shot while flowing through it, and to gradually discharge a quantity of the water after it leaves the reservoir and while flowing through the trough.

3. In a stone-sawing machine, the combination, with the gang-frame and a reservoir for mixed chilled shot and water, of a feed-trough provided at its lower end with a discharge-pipe, a water-box beneath said trough, a series of drain-pipes whose upper ends extend through the bottom of the feed-trough on different levels, and whose lower ends extend into the water-box, and a pipe leading from said box to the bottom of the gang-frame, substantially as described.

382,000. LETTER-BOX. LEWIS A. HOKE, York, Pa., assignor of one-half to Noah Stamp, same place. Filed June 3, 1887. Serial No. 240,178. (No model.)



Claim.—1. A letter-box composed of a front, *a*, one side, *b*, a top, *c*, provided with a slit and with ears for the cover, a bottom, *e*, fastening-ears *f*, a cover, *j*, and a spring for the reception of papers, parcels, and the like, all constructed and arranged substantially as shown and described.

2. A letter-box composed of a front, *a*, provided with an indicator substantially such as specified, one side, *b*, a top, *c*, having a slit, and provided with ears for the cover, a bottom, *e*, fastening-ears *f*, and a cover, *j*, all arranged substantially as shown and described.

3. A letter-box composed of a front, *a*, one side, *b*, a top, *c*, provided with a slit, and with ears for the cover, a bottom, *e*, and fastening-ears *f*, all constructed as one casting, and a cover, *j*, substantially as described.

382,001. ELECTRIC GAS-LIGHTER. CHARLES W. HOLMES, Brookline, Mass. Filed June 22, 1887. Serial No. 242,122. (No model.)



Claim.—1. The combination of the gas-burner provided with a stationary electrode and a rotating gas-cock with a vibrating electrode mounted on the spindle of said gas-cock, and an actuating-spring tending to turn the said electrode in one direction, and a locking device which holds the said electrode with the spring strained, the said electrode being connected with the gas-cock and causing the latter to move with it when turned in either direction, substantially as described.

2. The combination of the burner and stationary electrode with the vibrating spring-actuated electrode and locking device therefor, and the rotating gas-valve connected with said vibrating electrode by engaging devices admitting of a small lost motion between said electrode and gas-cock, substantially as and for the purpose set forth.

382,002. TRACE ATTACHMENT. WILLIS J. HOWARD, Mariposa, Cal. Filed Sept. 28, 1887. Serial No. 250,771. (No model.)



Claim.—1. The combination of the trace, the hooked plate A, made tapering at its rear end where it is fastened in the trace, and the flat laterally-moving spring B, which closes the mouth of the hook, substantially as shown.

2. The combination of the trace and the flat hooked plate A, which is secured thereto, with a spring which is secured to the side of the plate, and which has a lateral movement, so as to close the mouth of the hook, substantially as described.

382,003. HYDRAULIC VALVE. MILTON B. KINSEY, McKee's Rocks, Pa. Filed Dec. 6, 1887. Serial No. 257,115. (No model.)



Claim.—1. In a hydraulic valve, the combination, with the valve-casing having an enlarged chamber, 6, a pressure-port communicating therewith, a machine-port, 5, and a cylindrical bore between the port 5 and the chamber 6, of a valve-stem having a packing-disk which encircles the valve-stem and closes the space between the stem and the side of the said cylindrical bore, said packing-disk working with the valve-stem between the port 5 and the chamber 6 and into the chamber 6, substantially as and for the purpose set forth.

2. In a hydraulic valve, the combination, with the valve-casing having an enlarged chamber, 6, a pressure-port communicating therewith, a machine-port, 5, and a cylindrical bore between the port 5 and the chamber 6, of a valve-stem having a packing-disk which encircles the valve-stem and closes the space between the stem and the side of the said cylindrical bore, said packing-disk working with the valve-stem between the port 5 and the chamber 6 and into the chamber 6, said disk being cup-shaped and the concavity being on the side next the chamber, substantially as and for the purpose set forth.

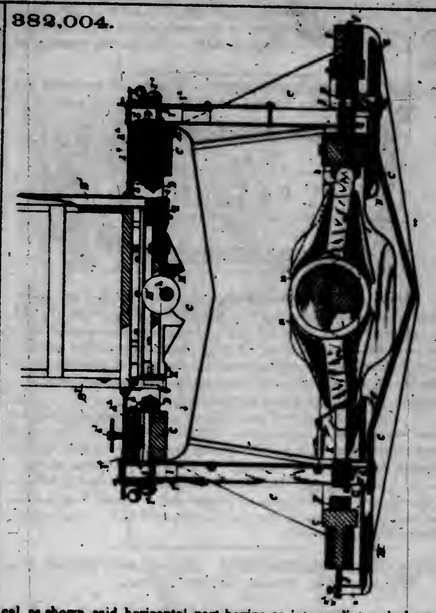
3. In a hydraulic valve, the combination, with the valve-casing having a pressure-port, a machine-port, and an exhaust-port, of a valve-stem working within the casing and having a packing-disk which moves between the pressure-port and the machine-port, and a second packing-disk which moves over the exhaust-port, said disk being concave, the concavity being on that side of the disk which is foremost in the motion of the valve over the port when the disk is under pressure, substantially as and for the purpose set forth.

382,004. MACHINE FOR MAKING BUNGS. FRANK M. LA BOITEAUX, Cincinnati, Ohio. Filed June 19, 1886. Serial No. 205,574. (No model.)

Claim.—1. The combination, substantially as specified, of a machine for making bungs and a cut-off saw for severing the blanks from strips, with feed tube or trough to convey the blanks from the saw to the cutting devices, said tube having between its receiving and discharge end a spiral section or part, as E', to turn the said severed blanks a quarter-revolution to bring the grain of the wood vertical.

2. The combination, substantially as specified, of the cut-off saw for severing square bung-blanks from a strip or strips, the feed-trough B B' B^2 B^3, with the hollow cutters D, sliding bed H, and piece E *e*, the said saw and trough B B' B^2 being arranged above the cutters, said part B having a spiral curve to turn said blanks a quarter-revolution, and devices for forcing the blanks through the same and the vertical part B^3 of the trough leading from the horizontal trough B B' B^2 to the cutters.

3. The combination, substantially as specified, with a bung-machine, of a feed-trough a part of which is horizontal and part vertical, as shown, said horizontal part having an intermediate spiral section, B', with a spring, as *b*, at the discharge end of the horizontal part to bear upon the leading block passing through said trough to force it into the vertical part which leads to the cutter.

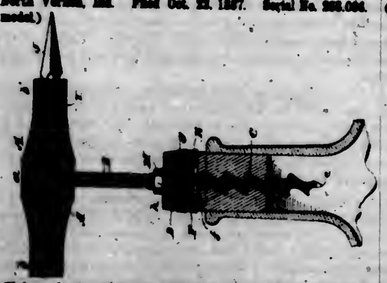


4. Compressing mechanism for bung-machines, consisting of the following parts, in combination, to wit: the frame C, the bed E, mounted in ways to slide within said frame, the plungers G, secured in each end of said sliding frame, the cam L, shaft *l*, shoes M, and arms *m*, extending from said shoes to the ends of the frame to actuate the frame in its ways, the cups F, secured in the ends of frame C, the adjustable stops J, and the followers *f*, to discharge the finished bung, substantially as shown and described.

5. In a bung cutting and compressing machine, the combination of the stationary hollow cutters D, secured in each end of the machine-frame, the sliding bed H, the followers E, secured in each end of the sliding bed, the eccentric H', and shaft A, to reciprocate the said bed between the opposite cutters, with the cups F, secured in the ends of frame C, the sliding frame K, and plungers G in each end of said frame, and mechanism, such as shown, to move the sliding frame between the cups, the tubes B^3, to convey blanks to the cutters, and the tubes I I', to convey the circular blanks from the cutters to the compressors, the said cutting mechanism being located above the compressing mechanism, substantially as shown and described.

6. In a bung-machine, the combination of the hollow cutter, the means shown to force blanks through it, the tube I, to deliver said blanks, and the spring-pressed gate I^2, and alarm I^3, to sound when the gate is forced by the feed clogging, substantially as set forth.

382,005. CORKSCREW. PIERCE MCCARTHY and PETER TIERNEY, North Vernon, Ind. Filed Oct. 22, 1887. Serial No. 253,094. (No model.)



Claim.—1. A corkscrew consisting, essentially, of a stem having an ordinary screw thereon, and a rubber washer secured on said stem, substantially as set forth.

2. A corkscrew consisting, essentially, of a handle, a stem, a recessed rubber washer mounted on the stem, and a pair of nuts for holding the washer in place, substantially as and for the purpose set forth.

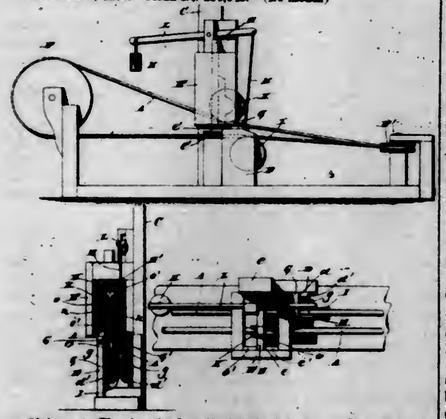
382,006. STATION-INDICATOR. KIMBERLY G. HICKERSON, Passaic, N. J. Filed Jan. 13, 1888. Serial No. 260,671. (No model.)



Claim.—1. In a station-indicator, the combination of two rollers made in two halves, one of which is tongued and the other grooved, an internally-screw-threaded cap inclosing one end thereof and a square-socketed cap inclosing the other, said square socket having a square spindle and a cylindrical journal at the end, gear-wheels mounted upon the square spindles, and intermediate gears uniting them, substantially as and for the purpose described.

2. The combination of two rollers carrying a printed band between them, each having a square spindle at one end, a gear-wheel upon each spindle, a journal, F, and two gear-wheels thereon located between the gears upon the spindles and carrying ratchet-wheels, a pulley, G, inclosing said ratchet-wheels and having an angular recess, *g*, therein, and a pawl having an angular end, *i*, located in said recess and having also two arms for engagement with said ratchet-wheels, substantially as described.

382,007. BELT-TIGHTENER. CHARLES PIERCE, Monticello, Iowa. Filed Jan. 6, 1888. Serial No. 259,949. (No model.)



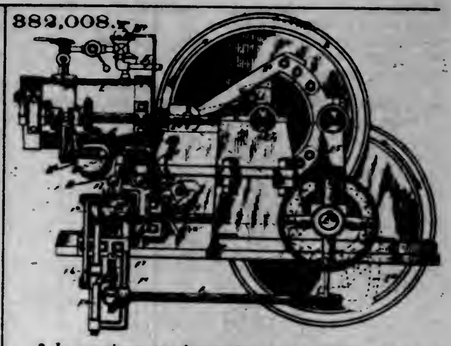
Claim.—1. The herein-described belt-tightener, adapted to be disposed at an intermediate point of an endless belt, and consisting of the lower grooved frame, D, and the upper grooved frame, E, the sliding carriers G and H, mounted in the grooves in the said frames, the idle-pulleys mounted in the said carriers and adapted to bear respectively against the lower and upper sides of the belt, the lever L, mounted on a suitable bearing at the upper end of the upper frame and connected at one end to the carrier G, and the weight N, attached to the opposite end of the lever, substantially as and for the purpose specified.

2. In a belt-tightener, the combination of the upper gravity-carrier having a pulley bearing on the upper portion of the belt, the lower carrier having a similar pulley to bear against the lower portion of the belt, the lever mounted on a stationary pivot and having a weight on one end, and the connecting-rod between the lower carrier and the other end of the said lever, substantially as specified.

382,008. STEAM OR GAS MOTOR ENGINE. BENJAMIN C. POLE, Camden, N. J. Filed June 12, 1886. Serial No. 204,976. (No model.)

Claim.—1. In combination with an engine-energizer, a coupling connecting it with a second shaft, said coupling being automatically operated by said energizer, substantially as and for the purpose set forth.

2. In an engine-motor, the energizer, combined with a second shaft by a friction-brake automatically operated by said energizer, substantially as and for the purpose set forth.



3. In an engine-motor, the energizer, combined with a second shaft by a rocking arm, and ratchet-and-pawl mechanism adapted to be automatically operated by said energizer, substantially as and for the purpose set forth.

4. In an engine-energizer, combined with a second shaft by a friction-brake automatically attached and detached by said energizer, the governors to regulate the speed thereof, substantially as and for the purpose set forth.

5. In an engine-motor, the energizer, combined with a second shaft by a rocking arm, ratchet-and-pawl mechanism adapted to be automatically operated by said energizer, and the governors to regulate the speed thereof, substantially as and for the purpose set forth.

6. In an engine-energizer, as set forth, connected with two shafts, one or both shafts provided with governors for regulating the speed thereof, substantially as and for the purpose set forth.

7. In an engine-energizer, combined with a second shaft, a pawl and ratchet-wheel or roller-friction automatically operated by itself, substantially as and for the purpose set forth.

8. In an engine-energizer, combined with a second shaft, a connection adapted to operate the clutch of a friction-coupling connecting said energizer with said shaft, as and for the purposes set forth.

9. In an engine-energizer provided with a piston-rod and cross-head, a connecting-rod to a vibrating arm adapted to receive the percussion of the fly-wheels and connected by a pawl and ratchet or friction-roller to a second shaft, substantially as and for the purpose set forth.

10. In an engine-energizer, combined with a second shaft provided with automatic connections, being cams or cranks, to operate a connecting-rod, adapted to attach and detach mechanism that connects the energizer with the second shaft, substantially as and for the purpose set forth.

11. An engine-motor provided with the following elements: an energizer, combined with fly-wheels and adapted to be automatically attached and detached to and from a second shaft, provided with governors to regulate the speed thereof, substantially as and for the purpose set forth.

12. The combination, in a gas-engine energizer operating its own and a second shaft, of the governor to control the supply of gas used by the energizer and adapted to control the speed of the second shaft, substantially as and for the purpose set forth.

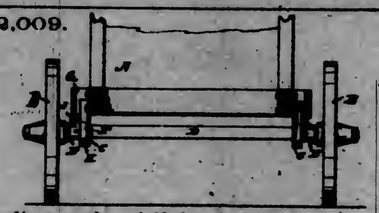
13. The combination, with an engine-energizer, of a friction-brake provided with an outer rim, A^5, and a side cover, A^6, provided with an interior free wheel, A^7, and a wheel, A^3, that is keyed on shaft A, also provided with springs, and an operating strap to a clutch mechanism suitably connected and operated by said energizer, as and for the purposes set forth.

14. The combination, with an engine-energizer, of the connection E^3 to the vibrating arm E^4, operating the yoke, with pawl E^6, or friction-roller H^4, to a wheel, H^3, or ratchet F^3, combined and keyed on a shaft, F^2, adapted to be automatically connected with the moving power by yielding or flexible connection E^{10} to the energizer, as and for the purposes set forth.

382,009. AXLE FOR THRASHING-MACHINES. FRANKIN W. REMINGTON, Richmond, Ind. Filed Feb. 28, 1888. Serial No. 264,616. (No model.)

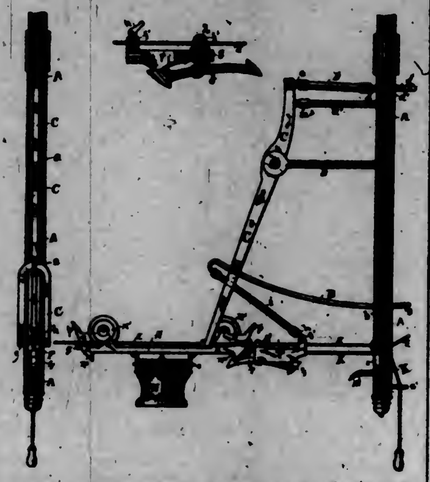
Claim.—1. The combination, substantially as set forth, of a thrasher-frame, an axle disposed across thereunder, chains secured to the end thereof and provided at their inner ends with upwardly-projecting bosses, jaws secured to the thrasher-framing and engaging the inner ends of the chains, downwardly-open spring-cups secured to the thrasher-frame over said bosses, and springs disposed within said cups and engaging said chain-bosses.

2. The combination, substantially as set forth, of a thrasher-frame,



a pair of jaws secured to each side thereof and projecting downwardly, downwardly-open spring-cups at each of said pairs of jaws, springs disposed within each spring-cups, a wooden axle extending across under the thrasher-frame between and through said jaws, chains secured to said axle and provided with rectangular enlargements at their inner ends engaging within the jaws, and bosses projecting upwardly from the inner end of each of said chains into engagement with said springs.

382,010. STORE-SERVICE APPARATUS. THOMAS A. SHERIN, FRANK D. SHERIN, and ADAM BRADY, Columbus, Ohio. Filed Feb. 27, 1888. Serial No. 265,682. (No model.)



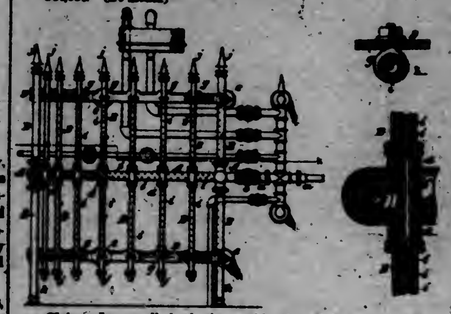
Claim.—1. In a store-service apparatus, the combination of the hanger A, having the outwardly-projecting arm *a*, the propelling-lever C, pivoted to the arm *a* and provided with the loop *c* on its lower end, the elastic tube D, and the connecting-bar *d*, adapted to be adjusted on the hanger A, all substantially as and for the purpose specified.

2. In a store-service apparatus, the combination of the hanger A, having the outwardly-projecting arm *a*, the propelling-lever C, pivoted to the arm *a* and provided with the loop *c* on its lower end, the elastic tube D, and the connecting-bar *d*, with the trunk-wire E, the catch-block F, loosely mounted thereon and having a spring-actuated and pivoted trigger, the rod B, and the elastic rubber tube *i*, connecting said block and rod, substantially as and for the purpose described.

3. In a store-service apparatus, the combination of the hanger A, having the outwardly-projecting arm *a*, the propelling-lever C, pivoted to the arm *a* and provided with the loop *c* on its lower end, the elastic tube D, and the connecting-bar *d*, with the trunk-wire E, secured to the hangers, the pulley K and tripping-pin M in the lower end of said hangers, the catch-block F, having a cord passing over said pulley and a pivoted trigger, the adjustable rod B, and the elastic rubber tube *i*, connected with said block, and a car mounted upon the trunk-wire, substantially as and for the purpose described.

4. In a store-service apparatus, the combination of the hanger A, having the outwardly-projecting arm *a*, the propelling-lever C, pivoted to the arm *a* and provided with the loop *c* on its lower end, the elastic tube D, and the connecting-bar *d*, with the trunk-wire E, secured to the hangers, the pulley K and tripping-pin M in the lower end of said hangers, the catch-block F, having a cord passing over said pulley and a pivoted trigger, the adjustable rod B, and the elastic rubber tube *i*, connected with said block, and a car mounted upon the trunk-wire and having the checkers a^2 and the upwardly-extended fingers *p* and bumper *q*, substantially as and for the purposes described.

382,011. NEEDLE-BATH. BENJAMIN C. SMITH, Brooklyn, assignor to Fred. Adee & Co., New York, N. Y. Filed Aug. 26, 1887. Serial No. 247,891. (No model.)



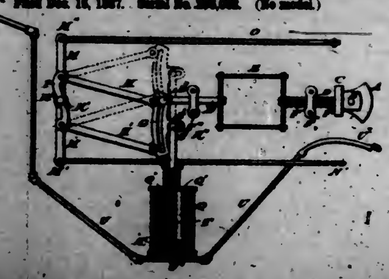
Claim.—In a needle-bath, the combination of the central horizontal distributing-pipe, A, couplings *d d*, carried by said pipe, vertical pipes B B, fitting said couplings, braces D D, and straps *g*, all arranged for operation substantially as herein shown and described.

382,012. HOT-AIR SYRINGE. ELI T. SHARP, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Feb. 13, 1888. Serial No. 263,821. (No model.)



Claim.—The hot-air syringe consisting of the bulb, the inlet-valve thereof, the pipe-connection, the outlet-valve, and the heating-chamber, substantially as described.

382,013. CAR-BRAKE. JAMES S. STEWART, Philadelphia, Pa. Filed Dec. 16, 1887. Serial No. 258,052. (No model.)



Claim.—1. In an automatic-impact brake mechanism, the combination of an air-cylinder provided with a piston adapted to be actuated by compressed air to shift the parts of the brake mechanism, whereby the said mechanism can be controlled by the engineer to close the brakes by either a pull or push of the buffer, substantially as described.

2. In an automatic-impact brake mechanism, the combination of an air-cylinder provided with a piston adapted to be actuated by compressed air to shift the parts of the brake mechanism, and a spring bearing against said piston to drive it back to place when the air-pressure is removed, substantially as described.

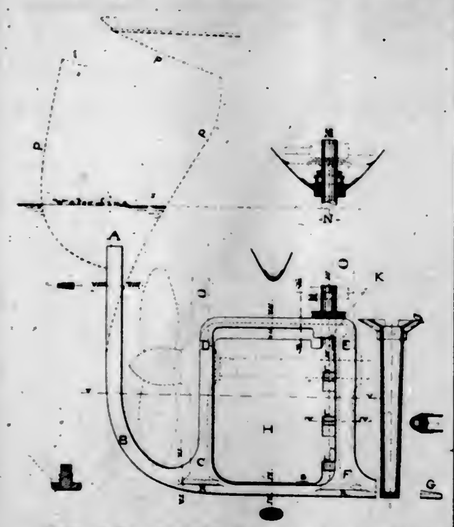
3. In an automatic-impact brake mechanism, the combination of arms H H', lever I, guard or guide G, air-cylinder Q, piston-head R, stem R', and air-pipes U, all arranged and operating substantially as described.

4. In an automatic-impact brake mechanism, the combination of arms H H', lever I, guard or guide G, air-cylinder Q, piston R, stem R', and spring T, to return the piston to place when the actuating air-pressure is removed, substantially as described.

5. In an automatic-impact brake mechanism, the combination of arms H H', lever I, lugs K K', rod J, lever-arm V, link G, piston-rod R', piston-head R, cylinder Q, spring T, and air-pipes U U', substantially as described.

382,014. STERN-POST AND STERN-FRAME FOR STEAMSHIPS.

WALFRID T. SYLVÉN, Washington, D. C. Filed Jan. 4, 1888. Serial No. 259,793. (No model.)



Claim.—1. The combination of one common or balanced rudder located in the longitudinal axis of a ship or vessel, a stern-post or stern-framing, an opening in said stern-post or stern-framing of suitable form to receive said rudder, and propellers located astern of such rudder, one or more of said propellers on each side of the said rudder, the dead-wood of the vessel being continued between said propellers, the whole relatively arranged substantially as described.

2. The combination, with a common or balanced rudder and two or more propellers located astern of and on each side thereof, of a protecting-frame, A B C D E F G, the forward portion, C D E F G, forming a suitable opening and support for the rudder, and the after portion, A B C, serving as a shield for the propellers, substantially as and for the purpose set forth.

382,015. POLE-ATTACHING AXLE-PLATE FOR WHEELED SCRAPERS, AGRICULTURAL MACHINES, AND SIMILAR PURPOSES.

STEPHEN W. TAFT, Kennett Square, Pa. Filed Feb. 4, 1888. Serial No. 263,033. (No model.)





Claim.—1. The metal axle-plate D, having lateral arms D', provided with seats *d* for the axle-bar, a projecting pivoting-boss, I, to receive the body-coupling, and a forwardly-projecting portion, D^2, having a seat for receiving and supporting the pole formed integral, substantially as set forth.

2. The combination, with the axle A and pole C, of the metal axle-plate D, having the lateral arms D', with seats *d* for the axle at the ends of said arms, the forwardly-extending portion D^2, provided with flanges *e* for supporting the pole, and the attaching-bolts F and H, substantially as set forth.

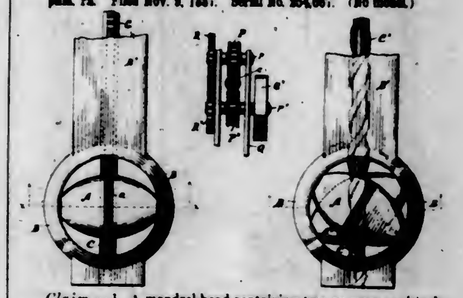
3. The pole-attaching axle-plate provided with recesses *n*, in combination with the axle-bar A and stay-chain hooks N, confined in said recesses, substantially as and for the purpose set forth.

4. The axle-plate having the lateral arms D', forward extension D^2, and projecting pivot-boss I, provided with the washer L, detachably secured to the top of said boss, in combination with the axle A, pole C, and body-coupling B', having an opening to fit over said boss, substantially as and for the purposes set forth.

5. The stay-chain hook N, having the bifurcated end for engaging a link of the stay-chain and the head n^2 at its opposite end, in combination with an axle, A, and axle-plate D, having the recess *n* for embracing said hook to confine it in position when said plate is attached to the axle, substantially as set forth.

382,016. ROLLER MANDREL.

STEPHEN P. M. TASKER, Philadelphia, Pa. Filed Nov. 9, 1887. Serial No. 254,667. (No model.)



Claim.—1. A mandrel-head containing two or more positively-driven rolls, substantially as and for the purposes set forth.

2. In combination, a mandrel-head containing two or more rolls, and driving mechanism, essentially such as set forth, for positively driving said rolls, substantially as and for the purposes set forth.

3. In a roller mandrel substantially such as set forth, the combination of two or more mandrel-rolls, gearing for positively driving said rolls, and a prime mover for actuating said gearing.

4. In a mandrel for rolling tubes, the combination of a mandrel-rod, rolls mounted rotatively therein, a prime mover mounted in connection with said mandrel-rod, and gearing operatively uniting said prime mover and rolls, substantially as set forth.

5. In a mandrel for rolling tubes, the combination of mandrel-rolls mounted rotatively therein, teeth identified with said rolls, propulsive gearing engaging with said teeth, and means for applying power to said propulsive gearing.

6. The combination, to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel-head for carrying said rolls, and a rack which is engaged with the teeth of said rolls, substantially as and for the purposes set forth.

7. The combination, to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel-head for carrying said rolls, a rack which is engaged with the teeth of said rolls, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth.

8. The combination, to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel-head for carrying said rolls, and a rack which passes between or among the rolls and is engaged with the teeth of said rolls, substantially as and for the purposes set forth.

9. The combination, to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel-head for carrying said rolls, a rack which passes between or among the rolls and is engaged with the teeth of said rolls, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth.

10. The combination, in a roller mandrel, of two ellipsoidal rolls the axes of which are inclined to each other, and which are provided with teeth, a mandrel-head carrying said rolls, and a rack which is engaged with the teeth of said rolls, substantially as and for the purposes set forth.

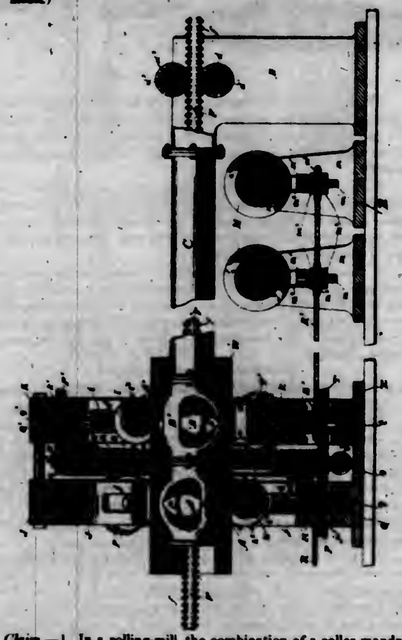
11. The combination, in a roller mandrel, of two ellipsoidal rolls the axes of which are inclined to each other, and which are provided with teeth, a mandrel-head carrying said rolls, a rack which is engaged with the teeth of said rolls, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth.

12. The combination, in a roller mandrel, of two ellipsoidal rolls the axes of which are inclined to each other, and which are provided with sunken teeth circumscribing their central portions, a mandrel-head carrying said rolls, and a spiral rack which passes between said rolls and is engaged with the sunken teeth thereof, substantially as and for the purposes set forth.

13. The combination, in a roller mandrel, of two ellipsoidal rolls the axes of which are inclined to each other, and which are provided with sunken teeth circumscribing their central portions, a mandrel-head carrying said rolls, a spiral rack which passes between said rolls and is engaged with the sunken teeth thereof, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth.

382,017. ROLLING-MILL FOR MAKING TUBES.

STEPHEN P. M. TASKER, Philadelphia, Pa. Filed Nov. 14, 1887. Serial No. 256,108. (No model.)



Claim.—1. In a rolling-mill, the combination of a roller mandrel having two or more mandrel-rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, and external compressing-rolls, substantially as set forth.

2. In a rolling-mill, the combination of a roller mandrel having two or more mandrel-rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing-rolls, gearing for positively driving said compressing-rolls, and a prime mover for actuating said gearing, substantially as set forth.

3. In a rolling-mill, the combination of a roller mandrel having two or more mandrel-rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing-rolls, and adjusting-gearing for simultaneously setting up toward a common center all of the external compressing-rolls, substantially as set forth.

4. In a rolling-mill, the combination of a roller mandrel having two or more mandrel-rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing-rolls, gearing for positively driving said compressing-rolls, a prime mover for actuating said gearing, and adjusting-gearing for simultaneously setting up toward a common center all of the external compressing-rolls, substantially as set forth.

5. In a rolling-mill, the combination of a roller mandrel having two or more mandrel-rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing-rolls, and idler carrying-rolls for carrying and supporting the ingot, substantially as set forth.

6. In a rolling-mill, the combination of a roller mandrel having two or more mandrel-rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing-rolls, adjusting-gearing for simultaneously setting up toward a common center all of the external compressing-rolls, idler carrying-rolls for carrying and supporting the ingot, and adjusting-gearing for adjusting the vertical set of said carrying-rolls, substantially as and for the purposes set forth.

7. In a rolling-mill, the combination of a roller mandrel having two or more mandrel-rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing-rolls, gearing for positively driving said compressing-rolls, a prime mover for actuating said gearing, adjusting-gearing for simultaneously setting up toward a common center all of the external compressing-rolls, idler carrying-rolls for carrying and supporting the ingot, and adjusting-gearing for adjusting the vertical set of said carrying-rolls, substantially as and for the purposes set forth.

8. In a rolling-mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, and a series of sets of external compressing-rolls corresponding in number with the mandrels, the rolls of said respective sets being alternated or interdisposed as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, substantially as set forth.

9. In a rolling-mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing-rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, gearing for positively driving said compressing-rolls, and a prime mover for actuating said gearing, substantially as set forth.

10. In a rolling-mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing-rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, and adjusting-gearing for simultaneously setting up toward a common center all of the compressing-rolls of all of the sets, substantially as set forth.

11. In a rolling-mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing-rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, gearing for positively driving said compressing-rolls, a prime mover for actuating said gearing, and adjusting-gearing for simultaneously setting up toward a common center all of the compressing-rolls of all of the sets, substantially as set forth.

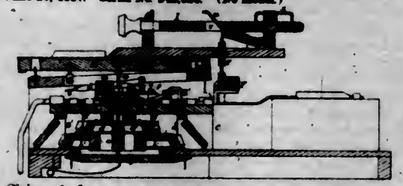
12. In a rolling-mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing-rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, and idler carrying-rolls for carrying and supporting the ingots, substantially as set forth.

13. In a rolling-mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing-rolls corresponding with the number of mandrels, the rolls

of said respective sets being alternated or interdisposed as set forth, and operating in connection with corresponding rolls of corresponding mandrels, adjusting-gearing for simultaneously setting up toward a common center all of the external compressing-rolls, idler carrying-rolls for carrying and supporting the ingot, and adjusting-gearing for adjusting the vertical set of said carrying-rolls, substantially as set forth.

14. In a rolling-mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing-rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed as set forth, and operating in connection with corresponding rolls of corresponding mandrels, gearing for positively driving the sets of external compressing-rolls, a prime mover for actuating said gearing, adjusting-gearing for simultaneously setting up toward a common center all of the external compressing-rolls, idler carrying-rolls for carrying and supporting the ingot, and adjusting-gearing for adjusting the vertical set of said carrying-rolls, substantially as set forth.

382,018. REED-ORGAN. ISRAEL B. TAYLOR, Boston, Mass. Filed June 27, 1887. Serial No. 242,693. (No model.)

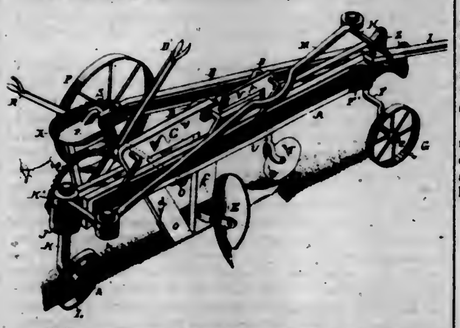


Claim.—1. In a reed-organ, the combination, with each stop I, having the slot *v*, as described, and with the valve-operating lever E of such stop, of the goose-neck *u*, arm H, and push-pin *t*, the latter being applied to the said lever, as specified.

2. The combination of the key A, having the adjustable-button *c*, the push-pin *a*, valve *b*, lever *d*, fulcrumed in the movable bar B, said bar being supported at its ends in the arms *d'*, which arms are pivoted to the ends of the case, the lever *h*, connected to lever *d* by link *g*, and the button *l* on the push-pin *a* and concentric therewith.

3. The combination of the movable bar B, shaft *n*, having an arm, *p*, provided with cranks *o*, and pivoted to the bar B, board *m*, arm *q* of the lever E, which lever has an arm, *r*, the bar F, operated by the arm *b* of shaft *s*, and the series of crank-levers E', whereby all the valves of the several sets of reed-chambers can be simultaneously opened.

382,019. THREE-WHEEL RIDING-PLOW. STEPHEN B. TOLSON and JAMES C. TOLSON, Kansas City, Mo. Filed Dec. 16, 1887. Serial No. 258,108. (No model.)



Claim.—1. The combination, in a wheel riding-plow, of the supporting-wheels and beam, colter and plow carrying frames or standards, a series of pivoted links loosely connecting the plow and colter carrying frames to the beam, and a hand-lever connected with one of said links, whereby the same are operated in unison to simultaneously raise and lower the colter and plow, substantially as described.

2. In a wheel-plow, the combination, with suitable supporting-wheels and beam, of the plow and colter carrying frames or standards, and a series of pivoted links loosely connecting said plow and colter carrying frames to the beam, said links having their free ends oscillating above the beam, to which they are pivoted, in the manner and for the purpose described.

382,020. CANTEEN. BERNICE A. TEEL, Helena, N. Mex. Filed July 21, 1887. Serial No. 244,909. (Model.)



Claim.—A canteen having two compartments, one for liquid, the other for solid food, the two compartments being divided by a partition and detachably united together, the solid-food compartment being provided with vessels having sliding covers which conform in shape to the compartment, and the liquid-compartment provided with a nozzle, substantially as described.

382,021. VAPOR-STOVE. J. BENNETT WALLACE, Chicago, Ill., assignor to George M. Chart & Company, same place. Filed Nov. 10, 1887. Serial No. 255,612. (No model.)



Claim.—1. The combination, with the non-generating burners of a vapor-stove and the two-part feed-pipe by which they are supplied, of a damper-valve, G, constructed with beveled edges *e* and located in said pipe at the junction of the parts thereof, substantially as specified.

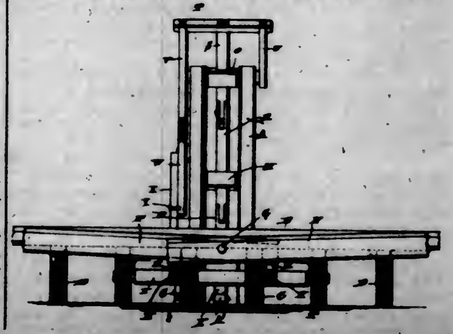
2. In a vapor-stove, the combination, with the feed-pipe C *c*, carrying the non-generating burners, the part C having its end bored to render it true for the valve and the end of the part *c*, of a valve, G, having bevel-surfaces *e* and located within such prepared part of the pipe C, substantially as specified.

3. In a vapor-stove, a feed-pipe made in two parts, C and *c*, each carrying a non-generating burner, the part C being interiorly bored from one end to the point *g*, as set forth, and the part *c* being fitted in such bored end, in combination with a valve, G, located in the bored portion of part C and controlling the further of said burners, substantially as specified.

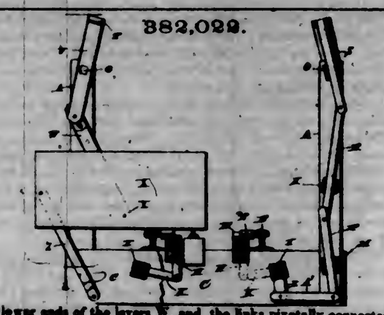
382,022. RAILROAD OR FARM GATE. NATHAN WISNER and SIDNEY R. SHAVER, Ingram, Ark. Filed Dec. 19, 1887. Serial No. 258,261. (No model.)

Claim.—1. The combination of the jump-gates, the links Z, connected to the outer ends thereof and to fixed points, the operating-rails adapted to be actuated by the wheels of a passing train, the levers W, pivotally connected to the gates near the centers thereof, and connections between the said levers and the operating-rails, whereby, when the operating-rails are actuated, the gates will be opened, substantially as described.

2. The combination of the operating-rails, the rock-shafts, connections between the said rails and the said rock-shafts, the series of connected levers P, R, and S, the jointed levers V W, connected to and operated by the said series of levers, connections between the levers P and the rock-shafts, the jump-gates X, pivotally connected to



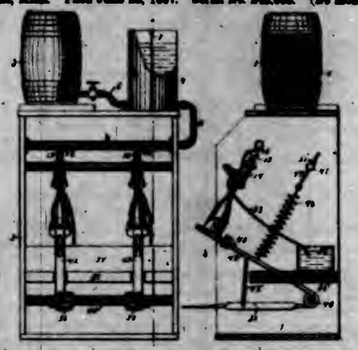
382,022.



the lower ends of the levers W, and the links pivotally connected to the outer ends of the jump-gates, substantially as described.

3. The operating-rails E F, fulcrumed together near their inner ends and arranged alongside the track-rails, whereby the outer ends of the rails E F will be elevated so as to be operated upon by the wheels of a passing train, in combination with the rock-shaft I, connected to the rails E F, the jump-gates X, the links Z, pivotally connected to the gates, the levers W, connected to the gates, and the system of levers between the rock-shaft I and the levers W, for the purpose set forth.

382,023. BEER-BOTTLING MACHINE. JOHN C. RAUER, Minneapolis, Minn. Filed June 22, 1887. Serial No. 242,092. (No model.)



Claim.—1. In a bottle-filling machine, the combination, with the filling-pipe, of the plunger 15, having an opening through it and having the inclined lower face, the slide-valve 17, having the opening 18 and having the inclined face bearing against the inclined face of the plunger, and the spring 27, bearing against said slide, all substantially as described.

2. The combination, in a bottling-machine, with the filling-pipe, of the plunger 15, having an opening, 16, communicating with said pipe, the valve-case sliding on said plunger, and the cut-off slide 17, arranged in said case and provided with the opening 18, all substantially as described.

3. The combination, in a bottle-filling machine, with the plunger 15, having the inclined lower end, and the slide 17, having the inclined face bearing against the lower end of said plunger, of the vertically-sliding valve-case 14, provided with the opening 26, and the rubber gasket 30, all substantially as described.

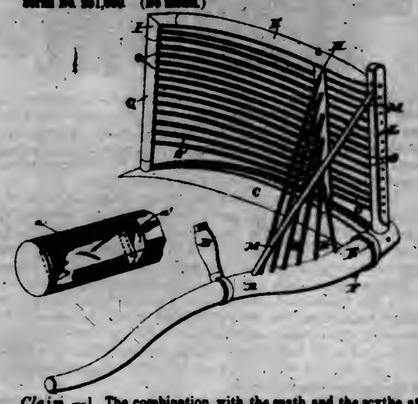
4. The combination, in a bottle-filling machine, of a stationary plunger, a movable case surrounding said plunger and adapted to receive the end of a bottle-neck, the cut-off slide located in said case, and the spring-valve connected with the case below said slide, substantially as described.

5. The combination, in a bottle-filling machine, with the filling-pipe, of the sliding cut-off valve, the air-outlet valve 23, connected therewith and provided with the pipe 33, and a bottle-support, substantially as described.

6. The combination, in a bottle-filling machine, of a cut-off valve adapted to be opened by the pressure of a bottle-neck against it, an adjustable bottle-support, an adjustable spring connected with said bottle-support and drawing it toward said valve, and a treadle connected with said lever for withdrawing the same, all substantially as described.

7. The combination, in a bottle-filling machine, of a cut-off valve having its lower end provided with a central cushion or packing and adapted to make an air-tight joint with a bottle-mouth, and an escape-valve arranged below the cut-off and provided with a tube extending into a suitable receptacle adapted to contain a supply of water, whereby the air in the bottle may be allowed to escape while the carbonic-acid gas is retained and the outside air is prevented from coming in contact with the liquid, substantially as described.

382,024. GRAIN-CRADLE. JOSHUA BAILEY, Jonesborough, Ga., assignor of one-half to F. G. Bates, same place. Filed Sept. 20, 1887. Serial No. 251,082. (No model.)



Claim.—1. The combination, with the snath and the scythe attached thereto, of the uprights G and H, secured at their lower ends to the scythe respectively near its outer and inner ends, the socket-piece I, having its vertical arm arranged on the upper end of the upright G, the top finger, K, secured to the upper end of the upright H and inserted at its outer end in the horizontal arm of the socket-piece, the said fingers being extended inward beyond the upright H, the upright L, secured to the lower end of the snath and attached at its upper end to the inner end of the finger K, the fingers O, secured at their inner ends in the upright L and at their outer ends in the upright G, and passing at their intermediate points through the upright H, the brace M, extending from the upper end of the upright L to the snath, and the brace N, extending from intermediate points of the upright H to the snath, substantially as specified.

2. In a grain-cradle, the combination of the snath and the scythe secured thereto, the outer and inner uprights, G and H, secured at their lower ends to the scythe, the top finger, K, connecting the upper ends of the said uprights and extending inward beyond the inner upright, the upright L, attached at its lower end to the snath, and having an aperture in its upper end to receive the inner end of the finger K, the fingers O, passing through the upright H at intermediate points of its length and secured at their ends, respectively, to the uprights G and L, the brace M, inserted at its ends in apertures in the upright L and the snath, and the brace N, inserted at their ends in apertures at intermediate points of the upright H and the snath, substantially as and for the purpose hereinbefore specified.

382,025. MACHINE FOR SETTING STAPLES. WILLIAM J. BROWN, Jr., Philadelphia, Pa., assignor to the Wire Staple Company, same place. Filed Oct. 20, 1886. Serial No. 217,502. (No model.)



Claim.—1. The combination, in a machine for inserting and clinching metallic staples by a single movement, of a staple-case through which staples are presented and driven, a reciprocating driver moving in said staple-case, an adjustable anvil secured to a spindle or arm, and a revolving cam adapted to operate on said anvil to bring it into greater or less proximity to the mouth of the staple-case and clamp the material to be fastened, substantially as set forth.

2. The frame or base B, with its arm A, staple-case C, driver D, adjustable anvil E, and revolving cam H, constituting a staple inserting and clinching device, substantially as described.

882,026. TURBINE WATER-WHEEL. NATHAN F. DURNBAR, York, Pa. Filed Dec. 17, 1887. Serial No. 258,177. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the turbine water-wheel case, the gate inclosed therein, the gate-arms, their central spindle or journal, the cover over the case, and the arms secured to the cover near its outer margin, interposed between the cover and gate, and provided with a central ring to form a bearing for the gate-arms, for the purposes specified.

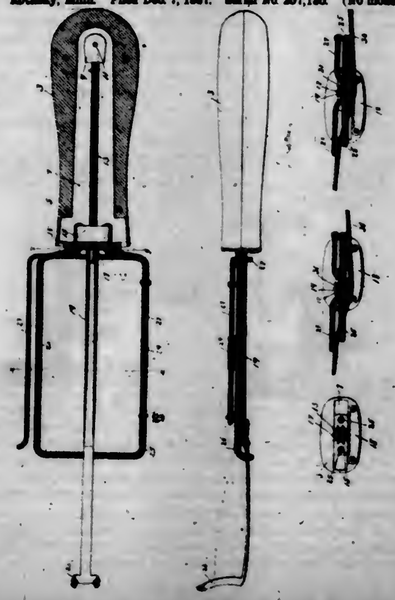
2. The combination, substantially as hereinbefore set forth, of a turbine water-wheel case, the gate inclosed therein, the gate-ring, the recesses on its inner margin, the gate-arms, their central journal, the cover over the case, the cover-arms interposed between the cover and gate, and the lugs on the cover-arms bearing on the gate in the recesses of the gate-ring to limit both its vertical and lateral movement.

3. The combination, substantially as hereinbefore set forth, of the turbine water-wheel case, the gate inclosed therein, the gate-ring, the gate-arms, their central journal, the cover over the case, the arms secured to the cover near its outer margin and interposed between the cover and gate, the rack on the top of the gate-ring, and the worm on the case meshing therewith.

4. The combination, substantially as hereinbefore set forth, of the turbine water-wheel case, the gate inclosed therein, the gate-arms, their central journal, the cover over the case, the arms interposed between the cover and case, the central ring on the cover-arms forming the bearing for the gate-arms' journal, the set-screws passing horizontally through the cover and abutting against the ends of the cover-arms, and the vertical set-screws passing through slots in the cover into lugs on the cover-arms to insure accurate centering and adjustment of the gate-ring.

5. The combination, substantially as hereinbefore set forth, of the cover, the cover-arms, the adjusting-screws passing horizontally through the cover and abutting against the ends of the cover-arms, slots in the cover near its outer edge, lugs on the cover-arms, and set-screws passing through said slots to connect the cover and its arms and to permit of their relative adjustment.

882,027. DEVICE FOR SHARPENING RAZORS. PETER J. CARMAN, Rothsay, Minn. Filed Dec. 7, 1887. Serial No. 257,180. (No model.)



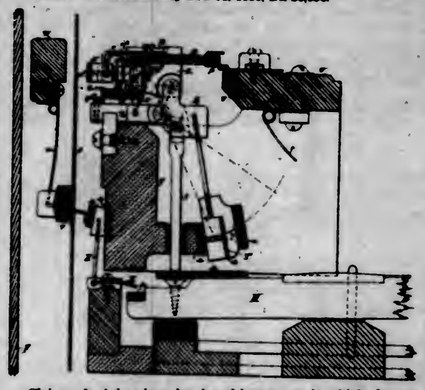
Claim.—1. The combination, with the recessed handle 3, provided with the rack-bar 18, of the shaft 13, pivotally secured within the recess of said handle and provided with the pinion 17, engaging said rack-bar, and the razor-holder 19, secured to said shaft, substantially as described.

2. The combination, with the recessed handle 3, provided with the rack-bar 18, of the shaft 13, pivotally secured within the recess of said handle and provided with the pinion 17, engaging said rack-bar, and the razor-holder 19, secured to said shaft, substantially as described.

3. The combination, with the recessed handle 3, provided with the rack-bar 18, of the shaft 13, pivotally secured within said recessed handle and provided with the pinion 17, engaging said rack-bar, the razor-holder 19, secured upon said shaft, and the frame 25, secured upon said shaft and extending upon opposite sides of said razor-holder.

4. The combination, with the recessed handle 3, provided with the rack-bar 18, of the shaft 13, pivotally secured within said handle and provided with the pinion 17, engaging said rack-bar, the razor-holder secured to said shaft, the frame 25, and the spring friction-clamp 27, all substantially as described.

882,028. KEY-BOARD MUSICAL INSTRUMENT. ANDREA LUIGI CALDERA, Turin, Italy. Filed June 30, 1887. Serial No. 242,982. (No model.) Patented in Italy Dec. 31, 1886, No. 20,950.



Claim.—1. A key-board stringed instrument in which the string is vibrated by the direct thrust of a knee-jointed plectrum or mechanical finger whose pivotal center is parallel to the string, the said center receiving a motion toward the string, and the finger or plectrum, after being so moved forward to deflect the string, receiving an oscillating motion on its center, as specified.

2. In a key-board stringed instrument in which the string is vibrated by the direct thrust of a plectrum or finger moving in two directions, as herein described, the combination, with the said plectrum or finger, of a weighted arm acting as a store of power to overcome the resistance of the string to the motion of the plectrum or finger, and as a means of quickly returning the "action" to the normal position after the string has been vibrated, substantially as specified.

3. In a key-board stringed instrument, the combination of the finger N, the pivoted arm M, the guide-pin *n*, and the spring connecting the finger N and arm M and forcing the former forward with an elastic or yielding pressure, substantially as and for the purpose specified.

4. In a key-board stringed instrument, the combination, with the yielding finger N and the elbow-lever M, pivoted on a center parallel to the string in a jack, L, having a motion perpendicular to the string, of the stop *r* on the jack for preventing the oscillation of the finger in one direction, the tie P, for producing the oscillation of the finger in the opposite direction on its forward motion, and the tie Q, for restoring it to its normal position on its return, as described.

5. In a key-board stringed instrument, the combination, with the yielding or spring finger N, and the elbow-lever M, carrying the same, pivoted in a jack, L, of the lever K, and radius-link O, for producing the longitudinal parallel motion of jack L, as specified.

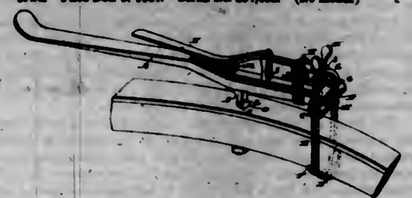
6. In a key-board stringed instrument, the combination, substantially as herein specified, of the spring-finger N, elbow-lever M, carrying the same and pivoted in a jack, L, ties P Q, controlling the elbow-lever, radius-link O, and lever K, guiding and actuating the jack L and the weighted arm T, acting as a store of power, as described.

7. In a key-board stringed instrument, the combination, substantially as herein specified, of the spring-finger N, elbow-lever M, carrying the same, and pivoted in a jack, L, ties P Q, controlling the elbow-lever, radius-link O, and lever K, guiding and actuating the jack L, the weighted arm T, acting as a store of power, and the spring *t*, acting as a cushion for the weight T and assisting it to return the action quickly to the normal position, as described.

8. In a key-board stringed instrument, the combination, with the spring plectrum or finger pivoted on a center parallel to the string supported in a jack moving in a direction perpendicular to the string and with the tapes for oscillating the finger on its center, of the springs *p* and *q*, for imparting elasticity to the action of the tapes, as specified.

9. In a key-board stringed instrument, a knee-jointed mechanical finger or plectrum acting on the string, as described, and having an acting face of felt beveled to an acute angle and projecting substantially as shown and described.

882,029. TIRE-BOLT HOLDER. THOMAS R. CASEY, Cedar Falls, Iowa. Filed Dec. 5, 1887. Serial No. 257,032. (No model.)



Claim.—1. In a bolt-holder, the combination of the handle A, having the stud D on its under side, and the hook-shaped jaws E E, pivoted to the handle and having the arms G G on their upper ends provided with finger-holds H H, substantially as specified.

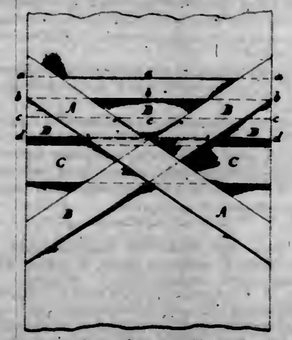
2. In a bolt-holder, the combination of the handle A, having the depending stud D, the jaws E E, pivoted to the handle, and the lever K, connected at one end to the jaws, substantially as and for the purpose specified.

3. In a bolt-holder, the combination of the handle having the depending stud D, the jaws E E, having the arms G G, and the lever K, having the fork L, engaging the said arms, whereby the jaws may be operated by the hand which grasps the handle, substantially as specified.

4. In a bolt-holder, the combination of the handle A, having the depending stud D, the jaws E E, pivoted to the handle and having the arms G G, and the spring-actuated lever pivoted on the upper side of the handle and engaging the arms G G, whereby the jaws are normally held open, substantially as specified.

5. In a bolt-holder, the combination of the handle A, having the depending stud D, the jaws pivoted to the handle and having the arms G G, the standard I on the handle, the lever K, pivoted to the end of the said standard and engaging the arms G at one end, and the spring M, secured to the handle and bearing against the lever, substantially as and for the purpose specified.

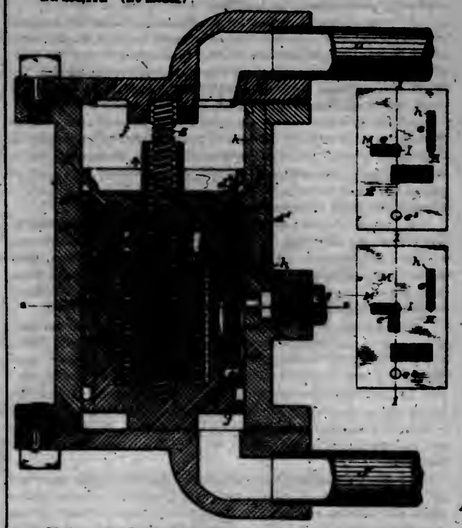
882,030. PANTALOONS. HENRY T. CARLEY, Trenton, N. J. Filed Sept. 30, 1887. Serial No. 250,670. (No model.)



Claim.—1. A pair of pantaloons provided with a knee-protector consisting of bands of inelastic woven fabric crossing each other at angles and stitched at their ends to the side seams of the leg of the garment, and having at the upper side thereof a cross-band stitched to the cloth of the garment at its upper edge and containing a loose horizontal fold opening upwardly, substantially as shown and described.

2. A pair of pantaloons provided with a knee-protector made of inelastic bands of woven fabric crossing each other at angles and fastened to the garment at the side seams of the leg, and having an upper horizontal band containing a loose fold running lengthwise of the band, substantially as shown and described.

882,031. AIR-BRAKE. THOMAS S. B. DEVOE, Chicago, Ill., assignor of one-half to Lysander Hill, same place. Filed Dec. 16, 1887. Serial No. 258,111. (No model.)



Claim.—1. In an air-brake system having an air-reservoir for each car and in which the movement of compressed air to and from the brake-cylinder is governed by a sliding piston actuated by varying the air-pressure in the train-pipe, the combination of the piston, the train-pipe, and the auxiliary reservoir K, not used for service-stops or grading purposes, but for applying air-pressure to the inner end of the piston, and of such capacity that its pressure is practically unaffected by the movements of the piston, substantially as described, whereby the initial pressure against the inner end of the piston is maintained substantially undiminished during the entire outward traverse thereof.

2. In an air-brake system having an air-reservoir for each car and in which the movement of the compressed air to and from the brake-cylinder is governed by a sliding piston actuated by varying the air-pressure in the train-pipe, the combination of the piston and ports with a storage-reservoir for ordinary service purposes and a separate reservoir for applying a practically uniform air-pressure to the inner end of the piston, substantially as described.

3. In an air-brake system in which the movement of the compressed air to and from the brake-cylinder is governed by a sliding piston actuated by varying the air-pressure in the train-pipe above the normal atmospheric pressure, the combination of the piston and ports with a storage-reservoir for ordinary service purposes and an independent reservoir for emergency-stops, both of which are controlled by the movement of a single piston, substantially as described.

4. In an air-brake system in which the movement of the compressed air to and from the brake-cylinder is governed by a sliding piston actuated by varying the air-pressure in the train-pipe above the normal atmospheric pressure, the combination of the piston with the service-reservoir and its port, all of which are controlled by the movements of a single piston, and with an independent emergency-reservoir and its port, substantially as described.

5. In an air-brake system in which the movement of the compressed air to and from the brake-cylinder is governed by a sliding piston actuated by varying the air-pressure in the train-pipe, the combination of the piston and its ports with a storage-reservoir for ordinary service purposes, and with an independent reservoir or reservoirs for applying air-pressure to the inner end of the piston and for emergency-stops, substantially as described.

6. In an air-brake system having an air-reservoir for each car, the combination, with the train-pipe and brake-cylinder, of two or more reservoirs under each car and a controlling-valve and ports operated by a piston and adapted for the admission of air from either of said reservoirs at will to the brake-cylinder, substantially as described.

7. In an air-brake system having an air-reservoir for each car, the combination of two or more storage-reservoirs with a valve and its ports attached to a piston, which at different points of its traverse

successively discharge their contents into the brake-cylinder, substantially as described.

8. In an air-brake system, the combination of a port-controlling piston with two storage-reservoirs which, through different ports in the piston, discharge into the brake-cylinder at different positions of said piston, substantially as described.

9. In an air-brake system, the combination of a service-reservoir and an independent reservoir with a valve and its ports attached to a piston and so arranged that the air in the independent reservoir is applied in a substantially uniform pressure upon the piston between the limits of its traverse and is discharged into the brake-cylinder at the outer end of such traverse, substantially as described.

10. In an air-brake system, the combination of two or more storage-reservoirs with a piston and ports capable of admitting air from either of said reservoirs at will to the brake-cylinder, said piston being subject at one end to the variable air-pressure of the train-pipe and at the other end to an air-pressure which is substantially uniform between the limits of its traverse, as herein set forth.

11. In an air-brake system, the combination of the port-controlling piston, the train-pipe, and an independent reservoir whose contents are not subject to depletion or variation for service-steps, grading, or the governing of the piston, but are employed to furnish a uniform pressure against the inner end of the latter between the limits of its entire traverse, substantially as described.

12. In an air-brake system in which the movement of the compressed air to and from the brake-cylinder is governed by a sliding piston actuated by varying the air-pressure in the train-pipe, the combination of the train-pipe, brake-cylinder, car-reservoir, and a valve and its ports attached to a piston and arranged to as to open the brake-release port and discharge the brake-cylinder when the piston is at an intermediate position between the extreme ends of its traverse and to close the same when at the end of its traverse, substantially as described.

13. In an air-brake system, the combination of a service-reservoir, an emergency-reservoir, and a train-pipe and brake-cylinder with a valve and its ports attached to a piston and arranged so that it at one end of its traverse vents air from the emergency-reservoir to the brake-cylinder, at an intermediate position vents air from the service-reservoir to the brake-cylinder, and at another intermediate position discharges the air from the brake-cylinder, substantially as described.

14. In an air-brake system, the combination of the port-controlling piston with a graduated series of springs arranged to apply yielding resistances at different points along its traverse corresponding to the several ports, whereby it is adapted to temporarily hold said ports open or closed, substantially as described.

15. In an air-brake system, the combination of the train-pipe, brake-cylinder, and car-reservoir with a valve and its ports attached to a piston which at one extremity of its traverse holds the discharge-port of the brake-cylinder closed, at an intermediate position between the ends of its traverse holds said port open, and at another position admits air from a reservoir to the brake-cylinder, substantially as described.

16. In an air-brake system, the combination of a service-reservoir, an emergency-reservoir, a train-pipe, and a brake-cylinder with a valve and its ports attached to a piston which at one end of its traverse holds the brake-cylinder closed, at the other end of its traverse vents air from the emergency-reservoir to the brake-cylinder, at one intermediate position vents air from the service-reservoir to the brake-cylinder, and at another intermediate position discharges air from the brake-cylinder, and a series of springs to temporarily hold the piston in its required positions for operating the intermediate service and release ports, substantially as described.

17. In an air-brake system, the combination of a port-controlling valve attached to a piston subject throughout its traverse to a substantially uniform pressure against its inner end with a series of differential springs acting successively against said uniform pressure, substantially as described.

18. In an air-brake system, the combination of two or more storage-reservoirs, a piston and ports capable of admitting air from either of said reservoirs at will to the brake-cylinder, and a graduated series of springs to hold the piston temporarily at different points in its traverse, substantially as described.

19. In an air-brake system, the combination of two or more storage-reservoirs, a piston-valve and ports capable of admitting air from either of said reservoirs at will to the brake-cylinder, said piston being subject at one end to the variable air-pressure of the train-pipe and at the other end to a pressure substantially uniform throughout its traverse, and a graduated series of springs to hold the piston temporarily at different points in its traverse, substantially as described.

20. In an air-brake system, the combination of a train-pipe, brake-cylinder, air-reservoir, and ports connecting the same with a valve controlling said ports and operated by a piston so arranged as to discharge the brake-cylinder at a position intermediate between the extreme ends of the traverse of the piston, with a spring or weight arranged to cooperate in the restoration of the piston to its normal position at the end of its traverse when the pressure is increased in the train-pipe, whereby this restoration may be effected without releasing the brakes, substantially as described.

21. In an air-brake system, the combination of a port-controlling piston which at a position intermediate between the extreme ends of its traverse opens the release-port to discharge the brake-cylinder and release the brakes with a resistance-spring arranged to temporarily arrest the movement of the piston at the point where it opens said release-port, substantially as described.

22. In an air-brake system, the combination of separate service and emergency reservoirs on each car, and ports with a piston and valve governing said ports, and a resistance-spring adapted to temporarily arrest the movement of the piston at the point where it opens the service-port, substantially as described.

23. In an air-brake system, the combination of a service-reservoir, a piston whose inner end is subject to a substantially uniform pressure between the limits of its traverse, a release-port opened by the piston at an intermediate point in its traverse, and a spring to temporarily arrest the movement of the piston at the point where it opens said release-port, substantially as described.

24. In an air-brake system, the combination of a service-reservoir, a piston whose inner end is subject to a substantially uniform pressure between the limits of its traverse, and a resistance-spring to arrest the piston at the service-port from the service-reservoir to the brake-cylinder and enable the latter to be held open or closed at will, substantially as described.

25. In an air-brake system, the combination of a train-pipe, brake-cylinder, and car-reservoir and ports connecting the same, and a valve controlling the ports and attached to a piston with two or more springs which apply their resistance to the piston in the same direction, and which, as the piston moves in its traverse, come successively into action, substantially as described.

26. In an air-brake system, the combination of a train-pipe, brake-cylinder, and car-reservoir and ports connecting the same, and a valve controlling the ports and attached to a piston operating under a substantially uniform pressure upon its inner end, with two or more springs which come successively into action against its outer end to resist said pressure, substantially as described.

27. In an air-brake system, the combination of the piston and ports, spring S or weight, the springs S' S", the reservoirs, and the train-pipe, arranged to operate substantially as described.

28. In an air-brake system in which the piston releases the brakes when at an intermediate position between the extreme ends of its traverse, the combination of the cock *n* with the separate open-air port M' and the normal open-air port M, whereby the piston may be enabled to release the brakes when at the inner end of its traverse or when in said intermediate position, substantially as described.

29. In an air-brake system, the combination of a port-controlling piston with an open-air port, M, which, when unobstructed, causes the brakes to be released when the piston is at a position intermediate between the ends of its traverse, an open-air port, M', which, when unobstructed, causes the brakes to be released when the piston arrives at the inner end of its traverse, and means for putting either of said open-air ports under the control of the piston and withdrawing the other from its control so long as it may be desirable so to do, substantially as described.

30. The combination of the movable hollow piston D with the sliding ring 1, flange or plate 3, stem 4, and springs S' S", substantially as described.

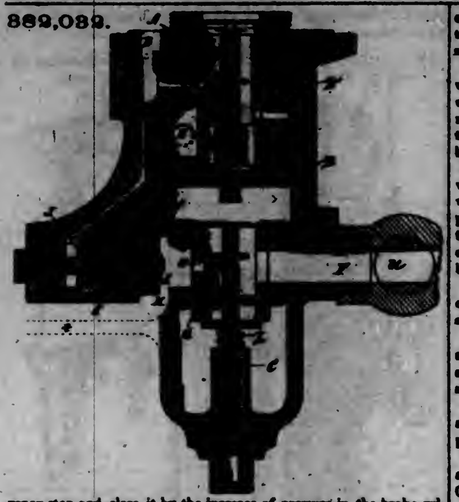
31. In an air-brake system, the combination of a train-pipe, brake-cylinder, air-reservoir, and ports connecting the same, and a valve controlling the ports and operated by a piston, with two slides and two springs acting, respectively, upon said slides, and arranged so that the piston in its movement successively encounters the resistance of said springs, substantially as described.

382,082. AIR-BRAKE FOR RAILROAD-CARS. THOMAS S. B. BENDS, Chicago, Ill., assignor of one-half to LYMANDER BEE, same place. Filed Dec. 16, 1887. Serial No. 258,112. (No model.)

Claim.—1. The combination of the brake-cylinder, the train-pipe, the car-reservoir, and the main valve-operating piston with a passage leading from the train-pipe to the open air for locally venting the train-pipe to the atmosphere, and with means whereby said passage is opened by preliminarily lowering the pressure in the train-pipe in applying the emergency-step, and closed by a sufficient increase of pressure in the brake-cylinder, substantially as described.

2. The combination of the brake-cylinder, the train-pipe, the car-reservoir, and the main valve-operating piston with a passage leading from the train-pipe to the open air for locally venting the train-pipe to the atmosphere, and a valve or valves which open said passage by the movement of the main valve-operating piston in applying the emergency-step and close it by the increase of pressure in the brake-cylinder, substantially as described.

382,082.



3. The combination of the brake-cylinder, the train-pipe, the car-reservoir, and the main valve-operating piston with a passage leading from the train-pipe to the open air for locally venting the train-pipe to the atmosphere, and a valve which opens said passage when the main valve-operating piston opens the emergency-port, and which is controlled by the movement of that piston, substantially as described.

4. The combination of the brake-cylinder, the train-pipe, the car-reservoir, and the main valve-operating piston with a passage leading from the train-pipe to the open air for locally venting the train-pipe to the atmosphere in applying the emergency-step, and a valve which closes said passage by the pressure of the air in the brake-cylinder, substantially as described.

5. The combination, in a fluid-brake mechanism, of a train-pipe, brake-cylinder, air-reservoir, and a main valve-operating piston, B, with a discharge-passage leading from the train-pipe to the open air, provided with a valve, which is operated by the final movement of the piston B in applying the brakes for emergency-stops, thereby venting the train-pipe to the atmosphere, substantially as described.

6. The combination of the brake-cylinder, the train-pipe, the car-reservoir, the main valve-operating piston, the passage leading from the train-pipe to the open air for locally venting the train-pipe directly to the atmosphere in applying the emergency-step, and the valve for closing said passage by an increase of pressure in the brake-cylinder, with a spring or its equivalent to aid in holding said passage open against the increasing pressure of the brake-cylinder, substantially as described.

7. In a fluid-brake mechanism, the combination of the main piston B with a supplementary piston, N, and a single valve operated by said pistons whose movement opens and closes the local discharge-passage leading from the train-pipe to the atmosphere, substantially as described.

8. In a fluid-brake mechanism, the combination of the main piston B with a valve operated thereby to open the local discharge-passage leading from the train-pipe to the atmosphere, and a supplementary piston for operating said valve to close said discharge, substantially as described.

9. In a fluid-brake mechanism, the combination of the main piston B with a valve operated thereby to open the local discharge-passage leading from the train-pipe to the atmosphere, and a supplementary piston, which under the influence of the brake-cylinder pressure operates said valve to close said discharge, substantially as described.

10. In a fluid-brake mechanism in which the movement of air to and from the brake-cylinder is controlled by a main valve-piston, the combination of an auxiliary piston actuating a valve which vents the train-pipe to the atmosphere, with a packing-ring or seat for the purpose of preventing the movement of the piston until a substantial difference of pressure upon its opposite sides has been attained without impairing by a continuance of the differential action the force of the movement of the piston when once it is initiated, substantially as described.

11. In a fluid-brake mechanism, the combination of the main *r* with the auxiliary piston N, which operates to close the local discharge, whereby said discharge is held open after the pressure in the brake-cylinder equals that in the train-pipe, but is effectually closed when the train-pipe pressure becomes further reduced, substantially as described.

12. In a fluid-brake mechanism, the combination of the main *r* with the auxiliary piston N, which operates to close the local discharge, whereby said discharge when closed is held closed during the readmission of air to the train-pipe, even under a greater pressure in the train-pipe than in the brake-cylinder, and until the pressure in the brake-cylinder is reduced, substantially as described.

13. In a fluid-brake mechanism, the combination of the main *r* with the auxiliary piston N, which operates to close the local discharge, whereby said discharge is held open until the pressure in the train-pipe is less than that in the brake-cylinder, is then effectually closed through the further decrease of pressure in the train-pipe, and remains closed until by the discharge of the brake-cylinder the pressure therein becomes less than that in the train-pipe, substantially as described.

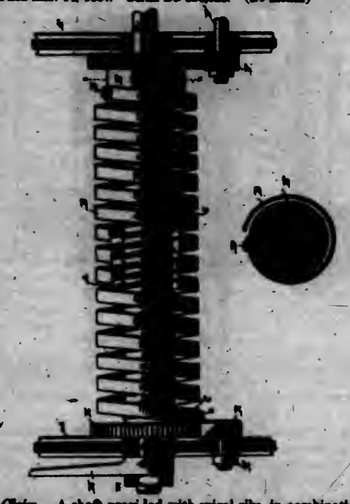
14. In a fluid-brake mechanism, the combination of the valve-carrying thimble O with a stem, *b*, and spring P, substantially as described.

15. In a fluid-brake mechanism, the combination of the piston B and valve G and the valve-carrying thimble O with the stem *b* and spring P, and with the ring Q and its spring Q', substantially as described.

16. In a fluid-brake mechanism, the combination of the piston B and valve G and the valve-carrying thimble O and its pin *o* with the piston N and its stem N', substantially as described.

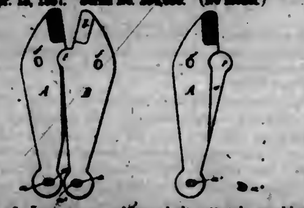
17. In a fluid-brake mechanism, the combination of the piston B and valve G and the piston-rod N' with the hollow stem *b*, the thimble O, the pin *o*, and the spring P, substantially as described.

382,033. SHEEP-SHEARING. PHILIPPE A. DEMS, Paris, France. Filed Mar. 14, 1887. Serial No. 230,933. (No model.)



Claim.—A shaft provided with spiral ribs, in combination with a spring which is wound thereon and attached at one end to said shaft, a handle for rotating said shaft, a ratchet and retaining-pawl for holding the shaft as the spring is wound, a sleeve attached to the other end of said spring and rotating independently of said shaft, and gearing actuated by said sleeve, substantially as set forth.

382,034. BOLT-CUTTER. WILLIAM L. DUDDERS, Paterson, N. J. Filed Apr. 13, 1887. Serial No. 234,693. (No model.)

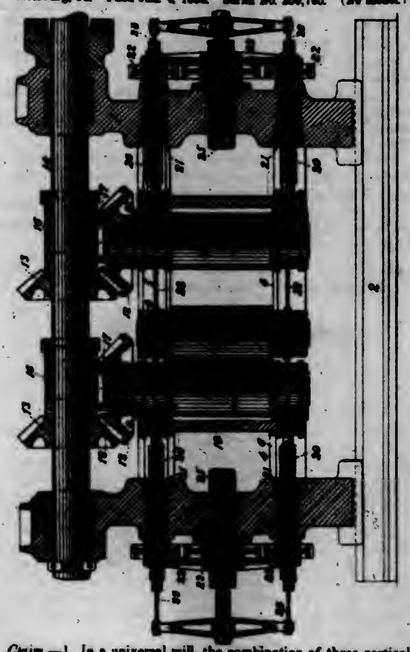


Claim.—1. In a compound-lever bolt-cutter, in combination with the handles H H, the cutting-levers A B, having their inner ends provided with the elliptical opening *a'* and adjusting-piece *a*, the latter

being of such size and shape that when placed in either end of said elliptical opening it will make and keep said opening circular in form and adapted to shift the center of said circular opening inward or outward, substantially as described, and for the purposes set forth.

2. As a new article of manufacture, the compound-lever bolt-cutter herein described, consisting of the following elements, viz: the handles H H, pivoted to each other and to the cutting-levers A B, the latter being pivoted to the plates P C and hinged to each other, and being provided at their outer ends with the jaws *b b*, and at their inner ends with the elliptical openings *a'*, the said plates P C, and the adjusting-pieces a^2, all constructed and arranged substantially as described, and for the purposes set forth.

382,035. ROLLING-MILL. JOSEPH FAWELL and JAMES HEMPHILL, Pittsburg, Pa. Filed Jan. 4, 1888. Serial No. 259,785. (No model.)



Claim.—1. In a universal mill, the combination of three vertical rolls, the outer rolls being positively driven and the intermediate roll being driven by or from one of the outer rolls, substantially as set forth.

2. In a universal mill, the combination of three vertical rolls, driving mechanism connected to the upper ends of the outer rolls, and the intermediate roll driven by or from one of the outer rolls, substantially as set forth.

3. In a universal mill, the combination of three vertical rolls, bevel gear-wheels secured to the upper ends of the outer rolls, correspondingly-shaped gears secured to the power, as described, and semicircular ribs connected to the gear-wheels on the power-shaft and engaging grooves in the gear-wheels on the rolls, substantially as set forth.

4. In a universal mill, the combination of three vertical rolls, the outer rolls being positively driven and the intermediate roll being movable and driven by or from either of the outer rolls, substantially as set forth.

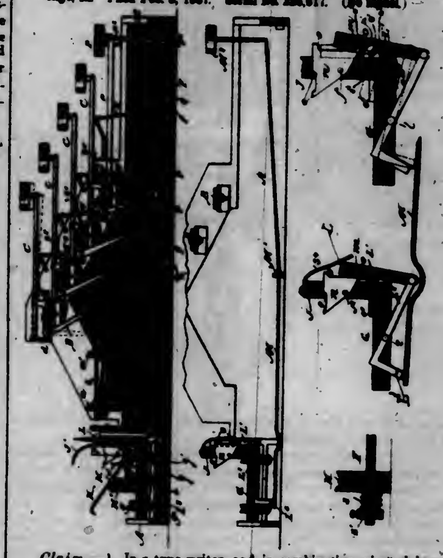
5. In a universal mill, the combination of three vertical rolls, the outer rolls being positively driven and the intermediate rolls held in frictional contact with one of the outer rolls and driven thereby, substantially as set forth.

6. In a universal mill, the combination of two positively-driven vertical rolls and an intermediate roll held in frictional contact with one of the outer rolls, said outer roll and the intermediate roll being provided with intermeshing pinions, substantially as set forth.

7. In a universal mill, the combination of two positively-driven vertical rolls, an intermediate roll, and a fluid-pressure mechanism for shifting and holding the intermediate roll in frictional contact with the outer rolls alternately, substantially as set forth.

8. In a universal mill, the combination of three-high horizontal rolls and three vertical rolls, the intermediate roll thereof being driven by or from one of the outer rolls, substantially as set forth.

382,036. TYPE-WRITING MACHINE. BERNARD GRANVILLE, Chicago, Ill. Filed Feb. 5, 1887. Serial No. 226,617. (No model.)



Claim.—1. In a type-writer, and in combination, pivoted key-levers substantially horizontal in the machine, sliding and converging type-bars, also substantially horizontal, having type on their end faces, and intermediate connections between the key-levers and the type-bars, a laterally-moving carriage, and a platen in rear of, opposite to, and facing the ends of the type-bars, and an inking mechanism, all substantially as and for the purpose described.

2. In a type-writer, and in combination, pivoted key-levers substantially horizontal in the machine, sliding and converging type-bars, also substantially horizontal, having type on their end faces, and intermediate connections between the key-levers and the type-bars, a laterally-moving paper-carriage, and a platen in rear of, opposite to, and facing the ends of the type-bars, and a vertically-arranged and rotating ink-disk, all substantially as and for the purpose described.

3. The combination of the plates *a a'*, provided with holes a^6, in convergent alignment, type-bars *b*, of uniform size corresponding to that of the holes a^6, bell-crank levers D, key-levers C, vibrating rods E, pendants *e'*, and rock-shaft F, provided with lateral arms, and mechanism for operating the carriage, substantially as specified.

4. The combination of the key-levers C, the vibrating bars E, the pendants *e'*, the rock-shaft F, located near the base of the machine and provided with lateral arms *f*, spring *s*, and arm f^3, the pawl *i'*, and the ratchet I, substantially as specified.

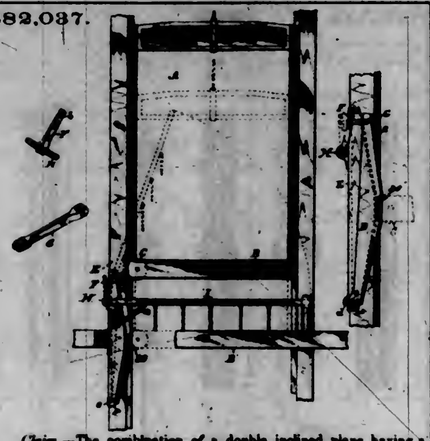
5. In a type-writing machine, the combination, with horizontal type-bars, and with a platen and a carriage provided with a ratchet-bar, I, and connected with a stationary part of the machine through a retractile spring, of the pawls *i i'* and the lever Q, having an upright bar, *q'*, provided with lugs *r*, engaging said pawls, said lever extending back to the key-board, where it is connected with a key, Q', as and for the purpose specified.

6. In a type-writing machine, the combination, with a group of convergent type-bars placed horizontally in the machine, of a platen and a rotary ink-disk supported vertically between the type and platen, with one edge covering the printing-point, and mechanism, substantially as shown, connecting the disk with the operating-keys, as and for the purpose specified.

7. The combination, with a vibrating frame and the upright pieces L', provided with a clamp, L, of cam-plates *o*, arranged to engage pins *m* on one side of the uprights and guide the motion of said uprights in one direction, and vibrating cams *n'*, arranged to engage with pins *m'* on the opposite side of the uprights and guide their motion in the other direction, substantially as specified.

382,037. HATCHWAY-GATE FOR ELEVATORS. CREWS M. GREENMAN, Wyandotte, Kans. Filed Dec. 5, 1887. Serial No. 256,961. (No model.)

382,037.



Claim.—The combination of a double inclined plane having a straight portion at the middle of its length, and arranged in the elevator-hatchway so that said straight portion will be opposite the floor of the building, said plane being pivoted at its lower end, so that its upper end may vibrate in a vertical plane, a rock-shaft extending at right angles to said inclined plane and provided with an arm extending at right angles from said shaft, a link which connects said arm to the upper end of said inclined plane, a radially-moving bar or gate, also extending at right angles from said shaft, and a roller carried by the platform of the elevator, which engages said inclined plane during the upward and downward movements of said platform, substantially as described.

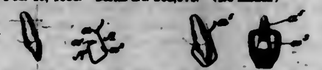
382,038. PRINTER'S RULE-CASE. MOSES C. HARRIS, San José, Cal. Filed Sept. 1, 1887. Serial No. 248,869. (No model.)



Claim.—1. A printer's rule-case having its boxes or compartments of less width than the height of rule, so that in no position can the rule or rules lie flat in the bottom of the case, but will always stand on edge at a greater or less angle of inclination with the bottom of the case.

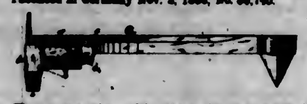
2. A printer's rule-case having its boxes or compartments of less sidewise diagonal than the height of a rule, substantially as set forth.

382,039. CERVIX-CLAMP. WOODBURY S. HOW, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Feb. 13, 1888. Serial No. 263,671. (No model.)



Claim.—The dental clamp having two jaws, one of which has two bearing points or surfaces for one side of a tooth and the other of which has a bearing point or surface for the opposite side of the tooth between said two bearing-points on the opposite jaw, substantially as described.

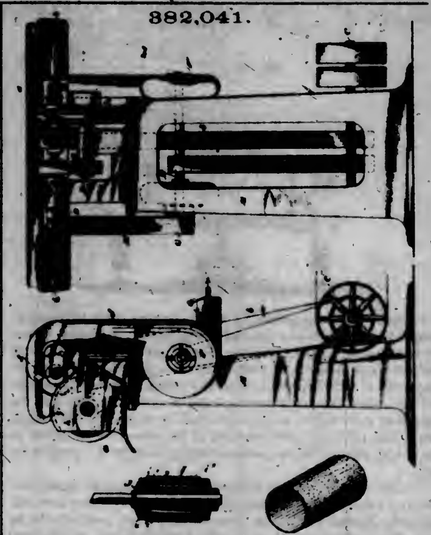
382,040. HORSESHOE. HERMANN JONAS and CARL HIRSCH, Dresden, Saxony, Germany. Filed June 28, 1887. Serial No. 242,773. (No model.) Patented in Germany Nov. 2, 1886, No. 39,765.



Claim.—The combination, with a horseshoe constructed with the tapered mortise *a*, the notch *b*, and the backward-extending hole *c*, of the removable toe-piece *d*, made narrow at its lower end and adapted to fit the mortise *a*, the screw-threaded shank *d'*, adapted to the cylindrical hole *c*, and the nut *e*, working upon the projecting end of said shank, substantially as and for the purpose set forth.

382,041. BUFFING-MACHINE. THOMAS E. KRAVY, Cleveland, assignor, by direct and mesne assignments, of one-half to Augustine A. Tibbals, Akron, Ohio. Filed July 5, 1887. Serial No. 243,344. (No model.)

Claim.—1. In a buffing-machine, a roll made of elastic material,



sheet-metal strips arranged within the roll to expand the same, and caps on the roll, which confine the ends thereof, substantially as set forth.

2. In a buffing-machine, an elastic roll, metallic spring-plates within the roll, a supporting-axle, adjustable caps on the roll to expand the same and to confine the ends, and a buffing-band upon the roll, substantially as set forth.

3. The process of cleaning a buffing-roll while at work and of removing the dust from about the roll at the same time, consisting in applying a blast of air to the surface of the roll at a tangent thereto opposite to the direction of rotation, and in maintaining an air-exhaust about said blast and buffer-roll to carry away the dust, substantially as set forth.

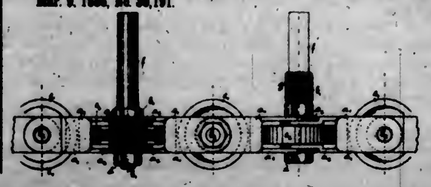
4. In a buffing-machine, the combination of a buffing-roll and a hood extending partly around the roll, and having a tube to maintain an exhaust about said roll, with air-blast mechanism having the jet or delivery point of the blast arranged to direct the air at a tangent to the surface of the buffing-roll, whereby the sand-paper is cleaned on the roll and the dust is removed, substantially as set forth.

382,042. PULLEY. WILLIAM H. KIRK, Kansas City, Mo., assignor of one-half to John Olden and John J. O'Keefe, both of same place. Filed July 25, 1887. Serial No. 245,197. (No model.)

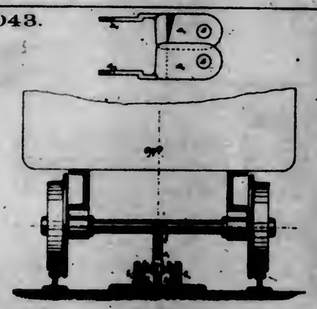


Claim.—A pulley or sheave consisting in a metal rim provided with the usual arms and hubs, and with perforated lugs which project from the surface of said rim, wooden blocks arranged around said rim, so as to form the exterior face of the pulley, opposite flanges which extend around the edges of the metal rim and engage said blocks, and suitable bolts which are passed through said flanges and engage said perforated lugs, substantially as set forth.

382,043. DRAWING-CHAIR. CONSTANTIN C. KLIMEK, FRIEDRICH PERKOWSKI, and ANTON SOLLMANN, Knighsitte, Prussia, Germany. Filed July 2, 1887. Serial No. 243,261. (No model.) Patented in Germany Mar. 9, 1886, No. 36,191.



382,043.



Claim.—1. The combination, with a traction-chain having links constructed each with two opposite corresponding side pieces, so that the end of each side piece shall overlap the end of the next adjacent side piece, and, forming the joint of the chain, be also the bearing for the journal of a friction-wheel, of friction-wheels mounted in each link, with their axes alternately perpendicular to each other, and with the journals of their shafts running in bearings formed by the overlapping ends of said links, said journals being at the same time the pivots on which said side pieces turn, substantially as and for the purpose set forth.

2. The combination with a traction-chain having links constructed with two corresponding opposite side pieces so formed that each link shall carry friction-wheels with their axes alternately perpendicular to each other vertically and horizontally, of shafts for the said friction-wheels having vertical axes projecting above said chain far enough to reach and actuate the vehicle to be propelled by said chain, substantially as and for the purpose set forth.

3. The combination, with a traction-chain having links constructed each with opposite corresponding side pieces so formed that each link shall carry friction-wheels, with their shafts set alternately perpendicular to each other and running in bearings in the said opposite side pieces of said links, of a conductor to direct said chain, composed of bars of right-angle iron placed with perpendicular sides facing each other, and having bars of right-angle U-iron interposed between them, substantially as and for the purpose set forth.

4. In a traction-chain, the combination of the side plates, a' a^3, the friction-wheels c' c^3, and the shafts b' b^3, substantially as and for the purpose set forth.

5. In a traction-chain, the combination of the side pieces, a' a^3, the friction-wheels c' c^3, the shafts b' b^3, and the projection f, substantially as and for the purpose set forth.

6. In a traction-chain, the combination of the side pieces, a' a^3, the friction-wheels c' c^3, the shafts b' b^3, the threaded coupling g, and the projection f, substantially as and for the purpose set forth.

7. The combination of the traction-chain hereinbefore described, composed of the side pieces, a' a^3, the friction-wheels c' c^3, and the shafts b' b^3, with a conductor for said chain, composed of the angle-irons h' h' and the U-iron h^3, constructed, arranged, and used substantially as and for the purpose set forth.

382,044. WATER-GAGE INDICATOR. ANDREW F. LAUDENBERGH and OTTO F. OLSON, Chicago, Ill.; said Laudenbergh assignor to said Olson. Filed Dec. 5, 1885. Serial No. 184,802. (No model.)

Claim.—1. The combination, with a gage-tube, of an indicator provided with a longitudinal line or lines and comprising a sheet or strip, and a separate clamp or holding device adapted to receive said strip and to sustain the latter adjacent to the tube, whereby the said strip may be removed and replaced when desired, substantially as described.

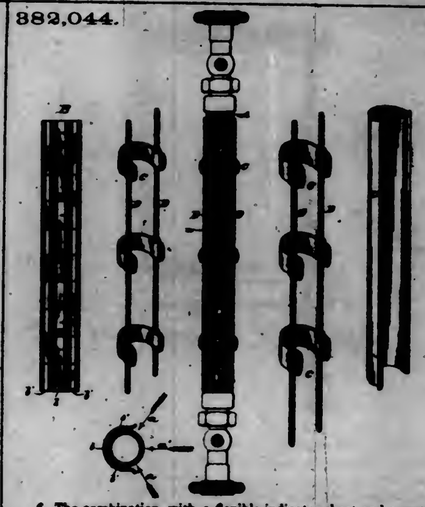
2. The combination, with a gage-tube, of an indicator partially embracing the tube and marked with a central longitudinal line and other lines parallel with the central line, substantially as described.

3. The combination, with a water-gage tube, of an indicator consisting of a strip of paper, cloth, or other similar material provided with longitudinal lines of contrasting shade or color, substantially as described.

4. The combination, with a water-gage tube, of an indicator consisting of a strip of paper, cloth, or similar material having thereon a central longitudinal light line and one or more light lines parallel with the central line and separated therefrom by lines of contrasting color, substantially as described.

5. The combination, with a water-gage tube, of an indicator consisting of a strip of paper, cloth, or similar material provided with longitudinal lines of contrasting color, and having a graduated scale upon one or more of the light lines, substantially as described.

382,044.

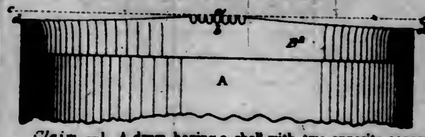


6. The combination, with a flexible indicator-sheet and a water-gage tube, of a clasp or clamp adapted to detachably hold the sheet to the tube, substantially as described.

7. The combination, with a water-gage tube and a flexible indicator-sheet, of a clamp consisting of a series of clasps connected by strips, substantially as described.

8. The combination, in a clamp for holding indicator-sheets to water-gage tubes, of strips D, and a series of clasps attached to said strips, one or more of said clasps being movable on the strips, substantially as described.

382,045. DRUM. HENRY G. LEDERER, Philadelphia, Pa. Filed July 30, 1888. Serial No. 209,869. (No model.)

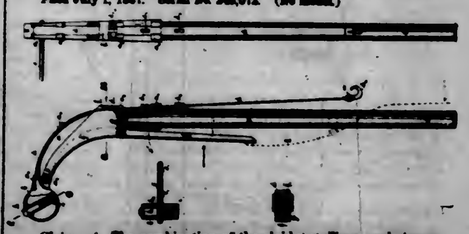


Claim.—1. A drum having a shell with two opposite concave recesses in the top thereof, substantially as and for the purpose set forth.

2. The shell A, having the pair of concave arcs formed upon the outer edge of its upper end, whereby convexity is given to the under surface of the batter-head contiguous to the series of mares resting longitudinally thereon, substantially in the manner herein shown and described.

3. The combination, with the shell or cylinder of a drum, having the pair of concave arcs upon the upper end, whereby convexity is given to the under surface of the batter-head, of a series of mares whose end portions rest within recesses formed for their reception in said shell, and means for imparting tension or relaxation to said series of mares, substantially in the manner herein shown and described.

382,046. APPARATUS FOR PUTTING DRIVING-BELTS ON PULLEYS. HERMANN R. LEDERMANN, Schalke-bei, Prussia, Germany. Filed July 1, 1887. Serial No. 243,072. (No model.)



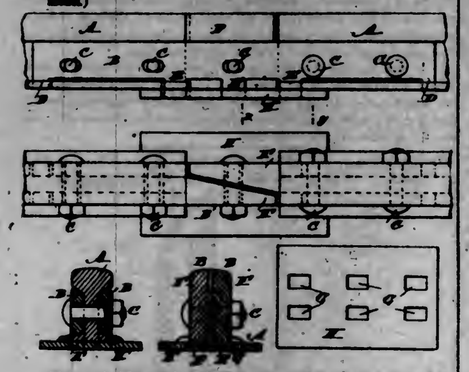
Claim.—1. The combination of the rigid metallic curved piece a, having guides a' a^2 a^3, the staff c, the elastic strip d, having legs d' d^2, handle d^3, and pin e, the head b, having the pins c' and spring

i, the lever f f', pivoted at c, and provided with fork f', and the spring g, substantially as and for the purpose set forth.

2. The combination of head b with the slide A, provided with spring i and pin k', and the pin e, having groove e' and recesses e^2, substantially as and for the purpose set forth.

3. The combination of the rigid shaft, curved rigid top piece, sliding elastic head, movable head having the fitting-pin, and the forked lever, all constructed and operated substantially as described.

382,047. FISH-PLATE. GABRIEL LEMMON, Cincinnati, Ohio, and Hiram Goldsmith. Filed Jan. 11, 1888. Serial No. 260,503. (No model.)

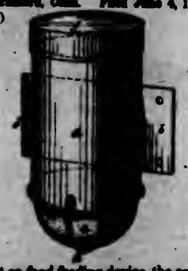


Claim.—1. The combination, with the rail A, of the fish-plate B, having the teeth D and E, the teeth E passing into apertures in the plate H, and the teeth D passing into apertures in the base of the rail, substantially as herein shown and described.

2. The combination, with the rail A and the plate H, of the fish-plate B, having the upwardly-projecting tongue F, the top of which is flush with the rail, and the teeth D E on its bottom edge, the teeth E passing into apertures in the plate H, and the teeth D into apertures in the base of the rail, substantially as herein shown and described.

3. The combination, with the rails having their ends placed a suitable distance apart, of the fish-plates B, having the upwardly-extending and overlapping tongues F projecting into the space between the ends of the rails and provided with teeth on their lower edges, substantially as herein shown and described.

382,048. SALT-FEEDING DEVICE. CHARLES LINDER and THORVALD F. HANSEN, Branford, Conn. Filed June 4, 1887. Serial No. 240,271. (No model.)



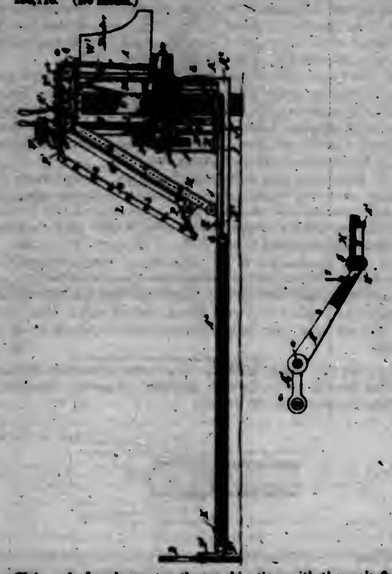
Claim.—1. In a salt or feed feeding device, the combination, with a protecting case or frame having an exposing-opening, of a solid salt or feed block fitting the same loosely and protruding at one end from the exposing-opening, with a narrow point of support projecting from the case out under the block and contacting with the protruding end of the block at or near the middle thereof, substantially as and for the purpose set forth.

2. In a salt-feeding device, the combination, with a case, c, having an exposing-opening at the base, of the supporting-ball d' under said opening, with the sliding or gravitating salt or feed block e, loosely fitting said case and adapted to rest on said ball at its exposed or protruding end, substantially as herein set forth.

3. The combination, with the sliding or gravitating salt or feed block e, of the case c, having the attaching bars or ears b, and the supporting-ball d, arranged and operating substantially as herein shown and described.

4. The combination of the case c, ears or bars b, lid f, and loop or ball d with the salt or feed block e, arranged and operating substantially as shown and described.

382,049. HARVESTER. SAMUEL D. HARNER, Miamisburg, Ohio, assignor to Mary Hoddis, same place. Filed May 2, 1884. Serial No. 130,110. (No model.)



Claim.—1. In a harvester, the combination, with the main frame carried by a single driving-wheel and occupying a fixed position in respect to the same, of a platform-frame extending laterally from said main frame and wheel, and an intermediate frame composed of two arms pivotally mounted at one end upon the axle of the driving-wheel, one upon each side thereof, and pivotally connected at their opposite ends in front of said wheel to the platform-frame, substantially as set forth.

2. In a harvester, the combination, with the main frame carried by a single driving-wheel and occupying a fixed position in respect to the same, of a platform-frame extending laterally from said main frame and wheel, and an intermediate frame composed of two arms pivotally mounted at one end upon the axle of the driving-wheel, one upon each side thereof, and pivotally connected at their opposite ends in front of said wheel to the platform-frame, and levers E and S, for adjusting the position of the platform and intermediate frames, substantially as described.

3. The combination, with the main frame, the platform-carrying frame, and means for varying the height of said platform-frame in respect to the main frame, of a jointed elevator-frame pivoted at one end to the platform-carrying frame and at the other end to the main frame and extending over the drive-wheel, substantially as described.

4. The combination of the axle, the main frame mounted in a fixed position with relation to the axle, platform-carrying frame, connecting-frame, and jointed elevator-frame connecting the main frame and platform-carrying frame, substantially as described.

5. The combination of the main frame mounted in a fixed position with relation to the axle, the axle, the platform-carrying frame, an intermediate connecting-frame pivoted upon the axle, a cutter-bar carried by the platform-carrying frame, an actuating-wheel revolving upon the axle upon which the connecting-frame swings, and mechanism, substantially as described, for transmitting motion from said wheel to the cutter-bar, substantially as described.

6. The combination of the main frame mounted in a fixed position with relation to the axle, the axle, the platform-frame, intermediate connecting-frame pivoted upon the axle, the cutter-bar, the bell-crank lever pivoted adjacent to the joint between the platform-frame and the connecting-frame, the crank-wheel turning on the axle of the connecting-frame, and means connecting the said bell-crank lever to the crank-wheel and to the cutter-bar, substantially as described.

7. The combination, with the drive-wheel, main frame mounted in a fixed position with relation to the axle, platform-carrying frame, and connecting-frame pivoted on the axle, of the cutter-bar, gears 3 4 J I, crank-wheel J^2, bell-crank lever H, and connecting-rods f f', substantially as described.

8. The combination, with the main frame mounted in a fixed position with relation to the axle, axle, platform-carrying frame, con-

necting-frame pivoted on the axle, and jointed elevator-frame connecting the main frame and platform-frame, of rollers having journals coinciding with the joints of the elevator-frame, and connections, substantially as described, whereby movement is communicated from the drive-wheel to the roller on the main frame and from the latter to the next roller, substantially as described.

9. The combination of the main frame mounted in a fixed position with relation to the axle, the axle, the platform-frame jointed thereto, the cutter-bar, the driving-gear, and the bell-crank lever having its pivot adjacent to the joint of the platform-frame, and connecting means whereby said lever communicates motion from the driving-gear to the cutter-bar, substantially as described.

10. The combination of the main frame, the platform-frame, the swinging connecting-frame, and grain-elevating appliances supported by a frame composed of two parts jointed together, one held to standards upon the said main frame and the other by said platform-frame, substantially as described.

11. The combination of the main frame, swinging connecting frame, platform-frame, and jointed elevator-frame provided with rollers carrying aprons, one of said rollers carrying a sprocket-wheel, around which passes a chain to a sprocket-wheel upon a shaft coincident with the outer joint of the elevator-frame, substantially as described.

382,050. WICK-TRIMMER. AUGUST MEYER, Hamburg, Germany. Filed Nov. 11, 1887. Serial No. 254,993. (No model.) Patented in Belgium July 2, 1887, No. 78,054.

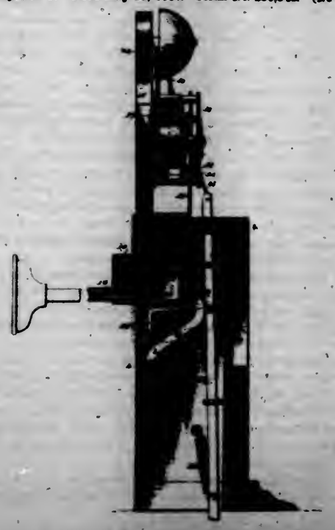


Claim.—1. The combination, with a tube closed at the bottom and furnished with lateral openings, of wings for bearing on the top of the tubes of a lamp-burner, said wings being provided in their lower edges, between the parts which are to bear on the latter tubes, with recesses *i i* of a depth and form corresponding with the height which the wick is desired to project above the said tubes and with the transverse sectional profile of the so-projecting part, substantially as and for the purpose herein described.

2. The wick-cleaner consisting of the slit contractile close-bottomed tube E, having openings *x x* and wings *m n*, substantially as herein described.

3. The wick-cleaner consisting of a tube, E, having a conical recess in the exterior of its bottom, having openings *x x* in its sides, and having wings *m n*, substantially as described, and explained by the accompanying sheet of drawings.

382,051. PNEUMATIC ANNUNCIATOR. WILLIAM R. OSTRANDER, Brooklyn, N. Y. Filed May 20, 1887. Serial No. 239,348. (No model.)



Claim.—1. The combination, with an alarm-train, of a toothed bar arranged to engage therewith said formed with an elongated slot, a pin passing through said slot, an operating-bar, and connections between the toothed bar and the operating-bar, substantially as described.

2. The combination, with an alarm-train, of a sliding bar provided with a catch-tooth which is arranged to engage with the train, an operating-bar, and connections between the operating-bar and the toothed bar, substantially as described.

3. The combination, with an alarm-train provided with a toothed wheel, of a toothed bar arranged to engage with said toothed wheel and formed with an elongated slot, through which there is passed a supporting-pin, an operating-bar, and connections between the toothed bar and the operating-bar, substantially as described.

4. The combination, with an alarm-train provided with a toothed wheel, 43, of a bar, 37, provided with a tooth, 6, and a slot, 40, a pin, 39, which passes through the slot 40, sheaves 42, an operating-bar, 34, and a cord passing from the operating-bar over the sheaves 42 to the bar 37, substantially as described.

382,052. CONVEYING APPARATUS. HENRY U. PALMER, Brooklyn, N. Y. Filed Dec. 19, 1887. Serial No. 258,573. (No model.)



Claim.—1. The combination, with a float provided with a track for receiving loaded coal-cars, of an endless horizontal carrier extending beneath said cars, a hopper or hoppers arranged between the track-rails for directing the coal onto said carrier as it falls from the car, and an elevating apparatus for receiving the coal from the carrier and delivering it at a suitable height, substantially as described.

2. The combination, with a float provided with a plurality of tracks for receiving loaded coal-cars, of endless horizontal carriers extending beneath said cars, hoppers arranged between the track-rails for directing the coal onto said carriers as it falls from the cars, chutes *f*, for receiving the coal from the carrier and delivering it to an elevating apparatus, and an elevating apparatus for receiving the coal from said chutes and delivering it at a suitable height, substantially as described.

3. The combination, with the float provided with a track for receiving cars, of an endless horizontal carrier arranged to receive the coal from the cars, an elevating apparatus arranged to receive the coal from the carrier, and the hopper *k*, and a chute, *l*, arranged to receive the coal from the elevating apparatus and pivoted to turn horizontally, whereby the coal can be delivered in different directions, substantially as described.

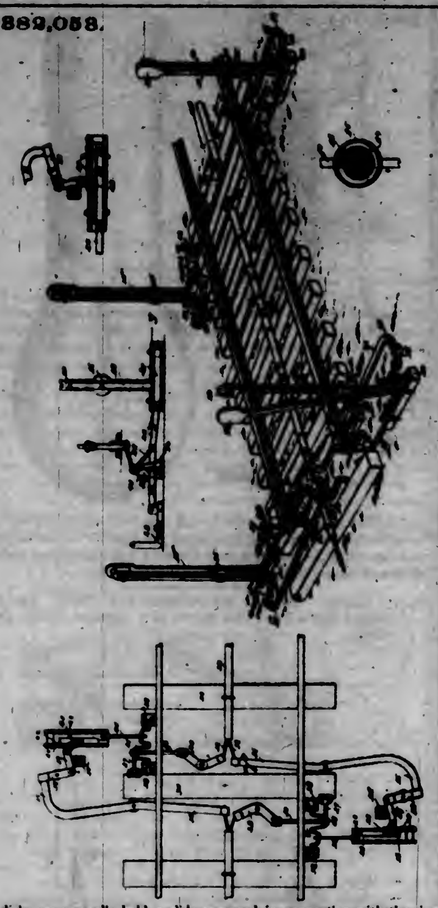
382,053. BLOCK-SIGNAL. GEORGE W. FITZGERALD, Louisville, Ky. Filed May 23, 1887. Serial No. 239,057. (No model.)

Claim.—1. The combination, with two signal-disks located at opposite ends of a block, of springs, against the tension of which the disks are normally held, a slide arranged in connection with the signal-disk at the entrance to the block, a tripping-bar connected to said slide and to a stop which holds the disk at the other end of the block, substantially as described.

2. The combination, with two signal-disks and their supporting-levers, of springs, stops which hold the signal-disk levers against the tension of the springs, slides arranged in connection with the levers and formed with shoulders adapted to bear upon the levers, a rock-shaft, connection between the slide and the rock-shaft, a tripping-lever, also connected to the rock-shaft, a bell-crank lever, a connecting-wire leading from said bell-crank lever to a lever, 31, said lever, and a lever, 36, that is connected to the stop of the second signal-disk, substantially as described.

3. In a block signaling apparatus, the combination of a lever, 12, a spring, 16, arranged in connection with the lever, a stop, 23, a slide, 21, formed with a shoulder, 22, a link, 26, a crank-shaft, 25, a tripping-bar, 27, connected to said shaft, a lever, 29, also connected to the crank-shaft, a connecting-wire, 32, a lever, 31, to which the wire 32 is connected, and a lever, 36, connected to the stop 23, all substantially as described.

382,053.

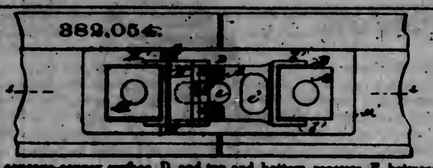


382,054. NUT-LOCK. HARRIMAN H. PHILLIPS, Vanalboyne, Ontario, Canada. Filed July 12, 1887. Serial No. 244,194. (No model.)

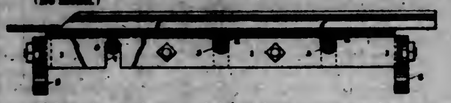
Claim.—1. A nut-lock consisting of the body A, provided with an aperture, *a*, at one end, the recess B at the opposite end, and a central concavo-convex surface, D, and a plate, H, provided with the pin A, fitting in the concave surface of the body, the recess H' at its free end, and the lips K, adapted to be bent over upon the body, substantially as described.

2. The combination, with the body A, provided with an aperture, *a*, at one end, a recess, B, at the opposing end, a central transverse concavo-convex surface, D, and top and bottom recesses, E, between said surface D and the apertured end, of the slotted plate H, provided with pin A, a recess, H', and top and bottom lips, K, the said plate adapted to be hinged to said body at the aforesaid concavo-convex portion and held in connection with said body by compressing the lips K into said recesses E, substantially as set forth.

382,054.



382,055. DRIPPING-GRATE. PETER REHLAND and CHARLES FRANCK, Fort Jervis, N. Y. Filed July 20, 1887. Serial No. 244,888. (No model.)



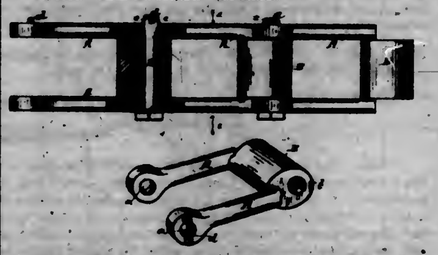
Claim.—A grate-frame consisting of the frame 1, having the semi-circular recesses 2 in its upper side edges, and the capping-frame 5, covering both the sides and ends of the frame and provided with the flange 6, having the vertical slots 7 and secured to the said frame, substantially as herein shown and described.

382,056. METHOD OF SIGNALING AT SEA. DANIEL RUSSELL, Fredericksburg, Va. Filed Dec. 30, 1887. Serial No. 259,262. (No model.)

Claim.—1. The method hereinbefore described for maritime signaling by sound and the reverberating echoes of sound upon the surface of oceans as well as submerged beneath in the depths of seas, lakes, and rivers by the explosive concussive projectile force of field-guns, in combination with concussive metallic balls on the surface and submerged, as receivers of sound, and the echoes of sound, by day or night, in calm or storm, and means for illuminating by electric light for signaling between ships at sea, or between ships and shores, and for similar purposes, substantially as described.

2. The method of signaling by the explosion of field-guns from a ship's deck, either on the surface of the seas or submerged beneath in the depths, in combination with concussive metallic balls, as hereinbefore described, to trace the range of the explosive concussive projectile, reverberating echoes as well as that of shot, and of shell, torpedoes, &c., exploded by the time-fuse during flight, to mark the time of obstruction or of exhaustion of sound on the line of the prolongation of the trajectory of the flight, substantially as and for the purpose described.

382,057. DRIVE-CHAIN. HOWARD BENNETT, Columbus, Ohio, assignor to the Lozier Manufacturing Company, same place. Filed Oct. 10, 1888. Serial No. 216,491. (No model.)



Claim.—In a drive-chain, the combination, with the links provided in their ends with pintle-seats, and with stop-bars *d*, projecting from the outer faces of the side bars and crossing the pintle-seats, of the pintles round in cross-section and having their ends which project beyond the side bars slotted to form the tangs *e e*, said tangs being bent inward over the outer faces of the stop-bars, substantially as set forth.

382,058. HAME-TUG. JAMES S. SCOTT, Burlington, Iowa. Filed July 11, 1887. Serial No. 244,092. (Model.)

Claim.—As an improved article of manufacture, a hame-tug consisting of a metallic plate having a loop, *c*, formed on its forward ends, and lateral loops *b*, formed near its opposite ends, lateral flanges B, formed about midway of its length and having a series of perforations, the said plate also having lugs with perforations *b'* at its corners, and

382,058.



the leather backing C, riveted thereto at the corners of the plate and united by rows of stitches through the perforations, substantially as specified.

382,059. BUSTLE. LIDA SMITH, New York, N. Y. Filed Sept. 1, 1887. Serial No. 248,542. (No model.)



Claim.—In a bustle, the combination, with the flat metallic ribs *f f*, curved and covered as specified, reaching only through the convex side of said bustle and fastened by their ends to the top and bottom of said bustle, the cover *c'* of said ribs extending far enough on either side to form the flap *c*, and the flap *c*, integral with said cover, of a piece of textile fabric stretched across the concave side of said bustle, secured thereto as specified, and extending far enough to form the flaps *d* integral therewith, the flaps *d*, the waistband *a*, sewed upon said bustle, the buckle *b*, fastened to one end of said waistband *a*, and buttons and button-holes *d*, securing the flaps *c* and *d* together, all substantially as and for the purpose set forth.

382,060. FORK-GUARD. CHARLES H. STEBBINS, Northampton, Mass. Filed Dec. 14, 1887. Serial No. 257,599. (No model.)



Claim.—The combination, with a fork provided at its shank with the pivoted guard B, and the chamber *f*, extending parallel with the guard-pivot, of a plunger located in said chamber, having a shank extending therefrom, and a head fitting said chamber, and a coiled spring inclosing said shank and acting between the base of said chamber and said plunger-head to force the outer end of the plunger against one leg of the guard, substantially as set forth.

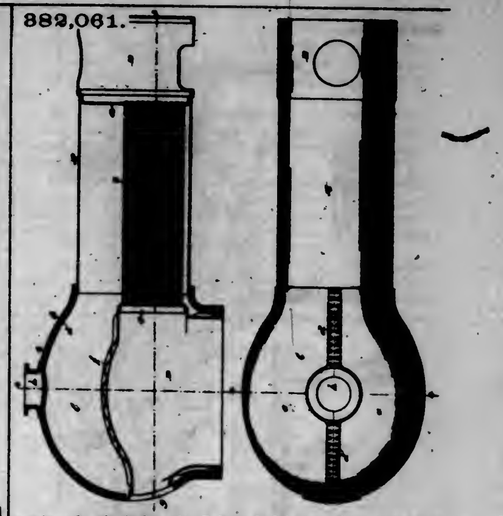
382,061. STEAM-BOILER. GEORGE S. STRONG, New York, N. Y. Filed Oct. 31, 1887. Serial No. 253,393. (No model.)

Claim.—1. The herein-described steam-boiler, consisting of the cylindrical portion A, the approximately spherical furnace portion C, and the vertically-corrugated arched portion K, forming the roof to the furnace, substantially as described.

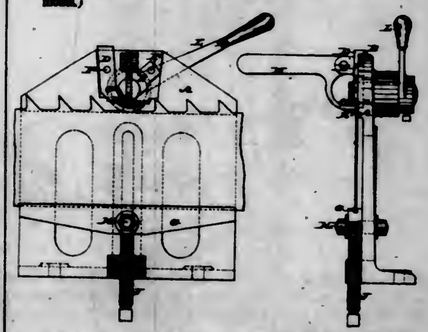
2. The herein-described steam-boiler, consisting of the cylindrical portion A and the approximately spherical furnace portion C, the latter being formed of the two plates *c*, struck up to approximately hemispherical form and united at their meeting edges, substantially as described.

3. The combination, with the cylindrical portion A, of the approximately spherical portion C, formed of the two plates *c*, struck up to approximately hemispherical form and united at their meeting edges, and the vertically-corrugated arched plates *k*, forming the roof to the furnace, substantially as described.

382,061.



382,062. MACHINE FOR SWAGING SAW-TEETH. JOHN F. TRIBELL, Clinton, Iowa. Filed Mar. 23, 1888. Serial No. 268,206. (No model.)



Claim.—1. In a saw-tooth-swaging machine, the frame A, in combination with the rotary die C, having a cut-away portion, C', and the block D, having abutment D', all substantially as and for the purpose set forth.

2. In a saw-tooth-swaging machine, the frame A, in combination with the rotary die C, having cut-away portion C', the block D, with abutment D', and die-support E, the periphery of the die being in contact with said support E, all substantially as described.

3. In a saw-tooth-swaging machine, a die, in combination with a die-block and die-support made interchangeable with each other in relation to the die, substantially as and for the purpose set forth.

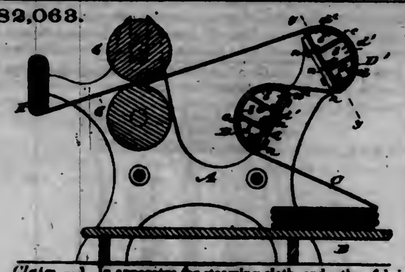
4. In a saw-tooth-swaging machine, the slotted frame A, having a threaded boss, in combination with a grooved bar, G, the bolt H, the screw J, and pivoted clamp K, having the cone K', all substantially as and for the purpose set forth.

5. In a saw-swaging machine, the combination of a frame, a saw-support, a female die, and a male die having a corner or pinching-off edge or face, substantially as and for the purpose set forth.

382,063. APPARATUS FOR STEAMING CLOTH AND OTHER FABRICS. VOORHEES T. VAN FLEET, Somerville, N. J. Filed May 26, 1887. Serial No. 239,262. (No model.)

Brief.—In order to obtain steam more or less wet, the inlets for the same and outlets for the water of condensation are arranged at different heights from the bottoms of the compartments of the steaming-beams, stop-cocks rendering the several compartments independent of one another.

382,063.

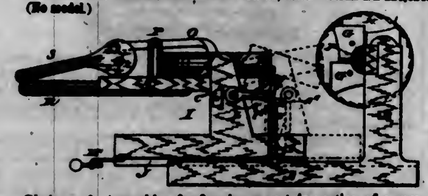


Claim.—1. In apparatus for steaming cloth and other fabrics, the perforated steaming-beams D D', constructed with a series of longitudinal compartments arranged one above the other and provided with steam inlets and outlets at their opposite ends at different heights or levels relatively to the bottoms of their respective compartments, substantially as and for the purpose herein set forth.

2. The combination of the partly-circular perforated steaming-beams D D', arranged one above the other to flow in reverse directions, and provided with longitudinal compartments *d d' d''*, disposed one above another, the steam-inlet and exhaust pipes *e h*, having branches *f f' f''* and *i i' i''*, arranged to connect with said compartments at different heights from the bottoms thereof, respectively, and the valves *g k*, controlling said branches, essentially as shown and described.

3. In a machine of the character described, a series of steam-chambers having their respective outlets for water of condensation arranged on different levels from their bottoms, substantially as specified.

382,064. MACHINE FOR FORMING SAW-HANDLES. CHARNEY L. S. WALKER, Newark, N. J. Filed Dec. 15, 1886. Serial No. 221,686. (No model.)



Claim.—1. A machine for forming a certain portion of a saw-handle, as herein set forth, consisting of cutters arranged on a horizontally-adjustable shaft or arbor, as C, and adapted to form beads on the edge of said saw-handle, and a suitable sliding rest or carrier having a pivoted holding device for holding and guiding said saw-handle to said cutters, substantially as and for the purposes set forth.

2. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable slide-rest, as I, having a pivoted support for the work, a bed, as A, in which said parts slide, and cutters, as G and H, and a shaft or arbor, as C, on which the cutters are hung, of arms or supports, as B, and adjustable bearings, as D, on arms B for said shaft or arbor, substantially as and for the purpose described.

3. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed provided with supports and bearings for a shaft or arbor, cutters, as G and H, and a slide-rest, as I, of a pivotally-arranged plate or carrier, as N, provided with a handle, as R, and suitable holding device for said saw-handle, substantially as and for the purposes set forth.

4. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed provided with supports and bearings for a shaft or arbor, cutters, as G and H, and slide-rest, as I, provided with a pivotally-arranged plate or carrier, as N, of a lever, as O, fulcrum, as P, and cam or eccentric, as Q, adapted to operate said lever and clamp said saw-handle, substantially as and for the purposes set forth.

5. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed, provided with supports and bearings for a shaft or arbor, cutters, as G and H, slide-rest, as I, and pivotally-arranged plate or carrier, as N, of arms or supports, as L, provided with vertically-adjustable bearings, as M, and cam-rod, as C', for adjusting said bearings, substantially as and for the purposes set forth.

6. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed, provided with supports and bearings for a shaft or arbor, cutters, as G and H, slide-rest, as I, provided with a pivotally-arranged plate or carrier, as N, and arms or supports, as L, of a guide-plate, as T, provided with guides, as U, and mechanism, substantially as described, for raising said plate automatically when said slide-rest is drawn back and to drop out of the way of said cutters automatically when said slide-rest is fed forward, substantially as and for the purposes set forth.

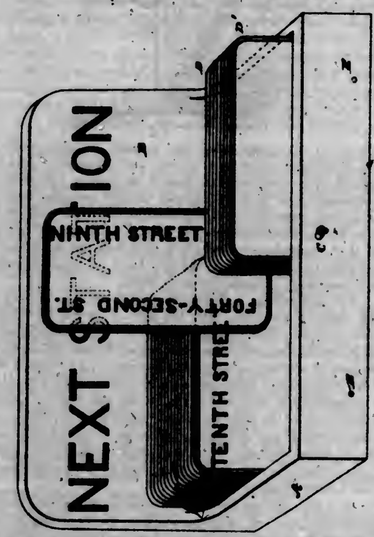
7. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed provided with supports and bearings, a shaft or arbor, as C, held in bearings in the bed, cutters, as G and H, slide-rest, as I, provided with a pivotally-arranged plate or carrier, as N, and suitable clamping device, of a guide-plate, as T, provided with guides, as U, having bearings in suitable supports, as L, one pivot, *t*, extending entirely through said support L, an arm, as A', secured upon the extended pivot of plate T, and a post, as B', attached to the bed A, which the arm A' engages, substantially as and for the purposes set forth.

8. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed, slide-rest, a pivoted device for holding said saw-handle, and shaft or arbor, as C, of cutters G, cutter-carrier F', and washers, as D', and cutters, as H, said cutters G adapted to be secured to said cutter-carrier F' and to co-operate with said cutters H in forming certain portions of said saw-handle, substantially as and for the purposes set forth.

9. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed provided with supports and bearings, a shaft or arbor, as C, provided with cutters, as G and H, and a slide-rest, as I, provided with a suitable clamping device, and pivotally-arranged plate or carrier N, for holding said saw-handle, of adjustable stops, as E', adapted to limit the feed to the depth of cut desired, substantially as and for the purposes set forth.

10. In a machine for forming certain portions of a saw-handle, as described, the combination, with a suitable bed provided with supports and bearings, a shaft or arbor, as C, provided with cutters, as G and H, and a slide-rest, as I, pivotally-arranged plate or carrier, as N, provided with a suitable clamping device for holding said saw-handle, suitable supports, as L, guide-plate, as T, provided with guides, as U, and a post, as E', of an arm, as A', adapted to co-operate with said post E' to raise said guide-plate T, and an adjustable wedge-shaped projection, A'', at the end of said arm A', whereby the throw of said arm may be adjusted, substantially as and for the purposes set forth.

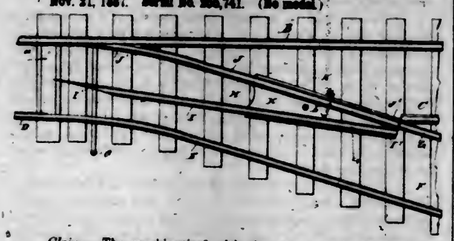
382,065. STREET AND STATION INDICATOR. MARY J. WARNER, Sacramento, Cal. Filed Jan. 16, 1888. Serial No. 261,131. (No model.)



Claim.—1. A street and station indicator consisting of a casing and a series of cards pivoted at one end within the casing, each card having the names of two streets oppositely arranged with respect to each other and near the opposite edges thereof, substantially as described.

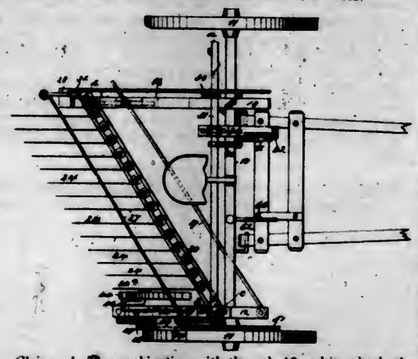
2. In a street or station indicator, the combination, with a casing, of a series of cards consisting of plates having a hem, *a*, and pivoted at one end within and about the center of the said casing, each card having the names of two streets on the same side oppositely arranged with respect to each other and near the opposite edges thereof, substantially as herein shown and described.

382,066. RAILROAD-SWITCH. HENRY D. BALDWIN, Shelbourg, assignor of one-half to Samuel H. Sexton, Lafayette County, Wis. Filed Nov. 21, 1887. Serial No. 256,741. (No model.)



Claim.—The combination, with the outer continuous-track rail, B, inner disconnected main-track rails, C D, an outer continuous switch-rail, E, leading to the rail D, and an inner switch-rail, G, converging with the end of the rail C, of the straight rail I, beveled at its front end, I', the switch-rail J, converging with the end I² of the rail I adjacent to the converging ends of the rails C G, and diverging at its beveled end J' from the end I' of the rail I, the plate K, connecting the rails I J, and the pivot L near said converging ends of the said rails I J, substantially as set forth.

382,067. HORSE HAY-RAKE. JULIUS H. BALLY, Paradise Hill, Ohio. Filed Nov. 28, 1887. Serial No. 256,319. (No model.)



Claim.—1. The combination, with the axle 10 and its wheels, the rake-head pivotally connected at one end with the axle and adjustable horizontally toward and from the axle at its opposite end, means for said adjustment, and the vertically and laterally swinging teeth connected at their inner ends with said head, of the lift-bar parallel with the rake-head and through bearings in which said teeth freely pass, a rock-shaft, connections between said rock-shaft and the lift-bar for swinging the teeth vertically on the rake-head, and means for operating said rock-shaft, substantially as set forth.

2. The combination, with the axle, its wheels, the rake-head extending obliquely rearward from the axle, a rearwardly-extending cross-bar connecting the outer end of the head with the axle, and the vertically and laterally swinging teeth carried by said rake-head, of a lift-bar parallel with the rake-head and having bearings through which the teeth freely pass, a rock-shaft parallel with the axle, a horizontal lever connecting the inner end of the lift-bar with said rock-shaft, a bell-crank lever on the outer end of said rearwardly-extending cross-bar, the horizontal arm of which is connected to the outer end of the lift-bar, a vertical lever-arm on the rock-shaft connected with the vertical arm of the bell-crank lever, and a hand-lever for operating the rock-shaft, substantially as set forth.

3. In a hay-rake, the combination, with the frame, the rake-head secured to the frame and extending obliquely rearward, and the rake-teeth secured thereto, of a vertically and longitudinally rocking kicker mounted on the frame and adjacent to the inner end tooth, 24ª, and means for operating said kicker, substantially as set forth.

4. The combination, with the axle, its wheels, a rearwardly-extending cross-bar, 12, and the rake-head pivoted thereto and horizontally adjustable toward and from the axle and having the teeth, of the transverse crank-shaft 46, journaled in the rear end of the cross-bar, the vertically and longitudinally rocking kicker 44, secured thereto adjacent to the tooth 24ª, and gearing operating the said shaft from one of the wheels on the axle, substantially as set forth.

5. In a hay-rake, the combination, with a rake-head, of circular plates mounted in circular recesses formed in the rake-head, standards which extend upward from the plates, and rake-teeth formed with bent ends that fit within the standards, substantially as described.

382,068. GATE. FRANK W. BENNETT, Ottawa, Ohio. Filed Oct. 17, 1887. Serial No. 252,601. (No model.)

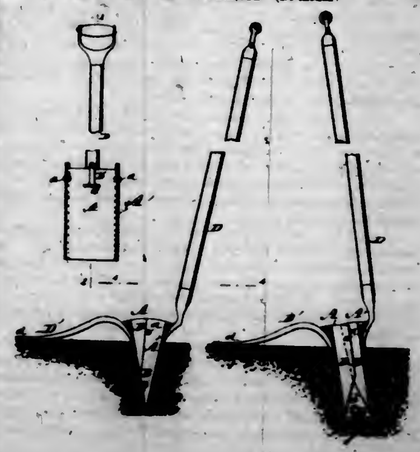


Claim.—1. The combination, with a sliding gate and a hinged frame upon which the gate is supported, of a bar pivoted on the free end of the said frame, and having its lower end engaging one of the bars of the gate, and means for locking the said bar in different positions, substantially as described.

2. The combination, with a sliding gate and a hinged frame upon which the gate is supported, of a bar pivoted to the free end of the said frame and having its lower end engaging one of the bars of the gate, and a rod secured to the said hinged frame and having its free end adjustably connected to the upper end of the pivoted bar, substantially as described.

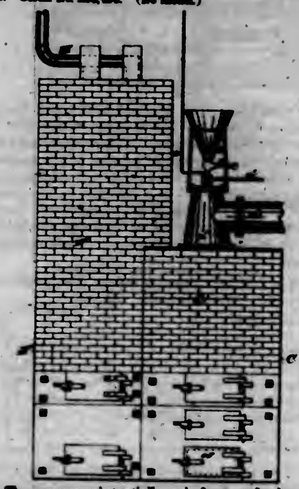
3. A support for a sliding gate, consisting of the triangular frame 7, provided with sockets or eyes 10 for hinging the same, and with the roller 14 and hook 20 for engaging the bars of the gate, the bar 13, pivoted to the pointed end of the frame and provided with a roller, 19, and perforations 16, and the rod 17, secured to the frame 7 and engaging one of the perforations in the bar 13, substantially as herein shown and described.

382,069. PLANTER. ALFRED W. BLACK, Traverse City, Mich. Filed June 22, 1887. Serial No. 242,144. (No model.)



Claim.—A planter consisting of the outwardly-flared jaws of rectangular shape, with their sides extended at right angles thereto and inclined upon the inner edges from near the center downward flush with the bottom edges of said jaws, and which sides are pivoted together near their upper edges, one of said jaws having a handle and the other jaw having a horizontal outwardly-extending gage-arm, substantially as specified.

382,070. PROCESS OF MANUFACTURING ORANGE MINERAL AND RED LEAD. ARTHUR C. BRADLEY, Brooklyn, N. Y. Filed Feb 20, 1887. Serial No. 228,493. (No model.)

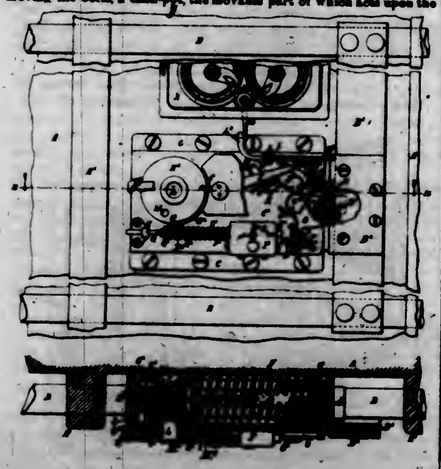


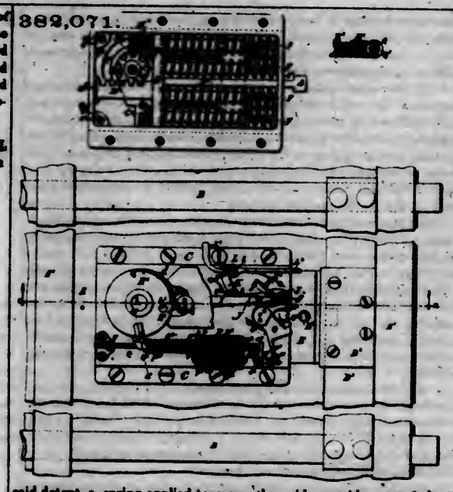
Claim.—The process, substantially as before set forth, of manufacturing orange mineral and red lead, which consists, first, in exposing finely-comminuted metallic lead in a shower to an inclosed current of air heated to a temperature sufficient to burn the lead, and collecting the resultant pulverulent litharge, and, secondly, in roasting the said pulverulent litharge.

382,071. SAFE-LOCK. ARTHUR C. BRADLEY, Chicago, Ill., assignor of one-half to James C. Harris, Dayton, Ohio. Filed May 10, 1887. Serial No. 237,602. (Model.)

Claim.—1. The combination, with the bolts of a safe, and springs or weights applied to actuate the bolts, of means for holding the casting-springs or weights from moving the bolts, comprising a detent, a dash-pot, and a spring or other means for actuating the movable part of the dash-pot, substantially as described.

2. The combination, with the bolts of a safe, and springs applied to actuate the bolts, of a detent for holding the casting-springs from moving the bolts, a dash-pot, the movable part of which acts upon the





said detent, a spring applied to move the said movable part of the dash-pot, and means for compressing or winding the bolt-actuating springs, constructed to also compress or wind the spring which moves the movable part of the dash-pot, substantially as described.

3. The combination, with the bolts of a safe, of casting and retracting springs, a detent holding the casting-springs from moving the bolts, a dash-pot, the movable part of which is adapted to engage and move the said detent, a spring-actuating said movable part of the dash-pot, and a sliding part, as plate D, the movement of which compresses the casting and retracting springs, said sliding part being adapted to also engage and compress the spring which actuates the movable part of the dash-pot, substantially as described.

4. The combination, with the bolts of a safe and casting-springs, of a rack-bar, a sliding plate attached to the rack-bar and acting upon said springs, a pinion intermeshing with the rack-bar, a detent holding the casting-springs from moving the bolts, a dash-pot, the movable part of which is adapted to actuate the said detent, and a spring for actuating said movable part of the dash-pot and engaging said sliding plate, whereby the said spring which actuates the movable part of the dash-pot is compressed with the casting-springs, substantially as described.

5. The combination, with the bolts of a safe and casting-springs, of a detent for holding the casting-springs from moving the bolts, a dash-pot, the movable part of which acts upon the said detent, a spring for advancing the movable part of the dash-pot toward the detent, and another spring applied to retract the said movable part of the dash-pot, substantially as described.

6. The combination, with the bolts of a safe and retracting-springs, and a sliding plate, D, against which the retracting-springs act, of a dash-pot comprising a casing, P, a piston and a piston-rod, P², a rod, R, connected with the said piston-rod and provided with a collar or shoulder, and a spring for actuating the said piston applied between the said shoulder of the rod R and the plate D, substantially as described.

7. The combination, with the bolts of a safe and springs, for moving the bolts, of one or more levers for holding the springs under tension, a detent for engaging the lever or levers when the springs are compressed, a time mechanism or other device acting upon the said detent to release the levers and springs at a desired time, and means for winding or compressing the springs constructed to automatically place the lever or levers and detent in position for holding the springs compressed or under tension, substantially as described.

8. The combination, with the bolts of a safe and actuating-springs for moving the bolts, of an arm or lever by means of which the springs are held compressed and which is moved or swung about its pivot in the act of compressing the springs, a second lever provided with a shoulder to engage the lever first mentioned, and with an arm or projection located in the path of the said lever first mentioned, whereby the second lever will be moved or turned by said first lever into position for the engagement of its shoulder with the said lever first mentioned, a detent engaging said second lever, and a time mechanism or other device acting upon said detent to release the levers and springs at a desired time, substantially as described.

9. The combination, with the lever I and detent L, of a lever or levers, as J and K, located between said lever I and detent L and pro-

vided with notches to receive the ends of the levers engaged therewith, said levers being provided with means for holding said notches in position to receive the ends of said lever or levers which enter said notches, substantially as described.

10. The combination, with the bolts of a safe, weights or springs applied to retract the bolts, and a part or plate connected and moving with the bolts, of a lever, as K, provided with a notch or shoulder engaging said part or plate for holding the bolts from movement under the action of the springs or weights, a detent engaging said lever, and means for actuating the detent to release the lever, the engaging surfaces of the said detent and lever being inclined or oblique, substantially as and for the purpose set forth.

11. The combination, with the bolts of a safe and casting-springs and a revolving disk or arm, as H', the turning of which compresses the said springs, said disk being provided with a projection or shoulder, of a lever, I, provided with a projection or arm, *i*, engaging said projection or shoulder, a movable part, detent, or lever engaging the free end of said lever I, and a time mechanism or other means for actuating the said movable part or lever at the time it is desired to unlock the safe, the said disk or revolving part H' being provided with a pin or stud, h^3, adapted to engage said arm *i*, substantially as described.

12. The combination, with the bolts of a safe and casting-springs, of a revolving disk or arm, as H', the turning of which compresses the said springs, a spring-strip, H^3, attached to said disk or arm, a lever, I, provided with a projection or arm, *i*, engaging the end of said strip, and provided, also, with a projection, i^3, adapted to engage the outer face of the strip, substantially as described.

13. The combination, with the bolts of a safe, of a bolt-actuating device comprising a metal shell or case, a sliding plate mounted in the case and acting against the bolts, springs for casting the bolts located in said shell or case and acting against said sliding plate, a detent engaging said sliding plate, and means for releasing said detent after the door is closed, substantially as described.

14. The combination, with the bolts of a safe, of a bolt-actuating device comprising a metal shell or case, a sliding plate mounted in the case and acting against the bolts, actuating-springs for casting the bolts located in said case and acting against said sliding plate, a detent engaging said sliding plate, and a spring-actuated motor mounted upon the said case and adapted to engage and move the detent, substantially as described.

15. The combination, with the bolts of a safe, of a bolt-actuating device comprising casting-springs and a moving part or plate against which said springs act, arranged to bear against the bolt-work, and a detent engaging said moving part or plate independently of the bolts, substantially as described.

16. The combination of casting and retracting springs and a shell or casing inclosing the same, the casting-springs being adjacent to the outer or exposed wall of the shell, a sliding plate or casting mounted in the said shell and acting against the bolts, and a detent mounted upon the said outer wall of the case and engaging said sliding plate, substantially as described.

17. The combination, with the bolts of a safe and springs or weights applied to move the bolts, of a sliding part or plate actuated by the springs and acting on the bolts, said sliding part or plate being provided with a projection or stud, and a pivoted detent provided with a notch or shoulder to engage the stud, and with a spring-arm located in the path of the stud, whereby the detent will be automatically engaged with the stud by contact of the latter with said part or arm, substantially as described.

382,072. NAIL OR RIVET FOR BOOTS OR SHOES. G. ANDREA CAVALLI, San Francisco, Cal. Filed Jan. 20, 1887. Renewed Oct. 7, 1887. Serial No. 251,769. (No model.)



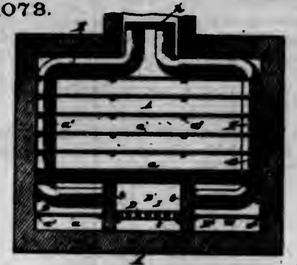
Claim.—1. The herein-described nail or rivet, having a thread, *a*, and longitudinal ribs *b b*, projecting beyond the thread.

2. The herein-described nail or rivet, having the thread *a* and the longitudinal ribs *b b*, extending beyond the thread, a flattened end, A', having threads on its sides, as shown.

382,073. OVEN. LEVI COLE, Elmira, N. Y. Filed July 26, 1887. Serial No. 245,517. (No model.)

Claim.—1. A baker's oven comprising three lower compartments, an upper compartment over the same, a central flue in the top thereof, doors for said compartments, smoke-pipe leading from the opposite sides of the rear end of the central lower compartment into the two compartments alongside thereof and up through the upper compartment at its opposite sides to the central flue, substantially as set forth.

382,073.



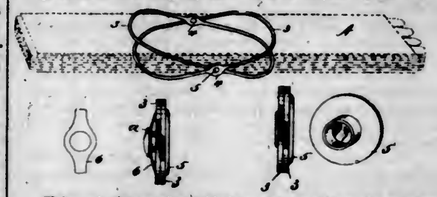
2. The combination, with an oven provided with the upper baking-chamber, A, the lower side baking-compartments, B B^3, and perforated shelves held in said chamber and compartments, and a fire-pot, B', centrally below said chamber A and between said compartments B B^3, of pipes H, projected from said fire-pot at each side, passing through said baking-compartments and main baking-chamber up into the flue, a damper, *K*, at the outlet ends of said pipes, double doors E' E' for the compartment A, doors E^3 E^3 for the lower side compartments, B B^3, and means for regulating the heat in the oven, substantially as shown and described.

382,074. CLASP. JAMES H. COMATY, West Haven, Conn. Filed Sept. 10, 1887. Serial No. 249,266. (No model.)



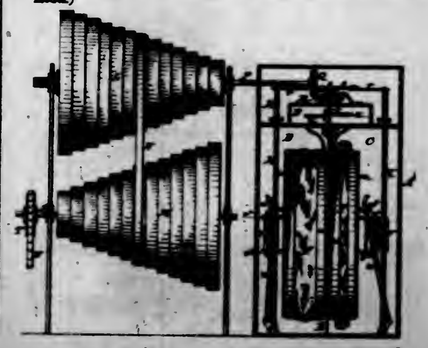
Claim.—The jaw or member of the herein-described cast-off clasp, having its cast-off finger cut from the back of the jaw and bent parallel, or nearly so, with the outer projection of the jaw or member, substantially as described.

382,075. GLOVE-PACKAGE BINDER. CHARLES CONNOLLY, Holyoke, Mass. Filed Aug. 20, 1887. Serial No. 247,495. (No model.)

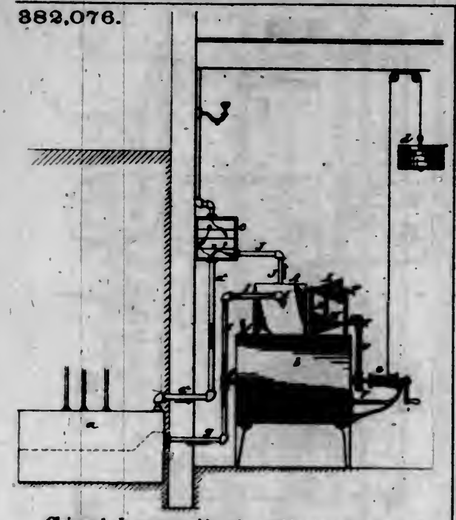


Claim.—A glove-package binder consisting of two links, 3, one within the other and pivoted together about midway between their ends, combined with a friction-spring at one or both joints of the binder, substantially as set forth.

382,076. DEVICE FOR MIXING GAS AND AIR. EDWARD B. DENNY, Newark, N. J. Filed Oct. 25, 1884. Serial No. 146,674. (No model.)



382,076.



Claim.—1. In a gas-machine, the combination of an air-pump, its operating-motor, a generator, a mixing-chamber, a closed air-measuring device, and suitable pipe-connections for these parts, arranged to supply air under the same pressure to the generator and to said closed measuring device, with a regulator operating to control the movements of said measuring device in the way described.

2. In a gas-machine, the combination of a generator, an air-pump, and an air-measuring device with a governor device consisting of connected cone-pulleys and suitable connections, with the valves of the air-measuring device, for regulating the speed of the latter, substantially as described, for the purpose specified.

3. In combination, in a gas-machine, the generator *a*, the air-pump *b*, the case A, the flexible air-measuring chambers F, their operating-connections, the valves G and their operating-connections with said chamber-connections, the cone-pulleys L M, their connecting-belt N, the gear-connections Q R for the cone-pulley L with said valve-connections, a motor for the pump, and the belt V, connecting the cone-pulley M with said pump-shaft, substantially as described, for the purpose specified.

4. The combination, in a gasoline-gas machine, of a generator and an air-pump, an air-measuring device consisting of flexible chambers having controlling-valves and connected to each other, the belt-connected cone-pulleys, suitable gear-connections for the latter and for said valves, a motor for said pump, and suitable connections for said pump-shaft with one of said cone-pulleys, all constructed and arranged to operate in the way described.

5. The combination, in a gas-machine, of the flexible air-measuring chambers, their valve-controlling mechanism and air-pump, with the belt-connected cone-pulleys having suitable connection with said valve mechanism, whereby to control the quantity of air required for reducing the density of the gas, substantially as described.

6. The combination, in a gas-machine, of an air-pump and a mixing-chamber, with an air-measuring attachment consisting of co-operating flexible chambers, the belt-connected cone-pulleys, and valve mechanism connecting said chambers with said cone-pulleys, substantially as described, for the purpose specified.

7. The combination, in a gas-machine, of an air-pump, its operating-motor, flexible air-measuring chambers, their controlling-valves, and a mixing-chamber having pipe-connections with said generator and said measuring device, with a regulator composed of the belt-connected cone-pulleys, one of which is connected to the said flexible chambers by intermediate gear mechanism and the other to the pump-shaft by a belt, all constructed and arranged to operate in the way described.

8. The combination, in a gas-machine, of the air-pump *b*, the generator *a*, and the mixing-chamber *c* with the flexible air-measuring chambers, the air-supply pipes I *g*, the connected cone-pulleys, and valves connected with said pulleys and with the said flexible chambers, substantially as described, for the purpose specified.

9. In a gas-machine, the combination of a generator, a pump for supplying air thereto, an air-measuring attachment, consisting of flexible chambers operated by air under pressure from said pump, and valves controlling the movements of said chambers, with a regulator connected with and controlling said valves, and suitable connections for positively operating said regulator from the air-pump-driving mechanism, substantially as described, for the purpose specified.

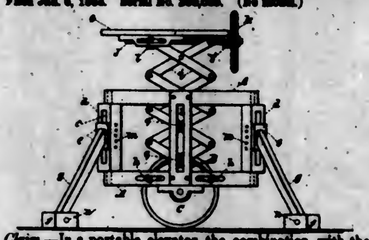
10. A gas-machine having in co-operative combination the following instrumentalities, viz: an air-pump, flexible air-measuring chambers having direct connection therewith, the regulating cone-pulleys, valves controlled by said cone-pulleys, a generator connected with said air-pump, and a mixing-chamber connected with said air-measuring chambers, the operation being such as to cause the air-measuring chambers to be operated by an excess of air-pressure over the gas-pressure in the normal working of the machine, substantially as herein set forth.

11. The combination, in a gas-machine, of suitable air-measuring chambers having controlling-valves, an air-pump forcing air under pressure through said measuring-chambers, and a generator receiving air under pressure from said pump, with a governor device consisting of connected cone-pulleys and suitable mechanism connecting the latter with the said valves and with the air-pump, substantially as described, for the purpose specified.

12. In a gas-machine, the combination of a generator, an air-pump, its operating-motor, flexible air-measuring chambers, pipes for supplying air under pressure to the generator and to the measuring-chambers, a regulator composed of stepped cone-pulleys placed in reverse relation and connected by an adjustable belt, and having connection with said flexible chambers and with the pump-shaft, for operation in the way described.

13. The combination, in a gas-machine, of a generator and an air-pump and measuring and mixing chambers for the fluids, suitable pipe-connections for said parts, and valves arranged to control the operation of the air-measuring chambers with the cone-pulleys and their connecting-belt, all operating to control the movements of the measuring device, as described.

382,077. PORTABLE ELEVATOR. JAMES DEE, Jerseyville, Ill. Filed Jan. 6, 1888. Serial No. 259,688. (No model.)



Claim.—In a portable elevator, the combination, with the base-frame thereof, of the pivoted bars *d*, having slots *e* and pins *m*, and the sliding blocks *c*, in which are secured bars *g*, having shoes *f*, pivotally secured to the lower ends thereof, all constructed and adapted to operate substantially as and for the purpose set forth.

382,078. NUT-LOCK. WILLIAM DEER, Philadelphia, Pa., assignor of two-thirds to Daniel B. Ruffner and Gideon B. Bolton, same place. Filed Mar. 19, 1887. Serial No. 231,551. (No model.)



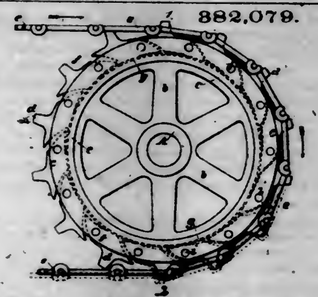
Claim.—A nut-fastener consisting of a single strip of material having one end coiled, forming a spring and an eye, C, and the other end portion, D, bent around the said eye C, and having a spring portion, E, adjacent to the said eye, and the ends E and D being set out in opposite directions, all as described.

382,079. SPROCKET-WHEEL. WILLIAM D. SWAIM, Chicago, Ill., assignor to The Beart Manufacturing Company, same place. Filed Dec. 3, 1887. Serial No. 257,410. (No model.)

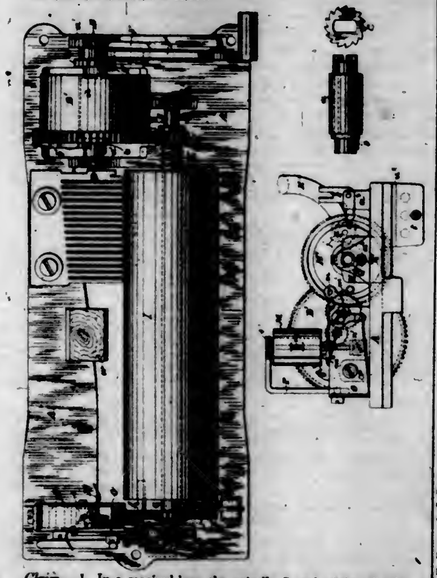
Claim.—A sprocket-wheel having bodily-movable teeth or sprockets, the movements of which vary the pitch of the wheel, substantially as and for the purpose set forth.



882,079.



882,080. MUSICAL BOX. EDMOND FONTAINEMOZ, La Mothe, near Yverdun, Switzerland. Filed Oct. 3, 1888. Serial No. 315,173. (No model.) Patented in Belgium May 14, 1888, No. 78,119; in France May 18, 1888, No. 176,937; in England May 24, 1888, No. 6,962, and in Germany May 31, 1888, No. 41,897.



Claim.—1. In a musical box, the spindle G and pinion H adjustable upon the same, substantially as described.

2. In a musical box, the cylinder-spindle G and bearings G^1 G^2, in combination with the spring-plate K, substantially as described, and for the purposes set forth.

3. In a musical box, the hollow shaft or collar *a*, having at one end the pin *b* and adapted to carry at the other the ratchet-wheel *c*, in combination with the fixed shaft B, all substantially as described, and for the purposes set forth.

4. In a musical box, the frame O, for carrying the fly and its train of wheels, formed from a single piece of metal and having a bent arm, P, and steel bearing-plate *s*, in combination with the three-armed lever or trigger, the spring of which bears directly upon the bed-plate, substantially as and for the purposes set forth.

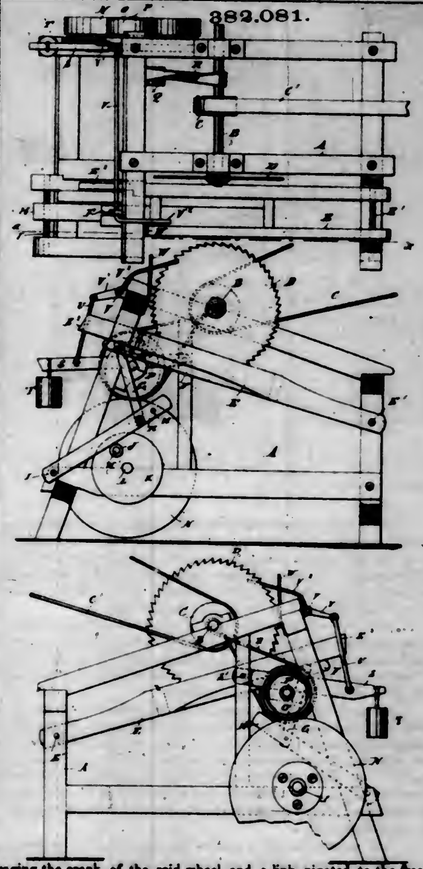
5. In a musical box, the bent arm *k*, pivoted in the lug a^2 and adapted to operate the air-changing device, substantially as described.

6. In a musical box, the combination of the winding-handle E, spring F', pawl F, ratchet-wheel *c*, pawl D, and spring D', substantially as described, and for the purposes set forth.

882,081. CIRCULAR SAWING MACHINE. JOSEPH W. FRANK, Emporia, Florida. Filed Oct. 1, 1887. Serial No. 251,266. (No model.)

Claim.—1. In a sawing-machine, the combination, with the main frame and a feed-frame for carrying the block-carriage pivoted to the main frame, of a crank-wheel journaled in the main frame below the free end of the feed-frame, an arm pivoted to the main frame and engaging the crank of the said wheel, and a link pivoted to the free end of the said arm and to the under side of the feed-frame, substantially as herein shown and described.

882,081.



2. In a sawing-machine, the combination, with the main frame and a saw-arbor journaled therein, of a feed-frame pivoted to the main frame, a crank-wheel journaled in the main frame below the free end of the feed-frame, an arm pivoted to the main frame and engaging the crank of the crank-wheel, a link pivoted to the free end of the said arm and to the under side of the feed-frame, and intermediate mechanism for operating the crank-wheel from the saw-arbor, substantially as herein shown and described.

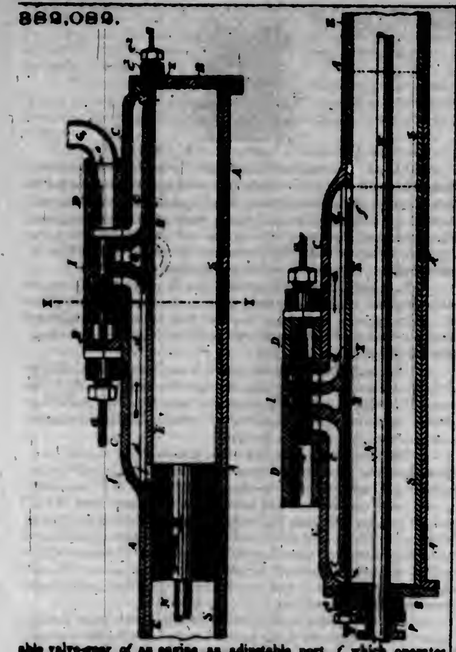
3. In a sawing-machine, the combination, with a saw-spindle and a saw, of a shaft operated from said saw-spindle, means, substantially as described, for raising and lowering said shaft, a friction-pinion secured on said shaft and engaging a friction-wheel, a shaft carrying said friction-wheel and also provided with a crank-disk, a pivoted arm operated by the crank-pin of said crank-wheel, a link pivotally connected with said pivoted arm, and a feed-carriage pivotally connected with said link and moving in front of said saw, substantially as shown and described.

4. In a sawing-machine, the combination, with the saw-arbor and a transverse shaft operated from the saw-arbor, of a weighted pivoted arm in which one end of said shaft is mounted, a link connected with the free end of said pivoted arm, an arm connected with said link and secured to a shaft, and a second arm fastened on said shaft and adapted to be held in a locked position, and devices for locking the same in position, substantially as shown and described.

882,082. REHEAT-ATTENDED STEAM-ENGINE. MICHAEL GARLAND and ASHA D. CATLIN, Bay City, Mich.; said Catlin assignor to said Garland. Filed Sept. 16, 1887. Serial No. 249,962. (No model.)

Claim.—1. In combination with the cylinder, piston, and suitable valve-gear of an engine, an adjustable port, *f*, which operates when set at different points lengthwise of the cylinder to effect the cushioning of the piston during longer or shorter portions of the stroke of said piston, all substantially in the manner and for the purposes hereinbefore set forth.

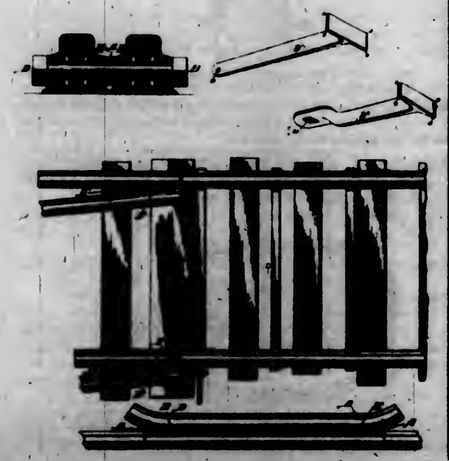
882,082.



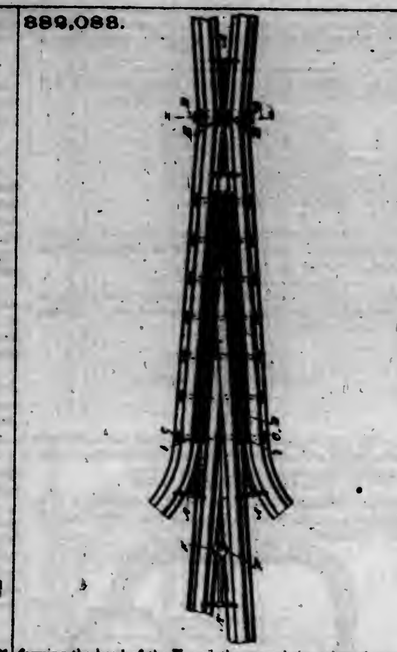
2. In an engine adapted to be driven by steam, (or any other elastic medium,) the combination, with the cylinder, piston, and suitable valve-gear, of adjustable ports *f f*, arranged one near each end of the cylinder and separately adjustable lengthwise of the cylinder, as specified, whereby the cushioning of the piston on the cylinder may be effected differently at the opposite ends of the cylinder and the piston-stroke, all substantially as hereinbefore set forth.

882,083. FOOT-GUARD FOR RAILWAYS. THOMAS A. GRIFFIN, Chicago, Ill. Filed Oct. 20, 1887. Serial No. 252,726. (No model.)

Claim.—1. A foot-guard for railways, consisting of a T-shaped single piece of metal formed from a short section of rail by drawing out the head thereof to form the stem of the T, the flange thereof



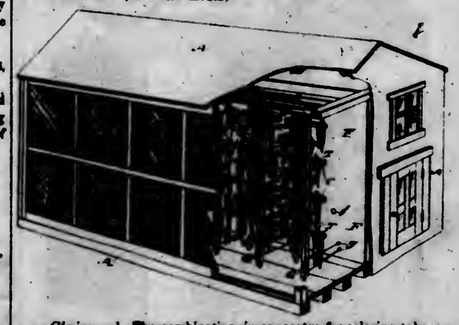
882,083.



forming the head of the T, and the stem being pierced near its end for the reception of a bolt or other fastening.

2. A foot-guard for railways, consisting of a piece of T-shaped metal, its head constructed to rest upon the rails and its stem being twisted or flattened at its end and provided with a spike-hole, substantially as described.

882,084. APPARATUS FOR COLORING TOBACCO. JAMES K. HARDWICK and JAMES J. REDDEN, Marshall, N. C. Filed Dec. 20, 1887. Serial No. 258,262. (No model.)



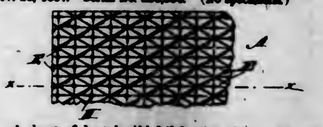
Claim.—1. The combination, in apparatus for coloring tobacco plants or leaves, of a structure provided with a transparent or translucent outer wall, an inner light-reflecting wall, and plant or leaf supports or racks arranged between the two walls, substantially as shown and described, whereby the plants or leaves on the racks will receive both direct and reflected light to give them a uniform color, as herein set forth.

2. The combination, in apparatus for coloring or bleaching tobacco plants or leaves, of a structure provided with a glass or transparent outer wall, an inner light-reflecting wall, and a series of revolvable tobacco-supports arranged between said outer and inner walls, substantially as herein set forth.

3. The combination, in apparatus for coloring or bleaching tobacco plants or leaves, of a house or structure provided with a glass or transparent outer wall and an inner light-reflecting wall, thereby subjecting the plants or leaves to direct and reflected light, substantially as specified, a series of revolvable tobacco-supports arranged be-

hind said wall, and cords wound on these supports and leading to one side of the bleaching-room for operating the supports, substantially as herein set forth.

882,085. DENTAL FOIL. THOMAS J. HENRY, New York, N. Y. Filed Nov. 28, 1887. Serial No. 256,260. (No specimens.)



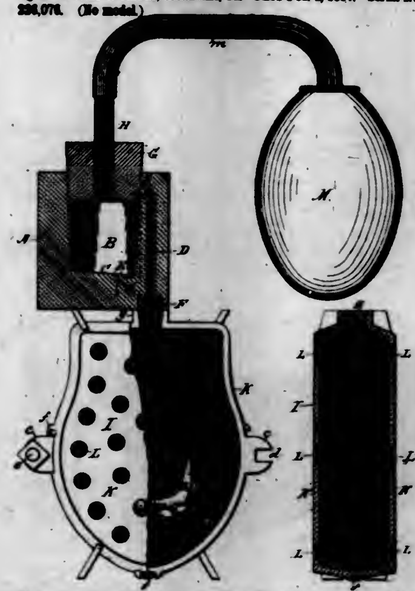
Claim.—A sheet of dental gold-foil having depressions covering its surface, the continuity of the metal at each of said depressions being slightly broken, as and for the purpose specified.

882,086. DOOR-BUTTON. FRANK J. HERRIN, New Britain, assignor of one-half to William Edgar Simonds, Hartford, Conn. Filed May 2, 1887. Serial No. 236,530. (No model.)



Claim.—The combination of the mortised button *a*, the pivot-pin *b*, and rubber cushion *c*, secured in the mortise, all substantially as described, and for the purpose set forth.

882,087. CRUCIBLE. JOSEPH R. HOLDEN, Washington, D. C., assignor to Craft C. Carroll, Hendville, Pa. Filed Feb. 1, 1887. Serial No. 226,076. (No model.)



Claim.—1. A crucible having a central melting-chamber and a discharge-passage extending from the bottom of the melting-chamber through the side wall to a point near the top, and thence to an opening in the base of the crucible, substantially as described.

2. A crucible having a tortuous discharge-passage in its wall and a discharge-opening in its base, substantially as described.

3. A crucible provided with a tortuous discharge-passage in its wall, a discharge-opening in its base, and a nipple embedded in said base and forming a continuation of said discharge-opening, substantially as described.

4. The combination, with the crucible A, having a tortuous discharge-passage in its wall and the discharge-opening in its base, of the tubular stopper G, the tube H, the rubber pipe *m*, and the air-injector M, substantially as described.

882,088. MOLD FOR CASTING SAW-TEETH. H. [illegible] HERMES, New York, N. Y. Filed Feb. 20, 1886. Serial No. 228,627. (No model.)



Claim.—1. The combination, in a mold for casting saw-teeth with diamonds or other hard stones, of the mold-sections constructed to form a cavity, and pins removably fitted opposite each other in said sections and projecting into said cavity from opposite sides thereof, whereby a stone supported between the ends of said pins will, when the tooth is cast, be completely surrounded by metal in which the pins are embedded, substantially as herein described.

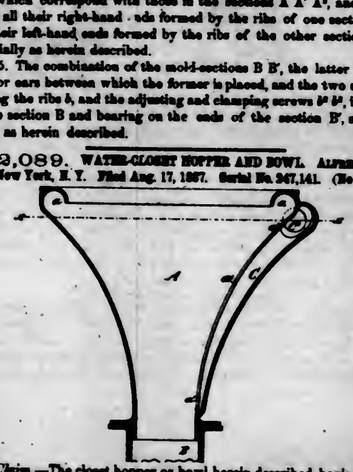
2. The combination, with mold-sections forming a cavity between them, of pins *n n'*, removably fitted in said sections and projecting into the cavity opposite each other, the said pins having cup-shaped or concaved inner ends for more securely retaining a stone between them, substantially as herein described.

3. The combination, with the two side sections of a mold having in the cavity formed between them the lateral enlargements *d*, of pins removably fitted in said sections opposite each other and projecting into the cavity on opposite sides thereof and from said lateral enlargements, substantially as herein described.

4. The combination, with the lower mold-sections, A A' A^3, constructed to form portions of mold-cavities, and pins *n n'*, fitted thereto for holding stones therein, of the upper mold-sections, B B', supported on said lower mold-sections and provided on their faces with ribs *b*, the said sections B B' being placed face to face, with the ribs *b* of each between the ribs *b* of the other, and containing portions of mold-cavities which correspond with those in the sections A A' A^3, and which have all their right-hand ends formed by the ribs of one section and all their left-hand ends formed by the ribs of the other section, substantially as herein described.

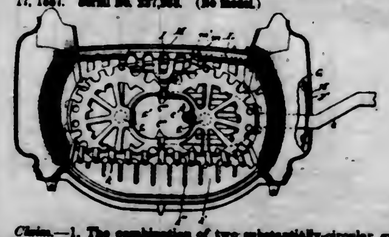
5. The combination of the mold-sections B B', the latter having lugs or ears between which the former is placed, and the two sections having the ribs *b*, and the adjusting and clamping screws b^2 b^2, inserted in the section B and bearing on the ends of the section B', substantially as herein described.

882,089. WATER-CLOSET HOPPER AND BOWL. ALFRED IVERS, New York, N. Y. Filed Aug. 17, 1887. Serial No. 247,141. (No model.)



Claim.—The closet hopper or bowl herein described, having in its side a water-supply channel or feeder extending substantially upright on the exterior thereof and communicating with the interior thereof by a slot, which also is substantially upright in the hopper or bowl, as and for the purpose herein described.

882,090. FIRE-POT FOR STOVES. WILLIAM J. KEEP, Detroit, Mich., assignor to the Michigan Stove Company, same place. Filed Feb. 17, 1887. Serial No. 227,923. (No model.)



Claim.—1. The combination of two substantially-circular grate-sections partially rotatable in a horizontal plane, each provided with a side opening to form a dump-hole between them, with a draw-slide for closing said dump-hole, and connected with one of said sections, whereby the said section and slide may be simultaneously operated, substantially as described.

2. The combination of the two partially-rotatable grate-sections C, each having a side opening, *d'*, and hook *c''*, adapted to alternately move into the dump-hole formed by said openings, substantially as described.

3. The combination, with the partially-rotatable grate-sections C, one of said sections being provided with an opening to form a dump-hole, of a vibrating draw-slide supported beneath the same and closing said dump-hole, and a bar, *c*, moving with said slide, and lugs *c'*, depending from one of said sections and receiving the bar *c* and transmitting motion from the bar *c* to said section, substantially as described.

4. The combination, with partially-rotatable grate cut away to form a dump-opening, and a spider beneath the same, provided with downwardly-projecting lugs D, of the swinging draw-slide R, arranged to slide on said lugs to close the opening and engaging the grate, substantially as described.

5. The combination, with the spider A, having cross-bars B, of the crescent-shaped sections C, one of which is provided with depending lugs and supported by and pivoted on said cross-bars, and the draw-slide R, filling the dump-hole between the crescent-shaped sections, and provided with the bar *c*, passing between the lugs on one of the sections, and the link I, connecting the two sections to move them simultaneously, substantially as described.

6. The combination, with a fire-pot, of a front grate comprising the vertical bars *k* and a plate arranged above said bars and at an angle thereto, having a series of slots, *k''*, forming short lateral bars *k'* in line with the bars *k*, substantially as described.

7. In a fire-pot, the combination, with the grate-support, of the frame M, supported thereby and formed with bars *m'*, and projections *m*, formed on said bars, and the lining formed of castings L, having lugs *l* on their backs engaging said projections, substantially as and for the purposes specified.

8. The combination, with the grate-support having upwardly-projecting lugs *a*, of the skeleton frame M, having bars *m'*, with projections *m* on their sides, and also having downwardly-projecting grate-bars passing between the lugs *a'*, engaging said lugs, and the lining formed of castings, united to said frame by lugs *l* on their backs engaging the projections *m*, substantially as described.

882,091. SPOOL OR BOBBIN. JOSEPH H. KEMBA, Antrim, N. H., assignor to H. I. N. Hayes, Cambridge, Mass. Filed Mar. 19, 1887. Serial No. 231,519. (No model.)

Brief.—The object of the invention is to produce a bobbin or spool which shall be strong and durable and at the same time of light weight.



Claim.—1. A spool or bobbin having a hollow barrel constructed in two parts united at a central point, the form of the bore toward the ends of the barrel being conical or rounded, substantially as and for the purposes set forth.

2. A spool or bobbin having a hollow barrel constructed in two parts united at a central point, the form of the hollow or bore being conical or rounded toward the ends of the barrel and enlarged or of substantially uniform diameter through the middle portion of its length, substantially as and for the purposes set forth.

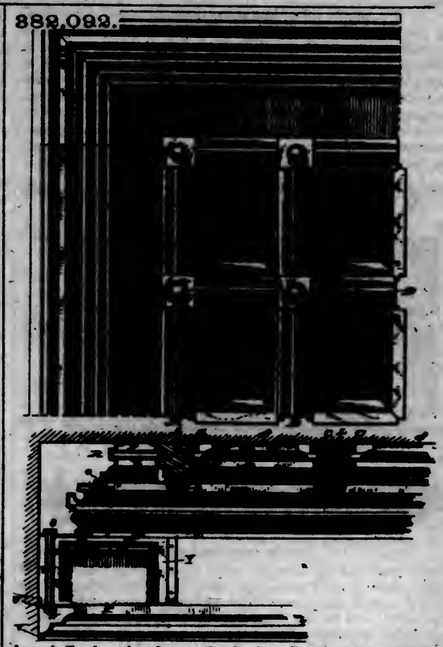
3. A spool or bobbin having a hollow barrel of wood constructed in two parts united at a central point, the meeting ends overlapping, as set forth, in combination with a metallic sustaining-ring, *c*, extending around within the bore of the barrel at a central point only, as set forth.

882,092. METALLIC CEILING. WILLIAM R. KINNEAR, Columbus, Ohio. Filed Oct. 1, 1887. Serial No. 251,231. (No model.)

Claim.—1. In a metallic ceiling such as described, the combination of separate panels provided upon the sides with the shoulders B and flanges C, the said flanges adapted to receive a line of nails, and strips of molding suspended between the said panels and provided with the channels E, adapted to fit over the shoulders B of the said panels, substantially as described.

2. In a metallic ceiling such as described, the combination of separate panels provided upon the sides with the shoulders B and flanges C, the said flanges adapted to receive a line of nails, strips of molding suspended between the said panels and provided with the

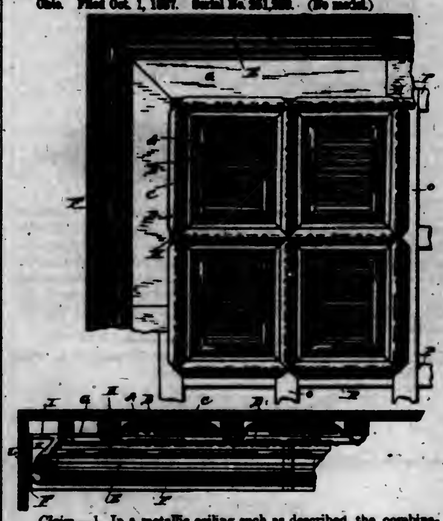
882,092.



channels E, adapted to fit over the shoulders B of the said panels, and the ornamental drops G, provided with the channels H, adapted to fit over the shoulders B of the said panels, substantially as described.

3. In a metallic ceiling such as described, the combination of the cornice O, provided with the flange P and channels S, the frieze Y, and the bending T, said bend provided with the channel W and flanges U and V, substantially as described.

882,093. METALLIC CEILING. WILLIAM R. KINNEAR, Columbus, Ohio. Filed Oct. 1, 1887. Serial No. 251,232. (No model.)



Claim.—1. In a metallic ceiling such as described, the combination of separate panels provided upon their edges with corresponding beads or moldings, said moldings being each adapted to fit any of the moldings of the abutting panels, and mitered at the corners of the panels, so that the moldings of the obliquely-abutting panels meet without changing the line of the said moldings.

2. In a metallic ceiling such as described, the combination of panels provided with corresponding beads or moldings upon the edges adapted to fit one over the other, and a cornice having a bead or molding corresponding to those upon the said panels and adapted to pass under the same, and further provided with a depending flange and adapted to rest against the side of the room and to receive a line of nails, substantially as described.

3. In a ceiling such as described, and in a cornice therefor composed of separate pieces, brackets provided with flanges for concealing the meeting edges of the said pieces, substantially as described.

382,094. METALLIC CEILING. WILLIAM B. KINNEAR, Columbus, Ohio. Filed Oct. 1, 1887. Serial No. 251,269. (No model.)



Claim.—1. In a metallic ceiling such as described, the combination of separate panels provided upon two adjoining sides with the folded edges C and flange D, and upon the opposite sides with the hooked edges F, the corners of the said panels cut away to receive the drops G, and the said drops provided with flanges H, adapted to rest under the folded edges of the said panels, substantially as described.

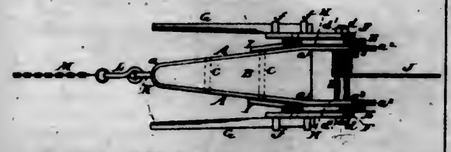
2. In a metallic ceiling such as described, the combination of separate panels provided upon two adjoining sides with the folded edges C and flanges D, and upon the opposite sides with the hooked edges F, and a cornice provided upon opposite sides of the said paneling with edges corresponding to the edges C and F, respectively, substantially as described.

382,095. BOLTING-REEL. RUDOLF KNEPPLER, Cleveland, Ohio. Filed May 12, 1887. Serial No. 237,934. (No model.)



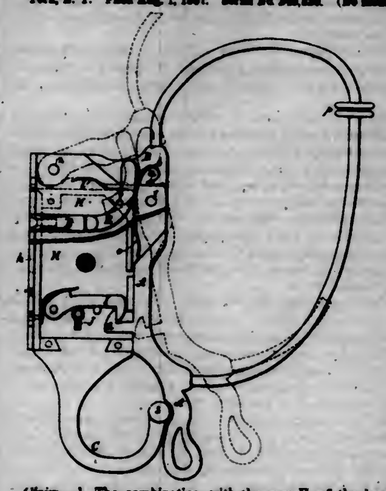
Claim.—The combination, with the shaft, the arms D, and the heads, of the hoops E on the outer ends of said arms, the flexible strip G over said hoops, the bolting-cloth made in sections, the adjacent ends of which are secured to said strip, the lacing-hooks I on the outer edges of the strip G, and the clamping-hoops secured around the hoops E between the sections of cloth and over the strip G, and lacings J between the hooks, substantially as and for the purpose specified.

382,096. STUMP-PULLER. LEBBEUS LAPO, Pittsburg, N. H. Filed Dec. 27, 1887. Serial No. 259,163. (No model.)



Claim.—A metallic stump-puller frame formed of two integral arms carrying a windlass near their front ends, together with pawls, ratchets, and levers, and provided on the outside of the fold a with a hook and eye, whereby the stump-puller may be used as described.

382,097. COAT AND HAT HOOK. WILLIAM H. LAWSON, New York, N. Y. Filed Aug. 1, 1887. Serial No. 245,230. (No model.)

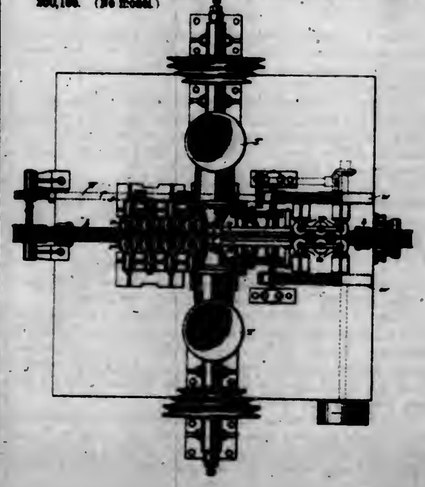


Claim.—1. The combination, with the case H, of the hook-section B, pivoted to the case and swinging upwardly, the hook-section A, pivoted to the case, and the spring O, to swing the hook-section A forward and upward, the hook C below the case H and behind the shank of the hook-section A, so as to be closed thereby when the section is swung down, the interlocking projections upon the shanks of the respective hook-sections A B, the catch G, and spring-latch I, substantially as set forth.

2. The combination, with the two hook-sections A B, the shanks of which interlock when brought together, and the case H, to which the said sections are pivotally connected, of the arm E, projecting from the shank of the section B, the open ring D at one side of the case H, the spring *l* between the shank of the section B and the top of the case H, the catch G, and latch I, substantially as set forth.

3. The combination, with the case H and the stationary hook C below the same, of the hook-sections A B, pivoted to the case and having interlocking projections, the open ring D upon the case, the arm E upon the hook-section B, the springs *l* and *o*, for acting upon the hook-sections to open the same when unlatched, the catch G, and the spring-latch I, for holding the parts when closed, substantially as set forth.

382,098. APPARATUS FOR PREPARING SECONDARY-BATTERY PLATES. ALBERT P. MADDEN, Newark, N. J., assignor to The Electrical Accumulator Company, of New York. Filed Sept. 20, 1887. Serial No. 250,168. (No model.)



Claim.—1. The combination, in a machine for the described purpose, of a moving surface and two or more rolls or cylinders for advancing the mold or form, two tubes or passages opening upon opposite sides of the advancing mold or form, from which the paste emerges to unite therewith, and two series of revolving disks located upon opposite sides of the mold or form, respectively, for smoothing the surfaces thereof.

2. In a machine for the described purpose, the combination of a moving surface and two or more rolls or cylinders for advancing the mold or form, two tubes or passages opening, respectively, upon opposite sides of the advancing mold or form, from which the paste emerges to enter the mold or form coincidently, two series of revolving disks located upon opposite sides of the mold or form, respectively, for smoothing the surfaces thereof, and a series of idle-rollers for supporting the mold or form in position until the operation is completed, all arranged to co-operate substantially as described.

382,099. HOSE-NOZZLE. IVES W. MCCAFFET, Chicago, Ill., assignor to John H. Brown, same place. Filed Dec. 12, 1887. Serial No. 257,670. (No model.)



Claim.—A hose-nozzle consisting of a butt-section and a rotatable point-section, the butt-section receiving and forming a seat for the point-section and having a lip, F, at its outer end, the point-section having a shoulder, E, and both sections having ports and passages for the water adapted to be opened and closed by the rotation of the point-section, and being secured together by the turning down of the lip F over shoulder E, substantially as set forth.

382,100. CORN-HARVESTER. JOHN T. MCHENRY, Chicago, Ill. Filed Oct. 28, 1887. Serial No. 253,056. (No model.)

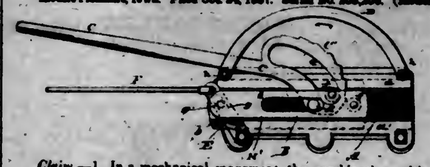


Claim.—1. In a corn-harvester, the combination of a pair of screw conveyers forming the jaws of the harvester, a pair of rollers located beneath and to the rear of the said conveyers, and rotating knives located longitudinally to the rear of the conveyers and vertically between the conveyers and the rollers, as set forth.

2. In a corn-harvester, the combination of conveyers forming the jaws for receiving and drawing the stalks into the machine, and rollers beneath and to the rear of the conveyers for pulling the stalks vertically downward, with rotary cutters at the end of the conveyers for severing the ears from the stalks, and with rotating radial arms in front and to the side of the knives for feeding the ears downward as they are severed from the stalks, as set forth.

3. In a corn-harvester, the combination of conveyers forming the jaws for receiving and drawing the stalks into the machine, rollers beneath and to the rear of the conveyers for pulling the stalks vertically downward, rotary cutters at the rear end of the conveyers for severing the ears from the stalks, conveyers extending rearwardly from the knives for carrying the ears to the rear of the machine, and rotary hubs having radial arms for feeding the ears from the cutters to the conveyers, all as set forth.

382,101. MECHANICAL MOVEMENT. THOMAS R. MCKINNEY, Mount Pleasant, Iowa. Filed Oct. 24, 1887. Serial No. 253,266. (Model.)



Claim.—1. In a mechanical movement, the combination, with a base-plate, of a box adapted to slide therein, carrying a roller, and a lever pivoted to the base-plate and provided with a curved slot, in which the roller on the box rests, substantially as set forth.

2. In a mechanical movement, the combination, with a base-plate having grooves or ways, of a box adapted to slide therein, and a notched segmental lever pivoted to operate within the box and engage a roller journaled therein to give the box a sliding movement and retain it in locked adjustment, substantially as set forth.

3. In a mechanical movement, the combination, with a base-plate having ways or guides, of an open box to slide therein, having elongated slots in its inner and outer faces, a post secured to the base-plate and extending through these slots, a notched segmental lever loosely mounted on said post, and a roller journaled in the box, with which the segmental lever engages to operate the box and retain it in locked adjustment, substantially as set forth.

4. In a mechanical movement, the combination, with a base-plate having guides or ways, of an open box to slide therein, a post secured to the base-plate and adapted to work in elongated slots in the box, a lever having a segment notched on one face and smooth on the other, and rollers journaled in the box to engage the segment on both faces, substantially as set forth.

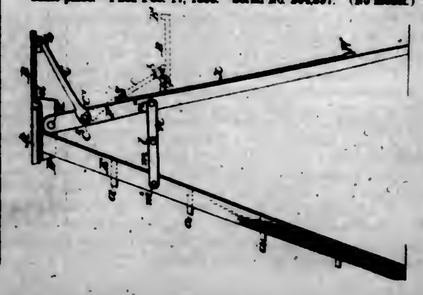
5. In a mechanical movement, the combination, with a base-plate, of an open box to slide therein, a notched segmental lever pivoted to work in said box, rollers to engage said segment, and a rod connected to one end of the sliding box, substantially as set forth.

6. In a mechanical movement, the combination, with a base-plate, of an open box to slide therein, a notched segmental lever pivoted to work in said box and engage rollers journaled therein, a bar or link pivoted to the base-plate, having a sliding connection with the box, and a rod connected to the free end of the link, substantially as set forth.

7. In a mechanical movement, the combination, with a base-plate, of an open box to slide therein, a segmental notched lever pivoted to work between the plates of the box, a roller journaled in the box to engage the notches of the segmental lever, and a pair of semi-elliptical plates to guide said lever, substantially as set forth.

8. In a mechanical movement, the combination, with a base-plate, of a box to slide therein, a notched segmental lever pivoted to work in said box, a roller journaled in the box and adapted to engage the segmental lever, and a rod so connected to the sliding box that its pulling action will always be in a line at right angles to the axis of said roller, substantially as set forth.

382,102. STEP-LADDER WITH JURY-SHELF. JAMES T. W. MCLAUGHLIN, Harrisburg, Pa., assignor of one-half to Lafayette Crull, same place. Filed Feb. 17, 1888. Serial No. 264,397. (No model.)



Claim.—1. The shelf B, provided with the cross-ledges B' B² on its under side, and having the braces C hinged or pivoted thereto and to the legs F of the ladder permanently, in combination with the landing-battens D, provided with the stop or stops *d* thereon, adapted to be engaged detachably by the ledge B² on the free end of said shelf, substantially as herein shown and described.

2. In a step-ladder, the shelf B, provided with the cross-ledges B' B², and with the braces C, formed of a continuous rod, bent into U form, having its middle joined by staples *b* to the ledge B', and having its ends pivoted to the legs F of the ladder, in combination with cross ledges or stops S S' at various elevations below the landing on ladder, for supporting said shelf thereby direct or reversed, substantially as and for the purposes shown and described.

382,103. HAME-FASTENER. ADDIS G. MCLEOD, Hallock, Minn. Filed Feb. 8, 1888. Serial No. 263,284. (No model.)



Claim.—1. The herein-described hame lock or fastener, composed of the clip having a hook at each end and a slot at one end, the upper end of the slot being enlarged, the hinged clamp consisting of the plate having one end bent substantially at right angles and having a turn-button at its other end, and the lever having a hook at one end and pivoted to the bent end of the plate, the hook extending in an opposite direction to the said bent end of the plate, the other end of the lever having an opening to receive the said catch, and the chain connected at its end with the clip and the said clamp and passing through the said slot in the clip, substantially as and for the purpose described.

2. The combination, with the clamp and the chain, of the clip having a hook at each end and a slot at one end, which slot extends around the hook and is enlarged at one end, substantially as and for the purpose described.

3. The combination, with the plate D, having the bent end *d*, and the lever having the hook *d'*, pivoted to the end of *d*, of the catch or turn-button E, pivoted to D and adapted to pass through an opening in the free end of D', and the clamp, all substantially as and for the purpose described.

382,104. GRATE-BAR. MAXIMILIAN H. MOSKOVITS, Kansas City, Mo., assignor of one-half to Cassarina Moskovits, same place. Filed Nov. 29, 1887. Serial No. 256,443. (No model.)
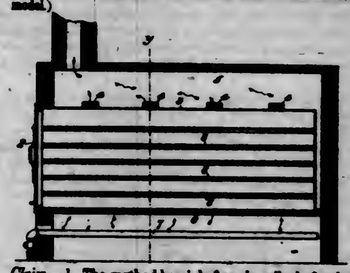


Claim.—1. In a grate-bar, a longitudinal supporting-web, A, provided with a transverse zigzag web, B, provided with openings *b' b''* upon opposite sides of the supporting-web, for the purpose set forth.

2. In a grate-bar, a zigzag web mounted upon a straight supporting-web extending transversely across the serrations of the zigzag web, the latter being provided with openings *b' b''* upon opposite sides of the supporting-web, substantially as described.

3. The combination, in a grate-bar, of a straight longitudinal supporting-web, A, at its under side, a zigzag upper web, B, supported upon said straight web by means of necks *e*, and lugs C, provided with projections M, all arranged and adapted to operate as described.

4. A grate-bar having a straight longitudinal supporting-web at its under side, in combination with a zigzag upper web supported upon said straight web by means of necks *e*, whereby air spaces *d* are formed, in the manner and for the purpose described.

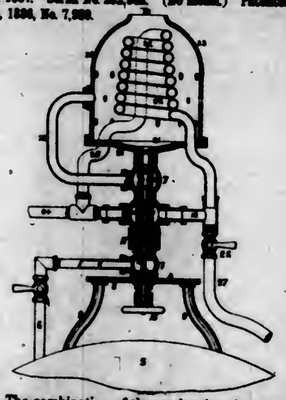
382,105. METHOD OF COLORING GLASSWARE. HENRY B. MUELLER, Pittsburg, Pa. Filed Mar. 3, 1888. Serial No. 266,092. (No model.)



Claim.—1. The method hereinbefore described of coloring glassware, which consists in painting glassware with a pigment, burning the pigment, and subjecting the glassware in a closed muffle to the action of coal-gas, substantially as and for the purposes described.

2. The method hereinbefore described of coloring glassware, which consists in painting glassware with a pigment, burning the pigment, subjecting the glassware in a closed muffle to the action of coal-gas, and, finally, developing the color, substantially as and for the purposes described.

382,106. OIL SPRAY OR VAPOR LAMP. ALEXANDER NELSON and JAMES TAYLOR, Inbermuir, County of Renfrew, Scotland. Filed Mar. 20, 1887. Serial No. 232,262. (No model.) Patented in England June 15, 1886, No. 7,899.



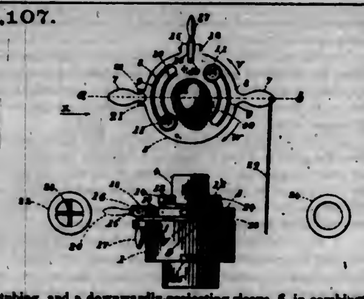
Claim.—The combination of the combustion-chamber of a vapor-burner with a burner-body below the chamber, and having upper and lower internal enlargements, a burner-tube within the burner-body opening into the combustion-chamber and extending through and past the said upper enlargement to the lower one and made with a conical mouth at its lower end, an adjustable conical nozzle in the lower enlargement for the issue of oil, an inlet for steam or compressed air into the lower enlargement, an inlet for heated air into the upper enlargement, and holes through the burner-tube to admit air from the upper enlargement.

382,107. PIPE-COUPLING. JOHN G. FRASER, Buffalo, N. Y. Filed Feb. 20, 1888. Serial No. 265,026. (No model.)

Claim.—1. A pipe-coupling consisting of a top provided with handles and with two curved slots having inclined ways on each side and enlarged holes 11 at the ends; an upper pipe for connecting with an



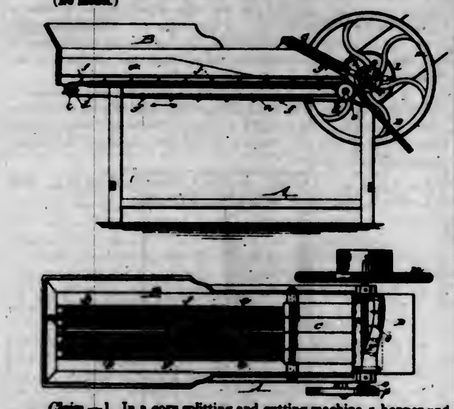
382,107.



elastic tubing, and a downwardly-projecting sleeve, 6, in combination with two screw-bolts provided with heads under which the inclined ways move while operating the coupling, and an elastic packing-ring and metal supporting-ring, as and for purposes described.

2. In a pipe-coupling, a cover, 3, having handles and two curved slots with bolt-holes at the ends and inclined slideways on each side, in combination with two screw-bolts secured to the body of the coupling and having heads under which the inclined ways move, a pivoted handle on the cover, and lugs 21 on the body of the coupling, between which the handle drops, for holding the coupling in position, substantially as described.

382,108. CORN SPLITTING AND CUTTING MACHINE. CLINTON J. FOSTER, Bowling Green, Ky. Filed Sept. 21, 1887. Serial No. 250,203. (No model.)



Claim.—1. In a corn splitting and cutting machine, a hopper and the endless chains or belts for advancing the ear-corn endwise therein, in combination with a revolving cylinder having one or more spirally-arranged transverse knives or cutters, a series of cutters, G, adjustably secured thereon so that their points project beyond the cutting-edge of the transverse cutters in a plane at right angles thereto, and a pivoted swinging board at the discharge end of the hopper adjacent to the cutters for holding the ear-corn while being operated on by said cutters, substantially as described.

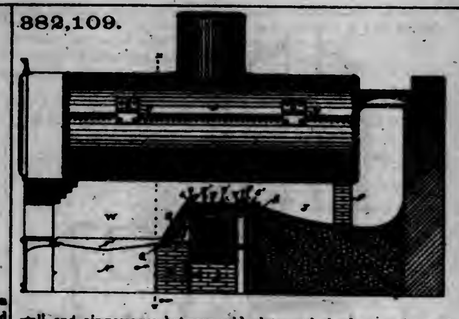
2. The combination, with a hopper and means for advancing the ear-corn endwise therein, of a revolving cylinder having transverse cutters or knives, the slotted cutters G, the nuts and bolts for adjustably securing said cutters to the transverse cutters, and the swinging grooved board for holding the ear-corn while being operated on by the cutters, substantially as described.

3. An improved corn splitting and cutting machine comprising a main frame, a hopper divided by a central partition in two channels or guides, endless chains or bands moving in said channels and advancing the ear-corn endwise therein, a swinging board at the discharge end of the hopper having a grooved under surface for the passage of the corn and for holding the corn endwise in the hopper, and a rotating cylinder having a plural number of cutters for cutting the corn held by said board, substantially as described.

382,109. FURNACE BRIDGE-WALL. THOMAS REESE, Jr., Erie, Pa. Filed Jan. 31, 1888. Serial No. 262,994. (No model.)

Claim.—1. The combination, in a boiler-furnace, of two plates, one an inclined plate, forming the rear of the fire-box, and the other a horizontal plate without openings therein over the top of the bridge-

382,109.



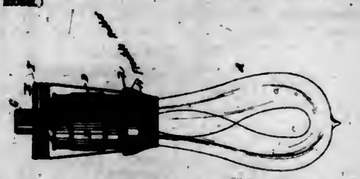
wall, and air-passages between said plates and the front and top of the bridge-wall, with one transverse air-exit opening between the rear edge of the inclined plate and the front edge of the horizontal plate, and another transverse air-exit opening at the rear edge of the horizontal plate, whereby the air in its traverse from the ash-pit through said passages is brought into contact with said plates and discharged into the furnace at two points only, one at the front edge and one at the rear edge of the bridge-wall, substantially as and for the purpose set forth.

2. The combination, in a boiler-furnace, of the plates R' and U, forming the upper walls of air-passages *f* and *b*, and adapted to heat the air during its passage through them, with an air-exit opening, *c*, from said passages between the plates R' and U, at the front of the bridge-wall, and an air-exit opening between the plate U and a plate, S, at the rear of the bridge-wall, substantially as and for the purpose set forth.

3. The combination, in a boiler-furnace, of the bridge-wall K and the rear wall, H, with the rear wall cap-plate, S, the plate U, raised above the bridge-wall K, the air-exit opening *a* between the plates U and S at the rear of the bridge-wall, and the air-exit opening *c* between the plates U and R' at the front of the bridge-wall, substantially as and for purpose set forth.

4. The combination, in a boiler-furnace, of the wall H, cap-plate S, the bridge-wall K, the plate U, and air-exit opening *a*, with the passages *b* and M, communicating with the opening *a*, the opening L through the bridge-wall K and its door O, the wing walls P P, supporting the rear plate, R', of the fire-box, the air-passage *f*, and the air-exit opening *c* at the front of the bridge-wall, substantially as and for the purpose set forth.

382,110. PROTECTOR FOR ELECTRIC-LAMP SOCKETS. CHRISTOPHER P. REILLY, New York, assignor of two-thirds to Thomas F. Ryder, West New Brighton, N. Y. Filed Mar. 3, 1888. Serial No. 265,923. (No model.)



Claim.—1. A covering for electric-lamp sockets, which consists of a cap and casing partially surrounding the socket and secured together by a moisture-tight joint, in combination with a rubber sleeve connecting the casing and the lamp-globe and making tight joints with each.

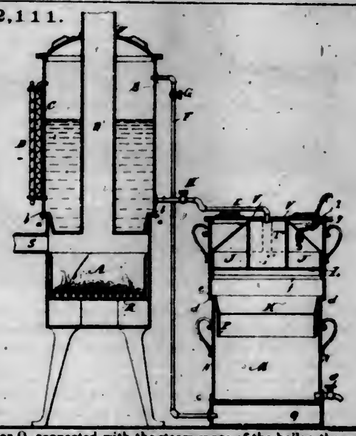
2. A covering for electric-lamp sockets, which consists of a cap and a casing partially surrounding the socket and making moisture-tight joints with each other, the said casing being provided with a bead at its outer end, in combination with a soft-rubber sleeve, forming a tight joint with the lamp-globe and adapted to fit over the bead, as and for the purpose set forth.

382,111. MACHINE FOR MAKING COFFIN. EDMUND K. SARGEANT, Brockville, Ontario, Canada. Filed Feb. 3, 1887. Serial No. 226,262. (No model.) Patented in Canada Mar. 31, 1886, No. 26,796.

Claim.—1. The combination, with the heater and the boiler, of the steam-chamber Q, connected with the steam-space of the boiler, the urn supported by said chamber, and the water-pipe leading from the water-space of the boiler and communicating with said urn, substantially as and for the purpose specified.

2. The combination, with the heater and the boiler, of the steam-

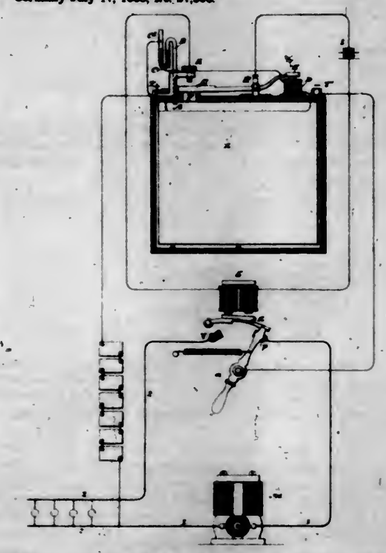
382,111.



chamber Q, connected with the steam-space of the boiler, the urn supported by said chamber, the removable filter, the pipe I, connected with the lower part of the boiler, and the pipe F, connected with the steam-space of the boiler and with said steam-chamber, substantially as described.

3. The combination, with the steam-chamber and the urn removably supported thereby, of the receptacle P, removably supported by said urn and formed with interior bead, *f*, and the filter removably supported by said bead, substantially as described.

382,112. AUTOMATIC SWITCH FOR SECONDARY BATTERIES. JOHN S. SELLON, Hatton Gardens, County of Middlesex, England, assignor to The Electrical Accumulator Company, of New York. Filed Aug. 30, 1887. Serial No. 248,201. (No model.) Patented in England Jan. 13, 1883, No. 217; in France June 30, 1883, No. 156,156, and in Germany July 17, 1883, No. 27,868.



Claim.—1. The combination of a secondary battery, a charging-circuit, a working-circuit, and a switch for transferring the battery from one circuit to the other, a magnet for operating said switch, and a device for opening and closing the circuit of said magnet operated by the accumulation of gas due to the decomposition of the electrolytic liquid.

2. The combination of a secondary battery, electro-magnetic switch mechanism therefor in an electric circuit, with a circuit-closer consisting of two insulated electrical contacts in a tube connected with a cell of said battery, and a globule or cylinder of mercury operated by variations in the pressure of gas in said tube to make or break said electric circuit.

3. The combination of an electrolytic cell having means for confining the generated gas or gases, a receptacle containing a conducting material operated by the pressure of the confined gas to connect the terminals of an electric circuit, and an electro-magnet operating an escape-valve.

4. The combination of an electrolytic cell having means for confining the generated gas or gases, a receptacle containing a conducting material operated by the pressure of the confined gas to connect the terminals of an electric circuit, and an electro-magnet controlling the local circuit containing an electro-magnetic switch operating to disconnect the battery from the charging-dynamo.

5. The combination of a secondary-battery cell having means for confining the generated gas or gases, a receptacle containing a conducting material operated by the pressure of the confined gas to connect the terminals of an electric circuit, and an electro-magnet controlling a local circuit containing an electro-magnetic switch operating to disconnect the battery from the charging-dynamo and connect it with the working-circuit.

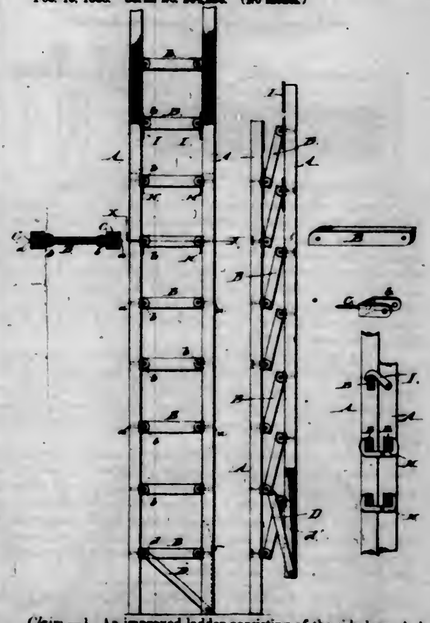
382,113. INHALER. CHRISTOPHER C. SHARP, Indianapolis, Ind. Filed Sept. 17, 1887. Serial No. 249,917. (No model.)



Claim.—1. An inhaler for use in administering medicines, consisting of a hollow chamber provided with tubes adapted to enter a person's nostrils, a substance in said chamber for holding the medicine, and an air-tube extending from the outside and terminating in the chamber near the entrance to the tubes for the nostrils, substantially as set forth.

2. The combination of the chamber A for holding the anæsthetic, formed in two parts and screwed together, and provided with tubes having removable tips *a*, and a handle, A', perforated longitudinally and extending into said chamber to near the entrance of said tubes, substantially as set forth.

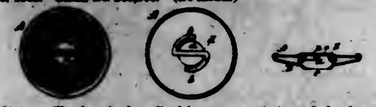
382,114. LADDER. ROBERT A. SHERMAN, Plover, Wis. Filed Feb. 16, 1888. Serial No. 264,226. (No model.)



Claim.—1. An improved ladder consisting of the side bars, A A, one of which is provided with the slot *d'*, the rungs B, pivoted in sockets *b*, and the brace D, consisting of a strip of metal pivoted at one end in the slot *d'* and provided at its opposite end with means for engaging the projecting end of one of the pivot-pins of the lower rung, substantially as described.

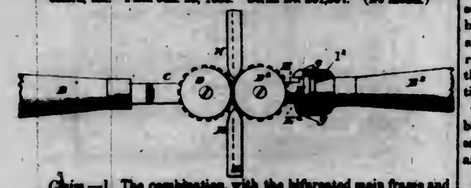
2. The combination, with a ladder, of the plates H, pivoted to the side bars of said ladder and provided with hooks at each end, and a pivoted plate, I, having a single hook, substantially as herein described.

382,115. BUTTON. ALFRED J. SHIPLEY, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Mar. 5, 1888. Serial No. 266,262. (No model.)



Claim.—The herein-described button, consisting of the face and back adapted to be secured together, the one constructed with inwardly-projecting tongues cut from the center of said part, and so as to form a central opening in said part, the other part constructed with a central opening corresponding to the opening in the first part, combined with a bar of substantially S shape across said tongued opening, the said tongues closed down over the ends of the bar, substantially as described.

382,116. DEVICE FOR SETTING SAWS. WILLIAM T. SLOCUM, Calera, Ala. Filed Jan. 23, 1888. Serial No. 261,697. (No model.)



Claim.—1. The combination, with the bifurcated main frame and the setting-wheels journaled one upon each side of the bifurcation, of the bifurcated gage on said shaft and adjustable in the bifurcation parallel with the axes of said wheels, substantially as described.

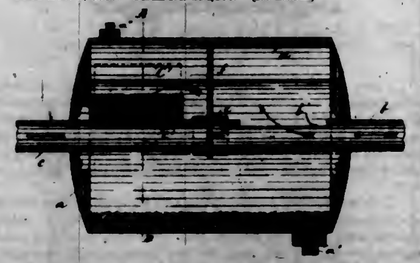
2. The combination, with the main frame and the setting-wheels journaled thereon, of the guides on said main frame, the gage having bifurcated shank, the arms of which work in said guides, and the adjusting-screw passed through said shank and engaging a screw-threaded hole in the main frame, substantially as described.

3. The combination, with the main frame provided with a setting-wheel, of the casting E, carrying a setting-wheel, and a casting I', engaging said casting E and adjustable lengthwise on said frame, substantially as and for the purpose described.

4. The combination, with the main frame provided with a setting-wheel, and having squared portion, as described, and the casting carrying the setting-wheel and having arms engaging said squared portion, and a collar having a flange, of the casting I', engaging the flange of the collar and adjustable on the frame, substantially as and for the purpose described.

5. The combination, with the main frame provided with a setting-wheel, and having squared portion *k* and screw-threaded portion *c*, of a casting having depending arms E embracing said squared portion, a collar sliding loosely on the frame and having a flange, F, a setting-wheel journaled on said casting, and a handle provided with a casting having arms *g* engaging the flange of said collar, and internally threaded to engage the threaded portion of the frame, substantially as and for the purpose described.

382,117. SAND-TRAP. BENJAMIN F. SMITH, Somerville, Mass. Filed Nov. 3, 1887. Serial No. 254,169. (No model.)



Claim.—The horizontal case or chamber *a*, having inlet and outlet pipes *b c*, with perforations *b' c'* and partition *d*, as described, combined with the open-partition *f*, secured to the interior of case *a*, and extending downward below the perforations *b' d*, and the perforated or netting deflector C, secured to the pipe *c* around its opening *c'*, as and for the purpose set forth.

382,118. UMBRELLA-SUPPORT. ABNER B. SNYDER, Brooklyn, N. Y. Filed Aug. 30, 1887. Serial No. 248,374. (No model.)



Claim.—1. A bracket or stand and a universal joint journaled thereon and composed of an annulus provided with journaling-lugs rotatable in said bracket or stand, and a clamping member fitted to said annular member and rotatable in a plane at right angles to the plane of rotation of the annular member and adapted to receive and hold a rod, substantially as described.

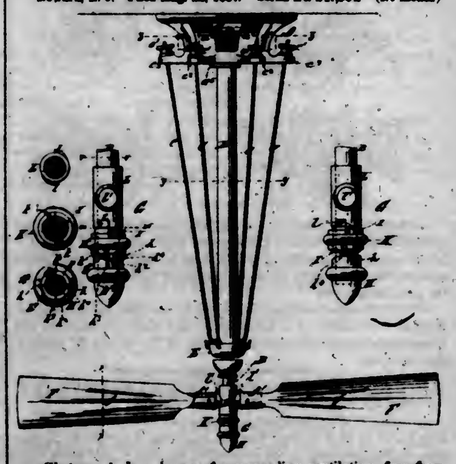
2. A bracket or stand provided with a slotted bow and a set-screw, combined with a universal joint composed of a rotatable member journaled in said slotted bracket and another member fitted to said first-named member and provided with an opening or recess to receive the thing to be supported and clamped, and rotatable with the first-named member and also at right angles to its plane of rotation, substantially as described.

3. The annular member *g*, having laterally-projecting lugs *h*, combined with the member *j*, having an opening, *k*, and lugs *m*, fitted in said annular member, a bracket provided with bearings for said lugs, and a set-screw, substantially as set forth.

4. A bracket or stand combined with a universal joint composed of a rotatable member, *g*, having bearings in said bracket or stand, and a second member, *j*, fitted to rotate with said rotatable member and also having an independent rotation of its own, and also provided with an opening or recess to receive the thing to be clamped, and a set-screw arranged in the bracket or stand and bearing against the last-named member to force it and the device contained in its recess against the face of the first-named member to clamp and hold the said device at any desired inclination or elevation, substantially as described.

5. The bracket or stand combined with a universal joint composed of a rotatable member, *g*, having the notched or corrugated face, and a second member having a recess to receive the thing to be clamped and co-operating with said notched first-named member in holding and retaining the said thing to be clamped, and a clamping-screw, substantially as described.

382,119. FAN FOR VENTILATING PURPOSES. JOHN STEWART, Newark, N. J. Filed Aug. 22, 1887. Serial No. 247,304. (No model.)



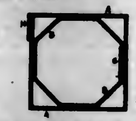
Claim.—1. In a hanger for suspending ventilating-fans from above, substantially as described, the combination, with the vertical fan-shaft B, provided with the power-pulley *b* at its upper end, of the

crown-piece A, inclosing the said pulley, the rigid central extension-piece, D, the upper end of which is seated in the said crown-piece, and the series of stay-rods C C, attached to the lower end of the extension-piece D and binding the latter to the said crown-piece, substantially in the manner and for the purpose described.

2. In a hanger for suspending ventilating-fans from above, substantially as described, the combination, with the vertical fan-shaft B, provided with the power-pulley *b* at its upper end, of the crown-piece A, inclosing the said pulley, the rigid central extension-piece, D, the upper end of which is connected with the said crown-piece by means of a ball-and-socket joint, and the series of adjustable stay-rods C C, attached to the lower end of the extension-piece D and adapted to compensate for any divistion or inclination of the crown-piece with relation to the vertical extension-piece D and shaft B, substantially in the manner and for the purpose described.

3. In combination with a fan for ventilating purposes, the stopping and starting clutch G, consisting of the vertically-movable ring K, formed with the upper shoulders *k*, and lower shoulders *k'*, the rigid horizontal cam H, formed with the shoulders *h*, cam-surfaces *h' h²*, and depressions *h²*, and the fan-hub L, formed with the shoulders *l*, the whole arranged and operating substantially in the manner and for the purpose described.

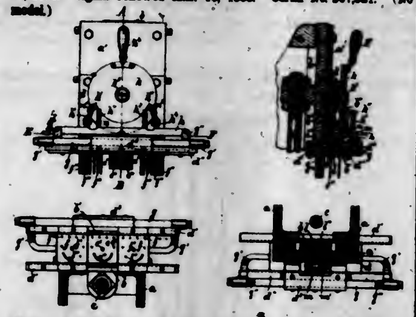
382,120. BOX OR CASE. ALBERT H. STOREY, London, England, assignor to the Storey Patent Case Company, (Limited,) same place. Filed Aug. 30, 1887. Serial No. 248,206. (No model.) Patented in England Sept. 18, 1883, No. 4,446.



Claim.—1. A box or case of card-board or other material, having an inner and an outer shell, the inner one having twice as many sides as the outer shell and the alternate sides of the inner shell being opposite the angles of the outer shell, as and for the purpose set forth.

2. A box or case of card-board or other material, having an inner and an outer shell, the inner one having twice as many sides as the outer shell and having its alternate sides in contact with the sides of the outer shell, while the intermediate sides of the inner shell are opposite the angles of the outer shell.

382,121. HEELING-MACHINE. MERRILL A. TYLER, Boston, and EDWARD MERRITT, Brockton, Mass., assignors to the American Heeling Machine Company, Portland, Me. Filed Mar. 27, 1885. Renewed May 20, 1886. Again renewed Mar. 16, 1888. Serial No. 267,331. (No model.)



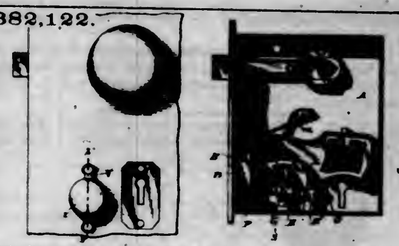
Claim.—1. In a heeling-machine, the driver-block *e* and right and left awl-blocks *f f*, located in horizontal guides below the plunger *b*, in which they are laterally adjustable, so as to bring one of such driver and awl blocks centrally below the plunger of the machine, as and for the purpose set forth.

2. In a heeling-machine, the vertically-movable and laterally-adjustable driver-block *e*, in combination with vertically-movable and laterally-adjustable right and left awl-blocks *f f*, as and for the purpose set forth.

382,122. KEY-HOLE GUARD. CHARLES R. UHLHAUS, Peoria, Ill. Filed Apr. 8, 1887. Serial No. 234,127. (Model.)

Claim.—1. The combination, with a lock-case and a sliding key-hole guard, E, of a pivoted tumbler, L, having a portion of its marginal surface normally in and inclined to the path of said block when advancing, and another portion of its marginal surface normally in and inclined to the path of the key-bit, and a spring adapted to offer a yielding resistance to the displacement of said tumbler by the action

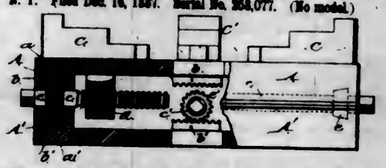
382,122.



of the key or block upon said surfaces, whereby the key may be prevented from remaining in position to obstruct the advance of the block, and both accidental advancement and partial retraction of the block may be avoided.

2. The combination, with the lock-case A, provided with the integrally-formed lug F, of the sliding key-hole guard E, the shaft H, and rigidly-connected arm G, for actuating said guard, the shaft-actuating bar H', with its encircling-spring 2, the pivoted tumbler L, having two oppositely-inclined marginal surfaces, and the spring *m*, acting upon said tumbler, substantially as set forth.

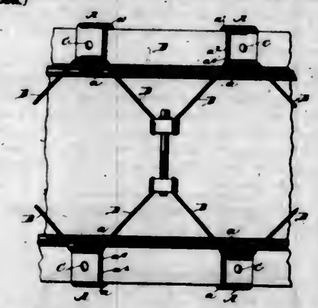
382,123. LATHE-CHUCK. FRANK H. VAN HOUTEN, Rochester, N. Y. Filed Dec. 16, 1887. Serial No. 258,077. (No model.)



Claim.—1. In a lathe-chuck, the jaws C C and the shells A A', each having an annular socket, in combination with an annular rack seated in each of said sockets, the shafts *c*, having pinions engaging the rack in one of said shells, and the shafts *c'*, provided with pinions engaging the rack in the other shell, substantially as and for the purpose specified.

2. In a lathe-chuck, the jaws C C, and the shells A and A', each having an annular socket, in combination with a rack seated in one of said shells, a rack seated in the opposite shell, and a plural series of shafts journaled in different planes, the shafts of one series having pinions engaging the rack in one shell and those of the other series having pinions engaging the rack in the opposite shell, substantially as described.

382,124. HOOK FOR DRUM-HEAD STRAINERS. GEORGE VAN ZANDT, Chicago, Ill. Filed Aug. 31, 1887. Serial No. 248,426. (No model.)

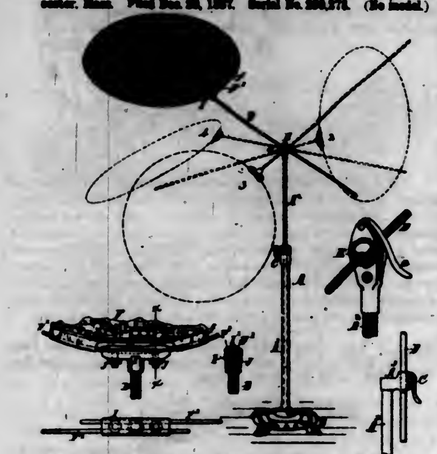


Claim.—1. In a drum-head strainer, a hanger for the straining-wire, formed of a sheet-metal strip folded back upon itself to provide along the line of fold a bearing, *a*, wherein the straining-wire is clasped and bent to form a curved lip, *a'*, which engages upon the edge of the hoop, the two leaves of such folded strip being brought closely together flatwise from the fold, substantially as and for the purpose set forth.

2. In a drum-head strainer, a hanger for the straining-wire, formed of a sheet-metal strip folded upon itself to receive and clasp the straining-wire along the line of fold and bent to provide a curved lip which engages the edge of the hoop, the two leaves of such sheet-metal hanger being brought together from the fold and held against slipping upon one another by a rivet, substantially as set forth.

3. In a drum-head strainer, a hanger for the straining-wire, formed of a sheet-metal strip folded upon itself to receive and clasp the straining-wire along its line of fold, and bent to provide a curved lip which engages the edge of the hoop, the two leaves of such sheet-metal hanger being brought together from the fold, and combined with a rivet passing through both leaves and extending into the hoop, substantially as and for the purpose set forth.

382,125. PHOTOGRAPHIC HEAD-SCREEN. OTIS C. WHITE, Worcester, Mass. Filed Dec. 30, 1887. Serial No. 259,573. (No model.)



Claim.—1. In a photographer's head-screen, the fabric screen-shade mounted at its border on a bow or hoop and supported at its edge, in combination with an adjusting-rod, to which the ends of said hoop are secured to maintain the fabric extended, substantially as set forth.

2. In a photographer's head-screen, a fabric shade or screen peripherally mounted upon a flexible hoop that is expansible for straining the fabric, and a binding-clamp that detachably holds the ends of said hoop in position and connects said shade to its supporting-rod.

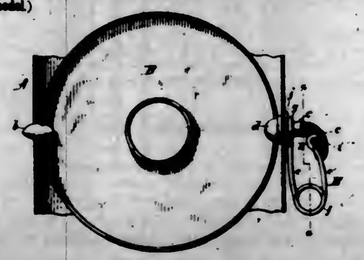
3. In a photographer's head-screen, a fabric shade having its supporting-hoop connected with the rod or arm by a joint and movable thereon to give adjustment of the shade to different planes coincident or diagonal to the longitudinal axis of the rod, substantially as set forth.

4. In combination, the fabric screen having the hem *f*, the expansible wire hoop or bow F', rove through said hem, and the supporting-rod D, provided with a connecting-head, to which the respective ends of said wire are detachably fastened, for the purpose set forth.

5. The longitudinally-grooved clamping-head I, its cap I', having screw-threaded shanks, and nuts J, in combination with the shade-supporting wire F and rod D, substantially as and for the purpose set forth.

6. In a photographer's head-screen, the fabric shade F, circumferentially supported by an expansible border, in connection with its adjusting-rod D, and the universally-adjustable clamping-joint E, having the binder *e*, for releasing and tightening said joint, in combination with an extensible standard, A, and the binder C, for retaining the movable part of said standard at raised or depressed position, substantially as shown and described.

382,126. STOVE-PIPE DAMPER. JAMES M. WILLIAMS, Jr., Hamilton, Ontario, Canada. Filed July 5, 1887. Serial No. 243,260. (No model.)

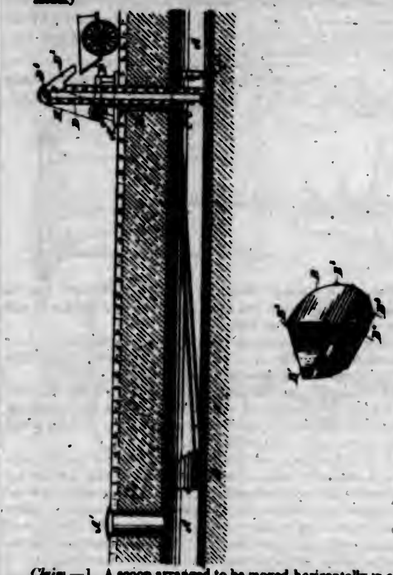


Claim.—1. The combination, with the damper provided with an enlargement or shoulder, *d*, and a journal, *c*, formed in one piece with the damper, of a spring-handle, E, provided with two arms, one of said arms being attached to the journal *c*, and the other arm bearing against the stove-pipe, whereby the shoulder *d* is caused to bear against the inner surface of the pipe and hold the damper from turning, substantially as set forth.

2. The combination, with the damper provided with a journal, *c*, having a recess, *i*, of a spring-handle, E, provided with a ring or eye, *g*, encircling said journal, and a hook, A, engaging in the recess of the journal, substantially as set forth.

3. The combination, with the damper provided with an enlargement, *d*, and a journal, *c*, having a recess, *i*, of a handle, E, composed of spring-arms *e e'*, connected by a coil, *f*, one of said arms being provided with an eye, *g*, which surrounds the journal *c*, and the other arm with a hook, A, which engages in the recess of the journal, substantially as set forth.

382,127. MECHANISM FOR CLEANING SEWERS. JOHN A. WYMAN, New York, N. Y. Filed May 17, 1887. Serial No. 238,470. (No model.)



Claim.—1. A scoop arranged to be moved horizontally in a sewer and to move the earthy and other deposits found therein from one point thereof to another and deposit them at different points for removal, in combination with an adjustable bulk-head, substantially as specified, and for the purpose set forth.

2. The horizontally-adjustable scoop, B, made of two or more sheets of metal, provided with inwardly-projecting flanges having in them slots for permitting the sheets to be adjusted in the manner described, whereby the scoop is made capable of use in sewers of different diameters, as described.

3. In combination with a street or other sewer, a scoop for removing the earthy matter from a sewer, a bulk-head for checking the movements of the earthy matter, and suitable mechanism for imparting movement to said scoop, substantially as set forth.

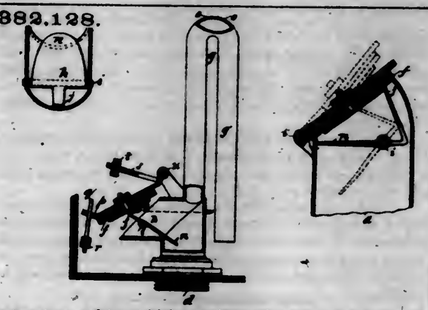
4. In a mechanism for cleaning sewers, the combination of an elevator supplied with a series of buckets for elevating the material carried forward by the scoop, and a bulk-head for arresting the movements of said material, the arrangement of the parts being substantially as described, whereby the lower end of the elevator is made capable of being inserted into a sewer.

382,128. WATER-CLOSET-SUPPLY APPARATUS. JOHN P. ADAMS, Cambridge, Mass. Filed Aug. 12, 1887. Serial No. 246,764. (No model.)

Claim.—1. In a tank for water-closets, having an outlet-port, combined with a valve for opening and closing said port, and a lever pivoted in the mouth or throat of the outlet-port, one arm of said lever acting against the valve and the other extending into the waterway or throat of the outlet-port, substantially as hereinbefore set forth.

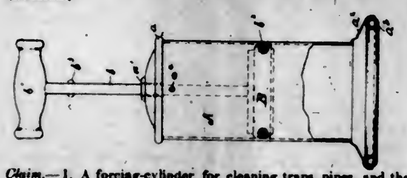
2. A tank for water-closets, having a main and supplemental com-

382,128.



partment, an outlet-port in the supplemental compartment, a valve to open and close said outlet-port, a port communicating between the two compartments, and a lever pivoted in the mouth or throat of the outlet-port, one arm of said lever acting against the valve and the other extending into the water-way or throat of the outlet-port, substantially as hereinbefore set forth.

382,129. FORCING-CYLINDER FOR CLEANING TRAPS. JOHN H. AUSTIN, New York, N. Y. Filed Apr. 20, 1887. Serial No. 236,147. (No model.)



Claim.—1. A forcing-cylinder for cleaning traps, pipes, and the like, comprising a cylinder open at its lower end and a piston in said cylinder, substantially as set forth.

2. A forcing-cylinder for cleaning traps, pipes, and the like, comprising a metallic cylinder open at its lower end and a water-tight piston in said cylinder, substantially as set forth.

3. A forcing-cylinder for cleaning traps, pipes, and the like, comprising a rigid cylinder open at one end and provided with a packing-ring around its open end, in combination with a piston working in said cylinder, substantially as set forth.

4. A forcing-cylinder for cleaning traps, pipes, and the like, comprising a rigid cylinder open at its lower end and having a closed top with a central guide-aperture, and a packing-ring around the open end of the cylinder, in combination with a piston working in said cylinder, a packing-ring carried by the piston between it and the cylinder, and an operating-rod fixed to the piston and extending upward through the aperture in the top of the cylinder, substantially as set forth.

5. A forcing-cylinder for cleaning traps, pipes, and the like, comprising a cylinder open at its lower end, an outwardly-flaring flange at the open mouth of the cylinder, and a packing-ring within said flange, in combination with a forcing-piston working in said cylinder, substantially as set forth.

382,130. REAR SIGHT FOR FIRE-ARMS. DANIEL V. BEAR, Plover, Wis. Filed Jan. 14, 1888. Serial No. 260,744. (No model.)

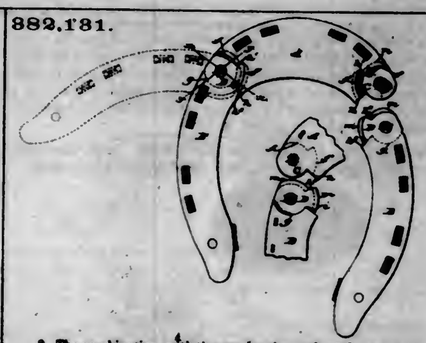


Claim.—A rear sight of white material having a curved or depressed upper surface and an underlying dark spot at the central point of said depression, said spot being in contradistinction to a vertical line.

382,131. HORSESHOE. JOHN B. REDMAN, Walla Walla, Wash., and EDWARD W. REDMAN, Portland, Oreg. Filed Oct. 26, 1887. Serial No. 253,415. (No model.)

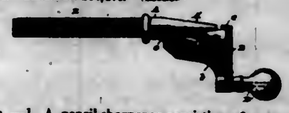
Claim.—1. The combination, with the overlapping ends of the toe and heel sections of a sectional horseshoe, and with a transverse pin uniting the two, of a tongue, *m*, upon the one section entering a slot, *n*, in the opposite section to form a rule-joint having the pin as its pivotal center, said tongue being disposed to engage its slot when the two sections are in normal position, and to be released only when the sections are swung out at about a right angle with each other, all substantially in the manner and for the purpose herein set forth.

382,131.



2. The combination, with the overlapping ends of the toe and heel sections of a sectional horseshoe having a transverse pivot-pin uniting the two, and a terminal segmental tongue, *m*, upon the one section, describing an arc having the pivot-pin as its center, and adapted to enter a slot, *n*, in the opposite section, of a second terminal segmental tongue formed upon the same section as the first to enter a counterpart slot in the opposite section, but describing an arc of greater radius, having the same pivot-pin as its center to form a double rule-joint, substantially in the manner and for the purpose herein set forth.

382,132. PENCIL-SHARPENER. CLARK WM. REDMAN, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Mar. 17, 1888. Serial No. 267,472. (Model.)

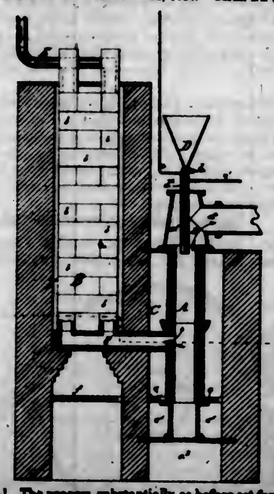


Claim.—1. A pencil-sharpener consisting of a pencil-receiving socket having the usual cutter or reducing device, and provided with crank-handle B B', as and for the purpose hereinbefore set forth.

2. The pencil-receiving socket formed with an opening for the passage of the blade or pencil-cutter, in combination with the crank-handle B B', formed with a cutter bed or seat, and the cutter secured to said bed and projecting through said opening in the socket, as and for the purposes hereinbefore set forth.

3. The sharpener having its receiving-socket formed of a cylindrical portion, A, and a conical portion, A', and provided with a crank-handle, B B', as and for the purposes set forth.

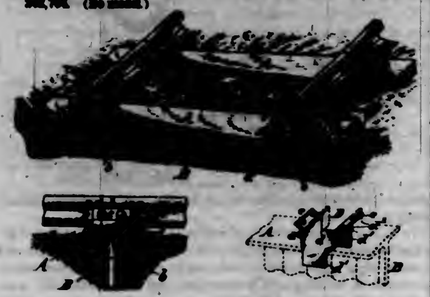
382,133. PROCESS OF MANUFACTURING THE OXIDES OF READILY-OXIDIZABLE METALS FOR PAINTS, &c. ARTHUR C. BRADLEY, Brooklyn, N. Y. Filed Feb. 21, 1887. Serial No. 228,290. (No model.)



Claim.—1. The process, substantially as before set forth, of manufacturing an oxide of a metal, which consists in exposing the metal in a comminuted condition to the action of an inclosed current of air heated to a temperature sufficient to burn the metal without contact with any other substance.

2. The process, substantially as before set forth, of manufacturing the oxide of a metal, which consists, first, in exposing the metal in a finely-comminuted condition and in a descending shower to an inclosed current of air heated to a temperature sufficient to burn the metal, and, second, in collecting the dust oxide from said current.

382,134. RAILROAD-TIE. WILLIAM H. BRITTON, Buffalo, N. Y., assignor of one-half to William H. Britton, Jr., Jewett M. Richmond, and Alan S. McAllister, all of same place. Filed Feb. 2, 1888. Serial No. 262,704. (No model.)



Claim.—1. A metallic railroad-tie composed of a horizontal bed-plate, A, and a vertical rib or plate, B, provided with vertical corrugations, substantially as set forth.

2. A metallic railroad-tie composed of a horizontal bed-plate, A, and a vertically-corrugated rib or plate, B, arranged centrally on the under side of the bed-plate and extending lengthwise thereof, substantially as set forth.

3. In a metallic railroad-tie, the combination, with the horizontal bed-plate A and the vertically-corrugated rib or plate B, of lips *c c'*, formed integral with the bed-plate, one set of said lips being arranged at or near one edge of the bed-plate and the other set of lips at or near the opposite edge of the bed-plate, substantially as set forth.

382,135. FLOUR-BOLT. CHARLES H. BROWN, Milwaukee, Wis. Filed Oct. 10, 1887. Serial No. 251,873. (No model.)



Claim.—1. The combination, with the bolting-reel, of a flexible cylinder arranged within said reel, and means whereby said cylinder is alternately collapsed and expanded, thereby throwing the material intermittently from the flexible cylinder against the surrounding bolting-reel, substantially as set forth.

2. The combination, with a bolting-reel, of a flexible cylinder arranged within the bolting-reel, fixed inclined whereby the flexible cylinder is moved inwardly and collapsed, and springs whereby the flexible cylinder is moved outwardly and expanded, substantially as set forth.

3. The combination, with a bolting-reel, of a flexible cylinder arranged within said reel, longitudinal bars supporting said flexible cylinder, stationary notched rings with which said longitudinal bars engage, and springs whereby said longitudinal bars are moved outwardly, substantially as set forth.

4. The combination, with the bolting-reel and the flexible cylinder F, arranged within the same, of notched rings I, secured to the stationary frame of the machine, longitudinal ribs *f*, supporting the flexible cylinder, curved spring-arms G, to which said ribs are attached, and longitudinal bars J, secured to the outer ends of said spring-arms and engaging with the notched rings I, substantially as set forth.

5. The combination, with the bolting-reel and the flexible cylinder arranged within the same, of elevating-buckets secured to the outer surface of the flexible cylinder, and means whereby the flexible cylinder is alternately collapsed and expanded, substantially as set forth.

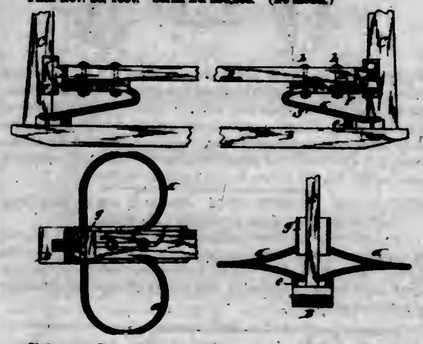
382,136. COFFIN. JOHN H. CHAMBERS, Schenectady, N. Y. Filed Jan. 9, 1888. Serial No. 260,202. (No model.)



Claim.—1. The combination, with a plurality of caskets and the conductor leading to a point below the surface of the earth, of pipe-connections between said caskets and conductor, substantially as and for the purpose described.

2. The combination, with the casket and conductor leading to a point below the surface of the earth, of a pipe-connection between said casket and conductor and a disinfectant-coal in said connection, substantially as and for the purpose described.

382,137. VEHICLE-SPRING. EDWARD CLUFF, Rochester, N. Y. Filed Nov. 26, 1887. Serial No. 256,322. (No model.)



Claim.—1. In combination with the bolster B, stake C, and the bar D, over the bolster and parallel therewith, the spring S, composed of the vertical coils *a a* at opposite sides of the bolster, and united at the top by the loop *l*, extending with its closed end toward the end of the bar D, and the bases of the coils terminating with bearings on top of the bolster nearly directly under the closed end of the loop *l*, substantially as described and shown.

2. The spring S, composed of the central horizontal loop, *l*, vertical coils *a a*, extending from the open end of the loop and terminating with horizontal curved bearings *c c* under the closed end of the loop, all formed in one piece, substantially as described and shown.

3. In combination with the bolster B and stakes C C, the bar D, provided with the longitudinal slot *d*, the plate *f*, formed with the guide *g*, and the bolts *b b*, passing through said plate and slot *d* and fastening the plate to the bar D, substantially as described and shown.

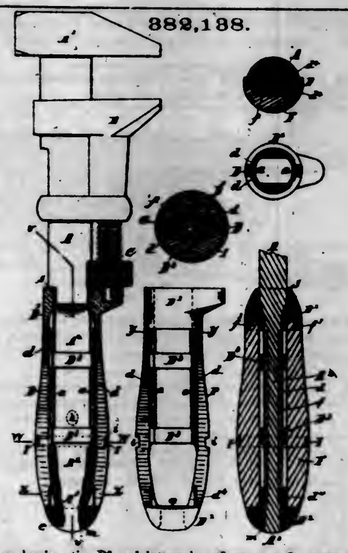
382,138. WRENCH. JOHN H. COES and FRANKLIN I. COES, Worcester, Mass. Filed Dec. 27, 1887. Serial No. 258,968. (No model.)

Claim.—1. The handle-frame composed of the ferrule, tip, and side braces formed integral, and having the tip end D^2 provided with an opening, *e*, in combination with the bar A, having the shank A', supported between the internal surfaces, *a*, of said handle-frame, and extending through the opening in said tip, with its end fastened or riveted at the outer end of the handle-frame, substantially as shown and described.

2. A wrench having its handle constructed as herein described, with the metal handle-frame composed of the ferrule, tip, and connecting-braces formed integral and internally fitted to support the shank of the bar at *a a*, and provided with the lips *d* adjacent to the shank-supporting surfaces, in combination with the side plates, F, internally longitudinally grooved or recessed, as described, to fit over and embrace said lips, and means for securing said side plates to the frame, substantially as set forth.

3. The wrench constructed substantially as shown and described, with the handle-frame D, composed of the integral ferrule, tip, and
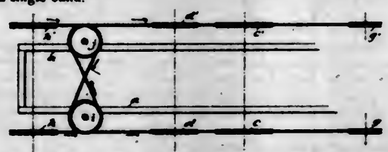
382,188.



side braces, having tips D^3 and internal surfaces, *a a*, for supporting the bar, an opening through the tip end and side notches, *i*, in combination with the bar having the long shank A', extending through the end of the handle fitted between said internal surfaces and fastened or upset at the outside of the tip end, the side plates, F, fitted to the handle-frame, and the ring I compressed into the notches *i* and peripheral groove about the side plates, for the purposes set forth.

382,189. SPINNING-MULE. THOMAS H. COSLEY, Ware, Mass. Filed Jan. 30, 1888. Serial No. 262,303. (No model.)

Brief.—The invention consists in improved means for banding the operative parts of a spinning-mule of the type of the Mason mule, whereby that portion of the copping mechanism embraced in the backing-off and winding-on devices on both sides of the head may be driven by a single band.



Claim.—The combination, with a dual set of rims or pulleys in a spinning-mule, each set consisting of a driving-pulley, pulleys for operating the backing off and winding on of the copping mechanism and for driving the spindles, of a single band passed or banded about said pulleys, and guide-pulleys *i j* for guiding said band from one set of rims or pulleys to the other, substantially as set forth.

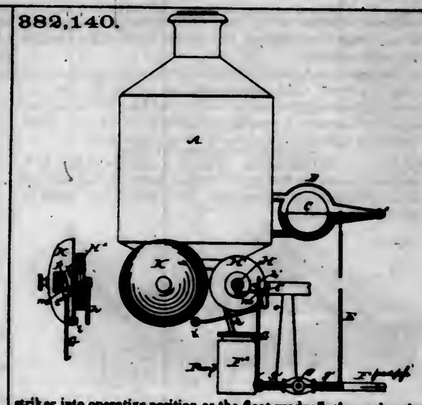
382,140. STEAM-BOILER INDICATOR. LOUIS D. CRUELAIS, Camden, N. J. Filed Nov. 19, 1887. Serial No. 255,694. (No model.)

Claim.—1. In a steam generator and engine, the combination, with an alarm-bell and an adjustable striker, of a rotary shaft receiving motion from the engine and carrying a stud or pin to engage with the striker, a float-chamber connected to the boiler, a float connected to a cock upon a supply-pipe leading to the boiler, and a series of jointed connections whereby when the float descends below the low-water limit the said striker will be brought into operative position, substantially as described.

2. In a combined steam generator and engine, the combination, with a float-chamber and float and a rotary shaft receiving motion from the engine and carrying a stud to engage with a striker, of a bell and striker and a series of jointed connections through which said striker is brought into operative action or engagement with said striker by the gradual descent of the float.

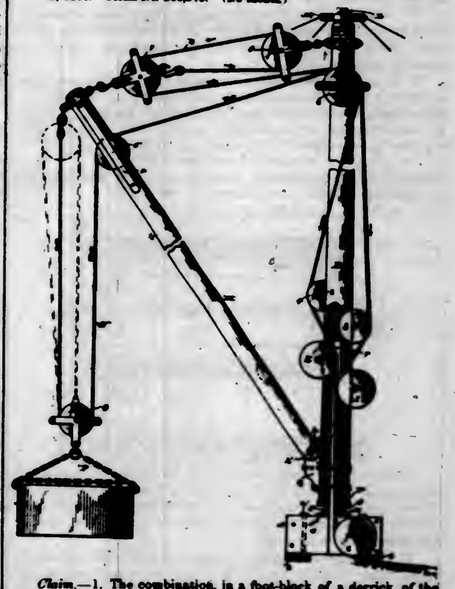
3. The combination, with the bell and striker of a low-water alarm and with the rotary shaft of an engine carrying a stud, *k'*, of the shaft or rod upon which said striker is movable, and a vertically-movable rod carrying a wedge by which said striker is adjusted, said rod being coupled or connected to the float and arranged to move the striker into operative position as the float gradually descends, substantially as described.

382,140.



4. In a steam generator and engine, the combination, with a float-chamber and float, an automatic striker actuated by the engine, and a water-supply pipe provided with a cock, of connections, substantially as described, coupling said float, striker, and cock, so that the same will act conjointly, as set forth.

382,141. DERRICK. D. HENRY CRAIG, Boston, Mass. Filed Jan. 12, 1888. Serial No. 260,575. (No model.)



Claim.—1. The combination, in a foot-block of a derrick, of the beams bolted side by side and provided with sheet metal on their contiguous sides, the skids having curved ends secured to the under side of said beams and projecting beyond the same at each side, the metal plate rigidly secured between said beams, and the sheaves journaled between said plate and beams, substantially as described.

2. The combination, in a derrick foot-block, of the beams C, bolted side by side, the skids having curved ends bolted to said beams, the metal plate secured between said beams, the metal wearing-surfaces *d*, the pin passing through said beams and plate, and the sheaves journaled on said pin between the plate and beams, substantially as described.

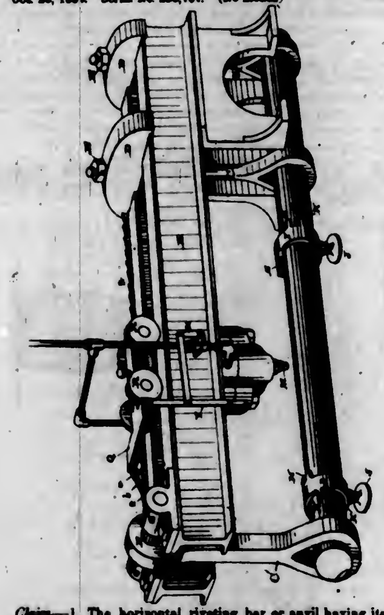
3. The combination, with the foot-block of a derrick, of a metal bearing-plate having a projecting hollow extension or sleeve provided with a shoulder on its interior, the mast having the way *r* formed in its lower portion, and provided with the metal foot-plate having a hollow pivot adapted to fit within said hollow extension or sleeve, and a washer resting on said shoulder, substantially as described.

4. The combination, in a derrick, of the foot-block, the mast resting on the same, the bars A, secured to said mast, the boom having its lower end iron-shod and pivotally secured to said bars, the wooden rest-plate having the concaved or curved upper surface bolted to said mast, and means for operating said boom, substantially as described.

5. The combination, in a derrick, of a foot-block having a channel centrally through it, a plate secured and sheaves journaled in said channel, a metal bearing-plate having a hollow projection or sleeve provided with an interior shoulder, a mast having a foot-plate provided with a hollow pivot adapted to fit within said sleeve, and said mast having a way formed in its lower end, sheaves journaled in boxes secured to the mast, said sheaves fitting partly in mortises in the mast, a wooden rest-plate having a curved or concaved upper surface bolted to the mast, a boom pivotally secured to the mast and having its lower end iron-shod, and a wire hoisting-rope and boom-hoist adapted to pass over the last-named sheaves through the way and foot-block to the power, substantially as described.

6. The combination, in a derrick, of a foot-block having a channel formed centrally through it, a mast adjustably supported on said foot-block and having a way formed in its lower end, sheaves working in mortises formed in said mast and journaled in boxes secured thereto, a boom pivotally secured to said mast and carrying a pulley, 5, near its outer end, a hoisting-wire, N, having one end secured to the outer end of the boom and passing around a pulley, O, to which the weight is hung, thence over pulley 5 to a pulley loosely hung to the upper end of the mast, thence down said mast over a guide-sheave, 4, into the way *r*, formed in the mast, and past pulley 2 into the channel of the foot-block, and a wire boom-hoist, R, having one end secured to a pulley-block, 7, loosely attached to the outer end of said boom, thence over a pulley, 8, loosely hung to the upper end of the mast, thence to pulley 7, thence to pulley 9, loosely hung to the upper end of the mast, and down the mast over guide-sheave 3 into the way and past sheave 1 into the channel in the foot-block, as set forth.

382,142. PIPE-RIVETING MACHINE. Gerrish Cushing, San Francisco, Cal., assignor of one-half to Francis Smith, same place. Filed Oct. 29, 1887. Serial No. 253,787. (No model.)



Claim.—1. The horizontal riveting bar or anvil having its ends suspended beneath the track or frame, in combination with the traveling riveting-plunger, substantially as herein described.

2. The horizontal riveting bar or anvil having one end fixed or suspended, as shown, in combination with a swinging supporting link or yoke at the opposite end, substantially as herein described.

3. The horizontal riveting bar or anvil having one end suspended in fixed supports and the other with the swinging or movable support, in combination with the notched or grooved collars, with the set-screws, whereby the pipe-section is held in position for riveting, substantially as herein described.
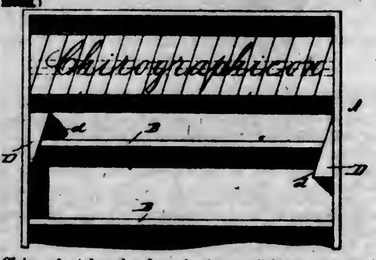
4. The collars fitting the riveting bar or anvil and having the grooves or notches in which the end rivets of the pipe-section fit, and the supplemental groove through which fixed pins upon the bar extend and by which the movement of the section is regulated for riveting double seams, substantially as herein described.

5. The horizontal riveting bar or anvil with its holding-collars, and the frame beneath which the bar is supported, in combination with the hydraulic cylinder, the vertically-moving plunger, the water-supply pipes, and the three-way cock or valve whereby the pistons and riveting-plunger are actuated, substantially as herein described.

6. The horizontal riveting bar or anvil with its fixed and swinging supports, and the pipe-holding collars, in combination with the hydraulic cylinder and riveting-plunger, the traveling carriage from which the cylinder is suspended, and the feed mechanism whereby the carriage and cylinder are advanced a distance equal to that between the rivet-holes in the pipe, substantially as herein described.

7. The hydraulic riveting-cylinder supported from the traveling carriage upon the main frame, the pipes supplying water to the pistons within the cylinder, and the three-way cock or valve whereby the supply is admitted and discharged, in combination with the swinging lever by which the cock or valve is opened and closed, and the feed mechanism is actuated simultaneously with the movement of the valve by the same lever, substantially as herein described.

382,143. APPARATUS FOR SETTING WRITING-COPIER. JAMES CURRIE, Darien, Conn. Filed Apr. 26, 1887. Serial No. 236,067. (No model.)



Claim.—1. A board or frame having parallel bars projecting from the face of the frame to form a groove or space between the frame and said bars, and provided with outside fixed end blocks having angular sides, in combination with grooved lettered blocks or cards having inclined sides adapted to said bars and blocks, substantially as and for the purpose set forth.

2. A board or frame having parallel bars projecting from the face of the frame to form a groove or space between the frame and bars, in combination with the reversible grooved lettered blocks or cards, substantially as and for the purpose set forth.

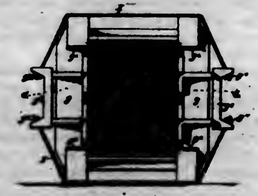
3. The combination of a board or frame having parallel bars provided with outside fixed end blocks having angular sides, and the reversible grooved lettered blocks or cards having inclined sides corresponding to the inclination of the angular side of said fixed blocks, substantially as and for the purpose set forth.

382,144. BALING-PRESS. PETER K. DEDERICK, Londonville, N. Y. Filed Nov. 10, 1887. Serial No. 254,254. (No model.)

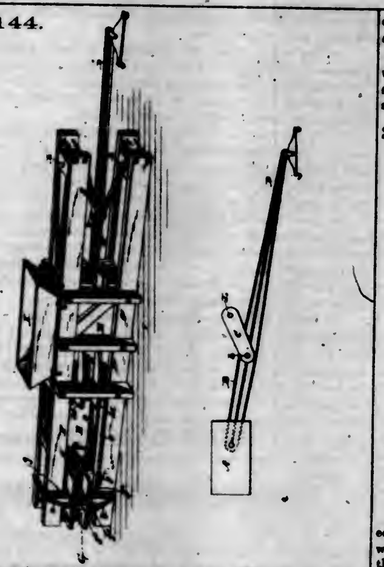
Claim.—1. In a baling-press, the combination, with the bale-chamber having openings, as at H, of the sides, each pivotally supported at a point between its extremities, whereby said sides are permitted to conform to and bear with uniform friction upon the column of pressed material, substantially as described.

2. In a baling-press, the combination, with the bale-chamber having openings, as at H, of the sides provided with passages for the bands on the bales, and each pivotally supported at a point between its extremities, substantially as described, for the purpose specified.

3. The bale-chamber having the openings H and guides O, and provided with the closed sides at the discharge end, substantially as described.



382,144.



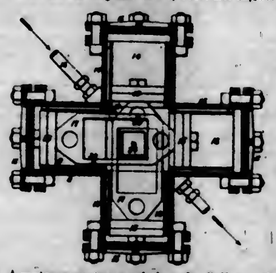
4. The bale-chamber having the openings H and guides O, in combination with the adjustable closed sides at the discharge end, and means for adjusting said sides, substantially as described.

5. The bale-chamber having the openings H, the guides O, and the slotted closed sides at its discharge end, substantially as described.

6. The bale-chamber having the openings H, the guides O, and the adjustable slotted closed sides at its discharge end, substantially as described.

7. In a horizontal baling-press, the combination, with the traverser, of the arms C C, pivoted to the press-frame, and the long lever B, pivoted to the traverser and to the said arms, as shown, and adapted for the direct attachment of the horse at its outer end, whereby the first part of the advancing movement of the traverser is effected by the inward thrust of the lever, due to a direct longitudinal pull on said lever, and without a strain on the arms C C, substantially as described.

382,145. PISTON WATER-METER. FRANK W. DICK, Glasgow, County of Lanark, Scotland. Filed Oct. 19, 1887. Serial No. 252,805. (No model.) Patented in England Oct. 8, 1886. No. 12,860.



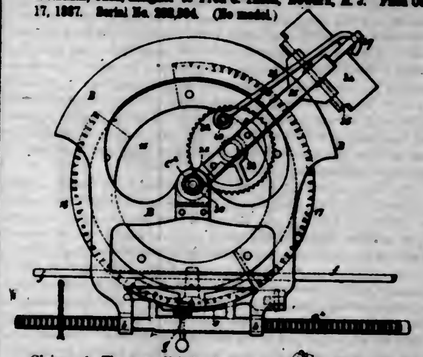
Claim.—1. A meter or motor consisting of cylinders radiating from a center, pistons working in the cylinders and attached to piston-rod plates formed with rectangular openings, a four-motion valve in the openings of the piston-rod plates and working on a port-face, two pins fixed on the upper piston-rod plate, and a star-wheel acted on by the said two pins and fixed on a spindle of the counting mechanism, substantially as and for the purposes herein set forth.

2. A meter or motor having, in combination, cylinders radiating from a center, pistons working in the cylinders and attached to piston-rod plates formed with rectangular openings, and a four-motion valve in the openings of the piston-rod plates and working on a port-face in a rectangular path, substantially as and for the purposes herein set forth.

3. A four-motion valve for a meter or motor in combination with plates or rods moved by pistons and arranged to separately and successively move the valve in directions corresponding to the four sides of a square, substantially as and for the purposes herein set forth.

4. A four-motion valve for a meter or motor, a center pin on the upper side of said valve, and a downwardly-projecting stationary spindle or pin placed centrally to keep away the center pin of the valve, substantially as herein set forth.

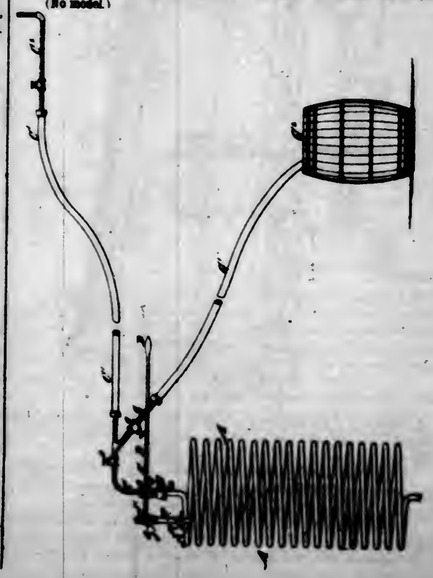
382,146. TYPE-WRITING MACHINE. JUAN DE LA CRUZ ROSSAR, Matanzas, Cuba, assignor to Fred G. Tilton, Newark, N. J. Filed Oct. 17, 1887. Serial No. 252,894. (No model.)



Claim.—1. The type-disk having two sets of flexible types at its edge, a pivot for such type-disk, and the index-plate, in combination with the printing mechanism, the centering-arc and arm for moving the same and the type-disk, the pinion, gear-wheel, connecting-rod, finger-plate and spring for moving the disk in relation to the centering-arc, and a stop for limiting the motion in either direction, substantially as set forth.

2. The combination, in a type-writing machine, with the means for moving the paper and giving the impression, of a type-disk having two sets of characters, an index-plate and pivot for supporting the disk, a centering-arc and arm above the type-disk, and an arm below the type-disk, the two arms being connected outside the edge of the index-plate, so as to move together, gearing below the type-disk and finger-plate, and connecting mechanism supported by the arm and serving to turn the type-disk in one direction or the other relatively to the centering-arc, and a stop to limit the motion and cause either one set or the other of the type to occupy the correct position relatively to the centering-disk, substantially as set forth.

382,147. APPLIANCE FOR CLEANING PIPE-COILS. FREDERICK FARRAR, Brooklyn, N. Y. Filed Nov. 19, 1887. Serial No. 254,602. (No model.)



Claim.—1. The combination, with an injector-pipe, C, having at its end a stopper for closing the end of a coil, of a lever, as D, constructed to engage an adjacent bearing to form a fulcrum, and adapted to act against a bearing on the said pipe, substantially as herein described.

2. The combination, with an injector-pipe, C, and the packed nut E, forming a cap to close the end of a coil, of the lever D, having a fulcrum-hook at the end and adapted to act against a bearing, *c*, on the said pipe, substantially as herein described.

3. The combination, with the injector-pipe C, having the cap E for closing the end of a coil, of the lever D, having a fulcrum point or hook and a long slot, *d'*, receiving the said pipe through it and adapted to bear against a shoulder on said pipe, substantially as herein described.

4. The combination, with the injector-pipe C, having an inducing-branch, G, and a cap or stopper, as E, for closing the end of a coil, of a lever, as D, adapted to bear against a shoulder on said pipe for holding the cap or stopper tightly against the end of a coil, substantially as herein described.

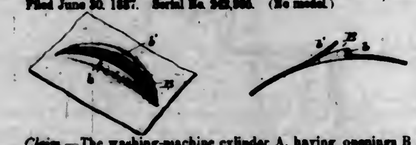
382,148. BOOK-COVER. ESTHER V. FOSLER, Salt Lake City, Utah. Filed Dec. 9, 1886. Serial No. 180,189. (Model.)



Claim.—1. The combination, with the cover and the joint-boards, of the spring-back creased and jointed in the manner stated and thickened in its central portion, substantially as shown and described, the ends of said spring-back being secured between the cover and the joint-boards, as set forth.

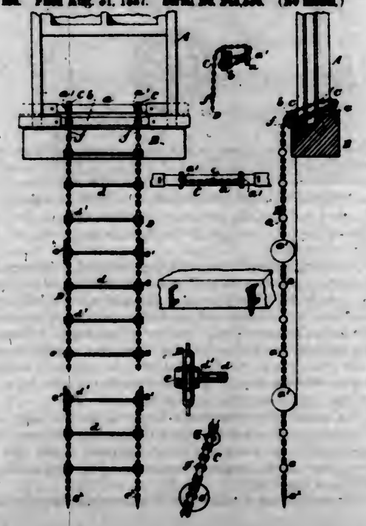
2. In a book-cover, the combination, with the joint-boards and the main boards, of the spring-back having creases formed therein and its ends secured between said boards, a space being formed between the inner edges of the main boards and the outer joints of the spring-back, substantially as shown, and for the purpose stated.

382,149. WASHING-MACHINE. WARREN FOWLER, Mexico, Me. Filed June 30, 1887. Serial No. 242,980. (No model.)



Claim.—The washing-machine cylinder A, having openings B in its periphery and sides, each of which openings has a raised edge lip, *b*, and a flaring and concave-edge lip, *b'*, substantially as described.

382,150. FIRE-ESCAPE LADDER. JOHN W. FRYE, Baltimore, Md. Filed Aug. 31, 1887. Serial No. 248,336. (No model.)



Claim.—1. The combination, with a frame comprising exterior longitudinal ribs for supporting the cloth, of two sets of spiral or obliquely-directed truss-ribs arranged to cross each other and secured together at their points of intersection to form a truss, said truss-ribs being extended the full length of the reel and connected with and constructed to support the exterior ribs, and means supporting the said longitudinal ribs and truss-ribs at the ends of the reel, substantially as described.

2. In a bolting-reel, the combination, with a frame comprising suitable exterior ribs for supporting the cloth, of two sets of spiral or obliquely-arranged truss-ribs, arranged to cross each other and secured together at their points of intersection to form a truss, said truss-ribs being extended the full length of the reel and connected with the exterior ribs of the reel and converged toward the center of the reel at the ends of the latter, and means supporting the said exterior ribs and the truss-ribs at the ends of the reel, substantially as described.

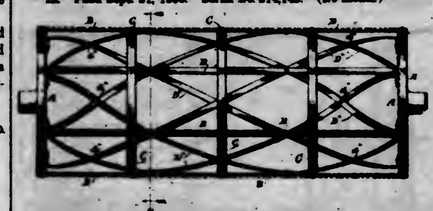
3. In a bolting-reel, the combination, with the cloth and exterior ribs for supporting the cloth, of two sets of spiral or obliquely-directed truss-ribs arranged to cross each other and united at their intersecting points to form a truss, said truss-ribs being connected with the exterior ribs of the reel and converged toward the axis of the reel at the ends of the latter, and reel-heads comprising central hubs located inside of the planes of the heads and provided with radial arms, which are outwardly bent or deflected to form hollow or concave spaces at the ends of the reel, the inwardly-bent or converging ends of the truss-ribs being attached to the said arms near the hubs, substantially as described.

382,151. SHEET-METAL JOINT. R. ELMER GOODSELL, New Haven, Conn., assignor of one-half to Clark R. Bryant, same place. Filed Mar. 3, 1888. Serial No. 266,551. (No model.)



Claim.—The herein-described joint for sheet metal, consisting in a series of slots formed near the edge of the one part and the metal offset in the line of the slots to form a shoulder parallel with the slots, so that the slots will be substantially through the shoulder, the other part constructed with a series of projecting tongues corresponding to the said series of slots, the said tongues introduced through said slots, so as to bring the edge from which the tongues project to abut against the said shoulder, and the tongues closed upon the reverse side of the slotted part, substantially as described.

382,152. BOLTING-REEL FRAME. WILLIAM R. GORTON, Moline, Ill. Filed Sept. 21, 1886. Serial No. 214,165. (No model.)



Claim.—1. In a bolting-reel, the combination, with a frame comprising exterior longitudinal ribs for supporting the cloth, of two sets of spiral or obliquely-directed truss-ribs arranged to cross each other and secured together at their points of intersection to form a truss, said truss-ribs being extended the full length of the reel and connected with and constructed to support the exterior ribs, and means supporting the said longitudinal ribs and truss-ribs at the ends of the reel, substantially as described.

2. In a bolting-reel, the combination, with a frame comprising suitable exterior ribs for supporting the cloth, of two sets of spiral or obliquely-arranged truss-ribs, arranged to cross each other and secured together at their points of intersection to form a truss, said truss-ribs being extended the full length of the reel and connected with the exterior ribs of the reel and converged toward the center of the reel at the ends of the latter, and means supporting the said exterior ribs and the truss-ribs at the ends of the reel, substantially as described.

3. In a bolting-reel, the combination, with the cloth and exterior ribs for supporting the cloth, of two sets of spiral or obliquely-directed truss-ribs arranged to cross each other and united at their intersecting points to form a truss, said truss-ribs being connected with the exterior ribs of the reel and converged toward the axis of the reel at the ends of the latter, and reel-heads comprising central hubs located inside of the planes of the heads and provided with radial arms, which are outwardly bent or deflected to form hollow or concave spaces at the ends of the reel, the inwardly-bent or converging ends of the truss-ribs being attached to the said arms near the hubs, substantially as described.

382,153. METHOD OF PAVING STREETS AND ROADS. PATRICK GRIFFIN, Utica, N. Y., assignor of three-fourths to James F. Leahy, Edward Callahan, and John Hackett, all of same place. Filed Oct. 3, 1887. Serial No. 251,377. (No model.)



Claim.—1. A roadway constructed by moistening and compressing the earth or clay into a convex surface, covering the same with a layer of water-tight felt or covering, and having a depressed ditch filled with loose stones at each side and the whole covered with a layer of hard wearing-surface.

2. A roadway consisting of successive layers of moistened and compressed earth, clay, or sand covered with a layer of felt, having a depressed ditch filled with loose stones at each side, and the whole covered with a layer of water-tight wearing cement.

382,154. FREIGHT-CAR DOOR. CHARLES HAGEE, Buffalo, N. Y., assignor of one-half to Henry Bosting, same place. Filed Dec. 19, 1887. Serial No. 258,200. (No model.)



Claim.—1. The combination, with a freight-car having an entrance-opening in its side, and a casing, F, arranged on the inside of the car on one side of the entrance, of a sliding door closing said entrance and adapted to enter said casing, and a rod or brace extending across the entrance on the outside of the sliding door and forming a support for the sliding door, substantially as set forth.

2. The combination, with a freight-car having an entrance-opening in its side, and a casing, F, arranged on one side of said entrance, of a sliding door closing said entrance, a horizontal shaft, A, a drum, G, mounted on said shaft and arranged in the casing F, a cord or chain, *g*, connecting said drum with the sliding door, rollers *l*, arranged below the casing F, a brace-rod, *o*, extending across the entrance for supporting the door, and a hand-crank, *j*, whereby the drum is rotated and the door drawn into the casing F, substantially as set forth.

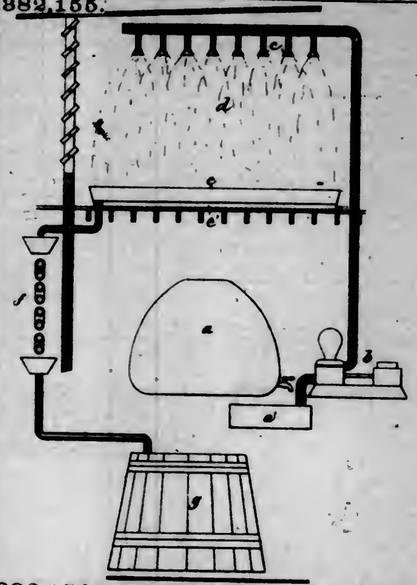
3. The combination, with a freight-car having an entrance-opening and a sliding door closing said entrance, of a sliding brace-rod extending across the entrance on the outer side of the sliding door and arranged with one end in a horizontal opening formed in one side of the entrance, and provided at its opposite end with a hook which engages in an eye secured to the opposite side of the entrance, substantially as set forth.

4. The combination, with the sliding door E and the casing F, of horizontal guide-rods *m*, arranged in said casing, and between which the sliding door is held, substantially as set forth.

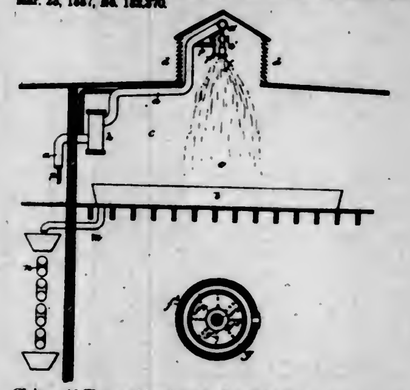
382,155. ART OF MAKING MALT LIQUORS. CLARENCE C. HANFORD, Medford, Mass. Filed Sept. 15, 1887. Serial No. 249,765. (No specimens.) Patented in England Nov. 16, 1886, No. 14,573, and in France Mar. 23, 1887, No. 182,370.

Claim.—The herein-described improvement in the art of making malt liquors, which consists in subjecting the hot infusion or wort taken from the boiler to pressure and delivering it under pressure to the atmosphere in the form of a fine spray, permitting the said spray to fall a considerable distance through the atmosphere, whereby the liquor is cooled and aerated, and subsequently collecting and fermenting the said liquor, substantially as described.

382,155.



382,156. APPARATUS FOR COOLING LIQUIDS. CLARENCE C. HANFORD, Medford, Mass. Filed Apr. 2, 1888. Serial No. 269,462. (No model.) Patented in England Nov. 16, 1886, No. 14,573, and in France Mar. 23, 1887, No. 182,370.



Claim.—1. The combination of a liquid-forcing apparatus, and a pipe leading therefrom, with a series of spraying devices or atomizers connected with said pipe and opening directly into the atmosphere, and an independent or disconnected vat or collecting-receptacle arranged below said spraying devices to receive the liquid therefrom after passing from the spraying device through the atmosphere, substantially as described.

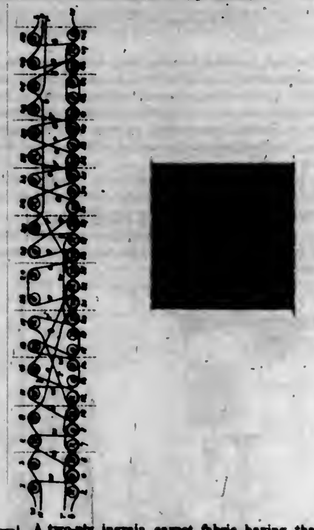
2. The combination of a liquid-forcing apparatus, a delivery-pipe, *a'*, connected therewith, a series of atomizers attached to said delivery-pipe and opening directly into the atmosphere, and a valve interposed between each atomizer and the delivery-pipe, so as to admit of the individual attachment of each atomizer independently of all others, and an independent or disconnected vat arranged a suitable distance below said atomizers, so that the spray from the atomizers will have to pass some distance through the free atmosphere before being collected in the vat, substantially as described.

3. The combination, substantially as shown and described, of a liquid-forcing apparatus, a delivery-pipe leading therefrom, atomizers connected to said pipe, a straining device interposed in said pipe between the pump and the atomizers, and a vat below said atomizers, substantially as described.

4. The combination of a forcing apparatus and delivery-pipe leading therefrom, and spraying devices communicating with the said pipe, with a ventilator affording a natural current of air through the spray delivered from said spraying devices, and a vat below said spraying devices, substantially as described.

5. The combination, with a forcing apparatus and liquid-delivery pipe leading therefrom, and spraying devices communicating with the said pipe, of an air-compressor and delivery-pipe provided with orifices adjacent to those of the spraying devices, substantially as described.

382,157. CARPET FABRIC. HARRY HARGWOOD, Philadelphia, Pa. Filed Sept. 8, 1887. Serial No. 248,884. (Specimens.)



Claim.—1. A two-ply ingrain carpet fabric having the weft-threads divided into sets of five, of which three are in one ply and two in the other, all substantially as set forth.

2. A two-ply ingrain carpet fabric having the wefts divided into sets of five and the warps into sets of four, the wefts being two in one ply and three in the other, and two of the warps each binding one face weft and one back weft, the third binding two face wefts and one back weft, and the fourth binding one face weft and two back wefts, all substantially as set forth.

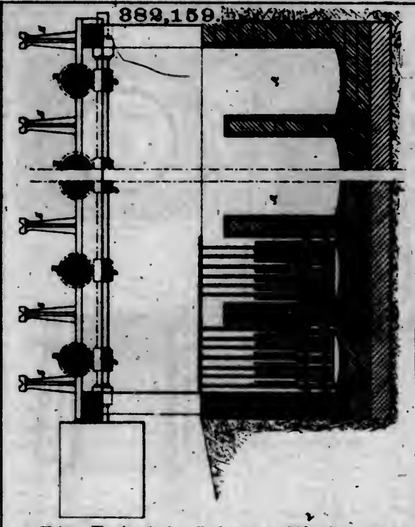
382,158. HEATING-STOVE. EDWARD HIRE, Jersey City, N. J. Filed Mar. 3, 1887. Serial No. 229,327. (No model.)



Claim.—The combination of an outer shell having a large opening at one end and air-holes in the top and ends, fixed longitudinal guideways at the interior of the shell, a fire-pan provided with bottom flanges and an adjustable and perforated guard-cover, a head-plate attached to one end of the fire-pan and made of a larger size than the end opening of the shell, said head-plate being provided with two series of air-openings, so as to supply air to the interior of the fire-pan and to the space between the same and the shell, and a locking device for locking the fire-pan in position in the shell, substantially as set forth.

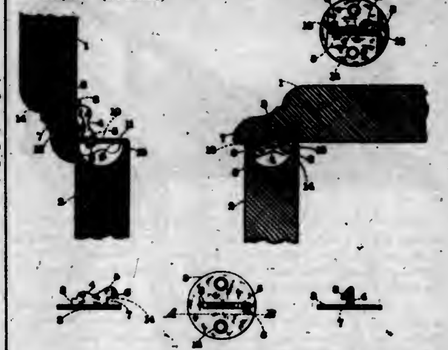
382,159. PROCESS OF BLEACHING. EUGÈNE HERMITE, Paris, France. Filed Feb. 11, 1886. Serial No. 191,691. (No specimens.) Patented in France Sept. 11, 1884, No. 164,389; in Belgium Sept. 13, 1884, No. 66,260; in England Oct. 21, 1884, No. 13,289; in Italy Oct. 23, 1884, No. 17,266; in Germany Oct. 24, 1884, No. 30,549; in Sweden Jan. 10, 1885; in Spain Feb. 26, 1885, No. 6,497; in Norway May 19, 1885, and in Austria-Hungary Jan. 5, 1888, No. 38,317.

382,159.



Claim.—The herein-described process of bleaching, said process consisting in electrolyzing a solution of chloride of magnesium and subjecting the material to be bleached to the action of said electrolyzed solution.

382,160. FASTENER FOR BURIAL-CASKETS. EDWARD HOLMES and BENJAMIN HOLMES, Buffalo, N. Y. Filed Apr. 20, 1887. Serial No. 235,522. (No model.)



Claim.—1. In a hinge for burial-casket lids, the plate 3, projecting catch-piece 4, and projecting side piece, 6, in combination with the plate 9, having the parts 13 and the openings 10 and 11, substantially as described.

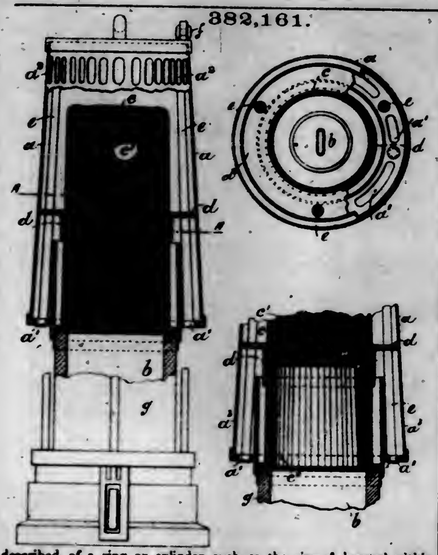
2. The combination of the plate 3, projecting piece 4, side projecting piece, 6, and shoulders 8, with the plate 9 and its openings 10 and 11, substantially as and for the purposes specified.

382,161. MINER'S SAFETY-LAMP. ANDREW HOWAT, Manchester, County of Lancaster, England. Filed Jan. 25, 1888. Serial No. 261,916. (No model.) Patented in England Feb. 5, 1886, No. 1,700; in France Mar. 22, 1886, No. 174,980, and in Belgium Mar. 26, 1886, No. 72,511.

Claim.—1. In a miner's safety-lamp, the combination, with a wire-gauze cylinder or cylinders, and a metal shield or outer casing, of a deflector, such as the ring *d*, inserted between the shield and gauze cylinder, and closing the intervening space, in order that all the air admitted to the lamp may be directed through said gauze cylinder, substantially as herein set forth, for the purpose specified.

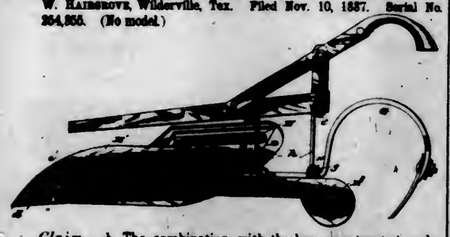
2. In a miner's safety-lamp, the combination, with a wire-gauze cylinder or cylinders, a metal shield or outer casing, and a deflector closing the space between said wire-gauze cylinder and said shield, so as to direct the air through said wire-gauze cylinder, substantially as

382,161.



described, of a ring or cylinder, such as the ring c^3, located within the wire-gauze cylinder, substantially as and for the purposes herein set forth.

382,162. COTTON-CULTIVATOR. WILLIAM H. IRWIN and GEORGE W. HAIRGROVE, Wilderville, Tex. Filed Nov. 10, 1887. Serial No. 254,855. (No model.)



Claim.—1. The combination, with the base constructed as described, of the slotted plate secured thereto, the strip on the rear side of the said plate, the blade having apertures and threaded bolts for adjusting the said blade, and the front and rear cutters or scrapers on the landside, substantially as specified.

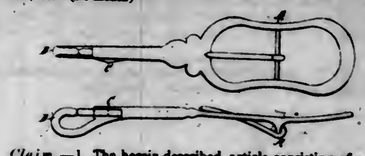
2. The combination, with a cotton-cultivator and the base thereof, as described, of the cutters or scrapers on the landside, one secured to the forward and one to the rear edges and extending below the bottom thereof, substantially as specified

382,163. CHURN. LEONORE H. JAMES, Vanceburg, Ky. Filed Sept. 20, 1887. Serial No. 251,023. (No model.)



Claim.—In a churn, the combination, with a suitable base, of a standard vertically supported thereon, having at its top a fixed projecting shelf provided with an opening, and also formed with the opening C and elongated slots *c*, the movable shelf adjustable in said slots by means of screw bolts and nuts, spools or pulleys supported in the opening C, and a dasher supported by the fixed and movable shelves, a belt or band passing over the dasher and pulleys, and movable levers to which the ends of the said band are attached, substantially as described.

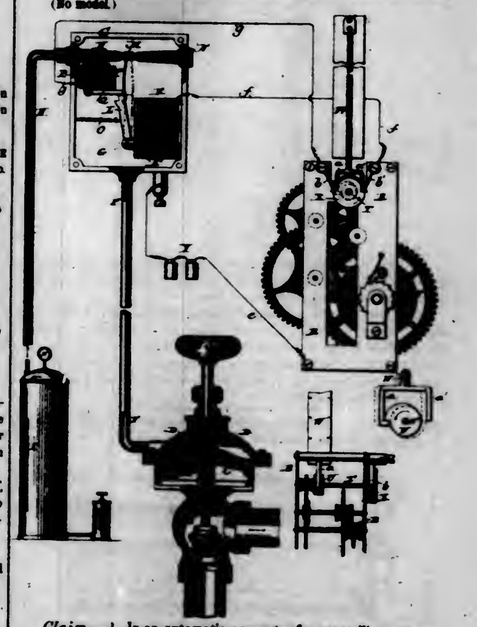
382,164. COMBINED BUCKLE AND SPRING-HOOK. WILLIAM JAMES, Port Pirie, South Australia. Filed Feb. 20, 1888. Serial No. 265,093. (No model.)



Claim.—1. The herein-described article consisting of a buckle and conjoined hook, the latter having a slot in its side, and being provided with a slide having an operating chamfered boss located at said side and made about as wide as the body of the hook and longer than the slot, substantially as specified, whereby the obstruction of the slide by dirt or its accidental movement by friction on the front of the device is prevented.

2. In hooks or snaps provided with a spring-slide, the boss C, placed at the side of the hook B and covering the slot in which the slide works, substantially as herein described.

382,165. AUTOMATIC TEMPERATURE-REGULATOR. WARREN S. JOHNSON, Milwaukee, Wis. Filed June 23, 1887. Serial No. 242,336. (No model.)



Claim.—1. In an automatic apparatus for controlling temperature, the combination, substantially as described and claimed, of a main valve, an expansion-chamber controlling the same, an electric three-way valve through which fluid under pressure is admitted to the expansion-chamber, an electric generator and circuit including the valve, a switch in said circuit, a motor by which the switch is caused to close and immediately reopen the circuit, and a thermostat mechanically controlling the action of said motor and switch.

2. In an automatic apparatus for controlling temperature, the combination, substantially as described, of a main valve, an expansion-chamber to operate the same, an electric valve with opening and closing magnets through which fluid under pressure is admitted to the expansion-chamber, a battery-line, a switch by which the circuit may be completed from the battery-line through either magnet, a motor by which the switch is caused to close and immediately reopen the circuit through first one and then the other of the magnets, and a thermostat mechanically controlling the action of said motor, whereby the motor and switch subject to the control of the thermostat are caused to apply the electric current for opening and closing the electric valve, and the latter caused to deliver into and out of the expansion-chamber the fluid by which the main valve is actuated.

3. A three-way valve and two electro-magnets to effect its movement, in combination with a battery-line, a switch through which the battery-line may be connected with one or the other of the valve-magnets, an independent motor for moving the switch, and the thermostat mechanically controlling the motor.

4. In an automatic apparatus for controlling temperature, the combination of a main valve and an expansion-chamber controlling it, an electric valve through which the fluid under pressure is admitted to the expansion-chamber, the switch controlling a circuit through which the electric valve is operated, an independent motor to actuate the switch, and a thermostat acting mechanically to control the motor.

5. In combination with a valve and an expansion-chamber to actuate the same, an electric three-way valve controlling the delivery of fluid into and from the expansion-chamber, an electric circuit including and controlling the three-way valve, a circuit-controlling switch, a motor for said switch operated by power independent of the power which moves the valves, and a thermostat mechanically controlling the motor, whereby the movement of the thermostat under changes of temperature is caused to bring the motor into action, the motor caused to apply the electric current to move the secondary valve, and the latter caused in turn to deliver the fluid which actuates the main valve into or out of the expansion-chamber.

6. In combination with a valve-controlling circuit and a switch to open and close the same, a motor to actuate the switch, and a thermostat acting directly as a detent for the motor to close and reopen the circuit.

382,166. WOODEN FAUCET. OTTO KNUPER, Bridgeport, Conn., assignor of one-half to Clapp Spencer, same place. Filed Dec. 12, 1887. Serial No. 257,945. (No model.)



Claim.—1. A faucet consisting of shank, body, and nozzle of wood, the body having a central opening and the shank and nozzle having openings communicating therewith, a bushing within the body, of uniform diameter, and a rubber valve fitting closely within said bushing, which moves transversely to the openings in the shank of the nozzle.

2. The shank, body, and nozzle having openings, as described, and a bushing of uniform diameter within the body arranged transversely to the opening, in combination with a yielding valve fitting close within the bushing, and operating mechanism, substantially as described, whereby the valve is moved transversely to the openings in the shank and nozzle, and to the closed position, after engaging the base of the socket, is expanded by pressure to prevent leakage.

3. The shank, body, and nozzle having openings, as described, and a bushing of uniform diameter within the body, in combination with a valve fitting closely within said bushing, a stem therefor, a cap through which the stem passes, and which is provided with a seat, 12, at its lower end, and operating mechanism, substantially as described, whereby the valve is pressed against the seat and expanded to prevent leakage in the open position and is pressed against the base of the bushing and expanded to prevent leakage in the closed position.

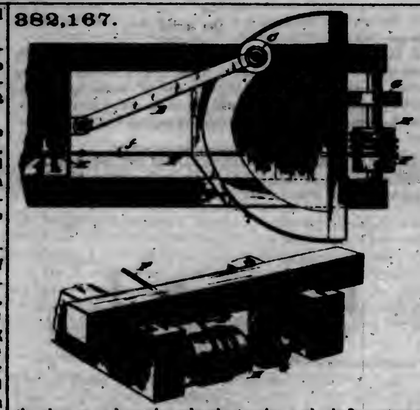
382,167. BALING-PRESS. WILLIAM A. LASLEY, Cherokee, Kans. Filed Sept. 6, 1887. Serial No. 248,771. (No model.)

Claim.—1. In a press, substantially as described, the combination, with the plunger, of a shaft, a cord or rope connecting such shaft with the plunger, and a spring whereby to give such shaft a rotary tendency, all substantially as and for the purposes described.

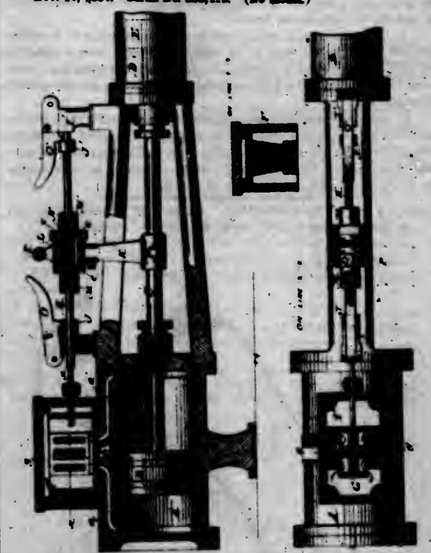
2. In a press, substantially as described, a plunger and a shaft combined with a rope extended between and secured at its opposite ends to said shaft and plunger, and a spring coiled around the shaft and secured at one end thereto and at its opposite end to the framing, substantially as set forth.

3. The combination, in a press, of the plunger provided with a slot fitted to receive a rope, the shaft, the spring for giving such shaft a rotary tendency, and the cord or rope secured to the shaft and provided with a number of knots whereby its connection with the plunger may be adjusted, substantially as described, and for the purpose specified.

382,167.



382,168. VALVE-GEAR. HENRY LEMPENNAU, Quincy, Ill. Filed Nov. 17, 1887. Serial No. 255,416. (No model.)



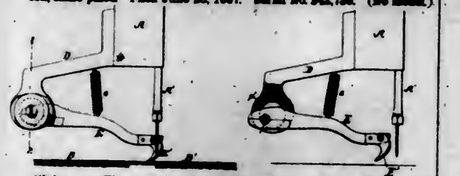
Claim.—1. In a valve-gear, the reciprocating valve-rod H, having the end collars, J J', in combination with the two independent pivoted dogs O O', alternately engaging the respective collars to hold the valve-rod momentarily at rest, the reciprocating piston-rod, the arm K, fixed rigidly to said rod and acting upon the dogs alternately to effect their disengagement from the collars, the spiral spring loosely embracing the valve-rod, and the two sleeves M M', seated against opposite ends of the spring and connected with the arm K to yield each toward the other, as described, whereby the arm on the piston-rod is caused to directly effect the compression of the spring first in one direction and then in the other against the collars of the valve-rod, and

also to directly trip the dogs, that the spring may move the rod at the proper time.

2. In combination with the piston-rod C, the arm K, fixed rigidly thereto and provided with the sleeve N and roller P, the spiral spring encircling the valve-spindle, the sleeves M and M', seated against the ends of the spring, the valve-spindle provided with the two collars, and the locking dogs or tappets adapted to engage said collars alternately.

382,169. CUTTING ATTACHMENT FOR SEWING-MACHINES.

HENRY LEPPERD, Philadelphia, Pa., assignor of one-half to John G. Wilson, same place. Filed June 23, 1887. Serial No. 242,720. (No model.)



Claim.—1. The combination of the reciprocating needle-bar of a sewing-machine with a fixed arm, a cutter-lever adapted to be acted on by the needle-bar, and an eccentrically-mounted pivot for the lever, to move the latter into and out of the path of the needle-bar, substantially as set forth.

2. The combination of the reciprocating needle-bar of a sewing-machine, the fixed arm, and a pivoted cutter-lever adapted to be acted on by the needle-bar, with a movable crank, to which the cutter-lever is pivoted, to move it into and out of the path of the needle-bar, substantially as set forth.

3. The combination of the reciprocating needle-bar of a sewing-machine and a pivoted cutter-lever with a crank for throwing the cutter-lever into and out of the path of the needle-bar, and stops for determining the extent of that movement, substantially as described.

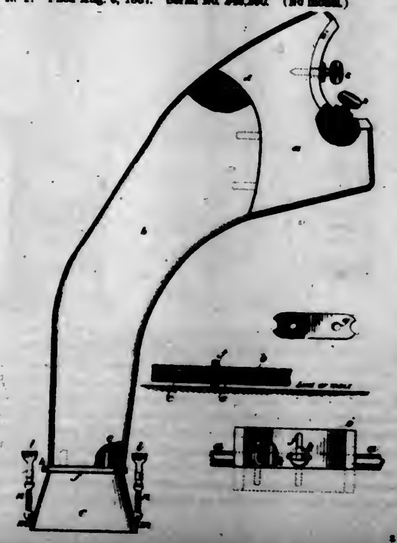
4. The combination of the reciprocating needle-bar of a sewing-machine and a fixed arm on the sewing-machine head with a crank in the said fixed arm, a cutter-lever pivoted to the crank, and stops for determining the extent of movement of the crank, all substantially as and for the purpose set forth.

5. The combination of the reciprocating needle-bar of a sewing-machine and a cutter-lever to be operated thereby, with a crank to which the cutter-lever is pivoted, the fixed arm carrying the crank, a nut for operating the crank, and stops for the latter, all substantially as set forth.

6. The combination of the reciprocating needle-bar of a sewing-machine, and a pivoted cutter-lever adapted to be acted on thereby, with a fixed arm, a crank to which the lever is pivoted, and a nut movably connected to the crank and having stop-notches, with a stop-pin on the fixed arm, substantially as specified.

382,170. IRONING-BOARD.

JOSEPH J. H. LIEBOVE, New York, N. Y. Filed Aug. 6, 1887. Serial No. 246,260. (No model.)



Claim.—1. A lady's ironing-board composed of a shoulder-former, *a*, sleeve-former *b*, and adjustable neck-former *i*, having slots *j j* and screws *k k*, substantially as described.

2. A lady's ironing-board composed of a shoulder-former, *a*, sleeve-former *b*, cuff-former *c*, and adjustable neck-former *i*, having slots *j j* and set-screws *k k*, substantially as described.

3. A lady's ironing-board composed of a shoulder-former, *a*, sleeve-former *b*, cuff-former *c*, adjustable neck-former *i*, and block *f*, substantially as described.

382,171. PIPE-HANGER.

GEORGE W. LOTZ, Wheeling, W. Va., assignor of one-half to John S. Trimble, same place. Filed Apr. 28, 1887. Serial No. 236,257. (No model.)



Claim.—1. A pipe-hanger consisting of two parts pivoted together, the upper ends thereof overlapping, with an opening in the end of each adapted to register when the parts are together, and a combined locking and supporting hook passing through said openings with suitable connections between said hook and the rafters or ceiling, substantially as described.

2. A pipe-hanger consisting of the two parts removably connected together at their lower ends, the upper ends overlapping and provided with openings registering, and a fastening and supporting hook independent of the hanger, adapted to pass through the opening in each part, and connections with the ceiling from said hook, substantially as described.

382,172. APPARATUS FOR TESTING PIPES.

GEORGE W. LOTZ, Wheeling, W. Va., assignor of one-half to John S. Trimble, same place. Filed Jan. 10, 1888. Serial No. 260,321. (No model.)



Claim.—1. In a portable apparatus for testing pipes, &c., wherein a chamber containing liquid and provided with an indicating liquid-column tube and the tube affording connection with the work to be tested, said liquid-column tube communicating with the chamber below the normal level of the liquid, and the other tube communicating therewith above the level thereof, the mouths of said tubes being arranged at or near the middle line of the chamber, the chamber being of such shape that when the instrument is lying on its side the tubes shall not afford an escape-orifice for the liquid, substantially as and for the purpose described.

2. In an apparatus for testing pipes, &c., the combination, with a chamber containing liquid and provided with an indicating liquid-column tube, which is connected with the work to be tested, of a tube extending therefrom and provided with a trap, substantially as and for the purposes described.

3. In an apparatus for testing pipes, &c., wherein a chamber containing liquid and provided with an indicating liquid-column tube is connected with the work to be tested, the combination, with the said vessel, of the indicating liquid-column tube and the tube affording connection with the work to be tested, said tubes entering the chamber at opposite sides and extending therein in opposite directions, substantially as and for the purposes described.

4. In a device for testing pipes, &c., a chamber or vessel for containing the testing-liquid, a liquid-column tube, and a tube affording connection with the work to be tested, said liquid-column tube communicating with the chamber or vessel below the normal level of the liquid, and the other tube communicating therewith above the level thereof, the said tubes being arranged within the chamber, so that when the instrument is lying on its side the tubes shall not afford an escape-orifice for the liquid, and said tubes being provided with traps, substantially as and for the purposes described.

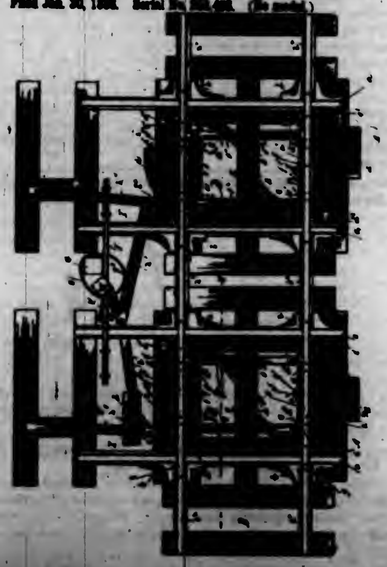
5. In a device for testing pipes, &c., the combination, with the chamber containing the testing-liquid and a pipe connecting the same with a force-pump, of a valve interposed in the line of the pipe, said valve being constituted by a tubular stem provided with a screw-thread, whereby it is forced to its seat to close the passage through the tubular stem and away from its seat to open said passage, substantially as and for the purposes described.
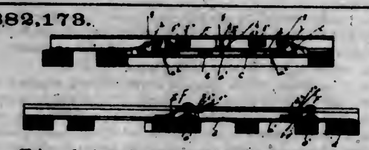
6. In an apparatus for testing pipes, &c., the combination, with the chamber containing the testing-liquid, of a testing-tube extending into the chamber, said tube being constituted of two parts united by a coupling, that part which is attached to the said chamber being made of metal, and the upper part of the tube being made of glass, substantially as and for the purposes described.

7. In an apparatus for testing pipes, &c., wherein a chamber containing liquid and provided with an indicating liquid-column tube is connected with the work to be tested, the combination, with the said chamber, of a tube extending therefrom and provided with a cap over the end thereof, substantially as and for the purposes described.

382,173. RAILROAD-CROSSING.

JOHN T. MARNEY, Forest, Ohio. Filed Jan. 30, 1888. Serial No. 262,493. (No model.)





Claim.—1. As an improvement in railroad-crossings, the rail-sections pivoted at their centers and the bent inclined arms over which said rail-sections move, substantially as shown and described.

2. As an improvement in railroad-crossings, the rail-sections pivotally secured at their centers, the arms *f*', pivotally connected to said rail-sections, the bent inclined arms C, and the supporting-plates 'C, having inclined upper surfaces, substantially as shown and described.

3. As an improvement in railroad-crossings, the pivoted rail-sections having the connecting-arms, the bent inclined arms over which said rail-sections move, the hinged post, the pivoted arms connected thereto, and the jointed levers, substantially as shown and described.

4. The combination, with the stationary post, of the hinged post secured thereto and having a right-angular arm or bracket, the grooved hoop or band, the arm or lever, the pivoted rail-sections, the jointed levers and the connecting-arms secured to said right-angular arm or bracket, and the signal rod or bar, substantially as shown and described.

5. As an improvement in railroad-crossings, the transverse plates *a*', secured to the rails by means of spikes, and the chairs secured on the outer sides of said rails, substantially as shown and described, whereby said rails are held as against lateral displacement with relation to each other, as stated.

382,174. ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

ROSS MACKIE, Troy, N. Y., assignor to John B. Tibbitts, same place. Filed May 9, 1887. Serial No. 237,602. (No model.)



Claim.—1. A disk armature having its coils wound in the plane of rotation, the cores of which coils are composed of iron plates arranged in substantially radial lines, as shown, whereby the magnetic density is greatest at the part of the core nearest the axis of the armature.

2. A disk armature having its coils wound in the plane of rotation and of triangular form and the cores thereof constructed of iron plates arranged in substantially radial planes, substantially as set forth.

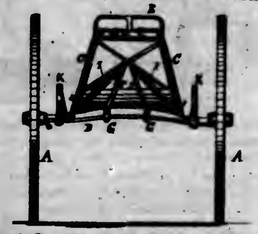
3. A disk armature having coils of triangular form and wound in the plane of rotation, having cores constructed of iron plates arranged in substantially radial planes and insulated magnetically from one another, substantially as described.

4. In an armature for dynamo-electric machines or electric motors, the core or body built up of iron plates circumferentially discontinuous, insulated from each other, and formed with projections in the plane of the shaft adapted to receive coils of wire or a conductor, substantially as described.

5. An armature having coils wound in the plane of rotation, cores composed of alternate plates of iron and insulating material, and clamping devices uniting the whole arranged at the circumference and about the center, substantially as described.

382,175. TWO-WHEELED VEHICLE.

HJALMAR MALMBORG, Cortland, N. Y. Filed Sept. 16, 1887. Serial No. 249,850. (No model.)



Claim.—1. In a two-wheel vehicle, the combination of a standard or standards projecting upward from the axle and having the ends approximately close together, and two springs, one end of each attached to the upper end of said standard or standards and the other end attached to each side bar of the frame, substantially as specified.

2. In a two-wheel vehicle, the combination, with a standard or

standards, rigidly secured to the axle and projecting upwardly and rearwardly, of two coiled springs located beneath the seat and having their respective ends attached to the upper end of the standard or standards and to the seat-frame, substantially as specified.

3. In a two-wheel vehicle, the combination, with a standard or standards, rigidly secured to the axle and projecting upwardly and rearwardly at a suitable distance below the seat, of two coiled springs, one end of each spring attached to the upper end of the standard or standards and the other end extending in an outward and forward direction and attached to the seat-frame, substantially as specified.

4. The combination of the seat-frame hinged to the thills of a vehicle, the thills rigidly secured to the axle, the standard or standards rigidly secured to the axle and projecting upward with the ends approximately close together and provided with hooks H, and the coiled springs, one end of each secured to the hook H and the other end to a hook, J, on the side bars of the frame, substantially as specified.

382,176. FRUIT-BASKET. JOSHUA H. MARVIL, Laurel, Del. Filed Feb. 23, 1888. Serial No. 264,993. (No model.)



Claim.—1. A basket comprising a circular bottom, a square rim, and a series of splints connecting the bottom and rim, substantially as described.

2. A basket comprising a circular bottom, an approximately square rim or top, splints connecting the bottom and rim, and a hoop confining the splints about the center, the splints being twisted and curved, substantially as described.

3. A basket comprising a circular bottom, an approximately square rim or top, splints connecting the bottom and rim, and a nearly-central hoop, the splints being twisted and curved, substantially as described.

4. A basket comprising a circular bottom, a series of splints having their lower ends secured to said bottom, and an approximately square top or rim receiving the upper ends of said splints, substantially as described.

5. A basket comprising a circular bottom, an approximately square rim or top composed of parallel strips arranged in pairs, splints having their lower ends secured to the circular bottom and their upper ends secured between the parallel strips of the square rim, and a nearly-central hoop secured to the splints, substantially as described.

6. A basket comprising a circular bottom, an approximately square rim or top, and splints connecting the bottom and rim, the corner-splints being crossed, substantially as described.

7. A basket comprising the circular bottom 1, the vertical splints 2, the hoops 3 and 9, the parallel rim-strips 4 and 5, and the corner pieces or straps 8, substantially as described.

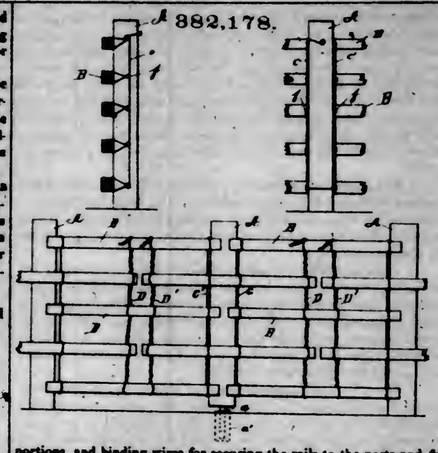
382,177. THILL-COUPLING. OLIVER M. MARSH and JOHN RHEINBURN, West Salem, Ohio. Filed Feb. 21, 1888. Serial No. 264,820. (No model.)



Claim.—The combination of the clip, the shackle provided with recessed ears, the two nuts placed within the recesses, the screw-rod provided with right and left threads and made to pass through both the ears and the nuts, and the shaft-iron provided with a slot, eye, or opening through its inner end, substantially as shown and described.

382,178. FENCE. HENRY MATHS, Logro, Ind. Filed Feb. 13, 1888. Serial No. 263,890. (No model.)

Claim.—1. The herein-described fence, consisting of posts, horizontal rails secured to said posts, every alternate rail extending from one post to another and secured to the same at its ends, and the intervening rails being secured to the posts at or about their middle



382,178.

portions, and binding-wires for securing the rails to the posts and for securing the free ends of the intervening rails together and to the middle portions of the alternate rails, substantially as described.

2. The herein-described fence, consisting of posts, every alternate post being firmly and securely anchored in the ground or in position, and the intervening posts being removably anchored in position, horizontal rails secured to the posts, every alternate rail extending between the posts and secured to the same at its ends, and the intervening rails secured to the posts at or about their middle portions and having their ends extending part of the distance between the posts, and binding-wires for securing the rails together and to the posts and for securing the intervening rails together and to the alternate rails between the posts, substantially as described.

3. The herein-described fence, consisting of posts and rails, every alternate rail in the vertical series secured to the posts at its ends, and the intervening rails secured to the posts at or near their middle portions and having their ends extending part of the distance between the posts, and binding-wires securely looped around the rails and secured to the posts, and binding-wires looped around the rails between the posts and securing the free ends of the intervening rails together and to the alternate rails, substantially as described.

4. The herein-described fence, consisting of upright posts, every alternate post of the fence being firmly and securely anchored in position, and the intervening posts being removably anchored in position, horizontal rails secured to the posts, every alternate rail of the vertical series extending the distance between the posts and secured to the same at its ends, and the remaining intervening rails of the vertical series being secured to the posts at or about their middle portions with their ends extending part of the distance between the posts, binding-wires at the posts looped around each rail in the vertical series and secured to the posts opposite each rail, and binding-wires between the posts securing the free ends of the intervening rails together and to the middle portions of the alternate rails, said last-mentioned wires being looped around each rail and twisted between the rails, substantially as set forth.

382,179. DETACHABLE PLOW-POINT. HUGH MCCLINT, Keokuk, Iowa. Filed Jan. 28, 1888. Serial No. 261,888. (No model.)

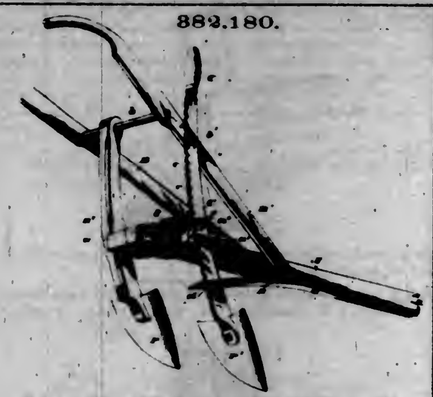


Claim.—The combination, with the cultivator-tooth A, of the hollow detachable point C, covering the entire inclined portion of the point A, in order to re-enforce the same and exclude all dirt and sand from between the two points, and the set-screw passing through a tapped opening of the point C and impinging on the point A, substantially as specified.

382,180. CULTIVATOR. HENRY L. MCCOY, Lake, Ind. Filed Feb. 17, 1888. Serial No. 264,267. (No model.)

Claim.—1. In a cultivator, the combination, substantially as described, of the plow-beam, the stationary plow-standard affixed thereto, and the vertically-adjustable plow-standard formed of a curved flat metallic bar having notches on its rear edge to form a rack-bar.

382,180.



2. In a cultivator, the combination, substantially as before set forth, of the plow-beam, the stationary standard, the adjustable standard whose rear edge is notched in the form of a rack-bar, the spring slotted plate secured to the under side of the plow-beam, through which the adjustable notched standard passes, and the coiled spring secured to the rear end of the plow-beam and having a looped arm encircling the said adjustable standard.

3. In a cultivator, the combination of the beam A, handles B and B', the metallic slotted arm D, the curved standard C, and the coiled spring S, having the hooked arm *e*, substantially as described.

4. In a cultivator, the combination of the beam A, having blocks *a* and *a'*, secured to the rear end thereof, the handles B and B', the stationary standard B^2, the loops a^2 and *b'*, arranged as set forth, the metallic slotted spring-arm D, the curved standard C, having its rear edge notched in the form of a rack-bar, and the spring S, having the looped arm *e*, substantially as described.

382,181. COMBINATION-TOOL. MILLARD F. MCCRAY, Cowgill, Mo., and JOHN E. REDFOX, Detroit, Mich. Filed July 12, 1887. Serial No. 244,102. (No model.)



Claim.—1. The herein shown and described combination-tool, for the purposes specified, composed of two levers, each lever having a head, hub, and handle pivoted together, the head having a claw at its inner corner and a hammer-face at its outer side, which intersects with the sloping end of the head, forming a fixed fulcrum, the hub having a widened portion intermediate the claw, and the pivotal point of the levers provided with a notch forming a cutter which extends flush with the inner side of the hub, and a wire-guide projection having its inner side extended to within a short distance of, but not flush with, the plane of the inner side of the hub, substantially as and for the purpose set forth.

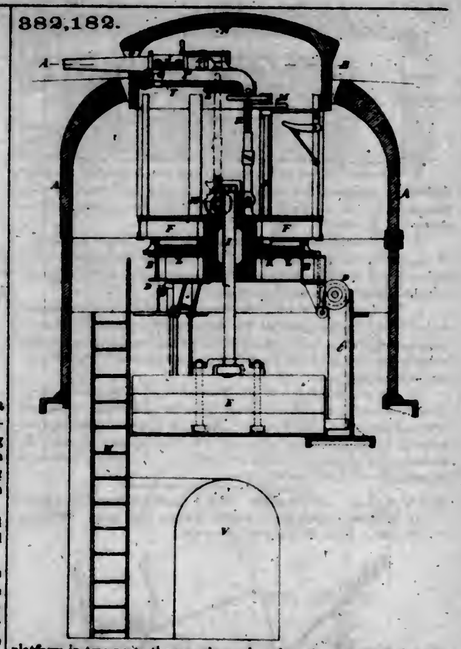
2. The combination of the two levers, each lever composed of a head, hub, and handle pivoted together, each lever having the cutter extended from the hub flush with its inner side, and the wire-guide projection located at a distance from the cutter and having its inner side arranged at a short distance from the plane of the inner side of the hub, substantially as and for the purpose specified.

3. The herein shown and described combination-tool, composed of two levers, each lever having a head, hub, and handle pivoted together, the head having a claw at its inner corner, and a hammer-face at its outer side, which intersects with its sloping end, forming a fixed fulcrum, and having its lower end overlapping the hub, which is widened between the end of the claw and the pivotal point, and has a notch in said widened portion forming a cutter flush with the inner side of the hub, and a wire-guide projection sloping on its outer edge and fitting a corresponding recess in the lower end of the head, and having its inner side extended close to, but not flush with, the inner side of said hub, substantially as and for the purpose described.

382,182. TURRET-MOUNTING FOR ORDNANCE. THORSTEN NORDENFELT, Westminster, England, assignor to the Nordenfelt Guns and Ammunition Company, (Limited,) same place. Filed Feb. 7, 1888. Serial No. 263,273. (No model.)

Claim.—1. The combination of the cylinder of armor-plate, the

382,182.



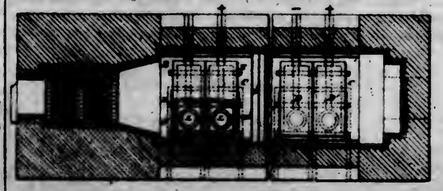
platform in two parts, the one above the other, the upper one capable of turning and the lower one supported by chains passing over pulleys to a counter-weight, and a toothed rack pivoted centrally to the top of the counter-weight, and toothed pinion carried by the upper platform gearing therewith, substantially as described.

2. The combination of the armor-cylinder having the top aperture, the lower and upper platforms within the cylinder, the upper one capable of turning and the lower one supported by chains passing over pulleys to a counter-weight, the toothed rack jointed at its lower end centrally to the counter-weight, the pinion carried by the upper platform and gearing with the rack, and the rising and falling dome-cover supported by uprights of the upper platform and provided with the side aperture or port-hole, substantially as and for the purpose set forth.

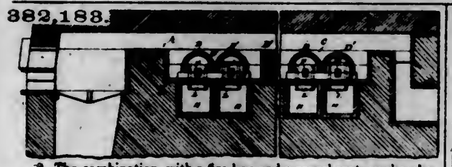
3. The combination of the cylinder of armor-plate, its dome-cover, the platform in two parts, one above the other, the upper one capable of turning and the lower one supported by chains passing over pulleys to a counter-weight, and a toothed rack pivoted centrally to the top of the counter-weight, and toothed pinion carried by the upper platform gearing therewith, the frame turning on trunnions near to the aperture in the dome-cover and having its rear end capable of being raised or lowered to give the required elevation, and the gun-carriage, which can be moved endwise along this frame to bring the gun within the dome-cover or move it out into firing position, substantially as described.

382,183. APPARATUS FOR PRODUCING METALS BY MEANS OF ELECTROLYSIS. JOHANNES CHRIST, Gumtz, Saxe-Altenburg, Germany, assignor to Chemische Fabrik Gumtz, Bottiger & Seidler, same place. Filed Feb. 17, 1886. Serial No. 192,203. (No model.) Patented in Germany June 6, 1886, No. 34,378; in France June 15, 1886, No. 169,560; in Belgium June 16, 1886, No. 69,904, and in England June 19, 1886, No. 7,510.

Claim.—1. The combination, with a fire-box and a reverberatory chamber, of half-retorts on the floor of the reverberatory chamber and electrodes in the half-retorts, substantially as shown and described.



382,183.



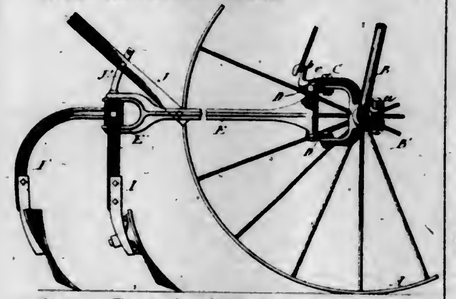
2. The combination, with a fire-box and a reverberatory chamber divided by partitions into compartments, of two half-retorts in each compartment and an electrode in each half-retort, substantially as shown and described.

3. The combination, with a fire-box and a reverberatory chamber, of supporting-pieces on the floor of the chamber, half-retorts on the supports, and an electrode in each half-retort resting on the supports, substantially as shown and described.

4. The combination, with a fire-box and a reverberatory chamber, of half-retorts in the chamber, the reverberatory chamber having a compartment below each half-retort, and a tube establishing communication between each half-retort and the compartment below it, substantially as shown and described.

5. The combination, with a fire-box and a reverberatory furnace, of half-retorts in the reverberatory chamber, electrodes in the half-retorts, a compartment below each half-retort, a tube establishing communication between each half-retort and its compartment, and a detachable cap or head piece on the outer end of each compartment, substantially as shown and described.

382,184. CULTIVATOR. JOHN F. PACKER, Chicago, Ill., assignor to the David Bradley Manufacturing Company, same place. Filed Aug. 20, 1887. Serial No. 247,479. (No model.)



Claim.—1. The cross-head F, having two semicircular portions, *f*, for the reception of attaching-sleeves, substantially as and for the purpose specified.

2. The cross-head F, having two semicircular portions, *f*, in combination with the sleeve or collar G, for attaching a cultivator-beam and receiving the wear, substantially as specified.

3. The cross-head F, having two semicircular portions, *f*, with slot *f'*, in combination with the sleeves G and clamping-eyebolts H, for locking the sleeves against movement, substantially as and for the purpose specified.

4. The cross-head F, having two semicircular portions, *f*, and plates D, in combination with a plow-beam for maintaining the alignment of the cross-head and a straight run for the shovels, substantially as specified.

5. The combination of the coupling C, having two arms forming a fork, the attaching-plates D, one being secured to each arm of the fork and provided with holes *d'*, and the beam E, formed of two bars pivotally attached to the plates D by a bolt, *e*, passing through holes *d'* of the plates D, as described, for the purposes specified.

382,185. ATTACHING MOLD-BOARDS. JOHN F. PACKER, Chicago, Ill., assignor to the David Bradley Manufacturing Company, same place. Filed Aug. 20, 1887. Serial No. 247,480. (No model.)

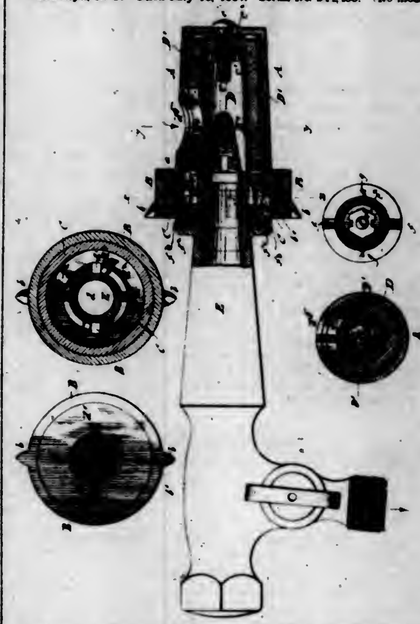
Claim.—The combination, with the mold-board and its standard, of three bosses made integral with one of said parts and arranged in triangular relation to each other to form three bearing-points between





the mold-board and the standard, substantially as shown and described, and for the purpose specified.

382,186. FAUCET ATTACHMENT FOR BARRELS. JACOB PAULUS, Brooklyn, N. Y. Filed July 16, 1887. Serial No. 244,435. (No model.)



Claim.—1. The combination, with a bushing, of an exterior socket secured to said bushing, a screw-collar having an opening and diametrical recesses, an interior socket having diametrical recesses in line with the recesses of the collar, a screw-pivot connecting the interior and exterior sockets, and a faucet the barrel of which is provided with lugs for engaging the recesses of the interior socket and turning the same on its axis, substantially as set forth.

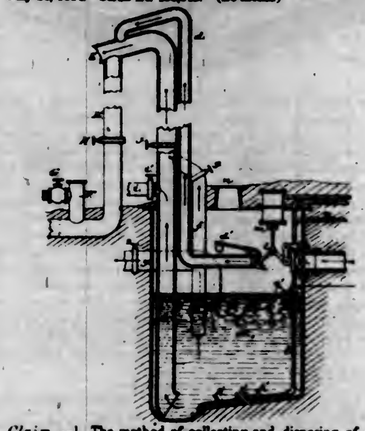
2. The combination of a bushing secured to the faucet-hole of the barrel, an exterior socket having an opening, an interior socket also having an opening, a screw-pivot connection between said sockets, a screw-collar for retaining the exterior socket in the bushing, said screw-collar being provided with recesses, interior inclined rims, and stops at the ends of said rims, and a faucet the barrel of which is provided with lugs engaging rims of the screw-collar and the recesses of the interior socket, substantially as set forth.

382,187. ROD-PACKING. FRANK PINCH, Sidney, assignor to the Excelsior Metallic Packing Company, Middletown, N. Y. Filed Dec. 6, 1887. Serial No. 257,082. (No model.)



Claim.—In a metallic ring packing, the combination, with an outer ring having a peripheral opening and an interior right-angled recess, of an inner ring resting in said recess and having a lug on its periphery projecting outwardly into the peripheral opening in the outer ring, the said inner ring being cut through, and the ends thus formed cut away to form rabbets, into each of which the opposite end of said ring is adapted to fit, and thus causes the ends to overlap, substantially as specified.

382,188. MEANS AND APPARATUS FOR COLLECTING AND SEPARATING SEWAGE. WILLIAM A. PITT, Glenbrook, Conn. Filed July 26, 1884. Serial No. 138,918. (No model.)



Claim.—1. The method of collecting and disposing of sewage from low plains, which consists in collecting the sewage in a closed tank, agitating the same by means of jets or currents of air, and then expelling the mass at a given elevation above the ground by the introduction of compressed air in the tank, as set forth.

2. The combination, with an ordinary grade-sewer, of a closed receiver provided with an outlet-pipe extending above the ground to a height to attain a gravity flow, an air-relief pipe opening in the interior of said tank on a plane with the sewer, and self-acting caps closing the mouths of the sewer and air-relief pipe with an air-compressing main, as set forth.

3. The combination, with a closed receiver communicating with the sewer and provided with an elevated outlet-pipe, compressed-air pipe, and means for regulating the admission of sewage into said receiver, of a secondary closed tank communicating with the outlet-pipe, divided by a perforated diaphragm or grating, and provided with a discharge-orifice in the bottom, and an outlet-pipe, whereby the separation and discharge of the solid and fluid matters are effected, as described.

4. The combination, with a closed receptacle adapted to receive and discharge the sewage from an ordinary grade-sewer, of a tank communicating with said discharge-pipe, provided with a drainer or grating to separate the liquid from the solid matter, and ducts for the discharge of such matters, as and for the purpose set forth.

5. The combination, with a sewage-tank connected with a sewer-pipe, of a funnel-shaped opening and valve located in the bottom of said tank, a grating arranged within the tank, and a duct or opening above said grating communicating with another tank, whereby the lighter matter is separated and conveyed into another tank, as set forth.

6. In combination with the tank A, the tanks B and C, arranged to receive the delivery from said tank, with means for separating the solid from the fluid matter, and conduits for conveying the liquid to the final point of discharge, as set forth.

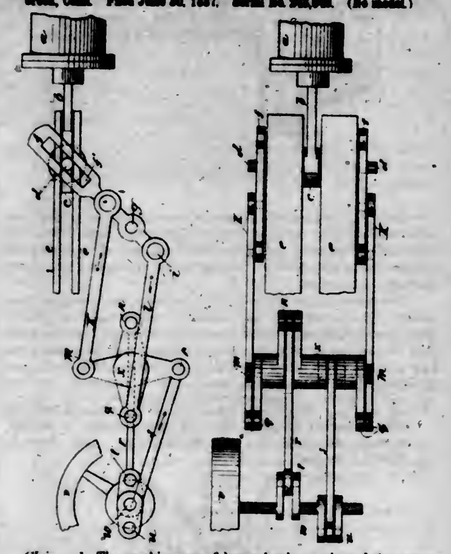
7. The combination, with the sewer-pipe *a*, of the receiver A, provided with the outlet-pipe *b*, air-relief pipe *d*, compressed-air pipe *e*, self-acting caps *k*, for closing the mouth of the sewer-pipe and air-relief pipe, and discharge-pipe *f*, having valve *g*, as and for the purpose set forth.

8. The separator C, divided into two compartments arranged to receive the delivery from the tank A by gravitation, and provided with an overflow, and a discharge-duct, as and for the purpose set forth.

9. The combination, with the tank B, having a funnel-shaped discharge or outlet, of the funnel-shaped sleeve *t'*, with arms *r'* and *s'*, having a pin-and-slot connection, and arm *v'* and lever *o'*, having a similar connection with gate-valve *q*, as set forth.

10. The combination, with a receiving-tank and its main discharge-pipe, of the connecting-pipe E, extending beneath the ground with branch connection F, and valve G, as and for the purpose set forth.

382,189. CRANK AND LEVER MOTION. WILLIAM A. PITT, Glenbrook, Conn. Filed June 30, 1887. Serial No. 243,043. (No model.)



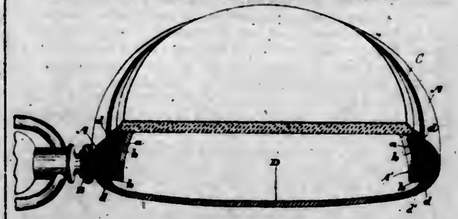
Claim.—1. The combination of levers having a pin-and-slot connection with the cross-head, rods connecting said levers with a set of cranks at right angles on the same shaft, and rods connecting another pair of cranks similarly mounted on the said shaft with cranks set on the same plane on the main driving-shaft, as and for the purpose set forth.

2. The combination of shaft *x*, cranks *m m*, *q q*, and *p n*, connecting-rods *k k l l*, levers *f f*, cranks *t u*, and connecting-rods *r s*, all arranged as and for the purpose set forth.

3. The combination of levers *f f*, cross-head *c*, moving in guideways *e*, cranks *m m* and *q q*, connecting-rods *k k l l*, cranks *n* and *p*, rods *r s*, and cranks *t u*, all arranged and operated as set forth.

4. The combination of cranks *m m* and *q q*, set at right angles on the same shaft, levers *f f*, connecting-rods *k k l l*, and the cranks *n p*, mounted on the same shaft at right angles to each other and to the cranks *m m* and *q q*, with cranks *t* and *u*, set on the same plane, shaft *w*, and connecting-rods *r* and *s*, as set forth.

382,190. WATCH-CASE. ROBERT J. QUIGLEY, Toronto, Ontario, Canada. Filed Oct. 27, 1887. Serial No. 253,568. (No model.)



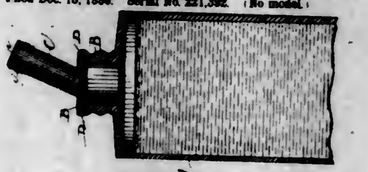
Claim.—1. A watch-case center made wider than the base of its pendant, in combination with a movement-ring fitted in said center, and a bezel or back having a ring formed on it designed to fit into a recess made in the center, and a shoulder, *d'*, abutting against said movement-ring, substantially as and for the purpose specified.

2. The combination, with a watch-case center, A, and a movement-ring, A', fitted in said center, of a back or bezel having a ring, *a*, formed on it to fit into a recess formed in the center A, and a flange, *d*, to butt against the edge of the center A, and a shoulder, *d'*, abutting against said movement-ring, substantially as and for the purpose specified.

3. The combination, with the watch-case center A, formed with interior recess and shoulder *d'*, of the movement-ring fitted in the re-

com in said center and abutting against said shoulder, and a back having a shoulder, *d'*, abutting against the edge of the movement-ring, and a flange, *d*, abutting against the outer edge of the center, substantially as shown and described.

382,191. BOTTLE-STOPPER. WILLIAM H. REDINGTON, Chicago, Ill. Filed Dec. 13, 1886. Serial No. 221,392. (No model.)



Claim.—1. A stopper for bottles or other vessels, comprising a cap to be secured to the top of the vessel, a spout extending out from the cap at an angle, having a diameter at its outer end not less than the smallest diameter of its body, and means for closing the spout, substantially as described.

2. In combination with a bottle or other vessel, a stopper comprising a cap secured to the top thereof, a tubular spout of substantially the same diameter throughout its entire length extending out from the cap at an angle, whereby the liquid may be permitted to flow out without the aid of any additional vent or opening, and means for closing the end of the spout, substantially as described.

382,192. MEAT-CUTTING MACHINE. G. OSCAR RINMAN and JOHN ZIMMERMAN, Cincinnati, Ohio; said Rinman assignor to said Zimmerman. Filed Aug. 12, 1884. Renewed Feb. 1, 1888. Serial No. 262,666. (No model.)



Claim.—1. In a meat-cutting machine, the combination of a hopper, a horizontal-cylinder force-feed provided with radially-reciprocating arms D, and a rotary shaft carrying a series of cutting-knives below and in proximity to said cylinder, to cut the meat brought within range of the cutters by said arms, substantially as described.

2. In a rotary meat, beef-fat, or lard cutting machine, the combination of a series of parallel cutting-knives, *k*, mounted on a rotating shaft, E, and a comb, *d*, adjustable laterally by set-screws, for the purpose of adjusting the relative cutting-paths of the knives at a greater or less distance from the sides of the teeth, substantially as and for the purpose specified.

3. In a rotary meat-cutting machine provided with combs *d*, adjustable laterally, the set-screws *f f'*, for producing such adjustment, in combination with the holding-screws *l l*, inserted through slotted openings permitting such adjustment, substantially as described.

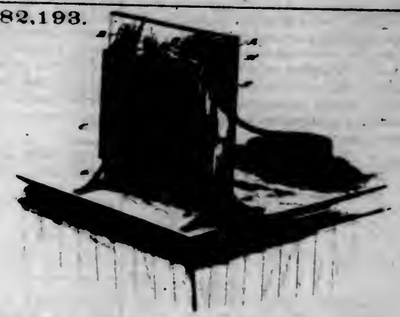
4. In a rotary meat-cutting machine, the combination of the force-feed mechanism, consisting of shaft A, cylinder C, having slotted openings *a b c*, and arms D, provided with pivots *e e* and having beveled edges *h*, the hopper B, constructed with curved interior surfaces, as described, and having the grooves in the ends thereof, and adapted to carry the shaft A; with cylinder C thereon, and adjustable combs adapted to be shifted laterally in relation to the knives, substantially as and for the purpose specified.

5. In a rotary meat-cutting machine, the combination of the shaft E, carrying the cutting-knives *k*, force-feed cylinder C on the shaft A, provided with radially-reciprocating arms D, and means, as described, for keeping said arms in close proximity to the respective left and right hand sides of the hopper B, substantially as and for the purpose described.

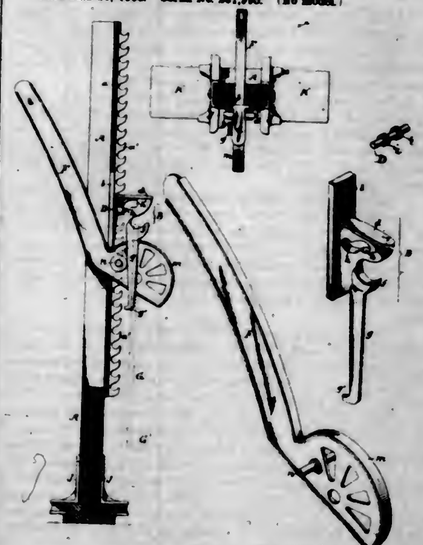
6. In a rotary meat-cutting machine, the combination of the shaft E, carrying knives *k*, and the shaft A, with cylinder C, carrying arms D on the hopper B, so that the knives *k* will pass in close proximity to the surface of the cylinder C at the point where arms D have reached their greatest recession, the cylinder C so journaled that it shall be ahead of the cutting-knives *k* in the direction of rotation, for the purpose of assisting the feeding and cutting operations, substantially as described.

382,193. ROPE-MEASURING DEVICE. LEVI J. ROSS, Goodwin, Dak. Filed Oct. 6, 1887. Serial No. 251,657. (No model.)

Claim.—In a device for measuring rope or cordage, the combination of the vertically-disposed supporting frame-work constructed to form inclosing-cases for the mechanism, as set forth and shown, the upper longitudinally-arranged shaft, carrying a centrally-situated worm and a small plain-faced wheel or roller, F, on one end thereof, a spring-actuated pressure-block mounted directly above the said wheel or roller and acting directly against the face thereof, the serrated disk D, mounted on a transverse shaft, *d*, and in direct connection with the worm on the upper longitudinal shaft, the dial-plate C, through which the transverse shaft *d* extends, provided with two sets of relatively-arranged figures indicative of feet and pounds, and an indicator, *i*, secured to the projecting end of the transverse shaft *d*, whereby—the roller translating motion to the upper longitudinal shaft, and the worm on the said shaft imparting said motion to the serrated disk which revolves the hand—the action is made positive and the measurement accurately registered, substantially as described.



382,194. LIFTING-JACK. SAMUEL Z. SCHWENK, Pottstown, Pa. Filed Jan. 26, 1888. Serial No. 261,993. (No model.)



Claim.—1. The combination of the standard and its rack, the cam-lever having a fulcrum-pin adapted to said rack, and a lifting-foot having a stem guided in the standard, and a curved base forming a bearing for the cam-lever, all substantially as specified.

2. The combination of the standard and its rack, the operating-lever having a fulcrum-pin adapted to said rack, and the lifting-foot having a depending bar serving as a stop and guide for said fulcrum-pin, all substantially as specified.

3. The combination of the standard and its rack, an operating-lever having a fulcrum adapted to said rack, and the lifting-foot having a depending bar with inturned lower end, whereby it serves as a stop, guide, and catch for the fulcrum-pin of the lever, all substantially as specified.

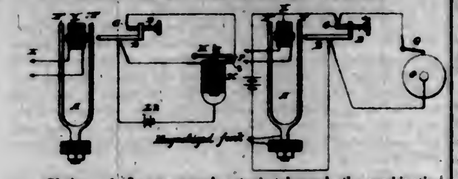
4. The combination of the standard and its rack, the operating-lever, the lifting-foot having an inclined slot, and a retaining-pin engaging with the teeth of the rack and free to slide in said slot, all substantially as specified.

5. The combination of the standard and its rack, the operating-lever, a lifting-foot having an inclined slot enlarged at the outer end, and a retaining-pin adapted to said slot and having opposite stop-shoulders, all substantially as specified.

6. The combination of the standard and its rack, the operating-lever, the lifting-foot having an inclined slot forming a seat or pocket at the outer end, and the retaining-pin adapted to engage with the teeth of the rack, but free to slide in the slot and to enter the pocket at the outer end of the same, all substantially as specified.

7. The base-plate having a vertical groove for the reception of the vertical bar of the standard, and transverse and longitudinal grooves, each adapted for the reception of a base-bar, all substantially as specified.

382,195. TELEGRAPH-RECEIVER. CHARLES SELDEN, Baltimore, Md. Filed Nov. 15, 1887. Serial No. 255,947. (No model.)



Claim.—1. In a tone or harmonic telegraph, the combination, with a tuning-fork operated by the main current, of an independent set of contacts in a local circuit, a support for the contacts and adjusting devices for said support, substantially as described.

2. In a tone or harmonic telegraph, the combination, with a tuning-fork operated by the main current, of a support carrying a fixed contact-piece, a movable contact-piece also mounted in the support, a local circuit including the contacts, and adjusting-screws for the contacts, substantially as described.

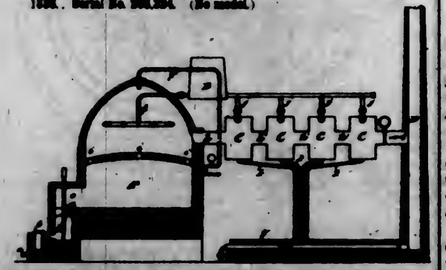
3. In a tone or harmonic telegraph, the combination, with a tuning-fork operated by the main-line current, of an independent set of adjustable contacts included in a local circuit, and a signal-receiving instrument in the circuit, substantially as described.

4. In a tone or harmonic telegraph, the combination, with a tuning-fork and an independent set of contacts operated thereby, of a local circuit including the contacts in one branch, and an automatic receiving-instrument in another branch, substantially as described.

5. In a tone or harmonic telegraph, the combination of a tuning-fork operated by the main-line currents, a set of contacts in a local circuit operated by the fork, an automatic receiving style or finger in the local circuit, and a second style or finger in a secondary circuit to the primary, substantially as described.

6. In a tone or harmonic telegraph, the combination, with a tuning-fork having a certain rate of vibration and controlled by the main-line currents, of an independent set of contact devices controlling the local receiving-instruments and adjusting devices whereby the contacts may be arranged so as to be operated only when the fork vibrates normally, substantially as described.

382,196. FURNACE FOR REDUCING ALUMINUM. FREDERICK J. SEYBOTH, Findlay, Ohio. Filed Apr. 26, 1887. Renewed Mar. 24, 1888. Serial No. 268,394. (No model.)



Claim.—1. The combination of the reducing-chamber provided with means for supplying air, gas, and ores, the gas and vapor exit flue leading from the same, the heating-chamber for the blending and expansion of gases, the exit-flue leading from said chamber, the cooling-chamber, and the superposed chamber provided with a spraying device communicating with said cooling-chamber, all combined substantially as and for the purpose specified.

2. The combination of the reducing-chamber provided with means for supplying air, gas, and ores, the gas and vapor exit flue leading from the same into a chamber for the blending and expansion of gases, the said chamber, an exit-flue leading from said chamber, the cooling-chamber, the spraying-chamber communicating with said cooling-chamber, and a condenser provided with spraying device, all combined substantially as and for the purpose specified.

3. The combination of the reducing-chamber provided with means for supplying air, gas, and ores, the gas and vapor exit flue leading from the same, the heating-chamber, an exit-flue leading from said chamber, the cooling-chamber, the superposed chamber provided with spraying device, the condenser provided with spraying device, and discharge-pipes and evaporating-pan.

382,197. METHOD OF OBTAINING ALUMINA FROM CLAY. FREDERICK J. SEYBOTH, Findlay, Ohio, assignor to the American Aluminum Company, Detroit, Mich. Filed May 16, 1887. Serial No. 238,288. (Specimens.)

Claim.—1. The process of separating alumina from clay or aluminous earth, which consists in mixing the clay or earth with a deoxidizing agent and a flux, and with copper or other metal of greater specific and atomic weight than aluminum, heating the mixture to produce a mixture of finely-divided materials and oxides, and then cooling, condensing, and collecting the same, substantially as specified.

2. The process of separating alumina from clay or aluminous earth, which consists in mixing the clay or earth with a deoxidizing agent and a flux, and with copper or other metal of greater specific and atomic weight than aluminum, heating the mixture, cooling the mingled oxides that pass from the heating-chamber, separately condensing and collecting silica, and, finally, cooling and collecting alumina mingled with the other metallic oxides, substantially as specified.

382,198. PURIFICATION AND ALLOYING OF COPPER. FREDERICK J. SEYBOTH, Findlay, Ohio, assignor to the American Aluminum Company, Detroit, Mich. Filed May 16, 1887. Renewed Mar. 24, 1888. Serial No. 268,395. (No specimens.)

Claim.—1. The method of purifying metals, which consists in fusing one or more of them with a flux composed of phosphorus and fluor-spar, substantially as specified.

2. The method of purifying and alloying a metal, which consists in fusing it with a flux composed of phosphorus and fluor-spar, and with one or more metallic oxides in the presence of a deoxidizing agent, such as carbon, substantially as specified.

3. The method of purifying and alloying copper, which consists in fusing it with a flux composed of phosphorus and fluor-spar, and with the oxides of aluminum and zinc in the presence of a deoxidizing agent, such as carbon, substantially as set forth.

382,199. SUSPENDER-BUCKLE. CALVIN VOORHIS, New York, N. Y., assignor to himself and Abraham Shenfield, same place. Filed Feb. 10, 1888. Serial No. 263,573. (No model.)



Claim.—1. In a buckle, the combination, with the main plate A, having a transverse slot and loop, B, at its upper edge, through which the suspender-web or other material passes, and teeth 2 and eyes or journal *b* at lower edge, of a swinging loop, D, pivoted to said plate, so that the main bar of said swinging loop D is parallel with and adjacent to the points of said teeth, and through which loop the suspender-web or other material passes, substantially as set forth.

2. The plate A, having teeth and eyes or journals 5 at its lower edge, in combination with the loop D, having a cross-bar, 6, adjacent to the teeth 2, the ends of said cross-bar 6 passing through the eyes or journals *b* and bent or curved at 9 to form springs, and the loop B at the upper part of the plate A, substantially as set forth.

3. The plate A, having loop B at the upper edge, and teeth and eyes or bearings at the opposite edge, in combination with the loop D, which is curved to form spring 9, and suspended by the eyes or journal *b*, substantially as set forth.

382,200. NUT-LOCK. JOSEPH G. WARE, Marengo, Iowa, assignor of one-half to Joseph G. Krantz, same place. Filed Feb. 3, 1888. Serial No. 262,862. (No model.)

Claim.—1. A nut and bolt lock composed of a washer having an opening and a device, as a wedge, located opposite the opening, and

382,200.



a split key adapted to be passed through the said opening and spread by the wedge, substantially as and for the purpose described.

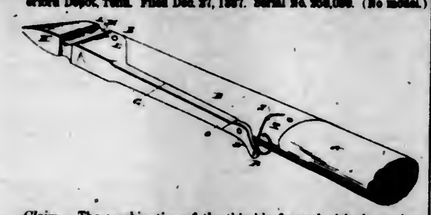
2. The combination, with the lower washer adapted to interlock with the timber and the upper washer having an opening, of a wedge secured to the lower washer and having its edge located opposite the said opening and the split key adapted to be passed through the said opening and spread on the wedge, substantially as and for the purpose described.

3. The combination, with the lower washer adapted to interlock with the timber and the upper washer having an opening, of the key adapted to pass through said opening and lock the barr, the upper and the lower washer together, substantially as set forth.

4. The combination, with the lower washer having a wedge-block and the upper washer having an opening, of a pin to hold the opening and wedge in register, and the split key, substantially as described.

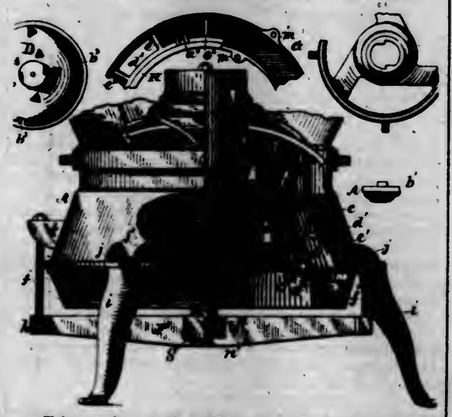
5. The combination, with the lower washer adapted to interlock with the timber and the series of wedge-shaped blocks, of the upper washer resting on the said blocks and provided with a series of openings opposite the ends of the wedges, the pin for holding the openings and wedge-blocks in register, and the split key, substantially as described, for the purpose specified.

382,201. HORSE-DETACHER. ABSALOM M. WITHERINGTON, Rutherford Depot, Tenn. Filed Dec. 27, 1887. Serial No. 259,090. (No model.)



Claim.—The combination of the thimble formed with the socket, the slanting shoulders, and the reduced outer end, and having the point or stop at its rear side, the pivoted end piece formed with the slanting recessed outer part, and the reduced inner rear end having the inclined shouldered extremity and the recess W, the centrally-pivoted catch having the shouldered inclined inner end, the spring, and the operating-cord, substantially as set forth.

382,202. GRINDING-MILL. JAMES S. WOODCOCK, New Lexington, Ohio. Filed Nov 26, 1887. Serial No. 256,400. (No model.)



Claim.—1. In a grinding-mill having the running burr composed of a burr section or sections attached to a dome-plate or cap, and suspended from the latter on a central spindle, the combination, with the inner top flange of the burr-section having the flat rectangular lugs projecting therefrom, of the dome-plate having the exterior horizontal flange and provided with depressions in its convex surface and the bolts connecting said dome-plate and burr-section, whereby the latter is suspended wholly from said dome-plate and both longitudinal and transverse strain upon said connecting-bolts prevented, substantially as hereinbefore set forth.

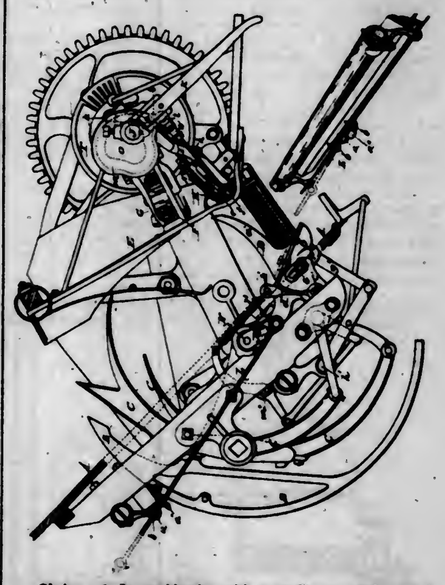
2. In a grinding-mill, the combination of a case, a stationary burr within the latter, and a running burr composed of the two frustum-shaped sections, the upper section having niches to form the inner projecting lugs, the lower section having the inner projecting proximate lugs, bolts connecting the lugs of the two sections, with vertical lugs on one section engaging recesses in the other section, and the dome-plate insertible from within said running burr and connected by the means described with the upper frustum-shaped section of the latter, substantially as set forth.

3. In a grinding-mill, a stationary barr, a running barr within the latter, composed of a burr section or sections, and a dome-plate insertible through said burr section or sections, and from which the latter are suspended with the means of attachment, substantially as described, for the purpose hereinbefore set forth.

4. In a grinding-mill, the combination, with the running barr, the fixed or stationary burr, and the case having an exterior bottom flange provided with holes for its attachment, of the annular meal-trough having the perforated lugs m' and the bolts d', securing said meal-trough, said stationary barr, and the case together, and a ring conveyer having radial blades located within said annular meal-trough, and having means thereon for connecting it with the running barr, said meal-trough being provided with a discharge-orifice, substantially as set forth.

5. The combination, with the annular meal-trough having the inner projecting top flange, the conveyer adapted to rotate within said annular meal-trough and having a top flange extending over the latter, and the spacing-clips secured to the flange of said meal-trough, each having a jaw extending over the flange of said conveyer, adapted to guide the latter and prevent its displacement, substantially as set forth.

382,208. GRAIN-BINDING MACHINE. CALVIN YOUNG, Auburn, assignor of one-half to D. M. Osborne & Company, New York, N. Y. Filed July 7, 1883. Renewed Oct. 14, 1887. Serial No. 252,318. (No model.)



Claim.—1. In combination with a needle-arm and a crank mounted on its shaft, a reciprocating cord-controlling arm mounted upon and actuated by said crank; as described.

2. In combination with the vibratory needle-arm, the crank M thereon, the reciprocating slack-arm L, and the fixed cord-guides, substantially as described.

3. The needle-arm, its rock-shaft, and the crank upon said shaft, in combination with the reciprocating slack-arm having an eye therein

and mounted on said crank, and the fixed cord-guides arranged on opposite sides of said arm.

4. The cord-clamping disk provided with ratchet-teeth, in combination with the swinging arm f, the spring-actuated pawl thereon, the rod A, to operate said arm, the lever i, operating said rod, and the cam-wheel grooved in its side face and acting directly upon a stud or roller on the lever.

5. In combination with the vertically-swinging frame I, the operating-cam o, the lever i, the clamping-wheel mounted on the swinging frame I and provided with ratchet-teeth, the swinging arm, also mounted on said frame, the spring-actuated pawl mounted on said arm to turn the clamping-wheel, and the rod extending from said arm to the lever i, whereby an intermitting rotary motion is imparted to the clamping-disk, while at the same time it is permitted to rise and fall with the swinging frame.

6. In combination with a rotary tying-bill of the type herein shown and described, the rotary cord-clamping disk, the pawl-carrying arm to rotate the disk, the vibratory lever and its actuating-cam, and the rod A and the head o, threaded thereon, the two forming an adjustable connection between the lever and pawl-carrying arm, substantially as described, whereby the rotation of the clamping-disk may be accurately adjusted and the presentation of the cord to the tyer properly controlled.

7. In combination with the cord-clamping disk having ratchet-teeth, the pawl p, to prevent a retrograde motion, and the cord-clamping jaw or plate N, the two mounted on one and the same pivot.

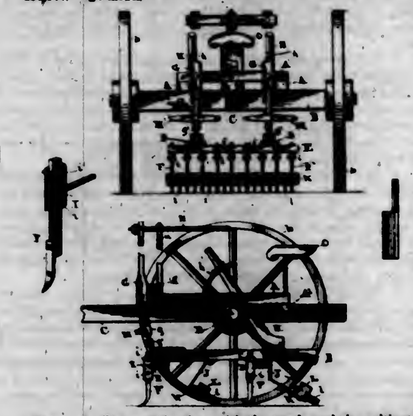
8. The combination with the fixed standard or frame and the vertically-swinging frame I, having the cord-clamp thereon, an adjustable stop, substantially as described, to limit the vertical motion of the said frame.

9. In combination with the vibratory frame I, with the cord-clamp thereon, the fixed standard or frame, the stop S, to limit the motion of said frame, and the adjusting-nuts applied as described.

10. The combination of the vertically-swinging arm d', the plate e', united thereto by a pivot and slotted connection, and the compressor proper mounted upon said plate.

11. In a grain-binder, the combination of a rock-shaft, the binding-needle and the crank, both fixed on said shaft, and a reciprocating cord-controlling arm closely jointed to and moved in both directions by said crank.

382,204. COMBINED HARROW, LEVELER, AND CULTIVATOR. PETER H. APPLEGATE, Kimball, Ind. Filed Jan. 3, 1888. Serial No. 259,577. (No model.)



Claim.—1. The combination, with the truck and the cultivator-frame, of the vertical levers G, pivoted to swing laterally and having their lower ends connected with and supporting the front end of the cultivator-frame, and the levers H, having their lower ends connected directly with and supporting the rear end of the frame, substantially as set forth, for the purpose described.

2. The combination, with the truck and the cultivator-frames, of the vertical levers united at their upper ends, the standard n, the hand-lever N, which guides the cultivators at the forward end instead of rear, the links pivotally connected with the lower ends of the levers and having a series of openings in their length, and the short chains for adjustably connecting the cultivator-frames with the links, substantially as and for the purpose described.

3. The combination, with the truck and the cultivator-frames provided with the earth-treating devices, of the levers H, having their lower ends connected directly with the frames, the levers G, mounted and united to move laterally together, the links g, having a series of openings in their length, the short chains g', and the whiffletrees applied to the links g and adjustable thereon, substantially as and for the purpose described.

4. The herein-described agricultural implement, composed of the truck, the adjustable seat, the cultivator-frames, the levers supporting the rear end of the cultivator-frames, the levers G, the standard n, the hand-lever N, the links g, having a series of perforations in their length, the whiffletrees adjustable on the links, the adjustable ground-openers, the brackets having slanting ends, the leveler-bars, the pulverizing-bars, and the pulverizing-teeth placed on the pulverizing-bars, the teeth of one bar coming opposite the spaces between the teeth of the other bar, substantially as described.

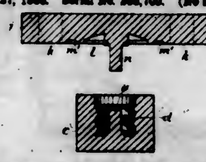
382,205. FAN. JAMES B. BAERMANN, New York, N. Y. Filed Nov. 12, 1887. Serial No. 254,998. (No model.)



Claim.—1. A folding fan composed of a series of folding arms, one of said arms being provided at its free end with a recessed offset adapted to receive one of the other of said arms when folded, a feather secured to said offset, and a feather secured to each of the other arms, substantially as described.

2. A folding fan composed of a series of folding arms, one of said arms being provided at its free end with a recessed offset, and another of said arms being provided with a recess made to correspond with the recess of said offset, a feather secured to said offset, and a feather secured to the free end of each of the other arms, substantially as set forth.

382,206. MANUFACTURE OF SCREW-STOPPERS. HENRY BARBET and JOHN J. VARLEY, London, England. Filed Dec. 17, 1886. Renewed Mar. 27, 1888. Serial No. 268,703. (No model.)



Claim.—1. A mold for the manufacture of screw-stoppers, consisting of the combination of a block or plate provided with a hole, (one or more,) as set forth, adapted to receive the hub, a middle plate having a hole for the heads of the stoppers, and a top or press plate, these parts being constructed and operated substantially as shown and described.

2. A mold for the manufacture of screw-stoppers with holes through them, consisting of a block or plate provided with holes, as set forth, adapted to receive a number of screwed hubs, the hub c and top plate, j, each having a central pin or core, and the middle plate having a hole for the head of the stopper, these parts being constructed and operated substantially as shown and described.

3. In molds for manufacturing screw-stoppers, the combination of the hub c, having a female screw-thread, and the plate e, adapted for forming the head of the stopper, and also for holding it while it is screwed out of the hub, these parts being constructed and operated substantially in the manner hereinbefore described.

4. In molds for manufacturing screw-stoppers, the combination, with the top plate, j, having the central pin, n, of the hub c, having the central pin, o, for the purpose of producing screw-stoppers with a central hole through them, substantially as described.

382,207. SPRING-SEAT. MARION J. BARROW, New Bloomfield, Mo. Filed Mar. 19, 1888. Serial No. 267,682. (No model.)

Claim.—1. The hereinbefore-described vehicle-seat, composed of the platform of slats of different lengths, the longer slats being united at their ends and the shorter slats being connected at their middle with the middle of the longer slats, and the seat supported at its ends

382,207.

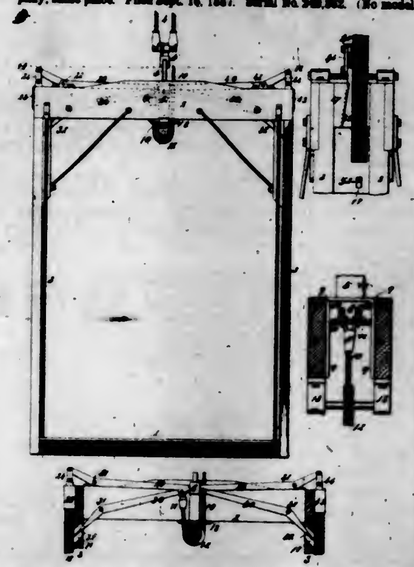


on the ends of the shorter slats, which slats are flexible and in the same plane with the longer slats, substantially as specified.

2. The herein-described platform for a vehicle-seat, composed of a series of slats of different lengths clamped together midway of their ends between cleats, and having the ends of the longer slats secured together by cleats, the slats being in the same plane, substantially as specified.

3. The combination, with the platform, composed of long and short slats arranged in the same plane, the short slats having openings at their ends, the middle cleats securing all the slats together, and the end cleats securing the long slats together only, of the seat, the bolts depending from the seat and adapted to enter the openings in the short slats, the blocks interposed between the seat and the short slats, and the stay-hook for holding the seat on the platform, substantially as specified.

382,208. SAFETY DEVICE FOR ELEVATORS. JOHN S. BRIGGS, St. Louis, Mo., assignor to the Smith, Briggs & Rankin Machine Company, same place. Filed Sept. 16, 1887. Serial No. 249,802. (No model.)

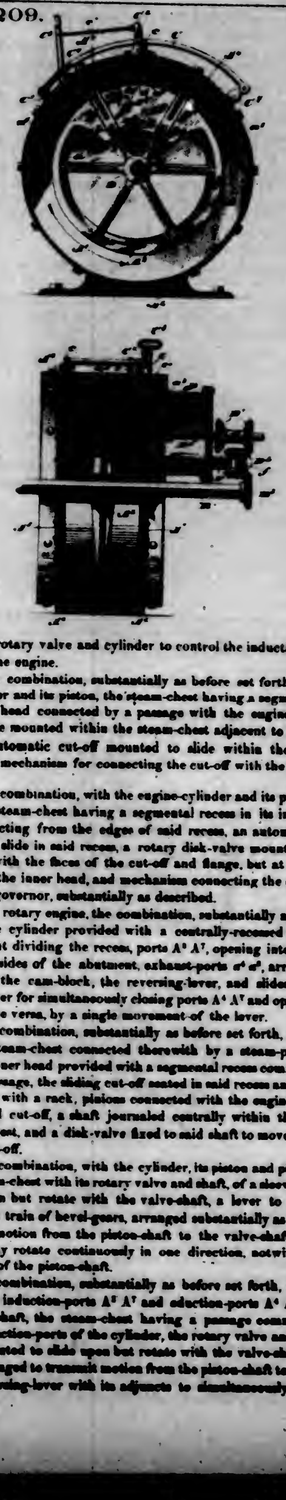


Claim.—1. The combination of the cage, movable block secured to the cage, hoisting-cable, and counterbalance-cable connected to the block, a double set of levers connected to the block and pivoted to the cage, wedges on the outer ends of one pair of the levers, prongs or points on the outer ends of the other set of levers, and uprights of the elevator-shaft, substantially as and for the purpose set forth.

2. The combination of the cage, movable block 6, cables 4 and 10, levers 20, 30, 40, and 50, pivoted to the cage, wedges 23 and 43, connected to the levers 20 and 40, projections 17 on the cage, levers 30 and 50, pivoted to the cage and having points 32 and 52 entering holes 18 in the sides of the cage, and uprights 16 of the elevator-shaft, substantially as and for the purpose set forth.

382,209. ROTARY ENGINE. AVERY W. BILLINGS and WILLIAM G. BILLINGS, Larned, assignors of one-third to Arthur T. Billings, Belmore, Kans. Filed Dec. 8, 1887. Serial No. 257,267. (No model.)

382,209.



Claim.—1. In a rotary engine, the combination, substantially as before set forth, of the engine-cylinder provided with a cam-block carrying an abutment, the piston, the steam-chest, ports for connecting the steam-chest with the cylinder at opposite sides of the abutment, eduction-ports arranged near the ends of the cam-block, a rotary valve within the steam-chest, and a slide-valve interposed between the rotary valve and cylinder to control the induction-ports for reversing the engine.

2. The combination, substantially as before set forth, of the engine-cylinder and its piston, the steam-chest having a segmental recess in its inner head connected by a passage with the engine-cylinder, a rotary valve mounted within the steam-chest adjacent to its recessed head, an automatic cut-off mounted to slide within the segmental recess, and mechanism for connecting the cut-off with the engine-governor.

3. The combination, with the engine-cylinder and its piston, of the cylindrical steam-chest having a segmental recess in its inner head, a flange projecting from the edges of said recess, an automatic cut-off mounted to slide in said recess, a rotary disk-valve mounted to move in contact with the faces of the cut-off and flange, but at a little distance from the inner head, and mechanism connecting the cut-off with the engine-governor, substantially as described.

4. In a rotary engine, the combination, substantially as before set forth, of the cylinder provided with a centrally-recessed cam-block, the abutment dividing the recess, ports A^6 A^7, opening into the recess at opposite sides of the abutment, exhaust-ports a^4 a^5, arranged near the ends of the cam-block, the reversing-lever, and slides connected with said lever for simultaneously closing ports A^4 A^7 and opening ports A^5 A^6, or vice versa, by a single movement of the lever.

5. The combination, substantially as before set forth, of the cylinder, the steam-chest connected therewith by a steam-passage and having its inner head provided with a segmental recess communicating with said passage, the sliding cut-off seated in said recess and provided peripherally with a rack, pinions connected with the engine-governor to move said cut-off, a shaft journaled centrally within the heads of the steam-chest, and a disk-valve fixed to said shaft to move in contact with the cut-off.

6. The combination, with the cylinder, its piston and piston-shaft, and the steam-chest with its rotary valve and shaft, of a sleeve mounted to slide upon but rotate with the valve-shaft, a lever to move said sleeve, and a train of bevel-gears, arranged substantially as described, to transmit motion from the piston-shaft to the valve-shaft, whereby the valve may rotate continuously in one direction, notwithstanding the reversal of the piston-shaft.

7. The combination, substantially as before set forth, of the cylinder having induction-ports A^2 A^7 and eduction-ports A^4 A^5, the piston and its shaft, the steam-chest having a passage communicating with the induction-ports of the cylinder, the rotary valve and its shaft, a sleeve mounted to slide upon but rotate with the valve-shaft, a train of gears arranged to transmit motion from the piston-shaft to the valve-shaft, a reversing-lever with its adjuncts to simultaneously open and close two ports of the cylinder at one movement, and a lever to shift the sliding sleeve on the valve-shaft.

8. The combination, substantially as before set forth, of the cylinder having induction and exhaust ports, arranged as described, the pivoted yoke carrying a slide-valve at each end, the slide-valve C^2, the reversing-lever, and rods connecting the reversing-lever with the valve C^2 and with the yoke.

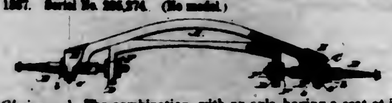
382,210. LAMP. HENRY A. BLAKE, Chicago, Ill., assignor to A. Henry Hadden, same place. Filed Oct. 24, 1887. Serial No. 253,173. (No model.)



Claim.—1. The combination of an oil-pot, A, a burner, B, and a wick raising and lowering device having a button, *c*, in frictional contact with the oil-pot, substantially as and for the purpose set forth.

2. The combination of an oil-pot, A, provided with a raised top, a burner, B, and a wick raising and lowering device, C, having a button, *c*, in frictional contact with the oil-pot, substantially as and for the purpose set forth.

382,211. WAGON-AXLE. NATHAN W. BENNER, Auburn, Tex., assignor of one-half to Wayne B. Trousdale, same place. Filed Nov. 15, 1887. Serial No. 255,274. (No model.)



Claim.—1. The combination, with an axle having a seat at its outer end and a cent located in from said outer end, of the spindle having its shank provided with a threaded inner end, and nuts turned on said inner end on opposite sides of the inner seat, by which the spindle may be adjusted to and held in any desired position, substantially as set forth.

2. The combination of the axle having seat-lug D arranged in from its ends and provided with the ears *c* depending from its opposite sides at its end, the spindle having its shank formed to fit between said ears and having its point threaded, the clip E, and the nuts F F, substantially as set forth.

382,212. FRUIT-JAR FASTENING. WILLIAM BRAUN, Washingtonville, Ohio. Filed Mar. 12, 1888. Serial No. 267,002. (No model.)



Claim.—1. The combination, with a fruit-jar and its cover, of a bail, C, having coils *d d* and offsetting-loop *e*, the connecting bar or link *f* uniting the coils, and a roller, *g*, arranged upon the said loop portion, substantially as and for the purpose described.

2. The combination, with a fruit-jar, of a hemispherical cover, B, having channels *b b* and recesses *c c*, the bail C, provided with coils *d d* and loop *e*, connecting-bar *f* uniting the coils, and roller *g* arranged upon the loop portion, substantially as and for the purpose described.

382,213. HAY-STACKER. DAVID H. CAMPBELL, Denville, Ill. Filed Jan. 16, 1887. Serial No. 224,903. (No model.)

Claim.—1. The combination of the supporting frame-work, the vertically-arranged pole having an arm carrying sheaves at each end thereof, the brace-arms D^3, the longitudinally-arranged sectional shaft having gears at each end thereof, the gear on the lower end of the pole adapted to engage with the gear on one end of the longitudinal shaft, and the power-transmitting gear engaging with the gear on the opposite end thereof, the counter-shaft carrying a windlass, the sweep, the rope R, and the shifting-lever for connecting and disconnecting the several parts of the mechanism, whereby the same may be used together or independently, substantially as described.

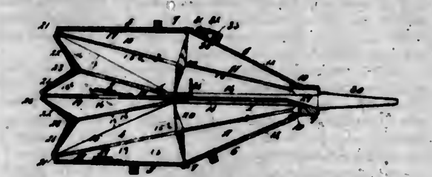
382,213.



2. The combination of the supporting frame-work, the vertically-arranged pole having an upper bifurcated end, the hinged sectional arm D^3, mounted in the upper end of the pole and carrying depending sheaves at its ends, the brace-arms, the longitudinal shaft connecting the gear at the base of the pole with the power-transmitting gear, as set forth, and the sweep, in connection with the extended end of the shaft of the power-transmitting gear, to which the power is attached for actuating the mechanism, as set forth, substantially as described.

3. The combination of the supporting frame-work, the pole, the hinged sectional arm D^3, pivotally mounted in the upper slotted end of the pole and carrying sheaves at its outer ends, the brace-arms D^4, secured at their upper bifurcated ends to the arm D^3 and at their lower ends to the pole by a wire, d^5, the longitudinal shaft adapted to be disconnected from the gear on the lower end of the said pole, the counter-shaft carrying a windlass and adapted to be unshipped from the power-gear, and the rope R, passing through the blocks on the frame and pole and over sheaves carried by the arm D^3, and through the upper slotted ends of the pole and its braces, substantially as described.

382,214. BELLOWS. FRANK GERSTER, St. Louis, Mo. Filed Aug. 8, 1887. Serial No. 246,494. (No model.)



Claim.—1. A bellows constructed with inclined forward top and bottom boards and horizontal rear top and bottom boards, the said boards being united, respectively, with each other by flexible joints and suitable valves, substantially as described.

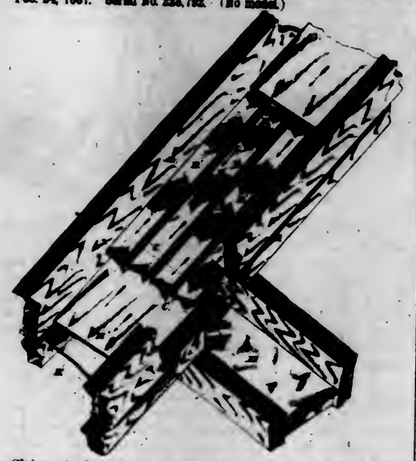
2. In a bellows, the combination of the front top and bottom boards and the rear top and bottom boards, said boards being connected with each other respectively by flexible joints, a rigid center board extending the entire length of the inside of the bellows, a series of gore-shaped boards interposed between the top and bottom boards and secured in place by flexible joints, and the valves, substantially as described.

3. In a bellows, the combination of center board, 1, provided with valve 2, top and bottom boards, 3 6 5 6, secured together by flexible joints, nose 10, secured to sections 6 6 by flexible joints, nozzle on the nose, end boards, 22 24 22 24, secured to each other and to the center, top, and bottom boards, 5 5, by flexible joints, rearward side gore-shaped boards, 11 14 11 14, secured to each other and to the center, top, and bottom boards by flexible joints, rearward side gore-shaped boards, 15 15½ 16 16½ 15 15½ 16 16½, secured to each other and to the center, top, and bottom boards by flexible joints, flexible diamond-shaped pieces connecting forward boards, 11 14, and rear boards, 15 15½, below the center boards, and the forward boards, 11 14, and rear boards, 15 15½, above the center board, and flexible diamond-shaped pieces connecting rearward boards, 16 16½, to the end boards, 22 24, substantially as shown and described, and for the purpose set forth.

4. In combination with the bellows, made substantially as described, the lever 40, rock-bar 41, adjustable arms, and rods 44, as specified.

5. In a bellows, the combination, with the top and bottom, of a series of gore-shaped boards interposed between the same, the upper and lower most boards having their broad ends placed in a forward position, the center boards being arranged in an opposite position, said boards and top and bottom being united by flexible joints, and the valves, substantially as described.

382,215. **AUTOMATIC SLATE-PICKER.** ECKLEY A. COXE and SAMUEL SALMON, Drifton, Pa.; said Salmon assignor to said Coxe. Filed Feb. 24, 1887. Serial No. 228,732. (No model.)



Claim.—1. As a means of separating flat pieces of material from other pieces differently shaped, an inclined trough having the face over which the pieces slide inclined to one side, the abrupt face on the side toward which the other face inclines, and the continuous slot or opening in the abrupt face beginning at point near the lower end of the trough, substantially as and for the purpose specified.

2. As a means of separating flat pieces of material from pieces of other shapes, a trough having the face over which the pieces of material slide made sloping toward one side and a face toward which the first face slopes provided with a continuous slot beginning near the discharge end of the trough and increasing in size toward such end, substantially as and for the purpose set forth.

3. The screen for separating flat pieces of material from pieces of different shape, consisting of a series of troughs or valleys, each having a face inclined toward one side and an abrupt face toward which the other face is inclined, and having a slot in its abrupt face beginning near the discharge ends of the troughs and increasing in size toward such ends, substantially as and for the purpose shown.

4. In combination with a suitable guiding-chute for the material to be separated, the separator-screen consisting of the plate having the series of valleys or grooves saw-tooth-shaped in cross-section and provided with the slots in the sides of such valleys, beginning near the discharge ends of the valleys and increasing in size toward and to the ends thereof, substantially as and for the purpose shown.

5. The plate for use in separating coal cast in one piece having the longitudinal faces inclined or pitching toward one side of the plate, the abrupt faces joining the lower sides of the inclined faces with the higher sides of the contiguous faces, the slots in the abrupt faces beginning near the ends thereof and increasing in size toward their ends, and the transverse bars or ribs on the under sides of the plate, substantially as and for the purpose shown.

6. In combination with the inclined plate having the longitudinal troughs or valleys saw-tooth-shaped in cross-section and the slots in the abrupt sides of the valleys beginning near the discharge end of the plate and increasing in size down to such end, a receiving-chute projecting under the end of the screen and made adjustable thereunder, substantially as and for the purpose set forth.

382,216. **TRACE-CARRIER.** EDWARD R. CROCKETT, Georgetown, Tex., assignor of one-half to J. H. Hodges, same place. Filed Dec. 14, 1887. Serial No. 257,993. (No model.)

Claim.—1. The combination, with the buckle formed with the central cross-bar having the teeth and having the side hooks and the outwardly-projecting tongue at its lower end, of the hook-plate formed

382,216.



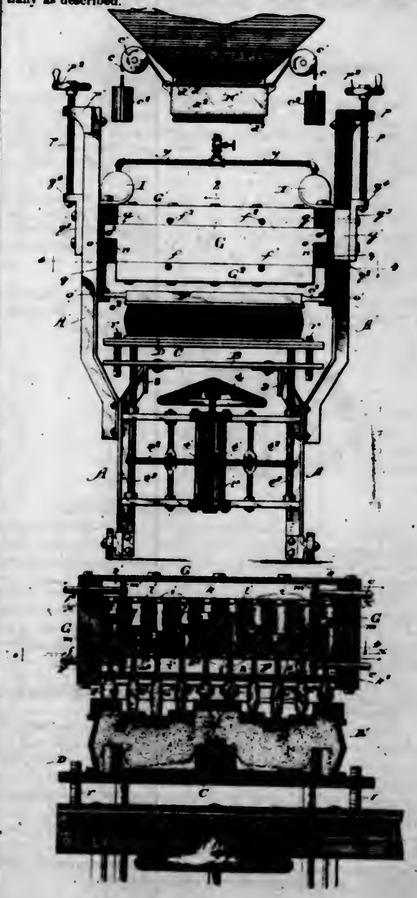
with the reduced upper ends and the hook at its lower end having the opposite slots, substantially as set forth.

2. The combination, with the buckle formed with the central cross-bar having the teeth and having the side hooks and the outwardly-projecting tongue formed with the transverse aperture at its lower end, of the hook-plate formed with the reduced upper ends and the hook at its lower end having the opposite slots, and the locking-key, substantially as set forth.

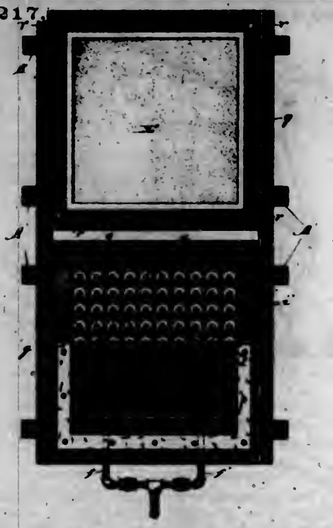
382,217. **SAND-MOLDING MACHINE.** JOHN R. DAVIES, Pullman, Ill. Filed Oct. 4, 1887. Serial No. 251,402. (No model.)

Claim.—1. In a sand-molding machine, the combination, with the frame, of a box having cylinders containing pistons, tamping-heads connected with the pistons, means for actuating the tamping-heads by fluid-pressure, and a wall within the box separating the cylinders into an inner and an outer non-intercommunicating series, whereby the tamping-heads of the outer series of cylinders may be actuated independently of those in the inner series to peen the sand around the edges in the flask, substantially as and for the purpose set forth.

2. In a sand-molding machine, the combination, with the frame, of a horizontally-sliding box, G, having cylinders *l*, containing pistons *h*, tamping-heads H, connected with the pistons, and means for actuating the tamping-heads by fluid-pressure to tamp the sand, substantially as described.



382,217.



3. In a sand-molding machine, the combination, with the frame, of a horizontally-sliding box, G, containing cylinders *l*, non-intercommunicating chambers *k* and *k'*, communicating, respectively, with the cylinders below them, and non-intercommunicating chambers k^3 and k^4, communicating, respectively, with the cylinders above them, pistons *h* in the said cylinders, tamping-heads H, connected with the said pistons, and fluid-pressure and exhaust pipes leading, respectively, to and from the said chambers, substantially as and for the purpose set forth.

4. In a sand-molding machine, the combination, with the frame, of a horizontally-sliding box, G, containing cylinders *l*, non-intercommunicating chambers *k* and *k'*, communicating, respectively, with the cylinders below them, and non-intercommunicating chambers k^3 and k^4, communicating, respectively, with the cylinders above them, fluid-pressure cylinders I, having their pistons connected with the box, and fluid-pressure and exhaust pipes leading, respectively, to and from the said chambers, substantially as and for the purpose set forth.

5. In a sand-molding machine, the combination of a frame carrying two flasks, E, a box supported to slide horizontally in the frame above the flasks, rammers carried by the said box, and means for actuating the rammers by fluid-pressure to tamp the sand in the flask below the said box, substantially as described.

6. In a sand-molding machine, the combination, with the frame, of a vertically-adjustable horizontally-sliding box, G, having cylinders *l*, containing pistons *h*, tamping-heads H, connected with the pistons, and means for actuating the tamping-heads by fluid-pressure to tamp the sand, substantially as described.

7. In a sand-molding machine, the combination, with the frame, of a vertically-adjustable horizontally-sliding box, G, containing cylinders *l*, non-intercommunicating chambers *k* and *k'*, communicating, respectively, with the cylinders below them, and non-intercommunicating chambers k^3 and k^4, communicating, respectively, with the cylinders above them, pistons *h* in the said cylinders, tamping-heads H, connected with the said pistons, and fluid-pressure and exhaust pipes leading, respectively, to and from the said chambers, substantially as and for the purpose set forth.

8. In a sand-molding machine, the combination, with the frame, of a vertically-adjustable sliding box, G, containing cylinders *l*, non-intercommunicating chambers *k* and *k'*, communicating, respectively, with the cylinders below them, and non-intercommunicating chambers k^3 and k^4, communicating, respectively, with the cylinders above them, fluid-pressure cylinders I, having their pistons connected with the box, and fluid-pressure and exhaust pipes leading, respectively, to and from the said chambers, substantially as and for the purpose set forth.

9. In a sand-molding machine, the combination, with the frame, of a vertically-adjustable sliding box, G, containing cylinders *l*, non-intercommunicating chambers *k* and *k'*, communicating, respectively, with the cylinders below them, and non-intercommunicating chambers k^3 and k^4, communicating, respectively, with the cylinders above them, pistons *h* in the said cylinders having rods *h'* extending through the base of the box and carrying tamping-heads H, and flexible material, h^3, surrounding the rods between the tamping-heads and base of the box and secured to the said base, substantially as and for the purpose set forth.

10. In combination with a sand-molding machine, a hopper supported above the flask and having a slide-valve, *d*, in its spout, and a cap, K', supported by weighted cables *c* on pulleys to normally surround the spout, and having a valve, d^3, substantially as described.

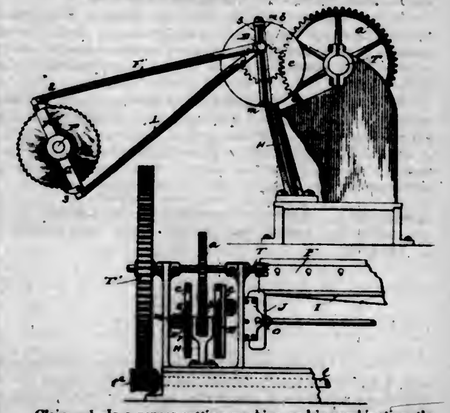
382,218. **PNEUMATIC MUSTARD-POT.** MAX DIENERT, Dresden, Saxony, Germany. Filed Dec. 12, 1887. Serial No. 257,803. (No model.)



Claim.—1. The combination, with the mustard-pot having the perforated neck at its lower end and a removable elastic cover at its upper end, of a supporting-stand provided at its base with a projection to close the perforation in the neck, substantially as set forth.

2. As a new article of manufacture, a funnel or conical shaped pneumatic mustard-pot, consisting of the mustard-receptacle B, having an opening, O, at its point or smaller end, and provided with an elastic cover, such as D, for exerting pneumatic force, in combination with the elastic-cover attachment A R and exterior receptacle or holder, G, in the lower end of which is inserted a small pan, such as N, having the projection Z for closing the opening O, substantially as shown, and for the purpose set forth.

382,219. **VENEER-CUTTING MACHINE.** EDWIN DENNISON, Grand Rapids, Mich., assignor to Wm. T. Powers & Son, same place. Filed July 23, 1887. Serial No. 245,537. (No model.)



Claim.—1. In a veneer-cutting machine, and in combination, the holder, as I, for the material, the cutting-knife, means, substantially as described, for giving movement to the same, a driving-shaft, and adjustable connections from said shaft to the knife-moving mechanism, whereby the knife may be advanced against the work to a greater or less degree relative to the movement of the holder, substantially as described.

2. In combination, the knife, the crank-wheel, the pitman, and the screw for moving the connecting-point of said pitman toward and from the center of the crank-wheel, and mechanism for communicating the movement of the pitman to the knife, substantially as described.

3. In combination, the cutting-knife, the crank-wheel provided with a groove in its face, the crank-pin or stud adapted to move in said groove, the screw engaging said crank-pin, knife-moving mechanism, as E P O, and the pitman, substantially as described.

4. In combination, the knife, the crank-wheel, the adjustable pitman connected with said crank-wheel, whereby the stroke may be varied, the pawl-and-ratchet mechanism operated by the pitman, and the mechanism, substantially as described, for imparting the move-

ment of the ratchet mechanism to the knife, substantially as described.

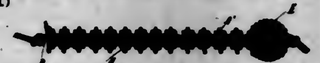
5. In combination, the knife, the crank-wheel, the ratchet-wheel, the push and pull pawls, and the adjustable pitmen operating said pawls and causing them to act alternately upon the ratchet-wheels, and mechanism, substantially as described, for communicating the movement of the ratchet mechanism to the knife, substantially as described.

6. In combination, the knife, the crank-wheel, the ratchet-wheel, the push and pull pawls, the pitmen for operating the said pawls, and adjustable crank-pins, both of said pitmen being secured directly thereto, substantially as described.

7. In combination, the knife, the crank wheels or disks *c c*, the ratchet-wheels, the pawls, and the pitmen for operating said ratchet mechanism, the pitman of one crank-wheel being positioned a quarter-turn from the pitman of the other crank-wheel, substantially as described.

8. In combination, the knife, the shaft I, the driving-gear *a*, placed thereon, the supplemental shaft E, the pinion *b*, supported by said shaft and meshing with gear *a*, the disk *c* on said shaft, the mechanism, as E P O, for driving the knife, and adjustable connection between said mechanism and the disk, substantially as described.

382,220. ORNAMENTAL WIRE COIL. LEVI M. DEVORE, Freeport, Ill., assignor of one-half to Robert H. Wiles and Wallace Greene, both of same place. Filed July 28, 1887. Serial No. 244,963. (No model.)



Claim.—1. As a new article of manufacture, a non-circular wire coil having its successive turns or spirals permanently displaced in the direction of rotation about the coil's axis, whereby corresponding points upon successive turns of the coil form a spiral curve about the coil's axis.

2. As a new article of manufacture, a wire coil whose spirals, viewed singly in the direction of the coil's axis, are non-circular, each being displaced with reference to the preceding in the direction of rotation about the coil's axis, substantially as set forth.

3. A wire coil whose spirals, seen in the direction of the coil's axis, are non-circular, each spiral being permanently displaced with reference to the preceding in the direction of rotation about the coil's axis, and whose spirals vary in size or diameter, substantially as set forth.

4. In combination with a wire coil of the form shown and described, a cord or rod passing within and along the axis of said coil and provided with knots or enlargements, substantially as set forth.

5. The combination, with a coil having spiral depressions in its surface, of a spirally-coiled rod adapted to advance by rotation along said depressions and engage the coil, substantially as set forth.

382,221. TEMPORARY PARTITION FOR CIGAR-BOXES. NAPOLEON DU BRUL, Cincinnati, Ohio. Filed Mar. 10, 1883. Serial No. 266,861. (No model.)



Claim.—1. A temporary partition for cigar-boxes, consisting of a back, 1, having a transverse arm, 2, and a horizontal flange, 3, said flange being provided with prongs 5 for insertion in the box, substantially as set forth.

2. The combination, with the back 1, having an arm, 2, and horizontal flange 3, of prongs projecting from said flange and back, as set forth.

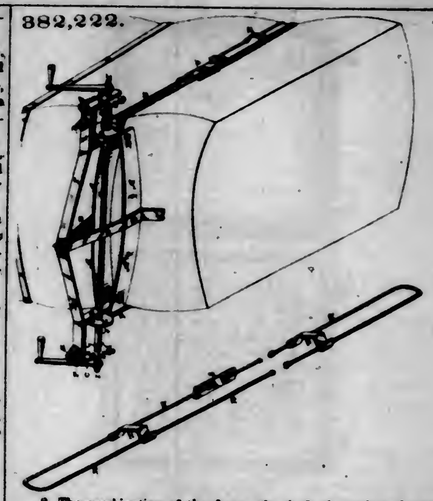
3. The combination, with the back 1 and arm 2, of the horizontal flange 3, and prongs 4 and 5, projecting downward from said back and flange for insertion into the bottom or upper edge of the box, respectively, as herein set forth.

4. The combination, with a cigar-box, of a temporary partition, A, consisting of the back 1, transverse arm 2, and flange 3, projecting at right angles from the back over the edge of the box, and having prongs 5 for insertion in the edge of the box, substantially as set forth.

382,222. MACHINE FOR PUTTING TIES ON BALES. WILLIAM R. DUNBAR, Waxahachie, Tex. Filed Jan. 23, 1888. Serial No. 261,603. (Model.)

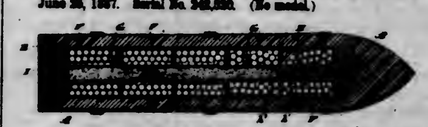
Claim.—1. The combination of the side bars, the brace rising therefrom, the bar F, the reel-frames, the shaft which is journaled in the reel-frames, and the pawls and ratchets, with the tightening-ropes, which are passed around the bale, substantially as shown.

382,222.



2. The combination of the frame, the shaft, the reels, and pawls and ratchets, with the ropes N, provided with the hooks, which have U-shaped shanks, the double rope, which is passed around the bale, and the U-shaped hooks, which are applied to the rope, substantially as described.

382,223. SHELL FOR EXPLOSIVES. JAMES W. GRAYDON, Washington, D. C., assignor, by mesne assignments, to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Filed June 28, 1887. Serial No. 242,830. (No model.)



Claim.—1. In an explosive shell, in combination with the explosive charge consisting of a number of pellets, each formed of a portion of high explosive wrapped in a flexible envelope, one or more partitions or divisions dividing the explosive charge up into several portions, each portion containing a number of the explosive pellets, substantially as and for the purpose specified.

2. In combination with the casing, a series of bodies of explosive within the casing, each made up of a number of small portions of high explosive inclosed in separate flexible envelopes, and divisions or partitions separating the several bodies of explosive from each other, substantially as and for the purpose shown.

3. In an explosive shell, in combination with the casing and the lining non-conductive of heat, the explosive charge composed of small portions of high explosive, each inclosed in a flexible envelope, and one or more transverse divisions separating the charge into several bodies, each body being composed of a mass of the enveloped portions of high explosive, substantially as and for the purposes described.

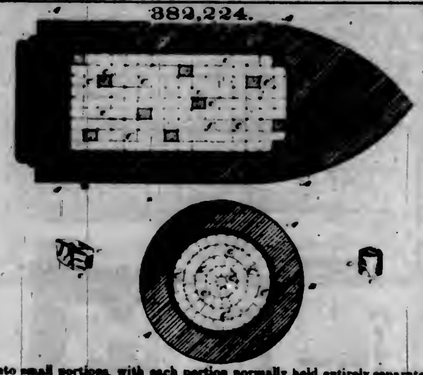
4. In an explosive shell, in combination with the casing and the explosive charge composed of pellets of high explosive, each provided with a flexible envelope to separate the explosive of the pellet from the explosive of the other pellets, divisions or partitions separating the charge into several bodies, each composed of a number of the pellets, and a fuse provided with sufficient explosive to shatter the envelopes of the pellets throughout the charge and ignite the whole charge, substantially as and for the purpose specified.

5. In an explosive shell, in combination with the casing having the charge-receiving chamber, one or more transverse partitions supported against movement within the chamber, and the bodies of explosive separated from each other by the partitions, each body consisting of a mass of small portions of high explosive inclosed in separate flexible envelopes, substantially as and for the purpose shown.

382,224. HIGH-EXPLOSIVE SHELL. JAMES W. GRAYDON, Washington, D. C., assignor to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Filed Feb. 15, 1888. Serial No. 264,082. (No model.)

Claim.—1. In a shell, the bursting-charge consisting of a mass of high explosive, which, both radially and longitudinally, is divided up

382,224.



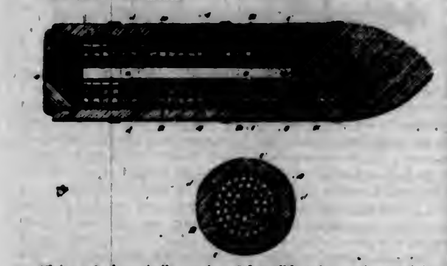
into small portions, with each portion normally held entirely separate from the others, substantially as and for the purpose specified.

2. In a shell, the bursting-charge within the shell-casing, both radially and longitudinally divided up into a number of pellets, each consisting of dynamite inclosed in an inflexible envelope, substantially as and for the purpose shown.

3. In a shell, the shell-bursting charge divided up in all directions into small portions normally held separate from each other and arranged within the shell in a layer or layers, each layer containing several of the separate small portions of explosive, substantially as described.

4. In a shell, in combination with the shell-casing, the bursting-charge therein, which, both radially and longitudinally, is divided up in all directions into explosive pellets, each consisting of a small portion of high explosive inclosed in an envelope non-conductive of heat, substantially as and for the purpose described.

382,225. HIGH-EXPLOSIVE SHELL. JAMES W. GRAYDON, Washington, D. C., assignor to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Filed Feb. 15, 1888. Serial No. 264,084. (No model.)



Claim.—1. In a shell, a series of frangible tubes each containing a portion of the shell-bursting charge, with the contents of each tube divided up into small parts held normally separate from each other, substantially as and for the purpose specified.

2. In a shell, in combination with the frangible tubes, each loaded with a charge of high explosive divided up into small portions by separating media, a fuse provided with a quantity of explosive to shatter such separating media and fire the whole shell-charge, substantially as and for the purpose shown.

3. In a shell, the bursting-charge composed of high-explosive pellets, in combination with a series of frangible tubes longitudinally arranged within the shell-chamber, each tube containing a number of the explosive pellets, substantially as and for the purpose described.

4. In a shell, longitudinal tubes packed side by side within the shell-chamber, each loaded with high-explosive pellets consisting of small portions of high explosive inclosed in rigid envelopes, substantially as and for the purpose described.

5. In a shell, in combination with the series of tubes in the shell-chamber, a series of high-explosive pellets in each tube supported by the walls of the tube against longitudinal movement therein, substantially as and for the purpose specified.

6. In a shell, tubes made of material non-conductive of heat, each inclosing a series of high-explosive pellets composed of portions of high explosive inclosed in envelopes, substantially as and for the purpose set forth.

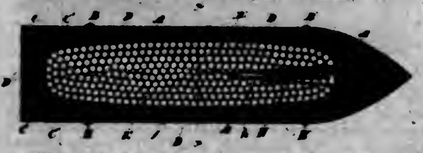
7. In a shell, the longitudinal tubes of material non-conductive of heat arranged side by side within the shell-chamber, and each loaded with a number of high-explosive pellets consisting of small portions of explosive inclosed in envelopes, substantially as and for the purpose described.

8. In a shell, in combination with the series of longitudinal tubes packed side by side within the shell-chamber, the series of high-explosive pellets in each tube, each of such size as to fit the tube and composed of a small portion of dynamite inclosed in an envelope, and a fuse provided with a quantity of explosive to shatter the tubes and pellet-envelopes and fire the whole shell-charge, substantially as and for the purpose specified.

9. In a shell, in combination with the longitudinal tubes arranged parallel with each other and each loaded with a number of high-explosive pellets, a casing of material non-conductive of heat inclosing the bundle of tubes, substantially as and for the purpose shown.

10. In a shell, in combination with the shell-casing and the lining therein made non-conductive of heat, the series of longitudinal tubes arranged side by side within the shell-chamber, likewise made of material non-conductive of heat, and each loaded with high explosive separated into small portions by suitable dividing media, substantially as and for the purpose set forth.

382,226. SHELL. JAMES W. GRAYDON, Washington, D. C., assignor, by mesne assignments, to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Filed May 7, 1887. Renewed Feb. 15, 1888. Serial No. 264,142. (No model.)



Claim.—1. In an explosive shell, in combination with the shell-casing and the charge of explosive, one or more layers of material non-conductive of heat entirely inclosing the charge, substantially as and for the purpose shown.

2. In an explosive shell, in combination with the charge of explosive, a wrapping made of asbestos around the charge and entirely inclosing the same, substantially as and for the purpose described.

3. In combination with the casing of an explosive shell, a charge consisting of a number of pellets or packages made of small portions of high explosive, each portion inclosed by a flexible envelope and separated from the other portions only by a flexible medium, substantially as and for the purpose shown.

4. A shell loaded with a mass of rounded pellets, each pellet consisting of a portion of high explosive inclosed in a flexible wrapping or envelope, substantially as and for the purpose described.

5. In combination with a suitable casing, an explosive charge for shells and the like, consisting of portions of high explosive wrapped in paraffine-treated paper, substantially as and for the purpose specified.

6. In an explosive shell, in combination with the charge made up of portions of high explosive inclosed in envelopes or wrappings, a fuse for firing the charge, provided with a quantity of explosive to shatter the envelopes of the separate portions of the shell-charge, substantially as and for the purpose set forth.

7. In an explosive shell, in combination with the shell-casing having the charge-chamber, the lining of material non-conductive of heat, and the pellets or packages of explosive inclosed in envelopes, substantially as and for the purpose shown and described.

8. In an explosive shell, in combination with the shell-casing having the charge-containing chamber, the lining non-conductive of heat and the bursting-charge made up of separate small portions of dynamite inclosed in wrappings or envelopes, substantially as and for the purpose specified.

9. In an explosive shell, in combination with the shell-casing having the charge-receiving chamber, the lining of asbestos within the same, the bursting-charge of dynamite separated into small portions, with each portion separately inclosed in an envelope, and a fuse provided with a charge of explosive to shatter the envelopes inclosing the portions of dynamite and fire the whole charge, substantially as and for the purpose shown.

382,227. CONTACT-FUSE FOR PROJECTILES. JAMES W. GRAYDON, Washington, D. C., assignor, by mesne assignments, to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Filed May 7, 1887. Renewed Feb. 15, 1888. Serial No. 264,145. (No model.)

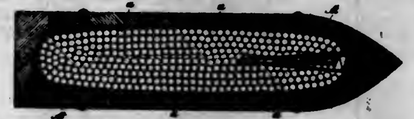


Claim.—1. A contact firing fuse for projectiles adapted to be put inside of and inclosed by the projectile-casing, and consisting of an outer casing, in combination with a tube sliding within the same, a primer on the tube, and a spring engaging the tube, so as to hold the primer-carrying end of the tube rearward, substantially as and for the purpose shown.

2. In a contact-fuse adapted to be placed within the chamber of an explosive projectile, the casing and the powder-containing tube sliding therein, in combination with the percussion-primer on the tube, and the spring engaging the tube and adapted to hold the same rearward in the casing, substantially as and for the purpose shown.

3. In combination with the funnel-shaped casing, the powder-containing tube, guided and adapted to slide longitudinally within the casing, the cap or percussion primer on the tube, and the spiral spring surrounding and engaging the tube, so as to hold the same rearward in the casing, substantially as and for the purpose set forth.

382,228. METHOD OF PREPARING EXPLOSIVES FOR USE. JAMES W. GRAYDON, Washington, D. C., assignor, by mesne assignments, to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Filed May 7, 1887. Renewed Feb. 20, 1888. Serial No. 264,652. (No specimens.)

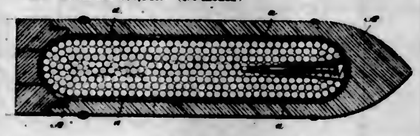


Claim.—1. The method of preparing a cartridge of explosive, which consists in dividing the amount of explosive for the cartridge into small portions, inclosing each in an envelope to separate it entirely from the other portions, and packing the enveloped portions together to form the cartridge, substantially as and for the purpose described.

2. The method of preparing a cartridge of explosive for blasting and other purposes, which consists in separating the amount of explosive for the cartridge into small portions, inclosing each of the portions in a flexible envelope and packing the pellets so formed together, substantially as and for the purpose specified.

3. The method of preparing a charge of explosive for use, which consists in separating the mass of explosive into small portions and inclosing each of the said portions in a flexible envelope, so as to make a rounded pellet, substantially as and for the purpose shown.

382,229. EXPLOSIVE CHARGE. JAMES W. GRAYDON, Washington, D. C., assignor to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Original application filed May 7, 1887, Serial No. 264,652. Divided and this application filed Mar. 20, 1888. Serial No. 267,841. (No model.)



Claim.—1. An explosive charge consisting of a mass of rounded pellets, each made of a small portion of explosive inclosed in a flexible envelope, substantially as and for the purpose shown.

2. An explosive charge consisting of a number of small portions of high explosive separated from each other only by a flexible medium, each of such portions of explosive being entirely inclosed by a flexible envelope, substantially as and for the purpose set forth.

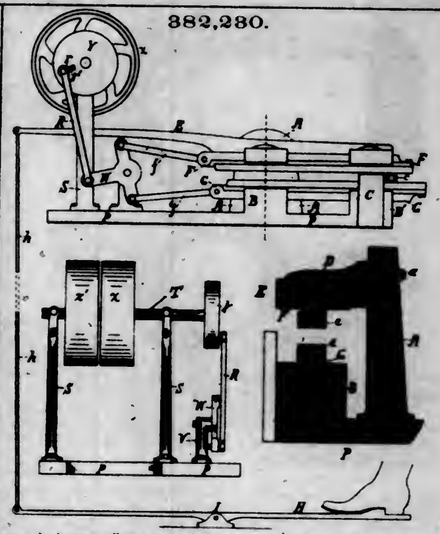
3. An explosive cartridge consisting of a mass of nitro-glycerine compound divided up into a number of small portions, each inclosed and separated entirely from the other by an envelope made impervious to the nitro-glycerine of the compound, such enveloped portions being packed together within a suitable envelope or casing to form the cartridge, substantially as and for the purpose described.

382,230. WHIP-BUTTON-ROLLING MACHINE. WATSON A. HEATH, Binghamton, assignor of two-thirds to Franklin L. Goodenough and Richard H. Randall, Windsor, N. Y. Filed Feb. 9, 1888. Serial No. 263,495. (No model.)

Claim.—1. A whip-button-rolling machine having parallel runners F and G, with dies *e e* upon their faces, said runners being driven always in opposite directions by means of the rock-shaft W, all constructed and operating substantially as shown and described.

2. The combination, in a whip-button-rolling machine, of a driving-shaft having crank-wheel Y, a rock-shaft W, parallel runners F and G, having changeable dies *e e* on their faces, a rocking sweep, E, carrying the upper runner, and treadle H, for regulating the pressure

382,230.



upon the button, all constructed and operating substantially as shown and described.

382,231. ELECTRIC IGNITING APPARATUS. LÉON HEM and RODOLPHE WEHRMANN, Brussels, Belgium. Filed Feb. 7, 1888. Serial No. 263,217. (No model.) Patented in Belgium Jan. 5, 1888, No. 80,503, and in England Jan. 19, 1888, No. 873.



Claim.—1. Electric igniting apparatus consisting of a casing or holder connected to the one pole of a generator of electricity and carrying an insulated contact-brush connected to the other pole of the generator of electricity, and an extinguisher, such casing being adapted for the reception of a lamp, and so arranged in conducting connection therewith that in withdrawing the lamp from the casing the wick-tube of the lamp makes electrical contact with the brush, producing sparks, whereby the lamp is ignited, substantially as herein described.

2. The combination, with a socket having an insulated contact-brush, and connections between said socket and brush, and suitable supply, of a lamp having a wick-holder adapted to complete circuit between said socket and brush, said wick-holder being insulated from the contact-brush except at its end, as and for the purpose set forth.

3. In an igniting apparatus, substantially as herein described, the combination, with the socket A, having insulated contact-brush M, extinguisher D, and spring C, of a lamp, O, having wick-tube Q, covered with insulation R for a portion of its length, adapted to slide in and out of said socket, and held in position by said spring C, as herein set forth.

4. The combination of a socket having an insulated contact-brush, said socket and brush being connected to the poles of a suitable supply, and a lamp for insertion in said socket, the wick-holder of which lamp is adapted to complete the circuit between said socket and brush, whereby the lamp is ignited.

382,232. SAFETY-PIN. HENRY C. HERR, Brooklyn, N. Y. Filed Jan. 20, 1888. Serial No. 261,265. (No model.)



Claim.—1. As a new article of manufacture, a safety-pin, A, having the point-guard *a* and the spiral head B, located between the ends and below the body of the pin, substantially as described.

2. As a new article of manufacture, a safety-pin, A, having the point-guard *a*, the spiral head B, and the end-protecting button C, substantially as described.

382,233. FENCE. THOMAS HOWE, Black Creek, Ohio. Filed Oct. 11, 1887. Serial No. 252,063. (No model.)



Claim.—In a fence, the combination, with the post and rails, the lower ones of which are rigidly secured to the post, of a wire doubled to form a loop at the bottom and then hooked in each end of stirrups H, to form seats for the remaining rails, the said wire being secured at its ends to the top of the post, substantially as and for the purpose set forth.

382,234. GLASS-CUTTING TABLE. ALONZO HOSMER, Orlando, Fla. Filed May 21, 1887. Serial No. 239,151. (No model.)



Claim.—1. A glass-cutter's table having an end, A', provided with feeding and gaging devices, and the other end, A^2, having a plain surface and straight-edged end upon which the glass may be broken, substantially as described.

2. In a glass-cutter's table, the combination, with the table, of a graduated side strip, and a feed-slide for moving the glass forward upon the said table to the line of cut, substantially as described.

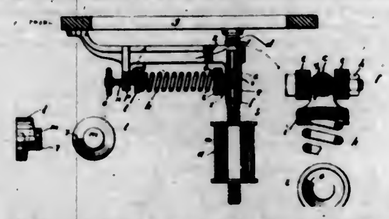
3. In a glass-cutter's table, the combination, with the table A, of the graduated side strips, C, the cross-strip D, and a feed mechanism for sliding the side strips and cross-strips upon the table, substantially as described.

4. In a glass-cutter's table, the combination, with the table A, of the side strips, C, having the toothed racks upon their under sides, a cross-strip, D, and a cross-shaft, E, having gear-pinions F, to engage with the said toothed racks, and a handle for revolving the same, substantially as described.

5. In a glass-cutter's table, the combination, with the board, of guide-plates B, having a rib, *b*, side plates, C, grooved to receive said rib *b*, and provided with a gage-plate upon one side and a toothed rack upon the other side, and a shaft carrying toothed wheels to engage said toothed rack, substantially as described.

6. In a glass-cutter's table, the combination, with the board A, of the side plates, C, having a toothed rack and graduated face, a cross-piece, D, and stops G, against which the straight-edge may be placed when the cut is made, substantially as described.

382,235. TILTING-CHAIR. JOSEPH W. KEMNA, Chicago, Ill., assignor to James W. Vail, trustee, Port Washington, Wis. Filed Sept. 15, 1884. Serial No. 143,149. (No model.)



Claim.—1. In tilting-chair irons, the combination, with the vertical screw-spindle and with the standard at the upper end thereof, of the spider-frame constructed to sustain the chair-seat, said spider-frame being suitably pivoted upon said standard and being provided with dependent yoke-like arms to snugly inclose the same, and having also an elongated slot therein, against the opposite faces of which the end of the standard projecting within said slot abuts above the pivotal point of the standard to limit the tilting movement, substantially as described.

2. In tilting-chair irons, the combination, with the vertical screw-spindle and with the standard at the upper part thereof, of the spider-frame constructed to sustain the chair-seat and suitably pivoted upon said standard, the pivotal bearing-plate and the bearing-nut, the coil-spring retained at its ends between said plate and nut, and the adjustable screw-rod to vary the tension of the spring, said several parts being arranged, substantially as described, whereby said coil-spring readjusts itself pivotally to the tilting movement, substantially as set forth.

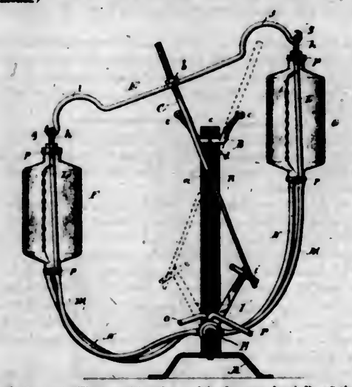
3. In tilting-chair irons, the combination, with the vertical screw-spindle *b*, having the standard *c* thereon, of the spider-frame *d*, constructed to sustain the chair-seat and suitably pivoted upon said standard, the pivot-plate *i*, provided with spiral-like face, the coil-spring *k*, resting at one end against said spiral-like face, the loosely-sustained bearing-nut *l*, having spiral-like face to receive the opposite end of said spring, and the adjusting-rod *n*, to vary the tension of the coil-spring, said rod being supported by an arm of the spider-frame, substantially as described.

4. In tilting-chair irons, the combination, with the spindle and with the standard at the upper end thereof, of the spider-frame constructed to sustain the chair-seat and suitably pivoted upon said standard, the sustaining-plate resting pivotally upon said standard, and the compression coil-spring having its end coil-face set against said pivot-plate and the opposite end adjustably sustained from an arm of the spider-frame, whereby the spring shifts radially during the tilting movement, substantially as described.

5. In tilting-chair irons, the combination, with the standard and with a spider-frame constructed to sustain the chair-seat and suitably pivoted to said standard, of an adjustable compression-spring for controlling the tilting movement of the spider, and a sustaining-plate for the end face of said spring, said plate resting against the standard and being provided with a projecting tongue, whereby it may be pivotally mounted in position, substantially as set forth.

6. In a tilting-chair iron, the combination, with the standard and with a spider-frame constructed to sustain the chair-seat and suitably pivoted to said standard, of a pivotal adjustable coil-spring for controlling the tilting movement of the spider, an adjusting-rod for the coiled spring, and a bearing-nut to seat the end of the spring, said nut having spiral-like face and being mounted upon the adjusting-rod, substantially as described.

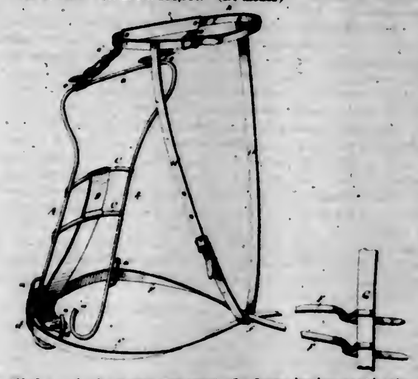
382,236. LIQUID-FORCING APPARATUS. HENRY B. LYTLE, Webb's Mills, N. Y. Filed Nov. 14, 1887. Serial No. 255,113. (No model.)



Claim.—1. The combination, with the standard B, of the arm C, pivoted thereto near its upper end and extended upon opposite sides of its pivot and screw-threaded at its upper end, the cross-bar E on the upper end of said arm, curved near its ends, as at *f*, and formed with hooks *g*, the nut *h*, the water-chambers F G, suspended from said hooks, the valve, flexible connections between said chambers and valve, and the lever I of said valve formed with an elongated slot engaging the lower end of said arm C, substantially as and for the purpose specified.

2. The combination, with the base A, standard B, arm C, pivoted to said standard, the valve having ways, as described, and the water-chambers carried by said arm and connected with the ways of the valve, of the bracket D on the upper end of said standard and formed with arms *e*, serving as stops for the arm C, substantially as described.

382,237. **WEANING-MUZZLE FOR ANIMALS.** JOHN F. MILLER, Lee, assignor of one-half to Benjamin A. Linvill, White, Ind. Filed Oct. 5, 1887. Serial No. 251,597. (No model.)



Claim.—1. A weaner composed of a frame having nose-hooks, and a spring-plate secured at one end to the frame and having its other end provided with oppositely-disposed teeth, substantially as and for the purpose specified.

2. A weaner composed of side bars terminating at their lower ends in nose-hooks, the end bar connecting the upper ends of said side bars, the cross brace-rods, and the spring-plate secured at its upper end to the cross-rods and having its lower end curved outwardly, and inwardly terminating in teeth, and having exterior teeth, substantially as and for the purpose set forth.

3. A weaner composed of side bars having nose-hooks, and joined by an upper end bar, the cross brace-rods uniting the side bars, and the spring-plate having teeth or prongs arranged substantially at right angles to the plane of the frame, and having its upper end secured to said cross brace-rods, substantially as specified.

4. The combination, with the frame, having the spring-plate provided with inner and outer teeth, of the head-strap, and the short straps *c* and *c'*, buckled together for adjustably connecting the frame with the head-strap, substantially as specified.

5. The combination, with the frame, and the spring-plate having inner and outer teeth, of the head-strap, the strap F, and the side straps for supporting the strap F, substantially as and for the purpose described.

6. The herein shown and described weaner, composed of the frame having nose-hooks, the spring-plate having inner and outer teeth, the head-strap, the short straps connecting the head-strap with the frame, the strap F, and the side straps for supporting the strap F, substantially as set forth.

382,238. **STOCK-CAR.** WILLIAM H. MILLER, York, Pa., and NATHANIEL K. SMITH, Washington, D. C., assignors to the Kohler Improved Cattle Car Company, New York, N. Y. Filed Mar. 16, 1888. Serial No. 267,416. (No model.)

Claim.—1. The combination, with the car and the tracks, the latter being provided with recesses or depressions at intervals, of the stall-partitions adapted to travel upon said tracks and drop into the said depressions in the tracks, substantially as described.

2. The combination, with the car and the horizontal track in the upper part thereof, these tracks being provided at intervals with depressions in their upper edges, of stall-partitions provided with wheels at their upper ends adapted to travel upon the said tracks and drop into the recesses in the same, the stall-partitions being suspended from the tracks, substantially as described.

3. The combination of the car, the stationary tracks in the upper part thereof, these tracks being provided with depressions at intervals in their upper surfaces, the flanged wheels secured to axles and adapted to travel upon the said tracks and drop into the depressions in the same, and the stall-partitions suspended from the said axle and adapted to enter recesses in the floor of the car, substantially as specified.

4. The combination of the car-body, the tracks secured in the upper part thereof, a stall-partition suspended from the said tracks by means of flanged wheels and consisting of the two vertical posts G, set some distance apart and having rigidly secured between them the middle stationary section, and the two swinging sections I, hinged to the said vertical rods and extending to the side of the car, substantially as described.

5. The combination of the car and the stationary tracks, these tracks being parallel with and in close proximity to the ceiling of the

382,238.



car, and the stall-partitions suspended from the said tracks by means of flanged wheels, the flanges of the said wheels extending into slots formed in the ceiling of the car, substantially as and for the purpose set forth.

6. The combination of the tracks provided with depressions in their upper surface, the pivoted bridge-pieces adapted to span the said depressions in the tracks, the flanged wheel adapted to travel upon the tracks and bridge-pieces, and the stall-partitions suspended from the said flanged wheels, substantially as described.

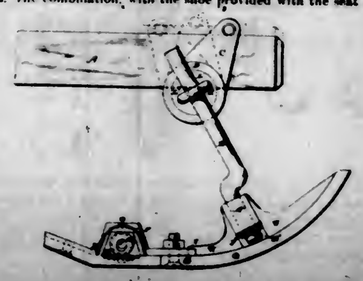
7. The combination, with the car-body, of a suspended stall-partition consisting of a middle stationary section and two vertical movable hinged sections, the latch-irons secured to the outer edges of the hinged sections, the double-inclined plates provided with recesses in their upper surfaces, into which the said latch-irons automatically drop, and thereby lock the hinged sections, and means for holding the latch-irons in their recesses, substantially as described.

8. In a stock-car, the combination, with the body, the parallel tracks provided with coincident depressions *a* in their upper surfaces, and the blocks *b*, secured to the ceiling of the car immediately over the said depressions in the tracks, of the flanged wheels adapted to travel upon the said tracks and drop into the depressions therein, and the stall-partitions suspended from the said flanged wheels, as and for the purpose described.

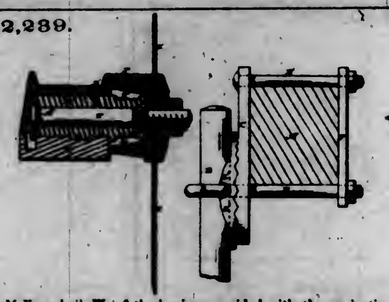
382,239. **ROLLING COLTER.** DEWITT A. MOON, Orlando, Fla. Filed Jan. 16, 1888. Serial No. 260,920. (No model.)

Claim.—1. The combination of the plow-beam, the bar attached to the beam at its upper end, and the shoe secured to the lower end of the bar, the shoe being widened at its front end and provided with a rearwardly-projecting portion, which extends along the outer side of the colter, for the purpose set forth, substantially as shown.

2. The combination, with the shoe provided with the seat N, re-



382,239.



cesses M Y, and rib W, of the boxing provided with the projections L and the cap bolted to the shoe, having the recess V, engaging the rib W, and the projection X, which fits in the recess Y in the shoe, whereby the boxing is rigidly and detachably secured to the shoe, substantially as specified.

3. The combination of the shoe, the boxing placed thereon, the cap bolted to the shoe, having the flange P, the headed spindle, hollow mandrel, the colter, the washer S, and the nut U, substantially as shown.

4. The combination of the shoe, the boxing having annular groove K, the cap bolted to the shoe, having the flange P, the spindle having a head upon its inner end and a screw-thread formed upon its outer end, the conical hollow mandrel, washer S, nut U, and the colter secured between the mandrel and the washer, substantially as set forth.

5. The combination of the shoe, the boxing having annular groove K and the flared or cut-away portion C', the headed and screw-threaded spindle T, having annular groove E', the cap having flange P, the conical hollow mandrel, the colter, washer S, and the nut U, substantially as specified.

6. In a clamp adapted to be secured to a plow-beam, the combination, with two clamping-plates placed upon opposite sides thereof, one of the plates having serrations, of an adjustable plate having serrations which engage the serrations made upon one of the clamping-plates, and having stops upon its outer face, a bolt passing through the clamping-plates at one end, and an eyebolt passing through the adjustable plate and clamping-plates at their opposite ends, and a bar which passes through the eyebolt, the two bolts being respectively above and below the beam, whereby the bar is clamped to the beam, substantially as described.

7. The shoe provided with the ribs W and the thimble A", supported by the ribs, for the reception of the bar B, and an opening between the under side of the thimble and the upper surface of the shoe, for the purpose described.

382,240. **CANT-HOOK.** CHRISTIAN BYGAARD, Oshkosh, Wis. Filed Jan. 25, 1888. Serial No. 262,021. (No model.)



Claim.—1. In a cant-hook, the combination of the handle, the hook, and the socket, with a grooved pike, the grooves being longitudinal and inclining upwardly to the plane of the socket, and with one of the projections of the pike upon the engaging side toward the hook, and a clip-brace forming a continuous slide or bearing and protecting the clip, substantially as shown, for the purpose specified.

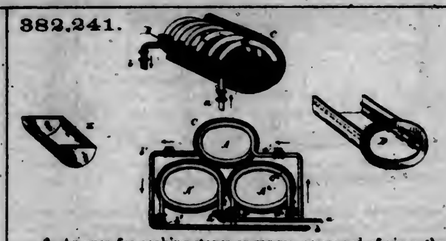
2. In a cant-hook, the combination, with a handle, of a socket provided with a slot, the walls of the slot inclining outwardly at an angle with the face of the socket, and a screw passing through the slot and engaging the handle, the head of the screw bearing on the inclined walls of the slot, as and for the purpose set forth.

3. In a cant-hook or the like, a socket provided with a grooved pike, the edges of the grooves in said pike forming a substantially straight line with the body of the socket, whereby said socket presents a straight engaging face to a log, and the weight of the socket is minimized.

382,241. **COOKING STOVE AND RANGE.** WILLIAM E. PRALL, Washington, D. C., assignor, by mesne assignments, to the National Heating Company, New York, N. Y. Filed Oct. 11, 1887. Serial No. 252,057. (No model.)

Claim.—1. An oven for cooking stoves or ranges, composed of a coil of pipe adapted to the circulation of steam or hot water, the spaces between the coils being filled in with a heat-conducting material, substantially as shown and described.

382,241.



2. An oven for cooking stoves or ranges, composed of pipes, the space between the pipes being filled in with a heat-conducting material, and in combination with a covering of asbestus or equivalent substance, substantially as shown and described.

3. An oven for cooking stoves or ranges, composed of steam or hot-water circulating pipes, the space between the pipes in the lower half of the oven being filled in with heat-conducting material, substantially as shown and described.

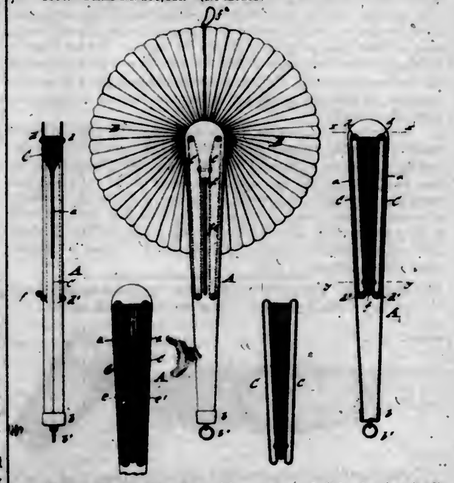
4. An oven for cooking stoves or ranges, composed of steam or hot-water circulating pipes, the space between the pipes in the lower half of the oven being filled in with heat-conducting material, in combination with a covering of asbestus or equivalent substance, substantially as shown and described.

5. An oven for cooking stoves or ranges, composed of steam or hot-water circulating pipes, constructed substantially as shown and described, in combination with a lining, D, provided with lugs or ways, substantially as and for the purposes set forth.

6. The combination, with a cooking stove or range, of an oven or ovens consisting of coils of pipe adapted to circulate steam or hot water, the space between the coils being filled with heat-conducting material, and the ovens surrounded with non-heat-conducting material and provided with pipes *a* and *b*, substantially as shown and described.

7. The combination, with the frame of a cooking stove or range, of a series of pipe-ovens, arranged together as shown, each being surrounded with non-heat-conducting material and opening on or through the face-plate of a stove or range, warming-ovens, as G and G', and boiler-tanks X X, substantially as shown and described.

382,242. **FAN.** MAX RUHR, New York, N. Y. Filed Dec. 30, 1887. Serial No. 258,446. (No model.)

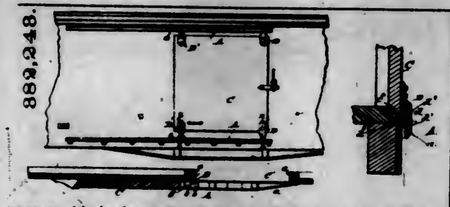


Claim.—The combination, with a case or shell having longitudinal side slots, of a folding web in the same, endless bands applied to the end folds of the web, fixed guides applied to the case for guiding said endless bands and end folds, and a push device for moving the web out of the case and returning it into the same, substantially as set forth.

382,243. **CAR-DOOR.** THOMAS G. RUFFNER, Renovo, Pa. Filed Aug. 24, 1887. Serial No. 247,780. (No model.)

Claim.—1. The combination, with the car-door-supporting rail adapted to permit the forward edge of the door to pass to its place, of the switch having its one end at the upper edge standing out of

382,248.



contact with the door-supporting rail, while its inner end or portion is about in alignment with a plane touching the outside of the car-body, and the door shoes or bearings, of which a number travel upon the rails and their inclined portions, carrying the forward edge of the door to its place, while a number travel upon the switches, carrying the rear edge of the door to its place, substantially as set forth.

2. The combination, with the car-door rails having their forward ends inclined or deflected toward the forward edge of the doorway or opening, of the switches, each having a portion of its surface disposed about in alignment with a plane touching the outside of the car-body and about opposite the rear door-jamb, while its outer end is provided in its upper edge with a notch arranged close to the rail, and the door shoes or bearings, of which two travel upon the rails and their inclined portions carrying the forward edge of the door to its place, while the other two travel upon and are deflected inwardly, carrying the rear edge of the door to its place, substantially as set forth.

3. The combination, with the car-door-supporting rails having inclined portions extending to the forward or front edge of the doorway or jamb, of the switches, each having one end disposed about opposite the rear door-jamb and its outer end at the upper edge standing close to and parallel with the rails, while the lower portion of said end is tapered or converged toward and joins the rails, and the door bearings or shoes, each of which is provided with two spaced-apart arms or prongs, the inner prongs or arms of two of which are shorter than the outer prongs, while the inner prongs or arms of the other two bearings or shoes are longer than the outer ones, said switches and rails having each a notch or recess in its upper edge, substantially as set forth.

4. The combination, with the car-door-supporting rails and means adapted to deflect or carry the forward or front end of the door inwardly to its closed position, of the switches applied about opposite the rear door-jamb and provided at their outer ends in the upper edges with notches, and the door shoes or bearings, two of which comprise outer pivoted or swiveled portions having spaced-apart arms or prongs, said switches being adapted to permit the front or forward shoes or bearings to pass them and to deflect the rear shoes or bearings toward the doorway or opening, while the door-rails are provided with notches arranged contiguously to and just forward of the said switches, substantially as set forth.

5. The combination, with the car-door-supporting rails and means adapted to deflect or carry the forward or front end of the door inwardly to its closed position, of the switches applied about opposite the rear door-jamb and the door shoes or bearings, two of which comprise outer pivoted or swiveled portions having spaced-apart arms or prongs, of which the inner ones are longer than the outer ones, while the inner arms or prongs of the other shoes or bearings are shorter than the outer ones, said switches and rails having each a notch or recess in its upper edge, substantially as set forth.

382,244. ELASTIC BUCKLE-SHIELD. GEORGE O. STEBBINS, Brooklyn, N. Y. Filed Oct. 7, 1887. Serial No. 251,676. (No model.)



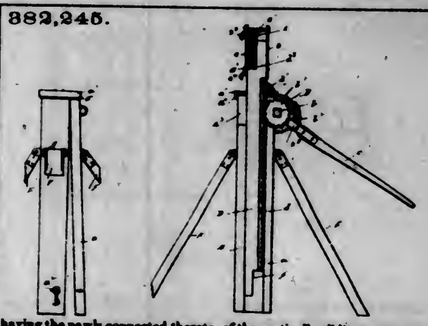
Claim.—1. The herein-described shield for buckles, made of rubber, whereby it is retained in position by the natural contraction of the material of which it is made, substantially as described.

2. The herein-described shield for buckles, made of rubber and having one end contracted, whereby it is retained in position by the natural contraction of the material of which it is made, substantially as described.

382,245. SCAFFOLD AND SHARING. NICHOLAS STABLER, Manitowoc, Wis. Filed Jan. 16, 1886. Serial No. 209,269. (No model.)

Claim.—1. The combination, with the casing or post having a removable front section and an opening in its rear wall, and the cap

382,245.

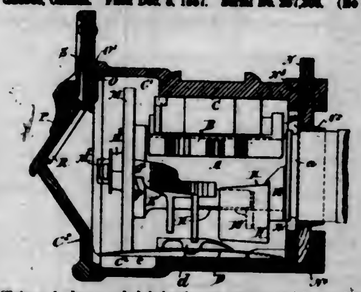


having the pawls connected thereto, of the vertically-sliding post or bar operated by a pinion and lever, and the extensible sections capable of being secured to said post or bar, substantially as shown and described.

2. The casing or post having the cap on its upper end, the sliding post or bar having a rack-bar on its front face, the single pawl *d'*, engaging said rack-bar, and the pawls secured to said cap and bearing against the sides of said post or bar, substantially as shown and described.

3. As an improvement in scaffolds, the casing or post having a removable front section, the sliding post or bar having a recessed lower end, and the extensible sections designed to be secured to said grooved end of the post or bar, substantially as shown, and for the purpose stated.

382,246. CAR-AXLE LUBRICATOR. SAMUEL VESSOT, Joliette, Quebec, Canada. Filed Dec. 5, 1887. Serial No. 257,208. (No model.)



Claim.—1. In an axle-lubricating apparatus, and in combination, the axle, a disk secured on end of same, loose springs carrying blocks and resting on bottom of axle-box, and a frame carried on such springs, said frame consisting of channeled side pieces with curved transverse bars connecting them, and cover-pieces on front ends with turned-down scraping-edges for taking the lubricant from the disk and discharging it into the channels in side pieces, as set forth.

2. In combination with a railway-car axle with disk mounted on its end and axle-box C, the frames E and K and compression-spring between them, all held between said disk and the shoulder of the axle, and loose springs introduced and resting on the bottom of the box to carry said frames and press them against the axle, as herein set forth.

3. The combination of the axle-box having chamber C, axle having groove *c*, disk mounted on end of axle, and channeled side frames supported on loose springs, all substantially as herein set forth.

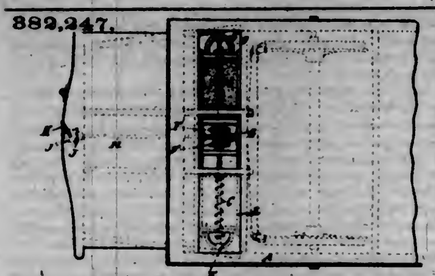
4. In combination with a car-axle and axle-box, the combination of a dust-guard with beveled circular opening, a curved strip of leather having its longest side nailed around said beveled opening and forming a conical projecting rim of somewhat smaller diameter than the axle and conforming closely thereto, and a belt-clamp joining the ends of the said strip of leather, the whole in combination with leather strips above and below opening, all as herein set forth.

382,247. SAND-BOX FOR STREET-CARS. WALTER V. H. WELSH, Troy, N. Y. Filed Jan. 5, 1888. Serial No. 259,893. (No model.)

Claim.—1. The combination, with a car, of a sand-tank, an outlet leading from the same, a feeder constructed to force the sand from the tank into and through the outlet, and means for giving motion to the feeder, substantially as described.

2. The combination, with a car, of a sand-receptacle, B, and a worm or conveyer, C, with means for giving motion to the worm, substantially as described.

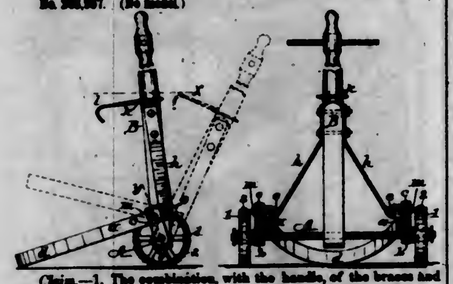
382,247.



3. The combination, with a car, of a pair of sand-receptacles worms running therein, bevel-wheels on the inner ends of said worms, a bevel-pinion gearing with both of said bevel-wheels, and means for giving motion to said bevel-pinion, substantially as described.

4. The combination, with a car, of a pair of sand-receptacles, B B, worms C C, running therein, bevel-wheels F F on the inner ends of said worms, a bevel-pinion, G, meshing with both of said wheels F, a shaft, H, carrying said pinion G, a bevel-wheel, J, on the front end of said shaft, a second bevel-wheel, J', meshing with said wheel J, a shaft, I, carrying said wheel J', and a crank, K, on the top of said shaft I, all substantially as shown and described.

382,248. HAND-TRUCK. JAMES H. ALEXANDER, Syracuse, N. Y., assignor to Charles H. Tryon, same place. Filed Feb. 14, 1888. Serial No. 263,987. (No model.)



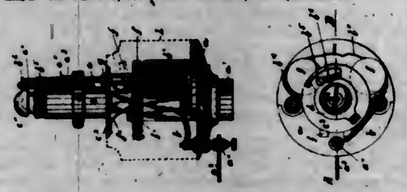
Claim.—1. The combination, with the handle, of the braces and nose *a*, constructed in one piece, and secured at their ends to the handle, substantially as described.

2. The nose and brace combined, consisting of a curved front, *d*, twists *c*, and cleats *b*, substantially as described.

3. The combination, with the axle and wheels and handle, of the posts *c*, secured to the axle, the nose *a*, mounted in the posts and curving outward therefrom, and the braces connecting the posts and handle, and the hook-ring *k* mounted upon the handle, substantially as described.

4. The combination, with the axle and wheels and handle, of the bracket provided with posts *c* and lugs 7, in which the axle is journaled, the nose *a*, hinged to the posts 3, and the braces *b*, connecting the posts and handle, and the hook-ring mounted upon the handle, substantially as described.

382,249. AUTOMATIC ELECTRIC GAS-BURNER. ELMER E. BAILEY, West Everett, assignor of one-half to William Sears, Malden, Mass. Filed Nov. 9, 1887. Serial No. 254,672. (No model.)



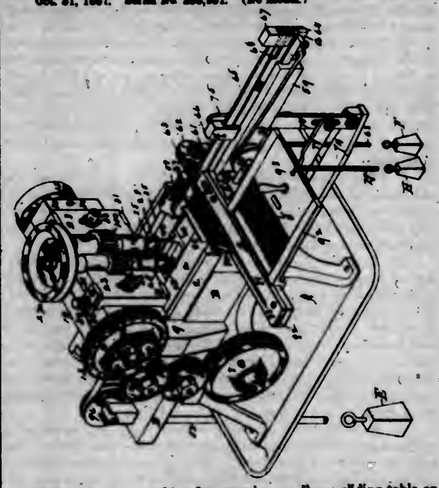
Claim.—1. In an automatic electric gas-burner, one or more electro-magnets electrically connected by means of a single wire to the stationary insulated electrode b^3, in combination with the movable ground-connected electrode *c'*, the stop-cock b', and armature *f*, substantially as and for the purpose set forth.

2. In an automatic electric gas-burner, the stop-cock b' and its block b, having recesses b^1 b^2, of varying depths, in combination with the movable rod *g*, pivoted to and actuated by the armature *f*, the pawl *h*, pivoted to said rod *g*, and the electrode *c'*, loosely connected to said rod *g* in such a manner that every alternate downward motion of said rod will cause the circuit to be broken between the electrodes b^3 *c'*, as and for the purpose set forth.

3. In an electric automatic gas-burner, the gas-pipe *c*, having stop-cock b', with recessed blocks b b^1 b^2, as described, and the stationary V-shaped projection c^4, combined with the movable armature *f*, the rod *g*, pivoted to and actuated by said armature, the pawl *h*, pivoted to the rod *g*, and having V-shaped recess h'' in its upper end, and the electrode *c'*, loosely connected to said rod *g*, in a manner as described, so that every alternate movement of the armature shall cause the circuit to be broken between the electrodes *c'* b^3, as set forth.

4. In an automatic electric gas-burner, the gas-pipe *c* and the stop-cock b', located therein, combined with the movable rod *g*, pivoted to the armature *f*, and having the set-screw g^4, for the purpose of retaining the stop-cock in place, as set forth.

382,250. NEEDLE-GROOVING MACHINE. JOHN BERRY, Springfield, Mass., assignor to the National Needle Company, same place. Filed Oct. 31, 1887. Serial No. 253,931. (No model.)



Claim.—1. In a machine for grooving needles, a sliding table on the bed of the machine, a cam and weight, substantially as described, for imparting a horizontal reciprocating motion to said table, and needle-clamping jaws secured to said table, combined with two needle holding and carrying fingers, substantially as described, supported opposite the end of said table, and a cam and a weight connected with said fingers, whereby they are given an endwise motion in one direction corresponding with that of said table and an endwise motion in the opposite direction, first corresponding with and then more rapid than that of said table, substantially as set forth.

2. In a needle-grooving machine, the herein-described needle-feeding devices, consisting of two needle-fingers capable of longitudinal reciprocating movements, having a pivoted connection, whereby their ends are separable to receive therebetween the shank of a needle, a spring to close said ends, a finger-lifter located at the side of said fingers, with which one thereof engages, whereby their needle-receiving ends are caused to open, combined with the table of the machine, having longitudinal reciprocating movements in like direction to said needle-fingers, and needle-clamping jaws attached to said table to receive a needle held by said fingers, substantially as set forth.

3. In a machine for grooving needles, mechanism for manipulating the needles, whereby they are taken one by one from a group thereof and presented to the groove-cutters, and after having been grooved are removed from said cutters, two needle-fingers capable of longitudinal reciprocating movements toward and from said cutters, having a pivoted connection, whereby their ends are separable to receive therebetween the shank of a needle, a spring to close said ends, a finger-lifter located at the side of said fingers to open their needle-receiving ends, a needle-receiver holding a group of needles by the side of and in a line with the direction of movement of said fingers, and a needle-follower moving said group toward the side of said fingers, substantially as set forth.

4. The needle-receiver having the internal longitudinal slot, 62, capable of receiving the shanks of the needles, and the slot *g*, com-

municating therewith, combined with a needle-table on which to place a group of needles in the plane of said slot *g*, and a needle-pusher capable of a sliding motion against said group, substantially as set forth.

5. The needle-receiver having an internal longitudinal slot, 82, capable of receiving the shanks of a group of needles whose points project from said slot, and a needle-follower, 84, having a movement in said slot against said shanks, combined with a gage-plate, 85, supported opposite the points of said needles, and a guide-plate, N, near said gage-plate, over whose upper edge the needles extend, substantially as set forth.

6. The needle-fingers capable of longitudinal reciprocating movements at right angles to the end of the gage-plate 85 and of holding a needle by its shank, combined with an ejector-slide, 87, supported on said plate and having an engagement with said fingers, whereby it is given a movement toward them, an ejector-arm attached to said slide, and a spring to move the slide from said fingers, substantially as set forth.

7. In combination, the needle-fingers, the needle-receiver 81, the needle-follower having a longitudinal movement in said receiver against a group of needles therein, whereby they are forced against said fingers, and the stop-arm 99, supported at the side of said fingers opposite that against which said needles are forced, substantially as set forth.

8. The needle-fingers capable of longitudinal reciprocating movements, having a pivoted connection, whereby their ends are separable to receive therebetween the shank of a needle, one of which fingers has thereon the finger-lifter cam 73, and a spring to close said ends, combined with the finger-lifter 69, pivoted to vibrate in a vertical plane at the side of said fingers and capable of engagement with said cam, and a spring acting against one side of said lifter, substantially as set forth.

9. The needle-fingers, the vibratory lever 75, pivoted by one end and having an engagement with said fingers, a cam on the main shaft, a slide-bar, 76, connected with said lever and having an engagement with said cam, and a weight, F, connected by a cord with said fingers, combined and operating substantially as set forth.

10. The table 2, capable of a longitudinal reciprocating movement on the grooving-machine, and the shaft 12, extending across said table and having a cam, 50, thereon, combined with a lever, 42, pivoted to said table, having a needle-clamp jaw pivoted thereto, a lever, 40, pivoted to said table by one end and engaging with one end of said first-named lever, a rock-bar, 35, having an end engaging with said lever 40 and having a laterally-extending wing, 36, a spring, 38, connected to said bar, and a vertically-moving bar, 48, having one end engaging with said wing and actuated by said cam, substantially as set forth.

11. In combination, a rotating cam, 50, a bar, 48, capable of a vertical movement and actuated in one direction by said cam, and the table 2, capable of a longitudinally-reciprocating movement under the end of said bar, combined with the rock-bar 35, having a wing, 36, thereon whose length is equal to or in excess of said table movement, and a flattened end, 39, a spring attached to said rock-bar and rocking said wing against the end of said vertical bar, the levers 40 and 42, pivoted on said table and actuated by said rock-bar, as described, the jaw 46, fixed on said table, the jaw 44, pivoted on lever 42, and a spring, 51, under said last-named lever, substantially as set forth.

12. The table 2, the lever 42, pivoted on said table, and the clamp-jaw 46, fixed thereon, combined with the clamp-jaw 44, pivotally attached to said lever, and the screw 47, adjustable vertically under the jaw-bearing end of the lever, all as set forth.

13. The cross-head 10, the shaft 12, extending across the machine in a line with said head, the blocks 30, capable of sliding horizontally on the cross-head, each having a stud, 22, connected thereto and extending toward the end of said shaft, and a spring interposed between said blocks to separate them, combined with a cam, substantially as described, on one or both ends of said shaft engaging with said stud to move one or both of said blocks toward the center of the cross-head, capable of having the extent of its cam-surface which acts on said stud elongated or shortened, and a cutter-shaft having a needle-grooving cutter attached thereto attached to each of said horizontally-sliding blocks, substantially as set forth.

14. The combination, with the bearing-blocks of the cutter-shaft of a needle-grooving machine, which blocks are capable of a reciprocating horizontal motion on the cross-head thereof, of a cam or cams rotating opposite the ends of said blocks and engaging them to cause the groove-cutters to approach each other, having bearing-faces of variable extent, as described, whereby a cutter is held in engagement with the needle during more or less of its movement past the cutter, substantially as set forth.

15. In combination, in a needle-grooving machine, the cross-head 10, the block 30, sliding on said head, the shaft 12, extending across the machine in a line with said head, and a cam, 15, attached to said shaft and engaging with said stud on said block, consisting of a disk, 21, and a ring, 20, encircling said disk, each having a cam-face thereon side by side and in the same plane, and capable of being rotated on or in the other, whereby the extent of said cam-faces is made variable, substantially as set forth.

16. In a machine for grooving needles, the combination of the following elements, viz: a table having a longitudinal reciprocating movement on the machine, a fixed needle-clamp jaw on said table, two clamp-operating levers, and a rock-bar, as described, attached to said table, a second clamp-jaw pivoted on one of said levers, a cam to operate said levers, two cutter-shafts carrying grooving-cutters on opposite sides of said clamps, cams acting to move said cutters and shafts toward the clamps, and a spring to move them in the opposite direction, a longitudinally-slotted needle-receiver, as described, fixed opposite the end of said table at right angles to the movement thereof, having an internal slot to receive the shanks of the needles, a needle-follower moving in said receiver against said shanks, and needle-fingers, as described, having a reciprocating longitudinal movement at the end of said receiver opposite the ends of said clamp-jaws and in the line of the movement of said table, substantially as set forth.

382,251. **WASH-STAND BOWL.** NATHAN G. DEEM, Fairfax Court-House, Va., assignor, by direct and mesne assignments, to the Deal Furniture Improvement Company, Washington, D. C. Filed Oct. 5, 1887. Serial No. 251,698. (No model.)



Claim.—1. The combination, with a bowl having a discharge-opening in its bottom, of an adjustable elastic cover suspended outside of said bowl and swinging in approximately the plane of said opening, said cover being adapted, when in one position, to close said discharge-opening.

2. The combination, with a bowl having a discharge-opening in its bottom, of an elastic cover lying outside of said bowl and revolvable about a vertical axis, and an adjustable elastic support on which said cover is mounted, whereby said cover may be brought into position to close said discharge-opening, and may in such position be pressed against the bowl only by its own elastic force and that of said support.

3. The combination, with a bowl having a discharge-opening in its bottom, of an adjustable elastic cover lying outside of said bowl, and adapted when in one position to close said discharge-opening, and moving substantially in the plane of said opening, a longitudinal reciprocating rod attached to said cover and imparting its own reciprocal motion thereto, and means, substantially as shown and described, for imparting motion to said rod, substantially as and for the purpose set forth.

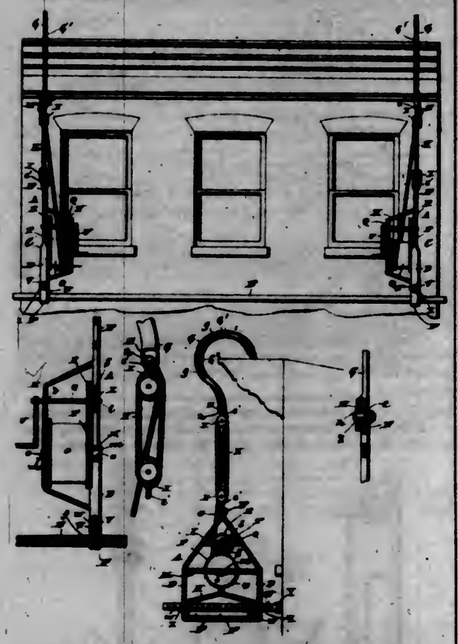
4. The combination, with a bowl having a discharge-opening in its bottom, of an elastic ball lying below said discharge-opening, a swinging rod on which said ball is mounted, the plane of motion of said rod being approximately tangent to said bowl, and means, substantially as shown and described, for actuating the free end of said rod and bringing said ball into or withdrawing it from a position immediately below and in contact with the walls of said opening, substantially as and for the purpose set forth.

5. The combination of the bowl B, having an opening, *b*, in its bottom, the rod *c*, swinging in a plane substantially perpendicular to the axis of said opening, the ball C, mounted on the free end of said rod, the guide D, and means, substantially as shown and described, for moving the free end of the rod *c*, substantially as and for the purpose set forth.

6. The combination of the bowl B, having the discharge-opening *b* in its bottom, the swinging rod *c*, oscillating in a plane intersecting the axis of said opening, and the elastic ball C, mounted thereon, the rotating rod H, and the lever G, rigidly mounted thereon, and the rod F, connecting the free end of the lever G with the free end of the rod *c*, whereby the rotation of the rod H actuates the free end of the rod *c*, substantially as and for the purpose set forth.

7. The combination, with the bowl B, having an opening, *b*, in its bottom, of the swinging rod *c*, oscillating about a vertical axis, the ball C, mounted thereon, the nut E, having cockets *e* in its walls, the rotating rod H and lever G, and the rod F, having one of its ends connected with the free end of the lever G, and provided at its opposite bifurcated end with inwardly-turned points entering the cockets *e* in the nut E, substantially as and for the purpose set forth.

382,252. **PAINTER'S STAGE.** CHARLES D. BOUTIN and WILLIAM H. CARPENTER, Camden, N. J. Filed Dec. 14, 1887. Serial No. 257,593. (No model.)



Claim.—1. In a stage, the combination of the hooks G G, the frames C C, depending from the hooks and having the horizontal supporting-bars F, the plank B, resting at its ends on the bars F, and the arms W W, attached to the frames and passing over the plank, substantially as and for the purpose specified.

2. In a stage, the combination, with the hooks, of the depending frames C, having supporting-bars F F, provided with spurs *f f* on their upper sides, the plank B, resting at its ends on the said bars and engaging the spurs, and the removable arms W W, attached to the frame and passing over the plank adjacent to the upper surface thereof, substantially as specified.

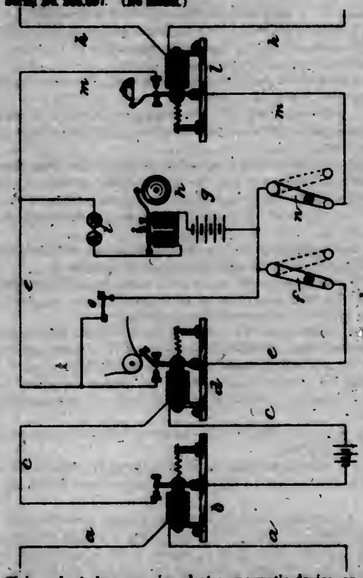
3. In a stage, the combination, with the hooks G G, of the frames C C, depending therefrom and having the side bars, D D, provided with aligned apertures V V, and the horizontal bars F F, the plank B, attached to the frame, the guide-arms W, arranged in the apertures V V and having the perforations *w w*, and the pins X X, engaging the perforations and bearing against the bars D D, substantially as specified.

4. In a stage, the combination of the hooks G, comprising the outer and inner bars, G' and G², converging to a point at their upper ends, the bracing-webs arranged at intervals between the said bars, and the apertured disk H, attached to the lower ends of the bars, the frames C C, comprising the converging side bars, D D, connected at their lower ends by the horizontal bars F, and the apertured disk E at the upper ends of the side bars, the plank B, resting at its ends on the horizontal bars F, the pulleys I I, having hooks *i i*, which are engaged in the apertured disks, the ropes K, passing through the pulleys, and the drums mounted on the frames C and adapted to wind or unwind the ropes, substantially as and for the purpose specified.

5. In a stage, the combination of the hooks G G, having pulleys I attached to their lower ends, the depending frames C C, having pulleys I attached to their upper ends, the inward-extending guide-arms W, attached to the frames and having rollers on their ends, and the hoisting devices mounted on the frames C and comprising the drums O, having peripheral series of gear-teeth, the gear-wheels R, meshing with the teeth on the drums and having a crank, U, attached thereto, the ratchet-wheels carried by the gear-wheels, the pawls engaging in the ratchet-wheels, and the ropes K, passing through the pulleys I I and attached at their lower ends to the said drums, substantially as specified.

6. In a stage, the combination, with the supporting-hooks having pulleys attached thereto and the plank-supporting frames having pulleys attached thereto, of the drums mounted on the said frames, the gear-wheels R, meshing with gear-teeth on the flanges of the drums, the ratchet-wheels carried by the said gear-wheels, the pawls mounted on the frames and engaging the said ratchet-wheels, the crank-arms connected to the gear-wheels, and the ropes K, attached to the drum and passing around the said pulleys, substantially as specified.

382,253. **FIRE-ALARM-SIGNAL CIRCUIT.** WILLIAM CARROLL, Chicago, Ill., assignor to John P. Barrett, same place. Filed Feb. 6, 1888. Serial No. 263,227. (No model.)
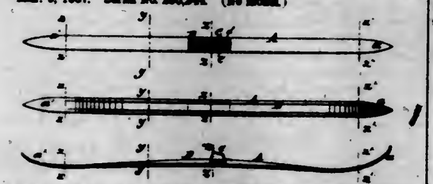


Claim.—1. A door-opening electro-magnetic device, an electric gong, and a battery in a wire common to two different local circuits, each of said local circuits containing a different switch, and each being mechanically independent of the other and connected through the circuit-closing points of a different relay, one of said relays being connected to be energized in unison with the signal sent over the joker-line of the system and the other of said relays being connected to be energized in unison with the signal sent over the gong-line of the system, in combination with said joker-line and gong-line, whereby the battery in said common wire may be closed to operate said door-opening electro-magnetic device and electric gong by signals sent over both the joker-line and the gong-line, the gong-line alone, or neither of said lines, according to the positions of the switches.

2. The combination, with two independent signal-circuits over which signals are sent in succession, of a relay or repeater in each of said circuits connected with local circuits, each local circuit including a switch, the switch in one circuit being independent of the switch in the other circuit, and a portion of said local circuits being common, the common portion including a local battery and a signal device, whereby when a signal is sent first over one signal-circuit the local circuit containing the relay of the other signal-circuit may be opened before the signal is sent over said second circuit.

3. The combination, with the two signal-circuits of a fire-alarm system, one of said signal-circuits, the joker-line, containing a relay in a register local circuit, of the register in a local circuit containing a switch and general-alarm-signal device, and the other of said signal-circuits, the gong-line, containing a bell connected up as a relay in a local circuit containing another switch, said switches being mechanically independent of said general-alarm-signal device, whereby the first signal sent over the joker-line may be received upon the register without operating the general-alarm device, while the signal subsequently sent over the gong-line may be allowed to operate the general alarm or not, at the will of the watchman, accordingly as he leaves the switch in the local circuit of the small bell of the gong-line closed, or opens the same after noting the first signal received upon the register.

382,254. SNOW-SKATE. PETER CHERADOT, Altoona, Pa. Filed May. 9, 1887. Serial No. 236,944. (No model.)



Claim.—1. A snow-skate having underneath a continuous groove, B, with parallel edges throughout its length and gradually shallower toward its ends, and ending flush with the surface of the skate at a distance from each end of the latter.

2. A snow-skate provided underneath with a continuous groove, B, having abrupt edges *b'*, as specified.

3. A snow-skate having its side edges rounded off at *b*, and provided underneath with a continuous groove, B, having abrupt edges *b'*, as set forth.

4. The combination of a snow-skate having its side edges rounded underneath at *b* and narrower above the rounded portion, in combination with the foot-strap C, made in two parts, secured to the said narrower portion and connected by the lace *c*, substantially as described.

5. In combination with the snow-skate A and the foot-strap C, the foot-plate D, provided with transverse corrugations *d*.

6. In combination with a snow-skate, the brake E, provided on its under side with projections or corrugations F and adapted to be attached to the skate, substantially as specified.

7. In combination with a snow-skate, the brake E, provided on its under side with projections or corrugations F, a friction-covering, *f*, above the said corrugations, and having the rigid end piece, *e*, and the hinged end piece, *e'*, conforming to the edge of the skate, and a spring or strap, *e²*, connecting the said pieces *e e'*, substantially as specified.

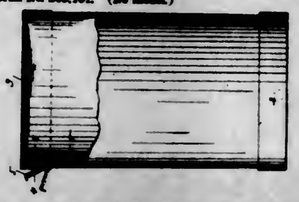
8. A snow-skate made in two or more detachable sections, substantially as specified.

9. In a snow-skate made in detachable main sections, the sub-sections interconnected by hinges M, to adapt them for folding together.

10. A snow-skate made in two main sections provided with angular end plates, J J', one of the said plates, J, having secured to it a bolt, K, and the other plate, J', having a bore or socket, *k*, and a pin or screw, L, to receive and retain the said bolt for securing the two sections together, substantially as specified.

11. In a skate made in sections, the sub-section made in two parts, having lugs *n* and connected by hinges M, in combination with a key or bolt, N, for securing the said sub-sections in the unfolded position, substantially as specified.

382,255. BIRD-FOOD HOLDER. HARRY F. BWABROOK, Worcester, Mass., assignor to Sarah B. Bwabrook, same place. Filed Feb. 24, 1888. Serial No. 265,101. (No model.)



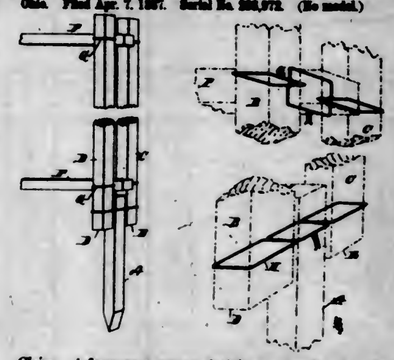
Claim.—1. As an improved article of manufacture, a box or canister having an opening in its upper part provided with a hinged lip, and a removable cover provided with a corresponding opening, for the purpose stated, substantially as set forth.

2. The combination, with a box or canister having an opening in its upper part provided with a hinged lip adapted to be bent outwardly, of a removable cover to extend over the upper part of said box and inclose said lip, and provided with an opening to correspond with the opening in said box, to permit of the hinged lip being bent outward when desired, substantially as shown and described.

3. The combination, with the box 1, having an opening, 6, in its upper edge, and a lip, 4, hinged thereto to close said opening and adapted to be bent outwardly, of a cover, 3, having a turned-down edge, with an opening, 3', therein to fit over the top part of the box 1, for the purpose stated, substantially as shown and described.

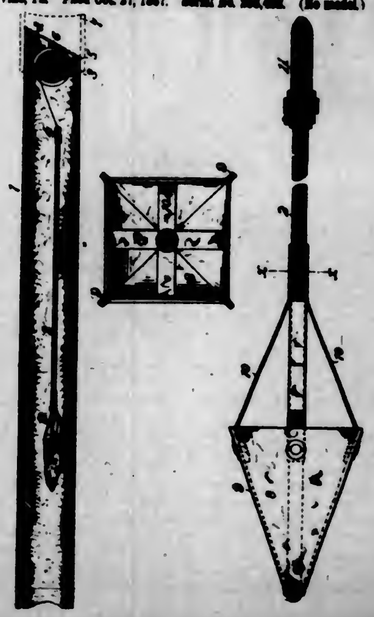
4. The combination, with a box having an opening in its upper part, of a lip, 4, for closing said opening, and a piece of flexible material, 5, for hinging said lip to the box, the upper part of said material extending beyond the edge of said lip 4, to furnish means for drawing the same outward, substantially as shown and described.

382,256. FENCE-POST. SAMUEL W. PEARCE, near Northwood, Ohio. Filed Apr. 7, 1887. Serial No. 233,972. (No model.)



Claim.—A fence-post composed of the two parallel pieces B and C, the wire loop G, and the piece A, one end of the latter being inserted through the wire loop and turned end for end, as and for the purpose set forth.

382,257. ARROW FOR PASSING CORD THROUGH PIPE-LINES. JACOB GUTHER, Allegheny, assignor of one-half to Charles H. Miller, Pottsville, Pa. Filed Oct. 27, 1887. Serial No. 253,402. (No model.)

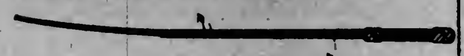


Claim.—1. The combination of a tapering-sided cup formed of flexible material, a shaft or arrow passing through said cup and secured to the apex thereof, said cup being suitably proportioned with reference to the diameter of the pipe in which it is to be used for passing freely through the pipe under ordinary hydrant-pressure, and means for attaching a cord to the opposite end of the arrow, substantially as set forth.

2. The combination of the pyramidally-shaped cup formed of flexible material, a shaft or arrow passing through said cup and secured at or near one end to the apex thereof, and means for attaching a cord to the opposite end, substantially as set forth.

3. The combination of a shaft or arrow, a pyramidally-shaped cup formed of triangular pieces of flexible material united to each other at their edges and at their apices to the shaft or arrow at or near one end thereof, and flexible stay-straps connecting the free edges of the cup to the shaft, substantially as set forth.

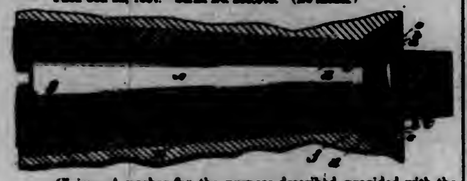
382,258. WHIP. PATRICK S. HARRINGTON, Cheyenne, Wyo., assignor to the Cheyenne Manufacturing Company, of Wyoming Territory. Filed Sept. 3, 1887. Serial No. 248,688. (No model.)



Claim.—1. The herein-described process of treating rawhide for covering whips, which consists in wetting the hide, heating the same, allowing it to sweat slowly, and then cutting the hide into strips, substantially as shown and described.

2. As an improvement in whips, the combination, with an elastic stock or core, of strips of rawhide prepared as herein described, and braided upon said stock, as set forth.

382,259. AXLE-WASHER. ISAAC HARRIS, Vincennes, Ind., assignor of one-half to H. W. Porter and C. M. Griffith, both of same place. Filed Oct. 22, 1887. Serial No. 253,093. (No model.)



Claim.—A washer for the purpose described, provided with the usual aperture to receive the axle-spindle, and its inner side having an annular flange of a diameter to embrace the said spindle and engage the outer end of a wheel-box, and its outer side having suitable means for fixing it to a nut, substantially as specified.

382,260. HEEL-PROTECTOR. FRANK J. HERRICK, New Britain, Conn., assignor to H. C. Hotin, same place. Filed Dec. 13, 1886. Serial No. 221,260. (No model.)

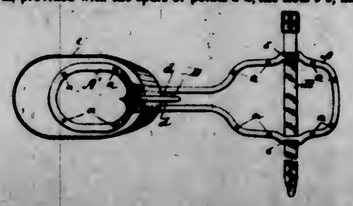


Claim.—1. The heel-protector herein described, consisting of a series of studs attached to or connected by a substantially-angular bar, and having a strengthening-bar, *c*, provided with a centering-spur or mold-rest, *d*, all substantially as described.

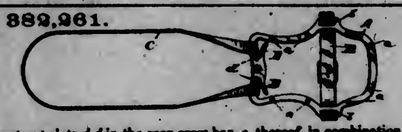
2. The within-described heel-protector, consisting of a series of hollow studs attached to or connected by a substantially-angular bar, and having a strengthening-bar, *c*, provided with a centering-spur or mold-rest, *d*, all substantially as described.

382,261. ICE-DOG. THOMAS S. HUTCHINSON, Saratoga Falls, N. Y., assignor to George A. Waller, same place. Filed Sept. 7, 1887. Serial No. 248,813. (No model.)

Claim.—The herein-described ice-dog, consisting of a plate or frame, A, provided with the spurs or points *a a*, the cleats *b b*, and the

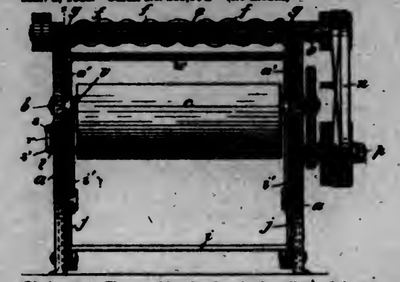


382,261.



cut-out slots *d d* in the rear cross-bar, *c*, thereof, in combination with means for securing the same to the boot or shoe, substantially as and for the purpose set forth.

382,262. LEATHER-SCRAPING MACHINE. JAMES HOGGINSON, Salem, assignor of one-half to Charles F. Brown, Reading, Mass. Filed Mar. 2, 1888. Serial No. 265,904. (No model.)

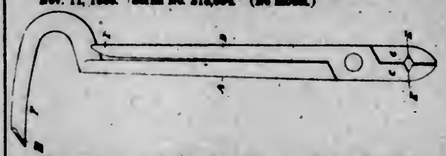


Claim.—1. The combination herein described of the segmental bed, mechanism for oscillating it, the clamp adapted to oscillate and arranged to co-operate with one edge of the bed in holding a skin, means for holding the bar against the edge of the bed, and a scraper adapted to act on a skin supported by the bed, as set forth.

2. The combination herein described of the segmental bed, means for oscillating it, the rotary scraping-roll movable toward and from the bed, means for raising and depressing said roll, the clamp adapted to oscillate and arranged to co-operate with one edge of the bed in holding a skin, and means for imparting a yielding pressure to said clamp when it is in operation, as set forth.

3. The combination of the segmental bed, the clamp, the springs pivoted to the arms of the clamp and provided with lefters *n'*, and the cams *n'* on the ends of the bed, whereby said springs are pressed against the clamp while the clamp and bed are holding a skin and released when the clamp is separated from the bed, as set forth.

382,263. HORSESHOER-PLIERS. SIMEON J. HUMILEY, New Haven, Conn., assignor of one-half to Patrick McDermott, same place. Filed Nov. 11, 1886. Serial No. 218,694. (No model.)



Claim.—1. A combined tool for cleaning and removing obstructions from horses' hoofs, consisting in two levers pivoted together and each provided with a jaw, one of the levers being provided at its opposite end with a hook bent inward toward the other lever and then outward, and the other lever being adapted to ride over and engage with the back of each hook at the point where the same offsets from the lever, of which it forms an extension, substantially as set forth.

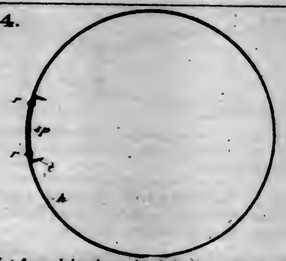
2. A combined tool for cleaning and removing obstructions from horses' hoofs, consisting in two levers pivoted together and each provided with a jaw, one of the levers being provided at its opposite end with a hook bent inward toward the other lever and then outward, and the other lever being notched at its outer end to ride over and engage with the narrow back of the hook, which is oblong in cross-section, tapering from its inner end outward, and beveled and pointed at its outer end, substantially as set forth.

382,264. HOOP. JAMES LIGGIT, Haughville, assignor of one-half to Calvin G. Udell, North Indianapolis, Ind. Filed Feb. 18, 1888. Serial No. 264,627. (No model.)

Claim.—1. A hoop formed of a band of iron, its ends united by means of a plate having one or more spurs on its inner face, each spur-plate secured to the ends of the hoop by means of rivets, substantially as shown and described.

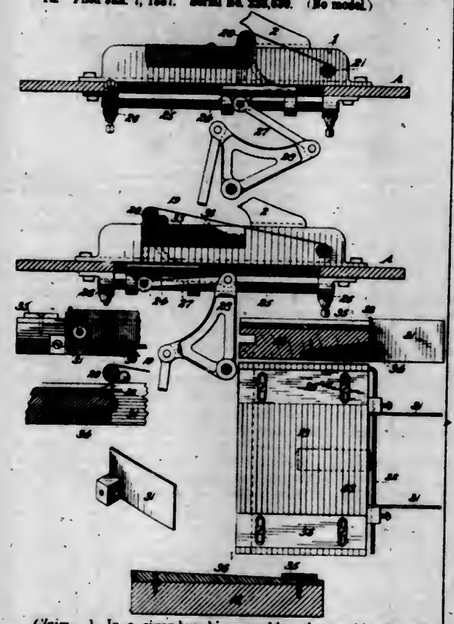
2. A hoop formed of a band of iron or similar material whose ends are united to a plate carrying spurs on its inner face, each plate

382,264.



lapping the joint formed by the ends of the hoop-band, with means for uniting the plate to the hoop, substantially as shown and described.

382,265. CIGAR-BUNCHING MACHINE. RALPH H. LOGAN and GEORGE H. CULLEY, Allegheny, assignors to John K. Collins, Clearfield, Pa. Filed Jan. 7, 1887. Serial No. 223,630. (No model.)



Claim.—1. In a cigar-bunching machine, the combination of a feed-hopper, a recessed cylinder mounted in the discharge end of the hopper, the recess in said cylinder being provided with interchangeable bottom and end plates, adjustable guide-plates below the cylinder, and bunching and binding mechanism consisting of a table, a movable roll, and an apron, substantially as set forth.

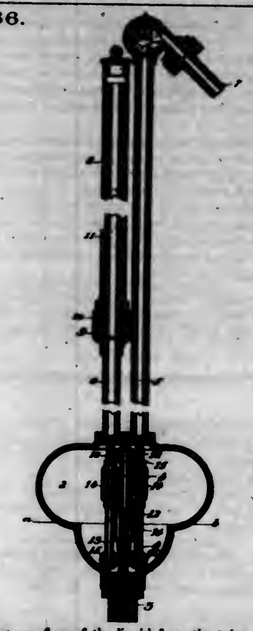
2. In a cigar-bunching machine, the combination of filler-feeding mechanism, a bunching-table, a movable bunching-roller, an apron passing over the table and roller, and a yielding stop-plate transverse of the table and arranged to hold the apron above the surface of the table, substantially as set forth.

382,266. APPARATUS FOR TESTING PIPES. GEORGE W. LOTZ and JAMES M. DILLON, Wheeling, W. Va.; said Dillon assignor, by mesne assignments, to John A. Trimble, same place. Filed Jan. 10, 1888. Serial No. 260,232. (No model.)

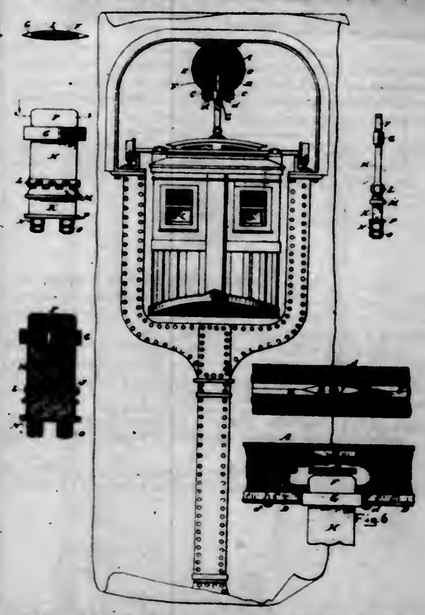
Claim.—1. In an instrument for testing pipes, &c., wherein a vessel containing liquid and provided with an indicating-tube is connected with the pipes to be tested and with an air-compressing apparatus, the combination, with the said vessel, of the air-supply tube, the mouth of the said tube extending into the liquid, substantially as and for the purposes described.

2. In an instrument for testing pipes, &c., wherein a vessel containing liquid and provided with an indicating-tube is connected with the pipes to be tested and with an air-compressing apparatus, the combination, with the said vessel, of the air-supply tube, the mouth of the said tube extending into the liquid, and said tube having an enlargement to prevent overflow of the liquid from the tube, substantially as and for the purposes described.

382,266.



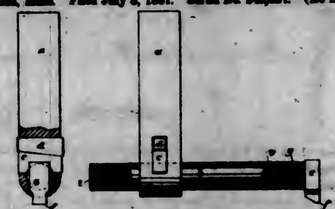
382,267. QUATERNARY YIELDING LEVER. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall executrix of said Thomas J. Mayall, deceased. Filed Aug. 26, 1887. Serial No. 247,927. (No model.)



Claim.—1. In combination with a car for the transportation of passengers or freight, the assembled devices, comprising a quaternary lever consisting of a flanged base-plate, K, adapted to be loosely united to an intermedial plate, H, the separating-plate G, and the locking-plate F, organized to coact with a pneumatic traveler, B, substantially as and for the purpose set forth.

2. In combination with the pneumatic tube A, having an aperture separably closed by an elastic sealing material, a separating-plate, G, constructed to discover said elastic material by its impact and to permit it to instantly reunite after said impact, so as to avoid the admission of air within said tube, in conjunction with the aggregated parts F H K, as previously described, and in the manner specified.

382,268. EXTENSION-TOOL FOR PLANERS. HENRY K. PORTER, Boston, assignor of one-half to Annie G. Porter and E. W. Porter, both of Chelsea, Mass. Filed July 5, 1887. Serial No. 243,397. (No model.)



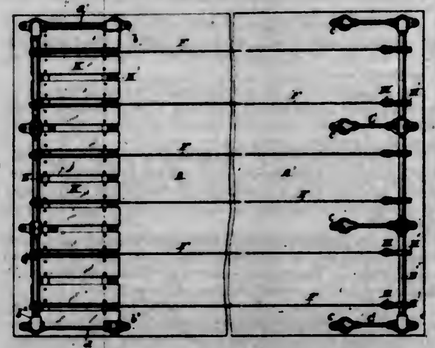
Claim.—1. A planer extension-tool having stock *a*, adapted to be locked in the tool-holding clamp of a planer and having a circular transverse passage therethrough near one end, cylindrical bar *b*, having axial and diversely threaded holes in its ends and fitted adjustably in said transverse passage in the stock, so that it may be adjusted both by rotation and lineal movement in the stock, and means, substantially as described, for rigidly locking the bar in the stock when adjusted therein, substantially as specified.

2. A metal-cutting tool formed with a body, a screw-threaded stem formed integrally with said body and with its axis at right angles to the longitudinal line of said body, and an operative cutting-edge formed upon said body with the line of said edge at right angles to the axis of said stem, substantially as specified.

3. An extension planer-tool formed of stock *a*, adapted to be locked in the tool-clamp of the planer, cylindrical bar *b*, fitted transversely and adjustably in said stock near one end thereof and having axial holes right and left hand threaded, and means, substantially as specified, for rigidly locking said bar in the stock when properly adjusted therein, and a cutter formed with a threaded stem fitted in said bar, a body to serve as a shoulder to abut against said bar, and an operative cutting-edge, all substantially as specified.

4. An extension planer-tool having a stock formed and adapted to be locked in the tool-clamp of the planer, a cylindrical bar fitted transversely and adjustably in said stock near one end thereof and axially threaded, and means, substantially as described, for locking said bar, and a cutter formed with a threaded stem fitted in said bar, with a body to abut against the end of the bar, and a cutting-point, substantially as specified.

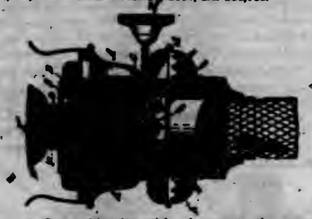
382,269. CLOTHES-DRIER. HENRY C. PRICE, New York, N. Y., assignor of one-third to J. Homer Hildreth, same place. Filed Mar. 24, 1887. Serial No. 232,294. (No model.)



Claim.—1. In an apparatus for drying clothes, the combination of the end frames having the top bars, E E', the series of independent pulleys H, all supported on the said bar E', the opposite series of independent pulleys G, the series of independent hinged levers arranged parallel to each other and all supported in common on the said bar E, the series of independent endless lines, respectively supported on the said pulleys and levers, and the series of independent fastening devices for the said levers, substantially as set forth.

2. In an apparatus for drying clothes, the combination, with the frame having the top horizontal bar, E and the lower horizontal bar, E', the endless lines, the pulleys G, and the levers I, hinged to the top bar E, of the fastening devices for the levers, having the hinged look-pieces J, connected to the said bar E', substantially as set forth.

382,270. CENTRAL-DRAFT LAMP AND BURNER. FRANK ESSEX, Meriden, Conn., assignor of one-half to Charles Standard Upton, New York, N. Y. Filed Dec. 20, 1886. Serial No. 222,125. (No model.) Patented in England Jan. 13, 1887, No. 600; in Belgium Jan. 17, 1887, No. 76,981, and in France Jan. 13, 1887, No. 180,908.



Claim.—1. In combination with a burner having a central-draft tube and a perforated cone or thimble at the top of said tube, a second perforated cone or thimble within the first, whereby an air-chamber is provided between the two cones, substantially as and for the purpose set forth.

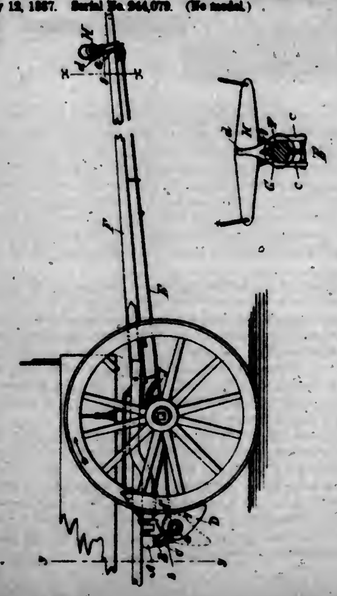
2. In a burner having a central air-tube, the combination, with a cone or thimble at the top of said tube having an imperforate top and perforated sides, of a second cone or thimble within the first, having its sides perforated to supply air to the chamber between the two cones, substantially as and for the purpose set forth.

3. In a burner having a central air-tube, in combination with a cone or thimble at the top of said tube, perforated substantially as set forth, a second cone or thimble within the first and removable therefrom, and also perforated, substantially as set forth.

4. In combination with a burner having a central air-tube, a perforated cone or thimble fitting the upper end of the central air-tube, and an inner cone or thimble fitting inside the first cone or thimble, substantially as shown and described.

5. In a burner having a central air-tube, the combination, with a cone or thimble at the top of said air-tube having its sides perforated, for the purpose set forth, of a second cone or thimble within the first, and having in its sides perforations larger than those in the first cone or thimble, substantially as and for the purposes set forth.

382,271. WAGON-BRAKE. FRED RISS, Shapiro, Wis. Filed July 12, 1887. Serial No. 244,079. (No model.)



Claim.—1. In a vehicle-brake, the combination, with the shaft provided with brake-block levers or cranks at its ends, and with an arm arranged intermediately of and out of alignment with the said levers or cranks, of the power-applying rod connected to said arm and to a bifurcated lever pivoted upon the tongue or pole and adapted to be acted upon by the neck-yoke, and which bifurcated lever is provided with a stop at its rear acting upon the tongue or pole, substantially as set forth.

2. In a vehicle-brake, the combination, with the shaft provided with brake-block arms or cranks at its ends, and with an arm arranged intermediately of and out of alignment with the aforesaid arms or cranks, of the power-applying rod connected to said intermediate arm and to a bifurcated lever pivoted upon the tongue or pole and adapted to be acted upon by the neck-yoke, and which bifurcated lever is provided with a stop at its rear acting upon the tongue or pole, and the spring holding the faces of the brake-blocks out of contact with the wheels, said brake-blocks being eccentrically hung and adapted to have their faces turned away from the wheels as the team is backed, substantially as set forth.

382,272. INSULATING-JOINT. JAMES T. RUSH, New York, N. Y., assignor to Bergmann & Company, same place. Filed Mar. 5, 1887. Serial No. 229,818. (No model.)



Claim.—1. In an insulating-joint, the combination of two flanged tubes and a flexible insulating washer between them, one of the flanges and the flexible washer being turned at their edges over the other flange, whereby the two tubes are secured together and insulated from each other, substantially as set forth.

2. In an insulating-joint, the combination of two flanged tubes and a flexible insulating-washer between them having a central aperture, one of said flanges and the flexible washer being turned at their edges over the other flange, substantially as set forth.

3. In an insulating-joint, the combination of two flanged tubes, a metal washer and a flexible insulating-washer between them, one of the flanges being turned at its edges over the washers, and the other flange to hold the parts together.

382,273. METHOD OF OBTAINING ALUMINA FROM CLAY. FREDERICK J. SEYBOUR, Findlay, Ohio. Filed Apr. 25, 1887. Serial No. 236,062. (Specimens.)



Claim.—1. The process of separating alumina from clay, kaolin, and other similar aluminous earths and reducing the same by mixing said substance with zinc, carbon, and a flux, and subjecting the same to the direct action of the products of combustion upon the charge, and driving the alumina, silica, and zinc in a finely-divided condition into a conduit or condenser, cooling and collecting the silica, subsequently cooling and collecting the mixed oxides of zinc and aluminum, and then reducing the oxides in a furnace in the presence of a deoxidizing agent and a metal such as zinc or aluminum, substantially as specified.

2. The process of separating alumina from clay, kaolin, and other similar aluminous earths and reducing the same by mixing said substance with zinc, carbon, and a flux, and subjecting the same to the direct action of the products of combustion upon the charge, and driving the alumina, silica, and zinc in a finely-divided condition into a conduit or condenser, cooling and collecting the silica, subsequently cooling and collecting the mixed oxides of zinc and aluminum, and then reducing the oxides in a furnace in the presence of a deoxidizing agent, substantially as specified.

3. The steps in the process of separating alumina from silica or clay to prepare the same for reduction, which consists in heating the silica and alumina with a flux and carbon and with zinc to about the vaporizing-point of the metal, in the manner specified, passing the finely-divided mixture thereby produced out of the heating-chamber, cooling and collecting the silica, then passing the oxides of zinc and aluminum to another conduit or chamber, and cooling and collecting them, substantially as specified.

382,274. TICKET-CLASP. JAMES L. SHAY, Bridgeport, Conn., assignor of one-half to Charles E. Thompson, same place. Filed Oct. 24, 1887. Serial No. 253,208. (No model.)

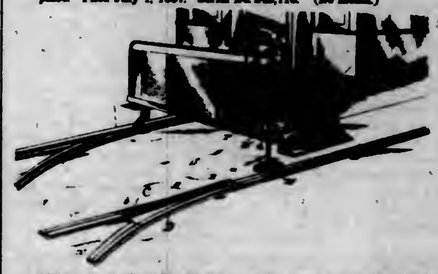


Claim.—1. A ticket-holder consisting of an attaching-plate having openings 8, a backwardly-turned spring-plate, 3, and a spring-plate, 2, projecting forward from the back over plate 3, and having guides which extend downward by the side of plate 3 and engage the openings in the attaching-plate, so that the ticket cannot be pushed out laterally.

2. A ticket-holder consisting of an attaching-plate having downwardly-turned ends curved inward to engage the top of the seat, a backwardly-turned lower plate, and a forwardly-turned upper plate curved upward at the edge, and having an opening, 11, and downwardly-turned guides, as and for the purpose set forth.

3. A ticket-holder consisting of an attaching-plate having openings 8, a backwardly-turned lower spring-plate, and a forwardly-turned upper spring-plate having guides at the sides which extend downward and engage said openings.

382,275. SWITCH FOR STREET-RAILWAYS. CHARLES F. SPENCER, Rochester, N. Y., assignor of one-half to Hobart F. Atkinson, same place. Filed July 1, 1887. Serial No. 243,110. (No model.)



Claim.—1. A pivoted switch-tongue having a projection rigidly secured on its upper face, said projection being beveled or inclined at its end.

2. A pivoted switch-tongue large at one end and gradually tapering toward the opposite end, said tongue having a rib or projection rigidly secured on its upper face and extending longitudinally thereon, substantially as set forth.

3. The combination, with a pivoted switch-tongue, said tongue having a projection rigidly secured thereon, of a device located on a car adapted to shift said tongue by its contact with the projection, substantially as set forth.

4. The combination, with a rod mounted in the platform of a car and shear-plates yieldingly secured to the rod, of a pivoted switch-tongue, said tongue having a projection thereon adapted to be engaged by the shear-plates in shifting the tongue laterally, substantially as set forth.

5. A rod or standard that is adapted to be raised and rotated, having a toe to limit its rotary movement, an arch-plate perforated to engage the toe of the standard, and two spring-actuated shear-plates hinged to the rod or standard, substantially as set forth.

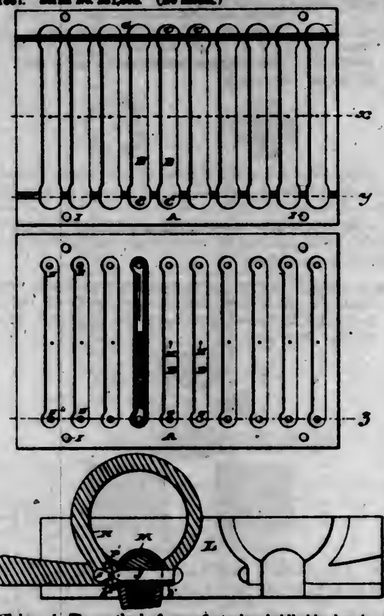
6. The combination, with a rod or standard that may be raised and rotated, an arch-plate provided with notches or holes, and an integral toe of the standard adapted to enter the holes in the arch-plate, of two hinged shear-plates, springs to support the shear-plates, and a tongue of a switch that is adapted to be moved sidewise at its point by the bearing upon it of the shear-plates, substantially as set forth.

7. A switch-shifting device consisting, essentially, of a rod or standard and a pointed shoe secured thereon, said rod or standard adapted to be turned to give the shoe a proper inclination.

8. A switch-shifting device consisting, essentially, of a rod or standard and shear-plates yieldingly secured thereto, substantially as set forth.

9. A switch-shifting device consisting, essentially, of a rotatable rod, a plate secured at one end thereof, and a pair of shear-plates pivoted to said plate, and springs located between the central plate and the free ends of the shear-plates and adapted to normally force the latter outward, substantially as set forth.

382,276. BRIDLE-BIT DIE AND THE METHOD OF MAKING BRIDLE-BITS. JAMES STARKEY, Newark, N. J., assignor to Edward H. Crane, Frederick Crane, and James Crane, all of same place. Filed Mar. 15, 1887. Serial No. 231,302. (No model.)



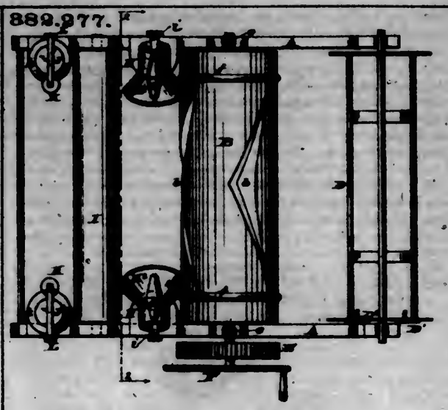
Claim.—1. The method of manufacturing bridle-bits herein described, which consists, essentially, in covering the mouth-core with rubber, arranging said covered core on pins in a die and subjecting the same to pressure to give form to the covering, withdrawing said covered core from said pins, and, finally, arranging said covered core in operative union with the cheek-pieces, substantially as set forth.

2. The die or mold for covering mouth-piece cores of bridle-bits, which consists of sections having concave grooves enlarged at the opposite ends, C C, and having pins in said enlarged portions, upon which the core of the mouth-piece may be arranged, and forming a perforation for the elastic covering for the cheek-piece, substantially as set forth.

3. The die for covering mouth-piece cores for bridle-bits, which consists of sections having grooves with enlarged opposite ends, the enlarged portions having pins E permanently secured to die-sections, substantially as set forth.

382,277. MACHINE FOR CORRUGATING AND EDGING SHEET METAL. HIRAM R. STARBUCK, Corning, N. Y., assignor to Victor Hatcher and Bertha Starbuck, both of same place. Filed Jan. 20, 1886. Serial No. 261,023. (No model.)





Claim.—1. In a machine having rolls for corrugating sheet metal for roofing, one of said rolls having circumferential ribs near its ends, and surface projections of angular or V form disposed at suitable distances apart between the said ribs, the other of said rolls having registering recesses, the arms of said projections tapering obliquely toward said circumferential ribs and terminating in points coincident with the surface of the roll, substantially as herein set forth.

2. In a machine for corrugating sheet metal, coacting rolls, one of which has surface projections of angular or V form, the other of said rolls having registering recesses, the said surface projections having their greatest width and projection at the middle of the length of the rolls and tapering therefrom in arms which terminate in points coincident with the surface of the rolls, substantially as described, and for the purpose specified.

3. In a machine for corrugating metal sheets for roofing, the rolls B and C, having surface registering projections and recesses in the middle of their lengths, the projections terminating in wide V-shaped arms, substantially as described, and registering circumferential ribs and grooves between the ends of the rolls and the termini of the oblique arms, the surfaces of the rolls between said registering parts being unbroken, substantially as described, for the purpose specified.

4. In a machine for corrugating and edging connected metal sheets for roofing, the combination of the rolls B and C, having surface registering projections and recesses in the middle of their lengths, the projections terminating in oblique arms, and registering circumferential ribs and grooves between the ends of the rolls and the ends of said surface projections, substantially as described, with rolls arranged in pairs and adapted to edge the connected sheets at the starting-lines made by the said circumferential ribs and grooves, whereby the strip is edged after it has been corrugated between such edge-starting lines.

5. The combination, in a sheet-metal corrugating and edging machine, of the rolls having surface registering projections and recesses and circumferential registering ribs and grooves, with preliminary edge-bending rolls having conical form and finishing edge-bending rolls having cylindrical form arranged to receive the sheet as it leaves the corrugating-rolls, substantially as described, for the purpose specified.

6. The combination of the corrugating-rolls having circumferential registering ribs and grooves near their ends, two pairs of bending-rolls registering with the ribs and grooves and consisting, respectively, each of an upper double-conical roll and a lower cylindro-conical roll, a guide-roller, and two pairs of vertically-journaled edging-rolls of cylindrical form registering with the conical rolls for corrugating and edging sheet metal, as described.

7. In a sheet-metal corrugating and edging machine, the combination, with the rolls B and C, having surface registering projections and recesses and circumferential ribs and grooves, of a roof and bending and edging rolls, arranged for operation substantially as described.

8. In a sheet-metal corrugating and edging machine, the combination of the lower roll, C, having V-shaped surface projections *a* and circumferential grooves *g*, and the upper roll having the V-shaped surface recesses *b* and the circumferential rib *f*, with the preliminary edge-bending rolls G H H² and the finishing edging-rolls J and K, the said upper corrugating-roll having the capacity to yield in relation to the lower roll, substantially as described, for the purpose specified.

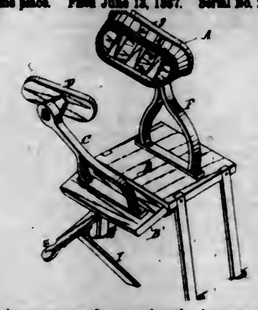
9. The combination, in a sheet-metal corrugating and edging machine, of the rolls B and C, having surface projections and recesses *a* and *b* and registering circumferential ribs and grooves near their ends, with bending and edging rolls arranged in pairs on each side of the

frame and carried by brackets adapted to be turned over out of the way, substantially as described, for the purpose specified.

10. In a machine for corrugating metal sheets for roofing, the rolls B and C, having registering circumferential ribs and grooves near their ends and intermediate registering projections and recesses which stand in oblique lines on the surface in the length of the roll, the said projections having their greatest surface projection at the middle of the length of the roll and extending therefrom to gradually terminate flush with the surface of the roll, as and for the purpose stated.

11. In a machine for corrugating metal sheets for roofing, the rolls B and C, having registering surface projections and recesses, the said projections being made widest and of the greatest surface projection at the middle of the length of the roll, and decrease in width and in surface projection in oblique arms, terminating in points coincident with the surface of the roll, as and for the purpose stated.

382,278. APPARATUS FOR MANUFACTURING BASKETS, &c. LEWIS STEVENS, Binghamton, N. Y., assignor of one-half to Benjamin F. Winfield, same place. Filed June 13, 1887. Serial No. 241,123. (No model.)

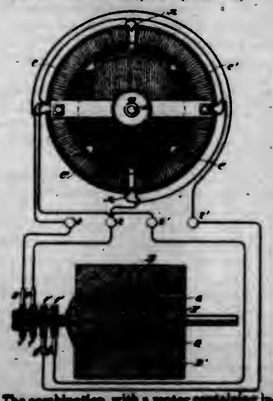


Claim.—1. An apparatus for securing the bottom to splint baskets or analogous articles, comprising a holder adapted to support the body of the article with the base of the latter projecting from the holder, in combination with a follower adapted to enter the said projecting portion of the body and provided with a hard-metal face around its edges, substantially as and for the purpose set forth.

2. An apparatus for manufacturing splint baskets or analogous articles, consisting of a pivoted form, over which to build the body of the said article, with the base of said body projecting from the form, in combination with a follower adapted to enter the projecting portion of said body and provided with a metal face around its edge, substantially as set forth and shown.

3. The apparatus for manufacturing splint baskets or analogous articles, consisting of the fixed post P, the form A, pivoted on said post axially at right angles thereto, the post C, arranged movably toward and from the fixed post, the follower D, pivoted on the movable post, and a prop adapted to support the latter post to hold the follower in proximity to the form on the stationary post, substantially as described and shown.

382,279. ELECTRO-MAGNETIC MOTOR. NIKOLA TESLA, New York, N. Y., assignor of one-half to Charles F. Peek, Englewood, N. J. Filed Nov. 30, 1887. Serial No. 256,061. (No model.)

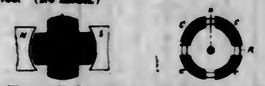


Claim.—1. The combination, with a motor containing independent inducing or energizing circuits and closed induced circuits, of an alternating-current generator having induced or generating circuits corresponding to and connected with the energizing-circuits of the motor, as set forth.

2. An electro-magnetic motor having its field-magnets wound with independent coils and its armature with independent closed coils, in combination with a source of alternating currents connected to the field-coils and capable of progressively shifting the poles of the field-magnet, as set forth.

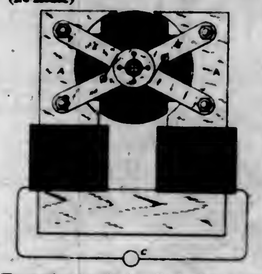
3. A motor constructed with an annular field-magnet wound with independent coils and a cylindrical or disk armature wound with closed coils, in combination with a source of alternating currents connected with the field-magnet coils and acting to progressively shift or rotate the poles of the field, as herein set forth.

382,280. ELECTRICAL TRANSMISSION OF POWER. NIKOLA TESLA, New York, N. Y. Original application filed Oct. 12, 1887, Serial No. 252,132. Divided and this application filed Mar. 9, 1888. Serial No. 266,755. (No model.)



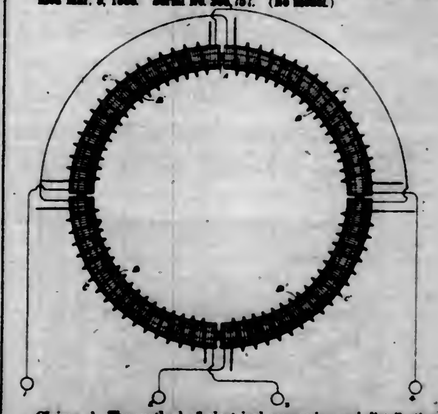
Claim.—The method herein described of electrically transmitting power, which consists in producing a continuously-progressive shifting of the polarities of either or both elements (the armature or field magnet or magnets) of a motor by developing alternating currents in independent circuits, including the magnetizing-coils of either or both elements, as herein set forth.

382,281. ELECTRICAL TRANSMISSION OF POWER. NIKOLA TESLA, New York, N. Y. Original application filed Nov. 30, 1887, Serial No. 256,562. Divided and this application filed Mar. 9, 1888. Serial No. 266,756. (No model.)



Claim.—The method herein described of transmitting power by electro-magnetic motors, which consists in continuously and progressively shifting the poles of one element of the motor by alternating currents and magnetizing the other element by a direct or continuous current, as set forth.

382,282. METHOD OF CONVERTING AND DISTRIBUTING ELECTRIC CURRENTS. NIKOLA TESLA, New York, N. Y. Original application filed Dec. 23, 1887, Serial No. 258,787. Divided and this application filed Mar. 9, 1888. Serial No. 266,757. (No model.)

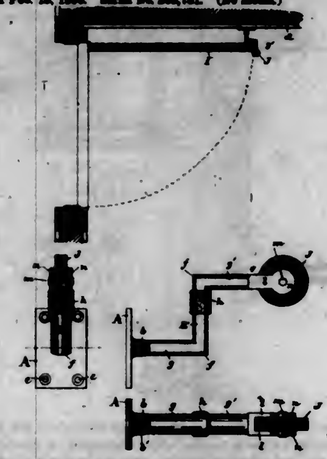


Claim.—1. The method of electrical conversion and distribution herein described, which consists in continuously and progressively shift-

ing the points or line of maximum effect in an inductive field, and inducing thereby currents in the coils or convolutions of a circuit located within the inductive influence of said field, as herein set forth.

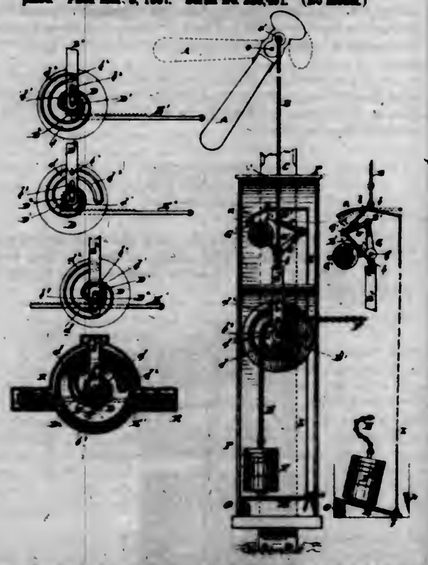
2. The method of electrical conversion and distribution herein described, which consists in generating in independent circuits producing an inductive field alternating currents in such order or manner as to produce by their conjoint effect a progressive shifting of the points of maximum effect of the field, and inducing thereby currents in the coils or convolutions of a circuit located within the inductive influence of the field, as set forth.

382,283. DOOR-CHECK. GERRAD THOMAS, Baltimore, Md., assignor of two-thirds to Werner Whelan and J. George Jung, both of same place. Filed Feb. 13, 1888. Serial No. 263,731. (No model.)



Claim.—The combined door stop and holder, comprising a stop-arm, E, having two right angles, *f*, the ends *g g* of which project in opposite directions, a base-plate, A, attached to one end, and a rubber roller, J, secured to the other end, as set forth.

382,284. DEVICE FOR ACTUATING RAILWAY-SIGNALS. JAMES J. THEISEN, Richmond, Ind., assignor to himself and John F. Miller, same place. Filed Mar. 5, 1887. Serial No. 229,691. (No model.)

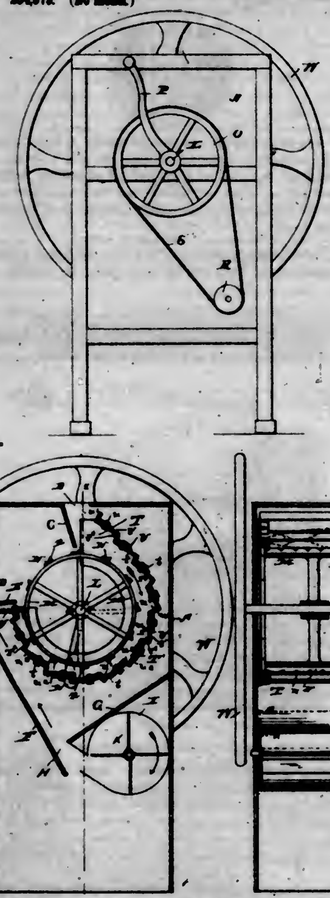


Claim.—1. As a device for actuating signals, switches, or switch-locks, the rotating disk D, having concentric circular slots *d' d²*, and spiral slot *d*, in combination with a connecting-rod having a stud adapted to enter and be guided by said slots and a slot adapted to pass over a projection of the disk's pivot, all substantially as and for the purpose specified.

2. In combination with a device for actuating a signal, substantially as specified, the safety device consisting of hinged links B' B', interposed in the connecting-rod B, the bell-crank lever G, the connecting-rod J, pivoted to one end of the bell-crank and to the joint *b'* of links B' B', the weight H, secured on the other arm of the bell-crank, the detaining clutch-lever K, and platform M, united by cord L, all combined, substantially as specified, so that the dropping of the weight F, secured to the actuating-connection of the signal, will release the clutch and permit the weighted bell-crank lever to draw the signal to "danger."

3. The combination of disk D, having grooves *d' d d²*, and sprocket-wheel D², the connecting-rod B, having stud *b²*, and hinged links B' B', the drive-chain E, having weight F, and the safety device consisting of the weighted bell-crank lever G, link J, clutch-lever K, connecting-cord L, and platform M, all substantially as and for the purpose specified.

382,285. MACHINE FOR SHUCKING AND SHELLING CORN. LOUIS R. WHITTEN, Fort Worth, assignor of one-fourth to Alfred Nuckle, Bobbin, Tex. Filed May 26, 1888. Renewed Nov. 7, 1887. Serial No. 254,579. (No model.)

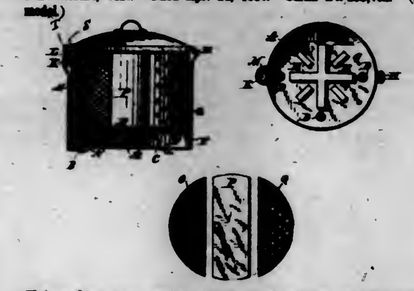


Claim.—1. The concave comprising the end walls, T, having their outer edges provided with the serrations T², which have the long tangential sides *t'*, and the shorter sides, *t²*, arranged at an obtuse angle with relation to the sides *t'*, and the flanges *t* on the opposing sides of the end walls and projecting inwardly from the sides *t'* of the serrations, and the ribs U, secured on the said flanges to connect the end

walls together, the said ribs being narrower than the said flanges to leave openings e² between the edges of the ribs, for the purpose set forth, substantially as described.

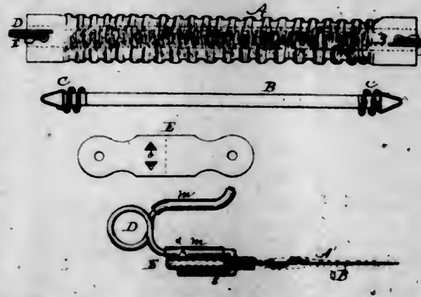
2. A corn shucking and shelling machine, comprising the cylinder and concave, the inclosing-case provided with the discharge-opening D for the shucks and cobs on one side, the board E, extending from the discharge end of the concave to the casing, and dividing the opening D into an upper and lower passage, the oppositely-inclined boards F and G, forming the bottom of the case, and having the opening H between their lower edges, and the blower to direct a current of air through the opening H up the board F, and out of the opening D below the board E, for the purpose set forth, substantially as described.

382,286. STEAM-COOKER. JOHN C. SMITH and LOREN B. SARGEN, Ballardsville, Ohio. Filed Apr. 21, 1887. Serial No. 235,702. (No model.)



Claim.—In a steam-cooker, the steam-chamber A, tube T, having port I for the admission of steam to the tube, and port L for the exit of steam therefrom, and the valve K, that indicates when sufficient steam for cooking is raised, and which rises high enough to allow extra pressure of steam to pass through the escape-port, as and for the purpose set forth.

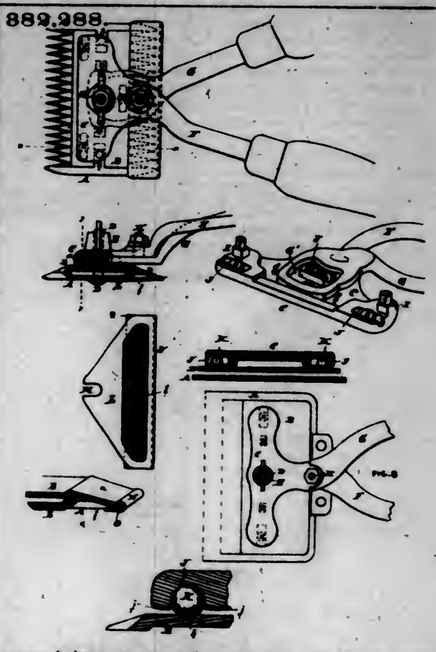
382,287. CARRIAGE-CURTAIN FIXTURE. FOWLER A. BRANDENBURG, Vandalia, Ohio. Filed July 26, 1887. Serial No. 245,184. (No model.)



Claim.—1. A carriage-curtain fixture comprising an elastic strap held in the sheath or hem of the curtain, the fastener attached to the end thereof, the plate folded over said fastener, and the clasp with looped end, which passes through the plate and fastener to bind the same together, substantially as described.

2. The wire fastener composed of an angular loop to embrace the folded end of the bow-clasp and parallel folds to engage an elastic strap, substantially as shown and described.

382,288. HAIR-CLIPPING MACHINE. LEWIS S. LEE, Philadelphia, Pa. Filed Mar. 31, 1887. Serial No. 233,116. (Model.)



Claim.—1. In a hair-clipping machine, the combination of the reversible cutters with a protecting-guard for the rear teeth, having its bottom open to allow of the ready discharge of any hair or other obstruction which might enter the teeth from above, substantially as described.

2. In a hair-clipping machine, the combination of the reversible cutters with a protecting-guard for the points of the rear teeth, provided with an elastic cushion arranged adjacent to the teeth, substantially as described.

3. In a hair-clipping machine, the combination of the reversible cutters with a protecting-guard for the points of the rear teeth, provided with an elastic cushion arranged adjacent to the teeth and made open on the bottom to allow of the passage of any hair, dirt, &c., which may find its way between the teeth, substantially as described.

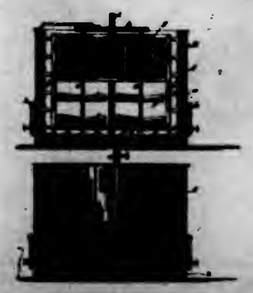
4. In a hair-clipping machine, the combination of the reciprocating cutter, the stationary cap, and interposed ball or spherical bearings, with guides to hold the balls against lateral movement, but to allow of longitudinal movement with respect to both the cutter and cap.

5. In a hair-clipping machine, the combination of the reciprocating cutter, the cap having three longitudinal parallel grooves arranged out of line, so as to cover an extended area, loose balls or spheres in said grooves, a stationary cutting-plate, and a clamping-bolt extending through the cap between the said balls or spheres, and hence between their points of contact with the cutter and within the area between them.

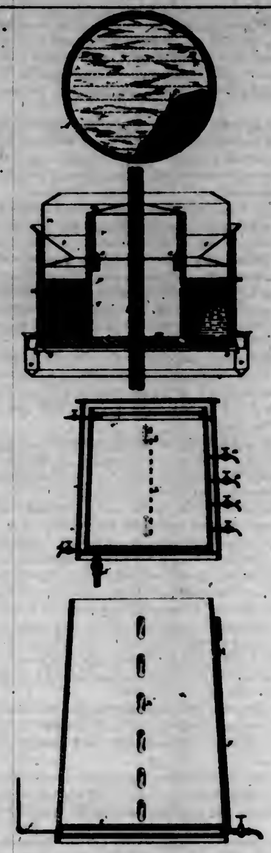
6. The combination of the reciprocating cutter having two or more longitudinal grooves, *h*, the cap having two or more longitudinal grooves, J, and balls or spheres K, fitting into said grooves J and *h*, substantially as described.

REISSUES.

10,925. PROCESS OF MAKING SYRUP AND BEER FROM MAIZE. ALFRED R. FERRIS, Boston, Mass., assignor to Edward C. Potts, Troy, N. Y. Filed Apr. 19, 1886. Serial No. 199,423. Original No. 304,761, dated Aug. 19, 1884.



10,925.



Claim.—1. The herein-described process for the manufacture of beer-wort and sirup from corn and malt, which consists in soaking the meal in water at a temperature a little below the point at which the albuminoids begin to coagulate; then adding a small percentage of malt; then raising the temperature slowly to the point at which starch dissolves and keeping the meal at this temperature for a sufficient time to render the constituents of the meal as soluble as possible by such treatment; then in a suitable separator separating the soluble portions, fine albuminous matter, &c., from the insoluble portions; then mashing with malt in the usual manner; then running it into a settling and conversion tub suitable for the purpose, keeping the mash at a substantially even temperature, thereby facilitating conversion and settling the fine insoluble matter by keeping the top portions of the mash as warm as or a little warmer than the lower portions; then drawing off the clear wort, boiling the same until coagulation is complete; then running the wort into the settling-tub, settling it as before, and drawing off the clear wort for further treatment, substantially as set forth.

2. In the manufacture of beer-wort and sirup from corn or maize, the herein-described method of making the necessary separation and conversion, which consists in soaking cornmeal in water at a temperature of about 150° Fahrenheit; then raising the temperature nearly to the heats at which the albuminoids begin to coagulate, (about 156° Fahrenheit;) then adding a small percentage of malt; then raising the temperature slowly up to the heats at which starch dissolves, (from about 165° Fahrenheit to the boiling-point;) then separating the starch and other soluble constituents of the meal from the insoluble portions; then mixing with malt to make the conversion, substantially as set forth.

3. In the manufacture of beer-wort and sirup, the herein-described process for liquefying and treating the starch and other soluble constituents of corn preparatory to converting the starch into saccharine extract by mixing it with malt, which consists in mixing a small proportion of malt (sufficient to liquefy the starch but not enough to effect its complete conversion) with the meal after it is softened and expanded by soaking, then raising the temperature of the mixture slowly up to the heats at which starch dissolves, (from 165° Fahrenheit to the boiling-point,) and then separating the starch and other soluble constituents from the insoluble matter before mixing them with malt to make the final and complete conversion, substantially as set forth.

4. In the manufacture of beer-wort and sirup, the herein-described method of treating the residue which remains in the settling-tub after conversion and settling, and after the clear wort, &c., have been drawn off, which consists in separating from the said residue in a suitable separating-machine the liquid portion thereof, cooling the same to a temperature of from 50° to 70° Fahrenheit, and adding thereto Irish moss, gelatine, or other similar substance, as usually prepared for fining beer, thoroughly mixing the same, and in a suitable vessel passing a gas or atmospheric air through it, and after the mass is cleared drawing off, and then treating the clear portion in the same manner as the wort first drawn from the mash, as set forth.

5. The herein-described method of facilitating the settling of the fine insoluble matter of corn and malt mashes during and after conversion, which consists in surrounding the vessel containing the mash or wort on its entire sides and over the upper surface of the mash or wort by a circulating conductor of heat, of the same or a little higher temperature than the contents of the said vessel, substantially as shown and described, whereby the escape of heat from the sides and upper part of the mash or wort and the consequent circulation caused by unequal cooling are prevented, as set forth.

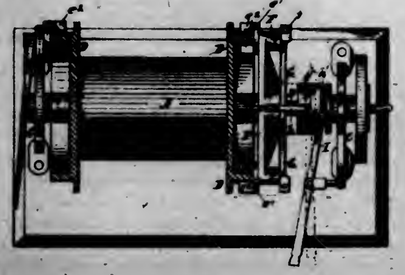
6. The hereinbefore-described process of separating the fine insoluble matters in corn and malt mashes from the extract or wort, which consists in treating it with a solution of Irish moss or gelatine and then subjecting the liquid to the action of gas or air, as specified.

10,926. FRICTION-CLUTCH. WILLIAM B. HAVENS, Denver, Colo., assignor to the Rotjan Wind Engine Company, Beloit, Wis. Filed Nov. 3, 1887. Serial No. 254,602. Original No. 330,613, dated Oct. 14, 1879.

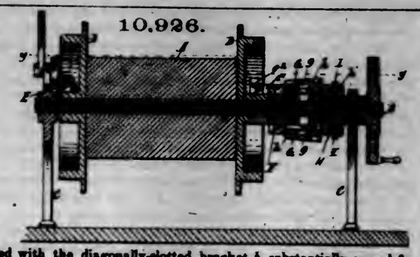
Claim.—1. In a friction-clutch, the combination of a plate provided with shoes pivoted thereto, an arm rigidly attached to the main shaft and upon which said plate is journaled, and a lever or other equivalent means adapted to oscillate said plate and shoes, the latter being adapted to engage with the outer and inner sides of an annular rim secured to the body to be moved, substantially as described.

2. In a friction-clutch, the combination of the plate *c'*, provided with the shoes c^3 c^3, and secured to the rod *c*, journaled in the end of the arm F, in combination with the lever G, and sliding ring H, pro-



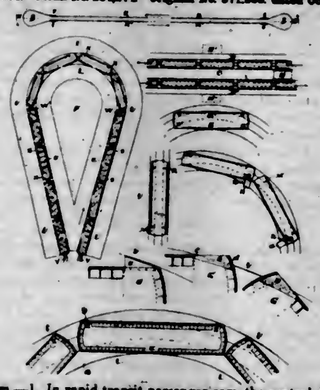


10,926.



vided with the diagonally-slotted bracket A, substantially as and for the purpose shown and described.

10,927. APPLIANCE FOR HANDLING RAPID-TRANSIT PASSENGER TRAFFIC. ARTHUR M. WELLINGTON, New York, N. Y. Filed Feb. 16, 1886. Serial No. 192,374. Original No. 371,866, dated Oct. 18, 1887.



Claim.—1. In rapid-transit passenger-cars, the central door, E, in combination with diagonally-opposite end doors or platforms, X, substantially as shown and described, and for the purpose described.

2. In rapid-transit passenger-cars, the middle doors, E E', in combination with end doors or platforms, X X, substantially as shown and described, and used for the purpose and in the manner described.

3. A rapid-transit passenger-car having diagonally-opposite exits and entrances, each at any one stop on one side only, in combination with a terminal receiving-platform, L, of horseshoe form, on one side of the track and a corresponding discharging-platform, U, on the other side, substantially as shown and described, and for the purpose described.

4. A rapid-transit passenger-car having diagonally-opposite exits and entrances, each at any one stop on one side only, in combination with a single central platform, C, and side platforms, D D', the one being for loading only and the other for unloading only, substantially as shown and described, and for the purpose described.

5. In rapid-transit passenger service, the combination, with passenger-cars having diagonally-opposite exits and entrances, each at any one stop on one side only, of the main tracks K K' and end loops, N B, substantially as shown and described, and for the purpose described.

6. In rapid-transit passenger service, the combination, with passenger-cars having diagonally-opposite exits and entrances, each at any one stop on one side only, of the main tracks K K', end loops, N B, and terminal platforms U L, substantially as shown and described, and for the purpose described.

7. In rapid-transit passenger service, the combination, with passenger-cars having diagonally-opposite exits and entrances, each at any one stop on one side only, of the main tracks K K', end loops, N B, and way-platforms C D D', substantially as shown and described, and for the purpose described.

8. The projecting triangular platform-plate O, in combination with station-platforms of slightly-varying height on straight lines and on curves, to permit the plate to ride over the one while running flush with the other, substantially as shown and described.

9. In rapid-transit passenger service, a terminal station, approximately of horseshoe form, having the tracks within it on which trains stop to unload passengers, and provided with landing-platforms on either side, at which the trains may stop, with front and rear of the train approximately opposite each other, and with the middle car of the train at or near the middle of the horseshoe, so as to accommodate a longer train than the station itself, substantially as set forth.

10. In rapid-transit passenger service, the combination of main tracks K K', loops or closed circuits N B, and semicircular or horseshoe station U L, having its landings for the middle car of trains at or near to the middle of the horseshoe, substantially as shown and described, and for the purpose described.

11. In rapid-transit passenger service, the combination of the main tracks K K', loops or closed circuits N B, terminal station U L, and way-station D C, substantially as shown and described, and for the purpose described.

12. In rapid-transit passenger service, the combination of the main tracks K K', closed circuit or loops N B, and way-station D C, substantially as shown and described, and for the purpose described.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE MASON.

Decided February 28, 1888.

STATEMENT OF THE CASE.

The petition failed to refer to or identify the specification, and the oath accompanying the application contained the statement that the invention had not been patented to the applicant, "nor with his knowledge or consent in any foreign country," the words "to others" being omitted and the word "foreign" inserted before country.

1. PETITION.

Held that the petition was defective, and must be amended to contain a reference to the specification for a full disclosure of the alleged invention.

2. OATH.

The oath filed by applicant is indefinite and may be construed to mean that the invention has not been patented to applicant in any country, or to himself in any foreign country, or with his knowledge or consent in any foreign country.

3. MATERIAL DEPARTURES FROM THE RULES NOT PERMITTED.

If the rules are violated or departed from in one material particular, the practice would soon become lax in other particulars. The several requirements of the rule with regard to the oath must be enforced.

REFERENCE by Examiner.

ACOUSTIC TELEPHONE.

Application of Peter L. Mason filed October 7, 1887, No. 251,677.

Mr. W. H. Burridge for the applicant.

HALL, *Commissioner:*

This case is referred to the Commissioner on request of applicant by the examiner, who objects to the petition because it does not refer to or identify the specification as contemplated by the rules, and also because the oath forming part of the application does not conform to the requirements of the rules of the Office.

The petition omits any reference to the specification for a full disclosure of the alleged invention. It is evident that without such reference it is defective. No reason is shown why the omission may not be cured by the attorney without any trouble or delay, and I think the requirement should be insisted upon.

In regard to the oath, it will be seen that the rules require an applicant to state—

whether the invention has or has not been patented to himself or to others with his consent or knowledge in any country, and if it has been, the country or countries in which it has been so patented, * * * and that it has not been patented in any other country or countries than those mentioned, &c.

Instead of the phraseology required by the rules, applicant avers that the invention—

has not been patented to him nor with his knowledge or consent in any foreign country—

the words "to others" being omitted, and the word "foreign" being introduced before "country," the effect of which is to omit from his oath the statement whether or not a patent for the same invention has been issued to others in this country. Applicant's statement that it has not been patented to himself may be held to mean to himself in any country; but another construction of this language would authorize a meaning that it has not been patented to himself in any foreign country, nor with his knowledge or consent in any foreign country. It is evident that this language is far from a compliance with the rules. It may possibly put the applicant to some trouble or delay to file a proper oath, but the requirement is one which should be insisted upon. If a material variation, or, rather, violation, of the rule can be permitted in one particular, the practice would soon become very lax in others. Indeed attention has already been called to the fact that applicants do not strictly conform to the rule with regard to the several requirements of the oath, and it is time that objections of this character were enforced. I therefore affirm the action of the examiner.

EX PARTE ZABEL.

Decided April 10, 1888.

1. An applicant who in his application has elected, through mistake or ignorance, to prosecute claims for one invention must exercise diligence in presenting his amendment correcting such error, and this before the application has been examined and rejected.

2. The examiner was right in refusing to admit an amendment covering a distinct and separate invention from that originally retained and prosecuted to rejection. To enter and consider such an amendment would be to permit the applicant to secure examination of two distinct inventions for one fee.

ON petition.

MANIFOLD-COPYING PROCESS.

Application of Franz A. C. Zabel filed May 1, 1885, No. 164,990.

Mr. E. A. Brydges and *Mr. C. J. Gooch* for the applicant.

HALL, *Commissioner:*

The application in this case showed originally an apparatus and a process, and upon requirement applicant limited his claims to the apparatus. The application received consideration and rejection. Applicant thereafter sought to amend his application by striking out his claims for the apparatus and introducing claims for the process. As said by the examiner, up to the date of this last amendment—viz., November 4, 1887—the record shows that claims had been prosecuted for an apparatus by which the said process might be car-

ried out, although no intimate connection existed between the said process and the said apparatus. The examiner held that the two inventions were not interdependent and refused to enter the amendment for the reason that it constituted a departure and was, in fact, an attempt to introduce claims for a different invention from that originally prosecuted. From this refusal of the examiner the applicant has appealed to the Commissioner and insists that the retention of the claims for the apparatus originally was in the nature of a mistake, and he urges that the Office should be considerate of the rights of an applicant and allow him to correct errors and mistakes of that character by presenting claims to the invention he desires to patent.

It is well settled under the present practice in the Office that an applicant will not be allowed to claim two separate and distinct inventions in the same application, a practice which applies to applications for apparatus and process. I am not prepared to say, in case of an application showing process and apparatus, should it be made to clearly appear that the applicant had made an actual mistake in claiming one invention instead of the other, through his own ignorance or the lack of information on the part of his attorney, and should he present an amendment changing the claims from the apparatus to the process, accompanied by proper evidence, that such amendment and correction might not be allowed, if presented diligently and before the case had been examined by the Office; but to allow such a change to be made after the application has received examination would result in permitting a party to secure examination for two inventions for the one fee. Of course this cannot be allowed. It follows from these considerations that the applicant must be compelled to stand by his original election.

The action of the examiner is affirmed.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

TILGHMAN *v.* PROCTOR *et al.* PROCTOR *et al. v.* TILGHMAN.

Decided March 19, 1888.

1. INTEREST IN COLLECTIONS NOT INVOLVING NECESSARILY INTEREST IN PATENT.

An interest in the net proceeds of collections for infringements of a patent does not necessarily involve an interest in the patent itself.

2. RULES FOR SETTLING GAINS AND PROFITS.

The infringer is liable for actual, not for possible, gains; for the fruits of the advantage which he derived from the use of the invention over that which he would have had in using other means then open to the public, and adequate to enable him to obtain an equally beneficial result.

3. SAME.

If there was no advantage in the use of the plaintiff's invention, there can be no decree for profits, and the plaintiff's only remedy is by action at law for damages.

4. SAME.

If the defendants gained an advantage by using the plaintiff's invention, that advantage is the measure of the profits to be accounted for, even if from other causes the business in which that invention was employed by the defendants did not result in profit.

5. SAME.

A court of equity will itself administer full relief by awarding as an equivalent or a substitute for legal damages a compensation computed and measured by the same rule that courts of equity apply in the case of a trustee who has wrongfully used the trust property to his own advantage.

6. SAME.

A court in equity will require an infringer to account for the gains and profits which he has made from the use of a patented invention instead of limiting the recovery to the amount of royalties paid to the patentee by third persons.

7. SAME.

Where the patent in suit had been adjudged invalid by this Court in a suit against another defendant, and subsequently in this suit the Court had adjudged the patent valid, the defendants must account for infringements committed after the date of the first adjudication that such patent was invalid.

8. SAME.

The plaintiff has the burden of proving the amount of profits the defendants have made by the use of his invention.

9. SAME.

As to the comparative expense of the old process, the cost at that the old process could not have been used at a less cost.

10. MASTER'S REPORT—PRESUMPTIONS SUPPORTING THE SAME.

In dealing with the exceptions to the master's report, his conclusions, depending upon the weighing of conflicting testimony, which the defendants used it, if at all, is not conclusive evidence have every reasonable presumption in their favor, and are not to be modified or set aside unless there clearly appears to have been error or mistake on his part.

11. INTEREST ON AMOUNT SETTLED—DATE OF SAME.

Interest should be allowed upon the amount found due the plaintiff by this Court from the date when the master's report was submitted to the court below.

APPEALS from the Circuit Court of the United States for the Southern District of Ohio.

Mr. George Harding and *Mr. Francis T. Chambers* for the appellant.

Mr. William M. Ramsey and *Mr. R. H. Parkinson* for the appellees.

Mr. Justice GRAY delivered the opinion of the Court.

This was a bill in equity, filed June 26, 1874, by Richard A. Tilghman against William Proctor and four others, copartners under the name of Proctor & Gamble, praying for an injunction, for an account of profits, and for damages for the infringement of letters patent originally granted to Tilghman for fourteen years from January 9, 1854, and afterward extended to January 9, 1875, for the process of manufacturing fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure.

The infringement complained of in this suit was from May 1, 1870, to January 8, 1875. Similar suits by this plaintiff against other defendants had been maintained by the Circuit Courts for the Southern Districts of Ohio and of New York in 1862 and 1864, respectively. (*Tilghman* v. *Werk*, 2 Fisher Pat. Cas., 229; *Tilghman* v. *Mitchell*, 2 Fisher Pat. Cas., 518.) In the suit in New York a final decree for an account of profits was entered by the circuit court on September 1, 1871. (*Tilghman* v. *Mitchell*, 9 Blatchford, 1, 18; S. C., 4 Fisher Pat. Cas., 599, 615.) On March 2, 1874, that decree was reversed in this Court by the opinion of four justices against three, two judges not sitting, upon the hypothesis that Tilghman's patent was limited to the apparatus therein described, and that the use of an apparatus similar to that used by the present defendants was not an infringement. (*Mitchell* v. *Tilghman*, 19 Wall., 287, 419, 421.)

In the case at bar the circuit court on December 2, 1874, following the decision of this Court in *Mitchell* v. *Tilghman*, made a decree dismissing the bill; but on appeal from that decree this Court, at October term, 1880, by a unanimous opinion overruled its decision in *Mitchell* v. *Tilghman*, and adjudged that Tilghman's patent was a valid one for a process, and not merely for the particular apparatus described in the specification; that that apparatus could be operated to produce a beneficial result; that the defendants had infringed the plaintiff's patent, and therefore that the decree of the circuit court be reversed and the case remanded, with directions to enter a decree for the plaintiff in conformity with that opinion. (*Tilghman* v. *Proctor*, 102 U. S., 707.) There is nothing in the record before us to induce any change or modification of the conclusions then announced.

By making a few extracts from that opinion the questions now before us will be better understood.

The patent in question relates to the treatment of fats and oils, and is for a process of separating their component parts, so as to render them better adapted to the uses of the arts. It was discovered by Chevreul, an eminent French chemist, as early as 1813, that ordinary fat, tallow, and oil are regular chemical compounds, consisting of a base, which has been termed glycerine, and of different acids, termed, generally, fat acids, but specifically stearic, margaric, and oleic acids. These acids, in combination severally with glycerine, form stearine, margarine, and oleine. They are found in different proportions in the various neutral fats and oils, stearine predominating in some, margarine in others, and oleine in others. When separated from their base, (glycerine,) they take up an equivalent of water, and are called free fat acids. In this state they are in a condition for being utilized in the arts. The stearic and margaric acids form a whitish semi-transparent hard substance, resembling spermaceti, which is manufactured into candles. They are separated from the oleic acid, which is a thin oily fluid, by hydrostatic or other powerful pressure, the oleine being used for manufacturing soap and other purposes. The base (glycerine) when purified has come to be quite a desirable article for many uses. (102 U. S., 708, 709.)

The substance of Tilghman's discovery and invention was thus summed up by the Court:

That the fat acids can be separated from glycerine without injury to the latter by the single and simple process of subjecting the neutral fat while in intimate mixture with water to a high degree of heat under sufficient pressure to prevent the water from being converted into steam without the employment of any alkali or sulphuric acid or other saponifying agent, the operation, even with the most solid fats, being capable of completion in a very few minutes when the heat applied is equal to that of melting lead, or 612° Fahrenheit, but requiring several hours when it is as low as 250° or 40.° Fahrenheit. The only conditions are, a constant and intimate commixture of the fat with the water, a high degree of heat, and a pressure sufficiently powerful to resist the conversion of the water into steam. The result is a decomposition of the fatty body into its elements of glycerine and fat acids, each element taking up the requisite equivalent of water essential to its separate existence, and the glycerine in solution separating itself from the fat acids by settling to the bottom when the mixed products are allowed to stand and cool. In this process a chemical change takes place in the fat in consequence of the presence of the water and the active influence of the heat and pressure upon the mixture. (Pages 712, 713.)

The Court spoke of the different forms of apparatus mentioned in Tilghman's patent or used by the defendants, as follows:

The apparatus described [in the patent] consists of a coil of iron pipe or other metallic tubing erected in an oven or furnace where it can be subjected to a high degree of heat, and through this pipe the mixture, (of nearly equal parts of fat and water,) made into an emulsion in a separate vessel by means of a rapidly-vibrating piston or dasher, is impelled by a force-pump in a nearly continuous current, with such regulated velocity as to subject it to the heat of the furnace for a proper length of time to produce the desired result, which time, when the furnace is heated to the temperature of 612° Fahrenheit, is only about ten minutes. The fat and water are kept from separating by the vertical position of the tubes, as well as by the constant movement of the current, and are prevented from being converted into steam by weighting the exit-valve by which the product is discharged into the receiving-vessel, so that none of it can escape except as it is expelled by the pulsations produced by the working of the force-pump. Before arriving at the exit-valve the pipe is passed, in a second coil, through an exterior vessel filled with water, by which the temperature of the product is reduced. After the product is discharged into the receiving-vessel it is allowed to stand and cool until the glycerine settles to the bottom and separates itself from the fat acids. The latter are then subjected to washing and hydraulic pressure in the usual way. (Pages 712, 713.)

It is evident that the passing of the mixture of fat and water through a heated coil of pipe standing in a furnace is only one of several ways in which the process may be applied. The patentee suggests it as what he conceived to be the best way, apparently because the result is produced with great rapidity and completeness. But other forms of apparatus, known and in public use at the time, can as well be employed without changing the process. A common digester or boiler can evidently be so used, provided proper means are employed to keep up the constant admixture of the water and fat, which is a sine qua non in the operation. (Pages 713, 730.)

The defendants use a boiler in which the charge of fat and other materials is placed and heated, and do not mix the fat and water in the manner pointed out in the specification of the patent, but, on the contrary, have inserted in the boiler a pump, which forces the water, as it settles to the bottom, upward to the top of the mass, and pours it upon the upper surface, whence it again finds its way down through the fat, thus keeping up a constant mixture. (Page 730.)

It was expressly decided that neither the form of the defendants' apparatus, nor the addition of lime, nor the use of steam, nor the applying of a lower degree of heat prevented their process from being an infringement of the plaintiff's patent. (Pages 730–733.)

The Court also said:

It is objected that the particular apparatus described in the patent for carrying the process into effect cannot be operated to produce any useful result. We have examined the evidence on this point, and are satisfied that it shows the objection to be unfounded. A recapitulation of this evidence is not necessary. The testimony of Tilghman himself, of Professor Booth, and of Mr. Wilson is directly to the point. (Page 730.)

In accordance with the judgment and mandate of this Court, the circuit court, in February, 1877, entered an interlocutory decree for the plaintiff, and referred the case to a master—

to ascertain and tax and state and report to the court an account of the gains, profits, savings, and advantages which the said defendants have received, or which have arisen or accrued to them, from infringing the said exclusive rights of the said complainant by the use of the process patented in the said letters patent, as well as the damages the said complainant has sustained thereby.

The master filed his report in August, 1884.

As to damages—

the master finds from the evidence that the complainant has derived no profit from the invention involved in this suit otherwise than by granting licenses to others to use the same. These licenses have been granted to all manufacturers desiring to use his process at a substantially uniform fee of twenty cents for each hundred pounds of fat treated, payable monthly. For several years the respondents held such a license from the complainant, but terminated the same, refusing to pay the stipulated license-fees after May 1, 1870, although continuing to use the process until the expiration of the patent on January 8, 1875.

The master further says:

The accompanying table A shows the quantity of fat treated by the respondents during each month of infringement, the license-fees therefor, and interest thereon to October 7, the first day of October term, 1884, making the whole amount of the complainant's damages herein $79,506.91.

As to the profits, gains, savings, and advantages which had accrued to the defendants, the master finds that what was known as "the lime-saponification process," which consisted in the manufacture of the fat into soap by the use of lime, and in the decomposition of that soap into fatty acids and glycerine by the aid of sulphuric acid, was more advantageous than any other process open to public use at the time in question, and reports the defendants' savings in lime and sulphuric acid, their gain in glycerine, their loss in fat acids produced, and their net gains and savings, as follows:

2,752,732 pounds of lime, at $3.3586 per hundred	$9,668 33
6,880,819 pounds of sulphuric acid, at $2.527 per hundred	173,863 13
Amount saved in chemicals	183,731 46
Amount gained on glycerine water	61,701 77
Total	244,433 23
Deducting loss in fatty acids, being 54 cents per hundred on 21,204,732 pounds of fat	114,991 76
Net gains and savings	129,441 47

In September, 1884, each party filed exceptions to

the master's report. The circuit court, in February, 1886, overruled all the exceptions, and entered a final decree for the plaintiff for $79,566.91, the amount of damages reported by the master, with simple interest added upon the license-fees from October 7, 1884, to February 4, 1886, making in all $83,275.21, and costs. From this decree both parties appealed to this Court.

At the hearing before the master a brother of the plaintiff, called as a witness in his behalf, testified on cross-examination that before this suit was brought the witness had acquired an interest in all license-fees and recoveries under the patent. No further question was asked or evidence offered by either party as to the nature or amount of that interest. The defendants contended before the master and at the argument here that the plaintiff could recover in this suit no more than his own share, and, having failed to prove the extent of his interest, was entitled to nominal damages only. It is a sufficient answer to this objection that it is not shown that any one but the plaintiff has any interest, legal or equitable, by assignment or otherwise, in the patent sued on, and that, as observed by Mr. Justice Strong, sitting in the circuit court—

an interest in the net proceeds of collections under a patent does not necessarily amount to legal ownership in the patent itself. It is plain, therefore, as the case appears, that there has been no want of joinder of the necessary parties. (*Jordan* v. *Dobson*, 4 Fisher Pat. Cas., 232, 236.)

The principal question of law now presented is as to the general rule that should govern the amount to be recovered. The defendants contend that the plaintiff, having established license-fees for the use of his patent, is not entitled to any gains and profits accruing to the defendants in excess of those fees. The plaintiff contends that, as the profits to be accounted for exceed the damages, he has the right, waiving the damages found by the master, to have a decree for profits.

In an action at law for the infringement of a patent the plaintiff can recover a verdict for only the actual damages which he has sustained, and the amount of such royalties or license-fees as he has been accustomed to receive from third persons for the use of the invention, with interest thereon from the time when they should have been paid by the defendants, is generally, though not always, taken as the measure of his damages; but the court may, whenever the circumstances of the case appear to require it, inflict vindictive or punitive damages by rendering judgment for not more than thrice the amount of the verdict. (Acts of July 4, 1836, c. 357, sec. 14, 5 Stat., 123; July 8, 1870, c. 230, sec. 59, 16 Stat., 207; Rev. Stat., sec. 4919; *Seymour* v. *McCormick*, 16 How., 480, 489; *New York* v. *Ransom*, 23 How., 487; *Suffolk Co.* v. *Hayden*, 3 Wall., 315; *Philp* v. *Nock*, 17 Wall., 460; *Packet Co.* v. *Sickles*, 19 Wall., 611, 617; *Burdell* v. *Denig*, 92 U. S., 716.)

But upon a bill in equity by the owner against infringers of a patent the plaintiff is entitled to recover the amount of gains and profits that the defendants have made by the use of his invention. This rule was established by a series of decisions under the patent act of 1836, which simply conferred upon the courts of the United States general equity jurisdiction, with the power to grant injunctions in cases arising under the patent laws. (Act of July 4, 1836, ch. 357, sec. 17, 5 Stat., 124; *Livingston* v. *Woodworth*, 15 How., 546; *Dean* v. *Mason*, 20 How., 198; *Rubber Co.* v. *Goodyear*, 9 Wall., 788; *Mowry* v. *Whitney*, 14 Wall., 620; *Littlefield* v. *Perry*, 21 Wall., 205, 220; *Mason* v. *Graham*, 23 Wall., 261; *Tremolo Patent*, 23 Wall., 518; *Cawood Patent*, 94 U. S., 695; *Mevs* v. *Conover*, October Term, 1876, 11 O. G., 1111;* *Elizabeth* v. *Pavement Co.*, 97 U. S., 126; *Root* v. *Railway Co.*, 105 U. S., 189.)

The reasons that have led to the adoption of this rule are that it comes nearer than any other to doing complete justice between the parties; that in equity the profits made by the infringer of a patent belong to the patentee and not to the infringer, and that it is inconsistent with the ordinary principles and practice of courts of chancery either on the one hand to permit the wrongdoer to profit by his own wrong, or on the other hand to make no allowance for the cost and expense of conducting his business, or to undertake to punish him by obliging him to pay more than a fair compensation to the person wronged.

The infringer is liable for actual, not for possible, gains. The profits, therefore, which he must account for are not those which he might reasonably have made, but those which he did make, by the use of the plaintiff's invention; or, in other words, the fruits of the advantage which he derived from the use of that invention over what he would have had in using other

* In *Mevs* v. *Conover*, which came from the Circuit Court of the United States for the Southern District of New York, and is reported at different stages below in 3 Fisher Pat. Cas., 258; 6 Fisher Pat. Cas., 508, and 11 Blatchford, 197, the opinion of this Court, not published in its official reports, but printed in the edition of the Lawyers' Co-Operative Publishing Company, (Bk. 22, p. 1068,) appears of record to have been delivered on March 12, 1877, by Mr. Justice Strong, as follows:

"The only errors assigned in this case are to the confirmation of the master's report, and they relate to the ascertainment of the profits which the defendant had made by his unauthorized use of the plaintiff's invention. That the machine employed by the defendant in splitting wood was an infringement of the plaintiff's patent is established by the decree which sent the case to the master, and no complaint is made of that; but it is contended the master erred in reporting 'there was saved to the defendant seventy-five cents per cord in the wood split by him and made into bundles.'

"In the ascertainment of profits made by an infringer of a patented invention the rule is a plain one. The profits are not all he made in the business in which he used the invention; but they are the worth of the advantage he obtained by such use, or, in other words, they are the fruits of that advantage. (*Mowry* v. *Whitney*, 14 Wall., 651.) We are not convinced that the rule declared in that case was not followed in this. The patented invention infringed by the defendant was a new and improved machine for splitting kindling-wood, and a distinguishing feature of it, perhaps the principal feature, was a device for the automatic feeding of the wood to the reciprocating splitting knives or cutters by a movable platform or apron carried forward by an endless chain. That device the defendant used, though it is said he used it in another machine, known as Green's. The evidence is full and uncontradicted that an advantage is gained in splitting kindling-wood by a machine with that device of at least seventy-five cents a cord over splitting it by hand or without that device. It was in harmony with this evidence the master reported and the court decreed. It is urged, however, that the Green machine, in which the defendant used the plaintiff's invention, was old and defective, and that no profits were actually received from such an use. But if such be the fact, if the defendant was a loser by splitting wood with the Green machine, his loss was less to the extent of seventy-five cents on each cord split than it would have been had he not used the patented invention. Such a result was equivalent to an equal gain, and it was rightly estimated as a part of the profits for which the infringer was responsible. These observations are sufficient for the present case. We notice, however, a suggestion made on behalf of the appellant, that since the decree in the circuit court the patentee has surrendered the patent upon which the decree was founded and obtained a reissue. This does not appear in the record, and if it did it would be immaterial. We have held that the surrender of a patent extinguishes it, and that after its surrender pending suits founded upon it fall with its extinguishment. The patent must remain unsurrendered, not only when a suit upon it is commenced, but at the time of trial and judgment. But a surrender after final judgment or decree can have no effect upon a right passed previously into judgment. After that there is nothing open for litigation. The right of the patentee then rests on his judgment or decree and not on his patent. The suggestion, therefore, cannot avail the appellant, and the decree of the circuit court must be affirmed.

"Decree affirmed."

means then open to the public and adequate to enable him to obtain an equally beneficial result. If there was no such advantage in his use of the plaintiff's invention, there can be no decree for profits, and the plaintiff's only remedy is by an action at law for damages; but if the defendant gained an advantage by using the plaintiff's invention, that advantage is the measure of the profits to be accounted for, even if from other causes the business in which that invention was employed by the defendant did not result in profits. If, for example, the unauthorized use by the defendant of a patented process produced a definite saving in the cost of manufacture, he must account to the patentee for the amount so saved. This application or corollary of the general rule is as well established as the rule itself. For instance, in the case of the Cawood patent for an improvement in a machine for repairing the crushed and exfoliated ends of railroad-iron, Mr. Justice Strong, in delivering judgment, said:

It has been argued that it would have been better for these defendants if, instead of repairing the crushed and exfoliated ends of the rails, they had cut off the ends and relaid the sound parts, or caused the rails to be rerolled. Experience, it is said, has proved that repairing worn-out ends of rails is not true economy, and hence it is inferred that the defendants have derived no profits from the use of the plaintiff's invention. This argument is plausible; but it is unsound. Assuming that experience has demonstrated what is claimed, the defendants undertook to repair their injured rails. They had the choice of repairing them on the common anvil or on the complainant's machine. By selecting the latter they saved a large part of what they must have expended in the use of the former. To that extent they had a positive advantage, growing out of their invasion of the complainant's patent. If their general business was unprofitable, it was the less so in consequence of their use of the plaintiff's property. They gained, therefore, to the extent that they saved themselves from loss. In settling an account between a patentee and an infringer of the patent the question is, not what profits the latter has made in his business or from his manner of conducting it, but what advantage has he derived from his use of the patented invention. (94 U. S. 710.)

In *Mevs* v. *Conover*, where the patent was for an improved machine for splitting kindling-wood, the same justice, delivering the opinion of the court, said:

It is urged, however, that the Green machine, in which the defendant used the plaintiff's invention, was old and defective, and that no profits were actually received from such an use. But if such be the fact, if the defendant was a loser by splitting wood with the Green machine, his loss was less to the extent of seventy-five cents on each cord split than it would have been had he not used the patented invention. Such a result was equivalent to an equal gain, and it was rightly estimated as a part of the profits for which the infringer was responsible. (11 O. G., 1112; ante, 5, note.)

In *Elizabeth* v. *Pavement Co.* Mr. Justice Bradley stated, as a general proposition that would hardly admit of dispute—

It is also clear that a patentee is entitled to recover the profits that have been actually realized from the use of his invention, although, from other causes, the general business of the defendant, in which the invention is employed, may not have resulted in profits—as where it is shown that the use of his invention produced a definite saving in the process of a manufacture. (97 U. S., 128, 139.)

In *Root* v. *Railway Co.* that statement was repeated, (105 U. S., 202, 208,) and in *Thomson* v. *Wooster*, (114 U. S., 104,) in which the patent was for an improved folding-guide for sewing-machines, Mr. Justice Bradley said:

It might have been a better financial operation to have bought of others or employed others to make the folded strips which they required, just as in the case of the Cawood patent the railroad company would have done better not to have mended the ends of their battered rails, but to have had them cut off; but as they chose to perform the operation they became responsible to the patentee for the advantage derived from using his machine. (114 U. S., 118.)

The general rule has been sometimes said to be based upon the theory that the infringer is converted into a trustee for the owner of the patent as regards the profits made by the use of his invention. But, as has been recently declared by this Court, upon an elaborate review of the cases in this country and in England, it is more strictly accurate to say that a court of equity which has acquired, upon some equitable ground, jurisdiction of a suit for the infringement of a patent will not send the plaintiff to a court of law to recover damages, but will itself administer full relief by awarding, as an equivalent or a substitute for legal damages, a compensation computed and measured by the same rule that courts of equity apply to the case of a trustee who has wrongfully used the trust property for his own advantage. (*Root* v. *Railway Co.*, 105 U. S., 189, 214, 215.)

The rule in equity of requiring an infringer to account for the gains and profits which he has made from the use of a patented invention, instead of limiting the recovery to the amount of royalties paid to the patentee by third persons, has been constantly upheld under the provision of the patent act of 1870, embodied in the Revised Statutes, which, beside re-enacting the grant of general equity jurisdiction in patent cases, further enacts that—

upon a decree being rendered in any such case for an infringement the complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby, and the court shall assess the same or cause the same to be assessed under its direction, and the court shall have the same powers to increase the same in its discretion that are given by this act to increase the damages found by verdicts in actions upon the case—

and thus expressly affirms the defendant's liability to account for profits, as well as authorizes the court sitting in equity to award and to treble any damages that the plaintiff has sustained in excess of the defendant's profits. (Act of July 8, 1870, c. 230, sec. 55, 16 Stat., 206; Rev. Stat., sec. 4921; *Birdsall* v. *Coolidge*, 93 U. S., 64, 69; *Marsh* v. *Seymour*, 97 U. S., 348; *Root* v. *Railway Co.*, above cited; *Manufacturing Co.* v. *Cowing*, 105 U. S., 253; *Garretson* v. *Clark*, 111 U. S., 120; *Black* v. *Thorne*, 111 U. S., 122; *Birdsell* v. *Shaliol*, 112 U. S., 485, 488; *Thomson* v. *Wooster*, 114 U. S., 104.)

It was argued for the defendants that the limited construction given to Tilghman's patent by the decision of this Court in *Mitchell* v. *Tilghman* (19 Wall., 287) became a restriction upon the scope of the patent, and so remained until revoked, and therefore that the defendants in this suit should not be held liable for infringement for the time between the date of that decision and the expiration of the patent—that is to say, for the last ten months and six days of the period of more than four years and eight months during which the infringement lasted. But the injustice done to a patentee by an erroneous decision in a suit against one infringer will not justify a repetition of the injustice in another suit against distinct infringers in no way connected with the first one. The decision against Tilghman in his suit against Mitchell was binding as between those parties only, and, having been directly overruled by this court on full consideration in 102 U. S., 707, when the present case was first brought before it, affords no ground for not holding these defendants to account to Tilghman for all the profits, gains, and savings which they have made from the use of his invention during the whole period of their infringement.

We are then brought to a consideration of the ex-

ceptions taken to the master's report in matters of fact affecting the accuracy of his conclusions in respect to the amount of those profits, gains, and savings. In dealing with these exceptions the conclusions of the master, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor, and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part. (*Medsker* v. *Bonebrake*, 108 U. S., 66: *Donnell* v. *Columbian Ins. Co.*, 2 Sumner, 366, 371; *Mason* v. *Crosby*, 3 Woodb. & Min,, 258, 269; *Paddock* v. *Commercial Ins. Co.*, 104 Mass., 521, 531; *Richards* v. *Todd*, 127 Mass., 167, 172.)

The master, as already stated, reports the amount of chemicals that the defendants have saved by using the plaintiff's invention as $9,868.33 in lime and $173,863.13 in sulphuric acid. If each of these two items is correct, he has made a mistake of $1,000 against the plaintiff in adding them together. But the plaintiff contends that a comparison of the report with the evidence shows that the actual saving in either item was greater.

The facts upon which the master bases his estimates of the savings in chemicals are stated in his report as follows:

After stating that at the time of the infringement by the defendants of the plaintiff's patent "the lime-saponification process was more advantageous than any other then in public use," he says:

By that process the neutral fat was converted into lime soap by boiling it in open tubs with lime. The water was then run off containing the glycerine, and the lime soap was treated with sulphuric acid, which combined with the lime, forming sulphate of lime, and released the fatty acids. Theoretically, 9⅓ pounds of lime and double that quantity of sulphuric acid for each hundred pounds of fat treated were sufficient to effect these results; but in practical operation manufacturers used from 12 to 14 pounds of lime per hundred, and from 2 to 3 pounds of acid for each pound of lime to insure perfect decomposition.

The respondents during the period of infringement treated the fat with water in closed digesters, adding one per cent. of lime and heating with steam at a pressure of 225 pounds for about nine and a half hours. Then they precipitated the lime by using 3 pounds of sulphuric acid for each pound of lime. As compared with the average amount of each employed in the old process, they saved 12 pounds of lime and 29⅝ pounds of sulphuric acid for each hundred pounds of fat treated.

Their books show that they thus treated 23,322,777 pounds of fat during the period in question, saving 2,798,733 pounds of lime and 6,880,219 pounds of sulphuric acid upon the basis above mentioned. The testimony shows the average cost of lime to have been $.353 per hundred pounds, and the average cost of the acid $2.537 per hundred.

It appears by the testimony of the defendants themselves that when they manufactured by the old process they used fourteen pounds of lime to each hundred pounds of fat treated, and three pounds of sulphuric acid to each pound of lime. It is contended by the plaintiff that that process, as used by the defendants, should be the standard of comparison in this suit, and that, according to the preponderance of evidence, the amount of lime, at least, so used by them was a necessity in that process. But the plaintiff has the burden of proving the amount of profits that the defendants have made by the use of his invention. (*Blake* v. *Robertson*, 94 U. S., 728; *Elizabeth* v. *Pavement Co.*, 97 U. S., 126, 139; *Dobson* v. *Hartford Carpet Co.*, 114 U. S., 439, 444, 445.) And the question to be determined is, as stated by Mr. Justice Strong in delivering judgment in *Mowry* v. *Whitney*—

What advantage did the defendant derive from using the complainant's invention over what he had in using other processes then open to the public and adequate to enable him to obtain an equally beneficial result. (14 Wall., 620, 651.)

In determining that question the expense of using the new process is doubtless to be ascertained by the manner in which the defendants have in fact conducted their business, and not by the manner in which they might have conducted it; but as to the comparative expense of the old process, the cost at which they used that process, if they did once use it, although strong evidence against them, because they may be presumed to have used it as economically as they could, is not conclusive evidence that the old process could not have been used at a less cost. To hold otherwise would be to hold infringers of a patent for a new process, who had ever used the old process, to a different measure of accounting from those who had never used the old process at all. In the former opinion the Court assumed, as the result of the evidence, that the saponifying process required twelve or fourteen per cent. of lime. (102 U. S., 731.) There being evidence that such was the amount of lime used by some manufacturers under the old process, as well as that the average use of sulphuric acid under that process was two and a half pounds to each pound of lime, we cannot say that the conclusion of the master ought to be set aside or modified as to either of these items.

The master finds that no material economy in operation has been secured by the change of process, and the testimony introduced by the plaintiff is not clear and decisive enough to overthrow his conclusion in this respect.

That part of the master's report which relates to the amount saved in glycerine water is as follows:

It appears from the evidence that the average density of glycerine water obtained in the old lime-saponification process was only 3½° Baumé, while that obtained from the digesters was from 3° to 3¼°. It also appears that the concentration of the latter to 15° cost $1.55 per barrel at the respondents' factory.

Assuming the cost of concentration to be in like proportion for each degree, it is claimed that concentration from 3½° to 3¼° would cost nearly $.94 per barrel, and the cost of such concentration is an item of gain and saving realized by the respondents by reason of the greater density of the glycerine water obtained from the digesters, for which they should be charged in this accounting. But there is no testimony establishing that the cost of concentration is in proportion to its degree, nor is it reasonable to assume such to be the fact. Indeed, it is apparent that the cost of concentrating a single degree would be much greater in proportion than a more extensive operation, while an additional degree of concentration in an extensive operation would affect the cost but little.

It appears in evidence that glycerine water was sold in the market at so much per barrel for each degree of density, and that the respondents sold it at the market price as it came from the digesters. It, however, required considerable concentration to prepare it for use, and they boiled it down to 15° for the purchasers, charging the cost thereof to them. Provided, as they were, with facilities for such work, the aditional cost of concentration from a still lower degree could not be great. The only witness whose testimony is directly in point says it would not be material. Besides, if paid by the purchaser, it would not affect the profits of the respondents.

But the evidence does show a larger yield of glycerine by the new process. While the old lime-saponification process was in use glycerine had no market value. Consequently no effort was made to secure it, and there is no direct testimony as to the best result that could be secured by careful treatment: but the testimony shows that the average density of the glycerine which ran to waste was 3½°, and that it was about equal in volume to the fat.

It is claimed that the same volume of glycerine water was drawn from the digesters, while its density was much greater; but the master finds from the evidence that the respondents used two charges of water, each half the bulk of the fat, the first charge drawn from the digesters being the glycerine water sold by them. There was consequently double the volume of glycerine water in the former process, which accounts in part for difference in density; but the comparison still shows considerable loss due to various causes, which is further increased by the additional concentration required, the average result of tests made in various degrees of concentration indicating that it requires about four and four-fifths barrels of 3½° to make one of 3°.

The accompanying table B shows the quantity and value of glycerine water obtained by the respondents from the digesters, and also the number of barrels concentrated to 3° that could be obtained from the fat treated by lime saponification, and the value thereof at market prices, the difference being the amount gained by reason of the greater yield of glycerine from the digesters—viz., $61,701.77.

As, according to the master's report and the whole evidence, the glycerine obtained by either process must, in order to be sold, be concentrated to 15°, and it is not shown how much, if anything, more it would cost to concentrate from 3° to 15° than from 3½° to 15°, and the purchaser in either case pays the cost of concentration to 15°, the plaintiff fails to show that anything should have been allowed for the cost of concentration. But the finding of the master, that in the new process "the respondents used two charges of water, each half the bulk of the fat, the first charge drawn from the digesters being the glycerine water sold by them," and "there was consequently double the volume of glycerine water in the former process," as well as the corresponding statement in his Table B, that the amount of glycerine water obtained by the new process was 65,312 barrels, while the amount that would have been obtained under the old process would have been 130,624 (misprinted in the record 134,634) barrels, is quite inconsistent with the sworn answer to the bill and with the testimony of the defendants.

The answer states that in the tank were placed fat and water in equal quantities, and that during the operation the first charge of water was drawn off and a second charge of water introduced.

The defendant James N. Gamble testified that the barrels of glycerine obtained under the new process were forty-gallon barrels, containing, as he estimated, 330 pounds, and to the question—

Can you state what amount of water was used in each charge in the process as carried on from 1870 to 1875?

answered—

I cannot state positively from recollection of what was absolutely used. My recollection was, however, that it was in each charge about fifty per cent. of the fat, and this recollection is confirmed by the amount of glycerine water obtained.

The amount of glycerine water obtained, as stated by the master from the defendants' books, was 65,312 barrels, which, at 330 pounds each, is 21,552,960 pounds. This is not half, but 92.4 per cent. of 23,322,777, the number of pounds of fat treated by the defendants, as ascertained by the master from their books, and perhaps a somewhat, but not much, less proportion in bulk.

As to the old process, the defendant, William A. Proctor, who was a member of the firm while they were using it, testified as follows:

64. Q. The saponifying-tubs were large enough to contain about double the quantity of fat you put in them, I understand?—A. They were.

65. Q. About how much water was put into these tubs along with the fat?—A. A little less than the volume of the fat, so that the vats were almost full. It was calculated that the condensed steam would supply water enough to keep them full.

66. Q. When the cooking of the mass in the saponifying-tubs was completed, the tubs were about full of lime, soap, and water, I understand?—A. They were not full, there being space enough to allow for the boiling of the water without excessive flashing out. That was all. The water in the vat when the operation was through was about equal to the bulk of the fat that had been put in.

Upon this testimony, as the whole of the glycerine could hardly have been separated from the mass of lime soap by merely drawing off, it may safely be concluded that the amount of glycerine-water obtained under the old process, which the witness speaks of as "about equal to the bulk of the fat that had been put in," was not more than 90 per cent. of the fat treated, and that there was no substantial difference in this particular between the results of the two processes. It is therefore clear that the old process would produce only one-half the amount of glycerine reported by the master and stated in Table B, and that the sum of $61,701.77, at which the master has arrived by deducting from $103,143.06, the value of 65,312 barrels of glycerine water obtained under the new process, $41,441.26, the value of 130,624 barrels, as obtainable under the old process, must be increased by adding half of the amount deducted, or $30,720.63.

The findings of the master, upon which he bases his conclusion of the amount of loss of fatty acids in using the plaintiff's invention as compared with the old process, are shown by the following extracts from his report:

It does not appear that saponification by water alone in such digesters [as the defendants used] had been regularly employed by any one; but the testimony shows that [those who tried to do so under licenses from the plaintiff] all became satisfied that a satisfactory result could not be secured by that process alone, and found it necessary to employ some additional agency to secure complete saponification at safe pressures within reasonable time.

During the period of this accounting the respondents used one per cent. of lime and a second charge of water, completing the process in about nine and a half hours at a pressure of about 225 pounds. With these two modifications, both of which are shown by the evidence to be efficient, a good quality of fatty acids was obtained, though not fully equal to that obtained by lime saponification.

The fatty-acid product obtained by the respondents, operating in their digesters for nine and a half hours at an average pressure of two hundred and twenty-five pounds, by the action of water alone, was inferior in value to the product of lime saponification.

The experiments made pending the hearing before the master at two hundred and twenty-five pounds pressure, without lime or change of water, yielded products containing an average of 92.5 per cent. of fatty acids.

As compared with the result of lime saponification, the experiments at 225 pounds pressure show a loss of 6 pounds of free fatty acids for each hundred pounds of fat treated, and an admixture of undecomposed fat seriously affecting the value of the product. The fatty acids were worth at least 9 cents per pound, making the direct loss of fatty acids not less than 54 cents upon each hundred pounds of fat treated.

There is no testimony from which the master can determine to what extent the value of fatty acids actually obtained was affected by the admixture of undecomposed fat, and no allowance has been made therefor.

During the period of infringement the respondents treated 23,322,777 pounds of fat in their digesters with one per cent. of lime. The evidence shows that 11⅛ pounds of lime completely saponify 100 pounds of fat in close digesters under pressure—

and—

in the process employed by the respondents 2,088,084 pounds of the fat treated by them were converted into lime soap by the action of lime, and 21,234,753 pounds were converted into a fatty-acid mixture, containing 92.5 per cent. of free fatty acids, by the action of water, the further decomposition of such mixture being effected by modifications of the complainant's process.

Upon comparing the master's report with the evidence we are unable to accept his conclusion upon this part of the case.

Much of the testimony on which he chiefly relies was in the record upon which the case had been previously heard before this Court, having been introduced to support the objection that the particular apparatus described in the plaintiff's patent for carrying the process into effect could not be operated to produce any useful result, of which the Court then said:

We have examined the evidence on this point and are satisfied that it shows the objection to be unfounded. (102 U. S., 730.)

Under these circumstances the master appears to us to have given too much weight to this, as contrasted with the other testimony in the original record, although it is quite true, as argued by the defendants, that the question of the practical economy of the patented process, as compared either with older processes or with the subsequent modifications used by the defendants, is distinct from the questions of utility and infringement heretofore determined.

The testimony of experts since taken and the tables of experiments made by them pending the hearing before the master are quite unsatisfactory, for rea-

sons fully set forth in the brief for the plaintiff, which it would take too much space to recapitulate.

Apart from these considerations, and even assuming that the master is right in reporting that the modifications of using one per cent. of lime and two charges of water, made by the defendants in the plaintiff's process, are shown to have been efficient, and that the defendants in accounting with the plaintiff for the profits made by them from the use of his invention are entitled to be allowed for the effect of such modifications, the evidence wholly fails to support the master's conclusion, that in the use of the plaintiff's process, without addition of lime or change of water, as compared with the lime-saponification process, there is a loss of six pounds of free fatty acids for each hundred pounds of fat treated, or to show that there has been any loss of free fatty acids which affects the value of the product.

The master's conclusion is based upon the finding that the product of the patented process without modification contains only ninety-two and one-half per cent. of free fatty acids, and upon the hypothesis that the product of the old process contained ninety-eight and one-half per cent. But there is no proof whatever that there was any such difference in the result of the two processes, or that the product of the old process contained ninety-eight and one-half per cent of fatty acid. No chemical analysis of the product of the old process appears to have been made. The defendants' own experts testify that the highest possible amount of fat acid in pure tallow is only ninety-five and a fraction per cent; and two of the defendants, as well as Ropes, one of the witnesses on whom the master relies, and Verdin, a partner of Mitchell, testify that in using the old process the whole average product was ninety-five per cent. of the amount of fat treated.

The testimony of one of the defendants, James Gamble, who had been forty years in the business, and was examined as a witness in their behalf, clearly exhibits his general impression as a practical manufacturer, not only that the product of the old process was not more than ninety-five per cent. of fatty acid, but also that there was no comparative loss of fatty acid by Tilghman's process. On cross-examination he testified as follows:

14. Q. Was there more or less fatty acid obtained by the old process used by you prior to 1856 than by the process used by you since 1870?—A. I think there would be no difference if the fatty acid from the tank in the new process is well settled; but it won't settle as well as in the old. In actual practice there is more weight in the product of the new process, as it contains more sediment, than from the old; but I think the amount of fatty acids in each is the same.

Upon the direct examination being resumed, he further testified:

16. Q. Do you know how many pounds of fatty acids were practically produced from 100 pounds of fat treated by the old saponification process used by you prior to 1856?—A. We always made a calculation of 95 pounds; but I cannot say more than that.

17. Q. Do you know how many pounds of fatty acids were practically produced from 100 pounds of fat treated by the process used by you from 1870 to 1875?—A. We calculated the same.

18. Q. Was this calculation or estimate founded upon any tests made by your firm or under their direction?—A. No, sir; I do not think a test practicable. It is no more than guess-work.

19. Q. So far as you have any actual knowledge there may have been a difference in the weight of fatty acids produced from 100 pounds of fat treated by the old saponification process and the process as used by you from 1870 to 1875, may there not?—A. I think when we have examined and find the lime all clear of the acids the product in each case must be the same, except as to the sediment remaining in the tank-stock.

The great preponderance of the evidence is to the effect that the product of the plaintiff's process, using water alone and all at one time, would contain as much as ninety-five per cent. of free fatty acids. Even the defendants' principal expert, in an experiment testified to by him and stated in his table, obtained that proportion by the use of equal quantities of water and of fat, without lime or change of water, under a treatment for nine hours at 225 pounds of pressure. Moreover, the real question is not of the exact quantity of fatty acid, as proved by chemical tests, contained in the two products, but whether the one is as good as the other for use in the manufacture of candles. The defendants' testimony shows that manufacturers always test the fitness of the product for that use by pressure with the thumb, and never by chemical analysis; and upon all the evidence there can be no doubt that a difference between ninety-five and ninety-two and one-half per cent. in the proportion of fatty acids does not affect the commercial or practical value of the product. From these considerations it follows that nothing is to be deducted for a loss in fatty acids, and that to the amount of $182,731.46 saved in chemicals, and $61,701.77 gained in glycerine water, as reported by the master, there is to be added $1,000 for his mistake in adding up the items of chemicals, and $20,720.63 for his error in computing the amount of glycerine water, making a total amount of $266,153.86. This result is arrived at by taking the amount of savings in chemicals, as found by the master, which the defendants produced no evidence to control, and which is less than such savings if computed by the standard of their own use under the two processes; then adding the amount gained in glycerine water, as appearing by the facts stated in the master's report or testified to by the defendants themselves, correcting only a clear error in the master's computation, and rejecting the deduction made by the master on account of a supposed loss of fatty acids in using the plaintiff's invention as compared with the old process, because the evidence returned with the master's report is quite inconsistent with the theory that there was any loss in this respect.

The only exception of any importance not disposed of or rendered immaterial by what has been already said is the exception of the plaintiff to the refusal of the master to allow interest on profits before the date of his report.

If the question thus presented were a new one, it would require grave consideration; but by a uniform current of decisions of this Court, beginning thirty years ago, the profits allowed in equity for the injury that a patentee has sustained by the infringement of his patent have been considered as a measure of unliquidated damages, which, as a general rule and in the absence of special circumstances, do not bear interest until after their amount has been judicially ascertained, and the provision introduced in the patent act of 1870 regulating the subject of profits and damages made no mention of interest, and has not been understood to affect the rule as previously announced. (*Silsby* v. *Foote*, 20 How., 378, 387; *Mowry* v. *Whitney*, 14 Wall., 620, 651; *Littlefield* v. *Perry*, 21 Wall., 205, 229; act of July 8, 1870, c. 230, sec. 55, 16 Stat., 206; Rev. Stat., sec. 4921; *Parks* v. *Booth*, 102 U. S., 96, 106; *Railway Co.* v. *Root*, 105 U. S., 189, 198, 200, 204; *Illinois Central Railroad* v. *Turrell*, 110 U. S., 301, 308.) Nothing is shown to take this case out of the general rule. At the time of the infringement the fundamental questions of the validity and extent of Tilghman's patent were in earnest controversy and of uncertain issue. Interest should therefore be allowed, as in *Illinois Central Railroad* v. *Turrell*, just cited, only from the day when the master's report was submitted to the court, (which appears by the terms of his report and of the decree below to have been October 7, 1884,) upon the amount shown to be due by that report and the accompanying evidence.

Decree reversed, and case remanded to the circuit court, with directions to enter a decree for the plaintiff for the sum of $266,153.86, with interest from October 7, 1884, and costs.

The Chief Justice dissented.

Mr. Justice Matthews did not sit in this case or take any part in the decision.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 43—NO. 6. TUESDAY, MAY 8, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
Fraudulent Practices by Attorneys	635
Order No. 477	635
Models in Rejected or Abandoned Cases	635
Notice	635
Issue of May 8, 1888	635
Designs	636
Labels	636
Disclaimers	636
Trade-Marks	636
Patents Granted	637
Reissues	752
Decisions of the Commissioner—	
Wells v. Boyle	752
Decisions of the U. S. Courts—	
Weir v. Mordan et al	753
Babcock & Wilcox Company v. Pioneer Iron Works	756
Palmer v. Johnston	758

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 16, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Messrs. Horn & Son, No. 606 Eleventh street, Northwest, Washington, D. C.*, have been guilty of the practices set forth in the first paragraph of the above notice, and that *Isaac S. McGiehan, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado.*

Order No. 477.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., May 3, 1888.

The establishment of the following sub-classes in Division III is hereby directed:

Metallurgy—
- Melting-furnaces—
  - Tank-furnaces,
  - Pot-furnaces,
  - Glass-pots.
- Regenerators—
  - Discontinuous or single-surface,
  - Continuous or double-surface.
- Blast-furnaces—
  - Bells,
  - Tuyeres.
- Coating with metal—
  - Iron oxides.

BENTON J. HALL,
Commissioner.

Notice.—Models in Rejected or Abandoned Cases.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 9, 1888.

Notice is hereby given to inventors and the public that a large number of models is in the custody of this Office, which were received between the years 1870 and 1886, many of which have never become a part of the records of this Office. All such models and all models belonging to rejected or abandoned applications will be sold or otherwise disposed of under the provisions of section 485 of the Revised Statutes unless removed in sixty days from the date hereof.

Institutions of learning in good standing may, after the expiration of the time above limited, on written application, make selection before the day of public sale of models remaining unclaimed. The expense of removal or transportation of these models must be borne by the applicants or institutions of learning.

BENTON J. HALL,
Commissioner.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of May 8, 1888.

Patents	387—	No. 382,289	to No.	382,675, inclusive.
Designs	7—	No. 18,299	to No.	18,305, inclusive.
Trade-Marks	36—	No. 15,417	to No.	15,452, inclusive.
Labels	7—	No. 5,564	to No.	5,590, inclusive.
Reissue	1—	No. 10,998.		
Total issue	438			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary			Germany	4	
Barbadoes			Mexico	1	
Belgium			Netherlands		
Bermuda			Norway	1	
Brazil			Russia	1	
Canada	6		Scotland	1	
Central America	1		Sweden		
Columbia, U. S. of			Switzerland	1	
Cuba			Victoria		
Denmark			West Indies		1
Ecuador					
England	14	6	Total to citizens of foreign countries	35	6
France	3				

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	....	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	1	2	New Hampshire	5	....
California	6	1	New Jersey	27	1
Colorado	4	....	New Mexico Terri'y	....	....
Connecticut	18	4	New York	53	10
Dakota Territory	1	1	North Carolina	....	....
Delaware	....	....	Ohio	36	....
District of Columbia	7	....	Oregon	1	....
Florida	1	....	Pennsylvania	33	1
Georgia	3	....	Rhode Island	3	....
Idaho Territory	....	....	South Carolina	....	....
Illinois	38	4	Tennessee	....	1
Indiana	7	....	Texas	6	....
Iowa	4	....	Utah Territory	....	....
Kansas	3	....	Vermont	1	....
Kentucky	4	....	Virginia	3	1
Louisiana	....	1	Washington Terri'y	....	....
Maine	1	....	West Virginia	3	....
Maryland	4	2	Wisconsin	10	....
Massachusetts	44	5	Wyoming Terri'y	....	....
Michigan	15	1	U. S. Army	....	....
Minnesota	5	2	U. S. Navy	1	....
Mississippi	2	....			
Missouri	8	....	Total to citizens of the United States	361	37
Montana Territory	....	....			

DESIGNS.

18,299.—CLOCK-DIAL.—*Archibald Bannatyne*, Waterbury, Conn., assignor to *The Waterbury Clock Company*, same place. Application filed May 3, 1887. Serial No. 237,014. Term of patent 7 years.

18,300.—CHEWING-GUM.—*William D. Chase*, Hackensack, N. J. Application filed March 22, 1888. Serial No. 268,183. Term of patent 3½ years.

18,301.—ORNAMENTAL BORDER FOR GLASSWARE, &c.—*Thomas G. Hawkes*, Corning, N. Y. Application filed March 17, 1888. Serial No. 267,566. Term of patent 7 years.

18,302.—COOKING-STOVE.—*Edward J. King*, Rochester, N. Y., assignor to *The Co-Operative Foundry Company*, same place. Application filed March 29, 1888. Serial No. 268,877. Term of patent 7 years.

18,303.—EXHIBIT FOR SHOE-LACES.—*William Paton*, Johnstone, county of Renfrew, Scotland. Application filed July 13, 1887. Serial No. 244,206. Term of patent 14 years.

18,304.—COOKING-STOVE.—*John A. Price*, Scranton, Pa. Application filed March 21, 1888. Serial No. 268,015. Term of patent 14 years.

18,305.—LADY'S COSTUME.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed April 2, 1888. Serial No. 269,379. Term of patent 3½ years.

LABELS.

5,584.—Title: "ROMAN CEMENT."—*Llewelyn Crowther*, Laurel, Md. Application filed March 23, 1888.

5,585.—Title: "THE SIOUX INDIAN ANTIDOTE." (FOR A MEDICINE.)—*E. Gomer Davies*, De Smet, Dak. Ter. Application filed March 29, 1888.

5,586.—Title: "THE BOSTON FEEDER." (FOR NURSING BOTTLES.)—*Dean, Foster & Co.*, Boston, Mass. Application filed April 13, 1888.

5,587.—Title: "MRS C. DORMAN'S OINTMENT."—*Charity Dorman*, Van Ettenville, N. Y. Application filed November 28, 1887.

5,588.—Title: "THE FEATHER WEIGHT." (FOR DRESS SHIELDS.)—*Isaac B. Kleinert*, New York, N. Y. Application filed February 25, 1888. (Trade-Mark Registered.)

5,589.—Title: "KLEINERT'S CELEBRATED INDESTRUCTIBLE." (FOR DRESS SHIELDS.)—*Isaac B. Kleinert*, New York, N. Y. Application filed February 27, 1888. (Trade-Mark Registered.)

5,590.—Title: "BALTIMORE BRAND CRAB-MEAT."—*Mary V. Smith*, Baltimore, Md. Application filed April 12, 1888.

DISCLAIMER.

202,429.—*Henry W. Johns*, New York, N. Y. IMPROVEMENT IN BOILER-COVERINGS. Patent dated August 8, 1882. Disclaimer filed May 1, 1888, by the patentee, and the assignee, *The H. W. Johns Manufacturing Company*.

Enter their disclaimer to "that part of the subject-matter of the specification and claims 1, 2, and 3 of said letters patent, which, being embraced in the general language of the following paragraph, to wit—

"'In carrying out my invention I make use of, as the insulator B, asbestus in the form of a cement.'

"Includes as within the invention the use of asbestus cement, as the insulator or cushion B, referred to in said specification and claims."

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,417.—PURGATIVE PILLS.—*Acrumen & Son*, Fordyce, Ark. Application filed March 27, 1888. Used since June 27, 1887.
"The words 'PURGATIVE PEAS.'"

15,418.—MEDICINAL OIL OR LINIMENT.—*Acrumen & Son*, Fordyce, Ark. Application filed March 27, 1888. Used since February 23, 1888.
"The word 'EUREKA.'"

15,419.—TOILET PREPARATIONS.—*Jesse Ascough*, Handsworth, near Birmingham, county of Stafford, England. Application filed February 17, 1888. Used since 1876.
"The representation of a borax crystal."

15,420.—SALT.—*John Corbett*, Stoke Prior Salt Works, near Bromsgrove, county of Worcester, and London, England. Application filed March 20, 1888. Used since August 13, 1860.
"The representation of an elephant."

15,421.—SALT.—*John Corbett*, Stoke Prior Salt Works, near Bromsgrove, county of Worcester, and London, England. Application filed March 20, 1888. Used since September 6, 1869.
"The words 'CORBETT'S WORCESTERSHIRE SALT.'"

15,422.—TABLE AND DAIRY SALT.—*Diamond Crystal Salt Company*, St. Clair, Mich. Application filed March 17, 1888. Used since November 1, 1886.
"The word 'DIAMOND.'"

15,423.—BITTERS.—*Durant & Co.*, Trinidad, British West Indies. Application filed February 24, 1888. Used since MAY, 1887.
"The autograph signature of Peter Arthur Ramsey, the representation of a packing-box, bottles resting upon the box, and the words 'RAMSEY'S TRINIDAD AROMATIC BITTERS.'"

15,424.—SHOE POLISH OR DRESSING.—*Eclipse Cement Co.*, Philadelphia, Pa. Application filed November 14, 1887. Used since September 1, 1887.
"The figure of a barrel."

15,425.—WATCHES.—*Elgin National Watch Company*, Chicago, Ill. Application filed April 2, 1888. Used since December 31, 1871.
"The words 'OLD FATHER TIME.'"

15,426.—WATCHES.—*Elgin National Watch Company*, Chicago, Ill. Application filed April 2, 1888. Used since December 31, 1871.
"The words 'FATHER TIME.'"

15,427.—WATCHES.—*Elgin National Watch Company*, Chicago, Ill. Application filed April 2, 1888. Used since December 31, 1871.
"The words 'OLD TIME.'"

15,428.—SMOKING AND CHEWING TOBACCO.—*Fishburne Bros.*, Roanoke, Va. Application filed February 29, 1888. Used since May 1, 1874.
"The words 'SMOKERS' CHOICE.'"

15,429.—SHOES FOR MEN, MISSES, LADIES, AND CHILDREN.—*C. Gotzian & Company*, St. Paul, Minn. Application filed February 28, 1888. Used since February 1, 1865.
"The representation of the face of Abraham Lincoln and the seal of Minnesota."

15,430.—LIQUID SHOE-DRESSING.—*Robert F. S. Heath*, Camden, N. J. Application filed April 2, 1888. Used since January 1, 1888.
"The words 'SOCIETY SHOE-DRESSING.'"

15,431.—METALLIC TABLE-WARE, BOTH HOLLOW AND FLAT.—*The Holmes & Edwards Silver Company*, West Stratford, Conn. Application filed March 27, 1888. Used since January 1, 1887.
"A monogram of the letters 'H' and 'E.'"

15,432.—METALLIC TABLE-WARE, BOTH HOLLOW AND FLAT.—*The Holmes & Edwards Silver Company*, West Stratford, Conn. Application filed March 27, 1888. Used since January 1, 1888.
"The representation of a Maltese cross.'"

15,433.—LIQUID MEDICINE FOR THE EAR.—*J. D. House & Co.*, New York, N. Y. Application filed March 20, 1888. Used since March 1, 1888.
"The words 'AURAL CARBOL.'"

15,434.—LINIMENT.—*Walter J. Hughes*, Minneapolis, Minn. Application filed December 21, 1887. Used since January 1, 1864.
"The words 'ANODYNE OIL' and the representation of a star and circle."

15,435.—LAUNDRY-STARCH.—*Johnson & Jefferson*, New Haven, Conn. Application filed March 9, 1888. Used since February 1, 1888.
"The word 'CHALLENGE.'"

15,436.—DRESS-SHIELDS.—*Isaac B. Kleinert*, New York, N. Y. Application filed February 25, 1888. Used since August 15, 1883.
"The words 'FEATHER WEIGHT.'"

15,437.—ALBUMEN PAPER FOR PHOTOGRAPHIC PURPOSES.—*John A. Knorr*, New York, N. Y. Application filed March 10, 1888. Used since March 7, 1888.
"The figure of a diamond inclosing the letter 'D.'"

15,438.—CERTAIN ANÆSTHETIC COMPOUND.—*Urial K. Mayo*, Boston, Mass. Application filed March 26, 1888. Used since March 8, 1888.
"The words 'BOSTON VEGETABLE VAPOR.'"

15,439.—CALIFORNIA OLIVE-OIL.—*Merriman Manufacturing Company*, Oakland, Cal. Application filed April 12, 1888. Used since February 1, 1888.
"The word 'ALPHA.'"

15,440.—SPOONS, FORKS, LADLES, &c.—*G. I. Mix & Co.*, Yalesville, Conn. Application filed November 30, 1887. Used since May 2, 1882.
"The words 'THE COLUMBIA.'"

15,441.—STEAM OR HOT-WATER RADIATORS.—*Pierce Steam Heating Co.*, Buffalo, N. Y. Application filed March 23, 1888. Used since April, 1888.
"The word 'IDEAL.'"

15,442.—LINIMENTS.—*Francis H. Read*, Smithborough, Mass. Application filed March 21, 1888. Used since March 1, 1888.
"The word 'ANCHORHOLD.'"

15,443.—PILLS.—*Scotch Oats Humane Company*, New York, N. Y. Application filed March 23, 1888. Used since November 1, 1887.
"The word 'BOSHEE.'"

15,444.—HOUSE AND CASTOR POWDERS.—*Spencer & Brown*, Greenville, Texas. Application filed February 23, 1888. Used since May 23, 1883.
"The words 'PLANTER'S "OLD TIME"' and the representation of the head and bust of a man."

15,445.—SELF-RAISING FLOUR.—*A. H. Sinkler & Co.*, New Orleans, La. Application filed March 16, 1888. Used since January 15, 1883.
"The words 'RED HOT' and the representation of a loaf of bread."

15,446.—PRESERVED CORN AND SUCCOTASH.—*Tuthill & Stoddard*, Camden, N. Y. Application filed March 16, 1888. Used since April 1, 1887.
"The words 'PURE GOLD' in connection with the representation of an ear of corn with the grain partially exposed and a bee on the wing."

15,447.—SPRINGLESS, GREATEST, AND GREATEST SPRINGLESS.—*G. P. Swinburne & Co.*, St. Andrew's Hill, London, England. Application filed March 19, 1888. Used since November 24, 1887.
"The word 'SWINBURNE.'"

15,448.—SPRINGLESS, GREATEST, AND GREATEST SPRINGLESS.—*G. P. Swinburne & Co.*, St. Andrew's Hill, London, England. Application filed March 19, 1888. Used since November 24, 1887.
"The fac-simile signature 'G. P. SWINBURNE.'"

15,449.—PREPARATION OF QUININE.—*Loretta Barton Weld*, Falmouth, Mass. Application filed March 19, 1888. Used since February, 1888.
"The word 'QUINQUINA.'"

15,450.—PREPARATION OF QUININE.—*Loretta Barton Weld*, Falmouth, Mass. Application filed March 19, 1888. Used since February, 1888.
"The word 'ALQUINIA.'"

15,451.—CORSET.—*Wadsell, Tatum & Co.*, New York, N. Y. Application filed March 24, 1888. Used since November 1, 1887.
"The word 'PRINCESS.'"

15,452.—WATCHES.—*Elgin National Watch Company*, Chicago, Ill. Application filed April 2, 1888. Used since December 31, 1871.
"The conventional representation of 'OLD TIME.'"

PATENTS

GRANTED MAY 8, 1888.

382,289. STEAM-WASHER. JORDAN W. BALLARD, Wilmington, Ohio. Filed Jan. 24, 1887. Serial No. 225,492. (No model.)



Claim.—1. In a steam-washer, the combination, with a revoluble perforated cylinder for operating the clothes by rotation and agitation, of a steam-generator having a reservoir or tank above it, a U-shaped pipe and cock in the latter communicating with both tank and generator, the latter being provided with holes coincident with lines of holes in said cylinder, and said tank having a slushing-pipe coincident with the middle line of holes, regulated by a stop-cock, and a drip-water chamber separated from said generator and having an opening under said cylinder extending from side to side of the case of said steam-washer, substantially as and for the purpose hereinbefore set forth.

2. In a steam-washer, the combination, with the case having a steam-generator, and a feed-water tank above the latter having a discharge-cock leading therefrom, of a clothes-cylinder provided with holes coincident with discharge-holes in said steam-generator and with said discharge-cock, said cylinder having the inclined or diagonal ribs diverging from the middle line of said cylinder and from the middle line of holes coincident with said discharge-cock, and said case provided with a drip-water chamber beneath said cylinder adapted to receive the waste water from the latter, and both feed-water tank and drip-water chamber being provided with outlet-pipes and stop-cocks in the same, substantially as set forth.

3. In a steam-washer, the combination, with the steam-generator provided with the discharge-holes $c' c'$, of a revoluble clothes-cylinder having holes c coincident with said discharge-holes, and diagonal ribs diverging from the middle line of the cylinder provided with holes therein for receiving and conducting the steam, and for the purpose described, substantially as hereinbefore set forth.

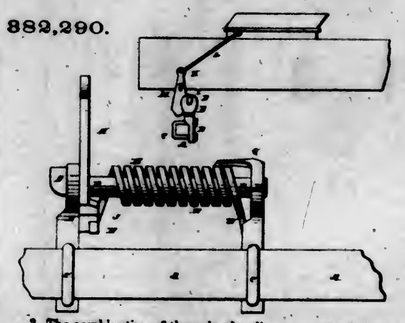
4. In a steam-washer, the combination, with the generator having steam-discharge holes, and the water-tank above said generator having a discharge-cock, of the inclosed clothes-cylinder having holes coincident with the holes in the generator and with the discharge-cock of the water-tank, tubular diagonal ribs in said cylinder, also perforated with holes, a hollow journal at one end of said cylinder for escape of excess or waste steam, and the drip-water chamber having an opening in the top, as and for the purpose hereinbefore set forth.

382,290. WAGON-SPRING. MIRIAM BALES, Pleasant Prairie, Wis. Filed July 20, 1887. Serial No. 245,080. (No model.)

Claim.—1. The combination of the wagon-axles, the springs mounted thereon, the levers connected to the springs, the wagon-body secured to the levers, the seat, and the rods L, connecting the seat with the levers, substantially as specified.

2. The combination, with the axle, of the clip-arms, the spring coiled around the said rod and having one end connected to one of the clip-arms, the lever having a notched offset, I, engaging the rod D, and having one end of the spring secured to its lower end, and the wagon-body and seat having independent connections with the lever, as set forth.

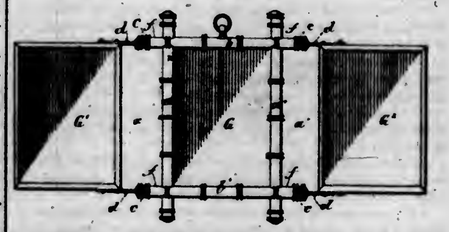
382,290.



3. The combination of the axle, the clip-arms secured thereto, one of said clip-arms being provided with the notch F, and the inwardly-projecting cap or flange G, the rod D, secured between the clip-arms, the spring coiled around the rod D, and having one end fitted in the notch F, and the lever fulcrumed on the rod D and adapted to be secured to the wagon-body and seat, and having one end of the spring secured to its lower end, substantially as set forth.

4. The combination of the axle, the clip-arms secured thereto, the rod D, secured between said clip-arms, the lever fulcrumed on said rod and provided with the lugs J at its lower end, the spring coiled around the rod D, and having one end secured to one of the clip-arms and its other end fitted between and secured to the lugs J of the lever, and the wagon-body and seat having independent connections with the lever, substantially as set forth.

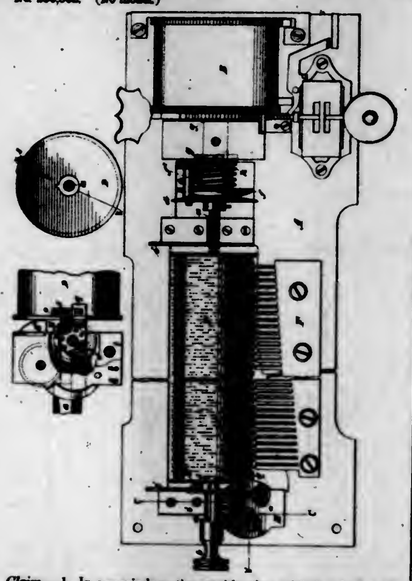
382,291. MIRROR. JACQUES BAY, Paris, France. Filed July 30, 1887. Serial No. 245,671. (No model.)



Claim.—1. In a folding mirror, the combination of the three glasses G G' G², frame $a\ a'\ b\ b'$ on glass G, the movable glasses G' G², having extending-rods $d\ d$, and the frame $a\ a'\ b\ b'$, having links $c\ c$, to which the rods $d\ d$ are attached, whereby glasses of restricted dimensions can be greatly extended from and swung in front of the center glass to permit all parts of the head to be seen, substantially as described.

2. In a folding mirror, the combination of the three glasses G G' G², frame $a\ a'\ b\ b'$ on glass G, said frame having immovable extensions, pivoted links $c\ c$, carried by said extensions, extension-rods $d\ d$, pivotally connected to the glasses G' G², the rods $d\ d$ being also attached to the links $c\ c$, whereby glasses of restricted dimensions can be greatly extended from the center glass and swung in front thereof, and whereby also one of the movable glasses may be folded over the center glass so as to serve as a single looking-glass, substantially as herein shown and described.

382,292. MUSIC-BOX. LOUIS CAMPICHE, St. Croix, Switzerland, assignor to Mermod Freres, same place. Filed Nov. 30, 1887. Serial No. 256,362. (No model.)



Claim.—1. In a music-box, the combination, with the shaft *a*, pin-barrel D, rigid thereon, and disk *d* on the shaft *a*, of the driving-shaft *g*, movable disk *f*, and spring *h*, all arranged for operation substantially as specified.

2. In a music-box, the pin-barrel D and means for driving said barrel, in combination with the cam E, for shifting the pin-barrel, and means, substantially as described, for locking and releasing said cam E as the pin-barrel rotates, as specified.

3. The combination of the pin-barrel D and means for driving it, with the barrel-shifting cam E, spring *q*, adapted to lock said cam, and prong *s* on the pin-barrel for raising the spring *q* and unlocking said cam, substantially as described.

4. In a music-box, the combination, with the cam E, for shifting a pin-barrel, of a lever or bolt, G, for locking the cam, substantially as set forth.

5. In a music-box, the combination, with the cam E, for shifting a pin-barrel, and spur-wheel *t*, driven by said cam, of a lever, G, adapted to engage the wheel *t*, to lock the cam, substantially as described.

6. The combination of the cam E, shaft *j*, wheel *t*, having recesses *u*, and lever G, having a projection, *v*, adapted to enter a recess, *u*, to lock the wheel *t*, substantially as described.

7. In a music-box, the combination, with a pin-barrel and a cam, E, for shifting same, of an index actuated by said cam, substantially as described.

8. In a music-box, the cam E, for shifting a pin-barrel, and wheel *t*, driven by said cam, combined with the index-wheel I, driven by the wheel *t*, substantially as described.

9. In a music-box, the combination of the barrel-shifting cam E, shaft *j*, spur-wheel *t*, and spur-wheel I, having an index thereon, all arranged so that as the cam E turns, the index-wheel I will also be turned to denote the tune being played, substantially as described.

10. The combination, with the pin-barrel D, having notch *e*, of the cam E, adapted to engage said notch to shift the barrel, and with the shaft *j*, secured to and extending beyond said cam and journaled in a block, *l*, whereby the cam E can be turned by hand to shift the barrel to the desired tune, substantially as described.

11. The longitudinally-adjustable pin-barrel mounted upon the shaft *a*, in combination with spring-pressure block *l*, slotted supports *i i*, and guide b^9 on one of said supports *i*, substantially as herein shown and described.

382,293. CARRIAGE-TOP SPRING. SHEPARD W. CATELY, Cortland, N. Y., assignor of one-half to Alice M. Etling, same place. Filed Jan. 23, 1888. Serial No. 261,968. (No model.)

Claim.—1. A coil-spring for the arms of carriage-seat rails, having on its inner end a hook to prevent the inner end of the coil from



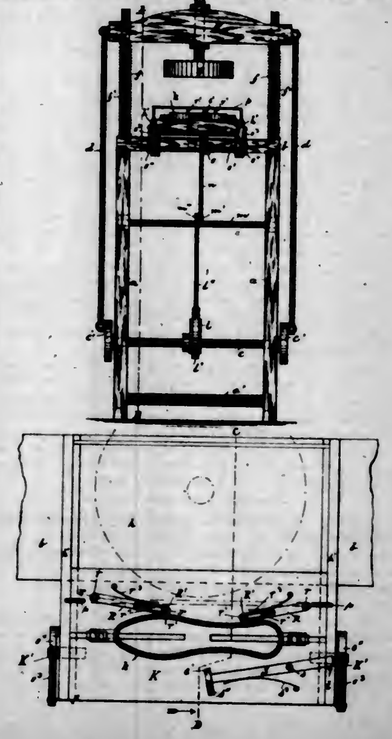
turning, and on its outer end a hook integral with the coil, adapted to fit over the vertical brace of the top, as set forth.

2. A coil-spring for the arms of carriage-seat rails, having hooks on its ends at right angles to and integral with the spring and on a line with the length of the coil, the hooks on the inner end fitting over the seat-rail and the hooks on the outer end fitting over the brace of the top, as and for the purpose set forth.

3. The combination, with a seat-rail having laterally-extending arms with top braces attached thereto, of coil-springs on said arms, having hooks on their ends integral therewith, the hooks on their inner ends adapted to fit over the seat-rail and hooks on their outer ends adapted to fit over the brace of the top, as set forth.

382,294. DRIVING-OUT MACHINE FOR BOOT OR SHOE SOLES. WILLIAM O. CRIM and GEORGE A. CLOUGH, Jr., Beverly, Mass. Filed Feb. 24, 1888. Serial No. 265,122. (No model.)

Claim.—1. In a sole-cutting machine, the vertically-reciprocating block *g* and the horizontally-movable carrier K, in combination with the connecting mechanism from the rotary shaft *c*, consisting of the eccentric *l*, the rod *l'*, having slot *P* in its upper end, the rock-lever *m'* and its pin *m''*, the link *n*, the rock-shaft *o'*, having lever *o* connected to said link *n*, and levers o^2 o^3, connected to the carrier K by means of the links o^3 o^4, substantially as and for the purpose set forth.



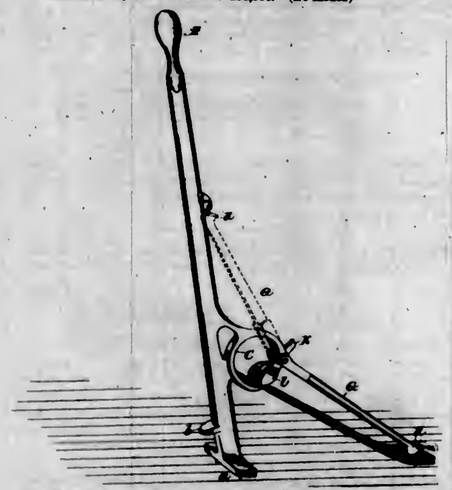
382,294.



2. In a sole-cutting machine, the movable die-carrier K and its die *k*, in combination with the sole centering and holding device, consisting of the spring-pressed pins *r' r'*, arranged on the adjustable levers R R, and the spring-pressed pin *r*, arranged on the spring-pressed lever S, substantially as and for the purpose set forth.

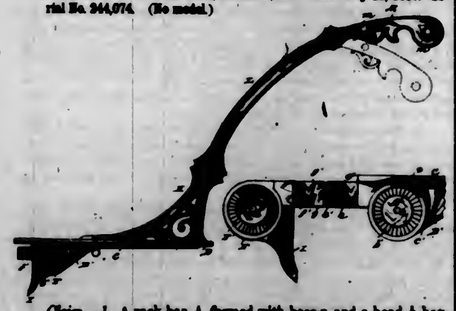
3. The reciprocating die-carrier K and its die *k*, in combination with the vertically-yielding pins *r' r'*, and the vertically-yielding pin *r*, mounted on the spring-pressed lever S, and the stationary pin or projection *t*, for automatically withdrawing the said pin *r* from the die *k* in placing or removing the sole on and from the die, as set forth.

382,295. CARPET-STRETCHER. LEWIS R. DEY, Camden, N. J. Filed Dec. 17, 1887. Serial No. 258,138. (No model.)



Claim.—In a carpet-stretcher, the combination, with the lever A, having the fastening device *f*, of the clutch C, and the brace G, hinged to the clutch and adapted to be swung up and secured by the fastening *f*, substantially as described.

382,296. BRACKET OR SUPPORT FOR SHELVES, DESKS, AND TABLES. CARLOS ROSEMEYER, St. Louis, Mo. Filed July 13, 1887. Serial No. 244,074. (No model.)



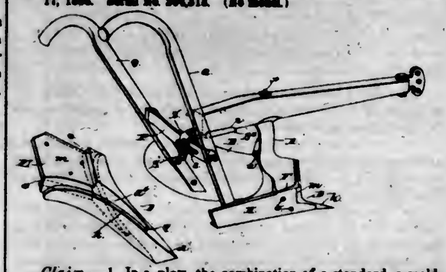
Claim.—1. A rack-bar, A, formed with bosses, and a head, *b*, having teeth A' upon its rear face to conceal the same behind the head, substantially as and for the purposes set forth.

2. The combination, with a rack-bar, A, having a base, *a*, and provided with a head, *b*, formed with teeth A' upon its rear face, of a bracket formed with rearwardly-extending lugs provided with right-angled extensions formed with teeth adapted to engage the teeth of said rack-bar, substantially as described.

3. The combination, with a rack-bar, A, having a base, *a*, and provided with a head, *b*, formed with teeth A' upon its rear face, of a bracket formed with teeth engaging the teeth of the rack-bar, and a depending arm, I, as shown, on said bracket, for the purpose of disengaging said bracket and bar, substantially as described.

4. The bracket consisting of the main piece B', formed with ratchet-disk, the disk B'', formed with toothed jaw and fitting on one side of said main piece, the disk F, formed with ratchet-face and toothed jaw and fitting against the ratchet-disk of said main piece, and means for adjustably securing said parts together, substantially as and for the purpose specified.

382,297. PLOW. JOSEPH H. FRY, Washington, D. C. Filed Feb. 17, 1888. Serial No. 264,312. (No model.)



Claim.—1. In a plow, the combination of a standard, a mold-board secured to the standard and having its lower edge cut away and provided with a recess, *b*, a point secured to the standard and recessed to receive the front edge of the mold-board and provided with the grooves d' d^3, and a wing having plane upper and lower edges, and having its ends inclined in opposite directions, and provided with tongues engaging, respectively, the recess *b* and the angle formed by the mold-board and the point, as set forth.

2. The combination, with the mold-board, of the standard having said board secured thereto, the forward edge of said standard being recessed in its lower portion to leave vertical portions of the board to project therefrom, and a reversible point provided with opposite working-faces having a common edge and furnished on opposite sides with bearing portions or grooves d' d^3, to bear against the projecting portions of the mold-board, as set forth.

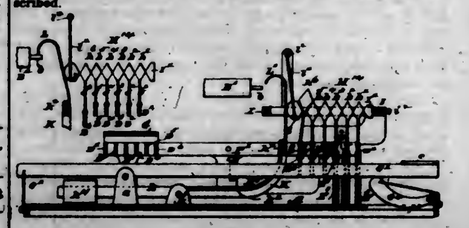
3. The combination, with the standard provided with the horizontal shoulders F F' and the mold-board secured to the standard, of the reversible point having the shoulders *e* and the recessed portions d' d^3, and the landside having its end provided with the shoulder *n* and the recess *j*, to engage the shouldered and recessed portion of the point, as set forth.

4. The combination of the beam, the handles, the brace-bar adjustably secured to the handles and having a longitudinal slot, a bracket having a horizontal portion provided with ribs *t*, fitted to the beam, and having a vertical slotted portion overlapping the brace-bar, an angle-plate bearing against the bracket, and the brace-bar and bolts securing the parts together, as set forth.

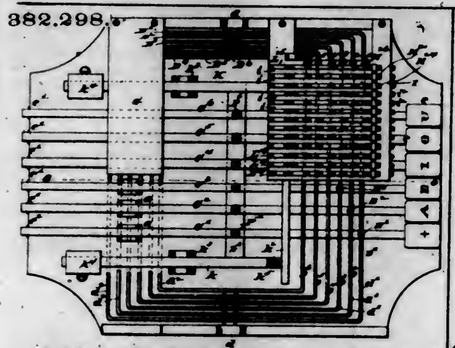
5. The combination of the handles, the brace-bar P, adjustably secured thereto and having a longitudinal slot, *s*, and flange *r*, an angle-bracket, S, having a horizontal portion, S^2, for the beam, and a vertical slotted portion, S', overlapping the brace-bar, an angle-plate, T, resting against the brace-bar and the horizontal portion S^2 of the bracket, and suitable securing-bolts, as specified.

382,298. DEVICE FOR OPERATING A SET OF LEVERS. HERVEY D. GAMBS, Chicago, Ill. Filed July 18, 1883. Renewed Apr. 20, 1887. Serial No. 236,533. (No model.)

Claim.—1. The wedges *k'* to k^5, inclusive, in combination with abutment I', block *l*, and hook L in guide-plate I, substantially as described.



382,298.



2. A file of wedges, K' to K^5, inclusive, in combination with a set of frames, D' to D^5, inclusive, jointed together, substantially as and for the purpose specified.

3. The combination of a file of wedges, K' to K^5, inclusive, an abutment for the file to press against, and a movable block to be moved by the file when the wedges move into line, substantially as described.

4. The combination of a file of wedges, K' to K^5, inclusive, an abutment for the file to press against, a movable block, substantially as described, to be moved by the file when the wedges move into line, and means, substantially as described, for moving the wedges into and out of line.

5. The combination of a file of wedges, K' to K^5, inclusive, each of which is adapted to be moved into and out of line with the other wedges of the file, and means for moving the various wedges of the file into and out of line, for the purpose described.

6. The combination of a series of files of wedges marked K' to K^5, inclusive, abutments for the various files to bear against, and a series of movable blocks, substantially as described, to be moved respectively by the files as the wedges of the respective files come into line.

7. The combination of the series of files of wedges K' to K^5, inclusive, the abutments I', the blocks l, shanks J' to J^5, inclusive, and the frames D' to D^5, inclusive, substantially as described.

8. The combination of keys C' to C^5, inclusive, frames D' to D^5, inclusive, shanks J' to J^5, inclusive, and the series of files of wedges K' to K^5, inclusive, substantially as described.

9. The combination of keys C' to C^5, inclusive, the adjustable studs E' to E^5, inclusive, and the frames D' to D^5, inclusive, substantially as described.

10. The combination, with the guide-plate I and the series of files H' to H^5, inclusive, of movable wedges, substantially as described.

11. The combination of the rocking frame K, and the hooks L' L^5, &c., to operate the levers or keys of a machine, substantially as described.

12. The combination of the keys C' to C^5, inclusive, and frame K, provided with its spring-hooks, substantially as described.

13. In combination with the series of files of wedges H' to H^5, inclusive, the adjustable abutments I' to I^5, as and for the purpose described.

14. The combination of the file of wedges K' to K^5, inclusive, the movable block l, and the hook L, to operate the levers or keys of a machine, substantially as described.

15. The combination of a file of wedges, H, composed of wedges K' to K^5, inclusive, and frames D' to D^5, inclusive, connected with the wedges by shanks of different lengths, as and for the purpose described.

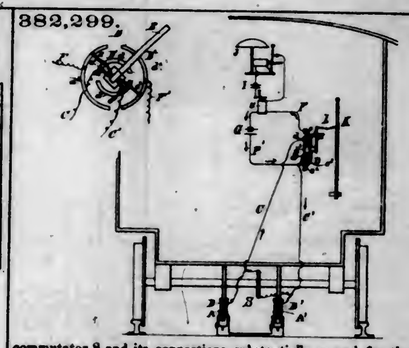
382,299. ELECTRIC RAILWAY-SIGNAL. DUNCAN H. GREEN, Covington, Ky. Filed July 25, 1887. Serial No. 245,203. (No model.)

Claim.—1. The combination of the conductors A A', brushes B B', wires C C', connecting the brushes to the two segments of the ring D', the ring D', made in two insulated sections, lever E, provided with arms e e' and e^3 e^4, wires F F', battery G, electro-magnet H, and bell J in a circuit operated by the electro-magnet H, substantially as and for the purposes specified.

2. The combination of conductors A A', brushes B B', wires C C', a reversing-switch, wires F F', battery G, electro-magnet H, and bell J and battery I in a circuit operated by the electro-magnet H, substantially as and for the purposes set forth.

3. The combination of conductors A A', brushes B B', wires C C', a reversing-switch, wires F F', battery G, electro-magnet H, and bell J and battery I in a circuit operated by the electro-magnet H, and

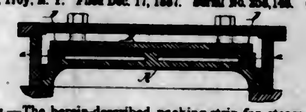
382,299.



commutator S and its connections, substantially as and for the purposes specified.

4. The combination of the rings D' D^5, each divided into two sections insulated from each other, and lever E, provided with arms e' e^3 e^4, substantially as and for the purposes specified.

382,300. PACKING FOR BALANCED VALVES. HIRAM G. HARNEY, Troy, N. Y. Filed Dec. 17, 1887. Serial No. 258,146. (No model.)



Claim.—The herein-described packing-strip for steam and other balanced slide-valves, the same consisting of a cast-metal exterior and a wrought-metal core united therewith, substantially in the manner and for the purposes set forth.

382,301. TANK-SUPPLY-REGULATING VALVE. PETER HANSEN, Chicago, Ill. Filed Oct. 26, 1887. Serial No. 253,312. (No model.)



Claim.—1. The combination, with a supply tank or reservoir and its supply-pipe having a bent end, d, and a valve-seat, d', consisting of the end of said pipe, of a float, a float valve-lever operated by said float, a valve-sleeve fitting loosely and exteriorly the bent end of said supply-pipe and projecting through a socket or opening in said lever, said valve-sleeve being provided with lugs or projections f^3, bearing against said lever, and with an internal central bridge and an elastic valve resting upon said bridge, substantially as specified.

2. The combination, with a supply-pipe having a bent end, the extremity of which constitutes the valve-seat, of a float valve-lever and a pendent valve-sleeve pivotally connected to said lever and fitting loosely and exteriorly the bent end of said pipe, and provided with an internal valve adapted to bear against said valve-seat, the pivotal connection between said pendent valve-sleeve and lever being above said valve-seat, substantially as specified.

3. The combination of supply-pipe D, having bent ends d, with valve-sleeve F surrounding the bent end of said supply-pipe, float valve-lever C, having a socket or opening, c', for the end of said valve-sleeve, bridge f, rubber valve f', pins f^3, and bearing-lugs f^3, substantially as specified.

4. The combination of supply-pipe D, having bent ends d, with valve-sleeve F, surrounding the bent end of said supply-pipe, float valve-lever C, having a socket or opening, c', for the end of said valve-sleeve, said valve-sleeve being provided with an internal bridge, f, having a pin, f^3, and rubber valve f', resting on said bridge and held in place by said pin, and said lever C having a cam or stop projection, c^4, on its end adapted to limit the movement of said lever, substantially as specified.

382,302. ALBUM-CLASP. THEODORE M. HAM, New York, N. Y. Filed Feb. 20, 1888. Serial No. 265,672. (No model.)

Claim.—1. In an album-clasp, the combination of the spring-reg-

382,302.



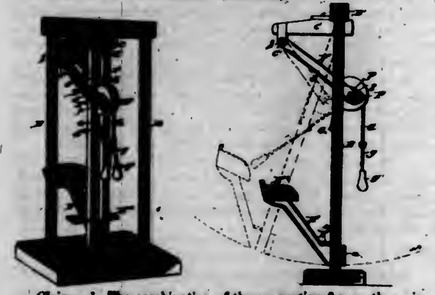
ulated extension element, and levers C and D, constructed and operating in the manner and for the purpose described.

2. In an adjustable album-clasp, the following elements in combination, an extension device and springs to actuate the same, levers C and D, engaging with said device and provided with finger-rests e, and an actuating-spring, p, for said levers, substantially as described.

3. In the herein-described adjustable album-clasp, the casing A thereof, with recesses k and k' in its sides, whereby the levers C and D may be pressed inward, as and for the purpose described.

4. In an adjustable album-clasp with recessed casing, levers C and D, combined with said recessed casing and spanning the same, whereby the outline of the casing is preserved by said levers when they are in a state of rest, as and for the purpose described.

382,303. SWING. JAMES D. HATE, MOUNT MORRIS, Ill. Filed Sept. 13, 1887. Serial No. 249,492. (No model.)



Claim.—1. The combination of the supporting-frame, the swinging frame D, hung therein and composed of parallel bars d united together, the swinging hanger F, the pulley P, carried by said hanger and having the disks p bearing on the bars d, the seat carried by the frame D, and the rope secured to said frame and passing around the pulley P, as set forth.

2. The combination of the supporting-frame, the swinging frame D, hung therein and composed of parallel bars d united together, the swinging hanger F, the pulley P, carried by said hanger and having the disks p bearing on the bars d, the seat carried by the frame D, and the rope secured to the frame D, passing around the pulley P, and provided with one or more grips, g', as set forth.

3. The combination of the supporting-frame, the open swinging frame D, having the central apertured block d^3, the hanger F, the pulley P, carried by said hanger and having the disks p, the cord G, secured to the frame D, passing over the pulley P, and having the ends g, provided with the grips g', the arm E, having the weighted extension e, the seat E', and the foot-rest E^2, substantially as described.

382,304. HARROW. EDWARD W. HENDERSON, Geneva, N. Y. Filed Sept. 7, 1887. Serial No. 249,099. (No model.)



Claim.—1. A harrow-tooth provided with one or more holes for receiving the fastening-bolt, in combination with a harrow-frame, and a fastening-bolt having an inclined head, whereby only an edge bears along the tooth at some distance from the hole, substantially as set forth.

2. In a harrow, a fastening-bolt having its head inclined so as to bear only along one edge and at some distance from the hole in which it is inserted, in combination with a curved harrow-tooth provided with a graduated series of attachment holes, substantially as described.

382,305. BELT-FASTENER. HENRY C. HESS, Williamsville, N. Y. Filed Mar. 10, 1888. Serial No. 266,992. (No model.)

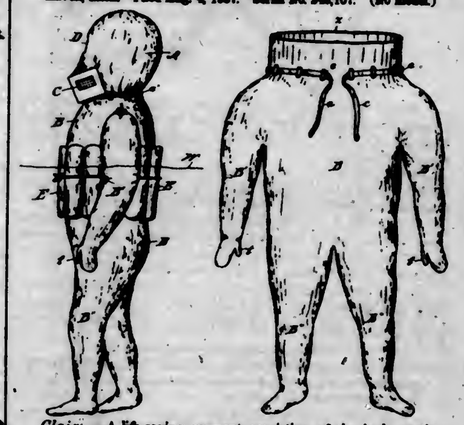
382,305.



Claim.—1. A belt for machinery having its ends united by a series of dovetail portions interlocked together and secured by a binding-piece surrounding the interlocked portions of the belt, substantially as described.

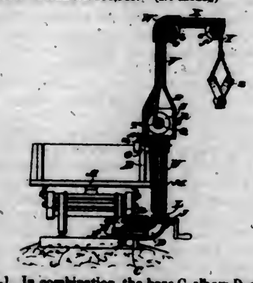
2. In a machinery belt, the combination of the portion A, having a series of dovetail portions, 3, and openings 2 with the portion B, provided with a series of corresponding dovetail portions, 7, and openings 6, the whole interlocked together and secured with a binding-wire, substantially as described.

382,306. LIFE-SAVING GARMENT. GEORGE A. HILER, Grand Haven, Mich. Filed Aug. 4, 1887. Serial No. 246,107. (No model.)



Claim.—A life-saving garment consisting of the body portion made of impervious material, and having legs, arms, and neckband formed integral therewith, and a gathering-cord for said neckband, in combination with the head part or protector having the transparent plate D, the series of perforated plates, the apron F, located back of said perforated plates, having its lower edge only attached to said protector, and the gathering-cord d', located at the lower end of said protector, whereby the lower end of the protector is bound to the upper end of the body portion, substantially as and for the purpose specified.

382,307. PORTABLE CRANE. JOHN A. HUTH, Bayard, Ohio. Filed Oct. 27, 1887. Serial No. 253,515. (No model.)



Claim.—1. In combination, the base C, elbow D, clamp G, vertical portion L, pipe M, and arms N, said base and clamp adapted to grasp the rail, and said arms the top of the car, substantially as set forth.

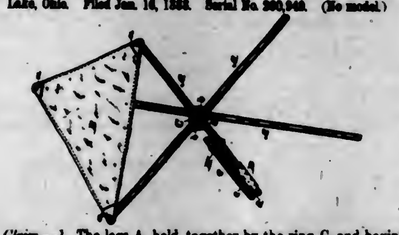
2. The herein-described support for the swinging crane, consisting, essentially, of the lower portion, D, provided with a clamp to engage the rail and with an upwardly-extending pipe-section, L, and an upper portion, M, having a free vertical movement on the lower por-

tion and provided with arms to engage the car, substantially as set forth.

3. The crane consisting, essentially, of the housing P, downwardly-projected pipe U, upwardly-projected pipe, V, elbow W, having depending lugs *d*, sheave *c*, supported in said lugs, outwardly-projected pipe-bar X, a sheave mounted thereon, a winding-shaft, Q, means for rotating the shaft, and rope Y, passed over the sheave and around the shaft, substantially as set forth.

4. In combination, the hollow crane forming a housing for the lifting-rope, a downwardly-projected pipe-section, U, and an extensible support on which the pipe-section U is mounted, the said support being provided with a clamp to engage the rail and with arms to engage the car, substantially as set forth.

382,308. COMBINED CANE AND CHAIR. JOHN H. KANEBEB, Lake, Ohio. Filed Jan. 16, 1888. Serial No. 260,949. (No model.)



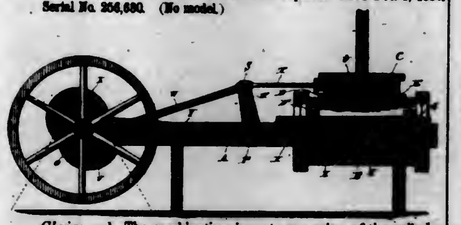
Claim.—1. The legs A, held together by the ring C, and having attached to the top or upper ends of said legs the seat B, the hinged extension leg or stick, and the ferrule D, substantially as and for the purpose set forth.

2. The legs A, held together by the ring C, and having attached to their top or upper ends the seat B, the cover E, and the detachable head or knob G, substantially as and for the purpose set forth.

3. The legs A, held together and having attached to their top or upper ends the seat B, the strengthening corners or patches *a*, sewed to said seat, the cover E, the knob G, the extension leg or stick *c*, and the ferrule D, substantially as and for the purpose specified.

4. The legs A, held together and having attached to their top or upper ends the seat B, the hinged leg or stick *c*, the ring C, the staples *b*, the ferrule D, and the pin *e*, substantially as and for the purpose set forth.

382,309. STEAM-ENGINE. WILLIAM K. KIGHT, Kossuth, Mo., assignor of one-fifth to J. A. Bohnert, same place. Filed Dec. 1, 1887. Serial No. 256,690. (No model.)



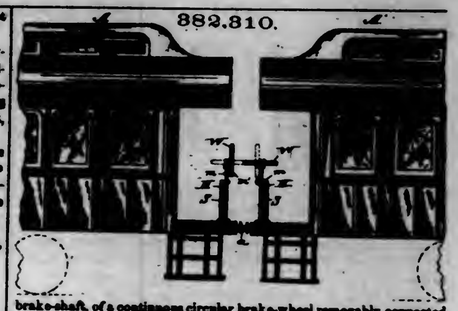
Claim.—1. The combination, in a steam-engine, of the cylinder having the steam-chest and the inlet-ports communicating with the steam-chest near the center thereof, and with the cylinder near the ends thereof, the exhaust-pipes F G projecting transversely from the ends of the cylinder, and having the exhaust-ports, the slide-valve U, arranged in the steam-chest and adapted to alternately uncover the inlet-ports, and the exhaust slide-valve I, secured to the exhaust-pipes, and having the ports K, adapted to alternately register with the exhaust-ports, substantially as described.

2. The combination, in a steam-engine, of the cylinder having the steam-chest, and the inlet-ports communicating with the steam-chest near the center thereof, and with the cylinder near the ends thereof, the exhaust-pipes F G, projecting transversely from the ends of the cylinder and having the exhaust-ports, the slide-valve U, arranged in the steam-chest and adapted to alternately uncover the inlet-ports, the exhaust slide-valve I, secured in the exhaust-pipes, and having the ports K adapted to alternately register with the exhaust-ports, the driving-shaft having the eccentrics V X, the pitman Y, connecting the latter with the valve I, the rocking arm R, connected to the valve U, and the pitman connecting said arm to the eccentric V, substantially as described.

382,310. CAR-BRAKE. ANDREW KILPATRICK, Morton, Pa. Filed Feb. 25, 1888. Serial No. 265,226. (No model.)

Claim.—1. In a railway-car brake, the combination, with the

382,310.



brake-shaft, of a continuous circular brake-wheel removably connected therewith and adapted to be turned into a vertical position thereon, with one portion of the wheel above and one portion below the point of connection with said shaft, substantially as set forth.

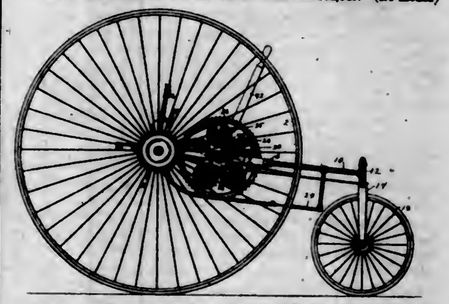
2. In a railway-car brake, the combination, with the brake-shaft, of a brake-wheel mounted and having a vertical sliding movement on said shaft, and also hinged thereon and adapted, when elevated, to be turned into a vertical position, substantially as set forth.

3. In a railway-car brake, the combination, with the brake-shaft having a recess, of a brake-wheel mounted and having a vertical sliding movement on said shaft, provided with a stop engaging said recess to limit such movement, the wheel being adapted to be turned into a vertical position, substantially as set forth.

4. In a railway-car brake, the combination, with the brake-shaft tapered at its upper end and provided with a recess, of a brake-wheel fitting said tapered end and provided with a stop engaging said recess to limit the vertical movement of the wheel, the wheel being adapted to be turned into a vertical position, substantially as set forth.

5. In a railway-car brake, the combination with the brake-shaft having the shoulder *r'*, of the wheel having a stop in line therewith, vertically movable on the shaft, adapted to be turned into vertical position, and having its center of gravity when in such position beyond its point of support.

382,311. LOCOMOTIVE-VELOCIPEDE. BRYANT W. ADEIS, Minneapolis, Minn. Filed Jan. 23, 1888. Serial No. 261,612. (No model.)



Claim.—1. In a motor of the class described, the combination, with the driving-shaft, of a revolving case or frame connected to and operating said driving-shaft, a series of springs mounted upon shafts or spindles journaled in said case, and a series of gear-wheels upon said spindles and meshing with a central and relatively-stationary gear, whereby the action of the springs will be exerted to revolve the said case or frame about its axis, substantially as described.

2. The combination, in a vehicle of the class described, with the driving-shaft and the spring-actuated frame or case connected with and revolving said driving-shaft, of the central shaft about which the said frame revolves, a lever attached to and arranged to operate said shaft, a gear also attached to said central shaft, and a series of gears located about and meshing with said central gear and secured to the spindles of the actuating-springs, whereby by operating the lever and revolving the central shaft the spindles of the springs are revolved and the springs rewound, substantially as described.

3. The combination, in a vehicle of the class described, with the driving-shaft 4, and the gear 27, secured thereto, of the gear 26, revolving about the shaft 32 and meshing with the gear 27, a gear, 40, upon the shaft 32, the gears 38, mounted upon spindles journaled in the plate or gear 26, and common to and meshing with the gear 40, the springs 34, attached to the gear 26 and to the spindles and exerting pressure to revolve said spindles, and means, as a ratchet, 46, for retaining the shaft 32 in a stationary position in order that the springs 34 may exert their power to revolve the gear 26, substantially in the manner and for the purpose described.

4. In a vehicle of the class described, the combination, with the spring-propelling device consisting of the series of springs held in a revolving case or frame, the spindles of said spring being provided with a gear meshing with a central and independent gear upon a shaft, 32, and the locking device consisting of a ratchet secured to the shaft 32, and a pawl secured to the revolving case, whereby when the said pawl engages the ratchet the shaft 32 and the gear attached thereto will be locked to and caused to revolve with the said case and the action of the springs will be suspended, substantially as described.

5. In a vehicle of the class described, the combination, with the spring-propelling device, consisting of the springs 34, the spindles 36, upon which the said springs are mounted, the gears 38, secured to said spindles, and the gear 40, secured upon the central shaft, 32, and meshing with the gears 38, of the ratchet 46, secured to the shaft 32, the pawl 60, secured to the revolving frame or case, the spring 62 for holding said pawl in suspension, and a device, as the finger 64, operated by a suitable latch, 66, to force the pawl into engagement with the ratchet, substantially as described.

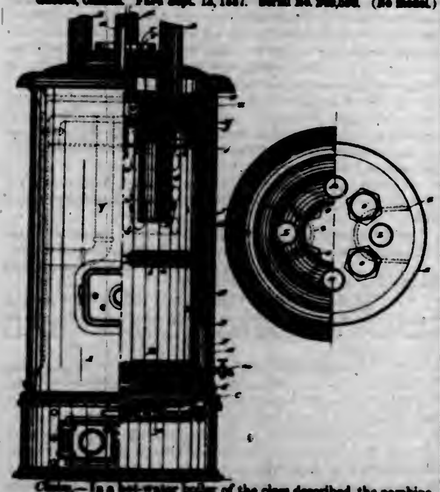
382,312. KNOCKDOWN BOX. CHARLES I. LOEWOOD, Philadelphia, Pa. Filed Mar. 3, 1888. Serial No. 265,932. (No model.)



Claim.—1. A blank for knockdown boxes, creased upon the lines *w w'* parallel to the edges, slotted from opposite sides along the lines *w'* to the lines *w* to form flaps *f*, with outwardly-projecting tongues *e d* at the end of each flap, and with slots *g h* adjacent to each slit, the slot *g* being parallel to the outer edge and the slot *h* at an angle thereto, substantially as set forth.

2. A knockdown paper box having in opposite sides slots *g* adjacent and parallel to the edge of each sides, and slots *h*, each at an angle to the adjacent slot *g*, and with terminal flaps *f* on the other sides of the box, each flap having at the outer ends two upwardly-projecting tongues, *e d*, substantially as set forth.

382,313. HOT-WATER BOILER. BOSTON S. MANBY, Montreal, Quebec, Canada. Filed Sept. 12, 1887. Serial No. 249,580. (No model.)



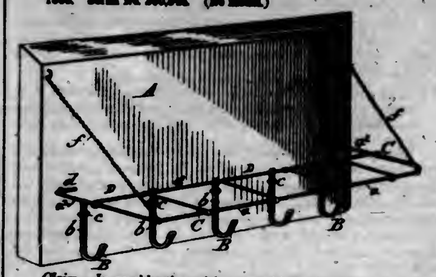
Claim.—In a hot-water boiler of the class described, the combination, with the three concentric envelopes D E G, of the top returning pipes, I, bringing the cold water along the outer envelope, D, to cool it down, casting B, pocket Z, and exit-pipes M M, as above described, and for the purposes set forth.

382,314. EVAPORATING-PAN. HIRAM MATHEWS, Wayne, and HENRY HILL, Greater Cross Roads, Ohio. Filed Dec. 3, 1887. Serial No. 256,576. (No model.)



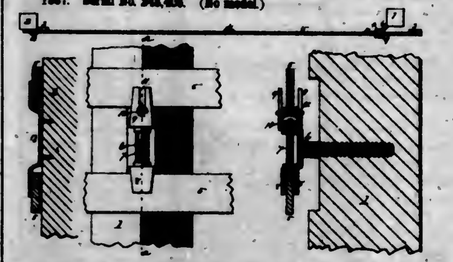
Claim.—The combination of the furnace M, constructed as herein shown and described, and the pans B, provided with central division-walls, F, and handles H, with tubes G G', connecting adjacent pans and telescoping to form conduits between the pans for the passage of the syrup, and serving as axes by means of which each pan may be tilted independently of or simultaneously with the others, said division-walls F having perforations aligning with the tubes G G', all substantially as shown and described.

382,315. COMBINED HAT AND COAT RACK. ROBERT I. MCARTHUR, Albert Lea, Minn. Filed Feb. 13, 1887. Renewed Jan. 12, 1888. Serial No. 260,544. (No model.)



Claim.—In combination with a portable back, A, having clothes-hooks and provided with the eyes or staples *d*, the hat-shelf having the ends of its supporting-arms *e* bent and inserted through the said eyes and provided with a stay rod or wire, *c'*, attached at each end to the said arms in position to allow the hat-rim space D, and the stays *f*, each of which is attached at one end to the upper portion of the supporting-back and at the other end to the forward portion of the hinged shelf, substantially as and for the purposes described.

382,316. GATE. DANIEL MCCARTY, Harlem, Ill. Filed Aug. 31, 1887. Serial No. 248,403. (No model.)



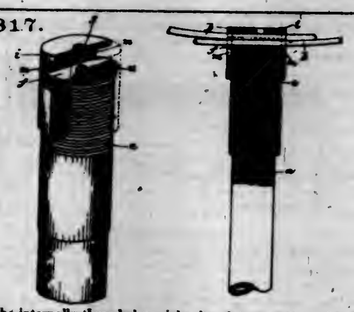
Claim.—1. The herein-described gate-hinge, consisting, essentially, of the yoke provided with its shank for securing it to a post, the pintle extending through the arms of the yoke and having a pair of jaws formed on one end to embrace the edge of a rail, a pair of jaws secured to the opposite end of the pintle, and a roller journaled between the jaws to support the gate, substantially as set forth.

2. The herein-described gate-hinge, consisting, essentially, of the yoke having a screw-threaded shank for securing it to the post, the said yoke being provided with a pair of perforated arms, the pintle extending through the arms of the yoke, the pintle having a pair of jaws at one end, and a pair of slotted jaws secured to the other end of the pintle and carrying a roller in the slots, substantially as set forth.

382,317. LANDING-NET. GEORGE W. MCCLINTOCK, Quincy, Mass. Filed Mar. 19, 1888. Serial No. 267,949. (No model.)

Claim.—1. The net-frame-holding device consisting of the ferrule *e*, externally screw-threaded, the shoe *f*, pivotally secured to the for-

382,317.



rule, and the internally-threaded cap *i*, having slots *m m* to receive the ends of the frame-strip, as set forth.

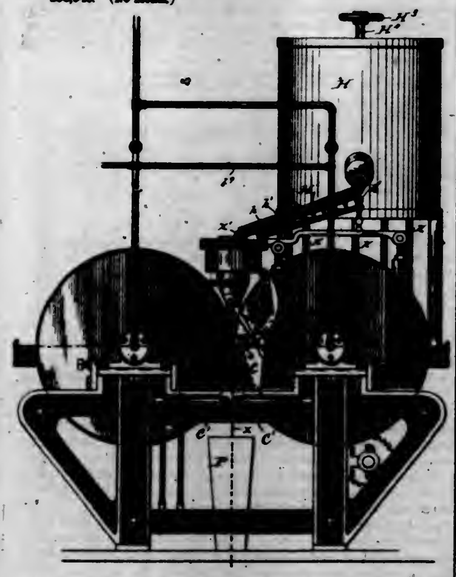
2. The combination of the externally screw-threaded ferrule, the shoe pivotally secured to the ferrule, and the cap having the strip-receiving slots *m m*, and engaged, substantially as described, with the pivoted shoe, whereby the removal of the cap from the ferrule is prevented, as set forth.

3. The combination of the externally-threaded ferrule, the internally-threaded cap having the slots *m m*, and the shoe *f*, pivotally secured to the head of the ferrule and projecting at its ends into the slots *m m*, as set forth.

382,318. ETCHING GLASS. ERNST EISENLOHR, New York, N. Y., assignor to Jesse H. Lippincott, same place, and Herman Schulze-Berge, Rochester, Pa. Filed Jan. 3, 1888. Serial No. 259,633. (No specimens.)

Claim.—The improved process of etching glass, porcelain, and similar materials hereinbefore set forth, by stamping a design upon the surface of such material with a sticky compound of rosin and fatty oil, then spreading said unstamped portion of said surface with a pulverized hydrofluorate of ammonia containing a portion of free hydrofluoric acid, and lastly subjecting the work to the action of slightly-warmed moist air, all substantially as and for the purpose set forth.

382,319. APPARATUS FOR MAKING SHEET METAL. ERWIN HORTEN and JOHN G. HOGREN, Maywood, assignors to said Erwin Horten, and Oliver W. Horton, Chicago, Ill. Filed Dec. 27, 1887. Serial No. 258,940. (No model.)



Claim.—1. The apparatus or machine for manufacturing sheet metal, consisting in a pair of smooth revolving chilling rollers or wheels with a space between their peripheries at their meeting-line equal to the thickness of the sheet metal to be produced and a pouring nozzle or vessel having a discharge opening or slot at its lower end or bottom directly above and extending parallel to said space between the peripheries of said rollers, so that the stream of molten metal issuing from said pouring nozzle or vessel may flow in a direction tangential to both said rollers, substantially as specified.

2. The combination, with two revolving chilling-rollers, of a pouring-nozzle above and between them and means for driving or revolving said rollers at a greater surface speed than the velocity of the flowing stream of molten metal, substantially as specified.

3. The combination, with a pouring nozzle or vessel having a long narrow discharge-opening, of a pair of chilling-rollers revolving with a space between them equal to the thickness of the metal sheet to be produced and at a sufficient surface speed in respect to the space between the rollers, the size of the discharge-opening, and the velocity of the flowing stream of molten metal so that the molten metal cannot collect above and between the rollers, substantially as specified.

4. The combination, with a pair of revolving rollers, of a pouring nozzle or vessel above and between them and a heater for heating said vessel, substantially as specified.

5. The combination, with a pair of revolving rollers, of a pouring nozzle or vessel above and between them, a heater for heating said vessel, and a capsible or vessel for holding molten metal, and a pipe or conductor leading therefrom to said pouring vessel or nozzle, substantially as specified.

6. The combination, with a pair of revolving rollers, of a pouring nozzle or vessel above and between them, a heater for heating said vessel, a crucible or vessel for holding molten metal, a pipe or conductor leading therefrom to said pouring vessel or nozzle, and a heater for heating said pipe or conductor, substantially as specified.

7. The combination, with a pair of revolving rollers, of a pouring nozzle or vessel above and between them and a heater for heating said vessel, said heater consisting of gas-burners, substantially as specified.

8. The combination of a pair of revolving wheels or rollers having a space between them equal to the thickness of the metal to be produced, a pouring nozzle or vessel, and a crucible connected with said pouring nozzle or vessel, substantially as specified.

9. The combination, with a pouring-nozzle having a long narrow discharge slot or opening, of a pair of hollow revolving rollers or wheels having a space between their peripheries at their meeting-line, into which the stream of molten metal issuing from said pouring-nozzle is directed, said wheels revolving at an equal or greater surface speed than the velocity of said flowing stream of molten metal, the shafts of said wheels or rollers being hollow and communicating at one end with an inlet water-pipe and at the other with an outlet water-pipe, substantially as specified.

10. The combination, with a pouring-nozzle having a long narrow discharge slot or opening, of a pair of hollow revolving rollers or wheels having a space between their peripheries at their meeting-line, into which the stream of molten metal issuing from said pouring-nozzle is directed, said wheels revolving at an equal or greater surface speed than the velocity of said flowing stream of molten metal, the shafts of said wheels or rollers being hollow and communicating at one end with an inlet water-pipe and at the other with an outlet water-pipe, the inlet water-pipe communicating with the interior of the roller near its center and the outlet near its periphery, substantially as specified.

11. The combination, with a pair of revolving chilling wheels or rollers, of a pouring nozzle or vessel above and between them, one or both of said wheels or rollers being mounted on adjustable bearings to regulate the thickness of the sheet metal produced, substantially as specified.

12. The combination, with a pair of revolving rollers, of an adjustable pouring-nozzle above and between them, substantially as specified.

13. The combination of a pair of revolving wheels or rollers, B B, pouring nozzle or vessel D, having discharge-openings *d*, and support F for said vessel mounted on one or more adjusting-screws, substantially as specified.

14. The combination, with the revolving rollers B B, of pouring-nozzle D above and between them, having discharge-opening *d* at its lower end, support F, and four adjusting-screws, *f f' f² f³*, substantially as specified.

15. The combination, with revolving rollers B B, of pouring nozzle or vessel D above and between them and made of a curved or wedging shape to permit the lower end of said nozzle to project down near the meeting-line of said revolving rollers, substantially as specified.

16. The combination, with revolving rollers B B, of pouring nozzle or vessel D, located above and between them, a gas, or other heater for projection of flame against said pouring nozzle or vessel, and a hood, as D', surrounding said vessel to confine the heat, substantially as specified.

17. The combination, with revolving rollers B B, of pouring nozzle or vessel D, having discharge slot or opening *d* at its lower end, and a valve or gate, *d'*, to regulate the discharge-orifice, and an adjusting handle or lever for said valve, substantially as specified.

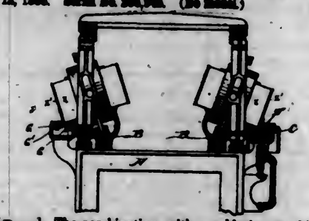
18. The combination, with revolving rollers B B, of pouring nozzle or vessel D, having discharge slot or opening *d* at its lower end, and a valve or gate, *d'*, to regulate the discharge-orifice, and an adjusting handle or lever for said valve, arc R, sliding block *e*, and adjusting-screw *e'*, substantially as specified.

19. The combination, with a pair of revolving rollers, B B, of a pouring nozzle or vessel, D, above and between the same, and a discharge-chute, N, below said rollers, substantially as specified.

20. The combination of a pair of revolving rollers having smooth unflanged peripheries, and having a space between them equal to the thickness of the sheet metal to be produced, with a pouring nozzle or vessel located above and between said rollers, whereby any inequality in the flow of the metal in respect to the velocity of the revolving wheels is compensated for by variations in the width of the strip of sheet metal produced and the sheet metal made of uniform thickness, substantially as specified.

21. The combination, with a pair of revolving wheels or rollers having smooth and unflanged peripheries, of a pouring-nozzle above and between them provided with a valve or gate for regulating the size of the issuing stream, whereby sheet-metal strips of different widths may be produced on the same machine, substantially as specified.

382,320. CAN-SOLDERING MACHINE. ERWIN HORTEN, Maywood, assignor to himself and Oliver W. Horton, Chicago, Ill. Filed Mar. 12, 1888. Serial No. 266,945. (No model.)



Claim.—1. The combination, with a soldering-machine and its can-carrier, of a flux-tank and a pair of long flux-applying brushes revolving in the flux contained in said tank and arranged parallel to the path of the can as it advances in said carrier, the revolution of the brush being transverse to the direction of movement of the can in the carrier, substantially as specified.

2. The combination, with a can-carrier, of a flux-tank and a long flux-applying brush revolving in the flux and arranged parallel to the path of the can as it advances in the carrier, the revolution of the brush being transverse to the direction of movement of the can in the carrier, substantially as specified.

3. The combination, with a can-carrier adapted to revolve the can as it advances, of a long revolving flux-applying brush parallel to the path of the revolving can as it revolves and advances in said carrier, the revolution of the brush being transverse to the direction of movement of the can in the carrier, substantially as specified.

4. The combination, with a can-carrier, of a pair of long revolving wipers parallel to the path of the can as it advances in said carrier, substantially as specified.

5. The combination, with a can-carrier, of a long revolving wiper parallel to the path of said can-carrier, substantially as specified.

6. The combination of a solder bath, a carrier device for revolving and advancing the can, and a long cylindrical revolving wiper, substantially as specified.

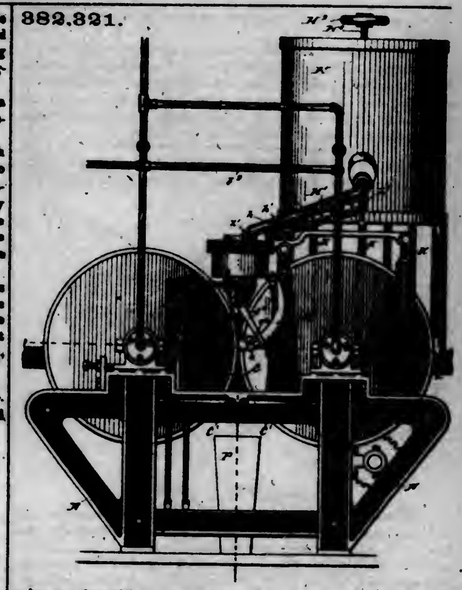
7. The combination, with a solder bath, a can-carrier adapted to advance and revolve the cans, and a pair of long revolving wipers parallel to the path of said carrier, substantially as specified.

382,321. MANUFACTURE OF SHEET METAL. ERWIN HORTEN and JOHN G. HOGREN, Maywood, assignors to said Erwin Horten, and Oliver W. Horten, Chicago, Ill. Original application filed Dec. 27, 1887, Serial No. 258,940. Divided and this application filed Mar. 12, 1888. Serial No. 266,962. (No model.)

Claim.—1. The process or improvement in the art of manufacturing sheet metal in continuous strips, consisting in pouring molten metal in a continuous unbroken stream between two rollers or wheels revolving together with a space between them equal to the thickness of the sheet metal to be produced, and at a sufficiently great surface speed to offer no obstruction to the flowing stream of molten metal, and thus pass the same between the rollers as fast as it flows and without permitting the molten metal to collect in a body above and between the rollers, substantially as specified.

2. The process or improvement in the art of manufacturing sheet metal, consisting in pouring molten metal in a thin wide flat stream between and in contact with two smooth revolving chilling-rollers, and in a direction tangential to both said rollers, and while said rollers revolve together with a space between them equal to the thickness of the sheet metal to be produced and at a surface speed equal to or exceeding the velocity of the flowing stream of molten metal, substantially as specified.

382,321.



382,322. DETERGENT. CHARLES G. PARSONS, Hempstead, N. Y., assignor to Julia M. Parsons, same place. Filed Sept. 14, 1886. Serial No. 213,582. (No specimens.)

Claim.—1. A detergent compound containing an ammoniacal salt and one or more alkaline or equivalent substances to set free the ammonia, in which compound the loss or waste of ammonia is prevented during manufacture and until use by a coating of protecting material placed between the granules or particles of the ammoniacal salt and the alkaline or other ingredients of the compound which might cause decomposition of said salt, substantially as set forth.

2. A detergent compound containing an ammoniacal salt, one or more saponaceous bodies, and sufficient additional alkaline or equivalent substance or substances to set free the ammonia, in which compound the loss or waste of ammonia is prevented during manufacture and until use by a coating of protecting material placed between the granules or particles of the ammoniacal salt and the alkaline or other ingredients of the compound which might cause decomposition of said salt, substantially as set forth.

3. A cake of ammoniacal soap containing a soap-powder, a granulated or powdered ammoniacal salt, and sufficient additional alkaline or equivalent substance or substances to set free the ammonia, and a protecting compound to prevent loss of ammonia during manufacture and until use, the whole mixed together and then formed into a cake or block, substantially as set forth.

4. A detergent compound containing a soap-powder and ammoniacal salt and sufficient additional alkaline or equivalent substance or substances to set free the ammonia, in which compound the loss of ammonia is prevented during manufacture and until use by a coating of protecting material placed between the granules or particles of the ammoniacal salt and the alkaline or other ingredient of the compound which might cause decomposition of said salt, substantially as set forth.

382,323. DETERGENT. CHARLES G. PARSONS, Hempstead, N. Y., assignor to Julia M. Parsons, same place. Filed Sept. 20, 1887. Serial No. 250,163. (No specimens.)

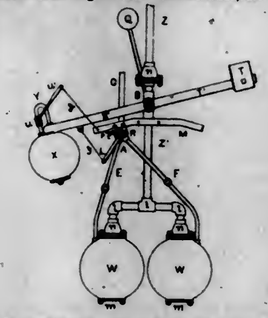
Claim.—1. A detergent compound containing an ammoniacal salt and one or more saponaceous bodies, in which compound the loss of ammonia is prevented during manufacture and until use by a coating of protecting material placed between the granules or particles of the ammoniacal salt and the saponaceous bodies, substantially as set forth.

2. A cake of ammoniacal soap containing a soap, a granulated or powdered ammoniacal salt, and a coating of protecting material placed between the granules or particles of the ammoniacal salt and the soap to prevent loss thereof during manufacture and until use, the whole

mixed together and then formed into a cake or block, substantially as set forth.

3. A detergent compound containing a soap-powder and an ammoniacal salt, in which compound the loss of ammonia is prevented during manufacture and until use by a coating of protecting material placed between the granules or particles of the ammoniacal salt and the alkaline or other ingredients of the compound, which might cause decomposition of said salt, substantially as set forth.

382,324. PNEUMATIC WATER-ELEVATOR. THOMAS O. PERRY, Tecumseh, Mich. Filed Aug. 26, 1886. Serial No. 211,383. (No model.)



Claim.—1. In combination with a submerged water-chamber and discharge-pipe leading therefrom, having at a point higher than the level of the water in which said chamber is submerged an extending arm which forms a part of the course of discharge of the water through said pipe, and which is adapted to oscillate up and down and which comprises a float-chamber, an air-duct leading into said submerged chamber, a revolving valve controlling the passage of compressed air through said duct and alternately admitting and excluding the same, and suitable connections whereby the oscillating arm of the water-discharge pipe actuates said valve, substantially as and for the purpose set forth.

2. In combination with a pair of submerged chambers, discharge-ducts leading therefrom, respectively, and the common discharge-pipe into which the said ducts communicate, said discharge-pipe having at a point higher than the level of the water in which the said chambers are submerged an extending arm forming a part of the water-course through said discharge-pipe, and adapted to oscillate up and down and comprising a float-chamber, two air-ducts leading into the submerged chambers, respectively, a revolving valve at the junction of such ducts, admitting compressed air to the said chambers alternately, and suitable connections whereby the oscillating arm of the water-discharge pipe actuates the revolving valve, substantially as set forth.

3. In a pneumatic water-elevator, the water-way having an extending arm forming part of the water-course, adapted to oscillate up and down and comprising a float-chamber, in combination with a pair of submerged water-chambers, air-ducts opening into them, a revolving air-valve at the junction of said ducts, and a ratchet-wheel and pawl actuated by the oscillation of the float-chamber, whereby the valve is rotated so as to feed each duct alternately, substantially as set forth.

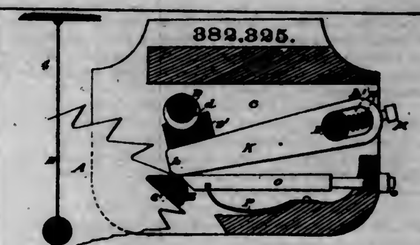
4. In a pneumatic water-elevator, in combination with the water-way Z', stop-arm M, rigid with said water-way, the water-way Z, and the casting B, forming the connection between the water-ways Z' and Z, the water-ways S and S', hinged to the casting B, the float-chamber X at the junction of the water-ways S and S', an air-passage, Y, service-cock *u*, and link *y'*, substantially as and for the purpose set forth.

5. In a pneumatic water-elevator, a pair of submerged water-chambers, a common water-way, Z, leading therefrom, the stop-arm M, rigid on said water-way, an extending arm comprising the water-ways S S', hinged to the casting B, the float-chamber X at the end of said arm, air-ducts opening into the water-chambers, a revolving air-valve at the junction of said ducts, a ratchet-wheel and pawl actuated by the oscillation of the float-chamber, the air-rest *y*, service-cock *u*, and link *y'*, all combined substantially as and for the purpose set forth.

382,325. SAW-TOOTH SWAGE. JAMES R. REEDER, Cheboygan, Mich. Filed Nov. 18, 1887. Serial No. 255,894. (No model.)

Claim.—1. In a tooth-swage for circular saws, the combination, with the clamping-jaws F F', of an anvil, E, having the flat top face, *e*, and the inclined bottom face, *e'*, to hold the tooth while being swaged, as set forth.

2. The combination, with the anvil and clamping-jaws, of the rear pivoted swage, K, having the front end, *k*, to draw out the point of the tooth, and the spring-actuated tooth-stop under said swage, as shown and described.



3. The combination, with a frame, C, of the cammed and hand-levered shaft D, the rear pivoted swage, K, the spring tooth-stop O, the anvil E, and the jaws F F', all constructed and arranged, substantially as and for the purpose specified.

4. The swage and tooth-stop provided with means, substantially as described, by which they may be correspondingly adjusted more or less forward toward the anvil, as shown and described.

382,326. DRAFT-EQUALIZER. DANIEL H. RINGLAND, Washington, D. C. Filed Oct. 31, 1887. Serial No. 253,847. (No model.)

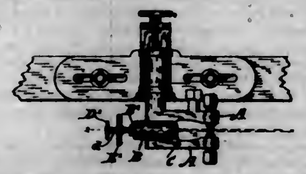


Claim.—1. In a draft-equalizer, the hollow tube or pipe A, screw-threaded at each end for attachment to the correspondingly screw-threaded eyes of the bolts C, and provided with the sliding sleeve-hooks *c*, and breeching-hook B, in combination with the sliding rod F and the traction appliances, substantially as and for the purpose specified.

2. In a draft-equalizer, the hollow tube or pipe A, secured to the eyes of the bolts C and provided with the sliding rod F, hook E, and sliding sleeve-hook *c*, in combination with the traction appliances, substantially in the manner and for the purpose specified.

3. In a draft-equalizer composed of a sliding rod connected to the collar of the harness and to the singletree, the hollow tube A, adapted to receive the said sliding rod and provided with a sliding sleeve-hook, *c*, and breeching-hook E, substantially as and for the purpose specified.

382,327. SAW-JOINTER. DAN C. ROSEBURY, Madison, Ind., assignor to R. C. Atkins & Company, of Indiana. Filed July 30, 1887. Serial No. 245,694. (No model.)



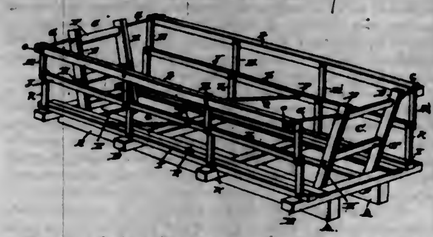
Claim.—1. The combination, in a jointer for jointing circular saws, of a casing, an operating part with which the saw comes in contact, a rod rigidly secured to said operating part, by which the same may be turned in its casing, and a hollow screw-threaded rod surrounding the first rod loosely and passing through a screw-threaded bearing, whereby said operating part may be drawn back and forth or revolved, each operation being independent of the other, substantially as set forth.

2. The combination, in a saw-jointer, of the tubular casing B, the emery or other operating part C therein, the rod D, rigidly secured to said part C and extending to outside the casing, and the hollow screw-threaded rod E, surrounding said rod D between collars or sleeves thereon, and passing through a screw-threaded bearing on said casing, substantially as set forth.

3. The combination, in a saw-jointer, of the part C, mounted to be rotated and adjusted longitudinally, and the means for accomplishing said rotation and said longitudinal adjustment each independent of the other, substantially as set forth.

4. The combination, with the operating part C of a saw-jointer, of a rod, D, rigidly secured thereto, a screw-threaded hollow rod, E, surrounding said rod D, and sleeves or collars *d* and *d'* on said rod D, between which the hollow screw-threaded rod E is placed and operates, each of said rods D and E being provided with hand-wheels, substantially as set forth.

382,328. HAY-RACK. DE WITT C. ROOT, Eureka, Kans. Filed Jan. 20, 1888. Serial No. 261,894. (No model.)



Claim.—1. A hay-rack comprising a base and extensible frames secured to the sides thereof, substantially as set forth.

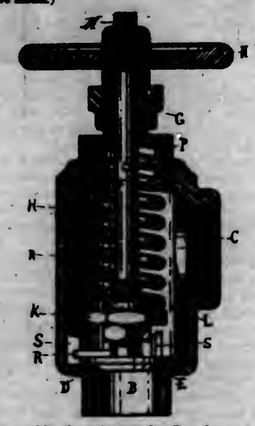
2. A hay-rack comprising a base, extensible frames secured to the sides thereof, and hook-braces secured to the base and adapted to engage the extensible frames when they are raised, as set forth.

3. A hay-rack comprising a base having the keepers R, the extensible side frames secured to the sides of the base, and the hook-braces secured to the base and adapted to engage the frames when the same are raised, and when they are lowered to engage the keepers R, as set forth.

4. A hay-rack comprising a base and the folding frames on the sides thereof, the said frames consisting of a series of vertical and horizontal bars pivoted to each other and to the base, substantially as set forth.

5. The improved hay-rack herein described and shown, comprising the beams A, the transverse beams B, secured thereto and projecting beyond the same, the standards pivoted to the beams A, and the folding side frames, the said frames consisting of the bars I, secured to the projecting ends of the beams B, the bars K, pivoted to the bar I, the bar J, pivoted to the bars K, the bars M, pivoted to the bar J, and the bar N, pivoted to the bars M, substantially as specified.

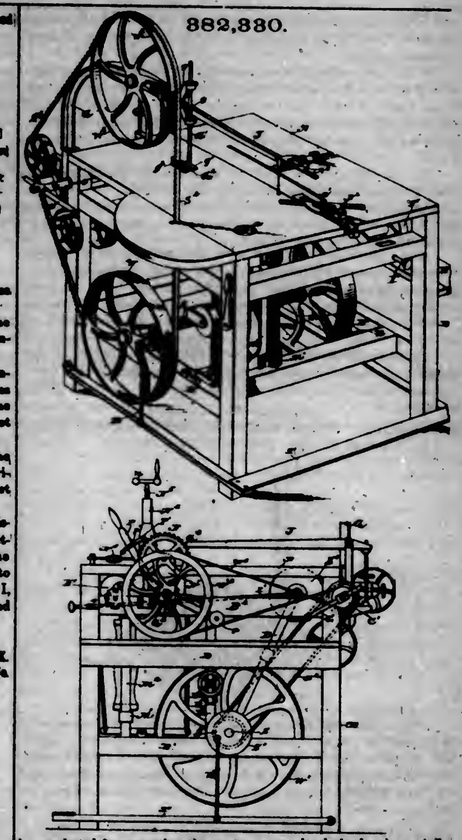
382,329. COMBINED RELIEF-VALVE AND CYLINDER-COCK. JAMES A. SEYMOUR, Auburn, N. Y. Filed Mar. 21, 1887. Serial No. 231,797. (No model.)



Claim.—The combination of the valve E, valve-seat D, spring H, and valve-stem F, provided with one screw-thread within the body of the valve and another outside thereof, the former having a set-nut, K, upon it, and the latter having a threaded hand-wheel, N, upon it, whereby the valve E may be raised and set at any desired point above its seat, so that it may operate either as a relief-valve or as a cock at will.

382,330. WOOD-WORKING MACHINE. EMILE W. SCHOCKEL, Saxonburg, Pa. Filed June 11, 1887. Serial No. 241,039. (No model.)

Claim.—1. In a wood-working machine, the combination of the hollow sleeve or shaft C, extending transversely across the machine, with the short shafts *c*, adjustably mounted in connection with said sleeve or shaft C, the handles *c'*, adjustably connected to the short shafts *c*, and the sprocket-wheel C' on the sleeve or shaft C, and chain belt C², adapted to be connected to the sprocket-wheel C, and also to the main shaft of the machine, whereby hand or foot power may



be employed for operating the parts, as may be desired, substantially as described.

2. In a wood-working machine, the standards M³, the molder-frame M, and the sectional boxes M', encircling the standards and having the sections connected by screws, whereby, when the screws are tightened, the boxes are brought closer together to produce a clamping effect and clamp the boxes at any point of the standards, as set forth.

3. The combination, with the main shaft S, of the swinging frame I, the circular saw S⁴, mounted in the upper end of said frame above the beam B, as herein set forth, the draw-rod I', connected to the upper part of the frame I, and the clamping device *i*, whereby, when the saw is not in use and is a position of rest, it is thrown back and supported on the top portion of the beam B³, and when drawn into position for use is permanently held by the device *i* clamping the draw-rod I', substantially as described.

4. The combination of the hinged table D, the folding bracket *d*, said parts being mounted in connection with an independent standard, D', the standard D³, the bolt *d*³, passing through the standard D' and encircling the standard D³, and the clamping-nut D⁴, engaging the bolt *d*³, substantially as described.

5. In combination with the rounder F, having the apertured disk F', the disk B⁴, entirely separate from the rounder, and attached to the frame on the side opposite the rounder and adjusted to correspond with the rounder, as set forth.

6. The combination, with the beam B³, of the disk F, having the apertured disk F', held within a circular recess formed in said disk F, and the disk B⁴, mounted in the beam B³, on the side opposite to the disk F, and having peripheral slots constructed therein of varying sizes, which, when adjusted, are in alignment with the varying-sized apertures in the disk F, substantially as described.

7. In the feed herein described, the combination of the vertical frame N', having the horizontal extension N², the screw-threaded standard N³, by means of which the frame entire is vertically adjust-

able, and the adjustable link N^4, connected at one end to the horizontal extension N^3 and at the other end to the top of the table A, substantially as described.

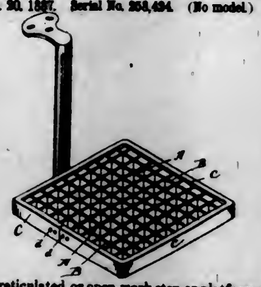
8. In combination with the shaft S', the handle or lever P, pivoted at an intermediate point on the said shaft, a pulley, *p*, at one end of the handle or lever, the stud or pin *p'*, carried by the other end of the lever, and the serrated retaining-sector P', pivoted upon the frame of the machine and engaging the pin *p'* of the handle or lever, as set forth.

9. In combination with the main shaft S, the swinging arm I, sleeved thereon, and adapted to swing from one side to the other, and carrying the saw S^4, the draw-rod I', connected to the frame I, to swing the frame from side to side, and the hook-bolt *i*, encircling the draw-rod and clamping the same, as set forth.

10. In combination with the horizontal shaft S^3, receiving motion from the main shaft and carrying the feeding-disk S^4, the supporting-frame for the shaft comprising the vertical portion N^2 and the horizontal portion N^3, the former being vertically adjustable and the latter being also adjustable, so as to raise or lower the feeding-disk, as set forth.

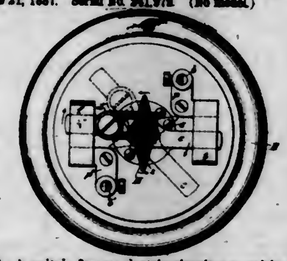
11. In combination with the standard D^4, the standard D', the hinged table carried by the latter, and the clamping-bolt d^3, encircling the standard D^4 and locked to the standard D', by the nut D^5, as set forth.

382,331. STEP OR PLATFORM. FRANK H. STANWOOD, Chicago, Ill. Filed Dec. 20, 1887. Serial No. 258,494. (No model.)



Claim.—The reticulated or open-work step or platform consisting of a support or hanger, a stiff frame secured to the support or hanger, and separate strips of sheet or like thin sharp-edged metal forming the tread and arranged edgewise in and supported by said frame without being welded to or made integral therewith, substantially as set forth.

382,332. SWITCH FOR ELECTRIC CIRCUITS. CLARENCE G. STERLING, Hartford, Conn., assignor to Charles R. Dustin, same place. Filed June 21, 1887. Serial No. 241,978. (No model.)



Claim.—1. A switch for an electric circuit, comprising the following: a spindle having a cut-away portion to form a cam, a circuit-controlling bar loosely swiveled about said spindle, a spring mounted upon said bar at one side of the spindle bearing upon said cam, and circuit-terminals arranged in co-operative proximity to said circuit-controlling bar.

2. A switch for an electric circuit, consisting of a cam, a circuit-controlling bar, a spring mounted upon said bar to one side of its pivot, bearing upon said cam and actuating said bar when the cam is operated, and circuit-terminals arranged in co-operative proximity to the aforesaid bar.

3. The combination, in an electrical switch, of a spindle having a cut-away portion constituting a cam with a handle upon its outer end, a circuit-controlling bar loosely swiveled about said spindle, a bifurcated spring secured to the latter to one side of its pivot and bearing upon the cam portion of the spindle, and circuit-terminals arranged in co-operative proximity to said circuit-controlling bar.

4. The combination, in an electrical switch, of a spindle having a cut-away portion constituting a cam with a handle upon its outer end, a circuit-controlling bar loosely swiveled about said spindle, a bifurcated spring secured to the latter to one side of its pivot and bearing upon the cam portion of the spindle, circuit-terminals arranged in co-operative proximity to said circuit-controlling bar, and a base upon which the above is mounted having a plate for journaling the spindle carrying limiting-stops for the bar.

5. A switch for an electric circuit, comprising the following: a spindle having a cut-away portion to form a cam, a circuit-controlling bar loosely swiveled about said spindle, a spring mounted upon said bar at one side of the spindle bearing upon said cam, means for journaling said spindle, a pin upon the same co-operating therewith for preventing it from being turned backward, and circuit-terminals arranged in co-operative proximity to said circuit-controlling bar.

6. The combination, in an electrical switch, of a spindle having a cut-away portion constituting a cam with a handle upon its outer end, a circuit-controlling bar loosely swiveled about said spindle, a bifurcated spring secured to the latter to one side of its pivot and bearing upon the cam portion of the spindle, circuit-terminals arranged in co-operative proximity to said circuit-controlling bar, and a base upon which the above is mounted having a plate for journaling the spindle carrying limiting-stops for the bar, and a pin upon said spindle taking into a slot in said plate for preventing the spindle from being turned backward.

7. The combination of the base B, a spindle, E, swiveled in a plate set in said base, a pin, *a*, upon the spindle E, taking into a slot in said plate for limiting the play of the spindle, a circuit-controlling bar, *c*, loosely swung about the spindle, a bifurcated spring, S, fast thereto, a cam portion, A, of said spindle, upon which the latter bears, a handle, H, upon the outer end of the spindle for manual operation, circuit-terminals *t t'*, limiting-stops *s s*, and a casing, C.

382,333. SWITCH FOR ELECTRIC CIRCUITS. CLARENCE G. STERLING, Hartford, Conn., assignor to Charles R. Dustin, same place. Filed June 21, 1887. Serial No. 241,980. (No model.)



Claim.—1. A switch for electric circuits embodying, essentially, a movable elastic spring, an operating device fast to one end of said spring, a vibratory lock for holding it at the other end in either of two positions, a circuit-governor controlled by said spring, and electric terminals in the path of said circuit-governor.

2. A switch for electric circuits, consisting of a movable elastic spring, a circuit-controller governed thereby, electric terminals in the path of the latter, a vibratory lock for holding said spring in either of two positions to keep the circuit-controller between said terminals or away from the same, and an operating device secured to and supporting the other end of said spring.

3. The combination, in a switch for electric circuits, of an elastic spring having a slot in it, an operating device attached to one end thereof having means for actuating it, a device for holding the other end near the slot in either of two positions, a circuit-governor controlled by the spring, two electric terminals arranged adjacent thereto, all arranged and combined, whereby the holding device will pass through the slot and liberate the spring when the operating device is actuated and control the circuit, as set forth.

4. The combination, in an electric switch, of an elastic spring, as E, a movable device, as F, for holding the same at one end, an operating device attached to the other end, a circuit-governor, as *d*, controlled by the spring, and two electric terminals, as *t t'*, arranged adjacent to the latter.

5. The combination, in an electric switch, of an elastic spring, as E, having a slot in it, a device, as F, for holding it at one end near the slot, an operating device, as B, attached to the other end, a circuit-governor, as *d*, carried by the spring, and two electric terminals, as *t t'*, arranged adjacent to the latter.

6. The combination, in an electric switch, of an elastic spring, as E, having a slot in it, a spring, as F, fastened at its center for holding it at one end near the slot, a double crank, as B, attached to the other end for operating the same, a circuit-governor, as *d*, carried by the spring E, and two electric terminals, as *t t'*, arranged adjacent thereto.

7. The combination, in an electric switch, of an elastic spring, as E, having a slot in it, a spring, as F, fastened at its center for holding it at one end near the slot, a double crank, as B, attached to the other end for operating the same, having a handle, D, upon the outer end thereof for manual operation, stops, as *s s'*, for limiting the play of said crank, a circuit-governor, as *d*, carried by the spring E, and two electric terminals, as *t t'*, arranged adjacent thereto.

382,334. ADJUSTABLE PACKING FOR STUFFING-BOXES. PETER THOMSEN, HILMI H. HANSEN, and WILLIAM B. HANSEN, Chicago, Ill., assignors, by direct and mesne assignments, to A. C. Calkins, trustee, same place. Filed Dec. 17, 1887. Serial No. 258,376. (No model.)



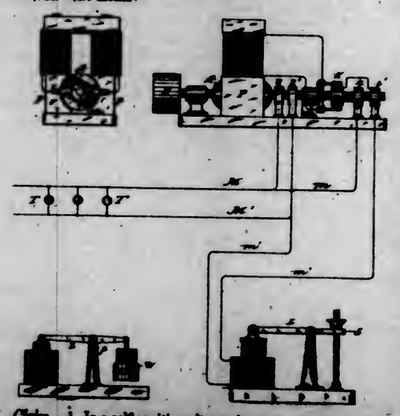
Claim.—1. The combination, with the stuffing-box and its packing, and with the rod or stem extending through said box, of the inner and outer segmental sleeves intermediate said rod and packing, each sleeve consisting of separate sections having upright conical conforming taper at the meeting surfaces of the sleeves, substantially as described.

2. The combination, with the stuffing-box and its packing, and with the rod or stem extending through said box, of the inner and outer segmental sleeves intermediate said rod and packing, each sleeve consisting of separate sections having upright conical conforming taper at the meeting surfaces of the sleeves, the outer sleeve-sections being provided with internal shoulders to rest the segments of the inner sleeve, substantially as described.

3. The combination, with the stuffing-box A', of an adjustable packing, comprising an inner sleeve formed of separate segments or sections and an outer sleeve formed of separate segments or sections arranged to break joint with the segments of the inner sleeve, and having exteriorly-tapering surfaces and suitable packing between the wall of the stuffing-box A' and the surfaces of the outer sleeve, substantially as described.

4. The combination, with the stuffing-box A', of the adjustable packing, comprising an inner sleeve formed of separate segments D, an outer sleeve formed of separate segments E, the diameter of said outer sleeve being less than the interior diameter of the stuffing-box, a series of packing-rings, F, placed in the space between the outer sleeve and the stuffing-box, and a packing-ring, F', placed around the piston at the outer ends of the segments D and E, substantially as described.

382,335. ALTERNATING-CURRENT DYNAMO-ELECTRIC MACHINE. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Dec. 27, 1886. Serial No. 222,562. (No model.)



Claim.—1. In a self-exciting alternating-current generator, a commutator for rectifying the current taken from the machine to the exciting coil or circuit, in combination with a reactive coil in the connection to the commutator, as and for the purpose described.

2. The combination, with the armature supplying alternating currents to mains, of a field-exciting coil or circuit connected with a branch, a commutator in said branch, and a reactive coil between the commutator and the mains.

3. The combination, with the main carrying alternating currents, of a branch, a commutator for rectifying the currents in the branch, and a reactive coil between the commutator and mains, as and for the purpose described.

4. The combination, with the branch supplied with current from a main carrying alternating currents or their equivalent, as described, of a commutator in the branch, and a reactive coil provided with means for adjusting its self-induction or reaction, as and for the purpose described.

5. The combination, with the reactive coil and core on an alternating or other vibratory current circuit, of a counterbalancing-retractor, whereby the immersion of the core in the coils may be stationary with a normal flow of current, and may be increased on an increase of current, so as to automatically adjust the reaction to the strength of the alternations or vibrations, as and for the purpose described.

6. The combination, with the alternating-current main, of the branch containing a commutator, a reactive coil in said branch between the main and commutator, and a main-circuit coil combined with the reactive coil in inductive relation thereto, as and for the purpose described.

7. The combination, with a reactive coil in the alternating-current branch, of a compensating coil in a circuit from which the branch is derived, as and for the purpose described.

8. The combination, with an alternating current dynamo having a field-coil in a branch or derived circuit, of a self-inductive coil in said branch, whereby a field-coil of comparatively low resistance may be employed.

9. The combination, with a commutator connected with a source of alternating currents or their equivalent, as described, of a reactive coil in the commutator-connection, as and for the purpose described.

10. The combination, with an alternating-current dynamo whose field is sustained by the action of current on a branch, of a commutator for rectifying the currents that are used to excite the field, and a compound reactive coil, part of the winding of which is traversed by the branch current and a part by the main current.

11. The combination of the field-circuit of a dynamo-machine and a commutator for said field-circuit, with a reactive coil in an alternating-current circuit to said commutator and a source of alternating current, the rapidity of the alternations in which is dependent on the speed of the dynamo, increasing and decreasing with such speed, for the purpose of automatically varying the current in the field-circuit to compensate for differences of potential developed at different speeds by regulating the strength of the field magnetism.

12. The combination, with a dynamo-machine, of an alternating-current source delivering alternating currents whose rapidity varies with the speed of the machine, and a reactive coil in the connection between said source and the wires or connections which deliver field-exciting energy to the machine, as and for the purpose described.

13. A compound or differential reactive coil placed on an alternating-current circuit and having one portion, G, wound and adjusted, as described, so as to tend to overcome the effect of the self-induction in the other or active portion.

14. In an alternating-current dynamo, a field-sustaining branch from the main containing a reactive coil, in combination with a compensating main-circuit coil, as and for the purpose described.

382,336. ALTERNATING-CURRENT REGULATOR. ELIHU THOMSON, Lynn, Mass. Filed Mar. 30, 1887. Serial No. 232,941. (No model.)

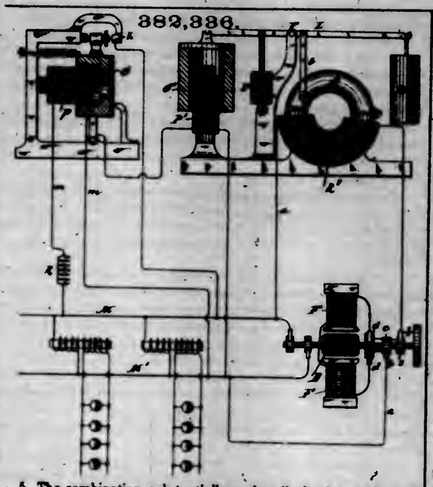
Claim.—1. The combination, with a reactive coil having means whereby the closure of its magnetic circuit may be varied, of a controlling mechanism responsive to variations in the strength of an alternating current.

2. The combination, with a reactive coil placed in an alternating-current circuit, of an adjustable armature, and a controlling device consisting of a coil in which alternating currents flow, and a closed circuit-conductor in which induced currents of high self-induction are set up by the alternating currents, as and for the purpose described.

3. The combination with a device in which a repulsive action is set up by the operation of alternating currents, as described, of a motor mechanism controlled thereby, and a reactive coil having means operated by said motor mechanism whereby its magnetic circuit may be variably closed.

4. The combination, with an alternating-current dynamo, of an adjustable reactive coil in an alternating-current circuit, and controlling devices for governing the counter electro-motive force of the reactive coil, said controlling devices being connected with and responsive to variations of electrical condition in the alternating circuit supplied from the dynamo.

382,336.



5. The combination, substantially as described, of a reactive coil in an alternating-current circuit, a movable armature, and an actuating device consisting of a coil having connections to an alternating-current source, and a conductor in which currents of high self-induction are set up to produce the repulsive action, as described, that shall operate upon the movable armature.

6. The combination, with an alternating-current dynamo, of a field-coil connected to the armature of said dynamo, a reactive coil in the connection to the field-coil having means whereby its counter electro-motive force may be governed, a motor mechanism for operating the adjusting device, and a controller electro-magnet, P, connected to the alternating-current circuit of the dynamo.

7. The combination, with an alternating-current dynamo, of a field-magnet coil connected to the armature, a commutator in said connection, a reactive coil having an adjustable armature for varying the counter electro-motive force in said connection, and a motor-magnet and controller-magnet connected to the alternating-current main and governing the connection of said motor-magnet with said main.

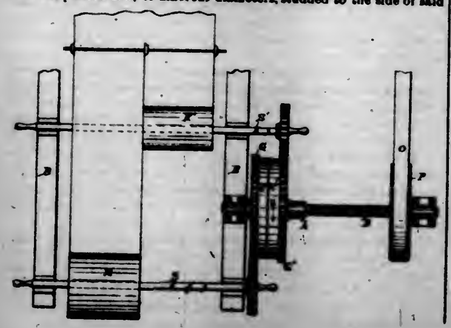
8. The combination, with an alternating-current branch or circuit, *a*, of a reactive coil having means whereby its counter electro-motive force may be adjusted, a motor mechanism for effecting an adjustment, and a controlling device in which a variable repulsive effect is set up by the action of alternating currents derived from the source supplying the circuit of branch *a*.

9. The combination, with a reactive coil in an alternating circuit or branch, of means for varying the magnetic closure of the magnetic circuit or core on which said coil is wound.

10. The combination, with a circuit or portion of circuit, *m*, and a magnet-coil in said circuit, of an artificial resistance whose amount is large compared with that of the coil, and which is of proper character, as described, to have an approximately constant resistance, as described, while the resistance of the coil varies.

382,337. COMPENSATING GEAR. THOMAS TUCKER, Marseilles, Ill. Filed Jan. 16, 1888. Serial No. 260,951. (No model.)

Claim.—1. The combination of shaft D, weighted disk L, secured theron, pinions E J, of different diameters, studded to the side of said



382,337.



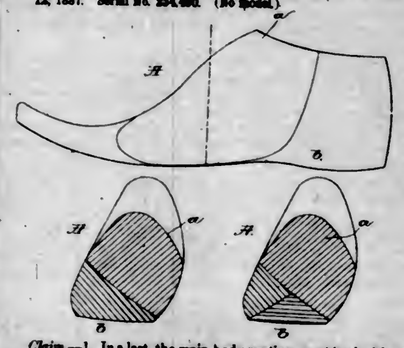
disk on the opposite side from its weight, gear G, sleeved loosely on said shaft and having the gear F secured on its inwardly-extending hub V, and gear G', having the internal gear, A, substantially as and for the purpose set forth.

2. The combination of gear-wheel G, having the gear-wheel F and flange C, gear-wheel G', having the flange C, and internal gear, A, shaft D, having said gears G G' sleeved loosely thereon, disk L, secured on said shaft between said gears G G', and the idler-pinions E J, studded to the side of said disk and connecting said gears G G', substantially as and for the purpose set forth.

3. In the compensating gear shown and described, the combination of gear-wheel G, having the gear F on its interior hub, the gear G', having the internal gear, A, and idler-pinions E J, connecting said gears G G', the gear F and idler-pinion E, with which it meshes, being relatively of the same proportional diameter as the idler-pinion J and internal gear, A, with which it meshes, substantially as and for the purpose set forth.

4. In a compensating gear, in combination with a shaft, a pair of equal spur-gears loosely sleeved thereon, a spur-gear of less diameter on one of said equal gears, an internal gear within the rim or flange of its fellow equal gear, a disk secured on said shaft between said equal gears, and a pair of connected idler-pinions studded to said disk and arranged to connect the interior gears of said equal gears in the manner substantially as and for the purpose specified.

382,338. LAST. J. STANLEY TURNER, Rockland, Mass. Filed Apr. 12, 1887. Serial No. 234,690. (No model.)

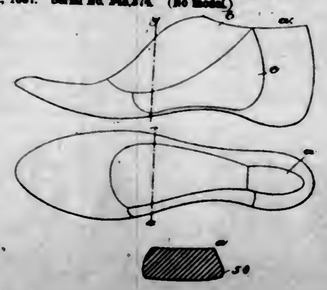


Claim.—1. In a last, the main body portion, combined with a last-block cut from the main body portion upon the inner or long-shank side thereof, substantially as and for the purposes specified.

2. In a last, the main body portion, combined with a last-block cut from the side of the main body portion on a line at an angle with relation to the plane of the bottom of the last, the said dividing-line upon the long-shank side of the last substantially coinciding with the bottom of the last, as set forth.

3. A last having a displaceable portion at its long-shank side, to operate as and for the purposes set forth.

382,339. LAST. J. STANLEY TURNER, Rockland, Mass. Filed Aug. 31, 1887. Serial No. 248,274. (No model.)

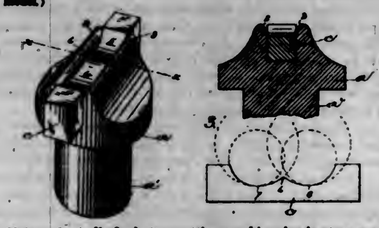


Claim.—1. In a last, the main body or sole portion *a* and the block *b*, as described, combined with the auxiliary portion *c*, substantially as and for the purposes specified.

2. In a last, the main body *a* and the block, combined with the auxiliary portion cut from the long-shank side of the main body beneath the block and attached to a component part of the last, substantially as described.

3. A last having the material or portion removed at the instep portion mainly upon the long-shank side, and also having an additional portion removed upon the long-shank side to present the space 50, substantially as described.

382,340. DIE FOR BUTTON-SETTING MACHINES. JOHN H. VINTON, Boston, Mass., assignor to the Pearmaker Novelty Company, Grand Rapids, Mich. Filed Dec. 21, 1886. Serial No. 222,166. (No model.)

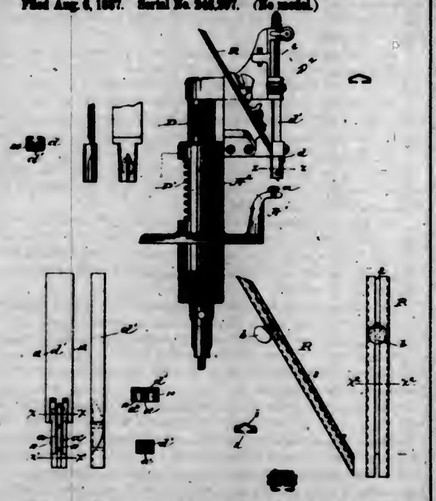


Claim.—1. A die for button-setting machines having two concave clinching-concavities in line with each other, the bottom of each concavity presenting a smooth clinching-surface formed by the union or conjoining of the arcs of two circles of different diameters, leaving a defined edge, as 6, between the two concavities to operate, all substantially as described.

2. The anvil-block *a*, slotted diametrically and having the beveled edges 2 3, combined with a die cut away upon its upper side to form two concaved clinching-surfaces, substantially as described.

3. The anvil-block *a*, slotted diametrically, combined with the die cut away upon its upper side to present two concaved clinching-surfaces, the side walls of the slot in the anvil-block and the curved clinching-surface taken together forming concavities with parallel sides, substantially as described.

382,341. BUTTON-SETTING MACHINE. JOHN H. VINTON, Boston, Mass., assignor to the Pearmaker Novelty Company, Grand Rapids, Mich. Filed Aug. 6, 1887. Serial No. 246,297. (No model.)



Claim.—1. In a button-setting machine, the herein-described one-piece sheet-metal raceway or guide slotted at one side at 2, and bulged outwardly at its other side opposite the said slot, substantially as described.

2. The herein-described one-piece sheet-metal raceway or guide slotted at its under side, as at 2, and outwardly bulged at its other side for the reception and passage of the eye of the button, and provided at each side the said slot and bulge with a narrow space to receive, embrace, and guide the legs of the staple, compelling it to travel in a substantially direct course through the raceway and preventing it from tipping up in said raceway or guide, thereby obviating the entrance of the crown of the staple on which the button hangs into the slot 2, substantially as described.

3. The herein-described sheet-metal raceway or guide slotted at its under side and bulged outwardly at its upper side, opposite and to cover the said slot 2, the inner side walls of the said raceway or guide being separated for a distance sufficient to just receive them and act as guides for the outer sides of the legs of the staples, substantially as described.

4. In a button-setting machine, the herein-described sheet-metal raceway or guide, slotted at one side at 2, and bulged outwardly at its other side opposite the said slot, combined with a staple-carrier to receive the staples from said raceway, substantially as described.

5. In a button-setting machine, the herein-described sheet-metal raceway or guide, slotted at its under side at 2 to permit the button to be suspended by the staple-fastening therein below the said raceway, and bulged outwardly at its other side opposite the said slot, combined with a carrier-guide grooved to form a saddle, the said saddle being also grooved longitudinally, substantially as described.

6. In a button-setting machine, the herein-described sheet-metal raceway or guide, slotted longitudinally at one side, as at 2, and bulged outwardly at its other side opposite the said slot, combined with a shank or bar and staple-carrier having grooves 10 for the reception of the points of the staple after leaving the raceway or guide, substantially as described.

7. In a button-setting machine, the herein-described sheet-metal raceway or guide, slotted longitudinally at its under side, as at 2, and bulged outwardly at its other side opposite the said slot, and the shank or bar *d'* and staple-carrier, combined with an anvil and driver, to operate all substantially as described.

382,342. BUTTON-FASTENER. CYRUS H. VERMILYE, Orange, assignor to Egbert Ahlers and George D. Paul, both of Newark, N. J. Filed Jan. 14, 1888. Serial No. 260,790. (No model.)

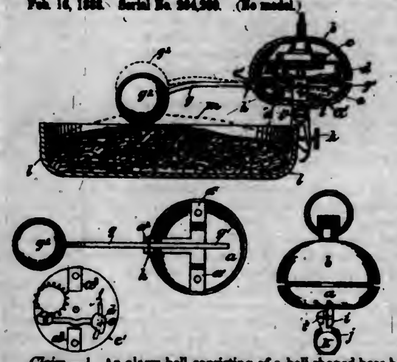


Claim.—1. The button-fastener herein described, having a flat disk perforated centrally and provided with an elastic spring-bow wing having an ovate slot that intersects with its converging end the central orifice of the disk, substantially as set forth.

2. In the button-fastener herein described, the combination, with a centrally-perforated disk, of an ovate bow-spring provided with an ovate perforation leading into the central perforation of the disk and adapted to have a spring engagement with a grooved button-shank, substantially as set forth.

3. In a button-fastener, the combination, with a centrally-perforated disk, of an integral bow-spring provided with an ovate perforation opening into the central perforation of the disk, and a slot communicating with said central perforation, substantially as set forth.

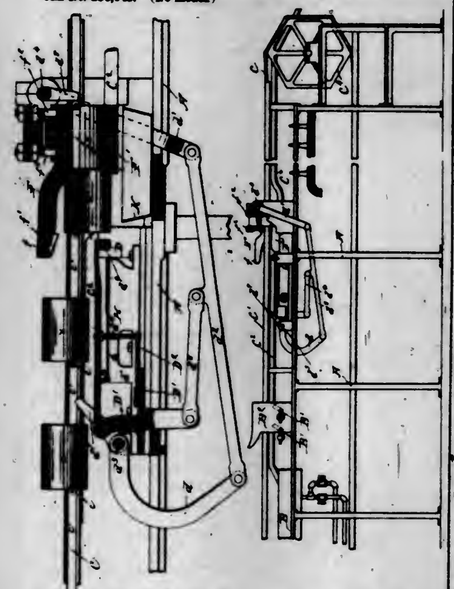
382,343. ALARM-BELL. ROBERT J. WHITSON, Chicago, Ill. Filed Feb. 16, 1888. Serial No. 264,269. (No model.)



Claim.—1. An alarm-bell consisting of a bell-shaped base having an exterior supporting-leg, *i*, and marginal fulcrum *h*, provided with a lever, *c*, having arm *f'* at one end and float *g'* at other end of said lever, and internal bearings, *d'*, on said base, in combination with an alarm-bell mechanism mounted on said internal bearings, *d'*, actuating a hammer provided with a pin extending below its base-plate *c* and engaging with the arm *f'*, said base-plate having lugs *c'* secured to said bearing *d'*, substantially as specified.

2. An alarm-bell consisting of a bell-shaped base having an exterior lug, *i*, holding a clamp, *j*, and a marginal fulcrum, *h*, carrying a lever, *g*, having at one end an arm, *g'*, and at the other end a float, g^2, and internal bearings, *a'*, in combination with an alarm-bell mechanism mounted on said internal lugs, actuating a hammer provided with a pin extending below the base-plate of the alarm mechanism and engaging with the arm *g'*, said base-plate having lugs a^2 secured to said internal bearings, *a'*, substantially as specified.

382,844. MACHINE FOR SOLDERING SIDE SEAMS OF CANS. ALFRED B. WILLCOX and EDWIN HORTON, Maywood, assignors to said Horton, and Oliver W. Horton, Chicago, Ill. Filed Dec. 27, 1887. Serial No. 258,943. (No model.)



Claim.—1. The combination, in a soldering-machine, of a continuously-moving can-carrier with a reciprocating inside wiper for wiping the inside of the seam while the can is being moved in the carrier, substantially as specified.

2. The combination, in a soldering-machine, of a continuously-moving can-carrier with a reciprocating wiper and a clamp device for holding the can to resist the action of the wiper, substantially as specified.

3. The combination of a can-carrier having receptacles to receive the can longitudinally of the direction of movement of the carrier, means for deflecting or inclining the path of the can as it is carried by said carrier, and an inside reciprocating wiper adapted to enter the can, substantially as specified.

4. In a soldering-machine, the combination, with a solder bath, of a can-carrier chain, a track for said carrier, a guideway or track for the can, having a deflected portion, and an inside reciprocating wiper entering the can at the deflected portion thereof, substantially as specified.

5. In a soldering-machine, the combination, with a solder bath, of a continuously-moving can-carrier chain, a track for said carrier, a guideway or track for the can, having a deflected portion, and an inside reciprocating wiper entering the can at the deflected portion thereof, and mechanism for giving the wiper a quicker motion than that of the can-carrier, substantially as specified.

6. In a soldering-machine, the combination, with a solder bath, of a continuously-moving can-carrier chain, a track for said carrier, a guideway or track for the can, having a deflected portion, and an inside reciprocating wiper entering the can at the deflected portion thereof, and mechanism for giving the wiper a quicker motion than that of the can-carrier, said motion-giving mechanism consisting in a pair of levers operated by the can-carrier and connected with said wiper, substantially as specified.

7. The combination, in a soldering-machine, of a can-carrier, a movable wiper, a lever projecting in the path of the carrier and connected with said wiper, whereby the wiper is moved bodily along and in contact with the seam of the can to be wiped by the movement of the carrier, substantially as specified.

8. The combination, in a soldering-machine, of a can-carrier, a movable wiper, a pair of operating-levers projecting in the path of said carrier, a pivotal link connecting said levers, a cross-head and a link connecting said cross-head and pivotal link, substantially as specified.

9. The combination, in a soldering-machine, of a can-carrier, a pivoted and reciprocating wiper, D, and a cam or track for guiding the free or wiping end of said wiper, substantially as specified.

10. The combination, in a soldering-machine, of a can-carrier, a pivoted and reciprocating wiper, D, and a cam or track for guiding the free or wiping end of said wiper, said carrier or track having a raised portion to lift the wiper from the seam as the wiper moves in one direction and a lower portion to guide the wiper against the seam as it moves in the opposite direction, substantially as specified.

11. The combination, in a soldering-machine, of a can-carrier, a pivoted reciprocating wiper, D, and a cam or track for guiding the free or wiping end of said wiper, said cam or track having a raised portion to lift the wiper from the seam as the wiper moves in one direction and a low portion to guide the wiper against the seam as it moves in the opposite direction, said wiper being furnished with a laterally-sliding guide pin or roller, and said cam or track being furnished with an incline at one end for sliding said guide-pin from the high to the low track, substantially as specified.

12. The combination, in a soldering-machine, of a can-carrier, a pivotal reciprocating wiper, D, and a cam or track for guiding the free or wiping end of said wiper, said cam or track having a raised portion to lift the wiper from the seam as the wiper moves in one direction and a low portion to guide the wiper against the seam as it moves in the opposite direction, and a spring to force the wiper against the seam, substantially as specified.

13. The combination, in a soldering-machine, of a continuously-moving can-carrier, a movable wiper, and a pair of wiper-operating levers, having short arms projecting in the path of said carrier and long arms connected with said wiper, whereby the wiper is moved faster than the carrier, substantially as specified.

14. The combination, with a can-carrier chain, of a movable wiper and a pair of wiper-operating levers, both having arms projecting in the path of said carrier-chain near the wiper and relatively near the link of the chain carrying the can being operated upon by the wiper, so that the slack in or wear of the links of the chain will not materially affect the operation of the wiper in its proper order or time, substantially as specified.

15. The combination, with a link-chain can-carrier, of a reciprocating wiper and device for holding or guiding the can to resist the action of the wiper, substantially as specified.

16. The combination, with a can-carrier, of a movable wiper and a stationary can holding or guiding device into or through which the can is carried by the carrier to resist the action of the wiper, substantially as specified.

17. The combination, with a continuously-moving can-carrier, of a reciprocating-wiper and a stationary can-holding device through which the can is drawn by the carrier, substantially as specified.

18. The combination, with a link-chain can-carrier, of a reciprocating wiper and a stationary can-holding device having a slot or opening for the can-carrier to pass through, substantially as specified.

19. The combination, with a can-carrier, of an inside reciprocating wiper, means for inclining or deflecting the path of the can carried by said carrier, and a can-holding device to resist the action of the wiper, substantially as specified.

20. The combination, in a soldering-machine, of a track or guideway along which the can is carried, having a deflected portion, with an inside reciprocating wiper entering and reciprocating inside the can while the same is at such deflected portion of said track or guideway, substantially as specified.

21. The combination, in a soldering-machine, of a track or guideway along which the can is carried, having a deflected portion, with an inside reciprocating wiper entering and reciprocating inside the can while the same is at such deflected portion of said track or guideway, and a can holding or guiding hood to resist the action of the wiper, substantially as specified.

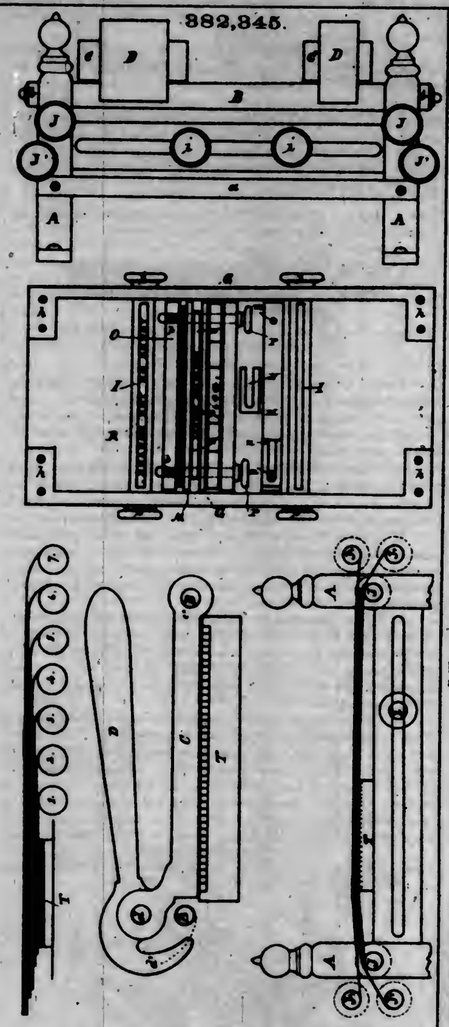
22. The combination, in a soldering-machine, of a track or guideway along which the can is carried, having a deflected portion, with an inside reciprocating wiper entering and reciprocating inside the can while the same is at such deflected portion of said track or guideway, a continuously-moving can-carrier, and means for reciprocating said wiper with a faster motion than that of the carrier, substantially as specified.

382,845. PRINTING-PRESS. THOMAS D. WORRALL, Lynn, Mass. Filed Jan. 20, 1887. Serial No. 224,962. (No model.)

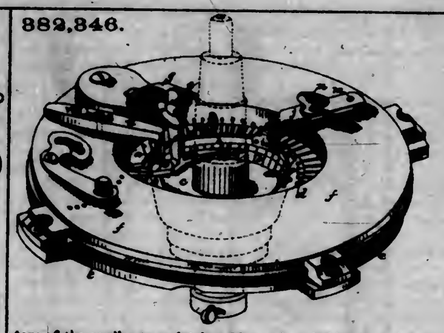
Claim.—1. The combination, with the type-bed, of a platen, pivoted, substantially as described, so as to be capable of lateral as well as vertical movement.

2. The combination, with the type-bed, of a series of independently-pivoted platens.

382,845.



382,846.



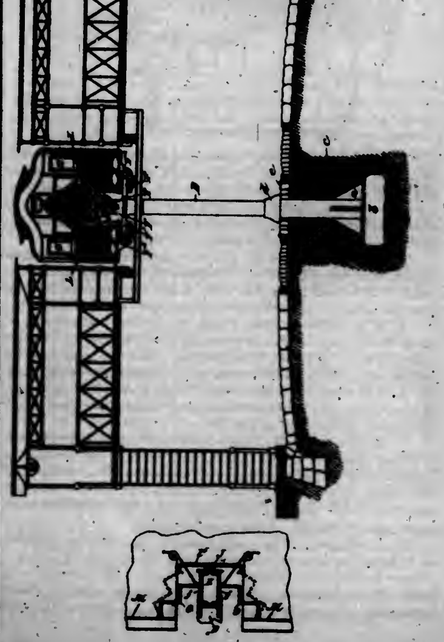
tops of the needles to maintain said guard or holder in position, as aforesaid, said shank being provided with holes, as described, a pin in the cam-plate entering one of said holes, and a set-screw passing through the other of said holes, whereby the guard or holder may always be set in proper position, substantially as described.

2. The combination, with the radial needles and their bed and the cam-plate, of the arm *g*, a latch guard or holder, *e*, provided with the slotted shank *p*, thumb-screw *r'*, for adjustably securing said latch-guard and its shank to said arm, yarn-guide *s*, having an angular shank, *t u*, securing-screw *v*, and adjusting-screw *x*, as set forth.

3. The combination, with the radial needles and their bed, the cam-plate, the yarn-guide and its shank, of an adjusting-screw in said shank bearing at its lower end on said cam-plate, and an attaching-screw passing through said shank and into said cam-plate to secure the yarn-guide to said cam-plate, as set forth.

382,847. ELEVATED STREET-RAILWAY SYSTEM. JAMES W. ADAMS, Chicago, Ill. Filed Nov. 30, 1887. Serial No. 256,393. (No model.)

Claim.—1. In a railway-car, the combination of the car-wheel, a pivot-connection between said car-wheel and the body of the car, and a steering-wheel, substantially as described.



3. The combination, with the type-bed, of a series of independently-pivoted and laterally-movable platens.

4. The combination, with the pivoted platen and adjustable bed, of the operating-lever pivoted directly to the platen, and the cross-rod extending the whole length of the press-frame, the lever engaging the rod after the manner of a wedge.

5. In combination with the bed and platen a series of holders furnished with saturated paper or strips, the strips being of different colors, whereby several impressions in one or more colors may be made at once.

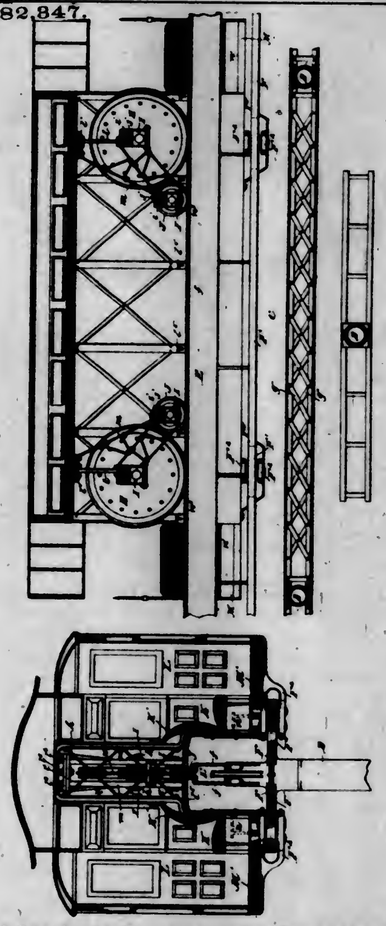
6. In combination, the slotted bed-frame and the laterally-adjustable type-holders.

7. The type-holder composed of perforated bars, interposed slotted adjustable and interchangeable strips corresponding to the thickness of the type, and the clamping or locking-up screws.

382,848. KNITTING-MACHINE. ERMAN G. YOUNG, Washington, D. C. Filed Mar. 21, 1887. Serial No. 231,893. (No model.)

Claim.—1. The combination, with the cam-plate, the cylinder and cylinder-needles, and means for operating them, of a latch guard or holder consisting of a curved finger extending around in close proximity to the latch-point of the needles being raised and lowered, said guard or holder being provided with a shank extending out over the

382,347.



2. In an elevated-railway system, a single-rail track and parallel guide-rails below said track, in combination with a car supported on said single track by a car-wheel, between which and the car there is a pivot-connection, a steering-wheel, a rigid connection between said wheel and the car-wheel support, and horizontal guide-wheels bearing against the parallel tracks, substantially as described.

3. In an elevated-railway system, a single-rail track having at stations steps secured thereto, in combination with a car the floor of which is in a plane below said track, said car being provided with steps providing access to said track, substantially as described.

4. In an elevated-railway system, a single-rail track having secured thereto steps in differing planes, in combination with a car the floor of which is in a plane below said track, said car being provided with steps providing access to said track, substantially as described.

5. In an elevated-railway system, the main and single rail track, in combination with a bridge-section track forming an incline in said main track, substantially as described.

6. An elevated-railway system consisting of a track way composed of a single-rail track and two parallel rails on each side of and in a plane below the same, mounted upon posts above the streetway, and cars guided by wheels horizontally engaging said parallel rails and supported by car-wheels swiveled to said cars and directed by steering-wheels, substantially as shown and described.

7. An elevated-railway system consisting of a track way composed of a single-rail track and two parallel rails on each side of and in a plane below the same, mounted upon posts above the streetway, said track way and posts being without trussing, cars guided by wheels horizontally engaging said parallel rails and supported by car-wheels swiveled to said cars and directed by steering-wheels, substantially as shown and described.

8. In an elevated-railway system, a track way composed of a single-rail track, two parallel rails on each side of and in a plane below the same, posts supporting said track way above the streetway, said track-way and posts being without trussing, cars provided with guide-wheels engaging said parallel rails and supported by swiveled wheels directed by steering-wheels, opposing stations on each side of said track way having platforms on a plane below the supporting track-rail, and revolving switches at the intersection of cross-tracks, all substantially as shown and described.

382,348. BEAM-CALIPERS. CHARLES E. BILLINGS, Hartford, Conn. Filed Mar. 6, 1888. Serial No. 266,235. (No model.)



Claim.—1. In a caliper-square, a beam consisting of two longitudinally-grooved parallel rods and a graduated plate having one edge let into the groove of one of said rods and having an opposite edge let into the groove of the other of said rods, substantially as and for the purpose specified.

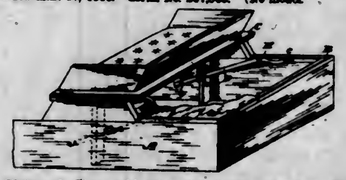
2. A beam consisting of two parallel grooved rods and an intermediate graduated plate which is let into the grooves of said rods, in combination with a sliding jaw having two parallel perforations, which are connected by a slot, substantially as and for the purpose specified.

3. A beam consisting of two parallel rods and an intermediate plate having two opposite edges let into said rods, in combination with a stationary jaw upon said beam and a split sliding jaw having a perforation for each of said rods and having a slot for said plate, substantially as and for the purpose specified.

4. A beam consisting of two parallel grooved rods and an intermediate plate whose edges are held in the grooves of said rods, in combination with a stationary jaw and with a split sliding jaw and a split adjusting-slide, which are severally provided with clamping-screws and with a connecting-screw adjustment, substantially as and for the purpose specified.

5. A beam consisting of two parallel rods and a graduated plate whose opposite edges are let into said rods, respectively, a stationary jaw, which is secured to said beam, an adjustable jaw, which is split and provided with a clamping-screw, and is perforated, slotted, and adapted to slide upon said rods, and a split adjusting-slide, which is similarly perforated, slotted, and provided with a clamping-screw, in combination with a connecting-screw, and a spring and nut, which work upon said screw, substantially as and for the purpose specified.

382,349. BUGGY-BOOT. PHILIP BURKE, New Philadelphia, Ohio. Filed Mar. 17, 1888. Serial No. 267,563. (No model.)



Claim.—1. The combination of the body A, the frame B, provided with the pivoted bars D, the springs E, and means for automatically locking the frame B either up or down, substantially as and for the purpose specified.

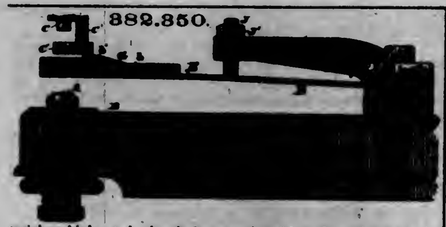
2. The frame B, provided with the bars D and spring-plates *c*, the springs E, and means for automatically locking the frame B either up or down, substantially as and for the purpose specified.

3. The combination of the hinged frame B, the bars D, provided with the lips or extensions *d*, the notches *e* and *f*, and the staples or hooks *b*, substantially as and for the purpose set forth.

382,350. RIVET-SETTING MACHINE. WILLIAM C. BRAY, Newton, Mass. Filed Dec. 12, 1887. Serial No. 258,258. (No model.)

Claim.—1. In a machine for uniting two articles or pieces of material by rivets, the combination herein described, with a fixed anvil for supporting one of the articles or pieces of material and upsetting a rivet when driven, and a vertically-reciprocating setting-plunger for driving the rivet, of a spring-arm, one end of which is firmly secured to the frame of the machine, while its other or free end is provided with a suitable receptacle for holding the other article or piece of material, and is located, when in its normal position, above the upper surface of said anvil, and constructed and arranged to be depressed by the downward movement of the setting-plunger, to bring the article or piece of material supported thereby into contact with the material to which it is to be secured by the rivet when upset upon said fixed anvil.

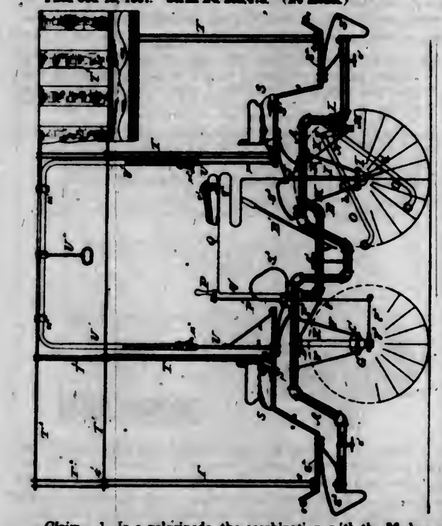
382,350.



2. In a machine for uniting two articles or pieces of material by rivets, the combination herein described, with a fixed anvil for supporting one of the articles or pieces of material, a vertically-reciprocating rivet-setting plunger, and a rivet-holding device, of a spring-arm, one end of which is secured to the frame of the machine, while its other or free end is provided with a suitable receptacle for holding the other article or piece of material, and is located, when in its normal position, between said rivet-holding device and the upper surface of the anvil, and constructed and arranged to be depressed to bring the article or piece of material supported thereby into contact with the material to which it is to be secured.

3. In a machine for uniting two articles or pieces of material by riveting, the combination herein described, with a fixed anvil for supporting one of said articles or pieces of material, and a vertically-reciprocating rivet-setting plunger, of a yielding support, which, in its normal position, is located above the upper surface of said anvil, and which is provided with one or more receptacles of a suitable shape to receive a buckle or clasp and hold it in position while it is being depressed by the setting-plunger to bring it into contact with the material to which it is to be secured.

382,351. VELOCIPEDE. MATTHEW A. CHERRY, Washington, D. C. Filed Oct. 15, 1887. Serial No. 252,473. (No model.)



Claim.—1. In a velocipede, the combination, with the M-shaped tubular frame A, of the bolster C, the cross-bar D, the frame E, the bearings I and rods I', and the cross-bar J, substantially as set forth.

2. In a velocipede, the combination, with the M-shaped tubular frame A, of the seats S, platforms S', foot-rests S², and the springs S³, substantially as set forth.

3. In a velocipede, the combination, with the cranked axle H, of the rod M, the forks N, loosely hung on said rod and provided with two or more perforations, *a*, and the treadles O, pivoted in said forks and having the bearings *c* and pedals *c'*, substantially as set forth.

4. In a velocipede, the combination, with the M-shaped frame A, of the bolster C, cross-bar D, and frame E, the front axle, C, turning on the bolster C, the frame F², the vertical shaft journaled in bearings on said frame and having at its upper end the handles and at its lower end the cross-bar, and the links connecting said cross-bar with the front axle, substantially as set forth.

5. In a velocipede, the combination, with the M-shaped tubular side frame, A, of the frame F², the cross-bar J, and the bar Q, carrying the seat and having a spring portion, *q'*, and downwardly-extending ends passing through slots in frame F² and cross-bar J, and adjustably secured thereto, substantially as set forth.

6. In a velocipede, the seat R, composed of a strip of metal turned upward and over at each end and provided with open heads, the leather saddle *r*, secured to said heads, and the cushion *r'*, secured to said saddle, substantially as set forth.

7. The method of making a velocipede-seat frame, which consists in slitting a portion of each end of a strip of metal, bending the two parts of the slitted portion into a ring and welding the ends together, and then turning each of said ends up and over until the rings lie in a plane parallel with the main portion of the strip and a few inches above the same, substantially as set forth.

8. The combination, with a velocipede, of the uprights T, hinged at their lower ends, the side rods, T', the rafters T², and the ridge-pole T³, substantially as set forth.

9. The combination, with a velocipede, of the crossed uprights T, hinged at the lower end, the side rods, T', the rafters T², and ridge-pole T³, the standards U, and the sliding tubes U', attached to the ridge-pole T³, substantially as set forth.

10. In a velocipede, the combination, with the fork N, treadle O, and crank A, of a spring-pusher, V, pivoted to the treadle, and a rod, W, connecting the middle of the pusher with the fork N, substantially as set forth.

382,352. MANUFACTURE OF SHEET-IRON. ISAAC R. CRANE, Camden, Ohio. Filed Feb. 4, 1888. Serial No. 262,994. (No specimens.)

Claim.—An improvement in the manufacture of polished sheet-iron, consisting in the introduction into the package made up for either heating or heating and hammering of a number of sheets of larger dimensions than the average alternated with the smaller ones.

382,353. WHIFFLETREE-SPRING. EDWARD C. CORBIN, South Evanston, Ill., assignor to the Evans Spring Company, of New York. Filed Oct. 14, 1886. Renewed Oct. 10, 1887. Serial No. 251,980. (No model.)



Claim.—1. In a draft attachment for vehicles, the combination, with the tubular frame secured to the tongue or cross-bar and inclosing the spiral spring, having the compressing-rod extending through its interior, provided with a nut or washer at its rear end adapted to slide within the frame and a clevis on its front end, of the slotted plate extending forward beyond the frame and provided on its under side with the downward-projecting ribs, forming a track or recess for the head of the clevis-bolt, substantially as specified.

2. In a draft-equalizer for vehicles, the combination, with the cross-bar of the shafts, of the tubular frame adapted to inclose the spiral spring and its compressing-rod, having a horizontal and a vertical flange at its front end cast integral therewith, and provided with suitable bolt-openings whereby it may be secured to said cross-bar, substantially as and for the purpose specified.

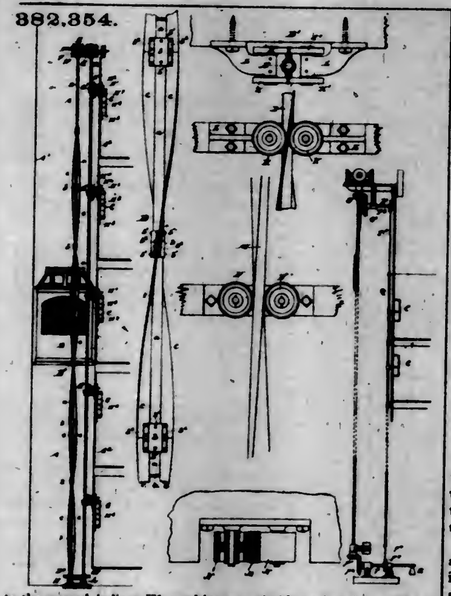
3. In a draft attachment for vehicles, the combination, with the tubular spring-frame having the horizontal and the vertical flanges at its front end, of the spiral spring, the spring-compressing rod having a nut or washer at its rear end and a clevis at its front end, and the slotted front extension-plate adapted to receive the end of the clevis-bolt, substantially as and for the purpose described.

4. In a draft attachment for vehicles, the combination, with the spring-frame having the vertical and the horizontal attaching-flanges at its front end, of the interior spiral spring, the spring-compressing rod having a clevis secured to its front end, and the slotted front extension-plate provided with a recess on its under side for the head of the clevis-bolt, substantially as and for the purpose described.

382,354. ELEVATOR-INDICATOR. HENRY REHRAUER, Mount Vernon, N. Y., assignor to himself, and the Crane Elevator Company of Illinois, Chicago, Ill. Filed Nov. 5, 1887. Serial No. 254,565. (No model.)

Claim.—1. The combination, with an elevator platform or car, B, of a vertical screw-shaft, D, and mechanical connections therefrom

382,354.

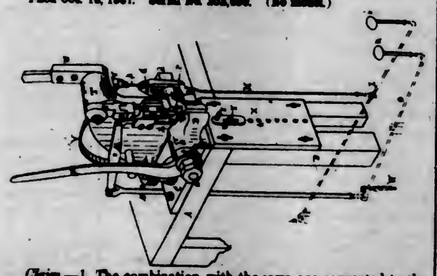


to the several indices H^2, working on suitable scales, the car being fitted with means, as the rollers N N, to act on and turn the screw-shaft and its connections as it ascends and descends, substantially as herein specified.

2. In an elevator-indicator, the upright shaft D, simply guided at the bottom, in combination with anti-friction rollers E, supporting its weight at or near the top, the associated shaft G, gearing G^2 H^2, and with the car B, provided with rollers N N, and indicator-index H^2, arranged for joint operation, as herein specified.

3. In an elevator-indicator, in combination with the car B and rollers N N, carried thereon, the shaft D, made in sections, united by couplings *b b*, and the helical flanges b^2 b^2, the latter being riveted or otherwise secured to the couplings in the required helical positions, substantially as herein specified.

382,355. UPSETTING-MACHINE. PETER GIBSON, Toledo, Ohio. Filed Oct. 18, 1887. Serial No. 252,689. (No model.)



Claim.—1. The combination, with the jaws, one connected to the other by a bolt, as described, and each formed with a boss through which the confining-bolt passes, of a slotted wedge straddling said bolt and operating on one of said jaws, and a lever having a head acting on the other jaw, substantially as and for the purpose specified.

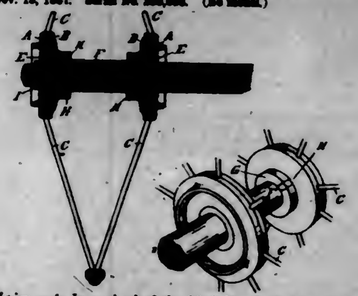
2. The combination, with the jaws, one connected to the other by a bolt, as described, and each formed with a boss through which the confining-bolt passes, and a spring interposed between said jaws, of a slotted wedge straddling said bolt and operating on one of said jaws, and a lever having a head acting on the other jaw, substantially as and for the purpose specified.

3. In a device for the purposes described, the combination, with a clamping device having two movable jaws, a wedge operated by a treadle-lever, and a retracting-spring, of a lever having a wedge-shaped head, substantially as and for the purposes specified.

4. The combination, in a device for the purposes described, with a clamping device having two movable jaws, and a pruner-foot operated by a treadle-lever, of a retracting-spring arranged between said jaws, substantially as and for the purposes specified.

5. The combination, in a device for the purposes described, with a clamping device having two movable jaws, of a plate having a vertical series of holes therein, and a stub-axle in vertical line with the interval between said jaws, substantially as and for the purposes set forth.

382,356. VEHICLE-WHEEL. PETER GIBSON, Toledo, Ohio. Filed Nov. 18, 1887. Serial No. 255,693. (No model.)

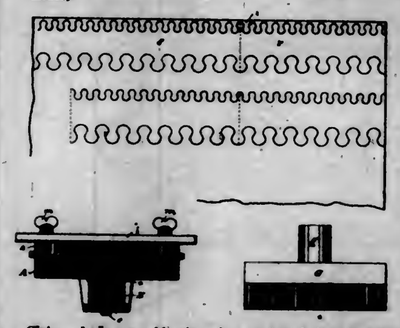


Claim.—1. In a wheel of the kind described, the combination, with two pairs of spoke-clamping disks, of notched collars formed upon the inner disk of each pair, and a skein, upon the outer ends of which these pairs of disks are sleeved and provided with lugs engaging into the notches of the collars of the disk, substantially as described.

2. The combination of two pairs of spoke-clamping disks, A B, a wheel of the kind described, notched collars G, formed upon the inner disk, and the skein F, upon the outer end of which the disks A B are sleeved, and provided with wedge-shaped lugs H, engaging into the notches of the collars G, substantially as described.

3. The combination of two pairs of spoke-clamping disks, A B, a wheel of the kind described, notched collars G, formed upon the inner disk, the skein F, upon the outer ends of which the disks A B are sleeved, lugs H, formed upon the skein and engaging into the notches of the collars G, one or more ribs, I, formed upon the inner face of the skein, and an axle provided with the corresponding recesses engaging with an inwardly-projecting rib of the skein, substantially as and for the purposes described.

382,357. PUNCH AND DIE. EMIL P. GUSTAFF and DUANE H. GLEASON, Brooklyn, assignors to the E. P. Gleason Manufacturing Company, New York, N. Y. Filed Feb. 6, 1886. Serial No. 260,576. (No model.)



Claim.—1. In a combination of a punch and die adapted to operate conjointly with each other, in which the figure forming the outline of the face of the punch are precisely the same in shape and size as the figure forming the cavity outline of the die-face, a die, the cavity outline of which is formed with cutting-edges on two diametrically-opposite sides, and with depressions from the die-face that render the edges of the other two sides of the die-cavity inoperative as cutting-edges, substantially as described.

2. A piercing and shearing punch having cutting-edges on its two sides which conform to the lines of figures that are precisely of the same size and shape as the spaces that occur between them, and a die-plate adapted to operate conjointly with the same, and which has the portion of its face upon which the cutting-edge is formed raised above the portion of its face which has no cutting-edge, in combination with a gage-bar, as *i*, and suitable means for holding the same in position, substantially in the manner and for the purpose described.

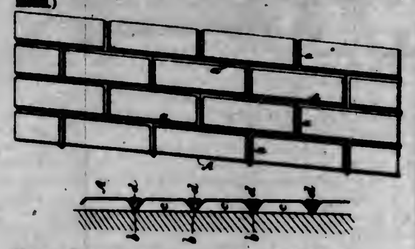
3. The following parts: a punch, as G, a die, as B, each having the characteristics described, bed-plate, as A, and bar, as C, with its guiding-shank *c*, plunger *b*, spring E, and stirrup D, when combined and arranged in the manner and for the purpose set forth.

382,358. PLATE FOR STORAGE-BATTERIES. CHARLES D. P. GIBBS, New York, N. Y. Filed Dec. 30, 1887. Serial No. 259,212. (No model.)



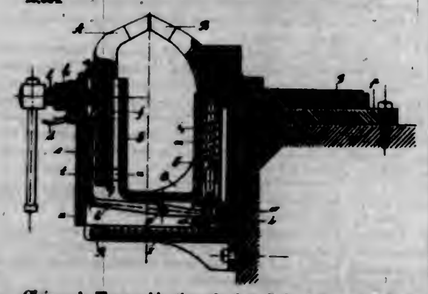
Claim.—The method described of producing plates for storage-batteries by forming them with closed or nearly-closed boxes A' on one face, adapted to be accessible to the acid, and open boxes A^2 opposite thereto, with cavities a between, next depositing a limited quantity of the active material in such cavities, then nearly closing the open boxes, and finally flattening both sets of boxes and compressing and confining the active material between them, while allowing access for the acid thereto, as herein specified.

382,359. FACING FOR WALLS OF BUILDINGS. ALFRED M. HARMS, Pekin, Ill. Filed Feb. 7, 1888. Serial No. 263,373. (No model.)



Claim.—The combination, with a building-wall, B, of the metallic facing A, provided with the transverse grooves *c*, filled with fire-proof material *d*, representing the face view of a brick or stone wall, the said facing having the inward projections *b*, adapted to hold the plane portions of the facing away from the wall to form the air-spaces *c*, substantially as and for the purposes described.

382,360. VISE. CARL J. HERMANN, Bielefeld, Westphalia, Prussia, Germany. Filed Dec. 7, 1886. Serial No. 220,262. (Model.) Patented in Germany Nov. 11, 1886, No. 40,326; in Austria-Hungary Nov. 13, 1886, No. 44,026 and No. 9,611; in France Nov. 20, 1886, No. 180,606; in Belgium Nov. 20, 1886, No. 76,440, and in England Dec. 1, 1886, No. 15,694.

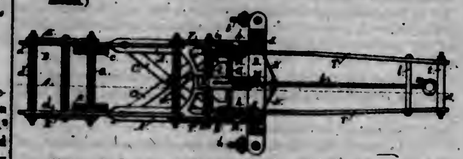


Claim.—1. The combination of a jaw, B, having a socket in the frame thereof and a rack, *s*, in said socket, with an arm, S, having an extension guided in said socket, a tooth in said extension adapted to gear with said rack, lever mechanism for lifting said tooth, and a jaw, A, adjustable in said arm in a direction to and from said jaw B, for the purpose set forth.

2. The combination, of a jaw, B, having a socket in the frame thereof and a rack, *s*, in said socket, with an arm, S, having an extension guided in said socket, a tooth in said extension adapted to gear with said rack, a spring for holding said tooth in engagement, bell-crank lever A, rod *c*, and lever *d*, for raising said tooth, a removable jaw, A, adjustable in said arm S in a direction to and from said jaw B, and screw-spindle *l*, for adjustment of said jaw A, in the manner set forth.

3. The combination of a jaw, B, a base, P, integral therewith, a socket in said base, an arm, S, having an extension movable in said socket, a jaw, A, in said arm, and means for relative adjustment of jaws A and B, with a spindle, O, on said base P, ribs *v* on said base, plate G, ribs *v'* on said plate, spring F, and nut M, for the purpose set forth.

382,361. STOVE-TRUCK. JOHN K. HESS and JOHN G. DELBRUGE, Elizabethtown, Pa. Filed Feb. 16, 1888. Serial No. 264,201. (No model.)

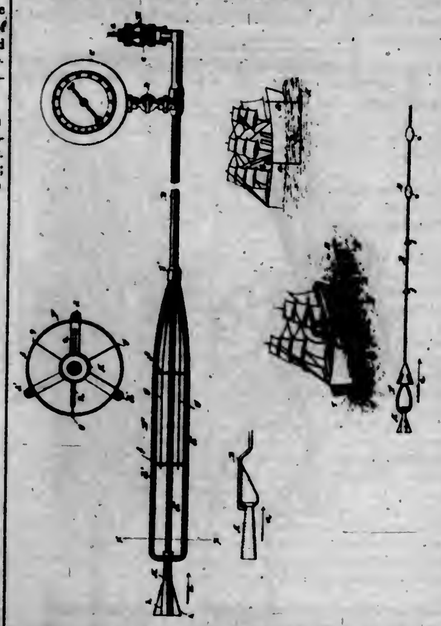


Claim.—1. In a truck, the combination, with the frame, the platform, and the pivotally-connecting posts, the front posts being provided with lips, as specified, of the spring-thills, and a device whereby they may be disconnected from the lips, substantially as and for the purpose specified.

2. In a truck, the combination, with the frame, the platform, and the pivotally-connecting posts, the front posts being provided with lips, as specified, of thills for engaging said lips, and a hook attached to said front posts and engaging with the frame, and a device for simultaneously disengaging the thills and hook from the lips and frame, respectively, substantially as specified.

3. In a truck, the combination, with the frame, the platform, the connecting-posts, the front posts being provided with lips, as specified, the hook for grasping the front of the frame, and spring-thills for engaging said lips, of springs connecting the hook and thills with the rod L, whereby said hook and thills may be simultaneously disengaged from said frame and lips, respectively, substantially as and for the purpose specified.

382,362. SHIP'S LOG. WILLIAM S. HOSS, U. S. Navy. Filed Apr. 14, 1887. Serial No. 235,262. (No model.)



Claim.—1. In a ship's log, the combination of a vacuum-tube, indicator, and relief-valve for clearing the tube of water, substantially as described.

2. In a ship's log, the combination of a vacuum-instrument, a

tube, an indicator, and a relief-valve for clearing the tube of water, substantially as described.

3. In a ship's log, the combination of a vacuum-instrument, a tube, an indicator, throttling device, and a relief-valve for clearing the tube of water, substantially as described.

4. In a ship's log, the combination of a vacuum-tube, indicator, and a relief-valve provided with a stem to be operated by hand for clearing the tube of water, substantially as described.

5. In a ship's log, the combination of a vacuum-instrument consisting of an open-ended tube and a guard supported in front thereof, substantially as described.

6. In a ship's log, the combination of a vacuum-instrument consisting of an open-ended tube, its tube, and a guard supported in front of said instrument and connected with said tube, substantially as described.

7. In a ship's log, the combination of a vacuum-instrument consisting of an open-ended tube, its tube, and a guard supported in front of said instrument and connected both to the instrument and to the tube, substantially as described.

8. In a ship's log, the combination of a vacuum-instrument and a guard composed of a series of rigid pieces, one of which is a tube communicating with the instrument, substantially as described.

9. In a ship's log, the combination of a vacuum-instrument, its tube, and a guard composed of a series of rigid pieces, one of which is a tube communicating with the instrument, and all connected together at one end with said tube, substantially as described.

10. A vacuum-instrument for a ship's log, consisting of an open-ended tube provided with a conical guard projecting in front of its mouth, substantially as described.

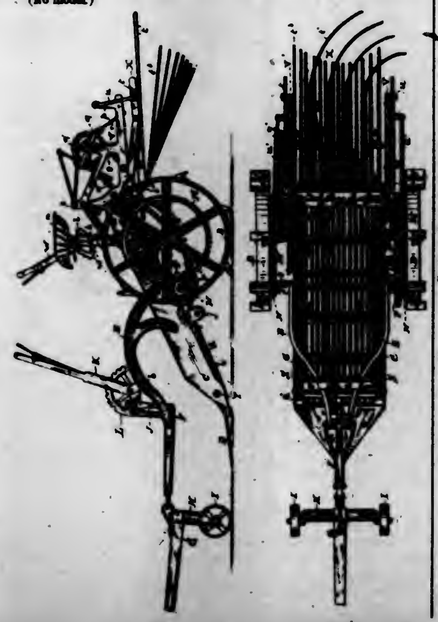
11. A vacuum-instrument for a ship's log, consisting of an open-ended tube provided with a conical guard projecting in front of its mouth and open so as not to interrupt the passage of water thereto, substantially as described.

12. A vacuum-instrument for a ship's log, consisting of an open-ended tube provided with a guard projecting in front thereof and having guard-wires *g*, substantially as described.

13. In a ship's log, the combination of a vacuum-instrument provided with a guard in front of its mouth, its tube, and vanes for keeping the instrument in a horizontal position and bringing it to the surface at low speeds, substantially as described.

14. In a ship's log, the combination of a vacuum-instrument consisting of an open-ended tube provided with a guard, its tube, and vanes for keeping the instrument in a horizontal position, substantially as described.

382,363. COMBINED POTATO DIGGER AND SEPARATOR. ISAAC W. HOOVER, Avery, Ohio. Filed Aug. 29, 1887. Serial No. 248,302. (No model.)

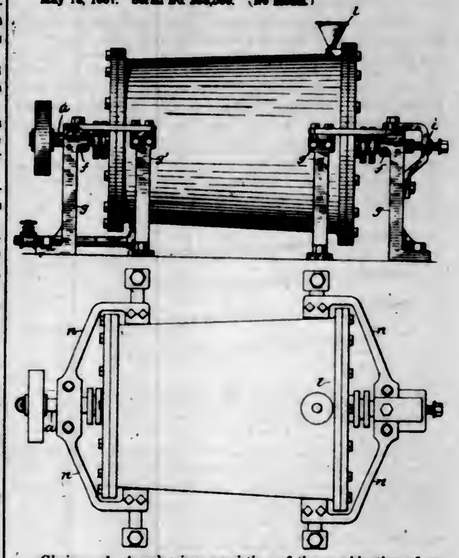


Claim.—1. In a potato digger and separator, the elevator S, consisting of the endless link belts *d*, and angular cross-bars *e*, provided with pins to move in between the spaces of the rack U, underlying said elevator S, substantially as described, and for the purpose set forth.

2. The combination of the arms E, provided with bosses *v*, the lever F, pivotally connected with said bosses, the braces *w*, and the bolt *x*, uniting them with said arms and lever, substantially as shown and set forth.

3. In combination with the potato digger and separator combined, the truck I, lever F, and braces *w*, pivotally attached with the arms E and lever K, substantially as described, and for the purpose specified.

382,364. PULVERIZER. AUGUSTUS JAMESON, Elizabeth, N. J., assignor of one-half to William A. Lottimer, New York, N. Y. Filed May 18, 1887. Serial No. 238,502. (No model.)



Claim.—1. A pulverizer consisting of the combination of an inner perforated rotatable cone, open at one end and closed at the other, an outer concentric fixed cone having a receiving-opening in the upper part of its larger end and an exit-opening in the lower part of its smaller end, and means for regulating the distance between the outer surface of the inner cone and the inner surface of the outer cone, the closed end of the inner cone being its smaller end, substantially as and for the purpose described.

2. In a pulverizer, the combination of a rotatable shaft, an inner cone fixed to said shaft containing openings, the said cone being closed at its smaller end and open at its larger end, an outer cone loose upon and concentric with said shaft, a screw pressing lengthwise upon said shaft, the said shaft being adjustable lengthwise, the said outer cone having a receiving-opening in the upper portion of its larger end and an adjustable exit-opening in the lower part of its smaller end, substantially as and for the purpose described.

382,365. BACK-BAND. HENRY C. JOHNSON, El Dorado, Ark. Filed Feb. 21, 1888. Serial No. 264,712. (No model.)

Claim.—1. A back-band hook having the longitudinal bars 1 and 2, end bars 3, tongues 4, having spaces 8 and 9, arms 5, extending downwardly, uniting in a point, said point turning up into a hook, 6, substantially as shown and described.

2. The combination, with the back-band hook, as described, of the webbing 7, said webbing passing under bar 1; thence outwardly through space 8, over tongues 4, spaces 9, and lower bar, 2; thence upwardly against the inner face of said bar 2; thence outwardly through spaces 9 and over the tongues 4; thence inwardly through



382,366.



spaces 8; then its lower end hangs downwardly against the inner face of said back-band hook below the arms 5 and hook 6, substantially as shown and described.

382,366. GLOVE-FASTENER. ROUTH J. KRAUSSE, Boston, Mass., assignor to the International Fastening Company, Portland, Me. Filed Nov. 26, 1887. Serial No. 256,203. (No model.)



Claim.—1. A flexible button member consisting of a struck-up stud, A, provided with spring-ears *b b* and having a flat unbroken base, in combination with a collet, B, embracing the base, a flanged eyelet, C, and a washer, D, substantially as and for the purposes described.

2. An inflexible button-hole member consisting of a cover, E, secured upon the upper side of the fabric and having a central opening, in combination with a cup, F, secured on the under side of the fabric, provided with an upwardly-projecting tubular portion, *c*, and having an inflexible contracted smooth circular mouth, whereby a flexible button member only may be inserted and held therein, substantially as described.

3. A flexible button member consisting of the spring-eared stud A, the collet B, the eyelet C, and the washer D, having the annular central edge, *f*, substantially as described.

4. In a fastener, an inflexible button-hole member consisting of a cover and a rounded cup, in combination with a flexible button member consisting of a spring-eared stud, an eyelet, a collet, and a washer, substantially as and for the purposes described.

382,367. DESIGNATION-BADGE. RICHARD H. LEE, Altoona, Dak. Filed June 1, 1887. Serial No. 239,967. (No model.)



Claim.—1. In a badge, the combination, with the plate formed with suitable openings, of a layer of fabric covering the face of said plate, and characters provided with tangs adapted to pass through said fabric and the openings in said plate and to be clinched upon the rear face of the plate, substantially as and for the purpose set forth.

2. The combination, with the plate B, having a frame, A, and formed with slots *b*, of the detachable fabric C, covering the face of said plate, and the characters D, provided with tangs *d*, adapted to pass through the fabric and the slots *b* and to be clinched upon the back of the plate, substantially as and for the purpose set forth.

382,368. PROCESS OF REFINING DEXTRINE. CONRAD HENRY MATTHIESSEN and JOSEPH KRIEGER, Chicago, Ill. Filed Nov. 1, 1887. Serial No. 253,905. (No specimens.)

Claim.—The process of refining commercial dextrine herein described, which consists in first causing a watery solution of commercial dextrine to ferment until the sugar originally present has been destroyed, and in then neutralizing the solution and filtering and concentrating it in the ordinary manner.

382,369. METHOD OF PRODUCING UNCOLORED AND COLORED PHOTOGRAPHIC IMPRESSIONS. JOHN J. H. MAYALL, Southwick, County of Sussex, England. Filed July 28, 1887. Serial No. 245,261. (No specimens.) Patented in England Apr. 5, 1887, No. 5,089; in France May 2, 1887, No. 183,445; in Belgium May 10, 1887, No. 77,266; in Denmark May 20, 1887; in Italy July 5, 1887, No. 21,751; in Spain Aug. 1, 1887, No. 7,033, and in Norway Oct. 12, 1887, No. 606.

Claim.—1. The method of producing uncolored photographic impressions, consisting of a bath to first soak the paper in composed of gelatine and lactate of iron; a bath to float the paper on composed of albumen, chloride of sodium, bromide of potassium, glacial acetic acid, and a derivative of silex; a sensitizing-bath composed of nitrate of silver, nitrate of soda, and free ammonia; the means for rendering the film slightly alkaline, consisting of fumigating the paper in an atmosphere of ammonia, and a weak solution of sulphuric acid to soak the print in to expel all traces of the hyposulphite, in about the proportions stated and as described.

2. The method of producing colored photographic impressions, consisting of a bath to first soak the paper in composed of gelatine and lactate of iron; a bath to float the paper on composed of albumen, chloride of sodium, bromide of potassium, glacial acetic acid, a derivative of silex, and coloring-matter previously dissolved in a mixture of alcohol and meconin; a sensitizing-bath composed of nitrate of silver, nitrate of soda, and free ammonia; the means for rendering the films slightly alkaline, consisting of fumigating the paper in an atmosphere of ammonia, a weak solution of sulphuric acid to soak the print in to expel all traces of the hyposulphite, attaching the print in a moist state on a sheet of glass or skeleton frame, face uppermost, and when dry dabbing on coloring-matter previously prepared with phenic acid, silicate of potash, and silicate of potash in alcohol; the means for rendering the paper impervious to moisture, consisting of the application of white wax, paraffine, or camphor to frost and back of the paper; the means for setting the color consisting of an atmosphere charged with a weak alcoholic solution of salicylic acid, derivative of silex, paraffine, or a preparation of fluorine, dissolved in alcohol, sprayed over the pictures, and afterward applying finely-powdered soluble glass, and the means for finishing the picture, consisting of a plate of glass coated with collodion mixed with salicylic acid, and when dry recoated with gelatine and salicylic acid, moistening the print with a mixture of hydrocarbon and salicylic acid, laying the print upon the prepared surface of the glass, face downward, well pressed down, and allowed to dry in a warm atmosphere, all substantially as hereinbefore described.

3. In the method of producing photographic impressions, the means for preparing the paper consisting of the combination of a bath to first soak the paper in, composed of gelatine and lactate of iron, and a bath to float the paper on, composed of albumen, chloride of sodium, bromide of potassium, glacial acetic acid, and a derivative of silex or hydrocarbon, in about the proportions stated.

382,370. PLANT-PROTECTOR. JOSEPH W. MCCALL, Kansas City, Mo. Filed May 24, 1886. Serial No. 203,132. (No model.)



Claim.—A colery-shield having a tubular body portion, A, of an interior diameter approximating the desired diameter of the mass of plant-stems over which it is to be placed, and having its lower edge flaring and sharpened, as at *a*, substantially as and for the purposes set forth.

382,371. APPARATUS FOR THE MANUFACTURE OF GAS. ARTHUR G. MELHUISH, Redhill, County of Surrey, England. Filed Aug. 23, 1887. Serial No. 247,696. (No model.) Patented in England Sept. 20, 1887, No. 12,340.

Claim.—1. In apparatus for the manufacture of gas from fluid hydrocarbons, the combination, with a double-mouthed retort, of two ingression-pipes, one extending from each end of the retort into its central portion for discharging opposing streams of fluid against each other and causing uniform mixture thereof.

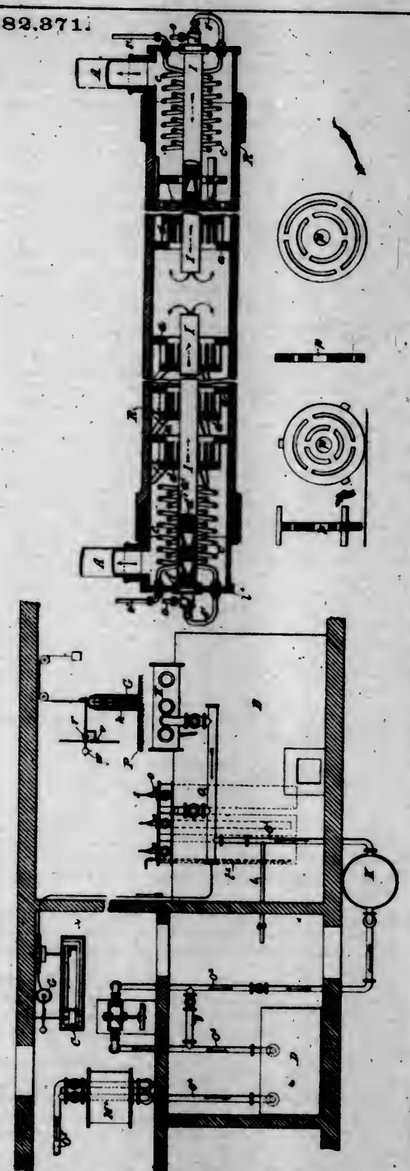
2. In apparatus for the manufacture of gas from fluid hydrocarbons, the combination, with a retort and its inwardly-extending ingression-pipe, of a complement of deflecting and impact devices provided with alternating annuluses and disks arranged in the retort, whereby gaseous fluids discharged within the retort are deflected against numerous heated surfaces for better combining and fixing them.

3. In apparatus for the manufacture of gas from fluid hydrocarbons, the combination, with a retort and an ingression-pipe extending into it, of a steam-superheater coiled about and connecting with the ingression-pipe, for the purposes set forth.

4. In apparatus for manufacturing gas from fluid hydrocarbons, the combination, with a retort, of an apparatus consisting of an ingression-pipe extending into such retort, a steam-superheater, an injector connecting with the superheater and the ingression-pipe, and deflecting and impact devices disposed around the ingression-pipe, substantially as herein described.

5. In apparatus for the manufacture of gas from fluid hydrocarbons, the combination, with a retort and its inwardly-extending ingression-pipe, of deflecting and impact devices consisting of a large number of auxiliary surfaces systematically disposed and arranged, whereby the passing current of fluid is repeatedly broken up and at

382,371.



combination with an inwardly-extending ingression-pipe, also fitted internally with deflecting and impact devices, and a fluid-supply pipe connecting with the ingression-pipe, whereby the gas-making fluids are first heated and intimately mixed and then discharged into the retort and against its heated deflecting-surfaces for conversion into a fixed gas.

9. In combination with a retort, a connected steam and oil injector, a connected induction-pipe for supplying a diluting fluid, an exhauster and motor connecting with the gas-outlet pipe, whereby steam and oil supplied to the retort are decomposed and a diluting agent is mixed with the resulting gas and the mixture drawn off without injurious decomposition, as described.

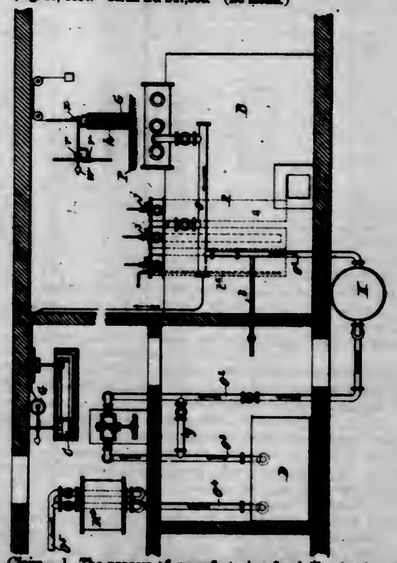
10. In combination with a retort, a connected steam and oil injector, an exhauster connecting with the outlet-pipe of such retort, a motor for operating the exhauster, and a governor for regulating and controlling the action of the exhauster and motor, whereby gas of a uniform quality may be made and withdrawn from the retort in regulated quantities independent of the rate of feed of the gas-making fluids, and of variations in the temperature of the retort.

11. In apparatus for the manufacture of gas from fluid hydrocarbons, the retort R, fitted with deflecting and impact devices *a d d*, in combination with a connected exhauster, E, and motor, substantially as herein described, whereby the gas is subjected to extended heating-surfaces and better fixed at reduced pressure and temperature, and obstructive deposits thereby prevented.

12. In apparatus for manufacturing gas, a retort, R, fitted with deflecting and impact devices *a d*, in combination with an exhauster, E, and motor, and a governor, G, substantially as herein described, whereby gas-making fluids are drawn into the retort in automatically-regulated quantities, the resulting gas is subjected to extended heating-surfaces and better fixed at reduced pressure and temperature, and is drawn off from the retort without injurious decomposition.

13. In apparatus for making gas from steam and fluid hydrocarbons, the combination, with a retort and its inwardly-extending ingression-pipe, of a complement of deflectors placed in the retort about the ingression-pipe, a steam and oil supply-pipe connecting with the ingression-pipe, a pipe for supplying a diluting fluid connecting with the retort, a connected exhauster, a motor for operating the exhauster, and a governor for regulating and controlling the action of the motor and exhauster, whereby the gas-making fluids are drawn into the retort and its eduction-pipe in automatically-regulated quantities, the vapors and gases generated subjected to extended heating-surfaces and better fixed at reduced pressure and temperature, and the fixed gas drawn off from the retort without injurious decomposition.

382,372. PROCESS OF MANUFACTURING GAS FROM OIL AND STEAM. ARTHUR G. MILNES, Redhill, County of Surrey, England. Filed Aug. 26, 1887. Serial No. 247,802. (No model.)



Claim.—1. The process of manufacturing fixed illuminating-gas which consists in admitting steam and hydrocarbon fluid into a suitable retort, and therein subjecting them to gaseous thermolysis under a constantly-maintained and uniformly-controlled partial vacuum or reduced pressure, whereby a uniform quality of gas is produced, as described.

2. The process of manufacturing fixed illuminating-gas which consists in subjecting hydrocarbon fluid to gaseous thermolysis in a suitable retort under the influence of a uniform constantly maintained and controlled partial vacuum or reduced pressure, and at the same time admitting an induced current of air, hydrogen, or water-gas for the purpose of dilution or of chemically influencing the gas in process of manufacture, whereby a uniform quality of gas of any desired candle-power is produced, as described.

382,373. PROCESS OF MAKING COAL-GAS. ARTHUR G. MILNES, Redhill, County of Surrey, England. Filed Aug. 26, 1887. Serial No. 247,800. (No model.) Patented in England Feb. 10, 1883, No. 2,070.



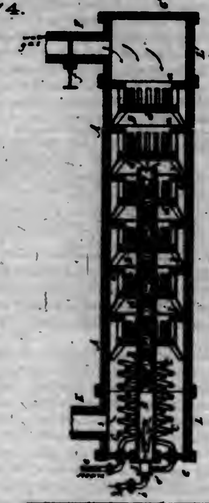
Claim.—The process of manufacturing gas which consists in distilling coal, shale, or similar material, and during the early stages of distillation passing the distillate, composed of condensable tarry vapors and gas containing an excess of rich hydrocarbons, together with an added supply of superheated steam, into a heated chamber and therein causing their mutual decomposition, so that the excess of carbon shall be combined with the oxygen and hydrogen of the steam and the whole converted into a fixed gas of the desired candle-power, and then during the latter stages of distillation enriching the thin gaseous distillate which is deficient in illuminants with injected hydrocarbons and converting the mixture into a fixed gas by passage through the heated fixing-chamber, whereby the products of the coal are fully utilized and an increased volume of fixed illuminating-gas produced.

382,374. PROCESS OF MANUFACTURING GAS. ARTHUR G. MILNES, Redhill, County of Surrey, England. Filed Oct. 20, 1887. Serial No. 253,747. (No model.)

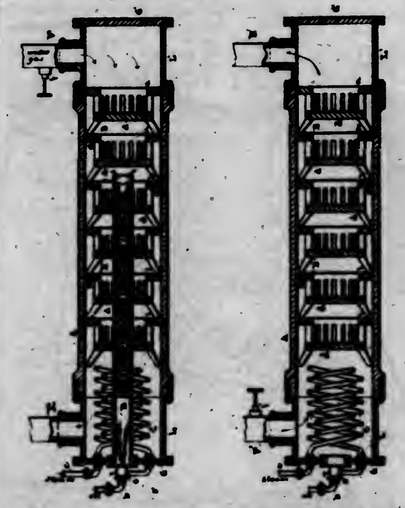
Claim.—1. The process of manufacturing gas which consists in first injecting steam and hydrocarbon oil into a heated chamber or retort and therein vaporizing the oil, thoroughly mixing the vapor with steam and highly heating the mixture, then heating hydrogen or water gas in a separate chamber and mixing it while hot with the heated mixture of oil-vapors and steam, and causing decomposition and recomposition by passing the mixture by direct impact in contact with numerous heated deflecting-surfaces till it is converted into a fixed gas.

2. The process of manufacturing gas which consists in injecting steam and hydrocarbon oil in regulated quantities into a heated chamber or retort and therein vaporizing the oil, thoroughly mixing the vapor with steam and highly heating the mixture, admitting a regulated quantity of hydrogen or water gas into a retort, heating it and mixing it while hot with the highly-heated mixture of oil-vapors and steam, and causing decomposition and recomposition by passing the mixture by direct impact in contact with numerous heated deflecting-surfaces till it is converted into a fixed gas.

382,374.



382,375. APPARATUS FOR THE MANUFACTURE OF GAS. ARTHUR G. MILNES, Redhill, County of Surrey, England. Filed Dec. 5, 1887. Serial No. 257,041. (No model.)



Claim.—1. In combination with a retort, an ingression-pipe or smaller internal retort extending from the front end of the outer retort, a steam and oil injector connecting with such internal retort, a gas-supply pipe connecting with the rear end, and a gas-eduction pipe connecting with the front end of the outer retort, for the purpose described.

2. In combination with a retort, an ingression-pipe or smaller internal retort extending inward from its front end, a steam and oil injector connecting with such internal retort, a series of deflecting and impact devices arranged in the outer retort and supporting the inner retort, a pipe for supplying water-gas connecting with the rear end, and a gas-eduction pipe connecting with the front end of the outer retort, for the purpose described.

3. In combination with a retort, a steam-superheating coil, a steam and oil injector connecting with the coil and discharging into the retort, a series of deflecting and impact devices arranged in the retort, a gas-supply pipe, and a gas take-off pipe connecting with opposite ends of the retort, for the purpose described.

4. In combination with a retort, a gas-supply connecting with its

rear end, a gas-eduction pipe leading from its front end, an ingression-pipe or small internal retort extending inward from its front end, a steam and oil injector connecting with such ingression-pipe, and deflecting and impact devices placed in the outer retort around the ingression-pipe and between its discharge end and the rear end of the retort, whereby the inflowing gas is first heated in contact with such devices, and then combined and fixed with the heated steam and oil-vapors flowing from the ingression-pipe, as described.

382,376. HYDRAULIC CEMENT. JOHN MURPHY, Columbus, Ohio. Filed Feb. 23, 1888. Serial No. 264,964. (No specimens.)

Brief.—Improvement on Letters Patent No. 347,367, dated August 17, 1886, to John Murphy and Nathaniel W. Lord.

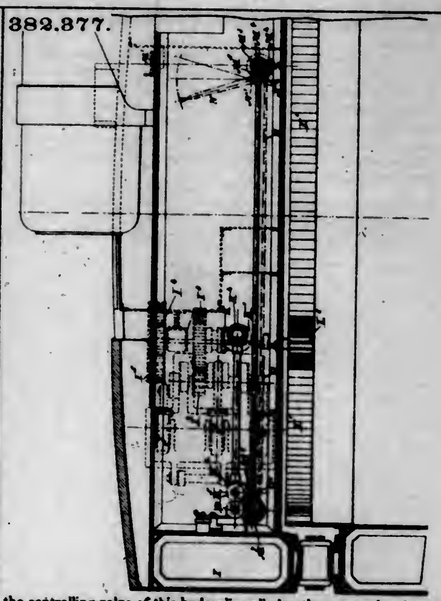
Claim.—A Portland or hydraulic cement composed of limestone, furnace-slag, and clay, which ingredients are mixed, burned, and then reduced to powder, substantially as described.

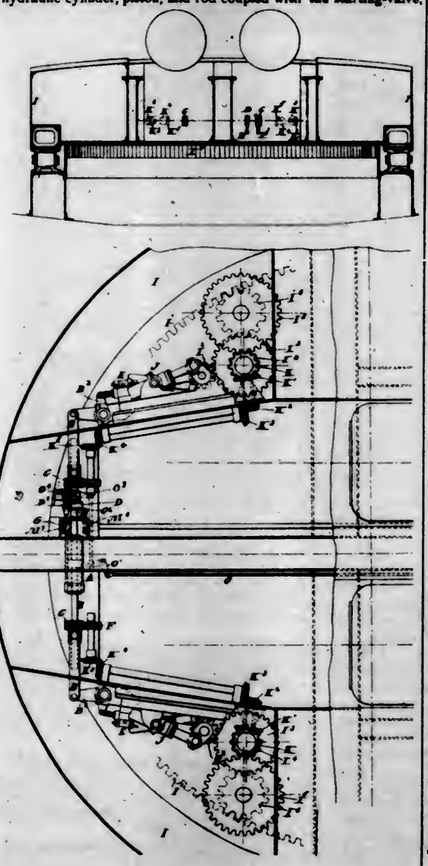
382,377. MEANS FOR CONTROLLING HYDRAULIC APPARATUS FOR TRAINING HEAVY GUNS. CHARLES H. MURRAY, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed June 15, 1887. Serial No. 241,380. (No model.) Patented in Italy Dec. 31, 1886, No. 20,756.

Claim.—1. The combination, consisting of a turret or gun-platform, a hydraulic engine geared therewith, the starting-valve of the said engine, a hydraulic cylinder, piston, and rod coupled with the starting-valve, the controlling-valve of this hydraulic cylinder, the nut on the piston-rod and coupled with the controlling-valve, which nut can be turned by hand-gear, and the other nut on the rod coupled with the starting-valve of the engine and also geared with the engine, the whole combined and operating substantially as described.

2. The combination, consisting of a turret or gun-platform, a hydraulic engine geared therewith, the starting-valve of the said engine, a hydraulic cylinder, piston, and rod coupled with the starting-valve,

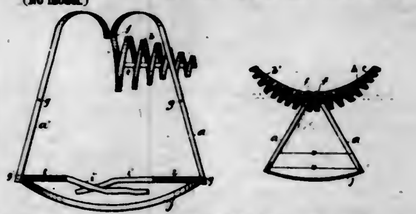
382,377.





the controlling-valve of this hydraulic cylinder, the nut on the piston-rod and coupled with the controlling-valve, the hand-gear for turning this nut from a distance, the other nut on the rod coupled with the starting-valve of the engine and also geared with the engine, and the clutch and its gear for locking the nuts together, the whole combined and operating substantially as described.

382,378. BUSTLE. CHARLOTTE O'DAY, Denver, Colo., assignor to Charlotte Alair, same place. Filed Aug. 10, 1887. Serial No. 246,580. (No model.)



Claim.—In a bustle attachment for dresses, the double sections consisting of the cone-shaped spirals *b* and *b'* and outwardly and downwardly curved back braces, *a* and *a'*, pivoted to the inner ends of the respective spirals, in combination with the contracting-tapes, substantially as described.

382,379. MACHINE FOR HARDENING HATS. SYDNEY C. PALMER, South Norwalk, Conn., assignor to Ellen M. Palmer, same place. Filed June 15, 1887. Serial No. 241,383. (No model.)

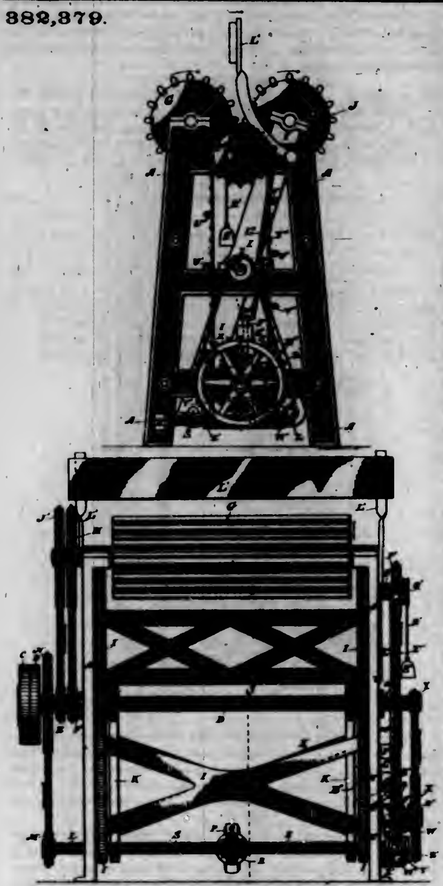
Claim.—1. In a hat-hardening machine, two rolls journaled side by side, the bearings of one roll being fixed and the bearings of the other being vibratory, whereby during the revolution of the rolls against the hat the latter is subjected to a series of compressions, substantially as set forth.

2. In a hat-hardening machine, a hardening-roll journaled in stationary bearings, in combination with a similar roll journaled in horizontal juxtaposition to the first-named roll and adapted to be vibrated toward and from the latter, substantially as specified.

3. In a hat-hardening machine, two hardening-rolls arranged in horizontal juxtaposition, one of said rolls being adapted to revolve within fixed and stationary bearings, the other roll being journaled within a vibratory frame, whereby the hat is subjected to two operations—namely, revolution and periodical compression—substantially as set forth.

4. In a hat-hardening machine, a stationary roll, in combination with a movable roll adapted to have a slight reciprocatory movement during the operation on the hat-roll, substantially as set forth.

382,379.



5. In a hat-hardening machine, the stationary roll journaled in the frame of the machine, in combination with the movable roll journaled at the top of a pivoted and swinging frame, a jog-frame pivoted eccentric with the pivotal point of the swinging frame, a short shaft having bearings within the jog-frame, and a compound eccentric secured on said shaft and adapted to act against the swinging frame, substantially as set forth.

6. In combination with the swinging and jog frames, a shaft extending through the jog-frame and having mounted thereon a compound eccentric, a strap around said eccentric, a strap connected to the swinging frame, a screw-bolt connecting said straps, and a sprocket-wheel mounted on said shaft and belted to the primary motive power, substantially as and for the purpose set forth.

7. In combination with the swinging and jog frames connected together, as described, a lever pivoted to the jog-frame and extending loosely through a bearing in the machine-frame, and a trip-bar pivoted to said lever and adapted to drop by gravity into locking abutment with the machine-frame, substantially as set forth.

8. In a hat-hardening machine, the combination, with the rolls and the means for operating the same against the hat-roll, of tripping mechanism consisting of a chain carried by wheels independent of the motive power, a trip-pin adjustably attached to said chain, a trip-bar which locks the hardening-rolls in operative position, and means for interlocking said tripping mechanism with the motive power, whereby said pin is forced by the travel of the chain against the trip-bar, thereby allowing the separation of the rolls, substantially as set forth.

9. In combination with the trip-bearing chain carried by wheels independent of the motive power and mechanism for connecting said wheels and power, means, as a weight and rope, adapted by gravity to revolve said wheels in a reverse direction, and thereby restore the trip-pin to its normal position, substantially as set forth.

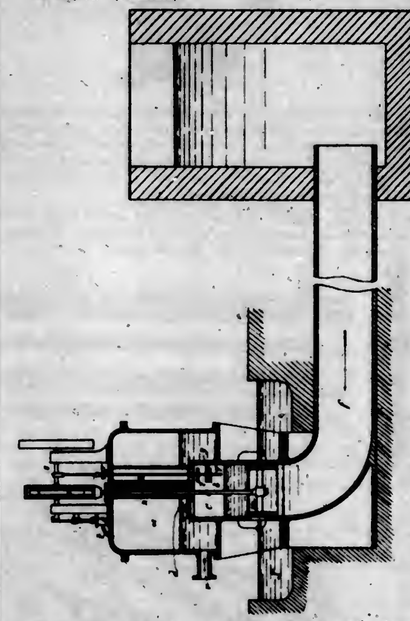
10. In a machine, as described, a sprocket-wheel having a clutch formed with its hub adapted to engage with a similar clutch carried by the motive power, in combination with means, as a weighted striker and a yoke operated thereby, for engaging said clutches, the striker adapted to be restored to its normal position by the swinging movement of the jog-frame, whereby the yoke is operated to disengage the clutch and motive power, thereby allowing the jog-frame and trip-bearing chain to return to their normal positions, substantially as set forth.

11. The sprocket-wheels carrying the tripper and mounted on shafts independent of the motive power, said wheels arranged one above the other, the upper wheel mounted on fixed bearings and having rigidly secured thereto a drum around which is coiled a rope with a weight at the free end, and the lower wheel secured on a hub which has a sidewise play on its shaft, in combination with a sprocket-wheel mounted on fixed bearings on the lower shaft, the hub of said sprocket adapted to be interlocked with the hub of the adjacent trip-carrying wheel, the primary motive power connected to said sprocket, and means for engaging and disengaging said hubs at predetermined times, whereby the operation of the tripping mechanism is determined, substantially as set forth.

12. In combination with the sprocket-wheels carrying the tripper and mounted on shafts, as described, the yoke pivoted to the machine-frame and attached at one end to the loose hub of the lower of said wheels, the primary shaft, a sprocket mounted on the same shaft with the lower trip-bearing sprocket and adapted to be engaged with the loose hub of the latter, and means for forcing said yoke to one side, whereby said loose hub is interlocked with that of the adjacent sprocket, substantially as set forth.

13. In combination with the trip-bearing sprocket-wheel mounted loosely on its shaft and the pivoted yoke attached to the hub of said wheel and adapted to be forced to one side, whereby the latter is engaged with the motive power, means dependent upon the jog-frame for automatically restoring said yoke to its normal position, whereby the tripping mechanism is disengaged from the motive power, substantially as set forth and specified.

382,380. HYDRAULIC APPARATUS FOR RAISING WATER, &c. HOWARD D. PEARSALL, London, England. Filed Mar. 10, 1886. Serial No. 194,713. (No model.)



Claim.—1. In hydraulic rams, the combination, with a flow-pipe and main valve, of a receiver, *c*, into which some of the water from the flow-pipe flows during the closing of the main valve, the receiver having a passage, *h*, through which air enters it and also escapes from it during the closing of the main valve, and a valve, *i*, in receiver *c* opening inwardly to close the passage *h*.

2. In hydraulic rams, the combination, with a flow-pipe and main

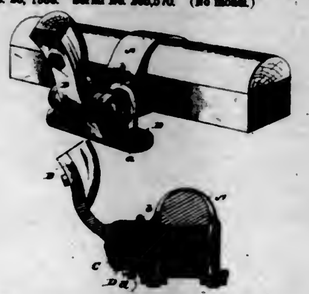
valve, of a receiver, *c*, into which some of the water from the flow-pipe flows during the closing of the main valve, the receiver having a passage, *h*, through which air enters it and also escapes from it during the closing of the main valve, a valve, *i*, closing the passage *h*, and a float, *b*.

3. In hydraulic rams, the combination, with a flow-pipe and main valve, of a receiver, *c*, into which some of the water from the flow-pipe flows during the closing of the main valve, the receiver having a passage, *h*, through which air enters it and also escapes from it during the closing of the main valve, a valve, *i*, closing the passage *h*, a float, *b*, and a screw, *g*, by which the distance of the float from the top of receiver *c* is varied at will.

4. In hydraulic rams, the combination of a flow-pipe, an air-vessel, *e*, a single valve, *m*, acting as main and waste valve, a valve-rod, *l*, and a motor, *A*, operatively connected with the valve-rod and actuated by the fluid under pressure in the air-vessel.

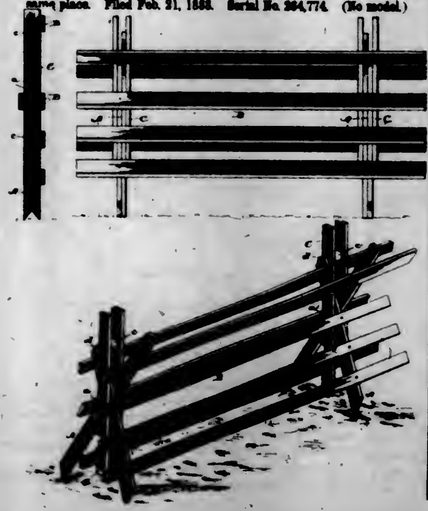
5. In hydraulic rams, the combination, with flow-pipe, main valve *m*, and an air-vessel, of a receiver, *c*, into which some of the water from the flow-pipe flows during the closing of the main valve, the receiver having a passage, *h*, through which air enters, and also escapes from said receiver during the closing of the main valve, a valve, *i*, closing the passage *h*, and a float, *b*, a screw, *g*, by which the distance of the float from the top of the receiver is varied at will, and a valve-rod, *l*, driven by a motor, *A*, actuated by the fluid under pressure in the air-vessel *e*.

382,381. THILL-COUPLING. AARON B. PERRIN, Topeka, Kans. Filed Feb. 28, 1888. Serial No. 265,570. (No model.)



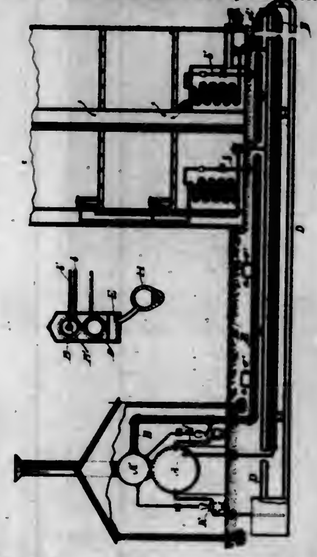
Claim.—The combination, with a thill-coupling, of an anti-rattler consisting of a plate perforated near opposite ends, a rubber bearing thereon and adapted to bear against the thill-eye, and the threaded rods passing through the said plate and having their upper ends hooked to engage the lugs of the shackle, and nuts for securing the rods to the said plate, substantially as specified.

382,382. FENCE. ANDREW J. PITTS and GEORGE W. PITTS, De Armanville, Ala., assignors of one-half to J. G. Hudson and C. C. Hudson, same place. Filed Feb. 21, 1888. Serial No. 264,774. (No model.)



Claim.—The combination, with the pivoted supporting-braces, the rails, and the supplementary rails, of posts pivoted to said braces and having slots for the reception of said supplementary rails, substantially as described.

382,383. MEANS FOR SUPPLYING HEAT AND POWER TO LARGE DISTRICTS OF BUILDINGS. WILLIAM R. PRALL, Washington, D. C., assignor to the National Heating Company, New York, N. Y. Filed Jan. 21, 1888. Serial No. 261,468. (No model.) Patented in England July 23, 1879, No. 2,907, and in Germany Jan. 27, 1880, No. 12,888.



Claim.—1. In a central-station heat and power system, the combination of a heater, a superheated water main or pipe extending from and returning to the heater, a steam-main contiguous to the water-main, means for introducing steam into said steam-main, and means for causing a circulation in the water-main, substantially as shown and described.

2. In a central-station heat and power system, the combination of a heater, a superheated water-pipe extending from and returning to the heater, a steam-main contiguous to the water-pipe, the steam-main being in communication with the heater and with the water-pipe, and a radiator or other means for utilizing the steam in communication with the steam-main.

3. In a central-station heat and power system, the combination of a heater, a superheated water-pipe extending from and returning to the heater, a force-pump connected with said pipe, a steam-main contiguous to said pipe, means for introducing steam into said main, a radiator or other means for utilizing the steam in communication with said main, and means for returning the water of condensation to the heater.

4. In a central-station heat and power system, the combination of a heater, a superheated water-pipe leading from and returning to the heater, a steam-main contiguous to the water-pipe in communication with the heater and with the water-pipe, a radiator or other means for utilizing the steam, a return-pipe in communication with the heater for returning the water of condensation to the heater, and pipes forming communications between the steam-main and return-pipe, substantially as shown and described.

5. In a central-station heat and power system, the combination of a heater, a superheated water-pipe and steam-main, one of which is placed within the other, the steam-main being in communication with the heater and superheated water-pipe, and a radiator or other means for utilizing the steam, substantially as shown and described.

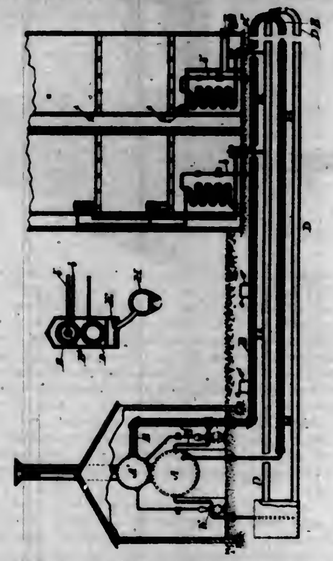
6. In a central-station heat and power system, the combination of a heater, a superheated water-pipe leading from and returning to the heater, a steam-main contiguous to said pipe, means for introducing steam into said main, and radiators or other means for utilizing the steam and hot water in communication with both the steam-main and water-pipe, substantially as shown and described.

7. In a central-station heat and power system, the combination of a heater, a superheated water-pipe extending from and returning to the heater, a steam-main contiguous to said water-pipe, means for introducing steam into said main, radiators or other means for utilizing the steam and hot water in communication with both the steam-main and hot-water pipes, and a system of return-pipes in communication with the heater, substantially as shown and described.

8. In a central-station heat and power system, the combination of a heater, a superheated water-pipe extending from and returning to the heater, a steam-main contiguous to the water-pipe, and in communication therewith a radiator or other means for utilizing the steam, and means for returning the water of condensation to the heater.

9. In a steam and hot-water heat and power system, the combination of a heater, a superheated water-pipe extending from and returning to the heater, a steam chamber or main in proximity to the water-main and in communication with the heater and the water-pipe, and a radiator or other means for utilizing the steam in communication with the steam-main, substantially as shown and described.

382,384. METHOD OF SUPPLYING HEAT AND POWER TO LARGE DISTRICTS OF BUILDINGS. WILLIAM R. PRALL, Washington, D. C., assignor to the National Heating Company, New York, N. Y. Filed Jan. 21, 1888. Serial No. 261,469. (No model.) Patented in England July 23, 1879, No. 2,907, and in Germany Jan. 27, 1880, No. 12,888.



Claim.—1. The herein-described method of supplying heat and power to large districts of buildings in cities and towns, in which superheated water and steam are used as heat and power conveying mediums, which consists in superheating water and generating steam at a central station, conveying each contiguously throughout the district, and extracting a portion of either of the heat and power conveying mediums at points where the same is required.

2. The herein-described method of supplying heat and power, in which steam and superheated water are used as heat-conveying mediums, which consists in superheating water and generating steam, conveying them, one within the other, throughout the district where heat and power are required, extracting a portion of the heat and power conveying medium at the points where the same is required, and returning the same to the heater after it has been employed for said purposes.

3. The herein-described method of supplying heat and power, which consists in superheating water and generating steam, conveying the steam and water contiguously to the point where heat or power is required, and extracting a portion of the steam for heat or power purposes, substantially as shown and described.

4. The herein-described method of supplying heat and power, which consists in superheating water and generating steam, conveying the steam and water separately and contiguously to the point where heat or power is required, extracting a portion of the steam for heat or power purposes, and returning the water of condensation to the heater.

5. The herein-described method of supplying heat and power to large districts of buildings in cities and towns, which consists in superheating water and generating steam, conveying each contiguously throughout the district, and extracting portions of the water and mingling them with the steam at points along the route, and extracting the steam where heat or power is required.

6. The method of supplying heat and power herein described to large districts of buildings in cities and towns, which consists in superheating water and conveying it throughout the district, extracting a portion of the superheated water whereby steam is formed, conveying the steam so formed contiguously to the superheated water, extracting a further portion of the superheated water and commingling it with the steam previously formed, and utilizing the steam for heat or power purposes where required.

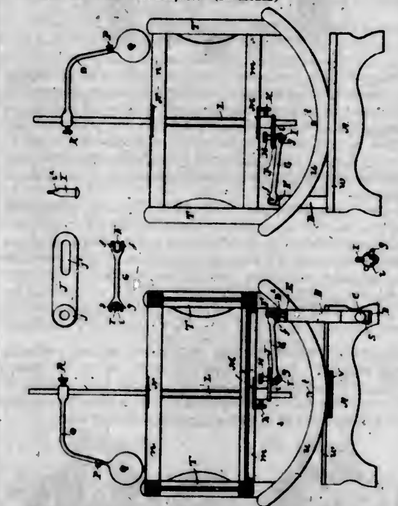
382,385. RAIL FOR STREET-RAILWAYS AND CHAIR. ISAAC H. RANDALL, Boston, Mass. Filed Aug. 2, 1886. Serial No. 209,332. (No model.)



Claim.—1. A chair for a railway-rail provided with a base, *g*, standard *h*, and seat composed of vertical part or block *i* and horizontal flanges *j*, substantially as and for the purpose set forth.

2. In combination with two meeting rails, each provided with two vertical webs, *c c*, a chair, B, provided with a base, *g*, standard *h*, and seat composed of a tie-block, *i*, and flanges *j*, substantially as set forth.

382,386. PAN ATTACHMENT FOR CRADLES. JOHN RAE, Belleville, Ill., assignor of one-half to A. F. Klotzbach, same place. Filed Mar. 31, 1887. Serial No. 233,119. (No model.)



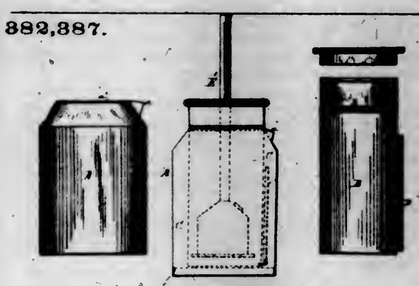
Claim.—1. The combination of the stationary support of a cradle, a standard secured thereto, a pin, F, on top of said standard, a cradle, a vertical rod, L, pivoted thereto and having an arm carrying a fan, a crank upon said rod, a pin, I, adjustably secured to said crank, and a rod, G, connecting the pins F and I, substantially as and for the purpose described.

2. The combination of the stationary support of a cradle, a screw-tapped plate, B, secured thereto and having a leg, S, a standard having a notch to receive said lug and a thumb-screw, and a pivot-pin, F, on top of said standard, with a vertical rod mounted upon the cradle and a fan secured thereto, a crank adjustably retained upon said rod, a connecting-rod, and a pin uniting it adjustably to said crank, substantially as and for the purpose described.

382,387. CHURN. JOHN RICHARDS, Fort Worth, Tex., assignor of two-thirds to Ruff J. Reese and J. B. Sinclair, same place. Filed July 5, 1887. Serial No. 243,266. (No model.)

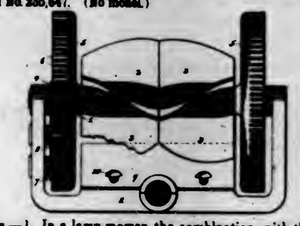
Claim.—The combination of the inner shell or cream-receptacle having the pipe D formed therewith, and with the ring near its upper end, the outer shell having its upper end contracted to engage the ring

382,387.



of the cream-receptacle and inclose the pipe, and provided with the side opening, *a*, at its upper end, and a valve located in the pipe D to open and close by the action of the dasher moving in the cream-cylinder, substantially as set forth.

382,388. LAWN-MOWER. CHARLES F. RITCHEL, Bridgeport, Conn., assignor to J. A. Burke, New York County, N. Y. Filed Apr. 21, 1887. Serial No. 235,647. (No model.)

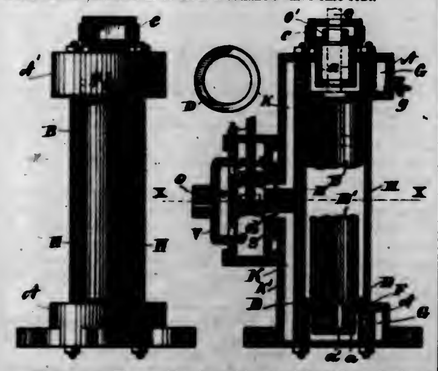


Claim.—1. In a lawn-mower, the combination, with the straight-edged stationary cutter adjustably secured to the lower portion of the frame, of the rotary cutters arranged upon the cutter-shaft and adapted to impinge against the stationary cutter, said rotary cutters being made, the one in the form of a section of a right-hand spiral and the other in the form of a left-hand spiral, the ends of said cutters being arranged to abut at the center of the cutter-shaft, substantially as set forth.

2. The combination, with the yoke-shaped frame, of the shaft journaled in the ends thereof and carrying the cutters, which latter are made, the one in the shape of a section of a right-hand spiral and the other in the shape of a left-hand spiral and abutting at the center of the cutter-shaft, the drivers journaled near the ends of the cutter-shaft, the straight-edged stationary cutter adjustably secured to the lower portion of the frame, and the gears 4 7 8, arranged between the internally-geared driver and the cutter-shaft, substantially as set forth.

382,389. CYLINDER FOR HYDRAULIC MOTORS. WILLIAM ROSS, Troy, N. Y. Filed June 9, 1887. Serial No. 240,701. (No model.)

Brief.—Two cylinder-heads containing air-chambers, so bolted together that different-sized cylinders may be held in place between the same, and so extended as to form a common valve-case seat.



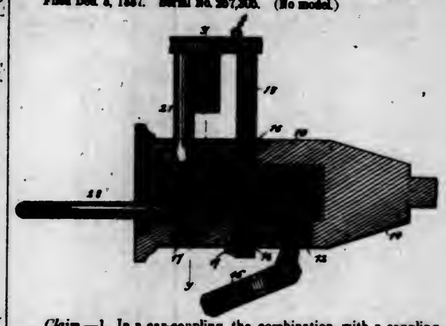
Claim.—1. The combination, with a straight unflanged tube or cylinder, of tube-supporting end covers or heads linked together, each being provided with a valve-case seat, and duct leading from said seat to a cylinder-port, said seats being arranged in alignment and forming together a seat for a common valve-case, substantially as described, and for the purposes set forth.

2. The combination, with a straight unflanged tube or cylinder, of detachably-connected end-supporting covers or heads, each provided with a cylinder-port leading to a valve-case seat, and a fixed guide-flange, substantially as described, and for the purposes set forth.

3. The combination, with a straight unflanged tube or cylinder, of detachably-connected end-supporting covers or heads, each provided with a cylinder-port leading to a valve-case seat, and a fixed guide-flange and a detachable guide-ring, substantially as described, and for the purposes set forth.

4. The combination, with a cylinder-tube, of tube-supporting end covers or heads linked together, each head being a single piece of metal cast with a valve-case seat, and an air-chamber opening into a duct leading from one end of said tube to said valve-case seat, substantially as described, and for the purposes set forth.

382,390. CAR-COUPLING. LUTHER B. SAMPSON, Rochester, N. H. Filed Dec. 8, 1887. Serial No. 257,305. (No model.)

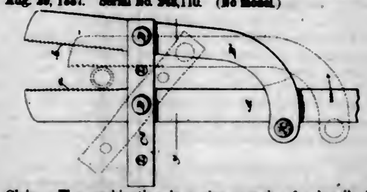


Claim.—1. In a car-coupling, the combination, with a coupling-pin and a guide-rod connected thereto, of a sliding grip for engaging the said rod and holding the coupling-pin elevated, and a weighted lever pivoted at the rear of the grip in engagement therewith and actuating said grip, substantially as herein shown and described.

2. In a car-coupling, the combination, with a coupling-pin and a guide-rod connected thereto, provided with a longitudinal slot near its lower extremity, of a sliding grip provided with an integral transverse tongue centrally upon its outer face, and a weighted lever pivoted at the rear of the grip in engagement therewith and actuating said grip, substantially as shown and described, whereby when the pin and guide-rod are elevated the lever will force the grip-tongue to enter the slot in the guide-rod and retain the coupling-pin in an elevated position, as set forth.

3. In a car-coupling, the combination, with a coupling-pin and a guide-rod connected thereto, provided with a longitudinal slot near its lower extremity, and a toe upon said lower extremity, of a bifurcated sliding grip provided with a transverse tongue between the approaching face of the grip-arms, and a weighted lever pivoted at the rear of said grip and having a constant bearing thereon, substantially as and for the purpose herein set forth.

382,391. PIPE-WRENCH. GEORGE G. SMITH, St. Albans, Vt. Filed Aug. 29, 1887. Serial No. 248,110. (No model.)



Claim.—The combination, in a pipe-wrench, of a handle bar or lever, a bent grip-bar coupled thereto at one end to be free to move longitudinally thereon without separating therefrom, and an adjustable transverse link pivoted to each bar about midway the length of the grip-bar, all substantially in the manner and for the purpose herein set forth.

382,392. CHECKREIN-HOLDER. FREDERICK SNYDER, Lancaster, Pa. Filed Feb. 25, 1888. Serial No. 265,234. (No model.)

Claim.—1. In a checkrein-holder, the forward post, A, provided with a base, a vertical column for a roller, and a tip, *a*, curved downward behind said column, substantially as set forth.

382,392.



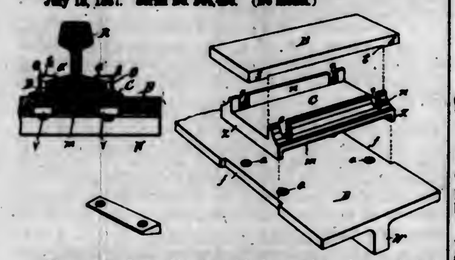
2. In a checkrein-holder, a rear post, C, having a recess, *c*, in combination with a tongue, D, pivotally suspended in said recess, and a spring, D', within said recess, which forces out said tongue, substantially as set forth.

3. A tongue, D, having a spring, D', integral therewith, in combination with a rear post, C, having a recess, *c*, in which said tongue is pivoted, substantially as set forth.

4. A rear post, C, having a recess, *c*, and a rear wall, C', therefor, in combination with a front post, a tongue, D, pivoted in said recess, and a spring, D', extending down behind said tongue, bearing against said rear wall, and operating substantially as set forth.

5. In a checkrein-holder, the combination of the rear post, C, and the tongue D, with the spring D', the post A, having the downwardly-curved tip *a*, the column A', and the roller B, substantially as set forth.

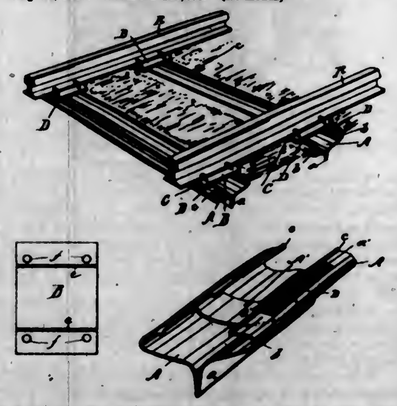
382,393. RAILWAY. JOHN B. SUTHERLAND, Detroit, Mich. Filed July 15, 1887. Serial No. 244,494. (No model.)



Claim.—1. In combination with the metal tie, the metal chair having depending flanges Z and upright flanges *n*, the bolt-holes in said chair registering with the holes of the tie, the rail, and the flexible agent located between said rail and the chair, as and for the purposes specified.

2. In combination with the metal tie having the recesses *f* and holes *a*, the metal chair having the flanges Z at the ends, the side flanges, *n*, the holes *e* registering with the holes of the tie, the rail, the flexible strip B, and bolts binding said parts together, as and for the purposes set forth.

382,394. RAILWAY. JOHN B. SUTHERLAND, Detroit, Mich. Filed Aug. 20, 1887. Serial No. 247,698. (No model.)

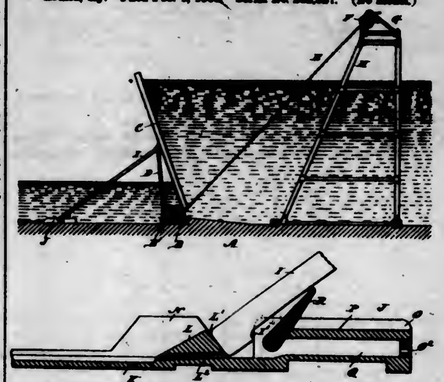


Claim.—1. In combination with a metallic tie having a rigid web and lateral flexible wings provided with strengthening-flanges on their edges, a metallic chair having flanges *d d*, grooves *e b*, and holes *f f*, the rail R, the cushion C, the bolts *g g*, and nuts A A, substantially as and for the purposes set forth.

2. In combination with a metallic tie having a rigid web and lateral flexible wings, the chair B, having flanges *d*, grooves *e e*, and holes *f f*, the rail R, cushion C, and flexible strip D, suitably perforated, the bolts *g g*, and nuts A A, substantially as specified.

3. A metallic railway-tie formed out of one single piece and having a central rigid anchoring web and lateral concave-convex supporting-wings, and provided on its inner face at the supporting-points with a spring re-enforce, substantially as set forth.

382,395. WICKET-DAM. REES F. THOMAS and JOHN C. THOMAS, Louisa, Ky. Filed Feb. 1, 1888. Serial No. 262,627. (No model.)



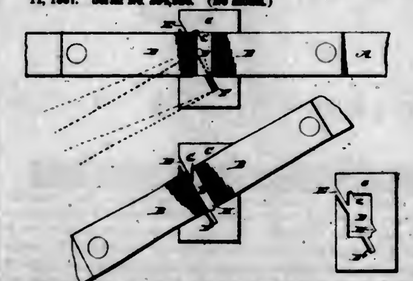
Claim.—1. In a wicket-dam, the combination, with a dam and hinged posts pivotally connected with the said dam, of props pivotally connected with the said dam, a hearter in which the lower end of each prop abuts, and a trigger for carrying the lower end of the prop over its abutment, substantially as shown and described.

2. In a wicket-dam, the combination, with a hearter provided with a cross-piece, of a prop resting against the said cross-piece, and a trigger for carrying the lower end of the said prop over the said cross-piece, substantially as shown and described.

3. In a hearter, the combination, with a base-plate and sides, of a triangular cross-piece held between the said sides and provided with longitudinal apertures for the passage of the water and impurities, substantially as shown and described.

4. A hearter comprising a base-plate, a cross-piece held on the said base-plate, and a trigger for carrying the lower end of the prop over the said cross-piece, substantially as shown and described.

382,396. BALE-TIE. THOMAS T. WELLS, Union, Miss. Filed Nov. 11, 1887. Serial No. 254,980. (No model.)



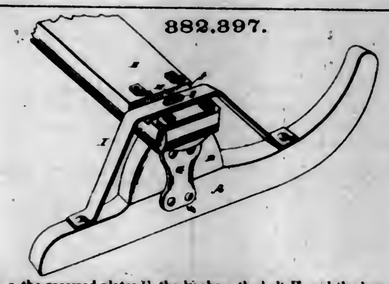
Claim.—A buckle for bale-ties having a longitudinal slot, D, an oblique passage, E, extending from one side of said slot to the edge of the buckle, a notch, F, extending obliquely from the end of the slot in line with the passage E, and V-shaped notches G H at the opposite end and side, respectively, of said slot D, substantially as specified.

382,397. SLEIGH-KNEE. HERMAN WEBLE and HENRY WEBLE, Medford, Wis. Filed Nov. 25, 1887. Serial No. 256,118. (No model.)

Claim.—1. As an improved article of manufacture, an attachment for sleigh-knees, formed of the convex plate D, having recesses *b* and a central aperture, *a*, the recessed plates G, fitted to the convex surface of the plate D, and the hooks *c*, received in the recesses, substantially as specified.

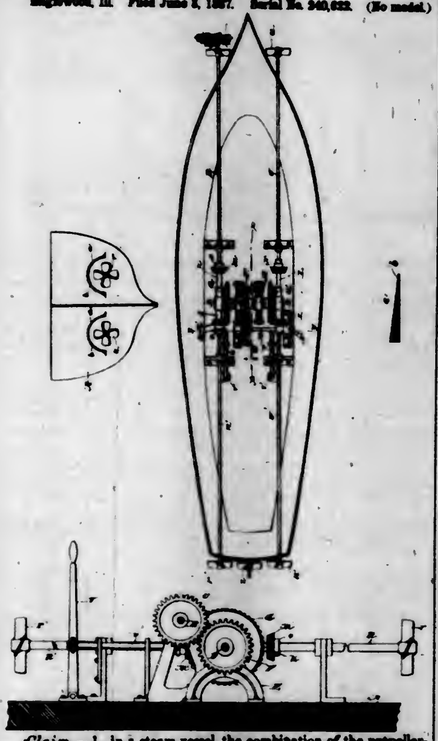
2. In a sleigh-knee, the combination of the runner A, the standard B, the convex plate D, provided with the recesses *b* and central

382,397.



slot, *a*, the recessed plates U, the hooks *e*, the bolt H, and the brace I, substantially as specified.

382,398. SCREW-PROPELLER FOR VESSELS. FRANK G. WHITE, Englewood, Ill. Filed June 8, 1887. Serial No. 240,622. (No model.)

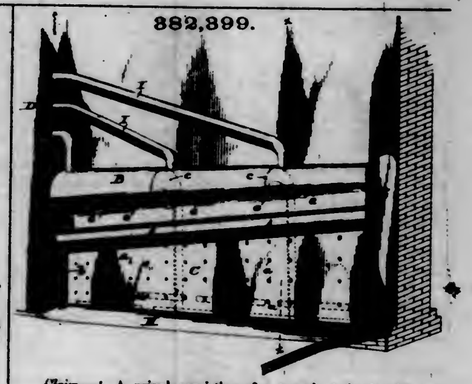


Claim.—1. In a steam-vessel, the combination of the propeller-shafts arranged in line with each other and extending beyond the bow and stern of the vessel, the right and left hand propeller-screws on both ends of the said shafts adapted to rotate simultaneously in opposite directions, the endwise-moving shaft connecting the opposing ends of the propeller-shafts and having the pinions at opposite ends, and the gear-wheel adapted to engage either of the said pinions when the said shaft is moved endwise, substantially as described.

2. The combination of the propeller-shafts on opposite sides of the vessel arranged in line with each other and provided with right and left hand propelling-screws, the endwise-moving shafts connecting the inner opposing ends of the propeller-shafts and having the beveled pinions at their opposite extremities, the rotating shafts D, the beveled gear-wheels G and G', attached to the said shafts and adapted to engage either of the pinions, and the endwise-moving shafts and the levers connected to the said endwise-moving shafts to shift the same longitudinally, for the purpose set forth, substantially as described.

382,399. URINAL. JAMES A. WELLS, Philadelphia, Pa. Filed Sept. 14, 1887. Serial No. 249,671. (No model.)

382,399.

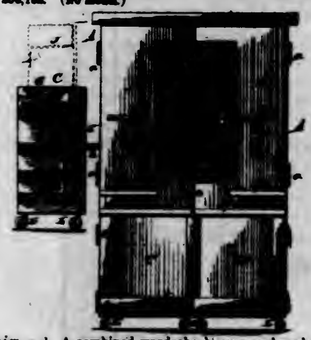


Claim.—1. A urinal consisting of a trough, A, having its rear upper wall perforated, in combination with an air-chamber over the same, and one or more vent-pipes, I, connecting said air-chamber with a draft-flue, D, said parts being constructed and arranged to operate substantially as shown and described.

2. In combination with a trough or urinal, the perforated partition below the same, with one or more vent-pipes arranged to draw the air and odors from underneath the urinal into the air-space in rear of said partition, and from thence into a draft-flue, *D*, substantially as described.

3. The combination, in a urinal, of a trough, A, having its rear upwardly-extending wall perforated, an air-chamber arranged to receive the air and odors down through said perforations, and one or more pipes connecting said air-chamber to a draft-flue, the area or capacity of said pipe or pipes being equal to or greater than the combined area of said perforations for the purpose of securing a uniform current of air to intercept and convey away the odors through the entire extent of said trough.

382,400. COMBINED WARDROBE, BUREAU, AND WASH-STAND. HENRY F. WILEY, San Antonio, Tex., assignor of one-half to Max B. Mayer and Abraham Cohen, same place. Filed Dec. 17, 1887. Serial No. 258,182. (No model.)
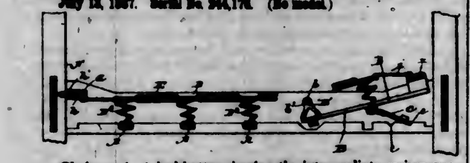


Claim.—1. A combined wardrobe, bureau, and wash-stand constructed with a main wardrobe-section, A, provided with hinged upper doors, A' A^3, having lower ledges or shelves, a' a^3, respectively, and bureau and wash-stand structures B C, hinged at opposite sides of the wardrobe below its doors A' A^3, and adapted when closed to close the lower front part of the wardrobe, and said door-ledges a' a^3 forming top covers to the wash-stand and bureau, substantially as herein set forth.

2. The combination, with the wardrobe having two doors hinged at the sides and closing toward the center, of the mirror A^5, fastened to one of the wardrobe-doors and overlapping the other door, substantially as described.

3. In a combined wardrobe, bureau, and wash-stand, comprising hinged sections A B C, the doors of section A having ledges a' a^3, covering the tops of sections B C when all are closed, and provided at or near said ledges with toilet-boxes E E, substantially as shown and described.

4. In a combined wardrobe, bureau, and wash-stand, comprising hinged sections A B C, the doors A' A^3, hinged at the sides of the section A and closing toward the center, said doors having ledges a' a^3, covering the tops of sections B C when all are closed, and provided at said ledges with toilet-boxes E, a mirror, A^5, secured to the door A^3, and overlapping the other door, substantially as and for the purposes described.

382,401. BED-BOTTOM. WILLIAM C. BAILEY, Chicago, Ill. Filed July 13, 1887. Serial No. 244,176. (No model.)

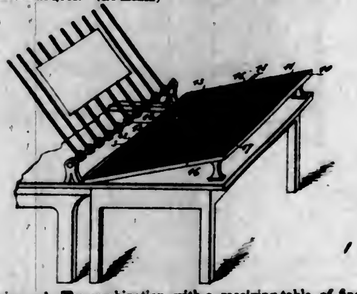


Claim.—1. A bed-bottom having the intermediate springs provided with vertical shanks fixed in supporting-strips, and twin end springs having shanks inserted diagonally in said strips, in combination with a single continuous lacing wire or cord connected to alternate springs of two adjoining series, substantially as described.

2. In a bed-bottom, the combination of the horizontal strips, the end spring having the inclined shanks inserted diagonally in the strips, intermediate springs arranged in continuous series with the end springs, and a lacing-wire connecting all the end and intermediate springs of two adjoining series, and having its ends connected together and unattached to the bedstead or the horizontal strips, as and for the purpose described.

3. In a bed-bottom of the class described, an adjustable head-section, B, adapted to assume a horizontal position and rest upon the notched rails of the bedstead, in combination with the bracket-castings B', affixed to said head-section and having the slots *b'*, which open through one edge thereof, pivots *b*, affixed in the bedstead at suitable points to suspend the inner end of the head-section out of contact with the notched rails of the bedstead when fitted in the slots of the bracket-castings, and means, substantially as described, for maintaining the free end of the head-section in its adjusted position, as and for the purpose set forth.

382,402. RECEIVING-TABLE FOR CYLINDER PRINTING-PRESSES. FRANK W. BALCH, Portland, Oreg. Filed Nov. 12, 1887. Serial No. 254,905. (No model.)



Claim.—1. The combination, with a receiving-table, of finger-guides 16, adjustably secured to said table and provided with laterally-projecting arms 18, substantially as described, whereby the fingers are made to serve a twofold purpose—viz., guides to the sheet and stops for the fly—as set forth.

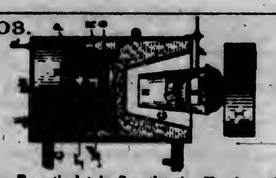
2. The combination, with a longitudinally and transversely slotted receiving-table, of curved fingers 18, secured in the transverse slots of the table, the fingers 16, provided with the laterally-projecting arms 18, and the crank-ed fingers 17, the said fingers 16 and 17 being secured in the longitudinal slots of the table, substantially as described.

3. A receiving table or frame having strips 11, between which there are slots or openings 2, and strips 12, between which there are slots or openings 3, in combination with backwardly-curved fingers 13, the shanks of which pass through the slots 3, fingers 16, the shanks of which pass through slots 2, said fingers being formed with outwardly-extending arms and crank-shaped fingers 17, the shanks of which also pass through the slots 2, the shanks of all of the fingers being engaged by nuts, substantially as described.

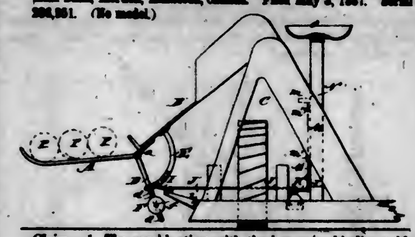
382,403. HEAT-REGULATOR FOR INCUBATORS. CHARLES R. BEAN, Westport, assignor of one-half to Mathew C. Yarwood, Fall River, Mass. Filed May 14, 1888. Serial No. 273,210. (No model.)

Claim.—The combination, with the heater D, of the air-chamber O, annular chamber R, provided with mercury, M^2, the air-valve N P, valve-chamber T, vertical tube S, outlet-pipe U, valve-rod M, lever K, rod J, lever F, and wick-tube sleeve E, as set forth.

382,403.



382,404. SHEAF-CARRIER FOR GRAIN-HARVESTERS. WILLIAM BELL, Morden, Manitoba, Canada. Filed May 3, 1887. Serial No. 236,951. (No model.)



Claim.—1. The combination, with the harvester binding-table, of the hinged sheaf carrier or tray having a pendent counterbalanced or weighted arm, a guide-bar fixed to the binding-table and through which plays the said arm, and the spring-latch applied to the guide-bar and adapted to hold the arm in such position as to retain the sheaf-carrier with its load in a horizontal position, substantially as set forth.

2. The combination of a sheaf carrier or tray, A, hinged to the binding-table B, a weighted arm, D, fixed to the sheaf carrier or tray, a guide-bar, E, fixed to the binding-table through which the arm plays, a latch, G *g*, mounted on and extending into said guide-bar and in the path of the movement of the said arm, a rod, H, connected to the latch, elbow-levers I K, fulcrumed on the harvester-frame, connections J L to the elbow-levers, and a treadle-bar, M, fitted to the harvester-frame and to which the cord or rod L is attached, substantially as described, for the purposes set forth.

382,405. STOCK-CAR. WILLIAM A. BERNARD and BENJAMIN W. RIDDICK, Danville, Va. Filed Sept. 1, 1887. Serial No. 248,503. (No model.)



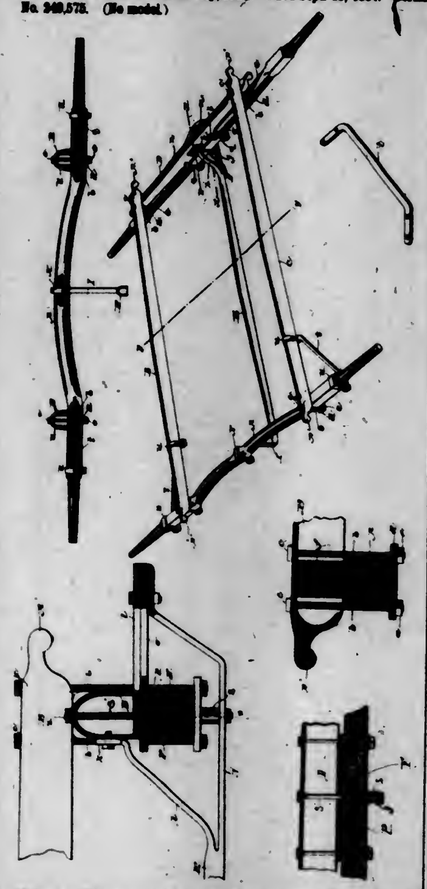
Claim.—1. The combination, with a stock-car having a trough, J, and plugs Q at the ends of said car, of the pipe L, secured to the central portion of the bottom of the car, having cross feed-pipes L', with branch pipes L^2, extending upward and having bends *l*, project-

ing over the trough, and the coupling P, with hose attachment P' connected to pipe L, and said coupling P adapted to be connected to plugs Q, as shown and described.

2. A stock-car having each of its sides consisting of the beams E E', grooved pillars D, the bars F, seated in said grooved pillars and connected to the beams E E', the braces G, secured to beams E' and pillars D, the transverse bars H' H², and the doors C, as shown and described.

3. In a stock-car, the combination, with the beams E E', the grooved pillars D, the bars F, seated in said grooves of the pillars and connected to the beams E E', the braces G, secured to beams E' and pillars D, and the bars H' H², of the trough J, formed in one piece and connected to bars H' H², and the flanged shields K, secured to the trough and to the pillars, as shown and described.

382,406. RUNNING-GEAR FOR VEHICLES. NICHLAS H. BLOCH and JOSEPH H. BLOCH, Charles City, Iowa. Filed Sept. 13, 1887. Serial No. 249,573. (No model.)



Claim.—1. The combination, with the rear axle and front bar, of the recessed side bars connected at their ends to said rear axle and front bar, and yielding cushions located in said recessed side bars at the points of connection to the rear axle and front bar, substantially as described.

2. The combination of the rear axle and front bar, the side bars, the bolts passing through the side bars to secure them to the rear axle and front bar, and the rubber cushions *f* between the said bolts, substantially as specified.

3. The improved reach herein described, consisting of a metal section of inverted-U shape and having integral vertical arms at its ends, substantially as described.

4. The combination, with the rear and front axles and front and side bars, of the hollow reach connected to the rear axle and having arms *i j* at its front end connected to the front bar and axle, substantially as described.

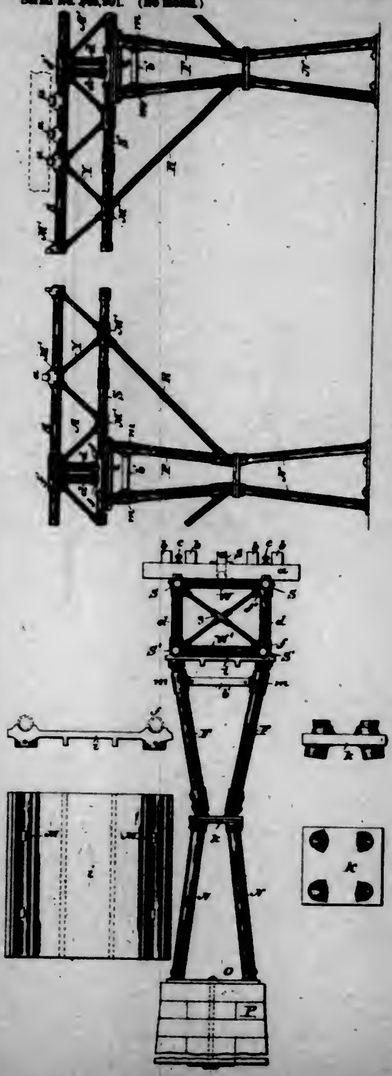
5. The combination, with the rear and front axles and side and front bars, of the fifth-wheel consisting of the upper and lower segmental plates, the latter having plate P bolted to the front axle, and a clip secured to said front axle and having bolts *s s*, forming the king-bolt, substantially as described.

6. The combination, with the rear axle, of the side bars bolted to the top side thereof, and yielding cushions between the axle and side bars at the point of intersection, as set forth.

7. In a running-gear, a hollow reach having its front end extended past the front axle and upward in front thereof to form a support for the fifth-wheel, as set forth.

8. In a running-gear, a reach provided at its front end with integral diverging arms, one of said arms forming a support for the fifth-wheel and the other being adapted to be secured to the front bar of the gear, as set forth.

382,407. ELEVATED CABLE-MOTOR OR OTHER RAILWAY STRUCTURE. EUGENE P. BOYER, Philadelphia, Pa. Filed Aug. 12, 1887. Serial No. 246,901. (No model.)



Claim.—1. A supporting-column for an elevated structure, made in sections, each section consisting of two or more struts and rigid connections for the ends thereof of unequal length, giving to said section the form of a truncated triangle, substantially as set forth and described.

2. A supporting-column for an elevated structure, made in sections, each section consisting of two or more struts united near their ends by unequal rigid connections, said sections being connected to each other by their narrower ends, their wider ends forming the ends of the compound column, substantially as shown and described.

3. A support for an elevated structure, made in sections, each section consisting of four struts united to each other near their ends by unequal rigid connections, giving to said section the form of a truncated pyramid, said sections being superposed one upon another, with their smaller ends in juxtaposition, their larger ends forming the ends of the compound column, substantially as shown and described.

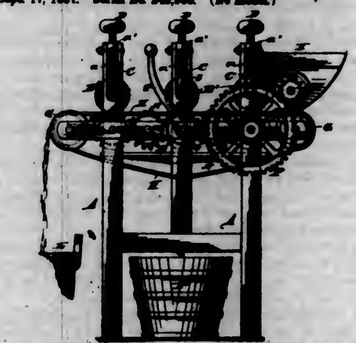
4. An elevated-railroad structure comprising the following mechanism: a track supporting tubular spans braced laterally, vertically, and diagonally, tubular supporting-columns having interposed plates between the lower ends of the upper columns and the upper ends of the lower columns, said plates being provided with means of securing the ends of said columns, all substantially as described.

5. An elevated-railroad structure having tracks, tubular spans braced by tubular braces and sleeves, interposed plates between said spans and the upper ends of the columns, said plates having seats for the lower chords, and means of connecting them with the upper ends of said columns, substantially as set forth and described.

6. In an elevated-railway structure, the combination of a track and tubular spans, of supporting-columns made up in sections, the members of the upper section converging to an intermediate plate, the members of the lower section diverging to a base-plate, substantially as set forth and described.

7. In an elevated-railway structure of the character described, the combination of the chords thereof, and a sleeve provided with seats for cross-ties, and also means for securing braces thereto, substantially as set forth and described.

382,408. CIDER-MILL. CHARLES W. BOYLE, Bradley, Mich. Filed Sept. 17, 1887. Serial No. 249,998. (No model.)



Claim.—1. The combination, in a cider-mill, of a frame, pairs of pressing-rollers journaled thereon, and an endless belt passed between the rollers, and the bed-rollers inclined toward one end to incline the belt to facilitate discharge of the juice, substantially as herein set forth.

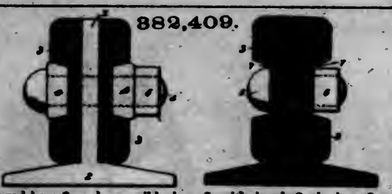
2. The combination, in a cider-mill, of a frame, A, pairs of rollers B B', journaled thereon, and provided with gear-wheels O, shafts M, journaled on the frame, gear-wheels N on said shafts and meshing with the wheels O, springs arranged above the yielding bearings of the upper rollers, B', an apron, R, below the rollers, an endless belt, H, passed over guides and between the pressing-rollers, a hopper, I, opening to the belt, a cutter-head, J K, in the hopper, a gear-wheel, P, on the shaft of one of the rollers B, and a gear-wheel, R, on the cutter-head shaft, all arranged for operation, substantially as described, for the purposes set forth.

382,409. COMPOUND RAIL. EDWARD G. CHAMBERLAIN, San José, Costa Rica, Central America. Filed Nov. 26, 1887. Serial No. 256,193. (No model.)

Claim.—1. A compound railway-rail consisting of a central bar having a flanged base and side reversible bars bolted thereto, and having their lower edges resting entirely on top of the flanges of the central bar, the central and side bars having their upper edges worn to form the tread of the compound rail, substantially as shown and described.

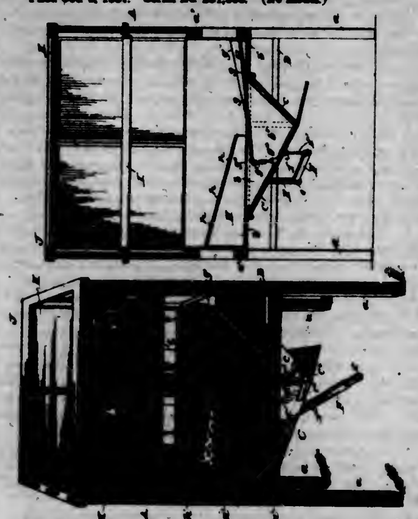
2. A compound railway-rail, consisting of central bar, 1, with

382,409.



flanged base 2, and reversible bars 3, with heads 3, the bars 3 and 1 forming a tread for the rail and bolted together, substantially as described.

382,410. SHELL-FISH REFRIGERATOR. HENRY C. CORNFORTH, Brooklyn, N. Y., assignor to himself and HENRY J. BECKMAN, same place. Filed Oct. 6, 1887. Serial No. 251,602. (No model.)



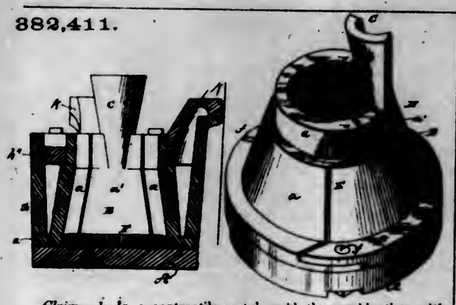
Claim.—1. A refrigerating-receptacle for shell-fish, consisting of a frame provided with a transparent top and inclosed by transparent doors, an ice-rack supported therein, a case beneath said rack having a central opening from which depend triangular side pieces, inclined platforms, one stationary and the other vertically movable in said case and projecting one over the other above said opening, an apron hinged to the movable platform, a triangular box in two parts hinged beneath said opening, one of said parts hinged to said apron and projecting beyond the other, and means for opening and closing said box, substantially as shown and described.

2. In a refrigerating-receptacle, the combination, with a frame having a transparent cover and inclosed by transparent doors, supporting within it an ice-rack, and a case having end ledges and a central bottom opening from which depend triangular side pieces, and a stationary and a movable inclined platform, projecting the one above the other over said opening, of a triangular box in two parts, having a pin-and-slot connection at their ends and hinged at their upper side edges beneath said opening, one of said parts projecting beyond the other, and means, substantially as shown and described, for opening and closing said box, for the purposes herein set forth.

3. In a refrigerating-receptacle, the combination, with a frame having a transparent cover and inclosed by transparent doors, supporting within it an ice-rack, and a case having end ledges and a central bottom opening from which depend triangular side pieces, a stationary and a movable platform, projecting the one above the other over said opening, and an apron hinged to the movable platform, of a triangular box in two parts having a pin-and-slot connection at their ends and hinged at their upper side edges beneath said opening, one of said parts being hinged to the lower edge of said apron and projecting beyond the other part, and means, substantially as shown and described, for opening and closing said box, for the purposes herein set forth.

382,411. METALLIC MOLD. PHILIP F. DILLON, Savannah, Ga. Filed Dec. 9, 1887. Serial No. 257,493. (Model.)

382,411.



Claim.—1. In a contractile metal mold, the combination, with the cheek of the contractile core and a contractile cope, substantially as described.

2. In a contractile metal mold, the combination of a core formed of segments *a a a'*, pivotally connected with the base, and the cope D, formed of segments *h h' h²* and connecting-pieces *i*, substantially as described.

3. The combination, with the contractile core B and contractile cope D, of the halves *b b'* of the gate, substantially as described.

4. In a metallic mold, the combination, with the cheek and cope, of the contractile core formed of segments *a a a'*, pivotally connected with the base, said segments formed with a rabbet, *c*, adapted for receiving the cope, substantially as shown.

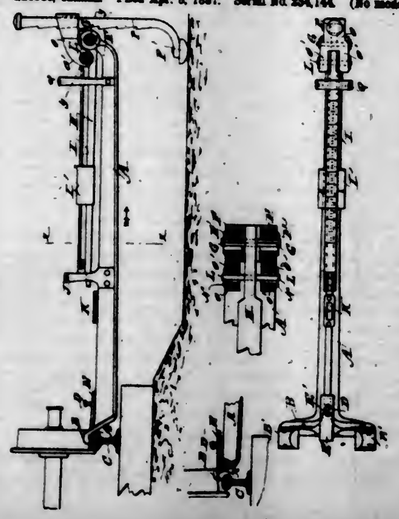
5. In a metallic mold, the combination, with the cheek and cope, of the contractile core formed of the segments *a a a'*, one end, E, of each segment extended so as to overlap the beveled free end of the adjoining segment, the extended end E, provided with an aperture to receive a pivot-bolt, *f*, the end of the adjoining segment provided with an elongated slot, and the bolt *f*, passing through said slot, whereby said segments are permitted to swing upon the bolts *f* when contracted, substantially as shown and described.

6. In a metallic mold, the contractile core composed of the sections *a a a'*, each section formed with a rabbet, *c*, and having one end, E, extended and provided with a bolt-hole and the other end extended and provided with an elongated bolt-opening, whereby the same may be adapted to swing upon the bolts *f*, as shown and described.

7. The combination, with the contractile core B, formed of segments *a a a'*, and a spring, F, arranged to press the segments of core outward, of the contractile cope D, substantially as shown and described.

8. In a contractile metal mold, the combination, with the cheek, of the contractile core provided with the gate portion *b'* of the gate C and a contractile cope provided with the portion *b* of the gate C, all arranged substantially as shown and described.

382,412. WEIGHING-SCALE FOR RAILWAY-CARS. ELOUILD DUPLESSIS, Lake Weedon, assignor to himself and John Roche, Quebec, Quebec, Canada. Filed Apr. 8, 1887. Serial No. 234,144. (No model.)

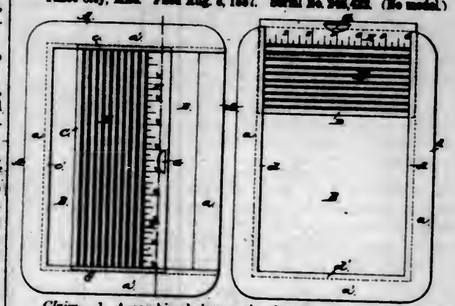


Claim.—1. In a weighing-scale, the combination of a lever provided with a cross-head at its inner end, a weighing-beam pivoted to the outer end of the said lever, a swinging block pivoted to said weighing-beam, and a support carried by said swinging block, substantially as described.

2. In a weighing-scale, the combination of a lever provided at its inner end with a cross-head having forwardly-extending projections, a weighing-beam pivoted to the outer end of the lever, an apertured swinging block pivoted to the weighing-beam a short distance from the pivoted end of said beam, and a ratcheted support working in the aperture of the said block, substantially as described.

3. In a weighing-scale, the combination of the lever A, provided with a cross-head, B, having the projections B' at its inner end and with the forked outer end, the beam H, pivoted between the forks of the said lever A, the graduated beam secured to the beam I, the equipoise I', sliding on the beam H, the apertured block O, pivoted to the beam H, and the ratcheted support P, provided with the foot P' and working in the aperture of the said block, substantially as herein shown and described.

382,413. COMBINED SLATE AND RULER. LOUIE M. DYER, Yazoo City, Miss. Filed Aug. 6, 1887. Serial No. 246,422. (No model.)



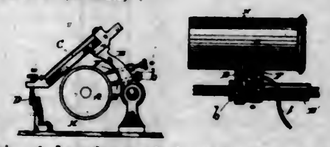
Claim.—1. A combined slate and ruler comprising a slate fitted in a frame which is provided with longitudinally and transversely ranging grooves next opposite faces, respectively, of the slate, and a ruler fitted in said grooves at each side of the slate, one ruler being arranged with a series of pencil-guiding slots ranging lengthwise of the slate and the other ruler provided with a series of pencil-guiding slots ranging crosswise of the slate, substantially as herein set forth.

2. A combined slate and ruler comprising a frame, A, provided with a slate B, and having grooves *c c d d* at opposite bars and next opposite sides of the slate, and rulers C D, provided with pencil-guide slots E, and fitted in the grooves *c d*, respectively, substantially as described, for the purposes set forth.

3. A combined slate and ruler comprising a frame, A, provided with a slate, B, and having grooves *c c c'* and *d d d'* next opposite faces of the slate, and rulers C D, provided with pencil-guide slots E, and adapted to said grooves, substantially as herein set forth.

4. A slate provided with a frame having grooves formed in it at opposite faces of the slate proper, and said grooves opening at the side of the frame at one side of the slate and at the end of the frame at the other side of the slate, substantially as described, for the purpose set forth.

382,414. BURNISHING ATTACHMENT FOR PHONOGRAPHS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Nov. 26, 1887. Serial No. 256,190. (No model.)



Claim.—1. In a phonograph, the combination, with the phonogram-blank carrier adapted to carry a wax-surfaced blank, of a burnishing-tool mounted upon the machine in position to act on the wax surface of the blank, substantially as set forth.

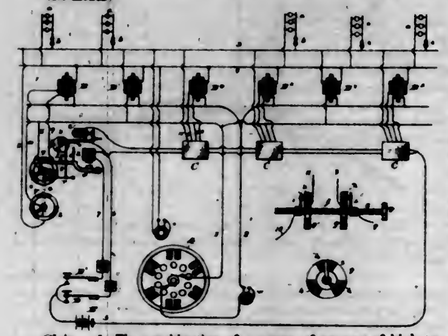
2. In a phonograph, the combination, with the phonogram-blank carrier adapted to carry a wax-surfaced blank, of a heated burnishing-tool mounted upon the machine in position to act on the wax surface of the blank, substantially as set forth.

3. In a phonograph, the combination, with the phonogram-blank carrier adapted to carry a wax-surfaced blank, of a cutting-tool and a burnishing-tool mounted upon the machine in position to act in succession on the wax surface of the blank, substantially as set forth.

4. In a phonograph, the combination, with the revolving phonogram-cylinder and the traveling holding-arm, of the cutting-tool and the heated burnishing-tool moving with such traveling holding-arm, substantially as set forth.

5. In a phonograph, the combination, with the phonogram-blank carrier adapted to carry a wax-surfaced blank, of a burnishing-tool mounted upon the machine in position to act on the wax surface, and electric-circuit connections for heating the tool by an electric current, substantially as set forth.

382,415. SYSTEM OF ELECTRICAL DISTRIBUTION. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Dec. 27, 1887. Serial No. 258,141. (No model.)



Claim.—1. The combination of a source of current of high tension, a circuit extending therefrom, two or more tension-reducing converters having their primary circuits connected with said high-tension circuit, a translation-circuit supplying a variable number of translating devices, to which the secondary circuits of all said converters are connected, and switches for making and breaking the primary and secondary connections of individual converters, substantially as set forth.

2. The combination of a source of current of high tension, a circuit extending therefrom, two or more tension-reducing converters having their primary circuits connected in multiple arc with said high-tension circuit, a translation-circuit supplying a variable number of translating devices, with which the secondary circuits of all said converters are connected in multiple arc, and switches for making and breaking the primary and secondary circuits of individual converters, substantially as set forth.

3. The combination of a source of current of high tension, a circuit extending therefrom, two or more tension-reducing converters having their primary circuits connected with said high-tension circuit, a translation-circuit supplying a variable number of translating devices, to which the secondary circuits of all said converters are connected, and switches controlled from the central station or source of supply for making and breaking the primary and secondary connections of individual converters, substantially as set forth.

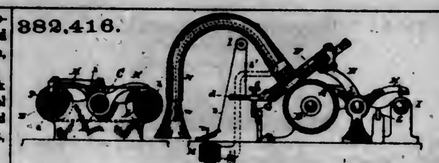
4. The combination of a source of current of high tension, a circuit extending therefrom, two or more tension-reducing converters having their primary circuits connected with said high-tension circuit, a translation-circuit supplying a variable number of translating devices, to which the secondary circuits of all said converters are connected, one or more separate circuits extending from the central station, electro-magnets energized thereby, and switches controlled by said electro-magnets for making and breaking the primary and secondary circuits of individual converters, substantially as set forth.

382,416. FEED AND RETURN MECHANISM FOR PHONOGRAPHS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Jan. 5, 1888. Serial No. 259,897. (No model.)

Claim.—1. In a phonograph, the combination, with the rocking holding-arm carrying the reproducer, of a revolving screw-shaft and



382,416.



an arm connected with the rocking holding-arm and engaging this screw-shaft when the rocking holding-arm is rocked to lift the reproducer from the phonogram, whereby the reproducer is retracted or set back, substantially as set forth.

2. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw, and holding and guide arms, of a revolving screw-shaft having a screw of greater pitch than the lead-screw, and an arm engaging this screw-shaft when the guide-arm is raised from the lead-screw, substantially as set forth.

3. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw, and holding and guide arms, of a revolving screw-shaft having a screw composed of a number of threads of greater pitch than the lead-screw, and an arm engaging this screw-shaft when the guide-arm is raised from the lead-screw, substantially as set forth.

4. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw, the guide-sleeve, and the holding and guide arms, of the retracting-screw shaft and the arm engaging therewith fixed adjustably upon the guide-sleeve, substantially as set forth.

5. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw, the guide-sleeve, and the holding and guide arms, of the retracting screw-shaft driven by a belt from the cylinder-shaft, and the arm engaging therewith fixed adjustably upon the guide-sleeve, substantially as set forth.

6. In a phonograph, the combination, with the rocking holding-arm, the lead and retracting screws, and the arms engaging such screws alternately, of a lever connected by an elastic lifting-cord with such rocking holding-arm to rock and set back the holding-arm, substantially as set forth.

7. In a phonograph, the combination with the rocking holding-arm carrying the reproducer or recorder, of an electro-magnet and armature acting to lift such arm and disengage the reproducer or recorder from the phonogram-surface, substantially as set forth.

8. In a phonograph, the combination, with the rocking holding-arm carrying the reproducer or recorder and the lead-screw, of an electro-magnet and armature acting to lift such arm, disengaging it from the phonogram and from the lead-screw, substantially as set forth.

9. In a phonograph, the combination, with the rocking holding-arm carrying the reproducer or recorder and the lead and retracting screws, of an electro-magnet and armature acting to lift such arm, disengaging it from the lead-screw and connecting it with the retracting-screw, substantially as set forth.

382,417. PROCESS OF MAKING PHONOGRAM-BLANKS. THOS. A. EDISON, Llewellyn Park, N. J. Filed Feb. 4, 1888. Serial No. 263,047. (No specimens.)



Claim.—1. The process of making wax phonogram-blanks, consisting in first molding the blank from melted wax and then pressing the blank in a polished die, substantially as set forth.

2. The process of making cylindrical wax phonogram-blanks, consisting in first molding the cylindrical blank from melted wax and then pressing the blank both externally and internally in a polished die, substantially as set forth.

382,418. PHONOGRAM-BLANK. THOMAS A. EDISON, Llewellyn Park, N. J. Original application filed Nov. 26, 1887, Serial No. 256,192. Divided and this application filed Mar. 2, 1888. Serial No. 265,999. (No model.)

Claim.—1. A phonogram-blank or phonogram having a bore tapered throughout its length, substantially as set forth.

2. A phonogram-blank or phonogram having a cylindrical recording-surface and a tapering bore, substantially as set forth.

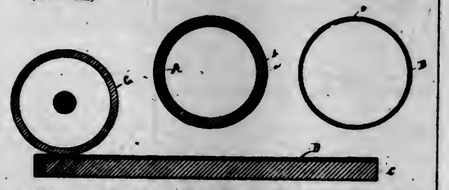
3. A phonogram-blank or phonogram having a cylindrical record-

882,418.



ing-surface of wax or wax-like material and provided with a tapering bore, substantially as set forth.

882,419. PROCESS OF DUPLICATING PHONOGRAMS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Mar. 8, 1888. Serial No. 266,594. (No model.)



Claim.—1. The process of duplicating phonograms, consisting in forming a kaurl having the original record in relief by depositing metal upon the original record, removing the original phonogram and opening the metallic coating, and then impressing duplicate phonogram-blanks with the original record by means of such kaurl, substantially as set forth.

2. The process of duplicating phonograms, consisting in depositing a flexible metallic coating upon an original cylindrical phonogram, removing the original phonogram from the inclosing-coating, splitting the inclosing-coating longitudinally, bending the same to form a kaurl, and then impressing the duplicate phonogram-blanks with the original record by means of this kaurl, substantially as set forth.

882,420. SECONDARY BATTERY. LUDWIG EPSTEIN, Marthafenfelde, near Berlin, Germany. Filed Feb. 18, 1887. Serial No. 228,092. (No model.) Patented in Germany Aug. 17, 1883, No. 27,675, and May 1, 1884, No. 30,264; in France June 13, 1884, No. 163,730; in Belgium June 13, 1884, No. 65,664; in England June 19, 1884, No. 8,195; in Italy June 30, 1884, XXXIV, 77, and in Austria-Hungary Nov. 11, 1884, XXXIV, 2,236, and XVIII, 2,194.

Claim.—1. The method herein described of preparing powdered lead for electrodes, consisting in adding sulphate of lead to molten metallic lead and stirring the liquid mass until it has been transformed into a finely-divided powder, as set forth.

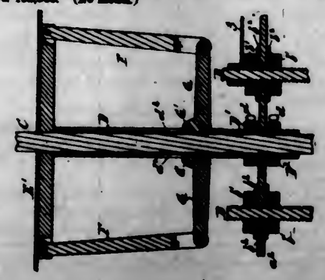
2. The method herein described of making electrodes, consisting in reducing a powder of metallic lead and salt of lead to a paste and then compressing the mass and forming it into the desired shape.

3. The herein-described method of forming electrodes, consisting in reducing a finely-divided lead-powder into a paste, forming the mass into slabs, and finally uniting the slabs together by means of molten metal, as set forth.

4. The method herein described of forming electrodes, consisting in reducing a finely-divided lead-powder into a paste, compressing the mass in a cake, cutting the cakes into notched or grooved slabs, and uniting the slabs together by means of molten metal, as set forth.

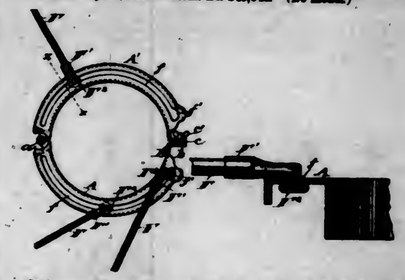
5. An electrode consisting of a series of bodies of metallic lead and sulphate of lead and a metallic uniting medium between the said bodies, substantially as described.

882,421. ELECTRIC-ARC LAMP. EDWARD H. FRENCH, Chicago, Ill., assignor to Charles K. Giles, same place. Filed Feb. 17, 1886. Serial No. 192,208. (No model.)



Claim.—The combination, with the carbon-supporting rod C, of the sleeve D, provided with adjustable stops or collars D' D², the gripping-levers G, pivoted to the said sleeve, the links F, pivoted to the gripping-lever, the armature, and the electro-magnet E, substantially as and for the purposes specified.

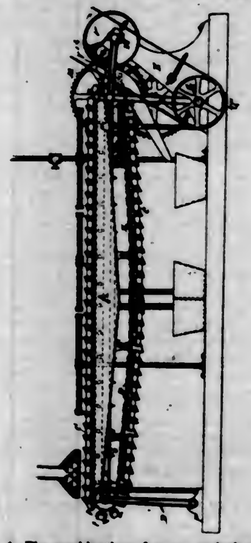
882,422. CLOTHES-DRIER. HERMAN RENTZ, Milwaukee, Wis., assignor to Harold G. Underwood, same place. Filed Mar. 17, 1885. Renewed Sept. 7, 1887. Serial No. 249,049. (No model.)



Claim.—1. In a clothes-rack, the circumferentially-slotted hinged sections in combination with arms having bent and headed ferrules, as set forth.

2. In a clothes-drier, the combination of the hinged sections, each section having a horizontal and a vertical flange, the latter to embrace the support of the drier, and the former provided with a circumferential slot extending continuously from end to end, with removable arms having ferrules bent at about a right angle, and provided with headed ends for engagement with the described slots, substantially as set forth.

882,423. ORE-WASHER. ARTHUR HENDEY, Denver, Colo., assignor to Christian Wahl, Milwaukee, Wis., and Louis Wahl, Chicago, Ill. Filed Mar. 16, 1887. Serial No. 231,133. (No model.)



Claim.—1. The combination of a progressively-moving endless series or apron of sluices, a reciprocating frame carrying said apron, pivoted links or frames supporting said sluice-frame from fixed points below, a shaft mounted in the frame-work concentric with the pivots of one pair of the links, a slow-down gear-connection between said shaft and a shaft of the endless apron for imparting the progressive movement to said apron, substantially as described.

2. The combination of an endless chain of sluices, a reciprocating frame for supporting said sluices, the rigid frames H H, adjacent to the reciprocating frame, distributing-gearing carried by frames H H, (consisting of main driving-shaft G, carrying pulleys H and R, the crank-shaft Q, carrying cranks V V, fast pulley P and loose pulley T, the shaft K, carrying pulley and pinion,) pitman W, for reciprocating the frame, and the train M, for moving the chain of sluices, substantially as described.

3. The combination of a progressively-moving endless series or apron of sluices, a reciprocating frame carrying said apron, pivoted links supporting said frame from fixed points below, a solid frame-work, H H, at one end thereof, devices, substantially as described, mounted in frame H H for reciprocating the sluice-frame, a shaft mounted in the frame-work concentric with the pivots of the links at that end, a slow-down gear-connection between said shaft and the shaft for imparting the progressive movement to the apron, substantially as described.

4. In a machine for washing ores, the combination of a reciprocating frame, the vertically-adjustable pendent bars or ways X X, supported by the frame, a series of sluices arranged transversely of said frame, endless chains and ways Y Y, fastened to said chains for connecting and carrying the series of sluices, as and for the purpose specified.

5. In a machine for washing ores, the combination of a reciprocating frame, the vertically-adjustable rods a a, mounted on said frame, and the flat bars or ways Z Z, mounted on said rods, as and for the purpose set forth.

6. In a machine for washing ores, the combination of a reciprocating frame having two diagonally-opposite corners higher than the other two, making a wind or twist in the frame, and an endless series of sluices mounted thereon, with the straight and offset castings c and d, connected with the alternate corners of the frame, substantially as described.

882,424. ROTARY VAPOR-ENGINE. ROBERT HAVEMS, San Francisco, Cal. Filed Nov. 19, 1887. Serial No. 255,669. (No model.)



Claim.—1. The generator having the annular chambers M M' and perforated diaphragm upon one side, valves by which vapor or gas under pressure may be admitted into the chambers from the generator, and a reactionary wheel journaled so as to rotate in close proximity with the perforated diaphragm, substantially as herein described.

2. The generator or boiler having the wheel-casing and perforated diaphragm upon one side, a wheel having concentric sets of buckets standing in opposition to each other, and corresponding annular chambers formed upon the back of the perforated diaphragm and communicating with the openings therein, in combination with the valves whereby the gas may be admitted into these annular chambers from the generator and thence delivered to either set of wheel-buckets, so as to drive the wheel in either direction, substantially as herein described.

3. The reversible reactionary wheel consisting of the two sets of buckets set reversely to each other and concentrically, one set within the other, substantially as and for the purpose herein described.

4. The generator, wheel-case, perforated diaphragm, annular chambers, and double reactionary wheel, in combination with the discharge-pipe connecting with the wheel-case, and pipes leading therefrom to the generator furnace or furnaces and having controlling-valves, substantially as herein described.

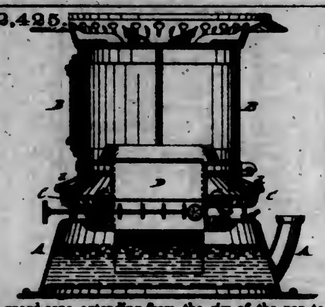
5. The generator having the double reactionary wheel journaled within the wheel-case at one side, the annular chambers, and intermediate perforated diaphragm through which vapor under pressure may be discharged from the generator upon the wheel, in combination with the valves, valve-stems, and controlling hand-levers, substantially as herein described.

6. The generator having the furnaces and return-flues extending through it from one end to the other, having a double reactionary wheel contained within a wheel-case upon one of the sides, a double perforated diaphragm with annular connecting-chambers and controlling-valves, and a discharge-pipe connecting with the wheel-case and having pipes leading therefrom into the furnaces, substantially as herein described.

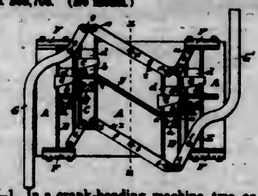
882,425. PETROLEUM COOKING-STOVE. FREDERIC HILDEBRANDT, New York, N. Y. Filed Feb. 21, 1887. Serial No. 228,260. (No model.)

Claim.—In a petroleum cooking-stove, the combination, with an oil-fount, of a pan supported on said fount and provided with side and bottom apertures, a detachable top part supported on said pan, and a closed guard-cone extending from the rim of the pan to the lower edge of the top part, substantially as set forth.

882,425.



882,426. CRANK-BENDING MACHINE. GEORGE H. HOWE, Hoosick Falls, assignor to James A. Bixby, Troy, N. Y. Filed Feb. 20, 1888. Serial No. 265,702. (No model.)



Claim.—1. In a crank-bending machine, two or more bars provided with clamping devices to hold transverse to the lengths of the bars the metal to be bent and linked together at their opposite ends, substantially as and for the purpose specified.

2. In a machine for bending cranks in bars, the combination of a fixed bar and a movable bar linked at or near both ends thereto, both bars provided with clamping devices to hold the bar to be bent transversely to the length of the clamping-bars, and means to swing the linked bar diagonally toward the fixed bar to form the crank, substantially as and for the purpose described.

3. In a crank-bending machine, the combination of a series of bars, each provided with a clamping device to hold the bar to be bent transverse to its length, said bars being linked together at their opposite ends and pivoted by links to the bed-plate of the machine, and means, substantially as described, for moving the crank-forming clamping-bars diagonally toward the pivot-points and the axial clamping-bars directly thereto, as and for the purpose set forth.

4. In a crank-bending machine, the combination of a series of parallel bars linked together at or near their opposite ends and pivoted by links to the machine, and provided with transverse clamping devices to receive the bar to be bent, and means for moving the crank-forming bars diagonally toward the pivots on the machine and the axial bars directly thereto, as and for the purpose specified.

5. The combination, in a crank-bending machine, of a series of parallel bars formed or provided with clamping devices to hold the bar of metal to be bent transversely to their length, said bars being linked together at or near their opposite ends and pivoted by links to the bed-plate of the machine, and the guides for guiding the movement of the axial clamping-bars perpendicularly toward the pivot-points, substantially as and for the purpose specified.

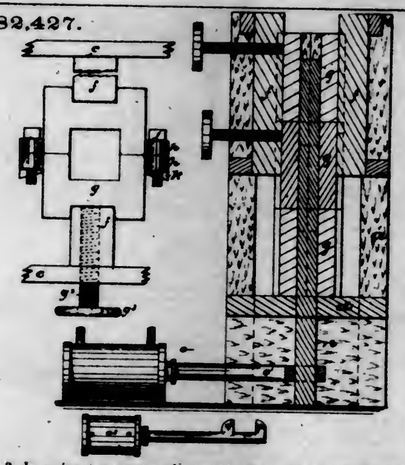
6. The combination of the perpendicularly-moving bars B and C, and the diagonally-moving bars C and D pivoted thereto and to each other at or near their opposite ends, said bars being provided with clamping devices to hold the metal to be bent transverse to their length, and all being pivoted by links to the bed-plate of the machine, substantially as and for the purpose specified.

882,427. INGOT-FORMING APPARATUS. JOHN ELDEWORTH, Newark, N. J. Filed Jan. 4, 1888. Serial No. 259,774. (No model.)

Claim.—1. In an ingot apparatus, the combination, with a frame-work having stripping-spaces n' and a covering-chamber, of a series of mold-sections, and holders adapted to be withdrawn from said sections to allow said sections to gravitate, and means for covering the ingot, said parts being arranged and combined substantially as set forth.

2. The combination, with a series of ingot-mold sections arranged vertically in line and adapted to be stripped from the ingot, of a step, d', for limiting the downward movement of the mold without limiting the movement of the ingot, and means for covering the stripped ingot, substantially as set forth.

382,427.



3. In an ingot apparatus, the combination, with a frame having suitable ways, *f*, and an apertured stop or flooring, *d*, of a series of molds and means for severing the ingot, substantially as and for the purposes set forth.

4. In an ingot apparatus, the combination, with a suitable frame having suitable ways, *f*, a fulcrum, and a mold-stop adapted to serve as a holder or bearing in severing the ingot and for limiting the downward progress of the mold, of said mold and means for severing the ingot, substantially as set forth.

5. In combination, in an ingot apparatus, a frame having holders for preventing downward movement, and a stripping-space, a stop, and means for severing said lower portion, substantially as set forth.

6. The combination, with a series of ingot-mold sections formed in part sections or halves, of a holder to retain certain upper sections of said series in an elevated position, while certain lower sections of said series are being stripped, and means for severing the bared portion of the ingot from the body portion, substantially as set forth.

7. In combination, a frame having a stripping-space and a severing-chamber below said stripping-space, suitable ways, *f*, for mold-sections, holders g^3, perforated flooring *d*, and severing means, substantially as set forth.

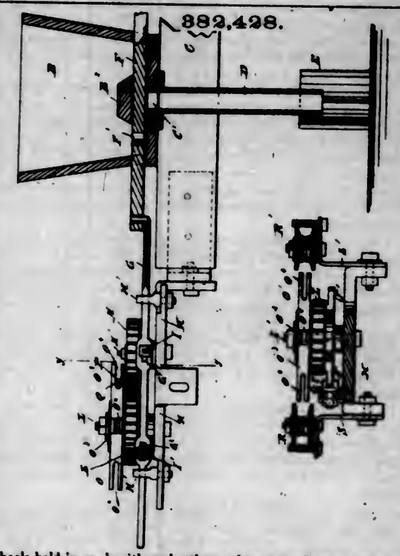
8. In combination, a frame, suitable ways, *f*, set-screws g^3, and a perforated flooring serving as a stop for limiting the gravitation of the mold-sections and as a passage for the ingot, and means for severing the ingot, substantially as and for the purposes set forth.

9. In an ingot-mold, the combination of a series of short mold-sections, a long mold-section, and a frame having a flooring adapted to allow the downward progress of the ingot but not the said mold-sections, substantially as set forth.

10. In an ingot apparatus, in combination, a frame having holders, a series of mold-sections adapted to be stripped from the casting and free to drop automatically into a stripping-space into engagement with a flooring or stop, and means for severing the stripped portion of the ingot, substantially as set forth.

382,428. CHECK-ROW ATTACHMENT FOR PLANTERS. ISAAC JACKSON, Kingman, Kans. Filed Feb. 20, 1883. Serial No. 265,702. (No model.)

382,428.



Claim.—1. In a check-row attachment for planters, the combination, with the seed-boxes and an apertured plate held to slide through the said seed-boxes, of a rod connected to the end of the said plate and provided with lugs, arms adapted to engage alternately the said lugs to impart a sidewise sliding movement to the said rod and plate, gear-wheels carrying the said arms and held in mesh with each other, and slotted arms secured to one of the said gear-wheels and adapted to be operated upon by the balls or knots of the check-row cord or wire, substantially as shown and described.

2. In a check-row attachment for planters, the combination, with the check-row rope or wire provided with balls or knots, of slotted arms adapted to be operated on by the said rope or wire, and two gear-wheels held in mesh with each other, one of the gear-wheels carrying the said slotted arms, one diametrical arm secured on each of the said gear-wheels and adapted to impart movement to the drop of the seed-boxes, substantially as shown and described.

3. In a check-row attachment for planters, the combination, with the check-row rope or wire provided with balls or knots, of slotted arms adapted to be operated on by the said rope or wire, two gear-wheels held in mesh with each other and one carrying the said slotted arms, one diametrical arm secured on each of the said gear-wheels, lugs operated on alternately by the said diametrical arms of the gear-wheels, a rod mounted to slide laterally and carrying the said lugs, and an apertured sliding bar connected with the said rod and operating transversely in the seed-boxes, substantially as shown and described.

4. In a check-row attachment for planters, the combination, with the check-row rope or wire provided with balls or knots, of slotted arms adapted to operate on the said rope or wire, two gear-wheels held in mesh with each other and one carrying the said slotted arms one diametrical arm secured on each of the said gear-wheels, lugs operated on alternately by the said diametrical arms of the gear-wheels, a rod mounted to slide laterally and carrying the said lugs, an apertured sliding bar connected with the said rod and operating transversely in the said box, and pulleys for guiding the said rope or wire to the said slotted arms, substantially as shown and described.

382,429. LASTING-TOOL. JOSEPH R. JACQUES, Hancock, Mich. Filed Feb. 14, 1888. Serial No. 263,904. (No model.)



Claim.—The herein-described lasting-tool, consisting of the handles A B, the downwardly-curved and corrugated jaws C D, the projection E on the jaw C, and the curved and corrugated lip H, pivoted between ears *b* on the jaw D, as specified.

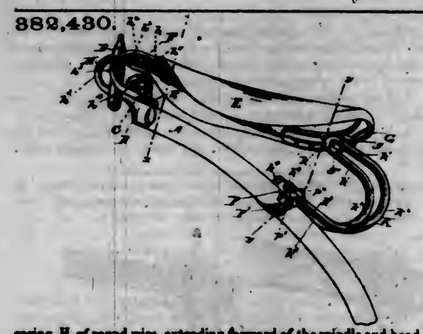
382,480. VELOCIPEDE-SADDLE. JOHN KNOX, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed Nov. 25, 1887. Serial No. 256,020. (No model.)

Claim.—1. In a velocipede-saddle-supporting mechanism, an improved bifurcated vertical-action forward-extending front spring, H, of round steel rod or wire formed into a larger loop, A, for attachment to the flexible seat-piece, and a smaller loop, *k*, to fit upon and about the neck, and further constructed with two long arms, h^3, extending forward of the spindle and head, downward bends h^4, backward bends h^5, rests h^6, and short arms h^7, essentially as set forth.

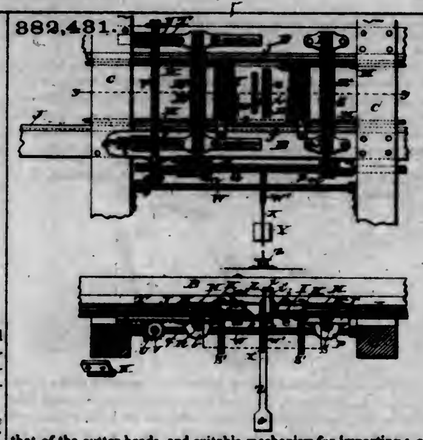
2. In a velocipede-saddle-supporting mechanism, an improved independent bifurcated vertical-action backward-extending rear spring, K, of round steel rod or wire formed to a loop, *k*, for attachment to the saddle-piece, and further constructed with backward arms *k'*, downward bends k^3, forward arms k^4, and with the ends k^5, held in a movable clip-piece, as P, essentially as set forth.

3. An improved velocipede-saddle mechanism consisting in a flexible seat, E, loop F, a saddle-piece, G, a bifurcated vertical-action front spring, H, of round wire, extending forward of the spindle and head and supported by a pin, C, in the neck, and an independent bifurcated vertical-action rear spring, K, of round wire bent with nearly-parallel backward-extending arms held in a movable clip, as P P', on a perch, A, essentially as set forth.

382,430.



382,431.



382,431. MACHINE FOR MAKING EXCELSIOR. ADDISON M. LITTLE, Menasha, Wis. Filed May 28, 1887. Serial No. 239,680. (No model.)

Claim.—1. In a machine for making excelsior, the combination of a series of feed-rollers arranged in pairs, the bearings for one roller in each pair being movable and those for the other stationary, a series of clamping-plates also arranged in pairs in front of the respective feed-rollers, and one plate in each pair having a movement that corresponds to that of said movable bearings, an endless carrier having a series of suitable cutter-heads mounted thereon, and suitable mechanism for actuating the carrier, substantially as set forth.

2. In a machine for making excelsior, the combination of a series of feed-rollers arranged in pairs, an endless carrier having a series of suitable cutter-heads mounted thereon, a flexible strip interposed between each two of the cutter-heads, and suitable mechanism for actuating the carrier, substantially as set forth.

3. In a machine for making excelsior, the combination of a suitable frame, revolvable drums mounted in the frame and having their peripheries provided with a series of depressions, an endless carrier arranged on the drums, a series of suitable cutter-heads mounted on the carrier and corresponding in contour with the depressions in said drums, a series of feed-rollers arranged in pairs in a plane parallel to that of the cutter-heads, and suitable mechanism for imparting a continuous motion to said carrier and an intermittent rotation to the rollers, substantially as set forth.

4. In a machine for making excelsior, the combination of a suitable frame, revolvable drums mounted in the frame and having their peripheries provided with a series of depressions, an endless carrier arranged on the drums, a series of suitable cutter-heads mounted on the carrier and corresponding in contour with the depressions in said drums, spurs projecting from the peripheries of the drums to come against the rear of the cutter-heads as the latter successively pass a given point, a series of feed-rollers arranged in pairs in a plane parallel to that of the cutter-heads, and a suitable mechanism for imparting a continuous motion to said carrier and an intermittent rotation to the rollers, substantially as set forth.

5. In a machine for making excelsior, the combination of a suitable frame, revolvable drums mounted in the frame, an endless carrier arranged on the drums and carrying a series of suitable cutter-heads, a driving-shaft geared to the drums, a disk fast on one of the drum-shafts and having a face thereof provided with a series of teeth arranged at an acute angle to its periphery, a transverse shaft carrying a pinion arranged to be actuated by said toothed disk, horizontal shafts geared to the transverse ones and provided with a series of worms, and feed-rollers having their bearings on the frame and provided with pinions that mesh with said worms, substantially as set forth.

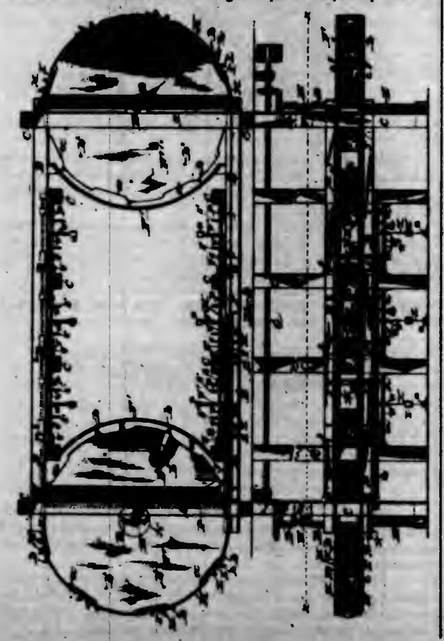
6. In a machine for making excelsior, the combination of a suitable frame, a series of feed-rollers having stationary bearings on the frame, rack-plates loosely arranged on said frame, another series of feed-rollers having their bearings on the rack-plates, vertical shafts carrying pinions arranged to mesh with said rack-plates, horizontal shafts geared to the vertical ones and severally provided with a disk, a weighted rope or chain arranged on each disk, a treadle connected to each rope or chain, an endless carrier having a series of suitable cutter-heads mounted thereon, and suitable mechanism for actuating the carrier, substantially as set forth.

7. In a machine for making excelsior, the combination of a suitable frame, a series of feed-rollers having stationary bearings on the frame, stationary clamping-plates arranged in front of said rollers, another series of feed-rollers and clamping-plates mounted on suitable carriages, suitable mechanism for automatically actuating the carriages in one direction and for imparting a reverse movement thereto at the will of the operator, an endless carrier having a series of suitable cutter-heads mounted thereon, and suitable mechanism for imparting a continuous movement to the carrier and an intermittent movement to the feed-rollers, substantially as set forth.

8. In a machine for making excelsior, the combination of a suitable frame, a series of feed-rollers arranged in pairs, inwardly-extended brackets secured to the frame between each pair of feed-rollers to support the blocks engaged by said rollers, an endless carrier having a series of suitable cutter-heads mounted thereon, and suitable mechanism for actuating said carrier and feed-rollers, substantially as set forth.

9. In a machine for making excelsior, the combination of a series of feed-rollers arranged in pairs, an endless carrier composed of two wire cables arranged on suitable drums, a series of heads having vertical slots and longitudinal grooves, clamping-plates having longitudinal grooves that unite with those in the heads to engage the chains or cables, a series of slitter-knives, and a single planer-knife secured to each head and extended through the slots therein, and suitable mech-

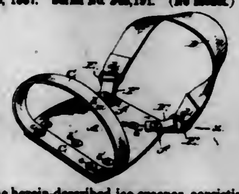
382,431.



anism for actuating said carrier and feed-rollers, substantially as set forth.

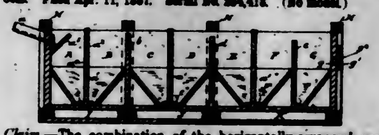
10. In a machine for making excelsior, the combination of a suitable frame having side timbers provided with grooved tracks, an endless carrier having a series of suitable cutter-heads mounted thereon, and each of said heads provided with flanges that engage said tracks, a series of feed-rollers arranged in pairs, and suitable mechanism for actuating said carrier and feed-rollers, substantially as set forth.

882,432. ICE-CREEPER. CHARLES J. LESS, Jamestown, N. Y. Filed Aug. 5, 1887. Serial No. 246,191. (No model.)



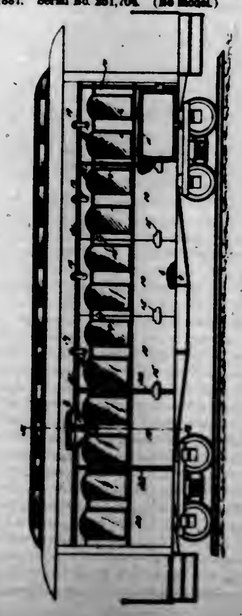
Claim.—The herein-described ice-creeper, consisting of the metallic plate A, provided with the spurs B, projecting from its under side, the toe-strap C, secured to the upper surface of the plate at the front edge thereof, the metal clips F, secured to the rear corners of the plate, and the elastic heel or back strap D, provided at its ends with the rings E, through which the clips pass and by means of which the band is secured to the plate, as specified.

882,433. SLIMER AND SETTLER. THOMAS H. MINTER, Whitfield, Ohio. Filed Apr. 11, 1887. Serial No. 234,418. (No model.)



Claim.—The combination of the horizontally-arranged ore-settling chambers provided with exit-openings at the bottom, the horizontal frames H, supporting said chambers upon a common base, the receptacles formed in the said base below the chambers, the partitions *b d e*, diminishing in height from front to rear, the alternating partitions *a'*, and the adjustable partitions a^2, arranged over said partitions, so as to form adjustable openings a^4, substantially as and for the purpose set forth.

882,434. RAILWAY-CAR. HENRY HIRSCH, New York, N. Y. Filed Oct. 7, 1887. Serial No. 251,704. (No model.)



Claim.—1. The combination, with a railway-car frame, of side panels, means for connecting the adjacent edges of said panels, tongues arranged to enter recesses in the upper edges of the panels, and levers connected to the tongues, substantially as described.

2. A detachable railway-car panel formed with a compartment in which a buoyant material is confined, substantially as described.

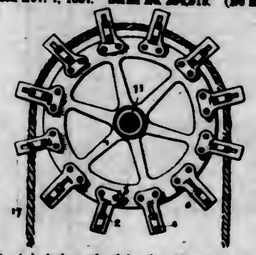
3. A detachable railway-car panel, in combination with an air-tight vessel or chamber fitted within said panel, substantially as described.

882,435. ATTACHING COULTERS. JOHN F. PARKER, Chicago, Ill., assignor to the David Bradley Manufacturing Company, same place. Filed Aug. 20, 1887. Serial No. 247,478. (No model.)



Claim.—The plate A, having on opposite sides a series of holes, *a*, in the arc of a circle, and provided with the hollow socket E, said socket having on its interior a groove, *b*, in combination with an eye-bolt, F, the body of which rests in said groove, and having a screw-threaded shank projecting through an opening in the socket and secured in place by a nut, and a standard, G, passing through the socket E and held therein by the eye-bolt F, the whole being secured to the plow-beam by bolts C D and plate B, substantially in the manner described, and for the purpose specified.

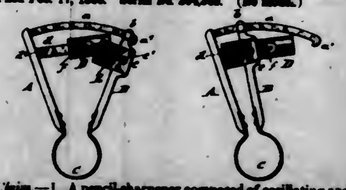
882,436. HOISTING-MACHINE. FREDERICK H. A. PETERS, Detroit, Mich. Filed Nov. 7, 1887. Serial No. 254,512. (No model.)



Claim.—1. A hoisting-wheel having its periphery provided with forked arms having longitudinal slots in the branches of the forks and containing slidable blocks or jaws mounted in the slots, substantially as shown and described.

2. A hoisting-wheel, 1, having the forked arms 2, with the slots 6 in the branches of the arms, and slidable blocks or jaws 4, with projection 5, mounted in the slots 6, and secured in place by plate 7 and screws 8, substantially as shown and described.

882,437. PENCIL-SHARPENER. PETER PETRY, Newark, N. J. Filed Feb. 17, 1888. Serial No. 264,368. (No model.)



Claim.—1. A pencil-sharpener composed of oscillating and spring-actuated handles, an inclined pencil-supporting tube attached to one handle, and an inclined cutting-knife attached to the other handle, substantially as set forth.

2. A pencil-sharpener composed of oscillating and spring-actuated handles, an inclined pencil-supporting tube attached to one handle and provided with an inclined side recess, and an inclined cutting-knife attached to the other handle, substantially as set forth.

3. The combination of two spring-actuated handles hinged at one end, a device for guiding said handles at the opposite end, a pencil-supporting tube attached to one handle, and an inclined knife attached to the other handle, substantially as set forth.

4. The combination of two handles connected by a hand-spring at one end, a guide and stop device at the other end of the handles, a pencil-supporting tube attached to one arm and provided with an inclined side recess, and an inclined cutting-knife attached to the other handle, substantially as set forth.

5. The combination of two oscillating and spring-actuated handles, a fixed guide-arm attached to one handle and provided with a stop at the outer end for the forked end of the other handle, a pencil-supporting tube attached by an arm to the first handle, and an inclined cutting-knife attached to the second handle, substantially as set forth.

6. The combination of two oscillating handles, one of said handles being forked at the outer end, a hand-spring connecting the handles at one end, a fixed arc-shaped guide-arm attached to the opposite end of one handle, a stop at the outer end of said guide-arm, a pencil-supporting tube attached to one handle, and an inclined cutting-knife attached to the other handle, substantially as set forth.

882,438. LAND-MEASURING MACHINE. EDWARD ROBARDS, Stilesville, Ind. Filed Jan. 5, 1888. Serial No. 259,593. (No model.)



Claim.—1. The combination, in a land-measuring device, with the frame having a carrying-wheel secured at its front end, of a tripod mounted in rear of said wheel, having a rearwardly-inclined top for the reception of a compass or other instrument and the retention of said instrument in horizontal position when the machine is inclined or operated, substantially as set forth.

2. The combination, in a measuring device, with the frame, of an indicator provided at one side thereof, comprising a gear, a worm-shaft meshing therewith, and having an angular or pyramidal shaped inner end, a carrying-wheel provided with a scale at its outer edge, and mounted upon an axle having a recessed end corresponding to and adapted to engage the pyramidal end of the worm-shaft, substantially as set forth.

3. The combination, in a measuring device, with the frame, of a carrying-wheel mounted at the forward end thereof, and an indicator connected with said wheel and comprising a casing provided with a concentric scale, a gear seated therein, a worm-shaft mounted in said casing, and a pin engaging a circumferential groove in said shaft to prevent lateral displacement thereof, substantially as set forth.

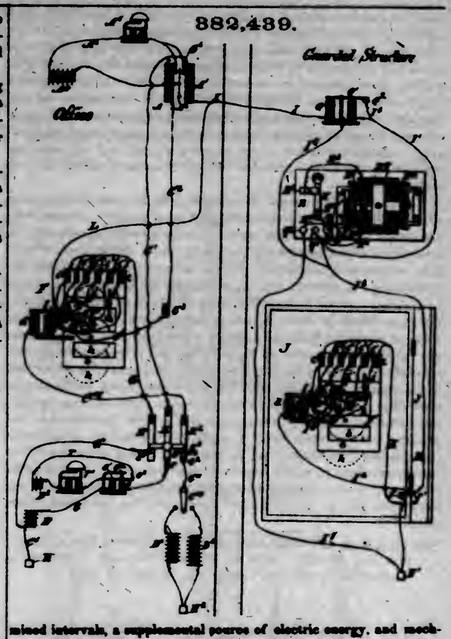
4. The herein-described land-measuring device, comprising the frame, an indicator provided at one side thereof, and comprising a worm-shaft having a pyramidal-shaped end, a carrying-wheel having a circumferential scale, mounted at the forward end of the frame upon a shaft, said shaft having a recessed end corresponding to and engaging the pyramidal end of the worm-shaft, and a tripod having an inclined top mounted on the frame, said top being adapted to assume a horizontal position when the device is operated, substantially as set forth.

5. The herein-described land-measuring device, consisting of the frame, comprising two forwardly-convergent longitudinal beams, handles provided at the rear ends of the same, a rest, or support, near the rear ends of said beams, a tripod upon the beams, an operating-wheel having its axle removably secured in slots at the front end of the beams, the outer edge of said wheel being provided with a scale, a recess in the end of the axle, and an indicator comprising a worm pin or shaft, having a pyramidal or angular end engaging said corresponding recess, substantially as and for the purpose set forth.

882,439. ELECTRIC BURGLAR-ALARM. HENRY G. ROSSE, Jersey City, N. J. Filed Sept. 16, 1886. Serial No. 243,603. (No model.)

Claim.—1. In an electric burglar-alarm comprising an internal circuit and an external circuit, the combination of a set of variable resistances in connection with the internal circuit, a set of variable resistances in connection with the external circuit, mechanism for varying the resistances in the internal and external circuits at predetermined intervals, a supplemental source of electric energy, and mechanism for throwing the supplemental energy into connection with the variable resistances at pleasure, substantially as set forth.

882,439.



2. In an electric burglar-alarm comprising an internal circuit and an external circuit, the combination of a set of variable resistances in connection with the internal circuit, a set of variable resistances in connection with the external circuit, mechanism for varying the resistances at predetermined intervals, a supplemental battery, a switch for throwing the supplemental battery into and out of connection with the variable resistances, and an alarm under the influence of the internal and external circuits, whereby attention is called to any disturbance in the resistances in the external circuits, substantially as set forth.

3. In an electric burglar-alarm comprising an internal circuit and an external circuit, the combination of a set of variable resistances in connection with the external circuit, and a set of corresponding variable resistances in connection with the internal circuit, mechanism for changing the resistances at predetermined intervals, a supplemental source of electric energy, means for throwing said supplemental energy into connection with the said variable resistances, a galvanometer or analogous device located under the influence of both the internal and external circuits and held normally in equilibrium thereby, and a compound key in connection with the internal and the external circuits, whereby the internal circuit may be broken when the supplemental electric energy is thrown into connection with the variable resistances, substantially as set forth.

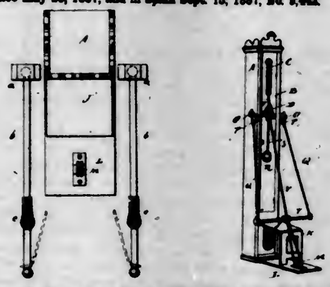
4. In an electric burglar-alarm comprising internal circuits at the office and external circuits extending to and through guarded structures, the combination of a galvanometer or analogous device located at the office and connected with the external circuits for the purpose of giving alarm, a set of variable resistances in connection with one of the internal circuits, mechanism in connection with the set of variable resistances for successively introducing different resistances into one of the internal circuits, a corresponding set of variable resistances in each of the external circuits, mechanism for successively introducing different resistances into the said circuits, a supplemental battery, a switch to throw the supplemental battery into and out of connection with the set of variable resistances, switches for throwing any one of the galvanometers or analogous devices at the office out of its normal circuit and into the circuit comprising the supplemental battery, and a compound key for manipulating the several circuits, substantially as set forth.

5. In an electric burglar-alarm comprising internal circuits at the office and external circuits extending to and through guarded structures, the combination of a galvanometer or analogous device located at the office and connected with the external circuits for the purpose of giving alarm, a set of variable resistances in connection with one of the internal circuits, a train of wheels including a switch-wheel, and

controlling electro-magnet for throwing the variable resistances into and out of circuit, adjustable rheostats arranged in other internal circuits, a set of variable resistances in connection with each of the external circuits, a train of wheels including a switch-wheel, and a controlling electro-magnet, in connection with each of the external sets of variable resistances for throwing the different resistances into and out of circuit, and a system of switches and connections at the office, whereby the set of variable resistances at the office may be temporarily connected with any of the external circuits and subsequently replaced by the circuit provided with the rheostats, substantially as set forth.

6. In an electric burglar-alarm comprising an internal circuit and an external circuit, the combination of a set of variable resistances in connection with the external circuit, mechanism for introducing the several resistances successively into the external circuit, a set of variable resistances in connection with the internal circuit, mechanism for introducing the different resistances successively into the internal circuit, a supplemental battery for setting in motion the aforesaid mechanisms, a switch for throwing said battery into and out of connection with the sets of variable resistances, a galvanometer or analogous device under the influence of the internal and external circuits, and adapted to give an alarm in the event of a change in the resistances of the internal and external circuits, a short-circuiting mechanism in connection with the external circuit, an electro-magnet having a polarized armature, a battery arranged to send an electric current in the opposite direction from the said supplementary battery, and connections leading from the magnet, having the polarized armature to the battery arranged to send a reverse current and to the set of variable resistances in the external circuit, whereby the said short-circuiting mechanism may be shunted out of its circuit by the watchman at the office.

382,440. EXERCISING-MACHINE. José Sanchis, Mexico, Mexico. Filed Dec. 26, 1887. Serial No. 259,280. (No model.) Patented in Mexico May 20, 1887, and in Spain Sept. 13, 1887, No. 9,462.



Claim.—1. In an exercising-machine, the combination, with an upright box having a hinged door on its front, said door being provided with two upright slots one above the other, of a weight guided in said box, a pulley in the top of the box, and a rope passed over said pulley and connected with the weight, substantially as herein shown and described.

2. In an exercising-machine, the combination, with an upright box, of a weight guided in the same, a pulley in the top of the box, a rope passed over said pulley, and a folding seat hinged to the front of the box at the bottom, substantially as herein shown and described.

3. In an exercising-machine, the combination, with an upright box, of a weight guided in the same, a pulley in the top of the box, a rope passed over said pulley and connected with the weight, levers pivoted on the floor at the sides of the base of the block, and ropes connecting said levers with the rope passed over the pulley in the box, substantially as herein shown and described.

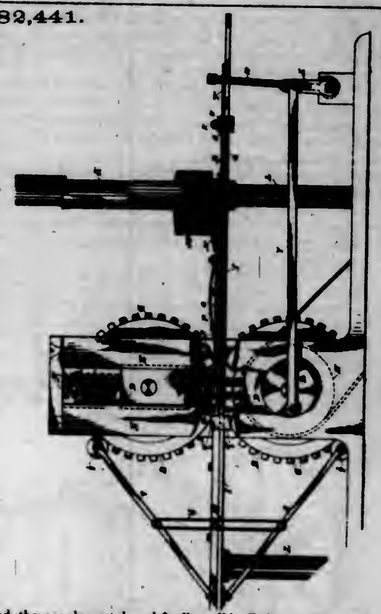
4. In an exercising-machine, the combination, with an upright box, of a weight guided in the same, a pulley in the top of the box, a rope passed over said pulley and connected with the weight, foot-levers pivoted on the floor at the sides of the base of the box, ropes connecting said foot-levers with the rope passed over the pulley in the box, and adjustable foot-rests on said foot-levers, substantially as herein shown and described.

382,441. WAD-PRINTING MACHINE. Phineas Smlly, Oakland, Cal. Filed Aug. 31, 1887. Serial No. 248,413. (No model.)

Claim.—1. The rotating rollers carrying the printing-dies and journaled one above the other, so that the dies shall print simultaneously upon both sides of the wad which passes between them, the wad reservoir or cylinder having a surrounding weighted shoe, N, the sliding table Q, and the supplemental wad-feeding slide R, substantially as herein described.

2. The wad-reservoir with its surrounding weighted shoe, the slide

382,441.

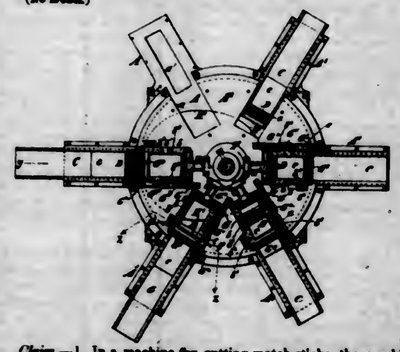


Q, and the supplemental wad-feeding slide R, having the slot S, and the bolt or pin V, whereby the slides may be adjusted with relation to each other, substantially as herein described.

3. The simultaneously-rotating printing-rollers journaled one above the other, the table extending between the two and having the movable slides Q and R, and the operating-levers, in combination with the wad-reservoir, the surrounding segmental shoe, the guides O, and the spring P, substantially as herein described.

4. The rotating printing-rollers, in combination with the inking-rollers adjustably supported, so as to press upon the printing-dies, and connected together by an elastic cord or band, substantially as herein described.

382,442. MACHINE FOR CUTTING MATCH-STICKS. William H. H. Smoe, Brooklyn, N. Y. Filed June 18, 1886. Serial No. 205,561. (No model.)



Claim.—1. In a machine for cutting match-sticks, the combination of a number of radially-reciprocating cutters operating to make cuts in one direction, mechanism, substantially such as described, for reciprocating the cutters successively beneath pieces of wood, and a revolving knife operating to make cuts in the pieces of wood at right angles to the other cuts, substantially as specified.

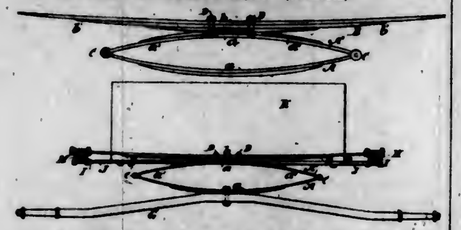
2. In a machine for cutting match-sticks, the combination of a platform, a number of radially-arranged slideways, slides carrying cutters arranged in said slideways and operating successively to make cuts in pieces of wood in one direction, and a revolving cutter operating to make cuts in the pieces of wood at right angles to the other cuts, substantially as specified.

3. In a machine for cutting match-sticks, the combination, with a platform, of a number of radially-arranged slideways, open-bottom holders for blocks of wood, mounted on the platform above the slideways, mechanism for periodically feeding down the blocks of wood, slides sliding in said slideways, provided with rests onto which said blocks of wood are fed, and with cutters, said cutters operating successively to make cuts in the blocks of wood in one direction, and a revolving cutter operating to make cuts in the pieces of wood in a direction at right angles to the other cuts, substantially as specified.

4. In a machine for cutting match-sticks, the combination of a platform, open-bottom holders for blocks of wood, rollers arranged upon the holders for feeding the blocks of wood, mechanism comprising levers for operating the rollers, a cam for actuating the said levers, slides carrying cutters, an eccentric for actuating the slides, and a revolving knife, substantially as specified.

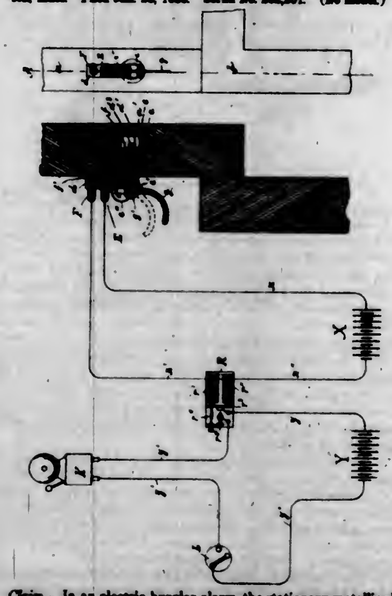
5. The holder B, comprising the sections *b b'* and the adjustable section *b²*, combined for use substantially as specified.

382,443. SPRING-VEHICLE. Edward Storm, Poughkeepsie, N. Y., assignor to the Edward Storm Spring Company, (Limited,) same place. Filed Oct. 31, 1887. Serial No. 253,353. (No model.)



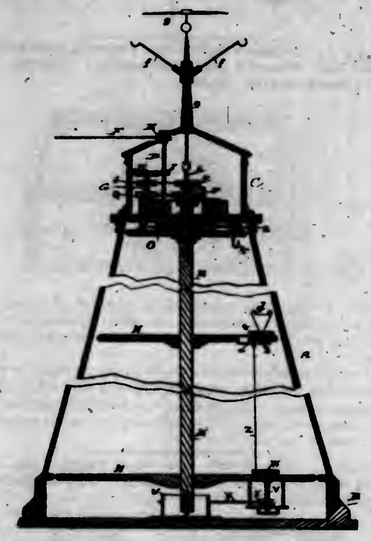
Claim.—The combination, with the axle of a wagon or other vehicle and a body or side bars supporting a body, of an elliptic spring supported by the axle, and a semi-elliptic spring, one of said springs having a concave seat at the central portion conforming to the adjacent convex portion of the other spring, said springs extending transversely to the length of the body of the wagon or other vehicle, substantially as specified.

382,444. ELECTRIC BURGLAR-ALARM. George F. Tafe, Boston, Mass. Filed Jan. 23, 1886. Serial No. 209,201. (No model.)



Claim.—In an electric burglar-alarm, the stationary metallic ring or ferrule *c*, in combination with the detachable circuit-breaker, consisting of the non-conducting part *d d'*, the lever *g*, pivoted to it and normally held in metallic connection with the insulated binder-screw E and ferrule *c* by means of the spring *d'* and metal plate *e d'*, respectively, and the binder-screw F, metallically connected to said ferrule by means of the metal plate *f f'*, and wires leading from said binder-screws E F to a battery and electric alarm arranged in the circuit, as and for the purpose set forth.

382,445. REVOLVING SHOW-CASE. Charles H. Tully, Middletown, Ohio. Filed Aug. 26, 1887. Serial No. 247,883. (No model.)



Claim.—1. The vertical central shaft and tables within the stationary outer case, the counter-shaft in the upper part of the structure and to one side of the central shaft, gears and pulleys carried by said shafts, whereby said central shaft is caused to rotate, an underlying disk supported and loosely journaled about the central axis, and pulleys by which it may be rotated in the opposite direction from this axis, in combination with a stationary pulley, R, in the upper part of the case and a belt extending from said pulley to a pulley, S, upon the shank of the hook T, whereby the latter will be rotated, substantially as herein described.

2. The stationary case, with the vertical central shaft and tables, mechanism whereby they are rotated, in combination with supplemental tables W and shafts V in the base of the case journaled around the periphery of the main tables and having pulleys upon the shafts, a stationary central drum, U, at the base of the central shaft, around which belts pass to the pulleys X, so that the latter and the tables W are caused to rotate, substantially as herein described.

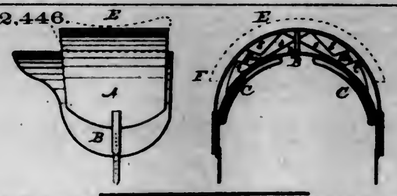
3. The exterior case, with the vertical central rotating shaft and tables and gearing whereby it is driven, the supplemental tables upon the lower of the main tables, with their shafts, pulleys, and belts, whereby they are rotated, in combination with the shaft extending from the lower tables, W, through the upper tables, N, having gears *a* upon their upper end which engage with corresponding gears in the supplemental upper tables, *c*, whereby they are caused to rotate in opposite directions while being carried around by the main tables N, substantially as herein described.

4. In combination with the stationary outer case, the interior revolving shafts and tables, and the pulleys, shafts, and gears by which they are driven, the vertical shaft extending upwardly from the roof of the structure, having the projecting arms *f*, with suspending hooks, and magnetic needle upon the vertex of the shaft *e*, said shaft being rotated in conjunction with the interior tables and mechanism, substantially as herein described.

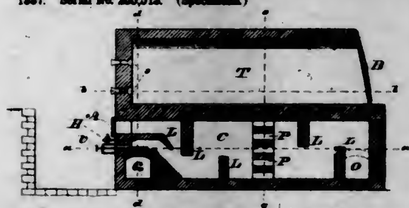
382,446. SADDLE. David Univershee, Dayton, Ohio. Filed Jan. 28, 1886. Serial No. 261,293. (No model.)

Claim.—The elastic horse-saddle comprising the parts A and B, the longitudinal blocks *s s*, attached to the former, and the blocks *t t*, attached to the latter, with a series of intervening spiral springs, *v*, and means to retain these parts in a proper relation, substantially as set forth.

382,446.



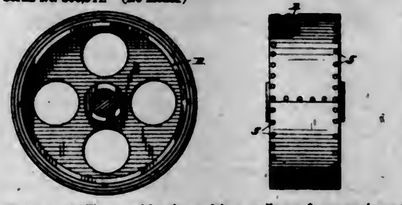
382,447. PROCESS OF COATING IRON AND STEEL WITH RUST-LESS OXIDE. WILLIAM T. WELLS, Harlemmeck, N. J. Filed Nov. 14, 1887. Serial No. 255,513. (Specimens.)



Claim.—1. The process, substantially as described, of protecting iron and steel articles from rust, which consists in subjecting such articles at a high temperature to the action of mingled steam and carbon monoxide.

2. The process, substantially as described, of protecting iron and steel articles from rust, which consists in subjecting such articles at a high temperature to the action of steam, then subjecting them to the action of carbon monoxide, and then subjecting them to the action of mingled steam and carbon monoxide.

382,448. BAND-PULLEY. JOHN WILEY, Fitchburg, Mass., assignor of one-half to Harold B. Eaton, same place. Filed Jan. 12, 1888. Serial No. 260,511. (No model.)



Claim.—1. The combination, with a pulley, of a covering of canvas and cement secured thereto, each layer of the covering being composed of a series of strips the adjoining ends of which overlap each other transversely to the face of the pulley.

2. The combination, with a pulley the rim of which is provided with a transverse row of holes, and also a row of holes along each of its edges, of a covering of canvas and cement secured to the face of the pulley, and rivets through said holes and covering.

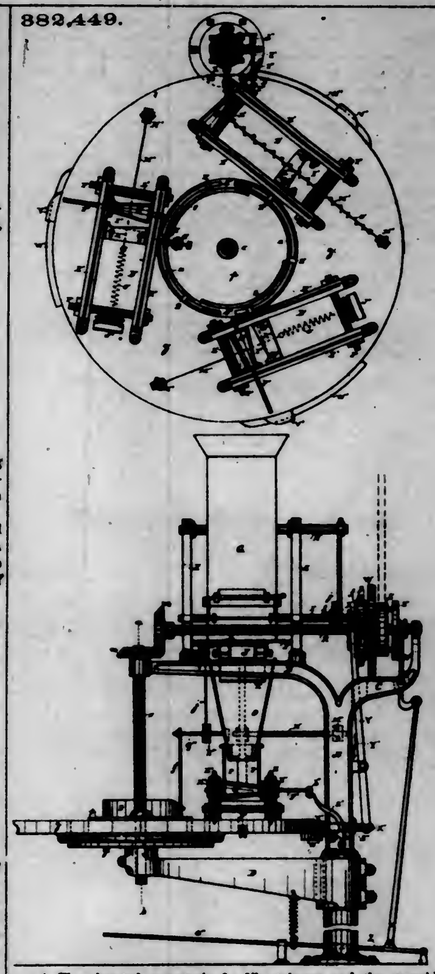
382,449. CIGAR-BUNCHING MACHINE. JOHN R. WILLIAMS, Newark, N. J., assignor to the John R. Williams Company, New York, N. Y. Filed Dec. 28, 1887. Serial No. 259,199. (No model.)

Claim.—1. The elevated receptacle for filler-tobacco, containing feed mechanism and the chute for conveying the charges of tobacco therefrom, combined with the rotating dial having an intermittent motion and carrying a series of rolling-tables, the reciprocating rollers for said tables, the rotary disk within said dial, connections between said disk and dial, whereby motion may be communicated from one to the other, and mechanism, substantially as described, for applying power, substantially as set forth.

2. The elevated receptacle for filler-tobacco and the movable chute for conveying the charges of tobacco therefrom, in combination with the rotary dial carrying the series of rolling-tables and rollers, the disk within the said dial, the series of projections K', connected with said dial, the arm Z', connected with said disk, and the arm adapted to engage the shafts of said rollers during the revolution of the dial, substantially as set forth.

3. The elevated receptacle for filler-tobacco and the movable chute for conveying the charges of tobacco therefrom, in combination with the rotary dial carrying the series of rolling-tables and rollers, the disk within said dial carrying the flanges f, and the arms f' and f'', for turning said chute upward at intervals, substantially as set forth.

382,449.



4. The elevated receptacle for filler-tobacco and the movable chute for conveying the charges of tobacco therefrom, in combination with the revolving dial having an intermittent movement and carrying the series of rolling-tables, the reciprocating rollers for each of said tables, and mechanism, substantially as described, for retaining the said rollers while the table is in motion, substantially as described.

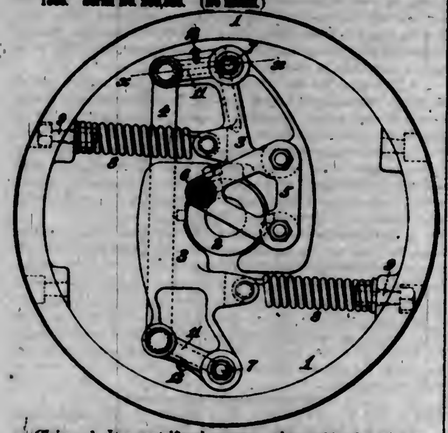
5. The elevated receptacle for filler-tobacco and the movable chute for conveying the charges of tobacco therefrom, in combination with the revolving dial having an intermittent movement and carrying the series of rolling-tables, the reciprocating roller for said tables, an arm for retaining the said roller while the table is in motion, and mechanism, substantially as described, for retracting the said roller to the front end of the table after the bunch has been rolled, substantially as set forth.

6. The elevated receptacle having an intermittent feed and the movable chute for conveying the charges of the filler-tobacco therefrom, in combination with the revolving dial having an intermittent motion and carrying the rolling-tables, the inverted toothed guides on opposite sides of said tables, the reciprocating roller with its shaft and pinions for each of said tables, and an arm for retaining the said roller while the table is in motion, substantially as set forth.

7. The elevated receptacle having an intermittent feed and the movable chute for conveying the charges of tobacco therefrom, in combination with the revolving dial carrying the rolling-tables and reciprocating rollers, the arm for retaining said rollers in succession while the table is in motion, a cam for actuating said rod, an additional

cam on the dial, and intermediate mechanism, as described, for controlling the feed, substantially as set forth.

382,450. GOVERNOR. WILLIAM A. BELL, Pittsburg, Pa., assignor to the Westinghouse Machine Company, same place. Filed Jan. 16, 1888. Serial No. 260,933. (No model.)



Claim.—1. In a centrifugal governor, the combination of a supporting-case, a weight or weighted arm pivoted thereto, and an oil-chamber fixed upon the weight and communicating with the bearing-surface of its pivot, substantially as set forth.

2. In a centrifugal governor, the combination of a supporting-case, a weight or weighted arm pivoted thereto, an oil-chamber fixed upon the weight and communicating with the bearing-surface of its pivot, and washers or packings fitting around said pivot at the ends of its bearing-surface, substantially as set forth.

3. In a centrifugal governor, the combination of a supporting-case, a pair of weights or weighted arms pivoted thereto, a link having end pivots fitting sockets in the weights, and oil-chambers fixed upon the weights and communicating with the bearing-surfaces of their pivots and of the pivots of the link, substantially as set forth.

382,451. CHAIN-COUPLING FOR STUMP-EXTRACTORS. WILBUR H. BARNES, Sheridan, Mich. Filed Dec. 15, 1887. Serial No. 257,926. (No model.)



Claim.—1. The combination, with the lifting-screw A, of the chain B and hook-link C, each secured to the end thereof, the hook D, having finger d', and a gravity catch-link, E, encircling said hook-link C and sliding longitudinally thereon and engaging with the finger of the hook D, substantially as described.

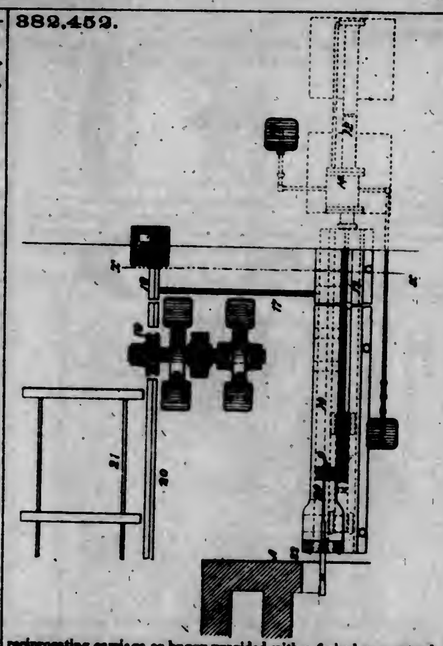
2. The combination, with the chain B, of the hook-link C, the hook D, and the catch-link E, having an outwardly-projecting lug, c, and fitted to slide upon said hook-link, substantially as described.

3. The combination, with the chain B, of the hook-link C, having outwardly-projecting shoulders c', the hook D, hinged to the end of said link, and the catch-link encircling said hook-link and adapted to move freely longitudinally and be held thereon by said shoulders, substantially as described.

382,452. PIPE-WELDING APPARATUS. THOMAS J. BRAY, Whitehall, W. Va., assignor of one-half to the Riverside Iron Works, same place. Filed Feb. 8, 1888. Serial No. 263,301. (No model.)

Claim.—1. In a pipe-welding apparatus, the combination of an inclined table, a welding-die located at the front end of said table, a

382,452.



reciprocating carriage or buggy provided with a forked arm extending over the table, and sizing-rolls for finishing and inclined bars for transferring the welded pipe from the table to a point in front of the sizing-rolls, substantially as set forth.

2. In a pipe-welding apparatus, the combination of a welding-die, a carriage or buggy provided with means for engaging the strip, a fluid-pressure cylinder and piston for operating the carriage or buggy, a valve mechanism controlling the admission and escape of fluid-pressure to and from the ends of the cylinder, and treadles located at or near the front and rear limits of the movement of the carriage or buggy for operating the valve mechanism, substantially as set forth.

382,453. MECHANISM FOR THE MANUFACTURE OF PIPE. THOMAS J. BRAY, Wheeling, W. Va., assignor of one-half to the Riverside Iron Works, same place. Filed Feb. 3, 1888. Serial No. 263,007. (No model.)

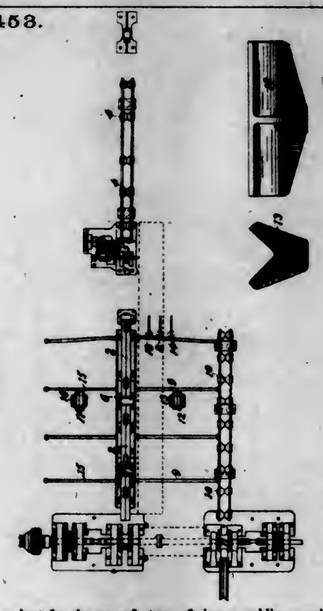
Claim.—1. In a plant for the manufacture of pipe, a welding mechanism, in combination with a receiving-trough and a vertically-movable head for raising and discharging the pipe from the trough, substantially as set forth.

2. In a plant for the manufacture of pipe, a welding mechanism, in combination with a receiving-trough, skids located at one side of said trough, and a vertically-movable head for raising the pipe from the skids and reversing its position, substantially as set forth.

3. In a plant for the manufacture of pipe, a welding mechanism, in combination with a receiving-trough, skids located at one side of said trough, a vertically-movable head for raising the pipe from the trough and discharging it upon the skids, and a vertically and horizontally movable head for reversing the position of the pipe, substantially as set forth.

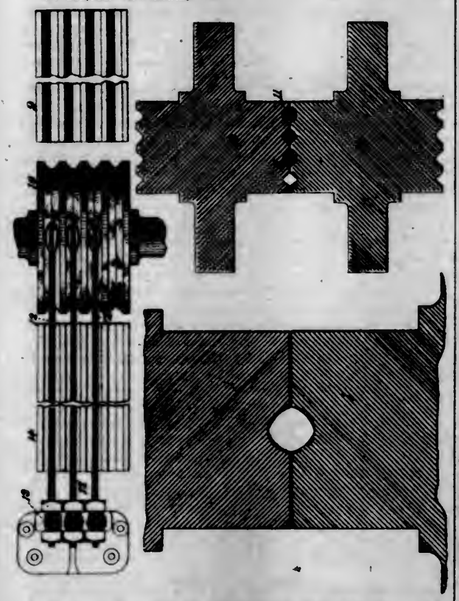


882,453.



4. In a plant for the manufacture of pipe, a welding mechanism, a sectional receiving-trough, and fluid-pressure mechanisms located between the sections of the trough and provided with heads having their upper faces inclined, substantially as set forth.

882,454. MECHANISM FOR THE MANUFACTURE OF ANGULAR TUBES. THOMAS J. BRAY, Wheeling, W. Va., assignor of one-half to the Riverside Iron Works, same place. Filed Feb. 3, 1886. Serial No. 262,906. (No model.)



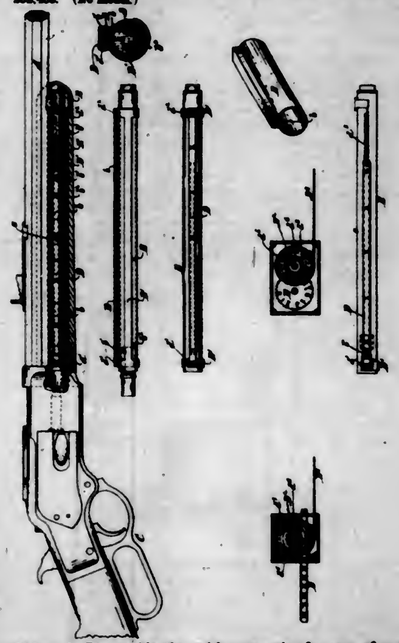
Claim.—1. In a plant for manufacturing polygonal tubes, a pair of welding-rolls having grooves formed therein, said grooves having their walls formed on arcs of circles of greater radii than the radius of the circumscribed circle, in combination with a welding-ball having a cross-sectional shape corresponding to the opening formed by the grooves of the welding-rolls, substantially as set forth.

2. In a plant for the manufacture of polygonal tubes, a pair of reversible reducing-rolls having a groove formed therein, said groove having its walls formed on arcs of circles of greater radii than the radius of the circumscribed circle, in combination with a ball or mandrel having a cross-sectional shape corresponding to the opening formed by the grooves in the rolls and tapering from the middle to its ends, substantially as set forth.

3. In a plant for the manufacture of polygonal tubes, a pair of reversible reducing-rolls having a groove formed therein, said groove having its walls formed on arcs of circles of greater radii than the radius of the circumscribed circle, in combination with a ball or mandrel having a cross-sectional shape corresponding to the opening formed by the grooves in the rolls and tapering from the middle to its ends, and one or more pairs of straightening-rolls grooved to correspond with the reducing-rolls and arranged on each side of the reducing-rolls, substantially as set forth.

4. In a plant for the manufacture of polygonal tubes, a pair of reversible reducing-rolls having a series of grooves formed therein, the first of said series having its walls formed on arcs of circles of greater radii than the radius of the circumscribed circle, and the walls of each succeeding groove approximating more and more closely to plane surfaces so arranged as to form an opening or pass corresponding to the shape desired, in combination with a series of balls or mandrels tapering from their centers to their ends and shaped in cross-section to correspond to the openings formed by the grooves in the rolls, substantially as set forth.

882,455. CARTRIDGE FEED-INDICATOR FOR FIRE-ARMS. EDWARD S. BUTLER, New York, N. Y. Filed Mar. 26, 1887. Serial No. 232,483. (No model.)

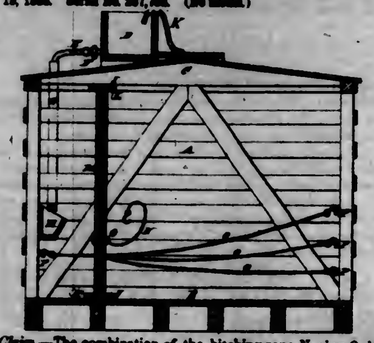


Claim.—1. The combination, with a magazine fire-arm, of an indicator bearing figures arranged upon one side of the magazine, a movable follower or pusher, and a tape or ribbon connected with the follower or pusher and serving to cause the display of the figures on the indicator successively, substantially as specified.

2. The combination, with a magazine fire-arm having its magazine provided with a longitudinal slot, of a strip bearing figures and connected through said slot to the follower or pusher of the magazine, substantially as specified.

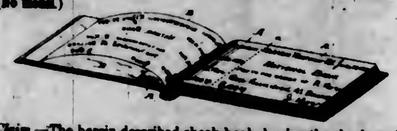
3. The combination, with a magazine fire-arm having its magazine provided with a longitudinal slot, of a tape or ribbon bearing figures passing around guides and having its ends connected through the slot of the magazine to the follower or pusher of the magazine, substantially as specified.

882,456. STOCK-CAR. JAMES B. GALLION, Pontiac, Mo. Filed Mar. 19, 1888. Serial No. 267,762. (No model.)



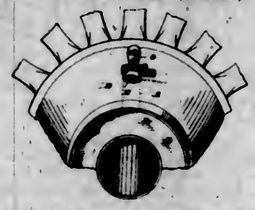
Claim.—The combination of the hitching-rope N, ring O, hitching-post M, plank J, pipe E, stop-cock F, tarred-rope partitions Q Q Q, loading-gate R, with hinged section S, and loops T, all substantially as set forth.

882,457. CHECK-BOOK. ALEXANDER CARMICHAEL and SAMUEL D. TOURTELLOTTE, Westerly, R. I. Filed June 22, 1887. Serial No. 242,111. (No model.)



Claim.—The herein-described check-book, having the checks and stubs printed in copying-ink and comprising a number of leaves weakened at *a* and forming stubs A and checks A', and a number of sheets of prem-copying paper, B, alternated between said leaves and of equal size therewith, as and for the purpose specified.

882,458. AXLE-LUBRICATOR. WARREN COLE, Jr., Keokuk, Iowa. Filed Nov. 17, 1886. Serial No. 219,126. (No model.)



Claim.—1. In a lubricator, a forcing-plunger provided with a laterally-extending locking-handle secured to its head, substantially as set forth.

2. In a lubricator, the combination, with a lubricant-tube adapted to be inserted in a hub, of a plunger having a laterally-extending handle secured to its head and a spring-catch adapted to hook the plunger in the tube, substantially as set forth.

3. In a lubricator, the combination of an externally-threaded tube adapted to be screwed into a hub, a forcing-plunger to be inserted and locked in said tube, a flange on the upper end of said plunger, a laterally-extending locking-handle secured to said flange, and a hook-shaped catch located on the hub, so that the locking-handle can be swung into the hook portion of the same, substantially as described.

4. In a lubricator, a lubricant-tube having the same external diameter and a continuous thread from end to end and located in a hub, so that its inner end will be flush with the interior surface of the box and its outer end flush with the exterior surface of the hub, the upper end of the interior of said tube being rabbeted out, the interior surface of said rabbeted portion and tube being smooth and free from projections, a solid plunger provided with an enlargement at its upper extremity, the exterior surface of said plunger and enlargement being smooth and the diameters of the same being such that they will fill and be able to freely slide within said tube and rabbeted portion, a flat flange upon the upper end of the plunger to fit over the upper end of said tube, and a spring-actuated locking device, whereby when the plunger is forced home it can be locked in position by a slight lateral turn of the same, substantially as described.

882,459. BOTTLE-STOPPER. JOSEPH OSBORN, New York, N. Y. Filed Feb. 20, 1888. Serial No. 264,680. (No model.)



Claim.—The combination of rigid stem *a*, carrying conical valves *a'*, with perforated flexible packing *b*, having rounded surfaces, and with the flexible tubular projections *b'*, extending from opposite sides of packing *b*, and made in one piece therewith, the tubular projections *b'* having conical valve-seats, substantially as specified.

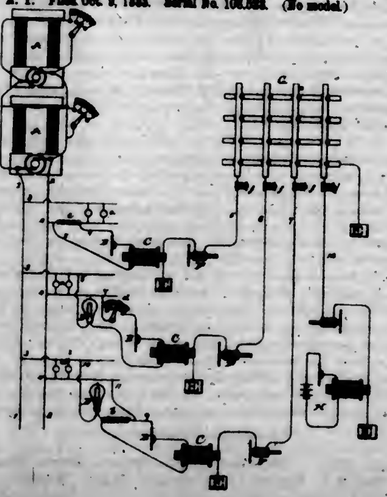
882,460. FOLDING BED. GEORGE W. OSER, Chicago, Ill., assignor to Myra J. Hoover, same place. Filed Jan. 24, 1887. Serial No. 225,204. (No model.)



Claim.—1. The combination, in folding beds of the class herein shown, having the sliding back or head-board Q, of the chain or cable E, one end of which is permanently attached at the bottom of the frame K, the other end attached to the top of said head-board, the lever B, pivoted to the support H and provided with the pan A for holding weights *a'*, and the purchase-bearing sheaves C C, pivoted to said lever and arranged to revolve against said cable, all substantially as set forth.

2. In a folding bed, the combination of the stationary section provided with the support-piece H, the weighted lever B, pivoted to said support and provided with the sheaves C C on the short arm thereof, the folding section of the bed pivotally attached to the stationary section having the sliding head-board, and the cable E, running between the sheaves C C and having one end attached to the bottom of the stationary case and the other end to the sliding head-board, substantially as described.

882,461. TELEPHONE SYSTEM. RICHARD H. DYER, New York, N. Y. Filed Oct. 9, 1883. Serial No. 108,263. (No model.)



Claim.—1. The combination, with two or more telephone-transmitters and induction-coils through which the transmitters are connected with the telephone-line, of a current-supplying circuit extending to said two or more telephone-transmitters and independent multiple-arc connections between each transmitters and said current-supplying circuit, substantially as set forth.

2. The combination, with two or more telephone-transmitters and induction-coils through which the transmitters are connected with the telephone-line, of a current-supplying circuit extending to said two or more telephone-transmitters, one or more dynamo-electric machines generating current in said supply-circuit, and independent multiple-arc connections between each transmitters and said current-supplying circuit, substantially as set forth.

3. The combination, with two or more telephone-transmitters and induction-coils through which the transmitters are connected with the telephone-line, of a current-supplying circuit extending to said two or more telephone-transmitters, two or more dynamo-electric machines generating current in said supply-circuit and acting to neutralize their individual vibrations, and independent multiple-arc connections between each transmitters and said current-supplying circuit, substantially as set forth.

4. The combination, with two or more telephone-transmitters and induction-coils through which the transmitters are connected with the telephone-line, of a current-supplying circuit extending to said two or more telephone-transmitters and formed by the conductors of a multiple-arc system of electrical distribution, and independent multiple-arc connections between each transmitters and said current-supplying circuit, substantially as set forth.

5. The combination, with a supply-circuit—such as an electrical-distribution system common to a number of telephone-transmitters and having a higher electro-motive force than is required for operating the telephones—of two or more telephone-transmitters, independent multiple-arc connections from such supply-circuit to said transmitters, and resistances or other current-reducing devices located in or forming part of such connections and acting to reduce the current passing through the transmitters, substantially as set forth.

6. The combination, with a dynamo-current supplying-circuit common to a number of telephones, of two or more telephone-transmitters connected in multiple arc with said supply-circuit, and an electrical accumulator for each transmitter located between the supply-circuit and the transmitter, said accumulator being charged from the supply-circuit and discharging in the transmitter-circuit to maintain the current uniform in the latter, substantially as set forth.

7. The combination, with a dynamo-circuit, of telephones connected therewith and signaling devices also connected with said dynamo-circuit, substantially as set forth.

8. The combination, with a dynamo-circuit, of telephones connected therewith, signaling devices also connected with said dynamo-circuit, and resistances whereby greater energy is diverted from said dynamo-circuit for signaling than for the transmission of articulate speech, substantially as set forth.

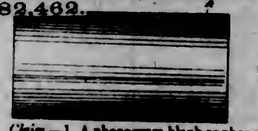
9. In a telephone system, the combination, with a current-supplying circuit, of a telephone-transmitter and induction-coil connected with said circuit, and a connection from such supply-circuit to the telephone-line through a circuit-controller for producing signals, whereby the telephone and signal devices are both operated from the same source of electrical energy, substantially as set forth.

10. In a telephone system, the combination, with a current-supplying circuit, of a telephone-transmitter and induction-coil connected with said circuit, and a connection from such supply-circuit to the telephone-line through a circuit-controller for producing signals, such connections with the supply-circuit having a multiple-arc relation, substantially as set forth.

11. In a telephone system, the combination, with a telephone-line, a telephone-transmitter, a telephone-receiver, an induction-coil, and a signaling-bell, of a current-supplying circuit, a connection from such supply-circuit to the telephone-transmitter and induction primary, another connection from the supply-circuit through the bell, a circuit-controller in the latter connection for producing signal impulses, and a switch alternately shifting the line-connection from the telephone-receiver to the bell, substantially as set forth.

12. In a telephone system, the combination, with a telephone-line, a telephone-transmitter, a telephone-receiver, an induction-coil, and a signaling-bell, of a current-supplying circuit, a connection from such supply-circuit to the telephone-transmitter and induction primary, another connection from the supply-circuit through the bell, a circuit-controller in the latter connection for producing signal impulses, and a switch alternately shifting the line-connection from the telephone-receiver to the bell and opening and closing the connection from the supply-circuit to the telephone-transmitter, substantially as set forth.

382,462. PHONOGRAM-BLANK. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Jan. 6, 1888. Serial No. 259,866. (No model.)



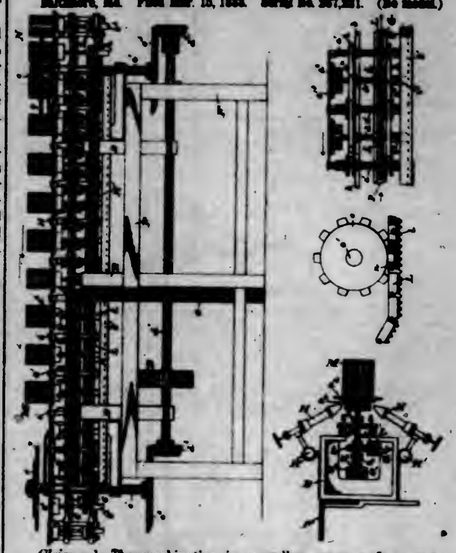


Claim.—1. A phonogram-blank or phonogram constructed wholly of wax or wax-like materials and having the same coefficient of expansion throughout its mass, substantially as set forth.

2. A phonogram-blank or phonogram constructed as a hollow cylinder wholly of wax or wax-like material and having the same coefficient of expansion throughout its mass, substantially as set forth.

3. A phonogram-blank or phonogram constructed as a hollow cylinder, with a tapering bore wholly of wax or wax-like materials, and having the same coefficient of expansion throughout its mass, substantially as set forth.

382,468. CAN-SOLDERING MACHINE. WILLIAM M. REHARE, Baltimore, Md. Filed Mar. 15, 1888. Serial No. 267,321. (No model.)



Claim.—1. The combination, in an endless conveyer for a can-soldering machine, of the jointed sections having top and bottom links, a revoluble spindle, *d*, which has bearing in both the top and bottom links, and a can-seat, a^6, on the upper end of the spindle and above the said top link.

2. The combination, in an endless conveyer for a can-soldering machine, of the jointed sections having top and bottom links, the said bottom links having on their lower sides a central boss, b^3, a revoluble spindle, *d*, which has its lower end stepped in said boss, a can-seat on the upper end of the spindle, two upper guide-bars, *b*, and a lower guide-bar having a groove in its top to receive the said bosses.

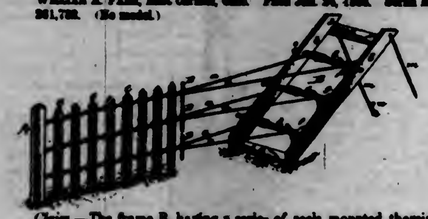
3. The combination, in a can-soldering machine, of the endless conveyer composed of jointed sections, each having a top and bottom link, a revoluble can-seat spindle which has bearing in both the said top and bottom links and is provided intermediate of its said bearings with a pinion, *k*, and an endless chain engaged with the said pinion, as shown and described.

4. The combination, in a can-soldering machine, of the endless conveyer composed of jointed sections, each having a top and bottom link, a revoluble can-seat spindle which has bearing in both the said top and bottom links and is provided intermediate of its said bearings with a pinion, *k*, an endless chain, each link of which has on one side cog-teeth *l* and on the opposite side a socket, *n*, and a sprocket-wheel, *o*, as shown and described.

5. The combination, in a can-soldering machine, of the endless conveyer composed of jointed sections, each having a top and bottom link, a revoluble can-seat spindle which has bearing in both the said top and bottom links and is provided intermediate of its said bearings with a pinion, *k*, upper guide-bars, *b*, a lower guide-bar, *b'*, a chain-guide located between the said upper and lower guide-bars, and an endless chain movable along said chain-guide and engaged with the pinions, as shown and described.

6. The combination, in a can-soldering machine, of a conveyer having revoluble spindles *d*, and a can-seat having two crossed bars, a^5, radiating from a hub which is attached to the said spindle, and an open cylindric shield, a^4, attached to said crossed bars and depending from them and surrounding the upper end of the spindle, which latter is thereby protected from the flame, as shown and described.

382,464. TENSION DEVICE FOR USE IN MAKING FENCES. WILLIAM A. FARR, East Cornwall, Ohio. Filed Jan. 24, 1888. Serial No. 261,722. (No model.)



Claim.—The frame B, having a series of reels mounted therein, provided with hubs adjacent to one side of the frame, in combination with levers attached to the frame and one end thereof bearing upon the hubs, and links for securing the levers, substantially as described.

382,465. TUNING-PIN FOR STRINGED INSTRUMENTS. LARS LARSEN PETERSEN, Ravenswood, and GERRIT VAN LAMPE, Chicago, Ill. Filed Jan. 31, 1888. Serial No. 262,924. (No model.)



Claim.—1. In a key for the purpose set forth, the combination of the loose flange or collar having an angular opening with the spindle having an angular portion passing through said flange or collar and provided with a spool beyond the same, substantially as described.

2. A key for the purpose set forth, provided with two independent and oppositely-arranged cylindric bearing portions, each having an annular flange or shoulder and both forming conjointly that portion of the key that enters and turns within a hole through one of the sides of the instrument-seek, combined with the spindle passing through one cylindric bearing portion and fitted in a bore of the opposite cylindric bearing portion, and the adjusting-screw engaging in a threaded socket in the spindle, said two cylindric bearing portions being keyed upon the spindle, whereby a rotation of the spindle shall turn both cylindric bearing portions, said spindle, which is prevented from rotation independently of the bearing in which it enters, being adjustable endwise therein, whereby the screw can be turned to draw the two shoulders or flanges against the opposite faces of one of the side walls of the instrument-seek, substantially as described.

3. The combination, with the spindle B, of the flanged collar E, loosely fitted upon a squared portion of the spindle, the bearing-piece C, provided with a flanged cylindric bearing portion, and having a socket in which a portion of the thumb-piece is fitted, and the adjusting-screw F, engaging the spindle, substantially as described.

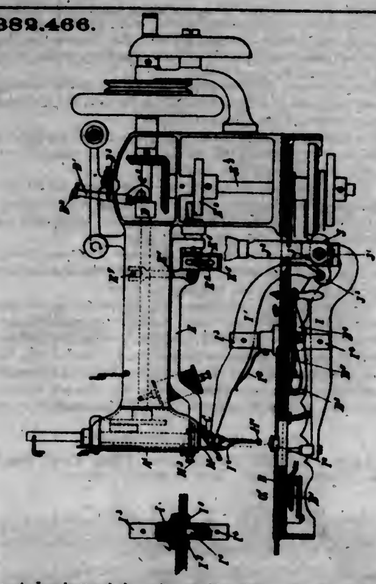
382,466. BUTTON-HOLE SEWING-MACHINE. JOHN S. PRESSE, Brooklyn, N. Y. Filed Oct. 28, 1886. Serial No. 217,574. (No model.)

Claim.—1. In a button-hole sewing-machine, a bed-plate having the slot G^2 partly straight and partly curved, as shown, a feed-wheel having the cam-groove G' and peripheral ratchet-teeth, a cloth-plate having a stud fitted in said slot of feed-plate to engage said groove of the feed-wheel, a spring-pawl engaging said teeth of the feed-wheel, a lever carrying said pawl, and a stop-lever adapted to engage with the feed-wheel, substantially as and for the purpose described.

2. In a button-hole sewing-machine, a cutting attachment composed of the levers I I', having return-springs and forming a cutting device, an operating-cam, J, constructed to engage both of said levers simultaneously by bearing against the tail end of the lower lever with its face and pulling the tail end of the upper lever by means of the hook J^3, and a handle, J^4, mounted on the cam-shaft, substantially as and for the purpose described.

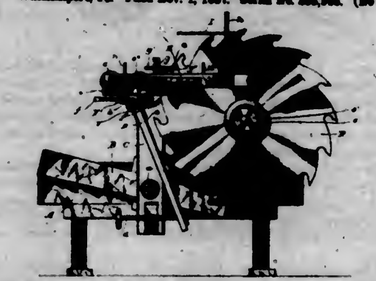
3. In a button-hole sewing-machine, a cutting attachment composed of levers I I', one carrying a cutter and the other a block and meeting from opposite sides, an operating-cam, J, constructed to engage both of said levers simultaneously by bearing against the tail end of the lower lever with its face and pulling the tail end of the upper lever by means of the hook J^3, and a handle, J^4, mounted on the cam-shaft, in combination with a feed-wheel having an opening for the passage of said cutters, substantially as herein described.

382,466.



4. In a button-hole sewing-machine, the combination, with cutter-levers and means for operating the same, of posts I^5 I^6, forming the fulcra for said levers, one secured to the bed-plate and provided with a screw-threaded socket and the other having a screw-threaded shank fitted into said socket, substantially as and for the purpose described.

382,467. DEVICE FOR JOINTING, DRESSING, AND SHARPENING SAWS. HARRISON W. GRIMES, Shoemakersville, and EDWARD ARBOGAST, Williamsport, Pa. Filed Nov. 1, 1887. Serial No. 253,903. (No model.)



Claim.—1. The combination, in a machine for jointing saws, of the fixed saw-arbor, the standard, the incline B, whereby the standard may be vertically and horizontally adjusted with reference to the fixed saw-arbor, and the adjustable jointer pivoted to said standard, substantially as described.

2. In a machine of the character described, the saw-tooth gage *g'*, removably secured to the swinging arm G and provided with a cut-away portion on its under side, whereby said gage may serve as a gage and stop for arresting both long and short teeth, substantially as set forth.

3. In a machine of the character described, the saw-tooth gage *g'*, removably secured to the swinging arm G and provided with a cut-away portion on its under side, whereby said gage may serve as a gage and stop for both long and short teeth, and a screw for retaining said gage in position on said swinging arm, substantially as set forth.

4. The combination, with the standard, of the clamping-jaws removably secured thereto, and the sharpening guide-frame, also removably secured to said standard, substantially as set forth.

5. In a machine of the character described, the combination of the standard, the clamping-jaws, the eyebolt *l*, and the saw-sharpening file, substantially as herein set forth.

6. In combination, the standard, the clamping-jaws, the saw-sharpening guide-frame made in sections pivoted together, the eyebolt *l*, and the saw-sharpening file, substantially as set forth.

7. In a machine of the character described, a saw-sharpening guide-frame consisting of the arm J, removably secured to the standard, the arm K, pivotally mounted on said arm J, and gage-arm L, pivoted to said arm K, substantially as set forth.

8. In a machine of the character described, the saw-sharpening guide-frame composed of sections pivoted together and also provided with locking-screws, for the purpose set forth.

9. In a machine of the character specified, a sharpening-file provided with the cylindrical end and with the rod-guide removably secured to said end, substantially as described.

10. The described saw-sharpening file, consisting of the file portion S, the removable cylindrical portion T, provided with clamping-jaws, the guide-rod U, having enlarged head V, and set-screw *v*, for fastening said rod in position, substantially as set forth.

11. In a machine of the character described, a saw-sharpening-file guide-frame made substantially as set forth, with the guide proper composed of a flat arch or leaf, as herein specified.

12. A combined jointer, side-dresser, and saw-sharpening machine composed of a base, a fixed arbor upon the base to support the saw, an incline upon the base for a sliding standard, a sliding standard carrying clamping-jaws to hold the saw in position, a jointer to joint the teeth of the saw, guides for side-dressing, and an attached adjustable file-frame to guide the sharpening-file, so as to file uniformly the face and back of each tooth without removing the file, substantially as set forth.

382,468. HOSE OR PIPE COUPLING. THOMAS HALEY, Boston, Mass. Filed Sept. 21, 1887. Serial No. 250,281. (Model.)





Claim.—1. In a hose-coupling, the combination, with a tail-piece, of a binder consisting of the end portions, and the slotted intermediate portion secured at one end to the tail-piece and projecting over the latter, and a clamping-ring adapted to encircle and compress the binder at the slotted portion, clamping the hose between the binder and tail-piece, substantially as described.

2. The improved coupling composed of the tail-pieces connected as described, the binders having the slots closed at both ends, and the internally-threaded heads screwed upon and inclosing said tail-pieces, and the clamping-rings supported upon the binder, adapted to compress the slotted portion thereof and clamp the hose between it and the binder.

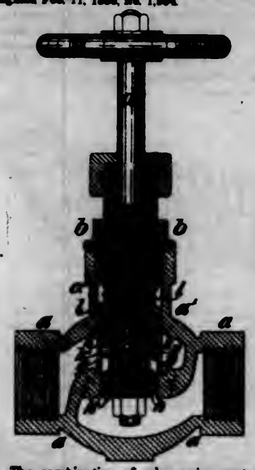
3. The combination, with a tail-piece adapted to be inserted in a hose or pipe and enlarged at its outer end, of a slotted compressible binder having an internally-threaded head screwed upon said tail-piece and adapted to receive the end of the hose in which the tail-piece is inserted, and a clamping-ring unconnected with the tail-piece, but supported entirely upon the binder-back of its point of connection with the tail-piece, arranged to compress it and clamp the hose between said binder and tail-piece, substantially as described.

4. The combination of the tail-piece *a*, having the flange *u*, and screw-threaded at both sides of said flange, the slotted binder and flanged nut *b*, adapted to be screwed upon the tail-piece and to bear the one against one side and the other against the opposite side of the flange *u*, the flanged tail-piece *a'*, engaged with said nut and threaded at *f'*, and the slotted binder *c'*, screwed upon the tail-piece *a'*, all arranged and operating substantially as described.

5. The combination, with an internal support for the hose, of a metallic binder composed of a cylinder having spirally-arranged slots in its body closed at the ends, and an independent clamping-ring adapted to be applied to the slotted portion of the binder and clamping the hose between the binder and internal support, substantially as described.

6. The combination, with the tail-piece, of the outer slotted sleeve or binder secured thereto, and a clamping-ring unconnected with the tail-piece applied to the slotted portion of the binder back of its connection with the tail-piece for clamping it to the hose and being itself held in place entirely upon said binder, substantially as described.

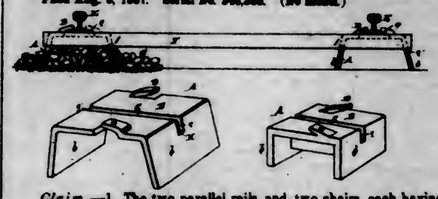
382,469. STOP-VALVE. JOHN HAWTHORN, New Hills, County of Chester, and SIDNEY MORGANSON, Stalybridge, County of Lancaster, England. Filed Feb. 7, 1888. Serial No. 263,220. (No model.) Patented in England Feb. 11, 1888, No. 1,994.



Claim.—1. The combination of valve-casing, seat, screw-spindle, and packed pistons operated by the spindle, with a shield for the pistons, and a spring acting on the shield to tend to press it onto the seat, substantially as described.

2. The combination of a valve-casing, seat, spindle, and piston, with a shield normally on the seat about the piston and bored to receive the piston as the latter is raised, and elevates the shield also to open the passage, as and for the purpose set forth.

382,470. RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Taylor Metallic Railway Tie Company, of New Jersey. Filed Aug. 8, 1887. Serial No. 246,326. (No model.)



Claim.—1. The two parallel rails and two chairs, each having clamping-lugs to grip the flanges of the rail upon being turned, and a transverse slot, in combination with a cross-tie made of a flat bar turned on edge, connecting said chairs, and extending through the slots therein to prevent them from turning.

2. The two parallel rails and two chairs, each having clamping-lugs to grip the flanges of the rail upon being turned, and a transverse slot, in combination with a cross-tie connecting said chairs, having notched ends to lock it to the chairs, and extending through the slots therein to prevent them from turning.

3. The two parallel rails and two chairs, each having clamping-lugs to grip the flanges of the rail upon being turned, and a transverse slot, in combination with a cross-tie connecting said chairs, having notched ends to receive the flange of the rail, and extending through the slots therein to prevent them from turning.

4. The two parallel rails and two chairs, each having clamping-lugs to grip the flanges of the rail upon being turned, and a transverse slot, in combination with a cross-tie connecting said chairs, having notched ends to receive the flange of the rail and also the edge of the slot of the chair to lock it to said rail and chair, and extending through the slots therein to prevent them from turning.

5. A railway-chair having two lugs, D D, pointing in opposite directions and separated a distance at least equal to the width of the rail-flanges, and a transverse slot, C, across the chair between the lugs and opening through the top of the chair.

6. A railway-chair having two lugs, D D, pointing in opposite directions and separated a distance at least equal to the width of the rail-flanges, and a transverse slot, C, across the chair between the lugs, in combination with the rail and cross-tie F, having notches *f* to lock the said tie to the chair.

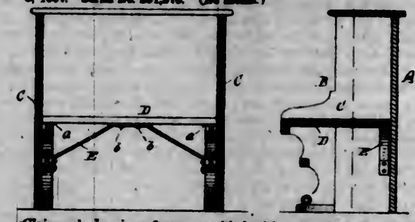
7. A railway-chair having two lugs, D D, pointing in opposite directions and separated a distance at least equal to the width of the rail-flanges, and a transverse slot, C, across the chair between the lugs, in combination with the rail and cross-tie F, having notch *f* to lock said tie to the rail and chair.

8. A railway-chair formed of sheet metal and having the upper face and lateral lugs, and provided with holding-lugs for the rail, pointing in opposite directions and stamped from the same piece of sheet metal, and also provided with a slot at right angles to the direction of the rail when laid upon the chair.

9. The railway-chair consisting of the top part, B, having lugs D D, pointing in opposite directions and of less, so as to fit over the rail-flange, the side lugs, *b b*, and the slots C *c c'*, in which the slot part *c* is deeper than part *c*.

10. The combination of two parallel rails with two chairs, each having two lugs for fitting over the rail-flange when the chair is turned, and two lugs, one on each side of the rail, said chair being slotted in its top and down into the lugs to form two widely-separated bearings in each chair, and a cross-tie formed of metal and adapted to fit down into the slots to prevent the chairs from turning and suite two chairs of which one is under each rail.

382,471. PIANO KEY-BOTTOM. WILLIAM H. IVERS, Dedham, assignor to the Ivers & Pond Piano Company, Boston, Mass. Filed Oct. 3, 1887. Serial No. 251,573. (No model.)



Claim.—1. In piano-fortes provided with a key-bottom and the end pieces to which said key-bottom is secured, a metallic brace, substantially as described, affixed to said end pieces and contiguous to the key bottom centrally, whereby the latter is supported and adjusted, as and for the purposes specified.

2. In musical instruments of the class herein specified, a horizontal key-bottom, D, having its ends permanently fixed, in combination with a brace, E, with its ends likewise fixed, and the interconnecting adjusting-nut *c* and bolt *c*, which unite the two, substantially as stated.

382,472. PORTABLE DRILL. WILLIAM C. JENNINGS, Camden, N. J. Filed Feb. 27, 1888. Serial No. 265,264. (No model.)

Claim.—1. A drill having the tool-carrier vertically adjustable by means of a worm, a worm-wheel, a rack, and a pinion, said worm, worm-wheel, and pinion being mounted on the bearing of the carrier and said rack being secured to the carrier, the latter having a gear-wheel which is connected with the same by a feather, substantially as described.

2. A drill having the bearing of the tool-carrier connected with a sleeve which is rotatably mounted in a bearing, whereby said carrier may be placed in vertical, horizontal, and oblique positions, as stated.

3. In a drill, the rotatable sleeve 29, connected with the bearings of the tool-carrier and mounted in a sectional bearing which may be clamped on said sleeve, substantially as described.

4. In a drill, a tool-carrier, in combination with gearing 32, 31 sleeve 29, clamping-bearings 30, shaft 27, gearing 25 26, and shaft 9 substantially as described.

5. In a drill, a tool-carrier adjustably mounted in its bearings, in combination with an operating-shaft and intermediate gearing, a slide carrying the bearing of said shaft, a crane supporting said slide, and an operating-screw connected with the crane and fitted to said slide, substantially as described.

6. In a drill, a tool-carrier, in combination with the driving-shaft and intermediate gearing, said shaft being mounted on an arm which is rotatable on one of the shafts of said gearing, substantially as described.

7. In a drill, a tool-carrier, in combination with the shaft 9, the bearing 8 for said shaft, the driving-shaft 12, gearing 11 10 of said shaft, and an arm, 13, the latter supporting the shaft 12 and having a clamping sleeve or boss which is rotatably fitted on said bearing 8, substantially as described.

8. In a drill, a tool-carrying crane such as C, vertically adjustable on a rod, in combination with a chain and counterpoise and an arm secured to said rod, said chain passing around pulleys on said arm and crane, the pulley on the crane carrying a ratchet which is engaged by a pawl on said crane, substantially as described.

9. In a drill, a tool-carrier and an operating-shaft and support therefor, in combination with a traveler or movable hanger, a track, and a bolt for clamping said hanger to said track, substantially as described.

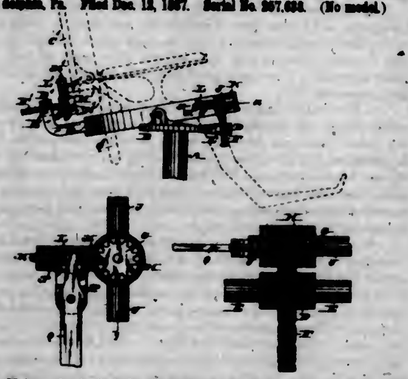
10. In a drill, a tool-carrying crane having a split boss for securing the same in vertically-adjusted position, in combination with a chain and counter-balance, substantially as described.

11. In a drill, a tool-carrying crane connected with a supporting-rod, in combination with a stand having bowls for sustaining said rod, substantially as described.

12. In a drill, a tool-carrying crane and a rod supporting the same, in combination with a traveler or hanger and a movable stand adjustably sustaining opposite ends of said rod, substantially as described.

13. A tool-carrier and an operation rack and pinion, in combination with shaft 36, clutch 46, worm-wheel 38, worm 39, and shaft 40, as stated.

382,473. DENTAL OR OTHER CHAIR. HENRY D. JUDY, Philadelphia, Pa. Filed Dec. 12, 1887. Serial No. 257,633. (No model.)

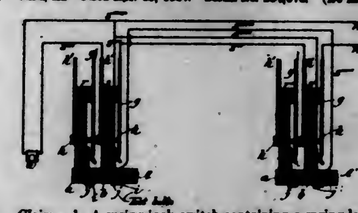


Claim.—1. A chair having a frame pivoted to a support, a nut having journal-bearings in said support, ears secured to the frame, a box having journal-bearings in said ears, a screw-shaft working in said nut, a spur or toothed wheel secured on said shaft so as to rotate therewith and in said box, a tubular guide leading into said box, a dog

in said guide, and a pivoted lever engaging said dog, said parts being combined substantially as and for the purpose set forth.

2. A chair having a standard with shelf thereon, a frame pivoted to said standard, the nut D, having journals E, with bearings in said shelf, the ears K, secured to the inner face of the said frame, the box H, having journals J, with bearings in said ears, the screw-shaft F, with spur-wheel G in said box, the tube L, the dog M, with spring N working in said tube L, and the lever Q, pivoted to the ear P of said tube L, said parts being combined substantially as described.

382,474. MULTIPLE SWITCH-BOARD. MILO G. KELLOGG, Hyde Park, Ill. Filed Apr. 13, 1887. Serial No. 234,670. (No model.)



Claim.—1. A spring-jack switch containing a spring-lever, a contact-point, and a contact-piece mounted on an insulating-strip, said lever being transverse to the front of said strip and said contact-point being so placed that said lever normally bears on it, said strip having through its front a transverse rectilinear hole in front of said lever and said contact-piece being mounted on one of the sides of said hole, in combination with a double or loop plug adapted, when inserted into said hole, to separate the spring-lever from the contact-point and form connection between its two contact-pieces and the lever and contact-piece of said switch, substantially as and for the purpose set forth.

2. The combination, with a strip of insulating material having transverse rectilinear plug-holes through its front, of the metal parts of several spring-jack switches mounted thereon, each metal part consisting of a spring-lever placed transverse to the front of said strip and in the rear of a plug-hole, a contact-point so placed that the lever normally bears on it, and a contact-piece mounted on one of the sides of said hole, all substantially as and for the purpose set forth.

3. In a spring-jack switch, the movable contact-piece and another contact-piece, both suitably mounted and insulated, said movable contact-piece being mounted and located back of the face of the switch, said face having a transverse rectilinear hole in front of said movable contact-piece, said hole being adapted to receive a rectilinear switch-plug and to guide it in its horizontal and lateral directions until it moves said movable contact-piece, and said other contact-piece being mounted on one of the faces of said switch-hole, in combination with a rectilinear loop switch-plug adapted to fit said hole and be guided by it in its horizontal and lateral directions, said plug having two contact-pieces, each a plane and on a face of said plug, said plug being adapted after being inserted into said hole to move said movable contact-piece and to have one of its contact-pieces form connection therewith and its other contact-piece form connection with said other contact-piece of the switch, substantially as set forth.

4. The combination of spring-jack switches mounted on an insulating-strip and having their plug-holes through the front of said strip, with pairs of contact-pieces, one pair for each switch-hole, one of each pair forming a face of said hole, and the other piece of each pair being adjacent to it on the front of said strip, substantially as and for the purpose set forth.

5. The combination of pairs of contact-pieces placed at a multiple switch-board, one pair for each line which is connected to the board, one piece of each pair forming a face of its switch-hole and the other being adjacent to it, with a double test plug or device attached to a double flexible cord, said test plug or device having two insulated metal pieces so made, placed, and adjusted that the operator can readily connect them to any pair of said contact-pieces, substantially as and for the purpose set forth.

6. In a telephone system, a metallic-circuit telephone-line, a loop-switching device in the circuit of said line adapted to loop another circuit into the circuit of said line, and a pair of test-bolts, one of the bolts being connected to the line on one side of the switching device and the other bolt being connected to the line on the other side of the switching device, in combination with a testing plug or device having two contact-points connected by a loop in which is a battery and a test-receiving instrument, and said contact-points being adapted to be brought into contact with said test-bolts, whereby the operator may by testing determine whether another line has been looped into the circuit of said line.

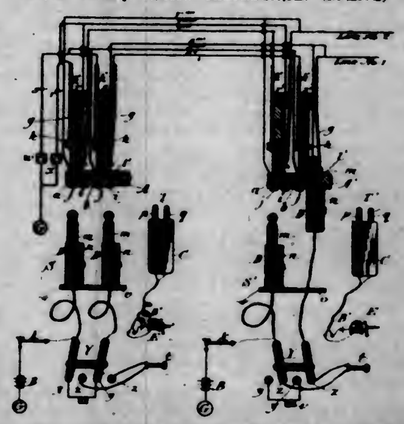
7. In a telephone system, a metallic-circuit telephone-line, two or more loop-switching devices in the circuit of said line, each adapted to loop another line into the circuit of said line, and a pair of test-bolts, one of the bolts being connected to the line on one side of the switching devices, and the other bolt being connected to the line on the other side of the switching devices, in combination with a testing plug or device having two contact-points connected by a loop in which is a battery and a test-receiving instrument, and said contact-points being adapted to be brought into contact with said test-bolts, whereby the operator may by testing determine whether or not some other line is looped into the circuit of said line at some one of the switching devices.

8. In a telephone system, two or more metallic-circuit telephone-lines, each having two or more loop-switching devices in its circuit, each switching device being adapted to loop another line into the circuit of its line, and pairs of test-bolts, one pair for each line, and one bolt of each pair being connected to its line on one side of its switching devices, and the other bolt of the pair being connected to its line on the other side of its switching devices, in combination with a testing plug or device having two contact-points connected by a loop in which is a battery and a test-receiving instrument, said contact-points being adapted to be brought into contact with any pair of said test-bolts, whereby the operator may by testing determine whether or not either of said lines is in use.

9. In a telephone-exchange system, two or more multiple switch-boards for the lines provided with series of switches, one series for each line, and one switch of each series arranged on each board, and each line passing through its series, switch-plugs adapted to be inserted into any of said switches, and when inserted to open the line at the contact-points of said switch, and series of pairs of test-bolts, one series for each line, and one pair of each series on each board, one bolt of each pair being connected to its line before the line passes to its switches, and the other bolt of the pair being connected to the line after it has passed through its switches, in combination with testing plugs or devices, one at each board, and each having two contact-points connected by a loop in which is a battery and a test-receiving instrument, the two contact-points of the testing device being adapted to be brought into contact with any pair of test-bolts at its board whereby the operator at any board may by testing determine whether or not either of said lines is in use.

10. In a telephone system, a metallic-circuit telephone-line, a loop-switching device in the circuit of said line adapted to loop another line into the circuit of said line, and a pair of test-bolts, one of the bolts being connected to the line on one side of the switching device, and the other bolt being connected to the line on the other side of the switching device, in combination with an operator's testing system consisting of a testing plug or device with two contact-pieces and a battery, a test-receiving instrument, and a loop, said contact-pieces being connected by the loop and being adapted to be brought into contact with said test-bolts, said loop containing said battery and test-receiving instrument, and said battery and test-receiving instrument being so adjusted to each other that the instrument will respond when the testing device is applied to the test-bolts and no other line is looped into the circuit of said line, but will not respond when another line is looped into the circuit, substantially as and for the purpose set forth.

382,475. MULTIPLE SWITCH-BOARD. MILO G. KELLOGG, Hyde Park, Ill. Filed Apr. 13, 1887. Serial No. 234,143. (No model.)



Claim.—1. The combination of two or more strips of insulating material placed one above the other, each having several spring-jack parts mounted thereon, each part containing a spring-lever placed

transverse to the front of the strip, and a contact-point normally in contact with the spring-lever, with transverse rectilinear holes along one of the edges of each of said strips, one hole in front of each of said levers, whereby the edge of one strip provides one of the sides of the holes of another strip, substantially as and for the purpose set forth.

2. The combination of spring-jack switches mounted on an insulating-strip, and having their plug-holes through the front of said strip, with pairs of test-bolts or pieces, one pair for each switch, and each pair being mounted on the front of the said strip adjacent to its switch, whereby the operator may know to what switch each pair of test-bolts corresponds, substantially as and for the purpose set forth.

3. In a telephone system, a telephone-line, a switching device in the circuit of said line, adapted to open and close said line at its contact-points, and a pair of test-bolts, one of the bolts being connected to the line on one side of the switching device and the other bolt being connected to the line on the other side, in combination with a testing plug or device having two contact-points connected by a loop in which is a battery and a test-receiving instrument, said contact-points being adapted to be brought into contact with said test-bolts, substantially as and for the purpose set forth.

4. In a telephone system, a telephone-line, two or more switching devices in the circuit of said line, each adapted to open and close said line at its contact-points, and a pair of test-bolts, one of the bolts being connected to the line on one side of the switching devices and the other bolt being connected to the line on the other side of the switching devices, in combination with a test plug or device having two contact-points connected by a loop in which is a battery and a test-receiving instrument, said plug contact-points being adapted to be brought into contact with said test-bolts, whereby the operator may determine whether or not the circuit from one test-bolt to the other is opened at some one of the switching devices.

5. In a telephone system, two or more telephone-lines, each having two or more switching devices in its circuit, each switching device being adapted in the operation of the system to open and close its line at its contact-points, and pairs of test-bolts, one pair for each line, one bolt of each pair being connected to its line on one side of its switching devices and the other bolt being connected to its line on the other side of its switching devices, in combination with a testing plug or device having two insulated contact-points connected by a loop in which is a battery and a test-receiving instrument, said plug contact-points being adapted to be brought into contact with any pair of said test-bolts, whereby the operator may determine whether or not either of said lines is in use.

6. In a telephone system, a telephone-line grounded at its two ends, a switching device in the circuit of said line, adapted to open and close said line in the operation of the system at the contact-points, and a pair of test-bolts, one of the bolts being connected to the line on one side of the switching device and the other bolt being connected to the line on the other side of the switching device, in combination with an operator's testing system, consisting of a testing plug or device, with two contact-pieces, a battery, a test-receiving instrument, and a loop, said contact-pieces being connected by the loop and adapted to be brought into contact with said test-bolts, said loop containing said battery and test-receiving instrument being so adjusted to each other that the instrument will respond when the testing device is applied to the test-bolts and the circuit between the bolts is closed at the switching device, but will not respond when the circuit is open at the switching device, substantially as and for the purpose set forth.

7. In a telephone-exchange system, two or more switch-boards provided with series of switches, one series for each line and one switch of each series arranged on each board, each line passing through each switch of its series and to ground, switch-plugs adapted to be inserted into any of said switches, and when inserted to open the line at the contact-points of the switch and disconnect it from the ground, and series of pairs of test-bolts, one series for each line and one pair of each series on each board, one bolt of each pair being connected to its line before it is connected to any of its switches, and the other bolt being connected to its line after it has passed through its switches and before it is connected to the ground, in combination with operators' testing systems, one system at each board, and each consisting of a testing plug or device, with two contact-points, a battery, a test-receiving instrument, and a loop, said contact-points being connected to the loop and being adapted to be brought into contact with any pair of the test-bolts at the board, and said loop containing the battery and test-receiving instrument, whereby the operator at any board may by a preliminary test determine whether any line is in use.

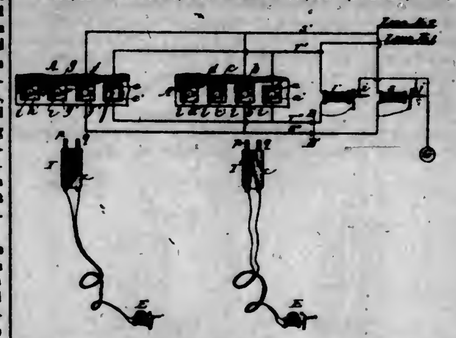
8. The combination of two or more strips of insulating material placed one above the other and each having the metal parts of spring-jack switches mounted thereon, with rectilinear plug-holes, one for each of said switches and transverse to the front and along one of the edges of its strip, whereby the edge of one strip provides one of the sides of the holes of another strip, substantially as and for the purpose set forth.

9. In a telephone-exchange system, two subscribers' lines temporarily connected together for conversation, in combination with a calling generator or battery, a clearing-out annunciator, an operator's telephone, a calling-key, and a switching device, said key and said generator being in a wire or circuit grounded on one side and connected to the circuit of said lines on the other side, said operator's telephone and said clearing-out annunciator being each in a loop, the two ends of which are connected to the two contact-bolts of a pair of contact-bolts of said switching device, (there being one pair of contact-bolts for each loop,) said switching device having two contact-pieces, each connected to its side of the circuit of said lines, and the two contact-pieces being adapted to be brought into connection with either pair of said bolts, whereby at the will of the operator he may loop either the operator's telephone or the clearing-out annunciator into the circuit of the lines so connected together, and may ground said circuit through the calling-generator, substantially as set forth.

10. In a telephone-exchange system, two subscribers' lines temporarily connected together for conversation, in combination with a calling generator or battery, a clearing-out annunciator, a calling-key, and a switching device, said key and said generator being in a wire or circuit grounded on one side and connected to the circuit of said lines on the other side, said clearing-out annunciator being in a loop, the two ends of which are connected to two contact-bolts of said switching device, said switching device having two contact-pieces, each connected to its side of the circuit of said lines, and said contact-pieces being adapted to be brought into connection with said bolts, whereby at the will of the operator he may loop the clearing-out annunciator in and out of the circuit of the lines so connected together, and may ground said circuit through the calling-generator, substantially as set forth.

11. In an operator's cord system, two cords normally (or when their plugs are not in line-switches) grounded, in combination with an operator's telephone, a calling-generator, a calling-key, and a switching device, said key and said generator being in a wire or circuit grounded on one side and connected to the circuit of said lines on the other side, said telephone being in a loop, the two ends of which are connected to two contact-bolts of said switching device, said switching device having two contact-pieces, either connected to its one of said cords, and said contact-pieces being adapted to be brought into connection with said bolts, whereby at the will of the operator he may loop said telephone into and out of the circuit of the cords, and may ground said circuit through the calling-generator, substantially as set forth.

382,476. MULTIPLE SWITCH-BOARD. MILO G. KELLOGG, Hyde Park, Ill. Filed June 3, 1887. Serial No. 240,114. (No model.)



Claim.—1. In a telephone-exchange system, the combination of a telephone-line entering the central office and separated into two branches, with a line-switch containing two normally-insulated metal parts, said parts being adapted to be brought temporarily into contact when said line is switched for conversation, and one of said parts being connected to one of said branches and the other of said parts being connected to the other of said branches, a back-contact relay and a battery, both in the circuit of said branches, as described, and a ground-wire, said line being connected to one of the contact-points of said relay, and said ground-wire being connected to the other contact-point of said relay, substantially as and for the purpose set forth.

2. In a telephone-exchange system, two or more switch-boards at the central office, in combination with a telephone-line, line-switches, one switch on each of said boards for said line, each switch being adapted to receive a switch-plug and having two normally-insulated metal parts, said parts of each switch being adapted to be temporarily brought into connection when a plug is inserted into the switch, said line being separated into two branches, one of said branches being connected to one of said metal parts of each of said switches, and the

other of said branches being connected to the other of said metal parts of each of said switches, a ground wire or connection, a back-contact relay in the circuit of one of said branches before the branch is connected to any of said switch parts, one of the contact-points of said relay being connected to the line and the other contact-point being connected to the ground wire or connection, and an electric battery in the circuit of one of said branches before the branch is connected to any of said switch parts, whereby when the switch-plug is placed in the switch of the line at either board the line is temporarily disconnected from the ground.

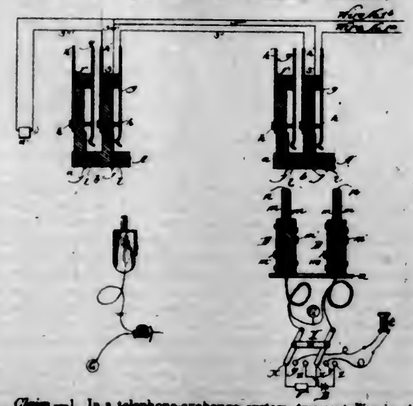
3. In a telephone-exchange system, the combination of two or more switch-boards at the central office, a telephone-line, the two branches of said line, the two-part switches of the line, one switch on each board, the switch-plugs, the back-contact relay, the battery, and the ground wire or connection, all connected and operating substantially as and for the purpose set forth.

4. In a telephone-exchange system, the combination of two or more switch-boards at the central office, a telephone-line, the two branches of said line, the two-part switches of the line, one switch on each board, the switch-plugs, the battery, the relay, and the operators' test systems, one system at each board, each containing a double test-plug, a test-receiving instrument, and a loop, all connected and operating substantially as set forth, whereby when a switch-plug is inserted into either switch the battery is closed to the relay and is short-circuited to the test-receiving instrument if the test is applied at either board.

5. In a telephone-exchange system, two or more switch-boards, a telephone-line adapted to be switched at either board, a test-circuit for the line, said test-circuit being a loop in which is a battery, two or more pairs of contact-points, one pair at each board, each pair being normally open and adapted to be closed or connected at a board when the line is switched for conversation at the board, one point of each of said pairs of contact-points being connected to said test-circuit on one side of said battery, and the other point of each of said pairs being connected to the test-circuit on the other side of the battery, in combination with operators' test-receiving instruments, one at each board, and switching devices or means whereby the operator at either board may at will connect the two sides of her test-receiving instrument to said loop or test-circuit on the two sides of the battery and determine whether or not said line is switched for use.

6. In a telephone-exchange system, a line-switch adapted to receive a switch-plug and containing two contact-points, said points being normally open at the switch and connected by a loop in which is a battery and a back-contact relay, one point of said back-contact relay being connected with the ground and the other point being connected with the loop, in combination with a telephone-line also connected with the loop, and a switch-plug with a flexible conducting-cord attached to its metal part, said plug being adapted to be inserted into the switch, and when connected to connect or cross the two contact-points of the switch, whereby when the plug is inserted the line is disconnected from the ground and is connected with the flexible conducting-cord.

382,477. MULTIPLE SWITCH-BOARD. MILO G. KELLOGG, Hyde Park, Ill. Filed Aug. 29, 1887. Serial No. 248,162. (No model.)



Claim.—1. In a telephone-exchange system, two metallic-circuit telephone-lines normally disconnected from the ground and temporarily connected together for conversation, with their circuit grounded, in combination with a test-bell grounded on one side and connected on its other side to a switch-testing device, adapted to be brought into connection with either line for testing, and a battery in the test-circuit between the ground-connection on one side of the bell and the temporary ground-connection of the two lines, substantially as and for the purpose set forth.

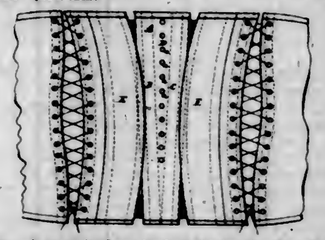
2. In a telephone-exchange system, two metallic-circuit telephone-lines normally disconnected from the ground and temporarily connected together for conversation, with their circuit grounded, in combination with a test-wire grounded on one side and connected on its other side to a switch-testing device, adapted to be brought into connection with either line for testing, and a battery and test-bell in the circuit of said test-wire, substantially as and for the purpose set forth.

3. In a telephone-exchange system, the combination of two metallic-circuit lines temporarily connected together for conversation, a test-circuit containing a test-receiving instrument and a test-battery, said test-circuit being electrically connected on one side of said instrument and battery with said lines when they are thus connected for conversation, and then only, a test-bolt connected to said metallic circuit, and a switching device connected to said test-circuit on the other side of said instrument and battery, adapted at the will of the operator to be brought into electrical connection with said test-bolt, substantially as and for the purpose set forth.

4. In a telephone-exchange system, metallic-circuit lines normally disconnected from the ground, two or more switch-boards, to each of which the lines are connected, and switching devices at each board adapted to temporarily connect any two of the lines together for conversation, and when they are thus connected to ground their circuit, in combination with test-receiving instruments, one at each board, grounded on one side, switch-testing devices at each board adapted at the will of the operator to connect its test-receiving instrument on the other side to the circuit of any line for testing, and a battery in the test-circuit thus established, substantially as and for the purpose set forth.

5. In a telephone-exchange system, the combination of metallic-circuit lines, two or more switch-boards for said lines, test-circuits, one at each board, each test-circuit containing a test-receiving instrument and a test-battery, said test-circuits being electrically connected on one side to their test-receiving instruments and test-batteries, and normally disconnected from said lines, switching devices at each board adapted to connect any two of said lines together for conversation and to connect them temporarily or when thus connected electrically with said test-circuits on said side of their test-receiving instruments and batteries, test-bolts, one for each line on each board, each test-bolt being connected to its line when it is switched for conversation, and switch-testing devices at each board, each connected to the test-circuit at its board on the other side of the test-receiving instrument and battery, and adapted at the will of the operator to be brought into electrical connection with any of the test-bolts at her board, substantially as and for the purpose set forth.

382,478. CORSET. JOSEPH KOCH, New Haven, Conn., assignor to Lewis Schiele & Co., New York, N. Y. Filed Feb. 27, 1888. Serial No. 265,452. (No model.)

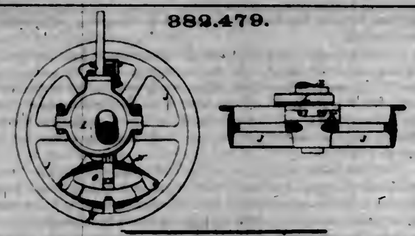


Claim.—A corset having a back section laced to the adjacent sections, the said back section provided with two stays at the center extending from top to bottom and gradually diverging from the bottom to the top, the space between the said two stays perforated, combined with the two stays E E, arranged, respectively, to the back at the right and left of the central or back stays, the said stays E E curved from the waist-line upward and forward and downward and forward, substantially as described.

382,479. STEAM-ENGINE. HIPPOLYTE LEBOUTHEUX and EMILE GARNIER, Paris, France. Filed July 31, 1884. Serial No. 139,333. (No model.) Patented in France Jan. 10, 1884, No. 160,669; in Belgium Nov. 13, 1884, No. 66,872; in England Nov. 15, 1884, No. 15,079, and in Germany Nov. 20, 1884, No. 30,202.

Claim.—The combination of the crank-shaft, fly-wheel, and eccentric free to move transversely across the fly-wheel, with a spring, N, secured at one end directly to the wheel and at the other to the eccentric, and a weight also secured to the eccentric, substantially as set forth.

382,479.

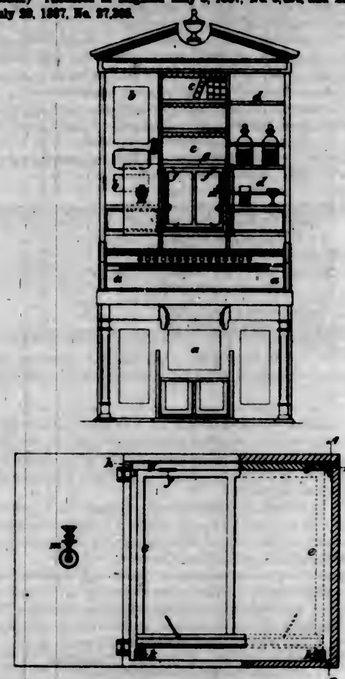


382,480. CLASP. SAMUEL M. LOEB, Indianapolis, Ind. Filed Feb. 27, 1888. Serial No. 265,602. (No model.)



Claim.—In a clasp, the combination, with the gripping-jaws, the pivot, and the coiled spring mounted on the pivot, of the hook formed integral with the spring and secured to the jaws, substantially as and for the purpose specified.

382,481. PIANO-FORTE, ORGAN, HARMONIUM, OR OTHER MUSICAL INSTRUMENT. EDWARD A. LOEB, Manchester, County of Lancaster, England. Filed July 12, 1887. Serial No. 244,179. (No model.) Patented in England May 3, 1887, No. 6,494, and in Canada July 29, 1887, No. 27,368.

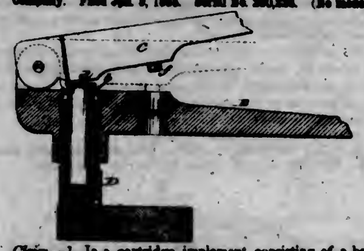


Claim.—1. The combination, with the top of a piano-forte, harmonium, or other musical instrument, of a horizontally-sliding bar, a music-desk hinged to the bar, and supports below for the desk, substantially as described.

2. The combination of the top of a piano-forte or other musical instrument with a horizontally-sliding bar, a music-desk hinged to the bar, and supports below for the desk, and doors to conceal the desk when closed, substantially as set forth.

3. The combination, with the top of a piano-forte or other musical instrument, of a cabinet having a compartment fitted with an adjustable hinged and sliding music-desk, and having doors provided with candle-brackets on the inside, substantially as described.

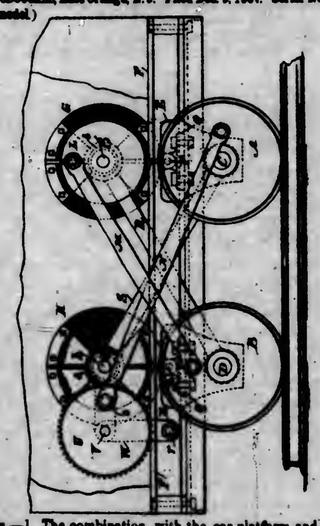
382,482. CARTRIDGE-RELOADING IMPLEMENT. WILLIAM MASON, New Haven, Conn., assignor to the Winchester Repeating Arms Company. Filed Jan. 9, 1888. Serial No. 260,236. (No model.)



Claim.—1. In a cartridge implement consisting of a base constructed with an opening adapted to receive the cartridge, but of smaller diameter than the head of the cartridge, the said opening enlarged below, the enlarged portion internally screw-threaded, combined with a follower screw-threaded upon its outer surface corresponding to the screw-thread of the said opening, and so as to be adjustable therein, the said follower constructed with a chamber in line with the said opening in the base and corresponding in shape to the exterior of the cartridge-shell, and the bottom of the chamber corresponding to the shape of the ball, the follower provided with a handle by which it may be rotated, and a forcing device, substantially such as described, adapted to operate in line with the said follower, substantially as specified, whereby said follower serves the double purpose as a support for the cartridge and as an extractor for the cartridge.

2. The combination of the two levers A C, the said lever A forming a base constructed with an opening, *b*, therein in diameter less than the diameter of the head of the cartridge, the other lever constructed with a working-face, *d*, corresponding to said opening, the said opening in the base below the face enlarged and internally screw-threaded, and the follower D screw-threaded corresponding to the screw-thread in said opening, the follower constructed with a chamber in line with said opening and corresponding to the outer surface of the shell, the bottom of the recess corresponding to the shape of the bullet, the said follower provided with a handle, substantially as described, whereby said follower serves the double purpose as a support for the cartridge and as an extractor for the cartridge.

382,483. ELECTRIC MOTOR FOR RAILWAY-CARS. WILLIAM H. MCDONALD, East Orange, N. J. Filed Dec. 9, 1887. Serial No. 257,631. (No model.)



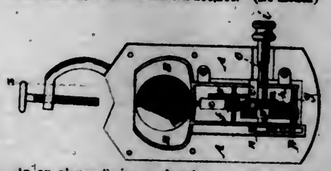
Claim.—1. The combination, with the car-platform and driving-wheels and axle, of an electric motor, hinges by which the frame of the motor is connected to the car-platform, connecting-rods between the shaft of the motor and the axle, and crank-pins and connecting-rods for rotating the drivers by the motor, substantially as set forth.

2. The combination, with the car-platform and the two pairs of driving-wheels and their respective axles, of two electric motors over

the respective axles, hinges for connecting the motors to the car-platform, links extending diagonally from the motor over one axle to the axle under the other motor, and cranks and connecting-rods that cross each other and extend diagonally to connect the respective crank-pins, substantially as set forth.

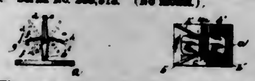
3. The combination, with the car-platform and driving-wheels and axle, of an electric motor, gearing, cranks, and connecting-rods for rotating the driving-wheels, and hinges to allow the parts to rock, and links to maintain the proper distance between the driving-shaft and axle, substantially as set forth.

382,484. BURGLAR-ALARM. WILLIAM R. MCINTOSH, Keene, N. H. Filed Mar. 23, 1888. Serial No. 268,310. (No model.)



Claim.—In an alarm device, a chamber provided with a curved floor which is slotted at the center, and a loose roller in said chamber, in combination with an alarm mechanism having a bell and provided with a striking-hammer, which is provided with an arm or projection in position to enter the slot in the floor when the hammer makes its upward movement, substantially as and for the purposes described.

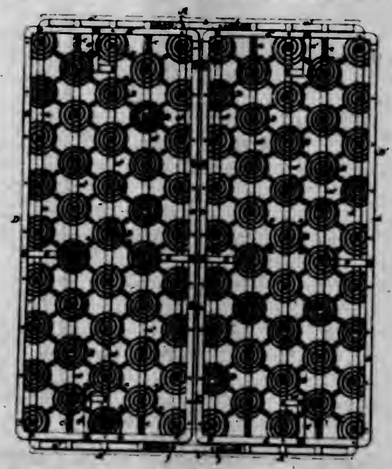
382,485. SLEEVE-BUTTON. OTTO T. MOOCK and WILLARD L. HEALEY, Philadelphia, Pa.; said Moock assignor to said Healey. Filed Feb. 13, 1888. Serial No. 263,812. (No model.)



Claim.—1. The combination, with the face and posts of a sleeve-button, of a pair of wings furnished with levers having upon their ends catches adapted to lock one into the other, said wings and levers being secured to said posts and face by a pivot, the whole arranged and operating substantially as and for the purposes set forth.

2. The combination, with the face, posts, wings, and locking-levers having upon their ends catches adapted to lock one into the other, of a cap adapted to cover the hinges and act as a stop to prevent the wings from passing the centers, substantially as set forth.

382,486. SPRING BED-BOTTOM. WILLIAM A. MOONEY, Philadelphia, Pa. Filed June 15, 1887. Serial No. 241,397. (No model.)



Claim.—1. The combination of the quadrangular base-frame made in two sections, springs supported thereby, and two top frames carried by said springs, each top frame and its springs being entirely independent of the other, a pivot-section free from springs connecting the two spring-sections together, whereby the whole structure can be folded with the top frames face to face without distorting any of the springs, the base-frame acting as a guard for the springs, substantially as specified.

2. The combination of the quadrangular base-frame, two sets of springs supported thereby, and two top frames carried by said springs, each top frame and its springs being entirely independent of the other, and each top frame detachably secured to the outside rows of the springs supporting said frames, whereby either one or both of the top frames are removable from the bed, all substantially as and for the purpose described.

3. The combination, in a spring bed-bottom, of the base-frame with supporting-springs connected thereto, each end bar of the frame having a flexible connecting-section free from springs, and extending to or nearly to the top of the springs, substantially as described.

4. The combination of the base-frame A, made in two sections, *a a'*, carrying suitable springs, and independent top frames for each section, a flexible section free from springs connecting the two spring-sections together, and extending to or nearly to the top frame, so that when the bed is folded the springs will not be crushed, substantially as specified.

5. The combination of the base-frame A, made in two sections, *a a'*, each having an upright extension, *i i*, with a flexible strip, *b*, connecting the extensions *i* of the sections together, all substantially as specified.

6. The combination of the base-frame A, made in two sections, *a a'*, each having upright extensions *i i*, with a connecting flexible strip, *b*, adjustably attached to one or both of the extensions *i* of the sections, substantially as specified.

7. The combination of the bottom frame, the end strips, *a*, and spring-bearing strips *a'*, with a cross-piece, *c'*, extending from one bearing-strip to another, and a brace extending from the cross-strip *c* to the top frame, substantially as described.

8. The combination of the base-frame A, made in two sections, with connecting-strips adjustably attached to one or both of said sections, springs carried by each section of the base-frame, and quadrangular top frames carried by said springs, one or both of said top frames being adjustable as to width, and each top frame and its springs being entirely independent of the other, all substantially as specified.

382,487. ELEVATOR. GEORGE A. MOSES, Cambridge, Mass. Filed Jan. 27, 1888. Serial No. 262,194. (No model.)



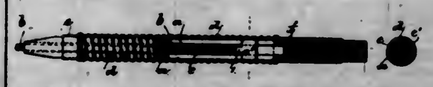
Claim.—1. In an elevator, a passenger-car combined with an auxiliary car or platform extensibly connected thereto, substantially as described.

2. In an elevator, a passenger-car, tubes or pipes, as a^3, secured thereto, combined with an auxiliary car or platform located below the said passenger-car and provided with rods to enter the said tubes or pipes, and with a clamping device to secure the said rods and lock the auxiliary car in its elevated position in proximity to the passenger-car, substantially as described.

3. In an elevator, a passenger-car provided with a panel, as a^4, combined with an auxiliary car or platform extensibly connected to the passenger-car and adapted to be concealed in its elevated position by the said panel, substantially as described.

4. In an elevator, a passenger-car, tubes or pipes secured thereto, and an auxiliary car or platform located below the said passenger-car and provided with rods a^5 to enter the said tubes or pipes, combined with a clamping device at or near the top of the said tubes to secure the said rods, and with a second or auxiliary clamping device located below the passenger-car floor, substantially as described.

382,488. PENCIL. OMAR MEREHAM, Jr., New York, N. Y., assignor to Eberhard Faber, same place. Filed Feb. 3, 1888. Serial No. 262,801. (No model.)

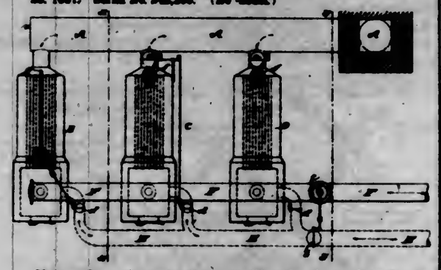


Claim.—1. In a pencil, the combination of a tubular slotted body, a slotted tubular holder for one end of the lead, a toothed plate projecting from said holder, a sheet-metal cylindrical screw around the tubular body, and into which the teeth of the plate mesh, and collars or rings around the body at the ends of the cylindrical sheet-metal screw, said screw becoming the motor in a propel and repel pencil, substantially as specified.

2. In a pencil, the combination of a tubular body or sheath, *a*, slotted centrally for part of its length, the slotted tubular holder *c* for one end of the lead, the toothed plate *d*, projecting from said holder, the sheet-metal cylindrical screw *d*, the metal ring or collar *e* at one end of said screw *d*, and the metal ring or collar *f* at the other end of the same, said collar *f* being extended as a sleeve and adapted to hold an erasing-rubber, substantially as specified.

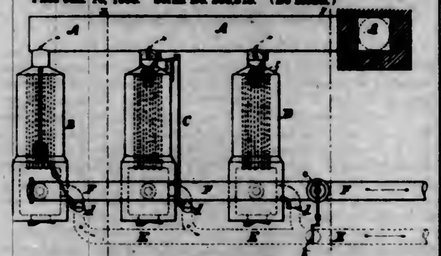
3. In a pencil, the combination of a tubular body or sheath, *a*, slotted centrally for part of its length, the slotted tubular holder *c* for one end of the lead, the toothed plate *d*, formed with said holder, the slotted metal tube A, surrounding the tubular slotted body *a*, the sheet-metal cylindrical screw *d*, and the metal rings or collars *e f* around the body at the ends of the cylindrical screw, substantially as and for the purposes set forth.

382,489. APPORTIONING FURNACE-DRAFT FOR BATTERIES OF STEAM-BOILERS. MAT. W. PRATT, Brooklyn, N. Y. Filed June 28, 1887. Serial No. 242,209. (No model.)



Claim.—In an apparatus for controlling the air-supply to the furnaces of a battery of steam-boilers, the combination of a main draft-regulator, automatically governed by the fluctuation of steam-pressure within said boilers and arranged to control the total air-supply with auxiliary regulating-dampers operated by the variations of temperature of the escaping gases from the several furnaces, and arranged to intercept the passage of the air-supply apportioned by said auxiliary dampers to each furnace, respectively.

382,490. METHOD OF APPORTIONING FURNACE-DRAFT FOR BATTERIES OF STEAM-BOILERS. MAT. W. PRATT, Brooklyn, N. Y. Filed Jan. 16, 1888. Serial No. 260,515. (No model.)



Claim.—The method described of first controlling the total air-supply to the furnaces of a battery of steam-boilers by a regulator operated by the varying steam-pressure within said boilers, and, second, apportioning said air-supply to the several furnaces by regulators operated by the respective varying temperatures of said furnaces.

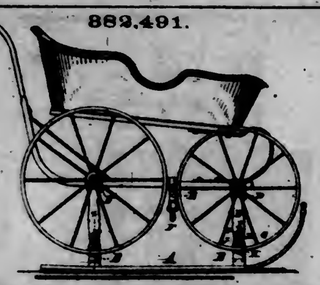
382,491. CHILD'S CARRIAGE. GEORGE RATHBUN, Buffalo, N. Y. Filed Mar. 5, 1888. Serial No. 266,142. (No model.)

Claim.—1. In combination with the wheels and running-gear of a child's carriage, the uprights hinged to said gear, a pair of runners attached to said uprights and folding therewith, and fastening devices detachably connecting the runners to the wheels, substantially as set forth.

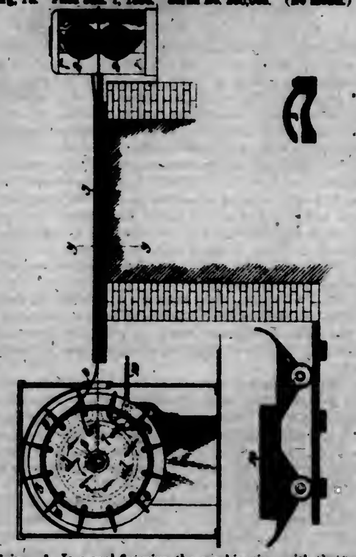
2. In combination with the wheels and running-gear of a child's carriage, two pairs of uprights hinged to said gear, and runners attached to the lower ends of said uprights, the forward pair, B', of the latter having bends formed in them to avoid the forward wheels, which are closer together than the rear wheels, substantially as set forth.

3. The combination, with the carriage-gear, of the two runners A A', having the uprights B B', hinged to said gear, the wheels having plates, and the bolts with the guides and springs, all being constructed and combined in the manner as and for the object set forth.

382,491.



382,492. REEL FOR WIRE-ROD MILLS. HENRY RAHMING, Pittsburg, Pa. Filed Jan. 7, 1888. Serial No. 260,082. (No model.)



Claim.—1. In a reel for wire, the combination, with the frame of the reel, of arms pivoted to the frame and rotary on axes longitudinal with the arms, the said arms projecting from the frame in a direction out of line with their axes, substantially as and for the purposes described.

2. In a reel for wire, the combination, with the frame of the reel, of arms pivoted to the frame and rotary on axes longitudinal with the arms, the said arms projecting from the frame in a direction out of line with their axes, and gearing connecting the said arms whereby they may be rotated simultaneously, substantially as and for the purposes described.

3. In a wire-rod mill, the combination, with the rolls, of a reel situate opposite to the delivery end thereof, having a boss projecting from the frame thereof, and arms projecting from the reel-frame around the boss, substantially as and for the purposes described.

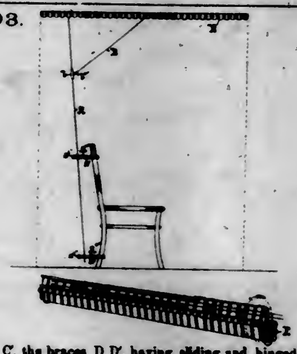
4. In a wire-rod mill, the combination, with the rolls, of a reel situate opposite thereto, having a central boss projecting from the frame thereof and having two series of arms projecting from the frame around the said boss—namely, an outer series of arms around which the rod is wound, and an inner series of arms whereby the end of the wire rod, when fed to the reel, is locked—substantially as and for the purposes described.

5. The combination, with the rolls of a wire-rod mill, of a reel situate opposite to the delivery side of the rolls and a guide extending thence from the rolls to the reel, said guide being open to permit free lateral escape of the wire, substantially as and for the purposes described.

382,493. CANOPY ATTACHMENT FOR CHAIRS, &c. ALMIRA A. SMITH, Hadley, Mass. Filed Dec. 12, 1887. Serial No. 257,720. (No model.)

Claim.—1. The herein-described canopy attachment, consisting of the combination of the standards A A', the side pieces, B B', the

382,493.



end pieces, C C', the braces D D', having sliding and hinged connections with the said standards, and side pieces and clamps for securing said standards to a chair or settee, each of said end pieces having a hinged connection with one of said side pieces and a detachable connection with the other thereof, whereby the said end and side pieces and standards are all adapted to be folded to positions parallel with and adjacent to each other, substantially as set forth.

2. The combination, with the standards A A', supporting the awning-frame, of the clamps A^2, adjustably secured to the said standards, each of said clamps having a hole and set-screw for attachment to its standard, and consisting of two curved grasping-jaws having shanks which are pivotally connected at their rear ends, a threaded bolt projecting from the shank of one of said jaws through a slot in the shank of the other jaw, a nut on said bolt, and a spring for separating said jaws, substantially as set forth.

3. The combination, with the standards A A' and the side pieces, B B', of the sleeves b, fitted to slide on said standards and side pieces, set-screws b' for securing said sleeves in place, and the braces D D', provided with the caps b^2, hinged to the said sleeves, substantially as set forth.

4. The combination, with standards A A' and side pieces, B B', each of said side pieces being provided at one end with a cap, c^2, having depression c^3 and orifice c^4, of end pieces, C C', connected by a hinge to said side pieces at the end opposite to said caps c^2, each of said end pieces being provided at its free end with a cap, c^2, having the projection c^3, and lug or pin c^4, arranged and operating substantially as and for the purpose set forth.

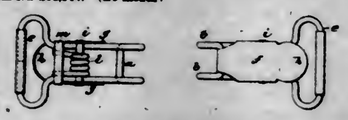
5. As an article of manufacture, the canopy attachment for chairs herein described, consisting of the side pieces, B B', having an awning cloth and a mosquito-guard attached thereto, substantially in the manner described, end pieces, C C', standards A A', suitable braces having hinged and sliding connections with said standards and side pieces, and clamps A^2, adjustably secured to said standards, arranged and operating substantially as set forth.

382,494. LOOP FOR SUSPENDER-BUCKLES. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Mar. 26, 1888. Serial No. 268,506. (No model.)



Claim.—The herein-described loop for suspender-braces, consisting of the curved tubular slide, the ends of which are doubled upon themselves, forming smooth rounded ends, combined with a loop attached to said slide, substantially as and for the purpose described.

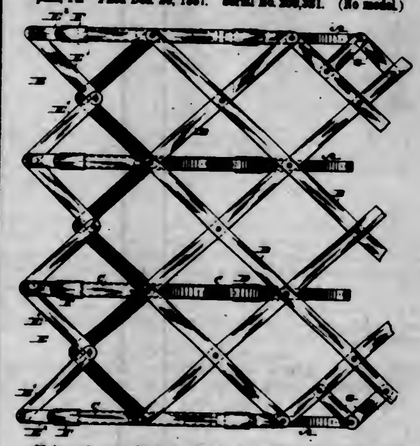
382,495. SNAP-HOOK. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Mar. 26, 1888. Serial No. 268,507. (No model.)



Claim.—1. The herein-described snap-hook, consisting of a body made from wire doubled to form the tip a of the hook, the two branches then bent to form the hook b b, the two branches extending substantially parallel to the opposite end, where the branches are bent to form the loop c, and the two sides bent at a point between the loop and hook at right angles to the plane of the two sides to form the pivot-bearings d d, combined with the tongue f, constructed with ears g g, the pintle i through said ears and resting in the said bearings d d, and a torsion-spring, l, between said body and tongue adapted to take a bearing between the body and the tongue in rear of the pivots, substantially as described.

2. The herein-described snap-hook, consisting of a body made from wire doubled to form the tip a of the hook, the two branches then bent to form the hook b b, the two branches extending substantially parallel to the opposite end, where the branches are bent to form the loop c, and the two sides bent at a point between the loop and hook at right angles to the plane of the two sides to form the pivot-bearings d d, the two sides of the body connected by a bar, m, combined with a sheet-metal tongue, f, constructed with ears g g, pierced corresponding to the bends d d of the body, a pintle, i, through said ears and within said bearings d d, and a torsion-spring, l, around said pintle, one arm of the spring resting upon said bar m and the other resting at a corresponding point on the tongue, the tendency of said spring being to yieldingly hold the tongue in the closed position, substantially as described.

382,496. SPRING BED-BOTTOM. FREDERICK STORER, Philadelphia, Pa. Filed Dec. 20, 1887. Serial No. 259,261. (No model.)

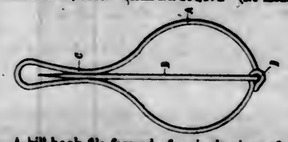


Claim.—1. An adjustable bed-bottom, consisting of cross and longitudinal slats pivoted, as described, and provided with an end section consisting of the slats E' and E^2, pivoted at one end, as described, each of the slats E^2 having a keeper, F, in which a longitudinal slat of the bottom rests, the slats E' being also pivotally connected at their inner ends, said parts being combined substantially as described.

2. An adjustable end section, consisting of the slats E', pivotally connected at their ends, the slats E^2, pivoted at each alternate pivotal connection of the slats E' and having keepers F, the said slats E^2 being so connected to the slats C by the said keepers F of the bed-bottom as to slide thereon, substantially as and for the purpose set forth.

3. A bed-bottom formed of top and lower cross and sectional longitudinal slats pivotally connected, as described, springs, each of which is formed of two leaves connected together and to the top and lower slats, and an adjustable end piece of pivoted slats connected to said top longitudinal slats by slats E^2 and keepers F, said parts being combined substantially as and for the purpose set forth.

382,497. BILL-HOOK FILE. FREDERIC M. STORY, Union Hill, N. J. Filed Feb. 16, 1888. Serial No. 264,174. (No model.)



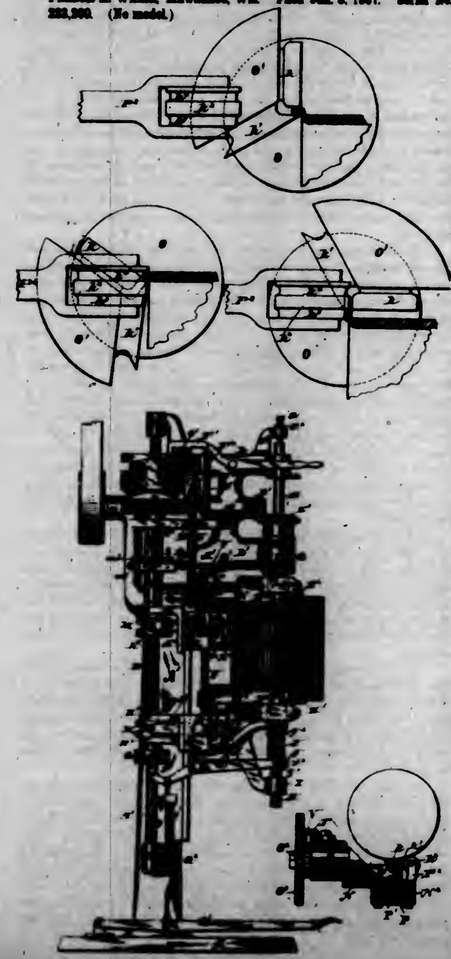
Claim.—A bill-hook file formed of a single piece of spring-wire, with a back, A, of approximately pear shape, adapted to be suspended by its upper or smaller end, and a hook, B, projecting outward from the base of said back and thence upward in the line of the center thereof, the back being contracted at a point opposite to the end of the hook to receive said end, and thereby retain the hook at a closed position, as shown and described.

382,498. RUBBER BOOT. JOSEPH B. THOMAS, South Framingham, Mass. Filed Dec. 1, 1887. Serial No. 256,494. (No model.)

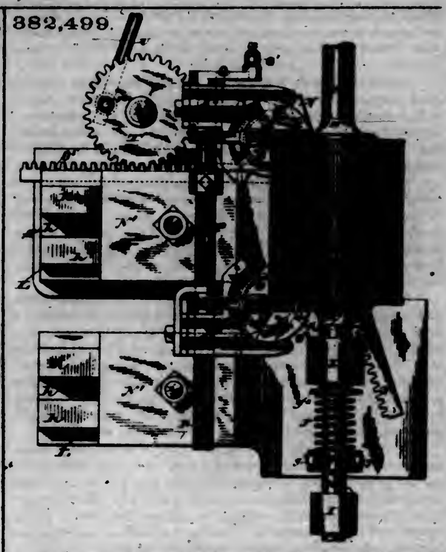


Claim.—As an improved article of manufacture, a rubber boot having a rubber foot part, a leg formed of the inner and outer cloth layers, c d, and intervening rubber layer, f, and a fur guard, k, secured to the cloth layers at the top edge of the boot and overlapping said edge and extending upon both the inside and outside thereof, substantially as described.

382,499. BRAKING-MACHINE FOR SHEET-METAL VESSELS. FRANCIS A. WALSH, Milwaukee, Wis. Filed Jan. 3, 1887. Serial No. 223,260. (No model.)



382,499.



Claim.—1. In a machine for working the seams of sheet-metal vessels, the combination of a non-reciprocating revolving chuck, a movable chuck opposing the one first named, a fulcrumed bearing, a shaft arranged in the bearing, rolls or formers carried on the shaft, and suitable mechanism for actuating the movable chuck, tilting the bearing, and rocking said shaft at predetermined intervals, substantially as set forth.

2. In a machine for working the seams of sheet-metal vessels, two fulcrumed bearings, a shaft arranged in each bearing, rolls or formers carried on each shaft, and suitable mechanism for simultaneously tilting the bearings and rocking the shafts at predetermined intervals, substantially as set forth.

3. In a machine for working the seams of sheet-metal vessels, the combination of a continuously-revolving chuck, a normally-stationary chuck arranged in opposition to the one first named and provided with a loosely-journaled spindle, a lever pivoted to the frame of the machine and connected at one end to the spindle, a shaft geared to a driving mechanism, and a cam carried by the shaft and so positioned as to impinge against the end of said lever opposite that connected with said spindle, whereby the spindle and its chuck are raised and lowered at predetermined intervals, substantially as set forth.

4. In a machine for working the seams of sheet-metal vessels, the combination of a continuously-revolving chuck, a normally-stationary chuck in opposition to the one first named and provided with a loosely-journaled spindle, a lever pivoted to the frame of the machine and connected at one end to the spindle, a shaft geared to a driving mechanism, a cam carried by the shaft and so positioned as to impinge against the end of the lever opposite that connected with said spindle, and a treadle mechanism for actuating said lever independent of the cam, substantially as set forth.

5. In a machine for working the seams of sheet-metal vessels, the combination of a continuously-revolving chuck, a normally-stationary chuck in opposition to the one first named and provided with a loosely-journaled spindle, a spring arranged on the spindle, a lever pivoted to the frame of the machine and connected at one end to said spindle in opposition to the spring, a shaft geared to a driving mechanism, and a cam carried by the shaft and so positioned as to impinge against the end of the lever opposite that connected with said spindle, substantially as set forth.

6. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a bracket suitably connected to the standard, a chuck having its spindle loosely journaled in the bracket, a lever fulcrumed to the bracket and operatively united at one end to the chuck-spindle, a shaft having a loose gear-connection with a driving mechanism, a cam-flut on the shaft, a clutch mechanism for uniting the cam and gear, a notched wheel arranged on said shaft to impinge against the other end of the chuck-lever, and a chuck in opposition to the one first named, substantially as set forth.

7. In a machine for working the seams of sheet-metal vessels, a head comprising a suitable block, a bearing secured to the block, a shaft arranged in the bearing and provided with rolls or formers, a

suitably-arranged shaft carrying an arm provided with a roll or former, and suitable means for imparting a partial revolution to the last-named shaft at predetermined intervals, substantially as and for the purpose set forth.

8. In a machine for working the seams of sheet-metal vessels, a head comprising a fulcrumed block, a bearing secured to the block, a shaft arranged in the bearing and provided with rolls or formers, a suitably-arranged shaft carrying an arm provided with a roll or former, and suitable means for tilting the head and for actuating the shafts at predetermined intervals, substantially as and for the purpose set forth.

9. In a machine for working the seams of sheet-metal vessels, the combination of a main standard provided with a suitable box, a head comprising a block fulcrumed to the box, a bearing secured to the block, and a shaft arranged in the bearing and provided with rolls or formers, a rack operative in said box, a pinion on said shaft arranged to engage the rack, and means, substantially as described, for actuating said rack, as and for the purpose set forth.

10. In a machine for working the seams of sheet-metal vessels, the combination of a main standard provided with a suitable box, a head comprising a block fulcrumed to the box, a bearing secured to the block, and a shaft arranged in the bearing and provided with rolls or formers, a rack operative in said box, a pinion on said shaft arranged to engage the rack, a suitably-arranged shaft carrying an arm provided with a roll or former, and suitable means for tilting the head, operating the rack, and actuating the last-named shaft at predetermined intervals, substantially as and for the purpose set forth.

11. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a head comprising a block fulcrumed to the standard, a bearing adjustably united to the block, and a rock-shaft arranged in the bearing and provided with rolls or formers, a suitably-arranged shaft carrying an arm provided with a roll or former, and suitable means for actuating the shafts at predetermined intervals, substantially as and for the purpose set forth.

12. In a machine for working the seams of sheet-metal vessels, the combination of a main standard provided with a suitable box, a head comprising a block fulcrumed to the box, a bearing secured to the block, and a shaft arranged in the bearing and provided with rolls or formers, a rack operative in said box, a pinion on said shaft arranged to engage the rack, another pinion engaging said rack, a rod having its lower end wristed to the latter pinion, a lever-arm fulcrumed to said standard and united with the rod, a suitably-arranged shaft carrying an arm provided with a roll or former, and suitable means for tilting the head and actuating the lever-arm and last-named shaft, substantially as and for the purpose set forth.

13. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a head comprising a block suitably secured to the standard, a bearing united to the block, and a rock-shaft arranged in the bearing and provided with rolls or formers, a suitably-arranged shaft carrying an arm provided with a roll or former, a sliding plate operatively connected by a rod with the last-named shaft, and suitable means for actuating the rock-shaft and sliding plate at predetermined intervals, substantially as and for the purpose set forth.

14. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a head comprising a block suitably secured to the standard and provided with a ⊢- -shaped slot and shoulders, a bearing having a flange fitted to slide on said shoulders and secured to the block by a ⊢- -bolt, a rock-shaft arranged in the bearing and provided with rolls or formers, a suitably-arranged shaft carrying an arm provided with a roll or former, and suitable means for actuating the shafts at predetermined intervals, substantially as and for the purpose set forth.

15. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, two heads, each comprising a block suitably secured to the standard, a bearing united to the block, a rock-shaft arranged in the bearing and provided with rolls or formers, a suitably-arranged shaft carrying arms provided with rolls or formers, and suitable means for simultaneously operating both rock-shafts and actuating the arm-shaft at predetermined intervals, substantially as and for the purpose set forth.

16. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, two heads, each comprising a block suitably secured to the standard, a bearing united to the block and provided with a chamber, a rock-shaft arranged in the bearing and provided with rolls or formers, and a disk loosely arranged in the chamber, a shaft journaled in the disks and carrying arms provided with rolls or formers, and suitable means for simultaneously operating both rock-shafts and actuating the arm-shaft at predetermined intervals, substantially as and for the purpose set forth.

17. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, two heads, each comprising a block suitably secured to the standard, a bearing united to the block, and a shaft arranged in the bearing and provided with rolls or formers, a pinion on each shaft, a horizontal rack arranged to engage the pinion of one shaft, a vertically-disposed rack, also arranged to engage this pinion, an intermediate pinion arranged to engage the latter rack and the pinion on the other shaft, a suitably-arranged shaft carrying arms provided with rolls or formers, and suitable means for actuating the horizontal rack and the last-named shaft at predetermined intervals, substantially as and for the purpose set forth.

18. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, two heads suitably secured to the standard, to be laterally adjustable with relation thereto, and one of said heads vertically adjustable on said standard, each head having a shaft arranged in a bearing and provided with rolls or formers, a pinion on each shaft, a horizontal rack arranged to engage the pinion on one shaft, a vertically-disposed shaft arranged to engage this pinion, an intermediate pinion arranged to engage the latter rack and the pinion on the other shaft, a suitably-arranged shaft carrying arms provided with rolls or formers, and suitable means for actuating the horizontal rack and last-named shaft at predetermined intervals, substantially as and for the purpose set forth.

19. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a shaft having its bearings on the standard, a head fulcrumed to said standard and provided with an arm, a rock-shaft journaled in the head and provided with rolls or formers, a chucking mechanism, and cams arranged on said shaft to engage the arms on the head and actuate said chucking mechanism, substantially as set forth.

20. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a shaft having its bearings on the standard and provided with a series of cams, a chuck normally held in one position and continuously revolved, a sliding chuck in opposition to the one first named and normally non-revolvable, a lever mechanism arranged to actuate the latter chuck independent of the seaming mechanism, suitable heads fulcrumed to said standard and provided with arms to engage the cams on the shaft, and rock-shafts carrying rolls or formers, another shaft journaled to the heads and carrying arms provided with rolls or formers, a spring sliding plate operatively connected to the latter shaft, a cam on the former shaft arranged to actuate the sliding plate at predetermined intervals, and suitable means for starting and automatically stopping the revolution of said former-shaft, imparting a simultaneous movement to both rock-shafts and automatically unchucking the vessel, substantially as and for the purpose set forth.

21. In a machine for working the seams of sheet-metal vessels, the combination of a main standard provided with a suitable box, a head comprising a block fulcrumed to the box, a bearing secured to the block, and a shaft arranged in the bearing and provided with rolls or formers, a rack operative in said box, a pinion on said shaft arranged to engage the rack, and suitable means for tilting the head and operating the rack, substantially as and for the purpose set forth.

22. In a machine for working the seams of sheet-metal vessels, the combination of a main standard provided with a suitable box, a head comprising a block fulcrumed to the box, a bearing secured to the block, and a shaft arranged in the bearing and provided with rolls or formers, a rack operative in said box, a pinion on said shaft arranged to engage the rack, another pinion engaging said rack, a rod having its lower end wristed to the latter pinion, a lever-arm fulcrumed to said standard and united to the rod, and suitable means for tilting the head and actuating the lever-arm, substantially as and for the purpose set forth.

23. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a head comprising a block suitably secured to the standard and provided with a ⊢- -shaped slot and shoulders, a bearing having a flange fitted to slide on said shoulders and secured by a ⊢- -bolt, a rock-shaft arranged in the bearing and provided with rolls or formers, and suitable means for actuating the shaft at predetermined intervals, substantially as and for the purpose set forth.

24. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, two heads, each comprising a block suitably secured to the standard, a bearing united to the block, and a rock-shaft arranged in the bearing and provided with rolls or formers, and suitable means for simultaneously operating both rock-shafts at predetermined intervals, substantially as and for the purpose set forth.

25. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, two heads, each comprising a block suitably secured to the standard, a bearing united to the block, and a shaft arranged in the bearing and provided with rolls or formers, a pinion on each shaft, a horizontal rack arranged to engage the pinion of one shaft, a vertically-disposed rack, also arranged to engage this pinion, an intermediate pinion arranged to engage the latter rack and a pinion on the other shaft, and suitable means for actuating the horizontal rack at predetermined intervals, substantially as and for the purpose set forth.

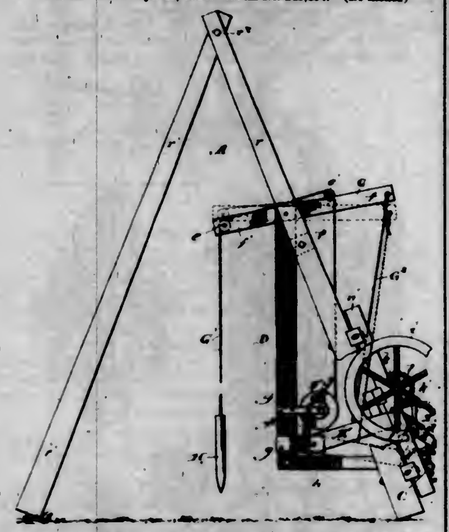
26. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, two heads suitably secured to the standard, to be laterally adjustable with relation thereto, and one of said heads vertically adjustable on said standard, each head having a shaft arranged in a bearing and provided with rolls or formers, and a pinion on each shaft, a horizontal rack arranged to engage the pinion on one shaft, a vertically-disposed shaft arranged to engage this pinion, an intermediate pinion arranged to engage the latter rack and the pinion on the other shaft, and suitable means for actuating the horizontal rack, substantially as and for the purpose set forth.

27. In a machine for working the seams of sheet-metal vessels, the combination of a main standard, a shaft having its bearings on the standard and provided with a series of cams, a chuck normally held in one position and continuously revolved, a sliding chuck in opposition to the one first named and normally non-revolvable, a lever mechanism arranged to actuate the latter chuck independent of the seaming mechanism, suitable heads fulcrumed to said standard and provided with arms to engage cams on the shaft and rock-shafts carrying rolls or formers, and suitable means for starting and automatically stopping the revolution of the former-shaft, imparting a simultaneous movement to both rock-shafts and automatically unchucking the vessel, substantially as and for the purpose set forth.

28. In a machine for working the seams of sheet-metal vessels, the combination of a chucking mechanism, a seaming mechanism, and a revolvable shaft provided with a series of cams arranged at intervals thereon to directly actuate said mechanisms, substantially as set forth.

29. In a machine for working the seams of sheet-metal vessels, the combination of a chucking mechanism, a seaming mechanism, and a revolvable shaft provided with a series of cams arranged at intervals thereon to directly actuate said mechanisms, and so timed that a vessel is chucked, seamed, and released by one revolution of the shaft, substantially as set forth.

382,500. WELL-DRILLING MACHINE. CHRISTIAN WEBER, Oak Glen, Ill. Filed Sept. 14, 1887. Serial No. 249,887. (No model.)



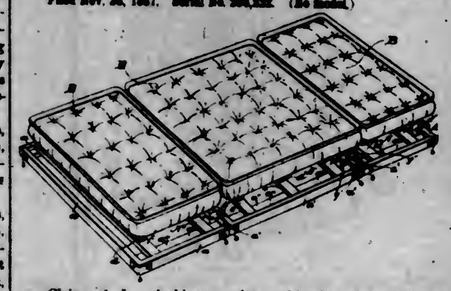
Claim.—1. In a well-drilling machine, the combination of a frame, A, a lever, E, a walking-beam, G, a drill, H, connected through the walking-beam by a chain or cable with the lever, a frame, A', upon the frame A, a driving-shaft, C, and a shaft, I', on the frame A' and geared together, and a striker, I, on the shaft I' and operated thereby to engage with the lever to actuate the drill, substantially as described.

2. In a well-drilling machine, the combination of a frame, A, rotary shafts I' and C, supported on the frame and carrying intermeshing gear-wheels k' and k², a striker, I, on the shaft I', a lever, E, extending into the path of the striker, a walking-beam, G, and a drill, H, connected through the walking-beam with the lever, substantially as described.

3. In a well-drilling machine, the combination of a frame, A, rotary shafts I, I', and C, supported on the frame and carrying intermeshing gear-wheels k, k', and k², a fly-wheel, i, on the shaft I, a striker, I, on the shaft I', a lever, E, extending into the path of the striker, a walking-beam, G, and a drill, H, connected through the walking-beam with the lever, substantially as described.

4. A well-drilling machine comprising a frame, A, formed of converging uprights r and r', connected together, a frame, A', upon the frame A, an upright, D, carrying a walking-beam, G, a drum, F, a drill, H, connected with the drum through the medium of the walking-beam by a chain or cable, G', a lever, E, pivotally connected with the upright D, near one end, and near its opposite end with the walking-beam, rotary shafts I, I', and C, supported on the frame A' and carrying intermeshing gear-wheels k, k', and k², a fly-wheel, i, on the shaft I, and a striker, I, on the shaft C, in line with the lever E, the whole being constructed and arranged to operate substantially as described.

382,501. BED-BOTTOM. WILLIAM F. ADE, Jr., Williamsport, Pa. Filed Nov. 26, 1887. Serial No. 256,332. (No model.)



Claim.—1. In a bed-bottom, the combination of the following elements, viz: a frame-work made in sections, each provided with the locking-hook f, attached to the lower bar n' of each section or frame and adapted to engage the opposite bar of the adjacent section for removably fastening said sections together, for the purpose set forth, spiral springs d, and mattress B B B, also made in sections and attached to said springs, substantially as described.

2. In a bed-bottom, the combination of the following elements, viz: a frame-work made in sections, each provided with the locking-hook f, for the purpose set forth, spiral springs d, mattress B B B, also made in sections and attached to said springs, and elastic brace c inside of each section of the mattress, substantially as described.

382,502. SPRING FOR SCISSORS, &c. FRANK C. ALTHAM, New Haven, Conn. Filed July 5, 1887. Serial No. 243,261. (No model.)



Claim.—In a pair of scissors or shears substantially such as described, the combination therewith of the spring H, arranged upon one blade between the head of the pivot and the blade, the said spring constructed with bearing-points b b, distant from each other forward of the pivot, the said bearing-points turned downward from the plane of the spring onto the blade, the body of the spring inclined downward and rearward beneath the head of the pivot, the head of the pivot taking its bearing upon the spring forward of the pivot, and the spring extending to the rear of the pivot and in slotted connection with the blade, substantially as described.

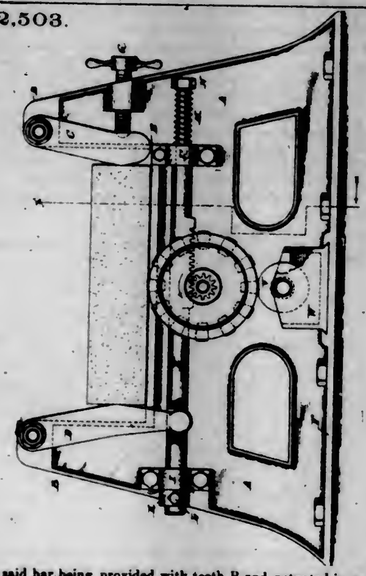
382,503. APPARATUS FOR GAGING BRICK AND MARKING THEREON THE GRADE OR COLOR THEREOF. JAMES C. ANDERSON, Highland Park, Ill. Filed Jan. 9, 1888. Serial No. 260,140. (No model.)

Claim.—1. In a machine for indicating the color or grade of bricks, a receptacle for the brick having a movable portion and a marking mechanism, substantially as described, operated by said movable portion, whereby the marking of the brick to correspond to its size and color is automatically and mechanically performed, as set forth.

2. A machine for indicating the color or grade of brick and marking the same, consisting of an open frame having a rigid and a movable jaw between which the brick is placed, a sliding bar to which the movable jaw is attached, and a numbering or printing wheel operated by the sliding bar to bring the proper number or character on the wheel into printing position, as set forth.

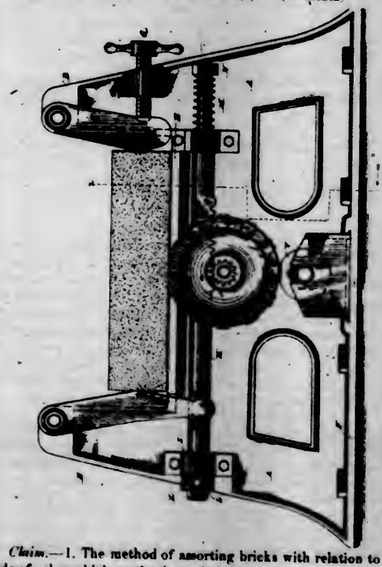
3. In a machine for indicating the color or grade of brick and marking the same, the frame A, having the projection B, to which the jaws C and D are pivoted, the jaw D being secured to the sliding

382,503.



bar H, said bar being provided with teeth R and actuated in one direction by the spring M, in combination with the pinion-wheel P, type-wheel S, and inking-roll V, as set forth.

382,504. METHOD OF ASSORTING BRICKS WITH RELATION TO THEIR COLOR AND GRADE. JAMES C. ANDERSON, Highland Park, Ill. Filed Jan. 9, 1888. Serial No. 260,141. (No model.)

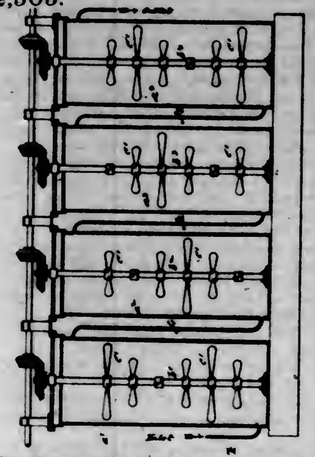


Claim.—1. The method of assorting bricks with relation to their grade of color, which consists in gaging the amount of shrinkage which each brick has sustained in drying and burning, as set forth.

2. The method of assorting brick with relation to their grade of color, which consists in determining by measurement the amount of shrinkage which each brick has sustained in drying and burning, and then marking the same with a symbol indicating the grade or shade of color to which it belongs, as set forth.

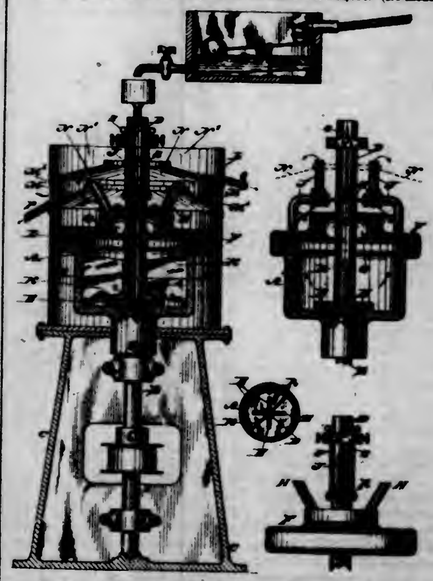
382,505. PROCESS OF OBTAINING ALUMINA. KARL J. BAYER, St. Petersburg, Russia. Filed Aug. 18, 1887. Serial No. 247,268. (No specimens.)

382,505.



Claim.—The process herein described of obtaining pure alumina compounds from bauxite and other materials containing alumina, which consists in subjecting an aluminate lye under constant stirring and at ordinary temperature to the action of hydrate of alumina, so as to decompose said solution and precipitate hydrate of alumina, concentrating the remaining mother liquor, mixing the resulting product with bauxite or other material containing alumina, and, lastly, calcining the mixture, substantially as set forth.

382,506. CENTRIFUGAL CREAMER. HENRY P. BEMBLING, Philadelphia, Pa., assignor to Charles H. Schwerdtfeger and Charles S. Weiderman, same place. Filed July 19, 1887. Serial No. 244,700. (No model.)

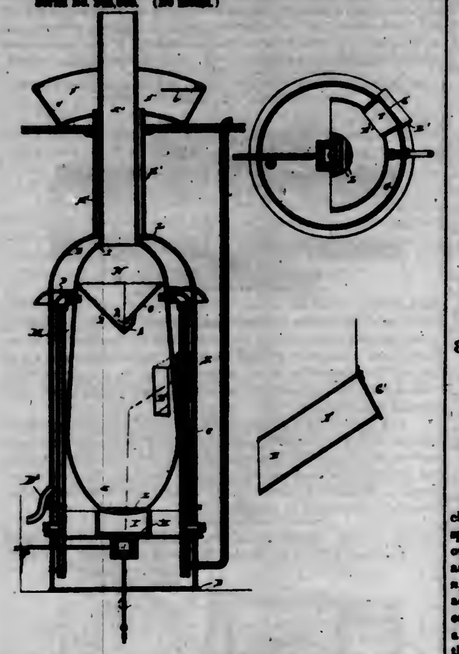


Claim.—1. In a centrifugal separator, the rotary vessel A, in combination with the supply-tube D, the cap F, having the chamber G thereto, communicating with said vessel A, the pipes H, inclining outward from said chamber G, the pipes J, leading from the periphery of said vessel A through said cap F, the jacket L, encircling said vessel A, the tables M and N, and the discharge-pipes P and Q, substantially as described.

2. In a centrifugal separator, the rotary vessel A, in combination with the stationary supply-tube D, the cap F, having the chamber G, the outward-inclined pipes H, the pipes J, the jacket L, and the flanged tables M and N, the said pipes H and J respectively extending above the flanged rim of said tables M and N, substantially as and for the purpose set forth.

3. In a centrifugal separator, the vessel A, with inlet-tube D, having distributing-pipes E, in combination with cap F, having chamber G, the pipes H and J, leading, respectively, from chamber G and vessel A, the cock R in said pipe J, and arms S, attached to said cock, substantially as and for the purpose set.

382,507. CAR-HEATER. WILLIAM P. BRENNEN, Columbus, Ohio, assignor of one-half to Wm. S. Bellmer, same place. Filed Sept. 2, 1887. Serial No. 248,695. (No model.)



Claim.—1. The combination of the outer shell, the hood at the upper end thereof, the plate D below said hood, the fire-pot within the outer shell, and the deflectors O P, arranged in the upper end of the fire-pot and in about the same horizontal plane as the plate B, substantially as set forth.

2. The combination of the outer shell, the fire-pot, and the deflectors O P, arranged in the upper end of the fire-pot, the lower edge of the deflector P being extended below the deflector O and having the upturned flange S, substantially as specified.

382,508. REMOVING IMPURITIES FROM STEAM-BOILERS. JOSEPH REESE, Chicago, Ill. Filed Nov. 19, 1887. Serial No. 255,671. (No model.)

Claim.—1. In a steam-boiler, the combination, with a perforated sediment-collecting tube located within and longitudinally of the boiler at the water-line, a deposit-chamber exterior to the boiler, a pipe communicating with the sediment-collecting pipe in the boiler and with the upper end of the sediment-chamber, a return-pipe leading from the upper end of the deposit-chamber and with the interior of the boiler below the water-line, a blow-off pipe extending longitudinally of the deposit-chamber and perforated therein and opening outside thereof, each of said pipes being provided with suitable cocks, substantially as and for the purpose set forth.

2. In a steam-boiler, the combination, with a perforated tube or tubes, *c*, and pipes *d* and *e*, the latter provided with a cock, *f*, of a deposit-chamber, B, exterior to the boiler, having therein a perforated tube, *j*, with which latter is connected a pipe, *i*, provided with a cock, *n*, substantially as and for the purpose set forth.

3. In a steam-boiler, the combination of a perforated tube or tubes, *c*, pipe *d*, leading therefrom, chamber B exterior to the boiler, provided with curved branches D and D', perforated tube *j*, pipe *i*, and hand-hole E, and a pipe, *e*, leading from the chamber to the interior of the boiler, substantially as specified.

382,508.



382,509. CURTAIN-FIXTURE. CHARNEY BUCKLEY, Meriden, Conn. Filed Feb. 14, 1887. Serial No. 227,519. (No model.)



Claim.—The combination of the roller A, having a concentric chamber extending from one end of the roller inward, a concentric spindle in the said chamber extending through a bearing at the end of the roller, a spring in said chamber, one end fixed to said spindle and the other to the roller, the spindle constructed with a shoulder, *a*, on one side, and the roller provided with a corresponding stop adapted to engage or pass said shoulder, as the case may be, the outer end of said spindle constructed with a notch, *d*, upon one side, and with a recess, *e*, in the opposite side longer than the width of the notch on the other side, with a bracket adapted for attachment to the window-jamb, and constructed with a horizontal recess, *f*, and with a vertical recess opening from said horizontal recess and forming the seat *l*, the thickness of the bracket on one side of said horizontal and vertical recesses corresponding to the width of the notch in the spindle, and the other side of said horizontal and vertical recesses broader than said notch, all substantially as and for the purpose described.

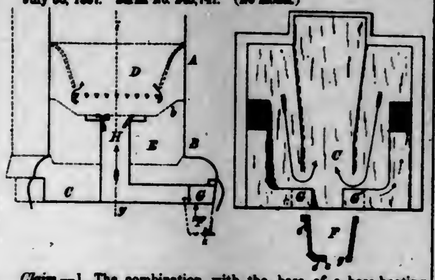
382,510. BARREL FOR OUTHOUSES. THOMAS W. CARRIGO, San Antonio, Tex. Filed Nov. 23, 1887. Serial No. 256,420. (No model.)



Claim.—1. The combination, with the barrel-head B, having the opening *b*, of the cover C, adapted to close said opening, the bolt D, extending through said cover and into the barrel, the clamping-bar E, longer than the width of said opening in the barrel-head, said bar being centrally pivoted by a rivet, *d'*, to the lower end of said bolt D, and a nut, F, screwed upon the upper end of said bolt for clamping said cover in position, substantially as described.

2. The combination, with the barrel-head B, having the opening *b*, of the cover C, adapted to close said opening for the purpose described, and provided with an irregular-shaped hole, c^4, the bolt D, having an irregular-shaped portion extending through the hole c^4 in said cover and into the barrel, the clamping-bar E, longer than the width of said opening in the barrel-head, said bar being centrally pivoted by a rivet, *d'*, to the lower end of said bolt D, and a nut, F, screwed upon the upper end of said bolt for clamping said cover in position, substantially as specified.

382,511. STOVE. JOHN V. R. CARTER, Rochester, N. Y., assignor of one-third to the Co-Operative Foundry Company, same place. Filed July 30, 1887. Serial No. 245,747. (No model.)



Claim.—1. The combination, with the base of a base-heating stove and with a conduit or chamber for products of combustion with the air-inlet flues, of the air-inlet chamber F, and air-flues G G', extending along the front and side walls of the stove and between said walls and conduit, and the vertical flues H H', arranged to deliver the air immediately below the grate, substantially as specified, whereby the exterior of the stove-base is kept comparatively cool and the air-supply is warmed.

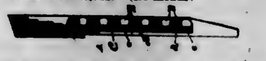
2. The combination, with the base of a base-heating stove, of an air-inlet chamber provided with air-inlet openings on its side and bottom, a suitable damper or slide provided with parts that entirely close the inlets at the side, and others that partially close those at the bottom when said damper is in its shut position, and air-flues extending from said chamber to the space beneath the grate.

3. The combination, with the base of the stove, having an air-inlet, of a damper for such inlet, the damper being of such size relative to the inlet that in its shut position it partially closes said inlet, and a check-draft opening, *i*, provided with damper *f*, substantially as set forth, whereby the stove will always ventilate the room and may be made at will to ventilate it without passing air through the fire.

4. The combination, with the base of a stove, of an air-inlet, exterior front air-flues, G G', the adjacent interior conduit or chamber for products, and a fuel-chamber in communication with said flues and also with the conduit, substantially as set forth, whereby air is preheated and excessive heating of the front of the base is obviated.

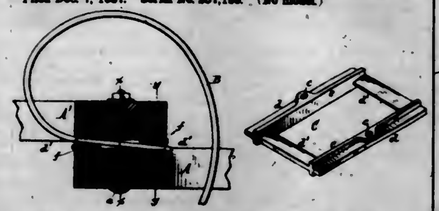
5. The combination, with the perforated bottom of the base of a stove, of the chamber F, secured under the bottom and having its interior in communication with the perforations in the bottom, a damper for air-inlets in the chamber, flues G G', extending from the perforations in the bottom around the exterior of the front and sides of the base immediately above its bottom and adjacent to a conduit for products of combustion, and flues H H', extending to the space beneath the grate, substantially as set forth.

382,512. WASH-BOARD. JAMES R. CLUTTON, Xenia, Ohio. Filed Aug. 30, 1887. Serial No. 248,338. (No model.)



Claim.—In a wash-board, the combination of the blank C, having a series of horizontal grooves, *c*, with the round-headed pins D, having shanks *d*, which enter grooves *c* of the blanks, the pins being secured and arranged on the blanks, substantially as and for the purpose described.

382,513. HARROW. SAMUEL COOPER, Yorkshire Centre, N. Y. Filed Dec. 7, 1887. Serial No. 257,189. (No model.)



Claim.—1. The combination, with the harrow-frame and a harrow-tooth, of a tooth-holder consisting of an open frame secured to the harrow-frame, and composed of side bars and end bars, whereby the tooth can be clamped against either side of the tooth-holder or be passed through the same diagonally so as to bear against opposite sides of the end bars of the tooth-holder, substantially as set forth.

2. The combination, with the harrow-frame and a harrow-tooth, of a tooth-holder consisting of an open rectangular frame having its end bars beveled inwardly, forming inclined seats for the tooth on opposite ends of the frame, substantially as set forth.

3. The combination, with the bars of the harrow-frame provided in their adjacent portions with grooves or depressions for the reception of the teeth, of a tooth-holder secured in said grooves, and a harrow-tooth inserted between the tooth-holder and the adjacent portion of the harrow-frame, substantially as set forth.

4. The combination, with the bars of the harrow-frame, having grooves or depressions for the reception of the teeth, of a tooth-holder secured in said grooves, a harrow-tooth inserted between one side of the tooth-holder and the adjacent portion of the harrow-frame, and a filling-piece inserted between the opposite side of the tooth-holder and the adjacent portion of the harrow-frame, substantially as set forth.

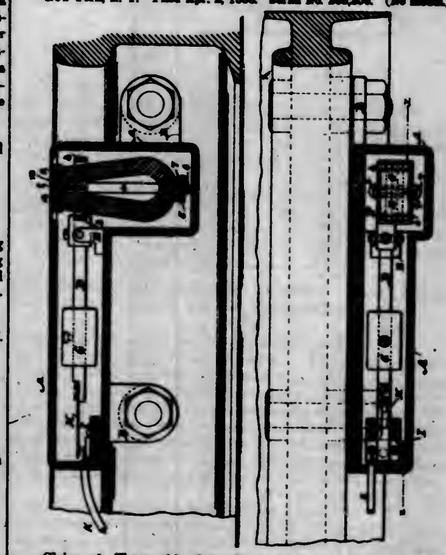
382,514. PIPE-COUPLING. JOHN DAVIS, Allegheny, Pa. Filed Nov. 3, 1887. Serial No. 254,210. (No model.)



Claim.—1. A pipe-coupling consisting of a sleeve or bell having a ring secured thereto, which is provided with a coarse internal screw-thread and a set-screw through its wall, in combination with a pipe having a corresponding coarse screw-thread on its end and provided with a fixed ring or collar, and a packing-ring adjacent thereto, substantially as described.

2. A pipe-coupling consisting of a sleeve or bell having a concave portion at its base, in combination with a ring having a convex outer surface and an internal screw-thread, a set-screw extending through the wall of the bell and bearing upon said ring, a pipe having a screw-thread on its end and provided with a fixed ring or collar and a packing-ring, substantially as described.

382,515. ELECTRIC RAILWAY-SIGNAL. COMPANY F. DU RETAIL, New York, N. Y. Filed Apr. 2, 1888. Serial No. 269,356. (No model.)



Claim.—1. The combination, with a closed case, of a lever pivoted within the case, a circuit-closing spring upon the lever, and a magnet supported by such lever and giving motion to the same in consequence of the magnetic attraction between the magnet and the iron of the passing wheels, substantially as set forth.

2. The magnet and a lever with which the magnet is connected and by which it is supported, a circuit-closer upon the lever, and a stationary circuit-closing contact, in combination with the case of non-magnetic material, having a thin plate above the magnet, so that the magnetism is free to act between the magnet and the passing wheels to give motion to the lever and circuit-closing device, substantially as set forth.

3. The combination, with the case, of a lever pivoted within the case, a circuit-closer connected with the lever, a permanent magnet, the poles of which are adjacent to the top of the case, and a frame upon the lever for receiving the magnet, substantially as set forth.

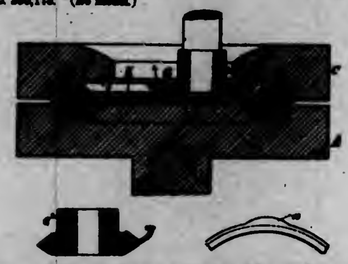
382,516. BUCKLE. GEORGE F. RUSSELMAN, Cleveland, Ohio. Filed Dec. 27, 1887. Serial No. 259,002. (No model.)



Claim.—1. The herein-described buckle, consisting of the frame, the cross-bar located between the end members of the frame, the bent tongue integral with said cross-bar, and a second cross-bar located in a plane below the first cross-bar and forming a loop, substantially as set forth.

2. The herein-described buckle, consisting of the frame, the cross-bar located between the end members of the frame and provided with the bent tongue and with perforations for permanently attaching a strap-end, and a second cross-bar located in a plane below the first cross-bar and forming a loop, substantially as set forth.

382,517. DIE FOR MAKING WATCH-CASES OR OTHER ARTICLES. FREDERICK BOARDMAN, Brooklyn, N. Y. Filed Jan. 9, 1886. Serial No. 208,173. (No model.)



Claim.—1. The combination, with the holding-shells A and C, of the ring-die D, having an interior surface corresponding to the exterior rim of the watch-case lid or bezel, in combination with the roller G, having an exterior surface corresponding to the interior of the rim, and the shield K, for holding the central portion of the lid, substantially as specified.

2. The combination, with the roller G, for forming the interior of the rim, of the die D, for forming the exterior of such rim, and the shell C, having a shoulder at 3 for the inner edge of the rim, and the inclined surface 5, with which the inclined portion 4 of the roller G comes in contact, substantially as set forth.

3. The combination, with the ring-die D, of the interchangeable rollers G G² G³, roller G, for shaping the interior of the rim of the lid or bezel, the roller G², for bending up the inner edge of the metallic ring, and the roller G³, for shaping the reflector portion of the bezel, substantially as set forth.

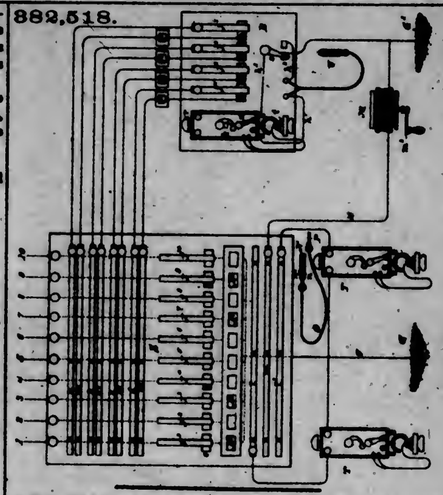
4. The combination, with the ring-die D, for the exterior of the bezel, of the backing-die M, within the bezel, and the roller G³, for shaping the interior of the reflector portion of the bezel, substantially as set forth.

5. A die having an interior shape corresponding to the exterior shape of the rim of the watch-case bezel, in combination with a roller for forcing the metal ring into such die, a roller for bending up the inner edge of the sheet metal and giving to the same the shape of the finished article, and simultaneously forming the groove for the watch-glass, substantially as specified.

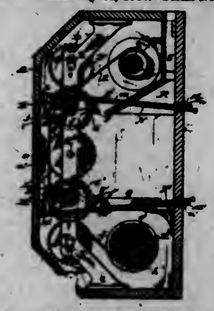
382,518. TELEPHONE-EXCHANGE. ROBERT H. RUSSELL, Boston, Mass., assignor to the Western Electric Company, Chicago, Ill. Filed Mar. 7, 1884. Serial No. 123,261. (No model.)

Claim.—The combination, substantially as hereinbefore set forth, of a series of subscribers' lines converging to a common switch-board, switch apparatus adapted for temporarily connecting any two of said lines, switching and calling mechanism mounted on an operator's table and in a loop connected with said switching mechanism, and indicators to notify the table-operator of connections made on the switch-board with the loop-lines on the table.

382,518.



382,519. STATION AND STREET INDICATOR. JOHN L. FAUS, Milwaukee, Wis. Filed July 11, 1887. Serial No. 243,946. (No model.)



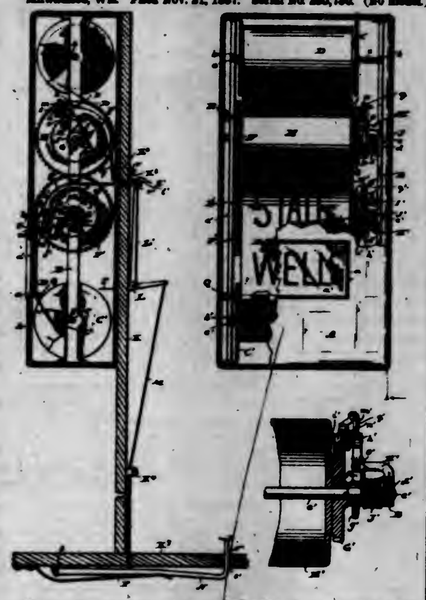
Claim.—1. In a station and street indicator, the combination of a name-band, the opposite ends of which are secured to spring-controlled drums, a pair of friction-rollers between which the name-band passes arranged at an intermediate point between the said drums, and operating-levers and actuating mechanism, substantially as and for the purpose set forth.

2. In a station and street indicator, the combination of a name-band, the opposite ends of which are secured to spring-controlled drums, a pair of friction-rollers at each end of the device between which the name-band passes, and operating-levers and actuating mechanism, whereby the device may be operated for a return trip without adjustment as soon as the initial trip is finished, substantially as set forth.

3. In a station and street indicator, the combination of a suitable casing, interior supporting-brackets, two pairs of friction-rollers, each pair supported by said brackets at opposite ends thereof, gear-wheels on the shafts of said rollers with an intermediate idler communicating therewith, ratchet-wheels and spring-controlled bell-cranks on the shafts of the rollers which are adjacent to the idler, pawls pivotally connected to the bell-cranks, operating-levers connected to said bell-cranks, stops projecting from the casing and from the bracket adjacent thereto, spring-controlled drums located back of each pair of friction-rollers, and a name-band extending from one drum to the other and passing between the adjacent surfaces of each pair of friction-rollers, substantially as set forth.

4. In a station and street indicator, the combination of the name-band, two pairs of friction-rollers between which it passes, a train of gears and a bell-crank, and pawl-and-ratchet mechanism connected to each pair of friction-rollers, an operating-lever connected to each bell-crank, and a wire or cord attached to the free end of each pawl, whereby when one of the levers is pulled to operate the pawl connected therewith the wire or cord attached to the other pawl may be pulled to disengage that pawl and prevent its operation, substantially as set forth.

382,520. STATION AND STREET INDICATOR. JOHN L. PATE, Milwaukee, Wis. Filed Nov. 21, 1887. Serial No. 255,730. (No model.)



Claim.—In a station and street indicator, the combination of a suitable casing, interior supporting-brackets, spring-controlled winding-drums supported by said brackets at opposite ends thereof, a pair of friction-rollers, also supported by said brackets between said drums, gear-wheels on the shafts of said friction-rollers in mesh with each other, ratchet-wheels fast with the heads of the friction-rollers, loose sleeves on the shafts of the friction-rollers having stop-arms rigid therewith, said stop-arms terminating in curved arms projecting in opposite directions, one of each of said curved arms carrying a pawl with an arm rising therefrom and the other curved arms serving as cord-guides, cords attached to the said pawl-arms and connected to the actuating mechanism, springs controlling the stop-arms and pawls, adjustable stops on each side of the stop-arms, and a same-band extending from one winding-drum to the other and passing between the adjacent surfaces of the intermediate friction-rollers, substantially as and for the purpose set forth.

382,521. NEWSPAPER-SELLING APPARATUS. CHARLES GALLARD, Lyons, France. Filed Sept. 6, 1887. Serial No. 248,978. (No model.) Patented in France Dec. 24, 1886, No. 180,470, and in England Aug. 6, 1887, No. 10,811.

Claim.—1. In an apparatus for the delivery of newspapers and the like upon the insertion of a coin, the combination, with a case, of a horizontally-guided oscillating needle-carrying bar, L, with the actuating swinging lever O, a rod, N, connecting the needle-bar and the lever, and the knob Z, connected with the lever for swinging the latter forward, substantially as described.

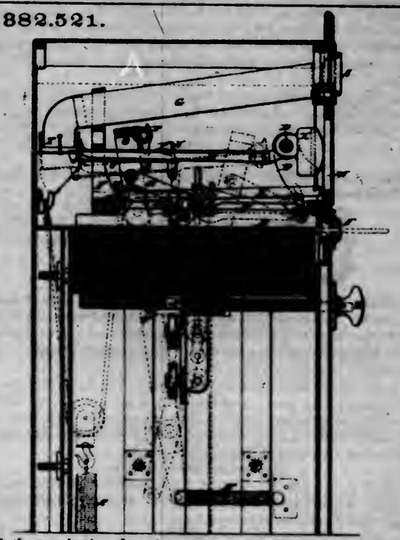
2. The combination, with a case having a coin-receiving orifice, S, and paper-delivery orifice, S', of a horizontally-guided oscillating needle-carrying bar, L, the swinging lever O, the rod N, connecting the lever and needle-bar, a dog for holding the lever retracted until a coin is inserted, and a knob, Z, connected with the lever to swing it forward and advance the needle-bar, substantially as described.

3. The combination, with a case having in its front the coin-receiving orifice S and the delivery-orifice S', of a channel, G, a cup, T, under the end of the channel, an oscillating lever, E, carrying the cup and having a stop, P', and lever V, the lever U, carrying the movable bottom of the cup, the stirrup-lever O, having a pivoted dog, P, a horizontally-guided needle-bar, L, connected with the stirrup-lever, and the knob Z, connected with the latter, substantially as described.

4. In an apparatus for the delivery of newspapers and the like by the insertion of a coin, the combination of the oscillating lever E, carrying a cup, T, having a movable bottom, the stop P' and lever V on the oscillating lever, the lever O, having the dog P, and the needle-bar L, substantially as described.

5. The combination, with the oscillating lever E, cup T, channel G, the case having the coin-receiving orifice S, the obturator at said orifice, and the grate R, of the pivoted arm K, connected with said obturator and having a rod, M, projecting down through the grate to bear on the newspapers or the like, substantially as described.

382.521.



382,522. SWEEP. JAMES T. GOSS, Point Peter, Ga. Filed Aug. 20, 1888. Renewed Dec. 27, 1887. Serial No. 259,142. (No model.)

Claim.—In combination with a plow-stock, a cultivating implement having a turning-blade, 2, adapted to enter the soil, a narrow straight sweep-blade, 1, projecting on the side of the stock opposite to the turning-blade, and arranged to scrape the surface of the ground, and the strengthening-piece 3, carried by one of the blades and bearing against the stock, substantially as described.

382,523. WHEELBARROW. WILLIAM H. C. GOSS, Sidney, Ohio, assignor of one-half to Wilbur E. Kilbury, same place. Filed Mar. 16, 1888. Serial No. 267,203. (No model.)



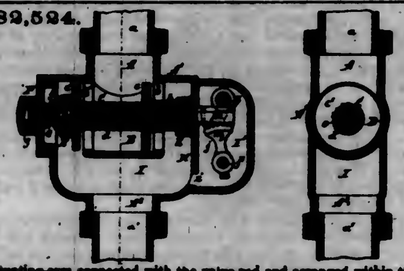
Claim.—1. A seamless metallic wheelbarrow-tray whose sides and ends meet in curves and gradually curve from the top downward into the bottom, substantially as described, and for the purposes stated.

2. A seamless raw-edge wheelbarrow-tray whose sides and ends meet in curves and gradually curve from the top downward into the bottom, the entire tray being beat or stamped up from a single metal blank, substantially as described.

382,524. VALVE. ALDEN H. GRAHAM, Glenwood, Mass., assignor to the Voltar & Fulkerson Manufacturing Company, Buffalo, N. Y. Filed May 25, 1887. Serial No. 239,371. (No model.)

Claim.—1. The combination, with the valve-casing provided with an inlet-passage, A, and two valve-seats, *b b'*, on opposite sides of the inlet-passage, of a valve, C, composed of two disks, *c c'*, and a hollow stem, *d*, and having a spherical socket, *f*, a valve-rod, *e*, passing through the hollow stem and provided with a spherical knuckle, *p*, and an actuating-arm connected with the valve-rod and arranged within the inclosure of the valve-casing, substantially as set forth.

382,524.



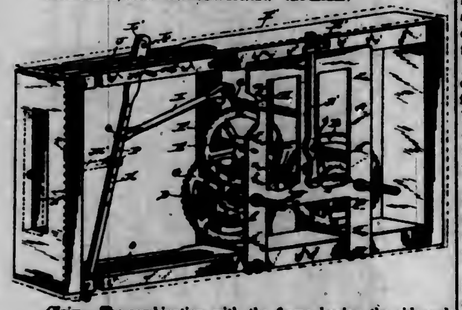
2. The combination, with the valve-casing having one of its heads provided with a socket, *g*, of the valve C, provided with a hollow stem, *d*, an actuating-rod, *e*, arranged within the hollow valve-stem and provided with a spherical knuckle, *p*, and a head, E, secured to the end of the valve and provided with a guide-pin, *c*, which enters the socket *g*, the head E and the adjacent portion of the valve being constructed with a spherical socket in which the knuckle of the actuating-rod is seated, substantially as set forth.

3. The combination, with the valve C, provided with a hollow stem, *d*, and guide-pin *c*, of the casing A', provided with sockets *g h'*, in which the valve is guided, an actuating-rod, *e*, arranged in the stem *d*, and an actuating-arm, *j*, substantially as set forth.

4. The combination, with the valve C, provided with the actuating-rod *e* and the inclosing-casing A', of the actuating-arm *j*, arranged in said casing and provided with a gear-segment, *m*, and a rack-bar, *n*, secured to the rod *e*, substantially as set forth.

5. The combination, with the casing A', the valve C, and its guide, of the actuating-rod *e*, the actuating-arm *j*, provided with a gear-segment, *m*, the rack-bar *n*, secured to the rod *e*, and the guide-roller *g*, bearing against said rack-bar, substantially as set forth.

382,525. MECHANICAL MOTOR. SAMUEL A. HAINES, Cuero, Tex. Filed Oct. 20, 1887. Serial No. 253,737. (No model.)



Claim.—The combination, with the frame having the side and end slots, of the two drive-wheels and their springs, the movable spring-actuated shaft having the central pinion, the pivoted lever, the catch for the same, the crank-shaft formed with the central crank and having the pinion, the connecting-pitman, the pivoted adjustable fan-rod formed with the series of apertures near its upper end and along its central part, the adjustable weight, and the connecting-rod, all substantially as and for the purpose herein set forth.

382,526. PIECE-MACHINE. ALEXANDER V. HARPER, Tower Hill, Ill. Filed Jan. 23, 1888. Serial No. 261,267. (No model.)

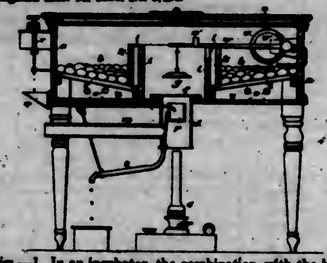


Claim.—1. In fence-machines, in combination, the standard *a*, the drive-wheel *c*, having crank-handle *e*, the sprocket-chain *d*, and the twister-wheels *b*, having each a frame, *f f'*, and adjustable hooks A, as and for the purpose set forth.

2. In fence-machines, twister-wheel A having frame *f f'*, and adjustable hooks A, as and for the purpose set forth.

3. In twister-wheels for fence-machines, in combination, a sprocket-wheel, *b*, having slot *b'* and central opening, *b''*, a frame, *f f'*, secured to the face of the wheel, and adjustable hooks A on part *f'* of the frame, as and for the purpose set forth.

382,527. INCUBATOR. WALTER H. HEARN, Rodsworth, England. Filed Feb. 7, 1887. Serial No. 226,703. (No model.) Patented in England Mar. 11, 1886, No. 3,626.



Claim.—1. In an incubator, the combination, with the hatching-chamber, of a hot-air-inlet opening communicating therewith, a valve for controlling the admission of heated air to the hatching-chamber, and a thermostat in the hatching-chamber connected to and operating said valve, substantially as set forth, whereby the admission of heated air is automatically regulated and an equable temperature in the hatching-chamber is maintained.

2. In an incubator, the combination, with the hatching-chamber, of a hot-air chamber communicating therewith through an opening, a valve for controlling said opening, and a thermostat in the hatching-chamber connected to and operating said valve, substantially as set forth.

3. In an incubator, the combination, with the hatching-chamber, of a hot-air chamber beneath it, an opening in the bottom of the hatching-chamber for admitting heated air from said hot-air chamber, a flue leading from said opening to the upper part of the hatching-chamber, a valve for controlling said opening, and a thermostat in the hatching-chamber connected to and operating said valve, substantially as set forth.

4. In an incubator, the combination, with the hatching-chamber constructed with a hot-air-inlet opening in its bottom, a flue extending from said opening to the upper part of the chamber, and a partition between said flue and the egg-holder forming an intervening air-space, of a valve for controlling said opening and a thermostat in the hatching-chamber connected to and operating said valve, substantially as set forth.

5. In an incubator, the combination, with the hatching-chamber having an inlet-opening, of a hot-air chamber communicating with said opening, a water-vessel in said hot-air chamber, whereby its vapor moistens the heated air at its entry into the hatching-chamber, and a valve for controlling said opening, substantially as set forth.

6. In an incubator, the combination, with the hatching-chamber having an inlet-opening, of a hot-air chamber communicating with said opening, a water-vessel in said hot-air chamber, whereby its vapor moistens the hot air at its entry into the hatching-chamber, a water-supply for replenishing the water in said vessel, an overflow-tube for removing any excess of water from said vessel, a valve for controlling the passage of heated air through said opening, and a thermostat connected to and operating said valve, substantially as set forth.

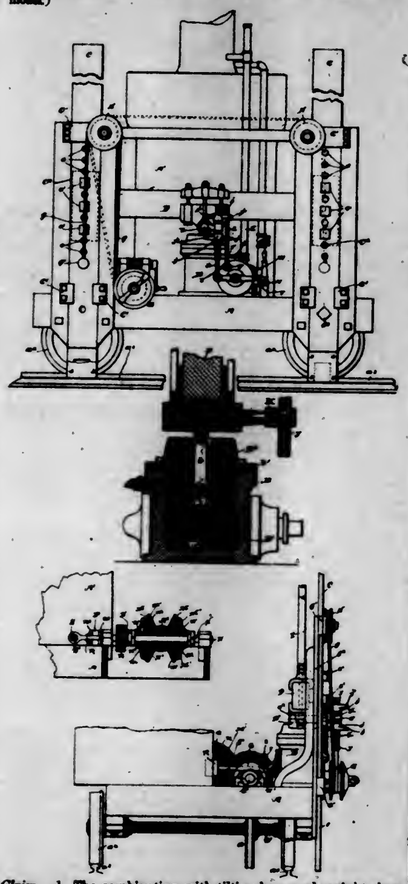
7. In an incubator, the combination, with the hatching-chamber having an inlet-opening, of a hot-air chamber communicating with said opening, an escape-flue for conducting away the excess of heated air or gases, a valve for controlling the admission of heated air through said opening, and a thermostat in the hatching-chamber connected to and operating said valve, substantially as set forth.

8. In an incubator, the combination, with the hatching-chamber having an inlet-opening, of a hot-air chamber communicating therewith, a valve for controlling said opening, a thermostat in the hatching-chamber connected to and operating said valve, a radiator-chamber for warming the air in said hot-air chamber, an escape-flue for conducting away the heated gases from said radiating-chamber, and a lamp or equivalent source of heat for heating said radiating-chamber, substantially as set forth.

9. In an incubator, the combination, with the hatching-chamber having an inlet-opening, of a hot-air chamber communicating therewith, a valve for controlling said opening, a balance-lever, to one end of which said valve is connected, and a thermostat within the hatching-chamber connected to said lever and adapted to vibrate it as the temperature varies, substantially as set forth.

10. In an incubator, the combination, with the hatching-chamber having an inlet-opening, of a hot-air chamber communicating therewith, a valve for controlling said opening, a balance-lever to one end of which said valve is connected, a thermostat within the hatching-chamber connected to said lever and adapted to vibrate it as the temperature varies, and a counter-weight adjustable along said lever in order to regulate its initial position, and thereby to determine the normal temperature within the hatching-chamber, substantially as set forth.

382,528. STONE-CHANNELING MACHINE. JOSEPHUS F. HALLOWAY, New York, N. Y. Filed Sept. 21, 1887. Serial No. 250,212. (No model.)



Claim.—1. The combination, with tilting lever and upright channeling-bars connected with the respective ends of the lever, of trunk-engine for operating the lever and channeling-bars, said engine being connected with the lever between the channeling-bars, and suitable means for holding stationary one channeling-bar while operating the other channeling-bar, substantially as set forth.

2. The combination, with tilting lever and channeling-bars connected with the respective ends of the lever, of wrists connected with the respective channeling-bars for attaching to the lever, said wrist being adjustable lengthwise of the channeling-bars, and a steam-cylinder for operating the lever, substantially as set forth.

3. The combination, with channeling-bars and trunk-engine located between the bars for operating the latter, of tilting lever, the latter being connected at the ends thereof with the respective channeling-bars and connected at the central portion of the lever with the engine for operating the same, and suitable means, substantially as indicated, for fastening the one channeling-bar to furnish a fulcrum for the lever in operating the other channeling-bar, substantially as set forth.

4. The combination, with upright channeling-bars, tilting lever, pivotally attached to the bars, a trunk-engine located midway of the bars for operating the device, of a series of holes in each channeling-bar made at equal intervals, and blocks with securing-bolts made to fit the holes in the channeling-bars to render the blocks adjustable lengthwise of the channeling-bars, said blocks having wrists attached for fastening to the tilting lever, substantially as set forth.

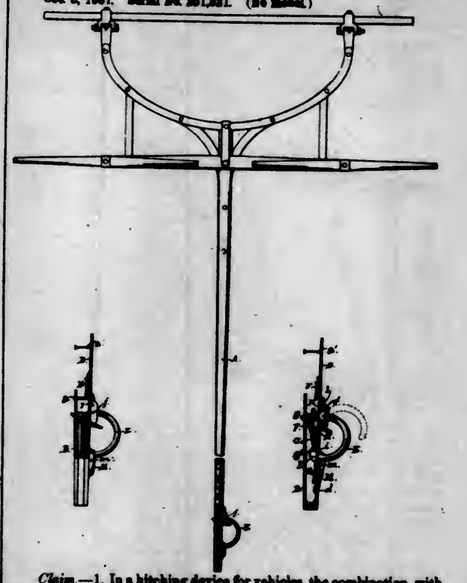
5. The combination, with steam-cylinder of the trunk variety, and a steam-space above the piston-head, of a steam-pipe and hand-valve for admitting steam above the piston-head to cushion the latter on its upstroke, the parts being arranged substantially as indicated, having no exhaust above the piston-head.

6. The combination, with steam-cylinder, channeling-bars, and tilting lever, substantially as indicated, a sleeve connected with the lever, a valve-rod made to slide through the sleeve, said rod having tappets mounted thereon, respectively above and below the sleeve, of a locking-bar for the tappets, said locking-bar being pivoted at the one end and provided with friction-disks at the pivotal bearings, substantially as set forth.

7. The combination, with bevel twin gears and driving-pinion simultaneously engaging both gears, the system of gearing having shrouding to hold the twin gears to the pitch-line as against pressure from without, of shaft, sleeve journaled on the shaft, the twin gears being journaled on the sleeve, and collars mounted on the sleeve outside the twin gears to hold the latter from moving apart, substantially as set forth.

8. The combination, with gearing, shaft, sleeve, and collar, substantially as indicated, of friction-clutches mounted on the shaft and operated, respectively, by the twin gears, and mechanism, substantially as indicated, for moving the shaft endwise to operate the one clutch or the other, substantially as set forth.

382,529. POLE-TIP. THOMAS J. HOUGHTON, Lancaster, Pa. Filed Oct. 5, 1887. Serial No. 251,321. (No model.)



Claim.—1. In a hitching device for vehicles, the combination, with the pole-tip divided into sections, of the clasp E, spring G, triggers L and M, and springs N and O, constructed to operate substantially as described.

2. The combination, in a pole-tip, with the clasp, and a spring connected with and acting to close the same, of two triggers, one engaging with the clasp to keep it open and the other to keep it closed, and springs to force the triggers into such engagement, for the purpose specified.

382,530. LOCKING MECHANISM FOR RAILWAY-SWITCHES. CHARLES H. JOHNSON and CHARLES ALLEN, Chillicothe, Iowa. Filed Dec. 5, 1887. Serial No. 256,603. (No model.)

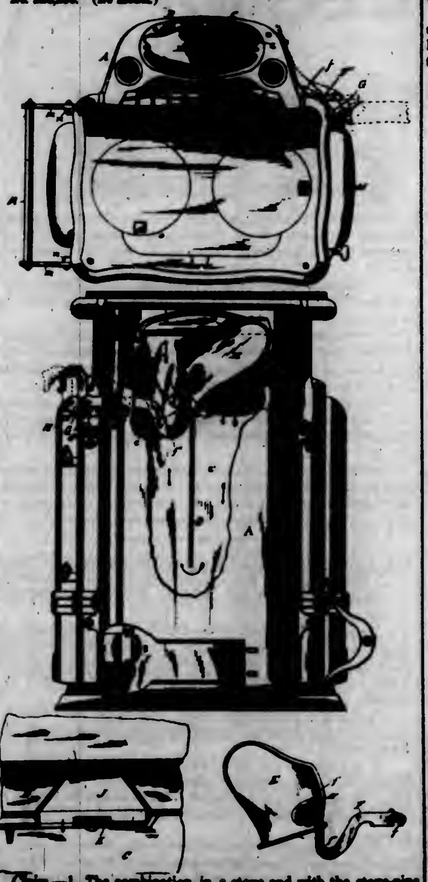
Claim.—1. In locks for railroad-switches, the combination, with the rock-shaft bearing adjustable dogs designed to turn up alongside the switch-rails and carrying at one end a crank, of a toggle-lever movably connected to said crank, a bell-crank lever movably connected to said toggle-lever, and a curved arm movably connected to said bell-crank lever, the said arm being operated by an upright shaft carrying a hand-lever designed to be held to its position by a bolt or pin, substantially as described.

382,530.



2. In locks for railroad-switches, the combination, with the rock-shaft having adjustable dogs thereon and carrying at one end a crank, of a toggle-lever movably connected to said crank, a bell-crank lever, and a curved arm movably and adjustably connected to said bell-crank lever, the upright shaft having a hand-lever moving in arc-shaped guides, and a pin or bolt passing through openings in said guides for holding the parts to their positions when operated in substantially the manner shown and described.

382,531. STOVE. WILLIAM J. KERR, Detroit, Mich., assignor to the Michigan Stove Company, same place. Filed Feb. 13, 1887. Serial No. 228,209. (No model.)



Claim.—1. The combination, in a stove and with the stove-pipe opening, the casing, and the fire-pot thereof, of a vertical air-flue, a divided smoke-flue, substantially parallel therewith, both air and smoke flues being between said fire-pot and casing, a direct passage for the products of combustion to the plate having an opening for the stove-pipe, a strip dividing the smoke-flue, and a damper at the upper end of said strip to cut off the products of combustion from the direct passage, substantially as described.

2. The combination, in a stove having an opening for the stove-pipe, a casing, and a fire-pot, of a vertical air-flue, a divided smoke-flue, substantially parallel therewith, and both air and smoke flues being between said fire-pot and casing, a direct passage for the products of combustion to the opening for the stove-pipe, a strip dividing the smoke-flue, and a curved damper at the upper end of said strip to cut off the products of combustion from the direct passage, substantially as described.

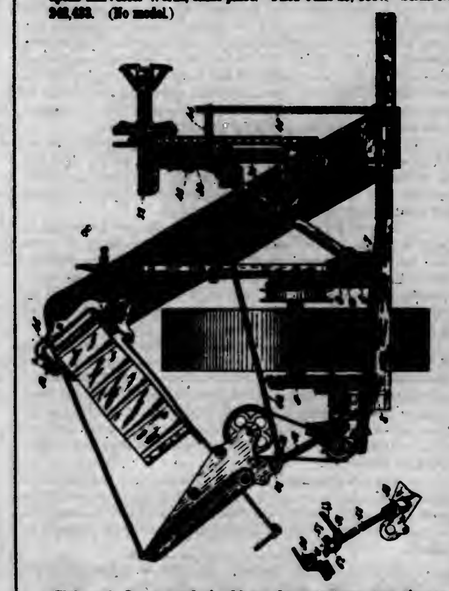
3. The combination, in a stove and with the fire-pot and casing thereof, of a divided smoke-flue, a damper at the upper end thereof, an air-flue of substantially the same width as the stove between the fire-pot and smoke-flue, and opening through the top plate of the stove, substantially as described.

4. The combination, in a stove and with the casing, the fire-pot, the ash-pit beneath the fire-pot, the air-flue behind the same, and the smoke-flue behind the air-flue, of the dust-flue passing through the air-flue and connecting the ash-pit and the space around the fire-pot with the smoke-flue, substantially as described.

5. The combination, in a stove and with the fire-pot, casing, and smoke-flue thereof, of a vertical air-flue running from the top to the bottom of the stove between the fire-pot and smoke-flue, and having an opening through it, mostly on one side of the stove, to allow of the passage of the products of combustion from the fire-pot to the smoke-flue, substantially as described.

6. The combination, in a stove having an ash-pit and air and smoke flues, of two plates forming the walls of the air-flue, and a box held between said plates and forming a dust and check flue, substantially as described.

382,532. SELF-RIDING HARVESTER. SAMUEL V. KENNEDY and CHARLES A. ANDERSON, Minneapolis, Minn., assignors to the Minneapolis Harvester Works, same place. Filed June 25, 1887. Serial No. 242,622. (No model.)



Claim.—1. In a trussed wheel-beam for grain-harvesters, the combination of the following elements: a main supporting-beam, an adjustable straining or truss rod above the same, an adjustable segment-rack for carrying the main frame upon the main wheel and forming a strut for the truss-rod, bolsters at the front and rear ends of the said main beam to connect the same with the front and rear axle, seats in each of the said bolsters for the truss-rods, and adjusting-nuts applied to the ends of the truss-rods which project through the said bolsters respectively.

2. In a trussed wheel-beam for grain-harvesters, the combination of a main supporting-beam, a straining or truss rod above the same, a

segment-rack adjustably mounted upon the said main beam and rigidly secured at its upper end to the truss-rod, and means for adjusting the truss-rod endwise relatively to the ends of the said main beam, for the purpose of securing the upper end of the segment-rack in its proper position.

3. In a trussed wheel-beam wherein a segment-rack which supports the main frame upon the main wheel is used as a strut and is adjustable at its upper end by means of an endwise-adjustable truss-rod, an adjusting-rod for connecting the lower part of the said segment-rack to the main gear-frame, whereby the latter is held in proper relation to the segment-rack, and hence in proper relation to the main spur-wheel mounted upon the axle of the main wheel.

4. A pivotally-adjustable segment-rack for grain-harvesters and an adjusting-rod for the same, the upper part of the rack being provided with a bearing and a clamp for engaging the adjusting-rod, by which the upper end of the segment-rack, when it has been properly adjusted, is rigidly held in position.

5. In a reel-supporting device for harvesters, the gear-frame 35, adapted to be passed over the pinion 36 and bolted to the elevator-frame, the disk 39, adapted to be held in place by the gear-frame 35, and the pinion 36 for driving the reel-gear affixed to the shaft 37, inserted through the hollow hub 38 of the disk 39.

6. In a reel-supporting device for harvesters, the gear-frame 35, provided with the recesses 42, and adapted to be passed over the pinion 36 and bolted to the elevator-frame, in combination with the disk 39, having the projections 41, adapted to fit within the recesses 42, and to thereby hold the disk in place.

7. In a reel for harvesters, the combination, with the gear-frame 35, of the reel-post 34, the quadrant-rack 33, and the divider 45, having its upper part rigidly connected with the horizontal lug or bar 44, cast upon or otherwise affixed to the said quadrant-rack.

8. In a reel for harvesters, an adjusting and locking device consisting of the reel-supporting arm 21, the rib 24‡, cast on the side thereof, provided with the slot 24, the perforated boss 25, the transversely-perforated and longitudinally-grooved brace 30, and the adjusting latch-arm 26, pivoted upon the horizontal reel-supporting arm and adapted to engage the perforations in the brace 30.

9. In a butt-adjuster for harvesters, the shaft of the roller 48, having affixed to its lower end the pinion 55, and the disk 51, provided with the radially-projecting lip 53, and secured to the lower side member, c', of the frame 47, in combination with the supporting-bracket 46, having the opening 52 and notch 54, through which the pinion 55 and lip 53 may pass, and within which the disk 51 has its seat, whereby the adjuster-frame may be removed from or replaced in its supporting-bracket, as and for the purpose set forth.

10. In a butt-adjuster for harvesters, the shaft of the roller 48, having secured to its lower end a pinion, 55, and the disk 51, the frame 47, to which the disk 51 is fastened, and the supporting-bracket 46, provided with the opening 52, through which the pinion 55 may pass and within which the disk 51 has its seat.

11. In a self-binding harvester, a binder-standard having at its upper end a seat for the binder-supporting pipe 62, and at its lower end a lip, 59, in combination with a part of the main frame provided with a hole, 60, having a groove, 61, as shown, to admit the lip 59, whereby, when the standard is inserted in its seat in the hole 60 and turned to its proper position to receive the supporting-pipe 62, it will be firmly held in place, as described.

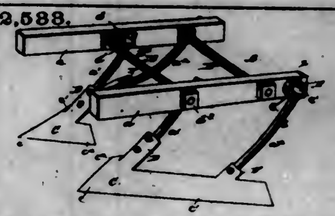
12. In a raising and lowering device for harvesters, the windlass 65, having the bearing 64 in the main frame, and extending thence grainward in a direction substantially at a right angle to the plane of inclination of the elevator-frame, whereon the upper end of the windlass-shaft has its bearing, and the operating-lever 67, mounted on the upper end of the said windlass-shaft, whereby the plane of movement of the operating-lever is substantially parallel with the plane of inclination of the elevator.

13. In a grain-harvester, the shoe 46, having a rearward extension provided with the lip 70, and the rear sill, 69, in combination with the plank 71, provided with the transverse grooves 72 and 73, adapted to fit, respectively, the lip 70, and the sill 69, as and for the purpose described.

382,533. COTTON-SWEEP. THADDEUS W. KNIGHT, Kyle, Tex. Filed Feb. 9, 1888. Serial No. 263,491. (No model.)

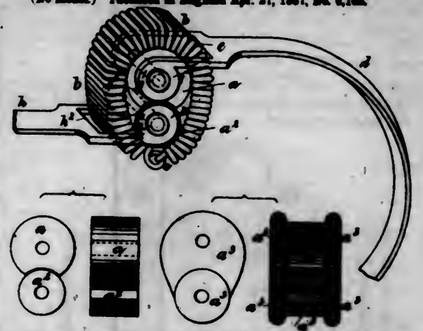
Claim.—1. The combination, with the frame A, having the longitudinal beams a a, and with the detachable shanks a' a^2, of the blades or points C, each composed of the outer long arm, c', and the inner short arm, c^2, making the front angle, c, of about forty-five degrees with each other, and having their lower front edges sharpened, as and for the purpose specified.

2. In a cotton or corn sweep, the blades or points C, composed of the outer long arm, c', and the inner short arm, c^2, the said arms meeting at the front point or angle, c, with the long arm running rearward and outward therefrom, and the short arm running rearward and inward from said point or angle, as set forth.



3. In a cotton or corn sweep, the blades or points C, each composed of the outer or long arm, c', and the inner or short arm, c^2, said arms meeting each other at the point or angle C, the extension D, extending upward from the angle or point, the extension F on the long arm, the frame, and the standards a' a^2, connected to the frame and arranged on opposite sides thereof, said standards being connected, respectively, to the extensions D F of the blades, as set forth.

382,534. SPRING-SHACKLE. JAMES A. LANGLOIS, Birmingham, County of Warwick, England. Filed Jan. 14, 1888. Serial No. 260,760. (No model.) Patented in England Apr. 27, 1887, No. 6,162.



Claim.—1. A shackle composed of a core of elastic material peripherally surrounded by an elastic band or hook consisting of a flattened coil of spring-wire united at its ends, substantially as described.

2. A shackle composed of an inner elastic core consisting of two cylindrical blocks of elastic material and a surrounding elastic band of flattened coiled spring-wire, substantially as described.

3. A shackle composed of an inner elastic core consisting of two cylindrical blocks of elastic material, one of which is provided with a longitudinal groove, as shown and described, and a surrounding elastic band of flattened coiled spring-wire, substantially as set forth.

4. A shackle composed of an inner core consisting of two cylindrical blocks of elastic material, a a^2, having end flanges, a^3, and a surrounding band of flattened coiled spring-wire, substantially as described.

5. The combination, with the elastic blocks a a^2, and the hoop or band b, composed of flattened coiled spring-wire united at its ends, of the forked spring d and forked rod A, connected, respectively, with blocks a a^2 by means of bolts g k, substantially as described.

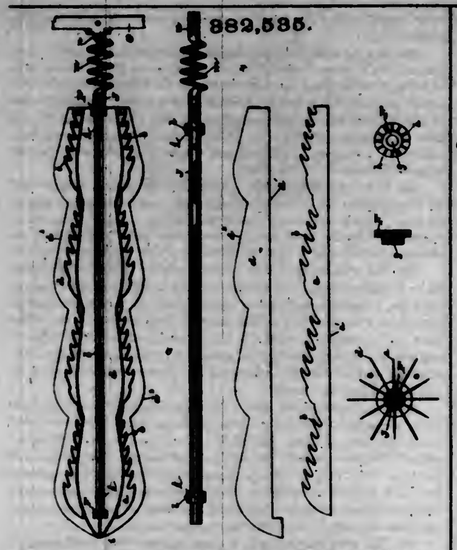
382,535. PICKER-STEM FOR COTTON-HARVESTERS. WILLIAM L. LANGLEY, Newark, N. J., assignor to The Langley Cotton Harvester Company of New York City. Filed Dec. 20, 1886. Serial No. 222,116. (No model.)

Claim.—1. A cotton-picker stem having its body portion provided with longitudinal toothed plates with undulatory outer edges, said plates having teeth only on those parts of the undulatory edges which incline inward and toward the butt of the stem, substantially as described.

2. A cotton-picker stem having longitudinal tooth-plates and longitudinal guard-plates, the latter provided with undulatory edges, for the purpose set forth.

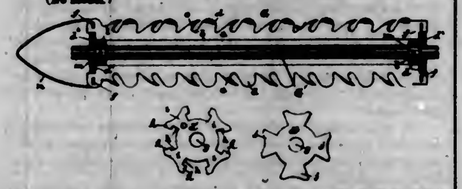
3. A cotton-picker stem having longitudinal tooth-plates and longitudinal guard-plates, the latter provided with undulatory outer edges, the said plates being arranged in rows on said stem so as to form longitudinal spaces between the tooth-plates and guard-plates, for the purpose set forth.

4. A cotton-picker stem consisting of the perforated end a, with holder O connected thereto, the body portion of the stem having heads F, with radial slots A, the longitudinal tooth-plates and guard-plates, and an intermediate spring portion, said perforated end, body portion,



and spring being integral, the whole constructed and arranged to operate as shown and described.

382,536. PICKER-STEM FOR COTTON-HARVESTERS. WILLIAM L. LANGLEY, Newark, N. J., assignor to The Langley Cotton Harvester Company of New York City. Filed May 19, 1887. Serial No. 238,782. (No model.)



Claim.—1. A cotton-picker stem having longitudinal plates which are provided along their outer edges with teeth and guards located alternately, as set forth.

2. A cotton-picker stem having longitudinal plates c secured to end plates and arranged to form between each two longitudinal plates a longitudinal slot or open space, e, and said plates provided with teeth c and guards d, located alternately along the same edge, as set forth.

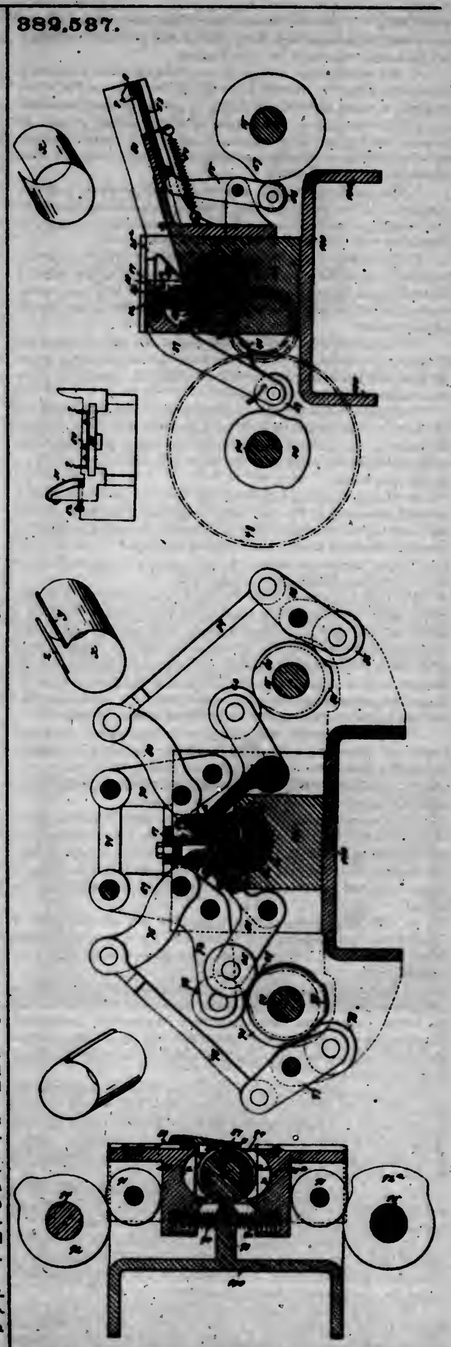
3. A cotton-picker stem having longitudinal plates provided on one edge with alternating teeth and guards, the said teeth pointing outwardly toward the circumference of the stem and inclined to the radius thereof and at the same time inclined rearwardly.

4. A cotton-picker stem having longitudinal plates provided on one edge with teeth and guards, the said teeth inclining sidewise and differently from the guards, whereby the teeth form a longitudinal row lying in one plane and the guards a row lying in another plane.

5. A cotton-picker stem having longitudinal plates provided with teeth and guards, and having in their ends slots f, and secured together at said ends by two end plates, each having a central hole, g, one of said plates, d, being provided with radial tongs i, having laterally-projecting ears k, and the other plate, d', being provided with tongs j, having radial edges, each laterally-projecting ear k on one end plate occupying the end slot, f, of a longitudinal plate, and a radial tongs, j, of the other plate lying between two of the longitudinal plates, and thereby confining them on the said laterally-projecting ears.

382,537. APPARATUS FOR FORMING SHEET-METAL CAN-BODIES. FRANK H. LEAVEY, Brooklyn, N. Y., assignor to Edwin Norton and Oliver W. Norton, Chicago, Ill. Filed July 6, 1887. Serial No. 243,023. (No model.)

Claim.—1. In a can-body-forming machine, a horn formed with a series of longitudinally-arranged recesses in its upper surface and divided longitudinally into four sections, of which the third section is of less diameter than the other sections.



2. In a can-body-forming machine, a horn divided longitudinally into four sections, A, B, C, and D, the sections A and B being of the same diameter and of a greater diameter than the other sections, the section C being of less diameter than any of the sections, and the rear

tion D being of a diameter between that of the section C and the sections A and B, the said horn being formed with a series of longitudinally-arranged recesses in its upper surface.

3. The combination, with a horn, of feeding-rollers arranged in connection therewith, a means for revolving the rollers, and a former arranged in connection with the rollers, as and for the purpose stated.

4. The combination, with a horn, of feeding-rollers, a means for revolving the rollers, a former arranged in connection with the rollers, and a lip-beading mechanism operating in connection with the horn, as and for the purpose stated.

5. The combination, with a horn, of feeding-rollers, a former mounted in advance of the rollers, a means for revolving the rollers, a lip-beading mechanism, and a lip-locking mechanism arranged in connection with the horn, as and for the purpose stated.

6. The combination, with a horn, of feeding-rollers, a former mounted in connection therewith, a means for revolving the rollers, a lip-beading mechanism, a lip-locking mechanism, and a lip-compressing mechanism, all arranged in connection with the horn, as and for the purpose stated.

7. The combination, with a stepped horn, of a pair of rollers, one of which is journaled in a recess in the larger part of the horn, a means for revolving the rollers, and a former mounted in connection therewith, as and for the purpose stated.

8. The combination, with a stepped horn, of a pair of rollers, one of which is journaled in a recess in the larger part of the horn, a means for revolving the rollers, a former, and a lip-beading mechanism operating after the rollers and upon the larger part of the horn, as and for the purpose stated.

9. The combination, with a stepped horn, of a pair of rollers, one of which is journaled in a recess in the larger part of the horn, a means for revolving the rollers, a former, a lip-beading mechanism operating after the rollers and in connection with the larger part of the horn, and a lip-locking mechanism mounted in connection with the smallest portion of the horn, substantially as described.

10. The combination, with a stepped horn, of a pair of rollers, one of which is journaled in a recess in the larger part of the horn, a means for revolving the rollers, a former, a lip-beading mechanism operating after the rollers and in connection with the largest portion of the horn, a lip-locking mechanism arranged in connection with the smallest section of the horn, and a lip-compressing mechanism arranged in advance of the locking mechanism and in connection with the intermediate section of the horn, substantially as described.

11. The combination, with a horn, of feeding-rollers arranged in connection therewith, a means for revolving the rollers, a former, a lip-beading mechanism operating after the feeding-rollers and former, and a means, substantially as described, for advancing the partially-formed can-bodies, as and for the purpose stated.

12. The combination, with a horn, of a pair of rollers, one of which is mounted in a recess formed in the horn, intermeshing gears carried by the roller-shafts, a driving-shaft, a train of accelerating gearing arranged between said shaft and one of the roller-shafts, and a former mounted in connection with the rollers, substantially as described.

13. The combination, with a horn, of a pair of rollers, one of which is mounted in a recess formed in the horn, a roller-driving mechanism, a former, and a blank-feeding mechanism, substantially as described.

14. The combination, with a horn, of a pair of rollers, one of which is mounted in a recess formed in the horn, a means for driving the rollers, a former and stripping-plate, a blank-feeding mechanism, an adjustable guide arranged in connection with the feeding mechanism, and a spring-guide arranged in advance of the rollers, substantially as described.

15. The combination, with a horn, of a block partially inclosing one section of the horn, an annular space being left between the horn and the block, a shoulder defining the annular space, a roller mounted in the recess formed in the horn, a second roller mounted in connection with the first roller, and a means for revolving the rollers, as and for the purpose specified.

16. In a can-body-forming machine, the combination, with a horn one end of which is held within a chambered block, of a plate connected to the frame and to the horn, substantially as described.

17. In a can-body-forming machine, the combination, with a horn formed with a longitudinal slot, 3, and supported at one end within a chambered block, of a plate, 16, connected to the frame and secured within the slot 3, substantially as described.

18. In a can-body-forming machine, the combination, with a horn formed with longitudinal side grooves, of slides mounted within said grooves, tongues pivotally mounted within recesses formed in the slides, springs arranged in connection with the tongues, and a slide-reciprocating mechanism, substantially as described.

19. In a can-body-forming machine, the combination, with a horn formed with a lip, *c*, of a presser-arm mounted on a movable pivot, a lever formed with a lip, *f*, and an operating mechanism, substantially as described.

20. In a can-body-forming machine, the combination, with a horn formed with a recess, *b*, and a lip, *c*, of presser-arms 63 and 64, the arm 64 being formed with a lip, *e*, levers 69 and 70, that are pivotally connected to the frame, a link by which said levers are connected, levers 75 and 80, that are pivotally connected to the levers 69 and 70, the lever 75 being formed with a lip, *f*, and the lever 80 being formed with a shoulder, *g*, and operating cams and connections, all parts being arranged substantially as described.

21. The combination, with a horn provided with a longitudinal rib or projection, 86, of curved-faced blocks mounted at either side of the horn, a hook carried by one of the blocks, a spring arranged in connection with the hook, and a means, substantially as described, for advancing the blocks toward the horn, as and for the purpose stated.

22. The combination, with a horn provided with a longitudinal rib or projection, 86, of curved-faced blocks mounted at either side of the horn, a hook carried by one of the blocks, a spring arranged in connection with the hook, a stiff metallic plate carried by the other block and extending toward the horn from the upper inner edge of said block, a spring arranged between the blocks, and a means, substantially as described, for advancing the blocks toward the horn, as and for the purpose stated.

23. The combination, with a horn provided with a longitudinal rib or projection, 86, of curved-faced blocks mounted in ways at either side of the horn, a hook carried by one of the blocks, a spring arranged in connection with the hook, a stiff metallic plate secured to the other block and extending outward from the upper inner edge of the block toward the projection 86, a spring arranged between the blocks, rollers carried by the blocks, and cams arranged in connection with the rollers, as and for the purpose stated.

24. The combination, with a horn formed with a longitudinal groove, *i*, of a plate mounted in a recess formed in the horn at one side of the recess *i*, springs arranged in connection with the plate, curved-faced clamping-blocks mounted at either side of the horn, and a means for operating said blocks, a presser-foot mounted above the horn, and a means for operating said foot, all substantially as described.

25. The combination, with a horn formed with a recess, *i*, of curved blocks mounted at either side of the horn, a means for operating the said blocks, a plate, 95, mounted within a recess formed at the side of the recess *i*, springs by which said plate is supported, a follower mounted above the horn, a presser-foot carried by the follower, a yieldingly-mounted plate carried by the presser-foot, and a means, substantially as described, for forcing the follower downward, as and for the purpose stated.

26. The combination, with a horn, of a pair of rollers, one of which is mounted in a recess formed in the horn, a former, a means for revolving the rollers, and a means for raising the upper roller, substantially as described.

27. The combination, with a horn, of a roller mounted in a recess formed in the horn, a roller mounted in movable boxes above the horn, a former, a means for revolving the rollers, and a means for raising the upper roller, substantially as described.

28. The combination, with a horn provided with a longitudinal recess having on one edge a projecting lip, of binders or presser-arms engaging the horn at the edges of the recess, one of which binders is provided with a projecting lip, and levers having their points working, the one over the lip on the horn and the other over the lip on the binding-arm, substantially as described.

382,588. CAN-HEADING MACHINE. FRANK M. LEAVITT, Brooklyn, N. Y., assignor to Edwin Norton and Oliver W. Norton, Chicago, Ill. Filed Aug. 26, 1887. Serial No. 247,873. (No model.)

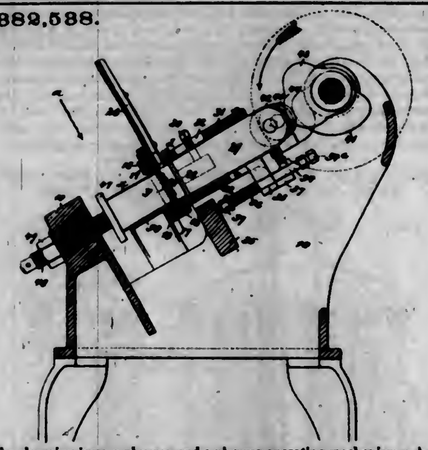
Claim.—1. In a can-heading machine, the combination, with a reciprocating guiding-ring, of clamping and sizing jaws held to slide beneath the ring, a means for feeding the can-heads within the ring, and a means for forcing the can-heads to place, substantially as described.

2. In a can-heading machine, the combination, with a follower and a means for reciprocating the same, of a guiding-ring carried by the follower, sizing and clamping jaws held below the guiding-ring, a means for advancing the jaws, a plunger, and a means for reciprocating the same, substantially as described.

3. In a can-heading machine, the combination, with a follower and a means for reciprocating the same, of a guiding-ring held by the follower, clamping and sizing jaws mounted beneath the guiding-ring, fixed inclined bearing-faces arranged in connection with the clamping-jaws, a plunger, and a plunger-operating mechanism, substantially as described.

4. In a can-heading machine, the combination, with a follower and a means for reciprocating the same, of a chambered guiding-ring held by the follower, clamping and sizing jaws mounted beneath the guiding-ring, fixed inclined bearing-faces arranged in connection with

382,588.



the clamping-jaws, a plunger, and a plunger-operating mechanism, substantially as described.

5. In a can-heading machine, the combination, with a follower, of a plunger mounted therein, a means for imparting an independent reciprocating motion to the plunger and the follower, a guiding-ring carried by the follower, supporting-plates mounted above the guiding-ring, a means for withdrawing the plates, clamping and sizing jaws mounted beneath the guiding-ring, and a means, substantially as described, for advancing said clamping and sizing jaws, as and for the purpose stated.

6. In a can-heading machine, the combination, with a follower, of a plunger mounted therein, a means, substantially as described, for reciprocating the plunger and the follower, a chute connected to the follower, supporting-plates arranged beneath the chute, a means for withdrawing the plates, a guiding-ring supported by the follower beneath the supporting-plates, clamping and sizing jaws mounted to slide beneath the guiding-ring, and a means, substantially as described, for advancing the clamping and sizing jaws, as and for the purpose stated.

7. In a can-heading machine, the combination, with a follower and a means for reciprocating the same, of a guiding-ring held by the follower, clamping and sizing jaws mounted beneath the guiding-ring, fixed inclined bearing-faces arranged in connection with the clamping-jaws, supporting-plates mounted above the guiding-ring, and means for retracting said supporting-plates, a plunger, and a plunger-operating cam, the bearing-faces of which cam is recessed, as and for the purpose stated.

8. In a can-heading machine, the combination, with a driving-shaft provided with cams 41 and 43, of a follower provided with anti-friction rollers 40, which are borne upon by the cams 41, a plunger and head-block mounted within the follower, a roller, 42, carried by the head-block and arranged to be borne upon by the cam 43, a chute, 26, leading to a recess, *d*, plates 22, arranged beneath the recess *d*, levers 23, that are studded to the follower 12, springs arranged in connection with said levers, a chambered guiding-ring, 16, mounted beneath the plates 22, clamping-jaws 17 and 17ª, mounted to slide beneath the ring 16, springs 19, arranged in connection with the clamping-jaws and plates 45, having shoulders *h* and inclined bearing-faces *f*, substantially as described.

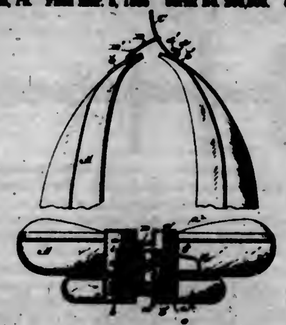
382,589. MODEL FOR DENTAL PLATES. PETER J. MALOUF, Altoona, Pa. Filed Jan. 24, 1888. Serial No. 261,777. (Model.)



Claim.—1. A model for dental plates, having a row of depressions or holes formed in the edge of its molding-surface for molding a guide-row of points or heads, as shown and described.

2. A model for dental plates, having a groove formed in the edge of its molding-surface and formed with a row of depressions or holes in the outer edge or side of the groove for molding a guide-row of points or heads for trimming the plate, as shown and described.

382,540. HORSE-COLLAR FASTENER. CLEMENT MARSHALL, Indiana, Pa. Filed Mar. 8, 1888. Serial No. 266,603. (No model.)



Claim.—1. In combination with a collar having strips *b* and *b'* attached thereto, an adjustable loop, B, provided with a movable crossbar, B', a pivoted lever with a cam or curved portion secured to the opposite end of the collar and adapted to engage with a loop, substantially as shown, and for the purpose set forth.

2. In combination with a horse-collar having a lever attached to one side thereof, a loop attached to the opposite side of the collar, and provided with outwardly-bent ends which are adapted to engage with perforations or loops in the opposite end of the collar, and an adjustable bar movable upon said loop for preventing the ends from becoming detached, substantially as shown, and for the purpose set forth.

3. In a horse-collar fastener, a loop, B, made of a single piece of wire with outwardly-bent ends which are adapted to be sprung so as to engage with securing means, a lever constructed of a single piece of wire, the side members of which are adapted to be sprung toward each other, and means for pivotally securing the loop and lever to the ends of the horse-collar, the parts being constructed of wire, substantially as shown, and for the purpose set forth.

382,541. FLOUR-SIEVE. HENRY MAHER, Cortland, Ill. Filed Feb. 10, 1887. Serial No. 227,180. (No model.)



Claim.—1. In a flour receptacle and sifter, the combination of a closed case, a horizontal frame with headed pins in its under side, a sieve secured to the upper side thereof, so as to divide the interior of the case into upper and lower chambers, an agitator secured within the case to be reciprocated horizontally in contact with the upper surface of the sieve, and a discharge-funnel having a flange with key-hole slots suspended within the case just below the sieve-supporting frame, so as to be detachable therefrom, the lower portion of the case having in one side a hinged door, substantially as shown.

2. In a flour receptacle and sifter, the combination of a closed case, a horizontal frame and sieve dividing the case into upper and lower chambers, a reciprocating agitator above the sieve, and a discharge-funnel removably secured to the frame, said funnel being provided at its lower end with a hinged bottom for closing the same, substantially as shown.

3. In a flour receptacle and sifter, the combination, substantially as described, of the case, a horizontal ledge projecting inward from the walls of the case between its ends, a sieve secured upon said ledge to divide the case into upper and lower chambers, headed studs projecting from the lower surface of the ledge, and a funnel provided at its lower end with a hinged bottom and at its upper end with a flange having key-hole slots to engage the headed studs of the ledge.

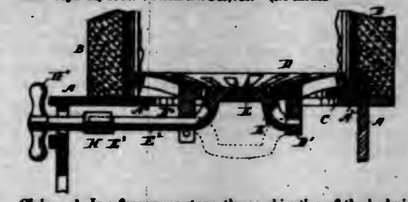
382,542. SHOW-RACK. CHARLES R. MCELROY, Brockton, assignor of one-half to Dudley P. Ladd, Medford, Mass. Filed Mar. 19, 1888. Serial No. 267,663. (No model.)



Claim.—1. The combination of the standard *a*, the series of slides which are adjustable on said standard and are provided with holding set-screws *h*, the sockets *i* on said slides adapted to receive rods or bars *m*, and the rests on said sockets, each adapted to support one end of a bar, *k*, the other end of which is supported by a like rest on another standard, as set forth.

2. The combination of the standard, the series of slides which are adjustable on said standard and are provided with set-screws *h*, which bind them to the standard, the sockets *i i* on said slides adapted to hold bars *m* horizontally, and the rests arranged at right angles to the sockets and above the latter, whereby the rests of two adjacent standards are adapted to support a bar, *k*, at right angles with the bars *m* inserted in the sockets on which said rests are formed, as set forth.

382,543. STOVE-GRATE. ROBERT W. MCNEELY, Somerville, Mass. Filed Sept. 14, 1887. Serial No. 249,719. (No model.)



Claim.—1. In a furnace or stove, the combination of the bed-piece A^1 A^2, the sliding supporting-piece C, having rounded bearings C^1 C^2, the annular grate D, provided with trunnion-sockets D^1 D^2, adjusted to receive said bearings and having downwardly-projecting ears D' D^3, with the central piece, E, having trunnions E' E^2, all arranged to operate together substantially as described, and for the purpose set forth.

2. In a stove-grate, the combination of the annular grate D, having a central opening and downwardly-projecting ears D' D^3, with an inner grate, E, having downwardly-inclined trunnions E' E^2, adapted to throw the grate E out of the center of the opening in the grate D, substantially as described, and for the purpose set forth.

382,544. LUBRICATOR. WILLIAM HILLARD, Indianapolis, Ind. Filed Oct. 6, 1887. Serial No. 251,602. (Model.)



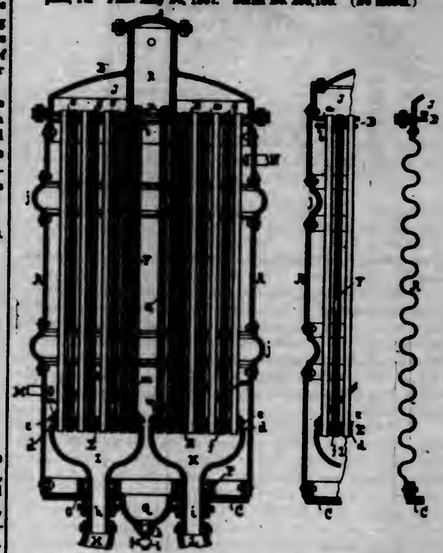
Claim.—The lubricator for crank-wrists consisting of the combination of grease-box 7, having duct 6 communicating with the periphery of the crank-wrist, piston 10, having a screw-threaded stem, 11, ratchet-wheel 12, having a screw-threaded eye, suitably-operated pawl 13 for intermittently rotating the latter, wheel 15, having tappet 14, lever 24, with which the latter is adapted to engage, and wheel and worm gear connection 16, 17, 18, 19, and 20 with the crank-wrist, substantially as set forth.

382,545. TUG-BUCKLE. HERMAN C. MINARD and LAWRENCE C. MINARD, SR., Clarion, Iowa. Filed Feb. 3, 1888. Serial No. 262,576. (No model.)



Claim.—As an improved article of manufacture, the herein-described tug-section, comprising the parallel curved sides A A, having the plain apertures C, and the tapped apertures C' therein, respectively, the loop B, connecting the ends of the sides and forming a crossbar perpendicular to the said sides, the removable rounds D, passing through the plain apertures and having threaded ends engaging the tapped apertures, and the loose sleeves E, mounted on the rounds between the sides A and bearing at their ends against the sides to maintain them in the proper relative positions, substantially as specified.

382,546. FEED-WATER HEATER. EDWARD J. MORRIS, Philadelphia, Pa. Filed May 24, 1887. Serial No. 239,102. (No model.)



Claim.—1. In a feed-water heater, a casing or shell, heating-tubes divided into two groups and attached at their upper ends to a single or continuous tube-sheet and at their lower ends to separate tube-sheets, combined with chambers formed on the under side of the lower tube-sheets, having necks which pass through stuffing-boxes in the lower heater-head, substantially as and for the purpose specified.

2. In a feed-water heater, heating-tubes divided into two groups and attached at their upper ends to a single or continuous tube-sheet and at their lower ends to separate tube-sheets, chambers formed on the under side of the lower tube-sheets, having necks which pass through stuffing-boxes in the lower heater-head, combined with an extensible and contractible outer shell or casing, substantially as and for the purpose specified.

3. In a feed-water heater, one or more of the tube-sheets formed of two plates separated by means of studs, the said tubes being expanded in both of the separated plates, substantially as and for the purpose specified.

4. In a feed-water heater, the lower tube-sheets provided with deflecting-plates to prevent the accumulation of mud on the same and to deflect it to a mud-reservoir, substantially as and for the purpose specified.

5. In a feed-water heater, the lower tube-sheets provided with deflecting-plates to prevent the accumulation of mud on the said sheets, combined with a mud-receptacle situated below the said deflecting-plates, substantially as and for the purpose specified.

6. In a feed-water heater, a scum-chamber situated near to the top of the heater, having a contracted entrance-aperture in its lower end, substantially as and for the purpose specified.

382,547. STEAM-ENGINE. FREDERICK C. MORTON, Chelsea, Mass. Filed Nov. 15, 1886. Serial No. 218,854. (No model.)

Claim.—1. In a steam-engine, the main shaft A, having cranks set substantially opposite and located in a case or box, a^3, the one-piece metal casting A', cored to form the valve-cylinder A^4, and piston-cylinders A^2 A^5, pistons in said cylinders, and a connecting-rod for each piston, combined with the eccentric-rod c^{10}, having an eccentric-strap pivoted at one end and a spring to keep the parts of the said strap together, substantially as described.

2. In a steam-engine, the main shaft A, having cranks set substantially opposite and located in a case or box, a^3, the one-piece metal casting A', cored to form the valve-cylinder A^4 and piston-cylinders A^2 A^5, pistons in the cylinders A^2 A^5, connected to the main shaft, the piston-valve *v*, the cross-head c^7, connected thereto and having the rod or pin c^9, combined with the eccentric-rod c^{10} and eccentric c^{11}, and with the cap c^{12}, and a spring to keep the cap in contact with the rod or pin c^9 to compensate for wear, as and for the purpose specified.

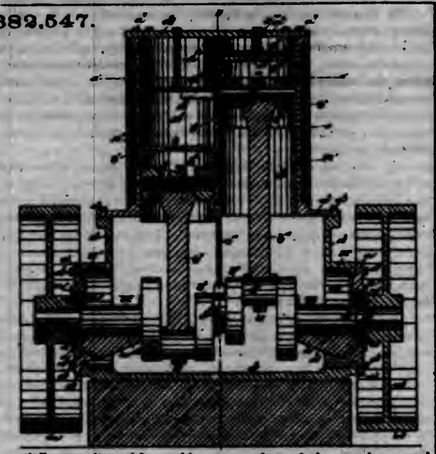
3. In a steam-engine, the main shaft A, having cranks set substantially opposite and located in a case or box, a^3, having the flange A^{13}, and cover a', secured thereto and provided with inwardly-projecting bearings *a*, each uncovered on its top, combined with the fly-wheel overlapping the cover a', as and for the purpose specified.

4. In a steam-engine, a main shaft, a case to contain oil or other lubricant, and the cover a', secured thereto and to the bearing *a*, combined with the flanged disk *n*, secured to and revolving with the main shaft, and with the flanged disk n', secured to the cover and forming an oil-trap with the disk *n*, substantially as described.

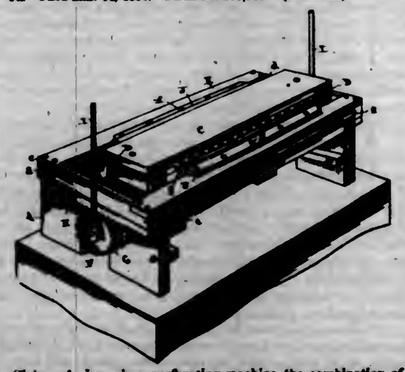
5. In a steam-engine, a main shaft, a case to contain oil or other lubricant, and the cover a', secured thereto and to the bearing *a*, provided with the passage n^5, combined with the flanged disk *n*, secured to and revolving with the main shaft, and with the flanged disk n', secured to the cover and forming an oil-trap with the disk *n* to return the oil into the said case, substantially as described.

6. In a steam-engine, a main shaft, a case to contain oil or other lubricant, and the cover a', secured thereto, combined with the flanged disk *n*, secured to and revolving with the main shaft, and with the flanged disk n', secured to the cover and forming an oil-trap with the disk *n*, substantially as described.

382,547.



382,548. CIGAR-PERFORATING MACHINE. ADEL P. NEWT, Roley Pa. Filed Mar. 11, 1887. Serial No. 230,695. (No model.)

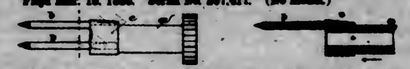


Claim.—1. In a cigar-perforating machine, the combination of a supporting-frame, a mold-board held in suitable guides on the frame, a reciprocating carriage embracing the mold-board and mounted on suitable guides or ways on the frame, two sets of perforating-needles mounted, respectively, on opposite sides or rails of the carriage, and means for reciprocating the carriage on its ways, whereby the two sets of needles are caused to move simultaneously in the same direction and to alternately perforate the two ends of the cigars held in the mold-board, substantially as and for the purpose herein specified.

2. The combination of a supporting-frame, a mold-board held in suitable guides on the frame, a reciprocating carriage embracing the mold-board and mounted on suitable guides or ways on the frame, two needle-plates removably attached to opposite sides or rails of the carriage and respectively provided with sets of perforating-needles, and means for reciprocating the carriage on its ways, substantially as and for the purpose herein set forth.

3. The combination, with a supporting-frame provided with vertical guides to engage with the mold-board, a removable mold-board, and the reciprocating carriage, of plates carrying perforating-needles and detachably secured to the longitudinal rails of the said carriage, and means for reciprocating the said carriage, substantially as and for the purpose herein specified.

382,549. FORK FOR FRUIT-PARING MACHINES. WILLIAM A. C. OAKE, ADRIAN, N. H., assignor to the Gould Company, same place. Filed Mar. 16, 1888. Serial No. 267,417. (No model.)



Claim.—1. The improved fork for fruit-paring machines, it comprehending a shaft, a series of independent steel tines provided with lugs or projections at their inner ends, and a ferrule, the lugs or projections of the tines entering recesses, and a portion of the tines near the said lugs entering grooves at or near the end of the fork-shaft, the ferrule retaining the tines in the said recesses and grooves, substantially as described.

2. The fork-shaft, the independent tines provided at their inner ends with lugs or projections, as 4, and tapered or inclined, as described, combined with a ferrule driven upon the said tines and shaft and bent at its end, to lock the ferrule in place against longitudinal movement, substantially as described.

382,550. FIRE-ESCAPE. SIDNEY B. PARKER, Springfield, Mass. Filed Mar. 27, 1883. Serial No. 269,667. (No model.)

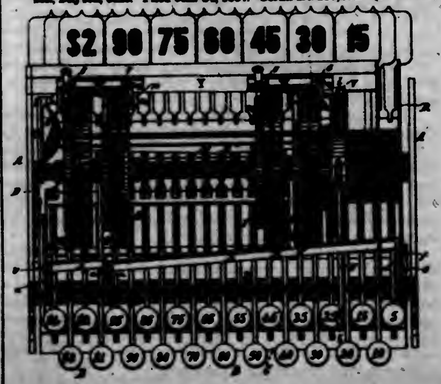


Claim.—A fire-escape consisting of a series of links or sections formed of wire and bent to form rings A, twisted shanks B, and hooks C, substantially as and for the purpose set forth.

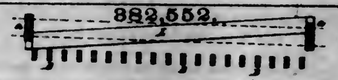
382,551. MAKING SODIUM CARBONATES BY SULPHIDES OF THE ALKALINE EARTHS. EDWARD W. PARNELL and JAMES SHEPPARD, Liverpool, County of Lancaster, England. Filed July 6, 1887. Serial No. 243,767. (No specimens.) Patented in England Apr. 22, 1887, No. 5,988.

Claim.—The manufacture of bicarbonate of soda by grinding sulphate of lime or baryta, subjecting it to the action of carbonaceous matter, roasting the mixture in a non-oxidizing atmosphere, mixing the sulphuret produced with chloride of ammonium, and heating this mixture and conducting the sulphuret of ammonium evolved, together with carbonic-acid gas, into a solution of chloride of sodium, substantially as described.

382,552. CASH INDICATOR AND REGISTER. JOHN H. PATTERSON, Dayton, Ohio. Filed Jan. 26, 1887. Serial No. 225,203. (No model.)



882,552.



Claim.—1. In a cash register and indicator, the combination with a series of keys of fixed values and a registering-wheel, of a bar located transversely across and inclined relatively to the plane of the keys, and connecting mechanism between said bar and registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

2. In a cash register and indicator, the combination, with a series of keys of fixed values and a registering-wheel, of a bar extending transversely across the keys and having a vertically-inclined operating side, and connecting mechanism between said bar and registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

3. In a cash register and indicator, the combination, with a series of keys of fixed values and a registering-wheel provided with a ratchet, of a bar located transversely across and inclined relatively to the plane of the keys, and a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

4. In a cash register and indicator, the combination, with a series of keys of fixed values and a registering-wheel provided with a ratchet, of a bar extending transversely across the keys and having a vertically-inclined operating side, and a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

5. In a cash register and indicator, the combination, with a series of keys of fixed values and a registering-wheel, of a bar located transversely across the keys and inclined relatively to the plane of the keys, and connecting mechanism between said bar and registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

6. In a cash register and indicator, the combination, with a series of keys of fixed values and a registering-wheel, of a bar extending transversely across the keys and having a vertically-inclined operating side, connecting mechanism between said bar and registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

7. In a cash register and indicator, the combination, with a series of keys of fixed values and a registering-wheel provided with a ratchet, of a bar located transversely across and inclined relatively to the plane of the keys, a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

8. In a cash register and indicator, the combination, with a series of keys of fixed values and a registering-wheel provided with a ratchet, of a bar extending transversely across the keys and having a vertically-inclined operating side, a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its value to be registered on said registering-wheel, substantially as described.

9. In a cash register and indicator, the combination, with a series of keys of fixed values pivoted upon horizontal axes and a registering-wheel, of a bar extending transversely across the keys, with which the latter engage when moved on their pivots, the portions of said bar with which the different keys engage being arranged at different distances from said keys, and connecting mechanism between said bar and registering-wheel, substantially as described.

10. In a cash register and indicator, the combination, with a series of keys of fixed values, a series a tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel, of a bar located transversely across and inclined relatively to the plane of the keys, and connecting mechanism between said bar and registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

11. In a cash register and indicator, the combination, with a series of keys of fixed values, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel, of a bar having a vertically-inclined operating side located transversely across the keys and connecting mechanism between said bar and registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

12. In a cash register and indicator, the combination, with a series of keys of fixed values, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel provided with a ratchet, of a bar located transversely across and inclined relatively to the plane of the keys, and a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

13. In a cash register and indicator, the combination, with a series of keys of fixed values, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel provided with a ratchet, of a bar extending transversely across the keys and having a vertically-arranged operating side, and a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

14. In a cash register and indicator, the combination, with a series of keys of fixed values, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel, of a bar located transversely across and inclined relatively to the plane of the keys, connecting mechanism between said bar and registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

15. In a cash register and indicator, the combination, with a series of keys of fixed values, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel, of a bar extending transversely across the keys and having a vertically-inclined operating side, connecting mechanism between said bar and registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and its value to be registered on said registering-wheel, substantially as described.

16. In a cash register and indicator, the combination, with a series of keys of fixed values, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel provided with a ratchet, of a bar located transversely across and inclined relatively to the plane of the keys, a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

17. In a cash register and indicator, the combination, with a series of keys of fixed values, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel provided with a ratchet, of a bar extending transversely across the keys and having a vertically-inclined operating side, a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, and brake mechanism applied to said registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

18. In a cash register and indicator, the combination, with a series of keys of fixed values pivoted upon horizontal axes, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel, of a bar extending transversely across the keys, with which the latter engage when moved on their pivots, the portions of said bar with which the different keys engage being arranged at different distances from said keys, and connecting mechanism between said bar and registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

19. In a cash register and indicator, the combination, with a series of keys of fixed values pivoted upon horizontal axes, a series of tablet-rods and tablets actuated by said keys for exposing to view the value of any key operated, and a registering-wheel provided with a ratchet, of a bar extending transversely across the keys, with which the latter engage when moved on their pivots, the portions of said bar with which the different keys engage being arranged at different distances from said keys, and a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, whereby the operation of any key causes its tablet to be exposed to view and registers its value on said registering-wheel, substantially as described.

20. In a cash register and indicator, the combination of a set of keys indicating cents, a wheel registering cents, a bar located transversely across and inclined relatively to the plane of said keys, connecting mechanism between said bar and registering-wheel, a set of keys indicating dollars, a wheel registering dollars, a bar located transversely across and inclined relatively to the plane of said dollar-keys, and connecting mechanism between said bar and dollar-registering wheel, whereby upon operating any key indicating cents its value is registered on the cent-registering wheel, and whereby upon operating any key indicating dollars its value is registered on the dollar-registering wheel, substantially as described.

21. In a cash register and indicator, the combination of a set of keys indicating cents, a wheel registering cents, a bar extending transversely across said keys and having a vertically-inclined operating side, connecting mechanism between said bar and registering-wheel, a set of keys indicating dollars, a wheel registering dollars, a bar extending transversely across said dollar-keys and having a vertically-inclined operating side, and connecting mechanism between said bar and dollar-registering wheel, substantially as and for the purpose described.

22. In a cash register and indicator, the combination of a set of keys indicating cents, a wheel registering cents and provided with a ratchet, a bar located transversely across and inclined relatively to the plane of said keys, a pawl actuated by said bar and engaging with the ratchet of said registering-wheel, a set of keys indicating dollars, a wheel registering dollars and provided with a ratchet, a bar located transversely across and inclined relatively to the plane of said dollar-keys, and a pawl actuated by said bar and engaging with the ratchet of the dollar-registering wheel, substantially as and for the purpose described.

23. In a cash register and indicator, the combination of a set of keys indicating cents, a wheel registering cents and provided with a ratchet, a bar extending transversely across said keys and having a vertically-inclined operating side, a pawl actuated by said bar and engaging with the ratchet of said registering-wheel, a set of keys indicating dollars, a wheel registering dollars and provided with a ratchet, a bar extending transversely across said dollar-keys and having a vertically-inclined lower side, and a pawl actuated by said bar and engaging with the ratchet of the dollar-registering wheel, substantially as and for the purpose specified.

24. In a cash register and indicator, the combination of a set of keys indicating cents, a set of tablet-rods and tablets corresponding in value to said keys and actuated thereby, a wheel registering cents, a bar located transversely across and inclined relatively to the plane of said keys, connecting mechanism between said bar and registering-wheel, a set of keys indicating dollars, a set of tablet-rods and tablets corresponding in value to said dollar-keys and actuated thereby, a wheel registering dollars, a bar located transversely across and inclined relatively to the plane of said dollar-keys, and connecting mechanism between said bar and dollar-registering wheel, substantially as and for the purpose described.

25. In a cash register and indicator, the combination of a set of keys indicating cents, a set of tablet-rods and tablets corresponding in value to said keys and actuated thereby, a wheel registering cents, a bar extending transversely across said keys and having a vertically-arranged operating side, connecting mechanism between said bar and registering-wheel, a set of keys indicating dollars, a set of tablet-rods and tablets corresponding in value to said dollar-keys and actuated thereby, a wheel registering dollars, a bar extending transversely across said dollar-keys and having a vertically-inclined operating side, and connecting mechanism between said bar and dollar-registering wheel, substantially as and for the purpose described.

26. In a cash register and indicator, the combination of a set of keys indicating cents, a set of tablet-rods and tablets corresponding in value to said keys and operated thereby, a wheel registering cents and provided with a ratchet, a bar located transversely across and inclined relatively to the plane of said keys, a pawl actuated by said bar and engaging with the ratchet of said registering-wheel, a set of keys indicating dollars, a wheel registering dollars and provided with a ratchet, a bar located transversely across and inclined relatively to the plane of said dollar-keys, and a pawl actuated by said bar and engaging with the ratchet of the dollar-registering wheel, substantially as and for the purpose described.

27. In a cash register and indicator, the combination of a set of keys indicating cents, a set of tablet-rods and tablets corresponding in value to said keys and operated thereby, a wheel registering cents and provided with a ratchet, a bar extending transversely across said keys and having a vertically-inclined operating side, a pawl actuated by said bar and engaging with the ratchet of said registering-wheel, a set of keys indicating dollars, a set of tablet-rods and tablets corresponding in value to said dollar-keys and operated thereby, a wheel registering dollars and provided with a ratchet, a bar extending transversely across said dollar-keys and having a vertically-inclined operating side, and a pawl actuated by said bar and engaging with the ratchet of the dollar-registering wheel, substantially as described, and for the purpose specified.

28. The combination, with the operating-keys, indicating cents, of the bar L, inclined relatively to the plane of said keys, cent-registering wheel G, provided with a ratchet, J, and dog *d*, actuated by the bar L and engaging with said ratchet J, substantially as and for the purpose described.

29. The combination, with the set of operating-keys indicating cents and the set of tablet-rods carrying tablets indicating cents, of the bar L, inclined relatively to the plane of said keys, cent-registering wheel G, provided with a ratchet, J, and dog *d*, actuated by the bar L and engaging with said ratchet J, substantially as described, and for the purpose specified.

30. The combination of the set of operating-keys indicating cents, bar L, inclined relatively to the plane of said keys and operated thereby, cent-registering wheel G, provided with a ratchet, J, dog *d*, actuated by the bar L and engaging with said ratchet J, the set of keys indicating dollars, the bar L, inclined relatively to the plane of said keys and operated thereby, the dollar-registering wheel provided with a ratchet, J, and the dog *d*, actuated by said bar L and engaging with the ratchet J of the dollar-registering wheel, substantially as and for the purpose described.

31. The combination of the set of operating-keys indicating cents and the set of tablet-rods provided with tablets indicating cents, bar L, inclined relatively to the plane of and operated by said keys, cent-registering wheel G, provided with a ratchet, J, dog *d*, actuated by the bar L and engaging with said ratchet J, the set of keys indicating dollars, and tablet-rods provided with tablets indicating dollars, the bar L, inclined relatively to the plane of and operated by the dollar-keys, the dollar-registering wheel G, provided with a ratchet, J, and the dog *d*, actuated by said bar L and engaging with the ratchet J of the dollar-registering wheel, substantially as and for the purpose described.

32. The combination, with the registering-wheels G H, each provided with a ratchet-wheel, J, of the rock-shaft W, extending transversely across said registering-wheels and provided at one end with an arm, *n*, adapted to engage with a pin, *m*, upon the registering-wheel G, and upon its opposite end with an arm, *o*, carrying a spring-dog, *p*, engaging with the ratchet-wheel J of the registering-wheel H, substantially as and for the purpose described.

33. In a cash-register, the combination, with a series of operating-keys, the vibrating frame C, actuated by the operation of any one of said keys and provided with a rod, U, of the brake-shoe T and a brake-wheel, S, secured to the hub of the registering-wheel, and with which said shoe is arranged to engage, substantially as and for the purpose described.

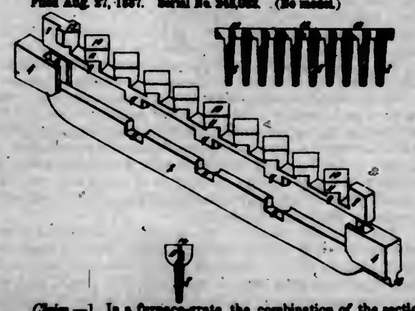
34. The combination and arrangement of the wing E, gong-hammer E', gong F, extension C', with its nose *r*, dog *s*, arm *t*, draw-bar D', and vibrating frame C, substantially as and for the purpose described.

35. In a cash register and indicator, the combination, of a series of keys, a vibrating frame operated by said keys, a till-compartment having a hinged lid, and locking and tilting mechanism interposed between said lid and vibrating frame, whereby the operation of any one of the keys unlocks the lid and throws it open, substantially as described.

36. The combination and arrangement of the hinged lid G', till-compartment F', spring-bolt *a'*, draw-bar *b'*, bell-crank *c'*, vibrating arms *d'*, and vibrating frame C, substantially as and for the purpose described.

37. In a cash-register, the combination, with a series of keys, a registering-wheel and connections between them, a brake-rim connected with the registering-wheel, and a co-operating brake, of a bar arranged to be operated by all the keys of the series connected with said brake-shoe, whereby upon the operation of any key the brake will be applied, substantially as described.

882,553. SECTIONAL PEDESTAL-GRATE. HENRY PETTIBONE, St. Louis, Mo., assignor of one-half to Christian Andrieu, same place. Filed Aug. 27, 1887. Serial No. 248,082. (No model.)



Claim.—1. In a furnace-grate, the combination of the sectional grate-bars 2 and 9 with surmounting pedestals 10, substantially as and for the purpose set forth.

2. In a furnace-grate, the combination of the bed-section grate-

bar 2, provided with bevel-slots 5 and end slots, 6, in which the bevel-lugs 7 and end pieces, 8, of the renewable section 9 of the grate-bar engage to unite the sections, substantially as and for the purpose set forth.

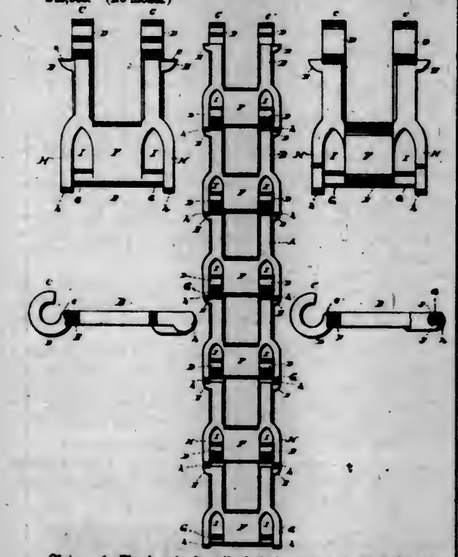
3. In a furnace-grate, the combination of the sectional grate-bars 2 and 9 and the diamond-shaped pedestals 10, arranged to shelter the bars from the heat of the furnace and to direct the draft at various angles and deliver it with varied projectile inclination, so that it may find its way through the lines of intersticos between the coal in the furnace, substantially as and for the purpose set forth.

4. In a furnace-grate, the combination of the bed-section grate-bar, the bevel-feet 3, whose laterally-enlarged ends rest on the bed-walls 1 of the furnace, said grate-bar provided with bevel-slots 5 and slots 6, in which the bevel-lugs 7 and rectangular ends 8 of the renewable sectional bar 9 engage, said bar 9, with its pedestals 10, arranged to shield the bar 2 from the heat, and when burned to be renewable by elevation from the bed-bar and the substitution of a duplicate, substantially as and for the purpose set forth.

5. In a grate-bar for furnaces, the combination of the bed-section grate-bar 2 and the renewable sectional grate-bar 9, having diamond-shaped pedestals whose angle corners project between the corresponding projecting corners of the adjoining bars, leaving narrow intersticos at varied angles for the ascent of the draft into the furnace, substantially as and for the purpose set forth.

6. In a grate-bar for furnaces, the combination of the renewable sectional grate-bar 9, surmounted and protected by the diamond-shaped pedestals 10, that angularly direct the draft in varied directions, the said bar attachable to the bed-grate bar 2 and renewable when burned out by the substitution of a duplicate, substantially as and for the purpose set forth.

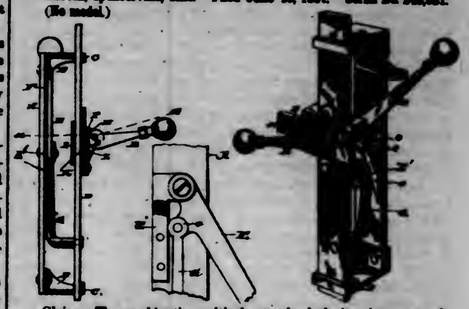
382,554. DETACHABLE-LINK CHAIN. REUBEN F. RISDON and JOSEPH H. RISDON, Spencerville, Ohio. Filed Sept. 14, 1887. Serial No. 249,925. (No model.)



Claim.—1. The herein-described chain composed of similar links, each consisting of parallel side bars, having downwardly-pointing hooks at their disconnected ends and laterally-projecting lugs provided with transverse guide-surfaces on the outer side of said bars at a point where the hooks spring therefrom, a central block connecting the opposite ends of said links, and journals standing transversely from the sides of the outer end of said block and flattened on their upper and lower surfaces to pass easily into the hooks of an adjoining link when held at a little less than right angles thereto and directed by the said guiding-surfaces, substantially as specified.

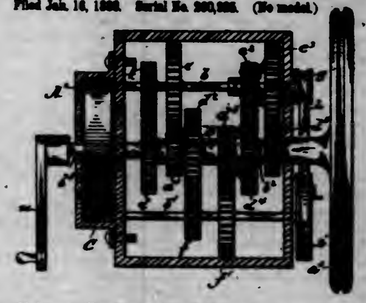
2. A chain-link composed of the side bars C, the hooks D at the unconnected ends of said bars and having their points downward, the lugs E, provided with the guide and bearing surfaces *e*, the central block, F, connecting the opposite ends of the side bars, C, the journals G, flattened above and below at *g*, and the projections H, provided with the rounded ends A, and forming, with the adjacent edges of the block F, the hook-slots I, aligned with the hooks, all constructed and arranged substantially as and for the purpose specified.

382,555. SAW-MILL DOG. REUBEN F. RISDON and JOSEPH H. RISDON, Spencerville, Ohio. Filed June 10, 1887. Serial No. 240,921. (No model.)



Claim.—The combination, with the standard, the brackets secured to the upper and lower ends thereof, and the slide passing through openings in said brackets, of the bifurcated bracket secured to the inner side of the standard, the weighted lever E, pivoted at its inner end between the arms of said bracket and provided adjacent to its pivotal point with a lug, and the rod G, having its lower end pivoted to the slide, and the ears *e* of its upper end pivoted to said lug, all as arranged that when the lever falls the rod G will bring up against the bracket and stop the descent of the lever just after the pivotal point of the rod has passed its dead-point, substantially as specified.

382,556. SPRING-MOTOR. ALFRED D. SANDERS, Brooklyn, N. Y. Filed Jan. 16, 1888. Serial No. 260,995. (No model.)



Claim.—1. The herein-described spring-motor, consisting, essentially, in the combination of a main driving-shaft provided upon one end with a hand-crank, a fly or driving wheel secured to said shaft near its opposite end and by which motion is imparted to the mechanism to be driven, a spring secured to the shaft at its end opposite the driving-wheel to actuate the shaft, a pair of secondary shafts journaled on opposite sides of the main shaft, a gear-wheel secured to the main shaft near the end upon which the spring is secured, a pinion secured to one of the secondary shafts and meshing with the gear rigid on the main shaft, a gear-wheel secured to said secondary shaft, a gear-wheel and pinion secured together and loosely mounted on the main shaft, the pinion meshing with the gear-wheel on said secondary shaft, a pinion secured to the opposite secondary shaft and meshing with said gear-wheel loosely rotating on the main shaft, a gear-wheel rigidly mounted on said last-mentioned secondary shaft, and a train of intermeshing gearing loosely mounted on the main shaft and on each secondary shaft between the driving-wheel and the before-mentioned rigid gears, said train of loose gearing receiving motion from the gear-wheel rigidly secured to the last-mentioned secondary shaft, as set forth.

2. In a spring-motor, the combination of a main driving-shaft formed in two sections, one of said sections having a limited longitudinal movement, whereby said longitudinally-movable section can be rotated independently of the other section, a spring secured to the longitudinally-movable section, and a crank to operate said section gearing upon the other section, and a driving or fly wheel upon said section, substantially as described.

3. The combination, with the main shaft, of secondary shafts, gearing connecting said main shaft and secondary shafts, a brake-pulley upon one end of a secondary shaft and provided with radial slots in its face, a treadle, a rod connecting the treadle and brake-pulley, and a locking-latch adapted to enter one of said slots in the brake-pulley, substantially as described.

4. The combination, in a motor adapted to actuate a sewing-machine, of a main shaft, secondary shafts, gearing connecting said shafts, a brake-pulley upon one end of a secondary shaft, a shaft journaled on the under side of the machine-table, a pulley on said shaft, a brake-strap engaging the under face of the brake-pulley and passing upward and secured to the pulley beneath the machine-table, a ratchet-wheel on said shaft journaled to the machine-table, a pawl to hold the same, and a lever whereby said shaft can be rotated and the tension of the brake-strap on the brake-pulley regulated, substantially as described.

5. In a spring-motor, the combination, with the main driving-shaft, the spring to actuate the same, secondary shafts journaled upon each side of said main shaft, gearing connecting said main shaft and secondary shafts, a brake-pulley secured to the end of a secondary shaft, a brake-strap, a pulley to which one end of said strap is secured, and a pawl-and-ratchet mechanism to regulate the tension of said strap on the brake-pulley, substantially as described.

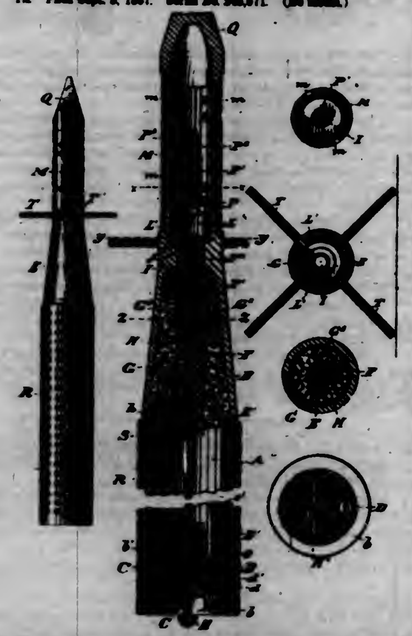
382,557. HOSE-CLAMP. FREDERICK GESSNER, Westchester, N. J., assignor of one-half to William H. Schroeder, New York, N. Y. Filed Feb. 1, 1888. Serial No. 262,617. (No model.)



Claim.—1. A hose-clamp consisting of a circular band provided with overlapping ends, said ends having interlocking teeth or serrations, a longitudinal slot in the overlapping end, and a projecting portion or abutment on the underlapping end extending into the slot of the overlapping end, substantially as set forth.

2. A hose-clamp composed of a circular band having overlapping ends, both ends being provided with interlocking teeth or serrations, the overlapping end having a longitudinal slot and the underlapping end an abutment, and an eye with a transverse spring-key, so as to engage and retain the overlapping end, substantially as set forth.

382,558. SOLDERING-IRON. ROBERT SHEARMAN, Allegheny, Pa. Filed Sept. 3, 1887. Serial No. 248,671. (No model.)



Claim.—1. In a soldering-iron, the combination of a reservoir, said reservoir being provided with an opening to admit oil and a plug for closing said opening, the inner end of the plug and the side thereof being provided with openings which communicate, the inner end of said plug being also provided with a tubular extension whose opening is in communication with the openings aforesaid, substantially as specified.

2. In a soldering-iron, the combination of a reservoir, said reservoir being provided with an opening to admit oil and a plug for closing said opening, the inner end of the plug and the side thereof being provided with openings which communicate, the inner end of said plug being also provided with a tubular extension whose opening is in communication with the openings aforesaid, and a stop to limit the outward movement of said plug and extension, substantially as specified.

3. In a soldering-iron, the combination of a reservoir and a casing secured around said reservoir, leaving an annular space between the outer side of the reservoir and the inner side of the casing, substantially as specified.

4. In a soldering-iron, the combination of a reservoir and a perforated casing secured around said reservoir, leaving an annular space between, substantially as specified.

5. In a soldering-iron having a burner, the combination of a reservoir, a casing having a chamber provided in one end with an absorbent material and having a flexible material in its other end, the end in which the flexible material is located being provided with an opening, and a tube engaged in said opening, said tube extending through the chamber aforesaid, substantially as specified.

6. In a soldering-iron having a burner, the combination of a reservoir having a casing secured thereto and separated therefrom by a perforated partition, a tube extending into said casing, the side of said tube being provided with openings in communication with the chamber in the casing aforesaid, a valve-seat located in one end of the said tube, and a valve-stem and valve, the said stem being within the tube and reservoir aforesaid, the outer end of the stem being outside the reservoir, substantially as specified.

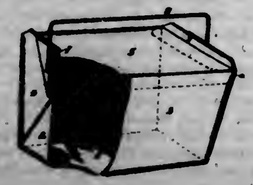
7. In a soldering-iron having a burner, the combination of a reservoir having a casing secured thereto and separated therefrom by a perforated partition, a tube extending into said casing, the side of said tube being provided with openings in communication with the chamber in the casing aforesaid, a valve-seat located in one end of the said tube, and a valve-stem and valve, the said stem being within the tube and reservoir aforesaid, the outer end of the stem being outside the reservoir, said outer end being provided with a handle, substantially as specified.

8. In a soldering-iron having a burner, the combination of a reservoir having a casing secured thereto and separated therefrom by a perforated partition, a tube extending into said casing, the sides of said tube being provided with openings in communication with the chamber in the casing aforesaid, a short tube having a valve-seat in its outer end, the short tube being seated in one end of the tube aforesaid, and a valve-stem and valve, the said stem being within the tubes and reservoir aforesaid, the outer end of the stem being outside the reservoir, substantially as specified.

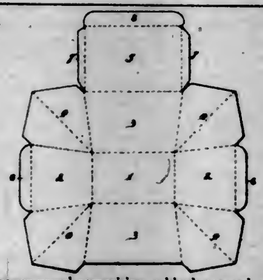
9. In a soldering-iron having a burner, the combination of a reservoir having a casing secured thereto and separated therefrom by a perforated partition, a tube extending into said casing, the sides of said tube being provided with openings in communication with the chamber in the casing aforesaid, a short tube having a valve-seat in its outer end, the short tube being seated in one end of the tube aforesaid, and a valve-stem and valve, the said stem being within the tubes and reservoir aforesaid, the outer end of the stem being outside the reservoir, the body of the stem having an enlarged screw-threaded portion in engagement with a screw-threaded opening in one end of the main tube aforesaid, substantially as specified.

10. In a soldering-iron having a burner, the combination of a reservoir having a casing secured thereto, a hollow perforated neck secured to said casing, and a soldering-point secured to the outer end of said neck, said casing being provided on its inner side with a tube having side openings and with a valve-seat, a hollow burner located in the neck aforesaid, and a chamber located between said burner and tube, the walls of said chamber being provided with openings for the admission of air, and a valve and stem, the stem being located within the reservoir and tube aforesaid, substantially as specified.

382,559. PAPER VESSEL. THEODORE F. W. SCHMIDT, Dayton, Ohio, assignor of one-half to Lenbach & Hönigs, same place. Filed Feb. 16, 1888. Serial No. 264,182. (No model.)



382,559.



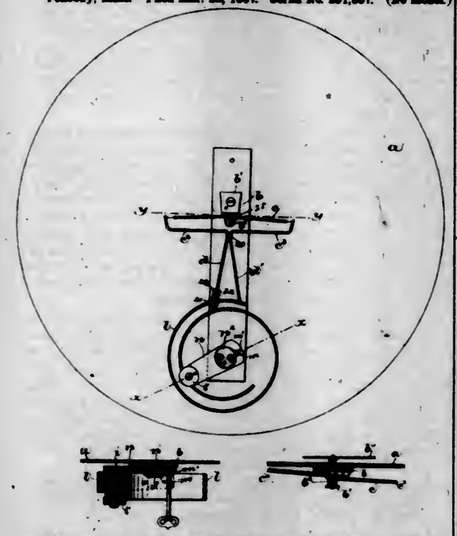
Claim.—A paper vessel comprising a blank creased and bent to form the bottom 1, ends 2, sides 3, and lid 5, having the flap 8 for fastening it in a closed position, said ends having their top edges turned inward below the top edges of the ears and sides to support the lid below said ears and ends, substantially as described.

382,560. ELECTRIC-LAMP FILAMENT. CARL SIEG, Berlin, Germany. Filed June 16, 1888. Serial No. 205,340. (No model.)



Claim.—In an incandescent lamp, a carbon thread characterized by an inner layer of carbon, *c*, in the shape of angle-iron, a second layer of silicate, *c'*, and a regulating-layer of carbon, c^2, at the outside for the purpose of equalizing the resistances, all substantially as described.

382,561. METALLIC THERMOMETER. THOMAS WM. SHEPHERD, Peabody, Mass. Filed Mar. 28, 1887. Serial No. 231,857. (No model.)



Claim.—1. In a thermometer, the combination of a Y-shaped yoke, a cord or chain suspended between its ends, and the pointer-operating shaft or arbor directly engaged by the said cord or chain, and a supporting-arm for the yoke, and a bimetallic strip, to which the supporting-arm is attached, substantially as described.

2. In a thermometer, the combination of a Y-shaped yoke, a cord or chain suspended between its ends, and the pointer shaft or arbor engaged by the said cord or chain, and the supporting-arms *d d'*, one of which, as *d*, is made adjustable, and the bimetallic strip, to which the said arms *d d'* are attached, substantially as described.

3. In a thermometer, the combination of a Y-shaped yoke composed of the two arms c^2 c^2 and the two supporting-arms *d d'*, respectively forming a part of the arms c^2 c^2, and pivoted together at their point of intersection, and the bimetallic strip, to which one of the arms, as *d'*, is rigidly connected, and the other arm, as *d*, is adjustably connected, substantially as described.

4. In the thermometer, the yoke and supporting-arm, to which the said yoke is attached in a plane at a slight angle with relation to the plane of rotation of the shaft or arbor, the cord or chain combined with the shaft or arbor for operating the pointer thereon, around which the cord or chain passes spirally, substantially as described.

5. A bimetallic thermal strip adjustably suspended at one end, the free end of the said strip being made narrower than the fixed end, substantially as and for the purpose set forth.

6. In a thermometer, the combination of a bimetallic thermal strip and the standard *i*, formed with the dovetailed recess in its outer side, in which the said bimetallic thermal strip is clamped adjustably, as set forth.

7. In a thermometer, the combination of a bimetallic strip and its pivoted supporting-arm *n*, and a clamp to hold the arm *n* in fixed position, and means, substantially as described, for moving the arm when released by the clamp to adjust the pointer by movement of the bimetallic strip, as set forth.

8. In a thermometer, the combination of a bimetallic strip, its pivoted supporting-arm *n*, and the toothed disk or clamp n^3, and the key *m*, engaging the supporting-arm and turning about the disk n^3, for moving the said supporting-arm on its pivot, as set forth.

9. In a thermometer, the combination of a bimetallic strip, its pivoted supporting-arm, and a clamp detachably secured to the pivot of the supporting-arm for holding said arm in fixed position, substantially as described.

382,562. THILL-COUPLING. THEOPHILUS A. SMITH, Coalburgh's, Pa. Filed Aug. 17, 1887. Serial No. 247,180. (No model.)



Claim.—1. In a thill-coupling, the combination, with a cylindrical axle-bearing provided with partially-circumferential flanges, arranged as described, of a ring-shaped thill-iron located thereon between the flanges, substantially as described.

2. In a thill-coupling, the combination, with a cylindrical axle-bearing having parallel flanges, arranged as described and shown, of a ring-shaped thill-iron broken away at one point for a distance equal to the length of one flange, and shorter than the other, to enable the thill-iron to be placed on the bearing between the flanges, substantially as described.

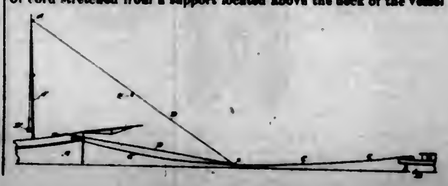
3. In a thill-coupling, the combination, with a ring-shaped thill-iron having a part of its periphery broken away, of a cylindrical axle-bearing having flanges thereon of such length and so positioned as to permit the thill-iron to be placed thereon when the shafts are elevated and prevent its removal at all other times, substantially as described.

4. The combination, with a cylindrical bearing, beveled at *d*, of a ring-shaped thill-iron, B, broken away at *b*, having arms C, and beveled at *f*, substantially as described.

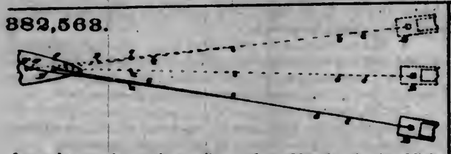
5. The combination, with a cylindrical bearing consisting of sections A and A', beveled at *d* and having flanges *a* and *a'*, of the thill-iron B, broken away at *b*, having arm C, and beveled at *f*, substantially as described.

382,563. STEERING VESSELS. THOMAS SKINNER, Chicago, Ill., assignor of one-half to Albert R. Ramsey, Cleveland, Ohio. Filed Jan 30, 1888. Serial No. 262,282. (No model.)

Claim.—1. The combination, with vessel and connected tow-line, of cord stretched from a support located above the deck of the vessel forward to a point on the tow-line, such cord bearing the signal-light, substantially as indicated, whereby such signal-light follows approximately the lead of the tow-line, and thereby indicates the direction for steering the vessel, substantially as set forth.



382,563.



2. The combination, with vessel, mast, and tow-line, of cord connected, respectively, with the mast and tow-line in position to follow approximately the lead of the tow-line, and a signal-light supported by such cord between the extremes of the latter, substantially as set forth.

3. The combination, with vessel, mast, and tow-line, of cord connected, respectively, with mast and tow-line, a weight connected with the free end of the cord, and a signal-light connected with the cord between the mast and tow-line in position to move laterally with the lateral lead of the tow-line, substantially as set forth.

4. The combination, with vessel, mast, and tow-line, of cord connected with the vessel and extending from thence forward to a snatch-block on the tow-line, and leading from thence to a snatch-block located at or near the mast-head, and leading from thence downward, a weight connected with the depending end of the cord, and a signal-light connected with the cord between the mast and tow-line in position to move laterally with lateral lead of the tow-line, substantially as set forth.

382,564. VALVE FOR STEAM-ENGINES. FRANK L. SMITH, Holton, Mich., assignor of one-half to William S. Clark, same place. Filed Sept. 12, 1887. Serial No. 249,673. (No model.)



Claim.—1. As an improvement in steam-engine valves, an outer valve acting as a steam-induction valve, in combination with the inner valve acting as an exhaust-valve, both valves having a simultaneous independent and positive motion in the same direction, in combination with the steam-cylinder having separate induction and exhaust ports opening into the steam-passage, and each port covered by its own valve, substantially as shown and described.

2. As an improvement in steam-engine valves, the combination of the inner and outer valves, each having toothed racks, with the rock-shaft traversing the steam-chest above the valves and connected therewith by toothed segments engaging the toothed racks of the valves and adapted to give a greater movement to the exhaust than the steam valve, substantially as specified.

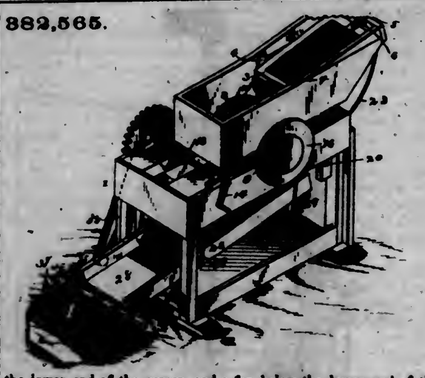
3. As an improvement in steam-engines, the cylinder provided with separate steam and exhaust ports, a sliding steam-valve and a sliding exhaust-valve inclosed within the steam-valve, and the rock-shaft for moving said valves, in combination with the valve-rod, adjustable cross-head, oscillating guide-bar, eccentric-rod, and eccentric, all operating conjointly to reciprocate the valves, as set forth.

382,565. TOBACCO-GRANULATING MACHINE. WILLIAM W. SMITH, Hartley, Pa. Filed Dec. 27, 1887. Serial No. 260,131. (No model.)

Claim.—1. The combination of a frame, a toothed cylinder journaled upon the frame, a feed-box upon the frame, one end of which is above the cylinder and the other end is provided with an inclined feed-board, an inclined screen above the feed-board, two hangers pivotally secured to the side of the box and to the inner end of the screen, an operating-rod secured to the other end of the screen and passed through the end of the feed-box, a shaft below the inclined feed-board having an arm, a rod or carved pitman connecting the arm with the end of the operating-rod, and a rod for connecting the shaft with the cylinder-shaft.

2. The combination of a frame, a cylinder journaled across its top, a feed-box above the cylinder, one end of which is provided with an inclined feed-board, an inclined screen above the feed-board, a vibrating screen below the cylinder, a drawer below this screen and the inner end of the feed-board, a trough secured transversely across the lower end of the screen, and a fan below the lower end of the screen.

382,565.



3. The combination of a frame, a cylinder journaled across its top, a feed-box, a vibrating screen in one end of the box, one end of which is provided with an operating-rod which projects through the end of the box, a vibrating screen within the frame below the cylinder, a shaft journaled in the frame below the screen in the feed-box and at the end of the screen in the frame, two arms upon the shaft—one of which is connected with the operating-rod of the screen in the feed-box and the other arm is connected with the screen within the frame—and a rod for connecting this shaft with the shaft of the cylinder.

382,566. REGULATING-VALVE FOR GAS-BURNERS. GEORGE R. SNOW, Buffalo, N. Y. Filed Apr. 6, 1887. Serial No. 233,866. (No model.)



Claim.—1. The combination, in a heating-gas burner, of a mixing-tube, a valve-casing, a shut-off valve, a perforated tubular stem connected to said valve and provided with a central passage, and an opening, D, smaller than the interior of the valve-casing, in which the tubular stem has a cylindrical fit, whereby the flow of gas through the opening D is regulated, substantially as described.

2. In a heating-gas burner, the combination of a mixing-tube, a valve-casing extended into the mixing-tube and provided with the escape-opening D, a shut-off valve, a tubular stem connected therewith and provided with the passage E and orifices *e*, said stem being arranged in the casing to leave a space around it and having a cylindrical fit in the escape-opening, whereby when the valve is opened a jet of gas will pass into the mixing-tube from the central passage, E, and also from the space around the tubular stem, substantially as described.

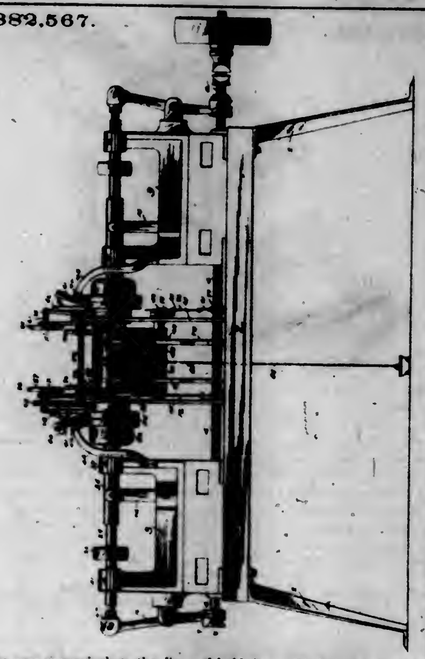
382,567. CAN-HEADING MACHINE. JOHN SOLOMS, Baltimore, Md. Filed Nov. 16, 1886. Serial No. 189,081. (No model.)

Claim.—1. In a can-heading machine, a pair of reciprocating dies placed opposite to each other, fitted to receive the ends of the can-body and hold them in proper shape while the heads are placed thereon, said dies having open slots to admit the can-heads, independently-reciprocating plungers in the dies to force the head upon the can-bodies, and mechanism for operating the dies and plungers, all substantially as described.

2. In a can-heading machine, a pair of reciprocating dies placed opposite to each other and fitted to receive the ends of the can-body and hold them in proper shape while the heads are placed thereon, said dies having open slots to receive the heads, independently-reciprocating plungers in the dies to force the heads upon the can-body, chutes for delivering the heads to the dies, and operating mechanism for these parts, all substantially as described.

3. In a can-heading machine, a pair of reciprocating dies placed opposite to each other and fitted to receive the ends of the can-body and hold them in proper shape while the heads are placed thereon, independently-reciprocating plungers in the dies to force the heads upon the body, and an intermediate carrier having a series of arms fitted to receive the cans, and having an intermittent motion to bring

882,567.



the cans successively to the dies and hold them with their ends in position to be acted on by the dies and plungers, substantially as described.

4. In a can-heading machine, a pair of reciprocating dies placed opposite to each other and fitted to receive the ends of the can-body and hold them in proper shape while the heads are placed thereon, independently-reciprocating plungers in the dies to force the heads upon the body, said plungers being on shafts provided with mechanism for giving them rotary motion, crimping-disks, and means for forcing said disks upon the can, all substantially as described.

5. In combination, the reciprocating die fitted to the can-body, having an open slot to receive the can-head, the reciprocating plunger located in the die and fitted to the can-head, mechanism for operating the die and plunger, and a carrier for the can-body, all substantially as described.

6. The combination of the die 34, reciprocating tubular stem 36, plunger 32, and a longitudinal reciprocating shaft, 29, as set forth.

7. The combination of the die 34, tubular shaft 36, pivoted lever 14, cam 12, with plunger 32, shaft 29, pivoted lever 10, and cam 8, as set forth.

8. The combination, with a can-heading machine having a trough for feeding the cans to the headers, of a fluxing-machine mounted over said trough and constructed and arranged to discharge the fluxed cans directly into the trough, as set forth.

9. The combination of the disks 51 52, adapted to receive a can-body between them, a pan for containing fluxed material, and rotary brushes 53, arranged in proper relation to the disks and pan for distributing the material upon the edges of the can-body, substantially as described.

10. The combination, with the plungers 32, shafts 29, and means for retaining them and forcing them together, of the crimping-disks 70, arranged in relation thereto, as described.

11. The combination of the dies having slots 39, and the plates 40 and 41, the latter being hinged to the dies and having mechanism for tilting them to discharge the can-heads through the slots, as and for the purpose set forth.

12. The combination, with the slotted pivoted lever 10, fork 24, rod 26, collar 27, and a bored shaft, 29, carrying the head 32, of mechanism for oscillating the lever 10 on its pivot, as set forth.

13. The combination of the can-carriers 49, having fingers 78, trough 50, and dies 34 35 36, as set forth.

14. The combination of plunger 36, die-cup having slot 39, and means for giving them reciprocating movement, the plate 40, hinged plate 41, having crank 42, and the bar 43, attached to the rigid portion of the machine, as set forth.

15. The combination of the die-cup and the plunger with mechanism whereby the die-cup is reciprocated and the plunger reciprocated and rotated, as set forth.

16. The combination of plungers 32, their stems, and their rotating and reciprocating mechanism, with the crimping-disks 70, mounted on frame 67, and the cam-operated levers for bringing them into contact with the can-body held between plungers 32, as set forth.

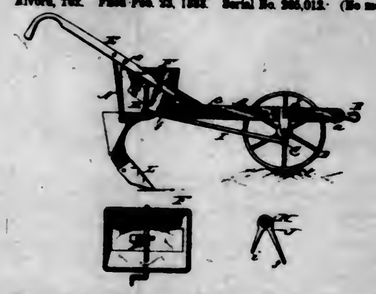
17. The combination of the disks 51 and 52 upon suitable shafts, the supports x x', the bent lever 62, and spring 61, the gears 58 and 59, the shaft 54, and the brushes 53, substantially as set forth.

382,568. CORN-HUSKER. JOSEPH SPENCE, near New Lisbon, Ohio, assignor to Lydia A. Spence, same place. Filed Oct. 12, 1885. Serial No. 179,718. (No model.)



Claim.—An implement for husking corn, consisting of the pivoted handles or levers A A', curving away from each other from their pivotal point, and having the lateral extensions B B', the cutting-blade D, provided with the curved projections I, the platform C, and the spring H, having its ends secured to the levers A and A', respectively, substantially as and for the purpose set forth.

382,569. CORN AND COTTON PLANTER. LOUIS TEDDER, near Alvord, Tex. Filed Feb. 23, 1888. Serial No. 265,012. (No model.)



Claim.—The combination, with the hopper, the wheel, the crank-shaft carrying said wheel, the rock-shaft journaled in said hopper, and the pitman connecting the crank-shaft with the rock-shaft, of a slide within said hopper, and the agitator J, on said rock-shaft, within the hopper, and formed with two arms of different lengths and extending in different vertical planes, the longer arm engaging an opening in the slide and extended through the opening in the bottom of the hopper and the other arm working in the hopper in proximity to the slide, substantially as shown and described, and for the purpose specified.

382,570. OX-YOKE. JULIUS S. VALENTINE, Albion, Mich. Filed Mar. 3, 1888. Serial No. 266,509. (No model.)



Claim.—1. The combination, in a neck-yoke for oxen, of a slotted bar A, provided on its upper side with a frame carrying a central pinion and rollers o o, neck-pieces C C, having blocks c' and plates D, and rack-bars F F, attached to the plates D, substantially as shown, and for the purpose set forth.

2. The combination, in a neck-yoke for oxen, of a bar, A, having end slots, neck-pieces C C, carrying bows E, rack-bars F, meshing with the central pinion, and rollers o o, for holding the rack-bars against the pinion, the parts being organized substantially as shown, and for the purpose set forth.

3. The combination, in a neck-yoke for oxen, of a bar, A, provided with end slots, B B, a frame carrying a pinion and rollers attached to the central portion of the bar A, and depending block I, neck-pieces C C, having blocks c', and plates D, bows carried thereby, and rack-bars secured to the plates D, the parts being organized substantially as shown, and for the purpose set forth.

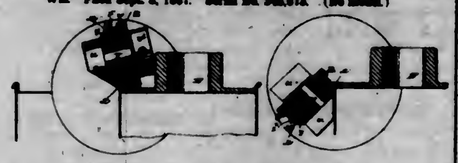
382,571. BIRD-CAGE SPRING. REUBEN WAGNER, Washington, D. C. Filed Feb. 20, 1888. Serial No. 265,717. (No model.)



Claim.—1. In a device for supporting bird-cages, the combination of the coiled springs A and A', the cross-piece B, having eye b, and the cross-piece C, having hook c, all substantially as described.

2. The combination of the springs A A', the upper cross-piece, B, the lower cross-piece, C, and the guard-wire, all arranged substantially as and for the purpose specified.

382,572. SEAMING-MACHINE. FRANCIS A. WALSH, Milwaukee, Wis. Filed Sept. 3, 1887. Serial No. 248,572. (No model.)



Claim.—1. In a machine for seaming sheet-metal vessels, a roll or former having a seaming-groove at an acute angle to its axis, and means, substantially as described, for actuating said roll or former with relation to a vessel, whereby the operation of seaming is accomplished, as set forth.

2. In a machine for seaming sheet-metal vessels, a roll or former having a seaming-groove at an acute angle to its axis and a finishing-face approximately parallel to said axis, and means, substantially as described, for actuating said roll or former with relation to a vessel, whereby the operation of double-seaming may be accomplished, as set forth.

3. In a machine for seaming sheet-metal vessels, a roll or former having a seaming-groove at an acute angle to its axis, a finishing-face approximately parallel to said axis, and a shoulder at an angle to the finishing-face, and means, substantially as described, for actuating said roll or former with relation to a vessel, whereby the operation of seaming is accomplished, as set forth.

4. In a machine for seaming sheet-metal vessels, a roll or former made in two sections, said sections so constructed and arranged that a groove at an acute angle to the axis of the roll or former is left between the opposing surfaces of said sections, and means, substantially as described, for actuating said roll or former with relation to a vessel, whereby the operation of seaming may be accomplished, as set forth.

5. In a machine for seaming sheet-metal vessels, a roll or former made in two sections, so constructed and arranged that a groove at an acute angle to the axis of the roll or former is left between the opposing surfaces of the sections, and means, substantially as described, for holding one of said sections against rotation and for actuating said roll or former with relation to a vessel, whereby the operation of seaming is accomplished, as set forth.

6. In a machine for seaming sheet-metal vessels, a roll or former provided with a seaming-groove and beveled on one side of this groove to form a finishing-face, and means, substantially as described, for actuating said roll or former, whereby the operation of seaming is accomplished, as set forth.

7. In a machine for seaming sheet-metal vessels, a bifurcated rock-shaft, a stud or support adjustable in the bifurcation of the shaft, a seaming-roll or former arranged on said stud or support, and means, substantially as described, for actuating said shaft with relation to a vessel, whereby the operation of seaming may be accomplished, as set forth.

8. In a machine for seaming sheet-metal vessels, the combination of a chucking mechanism, a shaft, a roll or former carried by the shaft, and mechanism, substantially as described, connecting the shaft and chucking mechanism, whereby the shaft is rocked and the chucking mechanism is reciprocated at predetermined intervals, as set forth.

9. In a machine for seaming sheet-metal vessels, the combination of a chucking mechanism, a shaft provided with a pinion, a roll or former carried by the shaft, a toothed segment arranged to mesh with the pinion, and suitable mechanism for actuating the segment, substantially as set forth.

10. In a machine for seaming sheet-metal vessels, the combination of a live-spindle carrying a chuck, another spindle in line with the live one and having its opposing end provided with a bore, a spring seated in the bore, a block loosely arranged above the spring, a chuck having a stem that fits said bore and rests upon the block, and a seaming mechanism, substantially as set forth.

11. In a machine for seaming sheet-metal vessels, the combination of a live-spindle carrying a chuck, another spindle in line with the live one and having its opposing end provided with a bore, a spring seated in the bore, a block loosely arranged above the spring, a chuck having a stem that fits said bore and rests upon the block, mechanism for bringing the latter spindle to and from the former, and seaming mechanism, substantially as set forth.

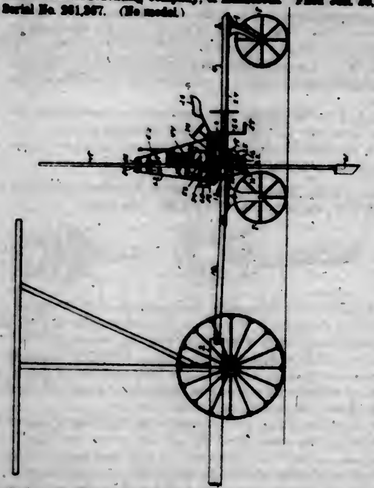
12. In a machine for seaming sheet-metal vessels, the combination of two oppositely-arranged and movable spindles, a chuck carried by each spindle, a shaft carrying two cams having a portion thereof timed alike, a lever mechanism connecting each spindle with one of the cams, and a seaming mechanism, substantially as set forth.

13. In a machine for seaming sheet-metal vessels, the combination of two oppositely-arranged and movable spindles, a chuck carried by each spindle, a shaft carrying two cams having a portion thereof timed alike, a lever mechanism connecting each spindle with one of the cams, a shaft carrying a roll or former, a segment geared to the shaft, a lever mechanism connected to the segment, and a cam for actuating the lever mechanism, substantially as set forth.

14. In a machine for seaming sheet-metal vessels, the combination of a shaft carrying a roll or former and provided with a pinion, a toothed segment arranged to mesh with the pinion, a lever-arm, a rod adjustably connected to the segment and lever-arm, and a cam for actuating said lever-arm, substantially as set forth.

15. In a machine for seaming sheet-metal vessels, the combination of a main standard, a block pivoted to the standard and provided with an arm, a bearing arranged on the block, a rock-shaft journaled in the bearing, a roll or former carried by the rock-shaft, and a cam arranged to impinge against the arm of said block and move the latter on its pivot at predetermined intervals, substantially as set forth.

382,573. CUTTING DEVICE FOR SEWERS AND OTHER EXCAVATIONS. WILLIAM WAGNER, Minneapolis, Minn., assignor to the National Sewer Excavating Company, of Minnesota. Filed Jan. 30, 1888. Serial No. 261,967. (No model.)



Claim.—1. The combination, in a machine of the class described, of a suitable truck-frame, a carriage arranged to slide longitudinally of the said frame, a platform arranged to slide laterally on said carriage, means for moving said carriage and said frame, the rolls mounted on said platform, the vertically-sliding cutter-bar arranged between said rolls, and means for driving said rolls in either direction, substantially as described.

2. The combination, in a machine of the class described, of a suitable truck-frame, a carriage arranged to slide longitudinally of said frame, a platform arranged to slide laterally on said carriage, a shaft journaled upon said carriage and operated from said platform, the rolls or sheaves upon said shaft, the cable or rope passing around said sheaves and having its ends secured to the truck-frame, the rolls mounted on said platform, the vertically-sliding cutting-bar arranged between said rolls, and means for driving said rolls in either direction, substantially as described.

3. The combination, in a machine of the class described, of a suitable truck-frame, a sliding carriage on said frame, a platform supporting the operating mechanism of the machine and sliding on said carriage, means for operating said carriage from said platform, consisting of the shaft 16, revolving in bearings on the carriage and connected to the frame by the cable 23, the gear 20 on the shaft 16 moving with the platform, and a suitable pinion-shaft and hand-wheel secured to the platform for operating the gear 20, substantially as described.

4. The combination, in a machine of the class described, of a suitable truck-frame, a sliding carriage on said frame, a platform supporting the operating mechanism of the machine and sliding on said carriage, the cable 42, having its ends secured to the carriage, the spool or sheave 40, around which the cable is turned, and by which the said cable is gripped, the shaft 36, journaled upon the platform, and the hand-wheel 38, for operating said shaft, whereby the platform and the operating mechanism of the machine are moved upon the carriage, substantially as described.

5. In a machine of the class described, the combination, with a suitable truck-frame, of a carriage sliding longitudinally on said truck-frame, a platform sliding laterally on said carriage, a friction-wheel mounted in fixed bearings upon said platform, a friction-wheel mounted in movable bearings, also supported upon said platform, a cutter-bar arranged to pass between the faces of the two friction-wheels, means for operating the movable friction-wheel against said bar, and means for driving said friction-wheels in either direction, substantially as described.

6. In a machine of the class described, the combination, with the platform sliding in two directions at right angles to each other, of one or more cutter-bars, 48, provided with the picks or cutters 61, the friction-wheels 46, mounted in stationary bearings, the movable friction-wheels 47, the faces of the said wheels so arranged as to be brought in contact with the bars 48, the eccentric bearings 52, in which the shaft of the movable wheel is mounted, the lever 56, fulcrumed upon the platform and connected to a lever or arm on the eccentric box, whereby, by operating the said lever, the movable friction-wheel is clamped against the bar 48, substantially as described.

7. In a machine of the class described, the combination, with a suitable platform and a driving mechanism located thereon, of the cutter-bar 48, the friction-wheels 46 and 47, actuated by said driving mechanism for raising said bar, the rolls 66, located above the friction-wheels in contact with the side of the bar 48, the standards 62, for supporting and bracing said rolls, and the rolls 68 in contact with the edge of the bar and mounted in the adjustable yoke 72, supported upon a frame, 70, secured to the standards 62, all substantially as described.

8. In a machine of the class described, the combination, with the sliding cutter-bar and the friction-rolls actuating said bar, of an adjustable platform, 81, supporting said rolls, and means for raising and lowering said platform, substantially as described.

382,574. FIRE-ESCAPE. FRANK A. WHITEHOUSE, Port Jervis, N. Y. Filed Jan. 31, 1888. Serial No. 261,694. (No model.)



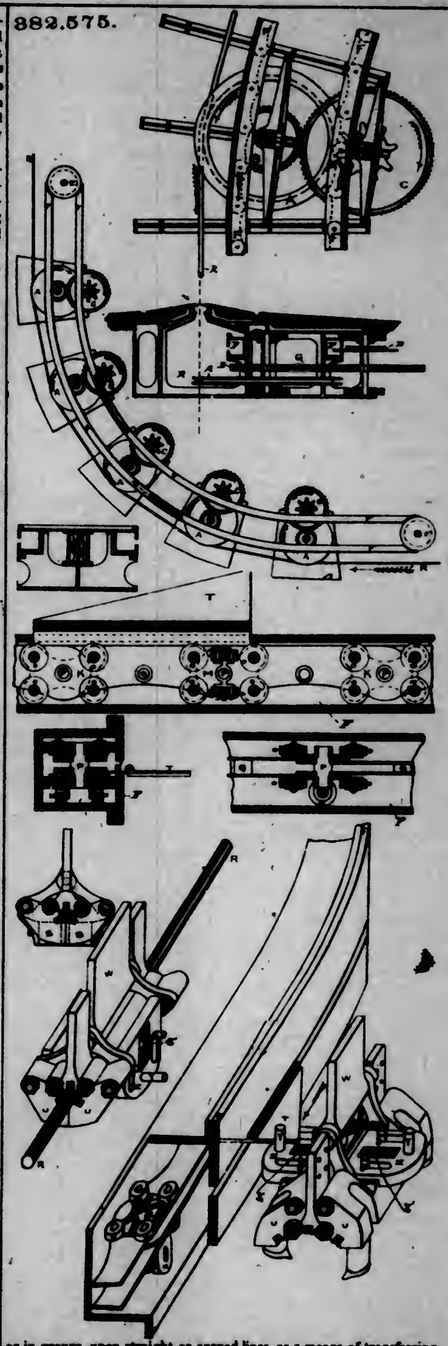
Claim.—1. In a fire-escape, the combination of the frame composed of the two parts A B, loosely connected together at their upper ends and provided with the ears F, with the lever I, provided with bearings to catch in the ears, an opening, J, through its upper end for the rope L to catch in, a handle on its lower end, and an arm or projection on its inner upper corner to force the two parts of the frame tightly against the rope C, substantially as shown.

2. In a fire-escape, the combination of the frame A B, provided with the legs and projections D E, and the ears or bearings F, with the rope C, and the lever I, provided with an opening for the rope or strap which supports the weight of the person descending, an arm which bears against the side of the part B of the frame, and the handle upon the lower end of the lever, substantially as described.

382,575. CABLE ROAD AND MACHINERY FOR OPERATING THE SAME. BROWN J. WHEELER, San Francisco, Cal. Filed July 11, 1881. Serial No. 57,694. (No model.)

Claim.—1. A sheave or series of sheaves or pulleys, either singly

382,575.



or in groups, upon straight or curved lines, as a means of transferring power from cables used on cable roads to an endless chain, or other mechanical device, for the purpose of enabling cars or dummies on cable roads to travel on curves to pass from one cable or track to another cable or track or to cross other cables, substantially as described.

2. In a cable railway, a system of gear-wheels as a means of actuating and regulating the speed of an endless chain in proportion to that of the cable or rope from which its power is derived, substantially as described.

3. A toothed wheel or series of toothed wheels, in combination with a main sheave or sheaves as a means of transferring power from cables used on cable roads to an endless chain, either with or without a system of intermediate gearing mechanism, substantially as described.

4. In combination with a cable road and dummy or cars, a tube, either straight or curved in plan view, having a side slot, and a supplemental endless chain within the tube adapted to make a connection with the dummy or cars of the cable road, substantially as described.

5. An endless chain traveling inside a tube, said tube being either straight or curved in plan view and having a slot throughout its length, through which slot a certain number of the links of which said chain is composed, or attachments to said links, project beyond the outside of the tube for the purpose of connecting with the cars or dummies in use on cable roads, the said parts being combined and arranged substantially as described.

6. A grip in which the part surrounding the cable is divided into three equal parts of one hundred and twenty degrees of a circle, each of which parts may either come in immediate contact with the cable, in which case a gripping action would be brought to bear upon the whole of its circumference, or fitted with movable shoes or dies, so as to allow of gripping action on three equidistant points in its circumference, the central portion being fixed to a shank or portion of the grip-frame projecting downward through the slot in the tunnel or tube of said cable road, and thus connected with the car or dummy, and the side portions being hinged to the center at the points V, and connected by projecting lugs and connecting-links with an upright bar, W, having a vertical movement and operated by the grip-handle K^1 and connecting-link J^1, substantially as described, and having a projecting pin, Y, arranged upon the sides of the grip by the mechanism, substantially as described, for connecting with a supplementary endless chain, and having rollers revolving upon a fixed spindle, called "finger-rollers," arranged upon the lower portion of the sides of the grip, substantially as described, for the purpose of picking up the cable, and of carrying said cable suspended when the grip is partly open.

7. An automatic device for disengaging the grip from the cable on cable roads, comprising a cam-plate arranged within or upon the tunnel or tube, a lever or bar arranged upon the grip to be actuated by said cam-plate, and mechanism for connecting said bar with the spring handle or catch, and to disengage the same from the segmental rack, substantially as described.

8. An automatic device for disengaging the grip from the cable, comprising a cam-plate arranged within or upon the tunnel, a spring handle or lever-formed catch, a lever or bar arranged upon the grip to be actuated by said cam-plate, and mechanism for connecting said bar with the spring handle or catch.

9. A grip for cable railways comprising a fixed jaw combined with swinging jaws pivoted to grasp the cable and move it toward the fixed jaw to clamp it by the three jaws, substantially as described.

10. A grip for cable railways comprising a series of connected jaws, two of said jaws being pivoted to swing in a radius to grasp the cable to move it toward another jaw to clamp it between the series of jaws, substantially as described.

11. In a cable railway which passes around a curve, an independent subsidiary cable having its driving-sheave connected with the shaft of a sheave by which the direction of the main cable is changed and deriving its power therefrom.

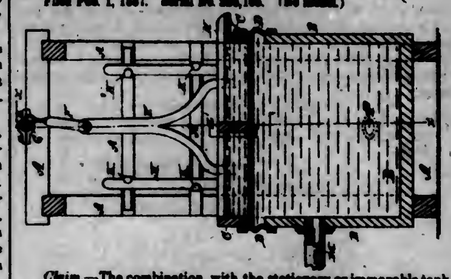
12. In a system for propelling cars by means of an endless rope or cable moving in an underground slotted tube or tunnel, the method of moving cars around curves, which consists in connecting them to a supplementary chain or cable which is driven by power derived from the movement of the main cable.

13. The improvement in moving cars around curves in cable railways, which consists in mounting a supplementary endless chain or cable on pulleys beneath a track, and providing the endless chain with arms which engage with a shank or projection extending downward from the car through a slot into the tunnel.

14. The improvement in the method of passing curves or other obstructions in cable railways, which consists in arranging a supplementary endless chain at a different level from the main cable, and to travel parallel with the curve of the track, and adapted to be connected with the grip of a car in lieu of a main cable while passing a curve, as set forth.

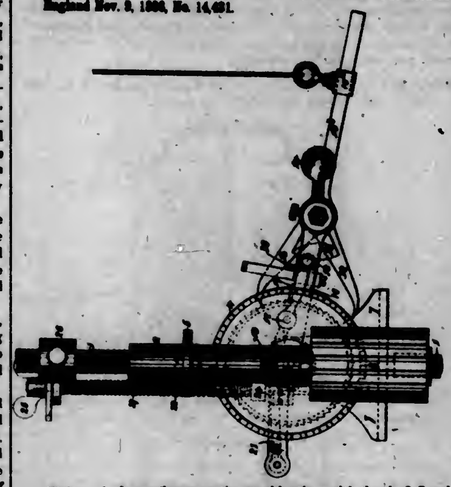
15. The method of passing curves or other obstructions in cable railways, which consists in connecting the car to a supplementary endless chain traveling along said curve or obstruction and conducting the main cable around such portion of the line at a lower level than said supplementary chain.

382,576. ORE-CONCENTRATOR. JAMES WEST, Silver City, Ore. Filed Feb. 1, 1887. Serial No. 226,163. (No model.)



Claim.—The combination, with the stationary or immovable tank of an ore-concentrator having a suitable water-inlet and an outlet for the concentrates, of a jig-box supported above said tank, a strip of a flexible water-tight material connecting the lower edge of said box with the upper edge of said tank, and means for vibrating said box, substantially as described.

382,577. APPARATUS FOR CONTROLLING THE SPEED OF STEAM-ENGINES. RICHARD WILEY, Birkhill, County of York, England. Filed Nov. 30, 1887. Serial No. 256,931. (No model.) Patented in England Nov. 9, 1886, No. 14,491.



Claim.—1. In a valve-gear, the combination, with the shaft 6 and its gear-wheel 4, of the ratchet-wheels 8 and 9, mounted on said shaft, the vibrating frame 10, the shaft 11 in said frame, the pawls 12 and 13, loosely mounted on said shaft 11, the pawl-reliever, and arm 16, secured on said shaft 11, the lever 17, mounted in frame 10 and coupled to said arm 16, the arm 21, its free end resting on a pin in lever 17, and the operating-rod 22, for depressing arm 21, said rod being actuated by the governor of the engine, whereby the governor by its action controls the engagement of the pawls with the ratchet-wheels, substantially as set forth.

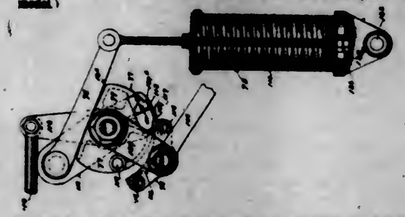
2. In a valve-gear, the combination, with the screw-threaded valve-stem 1, the long nut 2 on said stem, the pinion 3 on said nut, the operating-rod 22, coupled to and moving with said valve-stem, the shaft 6, the wheel 4 thereon meshing with pinion 3, the ratchet-wheels 8 and 9 on said shaft 6, the vibrating frame 10, the pawls carried by said frame and adapted to engage at proper times the said ratchets, the shaft 11 in said frame 10, the pawl-reliever 15, actuated by the partial rotation of shaft 11, and the intermediate gearing between rod 22 and shaft 11, whereby the movements of said rod are imparted to said shaft.

3. In a valve-gear, the combination, with the shaft 6, the ratchet-wheel 9 thereon, the vibrating pawl-frame, the pawl 13, carried by the same and adapted to engage said ratchet-wheel 9, the worm 26 on shaft 6, the worm-wheel 29 in mesh with said worm, and the releasing arm or finger 30 on the shaft of said worm-wheel and arranged

under said pawl, whereby the pawl is lifted out of engagement with the ratchet-wheel when shaft 6 shall have made a predetermined number of revolutions.

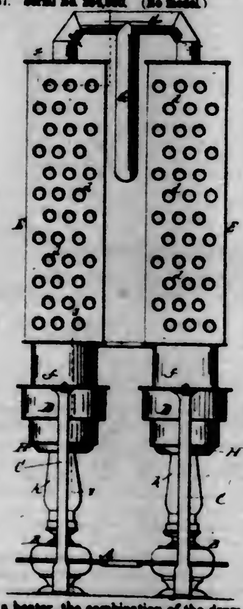
4. In a valve-gear, the combination, with the valve-stem 1 and its arm 26, of the operating-rod 23, which passes through said arm and is provided with a collar, 24, and lock-nuts 25, the spring 27 on said rod, between said arm and collar, and the intermediate arm, 21, which is actuated by said rod 23, whereby said valve-stem is enabled to move independently of the operating-rod by compression of said spring.

382,578. VALVE MECHANISM FOR ENGINES. STEPHEN WILCOX, Brooklyn, N. Y. Filed Mar. 21, 1887. Serial No. 231,653. (No model.)



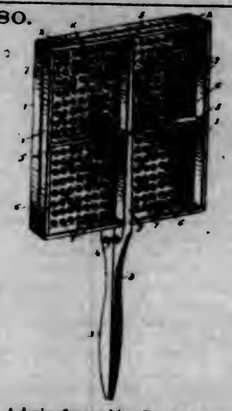
Claim.—In an induction-valve-operating mechanism by which a rocking movement is imparted to effect the valve-stroke, the combination of a valve-stem cam having a curved surface, substantially as shown, with a cam-lever and lever-spring, whereby the rotating movement actuating said valve is opposed in either direction from the normal, and the closed position of the latter is resumed and maintained by the action of the said spring and cam-lever when the valve is released from the opening mechanism.

382,579. LAMP-STOVE. JOHN R. WILSON, Rochester, N. Y. Filed Apr. 13, 1887. Serial No. 234,602. (No model.)



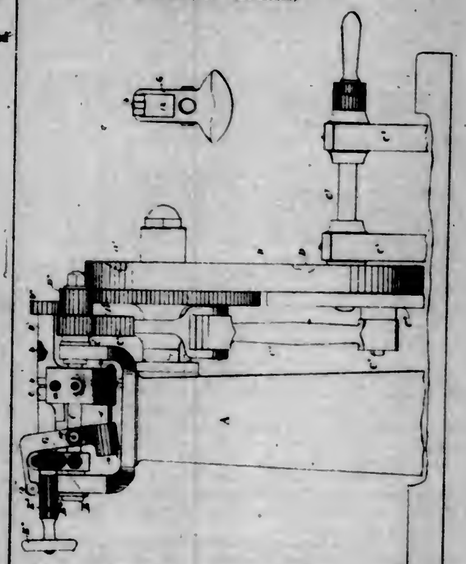
Claim.—In a heater, the combination of the drum D, open at its bottom and provided with the draft-opening *b* at its top, the radiator E, resting on the drum, the basket-shaped hood H, resting in the drum, open at its top, and provided with an opening, *g*, in its bottom to admit the lamp-chimney, and the convex packing-plate I, resting loosely in the hood and around the lamp-chimney, said hood being fitted to move vertically in the drum to allow it to be adjusted to contact with the packing-plate when fitted to the chimney, as shown and described, and for the purpose specified.

382,580. DEVICE FOR CATCHING FLIES. SAMUEL P. WILSON and F. ASHLEY WILSON, Bridgeport, Conn. Filed Feb. 20, 1888. Serial No. 264,956. (No model.)



Claim.—A device for catching flies and other insects, consisting of a two-part frame the parts of which are fitted to fold over upon themselves and are provided with cross-pieces, and having between the parts thereof a piece of open-work material covered with suitable sticky substance.

382,581. BURNISHING-MACHINE. CHARLES J. ABBY, Malden, assignor to the Tapley Machine Company, Boston, Mass. Filed Mar. 16, 1888. Serial No. 267,343. (No model.)



Claim.—1. In a burnishing-machine, an oscillating shaft, its attached swing-block or collar, and the arm B^3, combined with the equalizing-lever pivoted to move with the said shaft in its oscillations, substantially as described.

2. The oscillating shaft, its attached swing-block or collar, and the arm B^3, combined with the equalizing-lever pivoted to move with the said shaft in its oscillations, and with the rotating but jointed tool-carrying shafts E^3 b', bearings therefor, and burnishing-tool, to operate substantially as described.

3. In a burnishing-machine, the oscillating shaft provided with a pinion, the sector-lever to engage said pinion and oscillate the said shaft, means to vibrate the said sector-lever, the intermediate pinion, D^4, loose on the said oscillating shaft, the toothed gear to rotate the said pinion D^3, and the pinion b^4, rotated by the pinion D^4, combined with the swing-block, the arm B^3, and the connected shafts B^3 and b', bearings therefor, and tool, to operate substantially as described.

382,582. THEATRICAL APPLIANCE. JOSEPH ARDEN, New York, N. Y. Filed Oct. 13, 1887. Serial No. 252,021. (No model.)



Claim.—1. The combination of a stage, a mechanical structure representing an engine-house, interior beds supported by said structure having clothes laid thereon, lines attached to said clothes and to a common beam suspended above the structure, and a single hoist-rope attached to said beam leading over pulleys suspended above the stage, and provided with an attached counterpoise-weight, all arranged to operate substantially in the manner and for the purpose herein set forth.

2. The combination of a stage, a mechanical structure representing an engine-house interior, a series of beds supported by said structure having clothes laid thereon, independent lines attached to the clothes of each bed, a single beam suspended above the structure, to which said lines are attached, a single hoist-rope attached to said beam leading over pulleys suspended above the stage, and a counterpoise-weight attached to said hoist-rope, all adapted to operate substantially as shown and described.

3. The combination of a stage, a mechanical structure representing an engine-house interior, an engine, harness attached to said engine, crabs sustaining said harness connected by independent lines with a horizontal beam above the structure, and a hoist-rope attached to said beam passing over pulleys suspended above the stage and provided with a counterpoise-weight, all arranged substantially as and for the purpose herein set forth.

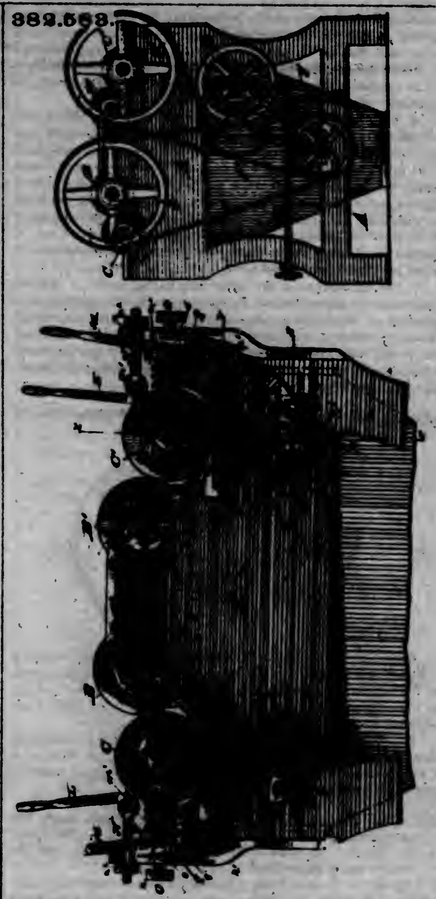
4. The combination, with a stage, of a mechanical structure representing an engine-house interior provided with a horizontal partition dividing the same into an upper and lower story, the upper story provided with a series of beds having covers, the lower story provided with an engine and attached harness, and means, substantially as shown and described, for simultaneously lifting the clothes from all the beds, and for retaining the harness in an elevated position, substantially as shown and described.

382,583. ROLLER-MILL. BERAH A. BARHAM, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed Oct. 27, 1886. Renewed Dec. 10, 1887. Serial No. 256,891. (No model.)

Claim.—1. The combination, in a roller-mill, of the pairs of rolls B B^2 C C, the rolls B C having pulleys on their extended journals on the same side of the mill, a counter-shaft journaled in the main frame and driven by the main belt at one end, endless belts *f f'*, unequal in length, connecting said counter-shaft at its other end with rolls B C, and a belt-tightening pulley located outside of belts *f f'*, and adapted to be engaged against the outer portion of one belt and the inner portion of the other belt, whereby both belts can be tightened simultaneously, or to be entirely released from the belts, substantially as and for the purpose specified.

2. The combination of the four rolls, a counter-shaft having two pulleys on the same end thereof, the pulleys on the journals of one roll of each pair of rolls, the belts *f f'*, of unequal length, converging from the pulleys on the roll-journals to the pulleys on the counter-shaft, with

382,583.



the idler-pulley journaled in a bifurcated bracket pivoted on the main frame to one side of the belts and counter-shaft, and the adjusting screw-rod, whereby the bracket can be shifted to cause the idler-pulley to impinge against the adjoining sides of the belts at one point of its periphery and regulate the tension of both belts simultaneously, substantially as and for the purpose described.

3. The combination of the counter-shaft provided with a pulley at one end rotated by the main driving-belt, the two equal-sized pulleys on the other end of the counter-shaft, the two pairs of rolls, the two equal-sized pulleys, one on the end of an adjustable roll of one pair of rolls and the other on the adjacent end of the stationary roll of the other pair, the belts *f f'*, of unequal length, actuating each of said pulleys from one of the pair of pulleys on the counter-shaft, with the belt-tightening device comprising a bracket, *g*, pivoted to the main frame on the side of and below the larger belt, *f'*, the idler-pulley G, and the adjusting screw-rod *g'*, engaging said bracket and an arm of the main frame, and adapted to adjust the bracket and cause the idler-pulley G to impinge against the slack outer portion of belt *f'* and against the slack inner portion of belt *f* at the same point of its periphery, whereby both belts can be simultaneously tightened thereby, all substantially as and for the purpose described.

4. The combination of the main frame, the stationary roll journaled upon the main frame, the adjustable roll, the bearing-blocks for the adjustable roll, the friction-rollers journaled in said bearing-blocks, blocks sliding vertically on the main frame, the cam-disks with their peripheries bearing on the peripheries of said rollers, shafts carrying said cam-disks and journaled in said blocks, and a lever-handle secured to said shaft, whereby the cam-disks can be partially rotated to raise or lower the adjustable roll, all substantially as specified.

5. In a roller-mill, the combination of the stationary roll, the ad-

justable roll, the bearing-blocks for the latter, the friction-rollers journaled in said blocks, the vertically-sliding cam-disks and lever-handle on the shaft thereof, the eccentric disks supporting the cam-disks, and the lever-handle on the shafts of the eccentric disks, whereby the same can be rotated to raise or lower the cam-disks, and consequently the adjustable roll, all substantially as specified.

6. In a roller-mill, the combination of the stationary roll, the adjustable roll, the bearing-blocks for the latter, the friction-rollers journaled in said blocks, the vertically-sliding cam-disks and lever-handles on the shaft thereof, the eccentric disks and lever-handle on the shaft thereof, the brackets *k'*, secured to the main frame, and the vertical adjusting-screws passing through threaded openings in said brackets, and with their ends impinging upon and supporting the bearings of the shaft of the eccentric disks, whereby the adjustable roll can be brought parallel to the stationary roll by turning the said vertical screws, all substantially as set forth.

7. The combination of the main frame having an arm, *n'*, the stationary roll, the adjustable roll, the bearing-blocks having projections extending out from their peripheries, the bolts having their inner ends pivoted to said projections and engaging with arm *n'*, the adjusting-nuts on said bolts, and the springs bearing against the bearing-blocks and the arm *n'* and their adjusting-nuts, the whole arranged to operate substantially to adjust the rolls.

382,584. PROP FOR TOP-BUGGIES. ISAAC BATEMAN, PITT, PA. Filed Dec. 5, 1887. Serial No. 257,202. (No model.)



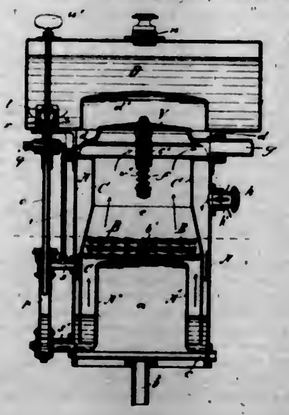
Claim.—1. As a new article of manufacture, the buggy-top prop hereinbefore described, the same being made of a volute-shaped spring and having the square socket *a* formed on its inner and lower end and the curved spring-arms *b* on its outer and upper end, the whole being constructed integrally, as shown and described.

2. A buggy-top prop consisting of a spring of volute form whose lower portion—that is to say, the portion below the plane of the point of attachment—is made thinner than the upper portion, to render it more elastic, as and for the purpose specified.

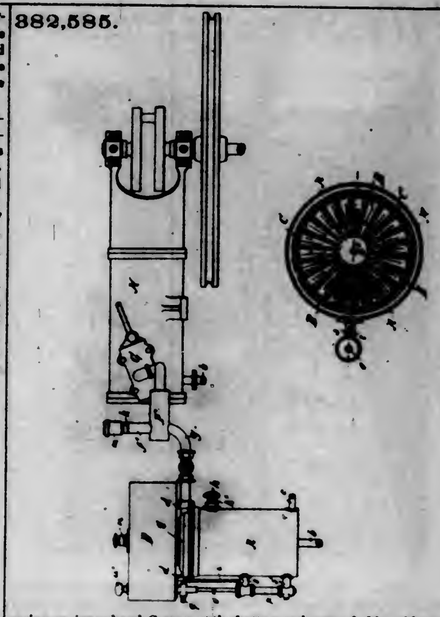
382,585. CARBURETOR. CARL BENZ, Mannheim, Baden, Germany, assignor to Benz & Co., same place. Filed Oct. 24, 1887. Serial No. 253,198. (No model.) Patented in France Mar. 26, 1888, No. 178,037, and in England Apr. 26, 1888, No. 5,789.

Claim.—1. In carbureting apparatus, the combination of a hood, C, suspended within the casing A, with the disks B, said disks being fastened to the top of dome A' and being slit, and the slotted parts being bent at an angle to the horizontal plane of the disks, and the mixer F, substantially as and for the purpose set forth.

2. In carbureting apparatus, the combination of an outer casing, A, with a screw-valve, A, for regulating the admission of air into said



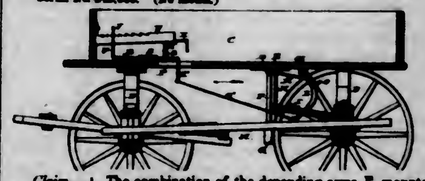
382,585.



casing, an inner hood, C, open at the bottom and suspended in said casing A, said hood being provided with an outlet, *g*, for the generated vapors generated from the liquid in the hood C and casing A, and the disks B within the hood C, substantially in the manner and for the purpose set forth.

3. In carbureting apparatus, the combination of a feeding device consisting of a pipe, *o*, connecting the reservoir D with the casing A, and a valve-spindle, *u*, passing through the tank D, and provided with a handle, *s'*, and screw *u*, for regulating the valve *x*, and with the groove *v*, in connection with the gage-glass *p*, communicating with the reservoir D by the pipe *o* and with the casing A by the pipes *o* and *o'*, substantially in the manner and for the purpose set forth.

382,586. VEHICLE-BRAKE. DONALD B. BOWLBY, Lynchburg, and FRANK O. RAMSEY, Alleghany Springs, Va. Filed June 30, 1887. Serial No. 243,009. (No model.)



Claim.—1. The combination of the depending arms F, mounted upon a rock-shaft and carrying the brake shoes or blocks at their lower ends, the springs to normally press the brake-shoes against the wheels, and the lever-connection to move the brake-shoes from the wheels against the tension of the springs, substantially as described.

2. The combination of the depending arms F, mounted upon a rock-shaft and carrying the brake shoes or blocks upon their lower ends, the springs to normally press the brake-shoes against the wheels, the lever in connection with the said brakes to move the same from the wheels, and the detent W, engaging the said lever to lock the same, as set forth, substantially as described.

3. The combination of the rock-shaft having the arms F, the brake-block attached to the said arms, the springs to normally press the brake-blocks against the wheels, the lever connected to the rock-shaft to turn the same, and thereby move the brake-blocks from the wheels, the slide connected to the said lever, and the ratchet bar or detent engaging the said slide, for the purpose set forth, substantially as described.

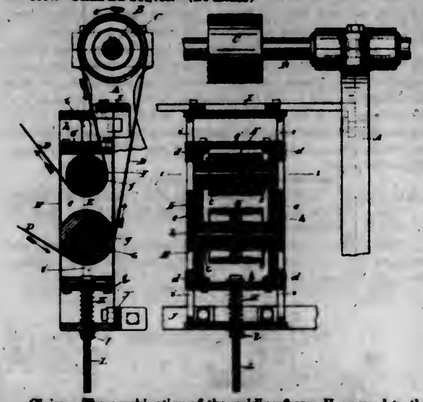
4. The combination of the rock-shaft having the arms F, the brake-blocks secured to the said arms, the springs to normally apply the brake-blocks to the wheels, the arm K, projecting rearward from the rock-shaft, the lever L, fulcrumed to the said arm and having the anti-friction roller at its short end to bear against the bottom of the

vehicle-body, the longitudinally-movable slide connected to the long arm of the lever, and means, substantially as set forth, to engage the slide, substantially as described.

5. The combination, with the rock-shaft, of the arms F, the brake-blocks or shoes connected to the same, the springs to normally hold the brake-blocks against the wheels, the lever L, having a roller, M, the link K, and the connections to operate the lever L, substantially as described.

6. The combination of the rock-shaft E, the two depending arms F, secured thereto and carrying brake blocks or shoes at their lower ends, the levers H, connected to the rock-shaft, the springs I, connected to the lower ends of the levers H and to the wagon-frame, the lever L, having a frictional roller, M, at its upper end, the link K, adjustably connected to the lever L at one end and to the rock-shaft at the other, the rod N, the lever T, and the detent W, substantially as described.

382,587. BELT-TIGHTENER. JOHN H. BRENNAN, Albany, N. Y., assignor of one-half to William H. Furey, same place. Filed July 19, 1887. Serial No. 244,788. (No model.)



Claim.—The combination of the guiding-frame H, secured to the machine and provided with slots *i i*, the pulley-frame E, carrying pulleys F, and G, and provided with projections *d d*, working in said slots, adjusting-bolt L, and spring K between said guiding-frame and the pulley-frame, with the pulley C of the wheel operating shaft B and the belt D, substantially as and for the purpose set forth.

382,588. ANTI-FREEZING DEVICE FOR WATER-PIPES. WALKER G. BROWNE, Atlanta, Ga., assignor to the United States Automatic Water Cut-Off Company, of Georgia. Filed Mar. 18, 1887. Serial No. 231,040. (No model.)



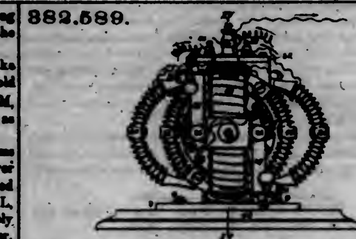
Claim.—The combination of the compound plates *x y*, the valve-stem *d'*, the different-sized valves C C', so arranged as to allow the pressure of the water to help open them after being started by the compound plates, the guide *d''*, the valve-shell, and the lug G.

382,589. ELECTRIC MOTOR. GEORGE F. CARD, Covington, Ky., assignor to the George F. Card Manufacturing Company, same place. Filed Aug. 3, 1887. Serial No. 245,694. (No model.)

Claim.—1. The combination, in an electric motor, of the following elements, to wit: a rotatable armature, two diametrically-remote pole-pieces which embrace three sides of the armature-bobbins, and which are magnetically connected by a pair of limbs in the plane of the armature-shaft, and which constitute its journal-bearings, and one or more limbs in the plane of rotation, all of said limbs being wound in series with one another and with the armature and the outer circuit, substantially as set forth.

2. In an electric motor, the combination, with armature 18, of three pairs of electro-magnetic limbs, 18 18', 19 19', 20 20', that on diametrically-opposite sides of the armature unite in pole-pieces N S, which embrace three sides of the armature-bobbins, said limbs being

382,589.

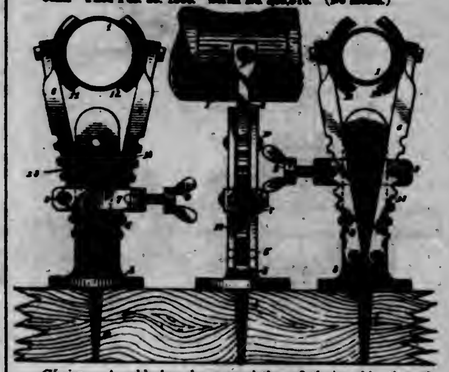


so wound as to be in series with each other and with the armature and the external circuit and to produce contrary polarity in said pole-pieces.

3. In an electric motor, the combination, with an armature, 18, of three pairs of electro-magnetic limbs, 18 18', 19 19', 20 20', that on diametrically-opposite sides of the armature unite in pole-pieces N S, one pair being fixed at right angles to the other two, and all being wound as to be in series with each other and with the armature and the external circuit, and so as to produce opposite polarity in said pole-pieces.

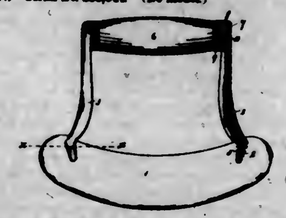
4. In an electric motor, the combination of clamp-ring 8, rubbered foot 5, field-ring N S, 19 19', non-magnetic saddle 31, and the non-conducting cap 32, supporting the binding-posts 33, 34, 35, and 36.

382,590. SOLDERING-CLAMP. WILLIAM H. CLAY, Waterbury, Conn. Filed Feb. 25, 1888. Serial No. 265,316. (No model.)



Claim.—A soldering-clamp consisting of the combination of a base, 3, having a holding-screw, 4, a bifurcated standard, 5, consisting of two separated side pieces rigidly connected near their upper ends, two clamping-jaws, 6, provided with notches 13 and grasping portions 11, and a holding device, 7, having cross-pin 8 and thumb-screw 9, substantially as set forth.

382,591. KNIFE. MARTIN COWLES, Bridgeport, Conn. Filed May 28, 1887. Serial No. 239,044. (No model.)



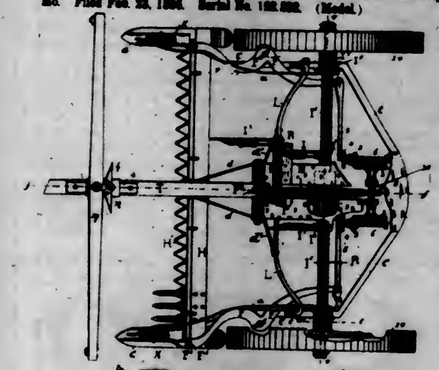
Claim.—1. The improvement in the art of attaching shanks to blades, which consists in forming slots in the blades and grooves in the shanks, then inserting the ends of the shanks into the slots with the edges of the slots resting within said grooves, and, finally, applying lateral pressure to the metal of the shanks on lines perpendicular to the plane of the blade, thereby forcing said metal against the inner faces of the slots, and by the same operation compressing it against the lateral faces of the blade in proximity to the slots.

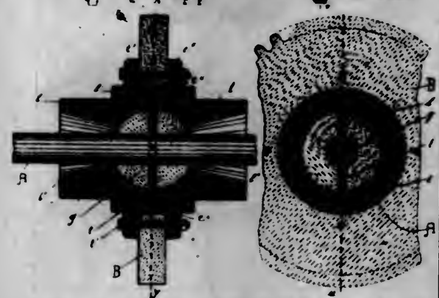
2. The method of attaching shanks to blades, which consists in forming slots in the blades having overhanging portions *b*, and form-

ing grooves on opposite sides of the shanks, then inserting the ends of the shanks into the slots with the edges of the overhanging portions resting in the groove, and, finally, applying lateral pressure to the metal of the shanks on lines perpendicular to the blade, thereby forcing said metal against the inner faces of the slots and beneath said overhanging portions, and at the same time compressing it against the lateral faces of the blade in proximity to the slots.

3. The combination, with a blade having a slot with overhanging portions 5, of a malleable shank having grooves on opposite sides and a solid central compressed portion between said grooves, substantially as set forth.

382,592. MOWING-MACHINE. JOSEPH DAIN, Jr., Kansas City, Mo. Filed Feb. 23, 1886. Serial No. 192,892. (Model.)





Claim.—1. In a mowing-machine, the combination of the main axle, a ball fixed thereon and rotating therewith, a gear-wheel mounted on the ball and provided with transversely-projecting hubs, through which said axle passes, and the framing of the machine which carries the cutter mechanism and its driving-gear mounted on said hubs, substantially as described.

2. The combination of the main axle A, the ball *g*, fixed thereon, a pin, *l*, projecting beyond the surface of the ball, and a surrounding casting provided with an oblong recess, in which the projecting end of said pin vibrates, said recess having its longest diameter parallel with the main axle, for the purpose substantially as described.

3. A mowing-machine having the frame which carries the cutter mechanism and its driving-gear centrally pivoted to the main-wheel axle, whereby they are allowed a lateral rocking movement thereon, in combination with stirrups secured at the sides of said framing, and provided with lifting-levers having cams which engage anti-friction rollers upon the axle, whereby either end of the cutter-bar can be alternately raised and lowered, substantially as described.

4. In a direct-draft mowing-machine having a continuous thrust-framing, the combination of the framing and an arch-bar having its end attached to the side bars of the framing, and supporting the forward end of the platform of the machine at its arch, substantially as described.

5. The combination of the main driving-wheels and their axle, the spherical support upon the axle, said support being provided with a pin projecting from its surface, a casting, *b*, having flaring bores and oblong recesses and mounted upon said spherical support, and the cutter and driving-gear frames supported by said casting, all arranged and adapted to operate as described.

6. In a mowing-machine, the combination of the main driving-wheels and their axle, a ball mounted upon the axle and provided with a pin projecting from its surface, the casting *b*, loosely mounted upon the ball, said casting being provided with oblong recesses *f*, and encircled by a main gear-wheel, B, and having the cutter and gear frames mounted thereon, all arranged and adapted to operate substantially as described.

7. The combination of the main gear B, the pinion 1, mounted on transverse shaft 20, bevel-gears 2, also mounted on said shaft, bevel-pinions 3, mounted on longitudinal shafts 6 and meshing with the bevel-gears, and cranks 4, mounted on the forward ends of shafts 6, substantially as set forth.

8. In combination with the axle A, the roller I' on the shaft, the cam I', formed on or secured to the shaft I', and the operating-lever I, substantially as and for the purpose set forth.

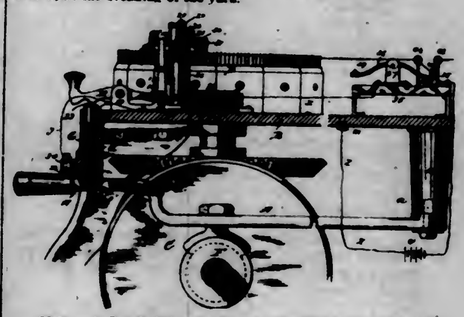
9. In a mowing machine, the combination of the tongue T, the toothed casting P', the pinion P, having flanges and opposite recesses *r* in said flanges, the shaft P', pins *p*, and an operating-lever, substantially as described.

10. In a mower, the combination of the supporting-wheels, the axle, the main gear-wheel mounted loosely thereon, so as to rotate therewith and rock laterally thereon, and the gear and cutter carrying frames mounted upon said wheel, substantially as described.

11. A mower wherein the cutter-bar is rigidly connected at both ends to the thrust-frame, said thrust-frame being rigidly attached to the gear-carrying frame and the latter being mounted on the main gear-wheel, and said gear-wheel mounted loosely on the main axle of the machine, so as to rotate therewith and have a lateral motion thereon, whereby the cutter-bar may conform to the undulations of the ground independent of the supporting-wheels and axle, substantially as described.

382,598. ELECTRIC STOP-MOTION FOR KNITTING-MACHINES. CHARLES DRAPER, Springfield, Mass. Filed Jan. 28, 1886. Serial No. 191,076. (No model.)

Brief.—The invention consists in an improved arrangement and combination of electrically-operated devices for releasing the shipper-lever upon the breaking of the yarn.



Claim.—1. In a knitting-machine, the combination, with the shipper-lever A, the spring-actuated bolt G, the pivoted lever 12, and the pivoted angular lever 15, of the pivoted lever comprising the hooked leg 19 and the leg 30, the rocking shaft 25, provided with an armature and the arm 29, engaging said lever-leg 30, the electro-magnet 28, contact-plate 35, and the adjacent tilting arm 36, located in the line of travel of the yarn and adapted for being engaged and supported from said contact-plate thereby, a battery, *v*, and suitable electrical connections for forming a circuit, substantially as described, for the purpose set forth.

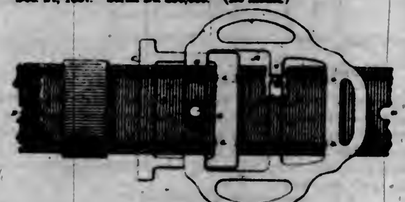
2. In a knitting-machine, the combination, with the shipper-lever A, the spring-actuated bolt G, the pivoted lever 12, and the pivoted angular lever 15, of the pivoted lever comprising the hooked leg 19 and the leg 30, the rocking shaft 25, provided with an armature and the arm 29, engaging said lever-leg 30, the electro-magnet 28, contact-plate 35, and the adjacent tilting arm 36, provided with the eye 40, the yarn supporting and guiding eyes 41 42, a battery, *v*, and suitable electrical connections for forming a circuit, substantially as and for the purpose described.

3. In a knitting-machine, the combination, with the shipper-lever A and the spring-actuated bolt G, the pivoted lever 12, and the pivoted angular lever 15, of the pivoted lever comprising the hooked leg 19 and the leg 30, the rocking shaft 25, provided with an armature and the arm 29, engaging said lever-leg 30, the electro-magnet 28, contact-plate 35, and the adjacent tilting arm 36, located in the line of travel of the yarn and adapted for being engaged and supported away from said contact-plate thereby, the contact-plate 34, arranged in relation to the said shipper-lever, substantially as described, a battery, *v*, and suitable electrical conductors between said battery and said contact-plate 34, between said tilting arm 36 and the electro-magnet, the latter and said contact-plate 34, and said shipper-lever and battery, substantially as and for the purpose described.

4. In a knitting-machine, the combination, with the shipper-lever A and the spring-actuated bolt G, the pivoted lever 12, and the pivoted angular lever 15, of the pivoted lever comprising the hooked leg 19 and the leg 30, the spring 31, bearing against the latter, the rocking shaft 25, provided with an armature and the arm 29, engaging said lever-leg 30, the electro-magnet 28, contact-plate 35, and the adjacent tilting arm 36, located in the line of travel of the yarn and adapted for being engaged and supported away from said contact-plate thereby, a battery, *v*, and suitable electrical connections for forming a circuit, substantially as and for the purpose described.

5. In a knitting-machine, the combination, with the shipper-lever A and the spring-actuated bolt G, the pivoted lever 12, and the pivoted angular lever 15, of the pivoted lever comprising the hooked leg 19 and the leg 30, the spring 31, bearing against the latter, the rocking shaft 25, provided with an armature and the arm 29, engaging said lever-leg 30, the electro-magnet 28, contact-plate 35, and the adjacent tilting arm 36, provided with the eye 40, the yarn supporting and guiding eyes 41 42, the contact-plate 34, arranged in relation to the said shipper-lever, substantially as described, a battery, *v*, and suitable electrical conductors between said battery and said contact-plate 34, between said tilting arm 36 and the electro-magnet, the latter and said contact-plate 34, and said shipper-lever and battery, all substantially as and for the purpose described.

382,594. BUCKLE. GEORGE F. RUSSELL, Cleveland, Ohio. Filed Dec. 27, 1887. Serial No. 259,089. (No model.)



Claim.—A trace-buckle the cross bar or bars of which are provided with grooves, which latter register with the stitching of the trace, substantially as set forth.

382,595. STEAM COOKING UTENSIL. JAMES G. RUSSELL, Springfield, Mass. Filed Dec. 6, 1887. Serial No. 257,311. (No model.)

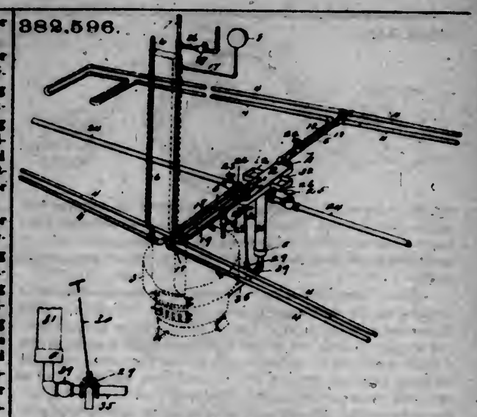


Claim.—A cooking utensil comprising the outer water-chamber, A, the cooking-chamber B, fitting therein and provided with a tube, E, opening at its upper and lower ends, and at the former end provided with the annular groove *e*, and the chambered cover C, for closing said cooking-chamber, provided with the tube *d*, adapted to extend downwardly into said tube E and having the downwardly-projecting annular flange *f*, adapted to extend into the said annular groove *e*, and also having the perforations A A, all substantially as described and shown, for the purpose specified.

382,596. STEAM-HEATING APPARATUS FOR RAILWAY-CARS. JAMES RUSSELL, Springfield, Mass. Filed Oct. 17, 1887. Serial No. 252,569. (No model.)

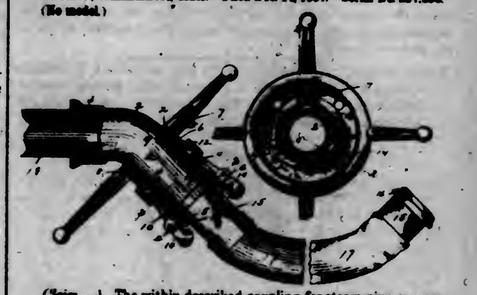
Claim.—1. In a car-heating apparatus, the combination, with the receiver 2, having the chamber *c* and the four separated chambers, *a*, therein, of two lines of steam-pipes, 4, one above the other, a branch, 5, connecting said chamber *c* with the upper of said lines 4, two branches, 18, connecting the lower of said lines 4 with two of said chambers *a*, and a steam-pipe connected with chamber *c* of the receiver supplying live steam thereto and to said pipes 4, substantially as set forth.

382,596.



2. In steam-heating apparatus for railway-cars, the receiver 2, having a chamber, *c*, therein to receive and distribute steam to the heating-pipes of a car, several separated chambers, *a*, therein to receive the water of condensation from said pipes, and a pending drip-pocket thereon having a series of pipes, 38, pending therein, each of which is connected by one end with said chambers *a*, combined with a main steam-conduit, 24, connected with said chamber *c* of the receiver, the heating-pipes 4 of a car having steam and drip connections with said receiver, and a drip-cock connected thereto, substantially as set forth.

382,597. STEAM-HEATING PIPE-CONNECTION FOR CARS. JAS. RUSSELL, Williamsett, Mass. Filed Dec. 14, 1887. Serial No. 257,696. (No model.)



Claim.—1. The within-described coupling for steam-pipe connections between railway-cars, consisting of a coupling-tube, as described, having means for connecting the same with a steam-pipe, combined with a screw threaded sleeve, 6, capable of a rotary motion on said tube, a sleeve, 10, having a screw-thread engagement with said sleeve 6, whereby said sleeve 10 has a longitudinal reciprocating movement on said coupling-tube, a series of hook-levers pivoted on said longitudinally-moving sleeve, and a cam-stud fixed in said tube under the rear end of each of said levers, substantially as set forth.

2. The coupling-tube 2, having the outturned head *a* on its end, combined with the screw-threaded sleeve 6, having a hand-wheel thereon, the sleeve 10, having a screw engagement with said sleeve 6, and the hook-levers 14, pivoted on said sleeve 10 and having engagement with said head, whereby their hooked ends are swung outwardly, substantially as set forth.

3. The coupling-tube 2, the screw-threaded sleeve 6, capable of a reciprocating rotary motion on said tube, the sleeve 10, having a screw engagement with said sleeve 6, whereby it is given a longitudinal motion on said tube, the cam-studs 4, fixed in the tube 2, combined with the hook-levers 14, pivoted on said sleeve 10, having their ends engaging with the ends of said studs, and a hose-nozzle capable of engagement with one end of said coupling-tube with which the hooks on said levers engage, substantially as set forth.

382,598. MECHANISM FOR STRIPPING THE TOP-FLATS OF CARDING-MACHINES. ALONZO FALLS, Lowell, Mass., assignor of one-half to Alexander G. Cumnock, same place. Filed July 20, 1887. Serial No. 245,022. (No model.)

Brief.—In order that the stripping mechanism may have a quicker motion while operating upon a flat than while passing from

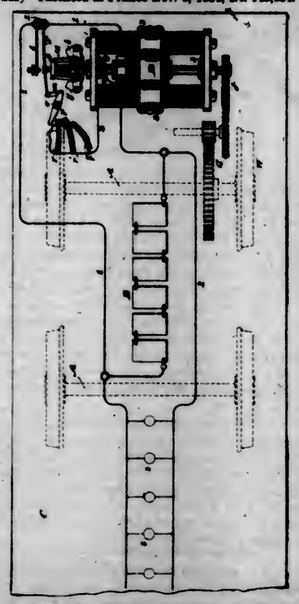
382,598.



one flat to the next, a portion of the periphery of the stripping cam-gear is provided with double teeth, and the actuating-pinion has a member provided with a single tooth, which at the proper time engages said double teeth and imparts to the stripping cam-gear a slower motion.

Claim.—The combination of the main shaft, the supporting-frame swinging on said shaft, a double actuating-pinion, one pinion of which is provided with spur-teeth of uniform pitch arranged at equal intervals around the same, and the other pinion of which is provided with a single spur-tooth of the same pitch as said first-named teeth, the stripping cam-gear provided with a cam-groove and with a set of spur-teeth corresponding in pitch with the teeth of said actuating-pinion, and provided also with a set or row of double teeth adapted to be engaged by the single tooth of said actuating-pinion, said sets of teeth of said cam-gear being continuous with each other, the stripping-arm provided with a stripper and with a projection which engages said cam-groove, the lifting-cam secured to said cam-gear, the lifting-rod provided with pins to engage said lifting-cam, and means, substantially as described, for imparting to said actuating-pinion a continuous and uniform rotary motion, the traverse-rack, the traverse-pinion engaging said rack, and another pinion secured to said traverse-pinion concentrically therewith and engaging a third set of teeth with which said cam-gear is provided, said sets of teeth on said cam-gear being arranged, as described, so that said cam-gear and said lifting-cam are rotated at a greater speed while said lifting-rod is being raised and while the stripper is being operated and at a less speed when the stripping mechanism is traversing from one flat to another, as and for the purpose specified.

382,599. AUTOMATIC SWITCH FOR SECONDARY BATTERIES. CAMILLE A. FAURE, New York, N. Y., assignor to the Electrical Accumulator Company, of New York. Filed Nov. 16, 1887. Serial No. 255,309. (No model.) Patented in France Nov. 9, 1881, No. 145,081.



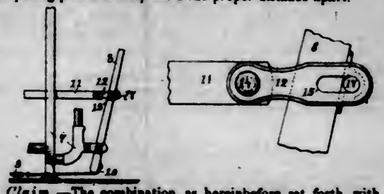
Claim.—1. The combination of a car or vehicle, a dynamo-electric machine, a secondary battery in circuit therewith, a switch or circuit-closer in the main circuit, and a mechanical device, arranged as described, controlled by centrifugal force and operating in a vertical plane to close said switch when the speed of rotation reaches a predetermined point, whereby the effect of jars and jolts upon the switch is avoided.

2. The combination of a dynamo-electric machine having its field-coils in a separate circuit, a switch or circuit-changer in said circuit, a switch or circuit-changer in the main circuit, and a device operated by the centrifugal force due to the speed of rotation controlling both said switches.

3. The combination of a dynamo-electric machine having its field-coils in a separate circuit, a switch or circuit-changer in said circuit, a switch or circuit-changer in the main circuit, and a mechanical device for automatically controlling both switches.

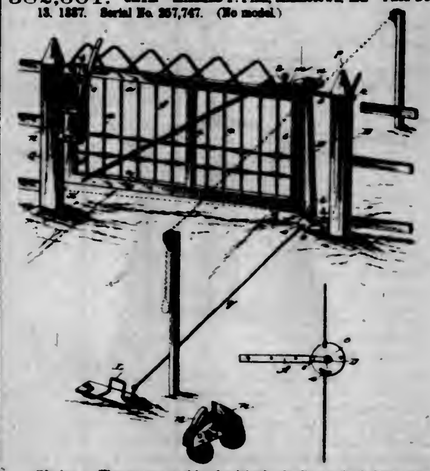
382,600. PICKING SWEEP-STRAP CONNECTION FOR LOOMS. EDWIN H. J. FIELDEN, Providence, R. I. Filed May 10, 1887. Serial No. 237,690. (No model.)

Brief.—The connection consists of two pieces projecting longitudinally from the sweep-strap at opposite sides thereof, which are slotted to engage projecting guide-pins fastened to the rear of the picker-stick. The said connecting-pieces are provided at their ends with spacing-pieces to keep them the proper distance apart.



Claim.—The combination, as hereinbefore set forth, with the picker-staff 8, having secured thereto the plate 16, provided with the lugs 17, of the sweep-strap 11, having mounted thereon by means of tie-bolt 14 the two-part sweep-strap connection 12, provided with the spacing-pieces 13, and having the opening 18, and formed with the lateral guideways 15 for the lugs 17, substantially as and for the purpose herein described.

382,601. GATE. MILLARD F. FINK, Middletown, Md. Filed Dec. 13, 1887. Serial No. 257,747. (No model.)



Claim.—The gate, combined with the inclined shaft D, having arm *l* and pivot 1 on the lower end and longer straight arm on the upper end, the lower pivot being near and the upper pivot farther from the end of the gate, a disk on the shaft D and devices for turning it, a double catch on the post C, and a horizontal-moving arm on the gate, all substantially as described.

382,602. CAR-COUPLING. THOMAS GAMBIN, Arcadia, Fla. Filed Sept. 26, 1887. Serial No. 250,807. (No model.)

Claim.—1. A car-coupling consisting of hooks C C, having their front faces curved upwardly and pivoted to work vertically, combined with horizontal bolts B B, a shoulder or support in front of the bolts for holding the hooks up, and suitable draw-heads, substantially as and for the purpose described.

2. The combination, with the coupling-hook C, of the link-arm F, horizontally-sliding rock-shaft G, with rigid arm G' and lug *l*, and the

382,602.

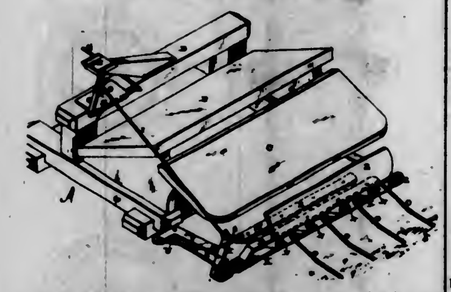


internally-notched keeper H, substantially as and for the purpose described.

3. A frame-plate attachment for car-bumpers having automatic car-coupling devices thereon and provided with an opening in the middle registering with the pin-hole of the bumper, in combination with a bolt going through said registering holes and a U-shaped strap-iron passing around both the car-bumper and the coupling attachment, substantially as shown and described.

4. The frame-plate A, having a central hole, *b*, notches *d d*, and ears *a a*, in combination with the horizontal bolt B, fastened in said ears, and a vertically-swinging coupling-hook hung upon said bolt, substantially as and for the purpose described.

382,603. SCRAP-CARRIER. GEORGE H. GOSSE, Rahway, Me. Filed July 19, 1887. Serial No. 244,769. (No model.)



Claim.—1. The combination of the frame-work, the foot-lever, the connecting-rod operated by the foot-lever, the partially turning and supporting shaft K, which is journaled in suitable arms or bearings secured to the frame and operated by said connecting-rod, the bent levers which are pivoted upon this arm-supporting shaft and provided with arms, and which are connected at their inner ends by the endwise-moving rod P, a connecting-rod connected to the rod P, the pivoted cranked lever for moving the rod P endwise and causing the levers N to turn upon their pivots, and the connecting-rod which unites the angular lever with the crank on the arm-supporting shaft, substantially as shown and described.

2. The combination of a partially-revolving arm-supporting shaft, K, mounted in suitable bearings, L, provided therefor, the rod R, which forms the upper bearing for the pivoted levers N, provided with the arms O, and the inclined board Z, which deflects the bundles outward as they drop from the inclined surface C, substantially as described.

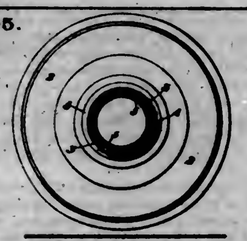
382,604. FERTILIZER. STEPHEN L. GODDALE, Saco, Me. Filed Feb. 21, 1887. Serial No. 228,204. (No specimens.)

Claim.—In the manufacture of fertilizing material, the herein-described process of making hydrated aluminic and ferric phosphates available as a plant-food, which consists in first mixing with pulverized crude mineral containing said phosphate carbonaceous matter and sulphuric acid and then heating the compound, substantially as set forth.

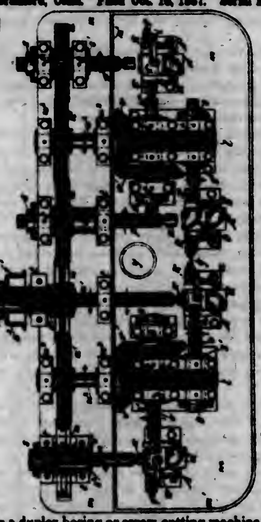
382,605. COLLAR FOR LAMPS. ANDREW GUTTERSALE, Martin's Ferry, Ohio. Filed June 9, 1887. Serial No. 240,744. (No model.)

Claim.—A lamp whose neck is threaded and provided with an indentation or recess, b, in combination with a threaded collar of soft metal screwed on the neck and having a portion of its body forced into the recess after the collar has been screwed on the neck, whereby the collar is locked, substantially as and for the purpose described.

382,605.



382,606. MACHINE FOR TAPPING PIPE-ELBOWS. THORVALD F. HANSEN, Branford, Conn. Filed Oct. 10, 1887. Serial No. 251,863. (No model.)



Claim.—1. In a duplex boring or screw-cutting machine, the combination of a group of rotary and reciprocating spindles consisting of a pair, *n n'*, and a pair, *o o'*, arranged at right angles to the former, and converging at their tool-fitted ends at two corners, with two chucks, A A, placed at said corners, with a similarly-arranged group of spindles, such as *p p'* and *r r'*, and chucks A' A', arranged adjacent to the former group, with connecting-gearing between the spindles of each group and between the two groups, substantially as herein set forth, whereby the four spindles of one group revolve in one direction, while the four spindles of the other group revolve in the other direction, substantially as herein shown and described.

2. In a boring or screw-cutting machine, the combination of a pair of rotary and reciprocating spindles, such as *n n'*, and a second pair, such as *o o'*, arranged at right angles to the former, with directly-meshing spur-gears *l l* on the spindles *o o'*, spur-gears *u u* on the spindles *n n'*, and intermediate spur-gear, *u'*, meshing on opposite sides with the gears *u u*, a bevel or miter gear, *v*, driven by the intermediate wheel, *u'*, and a miter-wheel, *v'*, meshing therewith and driving the spindle *o*, substantially as herein shown and described.

3. In a boring or screw-cutting machine, the combination, with the rotary and reciprocating spindles *n n'* and *o o'*, arranged in one group, with the spindles *p p'* and *r r'*, arranged in an adjacent group, and chucks A A A' A', arranged at the convergence of the spindles in the respective groups, of the spur-gears *l l* on the spindles *o o'* and *r r'*, meshing directly together, the miter-wheels *v' v'* on the spindles *o r*, the spur-wheels *u* on the spindles *n n'* and *p p'*, the wheel *u* of the spindle *n'*, meshing directly with the wheel *u* of the spindle *p*, with the intermediate spur-wheels *u' u'*, meshing between the wheels *u u* of the spindles *n n'* and *p p'*, and the miter or bevel wheels *v* on the axis of the wheels *v'* meshing with the miter-wheels *v* of the spindles *o r*, arranged and operating substantially as herein shown and described.

4. A self-discharging chuck constructed with an upper fixed jaw and an underlying movable dumping or gravitating jaw hinged or swung at a point below and back of the upper fixed jaw, whereby it may be thrown down into an inclined position to dump the finished work, and thrown up into a parallel position to clamp the succeeding article, with a suitable operating device connected with the said dump-

ing-jaw to raise and lower the same, substantially as herein set forth.

5. In a chuck or vise, the combination, with a sustaining-frame having a fixed jaw and a conforming socket on said jaw, of a movable dumping-jaw having a flat or level face adapted to be dumped or depressed at a sliding angle or incline, and to receive the blank at the top of the incline, with a movable stop projecting between the jaws near the end of the inclined jaw in the path of the descending blank, to arrest the sliding blank under the fixed jaw, and an operating device for raising or lowering said movable jaw, substantially as herein set forth.

6. In a vise or chuck, the combination, with the sustaining-frame having a fixed jaw, of the underlying pivoted inclining or dumping jaw *d*, pivoted at a point back of or beyond the fixed jaw, leaving a free throat or passage between the pivotal end of the movable jaw and the fixed jaw to admit a blank, and an operating device for raising the movable jaw into a parallel or dropping it into an inclined position, substantially as and for the purpose herein shown and described.

7. In a chuck or vise, the combination, with the cheeks or standards *b b'*, of the fixed jaw *c*, the conforming socket *e*, movable dumping-jaw *d*, pivoted at the end remote from the socket, and a manipulating-lever operatively connected with the jaw *d* to raise or lower the same, substantially as shown and described.

8. The combination, in a vise or chuck, with the sustaining-frame and a fixed jaw thereon, of a dumping-jaw underlying the same and a yielding stop arranged to project in the path of the jaw when depressed and in front of the succeeding blank sliding down the dumping-jaw to arrest the same under the fixed jaw, with a manipulating device connected to the movable jaw, adapted to raise the same, remove the stop, and clamp the arrested blank between the two jaws, and vice versa, substantially as herein shown and described.

9. The combination, with the sustaining cheeks or standards *b b'*, of the fixed jaw *c*, having conforming socket *e*, the dumping-jaw *d*, stop *k*, and a manipulating device operatively connected to the jaw to raise or lower the same, substantially as herein set forth.

10. In a vise or chuck, the combination, with the sustaining-frame having the fixed jaw, of the movable dumping-jaw *d*, toggle-cam *f*, rock-shaft *g*, and operating-lever *i*, substantially as shown and described.

11. In a chuck or vise, the combination, with the fixed and movable jaws, of the cam *f*, rock-shaft *g*, and lever *i*, and elastic or yielding supports on which said rock-shaft is mounted, substantially as and for the purpose set forth.

12. In a chuck or vise, the combination, with the fixed and movable jaws, of the rock-shaft *g*, an operating-lever extending from said rock-shaft, and a cam or projection extending from said rock-shaft to engage the movable jaw, with the spring *h*, supporting the bearings of the rock-shaft, substantially as set forth.

13. The combination, in a chuck or vise, with the fixed and movable jaws, of the rock-shaft *g*, lever *i*, and cam *f*, with the spring *h*, supporting the bearings of the rock-shaft, and screw *h'*, for adjusting said spring.

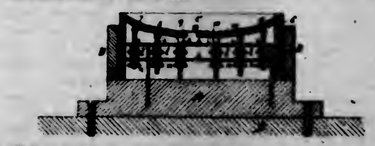
14. The combination, in a chuck or vise, with a sustaining-frame and a fixed jaw thereon, of the pivoted or movable dumping-jaw *d*, the rock-shaft *g*, lever *i*, cam *f*, boxes *g'*, supporting-spring *h*, and adjusting device *h'*, substantially as and for the purpose set forth.

15. In a vise or chuck, the combination, with the frame and fixed jaw, of the movable jaw *d*, cam *f*, and tongue *g*, with an operating-lever, *i*, connected to the cam *f*, substantially as and for the purpose set forth.

382,607. PLASTIC COMPOUND. LEAH F. HEAD, Germantown, Pa. Filed July 15, 1887. Serial No. 244,837. (No specimens.)

Claim.—The new plastic compound consisting of stearine, with talc and gum-shellac, substantially as set forth and described.

382,608. MOLD FOR MEASURING AND PARTLY SHAPING CIGAR-FILLERS. SIMON HENRY, Brooklyn, N. Y. Filed Aug. 22, 1887. Serial No. 247,580. (No model.)



Claim.—1. The combination, with the mold for measuring and partially shaping cigar-fillers, of a bottom for the mold, made of hinged sections, and screws for raising or lowering the sections to vary the quantity of tobacco measured in the mold, substantially as set forth.

2. The removable mold for measuring and partially shaping cigar-fillers, in combination with hinged sections forming the bottom, adjusting-screws, stationary plates through which the screws pass, and adjusting-nuts, substantially as set forth.

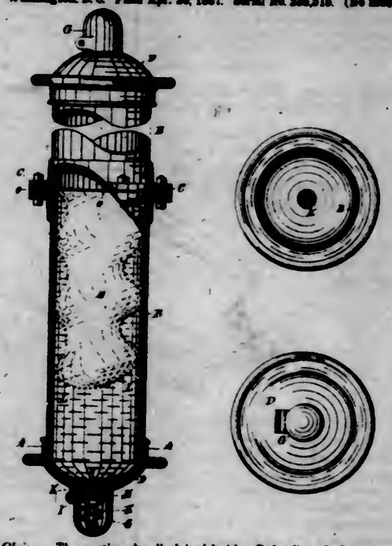
3. The combination, with the stationary bottom and the mold that rests over such bottom and measures and partially shapes the cigar-filler, of the case surrounding the mold and adapted to slide vertically as the mold is lifted, substantially as set forth.

382,609. DENTAL ANEARING-DISK. CHARLES W. P. HOLBROOK, Newark, N. J. Filed Jan. 20, 1888. Serial No. 261,276. (No model.)



Claim.—In a dental disk, an opening shaped to fit the head of the mandrel or disk-carrier, re-enforced by a metal binding composed of a single piece of metal lapping over the edges and pressing both the upper and lower face of the disk.

382,610. APPARATUS FOR TRANSPORTING AND TRANSFERRING GASES OR LIQUIDS UNDER PRESSURE. JOSEPH R. HOLMES, Washington, D. C. Filed Apr. 20, 1887. Serial No. 235,515. (No model.)



Claim.—The sectional cylindrical holder B for liquefied ammoniacal gas or other like fluids under pressure, consisting of two sections each having a flanged portion, C, with means for fastening the sections together, and heads D, which are provided with inlet and outlet pipes with valves E, chamber I, and perforated passage K, in combination with the flexible elastic diaphragm L, having a re-enforcement, N, arranged in said holder, substantially as and for the purposes set forth.

382,611. SNAP-HOOK. ROBERT L. HOWE, Cleveland, Ohio. Filed Dec. 27, 1887. Serial No. 259,033. (No model.)



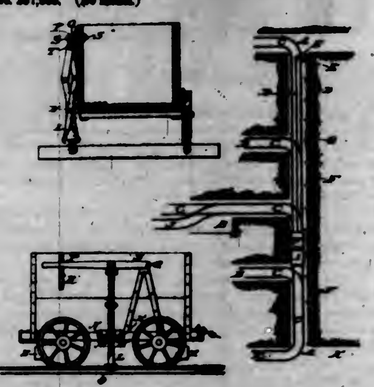
Claim.—In a snap-hook, the combination, with reverse rigid hooks integral with a shank, of a spring-actuated push-bar connected with such shank and serving as a mousing for the hooks, substantially as set forth.

382,612. COMBINED CLOD-CRUSHER AND LAND-ROLLER. C. LOUIS JESSEN, Milwaukee, Wis. Filed Dec. 27, 1887. Serial No. 258,994. (No model.)

Claim.—1. The combination of a frame comprising the parallel beams A, provided with the studs 1, and the angular castings B, united by the beams, and one of these castings provided with an eye, the shafts E F, journaled in the frame, the disks P, arranged on the shafts, the wheels J, for engagement with the studs on said beams, and the center-wheel L, having its shank adapted to fit the eye K on the casting above named, substantially as set forth.

2. The combination of a frame comprising the parallel beams A, castings B, uniting the ends of the beams and provided with ears F, the braces C, that cross each other and are connected at their ends to the ears on said castings, the shafts E F, journaled in the frame, and the disks P, arranged on the shaft, substantially as set forth.

382,613. APPLIANCE FOR OPERATING INCLINED PLANES. FREDERICK G. KIMBERLY, Uniontown, Pa. Filed Dec. 12, 1887. Serial No. 257,993. (No model.)



Claim.—The combination, in the operating of an inclined plane, of the suspended track F, the back-balanced G, and the grip-car H, as shown by Fig. 1.

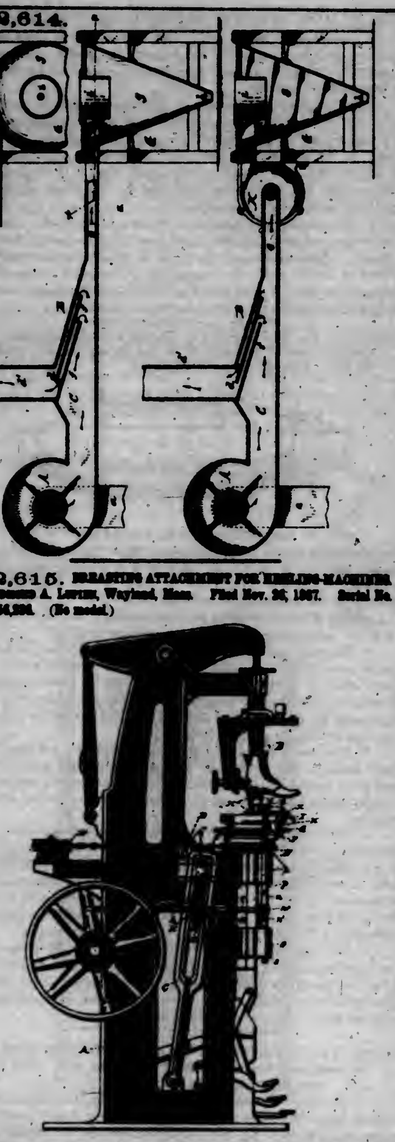
382,614. DUST-COLLECTOR. CHARLES B. KNEISBOECKER, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Mar. 1, 1886. Serial No. 293,943. (No model.)

Claim.—1. The combination, with a preliminary separating-chamber provided with an inlet for the dust-laden air, an exit for the separated air, and an exit for the reduced volume of air containing the dust, of a subsequent separating-chamber having its inlet connected with the exit through which the reduced volume of air containing the dust issues from the preliminary chamber, and provided with an exit for the separated air and an exit for the dust, substantially as set forth.

2. The combination, with a preliminary separating-chamber provided with an inlet for the dust-laden air, an exit for the separated air, and an exit for the reduced volume of air containing the dust, of a subsequent separating-chamber having an exit for the separated air and an exit for the dust, a conduit connecting the exit of the preliminary separating-chamber for the reduced volume of air containing the dust with the inlet of the subsequent separating-chamber, and a fan arranged in said conduit, substantially as set forth.

3. The combination, with a preliminary dust-separating chamber provided with an inlet for the dust-laden air, an exit for the separated air, and an exit for the reduced volume of air containing the dust, of a circular subsequent separating-chamber having an exit for the separated air, an exit for the dust, and a tangential inlet-spout connected with the exit through which the reduced volume of air containing the dust issues from the preliminary separating-chamber, substantially as set forth.

382,615. BREASTING ATTACHMENT FOR HEELING-MACHINES. EDWARD A. LEWIS, Wayland, Mass. Filed Nov. 26, 1887. Serial No. 256,393. (No model.)



Claim.—1. In breasting attachments for heeling-machines, the combination, with the vertically-reciprocating knife, and the guard having its upper end bent over at or near the same level as the edge of the knife, and both knife and guard reciprocating simultaneously, of mechanism, substantially as described, whereby said knife and guard are moved to their highest points when the head of the machine has made one-half of its rotation, substantially as specified.

2. In breasting attachments for heeling-machines, the combination, with the knife and guard secured to and reciprocating with a vertical bar, the knife and guard being vertically adjusted on said bar, of the toggle-joint attached to the lower end of said bar and connected with the main frame of the machine, and mechanism, substantially as described, to actuate said toggle-joint, substantially as specified.

3. In breasting attachments for heeling-machines, the combination with the knife and guard-bearing bar reciprocating vertically in a guide opening in the main frame, of the toggle-joint attached to the

lower end of said bar and connected with the main frame, the double-armed cam-lever journaled on a bearing secured to the main frame and connected by links to the toggle-joint, and means, substantially as described, whereby said lever is vibrated to actuate the toggle-joint, substantially as specified.

4. In breasting attachments for heeling-machines, the combination, with the vertically-reciprocating knife and guard-bearing bar, the toggle-joint attached to said bar and connected with the main frame, of the double-armed cam-roller connected to the toggle-joint by suitable links, the actuating-chain for the rotation of the head, the chain-carrier, the chain-carrier lever, and the cam-roller attached to said lever, substantially as specified.

5. In breasting attachments for heeling-machines, the combination of the reciprocating bar P, the guard Q, attached thereto and vertically adjustable thereon, the knife R, attached to and vertically adjustable on the same, the toggle-joint N, the plate V, the coiled spring O, the plate W, and adjusting-screw S, all constructed and arranged substantially as and for the purposes specified.

382,616. HEATING-DRUM. Walter Markle, Tonganoxie, Kans., assignor of one-half to Francis M. Vanden, Kansas City, Mo. Filed Mar. 26, 1887. Serial No. 232,327. (No model.)



Claim.—1. The combination of the heating chamber or drum and the ventilating-chamber K, having an air-inlet opening, *k*, and a protector-plate located within said chamber K opposite its inlet-opening, a passage or passages being provided between the protector-plate and the wall of the ventilating-chamber and laterally to the opening *k*, for the passage of the air entering through opening *k* into the ventilating chamber, substantially as and for the purposes specified.

2. The combination of the heating chamber or drum and a ventilating-chamber, K, having an opening, *k*, and provided with a protector-plate, O, combined with a valve whereby to close said opening at will, the plate O being extended past the opposite sides of opening *k*, passages for the inlet of foul air being provided laterally to said opening *k*, as and for the purposes specified.

3. The combination of the stand G, having legs *g* and ring G', the drum fitted in said stand, and the lugs *a a*, projected laterally from said drum and on opposite sides of the legs *g*, whereby to prevent any turning of the drum in the stand, substantially as and for the purposes specified.

4. The combination of the chamber B, the ventilating-chamber K, mounted on chamber B, and having an opening, *k*, the protector-plate O, located within chamber K and having its ends extended to opposite sides of and past the opening *k* and separated at its ends from the walls of chamber K, forming openings for the passage of the air entering through opening *k*, the lower chamber, A, and tubes connecting said chambers A B, substantially as and for the purposes specified.

5. The combination of the heating chamber or drum, the chamber K, having opening *k*, and having end plates provided on their inner sides with grooves *o o*, the connection uniting said end plates, and the protector-plates O, held in said grooves, all being arranged substantially as and for the purposes specified.

382,617. FRUIT-DRIER. Lacheen W. Merithew, Grand View, Ind., assignor of one-half to Loren F. Gage, same place. Filed Oct. 18, 1887. Serial No. 252,704. (No model.)



Claim.—1. In a fruit-drier, the combination of a main frame or support, ways therein for the fruit-trays, the trays fitted to said ways and movable thereon into and out of the drier, the sides fitted to the main frame and hinged at their upper ends to said frame, whereby they may be turned in to close said frame or out to form scaffolds whereon to support and expose the trays, and supports whereby said sides may be held elevated when opened, substantially as and for the purposes specified.

2. In a fruit-drier, the combination of the main frame or support having ways for the fruit-trays, the removable top, the sides hinged at one of their ends to the support, and uprights for securing the other ends of the sides elevated, substantially as set forth.

3. In a fruit-drier, the combination of the main frame or support, the sides hinged thereto, and consisting of the frame-bars 1 and the weather-board sections secured to the outer sides of said bars, and the upright bars hinged at one end alongside the frame-bars 1, whereby the said uprights may be turned up alongside the frame-bars and against the weather-boards, all substantially as and for the purposes specified.

4. In a fruit-drier, the main frame having guides or ways for the fruit-trays, such guides being arranged in a number of series, each of such series being arranged at right angles to the adjacent ones, combined with the sides hinged at one end to the main frame, whereby they may be turned outward from said frame, and supports for the outer ends of said sides, substantially as set forth.

5. In a fruit-drier, the combination of the main frame or support having ways for the fruit-trays, the removable top, and the adjustable sides arranged to be opened to form scaffolds whereby to support the trays for open-air drying, substantially as set forth.

6. In a fruit-drier, substantially as described, the removable top provided with side boards having openings *j*, combined with the scaffold-frames having their bars *l* fitted at one end to enter said openings, and having such ends notched on their under sides at *l'*, substantially as set forth.

7. In a fruit-drier, the combination of the main frame or support, the sides hinged at one of their ends to said main frame or support, and the cap or top fitted on the support or main frame and having depending portions overlapping the sides in the closed positions thereof, substantially as set forth.

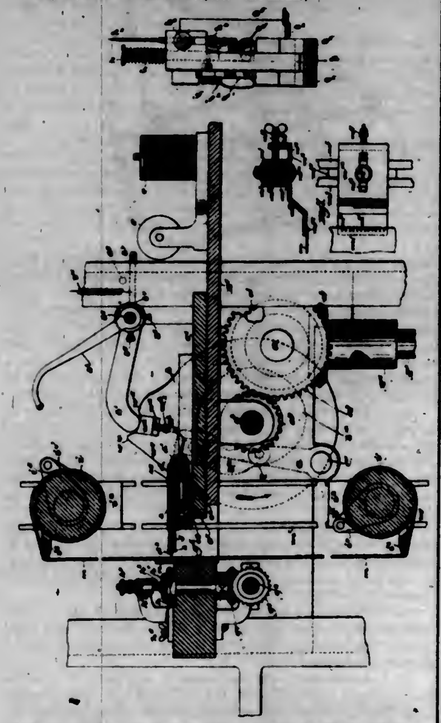
382,618. DEVICE FOR MOVING BARRELS. E. Hicks Mott, Oneida, N. Y. Filed Feb. 23, 1888. Serial No. 265,060. (No model.)



Claim.—1. A device for the purpose described, consisting of a lever, a shoe secured to one end thereof, a depending lug, C, on the under side of said lever, and a holding-hook adjustable on the lever, as and for the purpose set forth.

2. The combination, with the lever cut away, as at *c*, forming a recess, and a shoulder, *d*, of the shoe having a loop seated in said recess and engaging said shoulder and the screws engaging said loop and securing it to the lever, substantially as shown and described.

382,619. EMBROIDERING-MACHINE. James G. Perlaw, Lynn, Mass., assignor of one-half to Benjamin H. Dorman, same place. Filed July 26, 1886. Serial No. 209,206. (No model.)



Claim.—1. In a machine for stitching and embroidering, the combination, with the sliding cross-head c^2, a series of needle-carriers attached thereto, the shaft a^3, connected with the said slide to actuate the latter, and mechanism for rotating said shaft, of the shaft g^3, geared to the said shaft a^3, a series of hook-shafts geared to the shaft g^3, a series of rotary hooks carried by the hook-shafts, a stretcher-frame having rollers to hold the material, and a pantograph to operate the said frame, substantially as set forth.

2. In a machine for stitching or embroidering, the reciprocating cross-head, an attached block, and a needle-carrier pivoted to the latter, combined with a locking device to hold the carrier to the block, substantially as described.

3. The reciprocating cross-head, connected block, and adjusting-screw f^3, combined with the carrier *d*, pivoted to the block, and the presser-foot sustained in the said carrier, substantially as described.

4. The reciprocating cross-head, connected block, and the needle-carrier pivoted to the block and holding the presser-foot, and provided with an eccentric screw or stud, combined with means to adjust the carrier with relation to the block and with the latch *f'*, to operate all substantially as described.

5. The combination, with the needle-carrier and needle, of the holding-screw d^3, tapped in the side of said carrier and abutting against the side of the needle, and the adjusting-screw d^3, tapped in the carrier above the needle and abutting against the top or end of the shank of the latter, substantially as set forth.

6. The cross-head, its attached blocks, needle-carriers pivoted on the said blocks, the shaft a^3, and cams *b*, combined with the rock-shaft b^3, its arms b', and series of take-up levers b^2, substantially as described.

7. In a machine for stitching or embroidering, the suspended universally-movable stretcher-frame and rollers *i i'*, having their journals in bearings on the said frame, combined with adjustable stretcher-bars i^2 at or near each roller and adjustable toward and from the axes of the latter, and with the needle-hole plate to permit the material to be adjusted to the face of the needle-hole plate, substantially as described.

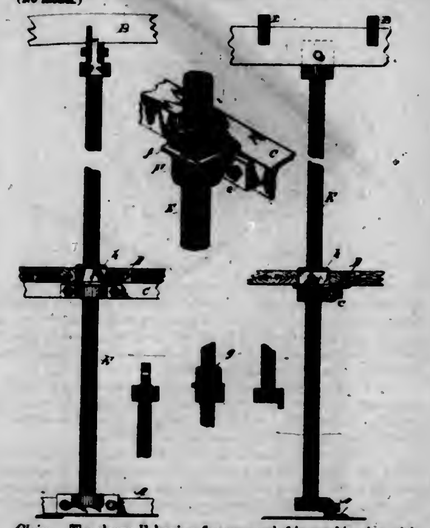
8. The stretcher-frame, its attached yokes, plates and guides at the corners of the stretcher-frame, and the rollers *i i'*, and boxes secured to the stretcher-frame to hold the journals of the said rolls, combined with the levers n^3, counterbalancing-weight n^7, and sheaves on which the said yokes rest and move, substantially as described.

9. In a machine for stitching or embroidering, the shaft g^3, a series of hook-shafts, hooks thereon, gearing, substantially as described, to rotate the said hook-shafts, the bobbin-holders to hold bobbins in the face of each hook, and the throat-plate, the reciprocating cross-head, its attached blocks, the needle-carriers attached to the blocks and slotted at one side, the presser-feet having their shanks inserted in the said carriers loosely, springs to surround the shanks of the pressers, and means, substantially as described, to govern the extent of outward movement of the presser-feet, combined with means, substantially as described, to reciprocate the said cross-head and carrying the presser-feet against the material while the needle is in the material, and removing the said presser-feet from the material when the needles are withdrawn from and the material is being moved for a new stitch, substantially as described.

10. The stretcher-frame, means, substantially as described, to suspend it, the rollers *i i'*, mounted thereon, the cross-head, its attached blocks and carriers containing the needles and presser-feet, the shaft a^3, means, substantially as described, actuated by it to move the cross-head, the hooks *h*, their shafts g^3, the shaft g^3, gearing between it and the hook-shafts to rotate the latter, and gears *g* and *g'*, combined with a clutch and with means, substantially as described, whereby the shaft a^3 is arrested after the completion of each stitch by any one needle and hook, in order to permit the stretcher-frame and material to be moved for the proper distance in any direction in a vertical plane for the next stitch to be made, substantially as described.

11. In a sewing-machine, a take-up lever, its shaft, and arm *b'*, combined with the cam *b*, having the adjustable block a^3, to provide more or less slack thread, according to the length of the stitch, substantially as described.

382,620. SECURING STANCHIONS OF VESSELS IN PLACE. Thomas M. Rees, Pittsburg, Pa. Filed Oct. 31, 1887. Serial No. 253,042. (No model.)



Claim.—The sleeve F, having flanges *e* and *f*, in combination with the beam C, floor D, and stanchion E, substantially as herein described, and for the purpose set forth.

382,621. INKSTAND. Henry A. Reinhard, Columbus, Ohio. Filed Jan. 21, 1888. Serial No. 261,461. (No model.)

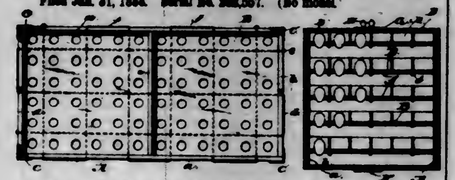


Claim.—The combination of the foot A, the stem B, provided with a shoulder, F, the rod C, and nut D, with the revolving base G, which

is held between the foot and the shoulder, and the pen-holder O, placed between the two parts of the stem, substantially as shown and described.

382,622. EGG CRATE AND TRAY.

JOHN L. RITTER, Milnes, Va. Filed Jan. 31, 1888. Serial No. 262,857. (No model.)



Claim.—1. An egg-tray having a bottom of wires, a perforated sheet of pasteboard or like material resting on the wires, and egg-cells resting on the board, as set forth.

2. An egg-crate composed of a series of superimposed trays each having a bottom of wires, a perforated sheet of pasteboard or like material resting on said wires, and cell-cases resting on said board, as set forth.

3. An egg-crate consisting of a series of superimposed trays vertically perforated at the ends, a top, a perforated plate on the bottom tray and having a threaded opening, a perforated plate on the top, and a rod passing through said perforations, threaded at its lower end to engage said bottom plate and threaded at its upper end to receive a clamp-screw, substantially as specified.

382,623. PAPER-HOLDER.

CALVIN W. SHERWOOD, Chicago, Ill. Filed Feb. 14, 1888. Serial No. 263,998. (No model.)



Claim.—1. A paper-holder comprising, in combination, a base, A, provided at one end with a flexible extension forming a reversible hinge, *g*, and a clamp, B, secured at one edge to the hinge to have its jaws project in the direction of the said extension, whereby a paper held by the clamp will lie practically to its full length flat upon either side of the base, substantially as described.

2. A paper-holder comprising, in combination, a base, A, provided at one end with a flexible hinge, *g*, and a spring-clamp, B, secured at one edge to the hinge *g*, and having its jaws normally closed, and a key for opening the jaws, substantially as described.

3. A paper-holder comprising, in combination, a base, A, provided at one end with a flexible hinge, *g*, and a spring-clamp, B, secured at one edge to the hinge *g*, and having its jaws normally closed, and a key for opening the jaws permanently attached to the clamp, substantially as described.

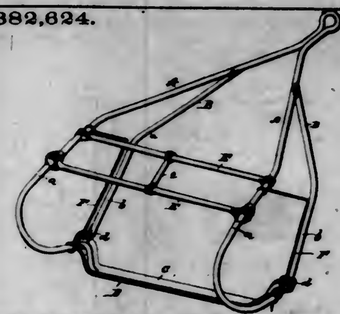
4. A paper-holder comprising, in combination, a base, A, provided at one end with a flexible hinge, *g*, and a spring-clamp, B, secured at one edge to the hinge *g*, provided with a channel, *c*, and having its jaws normally closed, and a key to turn in the channel to open the jaws, substantially as described.

5. In a paper-holder, the bases A, flexibly hinged together at corresponding edges to open and lie back to back to form a practically single base, a flexible extension forming a reversible hinge, *g*, and a clamp, B, secured at one edge to the hinge *g*, to have its jaws project in the direction of the said extension, whereby a paper held by the clamp will lie practically to its full length upon either side of the base, substantially as described.

382,624. OYSTER-DREDGE.

WILLIAM A. STEWART, Critchell, Md., assignor of one-half to James F. Lockman, same place. Filed June 8, 1887. Serial No. 240,626. (No model.)

Claim.—1. The herein shown and described dredge, composed of the four corner bars, A A and B B, united at their upper ends and diverging from top to bottom, and having their lower ends bent to form parallel portions *a a* and *b b*, and the lower ends of the bars A A curved forward and secured to the ends of the bars B B, the scrape-bar C, extended between the lower ends of the bars B B, the cross-rods E E, uniting the bars A A near their bends and braced by short stay *c*, the wire D, located on the rear of and parallel with the scrape-bar, and the wires F, having a portion parallel with the bars B and a portion extended across the space between the bars B and A and secured to the bars A, substantially as described, and for the purpose specified.



2. In a crab-catcher and oyster-dredge, side pieces composed of an upper bar, a runner of substantially the same length as the upper bar, and standards a^2, connecting the upper bar and runner, combined with cross-rods connecting the two side pieces and adapted to receive the net, and the wires F, arranged between the upper bar and the runner and placed close to the said runner, substantially as and for the purpose described.

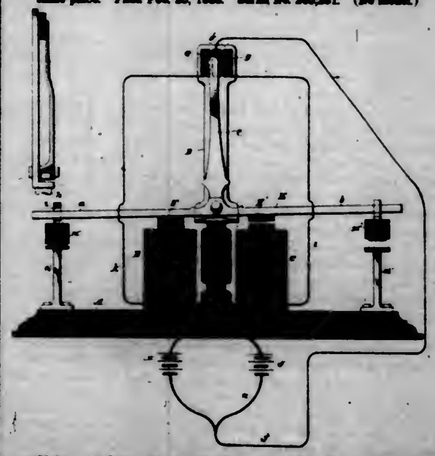
3. A crab-catcher and oyster-dredge composed of side pieces composed of upper bars, A, united at their forward ends, runners B, vertical stays between the upper bars and runners, cross-stays between the side pieces, the scraper-bar, and the wires F in the side pieces, substantially as and for the purpose described.

4. The side pieces having the upper bars, runners, and uprights for connecting the said upper bars and runners, combined with wires or rods F, arranged just above the runners, substantially as and for the purpose described.

5. In a crab-catcher and oyster-scraper, side pieces composed of the upper bars, A, the runners B, and the uprights a^2, connecting said upper bars and runners, the runners being extended forward from the uprights and connected to the upper bars, substantially as shown, to form supports for the side pieces essentially coextensive with their length.

382,625. AUTOMATIC ELECTRICAL SWITCH.

FREDERICK SEITZ, Louisville, Ky., assignor to the American Sanaphore Company, same place. Filed Feb. 25, 1888. Serial No. 265,231. (No model.)



Claim.—1. In an electrical switch, the combination, with electro-magnets, of a pivoted lever carrying a counterbalance-weight at each side of its fulcrum, and contact-blocks with which an arm of said lever is adapted to make contact, substantially as set forth.

2. In an electrical switch, the combination, with two electro-magnets, of a pivoted lever carrying armatures to be actuated by said magnets, adjustable weights on the lever at opposite sides of its fulcrum, and contact-blocks with which an arm of said lever is adapted to make contact, substantially as set forth.

3. In an electrical switch, the combination, with two electro-magnets, of a lever pivoted between said magnets and carrying armatures, adjustable weights carried by the lever at opposite sides of its fulcrum, and a series of contact-blocks with which an arm of the lever is adapted to make contact, substantially as and for the purpose set forth.

4. In an automatic electrical switch, the combination, with two electro-magnets and two batteries, of a lever pivoted above said electro-magnets and carrying armatures, adjustable weights carried by the lever at opposite sides of its fulcrum, contact-blocks with which an arm of the lever makes contact, and conductors connecting the contact-blocks with the batteries and coils of the magnets, substantially as set forth.

5. In a switch, the combination, with two electro-magnets and two batteries, of a pivoted lever carrying a weight at each side of its fulcrum, three contact-blocks mounted on a suitable support and electrically connected with the batteries and coils of the electro-magnets, and an arm of the lever adapted to connect the contact-blocks in pairs alternately as the device operates, substantially as set forth.

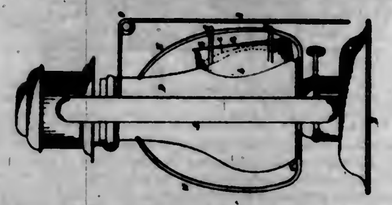
6. In an electrical switch, the combination, with two electro-magnets, of a pivoted lever above said magnets and carrying weights on opposite sides of its fulcrum, a series of contact-blocks with which an arm of the lever is adapted to make contact, and two batteries electrically connected with the contact-blocks and coils of the magnets, whereby when one battery becomes weak it will be cut out and the other battery switched into circuit automatically when the arm of the lever moves over the contact-blocks, substantially as set forth.

7. In an electrical switch, the combination, with two electro-magnets, of a lever pivoted above said magnets and carrying a weight at each side of its fulcrum, and having slotted cheeks through which the arms of the lever pass, supporting-posts mounted on a base beneath the weights, and contact-blocks with which an arm of the lever is adapted to engage, substantially as set forth.

8. In an electrical switch, the combination, with two electro-magnets, of a lever having three arms pivoted above said magnets and carrying armatures, and weights on two arms of the lever at opposite sides of its fulcrum, the third arm of said lever being made thin and adapted to bear with a yielding pressure upon a series of contact-blocks, substantially as set forth.

382,626. TUBULAR LANTERN.

JOHN H. SIMMS, Hamilton, Ontario, Canada. Filed Apr. 17, 1888. Serial No. 270,910. (No model.)



Claim.—1. The combination, with a tubular lantern, of a removable reflector, G, having its flange *b* cut to conform to and fit the shape of the globe, substantially as specified.

2. The combination, with a tubular lantern, of a reflector, G, having its flange *b* cut to conform to and fit the round shape of the globe, and secured to the guard E by hooks *d*, substantially as specified.

382,627. WATCH-CHAIN ATTACHMENT.

HENRY M. STOVER, Olathe, Kans. Filed Sept. 6, 1887. Serial No. 248,943. (No model.)



Claim.—1. A lock for watch chains or guards herein described, consisting of a metallic yoke having slotted arms, and provided with a spur or toothed bar and cam-lever for locking the same to a vest or other garment, substantially as herein set forth.

2. A lock for watch chains or guards herein described, consisting of a metallic yoke or U-shaped piece, one end of which has a locking-lever, in combination with an escutcheon or other ornament attached to the other limb, substantially as herein set forth.

382,628. UNDERWAIST.

EMMA D. WATSON, Prattsburg Corners, N. Y. Filed Aug. 20, 1887. Serial No. 247,467. (No model.)



Claim.—1. In an underwaist, the body A, provided with horizontal incisions or openings in its back, in combination with an elastic or yielding connection extending across the slits or openings.

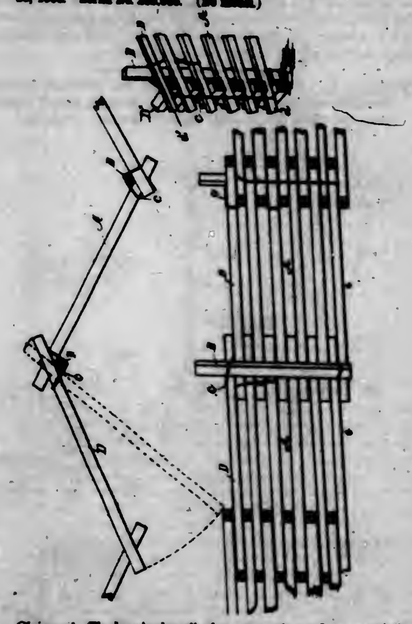
2. In an underwaist provided with shoulder-straps, the horizontal incisions or openings in the back, and the elastic connecting-pieces, as G, applied to the openings.

3. In an underwaist provided with shoulder-straps B B, flaps C D, adapted to be connected at the back, a horizontal incision, F, in each flap, and elastic G, applied to the incisions, all substantially as shown.

4. In an underwaist, the body *a*, provided with elastic portions G in its back, strengthening-strips H, buttons or fastenings at the upper and lower ends of the strips, and shoulder-straps B B, secured to the fastenings at the upper ends of the strips, all substantially as shown.

382,629. FENCE.

CHARLES E. WILSON, Dunn, Ind. Filed Feb. 20, 1888. Serial No. 265,092. (No model.)

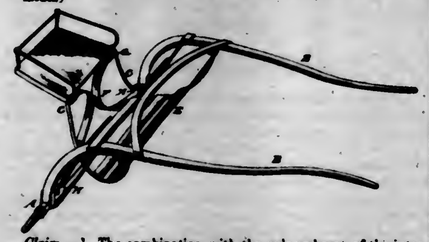


Claim.—1. The herein-described worm or zigzag fence, consisting of the horizontal rails forming the intersecting panels, upright posts placed in each inner angle at the ends and on opposite sides of the panel, and binding-wires securing the rails and panels together and firmly clamping the upright posts against the rails and into the angles, as set forth.

2. In a worm or zigzag fence, the combination of the rails forming the intersecting panels, an upright post or brace located in each inner angle formed by the intersecting panels, binding-wires to clamp the rails together and secure the posts or braces in the angles, and a locking-lever rail in each panel adapted to twist the wire at one end of the panel and thus firmly lock the panels and upright posts together, substantially as described.

3. In a worm or zigzag fence, the combination of the horizontal rails forming the intersecting panels, an upright post or brace located in each obtuse angle formed by the intersecting panels, a binding-wire securing the panels and upright post together at such angle, said binding-wire being secured at one end to the lower portion of the post, from thence passing upwardly in the angle on the opposite side of the fence, and from thence passed back around the post, and being secured to one of the rails near the top, and a locking-lever rail in each panel adapted to twist the wire at one end of the panel and thus firmly bind the post and panels together, substantially as described.

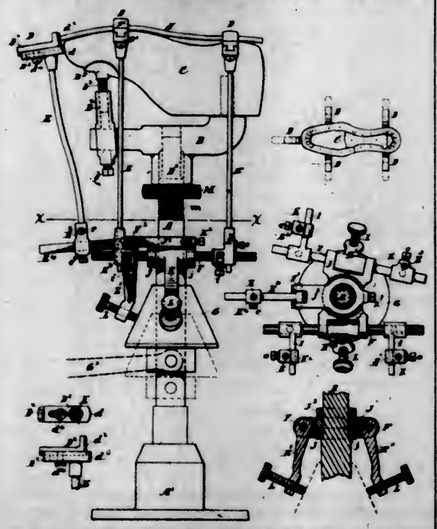
382,630. VEHICLE-SPRING. WILLIAM H. WEBSTER and HIRAM DUFFEY, Cortland, N. Y. Filed Jan. 14, 1888. Serial No. 260,770. (No model.)



Claim.—1. The combination, with the axle and seat, of the interposed C-springs loosely connected to shackles adjustable in clips secured upon the axle, whereby the springs may be adjusted to accommodate heavy and light weights, substantially as and for the purpose specified.

2. The combination, with the springs and axle, of the shanked shackles having shoulders with projecting lugs, the slotted plates or loops having recesses for the reception of the lugs, and the screw bolts and nuts whereby the shackles may be adjusted, and with them the springs, substantially as and for the purpose specified.

382,631. SOLE-FITTING MACHINE FOR BOOTS OR SHOES. WILLIAM AVERY, Spencer, Mass., assignor of one-half to Jonas B. Prouty, same place. Filed Mar. 5, 1888. Serial No. 266,134. (No model.)



Claim.—1. The machine herein described for fitting on outsoles to boots or shoes, comprising a main standard having a vertically-adjustable shoe-supporting head or jack, in combination with a series of backwardly and forwardly movable gages that guide the edges of the outsole, a series of levers or bars respectively carrying said gages fulcrumed in bearings on said standard, and an actuating wedge or expander whereby movement is imparted to said levers for advancing said gages to embrace the soles, for the purpose set forth.

2. The combination of the jack or support for holding a boot or shoe, and a series of movable gages having surfaces *d* to bear against the upper and surfaces d^3 for gaging the projection of the outsole, and operating-supporters for carrying said gages toward and from the axis of said jack, substantially as and for the purpose set forth.

3. The combination, with the standard A and the shoe-supporting jack B, mounted thereon, of the series of movable sole-gages D, gage-supporting bars or levers E, with fulcrum-pivots F F' and actuating-arm E', and the expander or wedge G, movable on said standard, for operating said levers to advance the gages to their work.

4. The combination, with the gages for indicating the position of the outsole, of the shoe support or jack having its toe-pad B^3 fitted with a screw-thread, to be outwardly and inwardly adjustable on the toe-piece B^2 by rotation of said pad, substantially as set forth.

5. The standard A, having the screw-threads *m*, the shoe-supporting head or jack B, movably socketed upon said standard, and the adjusting-nut M, fitted to said screw-thread, in combination with the sole-gages and gage-supporting fingers, for the purpose set forth.

6. In a machine for fitting on outsoles, the gage D, composed of two parts, as D' and D^2, said part D^2 being adjustable upon the part D', and a screw or binder for retaining the same at positions of adjustment, for the purpose set forth.

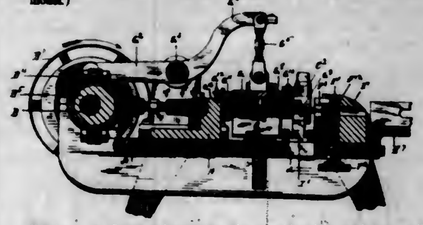
7. The lateral swinging fulcrum-bearings J, free to assume different positions, in combination with the standard A, carrying the shoe-supporting jack and the side gages and gage-operating levers, substantially as and for the purpose set forth.

8. The combination, with the sole-gage D, its fulcrum-axle F, supporting-finger E, and actuating-arm E', of the arm I, connecting-slide E^2, and binders or set-screws *e* and *i* for clamping the parts at positions of adjustment, substantially as set forth.

9. The toe-gage having its supporting-finger provided with an adjustable joint-head, E^5, and the actuating-arm fulcrumed at F on the fixed bearing J', and provided with an outward extension, E^4, whereon said joint-head is adjustably secured, in combination with the jack-carrying standard A and operating-wedge.

10. The actuating-arms E', provided with adjusting thumb-screws L, in combination with the fulcrum-axles F, gage-bearings D, carrying-fingers E, and expander G, substantially as and for the purpose set forth.

382,632. WIRE-NAIL MACHINE. WILLIAM F. RANDOLPH and HARLEY A. STORY, Worcester, Mass.; said Story assignor of one-half his right to said Randolph. Filed Feb. 19, 1887. Serial No. 228,264. (No model.)



Claim.—1. In a nail-machine, the combination, with an anvil-block to receive the force of the blow in heading the nail and a vertically-adjustable plate carrying the wire-gripping dies, of a tube held in said vertically-adjustable plate with one end of said tube in contact with said wire-gripping dies and the opposite end of said tube in contact with the anvil-block, whereby said tube is vertically adjustable simultaneously with said gripping-dies, substantially as set forth.

2. In a nail-machine, the combination of an anvil to receive the force of the blow in heading the nail, a die-holding block vertically adjustable in ways on said anvil, a fixed die held in said die-holding block, a lever pivoted in said die-holding block and carrying a movable wire-gripping die, and an actuating-cam by which said lever is vibrated and the wire-gripping dies closed, substantially as described.

3. In a nail-machine, the combination, with a fixed and movable gripping-die and a pivoted lever actuating said movable die, substantially as described, of a cam acting on said pivoted lever, the face of said cam being so formed as to effect the three successive movements of said pivoted lever, as described, whereby, first, the gripping-dies are opened and the wire released; second, the gripping-dies are partially closed and the wire held with a moderate pressure, and, third, the gripping-dies are completely closed and the wire firmly seized, substantially as described.

4. The combination of the vertically-adjustable block F', pivoted lever F^4, gripping-dies F^5 F^6, adjusting-screws F^9, and actuating-cam D', as and for the purpose set forth.

5. The combination of blocks I', sliding on horizontal ways, intermediate die-carrying blocks, I^2, gibs I^3, binding-screws I^4, and adjusting-screws I^5, substantially as described.

6. The combination of the vertically-sliding block G, horizontally-sliding block G^3, provided with a groove to receive the header, header G^9, held in said groove, and eyebolt G^{10}, as and for the purpose set forth.

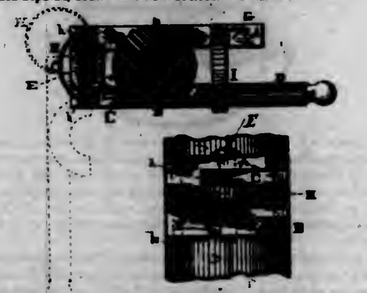
7. In the heading mechanism of a nail-machine, the combination of the vertically-sliding block G, a horizontally-sliding plate carrying a nail-header, a screw-threaded rod held in the vertically-sliding block and provided with an adjusting-nut, whereby the rearward motion of the header is limited, and a retractile spring by which said horizontally-sliding block is held against said adjusting-nut, substantially as described.

8. In the heading mechanism of a nail-machine, the combination of the vertically-sliding block G, horizontally-sliding block G^3, carrying a nail-header, and cushioning-springs G^2 to check the downward movement of said vertically-sliding block, substantially as described.

9. In the heading mechanism of a nail-machine, the combination of a vertically-sliding block, G, a horizontally-sliding block, G^3, a binding-bolt, G^{10}, carried by said sliding block G^3, and a nail-header, G^9, held by said binding-bolt, substantially as described.

10. The combination, with a vertically-sliding block and a horizontally-sliding block sliding in said vertically-sliding block and carrying the header, of a screw-threaded rod held in said vertically-sliding block and passing through a lug on said horizontally-sliding block, an adjusting-nut on said screw-threaded rod, and a spring applied to said horizontally-sliding block to hold it against said adjusting-nut, substantially as described, whereby the position of the header is adjusted relatively to the end of the wire.

382,633. METAL MOLD. CHARLES S. BELL, Hillsborough, Ohio. Filed Sept. 24, 1887. Serial No. 250,602. (No model.)

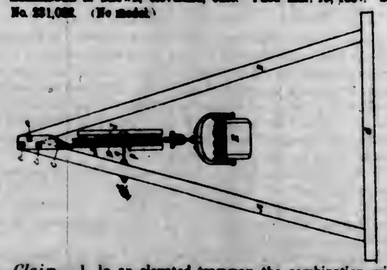


Claim.—1. The herein-described mold composed of opposite halves hinged together by a loose hinge, and held together normally independently of the hinge by springs, to permit the halves to separate as the casting expands, substantially as specified.

2. The combination, in a metal mold, of the opposite equal halves loosely hinged together and provided with handles D G, with the closing-springs H I, whereby the parts are held together normally, but allowed to separate during the expansion of the casting, substantially as specified.

3. The combination, in a mold, of the halves B *b*, provided, respectively, with hinged lugs C and F, and handles D G, the lug C having its hinge-bolt opening enlarged, as described, with the hinge-bolt E, the fixed closing-spring H, connecting the lugs C and F, and the hook-spring I, for connecting the handles D and G, all constructed and arranged substantially as specified.

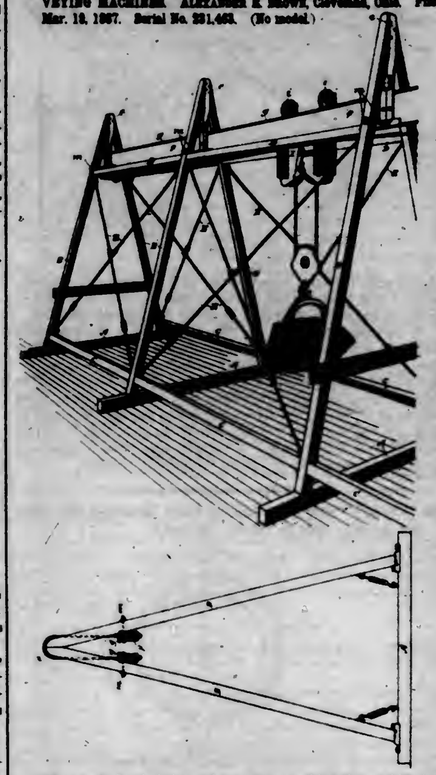
382,634. TRAMWAY FOR CARRYING ELEVATED LOADS. ALEXANDER E. BROWN, Cleveland, Ohio. Filed Mar. 15, 1887. Serial No. 231,082. (No model.)



Claim.—1. In an elevated tramway, the combination, with a series of A-frames, of a single track beam or stringer and a series of depending metallic suspender-like devices, which are secured at their upper ends to the apices of the said A-frames and at their lower ends carry the single track-beam, all in the manner specified, for the purpose set forth.

2. In combination with a series of A-frames and a track beam or stringer located in the space between the converging sticks of said frames, a metallic suspender device, C, composed of plate metal and having a loop-like upper portion which is saddled on the apex of the A-frame, and having its lowermost portion twisted or bent so as to both vertically and laterally support the track-beam, all substantially as hereinbefore set forth.

382,635. ELEVATED TRAMWAY FOR HOISTING AND CONVEYING MACHINES. ALEXANDER E. BROWN, Cleveland, Ohio. Filed Mar. 19, 1887. Serial No. 231,463. (No model.)



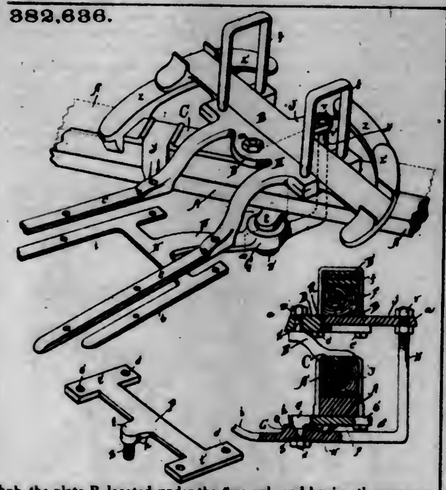
Claim.—1. In a hoisting and conveying machine, the combination, with a series of A-frames, of, first, a suitable track or railway located or arranged intermediately of the legs of said A-frames, and, second, a series of vertically-depending metallic straps or suspender-like devices, which are secured at their upper ends to the apices of the said A-frames, and which are attached at their lower ends to the track or railway, so as to securely support the latter, the whole constructed and operating in substantially the manner hereinbefore set forth.

2. In combination with the series of A-frames suitably braced and connected together, a tramway composed of two track stringers or beams, and a series of suspender-like devices which depend from the apices of the said frames and sustain the duplex track or tramway intermediately of the legs of said frames, all in the manner and for the purpose hereinbefore described.

382,636. RUNNING-GEAR FOR VEHICLES. STEPHEN BURNALL, Fremont, Ohio, assignor to John V. Beery and David Davis, same place. Filed Jan. 21, 1888. Serial No. 261,402. (No model.)

Claim.—1. In combination with the fore axle, the fifth-wheel plate B, the detachable perch-head H, having one or more rearwardly-extending perch-prongs, and rear extension, D, with hole *e*, the fifth-wheel plate C, having the rearwardly-extending arm E, said arm being pivoted to the extension D of the perch-head, the perch-head H', having one or more rearwardly-extending perch-prongs and forward extension, W, the hub G, formed therein and having a hole through said

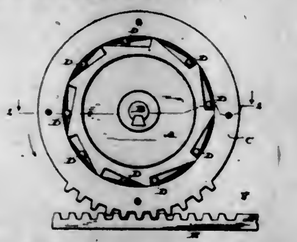
382,636.



hub, the plate P, located under the fore axle and having the rear extension, *t*, with depending bolt S, said bolt being pivotally connected to the hub G and having the nut *n*, as and for the purposes specified.

2. In combination with the fifth-wheel plate B, the detachable perch-head H, having the rearwardly-extending ledge D, and the fifth-wheel plate C, having the rearwardly-extending arm E, said arm having a pivotal connection with the ledge D of the perch-head, and the plate P, having the rear extension, *t*, with depending prong S, the perch-head H', having the forward extension pivotally connected to the prong *t* of the plate P in the rear of the axle, and its vertical prong N, pivoted to the nose J of the fifth-wheel plate B in advance of said axle, substantially as and for the purposes specified.

382,637. RATCHET. JOHN L. CURTIS, Milwaukee, Wis. Filed Oct. 24, 1887. Serial No. 253,175. (No model.)



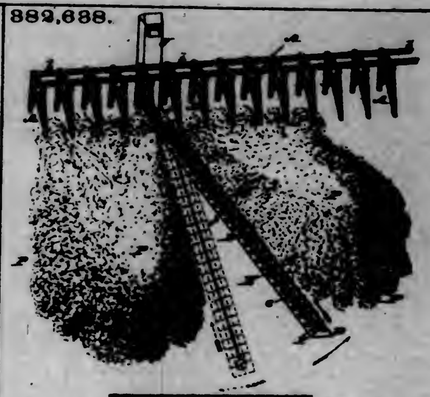
Claim.—1. The combination of a ratchet-wheel fast on a shaft and having planes in the form of two intersecting inclines at right angles to each other at any point on the line of their intersection, a chambered disk or collar surrounding the ratchet-wheel, a series of balls interposed between this disk or collar and the planes of said ratchet-wheel, and means, substantially as described, for imparting a reciprocative movement to said disk or collar.

2. The combination of a ratchet-wheel fast on a shaft and having its planes in the form of two intersecting inclines at right angles to each other at any point on the line of their intersection, a chambered disk or collar surrounding the ratchet-wheel, a series of balls interposed between this disk or collar and the planes of said ratchet-wheel, a face-plate for retaining the balls in position, and means, substantially as described, for imparting a reciprocative movement to said disk or collar.

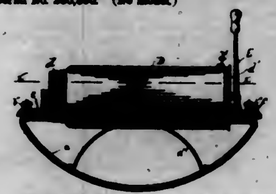
382,638. CHAIN CONVEYER FOR HANDLING COAL. JAMES M. DODDS, Philadelphia, Pa. Filed Oct. 18, 1887. Serial No. 252,494. (No model.)

Claim.—A conveyer composed of suitable flights and an endless carrier therefor mounted on suitable wheels, and a duplex conveyer-trough having two opposite open sides adapted to permit the feeding of the particles of material from a pile or piles into either of its compartments, substantially as and for the purpose hereinbefore set forth.

382,638.



382,639. CHURN. HERSHIAH DOTY, San José, Cal. Filed Jan. 16, 1883. Serial No. 260,892. (No model.)

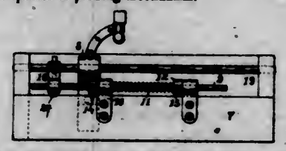


Claim.—1. In a churn, the combination of the rockers having the curved supporting bars or plates, the supporting-frame secured thereon, having a central opening provided with beveled side walls, the cream-receptacle, and the adjustable plates having slotted horizontal portions, through which thumb-screws project, the vertical portions of said plates fitting against the end of said receptacle, substantially as shown and described.

2. The combination, with the rockers, of the supporting-frame secured thereon, having a central opening and beveled side walls, the adjustable plates having screws working in holes or apertures of said frame, the receptacle, and the operating-handle secured to one of said adjustable plates, substantially as shown and described.

382,640. PICKER-CHECK FOR LOOMS. WILLIAM DENVER, Manville, R. I. Filed Aug. 20, 1887. Serial No. 248,128. (No model.)

Brief.—The check-rod is supported in hangers on the shuttle-box, against one of which hangers rests a spring which encircles the rod and bears against a stop on the rod which is adjustable thereon, thereby permitting the regulation of the tension of the spring. The stop on the rod is adjustable thereon, and is made in various forms to adapt it to the different species of picking mechanism.



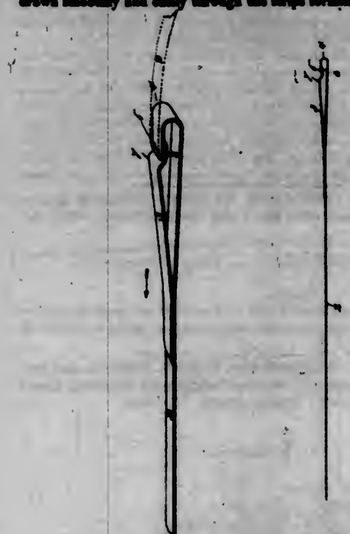
Claim.—1. The combination, with the shuttle-box, of a reciprocating check-rod provided with a check for receiving the blow of the picker, secured to the check-rod by a clamp to adjust the same and mounted in bearings, a spring mounted on the check-rod and abutting with one end against one of the said bearings, and a stop adjustable by means of a set-screw for engaging the other end of the spring and for regulating the tension of the spring by means of its adjustment, substantially as and for the purpose herein described.

2. The combination, with the shuttle-box 7, of the spring-actuated reciprocating check-rod mounted in bearings 10, and the check 16, adjustably mounted on the check-rod by means of the set-screw 24, and comprising the members 20 and 21, substantially as and for the purpose herein described.

3. The combination, with the shuttle-box 7 and the picker 8, provided with the guiding-spindle 19, of the spring-actuated reciprocating check-rod 9, mounted in bearings 10, and the check 16, adjustably mounted on the check-rod by means of the set-screw 24, and comprising the members 20 and 21, having the perforation 23 to receive the spindle 19, substantially as and for the purpose herein described.

382,641. WEAVING-NEEDLE. FREDERIC G. RAILEY and HENRY BAILEY, Springfield, Mass.; said Bailey assignor to said Railey. Filed Sept. 6, 1887. Serial No. 248,797. (No model.)

Brief.—The needle is used in plaiting or making mats of paper strips and the like, and is intended to hold a strip and permit it to be drawn smoothly and easily through the strips forming the warp.



Claim.—1. A weaving-needle consisting of a body having a head in the form of a hook, and a spring-latch rigidly secured by one end to one side of said body, having its free end extending under and bearing against the end of said hook, and a shoulder, 7, thereon higher than the adjoining end 5 thereof, substantially as set forth.

2. A weaving-needle consisting of a body having a head in the form of a hook, and a spring-latch rigidly secured by one end to one side of said body, having its free end extending under and bearing against the end of said hook, substantially as set forth.

382,642. HYDRANT. CHARLES G. HUTZ, St. Louis, Mo. Filed Aug. 3, 1887. Serial No. 246,493. (No model.)



Claim.—In a hydrant, a nozzle-section having the valve-seat and all of the valve-working parts of the hydrant located within the nozzle-section, in combination with a main water-pipe and a lower outer casing made in sections, which lower outer casing strengthens and forms an enlarged bearing for the hydrant, and extends from the nozzle-section to and slightly below the ground-line, substantially as described.

382,643. SAFETY-VALVE. WILLIAM R. FOX, Grand Rapids, Mich. Filed Sept. 30, 1887. Serial No. 251,253. (No model.)



Claim.—1. In combination, the chamber A, a main valve having a hollow stem, a piston, B', carried thereby within the closed chamber, a spring for closing said valve, an independent valve and spring within the hollow stem, said spring being of less tension than the spring of the main valve, and openings between said stem and the space below the piston B', whereby, when the supplemental valve is lifted, steam is admitted below the piston to operate the same, substantially as described.

2. In combination, the case A, the main valve B', having a hollow stem, a piston, B', carried thereby and inclosed within the case A, a spring for operating the valve B' against steam-pressure, a diaphragm, D, a chamber, F, between it and the piston B', openings from the hollow stem to the chamber F, a valve for controlling the entrance of steam to said chamber, and a chamber, E, with openings for the blowing off of steam, substantially as described.

3. In a safety-valve, the main valve having a hollow stem, and a supplemental valve within the hollow stem, said valves being kept to their seats against the pressure of the steam by independent springs varying in tension, the steam-pressure operating to open both valves, but one in advance of the other, by reason of the variation in the tension of the springs, substantially as described.

4. A safety-valve consisting of a main valve and a supplemental valve, both valves being kept to their seats wholly by regulated pressure against the pressure of the steam, the steam-pressure operating to open both valves.

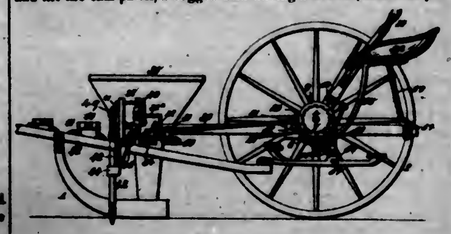
5. In a safety-valve, the main valve having a hollow stem, a supplemental valve within the stem, and pressure-springs or their equivalents for the valves, whereby they are held to their seats, and devices for regulating the said pressure against the steam-pressure, the said steam-pressure operating to open both valves.

382,644. WHEEL-PLANTER. WILLIAM H. GROVE, Circleville, Ohio, assignor of one-half to Clifton B. Drudrach, same place. Filed Dec. 15, 1887. Serial No. 257,905. (No model.)

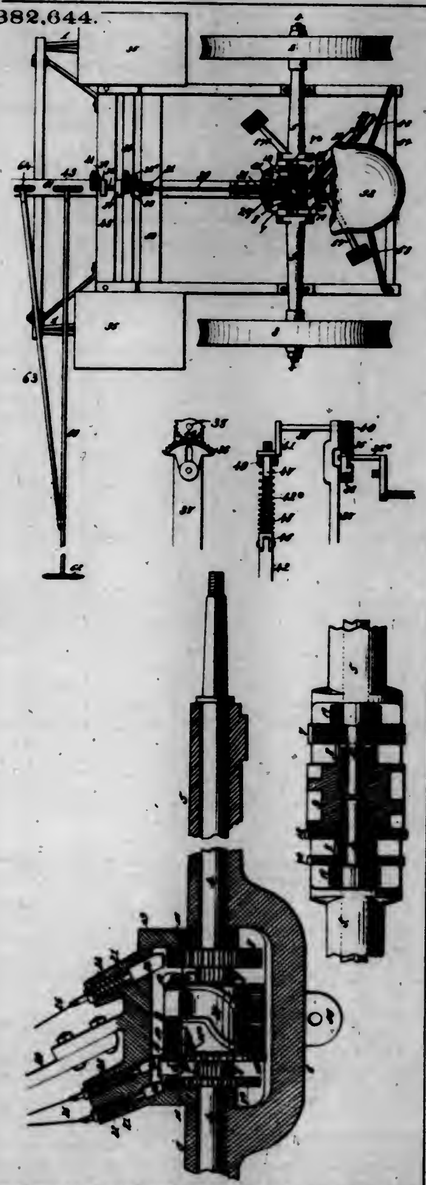
Claim.—1. In a wheeled planter, the combination, with a divided axle from which the seed-dropping devices are actuated, and ground-wheels and pinions secured to said axle, of a lever loosely mounted on the divided axle and provided with pawls to engage said pinions, whereby the axle and ground-wheels can be revolved forward or back to move the machine into position to bring the seed-boxes in line with rows already planted, substantially as described.

2. In a wheeled planter, the combination, with a divided axle and ground-wheels and ratchet-gears secured to said axle, of a cam loosely mounted on the axle to actuate a marker and seed-dropping devices, and pawls pivoted on each side of the cam to engage said ratchet-gears, substantially as described.

3. In a wheeled planter, the combination, with a divided axle, ratchet-gears secured to the axle, and a cam mounted loosely on the axle and provided with pawls to engage the ratchet-gears, of a pin supported transversely in the cam and having eccentrics to engage and lift the cam-pawls, a cogged disk having a slot to permit the pas-



382,644.



5. In a wheeled planter, the combination of a divided axle, ground-wheels and ratchet-gears secured to said axle, pawls pivoted to the sides of the cam to engage said ratchet-gears, a seed-dropping mechanism actuated by a slide-bar, a rock-shaft engaged with said cam and slide-bar, a vertically-movable marker, and means for actuating the marker from the rock-shaft, substantially as described.

6. In a wheeled planter, the combination, with a vertically-movable marker, a cam on the planter-axle, and a rock-shaft actuated by said cam, of a segment-gearing and crank-connection located between said marker-rod and rock-shaft, whereby the marker is forced into the ground, and a spring and movable collar on the marker-rod to render it yielding and prevent breakage, substantially as described.

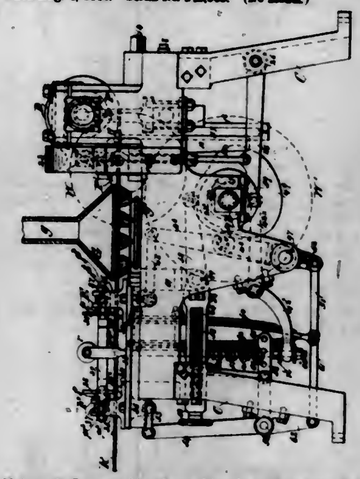
7. In a wheeled planter, the combination of a vertically-movable hill-marker located between opposite seed-boxes, and a line-marker or indicator having a hinged connection with the draft-pole and capable of being turned to project from either side of the planter, whereby it can be made to register on one side of the planter with the impression made by the hill-marker centrally between the hills last planted, and then be turned to the other side of the planter to indicate the proper distance for the hills on the next return-row, substantially as described.

382,645. PICKER-STICK FOR LOOMS. STEPHEN M. HAMBLIN, Plymouth, Mass. Filed Mar. 6, 1886. Serial No. 194,343. (No model.)



Claim.—A picker-stick split or formed of two parts or members and having a bridge interposed between the said parts, as and for the purpose set forth.

382,646. HORSESHOE-NAIL MACHINE. SIGVART HANSEN, Jobs, Christiania, assignor to Christian Christophersen, Christiania, Norway. Filed Aug. 1, 1887. Serial No. 245,905. (No model.)



Claim.—1. In a machine for making horseshoe-nails, the combination, with the forging devices, the nail-rod-feeding devices, and the cutter interposed between said devices, of a dog operating to dog the nail-rod in position for forging, said dog having a reciprocating motion timed to withdraw the nail-rod from the forging devices and carry the same to the cutter to sever the forged nail therefrom, substantially as and for the purposes specified.

2. In a machine for making horseshoe-nails, the combination, with the forging devices and the cutter, of a nail-rod-feeding device comprising a dog operating to dog the rod in position, said dog having a rectilinear motion toward and from the forging devices to feed the nail-rod thereto, and a releasing mechanism to disengage the dog from the nail-rod and allow it to return to its normal position, substantially as described.

3. In a machine for making horseshoe-nails, the combination, with the forging devices and a feeding device operating to feed the nail-rod to the forging devices, of a cutter interposed between the forging and feeding devices, and a dog operating to hold the nail-rod while a nail is being forged, said dog having a rectilinear motion toward and from the cutter and forging devices and operating to withdraw the nail-rod from the forging devices and carry the nail thereof to the cutter, substantially as and for the purpose specified.

sage of one end of said pin, and a pawl and lever to engage the cogged-disk and actuate the pin so as to throw the cam out of gear, substantially as described.

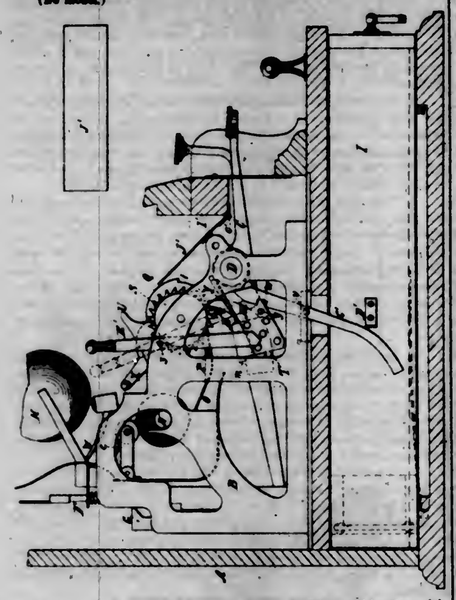
4. In a wheeled planter, the combination, with a divided axle, ground-wheels, pinions, and ratchet-gears secured to said axle, a cam loosely mounted on the axle to actuate a seed-dropping mechanism, and pawls pivoted to both sides of the cam to engage the ratchet-gears, of a pin passed transversely through said cam and having eccentrics to engage the pawls, a cogged-disk mounted loosely on the hub of the cam and engaged with one end of the eccentric-pin, and a pawl and lever to engage and actuate said disk for throwing the cam out of gear and setting it forward or back to start the seed-dropping devices at the right moment to drop the seed in line with former rows, substantially as described.

4. In a machine for making horseshoe-nails, the combination, with the forging devices and the nail-rod-feeding devices, and a cutter interposed between said devices, of a dog operating to hold the nail-rod in position while a nail is being forged, said dog having a rectilinear motion toward and from the cutter, and forging devices timed relatively to said devices to carry the nail end of the rod from the forging devices to the cutter, and a releasing mechanism operating to release the dog from the nail-rod when the nail is severed therefrom and permit the feeding devices to feed said rod to the forging devices, substantially as and for the purpose specified.

5. In a machine for making horseshoe-nails, a hammer comprising a stock and a hammer adjustable thereon, substantially as and for the purpose specified.

6. In a machine for making horseshoe-nails, forging devices for forging a nail, comprising a vertically-adjustable anvil, a forging-roller revoluble above the anvil, and two hammers on opposite sides of said anvil, said hammers being adjustable toward and from each anvil, substantially as and for the purpose specified.

382,647. CASH INDICATOR AND RECORDER. JOHN F. READY and JOHN H. PATTERSON, Dayton, Ohio, assignors to the National Cash Register Company, same place. Filed Nov. 16, 1887. Serial No. 256,310. (No model.)



Claim.—1. In a cash indicator and recorder, the combination, with the recording-paper and a series of keys representing odd multiples of five above the first power, of a five-cent bar provided with a puncturing-pin and arranged to be actuated by said keys, whereby upon operating any one of said keys said bar is actuated to cause its pin to puncture the recording-paper, substantially as described.

2. In a cash indicator and recorder, the combination, with the recording-paper provided with a five-cent space and a series of spaces indicating even multiples of five, and a series of keys indicating even and odd multiples of five above the first power, and each provided with a puncturing-pin, of a five-cent bar provided with a puncturing-pin and arranged to be actuated by each of the keys representing an odd multiple of five, substantially as and for the purpose described.

3. In a cash indicator and recorder, the combination, with the recording-paper provided with a five-cent space and a series of spaces indicating even multiples of five, a series of keys representing five and the even and odd multiples thereof, and a series of puncturing-pins, one on each of said keys excepting the five-cent key, of a five-cent bar provided with a puncturing-pin and arranged to be actuated by each of the keys representing an odd multiple of five, substantially as and for the purpose described.

4. In a cash indicator and recorder, the combination, with the recording-paper, a series of keys representing odd multiples of five above the first power, and a series of tablet-rods and indicating-tablets, one for each key, of a five-cent bar provided with a puncturing-pin and arranged to be actuated by said keys, substantially as and for the purpose described.

5. In a cash indicator and recorder, the combination, with the recording-paper provided with a five-cent space and a series of spaces indicating even multiples of five, a series of keys representing even and odd multiples of five above the first power, and each provided with a puncturing-pin, and a series of tablet-rods and indicating-tablets, one for each key, of a five-cent bar provided with a puncturing-pin and arranged to be actuated by the operation of any one of said keys representing an odd multiple of five, substantially as and for the purpose described.

6. In a cash indicator and recorder, the combination, with the recording-paper provided with a five-cent space and a series of spaces indicating even multiples of five, a series of keys representing five and the even and odd multiples thereof, a series of puncturing-pins, one for each key, excepting the five-cent key, and a series of tablet-rods and indicating-tablets, one for each key, of a five-cent bar provided with a puncturing-pin and arranged to be actuated by each of the keys representing odd multiples of five, substantially as and for the purpose described.

7. In a cash indicator and recorder, the combination, with a series of keys provided with puncturing-pins, of a bar extending across said keys and arranged to be vibrated by the operation of any one of them, and an auxiliary puncturing-pin actuated by said vibrating bar to puncture the recording-paper whenever any key is operated, substantially as and for the purpose described.

8. In a cash indicator and recorder, the combination, with a series of keys provided with puncturing-pins, of a vibrating frame extending across said keys and arranged to be vibrated by the operation of any one of them, substantially as described, and an auxiliary puncturing-pin actuated by said vibrating frame to puncture the recording-paper whenever any key is operated, as and for the purpose specified.

9. In a cash indicator and recorder, the combination, with a series of keys pivoted on a through-shaft at the front of the machine, a series of tablet-rods and indicating-tablets operated by said keys, and recording mechanism for recording the values of the keys operated, of a vibrating frame extending transversely across the top of said keys in rear of their pivotal support, substantially as and for the purpose described.

10. In a cash indicator and recorder, the combination, with a series of keys pivoted on a through-shaft at the front of the machine, a series of tablet-rods and indicating-tablets operated by said keys, recording mechanism for recording the values of the keys operated, and a gong and gong-hammer, of a vibrating frame extending transversely across the top of said keys in rear of their pivotal support, and connecting mechanism between said vibrating frame and gong-hammer, whereby whenever any one of the keys is operated the vibrating frame is lifted to cause the sounding of the gong, substantially as described.

11. In a cash indicator and recorder, the combination, with a series of keys pivoted on a through-shaft at the front of the machine, a series of tablet-rods and indicating-tablets operated by said keys, recording mechanism for recording the values of the keys operated, gong mechanism which is sounded whenever any key is operated, a spring-projected money-drawer, a locking-bolt for locking said drawer in its closed position, and a bolt-lever connected to said locking-bolt, of a vibrating frame extending transversely across the top of the keys in rear of their pivotal support, and connecting mechanism between said vibrating frame and bolt-lever, whereby when said vibrating frame is lifted by the operation of any key the bolt-lever is actuated to unlock the drawer, substantially as described.

12. In a cash indicator and recorder, the combination, with a series of keys pivoted on a through-shaft at the front of the machine, a series of tablet-rods and indicating-tablets operated by said keys, and recording-paper carried on a supply-roll and a rewinding-roll, of a vibrating frame extending transversely across the top of said keys, in rear of their pivotal support, and connecting mechanism between said vibrating frame and rewinding-roll, whereby the lifting of said vibrating frame by the operation of any key causes the partial rotation of said rewinding-roll, as and for the purpose specified.

13. In a cash indicator and recorder, the combination of a series of keys of fixed values, a series of tablet-rods and indicating-tablets operated by said keys, a supporting-wing for holding said tablets exposed to view, a gong and gong-hammer, a supply and a rewinding roll for carrying the recording-paper, a vibrating frame actuated by the operation of any one of the keys, connecting mechanism between said vibrating frame and rewinding-roll, and connecting mechanism between said rewinding-roll and said gong-hammer and supporting-wing, whereby the operation of the rewinding-roll through the medium of the vibrating frame causes the hammer to strike the gong and the wing to be thrown back to permit the passage of a tablet-rod whenever any key is operated, substantially as described.

14. In a cash indicator and recorder, the combination with the rewinding-roll, its actuating-dog, and overriding holding-dog provided with a laterally-projecting pin, of a spring-pressed cam-lever pivoted by the side of said ratchet and arranged to engage with said dogs, whereby upon turning said cam-lever both dogs are thrown out of engagement with the ratchet, and whereby upon subsequently operating any key of the machine the cam-lever is thrown back to its normal position and both dogs re-engaged with the ratchet, as and for the purpose specified.

15. In a cash register and indicator, the combination, with a series of operating-keys, a vibrating frame actuated whenever any key is operated, and a money-drawer with locking mechanism which is released when any key is operated, of a pivoted weighted latch adapted to engage with said frame to lock it when the drawer is opened or partially opened, and normally held out of engagement with said frame by the drawer when the latter is closed, substantially as described.

16. In a cash indicator and recorder, the combination, with a series of operating-keys, a vibrating frame actuated whenever any key is operated, and a money-drawer with locking mechanism which is released when any key is operated, of a latch arranged to engage with said vibrating frame when the drawer is opened or partially opened, and to be thrown out of engagement when the drawer is closed, and a lever for holding said latch out of engagement when desired, whereby the latch may be allowed to engage with the vibrating frame to hold the machine locked from operation while the drawer is open, or may be held constantly out of engagement with the vibrating frame to allow the machine to be operated at all times, substantially as described.

17. The combination and arrangement of the spring *f*, wing G, gong-hammer lever V, engaging with the wing G and provided with an extension, *c*, dog U, having a rear extension engaging with the extension *c*, pin *j*, cam-lever X, provided with a cam projection, *k*, and shoulder *l*, the rewinding-roll Q, provided with the ratchet S, with which the dog U engages, the operating-dog T, vibrating frame E, and keys C, substantially as and for the purpose described.

18. The combination, with the supply and rewinding rolls, the latter provided with wheel S, of the vibrating frame E, the keys operating to vibrate it, and the dog T, pivoted upon said frame, engaging the ratchet S and provided with the puncturing-pin *m*, arranged to operate on the paper passing between the rollers, substantially as described.

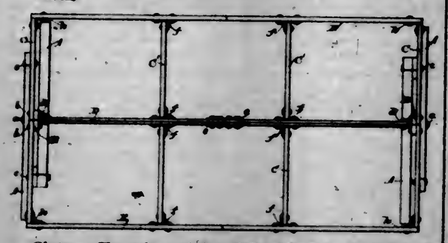
19. The combination, with the series of operating-keys, each provided with a puncturing-pin, the record-paper, and means for supporting the same, of the five-cent bar Y, provided with a puncturing-pin, *p*, and extensions *o* engaging the odd-numbered keys, substantially as described.

20. The combination and arrangement, with the operating-keys, of the drawer I, provided with the shoulder *D'*, the pivoted latch C', having the notch *w*, and the vibrating frame E, provided with the pin *y*, substantially as and for the purpose described.

21. The combination and arrangement, with the operating-keys, of the drawer I, provided with the shoulder *D'*, the pivoted latch C', having the notch *w*, the lever E', and the vibrating frame E, provided with the pin *y*, substantially as and for the purpose described.

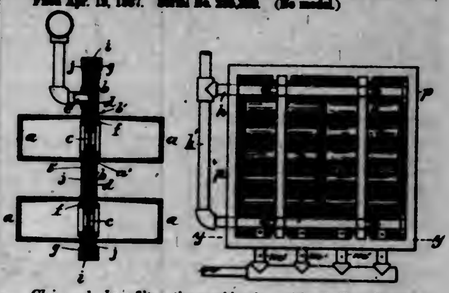
22. In a cash indicator and recorder provided with a supply and a rewinding roll, the combination, with the paper carried on said rolls, of the serrated cutter-bar J', extending transversely across the machine and hinged, as at *c'*, to the bar I' of the case, and adapted when swung into vertical position to cover the end of the paper drawn across it, and adapted when turned down to shield and hide the mechanism beneath, substantially as described.

382,648. PORTABLE FOLDING HAMMOCK-STAND. EVERETT EMERY, Hudson, Mass. Filed Sept. 24, 1887. Serial No. 250,576. (No model.)



Claim.—The ends consisting of the oblique standards A A, the short standard B, all three pivoted together by bolt *a*, and the oblique arms C C, bolted to the standards A A B, in combination with the central ridge-pole, D, made in two pieces and secured together by the fish-plates *c c*, the longitudinal side bars, E E, hinged in their middles at *g*, and the arms C', secured to the pole D and bars E E, and the braces *i*, having the hammock-hooks *j*, the whole forming a rigid and yet separable and portable frame, as set forth.

382,649. FOROUS FILTER-CUP. JOHN W. ELSEY, Newark, N. J. Filed Apr. 13, 1887. Serial No. 235,202. (No model.)



Claim.—1. In a filter, the combination, with a hollow filter-plate provided with a series of apertures, as set forth, of porous battery-cups attached by cement to such plate, with their mouths over such apertures, a filter-casing to inclose the plate and cups, and an outlet-pipe from the interior of the filter-plate, as and for the purpose set forth.

2. In a filter, the combination, with a series of porous cups, of a flat plate provided with apertures to withdraw the liquid from the interior of the cups, annular flanges around the apertures to fit within the cups, and flanges upon the plate exterior to the cups, and cement applied to the plate between the inner and outer flanges to secure the mouths of the cups thereto, as and for the purpose set forth.

3. In a filter, the combination, with a series of porous cups, of a flat plate attached to the mouths of the cups by cement and provided with apertures to withdraw the liquid from the interior of the cups, and annular flanges around the apertures within the cups, the apertures being arranged in diagonal rows across the plate, and the plate being sustained in a vertical position within a filter-casing having granular abrading material mixed with the unfiltered fluid and agitated by fluid introduced below the porous cups, as and for the purpose set forth.

4. In a filter, the combination, with two flat plates provided with apertures, as set forth, and attached together with an intermediate space, of annular flanges about each apertures, porous cups secured to the plate over said apertures, a casing to inclose the plate and cups, an outlet-pipe from the space between the plates, and granular abrading material mixed with the unfiltered fluid within the casing, the whole arranged and operated substantially as herein set forth.

5. In a filter, the combination, with a filter-plate provided with an internal water-space and an outlet-pipe, as set forth, of apertures in the plates connected with such water-space, porous cups secured over such apertures, and a filter-casing provided with vertical ribs upon its sides to guide and retain the plate movable in a vertical position, and granular abrading material mixed with the unfiltered fluid within the casing, the whole arranged and operated substantially as set forth.

382,650. WIRE-DRAWING DIE. JOHN B. JENKINS, Pittsburg, assignor of one-half to D. S. Carroll, Allegheny City, Pa. Filed Aug. 4, 1887. Serial No. 246,093. (No model.)



Claim.—1. A drawing-die having a space or chamber in the metal around the die-hole and water or air feeding and discharge connection therewith, substantially as and for the purposes set forth.

2. A drawing-die having an annular space or chamber around the die-hole, and inlets and outlets from said chamber, substantially as described.

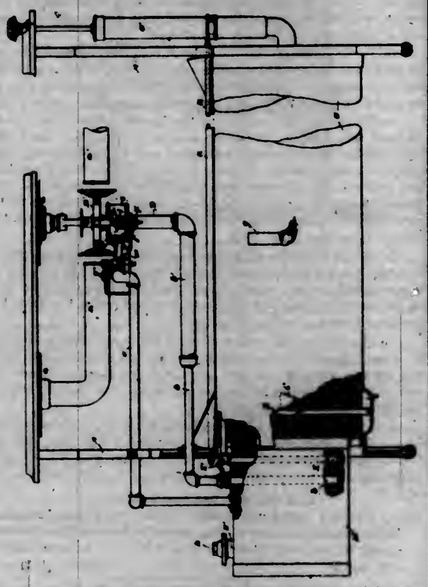
3. In a drawing-die, the combination of a die having a die-hole therein with a die-block having a seat for said die and an annular groove or channel in said seat, and an outlet and inlet from said channel, substantially as and for the purposes set forth.

382,651. SHOE-FASTENING. CHARLES KNOTT, Winona, Minn. Filed Feb. 13, 1888. Serial No. 264,494. (No model.)



Claim.—The combination, with a shoe, of a series of levers or slotted links arranged on one side of the opening in proper relation to the button-holes on the opposite side, so as to adapt the said levers to pass through the said button-holes and interlock each other, substantially as specified.

382,652. VAPOR-BURNER. FREDERICK A. LUHAN, Cleveland, Ohio. Filed June 6, 1887. Serial No. 240,676. (No model.)



Claim.—1. The combination, with mechanism for supplying carbureted air, substantially as indicated, and an oil-supply pipe, of a lighting-pipe for discharging the carbureted air to the burner, said lighting-pipe having two outlets, a valve located in the lighting-pipe for simultaneously controlling both outlets, a movable heating-chamber having a nozzle, and arm D, substantially as set forth.

2. The combination, with an air-reservoir, a pump for supplying air to same, gasoline-container, substantially as indicated, and a pan-like receptacle located within the air-container, of an air-pipe connecting these two vessels, one end of the air-pipe being located at or near the bottom of the gasoline-container and the other end of said pipe terminating near the bottom of the receptacle, substantially as set forth.

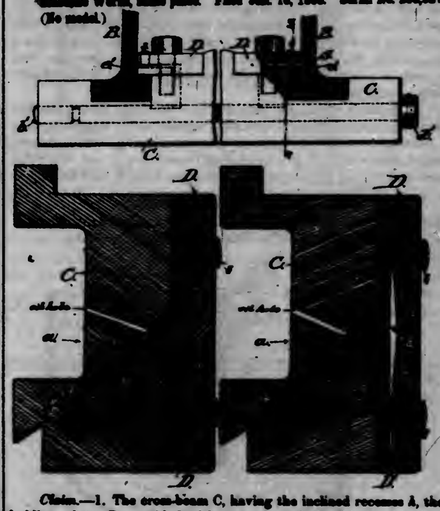
3. The combination, with a reservoir, an air-pump, and a gasoline-container, of an air-supply pipe leading from the reservoir into the container, said air-pipe having an overflow-vessel connected with the induction end of the pipe, substantially as set forth.

4. The combination, with a lighting-pipe having two discharging-nozzles, of a retort, the arm D, a rotating casing, the latter being mounted on the retort and having a receiving-nozzle and a lighting-cup, the latter having an upwardly-projecting head, substantially as set forth.

5. The combination, with a retort and a lighting-pipe adapted to discharge into the receiving-nozzle of the rotating casing, of a rotating casing mounted on the retort, the casing having a receiving-nozzle attached, and arm D, substantially as set forth.

6. The combination, with an arm, D, a lighting-pipe, a valve therein, a retort, and a rotating casing provided with a receiving-nozzle, of a lighting-cup rigidly attached to the rotating casing, the said cup being connected by a link with the valve-handle of the lighting-pipe, whereby the cup is operated by the movement of the valve, substantially as set forth.

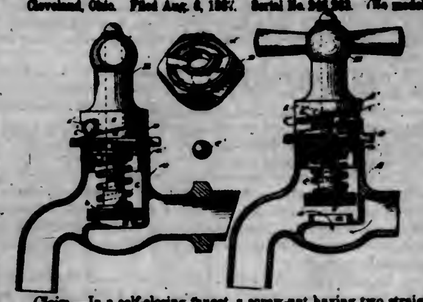
382,653. CLAMPING DEVICE FOR CROSS-BEAMS OF PLANERS. GEORGE I. MARBLE, Fitchburg, Mass., assignor to the Fitchburg Machine Works, same place. Filed Jan. 16, 1888. Serial No. 260,987. (No model.)



Claim.—1. The cross-beam C, having the inclined recesses *h*, the holding-plates D, provided with recesses, and the friction binding-plates seated therein, in combination with the operating-rod *b'*, passing through said beam and provided with eccentrics *l l*, and the loosely-seated plungers *i i* in said inclined recesses actuated by said eccentrics to produce a pressure upon the adjacent ends of the binding-plates, substantially as herein described.

2. The uprights B B and cross-beam C, having recesses *f f*, in combination with frictional binding-plates *g g*, plungers *i i*, provided with eccentrics *l l*, rod *b'*, and handle *d'*, all constructed, arranged, and operated as set forth.

382,654. SELF-CLOSING FAUCET. HARRY C. MONTGOMERY, Cleveland, Ohio. Filed Aug. 4, 1887. Serial No. 246,262. (No model.)



Claim.—In a self-closing faucet, a screw-nut having two straight inclines on its face, each extending half-way round and each incline terminating abruptly in a shoulder, in combination with a key having two straight inclines, each extending half-way round and terminating abruptly in a shoulder, the inclines on said nut and key running in parallel spiral lines, anti-friction balls between the opposite shoulders of the inclines above and below, which separate the key and nut slightly from each other, and a spring to press the nut against the key, substantially as set forth.

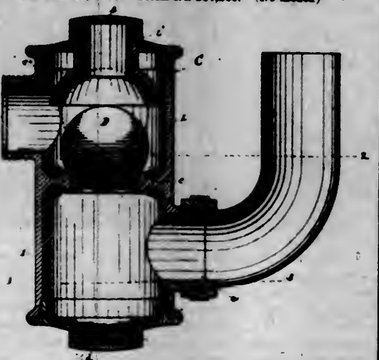
382,655. CHECK-VALVE. Harry C. Montgomery, Cleveland, Ohio. Filed Oct. 22, 1887. Serial No. 253,061. (No model.)



Claim.—1. In check-valves, a spherical rubber valve having a tube extending through its center, said tube being closed at its lower end and open at its upper, in combination with a casing having a single valve-seat, a plug set into said casing from the top and having a stem projecting inwardly therefrom and into the tube of the valve aforesaid and guiding the same, whereby, when pressure upon the valve from beneath is removed, the valve will automatically seat itself, substantially as set forth.

2. In check-valves, the combination of the casing having the diaphragm C, with a valve-seat on its upper surface, a reversible ball-valve, A, provided with a tube, B, through its center and having the flanged head *b* at its bottom, and a screw-plug, D, set in the casing above the valve and having a stem projecting into the tube B, substantially as set forth.

382,656. SEWER GAS-TRAP. Harry C. Montgomery, Cleveland, Ohio. Filed Mar. 15, 1888. Serial No. 267,209. (No model.)



Claim.—1. In a sewer-trap, a body part having the form of a section of cylindrical tubing and caps closing the ends of said body, a diaphragm extending across the interior of the said body at or near its center and having a valve-seat, a ball-valve above the diaphragm seating itself by gravity, an inlet at the side of the body below the diaphragm, and an outlet above the diaphragm having its lower edge raised about one-third the diameter of the valve above the valve-seat, whereby a water seal is formed above said valve-seat, substantially as set forth.

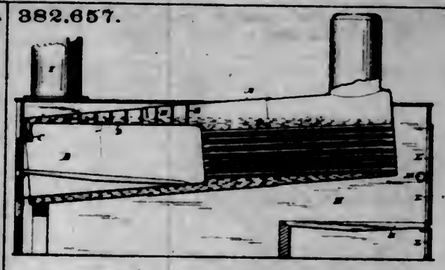
2. In a sewer-trap, a substantially-cylindrical body having its ends open the full width of the body and directly opposite each other, and screw-caps for closing the ends, a central diaphragm dividing the body into two separate chambers, an inlet-port below the diaphragm, and an outlet-port above the diaphragm at the sides of the body, a gravity-valve, and a guide and a stop therefor, substantially as set forth.

3. A reversible sewer-trap consisting, essentially, of a body part having a diaphragm at its center provided with opposite valve-seats, openings for the induction and eduction of water at equal distances from said diaphragm near the respective ends of the body part, and the ends of the body part closed by removable caps with a ball-valve, substantially as set forth.

4. In sewer-traps, a reversible trap having substantially the following distinguishing features: a body part with a diaphragm at its center having valve-seats on each side, fluid inlet and outlet ports on either side of the diaphragm at equal distances therefrom and about midway between the said diaphragm and the ends of the body part, whereby a water seal is maintained about the valve and a sediment-chamber is formed in the bottom of the trap, a ball-valve above the diaphragm, and a guide therefor, substantially as set forth.

382,657. STEAM-BOILER. Joseph A. Mumford, Hadspert, Nova Scotia, Canada. Filed Oct. 22, 1887. Serial No. 253,113. (No model.)

382,657.





Claim.—1. The combination, with the inclined cylindrical boiler, of the inclined partly-cylindrical fire-box located in the same, having the triangular-shaped substantially flat level top section, as set forth.

2. The combination, with the inclined cylindrical boiler provided with the water-front, as described, of the inclined cylindrical fire-box located therein, having the triangular-shaped substantially flat top section, and flues connecting the rear end of the fire-box with the rear end of the boiler, substantially as described.

3. The combination, with an inclined boiler having the fire-box in its lower end and flues connecting said fire-box with the rear raised end, of a combustion-chamber located beneath its raised end, with an air or steam supply therein and a smoke-exit, substantially as described.

4. The combination, with an inclined boiler, a fire-box located in its lower end, and flues connecting said fire-box with the raised end, of a chamber located beneath said raised end, with air or steam supply therein, and a smoke-exit above its lower end, whereby the smoke and products of combustion pass from the fire-box through the flues beneath the forward end of the boiler, commingling with the air or steam therein, thence around over the outside of the boiler, and out over its lower end, as set forth.

5. The combination, with an inclined boiler, a fire-box located in its lower end, and flues connecting said fire-box with the raised end, of a secondary fire-box located beneath said raised end through which the products from the first-named fire-box pass before reaching the smoke-exit, substantially as described.

6. The combination, with an inclined boiler, a fire-box located in its lower end, and flues connecting said fire-box with the raised end, of a grate located beneath said raised end, and doors at the rear of said boiler for supplying fuel to said last-named grate and for removing the ashes, substantially as described.

7. The combination, with an inclined cylindrical boiler having the fire-box in its lower end, and flues connecting said fire-box with the raised end, of a grate and combustion-chamber located beneath said raised end, and a smoke-exit above its lower end, substantially as described.

382,658. METALLIC WHEEL. Fred. A. Hoerneon, Springfield, Mass., assignor, by mesne assignments, to the Warwick Cycle Manufacturing Company, same place. Filed Aug. 29, 1887. Serial No. 248,130. (No model.)

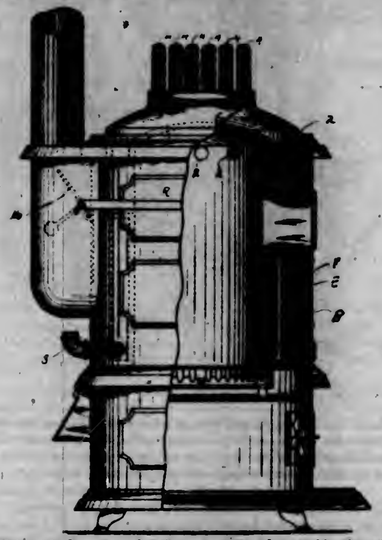


Claim.—1. A tubular metallic wheel-rim made from a strip of metal, having the solid thickened rib 4, to which the ends of the spokes are connected, that portion of said strip on one side of said rib forming one side of the tire-groove of the rim, and having the hook-shaped edge *e*, the portion of said strip on the opposite side of said rib forming the side *c* of the rim and having its edge offset to form with said hook-shaped edge a lap-joint on one edge of the rim, substantially as set forth.

2. In combination with a hollow metallic wheel-rim having a rib, 4, and with a wheel-spoke, 5, having a screw-threaded end, a hollow nut, 6, screwing into said rib, and a headed bushing, 7, passing through said nut and engaging therewith and screwing onto said spoke, substantially as set forth.

3. In combination with a hollow metallic wheel-rim having a rib, 4, and with a wheel-spoke, 5, having a screw-threaded end, a hollow longitudinally-slotted nut, 6, screwing into said rib, and a bushing, 7, having a head whose under side is tapered passing through said nut and engaging with the slotted end of said nut and screwing onto said spoke, substantially as set forth.

382,659. HOT-WATER BOILER. Oscar W. Noble, Lynn, Mass., assignor to the Noble Stove Company, Manchester, N. H. Filed Sept. 1, 1887. Serial No. 248,492. (No model.)



Claim.—1. In a water-heating apparatus, the combination of a fire-pot with a water-jacket extending down to the grate and over the top of the fire-pot, as shown, and provided with a fuel-receiving opening, as shown, and the casing surrounding said jacket and having an opening therein coinciding with the fuel-opening, and a valved exit-opening opposite the fuel-opening and connecting the combustion-chamber directly with the smoke-flue, substantially as described.

2. In a water-heating apparatus, the combination of a fire-pot with a water-jacket extending down to the grate and over the top of the fire-pot, as shown, and provided with a fuel-receiving opening, as shown, and the casing surrounding said jacket and having an opening therein coinciding with the fuel-opening, and a valved exit-opening opposite the fuel-opening and connecting the combustion-chamber directly with the smoke-flue, a door for covering the fuel-opening, a latch for operating the same, a damper for covering the direct-exit passage, and mechanism between the damper of the exit and the door-latch, whereby a normal movement of the door-latch for releasing the door will operate to displace the damper and open the exit prior to the opening of the door, substantially as described.

382,660. HOT-WATER BOILER. Oscar W. Noble, Lynn, Mass., assignor to the Noble Stove Company, Manchester, N. H. Filed Sept. 1, 1887. Serial No. 248,491. (No model.)

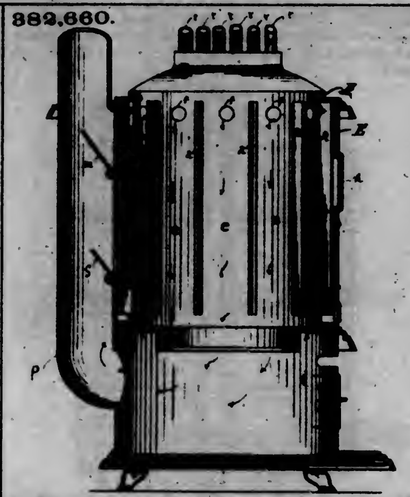
Claim.—1. A hot-water heating apparatus having a fire-pot and hot-water jacket surrounding the same, and a series of independent channels extending through the water-jacket and down the outside thereof for conducting heat and products of combustion out of the fire-pot and down the outer surface of the water-jacket to the ash-chamber and smoke-pipe, substantially as described.

2. In a hot-water heating apparatus, the combination of a fire-pot, A, a water-jacket, B, having apertures *f*, the outside casing, E, and the plates *e*, arranged to form channels *c*, communicating at one end with the aperture *f* and at the opposite end with the ash-chamber and smoke-pipe, substantially as described.

3. In a hot-water heating apparatus, the combination of the fire-pot, the water-jacket surrounding the same, the apertures *f* therein, the plates *e*, the channels *c* between the plates, the outer casing, E, the draft-openings *s* in the plate M, and movable dampers N for covering the same, substantially as described.

4. In a hot-water heating apparatus, the combination of a fire-pot, the water-jacket surrounding the same, having apertures *f*, the outer casing, E, and the plates *e*, arranged to form the channels *c*, said casing E being provided with apertures above the channels *c* for the introduction of a cleaning-rod and corresponding apertures in the plate M at the bottom of said channels for the exit of soot, substantially as described.

382,660.



382,661. PROCESS OF ORNAMENTING METALLIC SURFACES. Dexter W. Parker and Lewis F. Griswold, Meriden, Conn., assignors to the Charles Parker Company, same place. Filed July 19, 1886. Serial No. 208,206. (No model.)

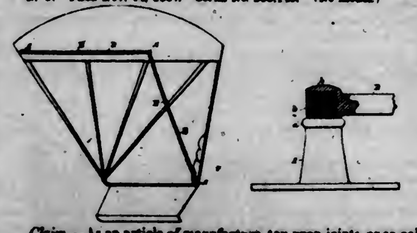


Claim.—1. The process of ornamenting metallic surfaces, which consists of the following steps: first, applying plastic metallized ornaments to the surface; next, coating that part of the surface not covered by such ornaments with a resistant to electroplate, omitting or removing said resistant around the border of the ornament, and, finally, electroplating so as to attach the ornament to the part of the surface thus made or left bare, substantially as set forth.

2. The process of ornamenting surfaces, which consists in applying to a surface a plastic body having the form of the ornament desired, and plating by deposit said plastic body and certain parts of said surface, the plate connecting said surface and the ornament, substantially as set forth.

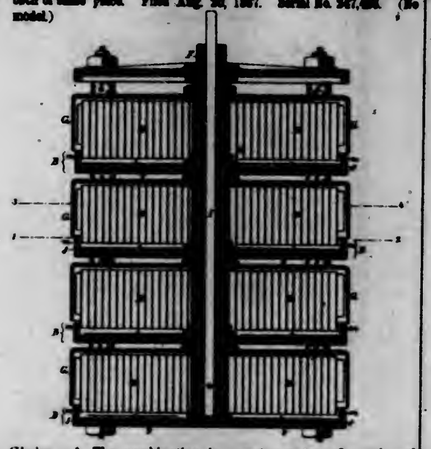
3. An article having a metallic surface and provided with an electroplated plastic ornament, which is attached to said surface by the plating, substantially as set forth.

382,662. TOP-PROP JOINT FOR VEHICLES. John G. Parsons, Columbus, Ohio, assignor of one-half to Edward Storm, Poughkeepsie, N. Y. Filed Nov. 14, 1887. Serial No. 255,149. (No model.)



Claim.—As an article of manufacture, top-prop joints, or so-called "top-braces," for vehicles, the same having screw-threaded eyes for screwing onto the top-props, substantially as set forth.

382,663. SPRING-MOTOR. JOHN R. POWELL, Philadelphia, Pa., assignor of one-fourth to Daniel P. Dieterich and Richard M. Popham, both of same place. Filed Aug. 20, 1887. Serial No. 247,493. (No model.)



Claim.—1. The combination, in a spring-motor, of a series of springs, located one above another, with a supporting-frame having rollers upon which the springs are directly supported, all substantially as specified.

2. The combination of a series of springs located one above another, an arbor composed of a series of sections connected together through the medium of the springs, and a supporting-frame having rollers upon which the springs are directly supported, all substantially as specified.

3. The combination of a series of springs located one above another, an arbor composed of a series of sections connected together through the medium of the springs, and a supporting-frame having conical rollers upon which the springs are directly supported, all substantially as specified.

4. The combination of a series of springs located one above another, a frame having a series of spiders, each carrying anti-friction rollers directly supporting the spring above it, and an arbor made in sections connected together through the medium of the springs, and each having a flange or collar bearing upon the hub of the spider, all substantially as specified.

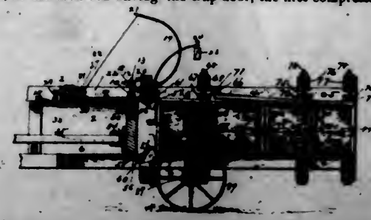
5. The combination, in a spring-motor, of a series of springs located one above another, a fixed frame having annular bearing-rims, a sectional arbor, and cages connected to the arbor-sections and to the outer ends of the springs, and having adjacent to said spring-connections anti-friction rollers having a lateral bearing upon the annular rims of the fixed frame, all substantially as specified.

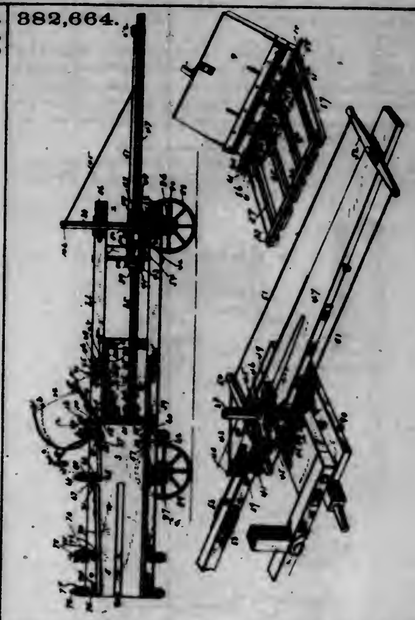
6. The combination, in a spring-motor, of a series of springs located one above another, a series of supporting-frames, each having trough-shaped arms, and rollers mounted in said trough-shaped arms and directly supporting the springs, all substantially as set forth.

382,664. HAY-PRESS. REGAN PRENDEL, Oakland, Cal.; Helena G. Prendel executrix of said Regan Prendel, deceased. Filed Nov. 21, 1887. Serial No. 255,763. (No model.)

Claim.—1. In a portable press, the combination, with a reciprocating plunger, of the feed-box having the trap-door, the first compression-chamber having the hinged top, the set-screws for adjusting the said top plate, and the tying-chamber and last converging box having the slotted bottom and the slotted hinged top plate, and the adjusting-screws for the said top plate, and the followers having the side slots, substantially as set forth.

2. In a portable press, the combination, with the reciprocating plunger, of the feed-box having the trap-door, the first compression-





chamber having the hinged slotted adjustable top plate, the tying-chamber and last converging box having the slotted bottom and the slotted hinged adjustable top plate, and the followers having the side slots and the top projections or horns, substantially as set forth.

3. The combination, with the reciprocating plunger having the wedge-blocks adjustably secured upon its rear upper portion, as described, of the hinged feed-box trap-door, the hinge-lever having the adjustable weight on its rear end portion, the cord or rope connecting the forward end of the said spring-lever with the hinged trap-door, and the catches pivoted in the cross-piece of the press-frame, having the beveled pointed rear ends and the weighted depending forward ends having the smaller rollers journaled in their lower extremities.

4. The combination, with the reciprocating plunger having the upper and lower slots in its inner end, of the feed-box having the trap-door, the upper and lower spring-actuated retainers connected at their outer ends by the transverse rods, the first compression-box having the hinged slotted top plate, the set-screws for adjusting the said plate, the tying-chamber and the last converging box having the slotted bottom and the slotted hinged top plate, the adjusting-screws for adjusting the said top plate, and the followers having the side slots and the top projections or horns, substantially as set forth.

5. In a hay-press, the combination, with the sliding plunger and the connecting-pitman, of the swinging crank formed of the upper and lower plates having the shoulders formed at their inner ends, the vertical shaft, and the lever having the collar and the lugs at its wide inner end, substantially as set forth.

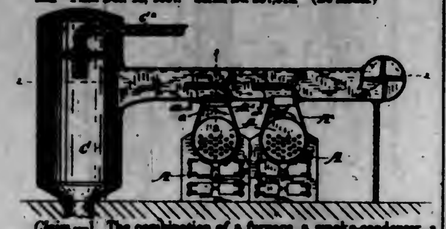
6. In a hay-press, the combination, with the sliding plunger, of the connecting-pitman, the swinging crank consisting of the lower and upper plates formed at their inner ends with the shoulders, the upper plate having the set-screw, the vertical shaft, and the lever having the collar and lugs at its wide inner end, substantially as set forth.

7. In a hay-press, the combination, with the sliding plunger, of the connecting-pitman having the elastic cushions on each side of its forward end portion, the swinging crank consisting of the lower plate and the upper plate having the set-screw and the cross-handle, the vertical shaft, the lever having the collar and lugs at its inner wide end, and having the pivoted cross-handle near its outer end, and the turning-ropes, substantially as set forth.

8. The herein-described portable hay-press, consisting of the outer frame mounted upon the supporting-wheels, the feed-box having the hinged trap-door, the spring-lever having the adjustable weight and connected by a rope to the trap-door of the feed-box, the spring-actuated retainers having their outer ends connected by the cross-rods, the first compression-box having the slotted hinged top plate, the set-screws for adjusting the same, the tying-chamber and last converging box having the slotted bottom, the slotted sides, and the hinged slotted top plate, the set-screws for adjusting the said top plate, the followers having the side slots and the top projections, the catches pivoted in slots in the forward cross-piece of the press-frame, the sliding plunger having the solid inner end, the solid top having the wedge-blocks secured upon it, said the solid side wings, the connecting-pitman pivoted to the head of the plunger below the center of the same and having the elastic side cushions, the swinging crank consisting of the bottom plate and the top plate having the shoulders and the set-screw and the cross-handle, the vertical shaft, the lever having the collar and the lugs at its wider end, and the forward cross-handle, the inclined brace-rods, and the turning-ropes, substantially as set forth.

9. The combination of the feed-box trap-door and the top plate of the first converging box, each having the end hinges, the transverse hinge-rod, the end plates, the spring-bolt or brace-rod having the apertures and the recesses in its lower side, and the brace-bolts having the end nuts, substantially as set forth.

382,665. SMOKE-CONSUMER. BENJAMIN HARRIS, Indianapolis, Ind. Filed Dec. 13, 1887. Serial No. 257,512. (No model.)



Claim.—1. The combination of a furnace, a smoke-condenser, a conduit arranged to conduct the smoke from said furnace to said condenser, and means for introducing a blast of air from the outside into the apparatus behind the smoke-entrance, substantially as shown and described.

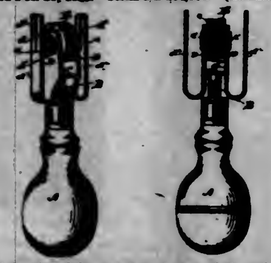
2. The combination of a smoke-condenser, a furnace, a breeching or conduit connecting them, and a blast-fan arranged at the rear end of said conduit behind said furnace, substantially as set forth.

3. The combination of the furnace, condenser, conduit connecting them, a blast-fan arranged at the rear end of said conduit, and a hood arranged within said conduit over the smoke-entrance thereto, substantially as set forth.

4. The combination of the furnace, the condenser, the conduit or breeching connecting them, a damper arranged in the path of the smoke, an imperforate hood over the smoke-entrance to the conduit, and the air-blast, substantially as set forth.

5. The combination of the furnace, condenser, conduit connecting said furnace and condenser, an imperforate hood arranged within said conduit over the smoke-entrance thereto, and means for introducing a blast of air behind said smoke-entrance, substantially as described, and for the purposes specified.

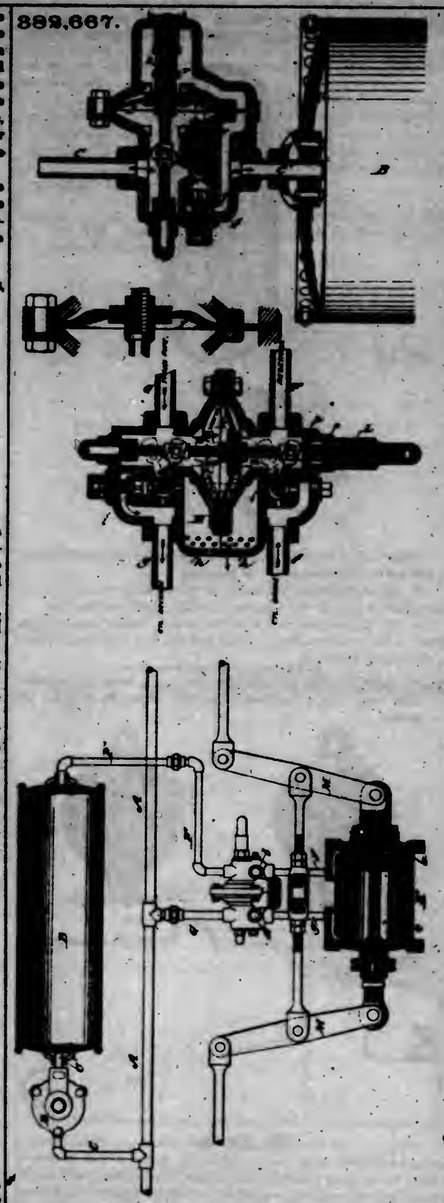
382,666. WIRE-TWISTING TOOL. CHARLES P. ROBERTS, Homer, N. Y. Filed Feb. 23, 1888. Serial No. 264,969. (No model.)



Claim.—A hand-tool for twisting wire, consisting of the handle, the slotted bearing-plates, the slotted wire-holding arms, and the slotted twister-wheel, its circumference extending beyond the bearing-plates and in such relation to the latter that the wheel can be rotated by the thumb of the hand engaging the handle, substantially as described.

382,667. AUTOMATIC AIR-BRAKE. REUALDO SELARS, Brooklyn, N. Y., assignor of two-thirds to John W. Howard and David R. Morse, same place. Filed Nov. 8, 1887. Serial No. 254,371. (No model.)

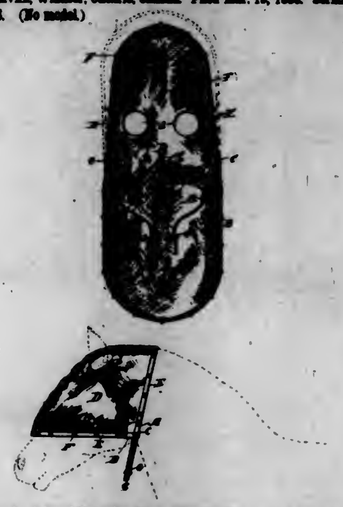
Claim.—1. The combination, with an independent reservoir-charging valve, located as described, of an actuating-diaphragm (or equivalent) permanently exposed on one side to the reservoir-pressure and on its opposite side to the train-pipe pressure, and adapted to operate said charging-valve, for the purposes set forth.



2. The combination, with an independent reservoir-charging valve, located as described, and valve-actuating diaphragm, (or equivalent,) of a closing-spring adapted to close said charging-valve slightly in advance of the equalization of the lower (reservoir) pressure with the predominating exterior (train-pipe) pressure, as and for the purposes set forth.

3. The combination, with the herein-described oscillating reservoir-charging valve and valve-actuating diaphragm, of a supplemental check-valve intercepting the communication between said charging-valve and the storage-reservoir, adapted to open toward the latter and to check return of pressure therefrom irrespective of said charging-valve movements when train-pipe pressure is reduced, as set forth.

382,668. HOOD FOR HORSES. CHARLES A. SULLIVAN and JOHN D. SULLIVAN, Windsor, Ontario, Canada. Filed Mar. 19, 1888. Serial No. 267,882. (No model.)

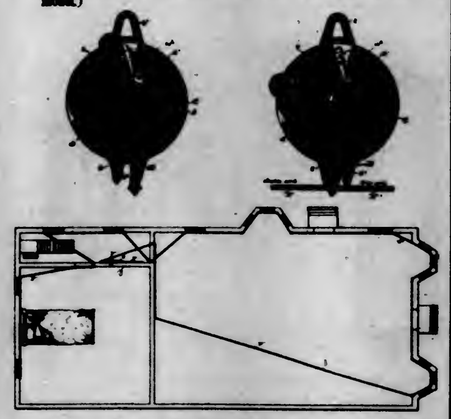


Claim.—1. A hood for animals provided with an expansible frame, A, and canvas D, substantially as described.

2. The combination, in a hood for horses, of a frame, A, a supplementary frame, B, and a canvas, D, substantially as described.

3. The combination, in a hood for horses, of the canvas D, the frame A, the supplementary frame B, and the link G, all substantially as shown and described.

382,669. BURGLAR-ALARM. WILLIAM I. SWAN, Lansing, Mich. Filed Dec. 9, 1886. Renewed Oct. 3, 1887. Serial No. 251,252. (No model.)

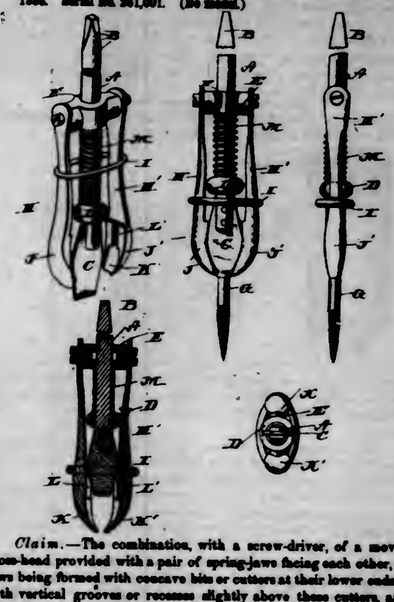


Claim.—1. In a burglar-alarm, the combination of the inclosing casing having the inner flange or shoulder provided with a circular cavity, the hammer pivoted to the center of said casing, and having a cam-like inner end with a shoulder or flange against which bears one end of a bow-shaped spring, the spring-actuated trigger pivoted in close proximity to the inner end of said hammer and having one arm engaging therewith, the loosely-pivoted trigger-trip, and the elastic cord or spring and trip-cord connected to the lower end of said pivoted trigger-trip, all arranged substantially as shown and described.

2. The combination, with the pivoted hammer having the cam-like end, the spring bearing against said hammer, the trigger engaging with said cam-like end, and the pivoted trigger-trip having the elastic cord or spring and trip-cord connected to its lower end, of the inclosing casing having an oblong aperture in one side thereof for insertion and removal of a blank cartridge or cap, and the flange or shoulder having a circular cavity in alignment with said oblong aperture, substantially as shown, and for the purpose described.

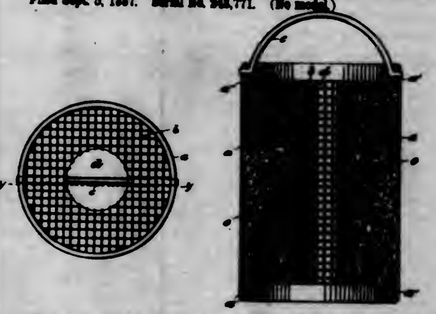
3. The combination, with the spring-actuated hammer, the trigger engaging with a shoulder on the inner end of said hammer and the trigger-trip, of the elastic cord or spring connected to the lower end of said trigger-trip, and the trip-cord, also connected to said end and extending in opposite direction to the elastic cord or spring, substantially as shown and described.

382,670. COMBINED SCREW-HOLDER, SCREW-DRIVER, AND COUNTERSINK. JAMES C. TROVILLION, Sunbury, Ill. Filed Jan. 17, 1888. Serial No. 261,091. (No model.)



Claim.—The combination, with a screw-driver, of a movable cross-head provided with a pair of spring-jaws facing each other, said jaws being formed with concave bits or cutters at their lower ends and with vertical grooves or recesses slightly above these cutters, and a link or keeper for forcing the said jaws together, substantially as set forth.

382,671. FUEL-CARTRIDGE. JOHN T. WHEELER, Chicago, Ill. Filed Sept. 5, 1887. Serial No. 248,771. (No model.)



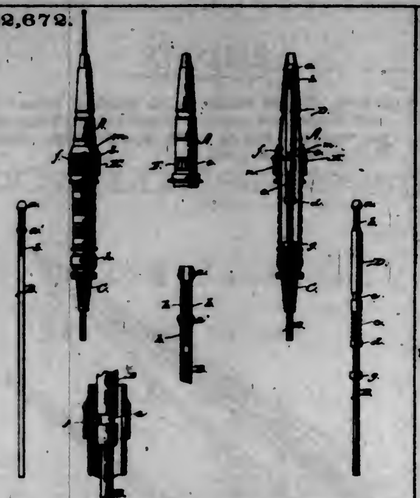
Claim.—1. A fuel-cartridge formed of a cylindrical outer shell of sheet metal, provided with annular wire-cloth ends, and a central open-end wire-cloth cylinder held by said annular heads, substantially as specified.

2. A fuel-cartridge formed of a cylindrical outer shell of sheet metal, provided with annular wire-cloth heads set back within the ends of said shell, and central wire-cloth tube, substantially as specified.

3. A fuel-cartridge formed of a cylindrical outer sheet-metal shell provided with annular wire-cloth heads set back within the ends of said shell, and a central wire-cloth tube held in place by the inturned ends of the outer shell, substantially as specified.

382,672. DENTAL HAND-PIECE. WALTER D. WILLIAMS, Camden, N. J., assignor of one-half to A. J. Fellmer, same place. Filed Jan. 20, 1887. Serial No. 225,091. (No model.)

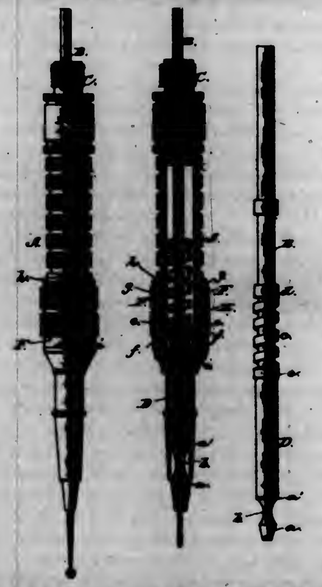
382,672.



Claim.—1. In a hand-piece for dental engines, an outer casing having openings therein and provided with a stationary outer cam-collar, and a cam-sleeve engaging with said cam-collar, having inwardly-projecting lugs, and the spindle having a movable sleeve thereon, for the purposes specified, substantially as described.

2. In a hand-piece for dental engines, the combination, with the hollow casing, of a tool-holding spindle having a conical outer end, and a series of jaws having conical projections thereon, an adjustable collar situated near the inner end of said spindle, a spring and sleeve surrounding said spindle, a cam-sleeve having lugs projecting through openings in said casing and surrounding the same, and a screw-threaded collar situated at the end of said casing and adapted to come in contact with said adjustable collar, substantially as described.

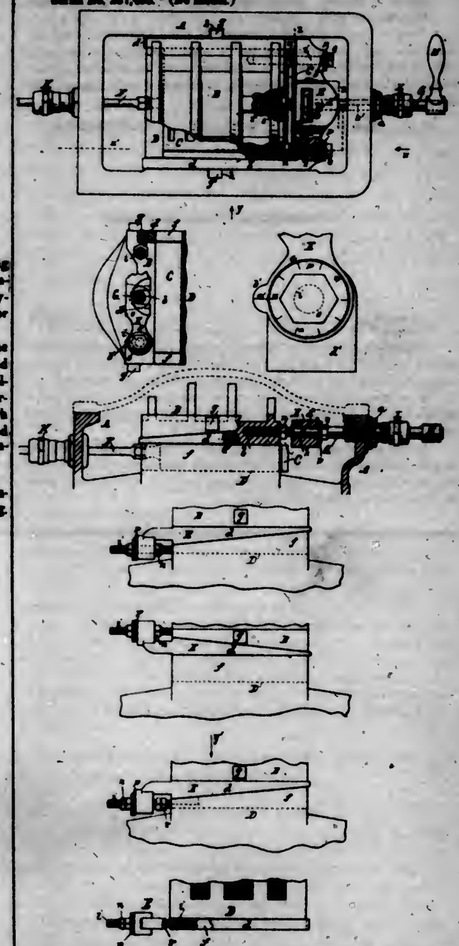
382,673. DENTAL HAND-PIECE. WALTER D. WILLIAMS, Camden, N. J., assignor of one-half to A. J. Fellmer, same place. Filed Aug. 27, 1887. Serial No. 248,001. (No model.)



Claim.—1. In a dental hand-piece, the outer casing having a rigid collar and an adjustable collar thereon, a female screw-threaded sleeve surrounding the casing and closely fitted between the collars, a male screw-threaded sliding sleeve surrounding the casing inside the other sleeve, having lugs which project inwardly through openings in the casing, and the spindle having a spring-actuated sleeve, substantially as described.

2. In a dental hand-piece, and in combination with the outer casing provided with the screw-threaded sleeves E and F, the spindle B, formed in one continuous piece and provided with the spring-actuated sleeve D, with which engages the said screw-threaded sleeves E and F upon the outer casing, substantially in the manner and for the purpose specified.

382,674. ADJUSTING RELIEF-PLATE WEDGES OF HAIR-VALVES. DANIEL A. WOODBURY, Rochester, N. Y. Filed May 7, 1887. Serial No. 237,498. (No model.)



Claim.—1. In combination with a relief-plate and cylinder, wedges interposed between said cylinder and relief-plate for controlling the latter, and adjusting-ties connecting said wedges on the one hand and said relief-plate or cylinder on the other hand, said ties having bearings at one end in said wedges and at the other end in said relief-plate or cylinder, substantially as shown and described.

2. In combination with a relief-plate and cylinder, interposed wedges, adjusting-ties connecting said wedges and said relief-plate or cylinder, and marked adjusting-disks.

3. A relief-plate and cylinder in combination with wedges for controlling said relief-plate, adjusting-ties connecting said wedges and said relief-plate or cylinder, and an adjustable stop for said wedges.

4. A relief-plate and cylinder, in combination with interposed wedges and adjusting-ties for said wedges and said relief-plate or cylinder, said adjusting-ties being held to have free longitudinal motion in said wedges or in said relief-plate or cylinder.

5. In combination with a relief-plate and cylinder, wedges interposed between said cylinder and relief-plate for controlling the dotter, and ties for said wedges, said ties having bearings at one end in said wedges and at the other end in said relief-plate or in said cylinder, and held to turn on their respective axes without moving longitudinally in their bearings at one end and to be free to move longitudinally in their bearings at the other end, substantially as described and shown.

382,676. LATCH-NEEDLE AND COVERING OR TRANSFERRING POINT FOR KNITTING-MACHINES. WILLIAM H. ABEL, Lowell, N. H.; George A. Bauman administrator of said William H. Abel, deceased. Filed Mar. 22, 1877. (Model.)

Brief.—The object of the invention is to so construct and arrange the needle and point that they can be readily attached to the other parts of the machine, and when in operation can be so united and disunited as to perform all the functions requisite for each in plain knitting and fashioning.



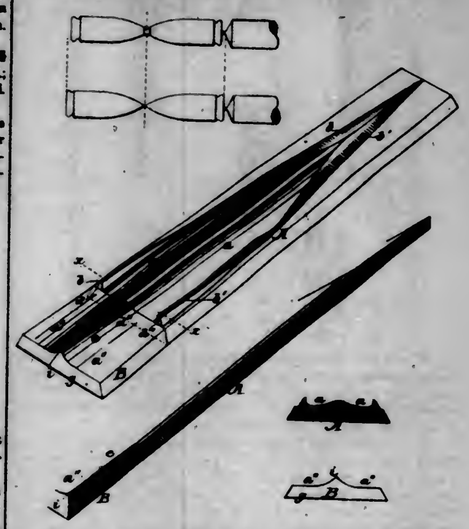
Claim.—1. A latch knitting-needle having the eye or enlarged slot therein between the latch-pivot and hook for the reception of the covering or transferring point, substantially as shown and described.

2. A latch-needle having the eye or enlarged slot therein between the latch-pivot and hook and the regulating-bar or tail-piece, as shown and described.

3. The covering or transferring point constructed as shown and stated, in combination with the latch-needle having the eye or enlarged slot therein between the latch-pivot and the hook for the reception of said covering or transferring point.

REISSUES.

10,928. DIE FOR MAKING ROLLED FORGINGS. Gurdon P. Simmons, Fitchburg, Mass., assignor to the Simonds Rolling Machine Company, same place. Filed Apr. 3, 1883. Serial No. 91,409. Original No. 264,859, dated Mar. 1, 1867.



Claim.—A die for making rolled forgings, having the duplex forming-surface *a a*, and spreading and reducing surfaces *b b'*, in combination with the extension-faces *a' a'*, and interposed projected rib *c*, substantially as and for the purpose set forth.

NORRIS PETERS

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

WELLS *v.* BOYLE.

Decided April 2, 1888.

The filing of a bill in equity in the circuit court of the United States by the defeated party to an interference will not operate to stay the issue of patent to the successful contestant, nor will it justify the Commissioner of Patents in delaying or withholding it until such proceeding in equity is terminated.

ON petition.

WATER-CLOSETS.

Application of Frank A. Wells filed October 15, 1885, No. 179,931. Application of James E. Boyle filed December 20, 1884, No. 150,822.

Mr. Charles S. Burton for Wells.
Messrs. A. C. Fraser & Co. for Boyle.

HALL, *Commissioner:*

This case comes up on a petition filed by Boyle to withhold the issue of patent to Wells. These applicants have been in interference, and award of priority was made to Wells, whose application is now in condition to be passed to issue.

Boyle has filed a bill in equity in the circuit court of the United States to obtain, if possible, the judgment of that court that he is the party entitled to the patent, and he now comes to the Commissioner of Patents and requests that he will exercise his authority and direct that no patent issue to Wells until the suit thus instituted shall be decided.

I am compelled to refuse this request. There is nothing in the patent law which suggests anything in the nature of a *supersedeas* upon the filing of a bill in equity by the defeated party in interference in the circuit court of the United States. The fact that there is no such provision in the statute and nothing relating thereto in any of the rules of practice furnishes conclusive evidence, to my mind, that under the present circumstances when an application has received the final sanction and approval of the Commissioner of Patents, and in his official judgment applicant is entitled to a patent, the Commissioner has no longer any power or discretion to withhold the issue of such patent from the party so entitled. There is no more discretion lodged in him to deny what he believes to be a right of an applicant at that stage of the procedure than at any other, and unquestionably it would be the exercise of arbitrary power should the Commissioner attempt to stay or delay the granting of a patent to a party without any lawful reason or legal cause when, in his judgment, the party was legally and lawfully entitled to his patent. This view of the subject is supported by a decision of the Secretary of the Interior, made in 1877, found in the OFFICIAL GAZETTE, volume 12, page 475, and in the Commissioner's decisions for 1877, page 125. The whole question is exhaustively discussed, and, in my opinion, the reasoning is conclusive upon the subject. I therefore decline to grant the request, and dismiss the petition.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

WEIR *v.* MORDEN *et al.*

Decided March 19, 1888.

1. WEIR—RAILROAD-FROGS.

Reissued Letters Patent No. 8,914, dated September 30, 1879, granted to Frederick C. Weir, for an improvement in railroad-frogs, adjudged to be invalid as to the second claim for lack of invention.

2. PATENTABLE INVENTION—WHAT IS NOT.

In a prior patent describing a U-shaped trough for the purpose of connecting outer rails, leaving the central rails to be secured by means of a V-shaped recess in the bed of the plate at the wide end of the trough, there was no invention in dividing the trough into two, so as to connect the central rails on each side by means of a separate U-shaped trough with the outer rail exterior to them.

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

STATEMENT OF THE CASE.

This is a bill in equity to restrain the alleged infringement of Reissued Letters Patent No. 8,914, dated September 30, 1879, for an improvement in railroad-frogs, the original patent, No. 215,548, dated May 20, 1879, having been issued on an application filed February 4, 1879, to Frederick C. Weir, the complainant. In his specification the patentee describes the invention generally as follows:

My invention relates to the class of frogs made by the bending of the overlapping ends of the rails themselves, and the junction of the same with the central rails constituting the point by rivets or bolts through separating-pieces; and my invention consists, first, in such a formation and connection of the two rails which make up the angular point as that one of the rails extends unbroken and uncut directly across the path of the other, and in itself makes a solid end to the point, with a full-width flange, which is overlapped by the flange of the other rail, and thus a flange of double thickness is afforded at a point where strength is particularly needed, and the cutting away of the flanges (as is the usual custom) is avoided entirely; second, in an improved manner of connecting the two rails of the point together, and to channel-iron pieces, to which the outer rails are connected.

One of the objects of this invention is to furnish a firm lateral support upon each side of the V-shaped rails by means of channel-irons, which at the same time unite and hold the center rails forming the V to the wing-rails firmly, uniting and holding all the parts in their proper relative position.

The drawings accompanying the specification are as follows:

Fig. 1.

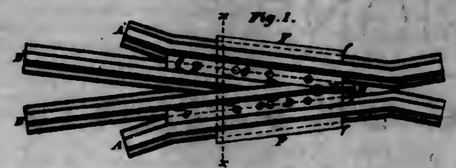


Fig. 3.



Fig. 4.

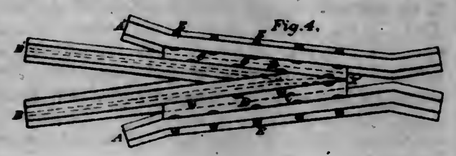


Fig. 2.

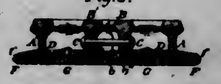
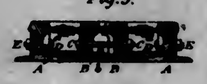


Fig. 5.



The specification explains the drawings as follows:

In the accompanying drawings, Figure 4 is a plan of a frog embodying my improvements. Fig. 5 is a cross-section of the same on line *x x*. Fig. 3 is a plan of the under side of the frog, showing the continuations of the main point-rail with a full-width flange throughout, also showing the riveted extension of the flanges of the channel-irons beyond the points.

It will not be necessary to describe the devices shown in Figs. 1 and 2, as they are fully described in division B of this reissue.

A A′ are the outer or wing rails of the frog, and B B′ are the two rails which compose the acute angle or point.

In place of cutting away both the flanges of the rails B B′, so as to make a joint between the two rails midway between the lines of the angle of the frog, as is common now, and I may say usually practiced, I continue the flange of the rail B of full width intact clear along the junction of the two rails to the point where it strikes the flange of the outer rail, as shown in Fig. 3, which is almost immediately under the point X′ of the frog, and I swage up the flange b^1 of rail B′ on one side, as shown in Figs. 5 and 3, so that it lies over the flange of rail B, this flange of rail B′ being cut away angularly on the edge to properly meet the line of the web b^2 of the rail B.

I connect the point-rails B B′ together by rivets C, which, while they secure these rails together, also secure pieces of channel-iron D to said point-rails, the channel-iron making the separating medium between the point-rails B B′ and wing-rails A A′, and giving a means for attaching said wing-rails.

The adjacent flanges of the channel-irons of the point may be extended beyond the point and riveted, as shown in Fig. 3.

With channel-iron I attach the wing-rails in the manner shown in Fig. 5, the outer flanges of the iron being notched at *d* for the passage, before the outer rails are attached, of the long rivets C, the bolts E, which connect the outer rails, being placed between the notches *d*.

The claims are as follows:

1. A frog having one of its point-rails extending with a full-width flange along the junction of the two rails, and the flange of the other point-rail overlying the flange of the first-mentioned one, substantially as and for the purpose specified.

2. A frog composed substantially of the two center rails, B B′, joined to form the V-shaped point, united to outside diverging or wing rails by means of two channel or U irons, D D, one wing of which channel or U iron is shaped to fit the web of the abutting rails, combined to form the point of the frog, and upon the other side fitting the web of the wing or diverging rail, respectively, and secured by bolts or rivets passing through the webs of the rails and the sides of the channel-bars, substantially as shown.

3. In combination with the point-rails B B′, fitted to each other as described, the channel-pieces D, extending and bolted or riveted together beyond the point of the frog, and connecting-rivets C, which extend entirely through the two point-rails and the channel-pieces, substantially as and for the purpose specified.

The only claim involved in this suit is the second, no infringement being alleged of either the first or third. Separate answers were filed by the defendants, respectively, which were, however, in substance the same. The defenses are that the reissued letters patent are null and void as not being for the same invention as set forth and described in the original letters patent; that the defendants do not infringe, and that the alleged invention of the complainant was not a patentable novelty, in view of the state of the art at the time of the alleged invention, as shown in certain prior letters patent specifically mentioned. The answer of Morden, adopted by the others, also sets out the following:

And this defendant, further answering, says, on information and belief, that he is the original and first inventor of a U-shaped plate in combination or connection with a railroad-frog, and that said invention was secured to him by said Letters Patent of the United States No. 173,804 and No. 178,694, and that by virtue of said letters patent he has the sole and exclusive right to said U shape in a railroad-frog, and that, while the complainant is engaged in the manufacture and sale of railroad-frogs, he uses a V-shaped plate so secured to your defendant, as before stated, and in said manufacture and sale has copied from defendant's invention in substantial and material parts secured to defendant by his letters patent aforesaid and in infringement of the same; and this defendant, in this connection, would state that prior to the filing of complainant's bill he, the defendant, filed a bill in this honorable court against said complainant for infringement of his said Letters Patent No. 173,804 and said wrongful acts, and praying relief on account of said wrongful acts by the complainant, which said bill is now pending against him in this court. Some days after this defendant filed his bill as aforesaid, the said complainant filed his bill, seeking thereby, as defendant is advised and states, on information and belief, to harass and annoy defendant in his said suit and to delay accounting to defendant for said wrongful acts of him, the said complainant.

On final hearing a decree was rendered dismissing the bill for want of equity, to reverse which the present appeal has been taken.

Mr. Edward Boyd, *Mr. E. E. Wood*, and *Mr. C. A. Seward* for the appellant.

Mr. C. K. Offield for the appellees.

Mr. Justice MATTHEWS delivered the opinion of the Court.

The question of infringement depends upon the proper construction of the second claim. The proof shows that the defendants did not infringe either the first or the third. They did not form and connect the two rails, making up the angular point as a part of the frog, so that one of the rails would extend unbroken and uncut directly across the path of the other, and in itself make a solid end to the point with a full-width flange overlapped by the flange of the other rail, thus affording a double thickness and avoiding the cutting away of the flanges, as was customary. If there is an infringement, it consists in the use of the channel-irons of a U shape, uniting the two center rails, forming the V-shaped point of the frog, to each other, and the two thus united to the two diverging rails on each side by means of bolts or rivets passing through the webs of the rails and the sides of the channel-bars. The question was disposed of by the circuit court in favor of the defendants, as follows:

The question of fact as to infringement depends upon whether the "two center rails, B B′, joined together to form the V-shaped point," mentioned in the second claim, necessarily mean the two center rails which are described in the specification, or does it mean any center rails joined together in any manner to form a V-shaped point? The answer to this question seems to me to be found in the complainant's own specification. He says:

"My invention consists, first, in such a formation and connection of the two rails which make up the angular point as that one of the rails extends unbroken and uncut directly across the path of the other, and in itself makes a solid end to the point with a full-width flange, which is overlapped by the flange of the other rail, and thus a flange of double thickness is afforded at a point where strength is particularly needed, and the cutting away of the flanges (as is the usual custom) is avoided entirely."

In his description of the drawings he says:

"A A′ are the outer or wing rails of the frog, and B B′ are the two rails which compose the acute angle or point."

And in his description of the mode of constructing his device he says:

"In place of cutting away both the flanges of the rails B B′, so as to make a joint between the two rails midway between the lines of the angle of the frog, as is common now, and I may say usually practiced, I continue the flange of the rail B of full width intact clear along the junction of the two rails to the point where it strikes the flange of the outer rail, as shown in Fig. 3, which is almost immediately under the point X′ of the frog, and I swage up the flange b^1 of rail B′ on one side, as shown in Figs. 5 and 3, so that it lies over the flange of rail B, this flange of rail B′ being cut away angularly on the edge to properly meet the line of the web b^2 of the rail B."

It will thus be seen that minute directions are given as to the construction of the two center rails, B and B′, to form a V-shaped point, and I am of opinion that the two center rails, B and B′, described in the second claim, are the rails constructed and joined according to the description given in the patent. The language of the claim is "the two center rails, B B′, joined to form the V-shaped point;" and any two center rails joined to form a V-shaped point. The V-shaped point made by embedding one rail underneath and upward directly across the path of the other, and thereby making a solid end to the point, and with the flange of the rail B′ swaged up, so as to lie upon or overlap the flange of the rail B, seems to me to be an essential element of other contrivances supposed to be invented, and therefore the two center rails, B B′, mentioned in the second claim, refer to and mean the two center rails which he has particularly described in his specification. The proof in this case wholly fails to show that the defendant formed the V-shaped point in his frog in the manner that complainant forms his point.

The construction of the second claim contended for by the appellant is, that it embodies separately and distinctly that part of the invention which, in the general description in the preliminary part of the specification, is stated to be—

an improved manner of connecting the two rails of the point together and to channel-iron pieces, to which the outer rails are connected—

without reference to the manner in which the two rails of the point are formed, so as to constitute the first part of the invention. If this construction be admitted, the second claim would cover every case of two center rails joined to form the V-shaped point, which were united to outside diverging or wing rails by means of channel-irons of a U shape, bolted or riveted, as therein described, without reference to the manner in which the two center rails were combined to make the angular point or V shape. In our opinion, the construction placed upon this claim by the circuit court is right, and is required by the language of the specifications and claim. The claim does not on its face profess to cover a mere mode of connecting, by means of U-shaped channel-irons, the intermediate with the external rails. It is in form a claim for a combination of parts which together constitute a frog of peculiar construction. The elements of that combination, as stated in the claim, are, first, the two center rails, B B′, joined to form the V-shaped point; second, the outside diverging or wing rails; third, the channel-irons of a U shape, uniting the center rails together and also to the outside or wing rails, so that the whole shall constitute a frog with the characteristics imparted by the features of this combination. This coincides with the statement contained in the brief of counsel for the appellant, who say, speaking of the invention as described in the second claim:

The elements constituting the invention in controversy are: First, two outside diverging wing and main rails; two inside V-shaped point rails, the four rails being united and joined together by two channel-irons bolted to these rails by three lines of rivets or bolts, to wit: one line of bolts, bolting one channel-iron to one wing-rail; another line of bolts, bolting another channel-iron to the other outside wing-rail, and the third line of bolts passing through the two inside wings of the two channel-plates and through the webs of the point-rails, thereby making one structure or machine. In this construction the cut-away rail forming the point is re-enforced on each side by the vertical wings of the channel-irons. The claim is for this frog or machine so constructed, a frog composed substantially of the elements above named.

The claim refers specifically to the—

two center rails, B B′, joined to form the V-shaped point.

This points explicitly to the drawings, on which the two center rails are designated by the letters, and also to the mode in which they are shown by the drawings and the description in the specification to be joined, and excludes the idea of constructing a frog, such as is intended to be covered by the second claim, of any other center rails than those thus pointed out and described. The patentee by this mode of description and of claim has made the center rails, formed and connected in the manner described to make up the V-shaped point, an essential part of the invention intended to be secured by the second claim.

An argument against this construction, made by the counsel for the appellant, is based upon the language of the third claim. That claim is for the channel-pieces D, extending and bolted or riveted together beyond the point of the frog, and connecting-rivets C, which extend entirely through the two point-rails and the channel-pieces—

in combination with the point-rails B B′, fitted to each other, as described.

It is admitted that the language of that claim limits it to the point rails formed and connected together so as to make the V-shaped point, according to the specific manner described in the specification and shown in the drawings, and that it does not cover center rails of any other description. This limitation is based upon the words—

fitted to each other, as described.

It is argued that as this phrase is omitted from the second claim the contrary inference must prevail, so that that claim may be permitted to extend so as to embrace all center rails joined to formed the V-shaped point, however they may be fitted to each other; but this variation of language does not seem to us so significant. The second claim, by the use of the phrase at its close—

substantially as shown—

limits its application quite as effectually to the particular kind of center rails described in the specification and covered by the first claim; and the reference therein to—

the two center rails, B B′, joined to form the V-shaped point—

can only mean such point rails as are shown in the drawings marked B B′, and joined to form the V-shaped point referred to in the drawings and described in the specification—

substantially as shown.

If this construction of the second claim needed corroboration, that would be found in the state of the art at the time of the alleged invention, as shown by the proof in the present case. The frogs exhibited in evidence as infringements of the complainant's patent were manufactured by the defendants, as they claimed, under Patent No. 148,264, dated March 3, 1874, issued to George Thomas and William Miller, under whom they claim, and also under Patent No. 173,804, dated February 22, 1876, issued to Morden, one of the defendants, as inventor. Morden's patent of February 22, 1876, showed a connection of the wing-rails for use as frogs by means of a U-iron or "trough-plate," the upturned sides of which—

are made to conform to the curve of the side rails, as well as to the form of the neck and base of the rails, and are firmly secured to the neck of the rails by bolts or rivets.

Instead of holding the V-shaped point in place by the use of channel-irons, he provided a V-shaped recess in the channel or trough plate, into which the point of the frog was inserted and held; but in applying his device to railroad-crossings instead of switches he used channel or U-shaped irons to connect the points and wing-rails. It is true, as suggested by counsel for the appellant, that a crossing of railroad-tracks is a very different device from a switch, where the latter is used by means of a frog to shift the engine and

train from one line of tracks to another; but the use of channel-irons is analogous in the two cases, and it would require no more than ordinary mechanical skill to transfer the channel-irons used upon a crossing to firmly hold the parts in place to a similar use in a frog to unite firmly in their respective positions the center rails with the exterior rails. Independently, however, of this use of channel-irons on crossings, we think that the patent to Morden, of February 22, 1876, for an improvement in railroad-frogs, considered in itself, leaves no room for invention in the application of channel-irons in uniting the V-shaped point-rails with the exterior rails. In that patent the invention consisted in forming a metallic plate into a U-shaped trough for the purpose of connecting the outer rails, leaving the V-shaped ends of the point-rails to be secured by means of a V-shaped recess in the bed of the plate at the wide end of the trough. There seems to be no invention in dividing that trough into two, so as to connect the center rails on each side by means of a separate channel-iron or U-shaped trough with the outer rail exterior to them.

For these reasons the decree of the circuit court is affirmed.

U. S. Circuit Court—Southern District of New York.

BABCOCK & WILCOX COMPANY *v.* PIONEER IRON WORKS.

Decided March 22, 1888.

1. CRAWFORD—STEAM-GENERATORS.

   Letters Patent No. 90,506, dated May 25, 1869, granted to Benjamin Crawford, for an improvement in steam-generators, adjudged valid as to the first, second, third, and fifth claims and to have been infringed.

2. BABCOCK AND WILCOX—STEAM-GENERATORS.

   Letters Patent No. 175,548, dated April 4, 1876, granted to Babcock and Wilcox, for an improvement in sectional steam-generators, adjudged invalid as to the first claim for lack of invention in the same.

3. PATENTABLE INVENTION—WHAT IS NOT.

   Where there was merely a good selection from among known joints and involved good workmanship and apparently nothing more, there was no patentable invention.

4. CLAIMS—CERTAINTY OF TERMS OF.

   Where a claim covered the combination of one element named with another element named, "or other part," these last words would mean some other equivalent part and the claim would be sufficiently certain.

5. SETTLEMENT OF SUIT BY ONE OF SEVERAL DEFENDANTS WHERE THE INFRINGEMENT WAS JOINT DISCHARGES ALL OF THE DEFENDANTS.

   Where in a suit against two defendants for a joint infringement one of the defendants had made a settlement by a writing under seal for the costs and damages by the infringement of such defendant, but by such writing the other defendant was expressly not included in such settlement, the settlement was a satisfaction of the infringement by both defendants both as to damages and costs.

6. INJUNCTION AGAINST DEFENDANT NOT INCLUDED IN TERMS OF SETTLEMENT.

   An injunction, however, may be granted against the defendant who was not included in terms by the writing of the settlement.

Mr. Samuel R. Betts and *Mr. Benjamin F. Thurston* for the complainant.

Mr. Edward N. Dickerson and *Mr. Edward N. Dickerson, Jr.*, for the defendant.

WHEELER, *J.*:

This suit is brought upon three patents—No. 90,506, dated May 25, 1869, and granted to Benjamin Crawford, for an improvement in steam-generators; No. 98,490, dated January 4, 1870, and granted to Griffith, Wundram, and Muller, for an improvement in sectional steam-generators, and No. 175,548, dated April 4, 1876, and granted to Babcock and Wilcox, for an improvement in sectional steam-generators. On the argument, infringement of the first, second, third, and fifth claims of the first and the first claim of the last is relied upon. The first claim of the last patent is for a tube connecting the steam-drum with other parts united to them by expanded instead of screw joints. The expanded joint appears to a slight extent to be like a ball-and-socket joint and to admit of small movements of the parts without causing a leak. Such a joint seems to be peculiarly useful in those connections, on account of necessary changes in the relative position of the parts, caused by expansion and contraction and otherwise; but such joints and their advantages are conceded to have been old and well known before, so that the only new thing done was to use one in this place. This was merely a good selection from among known joints, and involved good workmanship and apparently nothing more. It does not seem to come up to a patentable invention. (*Pennsylvania Railroad Co.* v. *Locomotive Truck Co.*, 110 U. S., 490; *Miller* v. *Foree*, 116 U. S., 22.)

These generators are of that class in which the water is contained in a series of tubes inclined upward from the fire-front. Active circulation of the water through the heated parts of the tubes is necessary to success in making steam, and, as there is no room for steam in the tubes, it must be carried to a chamber above, and some water will go with it. If this water is left to fall back toward the high ends of the tubes from which the steam comes, it impedes the circulation. Prior to Crawford's invention there was no arrangement, so far as has been made to appear, to compel it to go to the lower end of the tubes and take its place with water from the supply in the circulation upward through the tubes again. He made the ends of the tubes to open into chambers, called "boxes," which communicated with one another, and the chambers at the high end to communicate with the steam-chamber above, and he placed the reservoir of supply above and communicating downward into the chambers at the lower end, and connected the lower part of the steam-chamber with this reservoir. This arrangement takes the water from the steam-chamber to the supply and into the circulation forward, and effectually prevents the obstruction which it would cause by being left to take the other course. The invention described in English Letters Patent No. 662, granted to one Inglis in 1863, comes nearest to this arrangement of anything shown as an anticipation. In that, as understood, the water carried with the steam into the steam-chamber or accumulated there by condensation might find its way into the chamber at the lower end of the tubes and be drawn into the upward circulation through the tubes again, and might fall back the other way and obstruct the circulation. The first two claims relate principally to the boxes forming the communicating chambers at the

ends of the tubes. Such communicating devices are shown to have been known before. The third claim is for the water-reservoir connected with the steam-drum, or other part, in combination with the inclined tubes, substantially as described. Some question is made about the exactness of this claim on account of the expression "or other part." The connection would not be substantially as described unless the connection should be between the water-reservoir and the steam-drum, or some other part similar to the steam-drum. Therefore, that is what is understood by that expression, which, with that understanding, creates no uncertainty. That claim appears to cover this new arrangement and to be valid. The fifth claim brings other parts into a combination with the same arrangement, and would appear to be valid so far as it is included in the third. The steam-generator of the defendants has the inclined tubes, the communicating chambers, the steam-drum connected at the lower part with the water-reservoir, and their description of its operation in their circular put in evidence is the same as that mentioned of the invention of Crawford. The location of the parts is somewhat different; but they appear to accomplish the same thing by the same means in substantially the same way, and to have thereby infringed the third claim of this patent. Whether they infringe the fifth or not is not material, for an infringement of that would be an infringement of this, and the consequences of an infringement are not varied, so far as known, by the number of claims infringed.

This patent has expired and no occasion for an injunction against further infringement of it is made to appear. No question of liability or relief is left except as to profits and damages. With reference to those the defendant, Pioneer Iron Works, appears by written stipulation with the orator under seal to have settled with the orator since the suit was brought and while it was in readiness for final hearing, and to have paid to the orator six thousand five hundred dollars—

in cash to cover the costs of the complainant in this suit against said Pioneer Iron Works and all damages for the infringement by the said Pioneer Iron Works of the letters patent sued on—

but—

not to discharge or license any parties who may have used or may hereafter use any infringing apparatus heretofore or hereafter made by the Pioneer Iron Works except as herein expressly stated, nor shall it release the Safety Steam Generator Company, all such claims and demands being expressly reserved.

The defendant, the Steam Generator Company, insists that this settlement is a full answer to any further claim by the orator against that company on account of this infringement. The bill charges a joint infringement, which—

said defendants are jointly concerned in and connected to—

by the manufacture by the Pioneer Iron Works, for sale made by the Safety Steam Generator Company, of steam-generators containing each and all of the inventions contained in each and all of these Letters Patent. The answer denies all infringement. The evidence meagerly shows that the generators of the defendants contain the invention of this third claim. The infringement of a patent is in the nature of a trespass upon the exclusive rights of the owner of the patent secured by it for which an action would lie at common law. (Buller's N. P., 76.) The action would be an action on the case, as for a tort, in which all who participate are principals, and for which they are jointly and severally liable for the whole. (1 Chitty's Pl., 141; 2 Green. Ev., section 467.) This is the form of action mentioned in the statutes. (Rev. Stat. U. S., section 4919; *Moore* v. *Marsh*, 7 Wall., 515; *Mowry* v. *Whitney*, 14 Wall., 620.) Littleton, section 276, laid down this:

Also, if two men do a trespass to another, who releaseth to one of them by his deed all actions personalls, and notwithstanding such an action of trespasse against the other, the defendant may well shew that the trespasse was done by him, and by another his fellow, and that the plaintife by his deed (which he sheweth forth) released to his fellow all actions personals, and demaund the judgment, &c., and yet such deed belongeth to his fellow and not to him.

This seems to be good law to this day. (2 Green. Ev., section 30; *Eastman* v. *Grant*, 34 Vt., 387.) A plaintiff is entitled to but one satisfaction of his cause of action, whether but one or many may be liable, or whatever the form of action may be. (2 Saund., 480; *Lovejoy* v. *Murray*, 3 Wall., 1.) If the damages are actually paid by one, that is a sufficient satisfaction for all. If such payment is acknowledged by deed, the actual consideration cannot be inquired into. If the plaintiff had brought suit against the Pioneer Iron Works alone on the proofs in this case, as here understood and considered, judgment would have been recovered for all the infringement involved. After the satisfaction of such judgment no action could be maintained against the Safety Steam Generator Company for the same infringement, because the plaintiff would be fully satisfied for that. The infringement by one is the same as that by the other, and when satisfaction is made for that the whole is satisfied. The payment and acknowledgement of it cover all damages for the infringement by the Pioneer Iron Works, and that includes all the infringement involved in this case and covers all damages for it. The agreement expressly provides that the Safety Steam Generator Company shall not be released; but whether released or not the orator has no unsatisfied claim to recover upon against that company. This case differs in this respect from *Chamberlin* v. *Murphy*, (41 Vt., 110,) where part satisfaction was received from some of the defendants and they were discharged without affecting the liability of the others for the residue. There the payment was received for but a part and the rest of the cause of action was expressly reserved. Here the payment is received for all the damages and only the liability of the other defendant so far as this case is concerned is reserved. That liability was reduced to nothing when all the damages were paid. The orator urges that the recovery of damages from a manufacturer for infringement does not relieve a seller or user afterward from liability, and that even the recovery of damages from a seller would not relieve a subsequent user, and argues from these premises that the Safety Steam Generator Company is or may be liable beyond the Pioneer Iron Works. (*Birdsall* v. *Shaliol*, 112 U. S., 485.) But as this case now stands both of the defendants were liable for all the infringement by either as maker, seller, or user, and all the damages for all of this have been paid. Nothing is left in that or any other view which has been presented or suggested itself. This result may not have been, and probably was not, intended by the orator and the Pioneer Iron Works in

doing what they did. Still the conclusion that such is the legal effect of it seems to be unavoidable. As there is no relief to which the orator appears to be entitled against the Safety Steam Generator Company, the bill must be dismissed as to that company. This conclusion would have rendered any inquiry into the original liability of that company unnecessary but for the question of costs. There are no costs for which one defendant was liable that the other was not that are made to appear. All the costs for which one defendant was liable are paid. There are none for which the other was liable remaining to be recovered or paid. But both were liable for costs and neither was entitled to any, as the case has turned, when the costs were incurred. For that reason neither has ever become entitled to costs. The stipulation provides for an injunction against the Pioneer Iron Works. Witnesses appear to have been examined as to some prior patents which are material to questions of anticipation and which were not set up in the answer nor formally put in evidence, but have been treated as regularly in the case for that purpose on the argument and in the consideration of the case. Motion was made and submitted with the case for the amendment of the answer and the allowance of these patents as being formally in evidence. That motion is granted to make the case complete.

Let an order be entered for the amendment of the answer and the allowance of these patents in evidence, and let a decree be entered for an injunction against the Pioneer Iron Works according to stipulation, and dismissing the bill as to the Safety Steam Generator Company without costs, and without prejudice to the validity of the third claim of the Crawford patent.

U. S. Circuit Court—Northern District of New York.

PALMER *v.* JOHNSTON.

Decided March 20, 1888.

COWELL—SASH-BALANCES.

The second claim of Patent No. 126,031, granted to John J. Cowell, April 23, 1872, for an improvement in sash-balances, adjudged to be valid, and to have been infringed by a construction such as is described in Patent No. 135,309, granted to John Vetterlein, December 12, 1876, for a sash-pulley case.

WALLACE, *J.*:

The second claim of letters patent granted to John J. Cowell, April 23, 1872, for an improvement in sash-balances, is in controversy in this suit. The invention in question relates to a cast-metal pulley-box, and consists in forming the box with two or more semi-tubular swellings, one at each end of the box, adapted to fit auger-holes bored in the frame for inserting the box. The specification points out the advantages of such a pulley-box as follows:

> In inserting this casing in the window-frame it is only necessary to bore auger-holes corresponding with the swellings and chip out between the holes. The swellings fit snugly in the auger-holes, and it is not necessary to cut away wood neatly between the two auger-holes, as the sides of the box are less in diameter than the diameter of the swellings. The boxes can, by reason of this construction, be more easily and cheaply inserted in window-frames, and will be held just as securely and snugly in place as if the sides were more neatly fitted to the wood.

The defendant is manufacturing pulley-boxes made conformably to a patent granted to John Vetterlein, December 12, 1876. That patent describes the alleged infringing device as follows:

> My improvement relates to the case B, made with an external surface composed of segments of cylinders C at opposite sides, so placed that they are adapted to enter mortises formed by holes bored in wood, such holes intersecting so that the interior of the opening made in the wood will be corrugations corresponding with the corrugations upon the surface of the case.

In other words, the defendant's device is provided with semi-tubular swellings, not only at each end, like that of Cowell's pulley-box, but with the intermediate semi-tubular swellings, which practically connect with each other.

When Cowell made his improvements in pulley-boxes, it was customary to insert pulley-boxes in the frame by making an auger-hole at each end of the proposed recess and cutting away the intermediate wood; and a patent had been granted to Simon Drum, of the date of May 21, 1867, which described this method of inserting pulley-boxes, and described an oblong pulley-box with rounded ends, the arch of which would correspond with the arch of the auger-holes. The pulley-box of this patent did not, however, have the semi-tubular swellings of Cowell's device. This was the nearest approach in the prior state of the art to the pulley-box of Cowell, and Cowell was the first to recognise the advantage in the saving of time and attention to details in inserting pulley-boxes which would result from employing the peculiar form of pulley-box which his patent describes and claims. Cowell's improvement was a very simple one; and it is easy to assert now that any competent mechanic in that department of industry could have made it by the exercise of ordinary mechanical skill. Indeed, it seems surprising now that no one had made it; but no one had, although many kinds of pulley-boxes had been made and some had been patented; and as soon as this one was made and introduced its advantages were manifest, and it commended itself to the public as a practical and desirable device and a better one than those which had preceded it. These circumstances afford a safer criterion of inventive novelty than any subsequent opinion of an expert or intuition of a judge.

The defendant has appropriated the invention of the Cowell patent, and a decree is therefore ordered for an injunction and an accounting.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 43—No. 7. TUESDAY, MAY 15, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
FRAUDULENT PRACTICES BY ATTORNEYS	759
PUBLISHERS' CATALOGUES	759
ISSUE OF MAY 15, 1888	759
DESIGNS	759
TRADE-MARKS	760
LABELS	760
DISCLAIMER	760
PATENTS GRANTED	761
REISSUES	879
DECISIONS OF THE U. S. COURTS—	
Yale Lock Manufacturing Company *v.* James	881
Van Camp *v.* The Maryland Pavement Company	884
Thompson *et al. v.* Gildersleeve	886
Moxie Nerve Food Company *v.* Various Defendants	888

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 16, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado.*

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., May 5, 1888.

Messrs. Horn & Son, No. 606 Eleventh street Northwest, Washington, D. C., having satisfied the Commissioner of Patents that a circular issued by them to the effect that their attention had been directed at the Patent Office to specifications on file was not intended to create the impression that they possessed facilities for acquiring information concerning pending applications, and having assured the Commissioner that they will discontinue the publication of such circular, notice is hereby given that the condemnation of *Messrs. Horn & Son*, published in the OFFICIAL GAZETTE of May 1 and May 8, 1888, is hereby withdrawn, the language used in such circular having been an inadvertence on their part and not a matter of intention.

BENTON J. HALL, *Commissioner.*

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send these publications that not less than three copies should be forwarded in order that the contents may be properly indexed, classified, and embodied in the Scientific Library for convenient and ready reference.

Issue of May 15, 1888.

Patents	416—No.	382,676 to No.	383,091, inclusive.
Designs	23—No.	18,809 to No.	18,831, inclusive.
Trade-Marks	26—No.	15,453 to No.	15,478, inclusive.
Labels	9—No.	5,591 to No.	5,599, inclusive.
Reissues	4—No.	10,929 to No.	10,932, inclusive.
Total issue	475		

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	1	Nebraska	2	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	2	....	New Hampshire	2	....
California	16	1	New Jersey	14	1
Colorado	4	....	New Mexico Territ'y	....	....
Connecticut	21	1	New York	70	10
Dakota Territory	1	....	North Carolina	1	1
Delaware	....	....	Ohio	20	1
District of Columbia	6	....	Oregon	2	....
Florida	2	....	Pennsylvania	41	3
Georgia	3	1	Rhode Island	1	....
Idaho Territory	....	....	South Carolina	1	....
Illinois	53	4	Tennessee	....	....
Indian Territory	1	....	Texas	3	....
Indiana	15	....	Utah Territory	1	....
Iowa	6	....	Vermont	....	....
Kansas	5	....	Virginia	2	....
Kentucky	6	....	Washington Territ'y	1	....
Louisiana	2	2	West Virginia	1	....
Maine	1	1	Wisconsin	7	....
Maryland	2	3	Wyoming Territory	....	....
Massachusetts	30	1	United States Army	....	....
Michigan	19	....	United States Navy	....	....
Minnesota	9	....			
Mississippi	1	....	Total to citizens of the United States	405	31
Missouri	10	....			
Montana Territory	2	....			

TO CITIZENS OF FOREIGN COUNTRIES.

To citizens of foreign countries: Patents and Designs—34, Trade-Marks and Labels—1.

DESIGNS.

18,806.—CLOCK-DIAL.—*Archibald Bannatyne*, Waterbury, Conn., assignor to *The Waterbury Clock Company*, same place. Application filed February 24, 1887. Serial No. 228,735. Term of patent 7 years.

18,807.—CLOCK-DIAL.—*Archibald Bannatyne*, Waterbury, Conn., assignor to *The Waterbury Clock Company*, same place. Application filed May 3, 1887. Serial No. 237,012. Term of patent 7 years.

18,808.—CARPET.—*John Christie*, Halifax, England, assignor to *John Crossley & Sons*, New York, N. Y., and London, England. Application filed February 25, 1888. Serial No. 265,309. Term of patent 3½ years.

18,809.—BOTTLE.—*Adelbert M. Foster*, Chicago, Ill. Application filed March 14, 1888. Serial No. 267,168. Term of patent 14 years.

18,310.—RADIATOR.—*Henry C. Hodges*, Detroit, Mich., assignor to *The Detroit Steam Radiator Company*, same place. Application filed June 10, 1887. Serial No. 240,950. Term of patent 7 years.

18,311.—RADIATOR ORNAMENTATION.—*Charles H. Hodges*, Detroit, Mich., assignor to *The Detroit Steam Radiator Company*, same place. Application filed June 10, 1887. Serial No. 240,951. Term of patent 7 years.

18,312 and 18,313.—RADIATOR.—*Charles H. Hodges*, Detroit, Mich., assignor to *The Detroit Steam Radiator Company*, same place. Applications filed June 10, 1887. Serial Nos. 240,952 and 240,953. Term of patents 7 years.

18,314.—RADIATOR ORNAMENTATION.—*Charles H. Hodges*, Detroit, Mich., assignor to *The Detroit Steam Radiator Company*, same place. Application filed June 10, 1887. Serial No. 240,954. Term of patent 7 years.

18,315 and 18,316.—SPOON, FORK, &c.—*Robert H. Klingel*, Bridgeport, assignor to *The Holmes & Edward Silver Company*, West Stratford, Conn. Applications filed March 27, 1888. Serial Nos. 268,679 and 268,680. Term of patents 14 years.

18,317 and 18,318.—LADY'S COSTUME.—*Ellen Moran*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial Nos. 271,347 and 271,348. Term of patents 3½ years.

18,319.—MISS'S APRON.—*Lizzie Roys*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial No. 271,344. Term of patent 3½ years.

18,320.—WALKING-SKIRT.—*Lizzie Roys*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial No. 271,346. Term of patent 3½ years.

18,321.—LADY'S COSTUME.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial No. 271,349. Term of patent 3½ years.

18,322.—DESK-CABINET.—*Frank S. Thomas*, Topeka, Kans. Application filed March 1, 1888. Serial No. 265,867. Term of patent 14 years.

18,323.—LADY'S BASQUE.—*Mary Turner*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial No. 271,345. Term of patent 3½ years.

18,324 to 18,338, inclusive.—RAILWAY-RAIL.—*William Wharton, Jr.*, and *Edward Sumner*, Philadelphia, Pa., assignors to *William Wharton, Jr., and Company*, (*Incorporated*,) same place. Applications filed April 20, 1888. Serial Nos. 271,337 to 271,341, inclusive. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,453.—GATE-VALVES.—*The Arthur Company*, New York, N. Y. Application filed March 24, 1888. Used since September 1, 1880.

"The words 'ARTHUR'S ANNULAR' arranged between concentric circles."

15,454.—LIQUID TONIC FOR WOMEN.—*Edward William Austen*, Oswego, N. Y. Application filed March 19, 1888. Used since December, 1887.

"The number '51797.'"

15,455.—CULTIVATOR.—*A. Baldwin & Co.*, New Orleans, La. Application filed March 23, 1888. Used since February 1, 1888.

"The words 'WHIT'S IMPROVED LADOW' and the letters 'A B &' in monogram, with the word 'Co.' just under same."

15,456.—OUTER CLOTHING AND OVERCOATS.—*Bierman, Heidelberg & Co.*, New York, N. Y. Application filed March 26, 1888. Used since January, 1887.

"The representation of a shield with a bear and an Arab in standing position at either side of the shield."

15,457.—COFFEE.—*Chase & Sanborn*, Boston, Mass. Application filed March 16, 1888. Used since October, 1887.

"The word 'SANRIKA.'"

15,458.—JAPAN AND OOLONG TEA.—*Cobb, Wight & Co.*, Rockland, Me. Application filed April 17, 1888. Used since February 1, 1888.

"The word 'SUNBEAM.'"

15,459.—OLIVE-OIL.—*Cusimano Bros.*, New Orleans, La., and Palermo, Italy. Application filed March 19, 1888. Used since January 2, 1888.

"The representation of an eagle with wings open and with feet upon a twig."

15,460.—ROASTED COFFEE.—*The Enterprise Coffee Company*, Baltimore, Md. Application filed March 30, 1888. Used since January, 1873.

"The word 'ENTERPRISE.'"

15,461.—MIXED TEA.—*The Enterprise Coffee Company*, Baltimore, Md. Application filed March 30, 1888. Used since August, 1878.

"The word 'RA-JAH.'"

15,462.—ROASTED COFFEE.—*The Enterprise Coffee Company*, Baltimore, Md. Application filed March 30, 1888. Used since January, 1875.

"The word 'CHESAPEAKE.'"

15,463.—HORSE AND MULE SHOES.—*Greenwood Horse Shoe Company*, Philadelphia, Pa. Application filed March 22, 1888. Used since December 18, 1886.

"The words 'CRANBERRY PATTERN.'"

15,464.—BEER.—*Arthur Guinness, Son & Company*, (*Limited*,) London, England. Application filed March 13, 1888. Used since March 29, 1886.

"The representation of a harp."

15,465.—CIGARS.—*Horace R. Kelly & Co.*, New York, N. Y. Application filed April 12, 1888. Used since April 2, 1888.

"The word 'SOGNA.'"

15,466.—BOOT AND SHOE BLACKING.—*C. T. Kenney, John Donovan*, and *Will. K. Rodney*, Griggsville, Ill. Application filed March 19, 1888. Used since December 28, 1887.

"The word 'LEADER' surmounted with a blacking-brush."

15,467.—REMEDY FOR DISEASES OF THE URINARY SYSTEM.—*William T. Lindley*, Chicago, Ill. Application filed December 17, 1887. Used since August 1, 1887.

"The word-symbol 'BRIGHTINE.'"

15,468.—FLOUR.—*Marshall, Kennedy & Co.*, (*Limited*,) Pittsburg, Pa. Application filed April 7, 1888. Used since January 1, 1876.

"The words 'ST. LOUIS FAVORITE.'"

15,469.—TOILET-WATER SACHET-POWDER.—*R. H. McDonald Drug Company*, New York, N. Y. Application filed March 19, 1888. Used since February 1, 1888.

"The word 'ODORA.'"

15,470.—REMEDY FOR CHICKEN-CHOLERA.—*David F. McKittrick*, Marysville, Ohio. Application filed September 1, 1887. Used since May 31, 1887.

"The words 'NOX ALL.'"

15,471.—EMOLLIENT COMPOUND.—*Joseph Olcovich*, San Francisco, Cal. Application filed March 29, 1888. Used since September 15, 1887.

"The words 'SUN ANOINTING.'"

15,472.—MANUFACTURED TOBACCO, CIGARS, AND CIGARETTES.—*James Allen Patterson*, Birmingham, Ala. Application filed March 8, 1888. Used since September 1, 1887.

"The words 'RED BEET.'"

15,473.—SCREWS, BOLTS, RIVETS, TACKS, AND SIMILAR METALLIC FASTENINGS.—*Shelton Company*, Birmingham, Conn. Application filed April 2, 1888. Used since December 1, 1886.

"The representation of a bolt bent into the form of the letter S."

15,474.—DENTAL GOODS AND MATERIALS OF ALL KINDS.—*The S. S. White Dental Manufacturing Company*, Philadelphia, Pa., Chicago, Ill., New York and Brooklyn, N. Y., and Boston, Mass. Application filed May 19, 1883. Used since the year 1867.

"The monogram of the letters 'S S W.'"

15,475.—VEGETABLE PREPARATION FOR ASSIMILATING FOOD, PROMOTING DIGESTION, AND REGULATING THE BOWELS.—*James H. Vadakin*, Bethany and Peoria, Ill. Application filed March 29, 1888. Used since January, 1888.

"The word 'CASTEROLE.'"

LABELS.

5,501.—Title: "RHEUMATIC CURE."—*Lawrence Abbott, James Abbott*, and *Frank I. Abbott*, Chicago, Ill. Application filed April 18, 1888.

5,502.—Title: "BLUME'S TOKAYER GRAPE AND FRUIT WINE."—*William M. Blume*, New York, N. Y. Application filed April 16, 1888.

5,503.—Title: "BLUME'S TOKAYER GRAPE AND FRUIT WINE."—*William M. Blume*, New York, N. Y. Application filed April 16, 1888.

5,504.—Title: "LA SOGNA," (FOR CIGARS AND CIGARETTES.)—*Horace R. Kelly & Co.*, New York, N. Y. Application filed April 19, 1888. (Trade-Mark Registered.)

5,505.—Title: "THE NIAGARA WHITE GRAPE COMPANY."—*The Niagara White Grape Company*, Lockport, N. Y. Application filed March 24, 1888. (Trade-Mark Registered.)

5,506.—Title: "SEARCHING SYRUP." (FOR A COUGH.)—*William Shafer*, Camden, N. J. Application filed April 16, 1888.

5,507.—Title: "WOOLDRIDGE'S WONDERFUL CURE."—*Stiner, Heumber & Co.*, Columbus, Ga. Application filed April 16, 1888.

5,508.—Title: "CARSON'S CELEBRATED REMEDY FOR PURIFYING THE BLOOD."—*William K. Vandergrift*, Jamestown, N. Y. Application filed April 23, 1888.

5,509.—Title: "SURE VENEREAL CURE."—*Wright, Hollig & Co.*, Salisbury, N. C. Application filed April 14, 1888.

DISCLAIMER.

296,373.—*James G. Wilson*, New York, N. Y. IMPROVEMENT IN CORRUGATED-METAL ROLLING SHUTTERS. Patent dated April 8, 1884. Disclaimer filed May 8, 1888.

Enters his disclaimer to that portion of the specification in lines 42 to 50 of the printed specification, in words as follows:

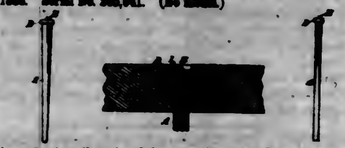
"I propose, also, to use the shields for repairing and strengthening old shutters, for riveting on patches, or for covering up such small holes as time or accident may have occasioned.

"I do not confine myself to any particular part of the shutter for affixing my shields, but intend placing them on any part where extra strength may be required."

PATENTS

GRANTED MAY 15, 1888.

382,676. HAIL. WILLIAM R. ALLEN, Brooklyn, N. Y. Filed Feb. 28, 1888. Serial No. 265,941. (No model.)



Claim.—1. A nail or brad having the point E formed upon its head, substantially as and for the purpose specified.

2. A nail or brad provided with a point upon its head or driving end, said point being substantially of the form as shown and described, and for the purpose specified.

382,677. HARVESTER AND BINDER. JACOB RAMMAH, Stony Run, Pa. Filed Oct. 12, 1886. Serial No. 215,903. (No model.)



Claim.—1. In a harvester, the combination of the non-revolving delivery-cylinder shaft having its central portion cut away upon one side, the cylinder K, comprising a series of disks suitably connected together by bolts passing through holes K^4 and revolving upon the said shaft, and the stripping-teeth P, pivoted on pins projecting from the said disks and provided with heels P', so that the teeth are pressed outward by the circumference of the shaft, substantially as and for the purpose set forth.

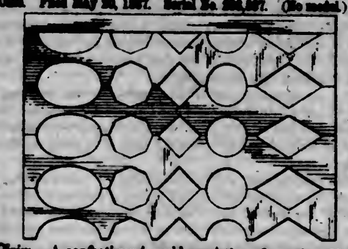
2. In a harvester, the combination of the tubular non-revolving delivery-cylinder shaft, having its central portion cut away on one side, the cylinder K, comprising a series of disks provided with recesses K^5 and pins K^3, the said pins in each disk being spirally in advance of the pins in the next disk, and the disks being connected together by bolts passing through holes K^4 and revolving upon the said shaft, and the stripping-teeth P, pivoted on the pins projecting from the said disks and provided with heels P', so that the teeth are pressed outward by the circumference of the shaft, substantially as and for the purpose set forth.

3. In a harvester, the combination of a supporting-frame secured to the binding-deck, a shaft journaled in brackets projecting from the said frame, the arms C and V, secured upon the said shaft, the arm F, loose upon the shaft and having lugs F^2 upon its sleeve, the spring H, projecting between said lugs and retaining the arm in position, and a cam secured to the shaft for raising the spring and freeing the arm F when the shaft has partially revolved, substantially as and for the purpose set forth.

4. In a harvester, the combination of a supporting-frame secured to the binding-deck, a shaft journaled in brackets projecting from the said frame, the arms C and V, secured upon the said shaft, the arm F, loose upon the shaft and having lugs F^2 upon its sleeve, the spring H, projecting between said lugs and retaining the arm in position, a cam secured to the shaft for raising the spring and freeing the arm F when the shaft has partially revolved, a lug projecting from the cam and bearing against one of the lugs on said sleeve, and the spring I and link S, connected to the cam for raising the arms to their original positions, substantially as and for the purpose set forth.

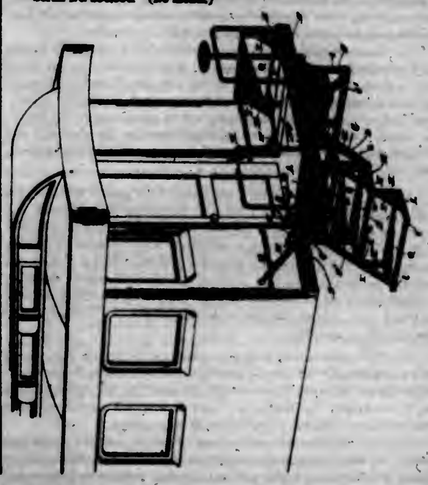
5. In a harvester, the combination of a supporting-frame secured to the binder-deck, the shaft C, having a bent central portion and journaled in brackets B, the arm C, the arm V, provided with a sail, V^2, the slotted link S, connecting said sail with the trip mechanism, the arm F, loose on shaft C and having lugs F^2 upon its sleeve, the spring H, projecting between said lugs and retaining the arm in position, and a cam secured to the shaft for raising the spring and freeing the arm F when the shaft has partially revolved, substantially as and for the purpose set forth.

382,678. CONFECTIONER'S MOLD. SAMUEL R. BALL, Dayton, Ohio. Filed May 20, 1887. Serial No. 238,327. (No model.)



Claim.—A confectioner's mold consisting of a series of heavy disconnected bars or plates with wide flat upper and lower faces and indented edges, said bars constructed, as described, of a weight and size by which they are adapted to remain in operative position by gravity on the mold-table and without the employment of connecting devices.

382,679. FOLDING STEP FOR CARS. ALBERT J. BARNES, Boston, N. Y., assignor to Martin V. Teeter, same place. Filed Nov. 30, 1887. Serial No. 256,593. (No model.)



Claim.—1. In combination with the platform of a car, the folding steps connected thereto for simultaneous operation, whereby when the steps are folded they form a continuation or extension of the car-platform, substantially as specified.

2. The combination, with a platform, of the swinging arms pivoted thereto, the steps having the risers secured to the arms, and the treads pivoted to the arms and adapted to assume a horizontal position flush with the platform when the arms are sprung upward, substantially as specified.

3. The combination, with a car-platform having the openings B B at the sides, of the swinging arms F G, pivoted to the sides of the openings and having the risers secured thereto, the swinging arms I, having the bottom treads, Q, attached thereto, and the treads P and O, pivoted to and connecting the said arms, whereby when the steps are raised or closed they will fill the openings B and form extensions to the platform, and the bottom treads, Q, will form guards at the sides of the platform, substantially as specified.

4. In combination with a car-platform, the folding steps connected together for simultaneous operation, and adapted when folded to come on a horizontal line with the platform and form a continuation thereof, the lowest tread of the steps standing in a vertical position at the end to form a guard, as set forth.

5. The combination, with a car-platform, of the arms F F, having the top riser attached thereto, the arms G G, having the second riser attached thereto, the top tread pivoted between the arms F and G, the arms I I, having the lowest tread attached thereto, and the tread P, pivoted to the arms G and I, whereby all the arms move simultaneously and the treads and risers form an extension to the platform, substantially as specified.

6. The combination, with a platform, of the arms F F, the arms G G, pivoted on the same level as the arms F, the tread pivoted to the lower ends of the arms F and the intermediate points of the arms G, the arms I I, pivoted at their upper ends under the upper ends of the arms G and having a tread attached rigidly thereto, and the tread P, pivoted to the lower ends of the arms G and intermediate points of the arms I, substantially as specified.

7. The combination, with a car-platform, of the swinging arms F, G, and I, connected together and having the treads attached thereto, the handle attached to one of the arms, and means, substantially as described, to lock the handle when the steps are raised, substantially as specified.

8. The combination, with a car-platform, of the swinging arms I, the arms G, connected thereto and having a handle, R, the arms F, connected to the arms G by the links S, the treads attached to the said arms, and the bracket attached to the car-platform and adapted to engage the said handle, substantially as specified.

9. The combination, with a car-platform, the swinging arms connected together and having the treads attached thereto, the handle attached to one of the arms, and the bracket T, having a notch, U, to receive and engage the said handle, substantially as and for the purpose specified.

10. The combination, with a car-platform, of the swinging arms F and G, the arms I, having the forks K at their free ends, the tread Q, attached to the said forks, the treads P and O, attached to the arms and connecting them together for simultaneous operation, and the handle attached to one of the arms, substantially as specified.

11. The combination, with a car-platform, of the arms F F, having the risers secured thereto, the arms G G, bent forward at their lower ends to form the arms M M, and having the riser P secured thereto, the arms I, having the forks K K at their lower ends, and the bars L, connecting the arms of the said forks, the tread secured to the bars L, the treads O and P, pivoted, respectively, between the arms F G and G I, and the handle attached to one of the arms, substantially as specified.

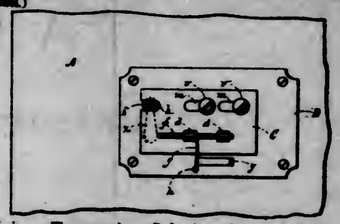
12. The combination, with a platform, of the arms F G I, the links N, pivoted to the arms G and I, the links H, pivoted to the arms F and G, and the treads attached to the said links, substantially as specified.

13. The combination, with a car-platform, of the arms I I, having the bars L on their lower ends provided with the flanges *l*, the arms G, connected to the arms I by the links N, having flanges *n*, the arms F, connected to the arms G by the links H, having the flanges *h*, and the treads O, P, and Q, secured to the flanges *h*, *n*, and *l*, respectively, substantially as specified.

14. The combination, with a car-platform, of the arm F, provided with a bracket, F', the arm G, provided with a bracket, G', the arm I, connected to the arm G, the treads attached to the said arms, the link S, connecting the brackets F' and G', and the operating-handle attached to the bracket G', substantially as specified.

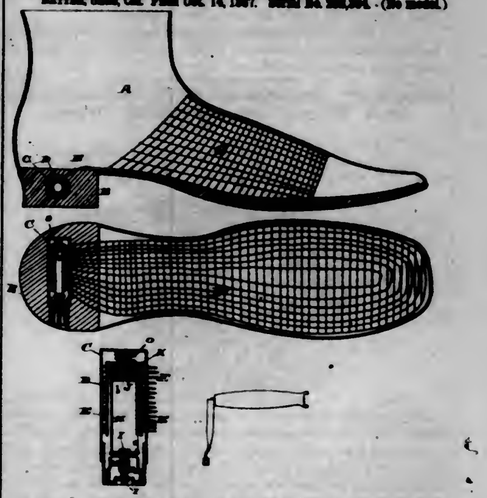
15. The combination, with a car-platform and the depending frame C, of the folding steps adapted in the lowered position to bear against the depending frame and in the raised position to form an extension to the platform, substantially as specified.

382,680. KEY-FASTENER. EDWARD BARRETT and HARRY G. BAKER, Fall River, Mass. Filed Feb. 3, 1888. Serial No. 262,882. (No model.)



Claim.—The escutcheon B, having a key-hole therein, and the locking-flange *y*, secured thereto, in combination with the plate C, having recess *k*, adapted to register with the shank portion of said key-hole, and also having slots *m*, the headed screws *v*, passing through said slots and into the escutcheon, the lugs *d d* upon said plate, the rod *f*, sliding in said lugs, and the arm connected to said rod between said lugs, and adapted to be sprung over either end of said locking-flange for locking the plate in operative or inoperative position, substantially as described.

382,681. HEATING APPARATUS FOR BOOTS OR SHOES. FRANK BAUER, Hilda, Cal. Filed Oct. 14, 1887. Serial No. 252,204. (No model.)



Claim.—1. A shoe having a chamber formed within the heel and a heater in said chamber, in combination with wires extending therefrom and passing through the sole or around the foot between the lining and the outer leather, substantially as herein described.

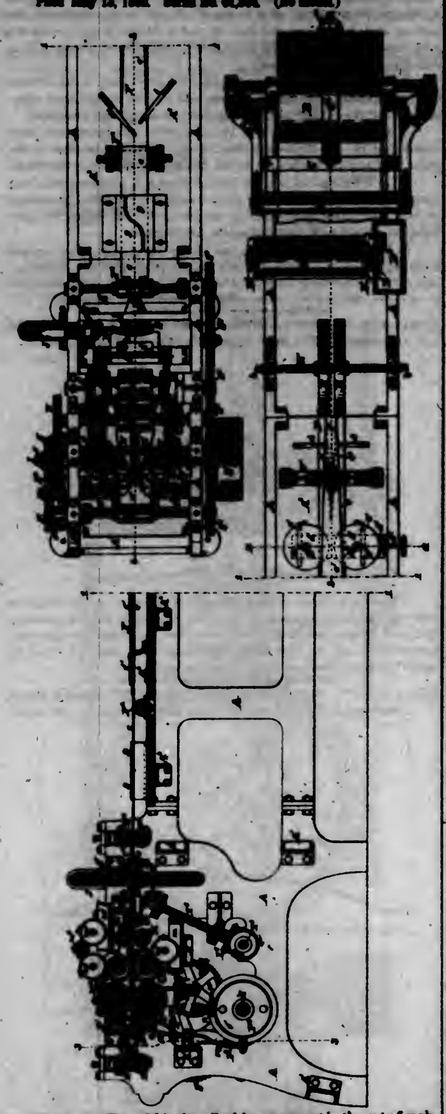
2. In a boot or shoe, the flexible conducting-wires concealed between the soles of the shoe or between the lining and the upper and connected with a heating-chamber formed within the heel of the shoe, substantially as herein described.

3. In a boot or shoe, the chamber formed within the heel of the shoe, having a metallic lining, a second concentric chamber fitted within the first and surrounded by conducting-wires which lie between the two, said wires extending thence through the soles or around the foot, in combination with the interior artificial or frictional heating devices, substantially as herein described.

4. In a boot or shoe, the concentric cylinders with the coils of conducting-wires lying between them and extending between the soles or around the foot, the interior cylinder having the concave frictional metallic surface formed in the inner end, in combination with the inner rotary cylinder having its end fitted to the concave surface and its outer end provided with a stem or shank, to which a key or crank may be attached for rotating it, substantially as herein described.

5. In a boot or shoe, the concentric cylinders with the frictional end pieces fitted into the heel of a shoe and adapted to be operated by the rotating key or crank, in combination with the spring by which the frictional surfaces are held in contact, and the conducting-wires arranged with relation to the cylinders, substantially as herein described.

382,682. APPARATUS FOR AND METHOD OF MAKING PAPER BAGS. LEANDER D. BENSON, Galesburg, Ill., assignor, by mesne assignments, to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed May 12, 1886. Serial No. 201,904. (No model.)



Claim.—1. The within-described improvement in the art of making square or satchel bottom bags, the same consisting in folding and pasting a strip of paper longitudinally to form a tube, bending in the sides of said tube on central lines to form bellows-folds, severing the tube transversely to leave ends of the infolded portions projecting beyond the edges of the flat portions, and bending down each folded corner and pasting the same upon the body, substantially as set forth.

2. In the manufacture of square-bottom bags, the mode described of making the blanks with sides extending beyond the edges of the body, top, and bottom portions, the same consisting in forming a tube, folding in the side portions, and then severing the tube across the body portions upon nearly straight lines and across the folded portions upon lines in advance of the severed edges of the body portions, substantially as specified.

3. The mode described of folding a tube with projecting side portions, *e*, to form a square bottom, the same consisting in folding part of the body portion on each side against the side portions having the projecting ends, turning the side portions at right angles to the body, thereby bringing the tube to an H shape in cross-section, and then bending down each corner on an oblique line and pasting it to the part upon which it is folded, substantially as set forth.

4. The mode described of forming the bottoms of square bags, the same consisting in folding a tube to an H shape in cross-section, and then turning down the corners and pasting them to the parts beneath, as specified.

5. The combination, in a paper-bag machine, of devices, substantially as described, for folding in the sides of a tube, severing-plates *e E'*, creasing the body portions of the tube, severing-plates *i i'*, creasing the folded portions of the tube with their edges in advance of the plates *e E'*, and a striker, H, substantially as set forth.

6. The combination of plates having edges of different lengths arranged at angles to each other to cover a tube transversely on different lines, with a bent striker formed to carry different portions of said tube successively against different portions of said edges, substantially as set forth.

7. The combination, with devices, substantially as described, for folding in the sides of the tube and for feeding the blanks cut therefrom longitudinally, of curved guides N N and rollers O O for bringing the blank to an H shape and appliances, substantially as described, for turning down the corners, substantially as specified.

8. The combination, with the devices, substantially as described, for bringing the blank to an H shape in cross-section, of guides N, having recesses *o* and blades *n*, and appliances, substantially as described, whereby said blades are brought against the sides of the blanks to force them into said recesses, substantially as specified.

9. The combination, with devices, substantially as described, for bringing the blanks to an H shape in cross-section, of blades *g*, devices, substantially as described, for carrying them across the sides of the blanks to turn in the corners, and feeding appliances, substantially as described, whereby the blanks are fed forward after the turning in of the corners, substantially as set forth.

10. The combination, with devices, substantially as described, for folding the blanks to an H shape and for turning and pasting down the corners, of plates *r' r''*, adapted to fold down the sides of the bag as the same is fed forward, substantially as set forth.

11. The former F, having its forward end composed of the serrated plates *c*, *i*, and *i'*, the beveled filling-pieces *h* and *h'*, and the smooth-edged plate *c''*, all constructed and arranged substantially as described.

12. The combination of the serrated plates *c*, *i*, and *i'*, the beveled filling-pieces *h* and *h'*, the smooth-edged plate *c''*, and the wedge-shaped guides G G, all constructed and arranged to operate substantially as described.

13. The combination of the former F, having its front end composed of the serrated plates *c*, *i*, and *i'*, the beveled filling-pieces *h* and *h'*, and the smooth-edged plate *c''*, with the independent stationary serrated plate h^2, the wedge-shaped guides G G, and a revolving striker adapted to strike off a section of the paper tube from which to form a bag, substantially as described.

14. The combination of the striker, feed-rolls, plates *h* and *h'*, plates h^2 h^3, arranged between the striker-arm and feed-rolls K K to guide the paper tube from the point of cut-off to said feed-rolls K K, substantially as described.

15. The guide-plates h^2 h^3, in combination with the plates h^2 h^3, and the revolving pasters M and M', constructed, arranged, and adapted to operate substantially as described.

16. The guide-plates h^2 h^3, terminating at their front ends in the spirally-surfaced guides N N, in combination with feed-rolls for feeding the paper tube, substantially as described.

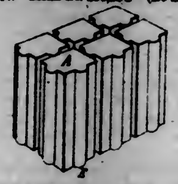
17. The combination of the pasting devices, spirally-surfaced guides N N, and feed-disks O O, arranged intermediate of said guides and adapted to operate substantially as described.

18. In a paper-bag machine, the combination, with forming, feeding, and guiding devices, substantially as described, of two sets of pasting apparatus arranged to apply paste to opposite sides of the bag-blank at the same time, substantially as and for the purposes described.

19. The combination of the two spirally-surfaced guides N N, each provided upon its inner face with two grooves, *o o*, arranged obliquely in opposite directions, the four crossing-fingers *n n* and *n' n'*, the levers P^2 P^3, and the cam-wheels P^4, provided with the cam-throws *p p'*, all constructed, arranged, and adapted to operate substantially as described.

20. The combination of the two spiral guides N N, provided with the oblique grooves *o o*, the crossing-fingers *n n* and *n' n'*, mechanism for reciprocating said fingers *n* and *n'*, the fingers *q q*, levers Q Q, and the cams P^4, provided with the cam-throws p^2 and p^3, all constructed, arranged, and adapted to operate substantially as described.

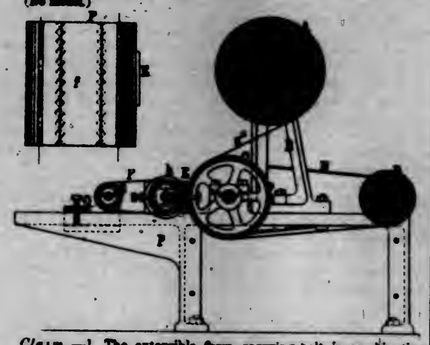
382,683. PAVEMENT. WILLIAM BUSSELL, Nebraska City, Nebr. Filed May 24, 1887. Serial No. 239,264. (No model.)



Claim.—1. A brick for paving provided on each of two adjacent sides with a rib for separating the blocks in use, said ribs being located at a distance from the corners, substantially as specified, whereby, when several bricks are placed together in a pavement, a continuous space will be provided around the corners.

2. A pavement consisting of bricks provided on each of two adjacent sides with a rib to separate the bricks, said ribs being located at a distance from the corners, whereby, when several bricks are placed together in a pavement, a continuous space will be provided around the corners, and a filling of concrete in the spaces between the bricks, all placed on a suitable road-bed, substantially as specified.

382,684. PRINTING-MACHINE. THOMAS S. BOWMAN, St. Louis, Mo. Filed Apr. 19, 1887. Renewed Feb. 27, 1888. Serial No. 265,432. (No model.)



Claim.—1. The extensible form-carrying belt, in combination with the impression-cylinder, as and for the purpose described.

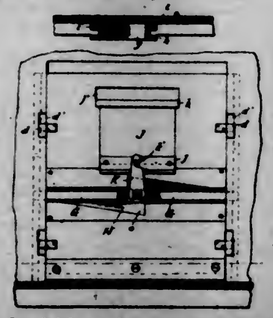
2. The combination of the extensible form-carrying belt, the roller H, and the cylinder C, substantially as described.

3. The combination of the adjustable roller G, the extensible form-carrying belt, the roller H, and the cylinder C, substantially as described.

4. The combination of the shaft *a*, uprights B B', the cylinder C, the extensible form-bearing belt, the roller H, and the adjustable roller G, substantially as described.

5. The combination of the cylinder C, having the continuous surface *c*, with the rollers G H, and the extensible form-carrying belt, substantially as described.

382,685. FREIGHT-CAR. PERRY BROWN, Louisville, Ky. Filed Aug. 28, 1887. Serial No. 247,893. (No model.)



Claim.—1. In a freight-car, the combination of the side wall having the lower half permanently closed and the upper half permanently closed, of a door having a vertically-movable hinged connection at the top, and a rabbeted lock at the bottom for tightly closing said closed portion, substantially as and for the purpose specified.

2. In a freight-car, the combination, with the car-body having an opening in its side wall, of a frame, F, hinged to said side wall, the slats on said frame, and the door E, and a double hinge connecting said frames and also hinging the frame F to the wall, substantially as and for the purpose specified.

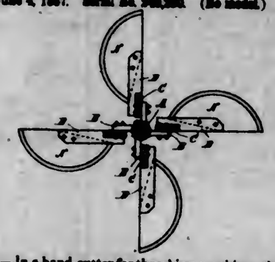
3. In a freight-car, a door having a rabbeted lock at the bottom, locking means near its vertical center, and holding means upon opposite sides of the central lock, substantially as shown and described.

4. In a freight-car, a door provided with a supplemental door, and means for simultaneously locking said supplemental door to the main door and the main door to the frame, substantially as described.

5. In a freight-car, a door provided with a supplemental door, combined with transverse bolts on the main door, a bolt constructed to lock said supplemental door to the main door, and means for operating all of said bolts simultaneously, as set forth.

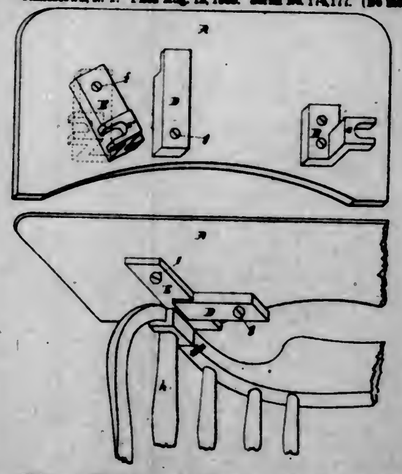
6. The combination, with a car having an opening in its top and a casting around said opening, of a hinged portion of the run-board, and a depending flange carried by said hinged portion and constructed to embrace said casting, substantially as shown and described.

382,686. BAND-CUTTER. JAMES BOSMAN, Indianapolis, Ind. Filed June 4, 1887. Serial No. 240,260. (No model.)



Claim.—In a band-cutter for thrashing-machines, the combination, with the revolving cutter-shaft A, of the removable short-armed iron spiders B B, the wooden guard-bars C C, the removable wooden knife-holders D D, and the thin detachable metal knife-blades N N, all arranged as described, and for the purpose specified.

382,687. TABLE ATTACHMENT FOR CHAIRS. ABNER A. BUSLER, Jamestown, N. Y. Filed Aug. 12, 1886. Serial No. 174,177. (No model.)



Claim.—1. The combination of the arms and spindles of a chair, a table adapted to rest upon said arms, and a leg, B, immovably secured to said table, and having a recessed arm, *c*, open on one side to receive one of the spindles of the chair, with a leg, E, pivotally secured to said table, and having a recessed arm, *c'*, open on one side to receive one of the spindles of the chair, substantially as and for the purpose described.

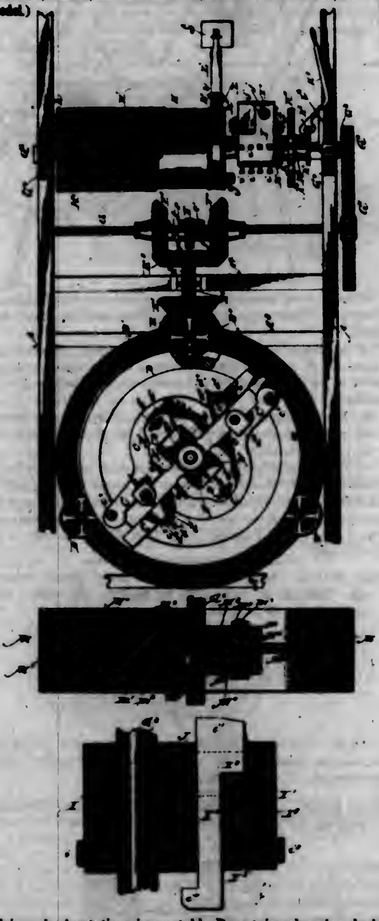
2. The combination of the arms and spindles of a chair, a table resting upon said arms, and a leg, B, secured to said table, and having a recessed arm, *c*, open on one side to receive one of the spindles of the chair, with a leg, E, pivotally secured to said table, and having a recessed arm, *c'*, open on one side to receive one of the spindles of the chair, and the locking-bar D, pivoted to the table and adapted to bear against the side of the leg E, substantially as and for the purpose described.

382,688. VETERINARY DRENCHING-TUBE. GEORGE W. GADY, Chicago, Ill. Filed Aug. 1, 1887. Serial No. 245,598. (No model.)



Claim.—An apparatus for the purpose described, consisting of a T-shaped tube, A, provided with an opening, *a*, and with cups *c* to both ends, all as shown and described.

382,689. APPARATUS FOR SINKING WELLS. MATTHEW T. CHAPMAN, Aurora, Ill. Filed Oct. 20, 1885. Serial No. 181,266. (No model.)



Claim.—1. A rotating ring or table, B, carrying clamping devices consisting of two arms, each carrying a support having cone-shaped clamps, substantially as and for the purpose specified.

2. The arms C C' C', plates D, cones D', and shafts D², for forming clamping-jaws, substantially as and for the purpose specified.

3. The arms C C' C', plates D, cones D', and shafts D², in combination with drawing and tightening bolts operating the arms for clamping the cones onto the article to be held, substantially as specified.

4. The combination, with a rotating ring, B, of the arms C C' C', plates D, cones D', shafts D², and tightening-bolts *e*², substantially as and for the purpose specified.

5. The combination, with pivoted arms, of a plate carrying the clamping-cones, drawing-bolts, and tightening-wedges for readily opening and closing the arms for clamping purposes, substantially as specified.

6. A loose winding-drum provided with a stationary stop, in combination with a rotating head carrying a sliding latch, and a cushioning device for the latch, substantially as and for the purpose specified.

7. A loose winding-drum provided with a catch or stop, in combination with a rotating head provided with a catch or stop, and a cushioning device for the catch or stop for preventing injurious effects from the engagement of the rotating head with the drum, substantially as specified.

8. The head I, having an extension, I', carrying a sliding latch, I', cushion J, and cam-disk K, for operating the head as a clutch, substantially as and for the purpose specified.

9. The combination of a rotating head, I, having an extension, I', carrying a sliding latch, I', bumpers or cushions J, cam-disk K, stop-plate K', and a loose winding-drum for engaging and disengaging the rotary head, substantially as specified.

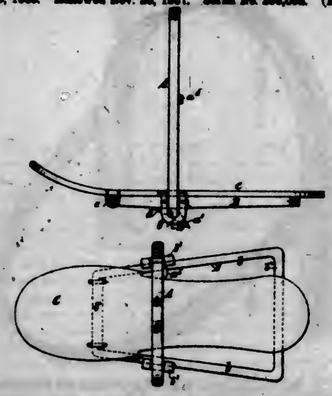
10. The combination, with a power-shaft, of a cushioning-wheel consisting of a rim and a yielding ring or center connected with the rim by spokes, substantially as and for the purpose specified.

11. The rim M, spokes M', and ring M², in combination with the plate M³, center M⁴, plate M⁵, yielding sleeves *m'*, and bolts *m*², for cushioning the shock, substantially as specified.

12. A rotary clamp adapted to grasp a round article and rotate with the endwise movement of the article clamped independent of the rotary movement which carries said article around, and having jaws of a circular form provided with sharp angles, substantially as described.

13. A rotary clamp having jaws of a circular form, with sharp angles adapted to grasp a round article to rotate with the endwise movement of the article independent of the rotary movement which carries said article around, in combination with a rotary ring for carrying said clamp, and gearing for driving said ring, substantially as described.

382,690. STIRRUP. THOMAS CRADY, New York, N. Y. Filed Oct. 5, 1889. Renewed Nov. 25, 1887. Serial No. 256,092. (No model.)



Claim.—1. In the stirrup herein described, the combination of a hanger or main frame and an open frame hinged or pivotally connected to the former and adapted to hang down below it, substantially as specified.

2. In a stirrup, the combination of the hanger or main frame A, the frame B, hinged or pivotally connected thereto, and the lugs *a*² *a*² on the hanger or main frame, substantially as specified.

3. In the stirrup herein described, the combination of a hanger or main frame, a secondary frame hinged or pivotally connected thereto, and a foot-piece hinged or pivotally connected to the secondary frame, substantially as specified.

4. In a stirrup, the combination of a hanger or main frame, A, a secondary frame, B, hinged or pivotally connected thereto, and a foot-piece, C, hinged or pivotally connected to the frame B, substantially as specified.

5. In a stirrup, the combination of a hanger or main frame, A, provided with a lug, a^3, a secondary frame B, hinged or pivotally connected to the hanger or main frame A, and a foot-piece, C, hinged or pivotally connected to the frame B, substantially as specified.

382,691. NAPKIN-SUPPORTER. FREDERICK W. OTIS, Malden, Ill. Filed Aug. 2, 1887. Serial No. 245,889. (No model.)



Claim.—1. The napkin-support herein described, comprising napkin-supporting arms provided with table-embracing portions at their lower ends, substantially as specified.

2. The napkin-support herein described, comprising napkin-supporting arms provided with napkin-retaining devices at their upper ends and table-embracing portions at their lower ends, substantially as specified.

3. A napkin-holder comprising napkin-supporting arms formed of wire, having at their lower ends wooden clamps bifurcated or grooved to receive the end of a table, substantially as specified.

4. A napkin-holder comprising a spring-arm having a napkin-retaining coil at its upper end and a bifurcated table-clamping block at its lower end, said arm passing through said block and bent to form a spring-tongue, substantially as specified.

5. The combination of the blocks A, grooved as at A', with the arms B, coiled as at B^2, connected to the blocks, as at B' B^2, and bent to form the spring-tongue B^3, substantially as specified.

382,692. HALTER. JAMES G. OVERIZ, West Troy, N. Y. Filed Jan. 18, 1888. Serial No. 261,088. (No model.)

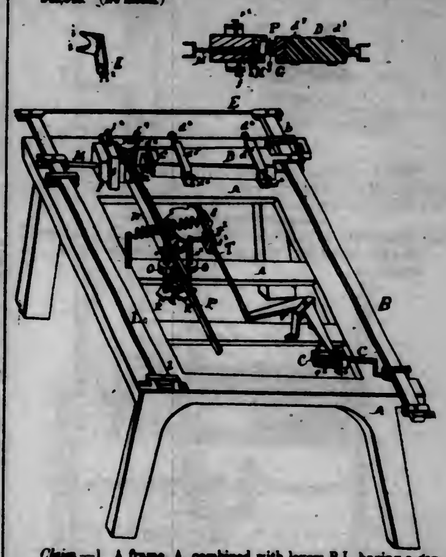


Claim.—1. The combination, with a halter, substantially as shown and described, and a web throat-latch secured permanently to one side of the upper portion of the halter, of a skeleton frame, as C, through which the free end of the latch is woven, and constructed with an eye at the end nearest the side of the halter opposite to that to which the latch is permanently secured, and a device secured to said nearest side of the halter with which the eye is adapted to engage.

2. The combination, with a halter, substantially as shown and described, and a hook secured to one side of the upper portion thereof, and having a prong constructed with a recess in one side and a lug on the other side and opposite the recess, of a throat-latch connecting-frame, as C, having an eye at one end adapted to be fitted over the said prong by hand and arranged to be secured against accidental dislodgment by the said lug.

3. The combination, with a halter, of a metallic hook, for the purpose described, consisting of a body portion having a hole at one end for the attachment of the hook to the halter and terminating at the other end in a prong running toward said hole, the prong having a recess in one side of it and a lug on the other side opposite the recess, whereby an eye may be fitted over the prong by the hand and is prevented from accidental dislodgment.

382,693. MACHINE FOR MAKING BARBS FOR BOX-BOARD RIPPER. JOHN H. BENNINGER and HIRAM J. PARKER, Springfield, Mo.; said Benninger assignor to said Parker. Filed Sept. 2, 1887. Serial No. 248,646. (No model.)
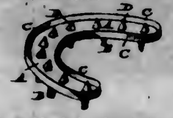


Claim.—1. A frame, A, combined with levers B L, having a connecting-rod, E, and a punch and dies, substantially as shown and described.

2. A plunger, D, composed of a block hinged to lever B, placed in guides d^3 d^3, provided with set-screws, said plunger having a projection, d^3, spring-scraper d^4, and a die, G, substantially as shown and described.

3. The combination of levers B and L, having a connecting-rod, E, with plunger D, dies G H, and a punch, M, all substantially as and for the purpose specified.

4. The combination, with a frame, A, and levers B L, having a connecting-rod, E, of dies G H, plunger D, punch M, operating simultaneously with and through said dies, feed-rollers O O, operated by cog-wheels R R, ratchet-wheel S, ratchet-rod T, V-shaped motion-shifter V, and rod C, connected with lever B, substantially as shown and described.

382,694. HEEL-PLATE. CHARLES DOBEY, Ottawa, Ontario, Canada. Filed Jan. 30, 1888. Serial No. 261,693. (No model.) Patented in Canada Dec. 22, 1887, No. 26,268.



Claim.—The improved heel-plate herein described, having a sharp rim along its edges and sharp calks between the rims, the calks being approximately of the same height as the rims.

382,695. GAS-BURNER. ANDREW J. BOYLSTON, Cincinnati, Ohio. Filed Jan. 31, 1887. Serial No. 226,028. (No model.)



Claim.—The combination of the tip A, of refractory material, and the flaring casing B, the tip resting rigidly at the bottom of the flare by the enlargement or shoulder *a*, and narrowed above to form an annular chamber immediately surrounding the burner within the casing and provided with radial plungers *b*, opening into said annular chamber from the gas-supply, substantially as set forth.

382,696. APPARATUS FOR SUPPLYING HALAT CLOSING RECEPTACLES FOR CORKS, &c. TRESVAL EVERETT, London, England. Filed Dec. 27, 1886. Serial No. 222,503. (No model.) Patented in Germany June 13, 1886, No. 36,319.



Claim.—1. A mouth-piece for a bag or other receptacle, provided with a frame having a slot in its side, combined with a lock, and a tongue or flap having a key-slot and pivoted to said frame and co-operating with the slot therein, substantially as set forth.

2. The mouth-piece *b* and frame *c*, provided with a slot in its side, combined with a lock whose tumblers are slotted at *j*, and a tongue or flap pivoted to frame *c* and provided with a key-slot and with a pin or bolt, *k*, substantially as set forth.

3. A hopper or like device, *a*, provided with a fixed key, *c*, in combination with mouth-piece *b*, slotted frame *c*, and a pivoted tongue and a lock, substantially as set forth.

4. The hopper *a*, provided with a fixed key and with a bracket and pins *q d'*, in combination with a mouth-piece, slotted frame *c*, and pivoted tongue *e*, and a lock, substantially as set forth.

382,697. DRIVE-WELL POINT. FREDERICK E. PERKINS, Waterloo, N. Y. Filed Nov. 9, 1887. Serial No. 254,973. (No model.)



Claim.—1. As an improved article of manufacture, a drive-well point consisting of the tapering portion *a*, having thereon the vertical central stud, *d*, the annular part or hoop *b*, and one or more vertical arms or bars, *c c*, supporting the part *b* above the part *a* without inclosing the space between them, substantially and for the purposes specified.

2. The combination, in a drive-well, of the tube B, the collar *f*, removably applied to the said tube, the ring or hoop *b*, the tapering or pointed part *a*, and one or more arms or hoop-supports, *c c*, all arranged, substantially as described, with relation to each other, for the purposes specified.

3. The point A, consisting of the tapering part *a*, the stud *d*, one or more supports, *c c*, and the hoop *b*, in combination with the tube B, having a collar at or near its lower end, substantially as and for the purposes specified.

382,698. IRONBOARD. HENRY H. GARLAND, Somerville, Mass. Filed Feb. 28, 1888. Serial No. 265,916. (No model.)



Claim.—1. In an ironstand of the character described, the body A, having the curb E, well D, reservoir *m*, and slot *i*, in combination with a fountain, as B, provided with a duct for the ink and a vent-hole for air, substantially as set forth.

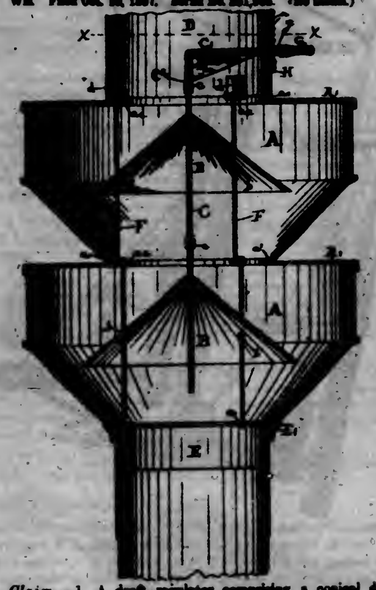
2. In an ironstand of the character described, the cover C, having the grooves *d* and provided with the shoulder *a*, adapted to engage the corners *p p'* of the curb E, and thereby prevent said cover from being accidentally upset, in combination with the body A and fountain B, substantially as specified.

3. The improved ironstand herein described, the same consisting of the body A, having the curb E, well D, reservoirs *m f*, slots *i* 60, and ledges *i v z*, the cover C, provided with the cavity *y*, shoulder *a*, and groove *d*, the cover J, fitted to slide on the ledge *z*, the cover N, fitted to slide on the ledge *i*, and the fountain B, provided with the stopple F, having the ducts *l A*, all being constructed, combined, and arranged to operate substantially as set forth.

4. In an ironstand of the character described, a fountain adapted to be inverted and supported in the well thereof, said fountain being provided with an opening through which air may enter the body of the fountain and an opening through which the ink may pass from the body of the fountain, the mouth of the air-opening being higher than the mouth of ink-opening when the fountain is inverted and in position for use in the ironstand, substantially as set forth.

5. In an ironstand of the character described, the body A, having the well D, and an overflow-reservoir, *f*, separated from the main reservoir *m* by the partition 62, said partition being provided with the slot 60, in combination with the fountain B, supported in an inverted position in said well and provided with an ink-duct and vent-hole, substantially as set forth.

382,699. DRAFT-REGULATOR. GARDELL B. GRAY, Waukesha, Wis. Filed Oct. 10, 1887. Serial No. 251,933. (No model.)



Claim.—1. A draft-regulator comprising a conical damper adapted to be raised and lowered, a damper-chamber thereabout having annular top and bottom plates provided with lugs projecting laterally from their inner circumferences, and bolts passing through the lugs of the top and bottom plates, whereby they are bound together, substantially as and for the purpose set forth.

2. A draft-regulator comprising a conical damper adapted to be raised and lowered, a damper-chamber thereabout whose sides are expanded laterally toward the top and whose top and bottom are annular plates provided with lugs projecting laterally from their inner circumferences, and bolts passing through said lugs, whereby the top and bottom plates are bound together and the sides secured between them, substantially as and for the purpose set forth.

3. In a draft-regulator, in combination, a damper-chamber having annular top and bottom plates provided with lugs projecting laterally from their inner circumferences, a conical damper therein adapted to be raised and lowered, and bolts connecting the lugs of the top and bottom plates passing through apertures in the damper and serving as guides therefor, substantially as and for the purpose set forth.

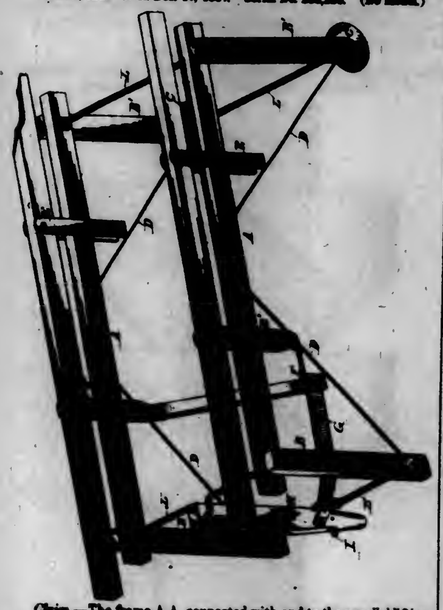
4. In a draft-regulator, in combination, a conical damper adapted to be raised and lowered, a damper-chamber thereabout expanded laterally toward the top and having an annular top plate provided with lugs projecting laterally from its inner circumference, which lugs serve as stops for the damper when raised, substantially as and for the purpose set forth.

5. In a draft-regulator, in combination, a damper-chamber having annular top and bottom plates provided with lugs projecting laterally from their inner circumferences, a conical damper therein adapted to be raised and lowered, and bolts, connecting the lugs of the top and bottom plates, passing through apertures in the damper and serving

as guides therefor, the lugs on the upper plate serving as stops for the damper when raised, substantially as and for the purpose set forth.

6. In a draft-regulator, in combination with a damper-chamber expanded laterally toward the top and having annular top and bottom plates provided with lugs projecting laterally from their inner circumferences, a pipe above and secured to the damper-chamber, a conical damper within the chamber, bolts passing through the lugs, by which the top and bottom plates are bound together, and through apertures in the damper, whereby they serve as guides for it, and a damper-support extending upward and passing through the wall of the pipe, and having a lifting-handle outside the pipe whose stem engages in a notched plate, substantially as and for the purpose set forth.

382,700. WAGON AND CARRIAGE LIFTER. DAVID B. HAMLEY, Bristol, Ind. Filed Dec. 17, 1887. Serial No. 258,288. (No model.)



Claim.—The frame A A, connected with and to the parallel lifting-bars J J by the adjustable parallel couplings E E and E' E', supported by the folding legs B B and B' B', with the rollers C C on legs B' B', pivot F at the union of couplings E and E', attached to hand-lever H by connecting-rod G, all combined substantially as herein described and set forth.

382,701. COMBINED CONCENTRATOR AND AMALGAMATOR. WILLIAM H. HARTMAN, Denver, Colo. Filed July 1, 1887. Serial No. 243,101. (No model.)



Claim.—1. The combination of the main supporting-frame, a series of tiers of hanging shelves supported therein, each tier being in vertical and horizontal planes different from such planes of any other tier, so that the tiers are arranged in step fashion, a series of amalgamating-pans supported thereon, and means for imparting a reciprocating movement to the shelves and pans, substantially as set forth.

2. An amalgamating-pan having sides flaring from the base to the rim, an aperture at each base with grooved ways upon two of its sides, a mercury-pan taking in such grooved ways and closing the aperture, and a strap passing beneath the mercury-pan and additionally securing it in position, substantially as set forth.

3. The combination of a main supporting-frame, two or more shelves suspended therein in different vertical and horizontal planes, a series of flaring pans carried thereon and having removable dished bottoms or mercury-pans held thereon in grooved ways, and means for imparting a reciprocating motion to the shelves and pans, substantially as set forth.

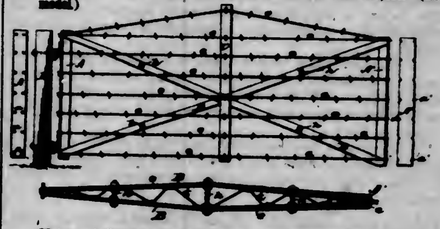
4. The combination of the main supporting-frame, two or more shelves supported therein in different vertical and horizontal planes, flaring-sided pans supported upon the shelves and arranged to discharge from a higher into a lower series, and means for imparting a reciprocating motion to the pans and shelves, substantially as set forth.

382,702. SWEAT-PAD. GEORGE P. HOWE, Streator, Ill. Filed Feb. 11, 1888. Serial No. 263,603. (No model.)



Claim.—As an improved article of manufacture, the sweat-pad herein described and shown, constructed with the front roll, *a*, extending the entire length of the pad, and the rear enlargement, *c*, the two parts brought together and stitched in rear of the roll, as at *b*, and also stitched through the body, as at *d*, the outer face forming a concave gradually curved toward the front roll and the rear forming a convex surface, as shown, and for the purpose set forth.

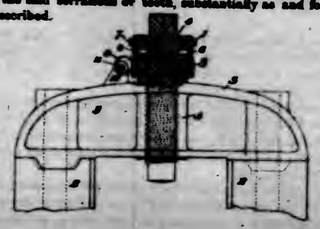
382,703. FARM-GATE. VIRGIL D. JOHNSON and VIRGIL GUTTLE, Mount Pleasant, Iowa. Filed May 14, 1887. Serial No. 238,152. (No model.)



Claim.—A farm-gate composed of upright metal bars A A', and double upright bars C, and double diagonal bars B, with the center of said bars B and C sprung outward or pressed apart at their center by a stud, A, and stayed by zigzag braces *i*, as a supporting frame-work, in combination with horizontal wires *e*, substantially as shown, for the purpose specified.

382,704. APPLIANCE FOR ROLLS. WILLIAM R. JOHN, Braddock, Pa. Filed Mar. 31, 1888. Serial No. 268,668. (No model.)

Claim.—1. An improvement in appliances for rolls, which consists in the combination, with the adjusting-screw, which is provided with serrations or teeth, of a pivoted look which is movable on its pivot to engage the said serrations or teeth, substantially as and for the purpose described.

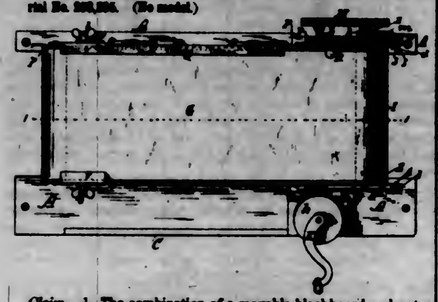


382,704.



2. An improvement in appliances for rolls, which consists in the combination, with the adjusting-screw, which is provided with serrations or teeth, of a pivoted look which is movable on its pivot to engage the said serrations or teeth, said look being also serrated, substantially as and for the purpose described.

382,705. BLACKBOARD AND WIPING AND DUST-COLLECTING APPARATUS. JOHN KANE, Green Isle, Minn. Filed Oct. 31, 1887. Serial No. 255,256. (No model.)



Claim.—1. The combination of a movable blackboard and automatically-rotating wiper, for the purpose herein set forth.

2. The combination of a movable endless belt blackboard or blackboard-surface and an automatically-rotating wiper, for the purpose herein specified.

3. A movable blackboard and a wiper therefor located in a close chamber, the said chamber being provided with a covered discharge-opening for the accumulated chalk-dust.

4. The combination of a movable endless belt blackboard, a revolving wiper, a turning handle or crank for driving the said rollers, belt, and wiper located in an oblique position, and gearing connecting the said handle, wiper, and endless belt, substantially as herein specified.

5. The pivoted hook-bearings P P, in combination with the revolving wiper N and the revolving rollers E I, substantially as and for the purpose herein specified.

6. In combination with the endless belt blackboard and fixed back board, the lip or flange Q and spring-plate R, whereby the upper edge of the endless belt is held straight and in position, substantially as and for the purpose herein specified.

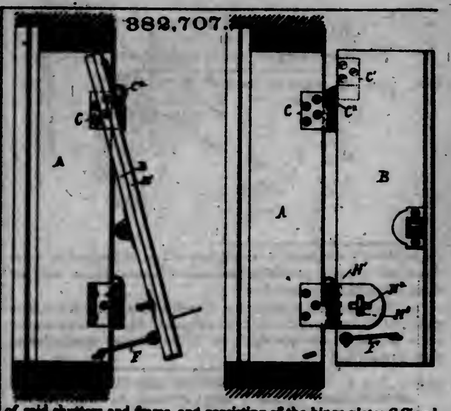
382,706. CORN-HUSKING IMPLEMENT. PETER KAUFMAN, Bloomington, Ill. Filed Oct. 26, 1887. Serial No. 253,493. (No model.)

Claim.—The herein-described corn-husking implement, constructed from a single piece of wire or other suitable material, bent to form the loop B, for the reception of the fingers, the angular portion D, projecting over and beyond the forefinger, and the shank H, to bear against the side palm of the hand, substantially as and for the purpose set forth.

382,707. ADJUSTABLE SHUTTER. CHARLES J. KRAUSE, Beverly, N. J., assignor of one-half to James A. Moody, Philadelphia, Pa. Filed Dec. 31, 1887. Serial No. 258,491. (No model.)

Claim.—1. In combination with a window-frame and a pair of adjustable shutters, the double-acting hinge consisting of the hinge-plate C, having a socket-bearing secured to the inside of the frame at right angles to the shutter, a similar hinge-plate, C', secured to the outside of the shutter, and a hinge-bolt, C², in the form of a right angle, playing in the socket-bearing of both hinge-plates, substantially as described.

2. The combination, with a window-frame and a pair of adjustable shutters, of a double-acting hinge located at the upper end of each of said shutters and frame, and consisting of the hinge-plates C C' and the angular hinge-bolt C², playing in the socket-bearings of said hinge-plates, and of adjustable hinges located at the lower end of each of said shutters and frame, and consisting of the hinge-plate H', secured at one side thereof to the frame, the other side being slotted at H², and a turn-bolt, H³, secured to the shutter and adapted to be inserted in said slot, the said parts being constructed, arranged, and operating substantially as and for the purpose set forth.



382,708. IMPLEMENT FOR EXTERMINATING ROBERTS. EMMA P. KINNEY, Lignite, Ind. Filed Oct. 11, 1887. Serial No. 252,042. (No model.)



Claim.—The herein-described implement for exterminating rodents, consisting of the handle B, having secured at one end the head A, said head being provided with inflexible sharpened teeth *c*, arranged in pairs thereon, and each pair being crossed or lapped together, as shown and described.

382,709. TRACE-CARRIER. OLIVER I. LADEWIGSEN, Bertrandville, Kans. Filed Feb. 14, 1888. Serial No. 263,862. (No model.)



Claim.—1. The combination, with the lower plate having a series of posts or studs, the upper plate provided with coincident grooves or recesses, and the straps secured between said plates, of a pad secured at one end to one of said straps and adapted to rest against the face of the lower plate, substantially as set forth.

2. As an improvement in harness attachments, the lower plate having studs or posts projecting therefrom, and the upper plate provided with coincident grooves or perforations adapted to receive the ends of said studs or posts, said upper plates being provided with inclined hooks projecting therefrom, substantially as set forth.

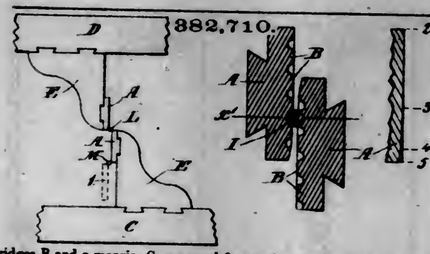
382,710. DIE FOR MAKING AUGERS. ANDREW LAMBERT, Otto St. Post Gaston, Canada, assignor of one-half to Henry Harrison Warren, Manassas, N. Y. Filed Feb. 6, 1888. Serial No. 263,126. (No model.)

Claim.—1. The combination of the dies A, each having diagonal parallel ridges B, arranged face to face, and caused to reciprocate and to act in parallel planes upon the metal placed between them, substantially as described.

2. The combination of the dies A, each having diagonal parallel ridges B and a margin, F, arranged face to face, and caused to reciprocate and to act in parallel planes upon the metal placed between them, substantially as described.

3. The combination of the dies A, each having diagonal parallel

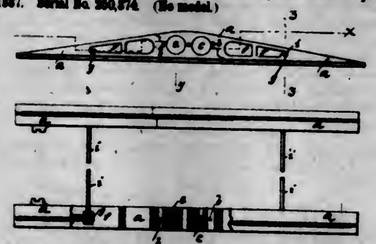
382,710.



ridges B and a margin, G, arranged face to face, and caused to reciprocate and to act in parallel planes upon the metal placed between them, substantially as described.

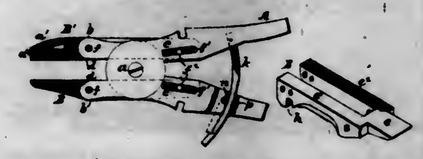
4. The combination of the dies A, each having ridges B and margins F and G, arranged face to face, and caused to reciprocate and to act in parallel planes upon the metal placed between them, substantially as described.

382,711. DEVICE FOR CARRYING CARS OVER TEMPORARY OBSTRUCTIONS. CHARLES H. LITTLE, Pittsburg, Pa. Filed Sept. 27, 1887. Serial No. 250,574. (No model.)



Claim.—In a device such as described, the combination consisting of the two sections *a* for each rail of the track, one or more circular openings, *c*, extending through the same, a portion of each of said openings *c* being formed in each of the two sections *a*, the projecting pins *b* for securing the sections together, the two rods *i*, extending across the track detachably secured to the device, whereby each portion of the device is held rigidly and securely in position, and the base and top of the sections *a* corresponding to shape of the rail *d*, on which the device is placed, substantially as and for the purpose set forth.

382,712. PLIERS. WILLIAM C. HARR, Orawa, Iowa. Filed Aug. 11, 1887. Serial No. 246,717. (No model.)

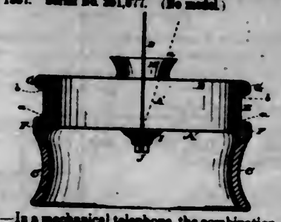


Claim.—1. The combination, with the pliers-handles A A', pivoted together and having the holes and slots, as set forth, of two bifurcated jaws, each provided with one pivotal hole through its front portion and a plurality of pivotal holes through its rear portion, and removably connected with the handles by means of the removable pins at *f f'*, substantially as and for the purposes described.

2. In pliers, a removable jaw, B', provided with a conic point, a^3, having a longitudinal groove, a^4, and a cross-groove, a^5, in combination with the removable nose *a'*, provided with a socket to fit over the conic point, and having a pin, a^6, adapted to extend into the grooves of the point, the said conic point having its inner gripping-surface flush with the inner face of the jaw, and being adapted to be used separately from the removable nose as a round-nosed jaw of pliers, substantially as described, for the purposes set forth.

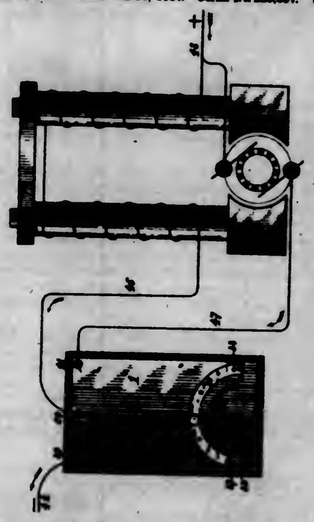
3. The combination, with the handles A A', pivoted together and provided with the slots *c*, and having a wire-cutting groove, *h'*, of the bifurcated jaws B B', provided with a wire-cutting groove, *h*, each jaw having its forward portion pivoted to one of the handles by a pin inserted through perforations at *f*, and the same jaw having its rear portion connected with the other handle by a pin inserted through perforations in the jaw at *f'* and through slot *c* in the handle, in which construction and arrangement of the parts in the cutting operation the jaw and handle having the wire-cutting grooves approach a straightened position, substantially as and for the purpose described.

382,713. MECHANICAL TELEPHONE. PETER L. MARIE, West Salem, assignor of one-half to Henry B. West, Cleveland, Ohio. Filed Oct. 7, 1887. Serial No. 251,677. (No model.)



Claim.—In a mechanical telephone, the combination, with a drum, A', having two diaphragms, prepared, as described, with albumen or glutinous coating, attached to the hoop E, with a mouth-piece connected to one end of the drum, and a ring, G, at the other over the diaphragm-lap, of a guard, H, head I, and wire-line connection with said head, arranged in the manner and for the purpose substantially as set forth.

382,714. SWITCH FOR ELECTRIC MOTORS. RICHARD H. MATHER, Windsor, Conn. Filed Jan. 20, 1887. Serial No. 225,227. (No model.)



Claim.—1. An electric circuit a portion of which is divided into two branches forming a constantly-closed loop, and a shunt-wound electro-dynamic motor having its armature in one of said branches and its field-magnet helices in the other of said branches, in combination with a rheostat and a switch which is adapted to introduce, operate, and cut out said rheostat as a portion of said first-mentioned branch, and also to open and close an electrical connection between said loop and the remaining portion of said circuit, substantially as and for the purpose specified.

2. An electric circuit a portion of which is divided into two branches forming a closed loop, and an electric motor having its armature in one of said branches, and having field-magnet helices in the other of said branches, in combination with a rheostat and a switch which is adapted to manipulate said rheostat and to open and close the circuit-connection of said loop, substantially as and for the purpose specified.

3. An electric circuit having two branches, an electric motor having an armature in one of said branches and field-magnet helices in the other of said branches, and a rheostat which is connected with said armature-branch and is provided with a number of contact-points, in combination with an electric switch having a contact-plate which is connected with said circuit, and a movable conductor which is connected with said field-magnet branch, and is adapted to make sliding contacts with said contact-points and contact-plate, substantially as and for the purpose specified.

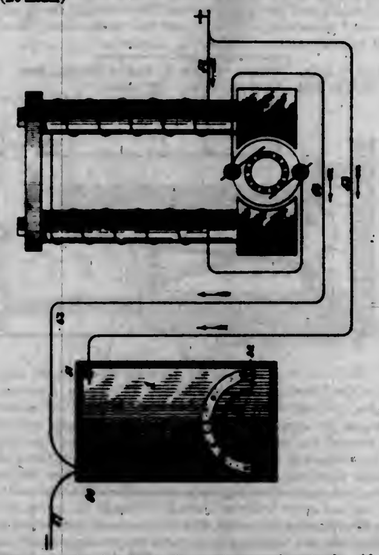
4. An electric switch having three terminals, in combination with a rheostat which is connected with one of said terminals, and a movable conductor which is connected with another of said terminals and is adapted to operate said rheostat, and also to make and break an electrical connection with the remaining terminal of said switch, substantially as and for the purpose specified.

5. An electric generator, a shunt-wound electric motor, and a rheostat which is connected with the armature-circuit of said motor, in combination with a movable conductor which is connected with the field-magnet circuit of said motor, and is adapted to operate said rheostat and to open and close an electrical connection between said movable conductor and said generator, substantially as and for the purpose specified.

6. An electric circuit having two branches, and an electric motor having an armature in one of said branches and field-magnet helices in the other of said branches, in combination with a rheostat which is connected with the armature-branch of said motor, a movable conductor which is connected with the field-magnet branch of said motor, and is adapted to connect said branches as a constantly-closed loop through a variable portion of said rheostat, and also to connect and disconnect said loop with the main circuit at a point between said branches, substantially as and for the purpose specified.

7. An electric circuit having two branches, a shunt-wound electric motor having its armature and field-magnet helices arranged in said branches, respectively, a rheostat which has a constant connection with the armature-branch of said motor, in combination with an electric switch which is provided with an insulated rest, a contact-plate, and a movable conductor connecting said branches through a variable portion of said rheostat and making and breaking contact with said plate, substantially as and for the purpose specified.

382,715. SWITCHING DEVICE FOR ELECTRIC MOTORS. RICHARD H. MATHER, Windsor, Conn. Filed Feb. 10, 1887. Serial No. 226,991. (No model.)

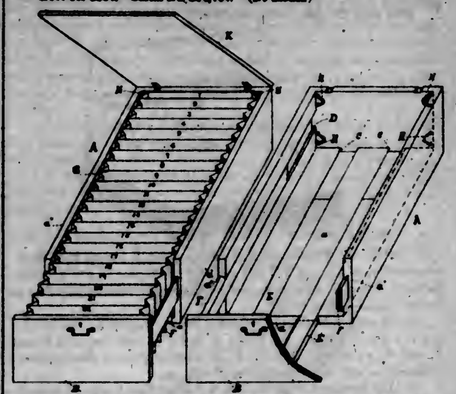


Claim.—1. An electric circuit, a series-wound motor in said circuit, a rheostat which is provided with a series of contact-points and is connected with said circuit at one side of said motor, a conductive plate which is connected with said circuit at the other side of said motor, a switch-finger which is adapted to make successive contacts with said contact-points and to make and break contact with said plate, in combination with an automatic cut-out which is arranged as a shunt about said rheostat and motor, substantially as and for the purpose specified.

2. An electric motor, an automatic cut-out, a rheostat, and a manual switch which is adapted to manipulate said rheostat, in combination with spring mechanism which is carried by the switch-arm and is adapted to open said cut-out whenever said arm is carried to a predetermined position, substantially as and for the purpose specified.

3. An electric motor and a rheostat, in combination with a manual switch which has a movable switch-arm and is adapted to operate said rheostat, a spring-seated stop-pin which is carried by said arm, an automatic cut-out which is provided with spring-contact, and an intermediate stop whereby motion is communicated from said stop-pin to said spring-contact, substantially as and for the purpose specified.

882,716. BILL-FILE. ROWE L. MATHEWS, Ada, Miss. Filed Nov. 10, 1887. Serial No. 254,767. (No model.)



Claim.—1. The combination, with an extensible bill-file case consisting, essentially, of a pair of telescoping parts, of a removable bellows bill-file detachably connected at its opposite ends to the end walls of the telescoping parts of said case, substantially as described.

2. In combination, the box-like body A, having its front end removed and provided with the grooves C D, the end B, provided with the slides E and F, working in said grooves, and the bellows-file G, attached at one end to the relatively fixed part A and at the other to the relatively movable part B, as and for the purpose set forth.

3. In combination with a bill-file case, a bellows bill-file adapted to fit the same and having end boards provided with projecting outer edges, and hook-shaped lugs secured in the ends of said case in pairs with their hook-shaped portions facing each other and adapted to detachably secure the ends of the bellows-file to the ends of the case, as and for the purpose set forth.

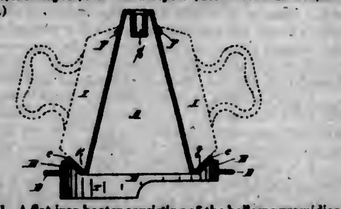
4. The extensible bill-file case and expansible bill-file described, consisting of the box-like body A, having one end removed and provided with the grooves C and D, the movable end B, provided with the slides E and F, working in said grooves, the lid K, pivotally secured to the rear end of the body A, and the bellows-file G, having its opposite ends secured by the lugs H, one end to the relatively fixed part A and the other to the movable part B, substantially as and for the purpose set forth.

382,717. WOLFRAM PROJECTILE. ARMAND MIES, Leipsic, Saxony, and HUGO BUSSMEY, Durlach, Baveria, Germany. Filed June 30, 1884. Serial No. 136,889. (No model.) Patented in Germany Nov. 20, 1883, No. 28,691; in Belgium Mar. 13, 1883, No. 60,734; in England Apr. 13, 1883, No. 1,949; in Austria-Hungary July 13, 1883, No. 16,606 and No. 20,606; in Italy June 30, 1884, XVIII, 14,606, and XXXIII, 200, and in France July 19, 1884, No. 163,269.



Claim.—As a new article of manufacture, a projectile made of metallic tungsten or wolfram, substantially as described.

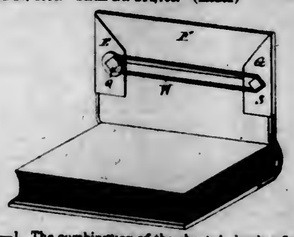
382,718. FLAT-IRON HEATER. ARMENIUS MOONEY and ASBURY LIECHARDT, Indianapolis, Ind. Filed Sept. 30, 1887. Serial No. 251,147. (No model.)



Claim.—1. A flat-iron heater consisting of the hollow pyramidical iron-holder A, having an imperforate top, the annular base B, the outward-projecting rim D, and the downward-extending flange *r*, all arranged as described, and for the purpose specified.

2. A flat-iron heater consisting of the hollow pyramidical iron-holder A, having an imperforate top, the base B, constructed as described, and the socket S, for receiving a curling-iron or the stove-lid lifter, as specified.

382,719. BOOK-COVER. CHARLES F. MORGAN, Cleveland, Ohio. Filed Sept. 27, 1886. Serial No. 214,708. (Model.)

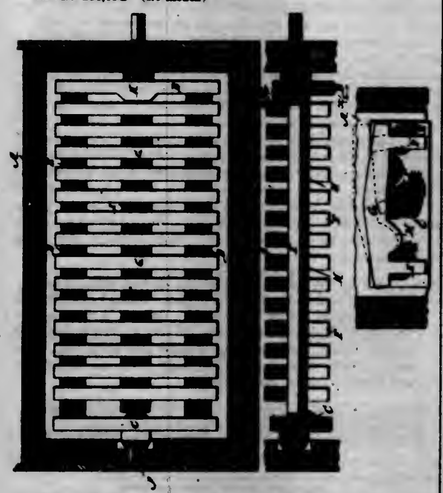


Claim.—1. The combination of the sheet A, having flaps freed, respectively, at *a b*, *c d*, *e f*, and *g h*, and the slots *c m* and *g n*, with fasteners K and L, all constructed and arranged substantially as and for the purposes described.

2. The combination of the sheet A, having flaps freed, respectively, at *a b*, *c d*, *e f*, and *g h*, the slots *c m* and *g n*, with fasteners K and L, and the catches Q, R, S, and T, all constructed and arranged substantially as and for purposes described.

3. The combination of the sheet A, having flaps freed, respectively, at *a b*, *c d*, *e f*, and *g h*, the slots *c m* and *g n*, with fasteners K and L, the catches Q, R, S, and T, and the binder W, all constructed and arranged substantially as and for the purposes described.

382,720. GRATE. ABNER C. MORTON, Chicago, Ill., assignor of one-fourth to Samuel C. Morton, same place. Filed Oct. 19, 1886. Serial No. 216,694. (No model.)



Claim.—1. The grate-frame composed of side and end bars, said side bars being provided with a series of perforations, in combination with a series of grate-bars having lugs projecting into said perforations, whereby said grate-bars may be bodily elevated or have either end elevated without disconnection from the frame or displacement relative to each other, and any grate-bar be removable from the frame without disturbing the others, substantially as described.

2. A grate-frame, in combination with a series of removable grate-bars and a separate rock-bar underlying said grate-bars at their centers, said bars being weighted at a point between the rock-bar and one end thereof, substantially as and for the purpose described.

3. A grate-frame composed of side and end bars, the side bars being provided with a series of perforations, a series of grate-bars supported by said frame, and lugs on said bars engaging the perforations in said side bars, in combination with a rock-bar underlying and engaging said grate-bars about the center of length thereof, and weights secured to said grate-bars intermediate the center and one end thereof, substantially as described.

382,721. FEED-TROUGH. ELI P. EDWARDS and JOHN MANAFFA, Beloit, Kans. Filed Dec. 20, 1887. Serial No. 258,472. (No model.)



Claim.—1. The herein-described trough attachment for cribs, boxes, &c., having an open end, and provided with an inclined chute that projects from said end to enter an opening in the side of the crib or box to which the device may be applied, substantially as specified.

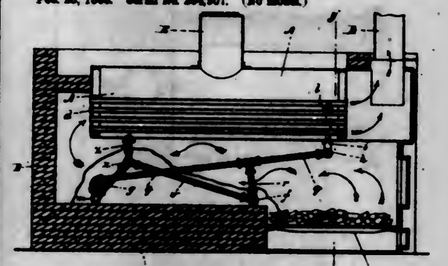
2. The combination, with the shallow trough having one end open and provided with an inclined chute, of the top having a feed-opening, the ear extending from the rear end of the top, and the cut-off adapted to be held in place by the bolt passing through the ear, substantially as described.

3. The herein shown and described attachment, composed of the shallow trough open at one end and having flaring sides and provided with ears, and an inclined chute at the open end, the top provided with a feed-opening and having an ear at its rear end, and the cut-off having a slotted extension, substantially as and for the purpose described.

4. The combination, with the box or crib having an opening in its side, of the trough having an open end, which end is secured to the side of the crib or box, and is provided with an inclined chute that extends through the said opening into the box or crib, substantially as described.

5. The combination, with the box or crib having an opening in its side, and the trough having an open end and provided with an inclined chute that extends through the said opening, and with the lug F, of the slotted cut-off placed between the box or crib and the trough, and the bolt *f*, for securing the trough to the box and for holding the cut-off in an adjusted position, substantially as specified.

382,722. BOILER. GEORGE F. ELLIOTT, Belmont, Mass. Filed Feb. 23, 1888. Serial No. 264,907. (No model.)



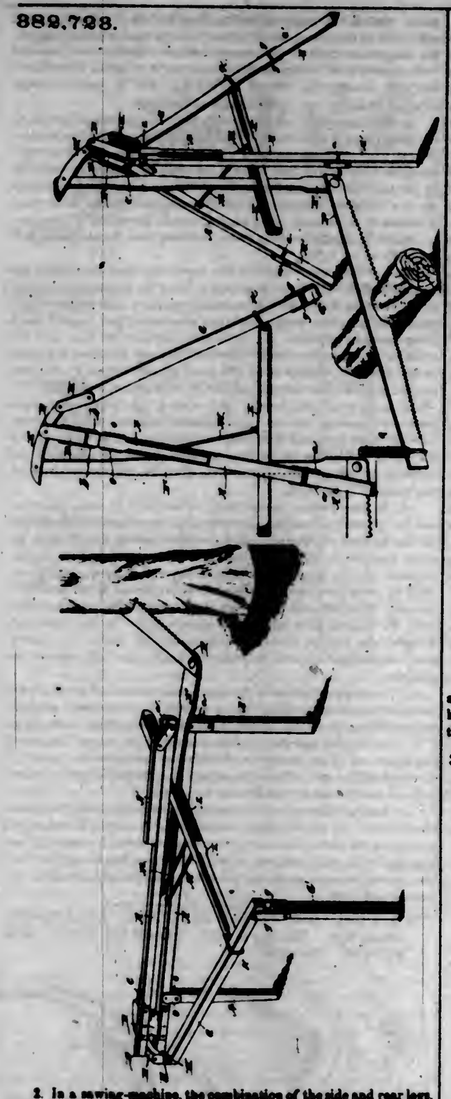
Claim.—1. In a boiler of the character described, the combination of the following instrumentalities, to wit: a body, a vertical pipe tapping said body at the rear on the under side thereof, a transversely-arranged pipe connected centrally with said vertical pipe and extending through the boiler-casing, a transversely-arranged pipe disposed on the bridge-wall near the fire-box and extending through the casing, inclined pipes connecting the ends of said transverse pipes outside the casing, a transversely-arranged pipe disposed on said bridge-wall under the rear end of the boiler and extending through the casing, the ends of said pipe being connected with the transverse pipe which is connected with said vertical pipe, a transversely-arranged pipe passing through the casing near the forward end of the boiler, inclined pipes connecting said pipe with the transverse pipe at the rear of the bridge-wall, and vertical pipes connecting the ends of the transverse pipes and the body of the boiler below the water-line, all being arranged to operate substantially as set forth.

2. In a boiler, the body or boiler proper, A, having the flues *d* and dome E, the vertical pipes *x r i*, transverse pipes *s m f* A, inclined pipes *q v g*, bridge-wall H, and casing D, combined and arranged to operate substantially as set forth.

382,723. WOOD-SAWING MACHINE. FRANK W. GLEE, Hamlin, Mich. Filed Jan. 23, 1888. Serial No. 261,594. (No model.)

Claim.—1. In a sawing-machine, the combination of the side and rear legs, having extensions connected to their lower ends and adapted to assume positions at right angles to the legs when the machine is in the horizontal position, substantially as specified, the short leg mounted on one of the legs and the sawing device mounted on the said legs, all constructed and arranged substantially as and for the purpose specified.

382,723.



2. In a sawing-machine, the combination of the side and rear legs, A A and G, connected together at their upper ends, the extensions A' A' and G' at the lower ends of the said legs, respectively, and the side links, *a a* and *g*, connecting the upper ends of the extensions to the lower ends of the legs, the swinging arm F, and the saw attached to the lower end thereof, substantially as specified.

3. In a sawing-machine, the combination of the side legs, A A, and the rear leg, G, connected together at their upper ends, the guide-bar having a longitudinal slot therein, the loop on the rear end of the guide-bar embracing and sliding on the rear leg, the connecting-rods between an intermediate point of the guide-bar and the side legs, and the swinging arm pivoted at its upper end and operating in the said guide-slot, and having the saw attached at one end thereto, substantially as specified.

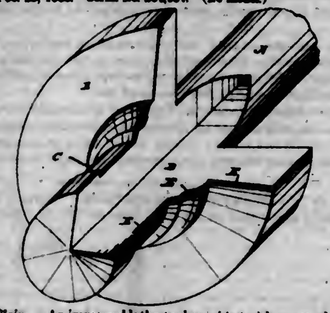
4. In a sawing-machine, the combination of the block B, the side legs mounted on the block, the lever B, mounted on the block, the rear leg connected to one end of the lever, and the swinging arm connected to the other end of the lever and having the saw attached thereto, substantially as specified.

5. In a sawing-machine, the combination, with a suitable stand, of the lever pivoted thereto, the leg connected to one end of the lever, and the swinging arm connected to the other end and having the saw attached thereto, substantially as specified.

6. In a sawing-machine, the combination of the block B, having the depending ears *b b* and the vertical ears D D, the legs A A, mounted at their upper ends between the ears *b b*, the lever E, mounted between the ears D D, the rear leg, G, connected at its upper end to the rear end of the lever by means of the pivoted links H H, the guide-bar connected to the legs, and the swinging arm operating in a slot in the said guide-bar and having the saw attached to its lower end, substantially as specified.

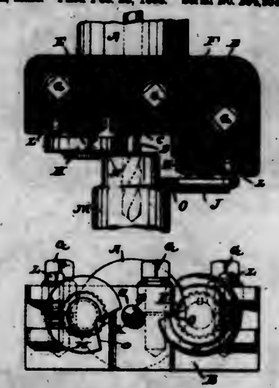
7. In a sawing-machine, the combination of the block B, the side legs mounted at their upper ends, thereon, the depending tongue or stop C between the legs to limit the outward swing of the latter, the lever mounted on the block, the rear leg connected to one end of the lever, and the swinging arm connected to the other end thereof and having the saw attached thereto, as set forth.

382,724. LATHE-TOOL. ANDREW PATTERSON, McKeesport, Pa., assignor to the National Tube Works Company, Boston, Mass. Filed Feb. 23, 1888. Serial No. 264,957. (No model.)



Claim.—An improved lathe-tool provided with an attaching-shank and with a cutting stem and flange fluted to form a cutting-edge, and having the cutting-faces of flange and stem formed spirally, substantially as and for the purpose set forth.

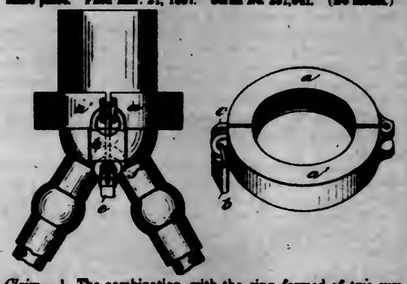
382,725. MACHINE FOR TURNING AXLE-ENDS. ANDREW PATTERSON, McKeesport, Pa., assignor to the National Tube Works Company, Boston, Mass. Filed Feb. 23, 1888. Serial No. 264,958. (No model.)



Claim.—1. In a lathe-tool, the combination, substantially as set forth, of an attaching-shank, a block upon the forward end thereof, an axial socket therein, one or more sockets parallel thereto, pinching-screws for the sockets, a bit secured in the axial socket, and disk tools provided with shanks engaging the other sockets.

2. In a lathe-tool, the combination, substantially as set forth, of an attaching-shank, a block upon the forward end thereof, an axial socket therein adapted to receive a boring bit or drill, one or more outer sockets in the block parallel to said axial socket, pinching-screws for the sockets, a worm-wheel disposed before each of said outer sockets, a worm journaled in said block at each of said worm-wheels and engaging the same, and a disk cutter for each of said outer sockets provided with a shank engaging said worm-wheel and socket.

382,726. LOCKING DEVICE FOR CABLE-SPLICES. WILLIAM B. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 21, 1887. Serial No. 231,641. (No model.)

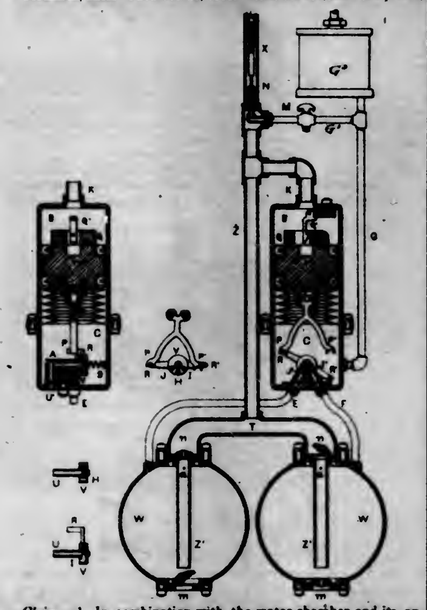


Claim.—1. The combination, with the ring formed of two symmetrical pieces hinged together, of the flanges at the joint of a cable-splice clasped thereby, and a padlock for holding the ring in place, as described.

2. The combination, with the ring formed of two symmetrical pieces hinged together, the hinges being integral with the said pieces, of the flanges at the joint of a cable-splice clasped thereby, and a padlock for holding the ring in place, as described.

3. The combination, with the Y-splice of the pipe of a telegraph-cable provided with a separate chamber or recess for receiving the test-wires, of said test-wires, a locking device, and a plug secured by said locking device, whereby the test-wires are made accessible, as described.

382,727. PNEUMATIC WATER-ELEVATOR. THOMAS O. PERRY, Tecumseh, Mich. Filed Oct. 26, 1886. Serial No. 217,104. (No model.)



Claim.—1. In combination with the water-chamber and its upwardly-extending discharge-pipe, a chamber supplied with compressed air, a pipe leading from such air-chamber into the water-discharge pipe, and a float and a valve operated thereby to control the discharge of air from such air-pipe into the water in the water-discharge pipe, substantially as set forth.

2. In combination with the water-discharge pipe and the air-pipe terminating within the same in a nozzle upwardly extended, a float terminating downwardly in a long and slender tapering extension, which protrudes into the mouth of the air-pipe nozzle to act as a regulating-valve, substantially as set forth.

3. In combination with two water-chambers, a third chamber from which compressed air is supplied to the water-chambers, a valve which controls the supply admitting air to but one chamber at a time, said valve having two arms, by which it is operated, a plunger or piston reciprocating within the compressed-air chamber and provided with suitable arms to engage the valve-arms at its stroke in one direction only, whereby the valve is shifted only once for each full reciprocation of the plunger, substantially as set forth.

4. In combination with an oscillating valve, a plunger which reciprocates toward and from it, a pawl flexibly connected to the plunger, the valve having arms provided with two abutments located at opposite sides of the axis at such distance that only one can be encountered by the pawl at a time, and adapted when thus encountered to engage the pawl laterally, whereby the pawl is deflected laterally as the valve is rotated by it, said pawl being adapted—as by the action of gravity—to resume its original position when it recedes from the abutment, substantially as set forth.

5. In combination with the two water-chambers, the water-pipes communicating with them, respectively, near the bottom, and leading into a common discharge-pipe extending upward and constituting a stand-pipe, air-pipes leading into the water-chambers from a single compressed-air chamber, the valve which admits air from said air-chamber to the water-chambers, respectively, one at a time, a plunger in said chamber adapted to be lifted and upheld therein by the compressed air admitted thereto, and having connections, as the pawl P P', which engage and actuate the valve when it falls, whereby the compressed air passing into one water-chamber will first expel the water into the stand-pipe, and then follow it therefrom and partially expel it therefrom and lighten the column, and then permit the plunger to fall and shift the valve to admit compressed air to the other water-chamber, substantially as set forth.

6. In combination, substantially as set forth, a water-chamber, and its upwardly-extending discharge-pipe constituting a stand-pipe, the compressed-air chamber, and the air-pipe leading therefrom to the water-chamber, a valve which controls the escape of air from the air-chamber into the air-pipe, a plunger in the air-chamber actuated upward by compressed air, and connections therefrom, as the pawl P P', whereby it operates the valve when it falls, and a pipe communicating with the air-chamber above the plunger and with the stand-pipe, whereby the column of water in the stand-pipe above the point of such communication exerts its pressure equally upon both sides of the plunger.

7. In combination with the compressed-air chamber, the vertically-reciprocating plunger therein uplifted by compressed air, the valve which controls the escape of air, and connections, as the pawl P P', whereby the plunger actuates the valve, the weight hinged to the upper end of the plunger, and a latch connected to the upper end of the chamber and adapted to engage the hinged weight, substantially as and for the purpose set forth.

8. In a pneumatic water-elevator, in combination with the water-chambers and the air-chamber communicating therewith, the eduction-pipes from the water-chambers protruding into them, respectively, and provided with perforations *a*; whereby the compressed air may leak into the water-pipes to charge the water, substantially as and for the purpose set forth.

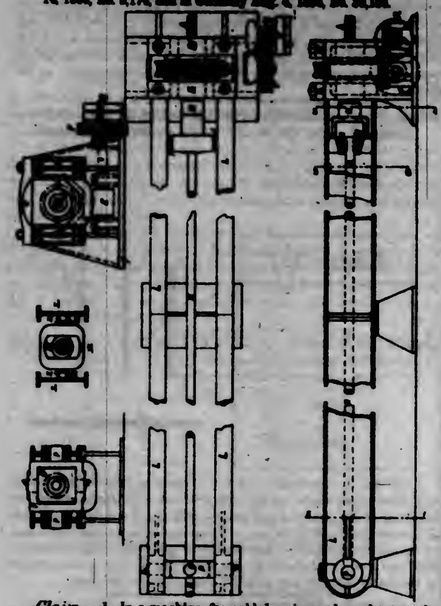
382,728. LOCK FOR BAGS OR SATCHELS. ALBERT PETERSON, Detroit, Mich. Filed May 13, 1887. Renewed Feb. 27, 1888. Serial No. 265,453. (No model.)



Claim.—1. In a lock for bags, satchels, or purses, the combination of a plate secured to the outer bow and a locking-lever pivotally secured between its ends in a slot therein, and having an outer arm formed complementary to the said plate and an inner arm constructed to engage a catch, substantially as and for the purpose described.

2. In a corner-lock for traveling-bags or satchels, a curved corner-plate secured to the face of the outer bow, a locking-lever pivotally secured between its ends in a slot therein and provided with an outer arm formed complementary to said plate and an inner arm forming a hook, and a catch formed on the inner bow, all arranged to operate substantially as described.

382,729. MACHINE FOR DRAWING RODS AND TUBES. CARL MARIA PERRETTEGUX, London, County of Middlesex, England. Filed Sept. 8, 1887. Serial No. 248,578. (No model.) Patented in England July 14, 1886, No. 9,174, and in Germany Aug. 4, 1886, No. 39,168.



Claim.—1. In a machine for cold-drawing rods and tubes, the combination of a screw-shaft carrying a cross-head and gripping-jaws, means for reciprocating said screw-shaft, longitudinal frames supporting the cross-head, and a self-centering drawing-die mounted between the extremities of the frames, substantially as described.

2. In a machine for cold-drawing rods and tubes, the combination of a hollow screw-shaft carrying a cross-head and gripping-jaws, means for reciprocating said screw-shaft, longitudinal side frames supporting the cross-head, and a die secured between the extremities of the side frames, substantially as described.

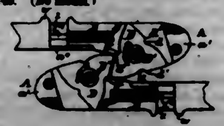
3. In a machine for cold-drawing rods and tubes, the combination of a screw-shaft provided with a cross-head and gripping-jaws, and means for reciprocating said shaft, side frames provided with lateral guiding-surfaces arranged to support the cross-head, and a self-centering drawing-die mounted between the extremities of the side frames, substantially as described.

4. In a machine for cold-drawing rods and tubes, a self-centering die in a support comprising a horizontally-pivoted frame, a die-holding plate or seat vertically pivoted within the frame, and a die-plate supported within the plate or seat, substantially as described.

5. In a machine for cold-drawing rods and tubes, a self-centering die in a support comprising the horizontally-pivoted frame P, the die-holding plate or seat O, vertically pivoted within the frame P, and a die-plate, Q, supported within the plate or seat O, longitudinal side frames between the extremities of which the frame P is pivotally supported, and a cross-head and gripper arranged to be reciprocated between the side frames, substantially as described.

6. In a machine for cold-drawing rods and tubes, the combination of a screw-shaft, a rotating nut on said screw, a worm-wheel engaging said nut, a counter-shaft carrying a worm-pinion engaging the worm-wheel, and suitable driving-pulleys on the counter-shaft, a cross-head and gripping-jaws on the screw-shaft, longitudinal frame-pieces provided with guides for the cross-head, and a drawing-die supported between the extremities of the frame-pieces, substantially as described.

382,730. CAR-COUPLING. JOHN RADENAH, Cincinnati, Ohio, assignor of one-half to John S. Patterson, same place. Filed May 2, 1887. Serial No. 236,769. (No model.)



Claim.—1. The draw bar and head and the revolving triangular block D, each face of which is provided with a groove, *d*, and shoulder *d'*, having an abrupt face forming one wall of the groove *d*, in combination with sliding block B, having projection b^3 adapted to fit in the groove *d* and against the shoulder *d'*, substantially as and for the purpose specified.

2. The draw-bar and head and the revolving triangular block D, each face of which is provided with a groove, *d*, and shoulder *d'*, having an abrupt face forming one wall of the groove *d*, in combination with sliding block B, having projection b^3 adapted to fit in the groove *d*, and means for locking the block B against the block D, substantially as and for the purpose specified.

3. The draw bar and head and the combination of the revolving triangular block D, each face of which is provided with a groove, *d*, and shoulder *d'*, having an abrupt face forming one wall of the groove *d*, sliding block B, having projection b^3 adapted to fit in the groove *d* and against the shoulder *d'*, and lever E, provided with tooth *e* for insertion between block B and a projection or shoulder of the draw-head, substantially as and for the purpose specified.

4. The draw bar and head and the combination of the revolving triangular block D, each face of which is provided with a groove, *d*, and shoulder *d'*, having an abrupt face forming one wall of the groove *d*, and sliding block B, having shoulder b^3 projecting to the line of strain and adapted to fit in the groove *d* and against the shoulder *d'*, substantially as and for the purpose specified.

5. The draw bar and head and the combination of revolving triangular block D, having faces provided with grooves *d* and shoulder *d'*, and a sliding block, B, having shoulder b^3, shaped substantially as set forth, and lever E, provided with tooth *e*, and slotted lever F, substantially as set forth.

6. The combination of the draw bar and head and triangular coupling-block D, sliding block B, spring S, and a wedge or plug to intervene between the sliding block and a fixed point on the draw-bar to lock the sliding block in position, substantially as specified.

7. The combination of the draw bar and head, triangular block D, each face of which is provided with groove *d* and shoulder *d'*, sliding block B, provided with shoulder b^3, spring S, and a wedge or plug to intervene between the sliding block and a fixed point on the draw-bar to lock the sliding block in position, substantially as specified.

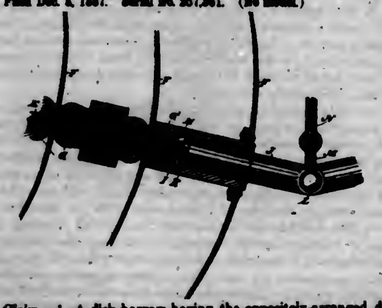
8. The combination of the draw-head A, provided with transverse open space in which the triangular block D is pivoted, the triangular block D, having in each face grooves *d* and shoulder *d'*, and sliding block B, provided with lip b^4 and shoulder b^3, substantially as set forth.

9. The combination of the draw-head A, provided with transverse open space in which the triangular block D is pivoted, the triangular block D, having in each face a groove, *d*, and shoulder *d'*, and sliding block B, and lip a^4, projecting from the draw-head, substantially as set forth.

10. The combination of the draw-head A, provided with transverse open space in which the triangular block D is pivoted, the triangular block D, having in each face a groove, *d*, and shoulder *d'*, and sliding block B, provided with lip b^4 and shoulder b^3 and lip a^4, projecting from the draw-head, substantially as set forth.

11. In a car-coupler, the combination of revolving triangular block D, having grooves *d*, respectively provided with shoulders *d'*, sliding block B, having shoulder b^3, provided with lip b^4 and tongue *b*, draw-head provided with spaces *a'*, lug a^4, shoulder or abutment *w*, lip a^4, and groove C, tooth *e*, connected with lever E, and slotted bar F, substantially as set forth.

382,731. DISK HARROW. LOVELL A. RICHARDS, Grayson, Cal. Filed Dec. 3, 1887. Serial No. 257,261. (No model.)



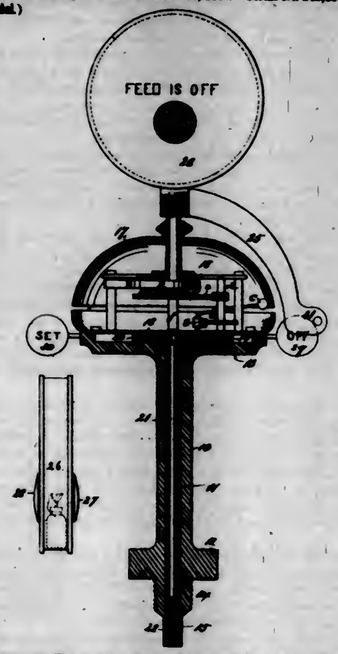
Claim.—1. A disk harrow having the oppositely-arranged disk-gangs with the inner ends of their shafts abutting or adjacent to each other, and the short shafts J extending into holes or openings in the

inner ends of the disk-shaft sleeves, and having internal wearing-plates, K, substantially as and for the purpose herein described.

2. In a harrow, the short shafts J, having their meeting ends hinged together and their outer ends entering holes in the adjacent meeting ends of the disk-shafts or sleeves thereon, in combination with the lever O, and the connecting-rod N, by which this lever is united with the joint of the shafts J, substantially as and for the purpose herein described.

3. The disk harrow with the angularly-supported divergent shafts, the adjacent meeting ends having sleeves bored to receive short shafts J, the meeting ends of which are hinged together, in combination with wearing-plates upon the ends within the sleeves G', to act as thrust-bearings, and oil-holes whereby the chambers within the sleeves may be supplied with a lubricant, substantially as herein described.

382,782. INDICATOR FOR BOILER-FEEDS. William H. Reggan, Whitestone, N. Y. Filed June 10, 1887. Serial No. 240,897. (No model.)



Claim.—1. The combination, with a signaling apparatus, of a rotary shaft connected with the signaling apparatus and a fusible plug for locking the said shaft, substantially as described.

2. The combination, with a signaling apparatus, of a rotary shaft connected with the signaling apparatus, a tube surrounding the said shaft, and a fusible plug for locking the shaft to the tube, substantially as described.

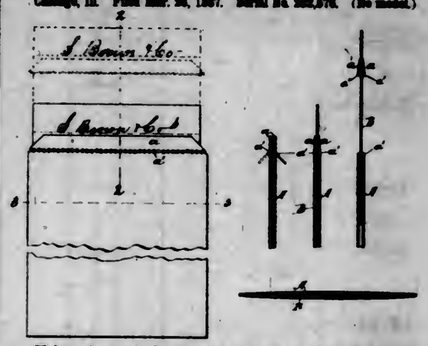
3. The combination, with a signaling apparatus, of a rotary shaft formed with a recessed lower end and arranged in connection with the signaling apparatus, a tube surrounding the shaft and arranged to enter the feed-pipe of a boiler, and a fusible plug fitted within the recess at the lower end of the shaft and arranged to lock the shaft to the inclosing-tube, substantially as described.

4. The combination, with a signaling apparatus, of a rotary shaft, 21, connections between the shaft 21 and the signaling apparatus, a tube arranged in connection with the shaft and formed with exceedingly thin walls at its lower end and bottom, and a plug of fusible metal fitted within the lower end of the shaft and arranged to prevent the said shaft from turning, which thin-walled portion is arranged for connection with the feed-pipe of a boiler, substantially as described.

5. The combination, with a visual and audible signaling apparatus, of a rotary shaft, 21, connected to said apparatus, a thin-walled tube within which the lower end of the shaft rides, said tube being rigidly connected to the case of the signaling apparatus, and a fusible plug fitted within a recess formed at the lower end of the shaft and arranged to prevent the shaft from turning in the said tube, which tube is arranged for connection with the feed-pipe of a boiler, substantially as described.

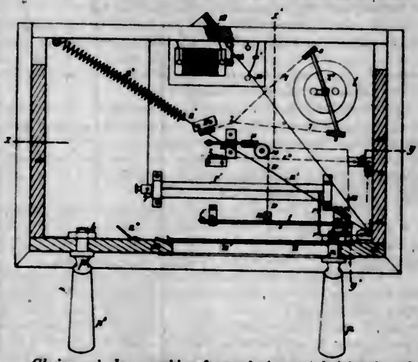
6. The combination, with a visual and audible signal, of a post or standard, 10, upon which the signaling apparatus is mounted, a threaded projection, 14, formed in connection with the post and arranged for connection with the feed-pipe of a boiler, a contracted extension, 15, extending downward from the threaded portion 14, a shaft, 21, connected to the signaling apparatus and formed with a recess in its lower end, and a fusible plug, 22, fitted within said recess and against the inner face and bottom of the thin-walled tube, substantially as described.

382,783. RECEPTACLE FOR CHECK-SLIPS, &c. Henry W. Roth, Chicago, Ill. Filed Mar. 26, 1887. Serial No. 232,576. (No model.)



Claim.—A receptacle or pocket, of paper or other suitable material, closed at all edges but one and provided with gummed flaps on each side of its mouth, in combination with a card or other like device of greater length than the depth of the receptacle, whereby a portion of the matter on the card may be securely concealed within the receptacle and a portion exposed on the end of the card projecting outside of the latter, substantially as and for the purposes specified.

382,784. COIN-OPERATED ELECTRICAL APPARATUS. Herman W. Rau, London, England. Filed Jan. 3, 1888. Serial No. 259,668. (No model.) Patented in England July 17, 1886, No. 9,310; in France Apr. 19, 1887, No. 182,971, and in Belgium Apr. 30, 1887, No. 77,190.



Claim.—1. In a machine for producing or administering electricity, the combination of a movable coin-receptacle and a treadle operated by the recipient of the electric current and serving by the agency of a coin deposited in the receptacle to complete the electric circuit, substantially as shown and described.

2. In a machine for producing and administering electricity on depositing a coin therein, the combination of treadle *c*, a battery, coil, and connections operated thereby, and a sliding coin-receptacle, *e*, serving when slid to complete a circuit by the agency of the coin and to give the shock, substantially as set forth.

3. In a machine for producing and administering electricity on the deposit of a coin therein, the combination of the following devices, namely: the coin-receptacle *e*, having the self-closing hinged bottom *f*, spring-arm *g*, and side slots *j j*, slide *d'*, and its spring d^3, fixed pin *h*, lever *k*, treadle *c*, and its described connections, substantially as and for the purposes set forth.

4. In a machine for producing and administering electricity on the deposition of a coin therein, the means described and shown for increasing and diminishing the force of the current, consisting, essentially, of the combination of sliding handle *p*, slot *n*, slide *n'*, wire *r*, trough *r'*, and electrical connection from a coil, *m*, to the water in the trough, substantially as set forth.

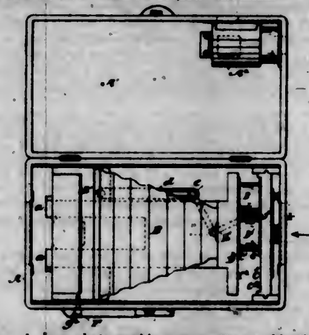
5. In a machine for producing and administering electricity on the deposit of a coin therein, the combination, with the movable handle *p*, of the wire *r*, attached thereto, water-trough regulator *r'*, and an electrical connection from the coil to the trough, substantially as set forth.

6. In a machine for producing and administering electricity on the deposition of a coin therein, the rack *s*, and pawl *p'* on handle *p*, in combination with the sliding cover *t*, all substantially as hereinbefore set forth.

7. In a machine for producing and administering electricity on the deposition of a coin therein, the means described for bringing the element into the excitant, consisting of the combination of a battery, cord 7 7, cross-head z^2, rod z', guide-pulleys 8 8, chain z^3, and treadle, substantially as set forth.

8. In a machine for producing and administering electricity on the deposition of a coin therein, the means employed for indicating on a dial the proportional increase of current administered to the recipient, consisting of the combination of dial *w*, pointer *w'*, wheel w^2, stop-pin w^3, arm w^4, pins $w^{4\times}$, and spring w^5, acted on by cord 18, all substantially as herein set forth.

382,785. PHOTOGRAPHIC CAMERA. Theodore S. Rue, Meriden, Conn., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Mar. 10, 1888. Serial No. 267,217. (No model.)



Claim.—1. In a photographic camera, the combination, with a box or case, of a movable back, two lens-tubes provided with lenses, and an adjusting device to adjust the lens-tubes during the movement of the movable back, substantially as specified.

2. In a photographic camera, the combination, with a box or case, of a movable back, two lens-tubes provided with lenses, and an adjusting device to adjust the lens-tubes during the movement of the movable back, said adjusting devices being capable of a limited range of movement without affecting the movement of the lens-tubes, substantially as specified.

3. In a photographic camera, the combination, with a box or case, of a movable back, two lens-tubes provided with lenses, a rod connected to the movable back and provided with a slot, a bell-crank lever having a loose connection with said rod, and a rod or projection on said lever extending between said lens-tubes, and a lever for causing the adjustment of the movable back and the lens-tube, substantially as specified.

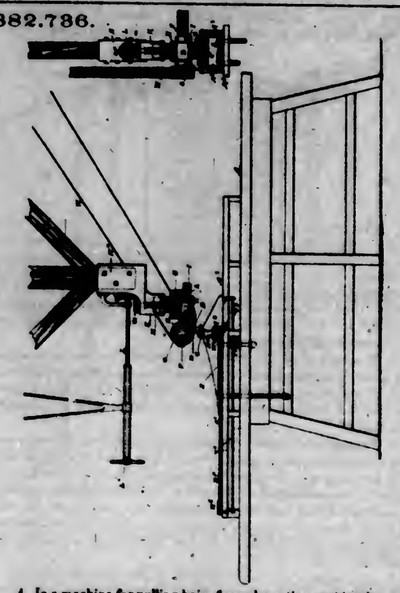
382,786. MACHINE FOR PULLING HAIR FROM SKINS OF FUR ANIMALS. Bell Sherwood, San Francisco, Cal. Filed Aug. 27, 1887. Serial No. 248,009. (No model.)

Claim.—1. A machine for pulling hair from skins, consisting, essentially, of a fixed plate presenting a nose or beak for turning up and separating the ends of the hairs from the fur, a revolving stripper with a flexible gripping-edge adapted to impinge and run over the nose of the fixed plate, and a bed-roller for supporting and presenting the skin to the stripping device arranged beneath the fixed plate, substantially as described, for operation as set forth.

2. In a machine for pulling hairs from skins, the combination of the fixed plate presenting a nose or beak for turning up the ends of the hairs, a revolving stripper with a flexible gripping-edge, and a bed-roller capable of vertical adjustment toward and from the fixed plate.

3. In a machine for pulling hairs from skins, the combination, with the bed-roller, of the fixed plate and the revolving stripper mounted on the vertically-adjustable head-block, which is movable in the part K, and the screw *d*, as a means for setting up the head-block, up or down, to regulate the position of these parts with respect to the bed-roller, as and for the purpose set forth.

382,786.



4. In a machine for pulling hairs from skins, the combination, with a bed-roller or support for the skin, of a stripping device operating above said roller and a heater below said roller, substantially as described, for operation as set forth.

5. The combination, with the fixed plate presenting a nose or beak to turn the ends of the hairs from the fur, of the revolving stripper having a flexible gripping-edge.

6. The combination of the fixed plate having a roller which forms a lower grip and the revolving stripper having a flexible gripping-edge set to impinge against said roller, for operation as set forth.

7. In a machine for pulling hairs from skins, the combination, with the stripping-plate, of the bed-roller mounted beneath said plate and capable of being set at an angle with respect to the said plate, as described, to operate as set forth.

8. In a machine for pulling hairs from skins, a revolving stripper having a flexible edge and mounted over a stationary stripping plate or surface, with a rounded nose or edge, substantially as described, for operation as set forth.

9. In a machine for pulling hairs from skins, a revolving stripper consisting of a stripper-block mounted on a revolving shaft and a yielding jaw carrying a flexible stripping-edge, substantially as described.

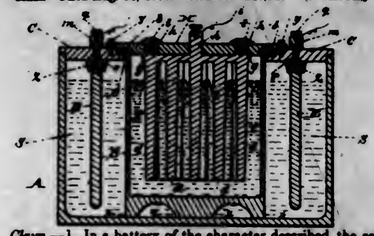
382,787. ROLLING COLTER. William H. Sutton, Canton, Ohio. Filed Mar. 12, 1888. Serial No. 266,957. (No model.)



Claim.—1. The frame A, provided with the parallel arms *c c*, in combination with the disk-bar B, having the serrated disks C, the connecting-arm D, having disk E, and the colter-arms F, substantially as and for the purpose specified.

2. The frame A, provided with the parallel arms *c c*, having the grooves *c' c'*, in combination with the disk-bar B, having the serrated disks C, the connecting-arm D, having disk E, and the colter-arms F, substantially as and for the purpose specified.

382,738. GALVANIC BATTERY. GEORGE H. BLAKE, Boston, Mass. Filed Aug. 31, 1887. Serial No. 248,345. (No model.)



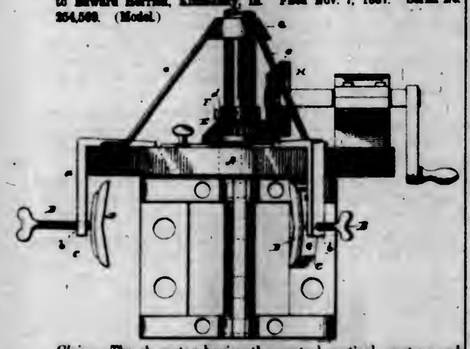
Claim.—1. In a battery of the character described, the cells A B and cover C, in combination with the carbon or negative plate E, provided with the lead ring *z*, and with the screw *v*, extending through said cover, and the screw-cap *m*, applied to said screw outside said cover, substantially as described.

2. In a battery of the character described, the zinc or positive plate *d*, cast integral with the supporting-plate *g*, and provided with lugs *h*, in combination with the cover H, screws *t*, cells A B, and cover C, the cover H being secured to the cover C by screws *y*, substantially as set forth.

3. The improved battery-jar herein described, the same consisting of the outer or containing cell, A, provided with the cover C, the porous cell B, provided with the cover H, overlapping the cover C and secured thereto by the screws *y*, the carbon E E, provided with the screws *v* and encircled by the lead ring *z*, the plate *g*, provided with the zinc rods *d* and secured to the cover H, the screw-caps *m*, and packing-ring *b*, constructed, combined, and arranged substantially as and for the purpose described.

4. In a battery, the combination of an outer cell, an inner cell, a cover for the outer cell, provided with an opening opposite the inner cell, a cover for the inner cell, which shuts over the opening in the cover for the outer cell, said covers being rabbeted, and a packing in the rabbet of the outer cover, the upper edge of the inner cell extending between said packing and the shoulder of the rabbeted cover of the inner cell, substantially as described.

382,739. CHURN. THOMAS J. SMITH, Omega, assignor of one-half to Edward Herrick, Kinmundy, Ill. Filed Nov. 7, 1887. Serial No. 254,569. (Model.)



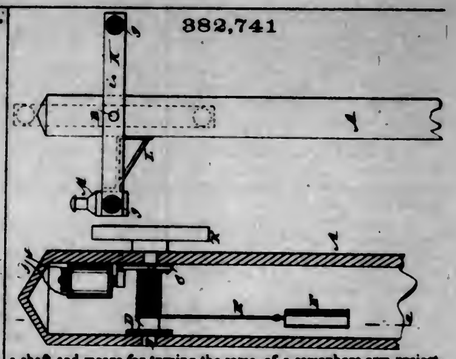
Claim.—The churn-top having the central vertical aperture and the aperture closed by a door, in combination with the angle-irons having their vertical branches provided with threaded eyes, the threaded rods bearing in said threaded eyes and having plates swiveled on their ends, the guide for the dasher-shaft secured by the braces, as shown, the dasher-shaft, the horizontal gear on the dasher-shaft, having a tubular sleeve, the set-screw for securing the gear to the dasher, and suitable means for rotating the same, substantially as specified.

382,740. WALL-COVERING COMPOSITION. CARL STRAUB, Syracuse, N. Y. Filed Feb. 8, 1887. Serial No. 226,946. (No specimens.)

Claim.—1. The covering composition consisting of wood fiber, cement, and a hardening-acid, substantially as set forth.

2. The covering composition consisting of wood fiber, sawdust, mineral cement, and muriatic and sulphuric acid, substantially as described.

382,741. RAILWAY-SIGNAL. CHARLES D. TEBBALS, Boston, Mass., assignor to himself and John D. Gould, same place. Filed May 27, 1887. Serial No. 239,531. (No model.)



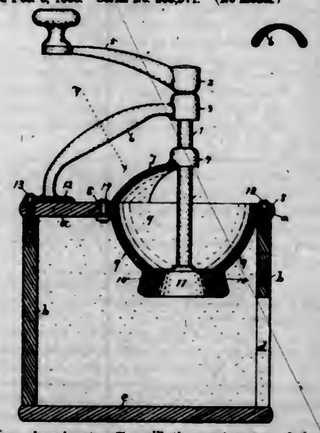
Claim.—1. In a semaphore signal device, the combination, with a shaft and means for turning the same, of a semaphore-arm projecting equally in opposite directions from the said shaft, and an escapement connected directly with the semaphore-shaft and arranged to limit the rotary movements of the shaft to a quarter of a revolution, substantially as described.

2. In a semaphore signal device, the combination of a hollow post, a weight-operated shaft journaled therein, a scape-wheel carried by the shaft, electro-magnetically-operated pallets arranged to engage and release the scape-wheel, a semaphore-arm attached to the shaft projecting equally in opposite directions from the shaft, and provided with windows in opposite ends thereof, and a lantern supported opposite the path of the windows of the semaphore-arm, substantially as described.

3. In a semaphore signal device, the combination, with the hollow post A, of the shaft B, provided with the drum D and two-toothed scape-wheel C, the cord E and weight F, the angled lever G, provided with the pallets *c d*, the armature H, attached to the said lever G, the electro-magnet J, adapted to operate the armature H, the semaphore-arm K, attached to the shaft B and provided with the colored windows *h*, and the lantern M, supported opposite the path of the windows *h*, substantially as described.

4. In a semaphore signal device, the combination, with the shaft B, scape-wheel C, drum D, cord E, and weight F, of the pin *b*, placed at an angle of ninety degrees with the semaphore-arm K, substantially as described.

382,742. COFFEE-MILL. JOHN M. WADDEL, Greenfield, Ohio. Filed Feb. 8, 1883. Serial No. 263,371. (No model.)

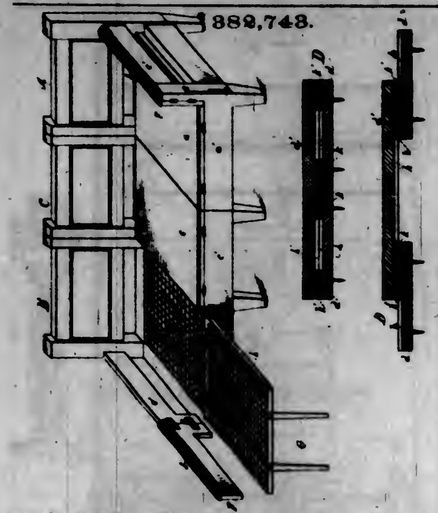


Claim.—In a hand coffee-mill, the combination of the grinding-shaft 1, having a hand-crank, 5, the hopper-cover 7, having a bearing, 4, the mill-box *a b c*, and the handle 6, having the shaft-bearing 3 at its upper end and an extension at its lower end for securing it to the box, substantially as set forth.

382,743. COMBINED EXTENSIBLE SOFA AND BED. CHARLES P. WALSH, Cincinnati, Ohio. Filed Nov. 3, 1887. Serial No. 254,392. (No model.)

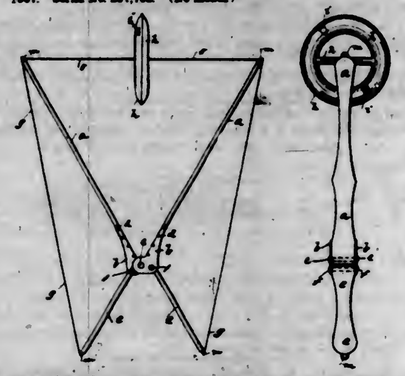
Claim.—In combination, the end sections, A and B, provided with the pivoted seat *a* and *b* and the pivoted arm-rests P *f*, the extension-

382,743.



sides D, adjustably connecting said sections, the removable central section, C, provided with the pivoted seat *c*, adapted to fit over the slides and between said end sections, the folding legs G, pivotally attached to the free ends of said pivoted seats and adapted to assume a vertical position and support the same when opened outward into a bed-bottom, and the mattress-wire E, covering the under side of the pivoted seats and the seat-frames, substantially as and for the purpose set forth.

382,744. TOY. FRANK WEBER, Pittsburg, Pa. Filed Dec. 12, 1887. Serial No. 257,702. (No model.)



Claim.—In a musical toy such as described, the combination consisting of the hand-levers *c* and the upper levers, *a*, hinged together by a suitably-constructed hinge, *b*, the side cords, *g*, attached to the extremities of the levers *a* and *c*, the wheel *h*, having a hollow perforated rim, and a means for securing the ends of two double cords, *o*, to the center of the wheel *h* and to the upper extremities of the levers *a*, substantially as and for the purpose set forth.

382,745. BERRY-HARVESTER. GEORGE WILKIE, Dundee, N. Y. Filed June 16, 1887. Serial No. 241,592. (No model.)

Claim.—1. In a berry-harvester, a suitable frame mounted upon wheels in front and provided with handles, in combination with a pair of hoppers located in said frame one above the other, and provided with screen-bottoms, said hoppers having their free ends resting in the forward part of said frame and their rear ends independently hinged or pivoted to the rear part of said frame, whereby the front ends of the hoppers may be independently raised and the hoppers emptied of their contents, substantially as described.

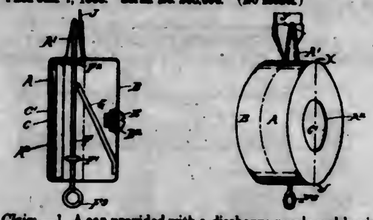
2. In a berry-harvester, the combination of a suitable frame provided with handles and mounted upon wheels in front, a pair of hoppers provided with screen-bottoms and hinged at their rear ends one

382,745.



above the other in said frame, so that their free ends can open upward, guiding-strips *m n*, located in one of said hoppers, and a parting-strip located at the hinged ends of said hoppers, for the purpose as described.

382,746. MUCILAGE-CAN. JOHN E. WEBSTER, Reading, Pa. Filed Jan. 7, 1888. Serial No. 260,094. (No model.)



Claim.—1. A can provided with a discharge-nozzle and having an open face with flexible interior lining, said lining having secured thereto an inflexible disk, substantially as set forth.

2. The combination, with a can having a flexible side and a discharge-nozzle, of a valve having a straight stem extended through the wall of the can opposite said nozzle and its point adapted to close and extend slightly beyond the nozzle, substantially as set forth.

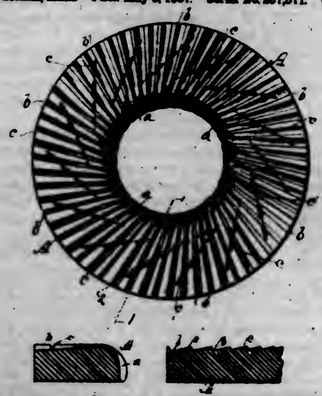
3. The combination, with the can having a flexible side, a discharge-nozzle, and a valve adapted to close said nozzle and having a straight stem extended through the wall of the can, of a spring adapted to press upon said stem and adapted to hold said valve open or shut as desired, substantially as and for the purpose set forth.

4. The combination, with a can having a discharge-nozzle and a valve adapted to close and extend beyond said nozzle, of a brush secured to said nozzle and adapted to receive and distribute the contents of said can, substantially as set forth.

5. The combination, with a can having a discharge-nozzle and a valve adapted to close and extend beyond said nozzle, of a brush or brushes adapted to be removably secured to said nozzle, substantially as and for the purpose set forth.

6. In combination with a can having a discharge-nozzle, a brush consisting of a flexible material secured to a sheet-metal back integral with a sheath and adapted to be removably secured to said nozzle, substantially as set forth.

382,747. MILLSTONE OR MILL-PLATE DRESS. DAVID J. ASHE, Owatonna, Minn. Filed May 9, 1887. Serial No. 237,571. (No model.)

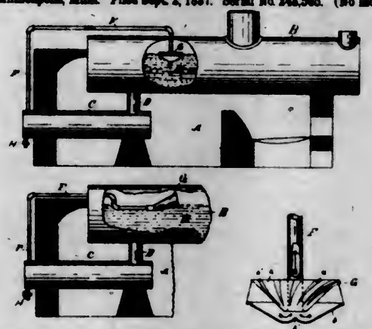


Claim.—1. A disk or plate for cotton-seed and grain hulling and reducing machines having grooves or furrows tangential to a small

circle around the center thereof, commencing at about the outer margin of the curved portion around the eye and regularly increasing in depth from the inner ends to the periphery of the disk or plate, and other grooves or furrows tangential to a larger circle than the first-named grooves or furrows and crossing the same obliquely, extending from near the outer margin of the said curved portion around the eye nearly to the periphery of the disk or plate and increasing in depth from the inner to the outer ends, substantially as herein set forth.

2. A disk or plate for cotton-seed and grain hulling and reducing machines having deep-cut grooves in the curved portion around the eye, in combination with finer grooves or furrows tangential to a small circle around the center thereof, the said finer grooves or furrows commencing at about the outer terminations of the deep grooves and regularly increasing in depth from the inner ends to the periphery of the disk or plate, and other grooves or furrows tangential to a larger circle than the said finer grooves or furrows and crossing the same obliquely, extending from points near the outer margins of curved portions around the eye nearly to the periphery of the disk or plate and increasing in depth from the inner to the outer ends, substantially as herein set forth.

382,748. **SCALE-PREVENTER FOR BOILERS.** CHARLES F. BAKER, Minneapolis, Minn. Filed Sept. 2, 1887. Serial No. 248,566. (No model.)



Claim.—1. In scale-preventers for boilers, a mouth-piece for the outflow-pipe, consisting of a truncated cone provided with spiral corrugations on its water-receiving and directing surface, and having its small end coterminous with the end of said outflow-pipe, as and for the purpose set forth.

2. In scale-preventers for boilers, a mouth-piece for the outflow-pipe, consisting of a truncated cone provided with spiral corrugations on its outer surface extending from its larger to its smaller end, supported vertically with its small end below and its large end above the water-level, and having its small end coterminous with the end of said outflow-pipe.

3. In scale-preventers for boilers, a mouth-piece for the outflow-pipe, consisting of a spirally-corrugated truncated cone supported vertically with its small end below and its large end above the water-level, in combination with a disk or cone-shaped deflector or guide rigidly attached to said corrugated cone and supported directly under the same, and having its large end just below the water-level, as and for the purpose set forth.

4. In combination, boiler B, mud-drum C, drum-leg D, connecting the top of the latter to the bottom of the former, the outflow-pipe F, extending from the interior of the boiler to the mud-drum, and the mouth-piece G *a a' b b'*, as described, attached to the end of the pipe F, within the boiler, as and for the purpose set forth.

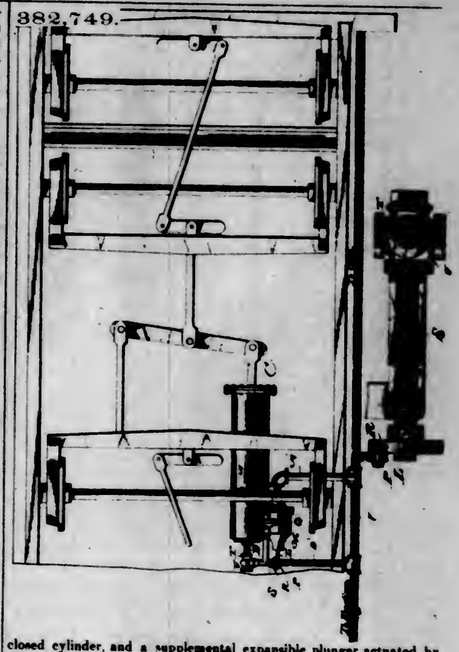
5. In scale-preventers for boilers, a mouth-piece for the outflow-pipe, consisting of a truncated cone supported vertically with its small end below and its large end above the water-level and a disk or cone-shaped deflector supported below and rigidly connected to said truncated cone, and having its larger end near to but slightly below the water-level, substantially as described.

382,749. **AIR-BRAKE.** ALFRED R. BOLDER, Norwood, Ohio. Filed July 19, 1887. Serial No. 244,772. (No model.)

Claim.—1. In an atmospheric railroad-car brake, the combination, with the cylinder A, provided with hollow expansible plungers and a brake-rod, of the air-supply pipe D, connected to the head of an end plunger, a two-way oscillating valve at the junction of pipes B' and D, and a supplemental expansible plunger applied in a cylinder communicating with the main supply-pipe V, and provided with a recoil-spring and a rod adapted to oscillate said valve, all substantially as described.

2. The combination, in an atmospheric brake, of expansible plungers communicating by means of a branch pipe with a main supply-pipe, a cut-off valve in said branch pipe, said plungers arranged in a

382,749.



closed cylinder, and a supplemental expansible plunger actuated by the pressure of air and a recoil-spring, and suitably connected to the stem of the said cut-off valve, substantially as described.

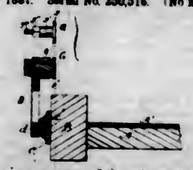
3. The combination of the closed cylinder, expansible plungers therein, a brake-rod, a supply branch pipe, D, the main supply-pipe V, the branches A' B', the cut-off valve at the junction of pipes D B', an expansible plunger, and a recoil-spring for oscillating said valve, substantially as described.

382,750. **SEWING-TOOL.** CHARLES K. BRADFORD, Lynnfield, assignor to George H. P. Flagg and George A. Fullerton, both of Boston, Mass. Filed June 7, 1886. Serial No. 204,335. (No model.)



Claim.—The improved tool herein described, made up of a needle, *a*, its handle *b*, having a longitudinal thread-passage, *b'*, and the clamp *d*, the clamp being pivoted at its end nearest the butt of the handle to shut into the thread-passage and clamp the thread therein, substantially as and for the purpose set forth.

382,751. **WASH-BOARD.** HENRY S. BERWINGTON, Baltimore, Md. Filed Sept. 23, 1887. Serial No. 250,516. (No model.)

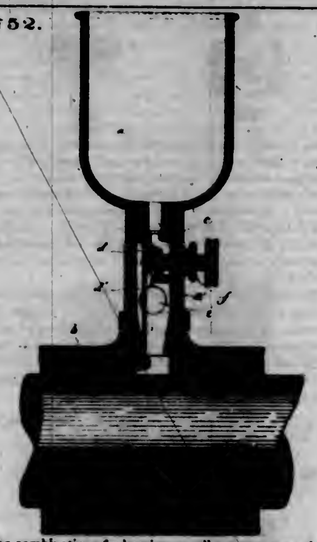


Claim.—In an improvement for wash-boards, the combination of the roller F, sustained in the arms *e e*, the handle E, the brackets D, having dovetail slides *d*, and the grooved plates C, attached to the sides of a wash-board, as described.

382,752. **LUBRICATOR.** GILMAN W. BROWN, West Newbury, Mass. Filed Dec. 19, 1887. Serial No. 258,330. (No model.)

Claim.—1. An oil cup or receptacle having a thermostatic or compound arm or bar regulating the discharge of oil therefrom and adapted to be operated by variations of temperature of the bearing to which the oil-cup is applied, as set forth.

382,752.



2. The combination of a bearing, an oil cup or receptacle adapted to supply oil thereto, and a thermostatic or compound arm or bar regulating the flow of oil from the cup and arranged to be operated by variations of temperature of the bearing, as set forth.

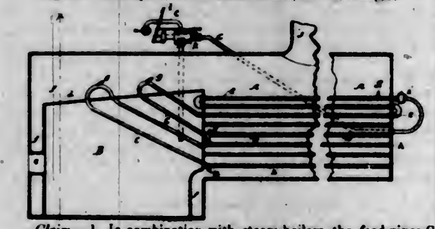
3. An oil cup or receptacle having a neck or shank provided with an oil-conduit combined with a valve, and a thermostatic arm or bar supporting said valve and arranged to be bent to displace the valve by an increase in the temperature of the bearing.

4. An oil cup or receptacle having a neck or shank provided with an oil-conduit and a sight-aperture, combined with a valve in said aperture, and a thermostatic arm or bar supporting said valve, as set forth.

5. An oil cup or receptacle having a neck or shank provided with an oil-conduit, composed in part of an adjustable tubular screw and a sight-aperture into which said screw projects, combined with the valve arranged to act on the delivering end of said conduit, and the thermostatic bar supporting said valve, as set forth.

6. An oil cup or receptacle provided with an oil-conduit composed in part of an adjustable screw, combined with a valve at the delivering end of the screw, and stop devices, substantially as described, whereby the rotation of the screw may be arrested both in the valve-opening and valve-closing positions of said screw, as set forth.

382,753. **FEED-PIPE FOR BOILERS.** SAMUEL R. BRYAR, Pittsburg, Pa. Filed Apr. 6, 1887. Serial No. 233,946. (No model.)

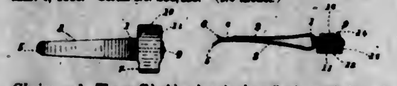


Claim.—1. In combination with steam-boilers, the feed-pipes C, extending through tubes or flues *h*, and inclined longitudinally through fire-box or furnace B, their upper curls entering crown-sheet D, and within water-space F, where it is provided with feeding-ducts G, as described, and for the purpose specified.

2. The combination, with a steam-boiler and feed or supply pipe C in a continuous coil or circuit through tubes or flues L passing within and exposed to fire, of fire-box or furnace B, having feeding-ducts G adjusted thereon within water-space of boiler, as shown.

3. In steam-boilers, the combination or arrangement of continuous, inclined longitudinal feed or supply pipes C, extending parallel through tubes or flues *h*, upward and downward through fire-box or furnace B, through openings in crown-sheet D at top of furnace, provided with feeding-ducts G within water-space F, and having discharging end N at rear end and bottom of boiler, substantially as described.

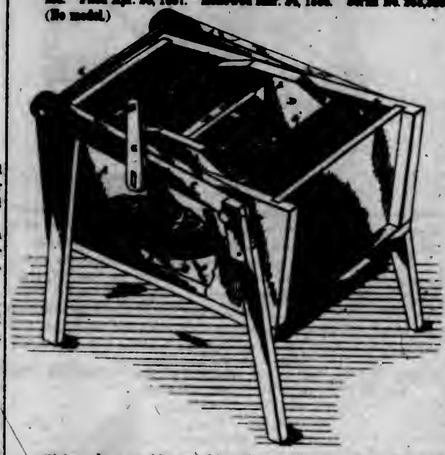
382,754. **CUFF-HOLDER.** JOSEPH H. CARSON, Buffalo, N. Y. Filed Mar. 7, 1888. Serial No. 266,488. (No model.)



Claim.—1. The cuff-holder herein described, consisting of two spring-arms formed in one piece, so that its free ends will spring together, between which the cuff is held so that it may be adjusted back and forth, in combination with a swiveled spring-clasp mounted on a pin rigidly secured to the rear end of said springs, substantially as and for the purposes described.

2. A cuff-holder consisting of two spring-arms formed in one piece bent over so as to spring together, one of them having its end projecting forward of the other, and the other spring provided with a bent portion, 4, at the end, a pin, 9, rigidly secured to the rear end of the springs, and a spring-clasp mounted upon said pin so that it may be turned in either direction or be opened and closed thereon, substantially as and for the purposes described.

382,755. **WASHING-MACHINE.** NORMAN R. CLARAGUE, Frederick, Md. Filed Apr. 30, 1887. Renewed Mar. 24, 1888. Serial No. 268,269. (No model.)



Claim.—In a washing-machine, the combination, with a tub and stationary rubbers, of a reciprocating frame carrying swinging rubbers, said swinging rubbers consisting of a body portion having pivots H H and legs G G, substantially as described.

382,756. **FARE-BOX.** WALTER A. CROWDUS, Dallas, Tex. Filed Aug. 3, 1887. Serial No. 246,002. (No model.)

Claim.—1. In a fare-box, in combination, a chute down which the fares are dropped, an electro-magnetic bell, balanced fingers at the bottom of the chute provided with electrical connections for closing the bell-circuit, a pivoted plate for holding the fares on the fingers, provided with an operating-lever, a fare-register, and mechanism connecting the lever of the pivoted plate to the register, substantially as and for the purpose set forth.

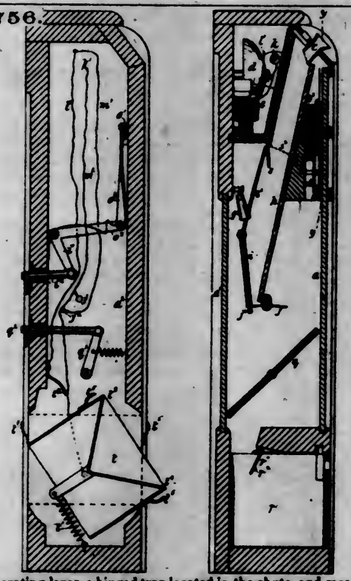
2. The combination, with a fare-box provided with an opening extending through it, of a trough pivoted centrally in the opening and normally closing both sides of the same, adapted to be moved so as to open only one side at a time, and a spring connected to the trough to normally hold it in central position.

3. In a fare-box, in combination, a trough pivoted therein and adapted to be moved so as to project through openings in two opposite sides of the box, a spring connected to the trough to cause it to normally close both openings, an electro-magnetic bell, a contact-spring, and lines connecting the trough, contact-spring, and electro-magnetic bell in an electric circuit, substantially as set forth.

4. In a fare-box, in combination, a chute down which the fares are dropped, a pivoted plate normally closing the lower side of the chute, a hinged trap located in the upper part of the chute normally open, and an arm projecting from the pivoted plate, whereby the trap is positively operated to close the chute when the pivoted plate is actuated to drop the fares from the lower end of the chute.

5. In a fare-box, in combination, a chute down which the fares are dropped, an electro-magnetic bell, balanced fingers at the bottom of the chute provided with electrical connections for closing the bell-circuit, a pivoted plate for holding the fares on the fingers, provided

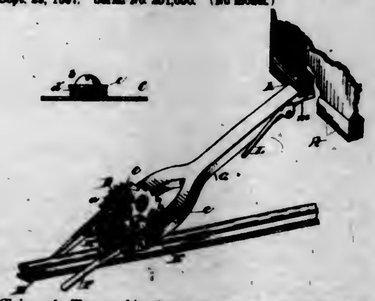
382,756.



with an operating-lever, a hinged trap located in the chute, and means, substantially as described, for causing the trap to close the chute when the pivoted plate is actuated to drop the lower end of the chute.

6. In a fare-box, in combination, a pivoted fare-retaining plate, a fare-register, a chute for directing the fares to the retaining-plate, which normally closes the lower end of the chute, a hinged trap in the upper end of the chute normally open, and means, substantially as described, whereby the fare-register is operated and the hinged trap positively closed when the retaining-plate is actuated to drop a fare.

382,757. CAR-MOVER. GEORGE S. CURRIER, Garnett, Kans. Filed Sept. 29, 1887. Serial No. 251,050. (No model.)



Claim.—1. The combination, in a car-mover, of the cylinder D, the wheels C, bolted to said cylinder and having teeth *a* on their peripheries, the levers F, the pawls H, pivoted to said levers, and the notched push-bar G, substantially as described.

2. The combination, in a car-mover, of a cylinder, notched or toothed wheels, bolts for securing said wheels to the ends of said cylinder, springs surrounding said bolts, levers and pawls for rotating said wheels, and a push-bar, substantially as described.

3. The combination, in a car-mover, of a cylinder, toothed wheels, bolts for securing said disks to the ends of said cylinder, springs interposed between the ends of said bolts and the wheels, a central shaft passed through said disks and cylinder, levers having lateral projections pivoted to said shaft, pawls pivoted to the levers, a push-bar mounted on said shaft, and a cam-lever pivoted to said push-bar and carrying a hook, substantially as described.

382,758. INITIAL FINGER-RING. WILLIAM B. DUTEMPLE, Providence, R. I. Filed Nov. 15, 1887. Serial No. 255,189. (No model.)

Claim.—1. A finger-ring or other article of jewelry hereinbefore described, having a removable front portion provided with an eye or

382,758.

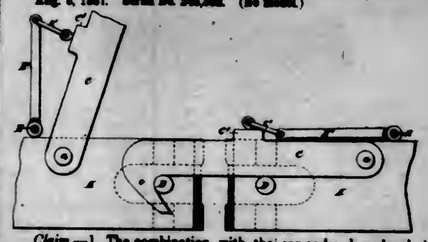


staple, and a hook or latch permanently mounted in the fixed apertured front or head, arranged to engage said removable front portion, substantially as described, and for the purpose set forth.

2. In a finger-ring, the combination, with an apertured front or head having a pivoted latch or hook mounted thereon, and a spring arranged to hold the latch in a fixed position, of a removable front portion having an initial or other setting secured thereto, and having an eye or staple secured to its under side adapted to receive the free end of said hook.

3. The combination, in a finger-ring, with the apertured front or head having a spring-holding latch arranged to vibrate thereon, of the removable front portion *a*, having a staple secured to its under side arranged to pass through an opening, b^3, formed in the head to receive the end of said latch, and an opening formed in the back of the head through which the latch may be operated, substantially as shown and described.

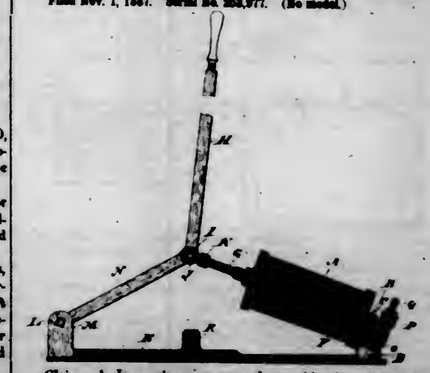
382,759. CAR-COUPLING. CHRISTIE ROY, Rhinelander, Wis. Filed Aug. 6, 1887. Serial No. 246,302. (No model.)



Claim.—1. The combination, with the car and a draw-head, A, provided with hooked arms C C and pins D D, of a horizontal longitudinally-movable rock-shaft, E, provided with a rigid arm connected with the hooked arms C C, and with an arm or hand-lever provided with a finger, c^1, and an eye or socket upon the car adapted for engagement with said finger, substantially as described.

2. The combination, with the car and draw-head A, provided with hooked arms C C and pins D D, of a horizontal longitudinally-movable rock-shaft, E, provided with a rigid arm connected with the hooked arms C C, with an arm or hand-lever provided with a finger, c^1, and with a rigid arm, E^2, and an eye or socket upon the car adapted to engage the said finger c^1, a rod, G, engaged with said arm E^2, and an eye, H, upon the car, affording a sliding bearing for said rod G, substantially as described.

382,760. AIR-COMPRESSOR. JAMES B. ERWIN, Milwaukee, Wis. Filed Nov. 1, 1887. Serial No. 253,977. (No model.)

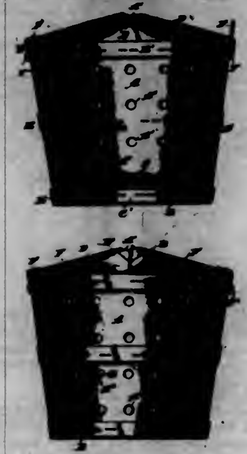


Claim.—1. In an air-compressor, the combination of an oscillating cylinder pivoted at a fixed point to a supporting-bracket and provided with inlet and outlet air-controlling valves, a piston and a piston-rod, a two-armed lever pivoted at one end to the cylinder-supporting bracket, and at an intermediate point between its ends to the protruding end of said piston-rod, the pivotal point of said rod and lever being

adapted with each downward stroke of the piston to be brought in line with the fixed pivotal points of said lever and cylinder, substantially as and for the purpose specified.

2. In an air-compressor, the combination of the base or bracket K, provided at its respective ends with upward-projecting lugs D D and M M, and at or near its center with a stop, R, air-compressing cylinder A, provided with air-controlling valves O and P, piston P, and piston-rod G, pivotal lugs B B, affixed to the lower end of said cylinder and pivoted to said lugs D D by pivotal bolt C, pivotal bolt C, and operating-lever H, pivoted at its lower end to said lugs M M and at an intermediate point between its ends to the protruding end of said piston-rod G, all substantially as and for the purpose specified.

382,761. FRUIT-BASKET. GEORGE H. GILLETTE, Newark, N. J. Filed Feb. 11, 1888. Serial No. 263,653. (No model.)



Claim.—1. A basket of the character described, having the conical integrally-flanged radially-seamed bottom formed of a single piece of material, substantially as specified.

2. A basket of the class described, having the conical integrally-flanged radially-seamed bottom, the conical radially-seamed cover, and flat metal cover-retaining clamps, substantially as specified.

3. A basket of the class described, having the conical, tapered, and integrally-flanged bottom, a tapered body, and a hoop, the flange, body, and hoop being secured together by staples passing therethrough, substantially as specified.

4. A bottom for a basket of the character described, consisting of a disk having a portion removed and overlapped on radial lines to form a seam and having an integral flange, substantially as specified.

5. In a basket of the class described, the body A, the conical cover D, resting upon the upper edge of the body, an exterior hoop, E, projecting above the body, and the cover-retaining clamp F, secured between the hoop and the body and adapted to be bent down upon the cover, substantially as specified.

6. In a basket of the class described, the body A, cover D, the exterior hoop, E, and a malleable cover-retaining device arranged between the hoop and body, with its lower end passing through and clinched to the latter and its upper end adapted to be bent down upon the cover, substantially as specified.

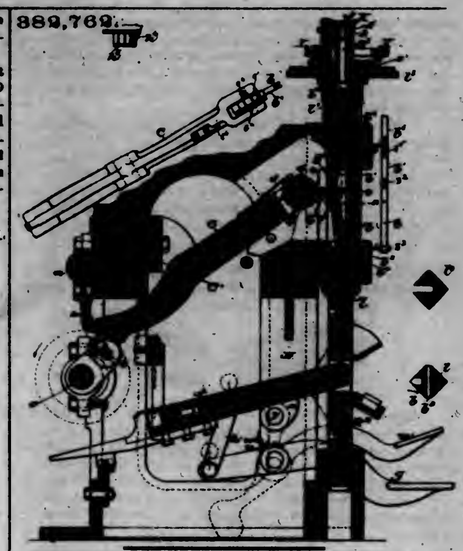
7. The clamp F, having the clinching end F', the bend or shoulder F^2, and the cover-retaining end F^3, substantially as shown and described.

382,762. NAILING-MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 21, 1887. Serial No. 252,985. (No model.)

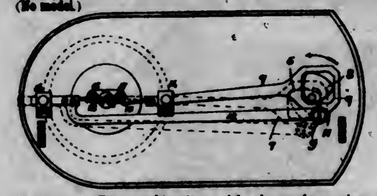
Claim.—1. In a nailing-machine, a vertically-reciprocated nail-box to contain the nails to be driven into the heel, and a driver-plate, combined with means to actuate the driver-plate to drive the nails from the nail-box into the heel, and with a secondary lifter to thereafter impart an additional movement to the nail-box only to compress the heel upon the nails previously driven into the body of the heel to attach it to the sole, substantially as described.

2. The die-bed spindle, the driver-plate moved by it, and the nail-box supported by a spring above the driver-plate, combined with the secondary lifting devices and cam to operate them, substantially as described.

382,762.



382,763. BUTTON-HOLE SEWING-MACHINE. THOMAS F. HASSETT, San Francisco, Cal. Filed Aug. 30, 1886. Serial No. 211,902. (No model.)

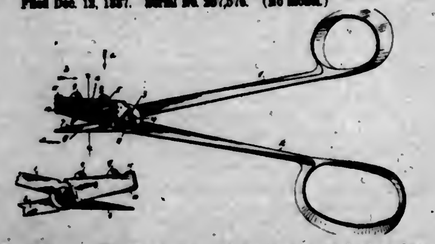


Claim.—1. The combination, with the reciprocating needle, needle-bar, frame which carries the needle-bar, and means to operate the said parts, of the vertical shaft 1, eccentric 2, strap 4, rod 5, thumb-screw *c*, eccentric 6, strap 9, link 12, eccentric 6, forked lever 7, swiveled boxes 14 and 15, looper-points 10 and 13, and detainer-points 16 and 17, substantially as and for the purpose herein set forth.

2. The combination, in a button-hole machine, of the needle-bar, its pivot-carrying frame, and the looping and feed mechanism, with means for operating said parts, as described, consisting of the vertical shaft 1, having the eccentrics 6 and 8 arranged beneath the bed-plate, and the eccentric 2 at the upper part of said shaft, the strap-levers 4, 9, and 7, the rod 5, the link 12, and the detainer-points 16 and 17, all arranged for co-operation, substantially as herein set forth.

3. The combination, with the reciprocating needle, needle-bar, and means for operating the same, of the vertical shaft 1, eccentric 8, strap 9, lever 12, pivoted boxes 14 and 15, looper-points 10 and 13, and detainers 16 and 17, substantially as and for the purpose herein set forth.

382,764. FRUIT-PICKER. HENRY HARMOUR, Charlton, Mass. Filed Dec. 12, 1887. Serial No. 257,576. (No model.)



Claim.—1. The combination, with the jaws 5 and 6, pivoted together and provided with the handles for operating the same, of a knife-blade upon one of said jaws, a spring-actuated holding-jaw ex-

tending between said jaws 5 and 6 and forming a yielding surface for one of said jaws, a spring interposed between said movable jaw and the jaw it extends over, and a lug integral with the movable jaw and embracing the jaw over which said movable jaw extends on the side opposite from said spring, for the purpose stated, substantially as shown and described.

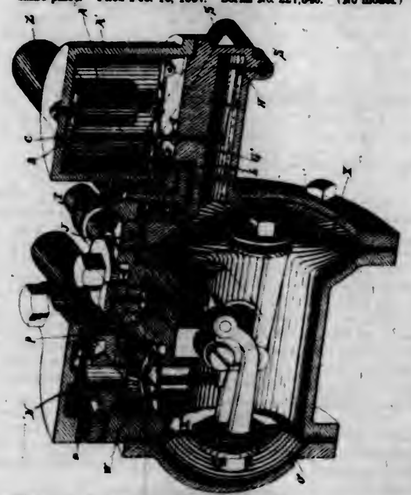
2. In a fruit-cutter, the combination, with jaws pivoted together and provided with handles for operating the same, one of said jaws having a knife-blade thereon, of a spring-actuated holding-jaw extending between said jaws and forming a yielding surface for one of said jaws, said holding-jaw being loosely secured at its rear end upon the pivot-pin of said jaws, and provided with an oblong slot therein to permit of the rear end of said holding-jaw moving on said pivot-pin, for the purpose stated, substantially as set forth.

382,765. SHAFT-COUPLING. GEORGE H. MACKAY, Salem, N. H., assignor of one-half to Orlando Woodbury, same place. Filed June 17, 1887. Serial No. 241,632. (No model.)



Claim.—The combination, with a divided shaft having abutting ends, each of such abutting ends being offset or cut away, as at *a b*, the construction and arrangement being such that the two ends will match or register when brought together, of the clamping-shells *d d*, adapted to be placed over the shaft at the meeting ends, and the clamping-thimbles *c c'*, the latter provided with a male screw and the former with a female screw, substantially as and for the purposes set forth.

382,766. ELECTRO-MAGNETIC CAR-BRAKE. ALBERT P. MASSEY, Watertown, N. Y., assignor to the Eames Vacuum Brake Company, same place. Filed Feb. 16, 1887. Serial No. 227,846. (No model.)



Claim.—1. In a fluid-pressure brake in which the valves are actuated by a variation of pressure in a given space, a chamber of such capacity that the air contained will, when opened to the space for actuating the main valves, vary the pressure in said space sufficiently to cause the fluid pressure to actuate the main valves controlling the application of the brakes, a valve between said chamber and said space, a valve between said chamber and the atmosphere, and an electro-magnet for actuating the valves, substantially as set forth.

2. In a fluid-pressure brake, the auxiliary chamber A', in combination with valves B, G, and H, and suitable passages connecting same with the chamber outside of diaphragm X.

382,767. MANUFACTURE OF TELEGRAPH-CABLES. WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 18, 1887. Serial No. 244,508. (No model.)

Claim.—1. In an electric cable, the combination, with the core of insulated conductors, of a water-proof pipe inclosing the same, and a serving between the interior of the pipe and the conductors, said serving being in bunches, the bunches being compressed by the pipe, whereby

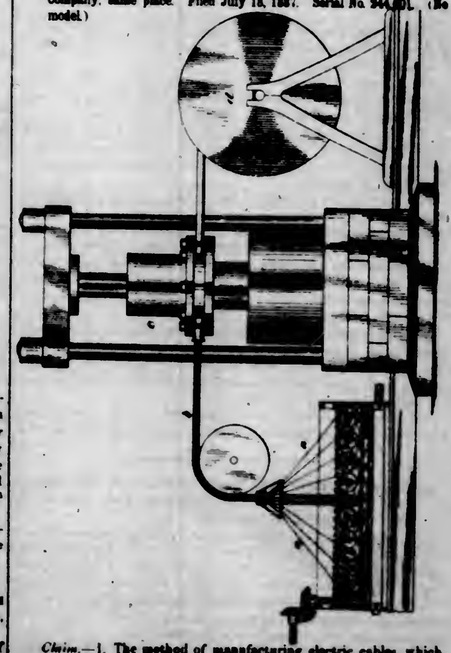
382,767.



air-spaces are formed and the compression of the covering of the conductors at said air-spaces prevented, substantially as described.

2. In an electric cable, the core, the serving wound thereon and bunched at points *d*, and lead pipe surrounding the core and compressing the serving at points *d*, as described.

382,768. METHOD OF MANUFACTURING ELECTRIC CABLES. WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 18, 1887. Serial No. 244,601. (No model.)



Claim.—1. The method of manufacturing electric cables, which consists in loosely twisting the insulated conductors together and then covering the core with a jacket or tubing of lead, whereby the serving heretofore used is dispensed with and hurtful compression of the

insulating-covering of the conductors avoided, thereby lowering the electrostatic capacity of the cable, as described.

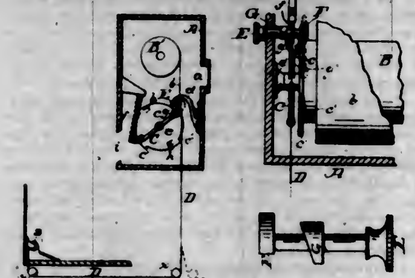
2. The method of manufacturing electric cables, which consists in loosely twisting the insulated conductors together and then loosely covering the core with a jacket or tubing of lead, whereby the serving heretofore used is dispensed with and hurtful compression of the insulating-covering of the conductors avoided, thereby lowering the electrostatic capacity of the cable, as described.

3. The method of manufacturing electric cables, which consists in twisting the insulated conductors loosely together to form the core, passing the core thus formed through a press, and forming a jacket or tubing of lead over the same, whereby objectionable compression of the insulating-covering is avoided, substantially as and for the purpose specified.

4. The method of manufacturing electric cables, which consists in loosely forming the conductors into a core, loosely covering the core with a flexible metallic jacket or tubing, and forcing melted insulating material into the tubing among the conductors, substantially as described.

5. The combination, with the spools, each carrying a different wire and mounted on a revolving carriage, of the press for forming the pipe over the core, as described.

382,769. STREET-INDICATOR FOR CARS. GEORGE A. FISCHER, Englewood, Ill. Filed May 24, 1887. Serial No. 239,177. (No model.)



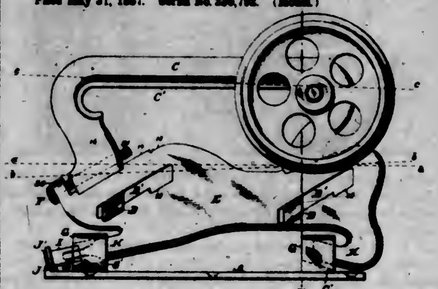
Claim.—1. In a street-car indicator having a rectangular case with opening in front, the combination, with two rollers thereof parallel to and placed one above the other, and a web of paper, having the names of streets thereon, so wound on said rollers as to roll from one onto the other, of plate *c* on the end of the lower roller, having serrations in its edges and depressions *c'* in its face, lever C, journaled on the central projecting stud of said plate, spring-actuated pawl journaled on the end of said lever and engaging depressions *c'*, spring *f*, depressing the end of lever C opposite said spring-actuated pawl, wire D, attached to the end of said lever contiguous to pawl *g*, and pawl *d*, engaging the serrated periphery of said plate.

2. In a street-car indicator, the combination, with spring-roller B', roller B, parallel with and immediately under the same, and a web of paper having the names of streets thereon and adapted to be wound from one of said rollers onto the other, of spindle-plate *c*, secured to one end of roller B, having its periphery serrated and provided with depressions *c'* in its face, lever C, journaled on the spindle of said plate, spring-actuated pawl *g*, journaled on the end of lever C, spring *f*, depressing the opposite end of lever, wire D, attached to the end of said lever contiguous to pawl *g*, and pawl *d*, engaging the periphery of plate *c*.

3. In a street-car indicator, the combination, with spring-roller B', roller B, parallel with and immediately under the same, and a web of paper having the names of streets thereon and adapted to be wound from one of said rollers onto the other, of spindle-plate *c*, having its periphery serrated and provided with depressions *c'* in its face, lever C, journaled on the spindle of said plate, spring-actuated pawl *g*, journaled on the end of lever C, spring *f*, depressing the opposite end of said lever, wire D, attached to the end of the lever contiguous to pawl *g*, pawl *d*, engaging the periphery of plate *c*, sheaves *x*, *y*, and *z*, the former two under the car and the latter journaled next the dash-board thereof, around which said wire travels, and a treadle to which the end of said wire is attached, substantially as and for the purpose set forth.

4. In a street-car indicator, the combination, with spring-roller B', roller B, parallel with and immediately under the same, and a web of paper having the names of streets thereon and adapted to be wound from one of said rollers onto the other, spindle-plate *c*, having its periphery serrated and provided with depressions *c'* in its face, lever C, journaled on the spindle of said plate, spring-actuated pawl *g*, journaled on the end of lever C, spring *f*, depressing the opposite end of said lever, wire D, attached to the end of the lever contiguous to pawl *g*, and pawl *d*, engaging the periphery of plate *c*, said pawl *g* having an extension opposite its engaging-point, in combination with tumbler E, having projections *h* and *i* so arranged and constructed with reference to pawls *g* and *d* that when it is turned it disengages said pawls from plate *c*, as and for the purposes set forth.

382,770. DOOR-HANGER. WILLIAM I. POWELL, Kansas City, Mo. Filed May 31, 1887. Serial No. 239,702. (Model.)



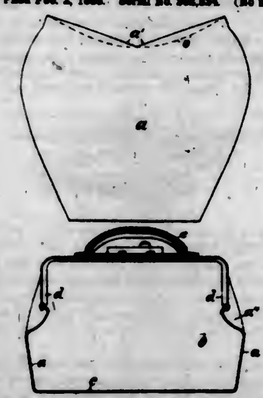
Claim.—1. A door-hanger constructed with a pair of inclined arms, both of which incline in the same direction, and provided with another pair of inclined arms, which are inclined in a direction that is opposite each other, substantially as and for the purpose set forth.

2. In a door-hanger, the combination of the hanger proper constructed with oppositely-inclined arms, as described, and a door-plate provided with inclined passages for engaging said arms, substantially as described.

3. In a door-hanger, the combination of an upper section provided with a rider-bar engaging the axle of the supporting-wheels, a lower section or door-plate provided with oppositely-inclined passages, and a main section located between the upper and lower sections and provided with a pair of inclined slots, which incline in the same direction, and also provided with oppositely-inclined arms for engaging the inclined passages in the lower section, substantially as described.

4. In a door-hanger, the combination of a lower section to be attached to the door and provided with oppositely-inclined passages, an upper section which is provided with a rider-bar for the axle of the supporting-wheels, and with lugs, as described, and a main section located between said upper and lower sections and provided with inclined slots which are engaged by the hooks on the upper section and also provided with oppositely-inclined arms for engaging the passages in the lower section, and adjusting-screws, substantially as described.

382,771. TRAVELING-BAG. FERDINAND C. SCHMIDT, Newark, N. J. Filed Feb. 2, 1888. Serial No. 262,834. (No model.)

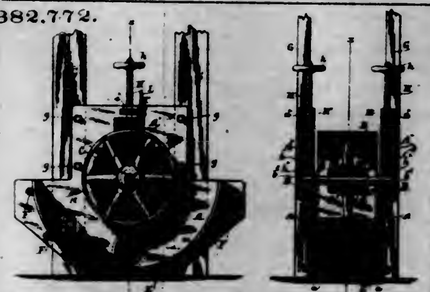


Claim.—The combination, with the bag-frame and suitable bottom and side pieces, of end pieces or gussets having their top edges cut before their insertion in the bag inwardly and downwardly from the upper corners toward the middle of the gusset, as and for the purpose set forth.

382,772. ELEVATOR-BOOT. MARSHALL F. SMILEY, Fremont, Nebr. Filed Nov. 6, 1886. Serial No. 218,201. (No model.)

Claim.—1. The combination, with a pulley and pulley-shaft, of a casing or boot comprising side walls, A A, of cast metal, provided with

382,772.



vertical guide-grooves A'-A' upon their inner faces and forming part of said side walls, and bearing-boxes B B for the pulley-shaft contained within the boot, fitted to and sliding in said guide-grooves, substantially as described.

2. The combination, with a pulley and pulley-shaft and vertically-movable bearings for the shaft, of a boot or casing comprising cast-metal side walls, A A, provided with vertical guides for said bearings and having horizontal recesses a' a' over the said guides, nuts H' H', inserted in said recesses a', and screw-shafts H H, engaged with the said nuts and connected with the said bearings, substantially as described.

3. An elevator-boot comprising continuous side walls, A, of cast metal, provided with vertical grooves or recesses A' upon their inner faces, and having horizontal recesses a' located vertically over the grooves A' A', of a pulley-shaft, bearings B B, constructed to slide in said grooves, nuts H' H', fitted within the recess a', and vertical shafts H H, engaging said nuts H' H' and connected at their lower ends with said bearing B, substantially as described.

4. The combination, with a pulley and pulley-shaft, of a casing or boot comprising continuous side walls, A A, of cast metal, provided with vertical guide-grooves A' A' upon their inner faces, and bearing-boxes B B for the pulley-shaft, sliding in said guide-grooves and provided with apertures b^2 b^2, extending through the boxes, said pulley-shaft being without shoulders at its ends and extending to the outer surface of the box, whereby the inner surfaces of the said guide-grooves A' A' serve as end bearings for the shaft, substantially as described.

5. The combination, with a pulley and pulley-shaft, of a casing or boot comprising continuous side walls, A A, of cast metal, provided with vertical guide-grooves A' A' upon their inner faces, bearing-boxes B B for the pulley-shaft, sliding in said guide-grooves, and oil-tubes connected with the said bearing-boxes, extending upwardly through the said guide-grooves, the upper part of the said side walls, A A, being provided with guide-apertures for the said oil-tubes, substantially as described.

382,773. KNOT-TYING MECHANISM FOR GRAIN-BINDERS. JAMES R. SEVERANCE, Fremont, Ohio, assignor of two-thirds to William D. Baldwin, Montclair, N. J., and John C. Adsit, Hornellsville, N. Y. Filed Feb. 20, 1886. Serial No. 192,646. (No model.)



Claim.—1. In a knotter, the combination of two parallel spiral arms of unequal length independently mounted upon tubular shanks fitting one within the other and supported on a fixed axis, the longer spiral being extended as a screw-thread upon the exterior of the outer shank, and a stationary block acting against said portion of the longer spiral, whereby the spirals when rotated are caused to move longitudinally upon their axis, substantially as and for the purposes set forth.

2. In a knotter, the combination of a pair of parallel spirals supported upon independent tubular shanks, one within the other, mounted loosely upon a fixed axis, and suitable mechanism adapted to give them a reciprocating longitudinal and rotary motion, substantially as described.

3. In a knotter, the combination of two parallel spirals of unequal length, each attached to a tubular shank, one of which runs within the other, a fixed axis upon which the inner shank is loosely mounted, a spring connecting the shanks, a fixed block acting against one of the spirals, and means for giving a rotary motion to the shanks, substantially as and for the purposes set forth.

4. In a knotter, the combination of two parallel spirals independently mounted upon tubular shanks fitting one within the other, the outer ends of the spirals being formed with a cord-holding hook and recess, respectively, a spring connecting the rear ends of the shanks and acting to hold the hook into the cord-holding recess, a fixed axis upon which the inner tubular shank is loosely mounted, means for positively rotating the inner shank, a stationary block acting against the convolutions of one of the spirals for imparting longitudinal motion thereto, a stud or projection on the exterior shank, and a fixed stop adapted to engage the stud and arrest the movement of the outer shank while the other shank completes its movement and opens the cord-holding jaws, substantially as and for the purposes described.

5. In a knotter, the combination of two parallel spirals, their concentric tubular spring-connected shanks loosely mounted on a fixed axis, the screw-thread extension of one of the spirals upon the surface of the exterior shank, the cam-shell partially enveloping the extended spiral, the stationary block adapted to act against said extension, and means for imparting to the cam-shell a reciprocating rotary motion, substantially as and for the purposes described.

6. In a knotter, the combination of a spiral cord-looping device mounted loosely upon a fixed shaft by means of a tubular shank, a screw-thread upon the surface of the shank having the same pitch as the spiral, a stationary block adapted to act against the spiral to cause it to move longitudinally when rotated, and means for giving to the shank reciprocating rotary motion, substantially as and for the purpose described.

7. In a knotter, the combination of a spiral cord-looping device, a suitable rotary cord-holder, and means for imparting a reciprocating longitudinal and rotary motion to the cord-looping device and an intermittent rotary motion in one direction to the cord-holder, all suitably arranged and adapted to co-operate with each other in the formation of a fish-net knot, substantially as and for the purpose set forth.

8. In a cord-holder, the combination of a fixed segmental clamping-surface, a revolving clamping-plate so mounted concentrically with the segment as on its rotation to pass close to the surface of the segment and press the cord against it with a yielding pressure, and a horn projecting spirally outward from the plate and adapted to hook over and engage the needle end of the cord at the beginning of the revolution of the plate, and by its continued revolution in the same direction to conduct the cord into position to be caught and clamped between the yielding plate and the fixed segment, substantially as and for the purposes described.

9. In a cord-holder, the combination of the fixed segmental clamping-surface, the rotating spiral horn-carrying plate adapted to perform by a single forward revolution all the operations of presenting the cord to the knotter and releasing, engaging, guiding, and clamping it as described, the mutilated pinion, upon the hub of which the horn-bearing plate is mounted so as to revolve about the axis of the segment, and the segmental gear fixed upon the binder-shaft and adapted to give to the pinion a single rotation at each revolution of the binder-shaft, substantially as described.

10. In a cord-holder, the combination of a fixed segmental clamping-surface, its supporting-post, a pinion mounted to revolve thereon, the plate K', secured to the pinion and extending across the periphery of the segment, and provided with a spirally-extending horn adapted on the rotation of the pinion to engage the cord outside of the orbit of the plate and move it laterally into the orbit of the plate, between which and the segment it is clamped by the continued rotation of the pinion, substantially as described.

11. In a knotter adapted for the formation of a fish-net knot, the combination of the double spiral, constructed as described, the cam for actuating the same, the pinions and driving-wheels for imparting rotary motion thereto, the rotating cord-holder, its driving-wheel mounted on the binder-shaft, and the vibrating knife, also actuated thereby, substantially as and for the purpose described.

12. In a knotter, the combination, with suitable supporting framework, of the casing A, the axis a^4, secured at its rear end to said casing and supported at its forward end by a depending bracket, and the double-spiral cord-looper mounted loosely upon said axis by its tubular shank, substantially as and for the purpose described.

13. In a knotter, the cord-holder consisting, essentially, of the segmental circular clamping-surface h^2 and the intermittently-rotating pinion I, to the hub of which is attached the cylindrical clamping-plate K', provided with the spiral projecting horn K, substantially as described.

14. The combination, with the segmental circular clamping-surface h^2, of the revolving elastic clamping-plate K' and the spiral projecting horn K, formed in one piece with the clamping-plate, substantially as described.

15. The combination, with the cord-looping jaws, of the cord-holder consisting of a rotating spiral horn and a fixed segment against which the cord is clamped by the projecting base or heel of the horn, continued rotation of which carries the cord into the open looping-jaws as it passes off the segment and is released by the holder, substantially as described.

16. The combination, with the knotter-casing formed with the lip or guard A, of the rotating cord-holder having the spiral cord-guiding horn K, adapted to pass beneath and be protected or shielded by the lower edge of the said lip, substantially as shown and described.

17. The combination, with the stud h', hub H', having recess h^3, and the circular segmental clamping-surface h^2, of the pinion I, having clamping-plate K', provided with spiral projecting horn K attached thereto, substantially as and for the purposes set forth.

18. The combination, with the knotter-casing formed with the lip or guard A, of a vibrating knife and a bracket attached to the casing and adapted to support said knife, with its blade behind and protected by the lip h', substantially as shown and described.

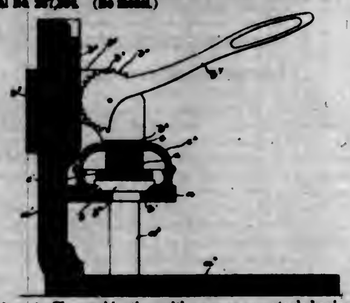
19. The combination of the knotter-casing formed with a lip or guard, A, with the rotating cord-holder having the spiral cord-guiding horn K, adapted to rest behind and be protected by the lip A, and the vibrating knife mounted as described and located behind the guard and adapted to move during its cutting-stroke between the convolution of the spiral horn, as shown and described.

20. The combination of a knotter and a cord-holder consisting of a fixed segment and a rotating plate provided with an extending spiral cord-guiding horn, with a vibrating knife mounted as described and adapted to move during its cutting-stroke between the convolutions of the spiral horn, as set forth.

21. In combination with the cord-looping devices of a knot-tyer, a cord-holder consisting, essentially, of a circular segmental clamping-surface and a revolving clamping-plate provided with a spiral projecting horn or cord-hook arranged to revolve about an axis at or nearly at right angles with the plane of the vibration of the binder-arm, whereby the engagement of the cord by the rotation of the hook is secured, substantially as and for the purposes set forth.

22. The combination, in a cord-holder, of the cylindrical segmental clamping-surface h^2, having its outer edge beveled, as at h^4, and the revolving clamping-plate K', provided with spiral projecting cord-hook K, substantially as described.

382,774. LEMON-SAUERBIER. ALBERT SEELA, Boston, Mass., assignor of one-half to Francis A. Shea, same place. Filed Mar. 16, 1888. Serial No. 267,304. (No model.)



Claim.—1. The combination, with a cup or receptacle having perforations in its bottom, of an upright or standard, a rack-bar, a toothed sector having a handle, a plunger or press connected to the said toothed sector, a knife, and a cover movable on said plunger or press, substantially as described.

2. The combination, with a cup or receptacle having perforations b and slot b' in its bottom, of a knife, b^3, an upright or standard, a', a rack-bar, b^5, a plunger or press having arms b^6, extended beyond the said standard, a cross-bar joining said arms, a cover on said plunger or press, and a toothed sector pivoted in said arms and provided with a handle, substantially as described.

382,775. LINT COLLECTING AND COMPACTING APPARATUS. JOHN W. SEELS, Bruning Shade, Ark. Filed July 5, 1887. Serial No. 243,266. (No model.)

Brief.—The lint-receiver rolls upon a track and is provided with a foraminous door at one end and a sliding door at the end adjacent to the gin. The receiver is filled from the gin-flue and then rolled back to the press. The foraminous door is removed and the sliding door drawn through the receiver, compressing the cotton into the press, of which the sliding door is adapted to form one side, several sliding doors being used. The receiver is then pushed back to be filled again, the foraminous door and another sliding door being put in position.

Claim.—1. The combination of the track, as described, with the lint-room A, consisting of the cross-beams a^6, sills b b^2, having between them a slot, as shown, the uprights and braces, lining b^3, beams d^3, curtains b^4 b^5, wire-gauze lining b', the roof and the floor, wire-gauze door F, and sliding door D, having the casters d^9 d^{14} d^4, all substantially as shown and described, and for the purposes set forth.

382,775.

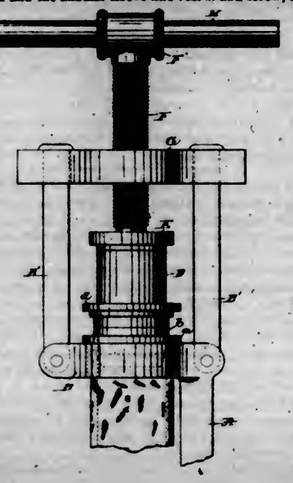


2. The combination of the room A, constructed as described, and having the sliding door D, having the cross-pieces d d', casters d^9 d^{14} d^4, and beam d^4, having the eye d^7, with the driving-beam E, having the notch d^8 and casters e, side rods, f, attached to said driving-beams, hooks and stretcher f', secured to said side rods, tackle-block f^3, attached to said hooks and stretcher, ropes f^2, the beam f^6, the winding-beam C, rope f^5, tackle-block f^7, and the press B, said tackle-block f^7 hooked in the eye d^7 of the beam d^4, all substantially as shown and described, and for the purposes set forth.

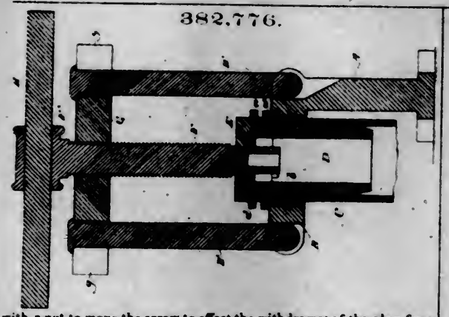
382,776. TOOL FOR APPLYING COUPLINGS TO HOSE. EDWIN R. EMLEY and CHARLES ALLEN, Chelsea, Mass., assignors to the American Fire Hose Manufacturing Company, same place. Filed Dec. 3, 1887. Serial No. 256,260. (No model.)

Claim.—1. The binder-holder to hold the outer ring or binder and the plug, a follower resting thereon, and a cap to act upon both the plug and the follower, combined with means, substantially as described, to cause the cap to force the plug into the hose and cause the follower to at the same time act upon the wedge-ring and force it into the hose surrounding the plug, substantially as described.

2. The binder-holder to hold the outer ring or binder and the plug having a head and the annular sleeve-like rest m and screw, combined

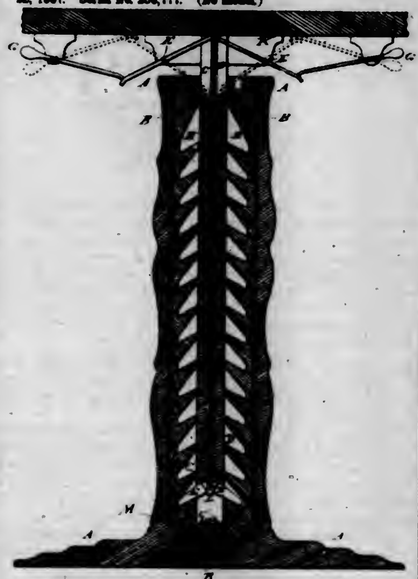


382,776.



with a nut to move the screw to effect the withdrawal of the plug from the hose end and the outer ring, substantially as described.

382,777. STOOL. HERMAN C. SETTE, Normal Park, Ill. Filed Dec. 22, 1887. Serial No. 258,777. (No model.)



Claim.—1. The combination, in a stool-seat, K, of a revolving cylinder, B, with indentations H, the post C, with the chamber C C', the rod D, the plugs E E, the wedged bottom L M, and the levers F and G, substantially as specified.

2. The rod D, having plugs E E attached, in combination with a revolving cylinder, B, with indentations H, the post C having the chamber C C', with a wedge-shaped bottom, L M, substantially as shown, for the purpose specified.

382,778. UNDERGROUND CONDUIT FOR ELECTRIC WIRES. WALTER F. SMITH, Philadelphia, Pa. Filed Jan. 24, 1888. Serial No. 261,754. (No model.)

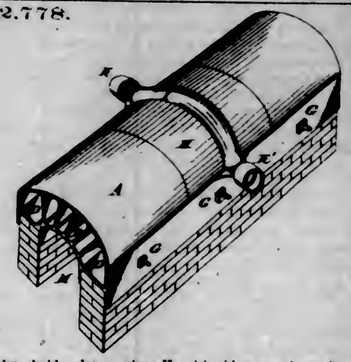
Claim.—1. A sectional conduit for electric wires, composed of double arch A B, fins C, attached to one of the arches and forming long chambers D D to receive the wires, substantially as described.

2. A sectional conduit for electric wires, composed of double arch A B, fins C, attached to one of the arches and forming long chambers D D to receive the wires, said conduit being provided with spaces J J at intervals between the upper edges of the fins and the roofing or arch A, and side openings, K, whereby a wire from any one chamber in the conduit may be carried or led out of the side opening, substantially as described.

3. A subway for electric wires, composed of double arch A B, fins C, attached to one of the arches to strengthen the same, brace-rod G, with its screw and nut to truss and strengthen the double arch, substantially as described.

4. A sectional conduit for electric wires, composed of double arch

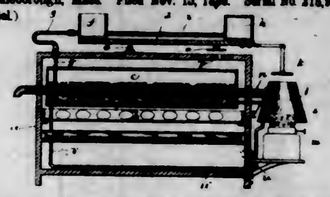
382,778.



A B, detachable plate-sections H, with side-tapered nozzles K, and rings O, adapted to be driven onto the tapered nozzle and tighten the joint, substantially as described.

5. A sectional conduit for electric wires, provided with removable plates H, side-tapering nozzles K, and rings O, to secure the parts together, substantially as described.

382,779. TEMPERATURE-REGULATOR FOR INCUBATORS. GEO. B. TALBOT, Tyngsborough, assignor of one-half to Lyman A. Thomas, Middleborough, Mass. Filed Nov. 15, 1886. Serial No. 218,972. (No model.)



Claim.—1. The combination of a casing or apartment, means for artificially heating it, a chamber within said apartment containing a fluid, a lever without said apartment having an open and closed receptacle, a communication from both receptacles to said chamber independent of said lever, and heat-controlling devices connected with and operated by said receptacles, substantially as set forth.

2. The combination of a casing or apartment, a chamber within said casing containing a fluid, the heating-pipe extending therethrough and connected with the source of supply of heat, an external tilting lever, a receptacle at one end of said lever and having a communication with said chamber independent of said lever, and a counterpoise for the receptacle on said lever, and heat-regulating devices connected with and operated by said lever, substantially as set forth.

3. The combination of a casing or apartment, means for heating it externally, a chamber, *c*, containing a fluid, an external tilting lever, and two receptacles, *f h*, at opposite ends of said lever, said receptacles having a tubular connection with each other, and with the chamber independent of the lever, substantially as set forth.

4. The combination of the casing, the sealed chamber *c* within the casing, an external heater, a funnel or passage over the same, a flue, *n*, adapted to conduct heated air through the casing, the tilting lever *d* outside of the casing, having the valve *k*, adapted to either divert the heated air into the flue *n* or permit it to pass directly through said funnel or passage, the receptacle *f* on said lever, connected, as described, with the chamber *c*, and a counterpoise on said lever for the receptacle *f*, as set forth.

5. The combination of the casing, the chamber *c* therein, the external funnel, *l*, the flue from said funnel extending through the chamber *c*, the lever *d*, having the valve or damper *k*, the receptacle *f* on said lever, connected, as described, with the chamber *c*, and a counterpoise on the lever for said receptacle, as set forth.

6. The combination of the casing, the chamber *c* therein, means for heating said casing, the tilting lever *d*, the open receptacle *f*, and the sealed receptacle *h* on said lever, connections, substantially as described, between said receptacles and between the receptacle *f* and chamber *c*, and heat-regulating devices operated by the lever *d*, as set forth.

382,780. WEATHER-STRIP. OLIVER TATHAM and JOHN BYAR, Augusta, Ky. Filed Jan. 5, 1888. Serial No. 259,888. (No model.)

Claim.—1. The combination, with a door, of the hood C, attached to the bottom thereof, the strip mounted in bearings at the ends of

382,780.

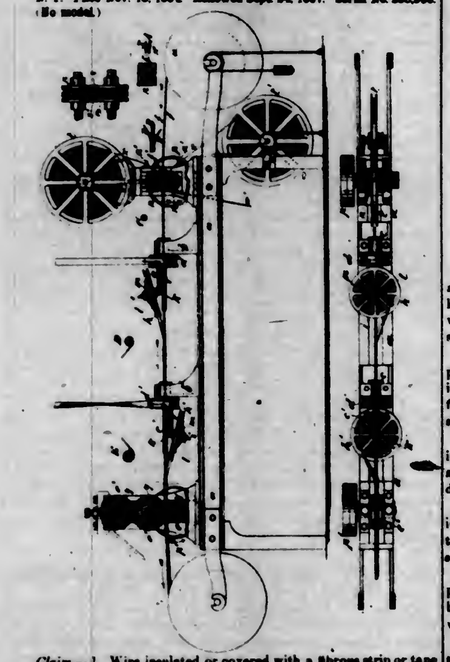


the hood, the lever G, mounted in a recess at the free edge of the door and having the detents H, adapted to strike at its upper end against the jamb when the door is closed, and the connecting-link B, between the lower end of the lever and the strip, substantially as specified.

2. The combination, with a door having a groove in its lower edge, of the weighted strip mounted therein, the shoulder L, having the padding or cushion M thereon, the upwardly and rearwardly extending arm D on the strip, and the lever connected to the said arm and adapted to engage the jamb of the door, substantially as specified.

3. The combination, with a door having a groove, B, in its lower edge and a recess, E, in its free edge, of the hood C over the groove B, the weighted strip mounted therein, the plate F over the recess E and having a slot, *f*, therein, and the lever G, mounted in the recess E and connected to the strip and having a detent, H, on its upper end projecting through the slot *f*, substantially as and for the purpose specified.

382,781. INSULATED WIRE. JOSEPH D. THOMAS, New York, N. Y. Filed Nov. 13, 1884. Renewed Sept. 24, 1887. Serial No. 250,586. (No model.)



Claim.—1. Wire insulated or covered with a fibrous strip or tape coated with soft unvulcanized rubber wound spirally about the wire and subsequently vulcanized thereon.

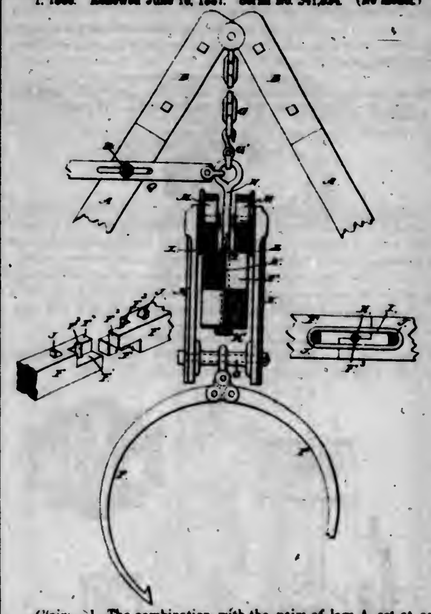
2. Wire insulated or covered with two successive tapes wound successively about the wire, the first tape being provided with adherent insulating material to adhere to the wire, while the second tape is prepared with a dry and non-adherent exterior.

3. Wire insulated or covered with two tapes or strips wound successively thereon, the first tape being of insulating and adherent material, while the outer tape is non-inflammable with a dry and non-adherent exterior, substantially as herein set forth.

4. Wire insulated or covered with two longitudinal strips of soft insulating material united diametrically about the wire, in combination with two overlying strips or tapes wound spirally thereon in successive layers and in opposite directions, substantially as herein shown and described.

5. The method of covering wire with a triple coating herein described, consisting in first applying a soft rubber coat to the naked wire, and thence winding over said coat two successive spiral windings of tape, each wound in opposite directions, substantially as herein set forth.

382,782. SUSPENDED TRAMWAY. CHARLES H. THOMPSON, Bartow, Fla., assignor to Alexander H. Brown, Cleveland, Ohio. Filed Sept. 1, 1886. Renewed June 16, 1887. Serial No. 241,894. (No model.)



Claim.—1. The combination, with the pairs of legs A, set at an angle with each other, of the track-bed suspended freely between the legs, so as to be capable of sidewise movement, and an adjusting device for aligning the track-bed, substantially as herein shown and described.

2. In combination with the suspended track-bed, the series of pairs of supporting-legs straddling the same, the legs of each pair being set at an angle with each other, and the braces D E, extending from one leg to the succeeding one on each side of the track-bed, substantially as herein shown and described.

3. In a suspended tramway, the combination, with the supporting-legs, of a track-bed carried thereby formed of stringers connected at their adjoining ends by pivots, substantially as herein shown and described.

4. In a suspended tramway, the combination, with the supporting-legs, of a track-bed carried thereby formed of stringers jointed together and connected by links at their ends, substantially as herein shown and described.

5. In a suspended tramway, the combination, with the series of pairs of legs A and braces E D, of the track-bed suspended by flexible connections from the legs, and a laterally-projecting bar connected with the track-bed and adjustable on the legs, substantially as specified.

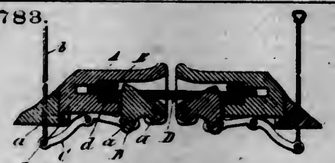
6. In a suspended tramway, the combination, with the legs or supports A, of the stringers F, flexibly suspended therefrom and having the adjacent ends oppositely mortised and apertured to receive the pivoting-bolt and connected by a link, substantially as specified.

7. In a tramway, the combination of the suspended stringers F, the parallel rails L on each side of the same, the V-shaped frame N, the wheels M, journaled in the same, and the tongs P, suspended from the frame N, substantially as specified.

382,783. CAR-COUPLING. WILLIAM L. UHLEMHART, Astoria, Oreg. Filed Nov. 8, 1886. Serial No. 218,264. (No model.)

Claim.—1. In a car-coupling, the combination of the coupling-pin B, lever C, and spring *c*, substantially as set forth.

382,783.



2. In a car-coupling, the combination of the several parts, coupling-pin B, lever C, fender-plate E, spring *d*, lever-spring *e*, and hand-hold *b*, all substantially as set forth.

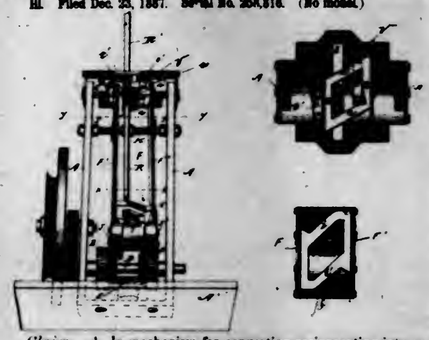
3. In a car-coupling, the combination of the several parts, lever-pin B, lever C, fender-plate E, spring *d*, lever-spring *e*, and lever-handle F, all substantially as set forth.

382,784. WINDOW-SHADE FIXTURE. DANIEL W. WEBB, Chicago, Ill. Filed Nov. 20, 1886. Serial No. 219,452. (No model.)



Claim.—In a window-shade fixture, the combination of shade B and roller C, having button K^3, with two shade-supports, J J, one provided with an aperture, K', and a pin, L, and both having arms with perforations to receive the rods H H and an aperture above to receive the end of the cord, rods H H, pulley-brackets having pulleys over which the curtain-cords pass, and each a hole into which one rod H is received, plates G G, lock-nuts I I, the compound cord N, and lock-pulley O, all as and for the purpose set forth.

382,785. MECHANICAL MOVEMENT. JULIUS WITT, Chicago, Ill. Filed Dec. 23, 1887. Serial No. 258,816. (No model.)



Claim.—1. In mechanism for converting reciprocating into rotary movement, the combination, with a series of co-operating wheels, substantially as described, to receive alternating movement and change it to continuous rotary movement, of a frame provided at one end with a toothed segment or segments, and carrying at its opposite end anti-friction rollers, said frame being mounted loosely on a supporting-shaft and provided with oblique cam-plates, a lever having its fulcrum coincident with the pivotal support of the frame and adapted to engage with the cam-plates of the frame, and guide-bars provided with detents that prevent a return-stroke of the frame until the latter is shifted.

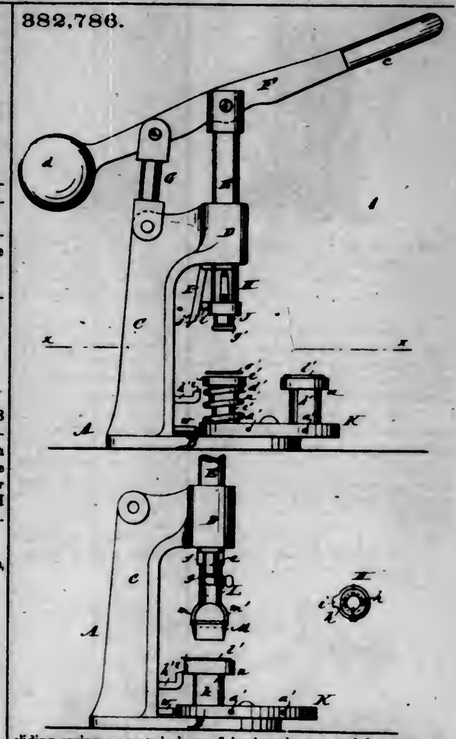
2. In a mechanical movement, the combination, with the series of wheels B, C, and E, of the frame F, mounted loosely and adapted to slide upon a fulcrum-support and provided toward its ends, respectively, with cam-plates, substantially as described, also with segments J J' at its lower end and anti-friction rollers *l l'* at its upper end, a shaft, H, on which frame F is supported, lever R, mounted on said shaft, and guide-bars *e e'*, having détents *u u*, substantially as described.

3. In a mechanical movement, the combination, with a series of wheels, B, C, and E, of the frame F, pivotally mounted and laterally movable, and provided with cam-plates *a* and *a'* and *i* and *i'*, a shaft, H, a pivotal lever, R, mounted on said shaft, anti-friction rollers *n n* and *n' n'*, guide-bars *e* and *e'*, detent-springs *u u*, and rollers *l l'*, substantially as set forth.

382,786. BUTTON-MACHINE. ALBERT WITTE, New York, N. Y. Filed Aug. 12, 1887. Serial No. 246,781. (No model.)

Claim.—1. In a button-machine, the combination, with the sliding rod E, provided with the guide *c*, of the follower H, the movable magnetized cylindrical block J, and the die formed of the standard *c'* and

382,786.



sliding spring-supported sleeve *d'*, having the recessed flange *e'*, substantially as specified.

2. In a button-machine, the combination of the rod E, provided with the guide *c*, the movable follower H, having the beveled projection *i* and concaved sliding cylindrical block J, the spring-actuated detent-lever I, the die formed of the standard *c'* and sliding spring-supported sleeve *d'*, having the recessed flange *e'*, and the disengaging-arm *h'*, provided with the beveled end *i'*, adapted to engage the detent-lever, substantially as specified.

3. In a button-machine, the combination, with the follower E and revoluble plate K, of the hollow punch M, secured to the follower E, and the punching-block *u*, carried by the plate K and provided with the rawhide disk *l'*, substantially as specified.

4. In a button-machine, the combination, with the sliding rod E and revoluble plate K, of the punch M, fitted to the said rod E, and the punching-block *u*, carried by the plate K, substantially as specified.

5. In a button-machine, the combination of the sliding spindle E, provided with the guide *c*, the follower H, fitted to the guide *c*, the concaved magnetized cylindrical block J, carried by the follower H the detent-lever I, releasing-arm *h'*, and the die formed of the standard *c'* and spring-supported sleeve *d'*, having the recessed flange *e'*, substantially as specified.

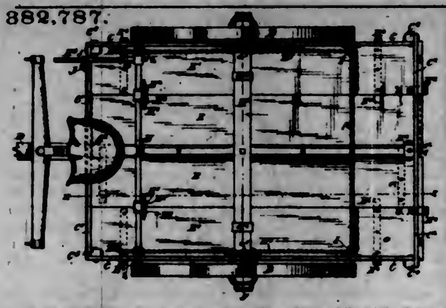
382,787. DUMPING-WAGON. ALEXANDER M. WOOLPOLE, Chicago, Ill. Filed Sept. 14, 1887. Serial No. 249,643. (No model.)

Claim.—1. A dump cart or wagon body provided in its bottom with longitudinally-arranged flaps extending from end to end of the body and hinged to the body at their side edges, and with a transversely-arranged axle passing through the sides of the wagon-body at a point between the ends of the latter over and free from the flaps.

2. A dump cart or wagon body provided with a central longitudinal beam or support extending from front to rear of the wagon-bed, and flaps hinged to said central beam and to the sides of the body, and a horizontal axle passing through the wagon-body above the flaps and attached to the said beam, substantially as described.

3. The combination, with the body of a dump-cart provided with longitudinally-arranged hinged flaps in its bottom extending from end to end of the body, of a transversely-arranged axle passing horizontally through said body at a point between its ends and above the flaps, and a centrally-arranged tongue extending through the front

382,787.



wall of the body and attached to the axle at the middle of the latter, substantially as described.

4. The combination, with the body of a dump-cart and an axle passing through the said body, of a tongue extending into the body and attached to the axle at its rear end, a longitudinal beam located beneath the axle and extending from end to end of the body, said beam being secured to the axle, substantially as described.

5. The combination, with the body of a dump-cart and an axle passing horizontally through said body, of a tongue extending into the body and attached to the axle, a longitudinal beam located beneath the axle and extending from end to end of the body, said beam being secured to the axle, and flaps hinged to the central beam and to the sides of the body and extending beneath the axle, substantially as described.

6. The combination, with the wheels and axle, of a dump-cart body comprising side walls sustained upon the said axle and extending below the latter, front and rear end walls connected with said side walls, a central longitudinal beam attached at its ends to the end walls of the body and secured to said axle, and flaps hinged to the said side walls and to the said longitudinal beam beneath the axle and forming the bottom of the body, substantially as described.

7. The combination, with a cart or wagon body and longitudinally-arranged hinged flaps forming the bottom of said body, of a rock-shaft mounted transversely at the front end of the body and provided with rigid arms, lifting-chains attached to said arms and extending downwardly to the front ends of the flaps, other lifting-chains extending from said arms to the rear ends of said flaps, and guides or pulleys upon the sides of the body near the rear end of the latter for said chains last mentioned, substantially as described.

8. The combination, with a cart or wagon body provided with hinged flaps forming the bottom thereof, and lifting-chains attached to said flaps, of a transverse rock-shaft having bearings upon the sides of the body, said rock-shaft consisting of a square bar of iron having cylindric bearings formed thereon, cast-metal arms provided with square apertures for the passage of the rock-shaft, and with set-screws for securing said arms upon the shaft, said arms consisting of two parallel parts or prongs, and having a pin extending through the extremities of said arms for the attachment of said lifting-chains, and a hand-lever attached to said shaft, substantially as described.

9. The combination, with the body of a cart or wagon provided with an outwardly-opening tail-board hinged at its top edge to the body, of longitudinal flaps hinged to the body, said flaps being provided with prongs or fingers adapted to engage the tail-board, and means for lifting and holding closed the said flaps, substantially as described.

10. The combination, with the body of a cart or wagon provided with an outwardly-opening tail-board hinged at its top edge to the body, of longitudinal flaps hinged to the body and provided with prongs or fingers adapted to engage the tail-board, the edges of the side-boards of said body being outwardly or rearwardly inclined in their parts against which the tail-board rests, whereby the said tail-board will close tight against the side-boards by gravity, substantially as described.

11. The combination, with the body of a cart or wagon and longitudinally-arranged hinged flaps, of lifting-chains extending from the front end of the wagon to each of said flaps, other lifting-chains extending from the rear ends of the alternate flaps, and prongs or fingers upon the rear ends of said flaps, to which the said chains last mentioned are connected, said fingers being adapted to extend beneath the free edges of the adjacent flaps, substantially as described.

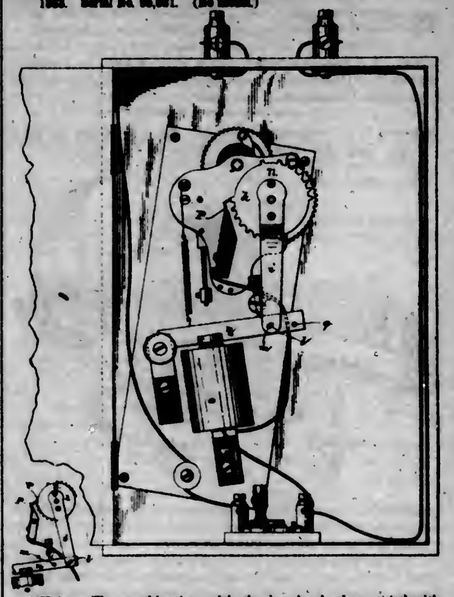
12. The combination, with a cart or wagon body, two flaps hinged at the center of said body, and two other flaps hinged at the sides of the body, of a rock-shaft mounted at the front end of the body, lifting-chains extending from said shaft to the forward ends of all of said flaps, other lifting-chains extending from the said rock-shaft to the rear ends of the outer flaps, guides upon the sides of the body for said chains last mentioned, and prongs or fingers upon said outer flaps engaging and supporting the free edges of the inner flaps, substantially as described.

13. The combination, with a cart or wagon body provided with a central longitudinal beam, of flaps hinged to said beam, and hinges for the flaps consisting of straps secured against opposite faces of said beam, a pivot-pin inserted and held in the lower bend of the strap, and straps attached to the opposite flaps and engaging opposite ends of said pin, substantially as described.

14. The combination, with the body of a cart or wagon and an axle passing through said body, of metal shells or thimbles embracing the axle and attached to the sides of the body, said shells or thimbles forming recesses to receive the wheel-hubs, whereby the wheels may be placed close to the body.

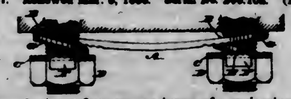
15. The combination, with the body of a cart or wagon and an axle passing through said body, of metal shells or thimbles embracing the axle and attached to the sides of the body, said shell or thimbles consisting of two separable flanged parts, substantially as described.

382,788. AUTOMATIC FIRE-ALARM. JOHN YOUNG, Chicago, Ill., assignor to the Western Electric Company, same place. Filed May 21, 1883. Serial No. 99,021. (No model.)



Claim.—The combination, with the break-wheel provided with the characters for indicating a given signal twice, of the clock-work, the circuit-closer *p*, the arm *i*, provided with the stop *l*, the armature-lever *n*, provided with stops *m q*, the fire-alarm circuit, the electro-magnet *o*, included in said circuit, and registering apparatus, substantially as shown and described.

382,789. NUT-LOCK. LOUIS J. BENTON, Alpine, N. Y. Filed Apr. 6, 1887. Renewed Mar. 3, 1888. Serial No. 266,102. (No model.)



Claim.—1. A nut-fastener consisting of a spring-bar having eyes with toothed ends, a corrugated washer with lips at its periphery, and a nut, substantially as described.

2. A nut-fastener consisting of a bar with helical eyes at the ends thereof, and serrated washers interposed between the nuts and eyes, the coils of the eyes interlocking with the serrations of the washers, said bar extending diagonally from eye to eye and bowed outwardly, substantially as described.

382,790. PROCESS OF PRODUCING RECORDS OF SOUND. EMILE BERLINER, Washington, D. C. Filed Mar. 17, 1886. Serial No. 267,868. (No model.)

Claim.—1. The method or process of producing a record of sound-waves in solid resisting material for reproduction of the re-

corded sounds, which consists in covering the surface of such material with a film of etching-ground that offers no perceptible mechanical resistance, then making a phonautographic record upon and through the etching-ground, and then exposing the record to the action of a suitable etching agent, substantially as described.

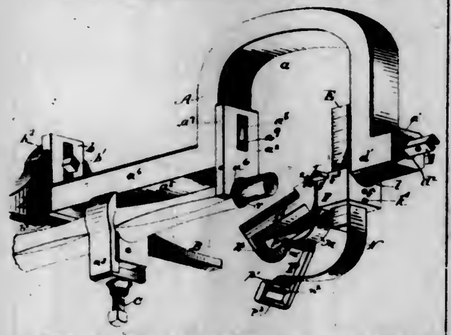
2. The method or process of producing a record of sound-waves in solid resisting material for reproduction of the recorded sounds, which consists in depositing upon the surface of such material a film of wax from a solution of the same in a suitable menstruum, then making a phonautographic record upon and through the wax film, and then exposing the record to the action of a suitable etching agent, substantially as described.

3. The method or process of producing a record of sound-waves in solid-resisting material for reproduction of the recorded sounds, which consists in depositing upon the surface of such material a film of wax from a solution of the same in benzine, then making a phonautographic record upon and through the wax film, and then exposing the record to the action of a suitable etching agent, substantially as described.

4. The method or process of preparing solid surfaces for the reception of a phonautographic record, which consists in depositing upon said surfaces a film of tracing or etching ground and then moistening such film with an adhering fluid, substantially as described.

5. The method or process of preparing solid surfaces for the reception of a phonautographic record, which consists in depositing upon said surfaces a film of wax and then moistening the wax film with alcohol, substantially as described.

382,791. **TENONING-MACHINE.** George C. Berlin, Del Norte, Colo. Filed Mar. 30, 1887. Serial No. 232,962. (No model.)



Claim.—1. In a spoke-tenoning machine, the supporting-frame, in combination with the cutter-head hinged lengthwise of the frame and held adjustably thereto, as set forth.

2. In a spoke-tenoning machine, the supporting-frame, in combination with the cutter-head hinged lengthwise of the frame to said frame, and provided with the spring or springs arranged lengthwise of the cutter-head, as set forth.

3. The combination, with the supporting-frame, of the cutter-head H, springs M N, and the yoke P, the cutter-head being hinged to the frame, and the springs connected by the yoke and interposed between the cutter-head and the frame, as set forth.

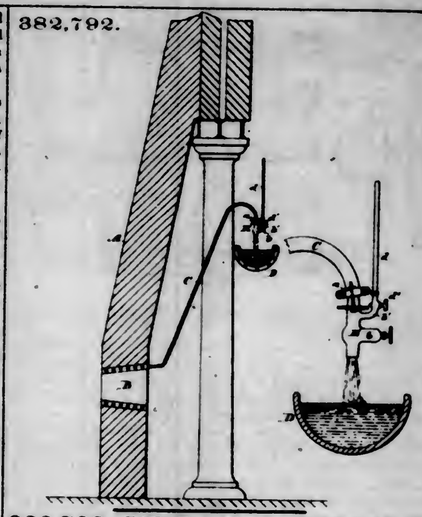
382,792. **APPARATUS FOR DETECTING LEAKAGE IN FURNACE-BLOCKS.** Joseph Bird, Saxton, Pa. Filed Aug. 17, 1887. Serial No. 247,176. (No model.)

Claim.—1. The combination, with the discharge-pipe of a furnace-block, of a stop-valve, a gage-glass closed at its upper end, and a stop-cock between the pipe and gage, substantially as set forth.

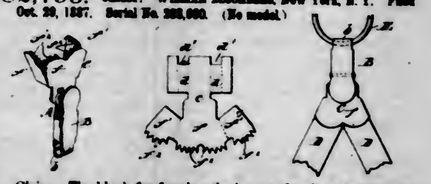
2. A device for detecting the leakage of blocks in furnaces, consisting of a faucet provided with a valve near the lower end, an upwardly-extending branch near the opposite end, a gage attached to the end of said branch, a stop-cock in said branch and closed at its upper end below the gage, and means for attaching the faucet to the water-discharge pipe of a furnace, substantially as shown and described.

3. The combination, with the water-blocks of a furnace and the discharge-pipe leading out therefrom, of a faucet detachably connected to said discharge-pipe, provided with a valve near the lower end, an upwardly-extending branch above said valve, a glass tube supported by said branch and closed at its upper end, a stop-cock below said tube, and the sectional collar *e*, attaching the faucet to the discharge-pipe, substantially as described.

382,792.



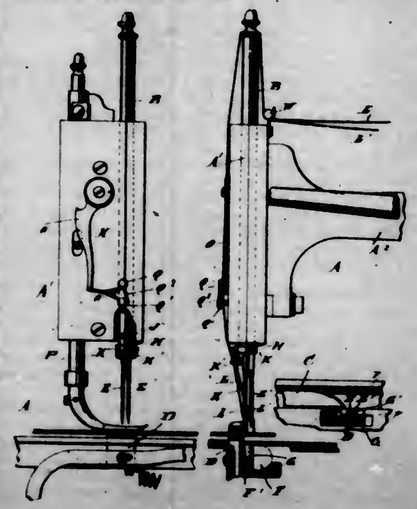
382,793. **CLASP.** William Rogers, New York, N. Y. Filed Oct. 29, 1887. Serial No. 253,660. (No model.)



Claim.—The blank for forming the jaw A of a clasp formed with the main center piece, *c*, side pieces *d*, fan-shaped piece *f*, side pieces *f'*, and teeth *f²*, substantially as described.

382,794. **SEWING-MACHINE.** Charles P. Bentley, Milton, assignor to himself, John F. Merkley, Watsontown, and Charles H. Dougal, Milton, Pa. Filed Mar. 29, 1887. Serial No. 232,698. (No model.)

Brief.—Two needles placed so as to make an angle to the path of the shuttle are brought into line, so as to be engaged by the same shuttle, by means of an inclined wall in the side of the race, which deflects one needle into line with the other. A needle-clamping device is also included in the invention.



382,794.



Claim.—1. The combination, in a sewing-machine, with the needle-bar, a race, a shuttle, and an operating mechanism, of two needles carried by the needle-bar and at an angle to the width of and both entering the same race, and mechanism for bringing the points of the needles into position within the race for the single shuttle to take both loops, substantially as set forth.

2. The combination, in a sewing-machine, with the needle-bar, the shuttle, the race, a slot having vertical walls, a slot having an inclined wall, the slots being at their bottoms in a plane parallel with the inner wall of the race, below the needle-bar, and an operating mechanism, of the two needles carried by the needle-bar and set at an angle to the width of the race, whereby the inclined wall of the slot will throw the point of one entering needle into line with the other needle and the race, substantially as set forth.

3. In a sewing-machine, a socket-piece provided with a slot and a transverse set-screw entering the slot, the needle-carrying frame within the slot and having a needle-receiving recess in the path of the set-screw, and means for securing the said needle-frame within the slotted socket-piece, substantially as set forth.

4. In a sewing-machine, the slotted socket-piece having a transverse set-screw entering the slot and recesses at opposite sides of the upper end of the slot, the needle-carrying frame having a recess in its upper end to form prongs which enter the said recesses in the socket-piece and a needle-receiving recess in the path of the set-screw, and the ring surrounding the lower end of the socket-piece and frame, substantially as set forth.

5. In a sewing-machine, the slotted socket-piece, its needle-clamping set-screw, and the needle-carrying frame within said slot and having a needle-receiving recess in line with the set-screw, the ring surrounding the lower end of the socket-piece and frame, substantially as set forth.

6. The combination, with the needle-bar of a sewing-machine having a socket in its lower end and a set-screw, and the operating mechanism, of the socket-piece having a reduced upper end entering said socket and provided with a vertical slot and a transverse set-screw, the needle-carrying frame having a vertical needle-receiving recess in line with said transverse set-screw, and the ring surrounding the lower end of the socket-piece and frame, substantially as set forth.

7. In a sewing-machine, the take-up N, consisting of the spring-lever O, pivoted at its upper end to the front of the head and operated from the presser-bar, the two eyes, O' O², placed alongside of each other at the lower end of said lever, the pins Q Q' on the head, one above the other at opposite sides of the eyes, and the spring Q², extending from one pin to the other, substantially as set forth.

382,795. **POCKET-BOOK FASTENING.** Robert L. Boyd, New York, N. Y. Filed Mar. 17, 1883. Serial No. 267,490. (No model.)

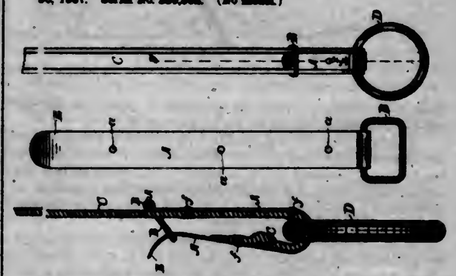


Claim.—1. A pocket-book provided with a fastening consisting of a base-plate attached to the body of the pocket-book and formed with a hook-shaped jaw and an elevated seat, a plate attached to the flap of the pocket-book and formed with a hook-shaped jaw adapted to engage that on the body base-plate, and a locking-button mounted to slide lengthwise on the said elevated seat over the engaging-jaws, substantially as described.

2. The combination, with the body and flap of a pocket-book, of a base-plate attached to the body and formed with a transverse jaw and an elevated seat, a button mounted to slide on said seat over the jaw and having a front cam end, and a fastener attached to the flap having a transverse jaw adapted to engage that on the base-plate, and formed with converging cam-ridges to receive and guide the cam-ended button, substantially as described.

3. The herein-described fastening for pocket-books, consisting of a body base-plate provided with attaching-claws and formed with a jaw extending entirely across the tip of the oval and having an inner face inclined sharply forward and downward, and with a flat seat just behind and elevated above the jaw, a button mounted to slide on said seat over the jaw, and a flap-fastener formed of a plate folded upon itself to embrace the flap and having a curved ridge on its outer face to engage the button, and a transverse hook-shaped jaw projecting from the face opposite the ridge, substantially as described.

382,796. **SAFETY REIN-FASTENER.** Elmer E. Brown, Portland, Me., assignor of one-half to John S. Williams, Boston, Mass. Filed Dec. 30, 1887. Serial No. 259,262. (No model.)



Claim.—1. The combination of the driving-rein with the U-shaped elastic metal hook having a pivoted loop, substantially as described.

2. A driving-rein provided with the U-shaped elastic hook having a curved point and a pivoted loop located at about equal distances from the bend of the hook, substantially as described.

3. The combination of the rein C, U-shaped elastic plate or hook A, with curved end E and pivoted loop B, and the ring D, substantially as described.

382,797. **CURTAIN-FIXTURE.** Ephas F. Bryant, Malden, assignor of one-half to William H. Part, Boston, Mass. Filed Apr. 27, 1885. Serial No. 163,686. (No model.)



Claim.—1. In combination with a curtain-roller, A, having slots *g* and *i* and peripheral groove A, and a spindle, C, a spiral spring, B, fastened at its inner end to the spindle and fastened at its outer end to the roller A by extending through said slots and groove, substantially as set forth.

2. In combination with a curtain-roller, A, provided with slots *g* and *i* and groove A, to receive the end of the spring-wire, a cap, E, extending over the periphery of said roller, so as to cover said groove and spring-wire therein, substantially as specified.

3. In combination with a curtain-roller, A, a cap, E, of one piece of metal, extending over a portion of the periphery of said roller and turned back upon itself at its outer end, whereby the cap may be struck up out of sheet metal and be recessed or countersunk at its end to form a chamber for the pawls *j*, substantially as specified.

4. In combination with a curtain-roller, A, cap E, and pawls *j*, pins *k*, which extend through the end of said cap and into the roller and form pivots for the pawls, substantially as set forth.

5. In a curtain-roller, in combination with a ratchet or notched hub, a spindle formed of a central wire or core doubled or enlarged within the ratchet or notched hub, and a wire wound around the central wire or core and bent to form the rectangular end, substantially as specified.

6. In combination with a curtain-roller, a spindle therein formed of a central core having a wire wound thereon, substantially as described, and for the purposes set forth.

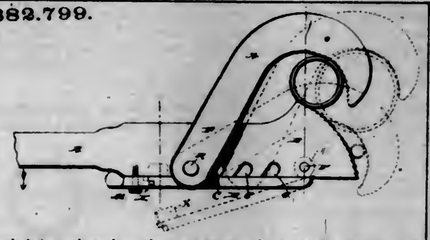
382,798. **MANUFACTURE OF FELT HATS, CAPS, &c.** Frederic W. Cheesman, Hyde, County of Chester, England. Filed Mar. 31, 1887. Serial No. 233,210. (No specimens.)

Claim.—The herein-described improvement in the method of manufacturing felt hats or head-coverings, which consists in first forming the complete body or form according to whether it is to be soft or stiff, then working or felting a covering or veneer of fine short staple wool or fur upon said coarser body or form, and, finally, finishing the body or form, substantially as set forth.

382,799. **PIPE-WRENCH.** Robert Copland, Baroda, Col. Filed Jan. 18, 1888. Serial No. 261,111. (No model.)

Claim.—1. In a wrench, the combination of the shank A, having the jaw B provided with sockets C C and the recess I, the swinging jaw having a transverse pin, R, engaging any one of the sockets, and the latch pivoted at its front or outer end to the jaw B, and having a detent on its other end fitting in the said recess I in the jaw, the said

382,799.

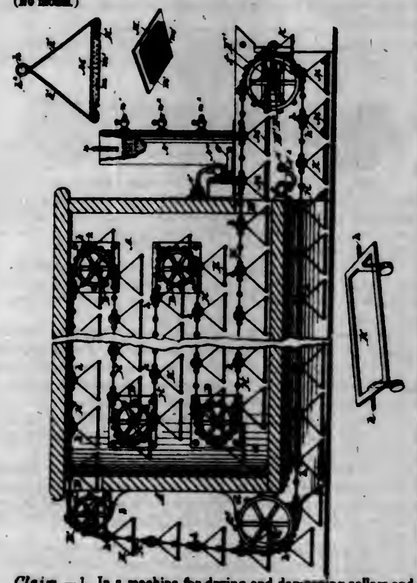


latch being adapted to close the open ends or mouths of the said sockets, substantially as and for the purpose specified.

2. In a wrench, the combination, with the shank having a rigid jaw attached thereto and provided with sockets C C, of the movable jaw having a transverse pin, R, mounted in one of the sockets, the pivoted latch closing over the said sockets and having a shoulder on its free end, and the catch having a shoulder to engage the shoulder on the latch, substantially as specified.

3. In a wrench, the combination, with the shank having a rigid jaw provided with sockets C, of the movable jaw having a transverse pin, R, mounted in one of the sockets, the pivoted latch having a beveled end provided with a shoulder, G, and the pivoted catch having a thumb-hold, N, and a beveled outer end provided with a shoulder to engage the shoulder G, substantially as and for the purpose specified.

382,800. COLLAR AND CUFF DRIER AND DAMPENER. JOHN G. DIXON, New York, N. Y. Filed Feb. 15, 1887. Serial No. 227,679. (No model.)

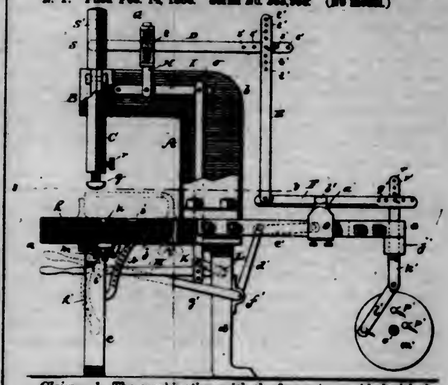


Claim.—1. In a machine for drying and dampening collars and cuffs, the combination, with a heated chamber, of an endless chain traveling in and out of the chamber, carriers suspended from the endless chain, and atomizers arranged outside of the chamber and above and below the endless chain, substantially as herein shown and described.

2. In a machine for drying and dampening collars and cuffs, the combination, with a heated chamber, A, having the extension E and provided with an inlet, D, and outlet E, a series of atomizers attached above and below the said outlet, and endless chain belts H, traversing said chamber, of carriers K, journaled in and suspended from said chain, and perforated trays M, supported upon said carriers, adapted to hold collars and cuffs, substantially as shown and described, whereby the collars and cuffs in said trays have both surfaces presented equally to the heat and also to the spray of the atomizers, as set forth.

3. In a machine for drying and dampening collars and cuffs, the combination, with a heated chamber, A, having an inlet, D, and outlet E, and provided with the extension E', endless chain belts H, traversing said chamber, carriers K, journaled in said chain and supported therefrom in a horizontal position, and perforated trays supported by said carriers adapted to hold collars and cuffs, of a series of atomizers, N' N², held above and below said outlet, and a tank, N, adapted to supply water to said atomizers, provided with overflow-cocks n', n², and n³, substantially as shown and described, whereby the spray is regulated, to be thrown upon the collars and cuffs after passing through the outlet E, as set forth.

382,801. EMBOSSING-MACHINE. MICHAEL T. DUNKIN, Brooklyn, N. Y. Filed Feb. 14, 1888. Serial No. 263,902. (No model.)



Claim.—1. The combination, with the frame A, provided with the bed-plate *a* and right-angled arm *b*, of the follower C, the lever D, provided with an adjustable yielding fulcrum, and means for oscillating the lever D, substantially as described.

2. In an embossing-press, the combination of the frame A, provided with the notched bed-plate *a*, the adjustable frame A, the circular die *i*, fitted to the frame *h*, the bolt *k*, the cross-bar *l*, and the reciprocating follower C, carrying the die *q*, substantially as described.

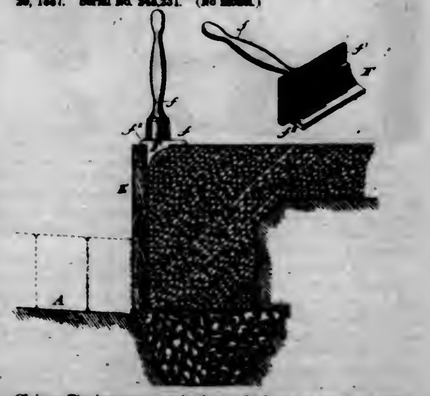
3. The combination of the follower C, the lever D, having a yielding fulcrum, the connecting-rod E, the lever F, the sliding block O, provided with convex surfaces *o' o'*, the reciprocating bar *k'*, pivoted to the lever F, and the crank-wheel *m'*, substantially as described.

4. The combination, with the follower C and lever D, of the frame G, provided with the rods *u*, the spiral springs *v*, the movable fulcrum *t*, the lever I, connecting-rod J, the shaft L, the arm K, and the hand-lever M, substantially as described.

5. The combination, with the circular die *i*, of the stake *p*, substantially as described.

6. The combination, with the frame A and reciprocating follower C, carrying the die *q*, of the right-angled stake *r'*, substantially as described.

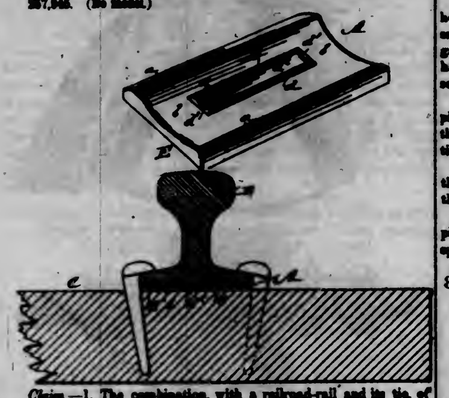
382,802. METHOD OF CONSTRUCTING STREET-CURBING OF ARTIFICIAL STONE. CHARLES J. EVERETT, Tuxedo, N. J. Filed Aug 20, 1887. Serial No. 248,231. (No model.)



Claim.—The improvement in the method of constructing street-curbing of artificial stone, consisting in first building the curb of stone

composition and providing a guard and guide plank or plate at the edge of the curbing, and in then forming an ornamental molding and consolidating the surface at the upper and outer corner of the plastic curbing by the combined pressing and rubbing action of a pressing and rubbing tool, guiding the tool meanwhile upon the upper edge of the guard plank or plate, substantially as herein described.

382,803. RAILWAY-RAIL PAD. HARRY J. PASSMORE HALL and LEWIS WALLACE, Philadelphia, Pa. Filed Dec. 15, 1887. Serial No. 257,945. (No model.)

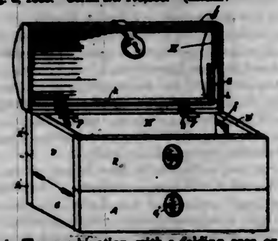


Claim.—1. The combination, with a railroad-rail and its tie, of an intervening elastic pad provided with a flat under face, a concave upper face, and a central longitudinal rib, as and for the purpose herein set forth.

2. The combination, with a railroad-rail and its tie, of an intervening elastic pad provided with a flat under face, a concave upper face, beveled longitudinal edges, and a central longitudinal rib having a concave face, the side edges whereof are of a height equal to the side edges of the body, substantially as shown and described.

3. As an improved article of manufacture, an elastic pad for railway-rails, consisting of a block provided with a flat under surface, beveled upper longitudinal edges, a concave upper face, and a central longitudinal rib having a concave upper face the side edges whereof are equal in height to the side edges of the block proper, substantially as and for the purpose herein set forth.

382,804. FOLDING CASE. HENRY C. FAY, Worcester, Mass. Filed Aug. 3, 1883. Serial No. 173,202. (Model.)



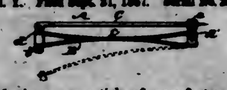
Claim.—1. The combination, with a folding case or box whose sides are provided with dovetailed grooves, of a detachable lid, and hinges attached to said lid provided with leaves adapted to be inserted in said dovetailed grooves, whereby the lid is attached to said case or box, substantially as described.

2. In a folding case or box, the combination of a rigid and a folding section, substantially as described, each of said sections being provided with dovetailed grooves, and a lid having hinges provided with leaves adapted to be inserted in said dovetailed grooves, substantially as described.

3. In a box or case, the sides provided with dovetailed grooves to receive the leaves of the lid-hinges, a detachable lid having hinges, each of which is provided with a leaf which is adapted to enter one of said grooves, and a pin passing through said leaves into the box, whereby the lid is attached to the box or case, substantially as described.

4. In a folding case, the sides A A' and C C', attached to the bottom of the case, folding sides B B', folding ends D D', the edges of the sides A' and B' being provided with grooves, as described, and a detachable lid having hinges whose leaves are adapted to enter and be held in said grooves, and an elastic packing between said lid and the sides of said box or case, substantially as described.

382,805. HANDKERCHIEF-HOLDER. STEPHEN M. SEAVERS, Brooklyn, N. Y. Filed Sept. 21, 1887. Serial No. 250,304. (Model.)



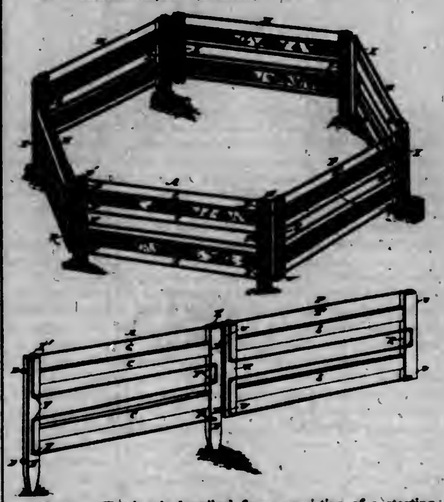
Claim.—1. As a new article of manufacture, a handkerchief-holder constructed substantially as herein shown and described, the same consisting of a main frame, a pin for fastening the same to a garment, and a clasping-bar hinged to the main frame for clasping a handkerchief between said bar and the main frame, substantially as set forth.

2. The main frame A, formed of spaced side bars, *c c*, and end pieces, *d d'*, in combination with the pin C, clasping-bar B, hinged to the main frame, and a fastening device for the clasping-bar, substantially as described.

3. The main frame A, provided with a pin, C, in combination with the clasping-bar B, hinged to the main frame and bent inward toward the main frame to form a spring, substantially as described.

4. The main frame A, composed of the spaced side bars, *c c*, end pieces, *d d'*, pin C, and hinged clasping-bar, made narrower than the space between the bars *c c*, substantially as described.

382,806. FENCE. JAMES HARRIS, Columbia, Mo. Filed Sept. 12, 1887. Serial No. 249,489. (No model.)



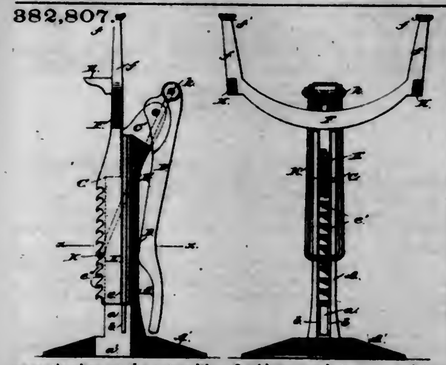
Claim.—The herein-described fence, consisting of a starting-panel having posts at each end pointed at their lower ends for insertion in the ground, and a number of similar panels having but one end post similarly pointed, the said panels being connected by hooks and staples at their meeting edges, and each panel composed of the mortised end posts and tenoned rails fitted to each other without bolt or pin, and the continuous wire having one end secured to the top of one of the end posts at E, running thence through the staple E' on top of the other posts, and over the pins F, secured in the side of the posts, and having its lower end secured to the first end post vertically below its upper end, the strands of wire adjacent to each rail being at equal distances above and below the latter, substantially as specified.

382,807. WAGON-JACK. RUSSELL HARRIS, Hackensack, N. J. Filed Nov. 4, 1887. Serial No. 254,266. (No model.)

Claim.—1. In a wagon-jack, the combination, with the carrying-bar, of a curved arm attached centrally thereto, upwardly-extending supporting-bars integral with the extremities of said arm, and steps secured upon one side of the arm beneath said supporting-bars, substantially as and for the purpose herein set forth.

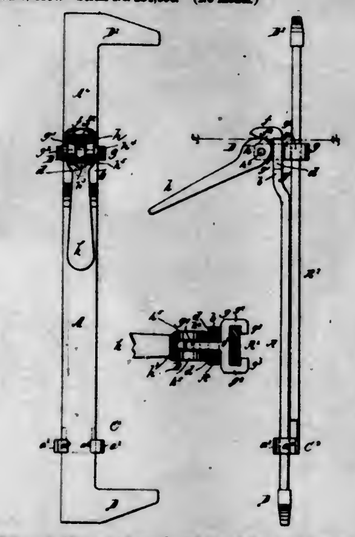
2. In a wagon-jack, the combination, with the recessed standard, a friction-roller journaled in said standard projecting in said recess, a lever pivoted in the standard, and a U-shaped lifting-loop pivoted to the lever, of a carrying-bar sliding in the recess of the standard, provided with notches to receive the lifting-loop, a curved arm attached centrally at the top of the carrying-bar, upwardly-extending vertical

382,807.



supporting-bars at the extremities of said arm, and stops secured beneath said supporting-bars, substantially as shown and described, and for the purpose herein set forth.

382,808. CLAMP. HENRY B. HATHAWAY, Merrill, Wis. Filed Oct. 7, 1887. Serial No. 251,602. (No model.)



Claim.—1. The combination, with two sliding jaw-bars, of a clasp separate from and independent of both bars, embracing one of said bars and provided with a stud extended to the outer side of the other bar, and a pivoted cam hung upon said stud, substantially as and for the purpose described.

2. The combination, with two sliding jaw-bars, A A^3, one, A, of which is provided with an inclined projection, of a clasp separate from and independent of both bars embracing the other bar, A^3, and provided with a stud extended to the outer side of said bar A, and a pivoted cam hung upon said stud, substantially as and for the purpose described.

3. The combination, with two sliding jaw-bars, one of which is provided with a slot, of a clasp separate from and independent of both bars embracing the other of said bars, and provided with a stud extended through said slotted bar, and a pivoted cam hung upon said stud, substantially as and for the purpose described.

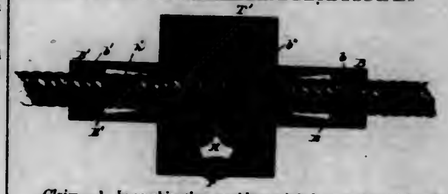
4. The combination, with two sliding jaw-bars, one of which is provided with an inclined projection, *f*, and a slot, *d*, of a clasp, *g*, embracing the other of said bars, provided with a stud, *g'*, extended through said slotted bar, and a pivoted cam, D, hung upon said stud, substantially as and for the purpose described.

5. The combination, with two sliding jaw-bars, A A^3, one, A, of which is provided with an inclined projection, *f*, and a slot, *d*, and the other, A^3, with a clasp, a^3, of a clasp, *g*, embracing said bar A^3, provided with a stud, *g'*, extending through said slotted bar, and a grooved pivoted cam, D, hung upon said stud, all substantially as and for the purpose described.

382,809. WITHDRAWN.

382,810. CABLE CONDUIT AND TRUCK. WILLIAM HEMMING, Yonkers, N. Y., assignor to Benj. Butterworth, trustee, Cincinnati, Ohio. Filed Feb. 13, 1883. Serial No. 269,902. (No model.)





Claim.—1. In combination, a cable-conduit for traction-cable railroads having an upper and a lower pair of rails, the cable-truck supported by wheels running normally upon the lower set of rails and having its wheels inclined one toward the other, so that the axial line of each passes through the rail upon which the other runs, substantially as described.

2. A cable-truck for traction-cable railroads having its wheels so inclined one to the other that the axial line of each wheel passes through the tread of the other, substantially as described.

3. A cable-conduit of trapezoidal cross-section having, in combination, the double bracket, the inclined side pieces supported by the brackets and separated by a central overhead slot, and the floor-piece held in place by the overlapping side pieces, substantially as described.

4. A cable-truck for traction-cable railways having three separate and independent points of support upon the cable, substantially as described.

5. In a cable-truck for traction-cable railways, the truck-frame centered on a ball of soft metal and having tubular bell-mouthed extensions surrounding the cable, in combination with the two auxiliary buttons, one at each end of the truck-frame, each centered upon its ball of soft metal, the bearing-surfaces of the buttons, and truck-extension forming portions of the surface of a sphere whose center coincides with that of the truck-frame, substantially as described.

6. A cable-truck frame having the central cavity connected with inclined journal-bearings, in combination with the plugged oil-hole leading to the same, substantially as described.

7. An organization of parts designed to secure a button upon a cable, consisting of the following combination: the cable-center, the two-part egg-shaped mass of soft metal surrounding the cable-center and provided with spiral corrugations, the surrounding cable-strands fitting into the said corrugations, and the secondary mass of soft metal surrounding and separating the strands, substantially as described.

8. In a cable road, the conduit having inclined sides and inclined rails forming a track for a cable-truck, in combination with a truck having its wheels and axles inclined one toward another and provided with an upward projection for engaging with the sprocket on a chain-grip, substantially as described.

9. A cable-truck having its wheels inclined one toward the other, substantially as described.

382,811. ELECTRO-MEDICAL APPARATUS. PETER HENRY, Sioux City, Iowa. Filed Oct. 5, 1887. Serial No. 251,514. (No model.)

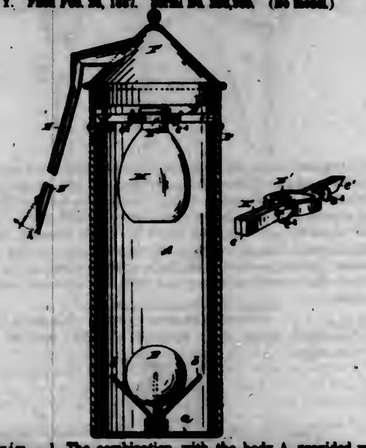
Claim.—1. In a medical apparatus, the combination, with a grooved hard-rubber disk, of a small metallic disk held centrally on the bottom of said rubber disk, a screw screwing in said rubber disk and resting with its head against said small metallic disk, a handle held on said screw, a large metallic disk held on the top of said rubber disk, and against which also rests the inner end of said handle, and metallic pins held in said rubber disk, their inner ends contacting with the inside of said large metallic disk, substantially as shown and described.

382,811.



2. In a medical apparatus, the combination, with a grooved hard-rubber disk, of a small metallic disk held centrally on the bottom of said rubber disk, a screw screwing in said rubber disk and resting with its head against said small metallic disk, a handle held on said screw, a large metallic disk held on the top of said rubber disk, and against which also rests the inner end of said handle, metallic pins held in said rubber disk, their inner ends contacting with the inside of said large metallic disk, and a collector for frictional electricity held between said large metallic disk and the top of said rubber disk, substantially as shown and described.

382,812. AUTOMATIC FIRE-EXTINGUISHER FOR STOVES AND HEATERS. FRANCOIS L. HOUSMAN and FRANK A. RAIT, Brooklyn, N. Y. Filed Feb. 28, 1887. Serial No. 229,205. (No model.)



Claim.—1. The combination, with the body A, provided with brackets D D' near the top, the oppositely-inclined rods *b* at the bottom, and the conical cap F, provided with an outlet-tube, H, of an acid bottle suspended by a detachable split yoke, E, from said brackets D D', and a ball, B, loosely seated upon the said inclined rods *b*, substantially as shown and described, and for the purpose herein set forth.

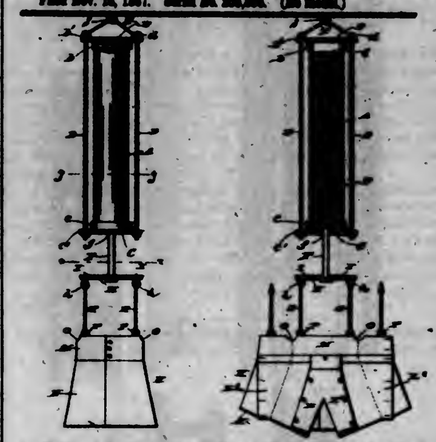
2. The combination, with a stove or heater, of a fire-extinguisher consisting of a body, A, a split yoke, E, detachably held in said body near the top, an acid bottle suspended from the yoke, a series of oppositely-inclined rods, *b*, attached centrally to the bottom of the body, a metal ball supported by said rods beneath the bottle, a detachable conical cap, F, and outlet-tube H, connecting the body with the interior of the stove, substantially as shown and described

382,813. GUMMED PAPER-FASTENER. JOSEPH M. JONES, Paris, Ky. Filed Oct. 26, 1887. Serial No. 253,252. (No model.)



Claim.—In gummed paper-fasteners, the strip A, divided transversely at suitable distances apart by rows of perforations *b*, and having the gum or adhesive material applied to both of its sides in sections or patches extending across the rows of perforations, leaving blank or ungummed portions or surfaces *c* on both sides of the strip and intermediate of the rows of perforations therein, substantially as and for the purposes specified.

382,814. BABY-JUMPER. MARY P. JONES, Mineral City, Tex. Filed Nov. 14, 1887. Serial No. 255,393. (No model.)



Claim.—1. In a baby-jumper, the combination, with the vertically-resilient supporting-rod F, having a frame, H, entwined on its lower end, of the supporting-garment adapted to be fastened around the infant and comprising the waist M, to be buttoned around the body, the pants depending from the waist and having the front flap, L', and the side flaps, L², adapted to be buttoned together in front of the infant, and the skirt N, attached to the waist at the top of the pants and hanging around the said pants, the upper edge of the waist being attached to the lower ends of cords R, which are attached to the said frame H, substantially as and for the purpose hereinbefore specified.

2. In a baby-jumper, the combination of the cylinder A, suitably supported and having an aperture, *f*, in its lower end, the spring coiled within the cylinder, the rod F, mounted in the aperture *f*, and having a plunger, G, on its upper end, fitting in the cylinder and bearing on the upper end of the spring, and the support K, attached to the lower end of the rod F, substantially as and for the purpose specified.

3. In a baby-jumper, the combination of the cylinder A, the cap B on the upper end, having the depending flange *b* surrounding the end of the cylinder, and the lateral flange *b'*, provided with perforations, the cap C, having the central opening, *f*, the vertical flange *e*, and the lateral flange *e'*, which is provided with perforations to align with the perforations in the flange *b'*, the rods D D, passing through the aligned perforations, and having the rings *d d* on the upper ends above the cap B, the spring E in the cylinder, the supporting-rod F, connected at the upper end to the spring and operating in the opening *f*, the support K, attached to the lower end of the rod F, the eyebolt S, secured to a suitable support, and the cords or chains T T between the said bolt and the eyes *d d* on the upper end of the cylinder, substantially as specified.

4. In a baby-jumper, the combination of the cylinder A, the cap B, having the depending flange *b* to embrace the end of the cylinder and the lateral perforated flange *b'*, the cap C, having the vertical flange *e*, to embrace the lower end of the cylinder, and the lateral perforated flange *e'*, the bolts D D, passing through aligned perforations in the said perforated flanges, the spring E within the cylinder, and the supporting-rod F, connected to the spring, and having the support K attached to the lower end to sustain the child, substantially as specified.

382,815. RAIL-JOINT. JOHN V. KERR, North Yakima, Wash. Filed Jan. 31, 1888. Serial No. 262,668. (No model.)

Claim.—1. An expansible rail-joint consisting of a chair having a fixed rail and sliding rail-sections, with intervening spring-joints, and located in a groove in the chair adjacent to the fixed rail, the latter having its ends overlapping the inner ends of the end sections, one of which is fixed, and the grooved chair extending beyond the end sections, substantially as shown and described.

2. An expansible rail-joint consisting of a chair grooved from end to end, rail-sections located at intervals apart and adapted to slide in said groove and connected by pins and resting-springs, end rail-sec-

882,815.



tions, one of which is fixed, overlapping the ends of the fixed rail, and the grooved chair extending beyond the end sections, substantially as described.

3. An expansible rail-joint consisting of a chair having a groove throughout its length, sliding rail-sections located in said groove and connected at intervals apart by spring-joints, and a fixed rail at one side of said groove, the intervening sliding rail-sections being less in height than the fixed rail, and the end rail-sections forming with the fixed rail a continuous rail shorter than the grooved chair, substantially as shown and described.

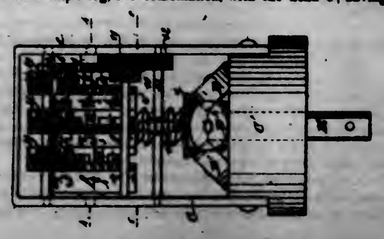
4. An expansible rail-joint consisting of chair 1, having groove 10, and fixed rail 2, having shoulders 18 20, groove 4, tongue 5, and lips 12 and 15, in combination with sliding rail-sections 9 9 8 8, and fixed section 19, connected by pins 23, springs 24, with ends in recesses 25, transverse slots 26, and pins 27, the end section, 9, having a shoulder, 17, and pin 21, engaging slot 22 in chair 1, and the sections engaging the lips of groove 10, substantially as described.

882,816. SHIP'S LOG. OSCAR KNUTH, San Francisco, Cal. Filed Aug. 15, 1887. Serial No. 246,975. (No model.)

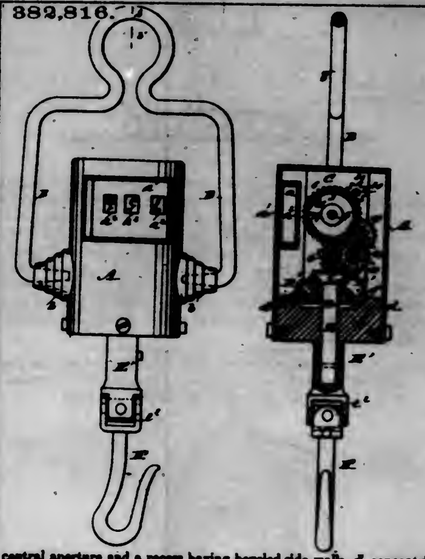
Claim.—1. In a ship's log, the combination, with the apertured head having a beveled face or track on its inner face, of the main shaft extending through the said aperture and having a disk or projection having its under face beveled parallel with the beveled face or track on the said head, and friction-rollers of even diameter between said beveled surfaces and having their axes parallel therewith, substantially as set forth.

2. In a ship's log, the combination, with the apertured head having a beveled surface or track on the inner face concentric with the aperture, of the shaft extending through said aperture and having a disk or projection beveled parallel with the said beveled surface on the head, a loose wheel or disk upon the shaft, and rollers journaled thereon and of even diameter, the axes of the rollers being parallel with the two beveled surfaces, substantially as set forth.

3. In a ship's log, the combination, with the head C, having a

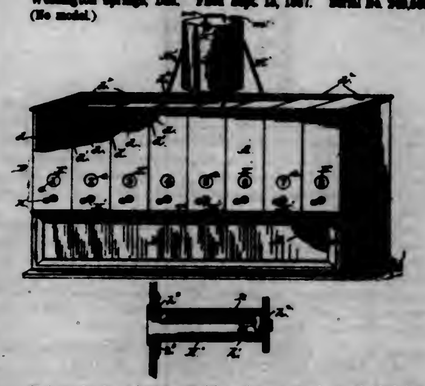


882,816.



central aperture and a recess having beveled side walls, *d'*, concentric with the aperture, of the shaft E, extending through the aperture and provided with the projection or disk *e*, having its lower surface beveled parallel with the surface *d'*, the loose beveled wheel D on the shaft within the recess, and the rollers D', of even diameter, journaled on the beveled face of the wheel between the two beveled surfaces between the shaft and the head, the axes of the wheels being parallel with the said beveled surfaces on the shaft and head, substantially as set forth.

882,817. POWDER AND SHOT CARRIER. AUGUSTINE LA POINT, Wessington Springs, Dak. Filed Sept. 12, 1887. Serial No. 249,599 (No model.)

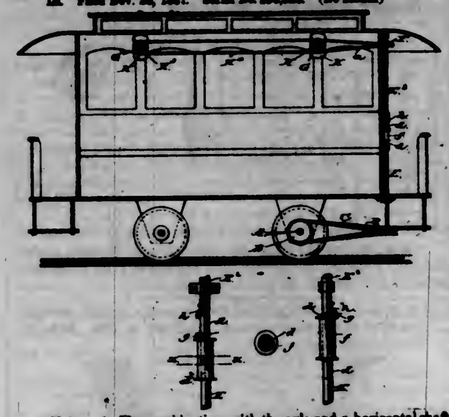


Claim.—1. A cabinet comprising the receptacle A, divided into compartments B and D by a horizontal partition, *c*, a series of vertical partitions, *d'*, subdividing the compartment D into lockers *d*, adapted to contain shot, each locker provided with an inlet and a glass plate indicating the size, and a glass door, E', covering the compartment B, and means, substantially as shown and described, for withdrawing the shot from the several lockers.

2. The combination, with the receptacle A, divided into compartments B and D by a horizontal partition, *c*, and a series of vertical partitions, *d'*, subdividing the compartment D into lockers *d*, adapted to contain shot, each locker provided with an inlet, of a revolvable faucet attached to each locker, consisting of an apertured tube, H, a similarly-apertured revolvable casing, H', provided with a milled disk, *h*, and collar *h'*, all combined to operate substantially as herein set forth.

3. The combination, with the receptacle having an opening in one wall, of the tube H, registering with said opening and provided with an aperture, A, the tube H' upon the tube H, and provided at its outer end with a head, *h'*, an aperture, *h'*, to register with aperture A, and a flange or projection at its inner end, and the loose collar *h'* upon the tube H, and secured to the outer wall of the receptacle to allow the rotation of the tube H', but prevent longitudinal movement, substantially as set forth.

882,818. FAN FOR CARS. JEAN H. V. LE BEAU, New Orleans, La. Filed Nov. 26, 1887. Serial No. 256,332. (No model.)

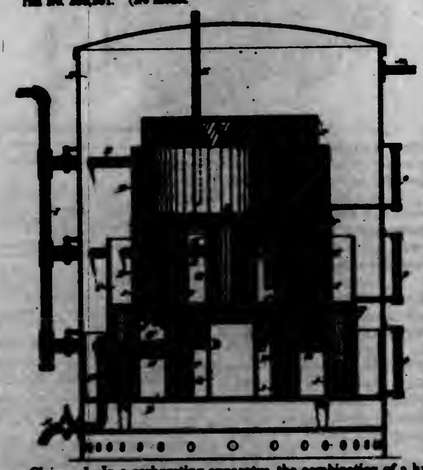


Claim.—1. The combination, with the axle and a horizontal shaft in a vehicle-chamber carrying a fan, of a two-part vertical shaft, a clutch-connection between said parts, said connections, such as described, between said axle and shafts, substantially as and for the purpose described.

2. The combination, with the axle of a vehicle provided with a pulley, B, and a fan-shaft in the car-chamber having a pulley, H, of the vertical shafts E E', having squared ends, the sleeve *f*, adjustable on said squared ends, the pulleys D F on said shafts, and the belts C *c*, substantially as and for the purpose described.

3. The combination, with the axle A of a vehicle provided with a pulley, B, and a fan-shaft in the vehicle-chamber having a pulley, H, of the vertical shafts E E', having squared ends, the sleeve *f*, provided with the eye *g*, adjustable on said squared ends, the hook *h* on the shaft E', and the belts C *c*, substantially as shown and described.

882,819. CARBURETOR. LOUIS HASEL, San Francisco, Cal., assignor, by direct and mesne assignments, of two-thirds to G. Schleuniger and George Barthorst, both of same place. Filed Nov. 28, 1887. Serial No. 256,591. (No model.)



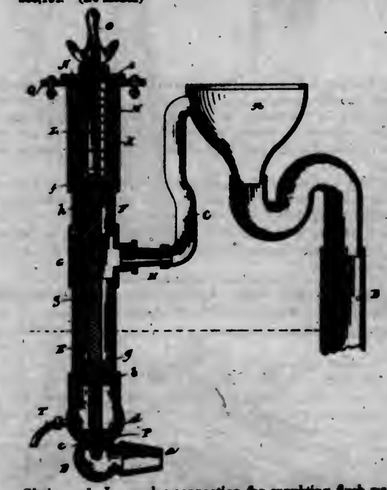
Claim.—1. In a carbureting apparatus, the combination of a hydrocarbon-gas generator, consisting of an exterior tank, the interior superposed shallow vessels of decreasing diameter from the bottom upward, a supply-pipe, overflow-pipes in each vessel, an internal chamber within the vessels containing air under pressure, and the perforated discharge-pipes uniting said chambers and provided with a porous or fibrous covering, substantially as described.

2. In a carbureting apparatus, the gas-generator consisting of the exterior tank, the interior superposed shallow vessels with the supply and overflow pipes and air-chambers, in combination with perforated or foraminous cylinders *f* and the horizontal perforated pipes by which they are connected, said cylinders and pipes being inclosed in fibrous or porous material and receiving air from the central chamber, substantially as herein described.

3. In a carbureting apparatus, the vessels or pans for containing the hydrocarbon placed in a series within an exterior inclosing-tank, having the central chambers receiving air under pressure, a series of vertical cylinders or chambers surrounding the central one and having an interior packing of sponge or porous material, and pipes by which they are united, said pipes having the receiving and discharge ends in different planes and covered with fibrous or porous material, substantially as herein described.

4. In a carbureting apparatus, the superposed hydrocarbon-containing pans within an outer inclosing-tank, the central air-chamber and the surrounding perforated cylinders, one of which is connected with the central air-chamber, while the others are connected with the first and each other successively by intermediate perforated pipes, the same being covered with fibrous or porous material, and the fibrous or porous disks covering and surrounding the same, substantially as herein described.

882,820. VALVE-CONNECTION FOR HOPPER WATER-CLOSETS. GEORGE F. MARSHALL, Brooklyn, N. Y. Filed Apr. 13, 1887. Serial No. 235,161. (No model.)



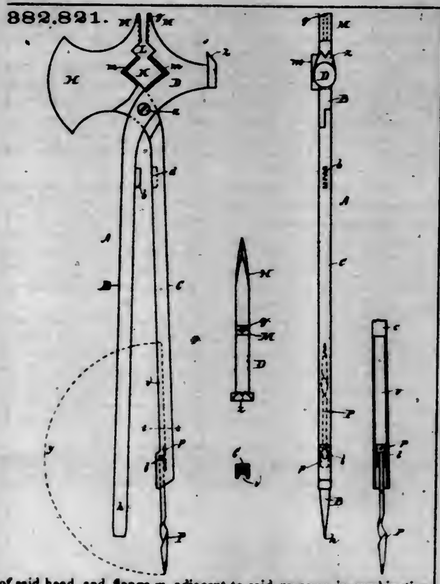
Claim.—1. In a valve-connection for supplying flush-water to hopper water-closets, the combination of the seat-plate Q, having the screw-threaded central aperture, the cylindrical casing K, having the screw-threaded flange *e*, screwed into the aperture of the plate, the cap N, screwed into the upper end of the casing, the valve-rod sliding through the cap, and the rocking cam-lever bearing against the cap and pivoted in the upper end of the valve-rod, as shown, and for the purpose specified.

2. In a valve-connection for the flush-water in hopper water-closets, the seat-plate Q, the guide-cap N, the upper casing, K, and the lower casing, E, their intermediate couplings, F and G, the latter having the hopper-connecting pipe H, and the supply-coupling D at the lower end of the lower casing, having the seat-forming constriction *c* of curved walls, forming the valve-seat centrally in line with the guideway in the cap, and having the drain-pipe T above said constriction and the supply branch *a* below said constriction, in combination with the elongated valve P, having curved walls, and its connecting-rod, whereby the said cap forms the guide for the valve-rod and the said curved constriction forms a centering guide and seat for the valve, as set forth.

882,821. COMBINATION-TOOL. JOSEPH B. MARSTON, Boston, Mass. Filed Sept. 8, 1887. Serial No. 248,978. (No model.)

Claim.—1. The improved combination-tool herein described, the same consisting of the handle B, provided with the blade *b*, the head D, claw *z* on said head, the projection M, the recesses in the lower side

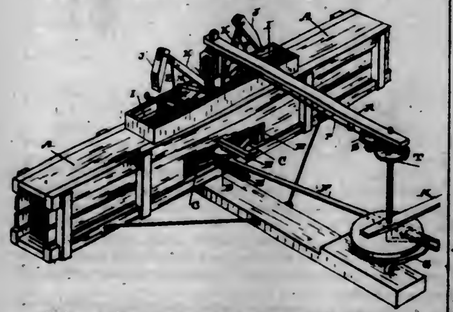
382,821.



of said head, and flange *m*, adjacent to said recesses, in combination with the handle C, pivoted at *x* to the handle B, provided with the hatchet-blade H, the recesses at the top of said blade, the flange *m* adjacent to the said recesses, the slot *d*, the projection M, and the gimlet P, pivoted in the lower end of said handle, substantially as described.

2. In a tool of the character described, the handle C, grooved longitudinally on its inner side and provided with the pivoted gimlet P, adapted to be folded into said groove, in combination with the handle B, pivoted to the handle C, and adapted to assist in keeping said gimlet properly extended when said handles are closed, substantially as set forth.

382,822. HAY-PRESS. PIRRO MCKINNEY, San Diego, Cal. Filed Feb. 16, 1888. Serial No. 264,280. (No model.)

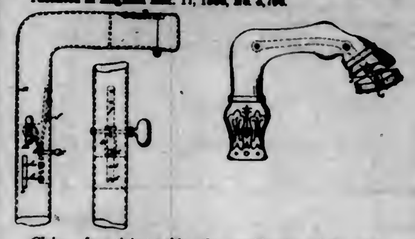


Claim.—1. The press-boxes standing horizontally in line with each other, having their inner ends separated, as shown, in combination with the upper and lower transverse guides standing between the inner ends of the press-boxes, a slide traveling between said guides, a pitman having a slotted head, a crank-shaft connected therewith and to which power is applied, and plungers or followers connected with said slide by knee-levers between the slide and plungers, whereby a double reciprocation of the followers takes place with each complete rotation of the driving-crank, substantially as herein described.

2. The combination of the press-boxes, the reciprocating followers, the compressors, and means for operating the compressors and the followers, the flanged pulley and the cords P, by which the compressors are forced downward, a pinion fixed to the pulley on its shaft, and a mutilated gear-wheel fixed to the main crank-shaft and operating to rotate the pulley intermittently, substantially as herein described.

3. The horizontal press-boxes with their reciprocating followers, the rising and falling compressors acting in the feed-boxes and having their lever-arms connected with the followers by cords, in combination with the second cords connected with the opposite ends of the lever-arms, the flanged pulley around which the cord passes, and the mutilated gear secured to the crank-shaft and operated thereby, substantially as herein described.

382,823. HOLDER FOR TICKETS, &c. RUDOLF MEYER, Dresden, Saxony, Germany. Filed Apr. 4, 1888. Serial No. 269,612. (No model.) Patented in England Mar. 17, 1888, No. 3,766.



Claim.—In a ticket-holder, the combination of the stick *a* with the handle *d*, tappet *c*, spring *f*, the slot *b*, pins or pegs *s*, and the knob *e*, substantially as and for the purpose set forth.

382,824. MANUFACTURE OF ARTIFICIAL-STONE COFFINS. LEBRECHT MUHDT, Berlin, Germany. Filed Nov. 12, 1886. Serial No. 218,733. (No model.)



Claim.—The construction of coffins in the mold F, consisting of a substance composed of gypsum, oxide of iron, glycerine, dextrine, alum, glue, and water, in combination with linen strips *b b'* and wood laths *c d*, and a wire skeleton or frame, *e f f e*, substantially as described.

382,825. GUNPOWDER-MILL. PAUL A. OLIVER, Oliver's Mills, Pa. Filed June 14, 1887. Serial No. 241,269. (No model.)



Claim.—1. In a gunpowder-mill, the combination of the side frames provided with deep slots, the subordinate frames removably secured within the said slots, and the adjustable rolls for the powder journaled in the said subordinate frames.

2. In a gunpowder-mill, the combination of the side frames provided with deep slots arranged alternately, with their open ends at opposite sides of the side frames, the subordinate frames removably secured within the said slots, and the adjustable rolls for the powder journaled in the said subordinate frames.

3. In a gunpowder-mill, the combination, with the adjustable roll D, of the hollow roll D', driven at a much greater speed, pipes for circulating water within the hollow roll D', and a scraper for preventing accumulations upon the surface of the said hollow roll.

4. In a gunpowder-mill, the combination of the adjustable rolls D and the hollow rolls D', arranged zigzag in pairs, one above the other, the rolls D' being driven at a much greater speed than the rolls D, gather-boards for guiding the material between each pair of rolls, pipes for circulating water within the hollow rolls, and the scrapers for cleaning the said hollow rolls.

5. In a gunpowder-mill, the combination of the side frames, the rolls moving with unequal speed and journaled in the frames in pairs, one above the other, toothed gearing connecting each similar roll so that each pair is driven at the same relative speed, and a pair of distributing-rollers journaled above the top pair of rolls, also driven with unequal speed, but at a much less velocity than the said rolls, whereby the feed of material to the said rolls is rendered perfectly uniform.

6. In a gunpowder-mill, the combination of the side frames, the rolls moving with unequal speed and journaled in the side frames in pairs, one above the other, the teeth-geared wheels M and M' on opposite sides of the machine connecting each similar roll, so that each pair is driven at the same relative speed, the toothed wheels L^2 and L^3 for operating the wheels M', the toothed wheels L' and L^2 for operating the wheels M, and a driving-shaft passing across the machine journaled in the side frames, and having said wheels L' and L^2 and driving-belt pulleys secured upon it.

7. A gunpowder-mill comprising a series of revolvable rolls arranged in pairs, one above the other, and driven at unequal speed, a pair of slow-moving distributing-rollers journaled above the top pair of rolls, a roller for the feed-conveyer belt journaled above the distributing-rollers, a roller for the delivery conveyer-belt journaled below the lowest pair of rolls, a shaft provided with driving-pulleys and extending across the machine, and intermediate gearing connecting all the rolls and rollers with the said driving-shaft, the whole supported by side frames and mounted upon a common base-plate, substantially as set forth.

8. In a gunpowder-mill, the combination of the side frames, A, provided with deep slots arranged alternately with their open ends at opposite sides of the side frames, the slotted subordinate frames G, provided with flanges, the bolts R, passing through said flanges and securing the subordinate frames in position in the deep slots of frames A, the rolls D and D', arranged zigzag in pairs, one pair above the other, and carried by the subordinate frames G, the separate sliding journal-blocks for the rolls D, and the adjusting-screws F for regulating the position of said rolls D, substantially as set forth.

382,826. ALLOY. HERMANN GUTEMANN and AXEL PRIP, Geneva, Switzerland. Filed Feb. 16, 1888. Serial No. 264,362. (No specimens.)

Claim.—An alloy composed of platinum, fifty to sixty parts; copper, ten to twenty parts; nickel, twenty to thirty parts; wolfram one to two parts; cobalt, one to two parts, and cadmium one to one and one-half part, substantially as described, and for the purpose specified.

382,827. ALLOY. HERMANN GUTEMANN and ALEX PRIP, Geneva, Switzerland. Filed Feb. 16, 1888. Serial No. 264,363. (No specimens.)

Claim.—1. An alloy composed of platinum, nickel, copper, wolfram, cobalt, and cadmium, for the purpose specified.

2. An alloy composed of platinum, sixty to seventy parts; nickel, ten to twenty parts; copper, ten to twenty parts; wolfram, one to two parts; cobalt, one to two parts, and cadmium, one to one and one-half part, substantially as described, and for the purpose specified.

382,828. THILL-COUPLING. JOHN S. PARSONS, New Troy, Mich. Filed Sept. 6, 1887. Serial No. 248,896. (No model.)



Claim.—1. In a thill-coupling, the combination, with a clip adapted to a vehicle-axle, of a hook on the clip adapted to receive a thill or pole stud, and a clamp-head connected elastically and pivotally to the clip and adapted to lock against the thill or pole stud in the hook, substantially as described, for the purposes set forth.

2. In a thill-coupling, the combination, with a clip adapted to a vehicle-axle, of a hook on the clip, a spring pivoted to the clip, and a clamp-head pivoted to the spring and adapted to a thill or pole stud slipped into the hook, substantially as herein set forth.

3. In a thill-coupling, the combination, with a clip adapted to a vehicle-axle, of a hook, D *d*, on the clip, a spring, F, pivoted to the clip, and a clamp-head, G, pivoted to the spring and provided with an elastic block, H, adapted to bear on a thill or pole stud slipped into the hook, substantially as herein set forth.

4. In a thill-coupling, the combination, with a clip adapted to a vehicle-axle, of a hook, D *d*, on the clip, a spring, F, pivoted to the clip, and a clamp-head pivoted to the spring and adapted to a thill or pole stud slipped into the hook, and studs J at the joint between the spring and clamp-head, substantially as herein set forth.

5. In a thill-coupling, the combination, with a clip adapted to a vehicle-axle, of a hook, D *d*, on the clip, a spring, F, pivoted at *f* to the clip, and a clamp-head pivoted at *f'* to the spring and adapted to a thill or pole stud, E, slipped into the hook, and said pivot *f'* being arranged below a line drawn through the centers of the stud E and pivot *f* when the coupling is in use, substantially as herein set forth.

6. In a thill-coupling, the following elements in combination: a clip, A, a hook, D *d*, thereon, a spring, F, pivoted at *f* to the clip, a clamp-head, G, pivoted to the spring at *f'*, and an elastic block, H, in the clamp-head and adapted to bear on a thill or pole stud, E, slipped into the hook, and said pivot *f'* being arranged below a line drawn through the center of the stud E and pivot *f* when the coupling is in use, substantially as herein set forth.

382,829. TELEGRAPH-CABLE. WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 2, 1883. Serial No. 199,051. (No model.)



Claim.—1. A telegraph-cable covered with a winding of lead tape with overlapping edges, shellacked as described, wound upon a bed or covering of dry-paper tape, a covering of paper tape outside the lead tape, and an outer serving of yarn, substantially as shown and described.

2. A telegraph-cable consisting of a flexible core of one or more conductors, a winding of lead tape with overlapping edges, the overlapping portions of the lead tape being cemented together by a water-proof cement like shellac, a winding of paper tape outside the lead, and an outer serving of yarn wound upon the paper, the lead tape being separated and protected from the yarn by said paper tape, substantially as and for the purpose specified.

3. The combination, in a telegraph-cable, of a winding of lead tape with shellacked and overlapping edges, a bed or winding of paper tape under the lead tape for absorbing the excess of shellac, the core of conductors, and an outer serving, substantially as and for the purpose specified.

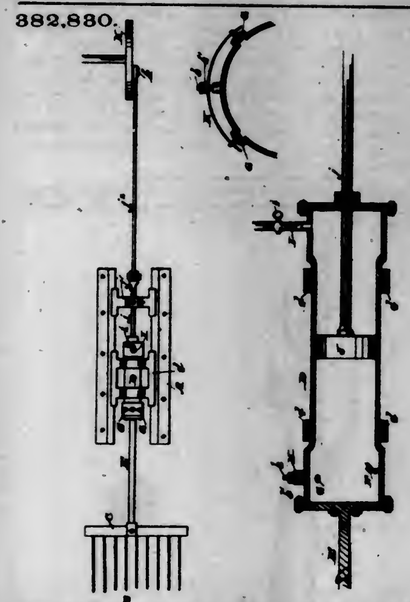
382,830. CARTRIDGE-LOADING APPARATUS. JAMES H. READ, San Francisco, Cal. Filed Oct. 22, 1887. Serial No. 253,153. (No model.)

Claim.—1. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, which consists of a sliding cylinder connected with the plunger or rammer and a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward through the interposition of the air in front of the piston, substantially as herein described.

2. In a cartridge-loading or powder-packing apparatus, the pneumatic connection for applying power, consisting of a sliding cylinder, a reciprocating piston working therein and moving the cylinder with itself in one direction and in the other direction by the compression of air, and a relief-port in the cylinder controlled by an adjustable pressure-valve, whereby the limit of motion of the cylinder in the latter direction is defined by regulating the pressure of the valve, substantially as herein described.

3. In a cartridge-loading and powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the

382,880.



source of power, which consists of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward by compressing the air in front, a valve-controlled inlet-port for the air in front, and a valve-controlled relief-port for defining the forward limit of the cylinder's movement, substantially as herein described.

4. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, which consists of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward by compressing the air in front, a valve-controlled inlet-port for the air in front of the piston, and a relief-port controlled by an adjustable pressure-valve for defining the forward limit of movement of the cylinder, substantially as herein described.

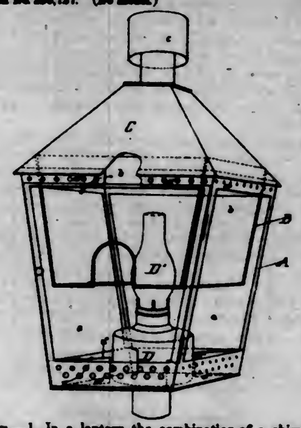
5. In a cartridge-loading and powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to move it back with itself in one direction and forward by compressing the air in front, a valve-controlled inlet-port for the air in front of the piston, a relief-port with a controlling-valve, and an adjustable spring for applying different pressures to said valves, whereby the forward limit of the cylinder's motion is defined, substantially as herein described.

6. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to draw it back with itself in one direction and to force it forward by compressing the air in front, and a cushion in the rear end of the cylinder, against which the piston comes in contact when drawing said cylinder back, substantially as herein described.

7. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power and operating within the cylinder to draw it back by itself in one direction and to force it forward by compressing the air in front, a valve-controlled inlet-port for admitting the air in front of the piston, a relief-port controlled by an adjustable pressure-valve for defining the forward movement of said cylinder and a cushion in the rear end of the cylinder, against which the piston comes in contact when drawing said cylinder back, substantially as herein described.

8. In a cartridge-loading or powder-packing apparatus, the connection between the plunger or rammer of the apparatus and the source of power, consisting of a sliding cylinder connected with the plunger or rammer, a reciprocating piston connected with the source of power, and operating within the cylinder to move it back with itself in one direction and forward by compressing the air in front, a valve-controlled inlet-port for the admission of air in front of the piston, a relief-port controlled by an adjustable pressure-valve for defining the forward movement of the cylinder, and an exit-pipe from the rear of the cylinder controlled by a cock or valve, whereby a cushion is provided behind the piston, substantially as herein described.

382,881. LANTERN. FRANK REBER, Morton, Conn., assignor of one-half to Edward Miller & Company, same place. Filed May 21, 1887. Serial No. 239,737. (No model.)



Claim.—1. In a lantern, the combination of a chimney-bearing lamp, a translucent chimney resting in conjunction with said lamp, an outer translucent lantern-wall, an opening for the admission or emission of air at the upper edge of said outer wall, and an inner translucent lantern-wall separated from the outer wall by an air-space and extending downward to a point below the top of the lamp-chimney and above the lower edge of the outer wall, substantially as described.

2. In a lantern, the combination of a chimney-bearing lamp, a translucent chimney resting in conjunction with said lamp, an outer translucent lantern-wall, an opening for the admission or emission of air at the upper edge of said outer wall, an inner translucent lantern-wall separated from the outer wall by an air-space, and a lantern roof or top from which said inner wall depends, substantially as described.

3. In a lantern, the combination of a chimney-bearing lamp, a translucent chimney resting in conjunction with said lamp, an outer translucent lantern-wall, an opening for the admission or emission of air at the upper edge of said outer wall, an inner translucent lantern-wall separated from the outer wall by an air-space, and a lantern roof or top from which inner wall depends, said roof being formed with a covered or protected opening, substantially as described.

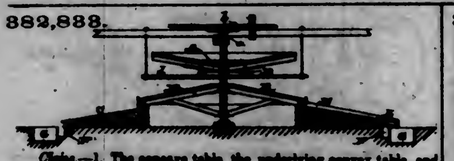
382,882. PRODUCTION OF YELLOW COLORING-MATTER. CHRISTIAN RUDOLPH, Offenbach, near Frankfort-on-the-Main, Germany, assignor to K. Oehler, same place. Filed Sept. 27, 1887. Serial No. 250,251. (No specimens.)

Claim.—1. The method of producing a yellow dye-stuff from benzaldehyde and tolaylen or phenylen-diamine by first condensing benzaldehyde with the said diamines, as described, next heating the tetra-amines thus formed with bodies capable of separating ammonia, and then converting the products of this reaction (the hydrophenylacridines) by oxidizing agents—such as chloride of iron, &c.—into the new yellow dye-stuff herein described as benzoflavine.

2. The yellow dye-stuff herein described as benzoflavine, consisting of an orange-colored powder difficultly soluble in water, somewhat more easily soluble in alcohol, capable of being precipitated from its watery solution by the addition of muriatic acid, showing in alcoholic solution an intense greenish-yellow fluorescence, which disappears on the addition of diluted acids, showing when in solution in concentrated sulphuric acid a yellow tint with greenish fluorescence, and from an aqueous solution of which the coloring-matter is, by the addition of caustic soda, precipitated in the shape of yellowish-white flakes insoluble in water, but soluble in alcohol and ether, as herein described.

382,883. GAS-CONDENSATOR. CHARLES C. BURRIS, Anaconda, Mont. Filed May 21, 1887. Serial No. 239,033. (No model.)

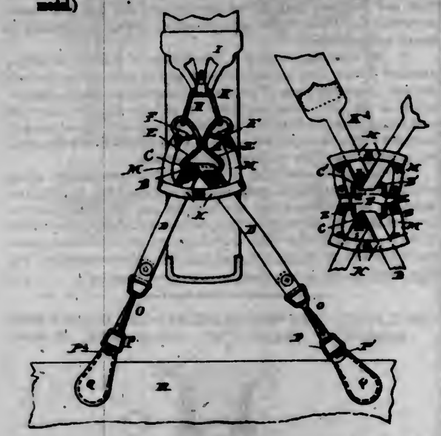
382,888.



Claim.—1. The concave table, the underlying convex table, and means for rotating said tables, in combination with the stationary receiver D and the stationary cone C, substantially as herein described.

2. A revolving concave upper table and a revolving convex lower table, in combination with a convex stationary cone onto which the ore-pulp is fed by the tables, substantially as described.

382,884. SUSPENDER ATTACHMENT. CHARLES H. STALLS, Toronto, Ontario, Canada. Filed Dec. 30, 1887. Serial No. 259,507. (No model.)



Claim.—1. The suspender-buckle A, formed of a single piece of wire bent upon itself, thereby forming an axis, B, adapted to receive the friction-roller C, said ends contracted above said axis and extended and bent to receive the end of the suspender, substantially as shown and described.

2. In a suspender-buckle, the combination, herein described, with a skeleton body having a transverse friction-roller axis, upward-projecting members, and outward-projecting arms, of a pair of oblong guide-loops rigidly connected end to end, and rigid branches on the loops connecting them to the outward-projecting arms of the body, substantially as described.

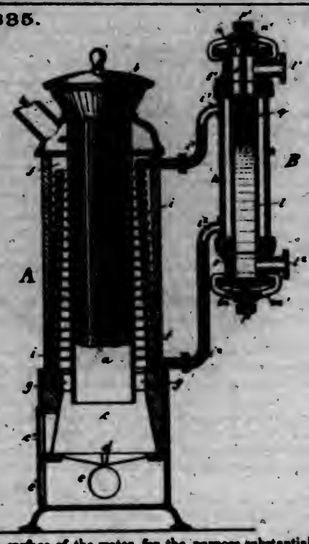
3. The combination, with the buckle A, formed of a single piece of wire, formed with a transverse axis, B, provided with a friction-roller, C, and its ends extended and projected and adapted to receive the suspender-end, as shown, of the skeleton plate M, connected to the outward projection of the buckle A, and provided with guide-loops N N, arranged exterior to the said buckle, substantially as and for the purpose specified.

382,885. STEAM-GENERATOR. WILHELM SIEMENS, Halberstadt, Prussia, Germany. Filed Oct. 17, 1887. Serial No. 252,617. (No model.) Patented in Germany May 5, 1886, No. 37,987.

Claim.—1. A steam-generator consisting of two tubes, *l* and *h*, of different diameters, being shut off from one another, and of which the one *l* is inserted in the other, *h*, and is provided with a steam-outlet port, *l'*, and water-inlet port *P*, and of which the other one, *h*, is connected to the boiler by means of the pipe *P'* at the top and by the pipe *P* at the bottom, in combination with a directly-heated system of tubes, *i*, the steam of which is conducted into tube *h* by a pipe, *i'*, and the condensed steam is guided back into the system of tubes *i* through pipe *P'*, for the purpose substantially as described.

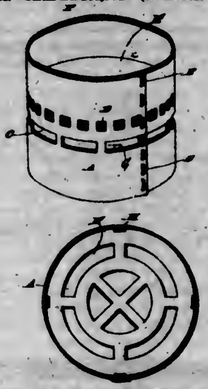
2. In steam-generators consisting of two tubes, *l* and *h*, of different diameters, being shut off from one another, and of which the one *l* is inserted in the other, *h*, and is provided with a steam-outlet port, *l'*, and water-inlet port *P*, and of which the other one, *h*, is provided with similar ports, *l'* and *P*, in combination with a directly-heated system of tubes, *i*, the steam of which is conducted into tube *h* by a pipe, *i'*, and the condensed steam is guided back into the system of tubes *i* through pipe *P*, and with a piston, *g*, arranged inside the boiler *l*

382,885.



above the surface of the water, for the purpose substantially as described.

382,886. VAPORIZER. ROBERT S. SKINKLEY, Galesburg, Ill. Filed Jan. 20, 1888. Serial No. 261,674. (No model.)



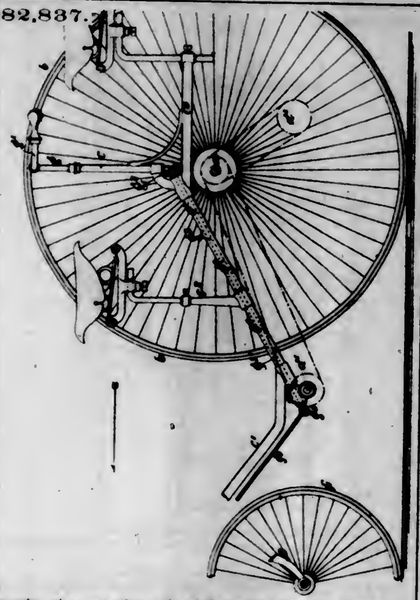
Claim.—1. The vessel for heating and administering the catarrh remedy, said vessel comprising the cylinder having the pan F in its upper end, the perforated plate or diaphragm G below the said pan and adapted to rest upon the upper end of a lamp-chimney, that portion of the cylinder between the bottom of the pan and the plate or diaphragm G being perforated to admit the escape of the products of combustion, substantially as described.

2. The device for administering catarrh remedy, comprising the cylinder having the openings C D, the diaphragm B, arranged in the upper end of the cylinder above the openings D, and the plate or diaphragm G, arranged in the cylinder below the openings C, said plate or diaphragm being perforated for the purpose set forth, and having the lugs or ears secured to the cylinder, substantially as described.

382,887. VELOCIPEDE. SAMUEL GOODE and RICHARD H. LEA, Coventry, County of Warwick, England. Filed July 22, 1887. Serial No. 244,962. (No model.) Patented in England Mar. 27, 1886, No. 4,346.

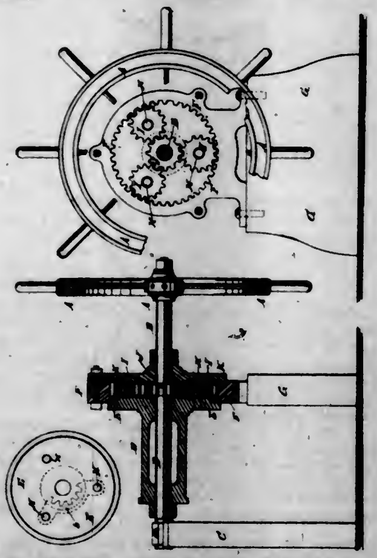
Claim.—The combination, in a two-cast tricycle, with the driving-wheels and front steering-wheel and fork, and the frame having an inclined tube connecting the forward and back portions, of a handle-bar between the two ends, an inclined rod connected to said handle-bar and passing through and below the inclined tube of the frame, a crum-head upon the lower end of this rod, a crum-head upon the upper end of the steering-wheel forks, and two parallel rods or links

382,837.



connecting the respective ends of the cross-heads, substantially as specified.

382,838. STEERING APPARATUS FOR VESSELS. JOHN H. SHELLENS, Peru, N. Y. Filed Mar. 12, 1888. Serial No. 266,055. (No model.)



Claim.—In a steering apparatus, the combination of the combined standard and internally-toothed rim F with the wheel-shaft and its gear J, the drum and its gears I, mounted loose on studs fixed in the flange of said drum, the cap-plate K, in which the shaft has its front bearing, and bolts for securing said plate to the standard, as shown and described.

382,839. TWO-WHEELED VEHICLE. CHARLES C. SPENCER, Cortland, N. Y. Filed Dec. 2, 1887. Serial No. 256,773. (No model.)

382,839.



Claim.—1. The combination, with a vehicle-body and a semi-elliptic spring attached to said body, of longitudinal side springs having their forward ends attached at the front of said body and their rear ends curved upward, provided with a U-shaped bend, and secured to the said semi-elliptic spring, substantially as herein shown and described.

2. The combination, with a vehicle-body, a semi-elliptic spring attached to said body, and the axle, of longitudinal side springs secured to the axle, having their forward ends linked to the body at its front and their rear ends curved upward, provided with a U-shaped extremity and linked to the said semi-elliptic spring, substantially as shown and described.

3. The combination, with a vehicle-body, a semi-elliptic spring attached to said body beneath the seat, and an axle having its body dropped below the plane of its ends, of longitudinal side springs attached to the axle within and below its ends, having their forward ends linked to the body at its front and their rear ends curved upward, provided with a U-shaped extremity and linked to the said semi-elliptic spring, substantially as shown and described.

4. The combination, with a vehicle-body, a semi-elliptic spring attached to the seat of the body, the axle, and side bars, of springs attached to said side bars and the body, longitudinal side springs secured to the axle, having their forward ends linked to the front sides of the body and their rear ends curved upward, provided with a downwardly-inclined U-shaped end, and linked to the extremities of the semi-elliptic spring, substantially as shown and described.

382,840. DRAW-GEAR FOR RAILWAY-CARS. CHARLES H. STARR, Logansport, Ind. Filed July 13, 1887. Serial No. 244,193. (No model.)



Claim.—1. As a new article of manufacture, a channel-bar having outwardly-extending flanges, the flanges and sides of which are provided with transverse gains or slots, substantially as described.

2. An improved channel-bar having outwardly-extending flanges and provided with transverse slots in the sides and flanges, the said slots being of a sufficient depth to allow the head of a bolt to drop down behind the said flanges when a bolt is inserted in the said slots, substantially as herein shown and described.

3. The combination, with channel-bars with outwardly-extending flanges and a means of connecting said bars with the draft-sill of the car, of bolts passing through transverse gains or slots formed in the flanges and sides of the channel-bars and bolster-bearings, being held to place by bolts and the lower flanges on the channel-bars, substantially as described.

4. The combination, with channel-bars 13, a means for connecting said bars to the draft-sills of a car, of bolts 3, which pass through gains or slots 2, formed in the flanges and sides of channel-bars 13, substantially as described.

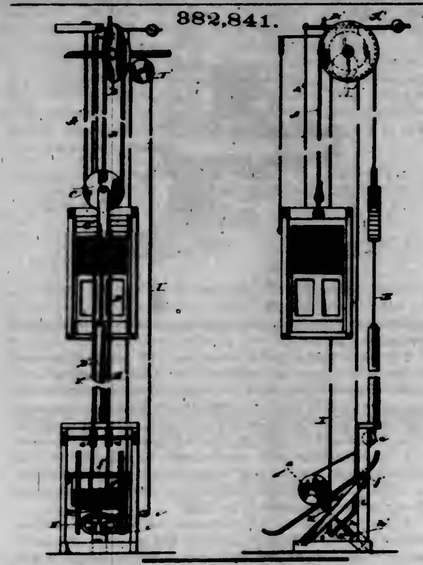
5. The combination, with the spring-cage 15, provided with apertured plates or flanges 16, of the channel-irons 13, having outwardly-extending flanges and provided with slots 2 in the sides and flanges, and the bolts 3, substantially as herein shown and described.

382,841. ELEVATOR. EDWARD J. STELLWAGEN, Washington, D. C. Filed Jan. 4, 1888. Serial No. 259,771. (No model.)

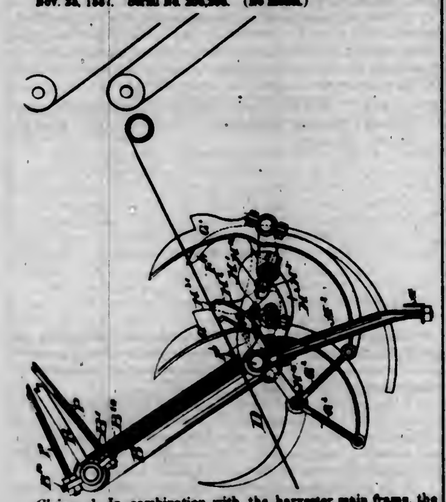
Claim.—1. The combination of an elevator-car, its hoisting mechanism, an adjustable track or inclined plane, and a car-elevating weight connected with the hoisting mechanism and traveling on the adjustable track, as set forth, whereby the car may be elevated or permitted to descend.

2. The combination of an elevator-car, its hoisting mechanism, a pivoted adjustable track or inclined plane, a car-elevating weight connected with the hoisting mechanism and traveling upon said track, and a track-inclination adjusting-rope passing through the car, whereby by manipulation of the rope in the car the inclination of the track may be varied and the car elevated by the draft of the weight or permitted to descend, as set forth.

382,841.



382,842. GRAIN-BINDER. JOHN F. STEWARD, Chicago, Ill. Filed Nov. 23, 1887. Serial No. 256,206. (No model.)



Claim.—1. In combination with the harvester main frame, the binder-frame, the needle rock-shaft journaled in said binder-frame, and a post or bracket, as A^1, supported on the main frame and having a bearing for the needle rock-shaft, whereby the binder-frame receives support through the needle rock-shaft, substantially as set forth.

2. In combination with the harvester main frame and the binder-frame comprising a rigid arm; as B^2, the needle rock-shaft journaled in said arm and protruding from the end of it, and a rigid post or bracket, as A^1, on the main frame, having a bearing in which the protruding end of the needle rock-shaft is journaled, substantially as and for the purpose set forth.

3. In combination with the binder-frame having a rigid arm, as B^2, the needle rock-shaft journaled in said arm and having the needle at one end of said arm, the packer crank-shaft having its cranks located one on each side of the vertical plane of the needle, and the bracket H^3, secured to the arm B^2 and having a journal-bearing for the packer crank-shaft between the cranks, substantially as set forth.

4. In combination with the binder-frame and the packer crank-shaft, a bracket, as H^3, secured to the binder-frame and having a bearing for the packer crank-shaft between its cranks, and having also a bearing for the trip-shaft, substantially as set forth.

5. In combination with the binder-frame, the needle rock-shaft journaled in an arm thereon, a rigid bracket secured to the said arm and hung on said rock-shaft, and having a bearing for the packer crank-shaft, substantially as set forth.

6. In combination with the binder-frame and the needle rock-shaft journaled in an arm thereof and carrying the needle located at the end of such arm, and protruding beyond said needle, a bracket, as $H' H^3$, having a journal-bearing for the packer crank-shaft and extended from such bearing in two arms, one on each side of the vertical plane of the needle, one of them being secured to the binder-frame arm and the other supported on the protruding end of the needle rock-shaft beyond the needle, substantially as set forth.

7. In combination, substantially as set forth, the binder-frame, needle rock-shaft, packer crank-shaft, and the bracket composed of the parts H' and H^3, each part having a portion of a journal-box for the packer-shaft, one part, H', being supported on the needle rock-shaft and the other part, H^3, being secured to the binder-frame, substantially as set forth.

8. In combination with the binder-frame, the bracket H^3, secured to the lower arm of said frame, the trip-shaft and the packer-shaft each having bearings therein, the packer, and the packer guide-link having the trip-shaft as its pivot, substantially as set forth.

9. In combination with the binder-frame, the packer crank-shaft and the trip-shaft having their bearings rigid therewith, the packer journaled on the crank-shaft wrist, and the packer guide-link pivoted to the packer and having its other pivot on the trip-shaft, substantially as set forth.

10. In combination with the binder-frame, the bracket H^3, secured to the lower arm of said frame, having the tucker-cam integral with it, and having the bearing for the packer-shaft, substantially as set forth.

11. In combination with the binder-frame, the bracket H^3, secured to the lower arm of said frame, having the tucker-cam integral with it, and having the bearing for the trip-shaft, substantially as set forth.

12. In combination with the binder-frame, the bracket H^3, secured to the lower arm of said frame and having the tucker-cam integral with it, and having the bearings for the packer-shaft and the trip-shaft, substantially as set forth.

13. In combination with the binder-frame, the needle rock-shaft journaled in its lower arm, the brackets H' and H^3, rigidly joined, one of them being secured to the binder-frame arm and the other being hung upon the needle rock-shaft, and the trip-shaft having a bearing in one of said brackets, substantially as set forth.

14. In combination with the binder-frame, the needle rock-shaft journaled in its lower arm, the brackets H' and H^3, rigidly joined, one of them being secured to the binder-frame arm and the other being hung upon the needle rock-shaft, the packer crank-shaft journaled in one of said brackets, the packers pivoted on the cranks of said shaft, and the packer guide-links having one end pivoted to the packers, respectively, and the other end pivoted to said brackets H' and H^3, respectively, substantially as set forth.

15. In combination with the binder-frame arm B', the braces P P, secured to said arm and extended thence inward and rigidly secured at approximately the same point to the bar N, said bar terminating free of support at both ends, and the grain-check fingers M M M, secured to said bar, substantially as set forth.

16. In combination with the binder-frame arm B', the binder-shaft O, journaled therein, the knotter-frame K, supported on the protruding portion of said shaft, the breast-plate secured to the lower part of the knotter-frame and extending inward, the braces P P, secured to the arm B' and extending thence inward and rigidly connected with the inward part of the breast-plate, and the bar N, rigidly secured both to the breast-plate and to both said braces and terminating free of other support at both ends, substantially as set forth.

17. In combination with the binder-frame arm B', the braces P P, rigidly secured to the said arm, one on the upper and the other on the lower side thereof, and extended thence inward and bent at their inner ends to form a foot on each, and the bar N, rigidly secured to such feet and extending both ways therefrom and terminating free of other support at both ends, and the grain-check fingers secured to said bar, substantially as set forth.

18. In combination with the binder-frame arm B', the braces P P, rigidly secured to said arm, one on the upper and the other on the lower side thereof, and extended thence inward and bent at their inner portion to form feet at an angle with their remaining portion, the bar N, rigidly secured to said feet and terminating free of other support at both ends, the binder-shaft journaled in the arm B', the knotter-frame hung upon its protruding portion, and the breast-plate secured to the knotter-frame and to the bar N, substantially as set forth.

382,843. STOCK-CAR. LUTHER R. STILES, Chicago, Ill. Filed Oct. 3, 1888. Serial No. 170,232. (No model.)

382,843.



Claim.—1. An upper and removable deck for a stock-car, composed of planks the ends of which are sustained by the side walls of the car, and each plank provided with two cleats extending out laterally from each of its edges so as to support and receive support under pressure from adjacent planks, substantially as described.

2. As a component part of an upper and removable deck for a stock-car, the plank D, provided with two cleats, *c*, one of which is fastened upon each side edge of the same and extends out laterally therefrom, the two cleats being placed on opposite sides to each other of the plank and also of the short axis of the plank, adapted to afford support to and receive support from adjacent planks and to render the same interchangeable, substantially as described.

3. In combination with a stock-car having a removable upper deck, the described receptacle for holding the removable deck when not in use, located immediately under the lower deck of the car and supported in position by any suitable means, substantially as described.

382,844. GATE ROLLER AND HINGE. JAMES J. SWARTHOUT, Stone's Prairie, Ill. Filed Mar. 12, 1888. Serial No. 267,012. (No model.)



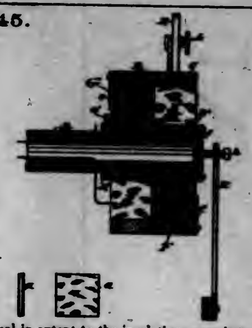
Claim.—1. A gate roller and hinge device consisting of a ball having two oppositely-extending arms adapted for connection to two posts, between which the gate may slide and swing, and a roller fitted loosely on the ball and adapted to support the gate, substantially as herein set forth.

2. In a gate, the combination, with two diagonally-set posts, F G, of a ball-bearing, B, having arms C D fixed to said posts, a roller, A, fitted loosely onto the ball B, and said gate provided with rails or ways supporting it to slide on the roller and swing with the roller on the ball, substantially as herein set forth.

382,845. COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES. NIKOLA TESLA, New York, N. Y., assignor of one-half to Charles F. Peck, Englewood, N. J. Filed Apr. 30, 1887. Serial No. 236,711. (No model.)

Claim.—1. In a dynamo-electric machine, the combination, with a commutator formed with conducting terminals or segments with intervening insulating-spaces, of a collector adapted to bear upon the surface of the commutator and formed with conducting terminals or

382,845.



segments equal in extent to the insulating-space between the commutator-segments, as set forth.

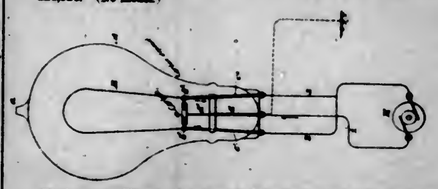
2. The combination, with a commutator built or formed of alternate blocks or segments of conducting and insulating material, of a collector adapted to bear upon the surface of the commutator and formed of conducting blocks or segments of a width or extent equal to that of the insulating-segments of the commutator and separated by interposed blocks or segments of insulating material, as described.

3. The combination, with a commutator formed as a disk with alternate terminals or segments of conducting and insulating material, of a collector similarly formed and mounted with its face in contact with that of the commutator, as set forth.

4. The combination, with a commutator having a bearing-surface formed of alternate sections of conducting and insulating material, of a collector with a similar and symmetrically-formed bearing-surface and means for applying spring-pressure to force the two bearing-surfaces together, as set forth.

5. The combination, with a commutator and a collector the bearing-surfaces of which are identical in respect to the disposition of the conducting and insulating parts, of means for applying spring-pressure to maintain the two bearing-surfaces in contact and means for holding the collector against rotary movement, as set forth.

382,846. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. EDWARD P. THOMPSON, Elizabeth, N. J. Filed Feb. 4, 1887. Serial No. 226,596. (No model.)



Claim.—1. The hereinbefore-described method of heating the joints of incandescent electric lamps, which consists in forming electric arcs between the same and an independent conductor in a chemically-inert atmosphere, substantially as described.

2. In an incandescent electric lamp, the combination, with the leading-in wires, the filament and the joints between the same, of an independent conductor, and a carbon plate supported upon the latter and extending into proximity to the respective joints, all contained in a chemically-inert atmosphere, substantially as described.

3. In an incandescent electric lamp, the combination, with the leading-in wires, the filament, and the joints between the same, of a plate or strip of carbon extending between the joints, and a source of electricity for passing an electric current from said plate to the respective joints, substantially as described.

4. The hereinbefore-described method of building up the joints of incandescent-electric-lamp filaments, which consists in causing a deposit of carbon to be made upon the joints in a chemically-inert atmosphere by means of an electric current forming arcs between an independent electrode of carbon and said joints.

5. In an incandescent electric lamp, discharge-points of carbon between the respective joints of the filament and an independent conductor supporting the same, substantially as described.

6. The hereinbefore-described process of manufacturing incandescent electric lamps, which consists in exhausting the atmosphere from the lamps and simultaneously heating the joints of the filaments to incandescence, and strengthening the same by electrically depositing carbon thereon.

7. In an incandescent electric lamp, the combination, with the

leading-in wires of the filament, of an independent conductor consisting of a plate of carbon between the joints of the filament and a flexible support carrying the same, substantially as described.

8. The hereinbefore-described process of strengthening the joints of the filaments of an incandescent electric lamp, with its leading-in wires, which consists in forming an arc between an electrode and the joints and causing a deposit of carbon obtained from said electrode to be made upon the joints by the discharge of the current in an attenuated atmosphere.

382,847. SPRING-TOOTH. PHILIP F. WELLS, Milford, Mich., assignor of one-half to D. S. Wells, same place. Filed Sept. 22, 1887. Serial No. 250,631. (No model.)



Claim.—The herein-described spring-tooth, consisting, essentially, of the curved-spring standard provided with a slot near its lower end, the reversible point having its edges turned abruptly rearwardly to snugly engage the opposite edges of the spring-standard and having an extended bearing therewith in the direction of the length of the point, and the single draw-bolt extending through the elongated slot to lock the point to the spring-standard, substantially as set forth.

382,848. DOG-GUARD FOR EYEGLASSES. WALTER S. WELLS, New York, N. Y. Filed Apr. 25, 1887. Serial No. 236,067. (No model.)



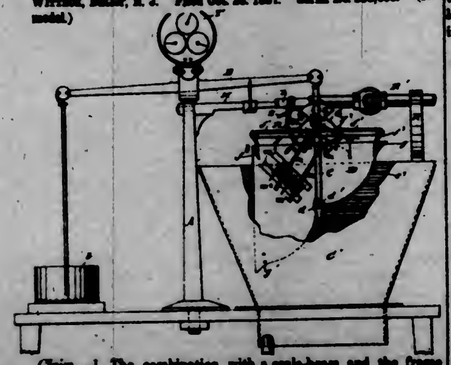
Claim.—1. The combination, in eyeglasses or spectacles, with the glasses or lenses, of arms extending substantially horizontally from and beyond the posts which connect the bow-spring with the glasses or lenses, and nose-pads secured one upon each arm by a universal joint, and of which said arms constitute the sole support, substantially as herein described.

2. The combination, in eyeglasses or spectacles, with a bow-spring the end portions of which are prolonged in a substantially horizontal plane beyond the posts which connect the spring with the glasses or lenses, of nose-pads, each having a universal-joint connection with the end of the bow-spring, whereby the pad is solely supported, substantially as herein described.

3. The combination, in eyeglasses or spectacles, with the glasses or lenses, of arms projecting from and beyond the posts which connect the bow-spring with the glasses or lenses, and terminating in balls *c*, and the nose-pads C, each consisting of a wire or strip of metal bent into ring-like form and having its ends separated and shaped in the form of rings or cups *c'* to embrace the ball and form a joint therewith, and provided with an adjusting-screw, *d*, substantially as herein described.

4. The combination, in eyeglasses or spectacles, of a bow-spring having its end portions projecting in a substantially horizontal plane beyond the posts which connect it with the glasses or lenses, and each forming the sole support for a nose-pad, and the posts adjustable along the bow-spring to vary the distance of the glasses or lenses apart, substantially as herein described.

382,849. AUTOMATIC WEIGHING-SCALE FOR LIQUIDS. PAUL WITZKE, Butler, N. J. Filed Oct. 20, 1887. Serial No. 253,003. (No model.)



Claim.—1. The combination, with a scale-beam and the frame suspended therefrom, of the divided scoop pivoted thereto, a transverse bar secured to the frame, angular catches pivoted at their angles to the ends of the said bar and engaging the opposite ends of the scoop alternately with their vertical arms, pins on the horizontal or trip arms of the catches, and a releasing device in the path of the said pins when the frame and scoop are depressed, substantially as set forth.

2. The combination, with the scale-beam, the frame suspended therefrom, and the scoop pivoted in said frame and having a partition, of the tilting table pivoted above the scoop and provided with flanges at its sides and at its ends, the end flanges being inclined inward and having downward and outward extending lips, and connections between the table and scoop, substantially as set forth.

3. The combination, with the scale-beam, the frame suspended therefrom, and the scoop pivoted to the frame, of the tilting table above the scoop, connections between said table and scoop, and an adjustable stop limiting the throw of the table, substantially as set forth.

4. The combination, with the scale-beam, the frame suspended therefrom, and the scoop pivoted in the frame, of a tilting table above the scoop, a yoke connected with the table, and an adjustable stop on the scoop and with which said yoke engages, substantially as set forth.

5. The combination, with a scale-beam, a frame suspended from one end and a weight from the other, a scoop divided into compartments by a central partition and provided with a central adjustable projection upon one outer face, and a receiving-receptacle beneath said scoop, of a flanged tilting table pivoted above the uppermost compartment of the scoop, a yoke secured to the axis of said table, the arms whereof extend downward at each side of the said adjustable projection, and a supply-pipe having an outlet centrally above the table, substantially as and for the purposes herein set forth.

6. The combination, with a scale-beam, a frame suspended from one end and a weight from the other, a scoop divided into two compartments by a central partition and provided with a central adjustable projection, a cross-bar attached to the front of said frame, retaining-arms pivoted at the ends of said bar, provided with catches at their outer extremities adapted to engage pins secured upon the scoop, and a receiving-receptacle below said scoop, of a flanged tilting table pivoted above the uppermost compartment of the scoop, a yoke secured to the axis of the table, the arms whereof engage the said adjustable projection, a curved tripping-bar secured to the table-support projecting under the inner ends of the retaining-arms, and a supply-pipe having an outlet centrally above the table, substantially as and for the purposes herein set forth.

7. The combination, with a scale-beam, a frame suspended from one end and a weight from the other, a scoop divided into two compartments by a central partition and having a curved bottom, and provided with a central adjustable projection, a cross-bar attached to the front of said frame, retaining-arms pivoted at the ends of said bar, provided with catches at their outer extremities adapted to engage pins secured upon the scoop, and a receiving-receptacle below said scoop, of a flanged tilting table pivoted above the uppermost compartment of the scoop having beveled end lips, a yoke secured to the axis of said table, the arms whereof engage said sliding projection, a tripping-bar secured to the table-support projecting under the inner ends of the retaining-arms, and means, substantially as described, for supplying material to the table, as and for the purposes set forth.

382,850. COUGH-MIXTURE. JAMES WEST, Crawford, Colo. Filed June 16, 1887. Serial No. 241,869. (No specimens.)

Claim.—The herein-described compound or composition of matter to be used as a remedy for coughs and colds, consisting of the extract of bloodroot, essence of anise, essence of sassafras, essence of lobelia, tincture of Cayenne pepper or capsicum, and tincture of myrrh, in or about the proportions specified.

382,851. STOVE OR RANGE. EDGAR W. ANTHONY, Brooklyn, Mass. Filed Oct. 7, 1886. Serial No. 215,892. (No model.)



382,851.



Claim.—1. In a cooking stove or range having an entrance to a compartment under the hearth-plate, a movable hearth-plate hinged to the base-plate or end of the stove, and a latch or lock for holding it to the end of the stove in a perpendicular position, substantially as described.

2. In a stove or range having an entrance to a compartment under the hearth-plate, the combination of the hinged hearth-plate A, the said compartment, and an ash-pan, D, adapted to be held in said compartment, and having the front plate, *d*, which forms the front plate of the base of the stove, and its handle *b'*, as and for the purposes specified.

3. In a stove or range, the combination of the base-plate *b*, or end of the stove or range, the hearth-plate A, and a latch adapted to automatically hold the plate when lifted to a perpendicular position, substantially as described.

382,852. BOARD FOR PICTURE AND MIRROR BACKS. JACOB APELL, Chicago, Ill., assignor to Duncan & Johnston, same place. Filed Sept. 14, 1887. Serial No. 249,615. (No model.)



Claim.—1. The improved manufacture described, consisting of a thin wood board, A, scored lengthwise of the grain at short intervals, and a sheet, B, adhesively attached to the surface of the board, substantially as described.

2. The improved manufacture described, consisting of a thin wood board, A, scored lengthwise of the grain in alternate lines on opposite sides, and a sheet, B, adhesively attached to the surface of the board, substantially as described.

382,853. DEVICE FOR MAKING POST-HOLES. JOSIAH W. BAILEY, Mansfield, Pa. Filed Sept. 12, 1887. Serial No. 249,494. (No model.)



Claim.—The herein-described device for making post-holes, consisting of the steel bar A, having the cylindrical part *a*, the point a^2, and the part a' between said point and the cylindrical part, which part a' is larger in diameter than the cylindrical part *a* and is rectangular in cross-section, and the cast-iron portion C, which has its sides aligned with the point B of the stem A, and is held on said stem by its contraction from a molten state upon the shoulders a^3 a^4 of the stem A, substantially as specified.

382,854. SLIP AND SHRINKAGE GAGE. HENRY C. RAILSBACK, Harrisburg, Pa. Filed May 21, 1887. Serial No. 239,023. (No model.)



Claim.—1. In a slip-gage, the combination of the tube A, having one end threadless and formed with tongues *m*, having slots N between them, the long round plug B, having terminal *c* and sleeved snugly in said tube, the flared ring L, adapted to be slid inward on said tongues for clamping said plug therein, the corresponding shorter plug, E, having the terminal *c'* and pin Q inserted in the exteriorly-threaded end of said tube, with said pin projected through the slot O' therein, the spring G, contained in said threaded end and exerted against the inner end of the plug, and the nut C on the threaded end of the tube and engaging said pin, substantially as and for the purposes set forth.

2. In a slip-gage, the combination, with the tube A, formed at one end with the taper tongues *m*, duly spaced apart, and with the partition A' fixed therein, of the round plug B, sleeved in said tube and having the point *c*, of the slip-ring L, adapted to inclose said tongues and compress them onto said plug to hold it in place therein by sliding the ring over the tongues, of the plug E, provided with the pin Q, projecting through the slot O' in said tube, of the nut C, driven upon the threaded end O of said tube and having its inner end in contact with said pin, and of the spring G, interposed between said plug E and said partition in said tube, as and for the purposes set forth.

3. In a slip-gage, the combination, with the tube A, having one of its ends provided with the taper tongues *m*, the ring N, slipped thereon and with the long plug B adjustably held therein by said means, of the doubly-threaded ring or nut C, driven on the threaded end O of said tube, of the round plug E, provided with the fixed pin Q, projected through the slot O' and engaged by the inner end of said nut, of the spring G, inserted between the partition A' and the butt-end of said plug in said tube, and of the sprung pin J, provided with the point X, all arranged and adapted substantially as and for the purposes set forth.

4. In a slip-gage, the combination, with the tube A, having the long-pointed plug B adjustably clamped therein, and having sleeved in its opposite end the plug E, provided with the pin Q, of the ring or nut C, driven on said tube and jammed interiorly against the end thereof, of the outer nut, D, driven on said other nut and provided with the circle of graduation-marks *d*, of the spring G, supported in said tube and exerted to hold said pin in contact with said nuts, and of the sprung indicator J, inserted in the plug E and having its point X extended over said marks, so as to be adjustable to any of them, substantially as and for the purposes herein set forth.

382,855. METALLIC RAILROAD-TIE. FRANK RARETY, Schenectady, N. Y. Filed Feb. 26, 1887. Serial No. 228,969. (No model.)



Claim.—1. A railroad-tie consisting of an upper and a lower section and springs intermediate between the two sections, said upper section being normally held at a point between the extreme limits of expansion and contraction of said springs, thereby compressing the latter to sustain without contraction a given load, while at the same time permitting of further contraction to compensate for heavier loads, substantially as described.

2. A railroad-tie consisting of an upper and a lower section and springs intermediate between the two, the sections being provided with stops to prevent separation of the sections from each other, and retaining the springs in a normally-compressed condition corresponding to a given load, substantially as described.

3. A railroad-tie consisting of an upper and a lower section and compressed springs intermediate between the two, one of said sections being provided with slots and the other with cross-bolts engaging within said slots, substantially as described.

4. A metallic railroad-tie consisting of a U-shaped base having side flanges and cross-bolts, a U-shaped upper section fitting within said flanges and having slots, springs intermediate between the base and upper section, and end caps, substantially as described.

382,856. REPEATING INDUCTION-COIL. JOHN A. BARRETT, Brooklyn, N. Y. Filed Jan. 14, 1888. Serial No. 260,742. (No model.)

Claim.—1. A repeating-coil consisting of two insulated wires of approximately equal length and size, and a magnetic core, said wires being each wound into two or more helices, each of which is placed in close inductive relation to a helix or helices of the other wire, and both wires as a whole being equally near to the core, whereby each wire is equally exposed to reciprocal inductive action, and to magneto-electric induction from the magnetic core, substantially as described.

382,856



2. A repeating-coil having two wires of approximately equal length and size, and a spool divided longitudinally into sections, said wires being each wound into two or more separate helices disposed in the sections of said spool in such manner that each helix is adjacent to one in the other circuit, substantially as described.

3. A repeating-coil for telephone-circuits, comprising a soft-iron core, and two separate insulated conducting-wires wound thereon, equal portions of both of the said wires being wound in a helix next to the core, and the remaining portions of each being wound externally to and surrounding that portion of the other which immediately surrounds the said core, whereby both are equally exposed to magnetic induction from the said core, and whereby each is enabled to act inductively with equal power upon the other.

4. A repeating-coil for telephone-circuits, comprising a soft-iron core, and two separate and independent insulated conducting-wires of equal size and approximately equal length and resistance surrounding the same, equal portions of both of said wires being wound in separate helices next to the core, each being wound to an equal thickness from one end to the center of the said core, and the remaining portions of each being wound externally to and surrounding that portion of the other which immediately surrounds the said core, whereby both are alike exposed to the inductive action of the core, and whereby each is enabled to reciprocally induce currents in the other.

5. In a repeating induction-coil, a containing reel or spool divided at its longitudinal center into two equal portions or compartments, an inside helix of insulated wire wound in each compartment of the said reel and filling up one-half of the depth of the wire-spaces, each inside helix being of substantially equal length and resistance, an external helix of insulated wire wound in each reel-compartment surrounding the inner helix thereof, and filling the remaining wire-space of the reel, the external wires also being of uniform length and resistance, one end of each external helix being united to one end of the internal helix of the other compartment, so that two separate circuits are constituted in the complete repeating-coil, each formed, respectively, of one inside and one outside helix, the outer helix of each surrounding the inner helix of the other, and a soft-iron core passing through the center of the reel and surrounded by the said helices, substantially as and for the purposes described.

6. In a repeating induction-coil, the combination, substantially as hereinbefore described, of a soft-iron core, a wire-spool surrounding the same and divided into longitudinal compartments, two helices of insulated wire of uniform size wound in each compartment, the inner helix being wound to fill one-half the depth of the wire-space, the outer helix wound thereover until the remaining wire-space is filled up, and the inner helix of each compartment being connected with the outer helix of the next, whereby each of the two circuits of the repeating-coil are caused to consist of an inner helix and an outer helix in series, the outer helix surrounding the inner helix of the other circuit, and terminal screws or connections for each of the said circuits, whereby they may be united with independent telephone-circuits, for the purpose specified.

382,857. TRACTION-ENGINE. FRANK BAXTER, Slide, Cal. Filed Feb. 11, 1888. Serial No. 263,731. (No model.)

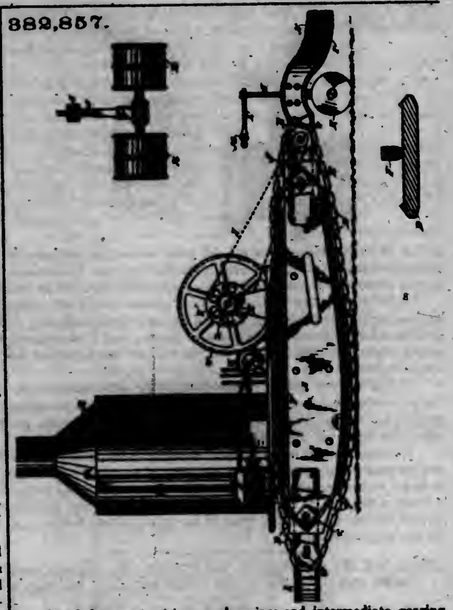
Claim.—1. The traction-engine consisting of parallel frames united together and having two independent endless belts formed of blocks or sections hinged together, pulleys or drums in the ends of the frames, around which the belts pass and through which they are propelled, in combination with a series of alternately flanged and plain rollers journaled to the lower part of the engine-frame, and an intermediate endless belt composed of links resting upon the central portions of the shoes and upon the upper edges of which the rollers travel, substantially as and for the purpose herein described.

2. The traction-engine composed of parallel frames with the semi-circular channel-iron end pieces by which they are united, the endless belts composed of blocks hinged together, having their greatest length transversely to the machine, so as to form shoes upon which the latter is supported, a second belt composed of narrower links united together and resting upon the upper surfaces of the shoes, alternately flanged and plain rollers journaled in the power part of the frames and traveling upon the upper edges of the intermediate links and out of contact with the shoes, in combination with the two sets of steering-drums mounted in pairs on horizontal shafts, vertical shafts, tillers, and connecting rod or bar by which they are turned simultaneously, a divided driving-shaft and clutch-couplings by which either one or both traveling belts may be driven, and engines and intermediate gearing by which power may be applied to the same, substantially as herein described.

3. The steering-drums mounted in pairs on horizontal shafts which pass through journal-boxes, said boxes being hinged to vertical steering-shafts, whereby the tread of the drums may conform to the irregularities of the surface without strain upon the vertical shafts, substantially as herein described.

4. In a traction-engine, the parallel frames united together, having the supporting-shoes, the intermediate link belt and the rollers traveling upon the same, together with the engines and driving-shaft, in combination with the draft-bar extending rearwardly from a transverse shaft P, to which said draft-bar is connected, and the screw or mechanism by which the bar may be shifted to one side or the other of the center when it is desired to turn the machine around, substantially as herein described.

382,857.

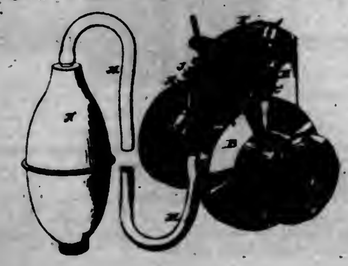


5. The traction-engine having the independent endless traveling belts forming shoes upon which it is carried, and engines and driving mechanism, as described, in combination with the draft-bar N, the transverse shaft P, to which said draft-bar is connected, and the screw or mechanism by which the bar may be shifted to one side or the other of the center when it is desired to turn the machine around, substantially as herein described.

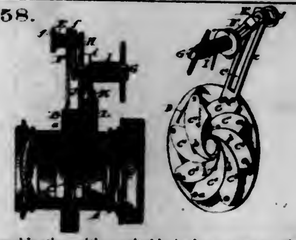
382,858. DIAPHRAGM AND SHUTTER FOR PHOTOGRAPHIC AND OTHER LENSES. EDWARD BAUSCH, Rochester, N. Y. Filed Dec. 24, 1887. Serial No. 258,883. (No model.)

Claim.—1. In combination with a suitable body or support having an opening therethrough, the series of pivoted blades grouped around said opening and each engaging directly with and actuating the next, substantially as described and shown.

2. In combination with a suitable body or support, the pivoted overlapping blades grouped around said opening, and each provided with a stud or projection to act directly on the next, in combination with a springe tending to move said blades in one direction on their pivots.



382,858.



3. In combination with a suitable body or support, the series of pivoted overlapping blades directly connected by studs and slots, as shown, whereby they are caused to move inward and outward in unison.

4. In combination with a series of pivoted connected blades adapted to swing inward and outward across a central opening, an arm extended from one of said plates, a crank acting on said arm, a spring to turn the crank, and a detent to hold the crank against the stress of the spring.

5. The series of pivoted blades grouped around a central opening and acting each to move the next, in combination with the spring tending to close the blades, the slotted arm *c*, the slotted crank, the adjustable crank-pin, the crank-actuating spring, and the detent-lever.

6. In combination with a series of movable blades pivoted around the periphery of a central opening and adapted to swing inward and outward across the same, an arm arranged to operate the said blades, a crank acting on said arm, a spring to turn the crank, and a detent to hold the crank against the stress of the spring, substantially as and for the purposes described.

382,859. COBK-HOLDER FOR BOTTLES. WILLIAM BRADSLEY, Buncon, Iowa. Filed Mar. 26, 1888. Serial No. 268,480. (No model.)



Claim.—The within-described compensating cork holder or retainer for bottles of different sizes, the same consisting of a flexible strip or cap-piece, A, having strap-like clinching-extensions *c c*, and of a flexible neck band or strip, B, adapted to encircle the neck of the bottle and provided with a series of cross-slots, *f*, at or near its one end, a clinching extension or tongue, *d*, at or near its opposite end, and longitudinal intermediate slots, *e e*, of greater length than the width of the clinching end portions of the cap-piece or strip, essentially as and for the purposes herein set forth.

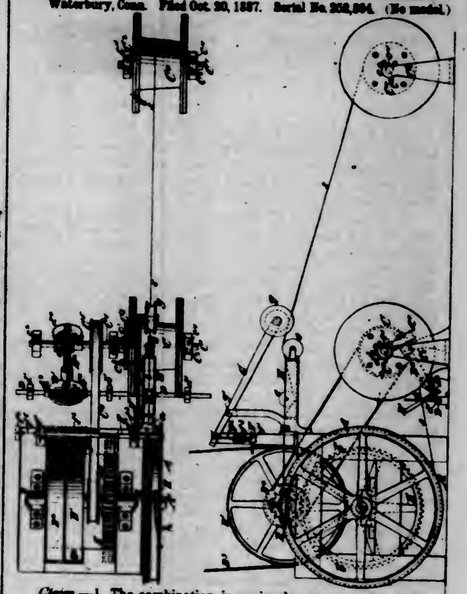
382,860. HINGE. CHARLES H. BEER, New York, N. Y. Filed Mar. 2, 1888. Serial No. 265,904. (No model.)



Claim.—1. A hinge having the under bearing-surface of the leaves inclined in opposite directions from an approximate central point, as and for the purpose specified.

2. A hinge having the under bearing-surface of the leaves inclined in opposite directions from an approximate central point and a longitudinal shoulder at the termination of the inner incline, substantially as and for the purpose herein specified.

382,861. WIRE-DRAWING MACHINE. GEORGE C. BLAKESLEE, Waterbury, Conn. Filed Oct. 20, 1887. Serial No. 252,994. (No model.)



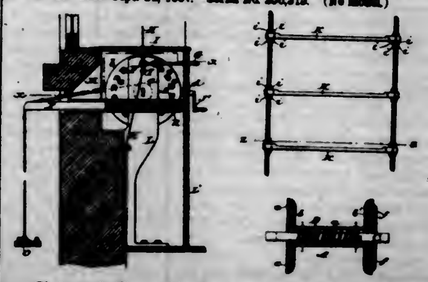
Claim.—1. The combination, in a wire-drawing machine, of a delivery reel or drum, C', from which the wire is taken, and a take-up reel or drum, C, bearings wherein said reels or drums are interchangeably supported, so that they may be changed one for another at each drawing operation, a die through which the wire is drawn, a winding-drum, A, whereby the wire is drawn through the die and from which the wire is taken by the take-up reel or drum, and a slipping driving device for the said take-up reel or drum, substantially as herein described.

2. The combination, in a wire-drawing machine, of a reel or drum from which the wire is taken, a die through which the wire is drawn, a winding-drum, a take-up drum or reel for the wire, and a traverse-guide, and mechanism, substantially as described, for reciprocating said guide, substantially as herein set forth.

3. The combination, in a wire-drawing machine, of a reel or drum from which the wire is taken, a die through which the wire is drawn, a winding drum or reel, a take-up drum or reel and slipping driving mechanism for operating it, a shifting driving device for the winding-drum, a shipper operating automatically when released to shift the driving device, a catch for holding the shipper retracted, and a bearer riding on the wire and connected with the catch to withdraw the latter when the bearer falls, substantially as herein described.

4. The combination of the delivery drum or reel C, the box E for lubricant, and its guiding-pulleys, the winding-drum A and gearing for driving the same, the reciprocating traverse-bar D, the take-up drum C, the belt-shipper F and its actuating-spring or equivalent weight, the catch *f*', and the stop-motion lever G, supported by the wire and connected with the catch, substantially as herein described.

382,862. LADDER FIRE-ESCAPE. FRANK L. ROSS, New York N. Y. Filed Sept. 21, 1887. Serial No. 250,315. (No model.)



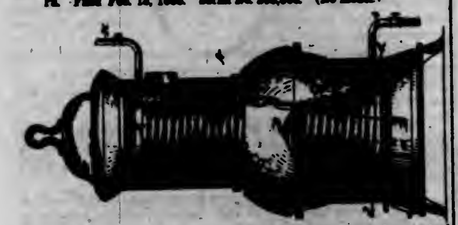
Claim.—1. The combination, in a fire-escape, of the drum, the flexible ladder winding up thereon, a block attached to the free end of the ladder and adapted to close an opening in the house-wall through which the ladder is carried, connected parallel bars extending at right angles to said block, each moving into a case fitted longitudinally into and through the house-wall, and springs compressed by each bar when the block is in place and operating automatically to force said block out of its seat, substantially in the manner and for the purpose herein set forth.

2. The combination, with a block closing an opening in the house-wall, a flexible fire-escape ladder attached to said block and extending inward through said opening, a drum upon which the ladder is wound, spring-actuated bars operating automatically to force out the block and ladder, of an auxiliary spring attached to the drum and operating automatically to revolve it so as to unwind the ladder, substantially in the manner and for the purpose herein set forth.

3. The combination of a block closing an opening in the house-wall, a flexible fire-escape ladder attached to said block and extending inward through said opening, a drum upon which the ladder is wound, spring-actuated bars operating automatically to force out the block and ladder, an auxiliary spring attached to the drum, and operating automatically to revolve it so as to unwind the ladder, a beveled gear-wheel carried by a crank-shaft mounted to rotate and to move longitudinally in bearings at a right angle to the axis of said wheel, and a beveled pinion upon the shaft adapted to be thrown in and out of gear by the longitudinal movement of the shaft, substantially in the manner and for the purpose herein set forth.

4. The flexible ladder herein described, having sides constructed of wire strands, which at regular intervals are laid flat and parallel to each other to permit of a ready attachment of the rounds thereto and are twisted together between the rounds, in combination with rounds made fast to said flat intervals, substantially in the manner and for the purpose herein set forth.

382,863. STEAM-GENERATOR. JOSEPH S. BUNDLE, Middletown, Pa. Filed Feb. 13, 1888. Serial No. 263,993. (No model.)



Claim.—1. In a steam-generator, the combination of a conical coiled water-pipe supported above the grate, a rotary grate upon which the fuel rests, an annular fire-chamber, and an air-supplying chamber in the bottom of the furnace leading up into the chamber formed by the coil and through the spaces between the coils into the fuel-chamber, substantially as described.

2. In a steam-generator, the combination of a conical coiled water-pipe with an opening at both ends, a cover for the upper opening, an inner and an annular fuel-chamber, a rotary grate, and air-feeding passages between the coils, substantially as described.

3. In a steam-generator, an inner and an annular fuel-chamber, a rotary grate, a conical coiled water-pipe supported above the grate, a metallic cover for the upper end of the coil provided with a conical top, and a magazine, all combined and operating substantially as described.

4. In a steam-generator, a conical coiled water-pipe supported above a rotary grate and forming an annular fuel-chamber, in combination with a superheating-coil supported in the combustion-chamber, substantially as described.

5. In a steam-generator, a conical water-pipe forming an annular fuel-chamber, in combination with a superheating-coil arranged to perform the function of a magazine to discharge fuel into said fuel-chamber, substantially as described.

382,864. CISTERN-CLEANER. JOHN H. BARNES, Minneapolis, Minn. Filed Dec. 22, 1887. Serial No. 259,268. (No model.)



Claim.—1. The combination of a hollow body provided with a bottom having an aperture, a tube open at both ends and extending upward from said aperture within said body and terminating below the top thereof, and a tubular handle connected to the top of said body, substantially as described.

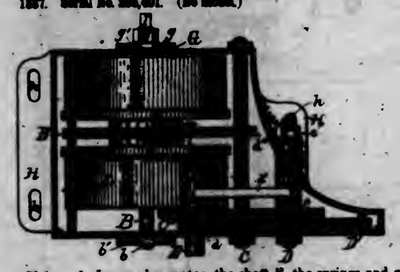
2. The combination of a hollow body provided with a bottom having an aperture, an extensible tube open at both ends and extending upward from said aperture within said body and terminating below the top thereof, and a tubular handle connected to the top of said body, substantially as described.

3. The combination of a hollow body provided with a bottom having an aperture, a tube open at both ends and extending upward from said aperture within said body and terminating below the top thereof, a tubular handle connected to the top of said body, and a closing device for said handle, substantially as described.

4. The combination of a hollow body provided with a bottom having an aperture, an extensible tube open at both ends and extending upward from said aperture within said body and terminating below the top thereof, a tubular handle connected to the top of said body, and a closing-plug for said handle, substantially as described.

5. The combination of a hollow body provided with a bottom having an aperture, a tube open at both ends and extending upward from said aperture within said body and terminating below the top thereof, a detachable cover for said body, a hollow handle secured to said cover, and a closing-plug for said handle, substantially as described.

382,865. MOTOR. JOHN M. BROWN, Atlanta, Ga. Filed Dec. 19, 1887. Serial No. 258,691. (No model.)



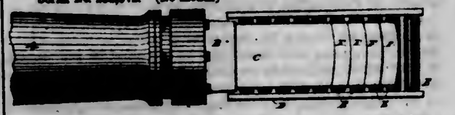
Claim.—1. In a spring-motor, the shaft E, the springs and gearing to drive said shaft, and a second shaft provided with a wheel, in combination with the speed-regulating mechanism consisting of the pipe P, the friction-plate *p*, bearing on said wheel, the spring *s*', and the rod R, provided with the stirrup S, for the purpose set forth.

2. In a spring-motor, the combination of the shaft E, the sleeve G, said shaft and sleeve provided, respectively, with the seats I and J for the winding-key, the ratchets *b* and *g*, pawls *b*' and *g*', the springs L and M, the ratchets *l* and *m*, the pawls *l*' and *m*', and the brakes by which the action of the springs may be stopped, substantially as shown and described.

3. In a spring-motor, the shaft E and the mechanism for driving the same, in combination with the arm *d*', journaled on the shaft D and adapted to permit the variation of the height of shaft E, the nut *e*, and the slotted casing for allowing the adjustment of said shaft E, substantially as set forth.

4. In a sewing-machine motor, the combination of the spring-driven gearing, the arm *d*', the pinion-shaft E, the socket-coupling connecting the pinion-shaft and the sewing-machine shaft, and the casing having slots *h* and screws *h*', for the purpose specified.

382,866. METHOD OF MANUFACTURING BRICK. JAMES F. CLARK, Morenci, Mich. Filed July 19, 1886. Renewed Oct. 14, 1887. Serial No. 252,572. (No model.)



Claim.—An improvement in the art of making brick, which consists in cutting the brick from a column of clay as it emerges from the machine in a curved direction, so as to form one side convex and the other concave, and then straightening the sides of the brick by subsequently drying and burning the same, as set forth.

382,867. AUTOMATIC LOCKING ATTACHMENT FOR FARE-BOXES. JAMES H. CLANEY, Atlanta, Ga. Filed July 26, 1888. Serial No. 282,176. (No model.)

Claim.—1. In a cash-box for street-cars, the combination, with the spring-lock provided with the locking-hooks 11 and the guide-pin *a*,

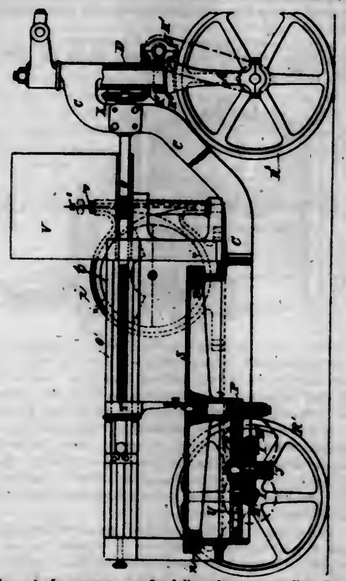
382,867.



of the key 12, said pin being so placed as to guide the key when it enters the lock and retain it in its proper position to act on both locking-bolts simultaneously, as set forth.

2. In a cash-box for street-cars, the combination of the key 12 hollow piston 13, spring 17, and slotted incasing-tube 14, all arranged and adapted to rotate the key when the piston is forced backward upon the spring, as set forth.

382,868. APPARATUS FOR RECORDING THE DIRECTION AND GRADIENTS OF A ROAD. ADOLPHE R. D. F. DE VILLEPOIX, Paris, France. Filed Feb. 20, 1887. Serial No. 228,947. (No model.)



Claim.—1. In an apparatus for delineating or recording the direction of a road, the combination, with a rotating table, S, of a double sector, K, the axis thereof, a fixed rack gearing with the sector, the pinion I, the slide J, carrying said pinion and sector, and the shafts E E', rotated independently by the two hind wheels of the vehicle and gearing with pinion I, all arranged so that the pinion I and sector K shall receive a movement of translation when the shafts E E' revolve at different speeds, substantially as herein described.

2. In an apparatus for delineating or recording the direction of a road, the combination of a rotating table, S, pinion P, sector K, gearing with said pinion, rack U, gearing with the sector, and means, as described, for moving the sector, the pencil-carrier T, the screw-shaft O, for moving said carrier, the leading wheel B^2, and gearing X X' $H^{\times}$ y H H', and a chain connecting H H' for moving the screw-shaft O from the wheel B^2, substantially as specified.

3. In an apparatus for recording or delineating the gradients of a road, the combination, with a drum, V, receiving continuous rotary motion from the traveling wheel, as described, of a casing, i, mercury in the casing, a drum, t, within the casing and immersed in the mercury, a pencil-carrier, r, and bands connecting the carrier r with the drum t, the pencil-carrier receiving vertical motion in consequence of the relative motion of the mercury and drum and of the casing containing the same, substantially as specified.

4. In an apparatus for recording or delineating the direction and gradients of a road, the tables S, the double sector K, gearing therewith, the fixed rack U, slide J, carrying the double sector, the pinion I, and independent worms operated by different wheels gearing with pinion I, in combination with the pencil-carrier T, the worm-shaft O, operating the same, and means for operating said shaft from the wheel B^2, substantially as described.

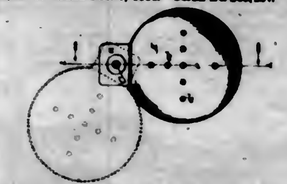
5. In an apparatus for recording or delineating the direction and gradients of a road, the combination of the table S and means, as described, for operating the same, the pencil-carrier T, screw-shaft O, for operating the same, drum V, casing i, containing mercury, drum t in the mercury, and pencil-carrier r, connected with the drum t, all arranged and operating substantially as described, and for the purposes set forth.

382,869. HOPPLE. CHARLES B. FALES, Guilford, Ohio. Filed Jan. 11, 1888. Serial No. 260,412. (No model.)



Claim.—In a serving and kicking hopple, the combination of the collar A, having attached thereto the breast-strap B, the free end of said breast-strap having the pulley a, the rope C, passing over said pulley a, the pulley-block d, fixed to said rope C, and adapted to embrace and confine the return portion of said rope C, the hopple composed of the strap G and the elastic strap H, the snap-hooks D and E, and the swivingle I, substantially as and for the purpose specified.

382,870. MEASURING UTENSIL. THOMAS B. FARRINGTON, New York, N. Y. Filed Feb. 6, 1888. Serial No. 263,127. (No model.)

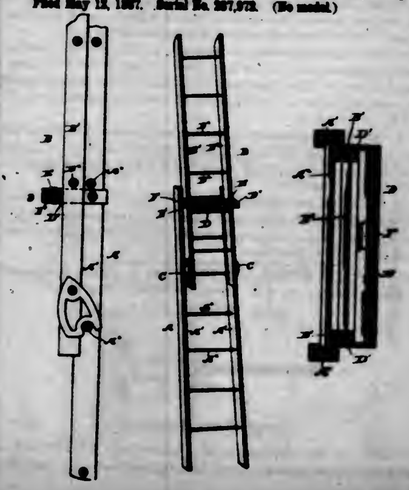


Claim.—1. A measuring implement or vessel consisting of a cup-shaped disk and a second disk pivoted thereto and swinging on its pivot in position to cut or scrape off the contents of the cup which rise above its edges.

2. The combination of two saucer or cup shaped disks of unequal concavity, pivoted together with their concaved surfaces adjacent to each other, the pivot being arranged at right angles to the planes of the meeting edges of the cups.

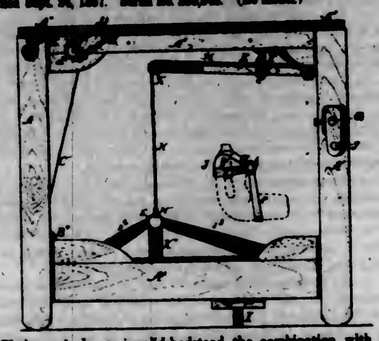
3. The combination of a cup-shaped disk and a second disk pivoted together, with their edges in contact with each other and adapted to swing in parallel planes, one of said disks having perforations, substantially as and for the purposes set forth.

382,871. EXTENSION-LADDER. JAMES C. GARDNER, Chicago, Ill. Filed May 12, 1887. Serial No. 237,972. (No model.)



Claim.—The combination of the sections A and B, the latter lying upon the rungs and between the side rails of the former, a yoke, D, extending transversely across said section B, and having its arms D' D' passing along the side rails of said section, and secured to the side rails of the section A, and jointed above each section B by a shaft, F, extending from one to the other, a roller loosely surrounding said shaft, and stirrups C C, to engage the rungs A^3, substantially as shown and described.

382,872. INVALID-BEDSTEAD. MORRIS F. HARDY, Bozeman, N. Y. Filed Sept. 24, 1887. Serial No. 250,045. (No model.)



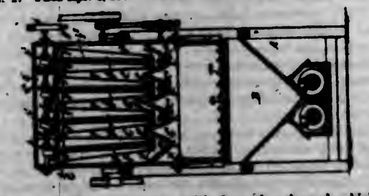
Claim.—1. In an invalid-bedstead, the combination, with the frame A A' A^3 A^3, of the crane-arm B, pivoted at e to the top portion of said frame midway between the rails A^3, hanger d, secured about midway of said arm B, curved trunk F, upon which the hanger e travels, extending transversely across the bedstead-frame and secured to the top rails, A^3, thereof, drum G, with crank-handle g and pawl and ratchet g' g^2, pulleys h h', and rope H, with hook H', all constructed and arranged substantially as described, for the purposes specified.

2. In an invalid-bedstead, the combination, with a suitable frame and means for elevating the patient, substantially such as described, of the sling or yoke composed of a broad band, J, adapted to fit around the back, loop j^3, upon which the patient sits, straps J', passing across the shoulders and united at the back to the strap J to form the openings j' for the arms, and ring j, uniting the ends of the straps and forming a means of suspension of the sling, as described, for the purposes specified.

3. In an invalid-bedstead, the combination, with a suitable frame and means for elevating the patient, substantially such as described, of the stretcher K, formed of flexible material, with the side bars, k, head or strap K', secured transversely about midway across the stretcher, head-straps k^2 and foot-straps k^3, extending at an angle from the outer ends of the strap K' to the head and foot, respectively, of the stretcher, and ring or eyes k', which unite the ends of the straps and form a means of attachment of the stretcher to the elevating devices.

4. In an invalid-bedstead, the combination, with the side rails, A^3, formed with a slotted guideway transversely across the bottom thereof, of the counter-support I, fitting within said slotted guideway and adapted to be adjusted upon either side of the bedstead, for the purposes specified.

382,873. BEDCLOTHES-FURLIFTER. ANDREW HESSE, Silver Creek, N. Y. Filed Apr. 1, 1887. Serial No. 233,202. (No model.)



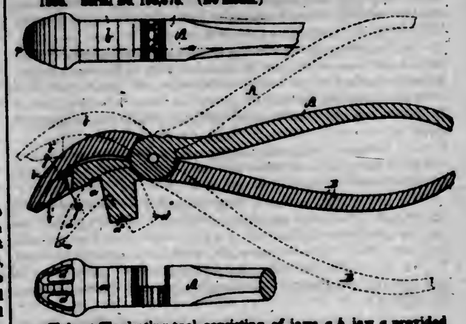
Claim.—1. The combination, with the casing through which the dust-laden air passes, of a diaphragm extending across said casing and composed of a series of dust-collecting troughs having the upper portions of their side walls perforated, and a series of dust-collecting chambers arranged in said casing above the said diaphragm, substantially as set forth.

2. The combination, with the casing through which the dust-laden air passes, of a diaphragm arranged across said casing and provided with inclined side walls having upright corrugations, and air-passages in the crown portions of said corrugations, and dust-collecting chambers arranged in said casing above said diaphragm, substantially as set forth.

3. The combination, with the casing through which the dust-laden air passes, of a dust-collecting chamber depending into said casing, open at its top, closed at its bottom, and having its sides covered with filter-cloth, a vertically-movable gate applied to the upper end of said dust-collecting chamber, and a cam whereby the gate is raised and then suddenly dropped, thereby shutting off the air-current and jarring the chamber, substantially as set forth.

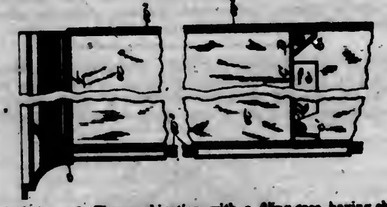
4. The combination, with the shaking screen, of cleaning-cords arranged on the screen and secured at one end to the screen, and a support to which the opposite ends of the cords are secured, and which moves independent of the screen, whereby the cords are at intervals loosened to rest on the screen and tightened to be lifted clear of the screen, substantially as set forth.

382,874. LASTING-TOOL. CHARLES H. HILLS, Poughkeepsie, N. Y., assignor to George H. P. Flagg, trustee, Boston, Mass. Filed Feb. 3, 1888. Serial No. 263,673. (No model.)



Claim.—The lasting-tool consisting of jaws a b, jaw a provided with one or more longitudinal recesses, a', and jaw b with one or more longitudinal projections, b', which enter recesses a' when the jaws are closed, thereby seizing and crimping the material, substantially as and for the purpose set forth.

382,875. FILING CASE AND DRAWER. BERNARD J. HOFFMAN, Milwaukee, Wis. Filed Sept. 26, 1887. Serial No. 250,494. (No model.)



Claim.—1. The combination, with a filing-case having sheet-metal sides or partitions which are rolled or folded at their front edges into ribs or beads, of drawers having inwardly-turned side wings or flanges which fit closely against said ribs or beads when the drawers are closed, substantially as and for the purpose set forth.

2. The combination, in a filing-case having upright partitions, of transverse rods passing through said cases from side to side, and sheet-metal shelves bent at the sides into stiffening-flanges and inserted between said upright partitions and supported upon said transverse rods, substantially as and for the purpose set forth.

3. The combination, in a filing-case, of upright sheet-metal partitions, transverse tie-rods passing through said partitions and secured at the ends in the sides of the case, and sheet-metal shelves bent at the ends to engage said tie-rods, which support them and bind the sections of the case together, substantially as and for the purpose set forth.

4. The combination, in a filing-case, of transverse rods, upright partitions, and sheet-metal shelves bent at the sides into vertical stiffening-flanges, and looped or turned at the ends to receive or engage said transverse rods, upon which they are supported, substantially as and for the purpose set forth.

5. In a filing-case, a drawer the bottom and sides of which are composed of a single piece of sheet-metal folded at the sides to form on the bottom depending bearing-flanges, substantially as and for the purpose set forth.

6. In a filing-case, a drawer having a sheet-metal bottom folded

to form a longitudinal retaining-groove, in combination with a sliding support or compressor working in said groove, substantially as and for the purposes set forth.

7. In a filing-case, a drawer having its sides and bottom formed of a single piece of sheet metal folded longitudinally to form a retaining-groove in the bottom for receiving and holding the compressor-foot, and depending bearing-flanges at the sides of the bottom, and a front piece bent rearwardly at the sides into stiffening flanges or wings, substantially as and for the purposes set forth.

8. In a filing-case, a drawer open at the rear end and provided with a bail attached thereto, in combination with a compressor working in a longitudinal groove in the bottom of said drawer, substantially as and for the purposes set forth.

9. In a filing-case, the combination, with a compartment in which the drawer slides, provided at the upper side of the front or open end with a ledge or projection, of a drawer working in said compartment and provided at its rear end, which is open, with an upright bail arranged to engage said ledge or projection when the drawer is open, and thus suspend the same, projecting horizontally from the case, substantially as and for the purposes set forth.

10. In a filing-case provided with drawer-compartments, the combination of drawers provided at their rear ends with upright suspension-bails, and a hook or hanger attached to said case, so as to hold a drawer projecting horizontally therefrom in a convenient position for manipulating its contents, substantially as and for the purposes set forth.

11. In combination with a filing-case, a filing-drawer having a metallic front bent at the sides into stiffening wings or flanges, substantially as and for the purposes set forth.

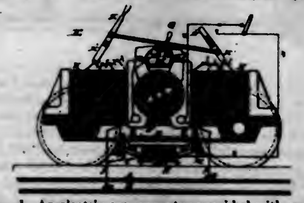
12. In combination with a filing-case, a drawer provided with a card pocket or holder on the front, and having a slit through the front piece or section for the insertion of a card from the rear or back side into said pocket or holder, substantially as and for the purposes set forth.

13. In combination with a filing-case, a drawer provided at its rear end with a suspension-bail, substantially as and for the purposes set forth.

14. In a filing-case, a drawer having its bottom and sides formed of a single piece of sheet metal folded longitudinally through the bottom into a groove having overhanging edges, and at the sides into depending bearing-flanges, substantially as and for the purposes set forth.

15. The combination, in a filing-case, of upright sheet-metal sides or partitions rolled at one or both edges over wire rods, which are riveted at the upper ends in the top section of the case, and rest at their lower ends upon the base and flanges turned upon the edges of said sides or partitions, and riveted to the inside of said base, substantially as and for the purposes set forth.

382,876. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Original application filed Mar. 13, 1886, Serial No. 195,742. Dividing and this application filed Aug. 29, 1887. Serial No. 248,103. (No model.)



Claim.—1. An electric car or motor provided with an armature adapted to be attracted by the poles of the motor, and friction-brake mechanism actuated by said armature, substantially as and for the purpose specified.

2. In an electric car or motor, the field-magnets of the motor and means to increase or decrease their magnetic power, in combination with a brake-applying armature adapted to be attracted to the field-magnet poles upon increasing their strength above the normal to stop the car, substantially as and for the purpose specified.

3. In an electric car or motor, the field-magnet of the motor and means to increase or decrease the magnetic power, in combination with a brake-applying armature adapted to be attracted to the field-magnet poles upon increasing their strength above the normal to stop the car, a helix to magnetize the brake-armature, and a switch to open or close said helix with the electric supply, substantially as and for the purpose specified.

4. In an electric car or motor, the field-magnets of the motor and means to increase or decrease their magnetic power, in combination with a brake-applying armature adapted to be attracted to the field-magnet poles upon increasing their strength above the normal to stop the car, a helix to magnetize the brake-armature, and a switch to put said helix in a shunt around the motor, substantially as and for the purpose specified.

5. In an electric car or motor, the field-magnets of the motor and means to increase or decrease their magnetic power, in combination with a brake-applying armature adapted to be attracted to the field-magnet poles upon increasing their strength above the normal to stop the car, a helix to magnetize the brake-armature, and a switch to put said helix in or out of circuit upon increasing or decreasing the power of the field-magnets, substantially as and for the purpose specified.

6. The combination of the field-magnets H of the motor or car, the magnetic armature L of the friction-brake controlled by said field-magnets, brake-shoes M, actuated thereby, circuit *n*, and a switch to open or close said circuit, substantially as and for the purpose specified.

7. The combination of the field-magnets H of the motor or car made with a series of coils, switches to put any number of said coils into circuit to vary the power of the motor, the magnetic armature L of the friction-brake controlled by said field-magnets, brake-shoes M, actuated thereby, circuit *n*, and a switch to open or close said circuit, substantially as and for the purpose specified.

8. The combination of the field-magnets H of the motor or car made with a series of coils, switches to put any number of said coils into circuit to vary the power of the motor and actuate the switch of the brake-circuit *n*, the magnetic armature L of the friction-brake, shoes M, actuated thereby, circuit *n*, and a switch to open or close said circuit, substantially as and for the purpose specified.

9. An electric-railway motor having its field-magnets formed of a series of coils, those on each magnet connected in series, in combination with an electric circuit for supplying electricity to said magnets, and switches to simultaneously put in or out of circuit any number of coils of each field-magnet to vary the power or speed of the motor, substantially as and for the purpose specified, an electric signal, a signal-circuit, a switch in said circuit, and a connection between the signal-switch and switches for putting in or out of circuit the magnet-coils of the field-magnets.

10. An electric-railway motor having its field-magnets formed of a series of coils, and its armature arranged in multiple-arc or shunt connection with said field-magnets, in combination with working-conductors and connecting devices for supplying electricity to said magnets, and switches to simultaneously put in or out of circuit any number of coils of each field-magnet to vary the power or speed of the motor, and switch devices for reversing the direction of the current through the armature, substantially as and for the purpose specified, an electric signal, a signal-circuit, a switch in said circuit, and a connection between the signal-switch and switches for putting in or out of circuit the magnet-coils of the field-magnets.

11. In an electric railway, the working-conductors, in combination with a motor or car, connecting devices for conveying electric currents to the motor from the conductors, a slowing-down lever to control the power of the motor, an alarm or electric bell arranged in a branch circuit connecting the positive and negative working-conductors and interrupted to intermittently break said branch circuit, a switch to open or close said circuit, and a connection between said switch and slowing-down lever, substantially as and for the purpose specified.

12. In an electric railway, the working-conductors, in combination with a motor or car, connecting devices for conveying electric current to the motor from the conductors, a slowing-down lever to control the power of the motor, an alarm or electric bell arranged in a branch circuit connecting the positive and negative working-conductors, and a switch to open or close said circuit actuated by the slowing-down lever to sound the alarm when slowing down the motor, substantially as and for the purpose specified.

13. In an electric railway, a traveling electric vehicle, an electric motor on said vehicle, a source of electric energy, an electric brake, a brake-magnet having its coils made in sections, a brake-circuit including said magnet, switch devices to put one or more of said coils in circuit, a brake-armature, a helix on said armature, and an electric circuit to energize said armature, substantially as and for the purpose specified.

14. In an electric railway, a traveling vehicle, a source of electric energy, a mechanical or friction brake, a movable brake-actuating magnet, a stationary magnet independent of the wheels to actuate said brake-magnet, a connection between the brake-magnet and friction-brake, and means to energize the said movable brake-magnet, whereby it is attracted toward the stationary magnet.
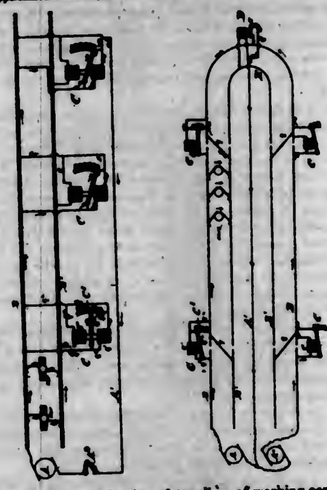
15. In an electric railway, a traveling electric vehicle, an electric motor on said vehicle, a source of electric energy, an electric brake, a brake-magnet connected to the brake and capable of moving a stationary magnet, and means to energize both said movable and stationary magnets, substantially as and for the purpose specified.

16. In an electric railway, a traveling electric vehicle, an electric motor on said vehicle, a source of electric energy, an electric brake, a brake-magnet connected to the brake and capable of moving a stationary magnet, and means to energize both of said movable and stationary magnets, and means to vary the power of the stationary magnet, substantially as and for the purpose specified.

17. In an electric railway, a line-working conductor, a traveling electrically-propelled vehicle, an electric motor on said car, receiving electric current from said conductor, the field-magnets of said motor being formed of a number of coils or bobbins, and means for putting into or out of circuit one or more of said bobbins to vary the power of the field-magnets, an alarm or signal, a signal-circuit, a switch in said signal-circuit, and a connection between said signal-switch and the means for putting into or out of circuit the bobbins of the field-magnets.

18. In an electric railway, a line-working conductor, a traveling electrically-propelled vehicle, an electric motor on said car receiving electric current from said conductor, the field-magnets of said motor being formed of a number of coils or bobbins, means for putting into or out of circuit one or more of said bobbins to vary the power of the field-magnets, and means for reversing the current in the armature-circuit, an alarm or signal, a signal-circuit, a switch in said signal-circuit, and a connection between said signal-switch and the means for putting into or out of circuit the bobbins of the field-magnets.

382,877. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Original application filed July 12, 1886, Serial No. 208,413. Divided and this application filed Sept. 6, 1887. Serial No. 248,760. (No model.)



Claim.—1. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through resistances, and sections of the other lines being connected with the sections of the first-mentioned line, and a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the line may be coupled in series with each other, substantially as and for the purpose specified.

2. The combination of two lines of working-conductors made in sections of a length sufficient to accommodate two or more motors or trains, the sections of one line being connected together through resistances, and sections of the other line being connected with the sections of the first-mentioned line, a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the various sections of the line may be coupled in series with each other and those upon the corresponding sections may be coupled in multiple arc, substantially as and for the purpose specified.

3. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through resistances, means to adjust said resistances, and sections of the other line being connected with the sections of the first-mentioned line, a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the line may be coupled in series with each other, substantially as and for the purpose specified.

4. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through resistances, automatic devices controlled by the current in the line to adjust said resistances, sections of the other line being connected with the sections of the first-mentioned line, and a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the line may be coupled in series with each other, substantially as and for the purpose specified.

5. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through resistances, automatic devices controlled by the current passing through the motors to adjust said resistances, and sections of the other line being connected with the sections of the first-mentioned line, and a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the lines may be coupled in series with each other, substantially as and for the purpose specified.

6. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through resistances, automatic devices controlled by the current passing through both the line and the motors to adjust said resistances, and sections of the other line being connected with the sections of the first-mentioned line, and a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the line may be coupled in series with each other, substantially as and for the purpose specified.

7. The combination of two lines of working-conductors made in sections of a length sufficient to accommodate two or more motors or trains, the sections of the one line being connected together through resistances, automatic devices controlled by the current in the line to adjust said resistances, and sections of the other line being connected with the sections of the first-mentioned line, a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the various sections of the line may be coupled in series with each other, and those upon the corresponding sections may be coupled in multiple arc, substantially as and for the purpose specified.

8. The combination of two lines of working-conductors made in sections of a length sufficient to accommodate two or more motors or trains, the sections of one line being connected together through resistances, automatic devices controlled by the current passing through the motors to adjust said resistances, the sections of the other line being connected with the sections of the first-mentioned line, a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the various sections of the line may be coupled in series with each other, and those upon the corresponding sections may be coupled in multiple arc, substantially as and for the purpose specified.

9. The combination of two lines of working-conductors made in sections of a length sufficient to accommodate two or more motors or trains, the sections of the one line being connected together through resistances, automatic devices controlled by the current passing through both the line and the motors to adjust said resistances, sections of the other line being connected with the sections of the first-mentioned line, and a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the various sections of the line may be coupled in series with each other, and those upon the corresponding sections may be coupled in multiple arc, substantially as and for the purpose specified.

10. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through resistances, sections of the other line being connected with the sections of the first-mentioned line, a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the line may be coupled in series with each other, and means to control the line-current, substantially as and for the purpose specified.

11. The combination of two lines of working-conductors made in sections of a length sufficient to accommodate two or more motors or trains, the sections of the one line being connected together through resistances, the sections of the other line being connected with the sections of the first-mentioned line, a generator of electricity connecting with opposite ends of the respective lines, whereby motors upon the various sections of the line may be coupled in series with each other, those upon the corresponding sections may be coupled in multiple arc, and means to control the line-current, substantially as and for the purpose specified.

12. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through adjustable resistances, and the sections of the other line being connected by branches with the sections of the first-mentioned line, so as to connect motors on the respective sections of the line in series, a regulating device for varying said resistances, consisting of an electro-magnet in said branch, and a resistance-changer actuated by said magnet, substantially as and for the purpose specified.

13. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through adjustable resistances, and the sections of the other line being connected by branches with the sections of the first-mentioned line, so as to connect motors on the respective sections of the line in series, a regulating device for varying said resistances, consisting of an electro-magnet in circuit with adjacent sections of the first-mentioned line, and an electro-magnet in said branch, and a resistance-changer actuated by said magnet, substantially as and for the purpose specified.

14. The combination of two lines of working-conductors made in

sections, the sections of one line being connected together through adjustable resistances, the sections of the other line being connected by branches with the section of the first-mentioned line, so as to connect motors on the respective sections of the lines in series, a regulating device for varying said resistances, consisting of an electro-magnet of high resistance in circuit with adjacent sections of the first-mentioned line, and an electro-magnet of low resistance in said branch, and a resistance-changer actuated by said magnets, substantially as and for the purpose specified.

15. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through adjustable resistances, the sections of the other line being connected by branches with the sections of the first-mentioned line, so as to connect motors on the respective sections of the lines in series, a regulating device for varying said resistances, consisting of an electro-magnet in circuit with adjacent circuit-sections of the first-mentioned line, and a resistance-changer actuated by said magnet, substantially as and for the purpose specified.

16. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through adjustable resistances, the sections of the other line being connected by branches with the sections of the first-mentioned line, so as to connect motors on the respective sections of the lines in series, a regulating device for varying said resistances, consisting of an electro-magnet in circuit with adjacent sections of the first-mentioned line, a resistance-changer actuated by said magnet, and a shunting device to put the magnet in a shunt-circuit when the resistance is cut out, substantially as and for the purpose specified.

17. The combination of two lines of working-conductors made in sections, the sections of one line being connected together through adjustable resistances, the sections of the other line being connected by branches with the section of the first-mentioned line, so as to connect motors on the respective sections of the lines in series, a regulating device for varying said resistances, consisting of an electro-magnet of high resistance in circuit with adjacent sections of the first-mentioned line, an electro-magnet of low resistance in said branch, a shunting device to put the high-resistance magnet in a shunt-circuit when the resistance between the sections of the first-mentioned line is cut out, and a resistance-changer actuated by said magnets, substantially as and for the purpose specified.

18. In an electric railway, two lines of working-conductors divided into sections and having their sections connected in pairs, including one section from each line, and such successive pairs of sections connected in series, so as to couple motors on the successive sections of the lines in series, and motors on the corresponding sections of each line in multiple arc, in combination with one or more electric motors, and a bridging-circuit to shunt more or less of the line-current around the motors on the said corresponding sections, whereby the current passing through the motors may be in accordance with the requirements, substantially as and for the purpose specified.

19. In an electric railway, two lines of working-conductors divided into sections and having their sections connected in pairs, including one section from each line, and such successive pairs of sections connected in series, so as to couple motors on the successive sections of the lines in series, and motors on the corresponding sections of each line in multiple arc, in combination with one or more electric motors, a bridging-circuit to shunt more or less of the line-current around the motors on the said corresponding sections, and an adjustable resistance device in said bridging or shunt circuit and governed by the current flowing through the motors, to the end that the current passing through the motors may be in accordance with the requirements, substantially as and for the purpose specified.

20. In an electric railway, two lines of working-conductors divided into sections and having their sections connected in pairs, including one section from each line, and such successive pairs of sections connected in series, so as to couple motors on the successive sections of the lines in series, and motors on the corresponding sections of each line in multiple arc, in combination with one or more electric motors, a bridging-circuit to shunt more or less of the line-current around the motors on the said corresponding sections, and an electrically-actuated adjustable resistance device in said bridge or shunt circuit and governed by the current flowing through the motors, to the end that the current passing through the motors may be in accordance with the requirements, substantially as and for the purpose specified.

21. In an electric railway, two lines of working-conductors divided into sections and having their sections connected in pairs, including one section from each line, and such successive pairs of sections connected in series, so as to couple motors on the successive sections of the lines in series, and motors on the corresponding sections of each line in multiple arc, in combination with one or more electric motors, a bridging-circuit to shunt more or less of the line-current around the motors on the said corresponding sections, an adjustable resistance-changer in said bridge or shunt circuit and in multiple-arc connection with the motors on the corresponding sections of the lines, and controlled by the motor-resistance, whereby the current passing through the motors may be in accordance with the requirements, substantially as and for the purpose specified.

22. In an electric railway, two lines of working-conductors divided into sections and having their sections connected in pairs, including one section from each line, and such successive pairs of sections connected in series; so as to couple the motors on the successive sections of the lines in series, and motors on the corresponding sections of each line in multiple arc, in combination with one or more electric motors, a bridging-circuit, a resistance-changer in said bridging-circuit to shunt more or less of the line-current around the motors on the said corresponding sections, whereby the current passing through the motors may be in accordance with the requirements, and a regulator to control the current passing through all of the sections simultaneously, substantially as and for the purpose specified.

23. In an electric railway, two lines of working-conductors divided into sections and having their sections connected in pairs, including one section from each line, and each successive pairs of sections connected in series, so as to couple motors on the successive sections of the lines in series, and motors on the corresponding sections of each line in multiple arc, in combination with one or more electric motors, a bridging-circuit to shunt more or less of the line-current around the motors on the said corresponding sections, an electrically-actuated adjustable resistance device in said bridge or shunt circuit, and governed by the current flowing through the motors, to the end that the current passing through the motors may be in accordance with the requirements, and a regulator to control the current passing through all of the sections simultaneously, substantially as and for the purpose specified.

24. In an electric railway, two lines of working-conductors divided into sections and having their sections connected in pairs, including one section from each line, and each successive pairs of sections connected in series, so as to couple motors on the successive sections of the lines in series, and motors on the corresponding sections of each line in multiple arc, a bridging-circuit to shunt more or less of the line-current around the motors on the said corresponding sections, an electrically-actuated adjustable resistance device in said bridge or shunt circuit, and governed by the current flowing through the motors, to the end that the current passing through the motors may be in accordance with the requirements, and a regulator to control the current passing through all of the sections simultaneously, substantially as and for the purpose specified.

25. In an electric railway, a line-working conductor divided into sections arranged end to end in line, in combination with a bridging-conductor connecting the said sections end to end in the same line, and a resistance in said bridging-conductor, substantially as and for the purpose specified.

26. In an electric railway, a line-working conductor divided into sections, in combination with a bridging-conductor connecting the said sections end to end, and a variable resistance in said bridging-conductor, substantially as and for the purpose specified.

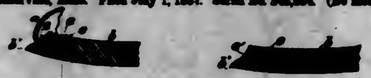
27. In an electric railway, a line-working conductor divided into sections, in combination with a bridging-conductor connecting the said sections end to end, a variable resistance in said bridging-conductor, and an automatic device to vary said resistance, substantially as and for the purpose specified.

28. In an electric railway, two lines of working-conductors made in sections, in combination with traveling electromotors receiving electricity therefrom, branch conductors connecting one section of one line with the next section of the other line, electrical connections between one of the poles of said generator and the nearest end of one of the line-conductors, and the other pole and the farthest end of the other line-conductor, whereby the resistance from the generator through a motor and return shall be practically uniform for all positions of the motor upon the line, substantially as and for the purpose specified.

29. The combination of two portions of a series multiple electric-railway circuit and an automatic variable-resistance shunting device, substantially as set out, between the two portions of the railway to shunt more or less current around the motors on one portion of the railway and deliver it to the other portion of the railway, with two generators having similar poles coupled to the same line-conductor, but on opposite ends thereof, and having the other and similar poles coupled to the other working-conductor at a distance from the terminals of the first-mentioned working-conductor, substantially as and for the purpose specified.

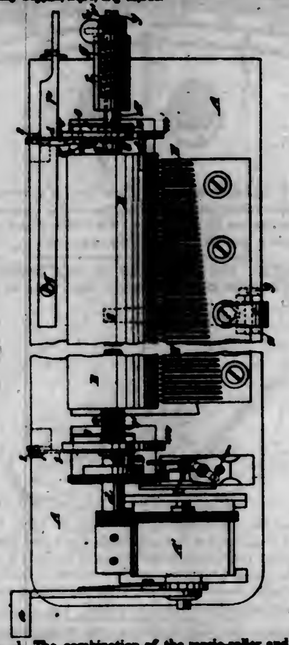
30. The combination of two portions of a series multiple electric-railway circuit and an automatic variable-resistance shunting device, substantially as set out, between the two portions of the railway to shunt more or less current around the motors on one portion of the railway and deliver it to the other portion of the railway, with two generators having similar poles coupled to the same line-conductor, but on opposite ends thereof, having the other and similar poles coupled to the other working-conductor at a point midway between the terminals of the working-conductors, whereby the resistance to the passage of the current shall be equal for all positions of the motors on the line, and the total resistance of the line shall be greatly reduced, substantially as and for the purpose specified.

382,878. MANUFACTURE OF BOOTS OR SHOES. JOHN C. IVERY, Somerville, Mass. Filed July 1, 1887. Serial No. 243,094. (No model.)



Claim.—In the manufacture of turned soots or shoes, that improvement which consists in uniting the soles and uppers by first lasting the upper to an unchamfered sole, then indenting and perforating the soles at different points simultaneously, as set forth, whereby an indentation is made successively in advance of each perforation, and finally stitching the parts together, all substantially as shown and described.

382,879. SPEED-BOX. Baron FRITZ JAGEMAN, Ste. Croix, Switzerland. Filed Mar. 30, 1888. Serial No. 268,891. (No model.) Patented in Germany Sept. 8, 1887, No. 43,511.



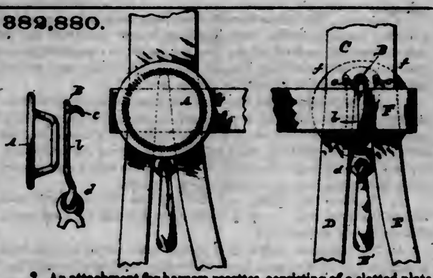
Claim.—1. The combination of the music-roller and its axle *c*, having on it a disk, *m'*, the driving-shaft *d*, having in it a bearing for one end of said axle, a coupling-connection, *k*, between said axle and shaft, a sliding bolt, *d'*, having a bearing for the other end of said axle, a bearing, *i*, for said sliding bolt, having a curved groove, *v'*, a lever, *h h'*, attached to said bolt and working in said curved groove, and a hooked bar, *y*, connected with said bolt and engaging with said disk *m'*, all substantially as and for the purpose herein described.

2. The combination, with the music-roller and its axle *c*, provided with disks *m m'*, of the levers 1 1, having fixed fulcrums and provided with seats or saddles 3 3 for said disks, a connecting-bar, 7, between said seats or saddles, and a hand-lever, 8, to operate on said connecting-bar, all substantially as and for the purpose herein described.

382,880. HARMING-ROSETTE ATTACHMENT. RICHARD W. JONES, Syracuse, N. Y. Filed Mar. 31, 1888. Serial No. 269,112. (No model.)

Claim.—1. As an attachment for harness-rosettes, an oblong slotted plate provided with hooks or studs at its upper end, the slot adapted to receive the loop or eye of a rosette, and the hooks or studs to secure the head-strap and brow-band of a bridle, substantially as set forth.

382,880.



2. An attachment for harness-rosettes, consisting of a slotted plate with hooks or studs on its rear upper portion, and a gag-runner at its lower end, substantially as set forth.

3. An attachment for harness-rosettes, consisting of a slotted plate with hooks or studs on its rear upper portion, and a gag-runner at its lower end, in combination with a rosette provided with a loop or eye, substantially as set forth.

4. The combination of the slotted plate having hooks or studs on its upper rear portion and a gag-runner at its lower end, and the head-strap, brow-band, and throat and cheek straps of a bridle, substantially as set forth.

382,881. DEVICE FOR CONVERTING MOTION. SALVIN F. KELLOGG, Clay Centre, Kans. Filed Sept. 12, 1887. Serial No. 249,570. (No model.)



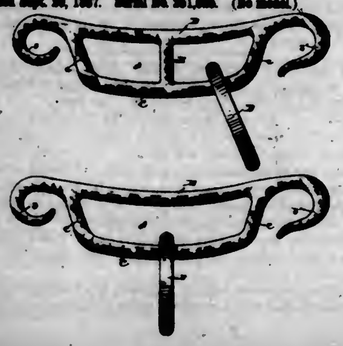
Claim.—1. The combination of the supporting-frame, the gear-wheels mounted in said frame and meshing together and provided with internal ratchet-rims, the oscillating lever mounted above said wheels, the reciprocating rod connected to said lever, the pawls loosely mounted on the gear-wheel shafts, and the links connecting the opposite ends of the lever with the said pawls, substantially as described.

2. The combination of the supporting-frame, the cog-wheels mounted thereon and geared together and provided with internal ratchet-rims, the standards mounted on the supporting-frame, the oscillating lever fulcramed between said standards and forked at one end, the reciprocating rod having a yoke on one side, the head-block pivotally mounted in said yoke, and to which the tines of the forked end of the oscillating lever are fitted, the pawls loosely mounted on the shafts of the cog-wheels and engaging the ratchet-rims thereof, and the links connecting the ends of the lever with said pawls, substantially as specified.

382,882. COMPOSITION OF MATTER. JOHN A. KIESSLER, New York, N. Y. Filed Oct. 28, 1887. Serial No. 253,157. (Specimens.)

Claim.—The herein-described composition for castings, consisting of concrete and sugar, in about the proportions specified.

382,883. HAME-LINK. HEMAN R. LAMSON, Champaign, Ill. Filed Sept. 20, 1887. Serial No. 251,088. (No model.)



Claim.—1. The herein-described one-piece hame-link, comprising a top bar having a central depending loop formed therewith and its ends extended on each side of said loop and curved to engage the hame-eyes, one of said ends being adapted to close against the loop around one of the hame-eyes, all substantially as specified.

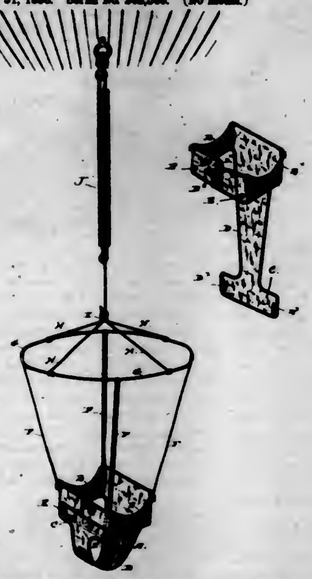
2. The herein-described hame-link, composed of an upper connecting-bar having its ends bent, as described, one of which is elongated to permit its closing around the eye of the hame, and a lower loop-rod having upturned ends lying just within the bent ends of the connecting-bar and formed integral therewith, in combination with a ring secured in the loop of the link, all substantially as set forth.

3. The hame-link having a central loop and curved hooked ends outside this loop, and a central division-bar dividing the loop-space, all substantially as described.

4. The hame-link consisting of an upper bar having its ends bent to engage the hame-eyes, a loop-rod formed integral with said bar; a division-bar in said loop-space connecting the loop-rod with the upper bar, and a ring in one of the spaces of said loop, substantially as specified.

5. The hame-link for harness, consisting of an upper bar, B, having bent ends *b b'*, a loop-rod, C, having bent ends *c c*, formed integral with bar A and widened at the junctions therewith, a re-enforce division-bar, E, connecting bar B and rod C centrally of the loop-space, and a solid ring, D, mounted on the loop-bar on one side of bar E, all constructed and arranged substantially as specified.

382,884. BABY-JUMPER. BENJAMIN G. LATHROP, Oakland, Cal. Filed Jan. 31, 1888. Serial No. 262,569. (No model.)



Claim.—The combination of the sling, composed of the body-band having armpits B B×, buttons B^9 and E, button-holes B^9, and the crotch-piece D, having cross-shaped end C, formed with button-holes B^9, to receive buttons E, the suspension-straps F, the hoop G, cords H, and spring J, all arranged substantially as described.

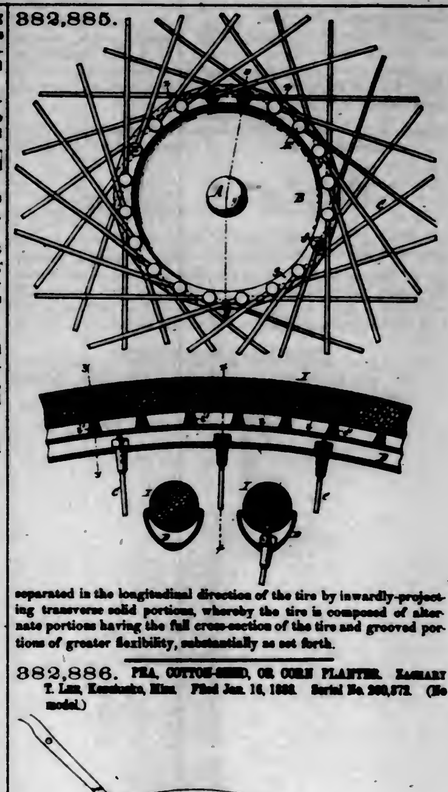
382,885. VELOCIPEDE-WHEEL. ROBERT G. LATTA, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Sept. 16, 1887. Serial No. 249,893. (No model.)

Claim.—1. The combination, with the hub-flange and two spokes headed at their inner ends, of a straight cylindrical coupler seated in an opening in the hub-flange and provided on opposite sides of the hub-flange with countersunk openings in which the headed ends of the spokes are seated, the spokes resting against the flange and the inner side of the spoke-head resting inside the flange, substantially as set forth.

2. The combination, with the spokes and the hub-flange bent or corrugated near its outer edge, of couplers seated in said corrugated portion of the hub-flange and supporting the inner ends of the spokes, substantially as set forth.

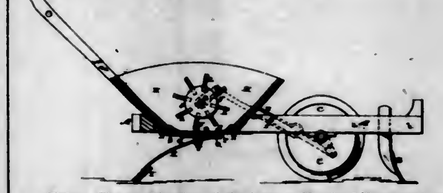
3. The combination, with the wheel-rim, of a flexible tire provided on its inner surface with a peripheral series of depressions or recesses

382,885.



separated in the longitudinal direction of the tire by inwardly-projecting transverse solid portions, whereby the tire is composed of alternate portions having the full cross-section of the tire and grooved portions of greater flexibility, substantially as set forth.

382,886. PEA, COTTON-SEED, OR CORN PLANTER. ZACHARY T. LEE, Kosciusko, Miss. Filed Jan. 16, 1888. Serial No. 260,572. (No model.)



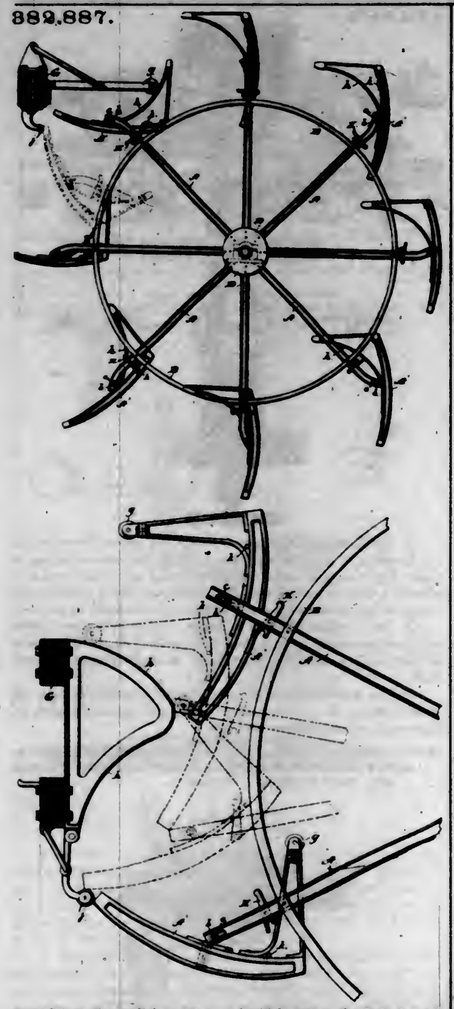
Claim.—The combination of the hopper H, wheel J, secured to the shaft G, and provided with adjustable pins L, the plate O, held in position against the bottom by the guides N, the slide R, which moves through the guides Q, and is provided with the projection U, spring S, and the spring cleaning device T, which has its inner end turned upward, substantially as shown and described.

382,887. CONSTRUCTION OF WATER-WHEELS WITH MOVABLE FLOATS OR PADDLES. JULES FRANÇOIS LEMOINE, Paris, France. Filed Nov. 16, 1887. Serial No. 255,203. (No model.) Patented in France June 2, 1887, No. 171,628; in Belgium Oct. 28, 1887, No. 78,376; in England Oct. 26, 1887, No. 14,695, and in Germany Nov. 2, 1887, No. 4,260.

Claim.—1. In a water-wheel, the combination of a paddle suspended on pivots in an arm of the wheel, said pivots being situated on the paddle somewhat above its center of gravity, so that it tends to hang vertically, an arm projecting from the upper end of the paddle, a stationary roller or rollers carried by a fixed beam with which said arm comes in contact, so as to cant the paddle over from its vertical position into a radial or nearly radial position, and a catch on an arm of the wheel that holds the paddle in the canted or radial position until the paddle passes out of the water, substantially as described.

2. In a water-wheel, the combination of a paddle suspended on pivots in an arm of the wheel, said pivots being situated above its center of gravity and free to slide in radial slots in the said arm, an arm projecting from the upper end of the paddle, one or more stationary rollers carried by a fixed beam and with which the said arm comes in contact, so as to turn the paddle from a vertical to a radial or nearly radial position, a forked catch on an arm of the wheel, and a stud on the paddle which passes behind the catch while the paddle is being

382,887.



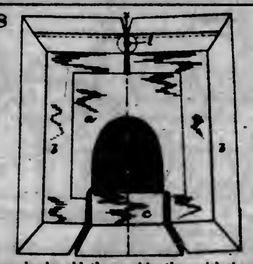
turned into the radial position, and which enters the forked catch when the paddle, having slid outward in the slots, is set free by the roller and tends to resume its vertical position, substantially as described.

3. In a water-wheel, the combination of a paddle pivotally mounted in radial slots in an arm of the wheel, a forked catch on the said arm, and a stud on the paddle, said stud being so situated as to pass behind the said catch when the paddle is turned on its pivots and while said pivots are situated at the inner ends of the radial slots, and to pass into the slot of the catch when the paddle is turned on its pivots in a contrary direction and while said pivots are situated in the outer ends of the slots, substantially as described.

4. In a water-wheel, the combination of a paddle pivotally mounted in an arm of the wheel, so as to tend to hang vertically, a curved arm projecting from the upper end of the paddle, an upper stationary roller carried by a fixed beam and against which said arm bears, so as to turn the paddle on its pivots, a lower stationary roller, also carried by said fixed beam, against which the lower end of the paddle bears, so as to be turned still farther on its pivots, and a catch on an arm of the wheel into which a stud on the paddle catches after it has been released by the lower roller, substantially as described.

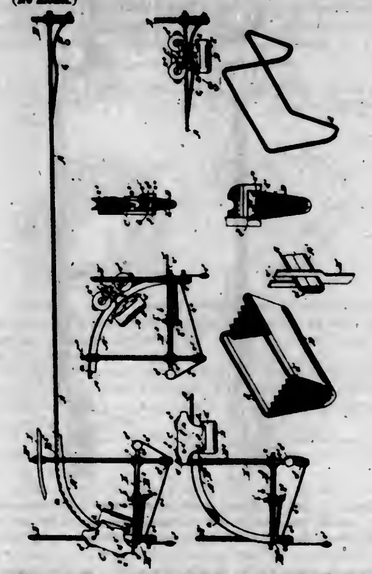
382,888. HEEL-MOLD. EDWARD J. LE GAY, Boston, Mass. Filed Jan. 18, 1888. Serial No. 261,078. (No model.)

382,888



Claim.—In a heel-mold, the combination, with the separable rigid holders, of the integral elastic piece held thereby, having a seamless molded surface normally more widely opened at its forward than at its rear end, and adapted to be compressed at such forward end to form the narrower front portion of the heel, substantially as described.

382,889. CASH AND PARCEL CARRYING APPARATUS. HENRY L. LOVEJOY, Lowell, Mass. Filed Sept. 16, 1887. Serial No. 249,851. (No model.)



Claim.—1. The combination of a track or way having a straight section and an arc-shaped end section, a carrier adapted to travel on said way, and a lever having its fulcrum at the center of said arc, and adapted, when turned upon its fulcrum, to propel said carrier along said arc and from said arc onto said straight section, as and for the purpose specified.

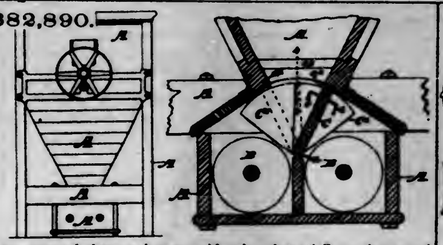
2. The combination of the track and a carrier adapted to travel thereon, said track having an arc-shaped end section, a lever having its fulcrum at the center of said arc, and stops to limit the motion of said lever, as and for the purpose specified.

3. A carrier adapted to be hung upon a suspended track and to travel thereon, having a frame extending below said track, provided with a groove in its under side, pins or projections extending into said groove from the sides thereof, and a pouch of flexible material having a spring-frame adapted to be compressed at the top to pass said pins, and to spring outward over said pins and to be retained thereby, as and for the purpose specified.

382,890. SHIFTING GATE FOR CONVEYERS. DANIEL W. MARMON, Indianapolis, Ind., assignor to the Herdyte & Marmon Company, same place. Filed June 5, 1886. Serial No. 167,725. (No model.)

Claim.—The combination of the casing A, a central partition thereto, conveyers on each side of said partition, shifting gates mounted on said partition and provided with ends C, each of which is of just sufficient size to overlap the edge of that on the adjacent gate when it is turned in the opposite direction, and the cross-partitions c^2, which

382,890.



are arranged above and cover said ends, substantially as shown and described, and for the purposes specified.

382,891. PITMAN ATTACHMENT FOR MOWING-MACHINES. FRANK MCMAHON, ADA C. SHARP, and CHARLES H. LILES, Darlington, Ind. Ter. Filed Jan. 21, 1888. Serial No. 261,473. (No model.)



Claim.—1. The combination of the wheel and the plates secured thereto with the pitman-rod having a head formed upon one end, and which head fits between the wheel and the plates, substantially as shown.

2. The combination of the wheel, having a circular recess, B, formed in its outer side, the two semicircular plates F, secured to the outer side of the wheel, and also provided with a recess, and a pitman-rod provided with a head which fits in the recess in the wheel and plate, substantially as described.

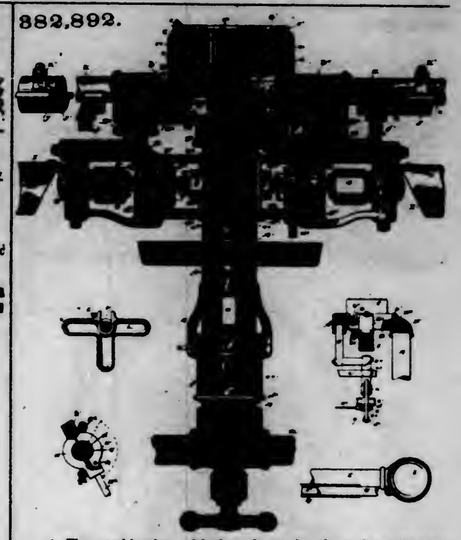
382,892. VAPOR-BURNER. WILLIAM MEYERSBERG, Cleveland, Ohio. Filed June 17, 1887. Serial No. 241,681. (No model.)

Claim.—1. The combination, with a needle-valve having a screw-threaded portion and a thimble screw-threaded internally, of a sleeve mounted on the valve, said sleeve being screw-threaded externally and internally for engaging the threads of the thimble and of the valve, and an adjustable clamp or clutch adapted to grip the sleeve for operating the latter, substantially as set forth.

2. The combination, with a needle-valve having a screw-threaded portion and an angular portion adapted to extend through a similar-shaped opening, wherein said valve may have an endwise movement, but not a rotary movement, and a stationary thimble screw-threaded internally, of a sleeve mounted on the valve, said sleeve being screw-threaded externally and internally for engaging the threads of the thimble and of the valve, and an adjustable clamp or clutch adapted to grip the sleeve for operating the latter, substantially as set forth.

3. The combination, with a needle-valve, a stationary thimble, and a sleeve adapted to turn in the thimble, said sleeve being internally threaded for the reception of the needle-valve, of an adjustable friction clamp or clutch mounted on the sleeve for operating the same, substantially as set forth.

382,892.

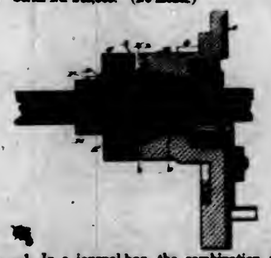


4. The combination, with the valve and a sleeve for reciprocating the valve, of an adjustable friction-clutch, the latter consisting of a pair of pivoted jaws and a screw for holding said jaws together, a suitable handle connected with the clutch, and lugs for limiting the movement of the clutch in either direction, substantially as set forth.

5. The combination, with a burner having cylindrical slotted shell and imperforate top and upwardly-projecting rim, of one or more internal circumferential ribs integral with the shell, substantially as set forth.

6. The combination, with retort, lateral commingling-tube, and outside burner, of a lighting-tube, trough, and connecting-tubes for the trough, substantially as set forth.

382,893. JOURNAL-BOX. JOHN C. MILLER, Springfield, Ohio, assignor to the Thomas Manufacturing Company, same place. Filed Sept. 7, 1887. Serial No. 248,608. (No model.)



Claim.—1. In a journal-box, the combination, with a slotted sleeve having a sphere-like enlargement, of the box proper, composed of two parts whose adjacent faces are each provided with a spherical enlargement which embraces the said sphere-like enlargement, with a space between them, and devices to draw the said parts toward each other and axially to the sleeve, whereby the sleeve is compressed and its interior shaft-journal reduced in diameter.

2. In a journal-box, the combination, with the box proper, composed of two vertical parts having horizontal openings therein and whose adjacent faces are each provided with a spherical enlargement and devices to draw said parts together, of a compressible bearing fitted within said box, composed of a slotted sleeve loosely fitted in said openings and having a sphere-like enlargement within the said spherical enlargement of the box proper, and compressible by drawing the parts together in a direction longitudinally to the slot in the sleeve.

382,894. HEDDAEUS. JOHN F. K. O'CONNOR, Yonkers, N. Y. Filed Oct. 15, 1887. Serial No. 252,512. (No model.)

Claim.—1. An automatic cover-closing inkstand comprising two or more ink-receptacles located and secured in place upon a common base, in immediate proximity to each other, so that the cover of one on opening it comes into direct contact with either or all of the other cov-

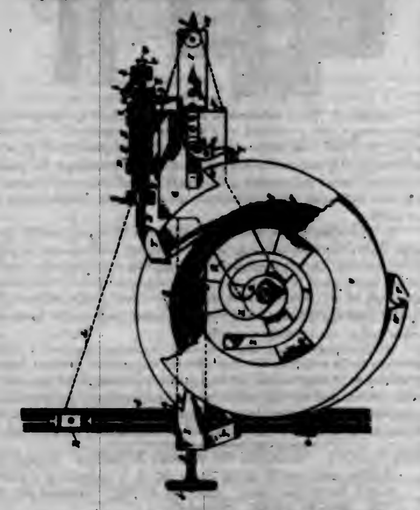
382,894.



ers that may be open and thereby closes the same, substantially as and for the purpose hereinbefore described and shown.

2. In an automatic cover-closing inkstand comprising two or more ink-receptacles located upon a common base, the combination of the common base with a sub-base by means of a revolving socket and pivot, substantially as and for the purpose hereinbefore described and shown.

382,895. ROCK-DRILL. WILLIAM O'KEEFE, Hilston, Mont. Filed July 27, 1887. Serial No. 245,033. (No model.)



Claim.—1. The standard and guide-adjustably fixed and having the traveling carriage moving upon the guide, in combination with the drill, the sleeve through which it passes, and the rotating mechanism, and the wheel or disk having the spring-handled hammers attached thereto, and the spring or elastic turning-crank, substantially as herein described.

2. The adjustable guide, the drill-carriage traveling thereon, and the cylindrical box supported on the carriage and having a zigzag or cam groove around it, in combination with the cylindrical drill-carrying sleeve within the box, having a pin projecting outwardly into the cam-slot, and a centrally-fulcrumed lever, Y, one end of which acts to reciprocate the drill-carrying sleeve, and the cam W upon the hammer-carrying disk, and a retracting-spring, *d*, acting upon the opposite end of the lever, substantially as herein described.

3. The cylindrical drill-carrying sleeve B, loosely fitting into the stationary box or holder D, and a pin projecting from the sleeve through a zigzag or cam slot in the box or holder, in combination with a lever, Y, by which the sleeve is reciprocated within the holder, said lever having the arms *a* and *b* standing diagonally, so that one will strike the front and the other the rear of the circumferential groove in the drill-sleeve to reciprocate it and cause the pin to travel in the cam-groove, substantially as herein described.

4. The cylindrical sleeve B, having the exterior pin projecting into a zigzag slot in the box or holder D, within which it is reciprocated and rotated, and having an axial hole through its center, with a square or polygonal chamber at the rear end; in combination with a drill-shank loosely fitting the hole in the sleeve, and a square or polygonal collar secured to the drill-shank and fitting the chamber, substantially as herein described.

5. The drill-carrying sleeve B, box or holder D, and the forked reciprocating lever supported upon the traveling carriage, in combination with the rotary disk having pins and cam flanges, the shaft of which is journaled in extensions or supports from the carriage, and the hammers having the curved elastic handles secured to the periphery of the disk between the projecting flanges, substantially as herein described.

382,896. LUBRICATING CRANK-PIN. GARDNER B. PARKER, Worcester, Mass., assignor to the Richardson Manufacturing Company, same place. Filed Dec. 10, 1887. Serial No. 258,260. (No model.)



Claim.—The combination, with a crank disk or arm and a connecting-rod, S, having the end 7, provided with an oil-tube, 10, of the crank-pin 3, of the same external diameter and having a central chamber, 4, and an oil-feed hole, 5, therein, the position of said feed-hole corresponding to the position of said oil-tube for the introduction of oil into said chamber 4, and a bolt, 6, for closing the outer end of the chamber 4, and a washer for holding the end of the connecting-rod upon the crank-pin 3, substantially as shown and described.

382,897. DEVICE FOR REGULATING TEETH. JOHN J. B. PARSONS, Belleville, Ill. Filed July 30, 1887. Serial No. 245,731. (No model.)



Claim.—1. A dental arched spring for regulating teeth, provided with an adjusting-screw extending lengthwise of the leg of the spring, engaging a bearing attached to the bow, and a threaded lug on the loop-band, substantially as specified.

2. The combination, with a dental bow-spring, of an adjustable clamp having a threaded perforation, an adjustable slide-bearing, and an adjusting-screw extending parallel to the leg of the bow-spring, substantially as specified.

3. The combination, with a dental bow-spring, of the open loop C secured by the clamp-screw *y* and adjusted by the screw *k*, substantially as specified.

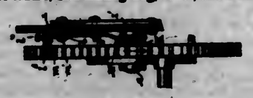
4. The combination, with a dental bow-spring, of a branched loop-clamp having a clamp-screw, a bearing-slide having a double-wedge fastening, and a regulating-screw, substantially as specified.

5. The combination, with a dental bow-spring and its slides, bearing attachment, and regulating devices, of the double-wedge fastenings, each consisting of a thin or ribbon form middle portion increasing in thickness toward the ends, substantially as specified.

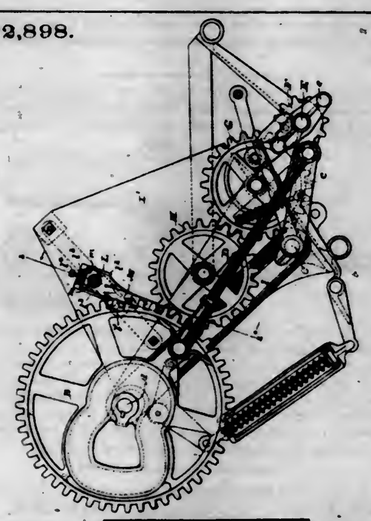
382,898. GRAIN-BINDER. HENRY H. PERSHING, Chicago, Ill., assignor to the McCormick Harvesting Machine Company, same place. Filed Dec. 7, 1886. Serial No. 220,878. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, with the main gear in a binding attachment, of the ratchet-teeth on the inner face of said gear, the chair bolted to the adjacent frame, the longitudinally-slotted plate-spring seated in said chair, and the bolt passing through the slot in said spring, through the chair and frame, and serving to secure the three together, and the set-screw mounted in a lug on said chair bearing against the heel end of the spring.

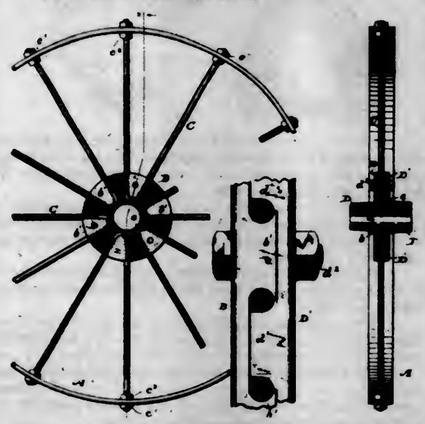
2. The combination, substantially as hereinbefore set forth, of the chair L, having lateral snugs *P*, the plate-spring or dog having a longitudinal slot in its shank and an upturned flange at its heel end, the set-screw in the lug of the chair bearing against said flange, the bolt which enters the open end of the chair to the frame, and the bolt passing through the slot in the dog, through the chair near its lug end and through the frame, and uniting dog, chair, and frame.



382,898.



382,899. WHEEL. HENRY R. PRESSER, Chicago, Ill., assignor to the McCormick Harvesting Machine Company, same place. Filed Sept. 1, 1887. Serial No. 248,503. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the metal wheel-rim, the central binding-disk provided with equidistant open lugs upon its face, the centrally-bent spokes catching over said lugs, and the independent detachable hub.

2. The combination, in a metal wheel, of a metal rim and a central binding-disk provided with lugs upon its face, spokes formed of centrally-bent rods which fit over said lugs at their apexes and extend thence to the rim, an independent hub having a bearing-sleeve passing through the center of the disk, and a flange which comes against the face of said disk and confines the spokes thereon, and bolts passing through said flange and disk.

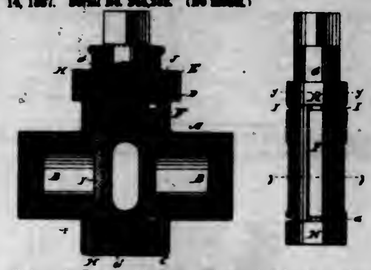
3. The combination, substantially as hereinbefore set forth, with the metal wheel-rim, the central binding-disk and its flaring lugs, and the centrally-bent spokes, of the tapering hub, its annular flange, and the bolts uniting said flange to the binding-disk.

4. The combination, substantially as hereinbefore set forth, of the wheel-rim, the central binding-disk having radially-flaring lugs, the centrally-bent spokes taking over said lugs and at their ends passing through the rim, the nuts applied to the outer end of said spokes exteriorly to the rim, the hub and its annular flange, and the bolts uniting said flange to the binding-disk.

5. The combination, substantially as hereinbefore set forth, of the wheel-rim, the central binding-disk having radially-flaring lugs, the centrally-bent spokes taking over said lugs and at their ends passing through the rim, the nuts applied to the outer end of said spokes exteriorly to the rim, the hub and its annular flange, and the bolts uniting said flange to the binding-disk.

6. The combination, substantially as hereinbefore set forth, of the wheel-rim, the central binding-disk having flaring lugs, the centrally-bent spokes taking over said lugs, the hub having an annular flange provided with teeth or projections entering into the spaces between said lugs, and the bolts uniting said flange to the binding-disk.

382,900. COCK. JOSEPH A. PEROT, New York, N. Y. Filed July 14, 1887. Serial No. 244,262. (No model.)

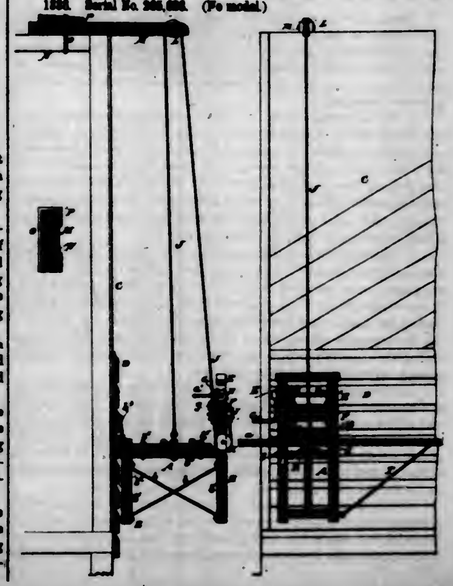


Claim.—1. The combination, with the shell having a plug-seat, a fluid-passage, and a cap-seat, of a cap made to engage said cap-seat, a plug provided with necks and with longitudinal packing-strips, and collars movably secured to said necks and made to engage the packing-strips, one of said collars being made to rest upon the plug-seat, and said cap being made to act upon the other collar, substantially as set forth.

2. The combination, with the shell having a plug-seat, a fluid-passage, and a cap-seat, of a cap made to engage said cap-seat, a plug provided with longitudinal packing-strips, and movable collars, with which the cap and plug-seat respectively engage, whereby the collars are made to act on said packing-strips, one of said collars being made to rest upon the plug-seat, and said cap being made to act upon the other collar, substantially as set forth.

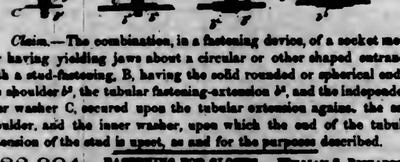
3. The combination, with the shell having a plug-seat, a fluid-passage, and a cap-seat, of a cap made to engage said cap-seat, a plug provided with longitudinal dovetail grooves, packing-strips secured in said grooves, and movable collars made to act upon said packing-strips, one of said collars being made to rest upon the plug-seat, and said cap being made to act upon the other collar, substantially as set forth.

382,901. SCAFFOLD FOR WOODEN BUILDINGS. CHARLES W. RANDALL and JAMES H. SMITH, Jersey City, N. J., assignors of one-third to S. F. Bailey, same place. Filed Feb. 11, 1887. Renewed Feb. 23, 1888. Serial No. 265,033. (No model.)



Claim.—1. In a carpenter's scaffold, the combination of the platform-frame B, having a rubber roll to bear against the house, the hand-shaft G, carrying detent *g* and pinion H, the windlass having spur-wheel I, the adjacent steadying-pulley K, the trunk Q, bars R R, and pins S S, the superposed pulley L, and the rope J, the latter attached at one end to the windlass and at the other to the middle of the platform, as shown and described.

382,902. VEHICLE-AXLE. RICHARDS F. RICHARDSON, Cincinnati, Ohio. Filed Oct. 27, 1887. Serial No. 253,502. (No model.)



Claim.—1. A resilient wire ring, H, having an opening or blank, A, in its circumference, and hollowed or dished diametrically in two lines, one line being at right angles to the other, substantially as herein set forth.

2. The combination, with axle-box A, having chamber *a* at its inner end and circular ridge or elevation *d* on the bottom of said chamber, of an open resilient wire ring, H A, hollowed or dished diametrically in two lines, one line being at right angles to the other, substantially as herein set forth.

3. The combination, with a chambered or shouldered axle-box, A *a*, of an open resilient wire ring, H A, hollowed or dished diametrically in two lines, one line being at right angles to the other, substantially as herein set forth.

4. The chamber or socket *a* at the inner end of the axle-box, having a circular ridge or elevation, *d*, on its bottom, substantially as herein set forth.

5. The combination, with chamber or socket *a* at the inner end of the axle-box, having the circular ridge or elevation *d*, of a washer composed of leather or other similar suitable material, substantially as and for the purpose specified.

6. An axle-arm having a collar or shoulder, *b*, and a circular ridge or elevation, *b'*, constructed on the front face of said collar, intermediate its inner and outer edges, substantially as and for the purpose specified.

7. The combination, with collar *b* on the axle-arm, having the circular ridge or elevation *b'*, of a washer, D, composed of leather or other similar suitable material, substantially as and for the purpose specified.

8. The combination of an axle-box having at its inner end a chamber or socket, *a*, provided with a circular ridge or elevation, *d*, and an axle-arm having collar *b* and circular elevation *b'*, said ridges or elevations embedding themselves in the substance of the lubricating-washer D on the turning home of the nut on the axle-arm, substantially as and for the purpose specified.

9. The combination of axle-box A, having a socket or chamber, A', at its outer end, the axle-arm C, nut G, having a circular ridge or elevation, *g*, on its inner face, and a lubricating-washer, E, constructed, arranged, and operating substantially as herein set forth.

382,903. GLOVE-FASTENING. WILLIAM S. RICHARDSON, Boston, and JOSIAH R. CRANE, Newton, Mass., assignors to the Ball and Socket Fastener Company, Boston, N. H. Filed Dec. 31, 1883. Serial No. 157,260. (No model.)



Claim.—The combination, in a fastening device, of a socket member having yielding jaws about a circular or other shaped entrance, with a stud-fastening, B, having the solid rounded or spherical end *b*, the shoulder b^2, the tubular fastening-extension b^3, and the independent over washer C, secured upon the tubular extension against the said shoulder, said the inner washer, upon which the end of the tubular extension of the stud is upset, as and for the purposes described.

382,904. FASTENING FOR GLOVES. WILLIAM S. RICHARDSON, Boston, Mass., assignor to the Ball and Socket Fastener Company, Boston, N. H. Filed Jan. 24, 1888. Serial No. 261,794. (No model.)

Claim.—1. In the fastening for gloves and other articles, the combination of the cap *a*, the collet *b*, having the central hole, *b'*, and

382,904.



the slit eyelet *c*, held in the hole of the collet by the collet and the cap, as and for the purposes described.

2. The combination, in a fastening for gloves and other articles, of the cap *a*, the collet *b*, the slit eyelet *c*, and the prongs or fastenings b^3, integral with the collet, substantially as described.

3. The combination, in a fastening for gloves and other articles, of the cap *a*, the collet *b*, the slit eyelet *c*, held by the collet and cap, as specified, the fastening prongs or extensions b^3, extending from the outer section of the fastening, and the under washer, *d'*, having the holes *d*, as and for the purposes described.

4. The combination, in a fastening for gloves and other articles, of the cap *a*, the collet *b*, the slit eyelet *c*, held by the collet and cap, as specified, the under washer, *d'*, its sleeve d^2, and fastening prongs or extensions for uniting the collet and the under washer, substantially as described.

5. The combination of the cap *a*, the collet *b*, having the hole *b'* and united to the cap, with the slit eyelet *c*, having the enlarged section *c'*, the shoulder c^2, and the grasping-section c^3, having the opening c^4, substantially as described.

6. In a fastening for gloves and other articles, the combination of the cap *a*, having a flat or substantially flat top, the collet *b*, made dish-shaped and united at its edge to the cap, with the slit eyelet *c*, held by its flange between the collet and cap, substantially as described.

7. The combination, in a fastening for gloves and other articles, of the collet *b*, having the short prongs, with the cap *a* and the ball or stud receiving device *c*, supported between the collet and the cap, substantially as described.

382,905. FASTENING FOR GLOVES. WILLIAM S. RICHARDSON, Boston, Mass., assignor to the Ball and Socket Fastener Company, Boston, N. H. Filed Jan. 24, 1888. Serial No. 261,795. (No model.)



Claim.—The improvement in fastenings for gloves and other articles, comprising the cap *a*, the collet *b*, having a large hole, *b'*, the slit eyelet *c*, having the flange *c'* and an extension which enters the hole in the collet, and is of a size sufficient to provide a space or recess between it and the inner edge of the collet, and an eyelet under washer or fastening having a fastening extension or extensions which enter the collet-hole outside the extension of the slit eyelet, and is or are upset or turned upon the flange of the eyelet and caused to lap or extend upon the upper surface of the collet, as and for the purposes set forth.

382,906. GATE. REUBEN H. SAYER, New Martinsville, assignor of two-thirds to Thomas W. Carroll and John W. Carroll, Keyser, W. Va. Filed Jan. 17, 1888. Serial No. 261,018. (No model.)

Claim.—1. The combination of the gate, the lever D, the standards erected to the sides of the gate, the lever V, mounted on said standards, connecting-rods between the levers V and D, and clutches carried by the levers V and engaging the standards, as set forth.

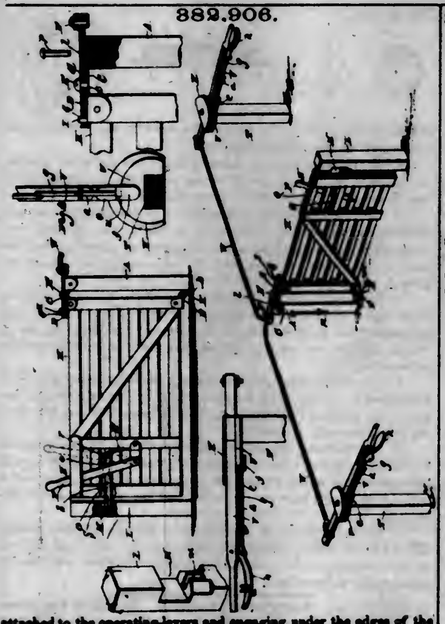
2. The combination of the gate, mechanism for tilting and swinging the same, the latch-post, the spring-actuated bolt having the shoulder S, and the pins *s* above the bolt and engaged by the shoulder S, substantially as specified.

3. The combination with the hinge-post and the gate hinged at its bottom thereto, of the lever D, mounted on the upper end of the post and connected pivotally at its inner end to the top of the gate, the standards T T, the shouldered plates on their upper ends, and the operating-levers mounted on the plates and connected to the lever D, the said operating-levers being provided with clutches to engage shoulders on the said plates, substantially as and for the purpose specified.

4. The combination, with the lever D, mounted on a suitable post, and the gate hinged to the post and connected to the inner end of the lever, of the shouldered plates U U, suitably supported at convenient distances on opposite sides of the gate, the operating-levers mounted on the plates and connected at their outer ends to the outer end of the lever D, and the clutches mounted on the levers and comprising the bolts *g*, which are adapted to engage the shoulders on the plates U, and the handles mounted on the operating-levers and connected to the said bolts, substantially as and for the purpose specified.

5. The combination, with the lever D, mounted on a suitable post, and the gate hinged to the post and connected to the inner end of the lever, of the plates U U, having shoulders *u u* thereon, the operating-levers connected at their outer ends to the lever D, the guide-plates *f*,

382,906.



attached to the operating-levers and engaging under the edges of the plates U U, and the clutches mounted on the operating-levers and comprising the bolts *g g*, sliding in suitable keepers, *e* and *e*, and the handles connected to the bolts and adapted, when released, to drop at their free ends and project the bolts into engagement with the said shoulders *u*, substantially as and for the purpose specified.

6. The combination, with the gate hinged to a suitable post and connected to the end of a lever, D, of the plates U U, having shoulders *u u* thereon, the operating-levers mounted on the plates and provided with automatic clutches to engage the said shoulders, and the caps arranged over the plates, substantially as and for the purpose specified.

7. The combination of the post having a socket in its upper end, the lever D, mounted on the post and having an aperture adapted to align with the said socket, the gate hinged to the post and connected at its top to the inner end of the lever D, operating-levers connected to the outer end of the said lever D, and the pin *p*, adapted to be inserted in the aligned aperture and socket to lock the lever D against movement, substantially as and for the purpose specified.

382,907. MANUFACTURE OF ARTIFICIAL COPAL, ROBERT REHAAS, Stuttgart, Würtemberg, Germany. Filed Mar. 27, 1885. Serial No. 160,377. (Specimens.)

Claim.—1. The new resinous product herein described, which is produced by the action of an alcohol on a resin acid, which dissolves readily in petroleum-benzine, but is insoluble in alkaline carbonates, and which by the action of a caustic alkali splits up into a resin acid and an ether.

2. The new resinous product herein described, produced by the action of an alcohol upon colophony, which product is soluble in petroleum-benzine but insoluble in alkaline carbonates, and which by the action of caustic alkalies splits up into abitic acid and the ether of the alcohol employed in the operation.

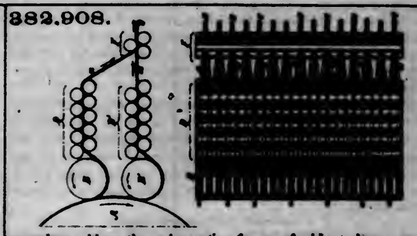
382,908. MACHINE FOR MAKING HEAVY ROVINGS. JOHN SCHOLES, Philadelphia, Pa. Filed Mar. 5, 1887. Serial No. 229,774. (No model.)

Brief.—Each fibrous web or strip is condensed to form a fine slubbing, and then several fine slubbings are united and subjected to a second rubbing operation to form a heavy slubbing.

Claim.—1. The combination of the cylinder and doffers of a carding-machine, upper and lower sets of rubbers, one for each doffer, a single set of secondary rubbers, and means for supporting and operating said rubbers, all substantially as specified.

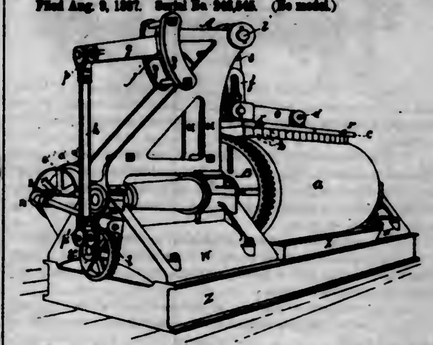
2. The combination of the cylinder and doffers of a carding-machine, upper and lower sets of rubbers, one for each doffer, a set of

382,908.



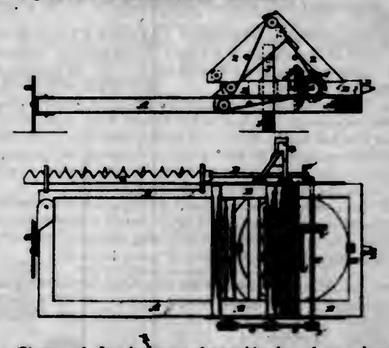
secondary rubbers, the reciprocating frames of said sets, bars connecting the frames of one of the sets of main rubbers with those of the secondary set, and means for reciprocating the rubber frames, all substantially as specified.

382,909. POLISHING-LATHE. HIRAM H. SNOVILLE, Chicago, Ill. Filed Aug. 9, 1887. Serial No. 246,045. (No model.)



Claim.—In a stone-polishing lathe, a frame to receive and hold the polishing-bricks, in combination with a bell-crank lever, A, link *c*, arm or bar *f*, connecting bar or rod A, worm-wheel *l*, and worm *m*, substantially as and for the purposes specified.

382,910. HARVESTER. JAMES SHIELDS, Broadway, Va. Filed Aug. 16, 1887. Serial No. 246,572. (No model.)



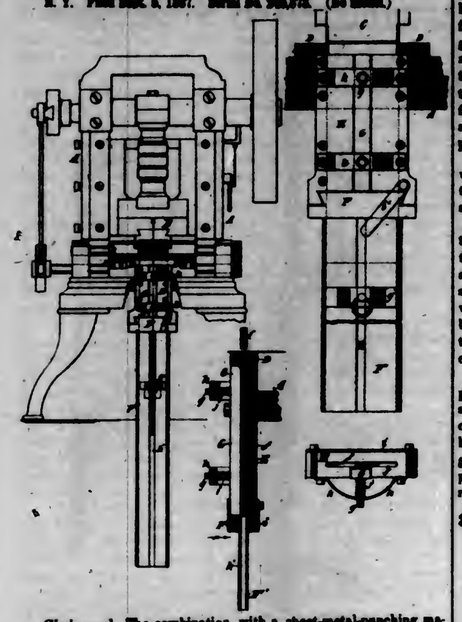
Claim.—1. In a harvester, the combination of a supplemental frame, in which the grain-wheel is mounted, having the tongue secured thereto, and the platform-frame, the supplemental wheel-carrying frame being swiveled upon the stubble end of the platform-frame, whereby said frame can be swung around and bring the tongue and main wheel into line with the platform, substantially as shown.

2. In a harvester, the combination of a supplemental wheel-carrying frame, the driving-wheel journaled therein, the tongue secured to the wheel-frame, the platform-frame, upon the inner end of which the wheel-carrying frame is swiveled, and the pivoted grain-wheel on the grain end of the platform-frame, whereby the grain-wheel, the supplemental or wheel-carrying frame, and the tongue can be turned into line with the platform-frame, substantially as described.

3. The combination, in a harvester, of a supplemental wheel-carrying frame, in which the driving-wheel is journaled, and to which the tongue is secured, of the platform-frame, upon which is swiveled at its

stubble end the wheel-carrying frame, and which is supported at its grain end by the pivoted grain-wheel, the said wheel-carrying frame having a spindle adapted to receive a supplemental wheel when the wheel-carrying frame and the tongue are turned into a line with the platform-frame for the purpose of transporting the machine, substantially as set forth.

382,911. MATT-HOLDER FOR FURNISHING-MACHINES. RALPH J. SHUPLEY, Waterbury, Conn., assignor to George W. Hoffe, New York, N. Y. Filed Sept. 5, 1887. Serial No. 248,572. (No model.)



Claim.—1. The combination, with a sheet-metal-punching machine, of a slotted case for receiving the blanks as cut out, and a presser-bar for applying friction to the edges of such blanks, and a removable sheath below the slotted case for receiving the blanks and in which they are conveyed away, substantially as set forth.

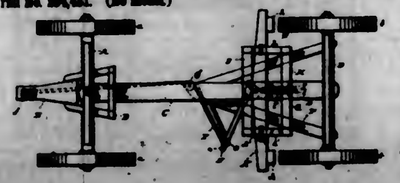
2. The combination, with a sheet-metal-punching machine, of the slotted case E, the friction-bar G, pins *g*, coiled springs *j*, bearing-bars A, the plate *i*, swinging arm *l'*, and a sheath, F', having a dovetailed block to be removably connected to the case E, substantially as set forth.

3. In a sheet-metal-punching machine, the combination of the slotted case E, the lower end of which has a dovetail groove, with the dovetailed block F and sheath F', adapted to be connected to said case E, the friction-bar G, and springs for pressing said bar against the descending blanks, and the holder *g'* in the case F', substantially as set forth.

4. The combination of a slotted case for receiving blanks from a punching-machine, with a sheath detachably connected with said slotted case for receiving the blanks therefrom, substantially as described.

5. The combination of a slotted case for receiving blanks from a punching-machine, with a longitudinally-slotted sheath detachably connected with said slotted case for receiving the blanks therefrom, substantially as described.

382,912. WAGON-BRAKE. JOB SMITH, Chemung, N. Y., assignor of one-half to Elmer E. Warren, same place. Filed Nov. 7, 1887. Serial No. 254,451. (No model.)



382,912.



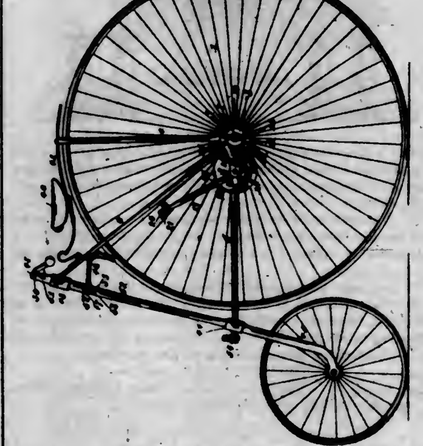
Claim.—1. In a wagon-brake, the combination of the rectangular guide-frame constructed as described and secured upon the rear bounds, the brake-bar sliding between the side guide-plates of said frame, the guide-loops embracing the upper of said side guide-plates, the guide-bar extending rearward from said brake-bar and passing through an opening in a standard rising from the rear plate of the guide-frame, the coiled spring surrounding the guide-bar between the standard and the brake-bar, the toggle-joint formed by the lever pivoted to the front of said guide-frame and to the link connecting with brake-bar, and the rope actuating said toggle-joint, substantially as and for the purpose described.

2. The combination, with the guide-frame and brake-bar sliding within said frame, of the link M, pivoted to the front of said frame, the lever N, the pulleys O, O', and *f*, and the rope P, substantially as specified.

3. In combination with a wagon, and adapted to be secured upon the rear bounds thereof, the brake mechanism described, consisting of the rectangular frame having the upper and lower front and side plates and the rear plate provided with a guide-standard, the brake-bar sliding between the side plates and having a guide-bar standing rearward through the guide-standard and surrounded by a coiled spring between said standard and the bar, the toggle-jointed lever pivoted in the front of the guide-frame, and the rope for operating same, all constructed substantially as and for the purpose described.

4. The guide-frame composed of the front plates *g g*, the side plates *h h'*, and rear plate, H, provided with the perforated guide-standard I, and end blocks separating the upper and lower plates, in combination with the brake-bar sliding between the side plates and having the rear guide-bar, L, the lever N, pivoted to the front of the guide-frame and to the link M, connecting with the brake-bar, the pulley O in the outer end of the lever, the pulley attached to the reach, and the rope, substantially as and for the purpose described.

382,913. BICYCLE. SIDNEY SMITH, Pine Bluff, Ark. Filed Jan. 16, 1888. Serial No. 261,022. (No model.)



Claim.—1. In a bicycle, the combination of the central circular frame, 7, having segmental slots 8, the circular frame 9, having the forwardly-projecting arms supporting the foot-levers and the driving-gear, and the notted bolts passing through the segmental slots and the circular frame, adjusting the latter, as shown, and for the purpose specified.

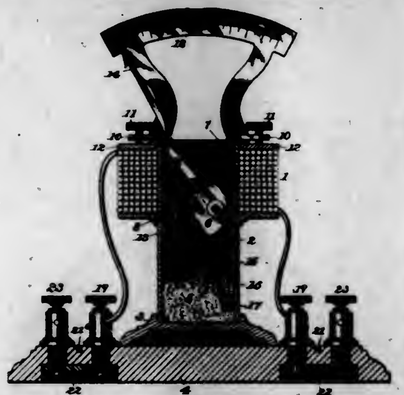
2. In a bicycle, the combination of a circular frame, 7, having segmental slots 8, the circular frame 9, having bolts 10 and arm 12, and provided with the cross-bar 16, having connecting-lips 18 and arm 13, connected by bolts 14 and 15 to the other arm, the drum or ratchet-box within the frame having the drum-strap, and the foot-lever having the disks formed with the segmental slots 25, and having the drum-strap secured between them, as shown, and for the purpose specified.

3. In a bicycle, the combination of the adjustable frame 9, having arms 12 and 13, the disks having the cogs or notches 23 and journaled between the ends of the arms, and the lever pivoted with its bifurcated inner ends straddling the disks upon the journal-bolt of the disks and having the spring-bolt engaging the cogs or notches, as shown, and for the purpose specified.

4. In a bicycle, the combination of the drum or ratchet-box, the circular frame surrounding the said box and having its cross-bar secured to the axle or shaft and formed with the forwardly-projecting arms connected by the journal-bolt 14 and the smaller bolt, 15, the disks 22, having the segmental slot 25 and journaled upon the journal-bolt, and formed with the bolts 26, 27, and 28, and bolt 29, and having the cylinder 30 and circular grooves 32 and 33 in their inner faces, the semicircular plates having the perforation and the hooked ends and sliding in the grooves, and the drum-straps secured to the drum and having the hooked end and the pin near the end, as shown, and for the purpose specified.

5. The combination of the steering-rod having the upper tubular portion provided with longitudinal slots in its sides, the brake-bar fulcrumed upon the handle-bar, the rod in the tubular portion of the steering-bar, having its upper end pivoted to the brake-bar and having the cross-head at its lower end sliding in the slots and the ring, the spring for holding the rod and ring up, and the brake having the bifurcated arm straddling the steering-rod and bearing against the under side of the ring of the cross-head, as shown, and for the purpose specified.

382,914. ELECTRIC INDICATOR. JOHN TRESCOTHICK, Hartford, Conn. Filed May 23, 1887. Serial No. 239,072. (No model.)

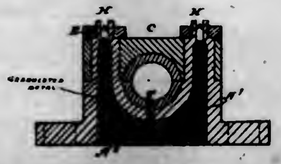


Claim.—1. A solenoid, in combination with an armature which is eccentrically pivoted thereto, and is provided with a lever carrying an adjustable counterpoise and a fan, substantially as and for the purpose specified.

2. In an electric indicator, a hollow spool and a helix which is located on said spool, in combination with an armature pivoted in a frame which is adjustable in said spool, substantially as and for the purpose specified.

3. A hollow spool, a helix which is wound thereon, a dash-pot which is formed therein, and an armature which is provided with an index-finger, fan, and counterbalancing-lever, in combination with an adjustable frame in which said armature is eccentrically pivoted within said spool, substantially as and for the purpose specified.

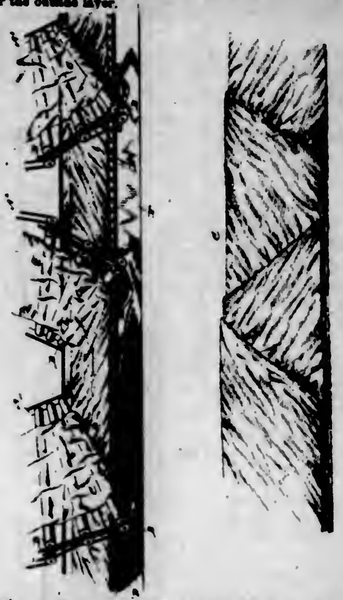
382,915. LUBRICATOR. ETIENNE VERNY, Récourt, France. Filed Nov. 10, 1887. Serial No. 254,234. (No model.)



Claim.—As means for lubricating rotary shafts, granulated metal saturated with oil, the whole placed within a chamber forming a part of a journal-box, and the chamber communicating with a rotary shaft within said journal-box.

382,916. METHOD OF MAKING COTTON-BATTING. EDWARD WALKER and DAVID WILLIAMS, Cohoes, N. Y. Original application filed Mar. 24, 1887, Serial No. 232,262. Divided and this application filed Nov. 23, 1887. Serial No. 256,469. (No model.)

Brief.—The fleeces from several carding-machines are obliquely deposited upon an apron traveling at right angles to the front of the machines. A bat is thus formed of layers whose fibers lie oblique to the direction of the length of the web, and the fibers of each layer lie across the fibers of the layer beneath. The bat is afterward folded in a direction parallel with the edges. The best grade of stock may be used for the outside layer.

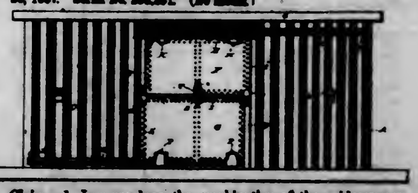


Claim.—1. The method of forming cotton-batting which consists in placing a fleece or layer of cotton upon a traveling surface, and then applying to said first layer as it moves with the traveling surface, in a single continuous unbroken layer extending lengthwise of the first layer, a second layer or fleece fed obliquely to the line of travel of the moving surface, and also obliquely to its own width, substantially as described.

2. The method of forming cotton-batting which consists in placing a fleece or layer of cotton upon a traveling surface, then applying to said first layer as it moves with the traveling surface, in a single continuous unbroken layer extending lengthwise of the first layer, a second layer or fleece fed obliquely to the line of travel of the moving surface, and also obliquely to its own width, and afterward folding the web so formed upon itself lengthwise thereof, substantially as described.

3. The method of forming cotton batting which consists in placing a fleece or layer of cotton upon a traveling apron, and then applying to said first layer as it moves with the traveling surface, in continuous unbroken layers extending lengthwise of the first layer, a series of other layers fed in opposite directions to each other, and one upon the other, and each obliquely to the line of travel of the moving surface, and also obliquely to its own width, substantially as and for the purpose described.

382,917. CAR-DOOR. JOHN G. WARNE, St. Louis, Mo. Filed Nov. 26, 1887. Serial No. 256,251. (No model.)



Claim.—1. In a car-door, the combination of the guideways secured to the outer surface of the side of the car, and the door formed of an upper and lower section moving upon said guideways, and having their meeting joints covered by a downwardly-depending flange, and each section having its vertical joint on the side on which it opens protected by an inwardly-standing flange, substantially as specified.

2. A car-door composed of the rectangular upper and lower sections, each consisting of an interior frame and exterior metallic plate properly secured to said frame, the said doors sliding outward in opposite directions and the guideways secured to the adjacent side of the car, substantially as specified.

3. The combination of the car-door composed of an upper and lower rectangular section, each consisting of an inner frame and an outer metallic plate secured to said frame and bent inward at its edges to overlap the exposed joints between the sections and the door-opening, and extending downward to overlap the joint between the meeting edges of the sections, of the longitudinal guide beams and strips, the hooked engaging-plates secured to the sections and sliding on said strips, and the guiding and retaining brackets, substantially as specified.

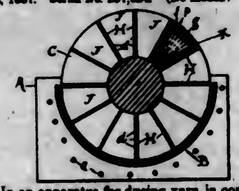
4. The combination, with the car, the horizontal guide-beams secured longitudinally to the outside of the car, the rabbeted vertical side clips, E, adjoining the doorway or opening of the car, and provided, respectively, with the shoulder *x* and lower reduced portion, *y*, and the shoulder *x'* and upper reduced portion, *y'*, of the door-section F and G, the flange or extension I of the upper section extending over the upper edge of the lower section, the clips J and N, attached, respectively, to the upper and lower sections, and the inwardly-bent portions *i m* of the upper and lower sections, respectively covering said clips J and N, substantially as specified.

5. In a car, the combination, with the side provided with a proper doorway and the guide-beams extending longitudinally in opposite directions from the top and bottom, respectively, of said doorway, of the two rectangular door-sections sliding in opposite directions on the guide-beams, and the fastening devices, substantially as described, to connect said sections together, as specified.

6. In a car, a door composed of oppositely-sliding upper and lower sections, each section consisting of a rectangular inner frame and an outer covering secured to the frame by splices, having their ends bent up or upset on the inner surface of the frame, substantially as specified.

7. In a car, the combination, with the vertical, partly-rabbeted, and shouldered side clips, E, the upper and lower guide-beams, and the guide-strips secured to said beams, of the sectioned door, each section of which is composed of an inner rectangular frame and an outer covering secured to said frame, the vertical clips J N, secured to said sections, the hooked engaging-plates, and the guide-brackets, substantially as specified.

382,918. DYEING APPARATUS. URIAH WILDIN, Cohoes, N. Y. Filed Dec. 12, 1887. Serial No. 257,694. (No model.)



Claim.—1. In an apparatus for dyeing yarn, in combination with a rotary dipping-wheel provided with partitions forming compartments, a series of removable frames adapted for insertion in said compartments and provided with pins for holding yarn, substantially as and for the purposes described.

2. In an apparatus for dyeing yarn, in combination with a rotary dipping-wheel provided with pockets formed by radial open-work partitions, a series of removable frames provided with fixed pins, and hinged lids adapted to fit in said pockets, substantially as and for the purposes described.

3. In combination with a dipping-wheel divided into compartments, substantially as shown, a series of removable frames provided with yarn-holding devices and adapted for insertion in said compartments, each of which frames is constructed in two sections which are adjustable to or from each other, whereby the frame may be extended or reduced, substantially as set forth and described.

4. In combination with a dipping-wheel provided with radial partitions, a series of frames, K, each having an open-work base provided with fixed pins P, and a hinged lid, *f*, substantially as and for the purposes described.

382,919. SULKY-PLOW. RICHARD C. WHEELWRIGHT, South Bend, Ind. Filed Feb. 16, 1888. Serial No. 264,292. (No model.)

Claim.—1. The combination of a plow with a U-shaped hanger pivoted upon the front end of the plow-beam and carrying on its free end an adjustable wheel, and a locking-dog for said hanger, pivoted on the beam and adapted to engage the hanger automatically and hold the wheel parallel with the beam, substantially as described.

382,919.



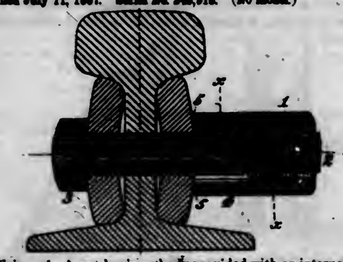
2. The combination of the plow with the bar D, a wheel mounted thereon, and the rods H H, attached to bar D at one end and adjustably secured to the plow-beam at the other end, whereby the bar D is adjusted, substantially as and for the purpose described.

3. The combination of plow A with the bar D, its adjusting-rods H H and brackets I I, and the adjustable lever E and rack F on bar D, and the wheel W, mounted on said lever, all constructed and arranged substantially as and for the purpose specified.

4. The combination of the plow with the caster C, mounted on the rear end of the plow-beam, the adjustable bar D, adjustable lever E, pivotally mounted on bar D and wheel W thereon, and the hanger J, the adjustable lever K, and the wheel M, all substantially as and for the purpose described.

5. The combination of the plow, the caster C, mounted on the rear end of the beam, and the adjustable bar D and lever E, rack F, and wheel W, with U-shaped bracket J, pivotally mounted on the front end of the beam, and lever K, rack L, mounted on said bracket, and wheel M, and the spring-controlled dog N, all constructed and arranged substantially in the manner and for the purpose described.

382,920. NUT-LOCK. GEORGE WESTINGHOUSE, Jr., Pittsburg, Pa. Filed July 11, 1887. Serial No. 243,913. (No model.)

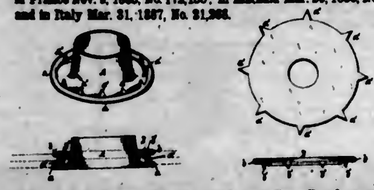


Claim.—1. A nut having a body provided with an internal thread which is adapted to engage an ordinary single-threaded bolt to which the nut is to be applied, and is of proper length to exert the maximum clamping force which the bolt is designed to sustain, and having its bearing-face located upon a blank or unthreaded extension which is reduced in thickness relatively to the body sufficiently to present a substantial degree of elasticity, substantially as set forth.

2. A nut having its bearing-face located upon a blank or unthreaded elastic extension of its body in the form of two or more concentric bands, substantially as set forth.

3. The combination of a nut having an ordinary internally-threaded body and having its bearing-face located upon an elastic unthreaded extension reduced in thickness relatively to the body, as described, and a bolt the thickness of metal of which is reduced between its head and the adjacent end of its thread, substantially as set forth.

382,921. SAIL-GROMMET. WILLIAM W. WILCOX, Middletown, Conn. Filed Mar. 5, 1888. Serial No. 266,515. (No model.) Patented in France Nov. 9, 1885, No. 173,150; in England Mar. 20, 1886, No. 4,383, and in Italy Mar. 31, 1887, No. 21,266.

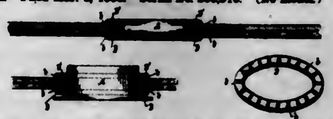


Claim.—1. The combination, with a washer, B, of an eyelet to form a sail-grommet provided with a rolled rim, the edge of which is provided with a series of upwardly-projecting barbs, *a'*, to engage the

sail when the eyelet is clinched in position on the washer, substantially as described.

2. The combination, with an eyelet provided with a rim, *a*, the edge of which is formed with a series of upwardly-projecting barbs, *a'*, of a washer, B, adapted to the eyelet and having barbs *b'* around its central opening, substantially as described.

382,922. SAIL-GROMMET. WILLIAM W. WILCOX, Middletown, Conn. Filed Mar. 8, 1888. Serial No. 266,516. (No model.)



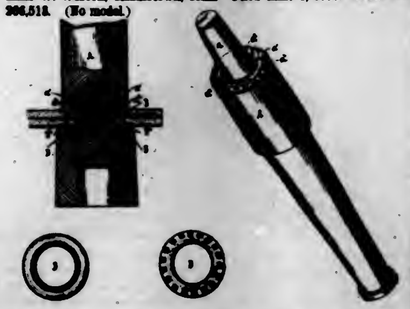
Claim.—A sail-grommet composed of an eyelet, A, and two rings, B B', of equal diameter, adapted to surround the eyelet-barrel loosely on opposite sides of the sail-cloth, the opposing faces of said rings being roughened or barbed, substantially as shown and described.

382,923. SAIL-GROMMET. WILLIAM W. WILCOX, Middletown Conn. Filed Mar. 8, 1888. Serial No. 266,517. (No model.)



Claim.—A sail-grommet composed of a metallic eyelet and of a sheet-metal washer which is provided at its inner edge with projections which are bent outward and upward, substantially as described.

382,924. PUNCH AND DIE FOR SAIL-GROMMETS, &c. WILLIAM W. WILCOX, Middletown, Conn. Filed Mar. 8, 1888. Serial No. 266,518. (No model.)
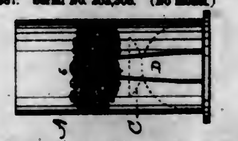


Claim.—1. The combination, with a die having a central orifice, of a punch having a central projecting nipple, *a*, and a series of outwardly-projecting teeth, a^2, around the inner end portion of the nipple, substantially as described.

2. The combination, with a die having a central orifice, of a punch having a projecting nipple, *a*, and a clinching-shoulder, *a'*, and outwardly-projecting teeth a^2 around the inner end portion of the nipple, substantially as described.

3. The combination, with a punch having a nipple, *a*, of a die consisting of a disk having a central orifice, and provided with a series of outwardly-projecting teeth, b^2, arranged around the orifice, substantially as described.

382,925. SLATE-ERASER. GOTTLIEB WILKENING, Dayton, Ohio. Filed Oct. 14, 1887. Serial No. 252,302. (No model.)

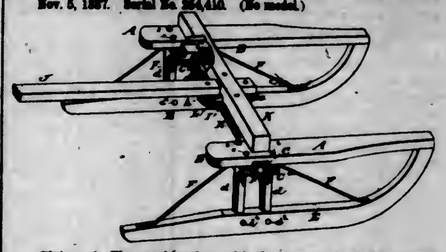


Claim.—1. A slate-eraser comprising a hollow case, a flexible reservoir with flanged base, and an aperture terminating in a cup at the top, and a holder with sponge attached to the tapering end thereof and suited to have contact with the cup of said reservoir within said case, substantially as set forth.

2. The case A, for a slate-eraser, having the clasp D on its outside to engage a sponge, and in combination with the reservoir C and a suitable holder for an erasing-sponge, substantially as set forth.

3. In a slate-eraser, the holder B, with sponges on both ends, in combination with the flexible reservoir C and the case A, substantially as and for the purposes specified.

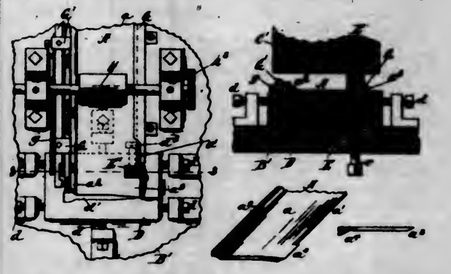
382,926. SOD-SLEDGE. MELVIN D. WILLIAMS, Dexter, Minn. Filed Nov. 5, 1887. Serial No. 254,410. (No model.)



Claim.—1. The combination, with the runners E, of the vertical supports *d*, arranged in pairs, as shown, and provided at their upper ends with horizontal portions, of the rave, the two-part box supported by the horizontal portions of said supports and confined between the same and the rave, and the bolts *e*, passed through the rave, the two parts of the box, and the horizontal portion of the supports, and serving to secure them all together, as set forth.

2. The combination, with the runners E, of the vertical supports *d*, arranged in pairs, as shown, and each provided at its upper end with a horizontal portion, of the rave provided upon its under face with a transverse groove, the two-part box supported upon the horizontal portions of said supports and confined between the same and the rave, the upper part of the box being formed with a transverse rib engaging said groove, and the bolts *e*, passed through the rave, the two parts of the box, and the horizontal portions of the supports, and serving to secure them all together, substantially as described.

382,927. PROCESS OF CUTTING HORSESHOE-NAILS. HARRY A. WILLS, Chicago, Ill. Filed May 12, 1887. Serial No. 237,967. (No model.)



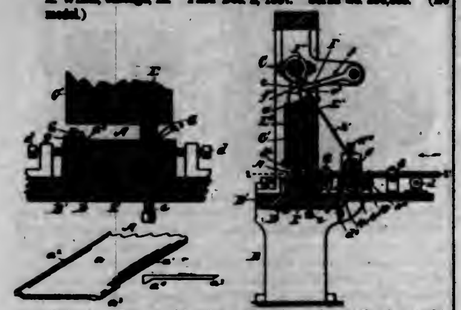
Claim.—1. The herein-described process of making horseshoe-nails, which consists in forming a bevel upon one side of the point edge of a suitably-rolled bar and then punching the nails successively from the said bar, both operations being performed as the bar is fed along through a single machine, substantially as and for the purpose specified.

2. The hereinbefore-described process of making horseshoe-nails by a continuous operation, which consists in alternately first beveling the point edge of a portion of the bar and then cutting from the beveled portion the finished nail, and repeating these operations, substantially as and for the purposes specified.

3. The hereinbefore-described process of making horseshoe-nails, which consists in first beveling the point edge of a portion of the bar and then forcing the bar backward so as to produce a drawing action on the point by the pressure of the beveling-dies, and then cutting from the beveled bar the finished nail, substantially as and for the purposes specified.

4. The herein-described process of making horseshoe-nails in a continuous operation, which consists in gradually beveling the point edge of a suitably-formed bar, gaging the position of the said bar for the cutting-dies from the said beveled edge, and then cutting the nails successively from the said bar while thus gaged, substantially as and for the purposes specified.

382,928. MACHINE FOR MAKING HORSESHOE-NAILS. HARRY A. WILLS, Chicago, Ill. Filed Dec. 2, 1887. Serial No. 256,595. (No model.)



Claim.—1. In a machine for making horseshoe-nails, the combination, with suitable cutting-dies, of beveling-dies to operate upon the point edge of the bar in front of the cutting-dies, substantially as and for the purposes specified.

2. In a machine for making horseshoe-nails, the combination, with the die-plunger and its cutting-die, of the beveling-die mounted in said plunger and operating independently of the same, substantially as and for the purposes specified.

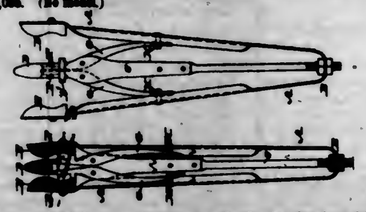
3. In a machine for making horseshoe-nails, the combination, with the die-block D, having female cutting-die *d'* and female beveling-die E, of the die-plunger C, reciprocating in vertical ways and carrying the male cutting-die d^2 and the male beveling-die E', mounted in said die-plunger and reciprocating independently of the same, substantially as and for the purposes specified.

4. The combination, with the female cutting and beveling dies, of the die-plunger C, carrying the male cutting-die and connected by pitman *e* to the crank-shaft G, the male beveling-die E', mounted to reciprocate in the die-plunger C, a suitable spring to thrust the said beveling-die normally upward, the vibrating arm F, arranged to bear on the head of the said beveling-die, and the cam F', mounted on the shaft G, to vibrate the arm F, substantially as and for the purposes specified.

5. In a machine for making horseshoe-nails, the combination, with the fixed guide for supporting one edge of the bar from which the nails are cut, of a yielding guide for supporting the other edge, substantially as and for the purposes specified.

6. In a machine for making horseshoe-nails, the combination, with the beveling-dies arranged to operate on one edge of the bar, and the fixed guide G, for supporting said edge, said guide extending to the cutting-dies and forming a gage for the beveled edge of the bar, of the yielding spring-controlled guide G', for supporting the other edge of the bar, substantially as and for the purposes specified.

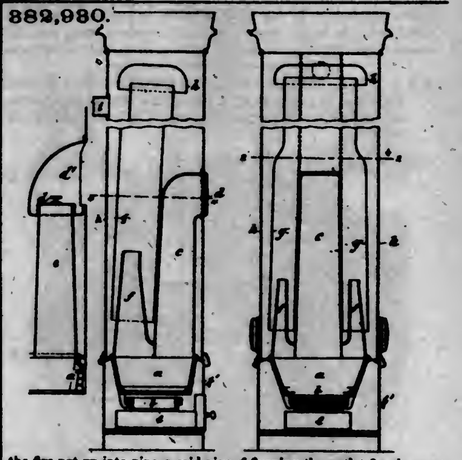
382,929. TOOL FOR GROOVING THE MOUTHS OF BOTTLES. WILLIAM H. WILSON, Camden, N. J. Filed Nov. 16, 1886. Serial No. 219,088. (No model.)



Claim.—A tool for grooving the mouth of a bottle, comprising the spring-jaws A, having the eyes or sockets H secured thereto on the inner sides thereof, and having the detachable molds B secured at their ends, the stem C, adjustable in said jaws and having the slotted head D, with shoulders D', the levers G, partly within the said stem and pivoted thereto, each of the said levers having at one of its ends the bit F, the other end freely entering the eye H, the said shoulders D' forming a seat for the neck of the bottle and adapted to abut against the lower portion of the molds, substantially as described.

382,930. HEATING-STOVE. ERNST A. WEMAN, Stockholm, Sweden. Filed June 20, 1887. Serial No. 242,703. (No model.)

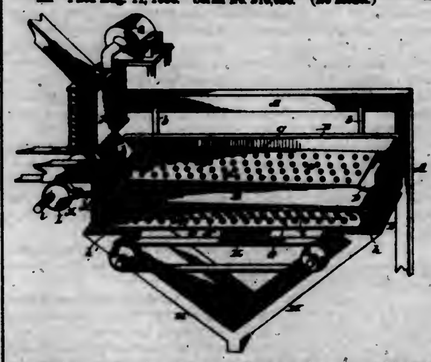
Claim.—1. In a stove, the combination, with the drum *h*, closed at top and bottom and provided with an outlet for the products of combustion, of the upright pipe *g*, arranged within said drum and open at top and bottom, the fire-pot *a*, and the pipe or pipes *f*, extending from the fire-pot up into pipe *g*, said pipe *f* forming the outlet for the products of combustion from the fire-pot, substantially as set forth.



2. In a stove, the combination, with the drum *h*, closed at top and bottom and provided with an outlet for the products of combustion, of the fire-pot *a*, the magazine *c*, the pipe *g*, arranged inside the drum and open at both ends, and the tapered pipes *f*, extending from the fire-pot up into said tube *g*, and forming a passage for the products of combustion, as set forth.

3. In a stove, the combination, with the drum *h*, closed at top and bottom and provided with an outlet for the products of combustion, the fire-pot, the pipe or pipes *f*, and open-ended pipe *g*, all respectively arranged as set forth, of the cap A, having the form of an inverted cup arranged over the upper end of pipe *g*, with the rim extending below the top of the said tube, as set forth.

382,931. RICE-SEPARATOR. CHARLES J. ALLEN, New Orleans, La. Filed Aug. 11, 1888. Serial No. 282,690. (No model.)



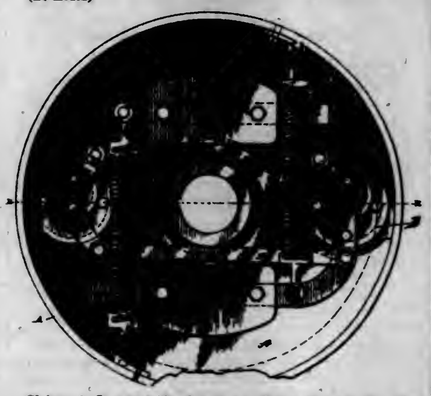
Claim.—1. In a rice-separator, a sheet-metal screen provided with rows or series of indented perforations, the said plate at points between said rows of perforations being punctured from underneath, forming series of upwardly-projecting burrs, substantially as set forth.

2. The combination, with a supporting-frame, a vibratory casing suspended therein, and a rotary shaft for giving motion to the casing, of a pair of oppositely-slanting screens located in the casing, a table located between the screens, there being a space between one end of the table and the end of the casing, and also a space between the two ends of the lower screen and the ends of the casing, a removable bottom section adapted to fill one of the spaces, and rice-conduits extending from the spaces formed at the ends of the lower screen and uniting into one, substantially as set forth.

3. The combination, with a supporting-frame, a vibratory casing suspended therein, and a rotary shaft for giving motion to the casing, of a pair of oppositely-slanting screens located in the casing, a table located between the screens with a space between one end of the table and the end of the casing, and also with a space between the two ends of the lower screen and the ends of the casing, a removable bottom

section adapted to fill one of the spaces, a cleaner-brush carried in contact with the lower screen, and rice-conduits extending from the spaces formed at the ends of the lower screen, substantially as set forth.

382,932. GOVERNOR FOR STEAM-ENGINES. JAMES B. ALLFREE, Indianapolis, Ind., assignor of one-half to Robert Shriver and Harrison Swartzwelder, Cumberland, Md. Filed Sept. 1, 1887. Serial No. 248,563. (No model.)



Claim.—1. In a centrifugal governor, the combination of a valve-actuating eccentric having an opening or transverse slot adapted to fit freely over a crank-shank, and two double auxiliary eccentrics (composed of inner and outer eccentrics) fitted into the web of the casing and connected with the movable plate K, carrying the valve-actuating eccentric, by eccentric-pins J, substantially as set forth.

2. In a centrifugal governor, the combination of a suitable casing, a valve-actuating eccentric having an opening or transverse slot adapted to fit freely over a crank-shaft, two double auxiliary eccentrics (composed each of an inner and an outer eccentric) fitted into the web of the casing and connected with the movable plate K, carrying the valve-actuating eccentric, by eccentric-pins J, and intermediate mechanism connecting the two pairs of auxiliary eccentrics to secure their proper relative movements, substantially as and for the purposes set forth.

3. In a centrifugal governor such as described, the arrangement of two pairs of auxiliary eccentrics on opposite sides of the valve-actuating eccentric, in combination with suitable mechanism for rotating the inner and outer eccentrics of each pair in opposite directions to secure the movement of the valve-actuating eccentric in a straight line, substantially as set forth.

4. In a centrifugal governor, the two double auxiliary eccentrics arranged opposite to each other on opposite sides of the hub, the movable plate K, carrying the valve-actuating eccentric, weighted levers F, and small levers I, bolted to the eccentrics, in combination with links H H', pivoted to the levers I at one end and to the lever P at the other, as and for the purpose hereinbefore set forth.

5. The weighted levers F, rigidly bolted to the auxiliary eccentrics, whereby the eccentrics form the pivots of the weighted levers, substantially as hereinbefore set forth.

6. In combination with the two double auxiliary eccentrics, weighted levers F, small levers I, and links H H', the connecting rod or bar P, substantially as and for the purpose set forth.

7. In a governor such as described and provided with two double auxiliary eccentrics on opposite sides of the main eccentric, the inner eccentric of each pair connected with the outer eccentric of the other by suitable mechanism, substantially as and for the purpose set forth.

8. The combination of the casing A, movable plate K, and securing ring or flange Q, substantially as and for the purpose set forth.

9. A steam-engine governor comprising a suitable casing attachable to the driving-shaft of the engine, two pairs of double auxiliary eccentrics journaled in said casing on opposite sides of its center, levers secured to said eccentrics, one to one of each pair, respectively, weights adjustably attached to said levers, counteracting-springs adjustably attached to said levers and to said casing, suitable connections between said levers, and also between the outer and inner eccentrics of the opposite pairs of said auxiliary eccentrics, whereby they are caused to move in harmony, a valve-actuating eccentric, a movable disk or plate to which said valve-actuating eccentric is suitably attached, said disk being sustained and regulated in its movements by one of each pair of said auxiliary eccentrics, and suitable means for holding said disk in place, all substantially as described, as arranged and combined as to operate as set forth.

382,933. SCREW-CUTTING DIE. PETTER A. ASBERGER, Harrisville, Pa. Filed Aug. 26, 1887. Serial No. 247,981. (No model.)



Claim.—1. In a bolt-cutter head, the combination of the head having jaws sliding in radiating recesses in the forward or outer end and confined by a front plate, a ring upon the outer end of the head having cams for operating the jaws and sliding upon the head, and a bolt in a radial recess in the side of the head at the inner end or edge of the ring, having a spring forcing it outward, and having a transverse lip upon the outer end of its head bearing against the inner or rear edge of the ring, the inner concave face of the ring bearing against the face of the head of the bolt at the side of the lip, as shown, and for the purpose specified.

2. In a bolt-cutter head, the combination of the cylindrical head formed with the oblique groove in its side and with radiating recesses in its outer or forward end, jaws sliding in the recesses and having springs forcing them out and obliquely cut-off outer ends, a cam-ring upon the outer end of the head having eccentric or ratchet-shaped recesses in its inner face corresponding to and registering with the oblique ends of the jaws, a ring upon the head inside of the cam-ring having segmental slots and rearwardly-projecting guide-rods, screw-threaded bolts passed through the cam-ring into nuts sliding in the segmental slots of the inner ring, and a ring sliding upon the head, with perforations sliding upon the guide-rods, and having an inwardly-projecting stud engaging and sliding in the oblique guide-groove, as shown, and for the purpose specified.

3. In a bolt-cutter head, the combination of the cylindrical head having the axial perforation and the radiating grooves or recesses in the forward or outer end, and provided with the longitudinal grooves in the sides merging into the radiating recesses and with the oblique groove in the side, levers having slightly outwardly-curved rear ends and pivoted in the longitudinal grooves or recesses, and provided with springs forcing their outer ends outward, jaws having lips and suitable removable bits and sliding in the radiating recesses, said lips engaging the outer ends of the levers, a front plate removably secured over the forward or outer end of the head inclosing the jaws, a cam-ring having eccentric or ratchet-shaped recesses in its inner face bearing against the oblique outer ends of the jaws, an inner ring having rearwardly-extending rods, and having the cam-ring circumferentially adjustable upon its outer face, and a ring sliding upon the head, and having a stud sliding in the oblique groove in the same and having perforations for the guide-rods, as shown, and for the purpose specified.

382,934. STOCK-CAR. HARRISON ABEL, Toledo, Ohio. Filed Feb. 25, 1888. Serial No. 265,202. (No model.)



Claim.—The combination, with a stock-car provided with a standard near one side thereof, of a partition composed of sections hinged together, one of the sections being also hinged to the said standard, a standard secured to the opposite side of the car and provided with a groove into which the free end of the partition is made to fit, and bars and keepers secured to said sections and adapted to engage with each other to hold the partition rigid at its joints, substantially as specified.

382,935. LIFE-PRESERVING CHAIR. JAMES A. ASHWORTH, Yonkers, N. Y. Filed May 11, 1887. Serial No. 237,863. (No model.)

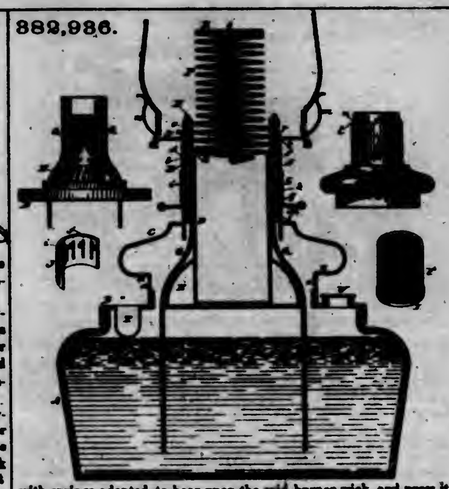
Claim.—1. The combination, with the hinged legs, the inner pair of which are formed with the notches in the upper side of their rear



382,935.



382,936.



portions, of the water-proof material forming the seat and having the buoyant material secured within it, and the pivoted braces, substantially as and for the purpose set forth.

2. The combination, in a life-preserving chair, of the centrally-pivoted legs having the cross-bars at their upper ends, the inner legs having the rear notches, the back-frame having the projecting lower ends, and the water-proof material forming the back and seat and having the buoyant material secured within it, as described, substantially as and for the purpose set forth.

3. The combination, in a life-preserving chair, of the centrally-pivoted legs having the cross-bars at their upper ends and the inner legs being formed with the rear notches, the back-frame having the projecting lower ends, and the water-proof material forming the back and seat having the slack or hinge portions and having the buoyant material secured within it, as described, substantially as and for the purpose set forth.

4. The combination, in a life-preserving chair, of the centrally-pivoted legs having the cross-bars at their upper ends and the inner legs having the rear notches, the back-frame having the projecting lower ends, the water-proof material forming the back and seat having the slack or hinge portions and having the buoyant material secured within it, as described, and the strap pivoted at one end to the back-frame and having the loop or ring at its free end adapted to engage with the button on the opposite side of the back-frame, all substantially as and for the purpose herein set forth.

5. In a life-saving chair, the combination, with the centrally-pivoted legs, the outer legs having the recesses in their lower sides near their upper ends, of the back-frame having the lower ends of its side rails extended down below their pivotal point and connected by the transverse brace-rod, the ends of which engage with the said recesses of the outer legs, the water-proof material forming the back and seat, and the buoyant material secured therein, substantially as and for the purpose set forth.

6. In a life-saving chair, the combination, with the centrally-pivoted legs, the inner legs having the notches formed in the rear portions and the outer legs having the recesses formed in their lower sides near their upper ends, of the back-frame having the lower ends of its side rails extended down below their pivotal points and connected by the transverse brace-rod, the ends of which engage with the said recesses of the outer legs, the water-proof material forming the back and seat, and the buoyant material secured therein, substantially as and for the purpose set forth.

382,936. LAMP. S. WM. BARRETT and HENRY B. BRADY, Meriden, Conn. Filed Feb. 20, 1887. Serial No. 228,163. (No model.)

Claim.—1. In a tubular-wick lamp, the combination of the outer tube surrounding the wick, constructed with an outwardly-projecting shoulder, *l*, and with projections *r* above, and the ring chimney-gallery N, corresponding in diameter to the upper end of the wick-tube, and with notches upon its inner edge corresponding to the projections on the wick-tube, the said ring-gallery provided with devices to secure the chimney thereon, substantially as described.

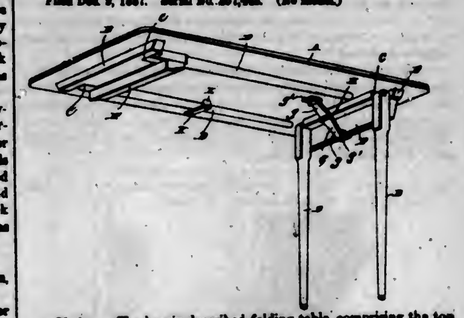
2. In a tubular-wick lamp, the combination of a concentric inner tube and an outer tube forming a wick-chamber between them, a wick-feed consisting of a ring arranged within the outer tube and adapted to move up and down therein, the said ring constructed with inwardly-projecting spurs to engage the wick, and a collar, l, surrounding the said outer tube and adjacent to the said ring, the said outer tube slotted vertically between the said ring and collar, and the said ring and collar connected through said tube, substantially as described.

3. In a tubular-wick lamp, the combination of a concentric inner tube and an outer tube forming a wick-chamber between them, the said inner tube having an annular shoulder upon its outside near its upper end and in said wick-chamber, a feeder-wick surrounding the inner tube, and so as to abut against said shoulder, a burner-wick surrounding the upper end of said feeder-wick, and a wick-adjuster within the outer tube and adapted to surround the burner-wick, the said ring having a projection therefrom outside the outer tube, whereby the said ring is made adjustable vertically, and the said ring constructed with springs adapted to bear upon the said burner-wick and press it against the feeder-wick, substantially as described.

4. In a central-draft lamp, the combination of the inner tube, an enlarged chamber, E, around the lower end of the said tube, said chamber being perforated for the admission of air to the tube, and a base surrounding said perforated chamber, the base having perforations to admit air to the said chamber, substantially as and for the purpose described.

5. In a lamp-fount, the glass cup T, introduced from the top of the fount and extending therein, substantially as and for the purpose described.

382,937. FOLDING TABLE. BARNET BABCOCK, Lenawee, N. Y. Filed Dec. 9, 1887. Serial No. 257,463. (No model.)



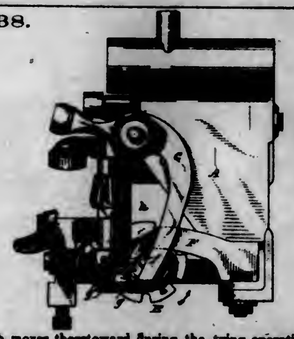
Claim.—The herein-described folding table, comprising the top A, the transverse cleats B, having the shoulders C, the legs D, pivoted to said shoulders, the cross-braces E, connecting the outer sides of said legs and resting against the corresponding cleats when the legs are perpendicular to the top, the buttons K, arranged to be turned outward and hold both pairs of legs folded, and the hinged braces G, each having legs *g g* of equal length, one of which is pivoted in an ear, *f*, secured to the table, and the other to a similar ear secured to the corresponding brace, E', the said braces folding upward and outward and resting between the top of the table and the corresponding braces E, in order to be protected and out of sight, substantially as specified.

382,938. GRAIN-BINDER. WILLIAM B. BAKER, Chicago, Ill. Filed Aug. 4, 1884. Serial No. 140,033. (No model.) Patented in England July 19, 1884, No. 10,320; in Victoria Oct. 2, 1884, No. 3,864; in New Zealand Nov. 20, 1884, No. 1,200; in South Australia Feb. 2, 1885, No. 951, and in New South Wales Feb. 3, 1885, No. 1,008.

Claim.—1. In combination with the knotter or band-securing device, an underlying cord-guide having a recurved hook at its end beneath the knotter, and a holder beneath the cord-guide adapted to receive the ends of the band and carry them along the guide until they come into the room formed by said hook and in position for the action of the band-securing device.

2. The combination of the knotter or tying-bill, a swinging

382,938.



holder which moves therstoward during the tying operation, and a cord-guide arranged between the knotter and holder and having a recurved hook at its end adjacent to the knotter, whereby the proper position of the band ends relatively to the latter is preserved irrespective of the directional thrusts imparted to them.

3. The cord-guide F, having the outline shown and described, with the recurving-hook *f* at its end, and arranged substantially as set forth.

382,939. COAL-HOD. EDWARD BARRATH, Cincinnati, Ohio, assignor to Victor R. Knecht, same place. Filed Feb. 23, 1888. Serial No. 264,949. (No model.)



Claim.—1. The blank for a coal-hod, provided with slits 3 and circular creased line 4, for forming the shell 1, and the cone 2 for a coal-hod, substantially as specified.

2. The shell and crimped bottom of a coal-hod of a single piece of metal, the crimps of the bottom being on its upper side, substantially as described.

3. A coal-hod consisting of a shell and crimped bottom of a single piece of metal having a V-shaped peripheral edge at the base thereof, the crimps of the bottom being on the upper side with the inner ones overlying the outer ones, and a base having an upper cylindrical portion compressed within the V-shaped peripheral edge to form a lock-seam, substantially as described.

382,940. PLOW. ARNOLD G. BAMBERGER, Anlander, N. C. Filed Dec. 20, 1887. Serial No. 258,494. (No model.)





Claim.—1. In a plow, the combination, with the point, of the landside and plate having the concave circular front portion provided with the shoulder for engaging the flange portion of the point, substantially as specified.

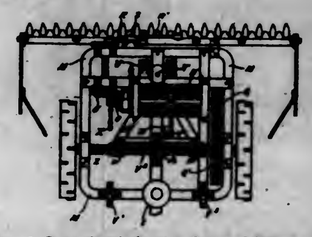
2. In a plow, the landside provided on its inner face with the thickened portion and arc slot having the recess and the clamping-bolt therein, the lug on the edge of the thickened portion, and the rib, substantially as specified.

3. In a plow, the combination of the mold-board and landside having the circular flanged edge and the point having the shoulder *e* and the inclined keeper or flange *f*, substantially as specified.

4. In an adjustable plow, the plate-piece bolted to the inner face of the point portion and mold-board, and the outstanding plate-piece rounded at its rear edge and having the opening for the clamping-bolt, and the adjusting-rack, substantially as specified.

5. In a plow, the removable adjusting device, consisting of the plate-pieces E F, the braces *g g'*, the rack A, and the opening *i*, in combination with the clamping-bolt, the arc slot, and the rib, substantially as specified.

382,941. ELECTRICAL AGRICULTURAL SYSTEM. EDWARD H. RAVELEY, New York, N. Y. Original application filed Dec. 11, 1886, Serial No. 180,411. Divided and this application filed Nov. 28, 1887. Serial No. 256,081. (No model.)



Claim.—1. In an electrical system for supplying current from a stationary source to a movable translating device, the combination, with an electrically-propelled vehicle, of a main line extending transversely to the course of movement of said vehicle and an intermediate conductor provided with a rotative connection permitting movement of the vehicle about a central point.

2. In an electrical system for supplying current from a stationary source to a movable translating device, the combination, with a main supply-line, of an electrically-propelled vehicle, means for guiding the vehicle at will, a winding-drum, and a conductor between the main line and the vehicle adapted to be wound on said drum and provided with a rotative connection permitting movement of the vehicle about a center.

3. In an electrical system for supplying current from a stationary source to a movable translating device, the combination, with an exposed main line, of an electric motor, means for guiding the same at will, a winding-drum, and an intermediate conductor between the motor and the main line adapted to be wound on said drum and having a traveling connection with said main line.

4. In an electrical system for supplying current from a stationary source to a movable translating device, the combination of an exposed main line extending along one side of a field or district, a conductor having a traveling connection therewith and equal in length to the transverse dimension of said field or district, a movable electric motor adapted to follow said conductor, and means for guiding said motor at will.

5. The combination, with a main supply-line, of a bare conductor having at one end a traveling connection with said line, an insulated drum upon which said conductor is adapted to be wound, and a movable electrical translating device on the opposite end of said conductor.

6. In an electrical agricultural system, the combination, with a main-line wire extending along one side of a field, of an electrically-propelled machine having an extensible connection therewith, permitting a transverse movement of the machine relatively to the wire.

7. In an electrical agricultural system, the combination of a main supply-line, an electrically-propelled vehicle having a traveling connection with said line, a propelling-motor for the vehicle, and mechanism on the vehicle actuated thereby.

8. In an electrical agricultural system, the combination, with a main supply-line, of an electrically-propelled vehicle having a movement to and from said line and provided with a rotative electrical connection therewith, whereby it may turn about a central point.

9. In an electrical agricultural system, the combination of the main supply-conductor, a bare secondary conductor having a traveling connection with the main, an insulated drum for said secondary conductor, an electrically-propelled vehicle having a rotative connection with the main through the secondary, and means for guiding said vehicle at will.

10. In an electrical agricultural system, the combination of a main supply-line extending along one side of a field or district, a bare secondary supply-conductor having a length equal to the transverse dimension of said field or district and a traveling connection with said main line, an electrically-propelled vehicle, means for guiding the same at will, and an insulated drum on said vehicle, on which the secondary conductor is adapted to be wound.

11. In an electrical agricultural system, the combination of a main supply-conductor, a secondary conductor having a traveling connection therewith, an electrically-propelled vehicle, means for guiding the same at will, a drum on the vehicle for the secondary conductor, and a standard over which said conductor passes in reaching said drum.

12. In an electrical agricultural system, the combination, with a main line extending along one side of a field or district and suspended from the tops of a line of posts, of a transverse conductor having a traveling connection therewith and of a length equal to the transverse dimension of the field or district, an electrically-propelled vehicle in constant connection with said conductor, and means for guiding the same at will.

13. The combination, with a main supply-conductor extending along one side of a field or district, a corresponding line on the opposite side, a transverse conductor having a traveling connection at each end, and a movable electric motor having a connection with said transverse conductor.

14. The combination of the positive and negative supply-lines on opposite sides of a field or district, respectively, a transverse conductor having a traveling connection with said lines at its opposite ends, and a movable electric motor included in the circuit of said conductor.

15. The combination of the positive and negative lines on opposite sides of a field or district, respectively, two parallel wires having a length equal to the transverse dimension of the field or district and a traveling connection with the said lines, respectively, and a movable electric motor in circuit between said wires.

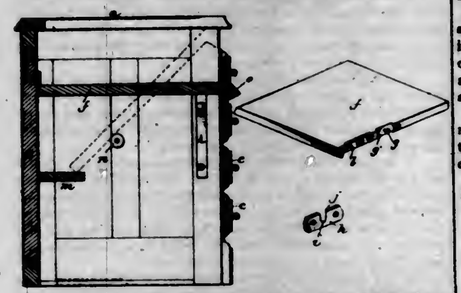
16. In an electrically-propelled harvesting-machine, the combination, with a propelling-motor, of a stationary conductor with which the motor has a traveling rotative connection permitting movement of the machine about a center, means for guiding the machine at will, and a cutting-bar extending transversely in front of the machine.

17. The combination, with a movable electric translating device, of a stationary source of current, an intermediate conductor, a winding-drum therefor, and a traveling guide for directing the conductor on the drum.

18. The combination, with a movable electric motor, of a stationary source of current, a movable electric translating device, two intermediate conductors extending from opposite directions, and a winding-drum upon which said conductors are oppositely wound, so that one may wind up as the other unwinds.

19. The combination, with a moving vehicle, of an electric translating device thereon, a stationary source of current, an intermediate conductor, and a winding-drum for said conductor movable about a vertical axis.

382,942. TYPE-WRITER CABINET. LUTHER G. BILLINGS, Washington, D. C. Filed Oct. 24, 1887. Serial No. 253,262. (No model.)



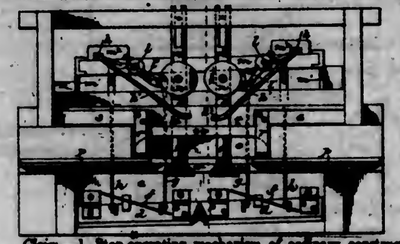
Claim.—1. A type-writer cabinet comprising a desk having a recess to receive the machine and a hinged top for such recess, a shelf or platform for the machine pivoted between its ends in said recess, a catch to engage said shelf and retain it in horizontal position, and a lock to connect the hinged top and shelf in position of disuse, substantially as set forth.

2. The desk or cabinet A, having the recess *d*, combined with the shelf *f*, pivoted in said recess by means of the lateral journals *g*, permanently attached to said shelf and provided with heads, and the notched bearings *h*, secured to the sides of the recess and into which the headed journals are detachably fitted to not only allow the shelf to be swung or rotated upon its journals, but also to permit the shelf and its attached journals to be removed bodily from the desk at pleasure, and serving, further, to brace or tie together the sides of the desk when in place, substantially as described.

3. The desk or cabinet A, having the recess *d* and a movable top for such recess, combined with the shelf *f*, operable independently of the top and pivoted between its ends within the said recess by means of the headed journals *g*, permanently attached to the sides of the said shelf, and the notched or countersunk bearings *h*, secured to the sides of the recess and receiving the headed journals to tie together the parts of the desk and permitting the free movement of said journaled shelf within and out from them, and a catch, all constructed and arranged substantially as described.

4. The desk or cabinet A, having a recess, *d*, combined with a gravitating shelf, its journals, and bearings arranged in said recess, a catch, a stationary shelf, *m*, and buffers *n* and *o*, substantially as described.

382,943. REED-ORGAN STOP-ACTION. LUTHER G. BILLINGS, Washington, D. C. Filed Nov. 4, 1887. Serial No. 254,212. (No model.)



Claim.—1. Stop-operating mechanism of ordinary construction having its stop-knob arranged in a recess or inclosure, combined with a secondary operating mechanism coupled therewith and controlling access to said recess or inclosure, substantially as described.

2. Stop-operating mechanism of ordinary construction having its stop-knobs arranged in a recess, combined with secondary stop-operating mechanism coupled with and operated by doors or slides for such recess, substantially as described.

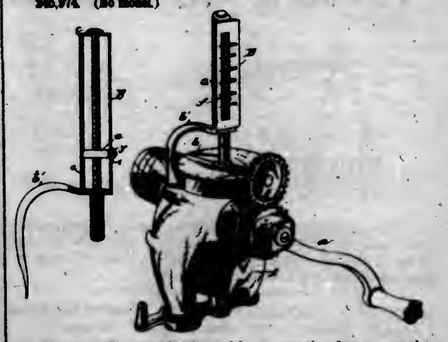
3. An ordinary stop-operating mechanism having its knobs arranged in a recess along with the knobs of any desired number of other stops, combined with a secondary stop-operating mechanism comprising doors to close said recess when all the stop-knobs are withdrawn therein, so as to render all the stops or reeds inoperative, rods connected to any desired stop-action, and rock-shafts and tappets thereon co-operating with said rods and doors, substantially as described.

4. The spring-closed mutes and an ordinary stop mechanism connected therewith, and having its stop-knobs arranged in an inclosure, combined with a secondary operating mechanism, including the doors or covers of said inclosure for opening the mutes after the stop mechanism is closed and rendered operable only upon the closing of the stop mechanism, substantially as described.

5. The combination, with the mutes and their springs, and ordinary stop mechanism connected therewith and arranged in a recess wherein it may be concealed, of a secondary operating mechanism comprising connections with the mutes, doors for the recess, and interposed mechanism for closing and opening the mutes, respectively, by the opening and closing of the said doors, substantially as described.

6. The doors *p* and co-operating wiper-blocks *s*, tappet-armed rock-shafts *k*, rods *g*, and spring-mutes, combined with ordinary stops, the stop-knobs of which are arranged in a recess with which the doors co-operate, substantially as described.

382,944. REGISTERING DEVICE FOR MEASURING-FAUCETS. JULIUS A. BLOUNER, Sioux City, Iowa. Filed Aug. 2, 1887. Serial No. 245,974. (No model.)

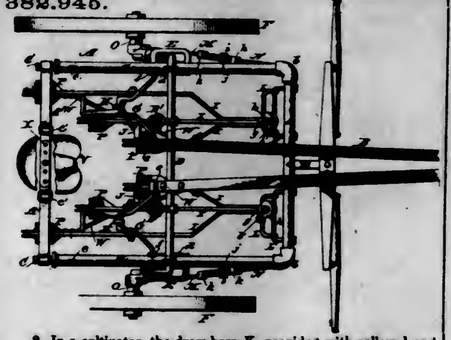


Claim.—The combination, with a measuring-faucet, a register adapted for connection therewith, consisting of the revolving spindle having a bifurcated end for connection with the index-finger of said faucet, a case for inclosing the same, a traveling block in connection with said spindle, an index-finger carried thereby, and a suitable dial, substantially as described.

382,945. CULTIVATOR. DENNIS S. BLUE and LEANDER HALTER, Fremont, Ohio. Filed Jan. 21, 1888. Serial No. 261,518. (No model.)

Claim.—1. The combination, with the draw-bars K, provided with rollers A and hooks *b'*, of the guides L, connected to independent brackets L', substantially as and for the purpose set forth.

382,945.



2. In a cultivator, the draw-bars K, provided with rollers k and hooks b', in combination with the beams I, carrying shovels P, and the guides L, connected to independent brackets L', substantially as and for the purpose specified.

3. In a cultivator, the axle D, extending through eyes *d* on the frame, and the yokes E, having eyes *f*, in combination with the levers G, for raising the shovels, and the springs E' and chains *d'*, substantially as and for the purposes described.

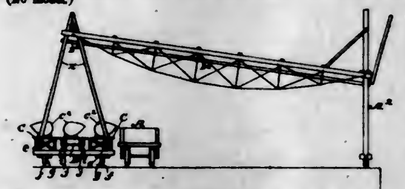
4. In a cultivator, the combination, with the frame and axle thereof and the hollow bearings O, through which the axle passes, of the extensible braces formed of the sections M N, having overlapping guides and adjustably connected together, substantially as and for the purpose set forth.

5. In a cultivator, the combination, with the extensible rods C and straps A', connected thereto, of the seat V and springs X, formed of adjustable sections and connected to the straps by links *c'*, substantially as and for the purpose set forth.

6. The combination, with the beam I, having shank or boot *m*, of the bracket for attaching thereto the harrow-teeth, consisting of the sections R S T, the two outer sections having grooved shanks *r*, and the middle section having perforated arms therefor, and a hub, *o*, for connecting it to the shank or shoe of the beam, and set-screws for connecting the several parts together, substantially as and for the purpose specified.

7. The beams and draw-bars of a cultivator and the brackets consisting of the sections R S T, detachably connected together and adapted to carry harrow-teeth, in combination with the beam-arms U, claw *u*, rod *v*, and screw-bolt *a'*, formed with eyes to receive the eyes of the rod, substantially as and for the purpose described.

382,946. APPARATUS FOR HANDLING MATERIAL. ALEXANDER H. BROWN, Cleveland, Ohio. Filed Mar. 5, 1887. Serial No. 229,905. (No model.)



Claim.—The combination, with a hoisting and conveying machine, of the duplex-truck device or bucket-shifting apparatus described, having mounted thereon the pier of the hoisting and conveying machine, all substantially as set forth and described.

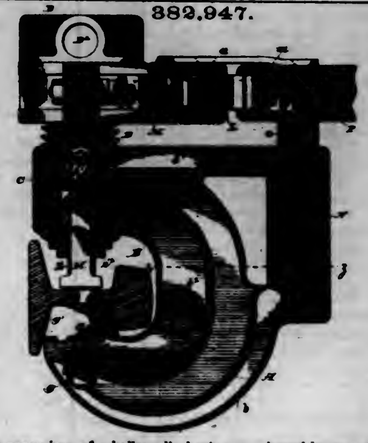
382,947. COMPOUND-LEVER PUNCH. CHARLES M. BROWN, Rockford, Ill. Filed Dec. 9, 1887. Serial No. 257,447. (No model.)

Claim.—1. In a punching-machine, the combination, with jaws and a screw-punch, of a die seated in the lower jaw and having a flanged lower end, and a clamping-plate having an opening, and a recess for the reception of the die and its flange, whereby the die is supported on all sides, substantially as set forth.

2. In a punching-machine, the combination, with jaws and a punch, of a hollow die having a flanged lower end and a clamping-plate having a central opening, and a recess to receive the lower end of the die and its flange, whereby the die is firmly clamped at all sides, substantially as set forth.

3. In a punching-machine, the combination, with jaws the lower one of which has an opening through same, and a punch mounted in

382,947.



the upper jaw, of a hollow die having an enlarged lower end and a clamping-plate having an opening conforming in shape to the enlarged end of the die, whereby when the clamping-plate is locked in position the die is firmly supported on all sides.

4. In a punching-machine, the combination, with jaws the lower one of which has an opening through the same, of a hollow die having a flanged lower end and a slightly-conical upper end, and a clamping-plate having a recess to receive the flanged end of the die and adapted to be secured to the jaw and lock the die over the opening in the jaw, said plate having a form to correspond with the shape of the rail-bar being operated upon, substantially as set forth.

5. In a punching-machine, the combination, with jaws, of a punch in the upper jaw, a die on the lower jaw, a pair of pivoted arms located alongside of the upper jaw, each arm having a flattened portion, and springs adapted to bear against said flattened portions for yieldingly holding the arms in position.

6. In a punching-machine, the combination, with a jaw, a screw therein, and a punch, said screw having a ratchet-toothed wheel thereon, of a bracket mounted on the screw, spring-actuated pawl for engaging the teeth of the wheel, and a pivoted lever for imparting motion to this bracket, substantially as set forth.

7. In a punching-machine, the combination, with a jaw, a shaft, and a screw adapted to turn in the jaw, said screw having ratchet-teeth thereon, of a bracket mounted on the screw and having a spring-actuated pawl held normally in contact with the teeth, a toothed segment attached to said bracket, and a lever affixed to the shaft and provided with teeth which mesh with the teeth on the segment attached to the bracket, substantially as set forth.

8. In a punching-machine, the combination, with a jaw, a screw adapted to turn therein, and a punch in the screw, of a bracket mounted on the screw and adapted to engage with the latter, a toothed segment on the bracket, and a pivoted lever having a toothed segment adapted to mesh with the teeth of the segment on the bracket in operating the screw, substantially as set forth.

9. In a punching-machine, the combination, with a jaw, a screw therein, and a bracket mounted on the screw, said bracket having a toothed segment, of a toothed lever pivoted on the jaw and a link loosely connecting the lever and bracket, substantially as set forth.

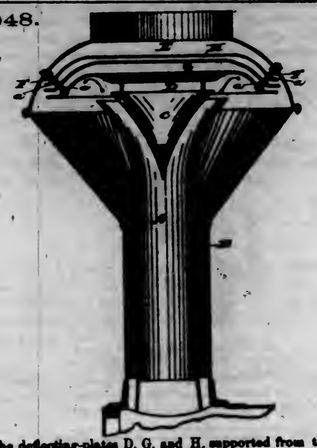
10. In a punching-machine, the combination, with a jaw and a screw therein, of a lever pivoted to the jaw-frame and devices connecting the lever with the screw for operating the latter, substantially as set forth.

11. In a punching-machine, the combination, with a jaw and a screw, of a bracket mounted on the screw and devices, substantially as described, connecting the bracket with the screw, whereby it can turn on the screw when moved in one direction and turn the screw when moved in the opposite direction, and a lever pivoted on the jaw-frame and adapted to operate the bracket, substantially as set forth.

382,948. SPARK-ARRESTER. HOWDEN ROSS, St. Thomas, Ontario, assignor of one-half to James Henry Radford, Toronto, Canada. Filed Aug. 21, 1888. Renewed Apr. 5, 1888. Serial No. 269,663. (No model.)

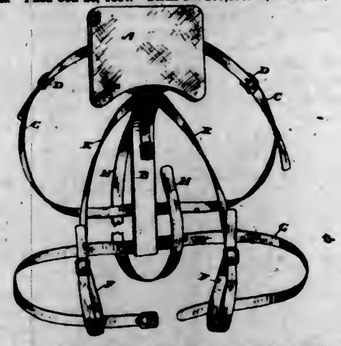
Claim.—1. A smoke-stack having a bell-mouthed pipe, A, inserted in it, so as to leave a space between the case B and the said bell-mouthed pipe A, the combination of the cone C, suspended from the deflecting-plate D, which is supported from the top of the bonnet E by the bolts F, substantially as and for the purpose specified.

382,948.



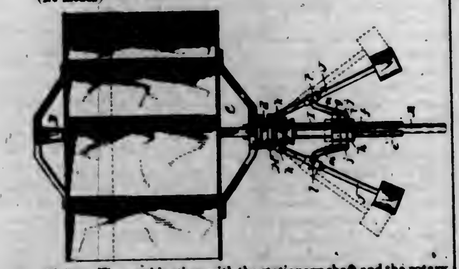
2. The deflecting-plates D, G, and H, supported from the top of the bonnet E by the bolts F, having adjusting-nuts *e* on them, in combination with the inverted cone C, suspended from the plate D within the bell-mouth of the pipe A, substantially as and for the purpose specified.

382,949. HEAD-REST. JOHN W. CAMPBELL, Toronto, Ontario Canada. Filed Oct. 28, 1887. Serial No. 253,855. (No model.)



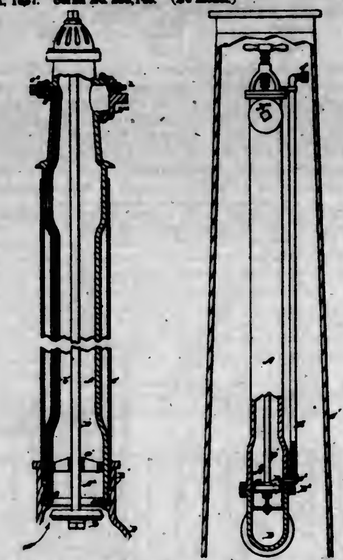
Claim.—The head-rest described, consisting of the head-rest A, the upright B, attached thereto, the shoulder-straps C, attached to the head-rest and passed behind said upright, the arm-straps E, secured to the upper part of the upright and formed at their free ends with loops, the body-strap G, attached to the upright, and the securing strap H, attached to said upright, all substantially as and for the purpose specified.

382,950. GOVERNOR FOR WIND-WHEEL SHAFTS. WARSHAM S. CAMPBELL, New Britain, Conn. Filed Dec. 16, 1887. Serial No. 258,053. (No model.)



Claim.—The combination, with the stationary shaft and the rotary wheel, of the sleeve H, movable with the wheel and formed with eccentric groove *d* and conical bore, the tapered sleeve I, vertically movable on the fixed shaft and formed at its lower end with a vertical slot engaging a lug on the shaft, the collars *g h* on the sleeve I, the loose collar *i* on the shaft between said collars *g h* and formed with lugs *j*, the weighted arms J, pivoted at their upper ends to the lower end of the sleeve H, and the links *m*, pivoted at one end to the lugs *j* of the loose collar and at the other end to the arms J intermediate their ends, substantially as shown and described, and for the purpose specified.

382,951. FIRE-HYDRANT. DANIEL W. CARROLL, Detroit, Mich., assignor of one-half to Edmund A. Chapoton, same place. Filed Mar. 31, 1887. Serial No. 233,142. (No model.)

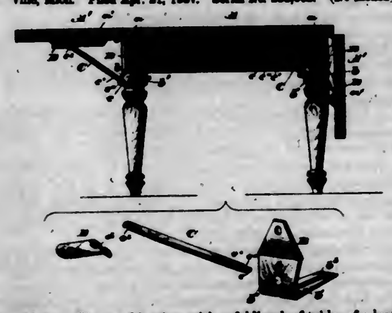


Claim.—1. The combination, with a fire-hydrant and its case, of a valve provided with a hollow valve-stem extending to or near the top, said hollow space communicating at a point just above the valve with the interior of the case, and an attachment upon the case adapted to receive the discharge end of a steam-hose or air-pump, the construction being such that steam or air admitted into the case through the said attachment will expel the water from the case up through the hollow valve-stem, substantially as described.

2. The combination, with a fire-hydrant, of a hollow valve-stem communicating at its base above the valve with the chamber of the hydrant, said hollow orifice in the stem closed at the top of the stem by a removable plug or stopper, the construction being such that by the removal of the stopper the water in the case may be forced out through the passage in the valve-stem, substantially as described.

3. The combination, with a fire-hydrant having a hollow valve-stem communicating at its base above the valve with the interior of the hydrant-case, of a nipple, *h*, in the plug-cap h^3, adapted to receive the discharge end of the steam-hose or air-pump, substantially as and for the purposes described.

382,952. TABLE-LEAF SUPPORT. HENRY J. CHAPMAN, Middleville, Mich. Filed Apr. 21, 1887. Serial No. 235,662. (No model.)



Claim.—The combination, with a folding-leaf table, of a leaf-support consisting, substantially as before set forth, of a hinge-plate se-

cured to the table-leaf, a brace-rod hinged to said plate at one end and provided at its opposite end with an enlarged boss and a cross-bar connected by a narrow neck, and a slotted keeper-plate secured to the side sill of the table, and having its abutting surface so disposed that its upper end is at a greater distance from the hinged pintle *d* than the lower end when the table-leaf is at the limit of its upward movement.

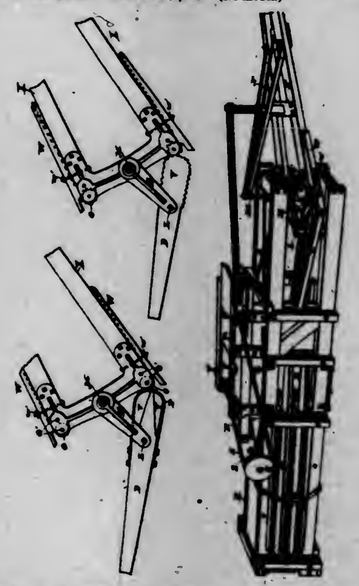
382,953. OPEN RING. JOSEPH DANIELS, Cleveland, Ohio. Filed Oct. 31, 1887. Serial No. 253,840. (No model.)



Claim.—1. An open overlapping ring having its ends bent inward and provided with a free space at the angle of and between said bent ends, forming a seat for a ring or link, substantially as set forth.

2. An open ring formed of a single piece of metal, as gold wire, bent to overlap and having its ends turned sharply inward toward the center of the ring from different points of its overlapped portion, whereby an overlapped free space is formed at the angle of the bent ends to hold a link or the like, substantially as shown and described.

382,954. BALING-PRESS. PETER K. DEDERICK, Albany, N. Y. Filed Jan. 4, 1883. Serial No. 80,903. (No model.)



Claim.—1. In a baling-press, the combination, with the arm or pitman connected to the traverser, of the chilled pieces inserted in the outer end of said arm, and the metal band encircling the outer end of said arm and the inserted pieces, substantially as described.

2. In a baling-press, the combination, with the two arms comprising the toggle and the horse lever or sweep, of the adjustable rollers mounted on said sweep, substantially as described.

3. In a baling-press, the combination, with the two arms comprising the toggle, of the horse lever or sweep, the rollers mounted on said sweep, and the bumpers attached to said sweep and projecting out beyond the rollers, the whole constructed and arranged substantially as described.

4. In a baling-press, the combination, with the horse lever or sweep carrying the rollers, of the bumpers secured to said sweep and capable of adjustment in and out, substantially as described.

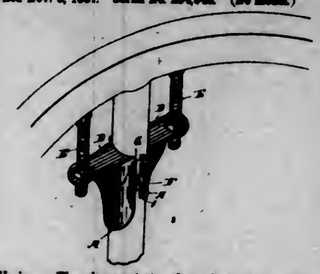
5. In a continuously-operating baling-press, the combination, with the press-case, of a wheel projecting in the path of the moving column of pressed material in the press, and a movable indicator operated from said wheel, denoting by its position the length of the bale being formed, substantially as described.

6. The combination, with the press, of the shaft carrying the toothed wheel and the pulley, the belt, the indicator on the belt, and a guide pulley or pulleys, substantially as described.

7. In a baling-press, the combination, with the two arms comprising the toggle, of the horse lever or sweep and the bumpers attached to said sweep, substantially as described.

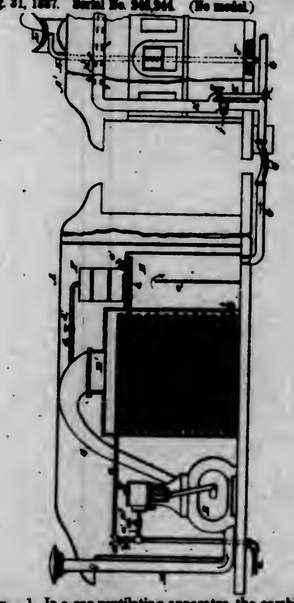
8. In a baling-press, the combination, with the two arms comprising the toggle, of the horse lever or sweep and the adjustable bumpers attached to said sweep, substantially as described.

382,955. TIRE-TIGHTENER. FRANK S. DUREE, Fort Scott, Kans. Filed Nov. 8, 1887. Serial No. 254,962. (No model.)



Claim.—The clamps A A, adapted to grip a spoke and having the interlocking hinge formed of the hooks G and the lugs *f*, together with the fastening bolt and nut, substantially as and for the purpose set forth.

382,956. CAR HEATING AND VENTILATING APPARATUS. JACOB T. HARVEY, Jacksonville, Fla., assignor of three-fourths to John H. Stephens, Charles R. Hibbs, and Robert S. Harvin, same place. Filed Aug. 31, 1887. Serial No. 248,244. (No model.)



Claim.—1. In a car-ventilating apparatus, the combination, with an air-blower, of a closed water-tank with spray-pipes, a chamber containing said spray-pipes, a conduit leading from the blower for the passage of air therethrough, and a pipe connecting the water-tank with the blast-pipe of the blower, substantially as and for the purpose described.

2. The combination, with an air-blower, of a chamber, E, having a vertical partition, *e*, extending nearly to the top and connected to the blower for a passage of air over said partition, and a water-tank, F, located above the same, and having a spray-pipe contained within the top of chamber E, substantially as and for the purpose described.

3. The combination of heating-chamber D', with steam-coil D, the blast-pipe C, blower B, with engine B', spray-chamber E, with partition *e*, and water-tank F, with spray-pipe *c* and pressure-pipe *d*, substantially as and for the purpose described.

4. The combination, with the longitudinal blast-pipe having an inlet branch opening into the car, of a supplementary injector-pipe, I, opening into the branch pipe, to permit the blast of air passing into the car to draw in an additional supply through said injector-pipe.

5. The combination of the two longitudinal pipes G G', arranged at the bottom of the car upon opposite sides thereof, the air-pipes H H', rising from opposite ends and opposite sides of the car, and having independent connections with pipes G G', with dampers, gratings J, having independent connecting-pipes with pipes G and G', and dampers located in said connecting-pipes, substantially as and for the purpose described.

382,957. CARRIAGE-CURTAIN-CORD HOLDER. JAMES G. BENNETT, New Haven, Conn., assignor to English & Mersick, same place. Filed Jan. 30, 1888. Serial No. 262,411. (No model.)



Claim.—The herein-described carriage-curtain-cord holder C, having a recess, *b*, opening from its under side, a vertical slot, *a*, into the said recess, and a spring, *d*, in said recess, combined with the tip B, adapted for attachment to the cord and for introduction in the socket, substantially as described.

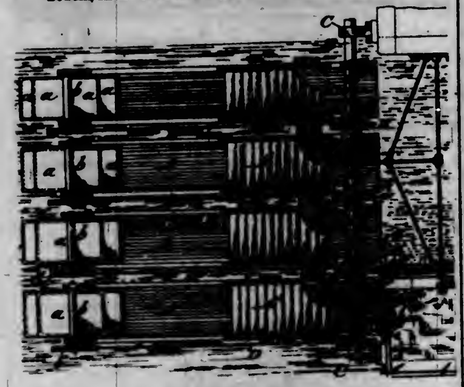
382,958. IMPLEMENT FOR TURNING TUBULAR FABRICS. LOUIS BAUMER, Philadelphia, Pa. Filed June 28, 1887. Serial No. 243,288. (No model.)



Claim.—1. A hand-tool for the purpose named, consisting of a ring having a rod attached at one side thereof at a right angle to the plane of the ring and in line therewith, substantially as described.

2. A device for turning tubular fabrics, consisting of a ring, a supporting-rod detachably secured to one side of said ring at a right angle to the plane of the ring and in line therewith, and a base attached to the lower end of said rod, said parts combined substantially as described.

382,959. WATER-CURRENT-POWER TRANSMITTER. HARRY V. B. BENNETT, Boston, assignor of one-half to Henry B. Webb, West Newton, Mass. Filed Nov. 11, 1887. Serial No. 254,594. (No model.)



Claim.—1. The herein-described water-current-power transmitter, consisting in the combination of a swinging float, a stationary air-pipe on which one end of the float is hung, a water-wheel carried by the float, suitable gears on the air-pipe, an air-compressing mechanism connected to said gears, and a driving-belt between the water-wheel and the gears for actuating the latter to drive the said mechanism and compress air into the air-pipe, substantially as described.

2. The combination of the swinging float A, the stationary support B, on which one end of the float is hung, the gear F on the support B and carrying-pulley E, the water-wheel on the float having pulley *b'*, and the belt-connection D between pulleys *b'* and E, all arranged to operate any desired mechanism, substantially as described.

3. The combination of a swinging float, a water-wheel thereon, an air-pipe, B, on which the float is hung, said pipe resting on supports on the shore, a crank-axle, *c*, actuated by connection with the water-wheel, the cylinder J K, carried on pipe B and communicating therewith, air-compressing cylinder H, communicating with said cylinders J K, and the pitman I, connected to crank-axle *c* for operating a piston in cylinder H, all substantially as described.

4. The combination of a swinging float, a water-wheel thereon, an air-pipe, B, on which the float is hung, said pipe resting on supports on the shore, the gear F on pipe B, rigid to pulley E, likewise on said pipe, the gear G, meshing with gear F, crank-axle *c*, carrying the gear G and suitably journaled, the belt D, whereby the water-wheel actuates the pulley E and other mechanism, the swiveling cylinders J K, carried on pipe B and communicating therewith, air-compressing cylinder H, communicating therewith, air-compressing cylinder H, communicating with cylinders J K, and the pitman I, connected to the crank-axle *c* and a piston within cylinder H, all arranged to operate substantially as described.

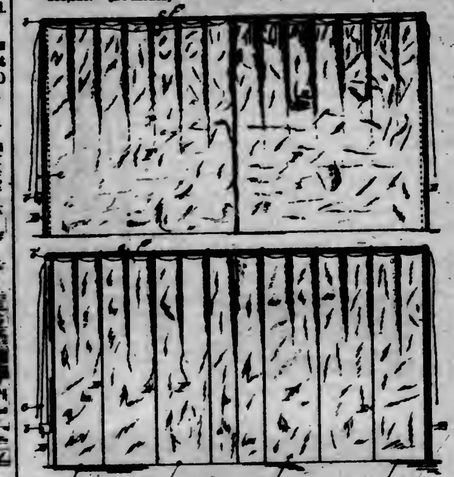
382,960. HYDRANT. CHARLES G. HYDE, St. Louis, Mo. Filed Aug. 6, 1887. Serial No. 246,469. (No model.)



Claim.—1. In a hydrant, a main water-pipe and a nozzle-section provided with a projection on the outside below the nozzle, in combination with casings made in sections, said casings having a corresponding recess at upper end to encircle the projection of nozzle-section, and having inwardly-projecting lugs below, said casings secured together and to the nozzle-section, substantially as described.

2. In a hydrant, a water-pipe and nozzle-section, in combination with a vertically-sliding frost-casing and an outer casing open at the bottom, made in sections, and provided with inwardly-projecting lugs, and an enlarged chamber below said lugs, substantially as and for the purpose specified.

382,961. STALLS FOR SEPARATING HORSES ON RACE-TRACKS. PETER A. FERRAR, San Francisco, Cal. Filed Oct. 26, 1887. Serial No. 253,255. (No model.)



Claim.—1. The combination, with suitable side supports, of transverse supporting means mounted upon the side supports, and curtains or partitions suspended from the transverse supporting means to form removable stalls upon a race-track, substantially as set forth.

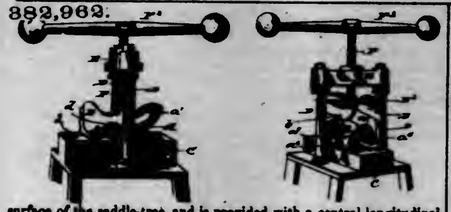
2. The combination, with suitable side supports, of transverse supporting means mounted thereupon, and curtains or partitions suspended from the transverse supporting means to form removable stalls upon a race-track, and a removable transverse curtain or screen placed in front of said stalls, as and for the purpose set forth.

3. In a device of the kind described, the combination, with the standards or posts, one pair of which is provided with pulleys and reels, as described, of the transverse supporting-ropes and the depending partitions, substantially as set forth.

382,962. PRESS FOR FORMING LEATHER SADDLE-TREES. JOHN H. FINK, Louisville, Ky., assignor of one-half to Henry B. Fallmann, same place. Filed Jan. 3, 1888. Serial No. 259,573. (No model.)

Claim.—1. In a press for forming saddle-trees of layers of leather or other flexible material, the combination of two independent dies, the top surface of the bottom one of which conforms to the under

382,962.



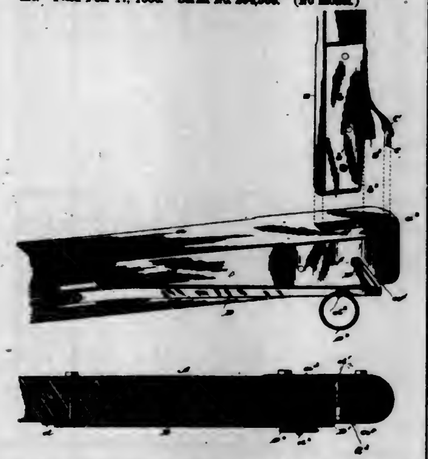
surface of the saddle-tree, and is provided with a central longitudinal raised portion and with a transverse rib at its front end, while the bottom surface of the top die conforms to the top of the saddle-tree, substantially as set forth.

2. In a press for forming saddle-trees of layers of leather or other flexible material, the combination of two independent dies, the top surface of the bottom one of which conforms to the under surface of the saddle-tree, and is provided with a central longitudinal raised portion and with a transverse rib at its front end, while the bottom surface of the top die conforms to the top of the saddle-tree, the bottom die being provided with guides which are engaged by the top die and retain the latter in position, substantially as set forth.

3. In a press for forming saddle-trees of layers of leather or other flexible material, a pair of dies having their inner faces corresponding to the contour of the saddle-trees and provided with a transverse rib at the forward portion of the bottom die, holes or perforations in the said rib for the reception of pegs adapted to retain the lower layer of material in position while building up the tree, and a longitudinal rib extending along the bottom die, substantially as and for the purpose set forth.

4. In a press for forming saddle-trees of layers of leather or other flexible material, a bottom die having guides thereon, and a top die provided with recesses for the reception of said guides, substantially as set forth.

382,963. WAGON-STANDARD. JOSEPH H. FOWLER, Mack's Creek Mo. Filed Feb. 17, 1888. Serial No. 264,309. (No model.)

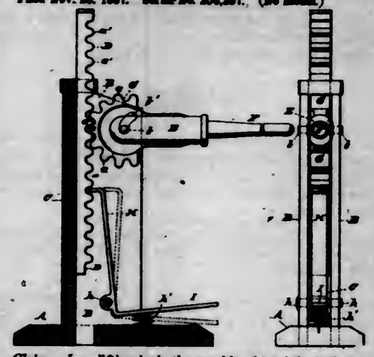


Claim.—1. The combination of the mortised and apertured bolster, the elongated spring-arm secured to the bolster, having a notched locking-bolt formed on its outer free end at right angles thereto, and the standard having an apertured tenon at its lower end, substantially as described.

2. The combination of a bolster having a mortise therein with tapered sides intersected by a transverse horizontal aperture and a vertical aperture near its outer end in line with the mortise, the spring-arm secured to said bolster, having a right-angled locking-bolt formed integral with its outer free end, a standard having a tenon with tapering sides and edges, and a transverse aperture extending therethrough, and a spring brace-stay secured to one edge of said standard having a lower reduced end to engage the aperture at the outer end of the bolster, substantially as described.

3. The combination of a bolster having a mortise formed with tapering sides, a horizontal aperture extending therethrough, and a vertical aperture near the outer end thereof, a metallic sheathing inclosing the outer end of said bolster, an elongated spring-arm secured to the side of said bolster, having a right-angled locking-bolt on the outer end thereof formed with an indentation, the operating ring or loop secured to the arm, the standard having a lower apertured tenon formed with tapered sides and a shoulder, and the spring brace-stay having a lower reduced end, substantially as described.

382,964. LIFTING-JACK. ROBERT M. FRALEY, Forest Hill, Ind. Filed Nov. 26, 1887. Serial No. 256,287. (No model.)



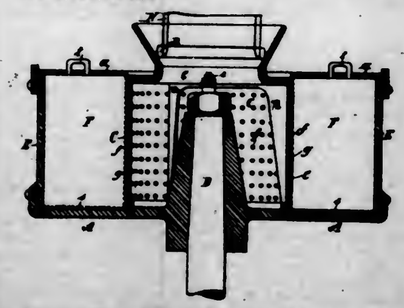
Claim.—In a lifting-jack, the combination of the bed-piece A, the standard having the walls B C, the socket E, having the enlarged end provided with the segmental rack G, having journal-bearings in the curved slot *b'*, the lever F, the rack-bar D, the clutch pivoted between the walls B, and having the foot-lever I, and the coiled spring *h'* beneath the foot-lever, substantially as specified.

382,965. MOP-WRINGER. GEORGE B. FERNEAU, Middleville, Mich. Filed Dec. 22, 1887. Serial No. 258,730. (No model.)



Claim.—The combination of the rectangular frame A, having the collar B attached to the upper portion thereof and the cross-bar *a* at the lower end, the handle having movement through said collar B, provided with the ratchet-collar on the lower end thereof, which in turn is provided with a loop at its lower end, the sliding plate moving against the sides of the rectangular frame interposed between the ratchet-collar and the loop on the lower end thereof, and the spring-pawl secured to the upper end of the rectangular frame, substantially as described.

382,966. CENTRIFUGAL MACHINE. ANDREAS FENTAS, Amsterdam, Netherlands, assignor to Maatschappy Vereenigdschap Wester-Suiker-Raffinaderij, same place. Filed June 25, 1887. Serial No. 242,602. (No model.) Patented in England Aug. 27, 1886, No. 10,172, and Mar. 31, 1886, No. 4,516; in France Nov. 16, 1886, No. 172,315, and in Germany Mar. 26, 1886, No. 36,737.



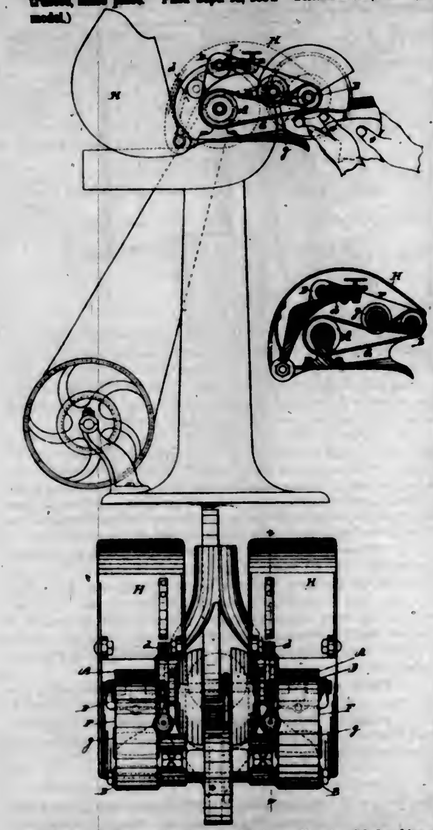
Claim.—1. The combination, with a rotary drum and a perforated cap centrally located within the same, of partitions removably located within said drum, each provided with a lateral flange or extension upon its lower end and with a handle upon its upper end, said partitions forming compartments between the peripheries of the drum and cap, substantially as described.

2. The combination, with a rotary drum and a perforated cap removably located in the drum and provided with vertical grooves in its outer periphery, of partitions removably located in the drum and held in the grooves of the cap, said partitions being provided with lateral flanges upon their lower edges, and with longitudinal vertical blades projecting from the same sides of the partitions as the lateral flanges, substantially as described.

3. In a centrifugal machine, the combination, with the cylindrical perforated outer drum, of the inner cylindrical perforated drum or cap centrally and removably located in the outer drum and provided with vertical grooves in its outer periphery, the removable radial partitions forming compartments between the outer periphery of the cap and inner periphery of the outer drum, the inner vertical edges of said partitions entering said grooves in the inner cap or drum, and means whereby said partitions can be removed, substantially as described.

4. The combination, with a rotary drum and a perforated inner drum or cap centrally located within the outer drum, of removable partitions forming compartments between the outer drum and the inner drum or cap, and a lateral flange or extension upon the lower end of each partition forming the bottoms of said compartments, for the purpose described.

382,967. MACHINE FOR BUFFING BOOT OR SHOE SOLES. GEORGE A. FULLERTON, Boston, Mass., assignor to George H. P. Flagg, trustee, same place. Filed Sept. 15, 1884. Serial No. 142,971. (No model.)



Claim.—1. In combination, the driving-pulley A, with fixed boxes, the cushioned pulley B, also with fixed boxes, the movable pulley D, with movable boxes, and the abrasive belt F, all arranged as shown—that is, both the driving-pulley and the cushioned pulley being in stationary boxes and arranged at nearly equal distances from the movable pulley D, which is brought nearly between the pulleys A and B in order to remove or replace the belt, and into the position shown to tighten the belt.

2. In combination, abrasive belt F and its pulleys, with hood H, the hood closing a chamber in which the belt runs, except at its mouth, for the introduction of the work, and at its outlet, which is under the abrasive belt and communicates with the fan-chamber, as set forth.

3. In combination, abrasive belt F, carrier-belt G, and pulleys A, B, D, and *g*, the pulleys A and B being common to both belts, the pulley D serving to tighten or slacken the belt F, and the pulley *g* to tighten or slacken belt G, substantially as described.

382,968. STORAGE-BATTERY. CHARLES B. P. GIBBS, New York, N. Y. Filed Mar. 31, 1887. Serial No. 233,111. (No model.)



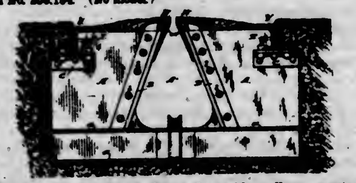
Claim.—1. In a storage-battery, the open-work insulating-frame E, composed of members crossing each other, in combination with the storage-plates D, provided with holes *d* opposite the angles formed by the crossing of said members, substantially as specified.

2. In a storage-battery, the open-work insulating-frames E, composed of members crossing each other, in combination with the storage-plates D, having holes *d*, and the pin F, arranged for joint operation, as herein specified.

3. In a storage-battery, in combination with two or more sub-batteries, B, and their plates and connections, the switch-board P, comprising a number of separate plates, Q, connected to one pole of the several batteries, a number of remote and separate plates, R, connected to the other pole of the several batteries, a number of independent auxiliary plates, Q', arranged adjacent to each of said plates Q, a number of independent auxiliary plates, R', arranged adjacent to said plates R, binding-posts Q^2, connected to said independent plates Q', and binding-posts R^2, connected to said independent plates R', all of said plates being provided with notches in their adjacent faces, whereby said several batteries are adapted to be connected at will in series or multiple by plugs T, substantially as specified.

4. The method described of filling cavities in the plates of a storage-battery by immersing in a suitable liquid and electrically connecting and sending a current through the plates under such conditions as to fill the cavities with peroxide by disintegration or deposition, or both, and exposure of plates to crystallize and absorb oxygen, substantially as herein specified.

382,969. CONSTRUCTION OF SUBWAY-YOKES FOR CABLE ROADS. SAMUEL GIBSON, San Francisco, Cal. Filed Dec. 27, 1887. Serial No. 259,194. (No model.)



Claim.—1. A yoke or frame for cable-railway construction, formed of a single plate, A, with a flanged bottom and an opening above the same for the cable-way, and the slot-iron supports B B, and rail-chairs C C, fastened to the plate in position, as described.

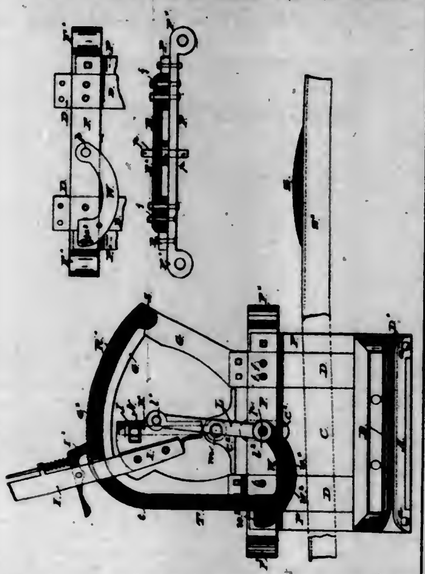
2. A yoke for cable-railway construction, having solid portions or webs between the cable-way opening and the rail supports or chairs at the outer edges for the full depth of the yoke, and the seats and recesses A^1 A^1 at the upper corners for the rails, substantially as and for the purpose set forth.

3. A yoke for cable-railway construction, having solid web portions, as described, with cut-away portions at the upper outer corners for the rails to let the inner flange of the rails into the plate, in combination with the hook-fastening E, which takes through the web of the rail and into the plate, as described.

4. The combination of the flanged plate A, angle-iron supports B B on either side of the cable-way opening in the plate, the flange *a*, and the slot-irons, substantially as described.

5. The herein-described yoke, having the rail-seats A^3, recesses for the rail-flanges, and the rail-chairs secured to the sides of the plate which forms the body of the yoke, substantially as described.

382,970. CABLE-RAILWAY GRIP. SAMUEL GIBSON, San Francisco, Cal. Filed Dec. 27, 1887. Serial No. 259,185. (No model.)



Claim.—1. An automatic let-go for cable-railway grips of the lever kind, consisting of the curved bar R^x, the curved plate W, pivoted at one end to some stationary part of the grip-frame, and the connecting-bar T, constructed and applied for operation substantially as described, the said plate W being set to strike and be thrown up by a projection on the surface of the roadway and the curved bar being placed to engage with the point of the locking-dog that holds the grip-lever, as set forth.

2. In combination with the grip-frame having upright guide-plates D D and sliding plate C, with cross-pieces E F and the jaws A B, the removable wearing-plates P, placed as described, and secured by fastenings to the stationary frame, for the purpose set forth.

3. The herein-described grip-frame for lever-grips, consisting of the frame D D D^x E, cast in one piece, the removable wearing-plates P, the seat D^3, for the lower jaw, and the cross-piece F, constructed and combined as set forth.

4. In combination with the lever I and the slide to be operated by it, the block K, having an extensible rod or part, as M, let into the block, and having a nut, N, for adjusting it, to the end of which the slide is attached, and a connecting link or links pivoted at one end to a fixed point below said point of attachment to the slide, and at the other end to the block above said point, substantially as described, for operation as set forth.

5. The herein-described adjustable toggle-connection, consisting of the block K, having a socket for the eyebolt or screw-threaded rod M, the rod movable in said socket, the nut N, and the eye I^2 on the block for the pin of a connecting-link, as set forth.

6. In a cable-railway grip, a sliding jaw-carrier, a jaw-operating lever, and a toggle-connection consisting of the block K on the end of the lever, the links L L, connecting said block to some fixed point on the stationary frame, and the adjustable bolt or bar M, attached to the slide at a point between the ends of said links and capable of being extended in said block, as set forth.

7. The combination, with the locking-segment fixed to or making a part of the stationary frame of a cable-grip, as described, of the curved bar R^x, pivoted at one end to the segment, the bar T, which is jointed to said curved bar, and the curved plate W, pivoted to the grip-frame and attached to the bar T, substantially as described, for operation with a stop or projection on the roadway, as set forth.

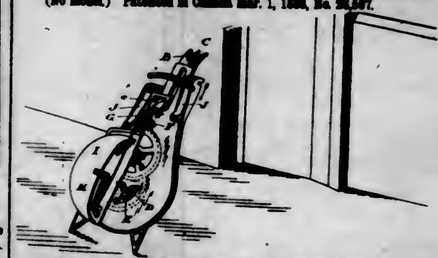
382,971. ALARM-LOCK. HERMAN GRAMM and DAVID GRIMM, Montville, Pa. Filed May 13, 1887. Serial No. 238,043. (Model.)



Claim.—1. In a lock, the lock-bolt provided with beveled projections *c* and laterally-projecting tooth *c'*, and pivoted piece B, provided with curved bar *e* and notches b^1, the said bolt and the piece B being placed in parallel planes in position to be operated by a key having bits a^2 a^3, in combination with spring-arm G, provided with projection g^2 in position near said bolt and piece B, and in a plane between the said parallel planes, and adapted to engage with pallet H, and an alarm mechanism provided with a pallet and an actuating-spring, substantially as and for the purposes described.

2. In combination with a lock-casing provided with an aperture, *g*, formed with a shoulder, *g'*, a spring-arm, G, adapted to connect with an alarm mechanism and provided with a projection, g^2, which is held in position, as shown, to connect with an ordinary key in the lock, and a bent arm, Q, extending through aperture *g*, and an alarm mechanism, substantially as set forth and described.

382,972. BURGLAR-ALARM. SAMUEL GOLDEN and JOSEPH CLARKE, Toronto, Ontario, Canada. Filed Feb. 4, 1888. Serial No. 262,908. (No model.) Patented in Canada Mar. 1, 1888, No. 26,567.



Claim.—1. A plate provided with suitable feet and arranged to support a bell and its ringing mechanism, in combination with a longitudinally-sliding bar adjustably connected to the bell mechanism, and a crank-disk in the connection between the bar and the bell mechanism, whereby the longitudinal movement of the bar will cause the bell to ring, substantially as and for the purpose specified.

2. A plate provided with suitable feet and arranged to support a bell and its ringing mechanism, and spring-hammers J, pivoted upon the plate, in combination with a longitudinally-sliding bar connected to the bell mechanism in such a manner that the longitudinal movement of the bar will cause the bell to ring, and a T-bar, K, connected to the said bar, arranged to strike the spring-hammers on the longitudinal movement of the bar, substantially as and for the purpose specified.

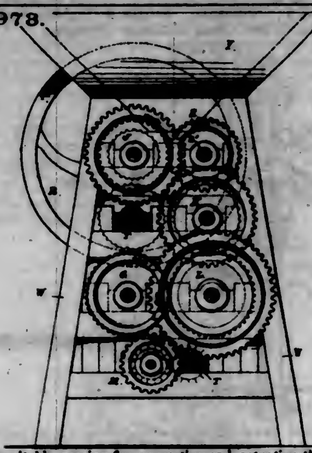
3. A plate, A, provided with suitable feet, *a*, a bar, B, adjustably connected to the said plate and having a slot, *b*, made in it, through which the spindle D projects, and is connected to the bar B by the pin *d*, as described, in combination with the bell-hammer arm H, pivoted at *e*, and operated by the crank-disk G, connected to the spindle F, which is geared to the spindle D, deriving motion therefrom upon the longitudinal adjustment of the bar B, substantially as and for the purpose specified.

4. The plate A, provided with suitable feet, *a*, and having pivoted upon it the spring-hammers J, in combination with the bar B, having attached to it the T-bar K, arranged to strike the spring-hammers J upon the longitudinal adjustment of the bar B, substantially as and for the purpose specified.

382,973. MACHINE FOR DISINTEGRATING BITUMINOUS SUBSTANCES. BRAD SHARP, San Francisco, Cal. Filed Sept. 26, 1887. Serial No. 250,907. (No model.)

Claim.—1. In a machine for disintegrating and reducing bituminous substances, the combination, with the supporting-frame, of the two sets of upper rollers fluted longitudinally and mounted upon shafts journaled in the frame, the two circumferentially-fluted rollers, whose shafts are journaled in the frame beneath the upper rollers, the two knife-carrying rollers located beneath the circumferentially-fluted roll-

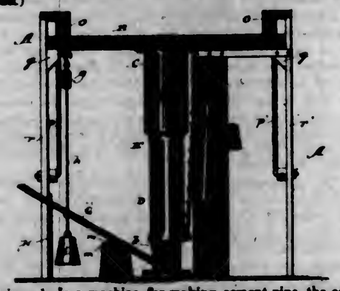
382,973.



ers, and suitable gearing for connecting and actuating these rollers, all substantially as described.

2. The combination of the supporting-frame, the set of longitudinally-fluted rollers A A^x, mounted on shafts S S^x, carrying gears E E^x, and said shaft S carrying fly-wheel R, the set of longitudinally-fluted rollers B B^x, gears J K for actuating them, the set of circumferentially-fluted rollers C C^x, and gears N P for actuating them, and the rollers D D, carrying knives D^x and driven by meshing gears L M, all arranged substantially as described.

382,974. MACHINE FOR MAKING CEMENT PIPES. LEE G. HAAS, Oak Park, Ill. Filed Aug. 16, 1887. Serial No. 247,056. (No model.)



Claim.—1. In a machine for making cement pipe, the combination of a core tapering in one direction and a jacket surrounding the core and tapering in the opposite direction, substantially as described.

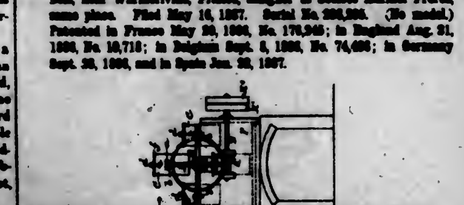
2. In a machine for making cement pipe, the combination of a stationary core tapering in one direction and a movable jacket surrounding the core and tapering in the opposite direction, substantially as described.

3. In a machine for making cement pipe, the combination of a vertically-movable table provided with an opening, a stationary vertical core tapering toward its upper end and extending in line with the center of the opening in the table, and a jacket tapering toward its lower end, secured to the table around the opening therein, and surrounding the core, substantially as described.

4. In a machine for making cement pipe, the combination of a frame, A, carrying a vertically-movable table, B, provided with an opening, a stationary vertical core, D, tapering toward its upper end, surrounded toward its lower end by a sleeve, E, and extending in line with the center of the opening in the table, a jacket, C, tapering toward its lower end, into which the sleeve enters, and secured to the table around the opening therein to surround the core, a ring, I, surrounding the core within the jacket near the base thereof, and means, substantially as described, for raising the sleeve and ring within the jacket, substantially as set forth.

5. In a machine for making cement pipe, the combination of a frame, A, carrying a vertically-movable table, B, provided with an opening, a stationary vertical core, D, tapering toward its upper end, surrounded toward its lower end by a sleeve, E, provided with a lug, A, and extending in line with the center of the opening in the table, a jacket, C, tapering toward its lower end, into which the sleeve enters, and secured to the table around the opening therein to surround the core, a ring, I, surrounding the core within the jacket near the base thereof, a crank, F^2, connected with the sleeve to raise it, a weighted lever, G, fulcrumed beyond one of its sides, and a curved guide, H, for the long arm of the lever, substantially as described.

382,975. VISE. BENJAMIN R. HAAS, Bradford, Pa. Filed Jan. 30, 1888. Serial No. 262,641. (No model.)



Claim.—1. The combination of the bar A, having the perforated fixed jaw B, secured to its inner end, the lever C, having a jaw secured to its outer end and made to pass through the perforation in the stationary jaw, and having the strap E secured to its inner end, with the serrated dog and the screw for operating it, the lever being placed in close contact with the inner edge of the bar, substantially as shown.

2. The combination of the dog F, made rounding upon its inner side, the screw H, swiveled to the dog, the bar A, serrated upon its outer side, so as to engage with the dog, and having the perforated jaw B secured to its upper end, the lever C, having a head secured to its outer end, and the strap E, secured to its inner end and through which the screw H passes, the upper inner corner of the bar A being slightly beveled away, so as to allow the lever C a slight backward movement, substantially as described.

382,976. ELECTRIC TELE-THERMOSCOPE. HARRY W. HAINES, Louisville, Colo. Filed Aug. 27, 1887. Serial No. 248,091. (No model.)

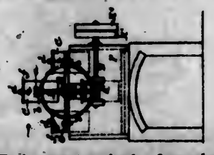
Claim.—1. The pulsator consisting of the curved tube provided with bulbs, one at each end, and additional tubes extending short distances into said bulbs, substantially as and for the purpose set forth.

2. The pulsator consisting of the curved tube provided with bulbs, one at each end, and additional tubes extending short distances into said bulbs, in combination with the air-chamber connected with one of said additional tubes, substantially as and for the purpose set forth.

3. The combination, with the pulsator comprising a curved tube having bulbs, one at each end, and connected to an air-chamber, of the thermostatic spring, and the regulating or adjusting screws which are adapted to have connection separately with an arm of said spring, the same being arranged in an electric circuit, substantially as and for the purpose set forth.

4. The combination, with the pulsator, of the thermostatic spring provided with an arm to which near its free or outer end are applied supplementary or contact springs, and the adjusting or regulating screws, the same being included in an electric circuit, substantially as and for the purpose set forth.

382,977. APPARATUS FOR DYEING. ALBERT HASSEL, Val-de-Bois, near Warmeriville, France, assignor to Soudet Hassel Frères, same place. Filed May 16, 1887. Serial No. 238,203. (No model.) Patented in France May 20, 1886, No. 176,945; in England Aug. 21, 1886, No. 10,718; in Belgium Sept. 8, 1886, No. 74,686; in Germany Sept. 20, 1886, and in Spain Jan. 20, 1887.



Claim.—1. The improved mechanism for mechanical dyeing, consisting of the combination of a vat for containing liquid, a rotatable frame journaled within said vat, and a series of receptacles for inclosing the fibrous matter carried by said frame, each of said receptacles

having imperforate sides and foraminous ends, said ends being located within the receptacle, whereby open-mouthed chambers having closed sides and perforated bottoms are formed at both ends of the receptacles at all times when the mechanism is in operation.

2. The improved mechanism for mechanical dyeing, consisting of the combination of a vat for containing liquid, a rotatable frame journaled within said vat, and a series of receptacles for inclosing the fibrous matter to be treated carried by said frame, each receptacle having imperforate sides and foraminous ends between which the fibrous matter is confined, one of said foraminous ends being removable and adjustable, whereby the fibrous matter may be inserted in the receptacle and securely retained therein.

3. The improved mechanism for mechanical dyeing, consisting of the combination of a vat for containing liquid, a rotatable frame journaled within said vat, and a series of receptacles for inclosing the fibrous matter, each journaled in said frame, the journals of each of said receptacles being above its center of gravity, and each of said receptacles having imperforate sides and foraminous ends, the upper foraminous end being located below the rim of the receptacle, whereby an open-mouthed chamber is formed at the upper end of the receptacle.

382,978. LUBRICATOR. THOMAS J. HARE, Detroit, Mich., assignor to R. G. Pelthousen and C. A. Sherwood, Buffalo, N. Y. Filed Oct. 3, 1887. Serial No. 251,256. (No model.)



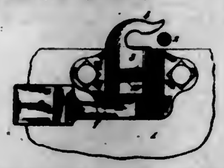
Claim.—In combination with the base A, having an internally threaded and chambered upwardly-extending sleeve, A', having a discharge-orifice located at the lower part thereof, the body C, and cover D, having a hollow stem, D², and fluid-opening D', an independent spring-pressed stopper, I, the adjustable sleeve E, attached to the sleeve A' by a screw-thread, and driver G attached to the sleeve E, so as to have independently only a rotary movement, and a valve, B, connected by a slip-joint to the driver and screw-threaded into the sleeve A', substantially as set forth.

382,979. INKING APPARATUS FOR PRINTING-MACHINES. JOHN T. HAWKINS, Taunton, Mass. Filed Dec. 14, 1887. Serial No. 257,572. (No model.)



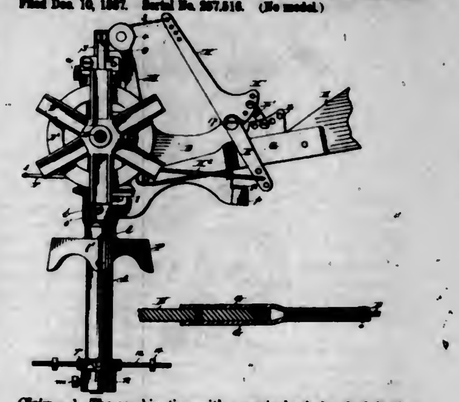
Claim.—In an inking apparatus of a printing-machine, the combination, with inclined bearings, as 9, of slotted ball-crank levers, as 6, fulcrumed laterally on studs, as 7, carrying on one arm sockets or bearings for the form-rollers resting upon said inclined bearings, and in the other arm set-screws, as 14, secured in position by check-nuts, as 15, and impinging upon lugs, as 5, formed on or secured to the frame of the machine, and thumb or other nuts, as 13, and studs, as 11, for securing said levers in place, whereby the adjusting only of said set-screws performs the adjustment of the form-rollers both to the form and to the distributer-roller and permits of the ready removal and replacing of the form-rollers without disturbing their adjustment, substantially as set forth.

382,980. ELEVATOR-LOCK. EMILE J. HERMAN, St. Louis, Mo., assignor to the Safety Hatch Door Company, same place. Filed Jan. 21, 1888. Serial No. 261,474. (No model.)



Claim.—In an elevator-lock, the combination of the box or housing having a fixed jaw and an inclined slot, a bolt adapted to fit in the box or housing and having two or more holes, an operating-lever on the bolt, and a pin adapted to fit in either of the holes and to work in the slot, substantially as and for the purpose set forth.

382,981. WINDMILL. WILLIAM W. HELSDON, Dunkirk, Ind. Filed Dec. 10, 1887. Serial No. 257,516. (No model.)



Claim.—1. The combination, with a vertical tubular shaft having suitable bearings therefor, of vane-bracket B, mounted on said shaft and having a horizontal movement therewith, vane H, pivoted at its inner end to said bracket, shifting lever K, having projecting arm K', connected with said vane and pivoted to said bracket, whereby said vane may be lifted, wheel-bracket C, loosely mounted on said tubular shaft, and having a horizontal movement thereon, said bracket provided with stops 9 8 and projecting arm C', wind-wheel D, journaled on said wheel-bracket, driving-shaft E, actuated by said wheel, crank-wheel N, pitman O, pump-rod S, and rod K² for connecting the shifting lever with the wheel-bracket, substantially as set forth and described.

2. The combination, with a vertical tubular shaft and suitable bearings therefor, of a vane-bracket, B, mounted on said shaft and having a horizontal movement therewith, said bracket provided with the boss *p* and lug *g*, a vane, H, secured to extension-plates G G, and pivoted to said bracket through the inner ends of said extension-plates, shifting lever K, having lifting-arm K', graduating-plate L, connecting link L', wire rope 3, wheel-bracket C, loosely mounted on said tubular shaft to one side of a line parallel with the vane-bracket thereon, said bracket provided with stops 8 9 and arm C', wind-wheel D, driving-shaft E, crank-wheel N, pitman O, pump-rod S, and rod K², connecting the shifting lever with the arm C' of the wheel-bracket, substantially as set forth and described.

3. The combination, with a vertical tubular shaft and suitable bearings therefor, of a vane-bracket, B, mounted on said shaft and moving horizontally therewith, vane H, pivoted on said bracket, a shifting lever, K, pivoted to the bracket for lifting said vane, a link for connecting said vane to the shifting lever, wheel-bracket C, loosely mounted on said tubular shaft, and having a horizontal movement thereon, rod K², for connecting the shifting lever with said wheel-bracket, a wind-wheel journaled on said bracket and actuating the driving-shaft E, crank-wheel N, pitman O, pump-rod S, cap-box *c*, secured to the upper arm of the wheel-bracket and acting as a rotary guide to the pump-rod, thimble R, having an annular flange inwardly projecting at its lower end, and circular plate 5, through which the pump-rod and shifting-lever rope pass, and which has a rotary movement therewith as the wind-wheel is thrown in and out of the wind substantially as set forth and described.

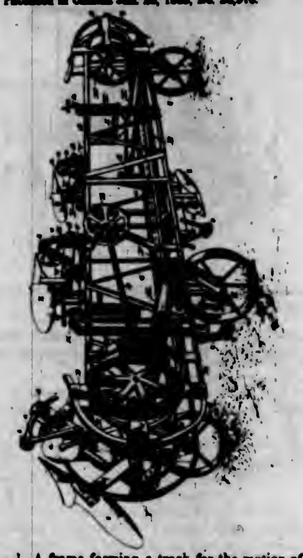
382,982. REFRIGERATOR. GEORGE R. HOVEMEIER, Chicago, Ill., and GEORGE F. SMITH, Michigan City, Ind. Filed Mar. 16, 1887. Serial No. 230,444. (No model.)



Claim.—1. In a refrigerator having double walls, the combination, with the provision-chambers, of an ice-box located above the same and provided with a central opening communicating with the provision-chambers, the side flues, *a a*, and the two hinged covers separated by a fine space, which space communicates with the side flues, the inner cover having the slot *d*, communicating with the ice-box, as set forth.

2. In a refrigerator, the double walls and an intermediate lining of charcoal mixed with paper-pulp or some other adhesive material, substantially as described.

382,983. STEAM PLOWING APPARATUS. EDWARD IRELETON, Toronto, Ontario, Canada. Filed May 14, 1888. Serial No. 273,587. (No model.) Patented in Canada Jan. 20, 1888, No. 30,970.



Claim.—1. A frame forming a track for the motion of one or more plow-carriages, in combination with beams carried on caster-wheels and connected to said frame by a pivot-joint, substantially as set forth, and for the purpose specified.

2. The beams H, supported by the caster-wheels G, in combination with the triangular brackets connected by a pivot-joint to the beams H and having one end jointed to a part of the frame, while the other end is connected to and actuated by a screw-spindle, substantially as and for the purpose specified.

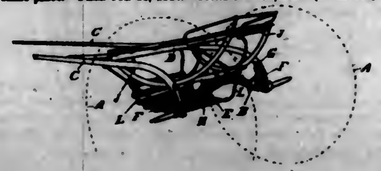
3. A frame made of any suitable material, but preferably of iron or steel, arranged to form a track for the movement of plow-carriages and having semicircular ends with the frame forming a double track along the lower side and around the semicircular ends, substantially as shown, and for the purpose specified.

4. The combination of the frame A, having the double track, a carriage supported on wheels adjusted to travel on said track and having one or more plows attached to it, and an endless chain for moving said carriage, substantially as described.

5. The combination of the frame A, having the double track, a plow-carriage having a plow-beam, W, and one or more plows, and an endless chain for moving said carriage, substantially as described.

6. The combination of the frame A, having a track, an endless chain on said frame, a plow-carriage on the track of said frame, and the bars *f*, connecting the carriage with the endless chain, substantially as described.

382,984. ROAD-CART. CHARLES W. JEWETT and GEORGE H. JEWETT, Jackson, Mich., assignors to the Collins Manufacturing Company, same place. Filed Oct. 13, 1887. Serial No. 252,051. (No model.)



Claim.—1. In a cart, the combination, with the axle, shafts, and spring, of the hanger-iron G, secured to the shafts and carrying a pin, *b*, and the hanger F, suspended from said pin and having two legs, one extended vertically and the other curved, substantially as and for the purposes specified.

2. In a road-cart, the combination, with the semi-elliptical seat-spring E, of the pivot-pin *b*, secured to the rear end of the shaft, and the hanger F, having the flaring eye *e* at its upper end and the straight and curved bifurcations at its lower end, substantially as described.

382,985. BOOT OR SHOE. JOHN W. JONES, Shoreditch, County of Middlesex, and EDWARD KYE BENHAM, London, England. Filed Mar. 7, 1888. Serial No. 266,642. (No model.)



Claim.—1. The combination, in boots or shoes, of a metal plate, *c*, secured to the "upper" and insole with a sliding fore part, *a*, a sliding metal waist, *f*, and heel *h*, substantially as set forth.

2. A boot or shoe constructed with a malleable metal plate, *c*, secured to the upper and insole, and having its outer edge, *d*, projecting, so as to allow the fore part or outer sole, *a*, and metal waist *f* to be slid on the two parts being thus firmly secured to the upper and insole and also firmly secured to each other by the screws *g*, substantially as set forth.

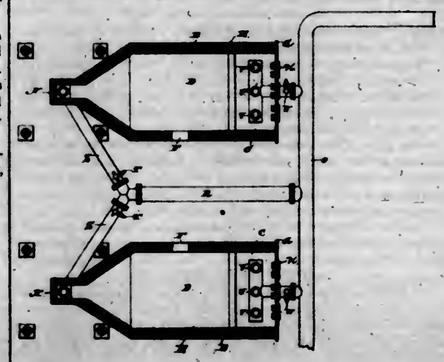
3. A boot or shoe constructed with a malleable metal plate, *c*, sewed all round (to the upper and insole) a short distance from its edge *c'*, upon which are slid the outer sole, *a*, the metal waist *f*, and the heel *h*, these parts being respectively prevented from coming off or apart by screws *g g* and *i i*, substantially as set forth.

4. A boot or shoe having a metal waist, *f*, with edges *f'* turned under to slide under and embrace a metal plate, such as *c*, secured to the upper and insole, substantially as set forth.

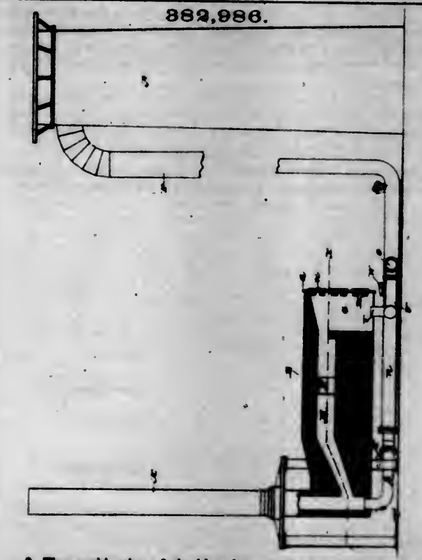
5. A boot or shoe having a sliding fore part or outer sole, *a*, with a projecting metal edge or rim, *b*, on its inside, to slide under and embrace the edge *c'* of a metal plate, such as *c*, secured to the upper and insole, the back edge of the sliding fore part, *a*, passing under the front edge of the metal waist *f*, these two parts being held together by screws, and thereby firmly secured to the upper and insole, all substantially as set forth.

382,986. REHEATING-FURNACE. THOMAS C. JONES, Lynchburg, Va. Filed July 16, 1887. Serial No. 244,266. (No model.)

Claim.—1. The combination of the blast-furnace, the reheating-furnace having a combustion-chamber, C, and a stack or chimney, N, and a pipe leading from the blast-furnace to carry off the blast-furnace gases, and having branch pipes communicating with the combustion-chambers C, and with the lower ends of the chimneys or stacks, substantially as set forth.



382,986.



2. The combination of the blast-furnace, the series of reheating-furnaces, each having a combustion-chamber, C, and a chimney or stack, N, the pipe P, leading from the top of the blast-furnace, the pipe O, extending from the pipe P past the front ends of the reheating-furnaces, the T-shaped pipe U, leading from the said pipe O and provided with the damper W, and the vertical pipes V in the combustion-chambers, and the pipes R S, leading from the pipe O to the lower ends of the chimneys or stacks N, and provided with dampers T, substantially as specified.

382,987. **HYDROGRAPH.** AMELIA KAHN, St. Joseph, Mo. Original application filed Mar. 21, 1887, Serial No. 231,712. Divided and this application filed Mar. 9, 1888. Serial No. 266,704. (No model.)



Claim.—1. Nose-guards having their upper end adjustably secured to the glass or its frame, and having the lower end unattached and normally free to move either in or out relatively to the edge of the glass, but having its forward or backward movement restricted by the sides of the frame or glass itself, substantially as and for the purpose set forth.

2. Nose-guards provided with pads of yielding material, as described, and having their lower end unattached and normally free to move in or out relatively to the edge of the glass, but having the forward and backward movement restricted by the sides of the frame or glass itself, substantially as and for the purposes set forth.

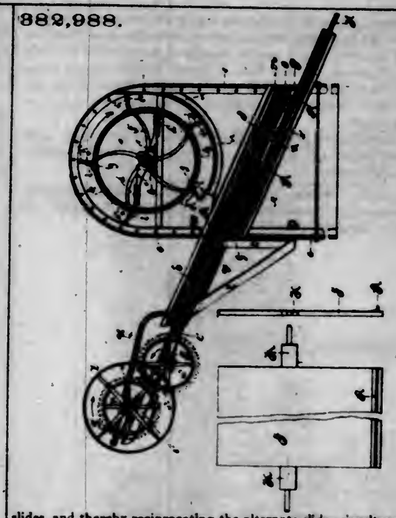
382,988. **PEA-SHELLING MACHINE.** ROBERT KAEGER, Brunswick, Prussia, Germany, assignor, by direct and mesne assignments, to Hermann Froling, same place. Filed Feb. 25, 1886. Serial No. 193,119. (No model.) Patented in Austria-Hungary Jan. 11, 1886, No. 2,826 and No. 22,114; in Belgium Jan. 13, 1886, No. 71,603; in England Jan. 14, 1886, No. 601; in France Jan. 13, 1886, No. 173,599, and in Italy Feb. 13, 1886, XX, 1,676, CCCLXXXIX, 19,406.

Claim.—1. The combination of the guideways, the slides arranged therein one above another and in different vertical planes, said slides having the sweeps bearing against their opposing faces, and means, substantially as set forth, to reciprocate the alternate slides simultaneously in opposite directions, substantially as specified.

2. The combination of the inclined guideways, the slides arranged thereon one above another and in different vertical planes, and means, substantially as specified, to reciprocate the alternate slides simultaneously in opposite directions, substantially as set forth.

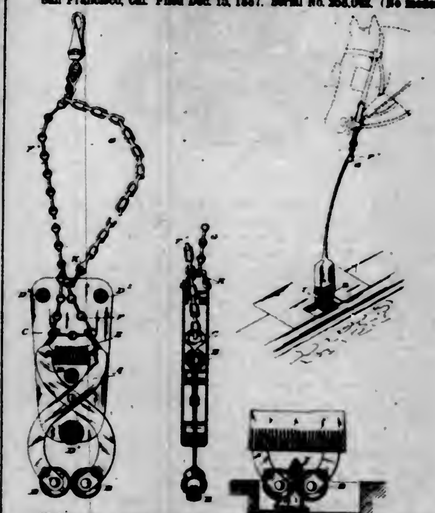
3. The combination of the inclined guideways, the slides arranged thereon one above another and in different vertical planes, said slides being connected together alternately, the crank-shafts rotating in opposite directions, and the pitmen connecting said crank-shafts to the

382,988.



slides, and thereby reciprocating the alternate slides simultaneously in opposite directions, substantially as specified.

382,989. **DEVICE FOR HITCHING HORSES.** CONSTANTIN KAUFER, San Francisco, Cal. Filed Dec. 15, 1887. Serial No. 258,062. (No model.)



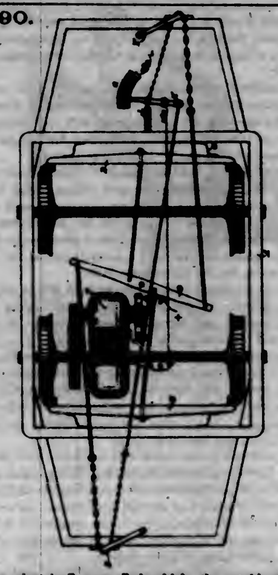
Claim.—1. A weighted hitching-strap contained in a casing, or otherwise held, which consists of a tongs having wheels or rollers in the ends of the jaws, and two chains or straps of different lengths, one of which is connected to the short arms of the tongs and the other to the metal casing, as described.

2. In a hitching device, the combination, with the long and short parallel straps or chains, arranged as set forth, of a weighted holding-tongs having a retractive spring in the short arms, as described, and rollers or wheels in the jaws thereof, adapted to be opened when struck upon a hitching ring or loop, in the manner as set forth.

382,990. **ELECTRICALLY-PROPELLED VEHICLE.** WALTER B. KNIGHT, New York, N. Y. Filed Jan. 20, 1888. Serial No. 261,347. (No model.)

Claim.—1. In an electrically-propelled vehicle, the combination, with the propelling-motor, of a circuit-controlling regulator therefor, an actuating-spring for moving it in one direction, a manual device for moving it in the opposite direction, and a brake for the vehicle controlled by said device.

382,990.



2. In an electrically-propelled vehicle, the combination, with the propelling-motor, of a circuit-controlling regulator therefor, an actuating-spring for operating it in one direction, a manual device for operating it in the opposite direction, and a brake for the vehicle controlled by said device.

3. In an electrically-propelled vehicle, the combination, with the propelling-motor, of a circuit-controlling regulator therefor, a manual device on each end of the vehicle for actuating said regulator, and a brake for the vehicle controlled by said manual device.

4. In an electrically-propelled vehicle, the combination, with a brake, of a retractile spring therefor, a manual device on each end of the vehicle for actuating said brake, and an electrical regulator therefor connected with the said devices so as to be worked thereby.

5. In an electrically-propelled vehicle, the combination, with the brake, of a retractile spring therefor, a manual device on each end of the vehicle for actuating said brake, the propelling-motor, an electrical regulator therefor, a spring for actuating it in one direction, and a connection with the said manual devices for actuating it in the other direction.

6. The combination, in an electrically-propelled vehicle, of a resistance, a brake, and a common actuating device therefor extending to opposite ends of said vehicle.

382,991. **MUSICAL WIND-INSTRUMENT.** ALEXANDER LEPAGE, Philadelphia, Pa. Filed May 27, 1887. Serial No. 239,574. (No model.)



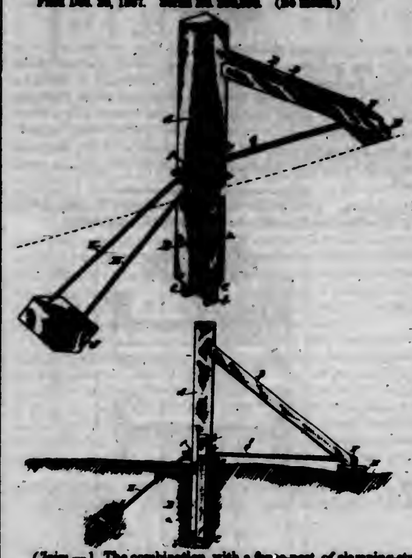
Claim.—1. In musical wind-instruments having looped tubes for varying the length of vibrating air-columns, the combination of said looped tubes with piston-valves provided with helical guides, substantially as set forth.

2. In piston-valves for musical wind-instruments, the combination of a piston-valve with a helical guide and rotatable key, substantially as set forth.

3. In piston-valves for musical instruments, the combination of helical tubular passages through the valve with a helical guiding mechanism, substantially as set forth.

4. The combination of helical tubular passages through the valve C, having a continuation of the taper of the mouth-pipe, with the mouth-pipe A, having a continuous gradual enlargement from the mouth-piece A' to the said valve, substantially as set forth.

382,992. **FENCE-POST.** LAFAYETTE W. LINDLEY, Louisville, Ky. Filed Dec. 26, 1887. Serial No. 259,203. (No model.)



Claim.—1. The combination, with a fence-post, of clamping-straps secured on opposite sides of its lower end, an anchor-block between the straps, and a bolt passed through the lower ends of said straps below the anchor-block for firmly clamping this block, substantially as described.

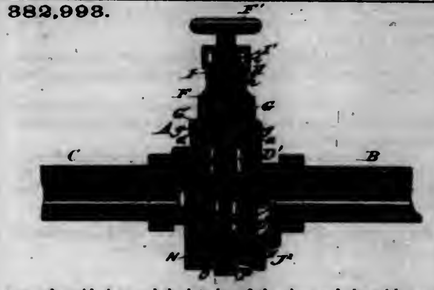
2. The combination of the post perforated transversely at its lower end, the anchor-block, the straps C C, bolted upon opposite sides of the post and extending down on opposite sides of the anchor-block and adapted to firmly clamp the same, the anchor-block J, embedded in the ground a short distance from the lower end of the post, the inclined brace-rods H H, connecting the lower end of the post with the said anchor-block J, the upper ends of the said rods H H being screw-threaded and passed through the transverse apertures in the lower end of the post, and the nuts *f f* upon the upper screw-threaded ends of the rods H H, as and for the purpose set forth.

3. In a fence-post, the combination of the post perforated transversely at its lower end, the anchor-block B, the straps C C, bolted upon opposite sides of the post and extending down upon opposite sides of the block B and adapted to clamp the same, the anchor-block J, embedded in the ground a short distance from the post, the inclined brace-rods H H, connecting the lower end of the post with the block J, the upper ends of the said rods H H being screw-threaded and passed through the apertures in the lower end of the post, the tightening-nuts *f f* upon the brace-rods H H, the inclined braces D D, resting against the upper end of the post upon the opposite side from the anchor-block J, the block B, placed under the lower ends of the braces D D, the perforated plate F, abutting against the lower ends of the braces D D, the horizontal tie-rod connecting the lower end of the post to the said abutting plate F, and the nut *f* upon the said tie-rod, substantially as herein set forth.

382,993. **THROTTLE-VALVE.** ROWE W. LEE, Salem, N. Y. Filed Dec. 16, 1887. Serial No. 258,089. (No model.)

Claim.—In a valve, the combination, with the main body having inlet and outlet pipes, of a two-part plug fitting therein, the upper of which parts is formed with lateral holes opening communication be-

382,993.



tween the said pipes and the interior of the plug, and also with a recess at its top to form a seat for the valve, and the lower of which parts closes the lowermost extremity of the valve-body, is formed at its top with an annular recess, forming a water and steam tight joint between it and the upper portion, and is also formed with a screw-threaded perforation and a screw-threaded drainage-plug normally closing the said perforation, and having a recess in its side extending but partially to its head, substantially as and for the purposes herein set forth.

382,994. AUTOMATIC CAR-BRAKE. ROWIN W. LOSS, Bolivar, N. Y. Filed Jan. 27, 1888. Serial No. 262,132. (No model.)



Claim.—1. In an automatic car-brake, the combination, with pressure-rods, of sliding plates adapted to be moved thereby, and brake beams and shoes connected with the said sliding plates.

2. In an automatic car-brake, the combination, with pressure-rods and sliding plates, of brake-beams having shoes or blocks, and pivoted rods between the pairs of brake-beams and connected therewith and with the said sliding plates.

3. The combination, in an automatic car-brake, with the car-axle, of a grooved cylinder secured thereto and having pivoted dogs, and a pivoted switch-bar adapted to be operated upon by the said dogs in the manner and for the purposes substantially as herein set forth.

4. A switch-bar having a recess at its extremity, in combination with a projection situated within the said recess and having lugs, a spring at the rear of said projection, connecting rods or cables secured to the said lugs, and means, substantially as described, for winding the said connecting rods or cables, for the purpose set forth.

5. The combination, in a car-brake, with a pivoted switch-bar and its connecting rods or cables, of a grooved cylinder, pivoted dogs situated obliquely thereon, for the purposes set forth, and springs for keeping the said dogs in their normal position, substantially as shown and described.

6. The combination, in an automatic car-brake, of pressure-rods and sliding plates, pivoted supports for the said sliding plates, and pivoted switch-bar carrying the said supports, with the grooved cylinder, and the dogs, all arranged in the manner and for the purposes substantially as herein set forth.

7. The combination, in a car-brake, of pressure-rods and sliding plates, with pivoted supports for the said sliding plates, having lugs or projections, a plate having curved grooves or recesses adapted to receive the said lugs and to act as guide for the pivoted supports, switch-bar carrying the said support, rods or cables secured to the said switch-bar, and means, substantially such as described, for winding the said rods or cables, for the purposes set forth.

8. In an automatic car-brake, pressure-rods, sliding plates adapted to be engaged thereby, pivoted support for the said sliding plates, having lugs or projections, and curved recesses adapted to be engaged by the said lugs and to act as guides for the said support, in combination with pivoted switch-bar carrying the said support and having a recess at its extremity, a projection situated within the said recess, having lugs, a spring at the rear of said projection, cables secured to the lugs of the projection, means for winding the said cables, grooved cylinder secured to the car-axle, and pivoted dogs situated obliquely thereon, all arranged for the purposes herein set forth.

9. The combination, in an automatic car-brake, with pressure-rods having spring-joints at their extremities, and sliding plates and pivoted supports therefor, of pivoted switch-bar carrying the said pivoted support, and grooved cylinder and pivoted dogs thereon, all arranged substantially as described, whereby the brake mechanism is adapted to be thrown into and out of position and the extremities of the pressure-rods will not be liable to injury thereby.

10. In an automatic car-brake, the combination, with axles thereof and tapered cylinder situated thereon and formed with spiral grooves, of lever-bars adapted to engage therewith, brake beams and shoes, and rods connecting the said lever-bar with the brake-beams, whereby the brakes will be automatically operated in the event of the parting of the train.

11. In an automatic car-brake, the combination, with axles thereof, tapered cylinders situated thereon and formed with spiral grooves, and brake-beams and their shoes, of lever-bars adapted to engage therewith and connected with the said brake-beams, supports for the said lever-bars, and pressure-rods having conical extensions and coiled springs, substantially as described, whereby the lever-bars will be normally out of engagement by their supports being normally located upon the largest portion of the conical extension.

12. The combination, in an automatic car-brake, with the pressure-rods having conical extensions and coiled springs, lever-bars also having coiled springs to increase their power, and supports for the said lever-bars, of conical tubes secured to the car-axles, having spiral grooves, brake-beams and their shoes, and rods connecting the said beams with the lever-bars, all arranged to operate in the manner and for the purposes substantially as herein set forth.

13. In an automatic car-brake, the pressure-rods, lever-bars, supports for the said lever-bars, brake-beams and their shoes, and pivoted rods between the pairs of brake-beams and connected therewith, in combination with conical tubes secured to the car-axles and having spiral grooves, and rods connecting the lever-bars with the said pivoted rods, all arranged for joint operation substantially as described.

14. The lever-bars having elongated slots, and headed pins secured to the car-body and passing through the said slots, in combination with cables at the rear of said lever-bars, adapted to engage with hooks on the car, substantially as described, whereby the said lever-bar can be drawn back and secured and the device rendered inoperative when desired.

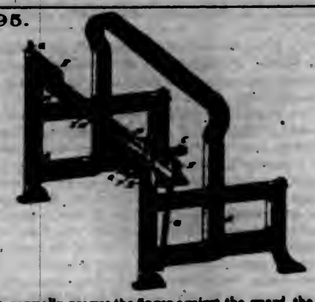
382,995. LOOM-SHUTTLE RELIEF MECHANISM. S. TAYLOR MCKINNEY, Piedmont, S. C. Filed Nov. 10, 1887. Serial No. 254,751. (No model.)

Brief.—One of the swords of the lay carries a bell-crank lever connected at one end to one of the lay-pitmen, and carrying an anti-friction roller at the other end. Said roller bears upon an arm connected to the usual rod having the finger and spring. Just before the forward movement of the lay the lovers described release the pressure of the finger upon the shuttle-binder.

Claim.—1. In a loom, the combination, with the lay, the shuttle check or guard, a shaft having a finger, and a spring in proximity to the shaft which normally presses the finger against the guard, the pitman, and the bell-crank lever connected thereto, of a relief-bar connected to the rock-shaft and constructed to be actuated by the bell-crank lever.

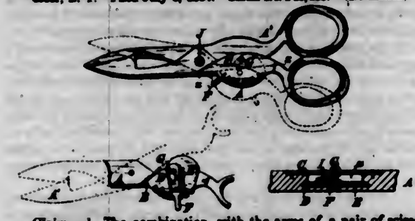
2. In a loom, the combination, with the lay, the shuttle check or guard, a rock-shaft having a finger, and a spring in proximity to the shaft which normally presses the finger against the guard, the pitman, and the bell-crank lever connected thereto and provided at one end with a roller, of a relief-bar connected to the rock-shaft and constructed to be actuated by the bell-crank lever.

382,995.



3. In a loom, the combination, with the lay, the shuttle check or guard, a rock-shaft having a rod or finger, and a spring mounted in proximity to the shaft to normally press the finger against the guard or check, of a pitman, a bell-crank lever connected thereto and provided at one end with a roller, and a relief-bar connected to the rock-shaft and constructed to be actuated by the bell-crank lever.

382,996. BUTTON-HOLE SCISSORS. LUTHER C. HOLMAN, Rochester, N. Y. Filed July 6, 1887. Serial No. 243,425. (No model.)



Claim.—1. The combination, with the arms of a pair of scissors and a cam pivoted to one arm and adapted to be swung on its pivot to engage the other arm and limit the movement of said arms, of a lock for positively holding said cam in adjusted position, substantially as described.

2. The combination, with a pair of scissors and a cam pivotally connected to one arm and adapted to be swung on its pivot to engage the other arm and limit the movement of the two arms toward each other, of a projection or tooth moved by the cam, and a notched surface with which said projection or tooth engages for holding the cam in adjusted position, substantially as described.

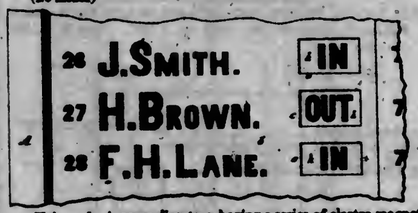
3. The combination, with a pair of scissors and a cam pivotally connected to one arm and adapted to be swung on its pivot to engage the other arm and limit the movement of the two arms toward each other, of a projection or tooth moved by the cam, a notched surface with which said projection or tooth engages for holding the cam in adjusted position, and a spring for holding said projection or tooth and notched surface in engagement, substantially as described.

4. The combination, with the pivoted arms of a pair of button-hole-cutting scissors, a cam pivoted on one arm and adapted to limit the movement of the blades toward each other, the series of adjusting-notches beneath said cam, and the adjusting-lever above the same, of a tooth or projection on the lever, and a notch or slot in the cam through which the tooth or projection passes to engage the adjusting-notches, whereby the cam is held in adjusted position, substantially as described.

5. The combination, with the pivoted arms of a pair of button-hole-cutting scissors, a cam pivoted on one arm and adapted to limit the movement of the blades toward each other, the series of adjusting-notches beneath said cam, and the adjusting-lever above the same, with its projection passing through a notch or slot in the cam for engaging the notches, of a spring secured to said lever and bearing against the inclosing-walls for holding the projection in engagement with the notches, as set forth.

6. In a pair of button-hole-cutting scissors, the combination, with the cam having a notch or slot therein pivoted in a depression in one arm of the scissors and adapted to be swung on its pivot to engage the other arm and limit the movement of the two arms toward each other, of the notched segmental plate held by the arm beneath the cam, the lever above the cam having the tooth or projection thereon passing through said notch or slot in the cam and engaging the notches in the segmental plate, a spring carried by said lever for holding said tooth in engagement with the notches, the plate for covering the depression in which said parts are located, and the pivot for holding the parts in position, substantially as described.

382,997. DIRECTORY-INDICATOR FOR BUILDINGS, &c. THOMAS J. HEFFERN, New York, N. Y. Filed May 24, 1887. Serial No. 239,248. (No model.)

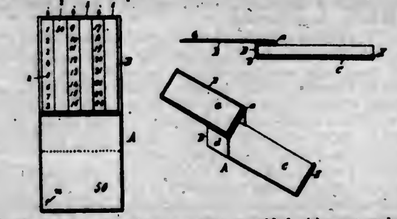


Claim.—1. A name-directory having a series of electro-magnetic indicators respectively adjoining said names, and adapted each to either of two positions, and thereby to convey information concerning the persons represented thereby, in combination with the circuit-wires, a source of current, and a series of keys respectively located in the rooms of said persons, substantially as described, each circuit being unbroken at all points, except the key belonging to it, whereby the positions of the indicators are determined solely by the operation of the respective keys at the rooms.

2. In a directory-indicator for buildings, the combination of a name or symbol representing a person, a polarized electro-magnet and armature having an indicator or target attached thereto adapted to take either of two positions, and by its position to signal information concerning the person represented, circuit-wires, a battery, and a reversing-key at the room occupied by said person, the circuit being unbroken at all other points, substantially as described.

3. In a directory-indicator for building, the combination of a name or symbol representing a person, a polarized electro-magnet having a movable armature adapted to take either of two positions, and thereby to display to view such words as "In" and "Out," or either of them, in juxtaposition to said name, a battery, circuit-wires to a distant part of the building, and a reversing-key therein, said circuit being unbroken at all other points, substantially as described, whereby the person represented can from a distance set the indicator at will.

382,998. CHECK AND PAD PROTECTOR. GEORGE A. MEYER, Brooklyn, N. Y. Filed Sept. 1, 1887. Serial No. 248,488. (No model.)



Claim.—A pad or check protector provided with a cap or hook for holding the stub end of the pad, a rigid cover having an overhanging edge to receive the back of the pad, and a hinged cover joined to said cap, the jointed cover having its inner side provided with a sheet of ciliss to be ruled and numbered, substantially as and for the purpose set forth.

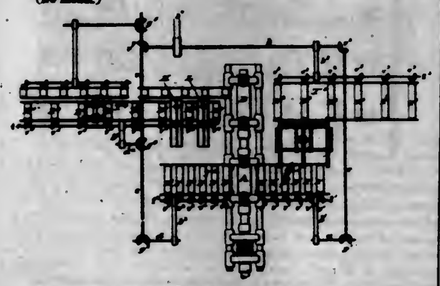
382,999. NUT-LOCK. WALTER A. MILLER, Strasburg, Pa., assignor of one-half to Ezra F. Landis, Lancaster, Pa. Filed Nov. 12, 1887. Serial No. 254,967. (No model.)



Claim.—1. In combination with a bolt and nut, a washer having besides its central perforation a segmental recess, *d*, and an eccentric recess, *d'*, communicating with said central perforation, and a key having a lateral projection adapted to enter said eccentric recess and provided with an acute edge to engage with the threads of the bolt, substantially as and for the purpose described.

2. In combination with a bolt and nut, a washer having a segmental recess, *d*, cut out of its face, a central perforation for the passage of the bolt, and an eccentric recess, d^2, communicating with said central perforation and extending throughout the washer, and a key having laterally an eccentric projection beveled at its inner end and received into the recess of the washer for engagement with the threads of the bolt, substantially as and for the purpose described.

383,000. FEEDING APPLIANCE FOR ROLLING-MILLS. JOSEPH MERRAM, Jr., Johnstown, Pa. Filed Oct. 3, 1887. Serial No. 251,354. (No model.)



Claim.—1. In a feeding appliance for rolling-mills, the combination of a rising and falling table and an arm pivoted thereto, the outer end of this arm being connected by a link to a fixed pivot, a continuation of this arm extending upward for the purpose of pushing over the piece being rolled when the table rises and by the act thereof, substantially as set forth.

2. In a feeding appliance for a rolling-mill, the combination of a rising and falling table, an arm pivoted thereto, and a link connecting the said arm with a second similar pivotally-swinging arm, the said second swinging arm being connected by a pivoted link with a stationary point, the whole acting together to cause the first-mentioned swinging arm to push over and tilt the pieces being rolled as the table rises and by the act thereof, substantially as set forth.

3. In a feeding appliance for rolling-mills, the combination of a rising and falling table, and pivotally-swinging arms thereon, the axes of said pivots being coincident, the outer end of said arms being connected by a flat strip or bar, the whole being adapted to swing by the act of the rising or lowering of the table for the purpose of pushing over the piece being rolled, and for extending longitudinally the range of the position of said piece while it is being acted upon, substantially as and for the purpose set forth.

4. In a feeding appliance for a rolling-mill, the combination of a rising and falling table, said pivotally-swinging arms thereon, the axes of the pivots being coincident, the outer end of said arms being connected by a flat strip or bar, the whole adapted to swing by the act of raising or lowering the table through the means of pivoted links, one end of each of said links being pivotally attached to each one of said arms, and the other end of each of said links being pivotally attached to a fixed point, substantially as set forth.

5. In a feeding appliance for a rolling-mill, the combination of a rising and falling feed-table connected with one berth of rolls, a stationary feed-table connected with a second berth of rolls, a tilting slide-over located between aforesaid tables, a single-acting hydraulic motor adapted to tilt the slide-over in one direction, and a counter-weight adapted to tilt the slide-over in the opposite direction, substantially as set forth.

6. In an appliance for feeding rolling-mills, the combination of a rising and falling table connected with one berth of rolls, a stationary table connected with a second berth of rolls, and a tilting slide-over pivoted near its center and actuated by means of an independent motor, substantially as and for the purpose set forth.

7. As a device for transferring partly-rolled rails from one berth of rolls to another, a tilting slide-over pivotally supported at some point near its center, and having its portion between the pivoted point and the receiving edge concavely curved on its upper side for the purpose of gradually and surely starting the partly-rolled rail on its downward slide, substantially as set forth.

8. As a device for transferring partly-rolled rails laterally from one berth of rolls to another, a tilting slide-over pivoted near its center, and provided with hooks on its delivering edge to retain the piece being operated upon, so that it may be gently lowered in place, substantially as and for the purpose set forth.

9. In a feeding appliance for rolling-mills, the combination of a pivoted and tilting feed-table provided with driven and reversible rollers, a frame carrying a roller arranged to slide transversely on said table, and automatic mechanism to slide this frame simultaneously with the movement of the tilting table, substantially as and for the purpose set forth.

10. In a tilting feed-table for a rolling-mill, the combination, with the frame thereof, of a transversely-sliding frame carrying a driven and reversible roller across said tilting table, substantially as and for the purpose set forth.

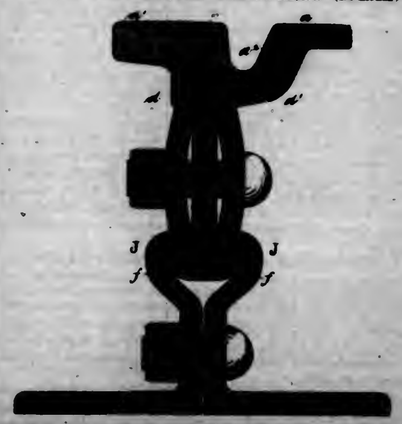
11. In a tilting feed-table for a rolling-mill, the combination of a shaft extending lengthwise of said table in bearings affixed thereto, driven through some suitable connection from some outward source of power, a series of bevel-wheels on this shaft engaging with similar bevel-wheels attached to feed-rollers which have their bearings in said tilting table, two bevel-wheels attached to this shaft engaging with two other bevel-wheels, each of which is attached to one of two spur-gears, each of said spur-gears engaging with one of two other spur-gears, a feathered shaft sliding through each of the latter spur-gears, the bearing of each of these shafts being attached to one of two transversely-sliding frames, two shaped rollers respectively attached to said last-mentioned shafts, a rock-shaft extending longitudinally under the tilting table with its bearings affixed thereto, arms attached to this rock-shaft, links pivotally connecting ends of said arms to the before-mentioned transversely-sliding frames, an arm affixed to said rock-shaft, a link pivotally connecting this arm with a fixed point below the table, and a hydraulic motor for operating the table, substantially as and for the purpose set forth.

12. In a feeding appliance for rolling-mills, the combination of a rising and falling feed-table on one side of the rolls, a stationary feed-table on the other side of the rolls, a pivoted and tilting apron located over the stationary table to receive the end of the partly-rolled rail and lower it gently to its feeding position, and mechanism connecting this rising and falling apron with the rising and falling feed-table, so that the act of lowering the rising and falling feed-table lowers the rising and falling apron, substantially as and for the purpose set forth.

13. In a feeding appliance for a rolling-mill, the combination of a tilting feed-table on one side of the rolls, a stationary feed-table on the other side of the rolls, a pivoted tilting apron located over the stationary feed-table, a stationary stop arranged in front of the central roll and over the stationary table entirely above the lower pass of the rolls, and mechanism connecting the tilting apron with the tilting table on the other side of the rolls, so that they may both be operated together by means of the same motor, substantially as and for the purpose set forth.

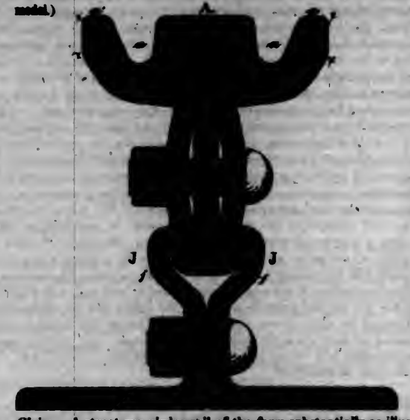
14. In mechanism to prevent a piece from entering the rolls of a rolling-mill until the receiving-table is in proper position to receive it, the combination of a fixed stop located opposite the middle roll of the mill, a rising and falling apron located so that its upper position is lower than the top of the stop, so that when the rolled piece is expelled by the action of the rolls it may fall a measurable distance upon the apron, and mechanism to connect this tilting apron with the receiving-table, so that the rolled piece is only at a position to pass through the rolls when the receiving-table is ready to receive it, substantially as and for the purpose set forth.

383,001. GROOVED GIRDER-RAIL. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Nov. 30, 1886. Serial No. 219,408. (No model.)



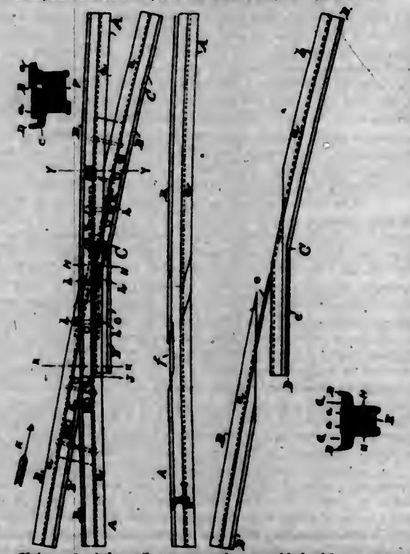
Claim.—A street-car girder-rail of the form substantially as illustrated in the accompanying drawings, consisting of a vertical central web terminating at bottom in a double-shouldered stub or bead, as F, and provided with a head having a shoulder, *d*, a groove, *d'*, and an overhanging lip, *d²*, substantially as and for the purpose set forth.

383,002. DOUBLE-GROOVED GIRDER-RAIL. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Nov. 30, 1886. Serial No. 219,409. (No model.)



Claim.—A street-car girder-rail of the form substantially as illustrated in the accompanying drawings, consisting of a vertical central web terminating at bottom in a double-shouldered stub or bead, as F, and at top in a flat head having a center bearing portion for the tread of the car-wheels, grooves on each side thereof for the flanges of said wheels, and exterior portions, as *d' d'*, on the outer sides of said grooves, provided with straight sides between points *x x*, substantially as and for the purposes set forth.

383,003. ACUTE CURVE-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Dec. 30, 1887. Serial No. 259,202. (No model.)

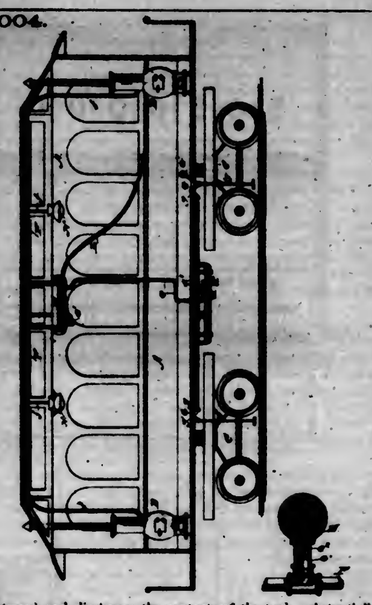


Claim.—A girder-rail curve-crossing provided with a cut-away guard and an auxiliary guard opposite the opening formed by said cutting away of the said guard, substantially as described, for the purposes set forth.

383,004. FIRE-EXTINGUISHER FOR RAILWAY-CARS. GEORGE W. GRANT, Columbus, Ohio. Filed May 20, 1887. Serial No. 238,324. (No model.)

Claim.—1. The combination, in a fire-extinguisher for cars, of a compressed-air receiver with a tank for containing a fire-extinguishing material, and having an outlet and an outward-opening spring-pressed valve thereto, and a pipe leading from the compressed-air receiver to the tank and provided with a valve, whereby, when the compressed air is admitted into the tank, the pressure will force the spring-valve outward and discharge the contents of the tank, substantially as set forth.

383,004.



2. The combination, in a fire-extinguisher for cars, with the air-brake system applied thereto, of a tank for containing a fire-extinguishing material and provided with an outlet in its bottom, an outward-opening spring-seated valve therein, a pipe connecting the upper part of the tank with the compressed-air supply of the brake system, and a valve in said pipe, substantially as set forth.

3. The combination, in a fire-extinguisher for cars, with air-brake mechanism, of the fire-extinguishing mechanism, a valved pipe leading from the air-brake cylinder to the fire-extinguisher, the rock-shafts G, having cranks *g* and end cranks, *g'*, the triggers J, depending from cranks *g'* down between the wheels of the trucks, the hand-lifts G', extending up through the floor of the car, and the rod H, connected at its ends to cranks *g'* and between its ends to the valve in the said valved pipe, substantially as set forth.

4. In a fire-extinguisher for cars, the combination of the air-brake mechanism, the tank E, having the outlet *e'* in its bottom, the downward-opening valve e^2 therein, a spring for closing said valve against the pressure of the normal contents of said tank, the pipe F, extending from end to end of the car and having branches leading to the stoves and to the lamps, and a hose connected directly to the tank, with a pipe for conducting the compressed air from the brake mechanism into the top of the tank, whereby the extinguishing material will be forced by the full power of the compressed air through the pipes to the stoves and lamps or through the hose, substantially as set forth.

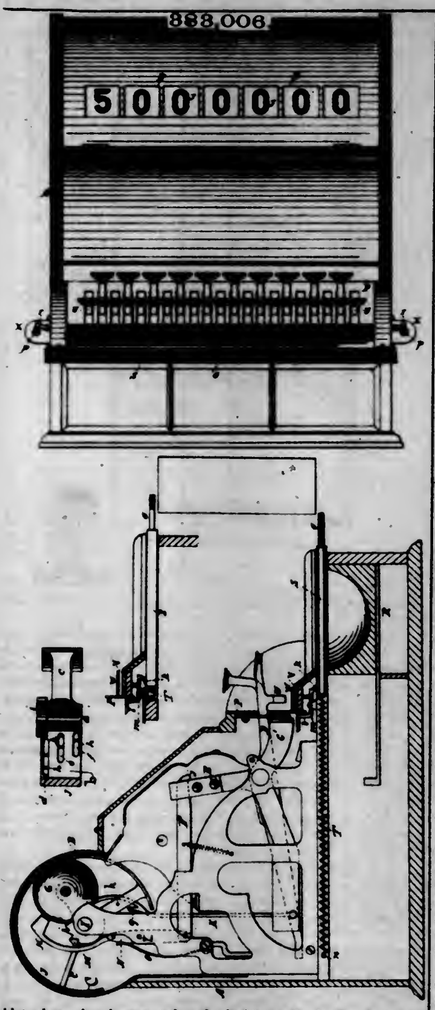
383,005. BILLIARD-CUSHION. JOHN D. O'CONNOR, New York, N. Y. Filed Jan. 18, 1888. Serial No. 261,113. (No model.)



Claim.—A cushion-strip composed of vulcanized rubber or other allied gum, and having incorporated within it and near its outer face a strip of canvas wound or rolled on itself to form an upper cord-like edge, as specified, and extending from said cord-like edge downwardly toward the base or foot of the cushion, all in substantially the manner and for the purpose set forth.

383,006. CASE INDICATOR AND REGISTER. JOHN H. PATTERSON, Dayton, Ohio. Filed Jan. 19, 1887. Serial No. 224,703. (No model.)

Claim.—1. In an indicating-machine, the combination of a series of keys of fixed values, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the series of keys, a stationary reading-opening, mechanism between the keys and the tablet for actuating and controlling the extent of movement of the



ing-opening, mechanism between the keys and the tablet for actuating and controlling the extent of movement of the tablet when a key is operated, and a locking and releasing device for the tablet controlled by all the keys, whereby when a key is actuated the tablet will be moved to bring to the reading-opening the number on it corresponding to the number represented by said key, and when any other key of the series is actuated the tablet will be released and moved so as to expose at the reading-opening the number represented by said last-mentioned key, and whereby, also, the registering mechanism will be operated upon the actuation of each key, substantially as described.

4. In a registering and indicating machine, the combination of a series of keys of fixed values, a registering mechanism operated thereby, a rocking indicating-tablet provided with a series of numbers corresponding to those represented by the series of keys, a stationary reading-opening, mechanism between the keys and the tablet for actuating and controlling the extent of movement of the rocking tablet when a key is operated, and a locking and releasing device for the tablet controlled by all the keys, whereby when a key is actuated the tablet will be rocked to bring to the reading-opening the number on it corresponding to the number represented by said key, and when any other key of the series is actuated the tablet will be released and dropped, so as to expose at the reading-opening the number represented by said last-mentioned key, and whereby, also, the registering mechanism will be operated upon the actuation of each key, substantially as described.

5. In an indicating-machine, the combination of a series of movable indicating-tablets each provided with a series of numbers, a series of keys of fixed values for each movable indicating-tablet, stationary openings through which the numbers on the tablets may be read, mechanism between each series of keys and its co-operating tablet for actuating and controlling the extent of movement of the tablet when any key of the series is operated, and a locking and releasing device for each movable tablet controlled by all the keys of the particular series, whereby when two or more keys of different series are actuated the corresponding tablets will be moved so as to bring to the reading-opening the numbers on the several tablets corresponding to the keys that are actuated.

6. In an indicating-machine, the combination of a series of rocking indicating-tablets each provided with a series of numbers, a series of keys of fixed values for each rocking indicating-tablet, stationary openings through which the numbers on the rocking tablet may be read, mechanism between each series of keys and its co-operating rocking tablet for actuating and controlling the extent of movement of the tablet when any key of the series is operated, and a locking and releasing device for each rocking tablet controlled by all the keys of the particular series, whereby when two or more keys of different series are actuated the corresponding tablets will be rocked, so as to bring to the reading-opening the numbers on the several rocking tablets corresponding to the keys that are actuated, substantially as described.

7. In an indicating-machine, the combination of a series of keys of fixed values, a movable indicating-tablet provided with a series of numbers in duplicate corresponding to the numbers represented by the keys, two stationary reading-openings, and intermediate mechanism between the keys and the tablet, by which, when either of the keys is actuated, the tablet will be moved a distance sufficient to bring into view simultaneously at the two reading-openings the duplicates of the number represented by the key actuated, substantially as described.

8. In an indicating-machine, the combination of a series of keys of fixed values, a rocking indicating-tablet provided with a series of numbers in duplicate corresponding to the numbers represented by the keys, two stationary reading-openings, and intermediate mechanism between the keys and the tablet, by which, when either of the keys is actuated, the tablet will be rocked a distance to bring into view simultaneously at the two reading-openings the duplicates of the numbers represented by the key actuated, substantially as described.

9. In a cash register and indicator provided with registering mechanism and a series of keys for operating said mechanism, the combination of a series of rocking tablets arranged upon a common axis, and a series of lifting-arms connected to said keys and arranged to engage with said tablets when operated, but normally out of operative contact with them, whereby the operation of any one of said keys elevates its lifting-rod to move its tablet, substantially as and for the purpose described.

10. In a cash register and indicator provided with registering mechanism and a series of keys for operating said mechanism, the combination of a series of rocking tablets arranged upon a common axis, positively-acting retaining devices for holding said tablets in their normal and in their actuated positions, and a series of lifting-arms connected to said keys and arranged to engage with said tablets, whereby the operation of any one of said keys elevates its lifting-rod to move its tablet, and whereby said tablet when so moved is held with its number exposed to view, substantially as described.

11. In a cash register and indicator provided with registering mechanism and a series of keys for operating said mechanism, the combination of a series of weighted rocking tablets arranged upon a common axis and a series of lifting-arms connected to said keys and arranged to engage with said tablets when operated, but normally out of operative contact with them, whereby the operation of any one of said keys elevates its lifting-rod to move its tablet, substantially as and for the purpose described.

12. In a cash register and indicator provided with registering mechanism and a series of keys for operating said mechanism, the combination of a series of weighted rocking tablets arranged upon a common axis, retaining devices for holding said tablets in their vibrated positions, and a series of lifting-arms connected to said keys and arranged to engage with said tablets when operated, but normally out of operative contact with them, whereby the operation of any one of said keys elevates its lifting-rod to move its tablet, and whereby said tablet, when so moved, is held with its number exposed to view, substantially as described.

13. In a cash register and indicator provided with a series of tablets for exposing to view the amount of each purchase, a registering mechanism for registering the amount of said purchase, and a series of keys of fixed values for operating said tablets and registering mechanism simultaneously, a series of types, one secured to each key and bearing a number corresponding to the value of the key, and inking mechanism or its equivalent, whereby any one of the keys may be operated to simultaneously expose its tablet, register its value, and print its number on a check placed under said type.

14. In a cash register and indicator provided with a series of tablets for exposing to view the amount of each purchase, a registering mechanism for registering the amount of said purchase, a series of keys of fixed values for operating said tablets and registering mechanism simultaneously, and a casing inclosing all said parts, a series of types, one secured to each key outside the casing and bearing a number corresponding to the value of the key, whereby any one of the keys may be operated to simultaneously expose its tablet, register its value, and print its number on a check placed under said type, substantially as described.

15. In a cash register and indicator provided with a series of tablets for exposing to view the amount of each purchase, a registering mechanism for registering the amount of said purchase, and a series of keys of fixed values for operating said tablets and registering mechanism simultaneously, a series of types, one on the under side of the front of each key and bearing a number corresponding to the value of the key, and inking mechanism or its equivalent, whereby any one of the keys may be operated to simultaneously expose its tablet, register its value, and print its number on a check placed under said type.

16. In a cash register and indicator, the combination, with a vibrating frame and a series of operating-keys for depressing said frame, of a till, a spring-latch, a sliding till-cover engaged by said latch, and springs for operating said cover to expose the till whenever one of said keys is operated, substantially as described.

17. In a cash register and indicator, the combination, with the operating-keys D and lifting-rods K, provided with fingers *g*, of the rocking tablets J, with which said fingers are adapted to engage, substantially as and for the purpose described.

18. In a cash register and indicator, the combination, with the operating-keys D and lifting-rods K, provided with fingers *g*, of the rocking tablets J, with which said fingers are adapted to engage, the shaft L, provided with dogs M, ratchets *i* upon the hubs of the tablets, and connecting mechanism for uniting the shaft L to the vibrating frame C, substantially as and for the purpose specified.

19. The combination, with a casing having a reading opening or slot therein and a tablet having a series of figures or characters thereon adapted to be exposed at said opening, of a series of keys indicating amounts corresponding to those on the tablet and suitable projections connected to the keys for operating the tablet, arranged at varying distances from the said tablet corresponding to the distance necessary to move it to expose the particular character represented by the key, substantially as described.

20. In a cash register and indicator, the combination, with a casing having a reading opening or slot therein and a tablet having a series of amounts indicated thereon adapted to be exposed at said opening, of a series of keys indicating amounts corresponding to those on the tablet, a registering mechanism for each key, and suitable projections connected to the keys for operating the tablet, arranged at varying distances from said tablet corresponding to the distance necessary to move the latter to expose the particular amount represented by the key, substantially as described.

21. In a cash register and indicator, the combination, with the casing having the reading-opening, and the pivoted segmental tablet having a series of amounts indicated thereon adapted to be exposed at said opening, of a series of keys representing various amounts, a registering mechanism for each key, and projections connected to the keys for operating the tablet and arranged at varying distances from it corresponding to the distance necessary to move it to expose the particular amount represented by the key, substantially as described.

22. The combination, with the casing having reading-openings at front and rear, and a pivoted segmental tablet having two corresponding series of amounts indicated thereon, of a series of keys corresponding to the amounts on the tablet and having projections for operating the latter at various distances from said tablet corresponding to the distance necessary to move it to expose the particular amount represented by the key, substantially as described.

23. The combination, with a gravitating tablet pivoted upon a horizontal axis or shaft, and provided with a face substantially parallel with said axis, and having characters indicated thereon, of a series of keys pivoted upon an axis parallel with said tablet-axis, a stationary reading-opening, mechanism between the keys and the tablet for actuating and controlling the extent of movement of the tablet when the keys are actuated, and a locking and releasing device for the movable tablet controlled by all the keys, substantially as and for the purpose described.

24. The combination, with a gravitating rocking tablet pivoted upon an axis or shaft and provided with a face substantially parallel with said axis, and having characters indicated thereon, of a series of keys pivoted upon an axis parallel with said tablet-axis, a stationary reading-opening, mechanism between the keys and tablet for actuating and controlling the extent of movement of the tablet when the keys are operated, and a locking and releasing device for the movable tablet controlled by all of the keys, substantially as and for the purpose described.

25. In a registering and indicating machine, the combination of a series of keys of fixed values, registering mechanism operated by said keys for registering the amount of each key operated, and a series of pivoted rocking tablets having faces substantially parallel with their pivotal centers, upon which a character or characters are indicated, and connections between said keys and tablets, whereby the operation of any of the keys registers the value of the key and moves the tablet to expose to view a number corresponding to the value of the key operated, substantially as described.

26. In a registering and indicating machine, the combination of a series of keys of fixed values, registering mechanism operated by said keys for registering the amount of each key operated, and a series of pivoted rocking tablets each having a face substantially parallel with its axis, each of said tablets being connected to a group of two or more keys and provided with a series of numbers upon the face mentioned corresponding to the value of one of the keys, whereby the operation of any one of the keys of a group registers the value of said key and moves the tablet to expose to view the number corresponding to the value of the said key.

27. In a registering and indicating machine, the combination of a series of keys of fixed values, registering mechanism operated by said keys for registering the amount of each key operated, and a series of pivoted rocking tablets each having a face substantially parallel with its axis, with connecting mechanism and a series of retaining devices for releasing and locking said tablets, whereby the operation of any one of the keys registers the value of the key operated and holds the tablet with said number exposed to view, and whereby the operation of another key releases the exposed tablet.

28. In a cash-indicator, the combination of a series of keys of fixed values, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a stationary reading-opening, connecting mechanism between said keys and movable tablet for actuating and controlling the extent of movement of said tablet when a key is operated, a ratchet on said tablet, and a locking-dog engaging therewith, a vibrating bar actuated by each of the keys, and tripping mechanism actuated by said vibrating bar and operating said locking-dog, substantially as and for the purpose described.

29. In a cash-indicator, the combination of a series of keys of fixed values, a rocking indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a stationary reading-opening, connecting mechanism between said keys and rocking tablet for actuating and controlling the extent of movement of said tablet when a key is operated, a ratchet secured to the hub of said rocking tablet, a locking-dog engaging with said ratchet, a vibrating bar actuated by each of the keys, and tripping mechanism actuated by said vibrating bar and operating said locking-dog, substantially as and for the purpose described.

30. In a cash-indicator, the combination of a series of keys of fixed values, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a stationary reading-opening, connecting mechanism between said keys and movable tablet for actuating and controlling the extent of movement of said tablet when a key is operated, a ratchet on said tablet, and a locking-dog engaging therewith, a gong and gong-hammer, a vibrating bar actuated by each of the keys, and tripping mechanism actuated by said vibrating bar and operating said locking-dog and gong-hammer, substantially as described.

31. In a cash-indicator, the combination of a series of keys of fixed values, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a stationary reading-opening, suitable projections actuated by the keys for operating the tablet and arranged at varying distances from said tablet corresponding to the distance necessary to move it to expose the particular number represented by the key operated, a ratchet on said tablet, and a locking-dog engaging therewith, a vibrating bar actuated by each of the keys, and tripping mechanism actuated by said vibrating bar and operating said locking-dog, substantially as and for the purpose described.

32. In a cash register and indicator, the combination of a series of keys of fixed values, registering mechanism actuated by said keys, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a stationary reading-opening, connecting mechanism between said keys and movable tablet for actuating and controlling the extent of movement of said tablet, a ratchet on said tablet, and a locking-dog engaging therewith, a vibrating bar actuated by each of the keys, and the tripping mechanism actuated by said vibrating bar and operating said locking-dog, substantially as and for the purpose described.

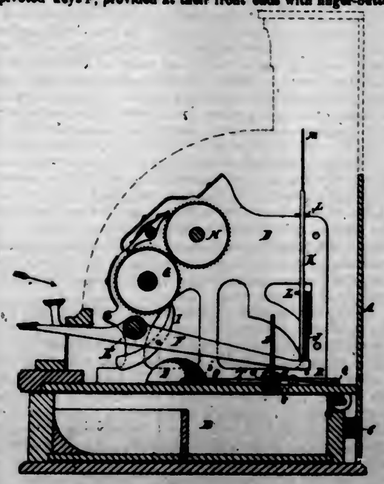
33. In a cash register and indicator, the combination of a series of keys of fixed values, registering mechanism operated by said keys, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a stationary reading-opening, suitable projections actuated by the keys for operating the tablet and arranged at varying distances from said tablet corresponding to the distance necessary to move it to expose the particular number represented by the key operated, a ratchet on said tablet, and a locking-dog engaging therewith, a vibrating bar actuated by each of the keys, and tripping mechanism actuated by said vibrating bar and operating said locking-dog, substantially as and for the purpose described.

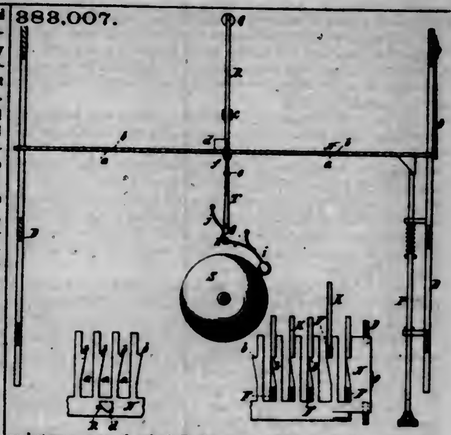
34. In a cash register and indicator, the combination of a series of keys of fixed values, registering mechanism operated by said keys, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a series of lifting-arms actuated by said keys and arranged to engage with said tablet, a ratchet on said tablet, and a locking-dog engaging therewith, a vibrating bar actuated by each of the keys, and tripping mechanism actuated by said vibrating bar and operating said locking-dog, substantially as and for the purpose described.

35. In a cash register and indicator, the combination of a series of keys of fixed values, registering mechanism operated by said keys, a movable indicating-tablet provided with a series of numbers corresponding to those represented by the keys, a series of lifting-arms actuated by said keys and provided with projections at varying distances from said tablet and arranged to engage therewith, a ratchet on said tablet and a locking-dog engaging therewith, a vibrating bar actuated by each of the keys, and tripping mechanism actuated by said vibrating bar and operating said locking-dog, substantially as and for the purpose described.

383,007. CASH REGISTER AND INDICATOR. JOHN H. PATTERSON, Dayton, Ohio. Filed Feb. 4, 1888. Serial No. 262,980. (No model.)

Claim.—1. In a cash register and indicator, the combination of the pivoted keys F, provided at their front ends with finger-buttons,





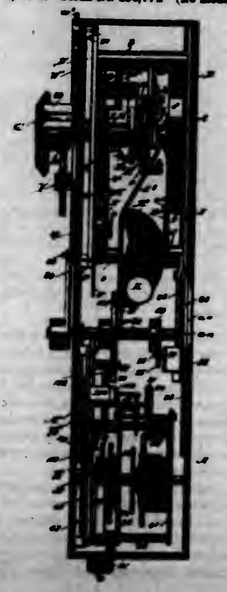
and strung upon the shaft E, the vertical tablet-rods K, arranged in guides and carrying the indicating-tablets M, and the slotted supporting-bar N, operating when a key is depressed to its fullest extent to automatically engage said key and hold its rear end elevated and its tablet exposed to view and to disengage said key and engage a second key when the latter is fully depressed, substantially as described.

2. The combination of the keys F, pivoted on the shaft E, tablet-rods K and tablets M, slotted supporting-bar N, drawer B, drawer-bolt Q, and a cam mechanism on the bar N for operating said bolt Q, substantially as and for the purpose described.

3. The combination of the keys F, pivoted on the shaft E, tablet-rods K and tablets M, slotted supporting-bar N, gong S, and its gong-hammer, and tripping mechanism between the bar N and said gong-hammer operated by said bar, substantially as and for the purpose described.

4. The combination of the keys F, pivoted on the shaft E, tablet-rods K and tablets M, slotted supporting-bar N, drawer B, drawer-bolt Q, gong S and its gong-hammer, and connecting mechanism between the bar N and the drawer-bolt and gong-hammer and operated by the bar N, substantially as and for the purpose described.

383,008. FARE-REGISTER. WILLIAM PROUT, Chicago, Ill., assignor to the Pigott Time and Fare Register Company, same place. Filed May 2, 1887. Serial No. 236,774. (No model.)



Claim.—1. In a fare-register, the combination, with the indicator-dial freely movable in either direction and a total-registering dial in one-way gear with said indicator-dial, of a shaft for turning said dials and an operating-rod geared with said shaft and extending through the cab-body in proximity to the driver's seat, substantially as described.

2. In a fare-register, the combination, with an indicator-dial and freely moving therewith in either direction, provided with an operating-shaft, of a total-registering dial mounted upon said shaft and in one-way gear with the indicator-dial, an inclosing-casing provided with sight-openings opposite said dials, an operating-rod detachably geared with the outer end of said shaft, a crank-handle for said operating-rod, and a ratchet-plate for determining the position of said crank-handle, substantially as described.

3. In a fare-register, the combination, with the registering mechanism, of an inclosing-casing for said mechanism, a sustaining-frame for said inclosing-casing, suitable fastenings for detachably connecting said casing and frame, and an operating-rod fixed to the cab-body and leading from said sustaining-frame in proximity to the driver's seat and in detachable gear with the registering mechanism, whereby said registering mechanism can be readily withdrawn from the cab for purposes of inspection, substantially as described.

4. In a fare-register, the combination, with the distance-registering mechanism, comprising an indicator-dial freely movable in either direction and a total-registering dial in one-way gear therewith, of an inclosing-casing for said mechanism having sight-openings therein, an operating-shaft for said dials extending through said inclosing-casing and provided at its end with a gear-wheel, and an operating-rod fixed to the cab-body and provided at one end with a gear-wheel to engage with the gear-wheel upon the shaft of the registering mechanism while said mechanism is in use, and having its opposite end extending in proximity to the driver's seat and provided with a crank-handle, substantially as described.

5. In a fare-register, the combination, with an indicator-dial freely movable in either direction and consisting of a movable annular plate and a central disk within said plate, of a total-registering mechanism in one-way gear with said indicator-dial, an operating-shaft whereon both of said dials are sustained, and an inclosing-casing having sight-openings therein opposite said dials, substantially as described.

6. In a fare-register, the combination, with a main drive-shaft, and with a gear-wheel for operating said shaft, of indicator and registering dials respectively arranged at opposite ends of said shaft, the indicator-dial being fixed to and moving with the shaft in either direction and the registering-dial being loosely journaled on said shaft, and an intermediate pawl-and-ratchet mechanism for locking the registering-dial in one-way gear with said shaft, substantially as described.

7. In a fare-register, the combination, with a main drive-shaft, and with a gear-wheel for revolving said shaft in either direction, of an indicator-dial consisting of an annular dial-plate connected with the main shaft and a dial-disk set within said annular plate and sustained freely upon the shaft, and a pawl-and-ratchet mechanism intermediate said plate and disk to actuate the latter by movement of this annular plate in either direction, substantially as set forth.

8. In a fare-register, the combination, with a main drive-shaft revolving freely in either direction, and with an indicator-dial consisting of an annular dial-plate fixed to said shaft, and a dial-disk set freely thereon and within a cup-shaped chamber of said plate, of a pawl-and-ratchet mechanism intermediate said plate and disk to actuate the latter by movement of the annular plate in either direction, a fixed trip projecting into the path of said pawl, and a stationary star-wheel set upon said main shaft independently of the movement thereof, and a locking-pawl secured to the dial-disk to engage with said star-wheel, substantially as described.

9. In a fare-register, the combination, with a main drive-shaft, and with an indicator-dial mounted upon and revolving with said shaft in either direction, of a gear-wheel set upon said shaft to actuate the same and having grooved hub and detent thereon, and a locking-wheel received circumferentially within said groove and notched in part about its periphery to engage said detent, whereby the indicator-dial may be reset at the zero-point, substantially as described.

10. In a fare-register, the combination, with the registering mechanism, the inclosing-casing therefor, and the sustaining-frame for said casing, of a sliding flap extending from said frame and a locking-pawl in the path thereof, secured to said casing and dogging with the main drive-shaft of the registering mechanism, substantially as set forth.

11. In a fare-register, the combination, with a clock mechanism, of a time-fare-registering mechanism in gear therewith and suitable actuating mechanism under the control of the driver, whereby the dial of said registering mechanism can be operated in forward direction independently of the clock mechanism, substantially as described.

12. In a fare-register, the combination, with a clock mechanism, of a time-fare-registering mechanism in gear therewith and a pawl-and-ratchet wheel for imparting forward movement to the dial of said time-fare-registering mechanism independently of the clock mechanism, substantially as described.

13. In a fare-register, the combination, with a clock mechanism, of a time-fare-registering mechanism, a stop for checking the movement of the clock mechanism, and a suitable actuating mechanism for imparting forward movement to the dial of said register mechanism independently of the clock mechanism, substantially as described.

14. In a fare-register, the combination, with a clock mechanism, of a time-fare-registering mechanism, a movable gear for throwing the said mechanisms into and out of connection, a stop for arresting the clock mechanism, and a pawl-and-ratchet wheel for imparting movement to the registering mechanism independently of the clock mechanism, substantially as described.

15. In a fare-register, the combination, with a clock mechanism, of a time-fare-registering mechanism operated thereby and a movable pinion for throwing said clock mechanism into engagement with the registering mechanism, substantially as described.

16. In a fare-register, the combination, with a clock mechanism and a time-fare-registering mechanism, of a movable gear-pinion for throwing said mechanism into and out of engagement and a lever for operating said gear-pinion, substantially as described.

17. In a fare-register, the combination, with a clock mechanism and a time-fare-registering mechanism, of two gear-wheels for connecting the clock mechanism and the time-fare-registering mechanism and a movable gear-pinion for throwing said gear-wheels into engagement, substantially as described.

18. In a fare-register, the combination, with a clock mechanism and a time-fare-registering mechanism, of intermediate gear mechanism comprising gear-wheels connected with said registering mechanism and with the clock mechanism, one of said gear-wheels being loosely mounted on a shaft of the clock mechanism, a driving-plate on said shaft adapted to engage with said gear-wheel, a movable gear-pinion for throwing said gear-wheels into engagement, and suitable means for imparting an independent movement to said loosely-mounted gear-wheel, substantially as described.

19. In a fare-register, the combination, with the time-fare-registering mechanism and the clock mechanism, of a gear-wheel loosely mounted on a shaft of said clock mechanism, a driving-plate for revolving said gear-wheel, a spring for imparting an independent revolution to said gear-wheel, and a movable pinion for connecting said gear-wheel with said registering mechanism, substantially as described.

20. In a fare-register, the combination, with the clock mechanism and the time-fare-registering mechanism, of gear-wheels for connecting said mechanisms, a movable pinion for throwing said gear-wheels into engagement, a lever for controlling the movement of said pinion, and a stop-plate connected with said lever for arresting the movement of the clock, substantially as described.

21. In a fare-register, the combination, with the clock mechanism and the time-fare-registering mechanism, of gear-wheels for connecting said mechanisms, a movable pinion for throwing said gear-wheels into engagement, a lever for operating said pinion, a ratchet-wheel connected with the dial of the registering mechanism, and a pawl connected with the lever and engaging with the teeth of said ratchet-wheel, substantially as described.

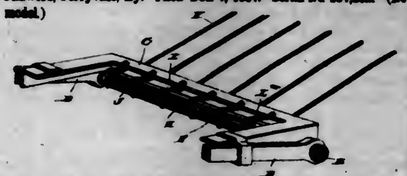
22. In a fare-register, the combination, with the clock mechanism and the time-fare-registering mechanism, of gear-wheels connected with said mechanisms, a movable pinion for throwing said gear-wheels into engagement, a lever for operating the movable pinion, a stop-plate connected with said lever for arresting the movement of the clock mechanism, the ratchet-wheel connected with the dial of the registering mechanism, a pawl connected with said lever and engaging with said ratchet-wheel, and a pawl for arresting the backward movement of said ratchet-wheel, substantially as described.

23. In a fare-register, the combination, with the clock mechanism and the time-fare-registering mechanism, of gear-wheels connected with said mechanisms, a movable pinion for throwing said gear-wheels into engagement, a lever for operating said movable pinion, a rocking plate for controlling the movement of said lever, and a shaft for operating said rocking plate, substantially as described.

24. In a fare-register, the combination, with the clock mechanism and the time-fare-registering mechanism, and suitable devices for throwing said mechanisms into engagement, of a dial for said registering mechanism comprising two disks, a ratchet-wheel for operating one of said disks independently of the other, and suitable mechanism for operating said ratchet-wheel, substantially as described.

25. In a fare-register, the combination, with the clock mechanism, of a time-fare-registering mechanism having a dial comprising two disks, one of said disks having a cam-plate connected therewith, and the other of said disks having a ratchet-wheel connected therewith, and a lever for transmitting movement from one of said disks to the other, said lever being provided with a stud for engagement with the cam-plate, and with a pawl for engagement with the ratchet-wheel, substantially as described.

388,009. BUNDLE-CARRIER FOR HARVESTERS. DAVID H. PREWITT, Perryville, Ky. Filed Dec. 7, 1887. Serial No. 257,222. (No model.)



Claim.—The combination of the cross-bar of the frame C, the supporting-arms D, the rock-shaft mounted in said arms below said frame and having a longitudinal recess and a series of vertical perforations in the base of the recess, means for rotating said shaft, and the carrying-bars having the vertical portions J at their inner ends passed through said vertical perforations in the recess of said shaft and playing freely therein, and the crank-arms L at the upper ends of the portions J, said crank-arms being turned to the rear of the vertical portions and pivoted to the cross-bar of the frame C, as set forth.

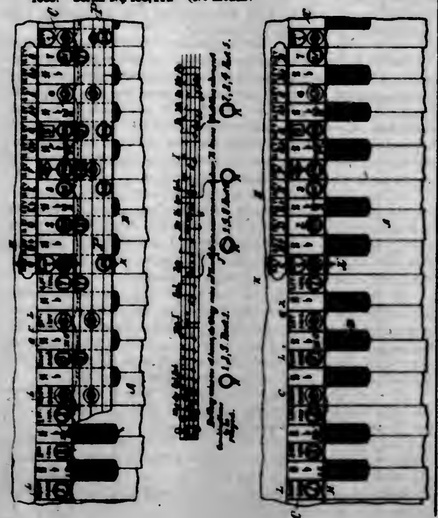
388,010. DEVICE FOR OPERATING CHURNS, WASHING-MACHINES, &c. JULIUS REEVES, Philadelphia, Pa. Filed May 19, 1887. Serial No. 238,713. (No model.)



Claim.—1. An improved mechanical motor, consisting of the swing A, having pivotal bar *a* and cross-rod *b*, the lever C, pivoted to said bar *a* and connected to said rod *b*, and having at its lower end the pin H, and the lever E, pivoted to the standard of the swing and having the slot G in its upper portion and an elbow with stirrups carrying the roller I, said parts being combined substantially as and for the purpose set forth.

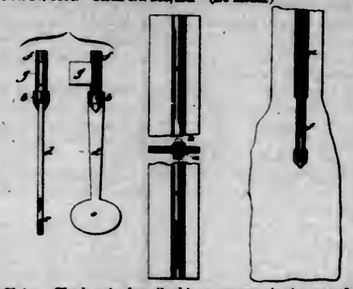
2. The standards B, having pivotal bar *a*, mechanism, substantially as described, adapted to rock on said cross-bar and carrying the cross-rod *b*, and a lever on said pivotal bar having means to actuate a second lever, the latter pivoted to the said standards and having an elbow carrying rollers, said parts being combined substantially as described.

388,011. MUSIC-CHART. GERRETT S. RICE, Chicago, Ill.; Sarah Rice administratrix of said Gerrett S. Rice, deceased. Filed Jan. 19, 1885. Serial No. 153,444. (No model.)



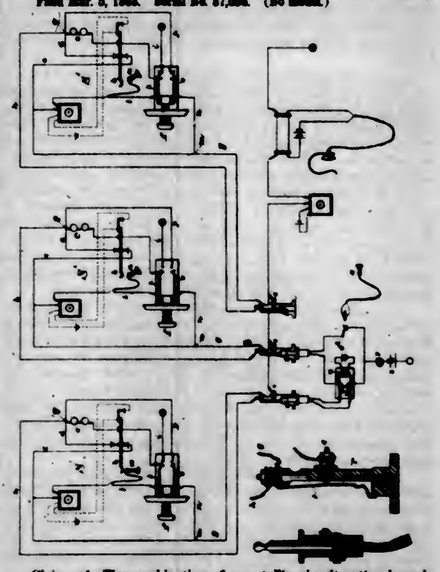
Claim.—A movable chart or indicator capable of being placed on the key-board of any instrument, provided with signs and symbols of different shapes and forms arranged in the manner described, to represent the respective harmonic families, and properly spaced, in combination with a key-indicator permanently attached thereto, all constructed and operating substantially as shown.

388,012. MANUFACTURE OF DOOR-KEYS. HENRY B. SARGENT, New Haven, Conn., assignor to Sargent & Company, same place. Filed Feb. 27, 1888. Serial No. 265,415. (No model.)



Claim.—The herein-described improvement in the manufacture of door-keys, consisting in, first, rolling a flat bar with a longitudinal rib, *a*, upon each side; second, flattening the said ribs into the plane of the adjacent portions of the bar, but leaving the shoulder portion *b* projecting from each side of the said flattened portion and the bit portion of the spindle reduced in diameter; third, cutting the blank from the said flat-shaped portion of the bar, substantially as described.

388,013. TELEPHONE-EXCHANGE SYSTEM. CHARLES H. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 5, 1883. Serial No. 87,254. (No model.)



Claim.—1. The combination of a metallic circuit with a branch circuit containing the operator's telephone and a switch included in the metallic circuit, whereby said metallic circuit may be connected to and disconnected from said branch circuit, substantially as specified.

2. A metallic circuit, in combination with a branch circuit to ground at the central office, including a telephone and a switch at the subscriber's station, whereby the telephone of said subscriber may be connected into a circuit branched from the metallic circuit to ground at the subscriber's station.

3. The united metallic circuits of two subscribers, in combination with a branch circuit to ground, including an annunciator and battery and switches, whereby either subscriber may ground the metallic circuit, and thereby close the battery and drop the annunciator, substantially as set forth.

4. The combination of a series of metallic circuits each extending from the central office to a different subscriber's station, and a branch line to ground at the central office, including the operator's telephone, and switches at the central office, one switch included in each metallic circuit, said switches normally connecting their respective metallic circuits with the said branch line.

5. A spring-jack consisting of the frame *r*, insulated point *s*, and the insulated spring or lever adapted to make contact with said frame and contact-point.

6. In a subscriber's telephone-outfit for metallic-circuit lines, the signal-bell and telephone, in combination with a branch circuit to ground, and switches and connections whereby the subscriber may bring the telephone and signal-bell alternately into and out of the line-circuit and may remove the telephone from the line-circuit and connect it into said branch circuit.

7. A loop-plug, in combination with a switching device, said switching device being adapted to receive said loop-plug and having three contact-pieces, said contact-pieces being electrically connected in the switching device when the plug is not in it and being electrically disconnected in the switching device when the plug is in it.

8. A loop-plug, in combination with a switching device, said switching device being adapted to receive said loop-plug and provided with three contact-pieces, two of which are line contact-pieces, said contact-pieces being in electric connection with the third contact-piece when the plug is not in the switching device and being electrically disconnected from said third contact-piece when the plug is in the switching device.

9. The combination of a loop-plug with a switching device adapted to receive said loop-plug, the switching device having two insulated line-connections and a third insulated connection, and one of said insulated line-connections being normally in electric contact with the other line-connection, and also with said third insulated connection, and being removed from electric contact with said line-connection and said third connection when the plug is inserted.

10. The combination of a loop-plug with a switching device, the loop-plug having two insulated connections, and the switching device having two insulated line-connections and a third insulated connection and adapted to receive the loop-plug, one of said line-connections being normally in electric contact with the other line-connection and with said third insulated connection when the plug is not inserted, and when the plug is inserted said line-connections being disconnected from each other and from said third insulated connection, and each connected with a corresponding insulated connection of the loop-plug.

11. In the central office of a telephone-exchange, two or more switching devices, each of which has two insulated contact-pieces connected to the two terminals of a metallic-circuit telephone-line, and a third insulated contact-piece connected with a ground-line common to said switches, and loop-plugs with flexible cords adapted to be placed in and removed from said switching devices, in combination with an operator's telephone in said ground-line, whereby when a loop-plug is inserted into any switching device the operator's telephone is disconnected from the line connected with said switching device, said operator's telephone being again automatically connected to said line when the plug is removed.

12. In the central office of a telephone-exchange, a loop-plug with a flexible cord and a switching device adapted to receive said plug, said switching device having two insulated contact-pieces connected to the two terminals of a metallic-circuit telephone-line, and also a third insulated contact-piece connected to a ground-line, said third contact-piece being electrically connected with the other contact-pieces when the plug is not in the switching device, and being electrically disconnected from said pieces when the plug is in the switching device, in combination with an operator's telephone in said ground-line, whereby when the plug is in the switching device the operator's telephone is disconnected from the line-terminals, and when the plug is not in the switching device the operator's telephone is in electrical connection with both of said line-terminals.

13. In the central office of a telephone-exchange, loop-plugs with two or more switching devices, each of which has two insulated line contact-pieces connected to the two terminals of a metallic-circuit telephone-line, and also each provided with a third insulated contact-piece, which pieces are respectively in electrical connection with said line contact-pieces when a loop-plug is not in the switching device, said third pieces being disconnected from said line contact-pieces when a loop-plug is in the switching device, and an operator's telephone in a ground-line connected to said third insulated contact-pieces, whereby when a loop-plug is in either switching device the operator's telephone is disconnected from both terminals of the line connected thereto, and when the loop-plug is not in the switching device the operator's telephone is connected to both terminals of said line.

14. A subscriber's telephone-circuit, said circuit extending from the central office to the subscriber's office and thence back to the central office, a telephone in said circuit at the subscriber's office, a switching device by which said telephone may be removed from said circuit and connected into a branch circuit, one end of which is connected to said subscriber's circuit and the other end of which is connected with the ground, in combination with a switching device and an operator's telephone at the central office, the operator's telephone being connected on one side to the ground and on the other side to the switching device, the switching device being connected to the two terminals of the subscriber's circuit, whereby the subscriber, by operating the switching device at his station, may bring his telephone into circuit with the operator's telephone, and whereby the operator, by operating the switching device at the central office, may disconnect the subscriber's circuit from his telephone and connect it with another subscriber's circuit.

15. The switching device, consisting of a frame provided with a plug-hole of considerable depth, a spring or lever, and a third contact-point, in combination with a loop-plug adapted to lift the spring or lever from the contact-point, and also at the same time from contact with the frame, whereby the lever and frame may be connected, respectively, to different contacts of the loop-plug, and when the plug is removed automatically connected to the third contact-point.

16. A metallic-circuit telephone-line terminating in the central office of an exchange, in combination with a branch line at the central office containing the operator's telephone, said branch line being grounded on one side of the telephone, and being normally connected on the other side of the telephone to both terminals of said telephone-line, and a switching device, whereby said branch line may be disconnected from the terminals of said telephone-line.

17. The combination of two or more metallic-circuit telephone-lines centering in the central office of a telephone-exchange, with a branch line at the central office containing the operator's telephone, said branch line being grounded on one side of the telephone, and normally connected on the other side of the telephone with all of said lines, and switching devices, whereby any of said telephone-lines may be disconnected from said branch line.

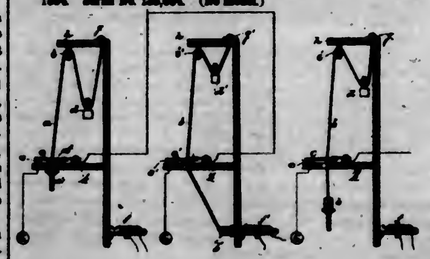
18. The combination of two or more metallic-circuit telephone-lines centering in the central office of a telephone-exchange, with a branch line at the central office containing the operator's telephone, said branch line being grounded on one side of the telephone, and normally connected on the other side of the telephone with all of said telephone-lines, and switching devices, whereby any of said telephone-lines may be disconnected from said branch line, and any two of said telephone-lines may be looped together in metallic circuit for conversation.

19. In a telephone-exchange system, a metallic-circuit telephone-line normally grounded at the central office through an operator's telephone, in combination with a switch at the subscriber's office, whereby the subscriber may, for conversation with the central office, establish a circuit which shall embrace the ground, his own and the operator's telephone, and part or all of said telephone-line.

20. In a telephone-exchange system, two or more metallic-circuit telephone-lines, all normally grounded at the central office through an operator's telephone, in combination with switches, one at each subscriber's office, whereby any subscriber may, for conversation with the central office, establish a ground-circuit which shall embrace his own and the operator's telephone and part or all of his telephone-line.

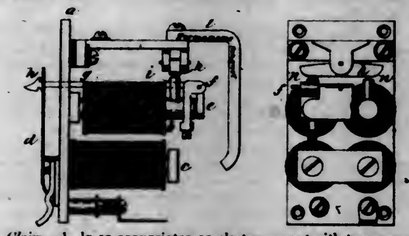
21. In a telephone-exchange, two or more metallic-circuit telephone-lines, all normally grounded at the central office through an operator's telephone, in combination with switches, one at each subscriber's station, whereby any subscriber may, for conversation with the central office, establish a ground-circuit which shall embrace his own and the operator's telephone and part or all of his telephone-line, and switching devices at the central office, one for each of said lines, whereby the operator may connect together any two of said lines for exchange communication.

388,014. SWITCH-BOARD. CHARLES H. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 16, 1884. Serial No. 135,594. (No model.)



Claim.—The combination, with the switch-board, of the cords attached to the lower side of the upper shelf toward the back, the weighted pulleys and the fixed pulleys, the lower shelf provided with openings for the cords, and the plugs below the lower shelf, whereby the cords are held taut and the weighted pulleys respectively carried out of the way of the weights and cords on either side as the plugs are drawn down or allowed to return to their position against the lower shelf, substantially as and for the purpose specified.

383,015. CLEARING-OUT ANNUNCIATOR. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Renewed Nov. 21, 1887. Serial No. 255,772. (No model.)



Claim.—1. In an annunciator, an electro-magnet with two armatures, one of said armatures being polarized, the other armature being neutral, in combination with an electro-magnet normally shunted out of circuit by the said polarized armature, and a shutter normally held by the armature-lever of neutral armature, said shutter being opposed to the poles of the normally-shunted magnet, whereby alternating currents traversing the annunciator will prevent the shutter from falling.

2. An electric annunciator provided with two armatures, one of said armatures being polarized and the other neutral, the neutral armature being extended and provided with a catch for holding up the annunciator-shutter, said shutter being connected with the armature of another electro-magnet, in combination with circuit-connections, whereby a straight current through the coils of the annunciator operates the neutral armature thereof to cause the shutter to fall, the coils of the magnet, of which the shutter serves as an armature, being shunted out by the polarized armature.

3. In an electric annunciator, the combination, with the neutral armature connected with the double detent, of the shutter normally supported thereby, said shutter being of iron and placed so as to be acted upon by an electro-magnet, *c*, the polarized armature of the annunciator, and circuit-connections, whereby a straight current sent through the electro-magnet of the annunciator is shunted from electro-magnet *c*, while the double detent is operated to permit the shutter to fall, substantially as described.

4. An electric annunciator consisting of an electro-magnet and two armatures, one of which is polarized and the other neutral, the neutral armature being connected with a double detent which serves to retain an iron shutter, in combination with an electro-magnet, *c*, presented to said shutter, and circuit-connections, whereby current of one polarity causes the detent to vibrate and release the shutter, magnet *c* being at the time shunted out by the polarized armature.

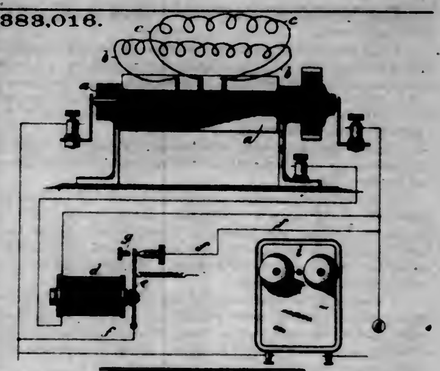
5. The combination, with an electro-magnet normally shunted out of circuit by the polarized armature of the electro-magnet of an annunciator, of the neutral armature of said electric annunciator extended to form a double detent, the iron shutter supported thereby, said shutter being presented to the poles of the normally-shunted electro-magnet, whereby the shutter is retained in position or allowed to fall, according as current of one polarity or current in reversals is sent through the annunciator.

383,016. AUTOMATIC SHUNT FOR MAGNETO-GENERATORS. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 3, 1885. Serial No. 184,561. (No model.)

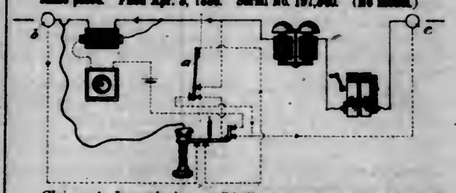
Claim.—1. The combination, with a dynamo or magneto electric machine, of a shunt-circuit around the machine, an extra coil upon the armature, an electro-magnet included in the circuit of said extra coil, and the armature-lever of said electro-magnet included in the shunt-circuit, whereby the shunt-circuit is held open and current sent to line when the machine is in operation.

2. In a dynamo or magneto electric machine, the revolving armature provided with two coils wound thereon, one of said coils being included in the main circuit and the other coil including an electro-magnet, and a shunt-wire around the machine including the armature of said electro-magnet, said shunt-wire being closed when the armature is at rest, but open when the armature is revolved to energize the electro-magnet, substantially as described.

383,016.



383,017. TEST-CIRCUIT FOR TELEPHONE CALL-BOXES. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 5, 1886. Serial No. 197,940. (No model.)



Claim.—1. In a telephone call-bell apparatus, a test key or switch normally connected in circuit between the telephone-switch and the telephone-line, a contact-point opposed to said test key or switch, with which the test-key may be connected, while at the same time the branch between the telephone switch and line is broken, and circuits connected with the generator and bell, whereby different parts of the box may be tested on disconnecting the line from the binding-post, substantially as and for the purpose specified.

2. In a telephone-call apparatus, the combination, with the telephone-switch and shunt-circuits, as described, of a circuit-changing device normally included in a branch circuit between the line and telephone-switch, and a contact-point against which said circuit-changing device may be closed to form a test-circuit and open the said branch circuit, thereby changing the circuits of the apparatus for testing, substantially as and for the purpose specified.

3. In a telephone call and signal apparatus, the combination, with the binding-posts *b c*, each disconnected from the lines leading out of the bell, the telephone-switch, the circuit-changing device *a*, and the generator and circuits, whereby the different parts of the apparatus may be tested, substantially as described.

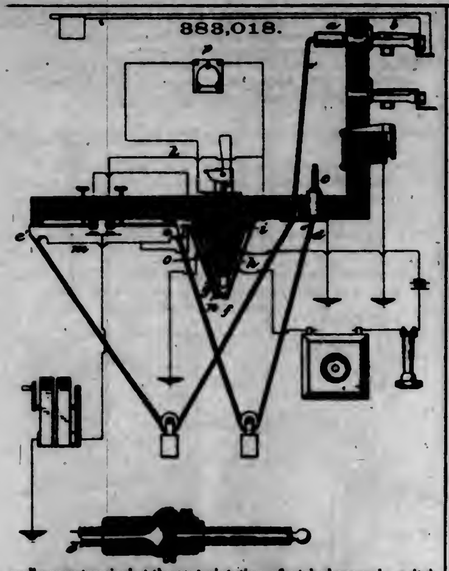
383,018. KEY-BOARD APPARATUS FOR TELEPHONE-EXCHANGES. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Renewed Nov. 21, 1887. Serial No. 255,772. (No model.)

Claim.—1. In a key-board system, the combination of double-pointed plugs connected together by double-stranded cords, the tips of the plugs being connected by one strand and the insulated sleeves by the other strand of the cord, ground-contact upon the hook of each plug, said ground-contact being permanently connected with the tip, a listening-key included in the circuit of the strand, connecting the tips of the plugs, and a ground-switch operated by said listening-key, connected with the strand included between the sleeves of said plug, whereby the operator's telephone outfit may be included in one of the strands of the cord and the other strand simultaneously grounded, substantially as shown and described.

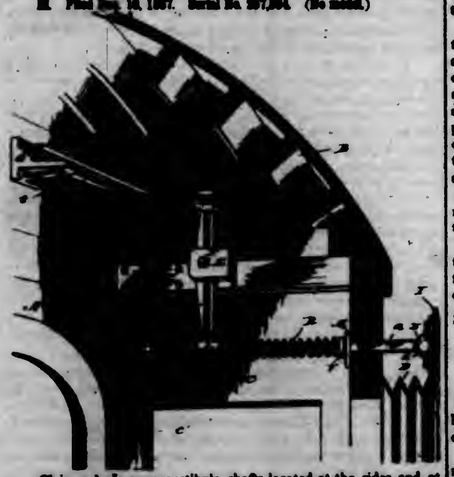
2. A metallic circuit extending from the spring of a spring-jack switch at a telephone-exchange station out through a subscriber's station and back to the insulated frame of said switch, in combination with a loop-plug inserted in said switch, a double-stranded cord connecting with said loop-switch, the strand connecting with the tip of the plug being normally grounded and the other strand being normally open, a telephone, and a switching device, whereby the telephone may be looped into the strand connecting with the tip, while the other strand which connects with the sleeve is grounded to complete a metallic circuit through the said telephone and the subscriber's station.

3. The combination, with a metallic circuit extending from ground at the central office through a subscriber's station and back to a normally-open terminal at the central station, of a telephone and a switching device, said switching device having contacts connecting with the said telephone, and a ground-contact, whereby the telephone may be looped into the grounded side of said metallic circuit, and the normally-open side of said circuit simultaneously closed to ground to complete the circuit from the normal ground at the subscriber's station through the metallic circuit and back to the ground last formed at the central station.

383,018.



383,019. REGISTER FOR CAR-VESTIBULES. ERNST H. SAMMIS, Pullman, assignor to the Pullman's Palace Car Company, Chicago, Ill. Filed Nov. 10, 1887. Serial No. 257,504. (No model.)



Claim.—1. In a car-vestibule, shafts located at the sides and at the upper portion of the vestibule, adapted to longitudinal movement, their front or outer ends bearing against the abutting-plates of the flexible vestibule portion, and their rear or inner ends being connected by a lever or system of levers with buffer-springs interposed between said levers and shaft so as a resistance to the inward movement of the latter.

2. In a car-vestibule, shafts located at the sides of the vestibule, adapted for longitudinal movement, having at their inner or rear ends lever attachments connecting one shaft with the other, and being provided with spherical outer ends, a spring interposed between the shaft and lever as a resisting medium for said shaft, in combination with the abutting-plate of a flexible vestibule, said plate being provided with sockets adapted in conjunction with the spherical shaft ends to form ball-and-socket joints.

3. In a car-vestibule, shafts at each side of the upper portion of the vestibule bearing against the abutting-plate of a flexible connection, and having connected therewith springs affording yielding resistance to inward movement thereof, in combination with a system of equalizing-levers, consisting of vertical bars at the sides and a horizontal equalizing-bar attached to the end of the car, to which said vertical bars are pivotally or flexibly attached.

4. In a car-vestibule, the shafts *a* and abutting-plate I, provided with ball-and-socket joints K L at their bearing, one with the other, in combination with springs R, vertical levers F, and horizontal lever H, substantially as and for the purpose set forth.

5. In a car-vestibule, the combination of the flexible vestibule portion D, shafts *a*, springs R, vertical levers F, and horizontal lever H, substantially as and for the purpose set forth.

383,020. TRITURATOR. LOUIS SEIBMAN, Milwaukee, Wis. Filed Jan. 11, 1887. Serial No. 223,902. (No model.)



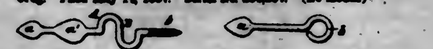
Claim.—1. The combination, in a triturating-machine, of a revolving mortar, a spider, a series of stationary division-plates suspended therefrom within the mortar, a series of independent stemless pestles, and a series of stationary separating-plates adjacent to the inner side surface of the mortar and extending only part way across the space between each two of the described stationary division-plates.

2. The combination, in a triturating-machine, of a revolving mortar, a housing surrounding the same, a spider above the mortar and secured to the upper platform of the housing, a series of stationary division-plates secured to and depending from the spider within the mortar and meeting at the center thereof, a series of independent stemless pestles located within the spaces between the said division-plates, a series of arms hinged to the housing-platform and projecting over the mortar, and a series of stationary separating-plates secured to said arms and suspended within the mortar adjacent to its inner side surface.

3. The combination, with a revolving mortar, of a series of triturating-disks or stemless pestles, flattened at the bottom, loosely resting thereon.

4. The combination, in a triturating-machine, of a revolving mortar, a series of stationary division-plates suspended within the same, free from contact with said mortar or its shaft, and a series of flattened circular triturating-disks loosely resting in said mortar.

383,021. BUTTON-HOLE OPENER. JOHN B. SEEVERS, Portland, Oreg. Filed May 14, 1887. Serial No. 238,097. (No model.)



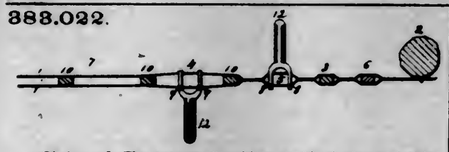
Claim.—1. As a new article of manufacture, the button-hole opener having a pointed conical head rounded at its base, and a shank or handle, substantially as shown and described.

2. A device for opening button-holes, consisting, essentially, of a rod having tapering heads of different sizes at one end thereof, and a handle, substantially as set forth.

3. As a new article of manufacture, a device for opening button-holes, consisting, essentially, of a rod having an oval-shaped head at one end and screw-threaded at its opposite end, the screw-threaded end and head being in a plane passing longitudinally through the rod, the said rod being bent at a point between the head and screw to form a handle, substantially as set forth.

383,022. PROCESS OF MAKING COMBINED WIRE AND PICKET FENCES. WILLIAM X. SEWELL, Washington, D. C. Filed Aug. 26, 1885. Serial No. 211,257. (No model.)

383,022.



Claim.—1. The process of making combined wire and picket fence, which consists in first securing one or more pairs of wires upon supports; secondly, placing a series of pickets between the two wires of each pair, and, thirdly, twisting loops in the pairs of wires between the pickets so placed and placing other pickets in the said loops, substantially as shown and described.

2. The process of making combined wire and picket fence, which consists in first placing two or more pickets between one or more pairs of wires; secondly, twisting the two wires of each pair together in two places at the same time, forming loops between the said pickets, and then placing other pickets in the loops named, substantially as shown and described.

383,023. HOLLOW VESSEL AND METHOD OF MAKING THE SAME. THOMAS F. STEVENSON, Brooklyn, N. Y. Filed May 28, 1887. Serial No. 239,634. (No model.)



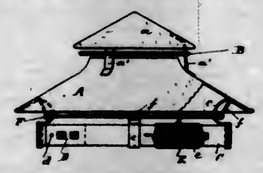
Claim.—1. The method herein specified of making hollow metallic vessels, consisting in casting a hollow blank with cylindrical sides that are thicker than the end, and then reducing the thickness of the sides of the vessel and extending the same in length, substantially as set forth.

2. A hollow metallic vessel having a head or end of metal that is consolidated by hammering, and sides that are of wrought metal, substantially as set forth.

3. The method herein specified of making hollow metallic vessels, consisting in casting a hollow blank, subjecting the end portion to a hammering or forging operation to consolidate the metal, and heating and rolling the metal to reduce the thickness of the sides and to elongate the cylindrical portion, substantially as set forth.

4. The hollow metallic vessel having a cast-metal end, with a base or foot thereon, and with wrought-metal sides, the end, the sides, and the foot or support being integral without seam or joint, substantially as set forth.

383,024. MILK-CAN COVER. FREDERICK STORK, Kewaskum, Wis. Filed Feb. 21, 1888. Serial No. 264,800. (No model.)



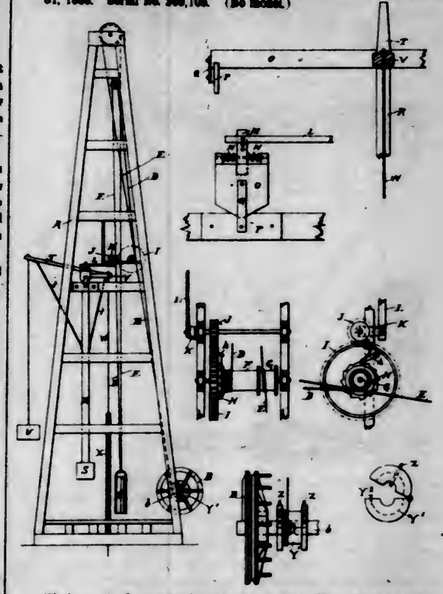
Claim.—1. The combination, with the cover, of the rim united thereto by elastic supports and provided with a series of holes, and the bolts for securing the rim when adjusted to the desired size, substantially as set forth.

2. The combination, with a cover, of a rim secured thereto by elastic supports, a spring joining the ends of the rim, and a guard-ring secured below the cover in the ventilating-space between it and the rim, substantially as and for the purpose set forth.

3. The combination, with a cover, of a rim united thereto by elastic supports, and a spring joining the ends of the rim and causing it to fit tightly on the can.

4. The combination, with a cover provided with a top portion secured to it by supports, leaving a ventilating-space between the two parts, a rim secured to the under side of the cover by elastic supports, and also leaving a ventilating-space around the cover, a spring joining the ends of the rim, and guard-rings secured in the middle of the said ventilating-spaces, substantially as and for the purpose set forth.

383,025. APPARATUS FOR OPERATING OIL-WELL PUMPS. OSMERAN C. STOVER, Bradford, Pa. Filed Apr. 12, 1888. Renewed Mar. 31, 1888. Serial No. 269,103. (No model.)



Claim.—1. In a pumping-rig, the combination of a supporting-frame, a rocking beam pivoted in the frame and provided with a counter-balance to the weight of the pump-rod, a vibrating pendulum secured to the said beam, a heavy descending weight and intermediate winding-gear for keeping up the vibrations of the pendulum, and a spring-connection interposed between the said gear and the rocking beam, substantially as and for the purpose set forth.
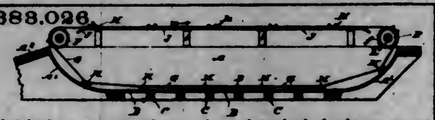
2. In a pumping-rig, the combination of a supporting-frame, a rocking beam pivoted in the frame, a vibrating pendulum secured to the beam, a descending weight provided with a cord, a revolving barrel for the cord, intermediate winding-gear provided with a ratchet and pawl and connecting the barrel with the rocking beam, and a revoluble bull-wheel connected to one end of the said cord for winding the other end of the cord upon the barrel, substantially as and for the purpose set forth.

3. In a pumping-rig, the combination of a supporting-frame, a rocking beam pivoted in the frame, a vibrating pendulum secured to the beam, a descending weight provided with a cord, the barrels F and G, having the ends of the said cord wound around them, as set forth, intermediate winding-gear provided with a ratchet and pawl and connecting the barrels with the rocking beam, the bull-wheel mounted upon a revoluble shaft, a sleeve having the end of the cord passing around barrel G secured to it, and a retractible pin for connecting the sleeve to the shaft, substantially as and for the purpose set forth.

383,026. SCREEN-SCRAPER FOR PULP OR PAPER MILLS. MARTIN V. STREETER, Franklin Falls, N. H. Filed June 20, 1887. Serial No. 242,449. (No model.)

Claim.—1. The combination of a screen, a shaft carrying sprocket-wheels mounted on top at one end thereof, two or more slack chains, suitable scrapers arranged at regular intervals and carried thereon, and suitable slide-ways for carrying the upper scrapers at a uniform

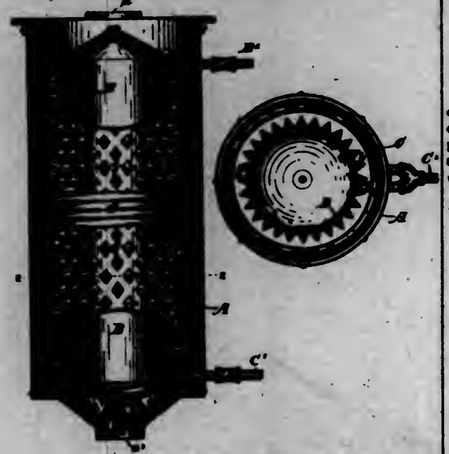
383,026.



height from one to another set of sprocket-wheels, for the purpose set forth.

2. The combination of a screen having inclined ends, a shaft and sprocket or rag wheels mounted on top near each end, two or more slack chains, suitable scrapers channeled on one side and arranged at regular intervals and carried thereon, and suitable slideways for carrying the upper scrapers at a uniform height from end to end of said screen, substantially for the purpose described.

383,027. GRAIN-HEATER. JAMES WARBURTON, Indianapolis, Ind., assignor to the Perfyrio & Harman Company, same place. Filed May 31, 1887. Serial No. 239,769. (No model.)



Claim.—1. In a grain-heater, the combination, with its other parts, of an internal cylinder provided with the pointed external projections, *b*.

2. In a grain-heater, the combination, with its other parts, of an internal cylinder provided with diamond-shaped projections which extend out nearly to the surrounding portion of the structure.

3. In a grain-heater, the combination, with its other parts, of an internal cylinder which is provided with projections arranged in diagonal rows, whereby the grain is given an irregular course through the heater.

4. The combination of the outer casing, A, inner cylinder, B, provided with the projections *b*, arranged in diagonal rows, the surrounding pipe-coil C, and the hopper A', all arranged and operating substantially as set forth.

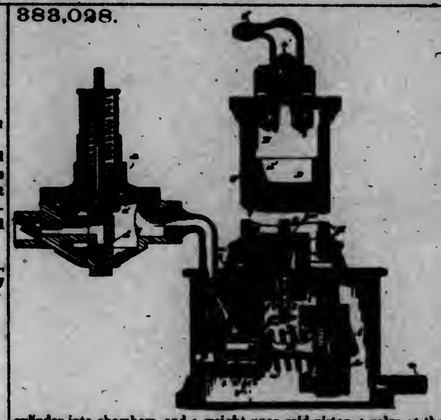
383,028. HYDRAULIC AIR-PUMP. EDWARD H. WEATHERHEAD, Cleveland, Ohio. Filed Apr. 7, 1887. Serial No. 234,078. (No model.)

Claim.—1. In a hydraulic air-pump, a main cylinder closed throughout its length and having air inlets and outlets at one end and water inlets and outlets at the other end, a piston in said cylinder by which the air and water are separated, and a counter pressing device as a spring or weight, within the cylinder to bear the piston down and expel the water from the cylinder, in combination with a valve located in the water-inlet channel leading to said cylinder, and a separate piston to operate said valve having a water-channel communicating with the source of water-supply and operated by the pressure of the same substantially as set forth.

2. In a hydraulic air-pump, a main cylinder provided with a piston and a pressure device, as a spring or weight, bearing upon said piston and confined within the cylinder, to force the piston back toward the starting-point and expel the water from the cylinder, in combination with a main valve in the water-supply channel, and a separate piston to actuate said valve, having a channel connecting with the source of water-supply behind the main valve therein, by which said piston and valve are operated when the main valve is closed, substantially as set forth.

3. In a hydraulic air-pump, a main cylinder having air and water passages at its respective ends, a close-fitting piston separating the

383,028.



cylinder into chambers, and a weight upon said piston, a valve at the end of the cylinder, and a connecting-piece between the valve and the piston, in combination with a valve in the water-supply channel, and a separate piston provided with water-pressure for controlling the said valve, substantially as set forth.

383,029. LIFTING-JACK. JAMES WEATHERS, Indianapolis, Ind. Filed Mar. 8, 1888. Serial No. 266,886. (No model.)



Claim.—1. In a lifting-jack, the combination of the standard, the rack-bar, the hand-lever swung by links, and its bar *i*, adapted to engage with the teeth of said rack-bar, a gravitating-pawl, the upper and lower primary guides, and an auxiliary guide, D, secured to the arms of the lower primary guide, substantially as described.

2. The combination, with the auxiliary guide D, provided with lifting-toes, of the standard B, a rack-bar, C, guided vertically and connected to the said guide D, and an operating-lever, substantially as described.

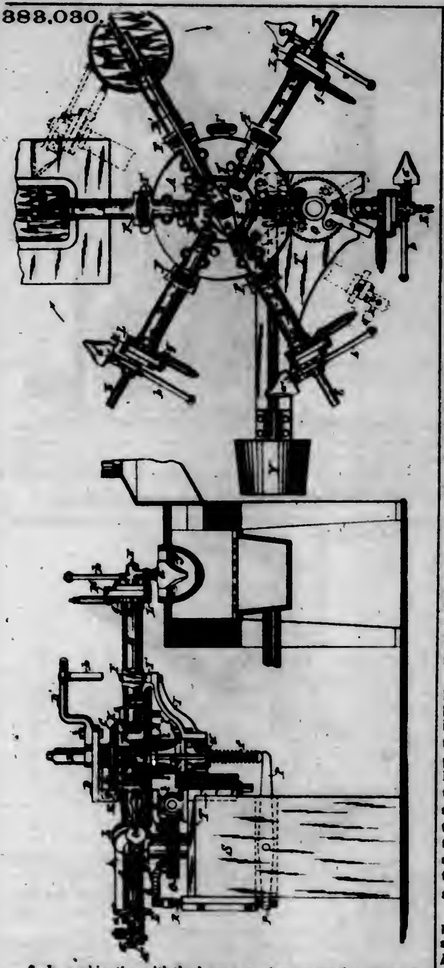
3. The combination, with the rack-bar and standard of a lifting-jack, of an auxiliary guide-bar secured to the lower primary guide and provided with lifting-toes above and below this guide, substantially as described.

4. The combination, in a lifting-jack, of the base A, the standard rising perpendicularly therefrom, the vertically-movable rack-bar having hooked teeth, the upper and lower primary guides, the auxiliary guide provided with lifting-toes at and between its extremities and rigidly secured to the lower primary guide, the bifurcated hand-lever swung from the upper primary guide by links and provided with a transverse lifting-bar, *i*, adapted to engage with the teeth of the rack-bar, and a gravitating angular pawl pivoted to the upper primary guide and adapted to be tripped by the said lifting-bar on the bifurcated end of the hand-lever, all substantially as described.

383,030. MACHINE FOR HEATING AND HARDENING METAL ARTICLES. HARVEY WHITE, Syracuse, N. Y., assignor to the Whitman & Barnes Manufacturing Company of Ohio. Filed June 6, 1887. Serial No. 240,602. (No model.)

Claim.—1. In combination with the heater, carriers mounted on a rotatory support and with their free ends in a path across the heater, holders or tongs connected to said carriers, and a tripper arranged in the path of the heater to automatically throw the heated articles from the holders, as set forth.

388,080.



2. In combination with the heater, carriers mounted on a rotatory support and with their free ends in a path across the heater, tongs connected to said carriers, spring holding the tongs normally closed, and a tripper in the path of the heater to automatically open said tongs, as set forth.

3. In combination with the heater, a series of arms carried on a rotatory support and arranged with their free ends in a path across the heater, shafts journaled longitudinally in said arms, pinions secured to said shafts, segmental racks adapted to mesh with said pinions, and holders or tongs secured to said shafts, substantially as and for the purpose set forth.

4. In combination with the heater, a series of arms carried on a rotatory support and with their free ends in a path across the heater, a corresponding series of projections on said support, a rotary cam arranged to successively engage said projections, and holders carried on the free ends of the said arms and adapted to carry the articles to be heated, substantially as set forth.

5. The combination of a series of arms extended from a rotatory support, a corresponding series of projections on said support, a rotary cam arranged to successively engage said projections, shafts journaled longitudinally on the aforesaid arms, holders or tongs connected to the outer ends of the said shafts, pinions secured to the inner end portions of the shafts, and two sets of segmental racks arranged to engage the pinions at diametrically-opposite points thereof, and the racks of each set situated at different points in a circle concentric with the pivoted support of the aforesaid arms, substantially as described and shown.

6. In combination with the arms extended from a rotatory support, and the normally-closed tongs having one of their respective jaws hooked on the free ends of said arms and the companion jaws hinged to the fixed jaws and provided with tripping-shanks, and an arm sustained across the path of the said tripping-shanks and by their encounter open the tongs, substantially as set forth.

7. The combination of the turn-table A, the arms B B, projecting therefrom and provided with the lugs *c c*, the jaws *a a*, hooked on the free ends of said arms, the jaws *a' a'*, provided with the shanks *b b*, the plate C, arranged stationary above the turn-table, the arm D, supported movably vertically and pivoted above the plate C and adapted to engage the lug *c*, the spring *d*, secured to the aforesaid plate and arranged to actuate the arm D, the arm D', extended from the arm D and reaching with its free end across the path of the shanks *b b*, and a lifter adapted to lift the arm D clear from the lug *c*, substantially as and for the purpose set forth.

8. In combination with the frame H, the turn-table A, the arms B B, projecting therefrom and provided with the lugs *c c*, the shafts E E, journaled longitudinally in said arms and having affixed to them the pinions F F, the brackets I, having affixed to them the segmental racks I', adapted to engage the under side of the pinion F, the stationary plate C, having affixed to it the segmental racks K, adapted to engage the upper side of the other of the aforesaid pinions, the jaws *a a*, rigidly attached to the outer ends of the shafts E E, the jaws *a' a'*, hinged to the said fixed jaws and provided with the shanks *b b*, the springs *c c*, holding the jaws normally closed, the pivoted arm D, supported movably vertically and adapted to engage the lugs *c c*, the spring *d*, arranged to actuate the arm D, the arm D', extended from the arm D and reaching with its free end across the path of the shanks *b b*, and the plunger *f*, adapted to lift the arm D, substantially as and for the purpose set forth.

9. The combination of the arm B, carried on a rotatory support, the shaft E, provided with the pinion F F, the segmental racks I and K, adapted to engage said pinions, respectively, at opposite sides, the locking-plate L, rigidly attached to the arm E, the plate M, fixed to the shaft E, and the dog *g*, connected to the latter plate and adapted to engage the locking-plate at different points of the circumference thereof, substantially as described and shown, for the purpose set forth.

10. In combination with the arms B B, carried on a rotatory support and provided with lugs *c c*, the shafts E E, provided with the pinions F F, the segmental racks I and K, adapted to engage said pinions, respectively, at opposite sides, the jaws *a a*, fixed to said shafts, the jaws *a' a'*, hinged and provided with the shanks *b b*, the locking-plates L L, rigid on the arms B B, the plates M M, fixed to the shafts E E, the dogs *g g*, connected to the latter plates and adapted to engage the locking-plates, the stationary plate C, the arm D, pivoted above said plate and movable vertically and adapted to engage the lugs *c c*, the spring *d*, arranged to actuate the arm D, the arm D', extended from the aforesaid arm and having its free end in the path of the shanks *b b*, and the plunger *f*, adapted to lift the arm D and throw the same out of engagement with the lug *c*, substantially as described and shown.

11. In combination with the arms B B, carried on a rotatory support, and the jaws *a a'*, carried by said arms and provided with the shanks *b b*, the spring-actuated pivoted arm D, provided with the slot *h*, the arm D', provided on the arm D, and the clamping-bolt *i*, passing through the arm D' and slot *h* and adjustably securing the two arms to each other, as described and shown.

12. The combination of the tubular shaft *n*, turn-table A, provided with the projections *l l*, arms B B, extended from said turn-table and provided with lugs *c c*, tongs *a a' b*, carried by said arms, the plunger *f*, extending longitudinally through the shaft *n*, the sleeve N, riding on the upper end of said plunger and having rigidly secured to it the arm D, adapted to engage the lugs *c c*, the arm D', extended from the arm D and adapted to trip the tongs, the wheel O, having affixed to it the cams *o o*, the pivoted lever P, having one end under the plunger *f*, and the push-bar R, riding on the opposite end of said lever and arranged in the path of the cams *o o*, to be actuated thereby, substantially as described and shown.

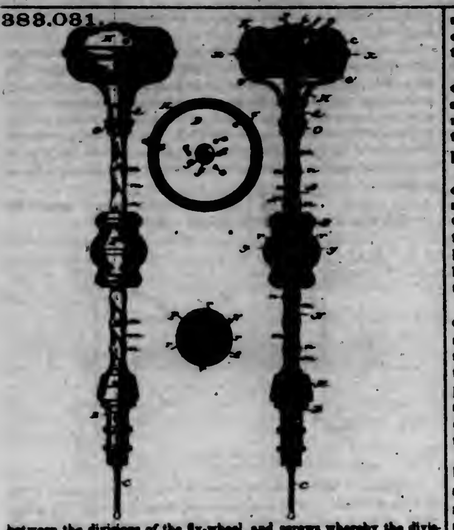
388,081. DRILL-STOCK. ANDREW ALLISON, New York, N. Y. Filed Oct. 31, 1887. Serial No. 253,978. (No model.)

Claim.—1. The combination of the spindle, the shell or handle fitted upon one end thereof and furnishing a pivotal bearing for said end, a socket-piece secured upon the opposite end of the spindle, an interposed spirally-grooved sleeve encircling the spindle loosely and having a limited longitudinal play thereon between the socket-piece and handle, a nut fitted upon the sleeve to engage its spiral grooves, and a clutch formed between the proximate ends of the sleeve and socket-piece, substantially in the manner and for the purpose herein set forth.

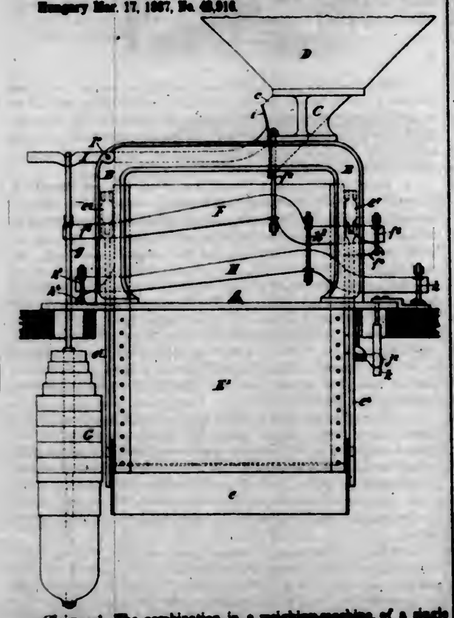
2. The combination of the spindle, the divided fly-wheel, a pin fixed radially in the spindle to project therefrom into a circular recess between the divisions of the fly-wheel, and screws whereby the divisions are clamped upon the pin, substantially in the manner and for the purpose herein set forth.

3. The combination of the drill-spindle, the fly-wheel attached to the end thereof, and a shell or handle inclosing the fly-wheel and furnishing an end bearing for the spindle, substantially in the manner and for the purpose herein set forth.

388,081.



388,082. APPARATUS FOR WINNOWING GRAIN. WILLIAM R. AVERY, Digbeth, Birmingham, County of Warwick, England. Filed Nov. 11, 1886. Serial No. 218,691. (No model.) Patented in England May 1, 1886, No. 5,931; in France Oct. 2, 1886, No. 176,886; in Belgium Oct. 14, 1886, No. 74,290; in Germany Oct. 16, 1886, No. 39,008; in Spain Jan. 17, 1887, No. 6,997; in Italy Jan. 28, 1887, No. 169, and in Austria-Hungary Mar. 17, 1887, No. 43,916.



Claim.—1. The combination, in a weighing-machine, of a single hopper receptacle for containing the substance to be weighed, and two sets of weighing-levers connected together and both surrounding the said box or receptacle, each set being connected with the said box or receptacle independently of the other, and one being connected with one side of said box or receptacle and the other with the opposite side thereof, substantially as herein described.

2. The combination, in a weighing-machine, of a single box or receptacle for containing the substance to be weighed, and two connected sets of weighing-levers surrounding the box one above another and connected with the box or receptacle independently of each other above the center of gravity thereof, one on one side and the other on the opposite side thereof, substantially as herein described.

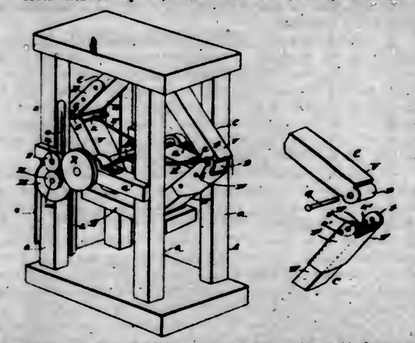
3. The combination, with the box or receptacle E E', of the pair of levers F and their connections *f*, the pair of levers H and their connections *h'*, the said levers and their connections surrounding the box or receptacle, one pair above the other, the fixed fulcra f^3 and *h* for the two pairs of levers, the independent connections f^5 f^6 and h^2 h^3 between the respective pairs of levers and the opposite sides of the box or receptacle, and the counterbalance-weight G, suspended from the levers F, all substantially as herein described.

4. The combination, with the box or receptacle E E', having two compartments and the tilting bottoms *e e'*, of the rock-shaft e^2 and its attached rock-levers e^3 e^4 and notched quadrant-plate e^{10}, the connections e^5 e^6 between said rock-levers and tilting bottoms, the bolt *j*, attached to the box, for engaging with the notches of the quadrant-plate, the weighted lever for holding up the said bolt, and the fixed stirrup *k*, for operating on said weighted lever to produce the withdrawal of the bolt from the notches of the quadrant-plate, all substantially as herein described.

5. The combination, with the weighing-receptacle, of an arresting-bolt, a tripping-connection, substantially as herein described, between said bolt and receptacle, for producing the arrest of the descent of the receptacle by the bolt, and means, substantially as herein described, for automatically withdrawing the bolt to liberate the receptacle, as and for the purpose herein set forth.

6. The combination, with the weighing-beam or weighing-receptacle, of the sliding stop-bolt *l*, the lever *m*, having a connection, substantially as herein described, with the beam or receptacle, and a trip-connection, m^2, with the bolt, the weighted cord *n'*, attached to the bolt, the pulley *o* for said cord, the fly *q'*, and the ratchet-wheel *s'*, pawl *p'*, and spur-gearing *p q* between the pulley and fly, all substantially as and for the purpose herein set forth.

388,083. BALING-PRESS. JOHN H. BARNES, Hilsboro, Tex., assignor of one-half to James Wright Gillespie, same place. Filed Mar. 3, 1887. Renewed Apr. 16, 1888. Serial No. 270,891. (No model.)



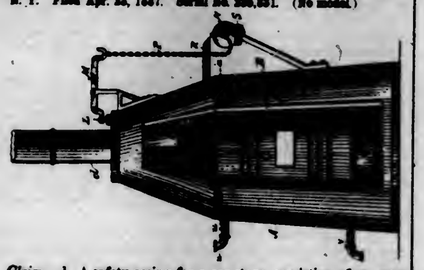
Claim.—1. In a baling-press, the frame A, drum A', the power-ropes K K K', to be wound thereon, and the platen B, combined with the levers C, having rounded upper and lower ends to operate in rounded sockets in the said platen and the upper part of the frame, and the toggle-joints near the centers of the said levers, comprising the rounded projection on one of the members adapted to fit a corresponding cavity or recess in the adjacent end of the other member, the lateral ears *f*, and the pin to pass through said ears and the rounded projection, substantially as and for the purpose set forth.

2. In a baling-press, the combination of the frame A, horizontal drum A', power-ropes K K', platen B, levers C, having toggle-joints near the center, comprising a rounded projection on the end of one member and a corresponding socket on the other, ears *f*, pivot-pin passing through the said projection and the ears, and the loop or link *k*, secured in the inner edges of the said ears, and having the ends of the power-ropes K secured thereto, substantially as and for the purpose set forth.

3. In combination with a baling-press having a platen to be operated by a revolving drum adapted to be rotated alternately in opposite directions, the hand-wheel M, operated by steam or other power through the band or belt L, the friction-wheel N, shaft *m*, on which

the wheels M and N are rigidly secured, the lever O, pivoted on the pin *o*, secured to the frame of the press or a similar support, the friction-wheel P, journaled on a shaft, *n*, said shafts *m* and *n* being journaled in bearings in the lever O, respectively below and above and at equal distances from the said pivot *o*, so that the peripheral edges of the said pulleys are in contact, and the friction-pulley R on the end of the drum A', and adapted to be rotated in opposite directions as the pulleys N and P are alternately brought in contact therewith by moving the lever O, substantially as described, for the purpose hereinbefore set forth.

383,034. SAFETY-CASING FOR CAR-HEATERS. ALONZO BELL, Washington, D. C., assignor of one-half to Baker, Smith & Co., New York, N. Y. Filed Apr. 23, 1887. Serial No. 236,031. (No model.)



Claim.—1. A safety-casing for a car-stove, consisting of an outer casing open at the side to expose the fuel, draft, and ash openings of the stove, in combination with a sliding plate having a horizontal movement for closing said opening in said outer casing, a spring connected with said sliding plate for closing the same, and a detent for holding the sliding plate in an open position against the tension of the spring, substantially as set forth and described.

2. A safety-casing for a car-stove, consisting of an outer casing open at the side to expose the fuel, draft, and ash openings of the stove and provided with an opening for the passage of smoke, in combination with a sliding plate having a horizontal movement for closing said openings in said outer casing, a spring connected with said sliding plate for closing the same, a detent for holding the sliding plate in an open position against the tension of the spring, and a tripping device for releasing said detent in case of an accident to the car, substantially as set forth and described.

3. A safety-casing for a car-stove, consisting of an outer casing open at the side to expose the fuel, draft, and ash openings of the stove, in combination with a sliding plate adapted to cover said openings, a spring connected with said plate for closing the same, catch L, for holding the slide in an open position against the tension of the spring, lever M, for tripping said catch, chain or rope P, attached to said lever, ball N, secured to said chain, and concave seat S, for seating said ball, substantially as set forth and described.

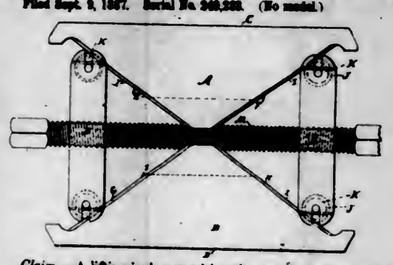
4. A safety-casing for a car-stove, consisting of an outer casing open at the side to expose the fuel, draft, and ash openings of the stove, in combination with a sliding plate adapted to cover said openings, spring K, for actuating said sliding plate, spring-catch L, for holding said plate in an open position against the tension of the spring, lever M, for tripping said catch, chain or rope P, attached to said lever, ball N, secured to said chain or rope, concave seat S, for seating said ball, and guide-rail R, for limiting the swing of the ball when unseated, substantially as set forth and described.

5. A safety-casing for a car-stove, consisting of an outer casing open at the side to expose the fuel, draft, and ash openings of the stove, in combination with a sliding plate having a horizontal movement for closing said opening in said outer casing, spring K, connected with said sliding plate for closing the same, catch L, for holding the sliding plate in an open position against the tension of the spring, and stationary platform D, supported by center standard, O, for elevating the stove above the bottom plate of the outer casing, so as to afford a free movement to said spring, substantially as set forth and described.

6. A safety-casing for a car-stove, consisting of an outer casing open at the side to expose the fuel, draft, and ash openings of the stove and provided with openings in its top plate for the passage of smoke, said openings surrounded with a collar for connection with the outer smoke-pipe of the stove, in combination with an inner sliding portion adapted to cover said openings in the outer casing, said sliding portion provided with smoke-openings, and a collar surrounding the same for connection with the inner smoke-pipe and corresponding in location with those in the outer casing, a spring connected with said sliding plate for imparting a horizontal movement to the same, a catch for holding the sliding plate in an open position against the tension of the spring, and a tripping device for releasing said catch in case of an accident to the car, substantially as set forth and described.

7. A safety-casing for a car-stove, consisting of an outer casing open at the side to expose the fuel, draft, and ash openings of the stove and provided with vertical cleat E, undercut at one edge, in combination with an inner sliding portion having a horizontal movement for closing the opening in said outer casing, said sliding portion having opening *g* and fitting under cleat E when the sliding portion is closed, spring-latch F, engaging with opening *g*, and rod H, adapted to enter said opening *g* and release the latch therein, substantially as set forth and described.

383,035. HOISTING-JACK. WILLIAM H. BELL, Pittsburg, Pa. Filed Sept. 9, 1887. Serial No. 249,269. (No model.)



Claim.—A lifting-jack comprising the two similar sections A and B, each provided with reversely-inclined faces, and with two roller guide-tracks, I, upon each of the said faces, the tracks I, provided with the right and left hand screw-threaded holes, the outside roller-spindle bearings and the middle bearings, *l*, the rollers K, journaled in said tracks and provided with grooves J engaging with the said guide-tracks, and the right and left hand threaded screw M for operating the said tracks and forcing the rollers against the inclines, substantially as set forth.

383,036. POCKET-BOX FOR POSTAGE-STAMPS. JOHN H. BARNES, Minneapolis, Minn. Filed Nov. 10, 1887. Serial No. 254,800. (No model.)



Claim.—1. The combination of a casing open at one end and one side, a holder hinged to said casing, said holder being open at its top and bottom and provided with inwardly-projecting lugs at its opposite ends, movable plates disposed within said holder, and a spring between said plates for forcing them outward in opposite directions, substantially as described.

2. The combination of a casing open at one end and one side, a holder hinged to said casing, said holder being open at its top and bottom and provided with inwardly-projecting lugs at its opposite ends, movable concave plates disposed within said holder, and a spring between said plates for forcing them outward in opposite directions, substantially as described.

3. The combination of a casing open at one end and one side, a holder hinged to said casing, said holder being open at its top and bottom and provided with inwardly-projecting lugs at its opposite ends, the sides of said holder being provided with inturned meeting flanges which form aprons inclined outward toward the top and bottom of the holder, movable plates disposed within said holder, and a spring between said plates for forcing them outward in opposite directions, substantially as described.

4. The combination of a casing open at one side and one end, a holder hinged to said casing, said holder being open at its top and bottom and provided with inwardly-projecting lugs at its opposite ends, certain of said lugs being sprung outward to serve as frictional catches for retaining the holder in closed position within the casing, movable plates disposed within said holder, and a spring between said plates for forcing them outward in opposite directions, substantially as described.

5. The combination of a casing open at one side and one end, a holder hinged to said casing, said holder being open at its top and bottom and provided with inwardly-projecting lugs at its opposite ends, a ring connected to one of said parts for attachment of a chain, movable plates disposed within said holder, and a spring between said plates for forcing them outward in opposite directions, substantially as described.

6. The combination of a casing open at one side and one end, a holder pivoted to said casing, said holder being open at its top and bottom and provided with inwardly-projecting lugs, movable plates disposed within said box, and a conical spiral spring disposed between said plates for forcing them outward in opposite directions, said spring being adapted to fold within itself, substantially as described.

7. A box for postage-stamps, comprising a holder having an open top provided with inwardly-projecting lugs, a spring within said holder, and a plate disposed within said holder and adapted to clamp the stamps against said lugs, said plate having a concave outer face whereby it is adapted to guide the stamps in upward direction in their removal from the box, substantially as described.

8. A skeleton box or holder for postage-stamps provided with inclined aprons which extend inward from opposite edges of the box for guiding the stamps in their removal, in combination with a plate or follower within said box, a spring for actuating said plate, and lugs or stops against which the stamps are clamped by said plate, substantially as described.

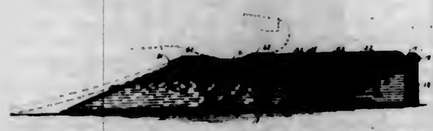
9. A box for postage-stamps, comprising a holder having an open top provided with inwardly-projecting lugs and with inclined aprons which extend inward from opposite edges of the box for guiding the stamps in their removal, a spring within said holder and a plate disposed within said holder and adapted to clamp the stamps against said lugs, said plate having a concave outer face whereby it is adapted to guide the stamps in upward direction onto the said inclined aprons, substantially as described.

10. A box for postage-stamps, comprising a holder having an open top and bottom provided with inwardly-projecting lugs, two movable plates within said holder provided with concave outer faces, and a spring interposed between said plates for forcing them outward to clamp the stamps against said lugs, substantially as described.

11. A skeleton box or holder for postage-stamps, provided with inclined aprons which extend inward from opposite edges of the box on both the upper and lower faces thereof, in combination with two plates or followers within said box, a spring interposed between said plates, and lugs or stops against which the stamps are clamped by said plates, substantially as described.

12. A skeleton box or holder for postage-stamps, provided with inclined aprons which extend inward from opposite edges of the box on both the upper and lower faces thereof, in combination with two plates or followers within said box provided with concave outer faces, a spring interposed between said plates, and lugs or stops against which the stamps are clamped by said plates, substantially as described.

383,037. DEVICE FOR HOLDING AND MOISTENING POSTAGE-STAMPS. JOHN H. BARNES, Minneapolis, Minn. Filed Nov. 14, 1887. Serial No. 255,093. (No model.)



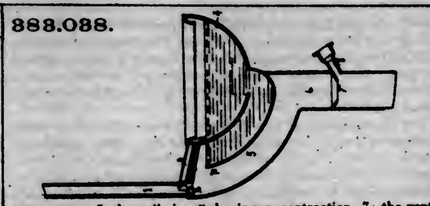
Claim.—1. In a postage-stamp holder, the combination of a stamp-compartment having an open top provided with inwardly-projecting lugs, a movable clamping-plate within said compartment, a spring for actuating said clamping-plate, a water-compartment, a moistening-roller therein, and a guide-apron between said stamp-compartment and roller, said guide-apron having an inwardly-projecting lip which extends below said clamping-plate, substantially as described.

2. In a postage-stamp holder, the combination of a ledge for a letter to be stamped, a stamp-compartment, and an intermediate moistening-roller, substantially as set forth.

3. In a postage-stamp holder, the combination of a stamp-compartment, a water-compartment adjacent thereto, a moistening-roller within the water-compartment, a guide-apron between said compartments, and a ledge for the letter, substantially as set forth.

4. In a postage-stamp holder, the combination of a stamp-compartment, a water-compartment adjacent thereto, a moistening-roller within said water-compartment, and a letter-ledge having a shoulder at its upper end, substantially as set forth.

383,038. SIPHON WATER-CLOSET. DAVID D. BUSH, Detroit, Mich. Filed May 27, 1887. Serial No. 239,544. (No model.)



Claim.—1. The combination of the bowl 4, having partitions 9 and 10, the passage 5, leading from said bowl, the soil-pipe 6, having therein the contraction 7, provided with an inclined upper surface, and a water-supply pipe communicating with the top of the bowl and with the top of the passage 5 above the contraction in the soil-pipe, substantially as described.

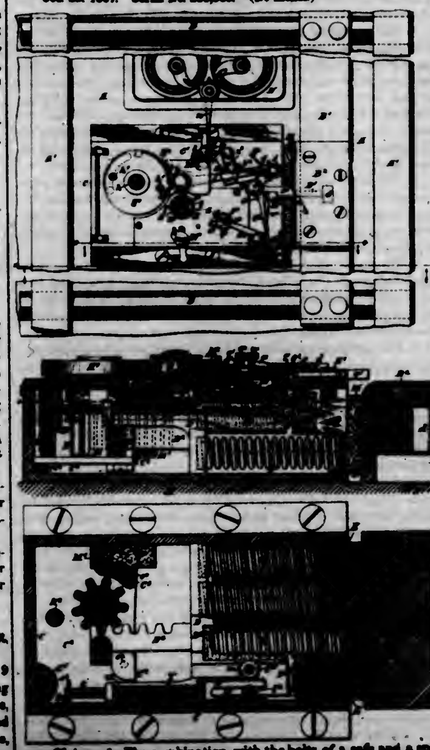
2. The combination of the bowl 4, having partitions 9 and 10, the side passage, 5, the soil-pipe 6, having a contraction, 7, the ventilating-pipe 8, leading from the soil-pipe below the contraction 7, and means for supplying water to the bowl and to the top of the side passage, 5, above the contraction in the soil-pipe, substantially as described.

383,039. MOLDING VISCOUS METALS. WALTER BURNHAM, Hyde Park, Ill. Filed Oct. 3, 1887. Serial No. 251,294. (No model.)

Claim.—1. In the art of metal-working, the process of viscous molding, which consists in heating the metallic object under treatment up to a temperature short of the melting-point, but at which the metal of which such object is composed acquires a viscous condition, as described, and in then immediately confining such object in a mold, and subjecting it to a continuously-exerted strong pressure while it is cooling down from the temperature of viscosity to a temperature at which it may be safely relieved from pressure preparatory to its removal from the mold.

2. The process of welding by viscous molding herein described, which consists in heating up to a viscous state the several metallic objects which are to be welded together, and in then immediately confining such objects in a mold, and subjecting them to continuously-exerted strong pressure while they are cooling down from the temperature of viscosity to a temperature at which they may be safely relieved from pressure preparatory to removal from the mold.

383,040. SAFE-LOCK. AUGUSTUS G. BURTON, Chicago, Ill. Filed Oct. 25, 1887. Serial No. 253,203. (No model.)



Claim.—1. The combination, with the bolts of a safe and a spring or weight for casting the bolts, of a detent for holding the casing

spring or weight from moving the bolts, a spring or weight motor for moving said detent, and means for winding, compressing, or lifting the bolt-actuating spring or weight and the actuating spring or weight of the motor, such winding, compressing, or lifting device being common for both the bolt-actuating and motor spring or weight, substantially as described.

2. The combination, with the bolts of a safe and springs applied to actuate the bolts, of a detent for holding the casting-springs from moving the bolts, a motor arranged to act upon and release said detent at a desired time after the bolt-actuating springs have been compressed, said motor comprising a spring, a train of gears, and a speed-regulator, and means for compressing or winding the bolt-actuating springs, constructed to also compress or wind the actuating-spring of the detent-controlling motor, substantially as described.

3. The combination, with the bolts of a safe, of casting and retracting springs, a detent holding the casting-springs from moving the bolts, a motor embracing an actuating-spring adapted to engage and move the said detent at a predetermined time after the compression of the bolt-actuating springs, and a sliding part, as plate D, the movement of which compresses the casting and retracting springs, said sliding part being adapted to also engage and compress the actuating-spring of the motor, substantially as described.

4. The combination, with the bolts of a safe and casting-springs, of a rack-bar, a sliding plate attached to the rack-bar and acting upon said springs, a pinion intermeshing with the rack-bar, a detent holding the casting-springs from moving the bolts, a motor arranged to actuate the said detent at a predetermined time, and a spring for actuating the motor, said spring engaging the sliding plate, whereby the motor-actuating spring is compressed with the casting-springs, substantially as described.

5. The combination, with the bolts of a safe, of a bolt-actuating device comprising a metal shell or case, a sliding plate mounted in the case and acting against the bolts, actuating-springs for casting the bolts, located therein and acting against said sliding plate, a detent engaging said sliding plate, a spring-motor mounted upon the case and operating to move the said detent, and means for compressing the said bolt-actuating springs, constructed to also compress or wind the actuating-springs of the spring-motor, substantially as described.

6. The combination, with the bolts of a safe, of a bolt-actuating device comprising a metal shell or case, a sliding plate mounted in the case and acting against the bolts, actuating-springs for casting the bolts, located therein and acting against said sliding plate, a detent engaging said sliding plate, a motor comprising an actuating-spring, a train of gears, and a speed-regulator mounted upon the case and operating to move the said detent, and means for compressing the said bolt-actuating springs, constructed to also compress or wind the actuating-spring of the spring-motor, substantially as described.

7. The combination, with an actuating-spring and train of gears, of a regulator comprising a rotating driving-spindle, an annular friction-surface surrounding the driving-spindle, weights for frictional contact with the friction-surface, and flexible arms connecting the spindle and weights, substantially as described.

8. The combination, with the bolts of a safe and springs or weights applied to actuate the bolts, of a detent for holding the springs from moving the bolts, a motor arranged to act upon and release said detent, and a stop mechanism for preventing the movement of the motor, substantially as described.

9. The combination, with the bolts of a safe, of bolt-actuating devices comprising a sliding plate acting against the bolts, and suitable springs for actuating said plate, a detent engaging the sliding plate and a motor embracing an actuating-spring and train of gears, adapted to engage and move the detent, and a rack-bar engaging the motor-actuating spring and the driving-pinion of the train of gears, the said spring being interposed between the rack-bar and the sliding plate, substantially as described.

10. The combination, with the bolts of a safe, of bolt-actuating devices comprising a sliding plate acting against the bolts, springs for moving said plate, a detent engaging the sliding plate, and a motor embracing a spring and train of gears and arranged to act upon the detent, a rack-bar engaging the motor-actuating spring and the driving-pinion of the train of gears, and having a guide-rod engaging the sliding plate, said motor-actuating spring being interposed between said sliding plate and the rack-bar, and a guide-surface upon the rack-bar engaging a stationary support, whereby the rack-bar is held in mesh with the pinion, substantially as described.

11. The combination, with the bolts of a safe, of bolt-actuating devices comprising a sliding plate acting against the bolts, springs for actuating the plate, a detent engaging the sliding plate, and a motor embracing an actuating-spring and train of gears provided with a backing-ratchet, said motor being adapted to engage and move the detent, and a rack-bar engaging the motor-actuating spring and the driving-pinion of the train of gears, said spring being interposed between the rack-bar and the sliding plate, substantially as described.

12. The combination, with the bolts of a safe and springs or weights applied to actuate said bolts, of a detent for holding the bolt-actuating springs from moving the bolts, means for holding the detent, comprising an arm the movement of which effects the release of the bolts, and a rotating stop acting upon said arm, substantially as described.

13. The combination, with the bolts of a safe and springs or weights applied to actuate the bolts, of a detent for holding the bolt-actuating springs from moving the bolts, means for holding the detent, comprising an arm the movement of which effects the release of the bolts, and a rotating stop acting upon said arm to release the detent, said stop being arranged to be adjusted about its axis, and thereby to engage the detent-releasing arm at any desired point during its rotation, substantially as described.

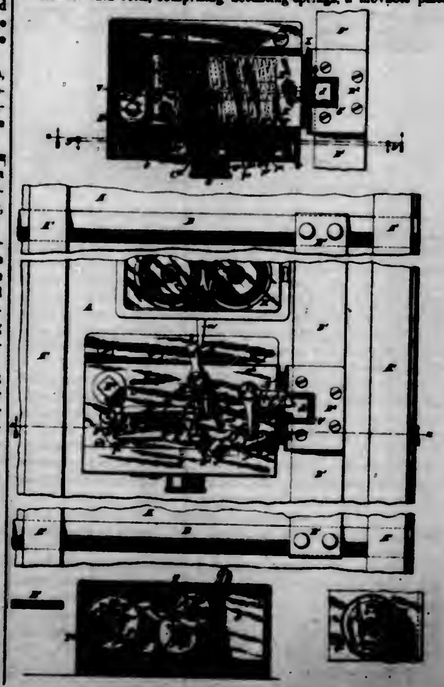
14. The combination, with the bolts of a safe and springs for actuating the bolts, of a detent holding the bolts from movement under the action of the springs, a motor for releasing the detent, and a revolving projection or stop actuated by the motor and acting upon the detent, said revolving projection or stop being constructed to engage and move the detent without passing the same, whereby it may be turned backwardly to its original position without interfering with the said detent, substantially as described.

15. The combination, with the bolts of a safe and springs for actuating the bolts, of a detent holding the bolts from movement under the action of the springs, a motor for releasing the detent, and a revolving stop actuated by the motor and acting upon the detent, said stop being connected with a part moved by or with the retracting springs or bolts in the rearward motion of the latter, whereby the stop or projection is restored to its original position when the bolts are retracted, substantially as described.

16. The combination, with the bolts of a safe and springs for actuating the bolts, of a detent holding the bolts from movement under the action of the springs, and a motor embracing a train of gears and a prime mover for releasing the detent, said motor embracing also a shaft driven by the prime mover and connected with the train of gears by a backing-ratchet and engaging a part which is moved when the bolts are retracted, whereby the said shaft may be turned backward independently of the train of gears when the bolts are retracted, substantially as described.

388,041. SAFE-LOCK. ANDREW G. BURTON, Chicago, Ill. Filed Oct. 25, 1887. Serial No. 253,208. (Model.)

Claim.—1. The combination, with the bolts of a safe, of actuating devices for said bolts, comprising actuating-springs, a movable plate



388,041.



against which said springs act, and a spring-compressing lever or key engaging a bearing upon the door and embracing an arm or wing acting at its end against said movable plate, substantially as described.

2. The combination, with the bolts of a safe, of an actuating device for said bolts, comprising a movable plate, as D, against which the springs act, springs located between said plate and a stationary surface of or upon the door, a second set of springs interposed between said movable plate and a part attached to the bolts, and a spring-compressing lever or key engaging a bearing upon the door and embracing a rigid arm or wing constructed to act at its free end against the said movable plate, substantially as described.

3. The combination, with the bolts of a safe, of an actuating device for the bolts, comprising an exterior casing or shell, a movable plate, as D, sliding in the said shell, springs located between the said movable plate and an opposing stationary surface of or upon the door, a second set of springs interposed between the said movable plate and a part attached to the bolts, and a spring-compressing lever or key adapted to engage a bearing upon the case and embracing a rigid arm or wing constructed to act at its free end against the said plate, substantially as described.

4. The combination, with the bolts of a safe, of an actuating device for the bolts, comprising a casing or shell, C, a sliding plate, D, mounted in the shell and connected with the bolts, springs located between the said sliding plate and a stationary surface or part of the shell, a second set of springs interposed between the said sliding plate and a part attached to the bolts, and a spring-compressing lever or key adapted to engage a bearing upon the shell adjacent to the rear end of the latter, and provided with a rigid arm or wing, and an anti-friction roller mounted in the end of said arm or wing and constructed to bear against the said sliding plate, substantially as described.

5. The combination, with the bolts of a safe, of springs for casting the bolts, springs for retracting the bolts, a sliding plate engaging both sets of springs, a detent upon the case engaging the said sliding plate for holding both sets of springs compressed, and means for actuating the detent to release the retracting-springs, substantially as described.

6. The combination, with the bolts of a safe, of actuating devices for the bolts, comprising a shell or casing, a sliding plate therein, springs for retracting the bolts bearing upon said plate and an opposing wall of the shell or casing, springs for casting the bolts bearing against said sliding plate and acting against the bolts, a detent upon the case engaging said sliding plate for holding both sets of springs compressed, and means for actuating the detent to release the retracting-springs, substantially as described.

7. The combination, with the bolts of a safe, of an actuating device for the bolts, comprising casting and retracting springs, a sliding plate against which said casting and retracting springs act, a spring-compressing lever or key engaging bearings upon the safe-door and embracing an arm or wing acting against said sliding plate, a detent engaging the said sliding plate and holding the springs compressed, and means for actuating said detent to release the retracting-springs for opening the door, substantially as described.

8. The combination, with the bolts of a safe, of an actuating device for the said bolts, comprising a sliding plate, as D, retracting-springs interposed between said plate and a stationary part or surface of the door, casting-springs bearing against said sliding plate D, a sliding plate, E, interposed between said casting-springs and a part of or connected with the bolts, a detent engaging the said sliding plate E for holding the springs compressed, another detent engaging the sliding plate D for holding the casting-springs from moving the bolts at the time the several springs are compressed, and means for actuating said detents for releasing the casting and retracting springs, substantially as described.

9. The combination, with the bolts of a safe, of an actuating device for the said bolts, comprising a sliding plate, as D, retracting-springs interposed between said plate and a stationary part or surface of the door, casting-springs bearing against said sliding plate D, a sliding plate, E, interposed between said casting-springs and a part of or connected with the bolts, a spring-compressing lever or key having bearings upon the door and embracing a rigid arm acting at its free end against said sliding plate, a detent engaging the sliding plate D for holding the springs compressed, another detent engaging the sliding plate E for holding the casting-springs from moving the bolts at the time the several springs are compressed, and means for actuating said detents for releasing the casting and retracting springs, substantially as described.

10. The combination, with the bolts of a safe-door, of a shell or casing, C, a sliding plate, D, mounted in said shell or casing, retracting-springs located between the said sliding plate and an opposing part or surface of the casing, casting-springs bearing at one end against said sliding plate D, a sliding plate, E, mounted in the casing and interposed between the said casting-springs and a part attached to and moving with the bolts, a spring-compressing lever or key having bearings in the shell or casing and embracing a rigid arm adapted to bear at its free end against the said plate, a detent mounted upon the case and engaging the said sliding plate D, another detent mounted upon the case and engaging the said sliding plate E, and means for actuating the said detents, substantially as described.

11. The combination, with the bolts of a safe and springs or weights applied to move the bolts, of a sliding part or plate actuated by the springs or weights and acting on the bolts, said sliding part or plate being provided with a projection or stud, and a pivoted detent provided with a shoulder to engage the stud, and with a part or arm located in the path of the stud, whereby the detent will be automatically engaged with the stud by contact of the latter with said part or arm, substantially as described.

12. The combination, with the bolts of a safe and springs or weights applied to move the bolts, of a sliding part or plate actuated by the springs or weights and acting upon the bolts, said sliding part or plate being provided with a projection or stud, and a pivoted detent provided with a shoulder to engage the stud, and with a part or arm located in the path of the stud, said stud being constructed to move in a line passing at one side of the pivoted axis of the detent substantially as described.

13. The combination, with the bolts of a safe and springs or weights applied to move the bolts, of a sliding part or plate actuated by the springs or weights and acting upon the bolts, said sliding part or plate being provided with a projection or stud, and a pivoted detent provided with a shoulder to engage the stud, and with a rigid arm located in the path of the stud, substantially as described.

14. The combination, with the bolts of a safe and springs or weights applied to move the bolts, of a sliding part or plate actuated by the springs or weights and acting upon the bolts, said sliding part or plate being provided with a projection or stud, and a pivoted detent-lever provided with a shoulder to engage the stud, and with an arm or prong located in the path of the stud, a second detent-lever provided with a notch or shoulder, and with an arm or surface located in the path of the detent-lever first mentioned, and a spring-detent engaging and holding from movement said second detent-lever, substantially as described.

15. The combination, with the bolts of a safe and springs applied to move the bolts, of a pivoted arm or detent-lever which holds the springs compressed and is moved in the act of compressing the same, a second detent-lever, as L, provided with a notch or shoulder, as *l*, with an arm or projection, as *l'*, located in the path of the detent-lever first mentioned, and with an arm, as L', provided with a prong forming a stop for limiting the motion of the said detent-lever first mentioned, and a spring-detent engaging said detent-lever, substantially as described.

16. The combination, with the bolts of a safe and springs or weights applied to move the bolts, of a sliding part or plate actuated by the springs or weights and acting upon the bolts, said sliding part or plate being provided with a projection or stud, a pivoted detent-lever, and a spring applied to said detent and acting to hold the arm in contact with the detent-lever and to cause the engagement of the notch or shoulder therewith, and means for actuating said detent, substantially as described.

17. The combination, with the bolts of a safe and actuating-springs for the bolts, of a plate moved by the springs and acting upon the bolts, a pivoted detent-lever, L, constructed to hold the said plate from movement, a detent, as M, provided with a notch or shoulder engaging said detent-lever, and with an arm, M', engaging the free end of said detent-lever, a spring applied to said detent and acting to hold the arm in contact with the detent-lever and to cause the engagement of the notch or shoulder therewith, and means for actuating said detent, substantially as described.

18. The combination, with the bolts of a safe and actuating-springs for the bolts, of a plate moved by the springs and acting upon the bolts, a pivoted detent or detent-lever, L, constructed to hold said plate from movement, a detent-lever, M, provided with a notch or shoulder engaging the said detent-lever L, and with an arm, M', provided with a stop or projection at its free end for limiting the movement of the detent-lever, a spring applied to actuate the detent M to cause its engagement with the detent-lever L, and means for actuating said detent M, substantially as described.

19. The combination, with the bolts of a safe and actuating-springs for the bolts, of a plate moved by the springs and provided with a stud or projection, a detent, I, constructed to engage said stud or pro-

jection and provided with an arm, I^3, a detent, J, provided with a notch or shoulder to engage said arm I^3, and with an arm, J', a spring applied to the lever J and holding the arm J' thereof in contact with the arm I^3, and means for actuating said detent J, substantially as described.

20. The combination, with the bolts of a safe and actuating-springs for the bolts, of a plate moved by the springs and provided with a stud of projection, a detent, I, provided with an arm, I^3, a detent, J, provided with a notch, j', and with an arm, J', having at its end a prong, j^3, a spring applied to actuate said detent J, and means for moving said detent J to release the casting-springs, substantially as described.

21. The combination, with the bolts of a safe, of retracting-springs, a sliding plate, D, engaged with the said springs and connected with the bolts, and a detent engaging said sliding plate, a pivoted detent lever, M, for holding said detent from movement, said lever being provided with a slot, m^2, provided with two notches, m'-m', either of which may be engaged with the detent for holding the latter from movement, substantially as described.

22. The combination, with the retracting-springs and sliding plate D, provided with a stud, D^2, of a pivoted detent-lever, K, provided with a notch or shoulder engaging the said stud, and with an arm, K', a second pivoted detent-lever, L, located in the path of the stud, provided with a short arm, L', notched to engage the end of the detent-lever K, with a projection or arm, l^2, and with a long arm, L^2, and a pivoted spring-detent, M, provided with a notch adapted to engage the longer arm, L^2, of said lever L, substantially as described.

23. The combination, with the safe-bolts and retracting-springs, of a sliding plate D, provided with a stud, D^2, a detent-lever, K, provided with a notch adapted to engage the said stud, and with an arm, K', located in the path of the stud, and a detent-lever, L, engaging the said lever K, for holding the latter in engagement with the stud, said lever L being provided with a notch, l', engaging said lever K, with an arm, L', provided with a prong, l^2, and having a projecting part or arm, l^3, located in the path of the free end of the lever K, substantially as described.

24. The combination, with the bolts of a safe, casting-springs for the bolts, a shell or case, C, inclosing said casting-springs, and a detent, I, mounted upon the case for holding the casting-springs from moving the bolts, of a detent, J, engaging the said detent I, a motor embracing a train of gears located at the side of the said case C, with the axes of rotation of its rotating parts parallel with the plane of rotation of the detents I and J, a revolving stop, T, moved by said motor, and a pivoted lever, U, mounted upon the case with one of its ends in the path of the said stop, and provided with a beveled surface upon its opposite end adapted to engage the said detent J, substantially as described.

25. The combination, with the bolts of a safe and actuating devices for casting and retracting the bolts, of interlocking parts connecting the said actuating devices and the bolts, said interlocking parts being engaged with each other solely by flat engaging-surfaces perpendicular to the plane of the safe-door, whereby the same may become disengaged in case the lock is detached and thrown inwardly away from the door, substantially as described.

26. The combination, with the bolts of a safe and an actuating device embracing a stem, D', provided with a head, d, of a plate attached to the bolts and provided with a slot for engaging the stem, open at its end remote from the door, substantially as described.

27. The combination, with the bolts of a safe, of a carrying-bar attached thereto, a plate, B^3, attached to the carrying-bar and provided with a slot, b, and with an opening, b', retracting-springs, and a plate, D, acted upon by said springs and provided with a stem, D', having a head, d, engaging said plate B^3, substantially as described.

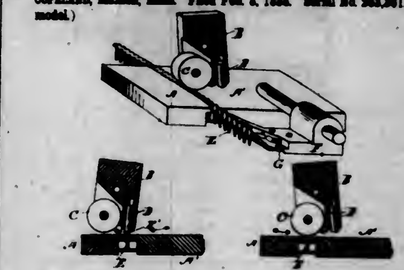
28. The combination, with the bolts of a safe and springs for actuating the bolts, of a detent holding the bolts from movement under the action of the springs, a motor for releasing the detent, embracing a rotating shaft and a revolving projection or stop upon the shaft constructed to act upon the said detent, a spindle passing through the said shaft and attached to the revolving projection or stop, an arm upon said spindle, and a disk upon the said shaft, and means adjustably connecting the arm with the disk, whereby the angular position of the stop with relation to the shaft may be changed, substantially as described.

383,042. PRINTING-FILM. PASQUAL G. CASPLAN, Philadelphia, Pa. Filed Feb. 17, 1887. Serial No. 227,949. (No specimens.)

Claim.—1. A printing film or pellicle having a raised printing-surface, composed of gelatine, water, bichromate of ammonia, and glycerine, in about the proportions described.

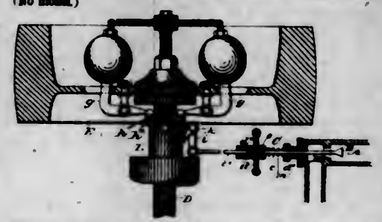
2. A printing film or pellicle having a raised printing-surface, composed of glycerine, water, bichromate of ammonia, and gelatine, and coated with a lacquer of saturated solution of Mossel salt or other solution of iron, substantially as described.

383,043. ART OF HEADING NAILS, TACKS, &c. GEORGE W. COPELAND, Malden, Mass. Filed Feb. 8, 1886. Serial No. 283,261. (No model.)



Claim.—That improvement in the art of heading nails or tacks which consists in taking a blank or strip of metal, clamping it rigidly, bending the edge or top portion at an angle, and then bending or swaging the end and parts near the end of said bent portion back upon itself, substantially as described.

383,044. FLY-WHEEL GOVERNOR FOR STEAM-ENGINES. LUCIUS D. COPELAND, Camden, N. J. Filed Nov. 19, 1887. Serial No. 255,632. (No model.)

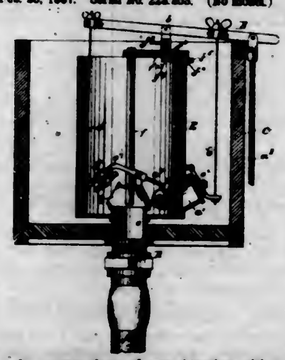


Claim.—1. In a governor for steam-engines, the combination, with the rotary shaft D and the governor-balls and levers, of a collar, h, revolving with said balls and sliding upon said shaft, a collar, h', loose upon the shaft, a bell-crank, k, and a valve-rod attached thereto, and a spiral spring, m, attached to said rod and adapted to close the valve, substantially as described.

2. In a steam-engine governor, the combination, with the collar h, revolving with the shaft D and sliding thereon, of the governor-balls having levers g g, which bear against the face of said collar, and are connected each to the main shaft by a separate spring, substantially as described.

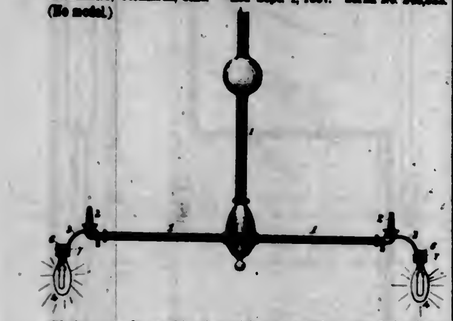
3. In a steam-engine governor, the combination, with the rotary shaft D, the governor-balls and levers, and the valve-rod, of the separate and independent collars h h', the collar h being arranged to revolve with the shaft and the collar h' being loose thereon, substantially as described.

383,045. WATER-CLOSET. JAMES CRAWFORD, Cambridge, Mass. Filed Feb. 25, 1887. Serial No. 228,853. (No model.)



Claim.—In a water-closet, the combination, with a movable seat and a lever, B, connected therewith, of a tank, a service-box having a single escape-passage, e^3, and an inlet, e', from said tank, a valve, e^2, for said inlet connected with said lever, said valve to be opened when the seat is depressed, a valve, e^4, for the said escape-passage, a lever, e^5, by which the said valve e^4 is carried, a float on the end of the said lever e^5 opposite to the said valve e^4, and a rod, e^6, connecting the valve end of the lever e^5 with the said lever B, whereby the escape-valve will be closed by the float as the service-box is filled and opened by the lever B when the seat is raised, substantially as set forth.

383,046. INCANDESCENT-LAMP ATTACHMENT. HARRY M. DOOLITTLE, Columbus, Ohio. Filed Sept. 1, 1887. Serial No. 248,822. (No model.)

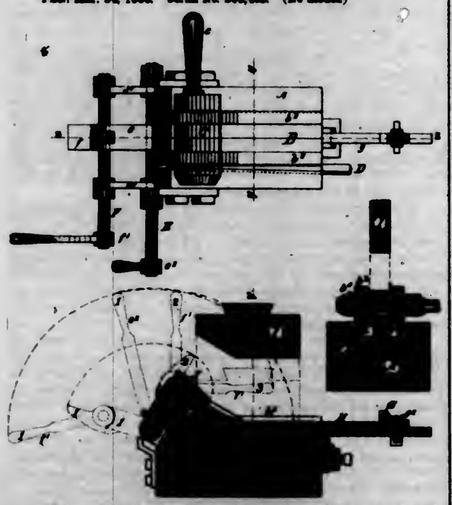


Claim.—1. In combination with a supporting-arm, 3, having a perforation at one end, a sleeve in said perforation having a flange pressed against said arm, and an incandescent lamp supported on said sleeve on the opposite side of the arm from the flange, substantially as set forth.

2. The combination of an electric lamp, a perforated arm or hanger, an insulating flanged sleeve passed through the perforation and secured to the lamp, and an insulating-collar interposed between the arm or hanger and the lamp, the said arm or hanger being adapted at its other end to engage a hook or projection, whereby the lamp is supported, substantially as shown and described.

3. The combination, with an electric lamp having a screw-threaded socket, of a metallic or other arm or hanger having perforations in its ends, a flanged insulating-sleeve passing through one perforation and screwing into the socket, and an insulating-collar on the sleeve and placed between the arm or hanger and the lamp-socket, the perforation at the other end of said arm or hanger being adapted to fit over a gas-fixture below the burner, as herein set forth.

383,047. FORGING-MACHINE. DAVID H. DOWNES, Pullman, Ill. Filed Mar. 24, 1888. Serial No. 268,402. (No model.)



Claim.—1. A forging-die provided with transverse openings, in combination with a removable mandrel adapted to be inserted in the die and across the seat thereof by inserting it in said openings, substantially as and for the purposes specified.

2. The two-part die B, provided with transverse openings b^4, in combination with the mandrel C, adapted to be inserted at will in said openings, and the male or drop die I, substantially as and for the purposes specified.

3. A die, B, in combination with a removable transverse mandrel, C, and a bending cam or cams attached to the die and arranged to bend the metal over the mandrel, substantially as and for the purposes specified.

4. The die B, in combination with the removable transverse mandrel C, and the jointed swinging bending-cams e and f, substantially as and for the purposes specified.

5. The die B, in combination with the rock-shafts E F, provided with suitable hand-levers, and the bending-cams e f, secured to the respective shafts, substantially as and for the purposes specified.

383,048. SUPPORT FOR SPINNING-SPINDLES. WILLIAM F. DRAPER and GEORGE A. DRAPER, Hopedale, Mass., assignors to George Draper & Sons, same place. Filed Dec. 20, 1887. Serial No. 258,806. (No model.)

Brief.—The invention is an improvement upon that shown in Letters Patent No. 378,877, dated March 6, 1888, the bolster being tapered and adjusting devices being provided therefor, whereby the degree of looseness of the bolster can be regulated.



Claim.—1. A spindle-bearing containing the following instrumentalities, viz: a bolster tapered externally, a surrounding internally-tapered support for the bolster, into which the bolster is fitted loosely, and a step and means to adjust the said bolster vertically with relation to the said support to thus increase or decrease the extent of looseness between the said parts, and means to restrain the loose bolster from rotation in the said support, substantially as described.

2. A bolster-support and bolster placed therein loosely, and a step-rest, combined with an intermediate connection, substantially as described, between the said bolster and step-rest, whereby the bolster may be adjusted longitudinally within its support and with relation to the said step-rest, as and for the purposes set forth.

3. A surrounding support having a tapering interior, a bolster having a tapering exterior and a tapering interior and placed in the bolster-support loosely, a spindle supported in the said bolster, and a step-rest, combined with a connecting device, substantially as described, whereby the bolster may be adjusted longitudinally with relation to the step-rest, and with means to restrain the rotation of the bolster in its surrounding support, for the purposes set forth.

4. A surrounding support having a tapering interior, a bolster having a tapering exterior and a tapering interior and placed in the bolster-support loosely, a spindle supported in the said bolster, and a step-rest, combined with a connecting device, substantially as described, whereby the bolster may be adjusted longitudinally with relation to the step-rest, and with means for restraining the rotation of both the bolster and the step-rest in or with relation to the surrounding support.

5. In a spindle-bearing, a bolster tapered externally, a surrounding support tapered internally, and an adjustable step to sustain the weight of the spindle, combined with pins or projections to restrain the rotation of not only the step, but also the bolster within the bolster-support, as and for the purposes set forth.

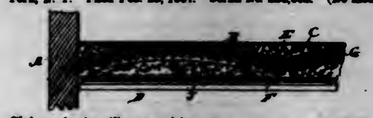
383,049. WRENCH. ALBERT F. M. GARRETT and FRED FRAIM, Daleville, Ala., assignors to said Albert F. M. Garrett. Filed June 22, 1887. Serial No. 242,194. (No model.)



Claim.—The combination, with the handle A and the detachable section F, connected thereto, of the ratchet G, located within a recess in said handle and section and provided with a shank, m, extending out from each side thereof and provided with a square opening, n, the

variable jaws H, secured to said shank, the spring-pawl I, secured to said handle, and the spring-pawl J, secured to the section F on the side opposite the pawl I and formed with hooked end *e*, all substantially as shown and described, and for the purpose specified.

383,050. FIRE-PROOF BUILDING. RAFAEL GUASTAVINO, New York, N. Y. Filed Feb. 20, 1887. Serial No. 228,262. (No model.)

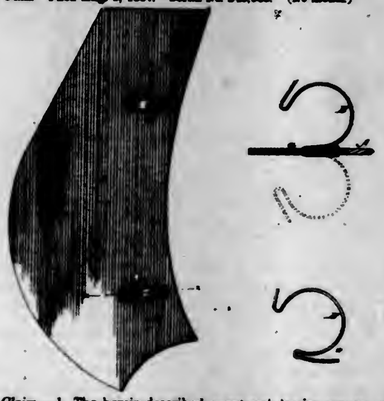


Claim.—1. A ceiling, partition, or staircase composed of two or more layers or rings of brick tiles and an outside layer or ring of cement-faced tiles with raised decorations thereon, the whole set in cement or plaster-of-paris, substantially as set forth.

2. A ceiling, partition, or staircase comprising rings or layers of brick tiles, the tiles of the outer layer being cement-faced and provided with raised ornamentation, and tie-beams having their exposed surfaces covered with metal caps, substantially as set forth.

3. A tile for the vaults of fire-proof buildings, having cast upon its face cement ornamentation and provided on its edges with flanges, substantially as and for the purposes set forth.

383,051. SWEAT-PAD. CHARLES J. GUSTAVSON, Salt Lake City, Utah. Filed Aug. 2, 1887. Serial No. 246,063. (No model.)



Claim.—1. The herein-described sweat-pad, having one or more openings or slots extending through the pad, combined with a hook having both ends made alike, and adapted to have either end seated in the slot to constitute a reversible pad, substantially as shown and described.

2. A sweat-pad having a re-enforced or eyeleted slot extending through the pad, combined with a flat spring-hook having an end bent as described, and adapted to have said end seated in said slot to constitute a reversible pad, substantially as shown and described.

383,052. DETACHABLE BUTTON OR STUD. HERMANN F. HARMSEN, Hamburg, Germany, assignor to Aug. F. Richter, same place. Filed Jan. 19, 1888. Serial No. 261,264. (No model.)

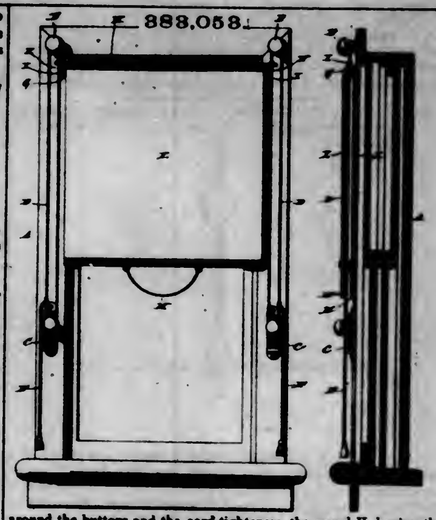


Claim.—The combination, in a detachable button or stud, of wings *f*, pivoted to a shank, *e*, with a plate, *d*, having arms *e*, connected with the said wings, substantially as specified.

383,053. WINDOW-SHADE. ANNA HOUTZ, Jeffersonville, Ill. Filed Jan. 16, 1888. Serial No. 261,162. (No model.)

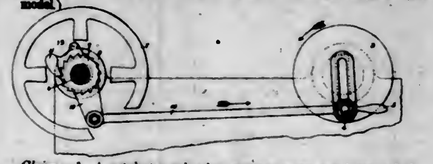
Claim.—1. The combination, with the window-frame, of the buttons B B, the cord-tightenors below said buttons, the endless cords passing around the buttons and the cord-tightenors, the guard H, secured to said endless cords and having depending perforated ears, the roller journaled in said ears, and the curtain passing loosely over said roller and depending from the same in front and rear thereof, but not connected thereto, as set forth.

2. The combination, with the window-frame, of the buttons B B, the cord-tightenors C C, below the buttons, the endless cords passing



around the buttons and the cord-tightenors, the guard H, having the endless cords passed through its ends and secured thereto, the said guard being further provided with the depending perforated ears I, the roller G, journaled in the said ears, the curtain passing over said roller, but not connected thereto, and the cords M, attached to ends of the curtain, as specified.

383,054. RATCHET MOVEMENT. WINFIELD S. HUSON, Taunton, Mass., assignor to the Campbell Printing Press and Manufacturing Company, New York, N. Y. Filed Dec. 14, 1887. Serial No. 257,674. (No model.)



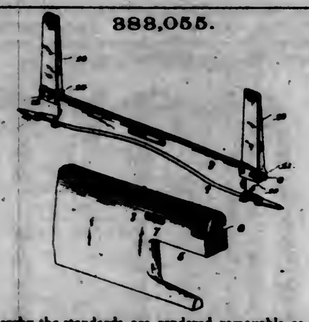
Claim.—1. A ratchet mechanism or movement consisting of the following-named elements: a power-transmitting shaft provided with ratchet-teeth, in combination with a boss concentric with said shaft, and a power-lever provided with an elongated eye spanning said shaft, a fulcrum-pin bearing on the circumference of said boss, and a rigid pawl, whereby, upon the application of a reciprocating force to the freed end of said lever, its pawl will positively engage and disengage said ratchet-teeth and rotate accordingly the power-shaft, substantially as and for the purposes set forth.

2. An automatic ratchet mechanism or movement consisting of the following-named elements: a power-transmitting shaft provided with ratchet-teeth, a boss concentric with said shaft, and a lever provided with an elongated eye spanning said shaft, a fulcrum-pin bearing on the circumference of said boss, and a rigid pawl, in combination with reciprocating mechanism connected to the free end of said lever, substantially as described, whereby the ratchet mechanism is automatically operated, substantially as and for the purposes set forth.

3. An automatic ratchet mechanism or movement consisting of the following-named elements: a power-transmitting shaft provided with ratchet-teeth, a boss concentric with said shaft, and a pawl-lever provided with an elongated eye spanning said shaft, a fulcrum-pin bearing on the circumference of said boss, and a rigid pawl, in combination with a rotary shaft, as 2, carrying a slotted plate, as 3, an adjustable stud, as 4, and a connecting-rod articulated at one end to said stud and at the other to said pawl-lever, whereby the ratchet-shaft is intermittently and positively rotated and its degree of rotation adjustably varied, substantially as and for the purposes set forth.

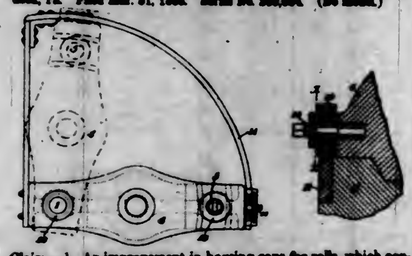
383,055. WAGON-STANDARD. JOHN B. HUTCHINSON, Penn's Grove, N. J. Filed Dec. 15, 1887. Serial No. 257,993. (No model.)

Claim.—The combination of a bolster having its ends extended and formed with open slots in its outer ends and with longitudinal slots parallel or in a line with the open slots, with standards provided with downwardly-projecting flanges or lips at the sides of their lower ends, formed with perforations which register with the slots, bolts,



and nuts, whereby the standards are rendered removable as well as laterally adjustable, as and for the purpose shown and described.

383,056. HOUSING-CAP FOR ROLLS. WILLIAM P. JOHNS, Braddock, Pa. Filed Mar. 31, 1888. Serial No. 269,604. (No model.)



Claim.—1. An improvement in housing-caps for rolls, which consists in a housing-cap pivoted at the end and adapted to swing thereon to uncover the housings and permit the removal of the rolls, substantially as and for the purposes described.

2. An improvement in housing-caps for rolls, which consists in a housing-cap pivoted at the end, in combination with a trunk whereby the other end of the housing-cap is supported in its swinging motion on said pivot, substantially as and for the purposes described.

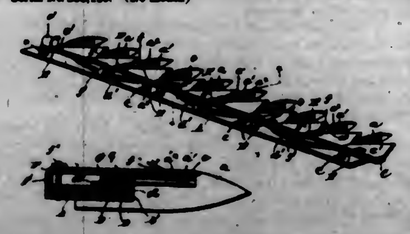
3. An improvement in housing-caps for rolls, which consists in a housing-cap pivoted at the end, in combination with a trunk whereby the other end of the housing-cap is supported in its swinging motion on said pivot, and a roller on the housing-cap which bears on said trunk, substantially as and for the purposes described.

4. An improvement in housing-caps for rolls, which consists in a housing-cap pivoted at the end and adapted to swing thereon to uncover the housings and permit the removal of the rolls, and a roller on which the housing-cap travels in its swinging motion, the axis of said roller being movable vertically to remove the weight of the cap from the roller and cause it to bear on the housing, substantially as and for the purposes described.

5. An improvement in housing-caps for rolls, which consists in a housing-cap pivoted at the end and adapted to swing thereon to uncover the housings and permit the removal of the rolls, and a curved groove in the housing in which a projection on the free end of the cap fits and moves, substantially as and for the purposes described.

6. An improvement in housing-caps for rolls, which consists in a housing-cap pivoted at the end and adapted to swing thereon to uncover the housing, said cap being connected with the housing at the pivoted end by a boss on one fitting in a concavity on the other, substantially as and for the purposes described.

383,057. CUTTER-BAR. WILLIAM P. KENNEDY, Winfield, Iowa, assignor of one-half to H. L. Olsen, same place. Filed Dec. 16, 1887. Serial No. 258,119. (No model.)

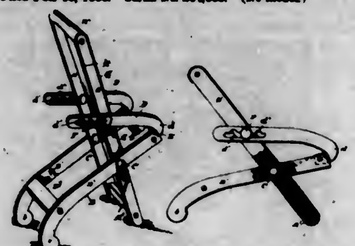


Claim.—1. The combination, with the cutter-bar, the finger-bar, and the guard-fingers *c'*, having short guards and recesses c^1 in the rear ends of said guards, of the holding-plates having their points engaging said recesses and having their rear ends bent down and bolted to the finger-bar, and the set-screws engaging tapped recesses in the lower surfaces of the holding-plates and bearing on the upper surfaces of the cutter-bar, as set forth.

2. The combination, with the cutter-bar, the pins depending therefrom and having anti-friction rollers on their ends, and the finger-bar having the obtuse-angled cam-slots to receive said pins, of the plates F, secured to the finger-bar and extending over the cutter-bar and across the meeting angle of the cam-slots, and the set-screws engaging the under side of said plates and bearing on the upper side of the cutter-bar, substantially as described.

3. The combination of the finger-bar having the obtuse-angled cam-slots and the cutter-bar having the pins depending therefrom and engaging said slots, and the widened portions *d'* in rear of said pins, as set forth.

383,058. RECLINING-CHAIR. HIRAM G. KERR, Freeport, Mich., assignor of two-thirds to James D. Coal and Charles A. Curtis, same place. Filed Feb. 14, 1888. Serial No. 264,068. (No model.)



Claim.—1. The herein shown and described reclining-chair, composed of the sections A and B, each section consisting of side pieces and said cross-bars, having their side pieces pivoted together between their ends, the arms having their lower ends overlapping the ends of the section B and connected therewith by the hinges E, and having their upper ends slotted and provided with a series of notches, d^3, the lateral pins F, and the fabric G, having its ends attached to the upper cross-bars of the sections A and B and free between said ends, substantially as described.

2. The herein shown and described reclining-chair, composed of the section A, consisting of straight side pieces and upper and lower cross-bars A^2 and A^3, respectively, the section B, made up of side pieces having their lower ends curved to form feet *b* and upper and lower cross-bars B^2 and B^3, the two sections A and B being pivotally connected together, the arms D, having their lower ends curved to overlap the ends of the side pieces of the section B, and having slots *d'* and a series of notches, d^3, in their upper ends, the hinges E, the lateral pins F, and the fabric G, attached at its ends to the cross-bars A^2 and B^2 of the sections A and B, respectively, substantially as and for the purpose described.

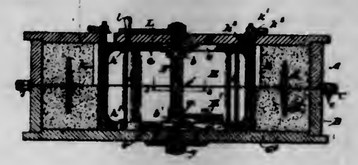
383,059. STOP-WATCH. EDWARD KIRK, Brooklyn, assignor to the Manhattan Watch Company, New York, N. Y. Filed Aug. 4, 1887. Serial No. 246,114. (No model.)

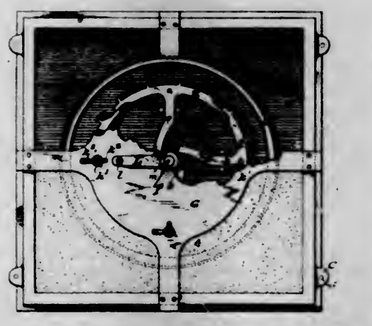


Claim.—1. In a watch, the combination, with the stop-lever carried by a movement and adapted to bear upon a wheel or arbor in said movement, of the wheel *b*, adapted to engage said lever to operate same by turning said wheel, substantially as described.

2. The lever *f*, carried by the movement B and adapted to engage a wheel or arbor in said movement, in combination with the wheel *b*, pivoted in the case A of the watch and adapted to engage said lever to operate same, substantially as herein shown and described.

383,060. **MOLD FOR CASTING METAL.** SYLVANUS D. LOCKE, Hoosick Falls, N. Y., assignor of one-half to the McCormick Harvesting Machine Company, Chicago, Ill. Filed July 23, 1886. Serial No. 208,672. (No model.)





Claim.—1. The combination, substantially as hereinbefore set forth, in a flask, of core-barrel sections having a common controlling device, whereby they are simultaneously governed in their expansion and collapsing, a lock whereby they are held in position at the extremity of their expansion, and whereby they may be released and left to yield before the pressure of the contracting casting, and a spring applied to said controlling device to afford elastic resistance to such yielding.

2. The combination, substantially as hereinbefore set forth, in a flask, of core-barrel sections in each division of the flask, and an interlocking connection, whereby said sections may be simultaneously expanded and collapsed throughout the entire flask.

3. The combination, substantially as hereinbefore set forth, in a flask, of core-barrel sections in each division of the flask, a common controlling device, whereby they are simultaneously expanded and collapsed, and a spring applied to said device to afford an elastic resistance to the collapse.

4. The combination, substantially as hereinbefore set forth, in a flask, of core-barrel sections in the cope and drag, and a sectional operating-spindle dividing upon the parting-line.

5. The combination, substantially as hereinbefore set forth, in a flask, of core-barrel sections in cope and drag, an interlocking connection for simultaneously expanding and collapsing said sections, and a spring applied to said connection, whereby elastic resistance is afforded to such collapse.

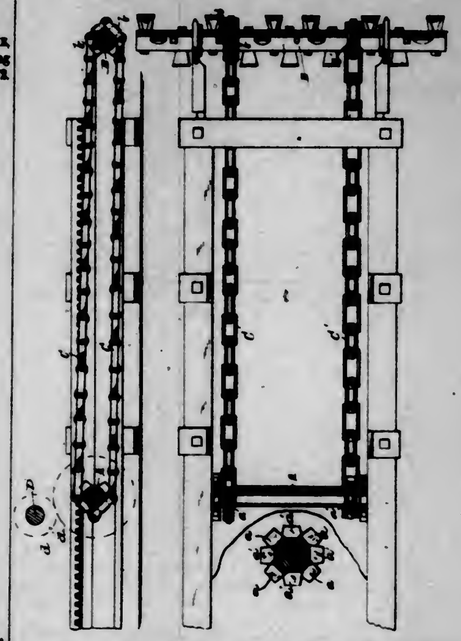
6. The combination, substantially as hereinbefore set forth, in a flask, of core-barrel sections in cope and drag, and an interlocking connection for simultaneously expanding and collapsing said sections, a spring applied to said connection, whereby an elastic resistance is afforded to such collapse, and means whereby the stress of said spring may be adjusted.

7. The combination, substantially as hereinbefore set forth, in a flask, of the overlapping core-barrel sections in each division of the flask, the central sectional spindle connected with said sections in said divisions, the crank on said spindle, and a locking device therefor.

8. The combination, substantially as hereinbefore set forth, in a flask, of the core-barrel sections in each division thereof, the sectional interlocking spindle, its hubs and arms connected with said barrel-sections, the crank on said spindle, and the locking-pin.

9. The combination, substantially as hereinbefore set forth, with the core-barrel sections in the cope, of the pins projecting through the slotted top plate of said cope, and the clamping-nuts.

383,061. **MINING-MACHINE.** FRANK LOWRY, Columbus, Ohio, assignor to the Lechner Manufacturing Company, same place. Filed May 27, 1887. Serial No. 239,542. (No model.)



Claim.—1. In a machine for cutting coal or rock, the combination, with the power devices and the cutter-bar, of a chain interposed between the said power devices and the cutter-bar, and the teeth *b b'*, arranged, substantially as set forth, in different axial planes, as described.

2. In a mining-machine, the combination, with the power devices and the cutter-bar, of the chains interposed between the power devices and the cutter-bar, and arranged, substantially as set forth, with the links of one chain out of line transversely with the links of the other chain, as described.

3. The combination, with the power devices and the chains adapted to transmit power, of the chain-driving shaft having two sets of teeth, the teeth of one set being out of the lines of the teeth of the other set, and a shaft driven by the said chain, having two sets of teeth correspondingly out of line, substantially as described.

383,062. **FLOUR-BOLT.** WILLIAM M. LUCAS, Christianville, Ohio. Filed Aug. 18, 1887. Serial No. 247,312. (No model.)

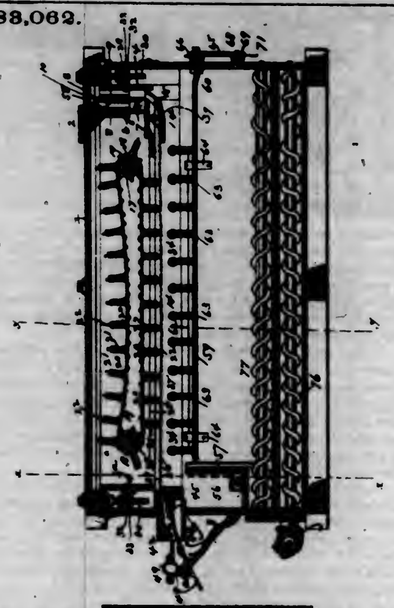
Claim.—1. The combination of the outer casing, a reciprocating sieve, a cleaning-frame below the sieve, the upper portion of which is between the side bars of the sieve and is guided in its vertical movements thereby, a bent shaft below the frame, and the leather straps secured to the frame and to the sides of the casing.

2. The combination of a casing, a partition in one end of the casing, a reciprocating sieve, one end of which projects over the partition, a frame below the sieve, the upper portion of which is between the side bars of the sieve and is guided in its vertical movement thereby, and a bent shaft, one end of which is journaled in the partition and the other end in the casing.

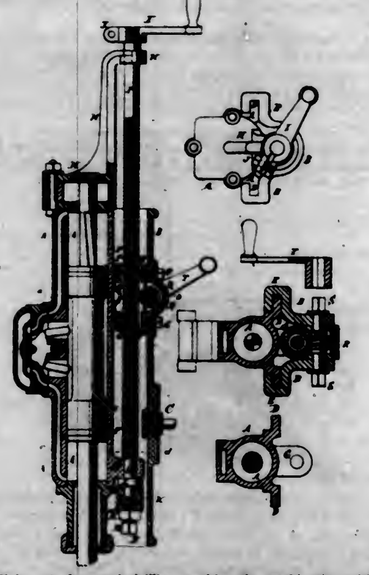
3. The combination of a reciprocating sieve, a cleaning-frame below the sieve, the upper portion of which is between the side bars of the sieve and is guided in its vertical movements thereby, a bent shaft below the frame, a slotted arm secured to one end of the casing, and an adjusting-arm secured at one end to one end of the shaft and at the other end to the slotted arm.

4. The combination of an outer casing, a frame, two arms pivotally secured at their outer ends to the frame, a grooved nut engaging with the inner ends of said arms, a screw-threaded bolt secured to the top of the casing, and a pair of bolts secured to the top of the casing, and having their lower ends bent and secured to the central portions of said arms.

383,062.



383,063. **ROCK-DRILLING MACHINE.** THOMAS J. MURPHY, New York, N. Y., assignor of one-half to Roger Potter, same place. Filed July 27, 1887. Serial No. 245,455. (No model.)



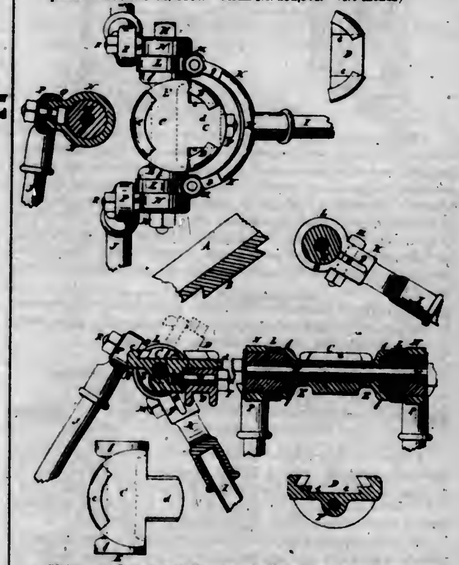
Claim.—1. In a rock-drilling machine, the combination, with the power or driving cylinder and the guide for the same, of a cylinder-adjusting screw provided with smooth-faced portions or journals at or near its opposite ends, an upwardly-extending guide-arm secured at its lower portion to a head of the driving-cylinder and provided with a bearing in its upper portion to receive one journal of the adjusting-screw, a crank upon the screw above the guide-arm, a lug projecting from the cylinder, and in which the opposite journal of the screw operates, a set-screw or the like bearing against the adjusting-screw, and a gear-wheel, worm, and crank, substantially as described.

2. In a rock-drilling machine, the combination, with the power or driving cylinder and a guide in which the cylinder operates, of a cylinder-adjusting screw provided with journals at or near its opposite ends, an upwardly-extending guide-arm secured at one end to the cylinder and provided with a bearing in its opposite end, in which one journal of the screw operates, a threaded portion upon the end of the screw beyond the outer journal, a hand-crank provided with a split head or hub adapted to fit over said threaded portion, a tightening-screw for said hub, a lug projecting from the cylinder, and in which the opposite portion of the adjusting-screw is journaled, and a set-screw or the like to bear upon the lower end of the cylinder-adjusting screw, substantially as described.

3. The combination, in a rock-drilling machine, with a driving-cylinder and a guide in which the same operates, of a cylinder-adjusting screw journaled at one end in a guide-arm carried by the cylinder, and at its opposite portion in a lug projecting from the cylinder, a collar or head secured to one end of the screw, a lug, and a set-screw passing through said lug and adapted to engage the collar, substantially as described.

4. The combination, in a rock-drilling machine, with a driving-cylinder and a guide in which the same operates, of a cylinder-adjusting screw journaled near its opposite ends in bearings carried by said cylinder, a worm-gear upon said screw and internally threaded, bearings in which said gear is journaled, a cap secured to the cylinder-guide and to which said bearings are secured, a worm journaled in the cylinder-guide and provided with projecting ends, and a crank to operate the worm, substantially as described.

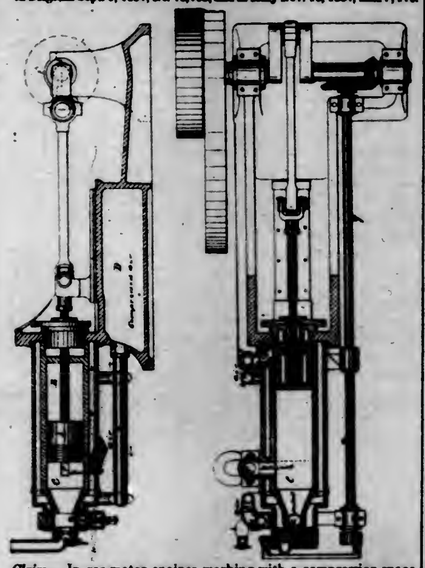
383,064. **TRIPOD FOR ROCK-DRILLING MACHINES.** THOMAS J. MURPHY, New York, N. Y., assignor of one-half to Roger Potter, same place. Filed Oct. 14, 1887. Serial No. 252,378. (No model.)



Claim.—1. In a tripod for rock-drilling machines, the combination, with a dovetail or flanged portion on the drill-stock, of a stationary jaw plate or seat provided with a dovetail segmental projection or jaw, a dovetail tongue projecting from the opposite side of the jaw-plate, a movable jaw provided with a dovetail groove to receive said tongue, a horizontal hub upon the under side of the jaw-plate, a screw-bolt passing through the movable jaw and entering said hub, and supporting-legs jointed onto the hub, substantially as described.

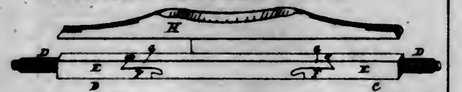
2. In a tripod for drilling-machines, the combination, with a jaw seat or plate and a horizontal hub upon the under side of the same, provided with bell-shaped ends projecting beyond the jaw-plate, of tapered or beveled plugs or hubs seated in said bell-shaped ends, a bolt extending longitudinally through the horizontal hub and plugs and locking the same in the bell-shaped ends, a forked leg provided with loop-heads embracing said plugs, bolts or screws to tighten said loop-heads, a loop-strap embracing each plug and provided with an outwardly-projecting shank, supporting-legs, a bell-shaped head upon each leg adapted to fit over the shanks upon the loop-straps, and a bolt passing through each shank and bell-shaped head, whereby the same are locked together, substantially as described.

383,065. MOTOR-ENGINE WORKED BY COMBUSTIBLE GAS. NICOLAUS A. OTTO, Cologne, Prussia, assignor to the firm thereof Felix Deutz, Deutz on the Rhine, Germany. Filed Sept. 26, 1887. Serial No. 250,734. (No model.) Patented in England Aug. 26, 1887, No. 11,668; in Belgium Sept. 3, 1887, No. 78,708, and in Italy Nov. 10, 1887, XLIV, 170.



Claim.—In gas-motor engines working with a compression-space and with a cycle of four strokes, the method of replacing the residual products of combustion remaining in the cylinder at the end of the expelling-stroke by a combustible charge by first driving out the said products by means of a charge of atmospheric air and then drawing in a variable quantity of combustible gas with or without admixture of air to mix with the said charge of air, the combined charge being partially expanded below atmospheric pressure during the suction-stroke and compressed during the return-stroke, substantially as herein described.

383,066. AXLE FOR VEHICLES. JAMES R. PRESCOTT, Waynesborough, Ga., assignor of one-half to John W. Reynolds, same place. Filed Dec. 15, 1887. Serial No. 257,966. (No model.)

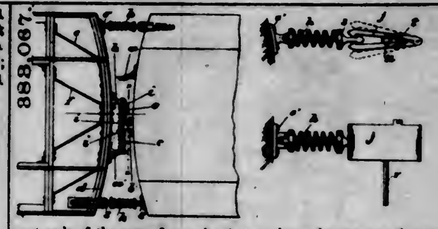


Claim.—1. In a sectional metallic axle, the combination, with the intermediate section having a half-lap extension, *f'*, and a recess, *g*, at the inner end thereof, the journal-sections having the half-lap extension *f'* and a hook-jaw, *f*, to engage with the recess *g*, and a bolster secured to the said axle-sections, substantially as described.

2. In a sectional metallic axle, the combination, with the intermediate section having a half-lap extension, *f'*, a recess, *g*, at the inner end thereof, and a beveled outer end, *g'*, of a journal-section having the half-lap extension *f'*, and a hook-jaw, *f*, to engage with the recess *g*, and an overlying beveled shoulder, *f'*, to engage with the matching portions of the intermediate section, and a bolster secured to the said intermediate and journal sections, substantially as described.

3. In a sectional metallic axle, the combination, with the intermediate section and journal-sections of said axle, having interlocking half-lap extensions, of the interlocking lug or tongue K' upon the shoulders of the one, and the matching-recess K² upon the shoulders of the other, joints, to interlock with each other, a bolster, H, and straps I, substantially as described.

383,067. RAILROAD-CAR. GEORGE M. PULLMAN, Chicago, Ill. Filed Sept. 13, 1887. Serial No. 249,894. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the adjacent ends of the superstructures of two cars of a train, with a spring-coupler, substantially as set forth, whereby the tendency of each superstructure to oscillate is checked and a constant force to restore proper alignment of the car-bodies is obtained.

2. In the construction of railway-cars, springs connecting adjacent ends of the cars of a train, that are located at or near the tops thereof and secured by mechanism that will admit of coupling the parts belonging to one car with or uncoupling from the parts belonging to another car, which springs yield to flexion as a result of oscillation or swaying of the cars, whereby the resistance of said springs to such flexion operates to restrain the oscillatory or swaying motion of the cars, substantially as set forth.

3. The combination, with a train of cars, of springs connecting adjacent ends of cars, located at or near the roofs or tops thereof and secured by mechanism that will admit of coupling the parts belonging to one car with or uncoupling from the parts belonging to another car, which springs yield under tensile strain, as a result of oscillation or swaying of the cars, whereby the resistance of said springs to such tensile strain operates to restrain the oscillatory or swaying motion of said cars, substantially as set forth.

4. In the construction of railway passenger-cars, brackets *b* and *b'*, secured to the car-roof on opposite sides of a central longitudinal line from that of the opposite end of the car, brackets *a*, also secured on opposite sides of a central line at the respective ends of a car, in combination with spiral springs *c* and *c'*, which latter are respectively hinged to the brackets *b* and *b'*, and their opposite ends adapted to bear against brackets *a* and *a'*, substantially as described.

5. In the construction of railway-coaches, springs A, one of which is provided on each end of a car at or near the top thereof and on opposite sides of a central longitudinal line of said car, said springs being provided with a coupling-shank and head, *a*, in combination with clutches *j*, likewise located at each end of the car in positions to couple with said springs when the cars are brought together, substantially as set forth.

6. In the construction of railway-cars, springs A, attached to the several cars of a train at the roof or ends of said cars, that are provided with suitable shanks and coupling-heads, in combination with clutches *j* upon adjacent cars, which latter are provided with cams *a* for opening the jaws of said clutches preparatory to coupling, substantially as described.

383,068. ROAD-SCRAPER. JAMES D. S. REED, Chicago, Ill., assignor of one-half to William G. P. Reed, same place. Filed Sept. 1, 1887. Serial No. 248,443. (No model.)



Claim.—1. The combination, with a wheeled frame, of a scraper provided with a lifting-bail and a handle, and a lever pivoted to the vehicle frame or axle, from the front and short arm of which the scraper is suspended by its bail, and the long arm of which is engagable with the scraper-handle, substantially as described.

2. The combination, with a wheeled frame, a scraper, and a lifting-lever for lifting and suspending said scraper clear of the ground, of a draft-bail pivoted to the frame at its forward end and having a vertical movement at its rear end for engaging and disengaging the front end of the scraper, said a lever, as F, pivoted to the frame of the vehicle and having its shorter arm connected to the draft-bail for lifting the same into engagement with the scraper and raising the front end thereof, and its longer arm adapted to engage and be held in position by a projecting portion of the scraper, substantially as described.

3. The combination of a wheeled axle elevated at its middle portion, a draft-tongue pivoted on said axle, and an adjustable brace-rod connecting the elevated part of the axle with the front portion of the draft-tongue, substantially as described.

4. The combination of a wheeled frame embracing an axle having two horizontal elevated portions, one in front and above the other, of a scraper-lifting lever pivoted to the lower and rear portion of said axle, and a lever pivoted to the front and more elevated portion of the axle, for lifting the front end of the scraper, substantially as described.

383,069. FASTENING FOR GLOVES. WILLIAM S. RICHARDSON, Boston, Mass. Filed Jan. 28, 1888. Serial No. 261,644. (No model.)



Claim.—1. In a fastening for gloves and other articles, the member having a dome or button top, *a*, the jaws *a'*, formed by inward extensions from the lower edge of the button or dome sections of the blank from which it is formed, the fastening-prongs *a²*, integral with the dome, and the stay-piece *a³*, interposed between the jaws and the top of the dome, substantially as described.

2. In a fastening for gloves and other articles, the member having the dome or button top *a*, the jaws *a'*, covered by the dome or button top *a*, and a stay-piece or support for the jaw-plates contained between the top of the dome and the upper surface of the jaws, substantially as described.

3. The combination, in a fastening for gloves and other articles, of the dome or button *a*, the jaws *a'*, and the stay *a³*, having a locating-flange, *c²*, and *b* staying sleeve or section, *d'*, substantially as described.

383,070. GLOVE-FASTENING. WILLIAM S. RICHARDSON, Boston, Mass. Filed Jan. 28, 1888. Serial No. 261,645. (No model.)



Claim.—1. In a fastening for gloves and other articles, a dome or button top, *b*, the jaws *b²*, and stay-piece *c*, having the prongs or fastening-extensions *c'*, as and for the purposes described.

2. The combination of the dome or button top *b*, the jaws *b²*, having the holes or recesses *c²*, with the stay-piece *c*, having the prongs or fastening-extensions *c'*, which extend through said holes or recesses, as and for the purposes described.

3. The combination of the dome or button top *b*, jaws *b²*, stay-piece *c*, having the flange *c²*, the upwardly-extending staying-section *c³*, and the prongs *c'*, substantially as described.

4. The combination of the dome or top *b*, the jaws *b²*, the stay *c*, and the under washer, *d*, connected with the stay-piece to secure the fastening in place, substantially as described.

383,071. FASTENING FOR GLOVES. WILLIAM S. RICHARDSON, Boston, Mass. Filed Jan. 28, 1888. Serial No. 261,646. (No model.)



Claim.—1. A fastening having the dome or button-top A, the independent jaw-plate C, having the flange *c'*, the opening *c²*, and slit *c³*, united to the dome or button-top by lapping its edge or sections thereof upon the under surface of the jaw-plate, and a fastening device having prongs or extensions *b²*, which pass through holes in the jaw-plate C, as and for the purposes described.

2. The fastening for gloves and other articles, having the dome or button-top A, the independent jaw-plate C, having the flange *c'* and jaw-opening *c²*, and the stay-piece B, having a staying-extension, *b³*, substantially as described.

3. The combination, in a fastening for gloves and other articles, of the dome or button-top A, independent jaw-plate C, having the flange *c'* and jaw-opening *c²*, united by its edge to the dome or button-top, the stay B, and prongs or extensions for securing the fastening in place, substantially as described.

4. The combination, in a fastening, of the dome or button-top A, the independent jaw-plate C, having the jaw-opening *c²*, the stay-piece B, the under washer, and fastening-connections extending from the outer section of the fastening through the material to the under washer, as and for the purposes described.

5. In a fastening for gloves and other articles, the independent dome or button-top A and the jaw-plate having a continuous flange, *c'*, united by its edge to the dome or button-top, and the jaw-opening *c²*, provided with radial slits, substantially as described.

6. In a fastening for gloves and other articles, the combination of the independent dome or button-top, the jaw-plate having a continuous outer edge and inner yielding jaws about a circular or other shaped hole, and united by its edge to the said dome or button-top, the interior stay-piece, B, and its fastening arms or extensions, substantially as described.

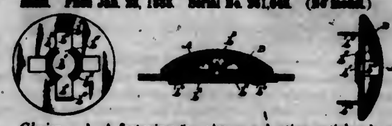
383,072. FASTENING FOR GLOVES. WILLIAM S. RICHARDSON, Boston, Mass. Filed Jan. 28, 1888. Serial No. 261,647. (No model.)



Claim.—1. A fastening for gloves and other articles, consisting of the dome or button-top A, the jaws *b'*, having the holes or recesses *b²* the stay-piece C, having the prong-turning depressions *c²*, and the washer D, having the prongs or fastening-extensions *d*, substantially as described.

2. In a fastening for gloves and other articles, the combination of the dome or button-top A, the jaw-plate having the opening *b²*, jaws *b'*, and the openings or recesses *b²*, with a stay-plate, C, having the prong-turning depressions *c²*, and the washer D, having the prongs *d*, substantially as described.

383,073. GLOVE-FASTENING. WILLIAM S. RICHARDSON, Boston, Mass. Filed Jan. 28, 1888. Serial No. 261,648. (No model.)



Claim.—1. A fastening for gloves and other articles, having a dome or button-top and a jaw-plate provided with integral stays for supporting the jaw-plate in relation to the top of the dome or button-top, with integral fastening prongs or extensions for securing the fastening in place, substantially as described.

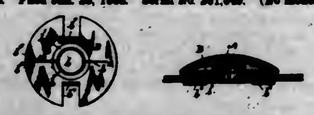
2. The combination, in a fastening, of a dome or button-top, A, and a jaw-plate, B, having the integral stays *b³* and integral prongs *b⁴*, the jaw-opening *b'*, and jaws *b²*, substantially as described.

3. In a fastening for gloves and other articles, the dome or button-top A, the jaw-plate B, having the fastening prongs or projections *b⁴*, formed by striking down sections of the jaw, the openings *b²* thereby formed being connected with the jaw-opening *b'*, and the jaws *b²*, substantially as described.

4. A fastening for gloves and other articles, having a dome or button-top and a jaw-plate secured to the dome or button-top, the jaws *b²*, and the prongs *b⁴*, struck down from the material of the jaw-plate and having their union with the jaw-plate close to the jaw-opening, substantially as described.

5. In a fastening for gloves and other articles, the dome A, the jaw-plate B and its jaw, and stay *b³*, and fastening-prongs integral with the metal of the jaw-plate, substantially as described.

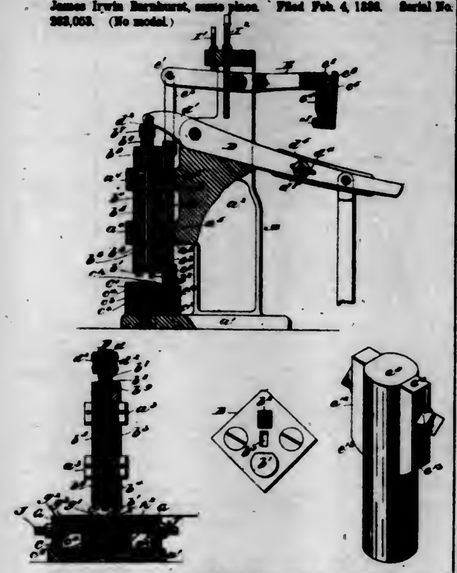
383,074. GLOVE-FASTENING. WILLIAM S. RICHARDSON, Boston, Mass. Filed Jan. 28, 1888. Serial No. 261,649. (No model.)



Claim.—1. A fastening for gloves and other articles, comprising a dome or button-top, A, and a flat jaw-plate, B, having the jaw-opening *b* and slit *b²*, extending from it to the outer edge of the plate, and the fastening prongs or projections *b⁴*, the edge of the jaw-plate being connected with the edge of the dome or button-top in a manner to permit of a slight movement thereof relatively to it, substantially as described.

2. The combination, in a fastening for gloves and other articles, of the dome or button-top A, the jaw-plate B, loosely connected at its edge with a dome or button-top, as described, having the opening *b* and the slit *b²*, extending from the opening to its outer edge, and prongs or extensions *b⁴*, for securing the fastening in place, and the stay-piece C, substantially as described.

383,075. MACHINE FOR ATTACHING FORKS TO UMBRELLA-STRETCHERS. CHARLES T. REDHEFFER, Philadelphia, Pa., assignor to James Irwin Barnhurst, same place. Filed Feb. 4, 1886. Serial No. 208,053. (No model.)



Claim.—1. In a machine of the class recited, the combination of the hammer, the plunger b^4, the die, and the transverse wings or jaws, all arranged and operating with relation to each other as shown and described, together with the mechanism for relatively operating said devices, substantially as and for the purpose set forth.

2. The combination of the die, the vertically-reciprocating hammer, the plunger b^4, the lever connected with said plunger, the transverse reciprocating jaws, the plunger c^3, with which said jaws are connected, and devices, substantially as described, for relatively operating said hammer and plungers, together with the supporting-frame, substantially as and for the purpose set forth.

3. The combination of the die, the vertically-reciprocating hammer, the plunger b^4, the lever D, connected with said plunger, the transverse reciprocating spring-controlled jaws, the plunger c^3, with which said jaws are connected, the lever E, connected with said plunger c^3, the pivoted spring-controlled projection on the end of said lever E, and the spud on the arm of lever D, substantially as and for the purpose set forth.

4. The combination of the die, the vertically-reciprocating hammer, the plunger b^4, the lever connected with said plunger, the transverse reciprocating spring-controlled jaws, the plunger c^3, the cams c^{13}, the blocks F, engaging said cams, the pivoted lever connecting said blocks and jaws, together with devices for operating said hammer and plungers, substantially as and for the purpose set forth.

5. In a machine of the class recited, the combination of the die, the vertically-reciprocating hammer provided with the stud and slotted projection on its lower end, the spring-controlled plunger working centrally in said hammer, the lever D, the plunger c^3, its lever E, the spring-elevated cam-blocks, the beveled horizontal blocks engaging therewith, the oppositely-reciprocating wings or jaws loosely connected with said blocks, together with the spud on lever D and pivoted spring projection on lever E, said spud and projection arranged with relation to each other, all substantially as and for the purpose set forth.

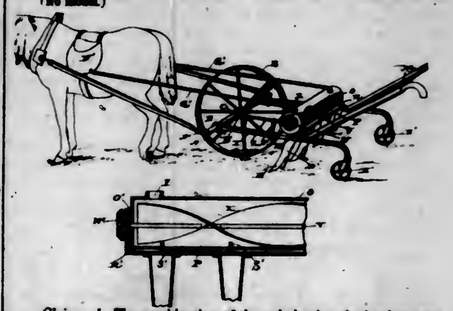
6. In a machine of the class recited, the combination of the stationary die, the vertically-reciprocating hammer provided with the stud and slotted projection on its lower end, the spring-controlled plunger working centrally in said hammer, the lever D, provided with the slot therein, the plunger c^3, its lever E, the spring-elevated cam-blocks, the beveled horizontal blocks engaging therewith, the reciprocating wings or jaws connected loosely with said blocks, together with the spud adjustably secured in said slot, and the pivoted spring-controlled projection on lever E, arranged with relation to the movement of said spud, all substantially as and for the purpose set forth.

7. In a machine of the class recited, the combination of the die, the vertically-reciprocating hammer provided with the stud and slotted projection on its lower end, the spring-controlled plunger working centrally in said hammer, the lever D, the plunger c^3, its lever E, the spring-elevated cam-blocks, the beveled horizontal blocks engaging therewith, the transversely-reciprocating jaws loosely connected with said blocks, the spud on lever D, and the pivoted spring projection on lever E, arranged with relation to the movement of said spud, together with the adjusting screws and nuts for limiting the throw of levers D and E, respectively, all substantially as and for the purpose set forth.

8. In a machine of the class recited, the combination of the die, the vertically-reciprocating hammer provided with the stud and slotted projection on its lower end, the spring-controlled plunger working centrally in said hammer, the lever D, the plunger c^3, its lever E, the spring-elevated cam-blocks, the beveled horizontal blocks engaging therewith, the transversely-reciprocating spring-controlled wings or jaws loosely connected with said blocks, the spud on lever D, and the pivoted spring projection on lever E, arranged with relation to the movement of said spud, together with the adjusting screws and nuts for limiting the throw of said wings, substantially as and for the purpose set forth.

9. In a machine of the said class, the combination, with the die, of the laterally-offset plates I, secured on said die, substantially as and for the purpose specified.

383,076. CULTIVATOR, GRAIN-DRILL, AND HARROW. WILLIAM B. ROBERTS, Sullivan, Ind. Filed July 30, 1887. Serial No. 245,661. (No model.)



Claim.—1. The combination of the axle having the hooks at the ends for the attachment of the traces, the wheel B, journaled to the center of the axle, the clevises attached to the axle near its ends and adjustable thereon, and the beams connected to the said clevises, substantially as described.

2. The combination of the axle, the wheel B, journaled thereon, the beams connected to the axle, the cylinder arranged transversely on the beams and having the discharge-openings and the spouts or conveyers depending therefrom, the worm conveyer journaled in the cylinder, and the gearing connecting the said conveyer to the wheel B, substantially as described.

3. The combination of the axle, the wheel B, journaled thereon, the beams connected to the axle, the cylinder arranged transversely on the beam and having the discharge-openings, the worm conveyer journaled in the cylinder, the gearing connecting the said conveyer to wheel B, the sack or receptacle adapted to be supported on the back of the draft-animal, and the flexible tubes connecting the said sack or receptacle with the cylinder, substantially as described.

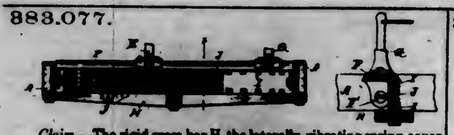
4. The combination of the axle, the wheel B, journaled thereon and having the miter-gear-wheel C, the beams connected to the axle, the cylinder arranged transversely on the beams, said cylinder having the discharge-openings, the worm conveyer journaled in the cylinder and having the miter-wheel W attached to one end of the shaft, the longitudinal rod Z, journaled in suitable bearings and having the miter-pinions meshing with the wheels C and W, for the purpose set forth, substantially as described.

5. The combination of the cylinder having the discharge-openings, the rotating worm conveyer arranged in the said cylinder, and the shaft F', having the feed disks or wheels S' arranged over the said openings and geared to the worm conveyer, substantially as described.

383,077. SHUTTLE-MOTION FOR LOOMS. LEWIS R. ROSS, St. Paul, Minn., assignor to the Ross Loom Company, Nashua, N. H. Filed Jan. 5, 1888. Serial No. 259,946. (No model.)

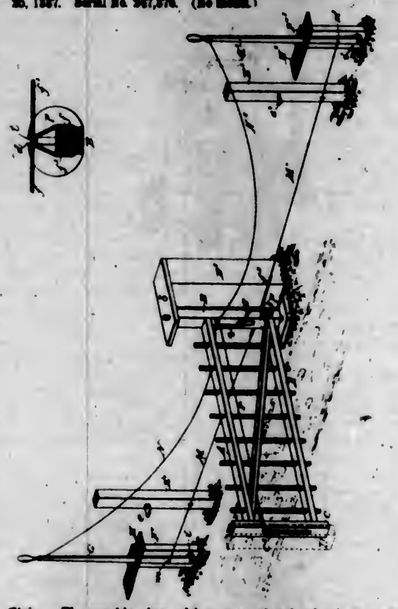
Brief.—An improvement on the devices of Letters Patent No. 233,551, dated October 19, 1880. The substitution of the compression-springs under one edge of the spring-cover for the torsional springs shown in the Letters Patent referred to removes the necessity for the central rod on which the torsional springs were placed, as well as facilitates the removal and replacement of the separate springs.

383,077.



Claim.—The rigid cross-bar H, the laterally-vibrating spring-cover F, and the arms E and G mounted thereon, in combination with the series of vertical and separately-removable springs J, and the corresponding series of studs, I, serving to hold said springs in place, substantially as set forth.

383,078. FARM-GATE. LEWIS SHEPARD, Hince, Ind. Filed Aug. 20, 1887. Serial No. 247,576. (No model.)



Claim.—The combination, with a gate, of spring-latch C, cord r, lever t, attached to upright B, slotted plate p, secured to the lower part of said upright, cords f m and f' m', levers G G', guides H H', posts F F', and cords N N', all arranged substantially as herein shown and described.

383,079. NEEDLE-LOOM. ALBERT L. SKINNER, Yonkers, N. Y., assignor to the Bigelow Carpet Company, Clinton, Mass. Filed Apr. 15, 1887. Serial No. 234,971. (No model.)

Claim.—1. The shuttle, a shipper, the feeler, intermediate connecting mechanism, substantially as described, between the feeler and shipper-lever, and the weft carrier or needle, combined with a tension device for the weft-thread, and with means, substantially as described, to temporarily increase or augment the tension on the weft-thread as the latter in the weft-carrier is pushed against the feeler, substantially as described.

2. The weft carrier or needle, the shuttle containing a thread to lock the loop of thread held by the said needle, and a shipper-lever handle, combined with a feeler, a^3, and with intermediate mechanism between it and the shipper-handle to effect the release of the shipper-handle when the weft fails, substantially as described.

3. The shipper-handle, its notched holding-plate, the lever a^9, and rock-shaft a^{10}, having an arm, a^{12}, provided with a projection to engage the shipper-handle, the loop or slide piece a^6, supported by the lever a^9, the feeler a^3, and means to connect it with the said loop, combined with the hooked bar a^{14} and with means to operate the said hooked bar, substantially as described.

4. The slideway E, the carriage thereon, its attached needle, tension device, and spring-arm b^3, combined with a rod having an arm which is acted upon by the carriage as the latter arrives at the end of its inward movement to effect the temporary nipping of the thread, substantially as described.

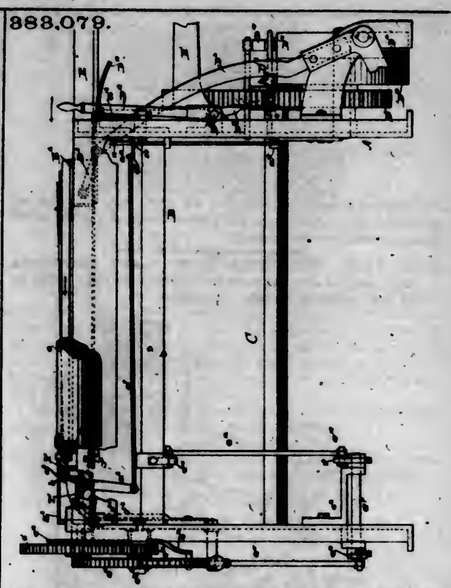
5. The combination, with the slideway E, a carriage thereon, a weft carrier or needle, and a shuttle provided with a rigid arm having a nock and a delivery-point, of an arm-holder loosely engaging the rigid arm of the shuttle, to operate substantially as described.

6. The ratchet-wheel c^2 of a take-up mechanism, the pawl c^3 to move it, means to actuate the said pawl, a lever to disengage the said pawl from the said ratchet-wheel, and a rod, f^{12}, combined with the shipper-lever handle to actuate the said rod to release the lever and insure the engagement of the pawl with the ratchet-wheel whenever the shipper-handle is moved to start the loom, substantially as described.

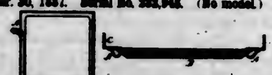
7. The combination, with a guide-bar, a carriage, a weft-carrying needle thereon, a shuttle having a thread to lock the weft-thread, and a shipper-handle and notched plate for holding it, combined with a feeler and intermediate mechanism, substantially as described, forming a weft stop-motion, the feeler being adapted to be moved by the thread held by the weft carrier or needle, substantially as described.

8. The weft-carrying needle provided with the eyes or notches at its inner end to support the weft-thread at two points, a shipper-lever, and a shuttle having an upturned point, combined with a feeler, as a^3, located opposite the point of the shuttle and in the line of movement of the weft carrier or needle, and intermediate mechanism between the said feeler and shipper-lever, whereby the weft-thread carrier or needle is made to act against the feeler preparatory to passing the weft-thread over the point of the shuttle, substantially as described.

383,079.



383,080. COACH-LAMP. ORRIN W. SWIFT, New Haven, Conn. Filed Mar. 30, 1887. Serial No. 232,948. (No model.)

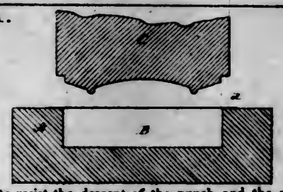


Claim.—In a lamp or lantern having open panels to be filled with glass, the combination of the glass B, the metal frame A, made from sheet metal without joint, and having an opening corresponding to the glass to be exposed, the said frame substantially concavo-convex shape in transverse section, the inner edge of the said frame adapted to bear upon the edge of the glass and clamp it against the frame of the lamp, and the outer edge of the frame secured to the frame of the lamp, substantially as described.

383,081. DIE FOR SHAPING SHEET METAL. ORRIN W. SWIFT, New Haven, Conn. Filed Aug. 20, 1887. Serial No. 248,106. (No model.)

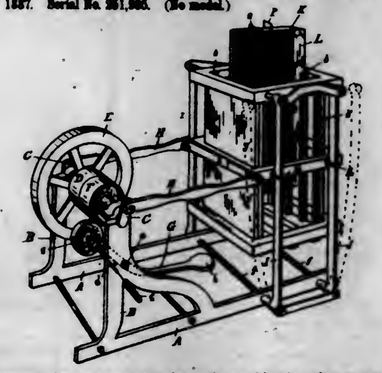
Claim.—The herein-described improvement in dies for shaping sheet metal, consisting of a die having a cavity in outline corresponding to the outline of the article to be produced, but of a depth greater than such article, combined with a follower or punch, having its under face shaped corresponding to the shape of the reverse or inner side of said article, the said punch adapted to close a cavity of the die and force the sheet metal placed between it and the said cavity into said cavity and upon the air normally in the said cavity, the said air form-

383,081.



ing a cushion to resist the descent of the punch and the metal and cause the metal to conform to the irregular shape of the face of the punch, substantially as described.

383,082. CREAM-TESTING CHURN. JAMES P. WOOD, Chelsea, Mich., assignor of one-half to George P. Glazier, same place. Filed Oct. 11, 1887. Serial No. 251,995. (No model.)



Claim.—1. In a cream-testing churn, the combination of a supporting-frame, a churn-crate provided with removable bottle-cases, spring-supports attached at the upper corners and passing through guiding-keepers at the vertical center of the churn-crate, and a revolving crank-shaft and pitman-connection between said shaft and the churn-crate, substantially as described.

2. In a cream-testing churn, the combination of a supporting-frame, a churn-crate provided with removable bottle-cases, spring-supports attached at the upper corners and passing through guiding-keepers at the vertical center of the churn-crate, a revolving shaft to which said churn-crate is reciprocatingly connected, a loose pulley, and a fast drive-pulley, substantially as described.

383,083. BOLT-HEADING MACHINE. WILLIAM H. WHITELEY, OSCAR B. PERRIGO, and ALBERT S. PERRIGO, Springfield, Ohio, assignors to said William H. Whiteley. Filed Jan. 6, 1887. Serial No. 223,902. (No model.)

Claim.—1. The combination, with the intermittently-revolving cylinder and a heading-tool adapted to come in contact with the blanks therein, of a striking-lever and mechanism for operating the same, adapted to pass in front of the heading-tool after each stroke thereof, substantially as set forth.

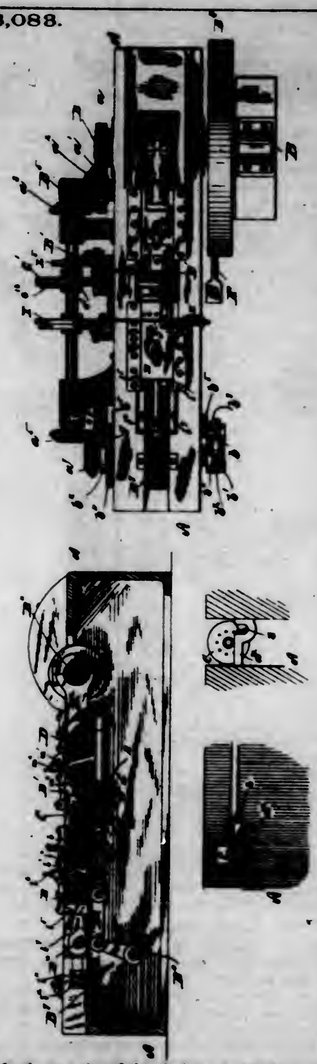
2. The combination, with the intermittently-revolving cylinder provided with a series of dies therein and a heading-tool adapted to reciprocate to and from said dies, of a feeding-cylinder adapted during the movement of the main cylinder to carry the blanks successively in front of one of said dies in a position to be fed into the same, substantially as specified.

3. The combination, with the feeding-cylinder, of an opening or throat above said cylinder, a rock-shaft having projections thereon on one side of said throat, and a retaining-plate adapted to receive and hold the blanks dropped into said throat, said retaining-plate being automatically adapted to close said throat as the projections are moved to carry the blank to the feeding-cylinder, substantially as set forth.

4. The combination, in a bolt-heading machine, of a feeding device having a throat to receive the blanks from the hopper or other source of supply, and a retaining-plate adapted to open and close the inlet to said throat, said retaining-plate being so constructed that its movement in closing said throat will expel all the blanks except one from the said throat, substantially as set forth.

5. The combination, with the feeding-cylinder having a series of grooves therein, of a rock-shaft provided with a series of projections thereon, a retaining-plate adapted to be operated by said projections, and an adjustable slide above said rock-shaft adapted when the retaining-plate is in its normal position to form with said retaining-plate a

383,088.



throat for the reception of the blanks to be fed thereby, said plate being adapted to approach said slide and close the said opening as the rock-shaft is moved to carry the blanks to the feeding-cylinder, substantially as set forth.

6. The combination, with the feeding-cylinder having the grooves therein, of a rock-shaft with the projections above said cylinder adapted to carry the blanks downwardly and deposit them successively in the said grooves, the retaining-plate operated by said projections to open and close the opening above said shaft, and a spring adapted to operate said rock-shaft and a cam to return said rock-shaft to its normal position, substantially as set forth.

7. The combination, with the feeding-cylinder, of the rock-shaft with the projections thereon, and the retaining-plate above said cylinder, means for operating said rock-shaft and intermittently revolving said cylinder, and a retaining-bolt adapted to engage said cylinder and hold it at rest during the movement of said rock-shaft, and means for automatically withdrawing said bolt to permit the cylinder to revolve while the rock-shaft remains at rest, substantially as specified.

8. The combination, with the main cylinder having dies therein, of the cross-head containing a series of plungers adapted to enter the respective dies in said cylinder, and a feeding-plunger supported in a

shaft having a bearing in said cross-head, said shaft being adapted to move independently of said cross-head, substantially as set forth.

9. The combination, with the main cylinder and the feeding-cylinder adapted to carry the bolt in a position in front of the dies in said main cylinder, of a sleeve in said feeding device cut away at the central portion to permit the blank carried by the feeding device to enter therein, the cross-head having a feeding-plunger capable of a movement therein, said sleeve being adapted to enter said cross-head, and said plunger being adapted to enter said sleeve, and means for moving said cross-head and feeding-plunger at different speeds, substantially as set forth.

10. The combination, with the main cylinder and the feeding-cylinder, of the cross-head provided with a series of plungers adapted to enter the dies in said main cylinder, a feeding-plunger adapted to move independently of said cross-head and pass through the respective grooves in said feeding-cylinder, a rock-shaft provided with a vibrating arm connected to said cross-head, said arm being extended and connected to said feeding-cylinder, and means for operating said rock-shaft and thus reciprocating said cross-head and feeding-plunger at different speeds, substantially as set forth.

11. The combination, with the main frame and cylinder provided with a series of dies therein, of a cross-head having a supporting-plunger adapted to successively enter said dies, a vibrating arm in the rear of said cross-head adapted, as the cross-head reaches the limit of its forward stroke, to form a connection between said cross-head and the main frame, and means for adjusting the bearing between said arms and main frame, substantially as set forth.

12. The combination, with the movable dies, the heading-tool at one side thereof, and the supporting-plunger at the other, of a movable head in which said supporting-plunger is secured, a variable key in said head for adjusting said plunger, a set-screw for holding said plunger therein, the supporting-arms adapted to form a rigid connection from said head to the main frame, sliding bearings in said main frame against which the supporting-arms rest, and means for adjusting said sliding bearings, substantially as set forth.

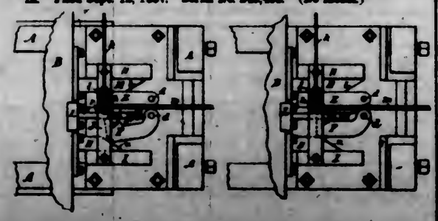
13. The combination, with the removable dies and the heading-tool and the supporting-plunger, of the head in which said supporting-plunger is secured, a rock-shaft having a vibrating arm adapted to move said head, a revolving shaft provided at either end with cams adapted to operate upon said rock-shaft and alternately move it in opposite directions, and means for connecting said revolving shaft to the mechanism which drives the heading-tool, substantially as set forth.

14. The combination, with the cylinder provided with a series of dies therein, of the heading-tool adapted to reciprocate in front of one of said dies, a reciprocating head supporting the series of plungers adapted to enter said dies, a rock-shaft having an extending arm adapted to move said head, one of said plungers being extended through said head and adapted to slide therein, and a connection from the extended portion of said arm to said sliding plunger, and a variable collar on said sliding plunger, to which the connection is made, substantially as specified.

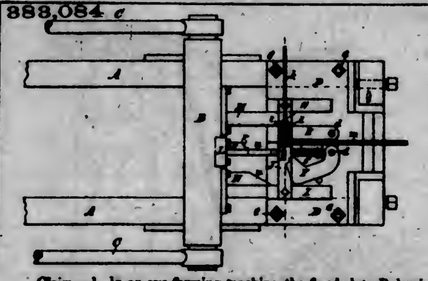
15. The combination, with the intermittently-revolving cylinder having dies therein and the heading-tool adapted to reciprocate in front of one of said dies, of a striking-lever provided at the base with bearings on which lever is adapted to reciprocate, one of said bearings being so constructed that when the lever reaches a given point it leaves said bearing, while the other bearing forms a pivot on which said lever turns to produce a downward striking motion thereof, substantially as set forth.

16. The combination, with the heading-tool, of the striking-lever adapted to reciprocate in front thereof, a bracket adapted to support said striking-lever, provided with tracks on which the lever is adapted to reciprocate, and rollers on said lever adapted to travel on said track, one of said tracks being of such length that when the lever reaches a given point the roller leaves the said track, while the other roller forms a pivot on which the lever is adapted to turn, substantially as set forth.

383,084. MACHINE FOR FORMING EYES OF RODS. CHARLES O. WILSON, South Bend, Ind., assignor to Williams, White & Co., Moline, Ill. Filed Sept. 12, 1887. Serial No. 249,493. (No model.)



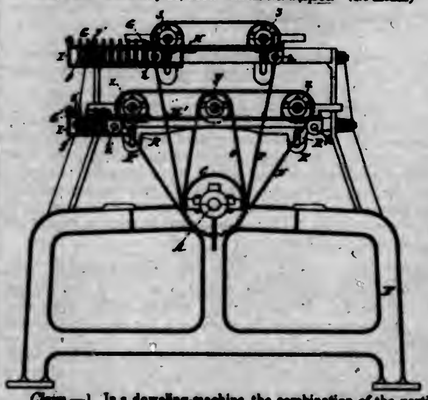
383,084 *c*



Claim.—1. In an eye-forming machine, the fixed plate D, having guide-bars H and I, jaws E and F pivoted to said plate, pin A, mounted in fixed bearings between the jaws, the reciprocating cross-head B, die L, secured to said reciprocating head, stud M, having inclined face *t*, and stud N, having inclined face *u*, said studs being also secured to the reciprocating head, all being arranged to co-operate, substantially as and for the purpose specified.

2. In an eye-forming machine, the die L, having the projecting portion *n*, mortise *o*, solid portion *p*, and notch *r*.

383,085. DOWELING-MACHINE. BENJAMIN B. WILLIAMS, Cincinnati, Ohio. Filed July 30, 1887. Serial No. 245,222. (No model.)



Claim.—1. In a doweling-machine, the combination of the vertically and horizontally adjustable tables arranged one above the other, spring-gages mounted in a suitable frame thereon, said gages being adapted to be operated by the weight of the wood to be bored, and adjustable bits arranged to operate above said tables, substantially as shown and described.

2. In a doweling-machine, the combination, with the adjustable tables H H', vertically-movable gages G G', mounted in suitable supports on said tables, of adjustable bit-shafts arranged above the tables and adapted to operate upon the wood placed upon said tables, substantially as shown and described.

383,086. STAIN OR PAINT. W. HENRY WHEELOW, Boston, Mass. Filed Mar. 3, 1887. Serial No. 229,542. (No specimens.)

Claim.—1. A stain or die containing as ingredients a chloride of iron, preferably a sesquichloride, dissolved in alcohol and intermixed with oil, substantially as described.

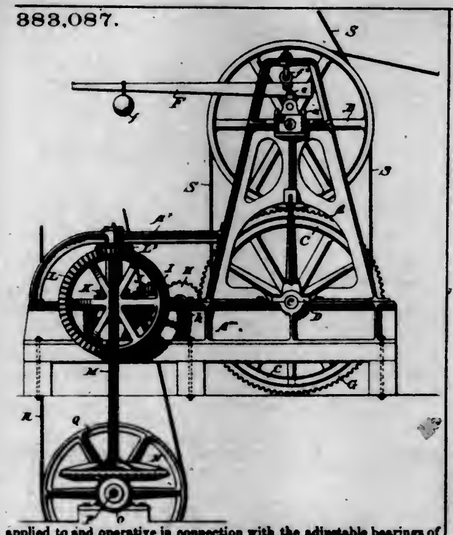
2. A stain or dye consisting of a chloride of iron dissolved in alcohol, with or without other coloring-matter, and a vegetable or animal oil and asphalt intermixed, in the manner substantially as described.

383,087. DELIVERING AND STRETCHING MECHANISM FOR MACHINES FOR THE MANUFACTURE OF WIRE ROPE. JAMES WITTENBERG, Chambersburg, assignor to the Trenton Iron Company, Trenton, N. J. Filed Jan. 30, 1883. Serial No. 268,949. (No model.)

Brief.—The invention is of especial applicability in connection with cable-closing machines, and its object is the delivery under tension of a wire cable from the closing-machine and the consequent stretching or taking of the slack out of said cable.

Claim.—1. The combination of a tension-drum rotatable in fixed bearings, fixed bearings for said drum, a tension-drum rotatable in adjustable bearings, adjustable bearings for said drum, driving mechanism for positively driving the first-named drum, and straining-levers

388,087.



applied to and operative in connection with the adjustable bearings of the last-named drum for adjusting its position, substantially as and for the purpose set forth.

2. The combination of a pair of drums, each peripherally circumscribed by grooves and mounted with axes parallel in approximate tangency, a fixed shaft for carrying one of said drums, gearing applied to said shaft for rotating said drum, an adjustable shaft applied to the other of said drums and susceptible of movement radially toward or from the shaft of the first-named drum, adjustable boxings applied to the adjustable shaft, and straining-levers applied to and operative in connection with the boxings of the adjustable shaft for adjusting it, substantially as set forth.

388,088. VERTICAL WIRE-ROPE-CLOSING MACHINE. JAMES WITHINGTON, Chambersburg, assignor to the Trenton Iron Company, Trenton, N. J. Filed Jan. 31, 1888. Serial No. 262,491. (No model.)

Brief.—The object of the invention is the production of a machine for closing about a main core at a single continuous operation the entire lengths of continuous strands of great aggregate length and weight, in which each of the strand-carrying bobbins is supported in entire independence of a central step, and in which friction is reduced to a minimum, the construction of the entire device being simplified and solidified.

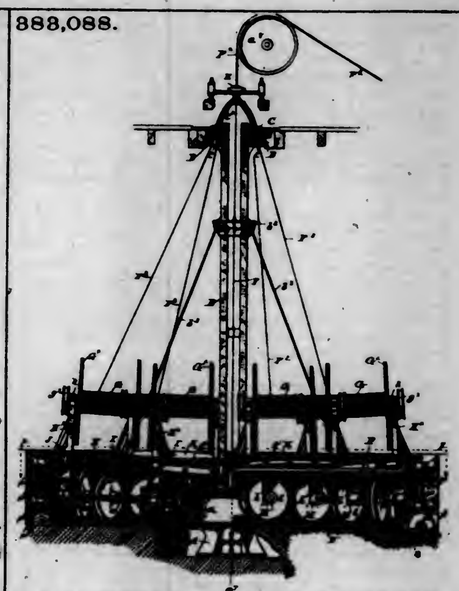
Claim.—1. The combination of a central rotatable vertical main shaft, a main step upon which said shaft is mounted and rotates, a cable-laying head connected and rotatable with the main shaft, a series of rotatable carriers for strand core-bobbins circumferentially distributed about the main shaft, and a series of revoluble supports for said carriers, connected with the main shaft, but supported in entire independence thereof, substantially as and for the purposes set forth.

2. The combination of a central rotatable vertical main shaft, a main step upon which said shaft is mounted and rotates, a cable-laying head connected and rotatable with the main shaft, a series of rotatable carriers for strand core-bobbins, a series of wheeled trucks for supporting said bobbin-carriers in independence of the main step, circumferentially disposed with reference to and so connected as to be rotatable with the main shaft, and a circular track concentric with the main step upon which said wheeled trucks travel, substantially as and for the purposes set forth.

3. The combination of a rotatable vertical main shaft, a main step upon which said shaft rotates, a cable-laying head, a series of circumferentially distributed and connected wheeled trucks, also connected to the main shaft and rotatable therewith, a series of rotatable carriers for strand-bobbins mounted respectively upon the trucks, and a fixed circular track concentric with the main step upon which the wheeled trucks travel, substantially as set forth.

4. The combination of a rotatable vertical main shaft, a main step upon which said shaft rotates, a cable-laying head, a series of wheeled trucks connected and rotatable with the main shaft, a series of rotatable carriers for strand-bobbins mounted respectively upon the trucks, friction-rollers interposed between the carriers for the strand-bobbins and the trucks, and a fixed circular track concentric with the main step upon which the wheeled trucks travel, substantially as set forth.

388,088.



5. The combination of a rotatable main shaft, a main step for said shaft, a rotatable cable-laying head, a series of wheeled trucks circumferentially disposed with reference to and connected with the shaft and all similarly inclined downwardly and inwardly, revolubie carriers for strand core-bobbins respectively mounted upon the trucks and possessing corresponding inclinations, and a circular road-bed concentric with the main step, substantially as set forth.

6. The combination of a rotatable vertical main shaft, a series of trucks circumferentially distributed about and connected with said shaft, pairs of wheels of respectively different diameters applied to said trucks, and revolubie carriers for strand-bobbins mounted upon said trucks, substantially as set forth.

7. In combination, a wheeled truck, a carrier for a strand core-bobbin superimposed upon and pivoted with respect to said truck, and a series of radially and circumferentially distributed friction-rolls interposed between the carrier and the truck, substantially as and for the purposes set forth.

388,089. AUTOMATIC STATIONARY WATER-FILTER. WILLIAM WITTEMEYER, Jr., St. Louis, Mo., assignor of one-third to Louis F. Boeckstiegel, same place. Filed Mar. 31, 1887. Serial No. 233,711. (No model.)



Claim.—1. The combination, with a tank and the filtering-wall, of inverted-V shape, placed therein so as to form settling-chambers 20 and 21, the supply-pipe 8, communicating with the chamber 20 at top, pipes communicating with each of said chambers at bottom for carrying off sediment, and a pipe for the escape of the purified water communicating with the top part of said tank, substantially as set forth.

2. The combination, with a tank and a filtering-wall, of inverted-V shape, placed therein so as to form settling-chambers 20 and 21, a valved pipe for the escape of sediment communicating with the bottom of each of said chambers, and the supply and douche pipes 8 42, communicating with the respective chambers 20 and 21 at top, substantially as and for the purposes set forth.

3. The combination, with the tank and the filtering-wall dividing it into settling-chambers 20 21, situated side by side, of the supply-pipe 8, communicating with the top portion of the chamber 20, the douche-pipes 42, communicating with the top portions of the chambers 21, the water-main with which said pipes 8 and 42 communicate, the pipe for conveying away the purified water, and the pipes 39, communicating with the bottom portions of the chambers 20 21 and with the sewer, substantially as set forth.

388,090. SIGM. HERMANN WITTE, Neustadt, Prussia, Germany. Filed Feb 9, 1888. Serial No. 263,670. (No model.) Patented in France Dec. 27, 1887, No. 187,948, and in England Jan. 9, 1888, No. 264.



Claim.—1. The combination, with a shoe having a cut on the front of the upper from the top along the instep to some distance back from the toes, of two flaps sewed to the opposite edges of the cut and having the edges opposite the ones secured to the edges of the cut united, and of a curved lever between said flaps, substantially as set forth.

2. The combination, with a shoe having a cut in the front face of its upper from the top along its instep to a point some distance from the back of the toes, of the flaps *a b c d e*, secured to the upper and to the opposite edges of said cut, which flaps have the edges *b c d* united, and the curved lever *f*, having one end secured to one of the flaps, and having the opposite end between the flaps united at their edges, substantially as set forth.

3. The combination, with the shoe having a cut in the front of its upper from the top along the instep to a point some distance back from the toes, of the two flaps *a b c d*, secured along the edges *a c* to the edges of said cut, and said flaps having the edges *b c d* united, the lever *f*, the tongues B C, and the pins b^3 c^3, substantially as set forth.

388,091. SUPPORT FOR SPINNING-SPINDLES. ASHER WOOD, Worcester, assignor to the Sawyer Spindle Company, Boston, Mass. Filed June 20, 1888. Serial No. 306,891. (No model.)

Brief.—The object of the invention is the production of an improved spindle-support capable of yielding to a limited extent with the foot of the spindle as the spindle gyrates under the influence of an unbalanced load, the employment of elastic packing being dispensed with.



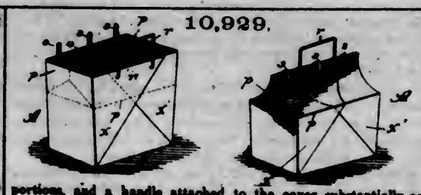
Claim.—A sleeve-whirl spindle, combined with a yielding bolster consisting of a solid or rigid sleeve interposed directly between the sleeve-whirl and the pintle of the spindle and constituting the only lateral bearing for the spindle and surrounded only by the sleeve-whirl, and of a spring-arm attached to or forming part of the said sleeve, the said arm being adapted to be attached to a suitable base, thus permitting the said sleeve constituting the bearing portion of the bolster to move to a limited extent in substantially every direction with the spindle, substantially as described.

REISSUES.

10,929. PAPER RECEPTACLE. OLIVER H. HOOD, Chicago, Ill., assignor to the Chicago Manila Paper Works, same place. Filed Mar. 8, 1888. Serial No. 266,941. Original No. 261,886, dated Nov. 2, 1886.

Claim.—1. A paper receptacle having a cover integral with it and comprising defined extensions of the sides of the receptacle, which incline at an oblique angle to the sides when brought together to close the receptacle, means for holding together the inclined cover

10,929.



portions, and a handle attached to the cover, substantially as described.

2. A paper receptacle having a cover integral with it and comprising defined extensions of the uncovered sides of the receptacle, which incline at an oblique angle to the sides when brought together to close the receptacle, means for holding together the inclined cover portions, and a handle attached to the cover, substantially as described.

3. A paper receptacle having a cover integral with it and comprising defined extensions of the sides of the receptacle which are folded inward from and at an oblique angle to the sides and toward each other at two opposite sides of the article, and as to the two remaining opposite sides are folded inward at an oblique angle to the sides toward each other to close the receptacle, means for holding together the folded cover portions, and a handle attached to the cover, substantially as described.

4. A paper receptacle having a cover integral with it and comprising defined extensions of the sides of the receptacle re-enforced by extended portions of the corner-flaps formed in the shaping of the article, which re-enforced extended sides are folded inward from and at an oblique angle to the sides and secured together to close the receptacle, substantially as described.

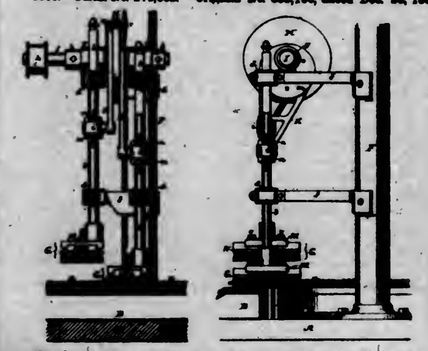
5. A paper receptacle having a cover integral with it and comprising extensions of the sides of the receptacle, divided from the receptacle proper by lines or creases, from which the cover-extensions are inclined obliquely toward each other to close the receptacle, means for holding together the inclined cover portions, and a handle on the cover, substantially as described.

6. A receptacle formed of a folded continuous sheet of paper, having the corners, formed in the shaping, folded and secured upon the receptacle, clamping mechanism, substantially as described, at one side of the receptacle, and a handle at the opposite side of the same, substantially as and for the purpose set forth.

7. A receptacle formed of a folded integral sheet of paper, having the corners, formed in the shaping, folded upon the receptacle, clamps *s* at one side of the opening, and a handle, *r*, at the opposite side of the same, the clamps and handle securing the corners in place, substantially as and for the purpose set forth.

8. A receptacle formed of a folded integral sheet of paper, having the corners, formed in the shaping, folded toward each other on opposite sides of the receptacle, clamps *s* at one side of the opening, and a handle, *r*, at the opposite side of the same, the clamps and handle securing the corners in place, substantially as and for the purpose set forth.

10,980. WOOL-COMBING MACHINE. WILLIAM LEWIS, Philadelphia, Pa., assignor to Hereon Wyman, Worcester, Mass. Filed Apr. 16, 1888. Serial No. 270,862. Original No. 356,196, dated Dec. 28, 1886.



Claim.—1. The combination of the toothed rings of a combing-machine with a dabbing-brush composed of sections working side by side and with means for reciprocating said sections, whereby they are caused to act alternately, all substantially as specified.

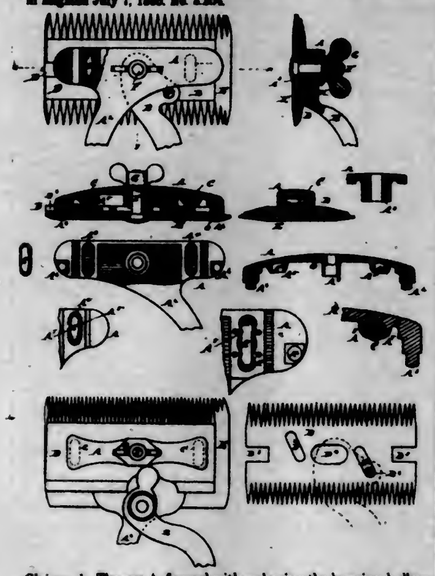
2. The combination of the column F of the machine, a dabbing-brush composed of sections located side by side, a short driving-shaft

having bearings carried wholly by said column, eccentrics on said shaft, and mechanism, substantially as described, whereby the movement of said eccentrics is imparted to the sections of the dabbing-brush, all substantially as specified.

3. The combination of the dabbing-brush composed of sections located side by side, a driving-shaft, a pair of eccentrics forming a single structure, means for securing said structure to the shaft, and mechanism whereby the movement of the eccentrics is transmitted to the sections of the dabbing-brush, all substantially as specified.

4. The combination of the stem having a grooved plate at the lower end, the slotted brush-block having a portion adapted to said groove, and confining bolts and nuts whereby the brush-block is secured to the plate, all substantially as specified.

10,931. HAIR-CLIPPER. THOMAS L. PHIPPS and WILLIAM BURMAN, Ryland Road, Edgbaston, near Birmingham, County of Warwick, England, assignors to Louis S. Lee, Philadelphia, Pa. Filed Apr. 12, 1888. Serial No. 270,632. Original No. 305,956, dated Feb. 9, 1886. Patented in England July 7, 1885. No. 8,904.



Claim.—1. The cap A, formed with or having the hanging hollow bush or cylinder A^3 and a surrounding collar, in combination with the handle B and the binding-screw F, substantially as and for the purpose specified.

2. In a hair-clipping machine, the combination of the stationary cutter having holes c' near its lateral ends, the reciprocating cutter resting thereon and having guide-slots D^2, a stationary cap having projecting pins A^2 extending down through the slots D^2 and into the holes c, whereby the reciprocating cutter is guided upon the stationary cutter, anti-friction rollers arranged between the cap and reciprocating cutter-plate and close to the pins, a clamping-screw extending through the cutters and cap and arranged in line with the guide-pins A^2 and rollers, a lever to hold the stationary cutter and cap, and a lever to reciprocate the movable cutter, substantially as shown and described.

3. In a hair-clipping machine, the combination of a stationary cutter, a reciprocating cutter resting thereon, a stationary cap, anti-friction rollers arranged between the stationary cap and reciprocating cutter and near the latter ends thereof, and a clamping-screw arranged through the cap and cutter-plates and within the area included between the ends of the anti-friction rollers, whereby the clamping effect shall come within such area and cause the cap to press flat upon the rollers, creating a uniform wear over their surface and their surfaces of contact, substantially as shown and described.

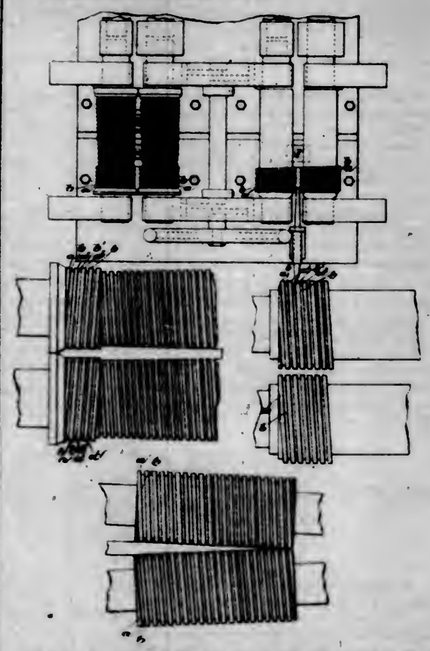
4. In a hair-clipping machine, the cap, in combination with anti-friction rollers, the said cap having retaining-edges which extend over the said rollers and prevent their falling out of the cap when the parts of the clipper are separated, substantially as and for the purpose specified.

5. The combination of the cap A, having pins A^2, and tubular projection A^3, with levers B K, having pin B^2, stationary cutter-plate E, having holes for reception of pins A^2, reciprocating cutter-plate D, having central slot, D^4, oblique slots D^2, and end guide-slots D^3, tightening-screw F, and nut G, substantially as and for the purpose specified.

6. In a hair-clipping machine, the combination of a stationary cutter, a reciprocating cutter, a cap secured to one lever and having a downwardly-extending tubular projection, supports between the ends of the cap and reciprocating cutter to hold the cap-body clear of the cutter, a clamping-screw extending through said tubular projection to clamp the cutters and cap together, and a pivoted lever for operating the reciprocating cutter, journaled on the tubular projection and resting upon the cutter-plate, substantially as shown and described.

7. The reversible cutter-plate for a clipping-machine, having the central slot, D^4, and the two oblique actuating-slots D^2 D^2, the said slots being arranged out of line, substantially as and for the purpose specified.

10,932. MACHINE FOR REDUCING METAL RODS. HENRY A. WILLIAMS, Taunton, Mass., assignor to the H. A. Williams Manufacturing Company, same place. Filed Apr. 17, 1883. Serial No. 271,949. Original No. 307,879, dated Aug. 9, 1887.



Claim.—In a rod-reducing machine, two working-surfaces, each of which is wholly made up of a series of slanting lands, a a' a^2, &c., separated by grooves b b' b^2, &c., substantially as and for the purpose set forth.

NORRIS PETERS

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

YALE LOCK MANUFACTURING COMPANY *v.* JAMES.

Decided April 9, 1888.

YALE—POST-OFFICE BOXES.

The first and second claims of Reissued Letters Patent No. 8,783, granted July 1, 1879, to the Yale Lock Manufacturing Company, declared invalid if construed broadly, and not to have been infringed if construed narrowly. The Court concurs in the views and in the result reached by the court below in this case as reported in 22 Blatchford, 294.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. Frederic H. Betts for the appellant.

Attorney General of the United States for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity brought by the Yale Lock Manufacturing Company, a Connecticut corporation, against Thomas L. James to recover for the alleged infringement of Reissued Letters Patent No. 8,783, granted to the plaintiff, as assignee of S. N. Brooks, administrator of L. Yale, Jr., deceased, July 1, 1879, for an improvement in post-office boxes, on an application for a reissue filed May 23, 1879, (the original patent, No. 119,212, having been granted to Silas N. Brooks, administrator of Yale, September 19, 1871, on an application filed September 30, 1868, and having been reissued to said Brooks, as administrator, July 9, 1872, as No. 4,903, on an application for reissue filed May 7, 1872, and having been again reissued to said Brooks, as administrator, April 24, 1877, as No. 7,625, on an application for reissue filed April 19, 1875.) The circuit court dismissed the bill, and the plaintiff has appealed from its decree.

Among other defenses the answer sets up that each of the three reissues was not for the same invention as the original patent, but contained material new matter, and was therefore invalid.

Reissue No. 8,783 was the subject of a suit in equity brought in the Circuit Court of the United States for the District of Connecticut by the present plaintiff against the Scovill Manufacturing Company, in which Judge Shipman, in June, 1880, gave a decree for the plaintiff as to the first and second claims of the patent. (18 Blatchford, 243.)

The original patent contained the following description of the invention:

[illegible] improvement in the construction of the fronts of post-office boxes; and consists in making said fronts, including the doors and box-frames, of metal, and *in securing the frames to the wooden pigeon-holes by rivets, connecting the frames with each other at top, bottom, and sides.* The body of these boxes is to be made of wood, in the usual manner, namely, a series of pigeon-holes; but the front of the box and the door-frame are made of iron or other suitable metal. Each door-frame or box-front is so made that it aids in covering the edge of the wooden partition or pigeon-holes, and is connected with the other frames above, below, and on each side of it, in such manner that the frames make a continuous frontage, no part of which can be removed (from the outside) without pulling down other parts and breaking the wood-work, *so that a surreptitious removal of the front of any box in order to get possession of its contents is practically impossible.* Each frame, made, as before stated, of metal, has all around it a flange, *a a*, which protects the outside of the wood-work. The sides of the frame *b b* enter and fit closely against the wood forming the pigeon-holes, and may be continuous or notched out at intervals; and each frame has attached to it one leaf of two or more hinges, *c c*. The door *is of iron*, solid *at top*, where the lock *d* is attached, and having an opening, *e*, below, in which a plate of glass is secured. I prefer to locate rods *f f* behind the plate, to prevent the introduction of a hand if the glass be broken, *and so to form* the door that when shut it enters within the frame, (*see g g,*) so that it cannot be lifted from its hinges. When the frames are all in place each frame is riveted through the wood-work to its four neighbors, (see A A, Fig. 2,) and thus a continuous *iron* frontage *is formed*. Each door has a small spring-bolt, *i*, and a lock, *d*, attached to it, the two operating together and forming, in the hands of the post-master, a perfect safeguard against all entrance to the box by means of the key, as is more particularly set forth in *my application for a patent therefor made equal date with this.*

That patent had two claims, as follows:

1. The combination of several box-frames with each other and *with* pigeon-holes, as described, by means of rivets passing through the frames, and the wood-work entering between the said frames, the combination being substantially as described.

2. *The above, in combination with the flanges making part of the frames and protecting and inclosing the exterior of the wood-work, substantially as set forth.*

The first reissue, No. 4,903, contained the following description of the invention:

This invention relates to an improvement in the fronts of post-office boxes; and consists in making said fronts, including the doors and box-frames, of metal, *said box-frames being constructed so as to overlap and cover, in whole or in part, the front edges of the wooden pigeon-holes to which they are affixed.* The body of the boxes is to be made of wood in the usual manner—viz., a series of pigeon-holes—but the front of the box and the door-frame are made of iron or other suitable metal. Each door-frame or box-front is so made that it aids in covering the edge of the wooden partition or pigeon-holes and is connected with the other frames above, below, and on each side of it in such manner that the frames *will* make a continuous frontage, no part of which can be removed from the outside without pulling down other parts. Each frame, made, as before stated, of metal, has all around it a flange, *a a*, which protects the outside *or edges* of the wood-work. The sides of the frames *b b* enter and fit closely against the wood, forming the pigeon-holes, and may be continuous or notched out at intervals, and each frame has attached to it one leaf of two or more hinges, *c c*. The door *may be of any desirable metal*, solid where the lock *d* is attached, and having an opening, *e*, below, in which a plate of glass is secured. I prefer to locate rods *f f* behind the plate, to prevent the introduction of a hand, if the glass be broken. The door *is so constructed* that when shut it enters within the frame so that it cannot be lifted from its hinges. When the frames are all in place each frame is riveted through the wood-work to its four neighbors, (see A A, Fig. 2,) and *in this way form* a continuous *metal* frontage. *The* door *for each frame* has a small spring-bolt, *i*, and a lock, *d*, attached to it, the two operating together and forming, in the hands of the postmaster, a perfect safeguard against all entrance to the box by means of the key, as is more particularly set forth in *Letters Patent granted to me on the 24th day of October*, 1871, *and numbered* 120,177.

That reissue contained two claims, as follows:

1. The combination of several box-frames with each other and with pigeon-holes, as described, by means of rivets passing through the frames and the wood-work entering between the said frames, the combination being substantially as described.

2. *The combination of two or more metallic frames and doors and locks with pigeon-holes, said frames having flanges, which protect and inclose wholly or in part the front edges of said pigeon-holes.*

In order to a comparison of the specification and claims of the first reissue with the specification and claims of the original patent, the parts of each which are not found in the other are above put in italics.

The specification and claims of Reissue No. 8,783 are as follows:

This invention consists in an improvement in the construction of post-office boxes; and its chief feature is the combination of a tier of pigeon-holes made of wood with a continuous frontage of metal, such frontage consisting of doors and their frames, which latter cover the ends of the boards which form the pigeon-holes. A series of wooden pigeon-holes open at the rear and covered at the front or on the outside by a permanent glass front is very old, and such a series was used for post-office boxes and in hotels as a receptacle for keys, cards, letters, &c. There has also been in use a series of wooden pigeon-holes, each provided at one end with a door, as described in the patent granted to Jacob H. Beidler, May 26, 1866; but in this patent the door is described as hinged to the wood, and the construction is, consequently, insecure, as an ordinary pocket-knife or small chisel will, even in inexperienced hands, suffice to cut away the wood or pry off the door, so that the boxes may be entered.

Pigeon-holes made of iron or other metal are difficult to construct and very costly; but such pigeon-holes, each provided with an ordinary metal door, would be sufficiently secure. Such a degree of security at a comparatively low cost is attained by covering the front of a series of wooden pigeon-holes with a continuous metallic frontage—that is, a frontage which presents a continuous surface of metal, or, in other words, a surface which covers the ends of the wooden pigeon-holes in such manner that those portions of the wood to which the metallic frames are attached cannot be attacked when the doors making part of the frontage are closed. In constructing YALE's invention the body of the boxes or the series of pigeon-holes is to be made of wood in any usual manner, and the fronts thereof—viz., the doors and their frames—are to be made of iron or other suitable metal.

Each door-frame is of such size that it aids in covering the ends of the wooden partitions that form the pigeon-holes to which it is applied, and these frames (see Fig. 1) are of such size and shape that where a series of them are combined with a series of pigeon-holes they cover the whole of the ends of the wood.

Each door-frame is a plate of metal, *a a*, which, when in place, overlaps a part of the ends of the wood-work surrounding the pigeon-hole, the outside of the frame inclosing a greater area than the orifice of the pigeon-hole, and each frame has an ear, *b b*, which enters the pigeon-hole; but this ear may be either continuous or notched out at intervals. The door is of iron or other metal, solid at top, and having an opening, *e*, below, in which a plate of glass is secured, and is hinged to the frame, as at *c c*. It is preferable to locate rods *f f* behind the plate, so as to prevent the introduction of a hand if the glass be broken, and so to form and hinge the door that when shut it enters within the frame, so that it cannot be lifted from its hinges when shut.

When the frames are all in place each frame is riveted or bolted to the wood-work to fasten it thereto, and is also riveted or bolted to its four neighbors to secure the frames to each other. (See A A, Fig. 2.) Thus each frame is secured to the wood-work, so that it cannot be removed till the rivet or the wood-work is cut away or broken.

When all the frames are in place a continuous metallic frontage, protecting the wood-work, is presented upon the outside of the series of boxes—that is, the side where the public can approach the boxes.

Each door has a lock attached to it, the bolt of which is actuated through the intervention of an arm, *k*, in the manner and for the purposes set forth in a patent granted for the invention of Linus Yale, Jr., on the 24th day of October, 1871, No. 120,177.

An iron door in an iron frame is not claimed as of YALE's invention, as such doors have been used in safe-vaults and for furnaces.

What is claimed as the invention of said LINUS YALE, Jr., (deceased,) is—

1. The combination, substantially as specified, of a series of metallic door-frames and doors with a series of wooden pigeon-holes, whereby a series of post-office boxes with a continuous metallic frontage is formed.

2. The combination, substantially as described, of a series of wooden pigeon-holes with a series of metallic door-frames and doors, and with rivets or bolts which attach the frames to the wood-work, whereby a continuous metallic frontage secured to the wood-work of pigeon-holes is obtained.

3. The combination, substantially as described, of a series of wooden pigeon-holes with a series of metallic door-frames and doors, and with rivets or bolts which attach the frames both to the wood-work and to each other, the combination being substantially such as described.

4. The combination of a metallic door with a glass panel, and with a frame to which the door is hinged, said frame being so constructed as to cover a part of the ends of the wooden partitions forming pigeon-holes and being applied thereto, the combination being substantially as specified.

5. The combination of a post-office box or pigeon-hole open at the rear, with a metallic frame and door to protect the front end of it.

Claims 4 and 5 were disclaimed by the plaintiff November 30, 1880. Claim 1 of the first reissue was the same as claim 1 of the original patent, while claim 2 of the first reissue was in these words:

2. The combination of two or more metallic frames and doors and locks with pigeon-holes, said frames having flanges, which protect and inclose wholly or in part the front edges of said pigeon-holes.

In the opinion of the circuit court in the present case, (28 O. G., 917; 22 Blatchford, 294,) Judge Shipman says:

The defendant, as postmaster in the city of New York, and not otherwise, used in the post-office, provided and equipped for him by the United States Government, wooden post-office boxes with metallic fronts and doors and open at the rear. They were manufactured by the Johnson Rotary Lock Company. The doors and door-frames made a continuous metallic frontage. The door-frames were secured to each other and to the wood-work as follows: At about the middle of each vertical edge of each door-frame there was a triangular hole, which, with the corresponding hole in the adjoining door-frame, made a rectangular hole, through which the metal fastening-bolt, completely filling such hole, was passed, the heads of such bolts overlapping the contiguous edges of adjoining metallic fronts, and the bolt itself passing through the wooden partition between the adjoining pigeon-holes, and being secured at the back thereof, within the post-office room, by a nut screwed upon the end of the bolt. There were other boxes constructed substantially as above described, excepting that the metal front of each pigeon-hole was fastened to the wood-work by means of flanges and screws; but the screws which attached the frames to the wood-work did not attach the frames to each other. Neither series of boxes would have infringed either claim of the original patent. Each series infringes the first and second claims of the present reissue, unless these claims are to receive a construction which shall compel the metallic frontage to be made continuous by rivets, bolts, or fastenings which shall attach the frames both to the wood-work and to each adjoining frame. The plaintiff insists that these claims should not receive such a construction, because it has been found that the invention of the specification of the reissue, although a broader one than was described in the original patent, is the invention which the history of the art and the patent show should have been described, and because the first reissue was promptly applied for, and, as issued, included in its second claim, in the view of the plaintiff, the same invention which is described in the first and second claims of the reissue. The defendant says, among other things, that since the cases of *Miller* v. *Brass Co.* (104 U. S., 350) and *James* v. *Campbell*, (Id., 356,) it has been settled by the Supreme Court that the Commissioner of Patents in allowing the first and second claims exceeded his jurisdiction, because the invention which was first applied for and was "complete in itself," was clearly, specifically, and fully described in the original specification and in the claim, and an expanded claim would necessarily include an invention which was not sought to be described in the original patent; and, furthermore, that there could have been no inadvertence or mistake, because the original patent and the accompanying documents show that the patentee "did not intend it" (the patent) "to embrace any such broad invention" as was described in the reissue. The defendant also says that the patentee in his application for the first reissue ineffectually endeavored to alter the description of the invention, so as to omit the fastening of the door-frames to each other as a necessary integral part of the invention, and that the second claim of the first reissue cannot fairly be construed to permit such omission, and, therefore, that the patentee is estopped from insisting upon a broad construction of the first and second claims of the present reissue, and that these claims are objectionable on account of the lashes of the patentee. The "file-wrapper and contents" of the first reissue were not a part of the record in the Scovill case.

In order to show the changes made in the specification and claims of the first reissue as they passed through the Patent Office, the specification and claims of that reissue as granted, and the specification and claims of the same as applied for, are here placed in parallel columns, the parts of the latter which are not contained in the former being in italics and brackets and being numbered severally from 1 to 8.

As applied for.	*As granted.*
This invention relates to an improvement in the fronts of post-office boxes, and consists in making said fronts, including the doors and box frames, of metal, said box frames being constructed so as to overlap and cover, in whole or in part, the front edges of the wooden pigeon holes to which they are affixed [*and in securing said frames to said pigeon holes by rivets or screws*]. The body of the boxes is to be made of wood in the usual manner, viz., a series of pigeon holes, but the front of the box and the door frame are made of iron or other suitable metal. Each [*door frame or box frame is so*]	This invention relates to an improvement in the fronts of post-office boxes; and consists in making said fronts, including the doors and box-frames, of metal, said box-frames being constructed so as to overlap and cover, in whole or in part, the front edges of the wooden pigeon-holes to which they are affixed. The body of the boxes is to be made of wood in the usual manner—viz., a series of pigeon-holes—but the front of the box and the door-frame are made of iron or other suitable metal. Each

made that it aids in covering the edge of the wooden partition or pigeon holes and [*may be*] connected with the other frames above, below, and on each side of it in such manner that the frames will make a continuous frontage, no part of which can be removed from the outside without pulling down other parts, [*or the several frames may be secured or otherwise fastened directly to the wooden pigeon holes, each one independent of the other, if desired.*] Each frame made, as before stated, of metal, has all around it a flange, *a a*, which protects the outside or edges of the wood-work. The sides of the frame *b b* enter and fit closely against the wood forming the pigeon holes, and may be continuous or notched out at intervals, and each frame has attached to it one leaf of two or more hinges, *c c*. The door may be of any desirable metal, solid where the lock *d* is attached, and having an opening, *e*, below, in which a plate of glass is secured. [*Cast with the door and over the opening e for glass may be a network or ornamental open work, admitting light, and at the same time preventing the introduction of a hand if the glass be broken, or rods f f may be located behind the plate for the same purpose.*] The door is so constructed, that, when shut, it enters within the frame, *b* [*see g g,*] so that it cannot be lifted from its hinges. When the frames are all in place, each frame [*may be*] riveted through the wood-work to its four neighbors, (see A A, Fig. 2,) and in this way form a continuous frontage, [*or each separate frame may be screwed or otherwise fastened to the wood-work independent of its neighboring frames.*] The door for each frame has a small spring-bolt, *i*, and a lock, *d*, attached to it, the two operating together, and forming, in the hands of the postmaster, a perfect safeguard against all entrance to the box by means of the key, as is more particularly set forth in letters-patent granted to me on the 24th day of October, 1871, and numbered 120,177.	wooden partition or pigeon-holes and is connected with the other frames above, below, and on each side of it in such manner that the frames will make a continuous frontage, no part of which can be removed from the outside without pulling down other parts. Each frame, made as before stated of metal, has all around it a flange, *a a*, which protects the outside or edges of the wood-work. The sides of the frame *b b* enter and fit closely against the wood forming the pigeon-holes, and may be continuous or notched out at intervals, and each frame has attached to it one leaf of two or more hinges, *c c*. The door may be of any desirable metal, solid where the lock *d* is attached, and having an opening, *e*, below, in which a plate of glass is secured. I prefer to locate rods *f f* behind the plate, to prevent the introduction of a hand, if the glass be broken. The door is so constructed that when shut it enters within the frame so that it cannot be lifted from its hinges. When the frames are all in place each frame is riveted through the wood-work to its four neighbors, (see A A, Fig. 2,) and in this way form a continuous metal frontage. The door for each frame has a small spring-bolt, *i*, and a lock, *d*, attached to it, the two operating together and forming, in the hands of the postmaster, a perfect safeguard against all entrance to the box by means of the key, as is more particularly set forth in Letters Patent granted to me on the 24th day of October, 1871, and numbered 120,177.
What I claim as the invention of the said LINUS YALE, Jr., deceased, is— First. The combination of several box frames with each other and with pigeon holes, as described, by means of rivets passing through the frames and the wood-work entering between the said frames, the combination being substantially as described. Second. The combination of two or more metallic frames and doors and locks with pigeon holes, said frames having flanges, which protect and enclose, wholly or in part, the front edges of said pigeon holes. [*Third. The combination of several metallic box frames with each other and with pigeon holes, said box frames being secured to said pigeon holes independently of each other, by means of screws or other similar fastening, as described.*]	What I claim as the invention of the said LINUS YALE, Jr., deceased, is— 1. The combination of several box-frames with each other and with pigeon-holes, as described, by means of rivets passing through the frames and the wood-work entering between the said frames, the combination being substantially as described. 2. The combination of two or more metallic frames and doors and locks with pigeon-holes, said frames having flanges, which protect and inclose, wholly or in part, the front edges of said pigeon-holes.

On the 8th of May, 1872, the Patent Office examiner called the attention of the applicant to the fact that the following matters in the new specification [illegible] by the original patent, namely, [illegible] words "may be" in the parts marked "2" and "6," the parts marked "3," "4," and "7," and the third claim, being the part marked "8."

On the 9th of May, 1872, the applicant appealed to the Commissioner of Patents in person, because the examiner had refused to examine the case on its merits, in view of the introduction of such new matter; but on the next day the applicant virtually withdrew his appeal by amending his application as follows: He erased part "1;" he erased the words "may be" in parts "2" and "6," and substituted in each case the word "is;" he erased parts "3" and "4" and substituted for the latter the words, "I prefer to locate rods *f f* behind the plate to prevent the introduction of a hand, if the glass be broken." He also erased part "7," and claim 3, part "8," and submitted the case for further action. The application was then reconsidered, and twice rejected, and from the second rejection the applicant appealed to the Examiners-in-Chief, who reversed the decision of the examiner, and the reissue was granted July 9, 1872. In view of these facts, Judge Shipman in his decision in the present case said:

It is unquestionable that the patentee, when he made his original application, intended to say that his invention did not consist simply in making, by his combination of metallic doors, door-frames, and wooden boxes, a continuous metallic frontage, but that it also consisted in the way in which the frontage was made continuous—viz., by the connection of the adjoining frames with each other. His definite and exact specification shows that he supposed that his patentable invention was thus limited. He described with precision and clearness that his metallic frontage was to be so constructed that the frames were to be fastened to each other at top, bottom, and sides, and not merely to the wood-work. A specific invention, complete in itself, was described, "fully and clearly, without ambiguity or obscurity." Under the definitions which are given in the decisions which have been referred to, and in *Manufacturing Co.* v. *Ladd*, (102 U. S., 468,) of the inadvertence, accident, or mistake which permits a reissue, when a patent is said to be inoperative on account of a defect or insufficiency in the specification, which arose through such inadvertence or mistake, and also of the nature of the defectiveness or insufficiency which is meant by the statute, there was no mistake, although the patentee might have fallen into an error of judgment, or into an erroneous conclusion of fact; and, furthermore, the original patent, according to the definitions contained in the recent, and perhaps in the earlier, cases, was not defective nor insufficient either in its descriptive portion or in its claims. The second claim of the first reissue, construed in the light of the contemporaneous facts which are shown in the "file-wrapper and contents," cannot be fairly construed to mean a metallic frontage irrespective of the fastening of the frames to each other through the wood-work. Were this claim to be construed without study of the history of the application as it made its way through the Patent Office, and of the amendments which it was compelled to undergo, it would probably receive the construction which naturally belongs to the first claim of the present reissue; but the patentee abandoned, under pressure from the Patent Office, the clauses in the application which made the fastening of the frames to each other to be optional, and abandoned also a proposed third claim, which described the box-frames as secured to the pigeon-holes "independently of each other by means of screws or other similar fastening." In view of the fact that the Patent Office excluded from the descriptive part of the specification suggestions of any other method of fastening than that by which the frames were to be fastened to each other, it would be singular if the intent of the Office was to include in the second claim such other method of construction. If this claim has properly, and the applicant knew that it was intended to have, a narrow construction—and of this knowledge I think there can be little doubt—the plaintiff would not insist that the first and second claims of the present reissue ought, in view of the decision in *Miller* v. *Brass Co.*, (*supra,*) to be so construed as to be any broader than the third claim, which requires the combination of door-frames, doors, and pigeon-holes to be by means of rivets or bolts which attach the frames both to the wood-work and to each other.

It was held that there was no infringement, and on that ground the bill was dismissed.

We concur in these views of the circuit court and in the result which it reached. In view of the numerous recent decisions of this Court on the subject of reissued patents, it would serve no good purpose to expand or amplify the views so well expressed by the judge of circuit. They are supported by the decisions in *Miller* v. *Brass Co.*, (104 U. S., 350;) *Mahn* v. *Har-*

wood, (112 U. S., 354;) *Parker & Whipple Co.* v. *Yale Clock Co.*, (123 U. S., 87;) *Matthews* v. *Iron Clad Manufacturing, Co.*, (123 U. S., 347.)

Our conclusion makes it unnecessary to consider the defense raised in the answer and urged in argument that the post-office boxes used by the defendant were used by him as postmaster of the United States at the city of New York; that the boxes were the property of the United States and were rented by it to sundry persons; that the rent was a part of the postal revenue of the United States and was not a source of personal emolument to the defendant; that it was not within the power of the defendant to remove or alter the boxes, and that the use of such boxes at the post-office while the defendant was postmaster was not an infringement of the patent by him and did not make him liable to this suit.

Decree affirmed.

U. S. Circuit Court—District of Maryland.

VAN CAMP *v.* THE MARYLAND PAVEMENT COMPANY.

Decided April 4, 1883.

1. CONSTRUCTION OF CLAIM—PROCESS—INFRINGEMENT.

A claim in the following words, namely: "In a concrete pavement, the use of crushed and pulverized rock, when the same is heated and saturated with dead-oil, crude petroleum, or the residuum of petroleum, and mixed with natural asphaltum, Cuban, Trinidad, or California, previously dissolved to a pitch by crude petroleum or the residuum of petroleum, substantially as described, and for the purpose set forth," construed as for a *process*, and also as for a process in which the previous saturation of the rock with dead-oil, crude petroleum, or the residuum of petroleum is one of the essential steps. *Held* that the omission of such step averts the charge of infringement.

2. PROCESS AND PRODUCT.

Under a proper construction of the language such a claim as the foregoing cannot be held to cover both a process and also a composition of matter.

3. COMPOSITION OF MATTER—OLD ELEMENTS—INVENTION.

When a mechanically-combined material composed of particular ingredients is old, a person who has merely altered the proportions of ingredients or the process of combining them has not discovered a new composition of matter in the sense of the patent law. To be a new composition of matter the product must have some distinctly new property or be applicable to some new use.

4. ERROR IN CLAIM FATAL.

It is fatal to a patent that a patentee claims as essential a step which is unnecessary.

5. HAVING CLAIMED A PART OR STEP ESSENTIAL IT CANNOT BE TREATED AS NON-ESSENTIAL.

When a patentee emphasizes in his specification and makes a part of the claim allowed by the Patent Office a particular step in a particular process, which step in the process the defendant does not use, it is not allowable for him to disregard that step or to contend that it is not essential.

6. CONSTRUCTION OF PATENTS.

While a patent is to be liberally construed, so as to sustain it as a grant of the invention actually made and actually claimed, it can never by judicial construction be made to cover an invention nowhere claimed in it, and which the public has had no fair notice that the patentee intended to claim.

7. CONSTRUCTION OF CLAIM—INFRINGEMENT.

Even in a good claim for a composition of matter which is not described otherwise than by the process of making it nothing can be in infringement which is not made by the process described.

8. ABANDONMENT OF ONE FORM OF PRODUCT NO PROOF OF ABANDONMENT OF PROCESS.

The fact of the [illegible] of the [illegible] patent by [illegible] the date of the complainant's invention of asphalt blocks composed of a composition containing the same ingredients as the alleged infringing blocks, presumably because the blocks were not a commercial success, proves nothing, it not appearing that the composition of matter produced by the practice of the complainant's process had ever been tested to prove its possession of new or useful qualities which similar compositions had not before possessed.

BILL of complaint for infringement of patent.

Mr. John E. Bennett and *Mr. H. Arthur Stump* for the complainant.

Messrs. Brown & Brune, Messrs. Upham & Proctor, and *Messrs. Strawbridge & Taylor* for the defendant.

MORRIS, *J.*:

The complainant seeks relief for the alleged infringement by defendant company of Patent No. 174,648, granted to complainant March 14, 1876, as the inventor of an improvement in concrete pavements, the specifications and claim of which are as follows:

To all whom it may concern:

Be it known that I, AARON VAN CAMP, of Washington city, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Concrete Pavements for Streets and Sidewalks; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same.

I take crushed and pulverized rock, sixty per centum of the finer pulverized portion, and forty per cent. of the coarser. The crushing and pulverizing process should be continued until the even or naturally smooth surface of the stone is entirely destroyed. The object of crushing and pulverizing the rock is to obtain sharp angles and rough surfaces. I use the blue limestone; but it is evident that any hard rock, bowlder, or gravel, when crushed and pulverized, will answer my purpose. The rock thus crushed and pulverized I subject to heat, so as to expel the moisture. I then add dead-oil, crude petroleum, or the residuum of petroleum until the rock becomes perfectly saturated. While thus heated I add about twenty per cent. of natural asphaltum, Cuban, Trinidad, or California, that has been previously dissolved by crude petroleum, or the residuum of petroleum, until it has assumed the consistency of bitumen or pitch.

I have found by experience that by saturating the crushed pulverized rock, as above stated, it will absorb more asphaltum and produce a more perfect concretion and cementation.

What I desire to claim and secure by Letters Patent is—

In a concrete pavement, the use of crushed and pulverized rock, when the same is heated and saturated with dead-oil, crude petroleum, or the residuum of petroleum, and mixed with natural asphaltum, Cuban, Trinidad, or California, previously dissolved to a pitch by crude petroleum or the residuum of petroleum, substantially as described, and for the purpose set forth.

The defendant denies the alleged infringement, and that is the question which will be first disposed of.

The use of crushed limestone, or other similar crushed material, combined with an asphaltic cement, to form a concrete paving material, was not in itself new at the date of Van Camp's alleged invention; nor was the heating of these materials, either separately or together, for the purpose of causing them to form a more perfect union at all new in practice. Many of the patents for improved concrete pavements put in evidence by the defendant were granted prior to Van Camp's application, and they describe concretes made of petroleum and products of petroleum mixed with asphalt and combined crushed rock in various proportions and when in a heated state. The object sought for by all the experimenters in this field was a perfect union of proper proportions of the stone with the cementation or binding ingredients, so as to form a hard and durable concrete, and each patentee claimed to have accomplished an improvement in this respect, either by some variation in the proportion of the ingredients, or the introduction of some new ingredient, or by some improved method of preparing them, or some improved process in the art of combining them.

stone or similar material with asphaltic cements are the patents granted to Foye, No. 100,697, November 29, 1870; to De Smet, No. 108,868, May 31, 1870; to Matthews, No. 114,172, April 25, 1871; to Hawes, No. 119,607, October 3, 1871; to Vandermark, No. 117,946, August 8, 1871, reissued, No. 4,501, October 10, 1871; and the British patent to Newton, No. 935, October, 6, 1871, and the British patent to Skinner, No. 1,795, January 2, 1872. These patents, together with the testimony showing the process of making asphaltic paving-blocks at Stony Point, on the Hudson, in 1872, and at Sing Sing in 1873, prove conclusively that at the date of complainant's alleged invention there was nothing new in the use of crushed stone and asphalt variously softened or tempered, nor in heating these materials to aid in effecting their combination. The claim of Van Camp, therefore, to stand at all, must be strictly confined to the proportions of the materials specified by him and to his precise process for combining them. Looking to the state of the art as disclosed by these patents and the evidence above adverted to, there was nothing else that he could lawfully claim to as a new discovery. This he seems to have been aware of, for as all crushed rock consists of some pulverized portions and some coarser parts he first specifically directs that there shall be used for his composition—

sixty per centum of the finer pulverized portion and forty per cent. of the coarser.

The next step in this process is the treatment of this crushed and pulverized material to prepare it for combination with the asphaltum, the importance of which step he states his experience has demonstrated. That the next step after first heating the crushed and pulverized rock is to perfectly saturate it with dead-oil, crude petroleum, or the residuum of petroleum. When this has been done, then the material thus prepared is to be mixed with asphaltum which has been dissolved to the consistency of pitch. He claims to have discovered that the previous saturation with oil of the crushed and pulverized stone enables it to absorb more asphaltum, and for that reason makes a more perfect combination. By no allowable construction of this patent can the previous saturation of the stone be considered as unessential, nor can the proportions so definitely stated of the finer and crushed stone be considered as immaterial, for if these are to be disregarded all that could possibly sustain the novelty of the patent would be disclaimed. In neither of these particulars does the defendant in its manufacture use the process described in the patent. It does not use the specified proportions of the stone, but uses sixty per cent. of the coarser and forty per cent. of the finer or pulverized limestone, thus reversing the proportions of the patent; and it omits entirely the previous saturation of the stone as hurtful and injurious to the special character of concrete it requires for molding under pressure into blocks, and for the same reason it does not use twenty per cent. of the softened asphaltum, but only twelve per cent.

The complainant contends that he is not confined to the proportions indicated in his specifications, but that any substantial use of the same materials in the same way is an infringement, and contends that, although the defendant may not [illegible] [illegible] sequently does so, because when the heated dry particles of stone come into contact with the asphaltum and the mass is then subjected to great pressure the oil in the asphaltum permeates into the stone. But it seems to me plain that, even if it were allowable to disregard the specified proportions of material in a patent which must be so narrowly construed, it certainly cannot be allowable to disregard the previous saturation of the stone with oil which the patentee emphasizes in his specification and makes a part of the claim allowed by the Patent Office, and which step in the process the defendant does not use. If the previous saturation of the stone is not essential to the result, but a subsequent and incidental permeation with oil is sufficient, which it would seem must always before have taken place, then the complainant claimed as essential a step which is unnecessary, and this would be fatal to his patent.

The permeation of oil into the stone must always have happened whenever heated crushed stone and asphaltum tempered with oil were combined, as was the case in nearly all the patents above mentioned. The permeation may take place in defendant's process to a somewhat greater extent, because, after the mixing is complete, it is put into a mold and subjected to a pressure of ninety tons; but I cannot see how this incidental permeation, under the pressure resulting from improved molding machinery, can be the equivalent of the previous saturation which complainant describes as necessary before the stone is brought into contact with the binding cement.

The witnesses who explained defendant's process of manufacture state that the object is to use as little oil and as little asphalt as possible, so that the paving-block when molded may contain the greatest possible per centum of stone and the least possible per centum of bituminous cementing material, relying very much upon the pressure in the mold to make the small amount of binding-cement effective. These witnesses also testify that their experience leads them to believe that the previous saturation with oil, described in the patent, and the use of the amount of asphaltum there specified, result in a material too soft and sticky to be used in defendant's machinery. I am clearly of opinion that the defendant does not infringe the process claimed in the complainant's patent. Complainant's counsel, however, urge that the patent should be construed as claiming the invention not only of a process, but also as claiming a new combination of matter—that is to say, a new paving concrete not before discovered. It is difficult to see how this contention can be supported either as a construction of the language of the patent or, if it could be shown as claimed in the patent, how it could be maintained that the process there described results in a new product. The patent does not anywhere use words which can be construed to mean that the patentee has discovered a new substance for use in pavements, or that he has discovered a new paving material. The patentee simply, and by apt and appropriate words, claims that he has invented an improvement in concrete pavements. As before shown, concrete pavements made of the same materials variously compounded were old and in common use. The result of his combination [illegible] [illegible] different in anywise from former

combinations, except that it contained a little more or less of some of the same ingredients mechanically combined, and differing from others only as the proportions of the ingredients differed, when such a mechanically-combined material is old and in common use, and has already been the subject of numerous patented improvements, both as to the proportions of ingredients and the process of manufacturing and methods of laying the pavements made of it. To say that a person who has merely altered the proportions of the ingredients or the process of combining them has discovered a new composition of matter in the sense of the patent law is to trifle with language. To be a new composition of matter the product must have some distinctly new property or be applicable to some new use. Of this there is no testimony whatever, and it is not alleged or claimed or suggested either in the bill of complaint or the patent.

With respect to the qualities or merits of the concrete made according to complainant's process, there has been no practical test. The complainant never obtained any opportunity of putting his concrete into actual use as a pavement. He only made a few experimental blocks, and produces as an exhibit one of them made by him in 1876. To all outward appearance the material of this block is not distinguishable from the material made at Stony Point on the Hudson in 1872, a specimen of which was also exhibited by the complainant. It was endeavored to be shown chemical analysis that the Stony Point material contained less mineral substance than the Van Camp block and more bituminous matter, and therefore could not have contained the same ingredients. The chemical experts differed from each other in the results obtained, and nothing convincing to support complainant's contention was established by the chemical tests. That the manufacture of asphalt blocks at Stony Point was abandoned, presumably because the blocks were not a commercial success, proves nothing, because the Van Camp material has never been put into use—never subjected to any test to prove whether or not it does possess any new or useful quality or use which similar compositions had not before possessed. The testimony tends to show that whatever reputation the defendant's manufactured blocks have obtained has resulted rather from the improved machinery and powerful presses used by defendant and the skill in manipulating the material adapted to being molded in defendant's machinery, rather than from any combination of materials differing from that used in 1872.

While a patent is to be liberally construed, so as to sustain it as a grant of the invention actually made and actually claimed, it can never, by judicial construction, be made to cover an invention nowhere claimed in it, and which the public has had no fair notice that the patentee intended to claim.

If it were necessary to say more, it might well be suggested that, even in a good claim for a new composition of matter which is not described otherwise than by the process of making it, nothing can be an infringement which is not made by the process described. (*Cochrane* v. *Badische Anilin and Soda Fabrik*, 111 U. S., 310.) The defense of non-infringement and the rejection of the claim for a new composition of matter make it unnecessary to consider other defenses set up in the answer and urged at the argument.

A decree dismissing the bill will be signed.

U. S. Circuit Court—Southern District of New York.

THOMPSON *et al.* *v.* GILDERSLEEVE.

Decided February 27, 1888.

1. SHOREY—MACHINES FOR FORMING STAPLE-SEAMS IN LEATHER.
The third claim of Patent No. 136,340, dated February 25, 1873, granted to Samuel W. Shorey, for an improvement in machines for forming staple-seams in leather, adjudged valid and to have been infringed.

2. DIFFERENCE OF PURPOSE—WHEN NO DEFENSE IN INFRINGEMENT.
It is no defense in a suit for infringement that the defendant's machine was used for forming staple-seams in paper, and not in leather, both machines operating in the same way.

3. INFRINGEMENT—WHEN NOT AVOIDED.
A claim is not avoided because the specification does not describe details of construction in elements of the claims well known in the particular art and employed only by the defendant.

4. COMBINATION CLAIM—WHAT IT INCLUDES.
A combination claim includes whatever is made a part of the combination by the words of the claim, or by necessary inference is a material part in the construction of the patent.

5. SAME.
Where the elements of a combination in a claim co-operate in a result, these parts constitute the combination claimed, and all the other parts of the machine which make these parts operate in this way to produce the result required are for that purpose equivalents of the parts of any other machine, (however different they may be in themselves,) which also make these parts operate in the same way to produce the same result.

6. INFRINGEMENT—WHEN NOT AVOIDED.
Where the defendant's anvil was made in separate parts, while the complainant's was a single piece, if the operation and results of each were the same, one construction was the equivalent of the other.

Mr. Horace Barnard for the complainants.
Mr. M. B. Philipp for the defendant.

WHEELER, *J.*:

This suit is brought for an alleged infringement of the third claim of Patent No. 136,340, dated February 25, 1873, and granted to Samuel W. Shorey, assignor to Arza B. Keith, for an improvement in machines for forming staple-seams in leather, and which is now owned by the orators.

The principal defense is non-infringement. There were such machines prior to Shorey's invention. The wire of which the staples are formed is made to pass across a bar called an "anvil," in width equal to the length of the crown of the staple, until the end projects beyond the anvil to an extent equal to a prong of the staple. Then the machine cuts the wire at an equal distance from the other side of the anvil for the other prong. A bender-foot, with a projection on each side of the anvil having a groove on the inside next to the anvil, then comes down and presses the ends of this piece of wire over the edges of the anvil, forming the staple with its crown across the top of the anvil and its prongs down the sides of the anvil in the grooves of the bender-foot. Then a driving-bar follows the bender-foot until it strikes the crown of the staple, when the anvil is withdrawn and the prongs of the staple are pressed through the sheets of leather beneath the bender-foot by the force of the driving-bar on the crown. The wire used is too fine to be stiff enough to be forced through the material by pressure on the crown of the staple without support, and until Shorey's invention holes for the prongs of the staple were punched. Shorey made the end of the anvil inclined, and had it withdrawn so that the driving-bar would strike the crown of the staple at the top of the incline and the crown would follow down and be supported by the incline as it was driven home, so that the prongs would be pressed through the material to be stapled without having holes previously prepared for them. This claim is for this inclined and retreating anvil, in combination with the bender-foot and driver, operating substantially as described. The patent describes a lever moved by a cam to so withdraw the anvil as to make the crown of the staple coincide with the incline in its descent and a spring working against the cam to return the anvil to its place for the next operation. In the defendant's machine the bender-foot forms the staple over an anvil, which is forced from beneath the crown of the staple by the driver, leaving the crown of the staple on an incline that supports the crown as it is driven home, so that the prongs are forced through the material operated upon without having holes previously made for them. The incline is moved away by the action of the driver forcing the crown of the staple down it against a spring in a direction opposite to that in which the anvil is moved, and is brought back to its place for the next operation by the action of the spring. The defendant uses his machine wholly on paper for stapling together the sheets of books and pamphlets.

One point made in behalf of the defendant is that his machine is used in forming staple-seams in paper and not in leather. The machine of the patent unites the leather by driving successive staples through the parts to be united, twisting together the prongs on the other side of the work, and forming thereby a continuous seam. The machine of the defendant does the same with sheets of paper. Either machine will operate upon either kind of material in the same manner as upon the other. The material is operated upon, and the kind of it has no effect upon the mode. The patent covers the exclusive right to the use of that part of the machine patented without restriction, and as much for new purposes as for old. (*Roberts* v. *Ryer*, 91 U. S., 150.)

Another point is that grooves in the bender-foot are necessary to support the prongs of the staple and prevent them from crippling while being driven, that such grooves are not described in the patent, and are employed for that purpose in the defendant's machine, making a different machine from the patented one. These grooves were, however, well known and in use as parts of a bender-foot for this purpose at the time of the patent. This claim is for the inclined and retreating anvil, in combination with the bender-foot and driver, and not for the bender-foot or driver. These grooves are no part of the anvil and have no share in supporting the crown of the staple while it is being driven. It was not necessary to describe them in describing the operation of the anvil for the purposes of this claim any more than it would be to describe any other parts of this intricate machine and their operation. The new part was to be described. Those parts which were old and well known would be understood without description. (*Webster Loom Co.* v. *Higgins*, 105 U. S., 580.)

Another point is that the cam and lever for withdrawing the anvil are taken by the specification into the combination of this claim, and that as the defendant does not make use of such a cam and lever he does not use that combination. Many cases are referred to which show that a patent covers only what is described in the claims, and that when a claim is for a combination whatever is made a part of the combination by the words of the claim itself or by necessary inference is a material part in the construction of the patent. (*Keystone Bridge Co.* v. *Phœnix Iron Co.*, 95 U. S., 274; *Fay* v. *Cordesman*, 109 U. S., 408; *White* v. *Dunbar*, 119 U. S., 47; *Hartshorn* v. *Saginaw Barrel Co.*, 119 U. S., 664; *Snow* v. *Railway Co.*, 121 U. S., 617.) There can be no question about this. The only question on this part of this case is whether it comes within the principles of those and other similar cases. The anvil as a former of the staple, and retreating after it is formed out of the way, was not new. The inclined part as a supporter of the crown of the staple, and retreating to give way to the crown as it is forced downward by the driver, was new. The cam and lever are necessary to draw the forming part of the anvil backward until the crown of the staple is brought to the top of the incline. Then the downward motion of the driver on the crown will force the inclined portion back while it is giving support. The cam and lever are not brought into the combination of this claim by its terms. Neither are they necessary to the operation of the inclined and retreating part of the anvil. Therefore they are not brought in by any necessary implication. This claim appears to be valid to cover this inclined and retreating anvil operating to support the crown of the staple in the manner described while the prongs are being supported by the bender-foot and the staple is being driven home by the driver. While these parts work together in this manner they are the combination of this claim, and all the other parts of the machine that make these parts operate in this way to produce the result required are for that purpose equivalents of the parts of any other machine, however different they may be in themselves, which also make these parts operate in the same way to produce the same result. (*Clough* v. *Barker*, 106 U. S., 166.)

In the defendant's machine what is called in this patent the "anvil" is divided, and the part over which the staple is formed is in one piece, and the inclined part which supports the crown of the staple while being driven is in another. But the inclined and retreating portion operates to support the crown of the staple while the prongs are supported by the bender-foot and the staple is being driven home by the driver precisely as these parts work in the combination of this claim. The forms are somewhat different, but the operation and result are the same. In this manner the defendant appears to make use of Shorey's invention as it was patented by this claim. (*Mason* v. *Graham*, 23 Wall., 261; *Jess* v. *Hamilton*, 98 U. S., 496; *Consoli-*

dated Safety Valve Co. v. *Crosby Steam Gauge and Valve Co.*, 118 U. S., 157.)

Let there be a decree that the third claim of the patent is valid, that the defendant infringes that claim, and for an injunction and an account, with costs.

U. S. Circuit Court—District of Massachusettr.

MOXIE NERVE FOOD COMPANY *v.* VARIOUS DEFENDANTS.

Decided March 14, 1888.

INFRINGEMENT—INJUNCTION.

The use of words which are technically descriptive will be enjoined where it appears that they are used as a means of effecting a fraud.

COLT, *J.:*

I have carefully considered the briefs of counsel in the above cases, and I must decline to modify the injunction order as it now stands. The power and the duty of a court of equity to restrain the use of words which may be considered descriptive where such words are used as a means of effecting a fraud is clear, it seems to me, upon the authorities cited by the plaintiff. In *Kinney* v. *Basch* (16 Am. Law Reg., N. S., 596) the court observes:

If the use of any words, numerals, or symbols is adopted for the purpose of defrauding the public, the courts will interfere to protect the public from such fraudulent intent, even though the person asking the intervention may not have the exclusive right to the use of the words, numerals, or symbols.

Mr. Rowland Cox, in a note to this case, considers this a doctrine which is now fully recognized by the courts. He says:

Words of a descriptive nature are *public juris;* but where a descriptive word is used by a person as a means of effecting a fraud an injunction will issue, especially if it appears that the descriptive word was selected by reason of its being similar to a word in use by another rather than on account of its being appropriate and well understood.

Upon the papers before me on the motions for preliminary injunctions I am satisfied, upon the ground that these defendants used the words "Nerve Food" as a means of effecting a fraud upon the public, that the present order should stand.

Motion to modify injunction order denied.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 43—NO. 8. TUESDAY, MAY 22, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
GERMAN PATENT LAW—ADDITIONAL OFFICIAL RULES	889
PUBLISHERS' CATALOGUES	889
FRAUDULENT PRACTICES BY ATTORNEYS	889
NOTICE	889
ISSUE OF MAY 22, 1888	889
DESIGNS	890
LABELS	890
TRADE-MARKS	890
PATENTS GRANTED	891
REISSUES	None
DECISIONS OF THE U. S. COURTS—	
Lyon v. The Paris and Gaff Manufacturing Company	903
Fonscrook v. Root	904
Cornell v. Weidner	905

German Patent Law—Additional Official Rules.

(Translated from an official copy by W. P. Thompson & Co., of Liverpool, Manchester, and London, England.)

Whereas in applications for patents of processes for producing chemical bodies protection is demanded for whole groups of products without full explanation of the production and technical application of the individual members of such groups, and whereas samples of the products which are kept in the Patent Office constitute important evidence in the case of disputes and for the judging of new applications for patents, the following is hereby enacted in accordance with the wishes expressed by the industries concerned:

Applications for patents with reference to the production of new chemical bodies must be accompanied by two samples of these bodies, and also of the intermediate products produced in the working of the process and which at the time may yet be unknown.

These samples should be delivered in quantities of 5 to 10 grams in glass bottles of about 30 millimeters outside diameter and 80 millimeters total elevation, closed with glass stoppers and the seal of the applicant, and provided with the exact description of the contents.

In the case of tar colors, samples of dyed wool, silk, and cotton should be added. These must be attached in a proper manner on card-boards in height 280 millimeters and in breadth 210 millimeters, and must be delivered in duplicate. Three different shades of each dye should be represented. In the case of dyes which allow of quantitative dyeing a sample must be dyed with one per cent. solution, while the two other shades can be stronger or weaker according to the strength of the dye. The samples of dyeing should be accompanied by a description of the process used, with exact statements of the concentration of the vats, the mordants capable of being used, the temperature, &c., and also whether the vat employed was discolored or retained more or less of the dye-stuff.

These directions for dyeing will be printed in the patent only by the desire of the patentee.

These rules have no application to explosives, especially those belonging to Class 78.

(Signed) STÜVE,
The President of the Imperial Patent Office.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other [illegible] to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given that [illegible] publications must not [illegible] than three copies should be transmitted. In order that the [illegible] may be properly [illegible], [illegible] should be addressed to the Assistant Librarian for convenient [illegible] reference.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No.* 155 *Broadway, New York,* a disbarred attorney, has been practicing under the name of *Alexander Methado.*

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., May 5, 1888.

Messrs. Horn & Son, No. 606 *Eleventh street Northwest, Washington, D. C.,* having satisfied the Commissioner of Patents that a circular issued by them to the effect that their attention had been directed at the Patent Office to specifications on file was not intended to create the impression that they possessed facilities for acquiring information concerning pending applications, and having assured the Commissioner that they will discontinue the publication of such circular, notice is hereby given that the condemnation of *Messrs. Horn & Son,* published in the OFFICIAL GAZETTE of May 1 and May 8, 1888, is hereby withdrawn, the language used in such circular having been an inadvertence on their part and not a matter of intention.

BENTON J. HALL, *Commissioner.*

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of May 22, 1888.

Patents	387—No. 382,032 to No. 382,418,	inclusive.
Designs	20—No. 18,232 to No. 18,251,	inclusive.
Trade-Marks	45—No. 15,476 to No. 15,520,	inclusive.
Labels	6—No. 5,003 to No. 5,008,	inclusive.
Reissues	None.	
Total issue	454	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nebraska	1	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	.....	.....	New Hampshire	2	.....
California	11	1	New Jersey	23	3
Colorado	3	.....	New Mexico Terri'y.	1	.....
Connecticut	8	2	New York	68	16
Dakota Territory	3	.....	North Carolina	1	.....
Delaware	.....	.....	Ohio	51	1
District of Columbia	3	.....	Oregon	2	.....
Florida	1	.....	Pennsylvania	30	4
Georgia	3	.....	Rhode Island	5	.....
Idaho Territory	.....	.....	South Carolina	1	.....
Illinois	34	4	Tennessee	3	.....
Indiana	10	1	Texas	4	1
Iowa	6	.....	Utah Territory	.....	.....
Kansas	6	.....	Vermont	1	.....
Kentucky	2	.....	Virginia	.....	.....
Louisiana	1	1	Washington Terri'y.	.....	.....
Maine	2	.....	West Virginia	.....	.....
Maryland	2	2	Wisconsin	4	1
Massachusetts	32	7	Wyoming Terri'y	.....	.....
Michigan	12	1	U. S. Army	.....	.....
Minnesota	2	1	U. S. Navy	.....	.....
Mississippi	.....	.....			
Missouri	16	2	Total to citizens of the United States	385	47
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	.....	.....	Germany	11	3
Barbadoes	.....	.....	Mexico	.....	.....
Belgium	.....	.....	Netherlands	.....	1
Bermuda	.....	.....	Norway	.....	.....
Brazil	1	.....	Russia	.....	.....
Canada	4	1	Scotland	.....	.....
Central America	.....	.....	Sweden	1	.....
Colombia, U. S. of	.....	.....	Switzerland	4	.....
Cuba	.....	.....	Victoria	.....	.....
Denmark	.....	.....	West Indies	.....	.....
Ecuador	.....	.....			
England	4	2	Total to citizens of foreign countries	25	7
France	.....	.....			

DESIGNS.

18,329.—AIR-BRUSH CASE.—*Charles L. Burdick*, Kansas City, Mo. Application filed March 21, 1888. Serial No. 268,037. Term of patent 14 years.

18,330.—ORGAN-STOP KNOB.—*Melville Clark*, Chicago, Ill. Application filed April 27, 1888. Serial No. 272,063. Term of patent 7 years.

18,331.—BUTTON-HOOK.—*Shubael Cottle*, New York, N. Y. Application filed March 31, 1888. Serial No. 269,197. Term of patent 7 years.

18,332.—COOKING-STOVE.—*Joseph Leon Gobeille*, Cleveland, Ohio, assignor to *The Channon-Emery Stove Company*, Quincy, Ill. Application filed January 19, 1888. Serial No. 261,335. Term of patent 7 years.

18,333.—HEATING-STOVE.—*Joseph Leon Gobeille*, Cleveland, Ohio, assignor to *The Channon-Emery Stove Company*, Quincy, Ill. Application filed January 19, 1888. Serial No. 261,336. Term of patent 7 years.

18,334.—COOKING-STOVE.—*Joseph Leon Gobeille*, Cleveland, Ohio, assignor to *The Channon-Emery Stove Company*, Quincy, Ill. Application filed January 19, 1888. Serial No. 261,337. Term of patent 7 years.

18,335.—MISS'S COSTUME.—*Minnie B. Kent*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial No. 271,342. Term of patent 3½ years.

18,336 to 18,342, inclusive.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Applications filed April 25, 1888. Serial Nos. 271,853 to 271,859, inclusive. Term of patents 3½ years.

18,343.—SHIRT-CUFF.—*Daniel O'Brien*, Washington, D. C. Application filed April 3, 1888. Serial No. 269,517. Term of patent 3½ years.

18,344.—WALKING-SKIRT.—*Lizzie Roya*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial No. 271,348. Term of patent 3½ years.

18,345.—HAME ATTACHMENT.—*Joseph S. Schott*, Burlington, Iowa. Application filed April 16, 1888. Serial No. 270,976. Term of patent 7 years.

18,346.—LADY'S COSTUME.—*Jennie Shedle*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed April 20, 1888. Serial No. 271,350. Term of patent 3½ years.

18,347 to 18,350, inclusive.—FANCHE.—*Charles B. Smith*, Fitchburg, Mass. Applications filed April 18, 1888. Serial Nos. 270,197 to 270,200, inclusive. Term of patents 3½ years.

18,351.—DOOR-TRIMMING.—*George J. Wells*, Albany, N. Y., assignor to *The Chicago Hardware Manufacturing Company*, Chicago, Ill. Application filed October 25, 1887. Serial No. 253,470. Term of patent 7 years.

LABELS.

5,600.—Title: "DR. HARTSHORNE'S HARMLESS BOWEL CORRECTOR FOR OFFENSIVE DIARRHŒA."—*George W. Hartshorne Calver*, Columbus, N. J. Application filed April 28, 1888.

5,601.—Title: "CAREY'S GERMAN DYSPEPSIA REMEDY."—*John Carey*, East Syracuse, N. Y. Application filed April 20, 1888.

5,602.—Title: "MANGANESE AND IRON." (FOR A MEDICAL PREPARATION.)—*Albert Day*, Boston, Mass. Application filed April 25, 1888.

5,603.—Title: "DIFFUSIBLE TONIC."—*Diffusible Tonic Company*, Sturgis, Mich. Application filed April 6, 1888.

5,604.—Title: "TIP TOP SMOKING AND CHEWING TOBACCO."—*Gradle & Strotz*, Chicago, Ill. Application filed April 19, 1888. (Trade-Mark Registered.)

5,605.—Title: "FRUIT PHOSPHATES." (FOR A SYRUP.)—*Hance Brothers & White*, Philadelphia, Pa. Application filed April 27, 1888.

5,606.—Title: "G. L. MCGREEVY'S COMPOUND TONIC."—*G. L. McGreevy*, Baltimore, Md. Application filed April 21, 1888.

5,607.—Title: "SANDS' RHEUMATIC SPECIFIC."—*P. A. Sands & Son*, Gallipolis, Ohio. Application filed April 26, 1888.

5,608.—Title: "FLY PAPER."—*Henry S. Winship*, New Haven, Conn. Application filed April 30, 1888.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 6,191 and upward are registered under the act of March 3, 1881.]

15,476.—PLASTER COMPOSITIONS FOR ARCHITECTURAL PURPOSES.—*Adamant Manufacturing Company*, Syracuse, N. Y. Application filed April 16, 1888. Used since January 1, 1887.
"The word 'ADAMANT.'"

15,477.—STARCH, BLUE, AND OTHER LAUNDRY PREPARATIONS.—*Jesse Ascough*, Handsworth, near Birmingham, county of Stafford, England. Application filed February 17, 1888. Used since 1876.
"A label having its surface printed in a design representing crystals."

15,478.—MEDICAL COMPOUNDS FOR CURING SKIN DISEASES.—*Benno Jaffé & Darmstaedter*, Charlottenburg, near Berlin, Germany. Application filed March 16, 1888. Used since February 1, 1888.
"The word 'ANTHRAROBINE.'"

15,479.—PREPARATIONS OF COCOA AND CHOCOLATE.—*Benedorp & Co.*, Amsterdam, Holland. Application filed March 29, 1888. Used since November 16, 1881.
"The letters and character 'B & Co' inclosed within a dotted oval frame, which is surmounted by a royal crown."

15,480.—SALVE.—*Augustus Berthold*, St. Louis, Mo. Application filed March 14, 1888. Used since December 1, 1887.
"The representation of a wolf's head."

15,481.—SALVE.—*Augustus Berthold*, St. Louis, Mo. Application filed April 19, 1888. Used since December 1, 1887.
"The word 'WOLF.'"

15,482.—STAINS FOR MORTARS AND CEMENTS.—*S. Bowen's Sons*, Philadelphia, Pa. Application filed April 2, 1888. Used since February 15, 1888.
"The representation of a triangle."

15,483.—HARD SOAP.—*Butler Brothers*, Chicago, Ill., and New York, N. Y. Application filed April 12, 1888. Used since January 7, 1888.
"The words 'BASE BALL.'"

15,484.—WOVEN COTTON AND WOOLEN FABRICS.—*China and Japan Trading Company*, (*Limited*,) New York, N. Y. Application filed April 24, 1888. Used since April 7, 1888.
"The representation of a moose."

15,485.—MEDICAL POWDERS.—*Charles F. Cleaveland*, Indianapolis, Ind. Application filed April 16, 1888. Used since June 15, 1886.
"The word 'DESICCATOR.'"

15,486.—COTTON UNDERWEAR.—*Abraham Cohen*, Boston, Mass. Application filed April 11, 1888. Used since January 1, 1888.
"The words 'THE SUBSTANTIAL LADIES' UNDERWEAR MANUFACTORY' and a monogram of the letters 'A' and 'C.'"

15,487.—PERFUMERY.—*The Dousson French Perfumery Company*, New Orleans, La. Application filed March 5, 1888. Used since December 1, 1887.
"The words 'THE SUNNY SOUTH.'"

15,488.—RUBBER BOOTS, SHOES, UMBRELLAS, AND COMBINATIONS THEREOF.—*Dunlap, Lennox & Field*, Chicago, Ill. Application filed February 24, 1888. Used since January 1, 1887.
"The picture of a duck with the word 'BRAND' thereon."

15,489.—PILLS, LIVER-PAD, TONIC, COUGH-SYRUP, AND FEMALE REGULATOR.—*David R. Fly & Co.*, Galveston, Tex. Application filed March 8, 1888. Used since February 1, 1887.
"The representation of a domestic fly."

15,490.—METAL TABLE-WARE.—*The Holmes & Edwards Silver Company*, West Stratford, Conn. Application filed April 5, 1888. Used since March 12, 1888.
"The word 'ORIENTAL.'"

15,491.—TOILET APPLICATION FOR THE SKIN.—*Louise H. Gordon*, Boston, Mass. Application filed March 12, 1888. Used since January 1, 1888.
"The name 'PONCE DE LEON.'"

15,492.—SMOKING AND CHEWING TOBACCO.—*Gradle & Strotz*, Chicago, Ill. Application filed April 19, 1888. Used since November 9, 1888.
"The representation of a steam fire-engine drawn by horses in full run."

15,493.—CORSETS.—*Catharine A. Griswold*, New York, N. Y. Application filed April 12, 1888. Used since December, 1887.
"The word 'JOSITA.'"

15,494.—CORSETS.—*Catharine A. Griswold*, New York, N. Y. Application filed April 12, 1888. Used since December, 1887.
"The letters 'H. J.'"

15,495.—HARNESS-SOAP.—*John M. Gwinnell*, Newark, N. J. Application filed April 2, 1888. Used since January 1, 1888.
"The word 'CRESWICK.'"

15,496.—RUBBER HOSE.—*Harper & Reynolds Company*, Los Angeles, Cal. Application filed March 29, 1888. Used since May 1, 1888.
"The letters 'I X L.'"

15,497.—TOOTH POWDER OR PREPARATION.—*The Horsey Manufacturing Co.*, Utica, N. Y. Application filed December 13, 1887. Used since November 12, 1887.
"The word 'PURITY.'"

15,498.—RIBBONS.—*Johnson, Coudin & Co.*, New York, N. Y. Application filed April 20, 1888. Used since February 1, 1884.
"A monogram consisting of the letters 'J C Co.' and the character '&.'"

15,499.—RIBBONS.—*Johnson, Coudin & Co.*, New York, N. Y. Application filed April 20, 1888. Used since February 1, 1884.
"The word 'LEADER.'"

15,500.—ILLUMINATING AND LUBRICATING OILS.—*Kosmic Oil Co.*, New York, N. Y. Application filed March 9, 1888. Used since March 7, 1888.
"The word 'KOSMIC.'"

15,501.—KNIT WEARING-APPAREL.—*The Lackawanna Mills*, Scranton, Pa. Application filed April 12, 1888. Used since 1887.
"The word 'LACKAWANNA.'"

15,502.—HORSE-NAILS.—*Livingston Nail Co.*, New York, N. Y. Application filed April 3, 1888. Used since 1878.
"The word 'ANCHOR,' or the representation of an anchor."

15,503.—TOILET-SOAP.—*Maine Balsam Fir Co.*, Boston, Mass. Application filed February 13, 1888. Used since September 1, 1886.
"The words 'BALSAM FIR,' imprinted upon a landscape-picture comprising a hill covered with trees, with a female figure in the foreground and a body of water at the foot of the hill."

15,504.—TIN PLATES AND TERNE PLATES.—*Merchant & Co.*, Philadelphia, Pa. Application filed April 17, 1888. Used since July 1, 1887.
"The word 'ALASKA.'"

15,505.—COTTON FABRICS OF ALL KINDS.—*Lancaster Mills*, Clinton and Boston, Mass. Application filed March 28, 1888. Used since August 1, 1888.
"The word 'NORMANDIE.'"

15,506.—SHIRTS AND HOSE.—*Joseph Carlos Moore*, Montreal, Quebec, Canada. Application filed March 12, 1888. Used since January 1, 1888.
"The words 'NEROLINE, SANSREGRET BOUDOIR.'"

15,507.—WORSTED, WOOLEN, SILK, AND COTTON YARNS.—*Newmarket Worsted Company*, Newton and Boston, Mass. Application filed March 12, 1888. Used since January 1, 1888.
"The words 'FORGET ME NOT.'"

15,508.—WORSTED, WOOLEN, AND SILK YARNS.—*Newmarket Worsted Company*, Newton and Boston, Mass. Application filed March 14, 1888. Used since November 15, 1887.
"The word-symbol 'FLEUR DE LIS.'"

15,509.—POTATO-FLOUR AND POTATO-STARCH AND ALL POTATO-STARCH PRODUCTS, INCLUDING DEXTRINE.—*The Norddeutsche Kartoffelmehl Fabrik*, Cöstrin, Germany. Application filed February 8, 1888. Used since October 16, 1875.
"The representation of an anchor."

15,510.—LEATHER BELTING.—*W. S. Nott Company*, Minneapolis, Minn. Application filed April 9, 1888. Used since January 1, 1888.
"The word 'DIAMOND' and a figure of diamond shape."

15,511.—REFINED COPPER.—*Oxford Copper Company*, New York, N. Y. Application filed November 30, 1887. Used since January 1, 1888.
"The letters 'O. A.'"

15,512.—FRESH OYSTERS, FRUITS, AND VEGETABLES IN CONTRADISTINCTION TO CANNED OR PRESERVED GOODS.—*C. H. Pearson & Co.*, Baltimore, Md. Application filed January 27, 1888. Used since 1881.
"The word 'PERISHABLE.'"

15,513.—MORTAR COLORS OF ALL SHADES AND TINTS.—*Ricketson Mineral Paint Works*, Milwaukee, Wis. Application filed February 24, 1888. Used since December 1, 1887.
"The words 'RED BRICK.'"

15,514.—EXPECTORANT MEDICINE.—*William H. Riker*, New York, N. Y. Application filed February 2, 1888. Used since October, 1883.
"The representation of a man in a standing attitude looking upward, with the hands clasped and raised as in prayer."

15,515.—CORSETS AND OTHER WHITE UNDERWEAR.—*Rosenthal, Fletscher & Co.*, Göppingen, Germany. Application filed April 10, 1888. Used since July 8, 1887.
"The letters 'R F C' in conjunction with the words 'A LA PRINCESSE.'"

15,516.—SHIRTS.—*V. Henry Rothschild & Co.*, New York, N. Y. Application filed March 1, 1888. Used since October, 1887.
"The representation of a dog's head and the word 'RESOLUTE.'"

15,517.—SHIRT-BOSOMS.—*Joseph Schloss*, New York, N. Y. Application filed April 28, 1888. Used since April 1, 1886.
"The word 'PROTECTION.'"

15,518.—SHIRT-BOSOMS.—*Joseph Schloss*, New York, N. Y. Application filed April 28, 1888. Used since April 1, 1888.
"The words 'TARIFF FOR REVENUE.'"

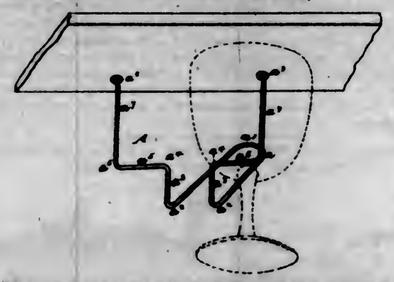
15,519.—PERFUMED SOAPS, COSMETICS, HAIR-OILS, AND PERFUMES.—*William Sparks Thomson*, London, England. Application filed April 28, 1888. Used since November 1, 1887.
"The word 'ORCHIDEA.'"

15,520.—RADIATORS.—*Thomas H. Williams* and *Samuel D. Tompkins*, Jersey City, N. J. Application filed April 13, 1888. Used since February 15, 1887.
"The word 'ELITE.'"

PATENTS

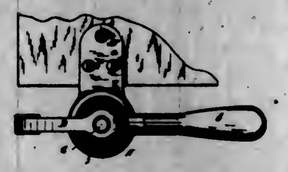
GRANTED MAY 22, 1888.

383,092. GOBLET-HOLDER. Rasmus C. Bates, Newport, R. I. Filed Nov. 14, 1887. Serial No. 255,070. (No model.)



Claim.—A new article of manufacture consisting of a goblet-holder made of a single piece of wire bent on a right angle at a^2 a^3 a^4 to form arms a^2 a^3, bent at a to form the U-shaped seat a', and provided with the right-angled end eyes, a^4 a^4, as shown and described.

383,093. CORK-EXTRACTOR. Ebenezer J. Brown, Cleveland, Ohio, assignor of one-half to Robert H. Beggs, same place. Filed Oct. 31, 1887. Serial No. 253,544. (No model.)



Claim.—1. The combination of standard A, provided with yoke-arm B and having a central opening, said yoke-arm provided with a slot, b', located in the same vertical plane with opening in said standard, corkscrew G, having loose bearing at its upper portion in said slot b', and at its lower portion in the opening in said standard, lever C, pivotally connected with said yoke-arm and corkscrew, and nut b^2, through which said corkscrew has thread engagement, substantially as set forth.

2. The combination of standard A, having opening f, and provided with yoke-arm B, said arm provided with slots b b', the latter slot located in the same vertical plane with the opening in the standard, nut A, fitting loosely in said opening, lever C, pivoted in slot b and having a slot, d, and corkscrew G passing through slot d, and provided with shoulders d' d^2, with which said lever engages, said cork-screw having loose bearing in its upper portion in slot b', and at its lower portion in the opening of the standard, and having threaded bearing in nut A, substantially as set forth.

3. The combination of standard A, provided with flange a, central bore, f, and yoke-arm B, said arm provided with slots b b', the latter slot located in the same vertical plane with the opening in the standard, nut A, fitting loosely in said opening, lever C, pivoted in slot b at right angles to flange a, and having a slot, d, and corkscrew G passing through slot d, and provided with shoulders d' d^2, with which said lever engages, said corkscrew having loose bearing in its upper portion in slot b', and at its lower portion in the opening of the standard, and having threaded bearing in nut A, substantially as set forth.

383,094. CULTIVATOR. Hiram Bond, Wilmot, Ind. Filed Nov. 19, 1887. Serial No. 255,610. (No model.)



Claim.—In a plow substantially as described, the combination, with the jointed standard having the attaching-flange T formed thereon and provided with apertures, the wing A, and the point g, of the form shown, respectively secured to the said flange flush with each other, substantially as specified.

383,095. DIFFERENTIAL EXPANSION DEVICE FOR GALVANOMETERS. William H. Bristol, and William H. Smith, Rahway, N. J. Filed Feb. 24, 1888. Serial No. 265,146. (No model.)



Claim.—1. A compound or differential expansion bar or device composed of two parts secured together in series, and both having the same coefficient of expansion, but differently susceptible to the heating effect of an electric current passed through them, as set forth.

2. A compound or differential expansion device composed of two strips or conductors secured together in series, and both composed of the same metal, but differing in cross-section, or radiating-surface, or both, as set forth.

3. In a compound or differential expansion bar or device, the combination, with two metal strips or parts having each the same coefficient of expansion and united at one end, of insulated fastenings securing at intervals the two parts together and electric terminals for passing a current through the parts in series, as set forth.

4. A differential expansion device consisting of two conductors, both having the same coefficient of expansion secured together but insulated, except at one end, one being in the form of a flat strip and the other in the form of a rounded bar or wire, as set forth.

5. The combination, with a differential expansion-bar composed of two conductors connected in series and having the same coefficient of expansion, but differently susceptible to the heating effect of an electric current passed through them, of a scale and pointer, and intermediate mechanism for imparting movements of the bar to the pointer, as set forth.

383,096. ANTI-INDUCTIVE COMPOSITION FOR ELECTRIC CABLES. David Brooks, Jr., Philadelphia, Pa., assignor to the Electric Cable Constructing and Maintenance Company, same place. Filed Dec. 4, 1886. Serial No. 220,643. (No specimens.)

Claim.—1. A composition, for the purpose set forth, consisting of plumbago, gum-copal, linseed-oil, and turpentine, substantially as described.

2. A composition, for the purpose set forth, consisting of a carbonaceous gum composed of a powdered electrical conducting material, gum-copal, linseed-oil, and turpentine, substantially as described.

383,097. SUPPORT FOR ELECTRIC WIRES. DAVID BROOKE, Jr., Philadelphia, Pa., assignor to the Electric Cable Construction and Maintenance Company, same place. Filed Dec. 4, 1886. Renewed Mar. 3, 1888. Serial No. 266,100. (No model.)



Claim.—1. A support for an electric cable, formed of a hanger having a bed with a hook at the top and an eye at the bottom, said eye being adapted for the attachment of a tie-wire, the parts being combined and operating substantially as described.

2. A support for an electric wire or cable, having a hanger formed of a hook at the top and a bed with shoulders on its under side, substantially as described.

3. A hanger for an electric wire or cable, formed with a bed having an eye for attaching a tie-wire, substantially as described.

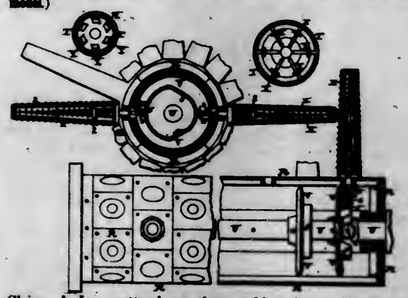
383,098. COVERING FOR ELECTRIC WIRES AND CABLES. DAVID BROOKE, Jr., Philadelphia, Pa., assignor to the Electric Cable Construction and Maintenance Company, same place. Filed Dec. 4, 1886. Renewed Mar. 3, 1888. Serial No. 266,101. (No specimens.)

Claim.—1. The process of covering electric wires, consisting in first covering the wires with a fibrous tape saturated with an insulating compound, then inclosing the same in a plastic rubber preparation with interlying canvas wrappings and powdered sulphur, and then placing the wires thus covered in a vulcanizing-furnace and subjecting the same to a heat of 265° Fahrenheit until the rubber is vulcanized, all substantially as described.

2. An electric cable formed of wires covered with fibrous material saturated with an insulating compound and a vulcanized-rubber coating with interlying canvas wrappings, all substantially as and for the purpose set forth.

3. An electric cable consisting of wires each of which is covered with a wrapping of fibrous material saturated with an insulating composition, the whole covered with layers of vulcanized rubber and canvas, all substantially as described.

383,099. COTTON-HARVESTER. OWEN T. BOSS, Louisville, Ky., assignor, by mesne assignments, to the United States Cotton Harvester Company, of New York. Filed Sept. 16, 1882. Serial No. 108,742. (No model.)



Claim.—1. In a cotton-harvesting machine, the combination of revolving cylinders provided with revolving perforated fingers, barbs placed within the fingers, and mechanism for retracting the barbs at certain points, substantially as specified.

2. In a cotton-harvesting machine, the combination of revolving cylinders, revolving perforated fingers mounted thereon, means for causing the fingers to revolve, barbs placed inside of the fingers, a spring-actuated rod provided with an expanding or contracting device for operating the barbs, and mechanism for imparting an endwise movement to the rod, substantially as specified.

3. The combination, in a cotton-harvesting machine, of revolving cylinders, perforated fingers provided with inclosed barbs adapted to be projected and withdrawn and mounted on the cylinders, a stationary rod placed inside of each cylinder, a series of annular gears on the rod, and pinions connected to the fingers to cause them to revolve while the cylinder is in motion, substantially as shown and described.

4. In a machine for harvesting cotton, the combination of the revolving cylinders, the mechanism for operating them, the stationary rods placed inside of the cylinders and provided with stationary gears having the cam-flanges 5, the rotating fingers having pinions for engaging the stationary gears, barbs placed within the fingers, and endwise spring-actuated rods for moving the barbs, the rods being moved in one direction by means of the springs and in the other direction by means of the cam-flanges, substantially as described.

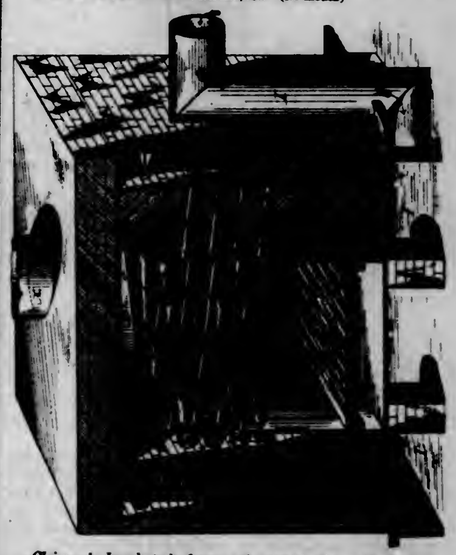
5. In a cotton-harvesting machine, the combination of a series of revolving perforated fingers, a suitable moving body or bodies to which the fingers are attached, barbs placed inside of the fingers, means by which the said barbs are forced out and then retracted, and mechanism for cleaning the cotton from the fingers after the barbs have been retracted, substantially as set forth.

6. The combination of the fingers of the plates Y, carrying the barbs X, the rods 1, and the expanding and contracting mechanism, substantially as specified.

7. In a machine for harvesting cotton, the combination of a revolving cylinder, a series of revolving fingers mounted thereon, a series of barbs inside of said fingers adapted to be projected and withdrawn, and a series of cars, cams, and springs inside of said cylinder for revolving the fingers and operating the barbs, substantially as specified.

8. The combination of the revolving cylinder provided with a series of revolving barbed fingers, the belts *a*, and revolving shafts 6, the belts being passed around the cylinders and shafts for the purpose of stripping the adhering cotton from the fingers, substantially as shown.

383,100. HOT-AIR FURNACE. HENRY CALLAHAN, Dayton, Ohio. Filed Nov. 16, 1887. Serial No. 255,347. (No model.)



Claim.—1. In a hot-air furnace, the combination, with the fire-box, of the compartment above the same, the walls A, inclosing the said fire-box and compartment and forming a hot-air chamber, the outer cold-air flues, B, and the pipes D, extending from said flues and diagonally upward through said upper compartment and opening at a higher point into the hot-air chamber upon the opposite side of the furnace, substantially as set forth.

2. In a hot-air furnace, the combination of the fire-box, an upper compartment above said box, walls inclosing the fire-box and upper compartment and forming a hot-air chamber, the outer cold-air flues, the pipes extending through said upper compartment from one side to the other and opening into the hot-air chamber, and separable pipe-sections connecting the cold-air flues with the ends of the first-mentioned pipes, substantially as set forth.

3. In a hot-air furnace, the combination, with the fire-box and the upper compartment, of the walls A, inclosing said fire box and compartment and forming a hot-air chamber, the outer walls, C, forming with the first-mentioned walls cold-air flues, and pipes extending from said flues diagonally upward through the said upper compartment and to the hot-air chamber upon the opposite side of the furnace, substantially as set forth.

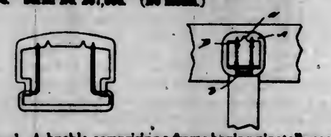
4. In a hot-air furnace, the combination, with the fire-box and the compartment above the same, of the heavy heating-pipes B, extending across said compartment, the separable sections E, of light material, forming extensions of said pipes, the inclosing-walls A, and the cold-air flues communicating with the outer ends of said sections, substantially as set forth.

383,101. WATER AND FIRE PROOF COMPOSITE ROOFING. WILLIAM CRAIG, Wilkes-Barré, Pa. Filed Dec. 8, 1887. Serial No. 257,373. (No model.)



Claim.—The improved roofing and siding herein described and shown, consisting of sheets formed of alternating layers of paper and white lead and provided with overlapping edges, a coating of shellac to secure the same to the base, and a fire-proof coating on the outer faces of the sheets, as specified.

383,102. BUCKLE. NELSON CLEMENT, Chicago, Ill. Filed Mar. 19, 1888. Serial No. 267,668. (No model.)

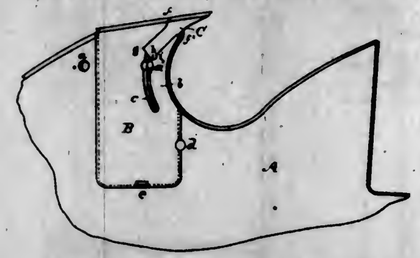


Claim.—1. A buckle comprising a frame having pivotally secured to one side thereof a double flexible tongue, and having a slot or opening in the bar of the buckle opposite the pivot of the tongue and adjacent to its ends, whereby to permit the passage of the tongue from one side of the frame to the other, substantially as described.

2. In a buckle, the combination of a frame, A, and a double flexible tongue formed of a single wire pointed at each end and bent into a U form, pivotally secured to one side of the frame, said frame having a notch or opening, *a*, to permit the passage of the tongues from one side of the frame to the other, substantially as described.

3. In a buckle, the combination of a frame, A, provided with notch *a*, tongue B, pivotally secured thereto, and extension C, having transverse slots *c* in said extension, substantially as described.

383,103. INSERTED SAW-TOOTH. FRANCIS W. OTIS, San Francisco, Cal. Filed Oct. 7, 1887. Serial No. 251,771. (No model.)

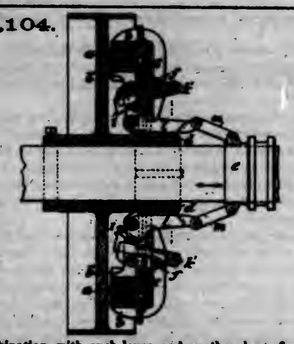


Claim.—The inserted saw-tooth herein described, consisting, essentially, of the holder B, oblong in shape, fitted in a recess in the saw-plate and set lengthwise upon an approximately radial line, the upper half of the forward edge of the holder extending beyond the recess and having a spring, *b*, to hold the cutting-bit in place, adapted to spring forward unobstructed by the saw-plate, a cutting-bit, C, inserted in the upper forward corner of the holder in a recess cut diagonally therein, and a saw-plate with recesses to receive the bit-holders, the edges of which extend the entire length of the back edge of the holder along the bottom and up the forward edge to the root of the spring *b*, all combined as and for the purpose described.

383,104. FRICTION-CLUTCH. HELEN C. (NEWELL) CRAYHANGER, Cuyahoga Falls, Ohio. Filed Jan. 23, 1888. Serial No. 262,182. (No model.)

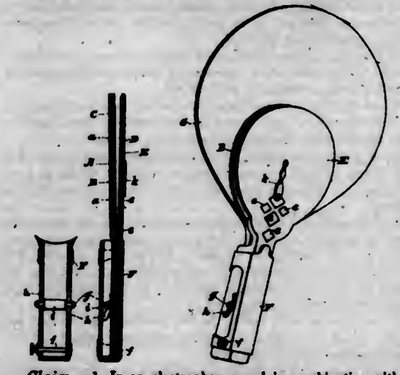
Claim.—In a friction-clutch having reversely-moving jaws and a lever for moving such jaws pivoted upon an arm moving with the shaft,

383,104.



the combination, with such lever and another lever for moving the first-named lever, also moving with the shaft, of an inclined piece interposed between said two levers and provided with means of adjustment, substantially as described.

383,105. ELECTROPHORUS. JAMES D. GILP, San Felipe, Cal. Filed Sept. 10, 1885. Serial No. 176,666. (No model.)



Claim.—1. In an electrophorus, and in combination with the inducing and induced plates thereof, the sole provided with an insulating plate or cover on the opposite side from the inducing-plate, substantially as described.

2. An electrophorus having two pins extending from the sole through the inducing-plate, substantially as described, in contradistinction to an electrophorus with a single pin, or with more than two pins, arranged at the corners of a triangular or other figure.

3. In an electrophorus, and in combination with the sole and the inducing-plate, the induced plate formed of a thin metal sheet or foil and the non-conducting backing to the same, substantially as described.

4. In an electrophorus, and in combination with the sole and the inducing-plate, the induced plate formed of a thin metal sheet or foil and the non-conducting backing to the same, having a handle insulated from the induced plate formed on said backing, substantially as described.

5. An electrophorus having the two parts thereof, one containing the induced plate and the other the inducing-plate and the sole, hinged together, and provided with a non-conducting plate, with which said hinge is connected, and whereby the induced plate is insulated from the sole, substantially as described.

6. An electrophorus comprising the inducing-plate, the sole, the insulating plate or cover on the opposite side of the sole from the inducing-plate, the induced plate, and the backing of said induced plate, substantially as described.

7. An electrophorus having the two parts, whereof one part comprises the induced plate and the other the inducing-plate and sole, provided each with a lateral extension which serves or may serve as a handle, that on the induced plate being insulated therefrom, and that on the other part having an exposed conductor connected with the sole, substantially as described.

8. An electrophorus having the two parts, whereof one part comprises the induced plate and the other the inducing-plate and sole, provided one with a hollow handle and the other with an extension into

said handle, and having a hinge between said parts, substantially as described.

9. An electrophorus provided with a handle and having the two parts hinged together, one part being free to move toward and away from the other when the instrument is wagged, substantially as described.

10. An electrophorus having the two parts provided each with a lateral extension which may serve as a handle, and detachably connected by a hinge-joint, so that said electrophorus may be used with the parts detached or connected, the handle or extension on the one part being insulated from the induced plate and on the other provided with an exposed conductor electrically connected with the sole, substantially as described.

11. An electrophorus having two parts, each provided with a lateral extension which may serve as a handle, one part comprising the induced plate and the backing therefor and having the handle insulated from the induced plate, and the other part comprising the inducing-plate, sole, and cover, and having in the handle an exposed conductor electrically connected with the sole, substantially as described.

12. The combination, with the two parts of an electrophorus hinged together, of an adjustable stop for limiting the motion of said parts away from each other, substantially as described.

13. The combination, with the two parts of an electrophorus, of a hollow handle on one part, an extension of the other part into said handle, and the adjustable stop or pin, substantially as described.

14. An electrophorus having one of the two parts provided on the back or outside with two or more points or electrodes separated by a suitable space to be leaped by the spark when the induced plate is discharged, substantially as described.

15. The combination, with the electrophorus, of two or more sparking points or electrodes and a switch, all in the discharging-circuit of the electrophorus, substantially as described.

16. An electrophorus having in the discharging-circuit points or electrodes arranged to leave two at the least paths of about equal resistance for the sparks to pass, substantially as described.

17. In combination with a fan, an electrophorus having a portion free to vibrate under the to-and-fro motion of the fan for the generation of ozone or production of sparks or other purpose, substantially as described.

18. The method of working an electrophorus for the generation of ozone by applying at intervals the induced plate of a suitable electrophorus to the inducing non-conductor thereof and removing said plate from said non-conductor after each application, and causing the electrical charges thus repeatedly induced to be discharged slowly or as brushes, substantially as described.

19. An electrophorus having the two parts hinged together and provided with an inducing-plate disconnected from sparking points or electrodes, substantially as described.

20. An electrophorus having the two parts provided each with a lateral extension which may serve as a handle, and the induced plate disconnected from sparking points or electrodes, substantially as described.

21. An electrophorus having the two parts hinged together and provided on the back or outside with sparking points or electrodes, substantially as described.

22. An electrophorus having the two parts hinged together and provided on the back or outside with sparking points or electrodes, and provided also with a switch or circuit-changer in circuit with said points or electrodes, substantially as described.

23. An electrophorus having a non-conducting backing on the induced plate and sparking points or electrodes on the said backing in the discharging-circuit of said induced plate, substantially as described.

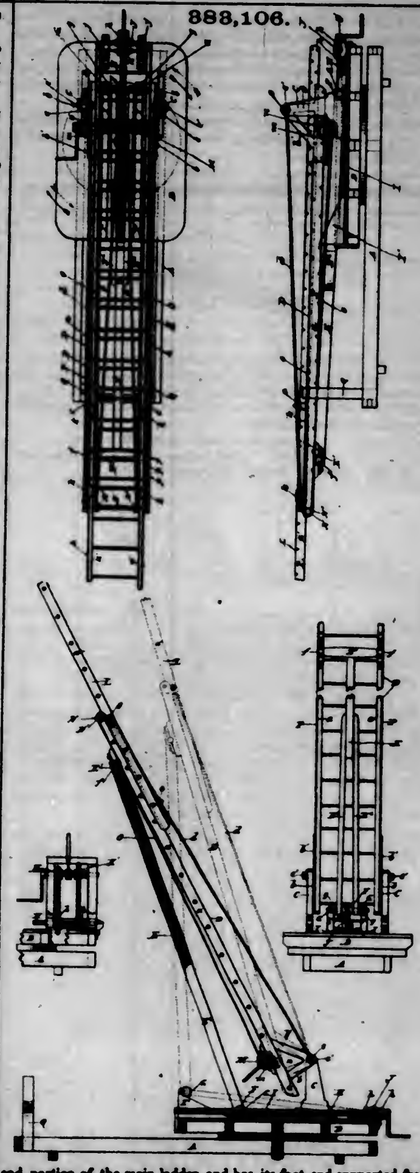
388,106. EXTENSION FIRE-LADDER. LEVI DEMAREST, Albany, N. Y. Filed Apr. 5, 1887. Serial No. 233,606. (No model.)

Claim.—1. In an extension fire-ladder, the combination, with a platform and posts projected from its upper side, of a ladder provided at its foot end with the angular suspension-brackets projected above the plane of its face side, and the pivot-connections between said brackets and posts, substantially as and for the purposes set forth.

2. In an extension-ladder, the combination, with a platform, supporting-posts rigidly secured to said platform, and a ladder which is pivoted to said posts at the outer-end portions of its brackets *b b*, and adapted to be raised and set at any selected angle, of the truss-rods *d d*, arranged at an angle in relation to the side rails of said ladder and securely connected with the upper ends of the side rails and with the outer ends of brackets *b b*, which are secured to the foot-end portions of said side rails, and the tie-loops *e e* between the upper ends of said side rails and said brackets, substantially as and for the purposes set forth.

3. In an extension fire-ladder, the combination, with the main ladder, on which a sliding ladder is supported when extended, and a supporting-prop, R, which is jointed at its upper end with the upper-

388,106.



end portion of the main ladder and has its foot end supported from the platform the main ladder is pivoted to, of the truss-rods *d d*, suspension-brackets *b b*, and tie-loops *e e*, having each secure connection with said ladder, as shown and described, whereby the strain on the main ladder from the leverage of the sliding ladder will be sustained by said brackets, rods, and loops, substantially as and for the purposes set forth.

4. In an extension fire-ladder, and in combination with the lower ladder and its sliding or upper ladder, the former suspended by angular brackets secured to its foot-end, a windlass provided with a ratchet-wheel and pawl on the foot-end portion of the lower ladder, sheaves at the upper end, and ropes over said sheaves connecting with the windlass at one end and with the lower-end portion of the sliding ladder by its opposite end, substantially as and for the purposes set forth.

5. In an extension fire-ladder, and in combination with a main ladder which is jointed by means of suspension-brackets with supporting-posts which are stationary in relation to the platform of the apparatus, a supporting-prop which is jointed with the main ladder and provided on its foot end with a screw-threaded nut, and the screw-threaded shaft held with the platform from moving endwise and adapted to be revolved at will within said nut, whereby the foot end of said supporting-prop will be moved away from the jointed and stationary foot end of the main ladder when the latter is being elevated, substantially as and for the purposes set forth.

6. In an extension fire-ladder, the combination, with the propping-piece jointed with the main or lower ladder, of the trucks secured to the platform, roller-nut provided with flanged rollers and jointed with the foot end of the said propping-piece, and the screw-shaft operated at will with its screw-threads holding with said nut and its head end holding with a block secured to said platform, substantially as and for the purposes set forth.

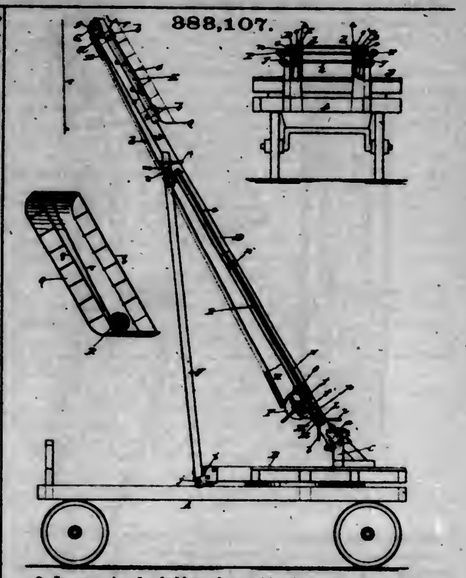
7. In an extension fire-ladder, the combination, with the propping-piece of the main or lower ladder, and flanged rollers secured to the foot end of said propping-piece, and the horizontal plain tracks and inclined tracks connecting with the horizontal tracks, of a screw-shaft which holds with a nut attached to the foot end of the said propping-piece and with a block secured to the platform, substantially as and for the purposes set forth.

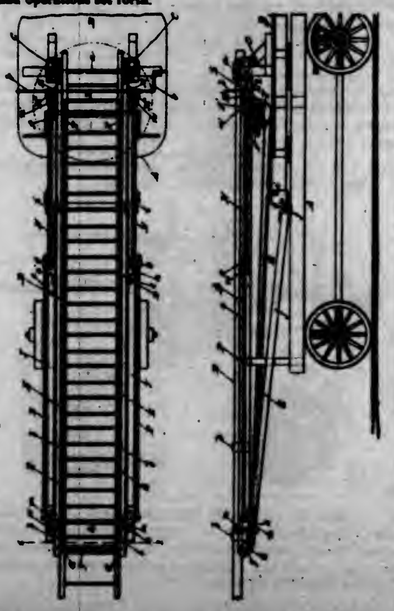
388,107. EXTENSION FIRE-LADDER. LEVI DEMAREST, Albany, N. Y. Filed Apr. 11, 1887. Serial No. 234,269. (No model.)

Claim.—1. In an extension fire-ladder, the combination, with a main ladder which has a jointed connection at its foot, and with a platform or pieces secured to the same, of a prop-lever which has its base end also jointed with the said platform and its opposite end extended rearwardly or upwardly, and serving by a sliding connection with the main ladder to support the rearward or upper end or portion of said main ladder at different points on the same, accordingly as said prop-lever has its rearward or upper end elevated by force applied to the same, substantially as and for the purposes and operations set forth.

2. In an extension fire-ladder, the combination, with a main ladder which is jointed at its foot end with the platform or posts secured to the same, of prop-levers which have their foot ends jointed with said platform at a point at a distance rearward of the point of joint of the said main ladder with the platform, and have their rearward or upper ends connected by a sliding connection with the main ladder and in normal idle position elevated to a plane relatively above the plane of the center of motion of said levers, and having connections with draw-rods, or their described equivalents, which operate to pull on the said ends to elevate the same, substantially as and for the purposes and operations set forth.

388,107.





3. In extension fire-ladders, the combination, with a main ladder jointed at its foot end with a platform or posts secured to the same, and the prop-levers which have their foot ends also jointed to said platform and at a distance from the connecting-joint of said ladder with the platform, and have their rearward ends supporting the rear end portion of the main ladder, and also free to be moved upwardly and forwardly to elevate the said ladder to different angles of inclination, of the revolving screw-shafts, and nuts which hold said screw-shafts in connection with draw-rods which are connected with the rearward ends of said prop-levers, substantially as and for the purpose set forth.

4. In extension fire-ladders, the combination, with prop-levers which are jointed with a platform at a point rearward to the point of joint of the main ladder with the same, and which have their free rearward or upper ends supporting the rear end portion of the main ladder, and draw-rods P, connected with nuts which work on the screw-shafts N, of gear mechanism which can be operated at will for revolving said screw-shafts, substantially as and for the purpose set forth.

5. In extension fire-ladders, the combination, with the side rails of the main ladder and ropes of the windlass moving the sliding ladder on said main ladder, of the protecting-cases H, containing the portions of said ropes which are below said main ladder, substantially as and for the purposes set forth.

6. In extension fire-ladders, the combination, with the ropes of the windlass which moves the sliding ladder on the main ladder, of the grooves A, made in the lower side of the side rails of the sliding ladder, substantially as and for the purposes set forth.

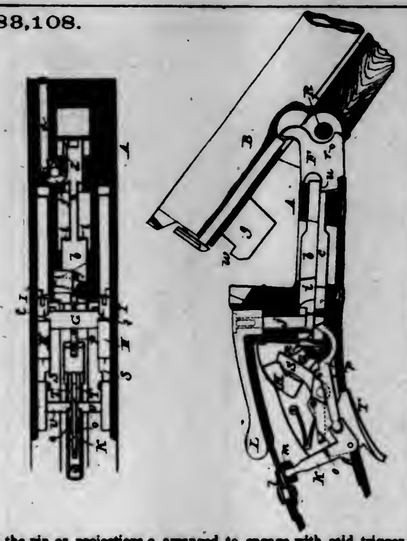
388,108. BREECH-LOADING GUN. LOUIS P. DEB, Ilion, N. Y. Filed Feb. 15, 1888. Serial No. 264,473. (No model.)

Claim.—1. The combination, in a tip-barrel gun, of the frame A, provided with the central longitudinally-sliding locking-bolt, *b*, provided with the shoulder *d*, the pivoted rocker *f*, provided with the shoulders *e* and *d'*, and the longitudinally-sliding stop-pin *a*, with the pawl F, pivoted to the under side of the barrels and arranged to fit in the recess in the frame in front of the locking-bolt, whereby the movement of the locking-bolt is limited and the dismounting of the barrels prevented until the fore-arm of the stock is detached, the said parts being arranged in relation to each other, substantially as shown and described.

2. The hammer H, provided on its inner side with a curved rib or projection having the notches 1 and 2 formed therein, in combination with the pivoted rear *a*, having its front end provided with the hook-shaped point arranged to bear against the under side of the curved projection on the side of the hammer and engage in the notches therein, whereby the hammers may be held at full or at half cock at will, as set forth.

3. In combination with the triggers T, provided on their upper edges with a notch or recess, the pivoted elbow-lever K, provided

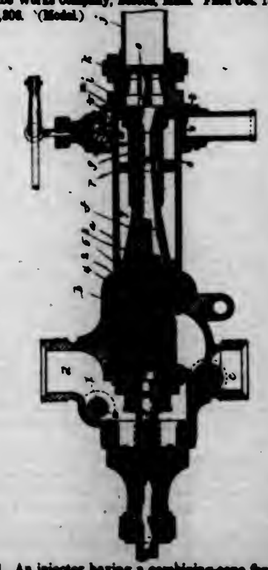
388,108.



with the pin or projections *e*, arranged to engage with said trigger in rear of said notch, and connected at its upper end with the slide *l*, and the pivoted lever *p*, having its rear end connected to the elbow-lever K and its front beveled end arranged in line with the locking-bolt *b*, so as to be depressed thereby in the rearward movement of said bolt, all arranged in relation to each other substantially as shown, whereby the triggers are automatically locked whenever the hammers are cocked and can be released for firing whenever desired.

4. The combination, in a tip-barrel gun, of the barrels B, having the pawl P pivoted to their under side, the frame A, having the locking-bolt *b* and cocking-bolt *c* both mounted centrally therein, the rocker G, or equivalent cross-head, at the rear end of the cocking-bolt, and the hammers H H, all being constructed and arranged in relation to each other, substantially as and for the purposes herein set forth.

388,109. INJECTOR. WALTER R. DODGE, Everett, assignor to the National Tube Works Company, Boston, Mass. Filed Oct. 19, 1887. Serial No. 252,808. (Model.)



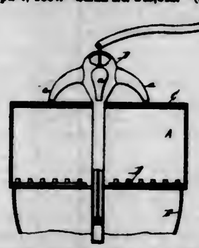
Claim.—1. An injector having a combining-cone formed to receive the steam-cone and made in separable sections not positively connected with each other, one of said sections being positively secured directly to the casing of the injector, and the other to a coupling or connecting end detachably secured to said casing, the last-mentioned section including the surface which is subjected to the greatest wear, as set forth.

2. In an injector, the combination, with the casing and the other operative parts, of a combining-cone formed to receive the steam-cone, and composed of a section, 2, screwed directly to the casing, the section 3, fitted to but having no positive connection with the section 2, and detachably connected to the delivery-cone, and the coupling or connecting end to which the delivery-cone is detachably secured, said coupling being detachably secured to the casing of the injector, said section 3 including the surface which is subjected to the greatest wear, as set forth.

3. In an injector, the combination, with the casing having the overflow-passage and the steam combining and delivery cones, of the flange or partition *r* on the delivery-cone, whereby the space within the casing containing the combining and delivery cones is divided and the overflow-water is confined to the space 8 surrounding the delivery-cone and excluded from the space 7 surrounding the combining-cone, substantially as and for the purpose specified.

4. The combination, with the steam combining and delivery cones of an injector, of a casing having one or more capped orifices, *w*, communicating with the space containing the receiving end of the steam-cone, whereby oil may be introduced into said space to be carried by the steam along the surfaces of said cones, as set forth.

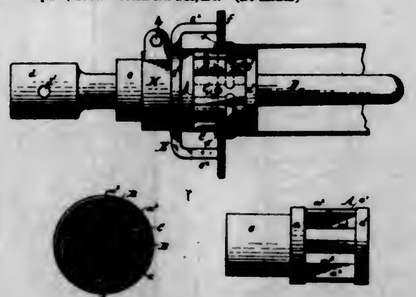
388,110. WASHING-MACHINE. JOHN C. DRAKE, Alton, Ark. Filed Sept. 7, 1887. Serial No. 249,012. (No model.)



Claim.—1. In a washing-machine of the character herein set forth, the hand-pump, combined with the vessel for receiving the clothes or materials, the pump passing through the bottom of said vessel, which bottom is provided with a perforation through which water may descend, the pump being arranged to deliver water from a second vessel below the first and upon the top of the materials and said second vessel, substantially as shown, and for the purposes set forth.

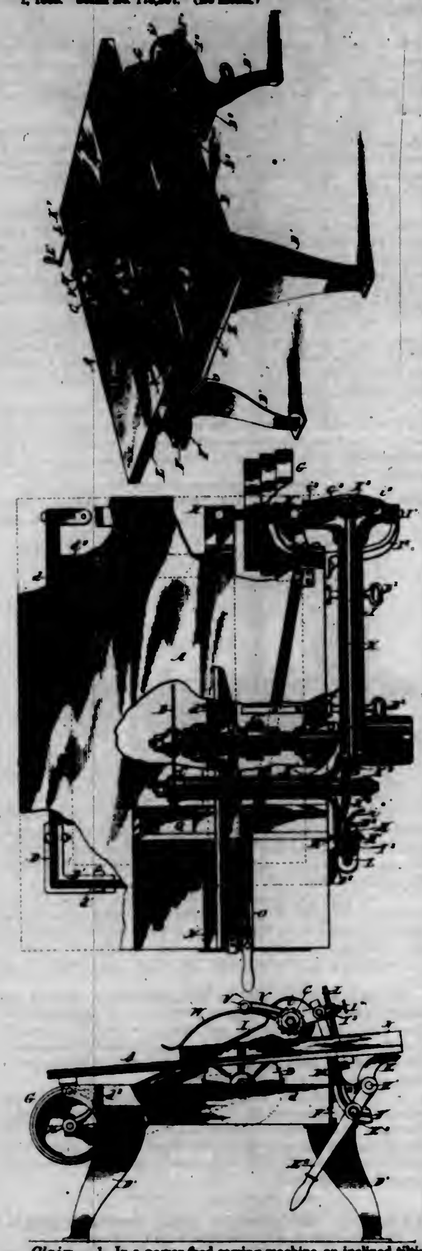
2. The herein-described washing-machine composed of the vessel A, hand-pump, top cross-bar, and false bottom, the bottom of vessel A being perforated for the passage of the pump-barrel and for drainage, the perforation being larger than the pump, and the parts being combined substantially as set forth and arranged for operation in connection with any water-heating vessel separate from and independent of vessel A, as explained.

388,111. TUBE-EXPANDER. JAMES DUFFY, Buffalo, N. Y. Filed Sept. 1, 1887. Serial No. 247,630. (No model.)



Claim.—The combination, with the holder A, provided with a series of tapering openings, a^3, of the pressure or swaging rollers B, arranged in said openings, and springs C, secured to the holder and partly covering said openings, whereby the rollers are retained in the openings, substantially as set forth.

388,112. POWER-FEED SEWING-MACHINE. GEORGE B. DUNNE, Chicago, Ill., assignor to Joseph W. Tell, same place. Filed Aug. 1, 1888. Serial No. 279,997. (No model.)



Claim.—1. In a power-feed sewing-machine, an inclined tilting support for the feed-wheel, hinged at one end below the level of the table at a point back of the saw, and extended above and over the table to bring the feed-wheel in front of the saw, substantially as described.

2. The inclined tilting feed-wheel support hinged at one end below the level of the table and at a point back of the saw, and extended above and over the table to bring the feed-wheel in front of the saw, combined with the feed-wheel and power-transmitting devices carried by the tilting feed-wheel support, substantially as described.

3. The bent hollow feed-wheel support pivoted at one end below the level of the table and at a point back of the saw and extended above and over the table to bring the feed-wheel in front of the saw, in combination with the feed-wheel and geared shafting carried by the said hollow support, substantially as described.

4. The inclined tilting feed-wheel support hinged at its lower end, in combination with a standard rising from the main frame and constituting a guide for the upper free end portion of the tilting feed-wheel support, and means for adjusting the said feed-wheel support at its upper free end portion laterally to the guide-standard, whereby the feed-wheel can under all circumstances be kept in line with the saw and at the same time a free tilting movement on the part of its support be admissible, substantially as described.

5. The tilting feed-wheel support hinged at its lower end, in combination with the guide-standard rising from the main frame and constituting a guide for the upper free end portion of the inclined tilting feed-wheel support, and the slide-block supported between a pair of adjusting-screws carried by the tilting feed-wheel support and fitted to slide upon the guide-standard, substantially as described.

6. In a power-feed sewing-machine, the tilting feed-wheel support carrying a feed-wheel and a power-transmitting mechanism, such as described, in combination with the two belt-connected speed-pulleys arranged below the table, the axle of one speed-pulley being provided with the saw and an ordinary belt-pulley, and the axle of the other speed-pulley being provided with a gear engaging a gear which is carried by the tilting feed-wheel support, and which forms a member of the power-transmitting mechanism with which said tilting feed-wheel support is provided, substantially as set forth.

7. In combination with the saw and feed-wheel, the hollow bent feed-wheel support I, expanded at its bend and at one end, geared shafting carried by said hollow support, with the gears situated at the expanded portions thereof, and means, substantially as described, for driving the geared shafting.

8. The combination, with the table A, of a rectangular bed-frame, D, provided with a longitudinal division-bar, d^3, the rotary saw, and a pair of belted speed-pulleys, the saw-shaft being journaled upon the bar d^3 and one side of the frame, and the cone-pulleys being mounted between said side of the frame and the bar d^3, substantially as described.

9. In a sewing-machine, the table hinged at or near one end upon a bed-frame on which the circular saw is mounted in position to extend up through an opening in the table, in combination with a rock-shaft provided with cams arranged to sustain the free end portion of the table, and means, substantially as described, for operating the rock-shaft and holding it in adjustment, for the purpose set forth.

10. The combination, with the bed-frame D, arranged below the hinged table, of the two speed-pulleys on shafts supported by the bed-frame, one of said shafts being provided with a circular saw which extends up through the table, the tilting feed-wheel support, the feed-wheel, power-transmitting devices connecting the feed-wheel with the shaft of the other one of said cone-pulleys, and one or more belt-shifters operative between the two speed-pulleys, substantially as described.

388,118. DYNAMO-ELECTRIC MACHINE. JAMES W. RANDS, New York, N. Y. Filed Mar. 18, 1887. Serial No. 231,309. (No model.)

Claim.—1. The combination, with the armature of a dynamo-electric machine, of a consequent-pole field-magnet having its poles presented to different points in the length of said armature, each convolution of the coils of said armature extending across the face of each of the field-magnet poles.

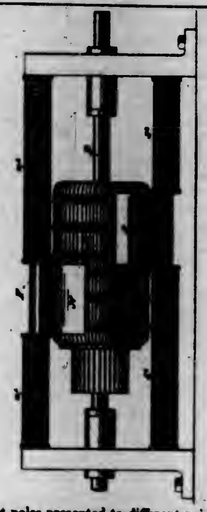
2. The combination, with the armature of a dynamo-electric machine, of a field-magnet having two poles facing the axis of the armature and presented to said armature at points diagonally opposite with reference to its axis, the separate convolutions of the armature-coils extending through the field of each pole.

3. In a dynamo-electric machine, the combination, with a ring-armature, of pole-pieces of opposite character presented to the periphery of the armature at different points in its length, the separate convolutions of the armature-coils extending across the face of each pole-piece.

4. In a dynamo-electric machine, the combination of a single continuous core of soft-iron wire wound upon the same, forming a cylindrical armature, and a field-magnet having consequent poles located in different transverse planes with reference to the axis of the armature.

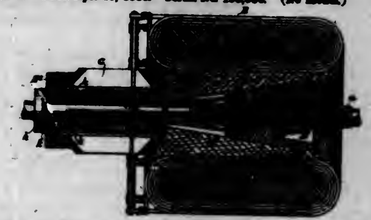
5. In an electric machine, the combination of a continuous armature-core, its axis, wire wound upon said core parallel with said axis,

888,118.



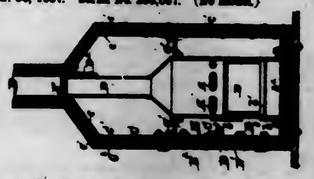
and two field-magnet poles presented to different points in the length of the armature and upon opposite sides thereof.

888,114. AUTOMATIC TIGHTENING DEVICE FOR ARMATURES OF DYNAMO-ELECTRIC MACHINES. JAMES W. EASTON, New York, N. Y. Filed Apr. 13, 1886. Serial No. 198,606. (No model.)



Claim.—The combination of the armature-shaft of an electric machine, an armature movable thereon, an automatic tightening device coupling the armature to the shaft, whereby the normal movement of the shaft during its operation tends to tighten the grip of the armature upon the shaft, and a commutator coupled to and moving with the armature independently of the shaft.

888,115. CAR-HEATER. JOHN H. EDWARD, Whitewater, Wis., assignor of one-half to J. F. Mitchell and J. A. Partridge, same place. Filed Mar. 30, 1887. Serial No. 233,067. (No model.)



Claim.—1. In an apparatus for heating cars, the combination, with the stove or furnace, of the surrounding shell, rigidly secured by bolts to the said furnace, which has upon all sides of the stove walls of non-conducting material and walls of sheet metal, which inclose the said non-conducting material, a doorway formed in said shell, and a door situated in the said doorway, also formed of sheets of metal and non-conducting material inclosed thereby, substantially as set forth.

2. In an apparatus for heating cars, the combination, with the stove or furnace and the pipes which convey heat from the furnace to the car, of the surrounding shell, which has two walls of non-conducting material extending entirely around the stove horizontally, and the three metal walls inclosing the said non-conducting walls, and the non-conducting door in the said shell, substantially as set forth.

3. In an apparatus for heating cars, the combination, with the stove, of the surrounding three-walled shell which extends horizontally entirely around the stove, the walls of which are formed of sheets of metal secured together and spaced apart by rivets, the rivets which secure the first and second walls being arranged on transverse lines other than those which secure together the first and second walls, substantially as set forth.

4. In an apparatus for heating cars, the combination, with the stove, of the surrounding three-walled shell, formed with the vertical part which surrounds the stove proper, the inwardly-tapering part above the said vertical part, and a supplemental vertical part above the tapering part and surrounding the smoke-exit, substantially as set forth.

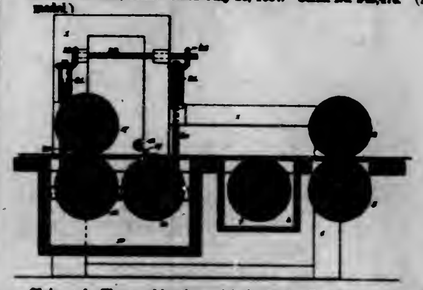
5. In an apparatus for heating cars, the combination of the stove, the surrounding shell of non-conducting walls with inclosing sheets of metal, the door constructed of similar walls and metal sheets, and the cross-bars D^4, fastened independently of the door to the said walls inside of the doorway, substantially as described.

6. In an apparatus for heating cars, the combination, with the stove, of the surrounding shell, the ash-pan-dust for smoke, the automatic valve which closes the said dust, the dust for supplying air to the furnace, the zigzag or staggered plates for preventing the ashes and cinders from escaping through said dust, the pipes *a a'* for conveying heat from the stove to the car, and the spring-actuated valves F^3 and F, substantially as set forth.

7. The combination, with the stove, of the non-conducting shell having two or more sheets of metal spaced apart and the doorway formed therein, and with the inner sheet of metal extended toward the middle of the doorway to form a flange, and the door having its edges outside and adjacent to said flange, as set forth.

8. The combination, with the stove, of the surrounding shell having several parallel separate metal walls with non-conducting chambers between them, and the braces G' for the stove secured to the shell independently of the outer metal wall thereof, substantially as described.

888,116. MACHINE FOR TINNING COPPER SHEETS. DAVID EVANS, Ansonia, Conn. Filed July 26, 1887. Serial No. 245,473. (No model.)



Claim.—1. The combination, with the feed-rolls, of the swab-roll, the metal-carrying roll, and means, as described, for pressing the plate upon its surface, and a pair of calenders arranged beyond the metal-carrying roll, the lower whereof revolves in the pot of molten metal, substantially as described.

2. In a plate-tinning machine, the combination, with the feeding-rolls and the swab-roll, of the tinning-roll and calender-rolls arranged behind the swab-roll, the tinning-roll and lower calender adapted to have a vertical movement within the tank, whereby the extent of their immersion may be regulated and varied, substantially as set forth.

3. The combination, with the feeding-rolls of the swab-roll, the metal-carrying roll, and the series of pressure bars or fingers arranged above said metal-carrying roll and adapted to forcibly impose the sheet thereon, of the pair of calenders arranged behind the said metal-carrying roll, the lower calender adapted to revolve within the molten metal, substantially as set forth.

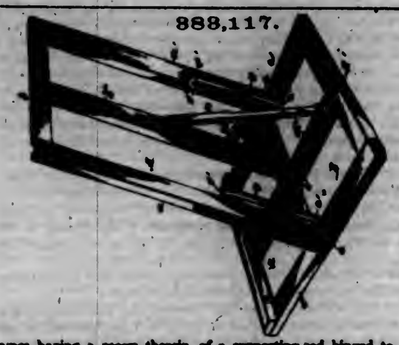
4. The combination, with the journal-frame arranged within the metal-tank, and the metal-carrying roll and the calenders journaled in said frame, of the vertical screw-threaded rods 20 and the shafts 22, adapted through the gears to raise and lower said rods, whereby the journal-frame may be elevated or depressed relative to the metal-tank, substantially as specified.

888,117. DISPLAY-RACK. JAMES A. FITZGERALD, Philadelphia, Pa. Filed June 15, 1887. Serial No. 241,502. (No model.)

Claim.—1. A displaying-rack consisting of a pair of frames having a sliding pivotal connection with each other, one of said frames having a recess therein, and a supporting-rod adapted to enter said recess when the rack is closed, substantially as set forth.

2. In a displaying-rack, the combination, with a pair of frames having a pivotal sliding engagement with each other, one of said

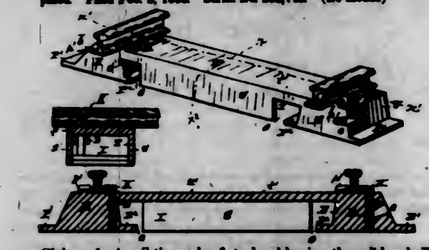
888,117.



frames having a recess therein, of a supporting-rod hinged to one frame and adapted to enter said recess when the rack is closed, and a slotted bar loosely connecting the rod to one frame for holding the latter in braced position, substantially as set forth.

3. A displaying-rack composed of two frames having a sliding pivotal engagement, of a supporting-rod hinged to one frame, and a connecting slotted guide-bar pivoted to one frame and having a sliding connection with the supporting-rod, whereby the several parts may be folded together or have their relative positions varied, substantially as set forth.

888,118. STEEL TIE FOR RAILROAD-TRACKS. MATHEW FITZGERALD, Troy, N. Y., assignor of one-half to Thomas McDonough, same place. Filed Feb. 2, 1888. Serial No. 262,743. (No model.)

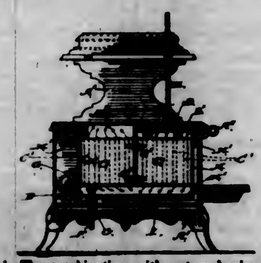


Claim.—1. A rail-tie made of steel and having the solid ends E E made with the tamping-plates F' F^2, the sides S, and the interior I open at the bottom, substantially as shown and described.

2. A rail-tie made of steel, having the solid ends E E made with the tamping-plates F' F^2, the sides S, and the interior I open at the bottom, substantially as shown and described.

3. A rail-tie made of steel, having downward and outward projected ends provided with laterally-projected tamping-plates, said tie having vertical sides, and a hollow interior between said ends and sides that is open at the bottom, substantially as shown and described.

888,119. HOUSE-WARMING APPARATUS AND STOVE. JAMES PRIME, Reading, Pa. Filed June 10, 1886. Serial No. 204,782. (No model.)



Claim.—1. The combination, with a stove having heater inlet-openings from the fire-pot and having outlet-opening communicating with the smoke-flue, of a water-heater consisting of a casing communicating with said openings, and having a partition, O^2, between them, said casing inclosing a tubular water-chamber connected with supply, delivery, and return water-pipes, and extending below the bottom of said tubular chamber, whereby the products of combustion may be conducted downward through said chamber on one side of said partition and upward on the other side before reaching the smoke-flue, substantially as and for the purpose set forth.

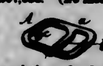
2. The combination, with a stove having heater inlet-openings from the fire-pot and heater outlet-opening communicating with the smoke-flue, of a water-heater consisting of a casing communicating with said openings, and having a partition, O^2, between them, said casing inclosing a reservoir, B, placed above said inlet-openings and attached to a tubular water-chamber connected with supply, delivery, and return water-pipes, and extending below the bottom of said tubular chamber, substantially as and for the purpose set forth.

888,120. TWINE GUIDE AND CUTTER. LEWIS GROSTEAD, Tremontsburg, N. Y. Filed Jan. 27, 1888. Serial No. 262,101. (No model.)



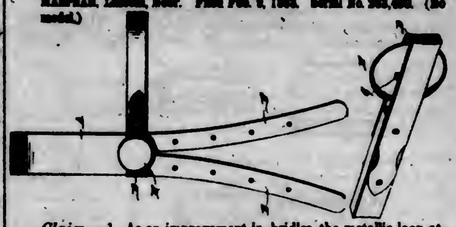
Claim.—The herein-described twine guide and cutter, consisting of a plate having an opening, *a*, a longitudinal block formed integrally with the said plate and having recesses *b c*, a transverse guide-pin in the former recess, and a cutter adjacent to the latter recess and over the opening *a*, as set forth.

888,121. BUCKLE. FREDERICK C. HALL, Chicago, Ill. Filed Mar. 19, 1888. Serial No. 267,693. (No model.)



Claim.—A buckle consisting of a frame, *a*, the side bars of which are in a straight line and the end bars of which are in the same horizontal plane as the side bars, which frame is provided at one end with the stud or boss *c* and with a central cross-bar, *b*, the upper surface of which is in a plane below that of the upper surface of the frame, substantially as and for the purposes specified.

888,122. ROSETTE ATTACHMENT FOR BRIDLES. JULIUS C. HAMPSON, Lincoln, Nebr. Filed Feb. 9, 1888. Serial No. 263,696. (No model.)



Claim.—1. As an improvement in bridles, the metallic loop attached to the end of the brow-band and adapted to receive the crown-piece, and the transverse rib or parting-plate arranged in the said loop to pass between the tongues or billets on the ends of the crown-piece, substantially as specified.

2. The combination, with the brow-band and the crown-piece, of the clip or loop attached to the end of the brow-band and adapted to receive the crown-piece, and the disk or rosette-plate carried by the clip or loop and adapted to be ornamented in any preferred manner, substantially as and for the purpose specified.

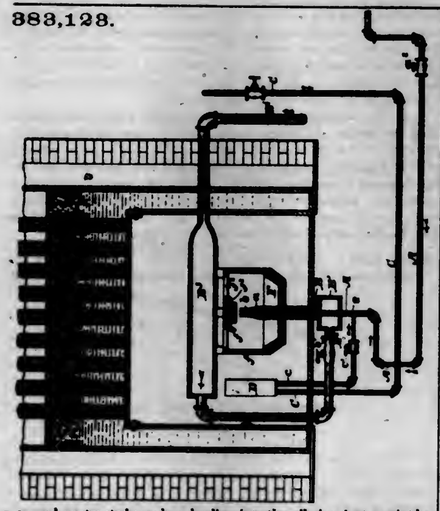
3. The combination of the clip or loop, the transverse rib or parting-plate therein, and the convex disk or rosette-plate carried by the clip or loop, substantially as specified.

4. The clip or loop to be fitted on the end of the brow-band and having a disk or rosette-plate formed integral therewith.

888,123. OIL-FURNACE. ALPHARMUS A. HARWOOD, McKeesport, Pa. Filed Aug. 19, 1887. Serial No. 247,257. (No model.)

Claim.—1. In a hydrocarbon-furnace, the combination, with the oil-pipe A, terminating in a nozzle, *a*, the air-pipe B, terminating at one end in a nozzle, *b*, surrounding the nozzle *a*, and at the other end in a box, F, surrounding the pipe A, said box F being connected with an air-heating chamber, F^2, located directly above the nozzles *a* and *b* and having an air-supply, and the superheating-chamber D, connected with a steam-supply pipe, C, and a pipe, *c*, the pipe *c* terminating in

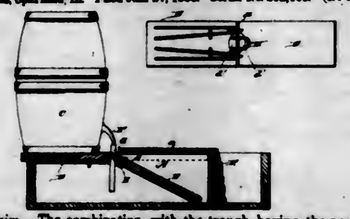
383,128.



a curved contracted nozzle, *e*, leading into the oil-pipe A at a point below the box B', substantially as shown and described, and for the purpose specified.

2. In a hydrocarbon-furnace, the combination, with the oil-pipe A, terminating in a nozzle, *a*, the air-pipe B, terminating at one end in a nozzle, *b*, surrounding the nozzle *a*, and at the other end in a box, B', surrounding the pipe A, said box B' being connected with an air-heating chamber, B, located directly above the nozzles *a* and *b* and having an air-supply, and the superheating-chamber D, connected with a steam-supply pipe, C, and a pipe, *c*, the pipe *c* terminating in a curved contracted nozzle, *e*, leading into the air-pipe A at a point below the box B', and the oil-pan F, having vertical wall *f*, and spider *f'*, the latter provided upon its under side with lugs which support a fire-brick directly over the nozzles *a* and *b*, the whole being constructed and arranged substantially in the manner shown, and for the purpose specified.

383,124. WATERING-TROUGH FOR CATTLE. WILLIAM R. HASKIN, Sparland, Ill. Filed Jan. 27, 1888. Serial No. 262,103. (No model.)



Claim.—The combination, with the trough having the partition E, provided with openings *c*, of the partial covers *a* and B, the latter having its edge notched at *d'* of the tank, the curved tube opening into the same, the rubber tube depending from said tube, and the hinged plank or float having its edge notched oppositely to the notch *d'* of the partial cover B, substantially as specified.

383,125. POP SAFETY-VALVE. ALFRED HATTERSLEY, Fort Wayne, Ind. Filed Nov. 5, 1887. Serial No. 254,247. (No model.)

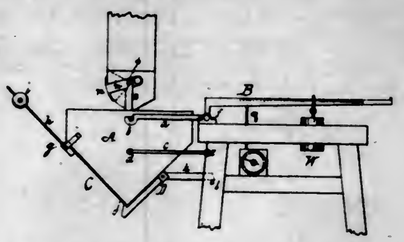


Claim.—1. A pop safety-valve consisting of a base-section, A, provided with a cylindrical internal portion, *a*, a beveled valve-seat, *b*, at the upper portion thereof, a chamber, C, above the seat *b*, a series of angular steam-ports leading from said chamber, a winged and chambered valve having an enlarged upper end, an adjustable holding-down spring for this valve, the said valve controlling the ports, and a case for this spring provided with steam-outlet apertures, and an enlarged chambered portion, F, said case being applied to the base-section A, substantially as specified.

2. The combination of the screw-threaded base portion A, provided with an annular bore, *a*, adapted to receive the radial wings of a valve, B, an annular seat, *b*, for the beveled portion of this valve, angular steam-ports leading from a chamber, C, and formed in said base portion, a perforated spring-case, E, having an enlarged base forming a chamber, F, adapted to receive the collared portion of valve B, and an adjustable holding-down spring for this valve, the said valve controlling the ports, all substantially as described.

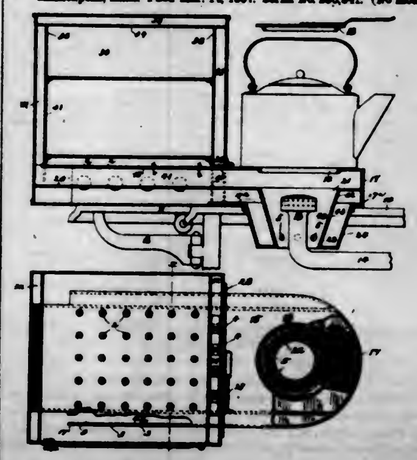
3. The combination, with the base-section A and the spring-section E, constructed as described, of the valve B, provided with an upper collared portion, a lower radially-flanged portion and the intermediate beveled seat and cylindrical portion to control the ports, and an adjustable spring, H, all substantially as and for the purposes described.

383,126. AUTOMATIC GRAIN-WEIGHER. JOHN HURST, Ardoch, Dak., assignor of two-thirds to John George Nelson and William T. Sheppard, both of same place. Filed Sept. 30, 1887. Serial No. 250,191. (No model.)



Claim.—In a grain-weigher, the forked scale-beam having fulcrum *f*, and weight W, the receiver pivotally suspended between the arms thereof and provided with a counterweighted hinged valve, C, closing the discharge-aperture of the receiver, the trip-lever D, pivotally mounted on the receiver, provided with catch *j* on one end, in position to engage with and retain the valve C when closed, and counterweighted opposite end, *k*, for closing said catch, stop *l*, mounted upon the frame-work in position to engage with end *k* of lever D, to release said catch, in combination with a self-closing cut-off on the supply-spout, and the tappet-arm *o* on the receiver, adapted to engage with pin *p* on said cut-off when the receiver is raised, and to release the same when the receiver is lowered, substantially as and for the purpose herein specified.

383,127. OVEN ATTACHMENT. CHARLES R. HOLLINSWORTH, Minneapolis, Kans. Filed Mar. 14, 1887. Serial No. 230,841. (No model.)



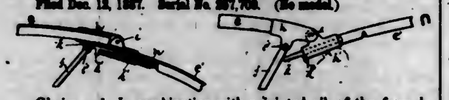
Claim.—1. An attachment for ovens consisting of a combustion-chamber, a heat-distributing flue and a return-flue, which first-named flue communicates with said combustion-chamber and which latter flue communicates with the said first-named flue, the top and bottom plates of said heat-distributing flue extending into the oven, the top plate reaching to the lower edge of an inner wall, while the bottom plate reaches to an outer wall, substantially as specified.

2. In an attachment for ovens, the combination, with the combustion-chamber, of a heat-distributing flue, the top plate of which is provided with a series of heat-distributing apertures, which first-named flue communicates with said combustion-chamber and which latter flue communicates with the said first-named flue, the said top plate and the bottom plate extending into the oven, the top plate reaching to the lower edge of an inner wall, while the bottom plate reaches to an outer wall, substantially as set forth.

3. In an attachment for ovens, the combination, with a combustion-chamber, of a heat-distributing flue, a chamber surrounding and communicating with the combustion-chamber, and cold-air flues communicating with the latter chamber, which heat-distributing flue communicates with said combustion-chamber and which return-flue communicates with the heat-distributing flue and with said cold-air flues, the top and bottom plates extending into the oven, the top plate reaching to the lower edge of an inner wall, while the bottom plate reaches to an outer wall, substantially as set forth.

4. In an attachment for ovens, the combination, with a plate, 15, formed with apertures 2 and carrying a flange, 17, formed with apertures 3, of a plate, 20, a curb, 22, formed with apertures 5, an annular flange, 23, and a ring, 24, which is connected to the flange 17, substantially as described.

383,128. UMBRELLA. ALEXANDER S. RUSSELL, Norwich, Conn. Filed Dec. 13, 1887. Serial No. 257,703. (No model.)



Claim.—1. In combination with a jointed rib of the form described, a stretcher hinged thereto at or near the rib-joint, and a spring-pressed bolt located and adapted to interlock the rib-sections, substantially as and for the object specified.

2. In combination with a jointed rib, a stretcher hinged thereto at or near the rib-joint, and a spring-pressed bolt so located in one rib-section that its free end may engage and ride against the said stretcher in the act of opening the umbrella and pass across the end of said stretcher to interlock the rib-sections, substantially as herein described, and for the object set forth.

383,129. VEHICLE-WHEEL. THOMAS B. JEFFERY, Ravenswood, Ill. Filed Aug. 5, 1887. Serial No. 246,572. (No model.)



Claim.—1. In a vehicle-wheel, in combination with the hollow rim flanged to receive the tire, a rubber tire having along each side a separate projecting strip of harder material secured thereto and engaging, respectively, under the said flanges, whereby the tire is secured to the rim, substantially as and for the purpose set forth.

2. In a vehicle-wheel, in combination with the hollow rim flanged to receive the tire, a rubber tire having along each side a separate projecting strip of harder material secured thereto and engaging, respectively, under the said flanges, whereby the tire is secured to the rim, the rubber tire filling the space between the proximate edges of the strips, substantially as and for the purpose set forth.

3. In a vehicle-wheel, in combination with the hollow rim flanged to receive the tire, a rubber tire having along each side a separate projecting strip of harder material secured thereto and engaging, respectively, under the said flanges, whereby the tire is secured to the rim, the rubber tire filling the space between and extending partially under the proximate edges of the strips, substantially as and for the purpose set forth.

4. In a vehicle-wheel, in combination with the hollow rim having an interior shoulder on each side, and a band resting upon each shoulders and flanged to receive the tire, a rubber tire having harder material secured thereto and projecting along each side, engaging under the said flanges, whereby the tire is secured to the rim, substantially as and for the purpose set forth.

5. In a vehicle-wheel, in combination with the hollow rim having an interior shoulder on each side, and a band resting upon each shoulders and flanged to receive the tire, and having its said flanges clasped by the rim bent about them, a rubber tire having harder material secured thereto and projecting along each side, engaging under the said flanges, whereby the tire is secured to the rim, substantially as and for the purpose set forth.

6. In a vehicle-wheel, in combination with the rim, a section of whose inner wall in a radial plane is a scallop comprising a sinuosity on each side of the middle, and which has apertures at the middle for the spokes, washers shaped to embrace said sinuosities and correspondingly apertured for the spokes, whereby the radial tension of the spokes is exerted on the rim at the outer sides, respectively, of the sinuosities, substantially as and for the purpose set forth.

7. In a vehicle-wheel, in combination with the rim, a section of whose inner wall in a radial plane is a scallop comprising an abrupt sinuosity on each side of the middle, and which has apertures at the middle for the spokes, washers shaped to embrace said sinuosities and correspondingly apertured for the spokes, whereby the radial tension of the spokes is exerted on the rim at the outer sides, respectively, of the sinuosities, substantially as and for the purpose set forth.

8. In a vehicle-wheel, in combination with the rim, a section of whose inner wall in a radial plane is a scallop comprising a sinuosity on each side of the middle, and which has at the middle a depression to receive the heads of the spokes, and apertures for the spokes, washers shaped to embrace said sinuosities and correspondingly apertured for the spokes, whereby the radial tension of the spokes is exerted on the rim at the outer sides, respectively, of the sinuosities, substantially as and for the purpose set forth.

383,130. VEHICLE-WHEEL. THOMAS B. JEFFERY, Ravenswood, Ill. Filed Aug. 5, 1887. Serial No. 246,571. (No model.)



Claim.—1. In a vehicle-wheel, a felly comprising a rim formed of one piece bent so that its edges approach, and a band secured upon its outer circumference overlapping said edges, substantially as and for the purpose set forth.

2. In a vehicle-wheel, a felly comprising a hollow rim formed of one piece bent so that its edges approach but do not meet, and a band secured upon its outer circumference overlapping said edges and flanged to receive the tire, substantially as and for the purpose set forth.

3. In a vehicle-wheel, in combination with the rim flanged to receive the tire, a rubber tire having on each side a row of pins embedded firmly therein projecting through corresponding holes in the flanges, whereby the tire is secured to the rim, substantially as and for the purpose set forth.

4. In a vehicle-wheel, in combination with the rim flanged to receive the tire, a rubber tire having on each side a row of pins, whose enlarged heads are embedded firmly therein, and which project through corresponding holes in the flanges, whereby the tire is secured to the rim, substantially as and for the purpose set forth.

5. In a vehicle-wheel, in combination with the rim flanged to receive the tire, a soft-rubber tire having on each side a row of pins of harder material embedded firmly therein and projecting through corresponding holes in the flanges, whereby the tire is secured to the rim, substantially as and for the purpose set forth.

6. In a vehicle-wheel, in combination, the rim, a band secured upon its outer circumference and flanged to receive the tire, and a rubber tire having on each side a row of pins, whose enlarged heads are firmly embedded therein and whose smaller ends project through corresponding holes in the flanges, whereby the tire is secured to the rim, substantially as and for the purpose set forth.

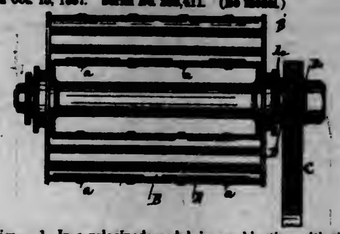
7. In a vehicle-wheel, in combination with the rim, the rubber tire secured thereabout, having on each side beyond the rim a row of projections thereon and extending laterally, substantially as and for the purpose set forth.

8. In a vehicle-wheel, in combination with the rim, the rubber tire secured thereabout, having on each side beyond the rim a row of pins, whose enlarged heads are firmly embedded therein and whose smaller ends project laterally, substantially as and for the purpose set forth.

9. In a vehicle-wheel, in combination with the rim, a soft-rubber tire secured thereabout, having on each side beyond the rim a row of pins of harder substance firmly embedded therein and projecting laterally, substantially as and for the purpose set forth.

10. In a vehicle-wheel, in combination with the rim flanged to receive the tire, the rubber tire secured thereabout and having on each side two rows of pins lying in the same radial planes, embedded firmly in the tire and projecting laterally, substantially as and for the purpose set forth.

388,131. VELOCIPEDE. THOMAS B. JEFFERY, Ravenswood, Ill. Filed Oct. 15, 1887. Serial No. 252,411. (No model.)



Claim.—1. In a velocipede-pedal, in combination with the end pieces, polygonal trough-shaped foot-supports secured rigidly thereto, each support having two or more edges exposed to the foot, substantially as set forth.

2. In a velocipede-pedal, a foot-support trough-shaped and having its trough extending above and below the medial horizontal plane of the pedal and having two or more of its edges exposed to the foot, substantially as and for the purpose set forth.

3. In a velocipede-pedal, in combination with the end pieces, trough-shaped foot-supports secured rigidly thereto and having projections upon two or more edges of each support for engaging the shoe of the rider, substantially as set forth.

4. In a velocipede, a pedal having trough-shaped foot-supports, having projections at the angle or angles for engaging the shoe of the rider, substantially as set forth.

5. In a velocipede, a pedal having trough-shaped foot-supports, each support having projections at two or more of its edges for engaging the shoe of the rider, substantially as set forth.

6. In a velocipede, a pedal having trough-shaped foot-supports, having projections at the edges and angle or angles for engaging the shoe of the rider, substantially as set forth.

7. In a velocipede, a pedal having trough-shaped foot-supports, having projections at the angle or angles projecting from one side and struck up out of the other, substantially as and for the purpose set forth.

8. In a velocipede, a pedal having trough-shaped metal foot-supports whose edges are provided with projections for engaging the shoe of the rider, the inner of said edges being lower than the outer, substantially as and for the purpose set forth.

9. In a velocipede, a pedal having metal foot-supports standing edgewise to the foot, strengthened by longitudinal corrugations, substantially as set forth.

10. In a velocipede, a pedal having trough-shaped foot-supports whose sides are strengthened by longitudinal corrugations, substantially as set forth.

11. In a velocipede-pedal, a yielding foot-block having an interior air space or spaces, and supported upon two or more of its outer faces, substantially as and for the purpose set forth.

12. In a velocipede-pedal, a yielding foot-block secured within a polygonal trough-shaped foot-support, substantially as set forth.

13. In a velocipede-pedal, a polygonal yielding foot-block having an interior air space or spaces and secured upon two or more of its outer faces to a polygonal trough-shaped foot-support, substantially as and for the purpose set forth.

14. In a velocipede-pedal, in combination with a foot-support which extends below the medial horizontal plane of the pedal, a yielding foot-block having an interior air space or spaces and secured upon two or more of its outer faces to the support, substantially as set forth.

15. In a velocipede-pedal, in combination with a foot-support which extends above and below the medial horizontal plane of the pedal, a polygonal yielding foot-block having an interior air space or spaces, and secured by two or more of its faces upon the support, substantially as set forth.

16. In a velocipede-pedal, in combination, a polygonal trough-shaped foot-support and a yielding foot-block, one having a projection or projections, and the other having a corresponding depression or depressions, whereby the foot-block is secured to the foot-support, substantially as set forth.

17. In a velocipede, in combination, a polygonal trough-shaped foot-support and a yielding foot-block, the latter having longitudinal depressions in two or more of its outer faces, and the former strengthened by inwardly-projecting longitudinal corrugations corresponding to the depressions in the foot-block, whereby the block is secured to the support, substantially as set forth.

18. In a velocipede-pedal, in combination with a polygonal trough-shaped foot-support strengthened by longitudinal corrugations, a polygonal yielding foot-block having on all of its faces similar longitudinal depressions adapted to engage with the corrugations of the foot-support, whereby any one side may be exposed to the rider's foot and the others secured to the foot-support, substantially as and for the purpose set forth.

388,132. DOOR-MAT. AXEL JOHNSON and PEHR LARSSON, Chicago, Ill. Filed Dec. 20, 1887. Serial No. 258,542. (No model.)



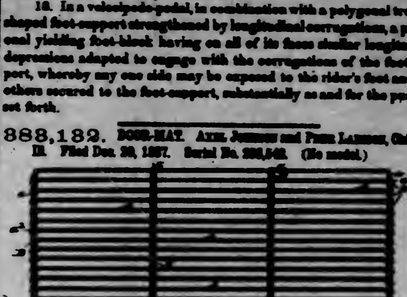
Claim.—1. As a new article of manufacture, a door-mat formed of approximately parallel bars, the ends of each bar being integral with the bar and being bent at approximately right angles and pivoted to the ends of its neighboring bar to permit of the mat being rolled, substantially as specified.

2. A door-mat formed of approximately parallel bars, the ends of each bar being bent at approximately right angles to the main bar to form a recess for the ends of its neighboring bar to lie in, and then bent outwardly and again at right angles to the main bar to lie within the recess of the bar next before it, to which it is pivoted, for the purpose of permitting the mat to be rolled while maintaining the ends of all the bars in the same plane, substantially as described.

3. In a door-mat formed of approximately parallel bars, the ends of each bar being bent at approximately right angles and pivoted to the ends of its neighboring bar, substantially as shown, the combination of said bars with one or more flexible fastenings, C, of woven wire or analogous material by which the bars are held together, and washers of resilient material upon the said rivets, whereby the bars are maintained in their position, but permitting the mat to be rolled, substantially as specified.

4. In a door-mat formed of approximately parallel bars, the ends of each bar being bent at approximately right angles to the main bar and pivoted to the ends of its neighboring bar to permit of the mat being rolled, the combination of the bars A', A^2, and A^3, the ends of each being formed as described, and all pivoted to the same rivet, substantially as specified.

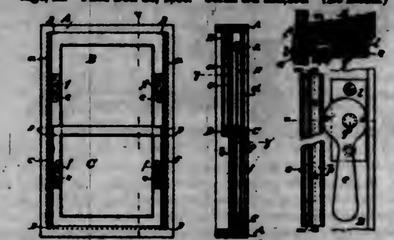
388,133. DETACHABLE SOLE PLATE AND SPIKE FOR BOOTS OR SHOES. SAMUEL KENNEDY, Boot Bridgewater, and WILLIAM H. MCCONNELL, Brockton, Mass. Filed Mar. 14, 1888. Serial No. 267,260. (No model.)



Claim.—1. The sole-plate adapted for attachment to a boot or shoe sole and provided with the sockets *c* and *c*, combined with the spike-plate having the fixed lug *d'*, formed to engage the socket *c*, and the swiveled lug or button *d*, formed to engage the socket *c*, as set forth.

2. The sole-plate provided with the sockets *c*, *d*, and *c*, combined with the spike-plate having the fixed lug *d'*, adapted to engage the socket *c*, the fixed stud *d'*, adapted to fit the socket *d*, and the swiveled lug or button *d*, adapted to engage the socket *c*, as set forth.

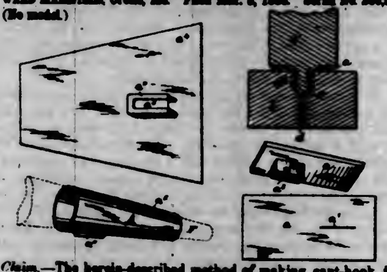
388,134. WINDOW SASH AND FRAME. CONRAD KINNE, Chicago, Ill. Filed Dec. 20, 1886. Serial No. 222,159. (No model.)



Claim.—1. The combination, with a window-frame formed with grooved sides, of a sash provided with guides pivoted to the sash and provided with tongues to fit into the grooves, and projecting wings projecting in front of the sash, and means, substantially as described, for operating said guides.

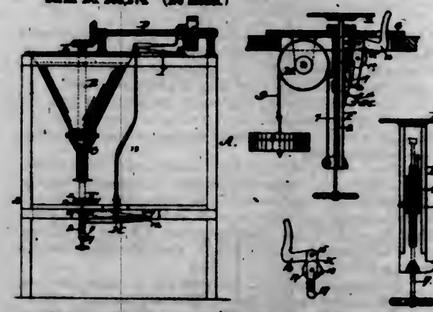
2. The combination, with a window-frame formed with vertically-grooved sides, of a sash having its edges recessed, guides or leaves hinged in said recesses and projecting beyond the face of the sash, and eccentric levers pivoted upon the sash-rail and bearing against the projecting hinged leaf to press it into the groove with the required force, substantially as shown and described.

388,135. METHOD OF MAKING CANT-HOOK FERRULES. EDWARD HAMMERER, Orono, Me. Filed Mar. 3, 1888. Serial No. 266,004. (No model.)



Claim.—The herein-described method of making cant-hook ferrules, consisting in first making a slitted blank, *a a'*, of a thickness greater than the ferrule to be made, afterward expanding the edges of the slitted portion and forming the staple *a'* in one piece with said blank, then reducing it to the thickness of the desired ferrule, and, finally, bending it and welding its overlapping edges together, substantially in the manner and for the purpose set forth.

388,136. MACHINE FOR PACKING PULVERULENT SUBSTANCES. CHARLES J. MATTHEWS, Oswego, N. Y. Filed Feb. 7, 1888. Serial No. 263,574. (No model.)

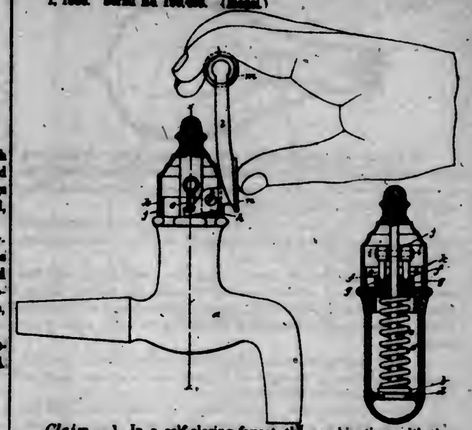


Claim.—In a packing-machine, the combination of a movable support having a shoulder projecting therefrom, an adjustable cam attached to the sliding plate of said movable support, a releasing-lever connected by an intermediate rod to move the operating-lever of a friction-pulley, and a locking-lever provided with a hook and a projection, said hook being fitted to engage said releasing-lever, and the projection being adapted to engage the shoulder on said movable support, as and for the purpose herein specified.

388,137. COMPOSITION FOR CONVERTING INDIA-RUBBER OR ITS COMPOUNDS INTO HARDENED RUBBER. WILLIAM B. MCGARVEY, Rochester, Pa., assignor of one-half to Walter A. Jones, same place. Filed Aug. 26, 1887. Serial No. 248,103. (No specimens.) Patented in Canada July 30, 1887, No. 27,594.

Claim.—The herein-described composition of matter, consisting of oxide of iron and petroleum or rosin-oil, in the proportions specified.

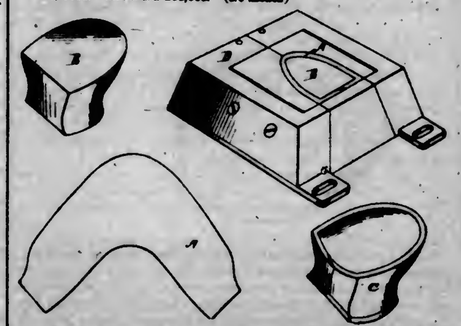
388,138. SELF-CLOSING FAUCET. TIMOTHY MCILVAIN, Boston, Mass., assignor of one-half to W. H. Ward & Co., same place. Filed Feb. 1, 1888. Serial No. 262,662. (No model.)



Claim.—1. In a self-closing faucet, the combination, with the faucet proper and its cap, of a valve and its stem, a spring for forcing the valve down upon its seat, an elbow-lever comprising the arms *k* and *l*, said arm *k* being pivoted or fulcrumed about midway of its length upon said cap, the forward end of said arm *k* being loosely connected to said valve-stem, the other arm, *l*, of said lever projecting substantially at right angles to arm *k*, and provided at its outer or upper end with a finger-grasp, *n*, and having a thumb-plate formed thereon substantially at the point of its junction with arm *k*, substantially as set forth.

2. In a self-closing faucet, the combination, with the faucet-body, of a valve and its stem, a spring for forcing the valve upon its seat, a right-angled lever having one of its arms pivoted about midway of its length and connected loosely to the valve-stem at its forward end, the other arm of said lever provided with a finger-grip at its upper end, and a thumb-plate formed thereon substantially at the point of juncture of the two arms, substantially as described.

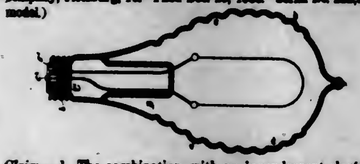
388,139. MANUFACTURE OF HEELS FOR BOOTS OR SHOES. ALBERT L. F. HITCHELL, Beachmont, and JOHN P. REYNOLDS, Jr., Milton, Mass., assignors to the Le Gay Heel Company, Portland, Me. Filed Jan. 24, 1888. Serial No. 261,932. (No model.)



Claim.—1. That improvement in the art of making molded heels which consists in covering one side of the flat blank with cement, and, when said cement is in proper condition to use, saturating the blank with a liquid of substantially the kind described, then molding the flat blank about the core, with its cemented face against the core, and by the same operation causing the shaped blank to adhere to said core, thereby forming the rough heel, and then finishing the heel in any desired way, all as set forth.

2. That improvement in the art of making molded heels which consists in first covering one side of a flat blank with cement, then molding it about a former which is to be the core of the heel, with its cemented face next said core under pressure, whereby said blank is molded and caused to adhere to said core, then finishing the heel in any desired manner, all as set forth.

388,140. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. Otto A. Mohn, New York, N. Y., assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Dec. 20, 1886. Serial No. 222,017. (No model.)



Claim.—1. The combination, with an incandescent electric-lamp globe having a neck of glass integral with the globe and formed with an internal screw-thread, of a contact-supporting block screwing into said thread, substantially as described.

2. A globe for incandescent electric lamps having a neck integral with the globe and having a screw-thread for receiving a holder formed upon the outer surface of the neck.

3. In an incandescent electric lamp, the combination, with the neck of the lamp, of a block entering the neck and secured therein, of the same material as the lamp, a central contact-point sunk into the block, and an annular contact-ring embracing the outer edge of the block.

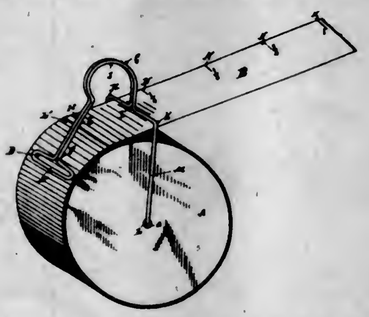
4. The combination, with an incandescent electric lamp, of a solid-glass block secured in the neck of the lamp and a central electrical contact-point sunk into said block

5. In an incandescent electric lamp, the combination, with the neck of the lamp, of a contact-bearing block screwed into the neck, a slot in said block extending from the center to the outer edge of the same, and two contact-points carried by the block, substantially as described.

6. In an incandescent electric lamp, a neck provided with means of attachment to a support, a central contact-point having a perforation through its length, and a leading-in wire of the filament passing through said perforation and secured to the contact-point.

7. In an incandescent electric lamp, the combination, with the globe, of a central contact-point, a leading-in wire passing through the same, and an independent supporting-block of glass surrounding the contact-point.

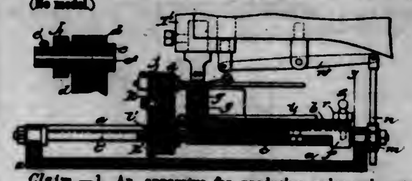
388,141. RIBBON-SPOOL. John J. Hucker and Cyrus Gifford, North East, Pa., assignors of one-third to John F. Oldach, same place. Filed Jan. 31, 1888. Serial No. 261,556. (No model.)



Claim.—1. The combination, with a ribbon-spool, of the clip C, provided with vertical wire arms having the spool-pivots L, the bow-spring portion J, formed by the conjunction and continuation of the said arms, and the bow forming a continuation of the said spring portion and having the straight wire E, for pressing crosswise upon the ribbon, substantially as set forth.

2. The combination, with a ribbon-spool, of the measuring-strip B, wound upon the spool with the ribbon, and the clip C, provided with vertical wire arms having the spool-pivots L, the bow-spring portion J, formed by the conjunction and continuation of the said arms, and the bow forming a continuation of the said spring portion and having the straight wire E, for pressing crosswise upon the ribbon, substantially as set forth.

388,142. APPARATUS FOR TAPERING METALLIC SHANKS. Charles Ness, Newark, N. J. Filed July 2, 1887. Serial No. 243,288. (No model.)



Claim.—1. An apparatus for producing polygonal metallic brooches, consisting in the combination, with a rotary holder for the blank, of an anvil for supporting the blank, means for moving the blank longitudinally upon the anvil, means, as a pawl and ratchet, for producing an intermittent partial rotation of the blank, and a reciprocating punch or hammer for pressing the blank upon the anvil, the whole arranged and operated as and for the purpose set forth.

2. In an apparatus for tapering metallic blanks, the combination, with a rotary holder for the blank, of an anvil for supporting the blank, a reciprocating hammer or punch for pressing the blank upon the anvil, and means actuated by the reciprocating hammer for intermittently rotating the blank and moving it longitudinally, and the means, substantially as described, for gradually raising the anvil during each longitudinal movement.

3. In an apparatus for tapering metallic blanks, the combination, with a rotary holder for the blank, of an anvil for supporting the blank, a reciprocating hammer or punch for pressing the blank upon the anvil, a carriage for sustaining the rotary holder and movable longitudinally upon a suitable bed, a feed-screw for traversing the carriage upon the bed, means connected with the carriage for gradually raising the anvil, a ratchet-wheel connected with the feed-screw, and a pawl actuated by the same means as the reciprocating hammer and operating upon the ratchet-wheel to rotate the screw and the rotary holder, as and for the purpose set forth.

4. In an apparatus for tapering metallic blanks, the combination, with a rotary holder for the blank, of an anvil for supporting the blank, a reciprocating hammer and punch for pressing the blank upon the anvil, a carriage for sustaining the rotary holder and movable longitudinally upon a suitable bed, a feed-screw for traversing the blank upon the anvil, guides for the anvil to move vertically, a wedge sustaining the anvil and moved longitudinally to raise the anvil gradually during the longitudinal movement of the blank, a ratchet-wheel connected with the feed-screw, and a pawl actuated by the same means as the reciprocating hammer and operating upon the ratchet-wheel to rotate the screw and the rotary holder, as and for the purpose set forth.

388,143. HORSE-COLLAR PAD. La Verne W. Noyes, Chicago, Ill. Filed Feb. 24, 1888. Serial No. 265,126. (No model.)



Claim.—1. A horse-collar pad comprising a neck-plate and a collar-plate, the one having a protuberance and the other a cavity, both being in the form of spherical segments, the former fitting into the latter, their spherical surfaces being in contact and forming the bearings of the neck and collar plates upon each other, and a pin connecting said plates at the center of said cavity and protuberance and having play in one of said plates for a small distance about said center, substantially as set forth.

2. A horse-collar pad comprising a neck-plate and a collar-plate, the one having a protuberance and the other a cavity, both being in the form of spherical segments, the former fitting into the latter and neither exceeding a hemisphere in extent, and a pin connecting said plates at the center of said cavity and protuberance and having play in one of said plates for a small distance about said center, substantially as set forth.

3. In combination with the neck-plate and the collar-plate, one having a protuberance and the other a cavity in which said protuberance fits, said protuberance and cavity being each a spherical segment in form, one of said plates having at the center of said spherical portion an opening, and the other having secured to it a pin, which is smaller than said opening and passes through it, and which has a head on the farther side larger than said opening, substantially as set forth.

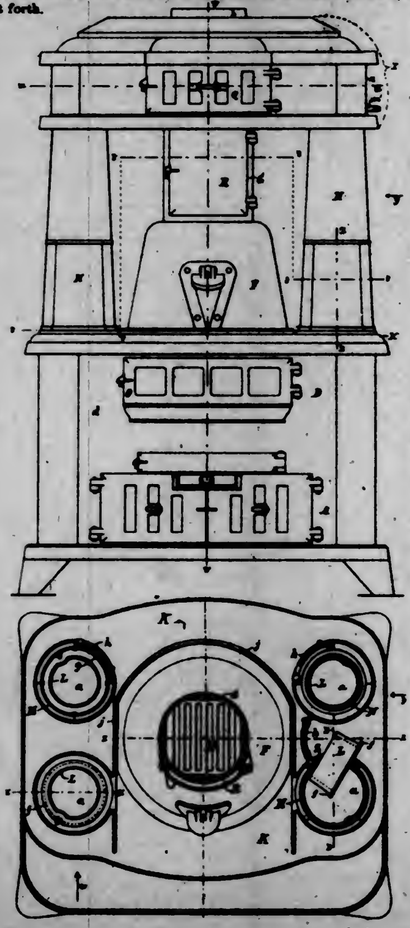
4. In combination with the neck-plate, whose general form is convex downward longitudinally and concave downward transversely, and which has the upwardly-projecting protuberance A' in the form of a spherical segment, the collar-plate whose general form is also longitudinally convex downward and transversely concave downward, and which has also the upwardly-projecting protuberance B' in the form of a spherical segment and forming the corresponding spherical cavity, *b'*, which fits the spherical protuberance A', the extent of said protuberance being greater than that of the cavity *b'*, and neither being greater than a hemisphere in extent, and a pin which connects the two plates at the center of said protuberances, its connection in one of them being loose and allowing play about the center substantially equal to the difference in spherical extent of the two protuberances, substantially as set forth.

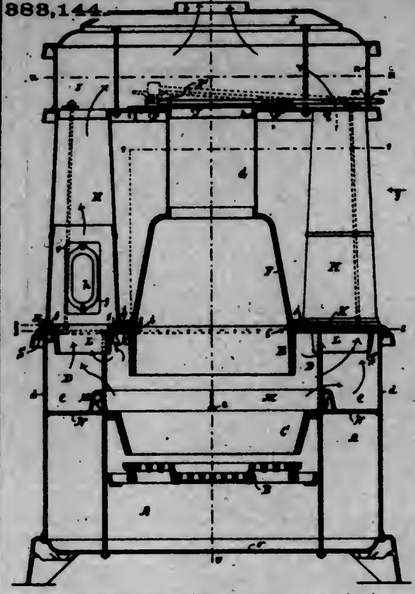
5. In combination with the neck-plate, the saddle-plate pivoted to it and having at the side the hollows *b*, substantially as and for the purpose set forth.

388,144. HEATING-STOVE. Hibbert Freeman, Utica, N. Y. Filed Dec. 24, 1887. Serial No. 258,283. (No model.)

Claim.—1. In a heating-stove, the combination, with its fire-pot, fuel-magazine, flame-chamber extending laterally around the lower portion of the magazine, flame-chamber cover having flue-apertures, and column-flues on said cover and coinciding with its flue-apertures, of the tubular flue-guards coinciding with said flue-apertures and extending downward into the flame-chamber from its cover, as set forth.

2. In a heating-stove, the combination, with its fire-pot, ring M and around and extending above the rim of the fire-pot, flame-chamber extending laterally outside of said ring, flame-chamber cover having flue-apertures over the lateral extensions of the flame-chamber, and column-flues on said cover and coinciding with said apertures, of the tubular flue-guards coinciding with said flue-apertures and extending therefrom downward into the lateral extensions of the flame-chamber, as set forth.





3. In a heating-stove, the combination, with its flame-chamber, its cover having the flue-apertures, and column-flues on the cover and coinciding with said apertures, of the tubular flue-guards within the circuits of the column-flues and extending downward through and below said flue-apertures, and in the casings of the column-flues lateral openings larger than said flue-guards and furnished with doors or covers, as described.

4. In a heating-stove, the combination, with its laterally-extending flame-chamber, its cover, column-flues upon the lateral parts of said cover, and the flue-chamber upon the column-flues, of the fuel-magazine consisting of its lower section suspended by its rim through a central aperture in said cover, middle section supported by said cover, and upper section connected telescopically with the middle section, and the ring-plate P in said flue-chamber, upon its bottom, covering an opening therein, secured to the upper section of the magazine, and movable upward, substantially as shown and described.

5. In a heating-stove, the combination, with its fuel-magazine, column-flues, flue-chamber on the column-flues and having the lateral doorway Q, and the upwardly-movable ring-plate P, connecting the magazine and said flue-chamber, of the valve J, pivoted to said ring-plate and having a handle-shaft extending outward through a socket-aperture in the casing of the flue-chamber, as set forth.

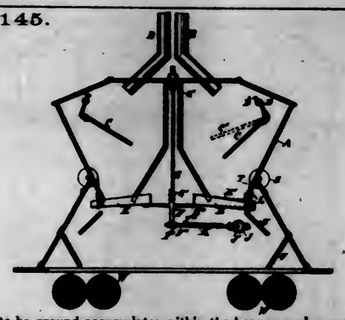
6. A heating-stove having an upper section embracing the supporting-plate K, fuel-magazine, column-flues, flue-guards, and flue-chamber on the column-flues, all mounted together on said supporting-plate, in combination with and removable bodily from a lower section embracing the rim-plate S, upon which the plate K normally rests and fits closely, the draft-chamber, flame-chamber, diaphragm-plate N, and their bottom and lateral inclosing-plates, all mounted together to and with said rim-plate, and the fire-pot C, suspended through the opening in said diaphragm-plate and smaller than the opening through the rim-plate S, and removable therethrough when the upper section of the stove is removed from the lower one, as set forth.

7. In a heating-stove, the combination, with its flame-chamber cover K, having the aperture *a*, of the detachable tubular flue-guard L, extending downward through and below said aperture, and having the flange *f* resting upon said cover, and the column-flue H upon said cover and surrounding said flange, as shown and described.

388,145. AUTOMATICALLY-ADJUSTABLE FEED DEVICE. Chas. J. Pellon, Scranton, Ohio, assignor of one-half to Hollis S. Bennett, same place. Filed Aug. 20, 1887. Serial No. 246,178. (No model.)

Claim.—1. In a grinding-mill, a hopper, in combination with a vibrating feed-shoe hinged beneath the hopper, a rock-shaft connected with the free edge of the vibrating feed-shoe, a second shaft connected with the former by arms and a connecting-rod, a board rigidly connected with the latter shaft and adapted to actuate the same when

388,145.

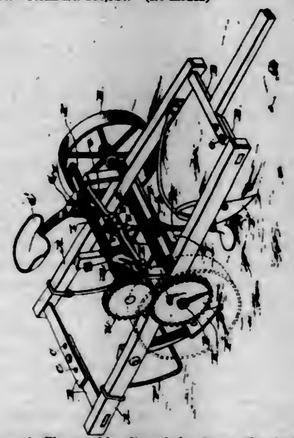


material to be ground accumulates within the hopper, and a counterbalance adapted to automatically return the parts to their normal positions, substantially as set forth.

2. In a mill, a hopper, in combination with a vibrating feed-shoe, a rock-shaft connected with the feed-shoe, and a shaft carrying the regulating-board, a counter-weight connected therewith, slotted arms adjustably secured to the shafts, and a connecting-rod adjustably secured to the slotted arms, substantially as set forth.

3. In a mill, the combination, with a hopper, the vibrating feed-shoe, the rock-shaft actuated by a board within the hopper, of a pulley secured on the rock-shaft, and a cord connecting the face of the wheel or disk with the free edge of the feed-shoe, substantially as set forth.

388,146. COMBINED COTTON CHOPPING, PLANTING, AND CULTIVATING MACHINE. DAVID W. PILGRIM, Waxahie, Tex. Filed Mar. 17, 1888. Serial No. 267,227. (No model.)



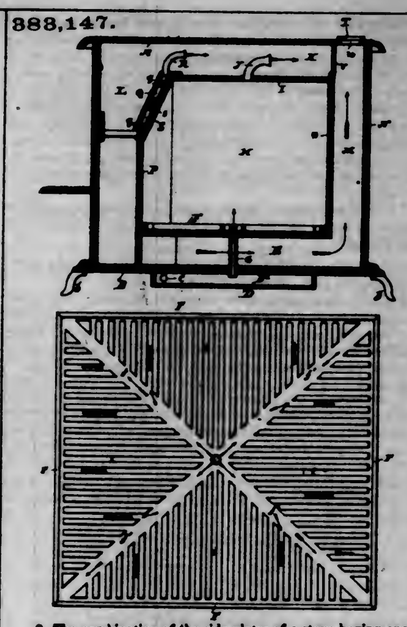
Claim.—1. The combination of the frame, the shaft journaled therein and having the driving-wheels and the spur-wheel F, the vertical knees or standards on the frame, the transverse shaft I, journaled thereon and having the wheel K, meshing with wheel F, the wheel M, journaled on a spindle projecting from one of the standards at right angles to wheel K and engaging the same, the chopping arm or lever fulcrumed in an opening in the frame, having the chopping-hoes at its lower end, and the pitman X, connecting the wheel M to the chopping-lever, substantially as described.

2. The combination of the frame having the bar P, the chopping-lever fulcrumed in said bar and having the chopping-hoes at its lower end and the slot U in its upper end, the knees or standards on the frame, the guideway N on one knee, wheel M, journaled on the other, the pitman connected to wheel M, having the slot T, through which the upper end of chopping-lever extends, and having the cross-head working in guideways N, pin V, extending through slots Y and U, and the driving-shaft geared to wheel M, substantially as described.

388,147. OVEN FOR COOKING-STOVES. JOHN RAE, Belleville, Ill. Filed Mar. 31, 1887. Serial No. 233,113. (No model.)

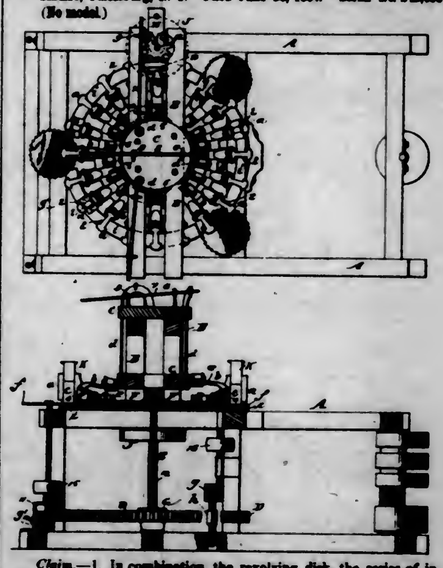
Claim.—1. The combination of the bottom plate, B, of a stove, and the pipe G, ascending therefrom, with the bottom oven-plate, F, receiving said pipe substantially in the center thereof, and having grooves in its upper surface radiating from said pipe G, substantially as and for the purpose described.

388,147.



2. The combination of the side plates of a stove having openings *e*, the front plate, P, of an oven, and the fire-pot lining Q, having lugs *q* on the rear thereof, and forming with said plate P an air-passage, S, with a pipe, R, leading from said passage into the upper smoke-passage, K, of the stove, substantially as and for the purpose described.

388,148. MACHINE FOR CUTTING BOX-SECTIONS. PIERRE REMBAUD, Plattsburg, N. Y. Filed June 30, 1887. Serial No. 243,056. (No model.)



Claim.—1. In combination, the revolving disk, the series of independent block-holders carried thereby, formed with plain smooth holding-surfaces for receiving the block and holding it by direct contact, said surfaces being also arranged vertically, whereby the material is guided accurately and permitted vertical movement by gravity, means for limiting the movement of the blocks, and the saws for cutting the material, substantially as described.

2. In combination, the revolving disk F, the series of independent block-holders arranged thereon having vertical plain smooth holding-surfaces to receive the material and engage the same by direct contact and allow its free vertical movement, each holder having a dog for engaging with the block, and the plates *c c*, substantially as described.

3. In combination, the revolving disk, the block-holders, the dogs for engaging with the material, the plates *c c*, for operating the dogs, said plates being movable vertically, whereby they may be rendered ineffective, and holding devices for said plates, substantially as described.

4. In combination, the disk F, the block-holders arranged with vertical holding-surfaces, and suitable block-weights adapted to rest upon the material, substantially as described.

5. In combination, the disk F, the block-holders, suitable block-weights adapted to rest upon the material, and having teeth to engage with the grooves of the material, substantially as described.

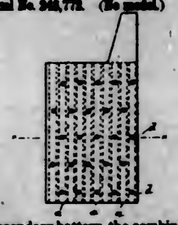
6. In combination, the disk F, the grooved block-holder, the block-weights provided with teeth, and with portions K', adapted to the grooves of the holders, and the double bars *l l*, for adjusting the weights, substantially as described.

388,149. BRAKE. CLARK RANDOLPH, Hartley, Iowa, assignor of one-half to F. Alonzo Bunger, St. Paul, Minn. Filed Feb 6, 1888. Serial No. 263,293. (No model.)



Claim.—As an improved article of manufacture, a slate-cleaner comprising an elastic bulb having an opening in one wall, a sponge fitted into the opening and held therein by the pressure of the bulb, and a cord or connection secured to the inner end of the sponge, passing out through the bulb and having its end free for attachment to a slate, all substantially as shown.

388,150. SECONDARY BATTERY. SAMUEL RUSSELL, Brooklyn, N. Y., assignor to the Central Electrical Company, of New York. Filed Sept. 5, 1887. Serial No. 249,773. (No model.)



Claim.—1. In a secondary battery, the combination of a plurality of plates having parallel opposing sides, and each having holes made through its body on a plane parallel with its sides and filled with active material or with material to become active, substantially as described.

2. In a secondary battery, the combination of a plurality of plates having parallel sides, each having holes made through its body on a plane parallel with its sides and filled with active material or material to become active, and also having transverse holes entering from the side of the plates to the longitudinal holes containing said material, substantially as described.

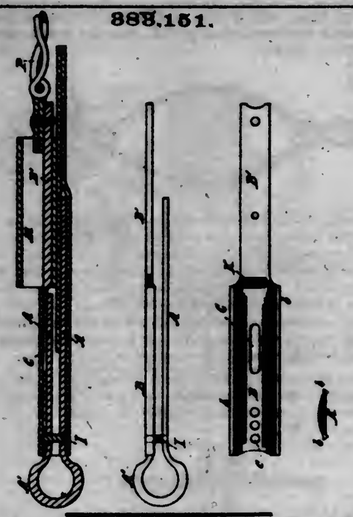
3. A secondary-battery element composed of a single continuous metallic plate provided with a series of holes through its body parallel with its sides, substantially as described.

388,151. HAME-TUG. CONRAD SCHMIDT, Cincinnati, Ohio. Filed Sept. 22, 1887. Serial No. 250,302. (No model.)

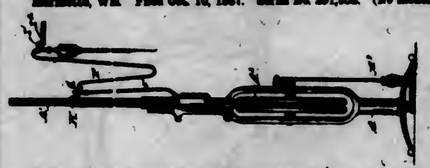
Claim.—1. In a hame-tug, the combination of a hame-clip, A, and a coupling-plate composed of the portions B and B', the portion B being made concave and with wings *b b*, and fitted externally upon the arm of the hame-clip, whereby their movement laterally with respect to each other is prevented, and a fastening device to hold said parts together, substantially as described.

2. In a hame-tug, the combination of a hame-clip, A, and a coupling-plate composed of the portions B and B', the portion B being made concave, with wings *b b* at its side and a shoulder, K, at its rear end, whereby it is adapted to fit externally upon the arm of the hame-clip, and a fastening device for holding the parts together, substantially as shown and described.

388,151.



388,152. PNEUMATIC DENTAL PLUGGER. WILLIS S. SHERMAN, Marinette, Wis. Filed Oct. 10, 1887. Serial No. 251,992. (No model.)



Claim.—1. In combination with a dental engine and its standard, a collar mounted upon the standard and carrying a spring-arm, a rigid arm connected with said spring-arm and provided with bearings at its top and bottom, a cylinder mounted on one of the bearings, a friction-roll journaled in the other bearing, and a piston-rod connecting the cylinder and friction-pulley, substantially as specified.

2. The combination, in a dental engine and its standard, of an adjustable collar mounted on the standard and provided with a perforated lug, a U-shaped spring-arm adjustably mounted in said lug and adjustably connected with a rigid arm provided with bearings at its upper and lower ends, a cylinder pivoted for oscillation, the upper bearing, a friction-pulley mounted for rotation in the lower bearing, and a piston-rod carrying a piston mounted in the cylinder and eccentrically connected with the pulley, substantially as specified.

3. The combination, with the frame-work and fly-wheel of a dental engine, of a split collar mounted thereon and formed with a perforated lug having a set-screw, a U-shaped spring-arm mounted in said perforation and adapted to be acted upon by said screw, and having its opposite end adjustably secured in a rigid arm having adjustable bearings at its upper and lower ends, a cylinder the head of which is journaled in the upper bearing, a frictional pulley journaled in the lower bearing, and a piston-rod mounted in the cylinder and eccentrically connected with said pulley, substantially as specified.

4. In a dental engine, the combination, with its standard having a hook projecting therefrom, of a tube-section coupling formed of metal and provided with an eye adapted to take over said hook, substantially as specified.

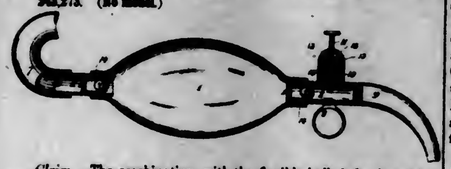
5. In combination with two sections of tubes, a metallic elbow-coupling provided with a suspension device and with enlarged ends for the reception of said sections, substantially as specified.

6. The combination, with the piston-rod of a dental plugger, of a tip secured to the end thereof and enlarged for the reception of the tubing, and provided with a suspension-hook, substantially as specified.

7. In a dental plugger, the combination of a piston-rod provided with screw-threads and a fixed piston-head, a cylinder mounted for movement on said rod, and an adjustable nut mounted on the rod above the cylinder to limit the movement of the same, substantially as specified.

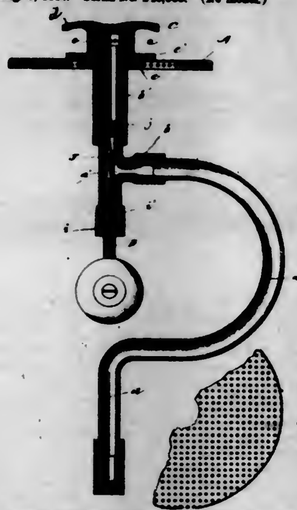
8. In a dental plugger, the combination of a screw-threaded hollow rod, a rubber nut or its described equivalent adjustably mounted upon said screw-threads, a fixed piston-head, and a cylinder adapted for movement between said nut and head, substantially as specified.

383,153. SIPHON FOR STARTING THE FLOW OF LIQUIDS. MICHAEL SIEBOLDTS, Louisville, Ky. Filed July 2, 1887. Serial No. 243,273. (No model.)



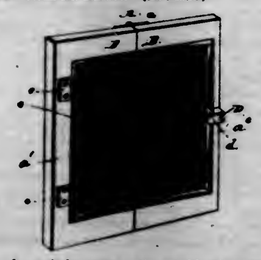
Claim.—The combination, with the flexible bulb 1, having tubes 2 3 inserted therein, balls 4 in each of said tubes, flanges or valve-seats 5, arranged in said tubes between the bulb and said balls, a cage, 14, partially surrounding said balls for retaining them, a dome or box, 12, on the tube 3, a stem projecting vertically through said dome, a disk, 10, on the lower end of said stem 11, a lug on said stem, a spiral spring surrounding said stem between said lug and tube 3, a strainer, 6, located in one of said tubes, and a ring, 8, on the under side of tube 3, all substantially as and for the purposes set forth.

383,154. GAS-BURNING TORCH. JAMES R. SMITH, Chicago, Ill., assignor to the Standard Natural Gas Burner Company, same place. Filed Aug. 3, 1887. Serial No. 246,063. (No model.)



Claim.—In a gas-burning torch, the combination, with a burner having lateral orifices *c* and flange C, of a single perforated plate as an air-controlling medium, and collars *e* and *e'*, respectively above and beneath said perforate plate, that serve in securing the latter in position, and also serve to exclude the air from the flame-jets near the burner, substantially as set forth.

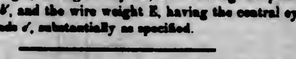
383,155. WINDOW-SCREEN. HENRY SYMES, Chelsea, Mich. Filed July 7, 1887. Serial No. 243,677. (No model.)



Claim.—1. In a window-screen, the combination of the rectangular frame A, having its bottom and top rails divided centrally and the divided parts connected by the hinges *a*, with the frame C, hinged to one of the divided parts of the frame A, and a latching device attached to the other part of said frame and holding the frame C against the frame A, thereby preventing the latter from folding, substantially as specified.

2. The combination of the rectangular frame A, composed of two equal sections having their upper and lower rails connected together at their central meeting points by the hinges *a*, with the screen-frame C, hinged upon the side rail, *a'*, of the frame A, having its top and bottom rails unsectioned and covered with wire-netting *c*, and the catch D, pivoted on the side rail, *a*², of the frame A, and engaging over the adjacent free edge of the frame C, thereby preventing the frame A from folding, substantially as specified.

383,156. BUTTON. WILLIAM STAMLEY, Coventry, County of Warwick, England, assignor to Albert H. Overman, Newton, Mass. Filed June 27, 1887. Serial No. 243,015. (No model.)



Claim.—A button having a flattened shank, a tapering shoe eccentrically secured, as shown, to one end of the shank and parallel with the longest axis thereof, and a plate or disk having a smooth outer face centrally secured to the other end of the shank, substantially as set forth.

383,157. TWINE-HOLDER. ALBERT B. TOBLIN, Fort Collins, Colo. Filed Jan. 14, 1888. Serial No. 260,695. (No model.)

Claim.—1. In a twine-holder, the combination, with the casing and the handle rising therefrom and having the legs *b b'*, of the weights having the reflex-bends passing around the said legs of the handle, and the eye between the legs, the twine being passed through said bends and eye, as set forth.

2. The combination, with the twine-holder case and the handle secured thereto and consisting of two wire legs, *b b'*, of the eye C, made on the leg *b*, the wire *d*, secured to the leg *b'*, having the eye D, and the moving wire weight having the central eye and the opposite reflex-bends at its end portions, substantially as specified.

3. The combination, with the twine-holder case, of the handle B, composed of the two legs *b b'* and having the eye C, the wire *d*, secured to the leg *b*, having the eye D, and forming the pointed eye *e* with the leg *b'*, and the wire weight E, having the central eye, *e*, and the reflex-bends *e'*, substantially as specified.

383,158. COMBINED GAS AND ELECTRIC-LIGHT FIXTURE. SAMUEL R. H. VAIL, New York, N. Y. Filed Jan. 31, 1887. Serial No. 225,975. (No model.)

Claim.—1. The combination, with a swing-jointed bracket having one set of jointed containing-arms, of tubular wire-necks on the swing-joints in axial line therewith, lateral wire-passages leading to said tubular wire-necks, and wire-tubes extending from joint to joint with

383,158.

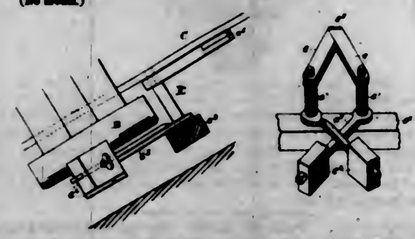


one end having a detachable rotating connection with the axial wire-neck, while the other end connects to the lateral wire-passage of the next joint or fitting, substantially as set forth.

2. The combination, with a swing-joint gas-bracket having tubular necks projecting from the joint-fittings in line with the axis of the gas-joints, and a wireway opening on the side of the fitting into said tubular neck, of wire-tubes having at one end a cup or socket to fit over said tubular necks, or vice versa, and connected at the opposite end with the lateral wireway on the next fitting, substantially as set forth.

3. The combination, with a swing-joint gas-bracket having tubular necks projecting from the joint-fittings in line with the axis of the gas-joints, and a wireway opening on the side of the fitting into said tubular neck, of wire-tubes having at one end a cup or socket to fit over said tubular necks and connected at the opposite end with the lateral wireway on the next fitting, said neck being formed with circumferential groove, and a set-screw on the cup or socket engaging said groove, substantially as described.

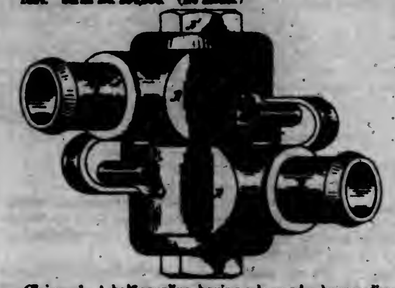
383,159. SAFETY-CATCH FOR CABLE RAILWAYS. CHARLES VOGEL, San Francisco, Cal. Filed Aug. 24, 1887. Serial No. 247,770. (No model.)



Claim.—1. In cable railways, the catch or lock E, consisting, essentially, of the levers *e*, overlapping the slot in the tube, arranged to be opened by the grip-shank passing by and closed automatically by means substantially as described, and for the purpose set forth.

2. In cable railways with underground slotted tubes, the safety device herein described, consisting of the combination of levers *e*, spindles *d'*, arms *e*², and weights *e'*, the whole being arranged in connection with the slot of the tube, substantially as and for the purpose herein described.

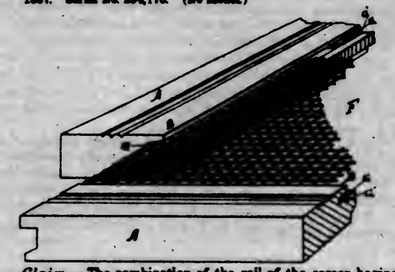
383,160. HOSE-COUPLING. HENRY A. WARNER, St. Louis, Mo., assignor to the American Brake Company, same place. Filed Nov. 7, 1887. Serial No. 254,808. (No model.)



Claim.—1. A half-coupling having a lug and a keeper diametrically opposite and on radial lines of the body thereof, and a stub-tube whose longitudinal axis is coincident with the radius of the body and intersects the radial lines on which the lug and keeper are arranged, substantially as and for the purposes specified.

2. In a hose-coupling, the combination of two half-couplings, each of which has a hollow body, a lug, and a keeper arranged on radial lines of the body and opposite each other, and a stub-tube whose longitudinal axis coincides with a radius of the body and intersects the radii of the lug and keeper, which will cause the lugs and keepers to disengage when the longitudinal axial lines of the stubs substantially coincide, substantially as and for the purposes specified.

383,161. WIRE SCREEN, &c. DEFOREST WHEELMAN, Los Angeles, Cal., assignor of one-half to John J. Jones, same place. Filed Nov. 3, 1887. Serial No. 254,170. (No model.)



Claim.—The combination of the rail of the screen having the grooves G G' therein, the trough T, inserted in the grooves of the frame, and the material of the screen having its edge lapped around one wall, *t*, of the trough.

383,162. NUT-LOCK. ANDREW J. WYLIE, Richland, Mich. Filed Aug. 8, 1887. Serial No. 246,998. (No model.)

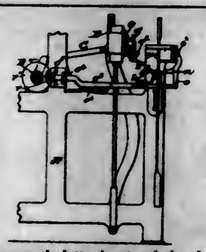


Claim.—The combination, with the bolt and nut, of a washer having a suitable number of right-angled flanges, said flanges having the recesses on the inside, and the end recesses and a forked key adapted for insertion between the flange and nut, one of the prongs of said key being bent outward around the end of the flange and in the end recess, substantially as set forth.

383,163. STOPPING MECHANISM FOR LOOMS. HORACE WYMAN, Worcester, Mass. Filed Apr. 26, 1887. Serial No. 236,127. (No model.)

Brief.—The lay is provided with feelers which feel for the binders at the backward movement of the lay. The presence of a shuttle causes an arm of the feeler to act on a lever pivoted below the breast-beam and to free it from a pin on an arm of a rock-shaft extending across the loom, there being a similar set of devices at each side of the loom. One of the arms of the rock-shaft is extended and connected with a sliding rod which is forced by a spring normally toward a cam on the crank-shaft. The presence of shuttles in opposite boxes at the level of the raceway entirely frees the rock-shaft arms from engagement with the levers and permits the spring to force the sliding rod into

383,168.



a depression in the cam as the latter is rotated, thus forcing the shipper-handle out of its notch by means of a lever pivoted below the breast-beam, which is hit by the arm on the rock-shaft. The continued rotation of the cam resets the mechanism.

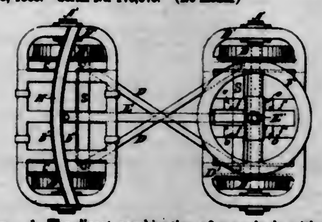
Claim.—1. The lay, means to operate it, the shuttle-boxes, their binders, the binder-feelers, the rock-shaft, its arms *o o'*, provided with pins or projections, the shipper-lever, a notched plate to hold it, and means actuated by the rock-shaft to release the shipper-lever, combined with two releasing-levers, and with means to normally move the arms *o* toward the lay, whereby when two shuttles arrive in two boxes located at the opposite ends of the raceway of the lay the said binder-feelers are made to actuate the releasing-levers and effect the release of the shipper-lever.

2. The lay, means to operate it, the shuttle-boxes, their binders, the crank-shaft, its attached cam-disk, the rock-shaft o^3, its attached arms *o o'*, rod o^4, and spring o^5, combined with two releasing-levers and with binder-feelers co-operating therewith, substantially as described.

3. The lay, means to operate it, the shuttle-boxes, their binders, a rock-shaft supported on the frame of the loom, the shipper-lever, and means between them adapted by the oscillation of the rock-shaft to disengage the shipper-lever and stop the loom, combined with two binder-feelers carried by the lay and two notched releasing-levers between them and the said rock-shaft, whereby when either one of the feelers is not actuated by a binder of a shuttle-box in line with the race of the lay just before the picking takes place it will not actuate its co-operating releasing-lever, and thereby will prevent the oscillation of the rock-shaft, substantially as described.

4. The lay, a crank-shaft to operate it and change shuttle-boxes at each end of the lay, and binders attached to the shuttle-boxes, combined with two binder-feelers and with means to actuate them to feel for the binders immediately after the shuttle-boxes arrive in their new position, the binder-feelers returning from the binders to release them from pressure at the time that the picking takes place, substantially as described.

383,164. CAR-TRUCK. WALTER YOUMANS, New York, N. Y., assignor, by mesne assignments, to John W. Emerson, same place. Filed June 20, 1885. Serial No. 170,073. (No model.)



Claim.—1. The direct combination of a car-body with two independent single trucks at each end thereof, the car-body resting directly upon all of the said trucks and being connected with each of them at points above their axles, all substantially as and for the purpose herein set forth.

2. The combination, with a car-body and with two independent single trucks at each end thereof, the car-body resting directly upon and connected with each of said trucks at points above their axles, of the crossed bars D, pivoted at their ends to the said trucks, all substantially as and for the purpose herein set forth.

3. The combination, with a car-body and with two independent single trucks at each end thereof, the car-body resting directly upon and connected with each of said trucks at points above their axles, of the crossed bars D and the reach E, the said bars and reach being pivoted at their ends to the said trucks, substantially as specified.

4. The combination of the platform-springs B C with a top frame, D', base-frame C, axle-boxes A', and axles A, all substantially as and for the purpose herein set forth.

5. The combination, with a car-truck axle, A, base-frame C, and top frame, D', of the side springs, B', the cross-springs C', connected by clips or bolts to the said top frame, and the shackles *d*, connecting the ends of said springs B' C', substantially as shown and described.

6. In combination with the top frame, D', side springs, B', cross-springs C', and axle A, the springs L, interposed centrally upon the side springs, B', between the latter and the superjacent end portions of the top frame, D', in position to support the said end portions upon the ends of the axle A, substantially as and for the purpose set forth.

7. The combination, with the car-body and with two independent single trucks at each end thereof, of a fifth-wheel, F, arranged centrally above the axle of each of the extreme forward and the extreme rearward trucks, and the car-body resting upon the said fifth-wheels and having a suitable bearing upon each of the other two single trucks, substantially as and for the purpose set forth.

8. The combination of two single trucks connected by cross-bars D, each truck consisting of a wheeled axle, a base-frame, C, platform-springs B' C', and a top frame, D', one of the said trucks having directly above its axle a fifth-wheel, F, and a king-bolt, E', and the other truck being provided with a segmental guide, H, with a car-body resting directly upon the said trucks and having upon its under side a slide-bar, K, fitting the said segment H, and having also near its end an annular plate, I, and a socket, E'', fitting the said fifth-wheel F and king-bolt E', respectively, substantially as shown and described.

9. The combination, with the car-body W and the top frames, D', independent of the car-body, and the journal-boxes A', of the springs L, the sleeves *i*, inclosing the said springs, the spring-supports *h*, fitting in the said sleeves, the boxes A', and top frames, D', the said springs L, sleeves *i*, and supports *h* being placed between the journal-boxes and the end portions of the top frames, D', in position to support the said end portions upon the ends of the axle, all substantially as and for the purpose herein set forth.

10. The bar S, in combination with the base-frame C, having axle-boxes A', and the crossed connecting-bars D, substantially as and for the purpose set forth.

11. The combination of the car-body W, provided with the curved bar K and with means for retaining the king-bolt E' in a fixed position, with the two single trucks, the rearmost being provided with the guide-segment H, eccentric with the king-bolt, and the foremost having a sliding block, G, pivoted upon the king-bolt and reciprocally movable transversely to the truck-axis, substantially as and for the purpose set forth.

12. In a car connected by a segmental guide with the subjacent truck, the combination, with the body W and the curved bar K, or its substantial equivalent, of intermediate fastening devices, *g*, affording a free space above the said bar between the same and car-body for receiving the brake-rods, substantially as and for the purpose set forth.

383,165. VISE. FRANK ARMSTRONG and NATHANIEL W. VANDERBILT, Bridgeport, Conn., assignors to the Armstrong Manufacturing Company, same place. Filed Jan. 16, 1887. Serial No. 224,470. (No model.)



Claim.—In a pipe or rod vise, the bed-plate A, formed with the longitudinal rail notched or serrated on its top surface and having the upright pin *d*, in combination with downwardly-diverging sockets removably secured to said bed-plate and adapted to receive supporting-legs, a movable jaw working on the rail and operated by a screw, and a stationary adjustable jaw having a pawl engaging the teeth of the rail and provided on one of its sides with the lug or shoulder *l*, substantially as described.

383,166. GRAIN-SEPARATOR. GEORGE B. BAILEY, Council Bluffs, Iowa, assignor of two-thirds to William O'Donoghue, St. Joseph, Mo. Filed Apr. 27, 1887. Serial No. 236,194. (No model.)

Claim.—1. The combination, with the supporting-frame and the rotary sieve mounted in said frame, of the shaft H, mounted in the said frame below the sieve, the double-armed lever K, mounted on the said shaft, and the cord or head secured to the opposite ends of the arms of said lever to reverse the rotary sieve, substantially as specified.

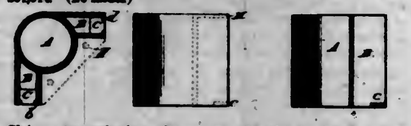
2. The combination, with the main frame, the rotary sieve journaled therein and provided with the longitudinal opening for the passage of the grain, and the shield-plate in the rear of the said opening,

383,166.



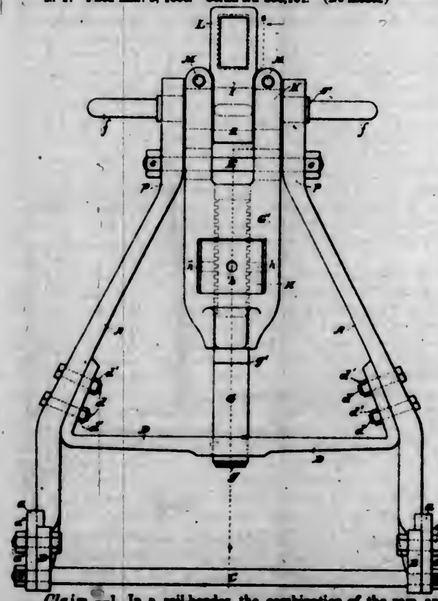
of the elevating-plates F and F', forming troughs extending the entire length of the inner surface of the sieve and adapted to elevate the grain therein, the plates F' being arranged at right angles to the screening-surface of the sieve, and the plates F extended and arranged at an acute angle to the plates F', substantially as described.

383,167. ANGLE-CLAMP FOR THE CORNERS OF TABLES, DESKS, &c. DAVID J. BROUGHER, Cincinnati, Ohio, assignor, by direct and mesne assignments, of two-thirds to William Griffith, Covington, Ky., and John Seymour, Oakley, Ohio. Filed May 5, 1886. Serial No. 201,514. (No model.)



Claim.—An angle-clamp for corners of tables, having the circular hole A, in which the legs fit, the sockets B, having projections *b* on their inner sides fitting in grooves cut in the side rails, D, so as to grasp said rails, the horizontal bar C for the side rail to rest on, and the lug H, having a hole in it, through which a screw is passed to fasten the table-top to the clamp, the whole arranged substantially as shown and described.

383,168. RAIL OR BAR BENDER. MORRIS H. BROWN, Yonkers, N. Y. Filed Mar. 5, 1886. Serial No. 203,161. (No model.)



Claim.—1. In a rail-bender, the combination of the ram and means for operating the same, the diverging side frames carrying jaws, and the tie-rod connecting the ends of the side frames beyond the jaws, substantially as described.

2. The combination, with the side frames provided on their ends with jaws, of the ram having a threaded portion, the bored block in which the ram has a long bearing, and the adjusting-nut working in an opening in said block and engaging the threaded portion of said ram, substantially as described.

3. The combination of the angular side frames, the jaws at the ends thereof, the ram, the block carrying said ram, bifurcated at its upper end, the cross-bolt connecting the side frames and passing through a slot in said block, the eccentric-shaft having bearings in said frames, the eccentric bearing against the grooved end of said block, and the operating-lever working between the branches of said block and keyed to said eccentric, substantially as described.

388,169. KNOCKDOWN RATTAN CHAIR. BENJAMIN J. BOSEMAN, Gardner, Mass., assignor to Heywood Brothers & Co., same place. Filed Aug. 11, 1884. Serial No. 142,204. (No model.)



Claim.—In a knockdown rattan chair, the back-frame A and seat C, in combination with the arm-pieces B, the arm-pieces having dowels with tenons to fit in mortises in the seat, and other dowels provided with eyes *b'*, by which the arm-pieces are connected to the back-frame, substantially as and for the purpose set forth.

388,170. IRON-BUILDING CONSTRUCTION. LEROY S. BUFFINGTON, Minneapolis, Minn. Filed Nov. 14, 1887. Serial No. 255,142. (No model.)

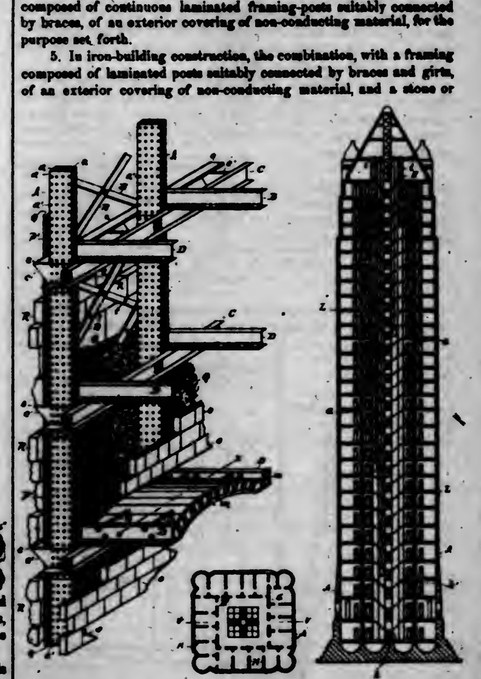
Claim.—1. A building having a continuous skeleton of metal, a covering of veneer, and a non-conducting packing between the skeleton and veneer, for the purpose set forth.

2. In a building-frame, a continuous diminishing laminated post formed of layers of metal plates secured together and arranged to break joints and decreasing in number toward the top.

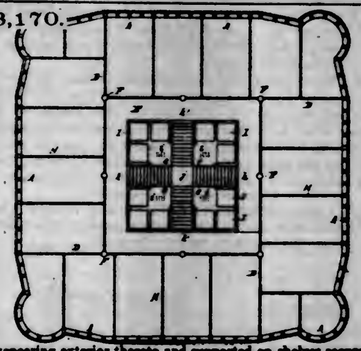
3. In iron-building construction, the combination, with a framing composed of continuous laminated posts suitably connected by braces and girts, of tie-beams secured thereto and to one another, substantially as set forth.

4. In iron-building construction, the combination, with a framing composed of continuous laminated framing-posts suitably connected by braces, of an exterior covering of non-conducting material, for the purpose set forth.

5. In iron-building construction, the combination, with a framing composed of laminated posts suitably connected by braces and girts, of an exterior covering of non-conducting material, and a stone or



388,170.



other veneering exterior thereto and supported on shelves secured to the framing, substantially as set forth.

6. In a frame for a building of two or more stories, a series of tapering posts extending from base to top of the frame and formed of metal plates in layers secured with their flat sides together and arranged to break joints, and braces and girts for connecting and securing the posts, substantially as set forth.

7. In a building-frame, a series of continuous framing-posts composed of metal plates secured with their flat sides together and breaking joints, in combination with girts and tie-beams secured thereto at each floor, substantially as set forth.

8. The combination, with the laminated posts, of the continuous girts secured thereto, and the tie-beams, also secured thereto and to one another, substantially as set forth.

9. The combination, with the framing-posts and braces, of the wire lath or equivalent coverings, the non-conducting packing and the veneering supported by the shelves, and anchor-rods, substantially as and for the purposes set forth.

10. The combination, with the building-frame composed of the laminated posts, girts, tie-beams, and pillars, arranged to form a central well, of the elevator-shafts and stairs arranged therein, substantially in the manner set forth.

11. The combination, with the building-frame constructed with a central well, of elevator-shafts arranged in the corners of such well and flights of stairs rising from opposite sides of such well to a central landing, and other flights rising from said landing to the other sides of such well, substantially as set forth.

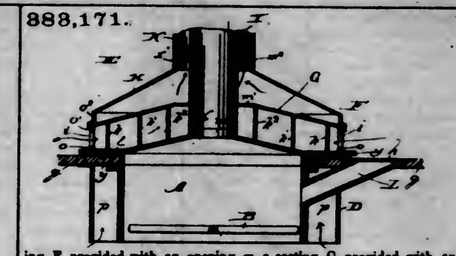
12. The combination, with the posts and girts forming the outer frame, of the beams having their outer ends resting on the girts and secured to the posts, and their inner ends secured to beams that are transverse to them, the pillars therefor, and the diagonal tie-rods, substantially as set forth.

13. The combination, with the posts and girts, of the angle-plates connecting them and forming supports for the veneer shelves.

14. The combination, with the posts and their braces, of the plates forming the shelf-supports, the shelves, the veneer, and the anchor-rods, substantially as set forth.

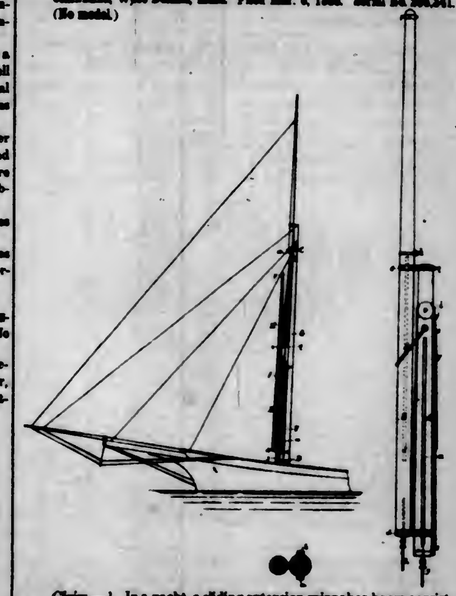
388,171. AIR-HEATING DEVICE FOR CARS. LYMAN P. CONVERSE, Chicago, Ill. Filed July 22, 1887. Serial No. 244,962. (No model.)

Claim.—1. In an air-heating device, the combination of a fire-pot, A, a jacket, D, surrounding the fire-pot and affording a chamber, *p*, a heater, E, supported directly over the fire-pot, comprising a casting, F, provided with an opening, *m*, a casting, G, provided with an opening, *m'*, and surmounting the casting F, ribs between the two castings about the openings therein, affording a circuitous chamber having communication with the surrounding atmosphere, and a casting, H, surmounting the casting G, and provided with an opening, m^3, a smoke-flue, I, extending through the openings *m*, *m'*, and m^3, and a hot-air flue, K, extending from the casting H around the smoke-flue and opening into the inclosure to be heated, substantially as described.



2. The combination, with a car having an opening, *r*, in its floor, of a heating device comprising a fire-pot, A, and a jacket, D, surrounding the fire-pot underneath the car, and affording a chamber, *p*, a chute, L, having its inlet in the floor of the car and leading from the car-floor into the fire-pot, a heater, E, supported on the upper side of the car-floor directly over the fire-pot, and comprising a casting, F, provided with an opening, *m*, and with openings *n*, leading into the chamber *p*, a casting, G, provided with an opening, *m'*, and surmounting the casting F, ribs between the two castings about the openings therein, affording a circuitous chamber having communication with the surrounding atmosphere, and a casting, H, surmounting the casting G, and provided with an opening, m^3, a smoke-flue, I, extending through the openings *m*, *m'*, and m^3, and car, and a hot-air flue, K, extending from the casting H around the smoke-flue and opening into the interior of the car, substantially as described.

388,172. SPINNAKER-BOOM FOR YACHTS, &c. ALBERT C. CRANDALL, West Dennis, Mass. Filed Mar. 6, 1888. Serial No. 266,241. (No model.)



Claim.—1. In a yacht, a sliding extension spinnaker-boom consisting of two parts, A and B, the main part pivotally secured to the vessel or mast at any suitable part, and the part B adapted to slide on the part A, as and for the purpose set forth.

2. In a yacht, a sliding extension spinnaker-boom, substantially as shown and described, it consisting of the two spars A B, connected to each other by the head and heel bands, the heel-band having bearings to receive and slide on bottoms fixed to the shorter spar, A, as shown, and each spar having tackle connected to it and to the mast-head, a line or pennant, *j*, secured to the heel-band passing through the spar A, and being connected thereto by means of a tackle, F, all as shown, and for the purpose set forth, the boom being supported at its foot, as represented.

3. In a yacht, a sliding extension spinnaker-boom, substantially as shown and described, it consisting of the spars A B, connected to each other by the head and heel bands *d e* in such manner that the heel-band can slide on one spar and the head-band on the other, or on battens secured to said spars, the spar A having a ball, *f*, and each spar having a tackle connected to it and to the mast-head, all as shown and set forth, the boom being supported at its foot, as represented.

388,173. ASH-SIFTER. JOSEPH H. CHENEY, Westfield, N. J. Filed Sept. 6, 1887. Serial No. 248,903. (No model.)



Claim.—1. In an ash-sifter, the combination, with a sieve-box provided with a hinged door and a cylindrical sieve located therein, the bottom of said sieve being pivotally connected with the bottom of said box, and the top of said sieve being open, of a removable top for said sieve, pivotally connected to the hinged door, and means for revolving said sieve.

2. In an ash-sifter, the combination, with a sieve-box having one end hinged to the body thereof, a cylindrical sieve located within said box, the bottom of said sieve being pivotally connected with the flat end of said box and the top of said sieve being open, and projections extending beyond the top of said sieve, of a removable top for said sieve, provided with apertures which engage said projections, a hinged door to which said removable top is pivotally connected, and a crank connected to said top, whereby the sieve may be rotated when the top thereof is closed down upon the same.

3. In an ash-sifter, the combination, with the ash-box A, having an opening in its top, of a sieve-box, B, having an open bottom adapted to register with said opening in the top of the ash-box, said sieve-box being hinged to the top of the ash-box at one edge of the opening therein, and one end, *b*, of said sieve-box being hinged to the top of the sieve-box, a cylindrical sieve, C, having a closed bottom and open top, located within said sieve-box, the bottom of said sieve being journaled in the flat end of said sieve-box, projections *c''*, extending above the open end of said sieve, a cover, C', for said sieve, pivotally connected with the hinged end of said sieve-box, said cover having apertures *c'*, which engage said projections *c''* when it is closed down upon the open end of the sieve, and a crank, *c'*, connected with said cover C' for rotating the same.

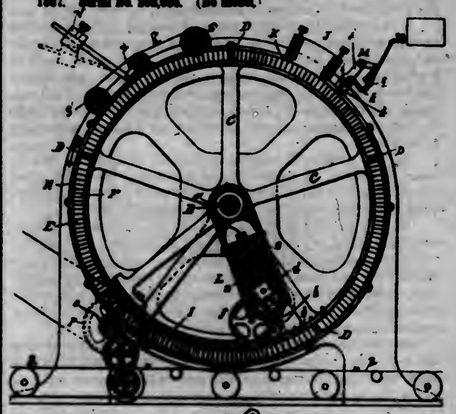
4. The cylindrical sieve C, closed at its bottom, and the rods *c''*, secured to said bottom, passing along the sides of said sieve, to which they are secured, and extending slightly above the open top thereof, in combination with the removable top C', having the notches *c'*, adapted to engage the projecting ends of said rods and retained in engagement therewith by a removable end to which said top is pivotally secured.

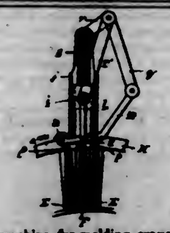
5. In an ash-sifter, the combination of an ash-box having an open top, a sieve-box having an open bottom and provided with a hinged end and hinged at its opposite end to the ash-box, a sieve having a closed bottom and open top, the closed bottom of said sieve being journaled in the flat end of said box, so that when the sieve-box is turned back the sieve will be raised to a vertical position, and a removable cover for said sieve, substantially as set forth.

6. In an ash-sifter, the combination of an ash-box having an open top, a sieve-box having an open bottom and provided with a hinged end and hinged at its opposite end to the ash-box, a cylindrical sieve having a closed bottom and open top, the closed bottom of said sieve being journaled in the flat end of said box, so that when the sieve-box is turned back the sieve will be raised from a horizontal to a vertical position, a removable cover for said sieve, pivotally connected with the hinged end of the sieve-box, and an ash-pan adapted to fit in the sieve, substantially as set forth.

7. In an ash-sifter, the combination of an ash-box having an open top, a sieve-box having an open bottom and provided with a hinged end and hinged at its opposite end to the ash-box, a cylindrical sieve having a closed bottom and open top, the closed bottom of said sieve being journaled in the flat end of said box, so that when the sieve-box is turned back the sieve will be raised from a horizontal to a vertical position, projections secured to the bottom and extending above the top of said sieve, a cover for said sieve, provided with apertures which engage said projections and journaled in the hinged end of the sieve-box, and an ash-pan adapted to fit in the sieve, substantially as and for the purpose set forth.

388,174. MACHINE FOR THE MANUFACTURE OF CHALK CRAYONS, &c. CHARLES H. PEASE, Sandusky, Ohio. Filed Oct. 11, 1887. Serial No. 252,026. (No model.)





Claim.—1. In a machine for molding crayons, the combination of a rotary drum, molds forming the cylindrical face thereof, a stationary hopper arranged to form a tight joint with the face of the drum, and a knocker to jar or hammer the molds, all arranged substantially as described.

2. In a machine for molding crayons, the combination, with the rotary mold-drum, of a stationary hopper extending the length of the molds, and of adjustable packing secured to the lower edges of said hopper to form a tight joint with the face of mold-drum, substantially as described.

3. In a machine for molding crayons, the combination, with the mold-drum, of a stationary hopper supported above said drum and to one side of the vertical center thereof, and arranged to discharge to one side of said vertical center, substantially as and for the purpose described.

4. In a machine for molding crayons, a rotary mold-drum consisting of a stationary shaft, circular heads journaled upon said shaft, circular flanges upon the inner face of said heads, longitudinal division-plates secured to said heads and dividing the face of the drum into sections, and wedge-shaped molds supported between the division-strips on the circular flanges of the heads, all arranged substantially as described.

5. In a machine for molding crayons, in combination, the rotary mold-drum provided with circular shoulders or flanges on the inner face of the heads on which the molds are loosely supported, a supporting-frame in which said drum is journaled, and guide-rails secured to the stationary frame to retain the molds upon the mold-drum, substantially as described.

6. In a machine for molding crayons, the combination, with the rotary mold-drum carrying sectional molds, of eccentric guide-rails controlling the radial adjustment of said molds on the mold-drum, substantially as described.

7. In a machine for molding crayons, the combination of a rotary mold-drum, a stationary shaft on which said drum is journaled, a sup-

porting-frame, sectional molds carried by the mold-drum, circular shoulders or flanges on the heads of the drum to support the molds on the under side, stationary guide-rails arranged to radially confine the molds upon the outside, eccentric portions in said rails to permit the radial outward movement of the molds, and a stationary segmental inner guide-rail to compel such radial movement, substantially as described.

8. In a machine for molding crayons embodying in its construction a rotary mold-drum, a stationary hopper extending the length of the face thereof and forming a tight joint therewith, an automatically-operating knocker for jarring the molds to remove the crayons, trays to receive the crayons and automatically carry them from the machine, and a lubricator for the molds, all substantially as described.

9. A machine for molding crayons embodying in its construction a rotary mold-drum, sectionally-constructed wedge-shaped molds carried by said drum, an expander for radially expanding the molds on the mold-drum, a hopper arranged on the face of the mold-drum, a knocker to remove the crayons from the mold, an automatically-operating oiler for the molds, and an automatically-moving train of trays to receive the crayons and carry them from the machine, substantially as described.

10. In a machine for molding crayons, the combination, with the rotary mold-drum, of an endless apron arranged to travel over a portion of the face of the mold-drum, with its lower portion run over the molds to close the top of the molds, substantially as described.

11. In a machine for molding crayons, the combination, with the rotary mold-drum, of a radially-reciprocated cross-head carrying a series of oilers corresponding with the molds, an oil-supply tank, a pipe leading from said tank to the oilers, a valve in said pipe, and connections, substantially as described, actuated by the motion of the drum to intermittently reciprocate the oilers and open and close the valve, substantially as described.

12. In a machine for molding crayons, the combination of a rotary mold-drum, a stationary shaft on which said mold-drum is journaled, and a knocker secured to said shaft within the drum and actuated by the motion of the drum, substantially as described.

13. In a machine for molding crayons, the combination of a rotary mold-drum, a stationary shaft on which said drum is journaled, and a reciprocating hammer having its supporting-frame secured to the aforesaid shaft, and with the hammer operating in an oblique direction to strike the molds at a point past the lowest point, substantially as described.

388,175. BOX OF PLASTIC MATERIAL. MARSHALL GARDNER, Aurora, Ill., assignor of one-half to James Stone, same place. Filed Apr. 11, 1887. Serial No. 234,464. (Model.)



Claim.—A box of plastic material, consisting of a bottom and four sides, the sides being connected to each other at their edges by welded mortise-and-tenon joints, substantially as described.

388,176. ATTACHMENT FOR BRIDLES. ADOLPH GERBER, Beloit, Kans. Filed Feb. 2, 1888. Serial No. 262,722. (No model.)



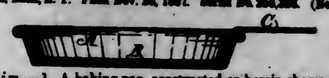
388,176.



Claim.—1. The nose-piece of rigid material, having rings at its ends, and having rings intermediate of its ends connected therewith by the swivel-connections, substantially as set forth.

2. The herein-described nose-piece of cast metal, having eyes at its ends, and rings held in the said eyes, and the rings intermediate of the said ends and held to the nose-piece by swivel-connections, said nose-piece being covered by leather, as and for the purpose described.

388,177. BAKING-PAN. EDWARD F. GERBER and FRANK H. EISENEYX, Bath, N. Y. Filed Nov. 26, 1887. Serial No. 256,266. (No model.)

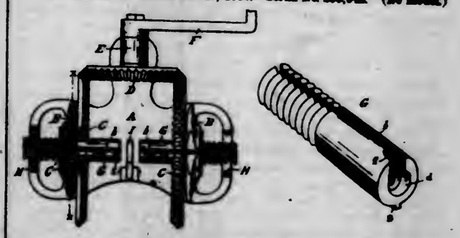


Claim.—1. A baking-pan constructed as herein shown and described, consisting of the sides and permanent bottom, the detachable auxiliary or false bottom adapted to lie upon the permanent bottom, the said detachable bottom being provided with a side handle formed integral therewith and extending up along the inner side of the pan, and thence longitudinally out beyond the pan's edge, the aforesaid detachable bottom and its handle portion being formed from a blank stamped or cut out of one and the same piece of tin or sheet metal, substantially as described.

2. A baking-pan constructed with a fixed or permanent bottom and provided with a removable auxiliary or false bottom adapted to lie upon the permanent bottom, and having connected thereto a side handle that extends up along the inside of the pan's side, and thence longitudinally out beyond the edge or rim of the pan sufficiently to admit of its proper handling, all combined substantially as described and shown, and for the purposes specified.

3. A baking-pan constructed with a permanent bottom and having removably mounted thereon an auxiliary or false bottom provided with a handle portion extending from a side thereof upward and in proximity to the inner surface of the pan's side, and thence extending beyond the top thereof a suitable distance, substantially as described, and for the purposes specified.

388,178. MACHINE FOR SPLICING WIRE. WILLIAM I. HAAG, Lansing, Mich. Filed Nov. 19, 1887. Serial No. 255,642. (No model.)



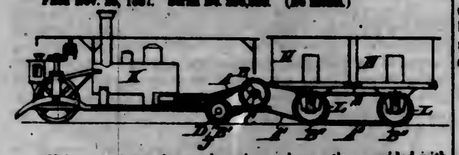
Claim.—1. In a machine for splicing wires, the combination, with a supporting-frame and actuating mechanism, substantially as described, of two oppositely-revolving mandrels slidingly journaled in bearings in axial line with each other and provided with a flanther, a, engaging the twister-wheels, a screw-feed, the enlargements c and d at the inner ends of the mandrels, and the wire clamp I, substantially as described.

2. In a machine for splicing wires, the combination, with the revolving mandrels G, of the frame A, having the standards B, the twister-wheels C, journaled on hollow trunnions in the standards B, and in which the mandrels are slidingly secured, the brackets H, having a screw engagement with the mandrels, the bevel gear-wheel D, and the handle F, all arranged to operate substantially as described.

3. In a machine for splicing wires, the combination of two oppositely-revolving mandrels journaled in bearings in axial line with each other and having an endwise-sliding movement in opposite direction in their bearings, central apertures in said mandrels, the longitudinal

slots b, the enlargements c, and the apertures d at the inner ends of said mandrels, substantially as described.

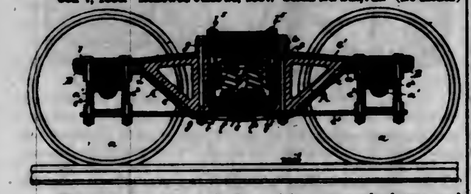
388,179. TRACTION-ENGINE. DAVID R. JAMES, Vinita, Ind. Ter. Filed Nov. 28, 1887. Serial No. 256,022. (No model.)



Claim.—1. A traction-road engine or locomotive provided with two cylinders containing pistons which connect by suitable rods with a driving-shaft upon which is a double sprocket-wheel to receive two chains, one leading from it to a corresponding sprocket-wheel under floor of engine, on the carrying or traction wheel of same, and the other chain leading to a corresponding sprocket-wheel on the axle of the first car connected to it, and alike to as many cars as the engine has the capacity to move, substantially as and for the purpose shown and specified.

2. In a traction-engine, the combination of two-wheel cars supported by each other at the corners by a coupling that acts as a hinge, connecting engine and train of cars in one continuous line, with side-play in couplings to allow for curves and follow over any reasonable depression on road, substantially as and for the purpose shown and specified.

388,180. CAR-TRUCK. LOUIS K. JEWETT, Boston, Mass. Filed Oct. 7, 1886. Renewed June 20, 1887. Serial No. 242,743. (No model.)



Claim.—1. In a car-truck, the arch-bar, truss, wheel-strap, and clips B, provided with seats, combined with arch-bar-sustaining blocks A, provided with projections, the said sustaining-blocks being placed between the arch-bar and truss and with its projections in the seats of the clips, whereby increased rigidity is obtained, substantially as described.

2. In a car-truck, the arch-bar, truss, wheel-strap, and arch-bar-sustaining blocks, and saddle provided with a recess and with grooves, combined with a rocker having a projection to enter the recess of the saddle, links b^3, and spring-seats and spring, and bolster and transom, the grooves in the saddle being adapted to receive the links b^3 whenever it is desired to change the truck from a swinging truck to a so-called "rigid truck," substantially as described.

3. In a car-truck, the bolster, combined with a center-plate composed of a base, h', and a top portion, h, the base being secured to the bolster, the top being adjustably connected with the base, as and for the purpose described.

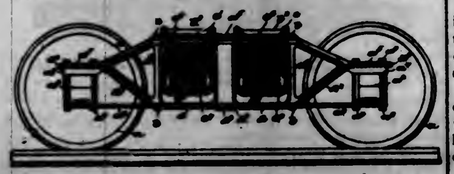
4. In a car-truck, the arch-bar, truss, wheel-strap and bolster, and transom, combined with means, substantially as described, to take up the slack in the truss, as and for the purpose set forth.

5. In an car-truck, the arch-bar-sustaining block A, having a laterally-extended wing, A', combined with a loop or connection, A^2, to support a brake-beam, substantially as described.

6. In a car-truck, an arch-bar, and an arch-bar-sustaining block provided with a projection, combined with a support having a seat for the projection on the arch-bar-sustaining block, substantially as described.

388,181. CAR-TRUCK. LOUIS K. JEWETT, Boston, Mass. Filed Oct. 7, 1887. Serial No. 251,707. (No model.)

Claim.—1. In a car-truck, two metallic transoms, the arch-bar a^3, supporting blocks or castings a^4, and the truss a^5, combined with two

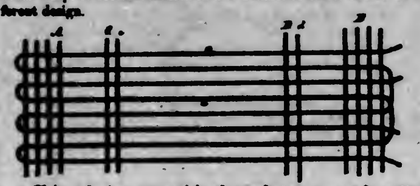


bolsters, springs to support them, rocker-bars and links embracing the rocker-bars, and with the plate c, connecting the said bolsters, substantially as described.

2. In a car-truck, two metallic transoms, the arch-bar a^3, the supporting-blocks or castings a^4, and the truss a^5, combined with two bolsters, springs to support them, rocker-bars, links embracing the rocker-bars, and with the plates c and c^2 to join the said bolsters, substantially as described.

388,182. WARP FOR PATTERN-MAKING. CHARLES H. LAUDENSLAGER, Philadelphia, Pa. Filed Mar. 15, 1888. Serial No. 266,936. (No specimens.)

Brief.—Short warps for pattern-weaving are formed in a broad loom by interweaving the weft-threads carried by the shuttles of such loom with warps placed in groups on opposite sides of the loom and adapted to serve as head-bands, other warps being woven at intermediate intervals to serve as lease-threads. The weft-threads thus interwoven with the head-bands constitute short warp. When one such warp or "section" has thus been produced, it is wound on a warp-beam, and the ends of its threads are joined to those of the threads of other warps or sections formed in like manner of either similar or different design.



Claim.—1. As a new article of manufacture, a warp for pattern-making, having a selvage-band at each end, substantially as and for the purpose set forth.

2. A warp for pattern-making, having selvage-bands and lease-threads, substantially as and for the purpose set forth.

3. A warp composed of continuous threads alternating from one end to the other of its length, and at each end being interlocked with threads crossing the same at right angles and forming a selvage-band at each end, substantially as described.

388,183. TONGUE-SUPPORT. LEONIDAS W. LEAVELL, Jr., and ROBERT H. L. LEAVELL, Kearney, Mo. Filed Jan. 10, 1888. Serial No. 260,266. (No model.)



Claim.—1. As an improvement in tongue-supports, the combination of the pole or tongue, having the corrugated or fluted plate, and the coil-spring having a band or stirrup for adjustable connection with said pole or tongue, as shown and described.

2. As an improvement in tongue-supports, the combination of the pole or tongue, the corrugated or fluted plate secured thereto, the coil-spring, and the band or stirrup encircling the tongue and engaging said plate, substantially as shown and described.

3. The combination, with the wagon-body and the pivoted tongue having the corrugated or fluted plate, of the coil-spring, the rods projecting therethrough, the spring-hooks, and the band or stirrup, substantially as shown and described.

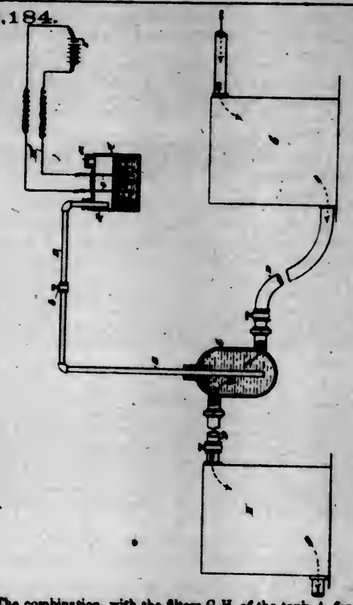
4. In a tongue-support, the combination, with the tongue, of a corrugated or fluted plate secured to the under side thereof, a band or stirrup encircling the tongue and engaging one of the corrugations of the plate, and a spring connected therewith, substantially as set forth.

388,184. ELECTRICAL APPARATUS FOR PURIFYING WATER. ALBERT R. LEEDS, Hoboken, N. J. Filed Sept. 19, 1887. Serial No. 250,003. (No model.)

Claim.—1. The combination, with the closed tank A, for containing the acid or salt solution, of the pipe B, communicating with said tank and the body of water to be purified, and the terminals c of the electric circuit, located in said tank in position to be in the solution, substantially as described.

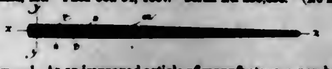
2. The combination, with the filter G, of the closed tank A, for containing the acid or salt solution, the pipe B, communicating with the discharge of the filter, and the terminals c of the electric circuit, located in said tank in position to be in the solution, substantially as described.

383,184.



3. The combination, with the filters G H, of the tank A, for containing the acid or salt solution, the pipe B, communicating with said tank and with the pipe through which the water passes from one filter to the other, and the terminals *c* of the electric circuit, located in said tank in position to be in the solution, substantially as described.

383,185. PERFORATED PEN-HOLDER. FREDERICK M. LIBBY, Portland, Me. Filed Oct. 31, 1887. Serial No. 253,233. (No model.)



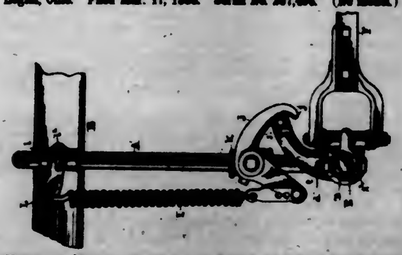
Claim.—1. As an improved article of manufacture, a pen-holder of homogeneous material and slitted transversely for a small portion of the length, whereby elasticity is imparted to the said pen-holder at such portion, substantially as described.

2. As an improved article of manufacture, a homogeneous pen-holder made hollow for a portion of its length and provided with a series of short and disconnected transverse saw-cuts in the said hollow portion near its outer end, substantially as described.

3. As an improved article of manufacture, a homogeneous pen-holder made hollow for a portion of its length and provided with short transverse slits, combined with a longitudinally-slitted plug to fit into the outer end of the said hollow portion, substantially as and for the purpose set forth.

4. As an improved article of manufacture, a homogeneous pen-holder made hollow for a portion of its length and provided with independent transverse slits, combined with a corrugated or milled cylindrical plug to fit into the outer end of said hollow portion, substantially as and for the purpose set forth.

383,186. CULTIVATOR. DAVID HOSTERWELL and ELI B. CORLY, Logan, Ohio. Filed Mar. 17, 1888. Serial No. 267,498. (No model.)



Claim.—1. In a wheel-cultivator, the combination, with the axle the sleeve D, having the arm *d*, mounted on the axle, and the gang connected with the sleeve to turn therewith, of the elbow-lever pivotally supported at the elbow and having one end bearing on the said arm *d*, and the spring I, interposed between the other end of the said elbow-lever and the frame, substantially as set forth.

2. In a wheel-cultivator, the combination, with the axle, the sleeve D, having the arm *d*, mounted on the axle to turn thereon, the sleeve E, adjustable on the sleeve D and held to turn therewith, and the gang secured to the sleeve E, of the elbow-lever J, pivoted at the elbow and having one end bearing on the arm *d*, the spring adjustably interposed between the other end of the lever and the frame, and the arm J', integral with the lever J and having its end forked, substantially as and for the purpose described.

3. The combination, with the axle, the gang, and the arm, of the lever J, having its rear end serrated on its inner edge, and the spring, substantially as and for the purpose described.

4. The combination of the axle, the tongue, the clamp-plate L', the arm L, having a longitudinal slot which is serrated on its lower edge, the bolt connecting the arm, the plate L', and the tongue together, the sleeve K, clamped to the axle, the lever J, pivotally connected with the sleeve, the sleeve D, having the arm *d*, the sleeve E, and the gang connected with the sleeve E, substantially as described.

383,187. WAGON-BRAKE. ROBERT J. HITCHELL, Benson, Me. Filed Mar. 14, 1888. Serial No. 267,163. (No model.)



Claim.—1. In a wagon-brake, the combination, with the two brake-levers C and C', arranged transversely of the vehicle and pivoted near their outer ends, and the two endless cables or chains connected with the brake-levers, respectively, of the pulleys for supporting the said chains at one end, and the rotatable shaft for supporting the chains at their opposite ends and moving them simultaneously for operating both of the brake-levers, substantially as described.

2. The combination, with the two brake-levers and the endless chains or cables, of the rotatable shaft for supporting the chains at one end and imparting motion thereto, and the independent pulleys for supporting the said chains at their other ends and adjustably connected with the vehicle, substantially as described, for the purpose specified.

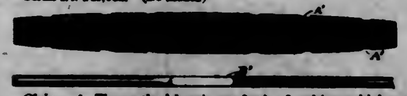
3. The combination, with the gear-wheel, the hand-lever having a click, and the pawl, of the lifting-rod, and means for connecting the lifting-rod with the hand-lever, substantially as described.

4. The combination, with the gear-wheel, the hand-lever having a click, and the pawl, of the curved lifting-rod concentric with the axis of the gear-wheel, the hand-latch, and the connection between the lifting-rod and the hand-latch, substantially as specified.

5. The combination, with the gear-wheel, the hand-lever having a click, and the pawl, of the elastic curved lifting-rod connected at one end with the pawl and rigidly connected at its other end with the vehicle-body, of the lifting-arm, the hand-latch, and the rod connecting the hand-latch with the lifting-arm, substantially as specified.

6. The combination, with the vehicle-body, the brake-levers arranged transversely of the body and pivotally supported near their outer ends, the endless cables or chains, the adjustable pulleys, the shaft E, having an angular portion in cross-section, the pinion, the gear-wheel, the hand-lever having a double-ended click and a click-operating lever, the pawl having one end extended and guided in its movements by a keeper, the lifting-rod, the lifting-arm, and the hand-latch connected with the said pawl, substantially as set forth.

383,188. METHOD OF MAKING AXLES OF SHEET METAL. THEODORE C. HOWE, Toledo, Ohio, assignor of one-half to Warren Henry Eldridge and Franklin Hubbard, same place. Filed Sept. 12, 1887. Serial No. 249,662. (No model.)



Claim.—1. The method herein set forth of making vehicle-axles, which consists in constructing a blank of the desired form out of sheet metal and then forming the same into the desired shape by pressure, as and for the purpose set forth.

2. A step in the art of making axles of sheet metal, which consists of forming cut-away portions in the sides of the blanks corresponding to the position of the clip-plates previous to forming the same into the desired shape by pressure, as and for the purpose set forth.

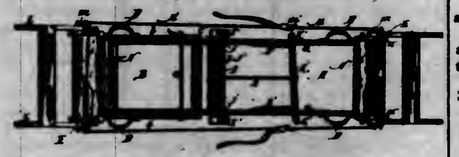
3. A vehicle-axle formed of sheet metal pressed into the desired shape, as and for the purpose set forth.

383,189. IRONING-TABLE. CHRISTOPHER GRELLNER, San Francisco, Cal. Filed Oct. 4, 1887. Serial No. 251,402. (No model.)



Claim.—The combination of the ironing-board having one end provided with the tapered edges *b b*, the bosom-board G, pivoted on the upper side thereof, and the removable spring-clamp P, constructed as described and having the inwardly-directed hooked ends Z Z, to embrace the said tapered edges of the main board, and its body portion adapted to fit snugly around the forward sides and end of the pivoted board, substantially as specified.

383,190. PIANO-MOVER. WALTER S. RETTENMEYER, De Kalb, Ill., assignor to himself, Samuel S. Bratt, and Leo R. Tomblin, same place. Filed Sept. 14, 1887. Serial No. 249,686. (No model.)



Claim.—1. The combination, with a frame adapted to receive a piano, of a central axle and wheels, and a locking mechanism for the axle for changing the wheels to carry the carriage or run clear thereof, substantially as specified.

2. A frame to receive a piano, having side pieces provided with slots i, in combination with an axle, I, having carrying-wheels I', and a lock for engaging and disengaging the axle to carry the weight on the wheels or allow the wheels to pass out of use, substantially as specified.

3. The combination, with a frame adapted to receive a piano, of a roller, F, at each end, and central carrying-wheels, I', mounted on a movable axle having a lock therefor, substantially as and for the purpose specified.

4. The combination, with the frame A B and supports E, of the rests, and blocks N, having a straight face on one side and a projected face, N', on the opposite side, substantially as and for the purpose specified.

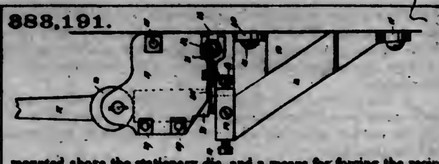
5. The combination, with the frame-sections A B and end pieces *a' b'*, of the rest-blocks O, adjustable in and out on the end pieces *a' b'* for adapting the rest-blocks to the reception of different pianos, substantially as specified.

6. The combination, with the sections A B of a carriage-frame and supports E, of the reversible blocks N N' and rest-blocks O O', substantially as and for the purpose specified.

383,191. SAW-GUMMER. JOHN P. BARNES and DOUGLAS BARNES, Greenville, N. Y., assignors to Barnes Bros. Manufacturing Co., same place. Filed Dec. 7, 1887. Serial No. 257,597. (No model.)

Claim.—1. In a saw-gummer, the combination, with the supporting-frame, of the bracket 31, adjustably secured to the frame, and the gage 34, adjustably secured to the bracket and provided with the toe 37 for engaging the recesses between the teeth of the saw, substantially as described.

2. In a saw-gummer, the combination, with a main body, of diagonal braces secured to the side faces thereof, a die-holder mounted above said braces and provided with side, front, and rear adjusting-screws, a stationary die carried by the holder, a reciprocating die

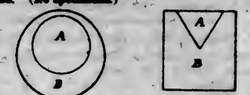


mounted above the stationary die, and a means for forcing the reciprocating die downward, substantially as described.

3. In a saw-gummer, the combination, with a main body, of diagonal side braces secured thereto, a die-holder mounted above the braces and provided with side, front, and rear adjusting-screws, a die supported by the diagonal braces and mounted within the holder, a reciprocating bar formed with a die and mounted between side plates that are secured to the body of the gummer, a spring formed with an eye, 24, arranged in connection with the reciprocating bar and mounted as described, guiding and clamping bolts arranged in advance of the bar, and an operating cam and lever, as and for the purpose stated.

4. A saw-gummer frame consisting of the bar 10, provided with the eye 11 at its lower end, and with the laterally-extending and apertured ears 40, the upwardly-extending diagonal plates 12, a die-holder above the upper ends of the said plates, and side plates, 19, secured to bar 10 above the die-holder, substantially as herein shown and described.

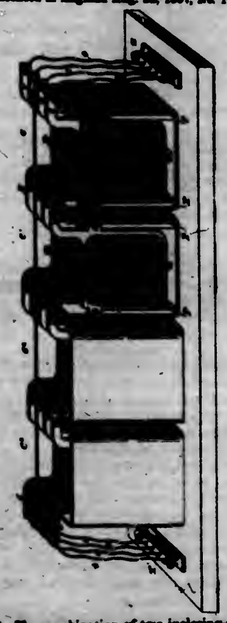
383,192. INGOT OR BAR FOR TOOLS. FREDERICK WM. SEAMAN, Sheffield, County of York, England. Filed Sept. 26, 1887. Serial No. 250,269. (No specimens.)



Claim.—1. An ingot or bar composed of a self-hardening steel and a tougher steel, substantially as hereinbefore set forth.

2. The combination, in an ingot or bar, of a self-hardening steel and a tougher steel, the latter surrounding or partially surrounding the former, substantially as hereinbefore set forth.

383,193. SECONDARY BATTERY. JOHN S. SHELDON, Sydenham, County of Kent, England, assignor to the Electrical Accumulator Company, of New York. Filed Nov. 5, 1887. Serial No. 254,618. (No model.) Patented in England Aug. 23, 1887, No. 11,443.



Claim.—1. The combination of two inclosing-cells, a positive element consisting of two or more plates, and a negative element consist-

ing of two or more plates alternating therewith in each cell, each negative plate in one cell being independently connected to a positive plate in the adjoining cell, both located in the same plane, whereby any pair of plates may be removed without disturbing the remaining parts of the element.

2. The combination of two inclosing-cells and two or more couples, each couple formed from one integral sheet, plate, or casting of metal, the two sections being located in two cells, respectively, but in one and the same plane.

383,194. TANK. NILS SODERBERG, Chicago, Ill. Filed Nov. 18, 1887. Serial No. 255,511. (No model.)

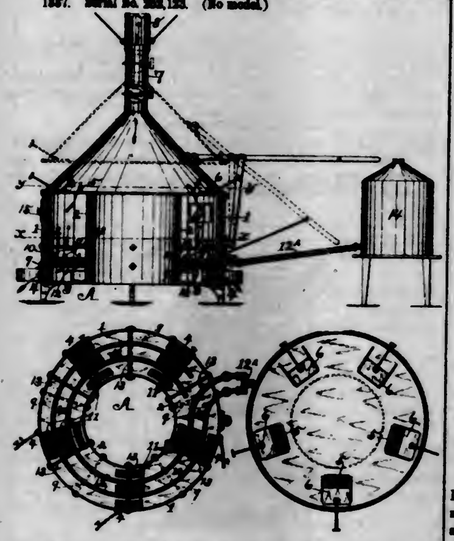


Claim.—1. The combination, with a tank, of a retaining-hoop and a filling interposed between the two, having its inner side formed with vertical grooves, substantially as and for the purpose set forth.

2. The combination, with a tank, of a retaining-hoop and a wooden filling interposed between the two, formed with an extension over the hoop to protect it from the overflow, substantially as and for the purpose set forth.

3. The combination, with a tank, of a retaining-hoop and a wooden filling-piece between the hoop and tank, formed with grooves in its inner side, and having its outer edge extended over the hoop to protect it, substantially as and for the purpose set forth.

383,195. TIRE-HEATER. JAMES O. STEBBINS, Oswego Falls, N. Y., assignor of one-half to Edward H. Crandall, same place. Filed Oct. 12, 1887. Serial No. 252,123. (No model.)



Claim.—1. A tire-heater consisting of a circular fire-place, a grate having walled perforations, and perforated fuel-pipes upon the grate, substantially as described.

2. A tire-heater consisting of a circular fire-place, a grate perforated with walled openings, perforated fuel-pipes upon the grate, and draft-doors, substantially as described.

3. A tire-heater consisting of a circular fire-place, a grate having walled perforations, perforated fuel-pipes, draft-doors, and heat-regulating dampers in the cowl, substantially as described.

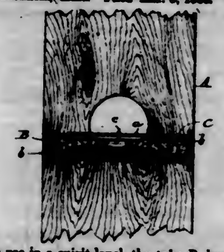
4. In a tire-heater, the combination of a cowl provided with heat-dampers with the fire-place, substantially as described.

5. In a tire-heater, the combination, with the outer wall, of observation-doors therein above the fire, substantially as described.

6. The combination, with the furnace and cowl, of the lifting-lever, substantially as described.

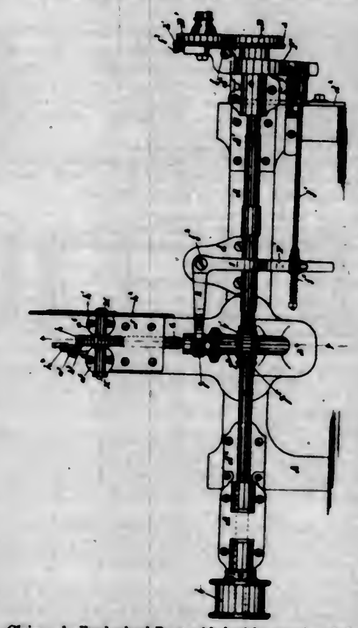
7. A tire-heater provided with two or more perforated fuel-pipes arranged in circular form and having regulating-valves and connecting with a single feed-pipe, substantially as shown and described.

383,196. SPIRIT-LEVEL. EDWIN A. STRATTON and CHARLES H. STRATTON, Greenfield, Mass. Filed Mar. 5, 1888. Serial No. 266,142. (No model.)



Claim.—For use in a spirit-level, the tube B, having the bead *c*, mounted on a wire, *a*, secured to said tube, said bead being made adjustable longitudinally of the tube, substantially as shown and described.

383,197. RATTAN-MEASURING MACHINE. EDWARD L. TAFT and CHARLES L. JONES, Gardner, Mass., assignors to Heywood Brothers & Co., same place. Filed Apr. 11, 1887. Serial No. 234,457. (No model.)



Claim.—1. Feed-wheel D, provided with gear *d*, and feed-wheel *D'*, provided with gear *d'*, in combination with pointer *N*, dial *M*, and means, substantially such as described, for connecting the feed-wheels and pointer, the gears *d d'* meshing together, and all arranged and operating substantially as described.

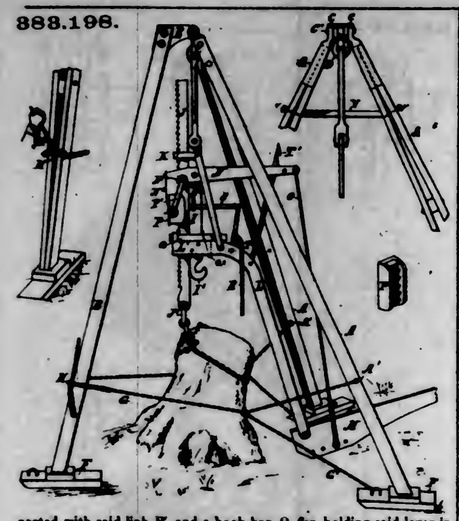
2. Feed-wheel D, provided with a gear, *d*, in combination with feed-wheel *D'*, provided with gear *d'*, and mounted on a lever, *F*, in combination with pointer *N*, dial *M*, and means, substantially such as described, for connecting the feed-wheels and pointer, all arranged and operating substantially as set forth.

3. Feed-wheels D *D'*, pointer *N*, dial *M*, and means, substantially such as described, for connecting the feed-wheels and pointer, in combination with a bell-hammer, *M'*, all arranged and operating substantially as and for the purpose set forth.

383,198. STUMP-PULLER. ROBERT B. THOMSON and PHILANDO WALKER, Benning, Minn. Filed July 28, 1887. Serial No. 245,203. (No model.)

Claim.—1. In a stump-puller, the combination of a support, a rack-bar, J, and a sliding pawl, Q, for holding the rack-bar in place, with a notched pawl, P, engaging the rack-bar J, a lever, N, connected by a link, P', with said pawl P and having a projecting end, N', provided with a spring, N², which engages with the pawl P, a lever, N, connected with said link P', and a hook-bar, O, for holding said lever in position, substantially as herein set forth.

383,198.



2. In a stump-puller, the combination of a bar, I, supported by a tripod, a rack-bar, J, connected to said bar by suitable keepers, K, and a sliding pawl, Q, for holding the rack-bar in place, with a pawl, P, engaging the rack-bar, a lever, N, connected by a link, P', to said pawl P and having an extension, N', provided with a spring, N², which engages with the notched pawl P, a lever, M, connected with said lever N, and a hooked bar, I, for holding said lever M in any desired position, substantially as herein set forth.

3. In a stump-puller, a support, a rack-bar, J, a sliding pawl, Q, for holding the rack-bar J in place, and a notched pawl, P, engaging with the rack-bar J and supported by a link, P', attached to a lever, N, having a projecting end, N', provided with a spring, N², which engages with the notched pawl P, in combination with a hand-lever, R, having a hinged arm, S, for simultaneously throwing the notched pawl and sliding pawl out of engagement with the rack-bar, substantially as herein set forth.

4. In a stump-puller, the tripod for supporting the pulling mechanism, having suitable shoes, F, in combination with chains G near the bases of the supporting-bars, which pass from one bar to the other and from the shoes, with a hooked lever, H, on one of the bars for tightening the chains, substantially as herein set forth.

383,199. INKSTAND AND FRAME. CHARLES VERRIN, New York, N. Y. Filed Feb. 4, 1888. Serial No. 263,263. (No model.)



Claim.—1. The combination, with the frame B, of the ink-bottle A, spring-catch E, cover G, and the arm D, rigidly secured to the spring-catch E, and projecting into a slot, *f*, in the frame B, substantially as shown and described.

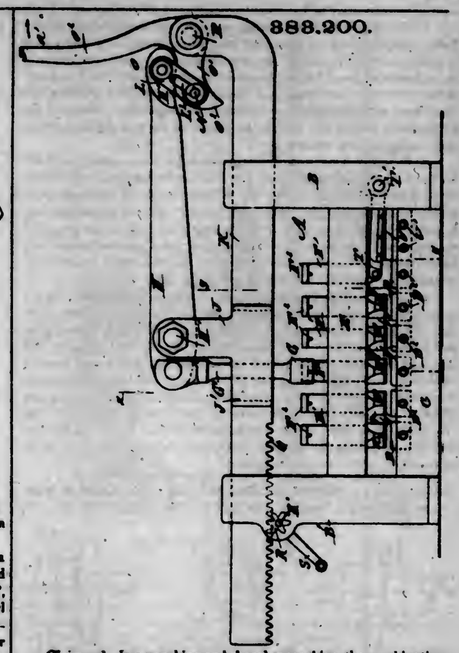
2. The spring-catch E, having the arm D rigidly secured to the said catch, substantially as described.

3. The casing F of the ink-bottle formed with the tongues *g*, in combination with the spring-catch E and arm D, rigidly secured to said catch, substantially as described.

4. The casing F, formed with the tongues *g*, in combination with the frame B, slotted at *f* and beveled at the front edge, the cover G, the spring-catch E, and arm D, rigidly secured to the said spring-catch and projecting into said slot, substantially as described.

383,200. PUNCHING AND SHEARING MACHINE. CLARK WEBER and HENRY SEEMANN, Parker, Dak. Filed Dec. 27, 1887. Serial No. 259,595. (No model.)

383,200.



Claim.—1. In a punching and shearing machine, the combination, with a series of different-sized punches and corresponding dies, of a holder adapted to engage successively the heads of the said punches, a lever for operating the said holder, a longitudinally-sliding bar on which the said lever is fulcrumed, and means for operating said bar, substantially as shown and described.

2. In a punching and shearing machine, a series of different-sized punches, corresponding dies, a shear-block, and a shear-arm, in combination with a holder adapted to engage successively the heads of the said punches, and also the head of the shank pivotally connected with the said shear-arm, a lever for moving the said holder up and down, and a bar adapted to slide longitudinally, and on which the said lever is fulcrumed, substantially as shown and described.

3. In a punching and shearing machine, a series of different-sized punches, corresponding dies, a shear-block, and a shear-arm, in combination with a holder adapted to engage successively the heads of the said punches, and also the head of the shank pivotally connected with the said shear-arm, a lever for moving said holder up and down, and a bar adapted to slide longitudinally, and on which the said lever is fulcrumed, and a bell-crank lever fulcrumed on the said sliding bar and connected with the long arm of said lever, substantially as shown and described.

4. In a punching and shearing machine, the combination, with a frame provided with standards, of a bar held to slide longitudinally in the said standards, a bell-crank lever fulcrumed on the said bar, a lever pivotally connected with the said bell-crank lever, and also fulcrumed on the said bar, a link connected with the said lever, and a holder held on the said link and adapted to engage the heads of the punches and the shear-arm to be operated on, substantially as shown and described.

5. In a punching and shearing machine, the combination, with a frame provided with standards, of a bar held to slide longitudinally in the said standards, a bell-crank lever fulcrumed on the said bar, a lever pivotally connected with the said bell-crank lever, and also fulcrumed on the said bar, a link connected with the said lever, a holder held on the said link and adapted to engage the heads of the punches and the shear-arm to be operated on, and a rack formed on the said bar, a pinion meshing into the said rack, and a crank-arm turning the said pinion, substantially as shown and described.

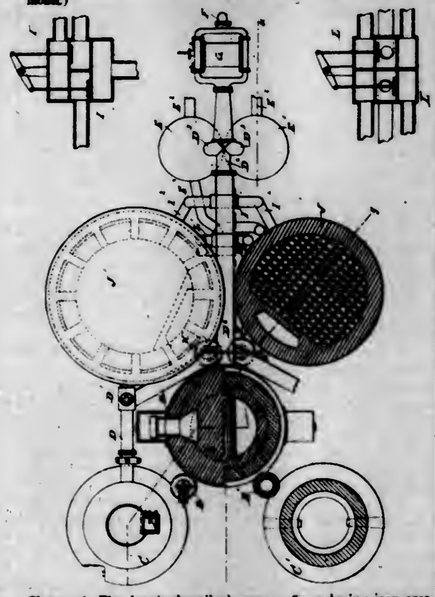
6. In a punching and shearing machine, the combination, with a frame provided with a longitudinal beam having a series of apertures, of shanks held to slide vertically in the said apertures of the said beams and carrying the punches, a shoulder formed on each of the said shanks, and a spring secured on the said beam and engaging with its free end the said shoulder so as to hold the said shank in its uppermost position, substantially as shown and described.

7. In a punching and shearing machine, the combination, with a frame provided with an apertured longitudinal beam, of a shank held to slide vertically in one of the said apertures, a shear-arm pivotally connected with the said shank and fulcrumed on the said frame, a shear-block held on the said frame and operating in connection with the said shear-arm, and a spring secured to the said longitudinal beam and engaging with its free end a shoulder formed on the said shank, substantially as shown and described.

8. In a punching and shearing machine, the combination, with the bar K, a sliding punch-shank, and a holder for engaging said shank, of the lever H, pivoted to the bar K and having its short arm connected to said holder, the bell-crank lever O, pivoted to the said bar K and having its short arm O' projecting under and resting against the long arm of the lever H, and the slotted link L, pivoted to the long arm of the lever H and to the short arm of the bell-crank lever O, substantially as herein shown and described.

9. In a punching and shearing machine, the combination, with a shank having a head and adapted to slide vertically in suitable bearings, of a holder adapted to engage the said head, a link carrying the said holder, a lever pivotally connected at its short end with the said link, a slotted link pivotally held on the long end of the said lever, a bell-crank lever carrying on one of its arms a bolt engaging the slot of the said slotted link, said arm of the said bell-crank lever being also adapted to engage with its curved edge the curved bottom of the long end of the said lever, and a bar adapted to slide longitudinally and carrying the pivots for the said bell-crank lever and the said lever, substantially as shown and described.

383,201. PROCESS OF REDUCING IRON ORES. GUSTAF M. WERMAN, Stockholm, Sweden. Filed July 22, 1887. Serial No. 245,097. (No model.)

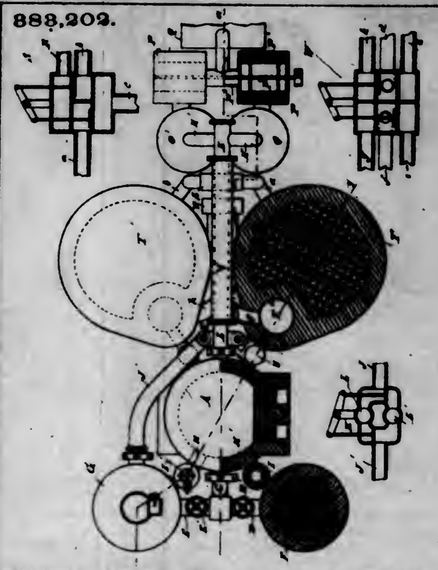


Claim.—1. The herein-described process for reducing iron ores by means of carbonic oxide, which consists in passing heated carbonic oxide through a charge of iron ore, drawing off the gases from the charge and passing them over glowing coke, then superheating these gases, after which they are again passed over or through the ore to be reduced, substantially as shown and described.

2. The herein-described process for reducing iron ores by means of carbonic oxide, which consists in passing heated carbonic oxide through a charge of iron ore, drawing off the gases from the charge and passing them over glowing coke, cooling the gases, as described, then superheating these gases, after which they are again passed over or through the ore to be reduced, substantially as shown and described.

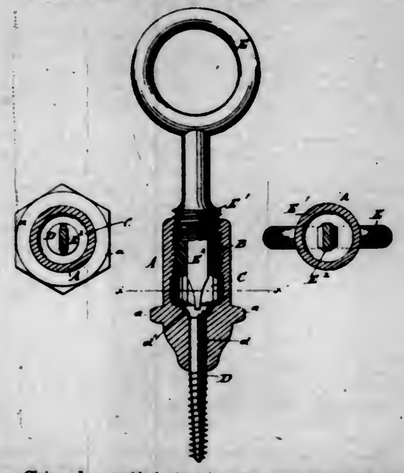
383,202. PROCESS OF REDUCING ZINC ORES. GUSTAF M. WERMAN, New York, N. Y. Filed Oct. 21, 1887. Serial No. 252,974. (No model.)

Claim.—The herein-described process of reducing zinc ores, consisting of subjecting the zinc ores in mixture with coal to the action



of highly-heated carbonic oxide, condensing the zinc from the outgoing carbonic oxide, and subsequently reheating and returning the gas through the charge, substantially as shown and described.

383,203. MOLDER'S DRAW-IRON. GEORGE A. WHITE, Sharon, assignor of one-half to William Henry Bunce, Canton, Mass. Filed Apr. 4, 1887. Serial No. 233,582. (No model.)

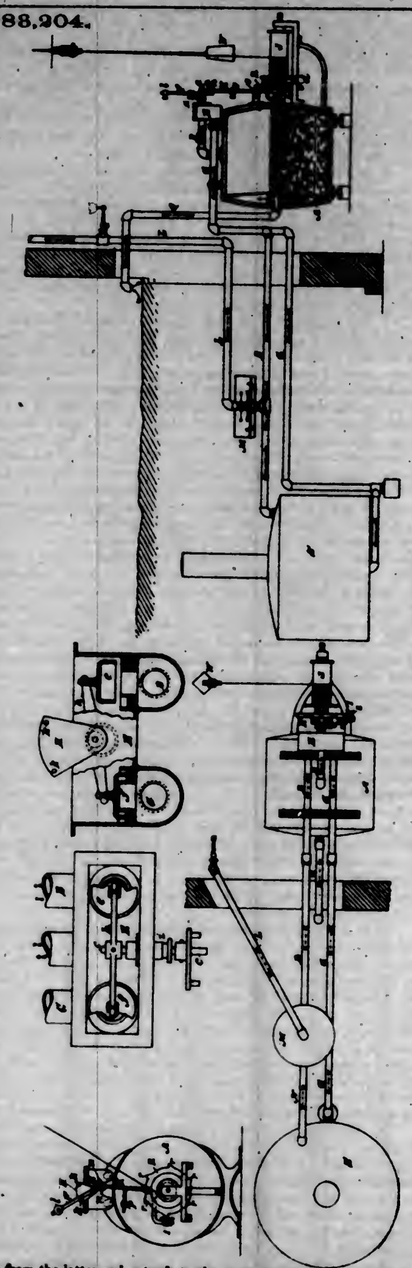


Claim.—In a molder's draw-iron, the combination, with the internally-threaded thimble having a removable wood-screw projecting therethrough, of the handle having a threaded shank provided with a socket, and a detachable screw-driver fitting in said socket and engaging the screw, substantially as set forth.

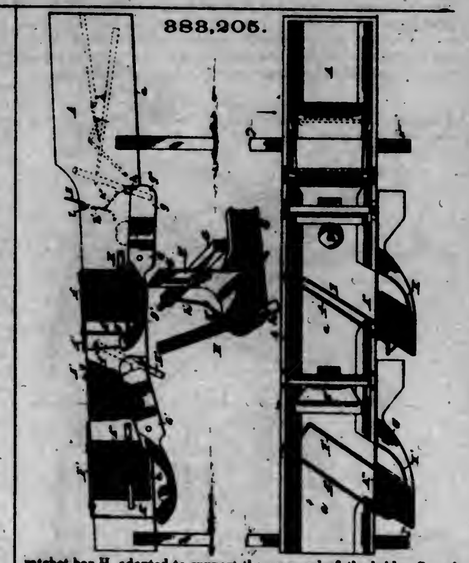
383,204. CARBURETOR. JAMES P. WILSON, Newark, N. J. Filed Jan. 18, 1886. Serial No. 189,015. (No model.)

Claim.—The combination of a pumping mechanism, a carburetor or generator, a pipe supplied with air from the pumping mechanism and extending to the carburetor or generator, a mixing-chamber, a pipe extending from the carburetor or generator to the mixing-chamber, a pipe supplied with air from the pumping mechanism and extending to the mixing-chamber, a measuring apparatus arranged between the pumping mechanism and that pipe which is supplied with

383,204.



383,205.



air from the latter and extends to the generator, and a measuring apparatus arranged between the pumping mechanism and that pipe which is supplied with air from the latter and extends to the mixing-chamber.

383,205. DEVICE FOR CHASING CRADLES. ALFRED AYER, Lake Weir, Fla. Filed Mar. 14, 1887. Serial No. 230,763. (No model.)

Claim.—1. The combination, with the trough A and the tripping-lever E, pivoted thereto, of the bridge G, pivoted to the side of the trough and having its rear end, *g*, heavier than its front end, *g'*, the ratchet-bar H, adapted to support the rear end of the bridge G, and means, substantially as described, connecting the tripping-lever E with the ratchet-bar H, whereby the forward motion of the lower end of said lever releases the rear end of the bridge and allows the same to drop, substantially as and for the purpose set forth.

2. The combination, with the trough A, having the opening A^1 in its side, of the guard F, pivoted to the trough, the pivoted bridge G, having its front end connected with the guard F and adapted when depressed to raise the guard to a horizontal position, the ratchet-bar H, pivoted to the trough and adapted to support the rear end of the bridge, and the tripping-lever E, pivoted to the trough and connected with the ratchet-bar H, whereby the forward motion of the lower end of the lever releases the rear end of the bridge, raises the lower end thereof, and allows the guard F to drop downward and obstruct the trough, substantially as and for the purpose set forth.

3. The combination, with the trough A, having the opening A^1 in its side, of the guard F, pivoted to the trough, the pivoted bridge G, having its front end connected with the guard and adapted when depressed to raise the same to a horizontal position, and the outer guard, K, adapted to insure the depression of the front end of the bridge upon the passage of an orange through the opening A^1 and over the bridge, substantially as and for the purpose set forth.

4. The combination, with the trough A, having a series of openings, A^1 A^1, &c., in its sides, of a series of pivoted tripping-levers, E, corresponding to said series of openings and having their lower ends separated from the bottom of the trough by spaces decreasing successively from the first to the last of the series, a series of transverse guards, F F', &c., pivoted to the trough and adapted when vertical to obstruct the same, means, substantially as shown and described, whereby each of the guards F F', &c., is held in a horizontal position, and means, substantially as shown and described, whereby the forward motion of the lower end of each of the tripping-levers causes the depression of the corresponding guard, substantially as shown and described.

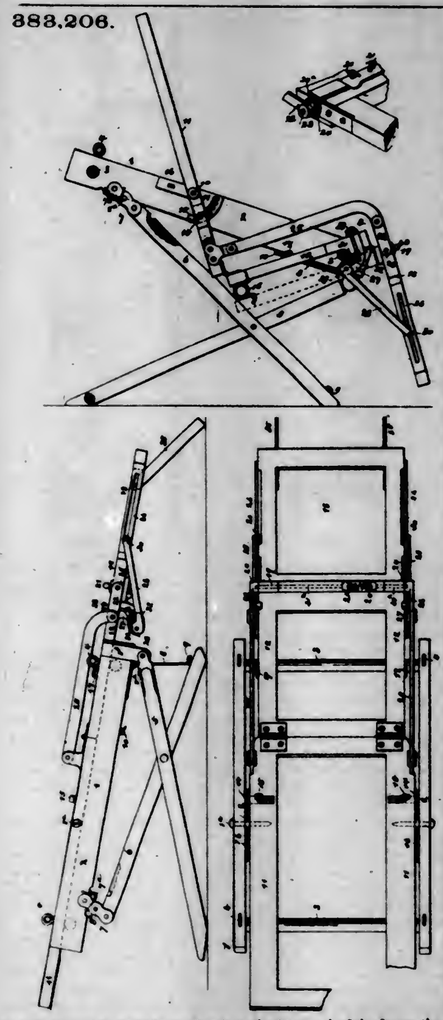
5. The combination, with the trough A, of the tripping-levers E, placed at unequal distances from the bottom of the trough, the pivoted guards F, the pivoted bridges G, connected with said guards respectively, the ratchet-bars H, adapted, respectively, to support the rear ends of said bridges, and means connecting the tripping-levers with the ratchet-bars, respectively, whereby the forward motion of each tripping-lever releases the rear end of the corresponding bridge and depresses the corresponding guard, substantially as and for the purpose set forth.

6. The combination, with the trough A and the pivot *e*, journaled therein, of the levers E, formed with the longitudinal slots *d'* and bolts passing through said slots and adjustably connecting the levers with said pivots, substantially as and for the purpose set forth.

383,206. ADJUSTABLE CHAIR AND SWING. CHARLES RAHTJEN, New Orleans, La. Filed Oct. 1, 1887. Serial No. 251,205. (No model.)

Claim.—1. The combination, with the supporting-frame, of the

383,206.



legs 5, pivoted at their forward ends to the front end of the frame, the legs 6, crossing the legs 5 and pivoted thereto, and the links 7, pivoted at their outer ends to the rear ends of the legs 6, and pivoted at their opposite ends to the rear end of the said chair-supporting frame, the links being of sufficient length to allow the legs 7 to fold upon the frame when their upper or inner ends are moved outward to their greatest extent, substantially as set forth.

2. In the supporting-frame of a folding chair, the combination, with the side pieces, 2, connecting cross-bars 3, and bow-springs 7ª in the rear under edge of the side pieces, of the legs 5, pivoted to the front of the side pieces, and cross-legs 6, pivoted to said legs 5, provided in their upper edge with a slot adapted to receive the bow-spring, a link, 7, connecting the legs and side pieces, and a transverse bar in said link adapted to engage the said spring, substantially as shown and described.

3. In the supporting-frame of a folding chair, the combination, with the side pieces, 2, connecting cross-bars 3, and a plate, 8, having a slotted extremity hinged to the under forward edge of the side pieces, of the legs 5, pivoted to the front of said side pieces, cross-legs 6, pivotally connected to the said legs 5, a link, 7, uniting the upper end of the legs 6 and the rear portion of the side pieces, and headed pin 9, secured in the lower ends of said legs 6, adapted for engagement with the slotted end of the hinged plate 8, substantially as shown and described, and for the purpose herein set forth.

4. In the supporting-frame of a folding chair, the combination, with the side pieces, 2, connecting cross-bars 3, eyes 4 upon the upper edges near the upper extremities of each side piece, and a bow-spring, 7ª, in the rear under edge of the same, of the legs 5, pivoted to the front edge of the side pieces, cross-legs 6, pivoted to the said legs 5 and provided with a slot to receive the spring 7ª, a link, 7, uniting the legs 6 and the cross-pieces, and a bar, 9ª, extending transversely the link, substantially as shown and described, whereby the legs may be folded upon the frame and the frame be suspended, if desired.

5. In a folding chair, the combination, with the back-section, the seat-section, and the foot-rest section hinged to each other, of a crank-arm, 22, pivoted to the upper edge of the foot-section, means for locking and unlocking the pivot-joint thereof, and a horizontal arm, 25, parallel with and above the side of the seat-section, said arm 25 being provided with one curved extremity pivoted to the crank, and pivoted at the opposite extremity to the base of the back-section, substantially as shown and described, whereby seat and foot-rest are manipulated in unison with the back, as set forth.

6. The combination, with the supporting-frame 1, consisting of the side pieces, 2, and cross-bars 3, and a segmental plate, 14, secured to said side pieces and provided with a series of apertures, of a chair-body consisting of a back-section pivoted in the frame, spring-bolts 15, sliding in said back, adapted to engage the apertures in said plates, a seat-section hinged to the back at the base, and a foot-rest section hinged to said seat, a crank-arm, 22, pivoted to the upper outer ends of the foot-section, means for locking and unlocking the pivot-joint thereof, and a horizontal connecting-arm having a curved end pivoted to the crank, and the opposite straight end pivoted to the back near the base between the locking-bolts and hinging-points of the seat, substantially as shown and described, and for the purpose herein set forth.

7. The combination, with the supporting-frame 1, consisting of the side pieces, 2, and cross-bars 3, and a segmental plate, 14, secured to said side pieces and provided with a series of apertures, of a chair-body consisting of a back-section pivoted in the frame, spring-bolts 15, sliding in said back, adapted to engage the apertures in said plates, a seat-section hinged to the back at the base, and a foot-rest section hinged to said seat, a crank-arm, 22, pivoted to the upper outer ends of the foot-section, a horizontal connecting-bar having a curved end pivoted to the crank, and the opposite straight end pivoted to the back near the base, and means for locking the crank-arm to the foot-rest, substantially as shown and described, and for the purpose herein set forth.

8. In a folding chair-body adapted to be pivoted in a supporting-frame, the combination, with the back-section, the seat-section, and the foot-rest section hinged one to the other, of a crank, 22, pivoted to the upper edge of the foot-section, a horizontal arm, 25, connecting the crank and the back near the base, a slotted rectangular plate, 26, secured to the side edges of the foot-rest, rearwardly-curved brackets 31, attached at the front side edge of the seat, supporting-arms 28, pivoted at one end to the brackets and provided at said end with a toothed edge and at the opposite end with a pin, 30, sliding in the slotted plate, and a spring-actuated pawl, 21, pivoted upon the brackets above the toothed arms 28, all operating substantially in the manner and for the purpose set forth.

9. In a folding chair-body adapted to be pivoted in a supporting-frame, the combination, with the back-section, the seat-section, and the foot-rest section hinged one to the other, of a crank, 22, pivoted to the upper edge of the foot-section, a horizontal arm, 25, connecting the crank and the back near the base, a slotted rectangular plate, 26, secured to the side edges of the foot-rest, rearwardly-curved brackets 31, attached at the front side edge of the seat, supporting-arms 28, pivoted at one end to the brackets and provided at said end with a toothed edge and at the opposite end with a pin, 30, sliding in the slotted plate, a spring-actuated pawl, 31, pivoted upon the brackets above the toothed arms 28, and a sliding rod, 33, pivoted to said pawl, all operating substantially in the manner and for the purpose set forth.

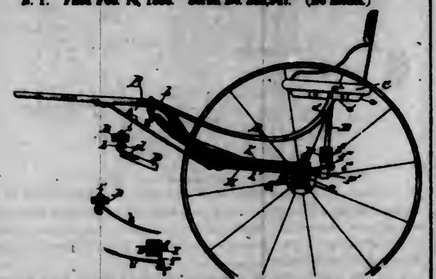
10. In a folding chair-body adapted to be pivoted in a supporting-frame, the combination, with the back, seat, and foot sections hinged one to the other, of a slotted plate, 26, secured longitudinally to the outer side edges of the foot-section, rearwardly-curved brackets secured to the outer and front side edges of the seat-section, supporting-arms 28, pivoted at one end to the brackets and provided at said end with a toothed surface, 29, and at the opposite end with a pin, 30, sliding in the slotted plate, a spring-actuated pawl, 31, pivoted upon the brackets above the toothed arms 28, and a sliding rod, 33, pivoted to said pawl, whereby it is released from the teeth 29, and means for retaining one section folded upon the other, substantially as and for the purpose set forth.

11. In a folding chair-body adapted to be pivoted in a supporting-frame, the combination, with the back-section, the seat-section, and foot-section hinged to each other, of a boxing, 19, inserted transversely the rear upper edge of the foot-section, provided with spring-actuated bolts 20 and 21, projecting from the ends, a crank-arm pivoted upon said ends provided with a slotted bean, 24, adapted to receive the said bolts, and a horizontal arm, 25, provided with one curved extremity pivoted to the crank, the opposing straight extremity being pivoted to the back a distance above the base equal to the length of the crank, substantially as shown and described.

12. The combination, with the frame, of the back pivoted thereto, a laterally-sliding bolt projecting through the side of the back to engage a locking-plate on the frame, operating-knobs extending from the bolt through opposite sides of the back, one knob being hooked, and the seat-frame hinged to the back to fold thereupon and provided with a staple, 17, to receive the said hook or catch-knob of the bolt, substantially as set forth.

13. The combination, with the frame and its folding legs, of the back pivoted in the frame and provided with laterally-sliding locking-bolts 15, having oppositely-projecting hooked knobs, the seat-frame hinged to the lower end of the back-frame to fold over upon the upper side thereof and having opposite staples 17, to receive said hooked knobs, and a spring-catch, 18, on its under side near its rear end, and the foot-section hinged to the seat-frame to fold against the under side thereof and engage the said spring-catch, whereby the back, seat, and foot frames or sections may all be folded within the frame and locked, substantially as set forth.

383,207. TWO-WHEELED VEHICLE. GEORGE BIRDS, Penn Yan, N. Y. Filed Feb. 14, 1888. Serial No. 263,947. (No model.)



Claim.—1. In a sulky, the combination of the seat, the supporting-bracket having pivot-bearings, the side braces, D, and T-pieces, and the main spring supported at the ends upon the ends of the shafts in the rear of the axle, as described.

2. The foot-board H, supported by bars loosely hooked to the back bar and by other bars loosely hooked to the spring-clips, the other ends of said bars being secured to the top and bottom boards correspondingly, as described.

383,208. DELIVERY. LEHMAN BIRDS, Philadelphia, Pa. Filed Feb. 16, 1888. Serial No. 264,177. (No model.)

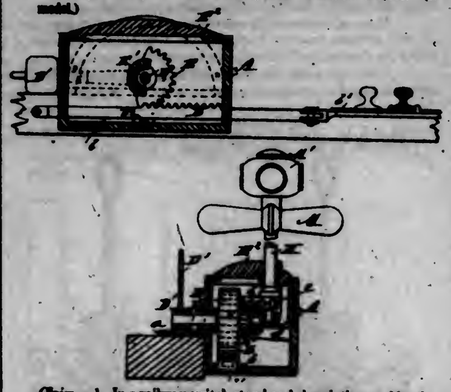


Claim.—1. The tubular bead formed at its ends with disconnected loops of the same thickness at their bends as the body of the bead, substantially as set forth.

2. The tubular bead bent back upon itself and its ends passed within the bend to form disconnected loops, substantially as set forth.

3. As an improved article of manufacture, the tubular bead A, having its ends looped and passed inwardly into the tubular body and an independent fastening to connect said loops, substantially as set forth.

383,209. RAILWAY SWITCH-STAND AND SIGNAL. NATHANIEL W. BOYD, Steelton, Pa. Filed Feb. 24, 1888. Serial No. 265,168. (No model.)

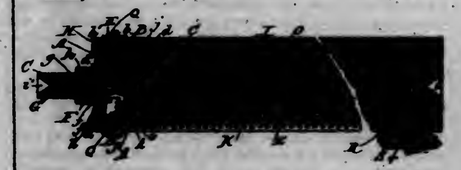


Claim.—1. In a railway switch-stand and signal, the combination, with a covered casing, a bar reciprocating longitudinally in the base of said casing, and a rock-shaft journaled transversely above the rock-bar, provided with a spur-gear and a beveled pinion upon the inner end and a weighted arm upon the outer end, of a vertical signal-shaft provided with a beveled pinion within the casing and a day and night signal upon the upper outer end, substantially as and for the purpose herein set forth.

2. In a railway switch-stand and signal, the combination, with a covered casing provided at the base with longitudinal spaced ribs and a transverse friction-roller, a rack-faced bar sliding upon said ribs and friction-roller, and a rock-shaft journaled transversely above the rack, provided with a spur-gear and bevel-pinion upon the inner end and a weighted arm upon the outer end, of a vertical signal-shaft carrying a bevel-pinion at its lower end and having a polygonal upper and outer end and a day and night signal secured thereon, substantially as and for the purpose herein set forth.

3. In a railway switch-stand and signal, the combination, with a single tie, a covered casing secured thereon, provided at the base with longitudinal spaced ribs and a transverse friction-roller, a rack-faced bar sliding upon said rib and roller, and a rock-shaft journaled transversely above the rack, provided with a spur-gear and bevel-pinion upon the inner end and a weighted lever upon the outer end, of a vertical signal-shaft carrying a bevel-pinion at its lower end, having a polygonal upper and outer end and a day and night signal secured thereon, substantially as shown and described.

383,210. AUTOMATIC FEED FOR BORING BARS. SAMUEL A. REYNOLDS, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,194. (No model.)



Claim.—1. The combination of the disk A, having the teeth *a*, and cam E, with the disk B, having the teeth *b*, and an adjustable contact-pin for the cam E, for engaging and disengaging the disks A B, substantially as and for the purposes specified.

2. The combination of the disk A, having the teeth *a*, and cam E, with the disk B, having the teeth *b*, and sliding rod D, carrying a contact-pin for the face of the cam E, substantially as and for the purposes specified.

3. The combination of the disk A, having the teeth *a*, cam E, sliding block F, with pin *f*, and spring G, with the disk B, having teeth *b*, and sliding rod D, having a contact-pin for the face of the cam E, substantially as and for the purpose specified.

4. The hollow spindle C and sliding rod D, having a pin, *d*, in combination with the clutch-disks A B and cam E, substantially as and for the purposes specified.

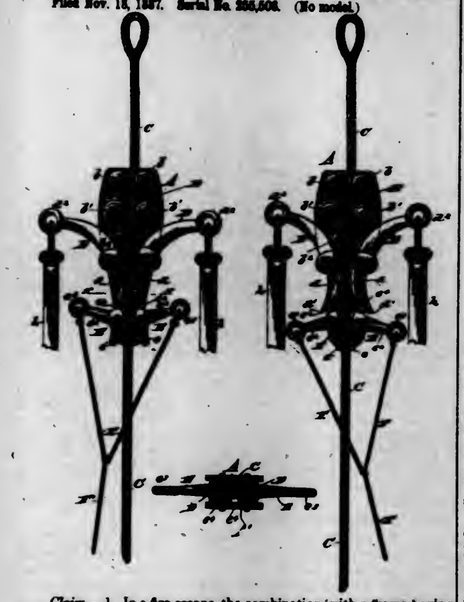
5. The hollow spindle C, sliding pin D, with pin *d*, sliding block F, with pin *f*, and spring G, in combination with the clutch-disks A B and cam E, substantially as and for the purposes specified.

6. The combination, with a feed-screw and a driving-gear therefor, of two clutch-disks, a cam, and a contact-pin for the cam for regulating the travel of the feed, substantially as specified.

7. The combination, with a feed-screw and a driving-gear therefor, of a movable rotating clutch-disk and a stationary clutch-disk for giving the desired feed, substantially as specified.

8. A driving clutch-disk and a driven clutch-disk, in combination with a cam and an adjustable contact-pin for the cam for regulating the travel of a feed-screw, substantially as specified.

383,211. FIRE-ESCAPE. HENRY R CALKINS, Hyndsville, N. Y. Filed Nov. 18, 1887. Serial No. 255,503. (No model.)



Claim.—1. In a fire-escape, the combination, with a frame having a series of friction-rollers pivoted therein near the upper end, of curved carrying-arms pivoted in said frame below the friction-rollers, with their convex edges inward, and angle trip-levers pivoted in said frame below the arms, each provided with a toe engaging the lower end of said arms, substantially as described.

2. In a fire-escape, the combination, with a frame having a series of friction-rollers pivoted near the upper end, of aligning curved carrying-arms pivoted below the friction-rollers, having their convex edges inward, and provided with a groove in said convex edges, and an eye at the outer ends, angle-levers pivoted below said arms, and a boss integral with the horizontal member, adapted to engage the lower end of the arms, substantially as described.

3. In a fire-escape, the combination, with a frame having a series of friction-rollers pivoted at the top, and a rope passing around said rollers and through the frame, of curved aligning carrying-arms pivoted at each side of the rope below the friction-rollers, having their convex sides inward, and provided with a groove in said edges adapted to receive the rope, and eyes at their outer extremities to receive the harness, angle-levers pivoted below said arms, a boss integral with the vertical members of said levers engaging the lower ends of the arms, said levers provided with an eye at the extremity of their horizontal members, and a rope secured to said eyes, substantially as and for the purpose herein set forth.

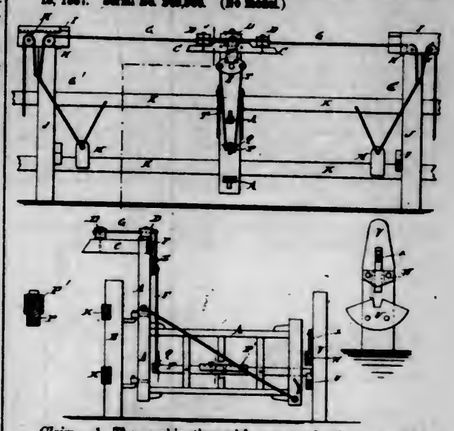
383,212. NUT-LOCK. ORLANDO I. CASTLE, Upper Alton, Ill., assignor to the Gordon Nut Lock Association, Lakeport, Cal. Filed Dec. 30, 1887. Serial No. 259,269. (No model.)

Claim.—In a nut-lock for railroad-rails, the combination of the arched spring-plate D, having enlarged apertures *e* at its ends and provided with projections *f* at the sides of the said apertures, the bolts C, the inflexible rings or washers *d*, of greater thickness than the spring-
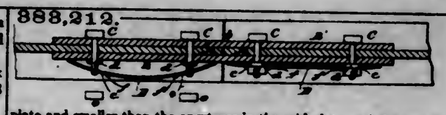


plate and smaller than the apertures in the said plate, and the nuts *c*, substantially as herein shown and described.

383,213. GATE. JESSE CHANDLER, Red Stone, Kans. Filed Sept. 13, 1887. Serial No. 249,503. (No model.)



Claim.—1. The combination, with a gate, of a three-armed lever on the end bar of the gate, a sectional latch, rods pivoted to the opposite arms of the said lever and loosely connected to the rear section of the latch, and ropes connected to the other arm of the said lever, substantially as described.

2. The combination, with a gate, of a three-armed lever pivoted to the rear end bar of the gate, a sectional latch provided with an apertured cross-bar on its rear section, rods pivoted to the opposite arms of the said lever and having their lower ends projecting through the apertures of the said cross-bar of the latch and provided with nuts thereon, and ropes attached to the upwardly-projecting arm of the said lever, substantially as herein shown and described.

3. The combination, with the gate A, of the three-armed frame C on the upper end of the end bar of the gate and provided with pulleys D, the lever E, pivoted to the end bar of the gate and provided with the upwardly-projecting arm F, the sectional latch P, provided with the cross-bar Q, having an aperture in each end, rods pivoted to the ends of the lever E and having their lower ends projecting through the apertures of the bar Q and provided with nuts thereon, and the ropes G, substantially as herein shown and described.

4. The combination, with the gate A and the operating cords or ropes G, of the uprights J, provided with the pulleys H, over which the operating cords or ropes pass, the cord G', secured to the operating-rope and to a support, and the weight M on said rope G', substantially as herein shown and described.

5. The combination, with a gate, of the sectional latch P and the slotted cap P', adjustably secured to the rear section of the latch and projecting over the front section of the said latch, substantially as and for the purpose set forth.

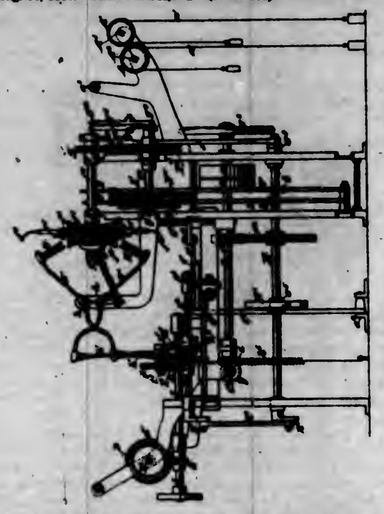
383,214. WHEEL FOR HAND-TRUCKS. MICHAEL J. CORRIGAN, New York, N. Y. Filed Jan. 23, 1888. Serial No. 261,662. (No model.)



Claim.—A wheel for hand-trucks, casters, &c., consisting of disks B B', provided with annular shoulders *b*, the shoulders having inclined slots or cavities E on their faces, the tapered key D, fitting in the slots

E, and the tire A, having transverse slots *d* on its inner face to register with the slots E and receive part of the key D when the disks are locked.

383,215. LOOM FOR WEAVING LOOM-HARNESS. FRED BECKMANN, Paterson, N. J., assignor to Paul A. Wagner, same place. Filed Aug. 30, 1887. Serial No. 248,304. (No model.)



Claim.—1. The combination, with the warp-carriers, harness, and the beaters or lays at opposite sides of the loom, of a centrally-arranged weft-carrier and rotary looper-arms, a pin around which the weft-threads from their spools or bobbins are carried and looped one into the other, shuttles carrying locking-threads at each side of the loom, and shuttle-carriers by which said locking-thread shuttles are advanced into the open shed, looped over the last weft-thread, and then withdrawn to pull the weft-thread into the shed, and mechanism, substantially as described, for operating the harness, the beaters or lays, the weft-carrier and its looper-arms, and the shuttle-carriers, substantially as herein set forth.

2. The combination, with the warp-carriers, harness, and beaters or lays at opposite sides of the loom, of a centrally-arranged rotary shaft carrying the weft-spools and looper-arms, a central head and pins protruding therefrom, around which the weft-threads are alternately looped one into the other, a rocker and a cam and cam-actuated lever for alternately withdrawing and projecting the pins, a pinion and sector through which the shaft is operated, and a crank and connecting-rod for rocking the sector, shuttle-carriers at the opposite warps, each having a shuttle adapted to carry a thread for looping around the weft-threads and drawing them into the warps, and mechanism, substantially as described, for operating the harness, the lays, the said crank, and the shuttle-carriers, substantially as herein set forth.

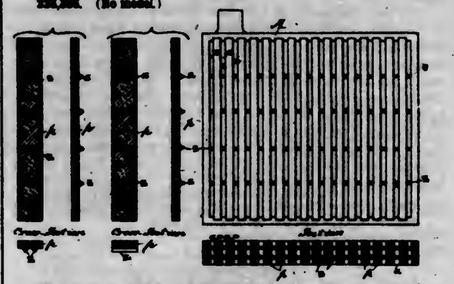
3. The combination, with the warp-carriers, the harness, and the lays at opposite sides of the loom, of the shaft with its looper-arm and weft-spool spindles, the pinion *g*, having a locking shoe or block, g^3, projecting beyond its periphery, and the sector F^3, having the locking-surface terminating in the notches g', the central head and its alternately-presented pins g', the shuttle-carriers at opposite warps, each having a shuttle adapted to carry a locking-thread for looping around the weft-threads and drawing them into the warps, and mechanism, substantially as described, for operating the harness, the lays, the said sector, the pins, and the shuttle-carriers, substantially as herein set forth.

4. The combination, with the warp-carriers, the harness, and the lays at opposite sides of the loom, of a center head and its alternately-presented pins, a rotary weft-carrier and looper-arms provided with tubes through which the weft-threads are conducted to their guides at the ends of the arms, shuttle-carriers at the warps, each containing a shuttle adapted to carrying a locking-thread for looping around the weft-threads and drawing them into the warps, and mechanism, substantially as described, for operating the harness, the lays, the reciprocating pins, the weft-carrier and looper-arms, and the shuttle-carriers, substantially as herein set forth.

5. The combination, with the warp-carriers, the harness, and the lays at opposite sides of the loom, of a center head and its alternately-presented pins, a rotary weft-carrier and looper-arms, shuttle-carriers at the warps, each containing a shuttle adapted to carry a locking-thread for looping around the weft-threads and drawing them into the warps, levers at opposite ends of which the shuttle-carriers are placed, each lever connected, as described, with shuttle-carriers which enter the two warps in opposite directions, rockers and a rock-shaft for operating said levers, and mechanism, substantially as described, for operating the harness, the lays, the pins, the weft-carrier, and the said rock-shaft, substantially as herein set forth.

6. The combination, with the warp-carriers, the harness, and the lays at opposite sides of the loom, of a center head and its alternately-presented pins, a rotary weft-carrier and looper-arms, shuttle-carriers at the warps, each consisting of a fork and each containing a shuttle having its opposite ends oblique in substantially parallel planes, and mechanism, substantially as described, for operating the harness, the lays, the reciprocating pins, the weft-carrier, the looper-arms, and the shuttle-carriers, substantially as herein set forth.

383,216. SECONDARY BATTERY. LUDWIG ELWERS, Martinikenfelde, near Berlin, Prussia, Germany. Filed Feb. 21, 1887. Serial No. 228,228. (No model.)

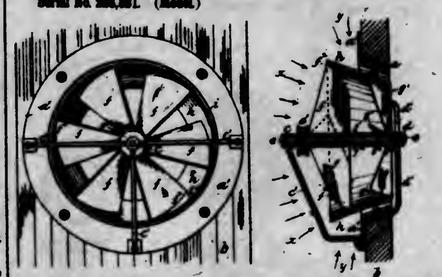


Claim.—1. An improved electrode for secondary batteries, the same consisting of a series of composite strips formed of the active material and metallic lead, as specified, the said strips being arranged at a suitable distance apart and connected by suitable means to form a grid, which is adapted to permit the free circulation of the electrolyte, as described.

2. An improved electrode for secondary batteries, the same consisting of a series of strips formed of the active material and metallic lead, suitably connected to form a grid, each such strip having lateral projections *s*, which serve to space it from its neighbor, as shown and described.

3. The improved electrode for secondary batteries hereinbefore described, the same being formed of a rigidly-connected series of cakes or plates composed of a foraminous body of active material and a filling of metallic lead, such composite electrode having a suitable non-conducting covering, such as varnish, as specified.

383,217. VENTILATING-WHEEL. EDWARD FOX, Brooklyn, N. Y., assignee of one-half to Patrick Reilly, same place. Filed Feb. 25, 1887. Serial No. 228,821. (Model.)



Claim.—1. The combination, with a fan-wheel composed of a peripheral shell and vanes located thereon, of a frame having an opening in which the wheel rotates, larger than the wheel, thereby forming an independent annular passage through which the air is drawn by the action of the column of air forced through the fan-wheel.

2. The combination, with a fan-wheel composed of a series of radially-inclined vanes and a casing surrounding them, of a frame of less depth than the wheel and provided with bearings in which the shaft of the wheel is held, said wheel being so located that the front or entrance end of the same projects beyond the frame and the rear or exit end is about in line with the rear end of the frame.

3. A fan-wheel composed of a series of inclined radial vanes and

a conical shell surrounding the vanes, in combination with a frame having a conical opening, said opening being considerably larger than the wheel, thus leaving an annular space between them, and bearings on the frame in which the wheel is held and rotated, substantially as set forth.

4. In a fan-wheel, in combination, a central shaft, two sets of vanes, and a shell surrounding them, the front or entrance set of vanes being formed with their central parts less inclined to the axis than their outer edges, and the rear or discharging vanes being formed with their outer edges less inclined to the axis than their central parts, substantially as set forth.

5. A fan-wheel composed of two sets of vanes secured to a central shaft, the rear set of vanes being of less diameter than the front set, and a conical shell secured to the outer edges of the two sets of vanes, in combination with a frame having an opening corresponding in shape with but larger than the conical shell and provided with bearings in which the shaft of the wheel is held, substantially as set forth.

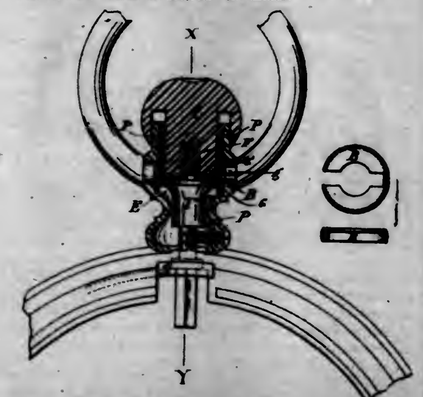
6. The combination of a conical fan-wheel having a set of vanes at its front or entrance end extending outside the wheel and having their working-angles greater at the center of the wheel than at the periphery, so as to concentrate the air in the central parts of the wheel, and a set of vanes located at and in line with the exit end of the wheel and having their working-angles greater at the periphery of the wheel than at the center, so as to spread out the column of air or discharge it laterally as it leaves from the wheel, with a frame having a conical opening larger than the outside of the conical wheel and provided with bearing-supports in which the wheel is held and rotated, substantially as set forth.

383,218. HOG-TRAP. JOSHUA H. GENTRY, Sheldon, Mo. Filed Dec. 21, 1887. Serial No. 258,663. (No model.)



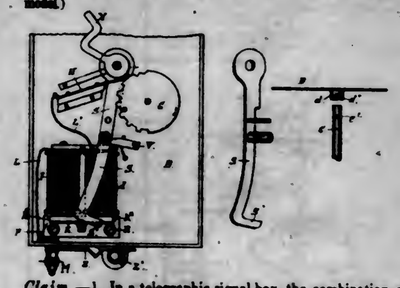
Claim.—A stock trap and holder consisting of the base-piece 1, having the recess 11 and perforations 15, slotted vertical bar 4, the inclined bar 3, having curved portion 14, the slotted cross-bar 5, connecting the bars 3 and 4 and having teeth 6, and the lever 8, having curved portion 14 and pawl 7, and the pivoted sliding bars 12, substantially as described.

383,219. WATCH-CASE PENDANT. HENRI GERBER, St. Trond, Switzerland, assignor to Ernest Francillon & Co., same place. Filed Dec. 16, 1887. Serial No. 258,093. (No model.)



Claim.—The combination, with the tubular pendant P, having the circular grooves G G', the stem T, having a head-piece, T', and neck E, and the crown C, connected to said stem, of the spring B, formed as a disk with a rim around its edge, the exterior surface of which is rounding, and having a transverse slot passing through the rim on one side, and having a central opening for the neck E, so that the parts are free to move as the spring is pressed by the crown endwise of the tubular grooved pendant, substantially as specified.

383,220. DISTRICT-TELEGRAPH CALL-BOX. JAMES R. GILL, San Francisco, Cal. Filed Sept. 30, 1887. Serial No. 250,966. (No model.)

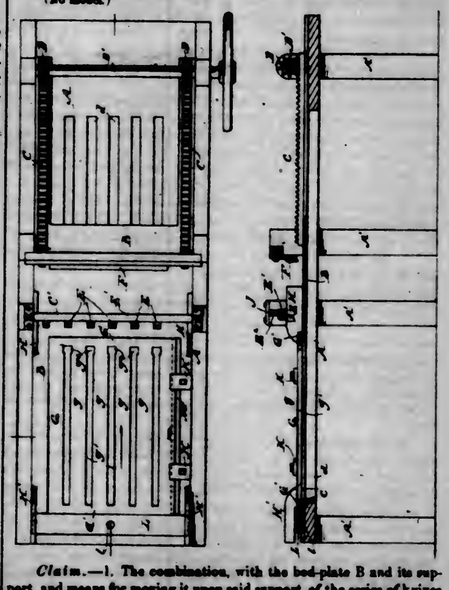


Claim.—1. In a telegraphic signal-box, the combination of an electro-magnet in a closed circuit, the shunting-circuit consisting of the connections P P, and armature K K, and mechanism under control of and actuated by the transmitting mechanism consisting of movable lever S, having foot S^{x}, the projecting hammer on the armature, and the knob W with its latch V, all arranged to enable the armature to be thrown away from the magnet and the circuit broken when the box is set in operation.

2. A telegraphic signal-box having an electro-magnet in a closed circuit, and a shunting-circuit consisting of connection P, plate R, and armature K, adapted to take the coils normally out of the main circuit, in combination with means described, consisting of movable lever S, having foot S^{x}, the projecting hammer on the armature, and the knob W with its latch V, whereby the shunting-circuit is broken and the magnet energized.

3. In a telegraphic signal-box, the combination of the magnet-armature K in a circuit, and the stop-lever S, of the transmitting mechanism having the bent end S^{x} set for operation with relation to the armature, as described.

383,221. MACHINE FOR PLANING STEREOTYPE-PLATES. LUCIUS GOSS, New York, N. Y. Filed Feb. 20, 1886. Serial No. 253,069. (No model.)



Claim.—1. The combination, with the bed-plate B and its support, and means for moving it upon said support, of the series of knives E for trimming the edges of the columns, substantially as described.

2. The bed-plate B, formed or provided with an offset or straight-edge, *m*, in combination with several trimming-knives, E, and means for moving the bed-plate, substantially as described.

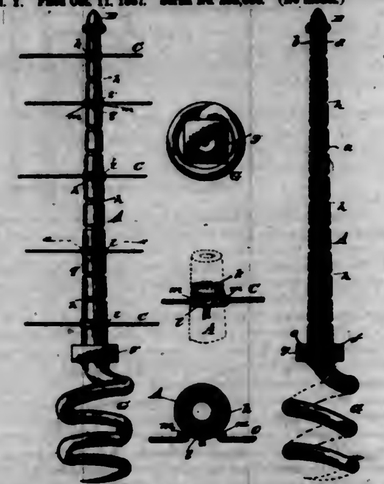
3. The cross-bar F, provided with several knives, E, held in vertical slots and acted upon by springs J, in combination with the bed-plate B, means for moving the same, and the cams H, substantially as and for the purposes set forth.

4. The cross-piece E, provided with several knives, E, in combination with the bed-plate, and means for moving the same, and the planing-knife F, substantially as described.

5. The bed-plate B, provided with clamps K and cams H H', in combination with the cross-bar F and several knives, E, substantially as described.

6. The combination, with the bed-plate B, several knives, E, and means for moving the bed-plate, of the shutting plate L, centrally pivoted to the bed-plate, substantially as and for the purposes described.

383,222. METALLIC FENCE. GEORGE H. GOSS, Three Mile Bay, N. Y. Filed Oct. 11, 1887. Serial No. 252,022. (No model.)



Claim.—1. An improved fence-post, consisting of the pillar or standard A, having a series of annular grooves, *k*, and the helical-shaped point G, secured to the lower end of the pillar or standard, substantially as described.

2. In the metallic fence, the combination of the pillar or standard A, having the series of grooves *k*, and provided with the helical-shaped point G, the wires C, having the loops or eyes *k* in the grooves of the pillar, and the loops *l*, connecting the necks of the said loops or eyes *k*, substantially as described.

383,223. COTTON-GIN. DANIEL R. HARRISON, Charleston, S. C. Filed Feb. 8, 1887. Serial No. 227,070. (No model.)

Brief.—The gin has two hoppers, between which revolves a cylinder carrying pivoted within it a series of frames provided with teeth, and the teeth are protruded while in the hoppers, then gradually withdrawn while passing the seed-bars, and then fully withdrawn to drop the cotton. The pivoted frames are connected by rods, which at each end extend into cam-grooves in plates at the ends of the gin, the frames being thereby actuated.

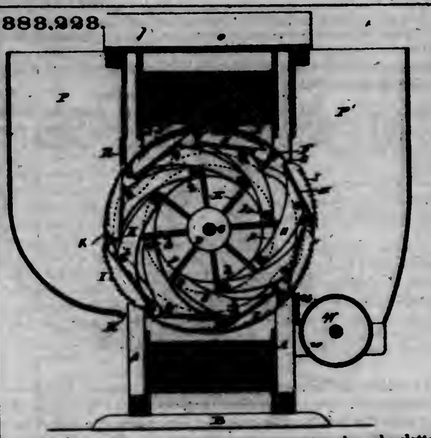
Claim.—1. A ginning-cylinder of slotted sheet metal, a shaft and ends for such cylinder, in combination with frames within the cylinder, pivot-bars for connecting the frames to the cylinder ends, ranges of teeth connected with the frames and in line with the slots, and stationary cams acting upon the frames to swing them and project and withdraw the teeth, substantially as specified.

2. The shaft C, slotted cylinder G, and the ends thereof, in combination with the frames H, pivot-bars A, to connect the frames to the cylinder ends, and ranges of teeth I upon the frames, the cross-bars L in the respective frames, and the cams M for acting on the ends of the cross-bars, substantially as specified.

3. The combination, with the slotted ginning-cylinder, the ranges of teeth, the frames carrying the same, the cams for projecting and withdrawing the teeth, and the two supply-hoppers, of the belts S' and T' to carry away the cotton as the teeth are withdrawn from the same and the chute T, substantially as specified.

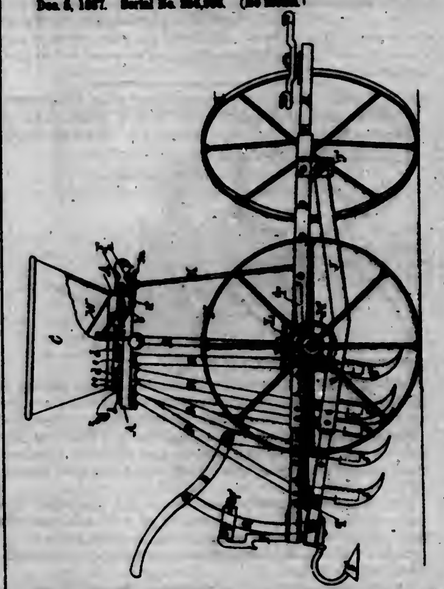
4. The combination, with the slotted cylinder, its ends and shaft, of frames within the cylinder, ranges of teeth thereon that are projected through the slots, the frames extending forwardly at their ends, and pivot-bars for connecting the end pieces of the frames, and cams for moving the frames and ranges of teeth, substantially as specified.

383,223.



5. The combination, with the breast in a cotton-gin, and a slotted ginning-cylinder having a shaft and ends, of frames pivoted to the cylinder ends, and ranges of teeth on the frames, and cams having three sets of steps that project the teeth to take the cotton and partially withdraw the same as they pass the breast and then completely withdraw the teeth to discharge the cotton, substantially as specified.

383,224. DRILL-PLOW. CHRISTIAN HERRMANN, Langen, Switzerland, assignor to himself and Arnold Doherty, San Francisco, Cal. Filed Dec. 6, 1887. Serial No. 256,956. (No model.)



Claim.—1. The head-piece A, with conical bottom A', circular groove *c*, in combination with a stirring-wheel, B, moved by means of a connection to the wheels H, and with a hopper, C, and cover W, substantially as shown and described, and for the purpose specified.

2. The combination of head-piece A with the tubes E, frame D, removable prolongation-tubes S, connected to the frame D, and movable frame J, and the hollow shares S', connected to the frame J and corresponding to the tubes S, substantially as shown and described, and for the purpose specified.

3. The combination of frame J with bolts J' and Q', rod Q, lever O, bearing P, loop *p*, and screw *p'*, substantially as shown and described, and for the purpose specified.

4. The combination, with the seed-tubes E and shares S', of the hopper C, the revolving stirring-wheel B within the hopper, the bottom

A' below the stirring-wheel, and the cover W above the same, there being an opening between the cover and the inside of the hopper, and holes through the base of the hopper and above the seed-tubes R, substantially as set forth.

383,225. PRESSURE-REGULATOR. ARNIM G. HOHENSTEIN, Brooklyn, N. Y., assignor to the Hohenstein Manufacturing Company, Newark, N. J. Filed Sept. 10, 1887. Serial No. 249,294. (No model.)



Claim.—1. The combination, with a pair of integrally-formed communicating cylinders, one cylinder being connected with a supply pipe or main and the other cylinder with a service-pipe, of a shut-off valve in one cylinder and a pressure-regulator in the other, substantially as set forth.

2. The combination, with a pair of integral cylinders having a communicating passage, one cylinder being connected with a supply pipe or main and the other cylinder with a service-pipe, of a shut-off valve in one cylinder and a pressure-regulator in the other, the latter having an annular chamber therein adjacent to the communicating passage, substantially as set forth.

3. The combination, with a pair of integrally-formed cylinders having a communicating passage, one cylinder being connected with a supply-pipe and the other cylinder with a service-pipe, of a shut-off valve in one cylinder, a pressure-regulator in the other, and screw-caps in each of these cylinders, whereby they may be opened and cleaned, substantially as set forth.

383,226. AUTOMATIC PRESSURE-REGULATOR AND SAFETY-VALVE. ARNIM G. HOHENSTEIN, Brooklyn, N. Y., assignor to the Hohenstein Manufacturing Company, Newark, N. J. Filed Sept. 13, 1887. Serial No. 249,563. (No model.)



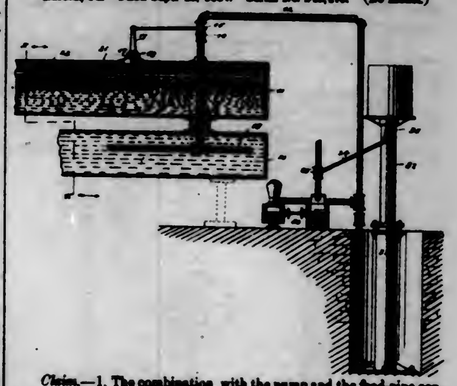
Claim.—1. The combination, with a balanced valve adapted to move away from its seat by its gravity, of a safety-valve located between the supply-pipe and balanced valve, and constructed and arranged to automatically shut off the supply of gas to the balanced valve when the pressure in the supply main or pipe falls below a predetermined amount and remain closed until opened manually, substantially as set forth.

2. The combination, with a gas main or pipe, of a safety-valve constructed to be upheld by the pressure of gas in the main, said valve being provided with suitable passage or port to convey gas to the upper ends of the valve to hold it against its seat when the valve is closed, substantially as set forth.

3. The combination, with a valve-chamber having inlet and outlet ports, and a balanced valve adapted to move away from its seat by its gravity, and having a conical valve at one end and an annular chamber at a point above said conical valve, the said annular chamber adapted to register with the inlet-port, of a safety-valve interposed between the supply-pipe and inlet-port to balanced valve and adapted to automatically shut off the supply of gas to the balanced valve when the pressure in the supply main or pipe falls below a predetermined amount and remain closed until opened manually, substantially as set forth.

4. The combination, with a single casting having two communicating cylinders, of a balanced valve located in one of said cylinders and adapted to move away from its seat by gravity, and a safety-valve located within the other cylinder and between the supply-pipe and balanced valve, and constructed and arranged to automatically shut off the supply of gas to the balanced valve when the pressure in the supply main or pipe falls below a predetermined amount, substantially as set forth.

383,227. BOILER-FEEDING ATTACHMENT. MORRIS P. JARNEY, Boston, Pa. Filed Sept. 12, 1887. Serial No. 249,473. (No model.)

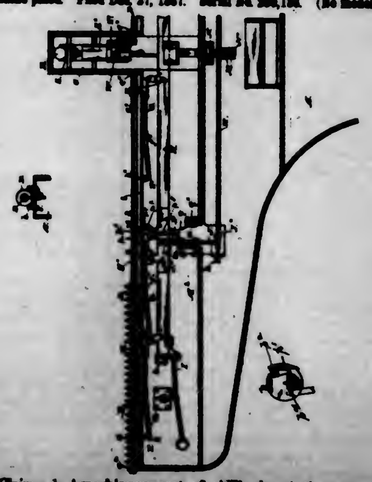


Claim.—1. The combination, with the pump and the feed-pipe connected with the pump and provided with a cock or valve at one side of its connection with the pump, of an accumulator connected with the throttle of the pump and with said feed-pipe at its end opposite the cock or valve, whereby when the feed-pipe valve or cock is closed the force of water in the feed-pipe causes the accumulator through its connections to operate the pump-throttle, substantially as set forth.

2. The combination, with the boiler, the pump and the feed-pipe connected between its ends with the pump and having a valve near its delivery end and a float within the boiler for operating the valve, of an accumulator connected with the throttle of the pump and with the opposite end of the feed-pipe, whereby after the float has automatically closed the feed-pipe valve the force of water in the feed-pipe will cause the accumulator to operate the pump-throttle, substantially as set forth.

3. In a boiler-feeding attachment, the combination, with an accumulator and a pump, of a connection between the accumulator and the throttle of the pump, a feed-pipe, a valve located in the feed-pipe and provided with a lever-arm, a lever, 17, mounted upon a rock-shaft, connection between said lever and the valve-lever, a bifurcated lever connected to the rock-shaft and extending downward within the boiler, and a float pivotally mounted between the arms of the bifurcated lever, substantially as described.

383,228. COIN-ACTUATED BILLIARD-MARKER. EDWARD C. JONES, San Francisco, Cal., assignor of one-half to William J. Gleason, same place. Filed Dec. 27, 1887. Serial No. 259,136. (No model.)



Claim.—1. A marking apparatus for billiards and other games having sliding counters or buttons movable on a rod in a grooved run or way, and a locking mechanism in combination therewith, consisting of locking-dogs B on the ends of levers working through slots in the run, a balanced bar to which said levers are attached to be moved and locked by it, a rock-shaft, K, connected with and adapted by its movement to depress said bar, the balanced lever M, which is adapted, when depressed, to turn the rock-shaft, and a set of actuating-balls, and mechanism whereby the same are released one by one and caused to overbalance and depress the said lever by gravity, substantially as hereinbefore described.

2. The combination, with a string of buttons or markers, of the slotted run *b*, locking-dogs B on levers G, balanced bar H, rock-shaft K, connecting crank-arm and slide-bolt, tilting lever M, and means, substantially as described, for operating said lever and its rock-shaft, consisting of a set of balls in a trough or chute above the lever, a ball-tray on the end of the lever, and mechanism acted upon by a coin and set in motion by its weight to release one ball and drop it into the lever-tray at each time of action, substantially as described, to operate as set forth.

3. In combination with locking-levers G, the balanced bar H, its operating rock-shaft K, and the holding-down device, consisting of the disk *p*, with yielding dog *p'*, and the spring-lever P, having a boot foot and the notched bolt or rod, substantially as described, to operate as set forth.

4. The combination, with the run or way for the sliding buttons, of the locking-dogs having inclined faces on pivoted levers G, the balanced bar H, and the rock-shaft K, connected to said balanced bar and adapted by its movement to depress said bar and draw in the dogs below the run *b*, substantially as described.

5. The balanced lever $W^{\times}$, having the coin-receiver W and the stops w^2 and w^3, and the pivoted gate T, having the slot t^2, in combination with the inclined ball trough or chute S, substantially as herein described, to operate as set forth.

6. The combination, with the pivoted gate T, having the slot t^2, of the balanced lever $W^{\times}$, having stops w^2 w^3, substantially as described, to operate as set forth.

7. In combination with the tilting lever M, which is part of mechanism to be actuated or set in motion, a set of balls, R, in an inclined trough, the ball-controlling gate T, the stop-gate U and operating-lever, and the coin-actuated lever $W^{\times}$, adapted to lock the gate T when elevated and to release it when depressed to a given point, substantially as described, for operation as set forth.

8. The combination of a suitable case having a coin slit and chute, S, the coin-actuated lever W $W^{\times}$, having the stops w^2 w^3, ball-trough S, gate T, having the slot t^2, stop-gate U, and lever adapted to control the discharge of the balls and release one at a time from a given movement of the coin-actuated lever, substantially as described.

9. The combination, with the chute S and balls R and the coin-receiver W, of a coin-ejector consisting of the push-plate rod having its end set in the path of the discharged ball to be struck by it, and the spring, substantially as described, for operation as set forth.

383,229. TWO-WHEELED VEHICLE. HENRY W. JOHNS, Ottawa, Ill. Filed Feb. 7, 1888. Serial No. 263,241. (No model.)



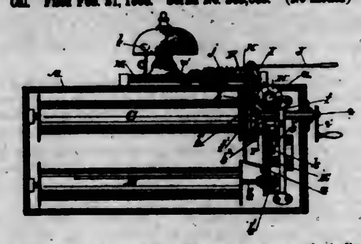
Claim.—1. In a two-wheeled vehicle, the combination, with a vehicle-body, an axle, and shafts attached to the axle, of two elliptical plate-springs and two compensating springs that are secured to the shafts by their front ends, to the elliptic springs by their rear ends, and between these ends to the body of the vehicle, substantially as set forth.

2. In a two-wheeled vehicle, the combination, with an axle that is provided with spindles on its ends and shafts that are attached by their rear ends to the body of the axle, of a vehicle-body, two elliptical plate-springs secured fixedly to the vehicle-body, and also to the axle, and two curved compensating springs which are adapted to give elastic support to the body by their attachment to said body, and also to the cross-bar of the shafts and the forward ends of the elliptic springs, substantially as set forth.

3. In a two-wheeled vehicle, the combination, with a body, an axle, a pair of shafts, and a cross-bar fixed to these shafts, of two elliptical plate-springs, two elastic compensating springs, two pair of mated links that are pivoted to the ends of the compensating springs, and also to the forward ends of the elliptical springs, and two scroll-springs, which are each attached by one end to the top surface of a compensating spring and by the other end to a side sill of the vehicle-body, substantially as set forth.

4. In a two-wheeled vehicle, the combination, with a body, a pair of shafts that are clipped by their rear ends to an axle, a cross-bar affixed to the shafts, and a transverse axle, of two elliptical plate-springs mounted on and secured to the axle, and also to the vehicle-body, two mated links pivoted to each elliptic spring at the front ends of these springs, two curved plate-springs secured loosely to the cross-bar of the shafts, and also to the lower ends of the links, and two scroll-springs that bear against and are attached to the side sills of the vehicle-body, and two side sills, substantially as set forth.

383,230. STATION-INDICATOR. JAMES C. LEWIS, San Francisco, Cal. Filed Feb. 21, 1888. Serial No. 265,088. (No model.)



Claim.—1. In a station-indicator, the drums, the indicating-ribbon, and the power mechanism applied to one of the drums by which the travel of the ribbon is effected, in combination with the releasing and stopping mechanism, whereby the operation is rendered intermittent, consisting of the disk connected with one of the drums and having the pins or stops, and the oscillating trip-hub in the path of the pins or stops, and having the offset or shoulder by which they are relieved, substantially as herein described.

2. In a station-indicator, the drums, the indicating-ribbon carried thereby, and the power mechanism applied to one of the drums, whereby the travel of the ribbon is effected, in combination with the releasing and stopping mechanism consisting of the disk connected with one of the drums and having the pins or stops projecting from its outer face, the oscillating trip-hub located in the path of the pins or stops and having the shoulder or offset for releasing them, the arm projecting from the trip-hub, the pull-rod by which the trip-hub is operated, and the spring by which it is returned to position, substantially as described.

3. In a station-indicator, the drums, the indicating-ribbon carried thereby, and the power mechanism applied to one of the drums, whereby the travel of the ribbon is effected, and the crank-shaft of the upper drum for winding the ribbon back to the initial point, in combination with the releasing and stopping mechanism consisting of the sleeve on the upper drum-shaft, the disk on the sleeve having the projecting pins or stops, the pawl-and-ratchet mechanism between the disk and the upper drum, and the oscillating trip-hub in the path of the pins or stops and having an offset or shoulder, whereby they are released, substantially as herein described.

4. In a station-indicator, the drums, the indicating-ribbon, and the power mechanism applied to one of the drums, in combination with the releasing and stopping mechanism consisting of the disk connected with the other drum and having the projecting pins or stops, and having a shoulder or offset by which they are released, and the hold-back mechanism consisting of the rock-shaft, the spring by which it is held in position, and the bent arm in the path of the pins or stops, substantially as herein described.

5. In a station-indicator, the drums, the indicating-ribbon, and the power mechanism applied to one of the drums, in combination with the releasing and stopping mechanism consisting of the disk connected with the other drum and having the projecting stops or pins, and the oscillating trip-hub having the shoulder or offset, and the alarm mechanism comprising the gong, the hammer, the spring-actuated rock-shaft, and the downwardly-extending arm on said shaft, located in the path of the pins or stops, substantially as herein described.

6. In a station-indicator, the rotary disk F, connected with the indicating mechanism and having pins P, in combination with the oscillating trip-hub H, having a shoulder, *h*, in front and a reversed shoulder, *h'*, behind, whereby the pins are released and caught, substantially as herein described.

383,281. CHAIR. ANDREW D. MARR, Boston, Mass. Filed Feb. 3, 1868. Serial No. 308,693. (No model.)

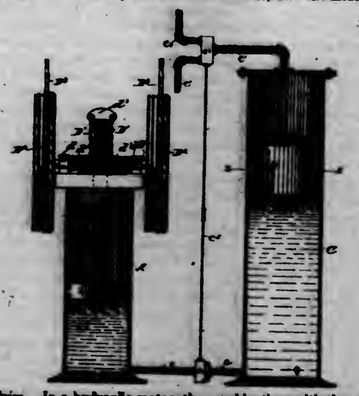


Claim.—1. In a chair of the character described, the combination of the seat A, provided with the standards F and legs C, the base D, secured to said legs and extending rearward of the same, the back B, provided with the arms E, pivoted to said standards, a bar, as H, hinged to said back, and means for securing the bar to the seat when the back is arranged to form a table, said seat being extended to the rearward of the rear legs of the chair to provide room for the lower end of the back, and thereby enable a longer back to be used, substantially as set forth.

2. In a chair of the character described, the seat A, provided with the standards F, stop *g*, legs C, and stud *k*, the base D, secured to said legs and provided with the elongated portion *h*, the back B, provided with the arms E, pivoted to the standards F, the bar H, jointed to the plate J, and provided with the sockets *v* and perforated plate *t*, and the plate N, having the stud *d*, provided with the nut *f*, said plate being fitted to slide in a groove, *r*, in the back B, all constructed, combined, and arranged to operate substantially as described.

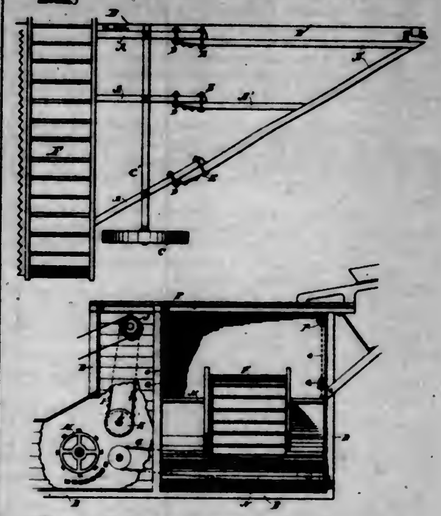
3. In a chair of the character described, the seat A, provided with the legs C and standards F, the base D, connected with said legs and provided with the elongated portion A, the back B, provided with the arms E, pivoted at their forward ends to the upper ends of said standards, and the bar H, jointed to the back B, in combination with means for adjusting said bar with respect to said back, and means for adjustably connecting it to said seat, substantially as set forth.

383,282. HYDRAULIC ELEVATOR. WILLIAM H. MARSH, New York, N. Y. Filed July 2, 1867. Serial No. 343,513. (No model.)



Claim.—In a hydraulic motor, the combination, with the water-cylinder and its piston and the water-reservoir, of a steam-supply pipe leading to said reservoir and a water-pipe leading from said reservoir to said cylinder, a three-way valve in the steam-pipe, and a three-way valve in the water-pipe, the entrance and exhaust ports of the steam-valve being nearer the line of the port leading to the reservoir and the length of the plunger thereof being less than the inlet and outlet ports of the water-valve are to the port leading to the cylinder, and than the length of the plunger thereof, respectively, together with a rod or stem common to and giving concurrent motion to both valves, as and for the purpose set forth.

383,283. COMBINED HARVESTER AND THRASHER. DAN C. MATTHEWS, Stockton, Cal. Filed Oct. 5, 1867. Serial No. 351,862. (No model.)



Claim.—1. In a combined header and thrasher, a header-frame detachably hinged to the side of the thrasher, said header-frame composed of two parts, the rear portion being hinged to the front portion, so that it may be folded upon and above the forward portion to permit the header when detached to be drawn endwise through gates, substantially as herein described.

2. In a combined header and thrasher, a header-frame detachably hinged to the side of the thrasher, said header-frame composed of two parts, the bolts E uniting said parts, whereby they may be rigidly secured together or made separable, and a hinged connection at the rear of the front part of the header-frame, whereby the rear part of said frame may be folded upon and above the forward part, to permit the header when detached to be drawn endwise through gates, substantially as described.

3. In a combined harvester and thrasher, the combination of the thrashing-cylinder, the feeder-belt mounted in the thrasher, the header-belt F on the header-frame and projecting into the thrasher-frame, by which the straw is carried to the thrashing-machine, and the vertically-moving gate M, mounted in the side of the thrasher-frame and the counterbalance weights and cords, substantially as described.

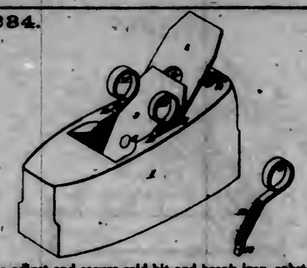
4. In a combined harvester and thrasher, the combination of the thrashing-cylinder, the feeder-belt mounted in the thrasher, the header-belt F on the header-frame and projecting into the thrasher-frame, by which the straw is carried to the thrashing-machine, the vertically-moving flexible gate or apron M, mounted in the side of the thrasher-frame and extending beneath the discharge end of the header-apron, the cords connected with said gate, guide-pulleys for said cords, and the counterbalance-weights Q, attached to said cords, substantially as described.

383,284. PLANE-PLATE. THOMAS H. B. MILLSAP, Harper, Kans. Filed Apr. 13, 1867. Serial No. 304,672. (No model.)

Claim.—1. In a bench-plane, the combination, with the bit-iron and brake-iron secured thereto, of spring-friction side wedges and pivoted abutment-pedestal having a center-pointed thumb-screw



383,284.



adapted to adjust and secure said bit and break iron, substantially as set forth.

2. In a bench-plane, the combination, with the bit-iron, break-iron, and the stock having abutment-shoulders, of friction-wedges having spring-arches fastened at their apices and adapted to engage with the abutment-shoulders of the stock, and an abutment-pedestal having a center-pointed thumb-screw, which, in conjunction with the said wedges, is adapted to adjust and hold the plane-irons in their place in the stock, substantially as set forth.

3. The combination, with the stock having abutment-shoulders and the bit and break iron, of a pivoted abutment-pedestal having a thumb-screw adapted to engage the bit-iron, and spring-wedges engaging between the plane-irons and the abutment-shoulders of the stock, said wedges being so arranged that there will be no intrusion on the chamber of the stock, to allow free vent for the shavings, substantially as set forth.

4. The combination, with the stock, bit and break irons, of spring friction-wedges adapted to clamp the bit and break irons in front, a pivoted abutment-pedestal having a pointed projection adapted to engage the stock, and a pointed thumb-screw engaging in the end of said pedestal and adapted to adjust their bearing and lengthen the lever-hold of said irons in the bed of the stock, and thereby steady their cutting action, substantially as set forth.

5. The combination, with the stock and its abutment-shoulders and the bit and break irons, of spring friction-wedges engaging between the front of the irons and the abutment-shoulders of the stock, leaving free vent between them for the escape of shavings, and a pivoted abutment-pedestal having a center-pointed rotary screw adjustable as an abutting support to the back of the irons, substantially as set forth.

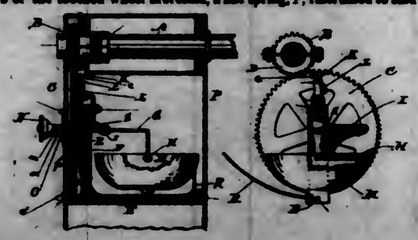
383,285. CAPTIVE-FASTENER. WILLIAM J. BOBLE, New York, N. Y. Filed Jan. 21, 1868. Serial No. 351,867. (Model.)



Claim.—The combination, with a plate attached to the edge of the casket-body, said plate being provided with a depressed channel or way, a shoulder at one end of said channel, an eye or opening at the other end of the channel, and a ledge adjoining said opening, a tapering catch attached to the lid, and a spring-actuated locking-piece pivoted to said catch and provided with a lateral finger-piece, substantially as set forth.

383,286. AUTOMATIC BELL. CHARLES M. O'LEARY, Washington, D. C. Filed Jan. 31, 1868. Serial No. 359,869. (No model.)

Claim.—1. In automatic bells, the combination of an ordinary axle or revolving shaft, A, having a cog, B, at some convenient place on the periphery thereof, with a toothed wheel, C, geared with said cog and having pins *c d* on the interior face of said wheel, a bracket, E, having a projecting shaft, D, extending through and outside the hub of the toothed wheel aforesaid, a flat spring, F, fulcrumed to said



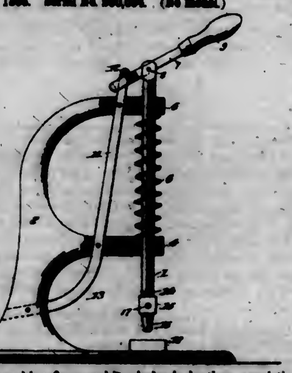
383,286. [duplicate]



bracket and collared upon said projecting shaft, and a ball, M, a lever, G, pivoted to the bracket aforesaid and having a ball-striker, H, a spiral spring, I, one end of which is attached to the aforesaid bracket, a door-foot, K, pivoted to said lever at one end thereof, and a spring, L, connected likewise to said door-foot, a screw-nut, N, fitted to the projecting end of the shaft D and having recesses *a* formed in a shank constituting part of said screw-nut, and a catch, O, pivoted to the ordinary frame-work or casing inclosing the bell mechanism in such relation to said screw-nut to enable said catch to be fitted to the recesses aforementioned, all substantially in the manner hereinbefore described and shown, for the purpose of adjustably and automatically sounding the bell by the forward revolution of the aforesaid ordinary axle or revolving shaft.

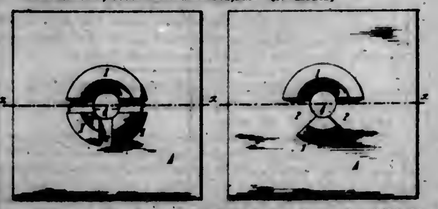
2. In automatic bells, the combination of an ordinary axle or revolving shaft, A, having a cog, B, at some convenient place on the periphery thereof, with a toothed wheel, C, geared with said cog and having pins *c d* on the interior face of said wheel, a bracket, E, having a shaft, D; extending through the hub of the aforesaid toothed wheel, and a ball, M, and a lever, G, pivoted to said bracket and having a ball-striker, H, a door-foot, K, pivoted to said lever at one end thereof, and a spring, L, connected likewise to said door-foot, all substantially in the manner hereinbefore described and shown, for the purpose of automatically sounding the ball by the forward revolution of the aforesaid ordinary axle or revolving shaft.

383,287. BELT-PUNCH. ENOS I. T. OVERMEY, Summerville, Ga. Filed Jan. 6, 1868. Serial No. 359,694. (No model.)



Claim.—A machine for punching holes in leather, consisting of a frame, 2, mounted on the base 3, having a bearing-block, 18, and arms 4 5, with a brace-rod, 11, passing through the arms 4 5 and into the frame 2, and rivoted thereto, and having an extension provided with a stop-pin, 12, in combination with the vertically-reciprocating rod 1, having a spring, 8, a screw-threaded end, 14, securing-nut 15, and punch 16, and the lever 7, with slotted end 10, substantially as described.

383,288. METHOD OF PREPARING HOLLOW STOCK FOR THE MANUFACTURE OF JEWELRY. JOHN S. PALMER, Providence, R. I. Filed Jan. 27, 1868. Serial No. 359,148. (No model.)

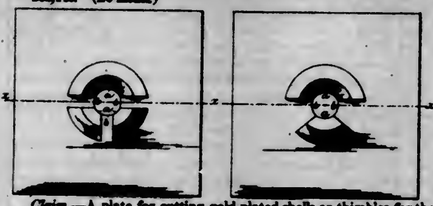


Claim.—1. The described method of imparting to plated thimbles or shells a varying thickness, consisting in submitting the same to the

action of reducing devices adapted for shaving off or otherwise removing the desired portion of the plate at the required parts, substantially as set forth.

2. The described method of imparting to plated thimbles or shells a varying thickness of plate, consisting in passing the thimble or shell through die-plates adapted for shaving off or removing a desired portion of the plate at the required parts, substantially as set forth.

388,239. PLATE FOR SHAVING GOLD-PLATED SHELLS, &c. JOHN S. PALMER, Providence, R. I. Filed Jan. 27, 1888. Serial No. 262,162. (No model.)



Claim.—A plate for cutting gold-plated shells or thimbles for the manufacture of plated jewelry, having a portion of the guiding-edge raised and rounded off for guiding without cutting away or removing any of the gold, and having the remaining portion left sharp and adapted to plane, cut away, or remove a desired part of the gold, all substantially as set forth.

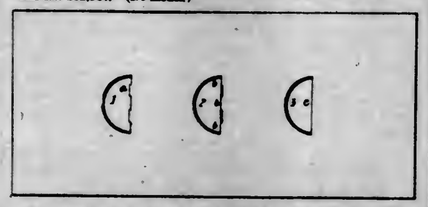
388,240. MANUFACTURE OF GOLD-PLATED-WIRE STOCK FOR JEWELRY. JOHN S. PALMER, Providence, R. I. Filed Jan. 30, 1888. Serial No. 262,516. (No model.)



Claim.—1. In the manufacture of gold-plated-wire stock for jewelry, the described method of reducing the gold-plate to the requisite unequal thickness, consisting in passing the stock through dies adapted for guiding it, and for cutting off, shaving off, or otherwise removing a portion of the gold at the parts desired, substantially as set forth.

2. In the manufacture of gold-plated-wire stock for jewelry, the described method of reducing the gold-plate to the requisite unequal thickness, consisting in passing the stock successively through dies adapted for guiding it and for cutting off, shaving off, or otherwise removing a portion of the gold at the parts desired, substantially as set forth.

388,241. PLATE FOR THE MANUFACTURE OF PLATED-WIRE STOCK. JOHN S. PALMER, Providence, R. I. Filed Jan. 30, 1888. Serial No. 262,517. (No model.)



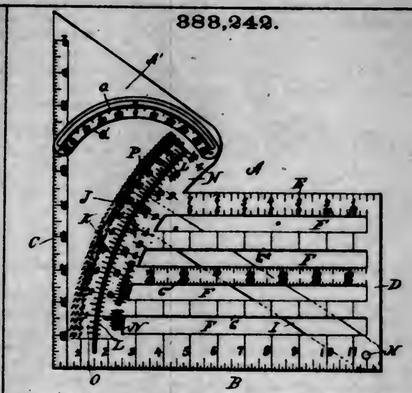
Claim.—In the manufacture of gold-plated-wire stock, a plate having a series of die-holes provided with one or more sharp edges, as set forth, adapted for removing a portion of the gold.

388,242. COMBINED SQUARE, BEVEL, PROTRACTOR, AND LEVEL. WILLIAM PALMER, Jr., Rincon, N. Mex. Filed June 21, 1887. Serial No. 242,008. (No model.)

Claim.—1. A measuring-instrument formed of a single approximately L-shaped plate, A, having the integral parallel bars G G' G² in one arm and the curved slot K in its other arm, and the straight-edge I, pivoted at H to the plate, and having a set-screw, J, extending through the curved slot, substantially as described.

2. A measuring-instrument consisting in the approximately L-shaped plate A, having integral parallel bars G G' G² in one arm, the

388,242.



curved slot K in the other arm, the segmental level Q, extending across the arm of the plate above or beyond the slot K, and the straight-edge I, pivoted at H to the plate, and having a set-screw, J, passing through the slot to hold the straight-edge at the desired angle across the bars, substantially as set forth.

3. In a measuring-instrument, the blade A, provided with the scale L, indicating degrees, and the edges D and C, the graduated edge E, and the graduated parallel bars G; all formed on the said blade, in combination with the straight-edge I, pivoted on the said blade and held adjustably on the same, substantially as shown and described.

4. In a measuring-instrument, the blade A, provided with the scale P, indicating the length of braces, and the graduated bar G' for measuring the length of the brace, in combination with the straight-edge I, pivoted on the said blade, substantially as shown and described.

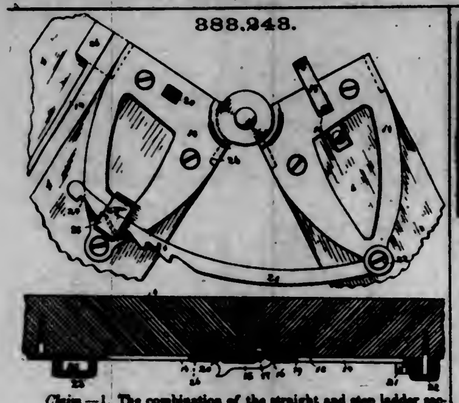
5. In a measuring-instrument, the plate A, approximately of L shape, and having the graduated outer edges, B C, at right angles one to the other, and the curved level Q, extending transversely across the upper end of the arm A' of said L-shaped plate, substantially as set forth.

6. In a measuring-instrument, the blade A, provided with the edges B, C, D, and E, the bars G, parallel with the said edges E and B, and the scales L, N, and O, formed on the said blade A, in combination with the straight-edge I, pivoted on the said blade A, and the set-screw J, the shank of which passes through a segmental slot, K, formed in the blade A, the said set-screw serving to fasten the said straight-edge I upon the said blade, substantially as shown and described.

388,243. STEP-LADDER AND BENCH COMBINED. JOHN W. PEACOCK, Cleveland, Ohio, assignor of two-thirds to Clarence B. Britton and Edgar S. Waller, same place. Filed Mar. 1, 1888. Serial No. 265,816. (No model.)



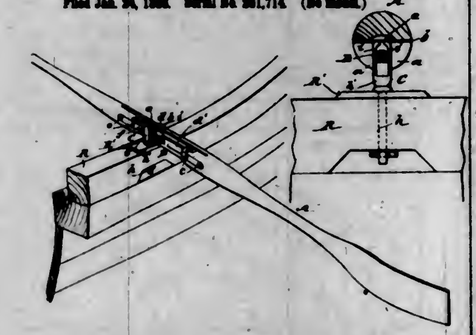
388,243.



Claim.—1. The combination of the straight and step ladder sections, connected together by hinged braces having pivotal joints in line with the inner edge of the sections, with the broad parts of said hinged braces lapping over and fastened to the sides of the ladder, with legs 26, inclosing the edges of said sections, all arranged to form the pivotal supports and connections, and a stand-board, 12, hinged to said sections, substantially as and for the purposes described.

2. In a combined step and straight ladder, the hook 16, having one end inserted in a slot, 16, in one section of the hinged brace 14, forming a pivotal connection therewith, and the opposite end adjusted to engage with the slot 20 in the other section of the hinge-brace, in combination with the spring 19, attached to the ladder-section, and its free end in contact with the hinged end of the hook arranged to co-operate with hinged braces in jointed relation with the ladders, in the manner substantially as herein set forth.

388,244. CAR AND CAR-LOCK. GEORGE K. PERATT, Toledo, Ohio. Filed Jan. 24, 1888. Serial No. 261,714. (No model.)



Claim.—1. The car A, having the rod B attached thereto and adapted to enter a suitable car-lock, the rod being longitudinally attached to the car, substantially as described.

2. The car A, having the longitudinally-attached rod B, formed with the round portion *d* and flat portion *d'*, and adapted to enter a suitable car-lock, substantially as described.

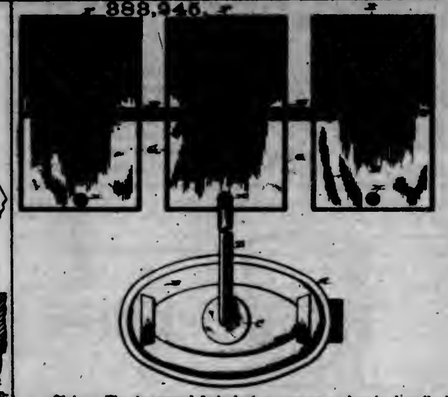
3. The car-lock C, formed with members *i i*, which approach each other at the top to form a narrow space, *e*, in combination with the car A, provided with the longitudinally-attached rod B, formed with the round portion *d* and flat portion *d'*, substantially as and for the purposes set forth.

4. The car A, cut away at *a*, and provided with the rod B, set into the space formed in the car, in combination with the lock C, formed with spaced members *i i* to retain the said rod, substantially as described.

5. The car A, cut away at *a* and provided with the plate *b*, set into the said cut-away place, and the rod B, set into the car adjacent to said plate *b*, in combination with the car-lock C, formed with spaced members *i i*, to receive and retain the said rod B, substantially as described.

388,245. FRUIT-DRIER. JAMES L. PERLEY, Monticello, Fla. Filed Mar. 29, 1887. Serial No. 232,932. (No model.)

388,245.



Claim.—The improved fruit-drying apparatus herein described, consisting of the boiler A, adapted to be placed on a cook-stove, and the independent evaporating-trays having the diaphragms E, whereby a steam-space, F, is formed between the diaphragms and the bottom of the tray, the nozzles H near both the sides and the ends of the trays, the said trays being all arranged in the same horizontal plane and entirely separated from each other, and having independent supports, the steam-pipe L, having one end connected to the boiler and the other end attached to one of the nozzles H, and the U-shaped coupling-pipes K, having their ends connected to the nozzles H of adjacent trays, whereby the coupling-pipes K can be connected to the nozzles H either near the ends or the sides of the trays, and thus the latter may be placed end to end or side to side, as may be desired.

388,246. UPRIGHT-SAW MACHINE. GEORGE PHELPS, Mishawaka, Ind., assignor to the Dodge Manufacturing Company, same place. Filed Sept. 20, 1887. Serial No. 250,391. (No model.)



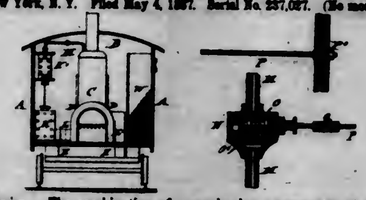
Claim.—1. In an upright-saw machine, the combination of the table and saw thereof with a frame having a pivotal connection with said table, and a longitudinally-movable carriage on said frame, provided with a clamp to hold the edge of the board to be cut, and a fixed-spacer with adjustable stops, whereby the length of the feeding-space may be changed.

2. In an upright-saw machine, the table A, the frame F, having

a longitudinally-moving carriage, and a clamp mounted on the latter, combined with a pivot-pin and slots in table and frame, respectively, whereby said pivot-pin may be adjusted in said slots and fixed at any desired point.

3. In an upright-saw machine, the combination, with the pivoted frame, of the carriage mounted thereon and having a rack, a segment or gear mounted on the frame and engaging said rack, a lever and ratchet engaging the gear, and an adjustable stop for regulating the swing of the lever.

383,247. APPARATUS FOR HEATING RAILWAY-CARS. WILLIAM H. PLIMER, Lake City, Colo., assignor of one-half to P. P. Dickinson, New York, N. Y. Filed May 4, 1887. Serial No. 237,027. (No model.)



Claim.—The combination of a car having a compartment provided with an opening to the outside air, a device for changing the temperature of the air admitted to said compartment, an air-forcing apparatus for forcing said air through said device, an air-pipe connecting said device with the air-forcing apparatus, a distributing-pipe leading from said temperature-changing device, a steam-engine for driving said apparatus, a steam-boiler, a steam-pipe connecting the steam-boiler with the cylinder of the engine, a valve-box in said pipe provided with a valve-face having a series of ports, a channeled valve in said box, an expansible rod exposed to the air admitted to said compartment and connected at one end to the wall thereof, and an adjustable coupling connecting the other end of said rod to the stem of said valve, substantially as described.

383,248. DRILL-CHUCK. HENRY M. PERRON, New Haven, Conn., assignor to Hiwood Bardsall, Port Chester, N. Y. Filed Feb. 20, 1888. Serial No. 265,594. (No model.)



Claim.—1. A drill-chuck provided with an independent adjustable holding device adapted to move with the drill, to permit the same to be centered by the chuck-jaws after it has been clamped upon the drill, substantially as set forth.

2. A drill-chuck provided with a dog located behind its jaws in a chamber in which it is movable, so as to permit it to respond to the jaws in centering the drill held by it, substantially as set forth.

3. A drill-chuck having a holding device located behind its jaws, flexibly coupled with one of them, and adapted to grip and hold a drill by the end thereof and to move to permit the drill to be centered by the chuck-jaws, substantially as set forth.

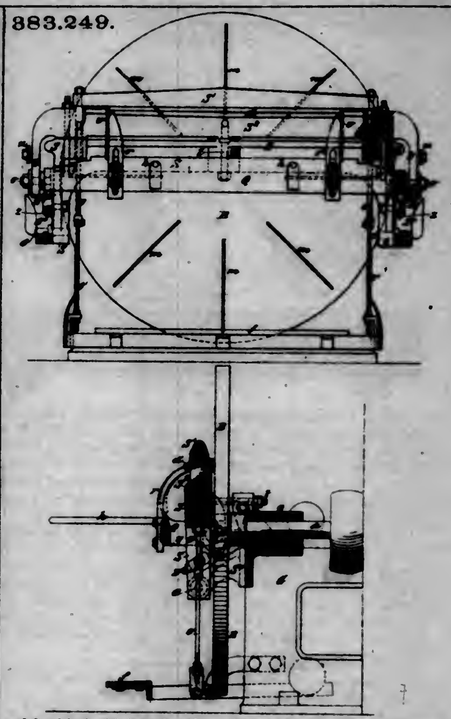
4. A drill-chuck provided with an independent clamping-dog having an opening between its ends, furnished with a set-screw, located in a chamber behind the chuck-jaws, and adapted to be moved so as to permit the drill to be centered by the said jaws while it is held against twisting by the dog, substantially as set forth.

5. A drill-chuck provided with a tapering circular dog having an opening between its ends, and furnished with a set-screw, located in a chamber situated behind the chuck-jaws, and adapted to be moved so as to permit the drill to be centered by such jaws while it is held against twisting by the dog, substantially as set forth.

383,249. JOINTING-MACHINE FOR BARREL-STAVES. WILHELM RITTER, Altona, Prussia, Germany. Filed Feb. 20, 1888. Serial No. 265,603. (No model.)

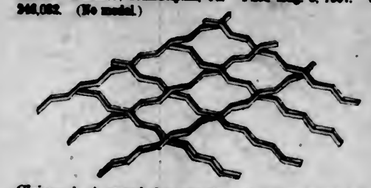
Claim.—1. The combination, with the rotary cutter-disk and cutters, of a stave-support capable of moving bodily toward and from the said disk, and a stave clamp or holder pivoted to the said support at or near the middle of said support to advance either end of the stave clamp or holder toward the disk, substantially as and for the purpose herein described.

2. The combination, with the rotary cutter-disk, of the pivoted swinging main stave support S, the stave clamp or holder S S', pivoted to the main support by a pivot perpendicular to the pivots of the said support, the yoke Q, having arms r r, for receiving the ends of the stave



and furnished with lever-handles and pivoted to the ends of the stave-holder, the stops x, provided on said yoke, and the adjustable set-screw z in the said main support S, all substantially as and for the purpose herein set forth.

383,250. REticulated OR OPEN WORK OF METAL BARS. THOMAS ROBINSON, Philadelphia, Pa. Filed Aug. 2, 1887. Serial No. 246,082. (No model.)



Claim.—1. A guard, fence-section, or screen composed of metal edge-crimped flat bars or strips woven or connected together, substantially as set forth.

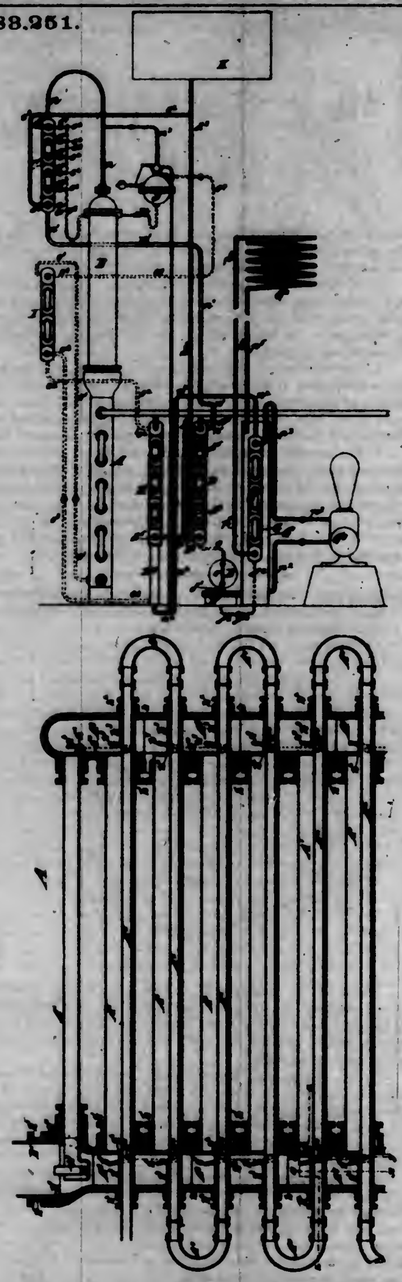
2. Reticulated or open work composed of edge-crimped flat bars connected together, substantially as set forth.

383,251. APPARATUS FOR REFRIGERATING AND ICE-MAKING BY THE USE OF AMMONIA. RAYMOND F. BOSWALD, New York, N. Y. Filed July 16, 1883. Serial No. 208,222. (No model.)

Claim.—1. In a generator for ammonia-gas, the combination, with a series of substantially parallel and horizontal outer tubes for strong liquor, and a header from which the tubes extend and which is constructed to afford a single upright passage with which all said tubes communicate, and which is independent of and separate from the passages for liquor, and serving for the escape of gas delivered from the several tubes without compelling its successive passage through the tubes, of a series of inner tubes connected at the ends to form a continuous passage for heating fluid and extending across the gas-passage of the header, substantially as herein described.

2. In a generator for ammonia-gas, the combination, with a series of substantially parallel and horizontal outer tubes for strong liquor, and headers A^2 at opposite ends of the tubes, each constructed with a free passage entirely independent of and separate from the passages for liquor, and with which all the tubes communicate, and serving for the escape of gas delivered from the several tubes without passing

383,251.



through the tubes in succession, of a series of inner tubes extending across the gas-passages of the headers and connected beyond the passages to form a continuous passage for heating fluid, substantially as herein described.

3. The combination, with the outer generator-tubes for strong liquor, of a header from which said tubes extend and which is constructed with dams or partitions at the ends of the tubes to control the depth of liquor in the tubes, and with supplemental dams to prevent the escape of liquor into the gas-space of the header when under violent ebullition, and steam-heating tubes extending through the outer tubes, substantially as herein described.

4. The combination, with the outer parallel and horizontal generator-tubes, of a header from which the tubes extend and which has a single open gas-passage with which all the tubes communicate, a pipe and conductor for introducing liquor to the header and for conducting the liquor to the upper tube and preventing its free passage through the gas-space, and inner heating-tubes extending through the outer tubes and across the gas-space of the header, substantially as herein described.

5. The combination, with the outer parallel and horizontal generator-tubes for strong liquor, of gas-headers A^2 at the ends of the tubes, and each of which is constructed with curved passages for the descent of liquor from one tube to another and with a gas-passage common to all the tubes and entirely separate from and independent of any passage for liquor in the header, a pipe and conductor for introducing liquor directly to the upper tube without its free passage through the gas-space, and steam-heating tubes extending through the outer tubes and across the gas-passage of the header and connected beyond the header to form a continuous passage for steam, substantially as herein described.

6. The combination, with the outer generator-tubes A', for strong liquor, of a gas-header, A^2, constructed with a main passage for gas and with dams at the end of the tubes, and steam-heating tubes extending through the outer tubes, the header being constructed with curved passages extending from the dams to its outer wall to receive through them the steam-heating tubes, substantially as herein described.

7. The separator or analyzer herein described, consisting of the upright chamber or casing containing two contiguous and alternated but separate spiral passages of substantially equal length, and serving one for the descent of strong liquor to the generator and the other for the escape of gas from the generator, in combination with an inlet for strong liquor at one end of one passage and an inlet for gas at the opposite end of the other passage, substantially as herein set forth.

8. The separator or analyzer herein described, consisting of an upright chamber or casing and a filling of intermatching sections, forming, when superposed one on another, two separate spiral passages which alternate one with the other and serve one for the descent of strong liquor to the generator and the other for the escape of gas from the generator, substantially as herein set forth.

9. The separator or analyzer herein described, consisting of an upright chamber or casing and a filling of intermatched sections, B^3, each forming part of a spiral and having a passage cored within it, and having flanges b^2 b^2 at top and bottom, whereby the sections when superposed one on another will form two alternating but separate passages of substantially equal length, substantially as herein set forth.

10. The combination, with the separator or analyzer chamber, of the cast-metal sections B^3, each having cast within it a portion of a spiral passage, and having flanges which enable the sections when placed one on another to form another and contiguous spiral passage, and each section having a downwardly-projecting nipple or throat, b^3, and an annular groove or depression, b^4, wherein the nipple or throat of the section next adjacent is trapped to prevent the direct upward flow of gas, substantially as herein described.

11. The combination, with the separator or analyzer chamber, of the spiral sections B^3, arranged therein one above another and constructed, as described, so as to form contiguous but separate spiral passages, each section being provided at the lower end of its passage portion with a projecting lip, b^5, entering a corresponding socket or recess in the upper end of the next lower section, substantially as herein described.

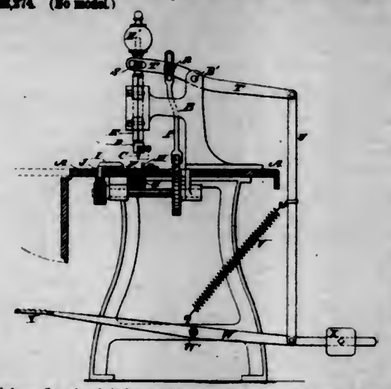
12. The combination, with the separator or analyzer chamber, of spiral sections B^3, arranged therein one above another and constructed, as described, so as to form contiguous but separate spiral passages, the upper surface of the sections being ribbed or having a serpentine or zigzag profile around their circumference, substantially as herein described.

13. The combination, with a tank for brine or other liquid to be cooled, of a cooler arranged therein and to be immersed in said liquid, and composed of a system of outer tubes and connecting-headers for expanding gas, and a system of inner tubes and connecting-bends for the liquid to be cooled, a pump for taking liquid from the tank and delivering it to the inner tube system at one end thereof, whereby the liquid after preliminary cooling in the tank is passed through the inner tube system, and pipes through which said liquid is conducted from the other end of the inner tube system and after performing useful effect in cooling is returned to said tank, substantially as herein described.

14. In an ammonia refrigerating apparatus, the combination, with a generator wherein gas is generated by heat and an absorber wherein the weak liquor is made to absorb the spent gas, of an automatic trap for returning strong liquor from the absorber to the generator, and

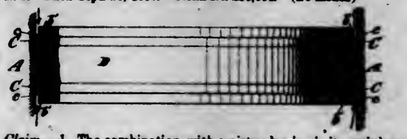
a pipe for conducting gas to the trap for producing its operation, substantially as herein described.

383,252. BOOK-INDEX-CUTTING MACHINE. ARCHIE ROYER, New York, assignor, by mesne assignments, to William W. Cotton and Clifton H. Cotton, both of Brooklyn, N. Y. Filed June 23, 1887. Serial No. 242,374. (No model.)



Claim.—In a book-index-cutting machine, the combination, with the table A, provided with the stationary adjustable guide H, the frame B, the pivoted lever T, the adjustable feed-bar P, the screw R, the weighted reciprocating bar E, the knife-holder D, the knife C, and with the weighted treadle W, adapted to operate the parts, substantially as described, of the movable adjustable guide I, the rack-bar K, the pinion N, the ratchet-wheel M, the dog Q, and the pawl O, as and for the uses and purpose set forth.

383,253. PISTON-PACKING. MICHAEL J. RUSSELL, Jersey City, N. J. Filed Sept. 26, 1887. Serial No. 250,691. (No model.)



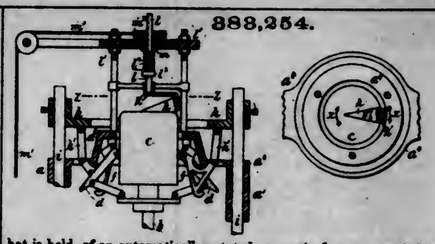
Claim.—1. The combination, with a piston having in its periphery a groove the opposite faces or walls of which are parallel with each other and oblique to the axis of the piston, of a packing-ring having its opposite sides also parallel and correspondingly oblique and fitting in said groove, substantially as herein described.

2. The combination, with a piston having in its periphery a groove the opposite faces or walls of which are parallel with each other and oblique to the axis of the piston, of a packing-ring having its opposite sides parallel and correspondingly oblique and fitting in said groove, the ring having that portion of its side on which the fluid acts and which projects beyond the piston a substantially flat surface in a plane at right angles to the axis of the piston, substantially as herein described.

3. The combination, with a piston having in its periphery a groove the opposite faces or walls of which are parallel with each other and oblique to the axis of the piston, and having a slightly greater diameter on one side than on the other side of said groove, of a packing-ring having its opposite sides parallel and correspondingly oblique and fitting said groove, and having that portion of its side which is exposed beyond the portion of the piston which is of smallest diameter a flat surface in a plane substantially at right angles to the axis of the piston, substantially as herein described.

4. The combination, with a piston-body and a follower or ball ring of smaller diameter, forming between them a peripherical groove the faces or walls of which are parallel with each other and oblique to the axis of the piston, of a packing-ring having its sides parallel and correspondingly oblique and fitting the groove, and having that portion of its side which is exposed beyond the follower or ball ring a flat surface in a plane at substantially right angles to the axis of the piston, substantially as herein described.

383,254. HAT-STRETCHING MACHINE. WILLIAM SIMMONS, Yonkers, N. Y., assignor of two-thirds to Lydia B. Bullmap and William H. Bullmap, same place. Filed Nov. 20, 1887. Serial No. 256,417. (No model.)



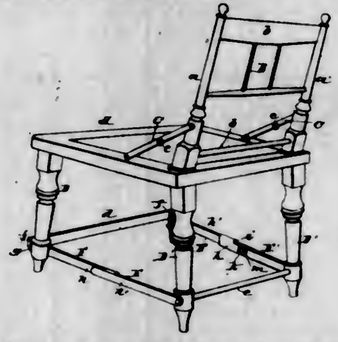
Claim.—1. The combination, substantially as set forth, with a machine for stretching hat-bodies, containing a former upon which the hat is held, of an automatically-rotated crown-tip flattener carried by the machine and arranged to bear and act upon the crown-tip of the hat, its axis of rotation being at right angles to the crown-tip.

2. In combination, a machine for stretching hat-bodies, containing a former upon which the hat is held, an automatically-rotated spring-acting shaft held in the machine perpendicular to the crown-tip of the hat on the former, and a roller carried by the shaft and arranged to bear on the hat.

3. The combination, with the former of a hat-stretching machine, of a conical roller automatically rotated on a center coincident with the axis of the former and arranged to bear on a radial line of the crown-tip of a hat held upon the former from the edge thereof to a point beyond the center, substantially as and for the purpose set forth.

4. In a machine for developing and stretching hat-bodies, in combination, a former upon which the hat is held, expanding ribs projecting therefrom, pivoted fingers for stretching the brim, a vertically-moving finger-plate connected to the fingers, a vertical shaft arranged perpendicularly to the top of the former, a roller carried by the shaft arranged to bear on the crown-tip of a hat placed upon the former, and a rotating shaft of the machine connected to the roller-shaft.

383,255. FOLDING CHAIR. JOSEPH F. A. SPAHR, WILLIAM F. BERRY, and JAMES T. SHIRLEY, Mount Pleasant, Iowa. Filed Nov. 30, 1887. Serial No. 256,808. (No model.)



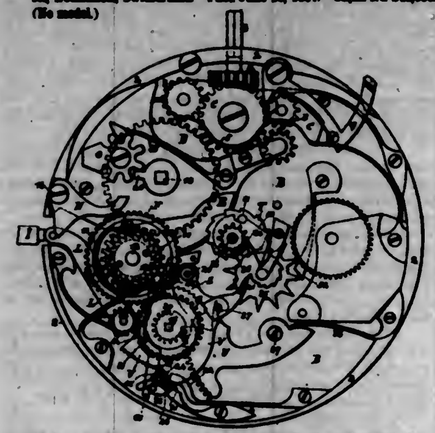
Claim.—1. In a folding chair, a locking stretcher-bar constructed of two pieces pivoted at its opposite ends to the front and rear legs of the chair, and provided with a lantern-lock and guard-lip at their meeting ends to lock the two portions of the stretcher-bar together, substantially as set forth.

2. In a folding chair, the combination, with a seat and front and rear legs hinged to the lower side of the seat at its corners, of two stretcher-bars, each formed of two pieces pivoted to the front and rear legs, and provided at their adjacent ends with lantern-locks and overhanging lips or flanges to lock the front and rear legs apart, substantially as set forth.

3. In a folding chair, the combination, with a seat, front and rear legs hinged to fold upon this seat, and an offset metal brace or stretcher secured to the outer face of the front legs, of two stretcher-bars, each formed of two pieces which are pivoted at their ends to the front and rear legs, and provided with lantern-locks and overhanging lip-flanges to lock the pieces together and brace the front and rear legs apart, substantially as set forth.

4. In a folding chair, the combination, with a seat, a back hinged to the top surface thereof, and diagonal jointed braces for supporting the back in an upright position, of hinged legs, a brace attached to the outer face of the front legs, and two pivoted stretchers, each composed of two sections pivoted together, and provided with a lantern-lock and guard-lip at their meeting ends to lock the two portions of the stretchers together, substantially as set forth.

383,256. REPEATING-WATCH. HENRI G. SCHARPFF, Porte-Marteau, Neuchâtel, Switzerland. Filed June 13, 1887. Serial No. 241,602. (No model.)



Claim.—1. The combination, with the spring-barrel and winding-stem, of the swinging lever C and intermediate wheels, the wheel 11, gearing into the wheel upon the arbor of the spring-barrel, the gear-wheel F, connected therewith, and the ratchet-wheel 13, pawl 14, and spring 15 upon the said wheel F, substantially as set forth.

2. The combination, in a striking-watch, of a spring-barrel and the train of gearing for the time mechanism receiving its motion from the spring-barrel, a train of gearing and striking mechanism receiving its motion from the axis of the spring-barrel, and a stop mechanism to prevent the striking mechanism being brought into action before the power of the spring is exhausted, so that the time-movement of the watch can continue the desired number of hours after the striking mechanism has been stopped, substantially as set forth.

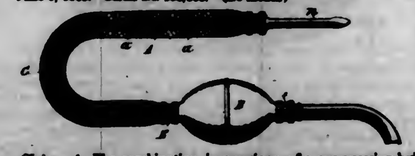
3. The combination, with the spring-barrel and the wheel D, of the gear-wheels 11 and F, ratchet-wheel and pawl, the gear G and the arbor 16 driven by the same, the train of gearing to regulate the speed of the striking mechanism, a tubular arbor around the arbor 16, and a wheel, R, corresponding to the wheel G, a segmental ratchet and striking mechanism, a push-lever, and pinion 32 on the same, connecting the wheels G and R, substantially as set forth.

4. In a striking-watch, the combination, with the bell and hammer, of a stud and two spring-pawls upon the stud and two segmental ratchets acting upon the respective spring-pawls one after the other, whereby the hour is struck upon the bell and then strokes are made by the same hammer and bell to indicate the minutes, substantially as set forth.

5. The combination, with the hammer and the spring-pawls for acting upon the same, of a snail moving with the minute-hand, an hour-snail moved at the end of each hour, swinging levers and fingers acting with the respective snails, a segmental ratchet, S, pinion 30, gear R, and pin 31, substantially as specified, for striking the hour and then striking the minutes after a pause by the revolution of the wheel R and pinion 30, substantially as set forth.

6. The combination, with the spring-barrel and the train of gearing for the time mechanism receiving motion from the spring-barrel and the train of gearing and striking mechanism from the axis of the spring-barrel, of the stop-wheel having a projection at one side and a tooth on the arbor of the spring-barrel for moving the stop-wheel, the detent N and push-pin, and the spring-pawl with an inclined end acting against the teeth of the stop-wheel and against the projecting stop to allow the wheel to move as the finger passes by the stop-wheel in completing the winding of the spring, substantially as set forth.

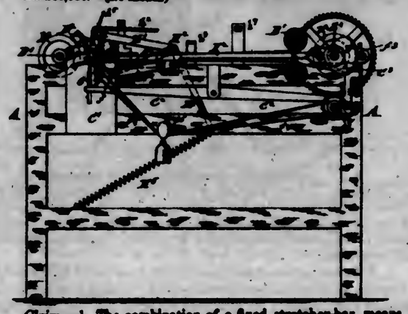
383,257. SYRINGE. BENJAMIN F. SUTTON, Brooklyn, N. Y. Filed June 9, 1886. Serial No. 205,162. (No model.)



Claim.—1. The combination, in a syringe, of a compression-bulb and suction-tube, a self-acting admission or discharge valve at the outlet-opening from the bulb, and a discharge-tube having a constricted outlet, the wall of which tube is of a thickness and elasticity to freely stretch in its circumference under the ordinary pressure produced in working the bulb while the discharge-tube is open, substantially as herein described.

2. A cylindrical dilatable elastic tube for syringes or like purposes formed integrally with one or more restricting-rings, for the purpose set forth.

383,258. MACHINE FOR PLUCKING FURS. JOHN W. SEVERS, New York, N. Y. Filed May 12, 1887. Renewed Mar. 3, 1888. Serial No. 266,097. (No model.)



Claim.—1. The combination of a fixed stretcher-bar, means for intermittently feeding the skin over said stretcher-bar, a stationary card above said stretcher-bar, and a vertically-reciprocating knife and a rotary knife, substantially as set forth.

2. The combination of a fixed stretcher-bar, means for intermittently feeding the skin over said stretcher-bar, a stationary card above the stretcher-bar, a vertically-reciprocating knife, a rotary knife, and a card applied to arms of the rotary knife back of the same, substantially as set forth.

3. The combination of a fixed stretcher-bar, means for stretching and intermittently feeding the skin over said stretcher-bar, a stationary card above said stretcher-bar, a rotary separating-brush below the stretcher-bar, mechanism for moving said brush in front of the stretcher-bar at the proper moment, an oscillating guard below the stretcher-bar, and a vertically-reciprocating knife and a rotary cutting-knife, substantially as set forth.

4. The combination of a fixed stretcher-bar, means for intermittently feeding the skin over said bar, a stationary card above the stretcher-bar, vertically-oscillating and laterally-reciprocating rubbers moving in front of the edge of the stretcher-bar, a rotary separating-brush, an oscillating guard below the stretcher-bar, and a vertically-reciprocating knife and a rotary cutting-knife, substantially as set forth.

5. The combination of a fixed stretcher-bar, means for intermittently feeding the skin over said bar, a stationary card above said stretcher-bar, an oscillating guide-bar, laterally-reciprocating rubbers on said guide-bar, a rotary separating-brush, an oscillating guard, and a vertically-reciprocating knife and a rotary knife, substantially as set forth.

6. The combination of a fixed stretcher-bar, means for intermittently feeding the skin over said bar, a stationary card above said bar, an oscillating guide-bar, and laterally-reciprocating rubbers on said guide-bar, substantially as set forth.

7. The combination of a fixed stretcher-bar, means for intermittently feeding the skin over the same, a guide-bar above the stretcher-bar, means for oscillating said bar, two pairs of rubbers guided on said bar, and means for imparting laterally-reciprocating motion to said rubbers, substantially as set forth.

8. The combination of a fixed stretcher-bar, means for intermittently feeding the skin over the same, a stationary card above the stretcher-bar, a rotary separating-brush below the same, and mechanism, substantially as described, whereby the rotary brush is moved upward and forward into a position in front of the stretcher-bar, substantially as set forth.

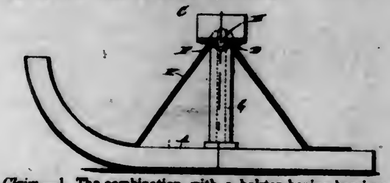
9. The combination of a fixed stretcher-bar, means for feeding the skin intermittently over the same, a fixed card above the stretcher-bar, a rotary separating-brush, pivoted arms for said brush, slotted guide-plates for said arms, connecting-rods having cam-yokes, and a driving-shaft having cams, whereby an upward and forward motion is imparted to the rotary separating-brush, substantially as set forth.

10. The combination of a fixed stretcher-bar, means for feeding the skin over the same, a stationary card above the stretcher-bar, a rotary brush below the same, mechanism for moving the brush forward and in front of the stretcher-bar, an oscillating guard having wipers, guide-plates having arc-shaped slots for said guard, pivot-links attached to the guard, connecting-rods having cam-yokes, and a driv-

ing-shaft having cams for engaging said cam-yokes, substantially as set forth.

11. The combination of a fixed stretcher-bar, B, an oscillating guide-bar, H, above the same, a shaft, H^2, having arms H^3 H^3, a spring, H^6, rubbers h h', having slotted keepers h^2, fulcrumed arms h^3, connecting-link h^4, spring h^5, rods h^6 h^7, and shaft S^2, having cams H^4 and h^8, substantially as set forth.

383,259. SLEIGH-KNEE. HERMAN P. TITUS, Lisbon, N. H. Filed Jan. 26, 1888. Serial No. 261,570. (No model.)



Claim.—1. The combination, with a bolster having bearings on its lower side, of the casting having trunnions mounted in the bearings and the runner pivotally attached to the lower end of the casting, whereby a horizontal rotary motion is allowed the runner, substantially as specified.

2. The combination of the vertical shaft mounted at opposite ends in bearings in the runner and bolster, and the casting mounted on the said shaft and pivoted at its upper end to the bolster, whereby a rocking and a rotary motion are allowed the runner, substantially as specified.

3. The combination of the plate secured to the under side of the bolster and having bearings thereon, the vertical shaft mounted at its lower end in a socket in the runner and at its upper end in a socket in the bolster, and the casting mounted on the vertical shaft and having lateral trunnions operating in the bearings on the said plate, substantially as and for the purpose specified.

4. In a sleigh-knee, the combination of the plate secured to the bolster, the vertical shaft mounted in sockets in the runner and bolster, the casting mounted on the said shaft and having trunnions on its upper end which are mounted in bearings on the said plate, and the strap passing over the casting and attached at its ends to the runner, substantially as specified.

5. The combination, with the runner, of the casting mounted on a vertical spindle on the runner, and the bolster pivoted to the upper end of the casting, substantially as specified.

383,260. STRIKING-WATCH. JOSEPH WALSER, Chaux-de-Fonds, Switzerland. Filed Dec. 20, 1888. Serial No. 292,070. (No model.) Patented in Belgium May 31, 1888, No. 73,178.



Claim.—1. In a stem winding and setting watch, the combination, with the stem A^4 and the wheels B, C, and D, of the wheel E, the swinging plate O, wheels P and G, hammer-tail O', and hammer and pin O^2, means, substantially as specified, for moving the plate O, the clutch-lever W, the hour-cannon L^2, a stop upon said cannon, the wheels H and M, the pawl K, and spring J, carried by said wheel H, the spring-barrel I and pin upon the spring-barrel, and stops for limiting the rotation of the barrel, substantially as specified.

2. In a stem winding and setting watch, the combination, with the stem A^4 and the wheels B, C, and D, of the wheel E, swinging plate O, wheels P and G, hammer-tail O', and hammer and pin O^2, the clutch-lever W, the hour-cannon L^2, a stop upon said cannon, the wheels H, M, and N, the pawl K and spring J, carried by said wheel H, the spring-barrel I, stops for limiting the rotation of the barrel I, the swing-plate X, hammer-tail X', and hammer, the button T, cam S, levers R Z, and links Q Y, substantially as specified.

3. The combination, in a stem winding, setting, and repeating watch, of the stem A^4, wheels B, C, and D upon said stem, the wheel E, swinging plate O, wheels P and G, and pin O^2, the wheel H, loose upon the cannon of the hour-hand, the clutch-lever W, the button T, cam S, lever R, and link Q, whereby the partial rotation of the button and cam separates the wheel B from C and connects the wheels G and H, so that the stem can be turned for operating the repeating mechanism without actuating the winding or setting mechanism, as set forth.

4. The combination, with the swinging plates O X and parts carried by them, the levers R Z, and links Q Y, of the button T, cam S, having notches therein, and the safety-spring S^2, having a hooked end to enter one of said notches, according to the position of said cam, and prevent accidental displacement of said cam, as set forth.

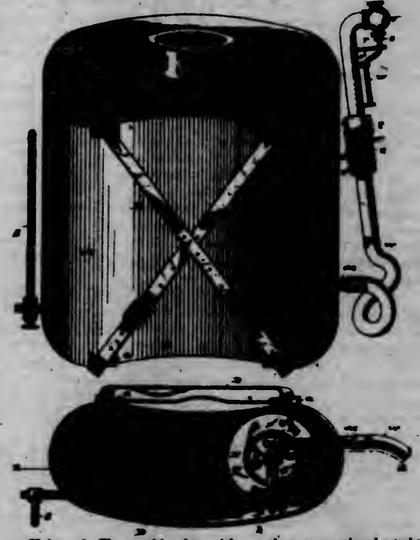
5. The combination, with the hour-cannon L^2 and its stop l, of the wheel H, fitted to turn loosely upon said cannon, a circular flange upon said wheel H, the pawl K and spring J, carried by the wheel H, the plate F, having a circular opening to receive the flange H', and the wheels M N, secured to the flange H' of the wheel H, substantially as and for the purpose specified.

6. The combination, with the spring-barrel and intermediate gear and the setting and repeating mechanism in a watch, of the stem A^4, the wheels B, C, and D upon said stem, and mechanism, substantially as set forth, for moving the gear B so that the winding, setting, and repeating mechanism are operated by the one stem, as set forth.

7. The combination, with the stem winding and setting mechanism, of the striking mechanism, gearing for actuating the striking mechanism, and mechanism, substantially as specified, for shifting the ratchet-pinion to an intermediate position out of contact with both the winding and setting mechanism and simultaneously bring the striking mechanism into gear to be actuated by turning the stem, substantially as set forth.

8. The combination, with the striking mechanism, of a stop upon the arbor of the hour-hand and a spring to turn the striking mechanism back to its normal position, and a pawl to come into contact with the stop on the arbor of the hour-hand, so that the number of strokes on the striking mechanism is determined by the distance the striking mechanism is moved by hand before it is arrested by the stop on the arbor of the hour-hand, substantially as set forth.

383,261. SPRAYING-PUMP. ADAM WEAVER, Vineland, N. J. Filed Feb. 16, 1888. Serial No. 264,242. (No model.)

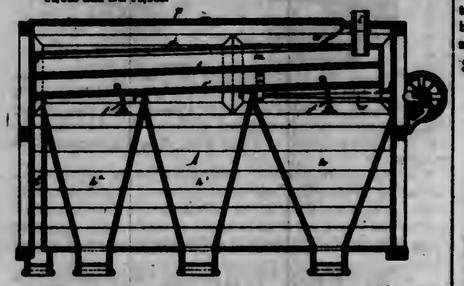


Claim.—1. The combination, with a tank or reservoir adapted to be carried on the back, of an inverted pump-cylinder secured to the bottom of the said reservoir and connected with its interior by means of a valve-port, an air-chamber surrounding the pump-cylinder and connected therewith by means of a valve-port, a discharge-pipe connected with the air-chamber, a plunger-rod in the pump-cylinder and depending from the bottom of the main reservoir, a horizontal rock-shaft connected with the said plunger-rod, and a hand-lever connected with the opposite end of the said rock-shaft, substantially as specified.

2. The combination, with a reservoir adapted to be carried on the back and having a skirt-flange, as described, and also an aperture in its floor, of the casting E, removably secured in the said aperture and having valve-ports and a discharge-pipe, a pump-cylinder, and an air-chamber, respectively secured to the said fastening, whereby the whole may be removed from the reservoir for repair or the like, substantially as specified.

3. The combination, with spray-pipe having its forward end curved laterally, of the nozzle secured thereto, and the valve arranged in the said nozzle and having a reduced forward end adapted to clear the discharge-aperture, substantially as specified.

383,262. MIDDLINGS-PURIFIER. RUD. WEISS and LOUIS FRANKEL, Berlin, Germany. Filed Nov. 13, 1886. Serial No. 218,709. (No model.) Patented in Germany Apr. 1, 1886, No. 36,337; in France June 30, 1886, No. 177,116; in England July 30, 1886, No. 9,965; in Belgium Oct. 29, 1886, No. 74,971; in Sweden Oct. 29, 1886, No. 606; in Italy Dec. 31, 1886, XX. 20,773; in Spain Jan. 29, 1887, No. 10,459; in Norway Feb. 9, 1887, No. 366, and in Austria-Hungary Mar. 26, 1887, No. 44,449 and No. 11,189.



Claim.—1. In a middlings-purifier, the combination, with a reciprocating screen-frame open at its tail end, and screens in the frame, of a flexible cover applied to the screen-frame above the screen and approximately parallel with the same, substantially as herein shown and described.

2. In a middlings-purifier, the combination, with a closed casing, of a reciprocating screen-frame open at its tail end, a screen in said frame, a flexible cover applied to the screen-frame above the screen and approximately parallel therewith, a supply-pipe and a sheet of canvas secured across the top of the screen-frame and to the under side of the top of the casing, substantially as herein shown and described.

383,263. GALVANIC-BATTERY ELEMENT. THOMAS P. WHITTIER, Asst. Engineer, Mich. Filed Feb. 11, 1886. Serial No. 191,666. (No specimens.)

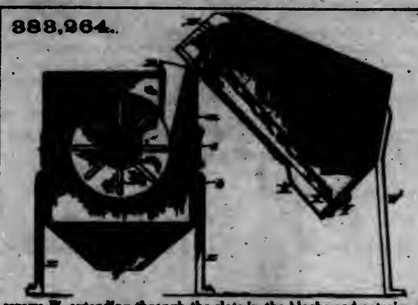


Claim.—An exciment for galvanic batteries, composed, essentially, of a solution of the residual salts from natural brine, substantially as described.

383,264. ELEVATOR FOR COTTON-CLEANING MACHINES. RANSOM E. WHEELER, New Haven, Vt. Filed Feb. 20, 1887. Serial No. 227,999. (No model.)

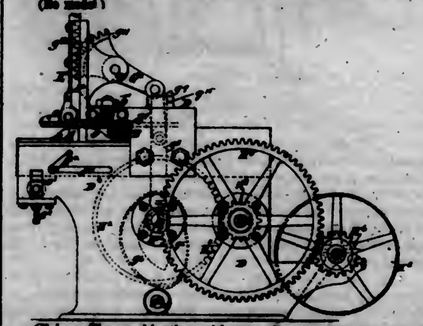
Claim.—The combination of the elevating-trough having the hinged screen X' on its lower side and the hook to secure the screen when closed, the guideways C on the sides of the trough, near the upper end thereof, the slotted blocks B', secured in the guideways, the

383,264.



screws E', extending through the slots in the blocks and entering the sides of the trough, the roller X, journaled in the lower end of the trough, the roller A', journaled in the movable blocks B', the endless belts connecting the said rollers, and the cross-slats connecting the said belts and having the spurs H', substantially as described.

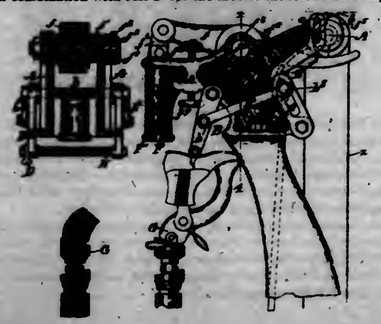
383,265. MACHINE FOR MAKING TIMBER-HANGERS. CASEY H. WILLIAMS, New York, N. Y. Filed July 20, 1887. Serial No. 245,091. (No model.)



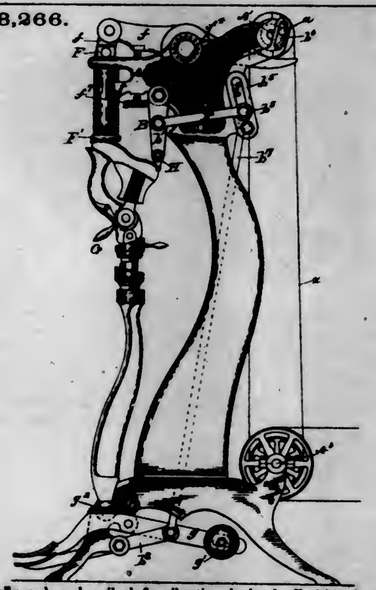
Claim.—The combination, with two rollers mounted upon stationary but adjustable pivots and having their peripheries in part straight and parallel with their axes and in part oblique or angular, of a slide movable between said rollers and geared by a rack and pinion with them, a former having its end wall and portions of its sides adjacent thereto vertical, and having its sides beyond said vertical portions made flaring or oblique to form the twist in the iron, the said former being fitted to a cavity in the slide and vertically movable in such cavity, so as to depress the former below the top of the slide when desired, the end of said slide serving as a former over which to bend the hooked ends of the bar, a roller past which said end of the slide moves in opposite directions, and a vertically-movable plunger carrying a bending roll or rolls, and which is movable downward past the end of the slide when the latter is in its inward position, substantially as herein described.

383,266. SOLE-MACHINE. HENRY S. AMERY, Boston, Mass., assignor to the Bradford Manufacturing Company, same place. Filed June 28, 1887. Serial No. 242,478. (No model.)

Claim.—1. In a machine substantially such as described, leveler F, in combination with rest F' for the face of the sole and means, sub-



388,266.

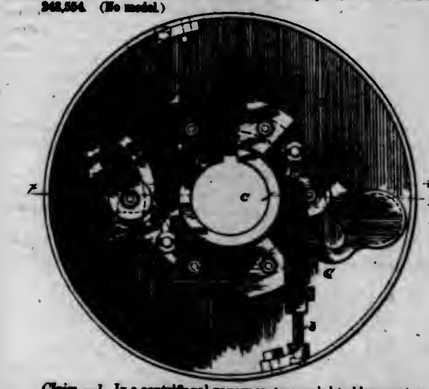


stantially such as described, for vibrating the leveler F within the rest for the face of the sole, substantially such as described.

2. Leveler F, cylindrical rest F' for the face of the sole, and means, substantially such as described, for reciprocating the leveler within the rest for the face of the sole, in combination with a stop, f' f'', for breaking the force of the leveler's blow, substantially as and for the purpose set forth.

3. In combination, spring tool-carrier B, one or more levers, b^3, fulcrumed to the head A, and slotted at b^4 to receive a cross-head, b^5, sliding in the slot and secured to the treadle-rod b^7, the tool-carrier being connected to lever b^3 by rod b^6, and lever b^3 being oscillated on its fulcrum, all substantially as set forth.

388,267. GOVERNOR FOR GAS-ENGINES. JAMES B. ALLFREE, Indianapolis, Ind., assignor of one-half to Robert Shriver and Harrison Swartzwelder, Cumberland, Md. Filed Sept. 1, 1887. Serial No. 248,594. (No model.)



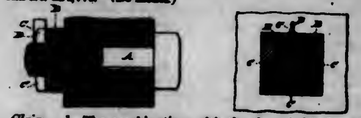
Claim.—1. In a centrifugal governor, two weighted levers pivoted to a suitable casing on opposite sides of its center and provided with eccentrically-curved slots, in combination with counteracting-springs, a valve-actuating eccentric, and suitable means of connection, whereby the said eccentric may be actuated and the valve regulated by the centrifugal force of the weights, substantially as described.

2. In a centrifugal governor, the valve-actuating eccentric fitted, as described, to an actuating-plate, M, in combination with two cam-levers pivoted in the web on opposite sides of the shaft and suitably connected with the actuating-plate to secure its movement automatically, as and for the purpose set forth.

3. In a centrifugal governor, the valve-actuating eccentric, in combination with the two cam-levers D, provided with curved slots E, the correspondingly-curved blocks P, the connecting-pins passing through said blocks and securely fastened to the actuating-plate, the web B, provided with slots H, weights E, and springs G.

4. A centrifugal governor comprising a suitable casing attachable to the driving-shaft, two cam-levers pivoted in the web of said casing on opposite sides of the shaft, weights adjustably attached to said cam-levers, adjustable counteracting-springs attached to the weighted cam-levers and to the casing, a movable plate sliding in suitable guides and carrying a valve-actuating eccentric, and suitable studs or pins attached to said plate and adapted to slide in slots in the web of the casing and in the cam-levers, all substantially as described, so arranged and combined as to operate as set forth.

388,268. NUT-LOCK. HENRY B. BAKER, Helmsville, Ohio, assignor of one-half to William R. Dewire, same place. Filed Jan. 19, 1887. Serial No. 224,776. (No model.)

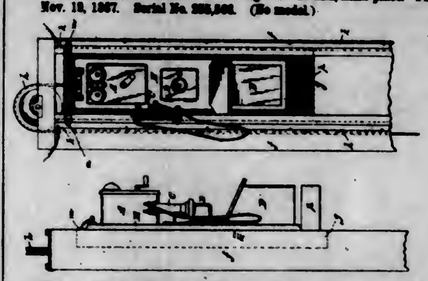


Claim.—1. The combination, with the threaded bolt and the nut having a radial slot in the outer face thereof, of the chisel or slip driven through said radial slot into the threads of the bolt, and having portions of the nut upset against the faces of the slip at the outer end of the slot and inside of the outer end of the slip, substantially as specified.

2. The combination, with the threaded bolt, its bearing, and a nut having a radial slot in the outer face thereof, of the chisel or slip driven through said radial slot into the threads of the bolt, and having portions of the nut at the outer end of the slot upset against the faces of the chisel or slip inside of its outer end, substantially as specified.

3. The combination, with the threaded bolt, its bearing, and a nut provided with radial slots, of the steel slips or chisels placed in the radial slots and driven into the threads on the bolt, and having the material of the nut at the outer ends of the radial slots upset against the faces of said slips inside of their projecting ends, substantially as specified.

388,269. TELEPHONE-CONVEYER. SAMUEL R. BALLARD, Pittsburg, Pa., assignor of one-half to George V. Marshall, same place. Filed Nov. 18, 1887. Serial No. 255,562. (No model.)



Claim.—The combination of the elevator-ways traversing two or more floors of a building, a carriage guided in said ways, a telephone transmitter, receiver, magneto call-bell, and battery mounted thereon, and having automatic switch, line, and ground connections constantly connected to said switch, a counter-weight for the carriage and its contents, and an operating-rope attached to said counter-weight at one end and at the other to the movable carriage, substantially as described.

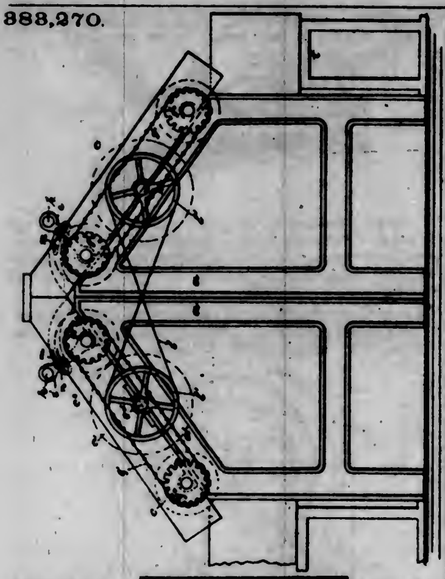
388,270. HAT-STARTING MACHINE. RICHARD BARRETT, Harrison, N. J. Filed Jan. 9, 1888. Serial No. 260,212. (No model.)

Claim.—1. The combination, in a hat-starting machine, with a large central roller or starting-cylinder, c', of smaller cylinders or rollers, c c^2, the said rollers being arranged to form pockets c' c^2 for the hat-bodies and being geared to operate simultaneously in one direction, substantially as and for the purposes set forth.

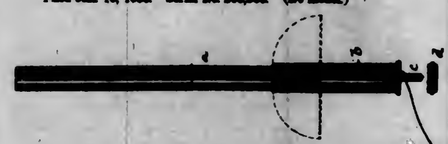
2. The combination, in a hat-starting machine, with a large roller, c', of smaller rollers arranged in inclined series with the said larger roll, substantially as and for the purposes set forth.

3. The combination, in a hat-starting machine, of the larger cylinder, c', a lower cylinder, c, and a higher cylinder, c^2, and a guard-cylinder, A, adapted to prevent the hat from being thrown from off the cylinder c^2, substantially as described.

388,270.



388,271. BATTERY-ZINC. JOHN BRAYER, Jr., Fall River, Mass., assignor to the Beattie Battery Zinc and Electrical Company, same place. Filed Jan. 10, 1883. Serial No. 260,262. (No model.)



Claim.—1. A re-enforce and connection for battery-zincs, consisting of a cap or shell of conducting material adapted to fit over the head of the zinc and extend down upon its body, as set forth.

2. A re-enforce and connection for battery-zincs, consisting of the combination, with a metallic cap or shell, of a screw passing through the head of the cap to receive a tightening-nut, as set forth.

3. As a new article of manufacture, a battery-zinc provided with a cap or shell of metal and a screw or rod, as *c*, for connection, substantially as described.

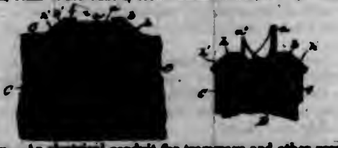
4. The combination, with a battery-zinc, of the cap or shell provided with a screw to receive a clamping-nut having a conical head, the screw being connected with the zinc by a dovetail or mortised connection.

5. The combination, with the zinc, of the cap or shell slitted, as described, and provided with the screw *c*.

388,272. PROCESS OF ORNAMENTING CELLULOID SURFACES. ADOLPH BERNHARD, Hanauerland, Baden, Germany. Filed Jan. 13, 1888. Serial No. 260,994. (No specimens.)

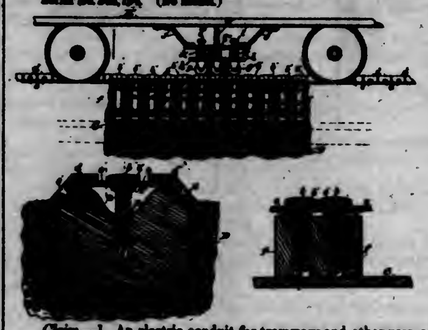
Claim.—The process of producing designs in colors upon a surface of celluloid, which consists in first producing the desired design upon paper or other like material with a suitable ink or inks, then moistening the celluloid surface with a solvent of the same and of the ink employed, and then transferring the design on the paper upon the moist celluloid surface under pressure, substantially as described.

388,273. ELECTRICAL TRAMWAY. HENRY T. BLAKE, New Haven, Conn. Filed June 2, 1887. Serial No. 240,169. (No model.)



Claim.—An electrical conduit for tramways and other uses, consisting of a base of wood or other suitable non-conducting material, having a metallic conductor-strip attached along its upper surface, in combination with a flexible flap or covering of non-conducting material overlying such conductor-strip, resting upon the same and its supporting-base, so as to be substantially in contact with said strip, in the manner and for the purpose hereinbefore set forth, said flap being arranged in the manner described, so as to be lifted and replaced in position to permit the passage of the trolley or other contact-making device, in the manner and for the purpose set forth.

388,274. ELECTRICAL TRAMWAY. HENRY T. BLAKE, New Haven, and CLARENCE STORRS, Bridgeport, Conn. Filed June 30, 1887. Serial No. 243,324. (No model.)



Claim.—1. An electric conduit for tramways and other uses, consisting of a sleeper, of wood or other suitable non-conducting material, having a channel cut in its upper surface and a primary or main conductor laid in the bottom of said channel, in combination with a diaphragm of flexible non-conducting material secured along the upper surface of such conduit across such channel, a secondary conductor attached along the outer surface of said diaphragm over said channel and having a series of projections extending through said diaphragm into said channel, which projections approach nearly to said main conductor, but not to the point of electrical connection therewith, and blocks or strips of elastic rubber or other similar non-conducting elastic material supporting said secondary conductor in its normal position, all as described.

2. The combination of the channeled conduit, constructed substantially as described, having the main conductor at the bottom of the channel, the flexible diaphragm covering said channel, the secondary conductor placed upon said diaphragm, and the flexible flap over said secondary conductor having stiffening-plates which extend across said channel and form a bridge over the secondary conductor, in the manner and for the purpose described.

388,275. GUITAR. GEORGE W. DOWNE, Somerville, Mass. Filed Mar. 28, 1888. Serial No. 268,966. (No model.)

Claim.—1. In a stringed musical instrument, an additional adjustable tuning device for changing the vibrating length of each string independent of the other strings and of the usual means for tuning the strings, substantially as and for the purpose set forth.

2. In a stringed musical instrument, an adjustable tuning-bearing for one end of the vibrating portion of the string, the same being independent of the other strings and of the usual means for tuning the string, substantially as and for the purpose set forth.

3. A compound bridge or bearing for guitars or like musical instruments, the same consisting of a series of adjustable attachments in addition to and independent of the usual tuning devices, so that the virtual or vibrating length of each string may be separately varied, substantially as and for the purposes set forth.

4. A compound bridge or bearing for guitars or like musical instruments, the same consisting of a series of bearings or supports for the strings, to which the strings may or may not be attached, each support being independently adjustable in the direction of the string, the said devices being in addition to the usual tuning devices, whereby the length of the vibrating portion of each string can be varied, as and for the purpose set forth.

5. The herein-described bridge for guitars or like musical instruments which have tuning devices for the strings, the same consisting of a device provided with adjustable attachments independent of the tuning devices, to which the strings are connected, so that the length of each string may be separately varied, for the purpose set forth.

6. In a stringed musical instrument, the combination of a stationary bearing for supporting the strings at one end, together with tuning devices for the strings, a finger-board having fixed frets thereon, and a bridge provided with adjustable bearings or supports for the strings, substantially as and for the purposes set forth.

7. In a stringed musical instrument, the combination of a sta-

383,275.



tionary bearing for supporting the strings at one end, together with tuning devices for the strings, a finger-board having fixed frets thereon, and a bridge provided with adjustable bearings or supports for the strings, and means for locking the adjustable bearings, substantially as and for the purpose set forth.

8. In a bridge for guitars or like musical instruments, an adjustable device having means for the attachment of a string and a bearing for the string in front of the point of attachment, substantially as and for the purpose set forth.

9. In a bridge for guitars or like musical instruments, the combination, with the base plate or block having the projection *c*, of one or more screws, G, passing through the projection, each having one or more adjusting-nuts, and a head provided with means for the attachment of a string, together with a bearing, A^2, for the string, and a block, A^3, substantially as and for the purpose set forth.

10. In a bridge for guitars or like musical instruments, the combination, with the base plate or block having one or more grooves in its upper face, of a corresponding number of bearings for the strings sliding in the grooves, together with means for locking each bearing when adjusted, substantially as and for the purpose set forth.

383,276. TAIL-PIECE FOR STRINGED INSTRUMENTS. SAMUEL M. DUNKIN, Hanoverton, Ohio. Filed Dec. 10, 1887. Serial No. 257,544. (No model.)



Claim.—1. The combination, with a tail-piece for violins, guitars, banjos, and other stringed instruments, having an elliptical recess or socket therein, of the elliptical spool mounted in the recess or socket and adapted to have the strings wound thereon, substantially as specified.

2. A tail-piece for violins, guitars, banjos, and other stringed instruments, having the slots B B and the elliptically-shaped recess or socket E therein, and the spool H, disposed in the recess and having the lower flange, I, fitting snugly therein, and the upper flange, K, bearing on the upper side of the tail-piece around the recess or socket, substantially as specified.

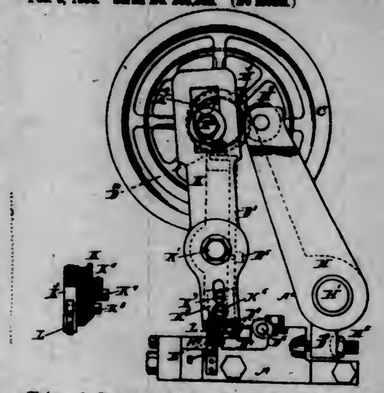
3. A tail-piece for violins, guitars, banjos, and other stringed instruments, having the recess or socket E therein, the legs F F, adjacent to said recess or socket, and the spool H, provided with the lower flange, I, fitting snugly in the recess or socket, and the upper flange, K, having notches L L to engage the said legs, substantially as and for the purpose specified.

383,277. BOTTLE-STOPPER. GEORGE E. CHAMBERLAIN, New York, N. Y. Filed Nov. 30, 1887. Serial No. 256,502. (No model.)



Claim.—A bottle-stopper comprising the sleeve A, upright B, and cover C, the upright being slotted and adjustably secured to the sleeve by a set-screw passing through the slot, and the cover being hinged to the upright and provided with a spring, whereby it is normally held in a closed position, as set forth.

383,278. STRIP-TACK-HEADING MACHINE. GEORGE W. COPELAND, Malden, Mass., assignor to Daniel T. Copeland, same place. Filed Feb. 6, 1888. Serial No. 263,262. (No model.)



Claim.—1. In a strip-tack-heading machine, the combination of gripping-jaws for holding the blank, an oscillating operating-tool for bending the head in one direction, and a roller for bending or swinging the point or end of said head back upon itself in the reverse direction, substantially as described.

2. In a strip-tack-heading machine, the combination of gripping-jaws for holding the blank, an oscillating tool-holder carrying a tool for bending the head in one direction, and a roller for bending or swaging the point or end of said head back upon itself in the reverse direction, substantially as described.

3. In a strip-tack-heading machine, the combination of the gripping-jaws H^3 H^7 with the oscillating tool-holder K^3, provided with a bending-tool, and a flattening-roller, L, substantially as described, and for the purpose set forth.

4. In a strip-tack-heading machine, the combination of the gripping-jaws H^3 H^7 with the feeding-pawl D^2, block D^7, and its actuating mechanism, substantially as described, and for the purpose set forth.

5. In a strip-tack-heading machine, the combination of the fixed gripping-jaw H^7 and the movable gripping-jaw H^3 with the swinging lever D^2 H, roller H^9, and a suitable bending-tool and roller for bending or swaging the heads, and cam H^8, all substantially as described, and for the purposes set forth.

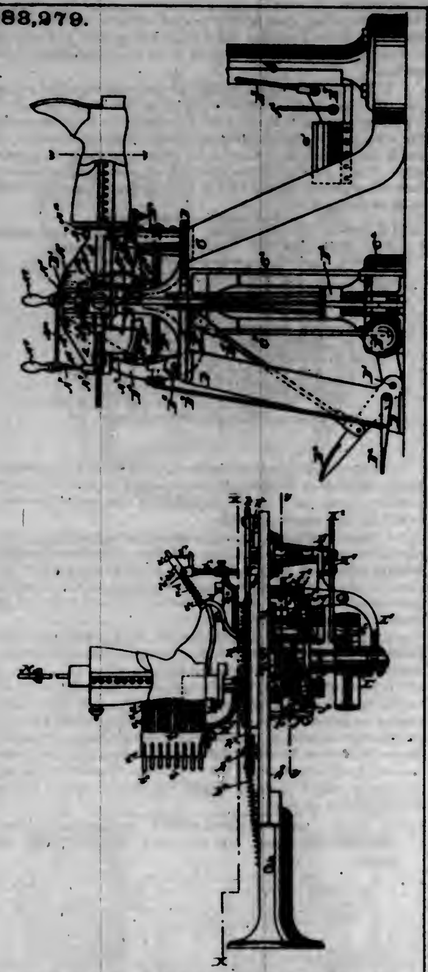
383,279. MACHINE FOR TRIMMING SHOES. GEORGE W. COPELAND, Malden, and JOSEPH R. CRAIG, Somerville, assignors, by mesne assignments, to Daniel T. Copeland, Malden, Mass. Filed Feb. 8, 1888. Serial No. 263,502. (No model.)

Claim.—1. In a shoe-trueing machine, the yielding toe and back rubbing tools mounted on pivoted shafts, and adapted by mechanism, substantially as described, to be automatically adjusted to and from each other, and to be oscillated substantially as and for the purpose set forth.

2. In a shoe-trueing machine, the mechanism for rubbing the sides and front of a shoe, comprising a series of adjustable spring-actuated rods or arms with proper rubbing tools or faces mounted on reciprocating heads, and mechanism for giving said heads differential motion, substantially as set forth.

3. A shoe-trueing machine comprising a revolving turret carrying shoe-trees, mechanism, substantially as described, for rotating the same and expanding the trees, a stand carrying toe and back rubbing tools mounted on pivoted shafts and adapted to be adjusted toward and

383,279.



from each other and oscillated, and an independent stand carrying side and front part rubbing mechanism supporting a series of adjustable spring-actuated rods provided with tools or faces mounted on reciprocating frames or slides having differential motion, and suitable operating mechanism, substantially as described.

4. In a machine for trueing shoes, in combination with the turret, the swinging bars A^5, and a pawl and ratchet to spread and carry spread the trees mounted on the sections of the turret.

5. In a machine for trueing shoes, in combination with the turret carrying one or more shoe-trees, the counterbalanced treadle D^6, its rod D^8, and the bell-crank lever D^4, operating as described.

6. In a machine for trueing shoes, the combination of the tool-carrier and tool-governing heads operated by differential cranks B^4 E^2, revolving around a common center.

7. In a machine for trueing shoes, the rand-guide F, constructed and operating substantially as shown and described, and for the purpose set forth.

8. In a shoe-trueing machine, a thin metal sole-plate, which acts as a rand-guide, attached to a swinging frame, in combination with partial disks to hold the swinging frame in operative position when they are revolving, substantially as described, and for the purpose set forth.

9. In a shoe-trueing machine, a time-ratchet provided with one more tooth than the feeding-ratchets for the tool-carrying slides or frames, and operative mechanism therefor, substantially as described.

10. In a machine for trueing shoes, cranks B^4, shafts G, clutches G^2, pawl A, ratchet A', lanthorn A^2 A^3, wedges A^4, and springs A^5, in combination with the clutch-gears G^3 and lanthorn G^4, operating as described.

11. In a machine for trueing shoes, the spring G^5, in combination with the clutches G^2, substantially as set forth.

12. In a machine for trueing shoes, the lever A^7, the spring-pawl A^6, and the spring A^5, in combination with the ratchet A', for the purposes set forth.

13. In a machine for trueing shoes, the tool-carriers H^3 H^7, having the line of the pivots around which they oscillate located for operative position by the rests H H' at a predetermined distance from the heel and toe ends of the shoe, substantially as described.

14. In a machine for trueing shoes, the tool-carriers H^3 H^7, carrying toe and back rubbing tools, and oscillated by mechanism, substantially as described.

15. In a machine for trueing shoes, the tool-carriers H^3 H^7, reciprocated horizontally by mechanism, substantially as shown and described.

16. In a machine for trueing shoes, a ratchet-wheel and operative mechanism for timing its operation, provided with a blank space, for the purposes set forth.

17. In a machine for trueing shoes, a ratchet, K^4, for timing its operation, in combination with the feeding-ratchets or the cams J^2 J^3, as set forth.

18. In a machine for trueing shoes, the elevated arc K^2, the clutch-lever L^2, having the inclined end L^3, and the spring I^3, in combination with the clutch L^1 and pulley L', all operating as described, and for the purposes set forth.

19. In a machine for trueing shoes, the eccentric L^4 and the pawl L^5, in combination with the ratchet K^3 and the lever K^4 K^7 and spring I^4, substantially as described, and for the purposes set forth.

20. In combination with a machine for trueing shoes, a tree provided with springs N^3, operating substantially as described, and for the purposes set forth.

21. In a machine for trueing shoes, the carriers for the trueing-tools, mounted upon pivots upon which they oscillate, adjusted automatically by means of heel and toe rests at predetermined distances from the heel and toe ends of the shoe, substantially as described.

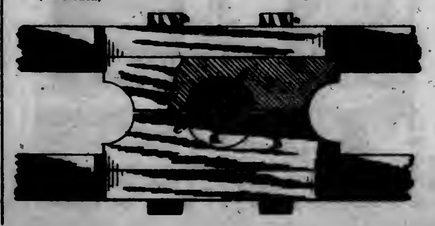
383,280. SASH-BALANCE. JAMES H. GRAHAM, Hartsell's, Ala., assignor of one-half to Milton J. Sparks, same place. Filed July 16, 1887. Serial No. 244,262. (No model.)



Claim.—1. In a sash-balance, the combination, with the casken having suitable pulleys thereon, of the fastener L, secured to one of the sashes and comprising the block M, having the wedge-shaped recesses N N' therein, the openings *n n'* in the ends of the block and communicating with the said recesses, and the wedges Q Q', arranged in the recesses N N', and having serrated upper sides, and the cords S S', operating around the said pulleys and passing through the openings *n n'*, and recesses N N' in opposite directions over the said wedges, substantially as specified.

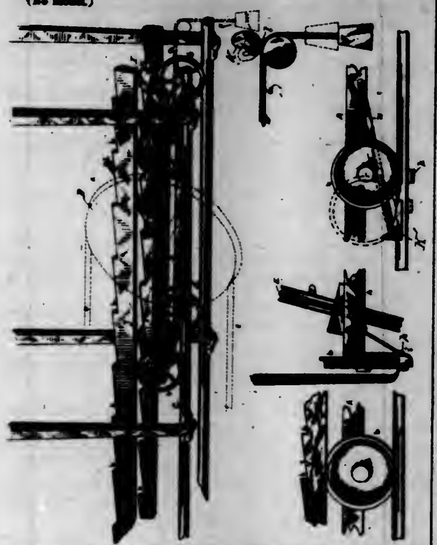
2. In a sash-balance, the combination, with the casken having suitable pulleys arranged thereon, of the fastener L, comprising the block M, having the wedge-shaped recesses N N', the end openings, *n n'*, and the shallow recesses O O', communicating with the recesses N N', and the serrated wedges Q Q', operating in the recesses N N', and having pins or handles R R', operating in the recesses O O', and the cords S S', passing around the said pulleys and extending through the openings *n n'* in opposite directions, the said cords being adapted to be clamped within the block M by the wedges Q Q', substantially as and for the purpose specified.

383,281. MEANS FOR SECURING PULLEYS ON SHAFTS. WALLACE H. DUNCH, Mishawaka, Ind. Filed Sept. 5, 1887. Serial No. 248,513. (No model.)



Claim.—The separable pulley having a central bearing portion of soft material, in combination with the shaft having a recess formed therein, a key piece or pin adapted to fit the recess and having a sharp outer end, and clamping devices as the screws *h*, for forcing together the parts of the pulley and causing the outer end of the pin to cut itself in the pulley at the desired point, substantially as set forth.

383,282. SLACK-TAKE-UP FOR ROPE TRANSMISSION. WALLACE H. DOUGLASS, Hitchcock, Ind. Filed Oct. 1, 1887. Serial No. 251,159. (No model.)



Claim.—1. In combination, the transmission-rope, the take-up wheel, the carriage to support said wheel, and the track C, with a catch adapted to engage and automatically arrest said carriage when moved in one direction, but let it slide freely in the other direction.

2. The transmission-rope, the take-up wheel, the carriage A, and track C, combined with a rail, and a catch attached to said carriage and adapted to engage said rail and automatically arrest the carriage when moved in one direction, but let it go freely when moved in the other direction, as set forth.

3. The transmission-rope, the take-up wheel, the carriage A to carry said wheel, and the track C, combined with the rail J, provided with ratchets A, and arm I, hinged to the carriage and in engagement with said ratchets, as set forth.

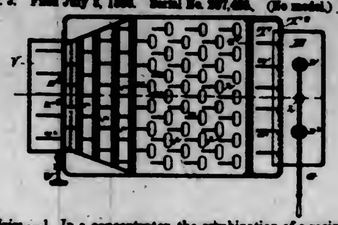
383,283. EXTINGUISHING FIRES IN STOVES. ALBERT DOREMUS, Nyack, N. Y. Filed Mar. 30, 1887. Serial No. 232,594. (No model.)



Claim.—1. The car, the stove A, and the grate and ash-pan therein, each supported near its rear edge upon a pivot, in combination with the bar E, having studs projecting into the stove, upon which the forward edges of said grate and ash-pan are supported, vertical tube F, disposed in front of said bar, and a chain passing down said tube and connecting said bar with the next car of the train, substantially as described.

2. The stove having a grate and ash-pan, each supported near its rear edge upon a pivot, said stove being provided with openings for permitting access to both said grate and ash-pan, in combination with the water-tank J, entirely below and independent of said ash-pan, the bar E, having studs projecting into the stove, upon which the forward edges of said grate and ash-pan are supported, and a chain whereby both the grate and ash-pan may be dumped simultaneously, substantially as described.

383,284. CONCENTRATOR. JOHN J. DRUCKENER, East Newark, N. J. Filed July 2, 1888. Serial No. 307,488. (No model.)



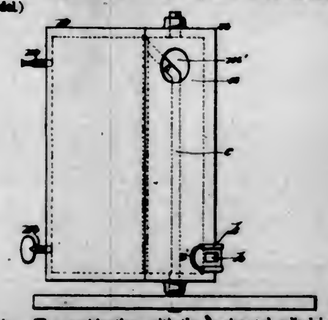
Claim.—1. In a concentrator, the combination of a reciprocating pan having stops or arresters and depressions or pockets and grooves *p* and *r*, a pump, and a hopper, arranged and operating substantially as and for the purposes set forth.

2. In a concentrator, the combination of a reciprocating pan having a pocketed or recessed bottom, and stops or arresters arranged laterally adjacent to the pockets therein, to produce a whirl or eddy over the pockets, substantially as set forth, and a pump for providing said pan with water, and a lever connected with said pump and pan for actuating the two simultaneously.

3. In a concentrator, the combination of the reciprocating pan having wings w^2 and an amalgamating-pan receiving said wings, substantially as and for the purposes set forth.

4. In combination, a concentrating-pan, reciprocating water and ore supply devices disposed at one end of said pan, exits for water and washed ore disposed at the opposite end, the bottom of said pan being provided with a series of pockets or recesses and stops, arresters, or wings disposed on or above said bottom laterally adjacent to said pockets at right angles to the line or direction of motion of said pan, whereby an eddy is produced directly over each of the said pockets, substantially as set forth.

383,285. RICE-HULLING MACHINE. EVARISTO CONRADO RIBEIRINHA, Pirahinha, Brazil. Filed Oct. 8, 1886. Serial No. 215,708. (No model.)



Claim.—The combination, with the horizontal cylindrical casing having a hulling-surface, a feed-opening at one end, and a discharge-opening at the other end, said discharge-opening being provided with a sliding plate having an opening to control the pressure and discharge of the material, of the horizontal hulling-cylinder *c*, having the projecting bars *c*, arranged parallel with its axis throughout the greater part of their length, and inclined at one end at an angle of about forty-five degrees directly beneath the feed-opening of the cylindrical casing, substantially as described.

383,286. COMBINED REVOLVING HARROW AND CULTIVATOR. LEWIS S. EVANS, Alvarado, Tex. Filed Feb. 20, 1888. Serial No. 265,096. (No model.)

Claim.—1. The combination, with the frame, of the adjustable hangers, the shaft L, journaled in said hangers and provided with the

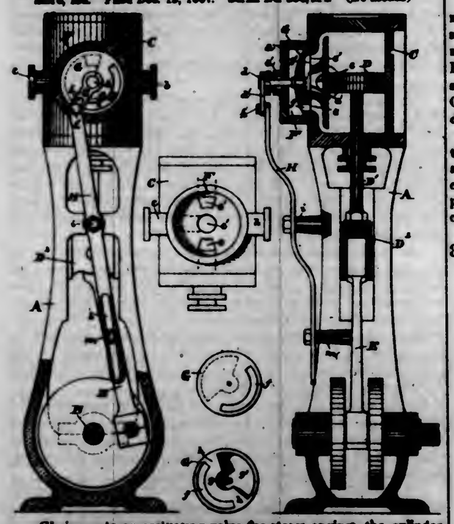
383,286.



revolving blade and bevel-pinion, the cross-shaft Q, carrying bevel-wheel R and journaled in the boxes U, the oscillating box P on the shaft Q and receiving the end of shaft L, and the drive-chain connecting the cog-wheel on shaft Q with the gear on the driving-wheel, substantially as described.

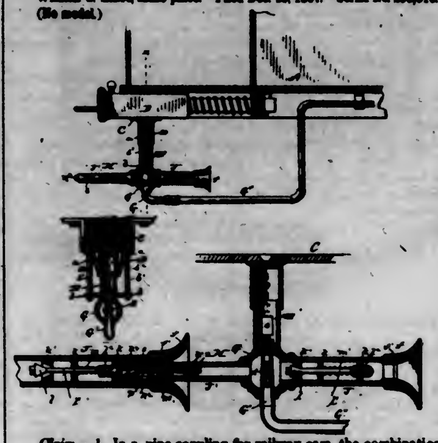
2. The combination, with the frame extending in front of the axle of the adjustable hangers carrying the shaft L, provided with the harrow-blade and bevel-pinion, the cross-shaft Q, operated from the main drive-wheel, carrying the main bevel-wheel meshing with the pinion on the harrow-shaft, the oscillating box in which fits the end of the harrow-shaft, the hinged bars carrying the cultivating-teeth, and the hangers N, depending from the frame and serving both as the support for the forward ends of the cultivator-bars and for the journal-bearings of the cross-shaft Q, substantially as and for the purposes described.

383,287. VALVE FOR STEAM-ENGINES. JOHN D. FISER, Baltimore, Md. Filed Dec. 19, 1887. Serial No. 258,414. (No model.)



Claim.—In an condensing valve for steam-engines, the cylinder G, provided with ports *e e'*, in combination with the recess *f* and the port *f*, the area of said port *f* being less than the inlet-port of the cylinder, substantially as and for the purposes set forth.

383,288. AUTOMATIC PIPE-COUPLING FOR RAILWAY-CARS. WILLIAM F. GRAMLEY, Williamsport, Pa., assignor of three-fourths to William G. Hiltz, same place. Filed Dec. 16, 1887. Serial No. 258,010. (No model.)



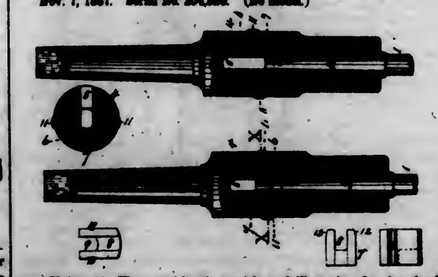
Claim.—1. In a pipe-coupling for railway-cars, the combination of the main conducting-pipe terminating in an upwardly-directed tapering extension, G', provided with openings in its opposite sides, means for supporting the main pipe, the globe G, fitted closely upon the extension G' and inclosing its recessed portion, the globe being adapted to rotate freely upon the vertical extension and provided with screw-threaded openings in its opposite sides, and the oppositely-projecting valved male and female branches screwed into the openings in the opposite sides of the globe, whereby either the male or female branch may be directed toward the adjacent car, substantially as herein set forth.

2. In a pipe-coupling for steam-pipes, the combination of the main steam-pipe provided with a perforated tapering vertical portion, G', a vertical yielding suspension device to which the upper end of the portion G' is adjustably secured, a globe, G, vertically perforated for the passage of the vertical portion G', this portion G' forming a vertical pivot for the globe to turn upon, and the male and female branches attached to opposite sides of the globe G and communicating with the interior thereof.

3. In a coupling device for steam-pipes, the combination of the main steam-conducting pipe provided with a vertical perforated extension, as at G', a vertically-yielding suspension device for suspending the main pipe to the car, and the reversible horizontally-arranged coupling H, comprising, essentially, the valved male and female branches, the said reversible coupling H being pivotally supported upon the extension G' of the main pipe and communicating therewith, substantially as described.

4. The combination, with a rigid tubular guide depending from the stirrup of a car-coupling, a cylinder working vertically in said guide and suspended by springs, a male and female reversible steam-pipe coupling having valves in its branches, and a conical perforated steam-pipe nozzle rigidly but adjustably secured to said vertically-movable cylinder, substantially as described.

383,289. DRILL-SOCKET. PETER GRAMLEY, St. Louis, Mo. Filed Nov. 7, 1887. Serial No. 254,892. (No model.)



Claim.—1. The combination, with a drill-stock, of a longitudinally-adjustable grip-block, substantially as and for the purposes specified.

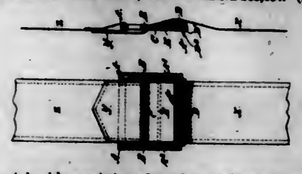
2. The combination, with a drill-stock, of a longitudinally-adjustable grip-block having a vertical and a horizontal open slot, substantially as and for the purposes specified.

3. The combination, with a drill-stock, of a longitudinally-adjustable grip-block having the vertical side grooves for the reception of the ends of the set-screws, and set-screws for securing the adjustable drill-block, substantially as and for the purposes specified.

4. The combination, with a drill-stock having an elongated slot or chamber for the reception of an adjustable grip-block, of a longitudinally-adjustable grip-block arranged therein, and set-screws arranged in different transverse planes of the stock for securing the adjustable grip-block, substantially as and for the purposes specified.

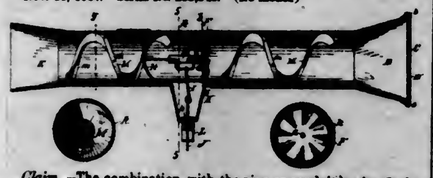
5. The combination, with a bit-stock having a grip-block cavity, of a longitudinally-adjustable grip-block having spring-tongues arranged in the cavity of the stock, substantially as and for the purposes specified.

383,290. BUCKLE OR CLASP. WILHELM GRIM, Commerstaedt, Prussia, Germany. Filed Feb. 4, 1888. Serial No. 263,007. (No model.)



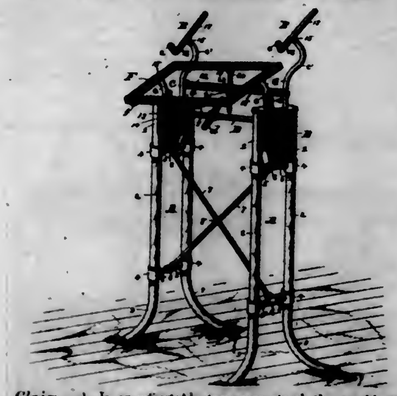
Claim.—A buckle consisting of the front and rear pins, A' A, connected by side bars, a transverse bridge-piece, B, secured to the side bars between the front and rear pins, and the flap C D, pivoted by a pin, E, in the space between the bridge-piece and the front pin to bind a strap when stretched against the bridge-piece, substantially as and for the purpose described.

383,291. WATER-POWER. ABRAM GUSTLER, Boone, Iowa. Filed Nov. 16, 1887. Serial No. 255,346. (No model.)



Claim.—The combination, with the pipe or conduit having flaring ends, one side of one end being removed and a gate for closing the other end, and a wheel journaled within the pipe on a crank-shaft arranged parallel with the bore of the pipe, of the dome, the bracket, the rod having bearings in the dome and bracket, and the pitman connecting the crank-shaft and rod, substantially as described.

383,292. TYPE-CASE STAND. WILLIAM P. HARMONY, Sidney, Ohio. Filed Sept. 13, 1887. Serial No. 249,461. (No model.)

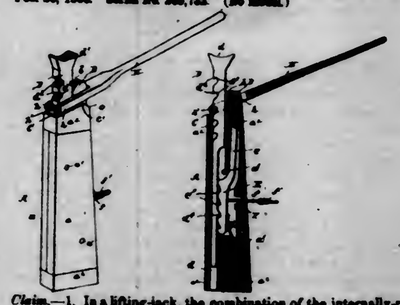


Claim.—1. In an adjustable type-case stand, the combination, with a transverse shaft journaled in the upper portion of the stand, and provided with a pinion near each end and an operating-handle, of a two-arm standard at each side of the stand, supports secured to the rear arms of said standards for holding the upper case, and a frame pivoted to the front arms for supporting the lower case, a rack-bar secured to one of the arms of each standard, with which the pinions engage, and mechanism, substantially as described, for holding the standards elevated.

2. In an adjustable type-case stand, the combination, with the legs, rounds, and cross-braces, constructed substantially as described, of the side blocks, grooved as at 9 and 10, clamped between the upper ends of each pair of legs, and provided with pins for taking into the tops of the legs, a transverse shaft journaled in said blocks, and provided with a pinion near each end and an operating-handle, a two-arm standard at each side of the stand, each formed from a single piece of metal bent so as to fit and work in grooves 10 in the side blocks, supports secured to the rear arms of said standards for holding the upper case, and a frame pivoted to the front arms for supporting the lower case, a rack-bar secured to one of the arms of each standard, with which the pinions engage, and mechanism, substantially as described, for holding the standards elevated.

3. In an adjustable type-case stand constructed as described, the combination, with a cross-brace uniting the rear arms of the standards which support the upper case, and provided with a loop, of a rectangular frame on which the lower case rests, pivoted to the front arms of the standards, a staple secured to the rear part of said frame, a screw-threaded rod hung to said staple and passing through the loop on the cross-brace, and screw-threaded nuts on said rod, above and below said loop, whereby the lower case may be adjusted to and held at any desired inclination with relation to the upper case.

383,293. LIFTING-JACK. MARCUS HEDGES, Harriotte, Cal. Filed Feb. 20, 1888. Serial No. 265,732. (No model.)



Claim.—1. In a lifting-jack, the combination of the internally-recessed casing having the vertical guide projection at its upper end, the lifting and support bar sliding in said recessed casing and provided on its edge with downwardly-inclined teeth, and the bifurcated lever-handle fitting over the guide projection and upper end of the lifting-bar and provided with a transverse bar between the ends of its bifurcation to engage the said teeth of the lifting-bar, substantially as specified.

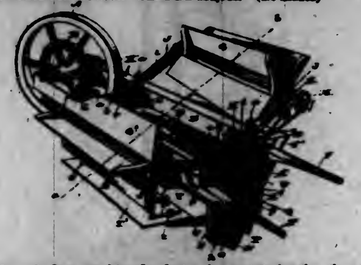
2. In a lifting-jack, the combination of the recessed sectioned casing, metal-shod at the ends, and having at its upper end the shoulders C *c*, downwardly inclined from their rounded apex *c'* at about right angles to each other, and the vertical guide projection B, provided with the beveled corner *b*, the lifting-bar D, having the angular head *d'* and the teeth *d²*, forming between them the rounded notches *d³*, and the lever-handle H, having the arms *h* at its bifurcated inner end, and the rounded transverse bar *h'*, connecting the ends of said arms; substantially as specified.

3. In a lifting-jack, the combination of the recessed casing having a vertical guide projection at its upper end, the lifting and support bar having the downwardly-inclined teeth on its outer edge and the downwardly-inclined detent-tooth on its inner edge, the ratchet-bar pivoted at the end of the upwardly-extending arm and provided with upwardly-inclined teeth on its inner edge to engage the detent-tooth on the lifting-bar, and the lever-handle bifurcated at its inner end to fit over the guide projection and having a transverse bar to engage the teeth of the lifting-bar, substantially as specified.

4. In a lifting-jack, the combination, with the recessed casing, the lifting-bar having the lifting and detent teeth, and the bifurcated handle provided with a transverse bar to engage said lifting-teeth, of the pivoted depending ratchet-bar and the spring pressing said ratchet-bar into engagement, substantially as specified.

5. In a lifting-jack, the combination, with the recessed casing, the lifting-bar having the lifting and detent teeth, and the bifurcated handle provided with a transverse bar to engage said lifting-teeth, of the pivoted depending ratchet-bar, the rod secured to the outer edge of the ratchet-bar and looped at its outer end outside the casing, the chain attached to said loop, and the U-shaped spring pressing the ratchet-bar into engagement, substantially as specified.

383,294. MACHINE FOR DESTROYING POTATO-BUGS. WILLIAM HUNT, Toronto, and JOHN W. BAILEY, Cartwright, Ontario, Canada. Filed Oct. 20, 1887. Serial No. 252,913. (No model.)



Claim.—1. In a machine for destroying potato-beetles, the combination, with a wheel suitably journaled and provided with a bevel-gear ring, of a spur-pinion adapted to mesh with said gear-ring and to drive a shaft and a pulley thereon, which actuate by means of belting and pulleys inwardly-rotating beaters journaled in arms adjustably connected with the frame of the machine, inclined tables below said beaters, adjustable laterally and radially on said frame, and designed to direct the beetles swept from the plants to two inwardly-rotating rollers driven by spur-pinions meshing into each other, one of which derives motion by pulley and belting connected with a pulley on the main shaft of the machine, substantially as specified.

2. The combination of wheel A, journaled on frame B, cogged ring B on said wheel, spur-pinion C, main shaft D, carrying said pinion, double pulley L on said shaft, rope *g*, pulleys M M', adjustable arms J, attached to said frame B, beaters G G' on spindles H, which are journaled on said arms, inclined table T, with adjustable leaves T', brackets U, adjustable as described, crushing-rollers R and S, gear-pinion P, meshing with gear-pinion O, which latter is driven by power communicated from the main shaft to pulley N, and spring A, formed in slot in end frame-piece, Q, and handles F, substantially as described and specified.

3. In combination with the frame of a machine for destroying potato-beetles, arms J, secured to and extending laterally from the frame, and slotted to receive standards *a*, which are pierced for pins *c*, and above K, rising from the ends of the frame, slotted and similarly pierced for retaining-pins *r*, the beaters G G', journaled on said arms J, and revolving inwardly by power communicated from the main shaft D of the machine, substantially as specified.

4. The combination, with a device for destroying beetles with the crushing-rollers R and S, suitably journaled, of gear-pinions O and P at the discharge of the tables, and spring A, formed in the slot in end frame-piece, Q, pulley N, driven by power communicated from main shaft D, inclined tables T, brackets U, adjustable on said frame, and leaves T', adjustably connected with tables T by set-screws *t* in slots *t'*, substantially as described, and for the purpose specified.

5. In a machine for destroying potato-beetles, the combination of the beveled beater G, journaled in the arm J, adjustably connected to the frame of the machine and adapted to rotate inwardly by power communicated from the main shaft D, which is actuated by bevel-gear connected with the road-wheel A, and inclined table T, adjustable laterally and radially on said frame, and designed to forward the beetles swept from the plants to the crushing-rollers O and P, which are also driven by power communicated from the main shaft D, substantially as specified.

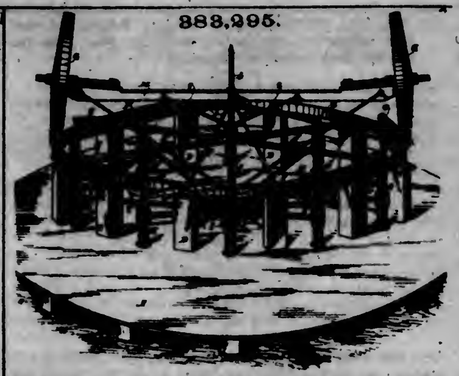
383,295. POWER MECHANISM. WILLIAM A. HOWARD, Petaluma, Cal., assignor of one-half to Charles W. Adamson, same place. Filed Dec. 30, 1887. Serial No. 259,433. (No model.)

Claim.—1. A power mechanism comprising a connected series of pivoted levers, a fixed track alongside of said levers, and oppositely-located wheels adapted to travel on the track and having their rims projecting over into the plane of and to contact with said levers, whereby they are oscillated, substantially as described.

2. A power mechanism comprising connected levers arranged in annular or endless series, an annular fixed track concentric with said lever series, and oppositely-located wheels adapted to travel upon the track and in contact with the levers, whereby adjacent ones throughout the series are oscillated simultaneously in opposite directions, substantially as described.

3. In a power mechanism, the annular series of connected pivoted levers to be connected with the machine or machines to be driven, and the fixed track concentric to and within the series of levers, in combination with the wheels mounted on the track to move in contact with the levers, whereby they are oscillated as described, the axle connecting the wheels, and the pole extending from the axle, substantially as described.

383,295.

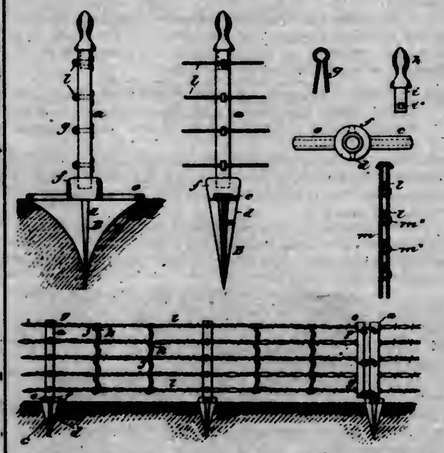


4. In a power mechanism, the annular series of standards, the levers pivoted to said standards, and the links connecting the levers in an endless series, in combination with the annular fixed track supported on the standards within the lever series and the beveled wheels adapted to roll on the track and levers, whereby the latter are oscillated, substantially as described.

5. In a power mechanism, the annular series of standards, the levers pivoted thereto, and the links connecting the levers in an endless series, in combination with the fixed annular track on the standards, the diametrical braces, and the inclined braces for said track, the fixed center pin, the axle pivoted on said pin, and the wheels on the axle adapted to roll on the track and levers, whereby the latter are oscillated, substantially as described.

6. In a power mechanism, the annular series of pivoted connected levers and the concentric beveled top fixed track, in combination with the axle, and the wheels mounted at an angle and having beveled rims adapted to roll on the track and levers, whereby the latter are oscillated, substantially as herein described.

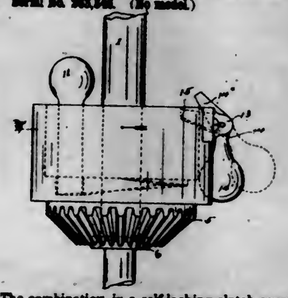
383,296. IRON FENCE. SAMUEL B. HEMELMAN, Chicago, Ill. Filed Jan. 26, 1888. Serial No. 262,022. (No model.)



Claim.—1. An iron fence consisting of tubular posts provided with holes at right angles to the plane of the fence, in which are secured split keys holding wire rails, said tubular posts being cast into a base consisting of a foot, *f*, placed centrally over the intersecting webs *c* and *d* and united to them, and a cap, *e*, on the webs *c*, substantially as specified.

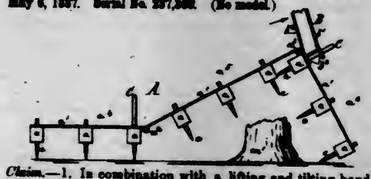
2. An iron fence consisting of tubular posts provided with caps secured to their places by the same keys which hold the upper strand of wire, and a base consisting of the intersecting webs *c d*, holding centrally over their intersection a foot, *f*, united to them and the cap of the webs *c*, substantially as specified.

383,297. CLUTCH-COUPLING. GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Feb. 13, 1888. Serial No. 263,846. (No model.)



Claim.—The combination, in a self-locking clutch-coupling, with a driver provided with an inclined circular groove in its bottom and with a pivoted locking-finger on its side, said driver running loose on the driven shaft, of the driven shaft and a collar fast on said shaft and provided with a movable pin adapted to engage the said inclined groove, while the said locking-finger engages a notch in the edge of said collar, substantially as shown and described.

383,298. HARROW. WILLIAM B. JAGGER, Columbus, Ohio. Filed May 6, 1887. Serial No. 237,262. (No model.)



Claim.—1. In combination with a lifting and tilting hand-lever, B, a three-section harrow comprising a middle section, a^2, jointed on either side to side sections, a^1 and a^3, and with the inner beams, a^{10}, of the respective side sections and nearest to the central section provided with vertical pins C to engage at the will of the operator with the lifting and tilting hand-lever, substantially as and for the purpose described.

2. The lifting and tilting lever B, provided with an angular bend, b^1, and an inclined passage, b^2, in combination with the vertical pin C of the side sections, a^1 and a^3, of the three-section harrow a^1 a^2 a^3, substantially as and for the purpose described.

383,299. COMBINED DOLL AND PHONOGRAPH. WILLIAM W. JACQUES, Newton, Mass., assignor to the Edison Phonograph Toy Manufacturing Company, of Maine. Filed Oct. 19, 1887. Serial No. 252,790. (No model.)

Claim.—1. The combination of a phonograph and a doll provided with a body carrying said phonograph, and a head having an orifice therein for the emission of sounds from the phonograph, substantially as described.

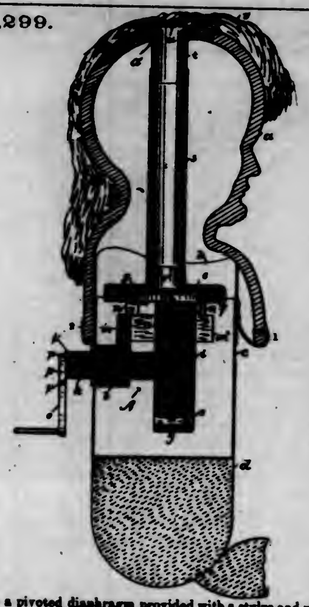
2. The combination of a phonograph having its stylus or tracer supported by the opposing tension of two or more springs, and a doll serving as a receptacle and a support for said phonograph, substantially as described.

3. The combination of a phonograph and a doll having a body provided with a cavity for receiving and a support for holding the phonograph therein, and a resonator contained in a perforated head for conveying and emitting sounds produced by the phonograph within the body, substantially as described.

4. The combination, with a doll provided with a cavity and a support or supports for a phonograph, of a phonograph having a diaphragm held in a frame at one edge and controlled in its movements by a spring upon the upper and under sides of said frame, substantially as described.

5. In a phonograph, the combination of a traveling record-surface with a pivoted diaphragm provided with a stylus and maintained between two counteracting-springs under tension in operative relation with said record-surface, substantially as described.





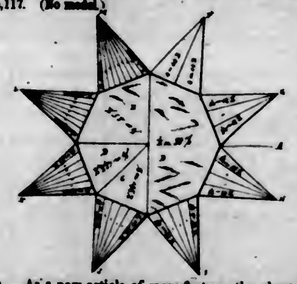
6. The combination, with a phonograph, of an automatic shipping device actuated by the reversed motion of the record-surface to withdraw the diaphragm-tracer from the contact with the record-surface, substantially as described.

7. The combination, in a phonograph, of a diaphragm held in a hinged frame cushioned by a spring acting upon one side thereof, with a second spring acting upon the other side of the frame, and having an extension bearing upon the record-surface, so as to disengage the stylus from the record-surface when the motion of the latter is reversed, substantially as described.

8. A record-plate for phonographs, consisting of a foil of metal which is superficially hard upon the side which is to receive the record and is normally soft upon the other side, substantially as described, and for the purpose specified.

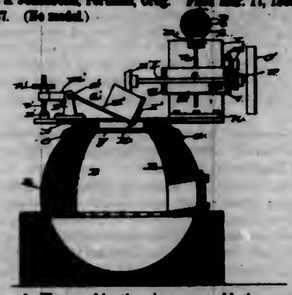
9. In combination with a phonograph, a record-plate of oxide foil made superficially hard upon the side which is to receive the record, whereby while the record may be readily impressed thereon it becomes practically permanent, substantially as described.

383,300. DEVICE FOR TEACHING FRACTIONS AND PERCENTAGE. LOUIS W. JOHNSON, Spencer, Mo. Filed Feb. 24, 1888. Serial No. 265,117. (No model.)



Claim.—As a new article of manufacture, the chart herein described, consisting of a polygonal surface, A, divided into any number of fractional parts, and having radial wings F G, &c., laid off as illustrated, whose aggregate value in the form of percentage shall in each case equal that of any other wing, so that a fractional part of the surface A will be indicated in the form of percentage on the stellar wings radiating equally from the center of the polygon, for the purpose herein fully shown and described.

383,301. MACHINE FOR SOLDERING CYLINDRICAL CANS. JAMES B. JOHNSTON, Portland, Oreg. Filed Mar. 17, 1888. Serial No. 267,827. (No model.)



Claim.—1. The combination, in a can-soldering machine, of the bed-plate having a soldering trough or can, the vertically-movable frame, the revolvible shafts Z, journaled in said frame, means to rotate said shafts, and the friction-disks E', secured to said shafts, for the purpose set forth, substantially as described.

2. The combination, in a can-soldering machine, of the frame, the shafts Z, journaled therein, and having their outer ends independently movable in a vertical direction and provided with the friction-disks E', and means, substantially as set forth, to rotate said shafts, for the purpose specified.

3. In a can-soldering machine, the combination of the furnace having the opening in its upper side, the bed-plate fitting on the top of the furnace, having the longitudinal central opening registering with the opening in the furnace and provided with the brackets G, bolted to the upper side of the furnace, and the solder pan or trough fitting in and having supporting-flanges engaging countersunk recesses in the sides of the opening in the bed-plate, substantially as described.

4. The combination, in a can-soldering machine, of the solder pan or trough, the laterally-inclined guide-track having the flange F', and provided at its lower side with the groove or gutter K' and openings L', and devices to vertically adjust said guide-track, substantially as described.

5. The combination of the solder trough or pan, the pivoted laterally-inclined guide-track having the flange F' at its lower side, and the groove K' and openings L', for the purpose set forth, and provided at its upper side with the arms M', and the adjusting-screws engaging said arms and adapted to raise or lower the guide-track in the trough or can, substantially as described.

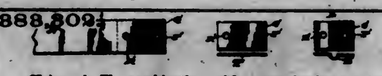
6. The combination of the bed-plate having the solder trough or pan and vertical standards I, with the vertically-movable frame, the revolvible shafts journaled in said frame and having the friction-disks, for the purpose set forth, the elevating-screws R, engaging the frame and journaled in bearings on standards I, and the shaft N, geared to said screws, substantially as described.

7. The combination of the bar U, having the vertical slots Y, the bar V, the bearings X, pivoted to said bar, the shafts Z, journaled in said bearings and extending through the slots Y, the friction-disks at the outer end of said shafts, the sprocket-wheels at the inner ends thereof, and the endless chain connecting said sprocket-wheels, substantially as described.

383,302. MACHINE FOR MAKING SHEET-METAL BLANKS. CHARLES W. JUDSON, Terryville, Conn., assignor to the Eagle Lock Company, same place. Filed Apr. 28, 1887. Renewed Apr. 5, 1888. Serial No. 269,982. (No model.)



383,303. [redacted]



Claim.—1. The combination, with a press having a gate, of two dies and two punches, a reciprocating feed for feeding the blanks from one die to the other, and an actuating device carried by the gate of the press and positively actuating the feed in one direction, substantially as set forth.

2. The combination, with two dies and two punches, of a reciprocating feed for feeding the blanks from one die to the other, a cam connected with the gate of the press for sliding the feed in one direction, and a spring connected with the feed for moving it in the opposite direction, substantially as set forth.

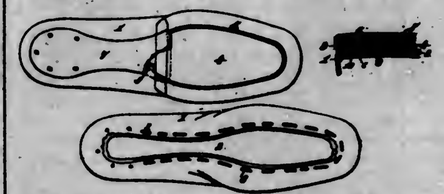
3. The combination, with two dies and two punches, of a reciprocating feed for feeding the blanks from one die to the other, and provided with an extension and a cross-bar, a cam carried by the gate of the press and engaging with the said extension to slide the feed in one direction, and springs connected with the cross-bar to slide the feed in the opposite direction, substantially as set forth.

4. The combination, with two dies located side by side, of a reciprocating feed located in line with such dies and transverse to the line on which the stock-strip is fed over the blanking-die, whereby one die is exposed to view, substantially as set forth.

5. The combination, with two dies and two punches, of a reciprocating feed for feeding the blanks from one die to the other, and a spring-actuated follower located in one punch and projecting from the working-face thereof to give right direction to the blanks before the feed and hold them until the same has them under control, substantially as set forth.

6. The combination, with two dies and two punches, of a yielding follower mounted in one of the punches and projecting from its working-face, and a reciprocating feed having its inner end cut away to escape the follower, which gives right direction to the blanks and holds them until they are under the control of the feed, substantially as set forth.

383,303. BOOT OR SHOE. WILLIAM F. KRAMER, Washington, D. C., assignor of one-fifth to George D. Tillman, Edgefield, S. C., and J. Althous Johnson, Howard C. Wall, Louis K. Rowe, and Thomas Parker, all of Washington, D. C. Filed Jan. 14, 1888. Serial No. 260,702. (No model.)



Claim.—1. In a boot or shoe, an insole secured to the upper by a basting carried around the margin of the upper and into but not through the insole, said shoe having a slip-sole and an outer sole attached to the insole and upper in any suitable manner, substantially as described.

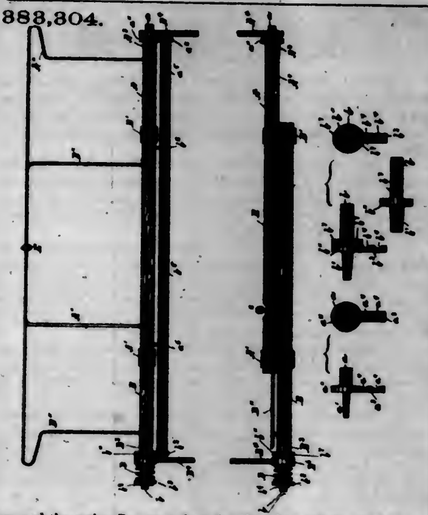
2. In a boot or shoe, an insole secured to the upper by a basting carried around the margin of the upper, a slip-sole secured by a line of stitching to the insole and to the turned-in upper, and an outer sole attached by a second line of stitching passing through the slip-sole, the turned-in upper, and insole, substantially as described.

3. A boot or shoe having an upper, an insole having two parallel channels on its inner surface, a slip-sole channeled on its outer surface, a line of stitching uniting the insole, the turned-in upper, and slip-sole, and lying in the channel in the latter and in one of the channels of the insole, and a separate line of stitching lying in the other channel of the insole and passing through the same, through the turned-in upper, the slip-sole, and the outer sole, substantially as described.

383,304. PILLOW-SHAM HOLDER AND LIFTER. DE WITT C. KING, Boston, Mass. Filed Dec. 15, 1887. Serial No. 258,026. (No model.)

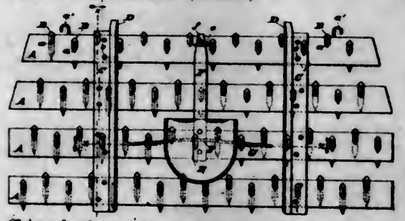
Claim.—The combination, with the brackets A^4 B^4, the latter recessed as described, of the extensible bars A B, each carrying a sham-lifter frame, the pivot a, loose in one bracket and having the flange a^2, the depending projection a^3, provided with notches a^4, and the tapering shank a^5, rigidly secured in one extensible bar, the tape a^6, connected to the notched projection and to one extensible bar, the pivot b, loose in its supporting-bracket and having the flange b^2, lateral lugs b^3, the depending projection b^4, provided with notches b^5, and tapering shank b^6, rigidly secured in the other extensible bar, the tape b^7, connected to the notched projection b^4 and to said other extensible

388,304.



bar, and the spring D, mounted on the pivot *b* outside its supporting-bracket, substantially as described.

388,305. HARROW. PETER C. KING, Syracuse, Ohio. Filed Nov. 12, 1887. Serial No. 255,003. (No model.)



Claim.—In a harrow, the combination, with the beams having the runners secured thereon, of the seat having the end of its standard inserted in a clip, *c*, and secured by a pin, *f*, passing through an opening in the standard and beam forward of the clip, and the downwardly-curved spring-bar G, engaging centrally with the standard below the seat and having its ends provided with the shoulder portion *K*, and turned centrally downward to enter the sockets *h* in the beam, the seat thus being rendered removable, substantially as specified.

388,306. MANUFACTURE OF SALICYLIC-ACID ESTERS. CARL KOLBE, Radebeul, Saxony, Germany, assignor to Dr. F. von Heyden, Radebeur, same place. Filed Dec. 22, 1887. Serial No. 258,941. (No specimens.) Patented in Belgium July 23, 1887, No. 73,316; in France July 23, 1887, No. 176,786; in England July 23, 1887, No. 10,269, and in Italy Sept. 30, 1887, XLIV, 362, and XXI, 23,072.

Claim.—1. The within-described process of producing salol, which consists in mixing together equal molecules of salicylic acid with equal molecules of a phenol, melting this mixture, and then adding thereto a solution of trichloride of phosphorus, substantially as set forth.

2. The within-described process of producing salol, which consists in mixing together equal molecules of salicylic acid with equal molecules of a phenol, dissolving the mixture in a suitable solvent, such as benzole, exposing the solution to the action of trichloride of phosphorus, and after the reaction has taken place removing the solvent, and finally washing the remaining product, substantially as set forth.

388,307. MILK-STRAINER. GEORGE W. KRAFT, Baltimore, Md. Filed Oct. 22, 1887. Serial No. 253,054. (No model.)

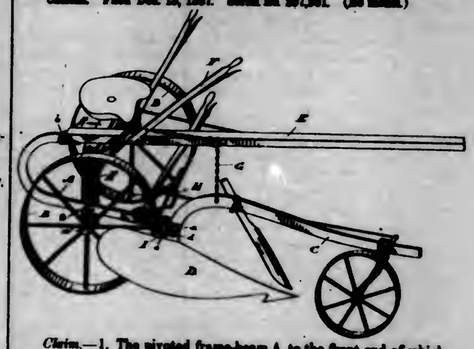


Claim.—A milk-strainer consisting of the vessel A, with bottom *b*, having opening *d*, and flange *f*, surrounding said opening, the wire-cloth *e*, having flange *e'*, the fastening-ring *g*, with flange *g'*, the said flange *g'* being inwardly bent, so as to have its end interlocked between the bottom *b* and flange *f*, and the flange *e'* being held between said interlocked portions of said flanges *g'* and *f*, and the inner edge, *g*, of the ring *g*, with the wire-gauze, being pressed upward, whereby said gauze is flush with said bottom of the strainer, substantially as shown and described.

388,308. PROCESS OF TRANSFERRING PHOTOTYPES TO LITHOGRAPHIC STONES. OTTO KRÜSS, Flensburg, Pa. Filed Nov. 15, 1887. Serial No. 255,203. (No specimens.)

Claim.—The process of transferring phototypes to lithographic stones, consisting in first taking a photograph of the object; second, printing the photographic image of the negative upon a plate which has been suitably prepared; third, taking an impression from the plate upon a sheet of paper which has been saturated with a solution of gelatine, chloride of calcium, glycerine, chromate of alum, and water, and, fourth, transferring the impression from the prepared paper to the lithographic stone, substantially as set forth.

388,309. SULKY-PLOW. HIRAM LAMPMAN, Woodstock, Ontario, Canada. Filed Dec. 10, 1887. Serial No. 257,991. (No model.)

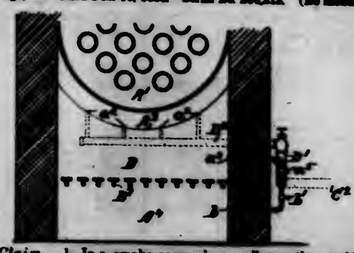


Claim.—1. The pivoted frame-beam A, to the front end of which the plow-beam C is pivoted, and to which the tongue E is pivoted behind the pivot of the said frame-beam A, in combination with the lever F, pivoted on the tongue E and connected to the plow-beam C by the chain G, substantially as and for the purpose specified.

2. The plow-beam C, pivoted to the front of the pivoted frame-beam A, behind which latter pivot the tongue E is connected to the said frame-beam A, in combination with the foot-lever H, pivoted on the hanger I and connected to the plow-beam C, substantially as and for the purpose specified.

3. The plow-beam C, pivoted to the front of the pivoted frame-beam A and having connected to it the pivoted foot-lever H, and the tongue E, pivoted to the frame-beam A, behind the pivot of the latter, in combination with the lever F, pivoted on the tongue E and connected by the chain G to the plow-beam C, substantially as and for the purpose specified.

388,310. SMOKE-CONSUMING FURNACE. JAMES D. LEE, Chicago, Ill. Filed Feb. 16, 1888. Serial No. 264,212. (No model.)



Claim.—1. In a smoke-consuming appliance, the combination, with the stack or smoke-passage, of a fan, a pipe connecting said stack and fan, a delivery-pipe connected to the discharge side of said fan, the branch pipe D', connected with the main delivery-pipe, a number of small angular pipes, *c'*, inserted in and extending upward and inward from the pipe D, terminating flush with the interior surface of the furnace-wall and opening into the combustion-chamber above the line of the grate-bars, the series of companion pipes *b*, inserted in and projecting downward and inward from the pipe D', and passing through the furnace-wall and opening into the ash-pit, and the stop-valves inserted in said pipes, whereby heated air may be supplied above and underneath the grate-bars and at different points simultaneously or independently, as set forth.

2. In a smoke-consuming appliance, the combination, with the smoke-passage, of a fan located intermediate between said passage or stack and the boiler-furnace, a pipe connecting the stack and fan, a supply or delivery pipe connected to the discharge side of said fan, the horizontal pipe D, forming a branch and continuation of the delivery-pipe C, and extending along the outside of the boiler-front, the series of short pipes *c*, extending inward from the pipe D and opening into the front side of the combustion-chamber, the branch pipe D', running along the side wall, the pipe D², connected with the pipe D' and embedded transversely in the bridge-wall, and the series of jet-tubes *c²*, extending upward from the pipe D² and opening on a level with the upper side of the bridge-wall, whereby the heated air and gases drawn from the smoke-stack may be conducted into the front side and back part of the combustion-chamber simultaneously or independently, substantially as and for the purpose set forth.

388,311. CONVEX-FASTENER. THOMAS A. LOVEJOY, Rochester, and JOHN V. HOWLAND, Gaskill, assignors to Chappell, Gunn, Maxwell & Co., Gaskill, N. Y. Filed Jan. 23, 1888. Serial No. 261,691. (No model.)



Claim.—1. A casket-lid fastener composed of a fixed plate provided with a slot, a latch arranged movably to and from a position across the slot of said plate, a catch adapted to slide in the said slot lengthwise thereof and engage and release the latch automatically with the movement of the catch into and out of the slot, and a bolt or other suitable fastening device for preventing the longitudinal movement of the lid after the engagement of the aforesaid latch and staple, as set forth.

2. A casket-lid fastener consisting of a fixed elongated plate provided with a longitudinal slot, a latch pivoted to said plate and provided with a plurality of arms adapted to swing successively across the slot of the plate, a staple adapted to slide lengthwise in the slot and turn the latch and thereby throw one of the arms thereof through the staple, and a bolt or other suitable fastening device for preventing the longitudinal movement of the lid after the engagement of the aforesaid latch and staple, as described and shown.

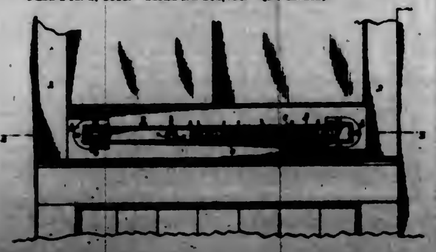
3. In combination with the slotted plate *a* and latch *c*, pivoted thereto, the staple *d*, adapted to slide in the slot of said plate lengthwise thereof, and having its cross-bar *d'* inclined, substantially as and for the purpose set forth.

388,312. ASH-SIFTER. MICHAEL LYNCH, Chicago, Ill. Filed Mar. 5, 1887. Serial No. 230,754. (No model.)

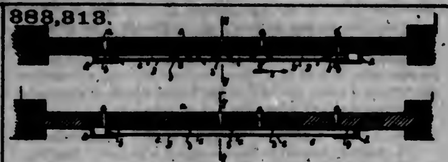


Claim.—The combination, with case A, of screen B, inclined hopper D, removable spout F, having flange *f²*, furnished with eyes *f'*, and handle F', said hopper being furnished with hooks *f³*, and said case A being provided with an opening, *f*, substantially as specified.

388,313. VENTILATOR. JAMES W. MCKENNEY, Newark, N. J. Filed Feb. 2, 1888. Serial No. 262,713. (No model.)



388,313.

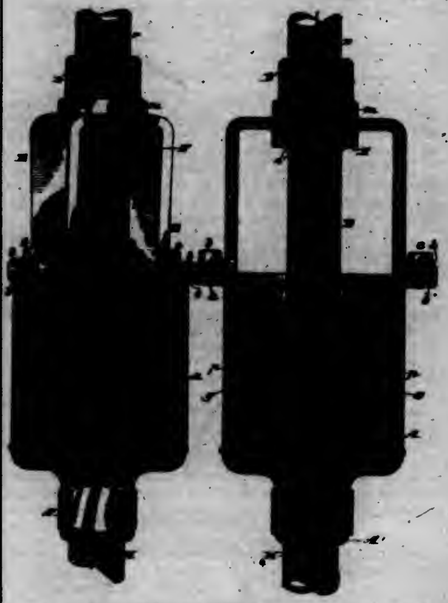


Claim.—1. The combination, with a base having transverse openings, of a movable hollow ventilator having openings in its back corresponding to the openings in the base, and a perforated front, substantially as shown and described.

2. The combination, with a base having transverse openings *a*, of a movable hollow ventilator, B, closed at both ends, said ventilator having openings *b* in its back and perforations in its front, and the sockets *d d* affixed to the base for securing the ventilator and permitting a movement of the same in the direction of its length, substantially as shown and described.

3. The combination, with a base having transverse openings, of a movable hollow ventilator having openings *b* in its back corresponding to the openings in the base, and a front having solid portions opposite the openings *b*, and perforated portions between said solid portions, substantially as shown and described.

388,314. SELF-ACTING OR AUTOMATIC PRESSURE-REGULATOR. EDGAR A. MCLAUGHLIN, Horseheads, N. Y., assignor of one-half to Horace J. Weller, same place. Filed Dec. 1, 1887. Serial No. 256,863. (No model.)



Claim.—1. The combination, with a chamber, a high-pressure pipe terminating within said chamber, and a service-pipe leading from said chamber, of a sliding piston mounted on the high-pressure pipe within the chamber and closely fitting said chamber, and a valve carried by said piston for closing the end of the high-pressure pipe.

2. The combination, with high and low pressure pipes and an intermediate chamber, of a piston located within the chamber embracing the discharge end of the high-pressure pipe, and a valve carried by said piston for closing the discharge end of said high-pressure pipe.

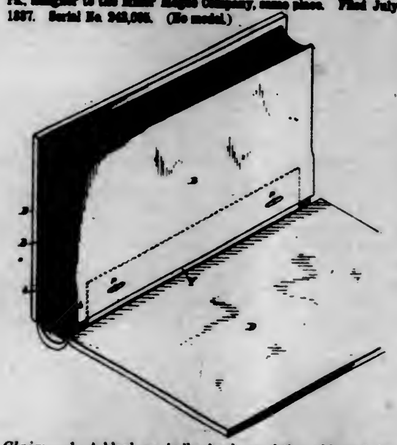
3. The combination, with a chamber, a low-pressure pipe in communication therewith, and a high-pressure pipe discharging into the same, of a piston mounted on the discharge end of the high-pressure pipe and fitting closely within the chamber, and a valve carried by said piston for closing the lower end of the high-pressure pipe.

4. The combination, with high and low pressure pipes and an intermediate chamber, of a piston closely fitting the chamber and loosely mounted on the high-pressure pipe, a hollow perforated stem attached to the piston, and a valve on the end of the stem for closing

the discharge end of the high-pressure pipe, the area of said valve being less than the area of the piston, substantially as set forth.

5. The combination, with high and low pressure pipes and an intermediate chamber, of a piston closely fitting within the chamber, a hollow stem secured to the piston and provided with a closed lower end forming a valve, and with orifices formed therein at a point above said closed lower end, substantially as set forth.

383,315. BINDING OF BOOKS. Andrew J. Myers, Philadelphia, Pa., assignor to the Miller Magee Company, same place. Filed July 1, 1887. Serial No. 243,093. (No model.)

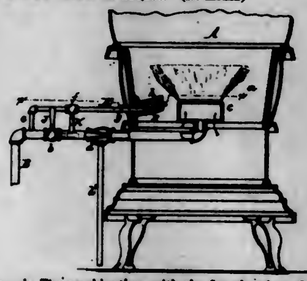


Claim.—1. A blank or similar book consisting of bound signatures, having fly-leaves with flaps, and a binding-cover, also provided with flaps and fasteners for the flaps, whereby the book and its cover are detachably secured to each other, substantially as set forth.

2. A blank or similar book consisting of bound signatures and strengthening-stays stitched to the signatures, fly-leaves secured to the said strengthening-stays, and a binding-cover, to which the said fly-leaves are detachably secured, substantially as described.

3. A temporary binding-cover consisting of a back and cover boards hinged thereto, and flaps made from a strip of textile material folded and having its folded portions secured between the boards of the covers, substantially as set forth.

383,316. GAS-STOVE. Michael J. O'Reilly, Buffalo, N. Y. Filed Sept. 20, 1886. Serial No. 214,009. (No model.)



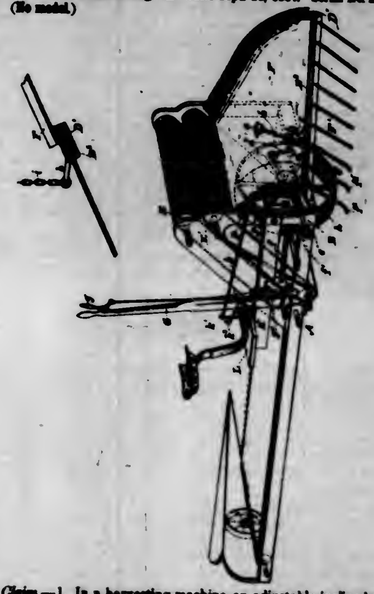
Claim.—1. The combination, with the fire-chamber of a stove, of a main gas-burner located within the fire-chamber, and a stationary lighter connected with the gas-supply pipe and extending into the fire-chamber, said lighter being provided with an ignition-aperture outside of the fire-chamber and with a communicating flame-aperture within the fire-chamber near the main burner, substantially as set forth.

2. The combination, with the fire-chamber of a stove and a gas-supply pipe, of a gas-burner located within the fire-chamber, and a lighter connected with the gas-supply pipe, and consisting of a gas-pipe provided with perforations extending from the outside to the inside of the fire-chamber, whereby the gas-jets within the fire-chamber are ignited upon lighting one of the gas-jets outside of the fire-chamber, substantially as set forth.

3. The combination, with the fire-chamber of a stove, of a main gas-burner, a lighter provided with perforations, and a shield arranged in the fire-chamber above the perforations of the lighter, whereby the lighter is protected, substantially as set forth.

4. The combination, with the fire-chamber, the main burner, and lighter, of the supply-cocks *b* and *f*, provided, respectively, with stops *j* and *k* and handles J and K, arranged to come in contact with each other and prevent the movement of the handle of the main cock before the lighter-cock has been opened, substantially as set forth.

383,317. SWATHING ATTACHMENT FOR HARVESTERS. Chas. H. Owen, Mechanicsburg, Pa. Filed Sept. 30, 1887. Serial No. 250,876. (No model.)



Claim.—1. In a harvesting-machine, an adjustable inclined spiral chute or swathing device hinged to the outer stubble side of the machine, substantially as described.

2. The combination, with a harvesting-machine, of the inclined spiral chute or swathing device hinged to the stubble side of said machine, and means, substantially as described, for effecting the adjustment of said swathing device while the machine is in operation, for the purpose and substantially as described.

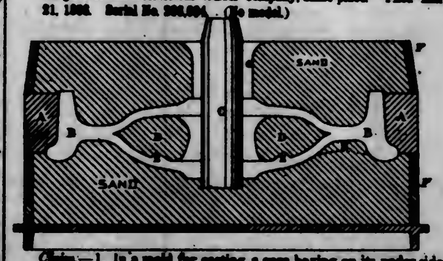
3. The combination, with the inclined spiral chute or swathing device hinged to the stubble side of the machine, as described, of an adjustable cut-off for temporarily stopping the operation of swathing the grain, substantially as described.

4. The combination, in a harvesting-machine, of the hinged swathing device or chute, the adjustable cut-off, and means, substantially as described, for independently adjusting both said chute and cut-off.

5. The inclined spiral chute or swathing device provided with the flexible fingers hinged to its discharging end, substantially as and for the purpose described.

6. The combination, with a hinged swathing device, of an adjustable cut-off having flexible delivery-fingers, and means, substantially as described, for independently adjusting both said swathing device and cut-off.

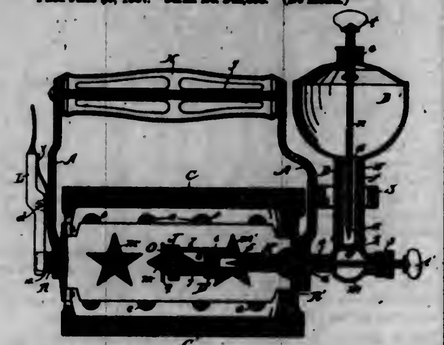
383,318. MOLD FOR CASTING. Thomas H. Pasco, Detroit, Mich., assignor to the Detroit Car Wheel Company, same place. Filed Mar. 21, 1888. Serial No. 268,094. (No model.)



Claim.—1. In a mold for casting, a core having on its under side an annular groove, substantially as and for the purposes set forth.

2. In a mold for casting, a core having on its under side a groove adapted to arrest slag carried on the surface of molten metal, substantially as shown and described.

383,319. RAD-IRON. Thomas H. Parsonage, East Saginaw, Mich. Filed June 20, 1887. Serial No. 242,202. (No model.)



Claim.—In combination with the end-iron, the burner, the vessel, the coupling-head, the pipes joining said parts, the rod 4, having the thumb-button *t'*, the rod *n*, adapted to close the port *d'*, the non-conducting material surrounding the pipe 15, with perforated metal jacket D, and springs S, mounted on the arm A of the handle, as and for the purposes specified.

383,320. DYNAMO-ELECTRIC MACHINE. Lawrence H. P. Poland, Cincinnati, Ohio. Filed Apr. 21, 1887. Serial No. 235,500. (No model.)



Claim.—In a dynamo-electric machine, the combination, substantially as specified, of the armature-shaft, the longitudinally-grooved wooden cylinder mounted thereon, the iron rings C on said cylinder, said rings being separated from each other, the separate coils, the field-magnet having poles N S, the armature, and the shell inclosing the armature and magnet.

383,321. RUBBER STAMP. Edwin Reynolds, Providence, R. I. Filed Jan. 16, 1887. Serial No. 224,692. (No model.)



Claim.—1. In combination, the opposite rubber dies, the equal die-plates projecting at their edges beyond the corresponding edges of the attached rubber dies, and the intervening spring, which serves to connect the said die-plates and dies to each other in one instrumentality, substantially as and for the purpose specified.

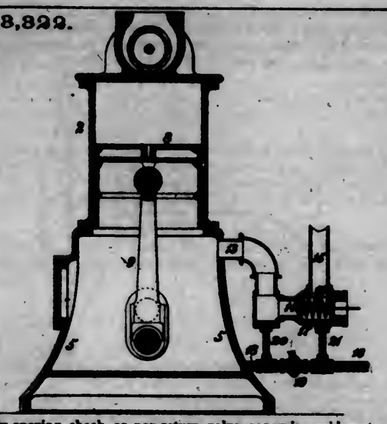
2. In combination, the grooved handle, the opposite die-plates, and the intervening spring, substantially as described.

383,322. STEAM-ENGINE. Frazer M. Ryan, Pittsburg, Pa., assignor to the Westinghouse Machine Company, same place. Filed Jan. 17, 1888. Serial No. 260,975. (No model.)

Claim.—1. In a single-acting engine, the combination of a closed crank-case, a cylinder fixed to and communicating by an open end with the crank-case, a vent-passage leading out of the crank-case, and a valve governing said passage and adapted to open the same at and adjoining the terminal of the downward stroke of a piston working in the cylinder, substantially as set forth.

2. In a single-acting engine, the combination of a closed crank-case, a cylinder fixed to and communicating by an open end with the crank-case, a vent-passage leading out of the crank-case, and an outwardly-opening check or non-return valve governing said vent-passage, substantially as set forth.

383,322.



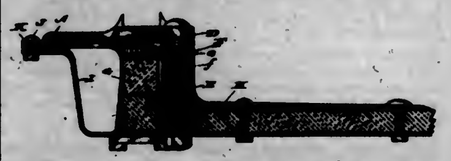
3. In a single-acting engine, the combination of a closed crank-case, a cylinder fixed to and communicating by an open end with the crank-case, a vent-passage leading out of the crank-case, an outwardly-opening check or non-return valve governing said vent-passage, and a vapor-discharge pipe leading upwardly from the valve-casing to the atmosphere, substantially as set forth.

4. In a single-acting engine, the combination of a closed crank-case, a cylinder fixed to and communicating by an open end with the crank-case, a vent-passage leading out of the crank-case, an outwardly-opening check or non-return valve governing said vent-passage, a vapor-discharge pipe leading upwardly from the valve-casing to the atmosphere, and a liquid-discharge pipe leading downwardly from the valve-casing to the atmosphere, substantially as set forth.

5. In a single-acting engine, the combination of a closed crank-case, a cylinder fixed to and communicating by an open end with the crank-case, a vent-passage leading out of the crank-case above the level of lubricating material therein, a liquid-discharge pipe leading out of the crank-case below the level of lubricating material and communicating with the vent-passage, an outwardly-opening check or non-return valve governing the vent-passage, and a vapor-discharge pipe and a liquid-discharge pipe leading outwardly and upwardly and downwardly, respectively, from the valve-casing to the atmosphere, substantially as set forth.

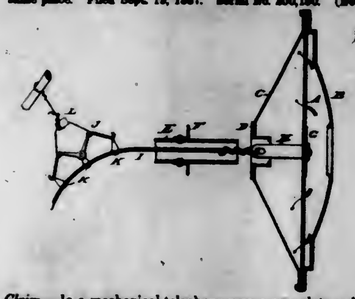
6. In a single-acting engine, the combination of a closed crank-case, a cylinder fixed to and communicating by an open end with the crank-case, a vent-passage leading out of the crank-case above the level of lubricating material therein, a liquid-discharge pipe leading out of the crank-case below the level of lubricating material and communicating with the vent-passage, an outwardly-opening check or non-return valve governing the vent-passage and located at or adjacent to the level of lubricating material, a vapor-discharge pipe leading upwardly from the valve-casing to the atmosphere, a valve governing the liquid-discharge pipe beyond or on the outer side of its connection with the vent-passage, and a pipe leading from the check-valve casing to the liquid-discharge pipe beyond or on the outer side of the valve of the latter pipe, substantially as set forth.

383,323. FIFTH-WHEEL. William H. Rothwell, Galt, Ontario, Canada, assignor to Warnock & Co., same place. Filed Feb. 9, 1888. Serial No. 263,488. (No model.)



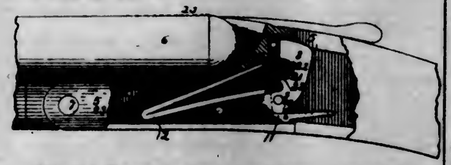
Claim.—A fifth-wheel having a lug, D, extending from its head-block bearing C, said lug having a hole to receive the king-bolt E, and a hub, *c*, surrounding the said hole and designed to fit into a hole made in the lug F, which extends from the axle-bearing G, in combination with a reach-bracket, H, having a hole in it to receive the king-bolt E, and a hub, *f*, to fit into a hole made in the lug F, substantially as and for the purpose specified.

383,324. MECHANICAL TELEPHONE. GEORGE F. SHAVER, New York, N. Y., assignor, by mesne assignments, to the Shaver Corporation, same place. Filed Sept. 19, 1887. Serial No. 250,180. (No model.)



Claim.—In a mechanical-telephone case, a rear plate and recessed supporting-chamber, D, through which a line-wire, I, is suspended, in combination with a concentrating-plate, B, extending over the said rear plate at its outer edge and flanged, thus supporting and clamping the telephone-diaphragm in position, substantially as herein set forth and described.

383,325. BREECH-LOADING GUN. LEROY H. SMITH, Lisle, assignor to the Rhoen Gun Co., Rhoen, N. Y. Filed Feb. 6, 1888. Serial No. 263,143. (No model.)



Claim.—1. The combination of a gun-frame, a spring folded on itself nearly in the middle, forming two arms of nearly equal length, and a hammer hinged in the frame and having a forward-projecting toe with a plane upper face, which plane extends back past the center of the hammer, the said frame having a plane face opposite to the center of the hammer and at an acute angle with the said plane of the hammer-toe, and provided with a shoulder for the stationary end of the spring to stop against, the said end of the spring resting upon the plane face of the frame both before and behind the point opposite the center of the hammer, substantially as shown and described.

2. The combination of a gun-frame having a downward internal face, a hammer hinged in the frame opposite the midway portion of the said face and having a plane upward face extending both sides of the hammer-center, and an angular spring having two arms of nearly equal length, the said two plane faces forming an acute angle opening in the same direction that the spring opens, and the spring bearing between the said faces, substantially as shown and described.

3. The combination of a gun-frame, a hammer hinged therein and provided with a cam-shaped forward projection between the hammer-face and hinge and nearly in line therewith, and a cocking-lever hinged midway, near its lower edge, in the frame, and having a cam-shaped rear end to engage the said projection, the under side of the said projection being nearly tangent to the circle of motion of the end of the said lever, whereby the rear end of the lever in moving downward cocks the hammer and brings the said projection nearly in the line of centers of the hammer and cocking-lever.

4. The combination of a gun-frame, a hammer hinged therein and provided with a cam-shaped forward projection, and a cocking-lever hinged below its central line in the frame and provided with a cam-shaped rear end, the upper side of the said projection on the hammer being a curve nearly coincident with the arc of a circle centered at the hammer-pivot, and whose lower side is a curve nearly coincident with an arc of a circle centered at the pivot of the cocking-lever when the hammer is at full-cock, substantially as shown and described.

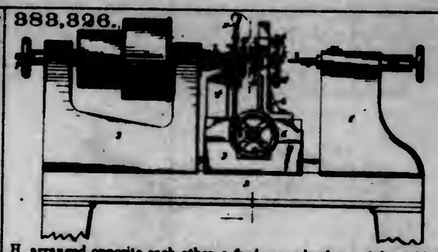
383,326. MACHINE FOR MAKING PENDANTS FOR WATCHES. ALFRED STALLMANN, New York, N. Y. Filed Jan. 26, 1888. Serial No. 261,943. (No model.)

Claim.—1. The combination, with a rotary chuck for holding a tubular blank, of rolls concentrically arranged to receive the blank in their common center, supports for said rolls constructed to move simultaneously toward the blank, a cutter, and means, substantially as described, for imparting to the same a motion across the blank, substantially as shown and described.

2. The combination, with the rotary chuck B, of the supports G and H, arranged opposite each other, a feed-screw having a right and left hand thread engaging respectively with the supports, a roll, I, mounted in a horizontal slide, i, on one of the supports, and rolls J and K, mounted in inclined slides j and k, arranged on the opposite support, substantially as shown and described.

3. The combination, with a rotary chuck for holding a tubular blank, of rolls concentrically arranged to receive the blank in their common center and having the closing-flange f, slides i, j, and k, in which said rolls are mounted, and supports for said slides arranged to move toward the blank, substantially as shown and described.

383,326.



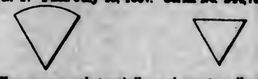
383,327. ENVELOPE FOR PROTECTING GRAPES WHILE MATURING. ELI T. SHARP, Philadelphia, Pa. Filed Jan. 6, 1888. Serial No. 260,706. (No model.)



Claim.—1. A device for protecting fruit while maturing, consisting of an envelope of translucent water-proof material provided with drainage-ports, and with means for securing its open end when closed around the fruit, substantially as described.

2. The device for protecting fruit while maturing, consisting of the envelope A, of translucent water-proof material, having its lower corners cut off to provide drainage-ports, and provided with devices for securing its open end when closed around the fruit, substantially as described.

383,328. PROCESS OF MAKING WIRE. WILLIAM A. SWEET, Syracuse, N. Y. Filed July 19, 1887. Serial No. 244,734. (No model.)



Claim.—The process, substantially as above described, of producing a stiffened wire for the manufacture of brads, nails, or spikes, consisting in cold-rolling a hot-rolled rod down to a wire of a materially-different form and of uniform stiffness.

383,329. ELLIPTIC SPRING. WILLIAM A. SWEET, Syracuse, N. Y. Filed Feb. 10, 1888. Serial No. 264,192. (No model.)



Claim.—The slotting and tenting of the ends of a vehicle or elliptic spring, either blind or open, in a roll-joint.

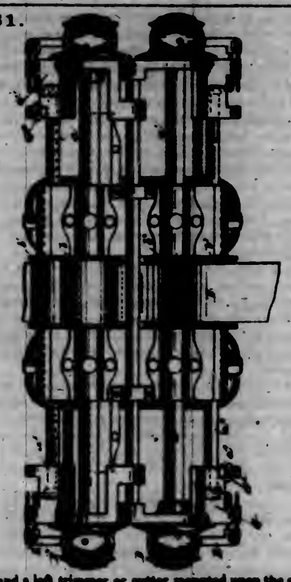
383,330. STAIN FOR BRICK-WORK. SAMUEL TELLAR, Warden, Quebec, Canada. Filed Jan. 16, 1888. Serial No. 260,991. (No specimens.)

Claim.—As a preparation for staining and preserving brick-work, the combination, with coloring material, of a solution of salt and alum and spirits of niter, in the proportions set forth.

383,331. BOOT OR SHOE TRIMMING MACHINE. CHARLES H. TRASK, Lynn, Mass., assignor to the Duplex Shoe Trimmer Company, Portland, Me. Filed June 6, 1887. Serial No. 240,609. (No model.)

Claim.—1. The combination of a common head, a shaft, *a*, supported by said head and rotated in one direction, a shaft, *a*, supported by said head and rotated in a direction opposite that of the shaft *a*, a right trimmer or cutter mounted upon one end of the shaft turning to the right, and a left trimmer or cutter mounted upon the end of the shaft turning to the left, all as and for the purposes specified.

383,331.

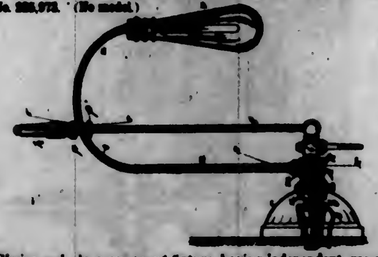


2. The combination, in a boot or shoe trimming machine, of a head, A, the shafts *a' a²*, supported by the head, arranged to extend from one or both fronts thereof, and adapted to be simultaneously turned in the same direction, trimmers at one or both ends of said shafts, and the shafts *a a²*, adapted to extend from one or both fronts of said head, and trimmers carried by said shafts, and means for rotating the said last-named shafts in a direction opposite that in which the shafts *a' a²* are rotated, as and for the purposes described.

3. The combination, in a boot or shoe trimming machine, of a common head, a shaft, *a'*, supported by said head and rotated in one direction, a shaft, *a*, also supported by said head and carried in a direction opposite to that of the shaft *a'*, a right trimmer or cutter carried at the end of the right-turning shaft, a left trimmer or cutter carried at the end of the left-turning shaft, devices in connection with the right trimmer for governing the right presentation of the boot or shoe thereto, and devices in connection with the left trimmer for governing the left presentation of the boot or shoe thereto, substantially as described.

4. In a boot or shoe trimming machine, the combination of the head A, the shafts *a a' a¹ a²*, the ends of which extend from the fronts *a³ a⁴* of the head, as specified, the pulleys *b⁶ b⁷* upon the shafts *a' a²*, respectively, and the pulleys *b b'* upon the shafts *a a¹*, respectively, the common operating-belt *b⁵*, adapted to turn the shaft *a' a²* in one direction and the shafts *a a¹* in an opposite direction, and rotary trimmers carried at the ends of said shafts, as and for the purposes described.

383,332. COMBINED GAS AND ELECTRIC-LIGHT FIXTURE. SAMUEL H. H. VANSE, New York, N. Y. Filed Jan. 31, 1887. Serial No. 226,073. (No model.)

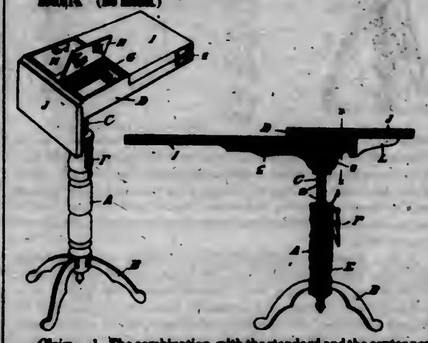


Claim.—1. In a combined fixture having independent gas and wire tubes proceeding contiguous and crossing each other between their roots and their extremities receiving the lights, collars *p p'* on one tube, between which the other tube is held at the point of intersection, substantially as set forth.

2. In a combined fixture, the combination, with a gas-tube, *p*, of a contiguous wire-tube, *s*, wider than the gas-tube and turned to cross the path of said tube, with the extremity of said gas-tube passed through the said wire-tube at the intersecting turn, with wires laid through the wire-tube and passing at the intersecting point between the inner walls of the wire-tube and outer walls of gas-tube, substantially as shown and described.

3. In a combined fixture, the flat wire-tube *s*, laterally turned at the end of the recent or carrier gas-tube *p*, extending parallel with the initial part of said flat wire-tube and extending across and through the same at the lateral turn thereof, substantially as shown and described.

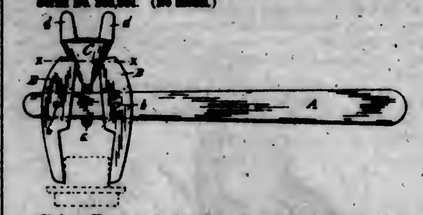
383,333. TABLE. GEORGE WEIS, Detroit, Mich., assignor of one-half to John Hindemann, same place. Filed Sept. 24, 1887. Serial No. 250,414. (No model.)



Claim.—1. The combination, with the standard and the center post, of the rigid leaf secured to one side of the center of the post, and provided at its inner end with the receptacles G, the leaf I, hinged to one end of the rigid leaf and folding in a recess below the top of the receptacles G, and the fall-leaf J, hinged to the other end of said rigid leaf, substantially as shown and described.

2. The combination, with the post and the rigid leaf, of the fall-leaf hinged to one end of the rigid leaf, the bracket L, pivoted to the end of said rigid leaf, and the bracket K, also pivoted to said leaf and formed with inclined supporting-faces, substantially as and for the purpose specified.
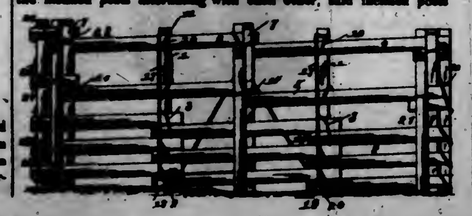
383,334. WRENCH. JOHN D. ARMEY, Reading, assignor of one-half to James A. Armstrong, Lexington, Mich. Filed Mar. 8, 1888. Serial No. 266,661. (No model.)



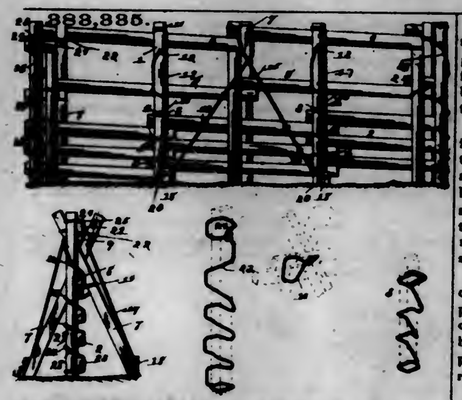
Claim.—The wrench described, consisting of the handle A, the jaws B B, pivoted on said handle and extended at right angles thereto, and provided with transverse slots for the reception of said handle, and the conical wedge provided with thumb-piece, and with screw-threaded stem engaging a threaded opening in the handle at right angles to the pivots of the jaws, substantially as shown and described.

383,335. FENCE. CHARLES C. RANDELL, Brooklyn, Ohio. Filed Dec. 14, 1887. Serial No. 257,992. (No model.)

Claim.—1. In a fence, the combination of the vertical posts and the inclined posts alternating with each other, said inclined posts



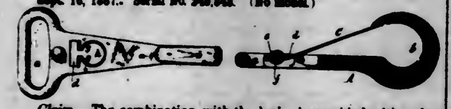
383,335.



crossing each other near the top, the lower rails, the ends of which overlap each other at the vertical posts, and the upper rails, the ends of which overlap each other at the inclined posts, one of which upper rails is above and the other one is below the crossing of said inclined posts, the wires secured to the vertical posts and wrapped around them and the rails, and the wires looped around the inclined posts and the upper rails.

2. In a fence, the combination of the vertical posts and the inclined posts alternating with each other, the inclined posts crossing each other near their tops, wire wrapped around the vertical posts and the rails and secured to the posts by means of loops around the posts, and the braces, each consisting of a single piece of wire wrapped around the tops of the inclined posts and over the upper rails, crossed upon the opposite side of the fence and passed down diagonally in opposite directions, and secured at their ends in the loops of the wires around the vertical posts.

383,336. SNAP-HOOK. JAMES M. BARNHART, Buffalo, N. Y. Filed Sept. 16, 1887. Serial No. 249,848. (No model.)



Claim.—The combination, with the body A, provided with a slot, *d*, and lugs or projections *g g*, of a pin or stud, *f*, formed on the under side of the body A, a tongue, C, provided with a hole engaging over said pin or stud, and an unobstructed opening, *h*, formed in the body A in front of the slot *d* and communicating with the latter, whereby dirt, &c., is prevented from lodging under the tongue, substantially as set forth.

383,337. ARGAND GAS-BURNER. ELIAS BRAUN, Chicago, Ill. Filed Feb. 21, 1887. Renewed Apr. 19, 1888. Serial No. 271,194. (No model.)



Claim.—1. In an Argand gas-burner, the combination, with the supply-pipe, coiled in the manner and for the purpose described, of the gas-burner provided with gas distributing and retarding devices, the fire-proof deflector of greater diameter than the flame-exit of said burner, and the movable adjustable regulating-bracket for controlling the flow of gas to the burner, as specified.

2. The combination, with the nipple-pipe coiled in the manner and for the purpose described, of the gas-burner provided with gas distributing and retarding devices, the fire-proof deflector of greater diameter than the flame-exit of said burner, the adjustable regulating-bracket having radial tubular openings, the suspended plug supporting said adjustable bracket and provided with openings which register with the openings of the said bracket, and means for changing the relative registrations of the respective openings of the plug and bracket, substantially as described.

3. The combination, with the adjustable bracket, having radial openings as described, and suspended by a suitable coupling from the plug J, of the plug J, having openings which normally register with the openings of the adjustable bracket, the coupling between the said bracket and plug for regulating the admittance of the gas, the supply-pipe and the nipple or handle N, formed of heat-non-conducting material, as specified.

4. The combination, with the supply-pipe coiled in the manner and for the purpose described, of the gas-burner having heat regulating and distributing devices, means for regulating the flow of gas to said burner, the bell-shaped deflector of larger diameter than the flame-exit of the said gas-burner and supported around the coils of the supply-pipe, and the ring screwed to the supply-pipe and supporting the deflector, as specified.

5. The combination, with the Argand gas-burner, of a series of perforated and relatively-graduated rings arranged in proper relative positions within the burner-chamber for equally distributing the gas to the flame-exit, the bell-shaped deflector of larger diameter than the said flame-exit and supported around the coils of the supply-pipe, the coiled supply-pipe, and means for admitting and regulating a flow of gas to the said burner, as specified.

6. The combination of the Argand gas-burner provided with the three rings of increasing fineness from the lowest to the uppermost the supply-pipe, the adjustable regulating-bracket having radial tubes, the short slotted pipe, and the handle having the lug, substantially as and for the purpose described.

7. The combination, with the Argand gas-burner, of the pipe I, the adjustable regulating-bracket having a screw-threaded central aperture, the screw-threaded nipple M, having the peripheral rim or flange, the gallery supported in the manner described, and the adjusting-handle formed of heat-non-conducting material, as specified.

8. The combination of the supply-pipe F, the short pipe I, having the slot L' at its lower end, the plug J, the bracket K, having the lug L arranged to be turned in the slot in said pipe I, and means for turning said bracket, substantially as described.

383,338. ARGAND GAS-BURNER. ELIAS BRAUN, Chicago, Ill. Filed Jan. 31, 1887. Renewed Apr. 19, 1888. Serial No. 271,126. (No model.)



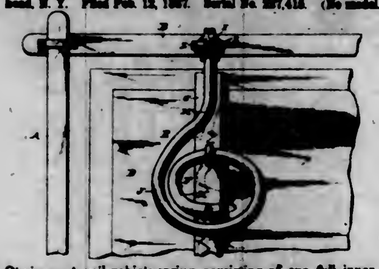
Claim.—1. In an Argand gas-burner, the combination of the bracket provided with radial hollow arms, the conical tube screwed centrally upon said bracket, the cylinder surrounding said tube, and also secured to the bracket, the burner surrounding the cylinder and secured to the bracket, the deflector secured to the bracket and surrounding the burner, the flaring chamber, and flaring deflector surrounding said chamber, said deflector and chamber being supported on the upper end of the cylinder, substantially as set forth.

2. The combination, with the bracket having radial hollow arms, the central tube, the cylinder surrounding said tube, and the burner surrounding the cylinder, all being secured to the bracket, of the conical perforated thimble interposed between the cylinder and the burner, substantially as and for the purpose specified.

3. In an Argand gas-burner, the combination of the conical tube, the cylinder surrounding said tube, the hollow chamber mounted thereon, the non-fusible conical-shaped deflector surrounding said hollow chamber, the bracket having hollow arms connecting and supporting the burner-chamber, the perforated thimble mounted between the burner-chamber and the cylinder surrounding the central tube, and the outer thimble or air-conductor and deflector, substantially as described.

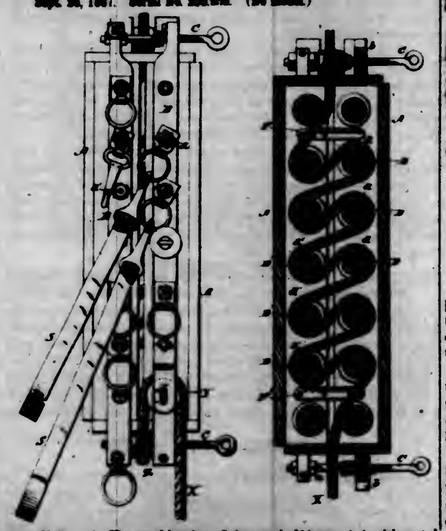
4. In an Argand gas-burner, the combination of the union B, having caps or bindings A, a conical tube, E, connected thereto, a cylinder, I, surrounding said tube, a hollow flaring chamber, L, a non-fusible deflector, M, surrounding chamber L, a bracket, D, having hollow radial arms S, supporting and connecting the chamber T with the cylinder I, a suitably-apertured tip or burner, K, inserted in the chamber T, and a suitable globe-support, substantially as described.

383,339. VEHICLE-SPRING. CHARLES M. BUTTERWORTH, Riverhead, N. Y. Filed Feb. 12, 1887. Serial No. 227,413. (No model.)



Claim.—A coil vehicle-spring consisting of one full inner coil forming the body-attachment portion and continued by an outer coil portion, J, of greater diameter than the inner coil and terminating in a straight arm, H, extending downward and outward away from the coil and beyond the body of the vehicle, the inner coil of said spring having the two opposite fastenings, substantially as specified

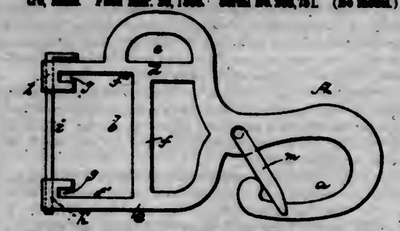
383,340. FIRE-ESCAPE. THOMAS BURNS, Sandy Hill, N. Y. Filed Sept. 20, 1887. Serial No. 250,090. (No model.)



Claim.—1. The combination of the two half-boxes A A with metal bands B B and screw-bolts C C, the two series of the pulleys D and D', with axes *d d'*, sustained in the heads B, and the rope wound about the pulleys, substantially as shown and described.

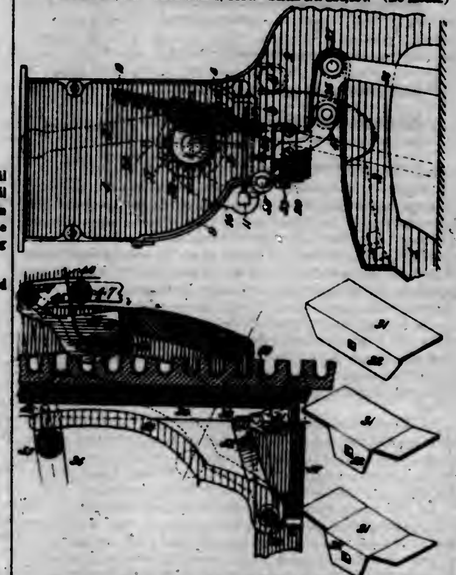
2. The combination of the two half-boxes A A with metal bands B B and screw-bolts C C, the two series of pulleys D D', with axes *d d'* located in the heads, the rope wound around the pulleys, and a graduated indicator-plate attached to one of the half-boxes and adapted to register with the other half-box to indicate the adjustment, substantially as shown and described.

383,341. HARNESS-HOOK. DANIEL W. BROWNELL, Newton Centre, Mass. Filed Mar. 30, 1888. Serial No. 268,731. (No model.)



Claim.—The within-described breeching-hook, consisting of the hook *a*, provided with the pivoted dog *m*, the frame composed of the parallel side bars and cross-bar, and having the loop *c*, said parallel bars having formed in their ends the hooks providing slots *g*, the whole formed integral and provided with a detachable holding-bar, *i*, substantially as described.

383,342. CIGAR-BUNCHING MACHINE. CLINTON BROWNING, Shoemakers, Pa. Filed Feb. 1, 1887. Serial No. 226,157. (No model.)



Claim.—1. In a cigar-bunching machine, the combination of a hopper, a nozzle at the discharge end of the hopper constructed to permit of the passage of the filler therethrough, and a reciprocating non-compressing comb arranged between the hopper and nozzle, substantially as set forth.

2. In a cigar-bunching machine, the combination of a hopper, a nozzle at the discharge end of the hopper constructed to permit of the passage of the filler therethrough, and provided with a swinging door, and a reciprocating non-compressing comb arranged between the hopper and nozzle, substantially as set forth.

3. In a cigar-bunching machine, the combination of a hopper, a nozzle at the discharge end of the hopper, a comb arranged between the hopper and nozzle, and mechanism for imparting a reciprocating and a jerking motion to the comb, whereby the filler cut off by the comb is disengaged from the comb and the body of filler in the hopper, substantially as set forth.

4. In a cigar-bunching machine, the combination of a bunching-

table, a movable bunching-roller, and an apron passing over the table and roller, said apron being comparatively stiff or rigid as regards the entire portion resting upon the table and flexible as regards the portion designed to form the pocket, whereby the apron is caused to lie smoothly upon the table and the flexible portion to loop down in front of the roller when in its rearmost position, substantially as set forth.

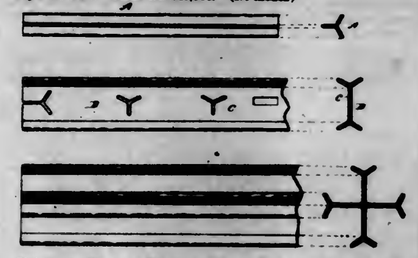
5. In a cigar-bunching machine, the combination of a hopper, a nozzle at the discharge end of the hopper provided with an adjustable swinging door, and a comb arranged to reciprocate between the hopper and nozzle, substantially as set forth.

6. In a cigar-bunching machine, the combination of filler-feeding mechanism, a bunching-table, a movable bunching-roller, an apron passing over the table and roller, and pivoted side plates arranged at the rear end of the table and movable to and from the end of the table by the bunching-roller, substantially as set forth.

7. In a cigar-bunching machine, the combination of filler-feeding mechanism, a bunching-table, a movable bunching-roller, an apron passing over the table and roller, and clamps at the rear end of the table for holding one end of the binder against the rear end of the table, substantially as set forth.

8. In a cigar-bunching machine, the combination of filler-feeding mechanism, a bunching-table provided at its rear end with a binder-clamp, a movable bunching-roller, a binder-smoothing roller, and an apron passing over the table and between the bunching and smoothing rollers, substantially as set forth.

383,343. IRON FENCE. WILLIAM H. CREIS, Macon, Ga. Filed Sept. 14, 1887. Serial No. 249,602. (No model.)



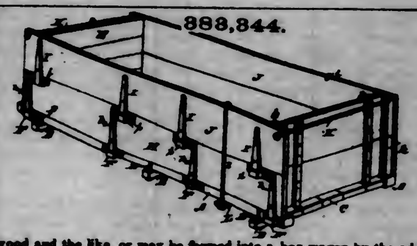
Claim.—1. The metallic fence-panel herein described, consisting of the posts provided with radial flanged wings, the horizontal rails each consisting of a web provided on its longitudinal edges with two diverging flanges, the ends of the said rails being provided with slots, which are cut to embrace and closely clamp the radial flanged wings of the posts in the manner described, whereby the said rails are supported by the posts and securely attached thereto, and the three-winged pickets supported by the said rails, substantially as described.

2. A fence-post consisting of the longitudinal radial wings, each of the said wings being provided on its longitudinal edge with two diverging flanges, the said post being constructed of sheet metal bent longitudinally and folded upon itself, as shown, the contiguous faces of the metal being pressed into intimate contact, substantially as described.

3. The herein-described fence-rail, consisting of a strip of metal bent longitudinally and folded upon itself with its contiguous surfaces pressed closely in contact, the sheet being so bent as to form a web, C, provided on its longitudinal edges with two diverging flanges equidistant from each other and the web, substantially as described.

4. The herein-described metallic fence-panel, consisting of the posts constructed of radial wings, the longitudinal edges of which are each provided with two diverging flanges, the rails B, each consisting of a web, the edges of which are also provided with two longitudinal diverging flanges, the webs of the said rails being punched or perforated for the reception of the pickets and slotted at their ends to engage or embrace the flanged edges of the radial wings of the posts, and the pickets inserted in the perforations in the webs of the rails, and each consisting of three radial wings equidistant from each other, the several parts of the panel being constructed of strips or sheets of metal bent longitudinally and folded upon themselves with their contiguous faces pressed into intimate contact, all arranged substantially as herein described.

383,344. WAGON. GEORGE H. COWELL, Bonneville, Tenn., assignor of one-half to Andrew G. Curl, same place. Filed Aug. 24, 1887. Serial No. 247,732. (No model.)

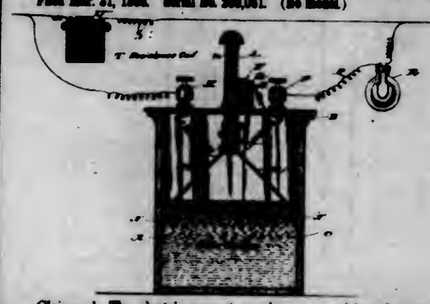


383,344.

Claim.—1. In a wagon, the combination of the base-frame, having cuffs or sockets adapted to receive the lower ends of suitable standards, and the front gate or portion, H, framed or secured rigidly to said base-frame, whereby to prevent the load thereon from sliding forward off the base-frame, all being substantially as described, whereby the wagon can be readily fitted with side standards for hauling wood and the like, or may be formed into a box-wagon by the addition of suitable side-boards, substantially as and for the purposes specified.

2. In a wagon, substantially as described, the combination of the base, the side-boards having standards, the cuffs or sockets to receive said standards, the front end piece, the gate, the bar L, extended under the base and projected at its ends laterally beyond the same, and the rods *l*, secured at their lower ends to the bar L, and having their upper ends formed with hooks *l'* to engage the tops of the side-boards, substantially as set forth.

383,345. RHEOSTAT. FRANK J. CROCKER, Eugene City, Oreg. Filed Mar. 31, 1888. Serial No. 269,061. (No model.)



Claim.—1. The electric-current regulator comprising the vessel containing a chemical solution, and the diverging conducting-arms connected in circuit with the main line or conductor and insulated from each other, said arm being adapted to be lowered into the solution to any desired depth, for the purpose set forth, substantially as described.

2. The combination, with the vessel to contain the chemical solution, of the vertically-movable rod K, the diverging arms M, attached to the said rod and insulated from each other, said arms being conductors of electricity and adapted to form part of an electric circuit, substantially as described.

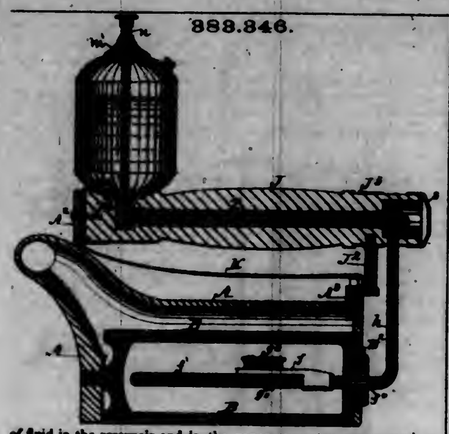
3. The combination of the vessel A, to contain the chemical solution, the vertically-movable rod K, having the rack-teeth, the revoluble shaft G, having the pinion engaging the rack-teeth, and the conducting-arms M, secured to the lower end of rod K, diverging outward to the sides of the vessel and adapted to form part of the electric circuit, for the purpose set forth, substantially as described.

4. The combination, in electric-light systems, of the conducting-wire in which the electric lamps are included, the vessel containing the chemical solution, and the diverging conducting-arms M, connected to the conducting-wires, having their upper ends insulated from each other, and means to immerse the diverging lower ends of said arms into the chemical solution to any desired depth, for the purpose set forth, substantially as described.

383,346. SELF-HEATING FLAT-IRON. JESSE A. OTIS, Des Moines, Iowa. Filed Aug. 20, 1887. Serial No. 248,288. (No model.)



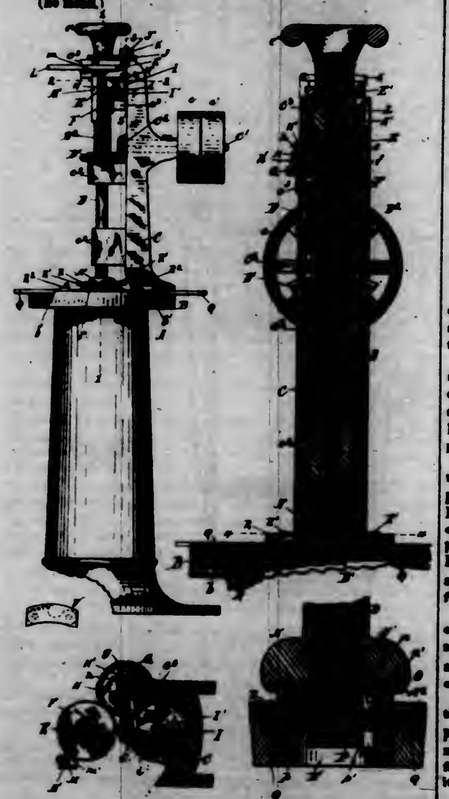
Claim.—An improved self-heating iron comprising an open-bottomed hollow iron having a chimney at its front end and journal-bearings at its opposite ends, a duplex bottom having journals on its ends and a crank on the end of one of said journals, a wooden handle having an oil-reservoir on its top connected by means of tubing with a vapor generator and burner located and concealed within the hollow iron and double revolving bottom, and valves for regulating the flow



383,346.

of fluid in the reservoir and in the vapor-generator, constructed, arranged, and combined to operate in the manner set forth.

383,347. MACHINE FOR MAKING BLANKS FOR CHAIN-CUTTING TEETH. CHARLES H. DOUGLAS, Chicago, Ill., assignor of one-half to Charles S. Baker, same place. Filed Oct. 15, 1887. Serial No. 252,001. (No model.)



Claim.—1. In a machine for cutting blanks, &c., the combination, with a suitable work-holding table for holding the bars from which the blanks are to be cut, of a tubular cutter or saw for severing the ends of the bars, substantially as and for the purposes specified.

2. In a machine for cutting blanks, &c., the combination, with a suitable table for holding the bars from which the blanks are to be cut in a position radial to the cutter, of a gage-piece to determine the position of the bars, and a tubular cutter or saw to sever the ends of the bars when in position, substantially as and for the purposes specified.

3. In a machine for cutting blanks, &c., the combination, with the tubular cutter and its rotary mandrel, of automatic feed devices for feeding the cutter to the work, substantially as and for the purposes specified.

4. In a machine for cutting blanks, &c., the combination, with the tubular cutter and its rotating mandrel, of automatic feed devices for feeding the cutter to the work, and an automatic stop for disconnecting the feed devices at a predetermined point, substantially as and for the purposes specified.

5. In a machine for cutting blanks, &c., the combination, with the tubular cutter and its actuating mechanism, of the work-holding table provided with seats or grooves to receive the bars from which the blanks are to be cut, said seats or grooves being arranged radially to the cutter and having suitable clamping devices to retain the bars in position, substantially as and for the purposes specified.

6. In a machine for cutting blanks, &c., the combination, with the tubular cutter and its operating mechanism, of the table B, having central recess or aperture, B', and radial grooves *b'*, and the cap-piece R, provided with corresponding grooves *r*, and having clamping-screws R', substantially as and for the purposes specified.

7. In a machine for cutting blanks, &c., the combination, with the tubular cutter and its operating mechanism, of the table B, provided with radial grooves *b'*, and the clamping-cams R², arranged at one side of said grooves, substantially as and for the purposes specified.

8. In a machine for cutting blanks, &c., the combination, with the rotating and vertically-movable mandrel, of a chuck removably secured on the end thereof, and a tubular cutter or saw mounted in said chuck, substantially as and for the purposes specified.

9. In a machine for cutting blanks, &c., the combination, with the mandrel D, having threaded portion *d*, of the chuck-body N', having recess *n*, the tubular cutter O, arranged in said recess, the split ring *n'*, having beveled inner wall, the beveled disk N², and the nut *n²*, for operating said disk, substantially as and for the purposes specified.

10. In a machine for cutting blanks, &c., the combination, with the mandrel D and the tubular cutter O, secured in a suitable chuck thereon, of a gage-piece mounted on said mandrel below the cutter, substantially as and for the purposes specified.

11. In a machine for cutting blanks, &c., the combination, with the mandrel D and the tubular cutter O, mounted in a suitable chuck, N, thereon, of the gage-piece P, mounted on said mandrel below the cutter and constructed at its upper portion within the cutter to prevent clogging, substantially as and for the purposes specified.

12. In a machine for cutting blanks, &c., the combination, with the cutter-mandrel D and the feed-screw E, swiveled to its upper end, of a spring arranged to thrust the mandrel upward against the feed-screw to prevent lost motion, substantially as and for the purposes specified.

13. In a machine for cutting blanks, &c., the combination, with the mandrel D, its actuating-pinion D', splined thereon, the pinion F, secured on the upper end to drive the feed-train, and the feed-screw E, swiveled in the pinion F, of the spring D², coiled around the mandrel D and bearing against the pinions D' and F, substantially as and for the purposes specified.

14. The combination, with the longitudinally-movable rotating mandrel D and elongated pinion F, secured thereon, of the pinion G, pinion H, adjustably connected thereto, shaft I, having ratchet-wheel I', and vibrating arm *i*, with spring-pawl *i'*, pinion J, loosely mounted on shaft I, clutch J', splined on said shaft and adapted to engage the pinion J, pinion E', arranged to mesh with the pinion J, and feed-screw E, swiveled to the upper end of the mandrel, splined in the pinion E', and passing through a suitable fixed nut or threaded aperture in the frame, substantially as and for the purposes specified.

15. The combination, with the cutter-mandrel and its feed-screw, of the feed-train connecting the two, clutch mechanism arranged in said feed-train to connect or disconnect the mandrel and feed-screw, and a lever connected to the said clutch to hold it normally in its disconnected position, substantially as and for the purposes specified.

16. The combination, with the clutch-pinion J and clutch J' in the feed-train, of the lever K, connected to the said clutch, the sliding piece K', connected to said lever, and the lever L, having its fulcrum near the sliding piece engaging the same and extending forward therefrom, said lever serving by its weight to hold the clutch normally in its disengaged position, substantially as and for the purposes specified.

17. The combination, with the cutter-mandrel, its feed-train, the clutch mechanism arranged therein, and the lever L for operating the same, of the rock-shaft M, provided with pin *m* to support said lever, and having pin *m'* arranged in the path of the pinion on the cutter-mandrel, substantially as and for the purposes specified.

18. The combination, with the cutter-mandrel, its feed-train, the

clutch mechanism arranged therein, and the lever L for operating the same, of the rock-shaft M, provided with pin m to support said lever, and having pin m' arranged in the path of the pinion on the cutter-mandrel, said pin m' being adjustable upon the rock-shaft, substantially as and for purposes specified.

383,348. FLYING TARGET. Prime Ehn, Jr., Lafayette, Ind., assignor to John O. Perrin, same place. Filed Aug. 10, 1887. Serial No. 246,604. (No model.)



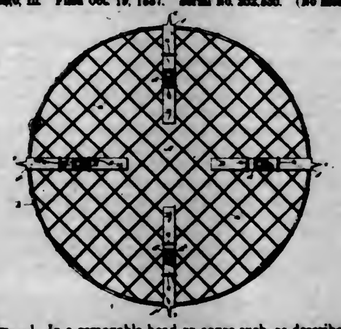
Claim.—1. A flying target having a hollow rounded concavo-convex top and a flat bottom formed integral therewith of brittle material, and having an annular re-enforce ring integral with the bottom and top, and a suitable opening for the insertion of feathers or similar articles, and means for closing said opening, all substantially as and for the purpose described.

2. The herein-described target, consisting of a hollow concavo-convex shell and a bottom formed of similar brittle material, and a diametrical transverse re-enforce strip secured to said bottom, substantially as and for the purpose described.

3. The target E, composed of a hollow concavo-convex rounded top and flat bottom formed integral therewith, of brittle material, and the re-enforce strip D in said bottom extending across the same and having projecting portion *d*, substantially as set forth.

4. The herein-described target, consisting of the concavo-convex shell or top and flat bottom formed integral therewith, and a re-enforcing strip, D, secured to said bottom and extending across the same, with a suitably-closed opening in said top for the insertion of feathers or other light articles into the target, all substantially as and for the purpose described.

383,349. BARREL-COVER ATTACHMENT. BENJAMIN F. FIELD, Chicago, Ill. Filed Oct. 19, 1887. Serial No. 252,830. (No model.)

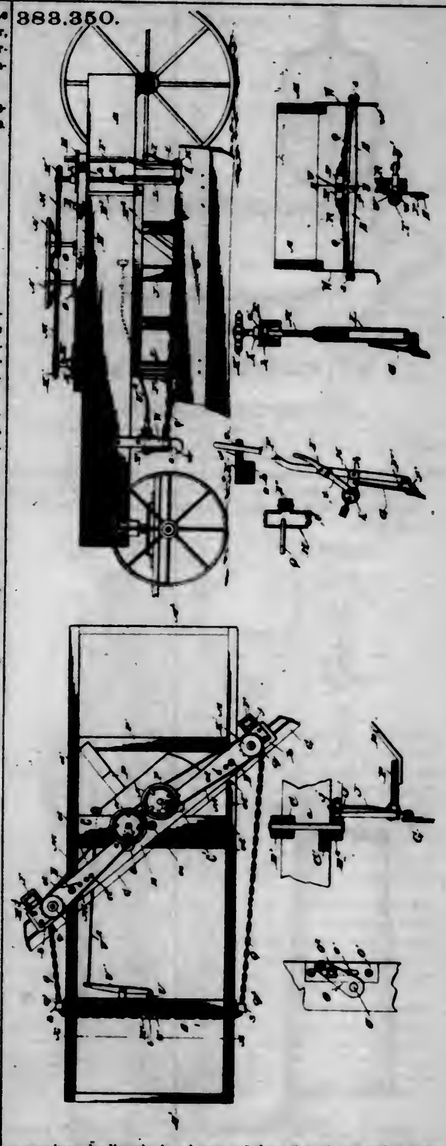


Claim.—1. In a removable head or cover such as described, the flat circular disk, in combination with the series of pointed dogs, each dog provided with a stud or projection, and confining rings or loops applied to the disk and over the dogs, the one in front and the other in rear of the said stud or projection, substantially as described.

2. In combination with the open end of a barrel, a flat head or cover fitting entirely within the end and provided with a series of independent flat dogs, each dog being provided with a point and a stud or projection lying below the upper or outer end of the walls of the barrel, and confining rings or loops loosely engaging said dogs in front and rear of said stud or projection to hold them in position upon the head, substantially as described.

3. In combination with the flat cover or head A, the series of independent flat dogs B, each provided with a point and shoulders on its outer end, and a metal block secured to its upper surface by a rivet, as described, and confining rings or loops secured to the head or cover in front and rear of the metal blocks on each of the dogs, substantially as described.

383,350. ROAD-GRADER. ALBERTO FIELD, New Berlin, N. Y. Filed Aug. 10, 1887. Serial No. 246,616. (No model.)



Claim.—1. In a road-machine, a main frame having guides at its opposite sides for the scraper draft-chain, combined with a reversible scraper and a draft-chain passed around the guides of the main frame and connected at its ends to the scraper, such guides being arranged approximately directly in advance of the point of connection of the draft-chains and scraper, whereby the draft on each scraper will be in the direction of motion in the different adjustments of the scraper, substantially as and for the purposes specified.

2. In a road-machine, a main frame and a scraper, combined with draft-chains connected with each scraper and vertically-adjustable guides for said draft-chains, substantially as set forth.

3. The combination, in a road-machine, with the main frame and the scraper, of the draft-chains and the lever or bar pivoted between its ends, and having at each ends guides for the chains, substantially as set forth.

4. The scraper and the upright connected therewith and having a loop, H, elongated laterally, combined with the draft-chain connected with said loop and movable from side to side thereof, whereby to avoid any twisting of the upright, substantially as set forth.

5. The combination, in a road-machine, of the main frame, the lever or bar S, pivoted between its ends, and the supporting-plates W, arranged directly in rear of the ends of said pivoted lever, substantially as and for the purposes specified.

6. In a road-machine, the main frame and scraper, combined with the pivoted lever S, having guides at its ends, the plates W, arranged directly in rear of the ends of the lever and provided at their lower ends with hooks or stops *w*, and the draft-chains, substantially as set forth.

7. In a road-machine, the combination of the main frame, the scraper, the draft-chain extended across the frame from side to side and connected with the scraper, the side guides for the said chain, and a clamp for securing the same, substantially as set forth.

8. In a road-machine, the main frame, side guides, and scraper, combined with the chain, and a clamp arranged between said side guides and adapted to secure the chain, substantially as set forth.

9. The combination, in a road-machine, of the main frame, the scraper, the draft-chain, the pivoted lever S, having guides at its ends, the loops T T, and the clamp U, operating between said loops T, substantially as set forth.

10. In a road-machine, the combination of the main frame, the scraper, the draft-chain, the lever S, having guides *s*, the plates W, having hooks or stops *w*, the loops T T, the clamp U, operating between said loops and the lever U', and handle U^3, substantially as and for the purposes specified.

11. In a road-machine, a scraper proper or blade and upright or support, as F, combined with a pivoted latch, H, a lever, I, and a link, *i*, connecting said lever I with the latch H, all arranged and adapted for use substantially as and for the purposes specified.

12. In a road-machine, the combination, with the scraper proper or blade, of the box F', pivoted to the said blade, and the upright F, pivoted to said box, substantially as set forth.

13. In a road-machine, the combination of a scraper-blade, a nut connected therewith, and a screw engaging said nut and loosely swiveled at its upper end, substantially as described, whereby the said screw may be turned or rotated and may swing at its lower end, substantially as and for the purposes set forth.

14. In a road-machine, a changer, substantially as described, consisting of a screw-rod and a tube or sleeve, L, having a threaded bearing for the said rod and adapted below the said bearing to brace such rod, substantially as set forth.

15. The combination, in a road-machine, of the blade, the tube or sleeve connected therewith and having a threaded bearing, and the screw-rod engaging said bearing and loosely swiveled on its supporting-frame, substantially as set forth.

16. The combination, in a road-machine, of the scraper-frame having end extensions, *b*, provided with bearings in which to swivel the screw-rods and with guides for the uprights, the blade, and the hangers and uprights, substantially as set forth.

17. In a road-machine, the combination, with the screw-rod and the sprocket-wheel K' therefor, of the sprocket-wheel N, the arm or bar O, pivoted at one end and having the wheel N on its opposite end, and the belt connecting said sprocket-wheels, substantially as set forth.

18. The combination, in a road-machine, with suitable supports or framing, of an arm or bar, O, pivoted at one end, whereby its opposite end may be swung toward or from a given point, a plate on the frame, a bolt connecting such plate with the pivoted arm or bar, the pulley or wheel supported on the swinging end of the pivoted plate, and the belt for connecting such pulley with the pulley to be operated, substantially as set forth.

19. In a road-machine, the combination of the main frame, the scraper, the draft-chains connected with said scraper, and vertically-movable guides, as *s*, for said draft-chains, said guides being connected, whereby the raising or lowering of one will effect a reverse movement of the other, substantially as set forth.

20. The combination of the main frame having a bar or bearing, P', the scraper-frame, the platform fixed to said frame, and the brace *p*, connected with said platform and resting and moving on the bearing P', substantially as set forth.

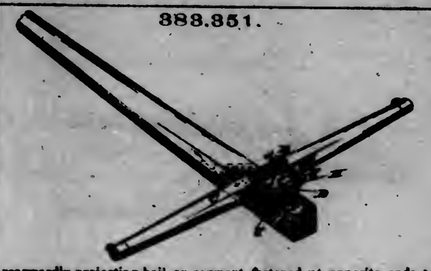
21. The combination, in a road-machine, of the main frame, the reversible scraper-frame, both having openings suitable to receive a pin, with a pin fitted to said openings, whereby to lock the scraper-frame in any desired position, substantially as set forth.

22. In a road-machine, the main frame, the reversible scraper-frame and the scraper suspended therefrom, and the draft-chain therefor, combined with the clamp for securing said chain and the lock for securing the scraper-frame in its different adjustments, substantially as set forth.

383,351. SINGLETREE. JAMES R. FREELAND, Wellsville, N. Y., assignor of one-half to Edwin Cotton Bentley, same place. Filed Feb. 7, 1888. Serial No. 263,512. (No model.)

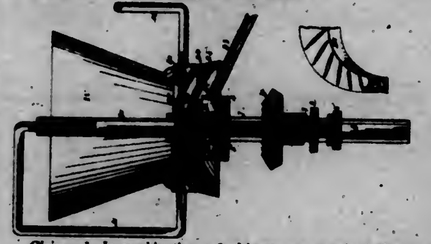
Claim.—The combination of the singletree provided with a rearwardly-projecting bail or segment having two steps or offsets, the bolt upon which the singletree is pivoted and on which it draws, and the

383,351.



rearwardly-projecting bail or segment fastened at opposite ends to opposite ends of the bolt, and provided with an offset or shoulder overlapping and adapted to engage the shoulders on the rearwardly-projecting bail, substantially as and for the purpose shown and set forth.

383,352. PAINT-MILL. AUGUSTUS J. GASTON, Beloit, Wis. Filed Mar. 4, 1887. Serial No. 229,702. (No model.)



Claim.—1. In combination, a feed-hopper, an annular hollow stationary grinder surrounding the base of the hopper, a vertical spindle, a rotary hollow grinder seated on the top of the spindle and provided with a tube fixed thereto and extending centrally upward through the hopper and communicating with the interior of the grinder, a water-inlet pipe in communication with the interior of the annular stationary grinder, a water-outlet pipe extending from the stationary grinder over the hopper and loosely into the said upwardly-extending tube, and an outlet-pipe in communication with the interior of the rotary grinder, substantially as set forth.

2. In combination, a stationary hollow grinder, a vertical spindle, a rotary hollow grinder seated on the top of the spindle, a water-inlet to the stationary grinder, water communication between the stationary and the rotary grinder, a water-outlet pipe depending from the bottom of the rotary grinder at one side of its center, a stationary annular trough located beneath the path of the depending outlet, and a waste-pipe leading from the stationary trough, substantially as set forth.

3. The combination, with the vertical spindle, of a hollow rotary grinder having a convex grinding-face and a concave under face, the said hollow grinder being seated on the top of the spindle at the center of its under or concave face, and provided with a discharge-pipe depending from its under or concave face, an annular trough fixed beneath the path of the free end of the depending pipe, the ends of the trough extending upwardly on opposite sides of the depending pipe, and a discharge-pipe leading from the annular trough, substantially as set forth.

383,353. CABLE-COVERING MACHINE. CHARLES H. GREEN, Chicago, Ill. Filed Jan. 30, 1886. Serial No. 209,993. (No model.)

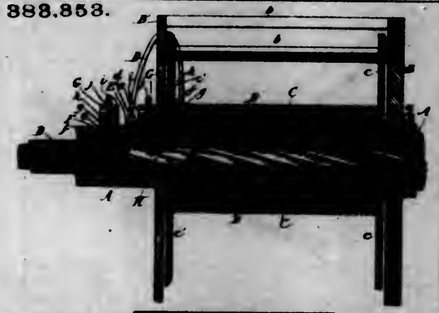
Brief.—The object of the invention is to produce an improved machine for winding a covering upon a traction-cable in an expeditious and firm manner.

Claim.—1. The combination, with the hollow spindle A and disks B B', of the pressure-rollers E E' E'', each mounted upon a shaft, and each having a beveled shoulder, *d*, to fit the bevel of the cable-covering, substantially as specified.

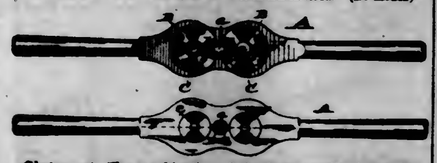
2. The spindle A, in combination with the pressure-rollers E E' E'', carried by the spindle, and each having a shoulder, *d*, substantially as described.



388,853.



388,854. SCREW-CUTTING DIE AND STOCK. PETER GRABLER, St. Louis, Mo. Filed Dec. 6, 1887. Serial No. 257,032. (No model.)



Claim.—1. The combination of the lever or die-plate holder, perforated centrally and having seats for the die-plates, and a pin for engaging in the holes in the die-plates, with the pair of circular notched adjustable die-plates, and the bolts and thumb-nuts for securing the die-plates to the lever or holder, said die-plates having a series of holes for said pin to engage in, substantially as described.

2. The combination of the die-plate holder, perforated centrally, as described, the pair of notches, adjustable die-plates, and the bolts and thumb-nuts for securing the die-plates to the holder, substantially as described.

388,855. CORN-SHUCK COMPRESSOR. RANDOLPH F. HAGEMAN, DAVID NOGGLE, and ROWLAND S. RAIN, New Madison, Ohio. Filed Dec. 13, 1887. Serial No. 257,720. (No model.)



Claim.—The combination, with a suitable bracket and the curved compressor-arms B, pivoted at one end thereto, of the fulcrum-bars D, secured one to each of the compressor-arms and curved, as shown, the levers C, connected to the arms B, and disposed between said arms and the fulcrum-bars in the laterally-curved portions *l* of the bars, and connected to said bars by a loose connection, as the bolts *c* and elongated slots *d*, and the cord-holders secured to the levers C, with one end free, substantially as and for the purpose specified.

388,856. STOP-COCK. SAMUEL HAWKINSON, Rotcbon, N. J. Filed May 7, 1887. Serial No. 237,491. (No model.)



Claim.—1. In a stop-cock for gas and water mains, service-pipes, and fixtures, the combination, with the barrel or casing A, having two openings or passages through its walls, of a rotary valve-plug formed with a tapering circumferential groove or channel in the plane of the openings in the barrel or casing to form a passage between the same, said groove or channel having a length greater than the distance between said openings, whereby when the plug is turned the passage between the openings is gradually increased or diminished, substantially as shown and described.

2. In a stop-cock for gas and water mains, service-pipes, or fixtures, the combination, with the barrel or casing having two passages through its walls, of a rotary valve-plug formed with a circumferential groove or channel in the plane of the openings through the walls of the barrel or casing to form a passage between the same, said groove tapering in both directions from a point of maximum capacity, and each part from said point of maximum capacity outward having a length equal to or greater than the distance between the said two passages in the barrel or casing, substantially as and for the purpose described.

3. In a stop-cock for gas and water mains, pipes, or fixtures, the combination, with the barrel or casing having two openings through its walls, of a rotary valve-plug having an axial opening or passage in communication with the source of supply, said passage opening laterally into a circumferential groove or channel of varying capacity in the plane of the openings through the walls of the barrel or casing, said groove or channel having a length greater than the distance between the said openings, substantially as shown and described.

388,857. BRAIDER-HOLDER FOR PENCILS. JOSEPH HOFFMAN, Hoboken, N. J., assignor to Gustavus A. Goldsmith, New York, N. Y. Filed Dec. 10, 1887. Serial No. 257,509. (No model.)



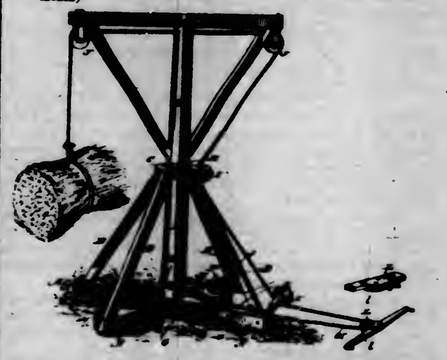
Claim.—1. A tubular rubber-holder having inwardly-extending pointed teeth at the end thereof, arranged horizontally, substantially as set forth.

2. A tubular rubber-holder having inwardly and downwardly projecting pointed teeth at or near the end thereof, arranged horizontally, substantially as set forth.

3. A tubular rubber-holder having inwardly-projecting teeth at the end thereof, arranged horizontally, and a shoulder between the rubber-holding extremity and the part which fits over the pencil, substantially as set forth.

4. The combination of a tubular rubber-holder having inwardly projecting teeth near the end thereof and a rubber eraser having the shank E, adapted to enter the unsplit tubular holder, and shoulders F, substantially as set forth.

388,858. HAY-DERRICK. WILLIAM A. HOOPER and ROBERT P. HAMILTON, Marysville, Mo. Filed Jan. 7, 1888. Serial No. 260,262. (No model.)



Claim.—1. The combination of the base-frame having an outer guide-pulley at its lower end and an inner guide-pulley at its upper end, the mast, the crane-beam secured centrally between its ends to the said mast and provided at its opposite ends with guide-pulleys, and the rope disposed over said pulleys, substantially as set forth.

2. The combination of the base-frame, the mast journaled thereon, the crane-beam fixed thereto and having guide-pulleys for the hoisting-rope, the windlass journaled in the base-frame, a rope connecting said windlass and mast, whereby the turning of the former will effect a turning of the latter, and the draft-rope connected with said windlass, substantially as set forth.

3. The combination, with the base-frame, the windlass, the mast having a crane-beam, and the guide-pulleys, of the rope connecting the windlass and the mast, the whiffletree having a guide and a clamp for the rope, and the rope secured at one end to the windlass passed through the guide of the whiffletree, thence disposed around the guide-pulleys, and depending at one end from the crane-beam, substantially as set forth.

4. The improved hay-derrick consisting of the base-frame having ribs crossing each other at right angles, the diagonal braces and the collar supported at the upper end of the said braces, the mast having the crane-beam secured to and extended equally on opposite sides thereof, the diagonal braces supporting said crane-beam, the guide-pulleys, the windlass, the rope connecting the windlass and mast, and the draft-rope, all substantially as and for the purposes specified.

5. The combination, in a hay-derrick, of the base-frame, the mast suitably journaled and provided with the crane-beam having guide-pulleys, the windlass supported in the base-frame and connected with the mast, and the rope connected with said windlass and also disposed over the pulleys of the crane-beam, substantially as set forth.

388,859. HARNESS. ARMSTEAD H. JENKINS, Sidney, Ohio. Filed Mar. 15, 1888. Serial No. 267,322. (No model.)



Claim.—An anti-kicking strap for harness, consisting of a strap or straps having split ends passing through the terret-ring of the harness-saddle, and a retaining-guide secured to the hip-strap and adapted to be secured to the check-rein and whiffletree, as set forth.

388,860. HOSE-COUPLING. CHARLES KEEFER, Toledo, Ohio. Filed Dec. 22, 1887. Serial No. 258,762. (No model.)



Claim.—The improved hose-coupling herein described and shown, comprising the member A, having the reduced extended portion L, the lugs M on the said portion L, and the lugs N on its main body in rear of the said portion L, the member B, having open bayonet-slots provided with inclined cam portions to receive the lugs M of the member, and thereby draw the members together, and the internal annular flanges, D, to receive the end of the extended portion L of the member A, the lugs G on the member B, the latch I, pivoted on the side of the member B, and having a hook, K, at one end to engage one of the lugs M when within the inclined portion of the bayonet-slot, and the detent-plate H, pivoted on one of the lugs G, and having and inclined outer edge adapted to bear against the rear edge of the latch I and hold the same in engagement with the lug M, as set forth.

388,861. THEATRICAL APPLIANCE. JOHN T. KERAN, Wilmington, N. C. Filed Aug. 8, 1887. Serial No. 246,416. (No model.)

Claim.—1. A scene composed of sets of interchangeable sections, the sections of one set constructed to alternately hide and expose those of the other set, substantially as described.

2. Two sectional curtains, the sections of one curtain constructed and arranged to be either exposed over or concealed beneath the other, as set forth.

3. The combination, with a stationary sectional curtain, of a movable sectional curtain, the sections of which move between the sections of the stationary curtain.

4. The combination, with a stationary sectional curtain, of two or more movable curtains, the sections of which move between the sections of the stationary curtain, as set forth.

5. The combination, with a stationary sectional curtain, of two or more movable sectional curtains and means for simultaneously moving all of the sections of one curtain independent of those of the other curtain, substantially as described.

6. A curtain composed of separate sections each carrying a portion of a scene and arranged when overlapped to form a complete scene, substantially as described.

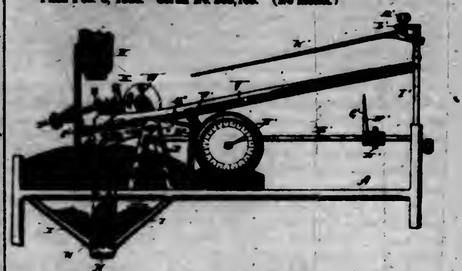
388,861.



7. A curtain composed of separate removable sections each carrying a portion of a scene and arranged when overlapped to form a complete scene, substantially as described.

8. The combination, with the stationary uprights provided with transverse pins, of the movable uprights having inclined slots engaging said pins, and the slats carried by said movable uprights, substantially as and for the purpose described.

388,862. AUTOMATIC GRAIN-METER. JAMES C. KIRK, York, Pa. Filed Feb. 6, 1888. Serial No. 263,163. (No model.)



Claim.—1. The combination, with the weighing-beam, of the angle-plate located on ways thereon, the buffer-plate pivoted thereto, the spiral spring, and the set-screw whereby the buffer is adjusted, substantially as specified.

2. The combination, in a grain-meter, of the weighing-beam, the rolling weight, and the spring-arm K', whereby the momentum of the weight is partially overcome, substantially as specified.

3. The combination, with the pivoted weighing-beam, the rolling weight, and the spring-arm K', of the adjusting-screw, whereby said arm may be adjusted to bear against the rolling weight with different degrees of force, substantially as specified.

4. The combination, with the frame of the weighing-beam, of the registering device and the rod which operates it, the adjustable hand on the shaft of said registering device, the vertical rod having a lateral projection operated thereby, the shouldered bolt mounted in bearings in a vertical standard, and the spiral spring, whereby the bolt is operated to stop the motion of the meter at any desired point, substantially as specified.

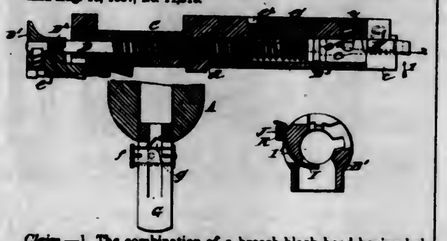
5. The combination, with the frame of the machine, the weighing-beam pivotally hung thereon, the hopper pivotally hung to the weighing-beam, the registering device mounted on the said frame and operated by an arm attached to the weighing-beam, and a hand or pointer on the shaft of the said registering device, of a spring-actuated bolt mounted in bearings in close proximity to the weighing-

beam, and means connected with the registering device, substantially as described, for operating this sliding bolt, whereby it is caused to engage with and stop the weighing-beam, as herein specified.

6. The combination, with the weighing-beam and the hopper hung thereon, of the registering device operated by the movement of the weighing-beam, the sliding bolt mounted in bearings in close proximity to the weighing-beam, and means, substantially as described, for operating this sliding bolt connected with the registering device, whereby the bolt is caused to engage with the weighing-beam and hold it when the desired quantity of grain is weighed, substantially as specified.

7. In a grain-meter, the combination, with the frame of the machine, the pivoted weighing-beam and hopper, and the rolling weight upon the said weighing-beam, of an independent stationary graduated beam, E', secured to the frame of the machine, and an adjustable stop, F', upon the said graduated beam, whereby the travel of the said rolling weight upon the weighing-beam may be regulated, substantially as described.

383,868. MAGAZINE FIRE-ARM. JAMES P. LEE, New York, N. Y. Filed Nov. 9, 1887. Serial No. 254,716. (No model.) Patented in England Aug. 18, 1887, No. 11,310.



Claim.—1. The combination of a breech-block head having hollow radial projection c^2, an extractor alongside the projection interlocked with the head, and a spring in the hollow projection to hold the extractor in place and to its work, whereby the parts may be assembled and held together without the use of separate tools, substantially as described.

2. The combination, with the head of a breech-bolt movable with relation to the body thereof and provided with a hollow radial projection for a spring and a recess for the extractor, as described, of the extractor having an arm extending inward beyond the hook and a spring arranged in said hollow projection to hold the extractor in its place and to its work, substantially as described.

3. The combination described of the head and body of a breech-bolt radially movable with respect to each other and an extractor whose shank or body is of general bell-crank form and seated between such parts, whereby the forward end of the body of said bolt serves as a cam for forcing the extracting-hook into engagement with the flange of a cartridge as the said bolt is turned into locking position, substantially as described.

4. In a fire-arm, the combination of the frame or shoe, a trigger-guard provided with groove or slot, a transversely-sliding spring-stop, and a magazine having a lug, f^9, engaged thereby for securing the magazine to the gun, substantially as described.

5. The combination, with a breech-bolt and extractor, of a shoe or receiver having an inclined roughened projection or stud therein in line with the cartridge being extracted to engage the same when withdrawn by the extractor and to assist in ejecting it, as and for the purposes specified.

6. The combination, with the shoe or receiver of a magazine-gun and a magazine adapted to hold the cartridges side by side and feed them sidewise to the gun, of the curved cut-off or arch-shaped gate having the chord of its arc arranged at an angle of about forty-five degrees, oscillating across the mouth of the magazine, substantially as described.

7. The combination, with the shoe or receiver, of an inclined roughened spring-stud in line with the cartridge being retracted to engage the same when withdrawn by the extractor for automatically ejecting it from the gun, as specified.

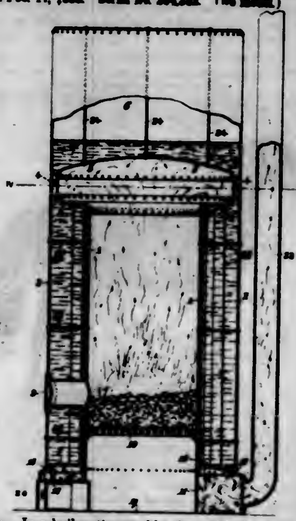
8. The combination, with a breech-bolt having a head provided with annular groove c^{10} and longitudinal groove c^{11}, connecting with the same, of a shield or cover provided with projection N', whereby the shield is detachably connected with said bolt, as set forth.

9. The combination, with a breech-bolt having a projection, C', and a head provided with annular groove c^{10} and longitudinal groove c^{11}, connecting therewith, of a shield or cover provided with projections N⁹ and N', engaging such projection and grooves, respectively, whereby said shield is detachably connected with the bolt and the body and head of the bolt are secured together, substantially as described.

10. The combination of the shoe or body of a gun, provided with a longitudinal groove along the inside thereof, a breech-bolt, and a shield or cover engaging said bolt, having a rib, N⁹, to fit in the groove in the shoe for holding the bolt in position, substantially as described.

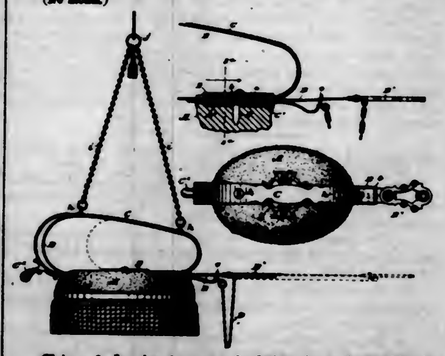
11. The combination of a breech-bolt provided with a lateral opening and a shoe or body of the gun, provided with an opening or passage registering therewith when the bolt is locked, for the escape of gas from defective or ruptured cartridges, as set forth.

383,864. STEAM-BOILER. CHARLES P. MARSHALL, Memphis, Tenn. Filed Feb. 17, 1888. Serial No. 264,382. (No model.)



Claim.—In a boiler, the combination, with the furnace having a combustion-chamber and inner shell, 1, and the outer shell, 2, the former having the extension 11, adapted to sustain the entire weight of the boiler, the flue-ring 7, joining said shells, a box surrounding said extension and having an opening in its top of less diameter than said box, an upwardly-projecting flange, 16, at the edge of said opening, and a downwardly-projecting flange, 18, on the shell 2, surrounding and coinciding with flange 16, and adapted to contact with the top of said box and flues connecting said combustion-chamber and box, as set forth.

383,865. HAND-MEASURE FOR FITTING GLOVES. ALEXANDER B. MCDONALD, Brooklyn, N. Y. Filed Mar. 5, 1888. Serial No. 266,167. (No model.)



Claim.—1. In a hand-measure for fitting gloves, the combination, with a hand-support, of a hoop-like guard, as C, mounted on said support and provided with a passage for the free end of the tape, and the said tape formed of some suitable material of the character described, and mounted within the said guard, substantially as set forth.

2. In a hand-measure for fitting gloves, the combination, with a hand-support, of a hoop-like guard, as C, mounted on said support and provided with a passage for the free end of the tape, the tape B, mounted within said guard, and the suspenders or chains by which

the measuring device is suspended attached to said guard, substantially as set forth.

3. In a hand-measure for fitting gloves, the combination, with the hand-support and the securing-plate g, of the hoop-like guard C, having its ends overlapped and provided with a spur, c^3, a keeper, c, and a passage, d, for the tape, and the said tape secured at one end to said guard and arranged within the same, substantially as set forth.

4. In a hand-measure for fitting gloves, the combination, with the guard C and the hand-support, of the tape B, mounted in said guard, the keeper, through which the tape plays, and the limiting chain or cord D, all arranged to operate as set forth.

383,866. NUT-LOCK. ALVIN B. HERMAN and LEWIS M. HERLDER, York, Pa. Filed Sept. 22, 1887. Serial No. 250,415. (No model.)



Claim.—The combination of a screw-nut having a tapered and threaded hole at right angles to and intersecting the bolt-hole on one side tangential thereto, and a tapered screw-plug fitted to enter said hole and cause a progressive burying of its threads transversely into the threads of the bolt, substantially as and for the purpose described.

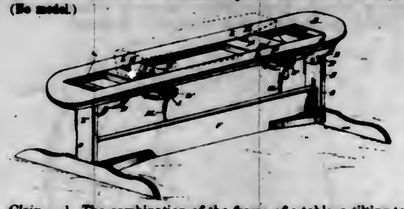
383,867. DENTAL TOOL. JOHN J. B. PATRICK, Bellefville, Ill. Filed Dec. 20, 1886. Renewed Feb. 28, 1888. Serial No. 265,207. (No model.)



Claim.—1. The combination, with the hand-piece of a dental engine and a burr for said hand-piece, of a revolubie sleeve carrying a gum-protecting shield, substantially as specified.

2. The combination, with the adjustable sleeve, of the free ring and the revolving shield attached thereto and provided with the wings D D, substantially as specified.

383,868. TRIMMING-TABLE. SAMUEL W. PATTERSON, Ringgold, Ohio. Filed June 6, 1888. Renewed Sept. 17, 1887. Serial No. 250,050. (No model.)



Claim.—1. The combination of the frame of a table, a tilting top and means for operating it, said top having a longitudinal opening therein, blocks adapted to slide in said opening, attaching-hooks secured to said blocks, and suitable means for operating them.

2. The combination of the frame of, a table, a tilting top, and means for operating the same, metal strips, each having a projection at one end, hooked levers pivoted to said strips, handled levers pivoted to said projections, and curved links and straight ones connecting said handled levers to said hooked levers.

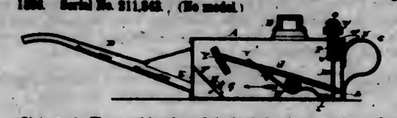
383,869. TURNING-LATHE. GEORGE PERLEE, Mishawaka, Ind., assignor to the Dodge Manufacturing Company, same place. Filed Sept. 5, 1887. Serial No. 248,894. (No model.)



Claim.—1. The hollow revolving cutter-head F, provided with journals n, pulley g, and cutters h, and the permanent journal-bearings d, supporting and centering said journals on each side of the cutters, and caps e e, combined with the tubular guides I J, supported and secured independent of the cutter-head and entering the latter from each side thereof, as set forth.

2. A hollow revolving cutter-head, enlarged at the planes of the cutters on each side of the latter, provided with journals n and journal-bearings d, combined with guides I and J, tapered or conical at their inner ends, and extending from each side inward to the planes x x of the cutter, as set forth.

383,870. OIL-CAN. JOHN RAE, St. Louis, Mo. Filed Aug. 25, 1886. Serial No. 211,843. (No model.)

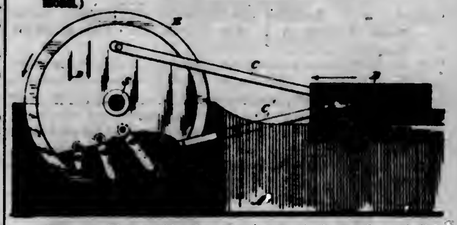


Claim.—1. The combination of the body having a perforated valve-seat and a nozzle, the bar, the valve-stem fulcrumed on the bar and having a valve, a push-stem connected to the valve-stem having a collar, a sleeve surrounding the push-stem having inner and outer heads, and a spring located within the sleeve between the inner head and the collar, substantially as described.

2. The combination of the body having a nozzle and a perforated valve-seat, the bar, the valve-stem fulcrumed on the bar and having a valve, a spring surrounding the bar and bearing on the valve-stem, a push-stem connected to the valve-stem, and a sleeve surrounding the push-stem, substantially as described.

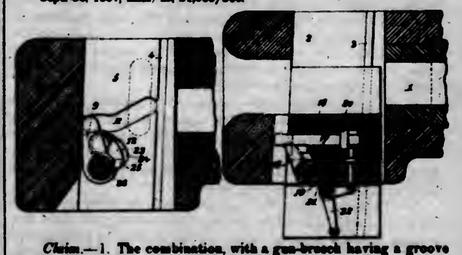
3. In an oil-can, in combination with the valve and perforated seat, the valve controlling communication between the body and nozzle of the can, the stem secured to the valve-bar upon which said stem is fulcrumed, spring surrounding the bar and bearing upon the valve-stem, push-stem forked at its lower end to enter grooves in the valve-stem, sleeve through which the push-stem passes, spring surrounding the stem within the sleeve, and knob upon the upper end of the stem, substantially as and for the purpose set forth.

383,871. INTERMITTENT GRIPPING DEVICE. MONTRUE S. REYNOLDS, Herman, Dak. Filed Aug. 23, 1887. Serial No. 247,605. (No model.)



Claim.—The combination of a rotary shaft, two flanged disks rigidly attached thereto, two plates adapted to loosely oscillate hung upon the shaft between the disks, and having pawls engaging with the inner periphery of the flanges of the disks, a reciprocating cross-head, and two pitmen connected at one end to the cross-head and at the other to the two loose plates upon opposite sides of the shaft, substantially as and for the purpose described.

383,872. BREECH-LOADING ORDNANCE. CARL MEYER, Magdeburg-Buckau, Prussia, Germany, assignor to Grusonwerk, same place. Filed Dec. 13, 1887. Serial No. 257,673. (No model.) Patented in Germany Jan. 13, 1887, No. 41,091; in Austria-Hungary June 10, 1887, 37/XXI. 1,120/1,100; in Belgium June 28, 1887, No. 77,988, and in Italy Sept. 30, 1887, XXI/42, 21,980/260.



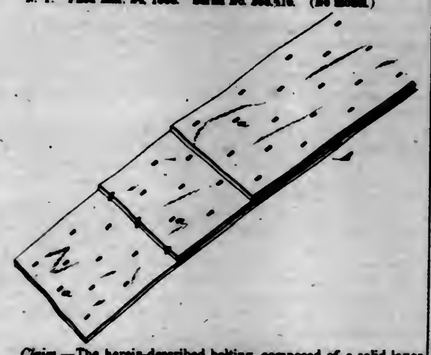
Claim.—1. The combination, with a gun-breech having a groove or guide formed therein, of a breech-block having a firing-pin, a shaft mounted in the breech-block and carrying an arm engaging the firing-pin, and a crank on the shaft working in and operated by the said groove as the block is moved, as set forth.

2. The combination, with a breech-block having a firing-pin and a shaft for operating the firing-pin, of a crank for moving the breech-block connected thereto, so as to allow lost motion of said block on first moving the crank, and an arm on the firing-pin shaft engaging

said crank and moved thereby, so that the pin will be started back before the block is lowered, as set forth.

3. The combination, with a breech-block having a firing-pin and an arm for operating the firing-pin, of a crank on the breech, groove formed in the breech-block, and a projection on the crank for engaging the groove, the said firing-pin arm engaging the crank and a portion of the groove being made concentric with the crank, whereby upon turning the crank the firing-pin is withdrawn before the block is moved, as described.

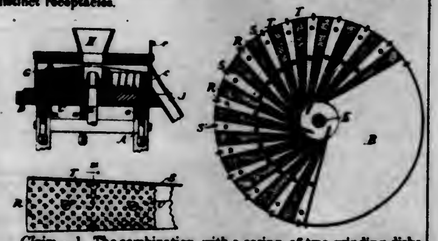
383,373. MACHINE-BELTING. CHARLES A. SCHIEREN, Brooklyn, N. Y. Filed Mar. 24, 1888. Serial No. 268,416. (No model.)



Claim.—The herein-described belting, composed of a solid layer or layers having perforations or air-openings therethrough.

383,374. MACHINE FOR DELINTING COTTON-SEED. ANTONY SIEBERT, Rock Hill, N. Y. Filed Mar. 26, 1887. Serial No. 232,477. (No model.)

Brief.—The seed is fed between disks, one of which is stationary and the other rotary. Their active faces are armed with radial or tangential toothed plates with intervening flat spaces, the latter being provided with grating-surfaces alternately smooth and roughened. The toothed plates prevent the fiber from balling between the disks. The fiber, hulls, and kernels pass to a separator, which removes the lighter impurities and directs the seeds and the hulls and fibers into distinct receptacles.



Claim.—1. The combination, with a casing, of two grinding-disks therein mounted to rotate relatively to one another, formed with grinding or rasping surfaces, and provided with teeth projecting beyond said grinding or rasping surfaces, and the disks spaced apart, so that the teeth on the opposite disks are out of contact with one another, whereby the teeth are adapted to tear the fiber from the seeds, keep it combed out and prevent its balling.

2. The combination, with a casing, of two grinding-disks therein mounted to rotate relatively to one another, formed with reciprocal grinding or rasping surfaces and provided with radial serrated blades set with their teeth projecting beyond said grinding or rasping surfaces, whereby the teeth are adapted to tear the fiber from the seeds, keep it combed out and prevent its balling.

3. The combination of two grinding-disks, the lower one stationary and the upper one rotary, mechanism for rotating the upper disk, a casing inclosing the latter, projecting teeth set in the working-faces of the respective disks, projecting teeth set in the periphery of the upper disk, and projections from the inner face of the casing adapted to coact with the said peripheral teeth to keep the fiber drawn out and prevent its balling.

4. The combination, with two grinding-disks rotating relatively to one another, of radial serrated blades attached to the respective disks, with their teeth projecting from the working-faces thereof, and removable sections or bands attached to the disks between the blades.

5. The combination, with two grinding-disks rotating relatively to one another, of radial serrated blades attached to the respective disks, with their teeth projecting from the working-faces thereof, and with grating-surfaces applied at intervals between said blades.

6. The combination of two grinding-disks rotating relatively to one another, with serrated blades attached to the respective disks, with their teeth projecting from the working-faces thereof, and with said working-faces composed of alternately-arranged plain bands and graters.

7. The combination of two grinding-disks rotating relatively to one another, with removable sections attached to the working-faces thereof, with serrated blades fastened to said sections and removable therewith, and with graters applied to certain of said sections.

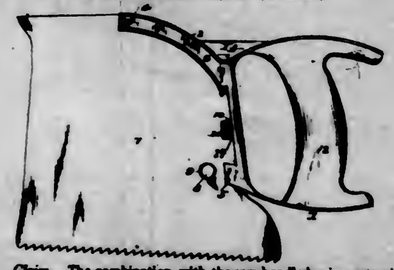
383,375. INSTRUMENT FOR MEASURING VERTICAL AND HORIZONTAL DISTANCES. JAMES SHAW, Centerville, Iowa. Filed Oct. 22, 1888. Serial No. 218,263. (No model.)



Claim.—1. The combination of the slotted arm B, the movable sliding block D in the slot thereof, slotted arm A, the stationary gage A', the said arms being pivoted to each other, as set forth, and the block D and gage A' being provided with scale-marks registering with graduated scale-strips, and the spirit-levels arranged on the said arms, as shown and described.

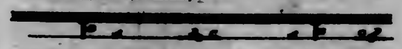
2. The combination of the slotted arm B, having the slot therein intersected by stay or brace blocks, a movable sliding block in said slot, a metallic socket in the upper end of said sliding block, having a clamping-clip, E', in connection therewith formed with a screw-threaded end, the clamping-screw S^3, having a nut, S^2, thereon, the arm A, having a slot with a stationary gage-block, A', therein, the screw and clamping-nut for securing the arms A and B together, the said screw passing through the sliding block D and the block A', the spirit-levels arranged on the arms A and B, as set forth, and the metallic shoes C, substantially as described.

383,376. SAW-HANDLE. GEORGE E. SEBLER, Dayton, Ohio. Filed Mar. 19, 1887. Serial No. 231,451. (No model.)



Claim.—The combination, with the saw-handle having extensions 2 and 5, provided, respectively, with a rigid stud, 6, and a stud, 4, upon a spring, 3, both studs engaging perforations 9 and 8 in the blade, and the blade, of a screw upon the handle projecting into a notch or recess in the rear edge of the blade, and a milled thumb-nut upon the screw bearing with its face against the inner side of the notch or recess, as shown and described.

383,377. FUSIBLE COUPLING FOR ELECTRIC FIRE-ALARM CIRCUITS. GEORGE G. SMITH, St. Albans, Vt. Filed Sept. 1, 1887. Serial No. 248,492. (No model.)

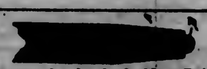


Claim.—The improved coupling for closed electric fire-alarm circuits, consisting of a tube of fusible metal adapted to receive the ends of the circuit-wire and a weight fixed centrally upon said tube, substantially in the manner and for the purpose herein set forth.

383,378. FERRULE FOR UMBRELLAS, CANES, &c. GEORGE H. SMITH, Philadelphia, Pa., assignor to William Grange, same place. Filed Mar. 17, 1888. Serial No. 267,833. (No model.)

Claim.—1. As a new article of manufacture, a ferrule for canes, umbrellas, and the like, consisting of a tube or socket of thin metal

383,378.



having a closed introverted end and a double-walled recess containing a conical plug or point, substantially as described.

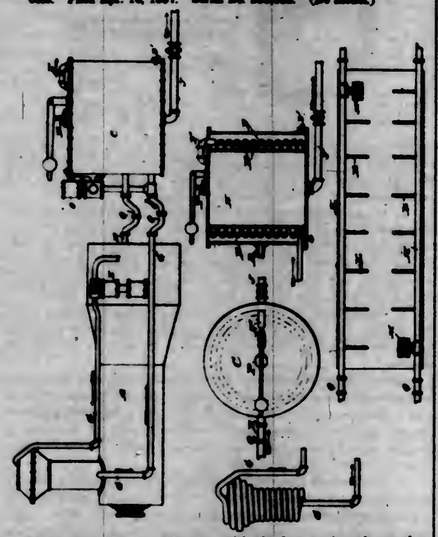
2. As a new article of manufacture, a ferrule consisting of a thin metallic tube having a closed recess at its smaller end containing a conical plug or point resting against the base of said recess and clamped by the walls thereof, substantially as set forth.

383,379. COMPOSITION OF MATTER FOR TANNING HIDES. LEVI B. SNOW and JAMES HOWARD, Wichita, Kans.; said Howard assignor to William Barton, same place. Filed Nov. 30, 1887. Serial No. 256,416. (No specimens.)

Claim.—1. A composition for use in tanning hides, consisting of the juice of the Osage orange, extract of hemlock, and ground sumac-berries, in the proportions substantially as specified.

2. A composition for use in tanning hides, consisting of the juice of the Osage orange, extract of hemlock, ground sumac-berries, salt, and alum, in the proportions substantially as specified.

383,380. HEATING RAILWAY-CARS. OTHO TAYLOR, Denver, Colo. Filed Apr. 16, 1887. Serial No. 235,052. (No model.)



Claim.—1. The combination, with the locomotive, the smoke-stack having pipe G coiled therein, and the pump I, connecting with said pipe, of an air-heater, C, having steam-chamber D, and air-chamber H, the coil of pipe E in the chamber D and connecting the pipe G and air-chamber H, and a pipe leading from the boiler of the locomotive to said chamber D, substantially as herein described.

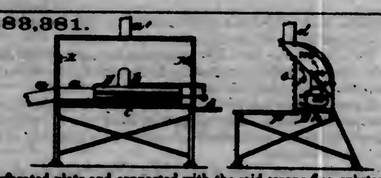
2. The combination, with the locomotive, of the air-heater C, located in a car contiguous to said locomotive and provided with a steam-chamber and an internal hot-air chamber, a pipe or coil within the steam-chamber and connected with the hot-air chamber, and a pipe leading from the boiler of the locomotive and connected with the steam-chamber, in combination with the pipe G, passing through the smoke-stack of the locomotive and connecting with said pipe or coil, and a pipe leading outward from the bottom of the heater, substantially as described.

3. An improved car-heating apparatus comprising a heater having an internal hot-air chamber and an outer casing surrounding said chamber, a coil or pipe between said chamber and outer casing of the heater, having a supply and and an opposite end communicating with the hot-air chamber, a pipe, E, in communication with the space within the outer casing, and a pipe, J, extending from said hot-air chamber, substantially as described.

383,381. HEATING-DRUM. VINCENT B. VAN BRUNDT, Ind. Filed Mar. 17, 1887. Serial No. 231,220. (No model.)

Claim.—1. In a heater, the combination of a slotted V-shaped distributer, an escape-flue of a furnace in connection therewith, a damper adapted to break the said connection, a lower chamber inclosing the said parts, and an upper chamber separated therefrom by a

383,381.

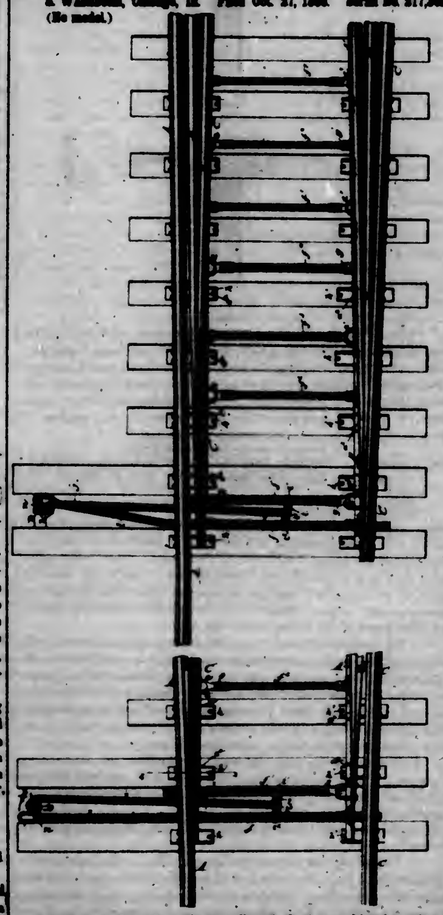


perforated plate and connected with the said escape-flue, substantially as and for the purpose described.

2. In a heater, the combination of a slotted V-shaped distributer, an escape-flue of a furnace in connection therewith, a damper adapted to break the said connection, a lower chamber inclosing the said parts, an upper chamber separated therefrom by a perforated plate and connected with the said escape-flue, and a damper, *b*, adapted to close the said flue, substantially as and for the purpose described.

3. In a heater, the combination of a slotted V-shaped distributer, an escape-flue of a furnace in connection therewith, a damper adapted to break the said connection, the said damper and distributer contained in a lower chamber, an upper chamber separated therefrom by a perforated plate and connected with the said escape-flue, and a heating-plate in front of the said distributer, forming a part of the casing or drum inclosing the said parts, substantially as and for the purpose described.

383,382. THREE-THROW SWITCH FOR RAILROADS. FRANK S. WASHBURN, Chicago, Ill. Filed Oct. 27, 1886. Serial No. 217,262. (No model.)



Claim.—1. In a three-throw split switch, the combination of two movable points, and a connecting-bar having one end forked and pinned

through holes in an intermediate point, whereby an undue weakening of the middle point for the passage of the bar is avoided.

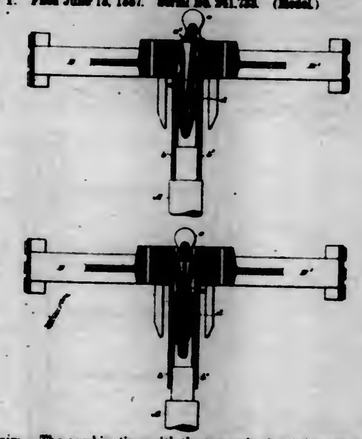
2. The coupling-bar for a split switch, having one end divided vertically into two parallel horizontal arms adapted to pass through separate holes in the switch-rail, substantially as described.

3. In a three-throw split switch, the combination of the two pairs of switch-points, a single operating-shaft provided with two cranks, and connecting devices, substantially as described, for operating both pairs of points therefrom.

4. The points B and A' and their connecting-bar *f*, and the points C and B' and their connecting-bar, in combination with the lever *i*, uniting said connecting-bars, the operating-shaft with two cranks, the pitman extending from one crank to said lever, and the rod extending from the connecting-bar *f* to the second crank, and having a limited independent motion whereby the one crank-shaft is enabled to control a three-throw split switch.

5. In a split switch, the two pairs of switch-points and their connecting-bars, in combination with the connecting-lever *i* and an operating-rod jointed to said lever.

383,383. TYPE-WRITING MACHINE. Horace Wurr, Brooklyn, N. Y. Filed June 18, 1887. Serial No. 241,733. (Model.)



Claim.—The combination, with the type-wheels, of the cylindrical stem A, on which they are rotatively mounted, said stem being provided with a bore, *c*, leaving the stem cylindrical and intact, and the spring *d*, mounted in said bore and secured at one end to the stem, said spring being provided with a head, *e*, having a flange-like base, *e'*, which closes the mouth of said bore *c* and projects laterally over the boss of the type-wheel, normally, substantially as set forth.

383,384. VACUUM EVAPORATING APPARATUS. Homer T. Yarian, Toledo, Ohio. Filed Sept. 13, 1887. Serial No. 249,504. (No model.)

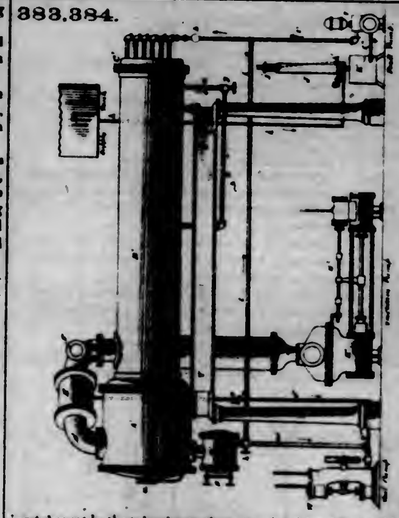
Claim.—1. In combination with a heating-cylinder of an evaporating apparatus, the inclosed evaporating-coils composed of tubes having their ends connected by closed return bends or coils, so as to form continuous closed conduits from their inlet to their outlet ends, and a feed-pipe connecting with the inlet end of each coil, whereby liquid to be evaporated may be subjected to an increased length of heating-surface without danger of overflowing till it is properly heated and discharged at the outlet end of the coil.

2. The heating-cylinder of an evaporating apparatus containing evaporating-tubes set in tube-sheets at each end, in combination with a return-bend head provided with intersecting partitions forming coils to connect the ends of the tubes, applied to the inlet end of the cylinder, the liquid-supply pipes piercing such head, and a separating-chamber connecting with the cylinder at the discharge end of the tubes for receiving the heated liquid and vapor.

3. In combination with the heating-cylinder of an evaporating apparatus, a separating-chamber connecting with one end thereof, the sets of evaporating-coils inclosed in the heating-cylinder and each opening into the separating-chamber at one end, and a feed-supply pipe connecting with the inlet end of each coil, for the purpose described.

4. In combination with the heating-cylinder containing evaporating-tubes set in the tube-sheets at each end, the return-bend heads provided with intersecting partitions forming coils to connect the ends of the tubes and form sets of coils, for the purpose described.

5. In combination with the heating-cylinder containing evaporat-



ing-tubes set in the tube-sheets, the return-bend head C, provided with intersecting partitions *c*, forming coils and openings *c'*, for connecting the supply-pipes, and the return-bend head T, having partitions *x* and outlet-openings *t''* for the discharge of liquid.

6. In combination with a heating-cylinder, the horizontal coils composed of sets of two or more connected tubes extending through the heating-cylinder, and a contracted liquid-feed duct connecting with the inlet end of each coil, whereby a reduced number of feed-ducts are required, and whereby the size of the ducts may be increased, so as to avoid the danger of their being clogged with solid matter.

7. In combination with the evaporating-coils and inclosing heating-cylinder, the externally-arranged manifold and contracted liquid-feed ducts connecting with the inlet ends of the coils, for the purpose described.

8. In combination with the series of evaporating-coils, the liquid-feeding apparatus consisting of a pump, a suction-pipe connecting it with a feed-box and having an automatic valve, a manifold, and contracted liquid-ducts connecting therewith and with the inlet ends of the coils, whereby each coil of the series may be fed by a single pump with the desired quantity of liquid.

9. In a vacuum evaporating apparatus, the combination, with an evaporator of any one effect and degree of vacuum, of a liquid-transfer pipe leading therefrom past one or more of the successive effect evaporators to an evaporator beyond having a greater degree of vacuum than the intervening evaporator or evaporators, for securing the advantage of a better vacuum, to facilitate the transfer and circulation of liquid from one evaporator to the other.

10. In a vacuum evaporating apparatus, a primary evaporator and a connecting liquid-feed pump, in combination with a transfer-pipe for partially-reduced liquid, leading from such evaporator past one or more of the succeeding evaporators to the feed-pipe of an evaporator having a greater degree of vacuum than the intermediate evaporator, whereby improved feed and circulation of liquid are secured.

11. In a multiple-effect vacuum evaporating apparatus, a primary evaporator having a separating-chamber, in combination with a liquid-feed pump connecting with the inlet end of the evaporator, a liquid-transfer pipe for partially-reduced liquid, leading from the separating-chamber of the primary evaporator past the second evaporator to the inlet end of the third evaporator of the series, a vapor-pipe connecting each evaporator with the next one in succession from the first to the last, and an exhaust device connecting with the last evaporator of the series, for the purpose described.

12. In a multiple-effect vacuum evaporating apparatus, a series of evaporators, each having a separating-chamber, a series of vapor-pipes connecting the evaporators in successive order from first to last, and an exhaust device connecting with the last evaporator of the series, in combination with a liquid-feed pump connecting with the inlet ends of the first and second evaporators of the series, and a liquid-transfer pipe leading from each separating-chamber past the next succeeding evaporator into the inlet end of the third evaporator from starting-point throughout the series, for the purpose of securing the advantages of a greater number of degrees of vacuum, for facilitating the flow and circulation of partially-reduced liquid from one evaporator to the other,

whereby an increased number of evaporators may be used in a series and more economical results secured.

13. A separating-chamber provided with numerous small open-ended tubes and an arresting-plate placed near their discharge ends for separating liquid or solid matter from the vapor arising from the liquid being evaporated.

14. In combination with a separating-chamber, A', having the evaporating-coils discharging into one end, the tube-sheet *r*, placed near each end and carrying open tubes *n*, and arresting-plate *b'*, placed in front of the discharging ends of tubes *n*, for the purpose described.

15. A catch-all chamber, E', having tube-sheet *o* placed near its vapor-inlet end and carrying open tubes extending to near its opposite end plate, and outlet-pipe *d''*, extending back from the rear end plate and connecting with outlet vapor-pipe D', for the purpose described.

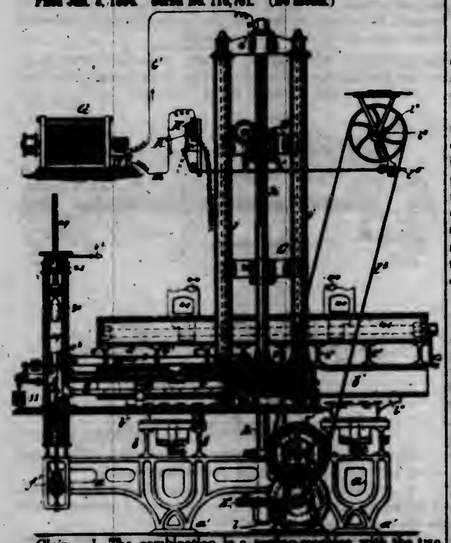
16. In combination with two or more vacuum evaporators, each composed of a heating-chamber containing evaporating tubes or coils and a separating-chamber, the catch-all chambers containing small tubes and arresting-plates, and connected in the vapor-pipes leading from each separating-chamber to the heating-chamber of the adjacent evaporator, for the purpose described.

17. In a multiple-effect vacuum evaporating apparatus, the combination, with the last two evaporators of the series and their separating-chambers, as A^5 and A^6, of the liquid-transfer pipe S, connecting the separating-chambers together, and a liquid-discharge pipe leading directly from the last separating-chamber of the series, whereby the finished liquid of the two chambers may be mingled, cooled, and discharged together.

18. In a multiple-effect vacuum evaporating apparatus, the combination, with the last two evaporators of the series and their separating-chambers, of a liquid-transfer pipe connecting the two separating-chambers, a liquid-discharge or tail pipe leading from the last separating-chamber, a connected tail-pump for drawing off the liquid, and a vapor-exhaust device, also connecting with the last separating-chamber, for the purpose described.

19. In a multiple-effect vacuum evaporating apparatus, the last two evaporators of the series and their separating-chambers, in combination with liquid-supply pipes connecting with the inlet ends of the evaporators, an exhausting device connecting with the last separating-chamber, and a liquid-transfer pipe connecting the two separating-chambers, whereby the finished liquids of the two may be mingled, cooled to the same temperature, and together subjected to the vaporizing effect of the exhausting device preparatory to discharge from the apparatus.

383,385. TESTING-MACHINE. Andrew V. Anson, Brooklyn, N. Y., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Filed Jan. 3, 1884. Serial No. 116,761. (No model.)



Claim.—1. The combination, in a testing-machine, with the two specimen-holding clamp-heads electrically insulated from each other, of a frangible electrical conductor extending between and fixed to the heads, and an electrical circuit completed through said conductor and through an electric-motor device controlling one or more active parts of the testing-machine, whereby the breakage of said conductor at the completion of the test will break the circuit and bring said active parts to rest, substantially as herein set forth.

2. The combination, with a testing-machine, of an electric-motor device controlling one or more active parts of the machine and an electric circuit completed through the specimen under test and through said motor device, arranged and operating substantially as herein set forth, whereby the breakage of the specimen will break the circuit and bring the machine to rest.

3. The combination, with a testing-machine, of a magnet or electric-motor device arranged to control the driving of the straining mechanism and an electric circuit energizing said magnet and completed through the specimen under test, and arranged and operating substantially as herein set forth, whereby the breakage of the specimen will break the circuit and automatically stop the straining mechanism.

4. The combination, in a testing-machine, with a device for marking and recording the stretch of the specimen, of a clamp affixed to each end of the specimen and provided with a pulley with a tape or connection extending at each end from the marker passing through the said pulley on one clamp and fixed at the opposite end to the other clamp, substantially as and for the purpose set forth.

5. The combination, in a testing-machine, of a device for marking and recording the stretch of the specimen, a tape or connection extending from the marker to clamps upon the specimen, and an electro-magnet on said specimen, arranged to hold the fixed end of said tape with an electric circuit completed through said specimen and magnet, whereby the breaking of the specimen breaks the circuit and instantly releases the tape and stops the advance of the stretch-mark coincident with the break of the specimen.

6. In a testing-machine, the combination, with the clamp-heads to hold the specimen and a specimen extending between and held by the same, of a stretch-clamp, such as *w* or *w'*, bound onto the specimen near the head and formed with the knife-edge w^2, arranged to grasp the specimen only at the extremity of the part under test, or at the line where it issues from the clamp-heads, substantially as and for the purpose set forth.

7. In a testing-machine, a stretch-clamp, such as *w* or *w'*, having the knife-edge w^2 and round edge w^3, substantially as and for the purpose set forth.

8. In a testing-machine, a clamp-head, such as B or C, formed with a central spherical socket whose center is coincident with the line of the specimen, or nearly so, in combination with a spherical universally-swiveling block, *m*, fitted in said socket, and means to secure the specimen in said block, substantially as herein set forth.

9. In a testing-machine, the combination, with the clamp-head B or C, having a central spherical socket, of the universally-swiveling block *m*, fitted therein, and the clamp-wedges *m'*, fitted in a central cavity in said block, substantially as and for the purpose set forth.

10. In a testing-machine, the combination, with the specimen, of a clamp-head provided with a clamp-socket inclined on more than two sides, with clamping-wedges driven in between said sides and between all sides of the specimen held therein, substantially as and for the purpose set forth.

11. In a testing-machine, a double scale-beam provided with a main and a minor poise, the former being movable in successive steps or graduations corresponding to the full travel of the latter, in combination with an electrical contact arranged in the path of the minor poise at the end of its movement, an electro-magnet controlling the movement of the main poise in its successive steps, and an electric circuit passing through said magnet and contact, arranged and operating substantially as and for the purpose set forth, whereby said contact and circuit are closed upon the arrival of the minor poise at the end of the beam and the magnet is energized, and the main poise thereby caused to be moved out one step, as set forth.

12. In a testing-machine, the combination, with the weighing-beam and its movable poise and a rotary driving-shaft, such as *i'*, and a clutch-pulley thereon for imparting motion to such poise, of an electro-magnet arranged when in circuit to attract or clutch said pulley to the shaft, with an electric circuit passing through said magnet and through contacts operated by the rise and fall of the beam, whereby the closing of one of said contacts by the rise and fall of the beam will energize the magnet and cause the pulley to be clutched to and revolved with the shaft to impart motion to the poise, substantially as herein set forth.

13. In a testing-machine, the combination, with the weighing-beam and its movable poise and a rotary driving-shaft for imparting motion to such poise, of an electro-magnet fixed to and revolving with said shaft, and a clutch-pulley arranged loosely on said shaft and forming an armature to said magnet and operatively connected to the poise, with an electric circuit passing through such magnets and through contacts operated by the rise and fall of the beam, substantially as and for the purpose herein shown and described.

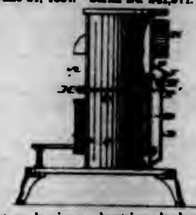
14. In a testing-machine, the combination, with the weighing-

beam and its movable poise g^3, and with the recording-drum r^2, of the rotary driving-shaft f and a suitable motor to propel the same, of the clutch-magnets f^5 f^6 and the pulleys f^7 and f^8 on said shaft, arranged to impart relatively reverse movements to the poise, with the clutch-magnet r^4 and driving-wheel r' on the said drum, with an electrical circuit passing through said magnets and through contacts operated by the rise and fall of the beam, and so arranged that the said magnet r^4 of the recording-drum is always in circuit to revolve the drum when the poise is advancing, but is out of circuit to keep the drum stationary when the poise is retreating, substantially as and for the purpose set forth.

15. The combination, in a testing-machine, with a weighing-beam, g, and its movable poise g^3 and electrical contacts operated by the rise and fall of the beam, of the motor f and its releasing-magnet u, the driving-shaft f and its clutch-magnets f^5 f^6 and its pulleys f^7 f^8, arranged to impart relatively reverse movements to the poise, and an electrical circuit passing through said contacts and magnets and so arranged that when the beam is in balance said contacts and said circuit will be open and said magnets, motor, shaft, and pulleys at rest, but when the beam rises or falls one of said contacts will be closed and the corresponding parts energized to move the poise forward or backward, substantially as herein shown and described.

16. A compound testing-machine adapted for both light and heavy tests, constructed with one weighing-beam and a major and a minor set of clamp-heads and straining mechanism, both sets of clamp-heads being connected with the same beam, having major and minor graduations thereon corresponding to the clamp-heads, substantially as herein shown and described.

383,386. DUST-FLUE FOR STOVES. JOSEPH A. BOICKWALTER, Royer's Ford, Pa., assignor to the Boickwalter Stove Company, same place. Filed June 21, 1887. Serial No. 241,971. (No model.)



Claim.—A stove having a sheet-iron body with the openings *a* and *b* in the back thereof, said openings being respectively above and below the grate of said stove, and provided with a casting adapted to be secured to said stove, said casting having a channel forming the passage D between said openings *a* and *b*, a rearwardly-projecting portion, J, and smoke-flue K, and a damper, E, pivoted in the upper part of said passage D, and adapted to rest on said portion J of the casting when the passage D is open, said parts being combined, substantially as and for the purpose set forth.

383,387. CAR-BRAKE. THOMAS H. BURRIDGE, St. Louis, Mo. Filed Dec. 16, 1887. Serial No. 256,097. (No model.)



Claim.—1. In combination with the axle of a street-car, a fixed disk, a movable disk, sleeve on the axle, to which the movable disk is secured, stationary cam on the axle in contact with one end of the sleeve, and means for turning the sleeve to apply the brake, substantially as and for the purpose set forth.

2. In combination with the axle of a car, a fixed disk, the movable disk, sleeve on the axle, a disk secured to the movable sleeve, a stationary cam on the axle, and means for turning the sleeve to apply the brake, said sleeve having an incline on the opposite end from the movable disk, said incline adapted to bear against the cam when the sleeve is turned, substantially as and for the purpose set forth.

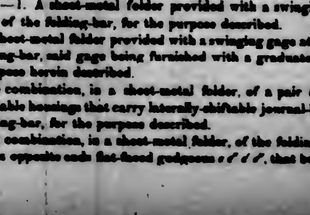
3. In combination with the axle of a car, a fixed disk, 5, rigidly secured to the axle, sleeve 10, mounted loosely on the axle, disk 9, formed upon or secured to the sleeve, cam 13, mounted loosely on the axle, and connected to the bottom of the car, and collar 14 to prevent end movement of the cam, substantially as and for the purpose set forth.

4. In combination with the axle and body of the car, a fixed disk, 5, sleeve 10, movable disk 9 on the sleeve, arms 17 and 19 on the sleeves, cams 13, arms 15, connecting the cams to the bottom of the car, collars 14, to prevent end movement of the cams, and means for connecting the arms of the different sleeves and for operating one of the sleeves, substantially as and for the purpose set forth.

383,388. SWEAT-PAD FASTENER. JASPER S. GIBBS, De Kalb, Ill., assignor of two-thirds to Joseph F. Glidden and Chase B. Glidden, same place. Filed Mar. 7, 1888. Serial No. 266,269. (No model.)

Claim.—The improved pad fastener or hook within described, consisting of the circular spring-band adapted to grasp the collar and pad, and provided with teeth at one end and the projecting thumb-piece at the opposite end, all substantially as described.

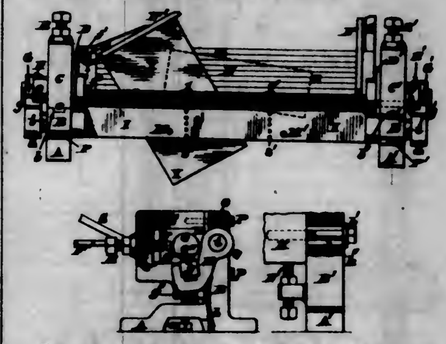
383,389. EDUCATIONAL DEVICE. JAMES DURHAM, South Bend, Ind. Filed Oct. 25, 1887. Serial No. 253,202. (No model.)



Claim.—1. The herein-described educational device, consisting of a rectangular frame having its front upper portion cut away, a series of parallel levers pivotally mounted in said frame, having upstanding pins in their front ends, and the removable object-blocks loosely mounted on said pins, all substantially as and for the purpose specified.

2. The within-described educational device, consisting of a rectangular frame cut away at its front portion and open in rear, the series of keyed pivoted levers mounted on a longitudinal rod in said frame, the step-board above said levers, the upstanding pins on the front ends thereof, and the series of removable object-blocks loosely mounted on said pins, the whole so arranged that the blocks will be normally out of sight of the pupil, but exposed upon the depression of the keys, all substantially as specified.

383,390. SHEET-METAL FOLDER. GEORGE B. EVERSON, Cincinnati, Ohio, assignor of one-half to William L. Rockenfeld, same place. Filed Mar. 6, 1888. Serial No. 266,226. (No model.)



Claim.—1. A sheet-metal folder provided with a swinging gage at one end of the folding-bar, for the purpose described.

2. A sheet-metal folder provided with a swinging gage at one end of the folding-bar, said gage being furnished with a graduated circle, for the purpose herein described.

3. The combination, in a sheet-metal folder, of a pair of vertically-adjustable bearings that carry laterally-shiftable journal-bearings of the folding-bar, for the purpose described.

4. The combination, in a sheet-metal folder, of the folding-bar E, having at its opposite ends flat-faced gudgeons e' e'', that bear upon

anti-friction rollers G G', journaled in bosses g g', fitted to the free ends of arms H H', said arms being attached to the journals f f' of the clamping-plate I, and being provided with set-screws g'', whereby said bosses are adjusted, as herein described.

5. The combination, in a sheet-metal folder, of vertically-grooved standards B b B' b', vertically-tongued bearings C c C' c', slots O O', bolts P P', and adjusting-screws a a', said bearings having the folding-bar E journaled in them, for the purpose described.

6. The combination, in a sheet-metal folder, of the detachable binder T, having a branch, t, retaining-screw t', limb U, slot u, wedge V, screw v, and gage-screw W, for the purpose described.

7. In a sheet-metal folder, the clamping-plate I, having two sets of perforations, 1 8 and 1' 8', in combination with the perforations j, spring L, and removable pin l, for the purpose described.

383,391. SHEET-METAL BENDING MACHINE. GEORGE B. EVERSON, Cincinnati, Ohio, assignor of one-half to William L. Rockenfeld, same place. Filed Mar. 12, 1888. Serial No. 267,723. (No model.)



Claim.—1. The combination, in a sheet-metal-bending machine, of bending-roll H, rack-bearings F f G g, shaft C, fixed pinion c, shiftable pinion c', and a device for locking said shaft, substantially as herein described.

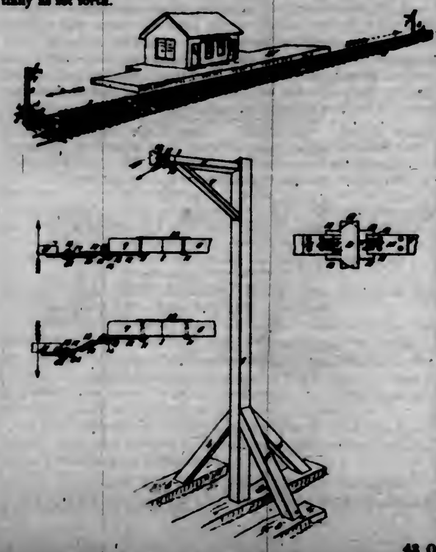
2. In combination with the shaft C, operating the bending-roll H, as herein described, the stop-pin E and plate D, the latter being provided with a series of retainers, d, for the purpose stated.

3. The combination, in a sheet-metal-bending machine, of standard A U, slip-roll R r', perforation a, and shiftable pin S, for the purpose described.

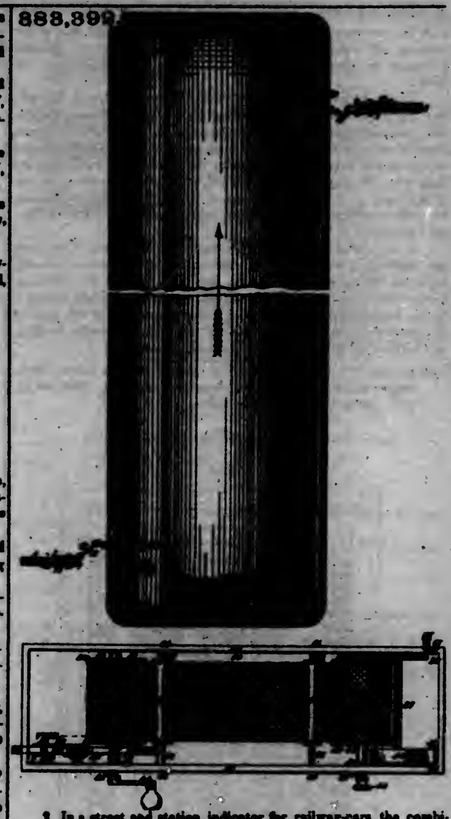
4. The combination, in a sheet-metal-bending machine, of standard A U, slip-roll R r', perforation a, shiftable pin S, and reducing-bushing V v, for the purpose described.

383,392. STREET AND STATION INDICATOR. SAMUEL H. FISHER, St. Louis, Mo., assignor of one-half to Julius B. Abeles and Leon Goldman, both of same place. Filed Aug. 15, 1887. Serial No. 247,203. (No model.)

Claim.—1. In a street and station indicator for railway-cars, the combination, with the indicator proper and its trigger-lever, of a suitably-mounted arm projecting toward the side of the track from the car, an extension having spring-connection at one side therewith, a buffer-head having pivotal connection with the end of said extension on its opposite side, and a spring surrounding the pivot-connection, its ends bearing respectively on the buffer-head and extension, substantially as set forth.



383,393.



2. In a street and station indicator for railway-cars, the combination of the frame, shafts journaled therein, reels provided with sleeves adapted to be secured on said shafts, an indicating-scroll wound on said reels, a projection from the side of the track on which the car travels, a catch for holding the scroll in inactivity, a projection from the car adapted to engage the aforesaid projection to release the catch, and suitable means for winding the scroll on the reels, substantially as set forth.

3. In a street and station indicator for railway-cars, the combination of the frame, shafts 32 journaled therein, reels 23, provided with sleeves adapted to be secured on said shafts, an indicating-scroll wound on said reels, an exhibiting-glass in front of said reels, and rollers mounted in said frame in proximity to said glass, over which the scroll passes, a projection from the side of the track on which the car travels, a catch for holding the scroll in inactivity, a projection from the car adapted to engage the aforesaid projection to release the catch, and suitable means for winding the scroll on the reels, substantially as set forth.

4. In a street and station indicator for railway-cars, the combination of the frame, shafts 32 journaled therein, reels 23, mounted on said shafts, a spring for actuating said reels, a stop to limit the movement of said reels, a projection from the side of the track on which the car travels, and a projection from the car adapted to engage the aforesaid projection and said stop, substantially as set forth.

5. In a street and station indicator for railway-cars, the combination of the frame, shafts 32 30 journaled therein, reels 23, mounted on shafts 32, scroll wound upon said reels, geared connection between shaft 30 and one of shafts 32, a coiled spring fixed to the frame and to shaft 30, a stop to limit the movement of said reels, a projection from the side of the track on which the car travels, and a projection from the car adapted to engage the aforesaid projection and said stop, substantially as set forth.

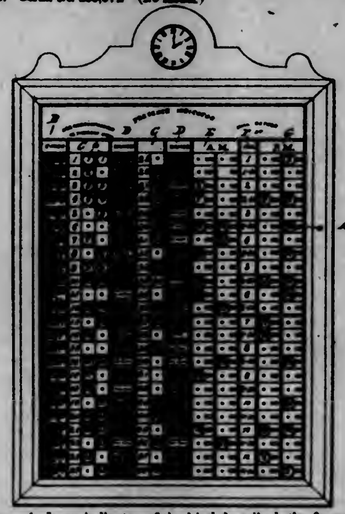
6. In a street and station indicator for railway-cars, the combination of the frame, shafts 32 30 journaled therein, reels 23, provided with sleeves 34 fitting on shafts 32, a scroll wound upon said reels, gear-wheel 37 on one of said sleeves 34, cog-wheel 38 on shaft 30 meshing

thereswith, coiled spring 40 fixed to shaft 39 and the frame, a stop to limit the movement of the indicator, a projection from the side of the track on which the car travels, and a projection from the car adapted to engage the aforesaid projection and said stop, substantially as set forth.

7. In a street and station indicator, the combination of the reels and shafts upon which they are mounted, scroll wound on said reels, disk mounted on one of said shafts having a spring-actuated dog-pawl thereon, and a pin to limit its movement, a pivoted trigger-lever adapted to engage said dog-pawl, a mainspring for winding the scroll upon the reels when the dog-pawl is disengaged, and a projection from the side of the track on which the car provided with the indicator travels, adapted to engage the trigger-lever, substantially as and for the purpose set forth.

8. In a street and station indicator, the combination of the reels and shafts upon which they are mounted, scroll wound on said reels, a pivoted lever projecting from the car provided with the indicator, devices on one of said reel-shafts adapted to be automatically operated by the engagement of said lever with a projection from the side of the track upon which the car travels, and a mainspring for winding said scroll upon the reels, substantially as set forth.

383,393. OFFICE-INDICATOR. ROSS R. GARNAR, Detroit, Mich., assignor of one-half to Philip John Reuston, same place. Filed Oct. 23, 1887. Serial No. 253,074. (No model.)



Claim.—1. In an indicator of the kind described, the frame provided with a plurality of columns, one forming card-receptacles, another a name-plate column, and another a number-column, with spaces opposite the numbers having holes, combined with removable indicating-pins in said holes, substantially as described.

2. In an indicator of the kind described, a frame provided with a plurality of subdivided columns, one column forming a number-column, another a name-column, and another a time-indicating column, and a column, E, bearing marks indicating divisions of the day, combined with a removable indicating-pin, as set forth.

3. In an indicator of the kind described, a frame provided with a plurality of subdivided columns, one provided with numbers and corresponding spaces provided with holes, a column denoting hours and provided with holes and a day-indicator, combined with a removable indicating-pin, substantially as and for the purpose specified.

4. In an index of the kind described, the column E, having holding devices and day-indicator, in combination with the movable button *a*, provided with the folding arm *c*, all substantially as described.

383,394. POISON-BOTTLE INDICATOR. JOSEPH C. HIRSH, New Brunswick, N. J., assignor of one-half to Frederic B. Kilmer, same place. Filed May 16, 1887. Serial No. 238,493. (No model.)



Claim.—A poison-bottle indicator composed of the band A, the upright barbed or serrated strips B thereon, and the fastening-band D, for holding the strips against the bottle-neck, substantially as herein shown and described.

383,395. GAS-GENERATOR FOR LOCOMOTIVES. ARTHUR C. HARRISON, Meadville, Pa. Filed Apr. 30, 1887. Serial No. 236,622. (No model.)

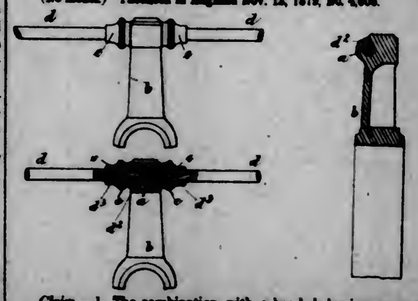


Claim.—1. The combination, with a tubular steam-boiler having a combustion-chamber, of a fire-box, a flue leading out of the top of the fire-box and directed downward and forward in said chamber, and an injecting-pipe leading from the steam-space of the boiler into the head of said flue and provided with a regulating-valve, all constructed and arranged substantially as and for the purpose described.

2. The combination, with a tubular steam-boiler having a combustion-chamber, of a fire-box located in said combustion-chamber, and having a downwardly-constructed extension, V, provided with a grate and a valve, a liquid hydrocarbon injector in said fire-box, a siphon-shaped outlet pipe or flue leading therefrom and into the combustion-chamber, and an injector leading from the steam-space of the boiler into said siphon-pipe, all constructed and arranged substantially as and for the purpose described.

3. The combination of a tubular steam-boiler having a combustion-chamber, a fire-box located therein, a flue-pipe connecting the said fire-box and combustion-chamber, and a steam-pipe leading from the boiler-space to said flue-pipe, with a liquid-fuel reservoir provided with a valved delivery-spout, and a pipe adapted to receive the liquid fuel entering the fire-box and provided with a spray pipe or head located inside the fire-box, substantially as and for the purpose described.

383,396. VELOCIPEDE. GEORGE ELLIOTT, Birmingham, County of Warwick, England, assignor to the Royal Machine Manufacturing Company, (Limited,) same place. Filed Mar. 2, 1887. Serial No. 229,444. (No model.) Patented in England Nov. 12, 1879, No. 4,606.



Claim.—1. The combination, with a head, *b*, having an angular open trough at its upper portion, of a continuous handle-bar, *d*, having the angular portion d^3 centrally between its ends removably fitting said trough, and devices engaging the handle-bar and the ends of the trough, substantially as described.

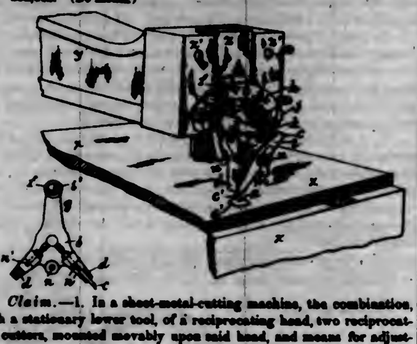
2. The combination of the head having an open trough, a continuous handle-bar, and sleeves on the bar for securing the latter in the trough, substantially as described.

3. In a handle for bicycles and other vehicles, the combination of a head, *b*, having a trough at its upper portion provided with convex screw-threaded extensions *c*, the bar *d*, having a flattened central portion, d^3, adapted to said trough, and internally-threaded collars *e* on the bar, adapted to the convex threaded extensions for confining the bar in the trough, substantially as described.

383,397. FINISH FOR PLASTERED WALLS. THOMAS JONES, Ravenswood, Ill. Filed Nov. 14, 1887. Serial No. 255,209. (No specimens.)

Claim.—A finish for walls, consisting of lime, raw gypsum over calcined gypsum, and alum or its equivalents, in substantially the proportions stated.

383,398. SHEET-METAL-SCROLL CUTTER. ARTHUR O. KITTREDGE, Slate Hill, and BENJAMIN ARMBRUS, Brooklyn, N. Y., assignors to the Vulcan Company, of Pennsylvania. Filed Oct. 11, 1887. Serial No. 252,052. (No model.)



Claim.—1. In a sheet-metal-cutting machine, the combination, with a stationary lower tool, of a reciprocating head, two reciprocating cutters, mounted movably upon said head, and means for adjusting them separately to the opposite sides of the lower tool, as and for the purpose set forth.

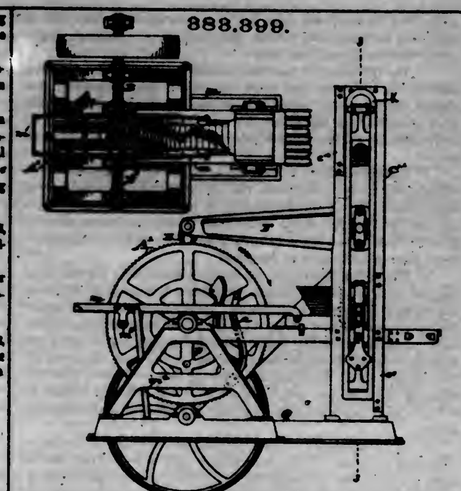
2. In a sheet-metal-cutting machine, the combination, with a stationary lower tool having opposite cutting-edges, of a reciprocating head, two reciprocating cutters mounted movably upon said head, and means for adjusting them separately to the opposite sides of the lower tool, as and for the purpose set forth.

3. In a sheet-metal-cutting machine, the combination, with a stationary lower tool, of a reciprocating head, a tool-carrier pivoted thereon, two cutters held upon said carrier, and means for shifting the carrier to adjust said cutters to opposite sides of the lower tool, as and for the purpose set forth.

4. In a sheet-metal-cutting machine, the combination, with a stationary lower tool, of a reciprocating head, a tool-carrier pivoted thereon, two cutters held upon said carrier, a taper-pointed bolt upon said carrier, holes in a guard upon the head to fit the point of said bolt, and screws *k*, for setting the cutters in contact with the side of the lower tool.

5. In a sheet-metal-cutting machine, the combination, with a stationary lower tool, of a reciprocating head, *b*, tool-carrier pivoted thereon, two cutters held upon said carrier, and means for shifting the carrier to adjust said cutters to opposite sides of the lower tool, the cutters being held upon the carrier in open-grooved holders, and the carrier being provided with set-screws to adjust the cutters vertically, and a button to clamp each cutter in its holder, the whole being arranged and operated substantially as shown and described.

383,399. BEAD-MACHINE. JOSEPH J. KRAMP, St. Louis, Mo. Filed Aug. 30, 1886. Serial No. 212,259. (No model.)



Claim.—1. In a bead-machine and in combination with the vertically-movable upper and lower plungers, *J* and *J'*, the former shouldered at *j'* and the latter carrying the spring-actuated hooks N, the deflector and sustaining-hooks independent of either plunger, whereby in operation the lower plunger is arrested and the sub-plunger momentarily upheld as the charge is moved over the mold.

2. The combination of the lower plunger, the hooks N, the upper plunger having the shoulder *j'*, the deflectors, the hooks O, and the springs P, substantially as described.

3. The combination of the charger M, the arms *m*, the link m^2, the base-plate Q, the adjustable rollers m^3, and the gears A A', having cams *a*, substantially as described.

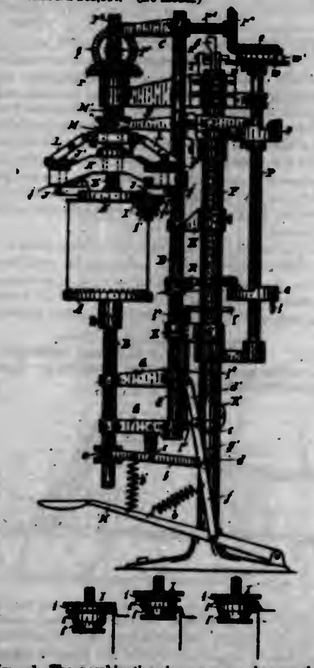
4. The combination of the arms *m*, the adjustable rollers m^3, and the gears A A', having the cams *a*, as described.

5. The combination of the plunger J', the cylinder R', the piston R, and the bag R^2, as described.

6. The combination of the plunger J', the piston R, the valve *r'*, the cylinder R', and the bag R^2, as described.

7. The uprights having the removable stripe c^2 c^3, as described.

383,400. MACHINE FOR SEAMING CANS. GEORGE W. LOUIS, Detroit, Mich., assignor of four-fifths to George L. Hill, Charles T. Hill, Louis W. Briggs, and Jas. S. Spencer, all of same place. Filed Feb. 20, 1888. Serial No. 265,097. (No model.)



Claim.—1. The combination, in a can-seaming machine, of the non-rotating and vertically-sliding chucks for holding the can body and head, a seaming roller or rollers mounted upon a frame revolving around the head, expanding and contracting mechanism, substantially

as specified, to bring said roller or rollers in or out of contact with the head, and mechanism for raising and lowering the chucks simultaneously, substantially as described.

2. The combination, in a can-seaming machine, of the chucks for holding the can body and head, the sliding shafts carrying these chucks, the connecting mechanism between the shafts to compel their joint operation, and the break-joint in said connection to permit the independent operation of one of said sliding shafts, substantially as described.

3. The combination, in a can-seaming machine, of the chucks for holding the can body and head, the vertically-sliding shafts carrying these chucks, the connecting mechanism between these shafts to compel their joint operation, the break-joint in this connection, the foot-lever for locking and the automatic tripping device for unlocking said break-joint, substantially as described.

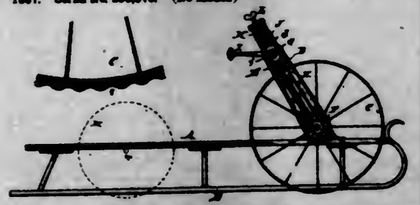
4. The combination, in a can-seaming machine, of the non-rotating and vertically-sliding chucks for holding the can body and head, the seaming roller or rollers mounted upon a frame revolving around the head, a set of can-seaming devices on said roller or rollers in vertical series, the expanding and contracting mechanism to carry said seaming roller or rollers in and out of contact with the head, and automatic mechanism for raising and lowering the chucks simultaneously, whereby the different seaming devices of the roller or rollers are brought into proper position relative to the head, substantially as described.

5. The combination, in an organized machine for double seaming can-heads to bodies, of the non-rotating chucks for holding the can body and head, the vertically-sliding shafts to which said chucks are secured, the break-joint connection between the lower and upper chuck, the seaming-roller provided with a set of seaming devices in vertical series, the revolving head carrying such seaming-roller, the expanding and contracting mechanism for operating said seaming-roller laterally toward and from the cam, with the chuck lowering and raising mechanism, the revolving cam-shaft for actuating said mechanism, the drive-connection for said shaft, the tripping-clutch in said drive-connection, the tripping-bar controlling said trip-clutch by the closing of the break-joint, the automatic trip controlling the breaking of the break-joint by the motion of the cam-shaft, and the foot-lever controlling the closing of the break-joint by the action of the operator, substantially as described.

6. The combination, in an organized machine for double seaming can-heads to bodies, of the non-rotating chucks for holding the can body and head, the vertically-sliding shafts to which said chucks are secured, a seaming roller or rollers provided with a complete set of seaming devices in vertical series, the double crank-lever, to one end of which said lever is mounted, the revolving head to which said crank-lever is fulcrumed, the shaft upon which said revolving head is mounted, the sliding collar upon said shaft, the link connecting the sliding collar with the crank-lever, the cam-lever engaging with the sliding collar, the seaming-cam actuating said cam-lever, the cam-shaft upon which said seaming-cam is mounted, the chuck-operating cam mounted upon the same shaft, the arm engaging with said chuck-operating cam, and the vertically-sliding frame which carries the chucks and to which the said arm is secured.

7. The combination, with the vertically-sliding chucks carrying the body and head of the can, of the seaming-roller revolving around the head of the can and provided with a set of seaming devices in vertical series, and mechanism, substantially as described, for bringing into operation the successive seaming devices of said roller, substantially as described.

383,401. SLEIGH. WILLIAM S. HARRAR, Philadelphia, Pa., assignor of one-half to Charles J. Spielberger, same place. Filed Dec. 30, 1887. Serial No. 259,370. (No model.)



Claim.—1. In a sleigh, the combination of a top board having runners attached thereto, a wheel located in the front part of said sleigh between the runners and extending through said top board, means, substantially as described, to allow said wheel to automatically rise and fall, a crank or handle carried upon the same support as the wheel, but located above it and free to rise and fall with it, to rotate said wheel, and mechanical power-transmitting connections between the crank and wheel, whereby the sleigh may be propelled.

2. In a sleigh, the combination of a top board having runners attached thereto, a wheel located in the front part of said sleigh between the runners and extending through said top board, means, substantially as described, to allow said wheel to automatically rise and fall, a crank or handle carried upon the same support as the wheel, but located above it and free to rise and fall with it, to rotate said wheel, and mechanical power-transmitting connections between the crank and wheel, whereby the sleigh may be propelled, and axles for removable wheels located in the back part of the sleigh.

3. In a sleigh, the combination of the top board, A, having runners B, the wheel C, guides D, upright frame E, guided in said guides D, sprocket-wheel F, journaled to said upright bar E and connected with the wheel C, sprocket-wheel G, journaled to said upright bar, crank-arms I, and endless chain H.

4. In a sleigh, the combination of the top board, A, having runners B, the wheel C, guide D, upright frame E, guided in said guides D, sprocket-wheel F, journaled to said upright bar E and connected with the wheel C, sprocket-wheel G, journaled to said upright bar, crank-arms I and endless chain H, and spring J.

5. In a sleigh, the combination of the top board, A, having runners B, the wheel C, guide D, upright frame E, guided in said guides D, sprocket-wheel F, journaled to said upright bar E and connected with the wheel C, sprocket-wheel G, journaled to said upright bar, crank-arms I and endless chain H, spring J, and adjusting-screw L.

6. A sleigh-body combined with a drive-wheel connected to the forward end thereof with freedom of upward movement, a spring device, substantially as described, to press said wheel down toward the runners, power-transmitting devices, substantially as set out, to rotate said drive-wheel, and free to move upward with said wheel, and adjusting mechanism to adjust the tension of the spring.

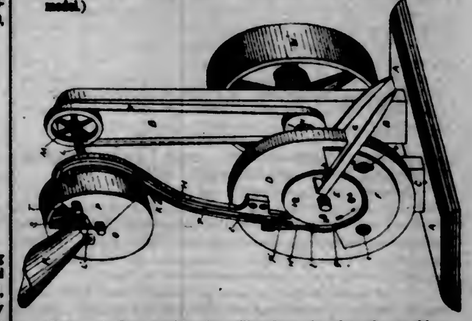
7. A sleigh-body combined with a drive-wheel connected to the forward end thereof with freedom of upward movement, a spring device, substantially as described, to press said wheel down toward the runners, extending backward toward the rear of the sleigh, and power-transmitting devices journaled upon the same support as the wheel, but above it, and having freedom of upward movement with it, to rotate said drive-wheel.

383,402. PLOW-POINT. ISAAC J. MARTIN, Henry Grove, Tex. Filed June 9, 1887. Serial No. 240,770. (No model.)



Claim.—The combination, with the double mold-board A, rigidly fixed to the curved beam B in the rear of the lower end thereof, of the point D, having symmetrical corners *d*, and legs *e*, adapted to pass beneath the front edge of said mold-board and prevent rocking of the point upon the beam, to which alone it is attached, and bolts E, securing said point in position.

383,403. MACHINE FOR ROLLING FLANGED EYELETS. ALBERT G. MEAD, Boston, Mass., assignor to the International Fastening Company, Portland, Me. Filed Nov. 26, 1887. Serial No. 256,393. (No model.)

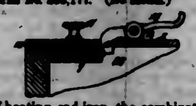


Claim.—1. In a machine for rolling flanged eyelets, the combination of a stationary plate, a revolving circular plate let into the surface of said stationary plate and flush therewith, a circular die secured to said revolving plate, and a curved die adjustably secured to said stationary plate, whereby a flange-receiving space is left between said dies and the surfaces to which they are secured, all constructed, arranged, and operated substantially as and for the purposes described.

2. In a machine for rolling eyelets and other articles, the combination of a feeding device consisting of a drum provided with a discharge mechanism, substantially as described, with a revolving die, B, and a stationary die, F, whereby flanged eyelets or studs are automatically fed and rolled, substantially as set forth.

3. In a machine for rolling eyelets, a feeding device consisting of a drum provided with a revolving brush and a chute, substantially as described, in combination with the guide H', the stationary plate D, the revolving plate E, and the circular dies E and F, all constructed, arranged, and operated substantially as and for the purposes set forth.

383,404. SAD-IRON. WILLIAM HEMPEL, St. Louis, Mo. Filed Mar. 31, 1887. Serial No. 233,177. (No model.)



Claim.—In a self-heating sad-iron, the combination of the body, the lid, and a catch consisting of a sliding bolt provided with a stud working in a slot in the lid, a bracket on the under side of the lid perforated for the reception of said bolt, which latter engages a recess in the body, and a gravitating lock adapted to engage through a slot in the lid with the end of the bolt, substantially as set forth.

383,405. STEAM OR OTHER MOTOR. HERMANN MEMMINGER and ALBERT FRÖHLICH, Frankfort-on-the-Main, Prussia, Germany. Filed Apr. 6, 1886. Serial No. 197,948. (No model.) Patented in England Apr. 7, 1886, No. 4,899; in France Apr. 7, 1886, No. 176,388; in Belgium Apr. 7, 1886, No. 72,688; in Germany Apr. 8, 1886, Nos. 37,864 and 40,827, and July 10, 1886, No. 41,148, and Nov. 14, 1886, No. 41,921; in Italy June 30, 1886, No. 19,777, and June 30, 1887, No. 21,888, and in Austria-Hungary Sept. 13, 1886, No. 14,694 and No. 41,694.



Claim.—1. The combination of a slide-valve constructed and arranged to receive a longitudinal movement and an oscillating or lateral movement, a shaft, a movable eccentric or eccentric-pin arranged at an angle with reference to said shaft, and a rod connecting said eccentric or eccentric-pin and the valve, whereby the point of cut-off of the valve may be varied by a change in the position of the angle of the said eccentric or eccentric-pin, substantially as and for the purpose herein set forth.

2. The combination of a slide-valve constructed and arranged to receive a longitudinal and an oscillating or lateral movement, a shaft, an eccentric or eccentric-pin carried by said shaft at an angle or inclination thereto, a rod connecting said eccentric or eccentric-pin, and the valve and mechanism for varying the position of the inclined eccentric or eccentric-pin to vary the point of cut-off of the valve, substantially as and for the purpose herein set forth.

3. The combination of a slide-valve constructed and arranged to receive a longitudinal and an oscillating or lateral movement, a shaft, an eccentric or eccentric-pin carried by said shaft at an angle or inclination thereto, a rod connecting said eccentric or eccentric-pin with the valve, a governor and devices connecting the same with the eccentric or eccentric-pin to automatically vary the position of the inclined eccentric or eccentric-pin in order to automatically vary the point of cut-off of the valve, substantially as and for the purpose herein set forth.

4. The combination of a valve-seat provided with steam and exhaust ports and with cavities *f* and passages *d*, a slide-valve having transverse covered passages *a* and *b* and longitudinal passages *c* and *e*, and mechanism for communicating longitudinal and transverse movements to the said slide-valve, substantially as and for the purpose herein set forth.

5. The combination of a slide-valve, a revolving shaft, an eccentric or eccentric-pin revolving with the said shaft and mounted at an inclination to the same, and a rod pivotally connected to the said eccentric or eccentric-pin and to the slide-valve, so that the said valve receives longitudinal and transverse movements, substantially as and for the purpose herein set forth.

6. The combination of a valve-seat provided with steam and exhaust ports and with cavities *f* and passages *d*, a slide-valve having transverse covered passages *a* and *b* and longitudinal passages *c* and *e*, a revolving shaft, an eccentric or eccentric-pin revolving with the said shaft and mounted at an inclination to the same, and a rod pivotally connected to the said eccentric or eccentric-pin and to the slide-valve, so that the said valve receives longitudinal and transverse movements, substantially as and for the purpose herein set forth.

7. The combination, in a valve-gear, of a revolving shaft having trunnions projecting from it at an inclination to its axis, and an eccentric or eccentric-pin pivoted on the said trunnions and adapted to transmit a longitudinal and an adjustable transverse movement to the valve, substantially as and for the purpose herein set forth.

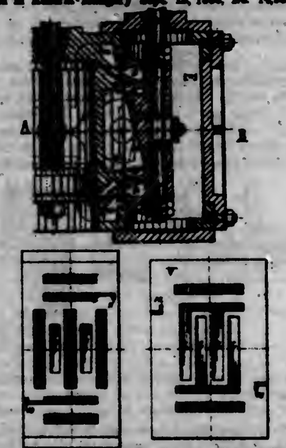
8. The combination, in a valve-gear, of a revolving shaft, an eccentric or eccentric-pin mounted on the said shaft at an inclination to its axis, and a pin or device connecting the eccentric or eccentric-pin with the shaft, so that the position of the said inclined eccentric or eccentric-pin may be varied, substantially as and for the purpose herein set forth.

9. The combination of a slide-valve, a revolving shaft, an eccentric or eccentric-pin mounted on the said shaft at an inclination to its axis, a pin or device connecting the eccentric or eccentric-pin with the shaft, so that the position of the said inclined eccentric or eccentric-pin may be varied, a rod pivotally connected to the eccentric or eccentric-pin and to the slide-valve, so that the said valve receives longitudinal and transverse movements from the eccentric or eccentric-pin, and a speed-governor connected to the eccentric or eccentric-pin for automatically varying its inclination and the transverse movement of the valve, substantially as and for the purpose herein set forth.

10. The combination of a slide-valve, a revolving shaft provided with the spherical portion S' and slot *s*, an eccentric mounted on the said spherical portion at an inclination to the axis of the shaft and provided with the conical beveled face *w*, the pin *p*, connecting the eccentric with the slot in the shaft, a rod pivotally connected to the eccentric and to the slide-valve, the eccentric-disk W, having the pinion *f* secured to it, and a governor connected to the said pinion for automatically varying the position of said inclined eccentric and the transverse movement of the valve without altering its longitudinal movement, substantially as and for the purpose herein set forth.

11. The combination, in a valve-gear, of a revolving shaft, an eccentric or eccentric-pin mounted on said shaft at an inclination thereto and adapted to transmit longitudinal and transverse movements to the valve, and mechanism connected to the eccentric for changing the position of its center and of its inclination, so that the direction of the movements transmitted by it to the valve may be reversed, substantially as and for the purpose herein set forth.

383,406. VALVE FOR STEAM OR OTHER MOTORS. HERMANN MEMMINGER and ALBERT FRÖHLICH, Frankfort-on-the-Main, Prussia, Germany. Filed Apr. 26, 1887. Serial No. 236,132. (No model.) Patented in England Apr. 7, 1886, No. 4,899; in France Apr. 7, 1886, No. 176,388; in Belgium Apr. 7, 1886, No. 72,688; in Germany Apr. 8, 1886, Nos. 37,864 and 40,827, and Dec. 14, 1886, No. 41,921, and May 27, 1887, No. 41,878; in Italy June 30, 1886, No. 19,777, and June 30, 1887, No. 21,888, and in Austria-Hungary Sept. 13, 1886, No. 14,694 and No. 41,694.



Claim.—1. A valve constructed and arranged to receive combined longitudinal and lateral movements, having main ports to govern the admission of steam to the cylinder by one motion of the valve and to govern the cut-off of steam by the other motion thereof, and a valve-seat having main ports arranged to act in conjunction with the main ports of the valve, substantially as described.

2. A valve constructed and arranged to receive combined longi-

tudinal and lateral movements, having main ports to govern the admission of steam to the cylinder by one motion of the valve and to govern the cut-off of steam by the other motion thereof, and having adjunctive ports or passages 12 13, a closed valve-chest external to said valve, and a valve-seat having main and adjunctive ports or passages 10 11, arranged to act in conjunction with the main and adjunctive ports or passages of the valve, the whole in combination and for operation, substantially as and for the purpose herein set forth.

388,407. MECHANICAL MOVEMENT. HERMANN MOSSNER and ALBERT PFLUGER, Frankfort-on-the-Main, Prussia, Germany. Filed Feb. 13, 1888. Serial No. 263,787. (No model.) Patented in England Apr. 7, 1886, No. 4,850; in France Apr. 7, 1886, No. 176,889; in Germany Apr. 8, 1886 No. 40,837, and Dec. 14, 1886, No. 41,821; in Belgium Apr. 7, 1886, No. 73,682; in Italy June 30, 1886, No. 19,777, and June 30, 1887, No. 21,502, and in Austria-Hungary Sept. 13, 1886, No. 14,904 and No. 41,064.



Claim.—1. A valve-gear mechanical movement comprising a shaft, in combination with an eccentric, carried thereon and arranged at an angle or inclination thereto, substantially as and for the purpose herein set forth.

2. In a mechanical movement, the combination, with a shaft, of a movable inclined eccentric and mechanism for varying the position of said eccentric, substantially as and for the purpose herein set forth.

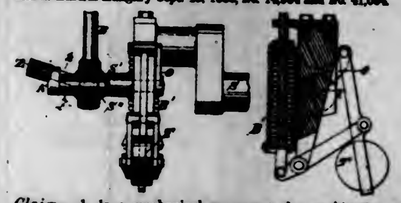
3. In a mechanical movement, the combination, with a shaft, of a movable inclined eccentric, an independent crank, and mechanism connecting said crank and eccentric to vary and control the position of the inclined eccentric, substantially as and for the purpose herein set forth.

4. In a mechanical movement, the combination of the following elements, to wit: a shaft, a movable inclined eccentric carried by said shaft, a speed-governor, and mechanism for transmitting motion from said governor to said eccentric, substantially as and for the purpose herein set forth.

5. In a mechanical movement, the combination, with a shaft, of a movable inclined eccentric carried by said shaft, an independent crank, a lever or levers connecting said crank with said eccentric, a speed-governor, and mechanism connecting said governor with said crank, substantially as and for the purpose herein set forth.

6. In a mechanical movement, the combination, with a shaft, of a movable inclined eccentric carried by said shaft and provided with an arm, *l*, and an independent crank connected with the extremity of said arm, substantially as and for the purpose herein set forth.

388,408. VALVE-GEAR. HERMANN MOSSNER and ALBERT PFLUGER, Frankfort-on-the-Main, Prussia, Germany. Filed Feb. 13, 1888. Serial No. 263,787. (No model.) Patented in England Apr. 7, 1886, No. 4,850; in France Apr. 7, 1886, No. 176,889; in Germany Apr. 8, 1886 No. 40,837, and Dec. 14, 1886, No. 41,821; in Belgium Apr. 7, 1886, No. 73,682; in Italy June 30, 1886, No. 19,777, and June 30, 1887, No. 21,502 and in Austria-Hungary Sept. 13, 1886, No. 14,904 and No. 41,064.



Claim.—1. In a mechanical movement, the combination of a wrist arranged eccentric to its axis of motion, a rod connected with said wrist to receive a longitudinal to-and-fro movement therefrom, and an eccentric-pin arranged at an angle to said wrist to give a transverse, lateral, or oscillating movement to the said rod during the longitudinal to-and-fro movement thereof, substantially as and for the purpose herein set forth.

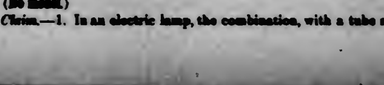
2. In a mechanical movement, the combination of a wrist arranged eccentric to its axis of motion, a rod connected with said wrist to receive a longitudinal to-and-fro movement therefrom, an eccentric-pin arranged at an angle to said wrist to give a transverse, lateral, or oscillating movement to the said rod during the longitudinal to-and-fro movement thereof, and a device for changing the position of the eccentric-pin, substantially as and for the purpose herein set forth.

3. In a mechanical movement, the combination of a wrist arranged eccentric to its axis of motion, a rod connected with said wrist to receive a longitudinal to-and-fro movement therefrom, an eccentric-pin arranged at an angle to said wrist to give a transverse, lateral, or oscillating movement to the said rod during the longitudinal to-and-fro movement thereof, and a crank or arm connected with said eccentric-pin to actuate or change the position of the same, substantially as and for the purpose herein set forth.

4. In a mechanical movement, the combination of a wrist arranged eccentric to its axis of motion, a rod connected with said wrist to receive a longitudinal to-and-fro movement therefrom, an eccentric-pin arranged at an angle to said wrist to give a transverse, lateral, or oscillating movement to the said rod during the longitudinal to-and-fro movement thereof, and a speed-governor to control the movement of said eccentric-pin, substantially as and for the purpose herein set forth.

5. In a mechanical movement, the combination of a wrist arranged eccentric to its axis of motion, a rod connected with said wrist to receive a longitudinal to-and-fro movement therefrom, an eccentric-pin arranged at an angle to said wrist to give a transverse, lateral, or oscillating movement to said rod during the longitudinal to-and-fro movement thereof, a crank or arm connected with said eccentric-pin to actuate or change the position of the same, and a speed-governor to control the movement of said eccentric-pin, substantially as and for the purpose herein set forth.

388,409. RUNNING-GEAR FOR VEHICLES. THEODORE C. MUSE, Toledo, Ohio, assignor of one-half to Warren Henry Eldridge and Franklin Hubbard, same place. Filed Sept. 13, 1887. Serial No. 249,603. (No model.)



Claim.—In a vehicle running-gear, metal axles formed with a longitudinal opening upon their lower sides, in combination with a packing placed within the longitudinal opening and against the upper web, with spindles bearing against the packing and held in a firm relation thereto by clips embracing the axle and spindle, as and for the purpose set forth.

388,410. JOURNAL-BOX. JOSEPH H. HOSMAN, Springfield, Ohio, assignor of one-half to the Thomas Manufacturing Company, same place. Filed Sept. 30, 1887. Serial No. 251,104. (No model.)



Claim.—1. In a journal-box, the combination, with the box proper, of a compressible bearing-sleeve fitted therein and supports therefor, and on which it is universally adjustable, one at least of said supports being inwardly adjustable so as to compress said sleeve.

2. In a journal-box, the combination, with the box proper and supports projecting into the interior thereof, one at least of which is inwardly adjustable, of a bearing-sleeve having an exterior recess and a channel with which the respective supports engage, and an incision through the wall thereof, whereby it is compressible.

3. In a journal-box, the combination, with the box proper having a radial slot or opening in a fixed wall thereof whose width is greater than the diameter of the shaft to be used in said box, whereby the shaft may be introduced and removed from the box sidewise to its axis, and supports projecting through the wall of said box and into the interior thereof, of a bearing-sleeve of less diameter than the interior of said box, mounted therein upon said supports and universally adjustable on them, and arranged to be introduced into and removed from said box at either side in a longitudinal direction, so as to slip over and off the shaft already within the box, for the purpose set forth.

4. In a journal-box, a compressible bearing-sleeve composed of a cylindrical body, through the wall of which an incision is made, and having a recess in the outside of the wall to one side of the incision, and a longitudinal channel in the outside of the wall at a point diametrical to the recess.

388,411. ELECTRIC LAMP. ELI C. OSMAN, New York, N. Y., assignor, by mesne assignments, to the Osmant-Hermann Electric Lighting Company, of New York. Filed Mar. 6, 1886. Serial No. 194,362. (No model.)

Claim.—1. In an electric lamp, the combination, with a tube surrounded by a helix, of a carbon-holding rod sliding in said tube and provided at its upper end with a head, and of a stop on the lower end of the tube to prevent the head passing out of the tube, the rod forming the core of the solenoid, substantially as shown and described.

388,411.



2. In an electric lamp, the combination, with a globe and mechanism for holding and regulating the upper carbon, of the socket *m* for the lower carbon, the ball *m'*, on which the socket *m* is fastened, the plate *n*, having the neck *n'*, the rod *p*, passed through said neck, the washer *r*, through which the rod *p* is passed, and the nut *s*, screwed on the lower end of said rod *p*, substantially as shown and described.

3. In an electric-arc lamp, the combination of a helix formed of the wire through which the entire lighting-current is conducted, said wire being provided with an insulating-covering, with an iron rod within the bore of said helix, which rod is the upper-carbon holder, and of a wire connecting the wire forming the helix with the above-mentioned carbon-holding rod, the current passing from the wire of the helix through said connecting-wire to the upper carbon, substantially as shown and described.

388,412. COAL-SIFTER. FRANCIS H. PERRY, Philadelphia, Pa., assignor to Charles J. Webb and Maggie Hughes Perry, both of same place. Filed Apr. 9, 1887. Serial No. 234,203. (No model.)



Claim.—A coal or ash sifter comprising a casing, a diaphragm having an opening through it and dividing said casing into a charging and a discharging compartment, the latter provided with an external vent or discharge opening, a reciprocating sieve and an ash drawer in the receiving compartment, and a deflector in the discharging compartment, substantially as set forth.

388,413. JOINT FOR CEMENT-LINED PIPES. EDWARD H. PHIPPS, New Haven, Conn. Filed June 16, 1888. Serial No. 276,909. (No model.)

Claim.—A folded sheet-metal cement-lined shell having in each end a rigid cement-lined ring, each provided with a sleeve closely fitting into the shell in direct contact therewith, a shoulder virtually corresponding in depth to the thickness of the shell against which it abuts, and an end adapted to form one member of a water-tight universal joint, the two rings of each shell being concaved and convexed, respectively, substantially as set forth.

388,418.



388,414. SASH-BALANCE. THORNELL G. RUSSELL, St. Louis, Mo. Filed Jan. 3, 1888. Serial No. 259,542. (No model.)



Claim.—The combination of a window-frame, two spiral springs coiled in opposite directions, each of which is fastened at one end to the window-frame, while its other end is fastened to the spindle of a spur-wheel, one of said springs being placed in tension while the other is relaxed, with a window-sash having a toothed rack, substantially as described, and for the purpose specified.

388,415. LAMP-SHADE HOLDER AND SHADE. GEORGE E. SPENCER, Fitchburg, Mass., assignor of one-half to William M. Copeland, same place. Filed Apr. 23, 1887. Serial No. 236,021. (No model.)



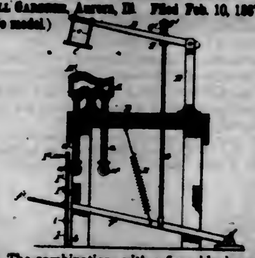
Claim.—1. A lamp-shade holder consisting of a collar adapted to encircle and be secured to the neck of a lamp, and an arm extending out from said collar, in combination with a vertical rod or standard adjustably supported on said arm, and two rings for supporting the lamp-shade, each adjustably supported on said rod and each adapted to be moved up or down or swung around thereon, for the purpose stated, substantially as shown and described.

2. In a lamp-shade holder, the combination, with a collar, D, an arm, *b*, extending out therefrom, and the rod or standard E, adjustably supported in the outer end of said arm, of the ring F, an arm, *c*, secured thereto and extending toward the center thereof, and adjustably supported at its inner end upon the rod E and the ring G, and an arm, *h*, extending out therefrom and adjustably supported at its outer end upon said rod E, substantially as shown and described.

3. The combination, with a collar, D, provided with a set-screw, *a*, arm *b*, extending out from said collar, and having a collar, *c*, and set-screw *b* at its outer end, and the rod E, adjustably supported in said collar *c* by means of set-screw *b*, of the ring F, an arm, *c*, secured thereto and extending toward the center of said ring, said arm *c* having a collar and set-screw at its inner end for adjustably supporting

said arm and the ring F on the rod B, and the ring G, and an arm, A, secured thereto and extending out therefrom, said arm A having a collar and set-screw at its outer end for adjustably supporting said arm A and the ring G upon the rod B, all constructed and arranged substantially as shown and described.

388,416. APPARATUS FOR SHAPING CORSETS. JAMES STOUT and MARSHALL GARDNER, Aurora, Ill. Filed Feb. 10, 1887. Serial No. 227,289. (No model.)



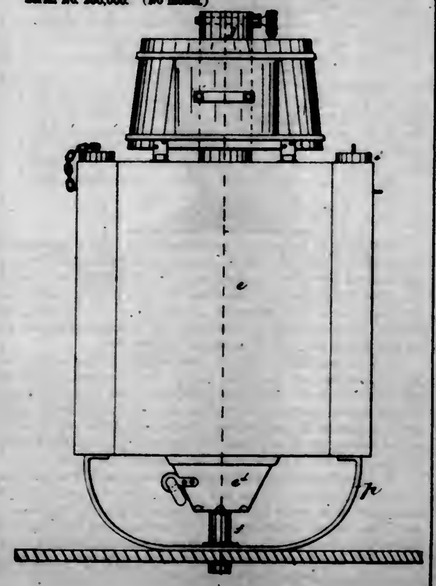
Claim.—1. The combination, with a form-block and two vertically-movable spring-clamps or clamp-bars located normally above the form-block and adapted to engage the latter when depressed, of a pivoted arm sustaining said clamp-bars, a treadle connected with the arm for depressing the latter and forcing the clamp-bars into engagement with the form-block, and a spring connected with the treadle for lifting the arm and clamp-bars, as set forth.

2. The combination, with a form-block and two spring-clamps or clamp-bars, of a pivoted arm sustaining said clamp-bars, a treadle, a rod attached to the treadle and having sliding connection with the arm, and a spring engaged with the said rod and the arm, whereby a yielding pressure is applied to the latter, substantially as described.

3. The combination, with a form-block and two vertically-movable spring-clamps or clamp-bars located normally above said form-block and adapted to engage the latter when depressed, of a pivoted arm, D, supporting said clamps, a treadle, F, a rod, G, connecting the treadle with said arm, a spring applied to hold the free end of the arm at the upward limit of its movement, and a detent, I, constructed to engage the said treadle, substantially as described.

4. The combination, with a form-block and two spring-clamps or clamp-bars, of a movable support for said clamps, a treadle connected with said support, a spring applied to lift the said support, and a spring detent-lever, I', provided with a notch, *i*, at its lower end for engagement with said treadle, substantially as described.

388,417. CAR-HEATER. CHARLES R. STRUCK, Newark, N. J., assignor of one-half to John A. Baldwin, same place. Filed Apr. 16, 1887. Serial No. 235,009. (No model.)



Claim.—1. In a sewing-machine, a rock-shaft and an arm, E, on said shaft and in the head of the machine, in combination with the needle-bar connected with the arm, a slotted link-connection between the presser-bar and arm, said link being formed in a continuous piece, a collar loosely mounted on the presser-bar, and a set-screw adjustably securing said collar to determine the movement of the presser-bar or to disconnect said collar from the presser-bar, substantially as described.

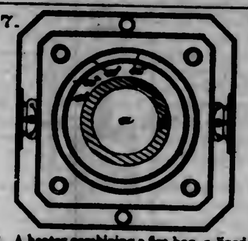
2. In a sewing-machine, the rock-shaft and an operating-arm having projecting pins *e* and *g*, in combination with the needle and presser bars, a link, F, connecting the needle-bar with the operating-arm, a collar, *d*, loosely mounted on the presser-bar and having the pin *f*, a link, G, having an elongated slot, H, within which the pin *g* travels, and an adjusting-screw, *c*, substantially as herein described.

3. In a sewing-machine, the combination, with the rock-shaft having an arm, E, as described, of the presser-bar and a link, G, connecting the presser-bar with the arm on the shaft, said link having the elongated slot H, and the screws passing through the slider to compensate for wear, substantially as herein described.

4. In a sewing-machine, the combination, with the needle-bar and its actuating mechanism, of the link F, formed in a continuous piece, having the inner portions of its hubs split or slotted, its side portions separated from each other, and the screws engaging the sides to take up the wear in the hubs, substantially as herein described.

5. The combination, with the presser-bar, the rock-shaft, and the arm E on said shaft, of the link G, formed in a continuous piece and having an elongated opening or slot engaging a pin on said arm, substantially as described.

388,417.



Claim.—1. A heater combining a fire-box, *c*, lined with fire-brick, flange *d*, to protect said brick from water, air-chambers *c*², and water-tank *e*, having communication with said fire-box, substantially as set forth.

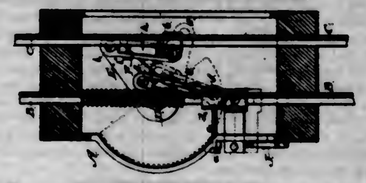
2. A heater combining a fire-box, water-tank, passages *e*, openings *d'*, and heat-chamber *c*², provided with walls perforated, as at *c'*, substantially as and for the purposes set forth.

388,418. COOKING-STOVE. JAMES STRONG, New York, N. Y. Filed June 18, 1887. Serial No. 241,713. (No model.)



Claim.—The combination of a stove-body comprising a water-tank, a fire-pot disposed centrally within said tank, a top plate provided with a central opening opposite the fire-pot and with openings opposite the tank, and a roasting-chamber at the top of the fire-pot below said top plate, substantially as described.

388,419. SEWING-MACHINE. CHARLES E. TISDEL, Chicago, Ill. Filed Aug. 30, 1886. Serial No. 212,174. (No model.)



Claim.—1. As a new article of manufacture, a bustle formed of convoluted spring-wire in vertical loops with re-entering coils in the angles of the loops, and the flexible and adjustable straps, *articulos*, secured in the coils and connecting the loops, substantially as described.

2. As a new article of manufacture, a bustle formed of convoluted spring-wire in vertical loops with re-entering coils in the angles of the loops, the flexible and adjustable straps, *articulos*, connecting the loops, the cross-buckle strap at the base of the bustle, and arched spring-wire top brace, substantially as described.

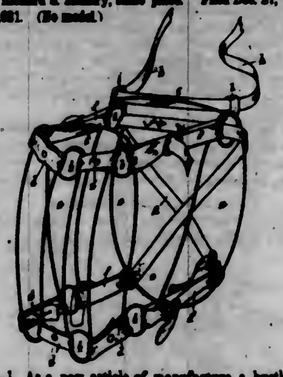
388,420. EXPLOSIVE COMPOUND. CARL W. VOLNEY, Troll's River, N. J., assignor to Andrea S. Finch, New York, N. Y. Filed Nov. 3, 1887. Serial No. 254,161. (No specimens.)

Claim.—1. An explosive compound consisting of a mixture of charcoal and an oxidant, as nitrate of sodium, with which is combined starch in about the proportions named, and forming an absorbent granular powder, together with nitro-glycerine absorbed by the powder granules, said granules being maintained as such and constituting a granular powder after said absorption of nitro-glycerine, and adapted for use in such granular form, substantially as described.

2. As an article of manufacture, an absorbent granular powder composed of charcoal, an oxidant, as nitrate of sodium and starch, combined in about the proportions and in the manner specified, and constituting a powder the granules of which are cellular or honeycombed in structure, and adapted to absorb nitro-glycerine and to maintain their granular form after such absorption, as set forth.

3. In the manufacture of an explosive compound, the process of producing a granular powder, which consists in combining starch dissolved and boiled in water as a paste, in about the proportions named, with the gas-producing ingredients of black powder—as, for example, charcoal and an oxidant, as sodium nitrate—and then evaporating the water of the paste from the mass, whereby when the dried mass is granulated the resulting granular powder will consist of granules which are cellular or honeycombed in structure, and which are adapted to absorb nitro-glycerine and will maintain their granular form subsequent to such absorption, as set forth.

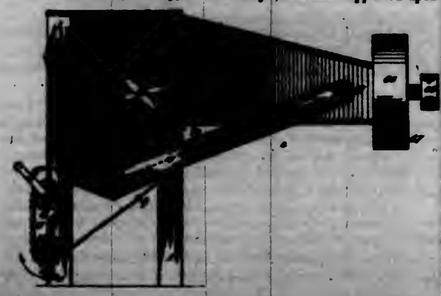
388,421. BUSTLE. ALBIS WEISS, Detroit, Mich., assignor of one-half to Richard S. Mallory, same place. Filed Dec. 27, 1887. Serial No. 259,021. (No model.)



Claim.—1. As a new article of manufacture, a bustle formed of convoluted spring-wire in vertical loops with re-entering coils in the angles of the loops, and the flexible and adjustable straps, *articulos*, secured in the coils and connecting the loops, substantially as described.

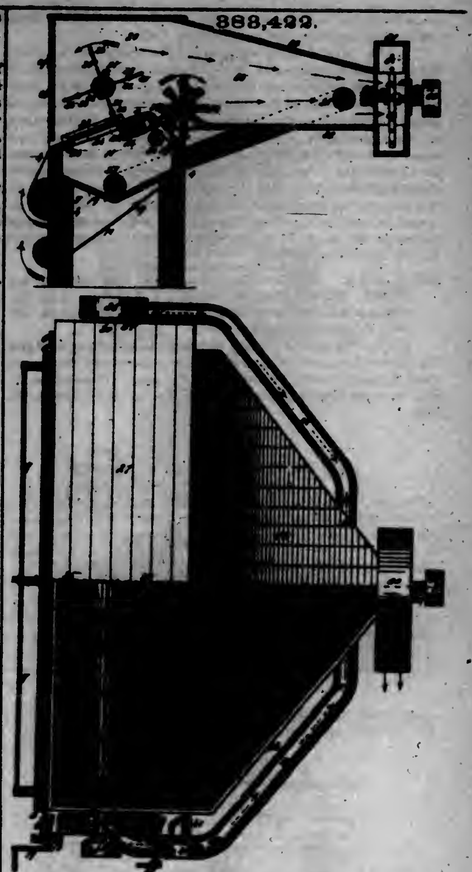
2. As a new article of manufacture, a bustle formed of convoluted spring-wire in vertical loops with re-entering coils in the angles of the loops, the flexible and adjustable straps, *articulos*, connecting the loops, the cross-buckle strap at the base of the bustle, and arched spring-wire top brace, substantially as described.

388,422. CARPET-CLEANER AND DUST-CONVEYER. HENRY A. WISMAR, Jr., St. Louis, Mo. Filed July 2, 1887. Serial No. 243,217. (No model.)



Claim.—1. In a carpet-cleaning machine, the combination of the two reels from and upon which the carpet is respectively unwound and wound, an upper and lower casing containing the upper and lower dust-chambers, respectively, a reciprocatory bed-frame supported upon

388,422.



the lower casing, provided with a screened opening over which the carpet passes, a revolvable shaft having thereon rope-beaters adapted to beat the carpet above said screened opening, a revolvable shaft provided with bristles adapted to brush the loosened dirt from the carpet, and suitable means for operating the reels and shafts, substantially as set forth.

2. In a carpet-cleaning machine, the combination of the casing over which the carpet is adapted to be passed, a beater, a frame pivoted within an opening in the casing and provided with a screen secured within its sides, a brush adapted to operate above the opening, and means for adjusting the frame within the opening relatively to the brush and the carpet, consisting of a shaft provided with eccentrics adapted to bear upon the frame, and means for securing said shaft when turned in one or the other direction, substantially as and for the purpose set forth.

3. In a carpet-cleaning machine, the combination of the casing over which the carpet is adapted to be passed, a frame pivoted within an opening in the casing and provided with a screen secured therein, a revolvable brush above said opening in the casing, a shaft mounted in the casing and provided with a crank at one end outside of the casing, eccentrics fixed to the shaft and adapted to engage said frame, an arm rigidly attached to the crank end of the shaft, provided with a projection adapted to engage any one of a series of holes in the casing, whereby the eccentrics are held in any desired position against the frame, substantially as set forth.

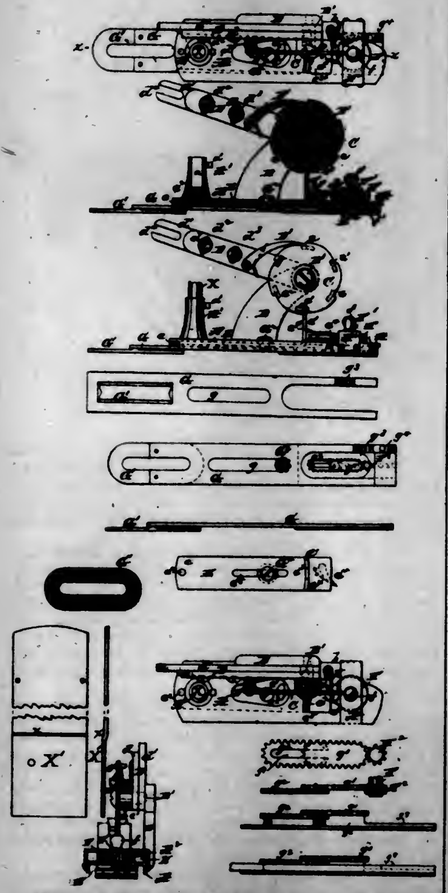
4. In a carpet-cleaning machine, the combination of the upper casing, the lower casing provided with openings over which the carpet is adapted to be passed, the beater and brush mounted in the upper casing above said openings, an extension-casing connecting with the upper casing, dust tubes or pipes communicating with the lower dust-casing and the forward part of said extension-casing, and a fan-case secured to the end of said extension-casing, provided with a rotary

fan, whereby the dust is exhausted from both the upper and lower casings simultaneously, substantially as set forth.

5. In a carpet-cleaning machine, the combination of the rotary beater, on the shaft of which is rigidly secured the band-wheel 36, that drives the machine, and the band-wheel 42, that, with the band-wheel 43 on the shaft of the rotary brush, co-operatively carries the endless belt 44, arranged to drive the beater and brush simultaneously, and the rotary fan 61, running on its shaft 62, and driven by the band-wheel 66 on said shaft, and producing an exhaust from the dust-chamber 18 below the carpet through the dust-tubes 57, and from the dust-chamber 20 above the carpet through the extension dust-chamber 55, that connects the chamber 20 with the case 60 of the rotary fan, arranged to draw the dust from the carpet as it is cleaned and discharge it through the mouth 67 of the fan-case, substantially as described, and for the purpose set forth.

383,423. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. HENRY J. WILLIAMS, New York, N. Y., assignor to the Harris Button Hole Attachment Company, same place. Filed May 24, 1887. Serial No. 238,302. (No model.)

Brief.—The main or primary operating-cam consists of small cam wipers or wedges placed alternately upon opposite sides of the ratchet-wheel operated directly from the needle-bar lever. These wipers engage upwardly-projecting portions of the vibrating lever to vibrate the same.



Claim.—1. The combination of the frame-plate, the feed-plate, the rack secured thereon, a pinion mounted in the frame-plate, the driving-wheel having ratchet-teeth in its periphery, and cams or wipers alternately set upon its opposite sides, a lever vibrated by the driving-wheel, connections between the lever and the feed-plate for giving the latter a vibrating movement, and connections between the lever and pinion that engage with the rack for giving the feed-plate a longitudinal movement, substantially as set forth.

2. The combination of the frame-plate, the driving-wheel having teeth in its periphery, and cams or wipers alternately set upon its opposite sides, the vibrating lever in operative connection with the driving-wheel, a pinion mounted on the frame-plate operatively connected with the vibrating lever, the rack on the feed-plate with which the pinion meshes, and connections between the vibrating lever and the feed-plate for giving the latter a vibrating motion, substantially as set forth.

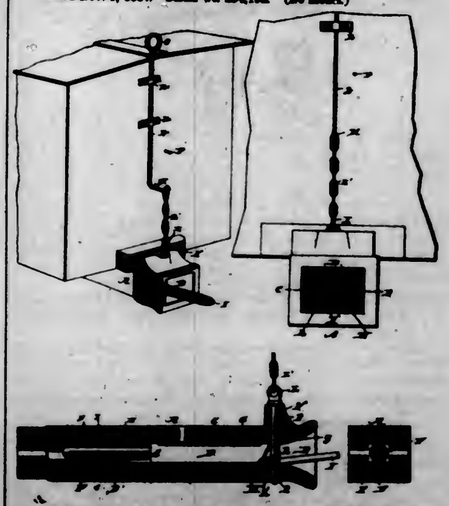
3. The combination of the frame-plate, the feed-plate, the driving-wheel, means for rotating it, the vibrating lever operated by the driving-wheel, the rack secured on the feed-plate, the pinion with which it meshes, the ratchet-wheel rigidly connected with the pinion and operatively connected with the vibrating lever, and a handle or knob for withdrawing the pinion from engaging with the rack, substantially as set forth.

4. The combination of the frame-plate, the feed-plate, the driving-wheel, means for rotating it, the vibrating lever operated by the driving-wheel, the pawl on the end of said lever, the ratchet-wheel with which it engages, the pinion rigidly secured thereto, the rack on the feed-plate with which the pinion engages, and an adjustable gage that regulates the movement of the pawl on the end of the vibrating lever, substantially as set forth.

5. The combination of the frame-plate, the feed-plate, the driving-wheel mounted on the frame-plate and having teeth in its periphery and cam-shaped lugs or wipers on its opposite sides, a lever pivoted to the frame-plate and having a slotted upright extension in which the driving-wheel works, and a backwardly-extending arm carrying a pawl, the ratchet-wheel with which said pawl engages, the pinion secured thereto, the rack secured to the feed-plate with which the pinion meshes, and the securing-pin G^3, extending through slots in the feed-plate and the vibrating lever and adjustable therein, substantially as set forth.

6. The combination of the button-hole attachment herein described, the bed-plate of a sewing-machine, and the removable throat-plate X', having a transverse offset at *x* to form a cover for the ordinary feeding mechanism of the sewing-machine, substantially as set forth.

383,424. CAR-COUPLING. ELIAS R. YARNES, Rockwood, Tenn. Filed Nov. 3, 1887. Serial No. 254,192. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head A, of the spring-actuated follower D, operating therein and having a shoulder, *h*, on the front end, the pressure-spring G on the upper side of the follower and bearing against the upper side of the opening in the draw-head, and the link adapted to be engaged at the rear end under the shoulder *h*, as and for the purpose hereinbefore specified.

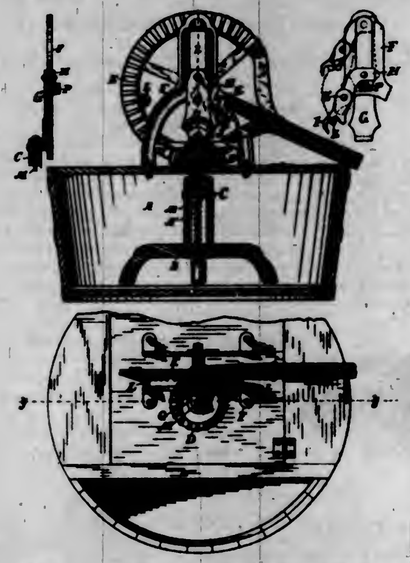
2. In a car-coupling, the combination, with the draw-head having a recess or slot, C, therein, provided at the front end on the lower side with an upwardly and outwardly beveled portion, *k'*, of the spring-actuated follower D, operating in the recess C, and having a shoulder, *h*, on the front end to pass over the coupling-link, and the spring G on the upper side of the follower, adapted to press the front end of the same down to hold the end of the link depressed, substantially as and for the purpose specified.

3. In a car-coupling, the combination, with the draw-head having a recess or slot, C, therein, and the shoulder *g* on the upper side of the said recess at the front end, of the spring-actuated follower D in the draw-head, having the leaf-spring G on the upper side to bear against the upper side of the recess C and engage the shoulder *g*, to limit the forward motion of the follower, all arranged substantially as specified.

4. In a car-coupling, the combination, with draw-head A, of the coupling-pin K, the vertically-movable uncoupling-rod N, having the horizontal arm M, the chain or other flexible connection between the said pin and the horizontal arm M, and the stud or stop P on the end of the car, adapted to be engaged by the said horizontal arm when the coupling-pin is elevated, substantially as specified.

5. In a car-coupling, the combination, with the recessed draw-head having a shoulder, *g*, of the follower operating in the draw-head and carrying a spring which bears against the said shoulder when the follower is in its extended position, substantially as specified.

383,425. WASHING-MACHINE. SOLAH F. GLIDDEN, Grand Rapids, Mich., assignor, by mesne assignments, to the Michigan Washing Machine Company, same place. Filed May 26, 1887. Serial No. 239,191. (No model.)



Claim.—1. In a washing-machine of the class described, a revolvable and vertically-adjustable stirrer or rub-block, in combination with a vertically-placed segmental gear engaging with the pinion on the shaft of the stirrer, a pin or stud upon such segmental gear, and a plate attached to the stirrer, said plate having attached thereto the jointed arm H I, with which arm the stud or pin engages and thereby raises the stirrer, substantially as and for the purpose described.

2. In a washing-machine of the class named, the combination of the tub or vessel A, the stirrer B, vertically adjustable, the bellow shaft C, spring N, pinion D, segmental gear E, provided with the pin L, plate G, the arm H, the hooked arm I, and the rod M, and the standard F, substantially as described.

383,426. FLUID-PRESSURE REGULATOR. WILLIAM B. MASON, Boston, Mass., assignor to the Mason Regulator Company, same place. Filed Nov. 9, 1885. Serial No. 182,253. (No model.)

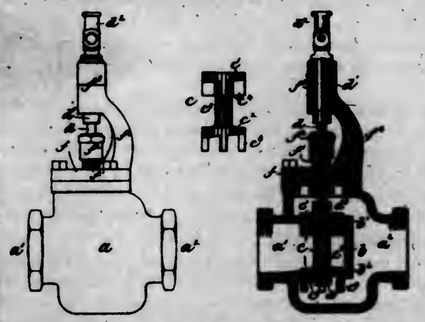
Claim.—1. In a fluid-pressure regulator, a piston and cylinder therefor, the said piston being constantly acted upon on one side by fluid-pressure, said provided with a small passage, through which the fluid passes into the cylinder at the other side of the said piston, combined with an exhaust-passage from the said cylinder, a secondary valve consisting of a rod having a longitudinal movement in a socket, and provided with a circumferential groove, the said valve controlling the said exhaust-passage, which intersects the said socket, and being actuated by a predetermined governing force and by an opposing variable pressure of a fluid in a pressure-chamber, substantially as described.

2. The main shell provided with a cylinder, and the cup-shaped piston working therein, combined with a bonnet for said cylinder having a sleeve-like projection passing down within the cylinder and piston, a pressure-chamber and diaphragm or equivalent therein, and a stem connected with the said diaphragm having a working fit in a passage in the sleeve-like projection, the said stem being provided with a valve controlling the exhaust of fluid from the said cylinder, substantially as described.

383,426.



383,427. GOVERNOR-VALVE. WILLIAM B. MASON, Boston, Mass., assignor to the Mason Regulator Company, same place. Filed Aug. 20, 1888. Serial No. 211,612. (No model.)

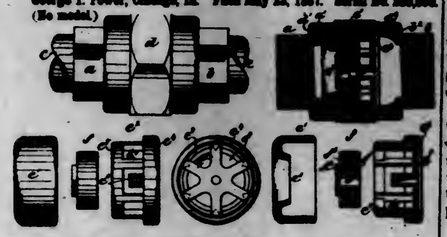


Claim.—1. The combination of the valve-shell provided with an inlet-chamber having opposite openings communicating with the outlet-chamber, and the valve consisting of two pistons having a working fit in the said openings, and a connecting portion between the said pistons, the faces of said pistons being inclined to their line of movement, as set forth, whereby a portion of the said pistons passes into or out from the openings controlled by them in advance of the remainder, substantially as and for the purpose described.

2. The combination of the valve-shell provided with an internal chamber having openings, and the bonnet provided with a bracket having a guide-passage, with a piston-valve having a working fit in the said openings in the valve-chamber, and a valve-stem loosely connected with the said valve and passing through the said bonnet and working in the guide-passage in the said bracket, substantially as described.

3. The combination of the valve-shell and valve with a valve-stem and coupling-piece provided with a longitudinal socket connected therewith by a hinge-joint transverse to the axis of the valve-stem, substantially as described.

383,428. COMBINED PIPE-COUPLING AND CHECK VALVE OR CHAMBER. WILLIAM T. MERRIMAN, Cambridge, Mass., assignor to George T. Power, Chicago, Ill. Filed May 23, 1887. Serial No. 238,602. (No model.)



Claim.—1. The combination of a pair of coupling-pieces and a co-operating coupling-nut with an independent chamber inclosed within the said coupling-nut and engaged at its ends by said coupling-pieces, being laterally removable from between said coupling-pieces without separating them, the said chamber consisting of two parts, one provided with an inwardly-projecting valve-seat and the other with a central valve-guide, and a valve inclosed within said parts and co-operating with said valve seat and guide, substantially as described.

2. The combination of a pair of coupling-pieces and a co-operating coupling-nut with an independent removable chamber engaged at its ends by said coupling-pieces and inclosed within the said coupling-nut, the said chamber being composed of a main part, *d*, having an internal valve-seat, and a valve-guiding part, *d*', composed of a ring, *d*', an open frame, *d*', a valve-guide, *d*', and a portion fitting within the said main portion *d*, substantially as and for the purpose set forth.

NORRIS PETERS

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

LYON *v.* THE PERIN AND GAFF MANUFACTURING COMPANY.

Decided April 16, 1888.

PLEA IN BAR.

The defendants pleaded in bar an adjudication and decree in their favor in a prior suit by the complainant against them for the same infringement, and put in evidence a copy of the decree. The complainant put in evidence a statement of the clerk of the court granting the decree, which statement was dated nearly two years after the decree was made, to the effect that no proof or testimony was filed in the suit by either party; that complainant did not appear nor was represented by counsel, and that the decree dismissing complainant's bill was granted on default of complainant.

1. THE RECORD OF THE COURT CONTROLS.

The court must look to the record, and not to the statement of the clerk of the court, made two years afterward.

2. A DECREE ABSOLUTE IN TERMS—EFFECT ON LATER LITIGATION.

A decree absolute in its terms is an adjudication of the merits of the controversy, and constitutes a bar to any further litigation of the same subject between the parties.

BARBALOCK—STIFFENER FOR BOOTS AND SHOES.

APPEAL from the Circuit Court of the United States for the District of Indiana.

Mr. William H. King for the appellant.

No counsel appeared for appellee.

Mr. Justice LAMAR delivered the opinion of the Court.

This is a suit in equity brought in the Circuit Court of the United States for the District of Indiana by Nelson Lyon against The Perin and Gaff Manufacturing Company, praying an injunction and damages for an alleged infringement of reissued Letters Patent No. 9,198, dated May 11, 1880, owned by complainant, for an improvement in metallic stiffeners for boot and shoe heels.

The bill of complainant, after the usual recitals necessary in a suit of this character, among other things, sets forth that before the commencement of this action—to wit, in September, 1881—complainant, having been informed and believing that the defendant was manufacturing an instrument which infringed said reissued Letters Patent, filed his bill in equity against the said defendant in the United States Circuit Court for the Southern District of Ohio, to restrain said defendant from further infringement; that the company appeared therein and answered, setting forth, among other things, the defense that said reissued Letters Patent was invalid for want of novelty in the invention, and was not granted in accordance with law, denying, also, that the instrument used infringed the said reissued Letters Patent, and denying that complainant was entitled to any of the relief therein prayed, to which answer complainant filed his replication; that the statutory time for taking testimony having expired, and an extension thereof not having been granted, and the complainant not having been able to get the proof of the infringement in time, no evidence of the facts, matters, or things alleged in his complaint was offered or taken, and upon the call of the case before the court, counsel for complainant not appearing, a decree was entered, dismissing the bill, and that none of the issues were tried, and no decision rendered on the merits thereof, the suit having been dismissed merely for want of prosecution.

The defendants interposed a plea that the prior adjudication and decree of the suit mentioned in said plea (which is the same suit set forth in said bill of complaint) is a bar to the present suit. The court below found the plea to be good and sufficient. Thereupon complainant filed his replication. The cause being at issue was referred to a master in chancery to take testimony, and to return the same into court with his conclusion of law thereon. Testimony was taken, and the master made and filed his report, in and by which said master concluded, as a matter of law, that the decree mentioned in said plea stands as an absolute adjudication of the rights of the parties upon the merits, and reported and found that the averments of the plea were sustained by the evidence. Exceptions to said master's report having been overruled by the court and the report confirmed, a decree was entered that the defendant's plea was well taken in law and sustained by the proofs, and the bill was dismissed. An appeal from this decree brings the case here.

The only material question for consideration is as to the effect of the decree of the Circuit Court of the United States for the Southern District of Ohio, rendered May 4, 1883, which is correctly found to be still in full force, as a bar to the prosecution of this suit.

It is well settled that, in order to render a matter *res adjudicata*, there must be a concurrence of the four conditions, viz: (1) *identity in the thing sued for;* (2) *identity of the cause of action;* (3) *identity of persons and parties to the action*, and (4) *identity of the quality in the persons* for or against whom the claim is made. (2 Bouv., 467.) All these elements or conditions exist in this case, as shown by the master's report, which was to the effect that the averments of said plea were sustained by the evidence; that there was no controversy as to the identity of the cause of action, or of the identity of the parties in the two suits; that the bill was sworn to by the complainant, and the answer was sworn to by the defendants, and the cause submitted in due course, and that the decree rendered in the suit pending in the court of Ohio was, as it professed to be, an absolute adjudication of the rights of the parties upon the merits, without any qualifying clause, and was conclusive of the rights attempted to be litigated in this case. The dispute, however, seems to be as to the *nature* of the former judgment—that is, whether it is a final judgment or decree. It is contended on the part of appellant that such judgment was merely one of *nos pros*—a decree entered by default—and is therefore not a bar to the prosecution of this suit. To sustain this view of the case he has recourse to a statement by the clerk of the Circuit Court of the United States for the Southern District of Ohio, (wherein the decree was rendered,) under his hand and seal, dated nearly two years after said decree was rendered, to the effect that no proof or testimony was filed in said cause in his office either for the complainant or the defendant; that at the time of the granting of said decree, May 4, 1882, the complainant did not appear, nor was he represented by counsel, and that said decree dismissing the complainant's bill was granted on default of the complainant. The decree itself is in the words and figures following, to wit:

The United States of America,
Western Division of the Southern District of Ohio, } *ss:*

At a stated term of the Circuit Court of the Western Division of the Southern District of Ohio, in the Sixth Judicial Circuit of the United States of America, begun and had in the court-rooms at the city of Cincinnati, Ohio, in said district, on the first Tuesday of April, being the fourth day of that month, in the year of our Lord one thousand eight hundred and eighty-two, and of the independence of the United States of America the one hundredth and sixth.

Present: The Hon. John Baxter, Circuit Judge, and Hon. Philip B. Swing, District Judge.

On Thursday, the fourth day of May, 1882, among the proceedings had were the following, to wit:

Nelson Lyon
vs. } 3180. In Equity.
The Perin and Gaff Manufacturing Co.

This cause coming on for hearing, and, being submitted to the court upon bill, answer, and replication, and having been duly considered, the court finds, adjudges, and decrees *that the equities are with the defendant;* that the bill of complaint be dismissed, and that defendant recover its costs, to be taxed.

This is the record to which the Court must look, and not to the statement of the clerk of the court, made two years afterward. This decree on its face is absolute in its terms, is an adjudication of the merits of the controversy, and therefore constitutes a bar to any further litigation of the same subject between the same parties. As was said by this Court in *Durant* v. *Essex Company*, (7 Wall., 107, 109:)

A decree of that kind, unless made because of some defect in the pleadings, or for want of jurisdiction, or because the complainant has an adequate remedy at law, or upon some other ground which does not go to the merits, is a final determination. Where words of qualification, such as "without prejudice," or other terms indicating a right or privilege to take further legal proceedings on the subject, do not accompany the decree, it is presumed to be rendered on the merits.

To the same effect see *Bigelow* v. *Windsor*, (1 Gray, 299, 301,) where it is said:

Sometimes, indeed, a party plaintiff in equity, who, because he is not prepared with his proofs, or for other reasons, desires not to go into a hearing, but rather to have his bill dismissed, in the nature of a discontinuance or non-suit in an action at law, may be allowed to do so; but we believe the uniform practice in such case is to enter "Dismissed without prejudice."

Likewise Cooper Eq. Pl., 270, as follows:

A plea in bar, stating a dismissal of a former bill, is conclusive against a new bill, if the dismissal was upon hearing, and if that dismissal be not, in direct terms, "without prejudice." (See, also, Story's Eq. Pl., sec. 798, and authorities there cited.)

The authorities to sustain this view of the case might be multiplied; but those cited are sufficient, and demonstrate the uniformity of the rule.

It is clear to this Court that the decree below dismissing the bill is in harmony with the law, and it is therefore affirmed.

Supreme Court of the United States.

FORNCROOK *v.* ROOT.

Decided April 23, 1888.

1. FORNCROOK—SECTIONAL HONEY-FRAMES.
Letters Patent No. 243,674, granted to James Forncrook, June 28, 1881, for an improvement in sectional honey-frames, adjudged to be invalid for lack of patentable novelty.
2. EQUIVALENT—WHAT IS NOT MECHANICALLY.
The claim of the patent embracing a longitudinal groove, the employment instead of pieces of wax is not a mechanical equivalent.

APPEAL from the Circuit Court of the United States for the Northern District of Ohio.

Mr. W. P. Wells for the appellant.
Messrs. M. D. & L. L. Leggett for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Northern District of Ohio by James Forncrook against Amos I. Root, for the infringement of Letters Patent of the United States No. 243,674, granted to the plaintiff June 28, 1881, for an improvement in sectional honey-frames, on an application filed May 18, 1879.

The specification, claim, and drawings of the patent are as follows:

Be it known that I, JAMES FORNCROOK, of Watertown, in the county of Jefferson and State of Wisconsin, have invented certain new and useful improvements in Sectional Honey-Frames; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in sectional honey-frames, the object being to so construct them that they shall be stronger and in a more portable form than the frames now used for such purposes; and the invention consists, essentially, in forming the frame from a single blank or piece of material having all the necessary grooves and recesses required to form a complete frame cut in it, the ends of the blank being notched or dentated and angular grooves cut across it at those points which are to form the corners. These blanks, after being thus prepared, may be packed solidly in boxes or otherwise for transportation, and when required for use are bent into the square form and their ends united at one of the corners by means of the interlocking notches or teeth, thus forming a complete frame ready for use.

In the drawings, Figure 1 is a plan of one of the blanks, showing the various recesses and grooves with which it is supplied. Fig. 2 is an edge view of the blank, and shows the form and depth of the angular grooves which form the corners of the frame. Fig. 3 shows the blank bent into a square form with the ends united, making a complete frame ready for use. Fig. 4 shows a modification of the groove or miter *c*, Fig. 2.

The blanks for these frames are preferably formed from some light, tasteless, and comparatively tough wood, which will bend at the corners without steaming or boiling, such as bass-wood or whitewood, the material being produced by cutting it from the log in the form of a thick veneer, or by sawing into thin stuff and then planing both surfaces. The blanks A are then cut from this material of the proper width and length, the ends dentated, as shown at *a a*, by means of a series of saws set on a shaft and close together upon an arbor or other suitable tool, so that they will interlock when brought together. The recesses *b b* are then formed in the edges at such points in its length as will bring them at the top and bottom of the frames when set up in the hive. These recesses form openings, which allow space for the passage of the bees between the frames and for the ventilation of this part of the hive. Three triangular grooves, *c c c*, are then cut across the blank at such points in its length as will divide it into four nearly equal parts, each of which forms one side of the frame after the blank is bent into a quadrangular shape. These triangular grooves are cut nearly through the blank, sufficient wood only being left to hold the parts firmly together. As the sides of the grooves are inclined toward each other at a right angle it follows that when the blank is bent into the form of a frame these grooves make perfectly-fitting miter-joints at three of its corners, the fourth corner being that at which the ends of the blank are united to each other by means of the interlocking teeth formed thereon.

In one of the spaces between two of the grooves *c*, and preferably that which will form the top of the frame when placed in the hive, is formed a longitudinal groove, *d*, for the guide-strip, which makes a secure point of attachment for the comb when the bees begin to build in the frames set side by side in the hive with the parts of the frame containing the recesses *b b* at top. These frames meet a want long felt by bee-keepers, as those in common use are either dovetailed or nailed together at the corners, and if set up at the manufactory form a large bulk for transportation, and are very liable to breakage in handling; but if sold to the user in pieces to be put together by him the numerous joints to be made cause loss of time and produce a very fragile article when finished, which loses its rectangular shape with the slightest rough usage, as the joints at the corners lack the necessary strength and rigidity to hold them in shape.

My frame will be found to possess none of the above-named defects, as it is intended for transportation in solid packages before being set up, and when set up possesses great strength and rigidity, preserving its form without difficulty during all the rough handling to which such frames are frequently subjected.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

As a new article of manufacture, a blank for honey-frames formed of a single piece of wood having transverse angular grooves *c*, longitudinal groove *d*, and recesses *b*, all arranged in the manner shown and described.

Fig. 1.

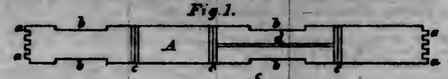


Fig. 3.

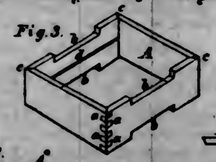


Fig. 4.

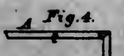
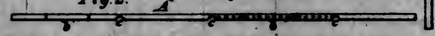


Fig. 2.



The answer sets up as defenses non-infringement and want of novelty. After issue joined, proofs were taken on both sides, and the circuit court, on a hearing, dismissed the bill. Its decision is reported in 21 Fed. Rep., 826.

The plaintiff does not carry his invention further back than the summer or late spring of 1877. The answer sets up that the same invention as that patented was known to Alexander Fiddes, who resides at Centralia, in the State of Illinois, as early as May or June, 1873.

The circuit court in its decision said that if the patentee was entitled to claim the blank for honey-frames as a new and useful device it was because it is a constituent of the frame or section into which it is formed by bending, no matter who bends it, whether the maker or the purchaser for use, and that if the state of the art at the date of the alleged invention was such that the patentee could not claim as his invention the honey-frame or section when formed by bending and uniting the ends of such a frame, he, for the same reason, could not claim as his invention such a blank for the purpose of forming it into a frame or a section. The opinion then proceeded:

The question, therefore, is whether, upon the evidence, at the date of the alleged invention the manufacture of honey-frames or sections by bending and uniting the ends of a blank consisting of a single piece, substantially as described in this patent, was a patentable novelty. Upon a careful comparison and consideration of all the evidence, this question must be answered in the negative. Alexander Fiddes testifies to making and using honey-sections formed from a single piece grooved, bent, and united at the ends as early as 1872 and 1873, some of which he sold to others for use and if those now made by the complainant under his patent are superior in any respect to the first specimens of the manufacture it is merely in point of finish and workmanship. There is no difference whatever in principle, and the early examples were complete and practical frames, actually used and perfectly serving the purpose, so that they cannot be considered as rude and imperfect experiments subsequently developed into a successful manufacture.

We concur in these views of the circuit court.

In addition to this the claim of the patent is as follows:

As a new article of manufacture, a blank for honey-frames formed of a single piece of wood having transverse angular grooves *c*, longitudinal groove *d*, and recesses *b*, all arranged in the manner shown and described.

The description in the specification states that—

the invention consists, essentially, in forming the frame from a single blank or piece of material having all the necessary grooves and recesses required to form a complete frame cut in it.

It also says that—

In the drawings, Figure 1 is a plan of one of the blanks, showing the various recesses and grooves with which it is supplied.

One of those grooves is the longitudinal groove *d*. The description further says:

In one of the spaces, between two of the grooves *c*, . . . is formed a longitudinal groove, *d*, for the guide-strip, which makes a secure point of attachment for the comb when the bees begin to build in the frames set side by side in the hive, with the parts of the frame containing the recesses *b b* at the top.

Thus the longitudinal groove *d* is made by the patentee a necessary element in the structure. The defendant's structure has no longitudinal groove, and no substitute or equivalent for it. (*Fay* v. *Cordesman*, 109 U. S., 408; *Yale Lock Co.* v. *Sargent*, 117 U. S., 373; *Dryfoos* v. *Wiese*, 124 U. S., 32.)

It is urged by the plaintiff that it is shown that the defendant's section is to be used with the comb foundation or attachment made by the putting by the user of pieces of wax on the section; but this is not a mechanical equivalent in the blank for the longitudinal groove, any more than, in *Gage* v. *Herring*, (107 U. S., 640, 648,) the person who shoveled or swept up by manual labor the meal deposited upon the floor of the dust-room was a mechanical equivalent, in the sense of the patent law, for the automatic conveyer-shaft in the dust-room.

The decree of the circuit court is affirmed.

Supreme Court of the United States.

CORNELL *v.* WEIDNER.

Decided April 30, 1888.

1. CORNELL—BUNG-BUSHING.
Reissued Letters Patent No. 8,759, granted June 17, 1879, to Lacy and Cornell, for bushes for bungs, adjudged invalid, as for an invention different from that of the original patent.
2. REISSUE VOID FOR CHANGE OF ORIGINAL INVENTION.
The original patent and the first reissue having been distinctly limited to a bushing having a notch, the second reissue, obtained nearly seven years afterward, for a bushing without any such notch, is an unwarrantable enlargement.

APPEAL from the Circuit Court of the United States for the Eastern District of Michigan.

Mr. J. W. Merriam for the appellant.
Mr. George H. Lothrop for the appellee.

Mr. Justice GRAY delivered the opinion of the Court.

This was a bill in equity for the infringement of a second reissue of Letters Patent. When the facts are understood the case is clear.

The original patent, issued August 29, 1871, No. 118,617, was for an improvement in metallic bushings for the bungs of casks, &c., and in wrenches for operating the same, and described the bushing thus:

* * * A tapering thimble or ring of metal, provided with a flanch, *b*, at its larger end, and having a screw-thread, *c*, on its outer surface, which screw-thread is cast on the bushing in the mold, and is capable of immediate use without other finishing. The flanch *b* is rounded off at its edge, and is provided at some point in its extent with a V-shaped notch, *d*, extending in to the screw-thread.

It then described the wrench and its mode of operation as follows:

* * * E represents the wrench-bar, consisting of the slotted plate *e* and the shank *f*. The metal of the shank, at its junction with the plate, forms a downward V-shaped projection, *l*, whose point extends forward toward the center of the plate *e*. F represents a tapering core of metal adapted to fit the bung-bushing *a*, and secured to the plate *e* by means of the bolt *h* and its nut. This core is made separable from the wrench-bar, in order that, by providing a number of cores of different sizes, the same wrench may be used for bushings of different diameters. Provision is also made, by the slot *k*, for moving the bolt toward the angular projection *l*, which becomes necessary when a smaller core is substituted for a larger one.

The wrench is applied by inserting the core into the opening through the bushing, and turning it until the projection *l* falls into the notch *d*. By means of the core the bushing is kept steady, and is readily prevented from assuming an oblique position in the bung-opening; at the same time the operator is enabled to get a better hold on the bushing than by means of the wrenches in common use, which are apt to slip from their seats when used on such difficult work as turning a rough-cast screw into place.

The single claim was in these words:

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination, with the notched bung-bushing *a*, of the wrench, consisting of the bar E having the slotted plate *e* and angular projection *l*, and the removable core F, substantially as specified.

It thus appears that the original patent described a bushing with a V-shaped notch in the flange and a wrench made with an angular projection to fit that notch, and applied by turning the wrench until the projection fell into the notch, and that all that the patentee claimed as his invention was the combination of the notched bushing with the wrench having a projection to fit it.

On August 6, 1872, the patent was reissued in two divisions, No. 5,026 (not in this record) being for the wrench and No. 5,027 being for the bushing, describing it as—

an annular ring of metal. This ring is made tapering on both its outer and inner sides, and is screw-threaded upon its outer side, by which means the same is secured within the aperture in the cask. This thread may be formed by a suitable tool or may be formed in the mold, as found most advantageous. The larger end of the said ring is provided with a flange, B, the outer surface or periphery of which is made in an ovolo shape, and is provided with a V-shaped notch, *d*, which extends inward to a point near the body of the ring. The object of this notch is to allow a suitable wrench, adapted for the purpose, to engage therewith, whereby the said bushing may be turned into place without the wrench slipping from its seat, as would be the case with a bushing having a smooth surface.

The claim in that reissue was for—

The screw-threaded metallic bung-bushing, made tapering upon both its outer and inner sides, and provided with the flange B, having the V-shaped notch *d*, as and for the purpose described.

The specification and the claim of that reissue, as clearly appears upon its face, both treated the notch in the flange of the bushing as an essential element of the invention. Of the notch in that reissue it may be said, as this Court in a case decided at October term, 1877, said of the notch described in the reissue for the wrench, that it was—

vital in the invention covered by his patent. The notch is the point of engagement between the bushing and the wrench when the latter, operating as a lever, gives the former its circular motion and thus forces it home. Without this arrangement such motion could not be communicated and the desired result produced. Hence its importance in the scheme of the invention. (*Schumacher* v. *Cornell*, 96 U. S., 549, 553.)

On June 17, 1879, a second reissue, No. 8,759, was obtained for the bushing, the material parts of the specification and the claim of which were as follows:

Our invention relates to bushings for barrels; and consists of a short metallic tube in exterior form in shape of the frustum of a cone, slightly tapering. The outer surface is screw-threaded, to adapt it to be screwed forcibly into the bung-hole of the barrel, and to be held securely in place by the contact of the surfaces. The larger end of this tube is provided with an annular flange projecting outwardly, and adapted to rest, when the bushing is screwed to its place in the hole of the barrel, snugly upon the outer surface of the stave. The interior surface of the bushing is also made in the form of a frustum of a cone, and tapers uniformly from the exterior or flanged to the inner end of the bushing. This surface is made smooth and unbroken, and extends in such form quite through from one end of the bushing to the other, so that the wooden or compressible plug or bung to which it is adapted may have a ready and unobstructed entrance, and may pass, if necessary, beyond the inner end of the bushing, and have a uniform bearing-surface throughout the entire length of the bushing.

* * * * * * *

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

A metallic bushing for the bung-holes of barrels, made with a flange adapted to rest on the outer surface of the stave, and with an exterior threaded and an interior smooth surface, both tapering from the flanged to the inner end, said inner surface being unbroken and unobstructed, and tapering uniformly from one end of the bushing to the other, as and for the purpose set forth.

The notch in the flange of the bushing is not mentioned either in the specification or in the claim of this reissue, although it is shown in the accompanying drawings substantially as it was shown in the drawings of the original patent and of the former reissue.

The original patent and the first reissue having been distinctly limited to a bushing having a notch to aid in forcing it into place, the second reissue, obtained nearly seven years later, for a bushing without any such notch, is an unwarrantable enlargement of the supposed invention, which, according to the now well-settled law, renders the reissue void. (*Yale Lock Co.* v. *James*, 125 U. S., 447, 464, and cases there cited.)

The defendant's plea that the second reissue was for a different invention from that described or claimed either in the original patent or in the first reissue was therefore rightly adjudged good by the circuit court, and the decree dismissing the bill is affirmed.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 43—No. 9. TUESDAY, MAY 29, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
ATTORNEYS	987
FRAUDULENT PRACTICES BY ATTORNEYS	987
NOTICE	987
ISSUE OF MAY 29, 1888	987
DESIGNS	987
TRADE-MARKS	988
LABELS	988
PATENTS GRANTED	989
REISSUES	1114
DECISIONS OF THE U. S. COURTS—	
The Mosler Safe and Lock Company *v.* Mosler, Bahmann & Company	1115
Heady *v.* The Golden State and Miners' Iron Works *et al.*	1117
Miller Magee Company *et al. v.* Carpenter	1118

Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., May 19, 1888.

SIR: The Secretary of the Interior has ordered that Oscar B. Barber, of Warren Mills, Wisconsin, be not recognized after this date as attorney in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully,

GEO. A. HOWARD,
Chief Clerk.

The Commissioner of Patents.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGehee, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Mellado*.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of May 29, 1888.

Patents	417	No. 383,429 to No. 383,845, inclusive.
Designs	7	No. 18,352 to No. 18,358, inclusive.
Trade-Marks	41	No. 15,581 to No. 15,621, inclusive.
Labels	9	No. 5,609 to No. 5,617, inclusive.
Reissues	2	No. 10,983 to No. 10,984, inclusive.
Total issue	476	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	2	
Arizona Territory			Nevada		
Arkansas			New Hampshire	2	
California	8	1	New Jersey	11	
Colorado	2		New Mexico Territ'y	1	
Connecticut	19	1	New York	78	14
Dakota Territory			North Carolina	2	1
Delaware			Ohio	23	4
District of Columbia	9		Oregon	2	
Florida		2	Pennsylvania	67	8
Georgia	1		Rhode Island	5	
Idaho Territory			South Carolina	1	
Illinois	25	8	Tennessee	3	1
Indian Territory			Texas	2	
Indiana	9		Utah Territory		
Iowa	5		Vermont		
Kansas	4	1	Virginia	2	
Kentucky	7		Washington Territ'y	1	
Louisiana	1	2	West Virginia	3	
Maine	1	3	Wisconsin	13	1
Maryland	2		Wyoming Territory		
Massachusetts	31	3	United States Army		
Michigan	17	1	United States Navy		
Minnesota	9				
Mississippi			Total to citizens of the United States	391	67
Missouri	18	2			
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

To citizens of foreign countries: Patents and Designs—33, Trade-Marks and Labels—3.

DESIGNS.

18,352.—TOY BANK.—*Jacob A. Graff*, Brooklyn, N. Y. Application filed October 1, 1887. Serial No. 251,246. Term of patent 3½ years.

18,353.—WRIST-HOLDER AND MATCH-SAFE.—*James F. Lockwood*, Philadelphia, Pa., assignor to himself, *Thomas J. Whitney*, and *Alva Bryant*, all of same place. Application filed April 23, 1888. Serial No. 272,001. Term of patent 3½ years.

18,354.—DENTIFRICE-CASE.—*Joseph C. Moore*, Montreal, Quebec, Canada. Application filed April 11, 1888. Serial No. 270,373. Term of patent 7 years.

18,355.—COVERS ON TEA POT.—*Lucius J. Richards*, Philadelphia, Pa. Application filed April 11, 1888. Serial No. 270,374. Term of patent 14 years.

18,356.—WATCH-CHARM.—*Edwin Terry*, Brooklyn, N. Y. Application filed March 29, 1888. Serial No. 268,874. Term of patent 7 years.

18,357.—ORNAMENTATION OF BUILDERS' HARDWARE.—*Thomas Village*, South Norwalk, assignor to *The Branford Lock Works*, Branford, Conn. Application filed April 23, 1888. Serial No. 271,644. Term of patent 7 years.

18,358.—DESK.—*William G. Walter*, Pittsburg, Pa., assignor to *Atterbury & Co.*, same place. Application filed April 14, 1888. Serial No. 270,703. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,521.—GIN, WINE, WHISKY, RUM, LIQUEURS, BRANDY, AND OTHER SIMILAR LIQUORS.—*Boord & Son*, London, England. Application filed April 28, 1868. Used since 1851.
"The representation of a cat standing upon a barrel."

15,522.—WATCH-CASES.—*The Brooklyn Watch Case Company*, Brooklyn, N. Y. Application filed March 15, 1888. Used since February 20, 1888.
"The word 'GRANGER' in connection with the representation of a stag's head."

15,523.—CYPRESS SHINGLES.—*Clark, Fairhead & Co.*, Jacksonville, Fla. Application filed January 18, 1888. Used since January, 1888.
"The words 'ALLIGATOR,' 'C. F. Co.,' and 'BRAND,' and the representation of an alligator."

15,524.—CYPRESS SHINGLES.—*Clark, Fairhead & Co.*, Jacksonville, Fla. Application filed January 18, 1888. Used since November 1, 1887.
"The words 'CROCODILE,' '2,' 'C. F. Co.,' and 'BRAND,' and the representation of a crocodile."

15,525.—HARD SOAP FOR LAUNDRY AND GENERAL PURPOSES.—*The Columbia Manufacturing Company*, Boston, Mass. Application filed March 16, 1888. Used since August 1, 1887.
"The word 'CLOVER.'"

15,526.—WHISKY.—*James E. Davis*, Detroit, Mich. Application filed April 30, 1888. Used since May 1, 1885.
"The words 'ST. BERNARD.'"

15,527.—MALT AND CARBONATED BEVERAGES.—*Joseph M. Donnelly*, College Point, N. Y. Application filed April 13, 1888. Used since April 1, 1888.
"The word 'REGAL.'"

15,528.—HYDRAULIC HOSE.—*Eureka Fire Hose Company*, New York, N. Y. Application filed April 25, 1888. Used since January, 1888.
"The words 'TRADE LINEN.'"

15,529.—GINGHAMS, TICKINGS, AND ALL COTTON GOODS.—*John Farnum & Co.*, Philadelphia, Pa. Application filed April 26, 1888. Used since April 10, 1868.
"The word 'CONEWINGO.'"

15,530.—GOLD PENS.—*John Foley*, New York, N. Y. Application filed April 25, 1888. Used since January 1, 1852.
"The word 'FOLEY.'"

15,531.—GAS-STOVES.—*The Gem City Stove Company*, Dayton, Ohio. Application filed April 19, 1888. Used since December 15, 1885.
"The word 'SUCCESS.'"

15,532.—DOWLE OR FINELY-DIVIDED PORTIONS OF FEATHERS RESEMBLING DOWN.—*Colin M. Hawkins & Co.*, Raleigh, N. C. Application filed March 3, 1888. Used since December 3, 1887.
"The word 'THISTLEDOWN.'"

15,533.—CHEWING-GUM.—*Charles T. Heisel*, Cleveland, Ohio. Application filed March 14, 1888. Used since March 9, 1888.
"The word 'NOMINEE' associated with the picture of Grover Cleveland."

15,534.—WOOLEN AND COTTON FABRICS FOR LININGS AND OUTER CLOTHING.—*Thomas Illingworth*, Bradford, county of York, England. Application filed April 24, 1888. Used since October 1, 1887.
"The representation of two hands grasping a piece of cloth in an attempt to tear it."

15,535.—CHAMPAGNE.—*Ernest Irroy*, Rheims, France. Application filed February 11, 1888. Used since November, 1887.
"The words 'BLACK TOP.'"

15,536.—CIGARS, CIGARETTES, AND SMOKING AND CHEWING TOBACCO. *Irwin & Co.*, Boston, Mass. Application filed March 29, 1888. Used since January 2, 1888.
"The words 'LOS DOCTORES.'"

15,537.—COUGH MEDICINE.—*Minnie Lawrence Keyes*, New York, N. Y. Application filed April 16, 1888. Used since March 28, 1888.
"The word 'INOKOP.'"

15,538.—MEDICAL COMPOUND FOR THE CURE OF CERTAIN NAMED DISEASES.—*Charles F. Kittredge*, Rockland, Me. Application filed April 14, 1888. Used since February, 1888.
"The letter 'K' inclosed within a triangular border."

15,539.—ARTIFICIAL STONE AND CEMENT AND CONCRETE PAVEMENTS. *William Krause & Son*, Philadelphia, Pa. Application filed April 17, 1888. Used since March 31, 1868.
"The representation of a star."

15,540.—REMEDY FOR DIPHTHERIA.—*Antoine Laqueau*, New Orleans, La. Application filed April 27, 1888. Used since May, 1887.
"A symbol composed of a crescent, three-pointed star, and cross."

15,541.—COUGH MEDICINE.—*John McLeish*, Cincinnati, Ohio. Application filed April 23, 1888. Used since November 17, 1868.
"The representation of a tree and the word 'TREMELLA.'"

15,542.—HORSE-NAILS.—*Calvin M. McClung & Co.*, Knoxville, Tenn. Application filed April 20, 1888. Used since March 18, 1881.
"The word 'CRANBERRY.'"

15,543.—TOILET, MEDICATED, AND COMMERCIAL SOAP.—*R. H. McDonald Drug Company*, New York, N. Y. Application filed March 29, 1888. Used since December 15, 1887.
"The word 'SEA-SALT.'"

15,544.—SALVE.—*Charles S. Phelps*, Gowanda, N. Y. Application filed March 10, 1888. Used since May 1, 1886.
"The compound word 'BORO-HYDRASTIS.'"

15,545.—ANTISEPTIC CHEMICAL COMPOUND.—*Phénique Chemical Company*, St. Louis, Mo. Application filed March 28, 1888. Used since February, 1884.
"The compound word 'CARBRO-PHÉNIQUE.'"

15,546.—METALLIC PAINT.—*Prince's Metallic Paint Company*, Philadelphia, Pa., and New York, N. Y. Application filed March 6, 1888. Used since October 5, 1875.
"The words 'PRINCE'S METALLIC PAINT' in plain capital letters."

15,547.—CIGARS.—*Reid, Murdoch & Fischer*, Chicago, Ill. Application filed April 14, 1888. Used since January 20, 1888.
"The bust figure, face, and head of a man wearing a Rubens hat, with the arbitrary word 'RUBENS' above the same in ornamental letters."

15,548.—CIGARS.—*Reid, Murdoch & Fischer*, Chicago, Ill. Application filed April 16, 1888. Used since August 12, 1887.
"A representation from the play of Richelieu, in which the King's guards are bowing low before the Cardinal while he draws around the form of the heroine the holy circle. Behind her stands a priest, and in the background are walls, scenery, &c., with the arbitrary words 'EL SANTO' in ornamental letters above the figure or representation."

15,549.—CIGARS.—*Reid, Murdoch & Fischer*, Chicago, Ill. Application filed April 16, 1888. Used since January 20, 1888.
"The bust figure, face, and head of a woman wearing a lady's hat, and the arbitrary word 'JULIANA' above said picture in ornamental letters."

15,550.—LEATHER BOOTS AND SHOES.—*Thomas Rice & Co.*, Shrewsbury and Boston, Mass. Application filed April 26, 1888. Used since April 16, 1886.
"The words 'OIL GRAIN' and the representation of two sheaves of grain."

15,551.—CERTAIN NAMED CONFECTIONERY.—*Matthew D. Saxe*, New York, N. Y. Application filed March 6, 1888. Used since February 28, 1884.
"The letters and character 'S & R.'"

15,552.—PRINTED PERIODICAL PUBLICATION.—*The Seeger & Guernsey Company*, New York, N. Y. Application filed April 12, 1888. Used since October, 1882.
"The words 'THE MEXICAN FINANCIER.'"

15,553.—BEER.—*Frank Seely*, New York, N. Y. Application filed April 18, 1888. Used since March 1, 1888.
"The word 'GANYMEDE.'"

15,554.—WINDOW-SASH CHAINS.—*The Smith & Egge Manufacturing Company*, Bridgeport, Conn. Application filed March 19, 1888. Used since April, 1884.
"The words 'RED METAL.'"

15,555.—CERTAIN SUPPLIES AND INSTRUMENTS FOR DRAFTSMEN AND ENGINEERS.—*Edward G. Soltmann*, New York, N. Y. Application filed April 12, 1888. Used since May, 1882.
"The word 'EMPEROR' inclosed in quotation-marks."

15,556.—TOILET SALVE.—*Frank M. Towne*, San Bernardino, Cal. Application filed March 20, 1888. Used since December 1, 1886.
"The word 'CARNATION.'"

15,557.—FREIGHT OR FARM WAGONS.—*The Turnbull Wagon Company*, Defiance, Ohio. Application filed April 9, 1888. Used since November 15, 1882.
"The word 'TURNBULL.'"

15,558.—PAPER BAGS.—*Union Bag and Paper Company*, Chicago, Ill. Application filed April 19, 1888. Used since January, 1875.
"The word 'UNION.'"

15,559.—PAPER BAGS.—*Union Bag and Paper Company*, Chicago, Ill. Application filed April 23, 1888. Used since April 17, 1886.
"The word 'LION' or the representation of a lion."

15,560.—PAPER BAGS.—*Union Bag and Paper Company*, Chicago, Ill. Application filed April 23, 1888. Used since December 10, 1887.
"The word 'KANGAROO' or the representation of a kangaroo."

15,561.—CATARRH REMEDY.—*Frank Wortz, Jr.*, Wausau, Wis. Application filed February 13, 1888. Used since April 7, 1888.
"The representation of a human head over the nose of which there appears a bandage which passes behind the neck."

LABELS.

5,609.—Title: "READY GLUE."—*Samuel M. Birby*, New York, N. Y. Application filed April 13, 1888.

5,610.—Title: "TURNER'S HAIR TINT."—*Finlay & Brunswig*, New Orleans, La. Application filed April 19, 1888.

5,611.—Title: "GERMAN COCOA POWDER."—*Hawley & Hoops*, New York, N. Y. Application filed May 2, 1888.

5,612.—Title: "COLE'S RHEUMATIC PAIN ANNIHILATOR."—*Charles F. Kittredge*, Rockland, Me. Application filed April 14, 1888.

5,613.—Title: "ART FLOWERS." (FOR ARTIFICIAL FLOWERS.)—*Abraham W. Maas*, New York, N. Y. Application filed May 2, 1888.

5,614.—Title: "ATCHISON CORNICE WORKS." (FOR METAL CORNICES, &c.)—*James W. McKelvey*, Atchison, Kans. Application filed April 24, 1888.

5,615.—Title: "TRIMBLE'S OZARK MOUNTAIN HERB SALVE."—*R. F. P. Trimble*, Seymour, Mo. Application filed April 12, 1888.

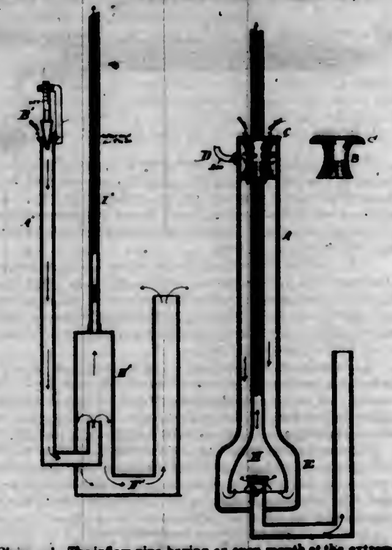
5,616.—Title: "KAISAROO." (FOR PAPER BAGS.)—*Union Bag and Paper Company*, Chicago, Ill. Application filed April 19, 1888. (Trade-Mark Registered.)

5,617.—Title: "LION." (FOR PAPER BAGS.)—*Union Bag and Paper Company*, Chicago, Ill. Application filed April 23, 1888. (Trade-Mark Registered.)

PATENTS

GRANTED MAY 29, 1888.

383,429. HYDROPNEUMATIC-PRESSURE APPARATUS. THOS. ARTHUR, Bangor, Pa., assignor of one-half to Robert J. Hagin, same place. Filed Mar. 26, 1887. Serial No. 232,593. (No model.)



Claim.—1. The inflow-pipe having an open mouth at the extreme upper end to permit a direct downflow of water, combined with an inspirator or air-injector near the open end of said pipe, an expansion-chamber connected with the lower end of said inflow-pipe, an escape-pipe leading from the expansion-chamber and having its outflow end above said expansion-chamber, and a delivery-pipe leading from the upper portion of said expansion-chamber.

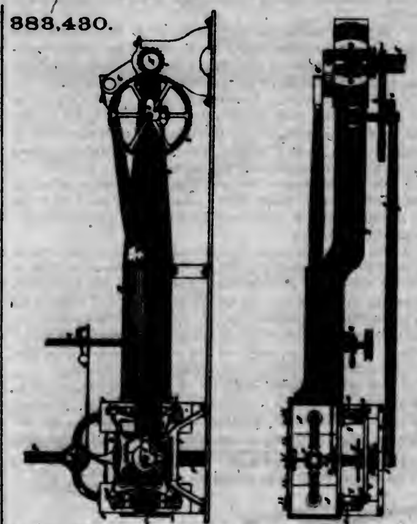
2. The open-ended inflow-pipe having a double conical inspirator removably attached to its upper end, as described, in combination with the expansion-chamber, escape-pipe, and delivery-pipe, all constructed and relatively arranged substantially as shown and described.

3. The inflow-pipe having an open mouth at the extreme upper end, said pipe having an expanded lower portion, in combination with an expansion-chamber inclosed therein and having a delivery-pipe connected therewith, and an escape-pipe having its lower end above the bottom of the expansion-chamber and its outer end above the upper portion of said expansion-chamber.

4. The combination, with an inflow-pipe having an air-injector near its mouth, of an expansion-chamber connected with the lower end of said inflow-pipe, an escape-pipe, and a delivery-pipe extending upward from the upper portion of the expansion-chamber, substantially as described.

383,430. STEAM-ENGINE. WILLIAM K. ASHER, Brooklyn, N. Y. Filed Dec. 29, 1886. Serial No. 223,267. (No model.)

383,430.



Claim.—1. In steam-engines, the combination of a steam-chest, a valve-casing placed in said chest and inclosing a steam-chamber that forms a prolongation of the port leading into the cylinder, a hollow cylindrical valve-seat provided with lateral openings for the passage of the steam to the ports, a hollow cylindrical rotary valve having open ends for the admission of steam from the steam-chest, and lateral openings for the exit of the steam from the valve, and through which the steam passes into the steam-ports, substantially as specified.

2. The combination of a steam-chest, a valve-casing placed inside said chest and inclosing a steam-chamber that connects with the steam-port of the cylinder, a hollow cylindrical steam-valve seat provided with lateral openings, a hollow cylindrical rotary valve having open ends for the admission of steam to the interior of the valve, and lateral openings for the exit thereof, and a hollow cylindrical cut-off valve placed inside the steam-valve and having open ends and lateral openings, said cut-off valve being moved independently of the steam-valve, substantially as specified.

3. The combination, with the cylinder of a steam engine, of the rotary cylindrical induction-valve and cylindrical cut-off valve inclosed therein, the said valves being provided with open ends that communicate with the steam-chest, and a rotary cylindrical exhaust-valve having open ends and lateral openings for the passage of the exhaust-steam into the interior of the valve, and suitable mechanism for moving the said valves in harmony with each other, substantially as specified.

4. The combination of the rotary cylindrical induction-valves, the stems 11, collared sleeve fixed to said stems and carrying the crank 13, the quadrilateral frame Q, shaft 15, carrying a crank which connects with frame Q, and suitable mechanism to connect shaft 15 with the main shaft of the engine, substantially as specified.

5. The combination of the rotary cylindrical induction and exhaust valves, having stems which connect with collared sleeve-bearings carrying cranks 13, the frame Q, shaft 15, carrying a crank which connects with the frame Q, and suitable mechanism to connect shaft 15 with the main shaft of the engine, substantially as specified.

6. The combination of the rotary cylindrical induction and exhaust valves having stems which connect with the collared sleeves carrying cranks 13, the frame Q, shaft 15, and crank 16, suitable connections between shaft 15 and duplex crank 5, the connecting-rods 4 4, spur-wheel 2, and pinion 1, fixed to the main shaft S, substantially as specified.

7. The combination of the rotary cylindrical valves connected with the crank 16 by suitable mechanism, the crank-shaft 15, journaled in sleeve *i*, and shaft 6, a suitable clutch to connect shaft 15 with shaft 6, and suitable mechanism for connecting shaft 6 with the main shaft of the engine, substantially as specified.

8. The combination of the valves having stems provided with cranks which are connected together by a frame, Q, placed on crank 16, the crank-shaft 15, the shaft 6, connected with the main shaft of the engine, and a reversing-clutch interposed between crank-shafts 16 and 6, substantially as specified.

9. The combination, with the valves of a steam-engine and the valve-gear connecting the same with the main shaft S', of the reversing-clutch R, composed of the member 18 on shaft 6, provided with suitable clutch-pins, and the member 18* on shaft 16, having slots *k* for the clutch-pins, and movable chucks 20, for filling the space between the clutch-pins and the opposite ends of the slots, substantially as specified.

10. The combination, with the member 18*, of the clutch R, having slots *k* and the movable chucks 20, the flanged face-plate 19, provided with slots *j*, connected with the member 18* by bolts for adjusting the chucks to change the valves, substantially as specified.

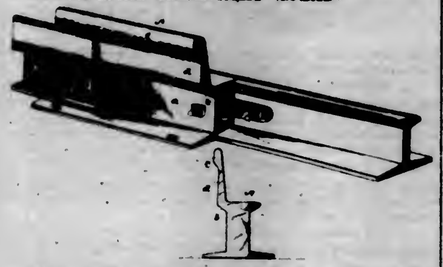
11. The combination of the induction and exhaust valves having stems which connect with sleeves carrying cranks 13, the quadrilateral frame Q, the shaft 15 and crank 16, the reversing-clutch R, the shaft 6, duplex crank 5, rods 4 4, spur-wheel 2, and pinion 1, fixed to the main shaft S', substantially as specified.

12. The combination of the induction-valves, the cut-off valves provided with suitable stems, slotted arms 22, connected with the stems, adjustable rods 23, rock-levers 25 and 26, and governor-rod 28, substantially as specified.

13. The combination, with the rotary cylindrical induction-valves, of cylindrical cut-off valves placed inside the induction-valves at each end of the cylinder, a governor and governor-rod, and connections between the cut-off valves and the governor-rod, said connections being susceptible of adjustment for the purpose of changing the positions of the cut-off valves independently of each other and setting said valves so that the cut-off at one end of the cylinder will be later than the cut-off at the opposite end, substantially as specified.

14. The method herein described of equalizing the cut-off in steam-engines, consisting in changing the position of the governor-connections with the cut-off valves for the purpose of causing one cut-off valve to move in advance of the other, substantially as specified.

383,431. RAILWAY-RAIL. DAVID T. BURNETT, Trenton, N. J. Filed Feb. 16, 1888. Serial No. 264,294. (No model.)



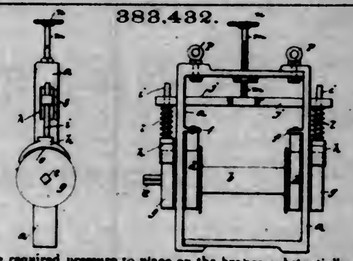
Claim.—1. The railway-rail having its web of an increased thickness, and having the base-attaching flanges and the guard formed on one side of the web and extending vertically and laterally from the outer side of the head, and the fish-plate adapted to snugly engage the outer side of the said rail and guard and serve as a bearing for its top lateral projection, substantially as specified.

2. The combination, with a combined rail and guard constructed as described, of the fish-plate adapted to conform to the side of the said rail and guard, and the angular bracket for connecting the end of the guard-rail with an ordinary rail, substantially as specified.

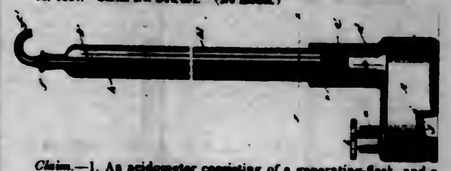
383,432. FIRE-ESCAPE. ADOLPH BERNSTEIN and ABRAHAM GOLDSTEIN, Pittsburg, Pa., assignors of one-half to Josiah Cohen, same place. Filed Sept. 27, 1887. Serial No. 250,972. (No model.)

Claim.—In a fire-escape such as described, the combination consisting of the frame *a*, the drum *b*, mounted thereon, the brake-wheels *g*, secured to the same shaft, *c*, as the drum *b*, the horizontal bar *j*, operating the brake-shoes *h*, the spiral springs *l*, and vertical guides *i*, the screw *m*, for operating the brakes, the wire cord *c*, one end of which is attached to the drum *b* and the other provided with suitable stirrups, *q r*, the eyebolts *p*, for securing the device in position, the springs *d*, for rewinding the cord *c*, and an indicator or scale, *s*, for ascertaining the required pressure to place on the brakes, substantially as and for the purpose set forth.

383,432.



383,433. ACIDOMETER. PHILIPP BAUER, Chicago, Ill. Filed July 16, 1887. Serial No. 244,451. (No model.)



Claim.—1. An acidometer consisting of a generating-flask, and a graduated glass tube detachably secured thereto, and provided with two small glass tubes projected into the graduated tube from opposite ends to extend nearly the entire length thereof in a manner that water filled in said tube will be displaced by the carbonic-acid gases generated, substantially as set forth.

2. An acidometer consisting of a generating-flask arranged to hold a carbonate and liquid separated, and adapted to be mixed by shaking, and of a graduated tube detachably connected with each flask and provided with two small tubes projected into the graduated tube from opposite ends to extend nearly the entire length thereof, substantially as and for the purpose set forth.

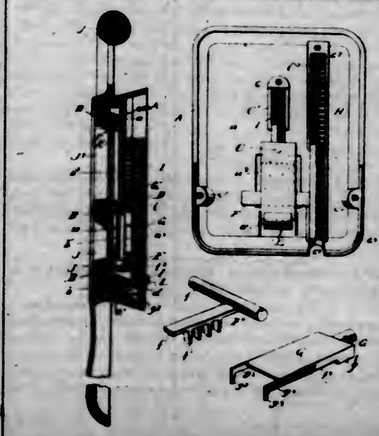
3. An acidometer consisting of a generating-flask, A, and of a graduated glass tube, E, removably secured to flask A by a screw-coupling, and having small-sized tubes F and *h* projected into the tube E from opposite ends to pass each other, the whole being constructed and arranged substantially as set forth, to operate as specified.

4. An acidometer consisting of generating-flask A, provided with shelf *j*, mouth *a*, with stopper *b*, and with neck *c* and screw-sleeve *d*, in combination with graduated glass tube E, having screw-plug *e*, tube A, and detachable tube F, forming the stopper *f*, the whole being constructed and arranged substantially as set forth, to operate as specified.

383,434. SEAL-LOCK. FIRST BROWN, Louisville, Ky. Filed Aug. 24, 1887. Serial No. 247,716. (Model.)

Claim.—1. A seal-lock provided with a defacer moving in line with the bolt, and means for moving said defacer to destroy the seal before the bolt is moved, as set forth.

2. The combination, with the bolt and the hasp engaging the same, of a defacer moving in line with the bolt, and means for operating said defacer to cause it to engage and operate the bolt, as set forth.



383,434.



3. The combination, with the bolt and the defacer moving in line therewith but in bearings independent of the bolt, of means for engaging said defacer to move the same to cause it to destroy a seal before engaging the bolt, substantially as described.

4. The combination, with the bolt and the defacer having a limited loose connection therewith, of a hinged cover and a hasp carried thereby to engage said bolt, substantially as described.

5. In a seal-lock, the combination, with the spring-actuated bolt and the spring-actuated defacer having a limited loose connection therewith, of a hinged cover and a hasp carried thereby and formed with a transverse groove, substantially as and for the purpose specified.

6. The combination, with the slotted case, and the defacer provided with tooth working through the slots in said case and having a stem working in guides in said case, of a bolt moving in guides in said case and having a limited loose connection with said defacer, a hasp engaging said bolt independent of the defacer, and means for moving said defacer to destroy a seal before moving the bolt, substantially as described.

7. In a seal-lock, the combination, with the case having a slotted diaphragm, as described, of a defacer having a stem working in a guide on one side of said diaphragm, and an arm at right angles to said stem carrying teeth working in the slots of the diaphragm, substantially as and for the purpose specified.

8. In a seal-lock, the combination, with the case, the seal, and the plate B, of elastic blocks secured to said plate to press upon said seal, substantially as and for the purpose specified.

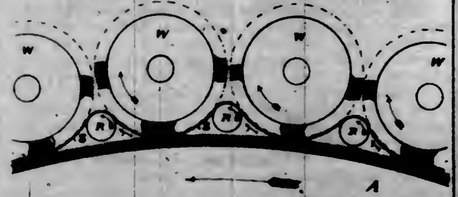
9. The combination, with the case having slotted diaphragm and half-barrel open at one side, as shown, of the defacer having a stem working in said half-barrel, and a right-angled extension working in the cut-away portion of said half-barrel and carrying teeth working in the slots of the diaphragm, substantially as described.

10. The combination, with the case having a diaphragm, *a*, and half-barrel C, open at one end and formed with ledge *c'* and tapering seat, of the back plate formed with half-barrel D and wedge-shaped lug *d'*, engaging said seat, substantially as shown and described.

11. The combination, with the case having diaphragm *a*, stud C, and half-barrel C, of the bolt having a stem working in said half-barrel, a slot engaging said stud and provided at its opposite end with extensions *g'*, formed with downwardly-extending lugs *g''*, substantially as and for the purpose specified.

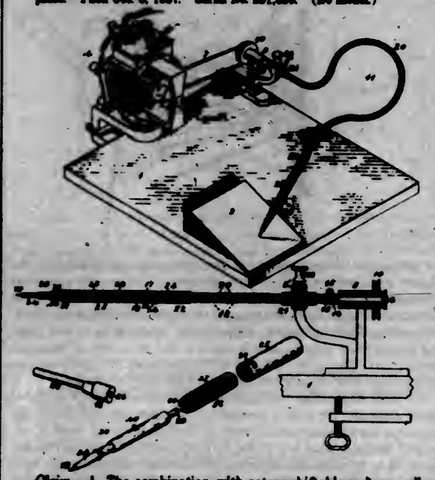
383,435. CARDING-ENGINE. WILLIAM BROWN, Galbert, Scotland. Filed Aug. 10, 1887. Serial No. 246,578. (No model.) Patented in England Feb. 17, 1887, No. 2,496.

Brief.—Strippers are dispensed with, and the fiber is always carded in the same direction. Between each two workers is a supporting-roller geared to the following worker, whereby the sliver is kept from touching the main cylinder till the point of contact of the following worker and cylinder. The workers rotate with successively-increasing speeds.



Claim.—The combination of the main cylinder of a carding-engine, and workers thereafter, with rotary rollers between the workers to carry and feed the lap from one worker to the next, all substantially as described.

383,436. REMOOKING DEVICE. GEORGE F. GAIN, Covington, Ky., assignor to the George F. Gain Manufacturing Company, same place. Filed Oct. 6, 1887. Serial No. 251,689. (No model.)

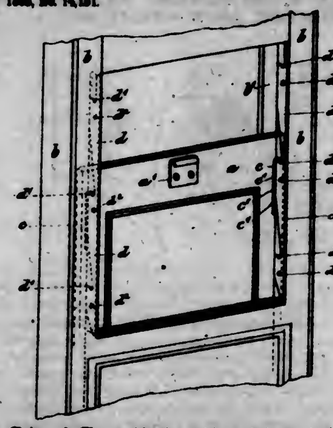


Claim.—1. The combination, with rotary shiftable and normally-retracted crayon-holder 30, having the pin 40, of the diversely-notched tube 36, attached to the handle 25.

2. The combination, with the longitudinally-adjustable sleeve 21 of the ballast shaft 12, of the socket 5' and set-screw 28, as and for the purpose set forth.

3. In the described combination with an electric motor, the combination of the rotary flexible transmitter 11, the tappet 17, the circumferentially-adjustable crayon-holder 30, having the pin 40, and the diversely-notched tube 36 upon the handle 25, for the purposes set forth.

383,437. CARRIAGE-WINDOW. ARTHUR W. GOLD and GEORGE B. GOLD, Clerkenwell, County of Middlesex, England. Filed Nov. 5, 1887. Serial No. 254,642. (No model.) Patented in England Nov. 18, 1886, No. 14,151.

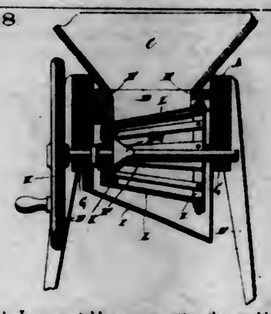


Claim.—1. The combination, with a window-sash and its framing, of a hook-shaped catch, as *c*, and a rack, as *d*, having sunken notches, and recesses, as *d'*, to receive and hold the catch *c*, substantially as and for the purpose set forth.

2. The combination, with a window-sash and its framing, of a hook-shaped catch, as *c*, and a rack, as *d*, having sunken notches, and recesses, as *d'*, to receive, hold, and hook the catch, aided by a spring applied to the sash, so as to press the catch and rack toward each other, as set forth.

383,438. VEGETABLE OR ROOT CUTTER. EDWIN H. CLARK, L'Original, Ontario, Canada. Filed Feb. 11, 1888. Serial No. 263,693. (No model.) Patented in Canada Feb. 2, 1887, No. 28,802.

383,438

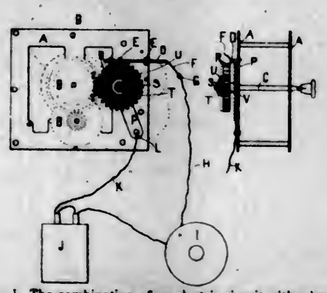


Claim.—1. In a vegetable or root cutter, the combination of the hopper, the cutting-cylinder arranged under the same, and composed of the shaft F, the solid disk K, secured on the shaft near one end of the same, the open band N, arranged near the other end of the shaft, the cutting-blades arranged obliquely and tangentially to the shaft and having their opposite ends secured to the inner side of the band and the outer side of the disk, and the conical block F^3, rigidly secured on the shaft with its base resting against the disk, as set forth.

2. The combination of the hopper, the transverse shaft arranged under the same, the disk K, secured on the shaft near one end of the same and having tangential recesses in its periphery, the band N, arranged near the other end of the shaft and having tangential enlargements M on its inner side, and the knives having their opposite ends secured, respectively, in the tangential recesses of the disks and to the tangential enlargements of the band, as set forth.

3. In a root-cutter, the combination of the supporting-frame, the hopper thereon, the bearings G, secured to the under side of the frame, the transverse shaft journaled in said bearings, the disk secured on said shaft near one end thereof, the band N, arranged near the other end of the shaft and of a larger diameter than the disk, the knives arranged obliquely and tangentially to the shaft, and having their opposite ends secured, respectively, to the inner side of the band and the periphery of the disk, and the inclined discharge-trough arranged below the cutting-cylinder and concentric therewith, and having its sides secured to the under side of the hopper and its end secured to one of the bearings G, as set forth.

383,439. ELECTRIC ALARM-CLOCK. EDWARD J. COLBY, Chicago, Ill. Filed Feb. 1, 1888. Serial No. 262,690. (No model.)



Claim.—1. The combination of an electric circuit with a battery, a bell, a clock, a shaft, a sliding pinion thereon intermeshing with a clock-gear, a spring which tends to force such pinion outwardly and which forms one terminal of the circuit, an insulated contact-piece which forms the other terminal located in the path of the spring, a pin on the shaft, and a recess on the pinion, so that at stated intervals the pinion is released and the spring permitted to move and engage the contact-piece and close the circuit.

2. In an alarm-clock, the combination of a clock mechanism, a gear meshing with such mechanism, a spring flexed by said pinion, a contact in the path of such spring, said spring and contact forming terminals of an electric circuit, and a pin on the pinion-shaft, and a recess on the pinion, so that at stated intervals the pinion can move on its shaft.

383,440. APPARATUS FOR ADMINISTERING MEDICINE TO ANIMALS. CHARLES W. COLLYER, Harrisburg, Pa. Filed Oct. 11, 1887. Serial No. 251,881. (No model.)

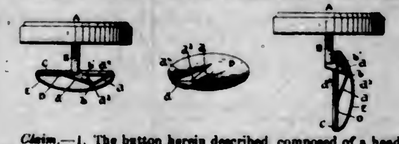
Claim.—1. In an apparatus for administering medicine to horses and other animals, a bit provided at its center with a transverse liquid-passage, combined with a closed reservoir containing the liquid material, and a conducting-pipe communicating directly with the said transverse liquid-passage and fitting into the outer end of the same, substantially as described.

2. In an apparatus for administering medicine to horses and other animals, the bit having a liquid-passage and a hollow flat projection communicating therewith, combined with flanges at each end of the bit, substantially as described.

3. In an apparatus for administering medicine to horses and other animals, the bit having a liquid-passage and a hollow flat projection communicating therewith, combined with the flanges at each end of the bit, and the flange projecting from the lower side of the bit for substantially its entire length, as and for the purposes set forth.

4. In an apparatus for administering medicine to horses and other animals, the bit having the liquid-passage integral therewith, combined with a spring-controlled valve for opening and closing said passage, substantially as described.

383,441. DETACHABLE BUTTON. WILLIAM W. COVELL, Providence, R. I. Filed Nov. 11, 1887. Serial No. 254,903. (No model.)



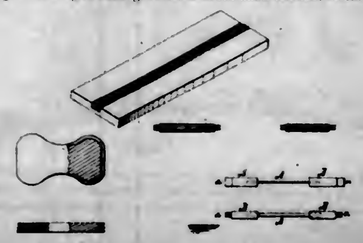
Claim.—1. The button herein described, composed of a head, an attached post having its free end bent to one side and furnished with shoulders or ears b', and a shoe consisting of a plate, D, having a spring-tongue, d, integral therewith, depressed below the plate-body, thereby allowing the said ears to pass between the tongue and plate-body, and having a bend, d^2, which forms a fulcrum in which the end of the post rests, and a covering shell or front attached to the plate, substantially as set forth.

2. The combination, with the post having its free end bent to one side and furnished with shoulders or ears b', of a shoe composed of a plate, D, having a spring-tongue, d, integral therewith and bent at d^2, and having a slot, d^3, which is produced by depressing the tongue below the plate-body, in which slot the post plays or swings, and a covering shell or front secured to said plate, the free end of the post resting in the bend d^2 as a fulcrum, and the shoulders or ears b', engaging the under side of the plate D, substantially as set forth.

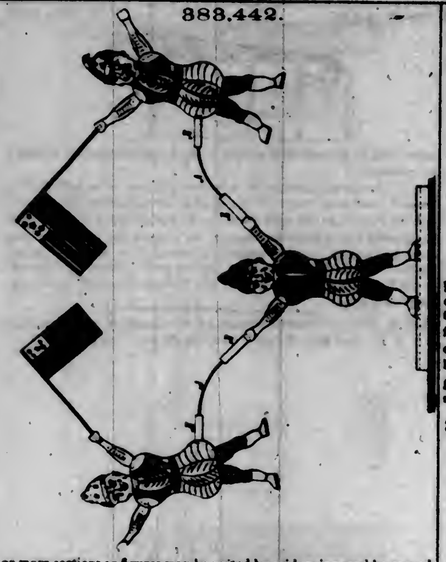
3. The plate D, having a portion, d, cut or slit therefrom, forming an integral spring-tongue, which is depressed below the plate-body, is bent at d^2, and extends beyond the perimeter of the plate, said plate being adapted to combine with a post such as described, substantially as set forth, and for the purposes specified.

383,442. TOY. CHARLES M. CRANDALL, Waverly, N. Y., assignor to Moses Lyman, same place. Filed Feb. 6, 1888. Serial No. 263,090. (No model.)

Claim.—In combination, tongued and grooved sectional toys, and springs with tongued and grooved sections fixed thereto, whereby two



383,442.



or more sections or figures may be united by said springs and be caused to vibrate, as and for the purpose shown and described.

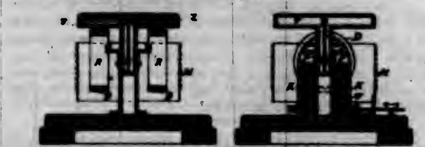
383,443. SWEEP FOR HORSE-POWERS. GEORGE W. CRANE, Minneapolis, Minn. Filed Jan. 30, 1888. Serial No. 262,926. (No model.)



Claim.—1. The combination, with a sweep and the draft chains or cables movably attached to the opposite ends of said sweep, of the equalizing-lever pivoted to the sweep and arranged to receive the ends of said draft-cable at relatively-varying points upon its length, in the manner and for the purpose substantially as described.

2. The combination, with the sweep, of the equalizing-lever 8, pivoted upon said sweep and provided with means for attaching draft chains or cables thereto, and the cables or chains 16, attached to said equalizing-lever and extending in opposite directions to the ends of said sweep, substantially as described.

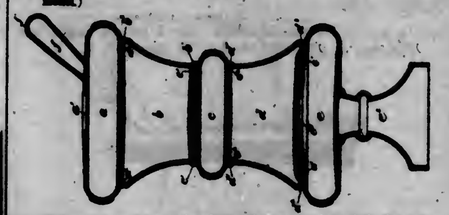
383,444. GALVANOMETER. ROBERT E. B. CROMPTON and GUSTAV KAPP, Chelmsford, County of Essex, England. Filed Sept. 27, 1884. Serial No. 144,126. (No model.) Patented in England Apr. 13, 1883, No. 1,977, and Sept. 16, 1883, No. 4,495; in France Sept. 26, 1883, No. 157,743; in Belgium Sept. 26, 1883, No. 63,717, and in Austria-Hungary Dec. 24, 1883, No. 26,800 and No. 26,900.



Claim.—1. In an instrument for measuring electro-motive force or current, an electro-magnet or electro-magnets having the core or cores small enough to be easily saturated, excited by all or part of the current to be measured, supplying the controlling-field instead of the permanent magnet hitherto employed, in combination with a deflecting-coil or its equivalent, and a steel or soft-iron needle free to take up a portion depending on the relative strengths of the controlling and deflecting fields, substantially as described.

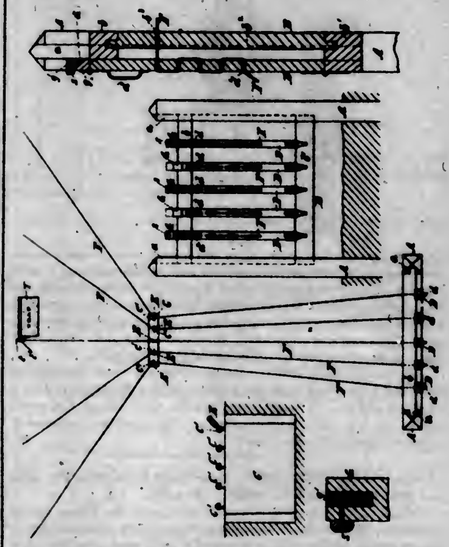
2. In an instrument for measuring electro-motive force or current, the combination of the controlling electro-magnet or electro-magnets having a core or cores small enough to be easily saturated, with poles extended beyond the exciting coil or coils toward the needle, so as to minimize the direct action of the magnetizing coil or coils upon the needle, substantially as set forth.

383,445. DRUGGIST'S SIGN. JOHN I. DAVIS and WILLIAM G. WALKER, Pittsburg, Pa. Filed Oct. 3, 1887. Serial No. 251,267. (No model.)



Claim.—As a new article of manufacture, a druggist's sign composed of several glass vessels whose forms are those of horizontally-divided sections of the sign—namely, one or more vessels, b d, forming the body of the sign, and one or more shallower and wider vessels forming ornamental bands or zones of the sign—said vessels being open at the top to permit of the introduction of colored liquids and being provided with interlocking flanges, whereby they are united together one upon the other, substantially as and for the purposes described.

383,446. APPARATUS FOR SPRINGING TARGET-TRAPS. ASHBURN C. DOTY, Cincinnati, Ohio. Filed Jan. 18, 1888. Serial No. 261,101. (No model.)



Claim.—1. The combination of posts A, detachable frame B, provided with levers D, hinged to the frame B, block C, provided with hooks C' and pulleys E, traps, and lines F, passing from the pickets to the traps through the pulleys E, substantially as and for the purposes specified.

2. The combination of posts A, provided with grooves a, frame B, sliding in grooves a, and provided with strips b^2 and pulls D, block C, located between the lever and the trap and provided with hooks C' and pulleys E, traps, and lines F, passing from the levers to the traps through the pulleys, substantially as and for the purposes specified.

3. The combination of lever D, drop-indicator G, hinged to the top of the lever, a trap, line F, connecting the trap and the lever, and fulcrum-pulley E, located between the trap and the lever, substantially as and for the purposes specified.

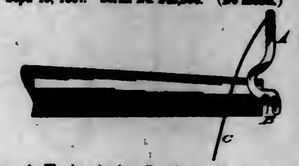
4. The combination of lever D, drop-indicator G, provided with weight f and hinged to the top of the lever, a trap, line F, connecting the trap and the lever, and fulcrum-pulley E, located between the trap and the lever, substantially as and for the purposes specified.

5. The combination of hinged lever D, provided with openings d', a trap, line F, laced through openings d' and connecting the lever and the trap, and intermediate fulcrum-pulley, E, substantially as and for the purposes specified.

6. The combination of a trap, a pull independent of and separate

from said trap, drop-indicator attached to the pull, and the line connecting the pull and the trap, substantially as and for the purposes specified.

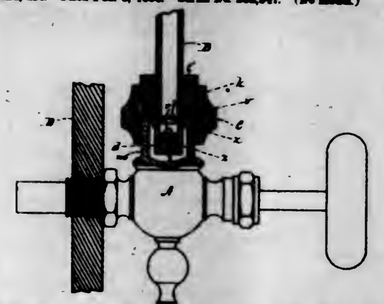
383,447. HORSE-DETACHER. JOHN A. DENTON, Pulaski, Tenn. Filed Sept. 13, 1887. Serial No. 249,598. (No model.)



Claim.—1. The herein-described horse-detacher, consisting of the whiffletree provided at its ends with the holding-pin, the curved lever pivoted to the end of said pin in the plane of the upper horizontal surface of the whiffletree, and the cord for operating the lever, as set forth.

2. The combination, in a horse-detacher, of the whiffletree, the bent pin B, lever A, and cord C, as set forth.

383,448. VALVE FOR WATER-GAGES. CLARK B. DENTON, Portland, Me. Filed Feb. 3, 1888. Serial No. 262,847. (No model.)



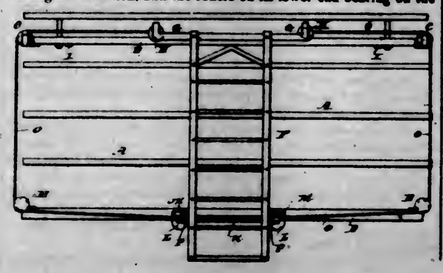
Claim.—1. The combination of a valve provided with a screw-threaded nipple, a nut thereon provided with a perforated cap, a packing-ring between said nut and nipple, a gage-tube passing through said cap, and an auxiliary dependent valve within said nipple, comprising a perforated tube having a flanged socket-head, a duct and valve-seat at its upper end, and a valve-stop at its lower end, and a cylindrical block-valve within said tube, substantially as described.

2. The auxiliary valve herein described, the same consisting of the tube *x*, provided with the holes *r*, head *z*, flanges *v y*, duct *t*, socket *f*, and pin *i*, in combination with the valve proper, *d*, disposed within said tube, all of said parts being constructed and arranged to operate substantially as set forth.

383,449. STEP-LADDER. JAMES RIBEN, Oconomowoc, Wis. Filed Mar. 8, 1888. Serial No. 266,868. (No model.)

Claim.—1. The combination of the track, the ladder having sheaves mounted on the track and provided with the guide-loops P P, the stationary pulleys C C E E, and the guide-rope attached at its ends to the upper end of the ladder, passing around the pulleys C C E E and running through the loops P P, whereby the occupant of the ladder may, by pulling the running portion of the rope, move the ladder in either direction, substantially as specified.

2. The combination, with a shelf having a depending flange on its edge and the track B, of the ladder having sheaves at its upper end running on the track, and the rollers on its lower end bearing on the



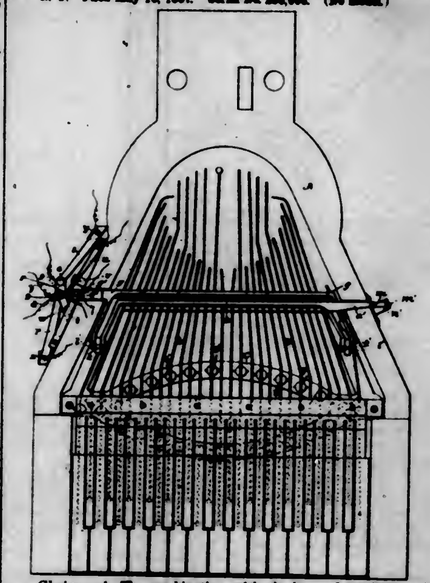
383,449.



under side of the said shelf in rear of the flange thereon, substantially as specified.

3. The combination, with a ladder adapted to be arranged in front of a series of shelves, of the track B, having pulleys C C thereon, and the stops near the ends of the track, the pulleys E E, mounted at the ends of one of the lower shelves, the sheaves on the ladder running on the track, and the rollers L L and M M on the same bearing against the shelves, and the guide rope or cord O, attached at its ends to the ladder and passing around the pulleys C C and E E, substantially as specified.

383,450. PRINTING-TELEGRAPH. SAMUEL V. BIRDS, Brooklyn, N. Y. Filed May 18, 1887. Serial No. 238,092. (No model.)



Claim.—1. The combination, with the keys of a printing-telegraph, the levers thereof, the contacts *n' n'*, located within the line-circuit, and the angular lever *a*, lying across the keys or their levers, whereby contact is broken at the contact-points of said levers and remains broken until the release of the key, substantially as described.

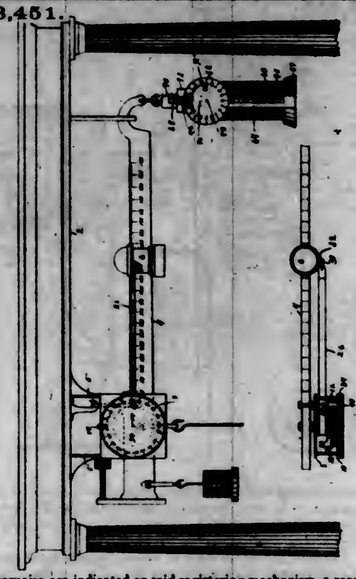
2. In a printing-telegraph, the longitudinally-movable rotating shaft, and means, substantially as described, for revolving and shifting the same, and the latch for holding said shaft in position when shifted, the lever for striking said latch and releasing said shaft, and the printing device, in combination with types and printing-characters disposed in parallel circular series around said shaft and rigidly connected thereto, so as to be shifted therewith.

383,451. REGISTERING AND RECORDING WEIGHING-SCALE. EDWARD G. PRIEST, Minneapolis, Minn. Filed Apr. 23, 1887. Serial No. 236,302. (No model.)

Claim.—1. The combination, with a scale-beam having a sliding poise and a suspended counterpoise, of a registering mechanism connected with said sliding poise, whereby the weight indicated by said poise is also indicated on said registering mechanism, a sliding follower on said counterpoise, and a registering mechanism connected with said follower, whereby the weights on said counterpoise are indicated upon said registering mechanism, substantially as described.

2. The combination, with a scale-beam having a sliding poise and a suspended counterpoise, of a registering mechanism connected with said sliding poise, whereby the weight is indicated on said registering mechanism, a sliding follower on said counterpoise, a registering mechanism connected with said follower, whereby the weights on said

383,451.



counterpoise are indicated on said registering mechanism, a recording-ticket, and means for forming on said ticket a record of the readings of said registering mechanism, substantially as described.

3. The combination, with the scale-beam and the suspended counterpoise having the removable weights 60, of the follower 72, arranged to rest on the upper weight, and a registering mechanism connected with and operated by the movement of said follower, substantially as described.

4. The combination, with the scale-beam and the suspended counterpoise having the removable weights 60, of the follower resting on the upper of said weights 60, a registering mechanism connected with said follower, a recording-ticket, and means for forming on said ticket a record of the reading of said registering mechanism, substantially as described.

5. The combination, with the scale-beam, of the suspended counterpoise having the removable weights 60, the standard 64, having the rack 70, the follower 72, adapted to rest on said weights, and the registering mechanism carried by said follower and provided with a gear-wheel engaging said rack 70, substantially as described.

383,452. SPEED-REGULATOR. THEODORE M. FOOTE, Boston, Mass., assignor to William Lamb, trustee, same place. Filed Apr. 25, 1887. Serial No. 236,111. (No model.)

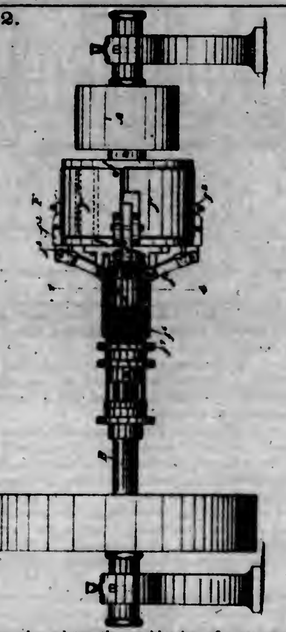
Claim.—1. Driver A and friction-wheel *f*, in combination with carrier f^2, mounted on shaft B, and one or more brake-shoes, *f'*, secured in contact with friction-wheel *f*, to the carrier f^2, substantially as and for the purpose set forth.

2. Driver A and friction-wheel *f*, in combination with carrier f^2, mounted on shaft B, one or more brake-shoes, *f'*, secured in contact with friction-wheel *f*, to the carrier f^2, and means, substantially such as described—viz., one or more levers, f^3, and links f^4, and sliding sleeve f^5—for increasing the frictional contact between brake-shoes *f'* and friction-wheel *f*, substantially as and for the purpose set forth.

3. In a friction-coupling, the combination of friction-wheel *f* and one or more brake-shoes, *f'*, in contact with friction-wheel *f*, with one or more levers, f^3, and links f^4, slide f^5, and spring f^6, substantially as and for the purpose set forth.



383,452.



4. In a speed-regulator, the combination of a governor, G, with slide H, and springs h^4, connecting the governor and slide, substantially as and for the purpose set forth.

383,453. AUTOMATIC CAR-LINK. FARAH S. PERSHING, Lititz, Pa. Filed Sept. 26, 1887. Serial No. 250,012. (No model.)



Claim.—1. A car-link consisting of a body, A, formed with a hole, A', guide-arm A^2, hook A^4, and snout A^5, in combination with a pivoted arm, B, adapted to be guided by said arm A^2, and having a projecting end, B', and with a spring, D, substantially as set forth.

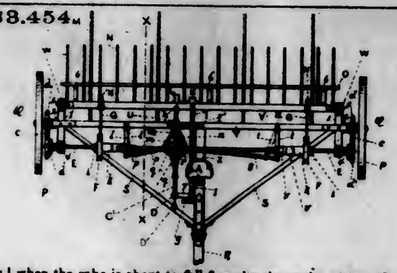
2. A car-link consisting of a body, A, formed with a hole, A', snout A^5, and hook A^4, said hook formed with a shoulder, A^6, in combination with a pivoted arm, B, having a projecting end, B', and an offset, B^2, adapted to engage with said shoulder and with a spring, D, substantially as set forth.

3. A car-link consisting of a body, A, formed with a hole, A', guide-arm A^2 A^3, hook A^4, with shoulder A^6, and snout A^5, in combination with an arm, B, pivoted at C to said body and formed with a projecting end, B', and offset B^2, and with a coiled spring, D, connecting said body and pivoted arm, all arranged and operated substantially as set forth.

383,454. HAY-RAKE. TALBAI F. GOODELL, Longmont, Colo., and MILAN G. GOODELL, Santa Anita, Cal. Filed Sept. 7, 1887. Serial No. 248,926. (No model.)

Claim.—In a horse-rake, the combination of the following parts: the shaft E, journaled in the frame and operated from the carrying-wheels, the loose pulleys F on said shaft, chains G, connecting said loose pulleys and the rake-head, sliding clutches *v*, adapted to engage the loose pulleys, the bar Y, the toggle-frame *r*, pivoted on said bar Y, bars *p* and *s*, connecting the toggle-frame and the clutches *v*, the sliding bar *h*, connected with the toggle-frame and projecting rearwardly, a lug, L, on the rake-head, arranged to operate the bar *h* when the rake is elevated to release the clutches, the lever I, pivoted in the frame and having a rearwardly-extending hooked end, *a*, and a lug, K, on the rake-head, arranged to engage the hooked end of the

383,454.



lever l when the rake is about to fall from its elevated position, all as set forth

383,455. NAILING-MACHINE. LOUIS GROSS, Winchester, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed June 13, 1887. Serial No. 241,116. (No model.)

Claim.—1. In a nailing-machine, a vibrating head, a driver-bar, and awl-carrier therein, the latter provided at one side with teeth, and a toothed sector to move it, combined with a horn to support the work, substantially as described.

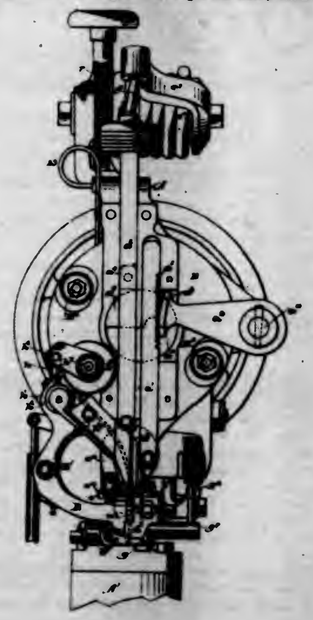
2. In a nailing-machine, a vibrating head, a driver-bar, and awl-carrier therein, the latter provided at one side with teeth, and a toothed sector to move it, combined with a horn to support the work, and with wire feeding and cutting mechanism to sever the wire into fasteners, substantially as described.

3. In a nailing-machine, wire-feeding mechanism, combined with wire-cutting mechanism containing a cutting-disk having a beveled edge, any portion of which may be brought into operative position in case any other portion of the edge becomes dulled, substantially as described.

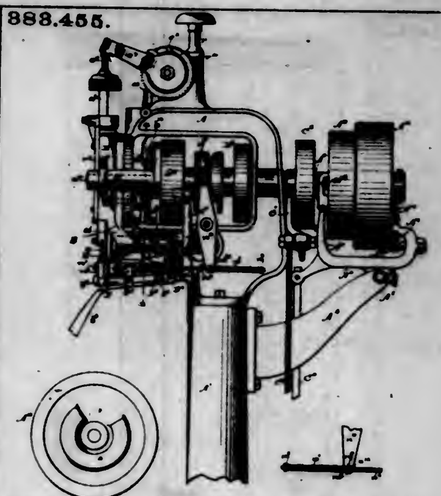
4. The nose attached to the lower end of the head in which the driver reciprocates, and an attached disk cutter, combined with a lever, d^{10}, and with a disk-shaped cutter fastened to it, to operate substantially as described.

5. The nose attached to the lower end of the head in which the driver reciprocates, wire-feeding mechanism, cutting mechanism having disk-like cutters, and a carrier to receive a fastener cut from the wire, combined with means to reciprocate the said carrier to transfer a fastener from the cutting mechanism into position to be driven by the driver, substantially as described.

6. The nose attached to the lower end of the head in which the driver reciprocates, wire feeding and cutting mechanism, and a carrier



383,455.



to receive a fastener cut from a wire, combined with the rod or shank, spring, and lever to move the carrier, whereby in case the backward movement of the carrier is obstructed the spring may yield and avoid breaking of parts, substantially as described.

7. The loose pulley, the shaft A^9, and the balance-wheel, provided with the cam-surface 2, combined with the yoke, and the roller A^{10}, to co-operate with the said cam-surface, substantially as described.

8. The loose pulley, the shaft A^9, and the balance-wheel fast on it, combined with the pivoted yoke, and friction device carried by it to act on the balance-wheel, substantially as described.

9. The loose pulley, the shaft A^9, and the balance-wheel provided with the cam-surface 2, combined with the yoke, the roller A^{10}, to co-operate with the said cam-surface, and a friction device, substantially as described, to act on the balance-wheel, as set forth.

10. The gage g, having a dovetailed shank, and the block on which the shank of the gage is free to slide, combined with the friction-plates g^6, to retain the shank of the gage in place, substantially as described.

11. In a nailing-machine, a vibrating head to carry the awl, and wire-feeding mechanism made movable with the said head, combined with a measuring mechanism, substantially as described, connected to the frame-work or detached from the vibrating head, and controlled by the height of the horn to determine the extent of movement of the wire-feeding mechanism and the length of the fastener to correspond with the requirements of the stock on the horn, substantially as described.

12. The feeding-ratchet, the tappet-shaft, on which it is mounted loosely, the tappet-lever, pawl to move the said ratchet, and means to move the tappet-lever, combined with the measuring-sleeve, measuring-leg, the horn, and connections between the said horn and leg, to operate substantially as described.

13. The feeding-ratchet, a pawl to move it, the tappet-shaft, and tappet-lever, having an arm, 22, provided with a curved and inclined edge or end, combined with the rock-shaft D^2, the stud 27, and sleeve mounted thereon having arms, one of which co-operates with the curved and inclined end of the tappet-lever, while the other arm co-operates with or is moved by the horn, substantially as described.

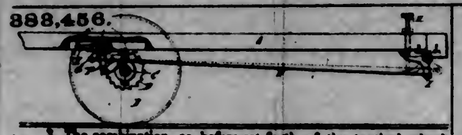
14. The rock-shaft D^2, the vibrating head, the awl-carrying bar located in the said head, connections between the said rock-shaft and head to operate the latter, and feeding-ratchet, combined with the horn, the measuring-sleeve m^2, having means to support the said sleeve and to actuate it from the said horn, and with a tappet-lever, its shaft, and means to move it a greater or less distance, and a pawl actuated by the said tappet-shaft to move the feeding-ratchet, substantially as described.

383,456. APPLIANCE FOR RAILWAY-CARS. JAMES GOODWILLOW, New York, N. Y. Filed Oct. 5, 1887. Serial No. 251,598. (No model.)

Claim.—1. In an appliance of the character herein set forth, the toothed wheel, the pawl or dog, the counter-weight, the crank, and the line, combined and arranged substantially as explained.

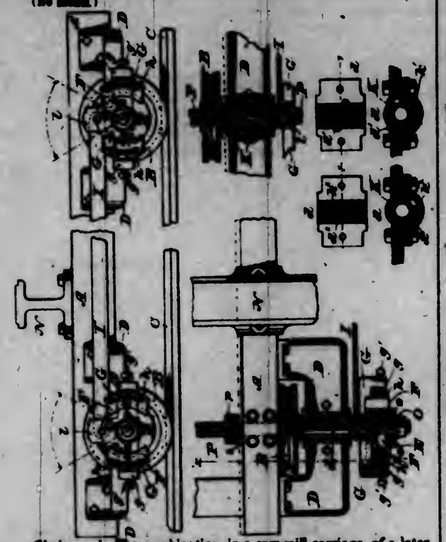
2. In an appliance of the character herein set forth, the combination, with the operating-line, of the hinged arm and the removable pin bearing thereon, substantially as explained.

383,456.



3. The combination, as before set forth, of the toothed wheel, pawl, counter-weight, crank, operating-line, hinged arm, and removable pin, for the purposes explained.

383,457. AUTOMATIC OFFSET FOR SAW-MILL CARRIAGES. WILLIAM GOWER, Wausau, Wis. Filed Oct. 6, 1886. Serial No. 215,402. (No model.)



Claim.—1. The combination, in a saw-mill carriage, of a laterally-movable carriage-frame and its supporting-wheels and axles, offsetting mechanism connecting said carriage-frame and its supporting-axles, and a friction wheel or wheels connected with said offsetting mechanism and arranged to actuate the same and to move said carriage-frame transversely to its line of travel, substantially as and for the purposes set forth.

2. The combination, in a saw-mill carriage, of the carriage-frame A, laterally movable with reference to the travel of said carriage, axle P, carriage-wheel B, friction-wheel E, applied to said axle, screw K, and shoe F, connected with said screw and bearing upon said friction-wheel, substantially as and for the purposes set forth.

3. The combination, in a saw-mill carriage, of the laterally-movable frame A, supporting-wheels B B, and axles P, screws K, mounted upon said axles and working in threaded boxes secured to the carriage-frame, cross-heads G G, formed on or attached to said screws, shoes F F, connected with said cross-heads and bearing against said friction-wheels, springs h h, interposed between said shoes, and projections $g\,g$ on said cross-heads, and set-bolts $g'\,g'$, substantially as and for the purposes set forth.

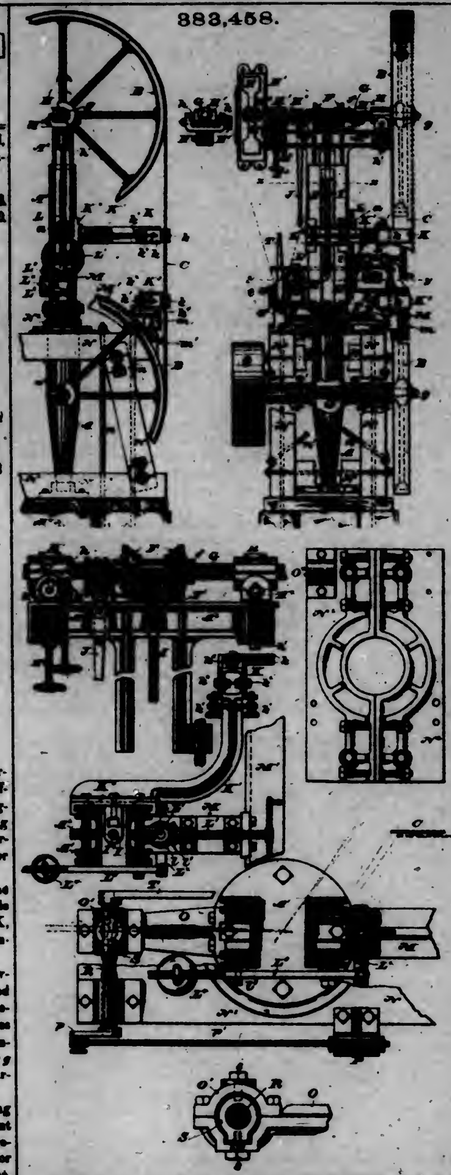
4. In a saw-mill carriage, the combination, with the supporting wheels and axles of the carriage-frame, capable of lateral movement on said axles, of a screw or screws arranged to move the carriage-frame laterally, and actuating mechanism connecting the screw or screws and one or more of the axles, substantially as and for the purposes set forth.

5. The combination, with the supporting-axles of a saw-mill carriage, of the carriage-frame arranged to move laterally thereon, a screw or screws to cause said lateral movement, a friction-wheel secured on one of the axles and provided with a friction shoe or strap to actuate said screw or screws, and mechanism connecting said shoe or strap and said screws, substantially as and for the purposes set forth.

383,458. BAND-SAW MILL. WILLIAM GOWER, Wausau, Wis. Filed Dec. 29, 1886. Serial No. 223,004. (No model.)

Claim.—1. In a band-saw mill, the combination of a supporting-column arranged to swing about a vertical axis, band-wheels carried by said column, and the band-saw mounted upon said wheels, substantially as and for the purposes set forth.

383,458.



2. In a band-saw mill, the combination of the band-wheels and their connections movable about a common upright axis and mechanism connected with and arranged to swing said band-wheels and their connections simultaneously toward and away from the log-carriage way, substantially as and for the purposes set forth.

3. In a band-saw mill, the combination of an upright column supported and arranged to swing about its axis in suitable bearings, band-wheels and their shafts supported by and movable with said column, a screw working in a nut in connection with said column and bearing or engaging with a fixed box, and means for operating said screw, substantially as and for the purposes set forth.

4. In a band-saw mill, an upright supporting-column composed of two sections, the lower section of which is furnished with bearings for the lower band-wheel shaft, in combination with a vertically-adjust-

able frame mounted upon the upper section and furnished with bearings for the upper band-wheel shaft, all arranged to be swung in suitable bearings about an upright axis, substantially as and for the purposes set forth.

5. In a band-saw mill, the combination of an upright supporting-column bearing at its lower end in a step and at an intermediate point in a box permanently secured to suitable frame-work, and the band wheels and saw carried by and movable with said column about its axis, substantially as and for the purposes set forth.

6. In a band-saw mill, the combination, with the band wheels and saw, of an upright supporting-column capable of angular movement about an upright axis, a vertically-adjustable frame movable in ways provided therefor on said column and furnished with bearings for the upper band-wheel shaft, and mechanism arranged to raise and lower said frame, substantially as and for the purposes set forth.

7. In a band-saw mill, the combination of the supporting-column, a T-frame having a central upright section movable in upright ways on said column, and a horizontal section both ends of which project beyond said column, boxes attached to the projecting ends of said horizontal section by universal-joint connections, the box opposite the upper band-wheel being vertically and laterally adjustable, and the upper band-wheel shaft bearing in said boxes, substantially as and for the purposes set forth.

8. In a band-saw mill, the combination of the band wheels and saw, an upright supporting standard or column, a vertically-adjustable frame mounted thereon and furnished with bearings for the upper band-wheel shaft, a screw working with a nut on said frame and bearing at the lower end in a step-lever fulcrumed to the supporting-column, a weighted lever connected with the free end of said step-lever and fulcrumed transversely thereto upon said supporting-column, and means for turning said screw, substantially as and for the purposes set forth.

9. In a band-saw mill, the combination, with the band wheels and saw, of a fan secured directly upon the upper band-wheel shaft, a case inclosing an air-chamber about said fan and provided with induction and eduction openings, and a regulating valve or slide working in one of said openings, substantially as and for the purposes set forth.

10. In a band-saw mill, the combination, with the band wheels and saw, of an upright supporting-column provided on opposite sides with ways, a reversible and vertically-adjustable guide-arm or slide adapted to the ways on either side of said column, a guide attached to said guide-arm or slide, and means for raising and lowering said guide-arm or slide with its guide, substantially as and for the purposes set forth.

11. In a band-saw mill, the combination, with the band wheels and saw, of a guide mounted upon a vertically-adjustable slide, a supporting-column provided with ways for said slide, an upright screw working with a nut on said slide and provided with a friction-wheel, a sleeve feathered on one of the band-wheel shafts and provided with a pair of friction-wheels, either of which works with the friction-wheel on said screw, and a lever connected with and arranged to move said sleeve endwise on said shaft, substantially as and for the purposes set forth.

12. In a band-saw mill, the combination, with the band wheels and saw, of a housing covering the upper portion of the lower band-wheel and provided at each end with a plate or flange for the attachment of a saw-guide, and a right and left guide or guides attachable thereto, substantially as and for the purposes set forth.

13. In a band-saw mill, the combination, with the band wheels and saw, of an upright supporting-column adjustable about its axis, a lever connected with and arranged to turn said column, and an adjustable stop arranged to limit the angular movement of said column, substantially as and for the purposes set forth.

14. In a band-saw mill, the combination, with the band wheels and saw, of an upright supporting-column carrying said wheels and saw, and an engine connected therewith and arranged under the control of the operator to swing said column about its axis, substantially as and for the purposes set forth.

15. In a band-saw mill, the combination, with the band wheels and saw, of an upright supporting-column carrying said band wheels and saw and capable of angular movement about an upright axis, a vertically-adjustable frame carrying the upper band-wheel and movable in ways provided therefor on said column, a screw working with a nut on said frame and provided with a gear, a bracket attached to the front side of said column between the sides of said saw, a step-lever fulcrumed in a recess in said bracket and furnishing a bearing for the lower end of said screw, a weighted lever fulcrumed to the side of said column and connected with the free end of said step-lever, and a crank-shaft mounted on said bracket and provided with a gear working with the gear on said screw, substantially as and for the purposes set forth.

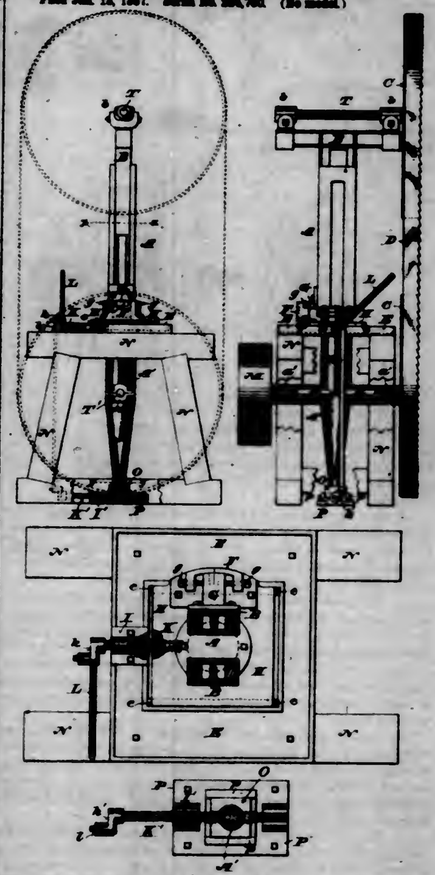
16. In a band-saw mill, the combination, with the band wheels and saw, of an upright supporting-column, a vertically-adjustable frame mounted upon said column, trunnions bearing in vertical sockets formed therefor in said frame, boxes horizontally hinged to the heads of said trunnions and supporting the upper band-wheel shaft, and adjusting-screws arranged to move the box farthest from the upper band-wheel vertically and horizontally, substantially as and for the purposes set forth.

17. In a band-saw mill, the combination, with the band wheels and saw, of a supporting-column provided on opposite sides with vertical ways, a reversible arm provided with a guide and adapted to the ways on either side of said column, and a cross-piece projecting on both sides of said column, and a right and left guide or guides attachable to the opposite ends of said cross-piece, substantially as and for the purposes set forth.

18. In a band-saw mill, the combination, with the band wheels and saw, of a centrally-slotted supporting-column, a vertically-adjustable frame mounted thereon and carrying the upper band-wheel, an upright screw-shaft centrally journaled in said frame, a reversible guide-supporting arm adapted to ways on either side of said column and provided with a nut working in either position with said screw-shaft, and means for driving said screw-shaft from said upper band wheel shaft, substantially as and for the purposes set forth.

388,459. BAND-SAW MILL. William Gowie, Weston, Wis.

Filed Jan. 12, 1887. Serial No. 224,702. (No model.)



Claim.—1. The combination, in a band-saw mill, with the upper and lower band-wheels and their shafts, the band-saw, and their connections, of an upright supporting-standard carrying the same, provided with bearings for the upper and lower band-wheel shafts, and movable with said band wheels and saw and their connections transversely to the carriage-track, substantially as and for the purposes set forth.

2. The combination, in a band-saw mill, with the band wheels and saw, of a standard carrying the same and supported in bearings adjustable transversely to the carriage-track and arranged to be turned about its axis in said bearings, so as to change the lead of the saw, substantially as and for the purposes set forth.

3. The combination, in a band-saw mill, with the band wheels and saw, of a supporting column or standard provided with bearings for the upper and lower band-wheel shafts and movable laterally in ways transverse to the carriage-track, and screws working therewith to move said column or standard and the parts supported thereon toward and from said carriage-track, substantially as and for the purposes set forth.

4. The combination, in a band-saw mill, with the band wheels and saw, of a standard carrying the same and supported and arranged to be turned in bearings adjustable transversely to the carriage-track, screws working with said bearings, and mechanism for operating the same, whereby the saw is carried out of contact with the log in rigging, substantially as and for the purposes set forth.

5. The combination, in a band-saw mill, with the band wheels and saw, of an upright column or standard provided with bearings for the upper and lower band-wheel shafts and supported in slides movable in ways transverse to the carriage-track, crank-shafts working with said slides, and a lever connected with said crank-shafts and arranged to operate said screws and to move the saw toward and from the carriage-track, substantially as and for the purposes set forth.

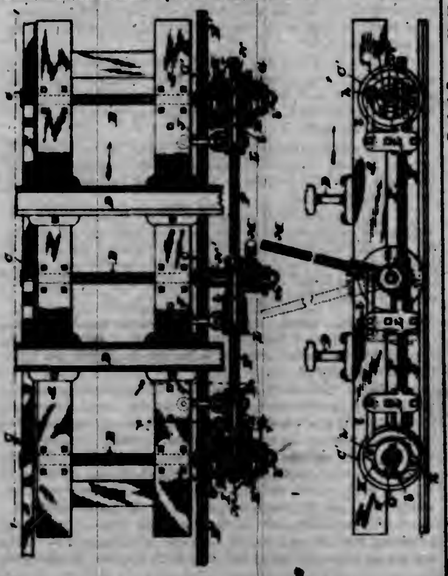
6. The combination, in a band-saw mill, with the band wheels and saw, of a column or standard provided with bearings for the upper and lower band-wheel shafts and supported and arranged to turn about an upright axis in suitable bearings provided therefor, an arm projecting laterally from said standard, and adjusting-screws working in fixed nuts against the opposite sides of said arm and arranged to turn said standard upon its axis and to lock the same at any desired angle, substantially as and for the purposes set forth.

7. The combination, in a band-saw mill, with the band wheels and saw, of an upright column or standard capable of angular movement about its axis, a vertically-adjustable frame mounted upon said standard and provided with bearings for the upper band-wheel shaft, slides supporting said standard and movable transversely to the carriage-track, and mechanism for moving said slides toward and from said track, substantially as and for the purposes set forth.

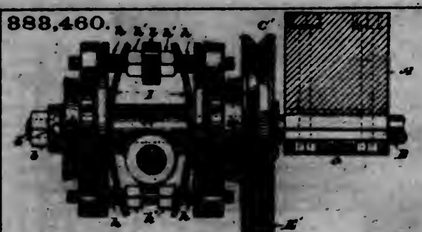
388,460. OPERATING MECHANISM FOR SAW-MILL CARRIAGE. William Gowie, Weston, Wis. Filed Jan. 12, 1887. Serial No. 224,703. (No model.)

Claim.—1. The combination, in a saw-mill carriage, of a log-supporting frame laterally movable upon its axles, a friction-wheel mounted upon one of said axles, a bar supported in bearings upon and movable lengthwise of said carriage and connecting said frame and axles, and a friction shoe or ring working with said friction-wheel and connected with said sliding bar, substantially as and for the purposes set forth.

2. The combination, in a saw-mill carriage, of a log-supporting frame movable laterally upon its axles, a bar linked to said frame and



388,460.



supported and movable endwise in cross-boxes mounted upon said axles, and a lever fulcrumed upon a carriage-axle and connected with said sliding bar, substantially as and for the purposes set forth.

3. The combination, in a saw-mill carriage, of a log-supporting frame movable laterally upon its axles, a sliding bar linked to said frame and supported in boxes mounted upon said axles, and a friction wheel or wheels fixed upon one or more of said axles and connected with said sliding bar, substantially as and for the purposes set forth.

4. The combination, in a saw-mill carriage, of a log-supporting frame laterally movable upon its axles, beveled friction-wheels mounted upon one or more of said axles, friction-rings working with said friction-wheels and connected with said log-supporting frame, and a spring or springs holding said friction-rings in engagement with said friction-wheels, substantially as and for the purposes set forth.

5. The combination, in a saw-mill carriage, of a log-supporting frame laterally movable upon its axles, friction-wheels mounted upon one or more of said axles, friction-rings working with said friction-wheels, and a sliding bar linked to said frame and friction-rings, substantially as and for the purposes set forth.

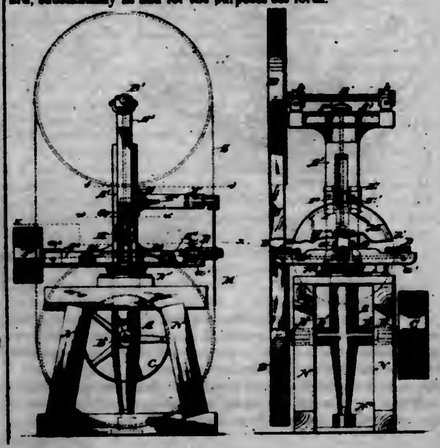
6. The combination, in a saw-mill carriage, of a log-supporting frame movable laterally upon its axles, a sliding bar connecting said frame and axles, an arm formed in sections bolted upon said sliding bar, and a crank mounted upon one of said axles and connected with said arm, substantially as and for the purposes set forth.

7. The combination, in a saw-mill carriage, of a log-supporting frame laterally movable upon its axles, a sliding bar connecting said frame and axles, and a crank mounted upon one of said axles and connected with said sliding bar, substantially as and for the purposes set forth.

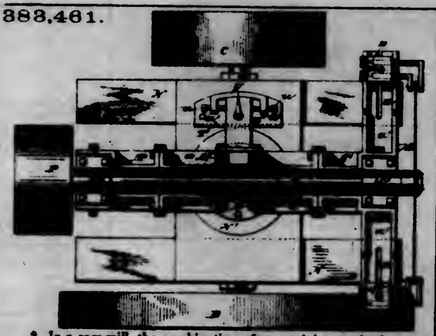
8. The combination, in a saw-mill carriage, of a log-supporting frame laterally movable upon its axles, friction-wheels mounted upon one or more of said axles, friction-rings engaging said friction-wheels, curved annular springs bearing against said friction-rings, threaded pins passing through said rings and provided with adjusting-nuts bearing against said springs, and a sliding bar connecting said frame and axles and connected with one of said pins, substantially as and for the purposes set forth.

388,461. SAW-MILL. William Gowie, Weston, Wis. Filed May 2, 1887. Serial No. 236,797. (No model.)

Claim.—1. The combination of an upright supporting post or standard movable about its axis, band-wheels supported and movable with said central standard, a band-saw mounted upon said band-wheels, and a circular saw supported by and movable with said standard, substantially as and for the purposes set forth.



383,461.



2. In a saw-mill, the combination of an upright standard or column supported by and capable of angular movement in suitable bearings and provided on opposite sides with laterally-projecting bracket-bearings, the saw and its mandrel supported transversely to said column in said bracket-bearings, a saw-guide attached to an arm projecting laterally from said standard or column and partaking of its angular movement, and mechanism for imparting an angular movement to said standard or column, substantially as and for the purposes set forth.

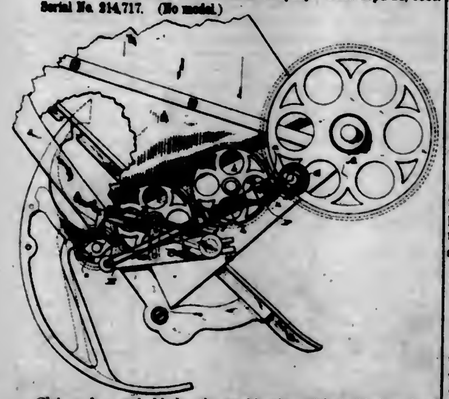
3. The combination, with an upright post or standard movable about its axis, provided with lateral arms and bearings for a circular-saw mandrel, of a circular saw supported in said bearings and movable with said standard, and a vertically-adjustable guide-support working in ways on said standard, substantially as and for the purposes set forth.

4. The combination, with an upright post or standard movable about its axis, furnished with bearings for a horizontal saw-mandrel and with vertical ways for a guide-support, of a circular saw mounted upon said mandrel, a guide-supporting arm movable vertically upon said ways, and an adjusting-screw working with said guide-supporting arm, substantially as and for the purposes set forth.

5. The combination, with an upright post or standard arranged to be turned about its axis, of arms extending laterally from said standard and provided with boxes for the saw-mandrel, cross-arms projecting transversely to the saw-mandrel from its adjacent supporting-arm, and guides adjustably attached to said cross-arms and working with the saw in front and rear of the mandrel, substantially as and for the purposes set forth.

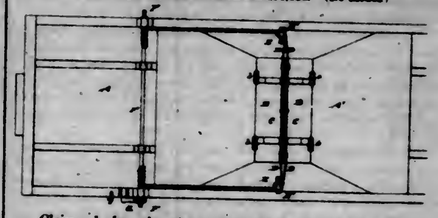
6. In a saw-mill, the combination, with the band-wheels and their shafts, of an upright supporting post or standard capable of angular movement about its axis and provided with bearings for a circular-saw mandrel and with bearings for said band-wheel shafts, substantially as and for the purposes set forth.

383,462. GRAIN-BINDER. JAMES A. GRAHAM, Milwaukee, Wis., assignor to the Milwaukee Harvester Company. Filed Sept. 26, 1888. Serial No. 214,717. (No model.)



Claim.—In a grain-binder, the combination, with the binder-wheel and crank-arm of the needle-shaft, of an eccentric cam-disk carried by the binder-wheel, a pitman, a pitman-head wristed to the cam-disk aforesaid and having a yielding connection with the pitman, and a stop carried by the pitman and adapted for impingement on the periphery of the cam-disk during the last portion of each revolution of the binder-wheel, substantially as described.

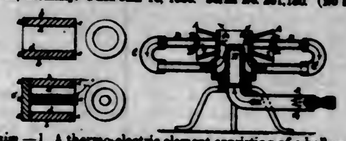
383,463. DUMPING-CAR. GEORGE H. GRAHAM, Elizabethport, N. J. Filed Sept. 20, 1887. Serial No. 249,893. (No model.)



Claim.—1. In a dumping-car, the hatches B, hinged to the car-body at *b*, and each operated by two chains, D, one connected to each end of the hatch, said chains being exterior to the hopper, substantially as herein specified.

2. A dumping-car for coal and analogous material, having, in combination with the body A, hopper A', and hinged hatches B *b*, the trusses C C, arranged to strengthen the hatches, the chains D D, sheaves E E, and windlass F, all arranged on the exterior of the car, substantially as herein specified.

383,464. THERMO-ELECTRIC GENERATOR. ROBERT J. GRAMME, Berlin, Germany. Filed Jan. 16, 1886. Serial No. 261,120. (No model.)



Claim.—1. A thermo-electric element consisting of a hollow cylindrical body provided with a small base-surface at one end for receiving heat and a large cooling-surface, substantially as and for the purpose set forth.

2. A thermo-electric element consisting of a hollow body provided with a small base-surface for receiving heat and a large cooling-surface, in combination with a second thermo-electric body arranged within the first one, substantially as and for the purpose set forth.

3. A thermo-electric element consisting of a hollow body provided with a small base-surface for receiving heat and a large cooling-surface, in combination with a second hollow thermo-electric body arranged within the first one, substantially as and for the purpose set forth.

4. A thermo-electric element consisting of a hollow body provided with a small base-surface for receiving heat and a large cooling-surface, in combination with a second hollow thermo-electric body arranged within the first one and provided with lateral air-holes somewhat below the edge of the said outer body, substantially as and for the purpose set forth.

5. The combination, with a series of external hollow thermo-electric elements, A, of the internal elements, B, the chimneys C, connected to the said elements B, and a heating-chamber common to all the elements and connected to the said chimneys, substantially as and for the purpose set forth.

6. The combination, with an external hollow thermo-electric element, of a second internal element provided with a central passage for gas, and a burner-hole common to both elements, substantially as and for the purpose set forth.

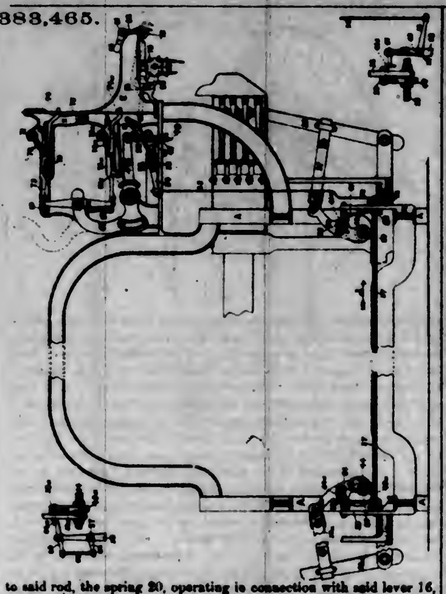
7. The combination of an external hollow thermo-electric element, and a second internal element provided with a central passage for gas, and a burner-hole common to both elements, with a second pair of external and internal elements similar to the first pair, and arranged with the heated ends of each pair opposite to each other, substantially as and for the purpose set forth.

383,465. LOOM. RICHARD I. HAYWORTH and JAMES HILL, Keighley, County of York, England. Filed Sept. 3, 1888. Serial No. 283,881. (No model.) Patented in England Mar. 6, 1885, No. 3,264, and July 4, 1885, No. 8,169.

Claim.—1. The combination, with the frictional driving-pulley 1, the disk 5, the gear-wheel 3, said pulley and disk being mounted on the boss of said gear-wheel, the former being loose and the latter fast to said boss, shaft 4, the gear-wheels 6 and 8, shaft 7, and the gear-wheel 9, rigidly mounted on shaft 4, of the levers 11 and 13, the rods 17 and 18, the springs 19 and 20, the levers 14, 15, and 14, the shaft 761, and the handle 12, said rods, springs, levers, and handle operating said levers 11 and 13, substantially as and for the purposes specified.

2. The projecting piece 21, the dagger 23, which operates said projecting piece, the stop-rod 24, to which said dagger is attached, and the lay *c*, in combination with the rod 17, the lever 16, connected

383,465.



to said rod, the spring 20, operating in connection with said lever 16, the rod 18, also joined to lever 16, the lever 11, and the disk 5, all arranged to operate substantially as and for the purpose specified.

3. The combination of the shaft 29 and the joint 30, in which said shaft is swiveled, with the tumbling-lever 32, the rod 34, which enters into the notch of said tumbling-lever 32, and the spring 35, all arranged to operate substantially as and for the purpose specified.

4. The combination, with the picking-cam 26, shaft 7, the cone 27, the stud 28, and the shaft 29, to which said stud 28 is attached, of the swivel-joint 30, the tumbling-lever 32, which, with said joint 30, carries said shaft, and rod 34, with its spring 35, all arranged to operate substantially as and for the purpose specified.

5. The lever 56, the connecting-rod 55, the levers 54 and 51, the sleeve or tube 52, the rod 48, the jack-lever having the arm 47ª, which, through said rods and levers, operates said lever 56, the means for actuating said jack-lever, the shaft 57, the lever 60, attached to said shaft, and the lever 61, operated by said lever 60, in combination with the pin 61ª, the catch 39, to which said pin is attached, the arm 38, carrying said catch, the picking-stick 36, the strap 37, joining said arm and picking-stick together, the notched piece 40, the shaft 29, to which said notched piece is attached, the cam 26, the bowl 27, and the stud 28, substantially as and for the purpose specified.

6. The lever 56, the connecting-rod 55, the levers 54 and 51, the sleeve or tube 52, the rod 48, the jack-lever 47, having arm 47ª, which, through said rods and levers, operates said lever 56, the means for actuating said jack-lever, the shaft 57, the lever 62, attached to said shaft, and the lever 64, joined to said lever 62 by rod 63, in combination with the pin 64ª, the catch 39ª, to which said pin is attached, the arm 38ª, carrying said catch, the picking-stick 36ª, the strap 37ª, joining said arm and picking-stick together, the notched piece 40ª, the shaft 44, the swape 43, the rod 42, the swape 41, the shaft 29, said shaft operating the shaft 44 by said swapes and rod, and the means for operating shaft 29, substantially as and for the purpose specified.

7. The combination of the jack-lever 47, having an arm, 47ª, the lever 68, the catches 73ª and 73ᵇ, and the reciprocating draw-bars 70 and 70ª, by which said jack-lever 47 is operated, with the connecting-rod 48, the yielding springs 49 and 50, mounted on said rod 48, the levers 51 and 54, the sleeve or tube 52, the connecting-rod 55, attached to said lever 54, the lever 56, the shaft 57, which is operated by said jack-lever 47 by means of said springs and rods, the levers 60 and 61, the pin 61ª, the catch 39, the lever 62, the rod 63, the lever 64, the pin 64ª, the catch 39ª, the picking-sticks 36 and 36ª, the arms 38 and 38ª, straps 37 and 37ª, notched plates 40 and 40ª, and means for operating the said plates, substantially as and for the purposes specified.

8. The combination of the lever 68, the shaft 66, and the handle 67, said lever and handle being mounted on said shaft, with the lever 51, the springs 49 and 50, the said lever 51 being permitted to move by the yielding of the said springs 49 and 50, the rod 48, jack-lever 47, having the arm 47ª, with said rod attached to it, means for operating the said lever, the sleeve 52, the lever 54, the rod 55, attached thereto, the lever 56, engaging with said rod, the shaft 57, to which lever 56 is attached, the levers 60 and 62, mounted on said shaft, the rod 63, the lever 64, joined to lever 62 by said rod 63, the lever 61, the pins 61ª and 64ª, operated upon by said levers 61 and 64, respectively, the catches 39 and 39ª, to which said pins 61ª and 64ª are respectively attached, the notched pieces 40 and 40ª, the means for operating said notched pieces, arms 38 and 38ª, straps 37 and 37ª, and picking-sticks 36 and 36ª, all arranged to operate substantially as and for the purposes specified.

9. The combination of the jack-lever 47 and the lever 68 hinged thereto with the catches 69, 69ª, 73, and 73ª, the said catches 69 and 69ª being hinged to the lever 68 and the catches 73 and 73ª being hinged to the catches 69 and 69ª, respectively, the reciprocating draw-bars 70 and 70ª, and the needle 75, for operating on said catches, the lever 77, the peg 76, the pattern-chain 79ª, and the barrel 79, all arranged to operate substantially as and for the purposes specified.

10. The combination of the catches 73 and 73ª, formed with their outer ends of an inclined shape, with the needle or rod 75, having loops or openings 74 and 74ª to receive said catches 73 and 73ª, the catches 69 and 69ª, to which said catches 73 and 73ª are hinged, respectively, the lever 68, the jack-lever 47, the reciprocating draw-bars 70 and 70ª, the crank 111, the rod 112, lever *l*, and rods *s' s²*, shaft 4, and gears 111ª, 111ᵇ, and 111ᶜ, all arranged to operate to the end set forth.

11. The combination of the hinged stop-bars 72 and 72ª with the catches 73 73ª and 69 69ª, the former catches, 73 73ª, being hinged to the latter, the lever 68, to which catches 69 and 69ª are hinged, the jack-lever 47, the draw-bars 70 and 70ª, the crank 111, the rod 112, lever *l*, and rods *s' s²*, all arranged to operate to the end set forth.

12. The combination of the series of levers 77, the barrel 79, and the pattern-chain with the series of looped needles 75, the series of catches 73 and 73ª, the series of catches 69 and 69ª, the series of levers 68, the series of jack-levers 47, on which the series of levers 68 is mounted, said series of levers 68 carrying said series of catches 69 69ª, on which are mounted the said series of catches 73 and 73ª, respectively, and the draw-bars 70 and 70ª, which operate upon the two series of catches 69 69ª and 73 73ª, the driving-crank 111, the rod 112, the lever *l*, and the rods *s'* and *s²*, all arranged to operate substantially as and for the purpose specified.

13. The combination of the pattern-barrel 79, the series of levers 77, the pattern-chain on said barrel, the series of needles 75, the two series of catches 73 73ª, said catches being operated by said levers 77 and said needles 75, the two series of catches 69 69ª, the levers 68, the jack-levers 47, the reciprocating draw-bars 70 and 70ª, which operate said series of catches 69 and 69ª, 73 and 73ª, the rods *s' s²*, the lever *l*, the rod 112, the crank 111, said rods, lever, and crank operating said bars 70 and 70ª, the levers 84 and 85, on which said barrel 79 is mounted, the gear-wheels 92, 93, 95, and 96, the shaft 97, the wheel 99, the crown-wheel 100, the nogging-wheel 103, the pins 101 and 102, the shaft 89, from which intermittent motion is derived, the shaft 86, upon which said levers 84 and 85 are mounted, the lever 87, fixed to said shaft, the rod 88, attached to said lever, the anti-friction bowl 91, mounted on said rod, the cam 90, fixed on said shaft 89, by which cam, bowl, rod, levers, and shaft vertically-oscillatory motion is imparted to the said pattern-barrel 79, the yielding coupling, and the gear-wheels 109 and 110, which impart rotary motion to the shaft 89, substantially as and for the purposes specified.

14. The combination of the upright revolving shaft 89, the yielding coupling consisting of box 106, spring 107, boss 105, and key *m*, the gear-wheels 109 and 110, and the shaft of the driving-crank 111 with the nogging-wheel 103 and its pins 101 and 102, the crown-wheel 100, the shaft 97, the gear-wheels 99, 96, 95, 93, and 92, the pattern-barrel 79, the levers 84 and 85, the shaft 86, the lever 87, the rod 88, and cam 90, through and by which the vertically-oscillatory motion of the said barrel 79 is derived from said shaft 89, substantially as and for the purposes specified.

15. The combination of the rib 82 and the handle 83, by which it is manually operated, with the series of levers 77, the series of needles 75, and the two series of catches 73 and 73ª, by the pressure or weight of which catches 73 and 73ª and needles 75 the said levers 77 are raised at their outer ends when the said rib 82 is removed, the pattern-chain, the barrel 79, and the reciprocating draw-bars 70 and and 70ª, substantially as and for the purpose specified.

16. The combination of the ratchet-wheels 124 and 125 and their respective pawls 126 and 127 with the levers 128 and 129, upon which said pawls 126 and 127 are respectively mounted, the spring 130, attached to said levers 128 and 129, the rod 131, the levers 132 and 133, the rod 134, and the swing-rail 135, for operating said levers 128 and 129, substantially as and for the purpose specified.

17. The combination of the friction-wheels 117 and 118 and the straps 119 and 120, partly encompassing said wheels, with the straps 121 and 122, for joining together the straps 119 and 120, and the weight 123, all arranged to operate substantially as and for the purpose specified.

18. The combination of the back part, 136, having openings 137 made therein and projections 138, with the shelves 139, having bifurcations 139ª, the bolts 139ᵇ, and the swell-levers 140, substantially as and for the purpose specified.

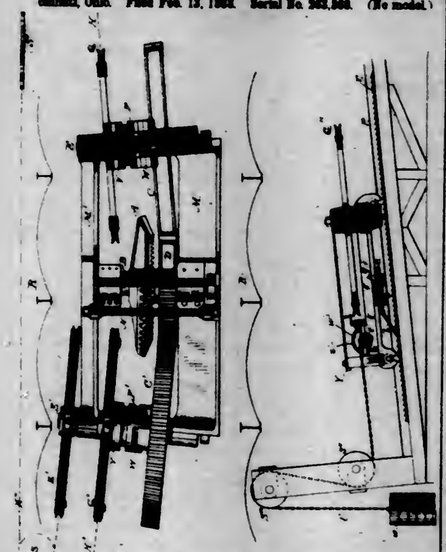
19. The combination of the bolts 141 and 141ª, the shelves 139, through which said bolts pass, the back part, 136, the swell-levers 140, and the pin 148 with the tubes 142 and 142ª and the tube 149, all arranged and constructed substantially as and for the purpose specified.

20. The combination of the strips of metal 144 with the tubes 142 and 142ª, the bolts 141 and 141ª, the shelves 139, and the back part, 136, all constructed and arranged substantially as and for the purpose specified.

21. The combination of the swell-lever 140, constructed with its end *p* open, with the pin 146, the back part, 136, and the pin 148, all constructed and arranged substantially as and for the purpose specified.

22. The combination of the swell-lever 140, constructed with its end *p* open, and the pin 146 with the tube 149, the pin 148, and the back part, 136, all constructed and arranged substantially as and for the purpose specified.

383,466. DRIVING MACHINERY FOR CABLE ROADS. WILLIAM HEBERT, Yonkers, N. Y., assignor to Benj. Butterworth, trustee, Cincinnati, Ohio. Filed Feb. 13, 1882. Serial No. 263,868. (No model.)



Claim.—1. In the driving machinery of a traction-cable railroad, the frame under the track, in combination with the motor at one side of the track, the shaft stepped in the frame and inclined slightly from the perpendicular, suitable gearing for transmitting motion from the motor to the shaft, and the expansion driving-drum having adjustable eccentric shoes upon the shaft, substantially as described.

2. In a traction-cable railroad, the combination of the double driving machinery placed midway of the length of the road, the two cables extending in opposite directions, each furnishing motive power to one section of the road, and the auxiliary cable which supplies the hiatus between the two main cables operated by a third wheel on the driving machinery, substantially as described.

3. In cable-driving machinery, an expansion driving-wheel having adjustable eccentric-shoes, substantially as described.

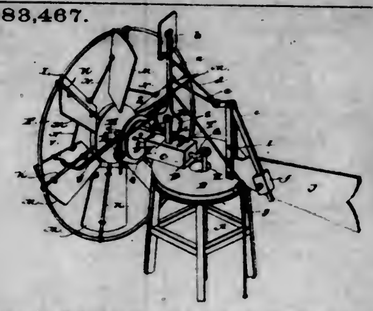
4. In cable-driving machinery, an expansion driving-wheel having eccentric bearing-surfaces upon its outer rim, in combination with adjustable shoes having inner eccentric bearing-surfaces and outer concentric bearing-surfaces, and the bolts passing through the shoes and through the slots in the wheel-rim, substantially as described.

5. In a tension apparatus for cable railroads, the combination of the inclined track with its rack, weighted carriage running on the track, and the adjustable spring-pawl engaging with the rack, substantially as described.

383,467. WIND-WHEEL. HENRY R. JOHNSON, Clay Centre, Kans. Filed Nov. 10, 1887. Serial No. 254,592. (No model.)

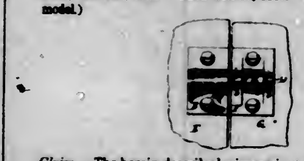
Claim.—The combination of the turn-table, the elongated bearing-plate F, constructed with longitudinal slits *a a*, of greater length than the diameter of the pivot, and so as to form two side parts, *b b*, with an intermediate part, *d*, the said side parts constructed with transverse bends *c c* midway of their length, and the intermediate part constructed with a corresponding bend, *f*, in line with, but in opposite direction to, the side bends, *c c*, the said slits extending longitudinally of the plate each side of said bends, combined with a second plate carrying a pivot, D, adapted to rest in the said bends of the plate, and the said two plates constructed for attachment, substantially as described.

383,467.



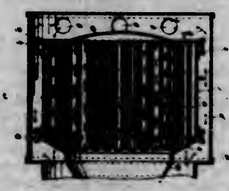
C, secured radially thereon, the wheel having its shaft D journaled in said bearing, the sliding rod T, mounted on the bearing C and having an integral rack, X, on its upper side, and provided at its outer or front end with an integral fork, S, having downwardly-bent ends, the sleeve O, mounted on the shaft D and having the annular flange P at its front edge, the collar Q, mounted on the sleeve O in rear of the flange P and having the diametrically-opposite ears R, engaged by the downwardly-bent ends of the fork S, the disk W, secured to the rear face of the sleeve O to hold the collar Q thereon, the rod U, secured to the sleeve O and connected to the wheel, the standard Y, erected on the bearing C, the segmental gear Z, pivoted to the upper end of said standard and engaging the rack X, the rod *a*, extending upward from the said gear, the governor-vane *b*, pivoted on the upper end of said rod, the standard I, erected on the turn-table at a point diametrically-opposite the end of the bearing C, the angle-lever *c*, fulcrumed to the upper end of said standard and having an adjustable weight, *f*, on its longer arm, the links *d e*, connecting the shorter arm of said lever to the vane *b* and the rod *a*, respectively, and the rope *g*, secured to and extending downward from the rod *a*, substantially as specified.

383,468. MIRROR-PIVOT. AUGUSTUS H. JOHNS and ROBERT H. PECK, Meriden, Conn. Filed Oct. 24, 1887. Serial No. 253,179. (No model.)



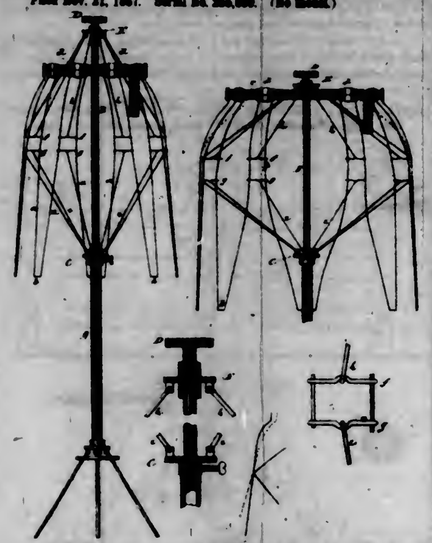
Claim.—The herein-described mirror-pivot, consisting of the bearing-plate F, constructed with longitudinal slits *a a*, of greater length than the diameter of the pivot, and so as to form two side parts, *b b*, with an intermediate part, *d*, the said side parts constructed with transverse bends *c c* midway of their length, and the intermediate part constructed with a corresponding bend, *f*, in line with, but in opposite direction to, the side bends, *c c*, the said slits extending longitudinally of the plate each side of said bends, combined with a second plate carrying a pivot, D, adapted to rest in the said bends of the plate, and the said two plates constructed for attachment, substantially as described.

383,469. HEATING-FURNACE. FRANCIS KERRAN, Jr., Utica, N. Y. Filed Apr. 18, 1887. Serial No. 235,202. (No model.)



Claim.—The combination, with the combustion-dome, of larger diameter than the fire-pot immediately above the same, of a circular cellular partition formed of vertical air-tubes passing through the dome, forming a combustion-chamber within the dome, and a circular flue between the partition and the wall of the dome, the air-tubes having spaces between them in front and adjacent to the charging-door, and the remainder being so nearly in contact as to form a partition in front of and adjacent to the smoke-exit, as described.

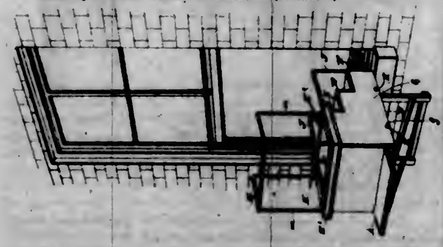
383,470. DRESS-FORM. WILLIAM H. KRAFF, Brooklyn, N. Y. Filed Nov. 21, 1887. Serial No. 255,669. (No model.)



Claim.—1. A garment-stand consisting of a central upright and a vertically-adjustable spindle, B, combined with a screw-threaded collar, C, on said spindle, a collar, E, above, loose on said spindle, but fixed against vertical movement, a series of substantially vertical ribs surrounding said spindle, a series of braces hung by their upper ends to the collar E and extending diagonally downward, hung by their outer ends to the ribs at a point below the upper ends of the ribs, a second series of braces hung by their inner ends to the collar C, extending diagonally upward, their outer ends hung to the ribs immediately below the connection of the upper braces with the ribs, the said ribs contractible from the point of connection with the braces upward, and a flexible band connecting said upper ends of the braces, substantially as described.

2. In a garment-stand consisting of a vertical central adjustable spindle, *d*, a series of ribs, each rib made from wire and of U shape, the upper end of one leg of each rib connected by a loop to the upper end of the adjacent leg of the next rib, a flexible band through said loops on the upper ends of the ribs, a collar, C, on the adjusting-spindle below, and a similar collar, E, above, a series of braces hung to the collar E and extending diagonally downward, their outer ends hung between the connected legs of adjacent ribs at a point below the upper ends, and a second series of ribs hung to the collar C below and extending diagonally upward, their outer ends hung between the connected legs at a point below the connection of the upper braces, the said braces constructed in pairs, each pair composed of a single piece of elastic wire bent so as to form a connection between the two braces of a pair at their inner ends, substantially as described.

383,471. PAINTER'S SCAFFOLD. MATHIAS LAUT, Wheaton, Ill. Filed Sept. 5, 1887. Serial No. 248,892. (No model.)



Claim.—1. The combination, with the scaffold having a platform, A, of the steps E on the upper side of the platform and having the depending flanges *g g*, to pass on opposite sides of the platform, and the bolts H, to pass through the said flanges under the platform to hold the steps thereon, substantially as specified.

2. The combination, with the scaffold having the platform A, provided at the inner end with the central series of perforations, *a*, of the steps E, having the base-board F, provided at the inner end with the series of perforations *f*, to align with the perforations *a*, the bolt or pin to pass through the aligned perforations, the depending flanges *g g* on the sides of the steps to pass down on opposite sides of the platform, and having perforations *g'* therein, and the bolt H, to pass through the said perforations, substantially as and for the purpose specified.

3. The combination, with the scaffold having the platform A, adapted to be secured to the sill of a window, of the steps E, adapted to be movably secured to the said platform, and having the flange *l* around the upper step, the railing K, having the base K', provided around the inner side with the groove *k* to fit the flange *l*, and the bolt K², to pass through the sides of the base at the inner end and engage the front side of the upper step, all constructed and arranged substantially as and for the purpose specified.

4. The combination, with the scaffold having the platform A, of the steps E, removably secured to the said platform and having the rails J J at the sides of the steps, the platform L at the top, and the horizontal flange *l* around the outer edge of the said platform, the removable railing K, secured around the platform L and comprising the base K', having groove *k* around the inner side to receive the flange *l*, aligned perforations in the inner ends of the sides of the base, through which passes the bolt K², to prevent the base from sliding rearwardly, the uprights *m*, secured at the lower ends to the base, and the top rail, M, secured to the upper ends of the uprights, all constructed and arranged substantially as and for the purpose specified.

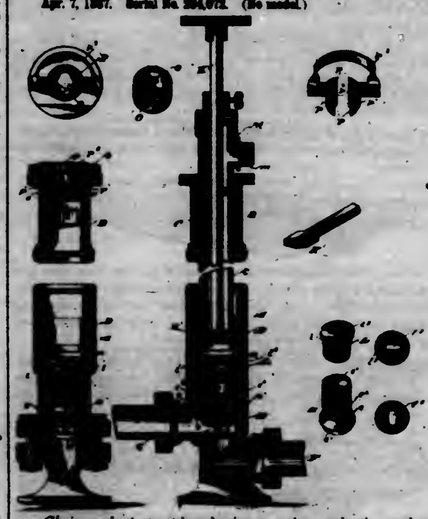
5. The combination, with the scaffold having the platform A, of the movable railing secured to the upper side thereof and adapted to be adjusted at any desired point of the same, as and for the purpose specified.

6. The combination, with a painter's scaffold, of the steps E, adjustably secured thereto and having the removable railing around the same, arranged substantially as and for the purpose specified.

7. In a painter's scaffold, the platform A, adapted to be secured to the window-sill, and the steps E, removably and adjustably secured to the platform, as set forth.

8. In a painter's scaffold, the platform adapted to be secured to the window-sill, and the brace B, depending from the platform and designed to bear against the house below the sill, the steps E, removably and adjustably secured to the platform, and the removable railing around the steps, as set forth.

383,472. STREET-BOX AND SHUT-OFF FOR WATER, GAS, OR OTHER FLUID SERVICE. EDWARD LUDLOW, Cleveland, Ohio. Filed Apr. 7, 1887. Serial No. 234,072. (No model.)



Claim.—1. A street-box having a main supply-pipe, and two branch pipes leading therefrom, and each provided with channels to convey fluid directly from the source of supply, the supply-pipe and the branch pipe above it each being provided with a separate seat, and single valve constructed to occupy either of said seats, substantially as set forth.

2. In a street-box, a main supply-pipe, and branch pipes leading from a common opening in said pipe, and one of said pipes being in a

direct line with said opening, in combination with a single valve provided with two opposite seating-faces, and an internal fluid-channel having an induction-opening from the outside above said seating-faces, and located to control the flow of fluid through the opening in the main pipe and through the branch pipes, substantially as shown and described.

3. In a street-box and shut-off having two valve-seats, a valve between said seats provided with a hollow neck and an opening above the seats leading into said neck, substantially as set forth.

4. In a street-box and shut-off, a double-faced valve having a hollow screw-threaded neck, a fluid-passage through said neck above the faces, and a seat for a turning key in said neck, substantially as set forth.

5. A street-box formed with a main-valve seat, a drip-orifice above the main-valve seat, and a valve-seat about said orifice, in combination with a main valve, and a plug separate from the main valve, and having a fluid-passage through it, and faced about its side to cover the drip-orifice, substantially as set forth.

6. In a street-box and shut-off having a main valve to control the fluid-supply, and formed with a chamber above said valve, with a drip-orifice at its side, in combination with a plug having a passage-way through it, and faced about its sides to cover the drip-orifice, with means to adjust the plug separately, substantially as set forth.

7. In a street-box, the casing provided with a drip-orifice above the main valve, and an annular shoulder, as *a*, above said orifice, in combination with a tube resting on said shoulder, and a plug provided with a fluid-passage through it, and faced about its sides to close the drip-orifice, substantially as set forth.

8. In a street-box, the casing provided with a main-valve seat, and a drip-orifice above said seat, and a chamber about the drip-orifice terminating in a shoulder in the casing, in combination with a tube resting on said shoulder, a main valve, and a plug adjustable in the said chamber to close the drip-orifice, substantially as set forth.

9. In street-boxes, a sectional bushing constructed with an irregular outer seating-surface, and each section having part of a key-seat formed on its inner face, in combination with a plug for the street-box, having an irregular seat for the bushing, whereby the bushing is prevented from turning, substantially as set forth.

10. In a street-box, a bushing consisting of two sections having lugs outside and faces inside shaped to form an angular key-seat when the bushing is set for use, in combination with a plug provided with a seat for said bushing, substantially as set forth.

11. In a street-box, a bushing formed in two sections connected by a spring, in combination with a plug for the street-box, provided with a seat in which the sections lock and form a key-seat, substantially as set forth.

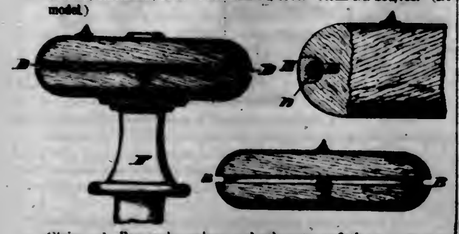
12. In a street-box, a lower section rigidly connected with the supply-pipe, a separate upper section, and a tube sleeved and packed in said sections at its respective ends, whereby the upper section alone or with the intermediate tube may be raised, as by frost, without impairing the box, substantially as set forth.

383,473. GUARD-FINGER FOR MOWERS AND REAPERS. HENRY LUEKER, Columbus, Nebr. Filed Jan. 14, 1888. Serial No. 260,607. (No model.)



Claim.—The combination of the guard-finger, the finger-bar, and the L-shaped wearing-plate having its horizontal flange rjveted to the upper surface of the guard-finger and arranged between the same and the finger-bar, and having its vertical flange resting against the front edge of the finger-bar, substantially as specified.

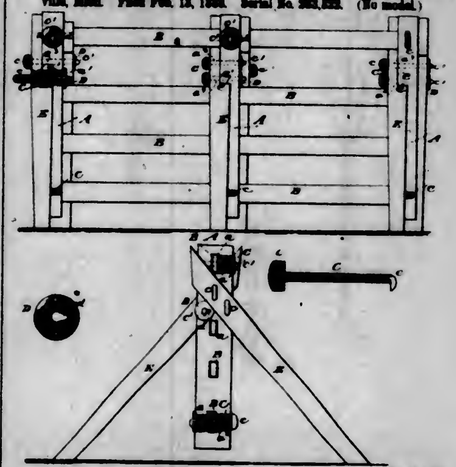
383,474. NON-CONDUCTING HAND-WHEEL FOR COCKS, VALVES, AND OTHER STEAM-FITTINGS. FREDERICK LUNKENHEIMER, Cincinnati, Ohio. Filed Jan. 24, 1888. Serial No. 261,792. (No model.)



Claim.—1. For cocks, valves, and other steam-fittings, a non-conducting hand-wheel having a circumferential groove with a tie or binder inserted therein and concealed by a filling applied to said groove, the ends of said tie being twisted together and housed within a pit or socket of said wheel, for the purpose described.

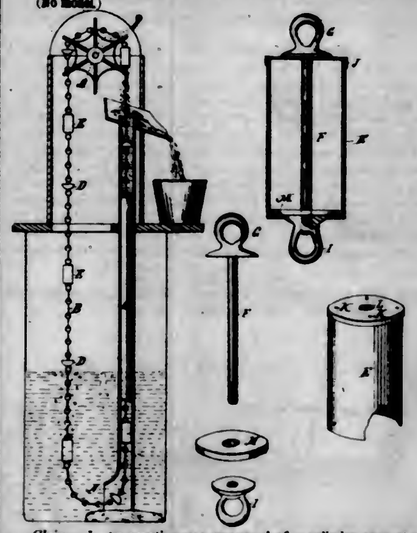
2. For cocks, valves, and other steam-fittings, a non-conducting hand-wheel having a circumferential groove with a tie or binder inserted therein, said tie being concealed by a filling applied to the groove, for the purpose described.

383,475. PORTABLE FENCE. MARLY R. MARSHALL, Rogersville, Mich. Filed Feb. 13, 1888. Serial No. 263,532. (No model.)



Claim.—In portable fences, the combination, with rails B, of posts having holes a' a^3 a^4, washers passing through said holes a^3 a^4 and provided with a hole, *d*, T-headed and hook-ended bolts C, passing through said holes a' a^3, and stakes E, having rabbets *e* and shoulders *e'*, as shown and described.

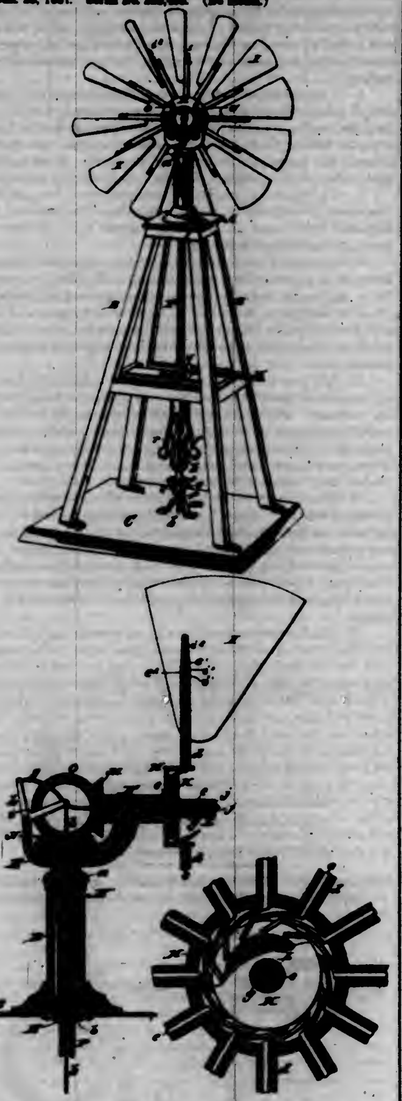
383,476. AERATING ATTACHMENT FOR CHAIN-PUMPS. WILLIAM MILD, Hamilton, Ohio. Filed Aug. 8, 1887. Serial No. 246,446. (No model.)



Claim.—1. An aerating-cup composed of a cylinder open at one end and having a perforated head at its other end, in combination with the stem having a link or eye at each end, and the disk for partially closing the cup, substantially as herein set forth.

2. The combination of the cup E, having the perforated head, and the central stem, F, having fixed at one end the eye G and upon its other screw-threaded end the disk M, of smaller diameter than the cup, and eye I, with the chain, substantially as described.

383,477. WINDMILL. HIRAM P. HIXON, Clay Center, Kans. Filed Jan. 28, 1887. Serial No. 225,622. (No model.)



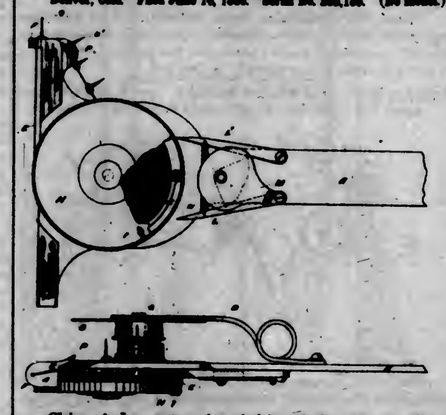
Claim.—1. In a windmill, a series of sails mounted upon radial arms having cranks at their inner ends, a disk having a grooved periphery, in which the ends of said cranks fit, a rod giving horizontal adjustment to said disk, a vertical governor-rod, connected to said adjusting-rod through an elbow or bell-crank lever, and a governor mounted upon a sleeve surrounding said governor-rod, and connected to a head which is adjustable on the latter, by the rotation of which the governor-rod is raised and lowered to give angular adjustment to the sails, substantially as described.

2. In a windmill, the combination, with a series of sails mounted on radial arms having cranks at their inner ends, of a grooved disk, with which the ends of said cranks engage, a rod giving horizontal adjustment to said disk, a governor-rod connected to the adjusting-rod by a bell-crank or elbow lever, a pair of weighted governor-arms pivoted upon a rigid revolving support and linked to the governor-rod, and an adjusting-wheel revolved upon the head to which said links are connected, and having a nut engaging with a threaded portion of the governor-rod, substantially as described.

3. The combination, with the sails I, having tubes *d*, of the rods *e*, having cranks *f*, the head or hub H, having hub *c*, the disk K, having a peripheral groove and an extension, L, the rod *g*, bell-crank A, governor-rod *k*, the governor E *r r'*, connected to a head, p^1, adjustable on said rod, the gear M, carried by a sleeve connected to hub *c*, the gear N, having sleeve P, to which the governor is attached, and the intermediate O, substantially as described.

4. The combination, with the sails and with devices, substantially as described, for feathering the same, of a governor-rod, a bell-crank operated by the same and actuating the feathering devices, a governor mounted upon a rotating sleeve surrounding the governor-rod and connected to a head upon the governor-rod, and a nut revolved in said head and having a female thread meshing with a male thread on the rod, substantially as described.

383,478. AUTOMATIC TACK-DRIVER. JAMES H. MONTGOMERY, Denver, Colo. Filed June 14, 1888. Serial No. 205,189. (No model.)



Claim.—1. In an automatic tack-driver, the hammer A, provided with an eye in its face, or its equivalent, substantially as shown and described, and for the purposes set forth.

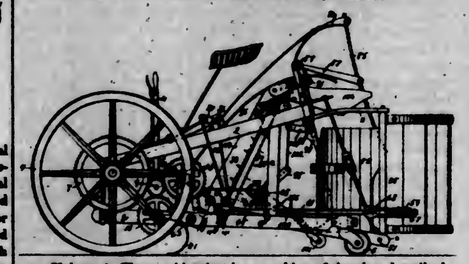
2. In an automatic tack-driver, the combination, with the means for feeding and driving the nails, of the reel actuated by a spring, all substantially as shown and described.

3. The dogs L and L', the spring N, and the lever M, in combination with the ratchet and reel, substantially as shown and described, and for the purpose set forth.

4. In an automatic tack-driver, the spring D and spool-post C, in combination with the tack holding and feeding devices, substantially as shown and described, and for the purpose set forth.

5. In an automatic tack driving and feeding device, the hammer A, provided with the guard P, substantially as shown and described.

383,479. HAY RAKE AND COCKER. HIRAM J. REESE, Hartline, Wis. Filed Oct. 24, 1887. Serial No. 253,103. (No model.)



Claim.—1. The combination, in a machine of the class described, of a hay-rake, an elevator for raising the hay gathered by said rake, a receptacle arranged to receive the hay from said elevator and composed of a tilting platform having fronts 33 secured to it, and swinging racks vertically pivoted upon projections on the frame of the machine, packers for compressing the hay in said receptacle, and pushers for discharging the hay from said receptacle, substantially as described.

2. The combination, in a machine of the class described, with the hay rake and elevator, of the hay-receptacle composed of a tilting

platform mounted on a suitable pivot or axis and having the fronts 83, the segmental swinging and opening racks 56, pivoted upon the frame of the machine, means to swing said racks, whereby they are opened or closed, and means to tilt said platform, substantially as described.

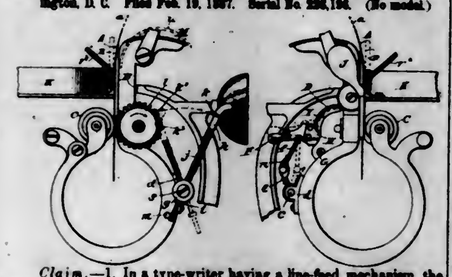
3. The combination, in a machine of the class described, with the hay rake and elevator, of the receptacle formed of the tilting platform having the fronts 83, and the vertically-hinged racks 56, mounted upon suitable projections from the frame of the machine and adapted to swing open, the pushers 97, and means for tilting said platform, opening said racks, and operating said pushers.

388,480. TYPE-WRITING MACHINE. JOHN W. OSBORNE, Washington, D. C. Filed Sept. 22, 1886. Serial No. 214,201. (No model.)



Claim.—The combination, with a ribbon-shield for a Hammond type-writer, of a straining-bow having vertical supporting-arms bent forward at an obtuse angle, whereby the bow is out of the plane of vision of the operator, substantially as described.

388,481. TYPE-WRITING MACHINE. JOHN W. OSBORNE, Washington, D. C. Filed Feb. 19, 1887. Serial No. 228,196. (No model.)



Claim.—1. In a type-writer having a line-feed mechanism, the combination of a positively-operated feed-roller, and locking mechanism therefor, with a knob for operating the roller independently of the feed mechanism, and a lever-connection for disengaging the locking mechanism extended within operative proximity of the knob, substantially as described.

2. In a type-writer having a line-feed mechanism, the combination of a positively-operating feed-roller, and locking mechanism therefor, with a knob for operating the roller independently of the feed mechanism, a lever-connection extending within operative proximity of the knob for disengaging the locking mechanism and accommodating coupling mechanism, substantially as described, for establishing and maintaining operative connection between the lever-connection and the knob during the rotation of the latter, whereby the roller may be freely rotated by the knob when its locking mechanism is disengaged, substantially as described.

3. In a type-writer having a line-feed mechanism, the combination of a feed-roller, and locking mechanism held in engagement with the roller by a spring, with a knob for rotating the roller independently of the feed mechanism, a lever-connection extended within operative proximity of the knob for lifting the locking mechanism against the action of its spring, and accommodating coupling mechanism, substantially as described, for establishing and maintaining operative connection between the lever-connection and the knob pending the rotation of the latter from its original position, whereby the connection of the knob with the lifting mechanism will be automatically severed when the knob returns to its original position, substantially as described.

4. In a type-writer having a line-feed mechanism, the combination of a feed-roller, and automatic locking mechanism therefor, with a knob for rotating the roller independently of the feed mechanism when the locking mechanism is lifted, and a stop for limiting the rotation of the roller by the knob, and a lock for holding it in its limited position, substantially as described.

5. In a type-writer having a line-feed mechanism, the combination of a feed-roller, and automatic locking mechanism therefor, with a knob for rotating the roller independently of the feed mechanism, a cam for lifting the locking mechanism, a shaft for actuating the cam extending within operative proximity of the knob, and accommodating coupling mechanism, substantially as described, for establishing and maintaining operative connection between the shaft and knob when the latter is actuated, substantially as described.

6. In a type-writer having a line-feed mechanism, the combination of a feed-roller, and automatic locking mechanism therefor, with a knob for rotating the roller independently of the feed mechanism, a lever-connection for disengaging the locking mechanism terminating within operative proximity of the knob in a sliding rod, a stud on the rod, a toothed wheel on the knob or roller arranged for engagement with the stud, and a spring controlling the rod, substantially as described.

7. In a type-writer having a line-feed mechanism, the combination of a feed-roller, locking and releasing mechanism therefor, and a knob for rotating the roller independently of the feed mechanism, with stops for limiting the rotation of the released roller in both directions, whereby the paper may be raised for correction or inspection and again returned to its original position, substantially as described.

8. In a Hammond type-writer, an erasing-plate arranged behind the paper and in proximity to the same, curved, as described, to be tangential to the paper where the same appears above the type-wheel guard, substantially as described.

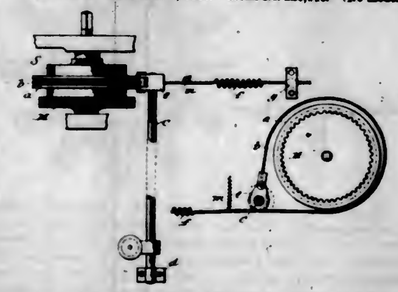
9. In a type-writer having an oscillating type-wheel, the combination of an erasing-plate suitably curved, as described, to be tangential to and located behind the paper, with a ribbon-shield and its bow, the latter being bent forward at an angle over the type-wheel guard and from the paper, whereby the writing upon the same is fully exposed to view and is accessible to erasing-tools, substantially as described.

10. In a type-writer, the combination of a feed-roller, and locking mechanism therefor, with a lever-connection for lifting the locking mechanism, a knob for rotating the roller when the locking mechanism is disengaged, and a toothed wheel connected with the knob and feed-roller, and a reciprocating coupling-rod constituting a part of the lever-connection for locking the same to the toothed wheel and roller pending the rotation of the latter, substantially as described.

11. In a type-writer, the combination of a feed-roller, a ratchet connected therewith, a pawl for actuating the ratchet and for locking the same and the roller, with a toothed wheel connected with the roller having teeth corresponding in number to those of the ratchet, a lever-connection for disengaging the pawl from the ratchet, a coupling-rod constituting a part of the lever-connection for actuating the same, and a stud upon said rod engaging the toothed wheel, substantially as described.

12. In a type-writer provided with a paper-carriage, a feed-roller mounted thereon, and a knob for rotating the latter when disengaged, and a locking mechanism and stop for holding the released roller after its rotation through a predetermined length of arc, consisting of a toothed wheel fast to the roller and knob, in combination with a boss journaled to the carriage-frame, a rod sliding across said boss, but sustained and controlled therein by a spring, a stud projecting from the rod adapted to engage the teeth of the wheel, and an extension of the rod formed and arranged to strike the shaft of the feed-roller as a stop when the predetermined rotation is completed and the engaged stud has been carried across and beyond a line in passing through the center of the wheel and that of the boss upon the carriage-frame, whereby said wheel is persistently urged by the controlling-spring upon the rod in a direction it cannot follow, substantially as described.

388,482. TYPE-WRITING MACHINE. JOHN W. OSBORNE, Washington, D. C. Filed Mar. 7, 1887. Serial No. 230,010. (No model.)



Claim.—1. In a type-writer, the combination of the carriage-feed mechanism and a friction-strap normally out of gear with the same with a strap-tightener adapted to the friction-strap for throwing it into gear with the carriage-feed mechanism and for actuating the latter in opposition to the direction of the feed of the carriage, substantially as described.

2. In a type-writer, the combination of a rotary element of the carriage-feed mechanism with a friction-strap loosely surrounding the same, and a strap-tightener adapted to the strap for tightening it upon the rotary element and for rotating the latter in opposition to

the direction of the carriage-feed, substantially as and for the purpose described.

3. In a type-writer, the combination of the carriage-feed mechanism and of an extensible friction-strap normally out of gear with said mechanism with a strap-tightener adapted to the extensible friction-strap for throwing it into gear with the carriage-feed mechanism, and for actuating the latter in opposition to the direction of the carriage-feed, substantially as and for the purpose described.

4. In a type-writer, the combination of a rotary element of the carriage-feed mechanism with an extensible friction-strap loosely surrounding the same, and a strap-tightener adapted to the strap for tightening it upon the rotary element and for rotating the latter in opposition to the direction of the carriage-feed, substantially as described.
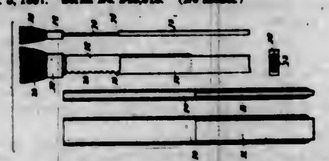
5. In a type-writer, the combination of the carriage-feed mechanism thereof and a friction-strap normally out of gear with said mechanisms with lever-connections extended within convenient reach of the operator for throwing the strap into gear with the feed mechanism and for actuating the latter in opposition to the direction of the carriage-feed, substantially as described.

6. In a type-writer, the combination of the carriage-feed mechanism thereof and a friction-strap normally out of gear with said mechanism with lever-connections extended within convenient reach of the operator for throwing the strap into gear with said mechanism and for actuating the latter in opposition to the direction of the feed, and a stop for determining the throw of the lever and thereby the backward feed of the carriage, substantially as described.

7. In a type-writer, the combination of the carriage-feed mechanism thereof and a friction-strap normally out of gear with said mechanism with lever-connections extended within convenient reach of the operator for throwing the strap into gear with said mechanism and for actuating the latter in opposition to the direction of the feed, with a stop for determining the throw of the lever, and a spring to restore said lever and strap to their normal position, substantially as described.

8. In a type-writer, the combination of a rotary element of the carriage-feed mechanism and the pawl and ratchet for holding the carriage against the actuating-spring with a friction-strap adapted to grasp the rotary element of the carriage-feed mechanism, and lever-connections, substantially as described, for drawing one end of said friction-strap (acting as a belt) against the actuating-spring through an interval representing one space-tooth of said ratchet, substantially as described.

388,483. ERASER. JOHN W. OSBORNE, Washington, D. C. Filed Sept. 6, 1887. Serial No. 248,518. (No model.)



Claim.—1. In an erasing-pencil, a tubular holder containing a movable strip of erasing-rubber, in combination with an extensible follower adapted to one end of said tube, whereby an advancing abutment within the same is provided for the sliding strip of rubber, substantially as described.

2. In an erasing-pencil, a tubular holder containing a movable strip of erasing-rubber, in combination with an extensible follower adapted to enter one end of said tube, and a shoulder upon the follower to limit its inward movement, substantially as described.

3. In an erasing-pencil, a tubular holder containing a movable strip of erasing-rubber, in combination with an extensible follower consisting of two pieces relatively adjustable lengthwise, and adapted as a whole to enter and fit one end of said tube, substantially as described.

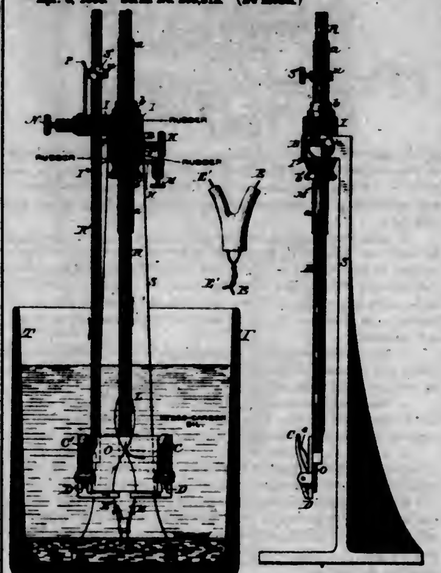
4. In an erasing-pencil, a tubular holder containing a movable strip of erasing-rubber, in combination with an extensible follower consisting of a plug adapted to fit one end of said tube, with a notched blade or shank extending inward therefrom, and a folded sleeve clasping said blade or shank and provided with a tooth to engage its notches, substantially as described.

5. In an erasing-pencil, a tubular holder containing a movable strip of erasing-rubber, in combination with an extensible follower supporting the inner end of said strip in its successive positions, and with a brush forming part of said follower extending from its outer end, substantially as described.

6. In an erasing-pencil, a follower adapted to push forward the movable rubber strip, and provided with a concave end whereby impact is made with the rubber at its edges only, substantially as described.

7. A follower adapted to push forward the movable rubber strip in an erasing-pencil, consisting of two separable pieces of stiff material sliding lengthwise upon each other, in combination with locking mechanism to effect their rigid connection in predetermined positions, and with a tubular holder whereby such connection is maintained, substantially as described.

388,484. MANUFACTURE OF FILAMENTS FOR ELECTRIC INCANDESCENT LAMPS. JAMES W. PARKER, New York, N. Y. Filed Apr. 6, 1883. Serial No. 269,512. (No model.)



Claim.—1. The combination of the insulating-standard having suitable binding-posts upon it, the spring contact-piece connected to one binding-post, and the clamp-holding frame adjustable upon the standard and having clamps insulated one from the other upon it, one of said clamps having continuous electrical connection with one binding-post, while the other clamp is electrically connected with the second binding-post through the spring contact-piece only when the clamp-holding frame is at one position of its adjustment, substantially as described.

2. The combination of the receptacle containing mercury and a solution of carbon, the insulating-standard, the clamps and clamp-holding frame adjustable upon said standard, and suitable contact-pieces upon the standard and clamp-holding frame, contact between which said pieces can only occur when the ends of the electrodes held in the clamps are immersed in the mercury and thereby short-circuited, substantially as described.

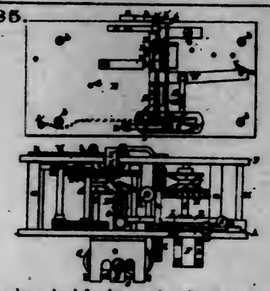
3. The combination of the insulating-standard having the clamp-holding frame adjustable upon it, and having also suitable contact-pieces connected to an external electric circuit, together with the clamps insulated one from the other upon the clamp-holding frame, and the electrical connections upon the clamp-holding frame, by which the internal circuit from one contact-piece upon the standard through the clamps and the object held by them to the second contact-piece upon the standard can be complete only when the clamp-holding frame is between certain positions of its adjustment, substantially as described.

4. The combination of an insulating-standard, a frame bearing clamps of suitable conducting material insulated one from the other, and a receptacle for liquids, the said frame and receptacle being relatively adjustable one to the other, together with suitable contact-pieces on the standard and on the frame, between which pieces contact can occur, and the clamps and the object held by them be thereby brought in circuit with an external source of electricity only when the clamp-holding frame and the liquid-receptacle are between such positions of their relative adjustment that the clamps are immersed in the liquid, substantially as described.

388,485. ELECTRIC PUNCH-REGISTER. ASHBEL G. PALMER, Utica, N. Y. Filed Nov. 30, 1886. Serial No. 219,803. (No model.)

Claim.—1. In an electric punch-register, the combination, with two feed-rollers, the shaft of one of which may be swung as specified,

383,485.



of a toothed or key wheel, I, a lever or key, L, a lever, R, provided with an adjusting-screw, *s*, to bear on the lever or key L, a spring, *m'*, and screw *n'*, for gaging the tension of said spring, said key-wheel, levers, and spring being for swinging said shaft, substantially as shown and described.

2. In an electric punch-register, in combination with a punch and die and two feed-rollers, the shaft of one of which may swing, a toothed or key wheel, I, a lever or key, L, operated by said key-wheel and provided with an arm extending under the punch to operate the same, and a lever, R, for swinging said shaft, and provided with an adjusting-screw, *s*, to bear on the lever or key L, substantially as shown and described.

3. The combination, with an armature, of an armature-lever, a sliding rod, *r*, latch O, a shaft, K, bearing an arm, *p*, and mechanism for revolving said shaft, substantially as and for the purposes set forth.

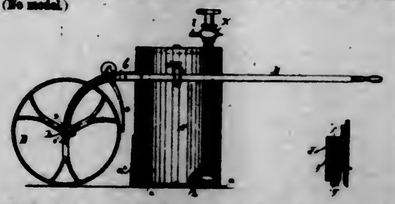
4. The combination of the toothed or key wheel H, the lever or key T, arm *s*, rod *a'*, lever *h'*, and latch X, which is an element in the stopping mechanism, substantially as and for the purpose set forth.

5. A gear, T, provided with one or more pins, *c'*, a shaft, *b'*, arm *d'*, provided with a cam-piece, *d'*, a rod, *g'*, a pivoted plate, W, and a latch X, pivoted in said plate, substantially as described.

6. The combination of a lever or key, Y, operated as set forth, a rod, *a'*, a lever, *h'*, a pivoted plate, W, bearing a pin, *u*, a latch, X, a rod, *g'*, an arm, *c'*, bearing a cam-piece, *d'*, a gear, T, provided with one or more pins, *c'*, a verge-wheel driven by said gear, and a verge, substantially as described.

7. In an electric punch-register, and in combination with the punch and die and mechanism, including a key-wheel, I, and key L, for operating the punch, feed-rollers revolved independently of said mechanism by means of clock-work regulated by a verge and verge-wheel, and stopped by a pin or like instrument engaging with an arm extending from said verge, said pin being moved into the path of said arm by devices controlled by means of a key, Y, and a key-wheel, H, fixed on the same shaft with the key-wheel I, substantially as described.

383,486. PORTABLE FORCE-PUMP APPARATUS. JOSEPH A PARSONS, Rocky River, Ohio. Filed Feb. 24, 1888. Serial No. 265,152. (No model.)



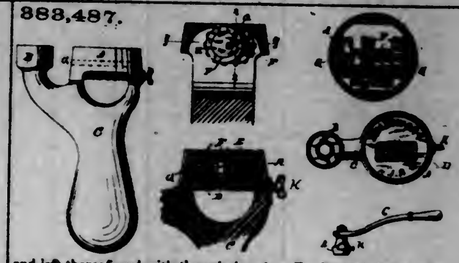
Claim.—1. In a portable force-pump apparatus, the combination of a forked journal and handle bearing cast integral, a wheel journaled in the forward portion of the same, handles secured to its opposite ends, a tank having bearing on said handles, said tank provided with radial arms, one of said arms terminating in a feeder, a second feeder secured to said fork, the two said feeders engaging with each other when the tank is in elevated position, substantially as set forth.

2. In a portable force-pump apparatus, the combination of a tank provided with a journal, handles on either side of said tank engaging with said journals, and journal-caps secured respectively by set-screws to the handles and having pivotal engagement with said journals, substantially as set forth.

383,487. STAMP FOR CANCELING, &c. JOHN B. PERRY, White Said, R. I. Filed Dec. 16, 1886. Serial No. 221,712. (No model.)

Claim.—1. In a stamping device, the recessed head A, having the transverse shaft G fixed thereon, in combination with the stationary hub E, mounted eccentrically upon said shaft and projecting to right

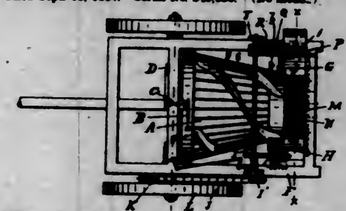
383,487.



and left thereof, and with the printing-rings F, adjustable by rotation on said hubs, substantially as set forth.

2. The described adjustable stamp, having on its face a permanent local stamp or die and provided with a polygonal shaft fixed horizontally across its recessed head, in combination with two or more eccentric hubs or disks fixed on said shaft, and having their centers alternately to right and left thereof in a horizontal plane, with rotatable printing-rings mounted on said hubs, and with a clamp-screw, as K, adapted to secure said rings in position when adjusted for use, substantially as set forth.

383,488. POTATO-DIGGER. JOSEPH D. PERRY, Detroit, Mich. Filed Sept. 16, 1887. Serial No. 249,850. (No model.)



Claim.—1. In a potato-digging machine, the combination, with the revolving scoop A, of the rolling disk B, supporting the forward end thereof, the crank-shaft and operating-lever for adjusting said disk vertically, and the ring-bearing G at the rear end of the scoop, said ring-bearing being supported on trunnions of the frame, substantially as described.

2. In a potato-digging machine, the combination, with a revolving scoop, of a bevel gear-wheel secured upon the rear end thereof, a ring-bearing in which said gear-wheel is journaled, trunnions on said bearing, and by which it is mounted in the frame, and a drive-pinion upon one of said trunnions and meshing with said gear-wheel, all substantially as described.

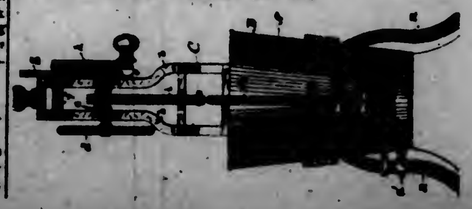
3. The combination, with the revolving scoop and the frame, of the crank-shaft C, provided with lever D, and the disk B on said crank-shaft, within said scoop and supporting the front end thereof, substantially as described.

4. The combination, with the revolving scoop and the frame, of the crank-shaft C, provided with lever D, and the disk B on said crank-shaft, within said scoop and supporting the front end thereof, and the rollers *k* on the frame, near the front end of the scoop, substantially as described.

5. In a potato-digging machine, the combination of the revolving scoop A, the circular trough M, provided with a grating on top, the elevator-trunk P, the elevator O, the discharge-spout U, and the revolving vine-cutter N, within said trough below the grating, all arranged to operate substantially as described.

6. In a potato-digging-machine, a revolving scoop consisting of the cutting-blade *a*, the tapered grating *c*, the gear-wheel B, the spiral brace *d*, secured to said grating, and the spiral wings *e*, secured to said brace, all substantially as described.

383,489. BEE-HEATER. DANIEL PETERS, Cincinnati, Ohio. Filed Nov. 9, 1886. Serial No. 182,262. (No model.)

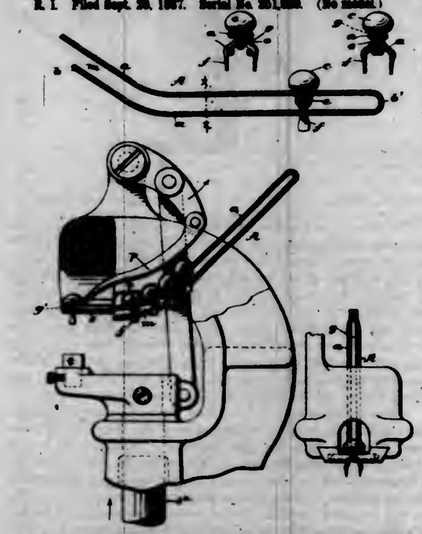


383,489.



Claim.—The improved egg-beater consisting of the vessel A, and arched frame C, hinged to the upper margin of the containing-vessel at one side and extending to and detachably fastened at the opposite side, the upper extensions, *b b*, of said arched frame, the crank-shafts *e* and *f*, journaled in and between said extensions and provided with intermeshing gears *g c*, the pitman *i*, extended through the arched frame C as a guide, and the detachable plunger D, combined and arranged substantially as set forth.

383,490. BUTTON-MACHINE. GEORGE W. PRENTISS, Providence, R. I. Filed Sept. 20, 1887. Serial No. 251,092. (No model.)



Claim.—1. The runway hereinbefore described, made of wire, having its upper portion adapted to receive the shanks of buttons and the lower portion of the runway arranged to guide the fasteners laterally when connected with the buttons.

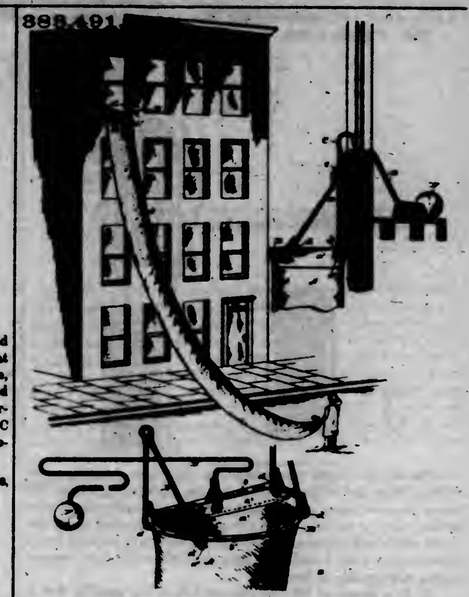
2. The combination, with button feeding and attaching mechanism, of a runway, substantially as described, made of wire, adapted to hold a series of buttons and fasteners, and having its lower end portion arranged to connect with said machine, and forming a continuation of the slotted guide, along which the buttons and fasteners are intermittently passed to the action of the clinching-die, substantially as hereinbefore described.

383,491. FIRE-ESCAPE. HENRY REMMERS PERRY, Tex. Filed Feb. 4, 1888. Serial No. 263,604. (No model.)

Claim.—1. In a fire-escape, the combination, with an elongated sack or flexible tube and with a ring permanently secured around the mouth of the same and formed with a curved or bowed portion and a straight inner or rear side, of divergent supporting-ropes carrying hooks at their upper ends and having their lower ends secured around said ring, the inner ends of said ropes being connected with the rings at the junction of the straight inner sides with the front curved portion, substantially as set forth.

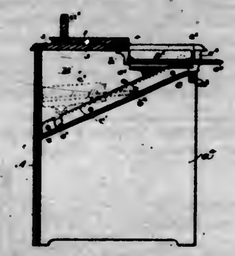
2. In a fire-escape, the combination, with an elongated sack or

383,491.



flexible tube and with a ring permanently secured around the mouth of the same and formed with a curved or bowed portion and a straight inner or rear side, of divergent supporting-ropes carrying hooks at their upper ends and having their lower ends secured around said ring, and a rope secured to said inner or rear side, provided with a ball or weight at its end, substantially as set forth.

383,492. TYPE-WRITER CABINET. BENJAMIN P. RICHARDSON, Boston, Mass. Filed Mar. 22, 1887. Serial No. 231,880. (No model.)



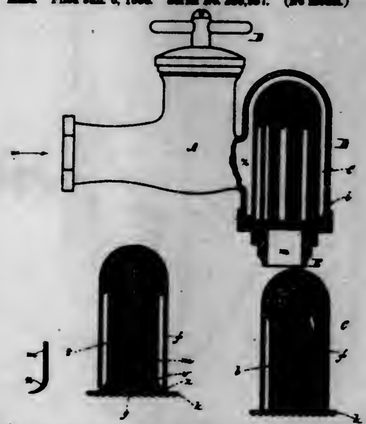
Claim.—1. The combination, with a cabinet or desk, of a track or tramway extending from front to rear of the said desk, and a machine-carriage supported by and adapted to be moved on the said track or tramway to bring it into position to enable the machine to be used, and thereafter, when not in use, to be moved back from the front of the desk on said track, substantially as described.

2. A cabinet or desk for type-writers, having a movable top or cover, and an inclined track or tramway extending from front to rear of the said desk below the said movable cover and upon which a type-writer is supported and adapted to be moved, substantially as described.

3. A cabinet or desk for type-writers, having a movable top or cover, and an inclined track or tramway extending from front to rear of the said desk below the said movable cover and upon which a type-writer is supported and adapted to be moved, and a locking shoulder or projection to retain the carriage in its elevated position, substantially as described.

4. A cabinet or desk for type-writers, having a movable top or cover, and an inclined track or tramway extending from front to rear of the said desk below the said movable cover and upon which a type-writer is supported and adapted to be moved, and a locking shoulder or projection to retain the carriage in its elevated position, combined with the pushing e^1, substantially as described.

383,493. FILTERING-FAUCET. WILLIAM H. SARGENT, Weymouth, Mass. Filed Jan. 6, 1888. Serial No. 259,927. (No model.)

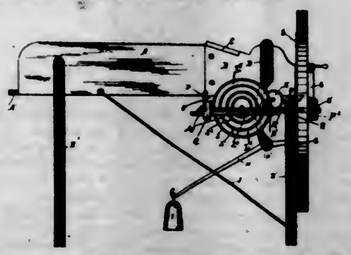


Claim.—1. A filter comprising the metallic case *f*, having a corrugated body and a perforated crown-top, a thimble-shaped felt screen disposed within said case and provided with an outwardly-projecting flange at its lower end, a thimble-shaped wire-cloth screen disposed within said felt screen, and also provided with an outward flange at its lower end, and a perforated plate disposed beneath said case and screen, substantially as described.

2. In a faucet of the character described, the metallic case *f*, having its body corrugated and its upper portion perforated, in combination with a felt screen disposed within said case, a wire-cloth screen disposed within said felt screen, a perforated plate disposed beneath said case and screen, the body A, valve D, chamber B, and cap E, having the duct *m*, all combined and arranged to operate substantially as specified.

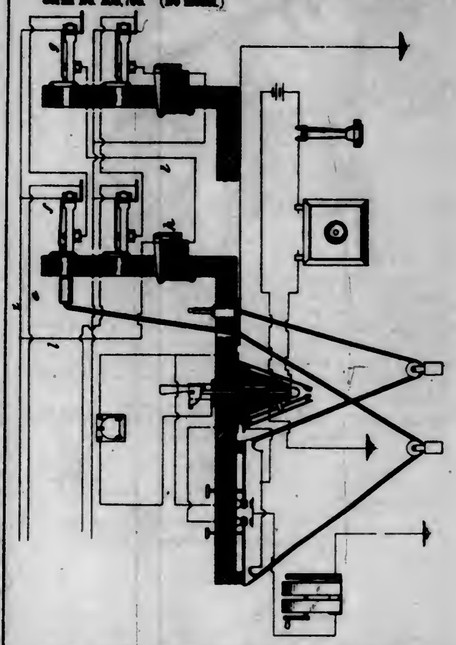
3. The improved faucet herein described, the same consisting of the body A, provided with the valve D, the chamber B, connected with said body and provided with the flange *i*, and screw-cap E, having the duct *m*, the metallic case *f*, having its body corrugated and its upper portion perforated, the thimble-shaped felt screens, *m*, provided with the water-proofed flanges *s*, the thimble-shaped wire-cloth screen *t*, provided with the flange *v*, the filtering material *b*, disposed within the screen *t*, and the perforated plate *k*, having the upwardly-curved projection *y*, all being constructed, combined, and arranged to operate substantially as set forth.

383,494. FEED-CUTTER. GOTTLOB F. SCHEID, Boardstown, Ill. Filed Feb. 15, 1888. Serial No. 264,092. (No model.)



Claim.—In feed-cutters, the trough A', having guiding-uprights A B, mounted on supports E E' and maintained by braces J, in combination with the shaft N, rotated in bearings Q R, having a crank, G, on its outer end, the fly-wheel F, having curved knives S, held on one side by the screws S' and pressed in on the other side by the screws T, the sliding pinion N', adjustably keyed to said shaft, the rod M, having arm M', the shaft X', the crown-wheel L³ thereon, having a concentric series of teeth to engage the pinion N' in its different positions on the shaft N and a parallel pinion, L⁴, mounted on the said shaft X', the meshing gears V K, operating the pinions Y X, which in turn mesh with the gear-wheels Z W, which respectively operate the rigid feed-roller W'' and the yielding roller W', the sliding standards D, the rod H', the lever H, and the weight I, for the purpose fully shown and described.

383,495. TEST-CIRCUIT FOR MULTIPLE SWITCH-BOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Renewed Nov. 21, 1887. Serial No. 256,709. (No model.)



Claim.—1. In a multiple-switch-board system of telephone-exchange, the combination, with a spring-jack switch on each of the boards, of a circuit extending from ground at the subscriber's station through his generator and bell and switch to the central office, through said switches and an annunciator to a line connected with the test plates or frames of said switches and extending to the subscriber's station, and two branches of said line at the subscriber's station, one branch including the telephone and being normally open at the telephone-switch, and the other branch being connected with a normally-open ground-switch, whereby signals may be sent between the subscriber's station and the central office, substantially as described.

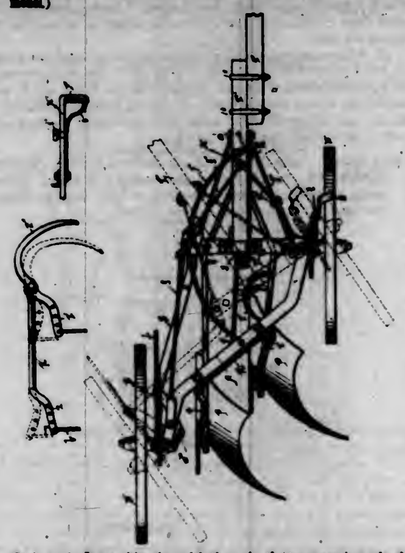
2. In a multiple-switch-board system, the combination of switches, one on each board for each telephone-line of the telephone-lines connected therewith, each line consisting of two branches, one branch of which, after passing through its switches and an annunciator, being connected with the other branch, which other branch is connected with the insulated frames or contact-pieces of the switches of the line, said branches extending to the subscriber's station, and the former being connected with the subscriber's telephone-switch, and when the telephone is on the switch through the bell and generator to ground, and the other branch, which includes the telephone, being normally open at the subscriber's telephone-switch when the telephone is hung thereon, and a branch connection including a ground-switch on the line side of the telephone, whereby a complete circuit may be formed from ground at the subscriber's station through the switches and the annunciator of the line at the central office, and back to ground at the subscriber's station, substantially as and for the purpose specified.

3. In a multiple-switch-board system of telephone-exchange, switches *f g* on different boards and telephone-line consisting of branches *c i*, connected therewith, and through an annunciator, A, said branches extending to the subscriber's station, and branch *c* being normally connected with ground, and branch *i* being normally open, in combination with a loop-plug inserted in switch *f* at the central office, whereby the insulated frames of the switches are disconnected from branch *c*, substantially as shown and described.

4. A subscriber's circuit extending from ground at the subscriber's station through the springs of a series of switches on different sections of a multiple switch-board and an annunciator back through the insulated frames or test-pieces of said switches, and thence back to the subscriber's station, the portion of the circuit connecting with the frames or test-pieces being normally open at said subscriber's station.

in combination with a plug which, being inserted in a switch at either of the boards, opens the metallic circuit at said switch.

383,496. GAS-FLOW. ABRAHAM SHAFFER and GEORGE M. SHAFFER, Crampsin, Mich. Filed Nov. 26, 1887. Serial No. 256,264. (No model.)



Claim.—1. In combination with the axle, the transporting-wheels, the swinging arm or head H', pivoted at one end to the forward end of the axle, the tongue attached thereto, the bar E, coupled to the swinging head and to the arm D of the rear axle-plate, E', and the circle-iron F, having its ends secured to the axle, as and for the purpose specified.

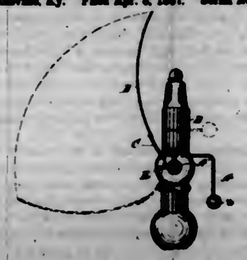
2. In combination with the wheels, the oblique axle, the mechanism for raising and lowering said axle on said wheels, the swinging head pivoted at one end to the forward end of the axle, the circle-iron supporting the outer end of said swinging head, the bar E, coupling the swinging head to the arm D of the rear plate, E', and the tongue pivoted to the yoke Y', having the braces *f''*, as and for the purpose specified.

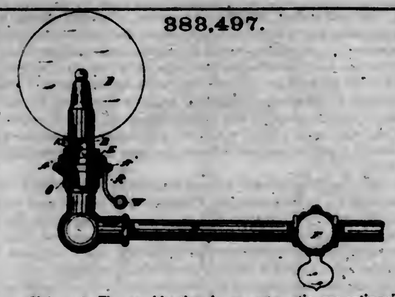
3. In combination with the transporting-wheels, the oblique axle, the circle-iron F, the swinging frame, the tongue mounted thereon, the reach H, and the plows adjustably coupled to said reach, as and for the purpose specified.

4. In combination with the oblique axle, the transporting-wheels, and the circle-iron F, the swinging head H', mounted thereon and having braces connected thereto supporting the tongue, said tongue having a pivoted connection to said braces, the curved lever *k'*, pivoted to said tongue, the reach H, and the plows coupled to said reach, as and for the purpose specified.

5. In combination with the axle-frame, the transporting-wheels, the swinging frame consisting of the parts H' N *f''* *f''*, the tongue, the bar E, the arm D, the plows coupled to the reach H, the rock-shaft B, having the arm Z, the curved arm Z', having the extension Z' made fast to said rock-shaft, and the loop-rods *b*, coupled to the plow-beams, the whole combined and operated as and for the purpose specified.

383,497. AUTOMATIC GAS-EXTINGUISHER. MICHAEL SHEEHEEN, Louisville, Ky. Filed Apr. 6, 1887. Serial No. 234,177. (No model.)

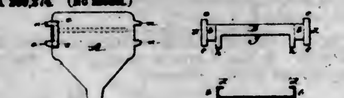




Claim.—1. The combination, in an automatic gas-extinguisher, of a cylindrical key passing horizontally through the gas-tube, an arm attached rigidly to said key and extending above and below the same, a disk secured to the upper end, and a counter-balance secured to the lower end of the arm, substantially as and for the purpose set forth.

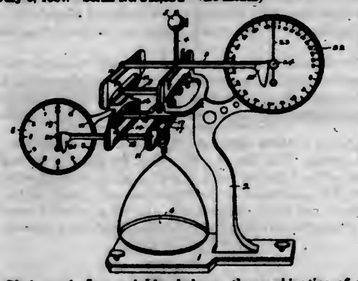
2. An automatic gas-extinguisher consisting, essentially, of a casing, E, a key, A, provided with an opening, O, and a Y-shaped arm, C, rigidly attached to the key, a concave polished disk, D, at its upper end, and a counterbalancing-weight, W, at the lower end of said arm, all adapted to operate substantially as and for the purposes set forth.

383,498. BUCKLE. DUNBAR I. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Apr. 2, 1888. Serial No. 269,274. (No model.)



Claim.—In a buckle the frame of which consists of front and rear plates, A B, forming substantially a tubular frame, the said plate B constructed with projections *d* at each end, the said projections forming laterally-projecting ears *e e*, the said projections turned inside the plate B and parallel therewith, distant from the plate B corresponding substantially to the distance required between the plates A and B, and the plate A constructed with ears *a a* at each end, corresponding to the said ears *e e* on the plate B, and the said ears *a a* closed over the ears *e e* as a means for uniting the two plates A and B to form the buckle-frame, substantially as described.

383,499. WEIGHT AND PRICE INDICATING BALANCE. ALFRED STRINGER, Cincinnati, Ohio, and WILLIAM KENT, Passaic, N. J. Filed July 9, 1887. Serial No. 243,324. (No model.)



Claim.—1. In a weighing-balance, the combination of a scale-beam having a pivotal resistance to deflection, a graduated vertical standard rigidly mounted thereon, an adjustable poise upon said standard opposing the pivotal resistance of the beam, and a registering device actuated by the beam oscillations to indicate total products of weight upon the beam terminal by the price-unit as fixed by the vertical adjustment of the resistance-counterpoise, substantially as set forth.

2. In a weighing-balance, the combination of a balance-beam having a pivotal resistance to deflection, a graduated vertical standard mounted rigidly thereon, a counterpoise to such pivotal resistance adjustable vertically on the standard, and a dial or indicating-register actuated by the beam's deflection as governed by the adjustment of the counterpoise, and an independent balance-beam or weight-indicator suspended from the main balance-beam and carrying the weighed body, substantially as set forth.

3. The combination, in a weighing-balance, of a balance-beam, a fulcrum-pivot acting by molecular displacement and involving molecular resistance, a rigid vertical standard upon the beam graduated into definite spaces, and a counterpoise carried upon the standard and adjustable to the graduations, whereby the molecular resistance of the fulcrum-pivot is increased or diminished to exact degrees by the adjustment of the counterpoise, thereby regulating the limit of oscillation of the beam under a given weight for the purpose of ascertaining and indicating both weight and price at the same time, substantially as set forth.

4. In a weighing-balance, the combination of a base-frame or pedestal carrying an indicating-dial, a balance-beam carried upon the pedestal or frame by a molecular fulcrum-pivot and engaging the dial-finger at one end, a suspending-link carried by the opposite end of the balance-beam, an indicating-dial carried by said link, and an independent balance-beam fulcrumed upon and suspended by said link, engaging at one end the index-finger of the last-mentioned dial and carrying at the other the weight-platform or scale-pan, substantially as set forth.

5. The combination, in a torsional balance, of the following instrumentalities, viz: a base frame or pedestal carrying a torsion-frame, a balance-beam carried upon one pivot of the frame, and a radius-arm upon the other, a double torsion-frame connecting the terminal of the balance-beam and radius-arm by two of its pivots, a second balance-beam and radius-arm carried upon the remaining pivots of a double torsion-frame, a third torsion-frame connecting the ends of the second balance-beam and its radius-arm and carrying the weight-platform, a graduated standard and poise adjustable thereon carried by the main balance-beam, a dial carried upon the pedestal with its index-finger in actuating engagement with the free end of the main balance-beam, and a second dial carried upon the double torsion-frame with its index-finger in actuating engagement with the free end of the second balance-beam, substantially as set forth.

383,500. COMBINED PANTS-PROTECTOR AND PULL-STRAP FOR SHOES. William H. Stewart, Brooklyn, N. Y. Filed Jan. 3, 1888. Serial No. 259,668. (No model.)

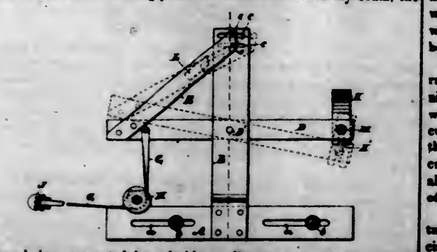


Claim.—1. In a pants-protector and pull-strap for shoes, the ring B, attached to the rear of a shoe, in combination with a strap, C, attached to said ring, and a hook, D, at the lower end of said strap, said hook being adapted to engage said ring, as and for the purpose herein specified.

2. The webbing C, folded upon itself and firmly secured to the rear of a shoe near its fold, in combination with a ring, B, secured to its short arm, and a hook, D, secured to its long arm, said hook being adapted to engage said ring, as and for the purpose herein specified.

383,501. LOOM-TEMPLE. William H. Taylor, Hampton, Ontario, Canada. Filed Feb. 13, 1888. Serial No. 263,809. (No model.)

Brief.—The T-shaped frame of the temple is provided with slots to permit of its adjustment on the breast-beam of a loom, and has pivoted to its central arm a vibrating arm, one end of which is provided with an adjustable striking-piece for contact with the lay-beam, the

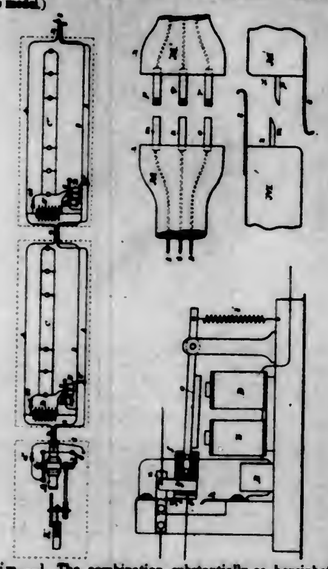


other being connected by suitable cording to a gravitating weight which retracts the bar after it has been set by its contact with the lay. To the end of the bar is riveted a spring-piece provided with teeth to engage the cloth projecting through slots in the frame, and also provided with an inclined plane, which, meeting the long arm of the frame when the vibrating bar is struck by the lay, lifts the teeth out of the cloth at the time mentioned.

Claim.—1. The combination, with the T-shaped frame composed of bars A and B, of the tilting bar D, spring E, having tooth *c* and inclined plane L, and a cord and gravitating weight, J, as and for the purpose set forth.

2. A loom-temple consisting of a bar, A, having longitudinal slots *a a*, bar B, secured at one end to the middle of bar A transversely, and provided with slots *c c* near the opposite end, tilting bar D, pivoted to bar B, and provided with an adjustable striker-plate, K, at one end, and spring E at the other end, said spring provided with tooth *c*, and inclined plane L, as set forth.

383,502. APPARATUS FOR LIGHTING RAILWAY-CARS BY ELECTRICITY. Ellis A. Tremis and Stanley C. C. Currie, London, County of Middlesex, England. Filed July 30, 1887. Serial No. 245,228. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of an independently-driven dynamo or generator of electricity mounted upon a locomotive, an electric charging-circuit running from the generator through all the cars, a secondary battery in each car and in said circuit, lamps in the car in multiple-arc circuit with the charging-circuit and secondary battery, and a circuit-controlling device which simultaneously cuts out and lets in both the generator and storage-battery.

2. The combination, substantially as hereinbefore set forth, of an independently-driven dynamo or generator of electricity mounted upon a locomotive, an electric charging-circuit running from the generator through all the cars, a secondary battery in each car and in said circuit, lamps in the car in multiple-arc circuit with the charging-circuit and secondary battery, an electro-magnetic circuit-controlling device which cuts the lamps in and out of circuit, and a controlling-circuit which regulates the circuit-controlling device, whereby the lamps may be lighted or extinguished from the locomotive as well as from the car.

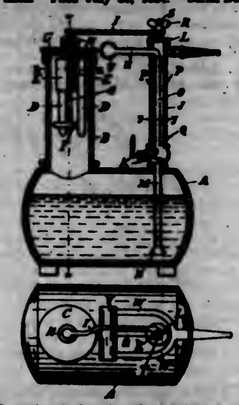
3. The combination, substantially as hereinbefore set forth, of a railway-train, a dynamo or generator, an electric charging-circuit running from car to car, a secondary battery in each car in multiple arc with said circuit, lamps in each car, also in multiple arc with said circuit and secondary battery, a circuit-controlling device which holds the lamps out of circuit in an independent circuit, and detachable circuit-connections between the cars, whereby the lamps are automatically lighted by the separation of the cars and the consequent breaking of the circuit.

4. The combination, substantially as hereinbefore set forth, of a train of cars carrying secondary batteries, a generator and a charging-circuit, and lamps all in multiple arc in the same charging-circuit with the secondary batteries, so that any inequality in condition of the storage-batteries is rapidly compensated when the train is coupled up.

5. The combination, substantially as hereinbefore set forth, of the

generator, the charging-circuit, the storage-batteries and lamps in multiple are in the charging-circuit, their electro-magnet circuit-controllers, the actuating mechanism thereof, and a controlling-circuit of which one of the charging-wires constitutes a portion.

383,503. CHEMICAL ENGINE. Randall P. Van Valkenburg, Manchester, Mich. Filed July 23, 1887. Serial No. 245,239. (No model.)



Claim.—1. In a chemical engine, the combination, with the main reservoir or tank, of two receptacles connected therewith on the top, one receptacle containing a series of pockets for the reception of acid-containing glass vessels and a mechanical crusher, and the other receptacle being provided with an exit-pipe on top, a valve at the bottom, a lower extension projecting into the main tank to near the bottom thereof, and an annular chamber formed between the outer wall of said receptacle and an inner perforated pipe inclosed in said receptacle, and an outlet from said pipe, all substantially as described.

2. In a chemical engine, the combination, with the main reservoir or tank, of a dry-compound-containing receptacle connected therewith on top and having a lower extension projecting into said main tank to near the bottom thereof and terminating in a strainer, a perforated tube within said receptacle, a valve between said lower extension and the receptacle, an exit-pipe communicating with the top of said perforated tube, a transverse drum communicating with said exit-pipe, and one or more exits from said drum, substantially as described.

3. In a chemical engine, the combination, with the main reservoir or tank, of a dry-compound-containing receptacle connected therewith on top and having a lower extension projecting into said main reservoir or tank to near the bottom thereof and terminating in a strainer, a valve between said lower extension and the receptacle, and an exit-pipe communicating with the top of said perforated tube, all arranged substantially as described.

383,504. CAR-COUPLING. Joseph Wagner, Mike Grove, Ill. Filed Mar. 12, 1888. Serial No. 267,115. (No model.)



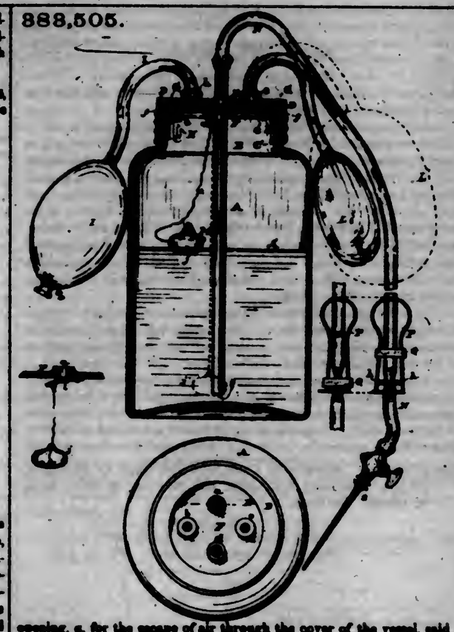
Claim.—1. In automatic car-couplers, the stationary buffer E H G, provided with the pin-plate O and slots V, in combination with the reciprocating buffer K W X, operating therein, and the link, as specified.

2. The stationary buffer E H G, provided with the link-plate O, slots V, and rim J I, in combination with the pin P, link V, and inclined reciprocating buffer K W X, provided with the pin S, operating in the said slots V, and the enlarged end part L M, shouldering against the rim J I, as specified.

383,505. APPARATUS FOR EMBALMING. Frank Warren, Cleveland, Ohio. Filed July 15, 1887. Serial No. 244,614. (No model.)

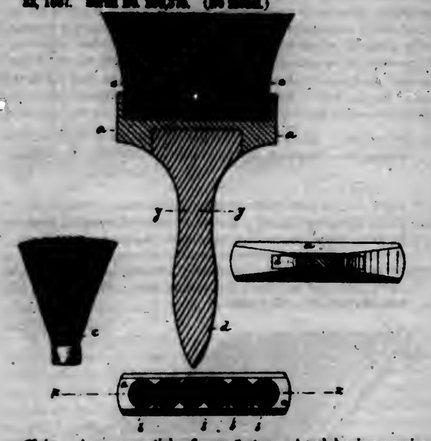
Claim.—In combination, the vessel for containing the embalming-fluid, an air-generator, I, connected by a pipe to the interior thereof through the upper part, an air-reservoir, also in connection with the interior upper portion of the vessel, a discharge-tube having a suitable nipple, O, and an extension-tube, M, within the vessel, reaching to near the bottom thereof, said tube having the discharge-opening at its lower portion, a valve, *i*, located at the top of the vessel and controlling an

383,505.



opening, *a*, for the escape of air through the cover of the vessel, said valve being in turn controlled by a float, *j*, and a suitable connection, all substantially as described.

383,506. BRUSH. Philip Warren, New York, N. Y. Filed Sept. 22, 1887. Serial No. 250,575. (No model.)



Claim.—As a new article of manufacture, a brush having a series of sockets opening into one another, in combination with tufts set into said sockets, substantially as specified.

383,507. SHEET-METAL VESSEL. Francis A. Walsh, Milwaukee, Wis. Filed Nov. 14, 1887. Serial No. 256,173. (No model.)



Claim.—1. In a sheet-metal vessel, the body having a flat vertical fold or false seam constituting part of said vessel-body and continuous

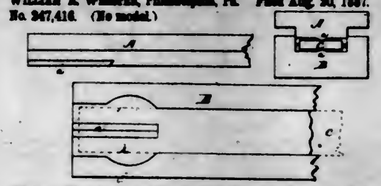
and integral therewith, said fold being of two thicknesses only in close contact, and one of said thicknesses being in close contact with said body, forming a seat for the can head or cover, in combination with a head or cover consisting of a horizontal plate having a vertical flange on its periphery, said head or cover resting on said seat composed of said vertical fold or false seam.

2. In a sheet-metal vessel, the body having a flat vertical fold or false seam constituting part of said vessel-body and continuous and integral therewith, said fold being of two thicknesses only in close contact and one of said thicknesses being in close contact with said body, forming a seat for the can head or cover, and said body rising vertically above said fold or seam, in combination with a head or cover consisting of a horizontal plate having a vertical flange on its periphery, said head or cover resting on said seat composed of said vertical fold or false seam within the vessel-body, and the top of said vessel-body above said fold or seam and the vertical flange of the head or cover rising to different heights.

3. In a sheet-metal vessel, the combination of the body having a fold or false seam formed therein, with ears or analogous attachments secured to the body by being pressed between two adjacent surfaces of the said folded part, substantially as shown and described.

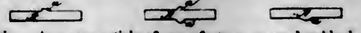
4. In a circular sheet-metal vessel, the body A, consisting of a sheet of metal notched out, as shown at c, and provided with a flat vertical fold or false seam, B, near its upper end, consisting of two thicknesses of the vessel-body pressed closely together, and one of said thicknesses pressed closely against the said body, forming a seat for a head or cover.

388,508. METHOD OF SPREADING THE ENDS OF EYE-BARS. WILLIAM R. WEBSTER, Philadelphia, Pa. Filed Aug. 20, 1887. Serial No. 247,416. (No model.)



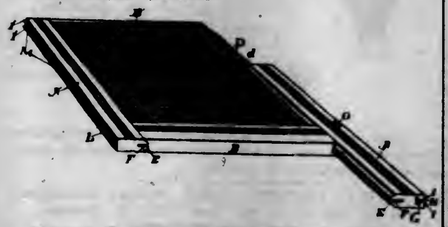
Claim.—The process of spreading the end of a rectangular metal bar, which consists in heating said end to the required temperature for upsetting, clamping it between die-faces, one or both of which are provided with a continuous central longitudinal rib or projection arranged to lie along the whole length of the heated end, and then upsetting it by pressure on its end and in the line of the central rib on the supporting die-face, all substantially as specified, and so that the heated end of the bar will be distorted and engaged with the ribbed die-face along its median line and throughout its length during the upsetting.

388,509. BLANK FOR EYE-BARS. WILLIAM R. WEBSTER, Philadelphia, Pa. Filed Sept. 30, 1887. Serial No. 251,084. (No model.)



Claim.—As a new article of manufacture, an eye-bar blank consisting of a metal bar having a central bead or ridge formed upon one or both of its sides, substantially as and for the purpose specified.

388,510. SCREEN. DIEDRICH WESSMANN, Los Angeles, Cal., assignor of one-half to John J. Jones, same place. Filed Dec. 22, 1887. Serial No. 258,730. (No model.)



Claim.—1. The combination of the rail of the screen having the groove E therein, and the groove F, opening into the groove E at or near its mid-width, at a point wholly within the groove, the trough D, retained in said grooves and not exposed to view, and the material of the screen having its edges lapped around one side of the trough.

2. The combination of the screen-frame provided with the T-shaped groove G in one of its stiles, the guide H I I, held in the groove G, the steps K K', provided with grooves J J and J' J', and the rectangular trough L I' I', secured to the other stile.

3. In a screen substantially such as set forth, the combination of the stile A, having the T-shaped groove therein, the guide H, formed to the shape of the groove and provided with the tongue I I and the hole N, and a spring-bolt adapted to be inserted into and withdrawn from the hole, as and for the purpose set forth.

388,511. HARNESS-OIL. ALLEN S. ASHCRAFT, Brandenburg, Ky. Filed Aug. 13, 1887. Serial No. 246,869. (No specimens.)

Claim.—A harness-oil composed of lard, fish, castor, and Eldorado oils, the pulverized barks of the roots of the alder and Paradise trees, indigo, and copperas, in about the proportions set forth.

388,512. COIN-SPINNER. FRANCIS M. BARNES, Washington, D. C. Filed Mar. 3, 1888. Serial No. 266,082. (No model.)

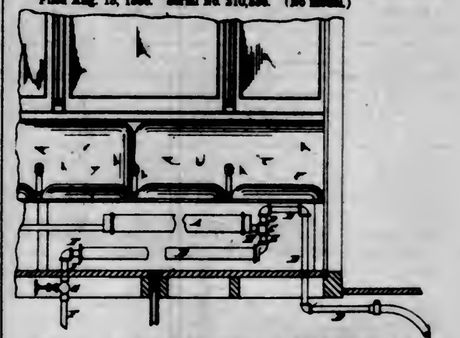


Claim.—1. A coin-spinner comprising a holder and a striker for discharging the coin from the holder and giving it a spinning motion, substantially as described.

2. A coin-spinner comprising, in combination, a holder and a spring-actuated striker adapted to strike the coin near its edge while in said holder, substantially as described.

3. The combination of the spring holding-fingers for clasping a coin at opposite points on its periphery and a spring-actuated striker for striking the coin near its edge and midway between the holding-fingers, substantially as described.

388,513. CAR-HEATER. JOHN D. CAMPBELL, New York, N. Y. Filed Aug. 13, 1886. Serial No. 210,198. (No model.)



Claim.—1. In a car-heating system, a steam-supply pipe, a heater, and a reservoir for the condensed steam; all connected with a coupling, the connection with the heater being out of line with the steam-pipe, and the steam-pipe being contracted at the point where it enters the coupling, substantially as described.

2. The combination, with heater A, reservoir B, lying outside of the steam-circuit, and coupling C, of a steam-pipe, D, rising vertically from said coupling, a pipe, E, of larger area than steam-pipe D, connecting said reservoir with the lower side of said coupling and located in line with the steam-pipe D, and a pipe, H, also of larger area than steam-pipe D, connecting said coupling with the heater A, substantially as and for the purpose set forth.

388,514. INK-WELL. EDWARD J. COLBY, Chicago, Ill. Filed Sept. 17, 1887. Serial No. 249,914. (No model.)

Claim.—1. An ink-well, in combination with a supporting-frame which is secured at any desired position, and provided with a projecting rod upon which the ink-well can be adjusted, so as to vary its distance from the supporting-frame.

2. An ink-well, in combination with a supporting-frame which is adapted to be secured at any desired point, and an arm pivoted to said frame so as to swing horizontally about the same, to which arm the ink-well is secured so as to be movable therealong.

388,514.



3. The combination of a supporting-frame, an ink-well, and an arm secured to said frame so as to be vertically adjustable, and pivoted so as to swing horizontally about said frame, which arm supports the ink-well, which is adjustably secured thereon so as to be movable therealong.

4. The combination of an ink-well, a supporting-frame, and an arm to which the ink-well is secured so as to be movable therealong, said arm being secured to the frame so as to be vertically adjustable thereon.

5. The combination of an ink-well, an arm to which it is secured so as to be movable therealong, and a supporting-frame to which the arm is pivoted, so as to horizontally rotate about the frame.

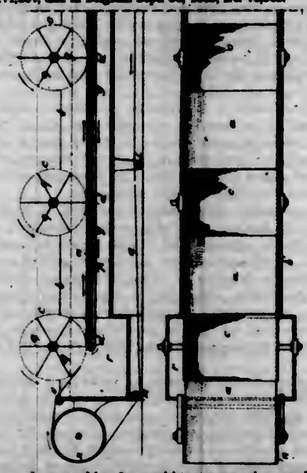
6. The combination of an ink-well, an arm to which the ink-well is secured so as to be movable therealong, and a supporting-frame on which the arm is secured so as to be vertically adjustable and to rotate horizontally about said frame.

7. In an ink-well, the combination of a series of angle-arms pivoted concentrically below and supporting above a series of rings, a series of ink-wells resting in said rings, and a supporting attachment upon which said arms are secured, the attachment adapted to reciprocate upon a supporting-frame.

8. The combination of a series of rotating ink-wells with a hollow portion on which they are secured, and a supporting-arm which is received within said hollow portion and upon which the said portion reciprocates.

9. The combination of a supporting-arm, a reciprocating hollow portion thereon, a series of ink-wells, and a covering-plate for said ink-wells secured to said hollow portion.

388,515. MACHINERY FOR WASHING WOOL. WALTER COOK, Christchurch, Canterbury, New Zealand. Filed Jan. 19, 1888. Serial No. 180,980. (No model.) Patented in New Zealand May 5, 1884, and Sept. 2, 1884; in England Mar. 20, 1885, No. 4,022; in France Sept. 28, 1885, No. 171,267, and in Belgium Sept. 30, 1885, No. 70,988.

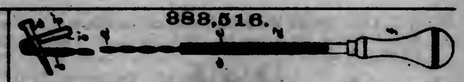


Claim.—In a machine for washing or scouring wool, the combination of the following elements, namely: a trough, a feeding-belt, squeezing-rollers which nip or squeeze the wool under water in said trough, a false bottom in the trough below the water-line, and paddles or fans *g* above said false bottom and serving to drive forward the water and the wool above the false bottom to wool-receiving mechanism and to create a circulation and return-current of the water beneath the false bottom.

388,516. TACK OR NAIL HOLDER. WILLIAM H. DE PUY, New York, N. Y. Filed Oct. 28, 1887. Serial No. 253,202. (No model.)

Claim.—1. The improved nail-holder consisting of the staff combined with spring-jaws in prolongation of said staff, and being adapted

388,516.



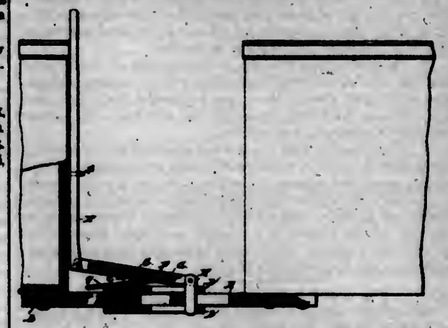
to grip and hold the body of a nail transversely and to be detached therefrom laterally when the nail is set, substantially as described.

2. The improved nail-holder consisting of the staff combined with spring-jaws in prolongation of said staff, each consisting of two members adapted to grip and hold the body of a nail transversely at two points a suitable distance apart for insuring a definite and stable position of the nail, and also adapted to be detached from the nail laterally when the nail is set, substantially as described.

3. The improved nail-holder consisting of the staff combined with spring-jaws in prolongation of the staff and consisting of two members, each formed of a loop of a wire bent nearly double at the middle, or thereabout, and at right angles to the plane of the two members of the loop, said jaws being adapted to grip and hold the body of a nail transversely at two points a suitable distance apart for insuring a definite and stable position of the nail, and also adapted to be detached from the nail laterally when the nail is set, substantially as described.

4. The improved nail-holder consisting of the staff combined with spring-jaws in prolongation of the staff and consisting of two members, each formed of a loop of a wire staff bent nearly double at the middle, or thereabout, of said loop and at right angles to the plane of the two members thereof, said jaws being adapted to grip and hold the body of a nail transversely at two points a suitable distance apart for insuring a definite and stable position of the nail, and also adapted to be detached from the nail laterally when the nail is set, substantially as described.

388,517. CAR-COUPLING. JAMES H. FISHER, Lebanon, Tenn. Filed Mar. 30, 1888. Serial No. 269,019. (No model.)

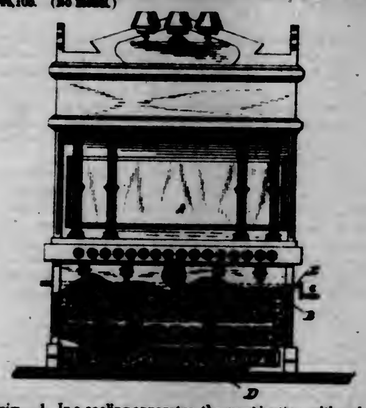


Claim.—1. In a car-coupling, the combination of the single-armed link secured to the end of a car, the bifurcated link secured to the facing end of a second car, and having an upper and a lower arm provided with longitudinal elongated registering pin-openings, the swinging pin hanging normally through the openings in the bifurcated link, and means, substantially as described, whereby the pin may be lifted out of said openings from the top of the adjoining car, substantially as specified.

2. In a car-coupler, the combination of the single-armed link secured to the end of a car, the bifurcated link having similar upper and lower arms and secured to the end of a second car, the vibratory lever journaled at its center between the arms of a bracket secured to the top of the bifurcated link inward from the pin-openings therein, the pin pivoted to the end of the outer arm of said lever at its upper end and hanging down through the pin-openings in the bifurcated link, and the rod with its lower end pivoted to the end of the inner arm of the vibratory lever and rising thence through a guide-staple to a suitable distance above the top of the car to which the bifurcated link is secured, substantially as specified.

3. In a car-coupler, the combination of the link A, secured to the end of a car, with the bifurcated link B, secured to the end of a second car, and having the similar upper and lower arms *b'*, the bracket C, secured to the upper surface of the bifurcated link, the lever D, journaled at its center between the arms *c c* of said bracket, the swinging pin E, pivoted at its upper end to the outer arm of said lever, the rod F, pivoted at its lower end to the inner arm of the lever and rising through the staple *f*, secured to the end of the car, to a suitable distance above the top of the latter, and the spring G, secured to the under surface of the outer arm of the lever D, having its inner end free and riding on the shoulder *g* of the bifurcated link, substantially as specified.

383,518. COOLER FOR SODA-WATER APPARATUS, &c. ALEXANDER K. FIRLAY, New Orleans, La. Filed July 12, 1887. Serial No. 244,105. (No model.)



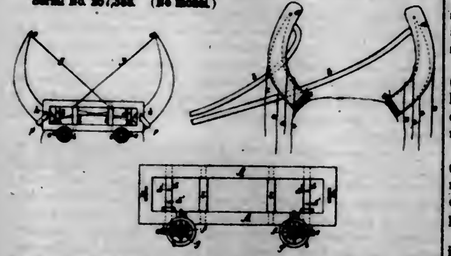
Claim.—1. In a cooling apparatus, the combination, with a chamber to receive the material to be cooled, of an ice-chamber adjacent thereto and extending above the same, and an agitator provided with suitable operative devices, said agitator being located in the ice-chamber in position to engage the ice-arch and rupture the same when it is operated.

2. The combination, with the cooling or ice chamber of a soda or other like fountain, of an agitator capable of a reciprocating, oscillating, or rotary motion, whereby the ice may be loosened and shaken down upon the coolers, substantially as specified.

3. The combination, with the cooling-chamber of a soda-water apparatus, of a horizontal rod extending through the same, and provided with fingers whereby the ice may be agitated, the said rod having a handle on the outside whereby it may be rotated, oscillated, or reciprocated, substantially as specified.

4. In combination with a soda-water apparatus having a cooling-compartment provided at its bottom with soda-water coolers and their ordinary supply and exhaust connections, a rod arranged to operate in apertures in the walls of the cooling-chamber, the said rod provided between the apertures with a series of projecting fingers, and at its ends with handles whereby it is operated so that the fingers of the rod may rake across the upper surface of the soda-water coolers, substantially as and for the purpose set forth.

383,519. MACHINE FOR SOFTENING AND BEVELING THE HORNS OF CATTLE. GEORGE B. FERRIS, Fremont, Nebr. Filed Dec. 2, 1887. Serial No. 257,388. (No model.)

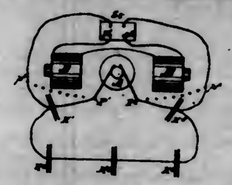


Claim.—1. The horn-sack *a*, having the series of cords *c* and the pipe *b* connected therewith, said pipe having its free end provided with a coupling, *b*², for connecting it with a nozzle projecting from a steam-generator, substantially as shown and described.

2. The horn-bending mechanism, substantially as described, it consisting of the frame A, provided at its ends with slots *k* and having bearings for properly containing therein the shafts *d d* and *l l*, each shaft *d* being provided with holes *d'* and having secured to its lower end a worm-gear, *e*, which operates with a worm, *f*, secured to or forming a part of a shaft, *g*, supported in bearings *h h*, fastened to the frame A, each shaft *g* having a hand-wheel, *i*, by revolving which motion can be communicated to the shafts *d* through the gears *e* and worms *f*, and shafts *g*, all as shown and set forth.

3. The frame A, having its side bars, *m*, provided with slots *q* and series of holes *r*, and its end bars, *j*, formed with tenons on the ends to enter the slots *q*, and having holes *s* to correspond with the holes *r* to receive bolts or pins *n*, in combination with the shafts *d d* and *l l*, worm-gears *e e*, worms *f f*, and shafts *g g*, sustained in bearings secured to the frame and provided with hand-wheels *i i*, all substantially as described and represented.

383,520. PRODUCTION, TRANSMISSION, AND DISTRIBUTION OF ELECTRIC CURRENTS. CHARLES R. PEUTE, New York, N. Y. Filed Oct. 7, 1886. Serial No. 179,271. (No model.)



Claim.—1. An organized system for the production, transmission, and distribution of electric currents, consisting of the combination of apparatus for automatically producing a suitably-varying current and one or more external or working circuits connecting the opposite poles of the current producing and varying apparatus, said circuits being inductively connected to the poles through electrical condensers or devices which prevent the actual passage of the initial current from the poles over the lines or circuits, but which transmit a corresponding amount of electrical energy over the circuits by virtue of inductive through said devices from both of said poles.

2. An organized system for the production and distribution of electrical energy, consisting in the combination of apparatus for producing a suitably-varying current, and one or more lines or circuits connecting the opposite poles of the current-producing apparatus, one or more of said lines being divided into sections by condensers, each section having substantially the same potential at its ends as the undivided line would have had and being substantially a counterpart of said undivided line.

3. The combination of apparatus for producing a suitably-varying current and one or more lines or circuits connected to the opposite poles of said apparatus, one or more of said lines being divided into sections inductively united by condensers, each such section being adapted for the utilization of the current passing over it in electrical apparatus inserted in it.

4. The combination of apparatus for producing a suitably-varying current and one or more lines or circuits connected to the opposite poles of said apparatus, one or more of said lines being divided into sections inductively united by condensers, and each of said sections being practically independent of the others as regards the character of the current passing over it or through the electrical apparatus inserted in it.

5. The combination of apparatus for producing a suitably-varying current and one or more lines or circuits connecting the opposite poles of said apparatus, one or more of said lines being divided into sections inductively united through condensers, whereby each pole acts by induction over the whole line to the other pole and each assists and sustains the inductive action of the other.

6. The combination, substantially as described, of dynamo-electric apparatus for producing a suitably-varying current, two or more lines connecting the opposite poles of said apparatus through condensers, and a circuit containing the field-magnet coils of said apparatus and means for changing the varying to a straight current.

7. The combination, substantially as described, of dynamo-electric apparatus for producing a suitably-varying current and one or more lines connecting the opposite poles of said apparatus through condensers, and a circuit containing the field-magnet coils of said apparatus.

8. The combination of apparatus for producing a suitably-varying current, one or more lines or circuits connected to the opposite poles of said apparatus, and means in said circuit or circuits, but independent of or separate from the generating apparatus, for changing said varying to a continuous or straight current for use therein.

9. The combination of dynamo-electric apparatus for producing a suitably-varying current and a circuit containing its field-magnet coils in closed circuit with one or more coils of the armature, with one or more external or working circuits connected to its poles through condensers.

10. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus through condensers for transmitting said current, and electrical receivers actuated by the impulses or currents induced by or between said condensers.

11. The combination of apparatus for producing a suitably-varying current, one or more lines or circuits connected to the poles of said apparatus through condensers, apparatus in said circuit for changing the character of the current flowing over it and sending it through a local circuit connected to said apparatus, then on, over the line, and an electrical receiver in said local circuit for utilizing said changed current.

12. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus through condensers for transmitting said current, means for also producing a straight current, and one or more lines connected thereto for transmitting said straight current.

13. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus for transmitting said current bodily, one or more lines connected to the poles, through condensers for transmitting said current by induction over them, means for producing a straight current, and one or more lines for transmitting said straight current.

14. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus through condensers, and means for giving any desired potential (within the capacity of the said apparatus) to the current sent over each individual line.

15. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus through condensers, and means for sending a current of the same potential over each of said lines.

16. The combination of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus through condensers, means for giving any desired potential to the current sent over each individual line, one or more lines connected to the opposite poles of said apparatus for transmitting said varying current bodily, and means for giving any desired potential to the current sent over each of said lines.

17. The combination of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus through condensers, means for giving any desired potential to the current sent over each individual line, means for producing a continuous current, one or more lines for transmitting said current, and means for giving any desired potential to the current sent over each of said lines.

18. The combination of apparatus for producing a suitably-varying current, one or more lines connected to the opposite poles of said apparatus through condensers, means for giving any desired potential to the current sent over each individual line, one or more lines connected to the opposite poles of said apparatus for transmitting said varying current bodily, means for giving any desired potential to the current sent over each of said lines, means for producing a continuous current, one or more lines for transmitting said current, and means for giving any desired potential to the current sent over each of said lines.

19. The combination, substantially as set forth, of apparatus for producing a suitably-varying current, one or more lines or circuits connected to the poles of said apparatus and divided into sections inductively connected through condensers, and a conductor connecting one of said sections to earth through a suitable resistance.

20. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines or circuits connected to the poles of said apparatus and consisting of sections inductively connected through condensers, and an electrical receiver inserted in one of said sections, whose resistance bears the same ratio to the resistance of said section as the desired difference of potential between its terminals bears to the difference of potential between the ends of said section.

21. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines or circuits connected to the poles of said apparatus and consisting of sections inductively connected through condensers, each section being divided into as many derived circuits and with such resistances as may be necessary to secure for the electrical receivers in them the proper strength or tension of current.

22. The combination of two or more apparatus for producing a suitably-varying current, with a suitable number of sectional lines, such as described, arranged on the multiple-wire system of conductors, substantially as set forth.

23. The combination, substantially as described, of apparatus for producing a suitably-varying current, one or more lines or circuits connecting the opposite poles through condensers, one of the sections of each wire or line being broken or open, and a conductor connecting the broken wire to earth.

24. The combination of a line consisting of a conductor whose ends terminate in the contiguous sides or armatures of condensers, generating apparatus for producing suitably-varying electro-motive force, and connections from the two poles of said apparatus to the opposite sides or armatures of the said condensers, enabling the generating apparatus to give them correspondingly-varying electric charges, and thereby inducing currents or impulses over the conductor connecting their opposing sides or armatures.

25. The combination, substantially as set forth, of a line consisting of a suitable conductor, two condensers, each having one of its sides or armatures connected to the contiguous end of said conductor, generating apparatus for producing suitably-varying electro-motive force, and connections from the two poles of said apparatus to the other sides or armatures of said condensers, enabling said apparatus to decompose or separate the electricity of the conductor and its connections and to attract the same to the condenser-plates attached to its ends by simultaneous induction from both poles of said apparatus, the whole arranged and operating to lessen or prevent the tendency of the said electricity to escape from said conductor to earth.

26. In a system such as herein described, the combination of a line terminating in condensers and consisting of two or more sections connected by condensers, and electrical receivers in one or more of said sections and between the condensers, actuated by the currents or impulses induced by said condensers.

27. In a system such as described, the combination of an electric generator charging condensers connected to its poles, a line connected to said condensers and divided into sections, and condensers inductively uniting said sections into a sectional line and caused by the terminal condensers to reproduce the changes occurring therein, the whole arranged and operating to substitute, in place of the sending of a current over the whole distance or length of the line, the production of corresponding but separate and independent currents in and over the several sections by the simultaneous inductions of the section-condensers, whereby the electrical resistance of said line is practically reduced to a minimum.

28. In a system such as described, the combination of apparatus furnishing suitably-varying currents, electro-motive force or potential, a sectional main line conveying varying currents therefrom, a local circuit distinct from the circuit containing the generator, an induction-coil having primary coil or coils acted upon by the currents of said sectional line and secondary coil or coils in the local circuit, and one or more electrical receivers in the local circuit.

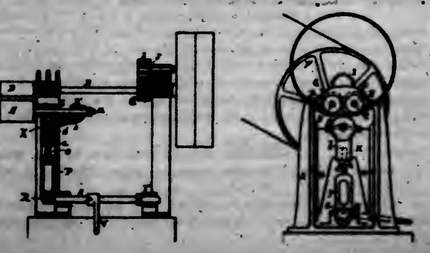
29. In a system such as described, the combination of a sectional main line, a conductor therein conveying line-currents, a local circuit distinct from the generator-circuit, and an induction-coil having primary coil or coils acted upon by the line-currents, and secondary coil or coils in the local circuit.

30. In an organized system for the production and transmission of electrical energy by repeated inductions, the combination of a generator expending a certain amount of energy in charging condensers connected to its poles, two or more sections of conductors arranged in series, condensers inductively uniting said sections into a line whose ends are connected to the terminal condensers and having capacities suitable for discharging over the sections connected to them currents having the stated amount of electrical energy, and devices properly reversing or varying the charges of said terminal condensers, the whole arranged and operating to reproduce the original amount of energy in each of the sections by the repeated inductions and electrical attractions and repulsions at the several condensers.

31. The combination of one or more sectional lines consisting of sections inductively connected through condensers, self-regulating apparatus for automatically supplying suitably-varying currents as needed on said line or lines, and connected to said line or lines through suitable polar condensers, and electrical apparatus in said line or lines utilizing said currents.

32. The combination of a sectional line consisting of sections inductively connected through condensers, self-regulating apparatus for automatically supplying suitably-varying currents as needed on said line and properly connected thereto, and suitable resistances in the sections, having the maximum section resistance properly adjusted to determine the volume of current flowing over the line.

383,521. ROLLING TIRES. PETER GREMER, Toledo, Ohio. Filed Oct. 14, 1887. Serial No. 252,694. (No model.)



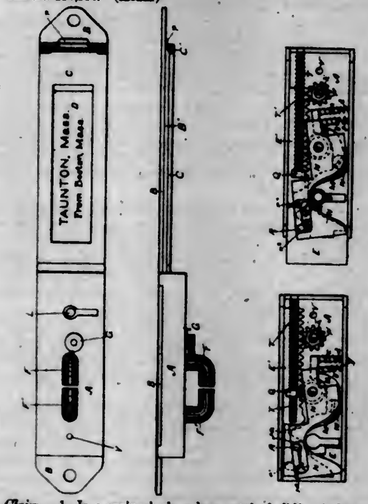
Claim.—1. In a machine for the purposes described, and in combination with the frame thereof, a vertically-adjustable gate which may be elevated or lowered at will by an eccentric, substantially as and for the purposes specified.

2. In a machine for the purposes described, and in combination with the frame thereof, a gate which is vertically adjustable and provided with two boxes in line with each other, for the purpose of carrying an overhanging shaft and roll, as set forth.

3. In a machine for the purposes described, and in combination, the overhanging rolls D and E, having mechanism intervening, by means of which they are compelled to rotate in the same direction, and the overhanging roll N, having a vertical adjustability, substantially as and for the purposes set forth.

4. The combination, in a machine for the purposes described, with the frame thereof and a vertically-sliding gate, of the set-screw, nut, and standard, substantially as and for the purposes specified.

388,522. LOCK. EDWARD F. GOODWIN, Taunton, Mass., assignor to Edward F. Goodwin, trustee, same place. Filed Dec. 12, 1887. Serial No. 257,597. (Model.)



Claim.—1. In a spring-lock, a key-notched sliding bolt provided with a pin, in combination with a spring, two slotted pivoted spring-tumblers, one of which is provided with a cam, and a wedge provided with a push-button and working against the said cam, whereby the bolt is thrown out and locked in place, substantially as and for the purposes described.

2. In a lock, a key-notched sliding rack, locking-tumblers whereby the rack is secured in place, and pinions engaging with said rack and provided with locking-arms, in combination with a hasp, substantially as described.

3. In a spring-lock, a key-notched sliding bolt provided with a rack and a spring, two slotted pivoted spring-tumblers, one of which is provided with a cam, a wedge provided with a push-button and working against said cam, and pinions meshing with the rack and provided with locking-arms, in combination with a hasp, all arranged and operated substantially as and for the purposes described.

4. A mail-pouch and tag-holder lock consisting of bent revolving locking-arms provided with pinions, in combination with a key-notched sliding rack, a bolt secured thereto, and locking-tumblers, whereby a hasp is locked by said arms and the hinged top of a tag-holder simultaneously held in place by said bolt, substantially as described.

5. In a lock, a sliding key-notched rack provided with a spring and a pin, pinions engaging with said rack and provided with locking-arms, two slotted pivoted spring-tumblers, one of which is provided with a cam, and a wedge provided with a push-button and working against the said cam, in combination with a hasp, whereby, when the hasp is pressed over the locking-arms and against the push-button, the locking-arms are turned at right angles, substantially as and for the purposes described.

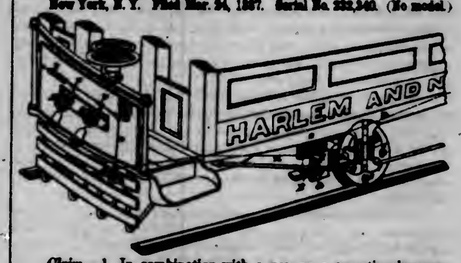
388,523. TAG-HOLDER. EDWARD F. GOODWIN, Taunton, Mass., assignor to Edward F. Goodwin, trustee, same place. Filed Dec. 12, 1887. Serial No. 257,597. (No model.)

Claim.—1. A tag-holder consisting of the combination of a card-receiving frame, a cover, C, hinged to one end thereof, said frame being provided with a retaining-bar, E, near the hinged end, a base-plate, B, and a spring, *p*, secured to said plate and bearing against the card, whereby when the cover is raised one end of the card is automatically thrown up, substantially as described.

2. A tag-holder consisting of a card-receiving frame and a retaining-cover hinged thereto, said frame being provided with a spring, free at both ends, attached to said frame, whereby one end of the spring bears against the hinged end of the cover and the other end of the spring against the card, substantially as and for the purposes described.

3. A tag-holder consisting of a card-receiving frame, A, having a plain base-plate, B, provided with an aperture, *b*, a cover, C, hinged at *c* to the plate B, and a spring, *p*, free at both ends, secured at a point intermediate of its ends to the said plate B, whereby one end of the spring works against the cover and the other end of the spring against the card, substantially as described.

388,524. AUTOMATIC CAR-ALARM OPERATOR. ISAAC H. HAHN, New York, N. Y. Filed Mar. 24, 1887. Serial No. 232,340. (No model.)

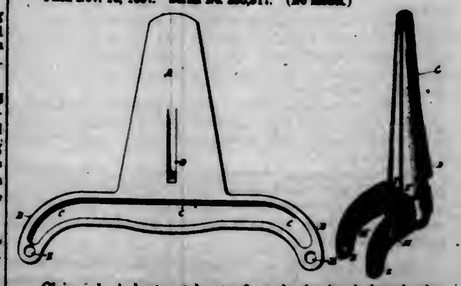


Claim.—1. In combination with a car, an automatic alarm-operator, consisting of a car-wheel attached to the running-gear, on the face of which are projecting knobs *e e e*, operating in conjunction with a horizontal bar, B, attached to a capped T-plate, A, suitably supported on the car, working on the pivot *c*, and transmitting power to the cranks *c c* by means of chains *d d*, all substantially as set forth and shown.

2. In an automatic car-alarm operator, the combination of a car and a capped T-plate, A, suitably supported on the car, and having cranks *c c*, working on pivots *f f*, to which chains *d d* are attached and connected with the bar B by means of eyebolts or other suitable method, substantially as described and shown.

3. In combination with the automatic alarm-operator, the cranks *c c*, attachments of the capped T-plate A, connected by wires *n n* on the bottom of the car, lengthwise to both dash-boards, and at their intersections, operating in conjunction with cranks *r*, suitably adjusted, cranks *w*, bells or gongs *x*, and counteracting-springs *l*, each suitably adjusted to the dash-boards and connected by wires *n n*, substantially as set forth and shown, for the purpose specified.

388,525. CASTER-FRAME. HERBERT C. HART, Unionville, Conn. Filed Nov. 26, 1887. Serial No. 256,317. (No model.)



Claim.—1. A sheet-metal caster-frame having its pintle and yoke-arms made in one piece, and the inner portions of the latter bent away from each other to make room for the caster-wheel between them, substantially as set forth.

2. A sheet-metal caster-frame having a retaining-spring struck up from the metal forming its pintle, which is formed in one piece with the yoke-arms of the frame, substantially as set forth.

3. A sheet-metal caster-frame having a stiffening corrugation formed in the lower end of its pintle, which is made in one piece with the yoke-arms, substantially as set forth.

4. A sheet-metal caster-frame having a continuous stiffening corrugation encircling the lower end of its pintle and extending into and terminating within the outer ends of its yoke-arms, which are made in one piece with the pintle, substantially as set forth.

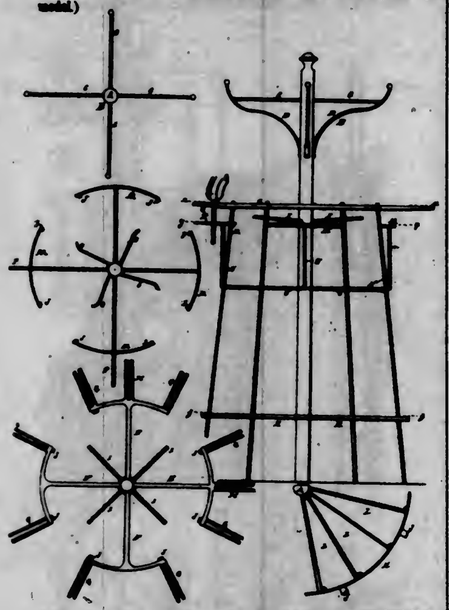
5. A blank for a sheet-metal caster-frame, consisting of a tapering shank and two curved arms, respectively projecting outward from the opposite edges of the widest end of the shank, substantially as set forth.

388,526. TRACE-EYE PROTECTOR. SAMUEL M. HARTMAN, Reading, Pa. Filed Jan. 17, 1888. Serial No. 261,071. (No model.)



Claim.—The combination herein described, with a trace formed of leather or equivalent material and having two or more eyes, *A'*, of a stiffening-plate with enlarged eyes fastened to said trace, substantially as and for the purpose set forth.

388,527. RACK FOR AGRICULTURAL TOOLS. FRANK A. HENRY, Jackson, Mich. Filed Mar. 7, 1888. Serial No. 266,668. (No model.)



Claim.—1. The combination of the standard A, provided with the bracket B at its upper end, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, the legs J, secured to the ends of said arms, the arms I, extending radially from the standard A toward the openings between the arms upon the brackets E F, and below said brackets the bands M, extending between alternate pairs of the legs J, below the arms upon the brackets E and F, said bands being provided with the rods N, extending from the center of said bands downward, then inward to the standard A, then outward, forming the radially-extending arms O, and the pins P, substantially as shown, and for the purpose described.

2. The combination of the standard A, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, the legs J, secured to the ends of said arms, the bands M, extending between alternate pairs of the legs J, below the arms upon the brackets E and F, said bands being provided with the arms M, extending from the center of said bands to the standard A, then outward, forming the radially-extending arms O, substantially as shown and described.

3. The combination of the standard A, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, and the legs J, secured to said arms, substantially as shown and described.

4. The combination of the standard A, the legs J, the bands M, secured to alternate pairs of the legs J, rods extending from the center of said bands to the standard A, then outwardly, forming the radially-extending arms O, and the pins P, said pins consisting of an extension of the said rods, substantially as shown and described.

5. The combination of the standard A, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, legs J, secured to the ends of said arms, the bands M, extending between alternate pairs of the legs J, below the arms upon the brackets E and F, said bands being provided with the rods N, extending downward, then inward to the standard A, then outward, forming the radially-extending arms O, and the pins P, extending from the center of the bands M and being formed of a part of the rods N, substantially as shown, and for the purpose described.

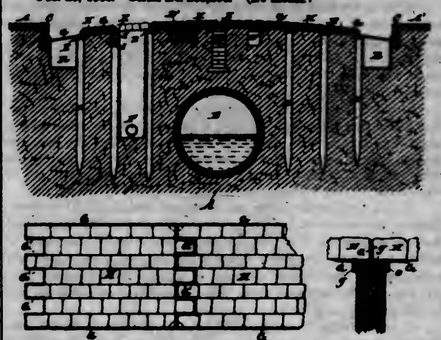
6. The combination of the standard A, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, legs J, secured to the ends of said arms, the bands M, extending between alternate pairs of the legs below the arms of the brackets E and F, said bands being provided with the arms M, extending from the center of said bands to the standard A, then outward, forming the radially-extending arms O, substantially as shown and described.

7. The combination of the standard A, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, legs J, secured to the ends of said arms, the bands M, extending between alternate pairs of the legs J, below the arms upon the brackets E and F, said bands being provided with the rods N, extending downward, then inward to the standard A, then outward, forming the radially-extending arms O, and the pins P, extending from the center of the bands M and being formed of a part of the rods N, substantially as shown, and for the purpose described.

8. The combination of the standard A, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, legs J, secured to the ends of said arms, the bands M, extending between alternate pairs of the legs J, below the arms upon the brackets E and F, said bands being provided with the arms M, extending from the center of said bands to the standard A, then outward, forming the radially-extending arms O, substantially as shown and described.

9. The combination of the standard A, the brackets E and F, attached to said standard and extending radially therefrom, said brackets having laterally-extending arms at the ends which are farthest from said standard, said arms being provided with the outwardly-extending forks G H, legs J, secured to the ends of said arms, the bands M, extending between alternate pairs of the legs J, below the arms upon the brackets E and F, said bands being provided with the rods N, extending downward, then inward to the standard A, then outward, forming the radially-extending arms O, and the pins P, extending from the center of the bands M and being formed of a part of the rods N, substantially as shown, and for the purpose described.

388,528. PAVEMENT. CHARLES H. HUNT, New York, N. Y. Filed Feb. 16, 1888. Serial No. 263,893. (No model.)



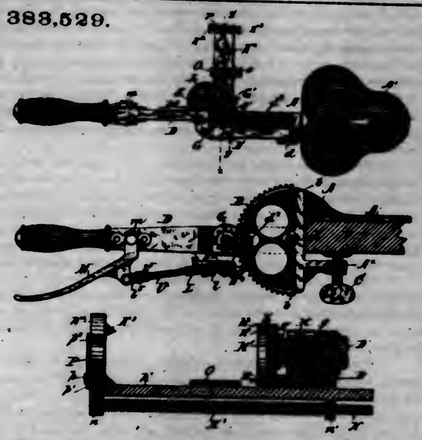
Claim.—1. In a pavement, a series of receptacles, G, and piles or analogous firm supports D under their corners, in combination with inclosed paving material H, as herein specified.

2. In a pavement, the supports D with caps E, in combination with a series of pan-like receptacles, G, containing paving material H, arranged to serve as herein specified.

3. In a pavement, the caps E, having recesses *e*, in combination with the supports D and pans G, having projections *g* to engage in the said recesses, and filling material H in the said pans, all arranged to serve substantially as and for the purposes herein specified.

388,529. MACHINE FOR CUTTING AND CRIMPING CARTRIDGE-SHELLS. GEORGE D. HUNTER, Auburn, Ill., assignor of one-half to Elizabeth Hunter, same place. Filed Feb. 2, 1888. Serial No. 262,762. (No model.)

383,529.



Claim.—1. In a machine for cutting and crimping cartridge-shells, the combination of a standard or support formed with a segment-gear upon its face, a vibratory hand-lever pivoted to said support, a pivot or stud bolt supported upon said lever and adapted to fit in a central axial recess formed in a revolving pinion and crimper or chuck wheel, said pinion and wheel having a circumferential groove formed intermediate thereof, and a movable plate, also supported upon said lever and adapted to fit into said groove, substantially as described.

2. In a machine for cutting and crimping cartridge-shells, the combination of a vibratory hand-lever, a cartridge-carrier mounted upon and adapted to slide transversely of the same, a grip-lever and cord connected with said carrier for moving it in one direction, and a spring arranged intermediate of said hand-lever and the outer end of said carrier for positively moving the latter in the opposite direction, substantially as described.

3. In a machine for cutting and crimping cartridge-shells, the combination of a vibratory hand-lever, a revolving crimper or chuck wheel mounted thereon, a cartridge-carrier mounted and adapted to slide upon said hand-lever, a cord and grip-lever connected with said carrier for moving it in one direction, and a guide-rod and spiral spring for moving said carrier in the opposite direction, substantially as described.

4. In a machine for cutting and crimping cartridge-shells, the combination of the vibratory hand-lever, a movable cartridge-carrier mounted and adapted to slide thereon, a grip-lever and sheave-pulley also mounted upon said lever, and a cord secured at one end to said carrier and at the other end to a compound hinge-joint secured to said grip-lever, substantially as described.

5. In a machine for cutting and crimping cartridge-shells, the combination of the vibratory hand-lever, a cartridge-carrier mounted and adapted to slide thereon, a grip-lever and sheave-pulley also mounted thereon, and a cord secured at one end to the grip-lever and at the other end to a screw-threaded thimble fastened at the outer end of said carrier by a screw-bolt, substantially as described.

6. In a machine for cutting and crimping cartridge-shells, the combination of a vibratory hand-lever, a revolvable chuck-wheel supported thereon, gearing for revolving said chuck-wheel by the movement of said lever, a cartridge-carrier mounted and adapted to slide upon said lever and provided with an abutment at its outer end having an opening, and a knife supported upon said abutment, substantially as and for the purpose described.

7. In a machine for cutting and crimping cartridge-shells, the combination of a vibratory hand-lever, a revolvable chuck-wheel mounted upon said hand-lever, a cartridge-carrier also mounted upon and adapted to slide transversely of said lever and provided with an open abutment at its outer end, and a knife pivoted to said abutment and provided with a laterally-projecting guide-flange and thumb-piece, substantially as described.

8. In a machine for cutting and crimping cartridge-shells, a revolvable chuck-wheel provided with an encircling spring which is secured at one end to the periphery thereof and which is free or disconnected at its opposite end and adapted to grip and firmly hold a cartridge and prevent the same from independently turning while being revolved, substantially as described.

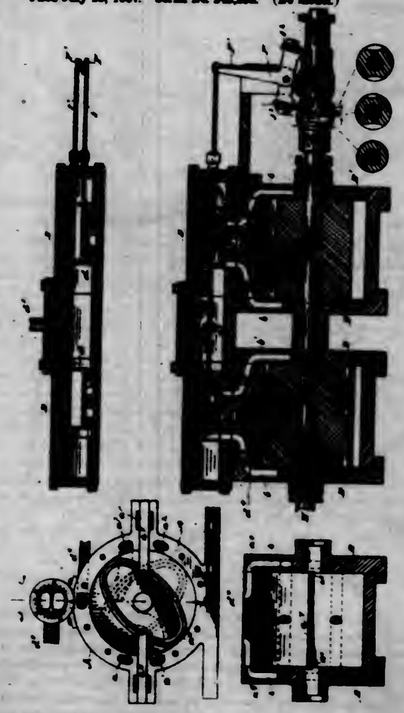
9. In a machine for cutting and crimping cartridge-shells, a revolvable chuck-wheel provided with an encircling spring which is secured at one end to the periphery thereof and which is free or disconnected at its opposite end, and provided with a spur adapted to grip the rim of a cartridge and hold the same when turned in one direction and to release the same when turned in the opposite direction, substantially as described.

10. In a machine for cutting and crimping cartridge-shells, a revolvable chuck-wheel provided with an encircling spring which is secured at one end to the periphery thereof and which is free or disconnected at its opposite end, and provided with a spur having an outwardly-inclined lip and a shoulder, said spring being also provided on its lower portion with an upwardly-inclined lip, substantially as and for the purpose described.

11. In a machine for cutting and crimping cartridge-shells, the combination of the standard or support provided with the segment-gear, the vibratory hand-lever pivoted thereto, the removable chuck-wheel and pinion adapted to be supported upon said hand-lever, a sliding cartridge-carrier also supported upon said hand-lever and provided at its outer end with an abutment having a central opening, a knife pivoted adjacent to said opening, and an adjustable gage-plate mounted upon said carrier, substantially as and for the purpose described.

12. In a machine for cutting and finishing cartridge-shells, the combination of the standard or support provided with the segment-gear and also with abutment-surfaces located at the ends of the cogged rim of said gear, the vibratory hand-lever pivoted to said support and provided with a lateral extension adapted to contact with said abutment-surfaces, and a pinion adapted to rotate a crimper or chuck wheel by engagement with said segment-gear and the vibration of said hand-lever, substantially as and for the purpose described.

383,530. ROTARY ENGINE. JESSE C. JARVIS, Huntington, W. Va. Filed July 28, 1887. Serial No. 245,222. (No model.)



Claim.—1. In a rotary engine, the combination of a cylinder, an induction and an eduction passage leading to and from the cylinder on each side of a diametrical line, an elliptical piston, and a pair of partitions or abutments operated from within the cylinder in both directions directly by the piston to maintain contact therewith, as herein described.

2. The combination of a cylinder or casing having induction and eduction passages in its walls leading from and to a steam-chest through the heads of the cylinder to opposite sides of a diametrical line, an elliptical piston, and a pair of abutments operated to maintain contact with the piston by grooves in the ends thereof, as set forth.

3. In a rotary engine, the combination of a cylinder, an elliptical rotary piston extending entirely across the cylinder, and partitions or abutments within the cylinder operated in both directions to maintain contact with the piston by a coupling between the piston and abutment, as described.

4. The combination, with a divider or abutment operated in both directions by a rotary driver, of an elastic spring-pressed packing strip or stave within the edge of the abutment for compensating for wear and maintaining close contact with the driver, as specified.

5. In a rotary engine, the combination of a valve, a reversing-cone, and connections, substantially as shown and described, for reversing the engine.

6. The combination of a valve, a valve-operating lever, and adjustable conical block connected with the driving-shaft for reversing the engine, as specified.

7. The combination of a valve, a valve-operating lever, and a cut-off cone formed on the reversing-cone, as described.

8. The combination of a valve, a valve-operating lever, an adjustable block having a variable cone-surface constituting a variable cut-off, as specified.

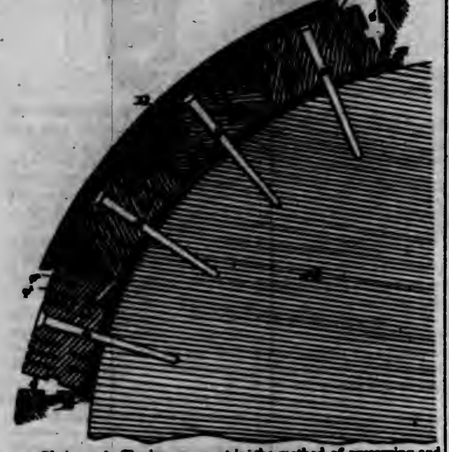
9. The combination, in a rotary engine, of a valve and a combined reversing-cone and variable cut-off cone, as specified.

10. In a rotary engine, the combination of a cylinder having induction and eduction ports or passages leading from opposite ends thereof, an elliptical rotary piston, a valve for admitting and cutting off steam, and a conical cam for operating said valve, substantially as described.

11. The combination of two rotary engines connected with the same shaft, the pistons being set at right angles to each other, valves for controlling said engines, and a double cone for operating said valves simultaneously, substantially as described.

12. In a rotary engine, the combination, with the cylinder, of a rotary piston, a valve for controlling admission of steam to said cylinder, and a cone-shaped spiral cam for producing a variable cut-off.

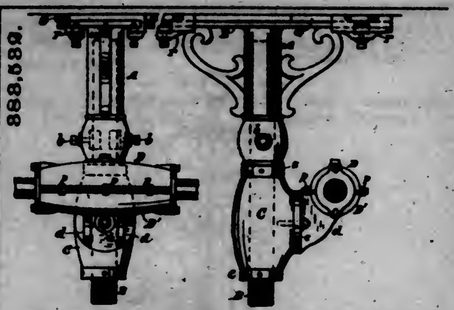
383,531. PRESERVING PILES. CHARLES C. LAMB, San Francisco, Cal., assignor to John H. Beale, same place. Filed Dec. 20, 1887. Serial No. 258,773. (No model.)



Claim.—1. The improvement in the method of preserving and protecting piles and other exposed wood surfaces, which consists in encircling or covering the pile or spud with a sheathing of wood prepared by first pricking or puncturing it, then treating it with a bath of preservative or protective material to permeate its substance by absorption through its pores, and then sealing up its punctures, substantially as herein described.

2. The improvement in the method of preserving and protecting piles and other exposed wood surfaces, which consists in applying a coating of preservative or protective material, then securing over said coating a sheathing of wood prepared by first pricking or puncturing it, then treating it with a bath of a preservative or protective material to permeate its substance by absorption through its pores, and then sealing up the punctures, and in finally coating the surface of the sheathing after it has been secured with a preservative or protective material, substantially as herein described.

383,532. SHAFT-HANGER. ARTHUR LEMMON, St. Louis, Mo. Filed Aug. 23, 1883. Renewed Mar. 16, 1888. Serial No. 267,284. (No model.)



Claim.—1. In a shaft-hanger, a shaft-box provided with a vertical plate having a circular conical projection, *f*, in combination with a vertical cylinder which is adjustable on a depending tube, said cylinder being provided with a lateral casket on one side corresponding with said conical projection, and a central securing-bolt, substantially as and for the purpose described.

2. In combination with a hollow depending column, a vertical tube, B, adjustably secured thereto, cylinder C, adjustable on said tube and provided with a lateral casket, *g*, a shaft-box provided with brackets projecting from a vertical plate, *e*, which has a circular conical projection, *f*, which fits in casket *g*, and a central securing-bolt, *h*, substantially as set forth and described.

3. In combination with a hanging column provided with a grooved base-plate, E, a fixed plate provided with recessed retaining-bearings, in which are placed removable beveled clamping-blocks *e*, which extend into correspondingly-shaped grooves in the base-plate, and screws for pressing the clamping-blocks, substantially as set forth and described.

4. In a shaft-hanger, a shaft-box the shell of which is constructed in two parts, which are provided with partitions constructed to form annular chambers around a shaft, end plates, *k*, provided with tubular extensions to enter chambers for stuffing-boxes, at the ends of the shaft-box, and securing-bolts, all combined substantially as set forth and described.

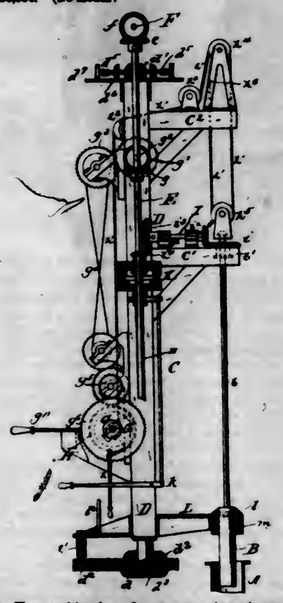
5. The shaft-box constructed in two parts, provided with flanges *e* and rim *e'*, with suitable packing between the flanges, the two parts of the box being provided with partitions constructed to form a central annular chamber about the shaft for lubricating matter, a chamber at each side of said central chamber for filling metal, and a chamber at each end of the shaft-box to form a stuffing-box, in combination with end plates, *k*, provided with tubular extensions, substantially as and for the purposes described.

383,533. EMBROIDERING FRAME AND STAND. HERMANN C. LEBUS, New York, N. Y. Filed Mar. 3, 1887. Serial No. 229,552. (No model.)



Claim.—A stretching-roller for an embroidery-frame, the body of which is divided longitudinally into two semi-cylindrical sections, one of said sections having a longitudinal groove on its flat face and provided with a longitudinal strip inserted in said groove, said strip having fixed pins, and the other semi-cylindrical section being provided with sockets for said pins, substantially as described.

383,584. PIPE-MOLDING APPARATUS. ANDREW H. McNEAL and WILLIAM A. STEBBINS, Burlington, N. J. Filed Feb. 28, 1887. Serial No. 229,066. (No model.)



Claim.—1. The combination of a crane or pivoted rotary frame, D, having near its bottom a fixed bracket, L, having a bearing for the upper end of a former, B, of a pipe-molding machine, fixed bracket C on said crane, having gear-wheel *i*, through which slides and with which rotates former extension-rod *b*, a snatch-block, A^2, swiveled on the upper end of rod *b*, rope or chain *k'*, connecting snatch-block A^2 to a winding-drum, G, for elevating and lowering rod *b* and former B, driving mechanism engaging with wheel *i* and with drum G, and actuating devices for controlling the operation of the driving mechanism, substantially as set forth.

2. The combination of frame or crane D, former B, having extension or rod *b*, a driving-shaft, a counter-shaft in gear with rod *b*, having clutch mechanism for engaging the counter-shaft with the driving-shaft to rotate former B, a snatch-block, A^2, secured to the upper end of rod *b*, a winding-drum, a chain or rope connection between the snatch-block and drum, and devices for controlling the operation of the driving mechanism, substantially as set forth.

3. The crane D, having step-bearing *d*, provided with cup or socket d^3 and disks d^4, and upper bearing, d^5, having set-screws d^6, in combination with former B and actuating devices for rotating and for raising and lowering said former, substantially as set forth.

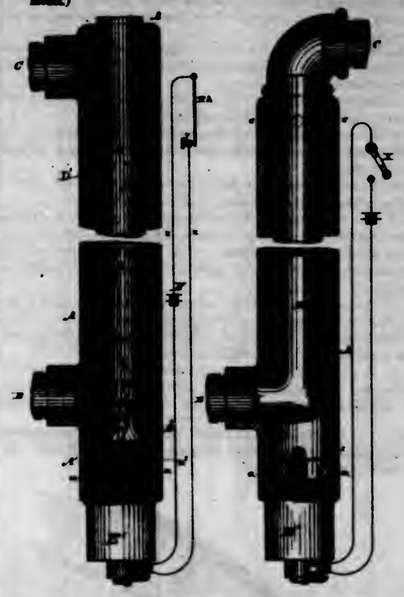
383,585. DRESS-FORM. BENJAMIN M. MCPHERSON, Boston, Mass. Filed Dec. 10, 1887. Serial No. 257,602. (No model.)



Claim.—1. In a dress-form, the combination, with a post or standard provided with three legs or feet suitably hinged or pivoted to it, of the casting D, and a laterally-adjustable plate, E, provided with means for clamping it against the legs, substantially as described.

2. In a dress-form, the combination of the post A, sliding collar C, legs B B, suitable guides to direct and hold the legs, the screw-eye F, and the plate E, provided with a hole in its center larger than the shank of the screw-eye F, so arranged that the plate E can laterally adjust itself to and be clamped against the legs B B, substantially as described.

383,586. THERMO-REGULATOR APPARATUS FOR CONTROLLING THE TEMPERATURE OF WATER IN PIPES. EDWIN A. HOWARD, Washington, D. C., assignor to the Bowman Anti-Freezing Water Pipe Company, Chicago, Ill. Filed Dec. 30, 1887. Serial No. 259,424. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a water-pipe, a source of heat arranged near the pipe, and means for automatically starting and applying the heat to the pipe.

2. The combination, substantially as hereinbefore set forth, of a water-pipe, a heat-generator arranged near the pipe, and a thermostat operatively connected with the heat-generator, whereby heat may be started and applied to the pipe when the temperature near the thermostat falls.

3. The combination, substantially as hereinbefore set forth, of a water-pipe, a gas-burner arranged in close proximity to the pipe, a thermostat for turning the burner off or on, and devices for lighting the gas.

4. The combination, substantially as hereinbefore set forth, of a water-pipe, a gas-burner, a pipe or passage over the gas-burner through which the heat from the burner passes, electrical apparatus for turning on the burner and lighting the gas, and a thermostat included in the electric circuit.

5. The combination, substantially as hereinbefore set forth, of a section of water-pipe having a connection with a water-main and connected at two points with the service-pipes of a building, a heat-generator arranged in said section of pipe, and devices for automatically applying the heat when the temperature in the surrounding atmosphere falls.

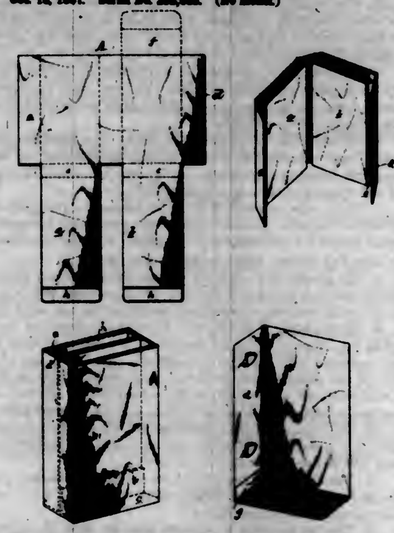
6. The combination, substantially as hereinbefore set forth, of a water-pipe, a heat-generator arranged near the pipe, an electric circuit for controlling the heat-generator, a thermostat included in the circuit, and a contact operatively connected with the thermostat to vary the electric current proportionately to the variations of the temperature.

7. The combination, substantially as hereinbefore set forth, of a water-pipe, a heat-generator arranged near the water-pipe, apparatus for turning the heat on or off, an electric circuit controlling said apparatus, and a thermostat included in the circuit for shifting it so as to turn the heat on or off.

8. The combination, substantially as hereinbefore set forth, of a water-pipe, an electric circuit passing in close proximity to the pipe, and a thermostat included in the circuit arranged to make and break the circuit according to variations in temperature.

9. The combination, substantially as hereinbefore set forth, of a section of water-pipe connected with a water-main and the service-pipes of a building, a gas-burner arranged near said pipe, an automatic electrical apparatus for turning the gas off or on and for lighting it, an electric circuit including a thermostat connected with said apparatus, a tubular passage for heat arranged within the section of water-pipe and over the gas-burner, a perforated disk or partition arranged just under the discharge-opening in the burner, and air-ports arranged under the disk.

383,587. PAPER BOX. BENJAMIN GREGORY, Newark, N. J. Filed Oct. 13, 1887. Serial No. 252,022. (No model.)

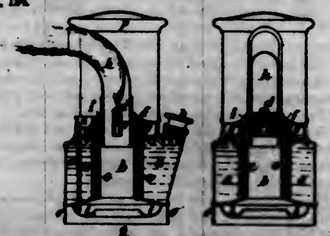


Claim.—1. A paper box consisting of a body, the bottom flaps having flaps *a b* formed integral therewith to form a central partition, and the flaps *h* integral with the flaps *a b*, as set forth.

2. A paper box constructed of a single piece of material formed with flaps *a b*, arranged when folded to form a central partition, bottom flaps, *c c*, connecting said flaps to the body, and a re-enforcing piece at the bottom, substantially as specified.

3. The box-blank described, comprising the body part, the side flaps, *d e*, the parallel central flaps, *a b*, extending at right angles to said side flaps, bottom flaps, *c c*, connecting said central flaps to the body of the blank, and the top flaps, *h h*, integral with said central flaps, substantially as shown and described.

383,588. APPARATUS FOR AUTOMATICALLY GENERATING AND BURNING INFLAMMABLE VAPORS. CLAUDE A. PAGNELLE, Paris, France. Filed June 9, 1888. Serial No. 276,691. (No model.) Patented in France May 19, 1888, No. 178,348; in Belgium May 26, 1888, No. 78,208; in Germany May 30, 1888, No. 46,194; in England May 31, 1888, No. 6,880; in Austria-Hungary Oct. 3, 1888, No. 21,333 and No. 58,033; in Spain Dec. 3, 1888, No. 10,168, and in Italy Dec. 31, 1888, XLI, 194.



Claim.—1. The reservoir *a*, traversing tube *b*, wick *c* around tube *b*, in combination with the jet-nozzle *d* and chimney *h*, substantially as described.

2. The jet-nozzle *d* in tube *b*, having dust *e*, in combination with chamber *f*, reservoir *a*, and diaphragm having perforation *g*, substantially as herein shown and described.

3. The gutter *l*, pipe *m*, and tube *b*, passing through reservoir *a*, in combination with said reservoir *a*, nozzle *d* in tube *b*, chamber *f*, and chimney *h*, all arranged and operating substantially as herein shown and described.

383,589. PENDULUM FOR CLOCKS. ALBERT L. PARMELEE, New York, N. Y. Filed Apr. 7, 1887. Serial No. 234,048. (No model.)



Claim.—1. The combination, substantially as set forth, of a driven train, a pendulum formed of a bar or strip of resilient material rigidly held at its upper end and bending in its length as it vibrates, and a escapement interposed between the pendulum and the clock-train.

2. A pendulum substantially such as herein described, formed of a flat elongated strip of resilient material adapted to be rigidly held at one end in its support and capable of bending in its length.

3. A pendulum substantially such as herein illustrated, consisting of a bar or strip of resilient material of uniform or substantially uniform cross-section rigidly held at its upper end in its support and bending in its length as it vibrates.

4. A pendulum substantially such as herein described, consisting of a bar or strip of resilient material rigidly held in its support at its upper end, having a suitable bob, and capable of bending in its length as it vibrates.

5. The combination, substantially as set forth, of a driven train, a pendulum formed of a bar or strip of resilient material capable of bending throughout its entire length as it vibrates, and a escapement interposed between the pendulum and train.

383,540. AXLE-BOX-MILLING MACHINE. ANDREW PATERSON, McKeesport, Pa., assignor to the National Tube Works Company, Boston, Mass. Filed Mar. 7, 1888. Serial No. 266,661. (No model.)



Claim.—1. In an axle-box-milling machine, the combination, substantially as set forth, of a bed, a pair of head-stocks fitted for sliding at the ends thereof and carrying each a cutter-spindle, cutter-chucks on the inner ends of the spindles, and a chuck disposed upon the bed between the head-stocks and provided with a pair of jaws facing each other.

2. In an axle-box-milling machine, the combination, substantially as set forth, of a bed, a pair of head-stocks fitted for sliding at the ends thereof and carrying each a cutter-spindle, cutter-chucks on the inner ends of the spindles, a saddle secured to the bed between the head-stocks and provided with a slideway transverse to the bed, a chuck-slide fitting said slideway, means, substantially as described, for moving the chuck-slide in the saddle, and a pair of chuck-jaws facing each other and carried by said chuck-slide.

3. In an axle-box-milling machine, the combination, substantially as set forth, of a bed, a pair of head-stocks fitted for sliding at the ends thereof and carrying each a cutter-spindle, cutter-chucks on the inner ends of the spindles, a saddle secured to the bed between the head-stocks and provided with a slideway transverse to the bed, a chuck-slide fitted to slide in said slideway, means, substantially as described, for moving the chuck-slide in the saddle, a pair of chuck-jaws facing each other and carried by the chuck-slide, and a dowel arranged to hold said chuck-slide in normal working position in the saddle.

4. In an axle-box-milling machine, the combination, substantially as set forth, of a bed, a pair of head-stocks fitted for sliding at the ends thereof and carrying each a cutter-spindle, cutter-chucks on the inner ends of the spindles, a chuck disposed upon the bed between the head-stocks and provided with a pair of jaws facing each other, and a gage-tongue at one of said jaws, adapted to be projected at one of the ends of said jaw beyond its face and to be withdrawn from such projection.

5. In an axle-box-milling machine, the combination, substantially as set forth, of a bed, a pair of head-stocks fitted for sliding at the ends thereof and carrying each a cutter-spindle, cutter-chucks on the inner ends of the spindles, a chuck upon the bed between the head-stocks, and a cutter at each of said cutter-chucks, having a notched disk and having a shank engaged by the cutter-chuck.

6. In an axle-box-milling machine, the combination, substantially as set forth, of bed A, head-stocks B C, with their spindles, shifting devices, and cutter-chucks, jaw-brackets N and O, with their jaws, sleeve Q, clamped in one of the jaw-brackets, and gage-tongue S, pivoted in said sleeve.

7. In an axle-box-milling machine, the combination, substantially as set forth, of bed A, head-stocks B C, with their spindles, shifting devices, and cutter-chucks, saddle J on the bed between the head-stocks and provided with a slideway, dowel M in the saddle and having a rod projecting downwardly and adapted to be attached to a treadle, and chuck-slide K, fitted to slide in the saddle and carrying a pair of chuck-jaws facing each other, and having a dowel-hole to be engaged by said dowel when the chuck is in normal working position with reference to the axis of the head-stock spindles.

383,541. CULTIVATOR. CHARLES H. PAYNE, Springfield, Ohio. Filed Dec. 26, 1887. Serial No. 259,256. (No model.)



Claim.—1. In a wheeled cultivator, a tongue or frame, A, draw-bars F F, and shovels attached thereto, combined with arches D and G, each provided with rigid journals and either adapted to receive the wheels, substantially as and for the purpose described.

2. The shovels K K, combined with the double standard *a d*, made of a single bar of wrought-iron or other suitable material, bent as shown, and with the bar E, and the intermediate standard, *d*', connecting the horizontal bars and carrying a shovel, for the purposes set forth.

3. The double standard *a d*, made of a single bar of wrought-iron, combined with the cap-plate E, bolted to the horizontal part of said standard and the cross-bar E, said plate and bar being provided with the sockets *g r*, and the joint-plate N, provided with the cones *s m* and tightening-bolt, substantially as set forth.

4. The shovel-standards rigidly connected together, and the parallel draw-bars F F, to which said standards are pivoted on two parallel vertical axes, combined with the handle D', mounted on the transverse bar of said standards, and means, substantially as described, whereby the handle may be adjusted to any desired lateral angle and partake of the parallel motion of the shovels and their standards.

5. The drag-bar F, the sleeve E, and the shovel-standard *a d*, rigidly but pivotally connected, combined with long joints composed of conical pintles *s m*, and the corresponding sockets, *g r*, and tightening-bolts, substantially as set forth.

6. The draw-bar F, coupled at its end by long axis-joints, composed of conical pintles *s m*, pointing in the same direction and combined with corresponding sockets, *g r*, in axial line with each other, and the tightening-bolts *s*, as set forth.

7. The parallel drag-bars F F and standards of a cultivator rigidly secured together, provided with parallel joints, each composed of conical pintles *s m* and sockets *g r*, combined with the joint-bolts *s*, the bar-nut O, and the spring-keeper *t*, as set forth.

8. The standards *a d*, made in a single piece, combined with the plate E, provided with lugs *c*', the cross-bar E, provided with lugs *c*², and the center standard, *c*³, detachably secured to said lugs, as set forth.

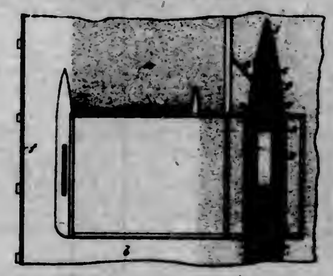
9. The draw-bars F, the sleeve E, to which said draw-bars are attached, the cross-arm L, and the draft rods or chains *u v* at their rear ends, connected with said arm L at different sides of the axis of the sleeve E, and united at their front ends by a pendent draft-rod, M, or its equivalent, and means, substantially as described, for adjusting said front ends of the parts *u v* vertically upon said rod M, as set forth.

10. The plate F', provided with a slot and a lever pivoted thereto and swinging parallel with the plate and across the slot, said lever provided with fingers, for the purposes set forth.

11. The draw-bar F, the sleeve E, its arm *g*, the balancing-spring EP, and the rod EP, combined with a plate, F', having a slot, *i*', and a lever provided with fingers *f f*.

12. The bracket-plate F', provided with the hood *f*³, to cover, protect, and secure the arch D, and the lever with fingers *f' f'*, as set forth.

383,542. GRAIN-DIVIDER. SEVERE RAY, Albany, Wis. Filed Dec. 13, 1887. Serial No. 257,797. (No model.)



Claim.—1. The combination, with the main wheel of a harvester, of the grain-divider composed of two side bars converging at their front ends, and having their rear ends connected with the wheel-frame of the harvester, and the connection between said front end and the upright frame of the harvester, substantially as described.

2. The combination, with the main wheel of a harvester, of the grain-divider having side bars, the rear ends of the side bars being bent back on themselves, and means for connecting the bent ends with the harvester-frame, substantially as described.

3. The combination, with the main wheel of a harvester, of the side bars, C, having their front ends converging and having their rear ends bent back upon themselves and curving inward, the short bar *l*, the rod Q, having a hook on its inner end, the short chain, and means, as the eyebolts *o* and yoke P, for securing the side bars to the frame of the harvester, substantially as described.

4. The herein-described grain-divider, composed of the elastic converging side bars having their rear ends bent back on themselves and curved inwardly, the short bar *l* at their points, and the rod Q, having a hook at its free end, substantially as described.

383,543. COMBINED BOOK AND INDEX. ROBERT H. ROSE, Kansas City, Mo. Filed Mar. 7, 1887. Serial No. 230,015. (No model.)



Claim.—In a combined book and index, the combination, with a book provided with a leaf, C, free of the book-cover, to its rear edge, of an index provided with a leaf or cover, F, the free edge of the latter being flexibly united to the free edge of the leaf C, whereby the index is independent of the book-cover and may be inserted and confined between the book-cover and the leaf C, with the front edges of its leaves outermost, substantially as described.

383,544. PIPE-WRENCH. JAMES ROSS, Franklin, Mass. Filed Mar. 26, 1888. Serial No. 268,511. (No model.)



Claim.—A pipe-wrench the handle portion or shank of which has a toothed jaw, B, and two slotted abutments, E F, said handle portion having pivoted to it a strap, L, which receives the shank K of the fellow jaw and connects it to the said shank or handle portion D, the shank K being pivoted to a screw which extends through the slotted abutments E F and engages with a nut, H, arranged between them in the manner shown, all being arranged and constructed and for use substantially as shown and described.

383,545. FILE-WIRE FOR LOOMS. GERARD SWEARINGEN, Yonkers, N. Y., assignor to the Wesing Hat Manufacturing Company, same place. Filed Feb. 15, 1888. Serial No. 264,071. (No model.)



Claim.—1. The combination, with a pile-wire having an enlarged and flattened end, of a head the shank of which is provided with a tapering recess, forming spring-jaws for engaging the enlarged end of the wire, substantially as set forth.

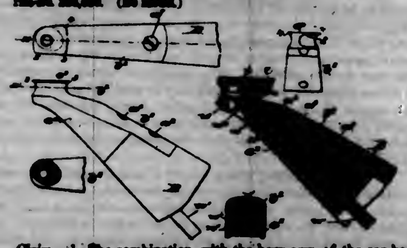
2. The combination, with a pile-wire having an enlarged and flattened end, of a head the shank of which is provided with tapering spring-jaws for engaging the end of the pile-wire, substantially as set forth.

3. The combination, with a pile-wire having an enlarged and flattened end, of a head or eye the shank of which is provided with a tapering recess having an enlarged rear portion or eye, and with grooves in the faces of the recess, so as to form spring-jaws for engaging the enlarged end of the wire, substantially as set forth.

4. A head for pile-wires, the shank of which is provided with tapering spring-jaws having grooved faces, substantially as set forth.

5. A head for pile-wires, the shank of which is provided with a tapering recess having grooved edges and an enlarged rear portion or eye, substantially as set forth.

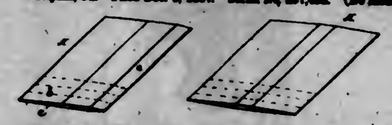
383,546. WORK-HOLDING HOOK FOR SHOE-SEWING MACHINES. HOWE I. SPRAGUE, Boston, and GEORGE B. PEARL, Lynn, Mass.; said Pearl assignor to said Sprague. Filed Feb. 18, 1887. Serial No. 228,023. (No model.)



Claim.—1. The combination, with the hero-arm, of the cap having a tip, *c*', provided with irregular flanges extended outwardly at its top, the said flanges acting in and laying or turning back the lip or flap of an inner sole as the latter is moved over the hero, the tip following in the said channel and operating substantially as described.

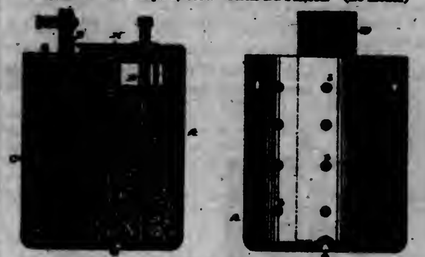
1. A hero-arm having a substantially horizontal surface, *p*, which terminates short of the rear side of the pinion used to rotate the wheel, combined with a cap having an attached tip, *c*', connected at its sides irregularly, substantially as described, to gradually lay back or lift the channel-covering lip or flap of the inner sole both along its sides and about its ends as the sole is moved on the hero, substantially as described.

383,547. MANUFACTURE OF FILES. WILLIAM WARNER, Philadelphia, Pa. Filed Dec. 9, 1887. Serial No. 257,032. (No model.)



Claim.—The within-described improvement in the manufacture of file-blanks, the same consisting in first making a plate having the transverse section corresponding to the longitudinal section of the desired blanks, and in then severing said section transversely to detach sections equal in width to the desired blanks, substantially as set forth.

383,548. ELECTRIC BATTERY. EDWARD A. WEBB, Long Island City, N. Y. Filed Sept. 3, 1887. Serial No. 248,552. (No model.)



Claim.—1. The combination, with a battery-cell, of a partition extending across the cell, so as to separate the electrodes, made of a material impervious to the liquid of the cell and provided with perforations, substantially as set forth.

2. The combination, with a battery-cell, of a partition extending across the cell, so as to separate the electrodes, and fitting loosely at its sides and bottom and made of a material impervious to the liquid of the cell, substantially as set forth.

3. The combination, with a battery-cell, of a perforated glass partition extending across the cell, so as to separate the electrodes, substantially as set forth.

4. The combination, with a battery-cell, of an element of fragmentary material and a liquid solution therein, and a partition extending across the cell and inclosing said fragmentary element, said partition being made of a material impervious to the liquid of the cell and provided with perforations, substantially as set forth.

5. The combination, with a battery-cell, so as to separate the electrodes, of a perforated partition extending across the cell and fitting loosely at its sides and bottom, and made of a material impervious to the liquid of the cell, substantially as set forth.

383,549. FASTENER FOR THE MEETING-RAILS OF SASHES. GAYTON WEBSTER, Hartford, Conn. Filed Nov. 10, 1887. Serial No. 254,744. (No model.)



Claim.—1. In a fastening device, in combination with the base-plate having a raised central portion with a pivot-hole, and also a curved slot terminating in an angular projection, the bearer having a central pivot-opening and a radial slot and a socket adapted to receive and hold a sliding latch, a sliding latch having an inner end fitting within the bearer-socket, with a slot on one side of which are arranged a number of teeth and bearing a downward-projecting pin, the cap fitting upon the bearer-plate bearing on its under side a pinion with teeth engaging the teeth of the latch, and the shouldered pivot whereby the several parts are held together, and the lever-handle, all substantially as described.

2. In a fastening device, in combination with a base-plate having a circular slot with angular projection, a rotary cap pivoted on the base-plate, the bearer interposed between the base-plate and cap, and bearing a sliding latch having a pin projecting through the slot in the bearer and into the slot in the base-plate, all substantially as described.

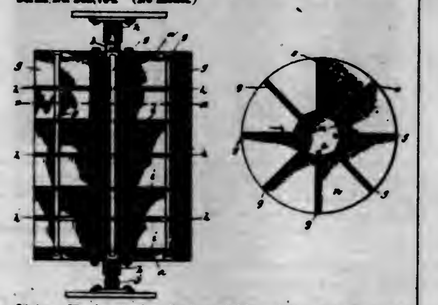
388,550. REVERSIBLE VEST FOR LADIES' GARMENTS. SAMUEL WOOLF, New York, N. Y. Filed Feb. 15, 1888. Serial No. 264,068. (No model.)



Claim.—1. The combination, with a lady's jersey or other garment having hooks at the under side of its overlapping edges, of a detachable and reversible vest formed of folding sections provided with eyes along the edges of each section, substantially as set forth.

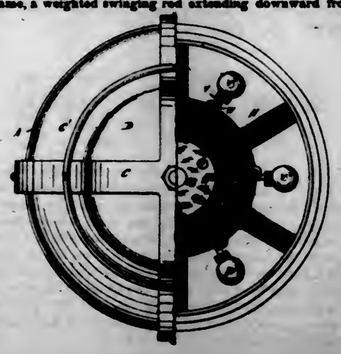
2. A detachable and reversible vest for ladies' garments, composed of folding sections stitched together at the edges and provided with fastening devices along the edges of each section, substantially as set forth.

388,551. RACK FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES. ALBERT RAYMOND, Campello, Mass. Filed Feb. 2, 1888. Serial No. 262,734. (No model.)



Claim.—The herein-described revolvable rack for use in the manufacture of boots and shoes, comprising the end or top and bottom plates provided with journal studs or hubs, and having radial grooves, as described, a rod or rods connecting said plates, vertical partitions having their ends engaged with said grooves and provided with grooves in their sides, shelves constructed to slide into the grooves of the partitions, and supports *j k* for said journal studs or hubs, as set forth.

388,552. BELL-RINGING DEVICE FOR BOOTS AND BOATS. GUSTAV BEMMER, Stapleton, N. Y. Filed Feb. 20, 1888. Serial No. 265,707. (No model.)



Claim.—1. The combination, with a bell, of a series of hammers in the same, a weighted swinging rod extending downward from the bell, and intermediate actuating-levers for operating the hammers from the upper end of said rod, substantially as herein shown and described.

2. The combination, with a bell, of a series of hammers in the same, a weighted swinging rod extending downward from the bell, a disk on the upper end of said rod, and intermediate levers for operating the hammers from said disk, substantially as herein shown and described.

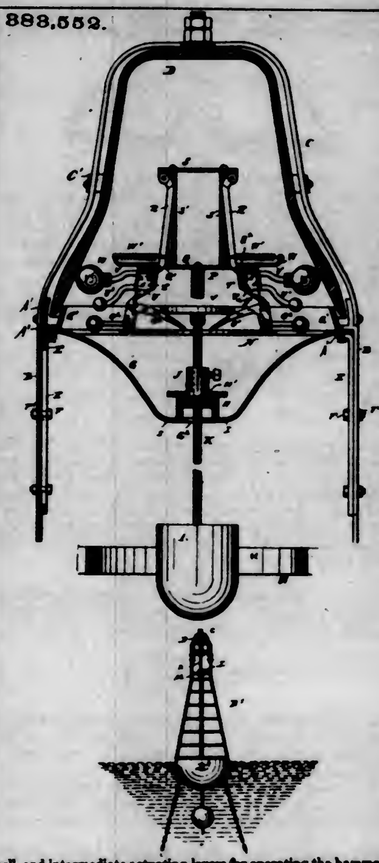
3. The combination, with a bell, of a series of swinging levers in the same, pivoted latches for moving the hammers from the sides of the bell, a weighted swinging rod extending downward from the bell, a disk on the upper end of said rod, which disk depresses the ends of said latches, whereby the opposite ends of said latches move the levers from the inner side of the bell, substantially as herein shown and described.

4. The combination, with a bell, of a series of levers pivoted to the same, springs acting on the levers and moving them toward the inside of the bell, hammer-heads on the lower ends of said levers, triggers pivoted to said hammer-heads, and pivoted latches adjacent to said triggers and serving to move the said triggers and hammers from the inner surface of the bell, and a weighted swinging rod extending downward from the bell and provided on its upper end with a disk that can depress the inner ends of the latches, whereby the outer ends are moved from the inner surface of the bell, and thereby move the inner ends of the hammers in the same direction, substantially as herein shown and described.

5. The combination, with a bell, of a plate secured transversely in the mouth of the bell, a frame on said plate, hammer-levers pivoted to said frame, latches pivoted on the plate and serving to move the hammers from the inner surface of the bell, and a weighted rod extending downward from said plate, provided on its upper end with a disk that actuates the latches, substantially as shown and described.

6. The combination, with a bell, of a plate in the mouth of the same, a weighted swinging rod passed through an aperture in said plate, a collar on said rod, a seat for the collar being formed on the

388,553.

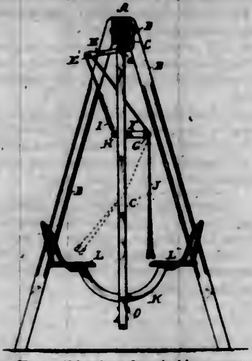


plate, swinging hammers on a frame supported on the plate within the bell, and latches on the plate, which latches are operated from the swinging rod and serve to operate the hammers, substantially as herein shown and described.

7. The combination, with a bell, of standards supporting the same at its top, leaving the bell-mouth open, sliding bars on said standards, mounted to slide toward and from the mouth of the bell, a plate secured on said sliding bars and adapted to fit in the mouth of the bell, and bell-ringing hammers, and mechanism for actuating the same on the top of said plate, substantially as herein shown and described.

8. The combination, with the bell D, of the plate G, the spider-frame N, the latches O, pivoted on the frame N, the plate P, the plate S, the levers R, pivoted on the plate S, the hammer-heads V' on the levers R, the triggers U, pivoted to the levers R, the springs W', connected with the levers R, the weighted swinging rod K, and the disk Y on the upper end of the same, substantially as herein shown and described.

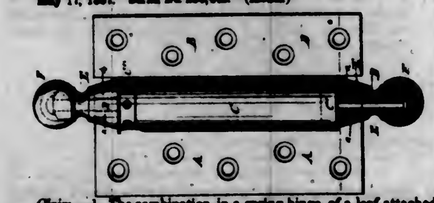
388,553. SWING. ALEXANDER BEVIS, Kansas City, Mo. Filed Nov. 7, 1887. Serial No. 254,513. (No model.)



Claim.—1. The combination of a suitable support, a single hanger secured thereto, a suspending-bar carrying a seat or seats at its lower end, and the upper end of which is pivoted to said hanger, a bracket located on said bar intermediate of the seats and its pivotal point, a roller carried by said bracket, an arm projecting from said hanger on the opposite side of said bar to that upon which said bracket is located, and a cord or rope connected to the said suspending-bar at a point intermediate of the seats and its upper end and passed over a roller carried by the outer end of said arm, and also over the roller carried by the bracket, substantially as set forth.

2. In a swing, the hanger C, pivoted to support A, and having arm E formed integral therewith, roller E', located in the outer end of said arm, in combination with suspending-bar C', the upper end of which is pivoted to said hanger, bracket F, projected from one side of said bar, roller G, carried by the outer end of said bracket, spring J, having one end connected to said bar, and cord J, connected to the other end of said spring and passed over said rollers, substantially as set forth.

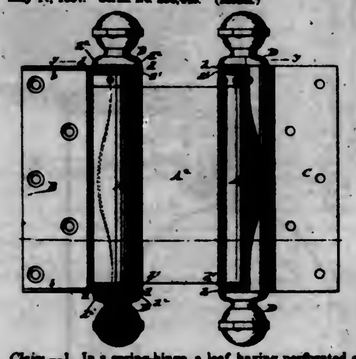
388,554. SPRING-HINGE. LEMUEL BENNER, Brooklyn, N. Y. Filed May 17, 1887. Serial No. 238,443. (Model.)



Claim.—1. The combination, in a spring-hinge, of a leaf attached to the door frame or casing; said leaf having pintle-sleeves made integral therewith, pintle-sockets having interior cylindrical cavities and lateral recesses fitting over the pintle-sleeves of the leaf, and a pintle passing through said sleeves and sockets and being rigidly attached to the latter, substantially as set forth.

2. In a spring-hinge, the combination of a leaf having pintle-sleeves made integral therewith, pintle-sockets having interior cavities and lateral recesses fitting over said pintle-sleeves, a pintle passing through said pintle-sleeves and sockets and attached to the latter, and detachable caps applied to the screw-threaded shanks or ends of the pintle-sockets, substantially as set forth.

388,555. SPRING-HINGE. LEMUEL BENNER, Brooklyn, N. Y. Filed May 17, 1887. Serial No. 238,442. (Model.)

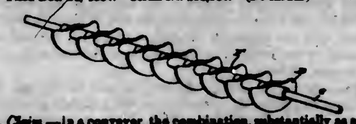


Claim.—1. In a spring-hinge, a leaf having perforated ears bent at right angles to and integral with the body of said leaf, and a bent-up stop-flange having recesses for the stop-pins, said flange extending from one ear to the other, substantially as set forth.

2. In a spring-hinge, the combination of a leaf having perforated ears with pintle-sockets having pins which engage holes in said ears, washers interposed between the pintle-sockets and the spring-sockets of the barrel, and a pintle attached to said pintle-sockets, substantially as set forth.

3. In a spring-hinge, the combination of a leaf having centrally-perforated ears and holes at some distance from the central perforation; washers having holes registering therewith, pintle-sockets having pins engaging the holes of the ears and washers, and a pintle attached to said sockets, substantially as set forth.

388,556. CONVEYER. ANNE E. BRAINARD, Hyde Park, Mass. Filed Dec. 31, 1887. Serial No. 259,557. (No model.)



Claim.—In a conveyer, the combination, substantially as set forth, of a trough to receive the material to be conveyed, a bearing for the support of a rotary conveyer-shaft, means for rotating such shaft, and a series of vanes secured to said shaft, said vanes being arranged parallel to each other and oblique to the axis of the shaft, the vanes corresponding to a portion only of the conveyer-circle, so that one longitudinal side of the conveyer is free from vanes, whereby when the conveyer-shaft is so turned that the vanes project upwardly from the shaft no vanes will project downwardly into said trough.

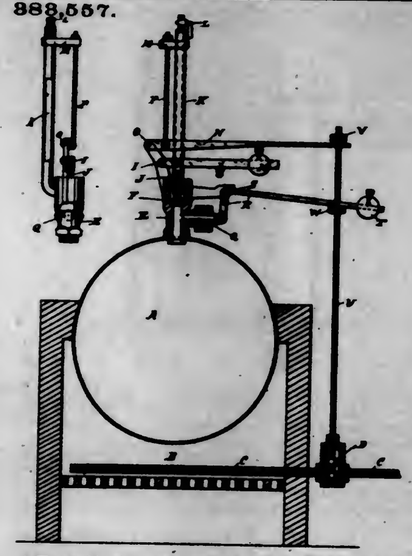
388,557. AUTOMATIC FUEL-REGULATOR FOR BOILERS. GEO. B. BENNETT, Rochester, N. Y., assignor of one-third to William A. Wilson, same place. Filed Aug. 6, 1887. Serial No. 246,570. (No model.)

Claim.—1. The combination, with a steam-boiler and its furnace, of a valve connected to the boiler and rising when the steam exceeds a given pressure, a valve for supplying fuel to the boiler-furnace, and a metallic pipe connected to the said steam-valve at one end and having its other end connected to the fuel-supply-valve spindle, whereby the expansion of the said pipe will close the fuel-supply valve when steam is admitted to the said pipe, substantially as set forth.

2. The combination, with a steam-boiler and its furnace, of a valve connected to the boiler and rising when the steam exceeds a given pressure, a valve for supplying fuel to the boiler-furnace, and a metallic pipe connected to the said steam-valve at one end, and having its other end provided with an adjustable outlet for condensed water and connected to the fuel-supply-valve spindle, whereby the expansion of the said pipe will close the fuel-supply valve when steam is admitted to the said pipe, substantially as set forth.

3. The combination, with a steam-boiler and its furnace, of a steam-valve casing connected to the boiler, the metallic expansion-pipe secured to the steam-valve casing, the weighted steam-valve seated in the said casing below the lower open end of the said pipe, a lever pivoted to the casing and connected to the upper end of the expansion-pipe, a plunger working steam-tight within the casing below the valve, a weighted bell-crank lever pivoted to the said casing and to the end of the plunger, and the valve for regulating the feed of the fuel, provided with a stem and actuated by the free ends of the said levers, substantially as and for the purpose set forth.

383,557.



4. The combination, with a steam-boiler and its furnace, of a steam-valve casing connected to the boiler, the metallic expansion-pipe secured to the steam-valve casing, the weighted steam-valve seated in the said casing below the lower open end of the said pipe, a lever pivoted to the casing and connected to the upper end of the expansion-pipe, a plunger working steam-tight within the casing below the valve, a weighted bell-crank lever pivoted to the said casing and to the end of the plunger, the valve for regulating the feed of the fuel, provided with a stem, and the adjustable tappets secured upon the said stem and actuated by the free ends of the said levers, substantially as and for the purpose set forth.

5. The combination, with a steam-boiler and its furnace, of a valve for supplying fuel to the boiler-furnace, and a metallic pipe rigidly supported at one end by the boiler and communicating with its steam-space, and having its other end connected to the fuel-supply-valve spindle, whereby the feed of the fuel will be regulated and proportioned by the expansion and contraction of the said pipe, substantially as set forth.

383,558. LUBRICATING ATTACHMENT FOR RAILWAY-CARS. James A. Criswell, Philadelphia, Pa. Filed July 30, 1887. Serial No. 245,782. (No model.)



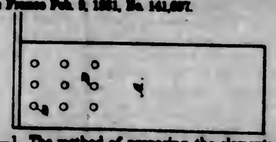
Claim.—1. The combination, with the car-body and wheels having their axles connected to the body in the usual manner, of the tank secured to the car-body, the valve-chamber communicating by a pipe, *c*, with the tank, the pipes *c*, running from the valve-chamber, and having their discharge-orifices over the rails in front or outward from the adjoining wheels, the piston-rod P and its reciprocatory valve-rod *f*, the treadle journaled upon brackets secured to the car-platforms and acting substantially as described upon the valve, and the spring G, whereby the valve-rod is moved in the direction opposite to the motion imparted by the treadle when released from the latter, substantially as specified.

2. The combination with the car-body, wheels, and tank secured to the car-body, of the spring-elevated treadle I, attached to the platform of the car and provided with the depending arm *i*, the valve-chamber E, the pipe *c*, connecting the tank and valve-chamber, the pipes H, the piston-valve P and its stem *f*, the spring G, surrounding the end part of the valve-stem, the angle-lever K, and the link-rod F, having its lower end adjustable on the depending part of the angle-lever, all constructed and arranged substantially as and for the purpose specified.

383,559. BISULPHATE. Arthur Duvall and Chas. H. Hall, Westminster, England. Filed Sept. 10, 1887. Serial No. 249,301. (No specimens.)

Claim.—As a new composition, a management of the alkalies combined with sulphate of magnesia, in about the proportions specified.

383,560. SECONDARY BATTERY. Camille A. Faure, Paris, France, assignor to The Electrical Accumulator Company, of New York. Original application filed Apr. 20, 1881, Serial No. 81,577. Divided and this application filed Oct. 7, 1881. Serial No. 67,691. (No model.) Patented in France Feb. 9, 1881, No. 141,697.

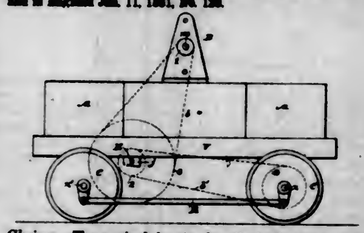


Claim.—1. The method of preparing the elements of secondary batteries, which consists in applying to the plates or supports the active material in the form of a paste prior to immersion of the elements in the battery-fluid, substantially as described.

2. The method of preparing the elements of secondary batteries by applying to the plates active material consisting of red lead in the form of a paste prior to the immersion in the battery-fluid, substantially as described.

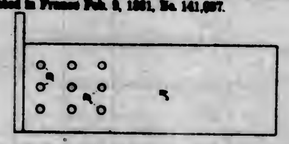
3. The process of construction of a secondary battery, which consists in first preparing the active material as a paste, then combining the same with the electrodes, and then placing the same in a battery-cell containing an electrolytic liquid, in which such active material is practically insoluble, substantially as described.

383,561. PROPELLING VEHICLES BY ELECTRICITY. Camille A. Faure, New York, N. Y., assignor to The Electrical Accumulator Company, of New York. Original application filed May 20, 1887, Serial No. 238,312. Divided and this application filed Jan. 12, 1888. Serial No. 261,261. (No model.) Patented in France Oct. 20, 1886, No. 180,264, and in England Jan. 11, 1881, No. 128.



Claim.—The method herein described of operating a vehicle propelled by an electric motor supplied with a current from a secondary battery carried by the vehicle, consisting in braking the vehicle and returning current to the secondary battery to recharge it by decreasing the electro-motive force of the battery until the counter electro-motive force of the motor exceeds it when the vehicle is on a downgrade or slowing down.

383,562. SECONDARY BATTERY. Camille A. Faure, New York, N. Y., assignor to the Electrical Accumulator Company, of New York. Original application filed Apr. 20, 1881, Serial No. 81,577. Divided and this application filed Apr. 13, 1882. Serial No. 57,269. (No model.) Patented in France Feb. 9, 1881, No. 141,697.

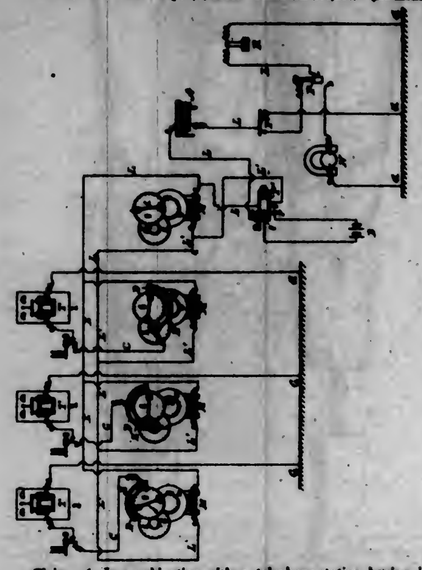


Claim.—1. A secondary battery consisting of a suitable containing-cell, an electrolytic fluid in which the elements are practically insoluble, such as sulphuric acid and water, and two or more elements, each of which contains a plate or conductor and a previously-prepared paste of active material in contact therewith.

2. A secondary battery composed of two elements, each element consisting of a support or conductor and a previously-prepared paste of red lead, and an containing-cell containing an electrolytic liquid in which the elements are practically insoluble.

3. An element for a secondary battery, composed of a plate, support, or conductor and a previously-prepared paste of red lead applied thereto, substantially as described.

383,563. TELEPHONE CALL-BELL SYSTEM. Frank E. Pierce, Detroit, Mich. Filed Sept. 14, 1885. Serial No. 177,177. (No model.)



Claim.—1. In combination with a telephone-station having its bell-circuit normally open, an electric motor constructed to work with a continuous current, and adapted, when set in motion, to close said bell-circuit, a line-wire connected with said motor, and a second line-wire, also connected with said motor and with the telephone, substantially as set forth.

2. In combination with a line-wire, two or more telephone-stations connected with said line-wire, and each having its bell-circuit normally open, and a continuous-current electric motor situated at each telephone and adapted to close the bell-circuit thereof, and a second line-wire, not connected directly with the telephones, said motors being connected in multiple arc with said two line-wires.

3. In combination with two or more telephones, a continuous-current electric motor located near each telephone and adapted to close the bell-circuit thereof, and two line-wires connected with each other at the further telephone, said motors being arranged in multiple arc in said line-wires, and said telephones being connected with one of said line-wires, substantially as shown and described.

383,564. ARMATURE FOR ELECTRIC MOTORS. Frank E. Pierce, Detroit, Mich. Filed Dec. 12, 1882. Serial No. 281,494. (No model.)



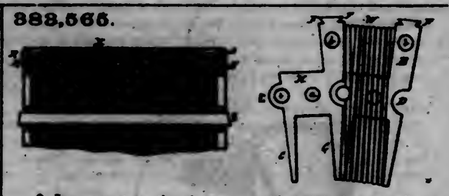
Claim.—1. In combination with the armature-ring S, carrying the wire bobbins 5, the magnetic metal strips 10, placed over the bobbins, substantially as shown and described.

2. In an electric motor, an armature having thereon bobbins of insulated wire, and a magnetic metal plate over each bobbin, whereby as the armature rotates the magnetic metal plate will be between the bobbin and the poles of the field-magnet, substantially as shown and described.

383,565. DYNAMO-ARMATURE. Frank E. Pierce, Detroit, Mich. Filed Oct. 3, 1887. Serial No. 251,241. (No model.)

Claim.—1. An armature-section made up of thin iron plates A, each provided with an upward projection, B, and two downward projections, C C, having holes *b b* to receive the rods R R, and having the concavity D and convex projection E, substantially as shown and described.

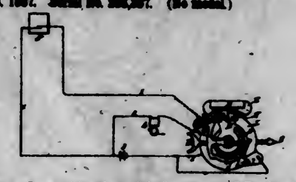
383,566.



2. In an armature, the plates A, provided with the upward projections B, having dovetail grooves F F therein, substantially as shown and described.

3. An armature in which the separate sections are made up of thin iron plates A, provided with upward projections B and downward projections C C, and having holes *b b* to receive the rods R R, each plate having the concavity D and convex projection E, each section being detachably secured to wheels G G, substantially as described.

383,566. ANNUNCIATOR. Frank E. Pierce, Detroit, Mich. Filed Oct. 25, 1887. Serial No. 253,257. (No model.)



Claim.—In combination with the magnet I D, the diamagnetic plate E, having thereon the detent F and the slot S therethrough, the needle-bar A, passing through slot S and leg I of the magnet, and an armature, H, secured to the end of the needle-bar A, having thereon the tooth T and extending near to both poles of the magnet, substantially as shown and described.

383,567. ARMATURE FOR DYNAMOS. Frank E. Pierce, Detroit, Mich. Filed Oct. 25, 1887. Serial No. 253,260. (No model.)



Claim.—1. In a ring-armature having projecting studs between which the bobbins are wound, dovetail grooves on the opposing faces of the said studs and metal plates adapted to slide into the said grooves, substantially as and for the purpose described.

2. In combination with the armature A, having bobbins C and projections E thereon, the dovetail grooves D and plates B, substantially as shown and described.

383,568. WEB TURNING AND REVERSING DEVICE FOR PRINTING-MACHINES. Joseph C. Fowler and Edward A. Rundle, Washington, D. C. Filed July 14, 1887. Serial No. 244,203. (No model.)

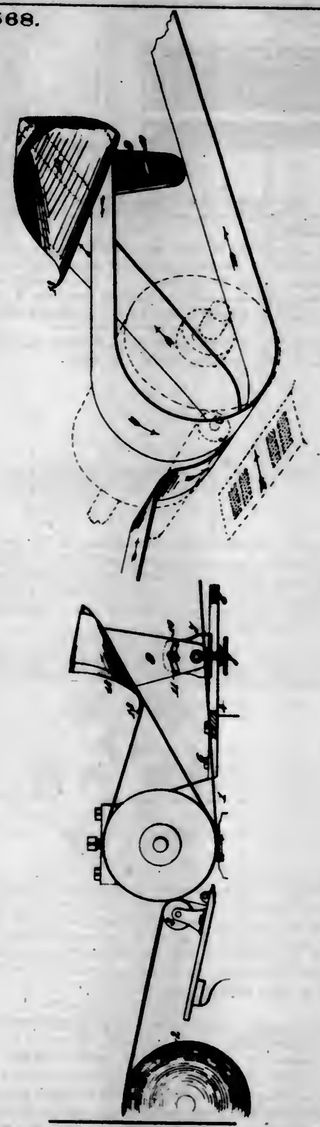
Claim.—1. In a printing-press, a web turning and reversing device consisting of a metallic body of substantially conoidal form flattened upon one side, and mounted upon a plate having pivoted adjustment, substantially as described.

2. In a printing-press, the combination, with the press-bed, of a web turning and reversing device consisting of a hollow stationary body of substantially conoidal form, having one side flattened, and provided with a pivotally-mounted plate, a set-screw adjustably connecting said plate to the press-bed, and means, substantially as described, for giving pivotal adjustment to said plate, substantially as described.

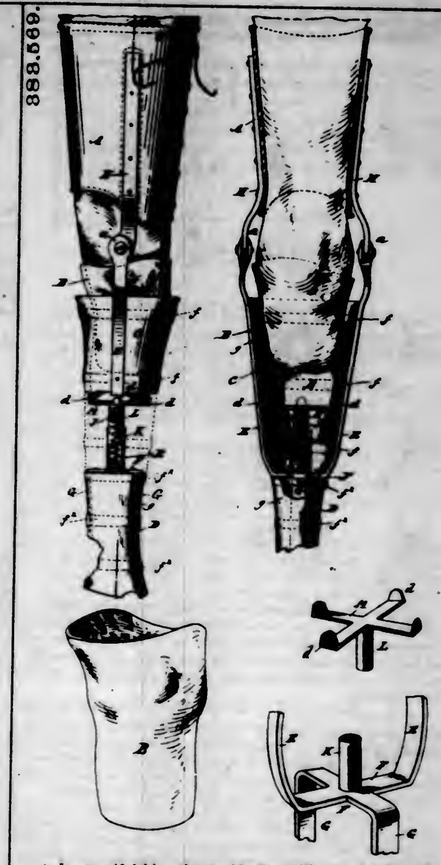
3. In a printing-press, the combination, with the press-bed having a longitudinal slot, of a bracket having a set-screw moving in said slot, a plate pivotally mounted on said bracket and having a curved slot through which a set-screw passes into the bracket, and a web turning and reversing device mounted on the end of said plate, substantially as described.

4. The web-turning and reversing device described, consisting of the metallic body 12, of substantially conoidal form, having one side flattened and prolonged in the direction of the base of the device, substantially as described.

388,568.



388,569.



388,569. ARTIFICIAL LEG. ALEXANDER GAWLE, Medford, Mass. Filed Nov. 21, 1887. Serial No. 255,792. (No model.)

Claim.—1. In an artificial limb, a socket for receiving the stump of an amputated leg, formed and suitably shaped of hard molded india-rubber or gutta-percha, substantially as described.

2. In an artificial leg, the combination, with an ankle-piece, D, having a vertical guiding-socket, a spring, and outer socket, C, and appliances for supporting said outer socket, of a stump-socket having a downward projection playing upon said guiding-socket against said spring, substantially as and for the purposes described.

3. In an artificial leg, the combination, with ankle-piece D, having an upwardly-projecting socket, and means for supporting said ankle-piece, of a frame provided with a tube projecting downwardly within the socket of the ankle-piece, a spring in said socket and tube, and a stump-socket resting upon the said frame, substantially as herein shown and described.

4. In an artificial leg, the combination, with an ankle-piece, D, having a vertical guiding-socket, K, and a spiral spring, J, therein, and an outer socket, C, and appliances for supporting said outer socket, of a frame having upwardly-extended lugs *d d* and a downwardly-extended tube, L, playing within said guiding-socket K against said spring, and a stump-socket, B, resting on said frame, substantially as and for the purpose described.

5. In an artificial leg, the combination, with an ankle-piece, D, having secured thereto a frame, F, provided with upwardly-extended brace-bars E E, a thigh-socket, A, pivotally secured to said brace-bars, and an outer socket, C, secured to and supported by said brace-bars, of a stump-socket fitting loosely within said socket C, and a spring between said frame F and said stump-socket for forcing said stump-socket upwardly, substantially as and for the purpose described.

6. In an artificial leg, the combination, with an ankle-piece, D, a frame, F, provided with downwardly-extended brace-bars G, lying along and secured to said ankle-piece, said frame also having upwardly-extended brace-bars E E, a thigh-socket, A, pivotally secured to said brace-bars E, and an outer socket, C, secured to and supported by said brace-bars, of a stump-socket fitting loosely within said socket C, and a spring between said frame F and said stump-socket for forcing said stump-socket upwardly, substantially as and for the purpose described.

388,570. FIRE-ESCAPE. JOHN GRANT, Beverly, Mass. Filed Mar. 27, 1888. Serial No. 268,669. (No model.)

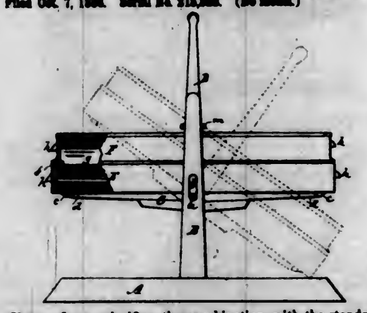
Claim.—1. A fire-escape consisting of a frame having a bifurcated lower end adapted to engage opposite sides of a window-sill, a drum pivoted in the upper end, provided with a central flange, a pulley mounted upon one end of the drum, an endless rope or chain resting upon said pulley, a hammock suspended from the drum, and a brake-shoe pivoted to the frame, engaging the pulley, substantially as and for the purpose specified.

388,570.



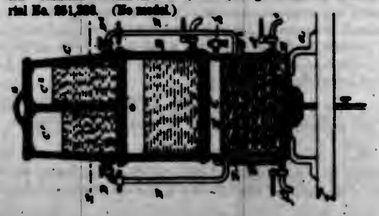
2. In a fire-escape, the combination, with a frame having bifurcated lower ends, the members whereof are oppositely curved and one shorter than the other, a drum pivoted in the upper end of the frame, provided with a central flange, a finger projected from the frame engaging said flange, and a grooved pulley attached at one end of the drum, of a hammock provided with a rear extension and throat-strap suspended from the drum, a brake having an attached rope pivoted to the frame beneath the pulley, and an endless belt or band passing over the pulley, all adapted for operation substantially as shown and described.

388,571. ASH-SIFTER. HENRY B. GRIFFIN, Rochester, N. Y. Filed Oct. 7, 1886. Serial No. 215,888. (No model.)



Claim.—In an ash-sifter, the combination, with the standards B, rocking frame C, and boxes E F, of the lever D, attached to the rocking frame, and the bar G, pivoted to the lever and provided with the right-angled stirrup *m*, said bar fastening the boxes to the rocking frame when turned down, and fastening the lever to the standard when turned up, as herein shown and described.

388,572. RECEPTACLE AND HEATER FOR TEA, COFFEE, MILK, &c. CHARLES W. HELLENBRAND, Salem, Oreg. Filed Oct. 3, 1887. Serial No. 251,309. (No model.)



Claim.—1. A heater for tea and coffee, comprising the hot-water vessel A, having a removable cover, *c*, the separate and independent vessel C, above the hot-water vessel, and having a cock, D, on its outside, and a pipe leading into and through the vessel A from said outside cock, substantially as set forth.

2. A heater for tea, coffee, and milk, comprising the hot-water vessel A, the removable milk-vessel B upon the vessel A, and having a cock, *d*, and the vessel C upon the vessel B, and having a cock, D, on its outside, and the pipe E, leading from the said cock D into and through the hot-water vessel, and provided with a cock, *f*, substantially as set forth.

388,573. TWINE-HOLDER. JONATHAN RUIZ, New York, N. Y. Filed Jan. 5, 1886. Serial No. 288,868. (No model.)

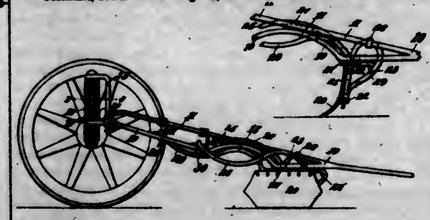


Claim.—1. In a twine-holder, the combination, with the supporting-chain, of the lever B, fulcrumed on the latter and provided with an eye at each end, the twine-cup suspended from the eye at the short arm of said lever, and the twine-guide chain E, pendent from the cup-connection, as shown and described.

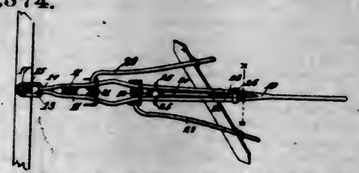
2. In a twine-holder, the combination, with a supporting-chain and a lever provided with a graduated sleeve fulcrumed upon said chain, of a twine-cup suspended from the short arm of said lever and a guide-chain pendent from the cup-connection adjacent to the lever, substantially as and for the purpose herein set forth.

3. In a twine-holder, the combination, with a supporting-chain and a lever fulcrumed upon said chain, provided with a graduated sleeve, and having an eye at the extremity of the longer arm, of a twine-cup supported from the short arm of the lever by a rod and short length of chain and a guide-chain pendent from the aforesaid short length of chain adjacent to the lever, substantially as shown and described, whereby the cord may be passed from the cup through a link of the guide-chain, through the eye of the lever, and downward, as set forth.

388,574. DETURNER AND GRADER. JAMES M. HOLLAND, Mount Pleasant, Iowa. Filed Aug. 24, 1887. Serial No. 247,726. (No model.)



383,574.



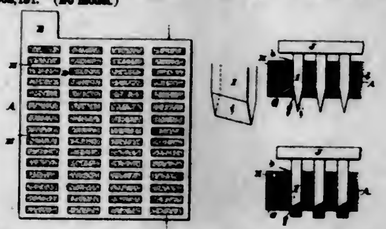
Claim.—1. In a ditcher and scraper, upper and lower bars, 10 11, rigidly connected at their front and rear ends, in combination with the shovel pivotally connected at or near its center to the rear ends of said arms, and the outer bars, 28 29, pivotally connected with the shovel at opposite sides of its center at their rear ends, and detachably connected at their forward ends to the frame formed by the said rigidly-connected bars, substantially as set forth.

2. The combination, with the frame comprising the upper and lower longitudinal bars, 10 11, rigidly connected together and provided with hooks 31, one in advance of the other, of the shovel 20, centrally pivoted to the rear end of the frame, and the rods 28 29, bent downward at their rear ends and pivotally connected to the shovel at opposite sides of its center and bent inward at their front ends to engage the said hooks, substantially as set forth.

3. The combination, with a clevis-link or slide, of bars 10 and 11, a knob connected to the forward ends of said bars, a shovel, 20, the standard of which passes between the bars 10, a wear-plate or washer, 27, connections between the standard and the shovel, bars 28 and 29, formed with hooks 30, and the hooks 31, substantially as described.

383,575. MANUFACTURE OF SECONDARY BATTERIES.

RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, of Pennsylvania. Filed Jan. 27, 1888. Serial No. 262,131. (No model.)



Claim.—1. The method of forming an element for a secondary battery, which consists in placing hardened pieces of active material in holes or perforations in a metal plate of ductile material and then bending the edges of said plate adjacent to the active-material pieces partly over them, to hold them in place and leave a large area of the active material exposed.

2. The method of forming an element for a secondary battery, consisting in making a metal plate of the proper shape and perforating it, then placing in said perforations or apertures pieces of active material in a hardened condition, and finally subjecting the metal of the plate between the active material to pressure, causing it to spread, so as to form lips which partly extend over the pieces of active material and hold them in place and expose said active material upon each surface of the plate.

3. The method of forming an element for a secondary battery, consisting in making a metal plate of the proper shape and perforating it with a series of parallel apertures, then placing in said perforations or apertures pieces of active material in a hardened condition and formed like small cylinders or bars of any cross-section, and finally subjecting the metal of the plate between the active material to pressure, causing it to spread, so as to form lips, which partly extend over the pieces of active material and hold them in place and expose said active material upon each surface of the plate.

4. The method of forming an element for a secondary battery, which consists in stamping from a sheet of lead a plate of the proper shape, then perforating it to form a large number of apertures, then placing hardened pieces of active material in said apertures, and finally subjecting the metal between the apertures to the action of spreading-dies, which spread the metal over the active material in the form of small lips to hold the active material in place.

5. The method of forming an element for a secondary battery, which consists in stamping from a sheet of lead a plate of the proper shape, then perforating it to form a large number of elongated apertures arranged in parallel rows, and each row formed of a series of such apertures arranged parallel to each other, then placing hardened elongated pieces of active material in said apertures, and finally subjecting the metal between the apertures to the action of spreading-dies, which spread the metal over the active material in the form of small lips to hold the active material in place.

6. The method of forming an element for a secondary battery, which consists in forming a lead plate with a series of apertures, then placing previously-hardened active-material pieces within said apertures, and finally subjecting the plate to the action of dies to force the lead to spread partly over the active-material pieces, to hold them in place and expose said active material upon each surface of the plate.

7. The method of forming an element for a secondary battery, which consists in forming a lead plate with a series of elongated parallel apertures, then placing previously-hardened active-material pieces of elongated shape within said apertures, and finally subjecting the plate to the action of dies to force the lead to spread partly over the active-material pieces, to hold them in place and expose said active material upon each surface of the plate.

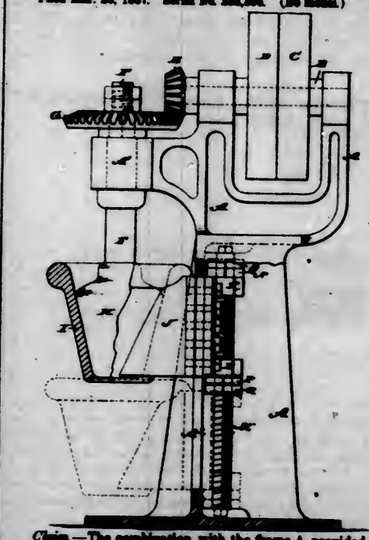
8. The method of forming an element for a secondary battery, which consists in forming a lead plate with a series of elongated apertures, then placing previously-hardened active-material pieces of elongated shape within said apertures, and finally subjecting the plate to the action of dies to force the lead to spread partly over the active-material pieces, to hold them in place and reduce the thickness of the lead between the pieces of active material.

9. The method of making perforated plates for an element of a secondary battery, which consists in, first, perforating a plate of lead or other suitable metal or combination of metals of uniform thickness, and then subjecting it to pressure to reduce the thickness of the metal between the apertures and force the edges of the perforations to spread inwardly, to form overhanging lips without touching each other, and adapted to hold the active material in place.

10. The method of making an element for a secondary battery, which consists in perforating a plate of lead and subjecting it to the action of pressure at points or lines between the perforations, to cause the metal to flow inwardly toward the apertures, and filling such apertures with active material.

383,576. INK-MILL.

T. RUDDIMAN JOHNSTON, Edinburgh, Scotland. Filed Mar. 20, 1887. Serial No. 231,256. (No model.)



Claim.—The combination, with the frame A, provided with vertical guides A^2 at one side, a vertical screw, M, within the frame adjacent to said guides, and the bracket A' above said guides, of the vertical shaft F, journaled in said bracket and having a grinder, H, on its lower end, the grinding-pot I, provided with a bracket, J, working in said guides, eyes K L on said bracket and sliding freely on the screw M, and the nuts on said screw for adjusting the position of the grinding-pot, substantially as set forth.

383,577. MECHANICAL MOVEMENT.

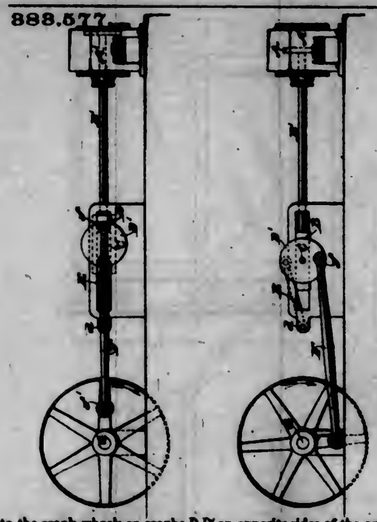
MARSHALL B. KELLOGG, San Francisco, Cal. Filed July 20, 1887. Serial No. 245,052. (No model.)

Claim.—1. The sliding cross-head B, provided with crank-wheels or cranks D D', connected to a revolving axis, C, carried by the cross-head, in combination with the link E and connecting-rod F, pivoted to the crank-wheels or cranks D D' on opposite sides of the axis C, substantially as described.

2. The sliding cross-head B, carrying two crank-wheels or cranks, combined with the connecting-rod of a motor connected to the cross-head, and the connecting-rod F, all arranged to operate substantially as described.

3. The sliding cross-head B, operated directly from the motor and provided with the revolving axis C, having two cranks projecting in opposite directions, substantially as described.

383,577.



383,578. ROLL-PAPER HOLDER.

HENRY H. KIRK, Adrian, assignor of one-half to John R. Bellas, Detroit, Mich. Filed Jan. 31, 1888. Serial No. 262,622. (No model.)



Claim.—1. In a roll-paper holder, the combination, with a frame having journal-bearings for receiving the ends of a supporting-roller, of a roller or bar journaled in pendent arms, spring-arms engaged with said pendent arms and adapted to force the roller or bar to bear upon and follow in against the paper on the roll, a fixed covering-bar, and a spring-controlled roller or bar back of the same, substantially as described.

2. The combination of a frame adapted to support a roll of paper, a roller or bar, D, journaled in pendent arms D', spring-arms D², connected with said pendent arms, with a fixed covering-bar, E, spring-arms F², and a roller or bar, F, journaled therein to force the paper into firm contact with the back of the covering-blade, substantially as described.

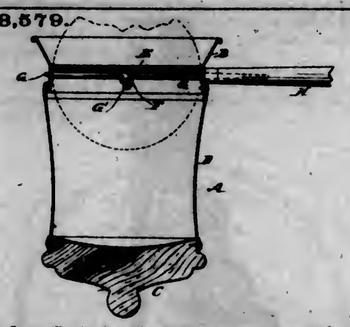
383,579. COLLECTING-BOX.

FRIEDRICH A. KETTELL, Hollidaysburg, Pa. Filed Feb. 24, 1888. Serial No. 265,154. (No model.)

Claim.—1. A collection-box provided with an upper tilting bottom, a lower bottom, and a rotary supporting-handle adapted to upset the tilting bottom, substantially as described.

2. In a collection-box, the combination, with a pendent box-body having a main bottom, of a rotary supporting-handle mounted transversely in the body above its bottom, and a movable false bottom in the body above the main bottom, adapted to be moved by the rotary handle, so as to discharge upon the lower bottom, substantially as described.

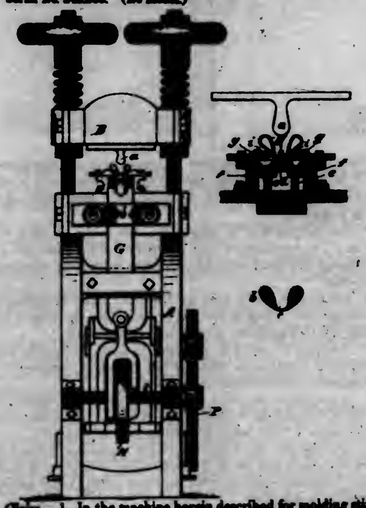
383,579.



3. In a collection-box, the combination, with a box-body having a main bottom, of an upper tilting false bottom therein provided with a sleeve, a pivot-rod passed through said sleeve and mounted to turn in the body, a handle attached to said rod, and means for locking the rod in the sleeve, substantially as described.

383,580. MACHINE FOR MOLDING HEEL-STIFFENERS FOR BOOTS OR SHOES.

GEORGE A. KIRK, Lynn, Mass. Filed July 5, 1887. Serial No. 243,269. (No model.)



Claim.—1. In the machine herein described for molding stiffeners for boots and shoes, a reciprocating male mold, a flexible female mold, *b*, a yielding bed for the latter, and cam-blocks *g* to engage the sides of the flexible female mold to press its sides inward or laterally as it yields on its bed to the pressure of the male mold, all combined and operating substantially as and for the purpose set forth.

2. The herein-described mold for molding counters or stiffeners for boots and shoes, having rigid sides and being flexible at its bow-point *c*, substantially as set forth.

3. In the machine herein described for molding stiffeners for boots and shoes, the molds, a reciprocating slide for ironing down and setting the flange, mechanism, substantially as set forth, for holding the slide with a yielding pressure against the face of the die as the slide is moved to set the flange, and mechanism, substantially as described, for relieving the slide of such pressure as it is moved backward after having set the flange, all combined and operating substantially as and for the purpose set forth.

4. In the machine herein described for molding counters or stiffeners for boots and shoes, a male mold, a female mold having practically rigid sides flexibly connected at the bow-point, a yielding bed for the female mold, and cam-blocks to engage the sides of the female mold to press its sides inward or laterally as it yields on its bed to the pressure of the male mold, all combined and operating substantially as and for the purposes hereinbefore set forth.

383,581. POOL-REGISTER.

CHARLES S. KRAPFF, Albany, N. Y. Filed Jan. 6, 1888. Serial No. 259,893. (No model.)

388,581.



Claim.—1. The locking-lever D, hinged at *b*, and the holder or clasp *b'*, in combination with registering mechanism, and a rod, F, connecting the said lever with the registering mechanism, substantially as described.

2. The locking-lever D, hinged at *b*, the holder or clasp *b'*, and the hook *D'*, in combination with registering mechanism, and a rod, F, connecting said lever with the registering mechanism, substantially as described.

3. The lever G, acted upon by a spring, H, in combination with the locking-lever D, disk Q, and rod F, connecting the lever G to the said disk and locking-lever, substantially as described.

4. The lever G, spring H, connected thereto, the locking-lever D, and disk Q, in combination with the rod F, gong K, hammer J, and the spring-trip *g*, substantially as described.

5. In a register, the lever G, spring H, connected thereto, locking-lever D, and disk Q, in combination with the rod F, ratchet-wheel L, dial B, arbor L', and hands L^2, substantially as described.

6. In a register, the lever G, spring H, connected thereto, locking-lever D, disk Q, and rod F, in combination with the gong K, hammer-dog J, ratchet-wheel L, arbor L', pawl *l*, dial B, and hands L^2, substantially as described.

7. In a register, the lever G, spring H, connected thereto, lever D, disk Q, and rod F, in combination with the shelf C, and means for communicating motion from the lever G to the said shelf, substantially as described.

8. In a register, the lever G, spring H, connected thereto, lever D, disk Q, and rod F, in combination with the gong K, sliding shelf C, hands L^2, and means, substantially as described, for operating the hands and shelf and striking the gong from the lever G, substantially as described.

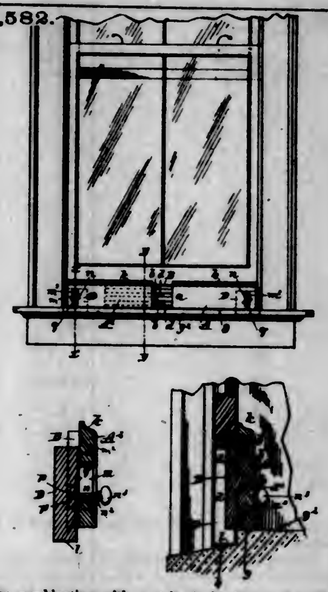
9. The lever G, spring H, connected thereto, lever D, disk Q, and rod F, in combination with registering mechanism, the electric wires N N', and a circuit-breaker operated by the lever, substantially as described.

10. The rod F, having hook *p*, and the disk Q, having prongs *q q* and projection *q'*, in combination with the lever D, having shoulders *d d'*, substantially as described.

388,582. WINDOW-VENTILATOR. CHARLES B. LOSS, Louisville, Ky. Filed Nov. 16, 1887. Serial No. 255,561. (No model.)

Claim.—1. The combination, with a strip, A, having an outwardly-extended longitudinal strip or rib, B, and a strip, A^2, adapted to slide longitudinally on said strip B, of blocks D D, lying against the outer side of said strips A A^2, vertically adjustable thereon, and of fastening devices, substantially as described, for securing said blocks and said strips against movement the one upon the other, substantially as and for the purpose described.

388,582.



2. The combination, with a strip, A, having an outwardly-extended longitudinal strip or rib, B, and a strip, A^2, adapted to slide longitudinally on said strip B, said strips A A^2 having vertical slots *m* through them, of blocks D D, having screw-sockets *p*, and thumb-screws *n*, passing through said slotted strips A A^2 into said screw-socketed blocks, substantially as and for the purpose described.

388,583. ELECTRO-MAGNETIC REGISTER. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Mar. 19, 1887. Serial No. 231,554. (No model.)

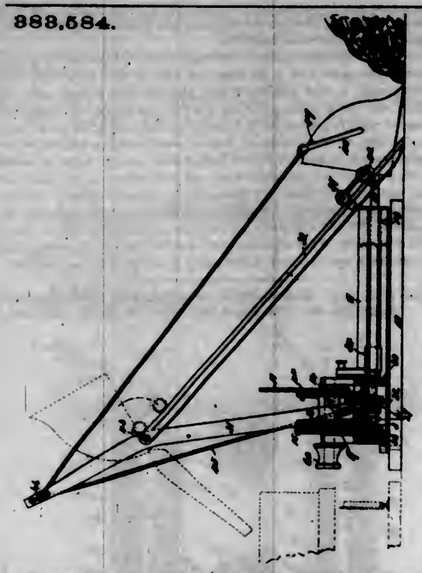


Claim.—The combination, with an electric circuit and a circuit-controller therefor, of an electro-magnet included in said circuit, an adjustably-pivoted armature pawl-lever controlled by said electro-magnet, limiting and retracting agencies for said pawl-lever, actuating and check pawls carried by said pawl-lever, a ratchet-wheel controlled by said pawls, an index-hand operated by said ratchet-wheel, a second ratchet-wheel rotated at every complete revolution made by the first-mentioned ratchet-wheel, a second index-hand controlled by said second ratchet-wheel, spring-dogs for severally retarding the rotation of the two ratchet-wheels, a bell-rod rigidly attached to said armature pawl-lever, a sounding-gong operated by said bell-rod, whereby each movement of an index-hand is announced, and the friction-clutch mounted on the central shaft, whereby the index-hands may be set at any desired point on the dial-face without disturbing the interior mechanism of the registor, substantially as described.

388,584. SEWAGE SEWERLING DEVICE. ANDREW HUTTER, Port Arthur, Ontario, Canada. Filed Sept. 28, 1887. Serial No. 250,603. (No model.)

Claim.—1. The combination of a pivoted inclined way, a hinged

388,584.



shovel mounted thereon, a hoisting apparatus connected to the shovel, and a slide connected to the lower end of the inclined way and operated from the hoisting apparatus, substantially as herein shown and described.

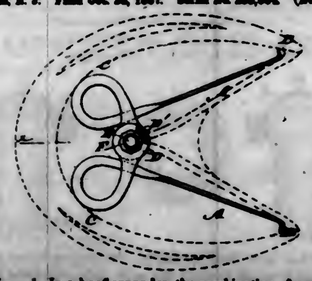
2. The combination of a pivoted inclined way, a trunk mounted thereon, a shovel hinged to the trunk, a hoisting apparatus connected to the shovel, and a sliding cross-head connected to the lower end of the inclined way, substantially as and for the purpose set forth.

3. The combination, with a bed-plate, a horizontal frame pivotally mounted thereon, and a supporting-frame pivotally connected to the horizontal frame, of an inclined way pivoted to the supporting-frame, a threaded shaft, a nut carried by the shaft, a cross-head connected to the nut and to the lower end of the inclined way, a truck mounted upon the way, a shovel connected to the truck, a drum, a cord extending from the drum to the shovel, and means for operating the said drum and shaft, substantially as herein shown and described.

4. In a hoisting apparatus, the combination, with a main shaft, of fixed gears carried thereby, a threaded shaft, two gears loosely mounted thereon, one of which is engaged by one of the gears of the main shaft, a gear interposed between the other gear of the main shaft and the other loosely-mounted gear of the threaded shaft, clutch-sections formed upon the gears of the threaded shaft, a double clutch-section mounted between said gears, and an operating-lever, substantially as described.

5. The combination, with an inclined way provided with stops in its upper and lower ends, of a truck mounted upon said way, a shovel, and a triple-leaved hinge connected to the shovel and to the truck, substantially as described.

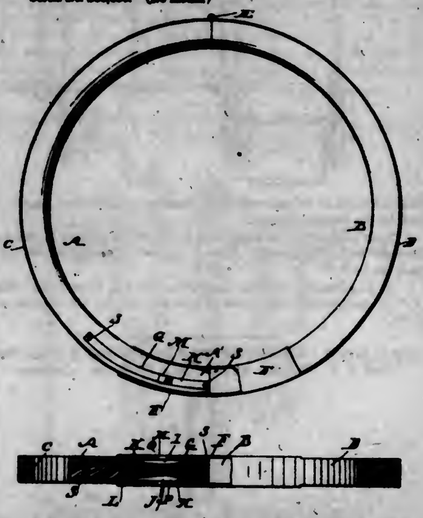
388,585. ROOF-EXPANDER. LAWRENCE MORARAN, Jr., Morris Plains, N. J. Filed Oct. 26, 1887. Serial No. 253,094. (No model.)



Claim.—1. In a beef-expander, the combination of spring-legs A, having prongs B, and interlocking disks D D', substantially as shown and described.

2. In a beef-expander, the combination of spring-legs A, having prongs B, disks D D', having pivot-holes, a pivot-bolt, E, and a clamp-nut, F, substantially as shown and described.

388,586. MAST-HOOP. CHARLES S. MOTT, Patchogue, assignor to himself and George H. Shaffer, Brooklyn, N. Y. Filed Mar. 3, 1888. Serial No. 265,959. (No model.)



Claim.—1. An improved mast-hoop consisting of two semicircular wooden sections and two outer metallic band-sections, the two sections being hinged together and provided at their ends, respectively, with a slotted socket and a catch for engaging the slot in said socket, substantially as herein shown and described.

2. In a mast-hoop, the combination, with two semicircular hoop-sections jointed together at their one ends, of a segmental slotted sleeve received partly on the free end of one section, the free end of the other section adapted to enter said sleeve, and having a segmental groove in its side deepened to form a recess at its middle, a flat segmental spring seated in said groove, fastened at its ends therein and free to yield inward into the said recess, and a beveled catch formed thereon on the spring and adapted to engage the slot in the sleeve, substantially as described.

3. In a mast-hoop, the combination, with two semicircular hoop-sections connected at their one ends by a joint, of a segmental oppositely-slotted socket on the free end of one section, the free end of the other section adapted to enter said socket and having segmental medially-deepened grooves in its opposite sides, flat segmental springs seated in said grooves and having medial catches, and rivets passed through the corresponding ends of both springs and through the intervening body of the hoop, substantially as described.

388,587. BELL-CORD ATTACHMENT. GEORGE W. HAYLER, Jersey City, N. J. Filed Aug. 24, 1887. Serial No. 247,736. (No model.)



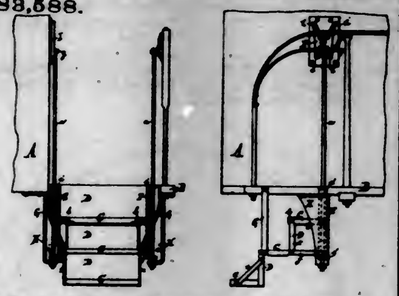
Claim.—1. The combination, with a railway-car or similar vehicle and the bell-cord, of a lever or series of levers pivoted between the windows, having lateral motion, the upper end of which lever or levers is secured to the bell-cord, the lower constituting a handle to manipulate the same, as and for the purpose herein set forth.

2. The combination, with a car or similar conveyance and the bell-rope, of a lever pivoted in a bracket attached between the windows, the lower end of which is extended downward in the direction of the seat to constitute a handle, the upper end being curved upward and inward and secured to the bell-rope, substantially in the manner and for the purpose herein set forth.

388,588. ADJUSTABLE CAR-SEAT. WILLIAM RUSSAMS, St. Louis, Mo. Filed July 11, 1887. Serial No. 244,003. (No model.)

Claim.—1. The car-steps C C C and risers D D D, when con-

383,588.

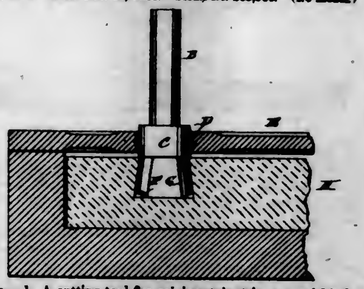


structed so as to be convertible at pleasure into steps or guards, as and for the purpose set forth.

2. In adjustable car-steps, links *c c'* and sliding bars E, in combination with sliding rods *a*, clamp I, and links *f*, as and for the purpose set forth.

3. In adjustable car-steps, suspending-links G, links *f*, and links *c c'*, in combination with metal guards *l*, as and for the purpose set forth.

383,589. GROOVE-CUTTING TOOL. WILLIAM H. FARRY, New York, N. Y. Filed Feb. 10, 1888. Serial No. 263,586. (No model.)



Claim.—1. A cutting-tool for gaining stair-stringers and kindred purposes, consisting of a holding-shank, a cylindrical head, and groove-cutters having side cutting-edges and inclined bottom cutting-edges projecting from the outer end of the head, the head and cutters formed on a single piece of steel, substantially as described.

2. A groove-cutting tool consisting of a shank, a head, and opposite downward-diverging cutters projecting from the outer end of the head, said cutters having diagonally-opposite side cutting-edges and oppositely-inclined bottom cutting-edges, the head and cutters formed of a single piece of steel, substantially as described.

3. As an improved article of manufacture, a groove-cutting tool formed of a single piece of steel and consisting of a shank, a solid cylindrical head, and cutters in the shape of cylindrical segments projecting from diametrically-opposite points of the outer end of the head, the outer convex faces of the cutters being formed reversely eccentric, so as to form diagonally-opposite cutting side edges and other diagonally-opposite retreating side edges, and the lower ends of the cutters being beveled upward and outward and inclined oppositely lengthwise to form the bottom cutting-edges, substantially as described.

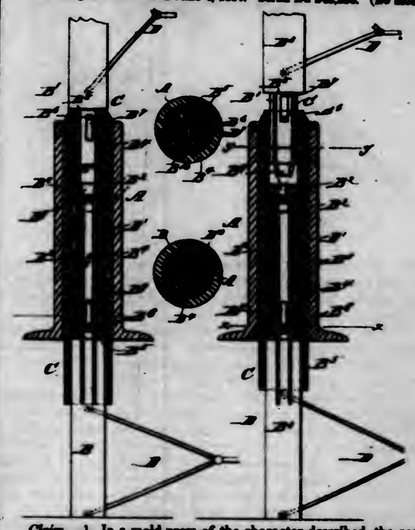
383,590. SPOKESHAVE. JAMES H. POLHEMUS and BENJAMIN F. POLHEMUS, Brooklyn, N. Y. Filed Jan. 20, 1888. Serial No. 261,577. (No model.)



Claim.—1. In a spokeshave, the combination, with the body having a recess in the upper face, a threaded rod held to turn in the body-recess, and a rectangular nut traveling upon said rod in said recess, of a blade adapted to slide upon the body above the recess, having a slot cut therein to receive the nut, an adjusting-plate held to slide upon the knife, provided with guide-slots and guide-screws, a cap-plate resting upon said blade, slotted to accommodate the guide-screws, and a set-screw passing through the cap-plate and blade into the body, substantially as shown and described.

2. In a spokeshave, the combination, with the body having a recess in the upper face, a threaded rod held to turn transversely and horizontally in said body-recess and provided with a head upon the outer end, and a rectangular nut traveling upon said rod in said recess, of a blade adapted to slide upon the body above the recess, having a series of central slots cut therein, one of which is adapted to receive the nut, an adjusting-plate held to slide upon the knife, provided with a central slot, side guide-slots, and guide-screws, a cap-plate resting upon the said blade, provided with shoulders at opposite ends engaging the body, and a central slot and side slots accommodating the guide-screws, and a set-screw passing through the slot of the cap-plate, the central slot of the adjusting-plate, and through the registering slot in the knife into the body, substantially as shown and described.

383,591. TILE-MACHINE. BENJ. PORTER and ROBERT HOFFMAN, Washington, Ia. Filed June 4, 1887. Serial No. 240,269. (No model.)



Claim.—1. In a mold-press of the character described, the combination of a movable former, a valve in the pressure-head of the same, means connections allowing a limited movement only of the valve with respect to the former, and a device for withdrawing the movable former from the mold, said device connected directly to the valve and operating thereby indirectly upon the former, substantially as described.

2. In a mold-press of the character described, the combination of the outer part, B^1, of the former, provided with an opening, B^2, and the inner part, B^3, of the former, provided with a plug or valve, B^5, and air-channels B^{10}, substantially as shown and described.

3. In a mold-press of the character described, the combination of the mold-chamber A, the former B, made in two parts, B^1 and B^3, movable upon each other, and the follower C, adapted to enter the space between the chamber and the outer of said parts B^1 B^3, substantially as shown and described.

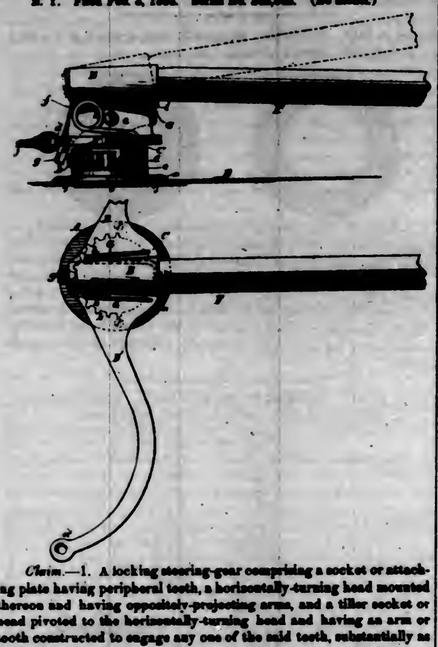
383,592. VENTILATOR. JOHN H. REYBOLD, Troy, N. Y. Filed Mar. 3, 1888. Serial No. 265,833. (No model.)



Claim.—In a ventilator-cap, the combination of two dome-like members—having substantially the same form—fixed one above the other to produce a circumferential opening between them, and the convex faces of both members being fixed uppermost, a ventilator-pipe which passes centrally through the lower dome to form a cylindrical

standing rim whose upper end is above the level of the under side of the gutter of the upper member, and a bolt which concentrically surrounds said cap opposite to said circumferential opening, as and for the purpose herein specified.

383,593. LOCKING STEERING-GEAR. JOHN H. REMPER, Canton, N. Y. Filed Feb. 3, 1888. Serial No. 263,262. (No model.)



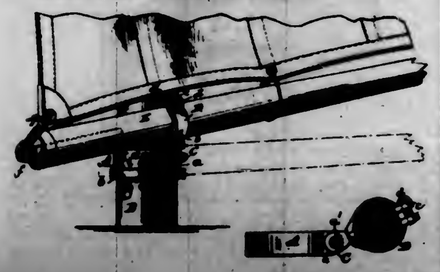
Claim.—1. A locking steering-gear comprising a socket or attaching plate having peripheral teeth, a horizontally-turning head mounted thereon and having oppositely-projecting arms, and a tiller socket or head pivoted to the horizontally-turning head and having an arm or tooth constructed to engage any one of the said teeth, substantially as set forth.

2. The combination, with the internally-screw-threaded socket or attaching plate having peripheral teeth, of a screw-threaded head turning horizontally therein and having oppositely-projecting arms, and a vertically-rocking tiller socket or head pivoted on the upper end of the horizontally-turning head and having a downwardly-extending arm engaging one of said teeth, substantially as set forth.

3. A locking steering-gear consisting of the internally-screw-threaded socket A, having the peripheral teeth *b*, the screw-threaded head C, turning horizontally in the socket A and formed with ears *c c* on its upper side and horizontally-projecting arms D D', the tiller-socket E, having a flange on its under side pivoted between ears *c c*, and having a downwardly-projecting arm, *d*, engaging a tooth, *b*, and the double spring G, bearing on the head C and on the socket E, substantially as set forth.

4. The combination, with a head having a vertically-swinging tiller pivoted to its upper side and having a locking-arm at its pivotal end, and a socket upon which the said head turns horizontally, provided with teeth engaged by said locking-arm, whereby the tiller may be locked in any desired position, substantially as set forth.

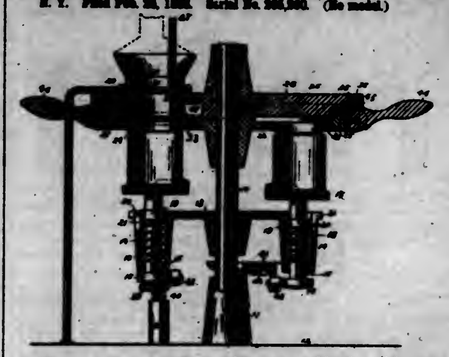
383,594. BOOK-FASTENING. JOHN H. REMPER, Canton, N. Y. Filed Feb. 3, 1888. Serial No. 263,264. (No model.)



Claim.—1. A beam-fastening formed of the ring A, provided with the apertured ears *a*, the clamp D, provided with the eye C and adapted to receive the beam B, and the spring-key *d'*, passing through said ears and eye and forming the pivot of said eye and clamp, substantially as described.

2. The combination, with the mast B and beam E, of the collars *b*, embracing the mast, the ring A, provided with apertured ears *a* and received on the mast B between the collars *b*, the clamp D, adapted to receive and clamp the beam E and provided with the eye C, pivoted between the ears *a* and upon the spring-key *d'*, and the spike F, inserted in the end of the beam and provided with a rounded apertured head, *f*, substantially as herein shown and described.

383,595. CAN-FILLING MACHINE. CONRAD SIEBEL, Brooklyn, N. Y. Filed Feb. 28, 1888. Serial No. 265,960. (No model.)



Claim.—1. In a can-filling machine, the combination, with a central spindle and a fixed top, of a lower disk secured to said spindle, provided with a series of spring-actuated can-carrying tables, an upper disk apertured in alignment with the tables, having downwardly-projecting collars surrounding said apertures, a delivery-chute attached to the top, registering with the consecutive apertures in the upper disk, and means for gradually elevating the tables, as and for the purpose specified.

2. In a can-filling machine, the combination, with a central spindle and a fixed top, of a lower disk secured to said spindle, provided with a series of can-carrying tables having spring-actuated rods projecting downward from said tables, an upper disk apertured in alignment with the tables and having downwardly-projecting collars surrounding said apertures, a delivery-chute attached to the top and registering with the consecutive aperture in the upper disk, and means for gradually elevating the tables, as and for the purpose specified.

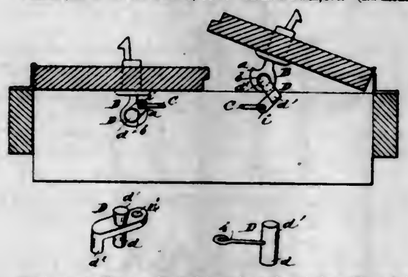
3. In a can-filling machine, the combination, with a central spindle and a fixed top provided with a feed-aperture and a chute surrounding said aperture, of a lower disk secured to said spindle, provided with a series of can-carrying tables having spring-actuated rods projecting downward from said tables, an upper disk also secured to the spindle and apertured in alignment with the tables, and also having downwardly-projecting collars, the said apertures adapted to consecutively register with the feed-aperture, and means for gradually elevating the tables and vibrating the same, substantially as shown and described.

4. In a can-filling machine, the combination, with a central spindle and a fixed top provided with a feed-aperture, a chute leading into said aperture, and a spring-actuated packing-ring below the same, of an apertured lower disk secured to said spindle, flanged can-carrying tables secured to spring-actuated rods, an upper disk also secured to the spindle, apertured in alignment with the tables, and having downwardly-projecting collars adapted to consecutively register with the feed-apertures, means for gradually elevating the tables, and means for gradually lowering and vibrating the same, substantially as shown and described.

5. In a can-filling machine, the combination, with a central spindle and a fixed top provided with a feed-aperture, a chute leading into said aperture, and a spring-actuated packing-ring below the same, of a lower disk secured to said spindle, vertically-reciprocating spring-actuated rods held in said disk and provided with flanged can-carrying tables secured to the upper end of said rods, said rods having a button and a friction-roller secured to their lower ends, an upper disk also secured to the spindle, apertured in alignment with the table, and having downwardly-projecting collars, and oppositely-arranged tracks, one plain and the other corrugated, adapted to be respectively engaged by the buttons and rollers to elevate and vibrate the tables, substantially as and for the purpose specified.

6. In a can-filling machine, the combination, with a central spindle and a fixed top provided with a feed-aperture, a chute leading into said aperture, and a spring-actuated packing-ring below the same, of a lower disk secured to said spindle, vertically-reciprocating spring-actuated rods held in said disk and provided with flanged can-carrying tables secured to the upper ends of said rods, a button and a friction-roller secured to their lower ends, an upper disk also secured to the spindle, apertured in alignment with the table, having downwardly-projecting collars, and oppositely-arranged tracks, one plain and the other corrugated, adapted to be respectively engaged by the buttons and rollers to elevate and vibrate the tables, the plain track being pivoted at one end and upheld by a spring at the other, substantially as and for the purpose specified.

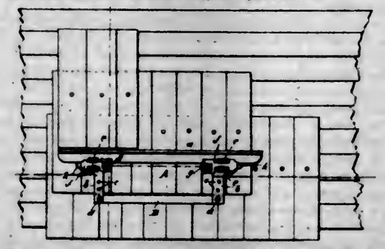
383,596. WINDOW-BLIND FASTENER. WILLIAM SEBRONIS, Yonkers, N. Y. Filed June 26, 1887. Serial No. 242,476. (No model.)



Claim.—1. The staple C, driven into the window-sill, and the fastening device D, placed loosely thereon and formed with a projection, *d*, in combination with the fastener B, formed with the eye *b* and hook *a* to engage with the staple C, substantially as described.

2. As a new article of manufacture, the fastening device D for blinds, formed with the projections *d d'*, to enter the eye of the hook B, the former for locking the hook in engagement with the staple, the latter for holding the blind partially open, substantially as described.

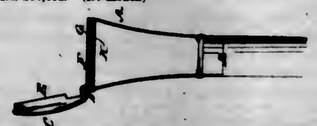
383,597. SHINGLING-GAGE. MCQUIER SLAFF, La Cinta, N. Mex. Filed Dec. 29, 1887. Serial No. 259,207. (No model.)



Claim.—1. In a shingling-gage, the combination, with the bar *a*, provided with arms *b*, of the bar B, arranged to abut against the row of shingles, the levers *f*, adapted to receive the blows of a hammer, and the pointed pins *g*, pivoted in and projecting above the levers, substantially as described.

2. In a shingling-gage, the combination of the body A, consisting of the angled bar *a*, provided with the apertured arms *b*, projecting at right angles therefrom, the levers *f*, pivoted in ears projecting from the said arms *b*, and the pins *g*, pivoted in the levers *f* and adapted to be driven into the shingles, substantially as described.

383,598. UTENSIL-HEAD FOR CANES, &c. MORITZ STERNBERG and ADOLPH MILLER, Sebastopol Park, N. Y. Filed Mar. 19, 1888. Serial No. 267,632. (No model.)



Claim.—1. The herein-described utensil-head for canes and the like, consisting of a box for matches, an outside lid for the same, an inner cover, and a match-igniter outside the inner cover, all combined and arranged substantially as and for the purpose specified.

2. In a utensil-head for canes and the like, the combination of a hollow body adapted to be attached to a cane-stick or the like, and to form a box for matches, and an inner cover, and an outside lid hinged at a common point to the box, the inner cover arranged to hold a mirror or photograph on its inner face and a match-igniter on its outer face, and the outside lid adapted to receive and hold the inner cover, substantially as described.

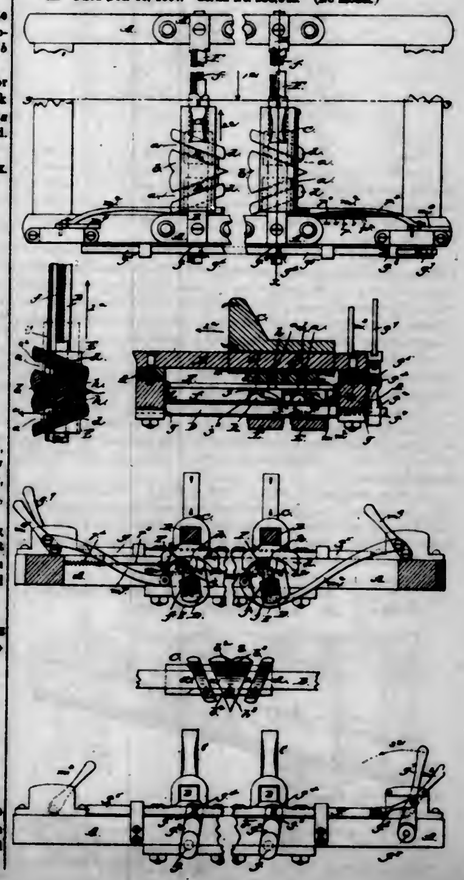
383,599. COVERING. WILLIAM M. SUHR, Brooklyn, N. Y. Filed Sept. 2, 1887. Serial No. 248,567. (No model.)



Claim.—1. The improved non-conducting covering consisting of parallel layers or covers of asbestus paper and linings of wire-netting and an interposed filling of asbestus fiber, all as shown and described.

2. As a new article of manufacture, a non-conducting covering consisting of outer and inner covers formed of asbestus paper, a filling of asbestus fiber inclosed by the said covers, and a piece of pliable stiffening material, which is arranged in the midst of said filling intermediate of the covers, as shown and described, for the purpose specified.

383,600. HEAD-BLOCK FOR SAW-MILLS. IRWIN SWANK, Paris, Ill. Filed Dec. 16, 1887. Serial No. 258,048. (No model.)



Claim.—1. In a head-block for saw-mills, the combination, with the cross-bar B and the knee C, adapted to slide thereon, provided with angularly-arranged grooves *a a*, of a rocker-bar having a rack, blocks E E, adapted to slide on said bar, provided with projections engaging said grooves and pawls adapted to engage said rack, and means for oscillating said rocker-bar, substantially as and for the purpose described.

2. The combination, with a suitably-guided part provided with angularly-arranged grooves *a a*, of a suitably-journaled rocker-bar having a rack and provided with a crank-arm, a lever and connection between said crank-arm and lever, and blocks adapted to slide on said rocker-bar, provided with projections engaging said grooves and having pawls, substantially as and for the purpose described.

3. The combination, with a suitably-guided part provided with angularly-arranged grooves *a a*, of a rocker-bar having a rack, blocks adapted to slide thereon, provided with projections engaging said grooves, and having pawls pivoted thereto and adapted to engage said rack-teeth, a tilting bar journaled on said rocker-shaft and bearing on said pawls, and means for securing an oscillation of said bar, substantially as and for the purpose described.

4. The combination, with a head-block knee provided with angularly-arranged grooves *a a*, of a suitably-journaled rocker-bar, D, having a rack and provided with crank-arm g^1, a bar, F, journaled on said rocker-shaft, provided with crank-arm *m*, blocks E E, adapted to slide on said rocker-bar, provided with projections A, engaging said grooves and having pawls *j j*, pivoted levers g^2 and m^2, and connections between said levers and said crank-arms g^1 and *m*, respectively, all substantially as and for the purpose described.

5. The combination, with a head-block knee provided with angularly-arranged cam-grooves *a a*, of a rocker-bar having a rack, the bar F, journaled thereon, the blocks E E, adapted to slide on said bar and provided with projections A, engaging said grooves, double-acted pawls pivoted in said blocks, and means for oscillating said bar F, substantially as and for the purpose described.

6. The combination, with a head-block knee provided with the triangular-shaped block *b*, having a slot, b^2, and set-screw, and the angularly-arranged strips *d d*, of a rocker-bar having a rack, blocks E E, adapted to slide on said bar, provided with projections engaging said grooves, pawls adapted to engage said rack, and means for oscillating said rocker-bar, substantially as and for the purpose described.

7. In a head-block for a saw-mill, the combination, with the cross-bar B and the knee C, adapted to slide thereon, provided with angularly-arranged grooves *a a*, of a rocker-bar having a rack, blocks E E, adapted to slide on said bar, provided with projections engaging said grooves and pawls adapted to engage said rack, and means for oscillating said rocker-bar, substantially as and for the purpose described.

8. In combination, two head-blocks, each comprising the cross-bar B, the knee C, adapted to slide on said bar B, provided with angularly-arranged grooves *a a*, the racked rocker-bar D, blocks E E, adapted to slide on said bar D, provided with projections engaging said grooves and having pawls adapted to engage said rack-teeth, a connection between the rocker-bars, and a means for securing its reciprocation, substantially as and for the purpose described.

9. In combination, two head-blocks, each comprising the cross-bar B, the knee C, adapted to slide thereon, provided with angularly-arranged grooves *a a*, the racked rocker-bars D, provided with the tilting bar F, journaled thereon, blocks E E, adapted for a slide thereon, provided with projections engaging said grooves and having pawls adapted to engage said rack-teeth, and a connection between said rocker-bars and a means for securing its vibration, and a means for securing a tilt of said bar E, substantially as and for the purpose described.

383,601. DASH-BOARD. BENJAMIN F. THOMAS, Delaware, Ohio. Filed Sept. 12, 1887. Serial No. 249,692. (No model.)



Claim.—1. A dash-board formed entirely of wood pulp and having an integral molding along the sides and across the top of one of its surfaces, its other surface being plain, for the purposes set forth.

2. A dash-board formed entirely of wood pulp, one of its surfaces being plain and its other surface having a molded depression or rabbet across the bottom, and provided with an integral molding along the sides and across the top, for the purposes set forth.

Claim.—1. The combination, with a suitably-guided part provided with angularly-arranged grooves *a a*, of a rocker-bar having a rack, blocks adapted to slide thereon, provided with projections engaging said grooves and having pawls adapted to engage said rack, and a means for oscillating said racked bar, substantially as and for the purpose described.

2. The combination, with a suitably-guided part provided with angularly-arranged grooves *a a*, of a suitably-journaled rocker-bar having a rack and provided with a crank-arm, a lever and connection between said crank-arm and lever, and blocks adapted to slide on said rocker-bar, provided with projections engaging said grooves and having pawls, substantially as and for the purpose described.

3. The combination, with a suitably-guided part provided with angularly-arranged grooves *a a*, of a rocker-bar having a rack, blocks adapted to slide thereon, provided with projections engaging said grooves, and having pawls pivoted thereto and adapted to engage said rack-teeth, a tilting bar journaled on said rocker-shaft and bearing on said pawls, and means for securing an oscillation of said bar, substantially as and for the purpose described.

4. The combination, with a head-block knee provided with angularly-arranged grooves *a a*, of a suitably-journaled rocker-bar, D, having a rack and provided with crank-arm g^1, a bar, F, journaled on said rocker-shaft, provided with crank-arm *m*, blocks E E, adapted to slide on said rocker-bar, provided with projections A, engaging said grooves and having pawls *j j*, pivoted levers g^2 and m^2, and connections between said levers and said crank-arms g^1 and *m*, respectively, all substantially as and for the purpose described.

5. The combination, with a head-block knee provided with angularly-arranged cam-grooves *a a*, of a rocker-bar having a rack, the bar F, journaled thereon, the blocks E E, adapted to slide on said bar and provided with projections A, engaging said grooves, double-acted pawls pivoted in said blocks, and means for oscillating said bar F, substantially as and for the purpose described.

6. The combination, with a head-block knee provided with the triangular-shaped block *b*, having a slot, b^2, and set-screw, and the angularly-arranged strips *d d*, of a rocker-bar having a rack, blocks E E, adapted to slide on said bar, provided with projections engaging said grooves, pawls adapted to engage said rack, and means for oscillating said rocker-bar, substantially as and for the purpose described.

7. In a head-block for a saw-mill, the combination, with the cross-bar B and the knee C, adapted to slide thereon, provided with angularly-arranged grooves *a a*, of a rocker-bar having a rack, blocks E E, adapted to slide on said bar, provided with projections engaging said grooves and pawls adapted to engage said rack, and means for oscillating said rocker-bar, substantially as and for the purpose described.

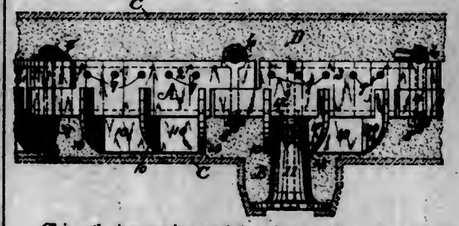
8. In combination, two head-blocks, each comprising the cross-bar B, the knee C, adapted to slide on said bar B, provided with angularly-arranged grooves *a a*, the racked rocker-bar D, blocks E E, adapted to slide on said bar D, provided with projections engaging said grooves and having pawls adapted to engage said rack-teeth, a connection between the rocker-bars, and a means for securing its reciprocation, substantially as and for the purpose described.

9. In combination, two head-blocks, each comprising the cross-bar B, the knee C, adapted to slide thereon, provided with angularly-arranged grooves *a a*, the racked rocker-bars D, provided with the tilting bar F, journaled thereon, blocks E E, adapted for a slide thereon, provided with projections engaging said grooves and having pawls adapted to engage said rack-teeth, and a connection between said rocker-bars and a means for securing its vibration, and a means for securing a tilt of said bar E, substantially as and for the purpose described.

383,602. CARBON CONDUCTOR FOR ELECTRIC LAMPS. HANS JOACHIM VON MIERBACH, New York, N. Y. Filed Dec. 6, 1887. Serial No. 257,196. (No specimens.)

Claim.—A carbon for galvanic batteries, composed of one part of coke, one part of anthracite coal, one part of gas-house carbon, and one-sixth silicate, molded together, as herein set forth.

383,603. CORE-ARBOR FOR HOLLOW CASTINGS. WARREN R. WARNER and FRANK A. ALDEN, Syracuse, N. Y., assignors to the J. P. Pease Furnace Company, same place. Filed Nov. 3, 1887. Serial No. 254,155. (No model.)



Claim.—1. A core-arbor consisting of removably-connected hollow sections provided at their meeting ends with an overlapping part adapted to come in horizontal meeting contact with an adjacent overlapping part, and with a suitable space left between the adjacent upper and lower vertical faces of the meeting sections to permit of longitudinal expansion under heat, substantially as described.

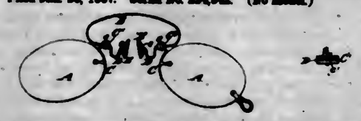
2. In a core-arbor, in combination, two or more rectangular hollow sections provided at their meeting ends with an overlapping part that comes in horizontal meeting contact with an adjacent overlapping part, and provided with an open space between their adjacent upper and lower vertical faces, and a key-bolt provided with a wedge inserted through the eye of its head, passing through perforations formed in the overlapping parts of the aforesaid meeting ends, said connections being adapted to secure the sections together unyieldingly vertically, and yet allow for their longitudinal expansion under heat, substantially as described.

3. A hollow core-arbor section of rectangular form in cross-section, with perforations in its shell, and constructed with an upper horizontally-projecting portion provided with an oblong aperture at one end and a lower horizontally-projecting portion provided with a circular aperture at its opposite end, and provided with a central longitudinal rib and transverse intercepting ribs upon its lower exterior surface, in combination, substantially as described.

4. A core-arbor consisting of sections bolted together and mounted upon and connected to a supporting-standard by a ball-joint, substantially as described.

5. A core-arbor mounted upon and connected to a supporting-standard by a ball-joint, substantially as described.

383,604. HYDROMETER. WALTER S. WELLS, New York, N. Y. Filed Jan. 30, 1887. Serial No. 234,942. (No model.)



Claim.—1. The combination, with the glasses or lenses A, the posts or brackets C, and the bow-spring B, of arms D, of ductile metal, each pivoted at one end, at *c*, to a post to swing in a substantially-horizontal plane, and each carrying at its free end a nose-pad, as E, and constituting the sole support of said pad, substantially as herein described.

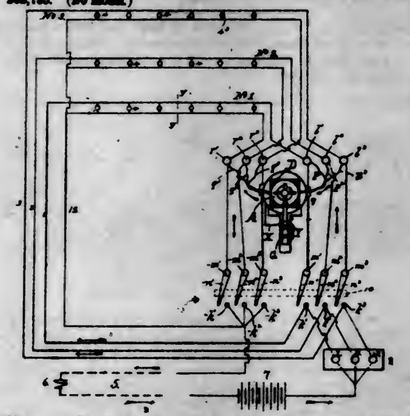
2. The combination, in eyeglasses or spectacles, of nose-pads or nose-pieces each consisting of an open ring arranged to bear with its face or flat portion upon the nose, and arms supporting the nose-pads at their outer ends and forming the sole supports for the pads, and at their inner ends secured to the posts, whereby the bow-spring is connected with the glasses or lenses by substantially-vertical pivots, so as to swing in a substantially-horizontal plane, as herein described.

3. The combination, in eyeglasses or spectacles, of nose-pads and arms each pivoted at one end to swing in a substantially-horizontal plane transverse to the plane of the glasses or lenses, and at its outer or free end supporting a nose-pad of which it forms the sole support, substantially as herein described.

4. The combination, in eyeglasses or spectacles, of a bow-spring, beam or other suitable joints receiving the ends of the spring, and nose-pads or nose-pieces each supported by an arm pivoted within a box or joint, the said beams or joints being provided with cam-surfaces which

hold said arms in substantially the same plane with the glasses, and which provide for swinging the arms into planes oblique to the glasses, substantially as herein described.

383,605. APPARATUS FOR TESTING ELECTRIC CIRCUITS. ALBERT D. WHEELER, Hyde Park, Mass. Filed Feb. 2, 1888. Serial No. 262,786. (No model.)

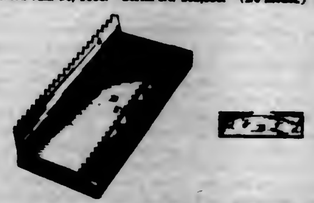


Claim.—1. In combination with a series of duplex open circuits, a series of simultaneously-moving switches which control said circuits at a designated point, and the lever connecting said switches with a circuit-testing apparatus and operating both the switches and testing apparatus, a circuit-testing apparatus, as described, having a rotary disk carrying closers, the fixed circuit-terminals, and a series of secondary wires which unite said testing apparatus with the main circuits, whereby movement of the switches serves to open the circuits and release the circuit-testing apparatus, said circuits being successively short-circuited therethrough, for purposes herein set forth and specified.

2. The combination, with a series of duplex open circuits, a series of switches, their operating-lever, the current-generator 7, annunciator 8, and the co-operating fire-alarm system 5, of a circuit-testing apparatus actively set in motion by the switch-lever and composed of a rotary disk, its actuating mechanism, the recording-dial and circuit-closers, which wipe successively the insulated terminals of said duplex open circuits, the electro-magnet common to the latter, and a vibrating marker or movable stylus actuated at each successive test, one of said circuit-closers operating with all the terminals a' a^2 of one set, and the other circuit-closer operating with all the terminals b' b^2 of the other set in the several circuits upon simultaneous movement of a series of switches, n' n^2 and $-n'$ $-n^2$, to open the main circuits as herein specified.

3. The combination, in an electric duplex system having a pair of switches, n' $-n'$ and the lever E, interconnecting with a circuit-testing apparatus and simultaneously operating said switches and testing apparatus, of a circuit-testing apparatus, 9, substantially as described, and the secondary wires p' q', which short-circuit the current on movement of said switches to open every circuit at a designated point, and the marker F, common to each system, actuated intermittently by such movement and at each successive test of the individual circuits when intact, for purposes herein set forth and described.

383,606. CONFECTIONERY-BOX. WILLIAM J. WHITE, Cleveland, Ohio. Filed Jan. 30, 1888. Serial No. 262,295. (No model.)



Claim.—1. In confectionery-boxing, an outside box having a lid hinged at its side, in combination with an inside box provided with lids having ornamental covering, each of said lids extending inward toward the center of the box about one-third the width of the box, substantially as set forth.

2. A confectionery-box having stiff lids hinged on its sides and provided with lace or ornamental covering, each of said lids extending inward toward the center of the box about one-third the width thereof, substantially as set forth.

383,607. HILLSIDE-CULTIVATOR. EDGAR C. WILEY, Independence, Va. Filed Mar. 1, 1888. Serial No. 265,791. (No model.)



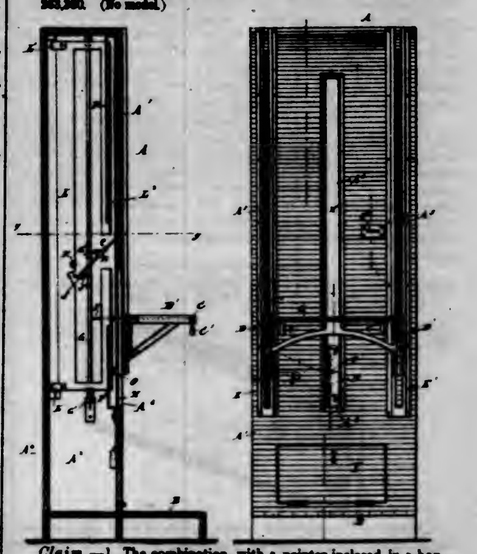
Claim.—1. In a hillside plow or cultivator, the combination, with a central beam, of side beams having a pivotal and sliding connection with the central beam at their forward ends, a bar pivoted at its center to the rear end of the central beam and having its ends connected to the side beams, and means for locking the said bar in position, substantially as described.

2. In a hillside-cultivator, the combination, with a central beam provided with rods on opposite sides near its forward end, of sliding blocks on said rods, side beams pivoted to said sliding blocks, a bar pivoted at its center to the rear end of the central beam and having its ends connected to the side beams, and means for locking the said bar in position, substantially as described.

3. In a hillside-cultivator, the combination, with a central beam and side beams having a pivotal and sliding connection with the central beam at their forward ends, of a bar pivoted at its center to the rear end of the central beam, plates pivoted to the ends of the bar and provided with slots, through which pass the side beams, and means for locking the said bar at different angles to the said central beam, substantially as herein shown and described.

4. In a hillside-cultivator, the combination, with a central beam and side beams having a pivotal and sliding connection at their forward ends with the central beam, of the bar E, having a central loop, e, and bifurcated ends e', and pivoted to the rear end of the central beam, the plates F, pivoted between the bifurcations of the bar E and provided with slots, through which pass the side beams, and the hook D, adjustably pivoted to the central beam and engaging the bar E, substantially as herein shown and described.

383,608. COIN-CONTROLLED WEIGHT-MEASURING MACHINE. CHARLES B. WILLIAMS, Newark, N. Y. Filed Feb. 8, 1888. Serial No. 263,260. (No model.)



Claim.—1. The combination, with a pointer inclosed in a box, brackets held to slide on the outside of the box and supporting the said pointer, and a graduated scale on which said pointer indicates, of a plate adapted to swing in front of the said pointer and scale, substantially as shown and described.

2. The combination, with a pointer adapted to slide vertically and a graduated scale on which the said pointer indicates, of a plate adapted to swing in front of the said pointer, and a lever connected with the said plate and operated by a coin, so that the introduction of the proper coin imparts a swinging motion to the said lever, whereby the said plate swings away from the said pointer and scale, substantially as shown and described.

3. The combination, with a box and a fixed platform on the front of the said box, of brackets held to slide on the front of the said box, a pointer supported by the said brackets on the inside of the box, a graduated scale secured in the said box behind the said pointer, the graduation on the said scale counting from the top of the said platform, and a hinged plate or flange adapted to swing in front of the said pointer on the inside of the box, substantially as shown and described.

4. The combination, with a box and a fixed platform on the front of the said box, of brackets held to slide on the front of the said box, a pointer supported by the said brackets on the inside of the box, a graduated scale secured in the said box behind the said pointer, the graduation of the said scale counting from the top of the said platform, a hinged plate or flange adapted to swing in front of the said pointer on the inside of the box, and a mechanism for operating the said plate by the introduction of a coin into the said box, substantially as shown and described.

5. The combination, with a box and a fixed platform on the front of the said box, of brackets held to slide on the front of the said box, a pointer supported by the said brackets on the inside of the box, a graduated scale secured in the said box behind the said pointer, a hinged plate or flange adapted to swing in front of the said pointer on the inside of the said box, a lever connected with the said plate or flange, and a chute secured to the front of the said box and discharging on the said lever, so that the introduction of the proper coin into the said chute operates the said lever and causes said plate or flange to swing away from the front of the said pointer, substantially as shown and described.

6. The combination, with a box and a fixed platform on the front of the said box, of brackets held to slide on the front of the said box, a pointer supported by the said brackets on the inside of the said box, a graduated scale secured in the said box behind the said pointer, a plate or flange adapted to swing in front of the said pointer on the inside of the said box, a lever connected with the said plate or flange, and a spring for locking the said lever in position, substantially as shown and described.

7. The combination, with a box and a fixed platform on the front of the said box, of brackets held to slide on the front of the said box, a pointer supported on the said brackets on the inside of the said box, a graduated scale secured in the said box behind the said pointer, a hinged plate or flange adapted to swing in front of the said pointer, a lever operated by a coin and connected with the said plate or flange, a bolt for locking the said lever in position, and an arm carrying the said bolt and operated on from the outside of the said box, substantially as shown and described.

8. The combination, with a chute, of a retaining-plate held to slide in the said chute, an arm carrying the said retaining-plate and secured to a vertical hinged bar, and a rod abutting against the said bar and having a sliding movement, so as to impart a swinging movement to the said bar and its arm, substantially as shown and described.

9. The combination, with a chute, of a retaining-plate held to slide in the said chute, an arm carrying the said retaining-plate and secured to a vertical hinged bar, a rod abutting against the said bar and having a sliding movement, so as to impart a swinging movement to the said bar and its arm, and a spring acting on the said arm for imparting a return motion to the said bar and its arm, substantially as shown and described.

10. The combination, with a vertical hinged bar provided with an arm carrying a retaining-plate and a locking-bolt, of a rod abutting against the said bar, an eccentric-pin operating against the said rod, and a rod mounted to turn and carrying the said eccentric-pin, substantially as shown and described.

11. The combination, with a vertical hinged bar provided with an arm carrying a retaining-plate and a locking-bolt, of a rod abutting against the said bar, an eccentric-pin operating against the said rod, a rod mounted to turn and carrying the said eccentric-pin, and handles held on the said last-named rod for turning it in its bearings, substantially as shown and described.

12. In a coin-operated measuring-machine, a chute provided in its lower part with a top plate, two side flanges, each having an inwardly-extending rib, and an end flange having an opening for the passage of improper coins, substantially as shown and described.

13. In a coin-operated measuring-machine, the combination, with a money-pan held at the end of a lever, of a money-chute discharging at its lower end at one side on the said pan, said chute being provided at its lower end with a flange having an opening for discharging the proper coins on the said pan, and having a second opening for carrying the improper coins over the said pan, substantially as shown and described.

383,609. CONCENTRIC-PISTON STEAM-ENGINE. ASHER D. BAKER and FRANKLIN P. HOYT, Swanton, assignors of one-third to Albert B. Roberts, Norwalk, Ohio. Filed Dec. 1, 1887. Serial No. 256,602. (No model.)



Claim.—1. In an engine, a cylindrical ring-valve mounted in the cylinder-head and having ports cut through it and adapted to move by steam-pressure endwise on its seat, substantially as set forth.

2. In an engine, a cylindrical ring-valve mounted in the cylinder-head and having ports cut through it in line with each other endwise and adapted to slide upon a seat by pressure of steam on its ends, substantially as set forth.

3. In an engine, a cylindrical ring-valve mounted in the cylinder-

head and having a series of oblong ports cut through it in a line with its edges and near its center of length, the valve being adapted to move endwise on its seat by direct steam-pressure on each end alternately, substantially as set forth.

4. In an engine, a cylindrical ring-valve mounted in the cylinder-head and having a series of elongated slots made through it at intervals, the slots being located near the center of length of the valve to serve as ports, the valve being adapted to reciprocate periodically endwise on its seat by direct steam-pressure, substantially as set forth.

5. In an engine, a valve having its body of a cylindrical form, ports cut through the body in line with each other and parallel to the ends of the valve, and cavities made in the body that are intersected by holes formed transversely of the body inwardly from each end, substantially as set forth.

6. In an engine, the combination, with a main valve of cylindrical form and a cylindrical head that is a valve-chest, ports in the valve, and ports and steam-passages in the head with which the cylinder-valve ports may register, of exhaust and live steam ports in the head made to register with an auxiliary ring-valve, and an auxiliary ring-valve adapted to be rotatively moved to admit and discharge the steam which slides the main valve endwise and cushions it at each end, substantially as set forth.

7. In an engine, an auxiliary ring-valve rotated by the piston-hub and controlling steam which operates a main cylindrical valve to reciprocate it periodically, substantially as set forth.

8. In an engine, the combination, with a cylindrical main valve, a cylinder-head that is a valve-seat, live-steam and exhaust ports in the face of the head that are continued as passages in the head and made to register with ports in the valve, and elongated ports in the main valve that are in line with the ends of the valve and cut through the valve near its center of length, of a shaft, a piston-hub mounted on this shaft, and an auxiliary ring-valve that is moved by the piston-hub to control steam which reciprocates the main valve, substantially as set forth.

9. In an engine, the combination, with a cylindrical main valve, a cylinder, pistons affixed to the cylinder, a cylinder-head with exhaust and live steam passages in it, and another cylinder-head with exhaust and live steam passages in it and adapted to receive a cylindrical valve, of a cylindrical ring-valve having ports in it to register with exhaust and live steam passages in the cylinder-head, a center shaft, a hub with radial pistons on it that lie alternately opposite the cylinder-pistons, and a means of controlling steam to reciprocate the cylindrical ring-valve which regulates the rotary movement of the cylinder and hub pistons, substantially as set forth.

10. In an engine, the combination, with a hub and pistons integral with this hub, of an auxiliary ring-valve doweled to the hub at one end and seated in the recessed end of the hub, substantially as set forth.

11. In an engine, an auxiliary valve having a live-steam port cut through its body endwise and a channel cut in its face diametrically opposite the live-steam ports to join a live-steam passage, and an exhaust-passage with which the groove is made to register, substantially as set forth.

12. In an engine, the combination, with a cylinder-head, which is also a valve-chest and has live-steam and exhaust passages and ports formed in it, of an auxiliary valve, a hub, pistons on the hub, a cylinder, pistons on the cylinder, and exhaust-passages made endwise through these pistons, substantially as set forth.

13. In an engine, a cylinder having pistons or abutments projecting radially toward its diametrical center, which pistons are perforated throughout the length of their bodies, substantially as set forth.

14. In an engine, a clutch-hub attached to a projecting sleeve and its hub, which has radial pistons projecting from its peripheral surface, substantially as set forth.

15. In an engine, the combination, with a piston-hub, pistons that are formed radially at opposite points on this hub, and an integral sleeve that extends from one side of the piston-hub, of a clutch-hub that is provided with radial arms or flanges and a hard cylindrical rim secured to or integral with the radial arms, substantially as set forth.

16. In an engine, the combination, with a piston-hub, pistons formed or affixed to this hub, and a sleeve projecting from one side of the piston-hub, of a clutch-hub provided with arms and a cylindrical rim, a clutch-disk; a series of wedge-shaped inclines on the inner surface of this disk, and a series of bracket and spring-actuated rollers that are adapted to lock the clutch-hub and clutch-disk together, substantially as set forth.

17. In an engine, the combination, with a clutch-hub of a stationary disk and locking devices carried by the clutch-disk, of a stationary clutch shell or case and locking devices secured to the stationary clutch-case to lock the clutch-hub, substantially as set forth.

18. In an engine, the combination, with a stationary clutch shell or case, of a clutch-hub, a center shaft, and two clutch-disks attached to the shaft to rotate with it, substantially as set forth.

19. In an engine, the combination, with a stationary clutch case or shell, a cylinder, a clutch-hub, and a series of locking devices secured to the stationary clutch-case to lock it to the clutch-hub and cylinder, of a central shaft, two clutch-disks attached by their hubs to the shaft, and a series of locking devices attached to these clutch-disks that are adapted to lock to the clutch-hub and cylinder oppositely to the locking devices secured to the stationary case, substantially as set forth.

20. In an engine, the combination, with a base-plate, bracket-stands, and boxes to support a shaft, of a shaft, a stationary clutch-case, and two clutch-disks secured to the shaft, substantially as set forth.

21. In an engine, the combination, with a stationary clutch-case, a base-plate, two bracket-stands furnished with boxes, and a shaft supported to rotate in these boxes, of two series of locking-rollers secured in place on the inner surface of the stationary clutch-case near each end of the case, substantially as set forth.

22. In an engine, the combination, with a base-plate, bracket-arms projecting from the base-plate to give revolvable support to a shaft, and a shaft, of a stationary clutch-case secured to the base-plate, and two sets of self-adjusting locking-rollers, and an equal number of wedge-shaped inclines adapted to engage the rollers, the rollers and inclines being located near the ends of the stationary clutch-case in a manner to lock in the same direction, substantially as set forth.

23. In an engine, a stationary clutch-case having live-steam and exhaust passages formed in it near its center of length and breadth, substantially as set forth.

24. In an engine, the combination, with a stationary clutch-case and live-steam and exhaust conduits formed in it near its center, of two sets of locking-rollers and two sets of inclines, all secured to the stationary clutch-case to lock on a clutch-hub and cylinder in the same direction, substantially as set forth.

25. In an engine, the combination, with a stationary clutch-case, a base-plate, a shaft revolubly supported upon the base-plate, to be nearly central with the stationary clutch-case considered diametrically, and clutch-disks secured by their hubs to this shaft, of a cylinder, pistons on this cylinder, a hub with radial pistons projecting from it to engage the inner surface of the cylinder, the piston-hub and cylinder being concentric with each other and the shaft on which they are loosely mounted, a clutch-hub, and locking-rollers secured to the inner surfaces of the clutch-disks and stationary clutch-case to lock upon the clutch-disks and cylinder, substantially as set forth.

26. In an engine, the combination, with a stationary clutch-case, a cylinder, a clutch-hub, and spring-actuated rollers and inclines that are adapted to lock upon the surface of the clutch-hub and cylinder in one direction, of two clutch-disks, a center shaft supported to rotate with the clutch-disks and secured to them, and a set of self-adjusting spring-actuated rollers and inclines that are secured to the clutch-disks on their inner surfaces opposite the peripheries of the cylinder and clutch-hub, so as to lock upon them in a direction opposite to the locking action of the rollers mounted on the stationary clutch-case, substantially as set forth.

27. In an engine, a ring-shaped cut-off valve adapted to control the flow of steam through the cylindrical main valve of a concentric-piston engine, substantially as set forth.

28. In an engine, a ring-shaped cut-off valve having steam-ports cut through it and adapted to cut off steam from the cylindrical main slide-valve of a concentric-piston engine, substantially as set forth.

29. In an engine, a ring-shaped cut-off valve having live-steam ports cut through it and adapted to slide on a guide-bar, so as to throw it into or out of service as a cut-off, substantially as set forth.

30. In a steam-engine, the combination, with a cylinder-head having steam-ports in it and a main cylindrical slide-valve, of a ring-shaped cut-off valve that is adapted to cut off steam from the main cylindrical slide-valve of a concentric-piston engine, substantially as set forth.

31. In an engine, the combination, with a cylinder-head having steam ports and passages in it, a main cylindrical ring-valve that slides in a channel formed in the cylinder-head, and an auxiliary valve that controls the reciprocal movement of the main slide-valve, of a ring-shaped cut-off valve adapted to cut off steam from the main cylindrical slide-valve of a concentric-piston engine, substantially as set forth.

32. In an engine, the combination, with a cylinder, a cylinder-head having steam passages and ports formed in it, and an annular channel to receive a cylindrical ring main slide-valve, a cylindrical ring-valve having ports cut through it to register with the steam-passages in the cylinder-head, and an auxiliary annular valve that controls the influx and discharge of steam to actuate the main slide-valve reciprocally, of a ring-shaped cut-off valve adapted to cut off steam from the main slide-valve at any point in the revolution of the cylinder and hub pistons of a concentric-piston engine, substantially as set forth.

33. In an engine, the combination, with a cylinder of a cylinder-head having an annular live-steam passage through it adapted to mate a similar passage in a hub-piston, an annular exhaust-channel which communicates with longitudinal exhaust-passages in pistons of the cylinder, and two diametrically-opposite pistons formed upon or secured to the inner surface of the cylinder, substantially as set forth.

34. In an engine, the combination, with a cylinder, of a cylinder-head that has a cylindrical slide-valve located in it, a cylindrical slide-valve, and steam and exhaust passages in the head and valve, and another cylinder-head secured to the opposite end of the cylinder and provided with live-steam and exhaust passages in it, substantially as set forth.

35. In an engine, the combination, with a stationary clutch-case, of a revolving cylinder and integral live-steam and exhaust conduits formed in the clutch-case to register with an attached head of the cylinder, substantially as set forth.

36. In an engine, the combination, with a stationary clutch-case, a base-plate, and a shaft revolubly supported on the base-plate, of integral live-steam and exhaust passages formed in the stationary clutch-case, a cylinder supported to revolve in the clutch-case, a hub-piston concentrically located in the cylinder, a cylinder-head adapted to hold a cylindrical slide-valve and convey steam to and through it previous to its admission into the cylinder, and another cylinder-head furnished with a live-steam passage that is made to connect with the integral live-steam passage in the stationary clutch-case, and an exhaust-channel that communicates with the exhaust-conduit made in the clutch-case, substantially as set forth.

37. In an engine, a hub-piston having an annular live-steam passage formed in it from one end to the other, substantially as set forth.

38. In an engine, a hub-piston having two opposite pistons, each piston provided with self-adjusting packing-strips, the hub also having an annular channel for live steam formed lengthwise of its body from end to end, substantially as set forth.

39. In an engine, the combination, with a stationary clutch-case, of a series of double inclines so disposed as to lock a series of spring-actuated rollers upon a cylinder and clutch-hub from motion either forward or backward, substantially as set forth.

40. In an engine, the combination, with a stationary clutch-case and clutch-disks that revolve with a shaft, of a cylinder, a clutch-hub, and a series of spring-actuated locking-rollers adapted to lock the clutch-case and clutch-disks fast to the cylinder and clutch-hub and cause a rotary motion of the shaft in either a forward or backward direction, as may be desired, substantially as set forth.

41. In an engine, the combination, with a stationary clutch-case, two clutch-disks, and double-inclined planes formed on the inner surfaces of the clutch case and disks, of a cylinder, a clutch-hub, and a series of spring-actuated locking-rollers supported on rings to permit the rollers to be moved and engage either set of inclines, substantially as set forth.

42. In an engine, the combination, with a clutch-disk, a stationary clutch-shell, a cylinder, and a clutch-hub, of a series of locking devices adapted to lock the working parts and run the engine-shaft in a forward or rearward direction, substantially as set forth.

43. In an engine, a series of spring-actuated rollers adapted to lock the stationary clutch-shell and rotary clutch-disks of a concentric-piston engine upon the cylinder and clutch-hub in a manner to allow the motion of the engine to be reversed, substantially as set forth.

44. In an engine, a cylindrical main ring-valve that is moved by steam and controlled by an auxiliary valve, substantially as set forth.

45. In an engine, an auxiliary valve to control a main cylindrical valve, said auxiliary valve having one steam-passage through it and an exhaust-channel formed on its face, substantially as set forth.

46. The combination, with a cut-off valve, of a pusher-rod, two rings connected by parallel rods, and a lever to slide the cut-off valve, substantially as set forth.

47. The combination, with a cut-off valve having a ring-shaped body and two steam-ports cut through it, and a guide-rod attached to this valve, said rod engaging a rotary piston-hub to transmit rotary motion to the cut-off valve and allow the cut-off valve to slide longitudinally, of a lever mechanism to move the cut-off valve endwise off of its seat and secure it in such a position at will, substantially as set forth.

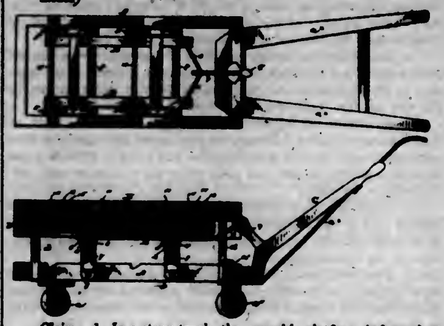
48. In an engine, the combination, with a stationary clutch shell or case, a clutch-hub, a shaft held to revolve upon bracket-stands, and a base-plate that supports and is attached to the stationary clutch-case and bracket-stands, of a cylinder, a hub-piston, radial pistons fixed upon the cylinder and hub-pistons to be alternately opposite each other, a cylindrical main slide-valve located in one of the cylinder-heads, an auxiliary ring-shaped valve that controls steam employed to operate the main valve, and a cut-off valve of annular form adapted to cut off steam from the main valve to work the engine by expansion of steam at any predetermined point in the stroke of the concentric pistons, substantially as set forth.

49. The combination, with a cylinder having inwardly-projecting wings or abutments and a hub having outwardly-projecting wings or abutments, of clutching devices for alternately locking the cylinder and hub to a shaft.

50. The combination, with a hub and a concentric cylinder surrounding same, the hub having outwardly-projecting wings or abutments, the outer edges of which rest in close contact with the inner face of the cylinder, and a cylinder having inwardly-projecting wings or abutments resting in close contact with the outer face of the hub, of clutching devices for alternately locking the cylinder and hub to a shaft.

51. An engine having piston-wings attached to the hub and to the cylinder, which alternately form abutments and moving pistons, which pistons make a stroke forward, then form abutments, and the former abutments become moving pistons, which make strokes forward successively and changing their position from a fixed point indefinitely.

383,610. STOVE-TRUCK. JOSEPH H. BELL and ALPHEUS L. GRIMES, Hamden, N. C. Filed Dec. 6, 1887. Serial No. 257,182. (No model.)



Claim.—1. In a stove-truck, the movable platform independent of the truck frame or body and capable of being raised and lowered, as shown and described.

2. As an improvement in trucks of the class herein described, the platform having adjustable boards, substantially as shown and described.

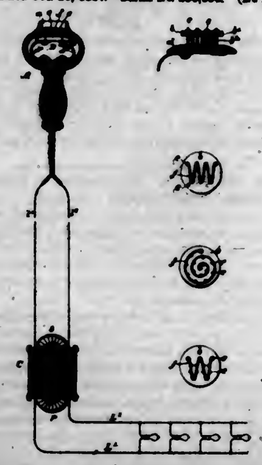
3. As an improvement in trucks of the class herein described, the platform having the adjustable boards and the telescoping rods, substantially as shown and described.

4. The combination, with the truck frame or body, of the pivoted U-shaped frames carrying rollers, the movable platform, and the lever, substantially as shown and described.

5. The combination, with the truck-frame or body, of the elevating-frame, the rods or axles carried thereby, the rollers, the pivoted U-shaped frames, and the platform, substantially as shown and described.

6. The combination, with the truck frame or body and the frame carrying the rods or axles, of the pivoted U-shaped frames carrying rollers, the platform having grooves or recesses, and the operating-lever, substantially as shown and described.

383,611. ELECTRIC CHAR-LIGHTER. REGINALD BELFIELD, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 20, 1887. Serial No. 253,093. (No model.)



Claim.—1. An electric cigar-lighter consisting of an electric converter, an incandescing electric conductor, a moving support for the same, a contact upon the support constituting one terminal of the secondary circuit of the converter, and a contact-point constituting the other terminal, against which the first contact is placed by pressure against the support.

2. An electric cigar-lighter consisting of an incandescing conductor and a circuit-closer for closing the connections through the conductor by pressure upon the same, consisting of a contact-point connected through the conductor and moving therewith, and a second contact connected with the other terminal of the conductor through a suitable source of electric currents, and against which the first contact may be placed.

3. The combination, with the incandescing wire and the pins, with the base supporting the same, of the bed of asbestus beneath the wire, the yielding support for the pins, and a circuit-closer operated by pressure upon the wire and the pins, substantially as described.

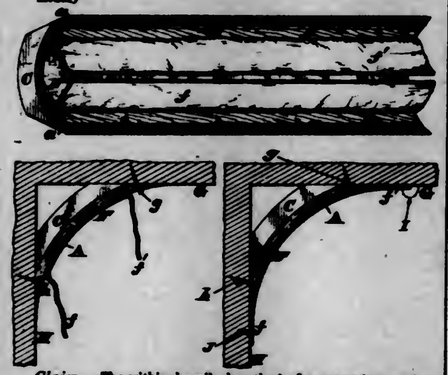
4. An electric cigar-lighter consisting of a section of wire adapted to be heated by the passage of electric currents, a circuit-closer operated by the pressure of the cigar against the wire, and a support for the wire and the circuit-closer, substantially as described.

5. An electric cigar-lighter consisting of a handle or support, an incandescing conductor, a non-conducting support, pins extending from said support and carrying said conductor, and a bed of refractory material surrounding the pins and upon which the conductor rests, substantially as described.

6. An electric cigar-lighter consisting of the holder A, the incandescing wire *f*, the supporting-pins *e*, carrying the wire, the bed *b*, upon which the wire rests, and the conductors l^2 l^3, for supplying currents to the incandescing wire.

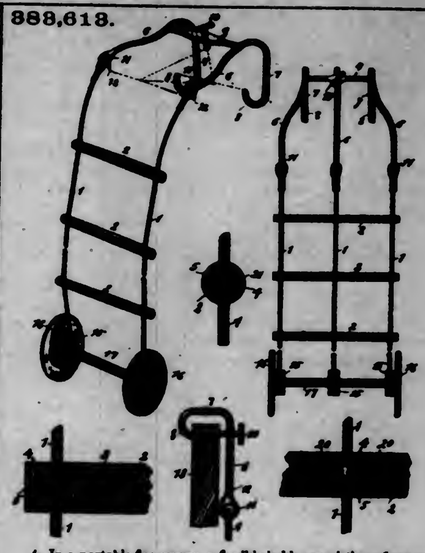
7. The combination, with the incandescing wire of an electric cigar-lighter, of supporting-pins therefor projecting beyond the plane of the wire and designed to enter the end of the cigar, substantially as described.

383,612. METHOD OF CONSTRUCTING CORNICES. HENRY BRETLING, Cincinnati, Ohio. Filed Feb. 13, 1888. Serial No. 263,701. (No model.)



Claim.—The within-described method of constructing cornices, which method consists in attaching ribs or stiffeners to the rear of a backing, to the front of which latter a relatively-wider flexible facing is cemented, which facing has free edges or flaps, then securing the cornice in place, and finally cementing said flaps to the wall, ceiling, and uncovered portions of said backing, thereby concealing the fastenings and joints, substantially as herein described, and for the purpose stated.

383,613. FIRE-ESCAPE. WILLIAM ROSE, St. Petersburg, Russia. Filed Apr. 2, 1888. Serial No. 269,291. (No model.)



Claim.—1. A portable fire-escape consisting of an attachable frame to engage a window-sill or other support, a flexible ladder having one end attached thereto, and a frame to which the other end of the ladder is secured and upon which it is adapted to be wound, formed of a rod having rollers, and disks at its ends of greater diameter than the rollers, substantially as described.

2. In a portable fire-escape, a frame upon which a flexible ladder may be wound, consisting of a rod having rollers, and disks at its ends of greater diameter than the rollers, substantially as described.

3. In a portable fire-escape, a flexible ladder consisting of ropes and hollow rounds, the ropes being secured to the rounds by passing through them, and having a projection within the round, the projection and rope within the round being embedded in solder, substantially as described.

4. In a portable fire-escape, a flexible ladder consisting of ropes 1 and hollow rounds 2, through which the ropes 1 pass adjacent to their outer ends, the ends of the rounds 2 having a plug, 3, inserted therein, and the cavity formed thereby filled with solder inclosing the rope 1, and a pin, 4, projecting through it, substantially as shown and described.

5. In a portable fire-escape, the joint for securing hollow rounds to flexible ropes, consisting of a hollow round, 2, a rope, 1, passing through the round, an opening, 21, in the side of the round, a plug, 20, in round 2, on either side of the opening 21, a pin, 4, projecting through the rope 1, and solder, 5, inclosing the pin 4 and rope 1 within the round, substantially as shown and described.

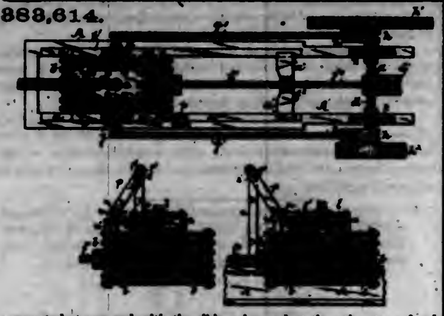
6. In a portable fire-escape, an attachable frame to engage a window-sill or other support, consisting of rods formed with the vertical portions 6, having eyes 11, with spurs 12, and connected by cross-bar 9, having clamping-screw 10, and the horizontal portions 7, with hooked ends 8, substantially as shown and described.

7. In a portable fire-escape, a flexible ladder consisting of wire ropes 1 and hollow rounds 2, the ropes passing through the rounds, and the central rope being connected to the rounds 2, having opening 21, by solder, 5, filling the round 2 between plugs 20 therein, and inclosing the rope 1, and a pin, 4, projecting through the rope 1, and the side ropes connected to the rounds 2 by solder, 5, filling a cavity formed in the end of the round by a plug, 3, and inclosing the rope 1, and a pin, 4, projecting through it, substantially as shown and described.

8. In a portable fire-escape, a frame upon which a flexible ladder may be wound, consisting of hollow rod 17, rollers 15, mounted thereon, and disks 16 on the ends of the rods 17, of greater diameter than the rollers 15, substantially as shown and described.

9. A portable fire-escape consisting of an attachable frame to engage a window-sill or other support, formed of rods with vertical portions 6, having eyes 11 and spurs 12, and connected by cross-bar 9, having clamping-screw 10, and horizontal portions 7, with hooked ends 8, in combination with a flexible ladder formed of wire ropes 1, connected to eyes 11, and hollow metallic rounds 2, through which the ropes pass at their center and adjacent to their ends, and fastened thereto at the center of the rounds by a pin, 4, projecting through the rope and embedded in solder, 5, filling the round between plugs 20 and opposite an opening, 21, in the round, and at the ends of the rounds by a pin, 4, projecting through rope 1 and embedded in solder, 5, filling the cavity in the end of the round formed by an inserted plug, 3, and a frame on which the flexible ladder is to be wound, consisting of a hollow rod, 17, having rollers 15 mounted thereon, to which the ropes 1 are fastened, and disks 16 at the ends of rod 17, of greater diameter than the rollers 15, substantially as shown and described.

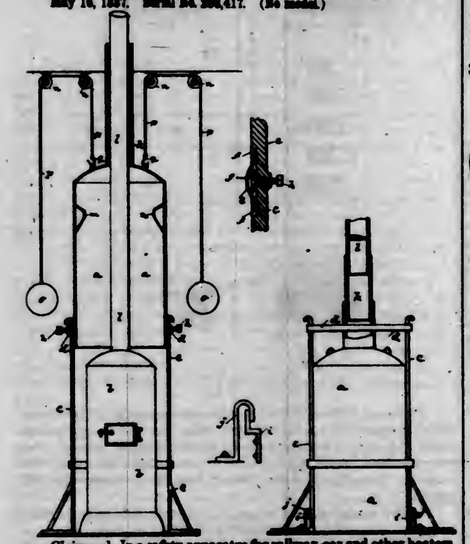
383,614. STEAM-ENGINE. DAVID SCOTT, Shenango, Pa. Filed July 1, 1887. Serial No. 243,102. (No model.)



Claim.—1. In steam-engines, the combination of an engine-bed, the cylinder sliding longitudinally thereon, the steam-chest and the slide-valve mounted thereon, and lever-connections between the slide-valve and engine-bed, said lever being fulcrumed on the cylinder and connected at one end with the slide-valve and at the other to a fixed pivot, substantially as and for the purpose set forth.

2. In steam-engines, the combination of the engine-bed, the cylinder sliding longitudinally thereon and having a steam-chest, a slide-valve within the steam-chest, the shaft *n*, carrying the lever *m*, lever *p*, and standard *r*, substantially as and for the purpose set forth.

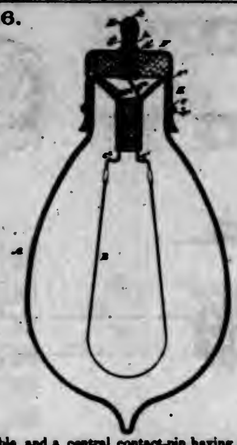
383,615. SHIELD OR COVER FOR HEATERS AND STOVES FOR USE ON RAILWAY-CARS. GEORGE A. BROWN, Pittsburg, Pa. Filed May 16, 1887. Serial No. 238,417. (No model.)



Claim.—1. In a safety apparatus for railway-car and other heaters, the combination of the vertically-movable shield *a*, friction devices for holding the said shield suspended, the vertical standards *c*, the braces, *n*, fixed to the interior of the shield, the hooks *i*, and spring-catches for holding the shield over the heater after the shield falls, substantially as specified.

2. The combination of a heater, a shield to cover the same, the vertical standards *c*, friction-holders for sustaining the shield elevated, the braces *n*, the holding-down devices *i j*, and the pulleys and loaded cords for elevating the shield, all substantially as specified.

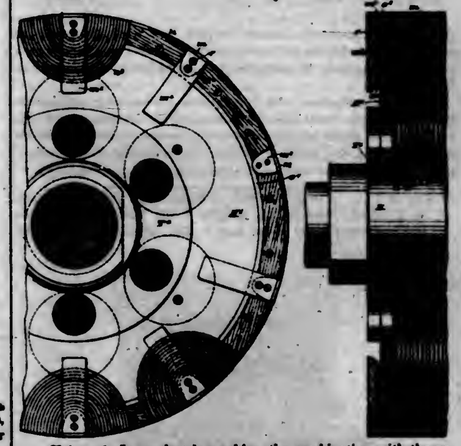
383,616. INCANDESCENT LAMP. HENRY M. BYLLESBY and PHILIP LANGE, Pittsburg, Pa., assignors to the Westinghouse Electric Company, same place. Filed Sept. 1, 1887. Serial No. 248,468. (No model.)



Claim.—1. The combination, with the globe of an incandescent electric lamp, of a metallic thimble cemented thereto, a glass block span or otherwise fastened into the end of the thimble, a central contact-pin having a neck extending through the center of the glass block and expanded upon its inner surface, and having a shoulder resting upon the outer surface of the block, and having a perforation through its length, and the leading-in wire passing through said perforation and soldered at the outer end of the pin.

2. The combination, with a thimble for incandescent-electric-lamp bulbs, of a non-conducting bottom block, span or otherwise fastened into the thimble, and a central contact-pin having a neck extending through the center of the block and expanded upon its inner surface, and having a shoulder resting upon the outer surface of the block, and having a perforation through its length for receiving the leading-in wire.

383,617. ARMATURE FOR DYNAMOS AND MOTORS. HENRY M. BYLLESBY, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Sept. 1, 1887. Serial No. 248,474. (No model.)



Claim.—1. In an electric machine, the combination, with the armature-core and wires wound upon the face thereof and down upon the ends, of overhanging clips of glass beneath which the wires upon the ends of the armature pass.

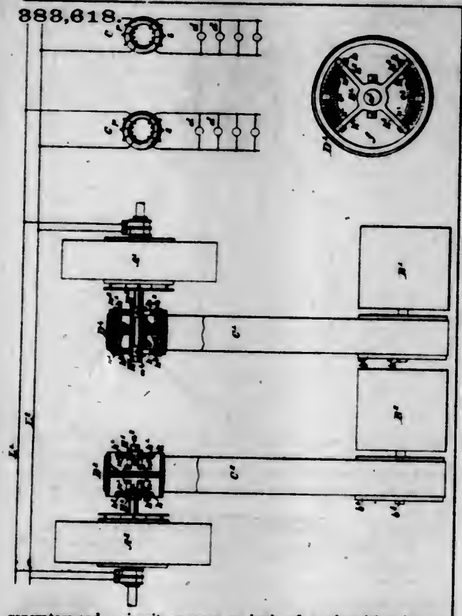
2. In an electric machine, the combination, with the armature-core, and plates therefor, and rings of metal at the outer ends or corners of the core, of wires wound upon the face thereof and down upon the ends, overhanging clips of glass beneath which the wires upon the ends of the armature pass, and legs of non-frangible non-conducting material intervening between the metallic end rings of the armature-core and the overhanging clips, substantially as described.

383,618. SYNCHRONIZING DEVICE FOR ALTERNATE-CURRENT DYNAMOS. HENRY M. BYLLESBY, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Sept. 1, 1887. Serial No. 248,476. (No model.)

Claim.—1. The combination, with an electric circuit and two or more alternate-current electric generators delivering currents to said circuit, of a source of power for driving the same, and yielding connections between the source of power and said machines, respectively, substantially as described.

2. The combination, with two or more alternate-current electric

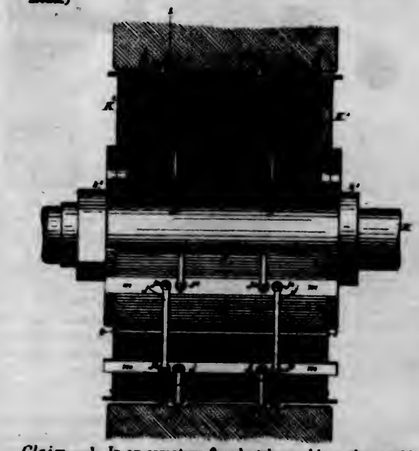
383,618.



generators and a circuit common to both, of synchronizing devices consisting of two driving-pulleys and yielding connections between said pulleys and the shafts of said generators, respectively, substantially as described.

3. The combination, with two or more alternate-current electric generators and a circuit common to both, of two pulleys respectively applied to the shafts of said generators, spring-connections between said pulleys and said shafts, and means for revolving said pulleys at an approximately constant speed, substantially as described.

383,619. ARMATURE FOR DYNAMOS AND MOTORS. HENRY M. BYLLESBY, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Sept. 1, 1887. Serial No. 248,476. (No model.)



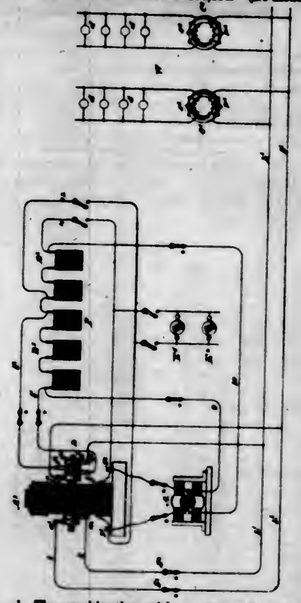
Claim.—1. In an armature for electric machines, the combination, with the armature-coils wound upon the surface parallel with its axis, of strips or lugs extending parallel with the axes, about which the coils are arranged, and binding-strips extending between the respective longitudinal strips and holding the wire in position, substantially as described.

2. The combination, with the armature-coils of an electric machine and longitudinal strips about which they are wound, of transverse binding-strips secured to the respective longitudinal strips, substantially as described.

3. The combination, in an armature for electric machines built up of alternate sheets of soft iron and insulating material, of one or more heavier plates intermediate in the series and longitudinal strips or lugs secured thereto, substantially as described.

4. The combination, in an armature for electric machines built up of alternate sheets of soft iron and insulating material, of one or more heavier plates intermediate in the series, longitudinal strips or lugs secured thereto, and binding-strips secured at their respective ends to adjacent longitudinal strips.

383,620. COMBINED ALTERNATE-CURRENT AND STORAGE SYSTEM OF ELECTRICAL DISTRIBUTION. HENRY M. BYLLESBY, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 1, 1887. Serial No. 251,192. (No model.)



Claim.—1. The combination, with a system of electric conversion and distribution, of a source of alternating electric currents for supplying the same, a source of direct electric currents, a storage-battery charged from the last-named source, and a rheotome or current-controller through which the battery may be connected with said system.

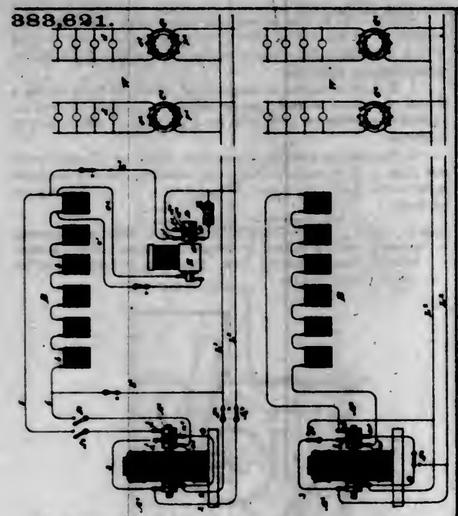
2. The combination of a system of electric conversion or distribution by alternating, intermittent, or pulsatory electric currents, an alternate-current electric generator, a direct-current generator for exciting the field-magnets of the same, a storage-battery charged from the last-named generator, and a rheotome or current-reverser, through which currents are delivered from the battery to the system of distribution or conversion.

3. The combination, with a source of alternating, intermittent, or pulsatory electric currents and a direct-current exciter for the same, of a storage-battery charged by currents from said exciter, a system of secondary electric distribution operated by currents from said source, a rheotome through which a portion of said battery may be connected with said system, and means for connecting a portion of the battery through the field-magnet coils of the generator.

383,621. ALTERNATE-CURRENT AND STORAGE SYSTEM OF ELECTRICAL DISTRIBUTION. HENRY M. BYLLESBY, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 1, 1887. Serial No. 251,193. (No model.)

Claim.—1. The combination of a source of alternating electric currents, a current-rectifier connected therewith, a storage-battery supplied with currents through such rectifier, a system of electric distribution and conversion, a rheotome for transforming the currents from the storage-battery into alternating, pulsatory, or intermittent currents, and means for discharging said battery into said system through said rheotome.

383,621.



2. The combination, with a system of electric distribution operated by alternate, intermittent, or pulsatory electric currents, of a storage-battery, means for charging the same by currents from the source of supply of said system, a rheotome for rendering discontinuous the currents from the battery, means for driving the same, and connections from the rheotome with said system, substantially as described.

3. The combination of a source of alternate electric currents, a system of secondary distribution operated by currents therefrom, a storage-battery, a converter for changing the potential of currents derived from the said generator, and a current-rectifier connected with the converter and delivering rectified currents to the storage-battery.

4. The combination, with a source of alternating, intermittent, or pulsatory electric currents and a work-circuit supplied therefrom, of a storage-battery, a current-rectifier through which currents are delivered from said source to said battery, a system of secondary distribution operated by currents from the generator, and a rheotome for rendering pulsatory, intermittent, or alternating currents from said battery and delivering them to said system of distribution, said rheotome moving synchronously with said generator, substantially as described.

5. The combination, with a source of alternating, intermittent, or pulsatory electric currents and a work-circuit supplied therefrom, of a storage-battery, a current-rectifier through which currents are delivered from said source to said battery, a system of secondary distribution operated by currents from the generator, and means for connecting said storage-battery with the work-circuit through said rectifier.

383,622. ALTERNATE-CURRENT AND STORAGE SYSTEMS OF ELECTRICAL DISTRIBUTION. HENRY M. BYLLESBY, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 1, 1887. Serial No. 251,202. (No model.)

Claim.—1. The combination of a source of electricity, a storage-battery, means for connecting the same with the source, a system of intermittent, pulsatory, or alternate-current electric distribution, and a rheotome through which the storage-battery is connected with the supply-conductors of said system.

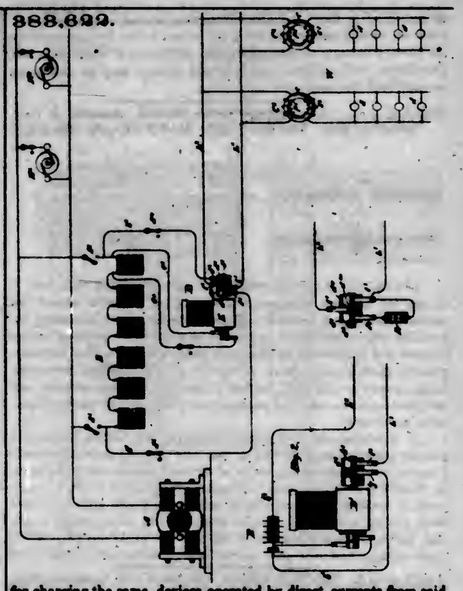
2. The combination, with a source of electricity, of a storage-battery, means for connecting the same with the source, a system of translating devices designed to be operated by alternating current, electric converters having their secondary coils connected with such translating devices, a rheotome, and means for connecting the primary coils of such converters with said storage-battery through said rheotome.

3. The combination of a source of electricity, a storage-battery, means for charging the same from said source, a rheotome for transforming direct into alternating, intermittent, or pulsatory currents, an alternate-current system of distribution and translation, and means for connecting the storage-battery with said system through said rheotome.

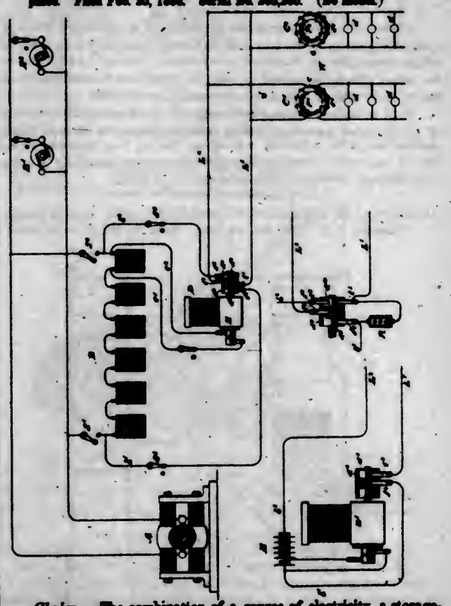
4. The combination, with a system of distribution and translation by secondary electric currents, of a storage-battery, a direct-current generator for supplying direct electric currents to the storage-battery for charging the same, devices operated by direct currents from said generator, a rheotome, and switches for connecting the storage-battery through the rheotome with the distributing system.

5. The combination, with a source of electricity, of a storage-battery charged from said source, a system of electric distribution requiring intermittent or pulsatory electric currents, a rheotome for transforming currents from said storage-battery into alternating, intermittent, or pulsatory currents, and an electric motor for driving the rheotome operated by currents from the storage-battery.

383,622.



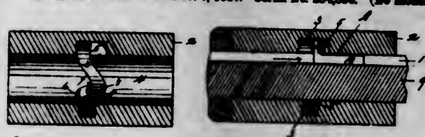
383,623. COMBINED ALTERNATE-CURRENT AND STORAGE SYSTEM OF ELECTRICAL DISTRIBUTION. HENRY M. BYLLESBY, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Feb. 25, 1888. Serial No. 265,305. (No model.)



Claim.—The combination of a source of electricity, a storage-battery, means for charging the same from said source, a rheotome

for transforming direct into alternating, intermittent, or pulsatory currents, an electric motor operating the same, driven by currents from the storage-battery, an alternating-current system of distribution and translation, and switches whereby said system may be connected through said rheotome with said source.

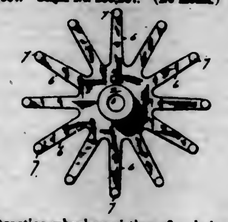
383,624. RATCHET-AND-PAWL DEVICE. ADELBERT B. CARR, Springfield, Mass. Filed Nov. 7, 1887. Serial No. 254,596. (No model.)



Claim.—1. A ratchet-and-pawl device consisting of a hub, 2, having the annular enlargement 3, having on one side thereof the ratchet-teeth 5, and between said teeth the recesses 8, extending beyond the base of said teeth, and on its opposite side a series of curved recesses and projections, as described, combined with a longitudinally-grooved shaft, 9, and a pawl, A, capable of a longitudinal movement in the groove in said shaft, having a tooth, 12, thereon entering said enlargement in the hub and engaging with said ratchet-teeth, substantially as set forth.

2. A ratchet-and-pawl device consisting of a hub, 2, having the annular enlargement 3, having on one side thereof the ratchet-teeth 5 and on its opposite side a series of curved recesses and projections, as described, combined with a longitudinally-grooved shaft, 9, and a pawl, A, capable of a longitudinal movement in the groove in said shaft, having a tooth, 12, thereon entering said enlargement in the hub, having its face *d* inclined, as described, whereby one edge of the tooth engages first with said ratchet-teeth, substantially as set forth.

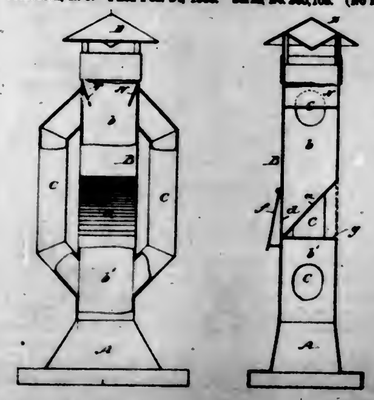
383,625. TRACTION-WHEEL. ADELBERT B. CARR, Springfield, Mass. Filed Dec. 29, 1887. Serial No. 259,267. (No model.)



Claim.—1. A traction-wheel consisting of a hub and a series of spokes or arms connected to and radiating from said hub, each of which spokes has on its extremity a tread-bar having the thickness of the end of the spoke extending laterally therefrom substantially in a line with the axis of said hub, substantially as set forth.

2. A metallic traction-wheel integrally constructed and consisting of a hub and of a series of spokes radiating therefrom, each of which spokes has on its extremity a tread-bar having the thickness of the end of the spoke extending laterally therefrom substantially in a line with the axis of said hub, substantially as set forth.

383,626. CHIMNEY COWL AND VENTILATOR. JOHN D. CARRILL, Princeton, N. J. Filed Feb. 24, 1888. Serial No. 265,103. (No model.)

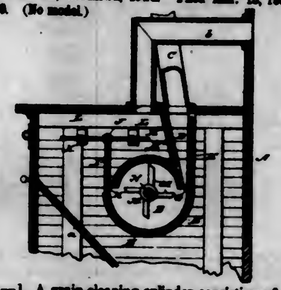


Claim.—1. A cowl or ventilator formed with upper and lower sections, *b b'*, connected by pipes C, the upper section being provided with a door below the entrance of the pipes to said upper section, substantially as described.

2. A cowl or ventilator composed of a main body, B, having a sloping partition, *a*, door *d f*, upper and lower sections, *b b'*, and the pipes C, connecting the lower with the upper section, substantially as described.

3. The cowl or ventilator divided into sections *b b'*, united by the side pipes, C, in combination with the deflecting-plates N, arranged in the section *b* over the pipes C, substantially as and for the purposes set forth.

383,627. GRAIN-CLEANING CYLINDER. WILLIAM P. CLIFFORD, Ottumwa, assignor to David W. Templeton, Fairfield, and the Western Machine Works, Ottumwa, Iowa. Filed Mar. 15, 1888. Serial No. 186,969. (No model.)



Claim.—1. A grain-cleaning cylinder consisting of an upper and lower section, the upper section being of a shorter radius than the lower one, forming longitudinal inlet and discharge openings, in combination with a beater therein, substantially as herein shown and described.

2. A grain-cleaning cylinder consisting of an upper and lower section, each formed of grooved end plates and a series of rods held in the grooves of the said plates, the upper section being of a shorter radius than the lower one, forming longitudinal inlet and outlet openings, in combination with a beater in said cylinder, substantially as herein shown and described.

3. The combination of a grain-cleaning cylinder having its upper part formed on a shorter radius than the lower part, forming longitudinal inlet and discharge openings, a hinged and weighted valve at the discharge-opening, and a beater in the said cylinder, substantially as herein shown and described.

4. The combination, with a cylinder composed of parallel iron rods secured to end plates, the upper part being of a shorter radius than the lower part, forming longitudinal inlet and discharge openings at opposite sides, and a beater in said cylinder, of a valve at the discharge-opening and adjustable weights for holding the valve closed and regulating the discharge of grain from the cylinder, substantially as herein shown and described.

5. The combination, with the cylinder E F, having the inlet and discharge openings G H, of the pivoted rod J, provided with the cross-rod K, the valve I, secured to the rod J, and the weights L, adjustably secured on the rod K, substantially as herein shown and described

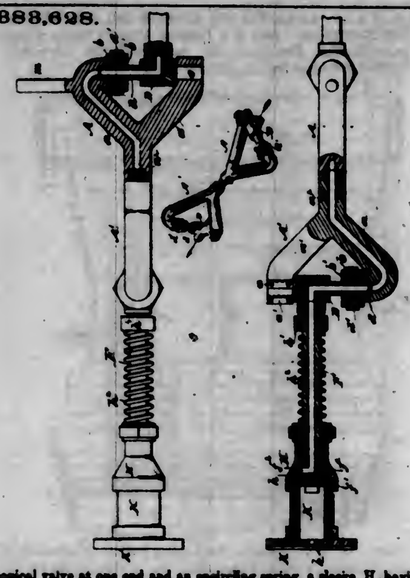
383,628. STEAM-COUPLING FOR RAILROAD-CARS. JAMES I. COLLINS, Amsterdam, N. Y. Filed Sept. 7, 1887. Serial No. 249,081. (No model.)

Claim.—1. A coupling for heating or ventilating pipes of cars, consisting of two essentially Y-shaped conductors secured to one another at right angles and one of them pivotally connected to the pipes, a tubular rod pivotally connected to the other conductor, a tube provided with an apertured disk and connected to the tubular rod, and a valve in the extremity of the said tubular rod, substantially as described.

2. A coupling for heating or ventilating pipes of a car, consisting of two essentially Y-shaped conductors secured to each other at right angles and one of them pivotally connected to the pipes, a tubular rod pivoted to the other conductor and provided with a conical end having peripheral grooves, a spring-actuated sleeve having a flaring mouth, a tube connected to the sleeve, and an apertured disk on the end of the said tube, substantially as herein shown and described.

3. The combination, with a railway-car and the heating or ventilating pipes, of a coupling consisting of the essentially Y-shaped conductors A A', having one solid and one tubular member and connected at right angles to each other, an L pivoted between the members of each conductor, the inner L being adapted for connection with the said pipes, a tubular rod, F, secured to the outer L, provided with a

383,628.



conical valve at one end and an encircling spring, a sleeve, H, having a flaring mouth, adapted to reciprocate upon said rod over the valve and bear against said spring, a tube, K, secured to said sleeve, and an apertured disk attached to the tube, having attached peripheral fingers, substantially as and for the purpose herein set forth.

383,629. TRANSPLANTING IMPLEMENT. THOMAS R. CORY, Head River, Oreg. Filed Oct. 20, 1887. Serial No. 253,319. (No model.)

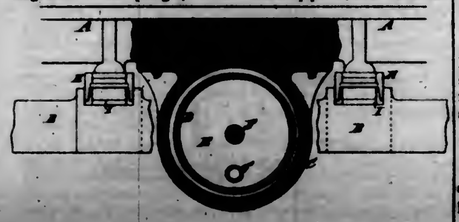


Claim.—An improved transplanter consisting of the blade D, formed of a spring-head having a sharpened lower edge, and the pivoted handles B, having their end portions secured to the end portions, *b*, of the blade, substantially as herein shown and described.

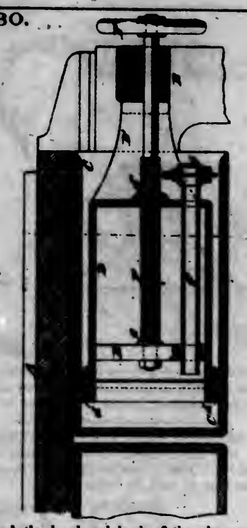
383,630. AIR SPRING OR CUSHION FOR PRINTING-MACHINES. CHARLES P. COTTRELL, Stonington, Conn., assignor to C. B. Cottrell & Sons, same place. Filed Oct. 26, 1887. Serial No. 253,055. (No model.)

Claim.—1. The combination, with the bed and frame of a printing-machine, of an air-spring mechanism for stopping the bed at the end of its movement, consisting of a cylinder and a cup-shaped plunger having its open end presented toward the cylinder, one of said two parts being secured to the bed and the other to the frame, and a head fitting the interior of the cup-shaped plunger and movable lengthwise therein to vary the air-space between the cylinder and plunger, substantially as herein described.

2. The combination, with the frame B and bed A, of the cylinder C on the bed, the cup-shaped plunger D on the frame, the head E, fitting the interior of the plunger, the screw F, for shifting the head lengthwise of the plunger, and the vacuum-pipe G', and valve ex-

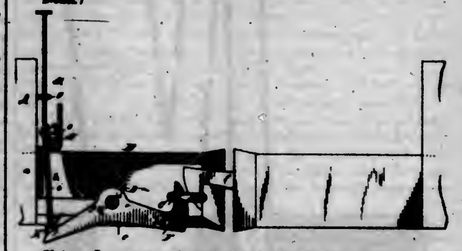


383,630.



tending through the head and back of the plunger, substantially as herein described.

383,631. CAR-COUPLING. JOHN R. CRANE, South West City, Mo. Filed Jan. 4, 1887. Renewed Nov. 26, 1887. Serial No. 256,209. (No model.)



Claim.—In a car-coupling, the herein-described elements, consisting, essentially, of the vertical lever M, transverse lever N, staple O, guides *n n*, rod *i*, loop *o*, coupling-hooks F, slotted bumper B, partitions E, pin G, and coupling-links C, all arranged and operating as set forth.

383,632. LAWN-MOWER ATTACHMENT. BYRON A. CROSIER, Sandusky, Ohio. Filed July 13, 1887. Serial No. 244,151. (No model.)

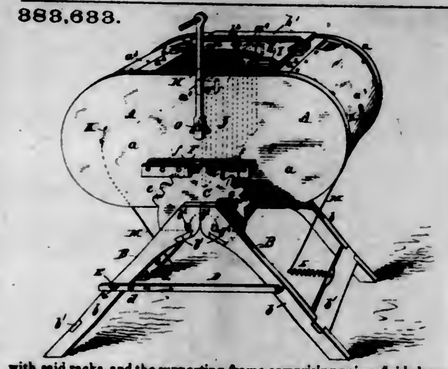


Claim.—The combination, with the side pieces of the frame of a lawn-mower, of the shield E, the attaching-clips *c'*, for securing the said shield to the mower-frame, the receptacle D, constructed as set forth, the pins 1 and 2, and the wire catch F, substantially as described.

383,633. CHURN. OTHO M. DORSEY and RUTH R. DORSEY, New Garden, Ohio. Filed June 27, 1887. Serial No. 243,042. (No model.)

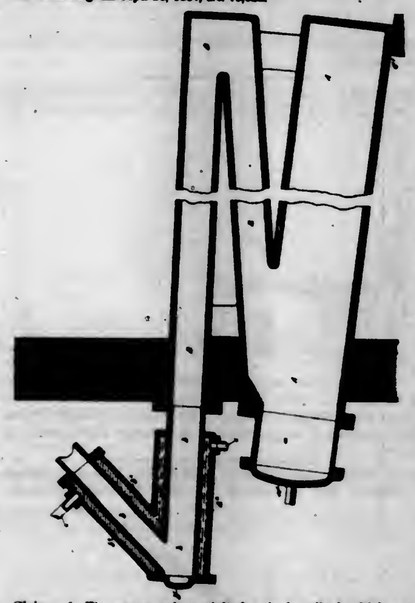
Claim.—The combination, with the churn, substantially as described, to the sides of the body of which are secured racks, of the plates or disks provided with segmentally-arranged teeth meshing

383,633.



with said racks, and the supporting-frame comprising pairs of side bars pivoted to said disks or plates and adjustably connected together, substantially as shown and described, and for the purpose set forth.

383,634. PROCESS OF MANUFACTURING ILLUMINATING-GAS FROM COAL. JOHN H. R. DUNNOSE, Liverpool, County of Lancaster, England. Filed Jan. 4, 1888. Serial No. 259,803. (No model.) Patented in Belgium Sept. 26, 1887, No. 79,022.

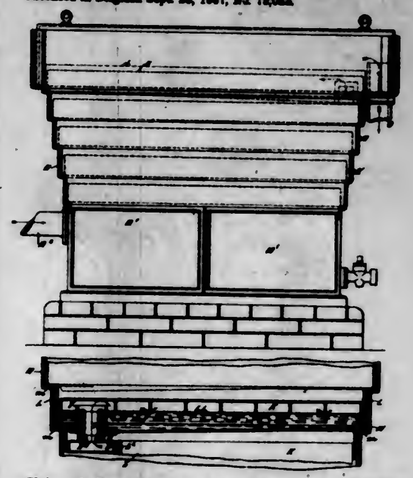


Claim.—1. The process substantially herein described, which consists in subjecting gas after it is distilled to contact with a chilled surface composed of a material inert in the presence of said gas, for the purpose of condensing and arresting the less permanent particles, and subsequently reheating and gasifying said particles and also reheating said gas.

2. The process substantially herein described, which consists in subjecting gas after it is distilled to contact with a chilled surface composed of a material inert in the presence of said gas, for the purpose of condensing and arresting its less permanent particles, and then causing said particles to flow under the influence of gravity into contact with a heated surface and gasifying the same, and also causing said gas subsequently to pass in contact with a heated surface composed of a material inert in the presence of said gas.

3. The process substantially herein described, which consists in distilling coal and converting the distillation into a fixed gas by alternately cooling and heating the same and returning the condensed portions into contact with a heated surface and thereby gasifying the same.

383,635. APPARATUS FOR WASHING AND PURIFYING ILLUMINATING-GAS. JOHN H. R. DUNNOSE, Liverpool, County of Lancaster, England. Filed Jan. 4, 1888. Serial No. 259,804. (No model.) Patented in Belgium Sept. 26, 1887, No. 79,023.



Claim.—1. In an apparatus for washing gas, the combination of a vessel containing a washing-fluid and a tray of less specific gravity than said fluid, and supported on the surface thereof by its own buoyancy, said tray being provided with partitions dividing said tray into a plurality of separate and independent compartments having no communication with each other except through said washing-fluid, substantially as described.

2. In an apparatus for washing gas, the combination of a vessel containing a washing-fluid, a tray divided into a plurality of separate and independent closed compartments supported on the surface of said fluid, a vertical inlet-pipe extending up through the bottom of said vessel and through said fluid, and open at its top, substantially as described.

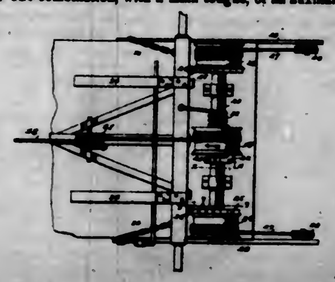
3. In an apparatus for washing gas, the combination of a bath of washing-fluid, a tray divided into a plurality of separate and independent closed compartments supported on the surface of said fluid, a vertical gas-inlet pipe open at its top and extending up through the bottom of said vessel and through said fluid, and a sleeve open at the bottom surrounding said inlet-pipe, substantially as described.

4. In an apparatus for washing gas, the combination of a plurality of baths of washing-fluid, set one above the other, gradually increasing in length and breadth as they ascend, each of said baths being provided with a tray divided into a plurality of separate and independent compartments supported above the surfaces of said fluid, substantially as described.

383,636. DEVICE FOR LOADING VEHICLES. WILLIAM B. DUNN, Moberly, Mo. Filed May 17, 1887. Serial No. 238,471. (No model.)

Claim.—1. In a loading device for vehicles, the combination, with the shaft and its weight-raising drums and ropes and its turning or actuating rope, of a sheave or pulley around which is passed or coiled the latter rope, and a loose drum or pulley having a pawl-and-ratchet connection with said latter shaft, and to which is also connected the said latter rope, and the slack-take-up spring applied to said loose drum or pulley and to a fixture, substantially as set forth.

2. The combination, with a main tongue, of an auxiliary extensible tongue connected thereto, a guide carried by the main tongue, a plate carried by the auxiliary tongue, said plate being grooved to receive the guide, a hook carried by the plate, a bail carried by the main tongue, a doubletree carried by the plate, a rope connected to the auxiliary tongue and leading to a drum that is loosely mounted on a drum-shaft, said drum and drum-shaft, and hoisting-ropes connected to other drums carried by the drum-shaft, the several drums being provided with ratchets, substantially as described.



3. The combination, with an extensible tongue, substantially as described, of a drum-shaft, a drum loosely mounted thereon, a ratchet carried by the shaft, a pawl carried by the drum, a spring arranged in connection with the drum, a rope leading from the extensible tongue to the loose drum, drums fixed to the shaft, hoisting-ropes connected to the fixed drums, sheaves over which the hoisting-ropes pass, and ratchets and pawls arranged in connection with the fixed drum, substantially as described.

4. In a vehicle-loader, the combination of the following elements: a main tongue, 10, an auxiliary tongue, 11, connected thereto, a hook connected to the auxiliary tongue, a bail connected to the main tongue, a doubletree connected to the auxiliary tongue, a shaft, 20, and drum 19, mounted upon said shaft, a rope, 18, leading to said drum, a ratchet, 21, mounted upon the shaft 20, a pawl, 22, carried by the drum 19, a spring, 23, connected to the drum 19, the shaft 20, fixed drums 25 and 24, provided with ratchets 25, pawls 26, which engage said ratchets, ropes 27, connected to the drums 25 and 24, upwardly-extending bars 29, sheaves carried by said bars, over which the ropes 27 pass, braces 34, and a sheave, 31, all substantially as described.

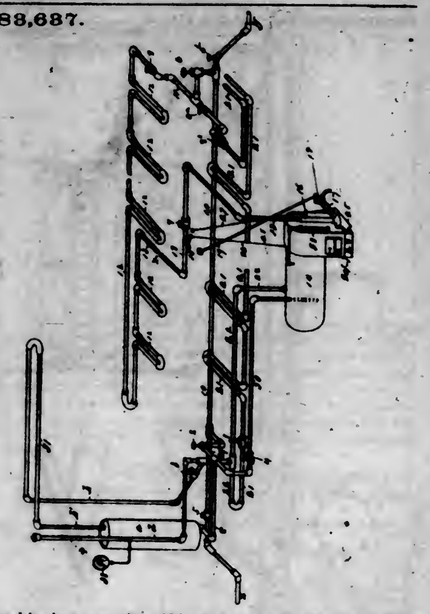
383,637. HEATING SYSTEM FOR RAILWAY-CARS. JAMES BEMENT, Williamsett, Mass. Filed July 12, 1888. Serial No. 277,827. (No model.)

Claim.—1. The within-described improved means for warming railway-cars by steam, which consist of a main steam-pipe, 10, running through the car, a series of car-heating pipes, 12 and 21, connected with said pipe 10, combined with a steam-boiler, 14, suspended under the car, a steam-pipe, 22, connecting said boiler with said heating-pipes, one or more drip-pipes connecting said heating-pipes and boiler, connecting-pipes and stop-valves, substantially as described, for controlling the flow of steam from said boiler through said heating-pipes, and a condenser-circulation consisting of the pipe 31, connected with said heating-pipes as located outside the car and higher than said heating-pipes, and having no outlet except at its connected ends, substantially as set forth.

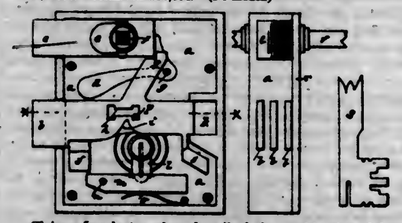
2. The within-described improved means for warming railway-cars by steam, which consist of a main steam-pipe, 10, running through the car, a series of car-heating pipes, 12 and 21, connected with said pipe 10, combined with a steam-boiler, 14, suspended under the car, a steam-pipe, 22, connecting said boiler with said heating-pipes, one or more drip-pipes connecting said heating-pipes and boiler, connecting-pipes and stop-valves, substantially as described, for controlling the flow of steam from said boiler through said heating-pipes, and a condenser-circulation consisting of the pipe 31, connected with said heating-pipes and located outside the car and higher than said heating-pipes, and having no outlet except at its connecting ends, and a water-reservoir, 0, connected with said pipe 31, substantially as set forth.

3. The combination, with a locomotive and a car, of an auxiliary boiler located on the car, a circuit of heating-pipes in communication with said boiler, and a pipe leading from the locomotive, and communicating at one end with the pipes of the circuit and at the other end with the steam and water spaces of the locomotive-boiler, substantially as described.

383,637.



383,638. LOCK. GEORGE R. M. POUND, Pittsburg, Pa. Filed Nov. 26, 1887. Serial No. 256,151. (No model.)



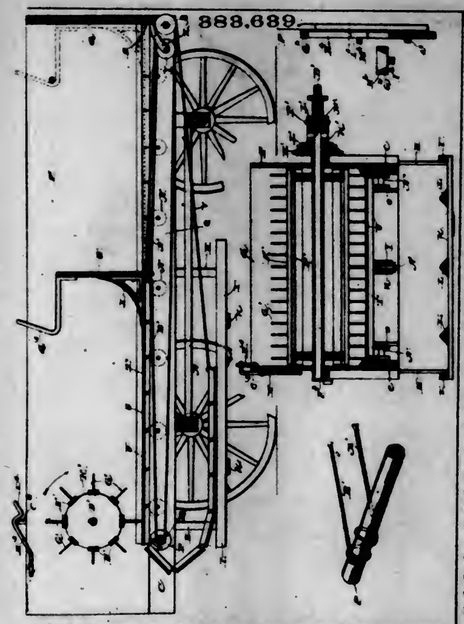
Claim.—In a lock such as described, the combination of the three bolts *b*, having each an opening, *h*, formed therein, the tumblers *u*, arranged between the bolts *b*, provided on their lower edge with suitable wards, *t*, with the revolving key-barrel *l*, and locking-piece *m*, actuated by a spring, *o*, the weights *j*, attached to the tumblers *u*, the extension or projection *g* of one of the bolts *b*, for locking the latch *c*, and the weight *d*, substantially as and for the purpose set forth.

383,639. MANURE-DISTRIBUTER. STEPHEN M. GARST, Greenville, Ohio. Filed July 6, 1887. Serial No. 243,502. (No model.)

Claim.—1. In a manure-spreader, the body having the sliding flexible platform forming the bottom therefor, the drum P, and the ropes A' B', both connected to the front end of the platform and wound in reverse directions on the drum P, as set forth.

2. In a manure-spreader, the body having the sliding flexible platform forming the bottom of the body, the drum P, the ropes A' B', wound in reverse directions on the drum and connected to opposite sides of the front end of the platform, and the rope V, connected at its ends to the ends of the platform and passed around a roller at an intermediate point, as set forth.

383,639.



3. In a manure-spreader, the body having the sliding flexible platform forming the bottom therefor, the drum P at the rear end of the body, over which drum the platform passes to turn the platform beneath the body, ropes connecting the drum with the platform, and a depending guide-frame below the body to receive the platform as it leaves the drum, as set forth.

4. In a manure-spreader, the body having the sliding flexible platform forming the bottom therefor, and the depending guide-frame below the body formed with the angular-shaped slots L, as set forth.

5. In a manure-spreader, the body having the sliding flexible platform forming the bottom for the body, and the hangers H, depending from the body and carrying a horizontal guide-frame, I, which is composed of an open frame-work entirely independent of and entirely below the body, as set forth.

6. In a manure-spreader, the body having the sliding flexible platform forming the bottom for the body, the guide-frame depending from the body and open at both ends, said platform passing over and resting upon the supporting-frame as it leaves the body, the rope V, connecting the ends of the platform, the drum P at the rear end of the body, over which drum the platform passes as it leaves the body, and the ropes A' B', wound in reverse directions on the drum and connected to the front end of the platform at different points, as set forth.

7. The combination of the drum P, for operating the sliding bottom, having the ratchet-wheels X', the oscillating levers A^2, having the pawls engaging the said ratchet-wheels, the oscillating lever G^2, having the vertically-movable rack-bar L^2, the rods connecting the said lever G^2 to the levers A^2, the pinion engaging the rack-bar L^2, and means for rotating the said pinion; and thereby adjusting the rack-bar, for the purpose set forth, substantially as described.

8. In combination with the body, the flexible platform forming the bottom therefor, the drum P, connecting with the platform for working the same, the revolving cylinder E, the pawl-and-ratchet mechanism for moving the drum P, the oscillating lever G^2, the vertically-movable bar L^2, carried by the bar G^2, the pitman connecting with the lever G^2, and the rods connecting the oscillating lever, to the pawl-and-ratchet mechanism of the drum, as set forth.

9. In a manure-distributer, the body, in combination with the flexible platform forming the bottom for the body, the rotating cylinder at one end of the body, the drum P, for operating the platform, the pawl-and-ratchet mechanism for working the drum, the oscillating lever G^2, the sliding block carried by the lever, the vertically-movable rack-bar L^2, connected to the sliding block, the pitman connecting the shaft of the rotating cylinder to the sliding block, the rods connecting the lever G^2 to the said pawl-and-ratchet mechanism, and hand operating mechanism for moving the bar L^2, and thereby adjusting the throw of the oscillating lever G^2, as set forth.

10. The combination, in a manure-distributer, of the bed or body having the sliding flexible platform constituting its bottom, said platform having the tappet-arm G^2 at its front end, the drum P, arranged at the rear end of the bed or body and on which the sliding platform is supported, the said drum being provided with the ratchet-teeth Y' and Z', extending in opposite directions, the oscillating levers A^2, having the double-ended dogs or pawls adapted to engage either of the series of ratchet-teeth on the wheels X', the spring-actuated lever A^3, adapted to reverse the dogs, and thereby impart retrograde rotation to the drum, for the purpose set forth, and the detent H^2, to normally secure the lever A^2 out of the engagement with the dogs or pawls, the said detent having the arm I^2 arranged in the path of the tappet-arm G^2, for the purpose set forth, substantially as described.

11. The combination, with the body having the depending frame, of the sliding platform forming the bottom of said body and adapted to be turned to rest on the depending frame, the drum P, for operating the sliding platform, and having the ratchet-wheels X', provided with the ratchet-teeth Y' and Z', extending in opposite directions, the oscillating levers A^2, having the double-ended pawls or dogs normally engaging the teeth Y', the sliding platform having the tappet-arm G^2 at its front end, the bell-crank lever A^3, having the cross-bar B^2, adapted to engage the dogs or pawls and trip the same, the lever C^2, connected with the bell-crank lever, the spring F^2, normally bearing forward against the said lever C^2, the spring-detent H^2, to lock the said levers B^2, and having the inclined arm I^2 arranged in the path of the tappet-arm G^2, for the purpose set forth, substantially as described.

12. In combination with the bed or body, the sliding flexible platform forming the bottom therefor, mechanism for sliding the platform in one direction, and tripping devices to cause the said mechanism to bring the platform back to its initial position, and the head-board W for the front end of the platform, as set forth.

13. In combination with the bed or body, the sliding platform therefor, the gearing for working the platform, the ratchet mechanism engaging with said gearing to determine the direction of movement of the platform, and the tripping devices to engage the ratchet mechanism when the platform reaches a certain point to change the direction of movement of the platform, as set forth.

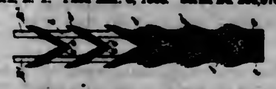
14. In combination with the bed or body, the sliding platform forming the bottom therefor, the gearing for working the platform to and fro, the ratchet mechanism to engage the gearing to determine the direction of rotation of the same, and the consequent direction of movement of the platform, and the adjusting means to regulate the throw of the ratchet mechanism and the consequent speed of the platform, and the tripping devices to engage the ratchet mechanism when the platform reaches a certain point, as set forth.

15. In a manure-spreader, the body, the sliding flexible platform forming the bottom therefor, the drum P, for operating the platform, the ratchet mechanism for working the drum, and the tripping device carried by the platform to engage the ratchet mechanism, whereby, when the platform has reached a certain point, the tripping device strikes the ratchet mechanism, when the continued movement of the machine causes the drum P to draw the platform back to its initial position.

16. In a manure-spreader, the bed or body, the sliding platform forming the bottom therefor, the drum P, the cords A' B', wound in reverse directions on the drum and connected to the platform, the ratchet mechanism for the drum, and the tappet-arm G^2, carried by the platform to operate the ratchet mechanism and change the direction of the rotation of the drum, and the consequent direction of movement of the platform, as set forth.

17. The combination, with the body having the depending frame, of the drum P, the sliding bottom adapted to pass beneath the body and be supported on the frame, ratchet-wheel X', having the teeth Y' Z' extending in opposite directions, the oscillating lever A^2, the pawl pivoted to the said lever and having the oppositely-extending arms to engage the teeth Y' Z' alternately, and the spring-detent D^2, secured to the lever A, as set forth.

383,640. STORAGE-BATTERY PLATE. CHARLES D. P. GIBBS, New York, N. Y. Filed Mar. 3, 1888. Serial No. 265,970. (No model.)



Claim.—1. A storage-battery plate consisting of two sheets of metal, each formed with openings, as described, the metal around said openings being forced outward on each side of the plate, so as to form projections, and placed together with the projections on one plate touching the projections on the other plate.

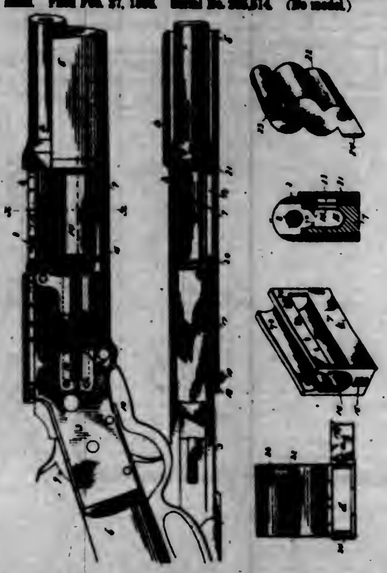
2. A storage-battery plate consisting of two sheets of metal, each having inclined perforations or openings for receiving the active material, the metal at the base of each opening in each plate being in metallic contact with the metal of the other plate.

3. A storage-battery plate consisting of two sheets of metal, each having perforations throughout its surface, projections of metal being thrown out from both sides of the plate, the projections upon the contiguous surfaces of the respective plates being in contact, and active material in said openings and in the space between the plates.

4. A storage-battery plate consisting of the two sheets B' and B^2, each having openings or perforations b, and projections thrown out in opposite directions from the general surface of the sheets, said sheets being covered together, substantially as described.

5. A storage-battery plate consisting of the two sheets B' B^2, each having openings or perforations b, and projections thrown out in opposite directions from the general surface of the sheets, said sheets being covered together, and active material contained within the openings.

383,641. MAGAZINE-GUN. SOLOMON E. HOVELEY, Springfield, Mass. Filed Feb. 27, 1888. Serial No. 265,514. (No model.)

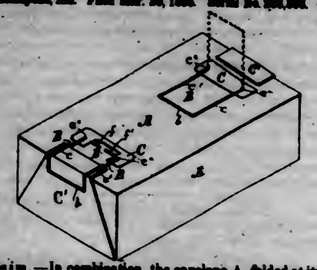


Claim.—1. In a breech-loading fire-arm, the combination, with a carrier-block having an aperture in its side of such size as to be capable of receiving a cartridge, and having a longitudinal bar over said aperture through which cartridges are introduced into the block, of the frame of the arm having through one side thereof an aperture corresponding to and registering with that in said carrier-block, said block being capable of a reciprocating movement between the sides of said frame and in the rear of and transversely to the end of the barrel, substantially as set forth.

2. The frame of a breech-loading fire-arm having an aperture through one side thereof for the introduction of cartridges, two rabbeted strips secured on the side of said frame at opposite ends of said aperture, a carrier-block capable of a reciprocating motion between the sides of said frame, in the rear of the barrel, and having an aperture in one side thereof corresponding to and registering with that in the side of said frame, there being a longitudinal bar attached to the block above said aperture, combined with a cartridge-magazine capable of attachment to the side of said frame, and of delivering cartridges therefrom through said two apertures into the carrier-block, substantially as set forth.

3. The frame of a breech-loading fire-arm having an aperture through one side thereof for the introduction of cartridges, two rabbeted strips secured on the side of said frame at opposite ends of said aperture, a carrier-block capable of a reciprocating motion between the sides of said frame in the rear of the barrel, and having an aperture in one side thereof corresponding to and registering with that in the side of said frame, said carrier-block having a lower chamber for live cartridges and an upper recess separated therefrom by longitudinal bars, combined with a cartridge-magazine capable of attachment to the side of said frame and of delivering cartridges therefrom through said two apertures into the carrier-block, and a sliding cover on said frame having one end engaging with said magazine, substantially as set forth.

383,642. FASTENING FOR ENVELOPES. WILLIAM H. HUBBARD, Indianapolis, Ind. Filed Mar. 20, 1888. Serial No. 268,082. (No model.)



Claim.—In combination, the envelope A, folded at its open end, as shown, the wire fastening B, consisting of the end bar, b, side bars, c c, and holding-bars f f', and the flexible strip C, having the openings c^3 therein, through which the ends of the wire are extended, which strip pivotally secures the fastening to the body of the envelope, as described, and the said fastening being bent so as to bear upon the front and rear faces of the envelope near the outer edges to hold the folds in close contact with the body of the envelope, all substantially as shown and set forth.

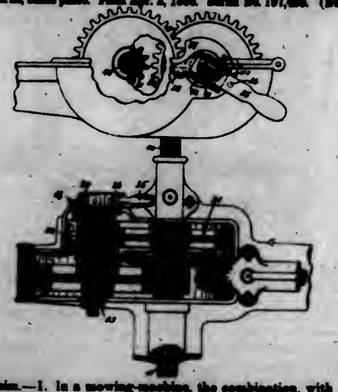
383,643. DOOR-CHECK. ALEXANDER JOHNSON, Canajoharie, N. Y., assignor of one-half to Jerome H. Keator, same place. Filed Apr. 6, 1888. Serial No. 269,709. (No model.)



Claim.—1. The improved door-check composed of the two-armed lever a a', pivoted at the junction of its arms, the cushion b, connected to the arm a', the spring c, arranged to turn the lever upward, and the cam d, formed with flat bearings at different distances from the pivot of the cam, and adapted to engage successively the top of the arm a, substantially as described and shown.

2. The combination of the plate P, formed with the recess r in its back and provided with the stud e, the two-armed lever a a', pivoted at the junction of its arms to the front of said plate, the cushion b, connected to the arm a', the pin or screw f, connected to the arm a and protruding into the recess r of the plate, the spring c, secured at one end in the said cavity and having its opposite end pressing upward on the pin or screw f, the cam d, pivoted to the plate P and formed with flat bearings i i at different distances from the pivot of the cam, the arm h, extended from the cam, and the rod l, connected to said arm, substantially as described and shown.

383,644. MOWING-MACHINE. SAMUEL V. KENNEDY and DANIEL SMITH, Minneapolis, Minn., assignors to the Minneapolis Harvester Works, same place. Filed Apr. 2, 1888. Serial No. 267,493. (No model.)

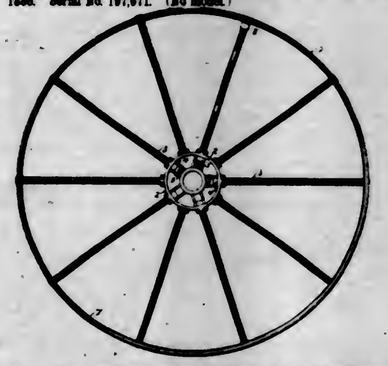


Claim.—1. In a mowing-machine, the combination, with a main shaft having a gear-wheel mounted thereon, of an eccentrically-

mounted shaft carrying a gear-wheel adapted to engage with the gear-wheel on the main shaft, a keeper on one end of the eccentric-shaft, a handle sliding freely therein, a projection on the main frame, and a projection on the sliding handle adapted to engage therewith, substantially as described.

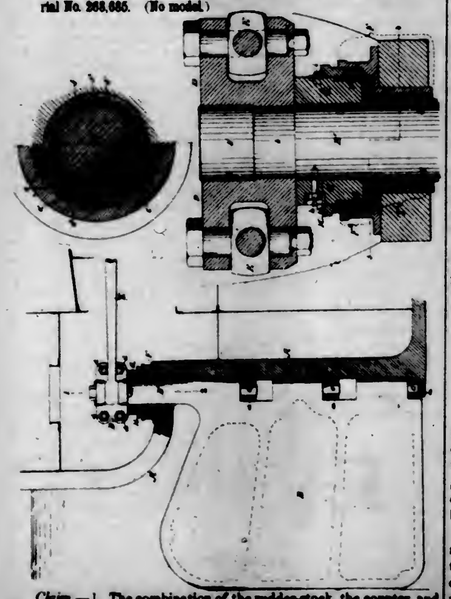
2. In a mowing-machine, the combination, with a main shaft having a gear-wheel mounted thereon, of an eccentrically-mounted shaft carrying a gear-wheel adapted to engage with the gear-wheel on the main shaft, a keeper on one end of the eccentric-shaft, a handle sliding in said keeper, a projection or pin, 36, on the sliding handle, a projection, 37, on the main frame, and a spring engaging said handle and adapted to snap the projection 36 thereon in front of the projection on the main frame to lock the machine into gear.

383,645. WHEEL. SAMUEL V. KENNEDY, Minneapolis, Minn., assignor to the Minneapolis Harvester Works, same place. Filed Apr. 3, 1886. Serial No. 197,671. (No model.)



Claim.—The combination, in a wheel, of the hub 1, provided with the flanges 2 2, having the spoke-holes therein, the series of projections 5, arranged within said flanges and adapted to receive the ends of the spokes between them, the spokes 3, and the nuts 4, arranged upon said spokes between said projections 5 and the inner walls of the flanges 2, substantially as described.

383,646. COMBINED BEARING AND STUFFING-BOX FOR RUDDERS. J. H. KOUNTZ, Philadelphia, Pa. Filed Mar. 27, 1886. Serial No. 268,685. (No model.)



Claim.—1. The combination of the rudder-stock, the counter, and a shell therein comprising two portions, one forming a bearing for the rudder-stock and the other forming the stuffing-box, substantially as set forth.

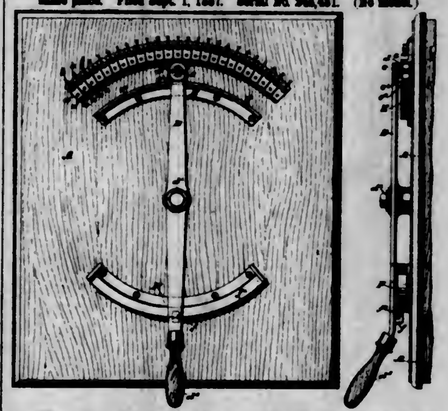
2. The combination of the rudder-stock, the counter, a shell having two portions, one forming both a steady-bearing and a supporting-bearing for the rudder-stock and the other forming a stuffing-box to prevent ingress of water to the hold of the vessel, substantially as set forth.

3. A rudder-bearing for vessels, consisting of a shell having a horizontal bearing for a collar on the rudder-stock and a stuffing-box above said horizontal bearing.

4. A rudder-bearing for vessels, consisting of a shell having a horizontal bearing for a collar on the rudder-stock, a vertical bearing for the stock below said horizontal bearing, and a stuffing-box above the same, all substantially as specified.

5. The combination of the counter, the shell having a lower bearing portion and upper stuffing-box portion, the rudder-stock, the cross-head secured thereto, and the bearing-collar interposed between said cross-head and the horizontal portion of the bearing in the shell, all substantially as specified.

383,647. SWITCH FOR ADJUSTABLE RESISTANCES. PHILIP LADEL, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Sept. 1, 1887. Serial No. 248,481. (No model.)



Claim.—1. In a switch for resistances, the combination of the base-board, the plates *a a*, having the lugs *c c* projecting perpendicularly from the base-board, the lever D, and a contact-surface, *d*, carried thereby and pressing against the faces of said lugs in a direction parallel with the plane of the base-board.

2. In a switch for resistances, the combination, with a series of plates, *a a*, having the outwardly-projecting lugs *c*, of the lever D, having its axis parallel with said lugs, the plate *c*, having the lug c^2, and contact-springs *d* and *d'*, compressed between the lugs *c* and c^2.

3. In a switch for resistances, the combination of the plates *a a*, having the outwardly-projecting lugs *c*, the lever D, a contact-surface, *d*, pressing against said lugs, and a guide-plate, F, having the flange *f'*, and the catch *f*, carried upon said lever and projecting beneath said flange.

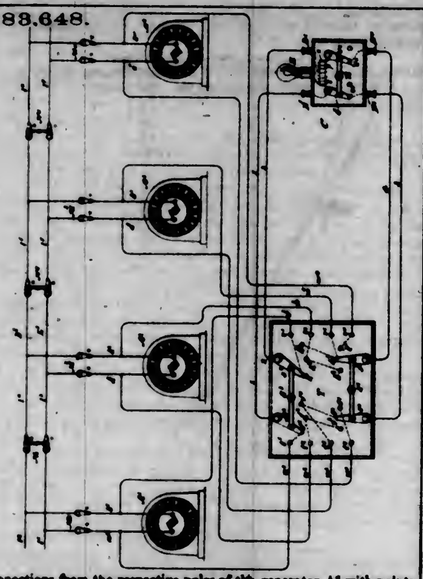
4. In a circuit-controlling switch, the combination, with the contact-plates and lever, of a contact-spring carried by the lever and pressing against said plates, consisting of a looped band of resilient metal having its ends projecting toward each other and fastened to the lever, substantially as described.

383,648. APPARATUS FOR CONNECTING ALTERNATE-CURRENT DYNAMOS. PHILIP LADEL, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 1, 1887. Serial No. 251,189. (No model.)

Claim.—1. The combination, with three or more alternate-current electric generators, of a switch-board for synchronizing the same, consisting of two double-point switches, contact-points for the respective arms of one switch connected with the respective poles of said generators, contact-points for the respective arms of the second switch connected with said poles, and an indicating device included in circuit between the respective switches.

2. The combination, with the alternate-current generators A', A^2, and A^3, of the switches S' and S^2, their contact-points f' f^2 K K^2 g' g^2 K^3 K^4, the indicating device C, connected between the switches, electrical connections from the respective poles of the generator A' with the points f' K, respectively, connections from the respective poles of the generator A^2 with the points g' and K^4, respectively, and electrical

383,648.



connections from the respective poles of the generator A^3 with points f^3 g^3 and K^3 K^4.

3. A switch-board for connecting different alternate-current generators through an indicating device consisting of two switches, each having two contact-arms and each arm having contact-points, conductors leading from one pole of each generator except one to the respective contact-points of one arm of one switch, conductors leading from the other poles of the same generators to the respective contact-points of the other arm of the same switch, and similar electric connections from the respective poles of all the generators except one of the first-named with the contact-points of the respective arms of the remaining switch.

4. A switch-board for connecting different alternate-current generators through an indicating device consisting of two switches, each having two contact-arms and each arm having contact-points, conductors leading from one pole of each generator to the contact-points of one arm of each switch, conductors leading from the remaining poles to the contact-points of the remaining arms, and an indicating device included in circuit between said switches.

383,649. VOLTMETER. PHILIP LADEL, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 20, 1887. Serial No. 253,721. (No model.)



Claim.—1. The combination, with a voltmeter consisting of two coils or solenoids, their respective cores, a common support for said cores, an indicator moved by said support, and metallic and carbon resistances in circuit with said coils, of a box containing the same, consisting of two parts hinged together, one part carrying the carbon resistance and the other the coils and metallic resistance, substantially as described.

2. The combination of a case, A, having a cover or lid, A', the incandescent electric lamps placed in the lid and shielded by the covering of wire-gauze, the indicating apparatus placed in the case A, an adjustable resistance, D, the protecting-cover for the coils and resistance, an indicator and adjustable slide for the resistance, said indicator projecting above said protecting-cover, and an indicating-arm visible through the cover, substantially as described.

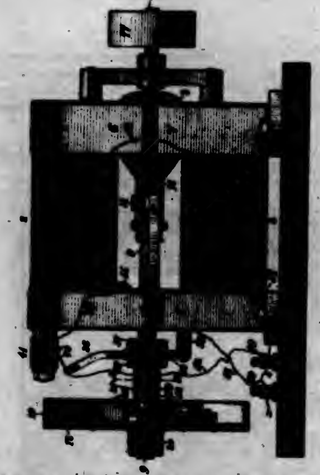
3. In an indicator for electric circuits, carbon resistances consisting of incandescent electric lamps, a box containing the indicator and said lamps, and a wire-gauze or ventilating protecting-cover for said lamps.

383,650. BEDSTEAD. MATHEW LAWSTER, Brunswick, Ga. Filed Oct. 1, 1887. Serial No. 251,204. (No model.)



Claim.—As an improvement in bedsteads, the combination, with the head and foot boards and the side rails, of the castings D, secured to the same, and having the perforated lugs *d*, the diamond-shaped coupling-plates F, the rods E, secured to said plates in the angles thereof and radiating therefrom and having hooks *e* at their ends, which engage the lugs *d*, the rods G', secured to the coupling-plates and extending toward each other, and provided with screw-threads at their inner ends, and the clamp G, consisting of the nuts g^2 g^3, fitted on the screw-threaded ends of the rods G', and the parallel bars g' g', connecting the nuts g^3, substantially as set forth.

383,651. GOVERNOR FOR ELECTRIC MOTORS. RICHARD H. MATHER, Windsor, Conn. Filed Dec. 9, 1886. Serial No. 221,095. (No model.)



Claim.—1. A rheostat consisting of an indefinite number of annular disks of copper or other highly-conductive material and an indefinite number of annular disks of iron or other material of comparatively low conductivity, all clamped together upon an insulated core by uniform pressure, in combination with an electric motor whose field-magnet helices are connected in parallel with said rheostat, a centrifugal governor which is mounted upon the armature-shaft of said motor, and a sleeve and brush-carrying lever, whereby said governor may manipulate said rheostat, substantially as and for the purpose specified.

2. A rheostat consisting of a number of perforated plates of copper or other highly-conductive material, a number of like smaller plates of iron or other material of comparatively low conductivity, and an insulated core upon which all said plates are clamped together, in combination with an electric motor, an isochronous governor, which is driven by the armature-shaft of said motor, a slotted sleeve upon said shaft, and a lever which engages said sleeve and is armed with a brush which is adapted to be moved across the edges of said first-mentioned plates, substantially as and for the purpose specified.

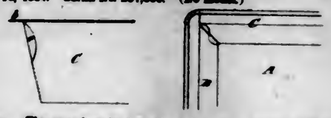
3. A rheostat consisting of plates of copper or other highly-conductive material and a number of intermediate plates of less highly-conductive material, all fastened side by side in electrical contact with each other upon a suitable support and insulated therefrom, in combination with an electric motor whose armature-shaft is provided with a radially-projecting pin, a sleeve which surrounds said shaft and is provided with two stop-collars and with a spiral slot for the accommodation of said pin, a lever which carries an electric brush and is provided with an eye, and a loose collar which is pivoted in said eye and between said stop-collars, substantially as and for the purpose specified.

4. As a rheostat, an indefinite number of annular disks of copper or other highly-conductive material, in combination with an indefinite number of annular disks of iron or other material of comparatively low conductivity, all clamped together upon an insulated core by uniform pressure, substantially as and for the purpose specified.

5. As a rheostat, a number of perforated plates of copper or of other highly-conductive material, a number of like smaller plates of iron or of other material of comparatively low conductivity, and an insulated core, upon which all said plates are clamped together, in combination with a brush which is adapted to be moved across the edges of said first-mentioned plates, substantially as and for the purpose specified.

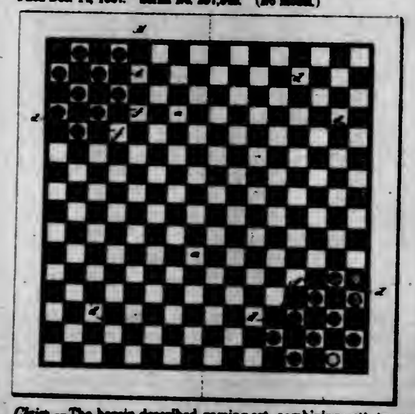
6. As a rheostat, a number of plates of copper or other highly-conductive material and a number of smaller intermediate plates of less highly-conductive material, all fastened side by side in electrical contact with each other upon a suitable support and insulated therefrom, in combination with an electric brush, and with mechanism which is adapted to move said brush across the edges of said first-mentioned plates, substantially as and for the purpose specified.

383,652. PAN. EDGAR W. HEMMERDAN, Brooklyn, N. Y. Filed May 11, 1887. Serial No. 287,809. (No model.)



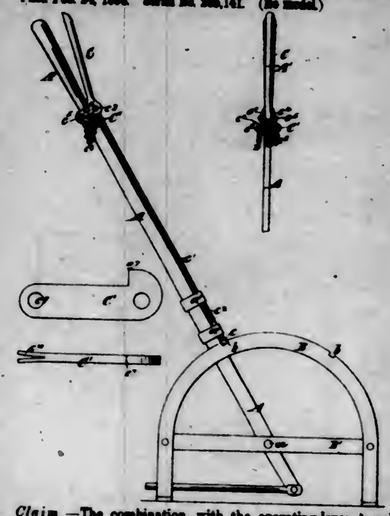
Claim.—The pan herein described, having a laterally-projecting flange at its upper edge formed by portions overlapping at the corners, and having at the unsoldered corners of its walls a lip or projection on each wall bent over the adjacent and meeting wall, substantially as herein set forth.

383,653. GAME OF SKILL. GEORGE H. ROSES, Boston, Mass. Filed Dec. 14, 1887. Serial No. 257,563. (No model.)



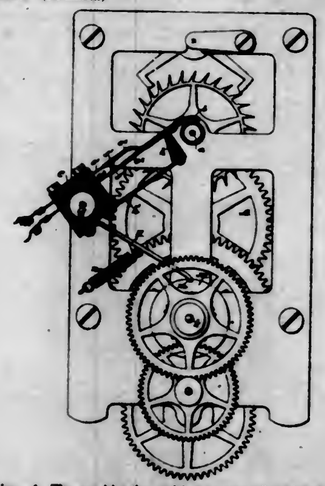
Claim.—The herein-described gaming set, combining with two or more sets of several men each, each set of different colors, a player's board having its surface divided into squares and having a group of several of said squares in two or more opposite corners of said board, having an indicated separation from the other squares thereon, substantially as set forth.

383,654. SWITCH-LOCK. ALEXANDER PELLOW, Hyrax, N. Y. Filed Feb. 24, 1888. Serial No. 265,141. (No model.)



Claim.—The combination, with the operating-lever A and its notched locking-segment B, of the catch-bolt *c*, the catch-lever C, having cheeks which embrace the operating-lever and through which the catch-lever is pivoted to the operating-lever, and a locking key or bolt, as C', inserted through said cheeks and engaging the operating-lever, whereby the swinging of the catch-lever on its pivot to withdraw the catch-bolt is prevented, substantially as herein described.

383,655. CIRCUIT-CLOSING DEVICE FOR ELECTRIC CLOCKS. CHESTER H. PAGE, Brooklyn, N. Y. Filed Dec. 21, 1887. Serial No. 258,570. (No model.)



Claim.—1. The combination, with a motor, of a circuit-controlling cam or block actuated thereby and two contact-arms projecting into the path thereof, so arranged that one will be released by the cam before the other, contact-points carried by the respective arms and brought into contact with each other during the time intervening between the release of the two arms, a support for the arms, and means for moving the support, thereby carrying the arms out of the path of the cam, substantially as described.

2. The combination of a circuit-closing cam, a circuit-controller operated thereby, a movable support for the same, a revolving disk, a mechanical connection between said support and said disk, whereby the circuit-controller is normally held out of operative position, and means whereby the revolution of the disk periodically brings the circuit-controller into operation.

3. The combination, with a clock-movement, of the cam, the circuit-closing arms *d d'*, the pivoted support C, carrying the same, the lever K, and the disk M, against which said lever rests, said disk having one or more notches, *m*.

4. In a circuit-closing device, the combination, with the pivoted support C, of the arms *d* and *d'* and the resting-block or support A, secured to said block C, substantially as described.

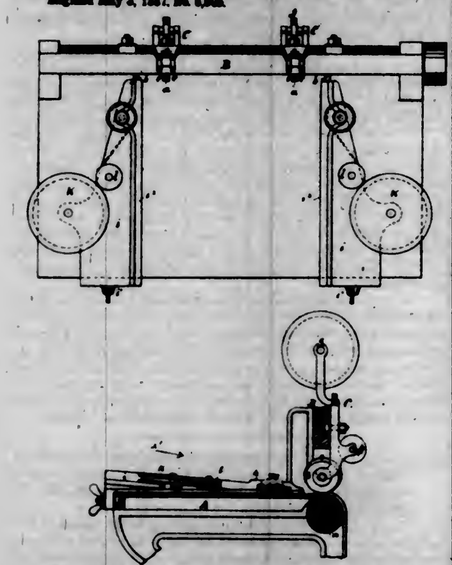
5. A circuit-controlling attachment for clock-movements, consisting of two movable arms adapted to be released one at a time, contact-points carried thereby and brought into contact with each other by the release of one arm before the other, a resting-block upon which the arms rest out of contact with each other, and a tilting support for the arms, whereby they may be thrown out of operation.

6. A circuit-controlling device designed to be operated by a motor, consisting of a contact device applied to the arbor of the motor, a tilting support for the same, whereby it may be thrown out of operation, and a second arbor for turning the device upon its support, thereby throwing it temporarily out of operation.

7. The combination, with two revolving arbors, of two contact-arms projecting toward one of the arbors and actuated thereby to control the connections of an electric circuit, and mechanism operated by the second arbor to throw the arms out of range of the first-named arbor.

8. The combination, with the circuit-closing cam and the two contact-arms periodically engaged thereby, of the pivoted support for said arms, a revolving disk, and the lever or arm resting against said disk for normally holding said contact-arms out of the path of said cam, and having one or more notches or releasing-points for allowing said arms to be moved toward the cam.

383,656. APPARATUS FOR APPLYING STRIPS TO BOXES. THEODOR REINZ, Dresden, Saxony, Germany, assignor of one-half to Jean Gebertel, same place. Filed May 30, 1887. Serial No. 239,502. (No model.) Patented in Germany Apr. 14, 1887, No. 41,397; in Belgium May 3, 1887, No. 77,305; in France May 3, 1887, No. 189,266, and in England May 3, 1887, No. 6,958.



Claim.—1. In a machine for pasting on strips, the combination, with a frame, of horizontal circumferentially-grooved rollers and presser-rollers for pressing the strips upon the surface of the sheet, substantially as shown and described.

2. The combination, with a table, of laterally-adjustable slides on the same, circumferentially-grooved rollers mounted horizontally on the slides, and pressure-rollers mounted to revolve in planes at right angles to that of the slides, substantially as shown and described.

3. The combination, with a table, of the roller *w*, the vertical presser-rollers *a* and *b b*, and the horizontal rollers *h*, substantially as shown and described.

4. The combination, with the table A and the roller *w*, of the circumferentially-grooved presser-rollers *a* and the rollers *m*, substantially as shown and described.

5. The combination, with the table A and the roller *w*, of the rollers *a c*, the disks *c c*, washers resting against the sides of said disks, the springs *d d*, the presser-rollers *b b*, and the rollers *h h*, substantially as shown and described.

383,657. BOBBIN FOR THE FIELD-MAGNETS OF DYNAMOS. ALBERT SCHERR, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,678. (No model.)

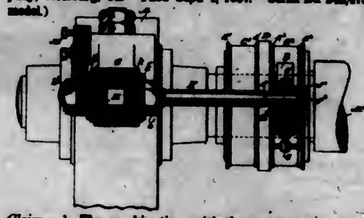


Claim.—1. The combination, with the field-magnet of an electric machine, of bobbin-spools fitting over the cores or polar projections of the field-magnet and lugs at the inner ends of the spools for securing them in position.

2. In an electric machine, a bobbin-spool having lugs at the inner end fitting over the field-magnet core, whereby it may be secured in position.

3. In an electric machine, a spool for receiving a bobbin of the field-magnet, consisting of a central cylindrical portion of soft iron, an outer flange of non-magnetic material secured to one end, and one or more lugs secured to the opposite end for securing the spool to the field-magnet.

383,658. BRUSH-HOLDER FOR ELECTRIC GENERATORS. ALBERT SCHERR, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,679. (No model.)



Claim.—1. The combination, with the commutator or collecting rings of an electric generator, of a contact-brush, a clamp for the same, a rod for supporting the clamp, means for adjusting the brush-clamp longitudinally upon said rod, and means for adjusting the rod longitudinally, substantially as described.

2. The combination, with an electric generator and its commutator or collecting ring, of a commutator-brush of less width than the commutator-ring to which it is applied, a clamp for the same, a rod for receiving the clamp, a square block upon said rod preventing it from turning, a support for receiving said rod, and means for adjusting the rod in said support.

383,659. ARMATURE FOR DYNAMOS. ALBERT SCHERR, Allegheny, and ERNST M. BULLOCK, Pittsburg, assignors to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 9, 1887. Serial No. 248,871. (No model.)



Claim.—1. The combination, with the armature of an electric machine, of a ring of metal at the end of the same, lugs projecting from the ring to the periphery of the armature, and blocks of insulating material—such as wood—secured to said rim between said lugs.

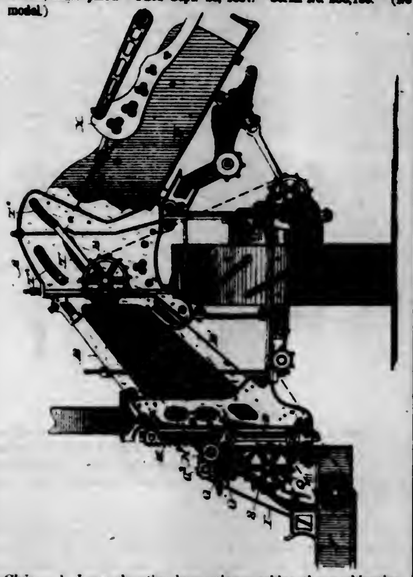
2. In an armature for electric machines, composed of insulated plates of soft iron, end plates applied thereto, rings of brass or similar material screwed upon said end plates, and strips of insulating material fastened to said ring flush with the periphery of the armature.

3. In an electric machine, an armature consisting of plates of soft iron bound together, sections of insulating material secured at the respective ends and flush therewith, constituting corners for the armature over which the wire is wound, and metallic rings to which said insulating material is secured.

4. The combination, with the armature-core, of the ring *d'*, having the lugs *e*, the clips secured to said lugs, and the longitudinal strips *p'*, also secured to said lugs.

5. In an armature for electric machines, a core, inductive wire wound upon the face thereof, a layer of insulating material covering said wire, plates secured to the respective ends of the armature, and flanges upon said plates projecting over the wire and its insulation.

383,660. PLATFORM ADJUSTMENT FOR HARVESTERS. CASPER F. SEARCH, Winona, Minn., assignor to the Winona Harvester Works, same place. Filed Sept. 20, 1887. Serial No. 250,189. (No model.)



Claim.—1. In an elevating harvesting-machine, the combination, with the combined main wheel and elevator-frame, of an elevator, a grain-platform adjustable to be raised or lowered independently of the combined main wheel and elevator-frame, the lower rollers of the elevator being mounted on the grain-platform and movable with the latter, and the upper rollers being mounted in elongated bearings in the combined main wheel and elevator-frame and movable with the grain-platform, and a pivotal grain-receiving board to receive the grain as it is discharged from the elevator, connected with the elevator, to be raised and lowered with the latter to different angles, substantially as described.

2. In an elevating harvesting-machine, the combination, with the combined main wheel and elevator-frame, of an elevator, a grain-platform adjustable to be raised or lowered independently of the combined main wheel and elevator-frame, the lower rollers of the elevator being mounted on the grain-platform and movable with the latter, and the upper rollers being mounted in elongated bearings in the combined main wheel and elevator-frame and movable with the grain-platform, a pivotal grain-receiving board to receive the grain as it is discharged from the elevator, and a pivotal grain-shield overlying the grain-receiving board, both being connected to the upper rollers of the elevator and movable up or down as the latter are moved, substantially as described.

3. In an elevating harvesting-machine, the combination, with the elevator-frame, of an apron-roller having outwardly-tapering laterally-recessed openings in its opposite ends, and journals extending into the said openings and provided with lugs to engage with the recesses therein, and having bearing in the elevator-frame, substantially as described.

4. In an elevating harvesting-machine, the combination, with the elevator-frame, of an apron-roller journaled in removable metal journal-bearings in said frame and having removable journals extending into the ends of the roller, substantially as described.

5. In an elevating harvesting-machine, the combination, with the combined main wheel and elevator-frame, and elevator aprons and rollers, of an apron-roller having a laterally-recessed tapering opening, *h*, in each end, caps P, having laterally-recessed tapering openings *h'*, and secured upon the ends of the roller, canvas-guide bars having hollow heads *k*, and plates *k'*, provided with laterally-recessed openings k^2, shafts Q, having pins *i* near their inner ends and inserted through openings in the side of the elevator-frame into opposite ends of the roller, and flanged boxes Q', surrounding the shafts and secured to the sides of the frame of the elevator, substantially as described.

6. In an elevating harvesting-machine, the combination of a combined main wheel and elevator-frame, A, having slots T and T' in the upper end of its sides, a grain-platform connected with the combined main wheel and elevator-frame, and adjustable thereon, to be raised or lowered, and an elevator having apron-rollers N O bearing on the platform, apron-rollers N' O', supported in the slots T T', and canvas-guide bars R and R' on the inner sides of the frame of the elevator connected at opposite ends, respectively, with the rollers N N' and O O', and an upper and lower apron traveling over said rollers, substantially as described.

7. In an elevating harvesting-machine, the combination of a combined main wheel and elevator-frame, A, having curved slots T, T', and T^2 in the upper ends of its sides, a grain-platform connected with the said frame, and adjustable thereon, to be raised or lowered, an elevator having its lower and upper apron rollers connected by apron-guide bars and supported respectively on the grain-platform and in the slots T and T', a pivotal grain-receiving board, U', pivoted on its opposite sides near its lower edge to the sides of the elevator-frame near one end and axially connected with the upper heads of the lower apron-guide bars at its upper edge, and a pivotal grain-shield, W, hinged at its outer end, having lateral bearings near its middle extending into the slots T^2, and pivotally connected near its opposite sides and near its middle portion with the upper-apron roller, O', of the lower apron, by links *a'*, substantially as described.

8. In an elevating harvesting-machine, the combination, with the elevator aprons and rollers, adjustable to be raised or lowered independently of the combined main wheel and elevator-frame, and with said elevator-frame, of a pivotal grain-receiving board, U', to receive the grain discharged from the elevator, substantially as described.

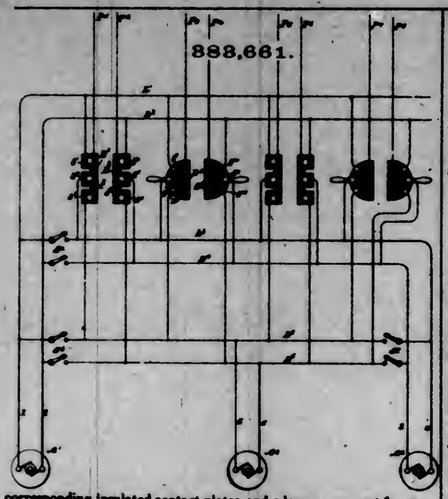
9. In an elevating harvesting-machine, the combination, with the elevator rollers, aprons, and canvas-guide bars, adjustable to be raised or lowered in the elevator-frame independently of the combined main wheel and elevator-frame, and with said elevator-frame, of a pivotal grain-receiving board, U', comprising side plates, U^3, journaled near their lower ends at the sides of the main wheel and elevator-frame, and near their upper ends at the sides into the upper heads of the lower-apron canvas-guide bars, and a board, *e*, secured to the side plates, U^3, and having hinged to its lower end a bar, *g*, substantially as described.

10. In an elevating harvesting-machine, the combination, with the elevator, the rollers, aprons, and guide-bars thereof, being adjustable to be raised or lowered independently of the main frame, of a pivotal grain-receiving board, U', to receive the discharged grain from the elevator-aprons, and a pivotal grain-shield, W, to direct the discharged grain to the receiving-board, both connected with the elevator, to be moved in parallel planes by the raising or lowering movements of the elevator rollers, aprons, and guide-bars, substantially as described.

383,661. CIRCUIT-CONTROLLING APPARATUS FOR ELECTRIC-LIGHTING CIRCUITS. OLIVER B. SHALLENBERGER, Rochester, assignor to George Westinghouse, Jr., Pittsburg, Pa. Filed Mar. 30, 1887. Serial No. 232,667. (No model.)

Claim.—1. A switch or circuit-controlling device consisting of a movable lever, two independent circuit-closing plates upon said lever, two independent series of contact-plates, in contact with which the circuit-closing plates may be respectively placed, individual contact-plates adjacent to the last-named contact-plates, and switch-plugs or circuit-closing devices adapted to place the individual contact-plates in connection with their respective contact-plates at will.

2. A circuit-controlling switch consisting of two independent circuit-closing plates, two independent series of contact-plates, in contact with which the respective circuit-closing plates may be placed, corresponding series of independent contact-plates, one or both of which series are normally electrically insulated from the first-named contact-plates, switch-plugs or circuit-closing devices for completing the connections between any two of the first-named contact-plates and their



corresponding insulated contact-plates, and a lever or support for moving the circuit-closing plates into contact therewith.

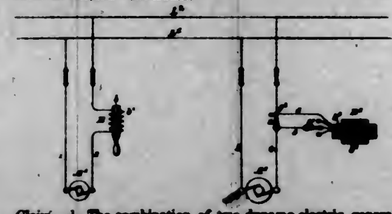
3. In a system of electrical distribution, the combination of an outgoing and return wire, two circuit-closing plates with which said wires are respectively connected, two series of contact-plates arranged in pairs, means for moving said circuit-closing plates into contact with different contact-plates of said series simultaneously, pairs of supply-conductors, and coupling devices for completing the connections of any pair of contact-plates with a corresponding pair of supply-conductors at will, substantially as described.

4. The combination of the switch B, the plates *d* and d^2, carried thereby, the two series of contact-plates b' b^2, &c., and b^3 b^4, &c., and their corresponding plates, b' b^3, &c., and b^2 b^4, &c., and conductors leading from the latter, substantially as described.

5. The combination of the pivoted lever B, the contact-plates *d* and d^2, carried thereby, the contact-plates b' b^2, &c., and b^3 b^4, &c., arranged in curved series, and the corresponding insulated plates with which said plates are respectively adapted to be connected, substantially as described.

6. The combination, with two or more generators, of multiple circuit-closing plates, respectively constituting the terminals of the generators, a series of contact-plates for each of said circuit-closing plates, into contact with which the latter may be moved, a second series of contact-plates, one plate being provided for each of the first-named contact-plates, coupling devices for connecting the second contact-plates with the respective first-named plates, main lines connected with the respective second contact-plates, and independent switches for connecting the generators in multiple-arc circuit.

383,662. COUPLING OF ALTERNATE-ELECTRIC-CURRENT GENERATORS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,494. (No model.)



Claim.—1. The combination of two dynamo-electric generators whose armatures have different amounts of self-induction, a circuit to which they are connected in multiple arc, and a device connected in series with one of the machines having a self-induction approximately equal to the difference of the self-inductions of the armatures.

2. The combination, with two alternate-current electric generators of different capacities for self-induction, of a main line with which they are connected in multiple arc, and an adjustable self-induction device connected in series with one of the machines, substantially as described.

383,668. ARMATURE FOR DYNAMOS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,493. (No model.)

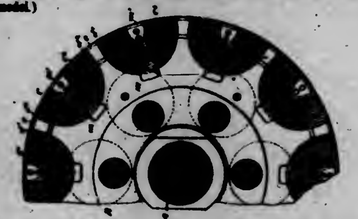


Claim.—1. In the armature of an electric machine, an end clip for receiving the wires, consisting of a metallic frame, and a lining-block of wood or other insulating material fastened into said frame.

2. In an electric machine, an end clip for receiving the armature-wire, consisting of a metallic frame, a lining-block of wood or other insulating material, said block having a lug upon its inner surface, and screws binding the frame and block to the end of the armature.

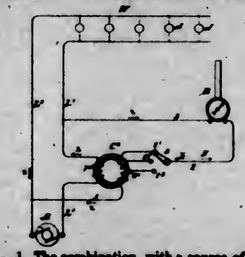
3. In an electric machine, the combination, with the armature-core, of a ring, *d'*, having lugs *e*, an end clip, F, consisting of the frame *f'*, the block *f*, of non-conducting material, having the lug *f'*, and means for fastening the block to a lug, *e*, of said ring, substantially as described.

383,664. ARMATURE FOR ELECTRIC MACHINES. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,495. (No model.)



Claim.—In an armature for electric machines, a core of magnetic material, inductive wire wound in separate sets of convolutions arranged flat upon the face of the armature-core, non-magnetic lugs about which the convolutions are wound, and strips of insulating material separating the outer wires of adjacent sets of convolutions from each other.

383,665. INDICATOR FOR ELECTRIC CIRCUITS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,492. (No model.)



Claim.—1. The combination, with a source of electricity and a work-circuit supplied therefrom, of an electric converter having its primary coil connected in series with the work-circuit and its secondary coil connected in multiple arc therewith, and an electric indicator connected in the circuit of the secondary coil, substantially as described.

2. In an indicator for electric circuits, the combination of a converter having its primary coil adapted to be connected in series with the work-circuit and its secondary coil connected to the terminals of the source of electricity, and an indicator operated by resultant currents traversing the secondary coil of the converter.

3. The combination, with a source of electricity and a work-circuit, of the lines L'-L^2, supplying current thereto, the converter C, having its primary coil *p'* connected in the line L', a circuit including the secondary coil *s'*, means for causing a current to traverse the coils *s'*, which current is dependent upon the difference of potential at the

terminals of the source of electricity and upon the opposing action of the converter, and the indicator B, connected in the circuit of the coils *c'*.

4. In an indicator for electric circuits, a converter having one coil connected in series and the other coil connected in multiple arc with the work-circuit, and an indicator operated by currents traversing the last-named coil, substantially as described.

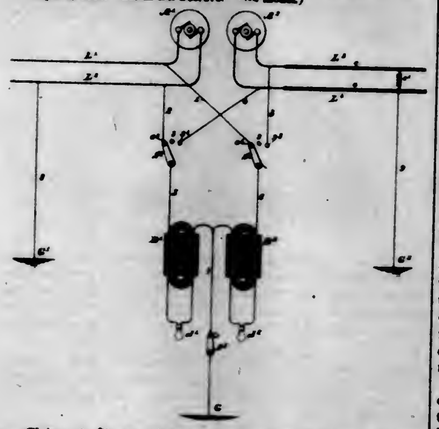
5. In an indicator for electric circuits, the combination of a converter having one coil connected in series and the other in multiple arc with the work-circuit, an indicator operated by currents traversing the latter coil, and means for varying the relative values of the two coils.

6. In an indicator for electric circuits, a converter having a primary coil receiving currents proportionate to the consumption in the work-circuit, and its secondary coil traversed by resultant currents due to the currents induced therein and to currents proportionate to the difference of potential at the terminals of the source, an electric indicating device connected in the secondary circuit, and means for varying the active length of the secondary coil.

7. In an indicator for electric circuits, a converter having a primary coil receiving currents proportionate to the consumption in the work-circuit, and its secondary coil traversed by resultant currents due to the currents induced therein and to currents proportionate to the difference of potential at the terminals of the source, and an electric indicating device connected in the secondary circuit.

383,666. APPARATUS FOR DETECTING GROUND-CONNECTIONS IN ELECTRIC CIRCUITS.

OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,670. (No model.)

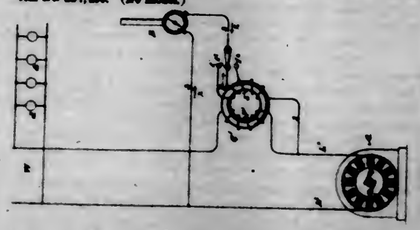


Claim.—1. The combination, with a source of alternating electric currents and lines leading therefrom, of two electric converters, conductors derived from said lines respectively and including such converters and leading to the earth, and an indicating device connected in the secondary circuit of each of said converters.

2. The combination, with a source of alternating electric currents and underground metal-covered lines leading from the respective poles thereof, of two electric converters, means for placing the same in circuit between the respective lines and the earth, and indicating devices connected in the secondary circuits of the respective converters.

383,667. METHOD OF INDICATING ELECTRIC CURRENTS.

OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Original application filed Sept. 1, 1887, Serial No. 248,669. Divided and this application filed Dec. 9, 1887. Serial No. 257,409. (No model.)



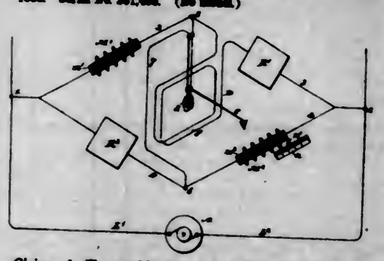
Claim.—1. The hereinbefore-described method of indicating the difference of potential upon an electric circuit, which consists in introducing in the circuit of an indicator deriving currents from the said circuit an opposing electro-motive force which is approximately proportional to the current in the work-circuit.

2. The hereinbefore-described method of indicating the difference of potential existing upon an electric circuit, which consists in introducing into an indicating-circuit traversed by electric currents an opposing electro-motive force, the amount of which is proportional to the current delivered to the work-circuit and approximately proportional to the fall of potential due to the transmission to the work-circuit.

3. The hereinbefore-described method of indicating the difference of potential at the work-circuit of a system of electric distribution, which consists in deriving a current proportional to the difference of potential at the source of currents and in opposing thereto an electro-motive force proportional to the current delivered to the work-circuit, substantially as described.

383,668. ELECTRICAL INDICATOR FOR ALTERNATING ELECTRIC CURRENTS.

OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Jan. 21, 1888. Serial No. 261,402. (No model.)



Claim.—1. The combination of an indicator acted upon by variations in alternating, intermittent, or pulsatory electric currents to indicate such currents, two self-induction devices and two resistances respectively in branch circuits spanning one of said self-induction devices and said indicator and the other of said induction devices and the indicator.

2. The combination of two branch conductors, a self-induction device and a resistance in one branch, the former being adjacent to the branching-point, a self-induction device and a second resistance in the other branch, the latter being adjacent to said branching-point, a conductor uniting points in the respective branches between the corresponding self-induction devices and resistance, and an electric indicator operated by alternating, intermittent, or pulsatory currents connected in the last-named conductor.

3. An indicator for alternating, intermittent, or pulsatory electric currents, consisting of the combination, with the lines L' and L², of the conductors 3 and 4, leading from the points 1 and 2 in the respective lines, the self-induction device M' and the resistance R' in one of said conductors, the induction device M² and the resistance R² in the other of said conductors, a conductor, 7, connecting the conductors 3 and 4 at points 5 and 6, the coil *d* in the conductor 7, and the coil *f*, included in a portion of the circuit receiving currents constant in their relative direction with reference to the circuit L' L².

4. An indicator for alternating, intermittent, or pulsatory electric currents, consisting of a movable and a fixed coil in inductive relation to each other, a Wheatstone bridge, in the bridge-conductor of which one of said coils is situated, a self-induction device and a resistance in one arm of the Wheatstone bridge, and upon opposite sides of the point at which the bridge-conductor is united therewith, a resistance in a portion of the other arm which spans the coil thus situated and said self-induction device, and a second self-induction device in a portion of the second arm spanning said coil and the first-named resistance.

5. The combination, with the main-line conductors of a system of electric distribution, of an electric indicator for alternating, intermittent, or pulsatory electric currents, consisting of a movable and a fixed coil in inductive relation to each other, two self-induction devices, a conductor in which they are connected, devices for opposing the flow of current, respectively connected, one in a branch circuit spanning one of said indicating-coils and one of said self-induction devices and the other in a branch circuit spanning the last-named indicating-coil and one of said self-induction devices, and a conductor including the other indicating-coil leading to points in the respective main-line conductors, substantially as described.

6. The combination, with an electric circuit, of an electric indicator operated by alternating, intermittent, or pulsatory currents traversing its coils, a conductor connecting points of different potential in said circuit, a self-induction device and a resistance located in said conductor, a second conductor connecting said points, a resistance and a self-induction device connected in the last-named conductor, the resistance being adjacent to the point to which the first-named self-induction device is adjacent, one of said self-induction devices being adjustable with reference to its self-inductive capacity, and a bridge-conductor uniting points of normally-equal potential in said conductors, in which said indicator is included.

7. The combination of a source of intermittent, alternating, or pulsatory electric currents, an electric circuit arranged as a Wheatstone bridge, an indicating-coil connected across said bridge, and a second coil in proximity to the first, connected independently thereof to the source of current.

8. The combination of a source of alternating, intermittent, or pulsatory electrical currents, an electrical circuit arranged as the arms of a Wheatstone bridge, and an indicator therefor, consisting of two coils, one connected across the points of equal potential thereof, and the other connected independently to the source of current.

9. An indicator for alternating, intermittent, or pulsatory electrical currents, consisting of two resistance-circuits having points of equal normal difference of potential, an indicating-coil connected between said points, and a second coil establishing a field of force connected in circuit between points at which the direction of flow of current is independent of the direction of flow of the current in the resistance-circuits.

10. The combination of a circuit traversed by alternating, intermittent, or pulsatory currents, two branch circuits connected therewith and adapted to vary their relative distribution of difference of potential under variations in the difference of potential of the main circuits, a coil of wire connected across two intermediate points on said branch circuits, a second coil connected in shunt to the main circuit, and an indicating device affected by the combined currents in the two coils.

383,669. ELECTRICAL INDICATOR.

OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Jan. 21, 1888. Serial No. 261,467. (No model.)

Claim.—1. The combination of an electrical indicator for alternating, intermittent, or pulsatory electric currents and a conductor of high self-inductive qualities whose coefficient of self-induction decreases with an increase of applied potential in circuit with such indicator, whereby the sensitiveness of the instrument is increased.

2. The combination of an electric indicator for alternating, intermittent, or pulsatory electric currents and an adjustable self-inductive device whose coefficient of self-induction decreases with an increase of applied potential in circuit with said indicator, whereby the sensitiveness of the instrument is increased.

3. An electric indicator for alternating, intermittent, or pulsatory electric currents, consisting of an indicating device acted upon by electric currents, a self-inductive device, and an adjustable resistance in circuit therewith.

4. An electric indicator for alternating, intermittent, or pulsatory electric currents, consisting of an indicating device affected by such currents, and two or more self-inductive devices having different coefficients of self-induction in circuit therewith.

383,670. ELECTRICAL INDICATOR.

OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Jan. 21, 1888. Serial No. 261,468. (No model.)

Claim.—1. The combination of an electric conductor, branch circuits for the same, a self-induction device in one branch, a resistance included in the other branch, opposing solenoids included in the respective branches, and an indicator acted upon by alternating, intermittent, or pulsatory electric currents traversing said solenoids.

2. An electric indicator consisting of two branch circuits, a self-induction device in one branch, means for balancing the normal apparent resistance of the self-induction device in the other branch, two opposing solenoids in the respective branches, and an indicator for alternating, intermittent, or pulsatory electric currents, to which said solenoids are applied.

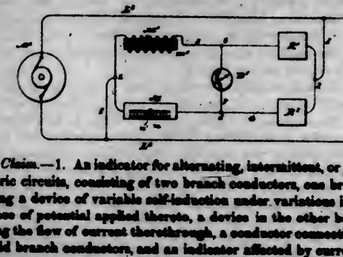
3. An electric indicator for alternating, intermittent, or pulsatory electric currents, consisting of two branch circuits, a self-induction device in one branch, means for balancing the normal apparent resistance of the self-induction device in the other branch, two opposing solenoids in the respective branches, an indicator to which said solenoids are applied, and an adjustable resistance connected in the conductor leading to said branch circuits.

4. The combination of a source of alternating, intermittent, or pulsatory electric currents, conductors L' and L², leading therefrom, a conductor, 4, leading from the conductor L' to the conductor L², and having a portion of its length divided in branches *l* and *l'*, a self-induction device included in one branch, and a resistance, R', included in the other branch, substantially as described.

5. An electrical indicator for alternating, intermittent, or pulsatory electric currents, consisting of an indicating device having differential coils, and two reactive coils of unlike self-induction connected in circuit with the respective coils of the indicator.

383,671. ELECTRICAL INDICATOR.

OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Jan. 21, 1888. Serial No. 261,470. (No model.)



Claim.—1. An indicator for alternating, intermittent, or pulsatory electric circuits, consisting of two branch conductors, one branch containing a device of variable self-induction under variations in the difference of potential applied thereto, a device in the other branch opposing the flow of current therethrough, a conductor connecting points in said branch conductors, and an indicator affected by currents traversing said connecting conductor, substantially as described.

2. An indicator for alternating, intermittent, or pulsatory electric circuits, consisting of a conductor having two branches, self-induction devices included in the respective branches, an indicating device included in a conductor uniting the two branches, and resistance devices included in the respective branches in shunt-circuit upon the respective self-induction devices and the indicating device.

3. An indicator for alternating, intermittent, or pulsatory electric circuits, consisting of an electric conductor having two branches, a self-induction device and an artificial resistance included in one branch, two resistance devices included in the other branch, an electric conductor uniting intermediate points in the two branches, and an indicating device in the last-named conductor.

4. An indicator for alternating, intermittent, or pulsatory electric circuits, consisting of an electric conductor having two branches, a self-induction device and an artificial resistance included in one branch, a second resistance and an adjustable resistance device included in the other branch, an electric conductor uniting intermediate points in the two branches, an indicating-coil in the last-named conductor, and a second indicating-coil included in the first-named conductor and applied to the other indicating-coil, substantially as described.

5. In an indicator for alternating, intermittent, or pulsatory electric currents, the combination of the conductor *l*, having branches 3 and 4, the conductor 7, uniting said branches, the indicator D', included in the conductor 7, a self-induction device, M', included in the branch 3, a device in the corresponding conductor, 4, whose rate of change of apparent resistance is different from that of the device M', and means for causing a current to pass through the conductor 7 in one direction or the other, accordingly as the counter electro-motive force of the device M' rises above or falls below that of the corresponding device in the conductor 4.

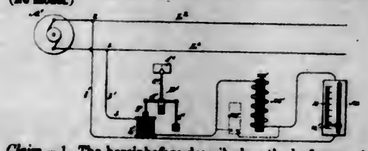
6. An indicator for periodically-variable currents, consisting of two circuits of approximately constant specific resistance having points of equal normal difference of potential, a coil of self-induction included in one of said circuits, and an indicator connected between the points of equal potential.

7. The combination of the circuit traversed by variable electrical currents, two circuits connected in shunt thereto, of approximately constant specific resistance, a coil of self-induction included in one of said circuits adapted to vary the distribution of differences of potential in its circuit under variations of difference of potential in the main circuit, and an indicator connected to a point in each of said shunt-circuits.

8. An indicator for alternating, intermittent, or pulsatory electric circuits, consisting of two circuits in multiple arc, one of which contains a coil of self-induction adapted to vary the distribution of differences of potential on said circuits under variations of difference of potential applied thereto, and an indicating device connected across said circuits to indicate such variations of potential.

9. The combination of a source of alternating, intermittent, or pulsatory electric currents, an electrical circuit arranged as the arms of a Wheatstone bridge, one of said arms including a portion having a variable self-induction under variations of current traversing it, and an indicator connecting two intermediate points in said circuits.

383,672. METHOD OF INDICATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Jan. 21, 1888. Serial No. 261,471. (No model.)



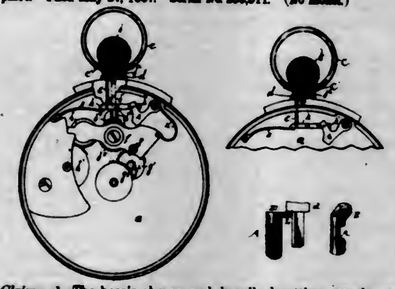
Claim.—1. The hereinbefore-described method of measuring the difference of potential existing between two points in an electric circuit for alternating, intermittent, or pulsatory electric currents, which consists in determining the amount of resistance required in a circuit of high self-induction through which said points are connected to establish a definite current therein.

2. The hereinbefore-described method of determining the variations in the difference of potential between two points in an electric circuit for alternating, intermittent, or pulsatory electric currents, which consists in establishing in the circuit connecting said points a high self-induction and indicating the variations of current passing through such circuit of high self-induction, substantially as described.

3. The hereinbefore-described method of indicating the difference of potential between two points in an electric circuit for alternating, intermittent, or pulsatory electric currents, which consists in establishing a definite current through a circuit of high self-induction, connecting the points by varying an adjustable resistance connected in the circuit, and noting the amount of such variations.

4. The hereinbefore-described method of indicating the difference of potential between two points in an electric circuit for alternating, intermittent, or pulsatory electric currents, which consists in establishing a difference of potential at the terminals of a coil of high self-induction which derives current from that circuit and in adding the difference of potential at the terminals of an adjustable resistance connected in the same circuit.

383,673. STEM WINDING AND SETTING WATCH. WILLIAM H. STEVENS, Buffalo, N. Y., assignor of one-half to Henry K. Stevens, same place. Filed May 27, 1887. Serial No. 239,511. (No model.)



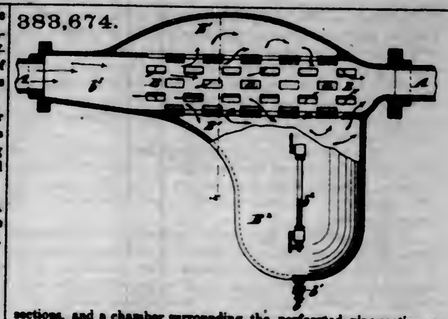
Claim.—1. The herein shown and described setting attachment for watch-movements, consisting of the combination, with tilting lever or yoke *f*, of the plunger *e*, spring *s*, and levers *k* and *r*, all substantially as shown, and for the purposes set forth.

2. In a pendant setting attachment for watch-movements provided with a tilting lever or yoke, *f*, and revolving crown *b*, having notched arbor *b'*, the herein shown and described plunger *e*, actuated by the revolving crown *b*, and adapted to force a tilting lever, thereby throwing the setting mechanism into gear, as and for the purposes set forth.

383,674. SEPARATOR. GERLAIR STUART, Plainfield, N. J. Filed Dec. 20, 1887. Serial No. 258,468. (No model.)

Claim.—1. The separator herein described, consisting of a steam-pipe section or passage which is perforated or formed with lateral openings, and with the ends of which are connected the steam-pipe

383,674.



sections, and a chamber surrounding the perforated pipe-section or passage, and which is constructed to form a well for receiving water and oil, substantially as herein set forth.

2. The combination, with the pipe-sections A, of the separator, comprising the pipe-section or passage B, larger in diameter than the sections A, and having lateral perforations or openings, the chamber B', surrounding the pipe-section or passage B, and the well B'', for receiving the water and oil, and provided with an outlet-pipe therefor, substantially as herein set forth.

383,675. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. EDWARD P. THOMPSON, Elizabeth, N. J. Filed Jan. 28, 1887. Serial No. 225,117. (No model.)



Claim.—1. The hereinbefore-described method of manufacturing incandescent electric lamps, which consists in attenuating the atmosphere within the globe and heating the leading-in wires independently of the filament to a higher temperature during the process of evacuating than they are heated after the lamp is sealed.

2. The hereinbefore-described method of manufacturing incandescent electric lamps, which consists in exhausting the globe and in heating the leading-in wires and their joints independently of the filament during the process of evacuating to a temperature greater than that which they acquire while the lamp is normally operated.

3. The hereinbefore-described process of manufacturing incandescent electric lamps, which consists in passing a current through each leading-in wire independently of the other and independently of the filament, thereby heating the same to an abnormal temperature during the process of evacuating and thereby expelling the gases therefrom.

4. In an incandescent electric lamp, a filament and two leading-in wires extending from each terminal thereof through the walls of the globe, forming four independent exterior terminals.

5. In an incandescent electric lamp, the combination, with the filament, of a double leading-in wire for each terminal of the filament, the respective arms of which are in electrical connection only at the joint.

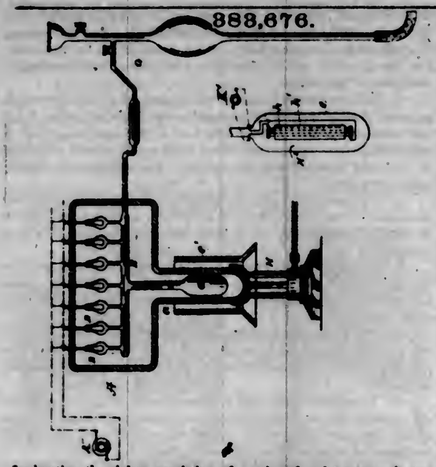
6. In an incandescent electric lamp, the combination, with the filament, of a double leading-in wire for each terminal, and a loop at each end of each leading-in wire formed by passing the ends of the wire back through the wall of the globe.

7. The hereinbefore-described process of expelling the atmosphere from the leading-in wires of a filament, which consists in heating to incandescence the portions of the wires within the globe independently of the filament and independently of the wire passing through the wall of the globe.

383,676. EVACUATING ELECTRIC LAMPS. EDWARD P. THOMPSON, Elizabeth, N. J. Filed Apr. 15, 1887. Serial No. 234,902. (No model.)

Claim.—The combination, with a vacuum apparatus and a series of incandescent-electric-lamp globes connected therewith, of a device

383,676.

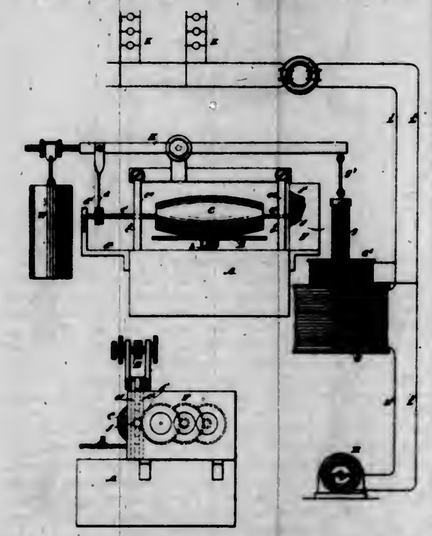


for heating the globes, consisting of a series of resistance-conductors, an evacuated chamber connected with the globes containing the conductors, and means for placing the conductors in an electric circuit.

383,677. GALVANIC-BATTERY FLUID. HANS J. VON HEIDRAPP, New York, N. Y. Filed Sept. 27, 1887. Serial No. 250,857. (No specimens.)

Claim.—A solution for galvanic batteries, composed of four hundred cubic centimeters of sulphuric acid, two hundred of water, two hundred of nitric acid reduced to forty per cent., and one hundred grams of bichromate of potash, as set forth.

383,678. ELECTRIC METER. GEORGE WESTINGHOUSE, Jr., Pittsburg, Pa. Filed June 16, 1887. Serial No. 241,492. (No model.)



Claim.—1. The combination, with a revolving plane, of a spheroidical roller in frictional contact with the face thereof, registering mechanism receiving its motion through said contact, and means for adjusting the angular position of the axis of said roller with reference to the plane of the disk in accordance with variations in the force to be measured.

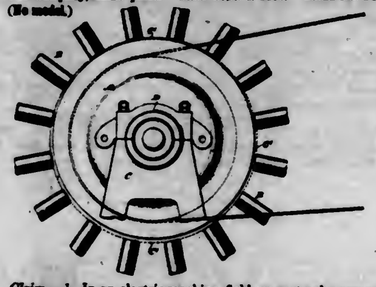
2. In a meter, the combination, with a revolving plane, of a spheroidical roller in frictional contact with the face thereof, and means for varying the angular position of the axis of said roller with reference to the plane of the disk, thereby causing the point of contact to be moved toward and from the center of revolution of said plane.

3. In a meter, the combination, with the revolving disk B, of the spheroidical roller C, in frictional contact with the face of said disk, the stirrup *d*, supporting one end of the axis of said roller, and means for raising and lowering said end through said stirrup by variations in the force to be measured.

4. The combination of a revolving plane, a spheroidical roller in frictional contact with the face thereof, a magnetizing solenoid and core movable with relation to each other under the influence of an electric current, and means for communicating movements thus produced to the roller, thereby changing its point of contact with the revolving plane.

5. The combination of a revolving plane, spheroidical roller in frictional contact with the face thereof, guides for retaining the axis of the roller in a plane perpendicular to the axis of revolution of said plane, and mechanism actuated by electricity for moving said axis in said perpendicular plane.

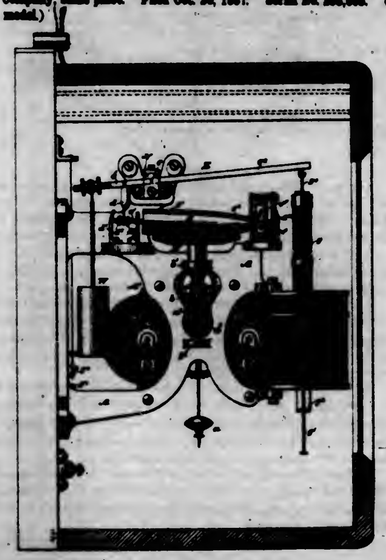
383,679. MOUNTING ARMATURES OF DYNAMOS. GEORGE WESTINGHOUSE, Jr., Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Sept. 1, 1887. Serial No. 248,488. (No model.)



Claim.—1. In an electric machine, field-magnet poles arranged in a circular series and an armature mounted upon its bearings with its axis of revolution eccentric with reference to the circle of the field-magnet poles, whereby the pressure of the armature upon its bearings is opposed by the excess of the magnetic attraction exerted by the nearer poles of the field-magnets.

2. In an electric machine, the combination, with the field-magnet poles arranged in a circular series, of an armature having its axis of revolution eccentric with reference to the circle of said poles, being located in a plane constituting a continuation of the plane of resultant pull of the force of gravity and the tension of the driving-belt of the machine beyond the center of the series of field-magnet poles.

383,680. ELECTRIC METER. GEORGE WESTINGHOUSE, Jr., and PHILIP LARNE, Pittsburg, Pa., assignors to the Westinghouse Electric Company, same place. Filed Oct. 20, 1887. Serial No. 252,602. (No model.)



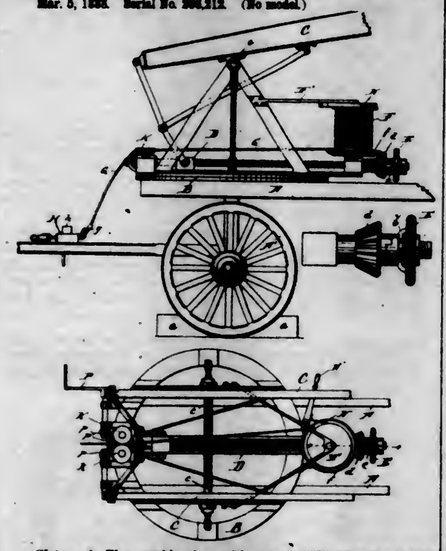
Claim.—1. In an electric motor, the combination of a friction-roller, a revolving disk against the face of which the roller rests, registering mechanism receiving motion through said roller, and means for automatically modifying the angle of the axis of said roller with reference to the surface of the disk in accordance with variations in the force to be measured, said roller being of gradually-diminishing cross-section through the portion adjacent to the center of the revolving surface and one end and approximately straight through its remaining portion.

2. In an electric motor, the combination, with a flat revolving surface, of the roller in frictional contact therewith, said roller being of gradually-diminishing cross-section from the center to one end, a lever operated by variations in the current, a stirrup connecting one arm of said lever with the axis of said roller, the point of attachment with the axis being adjustable, a registering device, and a pinion carried by said axis and communicating motion to the registering device.

3. In an electric motor, the combination of the clock-movement, the revolving disk B, the roller C, resting thereon, and the curved plates d' d^2 at the respective ends of the axis of said roller for preventing it from undue longitudinal movement, substantially as described.

4. In an electric motor, the combination, with the rocking roller C and the revolving disk B, upon which the roller rests, of the axis for said roller, the guide-plates at the respective ends of the axis, a pinion upon said axis between the rollers and one of said guide-plates, and a registering mechanism geared with said pinion.

383,681. TURN-TABLE EXTENSION-LADDER TRUCK. REDMOND ARCOCK, Chicago, Ill., assignor to Everett R. Preston, same place. Filed Mar. 5, 1888. Serial No. 266,212. (No model.)



Claim.—1. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith and a draft line or cable whereby horse-power may be applied for raising the ladder, substantially as specified.

2. The combination, with a turn-table extension-ladder truck, its pivoted main ladder, and screw raising mechanism, of a winding-drum geared to said screw and a draft-cable, substantially as specified.

3. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith, and a draft line or cable whereby horse-power may be applied for raising the ladder, and shoes for blocking the wheels of the truck, substantially as specified.

4. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith, and a draft line or cable whereby horse-power may be applied for raising the ladder, and a brake for controlling the motion of the ladder, substantially as specified.

5. The combination, with a turn-table extension-ladder truck, its pivoted main ladder, and screw raising mechanism, of a winding-drum geared to said screw, a draft-cable, and guide-pulleys for said cable, substantially as specified.

6. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith, and a draft line or cable whereby horse-power may be applied for raising the ladder, and a clutch device for connecting and disconnecting said winding-drum with said raising mechanism, substantially as specified.

7. The combination, with a wheeled truck, of a pivoted structure mounted thereon, a screw raising mechanism mounted on said truck and connected to said pivoted structure, a winding-drum geared to said raising-screw, and a draft line or cable wound around said drum for revolving the same, and thus operating the raising-screw, substantially as specified.

8. The combination, with a wheeled truck, of a pivoted structure mounted thereon, a screw for raising the same, a winding-drum geared to said screw, a clutch, and a draft line or cable, substantially as specified.

9. The combination, with a wheeled truck, of a pivoted structure mounted thereon, screw raising mechanism, a winding-drum geared to said screw, and a draft-line and guide-pulleys, substantially as specified.

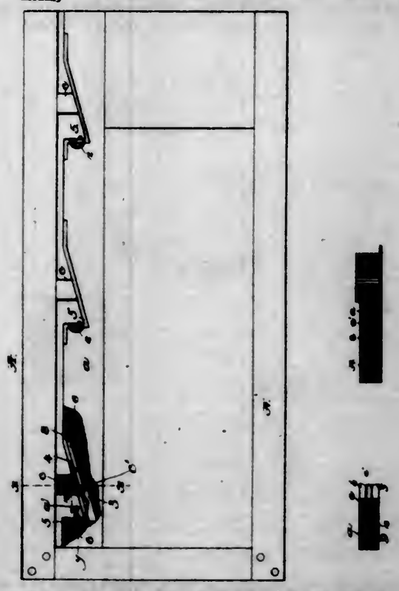
10. The combination, with a wheeled truck, of a pivoted structure mounted thereon, screw raising mechanism, a winding-drum connected with said screw, a draft line or cable, and a brake, substantially as specified.

11. The combination, with a wheeled truck, of a pivoted structure mounted thereon, screw raising mechanism, a winding-drum connected with said raising-screw, a draft line or cable, and devices for blocking the wheels of the truck, substantially as specified.

12. The combination, with a wheeled truck, of a turn-table, a pivoted ladder, screw raising mechanism, a winding-drum, a draft-cable, gears connecting said winding-drum and screw, a brake-shoe, and brake-lever, substantially as specified.

13. The combination, with truck A, of turn-table B, ladder C, screw D, having splined sliding gear d, spring d^2, and cam-wheel E, winding-drum F, having gear f, draft-cable G, and brace-arm F', substantially as specified.

383,682. SIDE-STICK FOR PRINTERS' GALLEYS. EDWARD P. ALLEN, Boston, Mass. Filed June 30, 1887. Serial No. 243,726. (No model.)



Claim.—1. A removable side-stick for a printer's galley, it having one or more openings or recesses having an inclined side provided with a groove, and a wedge-block, as a, connected with the side-stick, and so adapted to be locked in the recess that its contact-face will be flush with the side-stick, and moving upon the inclined side as a guideway, the flat face of the wedge-block being adapted to bear upon the side of the galley directly, substantially as described.

2. A side-stick for a printer's galley, it having one or more openings or recesses having an inclined grooved side, and a wedge-block, as a, connected permanently with the side-stick, and moving upon the inclined side as a guideway, the inclined face of the block a engaging the said groove, a stop or cheek, b, and a spring-latch c, substantially as and for the purpose specified.

3. A side-stick for a printer's galley, it having one or more openings or recesses having an inclined side, and a wedge-block, as a, connected with the side-stick, and moving upon the inclined side as a guideway, and a catch, b, to engage and hold said wedge-block when the latter is in the deeper part of the recess, and a releasing device, 12, therefor, substantially as and for the purpose specified.

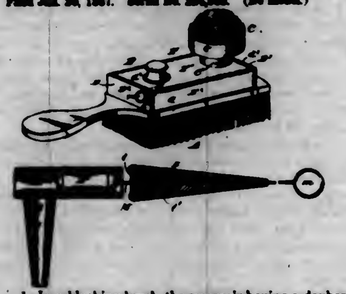
383,683. WASHING-MACHINE. JOHN H. ALLEN, Keyser, W. Va. Filed Dec. 5, 1887. Serial No. 257,057. (No model.)



Claim.—1. As an improvement in washing-machines of the class herein described, the revolving cylinder or receptacle having a removable section and deflectors, the ends or heads of said cylinder or receptacle and the sides of the deflectors being provided with circular detents or recesses and the cubes, substantially as shown and described.

2. The combination, with the box or tub, of the cylinder or receptacle, the operating-shaft, the agitating-paddles, the deflectors, and the grooved cubes, the said paddles and deflectors and the ends or heads of the cylinder or receptacle being provided with circular detents or recesses, substantially as shown, and for the purpose stated.

383,684. BLACKING-BRUSH. WILLIAM H. BAKER, Dennison, Ohio. Filed Jan. 30, 1887. Serial No. 225,993. (No model.)



Claim.—1. In a blacking-brush, the reservoir having a dauber attached thereto, the tube K, the tube I, connected with the tube K and extending into the dauber, and the valve M', combined with funnel-shaped tube L, having cap l and packing l', and the valve-rod M, passing through said tube, the packing l' being adapted to prevent the blacking from escaping through the opening d^4 for the said rod, substantially as described, for the purpose set forth.

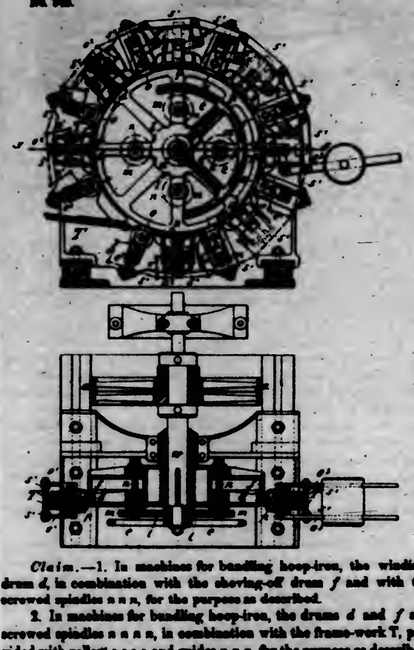
2. In a blacking-brush, the reservoir having a dauber attached thereto, the tube K, the tube I, to carry the blacking from the interior tube, K, to the dauber, the valve M' in the tube K, combined with the tube L, the larger end of which is placed a short distance from one end of the tube K, and the small end of which is passed through an opening, d^4, in the end of the reservoir, the rod M, connected with the valve M', and passing through the tube L and inclosed in the packing l' therein, and the cap or head l, to hold said packing in the tube, all substantially as described, for the purpose set forth.

383,685. NUT-LOCK. JAMES P. BALL, Philadelphia, Pa. Filed Sept. 26, 1887. Serial No. 250,257. (No model.)



Claim.—A nut-fastener consisting of a spring-piece having an eye coinciding with the periphery of the bolt near its center and on one side thereof, and having one of its ends projecting upward and the other end projecting downward, the sides of said ends being opposite the eye and so located in relation to the bolt as to prevent the disengagement of the said piece laterally from the bolt, substantially as described.

383,686. MACHINE FOR BUNDLING HOOP-IRON. WILHELM RASSEN, Kettwerbe, Prussia, Germany. Filed Mar. 16, 1886. Serial No. 295,407. (No model.) Patented in Germany June 10, 1887, No. 42,695; in England July 4, 1887, No. 9,467; in Belgium July 4, 1887, No. 76,696; in France July 4, 1887, No. 184,907, and in Luxemburg Jan. 13, 1888, No. 562.



Claim.—1. In machines for bundling hoop-iron, the winding-drum d, in combination with the shoving-off drum f and with the screwed spindles n n n, for the purpose as described.

2. In machines for bundling hoop-iron, the drums d and f and screwed spindles n n n n, in combination with the frame-work T, provided with rollers o o o o and guides p p p, for the purpose as described.

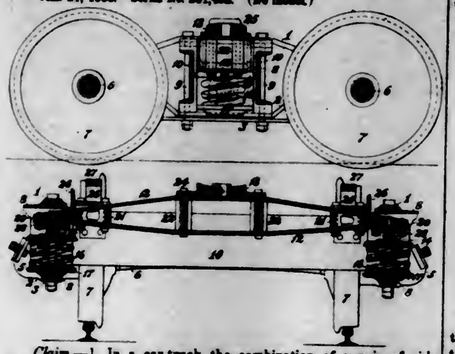
3. In machines for bundling hoop-iron, the winding-drum d, in combination with the shoving-off drum f, the screwed spindles n n n, and the frame-work T, provided with rollers o o and guides p p, arranged elastically to the frame, with the levers d' d' d', connected by links d, for the purpose as described.

383,687. CORSET. FREDERICK A. RABATTE, Philadelphia, Pa. Filed Mar. 12, 1887. Serial No. 230,623. (No model.)



Claim.—An anatomical corset consisting of a body having secured thereto and within the same, at a place corresponding to the place of defect in the body of the wearer thereof, a strap of fixed length secured at both ends by a row of stitching, (the position and length of said strap being determined by the character of the defect in the body of the wearer,) the said corset-body having opposite to the strap and on the inner wall thereof horizontal stays, said parts being combined substantially as and for the purpose set forth.

383,688. CAR-TRUCK. JOHN C. BARBER, St. Paul, Minn. Filed Jan. 21, 1888. Serial No. 261,662. (No model.)



Claim.—1. In a car-truck, the combination of a pair of side frames, an end casting secured centrally between the journal-boxes of each of said frames, and transoms secured to said end castings independently of and without bearing against the side frames, substantially as set forth.

2. In a car-truck, the combination of a pair of side frames, an end casting secured centrally between the journal-boxes of each of said frames and provided with lateral flanges, and transoms fitting against and secured to the end castings between the flanges thereof, substantially as set forth.

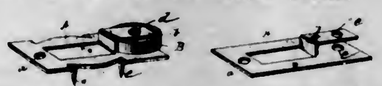
3. In a car-truck, the combination of a pair of side frames, an end casting secured centrally between the journal-boxes of each of said frames, springs supported within said end castings, a swing beam or bolster supported by said springs, and transoms secured to the end castings independently of and without bearing against the side frames, substantially as set forth.

4. In a car-truck, the combination of a pair of side frames, a frame or box-shaped end casting interposed centrally between the journal-boxes of and secured to each of said frames, a spring or group of springs supported within each of said end castings, a spring-cap resting upon the top of each spring or series of springs, a roller-bearing fitting a seat in each of said spring-caps, and a bolster resting at its ends upon said roller-bearings, substantially as set forth.

5. In a car-truck, the combination of a pair of side frames, a frame or box-shaped end casting secured centrally between the journal-boxes of each of said frames, a spring or group of springs supported within each of said end castings, a bolster supported with the capacity of free lateral movement upon bearings on said springs or groups of springs, and side-motion stops secured to the bolster in position to abut against the end castings at the limits of the lateral movements of the bolster, substantially as set forth.

6. In a car-truck, the combination of a bolster formed of a pair of arched or bent plates connected at their ends, thimbles provided with lateral chafing-plates interposed between and secured to the bolster-plates, and side bearing and lateral motion stop-castings secured to the chafing-plate thimbles and bolster-plates, substantially as set forth.

383,689. ANTI-FRICTION ROLLER FOR DRAWERS. JOHN BARR, Rochester, N. Y., assignor of one-half to Lewis C. Tower, same place. Filed Dec. 20, 1887. Serial No. 258,497. (No model.)

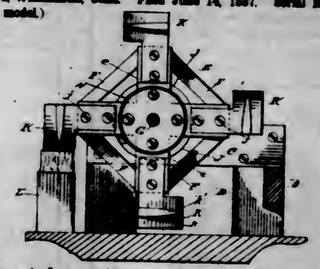


Claim.—1. The combination, with a base-plate having portions thereof bent out at substantially right angles thereto to form holding projections or points and a portion bent over parallel with said base-plate, of a roller between said bent-over portion and base-plate, and a pivot for said roller carried by the bent-over portion and base-plate, respectively, substantially as described.

2. In an anti-friction roller for drawers, the combination, with the extended base-plate having a portion thereof bent over substantially parallel therewith at one end, of a roller located between said bent-over portion and base-plate, the pivot therefor being held by said bent-over portion and base-plate, respectively, substantially as described.

3. In an anti-friction roller for drawers, the combination, with the extended base-plate having a tongue cut out of the center of the same and bent over parallel therewith at one end, of a roller located between said bent-over portion and base-plate, the pivot therefor being held by said bent-over portion and base-plate, respectively, substantially as described.

383,690. MACHINE FOR SPLITTING WOOD. CHARLES H. BARROWS, Willimantic, Conn. Filed June 14, 1887. Serial No. 241,258. (No model.)



Claim.—1. In a machine for splitting fire-wood, a vertically-rotating wheel supported on a suitable shaft and a series of cutters fixed to the wheel at suitable intervals from each other and projecting beyond the periphery thereof, each cutter consisting of two blades, which are arranged substantially at right angles to each other, and all the cutters facing in the same direction around the wheel, as and for the purpose described.

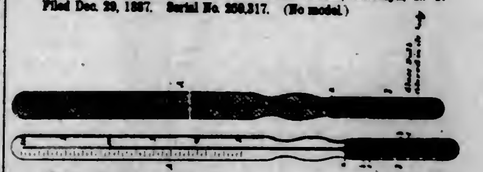
2. In a machine for splitting fire-wood, the combination of a vertically-rotating wheel supported on a horizontal shaft, a series of two-part cutters projecting radially from the wheel at suitable distances from each other, and a stationary block disposed in advance of said wheel and at one side of the path of the cutters, as and for the purpose described.

3. In a machine for splitting fire-wood, a vertically-rotating wheel carrying a series of spaced two-part cutters, one of the blades of each cutter being arranged at right angles to and projecting centrally from one of the lateral faces of the other blade of said cutter, as and for the purpose described.

4. In a machine for splitting fire-wood, a vertically-rotating wheel carrying a series of fixed two-part cutters which project beyond the periphery of the wheel at suitable intervals, one of the blades, *k*, of each cutter having one of its lateral faces inclined to the other face thereof, and the other blade, *k'*, of said cutter fitting snugly against the inclined lateral face of the other blade and projecting centrally therefrom, the cutting-edges of both blades lying in the same plane, as and for the purpose described.

5. In a machine for splitting fire-wood, a vertically-rotating wheel hung upon a suitable shaft and having a series of radial arms, each provided with a longitudinal socket which opens through the outer extremity and one of the lateral faces of the arm, in combination with a series of two-part cutters which are arranged at points beyond the periphery of the wheel, and each cutter having an extended shank which fits snugly in the socket of the arms, and means for detachably securing the cutters to the arms of the wheel, as and for the purpose described.

383,691. THERMOMETER. ADOLPH BAYER, Brooklyn, N. Y. Filed Dec. 29, 1887. Serial No. 259,317. (No model.)



Claim.—1. A thermometer having a transparent glass tube and a bulb of glass colored in its body, substantially as shown and described.

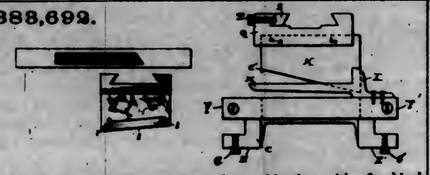
2. A thermometer having a transparent glass tube and a bulb of glass having transparent portions *b* and portions *c*, colored in their body, substantially as shown and described.

383,692. PAPER-CUTTING MACHINE. CHARLES BOSE, Philadelphia, Pa. Filed June 11, 1887. Serial No. 241,062. (Model.)

Claim.—1. In a paper-cutting machine, the combination of a die and a knife having a hooked cutting-edge at its side, as and for the purpose set forth.

2. In a paper-cutting machine, the combination of a knife, a die provided with a slot for the knife, and a forked guide above the slot, the arms of the fork extending parallel to the plane of the slot, and a grooved upward extension to the fork, said extension engaging the knife throughout its entire path of movement, as set forth.

383,692.

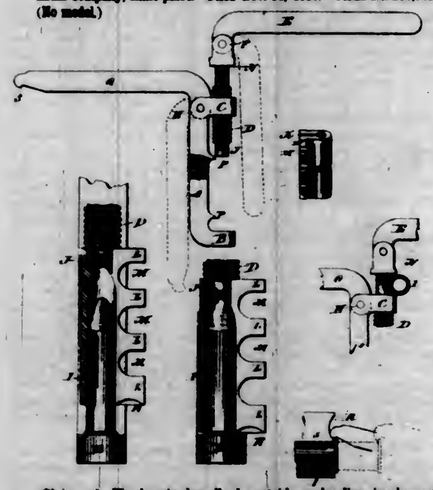


3. In a paper-cutting machine, the combination, with a fixed bed provided with parallel transverse ways and a die provided with a slot to receive the corner-cutting knife and mounted upon said ways, of a reciprocating frame provided with a guide-rail and the herein-described knife for cutting off corners, mounted upon said guide-rail and provided with two cutting-edges and a clearing-edge, the cutting-face being beveled away from said edges, whereby the portion of the material cut off by the knife is forced through the die, substantially as described.

4. In a paper-cutting machine, the combination, with a reciprocating knife, of a die provided with a slot or opening for the knife and a forked knife-guide carried by the die, the arms of the fork extending parallel to the plane of the slot and adapted to engage the opposite side faces of the knife, substantially as described.

5. In a paper-cutting machine, a knife formed of a single piece of metal, having two cutting-edges and a clearing-edge, the cutting-face being beveled away from said cutting-edges, substantially as herein shown and described.

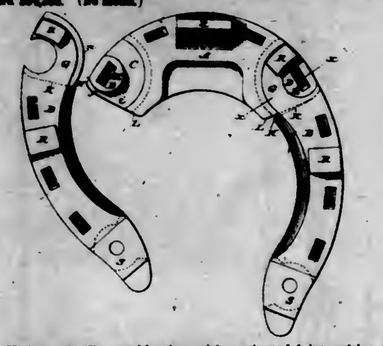
383,693. CARTRIDGE-RELOADING IMPLEMENT. THOMAS G. BENNETT, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Nov. 30, 1887. Serial No. 256,888. (No model.)



Claim.—1. The herein-described cartridge-reloading implement, consisting in the combination of the stock A, constructed with a laterally-projecting seat, B, and with a corresponding laterally-projecting head, C, a screw through said head in line with the said seat, a handle hinged to the screw, and so as to swing in a plane substantially parallel with the screw, a second handle hinged to the stock, and so as to also swing in a plane substantially parallel with the axis of the screw, and a block constructed with a recess longitudinally therein corresponding substantially to the size of the loaded cartridge, the said block adapted to be set between the said seat and the end of the screw, substantially as described.

2. The combination of the tubular block I, the interior in shape corresponding to the cartridge to be loaded, the said block slit longitudinally upon one side, the said slit opening into the chamber in the block, and the block constructed with lateral projections from each side said recess, the said projections forming one or more transverse recesses across the said slit, a stock, A, constructed with a laterally-projecting seat, B, and with a like laterally-projecting head, C, a screw through said head, the said seat adapted to receive one end of said block and the screw arranged to bear upon the other end of said block, the said screw constructed with a shoulder, N, which, with the said head, forms a pair of jaws, substantially as and for the purpose described.

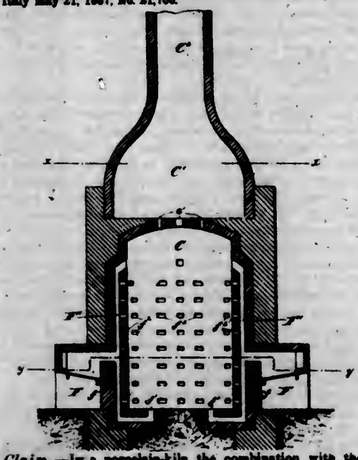
383,694. HORSESHOE. JOHN E. BRENNAN, Walla Walla, Wash., and EDWARD W. BRENNAN, Portland, Oreg. Filed Nov. 5, 1887. Serial No. 254,302. (No model.)



Claim.—1. The combination, with a pivoted joint uniting the separable sections of a sectional horseshoe, of a cylindrical stud having a nail-hole pierced through it, and serving as the pivot for the joint, substantially in the manner and for the purpose herein set forth.

2. A cylindrical perforated stud formed near the outer angle of each end of the toe-section of a sectional horseshoe upon its ground side by means of a segmental recess in said face encircling said stud, in combination with a counterpart segmental tongue projecting from the corresponding end of the appropriate heel-section to enter and fill said recess when the two sections are properly adjusted to fit the foot, substantially in the manner and for the purpose herein set forth.

383,695. PORCELAIN-KILN. LOUIS BOURGEOIS, St. Vallier, France. Filed Aug. 27, 1887. Serial No. 248,061. (No model.) Patented in France Nov. 5, 1886, No. 179,457; in Belgium May 9, 1887, No. 77,875; in Spain May 13, 1887, No. 11,111; in England May 13, 1887, No. 7,093, and in Italy May 21, 1887, No. 21,706.

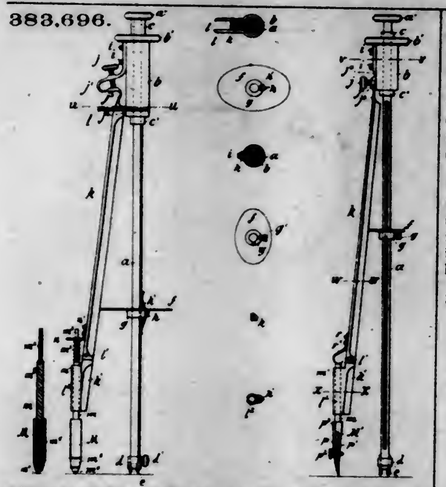


Claim.—In a porcelain-kiln, the combination, with the outer wall and the furnace or furnaces, of an inner wall extending from the floor to near the roof of the kiln, and forming, with the outer wall and completely enveloping the firing-chamber, a heat-distributing chamber, said inner wall having heat-distributing openings in front of the furnace or furnaces only, said heating-chamber being open at top, and flues under the floor of the kiln communicating with the heat-distributing chamber and the firing-chamber, substantially as and for the purposes specified.

383,696. ELLIPTOGRAPH. HERMANN BOSSHART, Philadelphia, Pa., assignor of one-half to J. Walter Douglass, same place. Filed July 26, 1887. Serial No. 245,481. (No model.)

Claim.—1. An improved elliptograph having a feathered rod with an adjustable collar on its lower extremity, to which are fitted two or more shouldered needle-points, a plate with a hub mounted on said rod, a spring secured to said hub and extending through said plate for holding the same in any position vertically on said rod, a sleeve mounted

383,696.



on the upper portion of said rod, a spring-leg suitably secured to said sleeve, a leg hinged to said spring-leg, and a drawing attachment supported by said hinged leg and guided by said spring-leg, substantially as and for the purposes set forth.

2. An improved ellipsograph having a feathered rod with a thumb-nut on its upper extremity and two or more shouldered needle-points fitted to a collar adjustably attached to the lower extremity of said rod, a disk having a hub formed integral therewith and mounted on said feathered rod, a spring for holding the same in a vertical position thereon, a sleeve provided with upper and lower hubs suitably mounted on the upper portion of said rod, whereby a rotary movement thereof is obtained, a spring-leg secured to said sleeve, a short leg hinged to said spring-leg, and a pen or pencil attachment held in position by said short leg and supported by said spring-leg, substantially as and for the purposes set forth.

3. An ellipsograph having a feathered rod with a sleeve mounted upon the upper portion thereof, one or more shouldered needle-points suitably attached to the lower extremity of said rod, a plate fitted to said feathered rod, and means for retaining it in position thereon, in combination with a spring-leg attached to said sleeve provided with an adjusting-screw, a short leg which has integral therewith a tube hinged to said spring-leg, and a pen or pencil attachment supported in position by said legs, substantially as and for the purposes set forth.

4. An improved ellipsograph having a feathered rod with a nut on its upper extremity formed integral with said rod, and two or more shouldered needle-points secured to a collar adjustably attached to the lower extremity of said feathered rod, a disk with a narrow groove formed in the interior surface thereof, a spring for retaining said device in a vertical position on said rod, a sleeve mounted on the upper portion of said rod, a spring-leg attached to said sleeve and hinged to a second leg, a drawing attachment supported and guided by said legs, and means for adjusting said legs to any angle of inclination to said feathered rod, substantially as and for the purposes set forth.

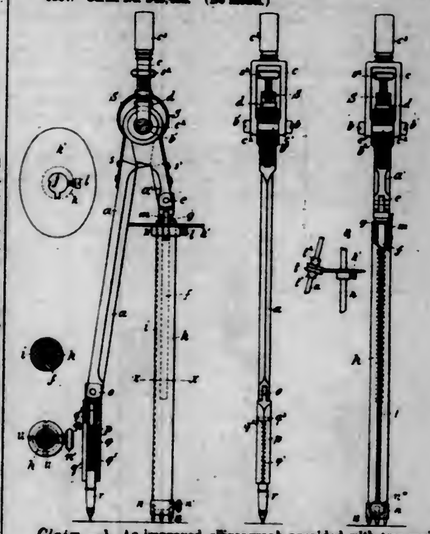
5. An improved ellipsograph provided with a feathered rod, a plate or disk adjustably mounted on said rod, whereby the size of the figure to be drawn may be readily increased or diminished, and a sleeve journaled to said rod, in combination with a spring-leg with its adjusting-screw, a short leg hinged to said spring-leg, a drawing attachment supported by said legs, and a double guideway rigidly secured to said sleeve, whereby the lateral movement of the legs while the instrument is being manipulated is prevented, substantially as described.

6. An ellipsograph having a rod with a thumb-nut on its upper extremity and recesses formed in its lower extremity for the reception of shouldered needle-points held therein by a collar with a clamping-screw, an elliptical plate or disk combined with a hub fitting onto said rod, and a spring for holding it in position thereon, in combination with a sleeve suitably supported upon said rod, a spring-leg attached to said sleeve, with a screw for adjusting said spring-leg to the desired angle of inclination to said rod, a short leg hinged to said spring-leg and having formed therewith a tube with a slit running through the surface thereof, a pen or pencil attachment, the stem of which carries a pin, a helical spring coiled around said stem, and a bracket secured to said spring-leg, all arranged substantially as and for the purposes set forth.

7. An improved device for forming geometrical figures, having a feathered rod, a plate or disk with a hub mounted on said rod, a spring for holding said plate or disk and hub in position thereon, a sleeve mounted on the upper portion of said feathered rod, a spring-leg attached thereto and to a short leg having a tube with a vertical slit in the surface thereof, a drawing attachment with a stem having a pin secured thereto, and means, as described, for supporting said attachment in proper position while the instrument is being manipulated, substantially as described.

8. An improved device for forming geometrical figures, having a feathered rod and a sleeve supported in position thereon, a fulcrum attached to said sleeve, a guideway secured to said sleeve, a spring-leg secured to said sleeve and provided with an adjusting-screw, a tube formed integral with a short leg hinged to said spring-leg, and a drawing attachment supported in said short leg and guided by said spring-leg, substantially in the manner and for the purposes described.

383,697. ELLIPSOGRAPH. HERMANN DOMMANN, Philadelphia, Pa., assignor of one-half to J. Walter Douglass, same place. Filed July 30, 1887. Serial No. 245,622. (No model.)



Claim.—1. An improved ellipsograph provided with two main legs suitably hinged together, a shank carried by one of said legs, a sleeve mounted thereon carrying on its lower extremity one or more needle-points, a plate fitted to said sleeve, a short leg with a socket therein hinged to the opposite main leg, and a drawing attachment supported in said socket, substantially as and for the purposes set forth.

2. An improved ellipsograph provided with two legs of unequal length hinged together, a shank attached to the shorter leg and provided with a stationary collar upon its upper extremity, a sleeve secured to said shank, a latch for holding said sleeve to said shank, a plate or disk fitted to said sleeve, a collar carrying two or more points, and means for holding said collar to said sleeve, a short leg hinged to the longer leg with a bored-out interior and a pencil attachment suitably held in said leg, substantially as and for the purposes set forth.

3. An improved ellipsograph having two legs suitably hinged together, a bail with a handle located centrally thereon, in combination with a shank hinged to one of said legs, a sleeve mounted thereon, means for holding the same thereto, one or more shouldered points secured to the lower extremity of said sleeve, a plate or disk with a hub integral therewith mounted on said sleeve, and means for holding the same thereto, a socketed leg hinged to one of the main legs, and a drawing attachment suitably supported in said socket, substantially as and for the purposes set forth.

4. The combination, with a device provided with two legs hinged to each other, of a spring encircling the upper extremity of and secured to the sides of said legs, an adjusting-screw passing through said spring, and a cap-plate mounted on one of said legs, substantially as and for the purposes described.

5. The combination, with a device having two main legs suitably attached to each other and carrying a bail with a handle, of a shank secured to one of said legs and having a sleeve mounted thereon, a narrow groove extending through the surface thereof, a plate or disk

provided with a feather fitting into said groove, and means for holding said plate or disk in position thereon, a collar provided with one or more points attached to said sleeve, a leg provided with a socket hinged to the other main leg, and a pencil attachment suitably supported thereby, substantially as and for the purposes set forth.

6. An improved device consisting of two legs hinged to each other, a shank attached to one of said legs, a sleeve mounted thereon with one or more needle-points fitted to the lower extremity thereof, a plate or disk with a beveled-edge periphery, and a hub formed integral with said sleeve, a grooved wheel loosely mounted on the opposite leg, and a drawing attachment suitably supported by said leg, substantially as and for the purposes set forth.

7. An improved device for forming geometrical figures, consisting of two main legs suitably hinged together and carrying a bail having a handle, a shank jointed to one of said main legs with a fixed collar thereon, a sleeve mounted upon said shank, and a latch for holding said sleeve to said shank and permitting of the removal of the plate or disk held thereon, a narrow longitudinal groove in said sleeve, an elliptical plate or disk secured to a hub having a feather upon the interior surface thereof and fitting into said groove, a collar having one or more shouldered points, and means for securing said collar to said sleeve, and a drawing attachment supported by the opposite leg, substantially as and for the purposes set forth.

8. An improved device provided with two legs, a shank connected with one of said legs by means of a knuckle-joint, a sleeve mounted thereon carrying a plate having a beveled-off periphery, a grooved wheel with double hubs secured thereto and loosely mounted upon the opposite leg, a spring secured to the upper extremity of both of said legs, having an adjusting-screw, and a cap-plate, *d*, formed integral with one of said legs, substantially as and for the purposes set forth.

9. An improved device provided with two main legs, a short leg hinged to one of said legs and having the interior bored out, a narrow vertical slit in the surface of said short leg uniting with a transverse slit therein, a drawing attachment having a stem with a pin projecting therefrom, and a helical spring coiled around said stem, whereby said attachment may be elevated and supported by means of the pin in said transverse slit out of its operative position.

10. An improved device, substantially such as described, having a sleeve held by means of a latch to a fixed collar formed integral with a shank hinged to one of the legs thereof, and a narrow longitudinal groove formed in said sleeve, in combination with a plate or disk and a hub formed integral therewith, and with a feather upon the interior surface thereof, and means for adjusting said plate or disk to said sleeve, substantially as and for the purposes set forth.

388,698. COMPOSITION OF MATTER TO BE USED IN THE MANUFACTURE OF GRINDSTONES, &c. CHARLES F. BRADSHAW, Baltimore, Md. Filed Nov. 23, 1887. Serial No. 255,594. (No specimens.)

Claim.—1. A new composition of matter for the purpose described, which has for its base sulphur and powdered pumice-stone, combined substantially as specified.

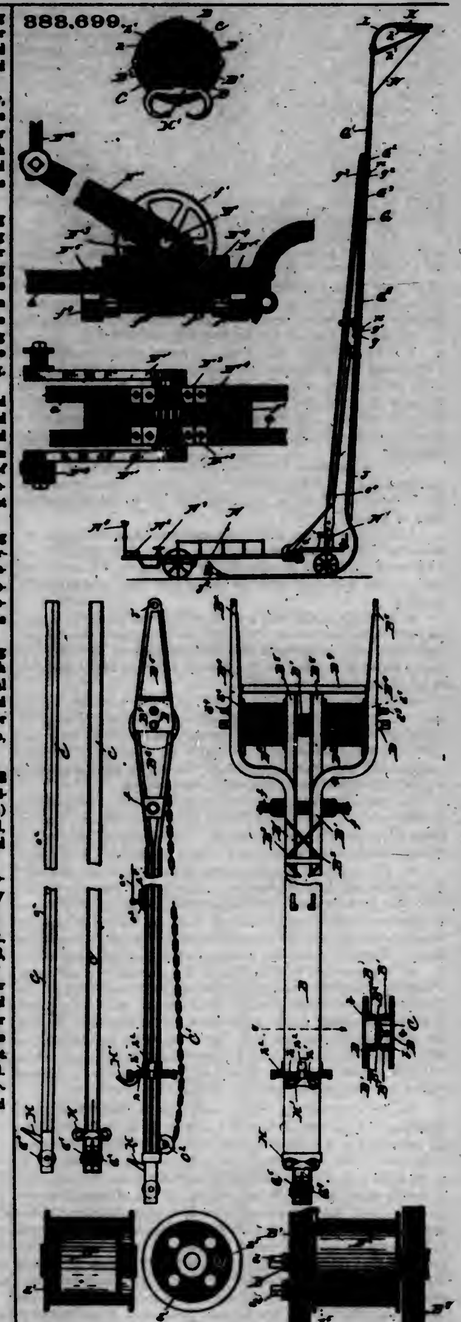
2. A new composition of matter which consists of sulphur, pumice-stone, powered antimony, and bone-black, all combined substantially in the proportions set forth.

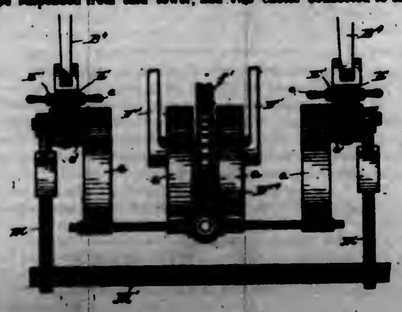
388,699. WATER-TOWER TRUCK. ABRAHAM BERGER, Jr., Chicago, Ill., assignor to H. Bruce Preston, same place. Filed Mar. 26, 1887. Serial No. 232,094. (No model.)

Claim.—1. The combination, with a trunk-frame, of a tower or derrick having vertically-adjustable pivots connecting the same to said trunk-frame, and mechanism for raising and lowering said tower or derrick, having a pivoted connection with said trunk-frame to enable such raising and lowering mechanism to automatically adjust or adapt itself to the position of the tower or derrick, substantially as specified.

2. The combination, with a trunk and water-tower, of a water-pipe suspended from said tower, and two cables connected to said water-pipe, one near its lower end and one above, for suspending and directing the water-pipe, said water-pipe being suspended wholly by said cables, and two guides for said pipe, either one or both of which may be used in directing the pipe, substantially as specified.

388,699.





3. The combination of a truck, a pivoted tower, an extensible mast having two pulleys near its upper end, a suspended water-pipe, and two cables connected to said pipe at different points for suspending and directing the same, two winding-drums for operating said cables, and two guides for said pipe, either one or both of which may be used in directing the pipe, substantially as specified.

4. The combination of a truck, a pivoted tower, an extensible mast having two pulleys near its upper end, a suspended water-pipe, and two cables connected to said pipe at different points for suspending and directing the same, two winding-drums for operating said cables, said cables having a swivel-connection with said pipe, and two guides for said pipe, either one or both of which may be used in directing the pipe, substantially as specified.

5. The combination of a truck, a pivoted tower, an extensible mast having two pulleys near its upper end, a suspended water-pipe, and two cables connected to said pipe at different points for suspending and directing the same, two winding-drums for operating said cables, said cables having a swivel-connection with said pipe, and a guide-yoke, H, near the top of said mast, and a second guide-yoke, H', near the top of said tower, substantially as specified.

6. The combination of a truck, a pivoted tower, an extensible mast having two pulleys near its upper end, a water-pipe and two cables connected to said pipe at different points, and two winding-drums for operating said cables, said cables having a swivel-connection with said pipe, a guide-yoke, H, near the top of said mast, and a swiveling guide-yoke, H', near the top of said tower, substantially as specified.

7. The combination, with tower and mast, of a water-pipe, a cable for suspending said water-pipe from the top of said mast, and a swiveling guide-yoke mounted on said tower near the top thereof, substantially as specified.

8. The combination, with tower and mast, of a water-pipe, two cables for suspending said water-pipe from the top of said mast, and a swiveling guide-yoke mounted on said tower near the top thereof, and a second guide-yoke near the top of said mast, substantially as specified.

9. The combination, with a truck, of a pivoted tower, an extensible mast, a cable-suspended water-pipe, and two guide-yokes for said water-pipe, one near the top of said mast and one near the top of said tower, nozzle K, flexible hose L, guide-rod *h*, pivotal arm *h'*, and cord or line N, substantially as specified.

10. The combination, with a truck, of a hollow straight pivoted tower consisting of plates B B, angle-plates B' B' B' B', and plates B^2 B^2, raising and lowering mechanism connecting said pivoted tower, and truck for raising and lowering the tower and holding it in different positions, and a telescopic mast fitting in the interior channel or guideway of said hollow tower, substantially as specified.

11. The combination, with a truck, of a pivoted tower consisting of flat plates and angle-plates riveted together to form an interior channel or guideway, and a telescopic mast consisting of a pair of channel-bars riveted together, back to back, substantially as specified.

12. The combination, with a truck, of a pivoted tower consisting of flat plates and angle-plates riveted together to form an interior channel or guideway, and a telescopic mast consisting of a pair of channel-bars riveted together, back to back, and a chain or cable for elevating said mast secured thereto and fitting or moving in the hollow space or channel in one of said channel-bars, substantially as specified.

13. The combination, with a truck, of a pivoted tower consisting of angle-bars and plates riveted together, said angle-bars being parallel to each other at the upper portion of the tower, and the angle-bars at the opposite edges of the tower being curved apart and forming two divergent arms at the lower end of the tower for pivoting the same to the truck, each of said divergent arms being formed of two curved angle-bars which are spread apart from each other in a plane transverse to the plane of the tower, substantially as specified.

14. The combination, with a truck, of a pivoted forked tower consisting of angle-bars B' B' B' B' and plates B^2 B^2 riveted together, the angle-bars at the opposite edges of the tower being curved apart in the plane of the tower, forming two divergent curved arms, B^4 B^4, at the lower end of the tower for pivoting the same to the truck, each of said divergent arms B^4 B^4 being formed of two of said curved angle-bars spread apart from each other in a plane transverse to the plane of the tower, pivot-pieces B^5 B^5, embraced between and secured to said transversely-spread curved angle-bars at the ends thereof, angle-plates B^6 and journal-plates B^7, secured to said transversely-spread curved angle-bars, division-bars B^3 B^3, extending between and parallel to said divergent arms B^4 B^4, transverse brace-bar B^8, to which the ends of said division-bars are secured, crank-shaft D, and winding-drums D^2 D^2, mounted upon and between said divergent arms and division-bars, substantially as specified.

15. The combination, with a truck, of a pivoted forked tower consisting of angle-bars B' B' B' B' and plates B^2 B^2 riveted together, the angle-bars at the opposite edges of the tower being curved apart in the plane of the tower, forming two divergent curved arms, B^4 B^4, at the lower end of the tower for pivoting the same to the truck, each of said divergent arms B^4 B^4 being formed of two of said curved angle-bars spread apart from each other in a plane transverse to the plane of the tower, pivot-pieces B^5 B^5, embraced between and secured to said transversely-spread curved angle-bars at the ends thereof, angle-plates B^6 and journal-plates B^7, secured to said transversely-spread curved angle-bars, division-bars B^3 B^3, extending between and parallel to said divergent arms B^4 B^4, transverse brace-bar B^8, to which the ends of said division-bars are secured, crank-shaft D, and winding-drums D^2 D^2, mounted upon and between said divergent arms and division-bars, substantially as specified.

16. The combination of a truck and a pivoted tower, a telescopic mast and a water-pipe, a chain for raising the mast, a pair of cables for suspending the pipe, a crank-shaft journaled upon said tower near its lower end, having sprocket-wheel D' secured rigidly thereto, and winding-drums D^2 D^2, journaled loosely thereon, and crank-shafts d^3 d^4, for operating said drums, substantially as specified.

17. The combination, with a water-tower and a cable-suspended water-pipe, of a swiveling guide-yoke for said pipe, substantially as specified.

18. The combination, with a water-tower and a cable-suspended water-pipe, of a guide-yoke for said pipe, upper ring, A, and a circular ring or guideway, *h'*, for said guide-yoke to swivel upon, mounted upon said tower, substantially as specified.

19. The combination, with a truck, of a tower or structure mounted thereon, a pivot or shaft pivotally connecting said tower or structure with the truck, horizontal rotary shaft F, mounted on said truck and extending transversely across the same back of and parallel to the pivot of said tower or structure, crank-arm F', secured rigidly to said shaft F, and connecting-link F^3, pivoted at one end to said crank-arm and at its other end to said pivoted tower or structure, said arm F' and link F^3 together constituting a toggle connecting the said fixed shaft F with the ladder, substantially as specified.

20. The combination, with a truck, of a pivotal tower or structure mounted thereon, a pivot or shaft pivotally connecting said tower or structure with said truck, horizontal shaft F, mounted on said truck and extending transversely across the same back of and parallel to the pivot of said tower or structure, crank-arm F', secured rigidly to said shaft F, and connecting-link F^3, pivoted at one end to said crank-arm and at its other end to said pivoted tower or structure, worm-shaft f^3, having worm f^3, said shaft F having a gear, f', meshing with said worm f^3, said arm F' and link F^3 together constituting a toggle connecting the said fixed shaft F with the ladder, substantially as specified.

21. The combination, with a truck, of a pivoted tower or structure mounted thereon, a shaft, F, crank-arm F', and pivoted link F^3 for raising the same, said shaft having a gear, f', and a worm, f^3, said shaft F being journaled on a laterally swinging or swiveling housing, F^4, substantially as specified.

22. The combination, with truck A, of a pivoted tower or structure, B, mounted thereon, the pivots of said tower being vertically adjustable on said truck, shaft F, having crank-arm F' secured thereto, pivoted link F^3, connecting said crank-arm and tower, worm-gear f', secured to said shaft F, shaft f^3, having worm f^3, meshing with said gear f', and block or housing F^4, pivotally connected to said shaft f^3, said shaft F being journaled on said block F^4, substantially as specified.

23. The combination, with truck A, of a pivoted tower or structure, B, mounted thereon, the pivots of said tower being vertically adjustable on said truck, shaft F, having crank-arm F' secured thereto, pivoted link F^3, connecting said crank-arm and tower, worm-gear f', secured to said shaft F, shaft f^3, having worm f^3 meshing with said gear f', and a block or housing, F^4, pivotally connected to said shaft f^3, said shaft F being journaled on said block F^4, and shafts f^5 f^6, connected by bevel-gears with said shaft f^3, substantially as specified.

383,700. ANIMAL-TRAP. JAMES BEMER, Oakland, Cal. Filed Feb. 16, 1888. Serial No. 264,321. (No model.)

Claim.—1. An animal-trap consisting of a collapsible inclosure of wire-netting secured to corner-posts, and having openings in all of its sides, the frames *b*, surrounding said openings, solid glass doors suspended within the openings, and mirrors inside of the inclosure and back of each door, substantially as described.

2. An improved animal-trap consisting of an inclosure made of wire-netting adapted to be rolled up when not in use, said inclosure

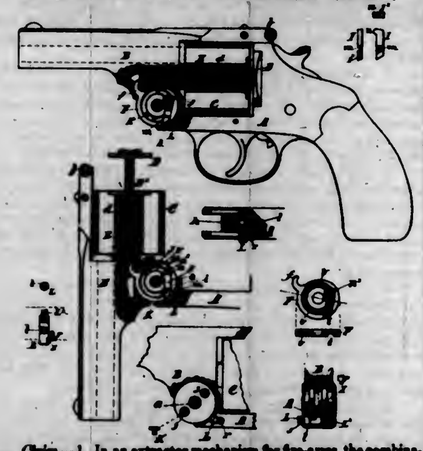


383,700.



having openings on all sides, solid glass doors suspended in said openings and adapted to swing inward, and mirrors fixed in the ground inside of the inclosure and in line with the doors, as herein described.

383,701. REVOLVING FIRE-ARM. HIRAM H. CALDWELL, Worcester, Mass., assignor to the Harrington & Richardson Arms Company, same place. Filed Mar. 7, 1888. Serial No. 266,651. (No model.)



Claim.—1. In an extractor-mechanism for fire-arms, the combination, with the barrel-hinge stir, the finger-disk mounted to swing on the hinge-pivot between said ears, and the finger-disk stop-bolt supported in said finger-disk to be retracted or projected beyond the periphery thereof, of two studs supported in the side of said barrel-hinge ear with their ends extending into the recessed side of said finger-disk at positions to respectively engage and operate said stop-bolt, one when the barrel is tilted forward and the other when the barrel is swung back to normal position, substantially as set forth.

2. In an extractor mechanism for fire-arms, the finger-disk having the groove *i*, with a recess, *n'*, in the side thereof, in combination with the longitudinally-movable stop-bolt I, fitted to slide free within said finger-disk groove, and having a lug, *n*, projecting from its side into said recess *n'*, together with studs borne by the hinge-ear and entering the groove to operate said stop-bolt, substantially as and for the purpose set forth.

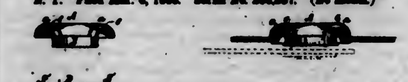
3. The combination, with the frame and barrel-hinge, shell-extractor, and extractor-spring, in a fire-arm, of the grooved finger-disk, the stop-bolt having a notch or shoulder, *n*, fitted within said finger-disk with one of its ends projectable from the periphery thereof, two studs carried by the barrel-hinge, which engage and move said stop-bolt, and an intercepting-stud supported in the frame adjacent to the periphery of the disk, against which said stop-bolt is arrested for effecting lifting action of the extractor, substantially as set forth.

4. The combination, substantially as described, with the frame and barrel-hinge, shell-extractor stem, and extractor-spring, in a fire-arm, of the finger-disk F, the stop-bolt I, fitted in said finger-disk and having a shoulder, *n*, and laterally-beveled outer end, two studs, J and K, fixed in the barrel-hinge, and the spring-actuated intercepting-stud L, having the notch *l* and supported in the frame A adjacent to the periphery of said finger-disk for engaging the end of the stop-bolt, for the purposes set forth.

5. In a fire-arm of the class described, the fire-end of the frame provided with the recess or groove A, in combination with the barrel-hinge, extractor-finger disk carrying a stop-bolt the end of which works in said groove, and the laterally-movable spring-pressed intercepting-stud arranged across said groove, substantially as set forth, whereby the stop-bolt is protected by inclosure within the frame.

6. In an extractor-operating mechanism for fire-arms, the combination, with the finger-disk F and stop-bolt I, beveled on its outer end, of the spring-pressed intercepting-stud L, supported in the frame for engaging said stop-bolt, and having the notch *l*, the spring L' at the end of said stud, and the stud-retaining screw *r*, for the purposes set forth.

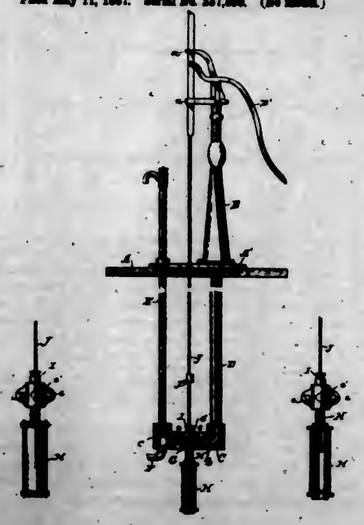
383,702. GLOVE-FASTENER. DANIEL A. CARPENTER, New York, N. Y. Filed Mar. 6, 1888. Serial No. 266,367. (No model.)



Claim.—1. In the spring member of a fastening device, the combination of the portion A, having the concavo-convex ring *a*, and slits *c c*, extending in opposite directions from the opening *b*, whereby is formed a pair of yielding jaws inclosed by an annular spring, and the eyelet B, the sides of the opening *b* being drawn downward to the tubular part of the eyelet and adapted to alternately engage and release a stud, substantially as and for the purpose described.

2. In the spring member of a fastening device, the spring portion A, having the concavo-convex ring *a*, an eyelet, B, with a concavo-convex flange conforming to the ring *a*, said spring portion having an opening, *b*, with yielding sides, which are drawn downward to the tubular part of the eyelet and adapted to alternately engage and release a stud, and a washer, D, drawn up, substantially as shown, to fit the recess on the under side of the flange of the eyelet, said parts being severally constructed and combined in the manner and for the purpose set forth.

383,703. FORCE-PUMP. GEORGE A. CARTER, Des Moines, Iowa. Filed May 11, 1887. Serial No. 237,889. (No model.)



Claim.—1. In a force-pump, the combination, with a hollow distributing-base, of a hollow bracket removably secured to the same, and the main cylinder screwed into and suspended entirely below said bracket and easily removable from the same and the distributing-base, substantially as and for the purposes set forth.

2. In a force-pump, the combination of the hollow distributing-base C, the hollow bracket G, removably attached to said distributing-base, the pump-cylinder H, screwed into said bracket, and the pump-rod J, passing through said bracket, substantially as set forth.

3. In a force-pump, the combination, with a hollow bracket, G, supporting the removable pump-cylinder H and provided at its upper end with a stuffing-box, I, through which the jointed pump-rod J passes, of the distributing-base C, air-chamber D, and discharge-pipe E, substantially as described.

383,704. APPARATUS FOR DISTILLING WATER. PASCAL B. CHARBONNEAU, Bay City, assignor of one-half to Thomas H. Smith, East Saginaw, Mich. Filed Apr. 28, 1888. Renewed Aug. 1, 1887. Serial No. 245,255. (No model.)

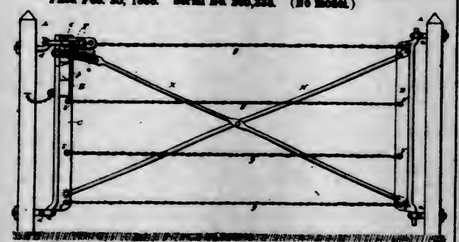


Claim.—1. In a water-distilling apparatus, the combination, with an evaporating-chamber, *a*, a condensing-chamber, *b*, above the said chamber *a*, and a cold-water reservoir, *d*, located above the said chamber *b*, of a spout, *r*, projecting from and opening into the said chamber *a*, and a feed-pipe, *s*, connected with the cold-water reservoir *d* and leading to the said spout *r*, and provided with a valve, *p*, substantially as and for the purpose specified.

2. In a water-distilling apparatus, the evaporating-chamber *a*, a receiving-chamber, *i*, over the said chamber *a*, a condensing-chamber, *b*, above the said chamber *i*, and a pipe, *n*, passing through the said chamber *i* and connecting the said chamber *b* with the chamber *a*, in combination with the conical deflecting-plate *e*, placed directly over the said pipe *n*, and the deflecting-plate *f*, forming the top of the said chamber *i*, and provided with the central opening *g*, and the outside openings, *h*, substantially as and for the purpose set forth.

3. In a water-purifying apparatus, the combination of an evaporating-chamber, *a*, and a condensing-chamber, *b*, located directly over

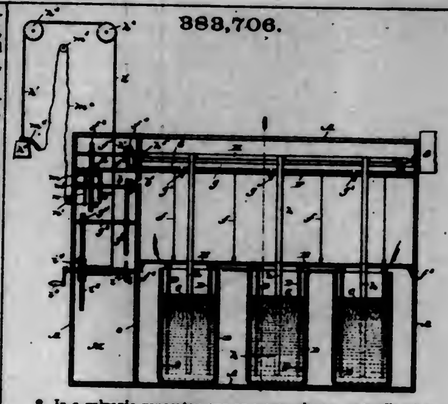
383,705. WIRE GATE. ARMENIS J. COUNTS, Green Bay, Wis. Filed Feb. 25, 1888. Serial No. 265,236. (No model.)



Claim.—A wire gate consisting of a hinge-bar, B, and fastening-bar C, connected by wires and having braces H K crossed and fastened at their intersection and to said hinge-bar, the fastening or stretcher bar being pivotally connected near its lower end to the brace H and adjustably connected at its upper end to the brace K by the pin *s* and slot *n*, with suitable means, substantially as described, for securing said hinge-bar and fastening or stretcher bar to the gate-posts.

383,706. GALVANIC BATTERY. HARRY R. COX, Chatteris, Ohio, assignor to George Clarke Cox, same place. Filed Dec. 17, 1887. Serial No. 258,333. (No model.)

Claim.—1. The herein-described means for preventing polarization in galvanic generators, which consists in one or more agitators extending into the electrolyte, a train of gears connected with said agitators, and a source of power, whereby said agitators are actuated through the medium of said gears, substantially as described.



383,706.

2. In a galvanic generator, one or more agitators extending into the solution or electrolyte, a rocking shaft, a train of gears, and a suitable source of power connected with said gears, whereby the agitator or agitators are actuated by the power through the medium of the gears and rocking shaft, substantially as described.

3. In a galvanic generator, a suitable frame, one or more cells containing a suitable electrolyte, a rocking shaft journaled in said frame, and one or more agitators secured to the said shaft and extending into said electrolyte, in combination with a train of gearing connected with the rocking shaft, and a weight to actuate said gearing, substantially as described.

4. In a galvanic generator, the combination of one or more cells containing suitable electrolyte, electrodes removably located in the electrolyte, a winding-shaft connected with the electrodes, a train of gearing, a source of power to actuate the gearing, and a laterally-movable gear-wheel, whereby the gearing is connected and disconnected with the winding-shaft, substantially as described.

5. In a galvanic generator, the combination of one or more bifurcated agitators extending into the electrolyte, a shaft carrying the bifurcated agitators, a train of gearing connected with the shaft, and a source of power to actuate said gearing and agitators, substantially as described.

6. In a galvanic generator, the combination of the electrolyte, plates or electrodes extending into the same, a winding-shaft, agitators extending into said electrolyte, a train of gearing normally connected with said agitators, a source of power, and a laterally-moving gear-wheel, whereby the power is connected with the raising-shaft to lift the electrodes from the electrolyte, substantially as described.

7. In a galvanic generator, the electrolyte, plates or electrodes, a raising device, and agitators extending into said electrolyte, in combination with a train of gearing normally connected with the agitators, a source of power to operate said gearing, and a laterally-moving gear-wheel, whereby said gearing is disconnected with the agitators and connected to raise the electrodes from the electrolyte, substantially as described.

8. In a galvanic generator, the combination of the electrolyte, the electrodes, a raising or winding shaft, agitators extending into the electrolyte, a weight, a train of gearing actuated by the weight, said gearing normally actuating the agitators, and a movable shaft connected with the weight, whereby, when said weight reaches a certain point, the gearing is disconnected with the agitators and thrown into gear with the winding-shaft, for the purpose described.

9. In a galvanic generator, the combination of the electrolyte, the electrodes secured to a suitable frame, a winding or raising shaft, one or more agitators secured to the same and extending into the electrolyte, a train of gearing normally actuating the agitators, a weight to actuate the gearing, and a longitudinally-movable shaft connected with the weight, whereby the agitators are thrown out of gear with the driving-power, and the electrodes are raised from the electrolyte when it is desired that the generation be discontinued, substantially as described.

10. The combination, with a rocking shaft and a winding-shaft, of a drum, a rope, cord, or wire wound thereon, and provided with a driving-weight at its opposite end, a longitudinally-movable shaft, gearing connecting the shaft and the drum, gearing connecting the movable shaft and rocking shaft, a spring to hold the movable shaft in gear with the rocking shaft, and a lever secured to the movable shaft and connected with the driving-weight, whereby the movable shaft is thrown out of gear with the rocking shaft and in gear with the winding-shaft, substantially as described.

11. In a galvanic generator, the combination of the electrolyte, a rocking shaft, one or more agitators secured to the rocking shaft and extending into the electrolyte, a crank upon one end of the rocking shaft, a crank-shaft connected with the crank upon the end of the rocking shaft, a train of gearing to drive said crank-shaft, and a weight to drive the train of gearing, substantially as described.

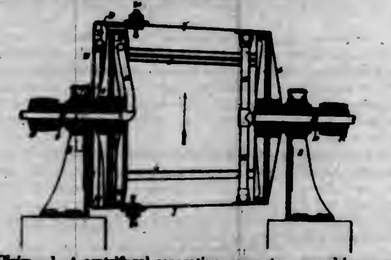
12. The combination, with the winding-shaft and rocking shaft, of cranks to drive the rocking shaft, a longitudinally-movable shaft normally driving the crank-shaft and provided with gearing to drive the winding-shaft, gearing and a weight to drive the movable shaft, a lever to throw the movable shaft out of gear with the crank-shaft and in gear with the winding-shaft, and a cord and spring, whereby said lever is connected with the weight, substantially as described.

13. In a galvanic generator, the combination, with the electrolyte, of one or more agitators extending into the same, and a suitable source of power connected with the agitators, whereby the same are given a to-and-fro motion within the electrolyte, for the purpose described.

14. In a galvanic generator, the combination, with the electrolyte and electrodes removably located in the same, of gearing, a suitable source of power to actuate said gearing, and a laterally-movable gear-wheel, whereby said gearing is connected to raise the electrodes from the electrolyte, substantially as described.

15. In a galvanic generator, the combination, with the electrolyte, the electrodes removably located in the same, and agitators extending into the electrolyte, of gearing normally actuating the agitators, a source of power to drive the gearing, and a laterally-moving gear-wheel, whereby said gearing is disconnected with the agitators and connected with the electrodes to raise the same from the electrolyte, substantially as described.

383,707. CENTRIFUGAL APPARATUS FOR SEPARATING OILS. ARCHIBALD F. CRAIG, Paisley, ALEXANDER RUSSELL, Inbermuir, County of Renfrew, and JAMES GOODALL, Pumpherston, County of Mid-Lothian, Scotland. Filed July 21, 1887. Serial No. 244,893. (No model.) Patented in England Mar. 10, 1887, No. 3,817.



Claim.—1. A centrifugal separating apparatus comprising a rotary vessel with its axis horizontal and having a body with disks at both ends, the disks having bosses or shafts, an axial feed-pipe with rotating radial branches inside of the vessel, a channel or guard, and a stationary pipe with its entrance within such channel or guard for delivering the lighter oil or other liquid, and a second channel and stationary pipe projecting into it for delivering the heavier oil or other liquid, all substantially as described.

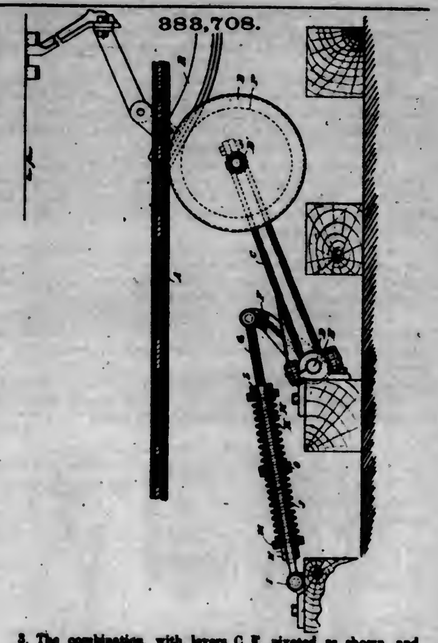
2. A centrifugal separating apparatus comprising a rotary vessel with its axis horizontal and having end disks, a feed-pipe, an annular plate, 21, outside one of the end disks to form a channel, 20, this end disk having openings near its periphery, a pipe projecting into the channel 20 to deliver the heavier liquids, and a pipe on the other side of the end disk to deliver the lighter liquid.

3. A centrifugal separating apparatus comprising a rotary vessel with its axis horizontal and having end disks, one of which, 6, has a channel, 18, on its inner side and is perforated near its periphery, an annular plate, 21, outside of the disk to form a channel, 20, a feed-pipe, an axial delivery-pipe projecting into the channel 18, and a delivery-pipe projecting into the channel 20, all substantially as set forth.

383,708. CABLE-SUPPORTING SHEAVE FOR CABLE RAILWAYS. GEORGE C. GRANT, New York, N. Y. Filed Feb. 25, 1888. Serial No. 265,302. (No model.)

Claim.—1. In a cable-supporting device, the combination of a sheave to receive the cable, a lever carrying said sheave, and a spring connected to said lever for upholding said sheave, so that the lever and the spring-connection have a differential movement, substantially as and for the purposes set forth.

2. The combination of the guard-rail B, carried by a car, the cable, the lever pivoted on the roadway, having both arms projecting on one side of its pivot, a cable-carrying roller carried by the arm, and a spring connected to the other arm, substantially as and for the purposes set forth.

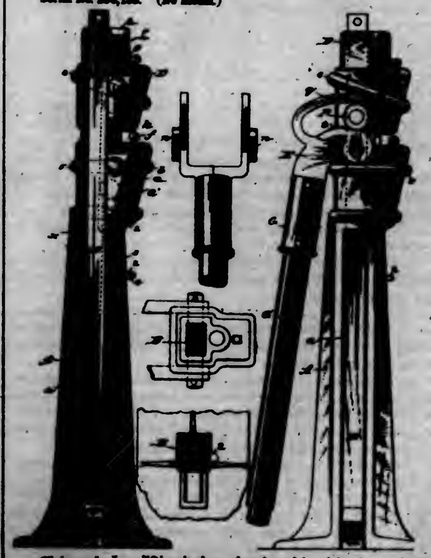


383,708.

3. The combination, with levers C F, pivoted as shown, and adapted to operate substantially as described, of frame H, pivoted to the roadway, rod G, connected to arm F and sliding in said frame, a spring guided in said frame, and a follower on said rod for compressing said spring.

4. The combination, with lever C F, pivoted as shown, rod G, connected thereto, of a follower adjustable on said rod, and a spring held between said follower and an abutment fixed to the roadway, substantially as set forth.

383,709. LIFTING-JACK. LEWIS J. GREENLEAF, St. Louis, Mo., assignor of one-half to Andrew Warren, same place. Filed Nov. 26, 1887. Serial No. 256,128. (No model.)



Claim.—1. In a lifting-jack, a chambered head having a channel

for the lifting-bar, said chamber being formed with a rear inclined wall and opening directly into the channel, a roller in said chamber, and a spring-pin in a recess in the head bearing upon the roller, substantially as described.

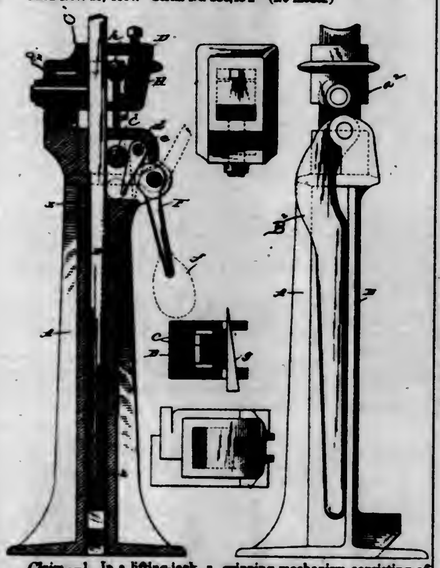
2. In a lifting-jack having a standard provided with a holding-grip and a head provided also with a grip, a lifting-bar and a lifting-lever pivoted on the standard and provided with a cam-surface fitted to bear against a projection on the head and thus to lift the head as the lever rises, substantially as described.

3. In combination, the standard and its grip, the lifting-bar, a head also having a grip, and a lever pivoted on the standard and provided with a cam-surface fitted to bear against a projection on the head to lift the head as the lever rises, and a loop over the projection, substantially as described.

4. In a lifting-jack and in combination, a channeled standard having a chamber formed with an inclined rear fixed wall, a gripping-roller and a lifting-bar tapering from the upper end downwardly, and a suitable lifting-head and lever, all substantially as described.

5. In a lifting-jack having a standard provided with a holding-grip and a head provided with a grip, a grooved and tapered lifting-bar and suitable operating means for lifting said bar, substantially as described.

388,710. LIFTING AND LOWERING JACK. LOUIS J. CRESSLINE, St. Louis, Mo., assignor of one-half to Andrew Warren, same place. Filed Nov. 25, 1887. Serial No. 256,134. (No model.)



Claim.—1. In a lifting-jack, a gripping mechanism consisting of a movable plate in the gripping-chamber, arranged opposite the face of the lifting-bar, a roller interposed between said plate and the bar, and a holder in rear of said movable plate, whereby the plate may be caused to move and the bar and its weight be lowered, substantially as described.

2. In combination, in a lifting-jack, the lifting-bar, the hinged plate, the interposed roller, and a holder for said plate, all substantially as described.

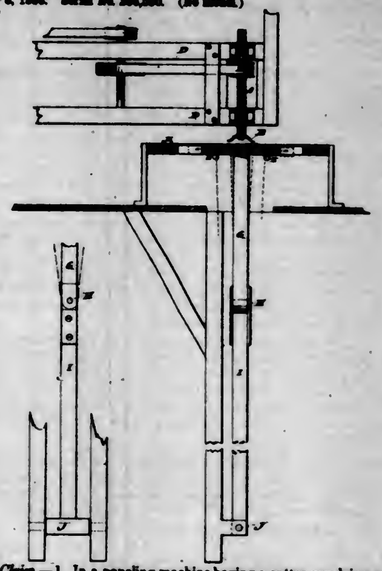
3. In combination, in a lifting-jack, the lifting-bar, the movable plate, the interposed roller, and holder consisting of the cam-lever bearing on the rear of the movable plate, forming a holder therefor, all substantially as described.

4. In combination, in a lifting-jack, the lifting-bar, the movable plate, the interposed roller, and the cam-lever forming a holder for the movable plate, the parts being arranged, as described, with the bearing-point of the cam on the rear face of plate in line with the center of the roller and that of the pivot of the cam-lever.

5. In combination, in a lifting-jack, a grip and a lifting-bar having a taper from upper to lower part, substantially as described.

6. The combination, in a lifting-jack, of a lifting-bar, B, having a tapered channel, the movable plate *d*, the interposed roller C, the holding-lever for the movable plate, and a lifting-head provided with a stationary plate, H, having an inclined front face, with a roller interposed between it and the lifting-bar, substantially as described.

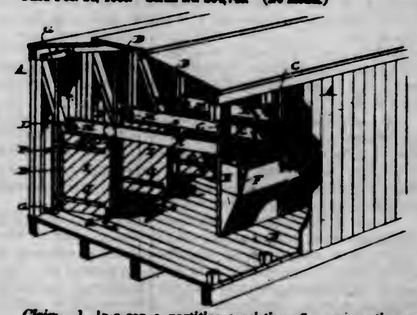
388,711. PANELING-MACHINE. JOHN A. DAHL, New Haven, Conn., assignor to the Dahl Bros. & Company, same place. Filed Mar. 4, 1882. Serial No. 268,892. (No model.)



Claim.—1. In a paneling-machine having a cutter revolving upon a vertical axis, the combination therewith of a holder beneath the cutter adapted to receive the work, the said holder hung below upon two different axes, the said axes at an angle to each other, substantially as described, and whereby said holder may swing beneath the cutter transversely upon one axis and longitudinally upon the other, substantially as described.

2. In a paneling-machine having a cutter revolving upon a vertical axis, the combination therewith of a holder beneath the cutter adapted to receive the work, the said holder hung below upon two different axes, the said axes at an angle to each other, with a former surrounding said holder, the said holder adapted to work against the edges of the former, substantially as described.

388,712. RAILWAY-CAR. CHARLES A. DAVIS, Washington, D. C. Filed Feb. 21, 1882. Serial No. 264,740. (No model.)



Claim.—1. In a car, a partition consisting of a rear section extending from the rear wall of the stall-space partially across said space and adapted to fold against said rear wall, and an independently-removable continuous section above and in line with said rear section, adapted to be raised vertically to the upper part of the car.

2. In a car, the combination of a partition and a laterally-yielding support for the end of said partition, whereby it is adapted to yield laterally.

3. In a car, a partition consisting of a hinged rear section extending partially across the stall-space, and an upper section extending entirely across said space, the two sections being provided with connecting devices, substantially as described and shown, whereby they may be connected and caused to act in unison in resisting side pressure or independently stowed away.

4. In combination with hinged partition-section I and partition board or section K, a pin extending from one into a socket in the other and serving to connect the two while in use, but to permit their ready separation.

5. In a car, the combination of a rear partition-section hinged to swing horizontally against a wall of the car, a partition board or section immediately above and in line with the rear section, extending entirely across the space to be partitioned and free to be raised and lowered at both ends, a fixed support to which one end of the partition-board or upper section is attached, and posts or supports between which the opposite end of said board is passed.

6. In a car, the combination of a vertical rod at one side and posts or supports at the opposite side of the space to be partitioned, a rear partition-section hinged to said rod and arranged to swing laterally, and a partition board or section above and in line with the rear section, provided at one end with an eye to encircle the rod and having its other end extended between and sustained by two of the posts or supports.

7. In a car, the combination of a vertical rod at one side of the space to be partitioned, posts or supports at the opposite side thereof, and a partition-board provided at one end with a swivel-eye encircling the rod, whereby the board is rendered capable of being raised and lowered and turned about its longitudinal axis from a vertical to a horizontal plane, substantially as and for the purpose set forth.

8. In combination with rod B and posts C C, partition-board K, provided with a swivel-eye to encircle the rod, and a hanger or support in the upper part of the car to receive and support the partition-board.

9. In a car, the combination of a partition and an upright rod or support therefor capable of movement transversely to the length of the stall.

10. In a car, the combination of a partition, an upright or support therefor capable of movement transversely to the length of the partition, a guide or guides to limit said movement, and springs bearing against the movable support and serving to restore it to its normal position.

11. In a car, the combination of vertical rod B, posts C C, partition-section I, hinged to swing about said rod, and partition-board K, having an eye or loop to encircle the rod and extending between the posts C C.

12. In combination with rod B and with a partition supported thereby, a guide, P, to hold the rod in position and limit its lateral movement.

13. In combination with a vertical rod, B, and a partition hinged thereto, slotted support G, for said rod, provided with springs H, substantially as described and shown.

388,713. MEAT-CUTTER. PETER DEMBLER and WILLIAM DEMBLER, Philadelphia, Pa. Filed Apr. 26, 1887. Serial No. 236,143. (No model.)



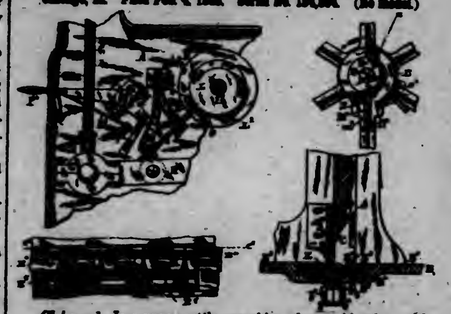
Claim.—1. A meat-cutter consisting of a casing, a rotary blade, and a stationary slotted discharge-plate, the casing having on the inner face of its back a spiral throat and a stationary bed for the rotary blade, said throat and bed being integral portions of said back, and having a circumferential rim which is provided with lugs for holding the discharge-plate in position, said parts being combined and operating substantially as described.

2. A meat-cutter having a discharge-plate with slots E, one wall thereof being oblique, as at *d'*, and the opposite wall, *d²*, at right angles to the side of the plate, and the inner face of said wall *d²* having a pocket, *a*, and a rotary cutter, with mechanism, substantially as described, connected therewith for rotating the same, substantially as described.

3. A meat-cutter having a slotted discharge-plate and a rotary cutter with a cutting-blade, H, having the advance oblique face, *b*, and rear oblique face, *d*, with the cutting-edge *c* at junction of said faces *b* and *d*, said discharge-plate and rotary cutter being so secured within the casing of said meat-cutter as to be in contact, substantially as described.

4. In a meat-cutter, the combination of a casing, a rotary cutter with a blade having the oblique faces *b* and *d* and cutting-edge *c*, with a discharge-plate having tangential slots, one wall of each of the said slots being oblique, as at *d'*, and the opposite at a right angle to the side of the plate, as at *d²*, and, depressed, forming the pocket *a*, substantially as and for the purpose set forth.

388,714. PAPER-CUTTING MACHINE. EDWARD P. BORDEN, Chicago, Ill. Filed Feb. 4, 1886. Serial No. 191,094. (No model.)



Claim.—1. In a paper-cutting machine, the combination, with a movable cutter, of a bed or table, a laterally-movable bar, F', located in front of the cutter and supported and constructed to slide upon the said table, and a spring applied to throw the said movable section of the table toward the cutter, substantially as and for the purpose set forth.

2. In a paper-cutting machine, the combination, with a movable knife or cutter, and a table provided with an opposing stationary part or edge, of a laterally-movable bar, F', a spring applied to throw the said bar F' toward the stationary part of the table, and stops adapted to hold the said movable part or bar from contact with the stationary part of the table, substantially as described.

3. In a paper-cutting machine, the combination, with a movable knife or cutter, of a table comprising a laterally-yielding part or bar, F', made in separately-movable parts or sections, substantially as described.

4. In a paper-cutting machine, the combination, with a movable cutter, of a table made in two stationary parts, F² and F³, separated to form a slot, *b*, at the line of junction between the parts of the table, and provided with lugs *b'* *b²*, bolted together, for uniting the parts, substantially as described.

5. The combination, with the cutting lever H, for actuating the knife, and a clutch device connecting the driving-pulley with the driving-shaft of the machine, and comprising a dog, N, and a latch, M, of a cam-plate, O, adapted to operate said dog and latch, a sliding rod, P', supporting said cam-plate, a hand-lever, P', pivoted upon the machine-frame and connected with the said rod, an arm, P⁵, pivoted upon the said lever, with its free end in the path of the oscillating lever H, a latch, P⁴, pivoted upon the lever P' adjacent to its handle, and a rod, P⁶, connecting said arm P⁵ and latch P⁴, substantially as described.

6. The combination, with the driving-shaft F and the pulley P, and a clutch device for connecting said pulley and shaft, embracing a collar or sleeve, L, upon the shaft, provided with a notch or recess, L', and a movable dog, N, upon the pulley, constructed to engage said recess L', and a cam-plate, O, for actuating said dog, of a hand-wheel, Q, upon the driving-shaft, whereby the latter may be turned into position to prevent the engagement of the dog with the recess when said dog is released by the action of the cam-plate, substantially as described.

388,715. ELEVATOR. EDWARD R. ELLERSON, Westminster, England. Filed Nov. 2, 1887. Serial No. 254,163. (No model.) Patented in England Jan. 27, 1887, No. 1,180; in France Nov. 2, 1887, No. 183,721; in Belgium Nov. 4, 1887, No. 79,413; in Victoria Nov. 21, 1887, No. 5,488, and in New South Wales Nov. 28, 1887, No. 284.

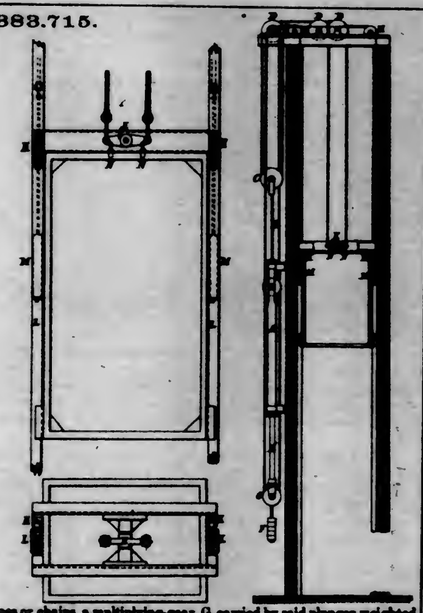
Claim.—1. In combination with the guides L L, wedges K K, and the rocking cross-head E, attached to an elevator-cage, an elongated hydraulic cylinder, A, the plunger B B', carrying the multiplying drums or pulleys C C, and weights F, the guide-pulleys D H, and ropes or pulleys passing in duplicate over said multiplying-drums and guide-pulleys to the wedges and rocking cross-head, substantially as described.

2. The combination, with an elevator-cage having a rocking cross-head, E, for attachment of suspension ropes or chains, of the indicators N N, attached to said cross-head and depending into the cage, substantially as described.

3. In combination with an elevator-cage having a rocking cross-head, E, the long vertical hydraulic cylinder A, the plunger B B', carrying a multiplying-gear, C, and weights F, the guide-pulleys D D, and ropes or chains passed in duplicate over said guide-pulleys from the multiplying-gear to the rocking cross-head, substantially as described.

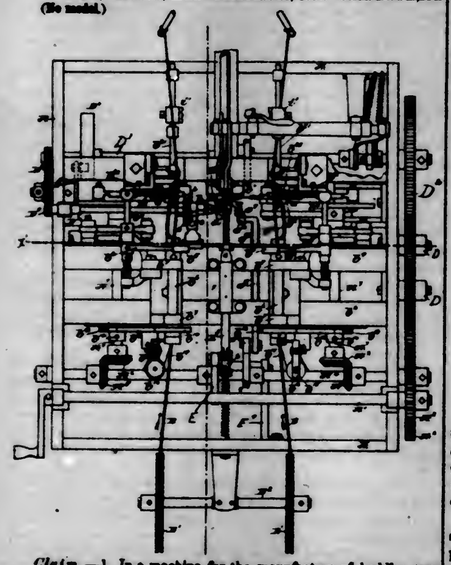
4. In combination with an elevator-cage, its suspension ropes or chains, and an elongated vertical hydraulic cylinder having a plunger, B B', carrying a multiplying-gear for attachment of said suspension

388,715.



ropes or chains, a multiplying-gear, G, carried by said plunger, weighted brake-wedges K K, arranged on the cage, guide-pulleys H H, and an independent set of ropes or chains passed from the gear G over the pulleys H to said brake-wedges and moved uniformly with the suspension ropes or chains, substantially as described.

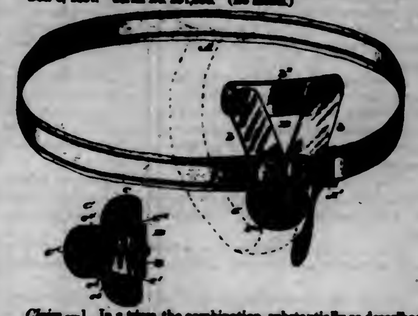
388,716. MACHINE FOR MAKING LOOM-HARNESS. THOMAS A. BENSON, Lawrence, Mass. Filed June 29, 1887. Serial No. 243,202. (No model.)



Claim.—1. In a machine for the manufacture of heddles, two parallel needles, C C, to contain the thread from which the heddles are to be made, the said needles being located in different horizontal and also in different vertical planes, and the two eye-formers, one of which is offset, as described, combined with two thread-twisters of different lengths, means, substantially as described, to operate the eye-formers and thread-twisters, whereby the threads are wrapped about the eye-formers and the latter are moved into position at the ends of the said needles, and eye-discharging devices co-operating with the said eye-formers, substantially as and for the purposes set forth.

2. In a machine for the manufacture of heddles, two parallel needles to contain the threads from which the heddles are to be made and to receive upon them the eyes of the heddles, the said needles being located in different horizontal and vertical planes, two thread-twisters one of which is longer than the other, two eye-formers one of which is offset with relation to the other, two sets of loop-dischargers located in different vertical and horizontal planes, and means, substantially as described, to operate the said needles, loop-twisters, eye-formers, and loop-dischargers, substantially as set forth.

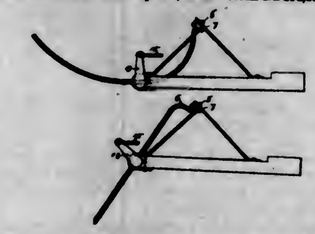
388,717. TRUSS. ROBERT H. FARMER, Brooklyn, N. Y. Filed Dec. 6, 1887. Serial No. 257,259. (No model.)



Claim.—1. In a truss, the combination, substantially as described, of a pad-frame comprising an upper horizontally-arranged extended abdominal rest provided with a cushion or lining on its inner surface, and having a downwardly-depending pad-support constructed independent of and secured at an angle to said abdominal rest, and carrying a pad at the lower end thereof, having a spring-actuated pressure-block therein, and a waist belt or girth permanently secured to said support at one end and the other end thereof adapted to be removably attached thereto, the securement and attachment of said belt being at a point between the spring-pad and abdominal rest, but nearer the pad, whereby a positive securement of the pad-support and pad is obtained and the greatest pressure exerted upon the spring-pad.

2. The combination, with a truss, of the pad-supporting frame, consisting of angularly-arranged strips b and an upper strip, b', having a cushion or lining on its inner surface and adapted to rest against the abdomen, and a pad carried at the lower end of said frame and provided with a spring-actuated pressure-block or plunger, substantially as described.

388,718. BUNDLE-CARRIER FOR HARVESTERS. GRANT J. PIER, Minneapolis, Minn. Filed Apr. 12, 1888. Serial No. 270,082. (Model.)



Claim.—1. In a bundle-carrier, a series of carrying-arms mounted in a suitable support by pivoted ends whose axial lines are oblique to the plane of the arms, in combination with a shaft having a series of transverse wedge-shaped slots, through which said arms pass, and means for turning said shaft on its axis, and thereby turning said arms on their pivots, substantially as described.

2. In a bundle-carrier for harvesters, the combination, with a series of carrying or holding arms mounted in a suitable support by pivoted ends whose axial lines are oblique to the plane of the arms and capable of a partial rotation on their axes to dump their load, of the supporting and operating rock-shaft located between the pivotal supports of the arms and their free ends, and provided with a series of transverse wedge-shaped slots, through which said arms pass, substantially as described, and for the purposes set forth.

3. In a bundle-carrier for harvesters, a series of carrying or holding arms mounted in a suitable support by pivoted ends whose axial lines are oblique to the plane of the arms, and provided near their upper ends with offset portions that move upward against the bundles as the arms are turned on their axes, in combination with operating mechanism for turning the said arms, substantially as described.

388,719. LACE PIN OR BROOCH. EDWARD B. GAUNT, Glasgow, Ky. Filed Sept. 9, 1887. Serial No. 249,353. (No model.)

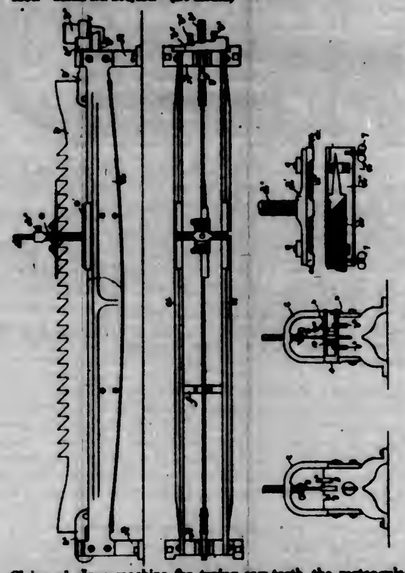


Claim.—1. The combination, with a body-plate having at one end a sleeve and at the other end a cast, of a pin having an enlarged or flattened portion near its point.

2. The combination, with a body-plate having at one end a sleeve and at the other end a cone-shaped cast, and a spring secured to the end of the body-plate carrying the sleeve, said spring having a tooth or catch located thereon, of a pin having a collar near its outer end.

3. The combination of a body-plate having at one end a cone-shaped cast, a bolt or stud projecting from the small end of said cast, a sleeve secured at the other end of said plate, and a spring secured to the said plate near the sleeve, said spring provided at its free end with a curved projection and with an inwardly-inclined tooth or catch, with a headed pin having a flattened or enlarged portion near its point and a collar near its head, said collar having its inner face beveled.

388,720. MACHINE FOR TRUING THE TEETH OF SAWS. ROBERT GARDNER, Jr., Portland, New Brunswick, Canada. Filed Jan. 21, 1888. Serial No. 261,602. (No model.)



Claim.—1. In a machine for truing saw-teeth, the rectangular open frame adapted to support the saw-blade, straining devices for adjusting the blade to a suitable tension, combined with a file-carrier adapted to move longitudinally upon the side bars of the frame to true the teeth of the saw, substantially as described.

2. In a machine for truing saw-teeth, the frame-work adapted to receive and support the saw, and means for holding the same under tension, combined with a universally-adjustable file-carrier moving upon the frame, substantially as described.

3. In a machine for truing saw-teeth, the frame adapted to hold the saw, combined with the yoke, and a vertically-adjustable file-carrier movable longitudinally upon the frame, substantially as described.

4. In a machine for truing saw-teeth, the frame to hold and suspend the saw, combined with a file-carrier made vertically and transversely adjustable, and the yoke to which the file-carrier is attached, movable upon the frame longitudinally, substantially as described.

5. In a machine for truing saw-teeth, the frame recessed at each end to receive the saw, combined with means, as the key b^4, and wedge-block interposed between the key b^4 and frame to subject the saw to longitudinal tension, substantially as described.

6. In a machine for truing saw-teeth, the frame recessed at each end to receive the saw, combined with means, as the key b^4, stepped wedge-block b^5, and the supports b^6, to regulate the tension of the suspended saw, substantially as described.

7. In a machine for truing saw-teeth, the frame provided at each end with notches or recesses of different depths to receive saws of different widths, substantially as and for the purposes described.

8. In a machine for truing saw-teeth, the frame, and straining devices adapted to hold and suspend the saw under a given tension, combined with a transversely-adjustable slotted file-carrier, substantially as described.

9. A file-carrier for truing saw-teeth, consisting of a clamp, d^2, adjustably attached to a plate fixed to a spindle, and fasteners, as set screws 7, to hold the file in position transversely in the said clamp, substantially as described.

388,721. MATCH-FRAME. GEORGE W. GATES, Oshkosh, Wis. Filed Feb. 17, 1887. Serial No. 227,852. (No model.)



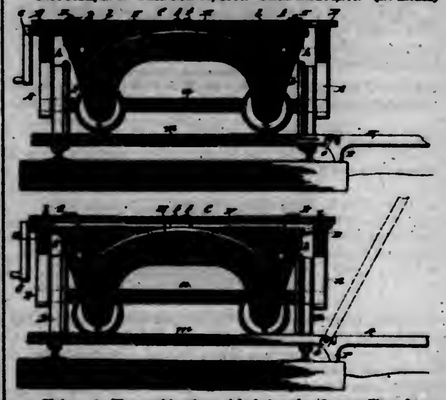
Claim.—In a match-splint-holding press or frame, the combination of a number of slats concave on the one side and convex on the other, held permanently together with curved spaces between them, into which the splints are thrust and held, substantially as described.

388,722. MATCH PRESS OR FRAME. GEORGE W. GATES, Oshkosh, Wis. Original application filed Feb. 17, 1887, Serial No. 227,852. Divided and this application filed Sept. 1, 1887. Serial No. 248,591. (No model.)



Claim.—In a match-splint-holding press or frame, the combination of a number of slats having curved grooves or channels in their sides into which the match-splints are thrust and held at three or more points, substantially as described.

388,723. DEVICE FOR HANDLING CARS. GEORGE H. GRAY, Port Plain, N. Y. Filed Feb. 14, 1888. Serial No. 264,203. (No model.)



Claim.—1. The combination, with the truck, of an auxiliary frame mounted below the same and provided with wheels at right angles to the wheels of the truck, and means for raising and lowering said auxiliary frame, as set forth.

2. The combination, with a truck, of an auxiliary frame provided

with wheels, means for raising and lowering said auxiliary frame, and supplemental rail-sections, substantially as set forth.

3. The combination, with a truck, of an auxiliary frame provided with wheels, springs suspending said frame in an elevated position, and means for lowering said frame, substantially as set forth.

4. The combination, with a truck, of an auxiliary frame provided with wheels, wedge-blocks, a differentially-threaded shaft moving said blocks, and an operating-crank, substantially as set forth.

5. The combination, with the truck and the auxiliary frame provided with wheels, of wedge-shaped blocks, differential screw-shaft moving said blocks, and springs connected to the truck and engaging the auxiliary frame, substantially as set forth.

6. The combination, with the truck and the auxiliary frame, of bolts connected to the latter and playing through openings in the truck-platform, and means for raising and lowering said auxiliary frame, substantially as set forth.

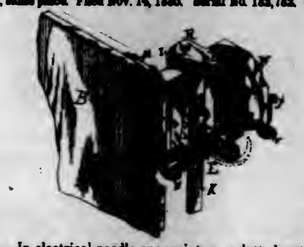
7. The combination, with the permanent track, of the rails N, provided with tongues and feet at their inner ends, and rails *n*, pivoted to said tongues, substantially as set forth.

383,724. DOOR-SECURER. GEORGE G. GREY, Adams, Mass. Filed Feb. 17, 1888. Serial No. 264,226. (No model.)



Claim.—The combination of an attaching-plate provided with a spur at an angle to the plate for engaging the door-casing, a brace-plate provided with a flange adapted to rest against the casing of the door, a fastener-plate provided with a flange adapted to engage the door, and a lift-plate between the brace-plate and the attaching-plate, said plates being hinged together at one end, the lift-plate being provided with a hole, and the attaching-plate being provided with a projection for engaging the hole of the lift-plate for holding the latter in position, substantially as described.

383,725. ELECTRICAL NEEDLE ANNUNCIATOR. WILLIAM R. GILL and RUDOLPH SCHNEIDAU, Chicago, Ill., assignors to John F. Wolbrank, same place. Filed Nov. 14, 1885. Serial No. 182,782. (No model.)



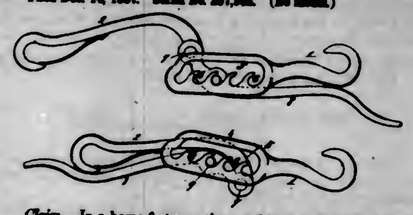
Claim.—In electrical needle annunciators, a slotted restoring-bar, in combination with weighted levers, the weighted ends of the weighted levers being in the slots, and being restored thereby to their normal position, substantially as described.

383,726. DETACHABLE CAR-SEAT ARM. JAMES A. GOBIN, Huntington, W. Va. Filed Nov. 7, 1887. Serial No. 254,537. (No model.)



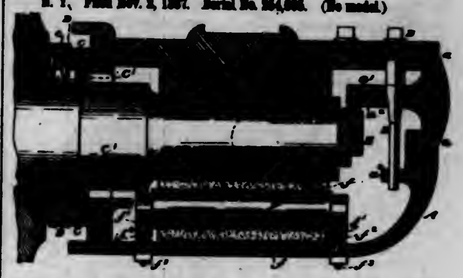
Claim.—The combination of the end pieces, B, of a car-seat and the keepers E, secured thereon, each consisting of a base portion, *e*, lug F, integral with said base, having reduced sides, and a head, *f*, with the back D, the arms C, secured thereto and having shanks *c*, perforated at their free ends by openings G, and having axial slots *g*, communicating with said openings and extending from the openings to the extremities of the arms, the opening G corresponding in diameter to the greatest width of lug F, and the slot *g* to the lesser diameter of said lug, all constructed and arranged substantially as and for the purpose described.

383,727. HAME-FASTENER. JOHN C. HACKNEY, St. Louis, Mo. Filed Dec. 14, 1887. Serial No. 257,982. (No model.)



Claim.—In a hame-fastener, the combination of hook 1, having slot 3, forming ears 4, ratchet-teeth 6 in the ears 4, hook 2, lever 8, pivoted to the hook 2, and arbors or journals 9 on the lever engaging the ratchet-teeth in the ears on hook 1, substantially as and for the purpose set forth.

383,728. CAR-AXLE BOX. JAMES M. HALLOWES, New York, N. Y. Filed Nov. 2, 1887. Serial No. 254,005. (No model.)



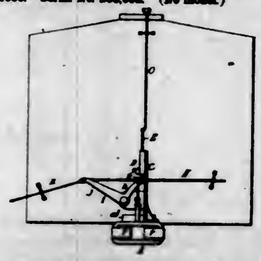
Claim.—1. The axle-box A, having the perforated lug a^4, combined with the door *a*, having the lug *a'*, provided with the tapered hole a^5, and the screw-bolt B, substantially as set forth.

2. The axle and the packing-ring C, having the slot *c'*, combined with the circular plate C and screw *c*, substantially as set forth.

3. The axle and the packing-ring C, having the slot *c'*, combined with the plate C, screw *c*, and spring D, substantially as specified.

4. The axle-box A, combined with the interior end stop, E, and bolts *e*, substantially as set forth.

383,729. CAR-COUPLING. LORENZO H. HARRIS, Auburn, Ill. Filed Mar. 27, 1888. Serial No. 268,602. (No model.)



Claim.—1. In combination, an upright support or standard, the slide E, applied to work thereon, a coupling-pin attached to said slide, the weighted bell-crank lever projecting into said slide, and the rods M N O, all substantially as shown and described.

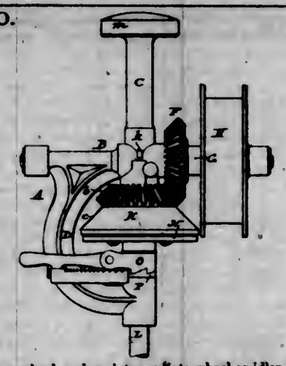
2. In combination, the slide E, with its support and coupling-pin, the bell-crank lever, its operating-rods, and the draw-head having the springs *r r* within its mouth, as set forth.

383,730. MACHINE FOR BORING, DRILLING, &c. HEZEKIAH C. HEISLEY, Richmond, Ind. Filed Feb. 6, 1888. Serial No. 263,762. (No model.)

Claim.—1. In a machine for boring, drilling, &c., the combination of the frame A, provided with a band-wheel, H, and a gear-wheel, F, adapted to rotate in unison, a tool-stock or spindle mounted in the frame and provided with a friction-wheel, N, and an idler encircling the spindle and adapted to engage with the wheels F and N.

2. In a machine for boring, drilling, &c., the combination, with a frame, of a band-wheel and a gear-wheel carried thereby and adapted to rotate in unison, a spindle or tool-stock mounted in the frame and

383,730.



provided with a wheel, and an intermediate wheel or idler journaled upon the spindle, substantially as shown, and adapted to impart motion from the gear-wheel to the wheel upon the tool-stock.

3. In combination with a frame, a band-wheel and a gear-wheel mounted thereon and adapted to rotate in unison, a tool-stock or spindle journaled in the frame, a gear or wheel carried by said tool-stock, and an idler loosely encircling the stock.

4. In combination with a frame, a band-wheel, H, and a gear-wheel, F, both mounted therein and adapted to rotate in unison, a tool-stock or spindle, a double-faced gear or wheel mounted loosely upon the spindle and adapted to remain in engagement with the gear-wheel F, a gear or wheel rigidly secured to the spindle, and a spring adapted to hold the spindle-wheel normally out of contact with the wheel F.

5. In combination with a frame, a band-wheel, H, and a gear, F, both mounted therein, a tool-stock or spindle, L, journaled in the frame and provided with a friction-wheel, N, a combined gear and friction wheel, K, loosely encircling the spindle, and a spring, M, serving to keep the wheels K N normally separated.

6. In combination with a frame, a band-wheel, H, and a gear, F, both mounted thereon, a tool-stock or spindle, L, journaled in the frame and provided with a friction-wheel, N, a combined gear and friction wheel, K, encircling the spindle, a spring, M, tending to keep the wheels K and N separated, and the collars O P, adapted and arranged to hold these wheels in engagement.

7. In combination with a frame, A, band-wheel H, and gear-wheel F, carried thereby, a tool-stock or spindle mounted in the frame and adapted to rotate and also to move longitudinally therein, a wheel secured rigidly to said spindle, and an idler loosely encircling the spindle and adapted to engage the wheel thereon as said spindle is moved relatively to the frame.

8. In combination with a frame, a band-wheel, H, and gear-wheel F, carried thereby, a tool-stock or spindle mounted in said frame, a wheel secured rigidly to the spindle, an idler encircling the spindle and adapted to engage the wheel thereon as the said spindle is moved longitudinally, a spring tending to keep the wheels upon the spindle separated, and a cam adapted and arranged, substantially as shown, to overcome the force of the spring and to hold the wheels in engagement.

9. In a machine constructed substantially as shown and described, the combination, with the frame, of a spindle, L, mounted therein and provided with a wheel, a sleeve, I, encircling the spindle and provided at its lower end with a collar, *a*, a nut, J, screwing upon the spindle, and a wheel mounted upon the sleeve and clamped between the nut and the collar.

10. In combination with frame A, provided with arms B and D, a spindle, L, mounted in said frame, a sleeve, I, encircling the spindle and provided with a collar, *a*, a wheel mounted upon the sleeve, a nut screwing upon the sleeve and provided with a series of notches, *j*, a pin, *k*, mounted in frame A and adapted to engage the notches, and a spring, *l*, bearing upon said pin, all substantially as shown.

11. In combination with frame A, a spindle, L, mounted therein, an idler encircling said spindle, and a wheel, N, secured rigidly upon the spindle and comprising hub *e*, plates *f g*, paper body A, and bolts *i*.

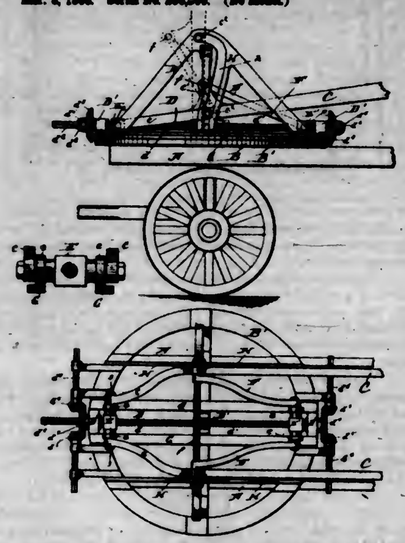
12. In combination with frame A, provided with a gear-wheel, F, a spindle mounted in the frame and provided with a conical friction-wheel, N, and a wheel, K, encircling the spindle and provided on its upper face with teeth *b* and with a conical shell, *c*, as and for the purpose set forth.

13. In combination with a frame, a spindle mounted and adapted to slide longitudinally therein, a conical friction-wheel, N, secured to said spindle and provided with a countersunk hub, and a conical friction-wheel, K, loosely encircling the spindle and provided with a hub to fit within the hub of the wheel N.

14. In a machine of the class described, the combination, with the frame A, having the upright arm C and tool-operating mechanism, of a fixed nut secured to the arm C, and a threaded stem passing through said nut and provided with a hand-wheel.

15. In combination with a shaft, I, threaded externally and provided at its lower end with a collar or flange, *a*, a wheel, K, mounted loosely upon the spindle and recessed at its upper end, and a nut encircling the spindle and serving to hold the wheel in place thereon.

383,731. TURN-TABLE EXTENSION-LADDER TRUCK. CHARLES HIMM, Chicago, Ill., assignor to Everett B. Preston, same place. Filed Mar. 5, 1888. Serial No. 266,500. (No model.)



Claim.—1. The combination, with a turn-table truck, of guide-bars G G, right-and-left screw D, nuts E E', ladder C, pivoted to one of said nuts, and link F, pivoted to the other of said nuts and to the ladder, substantially as specified.

2. The combination, with a turn-table truck, of guide-bars G G, right-and-left screw D, nuts E E', ladder C, pivoted to one of said nuts, and link F, pivoted to the other of said nuts and to the ladder, said link F being longer than the distance between the two pivots on the ladder, substantially as specified.

3. The combination, with a turn-table truck, of guide-bars G G, right-and-left screw D, nuts E E', ladder C, pivoted to one of said nuts, and link F, pivoted to the other of said nuts and to the ladder, and guide-braces H H, secured to the turn-table on each side of the ladder, substantially as specified.

4. The combination, with a turn-table truck, of guide-bars G G, right-and-left screw D, nuts E E', ladder C, pivoted to one of said nuts, and link F, pivoted to the other of said nuts and to the ladder, said nuts E E' being furnished with friction-rollers to roll on said guide-bars G G, substantially as specified.

5. The combination, with a truck, of a right-and-left screw, a pair of nuts, a structure pivoted to one of said nuts, and a link pivoted at one end to said structure and at the other to the other of said nuts, substantially as specified.

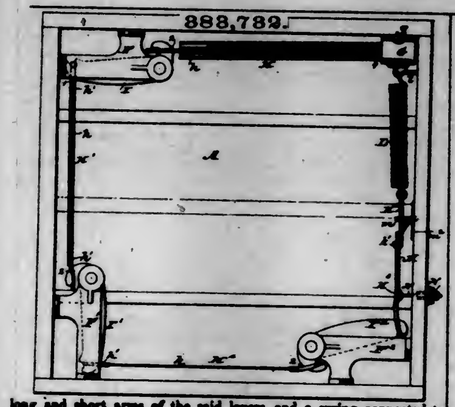
6. The combination, with a turn-table truck, of guide-bars G G, right-and-left screw D, nuts E E', ladder C, pivoted to one of said nuts, and link F, pivoted to the other of said nuts and to the ladder, and guide-braces H H, secured to the turn-table on each side of the ladder, said guide-braces H H having slots A A to receive a pivot projection or roller, *c'*, on the ladder, substantially as specified.

383,732. TEMPERATURE-REGULATOR FOR INCUBATORS. JOHN W. HILL, Valley Falls, Kans. Filed July 30, 1887. Serial No. 245,705. (No model.)

Claim.—1. A thermostat for incubators, consisting of a series of pivoted levers, and a series of thermostatic links connected directly to the long and short arms of the said levers, substantially as described, whereby provision is made for permitting the links to exert a pull when contracting, as set forth.

2. In a thermostat for incubators, the combination of a series of pivoted levers, a series of thermostatic links connected directly to the

388,732.



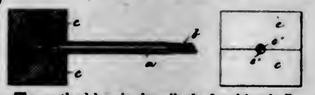
long and short arms of the said levers, and a spring connected to the last link of the series and serving to actuate the links and levers when permitted by the expansion of the links, substantially as herein shown and described.

3. The combination, with the incubating-chamber provided with a valve, of a series of pivoted bell-crank levers, a series of thermostatic links connected to the long and short arms of the said levers, and intermediate mechanism between the said last link and the valve for operating the said valve, substantially as herein shown and described.

4. The combination, with the incubating-chamber provided with a hinged valve and egg-drawer in said chamber, of a series of bell-crank levers pivoted in the drawer, a series of thermostatic links connected to the long and short arms of the said levers, a spring, a link connecting the spring to the last link of the series, and intermediate mechanism for operating the valve by the expansion and contraction of the said links, substantially as herein shown and described.

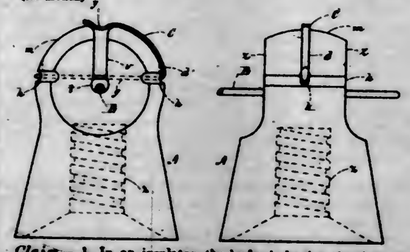
5. The combination, with the incubator-drawer A, of the links H H' H² H³, the bell-crank levers I I' I², the spring L, the bell-crank lever M, the cord N, and a rod for operating the ventilator-valve or the index of a register supported upon the outside of the incubator, substantially as described.

388,733. METHOD OF MAKING HEDDLES. SALMON F. JENKINS, East Braintree, Mass. Filed Nov. 30, 1887. Serial No. 256,556. (No model.)



Claim.—The method herein described of making hollow needles, which consists in first constructing a hollow cylinder, then inserting an open end thereof between a series of reciprocating and rotating dies having tapering recesses, and laterally hammering and compressing the walls of the open end of the cylinder into a uniformly-tapered closed point, substantially as set forth.

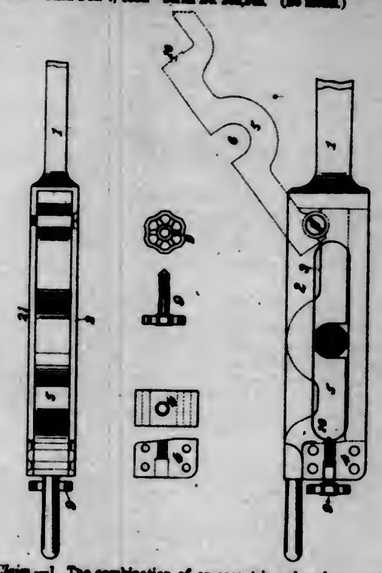
388,734. INSULATOR FOR ELECTRICAL WIRES. FRANK H. KETCH, Peterborough, N. H. Filed Feb. 3, 1888. Serial No. 262,898. (No model.)



Claim.—1. In an insulator, the body A, having the slot *v* and hole *h*, in combination with the fastener C, inserted in said hole and provided with the arm *r*, substantially as described.

2. In an insulator, the fastener C, having the arm *r* and bend *p*, in combination with the body A, having the slot *v* and hole *h*, substantially as set forth.

388,735. ROTARY-HOE. PETER KERSVAAG, Youngstown, Ohio. Filed Feb. 7, 1888. Serial No. 263,262. (No model.)



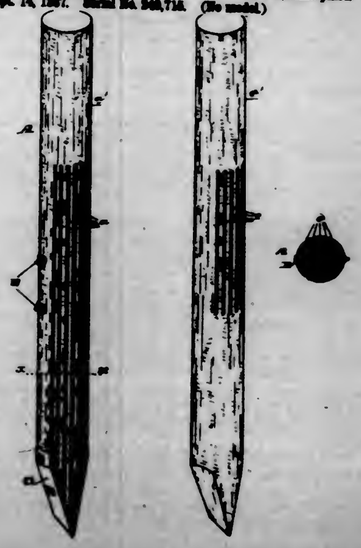
Claim.—1. The combination of an eccentric-rod and a movable latch for connecting said rod to valve-operating mechanism, substantially as set forth.

2. The combination of a slotted eccentric-rod, a valve-operating pin, and a movable latch or block provided with a hook for engaging said pin, substantially as set forth.

3. The combination of an eccentric-rod provided with slotted side bars, a valve-operating pin in the side bars, and a latch provided with a hook for locking the pin to the eccentric-rod, substantially as set forth.

4. The combination of an eccentric-rod provided with slotted side bars, a valve-operating pin fitting in the slots in the side bars, a latch provided with a hook for locking the pin to the eccentric-rod, and a look for holding the latch in position, substantially as set forth.

388,736. PROTECTING AND PRESERVING PILES. CHARLES C. LAKE, San Francisco, Cal., assignor to John H. Scott, same place. Filed Sept. 14, 1887. Serial No. 249,718. (No model.)



Claim.—1. The method of protecting and preserving piles, which consists in splitting the pile in that portion of it which is exposed to attack, and in then treating the split portion with a protective or antiseptic compound, whereby the slits are filled with it and the substance of the wood permeated, substantially as herein described.

2. The method of preserving piles, which consists in splitting, in substantially the direction of its length, that portion of the pile which is exposed to attack, leaving the upper or top portion of the pile unsplit, and in treating the split portion with a protective or antiseptic compound, whereby its slits are filled and its substance permeated, substantially as herein described.

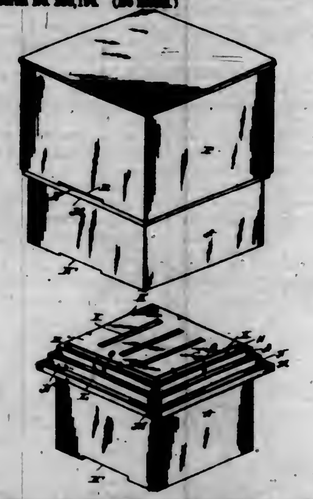
3. The method of preserving piles, which consists in splitting, in substantially the direction of its length, that portion of the pile which is exposed to attack, leaving the top portion unsplit, in then treating the split portion with a protective or antiseptic compound, whereby its slits are filled and its substance permeated, and in then spiking or pinning the split portion together, substantially as herein described.

4. The pile provided in the direction of its length with a number of slits extending throughout that portion which is exposed to attack, said pile having its top or upper portion unsplit, substantially as herein described.

5. A pile having a solid or unsplit upper portion, and its lower portion, which is exposed to attack, slitted or split, and its split portion spiked or pinned transversely, the slits of said portion being filled with a protective or antiseptic compound, substantially as herein described.

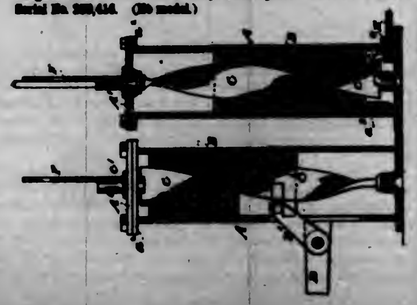
6. A pile having its lower portion split, its upper portion unsplit, and a metal cap for covering its point, substantially as herein described.

388,737. BEE-HIVE. JOHN LAMB, Bremen, Ind. Filed Dec. 27, 1887. Serial No. 259,194. (No model.)

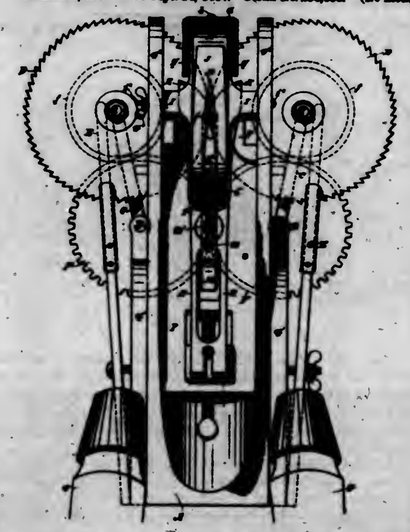


Claim.—The combination, with a bee-hive, of the supporting-collar formed with the exterior shoulder and having the supporting-hooks, and the cover or casing lined with a non-conducting material and formed at its bottom with a small opening or entrance, as set forth.

388,738. SWITCH-GEARD. GEORGE H. LEONARD, St. Paul, Minn., assignor of one-half to C. W. Hedegyre, same place. Filed Dec. 30, 1887. Serial No. 259,444. (No model.)



388,739. FRUIT-STONING MACHINE. BENJAMIN A. LILLIE, San Francisco, Cal. Filed Sept. 24, 1887. Serial No. 250,082. (No model.)



Claim.—1. In a fruit-stoning machine, and in combination with rotary cutters, the opposing curved spring guide-plates on each side of the cutters and the spring-arms secured below, and on which said plates are mounted, whereby the fruit in being drawn between the plates by the cutters is closed upon by the plates, substantially as described.

2. In a fruit-stoning machine, and in combination with the rotary cutters, the opposing curved guide-plates, the spring-arms on which they are mounted, whereby they close upon the fruit as it is drawn between them by the cutters, and an adjustable connection between the plates and the supporting spring-arms, substantially as described.

3. In a fruit-stoning machine, and in combination with the rotary cutters, the opposing guide-plates, the spring-arms on which they are mounted, and the adjustable connection of said spring-arms with their supports, substantially as described.

4. In a fruit-stoning machine, and in combination with the rotary cutters, the opposing guide-plates, the spring-arms on which they are mounted, the adjustable connection between the plates and the arms, and the adjustable connection between the arms and their supports, substantially as described.

5. In a fruit-stoning machine, and in combination with the rotary

cutters, the opposing guide-plates, the spring-arms on which they are mounted, and the oscillating brackets on which the arms are mounted, whereby the plates may be adjusted to or from each other, substantially as described.

6. In a fruit-stoning machine, and in combination with the rotary cutters, the opposing guide-plates, the spring-arms on which they are mounted, and the adjustable tension-springs on the back of the spring-arms, substantially as described.

7. In a fruit-stoning machine, and in combination with the rotary cutters, the adjustable opposing guide-plates, the adjustable spring-arms on which they are mounted, and the adjustable brackets supporting the spring-arms, substantially as described.

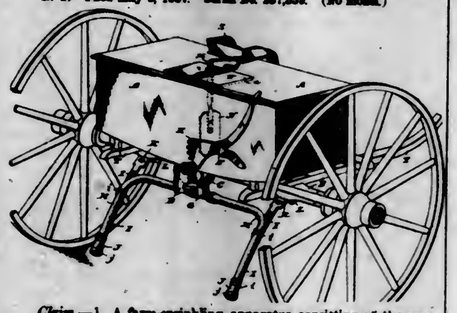
8. In a fruit-stoning machine, and in combination with the rotary cutters, the bifurcated scraper-knives below, and the intervening quartering knives or guides secured thereto, substantially as described.

9. In a fruit-stoning machine, the rotary cutters, in combination with the bifurcated scraping-knives below, the intervening quartering knives or guides, and the adjustable connection between said knives or guides and the scraping-knives, substantially as described.

10. In a fruit-stoning machine, the rotary cutters, in combination with the adjustable segmental plates *n*, secured thereto and covering a portion of the teeth of the cutters, said plates having prongs projecting from the peripheries of the cutters, and the adjustable covering-plates O, secured to the cutters, whereby but a portion of the teeth of the cutters may be exposed in advance of the prongs, substantially as described.

11. In a fruit-stoning machine, the rotary cutters, in combination with the adjustable segmental plates *n* and O on the side of the cutters and covering all their teeth but a portion which is left exposed, said plates being movable to and from each other to vary the length of the exposed portion, and the prongs N on the plates *n*, extending beyond the peripheries of the cutters, substantially as described.

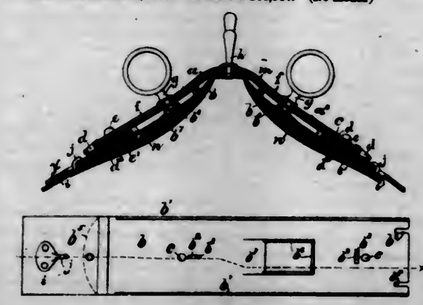
383,740. SPRINKLING-MACHINE. RUSSEL P. LOVEJOY, Craig, N. Y. Filed May 6, 1887. Serial No. 237,339. (No model.)



Claim.—1. A farm-sprinkling apparatus consisting of the reservoir A', with its rounding bottom, and vibrating agitator M N, to the bottom of which tank is attached the discharge tube and cock C, and T-tube G, carrying the hose-sections H, with the roses J J, supported by the adjustable arms I I, the whole mounted upon the axle B and thills T.

2. The combination, with the tank, axle, and wheels, of the yielding arms I I, each provided with a portion substantially parallel with the bottom of the tank and a rearwardly-drooping portion to engage the hose-sections, and provisions, as described, for endwise adjustment of said arms, as set forth.

383,741. HARNESS-SADDLE. STEPHEN A. MARKER, Newark, N. J. Filed Mar. 5, 1888. Serial No. 266,557. (No model.)



383,741.



Claim.—1. The combination, with the pad-plate *a* and shell *b*, provided with flanges *b'*, secured thereto to form a channel open at its outer end, of the skirt *k*, having its inner end attached to the plate within the said channel, the whole constructed and arranged as shown and described.

2. The combination, with the plate *a* and shell *b*, having flanges *b'*, of the shouldered lug b^3, and the hole or notch a^2, to fit the end of such lug, and means, substantially as described, for securing the plate and shell together, as and for the purpose set forth.

3. The combination, with the plate *a* and shell *b*, having the flanges *b'* secured together to form a channel between the same, of longitudinal and transverse ribs b^4 and incline b^7, as and for the purpose set forth.

4. The combination, with the plate *a*, provided with a hole, a^4, and the foundation-piece *f*, secured thereon, of the pad and loop, *d*, having shank *d'*, inserted between the inner end portions of the plate and foundation-piece, and the stud d^3, as and for the purpose set forth.

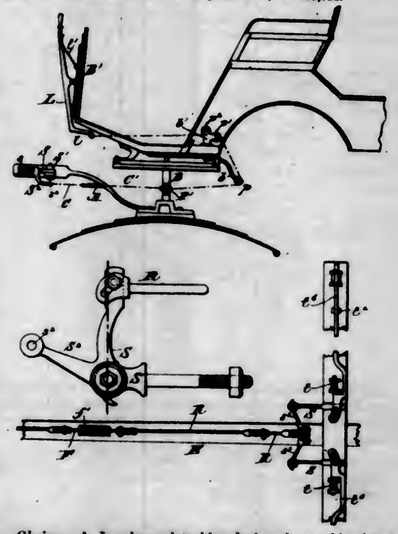
5. The combination, with the plate *a* and shell *b*, provided with flanges *b'*, and extension b^5, of a flexible end piece secured to the said extension beyond the ends of the ribs b^7, the whole constructed and arranged as and for the purpose set forth.

6. The combination, with the plate *a* and shell *b*, provided with flanges *b'*, and extension b^5, of a flexible end piece skived down at its inner end, as and for the purpose set forth.

7. The combination, with the plate *a* and shell *b*, of the extension b^5, offset from the body of the shell, and the flexible end piece, *i*, secured thereon, as and for the purpose set forth.

8. The combination, with the plate *a*, shell *b*, constructed as described, and the skirt *k*, of the flexible end piece, *i*, having the hook or lug *j* secured to its upper side, as and for the purpose set forth.

383,742. HORSE-DETACHER. THEODORE MAHEU and ELIE ROUSSEAU, Tourcoing, France. Filed Feb. 23, 1888. Serial No. 264,942. (No model.) Patented in France Aug. 17, 1887, No. 185,256.



Claim.—1. In a horse-detaching device, the combination, with the thill or whiffletree and a hitching-pin provided with a forked head having a segmental slot formed therein, of a rocking lever connected to the fork of the pin by a bolt passing loosely through the segmental slots in the ears of the fork, and means for rocking the lever, to move the pin out of its bearings, substantially as and for the purpose specified.

2. In a horse-detaching device, the combination, with the thill or whiffletree and a hitching-pin having its bearings on or in said thill or whiffletree, said pin being provided with a forked head having a segmental slot formed therein, of a spring-actuated rock-lever connected to the fork of the pin by a bolt passing loosely through the segmental slots in the ears of said fork, the stress of the spring being exerted to hold the pin in its bearings, and means for rocking the lever against the stress of its spring to move the pin out of its bearings, substantially as and for the purposes specified.

3. In a horse-detaching device, the combination, with the double or whiffle tree and the pole of the vehicle provided with a detachable breast-strap ferrule, of a pin or bolt to lock said ferrule to the pole, hitching-pins arranged in pairs on opposite sides of the pole and working in bearings secured to the whiffletree, said pins being provided with a forked head having a segmental slot formed in the ears thereof, levers connected to the fork of the pins by means of a bolt passing loosely through said segmental slots, a rocking segment and links and connecting-rods connecting the levers of the hitching-pins and the retaining-bolt for the breast-strap ferrule with said rocking segment, and a draft rod or chain for rocking the segment to simultaneously withdraw the retaining-bolt and hitching-pins from their bearings, substantially as and for the purposes specified.

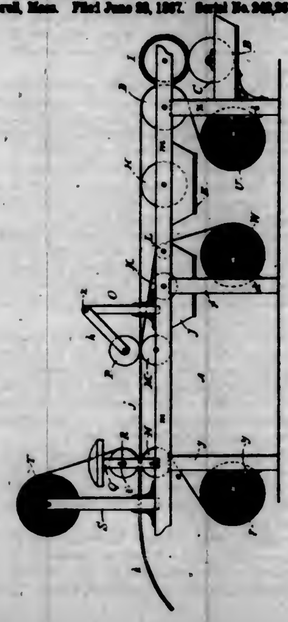
4. The combination, with the pole of a vehicle, of a detachable breast-strap ferrule, a bolt for locking the ferrule to the pole, said bolt having a forked head, in which is formed a segmental slot, a rock-lever connected with the fork of the bolt by a bolt passing loosely through the segmental slots in the ears of the fork, and a cord or rod for rocking the lever from the driver's seat, substantially as and for the purposes specified.

383,743. COTTON-CULTIVATOR. CHARLES S. MCCALL and JAMES L. HAYNIE, Bennettsville, S. C. Filed Mar. 16, 1888. Serial No. 267,249. (No model.)



Claim.—The combination, in a cotton-cultivator, of a cross-bar and a series of blades secured thereto, each of said blades being straight upon its lower edge for two-thirds of its length, and having its rear one-third or wing portion broader than the front two-thirds, and having its broader portion curved around into a concave until its lower edge is in the same horizontal plane with the lower edge of the front two-thirds of the blade, and said blade having its upper edge straight horizontally, but curved to one side, whereby the rear or wing portion of the blade is given a compound curve.

383,744. PAPER-BOARD MACHINE. JAMES H. MCCLELLAND, Pepperell, Mass. Filed June 22, 1887. Serial No. 242,361. (No model.)

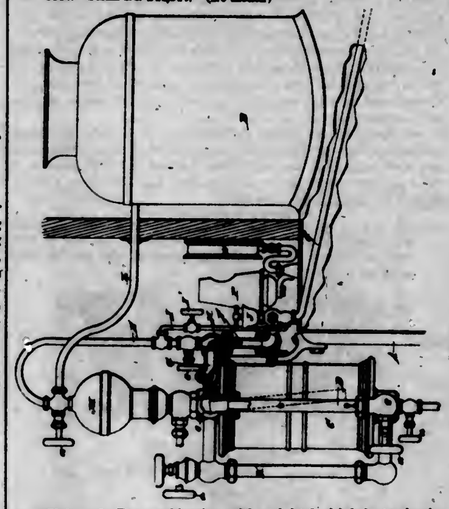


Claim.—1. A paper-board machine comprising the frame A, paste-troughs B E J, paste-rolls C H K, guide-rolls D L, brush I, bed-rolls M N, presser-roll P, pivoted arms A, presser-roll R, standards Q, and the mandrels U W F T, constructed, combined, and arranged to operate substantially as described.

2. A paper-board machine comprising a frame, brackets, mandrels, paste-troughs, and guide-rolls mounted on said frame, a paste-roll on each side of the guide-roll for the first sheet, supplying a coating of paste to both faces of each sheet, a paste-roll in rear of the guide-roll for the second sheet, supplying a coating of paste to the face thereof, which is remote from the first sheet, and presser-rolls for uniting said first and second sheets and for pressing the third and fourth sheets upon the outer faces thereof, substantially as described.

3. A paper-board machine comprising a frame, brackets, mandrels, paste-troughs, and guide-rolls mounted on said frame, a paste-roll on each side of the guide-roll for the first sheet, supplying a coating of paste to both faces of each sheet, a paste-roll in rear of the guide-roll for the second sheet, supplying a coating of paste to the face thereof which is remote from the first sheet, a pair of presser-rolls for uniting said first and second sheets, and a second pair of presser-rolls for pressing the third and fourth sheets upon the outer faces of the first and second sheets, substantially as described.

383,745. LUBRICATOR. ELIJAH MCCOY, Detroit, Mich., assignor to Henry C. Hodges and Charles C. Hodges, same place. Filed July 16, 1887. Serial No. 244,517. (No model.)



Claim.—1. The combination, with a sight-feed lubricator having an equalizing-conduit which taps the oil-exit passage between the sight-feed glass and the part to be lubricated, of a supplemental sight-feed tube located on the oil-exit pipe between the part to be lubricated and the said equalizing-conduit, substantially as and for the purposes described.

2. The combination, with a flexible locomotive-lubricator having sight-feed tubes and equalizing-conduits corresponding with each cylinder, and which each taps its corresponding oil-exit passage between the sight-feed glass and the part to be lubricated, of supplemental sight-feed tubes located on each oil-exit passage between the point tapped by the equalizing-conduits and the said cylinders, substantially as described.

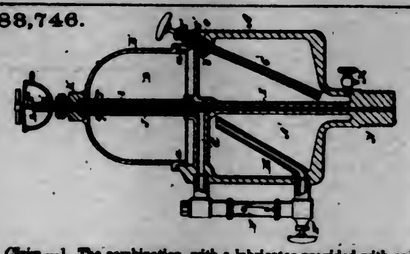
3. A sight-feed lubricator having an equalizing-conduit and a supplemental sight-feed tube, said equalizing-conduit opening into the oil-exit pipe adjacent to the entrance end of the said supplemental tube, substantially as described.

4. The combination, with a sight-feed lubricator having a supplemental sight-feed tube and an equalizing-conduit tapping the oil-exit passage between the reservoir and said supplemental sight-feed tube, of a sunk cup and cut-off valve located at the discharge end of said last-named tube, substantially as described.

5. The combination, with a sight-feed lubricator having an equalizing-conduit, of a supplemental sight-feed tube, through which oil led to its top is caused to drop, substantially as described.

383,746. LUBRICATOR. ELIJAH MCCOY, Detroit, Mich., assignor to Henry C. Hodges and Charles C. Hodges, same place. Filed Apr. 26, 1887. Renewed Mar. 13, 1888. Serial No. 266,969. (No model.)

388,746.



Claim.—1. The combination, with a lubricator provided with an oil-chamber, and a condensing-chamber communicating therewith, of a steam and oil conduit, a sight-feed glass communicating with the oil-chamber and with said conduit, a stuck-cap constructed with a hollow stem arranged to seat in conjunction with said conduit, said stem traversing a fixed steam-pipe, J, whereby steam is admitted to the condensing-chamber, substantially as described.

2. The combination, with a lubricator provided with an oil-chamber, a condensing-chamber communicating therewith, and a visible-feed glass, of a steam and oil conduit extending upward in the oil-chamber, a laterally-extended pipe communicating with the sight-feed glass and with said conduit, a perforated pipe, J, traversing the condensing-chamber, and a stuck-cap provided with a hollow stem traversing said pipe, the construction being such that said stem may be seated in conjunction with said conduit, thereby to cut off the feed from the visible-feed glass and afford a continuous passage from said stuck-cap through said stem and conduit to the parts to be lubricated, substantially as described.

3. The combination, with the oil-chamber, of a condensing-chamber engaged directly therewith, a plug, *c*, through which communication is afforded from the condensing-chamber to the oil-chamber, a valve engaged in said plug to regulate said communication, and the pipes C E, substantially as described.

388,747. CENTRIFUGAL GRAIN-DRYING MACHINE. FERDINAND HILLENBRAND, St. Charles, Mo. (Original application filed July 18, 1887, Serial No. 244,698. Divided and this application filed Dec. 19, 1887. Serial No. 258,326. (No model.)



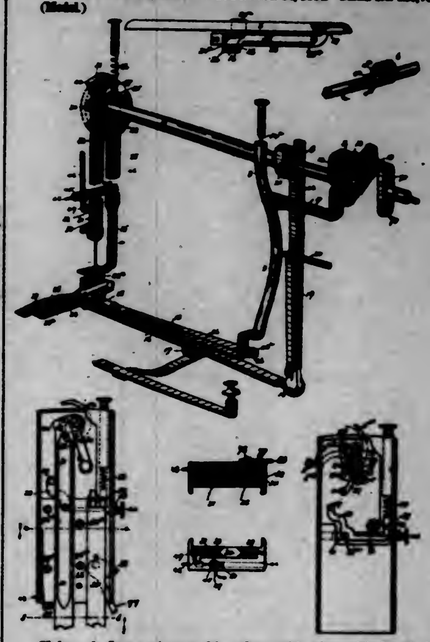
Claim.—1. The combination, substantially as hereinbefore set forth, of the main frame, the rotary carriage, and the strainer mounted in the carriage, with the hopper extending into the strainer, the convex plate below the mouth of the hopper, and the radial ribs or wings arranged on the inside of the strainer and extending from the convex plate to the other end of the strainer.

2. The combination, substantially as hereinbefore set forth, of the main frame, the rotary carriage mounted therein, and the funnel-shaped strainer mounted in the carriage, with the hopper extending into the mouth of the strainer, the convex plate on the bottom of the strainer under the mouth of the hopper, and the radial ribs or wings extending from the convex plate to the top of the strainer.

3. The combination, substantially as hereinbefore set forth, of the main frame, the carriage, the strainer mounted in the carriage, and the jacket surrounding the carriage and having a discharge-opening at the bottom, with the annular deflector arranged around the top of the carriage and over the jacket, the outer casing, the partition between the outer casing and the jacket, and the annular trough arranged under the outer casing.

4. The combination, substantially as hereinbefore set forth, of the main frame, the rotary carriage having a water-discharge opening near the bottom, the funnel-shaped strainer contained in the carriage, and the jacket surrounding the carriage to receive the water therefrom, with the inclined annular deflector arranged around the top of the carriage and over the jacket and provided with an annular water-opening into the jacket around the carriage, the inclined outer casing, the partition between the outer casing and the jacket, and the top plate over the partition and the outer casing.

388,748. SEWING-MACHINE. THOMAS I. HILLIS, Cliftonville, Ohio. Filed Oct. 22, 1881. Renewed Feb. 14, 1888. Serial No. 263,703. (Model.)



Claim.—1. In a sewing-machine, the combination, with the stitch-forming mechanism thereof, of a hollow standard and arm, a horizontal crank-shaft contained in the latter, a vertical rock-shaft contained in the former, and a pitman jointed at its respective ends to a crank on the driving-shaft and an arm on the rock-shaft, as and for the purpose set forth.

2. The combination of the driving-shaft 4, the vertical rock-shaft 8 actuated thereby through the medium of the pitman 9, and carrying the shuttle-driving arm 13, the screws 14 14ª, and the frame in which said screws have bearings for setting said vertical rock-shaft up or down for timing the movements of the various parts of the machine, as explained.

3. The combination of the feed-bar 23, carrying the roughened feed-plate 29ª, the stirrup-bar 24 25, pivoted to the feed-bar at 29ª, the lever 16, inserted in the stirrup 25 and actuating the feed-bar through the medium of the connecting-bar 28, and means for imparting to the feed-bar the necessary vertical movement, as explained.

4. The combination, with the stirrup-bar 24 25, supporting-bracket 24ª, feed-bar 23, and means for imparting to said feed-bar the necessary horizontal reciprocating motion, of the lever 16 and wedge-shaped bar 26, operating the feed in the manner described.

5. The combination of the skeleton needle-bar 31, having V-shaped grooves in its sides and longitudinal grooves in the spaces of said V-shaped grooves, with adjustable gibs 34, having V-shaped ridges corresponding with said V-grooves, and so arranged as to permit the taking up of wear of the needle-bar longitudinally of the line of shuttle movement, substantially as set forth.

6. The combination, with the needle-bar 31 and the take-up 54, of the pendent arm 56, fixed to the rock-shaft of the take-up, and the link 57, connecting said arm to the needle-bar, and arranged to impart to said arm a vibratory motion on both sides of a vertical line, said arm 56 and link 57 constituting a toggle-joint folding on itself and imparting a differential and compound movement to the take-up arm from the continuously-moving needle-bar, as explained.

7. The combination, with the presser-foot bar and a spring for holding it down, of the needle-bar, having a shoulder, 40, and a lever engaged at one end by said shoulder and engaging at the other with said spring for relieving its pressure upon the presser-foot bar when the needle is down, as set forth.

8. In combination with the head having a recess in its front, as shown, for the reception of the thread, the thread-check within said recess having fixed jaw 44 and movable jaw 45, controlled by a spring, and the needle-bar 31, having inclined portion, as shown, and acting to relieve the thread-check and release the thread, substantially as and for the purpose set forth.

9. In a thread-check in a sewing-machine, substantially as herein described, the combination of a pair of rods placed end to end and nipping the thread between their ends, means for adjusting one of said rods in position, and a spring for pressing the other against it, as set forth.

10. In a sewing-machine, substantially as herein described, the combination of the nippers 44 45 with a lug or handle for opening them for the insertion of the thread, and a dowel or pin, 47, for retaining the thread between them, as explained.

11. The combination, with the face-plate, the tension device secured thereto, and the presser-foot bar, of the lifting-lever having a screw-threaded pivot engaging a correspondingly screw-threaded aperture, and a lever engaged at one end by said pivot-screw, and engaging at the other with said tension device, for the purpose set forth.

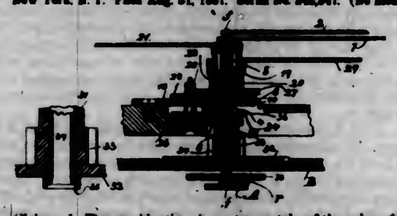
12. The main driving-shaft carrying at its forward end a crank or crank-wheel operating the needle-bar, and at its rear end a crank to operate the shuttle-carrier, in combination with a vertical shaft carrying the shuttle-driving arm, means for adjusting said shaft in a vertical direction, and a pitman connecting the rear crank of the driving-shaft with the arm of the vertical rock-shaft, whereby the vertical adjustment of said rock-shaft is made to time the movements of the various parts.

13. The combination, with the presser-foot mechanism, the needle-bar, and the lever engaging at one end with said presser-foot mechanism and engaged at the other by said needle-bar when depressed, of the sliding bar 41, to which said lever is fulcrumed, the split socket 43 on the end of said bar, the conical set-screw 42, and the head of the machine having a perforation through which said socket projects, as set forth.

14. The combination, with the presser-foot bar 36, its spring 36, and the rod 37, interposed between the said spring and presser-foot bar, of the needle-bar 31, having the lateral projection or shoulder 40, and the L-shaped lever 38, engaged at one end by said shoulder and engaging at the other with said rod 37, relieving the pressure of the spring 36 upon the presser-foot bar when the needle is down, as explained.

15. The combination, with the apertured face-plate, of a tension-pulley, a stem projecting through the aperture in the face-plate and having an enlarged head or flange bearing against said pulley, a spring for forcing said head or flange against said pulley, a lever engaging the inner end of said stem, and the lifting-lever engaging the other end of the aforesaid lever, as set forth.

388,749. SPLIT-SECONDS STOP-WATCH. CHARLES H. METCALF, New York, N. Y. Filed Aug. 31, 1887. Serial No. 248,947. (No model.)



Claim.—1. The combination, in a stop-watch, of the arbor *f* for the independent seconds-hand, the tubular arbor 5 for the additional independent seconds-hand, the bridge 16, tubular arbor 19, cannon 20 for the minute-hand, wheel 27, and cannon 28 for the hour-hand, the gear-wheel 23 and pinion 24 for driving the hour and minute hands, and the gearing connecting the arbor of the wheel 24 with the train of gearing in the watch-movement, substantially as specified.

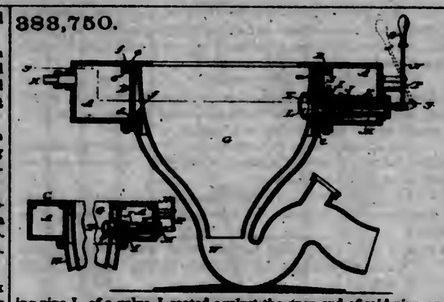
2. The combination, with the tubular center arbor, 31, in a watch-movement, of the tubular arbor 34, passing through the arbor 31 and held therein by friction, the wheel 24 on each arbor 34, the hour and minute hands and their tubular arbors, and the gearing between the wheel 24 and each hour and minute hands, and an arbor passing through the arbor 34 and carrying an independent seconds-hand, substantially as set forth.

3. The combination, with the tubular central arbor, 31, in a watch-movement, of the tubular arbor 34, passing through the central arbor, 31, and held therein by friction, the gear-wheel 24 on each arbor, the hour and minute hands and their gearing, and an independent seconds-hand, 2, and central arbor, *f*, therefor within a bearing inside the tubular arbor 34, a bridge, A, for one end of said arbor *f*, and the connections for moving the said arbor *f* and hand, substantially as set forth.

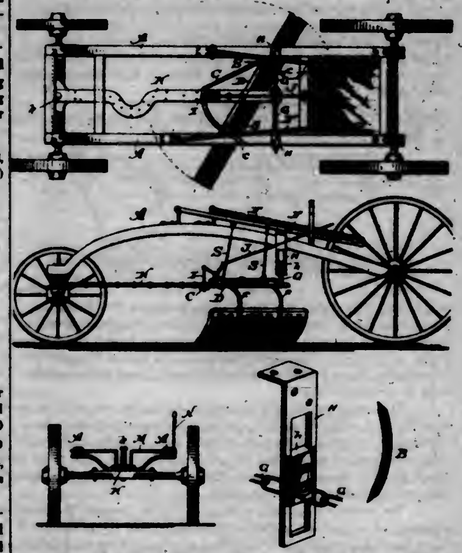
388,750. WATER-CLOSET. GILBERT HUBBARD, New York, N. Y. Filed Oct. 27, 1887. Serial No. 253,055. (No model.)

Claim.—1. The combination, with the flushing-tank A and flushing-pipe L, of a valve, I, seated against the open end of said pipe, and having a tubular stem, J, a guide-cylinder, K, projecting through the wall of the tank, closed at one end and embraced at its inner end by the tubular valve-stem, a valve-rod, M, extending outwardly through the tubular valve-stem and its guide-cylinder, and a lever, N, actuating said rod, substantially in the manner and for the purpose herein set forth.

2. The combination, with the discharge-pipe L, valve I, tubular valve-stem J, guide-cylinder K, upon which said valve-stem plays, and guide-rod M, extending through said valve-stem and guide-cylinder and passing outwardly through the closed end of the cylinder, of a secondary valve, R, controlling an opening in the valve I, and opening outwardly to permit of a discharge from within the tubular valve-stem and its guide-cylinder when the valve I is closed, substantially in the manner and for the purpose herein set forth.



388,751. ROAD-SCRAPER. GEORGE H. MILLER, Aurora, and CHAS. B. MOAIN, Chicago, assignors to Frederick C. Austin, Chicago, Ill. Filed Feb. 4, 1888. Serial No. 263,062. (No model.)



Claim.—1. In a road-scraper, the combination of a supporting-carriage, a draw-bar vertically adjustable at its forward end to permit the wheels to run under it while turning the machine, and means for effecting such adjustment while the machine is in operation, substantially as described.

2. In a road-scraper, the combination of a supporting-carriage, a draw-bar laterally and vertically adjustable at its rear end, a vertically-adjustable flexible attachment for the rear end of the draw-bar, vertically-sliding clamps in which the ends of the flexible attachment are secured, and a scraper-blade vertically and laterally adjustable with the rear end of the draw-bar, substantially as described.

3. In a road-scraper, the combination of a supporting-carriage, a draw-bar vertically adjustable at its forward end, and a cranked rod and lever for effecting such vertical adjustment, substantially as described.

4. In a road-scraper, the combination of a supporting-carriage, a draw-bar, a scraper-blade, and an angular scraper-blade supporting-rack, the circular portion of which is provided with holes to permit its adjustment, substantially as described.

5. In a road-scraper, the combination of a supporting-carriage, a draw-bar, a scraper-blade, a scraper-blade supporting-rack, an auxiliary supporting-rack, and a traveler on which the auxiliary supporting-rack travels while turning, substantially as described.

6. In a road-scraper, the combination of a supporting-carriage, a draw-bar, and a scraper-blade provided with sharpened sides and ends, substantially as described.

7. In a road-scraper, the combination of a supporting-carriage, a laterally-curved draw-bar, and a scraper-blade, substantially as described.

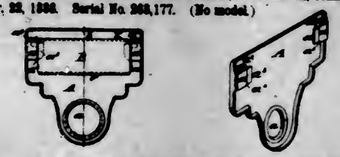
383,752. PORTABLE BULLET-PROOF WATCH-BOX. PATRICK F. MILLMAN, Washington, D. C. Filed July 27, 1887. Serial No. 245,430. (No model.)



Claim.—1. A watch-box formed with port-holes for the batteries and openings for the eyes, in combination with sliding bullet-proof cushions adapted to normally close the said port-holes, and springs for holding the cushions in position, all arranged substantially as shown and described.

2. In a battery of the character herein described, the base-piece formed with a series of recesses, in combination with revolvers the barrels of which are adapted to rest in the said recesses, rods for securing them therein, and a bar resting against the forward face of the triggers of the revolvers and adapted to discharge them simultaneously when pulled.

383,753. BUCKLE. JAMES F. MOLLOY, West Haven, Conn. Filed Mar. 22, 1888. Serial No. 268,177. (No model.)



Claim.—1. In the lever-buckle herein described, the combination, with the lever having at its ends pivots or trunnions, of a frame having ears turned inward and provided with downwardly-presented and inwardly-turned hooks to receive beneath them and behind the ears the pivots or trunnions of the lever, said ears also having flanges which underlie the pivots or trunnions to hold them in said hooks, substantially as herein described.

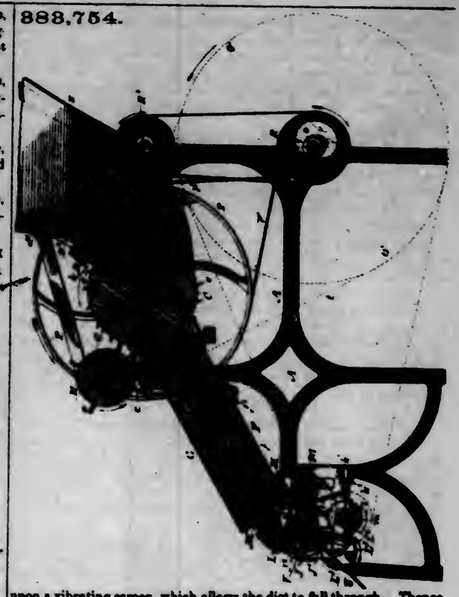
2. The combination, with a lever, B, having pivots or trunnions b', at the ends, of a frame, as A, having the inwardly-turned ears a', surmounted by downwardly and inwardly turned hooks a^2 and provided with the inwardly-offset flanges a^3, against the outer faces of which the lever closes, thereby producing a buckle with a flat plain back, substantially as herein described.

3. The combination, with a lever, B, having integral pivots or trunnions at its ends, of a frame, as A, having the inwardly-turned ears a', provided with hooks a^2, and flanges, as a^3, to form the bearings for the lever, the said lever having inwardly-turned tongues b^2, which engage with the said ears when the lever is closed and relieve the pivots or trunnions of strain, substantially as herein described.

4. The combination, with a lever-buckle frame, of a lever pivoted therein and having its upper edge provided with spurs for engaging the strap, and also having its lower edge turned in and formed with spurs for engaging the strap, substantially as herein described.

383,754. MACHINE FOR OPENING, CLEANING, AND GINNING SEED-COTTON. JOHN R. MONTAGUE, Auburn, N. Y., assignor to the Montague Roller Cotton-Gin Company, Toledo, Ohio. Filed Oct. 5, 1887. Serial No. 251,942. (No model.)

Brief.—The cotton is taken from the hopper by a toothed roller, over which and concentrically with which vibrates a cleaning-card to open and straighten the fiber. A wiper-roll knocks the cotton down



upon a vibrating screen, which allows the dirt to fall through. Thence the cotton passes under a feed-roll to the gin-rolls, being acted upon adjacent to the gin-rolls by a reciprocating rake. The ribs upon the feed-roll are protruded and withdrawn by a cam.

Claim.—1. The combination, substantially as hereinbefore set forth, of the hopper, the traversing drawing-teeth, means for actuating them, the cleaning-card, its supports pivoted concentrically with the axis of movement of the drawing-teeth, and means for reciprocating the cleaning-card, whereby it is caused to travel in a path parallel with the actuating-surface of the drawing-teeth to open the bolls and draw out the fibers.

2. The combination, substantially as hereinbefore set forth, of the hopper, the traversing drawing-teeth, means for actuating the drawing-teeth, the reciprocating card, means for reciprocating the card over the drawing-teeth in an arc coinciding with the line of movement of the drawing-teeth, the beater or cleaning roller arranged in rear of the drawing-teeth, and means for driving the beater or cleaning roller faster than the drawing-teeth to clear the latter, as well as beat out the dust, &c.

3. The combination, substantially as hereinbefore set forth, of the hopper, the traversing drawing-teeth, means for actuating the drawing-teeth, the cleaning-card arranged over the drawing-teeth, means for actuating the card, the beater or cleaning roller, means for actuating it, the laterally-reciprocating grating upon which the seed-cotton falls after being acted on by the beater, and means for reciprocating the grating.

4. The combination, substantially as hereinbefore set forth, of the feed-roll having radially-reciprocating ribs to grasp and retard the seed-cotton and insure its regular delivery to the ginning-rolls, means for actuating the ribs, the ginning-rolls arranged in close proximity to the feeding-roll to receive the seed-cotton therefrom, and means for actuating the ginning-rolls.

5. The combination, substantially as hereinbefore set forth, of the feed-roll having radially-reciprocating ribs to grasp and retard the seed-cotton and insure its regular delivery to the ginning-rolls, means for actuating the ribs, the ginning-rolls arranged in close proximity to the feeding-roll to receive the seed-cotton therefrom, means for actuating the ginning-rolls, the seed-separating teeth or rake reciprocating longitudinally between the ginning-rolls, and means for actuating the rake.

6. The combination, substantially as hereinbefore set forth, of the ginning-rolls, the feed-roll having radially-reciprocating ribs, means for actuating the ginning-rolls, feed-roll, and the ribs, the laterally-reciprocating seed-separating teeth, means for actuating the teeth, and the concave or guide plate concentrically surrounding the lower front portion of the feed-roll to facilitate the grasp of its reciprocating ribs on the seed-cotton.

7. The combination, substantially as hereinbefore set forth, of the ginning-rolls, means for actuating the rolls, the feed-roll, its radially-

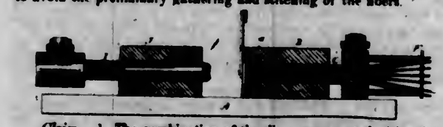
reciprocating ribs or blades, means for actuating the roll and its ribs or blades, the concave partially encircling the feed-roll, the seed-separating teeth reciprocating between the concave and the ginning-rolls, means for actuating the teeth, the grating over which the seed-cotton passes to the concave and feed roll, and means for reciprocating the grating.

8. The combination, substantially as hereinbefore set forth, of the ginning-rolls, the feed-roll, means for actuating the ginning-rolls and feed-roll, the concave under the feed-roll, the laterally-reciprocating separating-teeth, means for actuating them, the laterally-vibrating grating, the traversing, drawing-teeth, the beater-roll, and means for actuating the grating, drawing-teeth, and beater-roll.

9. The combination, substantially as hereinbefore set forth, of the ginning-rolls, the feed-roll, means for actuating the ginning-rolls and feed-roll, the concave arranged under the feed-roll, the separating-teeth, the grating, the beater-roll, the traversing drawing-teeth, reciprocating card, means for actuating the separating-teeth, grating, beater-roll, and drawing-teeth, and the hopper.

383,755. MACHINE FOR MAKING UPHOLSTERERS' TUFTS. JAMES L. MOORE, Stratford, assignor, by mesne assignments, to E. H. Hubbard, Bridgeport, and John K. Beach, New Haven, Conn. Filed May 10, 1886. Serial No. 201,674. (No model.)

Brief.—The object of the invention is to produce an improved machine for the manufacture of upholsterers' tufts of that class in which the tuft is made from a mass of fibers and one end of the fibers inclosed in a back, the other ends being free to spread, and particularly to avoid the preliminary gathering and stitching of the fibers.



Claim.—1. The combination of the die *a*, constructed with a flaring mouth, and a reciprocating slide, C, concentric with and in rear of said die, the said slide adapted to receive a mass of yarns or fiber, with a cutter arranged to work across the face of the said die, a reciprocating follower constructed to receive and carry a metallic cup-shaped back, the said follower being in axial line with said die, and mechanism, substantially such as described, for actuating the said slide, cutter, and follower, all substantially as and for the purpose described.

2. The combination of the die *a*, constructed with a flaring mouth, the tubular reciprocating slide C, in axial line and concentric with said die, and perforated guide-plate F, substantially concentric with said slide, with a cutter adapted to work across the face of said die, and a reciprocating follower constructed to carry a cup-shaped metal back, with mechanism, substantially such as described, for actuating the said slide, cutter, and follower, substantially as and for the purpose described.

3. The combination of the die *a*, constructed with a flaring mouth, a reciprocating slide, C, concentric with and in rear of said die, the said slide adapted to receive a mass of yarn or fiber, a reciprocating follower constructed to receive and carry a metallic cup-shaped back, the said follower being in axial line with said die, and the two cutters *f g*, arranged in guides parallel with the plane of the die, one each side the opening through the die and adapted to work across the face of the die, with mechanism, substantially such as described, to impart reciprocating movement to said cutters, slide, and follower, all substantially as described.

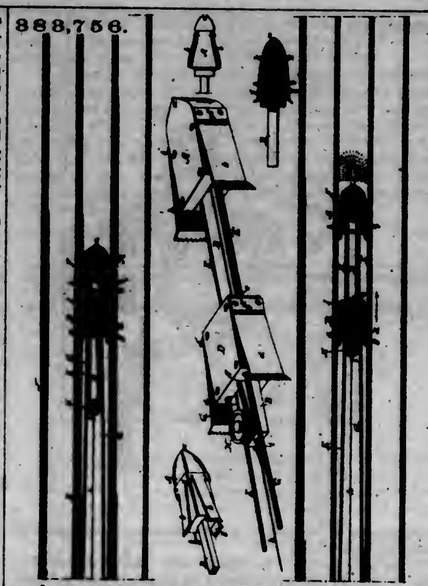
4. The combination of the die *a*, constructed with a flaring mouth, auxiliary stop *r*, reciprocating tubular slide C, provided with a corresponding shoulder, *s*, a cutter adapted to work across the face of said die, and a follower, I, constructed to receive and carry a cup-shaped metal back and in axial line with said die, with mechanism, substantially such as described, for actuating the said slide, cutter, and follower, substantially as described.

5. The combination of the die *a*, reciprocating slide C, stop M, auxiliary stop *r*, a cutter adapted to work across the face of said die, and a reciprocating follower in axial line with said die and constructed to receive and carry a cup-shaped metal back, with mechanism, substantially such as described, for actuating the said slide, cutter, and follower, substantially as described.

383,756. CRAWLER FOR ELECTRIC OR OTHER CONDUITS. HENRY G. MORRIS, Philadelphia, Pa. Filed Dec. 17, 1887. Serial No. 258,179. (No model.)

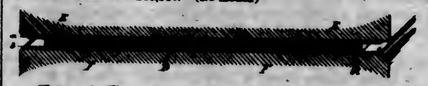
Claim.—1. The wholly-described crawler for conduits, said crawler consisting of two blocks, each provided with grippers for preventing back movement, and two ropes or cords, one imparting a positive forward movement to one block and the other imparting a positive forward movement to the other block, substantially as and for the purpose described.

2. The combination of the two blocks, each provided with grippers for preventing back movement, and two ropes or cords, each connected to one block and passing around a bearing on the other block, all substantially as specified.



3. The combination of the blocks A and D, each provided with grippers to prevent back movement, an arm, B, passing from the block A through the block D, a rope, E, secured to the front of the block D, passing around a rope-bearing in the block A, and thence back past the block D, and a rope, G, secured to the rear of the block D and passing around a rope-bearing on the arm E, thence around a rope-bearing on the block D, and thence back through said block, all substantially as described.

383,757. METHOD OF FILLING SECONDARY-BATTERY PLATES. HENRY G. MORRIS and PEDRO G. SALOM, Philadelphia, Pa. Filed Jan. 12, 1888. Serial No. 260,867. (No model.)



Claim.—1. The mode herein described of forming secondary-battery plates, said mode consisting in filling the cells or interstices of the grid with powdered active material, placing a uniform layer of said active material on one or both sides of the grid, and then compressing the surplus material into the cells of the grid, all substantially as specified.

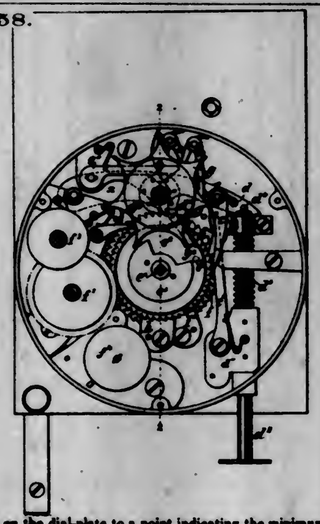
2. The mode described of filling a secondary-battery plate, said mode consisting in mounting the grid on a supporting-plate, applying a retaining-frame to the top of the grid, placing the active material in the cells of the grid and piling it above the same, removing the surplus material until it is level with the top of the retaining-frame, and then removing the latter and compressing the surplus material into the cells of the grid, all substantially as specified.

3. The mode described of filling a secondary-battery plate, said mode consisting in mounting the grid on a supporting-plate, applying a retaining-frame to the top of the grid, filling the cells of the latter with the active material and piling the latter above the same, removing the surplus material until it is level with the top of the retaining-frame, then reversing the grid and repeating the operation on the other side of the same, and finally compressing the two layers of surplus material into the cells of the grid, all substantially as specified.

383,758. FARE-INDICATING DEVICE FOR VEHICLES. WILHELM F. HEBLER, Hamburg, Germany. Filed Jan. 5, 1886. Serial No. 258,382. (No model.) Patented in Belgium Feb. 21, 1887, No. 78,497.

Claim.—1. The combination, in a fare-indicating apparatus for cabs and other vehicles, of the dial-plate, the ratchet-wheel *b*, the two pawl-levers *d* and *x*, the disk x^6, the sector *l*, the indicating-hand, and the angle-levers *m n* and *o p*, for the purpose of stopping automatically the movement of said hand after its first leap over a certain part of

383,758.



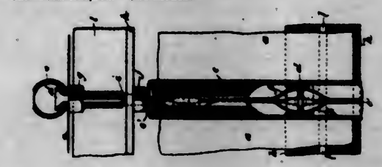
the divisions on the dial-plate to a point indicating the minimum fare, substantially as set forth.

2. In a fare-indicator for cabs or other vehicles, the two pawl-levers *d* and *x*, the disk x^2, the sector *l*, the indicating-hand, the angle-levers *m n* and *o p*, and the ratchet-wheels, in combination with the ratchet-wheel *e*, its spring, the spring-held disengaging-bolt having contact with said pawl-lever *d*, and the pawls *c c'*, substantially as shown and described whereby a disengagement is effected after a certain distance or time equivalent to the minimum fare has been exceeded, as set forth.

3. In a fare-indicating apparatus, the combination, with the ratchet-wheels, the main shafts, and the pawl-levers *d x*, of the disk d^2, having the projection d^3, the notched disk d^4, the star-wheel *g*, and the pinion *g'*, having the pins, substantially as shown and described.

4. In a fare-indicating apparatus the combination, with the ratchet-wheel *b* and the pawl-lever *d*, of the auxiliary pawl-lever *x*, the disk x^2, having a notched and toothed edge, the sector *l*, having the groove, the pawl *k*, the angle-levers *m n* and *o p*, the latter engaging a stop-pin, *i*, of the lever *d*, and the spring x^4, engaging a pin, x^5, substantially as shown and described.

383,759. SHEET-METAL STRUCTURE. WILLIAM ORR and PETER S. BROWN, Glasgow, County of Lanark, Scotland. Filed Aug. 22, 1887. Serial No. 247,573. (No model.)



Claim.—1. In a sheet-metal structure, the combination of the tube *c*, having slot *c'*, into which are passed the edges of two adjacent sheets of metal, and wedges or clips by which the edges of said sheets are spread at points within the tube, substantially as set forth.

2. In a sheet-metal structure, the combination of the tube *c*, having slot *c'*, into which are introduced the edges of two adjacent sheets of metal, and a wedge or clip having the head *d*, and two or more faces for the reception of a tool for rotating said clip, as set forth.

3. In a sheet-metal structure, the combination of the tube *c*, having slot *c'*, into which are passed the edges *b* of two adjacent sheets, *a*, and a wedge or clip by which the edges *b* are spread within the tube, the said tube being secured to purlin bars or supports *h*, substantially as set forth.

4. In a sheet-metal structure, the combination of the tube *c*, the sheets *a*, with edges secured as set forth, and the wedge or clip having a projection for securing the structures to purlin bars or supports, substantially as described.

5. The combination of a tube having a slot and sheets inserted therein, as described, of clips for securing the sheets in the tube, having ends projecting outward and secured to the purlin-bar by a nut, as set forth.

6. In the construction of sheet-metal structures, a metal sheet having a series of corrugations or indentations across its surface, and its longitudinal edges bent at an angle to the plane of the sheet, the said bent edges being inserted in slotted tubes, and the corrugations at the ends of one sheet superposed on those of the next, substantially as and for the purpose set forth.

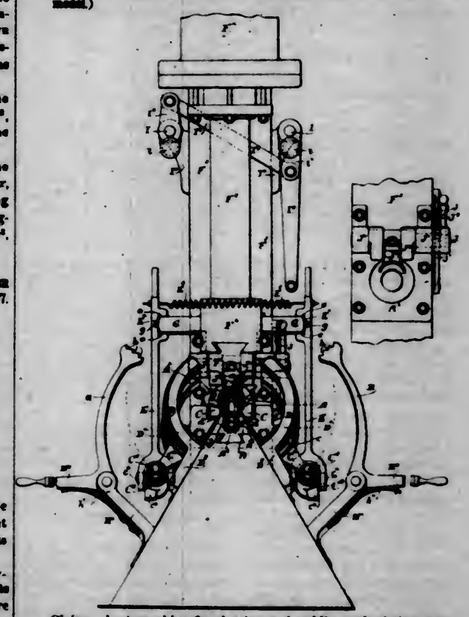
383,760. ARTIFICIAL TOOTH. JOHN B. PARKER, Grand Rapids, Mich. Filed Dec. 6, 1887. Serial No. 257,267. (No model.)

Claim.—1. A porcelain shell and crown made integral with each other, the under surface of which crown is a plane surface practically parallel with its grinding-surface and at right angles to the perpendicular inner side of the shell, substantially as described.

2. A porcelain shell having attached a porcelain crown made integral therewith, the under surface of which crown is a plane surface substantially parallel to its grinding-surface and at right angles to the perpendicular inner side of the shell, and provided with projecting pins, substantially as described.

3. In combination with a bridge having a flattened upper surface, a tooth consisting of an outer shell or facing having attached a crown extending inward from the upper part of said shell, the under surface of which crown is substantially parallel with the grinding-surface and at right angles to the perpendicular inner side of the shell of the same and resting upon the upper surface of the said bridge, and pins projecting from the under surface of said crown and bent against the inner surface of the platinum lining at the rear of the shell, substantially as described.

383,761. MACHINE FOR MAKING AXLE-SKEINS. SIMEON B. PARSONS, Chicago, Ill. Filed Nov. 21, 1887. Serial No. 255,720. (No model.)



Claim.—1. A machine for shaping and welding axle-skeins, comprising a mandrel, movable folding-dies, and a hammer, substantially as described.

2. A machine for the purpose stated, comprising a mandrel, a stationary anvil-block having a narrow longitudinally-arranged working-surface adjacent to the mandrel, and folding-dies mounted to rotate about longitudinal axes adjacent to the surface of the mandrel and at opposite sides of the working-surface of the anvil-block, substantially as described.

3. A machine for the purpose stated, comprising a mandrel, a stationary anvil-block having a narrow longitudinally-arranged working-surface adjacent to the mandrel, and pivotally-supported folding-dies located at opposite sides of said anvil-block and having pivotal support at their inner edges upon the said anvil-block, substantially as described.

4. The combination, with a mandrel and supports for the same, of a stationary anvil-block located longitudinally beneath the mandrel, folding-dies located at both sides of the mandrel, and a welding-hammer acting upon the top surface of the mandrel, substantially as described.

5. The combination, with a mandrel and movable folding-dies, of supports for the dies comprising curved guides and supporting arms or castings attached to the dies and engaging said guides, substantially as described.

6. The combination, with a mandrel and an anvil-block provided with longitudinal lateral bearing-recesses, of folding-dies engaging said recesses at their inner edges, arms or castings attached to the dies, and stationary curved guides engaging said arms or castings, substantially as described.

7. The combination, with a mandrel and movable folding-dies, of a reciprocating hammer applied to act against the mandrel, and means detachably connecting the hammer with the folding-dies, whereby the latter may be actuated by a movement of the hammer, substantially as described.

8. The combination, with a mandrel and movable folding-dies mounted to rotate about longitudinal axes, of a reciprocating hammer applied to act against the mandrel, and means detachably connecting the free or outer parts of the dies with the hammer, whereby the dies may be closed about the mandrel by the movement of the hammer, substantially as described.

9. The combination, with a mandrel, of pivoted folding-dies, arms attached to the dies for actuating the same, and detents engaging the said arms for holding the dies in their closed position, substantially as described.

10. The combination, with a mandrel and pivotally-supported folding-dies, of a vertically-reciprocating hammer acting against the mandrel, and bars E E, connected with the folding-dies and adapted for detachable engagement with the hammer, substantially as described.

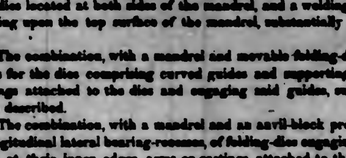
11. The combination, with a mandrel and pivotally-supported folding-dies, of a reciprocating hammer acting against the mandrel, bars E E, pivotally connected with the folding-dies and constructed for detachable connection with the hammer, springs applied to throw said bars into position to engage the hammer, and means upon the machine-frame for throwing and holding said bars out of engagement with the hammer, substantially as described.

12. The combination, with a mandrel and folding-dies, of bars E E, pivotally connected with the folding-dies, arms G G upon the hammer, engaging notches in the said bars E E, springs applied to hold the said bars E E in engagement with the arms G G, and connected rock-shafts I I, provided with cranks *i i*, engaging said bars E E, substantially as described.

13. The combination, with a mandrel and folding-dies, of a rigid support for one end of the mandrel, and a movable support or bearing for the opposite end thereof, detachably engaged with the mandrel, substantially as described.

14. The combination, with a mandrel, folding-dies, and hammer, of means for removing the finished skein from the mandrel, embracing a push-bar, J^4, and a rock-shaft provided with a crank engaging said push-bar, substantially as described.

383,762. HOOK OR GLOVE FASTENER. ALFRED P. PERKINS, Providence, R. I., assignor, by direct and mesne assignments, to Allen H. Reeder, Cincinnati, Ohio. Filed Aug. 26, 1887. Serial No. 247,988. (No model.)



Claim.—1. In the herein-described fastener for shoes, &c., a curved plate or frame having a rectangular opening secured by one end permanently to the meeting edge of one flap of the material to be fastened and extending thence across the meeting edge of the second flap, a lever-tongue formed to correspond with the frame-opening pivoted by one of its ends at the outer end of said opening and extending beneath and in the longitudinal direction of the opening and terminating in a depressed hook, and an eye or yoke secured to the edge of the second flap adapted to engage the hook of the lever-tongue, all combined and arranged so that upon engaging the hook in the eye and pressing the frame downward the engaging end of the lever-tongue slips into the opening of the frame, forming a flush surface with the frame-plate and covering and concealing the hook and eye, being held in such position, with the meeting edges forced together, by the retractile strain of the material acting at an angle with the frame-plate and tongue, substantially as set forth.

2. A fastener for shoes, gloves, &c., embodying an open frame secured at one end to one meeting edge of the shoe or glove and carrying pivoted at the other end a lever terminating in a cup-shaped bifurcation adapted to engage beneath a button secured to the opposite meeting edge of the article, and by throwing the lever over its center draw the edges of the material together and carry the button through the open frame into a position in which the parts of the fastening are disposed substantially in the line of strain of the material held, substantially as set forth.

383,763. PIPE-PLATE. GILES PERKINS, Avoca, Pa. Filed Feb. 1, 1888. Serial No. 262,633. (No model.)

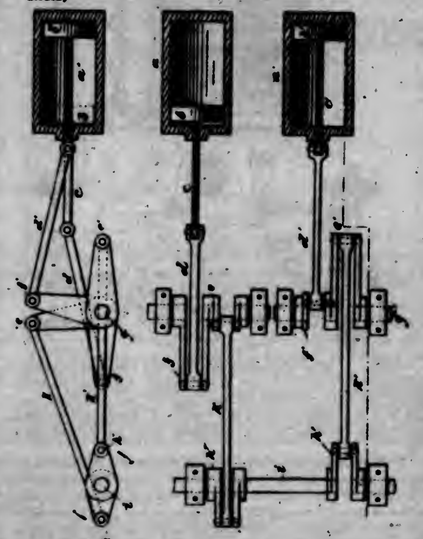


Claim.—1. In a joint, the combination, with the rail and fish-plate having a slot with a bolt therethrough, of a cotter inserted in an independent slot, and a head or strip bearing against said cotter and passing partially around the rail, substantially as and for the purposes set forth.

2. In a joint, the combination, with the rail and fish-plate having a slot therethrough, of a cotter inserted in an independent hole, a head or strip on one end of said cotter adapted to pass partially around the rail, and having a slot therein for the reception of the other end of said cotter, as set forth.

3. In a joint, the combination, with the rail and a fish-plate having cam-surfaces with slots and holes therein and bolts therethrough, of a cotter inserted transversely through said rail and plate, and a strip or head passing partially around the rail and bearing at both ends on said cotter.

383,764. STEAM-ENGINE FOR EQUALIZING POWER. WILLIAM A. PITT, Glastonbury, Conn. Filed Dec. 15, 1887. Serial No. 258,017. (No model.)

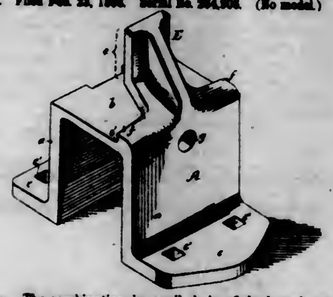


Claim.—1. In a steam-engine, the combination, with two cylinders and their piston-rods, of two sets of cranks mounted on independent shafts arranged in the same horizontal plane, two sets of cranks on a common shaft set in line with two of said cranks and connected therewith, and with the two other cranks at right angles thereto, as set forth.

2. The combination, with the cylinders *a a'* and piston-rods *e f*, of the cranks *f f'* and *e f*, set on independent shafts arranged in the same

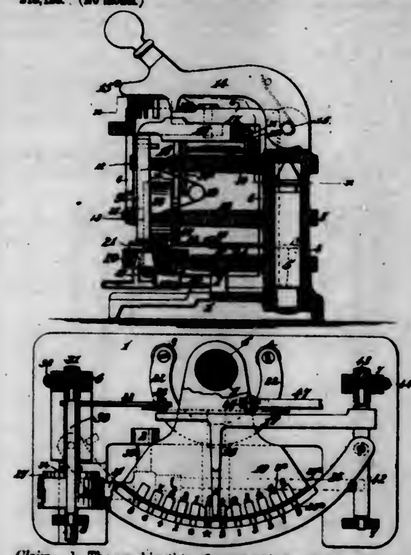
horizontal plane, connecting-rods *d d'*, cranks *h h'*, set on a common shaft, and rods *k k'*, all arranged as set forth.

383,765. RAIL-CHAIR. JAMES GIBBS, Jr., Philadelphia, Pa., assignor to William Wharton, Jr., and Company, Incorporated, same place. Filed Feb. 23, 1888. Serial No. 264,908. (No model.)



Claim.—The combination, in a rail-chair, of the base *b*, an extension, E, of the chair, having a face, *c*, ledges *f f*, extending on each side of the extension E, with a rail, B, and securing-bolt D, passing through the chair, and adapted to not only press the rail to the base *b*, but also to force it against the face *c* and into the recess formed by the extension and against the ledges *f f*, substantially as set forth.

383,766. MACHINE FOR CUTTING OR PUNCHING CHECKS, &c. CHARLES A. RANDALL, New York, assignor, by mesne assignments, to William D. Biger, Brooklyn, N. Y. Filed Sept. 9, 1886. Serial No. 213,123. (No model.)

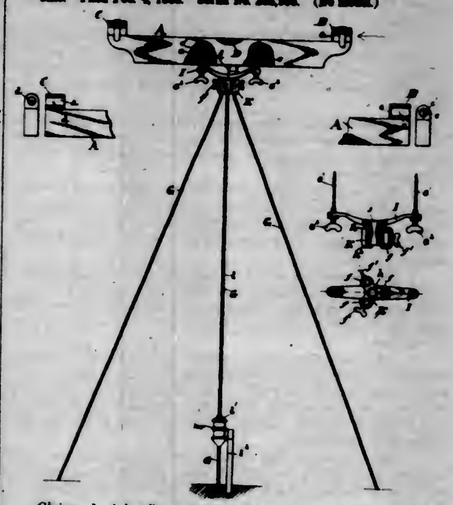


Claim.—1. The combination of a movable frame, the cutters or punches and dies carried by the same, a single selecting and actuating lever mounted upon and moving with the movable frame, and a single lever interposed between the punches or cutters and the single selecting and actuating lever, substantially as and for the purpose set forth.

2. The combination of a movable frame carrying the punches and dies, a punch selecting and actuating lever mounted on and moving with the frame, paper-feed devices, and a swinging lever for operating the feed devices, interposed between the punches and the punch-selecting lever and depressed by the latter to operate the punches, substantially as described.

3. The combination of a movable frame carrying the punches and dies, a punch selecting and depressing lever mounted on and carried by the swinging frame, a movable lever having an arm projecting forward beneath the punch-selecting lever, the rock-shaft carrying the pawl and connected with the armed lever, the feed-wheel, the ratchet-wheel, and the yielding friction-roller, substantially as described.

383,767. DITCHING-LEVEL. EDWARD EISENBRAUN, Orrville, Ohio. Filed Feb. 4, 1888. Serial No. 263,202. (No model.)



Claim.—1. A leveling-instrument having in combination a body provided with a spirit-level, sights, and two holes, *c*, entering at the lower side and extending upward, a tripod-head, and a bar, I, having at each end a vertical thumb-screw, c^2, the upper ends of said screws loosely occupying the said holes in the body.

2. A leveling-instrument having in combination a body provided with a spirit-level, sights, and two holes, *c*, entering at the lower side and extending upward, a tripod-head, a bar, I, swiveled to the tripod-head, and two vertical thumb-screws, c^2, one at each end of the swiveled bar, the upper ends of said screws loosely occupying the said holes in the body.

3. A leveling-instrument having in combination a body provided with a spirit-level, sights, and two holes, *c*, entering at the lower side and extending upward, a tripod-head, and a bar, I, having at each end a vertical thumb-screw, c^2, the upper ends of said screws loosely occupying the said holes in the body, a tubular spindle, K, connecting the tripod-head and said bar, and a plumb-bob hung by a cord, *l*, which is attached to the said body and passes down through the tubular spindle.

4. A leveling-instrument having in combination a body provided with a spirit-level and sights, a tripod-head, a tubular spindle, K, turning in the tripod-head, and a plumb-bob hung by a cord, *l*, which is attached to the said body and passes down through the tubular spindle.

5. A leveling-instrument having in combination a body provided with a spirit-level and sights, a tripod-head, a tubular spindle, K, turning in the tripod-head, and a plumb-bob having circumferential ribs *m* and hung by a cord, *l*, which is attached to the said body and passes down through the tubular spindle.

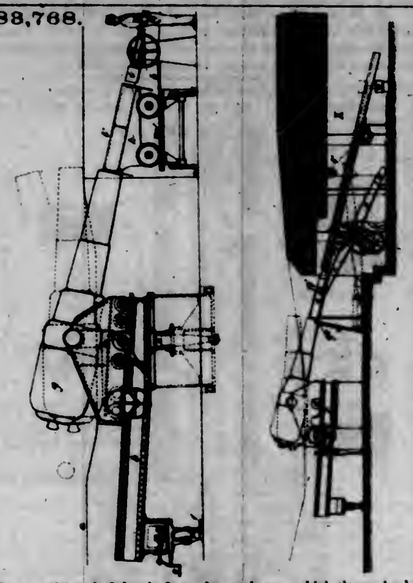
6. A leveling-instrument having in combination a body provided with a spirit-level and sights, a tripod-head having leg-sockets *f*, the bores of which are parallel, and legs G, the upper ends, *p*, of which enter the sockets, and each leg having a curve, *q*, just below the end part which occupies the sockets, whereby the legs may be spread to form a pyramid-stand, or may be turned in the sockets and brought close together and in parallel position.

383,768. MOUNTING AND LOADING APPARATUS FOR GUNS. GEORGE W. RENDEL, Newcastle-upon-Tyne, England. Filed June 7, 1887. Serial No. 240,543. (No model.) Patented in England June 7, 1873. No. 2,222.

Claim.—1. The gun-mounting apparatus hereinbefore described, consisting of the combination of the platform, the vertical supporting-pivot near its front, the wheels supporting the rear end of the platform, the track for the supporting-wheels concentric with the platform-pivot, the gun-carriage adapted to recoil along the platform, the parapet extending both in front of and laterally beyond the gun-carriage, and the ramming apparatus, working parallel with the lateral extension of the parapet, protected by it and in line with the bore of the gun and close to its muzzle when run forward on its carriage, turned parallel with the parapet, and its muzzle depressed to receive the charge from the ramming apparatus, as set forth.

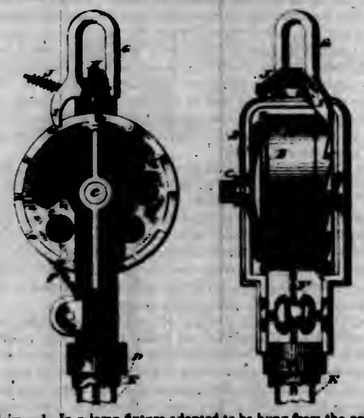
2. The combination of the platform supported at or near its front end by a vertical pivot just in rear of a parapet, the supporting-wheels

383,768.



at the opposite end of the platform, the trunk upon which these wheels run as the platform turns about its pivotal support, the gun and its carriage adapted to recoil along the platform, the ramming apparatus protected by the parapet, and at a short distance from the muzzle of the gun when the gun has been brought into its loading position by the turning of its platform, the railway for a trolley for conveying ammunition, and a railway transverse to the trolley-railway for a carriage for conveying the trolley and its load into a position between the muzzle of the gun and the rammer, substantially as and for the purpose set forth.

383,769. EXTENSION-LAMP FIXTURE. FRANK REED, Meriden, Conn., assignor of one-half to Edward Miller & Company, same place. Filed Nov. 30, 1887. Serial No. 256,511. (No model.)



Claim.—1. In a lamp-fixture adapted to be hung from the ceiling and consisting of two parts, one the suspending portion and the other part carrying the lamp or lamps, the said other part adjustable to different elevations with relation to the suspending portion, the combination therewith of a frame, a spring-drum arranged upon an axis in said frame, the said frame and drum arranged in one of said parts, a cord or chain upon said drum and extending therefrom into connection with the other of said parts, the said drum constructed with one or more notches in a line concentric with the axis of the drum, and a dog adapted to engage the notches in the drum when the parts are in the normal position, the said frame and dog, the one constructed for limited rotation in a horizontal plane, and the other stationary with relation to the same plane, substantially as described.

2. In a lamp-fixture adapted to be hung from the ceiling and consisting of two parts, one of said parts adapted to be suspended from the ceiling and remain stationary, the other part adapted to carry the lamp or lamps and adjustable to different elevations, the combination therewith of a spring-drum hung in a frame formed as a part of the stationary portion, a cord or chain therefrom in connection with the adjustable part, a hanger above the said frame and to which the said frame is pivoted, so that the said frame may rotate on the said pivot, the said drum constructed with one or more notches, and the hanger constructed with a corresponding dog adapted to engage said notch or notches of the drum in the normal condition of the fixture, substantially as described, and whereby said engagement of said hanger and drum may be released by a rotative movement of the fixture, substantially as described.

3. In an extension-lamp fixture, the combination of a frame carrying the stationary part of the fixture, a drum arranged upon an axis in said frame, a cord or chain therefrom and connected to the adjustable part of the fixture, a hanger to which the said frame is connected by a pivot, so as to permit a partial rotation of the said frame and drum, the said drum constructed with one or more notches in a line concentric with the axis of the drum, the hanger constructed with a dog extending downward and so as to stand in the path of said notch or notches on the drum in the normal condition of the drum, and a spring between said hanger and frame, the tendency of which is to draw the said hanger and drum into engagement but yield under the rotative movement of the frame and so as to take the drum out of engagement with the hanger, substantially as described.

4. In an extension-lamp fixture, the combination of a frame, A, carrying the stationary part of the fixture, a drum, B, hung in the said frame upon a horizontal axis and so as to revolve in a vertical plane, a cord or chain extending from said drum into connection with the adjustable part of the fixture, the said drum constructed with a series of notches or teeth, *a*, concentric with its axis, a hanger, G, with a vertical pivot-connection between said hanger and frame, whereby a horizontal rotation is permitted to the frame and all it carries independent of the hanger, a dog, I, projecting downward from said hanger into the path of the said concentric series of notches on the drum, and a spring, J, connected by one end to the frame and by the other end to said hanger, the tendency of the spring being to yieldingly hold the frame in the position of engagement between the dog and drum, but so as to permit disengagement under a rotative movement of the said frame, substantially as described.

383,770. UNDERGROUND CONDUIT AND GRIP FOR ELECTRIC RAILWAYS. ELIAS R. RICE and ALBERT H. HEDDERSON, Baltimore, Md. Filed Sept. 17, 1885. Serial No. 177,579. (No model.)



Claim.—1. In an electric railway, a longitudinally-slotted conduit formed entirely of non-conducting concrete or cement, and having longitudinal grooves or channels formed therein to receive and hold the conducting-rail, substantially as set forth.

2. In an electric railway, a longitudinally-slotted conduit extending along the line of way, the walls of which are formed entirely of non-conducting water-proof concrete or cement, and one or more naked electric conductors embedded in the walls of said conduit and having a part of their surface exposed, substantially as set forth.

3. In an electric railway, the combination of a longitudinally-slotted conduit extending along the line of way and formed entirely of non-conducting water-proof material, said conduit having one or more partially-exposed naked conductors embedded therein and traversing its interior in a direction parallel with said slot, and depending contact or current-collecting devices on a moving car or motor adapted to enter said slot and make connection with each conductor or conductors.

4. In an electric railway, the combination of an underground conduit formed of insulating or non-conducting material extending along the line of said railway and having an interior longitudinal elevation formed integral therewith and provided with a groove or channel formed therein, and an electric conductor adapted to enter said groove and be removably but securely held therein by virtue of gravity without danger of accidental displacement.

5. In an electric railway, an underground conduit having a centrally-supported conducting-rail, and provided at intervals with nor-

mally-sealed openings extending through the interior of the central support or supports, through which openings electrical connection can be made between the conducting-rail and exterior translating devices, substantially as and for the purpose set forth.

6. In an electric railway, an underground conduit for the conductors thereof formed of non-conducting water-proof concrete or cement, and provided with an interior longitudinal elevation formed integral therewith and having a groove for receiving an electric conductor, said elevation extending along the bottom of the conduit and dividing the lower portion thereof into drainage-channels, substantially as set forth.

7. In an electric railway, the combination, with an underground conduit having a central longitudinal surface opening or slot extending along its entire length and provided with an interior ridge or elevation extending along the bottom of the conduit, of an insulated A-shaped electric conductor supported by said elevation directly under the surface-opening, and a channel at each side of said conductor designed to receive the surface-drainage, and provided at intervals with a common outlet, substantially as set forth.

8. In an electric railway, the combination of an insulated conducting-rail extending along the line of way, and having its exposed contact or rubbing surface A-shaped in cross-section, and one or more contact wheels or pulleys provided with a V-shaped groove, and designed and adapted to move along said rail in contact with both sides of its exposed surface, the sides of said conducting-rail being pitched or inclined at an angle different from and less acute than that of the V-shaped groove in the contact wheel or wheels.

9. In an electric railway, the combination of a longitudinally-slotted underground conduit extending along the line of said railway, and a vertically-adjustable bar on a motor or car having grooved pulleys or contact-wheels pivoted to its lower end and designed and adapted to enter said slotted conduit and make electrical contact with one or more A-shaped insulated conductors supported therein, said contact-wheels being grooved at an angle more acute than that formed by the sides of the conductor or conductors, substantially as set forth.

10. An underground conduit for the conducting rail or rails of an electric railway, having a longitudinal opening or slot along its upper surface, and formed entirely of prepared sections of suitable length made from non-conducting or insulating concrete or cement, said sections being placed end to end and secured to each other by a joint of similar material in a plastic state in such a manner that both the interior and the exterior upper surface of the conduit remain perfectly smooth, substantially as and for the purpose set forth.

11. In an electric railway, a vertically-adjustable grip or contact bar capable of vertical motion between guides secured to and depending from a moving car or motor, said bar having at its lower end a centrally-pivoted yoke or rocking lever provided with contact wheels or pulleys, substantially as set forth, said contact-wheels, by reason of their pivoted connecting-yoke, being capable of adjusting themselves to inequalities in the conducting rail or rails and to irregularities of motion due to an uneven roadway, and thereby lessen or obviate the damage caused by interruptions in contact and consequent sparking.

12. In an electric railway, the combination, with a motor or car adapted to travel on said railway, of a longitudinally-slotted conduit extending along the line of said railway and having one or more electric conductors therein, and a depending vertically-adjustable bar extending through the slot from said motor or car and having at its lower end a pivoted yoke or rocking lever provided at its respective extremities with contact-wheels or current-collecting devices designed and adapted to make electrical contact with the conductor or conductors in the said conduit, substantially as and for the purpose set forth.

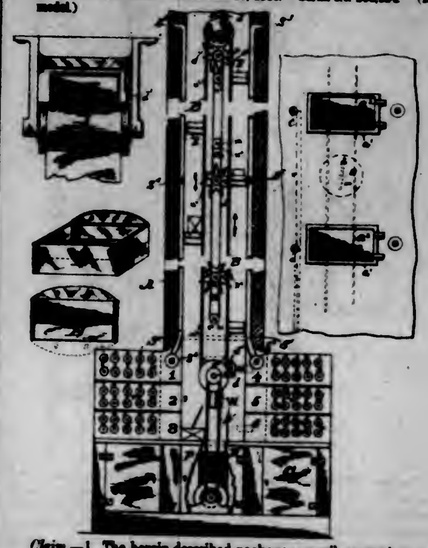
13. In an electric railway, the combination of a conduit having a longitudinal slot, an insulated vertically-guided bar entering said slot and adapted to make connection with an electric conductor carried in the conduit, and depending guides or supporting-brackets also entering said slot and provided with ways or channels between which the conducting-bar is free to slide, substantially as set forth.

14. In an electric railway, the combination of a longitudinally-slotted conduit extending along the line of said railway and having one or more electric conductors therein, depending guide-brackets on a moving car or motor and adapted to enter said longitudinal slot, a vertically-adjustable conducting-bar also carried by said car or motor and adapted to enter the slot between said guide-brackets, and insulating material between the said bar and the guide-brackets, substantially as and for the purpose set forth.

15. In an electric railway, the combination of a conduit having a narrow longitudinal slot, a motor or car having depending brackets or guides of such thickness as to nearly fill the width of the slot, and an insulated conducting-bar capable of vertical motion between such guides, but somewhat thinner in cross-section, and adapted to enter the conduit between the sides of the slot and without coming in contact therewith, substantially as set forth.

16. In an electric railway, the combination, with the conducting rail or rails, of the conducting-bar H, the yoke or rocking lever J, with its contact-wheels K K, and the slot *j* and pin *j'*, to limit the rocking motion of the yoke or lever, substantially as set forth.

388,771. MAIL-CONVEYING APPARATUS. ALFRED D. SAMSON, Brooklyn, N. Y. Filed Jan. 16, 1888. Serial No. 260,894. (No model.)



Claim.—1. The herein-described package or mail conveying apparatus, comprising a vertical closed well-hole extending through the several floors of a building, and provided with apertures or openings through its wall within easy reach from each floor, doors or the like normally closing said openings, an endless conveyer vertically operating in said well-hole, receptacles carried by said conveyer and adapted to pass within reach from each of said openings, each receptacle being provided with a pocket in its top and bottom, a motor in the bottom of said well-hole adapted to drive the conveyer, and connections between the motor and each floor, as set forth.

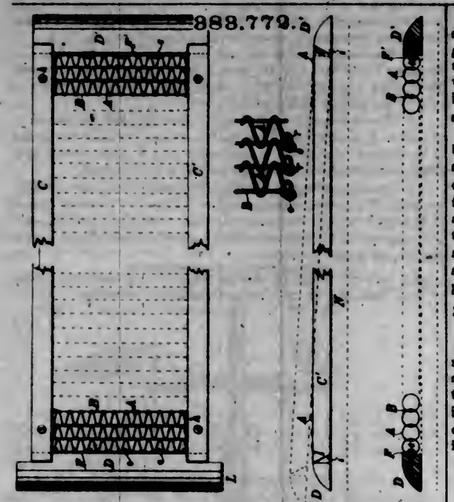
2. A conveying apparatus comprising a vertical well-hole extending through the several floors of a building, and provided with one or more openings through its wall at each floor, pulleys mounted at the top and bottom of said well-hole, an endless vertically-operating conveyer passing over said pulleys and adapted to be driven by the lower pulley, which is provided with an auxiliary pulley connected with an electric motor, and wires running through the well-hole from each floor, by which the operation of the motor can be started or stopped from any floor, as set forth.

3. The apparatus comprising a vertical well-hole extending through the several floors of a building, an endless conveyer operating in the same and provided with pockets or receptacles, and an indicating device whereby the number of floors traversed by the conveyer is shown and consisting of a graduated face or dial, and an indicating-finger operating over the face of the dial and located on and operated by a shaft or stud extending transversely into the vertical well-hole, said shaft or stud and the finger carried by the same being operated by the operation of the conveyer, substantially as described.

4. The apparatus comprising a vertical well-hole extending through the several floors of a building, an endless belt conveyer operating in the same and provided with pockets, and an indicating device whereby the number of stories traversed by the conveyer is shown upon every floor and consisting of a graduated face or dial upon each floor, an indicating-finger for each dial, horizontal shafts or studs extending transversely into the vertical well-hole and carrying said fingers and rotated by the belt conveyer as it operates, and belting whereby the shafts are connected and made to operate simultaneously when one shaft is turned, as set forth.

388,772. WIRE MAT. HENRY H. SUPLEE, Rochester, N. Y., assignor of one-half to William W. Gates, same place. Filed Dec. 22, 1887. Serial No. 258,603. (No model.)

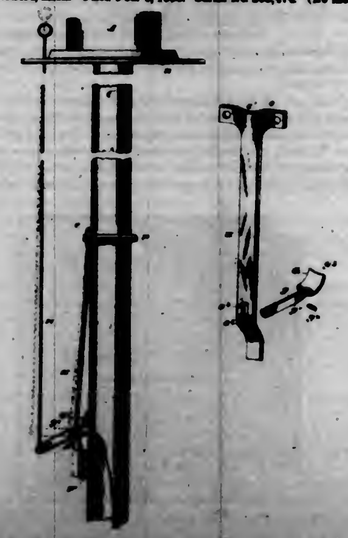
Claim.—1. In a flexible wire mat or floor-covering, the combination, with a series of parallel wire spirals, the coils of adjacent spirals overlapping each other, of straight wires passing through such overlapped portions to hold the spirals together, the ends of the straight wires being bent back on themselves over the ends of the coils to prevent the expansion of the latter, and the ends of coils being bent, substantially as described, to prevent rotation of the coils and their consequent displacement, as set forth.



2. The combination, with the side bars, C C, extending along the sides of the mat and fastened to the supporting-surface N, of the herein-described removable flexible wire mat, consisting of a series of parallel spiral coils, A A, connected together by the wires B B, passing through the adjacent coils and provided with the end bars, D D', projecting laterally beyond the edges of the mat and adapted to engage with the ends of the side bars to secure the mat in place between the side bars, substantially as and for the purpose set forth.

3. The combination, with the side bars, C C, extending along the sides of the mat and fastened to the supporting-surface N, of the herein-described removable flexible wire mat, consisting of a series of parallel spiral coils, A A, connected together by the wires B B, passing through the adjacent coils and provided at each end with the end bars, D D', attached to the mat by the wires F F and eyes *e e*, and lugs or projections *i i*, engaging the side bars, substantially as described.

388,773. VENT-STOPPER FOR PUMPS. ABNER SEGRAL, Hickory Corners, Mich. Filed Feb. 9, 1888. Serial No. 263,474. (No model.)

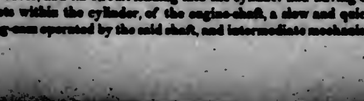


Claim.—1. In a vent-stopper for pumps, the combination, substantially as before set forth, of the well-tube having a vent, an elongated spring-arm secured thereto at one end and outwardly inclined therefrom, and having a cushion on its lower end to engage with the vent, a pawl carried in the lower end of said spring-arm having an inner T-head movably bearing against the well-tube, and a pull-rod secured to the outer end of said pawl.

2. In a vent-stopper for pumps, the combination, substantially as before set forth, of the well-tube having a vent therein, an elongated spring-arm secured to said tube by a clip having a slot in its lower end, a vent-closing cushion below said slot and outwardly inclined from the tube, the pawl mounted in the lower slotted end of the spring-arm having a T-head movably bearing against the tube and against the spring-arm to prevent disengagement therefrom, a transversely-arranged pin passing through said pawl on the outside of the spring-arm to limit the outward movement of the said spring-arm, and a pull-rod secured to the outer end of said pawl.

388,774. LOOM-SHUTTLE. JAMES C. SMEDLEY, Philadelphia, Pa. Filed Aug. 13, 1887. Serial No. 247,231. (No model.)

Brief.—The spindle-holding head has pivoted on it the bobbin-retaining catch, which is normally forced to engage the bobbin by a spring. The head is further provided with a cavity in which plays the journal of a spring-actuated knuckle, which holds the spindle in its inner and outer positions. This knuckle is formed with a lip, which engages the end of the bobbin-retaining catch when the spindle is in its outer position and so frees the bobbin from the catch.



Claim.—1. A shuttle having a spindle with a spring-actuated catch pivoted to the head thereof, and provided with a spring-pressed knuckle having a projecting lip adapted to bear against the spring-pressed arm of said catch when said spindle is elevated, substantially as and for the purpose set forth.

2. A shuttle having a spindle with a head pivoted to the body of the said shuttle, a catch pivoted in an opening in said head and having the spring H, adapted to keep said catch in contact with a bobbin on said spindle, and the knuckle J, pivoted to said head and provided with the projecting lip *b*, said parts being combined substantially as and for the purpose set forth.

3. A shuttle having a spindle with its head pivoted to the body of the shuttle, a spring-actuated catch pivoted to the head, and a spring-pressed knuckle having a lip adapted to bear on the spring-pressed arm of the catch when said spindle is elevated, said head of the spindle having a projection or shoulder on its lower side adapted to bear against the body of the shuttle, said parts being combined substantially as and for the purpose set forth.

4. A shuttle having the spindle B, with head C and spring-actuated catch F, said head being provided with the recess D, open at its ends and having therein the pivot E of said catch, the latter being secured to said head, and the spring-pressed knuckle J, having its journal *a* in the opening *d* of said head, and the projecting lip *b*, adapted to bear against the heel of said catch F when said spindle is elevated, said parts being combined substantially as and for the purpose set forth.

388,775. GAS-ENGINE. CLARK SIZER, Springfield, Ohio. Filed Nov. 30, 1887. Serial No. 256,493. (No model.)

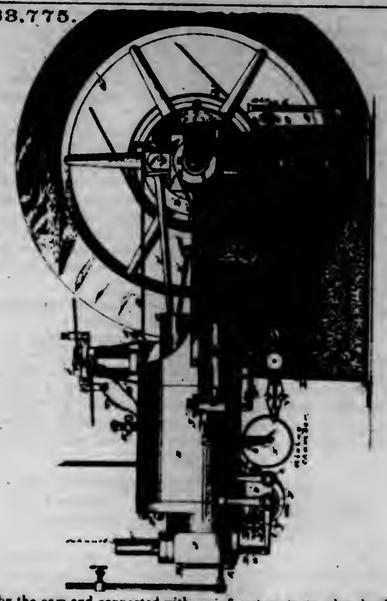
Claim.—1. In a gas-engine, the combination, with the cylinder and a differential piston, of a mixing-chamber in communication with the cylinder, an inlet-passage to the cylinder, also communicating with said chamber, a pump communicating with said chamber and with the atmosphere through a carbureting-chamber and carbureting material, a suitable exhaust-port, an igniting device, and the engine-shaft and its adjuncts operatively connected with the piston and pump.

2. In a gas-engine, the combination, with the cylinder, a differential piston, a mixing-chamber, two valves, one opening toward the cylinder and the other from it, and a cylinder-inlet passage communicating with said chamber and having a valve opening toward the cylinder, of a carbureting-tank, a pump communicating with the atmosphere through said tank and communicating with said chamber, and governor mechanism controlling the communication between said tank and pump, and the engine adjuncts which actuate said piston, pump, and governor.

3. In a gas-engine, the combination, with an electrical generator, and a circuit leading into the cylinder and having contact-points within the same, of slow and quick actuating mechanism connected with one of said contact-points, for the purpose described.

4. In a gas-engine, the combination, with a cylinder, an electrical generator, and its circuit leading into the cylinder and having contact-points within the cylinder, of the engine-shaft, a slow and quick actuating-cam operated by the said shaft, and intermediate mechanism actu-

383,775.



ated by the cam and connected with one of said contacts, whereby the circuit is broken with different degrees of rapidity.

5. In a gas-engine, the combination, with the cylinder, a dynamo, its circuit composed in part of a fixed insulated rod projected into the cylinder, and a reciprocating rod also projected into the cylinder and having a holding-down spring and contacts between said rods, of a pivoted bell-crank lever engaging the reciprocating rod, a rocking arm connected to the bell-crank lever, the engine-shaft, and a cam thereon, which actuates the rocking arm and having two head-inclines, one of which is more abrupt than the other.

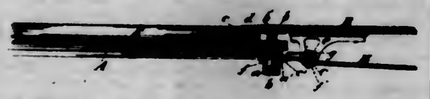
6. In a gas-engine, a cam for actuating an exhaust-valve, provided with head and tail inclines and a long and short surface between said inclines.

7. In a gas-engine, a cam for actuating a circuit-breaker, having two head-inclines, one of which is more abrupt than the other.

8. In a gas-engine, the combination, with the main shaft and two cams, one of which has two head-inclines, one more abrupt than the other, and the other of which cams has a long and a short cam-surface, of two pivoted rocking arms slidingly mounted, and an adjusting-lever therefor, whereby said arms are adjustable opposite the respective head-inclines and cam-surfaces.

9. In a gas-engine, the combination, with a mixing-chamber, of two pipes connected therewith, one of which extends near the opposite wall of the chamber from which it enters a terminus in proximity to the other pipe.

383,776. HAND-REST FOR BOOK-KEEPERS. WILLIAM D. SLOAN, Brooklyn, N. Y. Filed Sept. 10, 1887. Serial No. 249,408. (No model.)



Claim.—1. A book-keeper's hand-rest composed of overlapping bottom plate, A, and hand-supporting plate B, arranged in parallel planes, a sliding guide-connection for maintaining such relation of the parts, and devices for adjusting said plates at their lapping parts to grip the same to the book to hold the plate B in position to support the hand in the operation of writing, substantially as herein set forth.

2. The combination of the plate A, having a terminal angle-rest, *c*, and the plate B, having a terminal angle-rest, *d*, arranged to abut and lap each other end for end, and devices connecting said plates at their lapping edges, whereby the said plates may be clamped and maintained in parallel relation to each other upon the edge of a book, substantially as described.

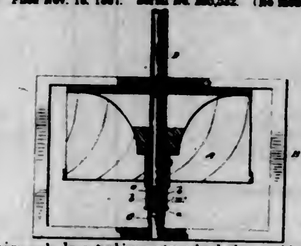
3. The combination of the plate A, the plate B, guides permitting a movement of the plates in a direction transverse to their plane, and a spring arranged to press toward each other the lapping edges of the said plates, substantially as and for the purpose herein set forth.

4. The combination of the plate A, provided with the sleeves *a*, the plate B, provided with the stems *b*, and a spring arranged to press the lapping edges of said plates toward each other, substantially as and for the purpose herein set forth.

5. The combination of the plate A, provided with the sleeves *a*, the plate B, provided with the stems *b*, springs *f f*, and the levers E E, arranged to press the lapping edges of said plates toward each other, substantially as and for the purpose herein set forth.

6. The combination of the plate A, provided with the sleeves *a*, the plate B, provided with the stems *b*, springs *f f*, and the levers E E, formed integral with each other and arranged to press the lapping edges of said plates toward each other, substantially as and for the purpose herein set forth.

383,777. TURBINE WATER-WHEEL. S. MORGAN SMITH, York, Pa. Filed Nov. 18, 1887. Serial No. 255,522. (No model.)

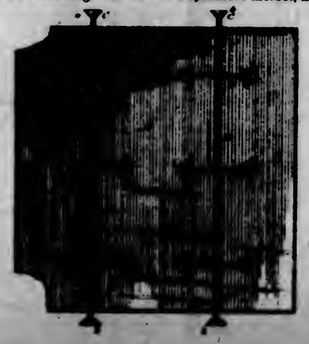


Claim.—1. In a turbine water-wheel, the combination, with a step having its upper bearing-surface formed convex, of a vertical shaft, a bearing-plate, E, concave on its lower face, so as to fit the upper convex surface of the step, the said bearing-plate being of greater diameter than the step, and a series of vertical radially-disposed pillars, *b*, formed integral with the bearing-plate and adapted to support the vertical shaft, these pillars being formed on the bearing-plate at its perimeter and outside of the radius of the step, whereby the water may circulate freely between the lower end of the shaft and bearing-plate and over all parts of the bearing-plate and keep it at a uniform temperature throughout, substantially as described.

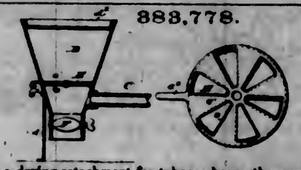
2. In a turbine water-wheel, the combination, with the step having a convex upper bearing-surface, of a bearing-plate, E, of uniform thickness throughout and slightly larger in diameter than the step on which it bears, the said bearing-plate having its lower bearing-surface concave, so as to fit the convex bearing-surface of the step, and its upper surface correspondingly convex to shed or throw off sediment and trash, the radially-disposed pillars formed integral with the bearing-plate outside of the radius of the said step, and the vertical shaft supported by the said pillars, whereby a water-circulating chamber is formed between the lower end of the shaft and the upper surface of the bearing-plate, substantially as described.

383,778. DRYING ATTACHMENT FOR TOBACCO-BARNS. JOHN M. BUSHOW, Big Stony Creek, Va., assignor of one-third to John Wesley Brown, Mercer County, W. Va. Filed Nov. 12, 1887. Serial No. 255,088. (No model.)

Claim.—1. In a drying attachment for tobacco-barns, the combination of a furnace provided with two dampers below the combustion-chamber and a cold-air pipe connected to the furnace between the two dampers, substantially as described, whereby provision is made for admitting the cold air to the furnace to be heated or delivering it directly into the building to lower the temperature thereof, as set forth.



383,778.



2. In a drying attachment for tobacco-barns, the combination of a furnace having open lower part, and provided with two dampers below the combustion-chamber, and cold-air pipes arranged in and projecting through the sides or ends of the barn and provided with dampers, and with laterally-projecting pipes connected to the furnace between the dampers of the furnace, substantially as described.

383,779. CAR AND ENGINE REPLACING FROG. ISAAC R. TIPTON, Youngstown, Ohio. Filed Dec. 24, 1887. Serial No. 258,881. (No model.) Patented in England Aug. 3, 1887, No. 10,998.



Claim.—1. A car-replacer composed of a shell having walls of different relative heights, and a curved or segmental top uniting the upper edges of the walls, the said top being curved transversely, substantially as described.

2. A car-replacer composed of walls substantially parallel and inclining from a vertical line, the walls being of different relative heights, the curved top uniting the upper edges of the walls and sloping from the higher to the lower wall, and the braces uniting the walls and resting against the inner side of the said top, substantially as and for the purpose described.

3. The combination, with the segmental shell, of the braces, some of the braces oblique and others vertical, substantially as and for the purpose described.

4. The combination, with the segmental shell, of the cross-rod centrally disposed to form a brace and a handle, substantially as described.

5. The combination, with the segmental shell, of the braces extending from one wall to the other and touching the top, and the cross-rod arranged midway between the ends of the segment, substantially as and for the purpose described.

6. The combination, with the segmental car-replacer, of the wear-plate located about midway between the ends of the car-replacer and arranged transversely thereof, substantially as specified.

7. The combination, with the segmental car-replacer having a recess in its crest, of the wear-plate fitted in the said recess, substantially as described.

8. The combination, with the segmental car-replacer having a recess in its crest provided with converging edges, of the wear-plate dovetailed in said recess, substantially as described.

9. The herein-described segmental shell, having the lower edges of the side walls thickened, substantially as described.

10. The herein-described segmental shell, having the side walls provided with a longitudinal groove in their edges, substantially as and for the purpose described.

11. The herein-described segmental shell, having the middle portion of its side walls thickened and extended downward, and having the lower edge of the said middle portion longitudinally grooved, substantially as and for the purpose described.

12. The combination, with the segmental car-replacer, of the projection 1, square on its under side and rounding on its upper end, substantially as and for the purpose described.

13. The combination, with the car-replacer, of thin and wide locking-spurs located along each edge of the car-replacer, and having one side of the spurs in a vertical plane and the other side beveled to form an edge, substantially as and for the purpose described.

14. The combination, with the car-replacer, of end and side locking-spurs, being thin and wide, the end locking-spurs being arranged with their greatest length at right angles to the greatest length of the side locking-spurs, and having the inner side of each locking-spur in a vertical plane and its outer side beveled inward to a straight edge, substantially as set forth.

383,780. PUMP. MARLON H. THORNLACK, Lafayette, Ind. Filed July 19, 1887. Serial No. 244,747. (No model.)

Claim.—1. As an article of manufacture, a lining for a pump-cylinder, composed of a hollow casting formed with a taper to enable it to take up swelling in the pump-cylinder and a sheet-metal tube secured to said casting, substantially as and for the purposes set forth.

2. As an article of manufacture, a lining for a pump-cylinder, composed of a hollow casting provided with spurs on its exterior and

383,780.

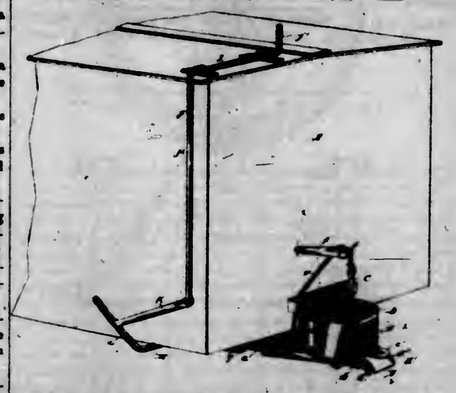


formed with a taper to enable it to take up swelling in the pump-cylinder, and a sheet-metal tube secured to said casting, the inner faces of the tube and casting at the joint being substantially flush with each other, substantially as and for the purposes set forth.

3. The combination, with the hollow tapering casting provided with spurs on its exterior, of the sheet-metal tube secured to the casting, the inner faces of the casting and tube at the joint between the two being substantially flush with each other, substantially as and for the purposes set forth.

4. The combination, with the tapering casting formed with the spurs and having the sheet-metal tube secured thereto, of the pump-stock fitting around said tube and casting and secured to the latter by its taper and spurs, and the wall-tubing fitting inside the casting, substantially as described.

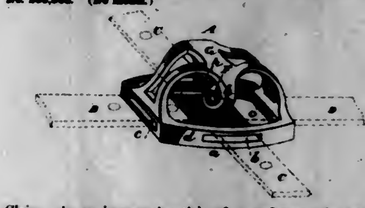
383,781. CAR-COUPLING. GEORGE W. TOLES, Neodesha, Kans. Filed Feb. 11, 1888. Serial No. 263,673. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head, the pin, and the pivoted guide-bar D, having the guide-face *d'*, provided with the retaining-flanges *d*[3], of the double crank-shaft journaled under the car, the pulley situated over the draw-head, the chain or cord running thereover and connecting the one crank of the shaft and pin, the pitman journaled on the other crank, the slotted link connecting the pitman and guide-bar, and the coiled spring extending normally the pitman and the link, substantially as specified.

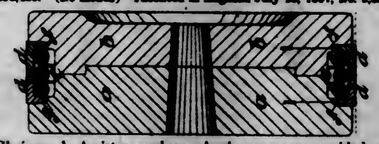
2. In a car-coupler, the combination, with the draw-head, the pin, the crank-shaft journaled under the car, the pulley, and the chain or cord connecting the crank-shaft and pin over the pulley, of the double-angled lever journaled in bearings on the roof of the car, and the link connecting the depending arm of said lever and the upstanding handle of the crank-shaft, substantially as specified.

383,782. COMBINED BACK-BAND BUCKLE AND TRACE-CARRIER. SAMUEL H. TOLER, Ramsdale, Mo. Filed Apr. 2, 1888. Serial No. 269,262. (No model.)



Claim.—As an improved article of manufacture, the combined buckle and trace-carrier described, consisting of the base portion *a*, having apertures *b b* and *c c*, the transverse strip B, having its lower face flush with the lower face of the base portion, and its upper face cut away to form the recess *d*, flush with the apertures *b*, and the arched piece G, arranged at right angles to the strip B, and formed with the hooks *h*, covered by said arched piece, substantially as shown and set forth.

383,783. PISTON AND PLUNGER. RICHARD TOZER, Alderley Edge, County of Chester, England. Filed Dec. 20, 1887. Serial No. 258,469. (No model.) Patented in England July 12, 1887, No. 9,922.

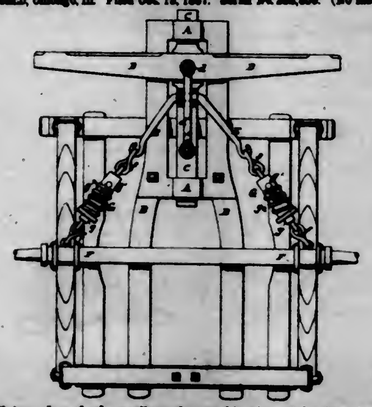


Claim.—1. A piston or plunger having a groove provided with ledges *f* at the sides, in combination with packing-rings *d* within the groove, and having edges to bear upon the said ledges to support the piston or plunger, all substantially as described.

2. A piston or plunger having packing-rings, and an internal spiral spring whose axis is coincident with the axis of the piston, the spring being a coiled rod of circular, semicircular, triangular, or semi-tubular section, as and for the purpose set forth.

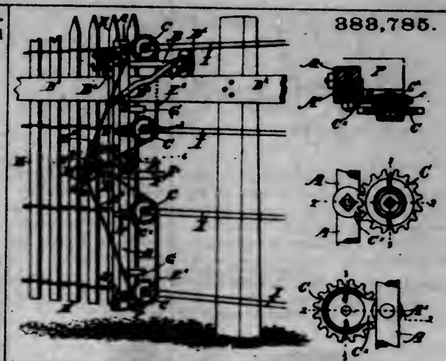
3. A piston or plunger composed of the body *a* and cover *b*, and formed with a groove, *c*, and ledges *f f*, in combination with the rings *d d* within the groove, and having edges to bear upon the ledges to support the piston and a spring behind the ring, substantially as described.

383,784. DRAFT ATTACHMENT FOR WAGONS. J. GEO. UNSELD, Chicago, Ill. Filed Oct. 19, 1887. Serial No. 252,850. (No model.)



Claim.—In a draft-equalizer, the combination of the draw-bar C, sliding in the guide-bracket A, and carrying the evener D, the rearwardly-extending V-shaped draw-link E, pivoted to the draw-bar C centrally, and duplicate links *f*, and spring devices *G g f g*, connected to the rear ends of the link E and axle F, the parts being arranged in the manner and for the purpose set forth.

383,785. FENCE-MACHINE. THEODORE F. VANDERVORT, Rush, and ALPHEUS L. HAFER, Shelbyville, Ind. Filed Dec. 21, 1887. Serial No. 258,216. (No model.)



Claim.—1. The combination, in a fence-machine, of several twisting-wheels, two driving-wheels, and independent driving-chains running from said driving-wheels to said twisting-wheels or groups of twisting-wheels, one of said driving-wheels being provided with means of engagement with the other, whereby either a part or all of the twisting-wheels may be driven.

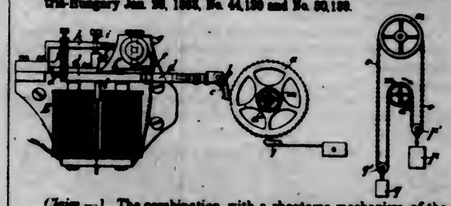
2. The combination, in a fence-machine, of a series of twisting-wheels adjustable toward or from each other, a driving wheel or wheels located to one side of the twisting-wheels and adjustable toward or from said twisting-wheels, and drive-chains connecting said twisting-wheels and said drive-wheels, whereby said twisting-wheels can be adjusted to different positions without varying the length of said driving-chains, substantially as set forth.

3. A fence-machine having a series of twisting-wheels, mechanism for operating said series of twisting-wheels, and means for throwing a portion of said twisting-wheels out of connection with the operating mechanism, substantially as set forth.

4. In a fence-machine, the combination of the twisting-wheels and drive-chains, two independent driving-wheels mounted upon the same shaft and provided with clutch-faces, one being mounted loosely on said shaft, and means for holding said wheels together and for forcing them apart, and means for operating said shaft, whereby the twisting-wheels or groups of twisting-wheels driven therefrom may be operated independently, substantially as set forth.

5. The combination, in a fence-machine, of the standard or post, serrated plates secured thereto, and brackets for the twisting-wheels having similar serrated faces, said twisting-wheels, driving-chains, driving-wheels, and an adjustable bracket supporting said driving-wheels, whereby the positions of said brackets on said plates, and consequently the positions of the twisting-wheels, may be varied as desired, substantially as set forth.

383,786. ELECTRIC APPARATUS FOR WINDING CLOCKS. MARIANO VIAS, Bilbao, Spain. Filed Oct. 13, 1887. Serial No. 252,753. (No model.) Patented in England Sept. 27, 1887, No. 13,091; in Belgium Sept. 28, 1887, No. 79,626; in France Sept. 30, 1887, No. 186,142; in Italy Oct. 5, 1887, No. 22,469; in Spain Nov. 30, 1887, No. 11,788, and in Austria-Hungary Jan. 20, 1888, No. 44,150 and No. 30,150.



Claim.—1. The combination, with a rheotome mechanism, of the herein-described weight-elevator, one wheel or pulley of the same communicating motion to the mechanism to be driven and its other wheel or pulley adapted to be driven by the armature of the rheotome mechanism, substantially as set forth.

2. The combination, with a weight-elevator, of a shaft carrying a ratchet-wheel and a wheel or pulley to operate the weight-elevator, and an automatic rheotome mechanism, the armature of the rheotome mechanism being adapted to operate the ratchet-wheel, and hence the elevator, substantially as described.

3. The combination, with an automatic rheotome mechanism, of a shaft adapted to be driven by the armature of the same, a wheel or pulley on said shaft, a weight adapted to be raised by the rotation of said pulley or wheel, and an additional wheel or pulley communicating motion to the mechanism to be driven and connected with and operated by the downward pull of said weight, substantially as described.

4. The combination, with an automatic rheotome mechanism, of a wheel or pulley intermittently rotated by the armature of the rheotome mechanism, a wheel or pulley imparting motion to the mechanism to be driven, and an endless chain or the like carrying weights, whereby the wheel immediately connected with the rheotome mechanism is adapted to operate the chain and weights independently of the other pulley, which is operated by the weights independently of the pulley which raises the weight, substantially as described.

5. The combination, with an automatic rheotome mechanism, of the herein-described weight-elevator, one wheel or pulley of the same communicating motion to the mechanism to be driven, and its other wheel or pulley adapted to be driven by the armature of the rheotome mechanism, and an automatic circuit breaker and closer connected with the wheels or pulleys of the elevator, whereby the operation of the rheotome mechanism is stopped and started automatically, as set forth.

6. The combination, with an automatic rheotome mechanism, of a weight-elevator communicating motion to the mechanism to be driven and intermittently operated by the armature of the rheotome mechanism, an automatic circuit breaker and closer, gearing connecting said breaker and closer with the weight-elevator, whereby the operation of the rheotome mechanism is stopped when the driving-weight has passed upwardly a certain distance, and gearing connecting said circuit breaker and closer with the mechanism operated by the weight, whereby the operation of the rheotome mechanism is started when the weight has passed downward a certain distance, as set forth.

7. The combination, with a rheotome mechanism and a weight-elevator, of a shaft rotated by the armature of the rheotome mechanism and adapted to operate the weight-elevator, an automatic circuit breaker and closer for the rheotome mechanism, gearing connected with said circuit breaker and closer, a lug or projection upon the shaft, adapted to operate said gearing when the shaft rotates, additional gearing connected with the circuit breaker and closer, and a wheel actuated by the downward pull of the weight and provided with a lug or projection to engage and operate said last-mentioned gearing, for the purpose set forth.

383,787. PIPE-THREADING DIE. FREDERICK VIEHLE, Yonkers, N. Y. Filed Feb. 15, 1888. Serial No. 264,072. (No model.)



Claim.—1. The combination, with the block of a cutter-die, of radially-guided cutters having teeth or racks at one side, pivoted locking-jaws having toothed faces, a slide-ring provided with pins for engaging said jaws, and means for shifting the slide-ring, substantially as set forth.

2. The combination of a block having radially-aligned recesses at the inner and outer ends, radial cutters guided in said recesses and provided with teeth or racks at one side, pivoted locking-jaws having toothed faces meshing with said racks, an interior slide-ring guided in a groove of the cap and provided with pins for engaging the jaws, means for shifting said slide-ring, and means for locking it into position when shifted, substantially as set forth.

3. The combination of the main part and caps of the block, screw-bolts for connecting the same, radially-guided cutters having teeth or racks at one side, toothed locking-jaws pivoted to said bolts, and a slide-ring guided in a groove of the cap and provided with pins for engaging the jaws, so as to set the cutters in locked position or expand the same, substantially as set forth.

4. The combination of the block of a cutter-die, radially-guided cutters having teeth or racks, pivoted locking-jaws having toothed faces meshing with said racks, a recessed slide-ring guided in the block and encircling the jaws, and tapering fingers pivoted to said slide-ring and adapted to engage the locking-jaws, so as to adjust the same and the cutters, substantially as set forth.

5. The combination of the block of a cutter-die, radially-guided cutters having teeth or racks at one side, pivoted locking-jaws having toothed faces, a slide-ring having pins for engaging said jaws and setting the same, and an encircling slide-ring having pivoted and tapering fingers for adjusting the jaws and cutters after they are set, substantially as set forth.

6. The combination of the block of a cutter-die, radially-guided cutters having teeth or racks, pivoted locking-jaws having toothed faces intermeshing with said racks, recesses at the inner ends said hooks at the outer ends, a slide-ring having pins for engaging the hooks of the jaws, a second slide-ring extending around the jaws, and tapering fingers pivoted to the jaws and guided along inclined recesses of the circumference of the block, substantially as set forth.

7. The combination of the block of a cutter-die, radially-guided cutters having teeth or racks at one side, pivoted locking-jaws having toothed faces intermeshing with the toothed cutters, a slide-ring extending around the jaws, tapering fingers pivoted to the slide-ring and guided along inclined recesses of the outer flange of the block, and radial lugs attached to the slide-ring and extended to the outside of the block for setting the slide-ring, substantially as set forth.

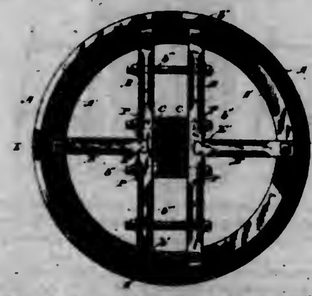
8. The combination of the block of a cutter-die, radial cutters guided by the same, said cutters having toothed middle portions and smooth ends, pivoted locking-jaws having toothed faces for locking said cutters, and filling-pieces set into the guide-recesses at the outer flange of the block, substantially as set forth.

383,788. INSECT-TRAP. JOHN WILLIAMS, Fort Colborne, Ontario, Canada. Filed Dec. 7, 1887. Serial No. 257,944. (No model.)



Claim.—In insect-traps, the combination of an open vessel, A, contracted at the top and containing a liquid, B, and with the handle *c* and hook *d*, from which an ordinary lantern can be suspended so that the light is on or near a level with the top of the vessel A, substantially as set forth.

383,789. SPLIT PULLEY. WILLIAM A. WILLINGHAM, Chattanooga, Tenn. Filed Sept. 8, 1887. Serial No. 248,836. (No model.)



Claim.—1. In a split pulley, the combination, with two rim-sections having a combined angular extent slightly less than an entire circumference, of two hub-sections attached by intermediate devices to said rim-sections, respectively, and means, substantially as described, for fastening said hub-sections together and for drawing the meeting ends of said rim-sections together, each of said hub-sections having in its inner face a cylindrical groove whose axis is coincident with the axis of the rim-section, and the meeting ends of said rim-sections being free to approach each other after the axes of said cylindrical grooves become coincident, substantially as and for the purpose set forth.

2. In a split pulley, the combination, with two rim-sections having an angular extent slightly less than an entire circumference, of spoke-arms attached to said sections, respectively, hub-sections attached to said spoke-arms, respectively, and means for fastening together the spoke-arms of the two sections, each of said hub-sections having in its inner face a cylindrical groove whose axis is coincident with the axis of the corresponding rim-section, whereby when the axes of said cylindrical grooves become coincident the contiguous ends of said rim-sections shall still be slightly separate, said said contiguous ends being free to approach each other after said axes become coincident, substantially as and for the purpose set forth.

3. The combination, with the rim-sections A A, of the spoke-arms B B, attached to said rim-sections, respectively, the hub-sections C C, attached to the arms B B, respectively, and grooved to form a bushing, and the bolts *b'*, connecting said arms B B and hub-sections C C, the groove in each of said sections C C being a cylindrical segment whose axis is coincident with that of the corresponding rim-section,

the combined angular extent of said rim-sections being slightly less than an entire circumference, and the contiguous ends of the rim-sections being free to approach each other after their axes become coincident, substantially as and for the purpose set forth.

4. The combination, with the two rim-sections A A, each having an internal flange, A', of the spoke-arms B B, each made up of two parts, *b b*, lying on opposite sides of the flange A', the plates P, extending across the outer faces of the spoke-arms, and bolts *b''*, passing through the plates P and the spoke-arms, substantially as and for the purpose set forth.

383,790. LOCOMOTIVE. LEANDER S. WOODBURY, Calumet, Mich.

Filed Feb. 20, 1888. Serial No. 264,583. (No model.)



Claim.—1. The combination of the locomotive and a tender coupled thereto, with an arm projecting beneath the tender from the locomotive and laterally confined to said tender, all substantially as specified.

2. The combination of the locomotive and tender, with an arm, F, having extensions adapted to opposite bearings on the locomotive and having a bearing on the tender, a rod connected to said arm between the opposite bearings, and a spring interposed between the head of said rod and a bearing carried by the locomotive, all substantially as specified.

3. The combination of the locomotive and tender, a transverse bar, E, having bearing portions *e e*, slotted bearings for the latter on the locomotive, an arm attached to the bar and having a bearing on the tender, a rod connected to the arm, and a spring interposed between the head of the rod and a bearing on the locomotive, all substantially as specified.

4. The combination of the locomotive and tender, an arm adapted to a bearing on the tender, and having extensions, with opposite bearings on the locomotive, a rod connected to the arm, a spring interposed between the head of said rod and a link hung to an arm on the locomotive, a bearing for said arm, and means for moving said bearing into and out of position, all substantially as specified.

383,791. WIRE-CLOTH. HENRY ATKINS, Newark, Ohio. Filed Mar. 30, 1888. Serial No. 267,861. (No specimens.)

Claim.—1. A wire-cloth consisting of interwoven copper wire and brass wire, substantially as specified.

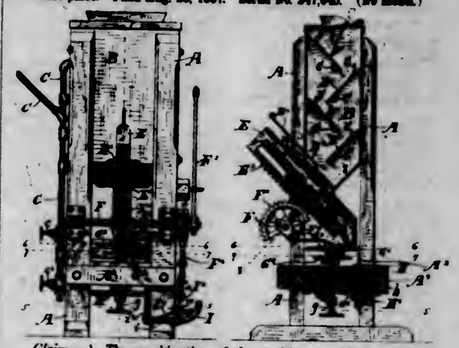
2. A wire-cloth consisting of the warp of copper wire and the weft of brass wire, substantially as specified.

3. A wire-cloth consisting of interwoven copper and brass wires, the copper wire being of larger gage than the brass wire, substantially as specified.

383,791.



383,792. COMBINED COOKING AND CAN-FILLING APPARATUS. JOHN J. BENNER, Greenwood, Ind., assignor of one-third to Harry Wood, same place. Filed Aug. 23, 1887. Serial No. 247,645. (No model.)



Claim.—1. The combination of the cooking-box B, containing a series of shelves extending alternately from the opposite sides of said box toward its center, and steam-supply pipes C, the branches of which extend inside said box and are perforated, and upon which the inner ends of said inclined shelves rest, substantially as shown and described.

2. The combination of the cooking-box, a series of shelves therein extending on an incline from each side of said box alternately toward its center, and a series of perforated steam-pipes extending inside said box between said shelves.

3. The combination of the cooking-box B, terminating in an opening at the lower end, the hopper D, with which said opening communicates, and a plunger in said hopper.

4. The combination of the cooking-box B, terminating in an opening in its lower end, a hopper, D, with which said opening communicates, and a gate by which said opening may be closed, substantially as set forth.

5. The combination of the cooking-box, the hopper with which it communicates, the plunger in said hopper, and a rack and pinion by which said plunger is operated.

6. The combination of the hopper for receiving the cooked article, the cooking apparatus arranged to discharge into said hopper, a revolving disk containing openings arranged beneath the mouth of said hopper, and a movable platform below said revolving disk, upon which cans may be placed and brought to and beneath the mouth of the hopper and the opening in the revolving disk, the opening in said disk thus serving, while the can is being filled, as an opening in the top of said can, substantially as set forth.

7. The combination, in a combined cooking and can-filling apparatus, of the cooking-box, a hopper arranged to receive the substance from said cooking-box, a plunger mounted to fit closely and slide in said hopper, a rock-shaft geared to said plunger for operating it, a revolving disk for receiving the cans and carrying them forward, and a connection between said rock-shaft and said disk, whereby the plunger and the disk may be operated simultaneously, substantially as set forth.

8. The combination of a hopper, a revolving disk arranged below the mouth of said hopper and containing holes, a second disk arranged on the same shaft therewith and containing notches for receiving cans, a discharging device in said hopper, the mechanism for simultaneously operating said disks, and a vertically-movable platform arranged below the mouth of said hopper for receiving cans successively as they reach that point, and the mechanism for giving to said movable platform a vertical movement, whereby the cans are brought into close contact with the disk containing the holes, and thus tightly closed, except as to the opening in said disk immediately above it, substantially as set forth.

9. The combination of the revolving disk G', having holes therein and faced on the under side with a yielding or elastic material, a vertically-movable platform, H, and the mechanism by which said movable platform is operated, and the can at the time resting on said movable platform brought into close contact with the under side of said disk G'.

10. The combination of a hopper for receiving cooked articles, the apparatus for cooking the same arranged to discharge into said hopper, a discharging device therein, a revolving device for moving the cans to and beneath the discharging-point of said hopper, a vertically-movable platform for bringing said cans up closely into position to be filled, a rock-shaft, and connections between said rock-shaft and the discharging device in the hopper, substantially as set forth.

11. The combination of the rock-shaft F, having an arm, F^3, and a pawl pivoted to said arm, a vertical shaft, G, having the disks G' and G^2, one of which is provided with pins or projections with which said pawl will engage, whereby as said shaft F is rocked said shaft G and the disks thereon are revolved, substantially as set forth.

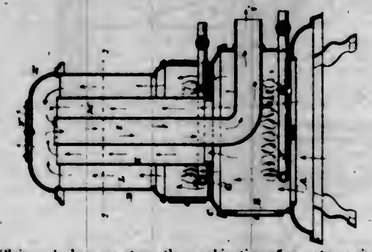
12. The combination of the rock-shaft F, the arm F^3 thereon, a vertically-movable platform, H, having a spindle, *h*, which extends down and rests on a hinge or spring-bar, a cam or crank-shaft by which said hinge or spring-bar may be moved, and a connecting-rod between a crank-arm on said shaft and the arm F^3 on the shaft F.

13. The combination, in a cooking and can-filling machine, of a water-supply pipe, I, containing a flexible section, and a lever running to said flexible section from the can-manipulating mechanism, whereby the liquid in said pipe is periodically forced out into the cans simultaneously with the movement of said can-manipulating mechanism, substantially as set forth.

14. The combination, in a cooking and can-filling machine, of a water-supply pipe, I, a flexible section, *i*, therein, the shaft F, having an arm, and a bell-crank lever, I', pivoted to the frame-work, one end resting upon said flexible section of pipe and the other against the arm on the shaft, whereby when said shaft is rocked the flexible section will be compressed, substantially as set forth.

15. A combined cooking and can-filling apparatus consisting of a cooking apparatus arranged with a can-filling apparatus to discharge into the hopper thereof, substantially as set forth.

383,793. GAS-STOVE. LEWIS BRIDGE, Philadelphia, Pa., assignor to the Pennsylvania Globe Gas Light Company, of Pennsylvania. Filed Dec. 27, 1886. Serial No. 222,577. (No model.)



Claim.—1. In a gas-stove, the combination of an outer casing or cylinder forming a combustion-chamber, a burner at or near its bottom, a central radiating-cylinder entirely inclosed by the said outer casing and opening into it near its top, but without direct connection with the external air, and further being exposed on its outside to the products of combustion ascending in the combustion-chamber, and also adapted to receive part at least of said products of combustion through its upper end, which opens into the combustion-chamber, an elbow-outlet extending through said combustion-chamber, opening from the bottom of said radiating-cylinder and located immediately above the burner, and a register or valve in the top of the stove-case above the central cylinder to allow part of the products of combustion to escape into the room and part to enter the central elbow-outlet, the interior passages of the stove, where combustion takes place, being substantially closed to the air exterior to the stove, and draft-passages to the burner at the base of the stove.

2. In a gas-stove, the combination of three concentric passage-ways, all open at the top and communicating with each other, a gas-burner at or near the bottom of each of the two outer passage-ways, and a smoke-outlet connecting with the bottom of the inner passage-way, substantially as and for the purpose specified.

3. In a gas-stove, the combination of three concentric passage-ways, all open at the top and communicating with each other, a gas-burner at or near the bottom of each of the two outer passage-ways, a chamber into which the bottoms of the two outer concentric passage-ways open, and a smoke-outlet connecting with the bottom of the inner passage-way, substantially as and for the purpose specified.

4. In a gas-stove, the combination of three concentric passage-ways, all open at the top and communicating with each other, a chamber at the bottom communicating with the bottoms of the two outer passage-ways, a valve between the chamber and one of said outer passage-ways, a gas-burner above the valve, a second gas-burner in the chamber below the two outer concentric passage-ways, and a smoke-outlet connecting with the bottom of the central or inner passage-way, substantially as and for the purpose specified.

5. The combination, in a stove, of the outer case or shell, the central outlet-tube, I, open at the top and made angular at the bottom, passing through the case of the stove to form an escape-flue at *i*, the gas-burner J, located within the stove-case and below the cylinder I, the second cylinder, H, forming the concentric passage-ways L and M, both open at the top, and a gas-burner, K, in the bottom of passage-way L and exterior to the cylinder H, substantially as and for the purpose specified.

6. The combination, in a stove, of the outer case or shell, the central outlet-tube, I, open at the top and made angular at the bottom, passing through the case of the stove to form an escape-flue at *i*, the gas-burner J, located within the stove-case and below the cylinder I, the second cylinder, H, forming the concentric passage-ways L and M, both open at the top, and a gas-burner, K, in the bottom of passage-way L and exterior to the cylinder H, and a valve, G, to connect or disconnect the passages L M at their bottoms, substantially as and for the purpose specified.

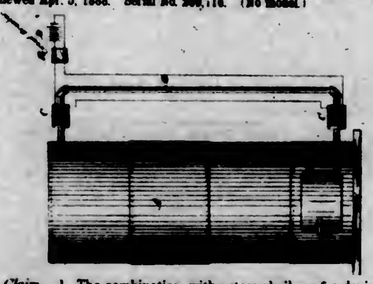
7. The combination, in a stove, of the outer case or shell, the central outlet-tube, I, open at the top and made angular at the bottom, passing through the case of the stove to form an escape-flue at *i*, the gas-burner J, located within the stove-case and below the cylinder I, the second cylinder, H, forming the concentric passage-ways L and M, both open at the top, a gas-burner, K, in the bottom of passage-way L and exterior to the cylinder H, and a register, F, arranged above the top of the passage-way L M and cylinder I, substantially as and for the purpose specified.

383,794. ELECTRIC SHELLING-BOTTLE. CHARLES T. BROWN, Chicago, Ill., assignor to Flora L. Brown, same place. Filed Dec. 23, 1887. Serial No. 258,836. (No model.)



Claim.—The combination, with a containing-vessel, of a battery comprising a sheet of zinc bent into a tube, a carbon stick contained in the tube, and an asbestus diaphragm saturated with an excitant between the zinc and carbon, and a sponge saturated with an electrolyzable compound in circuit with the elements of the battery.

383,795. DEVICE FOR PREVENTING INCRUSTATION IN STEAM-BOILERS. WILLIAM B. BULL, Quincy, Ill. Filed Jan. 19, 1888. Renewed Apr. 5, 1888. Serial No. 269,716. (No model.)

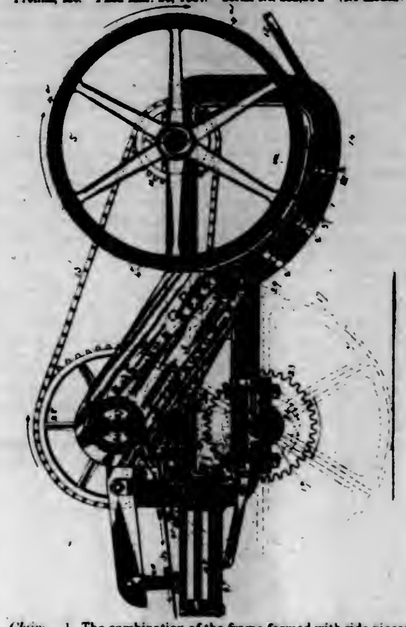


Claim.—1. The combination, with a steam-boiler, of a device for preventing incrustation therein, consisting of an electric generator, an electro-magnet in circuit therewith, having its poles in contact with said boiler, and a device in said circuit for varying the current from the generator, substantially as described.

2. The combination, with a steam-boiler, of a device for preventing incrustation therein, consisting of an electric generator, an electro-magnet in circuit therewith and having its poles in contact with the

boiler at points widely separated, so as to include the mass of the boiler between them, and a device for varying the current in said circuit, substantially as described.

383,796. CLOVER-SEED HARVESTER. HERMANN DOEPKENS, Frohna, Mo. Filed Mar. 26, 1887. Serial No. 232,504. (No model.)



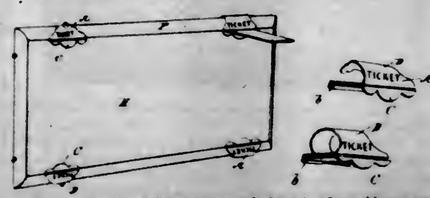
Claim.—1. The combination of the frame formed with side pieces, having curved parts 1 1, curved floor 3, secured thereto, the cylinder 5, having combs 4, formed with stripping-teeth 4ª, the roller 14 in advance of the floor, and the upwardly and forwardly extending fender 15, substantially as described.

2. The combination of the frame formed with side pieces, having curved parts 1 1, curved floor 3, secured thereto, the cylinder 5, having combs 4, formed with stripping-teeth 4ª, the upwardly and rearwardly inclined floor 30, formed with a trough, 29, beneath the upper edge, 6, of the main floor, and the endless conveyer 32, having brushes 33, working through the trough, substantially as described.

3. The combination of the frame having curved floor 3, secured thereto, the cylinder 5, having combs 4, formed with stripping-teeth 4ª, the upwardly and rearwardly inclined floor 30, formed with a trough, 29, beneath the upper edge, 6, of the main floor, the endless conveyer 32, having brushes 33, and the riddle 39 at the end of the conveyer-floor, substantially as described.

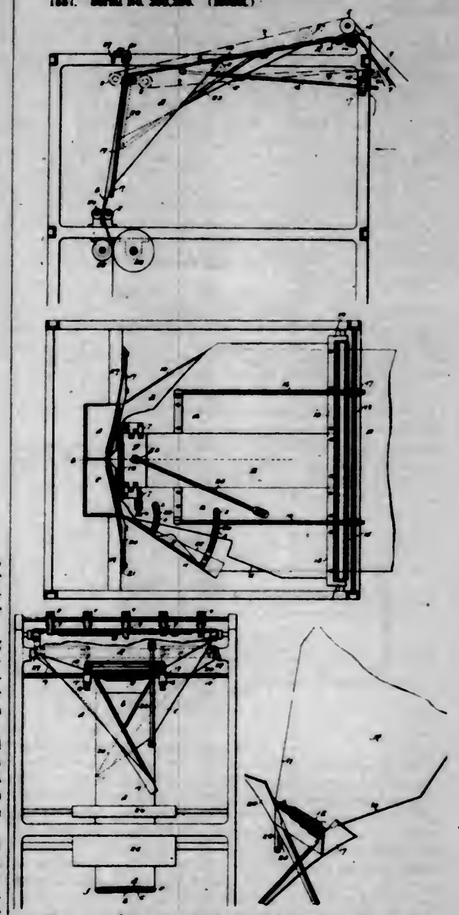
4. The combination of the frame having curved floor 3, secured thereto, the cylinder 5, having combs 4, formed with stripping-teeth 4ª, the upwardly and rearwardly inclined floor 30, formed with a trough, 29, beneath the upper edge of the main floor, the endless conveyer 32, having brushes 33, the riddle 39, into which the conveyer discharges, and the chute 47 beneath the riddle, having brushes 48, substantially as described.

383,797. TICKET-HOLDER. DAVID F. CROPUT, Bridgeport, Conn., assignor to Burns, Silver & Co., same place. Filed Dec. 21, 1887. Serial No. 258,553. (No model.)



Claim.—A ticket-holder constructed of a strip of metal bent upon itself with one end bent upward and backward to conform to the shape of the frame of the car-seat, and the other end bent downward and backward to rest against the cushion of the back of said car-seat, and with a ridge formed at the back of said ticket-holder where it is bent upon itself, in combination with said seat, which is provided with a recess in the frame thereof adapted to receive the ridge and flat bent portions of the ticket-holder.

383,798. FOLDING-MACHINE. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Peter S. Hoe, Stephen D. Tucker, Theodore H. Hood, and Charles W. Carpenter, all of New York, N. Y. Filed Oct. 13, 1887. Serial No. 252,226. (Model.)



Claim.—1. In a longitudinal folder, the combination, with an internal guide arranged across one part of the web obliquely to the travel thereof, of an internal guide arranged across the other part of the web at right angles to the travel thereof, and an external corner extending from a point adjacent to the junction of the internal guides, and arranged to deflect the part of the web passing over the oblique guide and lay it over onto the part passing over the other guide, substantially as described.

2. In a longitudinal folder, the combination, with internal guides arranged across the side portions of the web obliquely to the travel thereof, of an internal guide arranged across the central portion of the web at right angles to the travel thereof, and external corners extending from points adjacent to the junctions of the internal guides, and arranged to deflect the portions of the web passing over the oblique guides and lay them over onto the portion passing over the other guide, substantially as described.

3. In a longitudinal folder, the combination, with internal guides arranged across the side portions of the web obliquely to the travel thereof, of an internal guide arranged across the central portion of the web at right angles to the travel thereof, and external corners extending from points adjacent to the junctions of the internal guides, and arranged to deflect the portions of the web passing over the oblique guides and lay them over onto the portion passing over the other guide, substantially as described.

4. In a longitudinal folder, the combination, with internal guides arranged across the side portions of the web obliquely to the travel thereof, one of said guides being adjustable to and from the other and to different angles with relation to the web, of an internal guide arranged across the central portion of the web at right angles to the travel thereof, said guide being adjustable in length, and external corners extending from points adjacent to the junctions of the internal guides, and arranged to deflect the portions of the web passing over the oblique guides and lay them over onto the portion passing over the other guide, one of said corners being adjustable to conform to the adjustment of the internal guides, substantially as described.

5. In a longitudinal folder, the combination, with internal guides, 10 11 12, and the auxiliary internal guide, 22, arranged to co-operate with one of said guides, of the external corners, 19 20, substantially as described.

6. In a longitudinal folder, the combination, with internal guides 10 11 12, and the auxiliary internal guide, 22, of the external corners, 19 20, extending from points adjacent to the junctions of said internal guides, and arranged to deflect the side portions of the web and lay them over one upon the other onto the central portion, substantially as described.

7. In a longitudinal folder, the combination, with internal guides arranged across the side portions of the web obliquely to the travel thereof, one of said guides being adjustable to and from the other and to different angles with relation to the web, of an internal guide arranged across the central portion of the web at right angles to the travel thereof, said guide being adjustable in length, the auxiliary internal guide, 22, and external corners extending from points adjacent to the junctions of the internal guides, and arranged to deflect the portions of the web passing over the oblique guides and lay them over onto the portion passing over the other guide, one of said corners being adjustable to conform to the adjustment of the internal guides, substantially as described.

8. In a longitudinal folder, the combination, with the plate A, made in two parts and forming the internal guides, 10 12, of the removable supplemental section *g*, substantially as described.

9. In a longitudinal folder, the combination, with the internal guides, 10 12, of the internal guide, 11, made adjustable to different angles with relation to the guides 10 12, substantially as described.

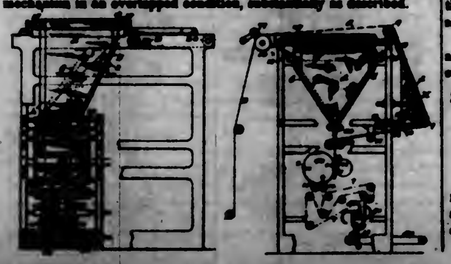
10. In a longitudinal folder, the combination, with an internal guide arranged across one part of the web obliquely to the travel thereof, of an internal guide arranged across the other part of the web at right angles to the travel thereof, and an external corner extending from a point adjacent to the junction of the internal guides, and arranged to deflect the part of the web passing over the oblique guide and lay it over onto the part passing over the other guide, and tapes for conducting the web to and onto the folder, substantially as described.

11. In a longitudinal folder, the combination, with the internal guides, 10 or 11 and 12, recessed or cut away at their point of union, of an external corner, 19 or 20, extending from a point opposite said recess, and arranged to deflect the part of the web passing over one of said internal guides, substantially as described.

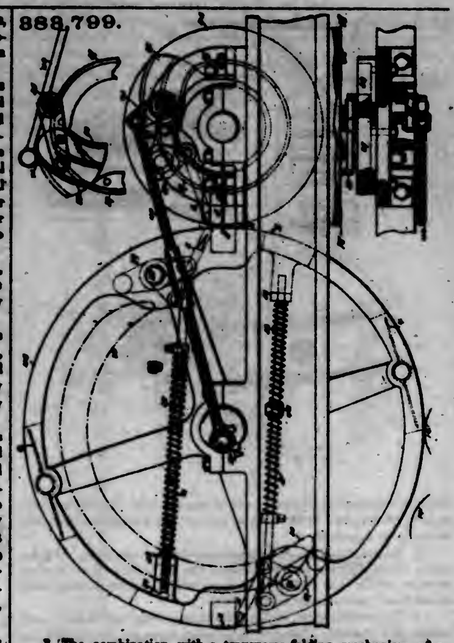
383,799. DELIVERY MECHANISM FOR PRINTING-MACHINES. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Peter S. Hoe, Stephen D. Tucker, Theodore H. Hood, and Charles W. Carpenter, all of New York, N. Y. Filed Nov. 2, 1887. Serial No. 254,603. (No model.)

Claim.—1. The combination, in a delivery mechanism, of a plurality of longitudinal folders set side by side and one slightly in advance of another, so as to deliver their folded products overlapped, substantially as described.

2. The combination, with a transverse cutting mechanism, of a plurality of longitudinal folders set side by side and one slightly in advance of another, so as to deliver their folded webs to said cutting mechanism in an overlapped condition, substantially as described.



383,799.



3. The combination, with a transverse folding mechanism, of a plurality of longitudinal folders set side by side and one slightly in advance of another, so as to deliver their folded products to said transverse folding mechanism in an overlapped condition, substantially as described.

4. The combination, with a transverse cutting and folding mechanism, of a plurality of longitudinal folders set side by side and one slightly in advance of another, so as to deliver their folded webs to said cutting and folding mechanism in an overlapped condition, substantially as described.

5. The combination, with a transverse cutting mechanism, of a plurality of longitudinal folders set side by side and one slightly in advance of another, so as to deliver their folded webs to said cutting mechanism in an overlapped condition, and a web-associating mechanism arranged to associate and deliver the webs to one of said longitudinal folders, substantially as described.

6. The combination, in a delivery mechanism, of a plurality of reversibly-arranged longitudinal folders set side by side and one slightly in advance of another, and so as to deliver their folded products overlapped, with their folded edges in opposite directions, substantially as described.

7. The combination, with a longitudinal folder, G, and a web-turner, of a second longitudinal folder, H, so arranged as to deliver its folded product overlapped upon the product of the first folder, said second folder consisting of an internal guide arranged at right angles to the web across its path of travel, an internal guide arranged obliquely across the path of one part of the web, and an external turner arranged to turn the web over the oblique internal guide, substantially as described.

8. The combination, with the rock-shaft 35, carrying the pins 6 and having the rock-arm 36, of the cam 38, for rocking the shaft, and the rod 40 and crank 39, for operating the cam, substantially as described.

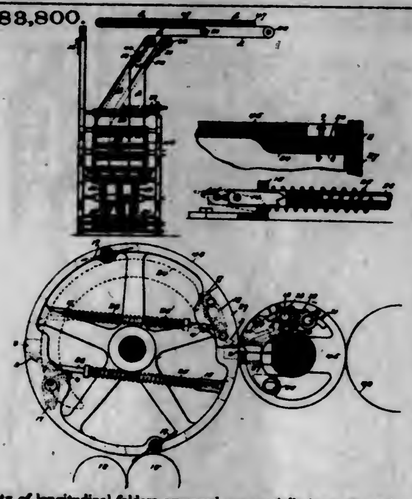
9. The combination, with the rock-shaft 35, carrying the pins 6 and having the arm 36, of the eccentric guide 37, cam 38, rod 40, and crank 39, substantially as described.

383,800. DELIVERY MECHANISM FOR PRINTING-MACHINES. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Peter S. Hoe, Stephen D. Tucker, Theodore H. Hood, and Charles W. Carpenter, all of New York, N. Y. Filed Nov. 10, 1887. Serial No. 254,703. (No model.)

Claim.—1. The combination, in a delivery mechanism, of a plurality of longitudinal folders set one in advance of and partially above another, so as to deliver their folded products inset, substantially as described.

2. The combination, with a transverse cutting mechanism, of a pla-

383,800.



rality of longitudinal folders arranged one partially beneath another, so as to deliver their folded webs to said cutting mechanism inset, substantially as described.

3. The combination, with a transverse folding mechanism, of a plurality of longitudinal folders arranged one partially beneath another so as to deliver their folded products to said transverse folding mechanism inset, substantially as described.

4. The combination, with a transverse cutting and folding mechanism, of a plurality of longitudinal folders arranged one partially beneath another, so as to deliver the folded webs to said cutting and folding mechanism inset, substantially as described.

5. The combination, with a transverse cutting mechanism, of a plurality of longitudinal folders arranged one partially beneath another, so as to deliver their folded webs to said cutting mechanism inset, and a web-associating mechanism arranged to associate and deliver the webs to one of said folders, substantially as described.

6. The combination, with the pins 3 and rock-shaft 16, of the rod 26 and spring 25, for protruding the pins, the guide 15, and the latch 14, for holding the pins in their retracted position, substantially as described.

7. The combination, with the pins 6, rock-shaft 12, and segment 33, of the shaft 31, segment 32, and spring 30, for protruding the pins, substantially as described.

8. The combination, with the pins 6 and shaft 12, of the cam-lever 27 and the sliding bolt 34, for holding the pins in their retracted position, substantially as described.

9. The combination, with the pins 6 and shaft 12, of the cam-lever 27, having the recess 11 and opening 10, and the sliding bolt 34, for limiting the movement of the pins and for holding them in their retracted position, substantially as described.

383,801. DUST ARRESTER AND COLLECTOR. ROBERT I. DOWTEN, St. Louis, Mo. Filed Oct. 4, 1887. Serial No. 251,662. (No model.)



Claim.—1. In a dust arrester and collector, the combination of the outer imperforate cylinder, an inner perforated cylinder smaller than the outer cylinder, and a flue having a tangential opening, through which the air and dust are deposited into the chamber between the cylinders, substantially as and for the purpose set forth.

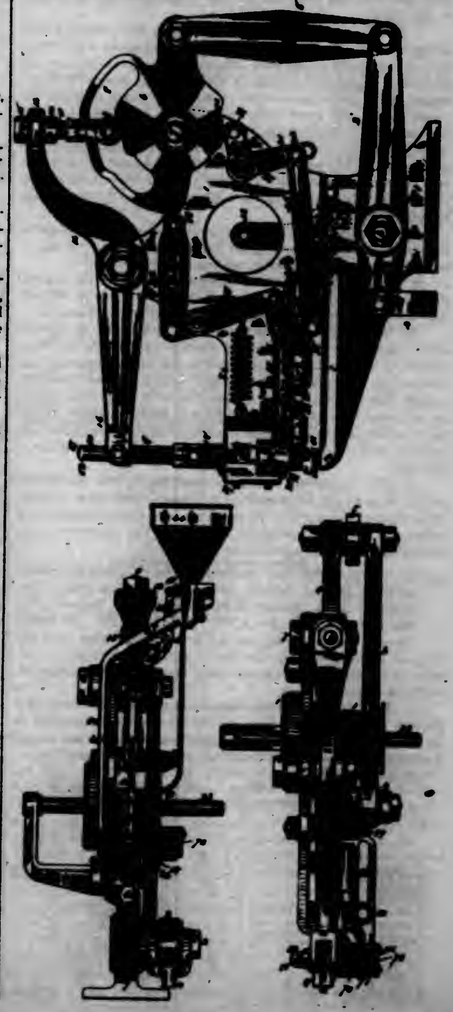
2. In a dust arrester and collector, the combination of the outer imperforate cylinder, inner perforated cylinder, and delivery-flue having a tangential opening, said cylinders being in the form of a frustum of a cone, and the inner cylinder being smaller and conforming in shape with the outer cylinder, substantially as and for the purpose set forth.

3. In a dust arrester and collector, the combination of the outer imperforate cone-shaped cylinder open at its lower end, inner perforated cylinder smaller than and conforming in shape with the outer cylinder, and a tangential delivery-flue opening into said outer cylinder at the top of the machine, the inner cylinder being open at top and bottom, substantially as and for the purpose set forth.

4. In a dust collector and arrester, the combination of the outer imperforate cylinder, an inner cylinder smaller than the outer cylinder, and a flue through which the air and dust are deposited into the chamber between the cylinders, said inner cylinder having perforations varying in size, substantially as set forth.

383,802. BUTTON-MACHINE. JONATHAN BERRY, St. Louis, Mo., assignor of one-half to George D. Berry, Le Roy, Kans. Filed June 4, 1887. Serial No. 240,268. (No model.)

Claim.—1. The combination, in a machine for attaching buttons, of a plunger having a recess to receive the eye of a button, and a



383,802.



groove on its lower edge to receive the staple, a retractile horn for supporting the button, and a fixed slotted plate for arresting the movement of the button, substantially as described.

2. The combination, in a machine for attaching buttons, of a plunger, a retractile horn having its end formed with shoulders and curved to conform to the contour of the button, and an anvil, substantially as described.

3. The combination, with the hopper, of a reciprocating slide having a vertical recess through its end for receiving the buttons, and a tube over which said recessed end passes and into which the buttons are discharged, substantially as described.

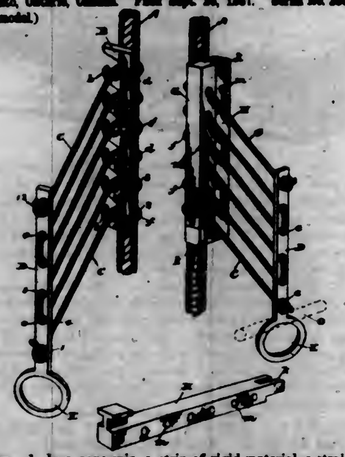
4. The combination, in a button-attaching machine, of a plunger constructed of a single piece of metal adapted to cut off a piece of wire, bend it into a staple and force it through the goods, a wire-feeding device, and a retractile horn, substantially as described.

5. The combination, with the hopper and the reciprocating feeding device for removing the buttons from the hopper, of the inclined feed-tube slotted from end to end and constructed with its upper portion substantially cylindrical in shape and its lower portion flattened to prevent the escape of the eye of the button from said slot, substantially as described.

6. The combination, in a button-attaching machine, of the body 1, the cam 6, having the groove 8 therein, the pitmen and levers connecting the same with the motive power, the lever 13, having the anti-friction wheel 9 secured thereto and working on said cam, the plunger 18, and the pitman 17, connecting the plunger with the lever 13, substantially as described.

7. In a button-attaching machine, the combination, with the cam 6 and the lever 13, of the screw-threaded arm 10, having connection with said lever and provided with a friction-wheel, 9, on its lower end, adapted to come in contact with said cam, substantially as described.

383,803. ROPE-GRIP OR SILVADOR-STROP. ARTHUR K. EVANS, Toronto, Ontario, Canada. Filed Sept. 23, 1887. Serial No. 250,710. (No model.)



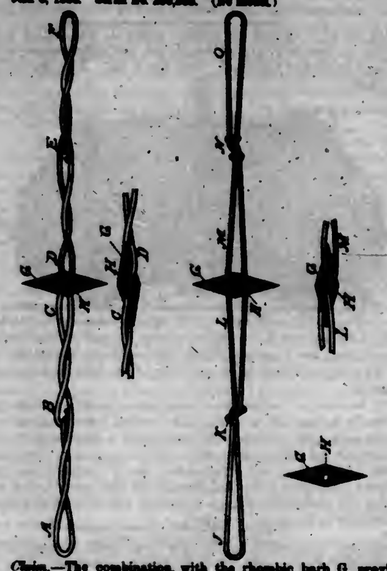
Claim.—1. In a rope-grip, a strip of rigid material, a straining-piece, and a series of loops attached to one side of said strip, adapted to pass around the rope to be gripped, and through openings on the opposite side of said grip to said straining-piece, substantially as described.

2. In a rope-grip, a strip of rigid material having openings on the opposite sides, a series of loops passing through said openings, and a straining-piece, to which one end of each of said loops is connected, substantially as described.

3. The combination, with rope A, of plate B, having hooked projections *b* and holes *d*, the straining-piece D, provided with ring E and holes *e*, and the rope or marline C, secured to said plate B and straining-piece D, substantially as described, and for the purpose specified.

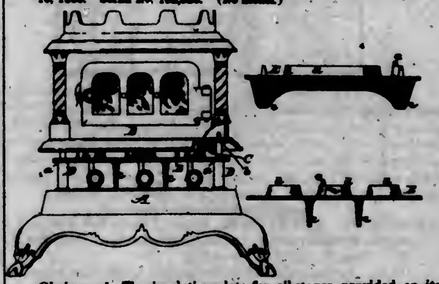
4. The combination, with the rope A, of the pieces G and H, having holes *m*, T-shaped projections, and notched so as to form shoulders *k*, the rope or marline C, secured to said pieces G and H, and the straining-piece D, having holes *e* and ring E, substantially as described, and for the purpose specified.

383,804. WIRE FENCE. FRANK C. FRASER, Cayuga, N. Y. Filed Jan. 3, 1888. Serial No. 259,522. (No model.)



Claim.—The combination, with the rhombic barb G, provided with a transverse elongated central slot, H, of the closed wire links engaging the slots, whereby the barbs may be turned aside, and when released may resume their transverse position by the lengthwise strain upon the frame.

383,805. OIL-STOVE. SIMEON B. GAYLORD, Providence, R. I., assignor to the Florence Machine Company, Florence, Mass. Filed Nov. 10, 1886. Serial No. 182,262. (No model.)



Claim.—1. The insulating-plate for oil-stoves, provided on its upper side with a stud and with supporting-surfaces serving as a seat for a perforated plate, and also provided with one or more depending lugs on its under side, which serve as legs for supporting said plate, and also prevent said plate from seating a perforated plate except when said insulating-plate is right side up, substantially as described.

2. In an oil-stove, the combination, with a reservoir and a perforated plate, of an insulating-plate having bearing-surfaces on its upper side adapted to flatly seat and support said perforated plate, and provided on its under side with one or more depending lugs, substantially as described, whereby said insulating-plate when wrong side up is rendered incapable of flatly supporting or seating said perforated plate.

3. In an oil-stove, the combination, substantially as hereinbefore described, of the reservoir or base, the drum, the perforated plate, the corner-posts supporting said drum, and an insulating-plate confined against horizontal displacement by said posts, and provided with one or more depending lugs on its under side, which serve as legs for supporting said plate, and also for preventing the perforated plate from being seated on the wrong side of said insulating-plate.

4. The combination, substantially as hereinbefore described, with the drum, the reservoir, and the front supporting-posts, of an insulating-plate provided with a seat for a perforated plate on its upper side, and a depending lug on its lower side, which serves as a supporting-leg for one side of said insulating-plate, and also prevents the under side of said plate from being used as a seat for the perforated plate

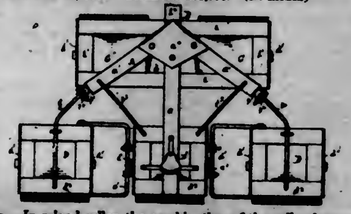
383,806. CARPET-SWEEPER. HENRY A. GOSS, HIRAM W. ROTH, and GEORGE W. KELLEY, Goshen, Ind.; said Kelley assignor to Edward W. Walker, same place. Filed July 8, 1887. Serial No. 243,741. (Model.)



Claim.—1. The combination, with a sweeper-case and its rotatable brush, of driving-wheels journaled on hangers pivoted to levers, which levers connect the hangers with the journals of the handle-bail, the said levers being pivoted to the end walls of the casing, substantially as specified.

2. In a carpet-sweeper, the combination, with the main case having slots in its top wall, as shown, of the slotted plates *c*, placed over the said slots of the case, the dust-pans pivoted at their rear portion in the said case and having rearwardly-extending arms *d*, and the sliding latches L, pivoted at their lower ends to the said arms of the pans, and their upper ends projecting through the slots and provided with notches *g* in their forward edges to engage with the slotted plates *c*, substantially as shown and described.

383,807. LAND-ROLLER. FRANKLIN GRIMM, Richland Station, Pa. Filed Feb. 27, 1888. Serial No. 265,365. (No model.)

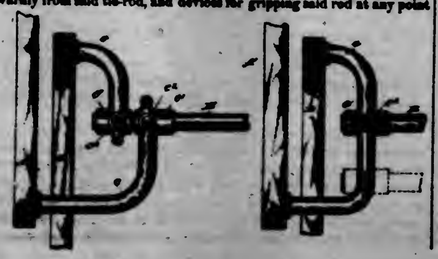


Claim.—In a land-roller, the combination of the roller-frame, the supplemental frame connected thereto and carrying rollers, the rear series of rollers, the U-shaped arms pivotally connecting the end rollers of said series with the central one thereof, the brace-rods secured to the frames of said end rollers and removably connected to said roller-frame by nutted bolts, and the brace-rods f^3, connecting said central roller to said roller-frame, substantially as shown and described.

383,808. ROCKING-CHAIR. GEORGE F. HALL, New York, N. Y., assignor of one-half to Peter Lowentrust, Newark, N. J. Filed May 31, 1887. Serial No. 239,731. (No model.)

Claim.—1. The combination, with a chair of the class described and with its base, of a cross-bar or rod, and hangers with which the said rod is connected at a point between the upper and lower journal of each hanger, substantially as specified.

2. In a chair of the class described, the combination of pivoted hangers, tie-rods connecting the same, an adjusting-rod extending rearwardly from said tie-rod, and devices for gripping said rod at any point



383,808.



thereon and maintaining the hangers at a desired incline, substantially as specified.

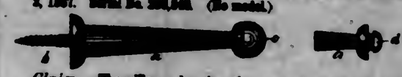
3. In a chair of the class described, the combination of the hangers thereof, with an adjusting-rod extending therefrom, pivoted gripping-rods embracing said adjusting-rod, and a foot-lever for actuating said gripping-rods, substantially as specified.

4. The chair A, having the depending portions A', in combination with the base B, the hangers C, journaled in said base and chair and having the intermediate sockets, C', and with the tie-bar E, substantially as specified.

5. The chair A, in combination with the base B, the hangers C, journaled in said base and chair and provided with sockets C', arranged between the journals, having set-screws D^2, and with the tie-bar E, adapted to enter said sockets and be held in place by said set-screws, substantially as specified.

6. The combination, with the hangers C and rod E, of the adjusting-rod F, connected thereto, the lever G, pivoted, as at G', to the plate G^2, the rods G^4 G^5, having gripping portions G^6, and pivoted at G^3, substantially as specified.

383,809. DOOR-CHECK. FRANK J. HERBERT, New Britain, assignor of one-half to Wm. Edger Shumate, Hartford, Conn. Filed May 2, 1887. Serial No. 236,845. (No model.)



Claim.—The pillar *a*, bearing the screw *b* at its base and also bearing the wrench-grip *d*, in combination with the removable yielding cushion *c*, all substantially as described, and for the purpose set forth.

383,810. NUT-LOCK. WALTER B. HOPKINS, Streator, Ill. Filed Mar. 14, 1888. Serial No. 267,327. (No model.)



Claim.—1. In a nut-lock substantially as shown, the combination of a plate, A, provided with openings having on one edge adjacent thereto lips *e e*, said plate having a semicircular recess, a plate, B, having similar openings with lips and a raised end portion with semicircular recess and slots *g g*, a spring, C, contained within the recess, and means for securing the plates so that they may slide, substantially as shown, and for the purpose set forth.

2. The combination, in a nut-lock, of the following elements: the parts A and B, secured movably to each other and provided with semicircular recesses, said parts having projecting lips *f* and *f'*, a spring located within said recesses to bear upon said lips, one of the parts being provided with slotted rivets for holding the parts together, so that they can slide one upon the other, the parts A and B being provided with openings with projecting lips *e*, substantially as shown, and for the purpose set forth.

383,811. PUMP-VALVE. CHARLES F. HOYT, Sioux City, Iowa. Filed May 28, 1887. Serial No. 239,103. (No model.)



Claim.—1. The combination of a valve or piston formed with a groove or recess in its outer edge and with recessed outer corners, a roller formed with conical recesses in its ends, and blocks removably secured in said recessed corners and provided with screws having conical or pointed ends for said conical recesses in the ends of said roller, substantially as described.

2. The combination of a valve or piston formed with recessed

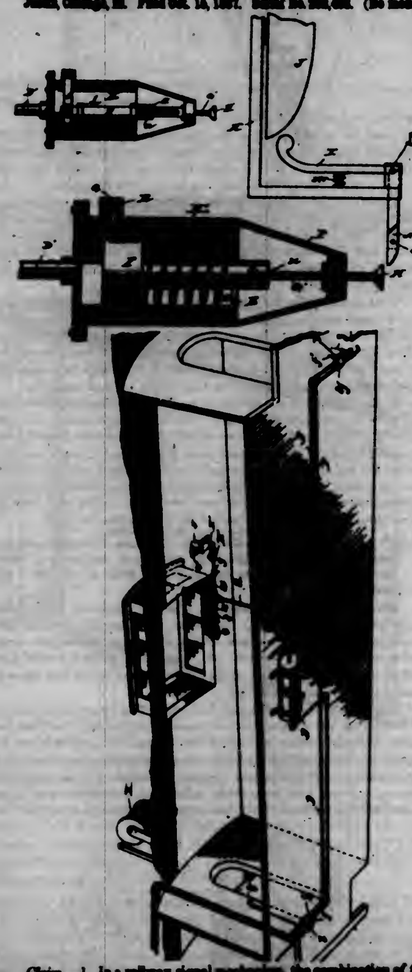
outer corners, with holes in its outer corners, and with a groove or recess in its outer edge, and provided with a lining of anti-friction material having a cylindrical groove in its outer side, an anti-friction roller supported in said groove and formed with conical recesses in its ends, and blocks fitted in said recessed outer corners of the valve or piston and formed with inwardly-projecting studs fitting in holes formed in the walls of said recessed outer corners of the valve or piston, and provided with flattening-screws entering the walls of said recesses and with conically-pointed screws for said conical recesses in the ends of said roller, substantially as described.

383,812. BOILER-SCOURER. LEWIS S. HOYT, Boston, Mass. Filed Nov. 14, 1887. Serial No. 255,624. (No model.)



Claim.—The combination, substantially as and for the purpose set forth, with the compressible body B, having a chamber, D, within the same, of the rubber cap G, provided with a central projection, L, which fits into the chamber G.

383,813. RAILWAY-FREIGHT-TRAIN SIGNAL. THOMAS M. JONES, Chicago, Ill. Filed Oct. 15, 1887. Serial No. 252,462. (No model.)



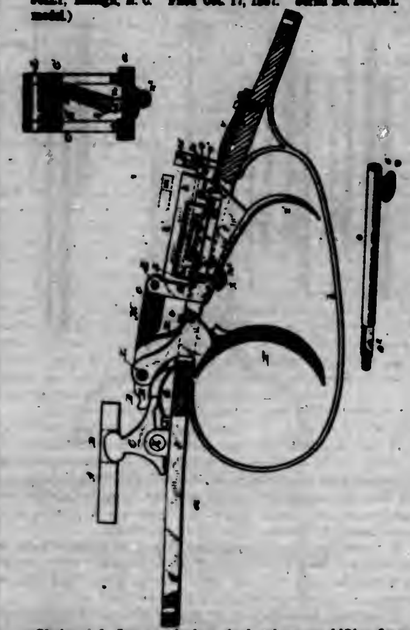
Claim.—1. In a railway signal mechanism, the combination of the two-way cock B, fitting air-tight in the vent Q, made in a side of the air-chamber E, near the end into which the pipe D' opens, the lever E, secured at one end to said cock and normally placed at right angles to the axis of said chamber and curved to conform to the curved side of said chamber, the pin U, rigidly secured in the piston G in said chamber, near the outer end of said piston, and extending at right angles to said lever in its normal position, and the slide-bar T, supported in brackets secured to the side of said chamber in a line parallel to the piston G, and having a pin through it at one end passing into a slot in the lever S near the end opposite to the cock B, and having next to its other end a slot made in the plane of the pin U and of such length that the pin U, extending through said slot, will strike the ends of it as the piston moves forth and back, so as to alternately open and close the vent Q, as and for the purposes stated.

2. In a railway signal mechanism, the cock Y, embracing in key C, pivoted at right angles by the parallel holes A A and diagonally by the hole *i*, and having the lever *l* secured to it at one end, in combination with the pipes F and D', secured beneath the cab of a locomotive and connected by hose with the pipes B and D, secured beneath the caboose of a railway freight-train, and opening, respectively, into the air-chamber A and into the pipe *d*, leading to the air-chamber F and to the whistle *c*, substantially as and for the purpose specified.

3. In a railway signal mechanism, the pipes B and D, in combination with the air-chamber A, secured beneath the caboose of a railway freight-train, and the cock Y, embracing the key C, which is operated by its lever *l*, connected at one end with the chain Z, extending up into the caboose, and at the other with the spring *f'*, secured to the under part of the caboose, said pipe D being connected by hose with the pipe D', leading into the air-chamber E, which contains the piston G, designed to throw the hammer I against the gong J in the cab of the locomotive, as stated.

4. In a railway signal-mechanism, the pipe D beneath the caboose of a freight-train, communicating with the pipe B through the cock Y beneath such caboose, and in combination with the pipe *d*, communicating through the pipe *d'* with the air-chamber F and the whistle *c* in such caboose, and communicating by means of connecting-hose with the pipe D', which opens into the air-chamber E on the locomotive, substantially as and for the purposes specified.

383,814. TRIGGER MECHANISM FOR GUNS. BENJAMIN R. JOLLY, Raleigh, N. C. Filed Oct. 17, 1887. Serial No. 252,621. (No model.)



Claim.—1. In a gun-lock, a single trigger, a shifting frame attached to said trigger, an abutment in the gun, and a cam carried by the shifting frame in position to engage the abutment, and thus shift the frame, whereby the frame may be made to engage the cams of a double gun alternately, substantially as described.

2. In a gun-lock, a trigger, a shifting frame mounted on said trigger so as to be shifted into position to engage either of the cams

of a double lock, and an indicator connected to said frame and extending outside the lock, so that the position of the frame may be known.

3. In a gun-lock, a trigger, a frame pivoted thereto so as to be shifted into position to engage either one of two sears, and a finger-piece connected to the frame and extending to the outside of the lock, so that the position of the frame may be changed by pressing on the finger-piece and the desired engagement be made by a subsequent pull of the trigger.

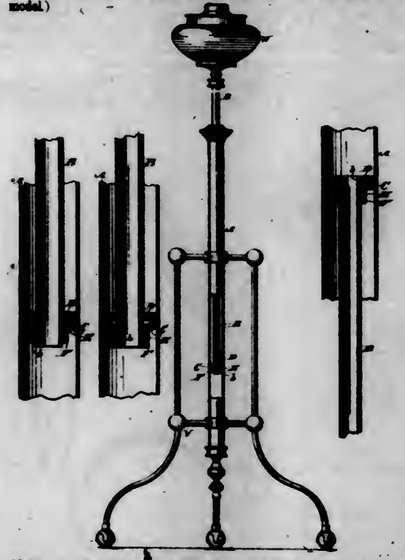
4. In a gun-lock, the combination of a trigger, a shifting frame pivoted to said trigger, a hanger in said frame, a pin carrying said hanger and adapted to swing the same, a cam on said pin, and an abutment in the lock with which said cam is brought into engagement on the pulling of the trigger.

5. The combination, in a gun-lock, of a trigger, a pivoted frame carried thereby, a hanger in the frame, a lever pivoted to the hanger and extending outside the lock, and a spring operating to press the inner end of said lever to one side of a central position, substantially as described.

6. The combination, in a gun-lock, of a trigger, a rocking frame carried thereby, a pin extending lengthwise of the frame and having a cam thereon, a hanger supported on said pin, and a lever pivoted to said hanger and to the trigger, and an abutment in the gun in position to engage said cam as the trigger is pulled.

7. In a gun-lock, the combination, with the trigger guard and strap, of a lever, F, within said guard, a bell-crank lever inside the strap with which said lever engages, and a longitudinally-moving locking-bolt with which one arm of the bell-crank lever engages, substantially as described.

388,815. LOCKING DEVICE IN EXTENSION-CHANDELIERS. WILLIAM W. KILBORN, Meriden, Conn., assignor to the Charles Parker Company, same place. Filed Nov. 30, 1887. Serial No. 256,496. (No model.)



Claim.—1. In combination with the outer tube and inner tube of an extension lamp or chandelier, an adjustable washer surrounding the inner tube, and adjustable devices above and below said washer, the latter operating by friction against the outer tube to prevent accidental descent of the lamp, substantially as set forth.

2. In combination with the outer tube of an extension lamp or chandelier, and the inner tube thereof, having a larger and a smaller step or shoulder on it, a flexible washer located between said steps or shoulders and operating substantially as set forth.

3. An outer extension lamp or chandelier tube and an inner extension lamp or chandelier tube, the latter being screw-threaded at one end, in combination with nuts D and E, of different diameters, on this screw-threaded end, and a flexible washer arranged between them, substantially as set forth.

388,816. ADJUSTABLE SIDE GUIDE FOR PRINTING-PRESSES. THADDEUS L. KINGSBURY and JAMES UHRI, Chicago, Ill. Filed Nov. 19, 1887. Serial No. 255,629. (No model.)



Claim.—1. In a side guide for printing-presses, the combination, with the bottom plate formed with the longitudinal slot widened along its lower half and having the scale marked upon it, of a guide-plate formed with the central aperture, the bottom lug at its inner end, and the point at its outer end, the threaded bolt, and the thumb-nut, substantially as set forth.

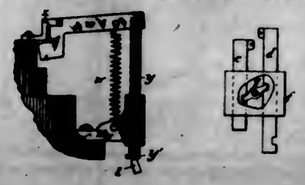
2. In a side guide for printing-presses, the combination, with the bottom plate and the adjustable guide-plate formed at its inner end with the sleeve having the top set-screw, of the head formed with the bottom lug and the tubular interiorly-threaded stem, and the adjusting-screw formed with the collar and having the milled head secured upon its outer end, substantially as and for the purpose set forth.

3. In a side guide for printing-presses, the combination of the bottom plate formed with the longitudinal slot widened along its lower half, and having the scale marked upon it, the guide-plate formed with the central aperture, the indicator-point, the bottom lug, and the sleeve having the top set-screw, the threaded bolt and the thumb-nut for the same, the head formed with the bottom lug and the tubular interiorly-threaded stem, and the adjusting-screw having the milled head secured on its outer end, substantially as and for the purpose set forth.

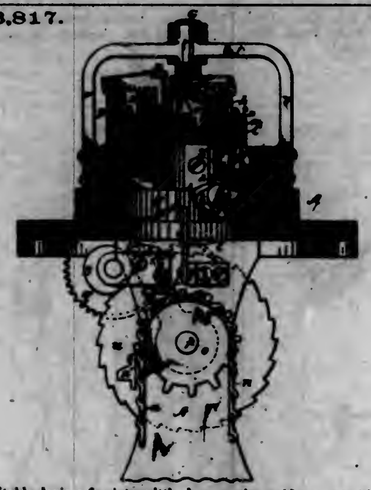
388,817. KNITTING-MACHINE. BENJAMIN R. LAMPREY and ALBERT G. BOWERS, Lake Village, N. H., assignors to the Lamprey Manufacturing Company. Filed July 5, 1887. Serial No. 243,243. (No model.)

Brief.—The machine is adapted to the production of fabrics having stripes of different colors. The yarn-guides carrying yarns of different colors are formed as rack-bars, a pinion pivoted between them acting upon the teeth of each, and thus as one guide is moved into action through the medium of a cam-wheel and lever the other is retired from action and its yarn severed.

Claim.—1. The needles and their supports, a rotary cam-cylinder and cam-dial, two yarn-guides, devices, substantially as described, between said yarn-guides, whereby when one guide is moved in one direction the other will be moved in the opposite direction, a lever fulcrumed on the cylinder, a cam adapted to turn on a pivot secured to the cam-cylinder, said lever being loosely connected at one end with one of said yarn-guides and in contact at the other end with said cam,



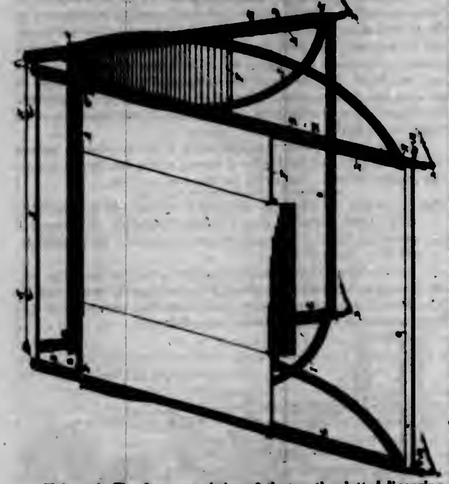
388,817.



and suitable devices for intermittingly operating said cam, combined and operating substantially as set forth.

2. The cam-cylinder, a cam-dial, a knife-arm pivoted on said cam-dial and having its knife-edge adapted to contact with said dial, a vertically-movable rod loosely connected at its upper end with said knife-arm, and devices, substantially as described, for intermittingly raising said rod, combined and operating substantially as set forth.

388,818. ADJUSTABLE MAP AND CHART SUPPORT. WILLIAM H. LAREW, Hartpeus, assignor of one-half to W. C. Reid, Hartpeus county, Ont. Filed Nov. 19, 1887. Serial No. 255,672. (No model.)



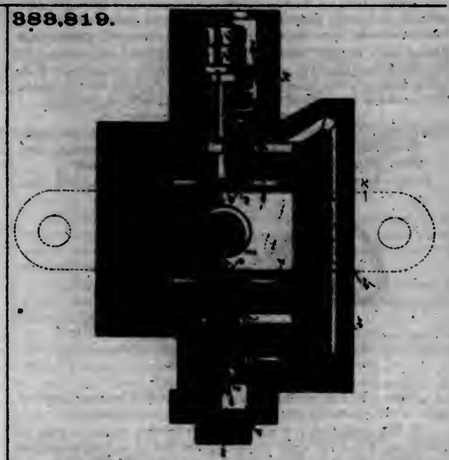
Claim.—1. The frame consisting of the top, the slotted diverging legs, and the boards extending through the slots in the legs upon each side, in combination with the diagonal connecting-rods I, substantially as and for the purpose herein described.

2. The map or chart support consisting of the boards extending through the slotted diverging legs of a frame, and having the connecting links or rods by which they are raised and depressed by the spreading or closing of the legs, and the clamps or holders for the maps or charts, substantially as herein described.

388,819. AUTOMATIC AIR-BRAKE. REUBEN J. LEWIS, Bellaire, Ohio. Filed Aug. 13, 1887. Serial No. 247,377. (No model.)

Claim.—1. In an air-brake apparatus, the combination, within a removable valve-chest, L, mounted on the seat J at the rear of the auxiliary reservoir, of the passage I from the main reservoir, the piston 1 and 12 on each side of said passage, the hollow cylindrical stem

388,819.



2, provided with the enlarged head 3, the solid cylindrical stem 13, secured to the piston 12, and the valve 15 on said stem 13, substantially as described, and for the purposes set forth.

2. In an air-brake apparatus, the combination, within a removable valve-chest, L, mounted on the seat J at the rear of the auxiliary reservoir, of the piston 1, hollow cylindrical removable stem 2, having enlarged head 3, puppet-valve 6, entirely within the head 3, piston 12, having the solid cylindrical stem 13, and valve 15 on said stem 13, substantially as set forth.

3. In an air-brake apparatus, the combination, within a removable valve-chest mounted on the seat J at the rear of the auxiliary reservoir, of the piston 1, having the hollow cylindrical stem 2, enlarged head 3, provided with the removable cap 1', puppet 6, entirely within the enlarged head 3, piston 12, stem 13, and valve 15 on said stem 13, substantially as set forth.

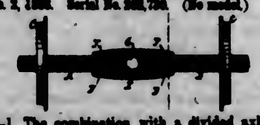
4. In an air-brake apparatus, the combination, within a valve-chest, L, removably mounted on the seat J at the rear of the auxiliary reservoir, of the piston 1, hollow cylindrical stem 2, enlarged head 3, having the cap 1', with perforations therein, the puppet 6, entirely within the head 3, piston 12, stem 13, and valve 15 on said stem 13, substantially as set forth.

5. In an air-brake apparatus, the combination, within a removable valve-chest, L, mounted on the seat J at the rear of the auxiliary reservoir, of the piston 1, having the cylindrical hollow stem 2, with enlarged head 3, removable perforated cap 1', puppet 6, entirely within said enlarged head 3, coiled spring 10, bearing against said cap and said puppet and tending to hold the two apart, the piston 12, stem 13, and valve 15 on said stem 13, substantially as set forth.

6. In an air-brake apparatus, the combination, within a removable valve-chest, L, mounted on a seat, J, at the rear of the auxiliary reservoir, of the piston 1, cylindrical hollow stem 2, secured thereto, and having the enlarged head 3, puppet 6, entirely within said enlarged head 3, piston 12, solid cylindrical stem 13, valve 15 on said stem 13, coiled spring 20, encircling said stem 13, flanged washer 21, against which said spring 21 bears, and the double locking-nuts 22 and 23, screwed over said stem 13, substantially as set forth.

7. In an air-brake apparatus, and in combination within a separate valve-chest, the following elements, viz: a piston, 1, hollow stem 2, puppet 6, removable perforated cap 1', the piston 12, stem 13, and valve 15, substantially as described and set forth.

388,820. CAR-AXLE. WILLIAM F. LEES, Jr., New York, N. Y. Filed Feb. 2, 1888. Serial No. 262,730. (No model.)



Claim.—1. The combination, with a divided axle consisting of the two sections A B, each having a peripheral groove, of a sleeve fitting upon and surrounding said sections and provided with holes passing transversely therethrough and registering with the peripheral grooves, keys passing through said holes and engaging with the peripheral grooves, and a sphere resting within said sleeve between the inner ends of the sections, substantially as described.

2. The combination, with a divided axle consisting of the two

sections A B, each provided with a peripheral groove and having cavities in their inner ends, of a sleeve fitting upon said sections and having holes passing transversely therethrough and registering with the peripheral grooves in said sections, keys passing through said holes and engaging in the peripheral grooves, and a sphere resting within the cavities in the ends of the sections, substantially as described.

383,821. SADDLE-PAD. JAMES MURPHY, Washington Court-House, Ohio, assignor to the Mercer Bros. Manufacturing Company, same place. Filed Jan. 11, 1888. Serial No. 260,415. (No model.)

Brief.—Improvement on Patent No. 269,650, of September 6, 1887.



Claim.—1. The combination, with the flexible bearing plates or pads, of a downwardly-curved supporting-bar, as set forth.

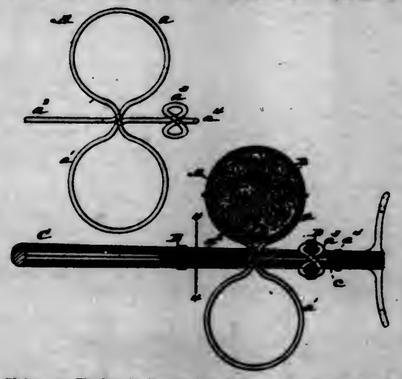
2. The combination, with the flexible bearing plates or pads, of a downwardly-curved rigid supporting-bar having adjustable hinged connections with said bearing-plates, as set forth.

383,822. WICK. GEORGE MUNSON, East River, Conn. Filed Apr. 26, 1887. Serial No. 236,051. (No specimens.)



Claim.—The herein-described wick for lighting and heating purposes, consisting of a thin strip of wood the grain of which runs transversely of the wick and having one or more lines of stitches run longitudinally through it, the said wick saturated with an inflammable material and adapted for use substantially as described.

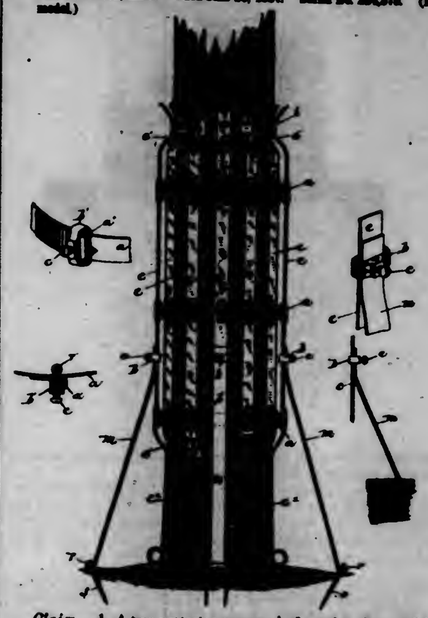
383,823. HOSE-BAG SUPPORT FOR VEHICLES. JOHN MURRAY, St. Louis, Mo. Filed Oct. 31, 1887. Serial No. 253,503. (No model.)



Claim.—1. The herein-described feed attachment for wagons, &c., consisting of the holder A, made of wire and having a circular-shaped receptacle for the feed-bucket, the respective ends of the wire being crossed and folded and extending in opposite directions, and adapted for being secured to the wagon-pole.

2. The herein-described feed attachment A, made of wire and bent to form on either side a circular holder, *a* and *a'*, the ends *a*² and *a*³ of the wire being extended in opposite directions to form means for attaching the device to a carriage, substantially as described.

383,824. TREE-PROTECTOR. JAMES S. HOWELL and JAMES S. BROWN, Boston, Mass. Filed Jan. 30, 1887. Serial No. 225,870. (No model.)

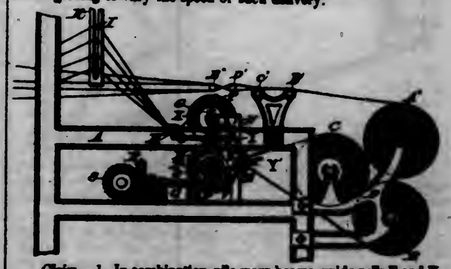


Claim.—1. A tree-protector composed of a series of expansible hoops adapted to encircle the tree and constructed to be expanded by the growth of the tree, and a series of metal slats secured to said hoops and having their ends bent inwardly to form yielding springs adapted to bear on the trunk of a sapling and yield to the enlargement thereof until said trunk fills the hoops and straightens out the bent ends of the slats, the protector being adapted to yield, first, by the outward bending of the ends of its slats, and, secondly, by the expansion of its hoops, as set forth.

2. The tree-protector hoop composed of the metal strap having overlapping ends, and the holder *b'*, having a clamping device, and an anti-friction roller, *r'*, supporting the hoop, as set forth.

383,825. PILE-WARP DELIVERY MECHANISM FOR DOUBLE-PILE-FABRIC LOOMS. FRED PEARCE, Philadelphia, Pa., assignor of one-half to John C. Graham, same place. Filed Dec. 1, 1887. Serial No. 256,601. (No model.)

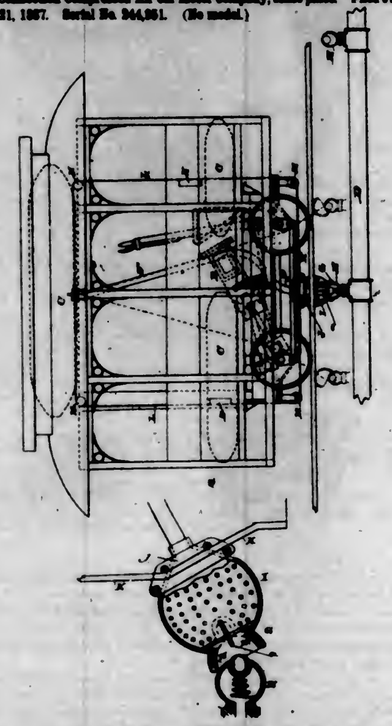
Brief.—This arrangement prevents the waste from the warps falling back upon the warps themselves, permits the ready detachment of the pile-warp-delivery mechanism, and allows the substitution of different gearing to vary the speed of such delivery.



Claim.—1. In combination, pile-warp beams, guide-rolls E and H, main rolls F and G, located one above the other, one of said rolls, at one end of its axis, being provided with a worm-wheel, and each of said rolls, at the opposite end of its axis, being provided with a gear-wheel which gears into the other, and a horizontal shaft, Q, provided with a worm which engages with said worm-wheel, substantially as and for the purposes set forth.

2. In combination, pile-warp beams, guide-rolls E and H, main rolls F and G, located one above the other, one, at one end of its axis, being provided with a worm-wheel, and each, at the opposite end of its axis, being provided with a gear-wheel which gears into the other, a horizontal shaft, Q, provided with a worm-screw which engages with said worm-wheel, and a lever pivotally fulcrumed on the loom-frame and adapted to be operated to lift the main roller provided with the worm-wheel and throw said worm-wheel out of gear with the worm on the horizontal shaft Q, as and for the purpose set forth.

383,826. AUTOMATIC AIR-SUPPLY FOR PROPELLING CARS. LEONIDAS C. PERSELY, San Francisco, Cal., assignor to the Automatic Compressed Air Car Motor Company, same place. Filed July 21, 1887. Serial No. 244,891. (No model.)



Claim.—1. The reservoir carried upon the traveling car, having the flexible tube, with one end opening into the reservoir and the other provided with a bell-mouthed nozzle, which will connect with corresponding valve-seats, and valves upon a tube fixed under ground and parallel with the line of rails, in combination with horizontal guides upon the car, and slides or rollers, whereby the nozzle at the end of the flexible tube is held in position and caused to travel from end to end of the guides while connection is made with the fixed street-tube, substantially as herein described.

2. The car provided with an air-reservoir, a flexible tube having one end connected with said reservoir and the other traveling upon horizontal guides beneath the car and provided with a bell-mouthed nozzle, by which connection is made with the corresponding valve-seats in a compressed-air pipe beneath the street, so that when such connection is made a valve will be opened to allow air to pass into the reservoir, in combination with a spring or weighted cord connected with the movable end of the air-pipe, so as to return it to the front end of the guides after connection has been broken with the street-pipe, substantially as herein described.

3. The underground tube or tunnel parallel with and between the rails and having an open slot in the top, a compressed-air pipe supported within the tube and having semi-globular projecting valve-chambers at intervals with inwardly-opening valves, in combination with a bell-mouthed nozzle fitting over the valve-seats, and a flat hollow disk extending up through the tube-slot, so as to form a connection with the lower end of a flexible tube connecting with a reservoir upon the car, substantially as herein described.

4. The bell-mouthed nozzles fitting the correspondingly-shaped valve-seats upon the air-pipe and the flexible conveying-tube with which they are connected, in combination with the traveling slides or rollers fixed to the lower end of the flexible pipe, and the guides upon which these rollers travel fixed to the car and having the ends inclined, substantially as herein described.

383,827. GARMENT-SUPPORTER. CHARLES A. PERRIN, Cambridgeport, assignor to George Frost, George H. Phelps, and George A. Frost, all of Boston, Mass. Filed Apr. 3, 1888. Serial No. 269,672. (No model.)



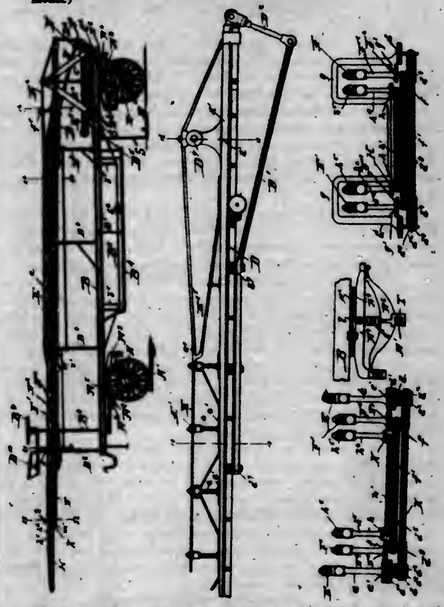
Claim.—1. The button, disk, or loop, and the pin, bent as described, to engage the material, combined with a jaw or guard having a recess to receive the bent or holding portion of the pin, substantially as described.

2. The button, disk, or loop, and the pin, bent as described, to engage the material, combined with the jaws *b d*, inclosing the pin, substantially as described.

3. The button, disk, or loop, and the pin, bent to engage and hold the material, combined with the jaws *b d*, bent at their outer ends to form a recess to receive the pin, substantially as described.

4. The button, disk, or loop, the pin, and a jaw connected with the pin, combined with another jaw movable with relation to the first jaw, substantially as described.

383,828. TURN-TABLE EXTENSION-LADDER TRUCK. EVERETT B. PERRIN, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,316. (No model.)



Claim.—1. The combination, with a turn-table truck, of a pivoted main ladder, D, mounted on said turn-table, having side bars, *d*, composed of T-shaped steel bars having their middle or stem webs in vertical planes, and an extension-ladder, F, having side bars, *f*, consisting of T-shaped steel bars having their middle or stem webs in vertical planes to adapt the same to resist transverse breaking strains, and mechanism for raising said main ladder, substantially as specified.

2. The combination, with a turn-table truck, of a pivoted main ladder, D, mounted on said turn-table, having side bars, *d*, composed of T-shaped steel bars having their middle or stem webs in vertical planes, and a fly-ladder having side bars consisting of T-shaped steel bars having their middle or stem webs in vertical planes to adapt the same to resist transverse or breaking strains, and mechanism for raising and lowering said main ladder, substantially as specified.

3. The combination, with a turn-table truck, of a main ladder, D, pivoted to the turn-table and consisting of T-shaped steel side bars, *d*, supplemental bars d^2 d^3, top bar, d^4, and rungs d^5, secured to the vertical webs of said T-bars *d*, substantially as specified.

4. The combination, with a turn-table truck, of a main ladder, D,

pivoted to the turn-table and consisting of T-shaped steel side bars, *d*, supplemental bars d^3 d^3, top bar, *d'*, rungs d^2, secured to the vertical webs of said T-bars *d*, brace-bars D' D^3, and cross-bars d^7, secured to said brace-bars D' and to the side bars of the ladder D, substantially as specified.

5. The combination, with a turn-table truck, of a main ladder, D, pivoted to the turn-table and consisting of T-shaped steel side bars, *d*, supplemental bars d^3 d^3, top bar, *d'*, rungs d^2, secured to the vertical webs of said T-bars *d*, brace-bars D' D^3, and cross-bars d^7, secured to said brace-bars D' and to the side bars of the ladder D, truss-rods E, and struts *e*, substantially as specified.

6. The combination, with the main ladder having side rails composed of T-bars having their middle or stem webs in vertical planes, of an extension-ladder having side rails composed of T-bars having their middle or stem webs in vertical planes, and guides for coupling the two ladders together bearing against the top webs of said T-shaped bars, so that they may slide on each other, substantially as specified.

7. The combination, with ladders D and F, having side bars consisting of T-shaped rails with their middle webs in vertical planes, with guides secured to one of said ladders and fitting over and under the top web or flange of the T-shaped bar of the other, substantially as specified.

8. The combination, with ladder D, having T-shaped bars *d*, of ladder F, having T-shaped bars *f*, and guide-bars f^5, secured to said ladder F and fitting against the top flanges of said T-shaped bars *d* of the ladder D, substantially as specified.

9. The combination, with ladder D, having T-shaped bars *d*, of ladder F, having T-shaped bars *f*, and guide-bars f^5, secured to said ladder F and fitting against the top flanges of said T-shaped bars *d* of the ladder D, said guide-bars f^5 having friction-rollers f^7, substantially as specified.

10. The combination, with ladder D, having steel T-shaped side bars, *d*, of extension-ladder F, having steel T-shaped side bars, *f*, and a guide-bar, G, secured to said ladder D and fitting against the top flanges of said T-bars *f*, substantially as specified.

11. The combination, with ladder D, having steel T-shaped side bars, *d*, of extension-ladder F, having steel T-shaped side bars, *f*, a guide-bar, G, secured to said ladder D and fitting against the top flanges of said T-bars *f*, guide-bars f^5, secured to said ladder F and fitting against the top flange of said T-bars *d*, substantially as specified.

12. The combination, with main ladder D, having steel T-shaped side bars, *d*, rungs d^2, secured thereto and furnished with friction rollers or sleeves d^9, of extension-ladder F, having steel T-shaped side bars, *f*, riding on said friction-rollers d^9, substantially as specified.

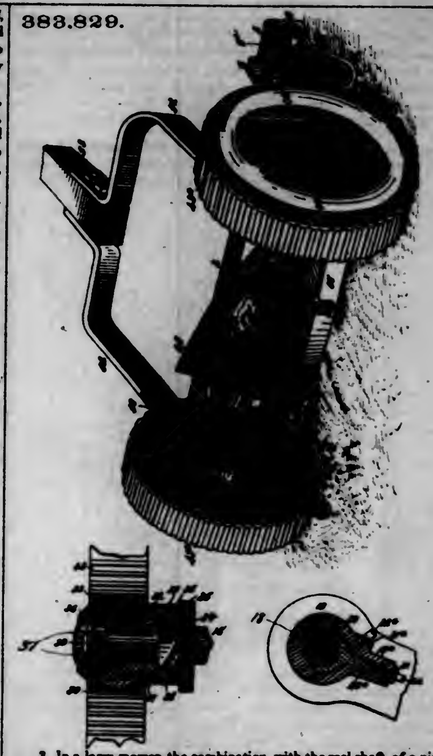
13. The combination, with main ladder D, having steel T-shaped side bars, *d*, furnished with truss-rods E and struts *e*, projecting in a vertical plane, of extension-ladder F, having steel T-shaped side bars, *f*, and U-shaped guide-bars f^5, secured to said ladder F and fitting against the top flanges of said T-bars *d*, substantially as specified.

14. The combination, with main ladder D, having steel T-shaped side bars, *d*, and extension-ladder F, having steel T-shaped side bars, *f*, and truss-rods F' and struts F^6, projecting in a vertical plane, and guide-bars G, secured to said main ladder D and provided with two loops, *g g*, substantially as specified.

15. In a turn-table extension-ladder truck, the combination of the frame B, having steel side bars, *b b'*, of different widths, with clips or brackets C^2, having vertical flange *c*, furnished with groove *c'*, to embrace the narrower bar, *b'*, turn-table ring C, bolted to said brackets C^2, and turn-table C, substantially as specified.

16. In a turn-table truck, the combination of the fifth-wheel A^5, cross-bars *a*, secured thereto, having vertical flanges *a'*, and the truck-frame B, having steel side bars secured to the vertical flanges of said cross-bars *a*, substantially as specified.

383,829. LAWN-MOWER. JAMES V. ROWLETT, Richmond, Ind. Filed May 19, 1886. Serial No. 202,596. (No model.)



Claim.—1. In a lawn-mower, the combination, with the driving-wheels and the shaft, said wheels having each a central bearing for the spindle or shaft, of a countersunk recess surrounding said bearing upon the exterior face of the wheel, a hood-washer having a circular plate seated in said recess and provided with a cap inclosing the end of the shaft and having an opening for a cotter-pin formed transversely through the cap, external flanges being formed upon each side of the opening to protect the head and end of the cotter-pin, substantially as specified.

2. In a lawn-mower, the combination, with the reel-shaft, of a ratchet-collar keyed to said shaft near its end, driving-pinions loose thereon and provided with pawl-pins arranged in bearings in the body of the pinion parallel with its axis, and a cam-collar keyed to the shaft at each end outside the pinion, and having upon its inner face cam projections which project the pawl-pins inward, substantially as specified.

3. In a lawn-mower, the combination, with the reel-shaft, of a pinion loose upon the end thereof, a ratchet-collar upon one side of said pinion, a cam-collar upon the other side, and steel pawl-pins lying in bearings in the body of the pinion and thrown by the cam-collar into engagement with the ratchet-collar, both said collars being keyed to the shaft, substantially as specified.

4. In a lawn-mower, the combination, with a ratchet-collar having opposite inclines terminating in square cam-shoulders upon one of its parallel faces, of a pinion loose on the shaft, pawl-pins arranged in the body of said pinion to move toward the ratchet-collar and from it, a cam-collar having two double inclines forming opposite apexes, said cam-collar being seated in a recess in the outer face of the pinion, and means for keying both collars to the shaft, substantially as specified.

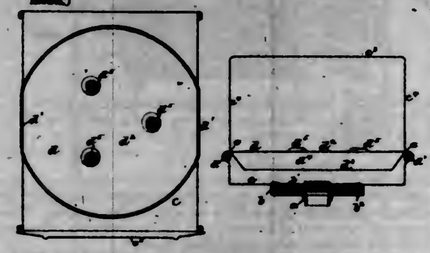
5. In a lawn-mower, the combination, with the reel-shaft, of a loose pinion, pawl-pins movable therein in lines parallel to the axis, a ratchet-pinion having radial recesses which engage with a pin through the shaft, and a cam-collar upon the opposite side of the pinion, having a cotter-pin engaging with the shaft and lying in recesses in the outer face of the collar, substantially as specified.

6. In a lawn-mower, the combination, with the disks cut away at the edge under the straps, of said straps cast or formed on the inner face of the disks, studs secured to said disks on their inner faces in a line passing through the axis of the disks and through the straps, and the arms of the handle, whereby said arms may be inserted under the straps and placed over the studs preparatory to securing the arms to the handle, substantially as specified.

7. In a lawn-mower, the combination, with the disks of the frame cut away at the edge under the straps, of inwardly-projecting straps and studs on the inner face of the disks, said studs being placed between said straps and the axial center of the disks, as set forth, and a wooden handle having metal arms secured thereto, said arms each engaging or embracing a stud by means of a suitable aperture in the arm, substantially as specified.

8. In a lawn-mower, the combination, with loose driving gears or pinions, of movable pins or pawls working in parallelism with the axes of the pinions and located between the faces and the axes of said pinions, said pins or pawls each engaging at one end with a ratchet and at the other end with a two-faced cam, whereby the pin or pawl is made to engage with a ratchet when the pinion moves in one direction, and is permitted to pass over a ratchet when moved in the opposite direction, substantially as specified.

383,830. PORTABLE TIN OVEN FOR OIL OR GAS STOVES. ALBERT W. SEDGWAY, Northampton, assignor to the Florence Stamping Company, Florence, Mass. Filed Dec. 3, 1887. Serial No. 256,801. (No model.)



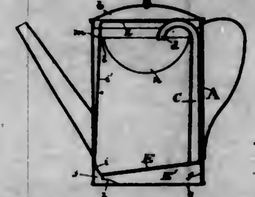
Claim.—1. In a portable oven, the combination, with a flanged and slitted base-plate adapted to fit the turret of a stove, of the sheet-metal oven-bottom having an opening therein, and integral ears which are passed through the slits of said base-plate and clinched thereon, substantially as described.

2. In a portable tin oven, the combination, with the slitted side walls, of a shelf which is projected through the slits in said walls, and is bent and clinched at the outer surface of said walls, substantially as described.

3. In a portable tin oven having a rectangular baking-space, the combination of a circular shelf secured to the side walls, and a base-plate through which heat passes into the oven below said shelf, substantially as described, whereby the heat is deflected laterally and evenly distributed at the four corners of the oven.

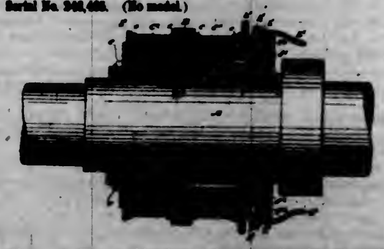
4. In a portable tin oven, the combination of slitted side walls and a hollow or air-chambered shelf projecting through slits in the walls of the oven and bent or clinched upon the outer sides of said walls, substantially as described.

383,831. EXTRACTOR FOR COFFEE-POTS. JOEL C. SLAUGHTER, St. Louis, Mo., assignor of one-half to Louis Holm, same place. Filed Dec. 8, 1887. Serial No. 257,318. (No model.)



Claim.—The herein-described extractor for coffee-pots, comprising the false bottom E, having a flat sloping top and a downflange, *f*, provided at its lowest side with an inlet, A, an upward-projecting spring, *i*, attached to the false bottom where the inlet is located, and curved outward beyond the said downflange, a stand-pipe, C, having a goose-neck nozzle, *d*, and its lower end passing through the high side of the false bottom diametrically opposite the said inlet, and a ground-coffee receptacle supported below said nozzle.

383,832. CURRENT-COLLECTOR FOR ELECTRIC MACHINES. WILLIAM STANLEY, Jr., Great Barrington, Mass. Filed Sept. 1, 1887. Serial No. 248,488. (No model.)

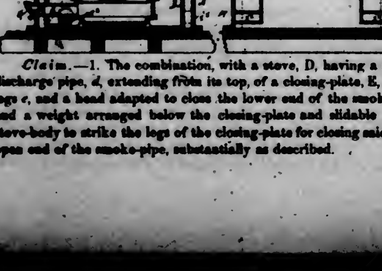


Claim.—1. The combination of the rings C and C^2, the bolts *f* and f^2, terminating in the respective rings, the blocks F and F^2, receiving the heads of the respective bolts, and the bolts *h'* and h^2, entering the heads of the bolts *f* and f^2.

2. The combination of the rings C and C^2, the bolts *f* and f^2, terminating in the respective rings, the blocks F and F^2, receiving the heads of the respective bolts, the bolts *h'* and h^2, entering the heads of the bolts *f* and f^2, and the binding-screws *k'* and k^2, for securing electrical connections with the respective rings.

3. A collector for electric machines, consisting of two rings of conducting material placed side by side and insulated from each other, two conductors for forming electrical connections with the respective rings, one of said conductors extending into one of the rings and the other extending through that ring into the second ring, but insulated from the first-named ring, and conducting-bolts screwing into the first-named conductors and extending at an angle therefrom, substantially as described.

383,833. FOLDING COOP OR CRATE. THEODORE J. STILLE and OSCAR G. STILLE, St. Louis, Mo., assignors of one-third to John A. Meuche, same place. Filed Dec. 27, 1887. Serial No. 259,014. (No model.)



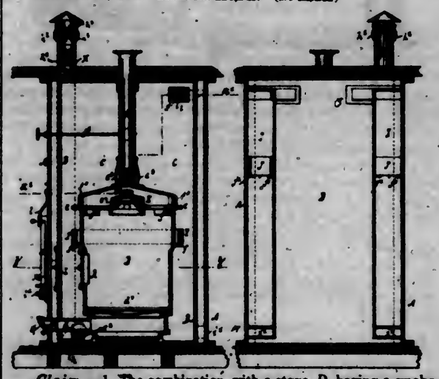
Claim.—The herein-described folding coop, the same consisting of the bottom, the top, and the sides, the two parts of which sides are severally hinged to the top and bottom of the crate and together, and provided with the side braces and the turn-buckles, as described, and the ends hinged and bolted, as set forth, all substantially as set forth.

383,834. SCREW. ERSKASU STILWELL, New York, N. Y., assignor, by direct and mesne assignments, to Bradford Willard and Hamilton C. Stilwell, same place. Filed Mar. 1, 1887. Renewed Nov. 18, 1887. Serial No. 255,562. (No model.)

Claim.—1. The herein-described screw having the wedge-shaped part B, provided at one end with a continuous thread, and at the other end with spiral serrations upon the edges of the wedging part, substantially as set forth.

2. A wood-screw having one end of the part B wedge-shaped, and provided upon its edges with spiral serrations, substantially as set forth.

383,835. CAR-HEATER. JOSEPH W. STORRS, New London, Conn. Filed Feb. 10, 1887. Serial No. 226,942. (No model.)



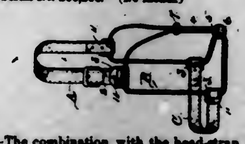
Claim.—1. The combination, with a stove, D, having a smoke-discharge pipe, *d*, extending from its top, of a closing-plate, E, having legs *e*, and a head adapted to close the lower end of the smoke-pipe, and a weight arranged below the closing-plate and slidable on the stove-body to strike the legs of the closing-plate for closing said lower open end of the smoke-pipe, substantially as described.

2. The combination, with a stove, D, having a smoke-pipe, *d*, provided with a retaining device, d^2, of the closing-plate, E, having legs *e* and a head, e', provided with a catch, e^2, to engage the retaining device, and a weight, F, arranged below the closing-plate and slidable on the stove-body, substantially as described.

3. The combination, with a stove, D, having a smoke-pipe, *d*, extending from its top and provided at its top with slots, of a closing-plate, E, having legs *e*, extending through said slots, and a weight, F, slidable on the body of the stove to strike said arms and force the plate to close the lower open end of the smoke-pipe, substantially as described.

4. The combination, with the closing-plate located in the interior of the heater and in line with the smoke-pipe, of a weight extending about the stove, supports for said weight, legs on the plate extending outward and adapted to be engaged by the weight, and a retaining device for the plate, substantially as shown and described.

383,836. HALTER. DAVID M. SWARE, Traer, Iowa. Filed Jan. 10, 1888. Serial No. 260,206. (No model.)



Claim.—The combination, with the head-strap A and the nose-strap C, of the rope B, formed into a loop, 4, and provided with a hitching-rope, 6, the strands of said rope being carried through sleeves in the ends of the head and nose straps, and then passed, respectively, through the hitching-ring, with the ends in the sleeve of the nose-strap, and clamping-plates 3, secured in the ends of the head and nose straps and formed with arms 9, to embrace the rope on each side of the straps, substantially as described.

383,837. WEATHER-STRIP. WILLIAM STRETER, Asheville, Ind. Filed Feb. 2, 1888. Serial No. 262,750. (No model.)



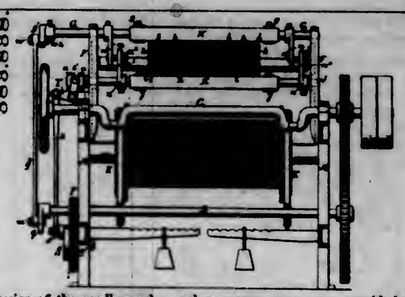
Claim.—1. In combination with the door having its bottom beveled, the strip extending the entire width of the door and held against the bevel, the plates provided with the lugs supporting and holding the strip up against the door, and the door-frame provided with the recesses to accommodate the said lugs, substantially as described.

2. In combination with the door having the beveled bottom, the strip, and the side supporting-plates having lugs in which the strip is supported and adapted to turn, and the spring secured to the door and holding the strip down to the door-sill, substantially as described.

3. The detachable and pivoted weather-strip B, provided with the upper bevel-edge, C, projecting ends c' c^2, upper and lower beveled surfaces, *d* and *e*, and a suitable felt or other covering, in combination with a door across the bottom of which said strip is placed, and hangers to connect with said strip and the edges of the door, substantially as described.

383,838. LOOM FOR WEAVING LENO FABRICS. HENRY TOPHAM and CHARLES TOPHAM, Philadelphia, Pa. Filed Sept. 13, 1887. Serial No. 249,561. (No model.)

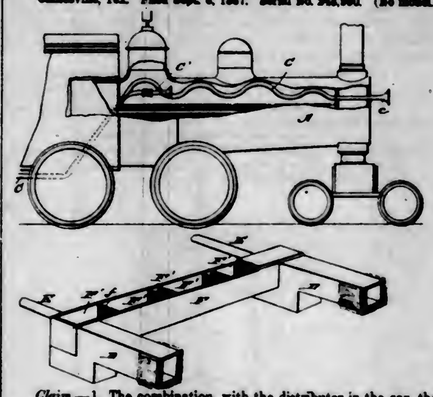
Brief.—In the loom-frame are journaled two rock-shafts so geared together that when one is moved in one direction the other is moved in the opposite direction. To each of these shafts are secured horizontal arms supporting at their forward extremities combs of needles which are arranged to play in and out of each other. These shafts are partially and intermittingly rotated to effect the approach and recession of the needle-combs; and, moreover, means are provided for giving either or both of said shafts a longitudinal movement. These combined movements of the combs and shafts whereby the warps are controlled will cause their crossing over the weft.



Claim.—1. The combination of two rock-shafts, each carrying a comb with eyed prongs through which the warp-threads pass, with mechanism for rocking said shafts and for moving one of them laterally, substantially as described.

2. The combination of a rock-shaft carrying a warp-threaded comb, mechanism for rocking said shaft, a lever acting thereon, an operating-cam, a lever acted on thereby, and a rod connecting the two levers, all substantially as and for the purpose set forth.

383,839. HEATING RAILWAY-CARS. CARTER S. TOWNLEY, Gainesville, Tex. Filed Sept. 6, 1887. Serial No. 248,992. (No model.)



Claim.—1. The combination, with the distributer in the car, the air-pipe, and the heater for heating the air passed through said pipe, of an injector for forcing steam in said pipe and a lime receiver or chamber into which the heated air and steam is conducted in its passage to the distributer, substantially as set forth.

2. In a car-heater, the combination of the heat-pipe, a steam-injector leading into such pipe, a distributer within the car, and a chemical-chamber through which the mixed air and steam is directed in its passage to the distributer, the said chamber being provided with a lime holder or holders having foraminated sides, whereby they will hold the lime and at the same time permit the circulation of the air and steam therethrough, substantially as and for the purposes specified.

3. The combination of the cars or car of a train, a heat-distributer therein, the locomotive having a boiler, the pipe leading through the boiler and having an opening to receive the air, an injector leading into such pipe, the chemical-chamber through which the air and steam are directed in their passage to the distributer, and the connecting pipe or pipes, all substantially as and for the purposes specified.

383,840. NOZZLE FOR SHEET-METAL CANS. WILLIAM VOGEL, Brooklyn, N. Y., assignor to William Vogel & Brothers, same place. Filed Feb. 16, 1888. Serial No. 264,264. (No model.)

Claim.—1. As an improved article of manufacture, the nozzle herein described, consisting of a tube formed with a resilient sleeve at its lower end, of larger diameter than the base of the tube, and having its lower edge struck inward and secured to the edge of the tube and the upper end free from contact with the tube, substantially as and for the purpose specified.

2. The combination, with a sheet-metal can provided with a depressed bung-plate, 3, having a thimble, 6, of a nozzle, B, consisting

383,840.



of a sheet-metal tube provided with a sleeve, 7, of larger diameter than the tube, and having its lower edge turned in and secured to the lower end of the tube and its upper end free from the tube, substantially as and for the purpose specified.

383,841. CORNER BRACE OR BRACKET FOR FURNITURE. FERDINAND VOGELSANG, Boston, assignor to Bardwell, Anderson & Co., Cambridge, Mass. Filed Feb. 3, 1888. Serial No. 262,981. (No model.)



Claim.—The combination of the post *b*, leg *d*, having its inner surface concave to fit the post, the shelf C, corner-brace D, having two converging ornamental faces, *g g*, and the screw *e*, passing through the leg and post into the shelf, all constructed and arranged substantially as described.

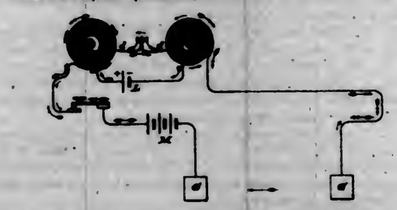
383,842. WOVEN SKIRT-WAISTBAND. CARL VOGWERK, Barmen, Prussia, Germany, assignor to Adolph Vorwerk, same place. Filed Oct. 26, 1887. Serial No. 253,203. (No specimens.) Patented in Germany Oct. 12, 1879, No. 9,733, and in England May 12, 1880, No. 1,993.



Claim.—1. The herein-described curved waistband, consisting of an outer web and an inner lining secured to each other, and each having one selvage longer than the other, and its wefts extending across the band radially.

2. The herein-described curved waistband, consisting of an outer web and an inner lining secured to each other at one edge, and by binding-picks within the edge, each web having one selvage longer than the other and its wefts running across the band radially.

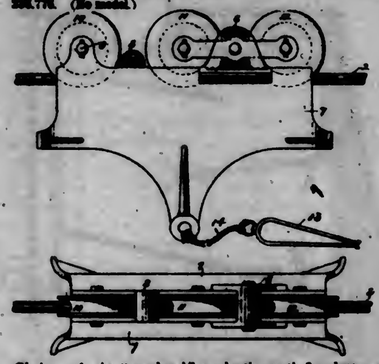
383,843. RELAY. JOHN R. WAGNER, Louisville, Ky., assignor to the International Electric Company, same place. Filed Feb. 1, 1888. Serial No. 262,614. (No model.)



Claim.—1. In a receiver, an electro-magnet provided with a continuously-wound helix having portions relatively of high and low resistance respectively connected in the main line and constantly-closed local circuit, separate batteries passing their currents in opposite directions in said portions, and an armature normally counterpoised against the magnetic attraction by a tension conditioned upon the reverse action of the main-line current in said electro-magnet, substantially as specified.

2. An electro-magnetic relay provided with a continuously-wound helix having a portion of high resistance connected in the main line, and a portion relatively of low resistance connected in a constantly-closed local circuit passing its current in the opposite direction to that of the main voltaic current in the main-line portion, to set up therein induced currents opposite in direction to the extra or otherwise induced currents of said main line to neutralize the same, substantially as specified.

383,844. OVERHEAD CONDUCTING SYSTEM FOR ELECTRIC RAILWAYS. GRANVILLE T. WOODS, Cincinnati, Ohio, assignor to the Woods Electric Company, same place. Filed May 2, 1887. Serial No. 236,778. (No model.)



Claim.—1. An "overhead" conducting-path for electro-motive railways, embodying, essentially, a central conductor carried by insulated metallic brackets, and one or more wires for carrying the contact-carriage, held upon suitable arms of said brackets, whereby the current delivered to the first-named conductor is transmitted by and through the bracket-arms to the carrying conductor or conductors, substantially as set forth.

2. In overhead conductors for electro-motive railways, the combination of an insulated suspending-bracket with three conducting-wires—to wit, a central wire connected with the generator and two others supported upon outer arms of the bracket and receiving their charges of current through said suspending-arms from the first wire—substantially as set forth.

3. A bracket for carrying overhead conductors of electro-motive railways, embodying a central stem adapted to engage and hold a central conductor, and one or two outer supporting-arms adapted to uphold the traveling contact-wires and transmit the current from the first-named to the second conductors, substantially as set forth.

4. A traveling contact or carriage for overhead-conducting systems for electro-motive railways, consisting, essentially, of two conducting side plates or frames joined at the top and carried upon three grooved rollers pivoted between the plates, two of said rollers being carried in a truck so pivoted, substantially as set forth.

5. The traveling contact-carriage for overhead-conducting systems for electro-motive railways, embodying, in combination with its carrying-rollers, two side plates joined together at the top, flaring outward below and at the forward and rear ends, one of said plates having a still lower central extension curved inward to the central vertical plane of the carrying-wheels and adapted to receive the motor-connection at the lowest central point, substantially as set forth.

383,845. SAFETY-CAR. ELBERT R. L. WOODWARD, Chicago, assignor of one-half to Frederick S. Woodward, Turner, Ill. Filed Mar. 5, 1888. Serial No. 266,291. (No model.)

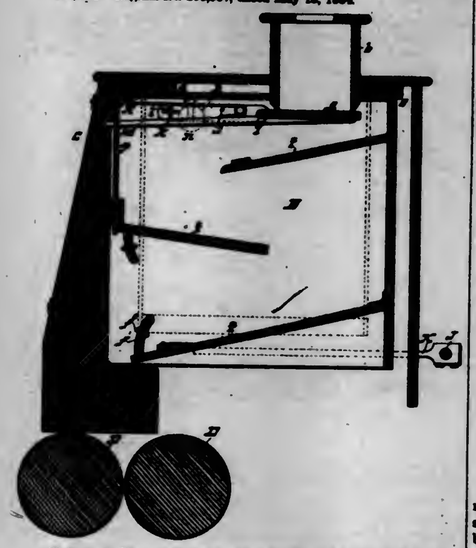


Claim.—1. A safety-car for railways, consisting of a detachable roof portion held in position by means of hooks, in combination with rods G, projecting outside the car, substantially as described, whereby the rods are caused to release the hooks when the car is overturned, as set forth.

2. In safety-cars of the character described, the detachable roof D, provided with the hooks E, for engaging holes F in the ventilating portion C, in combination with the rods G, projecting outside the car, and the rod or bar K, connected to the ends of the rods G, for releasing the hooks when the car is overturned, as set forth.

REISSUES.

10,933. AUTOMATIC SHELF-FEEDER. WILLIAM M. JEWELL, Pine, assignor, by mesne assignments, to J. A. McAnulty, Denver, Colo., and Simon W. Sperry, Stockton, Cal. Filed Jan. 15, 1883. Serial No. 183,694. Original No. 266,257, dated May 12, 1884.



Claim.—1. The combination, substantially as shown and described, of a stationary hopper, a frame provided with spreading-shelves, means to vibrate or shake such frame, and a shelf pivoted in said frame at the discharge end of said hopper, and provided with a counterbalancing device to render it automatic, and a hook to engage said shelf to limit its range of movement, as and for the purpose set forth.

2. The combination, substantially as shown and described, of the stationary hopper, the shaker suspended beneath it, the shelf for closing the discharge end of said hopper pivoted in said shaker and moving with it, means, as set forth, for vibrating said shaker, the adjustable counterbalancing mechanism connected with said shelf to vary its resistance, and means, substantially as specified, for limiting the fall of the shelf and for positively preventing its fall, as and for the purpose described.

3. In a middlings-purifier or roller-mill, the combination of a hopper with a shaking-frame provided with a pivoted, counterbalanced, and yielding feeder-shelf, and with one or more adjustable shelves arranged beneath said feeder-shelf, substantially as and for the purpose described.

4. In a middlings-purifier or roller-mill, the combination of a hopper with a shaking-frame provided with an adjustable, counterbalanced, and yielding feeder-shelf, and with one or more adjustable shelves arranged beneath said pivoted shelf, substantially as and for the purpose described.

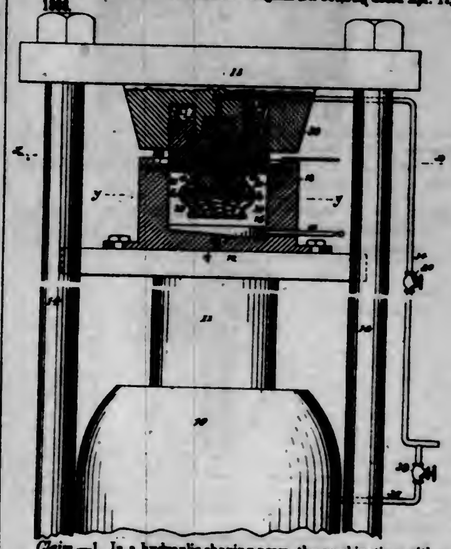
5. The combination, with a stationary hopper, of a counterbalanced and downwardly-yielding feeder-shelf for closing the discharge end of said hopper, and means for shaking or vibrating said shelf beneath the discharge end of said hopper, substantially as described.

6. The combination, with a stationary hopper, of an adjustable, counterbalanced, and downwardly-yielding feeder-shelf for closing the discharge end of said hopper, and means for shaking or vibrating said shelf beneath the discharge end of said hopper, substantially as described.

7. The combination of a stationary hopper, a vibrating or shaking frame provided with spreading-shelves and with a downwardly-yielding feeder-shelf pivoted in said frame and vibrating with it beneath the discharge end of said hopper, and counterbalancing devices, substantially as described.

8. The combination of a stationary hopper, a vibrating or shaking frame provided with spreading-shelves and with an adjustable downwardly-yielding feeder-shelf pivoted in said frame and vibrating with it beneath the discharge end of said hopper, and counterbalancing devices, substantially as described.

10,934. HYDRAULIC SHAPING-PRESS. ANDREW E. HOUSER, Hartford, Conn., assignor of one-half to I. J. Stearns & Co., same place. Filed May 5, 1883. Serial No. 272,904. Original No. 261,943, dated Apr. 17, 1882.



Claim.—1. In a hydraulic shaping-press, the combination, with a ram carrying a die-holder, of a head-block provided with a bearing-surface and arranged above the die-holder, whereby the edge of the blank may be clamped to the surface beneath it, substantially as described.

2. In a hydraulic shaping-press, the combination, with a die-holder, of an apertured head-block provided with a bearing-surface and arranged above the die-holder, whereby the edge of the blank may be clamped to the surface beneath it, substantially as described.

3. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, and an apertured plunger arranged to enter the die-holder, substantially as described.

4. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, and another ram arranged above the die-holder, substantially as described.

5. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, an apertured plunger above the die-holder, and a ram above the die-holder, substantially as described.

6. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, an apertured plunger arranged to enter the die-holder, and a ring surrounding the plunger, substantially as described.

7. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, an apertured plunger, and an annular ram surrounding said plunger, as and for the purpose stated.

8. The combination, with a ram, of a die-holder, and a rotary cylindric part having an inclined face and arranged beneath the cavity for the die, substantially as described.

9. The combination, with a ram, of a die-holder and a wedge-shaped block mounted within the holder, substantially as described.

10. The combination, with a ram, of a die-holder supported thereby, a wedge-shaped block mounted within the die-holder and provided with a downwardly-extending pin and an outwardly-extending lever arm or handle, substantially as described.

11. The combination, with a ram, of a die-holder carried thereby, dies adapted to fit said holder, a blank-holding plate arranged to fit within the die-holder above the die, and a head-block provided with a centrally-apertured plunger that is in connection with a water-supply, substantially as described.

12. The combination, with a ram, of a die-holder, 13, dies 20, mounted therein, a plate-holder, 22, a head-block, a plunger, 31, supported thereby and formed with a bore, 32, a ram, 35, mounted about the plunger, and a water-supply, substantially as described.

13. In a hydraulic press, the combination, with a ram, of a die-holder carried thereby, another ram arranged above the die-holder, a water-supply pipe common to both rams, branch pipes leading to the rams, and stop-cocks in said branch pipes, substantially as described.

H. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

THE MOSLER SAFE AND LOCK COMPANY *v.* MOSLER, BAHMANN & COMPANY.

Decided May 14, 1883.

1. MOSLER—FIRE-PROOF SAFES—No. 261,640.
Letters Patent No. 261,640, granted July 17, 1882, to Moses Mosler, for improvement in fire-proof safes, adjudged invalid as to the first and second claims for lack of invention and as to the third claim for lack of novelty.

2. SAME—BENDING ANGLE-IRONS.
Letters Patent No. 263,136, granted August 14, 1882, to Moses Mosler, for an improvement in bending angle-irons, adjudged invalid as being for a method of making the article described in the prior patent, No. 261,640.

3. SAME.—FIRE-PROOF SAFES—No. 273,585.
Letters Patent No. 273,585, granted March 6, 1883, to Moses Mosler, for an improvement in fire-proof safes, adjudged invalid for lack of novelty, and because the claim covered simply an aggregation of elements.

4. LATER PATENT FOR PROCESS INVALID WHEN ARTICLE IS PATENTED TO SAME PARTY IN EARLIER PATENT.
After a patent has been granted for an article described or made in a certain way the inventor cannot afterward obtain a valid patent on an independent application for the method or process of making the article in the way described in the earlier patent.

5. AGGREGATION—NOT PATENTABLE.
Where the same combination was employed in square-cornered safes it was simply an unpatentable aggregation to employ it to round-cornered safes.

APPEAL from the Circuit Court of the United States for the Southern District of Ohio.

Mr. G. J. Murray for the appellant.
Mr. James Moore for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Southern District of Ohio by the Mosler Safe and Lock Company, an Ohio corporation, against Mosler, Bahmann & Company, another Ohio corporation, for the infringement of three Letters Patent of the United States, each of them granted to Moses Mosler, namely: No. 273,585, March 6, 1883, for an improvement in fire-proof safes, on an application filed February 5, 1883; No. 261,640, July 17, 1882, for an improvement in fire-proof safes, on an application filed December 27, 1881, and No. 263,136, August 14, 1882, for an improvement in bending angle-irons, on an application filed December 11, 1882.

The answer denies that any one of the three patents shows any invention, and also denies that Moses was the first and original inventor, or an inventor at all, of the alleged inventions which the patents purport to secure, or of any of them, and also denies that any one of the inventions has any utility. It also denies infringement, and sets up various references on the question of novelty, in regard to all three of the patents.

A replication was put in and proofs were taken by both parties, and on a hearing the court dismissed the bill on the merits, its opinion, which accompanies the record, being reported in 22 Fed. Rep., 901; 21 O. G., 1669. That opinion sets forth sufficiently the nature of the inventions covered by the three patents, and the contents of the specifications and claims, and we adopt its statement, as follows:

1.—No. 273,585; application filed February 5, 1883; Letters dated March 6, 1883. The object of this invention, as stated in the specification, is to provide an improved means of constructing the outer casing so that the safe may be filled from the bottom. The front and back frames of the safe are formed from angle-bars which have one side cut away, where the heads of the corners are to be made, and the uncut side bent around to close the joint in the corner and form a frame with its outer corners rounded. The meeting joint at the bottom of the frame is overlapped by a short angle-piece which is screwed or riveted to the frame, uniting the joint. A sheet-metal cover is bent around the top sides and around the lower rounded corners of the frames. Upon each edge of this cover, at the bottom of the safe and between the angle-frames, are secured metal bars which project beyond the edges of the cover to form rests for the bottom plate. The safe is made with the customary sheet-metal box forming the interior receptacle, and secured to the cast-metal door-frame in the usual manner. The tops of the outer-frames conform to the curve of the rounded corners, and after the bottom plate is pushed into its place the inner bolts which secure the outer-frames pass through the bottom plate, which they secure, and the angle-frames. The patentee does not claim the bent angle-frames nor the safe composed of these frames and the sheet-metal cover bent around them, (the same being shown and claimed by him in an application then pending,) but limits his claim to the combination, in a fire-proof safe, of the frames, the sheet-metal cover bent around the top sides and lower corners, with projecting metal bars and removable bottom plate, substantially as described.

2.—No. 261,640. This patent differs from No. 273,585 in that a particular description is given in the specification of the cuts in the sides of the angle-bars, where the bends are to be made; but the patentee specifies that the shape of the cut may be varied, its only being essential that enough metal be cut away on one side of the angle-bar to permit the side or end to which it is to be bent, the cut nearest the uncut side being in the form of a curve or curves, so that when said uncut side is bent to form the corner it will bear upon and be supported by the curved end or portion of the cut, and there be rounded by a curve similar to the curve of the cut. The claims are as follows: "1. An angle-bar for safe-frames, consisting, substantially as before set forth, of a right-angled iron bar, one of the sides of which is cut away, leaving a curve facing the uncut side, whereby said uncut side may be bent to bear upon said curve to form a rounded corner. 2. An angle-bar for safe-frames, consisting, substantially as before set forth, of a right-angled iron bar, one of the sides of which is cut away, with curved cuts meeting a right-angled cut, whereby the uncut side may be bent to form rounded corners. 3. In a safe, the combination of the front and back frames formed of angle-bent angle-bars having one side cut away to leave curved ends upon which the uncut side is bent to form rounded corners, and a metal cover, 2, bent around and secured to said frames to form the top sides of the safe, substantially as described."

3.—No. 263,136; dated August 14, 1882; application filed December 11, 1882. The claim is as follows: "The herein-described process of bending angle-irons, which consists in cutting away a portion of one web by a cut which severs the two webs at their junction for a distance equal to the arc of the corner to be bent, and removes sufficient of metal in front of the single part of the apex with to permit the same to bend to the desired angle and to bring the edges of the opening meeting to form a close joint

as the bar is bent, substantially as shown and described." In the specification the sides of the angle-bar are designated by the letters A and B, A representing the uncut web and B the cut web. The outer opening of the cut C is made by lines at angles of forty-five degrees to the edge of the web, so that when the bar is bent the edges of this opening meet each other in a true miter. The inner opening, D, which extends outward within converging curved lines from the angle of the bar to where it meets the opening C, extending inward from the edge of B, and within converging lines, (the letter X suggesting the shape of the entire opening, excepting that the outer opening extends nearly to the angle of the bar,) has a dovetailed shape bounded by curved lines described from points upon the miter line and the face of the uncut web A. The curved ends of the web B abut against the uncut side when the bar is bent, making a close joint. The patentee states in the specification that "the shape of the opening or cut-away portions of web B may be varied at will so long as the meeting line or lines be not extended beyond the space bounded by the rounded corner and the edge lines extended to web A. The angle-bars cut out as described (it is stated in the specification) may be bent to the proper form by the machine represented by Fig. 6. In this, E represents a metal block having upwardly-projecting sides screw-tapped to receive clamping-screw F. The opposite corners of the block are rounded to fit the inner curve of the desired corner. G is a loose block of iron, between which and the side of block E the uncut web A is clamped by screw F, the other web, B, resting on the block, the cut-away part over the rounded corner. By force applied to the projecting end of the bar it is bent around until the severed edges meet in a close joint. The angle-bar herein shown is not claimed here, as it is the subject of a pending application."

The safes described in these patents are filled through the bottom opening with fire-proof cement. The bottom is then secured in place and the casters attached. The patentee states in the specification forming part of Letters Patent No. 281,640 that before his invention safes were filled from the back, and that his safe "can be completely finished before the filling is put in. The filling adds greatly to the weight. Much labor in handling is therefore saved."

The opinion of the circuit court then proceeds to say:

For the purposes of this suit these three patents may be considered as one, containing all the claims involved. As counsel for complainant suggests, the claims are for separate and distinct but not for independent inventions, at least so far as the manufacture of safes is concerned. They might have been all included in one application had the patentee chosen to so present them.

The first and second claims in Letters Patent No. 281,640 are for an angle-bar for safes, consisting of a right-angled iron bar, one of the sides of which is cut away, (the cuts being curved and meeting a right-angled cut,) leaving a curve facing the uncut side, whereby said uncut side may be bent to form a rounded corner. The patentee states in the specification that he is aware "that it has been proposed to make protecting corner-pieces for safes from angle-iron, from one side of which a triangular piece was cut out to permit the opposite side to bend." He also states that "the shape of the cut to permit the angle-bar to be bent to form rounded corners may be varied without departing from the principle of my invention," &c.

In the drawings accompanying the specification, forming part of Letters Patent No. 283,136, Figure 5 represents a templet of card-board or thin sheet metal, which the patentee states he uses to determine about the shape and size of the notch or cut which it is necessary to make to admit of the bar being bent to any desired angle and to make a corner of any desired curve. The templet is of the shape and size of a section of the angle-bar. One web is severed by a cut at right angles to its edge. The two webs are then severed at their junction for some distance upon each side of the cut. Then, by bending the web so that the cut edges will pass each other, the templet may be bent to any curve or angle desired, and the lines of the cuts required to make the proper shape of opening in angle-bars to be bent to the same curve or angle marked and fixed upon. Such use of the templet as a pattern is nothing new. It is clearly shown by the testimony that cutting an opening in one web of an angle-bar to permit the bending of the bar to an angle or curve was known and used before the date claimed by complainant's assignor for his invention. Different shapes of cuts and openings are shown in exhibits put in evidence by respondents. Unless the precise cuts and shape of opening shown in the drawing attached to the specification, forming part of the Letters Patent, are patentable, the claims are worthless. But the patentee shows how, by the use of a pattern of flexible material—an old method, and familiar as the use of the carpenter's miter-box—he determines the lines of the cuts and the shape of the opening. In this there is no exercise of the inventive faculty. It is only what would occur to a mechanic of ordinary skill. Moreover, if the precise lines of cuts and shape of opening shown in the drawings were patentable, the patentee does not, as we have seen, so limit his claim, but seeks to cover variations, which he says may be made without departing from the principle of his invention. Claims 1 and 2 in Letters Patent No. 281,640 and the claim in Letters Patent No. 283,136 are therefore adjudged invalid.

As to the combination claim being the only claim in Letters Patent No. 278,585, and claim 3 in Letters Patent No. 281,640, the parts are old, excepting only, and this is not material, that the precise lines of cuts and the shape of the openings of the angle-bar are not found in safes of prior manufacture. The sheet-metal cover is old. It is shown in respondent's exhibit, "St. Louis Safe." The bars C and lower removable plate D, claimed in No. 278,585, are old. See respondent's exhibit A and the depositions of John Hurst. The safes in the manufacture of which they were used were square-cornered, as was then the fashion; but that is not material. When the angle-irons were bent, the corners were round, and then heated and hammered upon both sides of the corners to make them square. Respondent's testimony also establishes that fire-proof safes were filled from the bottom as early as 1879 by the Cincinnati Safe and Lock Company, and in that year, probably also in 1878, by Hall's Safe and Lock Company. The complainant was the first to employ the combination claimed in the manufacture of round-cornered safes; but the change from square-cornered safes was only a change in form. The combination is nothing more than an aggregation, and falls by the application of the rulings in *Hailes v. Van Wormer*, (20 Wallace, 353, 368;) *Heckendorfer v. Faber*, (92 U. S., 347,) and *Pickering v. McCullough*, (104 U. S., 310, 318.) The bill is dismissed as complainant's costs.

It is apparent that the claim for the process in No. 283,136 is merely for the process or method of cutting away and removing the metal, so as to permit of the bending, and of doing the bending, and of producing the close joint as the bending takes place, such process or method being merely the process or method involved in making the article covered by claims 1 and 2 of No. 281,640. In other words, claims 1 and 2 of No. 281,640 are each for an article produced by a described method or process, and the claim of No. 283,136 is for such method or process of producing such article. The method is a purely mechanical method. No. 281,640 was applied for more than eleven months before No. 283,136 was applied for, and was issued twenty-eight days before No. 283,136 was issued. There was no patentable invention in No. 283,136 when it was applied for, in view of what was applied for by claims 1 and 2 of No. 281,640. After a patent is granted for an article described as made by causing it to pass through a certain method of operation to produce it—as, in this case, cutting away the metal in a certain manner—and then bending what is left in a certain manner—the inventor cannot afterward, on an independent application, secure a patent for the method or process of cutting away the metal and then bending it so as to produce the identical article covered by the previous patent, which article was described in that patent as produced by the method or process sought to be covered by taking out the second patent.

The circuit court, in its opinion, said that the use of the templet shown in Fig. 5 of No. 283,136, as a pattern, was not new; that cutting an opening in one web of an angle-bar to permit the bending of the bar to an angle or curve was known and used before the date of the patentee's invention; that different shapes of cuts and openings were shown in exhibits put in evidence by the defendant; that the claims in question—namely, claims 1 and 2 of No. 281,640 and the claim of No. 283,136—were invalid, unless the precise cuts and shape of opening shown in the drawings were patentable; that there was no exercise of the inventive faculty in using a pattern of flexible material in an old and familiar method to determine the lines of the cuts and the shape of the opening, and that the patentee had not limited his claims to the precise lines of cuts and shape of opening shown in the drawings, but had stated in the specification of No. 281,640 that the shape of the cut, to permit the angle-bar to be bent to form rounded corners, might be varied without departing from the principle of the invention. We concur in the view that claims 1 and 2 of No. 281,640 and the claim of No. 283,136 are invalid for the reasons thus given.

As to the claim of No. 278,585 and claim 3 of No. 281,640, which are claims to combinations, the opinion of the circuit court states that those claims are old, except in the immaterial point that the precise lines of cuts and the shape of the opening in the angle-bar

are not found in safes of prior manufacture; that the sheet-metal cover is old, being shown in defendant's exhibit "St. Louis Safe;" that the bars C and lower removable plate, D, forming part of the claim of No. 278,585, are old, it being immaterial that the safes in the manufacture of which they were used were square-cornered, the corners of the angle-frames, when bent, having been round, and having been then made square by heating and hammering the metal on both sides of the corners; that fire-proof safes had been filled from the bottom as early as 1879; that, although the patentee was the first to employ the combination claimed in the manufacture of round-cornered safes, the change from square-cornered safes was only a change in form, and that the combination was nothing more than an aggregation, and fell within the rulings of this Court in the cases cited that such an aggregation was not patentable. We think these views are correct.

The decree of the circuit court is affirmed.

Supreme Court of the United States.

HENDY *v.* THE GOLDEN STATE AND MINERS' IRON WORKS *et al.*

Decided May 14, 1883.

1. CUSENBARY AND MARS—ORE-STAMP FEEDERS.
   Letters Patent No. 140,250, granted June 24, 1873, to Cusenbary and Mars, for an improvement in ore-stamp feeders, adjudged invalid as to the first claim for lack of patentable invention.
2. PATENTABLE INVENTION—WHAT IS NOT.
   Merely putting rollers under an article to make it movable when without the rollers it would not be movable does not involve patentable invention.
3. PRACTICE—LACK OF INVENTION.
   The defense of no patentable invention can be made without setting it up in an answer.
4. AGGREGATION—NOT COMBINATION.
   There is no patentable combination between rollers which make the support movable and a feeding-cylinder mounted on such support.
5. INFRINGEMENT—WHEN NONE.
   The cylinder of the claim being described as having chambers or depressions, and the defendants' cylinder being smooth throughout, there was no infringement in this particular.

APPEAL from the Circuit Court of the United States for the District of California.

Mr. J. H. Miller and *Mr. J. P. Langhorne* for the appellant.

Mr. M. A. Wheaton for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought by Joshua Hendy against the Golden State and Miners' Iron Works, a corporation, and six individual defendants, in the Circuit Court of the United for the District of California, for the infringement of Letters Patent No. 140,250, granted June 24, 1873, to James D. Cusenbary and James A. Mars, for an improvement in ore-stamp feeders.

The specification, claims, and drawings of the patent are as follows:

Our invention relates to improvements in that class of ore-feeders for quartz-mills in which a part only is moved automatically

to operate the feeder automatically by the drop of the stamp. Our improvements consist, first, in mounting a feed-cylinder upon a movable frame or truck, so that it can be readily shifted from place to place when it is desired to repair the mill, and lastly, of an improved arrangement for operating the pawl-rod by the drop of the stamp without the use of springs.

In order to more fully illustrate and explain our invention, reference is had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a vertical section. Fig. 2 is a back view. Fig. 3 is a transverse section.

A represents the frame of a stamp-mill. B is the stamp. C is the stamp-stem with its tappet D. F is the cam-shaft, and G the cam which lifts the stamp, all of which are arranged in the ordinary manner of constructing a stamp-battery. H H are the foundation-timbers upon which the feeding-cylinder I is mounted. These timbers are mounted upon rollers so that the cylinder and frame can be moved about as desired. The cylinder I is made of cast metal, and has its outer surface formed into chambers or depressions J J, which are separated from each other by longitudinal partitions k. The cylinder and its carriage, when in working position, are placed below the hopper L, so that the ore from the hopper will fall into the chambers, and, as the cylinder revolves, be carried around until it falls by its own weight from the chambers upon an inclined apron, M, which directs it beneath the stamp.

This feeding-cylinder, being made of cast metal, will not wear out like the endless belts heretofore used in this class of machines, and as it turns upon journals like any common roller or cylinder, it cannot become clogged, as the endless belt is liable to do. To one end of the cylinder a ratchet-wheel, N, is secured, and this ratchet-wheel is operated by a pawl-bar, O, to revolve the cylinder.

In order to operate the pawl-bar from the tappet a horizontal shaft, p, has its opposite ends supported in boxes which are secured to the sides of the upright timbers of the frame, so that the shaft will pass across directly in front of the tappet transversely to the movement of the stamp-stem.

A fixed arm, q, extends backward from the shaft p, so that its extremity will terminate below the tappet in position to receive a blow from it when the stamp falls. Another fixed arm, r, extends forward from the shaft directly over the ratchet-wheel, and to the extremity of this arm the upper end of the pawl-bar o is attached by means of a trunnion-block, t. This bar extends down to the middle of the periphery of the ratchet-wheel, and has one or more upward-projecting teeth on its lower end, which serve to engage with the teeth of the ratchet when the pawl is lifted by the rock-shaft, and thus rotate the feeding-cylinder.

It will, therefore, be evident that at each drop of the stamp the tappet will strike the arm q and carry it downward, thus giving the shaft p a rocking motion, the weight of the pawl and its arm r serving to rotate the shaft in an opposite direction, thus feeding the ore automatically when it is needed.

When there is a sufficient quantity of ore beneath the stamp the drop will not be sufficient to operate the cylinder; but when the quantity of ore beneath the stamp is reduced the drop is greater, and consequently the tappet strikes the arm q and operates the cylinder.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The feeding-cylinder I mounted upon the movable timbers H H, substantially as and for the purpose above described.
2. The rock-shaft p with its fixed arms q r, in combination with the pawl-bar o, ratchet-wheel N, and feeding-cylinder I, when arranged to be operated by the tappet D, substantially as and for the purpose described.

Fig. 1.

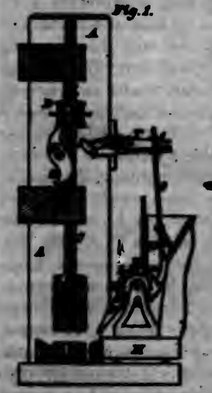


Fig. 2.

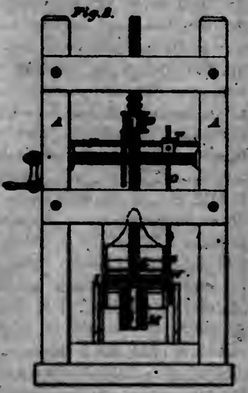


Fig. 3.



The answer denies infringement, and sets up two patents on the question of novelty, and denies the utility of the invention. After replication, proofs were taken on both sides, and the circuit court on a hearing dismissed the bill.

Infringement is alleged of only the first claim, namely:

1. The feeding-cylinder I mounted upon the movable timbers H H, substantially as and for the purpose above described.

The specification states in regard to the subject of the first claim that the improvement consists—

in mounting a feed-cylinder upon a movable frame or truck, so that it can be readily shifted from place to place when it is desired to repair the mill.

The specification speaks of the timbers H H as being the "foundation-timbers," upon which the feeding-cylinder is mounted, and it says that those timbers—

are mounted upon rollers, so that the cylinder and frame can be moved about as desired.

Therefore "the movable timbers H H" of the claim are timbers made movable by being mounted upon rollers.

The specification also states that—

The cylinder I is made of cast metal, and has its outer surface formed into chambers or depressions J J, which are separated from each other by longitudinal partitions K.

It is contended in defense that claim 1 of the patent is really a claim only for making the timbers movable by mounting them upon rollers, so as to be able to move the cylinder and frame about as desired, and that this required no exercise of any inventive faculty. This seems to be the purport of the invention, as stated in the specification. It is the movable character of the frame on which the feed-cylinder is mounted, so that the cylinder and frame may be readily shifted from place to place when repairs are desired, that is designated as the invention. When the mill is in operation, the movable feature is not brought into play. It is only when the mill is out of operation that the movable feature is to be used. The first claim does not appear to cover the functions or operation of the feeding-cylinder I as a part of the mill when in operation; and, interpreting it by its own language, as well as by that of the description in the specification, it covers only the mounting upon rollers of the timbers which carry the feeding-cylinder. Merely putting rollers under an article so as to make it movable when without the rollers it would not be movable does not involve the inventive faculty, and is not patentable. (*Atlantic Works* v. *Brady*, 107 U. S., 192, 200; *Thompson* v. *Boisselier*, 114 U. S., 1, 12, and cases there cited; *Yale Lock Manufacturing Co.* v. *Greenleaf*, 117 U. S., 554, 559; *Pomace Holder Co.* v. *Ferguson*, 119 U. S., 335, 338, and cases there cited.) This defense is one which can be availed of without setting it up in an answer. (*Dunbar* v. *Myers*, 94 U. S., 187; *Slawson* v. *Grand Street R. R. Co.*, 107 U. S., 649; *Mahn* v. *Harwood*, 112 U. S., 354, 358.) Moreover, there is no patentable combination between the rollers which make the timbers movable and the feeding-cylinder I, mounted upon the timbers. The union of parts is merely an aggregation. The feeding-cylinder mounted upon timbers which have rollers operates no differently from what it does when mounted upon timbers which have no rollers. (*Hailes* v. *Van Wormer*, 20 Wall., 353, 368; *Rochendorfer* v. *Faber*, 32 U. S., 297, 307; *Pickering* v. *McCullough*, 104 U. S., 310, 318; *Bussey* v. *Excelsior Manufacturing Co.*, 110 U. S., 131, 146.) There is nothing patentable in the aggregation.

The defendants' machine has a smooth cylinder and not a cylinder with chambers or depressions. The specification of the patent describes the cylinder I as having its outer surface formed into chambers or depressions separated from each other by longitudinal partitions. The cylinder of claim 1 is "the feeding-cylinder I," and to be such cylinder must be a cylinder substantially as described, and it is described specifically as having chambers or depressions. The claim cannot be construed to cover a cylinder with a smooth surface not formed into chambers. (*Fay* v. *Cordesman*, 109 U. S., 408, 420, 421; *Sargent* v. *Hall Safe & Lock Co.*, 114 U. S., 63, 86; *Shepard* v. *Carrigan*, 116 U. S., 593, 597, 598; *White* v. *Dunbar*, 119 U. S., 47, 51, 52; *Crawford* v. *Keysinger*, 123 U. S., 589, 606, 607.)

The decree of the circuit court is affirmed.

U. S. Circuit Court—Southern District of Ohio, Western Division.

MILLER MEGEE COMPANY *et al. v.* CARPENTER.

Decided May 7, 1888.

JURISDICTION—ACT OF MARCH 3, 1887.

The $2,000 limitation placed upon the jurisdiction of the court under the act of March 3, 1887, does not apply to patent cases or to suits for the infringement of patents.

SUIT FOR INFRINGEMENT OF LETTERS PATENT.

ON demurrer for want of jurisdiction.

Mr. J. H. Trohig and *Messrs. Howson & Howson* for the complainants.

Messrs. Parkinson & Parkinson for the defendant.

JACKSON, *J.*:

The question presented by one ground of demurrer in this case—viz., whether the jurisdiction of this court is defeated because the matter in dispute does not exceed, exclusive of interest and costs, the sum or value of $3,000—has at the request of counsel for the defendant been reconsidered by the court, and as the result of that re-examination the court is confirmed in the conclusion heretofore announced, that the $2,000 limitation placed upon the jurisdiction of the court by and under the act of March 3, 1887, does not apply to patent cases or to suits for infringement of patents. The exclusive jurisdiction vested in the courts of the United States in cases arising under the patent-right and copyright laws of the United States (sec. 711 Rev. Stats.) and the allowance of writs of error and appeals in such cases without regard to the sum or value in dispute (sec. 699 Rev. Stats.) were not repealed, either expressly or by implication, by the act of March 3, 1875. The act of March 3, 1887, only purports to amend the act of March 3, 1875, and by no fair or proper construction can it be held to repeal the foregoing statutory provisions relating to the exclusive jurisdiction of this court in cases arising under the patent laws without reference to the amount involved.

The acts of 1875 and 1887 both refer to that class of cases in which the Federal courts have concurrent jurisdiction with State courts. They do not apply to cases arising under the patent and copyright laws, as to which exclusive jurisdiction is vested in the courts of the United States, without reference to the amount involved.

The court accordingly adheres to its former ruling on this question, and overrules this ground of demurrer, with costs.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 43—No. 10. TUESDAY, JUNE 5, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
ORDER No. 480	1119
FRAUDULENT PRACTICES BY ATTORNEYS	1119
ISSUE OF JUNE 5, 1888	1119
DESIGNS	1120
TRADE-MARKS	1120
LABELS	1120
PATENTS GRANTED	1121
REISSUES	1203
DECISIONS OF THE COMMISSIONER—	
Ex parte Gérard	1205, 1240

Order No. 480.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., May 28, 1888.

The attention of the Commissioner has been called to the fact that patent solicitors who are appointed attorneys in fact in applications pending in the Office upon revocation of powers of attorney to former solicitors in the same cases are in the habit of erasing from the drawings the names of the solicitors who prepared and signed the drawings at the time they were originally filed.

In *ex parte Wharton* (40 O. G., 977) I called attention to the impropriety of changing in any manner the drawings themselves, and while the appointment of attorneys to such drawings are not of especial importance, circumstances might arise which would make them of very great importance, as, for instance, were a question raised concerning the identity of the drawing.

It is hereby directed that the practice of erasing the names of attorneys, or writing upon the drawings the names of attorneys subsequently appointed, so as to make it appear that their names were present when the drawings were originally filed, shall be discontinued.

Examiners will observe that this order is not violated. They are instructed to report to the Commissioner all instances which come within their knowledge of such violation.

BENTON J. HALL,
Commissioner.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons professing to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so representing themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys debarred from practice under section 483 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and residences of all such persons, and the public is warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that [illegible]

Issue of June 5, 1888.

Patents	382—No. 382,945 to No. 384,326, inclusive.	
Designs	19—No. 18,359 to No. 18,377, inclusive.	
Trade-Marks	21—No. 15,033 to No. 15,053, inclusive.	
Labels	7—No. 5,618 to No. 5,624, inclusive.	
Reissues	3—No. 10,925 to No. 10,927, inclusive.	
Total issue	432	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1		Nebraska	2	1
Arizona Territory			Nevada		
Arkansas			New Hampshire	2	
California	10		New Jersey	17	
Colorado	7		New Mexico Terr'y	1	
Connecticut	3		New York	70	11
Dakota Territory	1		North Carolina		1
Delaware	1		Ohio	35	2
District of Columbia	5		Oregon	1	
Florida	2	3	Pennsylvania	27	
Georgia	2		Rhode Island	3	1
Idaho Territory			South Carolina		
Illinois	26	3	Tennessee	2	
Indiana	10		Texas	2	
Iowa	3		Utah Territory		
Kansas	9		Vermont	2	1
Kentucky	5		Virginia	2	
Louisiana	2		Washington Terr'y	1	
Maine	3		West Virginia		
Maryland	4		Wisconsin	15	
Massachusetts	26		Wyoming Terr'y	2	
Michigan	10		U. S. Army		
Minnesota	3	1	U. S. Navy		
Mississippi	2				
Missouri	10		Total to citizens of the United States	374	34
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary		1	Germany	6	
Barbadoes			Mexico		
Belgium			Netherlands		
Bermuda			Norway		
Brazil			Russia		
Canada	8		Scotland		
Central America			Sweden		
Columbia, U. S. of			Switzerland		
Cuba			Victoria		
Denmark			West Indies		
England	14	1			
France	3	3	Total to citizens of foreign countries	37	4

DESIGNS.

16,360.—FRAME OF A CUTTERS OR FORCERS PRESS.—*John Wilson Brown, Jr.*, Philadelphia, Pa., assignor to *The Enterprise Manufacturing Company, of Pennsylvania*. Application filed March 20, 1888. Serial No. 267,905. Term of patent 14 years.

16,359.—CARPET-SWEEPER CASING.—*Walter J. Drew*, Grand Rapids, Mich., assignor to *The Bissell Carpet Sweeper Company*, same place. Application filed February 27, 1888. Serial No. 265,826. Term of patent 14 years.

16,361 to 16,364, inclusive.—ORNAMENTATION OF KNIT FABRICS.—*Jeremiah P. Herriman*, Woonsocket, R. I. Applications filed March 10, 1888. Serial Nos. 266,661, 266,662, 266,664, and 266,665. Term of patents 14 years.

16,365 and 16,366.—FRIEZE.—*George S. Hensel, Louis D. Valetton*, and *Frank E. Cook*, Philadelphia, Pa., assignors to *The Hensel, Colladay Company*, same place. Applications filed April 28, 1888. Serial Nos. 272,208 and 272,209. Term of patents 7 years.

16,367.—FIRE-BASKET.—*Lazard Kahn* and *Rudolph Tröen*, Hamilton, Ohio, assignors to *F. & L. Kahn & Brothers*, same place. Application filed March 28, 1888. Serial No. 268,181. Term of patent 7 years.

16,368.—SURFACE ORNAMENTATION OF WALLS.—*Frederick Koehnl*, Williamsport, Pa. Application filed March 17, 1888. Serial No. 267,574. Terms of patent 14 years.

16,369.—TRIMMING.—*Joachim Maidhof*, New York, N. Y. Application filed February 8, 1888. Serial No. 263,943. Term of patent 3½ years.

16,370 and 16,371.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Applications filed May 4, 1888. Serial Nos. 272,852 and 272,853. Term of patents 3½ years.

16,372.—SAW-BOX.—*George A. Meyer*, Brooklyn, N. Y. Application filed April 19, 1888. Serial No. 271,295. Term of patent 14 years.

16,373.—CALENDAR.—*Frederick Mitchell*, Brooklyn, N. Y. Application filed March 17, 1888. Serial No. 267,567. Term of patent 7 years.

16,374.—WHISK-BROOM HOLDER.—*George C. Varwig*, Philadelphia, Pa. Application filed February 27, 1888. Serial No. 265,532. Term of patent 3½ years.

16,375.—TILE.—*Edward Wheatley*, Washington, D. C. Application filed April 24, 1888. Serial No. 271,741. Term of patent 14 years.

16,376.—CLAIM-FRAME.—*Pardon A. Whitney*, Southington, Conn., assignor to *The Peck, Stow & Wilcox Company*, same place. Application filed March 6, 1888. Serial No. 266,642. Term of patent 14 years.

16,377.—HEATING-STOVE.—*William H. Wilkinson*, Rochester, N. Y., assignor to *The Co-operative Foundry Company*, same place. Application filed April 19, 1888. Serial No. 271,286. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,362.—PREPARATIONS FOR THE TOILET.—*Jesse Accough*, Handsworth, near Birmingham, county of Stafford, England. Application filed February 17, 1888. Used since 1870.
"A label having its surface printed in a design representing crystals."

15,363.—CIGARS.—*M. Barranco & Co.*, New York, N. Y. Application filed April 27, 1888. Used since February 9, 1887.
"A portrait of the poet Heredia."

15,364.—CIGARS.—*M. Barranco & Co.*, New York, N. Y. Application filed April 27, 1888. Used since April 2, 1888.
"A portrait of President Monroe on the American coat of arms."

15,365.—TOILET AND LAUNDRY SOAP.—*Beaver & Co.*, Dayton, Ohio. Application filed March 5, 1888. Used since January 1, 1886.
"The word 'GRANDPA'S.'"

15,366.—PLUG CHEWING-TOBACCO, SMOKING-TOBACCO, CIGARS, AND SNUFF.—*Bitting & Hoy*, Winston, N. C. Application filed April 23, 1888. Used since January 1, 1886.
"The representation of a zebra."

15,367.—WHISKY.—*Blake, Bruce & Co.*, Omaha, Nebr. Application filed May 9, 1888. Used since September, 1887.
"The words 'MAY FLOWER.'"

15,368.—CIGARS.—*El Modelo Cigar Manufacturing Co.*, Jacksonville, Fla. Application filed January 21, 1888. Used since August, 1888.
"The words 'EL MODELO' in connection with the armorial bearings of the State of Florida."

15,369.—LIQUID MEDICINE FOR INTERNAL USE AND FOR CERTAIN DISEASES.—*B. Fragner*, Prague, Bohemia, Austria-Hungary. Application filed February 24, 1888. Used since March 15, 1872.
"The representation of a soaring eagle with the initials 'Dr. R.' in a shield on its breast, and bordered with the circle and the inscription 'ZYVOTNÍ BALSÁM LIBERMANŮV.'"

15,370.—LAGER-BEER.—*Cleps Brewing Company*, Peoria, Ill. Application filed April 26, 1888. Used since September 1, 1887.
"The letters and syllable 'A-M Brew. I-N.'"

15,371.—LEATHER, CLOTH, AND RUBBER BOOTS AND SHOES.—*John H. Hansen*, New York, N. Y. Application filed May 7, 1888. Used since January 1, 1886.
"The words 'HANAN'S NATURALIST' and the representation of the sole of the human foot."

15,372.—HAIR-TONIC.—*Martha Matilda Harper*, Rochester, N. Y. Application filed March 26, 1888. Used since January, 1888.
"A representation of the horn of plenty."

15,373.—WHEAT-FLOUR.—*George V. Hecker & Co.*, New York, N. Y. Application filed June 17, 1887. Used since 1886.
"The word 'CHAMPION.'"

15,374.—TOOTH BRUSHES AND POLISHERS.—*Horsey Manufacturing Co.*, Utica, N. Y. Application filed April 26, 1888. Used since November 1, 1887.
"The word 'ISRAL.'"

15,375.—TOOTH BRUSHES AND POLISHERS.—*Horsey Manufacturing Co.*, Utica, N. Y. Application filed April 26, 1888. Used since November 1, 1887.
"The representation of a tooth polishing and cleansing pad and holder combined and a tooth polishing and cleansing pad separated."

15,376.—WOOD-INCASED CARS AND GLASS VESSELS.—*William D. W. Miller*, New York, N. Y. Application filed April 19, 1888. Used since September 1, 1887.
"The word 'TRIPOLI.'"

15,377.—TOILET-PAPER.—*John T. Moore*, Bellows Falls, Vt. Application filed April 23, 1888. Used since April 1, 1888.
"The representation of a mortar and pestle arranged in a circle surrounded by a square with the word 'MEDICATED' placed above the square."

15,378.—CIGARS, CIGARETTES, SMOKING AND CHEWING TOBACCO, AND SNUFF.—*Morris D. Neumann*, Chicago, Ill. Application filed May 8, 1888. Used since April 16, 1888.
"The words 'THE BAT' in connection with the pictorial representation of a base-ball bat."

15,379.—FILLED GOLD CHAINS.—*William H. Robinson & Co.*, Providence, R. I. Application filed March 12, 1888. Used since October 1, 1887.
"The word 'SEAMLESS' associated with the abbreviated words and initials 'WM. H. R. & CO.'"

15,380.—FOLDING BEDS.—*William T. Salter*, New York, N. Y. Application filed May 1, 1888. Used since August, 1884.
"The words 'PLEASANT DREAMS.'"

15,381.—CHAMPAGNE-WINE.—*Veuve Pommery Fils & Co.*, Rheims, France. Application filed April 4, 1888. Used since February 28, 1883.
"The word 'GENUINE,' in white letters upon a black ground between parallel lines of white."

15,382.—CHAMPAGNE-WINE.—*Veuve Pommery Fils & Co.*, Rheims, France. Application filed April 4, 1888. Used since February 28, 1888.
"The word 'AUTHENTIQUE' in white letters upon a black ground between parallel lines of white."

LABELS.

5,618.—Title: "EL MODELO CIGAR MAN'F'G COMPANY."—*El Modelo Cigar Manufacturing Co.*, Jacksonville, Fla. Application filed January 21, 1888.

5,619.—Title: "EL MODELO CIGAR MAN'F'G COMP."—*El Modelo Cigar Manufacturing Co.*, Jacksonville, Fla. Application filed May 12, 1888.

5,620.—Title: "GENUINE PERFECT FITTING CHILLED EDGE SHARER." (FOR PLOWS.)—*The Gibbs & Ball Plow Company*, Canton, Ohio. Application filed May 12, 1888.

5,621.—Title: "MARCARO TONIQUE FOR THE HAIR."—*Martha Matilda Harper*, Rochester, N. Y. Application filed March 26, 1888. (Trade-Mark Registered.)

5,622.—Title: "GERMAN COCOA POWDER."—*Hawley & Hoops*, New York, N. Y. Application filed May 10, 1888. (Trade-Mark Registered.)

5,623.—Title: "DR. PARTRIDGE'S PAIN QUELLER." (FOR A MEDICINE.)—*A. P. Partridge & Co.*, St. Paul, Minn. Application filed May 14, 1888.

5,624.—Title: "NEW DISCOVERY FOR RHEUMATISM."—*James A. Whittington*, Montrose, Ill. Application filed May 11, 1888.

PATENTS

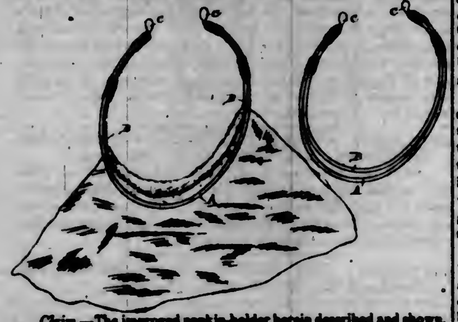
GRANTED JUNE 5, 1888.

383,846. CAR-WHEEL. BENJAMIN B. ALLEN, Indianapolis, Ind. Filed Aug. 9, 1887. Serial No. 246,559. (No model.)



Claim.—The axle having the annular groove to receive the annular collar, in combination with the wheel having its hub provided with the annular flange and groove, and a clip embracing the said collar and flange and fitting in the groove of the hub to secure the wheel on the axle and permit the same to revolve thereon, for the purpose set forth.

383,847. NAPKIN-HOLDER. ALBERT P. BAKER, Trenville, Ill. Filed Dec. 27, 1887. Serial No. 259,126. (No model.)



Claim.—The improved napkin-holder herein described and shown, consisting of the curved round wire springs A B, having their ends joined together and wrapped with fine wire, and the knobs C C, secured on the ends of the springs A B, the said springs being slightly separated at their center to receive and hold the corner of a napkin, substantially as set forth.

383,848. HUB-BORING MACHINE. WILLIAM H. BARNHART, Indianapolis, Ind. Filed Jan. 23, 1888. Serial No. 261,994. (No model.)

Claim.—1. The hub-boring machine herein described, comprising the frame-work *f f'*, having adjustable arms *f*² for centering the hub, the braces *b'*, bolted to the ends of the arms *f*², supporting the plate *p'*, the clamp-nut *n*, having jaws *j*, hinged to the plate at *b'*, the key *k'*, for holding the jaws of the nut together, the screw *w*, working in said nut, carrying the rod *r*, having adjustable bits *b*, secured by keys therein, all combined substantially as shown and described.

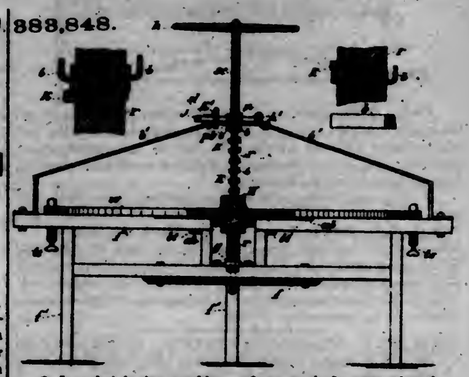
2. In a hub-boring machine, an auger composed of a rod mortised to receive bits held in place by keys and set so as to bore a tapering hole in the hub, the upper pair of bits set one upon the other, the cutter of the upper one connected near the base of its shank and the cutter of the lower one connected to its shank at or near the top, their cutting-edges formed on opposite sides, substantially as and for the purpose described.

3. In a hub-boring machine, a frame-work for supporting the wheel, its side arms adjustable as to length for centering the hub, an auger-rod carrying removable and adjustable boring-bits, the upper pair of them set one upon the other, the upper one having its cutter connected at or near the base of its shank, the lower one having its cutter connected at or near the top of its shank, the cutting-edges of the pair formed on opposite sides for forming an enlarged bore to receive the shoulder of the boring, the series of bits graduated so as to bore a tapering hole in the hub, all combined substantially as shown and described.

4. In a hub-boring machine, an auger-rod, *r*, carrying detachably-secured bits thereon, the upper pair set one upon the other, the cutter of the upper one connected to its shank at or near its base, the cutter of the lower one connected to its shank at or near its top, the cutters of the pair formed on opposite sides for forming an enlargement in the bore to receive the shoulder of the boring, such auger connected with operating screw mechanism above and its lower end moving in a guide-plate secured beneath the table to the frame-work, all combined substantially as shown and described.

5. In a hub-boring machine, a frame-work for supporting the wheel having adjustable side arms for centering the hub, a boring-auger composed of a rod carrying adjustable boring-bits, such auger operated by a screw-rod working in a clamp-nut, its lower end having bearings in a guide-plate secured beneath to the frame-work, the upper pair of bits upon the rod set one upon the other, the cutter of the upper bit secured at or near the base of its shank, the cutter of the lower of the pair secured at or near the top of its shank, the cutting-edges of the pair formed on opposite sides for enlarging the bore to receive the shoulder of the boring, substantially as shown and described.

383,848.

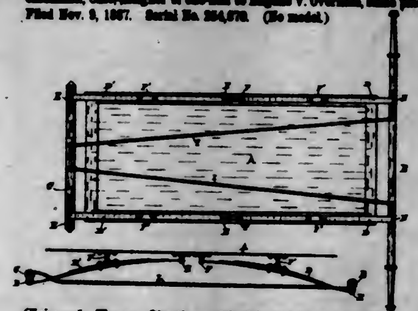


383,849. CARPET-FASTENER. GEORGE BARROW, Stanfordville, N. Y. Filed Oct. 17, 1887. Serial No. 252,515. (No model.)



Claim.—The strip A, comprising the plates A' A², the former having the turned edge A' at its top, and perforations A³, and the latter spurs A⁴, in combination with the flap B, having the turned edge B', pocket D', and with the coiled spring C, resting in said perforations and pocket, substantially as specified.

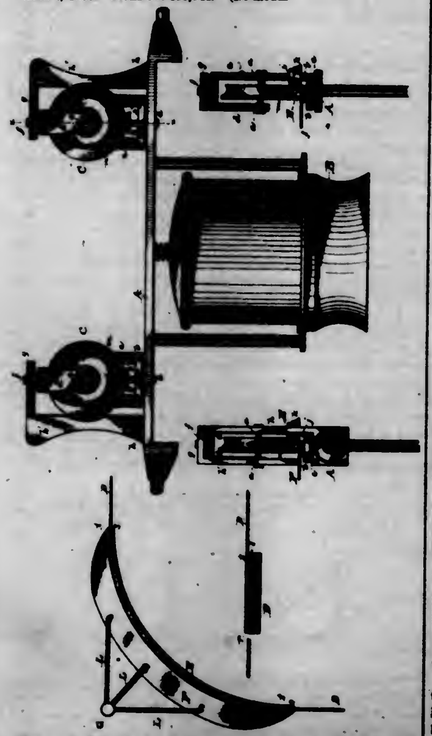
383,850. VEHICLE SPRING-GEAR. GEORGE B. RAMBLOSSEW, Cincinnati, Ohio, assignor of one-half to Eugene V. Overman, same place. Filed Nov. 8, 1887. Serial No. 254,670. (No model.)



Claim.—1. The combination, with the vehicle gear and body, of the longitudinal side springs, D, the swinging shackles coupling the said springs to the body, and the rigid shackles E, connecting them to the rear axle, and the front springs and rigid shackles coupling the front of the body and the head-block.

2. The combination, substantially as specified, of the body and gear, the two pairs of side springs, one in front and the other at the rear, the rigid shackles E, and loose shackles F, for coupling the springs to the body and gear, respectively, the ends of said front springs being connected to the body and bolster by rigid shackles and their centers by swinging shackles, and the rear springs being coupled to the body by swinging shackles and to the rear axle by rigid shackles, substantially as hereinbefore set forth.

383,851. STORE-SERVICE APPARATUS. EDWIN S. BATES, New York, N. Y., assignor of one-half to Samuel Insull, same place. Filed Mar. 4, 1886. Serial No. 193,941. (No model.)



Claim.—1. In a carrier for store-service, the combination, with the body of the carrier, of the swiveled rollers adapted to travel upon a way above the carrier, the suspension being on one side only of said rollers, and said rollers having flanges higher on the open side than on the other, substantially as set forth.

2. In a carrier for store-service, the combination, with the swiveled rollers adapted to travel upon a way above the carrier, of the horizontal rollers at the side of the way, substantially as set forth.

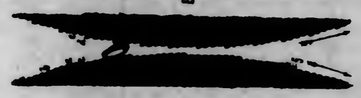
3. In a carrier for store-service, the combination of the body or plate, the vertical supports rising therefrom, each having an overhanging lip, the frames swiveled between said plate or body and said lips, and the rollers turning in bearings in said frames, substantially as set forth.

4. In store-service apparatus, the combination, with the track-wire, of a curved tube inclosing said wire and provided with a horizontal flange, said flange and tube being integral, and a radial support attached to the flange, substantially as set forth.

5. In store-service apparatus, the combination, with the stretched wire way, of the rigid curve-piece having an aperture extending through it from end to end and a slot near each end of said aperture, the wire passing through said aperture from one of said slots to the other.

6. In store-service apparatus, the combination, with the stretched wire way, of the rigid curve-piece having an aperture extending through it from end to end, a slot near each end of said aperture, and an upward-extending tongue at each end, over which the wire is bent to enter said slots, substantially as set forth.

383,852. ROLLS FOR GRINDING-MILLS. FRANK BEALL, Decatur, Ill. Filed Mar. 31, 1887. Serial No. 233,702. (No model.)



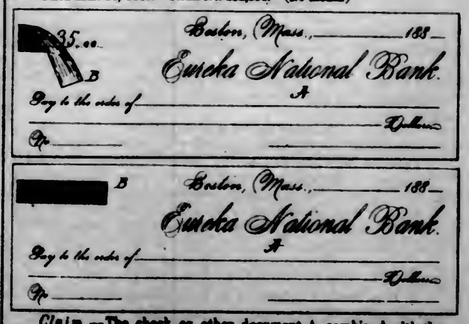
Claim.—1. A roll for grinding-mills, having corrugated longitudinal furrows and intermediate peripheral surfaces, the furrows being composed each of an abrupt terminal surface and a comparatively long surface approximately tangential to the periphery of the roll.

2. In a roller-mill, a pair of opposing rolls having differential rotation in opposite directions, the slow roll having longitudinal furrows longitudinally corrugated, and intermediate peripheral surfaces, also corrugated longitudinally, the fast roll having longitudinal furrows longitudinally corrugated, the furrows of each roll being formed each of an abrupt terminal surface and a comparatively long surface approximately tangential to the periphery of the roll, the abrupt surfaces of the furrows of the slow roll being presented in the direction of the rotation of the roll, and the abrupt surfaces of the furrows of the fast roll being presented in a contrary direction.

383,853. ANTISEPTIC SOAP. GEORGE C. W. BELSHER, St. Louis, Mo. Filed Apr. 6, 1885. Serial No. 161,363. (Specimens.)

Claim.—As a new article of manufacture, the herein-described block or cake for neutralizing the noxious properties of substances to which it is applied, consisting of a matrix of soap or equivalent solvent and cohesive material having the chemical agents in a granular form embedded therein, substantially as described.

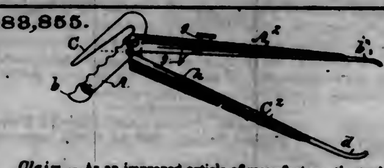
383,854. CHECK-PROTECTOR. WILSON I. BIRD, Boston, Mass. Filed Mar. 26, 1887. Serial No. 232,550. (No model.)



Claim.—The check or other document A, combined with the transparent strip B, gummed on the under side and attached at one of its ends to the check-body, and adapted to be pasted over the part to be protected on the document, substantially as set forth and described.

383,855. TOOTH. ALBERT BIRD, Des Moines, Iowa. Filed Sept. 12, 1887. Serial No. 249,892. (No model.)

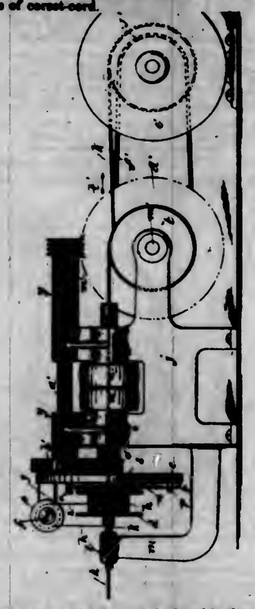
383,855.



Claim.—As an improved article of manufacture, the tool comprising the jaws A, C, A^2, and d, the levers A^3 and C^2, the spring f, and the locking device g h, substantially as shown and described, for the purpose stated.

383,856. MACHINE FOR WINDING COTTON, &c., UPON A CORE. CORNELIUS F. BRADFORD, Plymouth, Mass. Filed Mar. 31, 1887. Serial No. 233,188. (No model.)

Brief.—The object of the invention is to produce an improved machine for winding cotton, &c., regularly and evenly on a cord or core of jute, &c., and is intended more particularly to be applied to the manufacture of corset-cord.



Claim.—1. The plate c, and the reel d, placed in the center of the said plate, in combination with the tension device, consisting of the rod n, attached to the plate c by the screw o, and the guide-wire p, substantially as and for the purpose above described.

2. The plate c, the reel d, placed in the center of the said plate, and the guide-wheel e, in combination with the tension device, consisting of the rod n, attached to the plate c by the screw o, and the guide-wire p, substantially as and for the purpose above described.

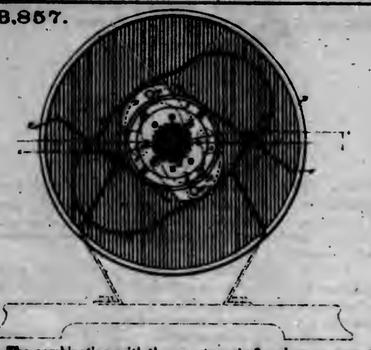
3. The plate c, the reel d, placed in the center of the said plate, the guide-wheel e, and the tube l, in combination with the rod n, attached to the plate c by the screw o, and the guide-wire p, substantially as and for the purpose above described.

383,857. GOVERNOR FOR ELECTRO-MAGNETIC MOTORS. CHAS. F. BROWN, Cleveland, Ohio. Filed Aug. 1, 1887. Serial No. 245,923. (No model.)

Claim.—1. The combination, with the armature-shaft and governor-casing connected therewith, of a commutator-sleeve loosely mounted on the armature-shaft, governor-weights pivotally connected with the commutator-sleeve, and links pivoted at one end to the weights and at their opposite end to the governor-casing, substantially as set forth.

2. The combination, with the armature-shaft and governor-casing connected therewith, of a commutator-sleeve loosely mounted on the armature-shaft, governor-weights pivoted to the commutator-sleeve, links pivoted to the governor-weights and governor-casing, and an endless spring engaging the governor-weights, substantially as set forth.

383,857.



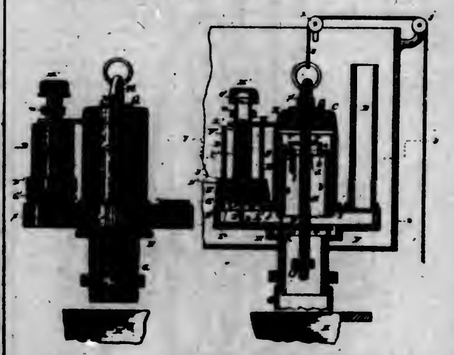
3. The combination, with the armature-shaft and governor-casing connected therewith, of a commutator-sleeve loosely mounted on the armature-shaft, governor-weights pivoted at one end to the commutator-sleeve, and links pivoted at one end to the governor-casing and at their opposite ends to the governor-weights at a point between its ends, substantially as set forth.

4. The combination, with the armature-shaft and governor-casing connected therewith, of a commutator-sleeve loosely mounted on the armature-shaft, and governor-weights pivoted at one end to the commutator-sleeve and connected by links to the governor-casing, said weights being formed to partly encircle the commutator-sleeve, substantially as set forth.

5. The combination, with the armature-shaft and governor-casing connected therewith, of a commutator-sleeve having external flanges, governor-weights located between the flanges and pivotally connected therewith, and links pivotally connecting the weights and governor-casing, substantially as set forth.

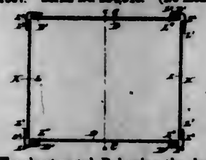
6. The combination, with the armature-shaft and governor-casing connected therewith, of a commutator-sleeve loosely mounted on the armature-shaft, governor-weights pivoted at one end to the commutator-sleeve, links pivoted to the governor-weights and governor-casing, and an endless spring consisting of two or more pieces riveted together and arranged to embrace the weights, substantially as set forth.

383,858. DOUBLE FLUSH-VALVE FOR WATER-CLOSETS. THOMAS CAMPBELL and JAMES H. MCFARTLAND, St. John, New Brunswick, Canada. Filed Aug. 5, 1887. Serial No. 246,219. (No model.)



Claim.—In combination with a tank, the double flush-valve consisting of a hollow base having end branches and an outlet leading to a basin, an overflow-pipe, D, a loaded cylinder, K, vertically movable and provided with a packing, J, and guides b b, as described, a piston, T, provided with a central opening, a vent, g, and a washer, P, a rod, M, secured to said cylinder and provided with a nut, O', a plate, U, provided with short uprights F' and adapted to be lifted by said nut for closing the passage surrounded by gland I, the loaded cylinder B, vertically movable and provided with a packing, G', the arm W, for lifting cylinder B, the piston J, with its hollow rod passing freely through said arm and provided with an adjustable nut, a vent and a cup-screw thereafter, the tube C, secured to the piston J', as described, and the central guide-rod, F, secured to the hollow base A, all constructed and adapted to operate substantially in the manner and for the purpose described.

383,859. BILL-FILE. CHARLES C. CHAMBERLAIN, Passaic, N. J. Filed Apr. 15, 1887. Serial No. 234,910. (No model.)



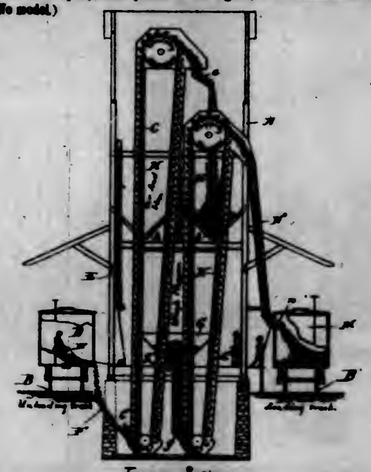
Claim.—1. The sheet metal, B, having the double fold B' B², extending along two edges, and a double fold, B³ B⁴, extending along the other two edges, in combination with an exterior surfacing material, C, adapted to serve in a bill-file or analogous structure, substantially as herein specified.

2. A bill-file composed of separate parts, the body of each part being sheet metal having the edges folded, in combination with narrow folded locking-strips engaging with said folds on the principal parts, substantially as and for the purposes herein specified.

3. In a rectangular sheet-metal box, the end piece, B, having the double fold B' B² B³ B⁴ along two opposite sides and the single fold B⁵ along the other two opposite sides, in combination with the two side pieces, D, each having a single fold engaging said double fold upon the end piece, the top and bottom pieces L, each having a single fold adjacent to the single fold B⁵ upon the end piece, and the locking-strips M, bent at right angles and provided along each edge with folds M', adapted to connect the single folds of the end piece with the folds upon the top and bottom pieces, substantially as specified.

4. In a rectangular sheet-metal box, the combination, with the several sides and the end thereof, each having its edges folded, so as to lock with the adjacent pieces, of exterior surfacing-plates applied to each of said pieces, said plates being each smaller than their registering-piece by the width of the edge folds thereof, and each being retained in place beneath the folds of its registering-piece, certain of said folds being continued and extended around the edges of and at right angles to their pieces, forming a double fold engaging the fold upon the adjacent piece, substantially as specified.

383,860. GRAIN TRANSFERRING AND WEIGHING ELEVATOR APPARATUS. PHILANDER F. CRANE, Chicago, Ill., assignor to the Chase Elevator Company, same place. Filed Aug. 20, 1887. Serial No. 248,168. (No model.)

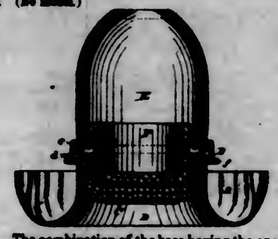


Transverse Section.

Claim.—1. The herein-described grain-elevator, having two weigh-hoppers and scales upon the first floor in proximity to the loading and unloading tracks, two car-load bins above each weigh-hopper, the receiving-elevator having a receiving-shoe next the unloading-track and adapted to deliver to any of said car-load bins, and the independent shipping-elevator arranged to deliver to the loading-track, said elevators being located between said weigh-hoppers, all arranged, as described, for the continuous transfer of grain from and to a series of cars.

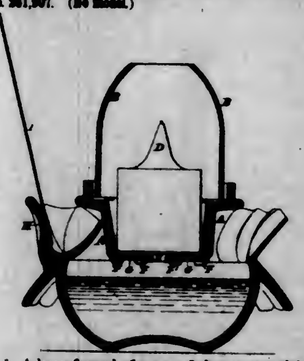
2. The herein-described grain-elevator, having two weigh-hoppers and scales upon the first floor in proximity to the loading and unloading tracks, two car-load bins above each weigh-hopper, the receiving-elevator having a receiving-shoe next the unloading-track and adapted to deliver to any of said car-load bins, the independent shipping-elevator, the vertical self-loading spout into which the shipping-elevator delivers directly and downward, and the curved lateral branches at the lower end of the spout, said elevators being located between said weigh-hoppers, all arranged, as described, for the continuous transfer of grain from and to a series of cars.

383,861. CANDLE-LAMP. SAMUEL CLARKE, Cobble Hill Works, London, County of Middlesex, England. Filed Apr. 6, 1887. Serial No. 233,904. (No model.)



Claim.—The combination of the base having the open-ended tubular post and provided with the receptacle about the post, the lamp-cup having the outwardly-projecting flange by which it is supported upon and within the post, and the dome resting upon the lamp-cup flange, these parts being separable and composed of translucent material, substantially as and for the purpose set forth.

383,862. CANDLE LAMP AND STAND. SAMUEL CLARKE, Cobble Hill Works, London, County of Middlesex, England. Filed Jan. 29, 1888. Serial No. 261,907. (No model.)



Claim.—1. A lamp formed of a cup of glass or porcelain with a dome cover, and having a hole formed centrally through the bottom for the admission of air, and with feet for the lamp to stand on when placed on a table, and projections on the upper surface of the bottom to allow air to pass between it and the inner cup or candle, substantially as described.

2. A lamp-stand formed of a bowl of glass or porcelain, having its upper edge corrugated and set inward at three points of its circumference for the top flange of a glass lamp to rest on, and with a projection standing up from the lower part of the bowl from below one of the points where its upper edge is bent inward, substantially as described.

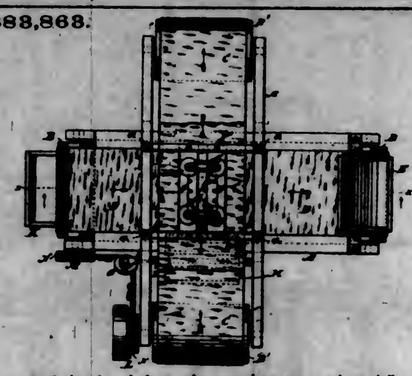
383,863. MAGNETIC SEPARATOR. GARDNER CORNELIUS, Glens Falls, N. Y. Filed Sept. 30, 1887. Serial No. 250,811. (No model.)

Claim.—1. The combination, with a primary apron, of a secondary apron to operate transversely to the primary apron, a magnetized plate secured in proximity to said secondary apron, so as to draw the iron particles to said secondary apron, and suitable driving mechanism for actuating the aprons, substantially as set forth.

2. The combination, with a primary apron and a secondary apron made to operate transversely to the primary apron, of a magnetized plate secured in proximity to said secondary apron, so as to draw the iron particles to said secondary apron, suitable driving mechanism for actuating the aprons, and a scraper or brush made to act on said secondary apron, substantially as set forth.

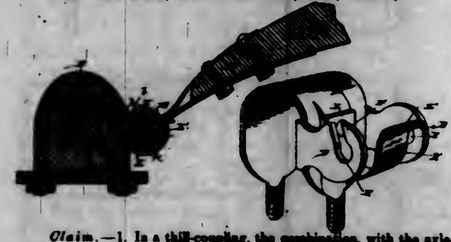
3. The combination, with a primary apron, of a secondary apron made to operate transversely to the primary apron, a magnetized plate secured in proximity to said secondary apron, so as to draw the iron particles to said secondary apron, and means for adjusting the

383,863.



magnetized plate in relation to the secondary apron, substantially as set forth.

383,864. THILL-COUPLING. MARTIN G. CONRAD, McGrawville, N. Y. Filed Jan. 13, 1888. Serial No. 260,811. (No model.)



Claim.—1. In a thill-coupling, the combination, with the axle-clip and the ears D D on the front side of the clip, having rearwardly-inclined slots F F therein, of the thill-iron having lateral trunnions which are mounted in the said slots, and the U-shaped spring L, attached to the clip between the ears and bearing against the under side of the thill-iron in front of the ears, substantially as specified.

2. In a thill-coupling, the combination of the axle-clip having a perforation, *b*, in its front side and the ears D D on the clip, the U-shaped spring, comprising the arm L, having a perforation, *l*, aligning with the perforation *b*, and the arm L', having a hook on its free end, the rivet or its equivalent engaging the aligned perforations *b* and *l*, and the thill bearing on the spring between the ears D and having trunnions mounted in bearings in the said ears, substantially as and for the purpose specified.

383,865. PIPE-COUPLING. ALPHEUS CORY, Galway, N. Y. Filed July 5, 1887. Serial No. 243,703. (No model.)

Claim.—1. In a coupling, the combination of a socket, a thimble, a coupling-pipe in said thimble, and the spring secured to the thimble and pipe, substantially as described.

2. In a coupling, the combination of a socket, a thimble, a coupling-pipe in said thimble, and a spring-disk secured to the thimble and pipe, substantially as described.

3. In a coupling, the combination of a socket, a thimble having washers upon the outer side, a coupling-pipe within said thimble, and a spring secured to the thimble and coupling, substantially as described.

4. In a coupling, the combination of a socket, a thimble, a screw-threaded coupling-pipe, and a spring attached to the thimble and secured to the coupling-pipe by clamping-nuts, substantially as described.

5. In a coupling, the combination of a socket, a thimble having rounded ends, a coupling-pipe secured to the thimble by a spring, and milled-edged clamping-nuts, substantially as described.

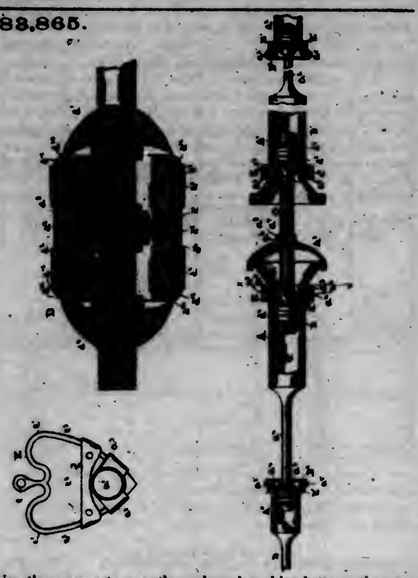
6. In a coupling, the combination of a socket, a thimble having rounded ends, a coupling-pipe having a spring-disk secured to the thimble, and milled-edged clamping-nuts, substantially as described.

7. In a coupling, the combination of a socket, a thimble having rounded nuts on each end, a coupling-pipe connected with said thimble by a spring, and milled-edged nuts upon said coupling-pipes, substantially as described.

8. The combination, in a pipe-coupling, of a socket, a thimble formed of two sections screw-threaded together and having rounded ends, a coupling-pipe secured to the thimble by a spring, and the milled-edged nuts upon the coupling-pipe, substantially as described.

9. The combination, in a pipe-coupling, of a socket, a thimble

383,865.



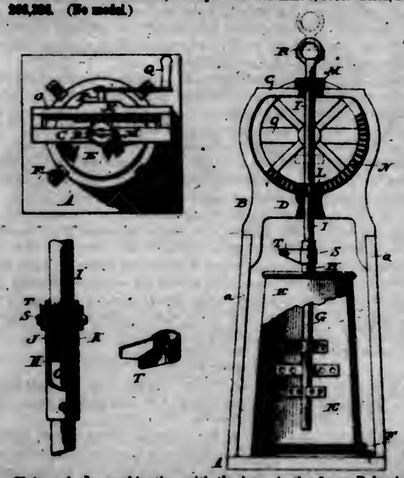
having the screw-nuts upon the ends and packing between the nuts, and a coupling-pipe fulcrumed upon and secured to said thimble by a spring, substantially as described.

10. In a pipe-coupling, the combination of two sockets having their mouths opposite each other, a cap upon one of said sockets, a coupling-pipe passing through said cap into the sockets, and a sliding thimble within the socket and secured to said pipe by a flexible connection which permits the pipe to turn, substantially as described.

11. In a pipe-coupling, the combination of two sockets pivoted at their rear ends, hangers for supporting the front ends of said sockets, a cap upon one of said sockets, a coupling-pipe passing through said cap into the sockets, and a sliding thimble within the socket and secured to said pipe by a flexible connection which permits the pipe to turn, substantially as described.

12. In a coupling, the combination of the sockets pivoted at their rear ends, the swinging hangers having the stops and clips, and a pipe having spheroids on its ends adapted to turn and slide in said sockets, substantially as described.

383,866. CHURN. WILLIAM H. CRAWFORD, Paris, Tex., assignor of one-half to John R. Snow, same place. Filed Mar. 6, 1888. Serial No. 266,359. (No model.)

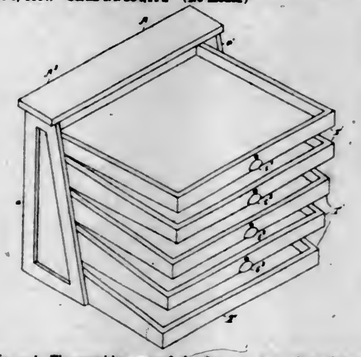


Claim.—1. In combination with the base A, the frame B, having the cross-bars C D O, churn E, provided with a dasher-shaft, G, a sec-

ond shaft, I, passing through cross-bars C D and connected with the dasher-shaft, pinions L and M, secured to the shaft I and adapted to rest upon the cross-bars D and C, a shaft, P, journaled in the cross-bar O, and a mutilated gear engaging the pinions L M.

2. In combination with the frame B, having the cross-bars C D O, a churn, E, provided with a dasher-rod, G, a shaft, I, journaled in the cross-bars C D and connected with the dasher-shaft, a ring or handle, R, at the upper end of said shaft, pinions L M, secured rigidly upon the shaft and resting upon the cross-bars D and C, a shaft, P, journaled in the cross-bar O, a mutilated gear, N, engaging the pinions L M, and a winch or handle, Q, all arranged substantially as shown, whereby the shaft is adapted to be raised to permit the churn to be removed.

383,867. SHOW-CASE. FRED C. CUTTING, Lowell, Mass. Filed Apr. 8, 1887. Serial No. 234,714. (No model.)



Claim.—1. The combination of the frame, a tray pivoted in said frame, arc-shaped racks secured to said frame concentrically with the pivots of said tray, and pawls secured to said tray and engaging said racks to hold said tray in position when said tray is turned on its pivots, as and for the purpose specified.

2. The combination of the frame, a tray pivoted in said frame, arc-shaped racks secured to said frame concentrically with the pivots of said tray, pawls secured to said tray and engaging said racks to hold said tray in position when said tray is turned on its pivots, a three-armed lever pivoted to said tray, rods connecting said pawls and said lever, and another rod connected to said lever and reaching to the front of said tray to enable said pawls to be withdrawn from said racks by pulling said last-named rod, as and for the purpose specified.

3. The combination of the frame, a tray pivoted in said frame, arc-shaped racks secured to said frame concentrically with the pivots of said tray, pawls secured to said tray and engaging said racks to hold said tray in position when said tray is turned on its pivots, a three-armed lever pivoted to said tray, rods connecting said pawls and said lever, another rod connected to said lever and reaching to the front of said tray, another lever pivoted to the front of said tray and connected at one end to said last-named rod, whereby turning said last-named lever upon its pivot will draw said pawls out of engagement with said racks, as and for the purpose specified.

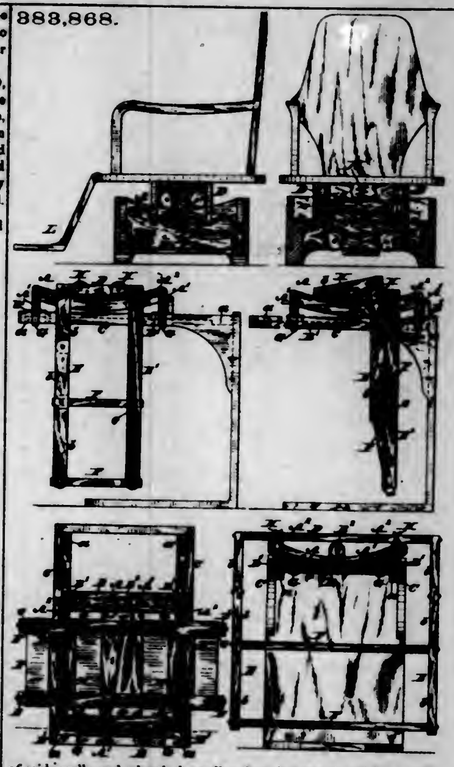
4. The combination of the frame, a series of trays arranged one above the other, each tray normally resting upon and covering the tray next below it, strips secured one to each side of each tray and extending back of said tray and provided with a hole back of said tray, and pivot-rods, each passing through the holes of the strips secured to one of said trays to enable each of said trays to be turned upon its pivot-rod without interfering with the tray next below the same, as and for the purpose specified.

5. The combination of the frame consisting of a bottom tray, uprights secured to said bottom tray, and a horizontal top connecting said uprights, a series of trays arranged one above the other and above said bottom tray, each tray of said series normally resting upon and covering the tray next below it, said last-named trays being pivoted in said frame and each being thereby adapted to be raised out of contact with the tray next below it, and independent means, substantially as described, for holding each of said pivoted trays in a raised position, as and for the purpose specified.

383,868. BERTH, CHAIR, &c. PETERRICK DAVEY, Philadelphia, Pa., assignor of three-fourths to Samuel W. Leedom, same place. Filed July 14, 1887. Serial No. 244,304. (No model.)

Claim.—1. In a device of the character named, a fixed support having a frame provided with rollers having V-shaped peripheries resting thereon, a cradle with rockers V-shaped on under surface resting on said rollers, and a frame with rollers resting on curved end pieces

383,868.



of said cradle, and a berth depending from last-mentioned frame, substantially as described.

2. In a device for the purpose named, a fixed support having a frame provided with rollers and adjustable on said support, a cradle with rockers resting on said rollers and having curved end pieces, a frame with rollers resting on said curved end pieces, and a berth connected to said frame by sectional uprights, substantially as and for the purpose set forth.

3. In a device for the purpose named, a fixed support, a frame thereon, a cradle with rockers on said frame, a frame with rollers on said cradle, a frame having sectional uprights on one side connected to a berth, and uprights connected to said frame, and having stops *c*, on which one side of said berth rests, said parts combined substantially as described.

4. A pivoted berth with sectional side arms on one side thereof, a frame with rollers connected to said side arms, and a curved support on which said rollers move, said parts being combined substantially as described.

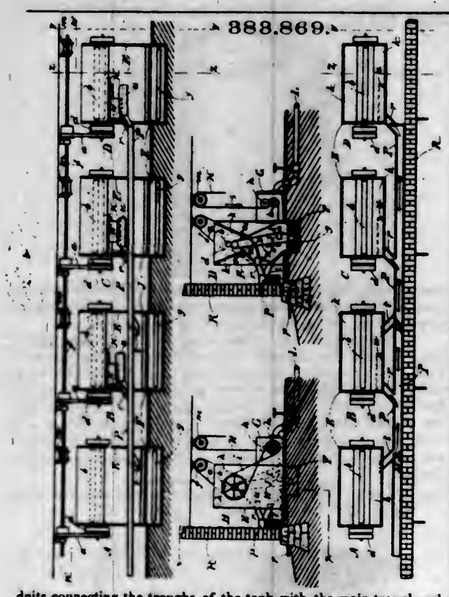
5. A rocking cradle and a support therefor, in combination with a berth, arms supporting said berth, &c., and a frame attached to the top of said arm and resting on the cradle, the berth being pivoted to the side arms, and the latter formed of jointed sections, the several parts being combined and operating substantially as described.

6. A fixed support, in combination with the frame B, the cradle A, with side rockers, A', and curved end pieces, A^2, the frame D, with rollers H, and the berth F, with sectional side pieces, E, substantially as and for the purpose set forth.

383,869. APPARATUS FOR BLEACHING AND DYEING. THOMAS DAVIES, Peabody, Mass. Filed Sept. 12, 1887. Serial No. 249,627. (No model.)

Claim.—1. The combination, in a bleaching apparatus, of a water-tank, a guide-roll therein, squeezing-rolls above the tank, a deflecting guide-board adjacent to said rolls for guiding the water therefrom, a collecting-trough for receiving the water from the guide-board, a secondary water-tank, a guide-roll therein, squeezing-rolls above said secondary tank, a deflecting guide-board adjacent to said rolls, a collecting-trough for receiving the water from said guide-board, a main trough provided with valved spouts leading into said tanks, and conduits connecting the troughs of the tank with the main trough, substantially as described.

383,869.



2. In an apparatus of the character described, the frame-work E, having the splash-board *k*, in combination with the rod K, secured to said board and having the slots *q*, the guide-board N, provided with the brackets 43 and arms 45, trough M, spout *r*, and main trough P, substantially as set forth.

3. In a device of the character described, the main trough P, having the branch troughs *f r* and gates 25, in combination with the frame F, trough M, splash-board *k*, guide-board N, and means for adjustably attaching board N to the board *k*, substantially as described.

4. In a device of the character described, the trough M, provided with the tube *s*, having the mouth 40, in combination with the frame E, splash-board *k*, spout *r*, and main trough P, substantially as described.

383,870. VAPOR-STOVE. ZEBULON DAVIS, Cleveland, Ohio, assignor to the Consolidated Vapor Stove Company, of Cleveland, Ohio. Filed July 27, 1887. Serial No. 245,410. (No model.)

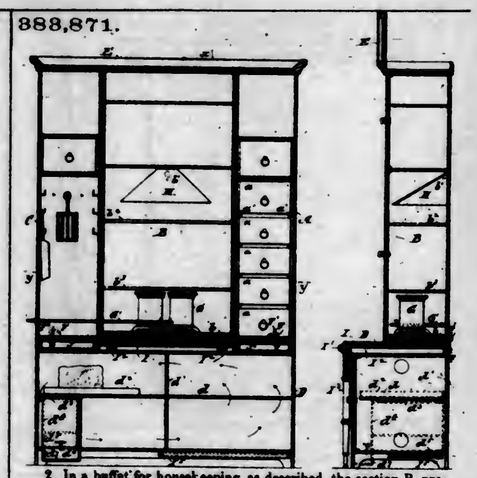


Claim.—In vapor-stoves, the combination of the oil can or reservoir A, having the pipe B downwardly projecting therefrom, a lateral opening at or near the lower end thereof, the tube H, with the air-chamber I, surrounding the pipe B and connected therewith at the lower end by means of the neck J and at the upper end to the can, the piston D within the pipe B, having the rod C extending through the can A and the tube H, and the means for holding said piston suspended, constructed and arranged substantially as and for the purpose set forth.

383,871. BUFFET FOR HOUSEKEEPING. ANNA L. DEY, New York, N. Y. Filed Feb. 5, 1887. Serial No. 226,615. (No model.)

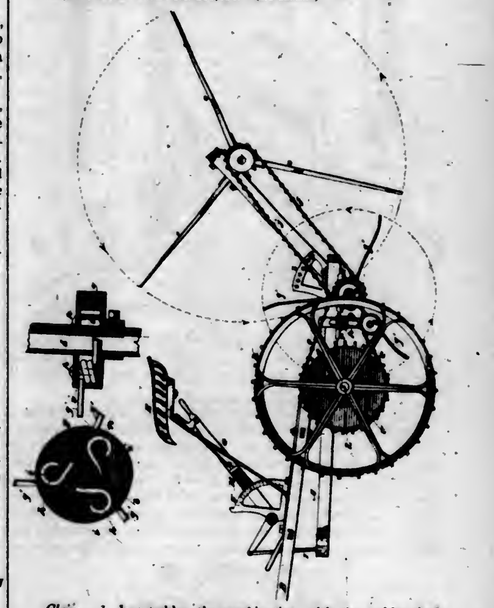
Claim.—1. In a buffet for housekeeping, substantially as described, a refrigerator divided into compartments by a vertical partition having an aperture near the top and another aperture near the bottom, and by a horizontal perforated metallic shelf on each side of said partition, one of the upper compartments having secured therein an ice-tray connected by a pipe with a filter communicating with a tank arranged beneath it, and the floor of the refrigerator in front of the tank being sunk to form a recess to admit of a cup or other receptacle being placed and withdrawn from under a faucet connected to the tank and inclosed by the doors of said refrigerator, whereby the water from the ice is filtered, collected, and utilized for drinking or other purpose.

383,871.



2. In a buffet for housekeeping, as described, the section B, provided with a supplemental metallic bottom secured to cleats attached to said section to support a cooking-stove, and a hood adapted to conduct vapors from said stove through an opening in the back of the section to the exterior thereof.

383,872. HAY-TEDDER. GEORGE H. RAHNEY, Springfield, Ohio, assignor of one-half to the Rogers Fence Company, same place. Filed May 31, 1887. Serial No. 239,737. (No model.)

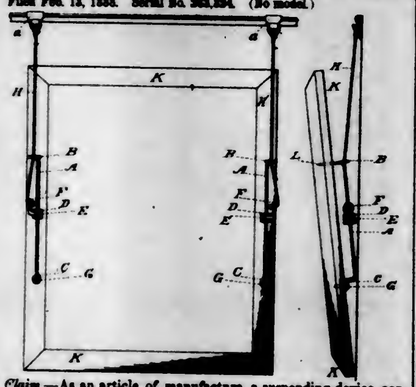


Claim.—1. In a tedder, the combination, with the tedder-shaft, of the clearer-shaft adjustable concentrically round the tedder-shaft, gearing connecting the said shafts together, and means to hold the clearer-shaft in any adjusted position.

2. In a tedder, the combination, with the tedder-frame, a sector thereon, and the tedder-shaft, of beams pivoted on the said shaft and adjustably connected with the sector, and a clearer-shaft journaled in the upper ends of the beams.

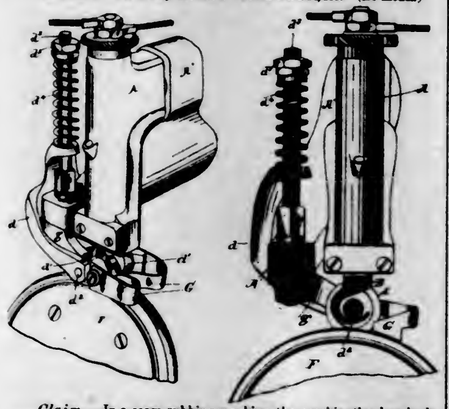
3. In a tedder, the combination, with the tedder shaft, of casings secured thereto, and forks coiled round studs in the casings, having a bearing at one end against the said shaft and extending out from the casing at the other end.

383,873. SUSPENDING DEVICE. CHARLES B. FAY, Auburn, N. Y. Filed Feb. 13, 1888. Serial No. 263,894. (No model.)



Claim.—As an article of manufacture, a suspending device consisting of a screw-threaded stem, A, adapted to be secured at both of its extremities to the object to be suspended, in combination with the nut D, the roller E, and loop F, adjustably arranged upon said stem, substantially as described.

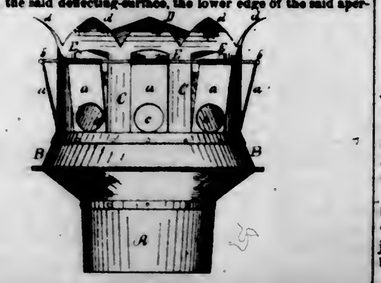
383,874. SEAM-RUBBING MACHINE. CHARLES S. FITCH, Revere, Mass. Filed July 16, 1887. Serial No. 244,485. (No model.)



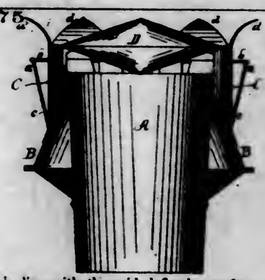
Claim.—In a seam-rubbing machine, the combination herein described of a work-support and a rubbing-tool, with a spool-shaped presser-foot held to its work by means of a spring, substantially as and for the purpose set forth

383,875. SELF-CLEANING SMOKE-JACK. LAODICEA B. FISHER, St. Paul, Minn. Filed Aug. 29, 1887. Serial No. 248,126. (No model.)

Claim.—1. The combination, in a chimney-cap, of a flue portion slightly flared upwardly and outwardly, and provided with an outer deflecting-surface around the top of the flue portion and extending downwardly and outwardly therefrom in the form of a truncated cone, and a slotted cylinder resting thereon having upwardly-extending apertured tongues outwardly bent from the point of contact of the said cylinder with the said deflecting-surface, the lower edge of the said apertures being in line with the said deflecting-surface, substantially as specified, whereby the cinders, &c., may pass downwardly over the deflecting-surface and be discharged through the apertures.



2. The combination, in a chimney-cap, of a flue portion slightly flared upwardly and outwardly, a deflecting-surface in the form of a truncated cone extending downwardly and outwardly from the upper edge of the said flue portion, a slotted cylinder resting thereon having apertured tongues extending upwardly and outwardly from the bottom of each slot, a deflecting-surface extending upwardly and outwardly over the top of each slot, and a double cone within the cylinder over the mouth of the flue, substantially as and for the purpose herein specified.



383,876. CARRIAGE-BOW. JOHN R. FOX, Milwaukee, Wis. Filed July 30, 1887. Serial No. 245,050. (No model.)



Claim.—1. As a new article of manufacture, the carriage-bows for the front and rear of a carriage-top having their central horizontal portion bent at an obtuse angle to their respective sides or ends, whereby when said bows are secured in place at an angle to the central cover-supporting bow the upper surface of said horizontal central portion of said front and rear bows will conform to the shape of the cover of said top affixed thereto, substantially as and for the purpose specified.

2. In a carriage-top, the combination of the central top-supporting bow, D, front and rear top-supporting bows, B and C, having their horizontal central portion, F, bent at an obtuse angle to their respective sides or ends, whereby said central portion is adapted to conform to the curve or angle of the cover E affixed thereto, and cover E, secured at its respective ends to said front and rear bows and at its center to said central bow, all substantially as and for the purpose specified.

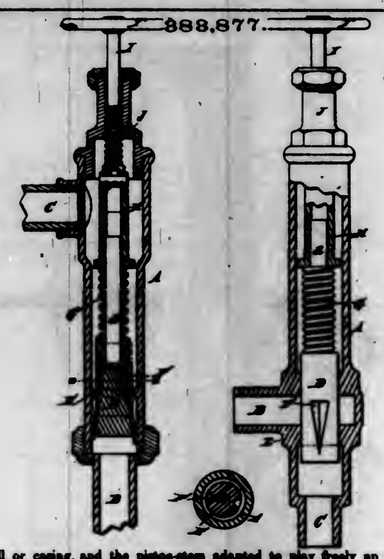
3. The method herein described for forming the front and rear bows of a carriage-top, consisting in bending the same over a U-shaped form, the upper surface of the central portion of which form is beveled at an obtuse angle to conform to the desired shape of the central portion of said front and rear bows, and in drawing said bows firmly down upon said beveled central portion of the form until said central portion of the bow is bent at an obtuse angle conforming to the shape of said form, and securing and retaining said bow in such position upon the form until by seasoning its shape becomes permanently fixed, substantially as and for the purpose specified.

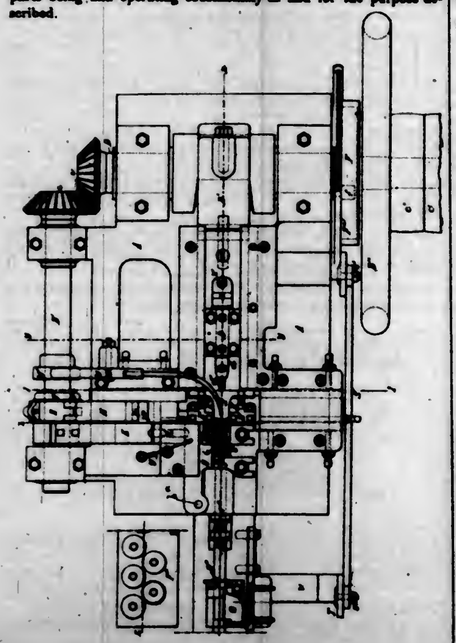
383,877. PRESSURE-REGULATOR. HORATIO GALE and CHRISTIAN D. WESLOSKI, Albion, Mich. Filed Oct. 31, 1887. Serial No. 253,896. (No model.)

Claim.—1. In a pressure-regulator, the combination of a piston-valve provided with a series of tapered grooves having their greatest cross-sectional area at the top of said valve upon its side, an adjustable spring having bearings on the upper end of the valve and the lower end of the follower H, adapted to assist the valve in resisting the outflowing steam, and a close-fitting partition, E, through which the valve reciprocates, substantially as described.

2. The combination, in a pressure-regulator, of a piston-valve having a series of tapered grooves, a spring having a bearing on the valve and a bearing on the lower end of the follower H, and an adjustable screw for varying the tension of said spring, said piston-valve being adapted to reciprocate through a close-fitting partition in the shell or casing, and the piston-stem adapted to play freely up and down in the hollow follower H, substantially as described.

383,877.





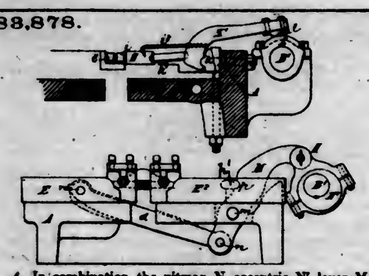
383,878. WIRE-NAIL MACHINE. ALBERT B. GLOVER, Stratford, Conn. Filed Jan. 9, 1888. Serial No. 260,194. (No model.)

Claim.—1. The spring reacting jaw H, pivoted at h^5, in combination with the dies i i', for gripping and holding the wire while the head is being formed and for releasing it, as and for the purposes described.

2. The dies i i', in combination with jaw H, toggle h', lever K', and cam L, the combination being and operating substantially as and for the purpose described.

3. The blank r, in combination with dies i i' and screw R, these parts being and operating substantially as and for the purpose described.

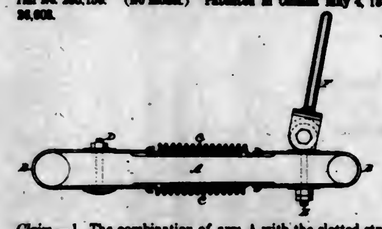
383,878.



4. In combination, the pitman N, eccentric N', lever M, rod d, toggle p', and slides E F', the bearing-point p of the toggle and the connecting-point n of the lever being equidistant from its fulcrum m.

5. The lever M, in combination with connecting-rod d, slides E and F', and toggle p, these parts being constructed and operating in the manner and for the purposes described.

383,879. LATHE-PITMAN FOR WIRE-WEAVING LOOMS. SAMUEL O. GLENDINNING, Hamilton, Ontario, Canada. Filed Apr. 16, 1887. Serial No. 235,159. (No model.) Patented in Canada May 4, 1887, No. 26,603.

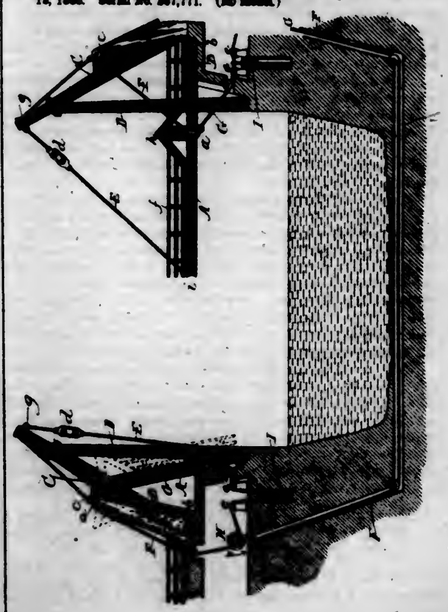


Claim.—1. The combination of arm A with the slotted straps B, bolts D and E, and the cam-lever F, substantially as described.

2. The combination of an arm, A, having straps B, with slotted holes and bolts for the adjustment of the same, with the springs c, attached to the ends of the strap, substantially as shown and described.

3. The combination, with the arm A, with its slotted straps and bolts, and the springs c, hooked to the said slotted straps, of the cam-lever F, substantially as shown and described.

383,880. BRIDGE. WILLIAM HARMAN, Oak Park, Ill. Filed Mar. 19, 1888. Serial No. 267,771. (No model.)



Claim.—1. A draw-bridge composed of halves or two parts, each part consisting of sections, as A B, hinged together, substantially as and for the purpose specified.

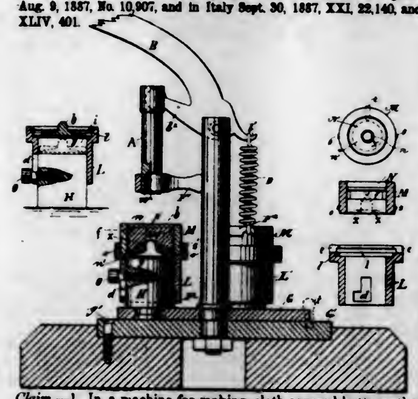
2. The combination of the sections A B, hinged together, standards C, rods E, and ropes F, for raising the sections B to open the bridge, substantially as specified.

3. The combination of the sections A B, hinged together, standards C, rods E, and ropes G, for lowering the sections B to close the bridge, substantially as specified.

4. The combination of the sections A B, hinged together, standards C, rods E, ropes F G, and winding shaft or drum H, for raising and lowering the sections B to open and close the bridge, substantially as specified.

5. In a draw-bridge, the hinged floor-sections A B, supported and arranged to fold together when lifting-power is applied to the abutment-section, substantially as described.

383,881. MACHINE FOR MANUFACTURING BUTTONS. GOTTLIEB HEIDMANN, EMIL HÖTTGES, and CARL BOEX, Barmen, Prussia, Germany, assignors to Heidmann & Höttges, same place. Filed Sept. 5, 1887. Serial No. 248,869. (No model.) Patented in Belgium Aug. 9, 1887, No. 78,596; in France Aug. 9, 1887, No. 185,256; in England Aug. 9, 1887, No. 10,907, and in Italy Sept. 30, 1887, XXI, 22,140, and XLIV, 401.



Claim.—1. In a machine for making cloth-covered buttons, the combination, substantially as described, with a vertically-movable follower and a lower die comprising a stationary die-block and a tubular section adjustable vertically thereon, of an upper die detachably connected to and movable vertically in the tubular section of the lower die, whereby the follower is adapted to co-operate directly with the lower die or operate the upper die, for the purpose specified.

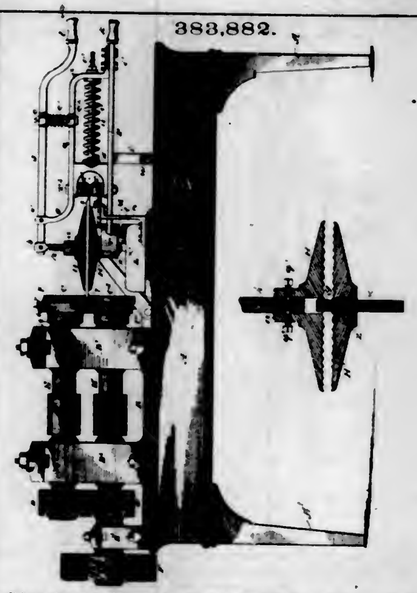
2. In a machine for making cloth-covered buttons, the combination, substantially as described, with the lower die comprising a die-block and a tubular section adjustable vertically thereon, of an upper die comprising a die-carrier, and a die detachably secured thereto and adapted to move vertically therein, and a locking device for locking the die-carrier to the tubular section of the lower die, for the purpose specified.

3. In a machine for making cloth-covered buttons, the combination, substantially as described, with a stationary standard and a follower movable in bearings on said standard, of a die-carrier plate revoluble on the standard, a locking device to lock said carrier into position relatively to the follower, a plurality of lower dies comprising a die-block secured to the carrier, a tubular section adjustable vertically on the die-block, and a plurality of upper dies detachably secured to the tubular sections of the lower dies and movable vertically therein, whereby the follower is adapted to co-operate with the lower dies independently of the upper dies, for the purpose specified.

4. In a machine for making cloth-covered buttons, the combination, substantially as described, with the lower die comprising a stationary die-block and a tubular section adjustable vertically thereon, said tubular section having its upper end enlarged, of an upper die, a carrier in which the upper die is movable vertically, a stop to limit the motion of said die within the carrier, a locking device for locking the carrier to the enlarged portion of the tubular section of said lower die, and a follower for operating the upper die, for the purpose specified.

383,882. MANUFACTURE OF HARROW-DISKS. WILLIAM J. HOGAN, Johnstown, Pa., assignor to the Cambria Iron Company, of Pennsylvania. Filed Nov. 1, 1887. Serial No. 254,004. (No model.)

Claim.—1. The process of manufacturing dished disks for harrows, consisting in heating circular flat blanks of sheet metal, then placing them in a proper machine and rolling their edges so as to consolidate the material and bevel them to a thin edge, which is thus rendered measurably hard by rolling compression and contact of metallic surface therewith, then removing the disks from the edging-machine, and dishing them in a drop-press or drop-hammer in dies, substantially as set forth.



383,882.

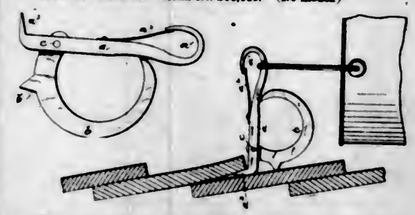
2. The process of manufacturing dished disks for harrows, consisting in first shearing or otherwise cutting circular flat blanks from unheated plate metal, then heating these blanks, and in a proper machine rolling their edges to bevel, sharpen, and consolidate the material and semi-harden these edges, and finally removing the disks from the edging-machine and giving them a concavo-convex form in dies under a hammer or press, substantially as set forth.

3. The process of manufacturing dished disks for harrows, consisting in first shearing or otherwise cutting circular flat blanks from cold sheet metal, then heating the blanks and subjecting their edges to a rolling pressure in a proper machine to bevel, sharpen, and semi-harden these edges by consolidation of their atoms and metallic contact of the rolls of the machine, at the same time removing the slight inequalities of the edges by proper means, and finally removing the disks from the edging-machine and drop-pressing them in dies to give them a dished form, substantially as set forth.

4. The process of manufacturing harrow-disks, consisting in heating flat blanks of metal and beveling their edges by rolling, substantially as set forth.

5. The process of manufacturing harrow-disks, consisting in heating flat blanks of metal, then beveling their edges by rolling, and finally dishing said blanks, substantially as set forth.
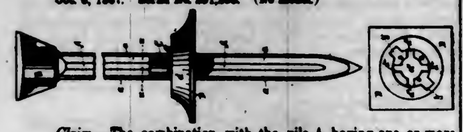
383,883. PAINTER'S HOOK. JOSEPH R. HOPPER, Newark, N. J. Filed Mar. 27, 1888. Serial No. 268,689. (No model.)



Claim.—1. A device for suspending articles, consisting of an arm provided with a hook at one end and claws or toes on the other end, in combination with an arm pivoted to it and adapted to serve as a brace between the supporting-body and the first-mentioned arm by resting against the said body and arm, substantially as described.

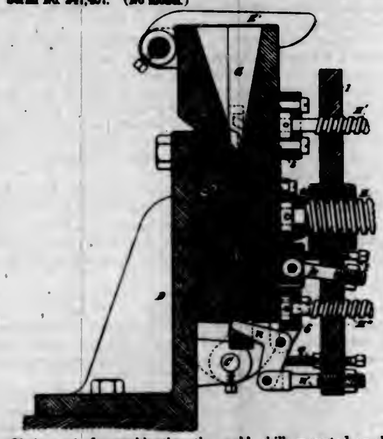
2. The arm *a*, provided with hook *a'* and claws a^2, in combination with arm *b*, provided with lug *b'*.

383,884. PILE. STEPHEN G. HUTCHINSON, Columbus, Ohio. Filed Oct. 3, 1887. Serial No. 251,262. (No model.)



Claim.—The combination, with the pile A, having one or more projecting lugs, C, of the ground-plate D, having depressions *f*, and locking-blocks *g'* or *g*, substantially as and for the purpose specified.

383,885. MOLD. MARTIN G. IRELAND, Brooklyn, assignor to the Improved Horse Shoe Company, New York, N. Y. Filed Aug. 20, 1887. Serial No. 247,407. (No model.)



Claim.—1. In combination, the mold, chills mounted on slides adapted to move at an angle with each other, the plate I, a bolt or bolts whereby the slide or slides moving toward the plate I are connected therewith, and the lever or levers a and bolt or bolts a', whereby the motion from the plate is conveyed to the slide or slides moving in other directions, substantially as described.

2. In combination with a mold adapted for wrought-iron or steel casting, a chill adapted to form a seat for a key, and another chill adapted to form a mortise, said chills being respectively mounted on slides which move at an angle with reference to each other, whereby the chills may be withdrawn from the mold-cavity, substantially as described.

3. In combination with a mold adapted for casting horseshoes, chills for forming mortises for the calks, and chills for forming keyseats for the keys attaching the calks, said chills being mounted, respectively, on slides, whereby they may be withdrawn from the mold-cavity, substantially as described.

4. In combination, a stationary support, D, a mold-half, A, secured thereto in an upright position, the mold-half B, pivoted to A at the bottom, chills mounted upon slides, the plate I, connections between the chills and the plate I, the screw H, whereby the plate I is moved to and from the mold, and a bolt or bolts, U, whereby the distance of the chill-slides from the plate I may be regulated, substantially as described.

383,886. FASTENER FOR MEETING-RAILS OF SASHES. JOHN JACKSON, Clinton, Iowa. Filed Oct. 10, 1887. Serial No. 251,936. (No model.)

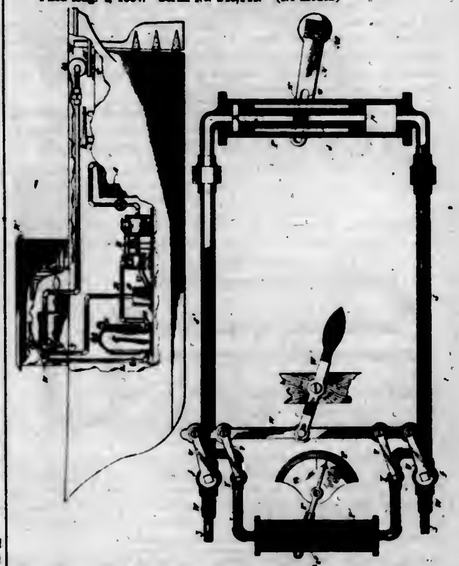


Claim.—1. A sash-lock comprising an outer casing or housing having pivoted therein a latch provided with a tripping-lug at one side of its pivot and a notch at its opposite side, and a gravity-pawl arranged above said latch and adapted to take into said notch, substantially as specified.

2. The combination, with the upper sash of a window recessed in one of its side rails, of a sash-lock mounted in said recess and provided with a latch pivoted thereto and formed with a tripping-lug at one side of its pivot and a notch at the other side thereof, and a gravity-pawl mounted above the latch and adapted to take into the notch of a lower sash provided with a projecting tripping-plate mounted to come into contact with the tripping-lug of the latch, substantially as specified.

3. The case C, having the perforated lip C^2 and the perforations C^3, C^4, and the plate C', having the similar perforations and connected to the casing, in combination with the latch D, formed with the straight and curved faces D' and D^2, the tripping-lug D^3, and the notch D^4, and the gravity-pawl E, having the lift E', and adapted to take into the notch D^4, substantially as specified.

383,887. MECHANISM FOR UTILIZING AND CONTROLLING HYDRODYNAMIC FORCES. WALTER M. JACKSON, New York, N. Y. Filed Aug. 4, 1887. Serial No. 246,141. (No model.)



Claim.—1. In mechanism for utilizing and controlling hydrodynamic forces, the combination, with a suitable pump, conduits connected therewith, and a plunger located in a casing or cylinder connected at both ends with the conduits, of a series of valves located in said conduits and adapted to be simultaneously actuated to equalize or vary the pressure on opposite ends of the plunger, and thereby retain it either in a stationary position at any point of its travel or actuate it in either direction, substantially as set forth.

2. In mechanism for utilizing and controlling hydrodynamic forces, the combination, with a suitable pump, discharge-conduits connected therewith, and a plunger located in a cylinder or casing connected at both ends with said conduits, of valves located in the several conduits for governing supply and exhaust passages connecting with each end of the plunger, and means for simultaneously actuating said valves, substantially as set forth.

3. In mechanism for utilizing and controlling hydrodynamic forces, the combination, with a suitable pump, a receiver, suitable conduits connected with the pump and receiver, and a plunger located in a cylinder connected at its opposite ends with said conduits, of valves located in the conduits for equalizing or varying the pressure on opposite ends of the plunger, substantially as set forth.

4. In mechanism for utilizing and controlling hydrodynamic forces, the combination with the tiller of a vessel, of a plunger connected with the tiller, and a suitable pump, conduits, and a series of valves located in the conduits and adapted to be operated simultaneously for equalizing or varying the pressure on opposite ends of the plunger, and thereby move the tiller in either direction or hold it stationary at any point of its travel, substantially as set forth.

5. The combination, with a fluid-cylinder and means for constantly supplying this cylinder, of a double-headed plunger having pockets in each head and adapted to reciprocate in the cylinder, said cylinder having elongated slots formed therein between the heads of the plunger, and outlets leading from the pockets through the slots of the cylinder, substantially as set forth.

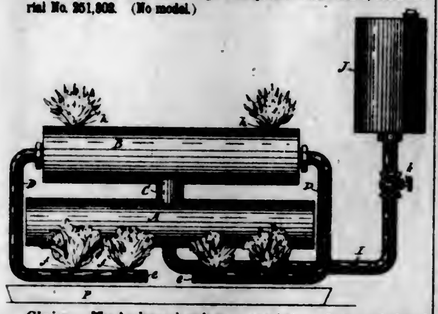
6. In a vessel, the combination, with a fluid-cylinder, a pump, and a receiver containing air or other elastic medium, wherein the water is forced from the pump, of a double-headed plunger adapted to reciprocate in the cylinder, and a system of valves located in the conduits and connected, so as to be operated simultaneously, and adapted to vary and equalize the fluid-pressure on both heads of the plunger, substantially as set forth.

7. The combination, with a cylinder having elongated slots therein, of a double-headed plunger adapted to reciprocate therein, said plunger having pockets formed therein and conduits connected to the opposite ends of said cylinder, substantially as set forth.

8. The combination, with a cylinder having elongated slots therein, of a double-headed plunger adapted to reciprocate therein, said plunger having pockets formed therein and pipes leading from the pockets through the slots in the cylinder, substantially as set forth.

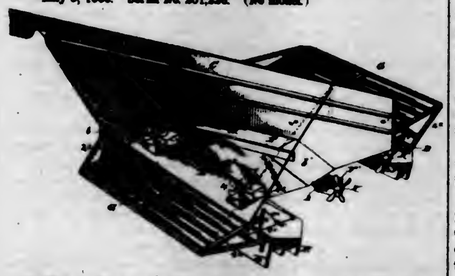
9. The combination, with a cylinder having slots therein extending lengthwise of the cylinder, of a double-headed plunger adapted to reciprocate therein, said plunger having pockets formed therein, pipes leading from the pockets through the slots in the cylinder, and a stem located in the plunger and adapted to communicate motion to any connected mechanism, substantially as set forth.

383,888. HYDROCARBON-BURNER. CHARLES S. JARDON and JOHN McHALE, Terre Haute, Ind.; said McHale assignor to Ambrose H. Tuesh and Joshua R. Glover, Vigo County, Ind. Filed Oct. 8, 1887. Serial No. 251,902. (No model.)



Claim.—The hydrocarbon-burner consisting of the cylindrical retort A, gas-receiver B, having perforations *h h*, tube C, connecting said retort and receiver, supply-pipe I, and the bent pipes D D, having perforations *f f* and closed ends *e e*, all combined and arranged to cooperate in the manner and for the purpose specified.

383,889. AIR-SHIP. EDWARD P. JOHNSTON, Decatur, Ala. Filed May 5, 1886. Serial No. 201,236. (No model.)



Claim.—1. An air-ship having a vertical central blade, C, and parallel vertical guide-blades D D', secured to the top of the hull on each side thereof, in combination with fixed inclined sections B B', propellers K, for propelling said inclined sections against the opposing atmosphere, and propellers K', for lifting the ship, substantially as set forth.

2. An air-ship provided with fixed inclined sections B B' and movable guide-flanges E', hinged to the lower surface of the outer edges of the inclined sections and operated substantially as described, in combination with means for propelling said inclined sections against the opposing atmosphere, and a series of lifting-propellers, substantially as described.

3. An air-ship consisting of a hull, A, having top and bottom and sides extending in parallel planes, oppositely-converging ends, and outwardly-projecting fixed sections B B', extending at an angle with the longitudinal axis of the ship, in combination with a series of lifting-propellers, substantially as described.

4. An air-ship consisting of a hull, A, having a longitudinally-extending blade, C, secured to the top thereof and forward part of the air-ship, outwardly-projecting sections B B', secured permanently to and projecting beyond and at an angle to the longitudinal axis of said hull, and provided with a series of depending fixed flanges, E, and movable flanges E', and means, substantially as described, for operating said movable flanges, in combination with a series of propellers mounted on vertical shafts and another series mounted on horizontal shafts, substantially as described.

5. An air-ship having fixed inclined sections, in combination with inclined sections composed of movable portions, and means, substantially as described, for propelling the same against the atmosphere and elevating the ship, substantially as described.

6. An air-ship having a hull, A, provided with outwardly-projecting permanently-fixed sections B B', that extend at an angle to the longitudinal axis of the hull, in combination with sections G G', provided with movable slats *g*, and a series of propellers for operating the ship, substantially as described.

7. An air-ship consisting of a hull, A, having oppositely-converging ends, a vertical guide-blade, C, secured to the top of said hull and the forward part of the air-ship, outwardly-projecting sections B B', secured permanently to and extending beyond said hull at an inclination to its longitudinal axis, and having sections G G', provided with movable slats *g*, in combination with propellers K, operating in the vertical plane to move the ship in a forward direction, and propellers K', operating in the horizontal plane to move the ship in an upward direction, substantially as described.

8. An air-ship consisting of a hull, A, having outwardly-projecting inclined sections B B', permanently secured thereto, in combination with sections G G', consisting of a series of narrow strips, *g*, hinged together and capable of being folded together by means of outwardly-projecting longitudinally-moving rods I, operating within suitable supports, substantially as described.

9. An air-ship consisting of a hull, A, having fixed inclined sections B B' secured thereto and projecting therefrom, said sections being provided with outwardly-projecting hollow supports H, in combination with sections G G', consisting of narrow slats *g*, hinged together, rods I, and springs *i*, arranged within the supports H and connected with the slats *g*, substantially as described.

10. An air-ship consisting of a hull, A, having oppositely-converging ends, vertical guide-blades C D D', and outwardly-projecting sections B B', provided with sections G G', consisting of movable slats *g*, in combination with a series of propellers, K K', and rudders F F', substantially as described.

11. An air-ship having one or more lifting-propellers on each side of its longitudinal axis and each provided with an independent motor having means for controlling it, a pendulum suitably supported to swing in a plane transverse to the longitudinal axis of the ship, and connections between the pendulum and the means controlling the motors, substantially as described.

12. An air-ship provided with a series of parallel fixed flanges or corrugations extending longitudinally along the bottom of the same, a set of lifting-propellers, and an automatic regulator connected with said propellers for maintaining the equilibrium of the air-ship, substantially as described.

13. An air-ship provided with fixed inclined planes and means for propelling the same against the atmosphere, in combination with an automatic regulator for maintaining the equilibrium of the air-ship, substantially as described.

14. In an air-ship, the combination of fixed inclined planes provided with movable portions and an automatic regulator for maintaining the equilibrium of the ship, substantially as described.

15. In an air-ship, the combination of one or more lifting-propellers, each provided with an independent motor having means for controlling the same, and a device moved by the force of gravitation connected with and operating the means for controlling the motors for the purpose of maintaining the equilibrium of the air-ship, substantially as described.

16. An air-ship having, in combination with the operating-propellers thereof, a pendulum, a support therefor, circuit-closers secured thereto and connected by suitable conductors with the motor for operating the propellers, substantially as described, for causing the inclination of the ship from its normal position to automatically transmit currents of electricity to said motor to counteract said inclination, as and for the purpose set forth.

17. An air-ship having, in combination with the operating-propellers thereof, a series of metallic plates, *p p'*, suitably supported and adapted, as described, to receive and transmit currents of electricity, circuit-closers, conductors, electric motors *v v'*, suspended rod or pendulum M, and lifting-propellers.

383,890. AUTOMATIC SPRINKLER. CHARLES W. KENWORTHY, Chicago, Ill. Filed Apr. 2, 1888. Serial No. 269,269. (No model.)

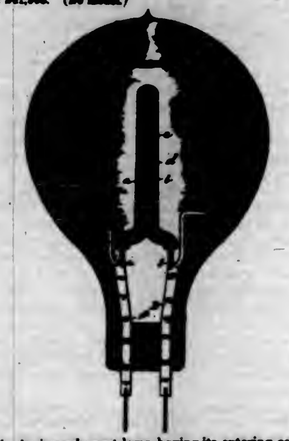
Claim.—1. In an automatic fire-extinguisher, the combination, with a nozzle having a removable cap or valve for the opening of said nozzle, of rigid bracket projecting upwardly from one side of the nozzle and provided with a deflector located above the nozzle-opening and provided with fixed lugs, an arm loosely engaged by one of said lugs and soldered to the other of said lugs, and a lever secured to bear upon said cap at a point intermediate its ends, one of its ends engaging the fixed stop and the other engaging said arm, whereby when the solder is fused and said arm is thereby released the pressure of the water in the pipes may raise the cap, substantially as described.

383,890.



2. In an automatic fire-extinguisher, the combination of the nozzle C, the bracket D, carrying the deflector E, the arm F, projecting from the bracket C on its side opposite the bracket D and provided with a shoulder, *f*, a lever, H, one end of which bears upon the shoulder *f*, said lever extending across and bearing upon the cap G, and the arm J, having the shoulder I, to receive the end of lever H, said arm being pivotally secured at one end to the bracket D and having its other end connected to a fixed part of the bracket by solder, substantially as described.

383,891. CUT-OUT FOR INCANDESCENT LAMPS. BENJAMIN LAMB and MERLE J. WHITMAN, Hartford, Conn. Filed June 21, 1887. Serial No. 241,968. (No model.)



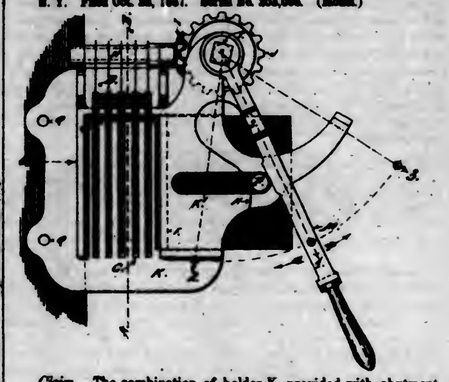
Claim.—1. An incandescent lamp having its entering conductors brought into proximity electrically in the space between the legs of the filament and sufficiently near to be electrically united by fusion under the influence of the arc formed between the broken ends of the conductor upon the rupture of the filament, as and for the purpose described.

2. An incandescent lamp having its entering conductors brought into proximity electrically in the space between the legs of the filament and continued in such proximity substantially the whole height of the filament, whereby they may be electrically united by fusion under the influence of the arc formed between the broken ends of the conductor upon the rupture of the filament, as and for the purpose set forth.

3. An incandescent lamp having its entering conductors brought into proximity electrically, and normally held in such proximity by a fusible cement, whereby they may be electrically united by fusion under the influence of the arc formed between the broken ends of the conductor upon the rupture of the filament, as and for the purpose described.

4. An incandescent lamp having its entering conductors brought into proximity electrically, said conductors being embedded in fusible cement at that point and insulated from each other by a thin sheet or layer of insulated material, whereby the conductors may be electrically united at that point by fusion under the influence of the arc formed between the broken ends of the conductor upon the rupture of the filament, as and for the purpose described.

383,892. CUTTING-MACHINE. ADOLPH J. L. LOHSEN, Brooklyn, N. Y. Filed Oct. 22, 1887. Serial No. 253,066. (Model.)



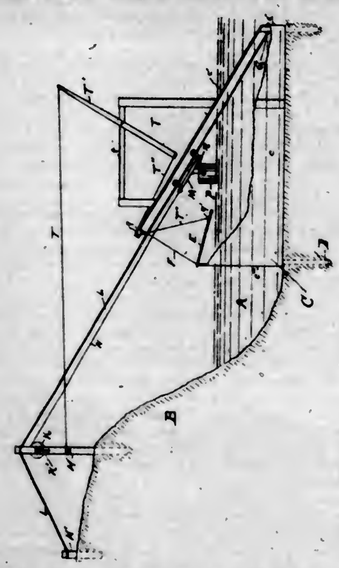
Claim.—The combination of holder K, provided with abutment C, guards F, bottom gratings, G, back gratings, G', horizontal cutters E, vertical cutters D, lever M, springs N, gears J and I, and shaft H, substantially as and for the purpose herein set forth.

383,893. GARMENT-SUPPORTER. ALBERT G. LULL, Chicago, Ill. Filed Sept. 22, 1887. Serial No. 250,274. (No model.)



Claim.—The clasp A, having the projection *c* formed with the end thereof for the prevention of accidental unclasping, substantially as specified.

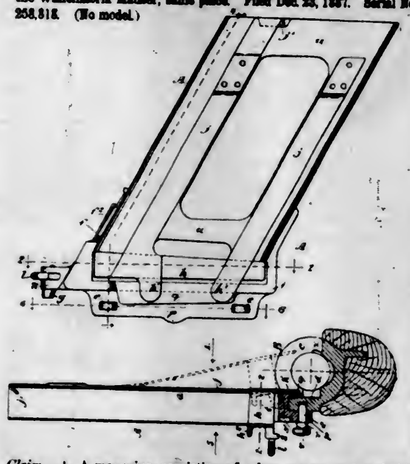
383,894. WATER-FETCHING MACHINE. CHARLES G. MATHER, Lindstrom, Minn. Filed Apr. 14, 1887. Serial No. 234,973. (No model.)



Claim.—The water-elevator comprising water-box C, as described, consisting of the vertical sides and ends *c c' c''* and inclined top *c'*, said box being fastened at a fixed depth in the lake, as by piling D, the door E, pivoted to the top of end *c''*, the eyebolt G, fastened to interior of *c'*, the posts H and H' on the adjacent shore, the cable L, extending

from post H to post H' through the top of post H, the traveler M, movable on cable L, provided with the stop R, the pivoted dipping water-bucket P, the drum or windlass K, journaled on post H and provided with the crank K', the wire or rope N, attached to said drum and to said traveler, the frame or lever support T, the lever T', fulcrumed on said frame, the sheave *q*, the rope T'', attached to the lower extremity of the lever T' and to upper end of door E by eyebolt G, and the hand-wire T''', attached to the top of lever T' and extending to a point within reach of the operator, all substantially as and for the purpose set forth.

383,895. DETACHABLE MAGAZINE FOR FIRE-ARMS. PAUL MAUSER, Oberndorf-on-the-Neckar, Würtemburg, Germany, assignor to the Waffenfabrik Mauser, same place. Filed Dec. 23, 1887. Serial No. 258,818. (No model.)



Claim.—1. A magazine consisting of a box constructed to hold a succession of cartridges one above another, in combination with a carrier consisting of a frame having open top and bottom arranged at the bottom of said box, adapted to hold a single cartridge, and mounted to move laterally from a position coinciding with the bottom of said box to a position to one side thereof and over the receiving-chamber of the gun.

2. A magazine consisting of a box constructed to hold a succession of cartridges one above another, in combination with a carrier consisting of a frame having open top and bottom arranged at the bottom of said box, adapted to hold a single cartridge, and mounted to move laterally from a position coinciding with the bottom of said box to a position sufficiently to one side thereof to permit a cartridge to drop from the carrier, and formed with a flange on its upper side arranged in position to uphold the remaining cartridges in the box while the carrier is moved out.

3. A magazine consisting of a box constructed to hold a succession of cartridges one above another, in combination with a carrier consisting of a frame having open top and bottom arranged at the bottom of said box, adapted to hold a single cartridge, and mounted to move laterally from a position coinciding with the bottom of said box to a position sufficiently to one side thereof to permit a cartridge to drop from the carrier, and abutting-stops on the box and carrier, respectively, adapted to limit the outward movement of the carrier.

4. A magazine consisting of a box constructed to hold a succession of cartridges one above another, in combination with a carrier consisting of a frame having open top and bottom arranged at the bottom end of said box, adapted to hold a single cartridge, and mounted to move laterally from a position coinciding with the bottom of said box to a position to one side thereof, and over the receiving-chamber of the gun, and guiding-fingers projecting downward from the said carrier and adapted to direct the cartridge into place as it falls therefrom.

5. A magazine consisting of a box constructed to hold a succession of cartridges one above another, in combination with a carrier arranged at the bottom of said box, adapted to hold a single cartridge and to move laterally from a position coinciding with the bottom of said box to a position to one side thereof, and over the receiving-chamber of the gun, and a retracting-spring acting against said carrier and tending to press said carrier into position coinciding with said box.

6. A magazine consisting of a box constructed to hold a succession of cartridges one above another, in combination with a carrier arranged at the bottom of said box, adapted to hold a single cartridge and to move laterally from a position coinciding with the bottom of said box to a position to one side thereof, and flat springs fastened to the side of said box and to said carrier and serving to support the latter in its movement.

7. A magazine consisting of a box constructed to hold a succession of cartridges one above another and of a carrier at the bottom of said box and mounted to move laterally to one side thereof, in combination with a lever for moving said carrier, arranged with one arm against said carrier and with the other arm in position to be encountered and displaced by some moving part of the gun.

8. A magazine consisting of a box for holding cartridges and a carrier mounted to move laterally from a position in coincidence with said box to a position at one side thereof, in combination with a lever for moving said carrier, arranged in position to be encountered and displaced by some moving part of the gun, and a block to which said lever is pivoted, connected movably to said magazine and arranged relatively to the gun in such manner that it may be moved to bring said lever out of engagement with the said moving part of the gun.

9. The combination, with a bolt-gun, of a magazine constructed with a laterally-movable carrier, a lever for moving said carrier, arranged in position to be encountered and displaced by the movement of the bolt of the gun, and a movable block to which said lever is pivoted, adapted to be moved so as to bring said lever out of engagement with the bolt.

10. The combination, with a bolt-gun constructed with a shoulder, *m*, on its bolt, of a magazine constructed with a laterally-moving carrier, an elbow-lever, *l*, for moving said carrier, arranged with its arm *l'* in position to be encountered by said shoulder *m* during the backward movement of the bolt and constructed to be displaced upwardly at will out of the path of said shoulder, whereby the automatic feed for said magazine may be thrown out of action.

11. The combination, with a gun, of a magazine constructed with a laterally-moving carrier, a lever for moving said carrier, arranged in position to be encountered and displaced by some moving part of the gun, a sliding block to which said lever is pivoted, constructed to be moved so as to carry said lever out of action, and a spring-catch for retaining said block in either position.

12. The combination, with a bolt-gun, of a magazine constructed with a laterally-moving carrier, a lever for moving said carrier, a block to which said lever is pivoted, and a spur projecting from said block and entering a socket in the gun.

13. The combination, with a gun, of a magazine consisting of a box constructed to hold a succession of cartridges one above another, a carrier at the bottom of said box mounted to move laterally to one side thereof and over the receiver of the gun, and a base-frame fixed to the bottom of said box and extending beneath said carrier, and reciprocal fastening devices on the gun and on said base-frame, respectively, for removably attaching the magazine to the gun.

14. The combination, with a gun and a detachable magazine, of reciprocal fastening devices on said gun and magazine, respectively, consisting of a projection on the one part entering a socket in the other, and a spring-latch on the one part projecting into said socket and adapted to engage a recess in the projection on the other part which enters said socket.

15. The combination, with a gun and a detachable magazine, of reciprocal fastening devices consisting of a recess in the one part, a laterally-moving latch, *c*, adapted to enter said recess, a lever carrying said latch and pivoted to the other part, a push-button engaging the opposite arm of said lever, and a spring acting to protrude said push-button and to keep said latch pressed into engagement with its recess.

16. The combination, with a gun and a detachable magazine, of reciprocal fastening devices consisting of two recesses in the one part, two latches projecting into said recesses through coinciding openings in the other part, two levers carrying said latches on their outer arms and arranged with their inner arms projecting toward one another, a push-button arranged between and engaging said inner arms, and a spring acting to protrude said push-button.

17. The combination, with a gun having a wall, *d*, formed at one side of the cartridge-chamber, of a detachable magazine having its base-frame *t* constructed with flanges *p* and *q*, projecting downwardly on opposite sides and adapted to embrace said wall between them, and spring-latches carried by the one part and entering recesses in the other.

18. The combination, with a gun having a wall, *d*, formed at one side of the cartridge-chamber, of a detachable magazine having its base-frame *t* constructed with flange *p* and *q*, projecting downwardly and adapted to embrace said wall between them, spring-latches *e e*, projecting through openings in the flange *p* and entering recesses in said wall *d*, levers *r r*, pivoted to said flange *p*, a push-button, *v*, engaging said levers, and a spring, *u*, acting against said push-button.

19. A magazine consisting of a box, *a*, a base-frame, *t*, fixed thereto and extending beneath the open bottom of the box, a carrier, A, mounted to move laterally beneath the bottom of said box and within said frame, and stops for limiting the movement of said carrier, consisting of hooked projections *s* thereon working in grooves *s'* in said base-frame.

383,896. LAWN-MOWER. JOHN W. MCCLELLAN, Middletown, Ohio. Filed Mar. 31, 1886. Serial No. 197,236. (No model.)

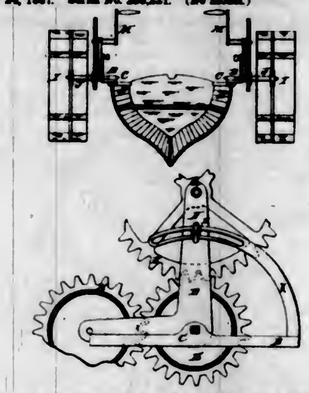


Claim.—1. The combination, substantially as set forth, of a lawn-mower having rearward projections E, grass-receptacle M, attached at the rear of the lawn-mower, apron-frame D, having rolls and an apron, and bolts engaging said apron-frame and slots in said rearward projections.

2. The combination, substantially as set forth, of a lawn-mower having rearward projections E, rollers F and G, journaled in such projections and having their ends geared together, grass-receptacle M, attached at the rear of the lawn-mower, apron-frame D, roller J, and apron K.

3. The combination, with a lawn-mower provided with a ground-roller in rear of its cutting-knife, of an endless-carrier attachment thereto, the driving-roll of which is connected with and driven by said ground-roller, substantially as described.

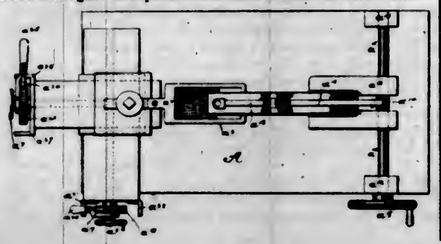
383,897. PADDLE-WHEEL BOAT. ISAAC G. MONROE and WILLIAM H. H. SMITH, Brooklyn, N. Y.; said Smith assignor to said Monroe. Filed Oct. 24, 1887. Serial No. 253,221. (No model.)



Claim.—In combination, the hull of a boat having a slotted curved arm supporting frame-piece affixed thereto, with a bell-crank and paddle-wheels connected therewith by intervening gear-wheels and bolts, constructed and operating substantially as and for the purpose hereinbefore set forth.

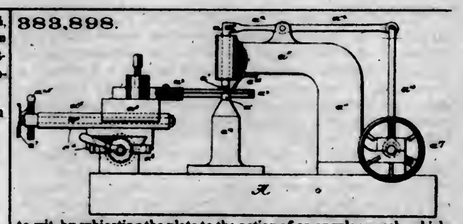
383,898. STOCK FOR SKELETON BURNERS FOR INCANDESCENT LIGHTING AND THE ART OF MAKING THE SAME. ROGERS MORGAN, Philadelphia, Pa. Filed Feb. 20, 1888. Serial No. 264,571. (No model.)

Claim.—1. The improvement in the art of forming stock for incandescent lights out of plates of thin metal or other suitable material—

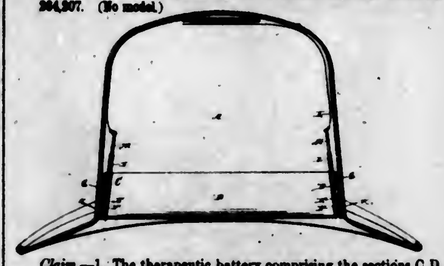


to wit, by subjecting the plate to the action of an angular punch, which, at regular intervals and at proper distances apart, perforates the plate and produces angular meshes, leaving a skeleton of the plate in one piece, composed of a series—in continuity—of straight bars of substantially uniform breadth.

2. As a new article of manufacture, stock to be used in the making of skeleton burners for incandescent lighting, a plate of thin metal or other suitable material, offering at proper intervals and at proper distances apart angular perforations by which the substance of the plate or sheet is made to present a reticulated or net-like structure composed of an integral and continuous substance surrounding the meshes and of substantially uniform breadth.



383,899. ELECTRO-THERAPEUTIC BATTERY. HOWARD J. MURPHY and JOHN FLOYD, Lynchburg, Va. Filed Feb. 16, 1888. Serial No. 264,207. (No model.)



Claim.—1. The therapeutic battery comprising the sections C D, made of suitable metals, provided with the absorbent filling, having the buttons K to connect them to a hat, and provided with a conducting-wire, substantially as described.

2. In a therapeutic battery, the case made of suitable metal, having the openings F on one side, and provided with a hinged back adapted to be opened to admit the insertion or removal of an absorbent filling, substantially as described.

3. In a therapeutic battery, a case made of suitable metal, having openings left on one side, and provided with projecting studs or spurs H, and having the hinged back adapted to be opened for the insertion or removal of an absorbent filling, said spurs or projections H being adapted to be bent over the back when the latter is closed, substantially as described.

4. A therapeutic battery comprising the cases D C, made of suitable metals, and having the absorbent fillings, and the tubular projections I, in combination with the conducting-wire L, having the pins M, adapted to be inserted in said tubular projections, substantially as described.

5. A therapeutic battery comprising the cases C D, made of suitable metals, having the buttons K to connect them to a hat, and having the tubular projections I, in combination with the conducting-wire having the pins M, to be inserted in the said projections, as set forth.

383,900. CLIP FOR WHIFFLETREES. WILLIAM M. MYERS and AUGUSTUS SMITH, Cosby, Mo. Filed Oct. 25, 1887. Serial No. 253,316. (No model.)

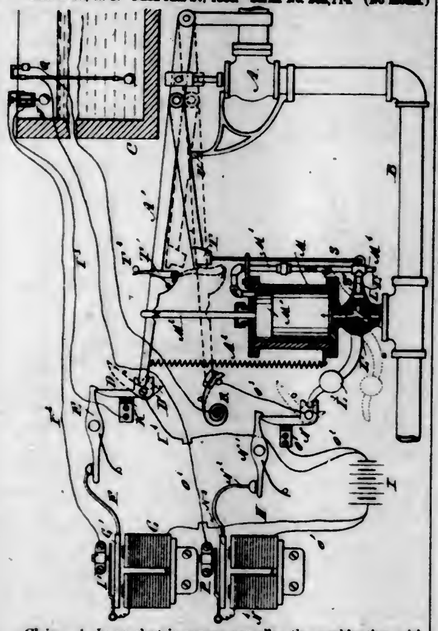


Claim.—1. In a clip for eveners, the combination, with the whiffletree and singletree, of a clevis having its upper portion curved outwardly and formed with a downwardly-projecting lug, and a plate on the singletree, substantially as shown and described.

2. In an evener-clip, the combination, with the doubletree, a bearing-plate secured thereto having outer and inner circular lugs or projections, of a singletree also provided with a plate having corresponding lugs or projections adapted to encircle those of a doubletree, a clevis having its ends passing through openings of the doubletree-plate, and a bolt passing through the opening of the clevis and through openings of the plates and single and double trees, as shown and described.

3. In an evener-clip, the combination, with the whiffletree having grooves in its sides, for the purpose set forth, and the singletree, of a clevis having screw-threaded extremities and consisting of a straight portion and a distended portion, the straight portion being partially embedded in the whiffletree, nuts on the said clevis, a plate on the bottom of the whiffletree having flanges at either extremity and formed with perforations for the reception of the extremities of the clevis, a bolt for securing the parts together, and a nut on the extremity of the said bolt.

383,901. ELECTRIC POWER-CONTROLLER. GERRARD S. HILL, New York, N. Y. Filed Jan. 27, 1888. Serial No. 262,114. (No model.)



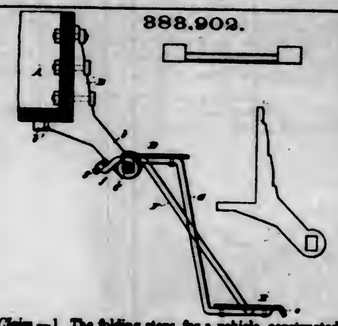
Claim.—1. In an electric power-controller, the combination, with a self-acting supply-valve and a catch for restraining the valve, of a vibrating hammer for tripping the catch, a vibrating armature for operating the hammer, an electro-magnet, and electric connections, substantially as described.

2. In a power-controller, the combination, with a supply-valve having a weighted or spring-actuated arm, of a pivotal lever having a fork to engage the arm, a catch for the lever, and tripping devices, substantially as described.

3. In an electric power-controller, the combination, with a supply-valve, of an auxiliary power-engine for working the same, a self-acting valve for controlling the engine power-supply, a catch for restraining the latter valve, electric tripping devices, and auxiliary-valve-working mechanism arranged to be operated by the main-valve-working engine, so that the auxiliary valve will be returned to the restraint of its catch with the action of the main valve, substantially as described.

4. In an electric power-controller, the combination, with a supply-valve, operating mechanism, and an electric circuit for closing the valve, separate operating mechanism, and a separate electric circuit for opening the valve, of self-opening circuit-closers in both the valve-closing and valve-opening circuits arranged to close by the action of the main valve as the same is respectively opened and closed, substantially as described.

383,902. FOLDING STEP. ALEXANDER H. NICHOLAS, RUSSELL, KANS. Filed Sept. 14, 1887. Serial No. 249,670. (No model.)

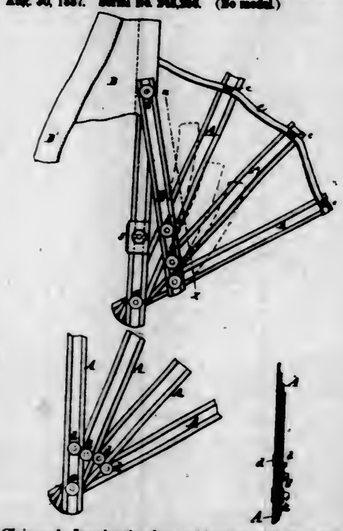


Claim.—1. The folding steps for a vehicle, constructed substantially as described and provided with the shaft C, having squared ends that rest within similar bearings in the outwardly-extending arms of the bearing-brackets, the said squared portions of the shaft C extending inwardly from their bearings sufficiently to form supports for the inner edge of the upper step, D, substantially as specified.

2. The folding steps for a vehicle, constructed substantially as described and provided with bearing-brackets to support the shaft C, which brackets have vertically-extending arms and horizontally-extending arms, respectively secured to the side and floor of the vehicle, as specified.

3. The folding steps for a vehicle, constructed substantially as described and provided with the brace-frame *f*, composed of the upper ends of the rods F F and G and the transverse bar *g*, and of suitable length for said bar to rest against the under surfaces of the outwardly-extending arms of the bearing-brackets when the steps are turned down, as specified.

383,903. BUSTLE. HENRY P. CLEVELAND, New York, N. Y. Filed Aug. 30, 1887. Serial No. 248,264. (No model.)



Claim.—1. In a bustle, the combination, with the approximately semicircular hoops A, secured together at each end by a single pin or rivet, *c*, of a waistband connected with the bent or curved upper portion of the first hoop, and braces applied to the hoops inward of their ends to connect each hoop with the next in the series, the braces on opposite sides of the bustle being unconnected with each other save by the hoops A and serving to prevent the collapsing movement of the hoops where they are applied, and by so doing to produce a torsional or bending action of the hoops by their collapsing movement between the braces, substantially as herein described.

2. In a bustle, the combination, with the approximately semicircular hoops A, all secured together at each end by a single pin or rivet, *c*, of a waistband, B, extending from the bent or curved top portions of the first hoop A, and the bracing-strips D, applied in pairs

to the outer and inner sides of the hoops A inward of their ends, and serving to prevent the collapsing movement of the hoops at the point where applied, and serving, by limiting the collapsing movement of the hoops to the portions between the braces, to produce a torsional action or bending of the hoops between said bracing-strips, the pairs of bracing strips D on opposite sides of the bustle being unconnected with each other, substantially as herein described.

383,904. CAR-BRAKE. GEORGE B. GREEN, Thornton, assignor to himself, and JOHN H. YOUNG, Chicago, Ill. Filed Feb. 20, 1888. Serial No. 264,862. (No model.)



Claim.—1. In combination with a car, a pivoted yoke, D, carrying rollers *d d'*, and sliding rods E F, adapted to operate the yoke and bring one of the rollers in contact with an axle, substantially as and for the purpose specified.

2. In combination with a car, a pivoted yoke, D, carrying at its ends rollers *d d'*, sliding rods E F, adapted to operate the yoke, brakes G G', and a rope or chain, *m*, to operate the brakes, substantially as specified.

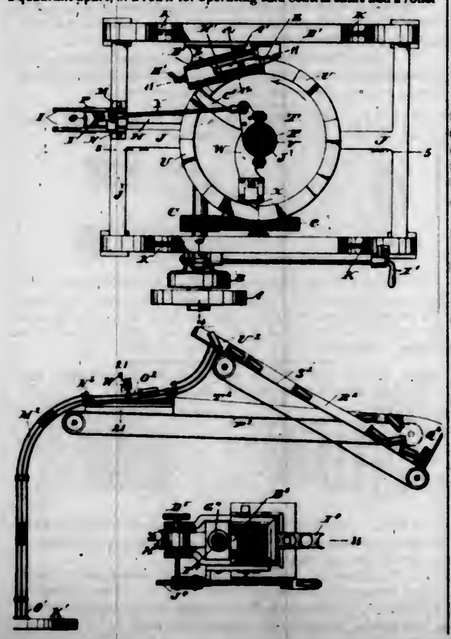
3. In combination with a car, a pivoted yoke, rollers *d d'*, sliding rods E F, brakes, a divided sleeve, *j k*, on one of the axles, and a rope or chain, *m*, substantially as specified.

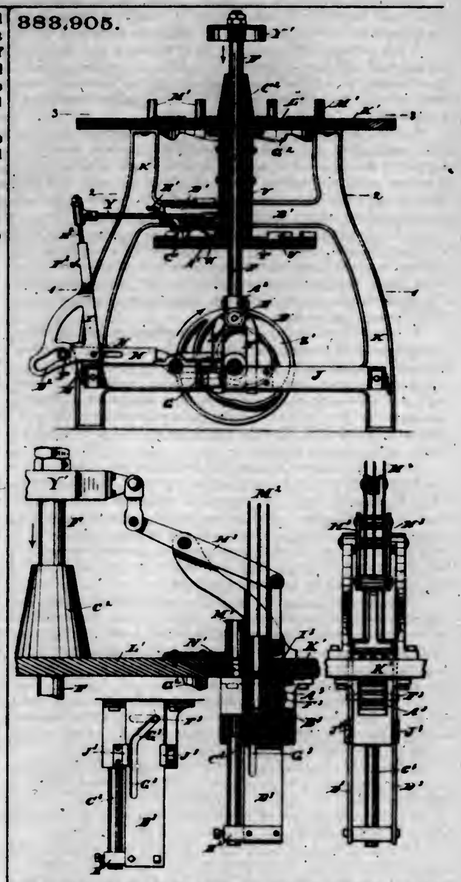
4. In combination with a car, a pivoted yoke, rollers *d d'*, rods E F, brakes, a rope or chain, *m*, and ropes or chains *o p*, substantially as and for the purposes specified.

5. In combination with a car, a pivoted yoke, D, carrying rollers *d d'*, sliding rods E F, each having at its inner end a case, *f* and *f'*, on which is a hook, *f'* and *f''*, to engage with one of the bars or rods *e e'*, springs in such cases, a return-spring for each of the sliding rods, and draw-bars, all constructed and arranged substantially as shown and described, and for the purposes specified.

383,905. CARTRIDGE-LOADING MACHINE. G. MOORE PETERS, Xenia, Ohio. Filed Sept. 10, 1887. Serial No. 249,301. (No model.)

Claim.—1. In a cartridge-loading machine, the combination, with the actuating mechanism and a central shaft actuated by a cam-wheel provided with eccentric guideways and with in-and-out treads about a quadrant apart, of a roller for operating said central shaft and a roller





for operating a horizontal slide, each engaging such eccentric way, and said slide being connected with and operating a lever, I, in a reciprocating manner by means of rollers at the outer end of said slide playing in an ogee slot or slots in said lever, the other end of the lever being connected to mechanism for rotating a shell-supporting table, as and for the purpose set forth.

2. In a cartridge-loading machine, the combination, with a horizontal slide, H, having rollers P connected thereto, of the adjustable lever I, having slotted blades engaging the rollers, said slots being ogee in shape and acting as cams to impart motion to the lever I through the intervention of the rollers, and intermediate connections between the lever I and the revolving shell-carrying table, as and for the purpose set forth.

3. In a cartridge-loading machine, the combination, with the central shaft and its actuating mechanism, of a hollow shaft and rotating table secured thereto, a lug-plate having lugs corresponding to the shell-cases, said lug-plate being connected with the table by means of a hollow shaft, as and for the purpose set forth.

4. In a cartridge-loading machine, the combination, with the central and hollow shafts and their actuating mechanism, a rotating shell-supporting table, and a lug-plate connected thereto, of a lever pivoted to a hollow shaft having the extension C', for operating the catch A', and the spring-catch X, for engaging successively the lugs on the lug-plate and pushing them till caught and held by the catches Z and A', as and for the purpose set forth.

5. The combination, with the rotating shell-carrying table of a cartridge-machine, of the lug-plate connected thereto and having lugs U, a lever, W, pivoted on the shaft of the lug-plate, having an arm, C', extending therefrom and connected with suitable operating mechanism, and two spring-catches, A' Z, carried by the frame of the machine and embracing the lugs in succession, one catch acting hori-

zontally and the other perpendicularly, so as to stop the movement of the lug-plate and prevent its rebound, as and for the purpose set forth.

6. In a cartridge-loading machine, the combination, with the rotating table and lug-plate connected thereto, of an air cushion or chamber provided with a piston engaged and actuated by the lugs successively, whereby the jar of the lug-plate and rotating table is prevented as set forth.

7. The combination, with a rotating table, its lug-plate, and actuating mechanism, of a catch, A', provided with a piston moving in and out of the air-chamber, the lugs on the lug-plate, when the latter is rotated, alternately coming into contact with the catch, said cylinder having a slot to accommodate the sliding movement of the piston and hold the catch in position, as and for the purpose set forth.

8. In a cartridge-loading machine, the combination, with the driving mechanism, of a cam-wheel having variations from its center arranged in quarters, and intermediate connection between such cam-wheel and a rotary shell-carrying table, and the reciprocating shaft which supports the loading implements, whereby these parts are alternately operated, as set forth.

9. In a cartridge-loading machine, the combination, with the driving mechanism, of a cam-wheel engaging rollers actuating a central shaft and horizontal slide, said cam-wheel having a central variation arranged in quarters, the rollers engaging said variations at right angles and alternately, one roller giving the central shaft a vertical movement, the other giving the slide a horizontal movement, and such slide being in operative connection with the rotary shell-carrying table, as and for the purpose set forth.

10. In a cartridge-loading machine, the combination, with the central shaft, a hollow shaft surrounding the same, and slide H, having rollers I' connected thereto and engaging a rotary cam on the driving-shaft, of the adjustable lever I, having slotted blades engaging the rollers, said slots acting as cams to impart motion to the lever I through the intervention of the rollers and by intermediate connection to a rotary shell-supporting table carried by the hollow shaft, substantially as and for the purpose set forth.

11. In a cartridge-loading machine, a shell-feeder consisting of a hopper gradually diminishing in width and depth from the receiving to the discharge end, a conveying and return belt, a wire cage for conducting the shells to the shell-placer, a hook for arresting said shells entering said cage wrong end foremost, and a tilting bridge for throwing out arrested shells or excess of shells.

12. In a shell-feeding device, the combination, with a cage leading to the shell-placer, of a tilting pivoted bridge provided with a balance-weight so adjusted that when more than one shell is on said bridge it will automatically tilt and displace the excess of shells.

13. In a cartridge-loading machine, a shell-placer consisting of a piston and shell-holding block, said block sliding horizontally in bearings beneath the shell-holder of the rotating table, the upper bearing of the block forming a cut-off to the shell-feeder when the block is moved beneath the shell-holder, as and for the purpose set forth.

14. In a shell-placing device, the combination, with the actuating mechanism, of a hollow block to receive the shell from the feeder, a piston for forcing the shell into the case, said block and piston being actuated by slotted double blades D^3 on the lever attachment to the central shaft, the block being connected thereto by a roller moving in the cam-slot, the roller in the upper portion of the slot moving the block forward into position, and in the lower portion of the slot holding the block while the piston passes through it, as and for the purpose set forth.

15. In a cartridge-loading machine, the combination, with a powder or shot hopper, of a feed-wheel operated by a ratchet, said feed-wheel containing four or more openings to the shell, said openings being graduated by slides radiating from the center of the feed-wheel and regulated by a cam-slotted wheel conforming to said center, and having a stem reaching downward through the bottom of the hopper, as and for the purpose set forth.

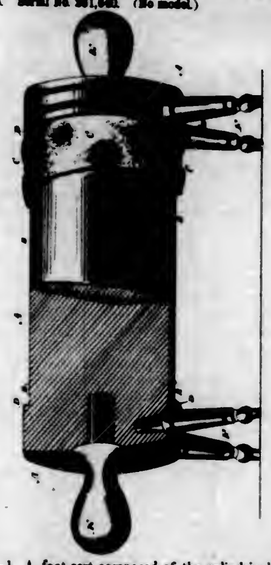
16. In a cartridge-loading machine, the combination, with a support for the wad-strip, of a wad cutter and placer consisting of a tubular cutter and an interior rammer, the rammer being actuated directly by the arm L^4, extending from the head-block of the central shaft, and the cutter being actuated by the same arm through the intervention of cam-slotted levers M^4, by which said cutter is moved to a certain distance and held in position for the return of the rammer, as and for the purpose set forth.

17. The combination, with the shell-supporting mechanism, of a shell-indenting device consisting of the rammer G^3, with flattened head R^2, the tripod F^5, for carrying the indenters, the bars I^5, for throwing the indenters in and out, the arm K^5, with bearings S^2, the cam-slotted arms M^5, the levers P^5, and the indenting-points with knife-like edges or projections A^6 at the end, as and for the purpose set forth.

18. In a cartridge-loading machine, the combination, with the support for the wad-strip and feed mechanism therefor, of a wad cutter and placer consisting of a tubular cutter and an interior rammer, the rammer being actuated directly by the arm L^4, extending from the head-block of the central shaft, and the cutter being actuated by the same arm through the intervention of the cam-slotted levers M^4, by which said cutter is moved a certain distance and held in position for the return of the rammer, as and for the purpose set forth.

19. In a cartridge-loading machine, the combination, with the shell-holder and a reciprocating plunger for ejecting the loaded shell, said plunger carrying a wad-marker at its lower end, of a spring-pressed vibrating lever pivoted to the frame which supports the plunger and carrying an ink-roller in position to engage and be pressed aside by the plunger-head, as set forth.

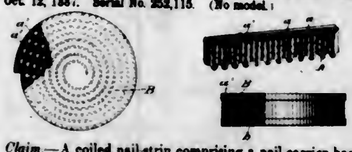
383,906. FOOT-REST. JAMES B. PIER, Plymouth, Ind. Filed Jan. 23, 1888. Serial No. 261,662. (No model.)



Claim.—1. A foot-rest composed of the cylindrical body A, the handles E, the legs F, the depression B, and the upholstering C, substantially as set forth.

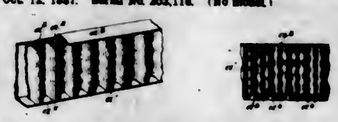
2. A foot-rest composed of a cylindrical body and supporting-legs, and upholstering surrounding the body and adapted to be rotated thereon, substantially as and for the purpose set forth.

383,907. NAIL-STRIP. JOHAB R. PROUTY, Spencer, Mass. Filed Oct. 12, 1887. Serial No. 252,116. (No model.)



Claim.—A coiled nail-strip comprising a nail-carrier having nail holders or pockets *a* and nails therein, arranged or wound in the form of a coil, and a sheet of paper applied to one or both of its surfaces, to retain the strip in the form of a coil and to hold the nails in its pockets or holders, as and for the purposes described.

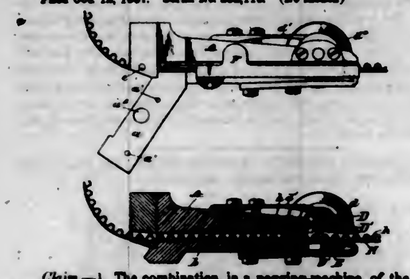
383,908. NAIL-STRIP. JOHAB R. PROUTY, Spencer, Mass. Filed Oct. 12, 1887. Serial No. 252,116. (No model.)



Claim.—1. A nail-strip having a series or line of holders or pockets closed at both ends and nails contained in said pockets or holders, as and for the purposes described.

2. The improved article of manufacture consisting of a flexible carrier having nail pockets or holders which are closed at their top and bottom by thin easily-destructible material, and nails loosely held in said pockets, as and for the purposes described.

388,909. PEGGING-MACHINE. JOHAB R. PROUTY, Spencer, Mass. Filed Oct. 12, 1887. Serial No. 252,115. (No model.)



Claim.—1. The combination, in a pegging-machine, of the feed-box having a narrow feedway of substantially the same width and height throughout, open at both ends and extending across the line of the driveway, with the driver, and an intermittingly-operated feed-wheel having spacing feeding-teeth, and a spring, H, arranged opposite the feed-wheel, all adapted to feed a nail-carrying strip having one straight surface, which bears against the spring, and a corrugated or rack surface, which is engaged by the spacing feeding-teeth of the feed-wheel, substantially as described.

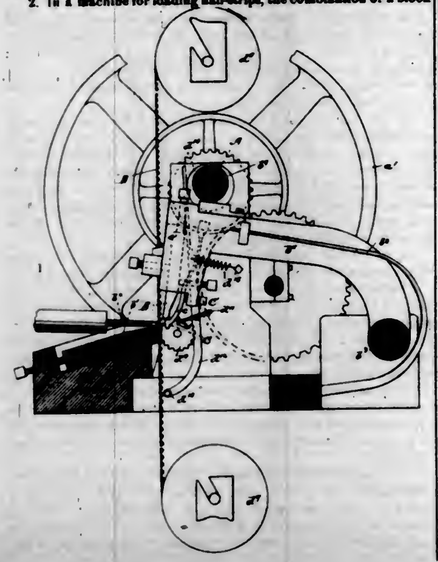
2. The combination of the feed-box having the feedway *b*, of a uniform height and uniform width throughout, open at both ends and extending across the driveway of the machine, the driver, the feed-wheel having spacing feeding-teeth D', arranged upon the left side of the box and adapted to be intermittingly turned, with the spring H, holding-bar F, and driver C, substantially as described.

3. The combination, in a pegging-machine having an awl and driver, of the feedway extending across the driveway, and a flexible nail-carrier having pockets or nail-holders arranged therein at a uniform distance apart, and the sides of each of which pockets form, successively, a continuation of the driveway entirely closed upon its sides during the driving of the nail therefrom, as and for the purposes described.

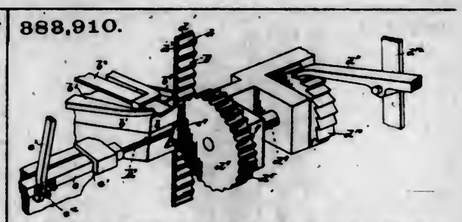
388,910. MACHINE FOR LOADING NAIL-STRIPS. JOHAB R. PROUTY, Spencer, Mass. Filed Oct. 27, 1887. Serial No. 253,494. (No model.)

Claim.—1. In a machine for loading a nail-carrying strip, the combination of nail-making devices, a recess or holder into which nails as they are made are fed in successive order by a nail-carrier, the nail-carrier, a plunger for removing the nail from the pocket or holder, and nail-strip-feeding devices for feeding a nail-carrying strip, having a series of pockets intermittingly to bring each pocket in line with the recess or holder, as and for the purposes described.

2. In a machine for loading nail-strips, the combination of a block



388,910.



having a recess or pocket into which nails are fed in succession, a reciprocating plunger to traverse said pocket or holder and remove nails therefrom, and a feeding mechanism for feeding the nail-carrier, having a series of pockets comprising the movable spur-teeth d^3, and the plate d^4, the teeth engaging the projections upon the carrier-strip and moving the pockets successively in line with the recess or holder, and holding each pocket of the strip while it is receiving a nail, as and for the purposes described.

3. The combination of the punch or cutter B, the holder or presser C, the die-block *b*, the recess or holder c^2, the roll d^4, having the teeth d^5, adapted to have intermittent periods of rotation imparted to it, and the plate d^6, as and for the purposes described.

4. The combination, in a machine for feeding nails into pockets of a nail-carrying strip in successive order, of a reel, d^{17}, upon which the complete filled strip is wound, the feed-roll d^4, having the teeth d^5, having intermittent periods of rotation, the plate d^6, a pocket or recess, c^2, in which nails are automatically fed, and a plunger, E, for feeding the nails from the recess or holder to the pockets of the nail-carrying strip in successive order, substantially as described.

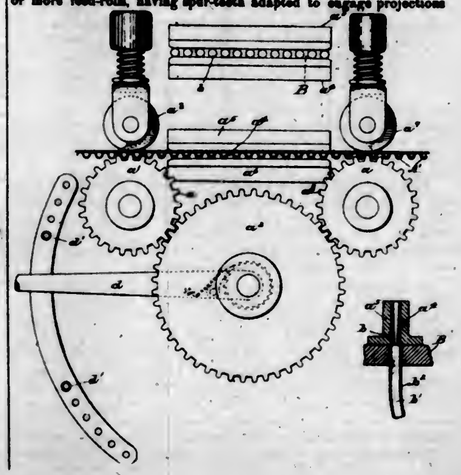
5. The combination of the shaft A, the head *c'*, carrying the cutter or punch B, and a cam or eccentric upon the shaft A, for moving the head downward, the presser or holder C, the die block or bed having a recess or holder, c^2, the plunger E, and a cam-pin or eccentric upon the shaft A, for moving the same, the feed-roll d^4, its shaft d^3, the ratchet d^{10}, the feed-pawl d^{11}, and a cam or eccentric for moving the same, and a plate, d^6, substantially as described.

6. The combination of a block having a pocket or recess, c^2, the plunger E, the feeding device having teeth d^5, and a plate, d^6, the bracket for supporting the feeding device cut away in line with the holder or recess c^2, to form a nail-escape passage, F, as and for the purposes described.

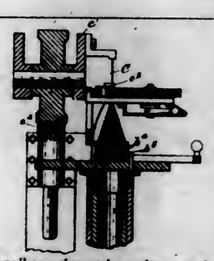
383,911. NAIL FEEDING AND DISTRIBUTING MACHINE. FREDERICK P. RAYMOND, 24, Newton, Mass. Filed Oct. 27, 1887. Serial No. 253,498. (No model.)

Claim.—1. In a nail feeding and distributing machine, the combination of a delivery-reel for holding a nail-carrying strip, a nail-strip-feeding device comprising a feed roll or rolls having teeth to mesh with projections upon the strip, and a feedway provided with holes through its bottom through which nails are forced from the strip, and a gang or group of reciprocating ejectors to simultaneously enter the pockets or holders of said strips and force nails therefrom through said holes, as and for the purposes specified.

2. The combination of a nail-strip-feeding device comprising one or more feed-rolls, having spur-teeth adapted to engage projections



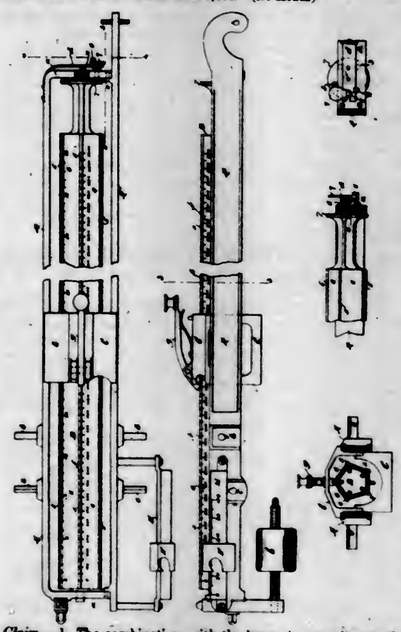
388,911.



upon the side of a nail-carrying strip, and means for rotating it or them, a plate or roll for holding a nail-strip in the feedway and in contact with the teeth of the feed roll or rolls, a block or plate, B, having holes *b* of the same arrangement as the pockets or holders of the nail-carrying strip, and a reciprocating gang or group of ejectors, substantially as described.

3. The combination of the reciprocating gang of ejectors C, the delivery-reel A, the feed-rolls *a a'*, having spur-teeth a^2, the feedway a^4, the pressure-roll a^7, the block B, having the holes *b*, the tubes *b'*, having the distributing-passages b^2, the gear a^3, and the ratchet-wheel carried thereby, and lever *d*, having a pawl to engage the ratchet, as and for the purposes described.

388,912. SCALE-BEAM. WILLIAM W. REYNOLDS, Rutland, Vt. Filed July 27, 1887. Serial No. 245,401. (No model.)



Claim.—1. The combination, with the beam A, extending to the rear of the fulcrum-pivots, and the sliding poise C, supported upon said beam and arranged to move to the rear of said pivots, of the revolving bar B, arranged adjacent to the beam, and having a plurality of graduations and extending from the front end of the beam to the rear of the fulcrum-pivots, substantially as described.

2. The combination, with the beam A, carrying the sliding poise, of the revolving bar B, composed of a plurality of notched blades, 5, and a plurality of plates, 6, each having a graduation, and the sliding poise C, resting and sliding upon the beam A, and having a catch to engage with the notches upon the blades 5, substantially as described.

3. The combination, with the beam A, composed of the two parallel bars rigidly connected together and provided upon their outsides with the fulcrum and load pivots, of the revolving bar B, journaled between said parallel bars and extending from the front end of the beam between and to the rear of the fulcrum-pivots, and having a plurality of graduations, *f*, and the sliding poise supported upon said parallel bars and arranged to be moved to the rear of the fulcrum-pivots, substantially as described.

4. The combination, with the beam A, composed of the two parallel bars rigidly connected together and provided upon their outsides with the fulcrum-pivots *b* and load-pivots *c*, of the revolving bar having a plurality of blades, 5, of hard metal, and plates 6, of soft metal, and extending between and past the fulcrum-pivots to the rear thereof, and the poise C, arranged to slide upon the parallel bars of the beam A, and having an opening for the passage of the revolving bar B, substantially as described.

388,913. RHEOSTAT. E. WILBUR RICE, Jr., LYNN, Mass. Filed Feb. 4, 1888. Serial No. 262,962. (No model.)



Claim.—1. In an electric resistance-frame, the combination of a series of conducting pins or studs projecting inward from a suitable support and cast in one piece with contact-plates C, arranged upon the outer face of the support, a second set arranged parallel with the first, and electric resistance strips or pieces supported by said studs and bridging the space between the sets.

2. In an electric resistance-frame, the combination of a series of conducting pins or studs projecting inwardly from a suitably-supported plate, a second set of pins arranged parallel with the first, but insulated therefrom, a continuous resistance strip or wire strung upon the two sets of studs and bridging the space between the two sets, and a series of switch-contacts cast in one piece with the conducting-pins and arranged upon the outer face of the support, as and for the purpose described.

3. In a rheostat, the combination, with two sets of pins or studs arranged in circles one within the other, of a set of contacts connected with the pins of one set, a contact-arm or circuit-closer adapted to move over the same, and an electric resistance wound upon the two sets of pins and in electric connection with the pins connected with the contacts, as and for the purpose described.

4. In an electric resistance-frame, the combination of two sets of pins or studs projecting from the same side of a suitable support and arranged in circles, one set of pins being of conducting material and electrically disconnected from the other set excepting by the conductor forming the electric resistance, and a set of contacts connected with the conducting pins or studs.

5. The combination, with a base-plate, of a disk-plate or annulus supported thereon and having a series of pins or studs projecting from its under surface toward the base-plate, a second plate of insulating material carrying a series of conducting pins or studs, also projecting toward the base-plate, a series of contacts mounted on the insulating-plate and electrically connected with the conducting pins or studs, and an electric resistance supported between the pins of the two series, as and for the purpose described.

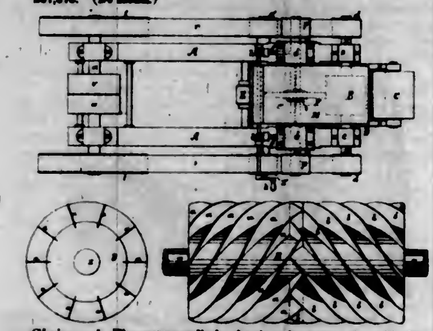
6. An electric resistance-frame consisting, essentially, of a base-plate, a superposed supporting table or plate separated from the first by a free air-space, two sets of pins projecting into said space at right angles to the base, one set being of conducting material, a series of contacts mounted on the face of the table or outer plate and severally connected with the pins of conducting material, and an electric resistance supported by the two sets of pins and bridging the space between the two sets.

7. In an electric resistance-frame, a series of contact-blocks, C, mounted on an insulating board or plate, B, and having pins or studs L formed integral with them and projecting through said board into the space between the latter and the base-plate, as and for the purpose described.

8. In an electric resistance-frame, the combination of a base-plate, a superposed disk or plate, I, having a series of pins projecting inward from it and cast integral with it, a board or plate of insulating material, B, carrying contact blocks and studs L of conducting material projecting inward toward the base-board, and a continuous electric conductor wound to and fro upon the two sets of pins and across the space between the sets, as and for the purpose described.

9. The combination, with a suitable base-board, of a disk or annulus, I, of iron, having a series of pins, P, projecting downward from the same, a plate of insulating material supported over an opening in the center of the plate I and carrying a series of conducting pins or studs projecting inward from it and electrically connected with blocks or studs mounted on the base of the plate, and an electric conductor strung across the space between the two sets of pins, as and for the purpose described.

388,914. MACHINE FOR SHAVING HIDES OR SKINS. JOHN ROSS and IRA VANDAM, Salem, Mass. Filed Mar. 19, 1888. Serial No. 267,673. (No model.)

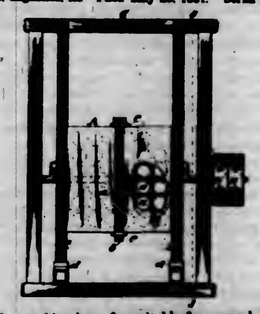


Claim.—1. The cutter-cylinder having the two series of knives arranged as described, in combination with the pressure-roller and the sharpening-wheel, arranged substantially as set forth.

2. The cutter-cylinder having the two series of knives, as described, arranged in a spiral direction on the external surface of said cylinder, the direction of each series being opposite to that of the other series and extending a short distance beyond the middle of the cylinder, longitudinally thereof, in combination with the pressure-roller and sharpening-wheel, arranged and provided with mechanism, substantially as explained, for operating such cylinder, roller, and wheel, as set forth.

3. The cutter-cylinder having the two series of knives, as described, arranged in a spiral direction on the external surface of said cylinder, the direction of each series being opposite to or the reverse of that of the other series, and the knives of each series extending from one end of the cylinder to and beyond the middle of such cylinder longitudinally thereof until they abut each against the other, substantially as shown and described.

388,915. MACHINE FOR LIQUIDISING CONDENSED MILK. GEORGE ROTH, Highland, Ill. Filed May 23, 1887. Serial No. 239,132. (No model.)



Claim.—The combination of a suitable frame-work, G, springs which are suspended therefrom and which have rigid pieces secured to their lower ends, the partitioned box A, which is secured to the springs, suitable stops upon the frame-work, the pitmen, and the operating crank-shaft, substantially as specified.

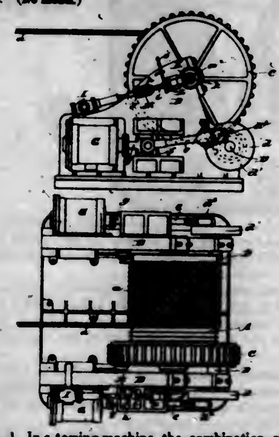
388,916. COFFEE-FILTER. CHARLES A. SHAW, Boston, Mass., and LEVI W. BENTON, Hudson, N. H.; said Shaw assignor to said Benton and ISAIAH ROBBINS, Jr., Hudson, N. H. Filed Nov. 10, 1887. Serial No. 254,777. (No model.)

Claim.—The combination of a body provided with bail-tubes on its opposite sides, a bail extending through said tubes in frictional contact therewith, and provided with stops at its lower end for engaging



when in raised position, the lower ends of said tubes, said bail being bent inward above said tubes, forming shoulders which abut over the edges of the cover for holding it in closed position, substantially as described.

388,917. TOWING-MACHINE. T. JACKSON SHAW, Wilmington, Del., and JOHN M. STEDDLE, Philadelphia, Pa., assignors to the Boston Tow Boat Company, Boston, Mass. Filed Feb. 21, 1888. Serial No. 264,893. (No model.)



Claim.—1. In a towing-machine, the combination, with a cable-drum, of an engine the shaft of which is geared to said drum to balance the load on the cable, and a pressure-regulating valve located in the steam-passage to the engine cylinder or cylinders and operatively connected with the shaft of said drum, whereby the pressure of the engine cylinder or cylinders is increased as increased strain on the cable causes the latter to be paid out and is diminished as the strain on the cable is lessened and the latter is hauled in, substantially as set forth.

2. In a towing-machine, the combination, with a cable-drum, of an engine the shaft of which is geared to said drum, a pressure-regulating valve located in the steam-passage to the engine, a screw spindle or shaft geared to the shaft of said drum and serving to operate said valve, and stops for arresting the movements of said spindle and thereby regulating the pressure governed by the said valve within certain fixed limits, substantially as set forth.

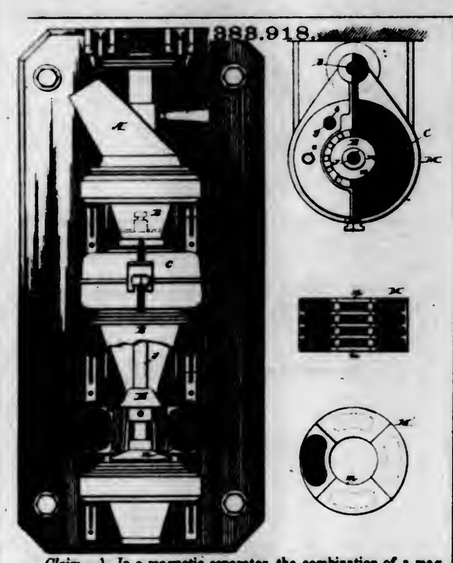
3. In a towing-machine, the combination, with a cable-drum, an engine, and a pressure-regulating valve, of a screw shaft or spindle for the said valve, geared to the drum-shaft and formed in two parts, and a friction-clutch for connecting the said parts, substantially as set forth.

4. In a towing-machine, the combination, with a cable-drum, an engine, and a pressure-regulating valve, of a screw shaft or spindle for the said valve, and which is geared to the drum-shaft and formed in two parts, a friction-clutch for connecting the parts of the said shaft, and stops for limiting the rotary movements of one part of the said shaft while the other part thereof having the positive member of the said clutch may still turn, substantially as set forth.

5. In a towing-machine, the combination, with a cable-drum and an engine the shaft of which is geared to the said drum, of the pressure-regulating valve I, connected with the engine cylinder or cylinders, the screw shaft or spindle J, formed in two parts and having the gear K, a clutch for connecting the parts of the said spindle, the gear *k* on the drum shaft, the collar A, fixed to the said spindle and having the pin or projection *k'*, and the bracket M, having the screws *m*, substantially as set forth.

388,918. MAGNETIC SEPARATOR. MICHAEL H. SMITH, Halifax, County of York, England. Filed Oct. 20, 1887. Serial No. 252,703. (No model.) Patented in England Aug. 9, 1887, No. 10,869.

888,918.



Claim.—1. In a magnetic separator, the combination of a magnetic ring, and a rotating cone whereby the material to be separated is distributed by centrifugal force against the surface of the ring, substantially as described.

2. In a magnetic separator, the combination of a magnetic ring having internal projections of opposite polarity, and a rotating cone arranged to distribute the material to be separated by centrifugal force against the magnetic projections of the ring, substantially as described.

3. In a magnetic separator, the combination of a stationary magnetic ring, and an inclosing-case for said ring, said case being formed in two parts, whereby the case may be easily opened, as and for the purpose set forth.

4. In a magnetic separator, the combination of a stationary magnetic ring, a case inclosing the same, a conical hopper leading to the case, a shaft, and a rotating cone adjustably mounted on said shaft, substantially as described.

5. In a magnetic separator, the combination of a magnetic ring made in two parts, each part secured in one portion of a separable case, whereby the case may be opened to expose the internal projections on the ring, substantially as described.

6. In a magnetic separator, the combination of a case made in two parts, each part inclosing one portion of a magnetic ring, electrical connections for said ring, consisting in part of a spring adapted to bear upon a bracket, the arrangement being such that when the case is open the electric circuit is broken, and when the case is closed the circuit is established by the spring, substantially as described.

888,919. **INSULATED WIRE.** HENRY SPLITDORF, New York, N. Y., assignor to the Splitdorf Wire Company, same place. Filed Nov. 12, 1887. Serial No. 255,013. (No model.)

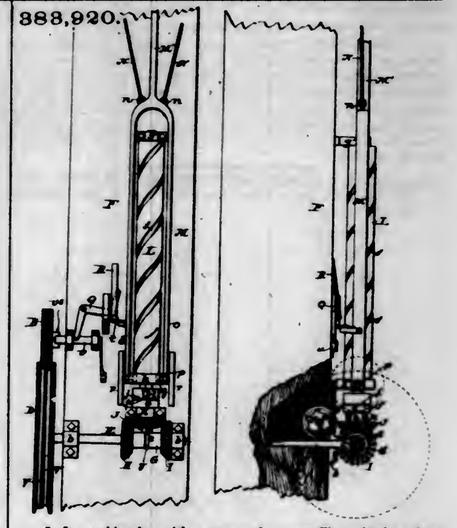


Claim.—A wire for electrical and other purposes covered with asbestus fibers applied in the form of an untwisted spread and flattened thread, substantially as herein shown and described.

388,920. **GATE.** PATTERSON STEELE, Fayette County, Ky. Filed Nov. 26, 1887. Serial No. 256,127. (No model.)

Claim.—1. In combination, with a longitudinally-movable gate and a wheel or drum for propelling the gate, a helically-grooved drum or cylinder geared to the propelling wheel or drum, and a yoke movable lengthwise of the grooved drum or cylinder and provided with lugs or projections to enter the grooves thereof, whereby a longitudinal movement of the yoke is caused to impart rotary motion to the grooved cylinder and to the propelling-wheel.

388,920.



2. In combination with a gate and a propelling wheel or drum therefor, a post, a helically-grooved cylinder geared to the propelling-wheel extending parallel with the face of said post and journaled in bearings, and a yoke provided with rollers to bear and travel upon the face of the post, and with projections to enter the grooves of the cylinder, whereby the yoke is prevented from turning or twisting laterally, but is caused to impart rotation to the cylinder when moved relatively thereto.

3. The combination, substantially as set forth, of a longitudinally-movable gate, a propelling wheel or drum therefor, a sleeve encircling said shaft free to move longitudinally thereon, but incapable of rotating independently of the shaft, two gears carried by said sleeve, a second shaft or cylinder at right angles to the first and provided with helical grooves, a gear-wheel carried by said second shaft or cylinder, a yoke provided with lugs or projections to enter the grooves of the shaft and impart rotation to the latter, and a shifting-lever connected with the sleeve and actuated through the movements of the yoke to move the sleeve and bring one or another of its gears into mesh with that of the grooved shaft or cylinder.

4. In combination with a longitudinally-movable gate, a propelling wheel or drum therefor, a shaft carrying said drum, a sleeve encircling said shaft and movable endwise thereon, two gears carried by said sleeve, a helically-grooved cylinder at right angles to the propelling-wheel shaft, a gear carried thereby, a yoke movable lengthwise of the grooved cylinder and having projections extending into the grooves thereof, a shifting-lever in engagement with the sliding sleeve, a cam-wheel serving to move the shifting-lever alternately in reverse directions and provided with ratchet-teeth, and a dog or pawl carried by the yoke and serving to engage said teeth and to turn the cam-wheel when the yoke is moved.

5. The combination, substantially as set forth, of a longitudinally-movable gate, a propelling-wheel and shaft therefor, a sleeve encircling said shaft and provided with two gears, a helically-grooved cylinder, a gear to mesh alternately with those of the sleeve connected with the cylinder, substantially as shown and described, whereby it is caused to turn with the cylinder in one direction only, a shifting-lever in engagement with the sleeve, a cam-wheel serving to actuate the shifting-lever and provided with ratchet-teeth, a yoke movable lengthwise of the grooved cylinder and provided with lugs or projections to enter the grooves thereof, and a dog or pawl carried by said yoke and adapted to engage with the ratchet-teeth of the cam-wheel and to rotate said wheel.

6. In combination with a gate, a propelling-wheel and its shaft, a sleeve carried by said shaft and movable longitudinally thereon, gear-wheels carried by said sleeve, a helically-grooved cylinder, a gear-wheel loosely mounted upon said cylinder and provided with a toothed hub, a toothed collar loosely encircling the cylinder directly above said toothed hub and adapted to move a limited distance independently of the cylinder, a shifting-lever connected with the sliding sleeve, a cam-wheel serving to move the shifting-lever and provided with ratchet-teeth, a yoke movable lengthwise of the cylinder and having projections to enter the grooves thereof, and a dog carried by said yoke and

adapted to engage with the teeth of the cam-wheel, all substantially as set forth, whereby each movement of the yoke is caused to shift the sleeve and its gear-wheels and to rotate the shaft, the rotation being alternately in opposite directions.

7. In combination with a sliding gate, a propelling shaft and wheel, a helically-grooved cylinder, a yoke for rotating said cylinder, and gearing connecting the cylinder and the propelling-shaft, a latch adapted to engage with the gate, and a trip or arm projecting from the yoke and serving to engage with and withdraw the latch as the yoke is lifted.

8. In combination with a sliding gate, a vertically-movable yoke or bar, and intermediate gearing, substantially such as shown and described, for transmitting motion from the yoke or bar to the gate, a latch adapted to engage with the gate when the latter is closed, a trip carried by the yoke or bar and adapted to engage with the latch and to withdraw the same as the yoke or bar is lifted, and a guard extending over the latch, and serving to deflect the trip and to prevent its engagement with the latch as the yoke descends.

9. The combination, substantially as set forth, of sliding gate A, propelling-wheel D, shaft E, carried in bearings secured to a post, F, sliding sleeve G, provided with gears H I, shifting-lever U, toothed cam-wheel S S', helically-grooved cylinder L, gear J, loosely encircling said cylinder and provided with teeth *j'*, clutch-hub *i*, provided with teeth *j* and opening *l*, pin *k*, projecting from the grooved cylinder into said opening, a yoke, M, having projections extending into the grooves of the cylinder, and a dog, *y*, carried by said yoke and serving to rotate the cam-wheel.

10. In combination with a sliding gate, A, and propelling-shaft therefor, E, a cylinder or shaft, L, a yoke or bar, and hand-levers for imparting rotary motion to the cylinder L, and reversible gearing interposed between the propelling-shaft E and the cylinder L, whereby the latter may be rotated in either direction by the former without changing the direction of rotation of the cylinder L.

11. In combination with a gate, a propelling-shaft, E, suitably connected therewith, a grooved cylinder, L, a yoke, M, having projections to enter the grooves of said cylinder, a toothed collar, *i*, loosely encircling said cylinder and provided with a hole or recess, a pin extending from the cylinder into said hole or recess, pinion J, loosely encircling cylinder L and provided with teeth to engage with those of collar *i*, and reversing-gear connecting shaft E and pinion J.

12. In combination with the propelling-shaft of a sliding gate such as described, a shaft or cylinder at right angles thereto, means, substantially such as described and shown, for rotating said cylinder, and reversing-gear forming a connection between the shaft and cylinder, whereby the shaft may be rotated alternately in opposite directions by a continuous rotation of the cylinder in one direction.

13. In combination with shaft E, sleeve G, encircling shaft E, gears H I, carried by said shaft, cylinder L, pinion J, and clutch-collar *i*, carried by said cylinder, shifting-lever U, cam and ratchet wheel S S', yoke M, and dog *y*, carried by said yoke and serving to rotate wheel S S'.

14. In combination with gate A and latch *v*, yoke or bar M, provided with yielding trip *t*, lever Q, extending from latch *v* into the path of *trip t*, and yielding guard R, extending over the rear end of lever Q, all substantially as shown and described.

15. In combination with a sliding gate, a propelling-shaft therefor, a helically-grooved cylinder connected by gearing with said shaft, a yoke having projections to enter the grooves of the cylinder, and a tail or extension, and rollers on opposite sides of said tail or extension to guide the same, substantially as set forth.

16. The combination, substantially as set forth, of a gate, A, a propelling-wheel and shaft therefor, a helically-grooved cylinder, gearing connecting the shaft and the cylinder, a yoke having projections to enter the grooves of the cylinder, rollers carried by said yoke and arranged to travel upon a fixed bearing-surface, and levers connected with and serving to move the yoke.

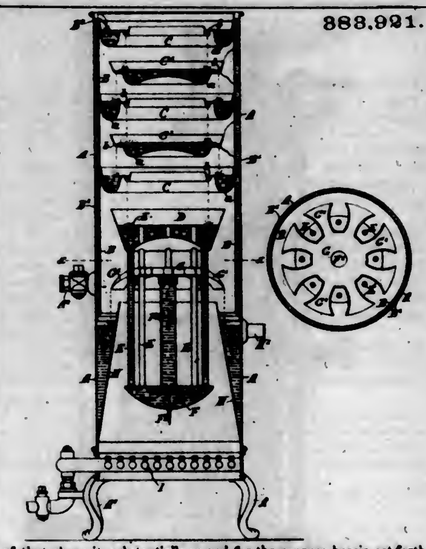
17. In combination with gate A, pivoted latch-bar or dog v^2, and an operating-lever connected therewith, a locking-bolt connected with the actuating mechanism of the gate and adapted to pass into the path of the bar or dog *v*.

388,921. **APPARATUS FOR HEATING WATER AND OTHER LIQUIDS.** WILLIAM T. SUGG, Westminster, England. Filed Feb. 21, 1887. Serial No. 228,273. (No model.)

Claim.—1. In an apparatus for heating water or other liquid, a tray containing both a reservoir and a perforated overflow-trough approximately concentric with each other, substantially as herein described.

2. In an apparatus for heating water or other liquid, the combination, with a cylinder or casing and a burner or heating device at the base thereof, of a series of trays arranged one above another and each containing a reservoir and a perforated overflow-trough, the said reservoirs and overflow-troughs being relatively arranged with the reservoirs of one tray directly under the perforated overflow-trough

388,921.



of that above it, substantially as and for the purpose herein set forth.

3. In an apparatus for heating water, the combination, with a cylinder or casing and a burner or heating device at the base thereof, of a series of alternating larger and smaller trays, C and C', the larger tray, C, fitting the cylinder or casing and having a central opening, and the smaller tray, C', having no opening, and each containing a reservoir, *a*, and a perforated overflow-trough, *b*, the trough *b* of each being directly over the reservoir *a* of the one below, substantially as herein described.

4. The combination, with a casing, A, and lining H, forming an open annular water-chamber and a burner or heating device at the bottom thereof, of a boiler, F, arranged above said burner, a tube, F', ascending from said boiler, and a tray or ledge, G, arranged on the top of said pipe and having overflow-spouts situated above said open annular water-chamber, substantially as herein described.

5. The combination, with the open annular water-chamber A H and a burner at or near the bottom thereof, of the boiler F, arranged above the burner, a water pan or vessel, D, above the boiler, communicating overflow-pipes E between the said vessel D and the boiler, an ascending pipe, F, connected with the boiler, and a tray or ledge, G, arranged at the top of said ascending pipe and provided with overflow-troughs over the said water-chamber, substantially as herein set forth.

6. The combination of a casing, A, having within its upper part a reservoir, B', with an overflow, B^3, and having in its lower part a water-chamber, A H, and a burner or heating device at the base of said casing, of the series of trays C C', comprising reservoirs *a a*, and perforated overflow-troughs *b b*, constructed and arranged as described, a pan, D, for receiving water from said trays, a boiler, F, and pipes E, connecting it with said pan, an ascending pipe, F, having its lower end in communication with the boiler, and having at its upper end a tray or ledge, G, with spouts G' arranged over the water-chamber A H, all substantially as herein set forth.

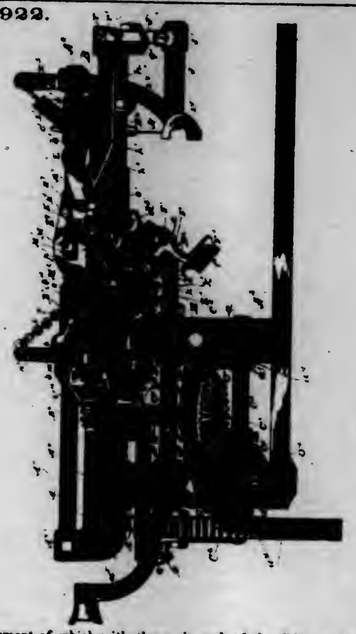
388,922. **APPLE PARING, CORING, AND SLICING MACHINE.** BYRON D. TABER, Wilson, N. Y. Filed Aug. 27, 1887. Serial No. 248,090. (Model.)

Claim.—1. In an apple-paring machine, the combination, with a frame, and a sliding table having a rack mounted thereon, of a main gear-shaft, a swinging bracket mounted thereon, a gear-shaft adapted to rotate in this bracket, and thereby reciprocate the sliding table and paring devices, substantially as set forth.

2. In an apple-paring machine, the combination, with a main frame, and a sliding table having a rack mounted thereon, of a main gear-shaft, a swinging bracket mounted thereon, a gear-shaft adapted to rotate in this bracket to move the sliding table in one direction, a spring or similar means for returning the sliding table to its normal position, and paring devices, substantially as set forth.

3. In an apple-paring machine, the combination, with a main frame and a sliding table mounted thereon, said table having rack-teeth thereon, of a main gear-shaft, a swinging bracket mounted thereon, a shaft journaled in this bracket and provided with a pinion

883,922.



the engagement of which with the rack-teeth of the sliding table is adapted to operate the latter in one direction, a spring for holding the pinion normally in engagement with these rack-teeth, devices for removing the pinion from these teeth, and paring mechanism, substantially as set forth.

4. In a paring-machine, the combination, with a main frame and a sliding table having rack-teeth mounted thereon, of a main driving-shaft, a swinging bracket mounted thereon, said bracket having a shaft journaled therein, gear-wheels for communicating motion from one shaft to the other, a pinion on one shaft adapted to mesh with the rack-teeth, a spring for normally holding said pinion in engagement with said teeth, a cam for removing the pinion from the rack-teeth during the backward movement of the sliding table, and paring mechanism, substantially as set forth.

5. In an apple-paring machine, the combination, with a main frame and a main driving-shaft journaled therein, of a swinging bracket mounted on this main shaft, said bracket having an upwardly-projecting arm and a shaft journaled in the swinging bracket, of a sliding table mounted on the frame, said table having rack-teeth thereon adapted to mesh with a pinion on the shaft in the swinging bracket, a switch-bar removably secured to the carriage, said bar having a bearing-pad adapted to engage the end of the upwardly-projecting arm of the swinging bracket, and paring devices, substantially as set forth.

6. In an apple-paring machine, the combination, with a main frame, a forked spindle journaled therein, and gearing for communicating motion to said spindle, of a sliding table mounted on the frame, a coring-tube carried by the table, an apple-remover depending from the frame in position to abut against the apple when the machine assumes its normal position, a device for adjusting said apple-remover, and a spring or equivalent means for returning the table to its normal position, substantially as set forth.

7. In an apple-paring machine, the combination, with a main frame and a sliding table mounted thereon, said table carrying a coring-tube, of an apple-remover depending from the frame and in a position relative to the coring-tube to remove an apple from the latter when the machine assumes its normal position, a device for adjusting said apple-remover, and a spring or similar means for returning this table to its normal position, substantially as set forth.

8. In an apple-parer, the combination, with a frame, of a depending apple-remover and a device for adjusting said apple-remover, substantially as set forth.

9. In an apple-parer, the combination, with a frame and a sliding table mounted thereon, of a coring-tube, said tube being removably secured to the table, and adjusting-screws, whereby the tube may be moved laterally, substantially as set forth.

10. In an apple-coring machine, the combination, with a frame and a sliding table, of an arm pivoted to one end of the table, said arm being forked at one end and provided with screws adapted to impinge against the end of the table to thereby laterally adjust the arm, and a coring-tube removably secured in the arm, substantially as set forth.

11. A coring device consisting, essentially, of a tube and an arm in which this tube is removably secured, said arm having adjusting-screws, whereby it is laterally shifted, substantially as set forth.

12. In an apple-paring machine, the combination, with a frame and a sliding table mounted thereon, of a coring-tube extending from the latter, an apple-remover depending from one end of the frame and provided at its lower end with a loop in position to allow the coring-tube to pass through it, and a device for adjusting said apple-remover, substantially as set forth.

13. In an apple-parer, the combination, with a main frame and a guide-rod extending the length of the latter, of a sliding table mounted on this guide-rod, said table having rack-teeth thereon, paring mechanism connected with the main frame and operated by the sliding table, a swinging bracket, a shaft journaled in this bracket and provided with a pinion adapted to mesh with the rack-teeth on the sliding table, and a spring and cams for varying the lateral position of the swinging bracket, substantially as set forth.

14. In an apple-parer, the combination, with a main frame, a guide-rod secured thereto, a sliding table mounted on said rod, this table having rack-teeth, a cam-plate thereon, a coring-tube at one end, and a main driving-shaft journaled in the frame, of a swinging bracket mounted on the driving-shaft, a shaft journaled therein, said shaft having a pinion on one end adapted to mesh with the teeth on the sliding table, a spring for normally holding the pinion in meshed contact with the rack-teeth, a switch-bar loosely secured to the sliding table, this switch-bar having cams thereon, a paring-knife, and mechanism for operating said knife by the passage of the switch-bar in contact therewith, substantially as set forth.

15. In an apple-parer, the combination, with a main frame, a guide-rod secured thereto, and a sliding table mounted on this rod, said table having an upwardly-projecting arm rigidly secured thereto, of an apple-remover adjustably secured on the guide-rod and having an arm projecting therefrom, and a spring yieldingly connecting said arm with the arm projecting from the sliding table, substantially as set forth.

16. In an apple-parer, the combination, with a sliding table, of an apple-slicing knife pivoted to the table, and lugs by which the knife is automatically locked in position, substantially as set forth.

17. In an apple-parer, the combination, with the main frame, a sliding table, and paring mechanism, of a removable switch-bar composed of an elongated bar of metal having arm M, finger M', arm K, ear n, lug n^2, depending arm n', and bearing-pad 8, substantially as set forth.

18. In an apple-parer, the combination, with the main frame, a sliding table, and paring mechanism, of a removable switch-bar composed of an elongated bar of metal having arm M, finger M', arm K, ear n, lug n^2, depending arm n', and bearing-pad 8, cams L (7' 6, and shoulder 7, substantially as set forth.

19. In an apple-parer, the combination, with a sliding table having arm n^2, offset x, and notch o, and a paring mechanism, a removable switch-bar having a depending arm, K, laterally-extended lug n^2, and depending arm n', for the purpose substantially as set forth.

20. In an apple-parer, the combination, with a sliding table having rack-teeth, cam A A^2, arm n^2, offset x, and notch o, and a paring mechanism, of a removable switch-bar having a depending arm, K, laterally-extended lug n^2, and depending arm n', for the purpose substantially as set forth.

21. In an apple-parer, the combination, with a frame and a shaft-box supported thereon, of a rocking-table frame supported in said box, a turn-table pivoted in the rocking-table frame, connected gearing for turning said table, and paring mechanism yieldingly supported in the turn-table, substantially as set forth.

22. In an apple-parer, the combination, with a main frame and a shaft-box supported thereon, of a rocking-table frame supported in said box, a turn-table pivoted in the rocking-table frame, connected gearing for turning said table, paring mechanism yieldingly supported on the turn-table, and an arm adjustably secured to said rocking-table frame, whereby the inclination of the latter is regulated, substantially as set forth.

23. In an apple-parer, the combination, with a main frame, a rocking-table frame supported thereby, and a toothed segment pivoted to the table-frame, of a turn-table pivoted also to the rocking-table frame in position to be turned by the toothed segment, substantially as set forth.

24. In an apple-parer, the combination, with a main frame, a rocking-table frame supported thereby, and a toothed segment, of a turn-table, also pivoted to the rocking table and provided with a toothed arc adapted to mesh with the teeth of the segment, whereby the turn-table may be turned, and a knife-stock pivoted to this turn-table, substantially as set forth.

25. In an apple-parer, the combination, with a main frame, a rocking-table frame supported thereby, and a toothed segment pivoted in said frame, of a turn-table having a toothed arc thereon which meshes with the teeth of the segment, a paring-knife stock pivotally and yieldingly supported on the turn-table, and cam mechanism for operating the paring mechanism, substantially as set forth.

26. In an apple-parer, the combination, with a main frame and a sliding table, the latter having an elongated cam-flange thereon, of a rocking-table frame supported by the main frame, a toothed segment pivoted on said frame, a turn-table having a toothed arc thereon which meshes with the teeth of the segment, a paring-knife stock pivotally and yieldingly supported on the turn-table, and an arm, F', secured to the rocking-table frame and in position to be moved by the cam-flange on the sliding table, substantially as set forth.

27. In an apple-parer, the combination, with a main frame, a sliding table mounted thereon, the latter having an elongated cam-flange on its side, and a movable switch-bar having arms and cams thereon, of a rocking-table frame supported by the main frame, a toothed segment pivoted on said frame, this segment having a toe adapted to be engaged by an arm on the switch-bar for turning the segment, a turn-table having a toothed arc thereon which meshes with the teeth of the segment, a paring-knife stock pivotally and yieldingly supported on the turn-table, an arm, F', adjustably secured to the rocking-table frame and provided with a notch which receives the cam-flange on the sliding table, and a cam on the switch-bar, whereby the rocking-table frame is rocked, substantially as set forth.

28. In an apple-parer, the combination, with a main frame, a rocking-table frame supported by the main frame, said frame having the incline K^4, a toothed segment pivoted on this rocking frame, and a turn-table carrying a yieldingly-pivoted knife-stock, said turn-table being operated by the segment, of a spring-actuated latch-bar pivoted to the rocking table and provided with a hook adapted to travel up the incline K^4 and be engaged by the shoulder formed at the upper end of this incline, substantially as set forth.

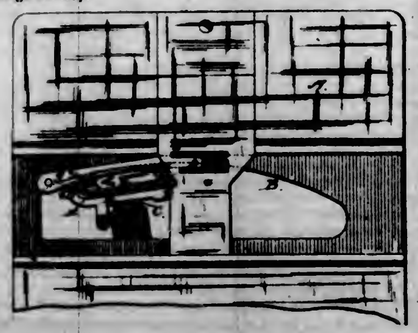
29. In an apple-parer, the combination, with a main frame, a sliding table mounted thereon, this table having an elongated cam-flange, and a removable switch-bar having projecting arms and cams thereon, of a rocking-table frame pivotally supported on the main frame, a toothed segment pivoted on this rocking frame, a spring-actuated latch pivoted to the segment and provided with a hook adapted to ride over an incline on the rocking-table frame and be engaged there, a turn-table pivoted in the rocking frame, and an arm adjustably secured to the rocking table, all these parts being operated, engaged, and disengaged periodically by the contact of arms and cams on the sliding table and switch-bar, with projections on the segment, the spring-actuated latch, and the rocking table, substantially as set forth.

30. In an apple-parer, the combination, with a main frame, a sliding table, said table having a laterally-projecting arm, a hollow forked spindle journaled in the main frame, and a core-ejector therein, of a pusher-bar having a hook adapted to be caught by the laterally-projecting arm of the sliding table when the latter is assuming its normal position, thereby driving the core-ejector forward through the forked hollow spindle, and a lug for automatically disconnecting the hook of the pusher-bar from the arm on the sliding table, substantially as set forth.

883,923. WITHDRAWN.

883,924. SEWING-MACHINE. CHARLES R. TYRRELL, Chicago, Ill. Filed Aug. 30, 1886. Renewed Dec. 28, 1887. Serial No. 259,276. (No model.)

Brief.—The guard g, which slightly overlaps the shuttle-race and is provided with an eye and groove in which the thread lies, prevents the raising of the shuttle by the thread while the nose is passing through the loop.



883,924.



Claim.—1. In a sewing-machine having slide-plates, the combination, with a bed-plate, a shuttle, and a shuttle-race, of a curved guard between said shuttle and one of the slide-plates, said guard having an eye, A, for the passage of the needle, substantially as described.

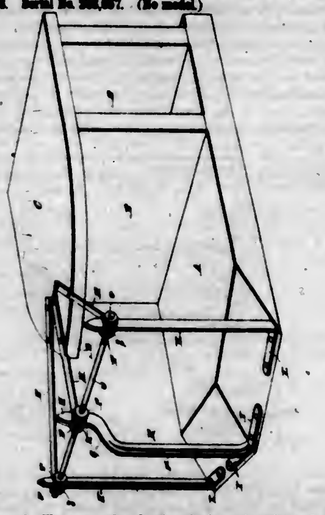
2. In a sewing-machine, the combination, with a shuttle and shuttle-race, of a shuttle-guard, g, located in close proximity to the top of said shuttle, having an eye, A, for the needle, and a groove, l, within which the thread loosely lies during the passage of the loop, substantially as and for the purpose described.

3. The combination, with an eye-pointed needle and means for reciprocating the same, of a shuttle having upon the flattened surface upon its outside, near the nose thereof, a depression or groove inclining upward and backward from a point near its lower front portion, and means for reciprocating said shuttle, whereby the eye of said needle during its upward movement follows the line of the groove, substantially as described.

4. In a sewing-machine, the shuttle having notches in its heel and a slot connecting one of said notches with the thread-guide, in combination with a bobbin having a disk or plate provided with lugs fitting the said notches, substantially as herein described.

5. In a sewing-machine, a shuttle having a notched heel, in combination with a bobbin having a disk or plate loosely mounted on its spindle permanently attached thereto and provided with lugs fitting the notches in the heel of the shuttle, substantially as herein described.

883,925. SNOW-PLOW. JOHN VERNER, Houlton, Me. Filed Feb. 4, 1888. Serial No. 263,057. (No model.)



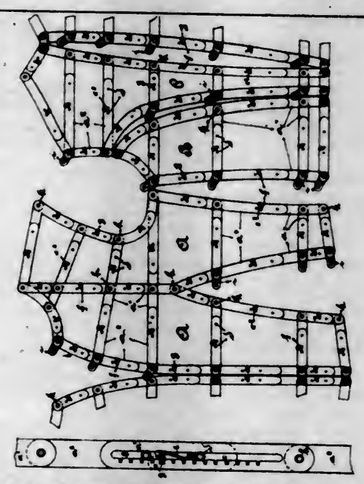
Claim.—1. The snow-plow having the base A and top C, in combination with the vertical cutters secured to the sides and center of the base at the front end thereof, the bolt-rod extending through and connecting the upper ends of said cutters, and the brace-rods secured to the top and to the upper end of the cutters to prevent the same from moving laterally, substantially as described.

2. The combination, in a snow-plow, of the base A, the top C, the vertical cutters secured to the sides and center of the base at the front end thereof, the brace-rod B, projecting forward from the center of the top, and having the ears N, bearing on opposite sides of the upper end of the central cutter, the diagonal brace-rods R, secured to the top C and having ears at their front ends bearing against the outer sides of the upper ends of the side cutters, and the bolt-rod arranged transversely and extending through aligned openings in the upper ends of the cutters and in the ears of the brace-rods, said bolt-rods having the clamping-nuts, for the purpose set forth, substantially as described.

883,926. ADJUSTABLE DEVICE FOR OUTLINING PATTERNS FOR GARMENTS. ARTUR WAGNER, Berlin, Germany. Filed Nov. 7, 1887. Serial No. 254,512. (No model.)

Claim.—1. In an apparatus for pattern-making, consisting of a number of jointed bars to fit the human figure, the combination of a series of flat bars, c' and c^2, sliding over each other and having longi-

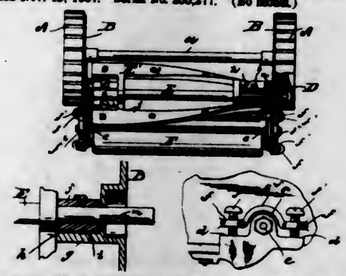
388,926.



tudinal slots *b* and communicating transverse slots *c* formed therein, with springs *e*, attached to the bars a^2 and provided with hooks e^2, which enter said cross-slots to hold said bars a' a^2 in any position to which they may be adjusted, substantially as set forth.

2. In combination with a series of flat bars, a', and another series of flat bars, a^2, movable over each other and provided with longitudinal and transverse slots, as described, a series of springs attached to the bars of one series and provided with hooks for engaging with the transverse slots of the other series, and eccentrics *g*, arranged on bands a^2 near the respective springs for operating them, substantially as set forth.

388,927. LAWN-MOWER. FRANK M. WATERS, Springfield, Ohio. Filed Nov. 15, 1887. Serial No. 255,277. (No model.)



Claim.—1. The combination, with the end pieces, of the stationary cutter having upwardly-extending ears, with bearing-faces on either side thereof, projecting lugs on said end pieces provided with adjusting-screws adapted to bear against said faces, a connecting-bolt passing through said end pieces and ears, and a shield or cap connecting said lugs and forming a hood or covering for ears, substantially as set forth.

2. In a lawn-mower, the end pieces, each having an inwardly-projecting bearing-support with a V-shaped depression therein, the cutting-reel and its shaft, a loose bearing-block seated in said bearing-support, the inside of which is adapted to conform to said shaft and the outside to the V-shaped depression, said bearing-block being tapered from the middle toward both ends, as set forth, and provided with a cap secured to said bearing-support, substantially as set forth.

3. The combination, with the end pieces, each having an inwardly-projecting bearing-support with the V-shaped depression therein, the tapered bearing-block adapted to rest in said V-shaped depression, and a cap over said bearing-block, of a cutting-reel, the shaft of which is journaled in said bearing-block, the stationary cutter under said reel secured at each end to said end piece, and a connecting-rod connecting said end pieces, substantially as specified.

4. The combination, with the reel-shaft, of a driving-pinion having a clutching-ring secured to and adapted to turn therewith, said ring being adapted to encircle the shaft, and having a projection on the inner face thereof adapted to engage the said shaft when turned in one direction and to turn freely thereon when turned in the opposite direction, and formed with a preponderance of weight on the side opposite to the said projection, substantially as specified.

5. In a driving-clutch, the shaft-encircling clutching-ring constructed with a driving-offset on its inner face and an engaging projection on its outer periphery, substantially as and for the purpose set forth.

6. In a driving-clutch, a shaft-encircling clutching-ring with a driving-offset on its inner face and an engaging projection on its outer periphery, and having a preponderance of weight upon the side opposite to the inside offset, substantially as set forth.

7. In a clutch, the combination, with a shaft, of an inclosing-rim provided with a slot or opening therein, and a clutching-ring having an outer projection adapted to engage in said slot and an inner projection to engage said shaft, said clutching-ring being formed with a preponderance of weight on the side opposite the inner projection, substantially as set forth.

388,928. ICE-SHAVER. FRANK K. WAY, Springfield, Ohio, assignor to John Foos, same place. Filed Apr. 13, 1888. Serial No. 270,761. (No model.)



Claim.—1. The combination, with the main casing having the cutting-cylinder therein, the reservoir at right angles to the axis of said cylinder, and a follower having projecting ends adapted to extend through the sides of said casing, of the revolving shaft journaled in bearings on said casing and chains connected to said follower on either side, said chains being connected to said shaft, so that a revolution of said shaft will move said follower, substantially as and for the purpose set forth.

2. The combination, with the main casing provided with an opening in the lower side thereof and an open-ended cutting-cylinder in said casing opposite to said opening, of a projecting stud at right angles to said casing, an adjustable plate on said stud, and means for securing said plate on said stud at a greater or less distance from said casing, substantially as specified.

3. The combination, with the cutting mechanism and the reservoir in a plane at right angles to the plane of said cutting mechanism, said reservoir being provided with longitudinal openings in the sides thereof, of the traveling follower provided with projections extending through said openings, and endless chains connected to said projections and passing over supporting-wheels, and engaging with sprocket-wheels on a revolving shaft, substantially as and for the purpose set forth.

4. The combination, with the main casing provided with an opening in the bottom and an open-ended cutting-cylinder in said casing, of a projecting stud at right angles to said casing and an adjustable plate on said stud, means for securing said plate in different positions on said stud, and a discharging mechanism in said cylinder, substantially as set forth.

388,929. COMBINED NECKTIE AND COLLAR-BUTTON. ALFRED C. WHITTINGHAM, Toledo, Ohio. Filed Nov. 11, 1887. Serial No. 254,999. (No model.)

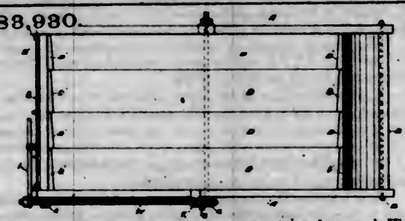


Claim.—As an improved article of manufacture, the combined necktie and collar-button herein described, consisting of a scarf or tie having a collar-button secured within the body of the same by means of stitches, its shank and head projecting and adapted to pass through the button-holes of a collar and neckband, all substantially as set forth.

388,930. DUMPING-WAGON. DAVID A. WILLIAMS, Denver, Colo. Filed Sept. 26, 1887. Serial No. 250,602. (No model.)

Claim.—1. In a dumping-wagon, the supporting-bar F, provided with loop F' and pin F^2, supporting-straps E, provided with roller E', clevis G, attached to said bar F at one extremity and to crank H' of rod H at the other extremity, and rod H, to which is attached hand-lever I, provided with spring J, as shown and described, and for the purpose set forth.

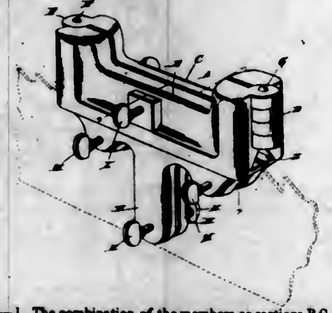
388,930.



2. In a dumping-wagon, the combination, with bottom boards, D, provided with cast-iron end pieces, D', said end pieces being provided with journals D^2, of the supporting-bar F, provided with loop F' and pin F^2, the same being supported at one extremity by straps E, provided with roller E', and attached at the other extremity to hand-lever I by means of clevis G, and rod H, provided with crank H', said rod H being held in place by means of straps E, said supporting-bar F also being attached to one of the boards D by means of attaching-piece D^4 and spring J, for retaining lever I, as described, and for the purpose set forth.

3. In a dumping-wagon, the bottom boards, D, provided with the cast-iron pieces D' and plate D^3, in combination with supporting-bar F, provided with loop F' and pin F^2, and supported at one end by the straps E, provided with roller E', and supporting-bar F being provided with attachment D^4, and raised and allowed to drop by any suitable means desired, for the purpose set forth and described.

388,931. DEVICE FOR SIDE-DRESSING THE TEETH OF SAWS. HAMILTON W. WILLIAMS, Nashville, Tenn. Filed Feb. 11, 1888. Serial No. 263,682. (No model.)



Claim.—1. The combination of the members or sections B C, having the matched ears D E at opposite ends and having the grooves I in their opposing sides, the files secured in said grooves, the gage-plate O, secured to the inner side of one of the members and vertically adjustable, the bolt F, connecting the ears E and forming the hinge for the members, and the removable pin G, adapted to be inserted in aligned openings in the ears D, substantially as described.

2. The combination of the members or sections B C, having the matched ears D E at opposite ends and having the grooves I in their opposing sides, the files secured in said grooves, the bolt F, connecting the ears E and forming the hinge for the members, and the removable pin G, adapted to be inserted in aligned openings in the ears D, substantially as described.

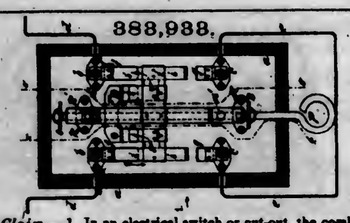
3. The combination of the members or sections B C, hinged together at one end and having the fastening device at the opposite ends to secure the same together on opposite sides of a saw, said members having the grooves I and the set-screws M N, the files secured in the grooves I, and the gage-plate O, secured to one of the members or sections and vertically adjustable thereon.

388,932. COMPOSITION FOR MAKING CEMENT. JOSIAH WOLFF, Union, N. J., assignor of three-fourths to Sarah B. Pulhara, Brooklyn, N. Y. Filed Mar. 7, 1887. Serial No. 230,004. (No specimens.)

Claim.—A building material consisting of a mixture of dry powdered slag, dry powered slaked lime, and coal-ashes, substantially as set forth.

388,933. SWITCH OR CUT-OUT FOR ELECTRIC CIRCUITS. JAS. J. WOOD, Brooklyn, N. Y. Filed May 28, 1887. Serial No. 239,041. (Model.)

388,933.



Claim.—1. In an electrical switch or cut-out, the combination, with the movable contact-maker, of a latch to lock the same in either position, a movable manipulating device, a spring interposed between the said device and the contact-maker, and an engaging-trip between the manipulating device and the latch, whereby the first movement of the manipulating device compresses or strains the spring against the contact-maker, while the terminal motion releases the latch, substantially as and for the purpose set forth.

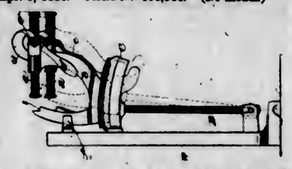
2. In an electric switch or cut-out, the combination, with the movable contact-maker, of a movable bolt or rod for shifting said contact-maker, a spring interposed between the shifting-rod and contact-maker, and a latch or catch arranged to hold the contact-maker in either of its positions, with a trip or trips connected with and operated by the rod and arranged to release said catch or latch when the rod is at the end of its stroke and the spring strained, whereby the contact-maker is suddenly released and shifted instantaneously and again held by the latch, substantially as herein set forth.

3. In an electrical switch or cut-out, the combination of the movable contact-maker carrying the movable contacts, a clasp, *j*, attached to said contact-maker, and a rod, *p*, passing through said clasp, with the flanged sleeves *v v*, fitting on said rod and abutting against said clasp, a spring, *l*, encircling said rod and abutting at each end against said sleeves, fixed stops or collars *s* on said rod, and a spring catch or latch, *n*, with engaging-points *k'*, arranged and operating substantially as shown and described.

4. In an electrical switch or cut-out, the combination of the terminals *b b* and *c c*, with contact-tongues *f g*, and the fixed conducting-bridge *r*, with the movable non-conducting cross-bar *h*, and Y-shaped contact-springs *i*, fixed thereon, arranged and operating substantially as shown and described.

5. In an electrical switch or cut-out, the combination, with the fixed contacts, of the movable contact-maker, such as *h*, carrying the movable contacts, such as *i*, a manipulable rod, *p*, a spring, *l*, interposed between the rod and the contact-maker, bearings *k k*, in which the rod slides, a spring-latch, *n*, attached to said contact-maker, having recesses *n* and engaging projections *k'*, with trip-stops *s* on said rod, substantially as shown and described.

388,934. HEEL-BURNISHING MACHINE. CHARLES J. ADDY, Malden, Mass., assignor to the Tapley Machine Company, Portland, Me. Filed Apr. 9, 1888. Serial No. 270,316. (No model.)



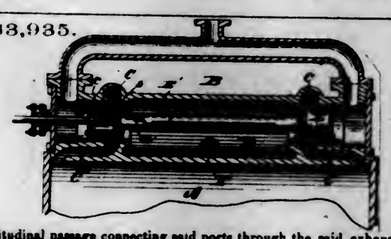
Claim.—1. In a heel-burnishing machine, the combination, with the post or rod B, of a pivoted frame containing two or more upwardly-extended branches, each of which constitutes a shoe-holder, the movement of the said frame upon its pivot enabling a shoe held by the said branches or shoe-holders to be placed in operative position with relation to the burnishing-tool, substantially as described.

2. In a heel-burnishing machine, the post or rod B, the yoke, and a frame pivoted thereon to vibrate about a horizontal pivot, and having two or more branches to constitute two or more shoe-holders, combined with a guide to receive and guide the arms of one of the branches or shoe-holders as the jack is being moved horizontally, or to and fro, under the burnishing-tool, substantially as described.

388,935. VALVE FOR STEAM-ENGINES. WALTER J. ALLEN, Springfield, Ohio, assignor of two-thirds to Philip J. Cole and Lawrence J. Hickey, both of same place. Filed Sept. 6, 1887. Serial No. 249,091. (No model.)

Claim.—1. A cylindrical valve to each end of which the steam is admitted at an equal pressure, and having a reduced middle portion about which is formed an exhaust-chamber, said valve being provided at either end with small circular ports in the periphery thereof and a

383,935.

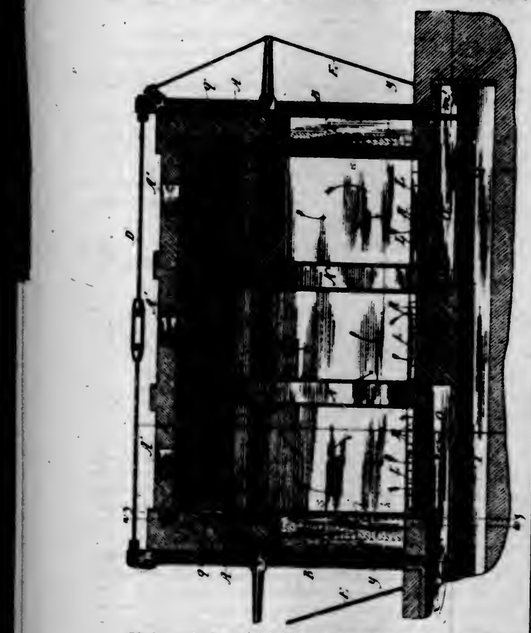


longitudinal passage connecting said ports through the said exhaust, said ports being located on the exhaust end of said valve, said valve formed without lap between said ports and the exhaust-chamber, substantially as specified.

2. A balanced valve, substantially as set forth, having a longitudinal passage provided at either end with small openings or ports adapted to register with the main cylinder-ports, said valve being formed without exhaust lap between the small openings or ports and the exhaust-chamber in said valve, whereby the terminal pressure of each piston-stroke is transferred from the front to the back of the piston to produce an automatic cushion, substantially as set forth.

3. A cylindrical balanced valve provided with piston-shaped ends adapted to open and close the main ports, as described, the reduced central portion adapted to form the exhaust-chamber with which the cylinder-ports are adapted to register as the valve moves in either direction, premature exhaust-ports in said piston ends connected together through said reduced central portion, said premature exhaust-ports being adapted to register with the main cylinder-ports without lap between the premature exhaust-ports and the main exhaust-ports, substantially as specified.

383,936. BRICK-KILN. WILLIAM ALSIP and SAMUEL H. ALSIP, Momence, Ill. Filed May 26, 1887. Serial No. 239,500. (No model.)



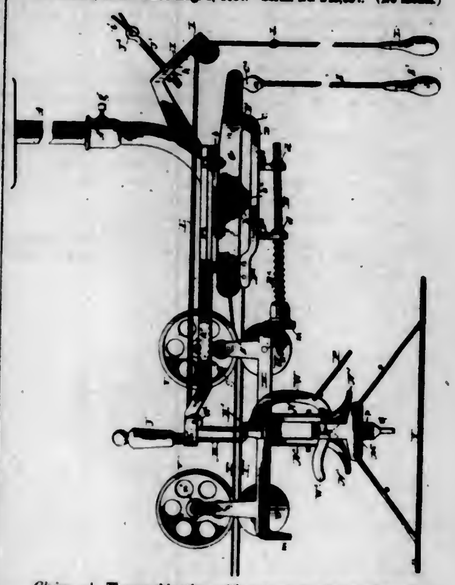
Claim.—1. In a brick-kiln, the combination of a chamber to receive the bricks to be burned, a series of furnaces, each of which is provided with two flues, a' and a^2, located directly at the rear of the fuel-chamber and having dampers $b\,b'$, the walls H and K, the vertical passages I and I', leading from said flues in opposite directions on the outside of the wall H, the cold-air passages d, located between said walls H K and communicating with both the passages I I', the partitions g in the passages d, and the air-passages $e\,f$, leading from the outside of the kiln to the passages d, substantially as described.

2. In a brick-kiln, the combination of a burning-chamber, a series of furnaces or fire-boxes, passages leading from the furnace both to the top and to the bottom of the kiln, dampers for such passages, flues N N', O O', and Q, dampers to control the outlets from the passages O O', flues R R' S S' T T', and dampers to control the flues S S', substantially as and for the purposes specified.

3. In combination with the burning-chamber of a brick-kiln, the passages $j\,j$ at the ends of the kiln, communicating at their upper ends with the burning-chamber and at their lower ends with passages R R', which communicate with passages S S', whereby heat, through $j\,j$, can pass either up or down according to the direction of the draft, substantially as and for the purposes specified.

4. In a brick-kiln, a burning-chamber, in combination with passages $k\,k$ at the ends of the kiln, which passages communicate at their upper ends with the burning-chamber and at their lower ends with passages or flues $l\,l$, which are controlled by dampers $n\,n'$, and which lead to a flue, P, which goes to the smoke-stack, substantially as and for the purposes specified.

383,937. CASH AND PACKAGE CARRIER. SAMUEL W. BARR, Mansfield, Ohio. Filed Aug. 2, 1887. Serial No. 245,267. (No model.)



Claim.—1. The combination, with a car-frame having depending limbs and spring-pressed latch-hooks, of a receptacle, a latch-block attached thereto, and a trip-block adapted to be moved into contact with the hooks and actuate the same to release the catch-block, substantially as set forth.

2. The combination of a car-frame having spring-actuated latch-hooks with a latch-block affixed to the cash or package receptacle and having an angular-shaped apex, and a sliding trip-block attached to the latch-block, substantially as set forth.

3. The combination, with a track, a car, a latch-hook, and hooks for elevating the receptacle, of a latch-block provided with laterally-projected curved arms and a body, the top portion of which is made with an apex and sloping sides that terminate in edges that are adapted to receive the elevating-hooks, substantially as set forth.

4. In a cash and package carrier, the combination, with a latch-block having curved laterally-extended arms and its body adapted to engage latch-hooks on its lower edge, of a sliding trip-block connected to the latch-block and adapted to actuate the latch-hooks, substantially as set forth.

5. The combination, with a car having a latch-hook, of the bail of a cash or package receptacle carrying a latch-block that has two curved lateral arms, a body that slopes to produce an apex and equally-inclined sides, and a sliding trip-block connected to the latch-block, substantially as set forth.

6. The combination, with a hanger, a boat-bracket affixed adjustably thereto and provided with two parallel flanges, and lugs on the flanges to support a rocking bar, of a swinging arm pivoted to the rocking bar, two track-wires, and a means for vibrating the rocking bar, substantially as set forth.

7. The combination, with a supported rocking bar and a swinging arm pivoted at one end to the rear portion of the rocking bar, of a spring-actuated bumper-rod supported to slide longitudinally below the swinging arm, substantially as set forth.

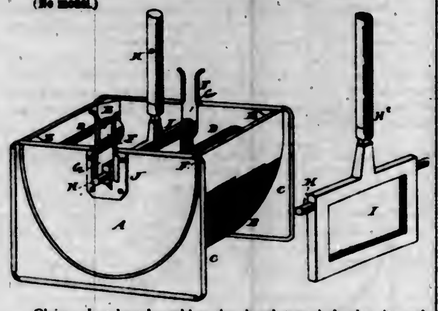
8. The combination, with a hanger, a bracket affixed thereto and provided with two horizontal and parallel flanges, and a rocking bar pivoted below these flanges and adapted to swing upwardly between them, of a swinging arm pivoted upon the rear end of the rocking bar on its lower edge, a bumper-rod, two line-wires, and a cam adapted to move when the rocking bar is vibrated, substantially as set forth.

9. An apparatus comprising a hanger, a bracket having two parallel flanges and two limbs attached to the bracket and projecting forwardly therefrom, two cords, and two hooks, of a rocking bar, a swinging arm pivoted on the rocking bar, a spring-actuated bumper-rod, two line-wires, and a cam adapted to move when the rocking bar is rocked, substantially as set forth.

10. An apparatus comprising a hanger, a bracket, two parallel horizontal flanges of the bracket, a rocking bar, a swinging arm, and a spring-actuated bumper supported by this arm, two limbs attached to the bracket-flanges, two loose grooved pulleys that rotate on the forward ends of the limbs, two cords, and two hooks adapted to release a basket from a car by the elevation of the hooks that engage arms of the latch-block of this basket, substantially as set forth.

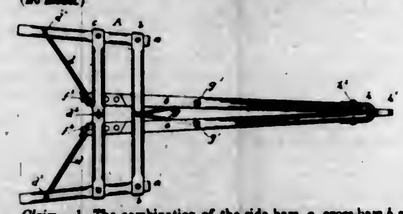
11. The combination, with a bracket, rocking bar, swinging arm, and track-wires, of a catch secured to the bar and a bumper carried by the arm, substantially as set forth.

383,938. BREAD-MACHINE. BERNARD BETTERMAN and LOUIS H. BRINKMEIER, North Topeka, Kans. Filed Dec. 12, 1887. Serial No. 257,656. (No model.)



Claim.—In a bread-machine, the dough-trough having its ends C C formed with vertical slots, and the strengthening-wires F, extended around said ends C and having their ends extended upward upon opposite sides of said slots, and the metallic plates J, secured to said ends C around the slots therein, substantially as and for the purpose described.

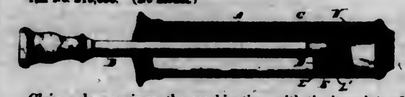
383,939. POLE AND SHAFTS FOR VEHICLES. ALBERT L. BRATHEN, Danville, Minn. Filed Mar. 27, 1888. Serial No. 268,627. (No model.)



Claim.—1. The combination of the side bars, a, cross-bars b and c, bolted to said side bars, elbowed rods d, secured to said side beams and rear cross-beam, e, shafts e, their rear ends secured in the sleeves f, sleeves f, adapted to slide back and forth on the rods d, set-screws f^3, adapted to hold said sleeves in position, rods g, their rear ends bolted between the upper and lower cross-beams b, their front ends bolted to the under side of said shafts by the bolts and nuts g', and tongue-irons h, holding the front end of said shafts together, being secured in place by the bolt and nut h^2, substantially as shown and described.

2. The combination of the side bars, a, cross-bars b and c, bolted to said side bars, elbowed rod d, secured to said side beams and rear cross-beam, e, shafts e, their rear ends secured in the sleeves f, sleeves f, adapted to slide back and forth on the rods d, set-screws f^3, adapted to hold said sleeves in position, and rods g, their rear ends bolted between the upper and lower end beams, b, their front ends bolted to the under side of said shafts by the bolts and nuts, substantially as shown and described.

383,940. SYRINGE. ALEXANDER W. BRINKERHOFF, Upper Sandusky, Ohio; Millard H. Brinkerhoff and Willis C. Brinkerhoff executors of said Alexander W. Brinkerhoff, deceased. Filed Nov. 16, 1886. Serial No. 219,055. (No model.)



Claim.—In a syringe, the combination, with the barrel A, of the piston-rod having the shouldered and threaded inner end, the collar C, having an encircling groove, the open yielding metal ring E within the encircling groove, the leathers L and L', and the circular locking-nut on the threaded inner end of the piston-rod, substantially as specified.

383,941. ELECTRIC SIGNALING-BOX. WALTER D. BROWER, Seneca Falls, assignor to Fred C. Timpson, Auburn, N. Y. Filed Sept. 17, 1887. Serial No. 249,909. (No model.)



Claim.—1. In an electric signaling-box, the combination of the hollow reversible carrier provided with a fixed diaphragm constituting a partial division-wall across said carrier, two movable heads connected at a fixed distance, and a weight, p, composed of finely-divided material and contained within said carrier between said heads.

2. In an electric signaling-box, the combination of the hollow reversible carrier provided with a diaphragm constituting a partial division-wall across said carrier, a weight of finely-divided material, two connected movable heads inclosing said weight, and a circuit making and breaking device actuated by said weight and moving with said heads.

3. In an electric signaling-box, the reversible carrier B, in combination with the locking-bar N, and a releasing-bar, E, impelled by gravity.

4. The combination of the hollow reversible carrier B, provided with a fixed diaphragm constituting a partial division-wall across said carrier, a weight of divided material, the sliding heads V V, bar E, and the segmental support i for the end of said bar.

383,942. COMPOSITION OF MATTER FOR PAVING-BLOCKS, &c. CHARLES E. COFFIN, Denver, Colo., assignor of one-half to Robert H. Jones, same place. Filed Apr. 13, 1888. Serial No. 270,544. (No specimens.)

Claim.—The composition of matter hereinbefore described, consisting of silica, oxide of iron, lime, alumina, barium, zinc, manganese, and lead, combined in the proportions substantially as set forth.

383,943. CULINARY VESSEL. ALONZO B. COMBS, Albany, N. Y. Filed Nov. 25, 1887. Serial No. 256,061. (No model.)



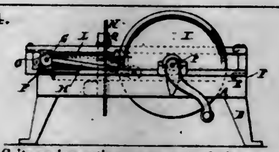
Claim.—1. A culinary vessel provided with a movable bail and a stationary bail, as herein described, said stationary bail being fitted to bear snugly around one side of said vessel and having its ends bent inwardly to form retainers for holding the cover on said vessel, as and for the purpose herein specified.

2. The combination of a culinary vessel provided with supporting-stops 5 and check-stops 6, a stationary bail retained in position by said stops and having its ends turned inwardly over the upper edge of said vessel to form retainers for holding the cover in place, and a movable bail fitted to swing on the trunnions of said vessel, as and for the purpose specified.

383,944. BAND-SAW-FILING MACHINE. ANDREW S. DUNN, New Brighton, Pa. Filed Feb. 23, 1887. Serial No. 229,233. (No model.)

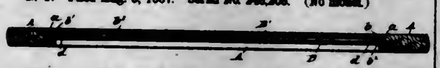
Claim.—In a machine for filing band-saws, the combination, with main frame A, and cam-wheel I, running between guide-rollers K,

383,944.



giving file-slide C its reciprocating movement, of pitman-rod H, attached to cam-wheel I and file cross-head D, giving the backward and forward motion to file cross-head D, which carries file L and the saw-feeding mechanism O, substantially as described.

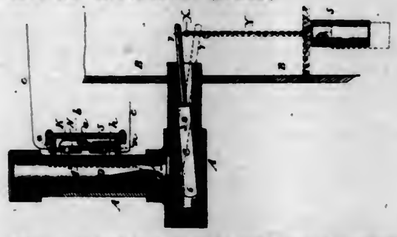
383,945. SCHOOL-SLATE AND RULER THEREFOR. MAYBURY W. FLEMING, New Brighton, and CHARLES R. LE SAUVAGE, Brooklyn, N. Y. Filed Aug. 5, 1887. Serial No. 246,203. (No model.)



Claim.—1. The combination, with a slate, and a frame attached thereto provided with grooves in the inner edges above the surface of the slate, of a ruler having rabbeted ends adapted to slide in said grooves, and a centrally-recessed under surface whereby a bearing-surface is provided at the ends only, substantially as set forth.

2. A ruler for slates, provided with rabbeted ends, a centrally-recessed under surface, and bearing-surfaces upon the under side at the ends only for use, as set forth.

383,946. BOILER-ALARM. JOHN J. GEOGAN, Newark, N. J. Filed Mar. 5, 1888. Serial No. 266,277. (No model.)



Claim.—1. In water-level alarms, the combination of a vibratory bar provided with a gravitating body and a counter-balance carrying magnetic material, with a liquid-reservoir, electric-alarm circuit, and magnetic-circuit controller, substantially as described.

2. In water-level alarms, a fluid-reservoir containing a gravitating body, in combination with a counter-balance and magnetic-circuit controller, substantially as described.

3. In a boiler-alarm, the combination of a fluid-reservoir, a movable balance located within a casing having a non-magnetic portion, a magnetic-circuit controller, a gravitating body connected with said balance, and an alarm-circuit, substantially as described.

4. The combination, in a boiler-alarm, of an electric circuit and a magnetic-circuit controller, with a movable balance located within the casing, one arm of said balance being of magnetic material and the other provided with a gravitating body, that portion of the casing intervening between said arm and the magnetic pole being of non-magnetic material, substantially as described.

383,947. MECHANISM FOR OPERATING DERAILING-SWITCHES AND SEMAPHORES. WILLIAM GRAVIT, Elkhart, Ind. Filed Feb. 24, 1888. Serial No. 265,129. (No model.)

Claim.—1. The combination, with the derailing-switches of crossing railroad-lines, of a cam-wheel mechanically connected to said switches, and separately closing those of either line, substantially as set forth.

2. The combination, with the derailing-switches of crossing railroad lines, of a cam-wheel mechanically connected to said switches and acting to close the switches of either line by a single movement and to open them by its return movement, substantially as set forth.

3. The combination, with the derailing-switches of crossing railroad-lines, of a single cam-wheel having the hooks F, the switches being mechanically connected to the wheel by the rods and arms, substantially as specified.

4. The combination, with the derailing-switches and semaphores of crossing railroad-lines, of a single shaft, a cam-wheel for operating the switches, and pulleys for operating the semaphores, said wheel and pulleys being all mounted upon said shaft, substantially as set forth.

5. In apparatus for operating derailing-switches, the shaft A and the cam-wheel having a concentric portion and the hooks F, in combination with the arms J and K, in contact with said wheel, and the rods G and H, extending to the switches, substantially as specified.

6. In apparatus for operating derailing-switches and semaphores, the cam-wheel, the pulleys P and Q, having studs *p* and *q*, and the arm R, all combined and operating substantially as specified.

7. In apparatus for operating derailing-switches and semaphores, the shaft A and the operator's lever, the latter having the three positions described, in combination with the cam and pulleys on said shaft and the mechanical connections to the switches and semaphores, substantially as set forth.

383,948. CHILD'S VEHICLE. FAYETTE GROFF, Saratoga Springs, N. Y. Filed Feb. 21, 1888. Serial No. 264,781. (No model.)

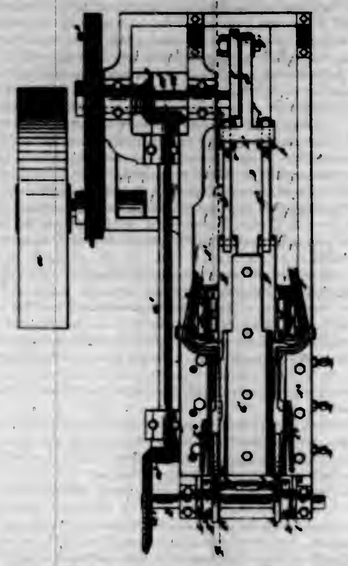


Claim.—1. A sleigh provided at its forward end with a wheel journaled in fixed axles and normally free from contact with the ground, as set forth.

2. A sleigh combined with a wheel journaled in axles fixedly secured to the forward ends of the runners with its periphery normally above the acting face of the runner, substantially as and for the purpose specified.

3. The combination, with the runner, of the clamp E, having jaws *c*, to embrace the runner, and a stub-axle, *a*, to receive the wheel, and the thumb-screw *d*, tapped through one of said jaws and engaging the runner, substantially as and for the purpose specified.

383,949. SCREW-SWAGING MACHINE. HAYWARD A. HARVEY, Orange, N. J. Filed Jan. 13, 1888. Serial No. 260,626. (No model.)



Claim.—1. In an organized machine for rolling the threads of screws, two screw-blank feeding ways and deliverers, and two pairs of appropriately-ribbed dies, each pair consisting of an actively-reciprocating die and a supporting-die, in combination with a common actuating mechanism, such as a crank and pitman, for imparting motion to the said actively-reciprocating dies.

2. In a screw-thread-rolling machine of the type in which an actively-reciprocating die is employed to roll the screw-blank over the face of a supporting-die, and in which the said supporting-die has prescribed endwise movements for effecting the feeding of the blanks to the dies and the discharge of the finished screws therefrom, and during the operation of rolling the thread upon each blank also has a lateral movement toward the plane of movement of the actively-reciprocating die, the combination, as herein set forth, of a cam for instituting said endwise movements of said supporting-die, and an independent cam for instituting said lateral movement of said supporting-die.

3. The combination, in a double screw-thread-rolling machine, of two actively-reciprocating dies which are independently adjustable with relation to the mechanism which actuates them, two supporting-dies supported in the frame of the machine, and two cams for imparting prescribed endwise motions to said supporting-dies, as and for the purpose set forth.

4. In a screw-thread-rolling machine of the type herein shown, in which an actively-reciprocating die and a supporting-die are employed, a cam for imparting a prescribed range of endwise movement to said supporting-die, a wedge interposed between the carriage, upon which said supporting-die is mounted, a laterally-adjustable gib affording the bearing for the diagonal side of said wedge, and a cam for imparting a prescribed endwise movement to said wedge.

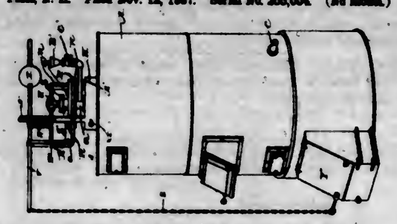
5. In a screw-thread-rolling machine of the type in which an actively-reciprocating die and a supporting-die are employed, a supporting-die, such as the die H', mounted upon a carriage, such as the carriage H, having affixed to its rear end a yoke, such as the yoke H^3, provided with a rib, such as the rib h^2, in combination with a cam, such as the cam H^2, for imparting a prescribed range of endwise movement to the carriage H, and a notched hub, such as the hub K', provided with the notch K^5, for steadying the carriage H at the end of the said movement, as set forth.

6. In a screw-thread-rolling machine of the type in which an actively-reciprocating die and a supporting-die are employed, the stop R, affixed to and projecting from the face of the actively-reciprocating die-carriage at an appropriate distance from the die mounted thereon, as and for the purpose described.

7. The supporting die-carriages H and I, in combination with the expanding-springs J J and J' J', for holding the die-carriages against the side bearings upon which they slide.

8. The cam-shaft B, the cams H^2 and *k*, mounted thereon, and the supporting die-carriages H and I, in combination with the ways O and P, and the spring-check slides Q Q, operated by the die-carriages H and I, respectively.

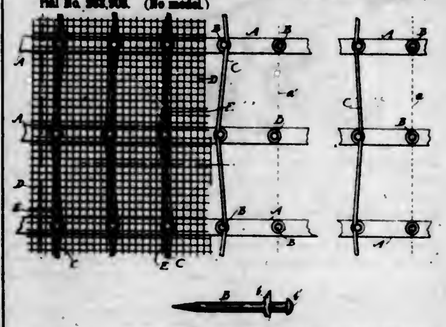
383,950. DAMPER-REGULATOR. IRVIN W. HAYNES, Franklin Falls, N. H. Filed Nov. 12, 1887. Serial No. 255,004. (No model.)



Claim.—1. The combination of the outer tank, B, the case or frame H, secured thereon, having the bridge K, the diaphragm P, and the follower on the said diaphragm, the inner tank, F, arranged in the tank B and having the pipe G, secured to the bridge K under the diaphragm, the levers connected to the said follower, the adjusting-weight on one of the said levers, the damper or door, Y, and the connection between the same and the weighted lever, substantially as described.

2. The combination of the furnace having the door or damper Y and the tank B, the case or frame H on the upper side of said tank and adapted to turn thereon, said case or frame having the bridge K, the diaphragm resting on said bridge, the follower on said diaphragm, the levers supported on the case or frame, connections between the same and the follower and door or damper, the inner tank, F, arranged in the tank B, and the pipe G, extending upward from said inner tank and secured to the bridge K and communicating with the lower part of the diaphragm, substantially as described.

383,951. DEVICE FOR SECURING WIRE LATHING TO WOODEN JOISTS AND STUDS OF BUILDINGS. MARSELLUS HERRON, Chicago, Ill., assignor to Frederick Voss, same place. Filed Feb. 13, 1888. Serial No. 263,903. (No model.)



Claim.—1. In combination with the wooden joist or studs A A and the wire lathing D D, the iron spikes B B, having their heads *b b* of less diameter than the mesh of the wire lathing and provided with the shoulders or supports *b b*, having a greater diameter than the mesh of said lathing, the wires C C, resting on the supports *b' b'* underneath the wire lathing and running transversely across the joist A A, and the wires E E, also running transversely across said joist above said wire lathing D D and passing between the lathing and the heads of the spikes, in manner substantially as shown, and for the uses and purposes specified.

2. In combination with the wooden joist or studs A A and the wire lathing D D, the iron spikes B B, having the shoulders or supports *b b*, on which the wire lathing is made to rest, and the wires E E, extending transversely across the joist or studs A A above the lathing and looped around the spikes B B between the wire lathing and the heads *b' b'*, for the purposes and in the manner substantially as described.

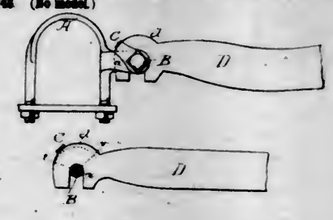
383,952. DEVICE FOR SECURING WIRE LATHING TO THE WOODEN JOISTS AND STUDS OF BUILDINGS. MARSELLUS HERRON, Chicago, Ill., assignor to Frederick Voss, same place. Filed Feb. 13, 1888. Serial No. 263,905. (No model.)

383,952.



Claim.—In combination with the wooden joist or studs A A and the wire lathing B B, the metallic tubes C C, the wires E E, the staples D D, and the wire lacings *e e*, in manner substantially as and for the uses and purposes specified.

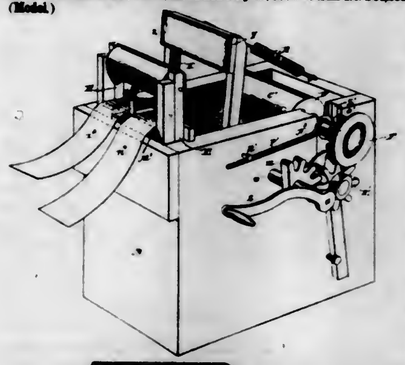
383,953. THILL-COUPLING. GEORGE R. HOWLAND, Chicago, Ill., and FRANK W. ALLEN, Osawatomie, Kans. Filed Apr. 22, 1887. Serial No. 236,748. (No model.)

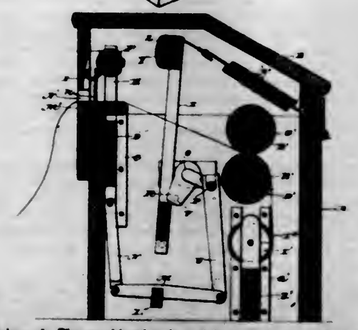


Claim.—1. In a thill-coupling, the combination, with clip A, having lugs *a* projecting therefrom, thill-bolt B, and ⌐-shaped spring C, of shaft D, and coupling-hook *d*, having its articulating surface correspond in width to the diameter of the bolt B, and having its back eccentric to the terminus of said articulating opening, as hereinbefore described.

2. In a thill-coupling, the combination, with clip A, having lugs *a* projecting therefrom, thill-bolt B, spring C, and cushion *e*, of shaft D and coupling-hook *d*, substantially as set forth.

383,954. TICKET-PRINTING MACHINE. CHARLEY F. HUFF, Golden, and WILLIAM R. HUFF, Bunn, Ill. Filed July 13, 1887. Serial No. 244,322. (Model.)





Claim.—1. The combination, in a ticket-printing machine, of the vertically-movable frame D, the printing-cylinder journaled therein and having the arm connected to a fixed part of the machine to oscillate said cylinder in the same, the vertical rocking frame X, carrying the inking-pad, the horizontal lever centrally pivoted below said frames and engaging the same to swing the inking-pad against the printing-cylinder and vertically move the frame to oscillate said cylinder, substantially as described.

2. The combination, in a ticket-printing machine, of the vertically-movable frame, the printing-cylinder journaled therein and having the arm 1, the fixed link K, slotted to receive said arm, the vertical rocking frame X, carrying the inking-pad, the horizontal lever centrally pivoted below said frames and engaging the same to swing the pad against the cylinder and vertically move the cylinder-frame to cause said cylinder to oscillate therein, substantially as described.

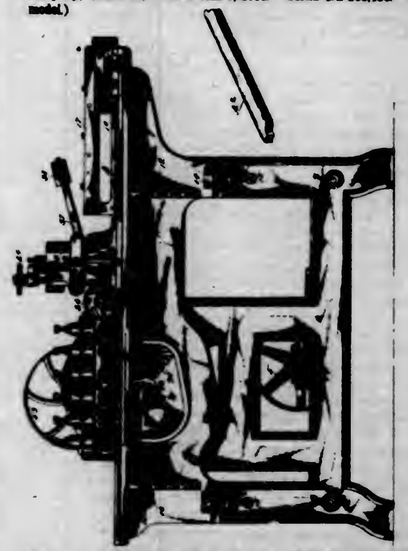
3. The combination, in a ticket-printing machine, of the vertically-movable frame D, the printing-cylinder journaled therein and adapted to be turned first in one direction and then in the contrary direction by the movement of the frame, the rocking frame X, having the inking-pad, the shaft O, having the crank and the tappet-arms R, the latter being adapted to engage the rocking frame to actuate the same and the lever M, the link N, connecting the said lever to the frame D, and the pitman U, connecting the lever to the crank P, substantially as described.

4. The combination, in a ticket-printing machine, of the vertically-movable frame D, the printing-cylinder journaled therein and having its arm connected to a fixed part of the machine to oscillate said cylinder in its frame, the vertical rocking frame X, carrying the inking-pad, the horizontal lever centrally pivoted to vibrate said cylinder and pad-frames, the feed-rollers B' C', having the spur-wheels geared together, the actuating-shaft O, operating the horizontal lever and having the segment-wheel engaging one of the spur-wheels, substantially as described.

5. The ticket-printing machine having a case provided interiorly with the vertical guide-ribs, the removable frame H, playing vertically in said guide-ribs, and the drums journaled in said frames and carrying the rolls of paper, substantially as described.

6. The combination, in a ticket-printing machine, of the feed-rollers B' and C', journaled in the case or frame, the roller C' being vertically adjustable in said case and removable therefrom, and the locking-arm pivoted to the case or frame and having the offset adapted to engage the spindle of the removable roller, substantially as described.

383,955. MACHINE FOR MAKING SCHOOL-SLATE FRAMES. GEORGE L. KRAMM, Allentown, Pa., assignor to the Hyatt School Slate Company, (Limited.) Filed Jan. 9, 1888. Serial No. 260,156. (No model.)



Claim.—1. In a machine of the class described, the combination of a vertically and laterally adjustable cutter-head consisting of alternately-arranged saws and groovers, and a series of feeding-disks mounted upon independently-adjustable shafts in rear of said cutter-head, and independent mechanism for rotating said shafts and head at different relative speeds, substantially as specified.

2. In a machine of the class described, feeding-disks the shafts of which are mounted in vertically-adjustable spring-boxes at one side and swinging boxes at the opposite side, substantially as specified.

3. In a machine of the class described, the combination, with a cutter-head comprising an alternate arrangement of saws and groovers, a series of feeding-disks mounted in rear of the same, and a second cutter-head mounted in rear of first, said cutter-head consisting of a series of saws registering with the grooves in the first-mentioned head, substantially as specified.

4. In a machine of the class described, the combination of a cutter-head consisting of an alternate arrangement of saws and grooves with a second cutter-head consisting of a like arrangement and registering with the first cutter-head and mounted below the same, and with a third cutter-head comprising a series of saws registering with the grooves of each cutter-head, substantially as specified.

5. In a machine of the class described, the combination, with a cutter-head adapted to form kerfs and grooves, of a similar cutter-head mounted below the same, a series of feeding-disks mounted upon shafts, and a third cutter-head comprising a series of saws registering with the grooves, and mechanism for operating the heads and shafts, substantially as specified.

6. In a machine of the class described, the combination, with the side frame 2, having the oppositely-located lugs 16, provided with screws 15, of the feed-table 11, mounted at one side of the frame upon said screws and having vertical slots 12, and bolts 13, passing through the slots and frame, substantially as specified.

7. The combination of the side frames, 1 and 2, carrying the feed-table 11, with the pivoted lever 9, having the feed-block 10, and guard 17, in which said lever is mounted for movement, substantially as specified.

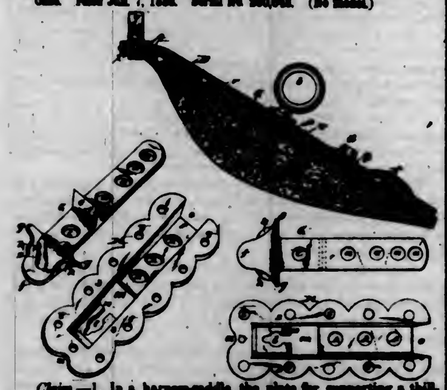
8. The combination, with the bridge 22, having the hand-wheel and shaft 24 and vertical grooves 28, of the longitudinally-grooved and vertically-ribbed plate 27, having the hand-wheel and shaft 29, mounted at one side thereof, the longitudinally-ribbed block 25, mounted at one side of the plate 27 and connected with the shaft of the hand-wheel, and the grooved plate 26, mounted at the side of the block 25, and having bearings 31, in which is mounted the shaft 32, substantially as specified.

9. The shafts 44, carrying disks 45, with the bridge 43, having spring-boxes 55 for said shafts, and the bridge 42, having adjustable boxes 56, consisting of the pivoted hangers 57, and the bearings 59, having trunnions 58, journaled in said hangers and forming a bearing for the opposite ends of the shaft 44, substantially as specified.

10. The combination of the frames 1 and 2, constructed as shown and provided with the shaft 4, carrying pulleys 5 and 6, with the shafts 44, carrying gears 47, the standard 49, carrying shafts 48 and gears 47 and 50, the shaft 52, carrying gear 51, and the pulley 53, all operating as set forth.

11. The combination of the frames 1 and 2 with the stationary plate 60, slotted, as at 61, and grooved, as at 66, and having the bolts 62 and the hand-wheel 64, with the movable plate 63, having ribs 65, provided with boxes, and having journaled therein the cutter-head 71, substantially as specified.

383,956. HARNESS-SADDLE. WILLIAM R. KNOWLES, Columbiana, Ohio. Filed Jan. 7, 1888. Serial No. 260,042. (No model.)

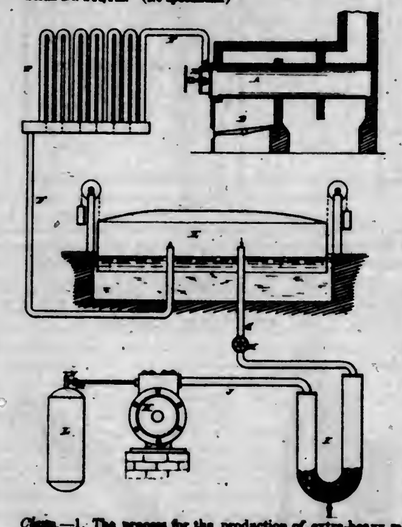


Claim.—1. In a harness-saddle, the plate for supporting a thill-bearer, provided with a head having transverse arms, flanges depending from each side of the head for limiting the movement of the thill-bearer, and a pin projecting from the under side of said head for engagement with a hole in the thill-bearer, in combination with a plate separate from the tree, having a groove to receive the nuts of the tarret and pad-screw, substantially as described.

2. In a harness-saddle, the plate for supporting a thill-bearer, provided with a head having flanges depending from each side of the head for limiting the movement of the thill-bearer, and a pin projecting from the under side of said head for engagement with a hole in the thill-bearer, in combination with a plate separate from the tree, having a seat to receive said pin and secure it against lateral displacement, and a groove for the reception of the nuts of the tarret and pad-screws, substantially as described.

3. In a harness-saddle, the plate for supporting a thill-bearer, provided with a head having flanges depending from each side of the head for limiting the movement of the thill-bearer, a pin projecting from the under side of said head for engagement with a hole in the thill-bearer, and a lug on the under side of the plate, in combination with a plate separate from the tree, having a slot to receive the lug on the upper plate and a groove to receive the nuts of the tarret and the pad screw, and a thill-bearer having a hole in it to engage with said pin, substantially as described.

383,957. MANUFACTURE OF CARBONIC ACID AND HEAVY MAGNESIA. HENRY LEMFRAME, Philadelphia, Pa. Filed July 16, 1887. Serial No. 244,442. (No specimens.)



Claim.—1. The process for the production of extra-heavy magnesia, consisting in subjecting native magnesite to the action of heat.

2. The herein-described process for the simultaneous production of carbonic acid and extra-heavy magnesia, consisting in subjecting native magnesite in a closed retort to the action of heat, which decomposes the native magnesite into carbonic acid and extra-heavy magnesia, thus drawing off the carbonic-acid gas from the retort, and finally removing the extra-heavy magnesia.

3. The herein-described commercial extra-heavy magnesia, formed from native magnesite, as an improved article of manufacture.

383,958. DUMB-WAITER. CHARLES L. LESSLIE, Brooklyn, N. Y., assignor of one-half to Andrew P. Van Tuyl, Jr., same place. Filed Feb. 28, 1888. Serial No. 265,261. (No model.)

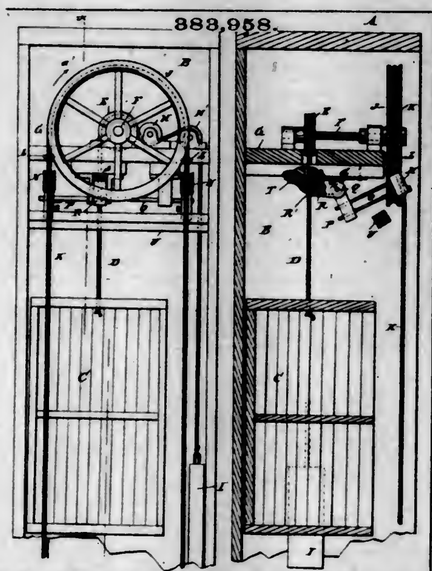
Claim.—1. In a dumb-waiter, the combination, with a carriage-supporting rope, of a hoisting-rope adapted to operate said carriage-supporting rope, and a clamp engaging said carriage-supporting rope and controlled by the said hoisting-rope, substantially as shown and described.

2. In a dumb-waiter, the combination, with a rope supporting the elevator-carriage, of a clamp adapted to engage the said rope, a hoisting-rope operating the said carriage-supporting rope, and shoes over which passes said hoisting-rope, said shoes being connected with the said clamp, substantially as shown and described.

3. In a dumb-waiter, the combination, with a carriage-supporting rope, of a spring-arm adapted to engage said rope, a fixed arm, against which the said rope is pressed by the said arm, a shaft carrying the said spring-arm, and shoes secured to arms on said shaft and operated by the said hoisting-rope, substantially as shown and described.

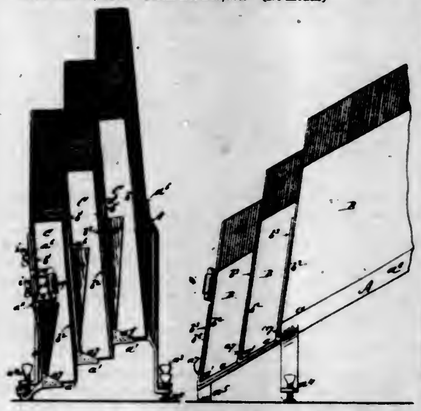
4. In a dumb-waiter, the combination, with a carriage-supporting rope, of a spring-arm adapted to engage the said rope, a fixed arm, against which the said rope is pressed by the said arm, a shaft carry-

383,958.



ing the said spring-arm, and shoes secured to arms of the said shaft, and a hoisting-rope operating the said carriage-supporting rope and passing over the said shoes, substantially as shown and described.

383,959. LEAD AND RULE HOLDER. A. AUGUSTUS LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Filed Nov. 26, 1886. Serial No. 219,965. (No model.)



Claim.—1. A series of lead or rule holders formed with transverse openings for the removal of the leads or rules, arranged side by side, with their delivery ends successively one in advance of the other, the smaller compartments being advanced beyond the larger ones next adjoining, substantially in the manner and for the purpose described.

2. In combination with a series of lead and rule holding compartments of different sizes, formed with transverse openings for the removal of the leads or rules, substantially as described, a common holder or frame formed with seats or supporting-rests for the chanels, the front lower ends of which seats or rests project successively one in advance of the other from left to right, substantially in the manner and for the purpose described.

3. In a lead and rule holder substantially such as described, a lower front line-holder, a^1, having its upper edge inclined obliquely, substantially in the manner and for the purpose described.

4. In combination with one or more lead or rule holders substantially such as described, the supporting-frame A, formed with the three adjustable rests, a^2, a^3, and a^4, and the stationary rest a^5, for the purpose and substantially in the manner described.

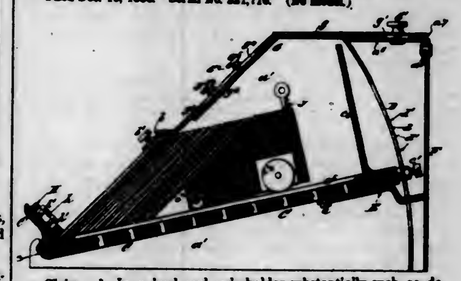
5. A lead or rule holder substantially such as described, formed at its lower front end with a lateral line-retaining guard, the right edge of which is inclined obliquely, substantially in the manner and for the purpose described.

6. A lead or rule holder substantially such as described, formed at its lower front end with a lateral opening, and with a floor of reduced width coinciding with said lateral opening, for the purpose of facilitating the removal of the rules or leads, substantially in the manner and for the purpose described.

7. In combination with a lead and rule holder substantially such as described, provided with lateral openings for the removal of the leads or rules, an end line-support consisting of an anti-friction roller supported substantially in the manner and for the purpose described.

8. In combination with a lead and rule holder substantially such as described, provided with lateral openings for the removal of the leads or rules, an end line-support which is adjustable in position with relation to the length of the leads or rules, substantially in the manner and for the purpose described.

383,960. LEAD AND RULE HOLDER. A. AUGUSTUS LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Filed Dec. 16, 1886. Serial No. 221,716. (No model.)



Claim.—1. In a lead and rule holder substantially such as described, a floor-piece which is adjustable longitudinally, substantially in the manner and for the purpose described.

2. In a lead and rule holder substantially such as described, the combination and arrangement, with the floor-piece C, pivotally suspended at its front end and provided at its rear end with the swinging catch or lever E, of the concentric segment D, formed with the longitudinal slot d, having lateral notches d', for the reception and support of the said lever E, substantially in the manner and for the purpose described.

3. In a lead and rule holder substantially such as described, the combination, with a floor-piece pivotally suspended at its front end, of the concentric segment D, formed with the slot d and provided with the adjusting-screw d', arranged and operating substantially in the manner and for the purpose described.

4. In a lead and rule holder substantially such as described, the floor-piece C, formed with the central groove, c^3, and series of perforations c^4, for the purpose and substantially in the manner described.

5. In a lead and rule holder substantially such as described, the combination, with a floor-piece formed with a series of perforations, substantially as described, of a line-follower provided with an adjustable stop adapted to engage the said perforations, for the purpose and substantially in the manner set forth.

6. In a lead and rule holder substantially such as described, a floor-piece formed with a forward extension substantially at right angles to the position of the leads or rules upon the said floor, substantially in the manner and for the purpose described.

7. In a lead and rule holder substantially such as described, the combination, with the floor-piece formed with the forward extension, substantially as described, of the adjustable lower front line end rest or support arranged and operating substantially in the manner and for the purpose described.

8. In a lead and rule holder substantially such as described, the combination, with the adjustable floor-piece pivotally suspended at its front end, of the concentrically-adjustable upper front line end support, b, arranged and operating substantially in the manner and for the purpose described.

9. A lead and rule holder substantially such as described, formed with a back plate or cover, F, at its rear end, the upper extremity of which is pivotally connected to the holder in such manner as to permit of the lower end being swung outward laterally, for the purpose and substantially in the manner described.

10. In a lead and rule holder substantially such as described, the sliding cover G, formed with the horizontal plate g, and forward extension, G^2, the latter projecting downward at an angle substantially the same as that of the inclination of the leads and rules in the compartment and inclosing the space above the transverse front guard, b, in combination with the latter and with the inclined parallel side walls of the holder, for the purpose and substantially in the manner described.

11. In combination with a lead and rule holder substantially such as described, the sliding cover G, formed of the horizontal plate g and extension g^2, and provided with the adjustable plate g^3, substantially in the manner and for the purpose described.

12. In a lead and rule holder substantially such as described, the sliding cover G, consisting of the inclined front portion, g^2, projecting downward from the main portion g, which runs between parallel guides a^7 a^7, and is formed with a longitudinal slot, g', and is provided with a set-screw, G', engaging the frame of the holder for the purpose of securing the cover rigidly in a prescribed position, substantially in the manner and for the purpose described.

13. In a lead and rule holder substantially such as described, the side bearing, L, formed with the gage L' and receding backward and downward from that point, substantially in the manner and for the purpose described.

883,961. LEAD AND RULE HOLDER. A. AUGUSTUS LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Filed Dec. 22, 1886. Serial No. 222,262. (No model.)



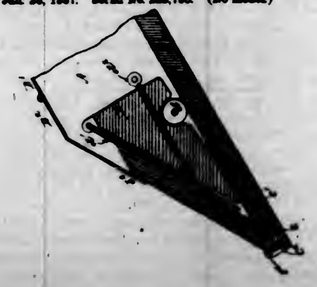
Claim.—1. The combination, in a lead and rule channel or compartment substantially such as described, of the side walls formed with inclined front edges, and a parallel front plate for supporting the upper end of the last lead or rule in the line, the said front plate being supported from above, so as to leave a free space upon both sides, for the purpose and substantially in the manner described.

2. In a lead and rule holder substantially such as described, formed with the open front end and with side walls the front edges of which are inclined and parallel, an inclined front plate parallel to the said front edges of the side walls, supported by means substantially such as described, by which it may be adjusted toward or from the said front edges of the side walls, substantially in the manner and for the purpose described.

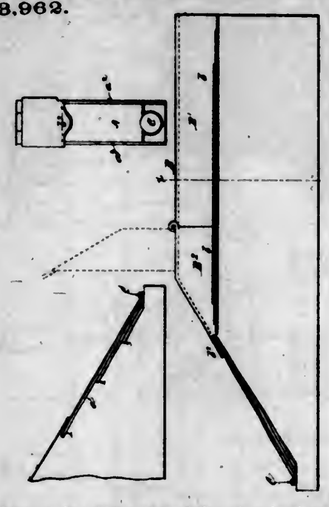
3. In a lead and rule holder substantially such as described, formed with the open front end and with side walls the front edges of which are inclined and parallel, an inclined front plate supported above and parallel to the said front edges of the side walls by means substantially such as described, which admit of its being adjusted in position vertically to increase or diminish the open space between its lower end and the floor of the holder, substantially in the manner and for the purpose described.

4. In a lead and rule holding and presenting channel substantially such as described, the bottom spine or stiffener, G, situated underneath the floor of the channel and having the lower end line-support attached to its front end and being secured between the walls of the channel by means which permit of its being adjusted longitudinally, substantially in the manner and for the purpose described.

383,962. LEAD AND RULE HOLDER. A. AUGUSTUS LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Filed Jan. 26, 1887. Serial No. 225,780. (No model.)



383,962.



Claim.—1. In a device substantially such as herein set forth for holding and presenting leads and rules, the combination, with a rear end line-support and a lower front end line-support for imparting a prescribed inclination to the leads or rules, substantially as described, of the right-hand-side wall having its front edge formed at a steeper degree of inclination than that at which the leads or rules are controlled, for the purpose and substantially in the manner described.

2. In a device substantially such as herein set forth for holding and presenting leads and rules, the combination, with the movable rear end line support or follower and the front end line-support for imparting a prescribed inclination to the leads or rules, and with the right-hand-side wall having its front edge formed at a steeper inclination than that at which the leads or rules are controlled, of the left-hand-side wall formed with the series of offsets, substantially in the manner and for the purpose described.

3. In a device substantially such as herein set forth for holding and presenting leads and rules, the combination, with a movable rear end line support or follower, of the lower front end line-support, consisting of the screw G, a portion of the head of which projects above the floor-surface to form the lower front end line support or rest, substantially in the manner and for the purpose described.

4. In a device substantially such as described for holding and presenting leads and rules, the combination, with a front and line-support, of a movable rear end line support or follower provided with a line-end bearing-surface plate which is hinged to the top of the follower and is adjustable thereon in inclination by means of a set-screw impinging against the under side of the said bearing-plate, for the purpose and substantially in the manner described.

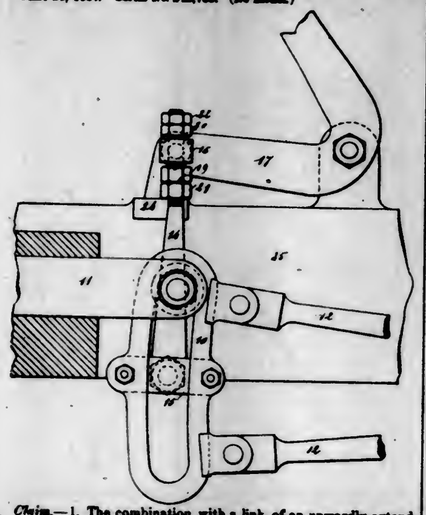
5. In a device substantially such as described for holding and presenting leads and rules, the cover or top B, provided with the overlapping flaps b b and formed in two sections, B' B^2, the front section, B^2, being formed with the upper end line-bearing surface, b^2, and being hinged to the rear section, B', substantially in the manner and for the purpose described.

6. In a device substantially such as herein designated for holding and presenting leads and rules, the combination, with a front end line-support and with a movable rear end line-support, of the front edges, a^2 a^2, of the side walls having their inner edges beveled, for the purpose and substantially in the manner described.

7. In a device substantially such as herein designated for holding and presenting leads and rules, the combination, with a movable rear end line-support provided with an anti-friction roller, of the hinged rear end floor-extension, E, formed with the groove e, for the reception and retention of the lower perimeter of the said anti-friction roller against lateral displacement, substantially in the manner and for the purpose described.

8. In a device substantially such as herein set forth for holding and presenting leads and rules, the combination, with a movable rear end line-support provided with an anti-friction roller, of the hinged rear floor-extension, E, formed with the recess or depression e', for the reception and retention of the lower perimeter of the said anti-friction roller against longitudinal movement, substantially in the manner and for the purpose described.

383,963. VALVE-GEAR. ROBERT MACKAY, Warren, Pa. Filed June 28, 1887. Serial No. 242,723. (No model.)



Claim.—1. The combination, with a link, of an upwardly-extending rod connected thereto, an operating-lever, a swivel-eye, and stops carried by the upwardly-extending rod upon either side of the swivel-eye, substantially as described.

2. The combination, with a link, 10, arranged for connection with a valve-stem and eccentric-rods, of a rod, 14, a lever, 17, a swivel-eye, 16, carried by the lever 17, nuts 19 and 20, arranged upon either side of the swivel-eye and engaging the rod 14, and jam-nuts 21 and 22, substantially as described.

3. The combination, with a link arranged for connection with a valve-stem and eccentric-rods, of a rod, 14, connected to the link-block, a lever, 17, formed with a foot, 23, a table upon which said foot rests, a swivel-eye, 16, carried by the lever 17, the rod 14, passing through said eye, and lock-nuts carried by the rod upon either side of the swivel-eye, substantially as described.

383,964. BOTTLE-WASHER. JOHN C. HACKSTORM, Erie, Pa., assignor of one-half to A. Fred. Tillotson, same place. Filed Oct. 3, 1887. Serial No. 251,243. (No model.)



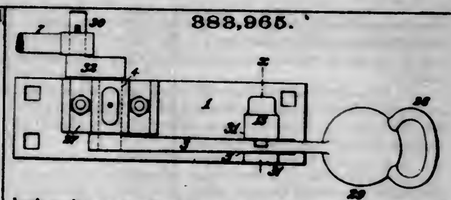
Claim.—1. The combination, in a portable bottle-washer, of a screw-threaded collar, having a diaphragm and a central jet-tube secured in said diaphragm, with a hood secured to said collar and surrounding said jet-tube, substantially as and for the purpose set forth.

2. The combination, in a portable bottle-washer, of a collar, C, having a tapering jet-tube, F, adapted to enter a bottle-neck, secured to one end thereof, with a conical hood, A, secured at its apex to the collar C, and adapted to cover and surround a bottle-neck when the jet-tube F is inserted therein, substantially as and for the purpose set forth.

383,965. RAILROAD-SWITCH LOCK. WILLIAM T. MANNING, Pittsburg, Pa., assignor of one-half to I. H. Kellough, same place. Filed Mar. 14, 1883. Serial No. 267,169. (No model.)

Claim.—The combination of a switch-stand having a horizontal base-plate and a bearing for the shaft of a switch-lever, a switch-lever





having a lateral recess and journaled in said bearing, a weight fixed to said lever and acting to retain the same in position to effect either desired adjustment of the switch-rails, a lock-case fixed relatively to the base-plate of the switch-stand, and a spring locking-bolt fitted to slide in said case transversely to the plane of movement of the switch-lever and adapted to engage the recess thereof when the lever is thrown into main-track position and held by the gravity of the weight, substantially as set forth.

383,966. WHEEL. HENRY G. MANNING, Albuquerque, N. Mex., assignor to himself, August Traviesa, and Michael Blandel, all of same place. Filed Dec. 20, 1887. Serial No. 258,467. (No model.)



Claim.—1. The combination, with a hub having opposing and spaced peripheral recesses, of spokes provided with bifurcated inner ends filling said recesses, a felly engaging the outer ends of the spokes, cap-plates clamping the bifurcated extremities of the spokes, and means, substantially as described, for drawing the cap-plates toward the center of the hub, whereby the spokes are clamped to the hub and felly, as set forth.

2. The combination, with a hub having opposing and spaced peripheral recesses, of spokes provided with bifurcated inner ends filling said recesses and angular outer ends, a felly having a polygonal inner face, the angles whereof correspond to the number of spokes and their angular outer ends, cap-plates engaging the bifurcated extremities of the spokes, and means, substantially as shown and described, for drawing the cap-plates toward the center of the hub and compressing the bifurcated ends of the spokes, as set forth.

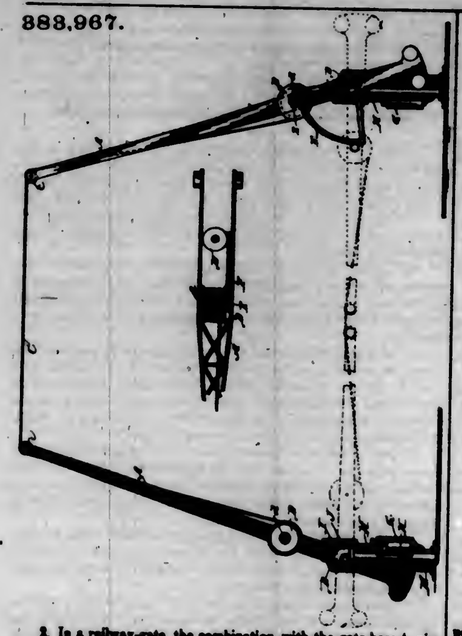
3. The combination, with a hub provided with a series of opposing and spaced peripheral recesses, and an interior chamber having polygonal walls, and head-blocks inserted in said chamber, of a contour corresponding to the walls thereof and apertured to receive the axle-box, of spokes provided with bifurcated inner ends fitting said recesses and having angular outer ends, a felly having a polygonal inner face, the angles whereof correspond to the number of spokes, and cap-plates secured to said head-blocks and engaging the bifurcated extremities of the spokes, substantially as shown and described.

4. The combination, with a hub provided with a series of opposing and spaced peripheral recesses, and an interior chamber having polygonal walls, and head-blocks inserted in said chamber, of a contour corresponding to the walls thereof and apertured to receive an axle-box, of spokes provided with bifurcated inner ends fitting said recesses and having angular outer ends, a felly having a polygonal inner face, the angles whereof correspond to the number of spokes, cap-plates to said head-blocks, engaging the bifurcated extremities of the spoke, and bolts passing through the cap-plate, head-blocks, and hub, provided with a suitable head and nuts, all adapted to operate substantially as and for the purposes herein set forth.

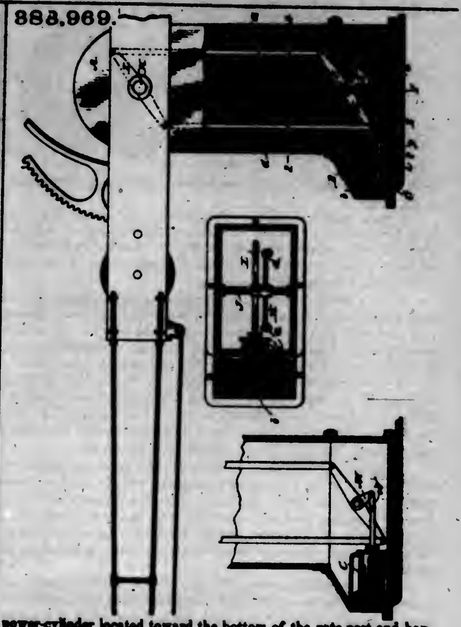
383,967. TIE FOR RAILWAY-GATES. ALEXANDER J. McDONALD, Chicago, Ill. Filed Nov. 5, 1887. Serial No. 254,446. (No model.)

Claim.—1. The combination, in a railway-gate, of gate-bars pivoted upon supports and adapted to be turned upon their pivots to open and close the crossing, drums mounted upon said bars toward their pivotal points, pinions secured to turn with said drums, and toothed segments, with which said pinions mesh, secured to a fixed part of the gate, and a cable secured to the drums and passing over sheaves secured to the gate-bars toward their outer ends, whereby the swinging of the gate-bars operates to take up and pay out the cable, substantially as described.

383,967.

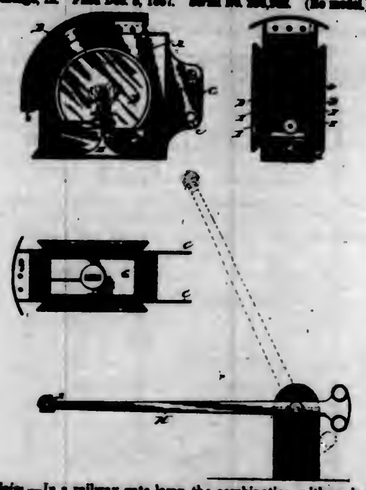


383,969.



2. In a railway-gate, the combination, with the gate-bars A, pivoted to posts B, of a cable, C, sheaves c at the ends of the gate-bars, drums D, mounted on said bars and carrying pinions E, which pinions mesh with segments F, secured to a fixed part of the gate, whereby the swinging of the gate-bars operates to rotate the drums and to pay out and take up the cable, substantially as set forth.

383,968. RAILWAY-GATE LAMP. ALEXANDER J. McDONALD, Chicago, Ill. Filed Dec. 6, 1887. Serial No. 256,982. (No model.)



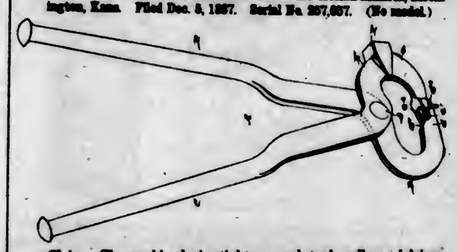
Claim.—In a railway-gate lamp, the combination, with an inclosing-case, A, provided with an attaching bracket or brackets, C, and having transparent side portions, D, and a ventilator, E, of a lamp suspended within said case by means of the standards E E, carrying the studs *e e* and the swinging arms F F, substantially as described.

383,969. RAILWAY-GATE. ALEXANDER J. McDONALD, Chicago, Ill. Filed Dec. 6, 1887. Serial No. 257,004. (No model.)

Claim.—1. The combination, in a railway-gate, of a pivoted gate-bar, a cross-beam secured to and turning with the gate-bar, a power-cylinder located toward the bottom of the gate-post and having a horizontally-reciprocating piston-rod, a rock-shaft having secured thereto a second cross-beam, suitable connecting devices between the piston-rod and said rock-shaft, whereby the latter is rocked, and links connecting said cross-beams on both sides of their centers of oscillation, substantially as described.

2. The combination, in a railway-gate, of a gate-bar pivoted upon a rock-shaft, a cross-beam secured to said rock-shaft, a power-cylinder having a horizontally-reciprocating piston-rod provided with a rack, a segment secured upon a second rock-shaft and adapted to be operated by the piston, a cross-beam secured to said last-named rock-shaft, and links connecting said cross-beams on both sides of their centers of oscillation, substantially as described.

383,970. COMBINED WIRE-TIGHTENER AND STAPLE DRIVER AND EXTRACTOR. FRANKLIN G. MCELHENY and HOMER MARVIN, Huntington, Kans. Filed Dec. 5, 1887. Serial No. 257,057. (No model.)



Claim.—The combined wire-tightener and staple puller and driver, having the jaws D E, the end of the jaw D forming a point, *d*, having a concave inner edge, *d'*, and an inwardly-turned point, d^2, and the end of the jaw E being pointed and widened laterally, made slightly concave on its lower edge, and provided with a longitudinal notch or recess, d^3, the floor d^4 of said recess being convex and corresponding to the concave edge of the point *d*, substantially as specified.

383,971. BLOW-PIPE FURNACE. FRANCIS J. MCLAREN, New York, N. Y. Filed July 26, 1887. Serial No. 245,313. (No model.)

Claim.—1. In a muffle-furnace, in combination, a refractory jacket or body-piece having a chamber with a front opening and a longitudinal opening extending through the upper side and the rear end, a muffle supported within the chamber, and a cover for closing the upper part of the longitudinal opening, whereby the muffle is preliminarily heated through the upper part of the longitudinal opening, which is then closed by the cover, and the operation completed by the

383,971.



heating-flame being directed through the rear opening, substantially as set forth.

2. In a muffle-furnace, in combination, a refractory jacket or body-piece having a chamber extending entirely through it, a muffle provided with a stopper supported within the chamber, and a deflecting-block placed in front of the chamber, partly closing the exit end of the same, substantially as set forth.

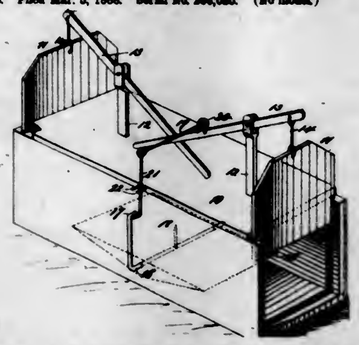
3. In a muffle-furnace, in combination, a refractory jacket or body-piece having a chamber extending entirely through and provided with a central stud, a muffle supported within the chamber, and a slab provided with a hole into which the stud of the jacket extends, whereby the jacket is held free to rotate on the slab, substantially as set forth.

4. In a muffle-furnace, in combination, the refractory jacket or body-piece *a*, provided with the chamber *b*, extending entirely through it, the muffle *j*, supported within the chamber on the frames *d* and *e*, and the flange *k*, extending from and around the front end of the muffle, so as to nearly close the chamber, substantially as set forth.

5. In a muffle-furnace, in combination, the refractory jacket or body-piece *a*, having a chamber, *b*, extending entirely through it, the muffle *j*, supported within the chamber on the frames *d* and *e*, the flange *k*, extending from and around the front end of the muffle, so as to nearly close the chamber, and the deflector *o*, placed in front of the chamber and extending partly within the same, substantially as set forth.

6. In a muffle-furnace, in combination, a refractory jacket or body-piece having a chamber with a front opening and a longitudinal opening extending through the upper side and the rear end, a muffle supported within the chamber and provided with a flange extending from and around its front end, a cover for closing the upper part of the longitudinal opening in the jacket, a deflector placed in front of the chamber, and a slab upon which the jacket is held free to rotate, substantially as set forth.

383,972. ANIMAL-TRAP. CHARLES H. MITTLER, Marthasville, Mo. Filed Mar. 3, 1888. Serial No. 266,095. (No model.)
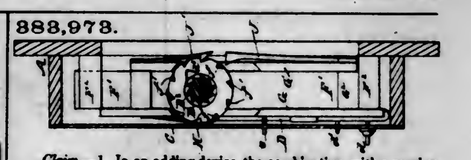


Claim.—1. In an animal-trap, the combination, with the rectangular box 10, having vertical grooves at its open ends, and doors 11, sliding in said grooves, of the pivotally-supported levers 13, and the links 14, connecting said levers loosely with the sliding doors, the cross-bar 19, the hook 21, the tilting platform 15, and an upwardly-extending hook, 17, rigidly connected to said platform and adapted to engage the hook 21, substantially as shown and described.

2. In an animal-trap, the combination, with the rectangular box 10, having vertical grooves at its open ends, and the doors 11, sliding in said grooves, of the levers 13, the standards 12, supporting said levers, the link 14, which loosely connects the lever with the sliding door, the cross-bar 19, the hook 21, the tilting platform carrying the bait-pin 18, and the upwardly-extending hook 17, rigidly connected to said platform and adapted to engage with the hook 21, substantially as shown and described.

383,973. ADDING-MACHINE. CHARLES C. MOORE, New York, N. Y., assignor to Jacob B. Moore, same place. Filed Aug. 18, 1887. Serial No. 247,273. (No model.)

383,973.



Claim.—1. In an adding device, the combination, with a numbering-disk and rack for turning the same, of sliding plates operated by the said numbering-disk, and a second numbering-disk also operated by the sliding plates for carrying the tens, substantially as described.

2. The side plates, F F', plate G, apron H, plate G', and pawl J, in combination with the numbering-disk B and the operating-bar D, substantially as described.

3. The side plates, F F', numbering-disk B, bar D, plates G G', constructed to be moved longitudinally by the disk B and the pawl J, in combination with another frame carrying similar parts, the pawl J engaging with the next adjoining numbering-disk, substantially as described.

4. In a numbering device, the numbering-disk B, provided with a side pin, A, and means for revolving the disk, in combination with the side plates, F F', and the plates G G', the latter provided with a pawl, J, said plates, G G' being formed, respectively, with shoulders h' h^2 to receive the impact of the said pin h for reciprocating the plates G G', substantially as and for the purposes set forth.

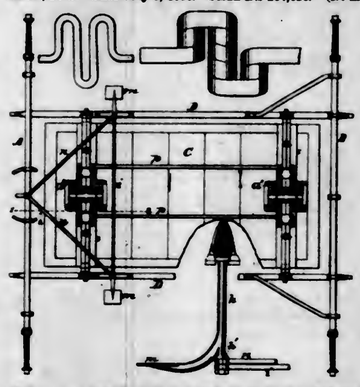
5. The side plate, F, provided with a locking-pawl, K, in combination with the numbering-disk, the operating-bar D, for revolving the same and notched for receiving the locking-pawl, and the united plates G G', the plate G being provided with a pin, *n'*, for operating the pawl K, substantially as described.

6. The sliding bars D, notched at *m*, in combination with the numbering-disks, the plates G G', the pivoted locking-pawls K, and pins *n'*, attached to the plates G and entering a diagonal slot in the said locking-pawls, substantially as described.

7. In a numbering-machine, the combination, with the numbering-disks, the bars D, for turning the same, the ratchet-wheel and ratchet and pawl for locking the disks from backward movement, the sliding plates G G', and the disk B, provided with the pins A, for reciprocating the plates G G', of the pawls J and the apron H, substantially as described.

8. In a numbering-machine, the combination, with the numbering-disks, the bars D, for turning the same, the ratchet-wheel and ratchet and pawl for locking the disks from backward movement, the sliding plates G G', and pins A, for reciprocating the plates G G', of the pawls J, for communicating motion to the neighboring numbering-disks, and the locking-pawls K, for locking the bars D, substantially as described.

383,974. VEHICLE SPRING AND GEAR. EVERETT P. MOSES, Ithaca, N. Y. Filed July 3, 1886. Serial No. 207,089. (No model.)



Claim.—1. A vehicle-spring consisting of two oppositely-extending supporting-arms supported at their remote ends and pivotally connected to the body on opposite sides of its central line at their adjacent ends, and an elastic rod or bar which is either a continuation of or has its ends rigidly attached to and extends continuously and freely between the butt-ends of said arms, said rods being formed into two or more nearly or quite parallel horizontal torsional branches arranged between the axes of said central pivotal connections and extending transversely to said arms, substantially as described.

2. A vehicle-spring consisting of two oppositely-extending arms

supported at their remote ends and pivotally connected to the body on opposite sides of its central line at their adjacent ends, and an elastic rod or bar which is either a continuation of or has its ends rigidly attached to and extends continuously and freely between the butt-ends of said arms, said rods being formed into two or more nearly or quite parallel horizontal coils arranged between the axes of said central pivotal connections and extending transversely to said arms, substantially as described.

3. A vehicle-spring consisting of two elastic rods or bars having their ends pivotally connected to the side bars of a side-bar wagon, their central portions formed into oppositely-extending torsional branches, and the portions extending outward from said branches similarly formed, clamped together, and pivotally connected to the body on opposite sides of said branches, substantially as described.

4. A vehicle-spring consisting of two elastic rods or bars having their ends pivotally connected to the side bars of a side-bar wagon and their central portions formed into similar coils *d' d'*, and the portions extending outward from these coils similarly formed and closely clamped together by clamps *d' d'*, adapted to pivotally connect said rods to the body at two points on opposite sides of the longitudinal central line of the body, said coils lying between the axes of the central bearings and being free to yield to the movements of both arms, substantially as and for the purpose described.

5. The combination, with a vehicle-spring bearing or joint, of a series of small cylindrical rollers inserted between the bearing-surfaces of said joint and parallel to its axis, whereby as one of said surfaces moves relatively to the other said small cylinders are adapted to roll between them, substantially as described.

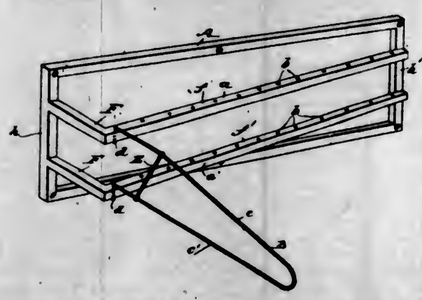
6. The combination, with the axles and side bars of a side-bar wagon, of dependent arms having their upper ends rigidly attached to said side bars, stops *m*, securely affixed to the lower ends thereof, and rods or bars securely attached to and extending between the lower ends of said arms and the lower end of the axis about which the front axle turns, substantially as described.

7. The combination, with the side bars and axles of a side-bar wagon, of dependent arms extending from and having their upper ends securely attached to said side bars, and a horizontal truss consisting of members diverging from its opposite ends, which are connected with and supported by the lower ends of said arms, the central part of said truss being connected to and staying the lower end of the axis about which the front axle turns, substantially as described.

8. The combination, with the side bars and axles of a side-bar wagon, of dependent arms having their upper ends securely attached to said side bars, rods diverging in two branches from and securely attached to the lower ends of said arms, the one branch extending to and pivotally connected with the lower end of the axis about which the front axle turns, the other extending between and connecting said arms, substantially as described.

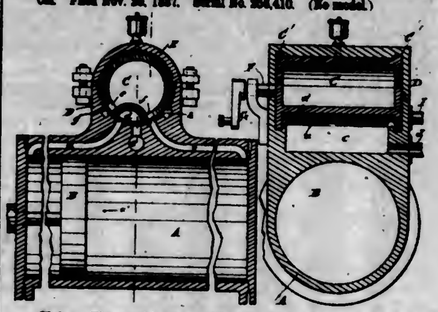
9. The combination, with the axles and side bars of a side-bar wagon, of arms A, having their upper ends securely attached to said side bars, and stops *m*, affixed to their lower ends, rods *n n*, securely attached to and extending between the lower ends of said arms and the lower end of the axis about which the front axle turns, and rod *i*, securely attached to and extending directly between the lower ends of said arms, substantially as described.

383,975. RACK FOR EXHIBITING GOODS. ADOLPH HERVILLE, St. Louis, Mo., and ALBERT BAER, New York, N. Y.; said Baer assignor to Tillie Baer, New York, N. Y. Filed Jan. 10, 1888. Serial No. 260,302. (No model.)



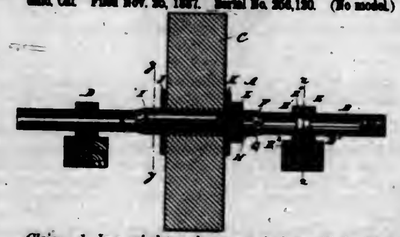
Claim.—The vertical frame A, having horizontal arms F F at right angles to the said frame, and the pierced horizontal diagonal supports or bars *f f'*, in combination with the arms B B, bent to form the members *c d* and hooks *d*, substantially as described.

383,976. ROTARY VALVE. JAMES O'DONNELL, San Francisco, Cal. Filed Nov. 20, 1887. Serial No. 256,410. (No model.)



Claim.—The combination, with the valve casing or chest E, having ports *g h a c b* in its bottom, and the cylinder A, to which the ports *a b* lead, of the tubular valve C, having a transverse cavity, *d*, in its under side connecting the port *c* with port *a* or *b* and ports *e f* at opposite sides of the cavity *d*, below the median line of the valve, and connecting ports *b g* or *a h*, substantially as set forth.

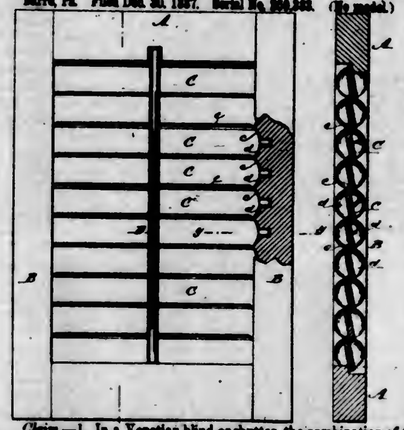
383,977. GRINDSTONE-HANGER. DENNIS O'LEARY, San Bernardino, Cal. Filed Nov. 25, 1887. Serial No. 256,120. (No model.)



Claim.—1. In a grindstone-hanger, a shaft provided with a split portion having an oblong cross-section and supporting the stone, substantially as shown and described.

2. In a grindstone-hanger, the combination, with a shaft having a split portion formed by a diametrical slot, of a key held in said slot, washers held on said oblong portion, and between which is held the grindstone, and a nut screwing on the threaded portion of said slotted oblong part of the shaft, substantially as shown and described.

383,978. VENETIAN BLIND. SAMUEL S. PATTERSON, Wilkesbarre, Pa. Filed Dec. 30, 1887. Serial No. 259,283. (No model.)

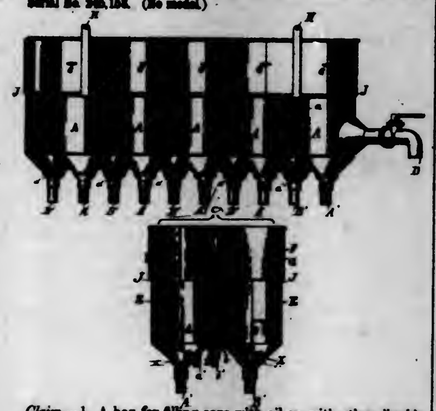


Claim.—1. In a Venetian blind or shutter, the combination of the side bars of the frame having a series of adjoining concave cavities, and the pivoted slats having their ends curved from edge to edge in the direction of their width, and fitting in and filling said cavities from edge to edge, substantially as described.

2. An improved Venetian blind or shutter, the combination of the

frame A B, the side pieces, B, of which are provided with the series of concave adjoining cavities, *d*, and the slats C, having their ends curved from edge to edge in the direction of their width, and their upper overlapping margins, *c*, straight and provided with the pivots *b*, the said curved ends fitting in the cavities and filling the same from edge to edge, substantially as herein shown and described.

383,979. BOX FOR FILLING CANS WITH OIL OR OTHER LIQUIDS. GEORGE H. PERKINS, Philadelphia, Pa. Filed July 26, 1887. Serial No. 245,158. (No model.)



Claim.—1. A box for filling cans with oil or with other liquids, provided with one or more series of adjacent compartments of a given size and with a like number of series of a like number of smaller adjacent compartments of a given size, each of said compartments of each of said series having at its lower end an outlet for permitting the escape of the oil from said compartment to a can, said compartments at their upper ends being provided with a compartment common to the compartments of all of said series, as and for the purpose specified.

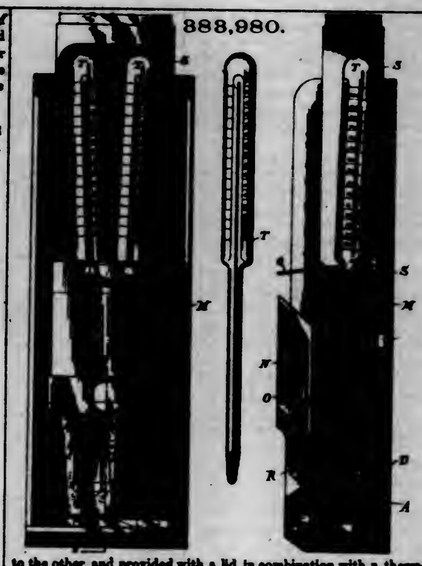
2. A box for filling cans with oil or with other liquids, provided with one or more series of adjoining compartments of a given size and with a like number of series of a like number of smaller adjoining compartments of a given size, each of said compartments of each of said series having at its lower end an outlet for permitting the escape of the oil from each of said compartments to a can, said compartments at their upper ends being provided with a compartment common to all the compartments of all of said series, in combination with vertically-adjustable displacing-blocks, as specified.

383,980. DEVICE FOR TESTING THE PHYSICAL CONDITION OF LIQUIDS AT GIVEN TEMPERATURES. GEORGE H. PERKINS, Philadelphia, Pa. Filed July 26, 1887. Serial No. 245,159. (No model.)

Claim.—1. A device in which to determine the physical condition of oil and other liquids at given temperatures, which consists in a transparent glass block provided with two or more bores in proximity to each other, having a partition of glass between them, and provided with a lid, one of the faces of which is plain and the other of which is provided with a transverse slot or channel adapted to form a passage between said bores, as and for the purpose specified.

2. A device in which to determine the physical condition of liquids or liquefied solids at given temperatures, which consists in a transparent glass block provided with two or more bores parallel and in proximity to each other, having a partition of glass between them, and provided with a duct or channel leading from one of said bores



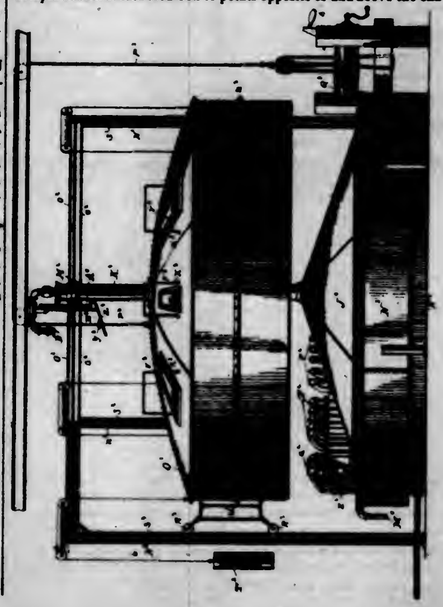


383,980.

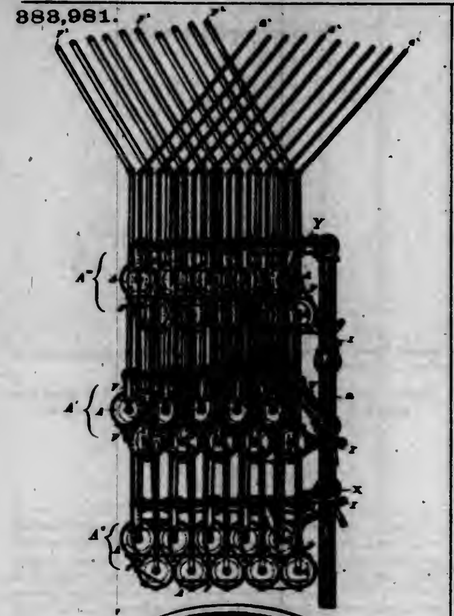
to the other, and provided with a lid, in combination with a thermometer located within each of said bores, as and for the purpose specified.

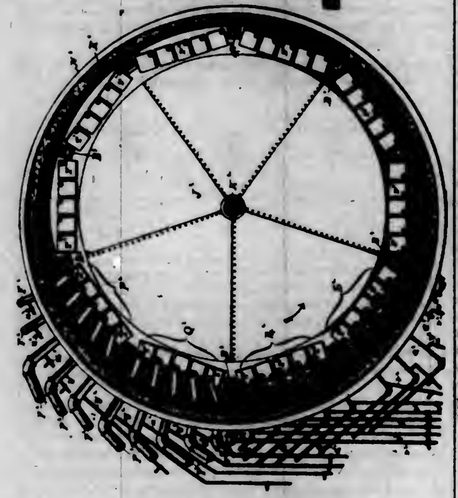
383,981. MACHINE FOR FILLING CANS. GEORGE H. PERKINS, Philadelphia, Pa. Filed July 26, 1887. Serial No. 245,160. (No model.)

Claim.—1. In an apparatus for filling cans with liquids, in combination, a filling-box provided with a series of compartments of equal size and with a series of a like number of smaller compartments of equal size, the compartments of both of said series at their lower ends being provided with exit-orifices and valves, a turn-table provided with two or more series of cans supported upon its periphery, and feed-pipes leading from one series of said compartments of said filling-box to points opposite to and above the can-orifices of one series of cans on the turn-table, and feed-pipes leading from a second series of smaller compartments of said feed-box to points opposite to and above the can-



383,981.





orifices of an equal number of cans of a second and adjacent series of cans on the turn-table, as and for the purpose specified.

2. In an apparatus for filling cans with liquids, a filling-box provided with one or more series of compartments and with a like number of series of a like number of smaller compartments, all of said compartments being provided with outlet-orifices and with valves, each of the valves of each of said series of compartments being connected with one end of a wire or rope adapted to operate the same, the other end of said wire or rope being provided with a handle and with a guard so attached thereto as to be capable of adjustment to, at will, permit of or prevent said handle being grasped, said guard being provided with a wire or cord attached thereto for adjusting said guard into or out of contact with said handle, as specified.

3. In an apparatus for filling cans, in combination, a turn-table provided upon its periphery with one or more series of can-rests, each series having a like number of said rests, a series of feed-pipes, the exit ends of which open over and into the orifices of the cans of one or more of said series, a second series of an equal number of smaller feed-pipes, the exit ends of which open over and into the orifices of the next adjoining series of cans, as and for the purpose specified.

4. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and of which each has a valve-provided bottom opening, a turn-table adapted to support a series of cans to be filled, a series of conduits equal in number to the number of said compartments, and being, as to one half of their number, of greater diameter than the other half, said large and small conduits being, at one end, in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles which overhang the periphery of said turn-table, a metal hood or dome supported over the turn-table, and means for raising and lowering said dome, substantially as set forth.

5. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and of which each has a valve-provided bottom opening, a turn-table adapted to support a series of cans to be filled, a series of conduits equal in number to the said given number of compartments, and being, as to one half their number, of greater diameter than the other half, said large and small conduits being, at one end, in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles overhanging the periphery of said turn-table, a metal hood or dome supported above the turn-table, provided with upwardly-opening doors in its top, means for raising and lowering said dome, and vertical guide-posts to guide it in its vertical movement, substantially as set forth.

6. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and of which each has a valve-provided bottom opening, a turn-table adapted to support a series of cans to be filled, a series of conduits equal in number to the said given number of compartments, and being, as to one half of their number, of greater diameter than the other half, said large and small conduits being at one end in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles and overhanging the periphery of said turn-table, a wall surrounding said turn-table and provided with a trough or water seal, a metal hood or dome supported above the turn-table, and means for vertically moving said dome into or out of said water seal, substantially as set forth.

7. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and of which each has a valve-provided bottom opening, a turn-table adapted to support a series of cans to be filled, a series of conduits equal in number to the said given number of compartments, and being, as to one half their number, of greater diameter than the other half, said large and small conduits being, at one end, in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles and overhanging the periphery of said turn-table, a water seal surrounding said turn-table, a metal hood or dome supported above said turn-table, means for lowering said dome into said water seal, so as to completely inclose said turn-table, and a hollow metal post upon which said turn-table is mounted, in communication, by means of a pipe, with a steam-supply, and provided, intermediate of its length, with steam-escape openings, substantially as described.

8. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and of which each has a valve-provided bottom opening, a turn-table adapted to support a series of cans to be filled, a series of conduits equal in number to the said given number of compartments, and being, as to one half their number, of greater diameter than the other half, said large and small compartments being, at one end, in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles, each size being grouped by itself and overhanging the periphery of said turn-table, a wall surrounding said turn-table, a metal hood or dome supported above said turn-table, means for lowering said dome upon said wall, so as to completely inclose said turn-table, a hollow metal post upon which said turn-table is mounted, in communication, by means of a pipe, with a steam-supply, and provided, intermediate of its length, with steam-escape openings, a valve seated in said steam-pipe and provided with a valve-lever, and a trip device connected to the dome, which, when the dome is lowered, acts upon the valve-lever and opens the valve, substantially as set forth.

9. In an apparatus for filling cans, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and of which each

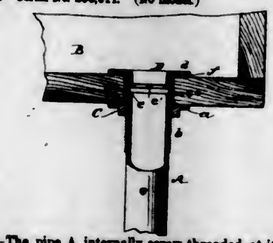
has a valve-provided bottom opening, a turn-table adapted to support and hold in place a series of cans to be filled, provided with a handle whereby it may be rotated and with a device for locking it in given positions, a series of conduits equal in number to the said given number of compartments, and being, as to one half their number, of greater diameter than the other half, said large and small conduits being, at one end, in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles, each nine being grouped by itself and overhanging the periphery of said turn-table, substantially as set forth.

10. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and each of which has a valve-provided bottom opening, a series of conduits equal in number to the said given number of conduits, and being, as to one half of their number, of greater diameter than the other half, said large and small conduits being, at one end, in position to receive the discharge from the valve-openings of the large and small compartments, respectively, and at their other ends terminating in nozzles and overhanging the periphery of said turn-table, a metal hood or dome supported over said turn-table, means for raising and lowering said dome, and counter-balances connected with said dome, substantially as set forth.

11. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and each of which has a valve-provided bottom opening, a turn-table adapted to support a series of cans to be filled, a series of conduits equal in number to the said given number of compartments, and being, as to one half their number, of greater diameter than the other half, said large and small compartments being, at one end, in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles which overhang the periphery of the turn-table, and a valve located in each of said conduits to prevent the backflow of its contents, substantially as set forth.

12. In an apparatus for filling cans, in combination, a series of filling-boxes, each of which is divided into a given number of compartments, of which one half are of greater capacity than the other half, and each of which has a valve-provided bottom opening, a turn-table adapted to support a series of cans to be filled, a series of conduits equal in number to the said given number of compartments, and being, as to one half their number, of greater diameter than the other half, said large and small conduits being, at one end, in position to receive the discharge from the valved openings of the large and small compartments, respectively, and at their other ends terminating in nozzles overhanging the periphery of said turn-table, an adjustable drip-cup supported under each of said nozzles, and means for shifting them into and out of such position, substantially as set forth.

383,982. COMBINED PLUG AND FERRULE FOR WASH-TRAY CONNECTIONS. CORNELIUS J. PHILLIPS, New York, N. Y. Filed May 18, 1887. Serial No. 238,611. (No model.)



Claim.—The pipe A, internally screw-threaded at its upper end, enlarged in diameter at c^1, and externally screw-threaded at b, in combination with the ferrule D, formed with flange d, and externally screw-threaded to enter the top of the pipe, and the jam-nut C, placed upon the threads b, substantially as shown and described.

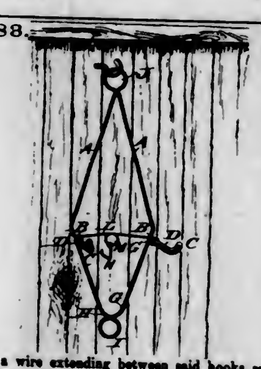
383,983. HARNESS-RACK. HENRY PHILLIPS and ALBERT H. EDWARDS, Wichita, Kans. Filed Nov. 15, 1887. Serial No. 255,242. (No model.)

Claim.—1. The harness-rack herein described, provided with loops at its upper and lower ends and intermediate side and center hooks, substantially as described.

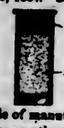
2. The harness-rack herein described, constructed of a single piece of wire having upper and lower loops formed therein and intermediate hooks formed on the sides of said rack, substantially as shown and described.

3. The harness-rack herein described, having upper and lower loops formed therein, intermediate side hooks, and a central hook suspended from a wire extending between said hooks, substantially as shown and described.

383,983.

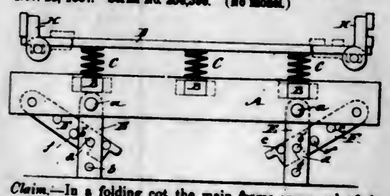


383,984. PHOTOGENIC CARTRIDGE. HENRY G. PIFFARD, New York, N. Y. Filed Oct. 19, 1887. Serial No. 252,784. (No model.)



Claim.—As a new article of manufacture, a photogenic cartridge containing a charge consisting partly of an easily ignited or explosive material of a nature and in a sufficient quantity to discharge the load of the cartridge and in part of powdered magnesium, which will be ignited by the combustion of the easily ignitible or explosive material and burned entirely at or near the mouth of the weapon, so as to produce at the place of discharge a magnesium light of great intensity, but momentary duration.

383,985. FOLDING COT. JOHN C. FOSTER, New York, N. Y. Filed Nov. 29, 1887. Serial No. 256,399. (No model.)



Claim.—In a folding cot, the main frame composed of the side beams, A A, cross-bars B B, supporting the springs and the slats held upon the same, and the folding legs E, pivoted to the side bars, A, and provided with the rounds b', in combination with the holding-arms F, each pivoted to the main side bars, A, on a line with the pivots of the legs E, and notched at d, and provided with the stop-pins f between the notch d and the pivot of the holding-arms, substantially as described.

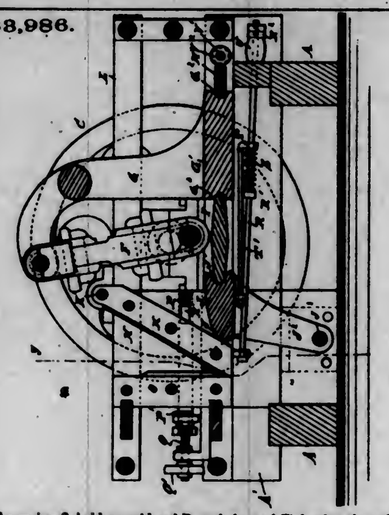
383,986. BREAKER AND CRUSHER. FREDERICK L. PERRYMAN, Darien, Wis. Filed Apr. 27, 1887. Serial No. 236,320. (No model.)

Claim.—1. In a breaking and crushing machine, a fixed corrugated jaw, fixed side plates between which said jaw is held, and an inclined vibrating jaw pivoted at its upper end, in combination with a pivoted pushing-plate operating against the lower end of said vibrating jaw, a bent lever, the main shaft, the pitman connecting said bent lever and main shaft, and an intermediate link-plate connecting said pushing-plate with the lower plate of the bent lever, substantially as shown and described.

2. In a breaking and crushing machine, the combination, with the vibrating jaw K and the side plates, N, between which said jaw K operates, and having slots N', of the cross-bar P, held to slide in said slots N', the U-shaped arm P', connected at its outer ends with said cross-bar P, and the screw Q, having the hand-wheel Q', adapted to move said U-shaped arm forward and backward, so as to adjust the cross-bar P in relation to the jaw K, substantially as shown and described.

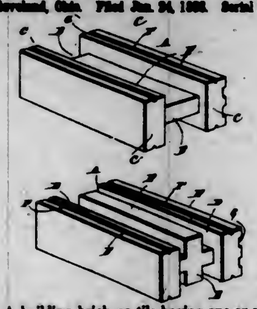
3. In a breaking and crushing machine, the vibrating jaw K, the adjustable cross-bar P, adapted to limit the return motion of said vibrating jaw K, and the swinging plate J, operating against the free end of said vibrating jaw K, mechanism for vibrating said plate J, in combination with the rod R, the spring U, held on said rod R and adapted to be pressed by the forward motion of said crushing-lever

383,986.



K, the spring S, held on said rod R, and the rod T, having the collar T, pressing the spring S by the forward motion of said swinging plate J, substantially as shown and described.

383,987. BRICK OR TILE FOR BUILDING PURPOSES. WILLIAM J. PETTEE, Cleveland, Ohio. Filed Jan. 24, 1888. Serial No. 261,712. (No model.)



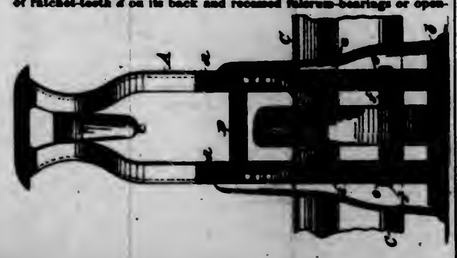
Claim.—1. A building brick or tile having one or more longitudinal grooves and one or more ribs on its upper and lower sides, the said ribs having one or more shallow longitudinal grooves, as set forth.

2. A building brick or tile having one or more longitudinal grooves on its upper and lower sides, said grooves being separated by intervening ribs, one or more recesses at the ends, and one or more shallow grooves in the said ribs, as set forth.

3. A building brick or tile having a smooth outer face and provided on its inner face with one or more longitudinal grooves, one or more longitudinal grooves on the upper and lower sides of the brick or tile, said grooves forming intervening ribs, shallow grooves in said ribs, and one or more recesses at the ends of the brick or tile, as set forth.

383,988. TRACK-LIFTER. GAVIN RAINNIE, Portland, New Brunswick, Canada. Filed Dec. 29, 1887. Serial No. 259,593. (No model.)

Claim.—1. In a track-lifter, the frame A, having opposite rows of ratchet-teeth d on its back and recessed fulcrum-bearings or open-



383,988.



ended slots e, arranged below said teeth, substantially as and for the purpose specified.

2. The combination of the frame A, having opposite rows of ratchet-teeth d on its back, and a series of recessed fulcrum-bearings or open-ended slots, e, arranged one below the other beneath the ratchet-teeth d, the claw bar or lever B, and its attached pawl D, essentially as shown and described.

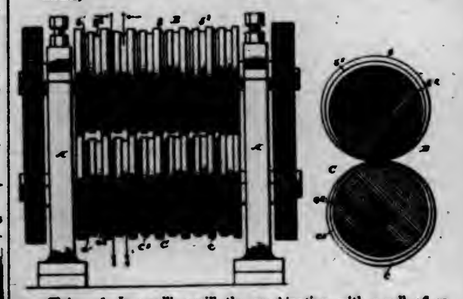
383,989. CAR-WHEEL. WILLIAM G. RICHARDS, Brooklyn, assignor to the Peckham Car Wheel Company, New York, N. Y. Filed Dec. 20, 1887. Serial No. 259,326. (No model.)



Claim.—1. A car-wheel composed of a single piece of cast metal formed with annular internal cavities respectively around the hub and near the periphery, and sectoral cavities uniting the annular cavities, substantially as set forth.

2. The improved cast-metal wheel-body composed of the hub A, web-plates P P', peripheral ring a, and the ribs b b, extending part way across the interior of the wheel-body, all cast in one piece with the internal annular cavities, c c', and sectoral cavities d d, uniting the annular cavities, substantially as described and shown.

383,990. ROLLING-MILL. JOHN T. RICHARDSON, Harrisburg, Pa., and AARON RAPP, Holland, N. J., assignors of one-third to Alexander H. Ege, Mechanicsburg, Pa. Filed Dec. 16, 1887. Serial No. 258,069. (No model.)



Claim.—1. In a rolling-mill, the combination, with a roll, of an opposing reducing-roll, B, provided with a reducing-face having eccentrically-arranged grooves and eccentrically-arranged ribs, substantially as described.

2. In a rolling-mill, the combination, with a roll, of an opposing reducing-roll, B, provided with a reducing-face having eccentrically-arranged grooves and eccentrically-arranged ribs, the degree of eccentricity of the grooves and of the ribs varying, substantially as described.

3. In a rolling-mill, the combination, with a roll, C, of an opposing reducing-roll, B, provided with a reducing-face having grooves and

ribs both eccentrically arranged relatively to the axis of the roll, the least eccentricity and the greatest eccentricity of all of such grooves and ribs coinciding on the same lines parallel with the axis of the roll, substantially as described.

4. In a rolling-mill, the combination of the roll B, provided with a rolling-face having one or more grooves and ribs eccentrically arranged relatively to the axis of the roll, the lines of least and greatest eccentricity coinciding, and the roll C, having a rolling-face opposed to the rolling-face on roll B, and provided with grooves and ribs opposed to the grooves and ribs on rolls B, and arranged eccentrically to the axis of their roll, the lines of least and greatest eccentricity coinciding, the two rolls being geared together to bring the lines of least and greatest eccentricity of the ribs and grooves on their respective rolls opposite each other as the rolls are revolved, substantially as set forth.

5. In a rolling-mill, the combination, with a roll, C, of an opposing roll, B, provided with a rolling-face having one or more eccentrically-arranged grooves and eccentrically-arranged ribs, the least and the greatest eccentricity of such grooves and ribs coinciding on different lines parallel with the axis of the roll, while the degree of eccentricity varies, substantially as and for the purpose set forth.

6. In a rolling-mill, the combination of the roll B, provided with a rolling-face having one or more eccentrically-arranged grooves and ribs, and a roll, C, having one or more eccentrically-arranged grooves and ribs opposed to the eccentrically-arranged grooves and ribs on the roll B, and having a groove concentric with the axis of said roll, substantially as set forth.

7. In a rolling-mill adapted to form tapering rails for railway-switches, the combination of the roll B, provided with a rolling-face having the eccentrically-arranged grooves $b' b^2$, and rib b^3 between said grooves, the greatest eccentricity of said grooves and ribs coinciding on a line parallel with the axis of the roll, and the roll C, having a rolling-face opposed to the rolling-face of roll B, and provided with the eccentrically-arranged groove c^2 and rib b^3, and the concentrically-arranged groove c', substantially as described.

8. In a rolling-mill adapted to form tapering rails for railway-switches, the combination of the roll B, provided with a series of rolling-faces having eccentric grooves $b' b^2$ and ribs b^3, the diameter and degree of eccentricity of said grooves and ribs varying progressively with each of the series of rolling-faces in the direction of the length of the roll, and the roll C, having a series of reducing-faces opposed to those on the roll B, and having the eccentric grooves c^2 and ribs c^3 and the concentric grooves c', the diameter and degree of eccentricity of ribs and grooves $c^3 c^2$ varying progressively in the direction of the length of the rolls, while the diameter or depth of groove c' remains uniform, substantially as set forth.

383,991. CAR-COUPLING. George M. Rogers, Worcester, Mass., assignor of two-thirds to Henry F. Arms and Charles G. Rusher, same place. Filed Apr. 14, 1888. Serial No. 270,694. (No model.)



Claim.—1. The within-described car-coupling, consisting of the draw-head A, provided with the lip *a*, the jaws B, formed with the lip *b* and upward extension B', and having the opening *f*, with flat top surface, *l'*, the pivot-pin E, and the locking-bar F, having the weighted offset-arm, and the flattened side I, as and for the purpose set forth.

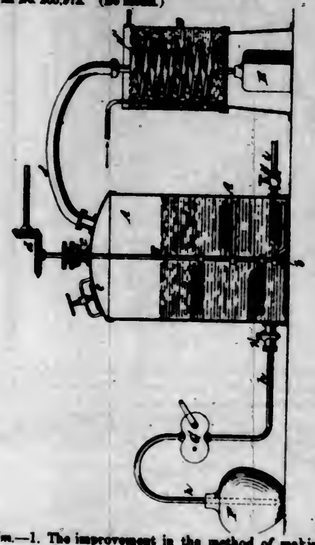
2. The combination, as described, of the draw-head A, having the lip *a*, the jaw B, having lip *b* and upright back B', the locking-bar F, having the counterweighted head F' and flattened side I, the pivot E, and the chain J, and rocker-shaft G, with arm H, as and for the purpose set forth.

3. The combination, with the draw-head A and pivoted jaw B, having lips *a* and *b*, formed with backwardly-inclined inner surfaces, and the locking-bar F, arranged for working said jaw, as set forth, of the link-plate D, having upon one side thereof the shoulders *d*, formed with outwardly-inclined surfaces, as shown and described.

4. The plate D^2, having the backwardly-inclined shoulder d^3, and the eye e^2, pivoted at *l* in the side of the draw-head, in combination with the draw-head A, vertically-swinging jaw B, respectively provided with the lips *a* and *b*, and the counterweighted locking-bar F, as shown and described.

5. The combination, with the horizontally-pivoted jaw B, having the opening *f*, with flattened surface I', and the draw-head A, having cylindrical openings in its sides, of the locking-bar F, having the flattened surface I, cylindrical bearings *n n*, and counterweighted offset end, and the stop *m m'*, and chain J, for limiting the rotative movement of said bar, substantially as set forth.

383,992. MANUFACTURE OF CHLOROFORM FROM ACETONE. Gustav Ruhff, Frankfort-on-the-Main, Germany, assignor to Frank Rossiter and Jacob Hasslacher, New York, N. Y. Filed June 28, 1886. Serial No. 206,972. (No model.)



Claim.—1. The improvement in the method of making chloroform, consisting in adding acetone to chloride-of-lime solution in such quantities that the chloride of lime employed shall be more than five times the weight of the acetone employed, substantially as herein described.

2. The improvement in the method of making chloroform, consisting in introducing acetone into a chloride-of-lime solution and in maintaining as nearly as possible a uniform temperature until the chloroform has been produced by the reaction, substantially as herein described.

3. The improvement in the method of making chloroform, consisting in introducing acetone into a chloride-of-lime solution, and in meanwhile stirring or agitating the solution to promote the thorough combination of the acetone with the chlorine of the solution, substantially as herein described.

4. The improvement in the method of making chloroform, consisting in introducing acetone in a dilute state into the chloride-of-lime solution, substantially as herein described.

5. The improvement in the method of making chloroform, consisting in introducing acetone into a vessel or still containing chloride-of-lime solution at a point below the surface of the chloride-of-lime solution, substantially as herein described.

6. The improvement in the method of making chloroform, consisting in introducing the acetone in a dilute state into a still containing chloride-of-lime solution and at a point below the surface of the chloride-of-lime solution, substantially as herein described.

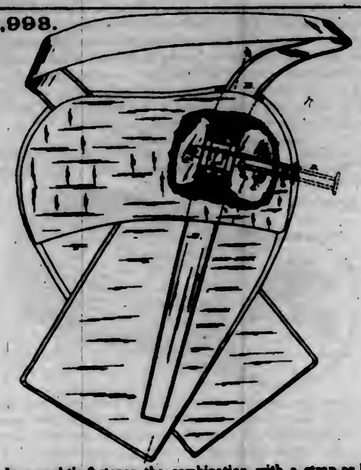
7. The improvement in the method of making chloroform, consisting in introducing the acetone periodically or at intervals of time during the operation into the still containing the chloride-of-lime solution and at a point below the surface of such solution, substantially as herein described.

8. The improvement in the method of making chloroform, consisting in introducing the acetone in a dilute state periodically or at intervals of time during the operation into a still containing chloride-of-lime solution and at a point below the surface of the chloride-of-lime solution, substantially as herein described.

383,993. BUCKLE-FASTENER. William R. Gardner, San Francisco, Cal. Filed Mar. 29, 1888. Serial No. 268,868. (No model.)

Claim.—1. The buckle-fastener herein described, which consists in a band or strap guiding tube, and a pin holding and guiding plate or arm connected to the said tube, and a retaining-pin adapted to operate and extend into the tube and pass through the strap or band to hold it in position, substantially in the manner specified.

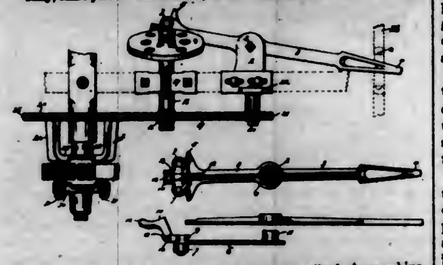
383,998.



2. In a necktie-fastener, the combination, with a strap or band guiding tube, of an intersecting pin containing and guiding arm or plate, with means for securing the same to the necktie, which consists of thin metal arms bent upward and adapted to pass through the necktie-shield and be bent downward upon the face thereof, and a fastening-pin held in the guiding-arm, all operated substantially in the manner described.

3. In a necktie-fastener, the combination, with a guiding-tube and an intersecting guiding plate or arm having a pin or stop, of a pin composed of two arms or members, with one of the arms or members terminating in a bent end or hook to engage with a pin or stop in the guiding plate or arm in which the pin operates, as in the manner described.

383,994. DRILL ATTACHMENT FOR PLANTERS. Levi Scofield, Grand Haven, Mich., assignor to the Challenge Corn Planter Company, same place. Filed Mar. 6, 1888. Serial No. 266,178. (No model.)



Claim.—1. In a drill attachment such as described, the combination, with the feed-bar provided with stops or shoulders, of a lever for actuating said feed-bar, provided with tapering sides at the point of contact with said stops, substantially as described.

2. In a drill attachment such as described, in which the feeding devices are mounted upon a frame flexibly connected to another or main frame, the combination, with the feed-bar provided with stops, of the actuating-lever supported upon the main frame, and provided with the inclined or tapering engaging portion interposed between and acting against the stops on the feed-bar, substantially as described.

3. In a drill attachment such as described, and in combination with the feed-bar, a lever and a link or plate supported upon coincident axes, driving mechanism for reciprocating the link, and a catch or dog connecting said lever and link, substantially as described.

4. In a drill attachment such as described, the combination, with the seeding devices, of the lever provided with the notched segmental end, the pivoted link, guides or ways connecting said link and lever to permit the one to vibrate independently of the other, and a dog or latch for connecting said link and lever to cause them to vibrate in unison, substantially as described.

5. In a drill attachment such as described, and in combination with the feeding mechanism, a lever for actuating the latter pivotally supported upon a link concentric with the pivot of the latter, a clutch or catch for connecting said link and lever, and devices acting upon the link to reciprocate the latter, substantially as described.

6. In a drill attachment such as described, the combination, with the feeding devices mounted on the runner-frame, of a lever mounted upon the main frame and provided at one end with the tapering sides engaging the feed-bar and at the opposite end with a notched segmental plate, the link pivotally supported on an axis concentric with that of the lever, guides, and a catch or dog connecting the lever and link, and a cam engaging the link to reciprocate the latter, substantially as and for the purpose set forth.

7. In a drill attachment such as described, the combination, with the actuating-lever for operating the feeding devices, of an independently-reciprocating link connected to the lever by a detachable dog or catch, and a cam-disk operating between pins or rollers on said link, substantially as described.

8. In a drill attachment such as described, the combination, with the actuating-lever provided with the notched arc-shaped plate, of the reciprocating link guided on said arc-shaped plate, and the pawl or dog pivoted upon said plate and provided with shoulders, said dog being held by gravity in engagement with the notch in the lever and when withdrawn and turned back sustained in like manner upon the shoulders, substantially as and for the purpose set forth.

9. In a drill attachment such as described, and as a means for detachably connecting and centering the driving-gear upon the hub of the wheel, the combination, with said driving-gear provided with the annular grooved plate for application to the inner end of the hub, of the outer plate correspondingly grooved and fitted to receive the outer end of the hub, and the clamping-bolts inserted between the spokes to clamp and hold the plates upon the hub, substantially as described.

10. In a drill attachment such as described, and in combination with the feeding devices and supporting-wheel, a driving-gear detachably applied to the hub, the cam-shaft, and sprocket-wheel, the tightening-wheel, and the chain encircling the driving and tightening wheels and passing over the intermediate sprocket-wheel, substantially as described.

11. In a drill attachment such as described, and in combination with the feeding devices on the runner-frame, the actuating-lever and its driver, the link supported upon a single bracket and connected by a movable dog or catch, the cam supported upon a shaft carrying a sprocket-wheel, and the chain engaging and driving said sprocket-wheel, substantially as described.

12. In combination with the frame of a planter, the improved drill attachment constructed substantially as described, and comprising the following parts detachably secured to the frame, viz: the bracket forming a support for the lever and link, the bearings for the tightener-pulley, and shaft-carrying cam and sprocket-wheel, and the driving-gear applied to the wheel-hub, said parts being constructed and combined for co-operation with the chain and feeding mechanism, substantially as described.

13. In a drill attachment such as described, the combination, with the frame and the cam-shaft and its detachable sprocket-wheel, of the chain engaging said sprocket-wheel and a driving-wheel, and the tightener-wheel mounted on an axis adjustable with relation to the sprocket-wheel to accommodate interchangeable sprocket-wheels differing in diameter, substantially as described.

14. In a drill attachment such as described, the combination, with the frame, of the bracket supporting the cam-shaft, a sprocket-wheel detachably secured to said shaft, a driving-gear on the wheel, a chain passing around said last-named gear and engaging the sprocket-wheel, and the pulley 21, supported upon a bolt, the latter adjustably secured in a slot in a bracket attached to the frame, substantially as described.

383,995. FAUCET. Elijah U. Scoville, Manlius, N. Y. Filed Oct. 3, 1887. Serial No. 251,788. (No model.)

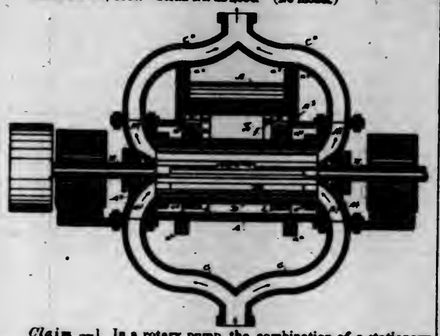


Claim.—1. The combination of the barrel B, provided with the channels *a a*, having their adjacent ends *a' a'* deflected laterally to the exterior of the barrel, the convex seat *b* across the ends of said channels, the concave valve *c*, provided with the port *c'*, and the lever *l*, pivoted to the barrel between the channels and carrying the valve, substantially as described and shown.

2. The combination of the barrel B, provided with the channels *a a*, having their adjacent ends *a' a'* deflected laterally to the exterior of the barrel, the convex seat *b* across the ends of said channels, the

concave valve *c*, provided with the port *c'*, the lever *l*, pivoted to the barrel between the channels and carrying the valve, and the spring *s*, arranged to push the lever into a position to normally hold the valve in its closed position, substantially as described and shown.

383,996. ROTARY PUMP. OSWALD SIEFERT, San Francisco, Cal. Filed Jan. 20, 1887. Serial No. 224,998. (No model.)



Claim.—1. In a rotary pump, the combination of a stationary case, the cylindrical chamber, piston and piston-shaft placed eccentrically in the chamber, suction and pressure openings and passages A^6 A^7 above and below the line of the piston-shaft, and the loose cylinder D, concentric with the main case and eccentric to and inclosing the piston and free to revolve with it, substantially as described.

2. In a rotary pump, the combination, with a rotating piston having folding wings or partitions and set eccentrically in a cylindrical chamber, as described, of a loose revolving ring or cylinder concentric with the main case or piston-chamber and eccentric to and inclosing the piston, and guide wheels or rollers that control the cylinder and keep it in position during its revolutions, substantially as described.

3. In a rotary pump, a piston having hinged wings that open out from the piston-block and shut against it, and a loose ring or cylinder surrounding the piston, in combination with a cylindrical piston-chamber, within which the piston is set to rotate eccentrically, and the ring or cylinder concentrically, the said chamber having ports or passages of inlet and discharge leading in and out from the ends of the cylinder, substantially as described.

4. In a rotary pump, a stationary piston-chamber having bearings a^5 for a longitudinal eccentrically-set shaft, H, in the ends, and suction and discharge ports and passages above and below, or on opposite sides of said shaft-bearings, in combination with the piston, and a revolving ring or cylinder which is interposed between the walls of the chamber and the piston and is eccentric to, incloses, and turns with the piston, but concentric with the axis of the chamber.

5. In a rotary pump, a stationary piston-chamber having a loose internal cylinder inclosing the piston and set concentric with the piston-chamber and eccentric to the piston, in combination with said piston, and with roller-chambers E E, and guide wheels or rollers F F, held in chambers E E over the loose cylinder, as set forth.

6. The pump-case having cylindrical piston-chamber and roller chambers or spaces over it on opposite sides of the center thereof, in which are roller-bearings *g* f^3 and spaces for the rollers, as described.

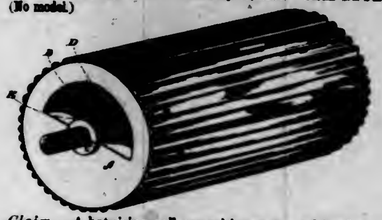
7. The herein-described pump, consisting of the stationary case having piston-chamber, roller spaces or chambers E E above and on opposite sides of the center of the chamber, the inlet and discharge ports and passages leading into and from the ends of the piston-chamber, the eccentrically-set piston, concentric cylinder D, and guide wheels or rollers F F, combined for operation as set forth.

383,997. SIDE-HILL PLOW. ALBERT K. SNODGRASS, Ellensburg, Oreg. Filed Aug. 23, 1887. Serial No. 247,805. (No model.)



Claim.—The combination, in a side-hill plow, of the beam, the vertical bolt F, extending through the same and adapted to rotate therein, the diverging standard-arms E, depending from the lower end of said bolt and having their upper ends united, the plows having their landside-plates attached to the said standard-arms and extending in opposite directions, said plows having their soles or lower edges arranged at an obtuse angle, the link-plate I, connecting the opposing ends of the said landside-plates, the outer upper corners of the mold-boards in contact and bolted together, and means to lock the revolving standard to the beam, substantially as specified.

383,998. HAT-SIZING ROLL. CHARLES R. SPRAGUE and WILLIAM J. WILEY, Danbury, Conn. Filed July 28, 1887. Serial No. 245,471. (No model.)



Claim.—A hat-sizing roll comprising cast-metal heads secured within the ends of a corrugated cylinder and having openings, as shown, and bearings which lead into said openings, and the shaft extending through the cylinder within said bearings, the caps superimposed upon the shaft at these bearing-points, and the headed bolts depending from and running within the upper walls of said openings, substantially as and for the purpose hereinbefore set forth.

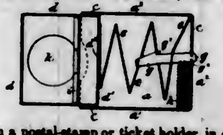
383,999. RASP. PHILIP S. STOKES, Tennent, N. J. Filed Feb. 23, 1888. Serial No. 265,262. (No model.)



Claim.—1. As an improved article of manufacture, a rasp formed with teeth B and recesses C, curved at the bottom, substantially as described.

2. As an improved article of manufacture, a rasp having its tooth B punched up from curved recesses C, whereby each tooth is re-enforced by extra metal and the recess made shallow, substantially as described.

384,000. POCKET POSTAL-STAMP AND TICKET HOLDER. FERDINAND STRAUSS, New York, N. Y. Filed Jan. 7, 1888. Serial No. 260,053. (No model.)



Claim.—1. In a postal-stamp or ticket holder, in combination, an inclosing-case open at one end, a drawer fitted to slide therein, a spring in the case for forcing the drawer out, and a spring-latch located in the case for holding the drawer in closed position.

2. In a postal-stamp or ticket holder, in combination, an inclosing-case open at one end, a drawer fitted to slide therein, a cover hinged to the drawer, a spring in the case for forcing the drawer out, and a spring-latch located in the case for holding the drawer in closed position.

3. In a postal-stamp or ticket holder, in combination, an inclosing-case open at one end, a spring-acting drawer fitted to slide therein and provided with an opening through its bottom, for the purpose set forth, and a spring-latch located in the case for holding the drawer in closed position.

4. In a postal-stamp or ticket holder, in combination, an inclosing-case open at one end, a drawer fitted to slide therein and having an opening through its bottom, for the purpose set forth, a spring in the case for forcing the drawer out, a spring-acting cover hinged to the drawer, and a spring-latch located in the case for holding the drawer in closed position.

5. The combination, with an inclosing-case composed of a bottom plate, three sides integral therewith and provided with retaining-lugs, and a top plate secured to the sides by means of the lugs, of a spring-acting drawer fitted to slide in the case and a spring-acting latch pivoted to the top plate and arranged to hold the drawer in closed position.

384,001. COAT AND HAT HOOK. FREDERICK TAYLOR, Lowell, Mass. Filed Feb. 1, 1886. Serial No. 190,442. (No model.)

Claim.—1. A hook formed of wire and having a hat-hook and a coat-book, a brace connecting said hat-hook and said coat-book, a horizontal arm, and a vertical back, said horizontal arm being connected to said hat-book at its front end, and at its rear end being provided with an eye which surrounds said back, the upper end of said back being bent backward above said arm to form an attaching-point for said book, as and for the purpose specified.

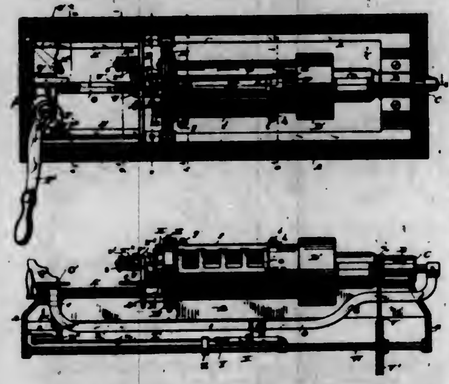
384,001.



2. A hook formed of wire bent to form a coat-book and a hat-hook, and a brace connecting said hat-book and said coat-book, and a horizontal arm provided at its rear end with an eye, the front end of said horizontal arm being connected to said hat-book, and a vertical back passing upward through said eye and bent backward above said arm to form an attaching-point, said back being bent forward where it is surrounded by said eye to prevent the rear end of said horizontal arm from moving on said back and to allow said back to rest closely against the vertical surface of the object to which it is attached, as and for the purpose specified.

3. A hook formed of wire and having a hat-hook and a coat-hook connected by a brace, and having a horizontal arm and a vertical back, said horizontal arm connected to said hat-book and provided with an eye which surrounds said back, the upper end of said back being bent backward above said arm to form an attaching-point for said hook, the head of said attaching-point being bent forward of said back to enable said point to be driven by a hammer, as and for the purpose specified.

384,002. MACHINE FOR TURNING IRREGULAR FORMS. HILBERT B. TAYLOR, Bennington, assignor, by direct and mesne assignments, of one-half to Miles D. Taylor, Janesville, Wis. Filed Sept. 3, 1887. Serial No. 248,698. (No model.)



Claim.—1. In a machine for turning irregular forms, the combination of a main frame, a revolving cylinder, a sliding feed-carriage, a pattern mounted on the cylinder, suitable means for imparting an independent rotation to the pattern, a knife carried by the cylinder, and means, substantially as described, for actuating the knife by the rotation of the pattern, as set forth.

2. In a machine for turning irregular forms, the combination of a main frame, a tube stationary on the frame, a revolving cylinder arranged on the tube, a sliding feed-carriage, a pattern mounted on the cylinder, suitable means for imparting an independent rotation to the pattern, a spring-apron forming part of said cylinder, a knife-arm secured to the axis of the apron, and a collar that travels on said tube and has transverse play, whereby it is caused to simultaneously bear against said pattern and apron, substantially as set forth.

3. In a machine for turning irregular forms, the combination of a main frame, a tube stationary on the frame, a revolving cylinder arranged on the tube, a sliding feed-carriage, a pinion journaled to the cylinder and provided with a cent, a pattern clamped between the cent and opposite head of said cylinder, a gear-wheel fast on the tube and arranged to mesh with the pinion, a spring-apron forming part of the cylinder, a knife-arm secured to the axis of the apron, and a collar that travels on said tube and has transverse play, whereby it is caused to simultaneously bear against said pattern and apron, substantially as set forth.

4. In a machine for turning irregular forms, the combination of a main frame, a tube stationary on the frame, a revolving cylinder arranged on the tube, a sliding feed-carriage, a pattern mounted on the cylinder, suitable means for imparting an independent rotation to the pattern, a spring-apron forming part of said cylinder, a knife-arm secured to the axis of the apron, a collar arranged to travel and have transverse play on said tube, so as to simultaneously bear against the pattern and apron, and an anti-friction roller journaled in the collar to come in contact with said pattern, substantially as set forth.

5. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a sliding feed-carriage, and an automatic stop for the carriage, substantially as set forth.

6. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a sliding feed-carriage, a screw-threaded shaft, an open nut connected to the carriage and arranged to engage the shaft, a block loose on said shaft, a headed rod knuckle-jointed to the nut and passed through the block, and a crank-rod connected to said block, substantially as set forth.

7. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a sliding feed-carriage, a screw-threaded shaft, an open nut composed of two arms pivoted to the feed-carriage and having turned-down ends that engage said shaft, a block loose on said shaft, a headed rod passed through the block and knuckle-jointed to the nut-arms, a crank-rod connected to said block, and a spring arranged to return the crank-rod to its normal position after setting the nut, substantially as set forth.

8. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a longitudinal sliding feed-carriage, a transverse plate loosely mounted on the carriage and provided with a jaw, a pivoted block in opposition to the jaw and provided with a cam-shaped recess that engages a lug on the transverse plate, and a lever for actuating the block, substantially as set forth.

9. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a longitudinal sliding feed-carriage, a transverse plate loosely mounted on the carriage and provided with a jaw, a pivoted block in opposition to the jaw and provided with a cam-shaped recess that engages a lug on the transverse plate, a lever adjustably secured to the block, and a set-screw for holding the lever in its adjusted position, substantially as set forth.

10. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a sliding feed-carriage, a revolving bracket arranged in advance of the vibratory knife and terminated in a ring, and a knife secured to said bracket to have its cutting-edge inside the ring, substantially as set forth.

11. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a sliding feed-carriage, and a grooving-knife arranged to operate upon the form during the return movement of the feed-carriage, substantially as set forth.

12. In a machine for turning irregular forms, the combination of a main frame, a pattern having a planetary movement and a revolution on its axis, a vibratory knife that is rotated about the work, a bearing that rests against and travels along the pattern to control the vibratory movement of the knife, a sliding feed-carriage, a loose sleeve provided with a lateral extension, an arm adjustably held in this extension, a grooving-knife secured to the arm to operate upon a form during the return movement of the feed-carriage, and a spring arranged upon the sleeve and connected to said extension thereof, substantially as set forth.

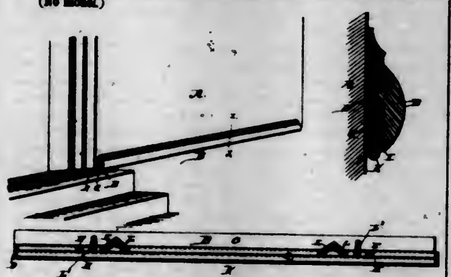
13. In a machine for turning irregular forms, the combination of a main frame, a revolving cylinder, a sliding feed-carriage, a pattern mounted on the cylinder, suitable means for imparting an independent rotation to the pattern, a spring-apron forming part of the cylinder and having a scalloped bearing-edge, a bearing that rests against and

travels along the pattern and scalloped edge of the apron, and a knife-arm secured to the axis of said apron, substantially as set forth.

14. In a machine for turning irregular forms, the combination of a main frame, a tube stationary on the frame, a revolving cylinder arranged on the tube, a pattern mounted on the cylinder, suitable means for imparting an independent rotation to the pattern, a sliding cross-head carrying a clamping mechanism, a plunger operative in the tube and provided with a chuck, an arm connecting the cross-head and plunger, a screw-feed detachably united to the plunger, an apron forming part of said cylinder, a knife-arm secured to the axis of the apron, and a collar arranged on said tube to be actuated by the plunger and travel along the pattern and bearing-edge of said apron, substantially as set forth.

15. In a machine for turning irregular forms, the combination of a main frame, a screw-threaded shaft journaled in the frame, a pulley fast on the shaft, a feed-carriage, an open nut connected to the carriage and arranged to engage said shaft, suitable means for closing and opening the nut, a revolving cylinder mounted on said frame, a belt connecting the cylinder and feed-shaft pulley, a pattern mounted on said cylinder, suitable means for imparting an independent rotation to the pattern, an apron forming part of the cylinder, a knife-arm secured to the axis of the apron, and a bearing that rests against and travels along said pattern and bearing-edge of the apron, substantially as set forth.

884,008. WEATHER-STRIP. JOSEPH THOMPSON and JOHN O. STEPHENS, St. Joseph, Mo. Filed Sept. 27, 1887. Serial No. 250,947. (No model.)



Claim.—1. In a weather-strip, the combination of the molding C, adapted to be secured to the lower edge of the door and having the rabbet D in the lower edge thereof, the beveled blocks E E in the upper side of the said rabbet, the adjustable strip G, adapted to operate in the said rabbet and having the notches in the upper edge to fit the said beveled blocks, the end of the said strip being adapted to project slightly beyond the end of the molding on the hinge side of the door, for the purpose described, and the springs to hold the strip normally in the rabbet, substantially as specified.

2. In a weather-strip, the combination of the molding C, having the rabbet D in the lower edge, the triangular blocks E E in the upper side of the said rabbet, the adjustable strip G, operating in the rabbet and having notches in the upper edge to receive the said blocks E E, and the springs L L, arranged in pairs and secured at the upper ends to the molding and at the lower ends to the strip G, the said springs diverging toward the lower ends, as and for the purpose substantially as specified.

3. In a weather-strip, the combination, with the molding C, having the rabbet or groove in the lower edge, provided with the stationary beveled blocks E E, of the movable strip G, operating in the said groove or rabbet and having notches in the upper edge to receive the said blocks and the parallel slits I I in the lower edge, the strip K, of rubber or other similar material, secured at the edges in the said slits and forming a flexible loop, and the springs to hold the strip normally in the groove or rabbet, substantially as specified.

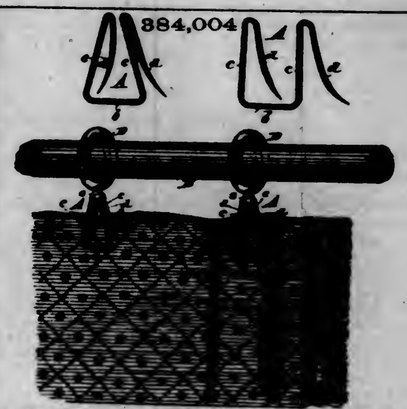
884,004. DRAPERY-HOOK. RALPH TELFER, New York, N. Y., and MARTIN COWEN, Chicago, Ill. Filed Feb. 9, 1888. Serial No. 263,513. (No model.)

Claim.—1. The elastic staple-like hook herein described for suspending drapery, composed of a bar-like head or back and sides bent to terminate in prongs inclining downward and away from said head or back, essentially as specified.

2. A hook for suspending drapery, constructed of a piece of spring metal bent to form a bar-like head or back, *b*, converging sides *c c*, and laterally-flaring elastic prongs *d d*, inclining downward toward the head or back and of a distance apart at their points corresponding, or thereabout, to the length of the head or back, substantially as specified.

3. The combination, with a sliding curtain or drapery ring, C, having an eye, *e*, of the within-described spring-metal staple-like hook

384,004

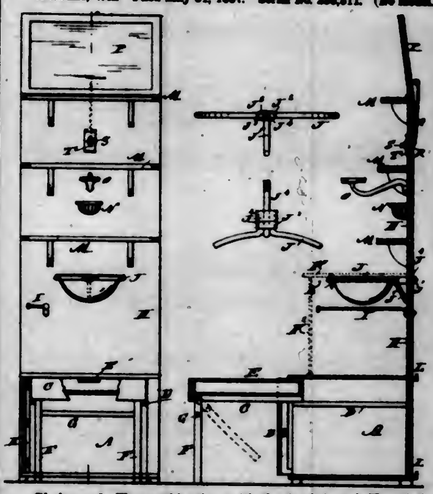


A, adapted to suspend a curtain or piece of drapery and to automatically lock with the eye in the ring, essentially as set forth.

884,005. VARNISH. RICHARD H. TODD, Newark, N. J. Filed Jan. 28, 1887. Serial No. 225,173. (No specimens.)

Claim.—The herein-described composition of matter to be used in a lacquer or varnish, consisting of pyroxyline or nitro-cellulose and balsam of tolu, in the proportions specified, substantially as and for the purposes set forth.

884,006. COMMODE. GAYNER D. TOLMAN and LORENZO D. BOWDEN, Shawano, Wis. Filed May 31, 1887. Serial No. 239,811. (No model.)



Claim.—1. The combination, with the back board, H, and the ring J, projecting in the horizontal plane from the face thereof, of the table K, its folding brace K^3, rear dowel-pins, K', and downwardly-projecting pin K^2, adapted to pass inside the ring J, substantially as shown and described.

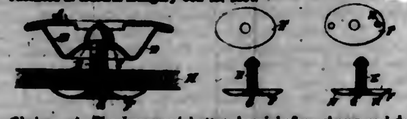
2. The combination, with the back board, H, of the ring J, having an arm, J^4, passed through the back board, a nut, J', screwed on the end of said arm, and an inclined brace, J^5, projecting downward from the ring and having an end spur to enter the back board, substantially as shown and described.

3. The supporting-ring made of a piece of wire, J, bent to form and having its ends bent outward parallel with each other, a short tube, J^6, through which the said parallel ends are passed, and an angle-wire having one arm, J^4, passed, also, through the tube J^6, and its other arm, J^5, projecting outward from the inner end of said tube, substantially as shown and described.

4. The combination, with the board H and the tilting mirror P, hinged at its lower edge to the upper or top edge of the said board, of a rod, Q, connected with the back of the mirror, its end bent forward and projecting through a slot in the board H, a knob on said

bent end, and a spring-escutcheon interposed between the knob and board H, substantially as shown and described.

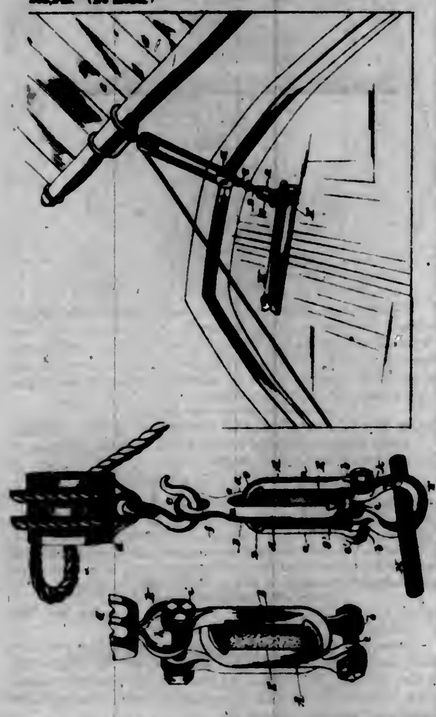
884,007. BUTTON. HENRY VALLERY, Manchester, County of Lancaster, England. Filed Mar. 10, 1888. Serial No. 266,889. (No model.) Patented in Austria-Hungary Oct. 15, 1887.



Claim.—1. The improved button hereinbefore shown and described, consisting of the cover-plate A, having a central aperture, in combination with the flanged, dished, recessed, and radially-slit inner plate, B, having a central hole, the outer plate, D, flanged, dished, and recessed, and having a central hole, the stud E, having a head larger than the hole in plate B, but smaller than the hole in plate D, and the disk F, surrounding the end of the stud, which is expanded against the outer side of the disk, substantially as shown and described.

2. In a stud for securing button-heads to garments, an elliptical disk or flange, F, having two small holes or perforations therein, substantially as and for the purpose set forth, and as illustrated by the drawings.

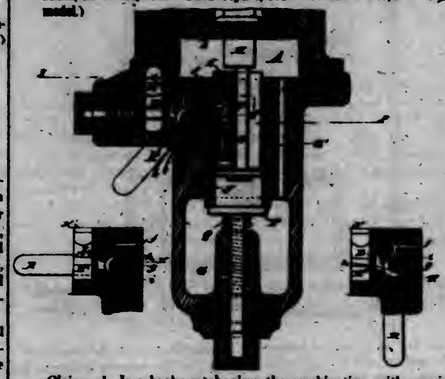
884,008. SHOCK-ARRESTER FOR THE RIGGING OF VESSELS. FRANK WHEELER, Meriden, Conn. Filed Feb. 28, 1888. Serial No. 265,962. (No model.)



Claim.—1. In a shock-arrester for vessels, the combination, with two interlocking links, each having approximately parallel integral sides and curved at one end, and the grooved cast-blocks resting on the curved ends of the links, of a spring interposed between the blocks, and a shackle-ring mounted on a bolt removably secured to the open end of one of said links, substantially as set forth.

2. In a shock-arrester for vessels, the combination, with the links, each made in a single piece and curved at one end, one of said links being open at one end and closed at the other, and the other link closed at both ends and provided at its outer end with an eye, and cast-blocks secured to the links, of a spring interposed between the blocks, and a shackle-ring mounted on a bolt removably secured to the open link, substantially as set forth.

884,009. TRIPLE VALVE FOR AIR-BRAKES. GEORGE B. WILLIAMS, La Crosse, Wis. Filed Sept. 8, 1887. Serial No. 249,169. (No model.)



Claim.—1. In a brake mechanism, the combination, with a main air-pipe, auxiliary reservoir, triple valve, and an auxiliary valve for admitting air in the application of the brake directly from the main air-pipe to the brake-cylinder at the same time that air is admitted thereto from the auxiliary reservoir, of a cock controlling the admission of the air from the main air-pipe into brake-cylinder through the said auxiliary valve-passage and independently of the ordinary cock of the main valve, substantially as set forth.

2. In a triple valve, the combination, with a piston carrying the usual slide-valve on its upper end, and carrying on its lower end an auxiliary slide-valve with its graduating-valve, of a cock connected with and controlling the auxiliary ports leading from main air-pipe through said auxiliary slide-valve and a check-valve to brake-cylinder, substantially as shown and described.

3. In a triple valve, a piston, a slide-valve operating with and above said piston, an additional slide-valve operating with and below said piston, and a cylinder in which latter slide-valve operates over the ports *f* and *g*, in combination with a three-way cock adapted to be connected with the ports *f* and *g*, and a check-valve adapted to open and close the connection between said slide-valve and brake-cylinder through three-way cock, substantially as shown and described.

4. In a triple valve, a piston, a slide-valve adapted to operate with and above said piston, an additional slide-valve operating with and below said piston, a cylinder having ports over which latter slide-valve operates, and a graduating-valve for said auxiliary slide-valve, in combination with a cock adapted to connect with said ports in said cylinder, and a check-valve adapted to allow air to pass from main air-pipe through said slide-valve and cock to brake-cylinder, but to prevent its return, substantially as shown and described.

5. In a triple valve, a piston, a slide-valve operated by and above said piston, an additional slide-valve operating with and below said piston, and a graduating-valve held in the latter slide-valve, in combination with a cylinder having ports over which said slide-valve operates, a cock or valve adapted to be connected with said ports, a check-valve adapted to open and close the passage leading from main air-pipe through said slide-valve, said cock, and said check-valve to brake-cylinder, substantially as shown and described.

884,010. CASH-DRAWER. FRED G. WILLIAMS and ALFRED W. BOWERS, Brooklyn, N. Y.; said Bowers assignor to said Williams. Filed Dec. 14, 1887. Serial No. 257,578. (No model.)

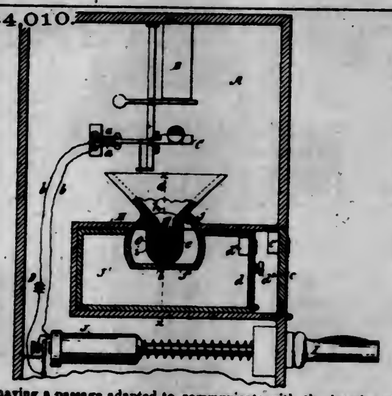
Claim.—1. The combination, with a cash-drawer, of a rotary receiver for coin, provided with a passage adapted to communicate with the interior of the cash-drawer, and a lock for securing said receiver in one position, substantially as specified.

2. The combination, with a cash-drawer, of a rotary receiver for coin, having a passage adapted to communicate with the interior of the cash-drawer, a lock for securing said receiver in one position, and a spring for rotating the receiver, substantially as specified.

3. The combination, with a cash-drawer, of a rotary receiver for



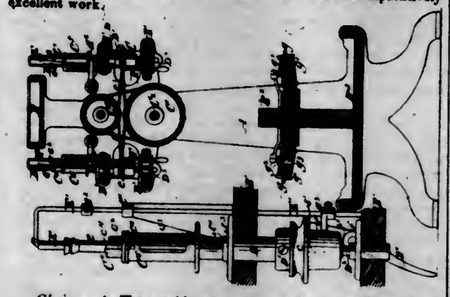
384,010.



coin, having a passage adapted to communicate with the interior of the cash-drawer, a projection against which the receiver will come in contact upon the removal of the drawer and be rotated into one position, and a lock for securing it in such position, substantially as specified.

384,011. MACHINE FOR WINDING QUILLS AND BOBBINS. JOHN R. ATWOOD, Stonington, Conn. Filed Aug. 3, 1887. Serial No. 246,302. (No model.)

Brief.—The object of the invention is to produce a quilling-machine of simple construction and low cost which will do comparatively excellent work.



Claim.—1. The combination, with a hollow spindle having a slotted tubular flier at one end and open entirely through its opposite end, and a quill-support entering said tubular flier and on which the quill is held independently of the spindle, of a traverse-guide on the flier, and mechanism, substantially as described, for rotating the spindle and flier and for traversing said guide, substantially as herein set forth.

2. The combination, with the spindle having at one end the tubular flier slotted lengthwise to its extremity, and having its end oblique to form a shoulder at one side of the slot, the spindle being open entirely to its opposite end, of a quill-support entering the flier and on which the quill is held independently of the spindle, a traverse-guide on the flier, and mechanism, substantially as described, for operating the spindle and traverse-guide, substantially as herein described.

3. The combination, with the spindle having at one end a tubular slotted flier and a traverse-guide locked to turn with but sliding on the flier, the spindle being open entirely to its opposite end, of a quill-support entering the open end of the flier, on which the quill is held independently of the spindle, and mechanism, substantially as described, for operating the spindle and traverse-guide, substantially as herein set forth.

4. The combination, with a spindle, a flier, a traverse-guide, and a movable quill-support, of a whirl on the spindle for receiving a continuously-running band, a brake for checking the whirl and spindle, a stop-lever for applying the brake, and a stop-rod operated by the movable quill-support to trip the stop-lever, substantially as herein described.

5. The combination, with the spindle C and its tubular and slotted flier C^9, of the traverse-guide on the flier, the whirl having a lump or projection, and the stop-lever F, for engaging the lump or projection to stop the whirl and spindle, the whirl when on the spindle having its lump or projection about diametrically opposite the slot in the flier, so as to stop the spindle with the slot at the front of the flier and clearly exposed, substantially as herein described.

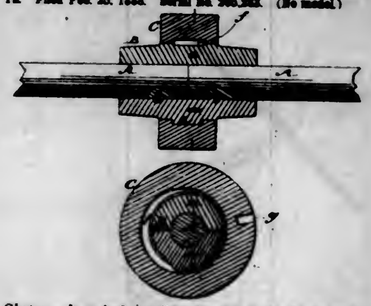
6. The combination, with the spindle C, the tubular slotted flier, and the traverse-guide C^9, of the bearing-bushing D, having the brake-collar D', the whirl fast on the spindle and adjacent to the brake-collar, the stop-lever F, and mechanism, substantially as described, for operating the spindle and traverse-guide, substantially as herein set forth.

7. The combination, with a hollow spindle having a tubular slotted flier, of a traverse-guide on the flier, a whirl on the spindle, a stop-lever engaging the whirl to stop the whirl and spindle on a quill being full, and a quill-support entering the tubular flier and having a stop-rod provided with an adjustable collar for acting on the stop-lever as the quill and support are moved by the quill-bearing on the flier, substantially as herein described.

8. The combination, with the hollow spindle and tubular slotted flier, of the traverse-guide C^9, the oil-guard or thread-centering device D^9 at the lower end of the spindle, a quill-support entering the flier, and mechanism, substantially as described, for operating the spindle and traverse-guide, substantially as herein set forth.

9. The combination, with the end frames and double girts rigidly secured together by struts *b*, of the hollow spindles terminating in tubular fliers, the traverse-guider C^9 on the fliers, the quill-supports entering the fliers, bearing-bushings D, fixed in the upper rail of the girts, the thread-centering devices and oil-guards fixed in the lower rail of the girts, and mechanism, substantially as described, for operating the spindles and traverse-guides, substantially as herein set forth.

384,012. SHAFT-COUPLING. SIMON H. RAHSER, Lansdowne, Pa. Filed Feb. 25, 1888. Serial No. 265,262. (No model.)



Claim.—In a shaft-coupling, the longitudinally-divided gripper having a projection upon the exterior of one of its sections, in combination with a rotatable band fitted to turn upon said sections and provided internally with an eccentric groove adapted to receive and to bear by its outer wall upon the exterior projection of the divided gripper, essentially as shown and described.

384,013. THIMBLE FOR CASINGS OF SCREW-STOPPERS. HENRY BARRETT and JOHN J. VARLEY, London, England. Filed Dec. 17, 1886. Serial No. 221,860. (Model.)



Claim.—An elastic thimble plain or unthreaded and closed at one end and composed of partly-cured material, such as is used in the manufacture of vulcanite, as and for the purpose set forth.

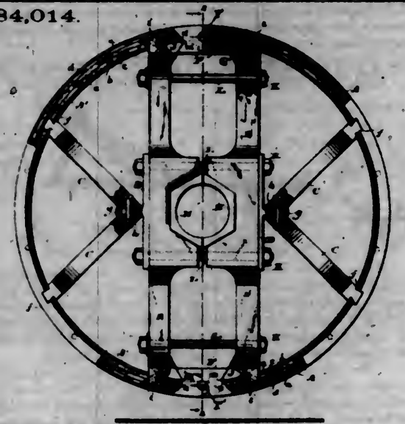
384,014. SPLIT PULLEY. JULIUS BAUER, Milwaukee, Wis. Filed Feb. 24, 1888. Serial No. 265,150. (No model.)

Claim.—1. The combination, in a split pulley, of cross-bars interposed between the ends of each half of the rim, the two being beveled at their meeting-points, with a key-block having transverse recesses which inclose the parts, and clamping-bolts for locking the two halves together, substantially as described.

2. The combination, in a split pulley, of the cross-bars and rim, and adjustable arms interposed between the bars and rim-sections, substantially as described.



384,014.



384,015. LAST. CHARLES H. DURHAM, Philadelphia, Pa. Filed Sept. 6, 1887. Serial No. 248,788. (No model.)



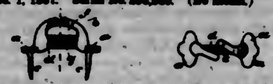
Claim.—The last herein described, composed of two parts united at a diagonal line running from the instep to the sole and capable of expansion and contraction by means of a screw moving in a nut parallel with the line of division, as described.

384,016. WIRE FENCE. JESSE J. DONAHAN, Bridgeport, Ill. Filed Sept. 9, 1887. Serial No. 249,263. (No model.)



Claim.—As an improvement in wire fences, the combination, with a hollow metallic post, 1, having perforations 10, of horizontal fence-wires 8 and wire supports and fasteners 9, passing through the perforations in the post, then bent around the wires 8 and back of the post, and having their ends twisted together, as at 11, substantially as described.

384,017. CHEEKPIECE-LOOP. EDWIN H. CARPENTER, Newark, N. J. Filed Dec. 1, 1887. Serial No. 256,602. (No model.)

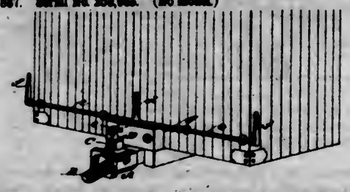


Claim.—1. The improved loop for bridles, combining in one integral piece therein arms *b b*, which stand oppositely to and extend inwardly and toward one another and are laterally curved, as described, and a connecting-bar, *d*, substantially as set forth.

2. The improved loop consisting of the lugs *c*, lips *a*, oppositely placed, and upwardly and laterally extending arms *b b*, substantially as and for the purpose set forth.

3. In a loop for bridles, the combination, with the oppositely-placed arms having the connecting-bar *d*, of the blade-like lugs *c*, extending from beneath the base of such arms, and the laterally-projecting lips *a*, all substantially as and for the purpose set forth.

384,018. CAR-COUPLING. WILLIAM B. GRAMBY, Chicago, Ill., assignor to W. A. Ogden Hoguenin, New York, N. Y. Filed Dec. 22, 1887. Serial No. 258,603. (No model.)

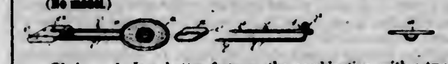


Claim.—1. In a car-coupling, the combination, with the link spur-pin, of the returning-spring A, adapted to lift and maintain said pin at its normal position, as described.

2. In a car-coupling, the buffer-pin F, located transversely to the link-pin, engaging thereon by a shoulder, as *k*, and adapted to a longitudinal release action by abutment of its extending portion upon an opposite car-buffer, as and for the purposes described.

3. In a car-coupling, the combination, with the buffer-pin F, having the link-pin shoulder *k*, of its actuating-spring, as *l*, and the handle G, operating in the L-shaped slot, adapted to retain said pin F in its withdrawn position as against said spring.

384,019. BUTTON-FASTENER. HENRY F. CLARK and NATHAN D. INGRAHAM, Holyoke, Mass. Filed Mar. 12, 1888. Serial No. 267,774. (No model.)



Claim.—1. In a button-fastener, the combination, with a two-pronged pin having at its rear end a loop to receive the shank of a button, and having near each of its pointed ends a transverse groove or notch, of a clasp having an opening to receive the pointed ends of said pin and having an engaging device to engage the grooves or notches in the pin, whereby the clasp is detachably retained upon the pin, substantially as set forth.

2. The combination, with a shank-button, of a two-pronged pin having at its rear end a loop which passes loosely through the shank of said button, whereby said button is free to rock upon said loop, and a detachable clasp adapted to be received upon the pointed ends of said pin, substantially as described.

3. The combination, with a shank-button, of a pin comprising two sharp-pointed prongs and a loop secured to or formed integrally with said prongs at their rear end and projecting therefrom at substantially a right angle, said loop being inserted through the shank of the button, a clasp consisting of a hollow receptacle adapted to receive the pointed ends of the prongs of said pin, and stops located upon said clasp and prongs, respectively, whereby the former is retained upon the latter, substantially as and for the purpose described.

4. The combination, with a shank-button, of pin *b*, having loop b^9 to receive the shank of the button, and prongs *b'*, having grooves or notches b^3 therein, and a clasp consisting of a hollow receptacle having a central opening and a longitudinal slot communicating with said opening, whereby it is adapted to receive the ends of prongs *b'*, said clasp being provided with stops to engage the grooves or notches in said prongs, arranged and operating substantially as and for the purpose set forth.

5. The combination, with pin *b*, having a button secured thereto, said pin having prongs *b'*, provided with transverse grooves or notches b^3 near their pointed ends, of clasp *c*, consisting of a flattened hollow receptacle having therein the transverse slot c^9, of greater width than the diameter of prongs *b'*, and having the longitudinal slot *c'*, communicating with said slot c^9, said slot *c'* corresponding substantially in width

with the diameter of prongs *b'* at the bottom of the grooves or notches b^3, substantially as and for the purpose described.

6. The button-fastener herein described, consisting of a pin, *b*, composed of a single piece of wire bent to form prongs *b'*, and loop b^2, projecting at substantially a right angle to said prongs, said prongs having their ends pointed, and having grooves or notches b^3 near said ends, and a clasp consisting of a hollow receptacle having an opening to receive the ends of said prongs, and having stops to engage the grooves or notches b^3 in the latter, substantially as set forth.

384,020. KNIFE-SHARPENING ATTACHMENT FOR SKIVING-MACHINES. PHILO B. CLARK and GERHART J. KLEINLEIN, Brooklyn, N. Y. Filed Dec. 1, 1887. Serial No. 256,616. (No model.)



Claim.—1. In a leather-skiving machine, a knife-sharpening attachment comprising a base-plate, a lever pivoted thereon, a casing or bearing, a universal joint connecting the sleeve and lever, a spindle mounted in said casing or bearing and provided with the grinding disk or wheel at one end, and a means of rotation, substantially as set forth.

2. In a leather-skiving machine, the combination, with the frame, the knife, and the operating mechanism, of the lever pivotally connected to the frame between its ends, the casing connected to the forward end of said lever by a universal joint, a spindle journaled in said casing, and provided with a grinding disk or wheel and an operating-pulley receiving motion from the main drive-shaft, and the elbow-lever engaging the inner end of said first-named lever, substantially as set forth.

3. The combination, with the knives of a leather-skiving machine, of a plate, 5, attached to said machine, an L-shaped lever, 8, pivoted to said plate, having a slot, 11, in its horizontal member, a rocking lever, 12, also pivoted to the plate 5, a pin, 14^a, attached to said rocking lever entering the said slot 11, a spindle, 15^a, united to said rocking lever by a ball-and-socket joint, a grinding-disk, 21, secured to the lower end of the spindle, a pulley, 17, attached to the upper end of the same, and a belt-connection between said pulley 17 and the driving-pulley of the machine, substantially as herein shown and described.

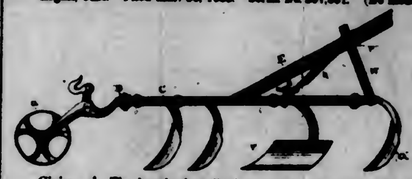
4. The combination, with the knives of a leather-skiving machine, of a plate, 5, attached to the machine, an L-shaped lever, 8, pivoted to said plate, having a slot, 11, in its horizontal member, a rocking lever, 12, also pivoted to the plate 5, a pin, 14^a, attached to said rocking lever, entering the said slot 11, a spindle, 15^a, united to said rocking lever by a ball-and-socket joint, a grinding-disk, 21, secured to the lower end of the spindle, a pulley, 17, attached to the upper end of the same, a belt-connection between said pulley 17 and the driving-shaft of the machine, and a shifting mechanism, substantially as shown and described, interposing the said pulley 17 and the driving-pulley, as set forth.

5. In a leather-skiving machine, the combination, with the main shaft and the grinding-disk and its shaft, of a rocking lever having a vertical shaft at its outer end provided with two idle-pulleys, and a belt passing around pulleys on the main shaft and the disk-shaft and around said idlers, whereby by throwing said shaft outward the belt may be tightened, substantially as set forth.

6. The combination, with the main shaft and the grinding-disk shaft, of the rocking lever 24, having a vertical shaft at its outer end provided with pulleys, an upward-projecting hand-lever pivoted to the rocking lever, a spring, 29, the idlers 26, and the belt passing around pulleys on the main and grinder shafts, respectively, and around the pulleys on said vertical shaft, substantially as set forth.

7. The combination, with the skiving-knife and its operating-shaft, of the rocking lever, a casing connected with it by a universal joint, a spindle mounted in said casing and having a pulley at its upper end and a grinding-disk at its lower end, a second rocking lever at right angles to the first-named rocking lever, a shaft projecting upward from the outer end thereof and carrying horizontal idle-pulleys, and a belt passing from the main shaft-pulley around the idlers and grinding-spindle pulley, whereby the idlers may be thrown inward and outward, according to the several adjustments of the grinding-spindle and its casing, substantially as set forth.

384,021. CULTIVATOR. ELI B. CORLEY and DAVID HOTHERSWELL, Logan, Ohio. Filed Mar. 30, 1888. Serial No. 267,891. (No model.)



Claim.—1. The herein-described connection for securing cultivator blades and shovels to their standards, consisting of the two parts G and G', having the horizontal extensions *b* and *b'*, respectively, which extensions overlap and are adjustably secured together by the vertical bolt *d*, the one extension being adjustable on the other about the said bolt as an axis, substantially as and for the purpose described.

2. The combination of the standard, the connection composed of two parts, one part being adjustable laterally on the other, means for vertically adjustably securing the connection on the standard, the blade, and means for adjustably fastening the blade to the said connection, whereby the inclination of the blade to a vertical line may be had, substantially as described.

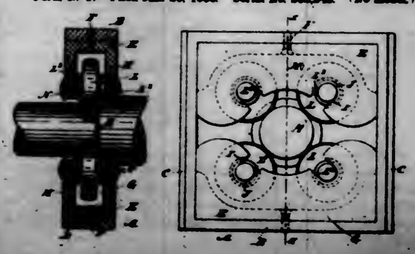
3. The herein-specified connection, composed of the part G, having an oblong opening and a horizontal extension, *b*, and the part G', having its front end expanded and provided with an opening at its upper and lower end, one of the openings being extended transversely and having a horizontal extension, *b'*, the opposing faces of the extensions *b* and *b'* corrugated, and the vertical bolt *d*, for securing the parts G and G' together, substantially as set forth.

384,022. BOTTLE-FILLER. WILLIAM H. COMPTON, Oskaloosa, Iowa. Filed May 20, 1887. Serial No. 238,209. (No model.)



Claim.—The combination, with the frame, the filling cylinder or tank, and the valve, of the bottle-rest L, pivoted at N and having an extension, L', below its pivotal point, the adjustable spring R, connected with the frame and the said extension, the lever P, pivoted to the frame between its ends and having a weight on its long arm, and the link O, connecting the short arm of said lever with the bottle-rest above its pivotal point, substantially as set forth.

384,023. ANTI-FRICTION BEARING. FRANK CORBETT, New York, N. Y. Filed Jan. 28, 1888. Serial No. 262,242. (No model.)



Claim.—1. An improved anti-friction bearing consisting of a band-like frame, centrally-recessed blocks fitted to opposite sides of the interior of the band-like frame, and having their walls provided with radial slots forming semicircular bearings, and friction-rollers provided with gudgeons mounted on the said bearings, substantially as herein shown and described.

2. In an anti-friction bearing, the combination, with the band-like frame B, of the blocks E, detachably secured within the frame and provided with the recesses G, the radial slots I, forming semicircular bearings J and inwardly-projecting flanges N, and the friction-rollers L, provided with the gudgeons L^2 and the projecting hubs L^3, substantially as herein shown and described.

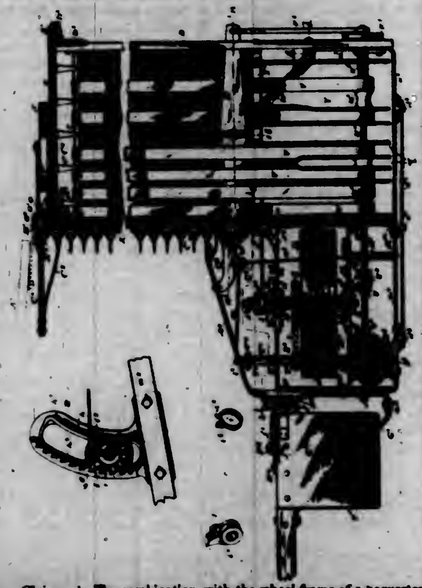
384,024. DISK WATER-METER. JAMES DAVIES, Wednesbury, County of Stafford, England. Filed Aug. 3, 1887. Serial No. 245,698. (No model.) Patented in England Oct. 22, 1886, No. 13,571.



Claim.—1. An oscillating disk, E, provided with a central ball having a recess in its under side, in combination with a bearing-pin, F, which enters said recess and has its point rounded, a lower cone provided with a recess which fits said ball, an upper cone, and a cylinder, B, the ball rocking partly on the bearing-pin F and partly on the concave bearing-face n^3, substantially as shown.

2. The combination of the upper cone and disk having a central ball, either the ball or cone having a hole, *z*, therein, with the lower cone, the cylinder having parts b^2 b^3, and the partition K, substantially as set forth.

384,025. HARVESTER. JOHN S. DAVIS, Toledo, assignor to Adlon B. Sumner, Cleveland, Ohio. Original application filed Mar. 7, 1888, Serial No. 266,857. Divided and this application filed Dec. 22, 1888. Serial No. 294,597. (No model.)



Claim.—1. The combination, with the wheel-frame of a harvester rectangular in shape and braced by a longitudinal bar which divides the frame into two compartments, of the driving-wheel and its axle which carries the frame, located in the inner compartment, and the gearing and shafts for transmitting power to the harvesting mechanism, located in the outer one, substantially as hereinbefore described.

2. The wheel-frame of a harvester surrounding the driving-wheel and supported by its axle, located in front of the outer end of the platform and rigidly connected thereto, the frame being composed of a continuous piece which forms its four sides, and extends across the end of the platform to the rear sill thereof, to which it is secured, substantially as hereinbefore described.

3. The combination, in the wheel-frame of a harvester, located in front of the outer end of the platform and rigidly connected thereto, of the outer side bar of the frame extending across the end of the platform to the rear sill to which it is secured, with a truss-brace on the extension-bar, substantially as and for the purpose hereinbefore set forth.

4. The combination of the wheel-frame of a harvester and a finger-beam attached to the frame, with a brace-bar extending diagonally from the front of the frame to the finger-beam to which it is attached, and twisted at its lower end to form a guard or shoe which shields the outer or first guard-finger on the beam, substantially as hereinbefore set forth.

5. The combination of the wheel-frame of a harvester having its outer side bar extending across the end of the platform and secured to the rear sill thereof, and a finger-beam rigidly attached to the rear bar of the wheel-frame, with a brace-bar attached to the finger-beam and extending diagonally across the platform to a point near its outer rear corner, where it is attached to the rear sill near the end of the extension-bar, substantially as hereinbefore set forth.

6. The combination of the wheel-frame of a harvester, located at the outer front corner of the platform and rigidly connected thereto, with a truss-brace on the outer side bar of the frame and platform and a diagonal brace across the bottom of the platform to stiffen the structure both vertically and laterally, respectively, substantially as hereinbefore set forth.

7. The combination of the wheel-frame, a tongue pivoted to the frame at its inner front corner, a diagonal brace-bar attached to the tongue and pivoted to the outer front corner of the frame in line with the tongue-pivot, and a foot-board attached to the tongue and extending across the front of the wheel-frame, and also attached to the brace-bar to strengthen the structure, substantially as hereinbefore set forth.

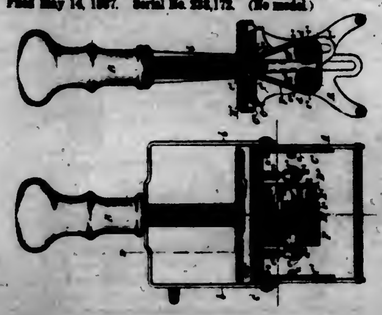
8. A bracket or standard attached to the end of the finger-beam, having a rear flange at its inner end, to which the end board of the platform is attached, and a front flange at its outer edge to which the divider is attached, and constituting an offset or breast between the end board and the divider, substantially as hereinbefore set forth.

9. The combination of a finger-beam, the guard-fingers offset therefrom by an interposed bar, and a rod or flexible connection through which the adjustment of the grain-wheel is effected, lying on the interposed bar in front of the finger-beam, substantially as hereinbefore set forth.

10. The combination of a wheel-frame divided longitudinally by a brace-bar, a bracket or casting located in the outer division of the frame and bolted to the adjacent bars, a counter-shaft mounted in sleeve-bearings in the bracket and provided at its inner projecting end with a spur-pinion, a driving-wheel upon the axle of which the frame is supported, located in the inner division of the frame, a spur-gear carried by the driving-wheel engaging the pinion, and a bevel gear-wheel on the counter-shaft working in a recessed gear-box in the bracket, and engaging a bevel-pinion on the end of a line driving-shaft, also journaled in a sleeve-bearing on the bracket, substantially as hereinbefore set forth.

11. The combination of a harvester-platform, a sway-bar extending across the platform, a pivot-stand for the sway-bar bolted to the bottom of the platform, and a diagonal brace-bar between the front and rear sills of the platform, passing beneath the pivot-stand and united to it by bolts, substantially as hereinbefore set forth.

384,026. DATING DEVICE. WILLIAM H. BEEBE, Chicago, Ill. Filed May 14, 1887. Serial No. 238,172. (No model.)

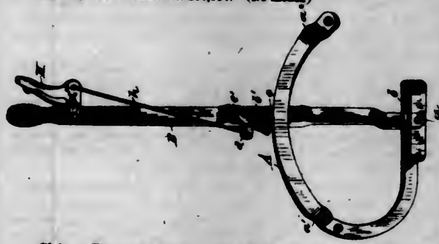


Claim.—1. The combination, with the movable type-supports in a dating or similar device, of a flexible sheet located adjacent to and extending over said type-supports, substantially as and for the purpose set forth.

2. The combination, with the frame of a dating or similar device and the movable type-supports thereof, of a flexible sheet supported upon the frame and extending over the said type-supports, substantially as described.

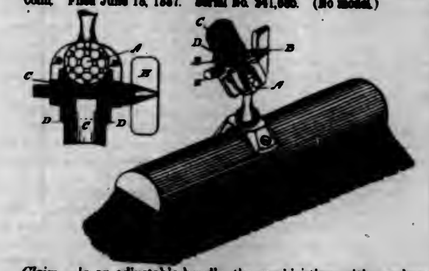
3. The combination, with a frame of a dating or similar device and movable type-supports sustained thereon, of a covering of elastic material placed around the said frame and extending over the said type-supports, substantially as described.

384,027. BRAKE-LEVER. THEODORE DELOSS, Liberal, Ind. Filed Mar. 31, 1888. Serial No. 267,987. (No model.)



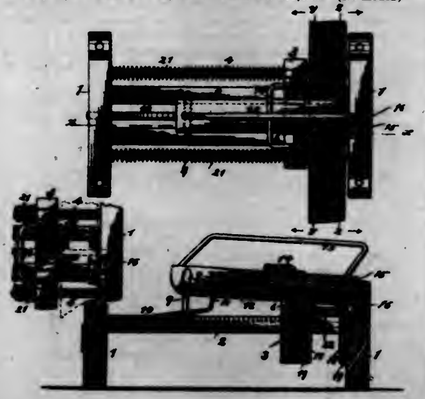
Claim.—The combination, with the slotted tension or brake having one end wall, *c'*, rounded, and a segmental bar extending through the slot in the lever, of a pawl provided with a round end and an eccentric face, pivoted in the slot of the lever, and a grip-lever and connecting-rod, substantially as shown and described.

384,028. ADJUSTABLE HANDLE. WILLIAM A. FABER, Danbury, Conn. Filed June 18, 1887. Serial No. 241,663. (No model.)



Claim.—In an adjustable handle, the combination, with a polygonal-faced ball secured to a brush or other utensil, of a split socket adapted to embrace the ball, a ferrule extending within the socket and affording an annular seat for the ball, and a set-screw extending through the ferrule and the socket and adapted to clamp the latter firmly against the ball, substantially as set forth.

384,029. STRAP-EDGING MACHINE. JAMES H. FARLOW, Lander, Wyo. Filed Feb. 11, 1888. Serial No. 263,720. (No model.)



384,029.



Claim.—1. In a strap-edging machine, the combination, with a frame having fixed and relatively-movable cutters and a sliding clamp having fixed and relatively-movable cutters, of a tilting presser bar or lever adapted to bear upon the movable cutters and force them into operative position, substantially as described.

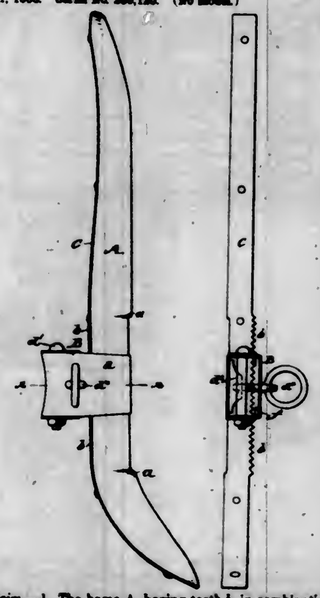
2. The combination, with the frame having a fixed cutter and a vertically-yielding cutter, of a clamp movable toward and from these two cutters and provided on its inner face with a fixed cutter and a vertically-movable cutter, and a presser-bar movable vertically across the strap-receiving space between the said knives and in line with the vertically-yielding knives, to depress them into engagement with the strap-edges, substantially as set forth.

3. A strap-edging machine consisting of a frame having a fixed cross-piece with a fixed cutter and vertically-movable spring-actuated cutter, and a spring-actuated sliding cross-piece with a fixed cutter and a vertically-movable spring-actuated cutter, the sliding cross-piece serving to hold a strap between the edges of the cutters, and a spring-actuated tilting presser lever or bar which is adapted to press down the movable cutters against the strap, substantially as described.

4. In a strap-edging machine, cross-pieces 1, connected by bars 4 and rods 2, the sliding cross-piece 3, mounted on bars 4 and rods 2 and provided with reacting springs 21, the tilting spring-actuated presser-lever 7, with handle 13, and having slots 8, engaging a standard and resting in recess 6 beneath handle 14 of cross-piece 3, and the fixed cutters 17 and movable cutters 17, mounted in casings 18 and resting on springs 19, said cutters being located on the cross-piece 1 and sliding cross-piece 3, substantially as described.

5. In a strap-edging machine, the combination, with clamp 3, mounted on bars 2 and having cutters 17, one of which rests in casing 18 upon spring 19, of cross-piece 1, having fixed cutter 17 and movable cutter 17 in casing 18, resting on spring 19, and the presser-lever 7, with handle 13, and resting in recess 6 of cross-piece 3 beneath handle 14, substantially as described.

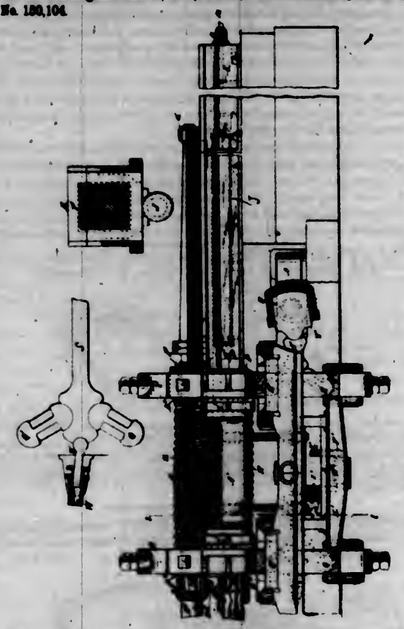
384,030. HAME. JAMES H. FARLOW, Lander, Wyo. Filed Mar. 31, 1888. Serial No. 269,126. (No model.)



Claim.—1. The hame A, having teeth *b*, in combination with the clip B, having teeth *f*, a bolt, d^3, and a screw-socket for closing the teeth *f* into the teeth *b*, substantially as and for the purposes set forth.

2. The hame A, having teeth *b*, and the clip B, having the teeth *f*, and screw-socket d^6, placed upon the hame, in combination with the bolt d^3, substantially as described, for the purposes set forth.

384,031. CORRUGATING-MACHINE. SAMUEL FOX, Leeds, County of York, England. Filed Mar. 6, 1888. Serial No. 266,126. (No model.) Patented in England Jan. 16, 1888, No. 810, and in France July 13, 1888, No. 180,104.



Claim.—1. The combination, in a corrugating-machine, of a corrugating-roll, two fixed bearings for supporting the same, one of said bearings being greater in diameter than the roll, and mechanism for withdrawing the roll longitudinally through said bearings, substantially as described.

2. The combination, in a corrugating-machine, of a corrugating-roll, two fixed bearings for supporting the same, one of said bearings being greater in diameter than the roll, and a hydraulic motor for withdrawing said roll through said bearing, substantially as described.

3. The combination, in a corrugating-machine, of a roll supported in two fixed bearings, one of said bearings being greater in diameter than the roll, so as to allow of the withdrawal of the roll therethrough, with a second roll and mechanism for causing the approach of the second roll to the first roll, substantially as described.

4. In a corrugating-machine, the combination of the adjustable corrugating-roll E, the fixed roll D, the movable bearings O and P, the double-toggle mechanism operated by bar B, and mechanism for moving said bar in both directions, substantially as described.

5. In a corrugating-machine, the combination of the guide-rolls Z Z, hydraulic motors E^2, gearing F^2 G^2 H^2 I^2 J^2, eccentrics J', and links K', substantially as described.

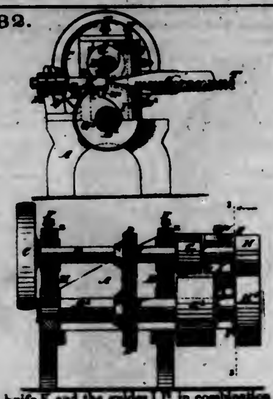
6. The combination, in a corrugating-machine, of a roll supported in two fixed bearings, one of said bearings being greater in diameter than the roll, so as to allow of the withdrawal of the roll therethrough, with a second roll and mechanism for causing the approach of the rolls to each other during corrugation, and adjustable guide-rolls for guiding the corrugating-cylinder during the process of corrugation, substantially as described.

384,032. MACHINE FOR STRIPPING LEATHER-BOARD. WALTER R. PRIEST, Lewiston, Me., assignor to the Mountain Manufacturing Company, of Maine. Filed Sept. 28, 1887. Serial No. 250,894. (No model.)

Claim.—1. The combination of the knife K, supported by the guides I^2, with the feed-rolls $G G^2$ $H H^2$, one of which rolls, G^2, extends inwardly beyond the cutting-edge of the knife K, arranged and to operate substantially as and for the purpose set forth.

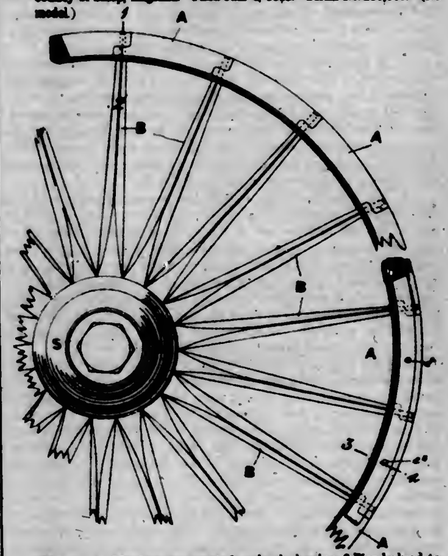
2. The combination of the knife K and the guides I^2 with two sets of rolls, between which the said knife and guides are arranged, one of the rolls on each set—viz., G^2 and H—extending inward beyond the cutting-edge of the knife, substantially as described.

384,082.



3. The knife K and the guides I^2, in combination with the feed-rolls G H and the enlarged rolls G^2 H^2, one of which extends inward beyond the cutting-edge of the knife, substantially as specified.

384,083. WHEEL. THOMAS GREEN, Highfield House, Wellington, County of Salop, England. Filed Jan. 4, 1888. Serial No. 259,800. (No model.)



Claim.—1. The improvements in wheels having follies halved together at their ends, with the hollowed and rounded corners, and resting at each end upon a spoke, whether wood or metal, with a pin, either separate or fast, passing through each half, substantially as and for the purpose herein set forth.

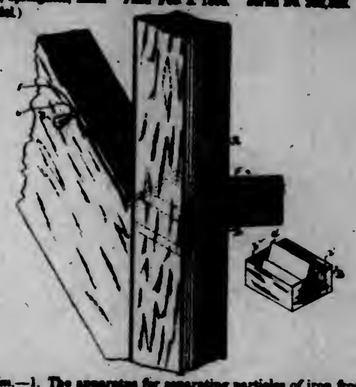
2. In wheels having follies halved together at their ends and secured to the spokes by pins passing through them, the combination therewith of circular side plates riveted through the follies, substantially as herein set forth.

384,084. CARD-HANGER. HENRY S. HACK, Taunton, Mass. Filed Aug. 8, 1887. Serial No. 246,403. (No model.)



Claim.—The device above described, consisting of the two outer legs, *a a*, and the intermediate leg, a^2, the two outer legs being each sharpened at its end and each having its sharpened end bent to form a claw, all substantially as set forth.

384,085. ELECTRO-MAGNETIC SEPARATOR. JOSEPH B. HAMILTON, Springfield, Minn. Filed Feb 2, 1888. Serial No. 262,852. (No model.)



Claim.—1. The apparatus for separating particles of iron from a mass of comminuted or other material, herein described, consisting of a frame open at top and bottom, one or more electro-magnets supported within said frame, each of said magnets being composed of two parallel bars united by an intermediate rib and having wound upon said rib lengthwise of said bars a wire coil, and suitable connections between each of said coils and an electrical generator for inducing an electric current through the former, substantially as described.

2. In apparatus for separating particles of iron from a mass of comminuted or other material, consisting of a series of magnets each comprising two parallel bars, an intermediate connecting-rib, and a wire coil wound upon said rib lengthwise of said bars, suitable connections between the coils of said magnets and an electrical generator for inducing an electric current through the former, and a chute or similar device for conducting the material to be operated upon to and through said series of magnets, substantially as set forth.

3. The apparatus herein described for separating particles of iron from a mass of comminuted or other material, consisting of a frame open at top and bottom, one or more electro-magnets supported at each end by opposite sides of said frame, each of said magnets being composed of two parallel bars, an intermediate connecting-rib, and a wire coil wound upon said rib lengthwise of said bars, said bars having their outer faces inclined outwardly from their upper toward their lower edges, and suitable connections between each of said coils and an electrical generator for inducing an electric current through the former, arranged and operating substantially as set forth.

4. In an apparatus for separating particles of iron from a mass of comminuted or other material, a frame open at top and bottom and having at opposite sides thereof seats for supporting the ends of a series of magnets, a series of magnets, each consisting of two parallel bars, an intermediate connecting-rib, and a wire coil wound upon said rib lengthwise of said bars, and having at each end a contact-strip connected to one of the ends of the wire composing said coil, contact-strips upon said frame located in such manner as to make connection with the strips upon said magnets when the latter are seated in said frame, and suitable connections between the contact-strips on the frame and an electrical generator for inducing an electric current through the former, whereby said current will also be induced through the coils of each of the magnets seated in the frame, substantially as set forth.

5. The combination, with chute A, having in one side thereof an opening and a door for closing the same, of frame B, supported within said chute adjacent to said opening, said frame being open at top and bottom and having horizontally disposed therein a series of electro-magnets, and suitable connections between each of said magnets and an electrical generator for inducing an electric current through the former, substantially as and for the purpose described.

6. The combination, with chute A, of frame B, detachably supported within said chute, said frame being open at top and bottom and having detachably supported therein a series of electro-magnets, C, positive and negative binding-posts upon said frame electrically connected with the positive and negative poles of each of said magnets, contact devices upon said chute to engage said posts on the frame, and suitable connections between said contact devices on the chute and an electrical generator for inducing an electric current through the former, arranged and operating substantially as and for the purpose set forth.

7. The combination, with chute A, frame B, located within said chute, and electro-magnets C, supported within said frame, of suitable connections between said magnets and an electrical generator for creating an electric circuit through said magnets, and lamp D, located in said circuit outside of said chute, whereby said lamp is adapted to serve as an indicator, substantially as and for the purpose described.

8. The electro-magnetic separator herein described, composed of a series of magnets, C, each consisting of parallel bars *c c*, connecting-rib *c'*, having a wire coil wound thereon, disks c^2, and contact-strips c^3 upon said disks, connected to opposite ends of the wire composing said coil, frame B, having seats *b* for said magnets, and contact-strips 1 2 3 4, arranged upon said seats, substantially as described, suitable connections between two or more of said strips on the frame and an electrical generator for inducing an electric current through the former, and a chute or similar device for conducting a mass of comminuted or other material to and through said frame, arranged and operating substantially as and for the purpose set forth.

9. In an electro-magnetic separator of the kind herein described, the combination, with the series of magnets C, each composed of bars *c c*, having their outer sides inclined, as shown, connecting-rib *c'*, and wire coil c^4 upon said rib, of a series of caps, c^5, closely fitting the space between said bars and above said coils, said caps having their upper surface wedge-shaped, substantially as and for the purpose described.

384,086. SECRETE-FASTENER. ADOLPH HELLERMANN, New York, N. Y. Filed Jan. 26, 1888. Serial No. 261,923. (No model.)



Claim.—The body *d*, formed with the fold or member d^2, to hold one side of the scarf, and the hinged member d', free at one edge and constructed to overlap the opposite side of the scarf, in combination with the plate f', hinged arm f, provided with shoulder f^2, and the spring *e*, arranged to press upon the shoulder f^2, substantially as described.

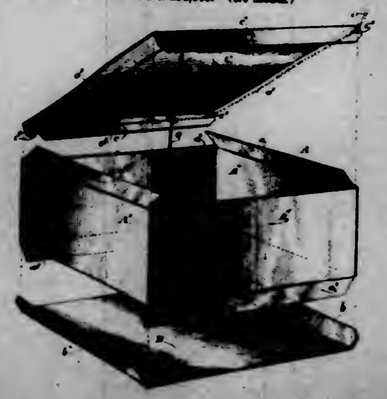
384,087. BELL-COLLAR FOR CATTLE. JOHN B. HILL and BENJAMIN B. HILL, New Albany, Miss. Filed Mar. 10, 1888. Serial No. 266,894. (No model.)



Claim.—1. The combination, in a bell-collar, of the yoke A, provided with staples *a*, the clasp B, having apertures *c*, for receiving the staples *a*, and the leather tongues C, provided with heads *d* and adapted to enter the staples *a*, substantially as described.

2. As an improved article of manufacture, a bell-collar for cattle, formed of a wooden yoke, A, provided with staples *a*, the clasp B, furnished with apertures *c*, for receiving the staples *a*, and provided with curved ends *c'*, the leather lining *c*, secured to the clasp B, and the tongue C, provided with T-heads *d*, substantially as described.

384,088. PAPER BOX. WARREN B. HOWE, Chicago, Ill. Filed Sept. 17, 1887. Serial No. 250,003. (No model.)



Claim.—1. The combination, with a paper or board body consisting of four connected walls and provided with two oppositely-arranged inwardly-bent flaps, of an end wall or cover provided at two opposite margins with inwardly-bent flaps inserted within the shell or body, substantially as described.

2. The combination, with a paper or board body consisting of four connected walls and provided with two oppositely-arranged inwardly-bent flaps, of an end wall or cover provided with inwardly-bent flaps upon two of its opposite edges inserted within the said body, and a paper wrapper or covering applied over the exterior of the said body and end walls or covers, substantially as described.

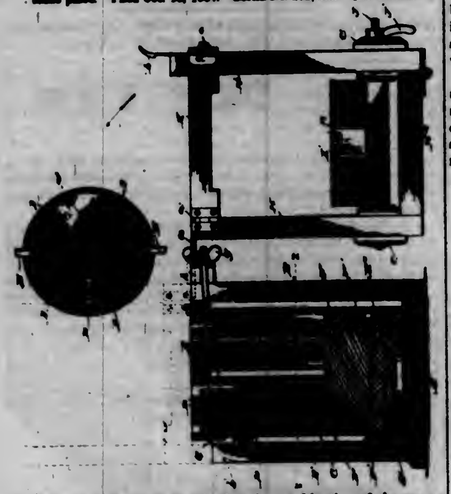
3. The combination, with a paper or board body consisting of four connected walls provided with oppositely-arranged inwardly-bent flaps, of end walls or covers, also provided with flaps at their opposite side margins, and a paper covering for the same, consisting of a sheet, J, extending around three sides of the box or package, and a second sheet or covering, L, extending around the other three sides of the box or package, substantially as described.

4. The combination, with a paper or board body consisting of four connected walls having two oppositely-arranged inwardly-bent flaps, and a cover or end wall, also provided with flaps at two of its opposite side margins, of an opening-string engaged with one corner of the cover or end wall, and a paper wrapper or exterior covering, substantially as described.

5. The combination, with a paper or board box-body consisting of four connected walls having two oppositely-arranged inwardly-bent flaps, and a cover or end wall, also provided with flaps at two of its opposite side margins, of an opening-string engaged with the flap at one corner of the cover or end wall, the flap at the opposite side of the cover or end wall being notched to receive said string, substantially as described.

6. A blank for box bodies or shells, consisting of a strip having parallel side edges and provided with two flaps upon each side margin, the flaps upon one side margin being located at intermediate points with relation to the flaps upon the other side margin, substantially as described.

384,089. LOADING APPARATUS FOR ORDNANCE-CARTRIDGES. JOHN T. JEFFERSON, Annapolis, Md., assignor of one-half to George Wells, same place. Filed Oct. 13, 1887. Serial No. 252,750. (No model.)



Claim.—1. In a cartridge-loader, the combination of the can or powder-charge holder having slotted sides, a lifting-platen arranged in the can and having handles protruding through the slots, and a removable bag-holder, substantially as and for the purpose described.

2. In a cartridge-loader, the combination of a can or powder-charge holder having slotted sides, a lifting-platen arranged in the can and having handles protruding through the slots, a detachable follower arranged within the can, and a removable bag-holding frame having clamping devices for the follower, substantially as and for the purpose described.

3. The combination of the slotted can, the lift-platen arranged within the same and having protruding handles, a frame-work for the can, and a hinged bag-holding frame arranged to be turned vertically over the can or to be inverted and turned down beside it, substantially as shown and described.

4. The combination of the slotted can or powder-charge holder, the vertical guide-strips D, arranged within the same for holding the vertical rows of powder cubes, the lift-platen arranged within the same and provided with protruding handles, and means for clamping and holding the bag, substantially as and for the purpose described.

5. The combination, with the powder-can and its lift-platen, of a clamping-strap, G, surrounding the top of the can and provided with adjusting devices, the follower F F, and the bag-holding frame removably fitted to the top of the powder-can, substantially as and for the purpose described.

6. The combination, with the can and its lift-platen and follower, of a hinged bag-frame, H H' H², having side clamping-arms, K K, and adjustable cross-head I, with bag-rest I', substantially as and for the purpose described.

384,040. STOP-MOTION. HENRY J. JOHNSON, Providence, R. I., assignor to Pimpl, Bartlett & Barnard, Buffalo, N. Y. Filed Jan. 30, 1888. Serial No. 262,204. (No model.)



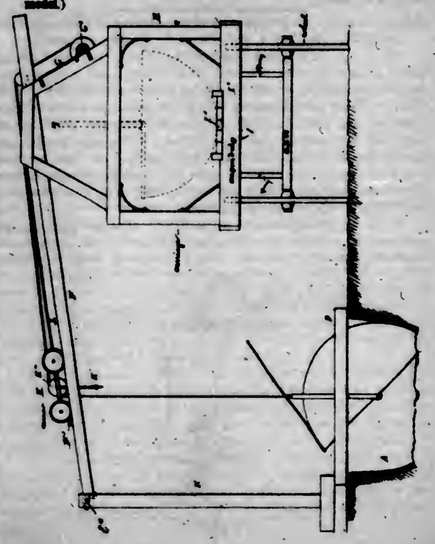
Claim.—1. The combination, substantially as set forth, with a revolving shaft, of the spring-stop and the holding-jaw carried by said stop.

2. The combination, substantially as set forth, of the stop-bumper by which the revolution of the driving-shaft is stopped, and the holding-jaw, both mounted on the same spring.

3. The combination, substantially as set forth, of a stop-bumper by which the revolution of the driving-shaft is stopped, with the lever by which said bumper is moved, and a locking device one part of which is connected with the stop device and the other part connected with said lever, by which the stop-bumper is held in its operative position when moved thereto by said lever.

4. The combination, substantially as set forth, of the stop device and the holding-jaw, with a lever by means of which both are moved, and with a locking device one part of which is connected with the stop device and the other connected with said lever, by means of which the stop device and holding-jaw are held in their operative positions when moved thereto by said lever.

384,041. MACHINE FOR EXCAVATING. CHARLES S. JONES, Yates Centre, Kans. Filed July 2, 1887. Serial No. 243,262. (No model.)



Claim.—1. The combination, with a semicircular vault, of a semicircular revolvable pan concentric with the inside curve of the vault, whereby by inserting one edge of the pan into the vault at one end thereof and rotating it therein, as described, the contents of the vault may be transferred to the pan at a single operation, substantially as set forth.

2. The combination, with the semicircular vault and the semicircular pan to fit therein provided with the bail, between the arms of which it may be rotated in the vault, of the holding-frame engaging the vault and the bail to hold the pan at about the center of the vault without interfering with the rotation of the pan, substantially as set forth.

3. The combination, with the semicircular vault and the semicircular pan having the bail pivoted centrally thereto, and between the arms of which the pan may be rotated, of the holding-frame having hooks engaging the vault and the axis of the pan, substantially as set forth.

4. The combination of the semicircular vault and the semicircular pan having the bail pivoted centrally thereto, and between the arms of which the pan may be rotated, and the hooked operating-rod for rotating the pan in the vault, substantially as set forth.

5. The combination, with the wagon-bed having a carriage movable longitudinally thereon, a longitudinal central flooring on the wagon-bed between the opposite sides of the carriage, and a windlass on the carriage, of the carrier traveling at right angles to the wagon-bed and operated from the windlass, and a frame on which the carrier travels, whereby the carriage may travel on the wagon-bed without interfering with the load deposited thereon by said carrier, substantially as set forth.

6. The combination of the rectangular wagon-body I, having longitudinal rods or tracks I′ parallel with its side beams, the carriage traveling on said tracks, the floor I^2, secured to the end beams of the wagon-body between the tracks and above the base of the carriage, with the frame F, supported at its inner end on the said carriage at right angles to its direction of movement, and the carrier traveling on the frame F and operated from the carriage, substantially as set forth.

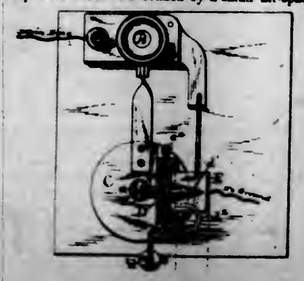
7. The combination, with the wagon-body I, tracks I′, parallel with the side beams, and the floor I^2, of less width than the space between the tracks, of the carriage H, consisting of the bottom frame, H^2, under the floor I^2, and having wheels mounted on the tracks, the side frames, H′, extending up from the bottom frame at opposite sides of the floor, and the windlass mounted on the side frames at right angles to their line of movement, substantially as set forth.

8. The combination, with the carriage H and its windlass, of the frame F, the carrier K, having wheels K^2, central pulley, K^4, hook K^3 on its rear end, and depending hooked rod K′, the rope L, extending from the windlass and detachably connected to the hook K^3, and the pan having a bail detachably suspended from the hooked rod, whereby, when the carrier reaches the desired point, the rope may be disconnected from the hook and passed over the central pulley and the pan removed from the hooked rod and connected with the rope, substantially as set forth.

384,042. LIGHTNING-ARRESTER. PIERRE O. KNELDOLTH, Baltimore, Md. Filed Feb. 8, 1888. Serial No. 263,390. (No model.)

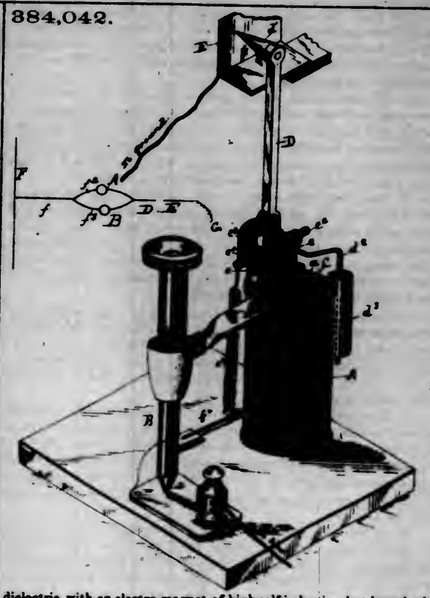
Claim.—1. In a lightning-arrester for electric lines, the combination of a main line with a branch from said line and a ground-connection separated from said branch by a small air-space or other dielectric with an electro-magnet of high self-induction but low ohmic resistance, and a shunt of low self-induction but high ohmic resistance, each included in a divisional branch of the main-line branch, said divisional branches reuniting before reaching the dielectric, and means operated by the electro-magnet for breaking the ground-connection automatically after it has been established by an arc bridging the dielectric, substantially as described.

2. In a lightning-arrester apparatus for electric-light lines, the combination of a main line with a branch from said line and a ground-connection separated from said branch by a small air-space or other



dielectric with an electro-magnet of high self-induction but low ohmic resistance, which is provided with an armature, and a shunt of low self-induction but high ohmic resistance, each included in a divisional branch of the main-line branch.

384,042.



384,043. SCREW-DRIVER ATTACHMENT. LEE KIELHORN, Jackson, La. Filed Feb. 2, 1888. Serial No. 262,737. (No model.)

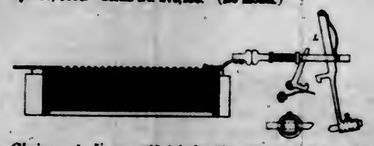


Claim.—1. The combination, with the screw-driver blade having a lateral projection, of a clasping-slide provided with a point and spring and adapted for engagement with such projection, as and for the purpose specified.

2. The combination, with the screw-driver blade B, provided with the tooth *b*, of the slide C, provided with the point D, and having the opening *d*, for receiving the said tooth *b*, and the spring *e*, for retaining the slide C in position upon the blade B, substantially as described.

3. As an improved article of manufacture, a screw-driver having a blade, B, with parallel edges, provided with the tooth *b*, the slide C, fitted to the blade B, adapted to move longitudinally thereon, and provided with the point D, aperture *d*, and knob *f*, and the spring *e*, attached to the slide C and adapted to bear upon the side of the blade B, substantially as described.

384,044. RHEOSTAT. WALTER H. KNIGHT, New York, N. Y. Filed Apr. 10, 1888. Serial No. 270,126. (No model.)



Claim.—1. In an artificial electric resistance, the combination, with a series of plates in superficial contact, of a contact device and extensions on certain plates of the series with which the contact device is adapted to connect.

2. The combination, in an artificial resistance, of a series of plates in superficial contact, certain plates of the series projecting above the rest, with a contact device adapted to sweep over the edges of the projecting plates.

3. In an artificial resistance, the combination of a series of exposed metallic plates held in permanent superficial contact and stationary relatively to one another, a non-combustible support therefor, and a movable contact device sweeping over the series to bring more or less of them into circuit.

4. The combination, with a variable artificial resistance, of a controlling device therefor, and a supplementary circuit-breaker in series therewith and placed in line of action of said controlling device, so as to be operated thereby.

5. The combination of a variable artificial resistance, a movable contact device therefor, and a supplementary circuit-breaker in series with said resistance and placed at the terminal point of movement of said contact device, so as to be actuated thereby after the resistance has been included in the circuit.

6. The combination, with a variable artificial resistance, of a controlling device therefor, and a "snap" circuit-breaker in series with said resistance and placed in the line of action of said controlling device, so as to be operated thereby.

7. The combination, with a variable artificial resistance, of a movable controlling device therefor, a supplementary terminal contact, and a mechanical power-accumulator between it and the said controlling device, whereby a sudden and wide separation between the contact-points may be effected.

8. The combination of a variable artificial resistance, a controlling device therefor, a supplementary terminal contact, and an accumulating-spring between it and the said controlling device, substantially as described.

9. The combination, with a double series of resistance-plates, C, of a movable contact device for each series in electrical connection with each other, and a line-connection at corresponding ends of the two series, respectively, whereby any desired number of plates may be included in the circuit.

10. An artificial resistance consisting of a series of metallic plates in superficial contact and a box or frame having a non-conducting and non-combustible lining, substantially as described.

384,045. BOW FOR STRINGED INSTRUMENTS. EDWARD LAVENDER, London, England. Filed Jan. 5, 1888. Serial No. 259,903. (No model.)



Claim.—1. A bow-stick for stringed instruments, provided with finger-bearings projecting from the bow in one direction, and with a thumb-bearing projecting from such bow in a reverse direction, substantially as and for the purpose specified.

2. An attachment for bow-sticks for stringed instruments, consisting of a sleeve provided with finger-bearings projecting therefrom in one direction and a thumb-bearing projecting therefrom in a reverse direction, substantially as and for the purpose specified.

3. As an attachment for bows for stringed instruments, a sleeve consisting of two parts hinged together and provided with a plurality of finger-bearings, A, B, C, and D, for the purpose set forth.

4. As an attachment for bows for stringed instruments, a sleeve consisting of two parts hinged together and provided along its meeting edges with a plurality of finger-bearings, for the purpose set forth.

5. As an attachment for bows for stringed instruments, a sleeve consisting of two parts hinged together and provided along its meeting edges with a plurality of finger-bearings, and a spring-clip for fastening the parts together, as shown.

384,046. TOWEL. FRANK LEAKE, Philadelphia, Pa. Filed Feb 21, 1888. Serial No. 264,709. (No model.)



Claim.—As an improved article of manufacture, a towel composed of a closely-woven body having a double surface of terry loops, the loops upon one side being composed entirely of soft material and the loops upon the other side entirely of harsher material, substantially as and for the purpose set forth.

384,047. CONSTRUCTION OF SHIPS, &c. CHARLES C. LESSNER, New York, N. Y. Filed Mar. 22, 1887. Serial No. 231,893. (No model.)

Claim.—1. A twin-screw vessel having its hull tapered rearward to a central stern-post and provided on opposite sides with two laterally-extended trunks or tubes inclosing the screw-shafts.

2. A twin-screw vessel having its hull tapered rearward to a central stern-post and provided at the bottom on opposite sides with trunks or tubes gradually emerging from the sides of the hull at their forward ends and projected independently in tubular form at their rear ends, whereby they are adapted to inclose and sustain the screw-shafts to their rear ends and to permit the free run of the water to the entire face of the screws.

3. A hull for a twin-screw vessel, tapered rearward to a central stern-post and contracted at the stern from the load-line downward to a point above the screw-shafts, and again widened at the bottom in the form of two tubes or trunks to inclose the screw-shafts.

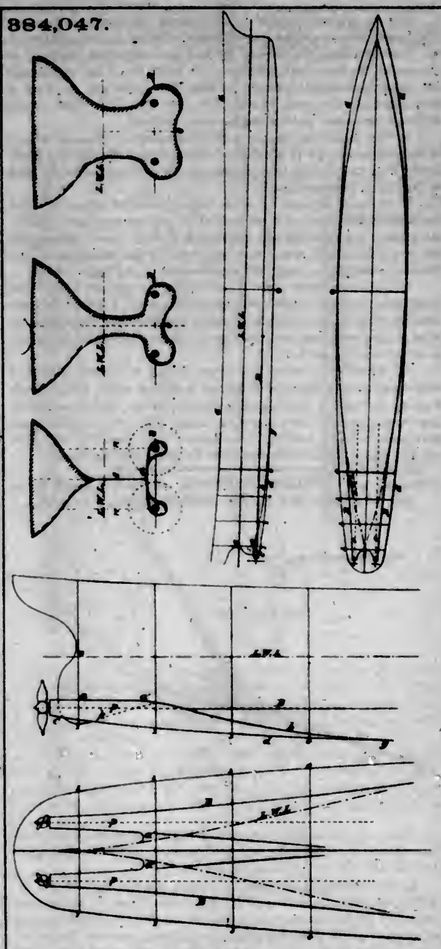
4. A hull for a twin-screw vessel, having a central stern-post, a rudder hung thereon, and two tubes projected rearward on opposite sides of and beyond the rudder, in combination with shafts mounted in said tubes and screws mounted on the rear ends of said shafts.

5. A hull having its rear end provided with a central stern-post and its lower portion divided vertically in the middle and terminated in the form of two shaft-receiving tubes or tunnels.

6. In a twin-screw vessel, a hull tapering to a central stern-post in the middle line and having on opposite sides two shaft-receiving tunnels emerging gradually from the sides and bottom of the hull at a point aft of its greatest transverse section, said tunnels contracting gradually rearward and extending in tubular form to the screws.

7. A hull for a twin-screw vessel, tapered rearwardly to a central stern-post, provided with two shaft-inclosing tunnels on opposite sides diminished in width between the said tunnels and the water-line and elevated on the bottom between the tunnels and forward of the stern-post.

384,047.



8. In a twin-screw vessel, a hull tapered rearward to a keel-post and provided on opposite sides with two shaft-receiving tunnels emerging gradually from the sides of the hull and extending rearward to the screws, the stern being contracted in width above the tunnels and the latter contracted vertically between the shafts and the keel as they approach the stern, whereby the free run of the water to the screws is permitted and the displacement reduced.

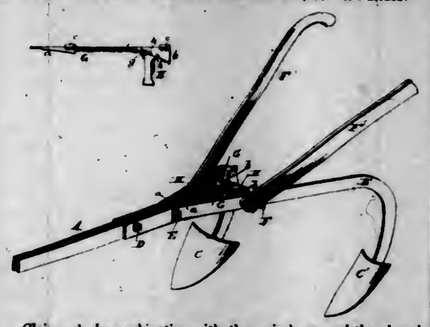
9. The vessel with two or more stern-screws on opposite sides of its longitudinal center in which the bottom of the hull under the shaft-tunnel from the stern for some distance forward forms the deepest part of the hull in transverse section.

10. A vessel with one or more screw-shafts and screws in which the bottom of the hull, at a point aft of its greatest transverse section, merges into and coincides with the bottom of shaft-tunnels surrounding the screw-shafts and rises thence rearward to the screws gradually, thereby permitting an easy and unobstructed run of water astern.

11. In a twin-screw vessel, a hull having on opposite sides of the longitudinal center the rearwardly-projecting tubes or tunnels, in combination with the screw-shafts extended therethrough, the screws applied to their rear ends, and the central rudder hung on the stern-post in advance of the screw.

12. A hull for a twin-screw vessel, having on opposite sides two shaft-receiving tunnels, substantially as described, which issue entirely from the hull only at their junction with the screws, their forward portions forming part of the hull and expanding in height and width from the screws forward, whereby firm support is obtained for the shafts and free access afforded thereto from the interior of the vessel.

384,048. WALKING-CULTIVATOR. EDWARD P. LYDE, Davenport, Iowa. Filed June 12, 1886. Serial No. 204,963. (No model.)

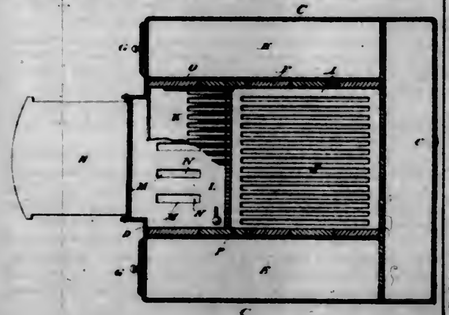


Claim.—1. In combination with the main beam and the shovel-beam applied to its side, the intermediate plate, G, provided at opposite ends with the two distinct wedges.

2. In combination with the main beam and the shovel-beam applied to its side, the intermediate adjustable plate, G, having two wedge-like portions at opposite ends, and the plate H, seated between the rear end of the plate G and the shovel-beam, whereby the shovel-beam is supported at two points and its adjustment at both points simultaneously permitted.

3. The main beam and the shovel-beam at its side, and the intermediate wedge-like block, *b*, having its outer face curved longitudinally and provided with notches A, in combination with the block H, constructed and arranged to interlock therewith, as described.

384,049. BROILING-OVEN FOR RANGES. JAMES G. LYDE, Brooklyn, N. Y. Filed Oct. 6, 1887. Serial No. 251,892. (No model.)



Claim.—1. A range having ovens at the side and a fire-pot provided with an open-front grate set back from the front of the range between the said ovens, so as to form a protected broiling-oven, as and for the purpose set forth.

2. A range or stove having ovens at its sides, a fire-pot set back from the front of the range or stove and between the said ovens and provided with a front grate inclined upward from the front of the fire-pot to the front of the range or stove, and a flooring extending from the front of the fire-pot to the front of the stove or range, substantially as described, whereby a broiling-oven is formed between the fire-pot and the front of the range or stove, as set forth.

384,050. HYDRAULIC PUMP. JOHN H. MARTIN, Oroville, assignee of one-half to Judson Hendy, San Francisco, Cal. Filed Jan. 28, 1888. Serial No. 261,672. (No model.)



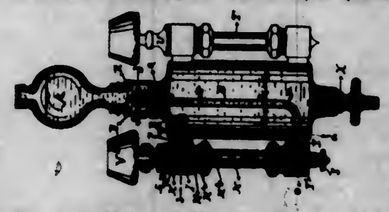
Claim.—1. A hydraulic pump consisting of a discharge-pipe having an open lower end and a nozzle for directing a stream of water under pressure into said open end, said nozzle having a fixed and movable portion whereby the inclination of the pipe may be varied, substantially as described.

2. A hydraulic pump consisting of a discharge-pipe having an open lower end, a flexible pipe for conveying water under pressure, and a nozzle connected with the supply-pipe and with the lower open end of the discharge-pipe, said nozzle consisting of a fixed and a movable portion, forming a movable joint, whereby the discharge-pipe and supply-pipe may change their inclination, substantially as herein described.

3. A hydraulic pump consisting of a discharge-pipe having an open lower end, a sectional supply-pipe provided with flexible or movable joints for conveying water under pressure, and a nozzle for said supply-pipe connected with the discharge-pipe, said nozzle consisting of a fixed and movable portion, forming a flexible joint, whereby both pipes may automatically change their inclination, substantially as herein described.

4. In a hydraulic pump, the combination of the inclined discharge-pipe, the flexibly-jointed supply-pipe, the flexibly-jointed nozzle, and the bolts connecting the nozzle with the discharge-pipe, substantially as herein described.

384,051. LUBRICATOR. ROBERT MASON and JESSE H. SMITH, Detroit, Mich. Filed Jan. 26, 1888. Serial No. 261,821. (No model.)



Claim.—1. A hydrostatic displacement down-drop lubricator combining in its construction a transparent oil-filled sight-feed glass, a reservoir for lubricating-oil, and an interposed water seal separating and confining the oils in their respective chambers, substantially as set forth.

2. In combination with a sight-feed-glass chamber and an oil-reservoir, B, respectively, provided with means for filling them independently, an interposed water seal forming the sole communication between said chambers, a hydrostatic column for supplying water in regulated quantities to the former, and an oil-discharge pipe for delivering oil from the oil-reservoir, substantially as set forth.

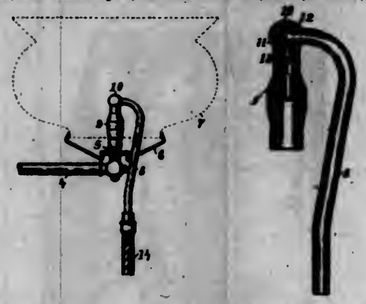
3. In combination with the sight-feed glass of a down-water-drop lubricator and the oil-reservoir, respectively, provided with means for independently filling them with oil, a pipe, P, leading up from the bottom of the sight-feed chamber to a level above that of the top of the sight-feed chamber, through which it is filled, substantially as set forth.

4. In combination with the condensation-chamber and oil-reservoir, an intermediate sight-feed having the plug M, constructed with water-ways and externally threaded, substantially as set forth.

5. In combination with the condensation-chamber and oil-reservoir, an intermediate sight-chamber, and externally screw-threaded plug M, constructed with water-ways, and a detachable valve, V^1, for expelling the air from the passages when the plug is forced into place after the sight-feed chamber has been independently filled with oil, substantially as set forth.

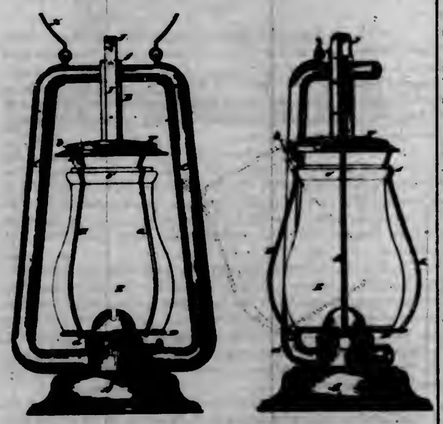
6. In combination with the condensation-chamber, independently oil-filled sight-feed chamber, and oil-reservoir B, a water seal in the passage between the condenser and the sight-feed chamber to prevent the escape of the oil from the latter upwardly, and a second water seal between the sight-feed chamber and the oil-reservoir B, to prevent the passage of oil from either into the other, substantially as set forth.

384,052. DROP-LIGHT ATTACHMENT. WILLIAM B. MASON, Providence, R. I. Filed July 19, 1887. Serial No. 244,703. (No model.)



Claim.—In a detachable stort-cock attachment, the combination, with the internally-screw-threaded gas-socket 9 for receiving the gas-burner, and the externally-screw-threaded bent gas-tube 8, of the elbow-coupling 10, connecting the socket and the tube and provided with the right-angled channel or bore 11, and formed with the internal screw-thread, 12, and the external screw-thread, 13, substantially as and for the purpose herein described.

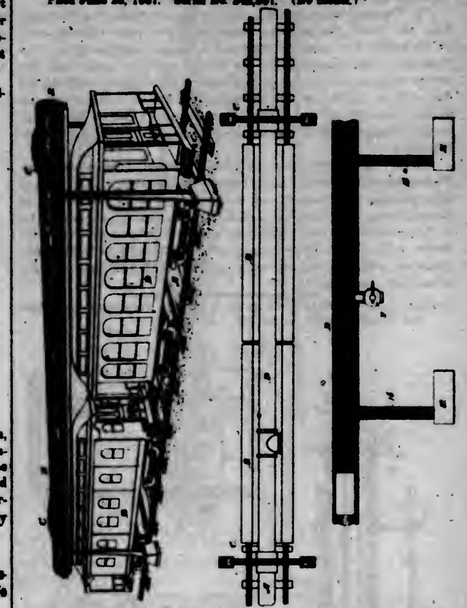
384,053. LANTERN. HENRY A. MATHEWS and DAVID M. IRELAND, Waterbury, Conn. Filed Feb. 16, 1888. Serial No. 264,202. (No model.)



Claim.—1. In a lantern substantially such as described, the combination of the perforated plate D, adapted to rest on the burner below, the cap-plate F above, the globe G, seated upon the plate D and below the plate F, two or more guard-wires extending from the plate below outside the globe to the plate above and rigidly secured to the said plates, and one or more guard-wires hinged at one end to one of said plates and extending outside the globe, detachably secured by the other end to the other plate, substantially as described.

2. In a lantern substantially such as described, the combination of the perforated plate D, adapted to rest on the burner below, the cap-plate F above, the globe G, seated upon the plate D and below the plate F and constructed with an annular bead around its upper end, two or more guard-wires extending from the plate below outside the globe to the plate above and rigidly secured to the said plates, and one or more guard-wires hinged at one end to one of said plates and extending outside the globe, detachably secured by the other end to the other plate, the said wires constructed with bends corresponding to and adapted to embrace said bead on the globe, substantially as described.

384,054. RAILWAY SYSTEM. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall executrix of said Thomas J. Mayall, deceased. Filed June 22, 1887. Serial No. 242,207. (No model.)



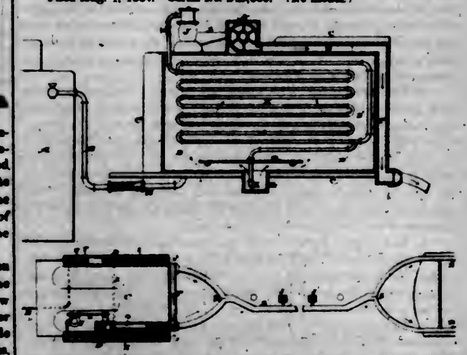
Claim.—1. The combination, with the surface road-bed of ordinary construction and the cars adapted to run thereon, of the arches spanning said road, the pneumatic tube carried by said arches, carriers within said tubes, and connections between said carriers and cars, substantially as described.

2. The combination, with the road-bed and arches spanning the same, of the pneumatic tube carried thereby and having a slot on its under side extending the entire length of said tube, and a flexible packing of anti-friction material for closing said slot, substantially as described.

3. The combination, with the pneumatic tube having a longitudinal slot, of the packing-tubes of anti-friction material, one on each edge of said slot, substantially as described.

4. The combination of the road-bed car, pneumatic tube having a slot, slotted carrier within said tube, and a coupler detachably connecting said car and carrier, substantially as described.

384,055. CAR-HEATER. FRANK C. MCELROY, Columbus, Ohio. Filed Aug. 1, 1887. Serial No. 245,869. (No model.)



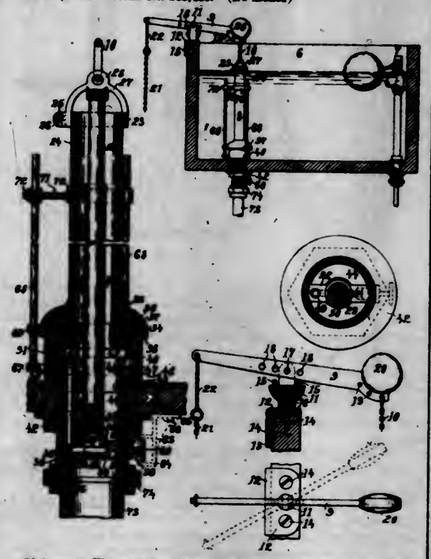
Claim.—1. The combination of the boiler, the pipe which conducts the steam therefrom, the inclosing-chambers placed upon opposite sides of the tender and connected together by an air-conducting pipe, the radiators placed in the chambers, an engine placed upon the tender, and a blower which is operated by the engine, with a register or pipe

through which cold air is taken into the inclosing-chambers, the pipe through which the heated air is forced by the fan, and the pipe which conducts the heat to the cars, substantially as shown.

2. The combination of the boiler, the pipe for conducting the steam from the boiler, the inclosing-chambers placed upon opposite sides of the tender and connected together by an air-conducting pipe, the registers in the chambers, the fan located upon the tender and connected with one of the inclosing-chambers, the engine for driving the fan, with the register or pipe through which the air is taken into one of the chambers, and the pipes or boxes for conveying the heated air to the outlet-pipe which extends along under the cars, substantially as described.

3. In a car-heater, the combination of the boiler, the pipe for conducting the steam therefrom, the tender, the inclosing-chambers placed upon opposite sides thereof, and which are connected together by an air-conducting pipe, radiators placed in the chambers, deflectors placed in the chambers for evenly diffusing the air, an engine located on the tender, a fan driven by the engine and connected with both of the chambers, and a pipe for conveying away the heated air from the cars, substantially as set forth.

384,056. **VALVE.** PATRICK W. HERMAN, Providence, R. I. Filed Feb. 9, 1888. Serial No. 263,469. (No model.)



Claim.—1. The combination, with the tube 24, provided with the annular valve, of the reservoir formed within the cylinder 40, the tube 30, connected with the reservoir by passage-ways 49 and 53, provided with valves 50, 55, and 58, and the piston 29, connected with the tube 24, constructed to draw water from the reservoir into the tube 30 when the valve is raised to act as a cushion to control the descent of the valve, as described.

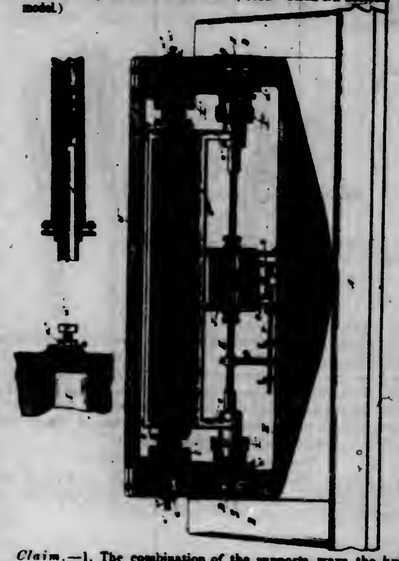
2. The combination, with the outlet secured in the bottom of the tank provided with the bridge 52, having water-channel 53, and a reservoir formed within the cylinder 40 by means of the ring 45 and provided with the block 48, connected by tube 49 with the bridge 52, of the tube 30 and piston 29, connected to and moving with the main valve and check-valves 50, 55, and 58, constructed to admit water to the tube 30 when the valve is raised and discharge the water when the valve descends, so as to regulate the descent of the valve and the quantity of the flushing-water, as described.

3. In a tubular flushing-valve, the combination, with the valve, of a reservoir connected with the tube 30 by water-ways 49 and 53, controlled by check-valves 50 and 55, the piston 29, connected to and moving with the valve, and the adjustable discharge-valve 58, as and for the purpose herein described.

4. The combination, with the tank and lever 9, one end of which is connected with the flush-valve, of the tube 24, provided with the valve-disk 36 and packing 38, the cylinder 40, forming the valve-seat, and the sleeve 45, forming a reservoir connected by water-ways with the bridge 52, the tube 30, piston 29, and valves controlling the water supply and discharge, the rods 68, and the stop 70, as and for the purpose set forth.

5. In a flush-valve, the combination, with the tube 24, provided with a valve, the tube 30, and piston 29, of the cylinder 40, forming the valve-seat and discharge-outlet, the ring or sleeve 45, forming an annular reservoir between the cylinder 40 and sleeve 45, and passages connecting the said reservoir with tube 30 of the strainer 46 47, as described.

384,057. **MACHINE FOR CUTTING VENEERS.** CHARLES L. MERRILL, Indianapolis, Ind. Filed Mar. 3, 1888. Serial No. 265,998. (No model.)



Claim.—1. The combination of the supports, ways, the knife-table traveling upon the said ways, a reciprocating knife-frame mounted in bearings in the said knife-table, a knife secured upon the knife-frame, a piston-rod connected to the said reciprocating knife-frame, a piston upon the piston-rod, and a cylinder in which the said piston works, this cylinder being mounted upon the traveling knife-table, substantially as herein described.

2. The combination of the traveling knife-table, the reciprocating knife-frame mounted thereon, the knife secured to this frame, the piston-rod rigidly connected at both of its ends to the knife-frame, a piston on the rod, and a cylinder in which the piston works, the said cylinder being mounted on the traveling carriage, whereby the knife is given a smooth and true reciprocating movement as the knife-table advances.

3. The combination of the traveling knife-table, the reciprocating knife-frame mounted thereon, the knife on the knife-frame, the piston-rod rigidly secured to the said reciprocating knife-frame, the piston on this rod, the cylinder in which the piston works, this cylinder being mounted upon the traveling carriage, the steam-chest and slide-valve therein, the latter being provided with a stem, the adjustable stops on this stem, and the adjustable arm on the piston-rod, as and for the purpose specified.

4. The combination, with the knife-table and the air-cylinders secured thereon, of the reciprocating knife-frame provided with plungers or pistons which work in the said air-cylinders, the knife secured to the knife-frame, and means for reciprocating the said knife-frame.

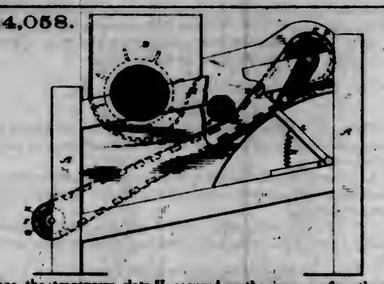
5. The combination, with the knife-table and the air-cylinders thereon, the latter being provided with adjustable openings, of the knife-frame provided with plungers or pistons which work in the said air-cylinders, the knife secured to the knife-frame, and means for reciprocating the knife-frame.

6. In a veneer-cutter, the combination, with the traveling knife-table and the air cylinders or chambers thereon, of the knife-frame provided with pistons or plungers working in the said air-cylinders, a knife on the frame, a piston-rod rigidly connected at both of its ends to the said knife-frame, a piston on this rod, and a cylinder in which this piston works, the said cylinder being mounted upon the traveling knife-table, as and for the purposes set forth.

384,058. **SEPARATING-MACHINE.** ANDREW J. MILLER, Avis, Ohio. Filed July 11, 1887. Serial No. 244,017. (No model.)

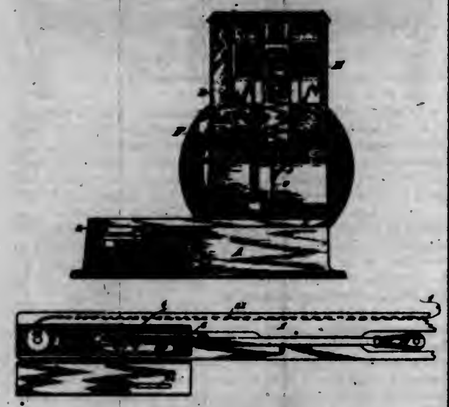
Claim.—In a separating-machine, the combination of the pulleys G, the inclined belt F, mounted thereon and having an unbroken outer

384,058.



surface, the transverse slats H, secured on the inner surface thereof, and the polygonal agitating-wheel I, having a frictional contact with the upper surface of the belt, whereby the jar produced by the frictional wheel is communicated to the whole width of the belt, substantially as shown and described.

384,059. **SEWING-MACHINE.** LOUIS L. MILLER, Newport, assignor of one-half to Frank H. Perkins, Covington, Ky. Filed Feb. 23, 1887. Serial No. 228,195. (Model.)



Claim.—1. The combination, with a hook-needle of a sewing-machine, of the tube-supporting bar 1, having a free end projecting above the machine-table and under the needle, and the reciprocating hook and thread-looper 7, having an eyelet, 8, and provided with a stud moving in a cam-groove, 24, substantially as described.

2. In combination with the supporting-bar 1 of the sewing-machine, the thread-looper mechanism consisting of the vibratory reciprocating bar 6, hook 7, located within said bar, and provided with a slotted guide, 24, and an elongated slot, 23, in the upper side of said bar, whereby the looper is operated in unison with the movement of the hook-needle by the driving mechanism of the machine, substantially as specified.

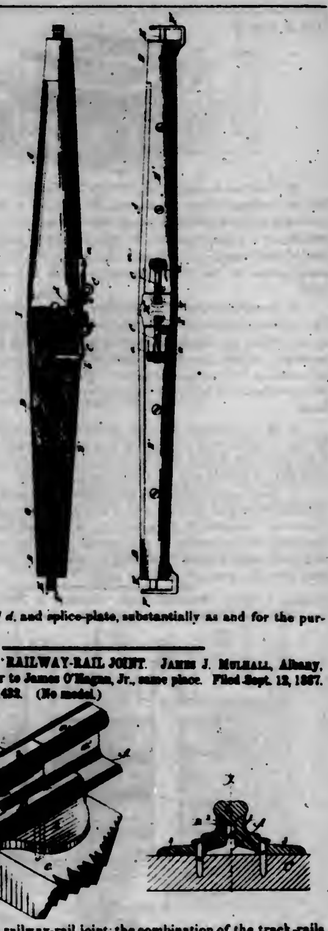
3. The combination, with the tube-supporting bar 1, provided with a slot, 23, and a lower slot, 24, and having its free end projected under the needle, of the reciprocating bar 6, having hook 7, the latter provided with eyelet 8, the connecting-bar 9, link 10, and lever 11, the hook 7 being guided by a cam-groove, 24, substantially as described.

4. In combination with the slotted hollow supporting-bar 1, the thread-looping mechanism located within said bar, consisting of the reciprocating vibratory bar 6, hook 7, eyelet 8, and friction-roller 22, slot 23, and guide 24, for looping the thread over a hooked needle, substantially as specified.

384,060. **HORSE-DETACHER.** WALTER L. MITCHELL, PHILIP M. MITCHELL, and JOHN G. A. HARNIT, Felton, Pa. Filed Dec. 13, 1887. Serial No. 257,293. (No model.)

Claim.—The combination of the whiffletree, chambered as described, the ferrules B B, with bracket-arms F F, and the metal strips B' B', screwed to the back of the whiffletree, and provided also with perforated ears *d d*, the spring-bolts E E, pull-rods D D, and elbow-levers C C, having arms *b* extending transversely into the whiffletree, and their outer arms parallel to the whiffletree and provided with loops *c*, the splice-plate H, and bolts I I, passing through and securing the

384,060.



whiffletree, ears *d d*, and splice-plate, substantially as and for the purpose described.

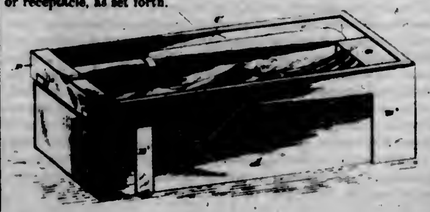
384,061. **RAILWAY-RAIL JOINT.** JAMES J. MULHALL, Albany, N. Y., assignor to James O'Hagan, Jr., same place. Filed Sept. 13, 1887. Serial No. 249,422. (No model.)



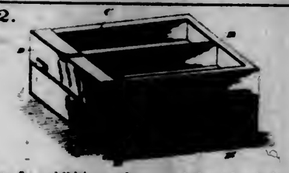
Claim.—In a railway-rail joint, the combination of the track-rails having the heads of their conjoining ends cut away, as herein shown and described, and a joint-piece for fastening the ends of said track-rails, said joint-piece comprising a head which fills the space formed by cutting away the conjoining ends of the track-rails, side flanges pendent from said head and of a uniform length with said head until they bear upon the lower flange of the track-rails, and then expanding both endwise and laterally to form horizontal flanges which bear upon the crosstie, and by which the joint-piece is secured in place, as and for the purpose herein specified.

384,062. **SHOW-CASE FOR CUTLERY.** EUGENE A. NELMS, Atlanta, Ga. Filed Mar. 3, 1888. Serial No. 266,569. (No model.)

Claim.—1. A device for exhibiting cutlery, consisting of a shallow sample box or receptacle having a transparent top and a closed bottom and clasping-bands secured to said bottom adapted to engage and retain an independent packing-box in connection with said sample box or receptacle, as set forth.



384,062.



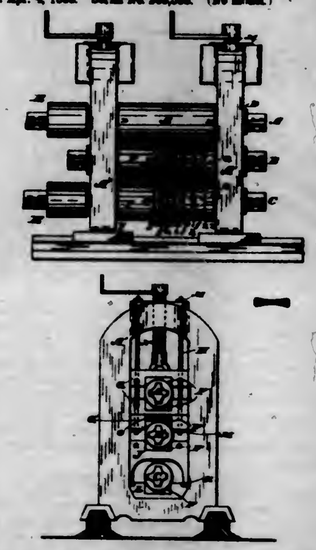
2. A device for exhibiting cutlery, consisting of a shallow sample box or receptacle having a transparent top and a closed bottom, and provided with longitudinal compartments, and the interior made accessible by a hinged door at one end, and bands attached to the bottom of said sample-box adapted to encircle and hold an independent packing-case in removable connection with the sample-box, as set forth.

3. In combination with a packing-box, A, a display or exhibiting case having bands secured thereto for connecting the cases removably to each other, the display-case being provided with longitudinal compartments, which are suitably lined, and a door, one of said compartments being of less length than the adjacent one to provide a space for the reception of a label, substantially as shown, and for the purpose set forth.

4. In combination with the packing box A, a shallow receptacle having a transparent top, and at one end a socket, the opposite end being provided with a band adapted to encircle the packing-box, substantially as shown, and for the purpose set forth.

5. As an improved article of manufacture, a sample or display receptacle having an open top with a transparent covering and accessible interiorly by means of a hinged door at one end thereof, and attaching-bands on the bottom of said sample or display receptacle adapted to encircle and retain a containing packing-case in removable connection with the sample-box, as set forth.

384,063. ROLLING-MILL. CHARLES A. NORMAN, Canton, Ohio. Filed Apr. 4, 1888. Serial No. 269,993. (No model.)



Claim.—1. A three-high train of rolls placed in vertical order in suitable housing, consisting, essentially, of an upper roll, as A, of plain surface and even diameter throughout its length, between journals, and a middle roll, as B, and a bottom roll, as C, having corresponding plain surfaces, as P and Q, and corresponding convex-bottomed grooves, as a and *f*, forming double concave grooves between the rolls B C, and a groove between the rollers A and B flat on one side and concave on the other, substantially as described, and for the purpose set forth.

2. In combination with housing A', the plain driven roll A, supported in journal-boxes F, suspended in yokes G, supported on rods H, a free middle roller, B, resting in journal-boxes P and F', pillow-block J, a driven bottom roller, C, journal-box F, pillow-block L, and means for adjusting and securing the rolls in adjustment, substantially as described, and for the purpose set forth.

384,064. BUTTON. WILLIAM P. HALE, Jersey City, N. J., assignor to the Vulcanite Manufacturing Company, New York, N. Y. Filed Feb. 27, 1888. Serial No. 265,802. (No model.)

Claim.—1. A button or other article formed of or containing a compound consisting of powdered hoof and a mixture of glycerine and saccharine substance.

2. A button or other article formed of a compound consisting of a fibrous material, powdered hoof, and a mixture of glycerine and saccharine substance.

3. A button or other article formed of a compound consisting of a fibrous material, powdered hoof, and a mixture of glycerine and molasses.

384,065. PISTON METER. JOHN R. HOSFORD, Boston, Mass. Filed Mar. 3, 1888. Serial No. 266,010. (No model.)



Claim.—1. In a fluid-meter, the combination, with the cylinders A A, reciprocating pistons *a*, and the valve-chamber B, of the main valve L, operated by the direct pressure of the fluid thereon, the supplemental valve S, actuated by the piston, and the latches P P, operated by the said supplemental valve and adapted to control the movement of the main valve, substantially as and for the purpose set forth.

2. In a fluid-meter, the combination, with the main valve L, operated by the direct pressure of the fluid, and the pivoted latches P P, adapted to control the movement of the main valve, substantially as described, of the supplemental valve S, provided with inclines S^2 S^2, for operating the latches when the supplemental valve is moved by the piston, substantially as described.

3. In a fluid-meter, the combination, with the cylinders A A, reciprocating piston *a*, and the valve-chamber B, of the main valve L, having the ports L^2 L^3 extending entirely through it, the valve-plate E, having the ports H H and outlet-port G, the valve-case I, with its ports J K, the cover O, with its ports J^2 K^2 and openings or waterways R R, the supplemental valve S, with its recesses 25 and inclines S^2 S^2, and the pivoted latches P P, having lips or projections Q and spurs or projections Q^2, the latter adapted to pass through the openings R into the ports L^2 of the main valve, whereby the movement of the latter is controlled, all co-operating substantially in the manner and for the purpose set forth.

4. In a fluid-meter, the combination, with the main valve L, its casing I, and the cover O, with their ports and water-ways, substantially as described, of the latches P, pivoted to the cover O and having the lips or projections Q and spurs or projections Q^2, and the supplemental valve S, adapted, when operated by the piston, to alternately raise the latches to release the main valve, whereby the latter is prevented from completing its movement until the piston has been moved to its full extent and the supplemental valve has admitted the water under full pressure to act upon the main valve, substantially as and for the purpose set forth.

5. In a fluid-meter, the combination, with the spindle T and ratchet-wheel U secured thereto, of the reciprocating finger-bar X, provided with a finger, Y, pivoted thereto and adapted to engage with the ratchet-wheel, and the fixed cam W^2 on the bar W, for throwing the finger into engagement with the ratchet-wheel, all constructed to operate substantially in the manner and for the purpose set forth.

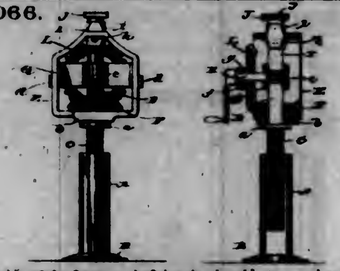
384,066. LIFTING-JACK. JOHN S. OAR, Augusta, Ky. Filed Feb. 16, 1888. Serial No. 264,302. (No model.)

Claim.—1. The combination of the standard, the threaded shaft therein, the open frame having a central swiveled bearing for the upper end of the shaft, and mechanism carried by the frame to rotate the shaft, as set forth.

2. The combination, in a lifting-jack, of a vertical standard, a threaded shaft therein, a frame rotatable on said shaft and provided with a central bearing for the end of said shaft, and a section, I, having its lower end in the said bearing, substantially as specified.

3. In a lifting-jack, a vertical internally-threaded standard, a threaded shaft therein, a frame rotatable upon said shaft, a strap spanning one side of the frame, a shaft bearing in said strap and carrying a bevel-wheel, said shaft being square-ended for the application of a key, and a bevel-wheel, F, on the threaded shaft, substantially as specified.

384,066.

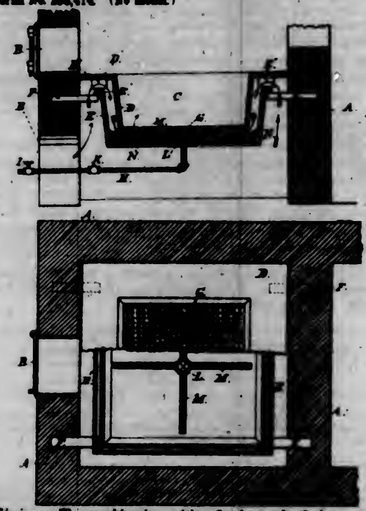


4. In a lifting-jack, the standard, the threaded shaft engaging a threaded portion of the standard and provided with the collar *a*, the upper portion of the shaft above the collar being threadless, the frame E, swiveled on the upper threadless portion of the shaft, the swiveled step carried by the frame, and the gearing carried by the frame to engage with the threaded shaft, as set forth.

5. In a lifting-jack, the standard, the threaded shaft D, having its upper portion plane and its lower threaded portion working in a threaded part of the standard, the gear F, secured on the plane portion of the shaft, the frame E, swiveled to the plane portion of the said shaft, the gear-wheel L to actuate the gear F, the brace G, the upper independent shaft-section, I, having its lower end seated in the brace, and the swiveled step carried by the shaft-section I, as set forth.

6. In a lifting-jack, the standard, the vertically-movable shaft D, the frame E, swiveled on the shaft D, the gearing carried by the frame E to work the shaft D, the independent shaft I, arranged within the frame E and supporting the same, and step J, as set forth.

384,067. HYDROCARBON-BURNER. JAMES R. PATTERSON and ALONZO HOFFMAN, Toledo, Ohio, assignors of one-third to Walter C. Lloyd and George P. Worts, both of same place. Filed May 16, 1887. Serial No. 238,414. (No model.)

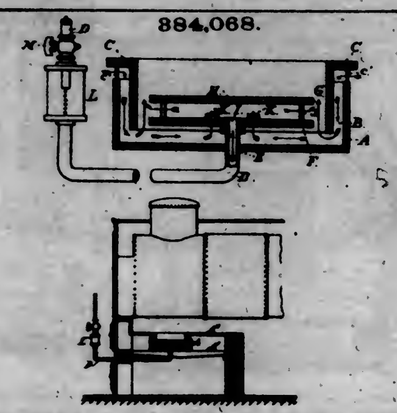


Claim.—The combination, with a fire-box, of a fuel-pan, means for supporting said pan in the fire-box, a perforated oil-supply pipe located in said pan, and an upper pan having a perforated bottom, and flanges for supporting the same within the fuel-pan, whereby an air-supply passage or flue is formed within the fire-box, as described.

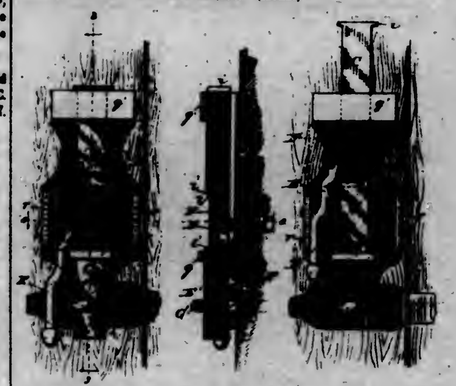
384,068. HYDROCARBON VAPORIZER AND BURNER. JAMES R. PATTERSON and ALONZO HOFFMAN, Toledo, Ohio, assignors of one-third to Walter C. Lloyd and George P. Worts, same place. Filed July 5, 1887. Serial No. 243,262. (No model.)

Claim.—In a hydrocarbon vaporizer and burner, a bottom pan, a cylinder therein having a top flange overlapping the bottom pan, forming air-spaces, as described, in combination with upper and lower burner-plates, the lower plate being provided with an induction-port for fuel centrally thereof, air-induction ports concentric therewith, said burner-plates being of less diameter than the cylinder, whereby an air-space is formed between the cylinder and peripheries of the plates, as and for the purpose set forth.

384,068.



384,069. SEAL-LOCK. ARTHUR E. PRIEST, Chicago, Ill. Filed Feb. 14, 1888. Serial No. 263,896. (Model.)

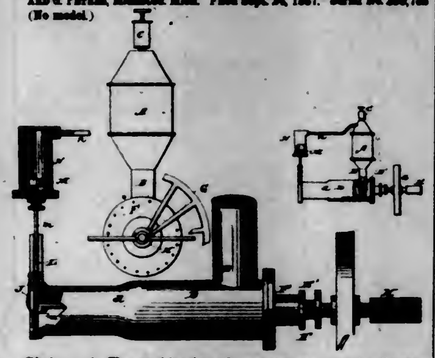


Claim.—1. In a seal-lock, the combination of a plate, A, provided with lateral flanges *r*, a bolt, C, on the plate, movable longitudinally thereon and immovable axially, and provided with a recess, *l*, and normally locked against longitudinal movement, and a frangible seal, F, confined in the recess *l* and between the flanges *r* and requiring to be fractured to permit access to the locking mechanism of the bolt, substantially as and for the purpose set forth.

2. In a seal-lock, the combination of a plate, A, provided with lateral flanges *r* and a yielding stud, *m*, a bolt, C, on the plate, movable longitudinally thereon, and provided with a recess, *l*, in its front side and with a recess, *k*, in its rear side, a rotary pin, D, extending through the bolt transversely to the stud *m* and carrying a stud, *m'*, adjacent to the recess *k*, a lever, E, extending from the pin D, and a frangible seal, F, confined in the recess *l* and between the flanges *r*, substantially as and for the purpose set forth.

3. A seal-lock comprising, in combination, a plate, A, having extensions at opposite ends, through which to secure the device in place, and provided with guides *q* and *q'*, lateral flanges *r* between the guides, and a yielding stud, *m*, a bolt, C, extending through the guides, movable longitudinally therein, and provided with a recess, *l*, in its front side and with a recess, *k*, in its rear side, a rotary pin, D, extending through the bolt transversely to the stud *m* and carrying a stud, *m'*, adjacent to the recess *k* and normally projecting into the path of the yielding stud, a lever, E, extending from the pin D, and a frangible seal, F, confined in the recess *l* and between the flanges *r*, substantially as and for the purpose set forth.

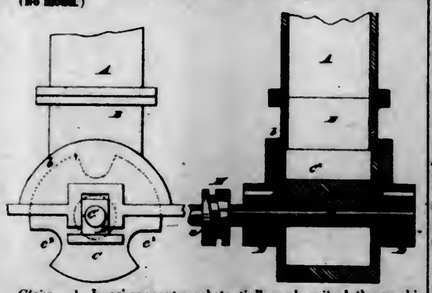
384,070. DISCHARGE MECHANISM FOR VACUUM-PANS. REUBEN G. PEYERS, Manistee, Mich. Filed Sept. 24, 1887. Serial No. 250,782. (No model.)



Claim.—1. The combination of a vacuum-pan, a valve for controlling the discharge of the precipitate, a cylinder, a connection between said cylinder and vacuum-pan forming communication between such parts, and a piston in said cylinder connected with the valve, substantially as and for the purposes specified.

2. The combination of the vacuum-pan, the discharge-chamber thereof having guides L, the valves E, movable in said guides, the cylinder N, connected by pipe *n* with the vacuum-pan, and the piston connected with the valve E, all substantially as set forth.

384,071. DISCHARGE MECHANISM FOR VACUUM-PANS. REUBEN G. PEYERS, Manistee, Mich. Filed July 26, 1887. Serial No. 245,320. (No model.)



Claim.—1. In an apparatus substantially as described, the combination of the leg or pipe having a valve-casing, a pocketed valve rotatably supported in said casing and made of less length than the distance between the side walls of said casing, and mechanism whereby the valve may be reciprocated longitudinally in its casing, substantially as described, and for the purposes specified.

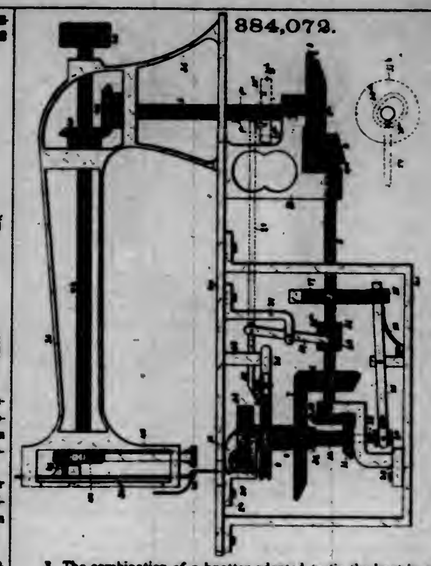
2. In an apparatus for use in the manufacture of salt, the combination of the leg or pipe provided at its lower end with a valve-casing, the rotary pocketed valve supported in said casing and capable of reciprocating in the direction of its axis in said casing, the shaft secured to said valve and supported in suitable bearings and provided with a circumferential spiral groove, and the fixed pin or stud entering said groove, whereby the shaft and its valve may be reciprocated longitudinally as the shaft is revolved, substantially as and for the purposes specified.

384,072. GRAIN-BINDER. WILLIAM H. PLATT, Mac-o-chee, Ohio, assignor of one-third to Benjamin F. Rumble, same place. Filed June 14, 1886. Serial No. 205,152. (No model.)

Claim.—1. The combination of a knotter adapted to tie the knot in one complete rotation, a gripper having two oppositely-disposed radial hooks mounted to rotate on the same center as the knotter, and mechanism for imparting for each single rotation of the knotter a one-half rotation to the gripper in the opposite direction for completing the knot, substantially as described.

2. The combination of a knotter adapted to tie the knot in one complete forward rotation, a gripper having two oppositely-disposed hooks adapted to rotate on the same center as the knotter, a guard over which the knotter operates and beneath which the gripper rotates, and mechanism for imparting for each single rotation of the knotter a one-half rotation to the gripper in the opposite direction for completing the knot, substantially as described.

884,072.
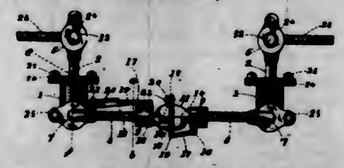


3. The combination of a knotter adapted to tie the knot in one complete forward rotation, a gripper having two oppositely-disposed hooks adapted to rotate on the same center as the knotter, a guard over which the knotter operates and beneath which the gripper rotates, a knife for severing the cord between the gripper and the guard, and mechanism for imparting for each single rotation of the knotter a one-half rotation to the gripper in the opposite direction for completing the knot, substantially as described.

4. The combination of a knotter adapted to tie the knot in one complete forward rotation, comprising the stem 12, an upper jaw, 19, a gear-wheel, 11, a shank, 13, sliding within the stem, and a lower jaw, 20, pivoted to the upper jaw and hinged to the shank, a gripper rotating on the knotter, comprising the sleeve 8, gear-wheel 7, and two oppositely-disposed hooks, 9 9, and mechanism for imparting a single rotation to the knotter-wheel and a one-half rotation to the gripper-wheel in the opposite direction for completing the knot, substantially as described.

5. The combination of the shaft 5, having bevel-pinion 4 and bevel-pinions 6 and 10, shaft 1, the bevel-wheel 2, having rack-segment 2*r*, engaging the pinion, the stem 12, provided with bevel gear-wheel 11, upper jaw, 19, and lower jaw, 20, the shank 13, to which the lower jaw is hinged, having an operating-lever, and the sleeve 8, rotating on the stem, having the large bevel gear-wheel 7 and hooks 9 9, substantially as described.

384,073. PIPE-COUPLING. BENJAMIN W. POE, Buffalo, N. Y., assignor to himself and Philip Steingoetter, same place. Filed Feb. 10, 1888. Serial No. 263,681. (No model.)



Claim.—1. In a pipe-coupling, the combination of two hollow flat-faced coupling portions provided with packing-rings, a ring jointed to an arm pivoted to one of the coupling portions, and a pivoted cam-lever for securing them together, substantially as described.

2. A pipe-coupling consisting of two hollow flat-faced coupling portions, a ring pivoted thereto and provided with a cam-lever for securing them together, in combination with pipes rigidly secured to the coupling portions in a line therewith and at right angles thereto by elbows and by stuffing-boxes with the horizontal portions of L-shaped coupling-joints, and pipes connected by stuffing-boxes to the vertical portions and by elbows to horizontal pipes connected by stuffing-boxes to couplings 5, having pipes rigidly secured to them, as and for the purposes described.

884,074. PAVEMENT. JESSE B. FOSTER, Belvidere, Ill., assignor of one-half to Reuben J. Tousley, same place. Filed Dec. 17, 1887. Serial No. 258,264. (No specimens.)

Claim.—The herein-described composition for pavements, composed of coal-tar, sand, hair, lime-plaster, salt, and tallow, substantially as set forth.

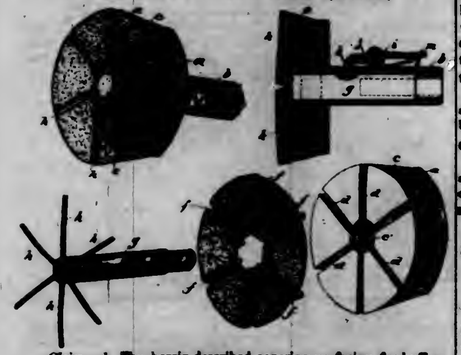
884,075. HAND-CHARGER FOR CONVEYING METALS WITH CHEMICALS, MINERALS, &c. PAUL S. BROWN, Philadelphia, Pa. Filed Sept. 14, 1886. Serial No. 213,472. (No model.)



Claim.—1. A hand-charger for the purpose named, consisting of a body, B, having a chamber, C, open at the bottom and provided with perforations in its sides, a neck, B', rising from said body and formed with a bore, and a handle, E, entering said bore and closing the top of said chamber, substantially as described.

2. A hand-charger for the purpose named, consisting of the body B, having a chamber, C, open at the bottom and provided with perforations in its sides, a hollow neck, B', rising from said body, a handle in said neck, and a cap, F, forming the bottom of said chamber, substantially as described.

884,076. ARMATURE-PAD. JOHN H. RUSSELL, Lynn, assignor, by direct and mesne assignments, to Charles F. Brown, trustee, Reading, Mass. Filed Dec. 9, 1887. Serial No. 257,578. (No model.)



Claim.—1. The herein-described covering or facing for buffing-pads, consisting of a sheet of sand-paper or similar material, having radial corrugations or depressions *f* permanently molded or formed therein, substantially as and for the purpose set forth.

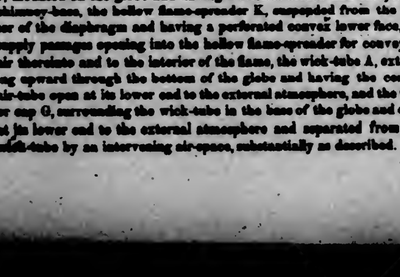
2. The herein-described buffing-pad, consisting of felt or other suitable soft or spongy material, having radial grooves or depressions *d* permanently formed in its face, substantially as and for the purpose set forth.

3. The pad provided with grooves or depressions, the support for the pad, and the sand-paper facing having corrugations or depressions, combined with a rod having radial arms constructed and arranged to extend into the depressions of the pad and facing, and a locking or clamping device for securing said rod to said pad-support, all combined, arranged, and operating substantially as set forth.

884,077. DYNAMO-ELECTRIC MACHINE OR MOTOR. ANDREW L. RIKER, New York, N. Y. Filed Nov. 23, 1887. Serial No. 256,152. (No model.)

Claim.—In a dynamo or motor, the combination, with the ring-armature, of the four field-magnets, each having its core and pole in one piece of wrought-iron, the outer surface of each pole having the form of an arc of a circle in cross-section, and the uprights to which said pieces are bolted at their ends, said magnets being parallel to the armature-shaft and located at the four corners of a rectangle whose base is horizontal, substantially as described.

884,078. TRUCK. WILLIAM W. ROBIN, Hampton, Va. Filed Feb. 28, 1888. Serial No. 265,915. (No model.)



Claim.—1. The combination of a truck having a longitudinally slotted handle, with an adjustable grip-bar, E, on said handle, having longitudinal slots *e* and *f*, whereby it can be adjusted longitudinally and vertically on the handle, and the securing-bolt passing through the slot in the handle, and through slot *f* in the grip-bar E, for fastening the grip-bar in any position, all constructed and arranged substantially in the manner and for the purpose described.

2. The combination of a truck having studs *b b*, a slotted handle, and braces D D, with an adjustable grip-bar, E, on said handle, having longitudinal slots *e f*, and its securing-bolts and nut, substantially as described.

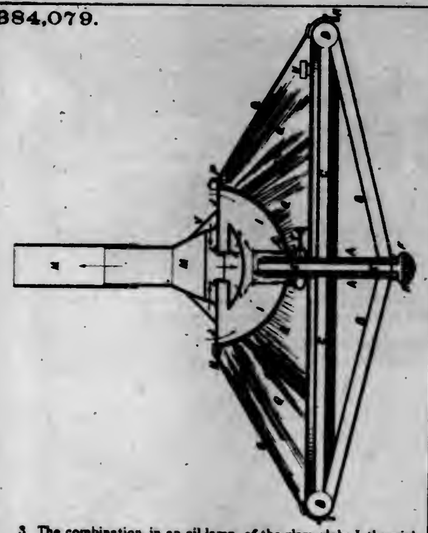
3. The combination of a truck having studs *b b*, a slotted handle, and pointed arms *d d*, with the adjustable double-slotted grip-bar E on said handle, and the bolt F and nut G, all constructed and arranged substantially in the manner and for the purpose described.

884,079. OIL-LAMP. JAMES ROSS, Walmley Gardens, Sumnerbury, County of Middlesex, England. Filed Jan. 28, 1888. Serial No. 262,263. (No model.) Patented in England Aug. 31, 1886, No. 11,081, and in Belgium Oct. 7, 1887, No. 79,119.

Claim.—1. In an oil-burning lamp, the combination of the globe I, the perforated diaphragm J, having a central orifice and mounted on the top of the bowl and carrying a chimney-base, the hollow flame-spreader K, having a convex perforated lower face and suspended centrally from and supported by the said diaphragm, air-supply passages leading into the hollow flame-spreader to conduct air to the interior of the flame, the wick-tube A, extending into the globe under the flame-spreader and having the central air heating and supply tube, E, open at its lower end to the external atmosphere and at its upper end open to the globe, and the tube or cap G, surrounding the wick-tube in the base of the globe, and supported by the latter and separated from said wick-tube by an intervening air-space, said tube or cap being open at its lower end to the external atmosphere, substantially as described.

2. The combination, in an oil-lamp, of the globe I, the diaphragm J, mounted on the globe and having a central orifice and carrying a chimney-base, the hollow flame-spreader K, suspended from the center of the diaphragm and having a perforated convex lower face, air-supply passages opening into the hollow flame-spreader for conveying air therefrom and to the interior of the flame, the wick-tube A, extending upward through the bottom of the globe and having the central air-tube open at its lower end to the external atmosphere, and the tube or cap G, surrounding the wick-tube in the base of the globe and open at its lower end to the external atmosphere and separated from the wick-tube by an intervening air-space, substantially as described.

384,079.



3. The combination, in an oil-lamp, of the glass globe I, the wick-tube A, extending into the bottom thereof, the diaphragm J, mounted on the top of the globe and having a central orifice, the hollow flame-spreader K, suspended from the center of the diaphragm and having a convex perforated lower face hung over the wick-tube, air-supply passages leading into the interior of the flame-spreader to supply heated air to the interior of the flame, and passages from the globe to the chimney-base for the products of combustion, substantially as described.

4. An oil-burning lamp comprising a wick-tube having a central air-supply tube, a glass bowl into which the wick-tube projects, a short air-conducting tube or cap around the wick-tube located in and supported by the bottom of the globe, a perforated diaphragm on the top of the globe carrying a chimney-base and having a central orifice, a hollow flame-spreader having a convex perforated lower face hung directly over the wick-tube, air-supply passages leading into the hollow flame-spreader for conducting heated air thereinto and to the interior of the flame, and passages from the globe to the chimney-base for the products of combustion, substantially as described.

5. The combination, in an oil-lamp, of the glass globe I, the wick-tube A, extending into the globe and having its lower portion below the globe, the surrounding oil-reservoir D, the inclined braces Q, extending from the reservoir to the globe for supporting the latter, horizontal tubes C, leading from the reservoir to the upper portion of the wick-tube below the globe, and the inclined tubes B, leading from the reservoir to the lower portion of the wick-tube, substantially as described.

384,080. PIPE EXPANDER AND CUTTER. SAMUEL A. ROSS, Erie, Pa., assignor of one-half to H. R. Barnhurst, same place. Filed Sept. 27, 1887. Serial No. 250,850. (No model.)

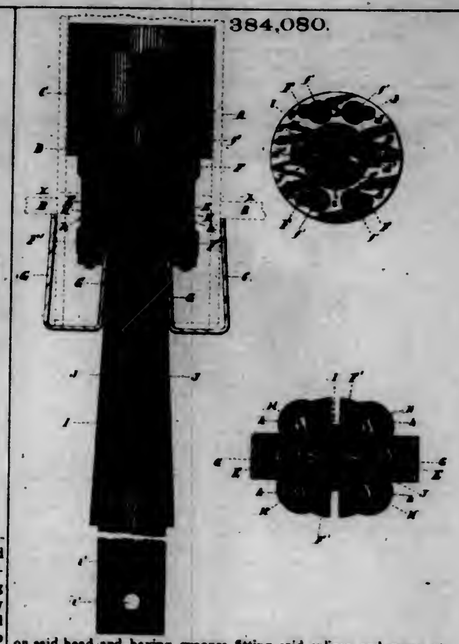
Claim.—1. In an apparatus for cutting and expanding steam-boiler flues, the combination, substantially as described, of a head fitting within the tube, sliding frames moving laterally on said head, rollers H, with cutters A, journaled in said frames, a splined tapering mandrel movable longitudinally within said head and between said frames, and grooves on said frames to receive the splines on said mandrel.

2. In an apparatus for cutting and expanding steam-boiler flues, the combination, substantially as described, of a head fitting within the tube and having a tubular extension, C, forming an elongated bearing, sliding frames movable laterally on said head, rollers H, with cutters A, journaled in said head, a splined tapering mandrel movable longitudinally within said head and between said frames, and grooves on said frames to receive the splines on said mandrel.

3. In an apparatus for cutting and expanding steam-boiler flues, the combination, substantially as set forth, of a head fitting in said tube, a tapering mandrel movable longitudinally in said head and having thereon dovetail-formed splines, and frames carrying the expanders and cutters, movable laterally on said head, and having dovetail-formed grooves embracing the splines on said mandrel.

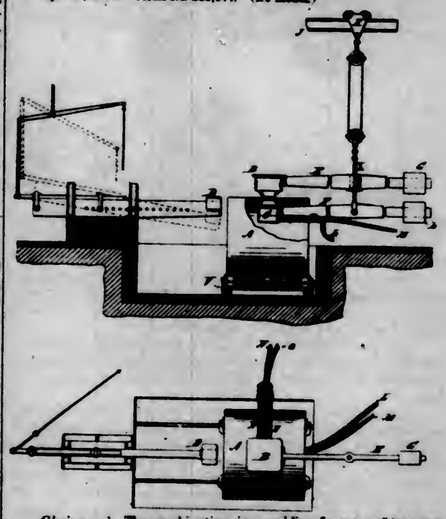
4. In an apparatus for cutting and expanding steam-boiler flues, the combination, substantially as set forth, of a head fitting in said tube, a tapering splined mandrel movable longitudinally in said head, laterally-movable frames carrying the expanders, and cutters adjusted

384,080.



on said head and having grooves fitting said splines, and gages attached to said frames which extend over the end of the tube and bear upon the flue-sheet of the boiler.

384,081. CYLINDER-WELDING APPARATUS. THOMAS F. ROWLAND, New York, and WARREN B. HILL and ARGUS MCLACHLAN, Brooklyn, N. Y.; said Hill and McLachlan assignors to said Rowland. Filed Apr. 21, 1887. Serial No. 235,677. (No model.)



Claim.—1. The combination, in a welding-furnace, of two gas-burners, B C, pivoted upon the same pivotal support, thereby enabling them to be brought one over the other, substantially as described.

2. The combination, in a welding-furnace, of the gas-burners B C, carried upon the same pivotal support, X, and mechanism for moving them longitudinally, substantially as described.

3. The combination of the pivoted gas-burners B C, the carriage V, and the welding mechanism D, substantially as described.

4. The combination of the gas-burners B C, carried by arms B F, supported by vertical pivot X, carried by carriage K on rail J, substantially as described.

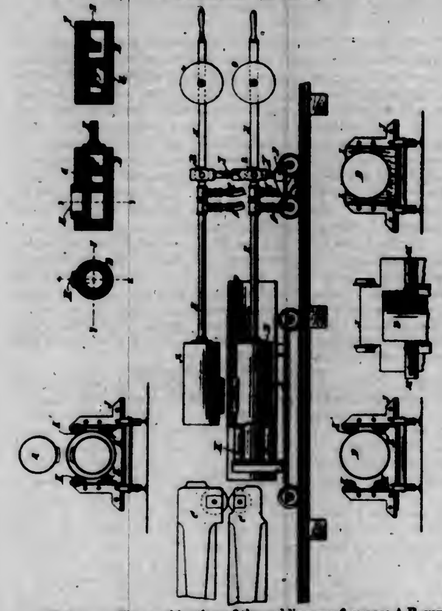
5. The combination, with a welding-furnace, of air-pipe R, gas-pipe P, mingling-chamber S, and oblong burner T, substantially as described.

6. The combination, in a welding-furnace, of an air-chamber connecting with the pipe O and pipes P, the double pipes P and R, the mingling-chamber S, and burner T, substantially as described.

7. The combination, in a welding-furnace, of two gas-burners and mechanism for bringing them together within and without the tube or body to be welded and a carriage for supporting such tube and moving it longitudinally between the gas-burners, substantially as described.

8. The combination of two welding gas-burners and mechanism for moving them longitudinally and a carriage for supporting the tube or body to be welded and capable of longitudinal motion in the same direction as the motion of the gas-burners, substantially as described.

384,082. CYLINDER-WELDING APPARATUS. THOMAS F. ROWLAND, New York, and WARREN B. HILL and ARGUS MCLACHLAN, Brooklyn, N. Y.; said Hill and McLachlan assignors to said Rowland. Filed Apr. 21, 1887. Serial No. 235,678. (No model.)



Claim.—1. The combination of the welding gas-furnaces A B, supported upon the same pivot, and a carriage, J, provided with adjustable mechanism for carrying cylinders of different diameters and bringing such cylinders in the proper relation to the welding gas-furnaces A B, substantially as described.

2. The welding gas-furnaces A B, carried upon the carriage J, capable of longitudinal motion, substantially as described.

3. The welding gas-furnaces A B, combined with the pipes E and longitudinally-movable carriage P, substantially as described.

4. The counterbalanced gas-furnaces A B, pipes E E, air and gas pipes S T, and carriage P, substantially as described.

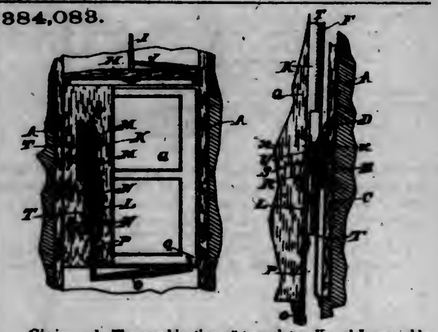
5. The welding gas-furnace B, provided with internal baffle-plates or partitions, and burner H, located beyond said baffle-plates in the flow of gas and air, substantially as described.

6. The combination of the gas-furnaces A B, having their burners H facing each other, the pipes E, and the gas and air pipes S T, substantially as described.

7. The combination of two furnaces having their burning-openings adjacent to each other and each provided with internal baffle-plates between the gas-supply and the burner, and means of introducing gas and air simultaneously to said burners, substantially as described.

384,088. AUTOMATIC DOOR FOR ELEVATOR-WELLS. JOHN P. RIEDEL, Milwaukee, Wis. Filed Sept. 27, 1887. Serial No. 250,702. (No model.)

384,083.



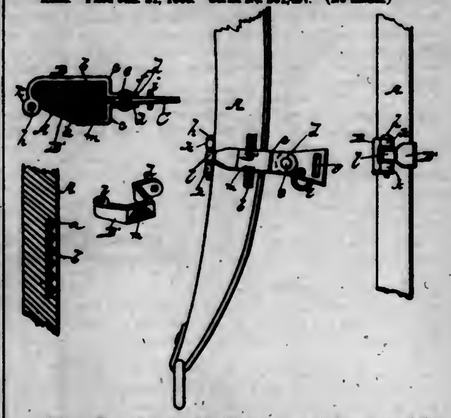
Claim.—1. The combination of two plates, K and L, movably secured to the side of an elevator-car, G, and provided with toothed flanges T, and the lever O, connected at one end to the lower plate, L, and at the other end provided with the pedal Q, with a horizontally-moving elevator-well door, C, a rack, D, secured thereto, a wheel, E, meshing therewith, and a pinion, R, rigid to wheel E and meshing with the teeth on plates K and L, all substantially as described.

2. In a device for automatically operating elevator-well doors, a horizontally-moving door, C, and a thereto-secured rack, D, in combination with a single wheel, E, having integral therewith a single pinion, R, and two plates, K and L, secured to the side of the car and provided with reversed teeth which mesh on opposite sides with the single pinion R, whereby they are adapted to rotate it alternately in the reverse direction, substantially as and for the purpose described.

3. In devices for operating elevator-well doors, the plates K and L, provided, respectively, with the inclined slots M M and N N, and with the toothed flange T, and the therewith-connected operating-lever O, in combination with gear secured to the side of the well, and a rack secured to the door, whereby the door is opened and closed, substantially as described.

4. In devices for operating elevator-well doors, two reversely-toothed plates, K and L, movably secured to the side of the car, one above and moving with the other, but in reverse direction, in combination with an operating-lever, O, substantially as described.

384,084. HAME ATTACHMENT. ROBERT F. REMER, Abilene, Kans. Filed Jan. 21, 1888. Serial No. 261,457. (No model.)



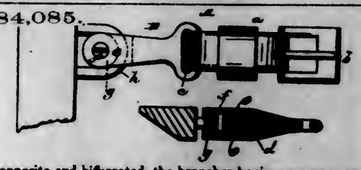
Claim.—The within-described improvement in hames, consisting of the plates B B', one of which having the teeth *m*, and provided with the eyes *k l*, lugs or ears *d*, slotted plate C, having the ring *i*, the pin A, and toothed plate *b* within the recess *a* of the hame, the whole combined, constructed, and arranged as and for the purpose set forth.

384,085. HAME-TUG. ROBERT F. REMER, Abilene, Kans. Filed Feb. 9, 1888. Serial No. 263,492. (No model.)

Claim.—1. In combination with the hame provided with the staple and the tag-strap, the within-described attachment or plate B, constructed with the loop *e* at one end and the branches *c* at the other end, formed integral, the screw *f* connecting these branches and provided with the roller, as and for the purpose set forth.

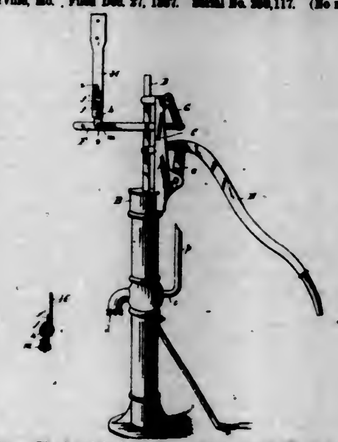
2. The attachment for hames, having a loop, *e*, at one end and

384,085.



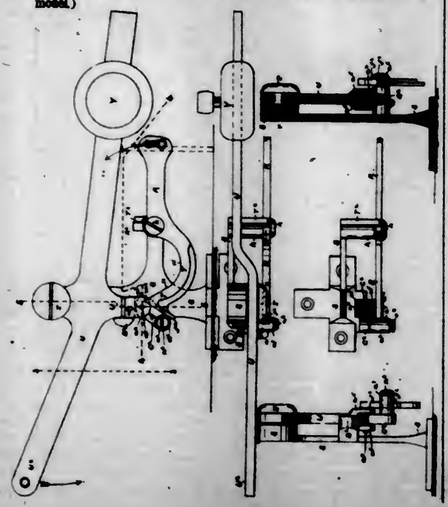
the opposite end bifurcated, the branches having a square opening, *k*, and beveled perforation *m*, on the face of one of the branches, the block *o*, having square end *p* and beveled end *n*, and the screw for holding said block in position, as shown and described.

384,086. PUMP AND WINDMILL HEAD. JOHN P. SHUCKMAN, Owensville, Mo. Filed Dec. 27, 1887. Serial No. 258,117. (No model.)



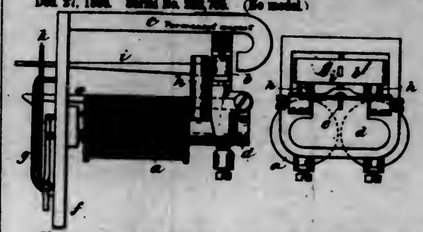
Claim.—The hereinbefore shown and described pump-head for hand and windmill power, composed of the head B, having the standard C projected vertically therefrom, and provided with a bearing at its upper end for the pump-rod to work through, the lever F, pivoted to the pump-rod, and having one end adjustably connected with the windmill-rod, and having its other end connected with the bearing by the swinging link G, and the handle E, connected with the pump-rod and connected with the said standard by the swinging link *e*, substantially as set forth.

384,087. OPERATING-LEVER FOR VALVES, &c. WILLIAM SCOTT, Malden, Mass. Filed Feb 13, 1888. Serial No. 263,898. (No model.)



Claim.—In combination, a reciprocating and operating lever, U, having an abutment-face, e^{10}, and a swinging and dependent toe, C^3, with abutment-faces c^5 c^6 at an angle to each other for said abutment-face e^{10}, and with bearing and working faces c^3 and c^4, a lever, R, having bearing and working faces f^1 a at an angle to each other to be acted upon by the bearing and working faces c^3 c^4 of the operating-lever U, and fixed stops to arrest the movement of said levers, substantially as described, for the purpose specified.

384,088. ELECTRIC ANNUNCIATOR. CHARLES H. SHERBURNE, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Serial No. 222,709. (No model.)

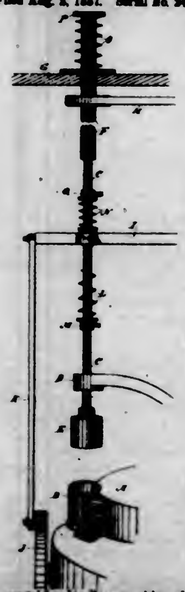


Claim.—1. The combination, in an electric annunciator, of two shutters, an electro-magnet with its poles extended, two armatures, one of said armatures being polarized and centrally pivoted and the other armature being neutral, the said armatures respectively engaging with the said shutters, substantially as and for the purpose specified.

2. The combination, with a pair of electro-magnets, of two armatures, one of said armatures being neutral and the other centrally pivoted and polarized, and two shutters, one of said shutters being operated by the movement of the neutral armature and the other of said shutters being operated by the vibration of the centrally-pivoted armature, whereby different signals may be displayed, according to the character of the current which is sent through the electro-magnet.

3. The combination, with an electro-magnet, of two armatures, one neutral and the other polarized, two shutters, one shutter being retained by a double detent upon the polarized armature, the other shutter being retained by a single detent upon the neutral armature, whereby on energizing the electro-magnet by a single impulse the detent of the neutral armature releases its shutter, while on energizing the electro-magnet by a series of alternate impulses both armatures are operated to release their shutters.

384,089. CARTRIDGE-LOADING MACHINE. PERRYMAN SELBY, Oakland, Cal. Filed Aug. 3, 1887. Serial No. 245,979. (No model.)



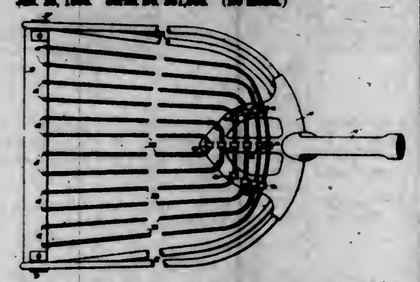
Claim.—1. In a cartridge-loading machine, the vertically-moving crimper-stem and the rotating spindle seated upon its upper end, in combination with the supporting-arm through which the stem passes, a pitman connected with one end of said arm, a crank-wheel to which the opposite end of the pitman is attached, the collars M and Q on the vertical stem, and the springs bearing against the collars, substantially as described.

2. In a cartridge-loading machine, the vertical spindle having the crimper attached to the lower end, the rising and falling supporting-arm, in combination with the spring N and collar Q, by which the weight of the spindle is supported upon the arm from above, and the spring L and collar M upon the spindle beneath the arm, whereby the pressure of the arm is gradually increased by its descent, substantially as herein described.

3. The vertical spindle carrying the cartridge-crimper at its lower end, the rising and falling arm through which the spindle passes, the collars, and springs, as shown, in combination with the vertical rod extending through guides in a line above the spindle, having a tapering socket in the lower end to fit the head of the spindle, and a pulley by which the rod and spindle are caused to rotate, substantially as herein described.

4. The vertical rising and falling spindle carrying a crimping-head at its lower end and having supporting and operating springs and collars, as shown, the vertical rod standing in line above the spindle, having a tapering socket in its lower end fitting a correspondingly-shaped head of the spindle, and a pulley on said rod through which a rotary motion is imparted, in combination with the spring O, surrounding the rod, and the collar or head P, whereby the weight of the rod and spindle is automatically reduced as they move downward, substantially as herein described.

384,090. WIRE SCOOP. LOUIS H. SEGLER, Cleveland, Ohio. Filed Jan. 28, 1888. Serial No. 261,893. (No model.)

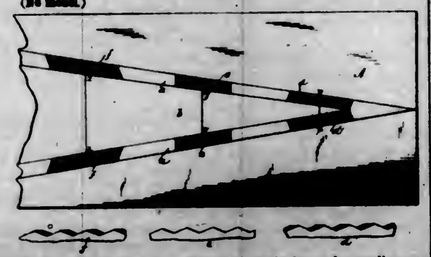


Claim.—1. In a wire scoop, the combination, with a skeleton plate having loops therein and outwardly-projecting ribs on its sides and wires passing through these loops in the skeleton plate, of a front plate to which the forward ends of the wires are secured, said plate having loops on its end, and side wires secured in said loops and having their ends secured in the outwardly-projecting ribs of the skeleton plate, substantially as set forth.

2. In a wire scoop, the combination, with wires B, of a front plate having a series of holes for securing the ends of such wires, the latter being offset downward to enter such holes, the plate being offset downward rearward of each hole and offset upward forward of such hole, the parts being arranged substantially as set forth.

3. In a wire scoop, the combination, with plates A and D, the former having ribs arranged in pairs and the latter having loops at the end thereof, substantially as indicated, of wires forming the sides of the scoop, said wires engaging the loops of plate D, these wires being bent back and secured at the ends between ribs of plate A by clinching such ribs over the respective wires, substantially as set forth.

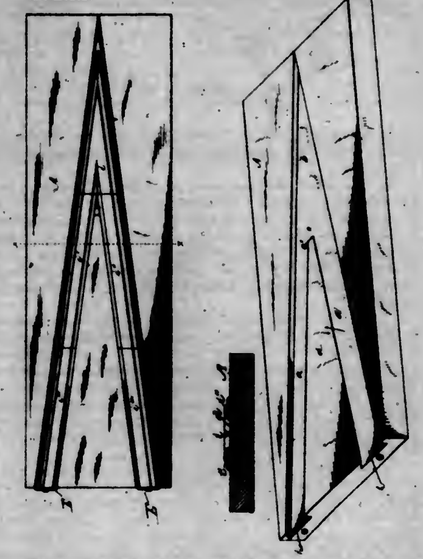
384,091. DIE FOR MAKING ROLLED FORGINGS. GERMAN F. SIMONDS, Fitchburg, Mass. Filed Nov. 2, 1887. Serial No. 254,066. (No model.)



Claim.—1. In the construction of the reducing and spreading surfaces of dies for making rolled forgings, the inclination of the teeth from the lower or base line of such surfaces to the upper line in the direction of the line of travel of the dies when rolling an article.

2. The construction of the teeth or corrugations with their surfaces forming obtuse angles.

384,092. DIE FOR MAKING ROLLED FORGINGS. GERMAN F. SIMONDS, Fitchburg, Mass. Filed Nov. 2, 1887. Serial No. 254,067. (No model.)



Claim.—A die for producing rolled forgings, formed of a series of hardened-steel sectional parts inserted in their proper relation to each other in converging dovetailed recesses in an iron base.

384,093. WHEELBARROW. WILLIAM SLOCOMB, Jr., Troy, N. Y. Filed Dec. 31, 1887. Serial No. 259,502. (No model.)



Claim.—1. The combination, in a wheelbarrow, of two side stringers, each formed of a single malleable casting having longitudinal ribs and flanges, with laterally-projecting attaching-lugs, a lubricant-chamber at one end of the stringers open on one side to the wheel-axle, and a handle at the other end, supporting-legs bolted upon the stringers, and a traction-wheel, all combined and organized substantially as and for the purposes set forth.

2. The combination, with stringers having the strut E and flanges *b*, of a truss cable, wire, or spring, D, bent down at D' against said strut, resting in a groove formed by said flanges, held by a bolt at its forward end, and bearing with its middle against said strut, as and for the purpose specified.

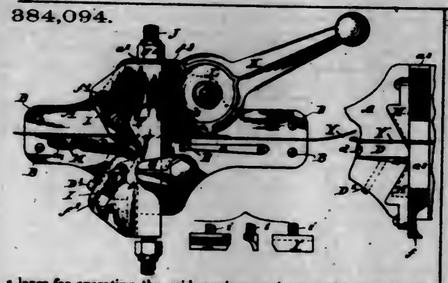
3. The wheelbarrow axle-boxes, combined with flanged stringers B to form a chamber for lubricants, as shown and described.

384,094. SAW-SETTING MACHINE. WARREN S. SMITH, St. Johnsbury, Vt. Filed Aug. 31, 1887. Serial No. 248,233. (No model.)

Claim.—1. In a saw-set, the combination of a bed-plate having a groove for receiving a saw, a sliding carriage adapted to move across said groove at a right angle, suitable saw-feeding jaws pivotally attached to said carriage and tooth-setting blocks adjustably attached thereto, and means for reciprocating said carriage to and fro upon said bed, substantially for the purpose set forth.

2. In a saw-set, the combination of a bed-plate having a groove for receiving a saw, a sliding carriage adapted to move across said groove at a right angle, suitable saw-feeding jaws pivotally attached to said carriage and tooth-setting blocks adjustably attached thereto,

384,094.



a lever for operating the said carriage, and means for retaining the carriage in its proper position upon said bed-plate, substantially as set forth.

3. In a saw-set, the combination of a bed-plate having a groove for receiving a saw, and a spring-roll for retaining said saw in its proper place, a sliding carriage adapted to move across said groove at a right angle, suitable saw-feeding jaws pivotally attached to said carriage and tooth-setting blocks adjustably attached thereto, a lever for operating said carriage, and means for retaining the same in its proper position upon said bed-plate, substantially for the purpose explained.

4. In a saw-set, the combination of a bed-plate having a groove for receiving a saw, an adjustable wedge for contracting said groove to various thicknesses of saws near the part being set, and a spring-roll for retaining said saw in its proper place, a sliding carriage adapted to move across said groove at a right angle, suitable saw-feeding jaws pivotally attached to said carriage and tooth-setting blocks adjustably attached thereto, a lever for operating said carriage, and means for retaining the same upon the bed while moving to and fro, substantially for the purpose specified.

5. In a saw-set, the combination of a bed-plate provided with a groove for receiving a saw, an adjustable wedge for contracting said groove to various thicknesses of saws near the teeth being operated upon, and a spring-roll for retaining said saw in its proper place, a sliding carriage adapted to move across said bed at a right angle with said groove, and provided at each end with a set-screw for adjusting its reciprocal movement, as shown, suitable saw-feeding jaws pivotally attached to said carriage and tooth-setting blocks adjustably attached thereto, means for adjusting various widths of saws in the bed, substantially as described, and mechanism comprising a rack, segment of a pinion, and a lever for operating the said carriage, for the purpose set forth.

384,095. STEAM BELL-RINGER. GEORGE B. SNOW, Buffalo, N. Y. Filed Mar. 6, 1883. Serial No. 87,275. (No model.)



Claim.—1. In a steam bell-ringer, the combination of a piston-rod operating through a sleeve on a cylinder-head and formed with a beveled shoulder near its lower end, and a piston formed with a countersink for engagement with the beveled shoulder on the piston-rod, the said piston-rod being wholly disconnected from the piston, substantially as described.

2. The combination, with a single-acting engine having its piston and piston-rod separate and capable of independent motion, of a connecting-rod and a crank attached to the yoke of a swinging bell, the said crank and piston-rod having a greater throw than the said piston, substantially as described.

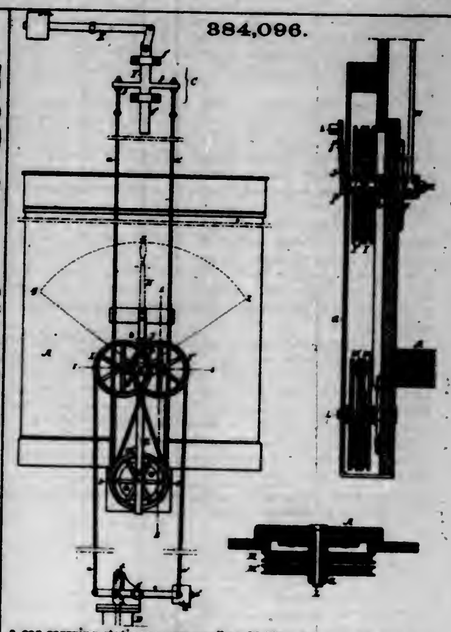
3. In a steam bell-ringer, the combination of a piston-rod and piston separate and detached from each other and capable of independent motion, said piston-rod having a greater throw than its piston, and seating thereupon to form an equilibrium-valve, substantially as described.

384,096. ELEVATOR. SAMUEL R. STOKER, Philadelphia, Pa. Filed Mar. 20, 1888. Serial No. 268,274. (No model.)

Claim.—1. The combination of ropes attached to a fixture at one end, and a power-controlling device to which the other ends of the ropes are connected, and an elevator-car having pulleys M M', wheels I I', and movable supports for the latter, so that said wheels can be moved toward or from the said pulleys M M', substantially as set forth.

2. The combination of ropes attached to a fixture at one end, and a power-controlling device to which the ropes are also connected, with

384,096.



a car carrying stationary rope-pulleys M M', a two-armed lever carrying pulleys I I', over which the ropes pass, and a lever connected to the two-armed lever for adjusting the rope-pulleys I I' toward and from the rope-pulleys M M', substantially as specified.

384,097. RUBBER SHOE. ELISHA STOUT, Lambertville, N. J. Filed Apr. 5, 1887. Serial No. 233,722. (No model.)



Claim.—1. A boot or shoe composed of a combined fabric of rubber and duck in which the rubber forms an outer covering for the duck and is extended above the same to the top of the shoe, substantially as described.

2. A boot or shoe composed of a combined fabric of rubber and duck in which the rubber forms an outer covering for the duck and is extended above the same to the top of the shoe, that portion of the rubber above the duck being provided with an elastic lining, substantially as described.

384,098. WATER-HOOK FOR HARNESS. GEORGE M. STRONG, Boston, Mass. Filed June 14, 1886. Serial No. 205,154. (No model.)



Claim.—In a harness water-hook, the combination of the hook or standard B, having an opening, H, and slots L L, with the eyebolt M, having wings N N, and spring K, all adapted to operate together substantially as described, and for the purpose set forth.

384,099. JAR-CLAMP. FRANK G. VALLEAU, Beaver Falls, Pa. Filed Sept. 27, 1887. Serial No. 250,522. (Model.)

Claim.—1. The clamp formed of two loops of substantially like form, each provided with a bar portion adapted to engage the lower face of an annular projection or lug on a jar, with the inner ends connected

384,099.



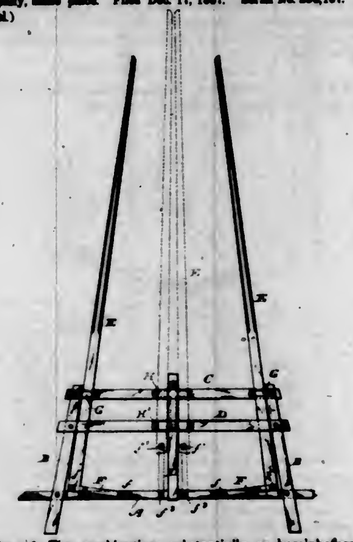
to form a universal connection between the parts, substantially as described, whereby the clamp shall engage the projection or lugs at points diametrically opposite each other and in line with the universal connection, as set forth.

2. The clamp comprising two loops having their free ends constructed to engage the lower face of an annular projection on the jar, in combination with the ring for connecting the same, the loops being adapted to be turned to draw the parts tightly upon the jar, substantially as set forth.

3. The adjustable wire clamp for fruit-jars, consisting of two loops connected by a ring having unequal dimensions and adapted to be placed with its short or long diameter in the plane of the loops, substantially as set forth.

4. The clamp comprising two loops having their free ends shaped to engage the jar, in combination with a connecting-ring having unequal dimensions and provided with a lever-arm for operating the same, substantially as and for the purpose set forth.

384,100. DRAFT APPARATUS FOR VEHICLES. ALLEN R. THOMAS and SEBASTIAN RITTY, Dayton, Ohio, assignors to the Ohio Rake Company, same place. Filed Dec. 17, 1887. Serial No. 258,167. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the oblique side bars, the transverse bars uniting them, the shafts, the links secured to the rear ends of the shafts and to the rear transverse bar, and a clip bridging each shaft from the adjacent side bar and bolted to one of the forward transverse bars.

2. The combination, substantially as hereinbefore set forth, of the oblique side bars, the transverse bars uniting them, the central longitudinal bar, the shafts, the links secured to the rear ends of the shafts and to the rear transverse bar, and a fastening or fastenings securing said shafts against the edges of said central bar, whereby they form a pole.

3. The combination, substantially as hereinbefore set forth, of the oblique side bars, the transverse bars uniting them, the central longitudinal bar, the shafts, the links bolted to the rear ends of said shafts and to the rear transverse bar, and clips bridging said shafts on each side of the central longitudinal bar, whereby they are brought together and secured in position to form a pole.

4. The combination, substantially as hereinbefore set forth, of the oblique side bars, the transverse bars uniting them, the central longitudinal bar, the shafts, the links secured to the rear ends of said shafts and to the rear transverse bar, a device for uniting said shafts to one of the forward transverse bars adjacent to the corresponding side bar, and a device for uniting said shafts to one or more of the forward transverse bars adjacent to the central longitudinal bar.

5. The combination, substantially as hereinbefore set forth, of the oblique side bars, the transverse bar, the central longitudinal bar, the shafts, the links pivoted to the rear ends of said shafts and to the rear transverse bar and swinging from the oblique bar over toward the central bar on their pivotal connections with said transverse bars, and fastenings for uniting said shafts to one of the forward transverse bars adjacent to the side bars and also adjacent to the central bar.

6. The combination, with the two-part pole, of the neck-yoke hook herein described, formed as a normal goose-neck with a ring or loop journaled in its point and with a shank entering between the ends of the pole and secured by bolts.

384,101. PEN-HOLDER. CHARLES F. WARNER, Orange, N. J. Filed Sept. 30, 1887. Serial No. 250,963. (No model.)



Claim.—1. The combination, with a staff, of a point at one end of said staff, a spring-clamp adapted to engage said staff, and an arm projecting from said clamp and capable of having one or more marking-instruments secured thereto, substantially as set forth.

2. The combination, with a clamp for engaging a pen-holder, of an arm adjustably secured to said clamp and adapted to have one or more pen-stocks secured thereto, substantially as set forth.

3. The combination, with the slotted arm 4, of a pen-stock provided with a screw-threaded hole and a set-screw therefor, substantially as and for the purposes set forth.

4. The combination, with a staff having a point at one end, of a clamp for engaging said staff and being adjustable thereon, and a screw projecting from said clamp and provided with a cap whereby an arm for carrying one or more marking implements may be adjustably secured thereto.

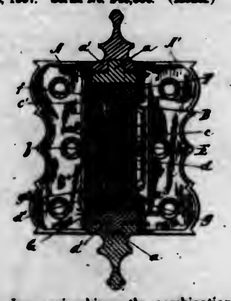
5. The combination, with the staff 1, having a point at one end, of the clamp 2, for engaging said staff, an arm having a longitudinal slot, a screw projecting through said slot for securing the arm to said clamp, and a pen-stock adapted to be clamped to said arm, substantially as set forth.

6. The combination of the clamp 2, having screw 3, arm 4, having slot 5 fitting over said screw, tap 7 for said screw, a pen-stock, 8, having screw-threaded hole 10, and a screw, 11, for passing through slot 5 and hole 10, substantially as and for the purposes set forth.

7. The combination, with the clamp 2, for engaging a staff, and the clamp 14, for engaging a marking-instrument, of an arm, 13, projecting from clamp 14 and having a hole therein, and a screw for clamping said arm to the clamp 2, substantially as set forth.

8. As an article of manufacture, the clamp 2, provided with an arm having a slot and a pen-stock provided with a screw-threaded hole, and a screw whereby said stock may be secured to said arm.

384,102. SPRING-HINGE. GEORGE W. WARNER, Prospect, Ill. Filed Aug. 12, 1887. Serial No. 246,803. (Model.)



Claim.—1. In a spring-hinge, the combination, with the independent tube or cylinder pivotally connected to one leaf of the hinge and its end trunnions pivotally connected to the other leaf, of the re-

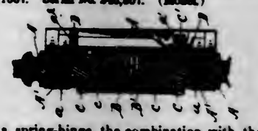
versely-coiled springs arranged within the tube, and having their inner ends connected thereto and their outer ends connected to the respective trunnions, substantially as and for the purposes specified.

2. In a spring-hinge, the combination, with the leaf A, having loop a^2, and the leaf A', having loops a^2, of the tube B, provided with a hook, *b*, to connect it to the loop a^2, the trunnions F and G, mounted in the ends of the tube and provided, respectively, with hooks F' and G', by means of which they are connected to the loops a^2, and the coiled springs C and D, arranged within the tube B and having their inner ends connected to the said tube and their outer ends connected, respectively, to the trunnions F and G, substantially as and for the purposes specified.

3. In a spring-hinge, the combination, with the independent tube pivotally connected to one of the leaves and the reversely-coiled springs arranged within said tube and having their inner ends connected thereto, of the trunnions, each provided with a body portion to fit within the tube, an inward extension to receive the coiled spring which is connected thereto, and an outer cap or head provided with a hook, by means of which it is pivotally connected to the other leaf, substantially as and for the purposes specified.

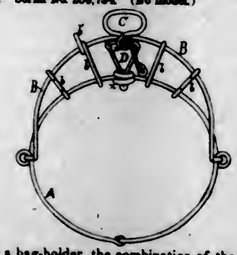
4. In a spring-hinge, the combination, with the tube B, connected to one of the leaves and having internal projection, *b'*, of the trunnions F and G, connected to the other leaf, the coiled springs C and D, arranged within the tube and having their outer ends connected to the trunnions, and the intermediate connecting-piece, E, arranged between the inner ends of the spring and slotted at *c* to receive the projection *b'* and the inner ends of the springs, substantially as and for the purposes specified.

384,103. SPRING-HINGE. GEORGE W. WARNER, Freeport, Ill. Filed Aug. 13, 1887. Serial No. 246,807. (Model.)



Claim.—In a spring-hinge, the combination, with the leaves A and A', having loops *a'* and studs or pins a^2, of the coiled spring B, the independent tube B', loosely surrounding said spring and disconnected from the other parts of the hinge, the trunnions C, having body portions *c* extending into the said coiled spring and connected thereto, the heads *c'*, with hooks C', connected to the loops *a'*, and studs or pins c^2, and the links D, pivoted on the studs or pins a^2 and c^2, substantially as and for the purposes specified.

384,104. BAG-HOLDER. ISAAC H. WEAVER, Toledo, Ohio. Filed Jan. 3, 1888. Serial No. 259,734. (No model.)



Claim.—In a bag-holder, the combination of the frame with the open swivel and lever, substantially as shown and described, for the purpose specified.

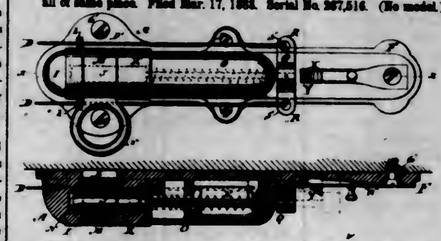
384,105. CLEANER AND GAGE ATTACHMENT FOR GRAIN-DRILLS. JOHN T. WEBB, Bowling Green, Ky. Filed Dec. 31, 1887. Serial No. 259,508. (No model.)



Claim.—1. The combination, with the flukes 1, of the arms C, the axle B, arranged in front of the latter, the wheel A, and teeth *a*, which are slightly curved forward and made of such relative length that when the wheel is in working position the said teeth project a considerable distance below the points of the flukes, and are thus adapted to take a firm hold in the soil and act on clods and trash, in the manner specified.

2. In a grain-drilling machine, the combination of the wheel A and axle B, the pendent arms C, having lengthwise slots, the drag-bars 2, and flukes 1, and bolts for securing said arms in any adjustment, as shown and described.

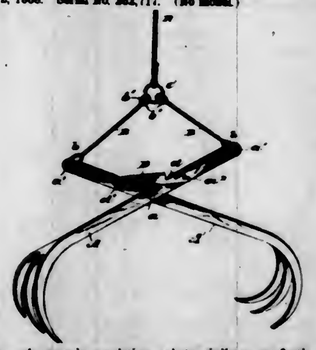
384,106. RELEASING DEVICE. MICHAEL H. WEALEN, Brooklyn, N. Y., assignor to himself, John C. Van Brunt, and Edwin L. Shanbaugh, all of same place. Filed Mar. 17, 1888. Serial No. 267,516. (No model.)



Claim.—1. The combination of the sliding bolt J, cross-head Q, line-wires D D, lugs I K, loop M, and box O, with the spring-catch W, substantially as shown and described.

2. The combination of the series of bed-plates F, each having the lugs I K, the spring-impelled bolts J, each having a cross-head, Q, provided with upper and lower perforations S, and the upper and lower line-wires D D, made in sections, with a pair of said sections arranged between each pair of cross-heads, and having hooks I at their ends engaging the perforations in the cross-heads, substantially as shown and described.

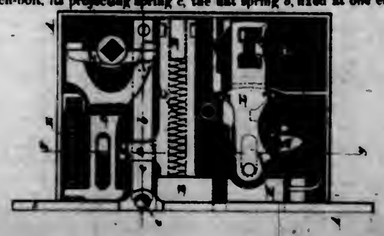
384,107. GRAPPLE. WILLIAM H. WILEY, Stockton, Kans. Filed Feb. 2, 1888. Serial No. 262,717. (No model.)



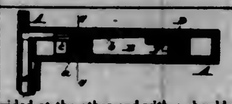
Claim.—A grapple consisting, substantially as set forth, of a pair of jaws pivoted together at a point between their ends, a rope united by links with the upper ends of the jaws and tending to close the latter, a stud secured to one of the jaws above the pivot *a*, and a pawl pivoted to the other jaw, also above said pivot, and having upwardly and outwardly facing notches in its upper edge to engage the stud.

384,108. LOCK. EDWARD S. WITHERSPOON, Boston, Mass. Filed Dec. 4, 1886. Serial No. 220,603. (No model.)

Claim.—1. In combination with the case A, the reciprocating latch-bolt, its projecting spring *c*, the flat spring *b*, fixed at one end to



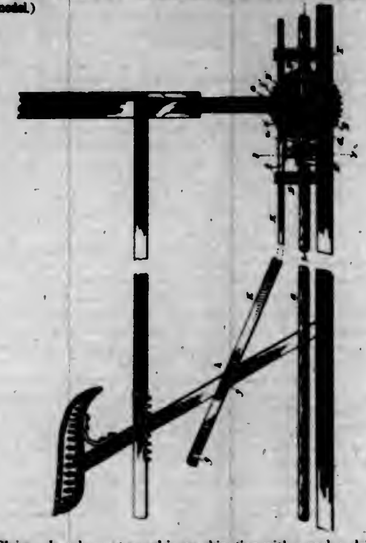
384,108.



the case and provided at the other end with a shoulder to engage the latch-bolt, and the transverse pin *e*, seated in the face-plate of the lock and provided with a side notch, in which the edge of the lock-case is seated to prevent its escape, as described and shown.

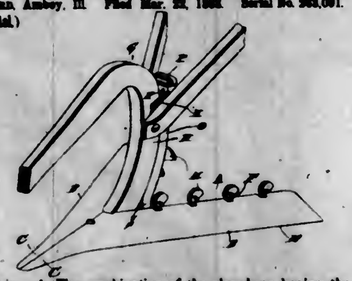
2. The combination of the case, the reciprocating lock-bolt provided with a depending arm, A, in position to encounter the bit of the key, and the elastic arm *m*, fixed at one end rigidly to the lock-case and indented at the opposite end to engage and hold the bit of the key, as described.

384,109. REEL-DRIVING GEAR FOR HARVESTERS. JOSEPH ADAMSON, Sheboygan, assignor to the Empire Harvesting Machine Company, Whitewater, Wis. Filed Dec. 22, 1887. Serial No. 258,716. (No model.)



Claim.—In a harvester and in combination with a reel, a driving mechanism therefor, consisting of the sprocket-wheel and the concentric gears E E', of different diameters, secured thereto, the driving-shaft B, the freely-rotating pinion G thereon, the sliding pinion H and sliding clutch, both splined to the shaft, and a shifting device, substantially as described, acting to throw the clutch I and pinion H into action alternately, substantially as set forth.

384,110. COMBINED PLOW AND PULVERIZER. GEORGE D. BAIRD, Amboy, Ill. Filed Mar. 22, 1888. Serial No. 268,091. (No model.)



Claim.—1. The combination of the plowshare having the rearward-diverging wings or mold-boards with the rock-shafts journaled under the upper inner sides of said mold-boards or wings, the cutters or colters M, attached to said rock-shafts, and devices, substantially as set forth, attached to said rock-shafts to secure the same and the cutters at any desired angle, substantially as described.

2. The combination of the plowshare having the diverging wings, the rock-shafts journaled under said wings, the cutters attached to said shafts, the standard secured to the share, the keeper N on the rear side of the standard, and the rod O, secured to the rock-shafts and projecting through said keeper and adjustably secured therein, as set forth.

384,111. CAR-UNLOADER. HENRY M. BARNHART, Marion, Ohio. Filed Aug. 15, 1887. Serial No. 246,971. (No model.)



Claim.—1. In a car-unloader, the combination, with a plow and fender, the said parts having a vertical sliding connection with each other, of a lever fulcrumed on the fender and loosely connected to the plow, whereby the relative height of the plow to the fender may be regulated, substantially as set forth.

2. The combination, with a plow, a fender, and arch-bars connected with the fender, of vertically-slotted brackets connected with the rear arch-bar and made to embrace the forward end of the plow, a pin made to pass through the cutter of the plow and into the slots of the bracket, substantially as set forth.

3. The combination, with a plow and a fender, of a lever pivoted to the fender, a link connecting the lever with the plow, whereby the front portion of the plow may be elevated, substantially as set forth.

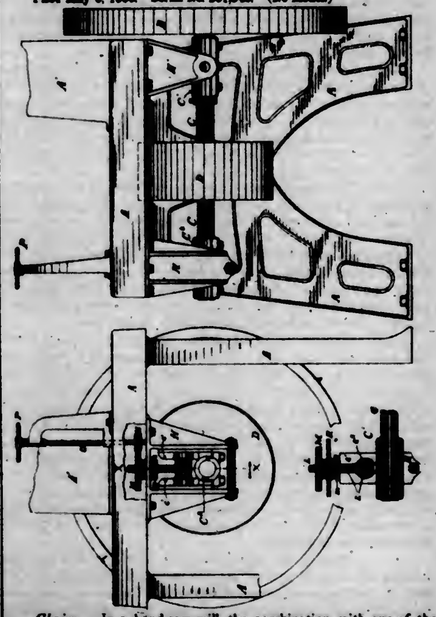
4. The combination, with a connected plow and fender, the former having vertical play, substantially as indicated, of a lever pivoted on the fender and connected by a link with the cutter of the plow, substantially as set forth.

5. The combination, with a plow, a fender, and a lever, of a poise or counter-balance mounted on the lever, substantially as set forth.

6. The combination, with a plow, a fender, and a lever, of a poise mounted on the lever, said poise being adjustable lengthwise of the lever, substantially as set forth.

7. The combination of a plow, a fender, a lever, and a poise, substantially as indicated, said lever having a return-bend, whereby the poise may be moved on either side of the fulcrum of the lever, substantially as set forth.

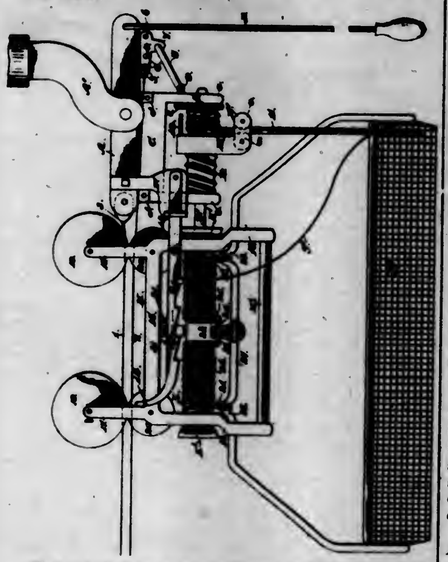
384,112. BAND-SAW MILL. HENRY R. BARNHURST, Erie, Pa. Filed May 8, 1888. Serial No. 201,848. (No model.)



Claim.—In a band-saw mill, the combination, with one of the band-wheels and the shaft supporting the same, of a pivoted journal-

box, C, for said shaft near the said band-wheel, a vertically-sliding journal-box, C', for said shaft at its end opposite the band-wheel, a link, L, pivoted on said sliding journal-box, a geared nut, M, on said link, and a shaft gearing with said nut, which extends to and may be operated by the sawyer while at his post observing the saw in operation.

384,113. CASH AND PARCEL CARRYING APPARATUS. SAMUEL W. BARR, Mansfield, Ohio. Filed Jan. 21, 1887. Serial No. 224,993. (No model.)



Claim.—1. In a store-service apparatus, the combination of the windlass mechanism, the carriage, revolving hollow cylinder having right and left spiral corrugations on its outer surface, the flexible support, and the receptacle, said cylinder also having inclosed spring-controlled blocks near its ends to cushion said carriage when struck by the said windlass mechanism, substantially as described.

2. In a store-service apparatus, the combination of a carrier, a cylinder mounted and journaled therein and provided with right and left spiral corrugations and with spring-actuated buffers located interiorly and near its ends, a windlass provided with spiral corrugations extending to the left, a stationary frame supporting said windlass, and a rotating bumper-rod connecting said cylinder and windlass, substantially as described.

3. In a store-service apparatus, the combination of a carrier, a way therefor, a cylinder mounted in said carrier and provided with right and left spiral corrugations, a flexible support secured to said cylinder, a receptacle attached to said flexible support, a suspending and detaching hook pivoted in said carrier and having projecting arms, a stirrup or yoke provided with pivoted latch-bars, a windlass provided with spiral corrugations extending to the left, a stationary frame supporting said windlass, and a rotating bumper-rod connecting said cylinder and windlass, substantially as described.

4. In a store-service apparatus, the combination of a way, a movable carrier mounted upon said way and comprising a frame, a revolving cylinder mounted therein, provided with right and left screw-threaded corrugations on its surface, and having inclosed spring-buffers situated near its ends and resting against a spiral internal connection, a flexible support adapted to be coiled on said cylinder, a parcel-receptacle attached to said flexible support, a hook for suspending and releasing said receptacle, latch-bars secured to a tilting lever, a windlass mounted in a stationary frame, a recoiling-spring, and a hanger mounted on the windlass to control the pull-down cord, and a rod rigidly secured in the windlass by a transverse pin provided with a rectangular buffer end, connecting the said carrier and windlass, substantially as described.

5. In a store-service apparatus, a traveling carrier, a revolving cylinder mounted in said carrier and provided with right and left spiral corrugations with interior-cushioned buffers near its ends, and with a cord-retainer at or near its mid-length, in combination with the cord, the receptacle, the windlass and the bumper-rod, and devices for operating the same, substantially as described.

6. In a store-service apparatus, the combination of a lever pivotally mounted in a hanger, and having a pull connected to its rear end and the upper track-wire to its forward end, an adjusting-link secured to the under rear portion of said lever, and having the lower track-wire connected to its forward end, a windlass-frame, a coupling-link connecting said windlass-frame and the adjusting-link, and clips secured to the upper part of the said windlass-frame, through which the lower track-wire passes, substantially as described.

7. In a store-service apparatus, the combination of a windlass-frame secured to a lever pivotally mounted in a hanger, a windlass having an outer screw-threaded corrugated surface, a bumper-rod passing through the legs of the frame and the windlass, a spring mounted on said rod between the rear portion of the windlass and the rear leg of the frame, and having a hook formed on its upper end, and a hanger constructed to move over the outer screw-threaded surface of the windlass, and having an angular projection formed on its lower end, in which friction-rollers are mounted, between which the operating-cord passes, substantially as described.

8. In a store-service apparatus, a carriage comprising a supporting-frame having two sets of upper and lower track-wheels on its upper arms, a cylinder mounted in the lower portion of said frame, having its outer surface formed with right and left screw-threaded corrugations and adapted to receive the cord of the basket-bail, and wooden friction-bars mounted in the lower arms of the said frame, substantially as described.

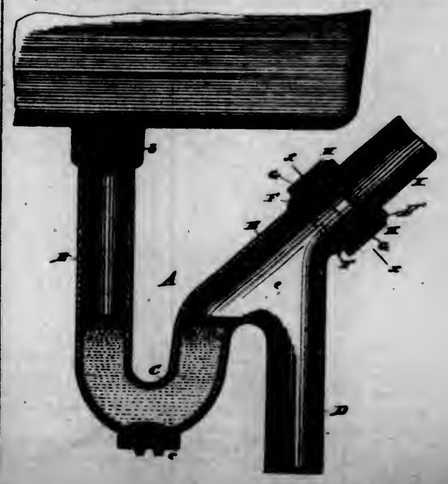
9. In a store-service apparatus, the combination, with a carriage having a supporting-frame, of a cylinder mounted in the lower part of the said frame, having its outer surface provided with right and left screw-threaded corrugations, which are separated by a plane surface, and projections or lugs formed with said plane surface, having a pin passing therethrough, whereby the bail-cord is secured to the said drum, substantially as described.

10. In a store-service apparatus, the combination of a carriage frame-work, a hollow cylindrical drum or barrel mounted therein, hollow heads screw-threaded in the ends of said drum and forming bearings therefor, sliding blocks provided with internal square recesses adapted to be engaged by the square head of the bumper-rod, situated adjacent to and in the rear of said heads and adapted to move in the drum, and a coiled spring situated between said sliding blocks in the cylinder or drum, substantially as described.

11. In a store-service apparatus, the combination, with a lever, A, of a yoke, F, secured thereto, latch-bars G, pivotally mounted on each side of said yoke, having their forward ends, 14, upwardly curved and their lower edges provided with teeth 15, and a bar, *g*, mounted on one of said latch-bars, having a cord, *g'*, secured thereto, substantially as described.

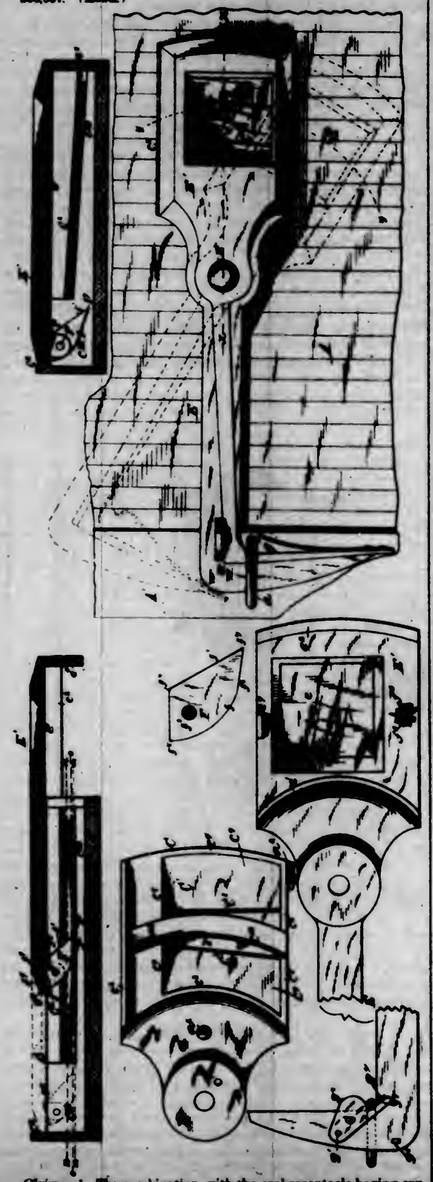
12. In a store-service apparatus, the combination, with the carriage-frame H, having a longitudinal strip, 18, provided with lugs 31, of a bail-attaching device, L, having arms 32 32 in its end, a hook, 35, formed on the lower end of the curved depending portion 34 thereof, and a spring, 33, secured to one of said arms and passing up under and between the lugs 31, substantially as described.

384,114. PLUMBER'S TRAP. NICHOLAS BARRY, Jr., Muscatine, Iowa. Filed Apr. 9, 1887. Renewed Mar. 10, 1888. Serial No. 266,892. (No model.)



Claim.—A sewer-trap formed integral and consisting of a vertical portion, B, adapted to receive a coupling on its upper end, a U formation at its base, having a tap at the lower extremity thereof, an outwardly and upwardly directed branch, E, terminating at its upper end in a double-flanged portion, a downwardly-directed branch, D, and a bread swell, *c*, at the junction of the branches E and D, all constructed and adapted to operate substantially in the manner and for the purposes described.

384,115. SEAL-LOCK. EDWARD C. BASELEY, Omaha, Nebr., assignor to John L. McCague, same place. Filed Jan. 7, 1888. Serial No. 260,067. (Model.)



Claim.—1. The combination, with the seal-receptacle having supports for the seal at its edges, of a stop for the central part of the seal on a plane lower than that of the said supports for the edges, a knife-way extending below the last said stop, and a seal-support across the central part of the seal on the side opposite the said stop, substantially as described.

2. The combination, with the seal-receptable having a support for the edges of the seal and stops below the edge-supports for the center of the seal, and a knifeway between said central stops and extending below them, of a knife all of whose cutting-edge lies in a plane transverse to the seal and which extends below the said central stops, as set forth.

3. The combination, with the seal-receptacle having a support for the edges of the seal and a stop for the central part thereof lower than the edge-supports, of the knife, the seal-cover, and a support or retainer for the outer surface of the seal supplemental to the said cover, substantially as described.

4. The seal-receptacle formed with supports for the edges of the seal, supports for the central part of the seal, and continuous bottom walls formed integral with both of the said supports and gradually depressed from those at the edge to those at the center, and a knifeway between said bottom walls, in combination with a seal-cover provided with a knife in said knifeway, substantially as set forth.

5. In a car-sealing device, the combination of a seal-holder having a knife groove or way, a rigid or unyielding support at the side of said knife groove or way and inclined upward and outward from said way, and a support for the card adapted to bear against the central portion of its outer face, a knife-carrier, and a knife adapted to move in the said knife groove or way to sever the card or seal, substantially as set forth.

6. In a sealing device, the combination of a seal-holder having an unobstructed passage for a seal-cutting knife, and having a rigid inflexible support for the under side of the seal, which is inclined inward or downward relatively to the path of the knife and knife-carrier, and a knife adapted to move along the aforesaid passage and cut the seal, substantially as set forth.

7. In a sealing device, the combination of the seal-holder having an inwardly-sloping bottom wall, c^2, inclined relatively to the path of the knife, a knife way or passage, c^{11}, depressed below the bottom wall, c^2, the seal-support C^3 across the central part of the outer surface of the seal, a knife-carrier lying above the seal-receptacle when the seal is sealed, and a knife secured to the said carrier and adapted to move in the said knifeway and cut the seal, substantially as described.

8. In a sealing device, the combination of the seal-holder and the knife-carrier, of which parts one is fastened by and rocks about a pivot and a staple to which the said pivoted part is fastened, and which is situated on that side of the pivot opposite to the knife and seal, substantially as described.

9. In a sealing device, the combination of a seal-holder and a knife-carrier, which is secured by and rocks about a pivot, a knife thereon which moves in a curvilinear path around said pivot, and a bar or arm, E, on that side of the pivot which is opposite to the knife, adapted to operate as a handle for moving the knife, substantially as set forth.

10. In a sealing device, the combination, with the seal-holder, of the latch-arm secured by a pivot, B, and adapted to engage with a fixed fastener and formed integrally with a cover for the said seal-chamber, which is situated on that side of the pivot opposite to the said fixed fastener, substantially as set forth.

11. The combination, with the seal-receptacle, of the latch-arm fastened by a pivot and adapted to engage with a fixed fastener on one side of the pivot and cast with an apertured heel-extension on the other side of said pivot, adapted to receive a glass to lie over the seal, substantially as described.

12. The combination, with the seal-receptacle having a knifeway extending beyond the seal, of the knife-carrier, the knife hinged thereto and adapted to initially engage with the edge of the seal, and a yielding stop for retarding the movement of the knife around the hinge when it begins to cut the edge of the seal, as set forth.

13. In a sealing device, the combination, with the seal-receptacle and the knife-carrier, (of which two parts one moves relatively to the other,) of a knife having its cutting-edge situated at an inclination to the plane of the seal, substantially as set forth—that is to say, at an obtuse angle on one side of said seal—and a seal-retainer independent of the knife-carrier, adapted to bear against the last said side of the seal to prevent displacement of the card relatively to the knife, substantially as set forth.

14. In a sealing device, the combination, with the seal-receptacle and a knife-carrier, (of which two parts one moves relatively to the other,) of a knife having the cutting-edge inclined to the plane of the seal and a stationary support or retainer for the seal across that face of the seal which is opposite to the point of the knife, substantially as described.

15. In a sealing device, the combination, with a seal-holder adapted to hold the card in a normal position, and also to permit the card to yield inward, of a knife-carrier, a knife hinged to said carrier and adapted to move over the face of the card and to depress it when moving in one direction, and stops, substantially as described, which

prevent the point of the knife from passing beyond the normal plane of the card, substantially as set forth.

16. In a sealing device, the combination, with the seal-holder adapted to hold a card in a normal position, and also to permit it to yield therefrom, of the knife-carrier and the knife hinged thereto and adapted to move over the face of the card in one direction and in contact therewith to depress it, stops to prevent the point of the knife from moving beyond the normal plane of the card, and stops to limit the movement of the knife in the opposite direction around its hinge, substantially as set forth.

17. In a sealing device, the combination, with the seal-holder, of the knife-carrier and the swinging knife hinged thereto having a curvilinear blunt back and bottom edge and the opposite sharpened cutting-edge, and the knifeway extending beyond the card, whereby the knife and the edge of the card can be brought into the described relation to each other when the cutting begins, substantially as set forth.

18. In a sealing device, the combination, with the seal-holder, of the knife-carrier arranged to form a cover for the seal-holder and having the inward-projecting ears f^3, and the knife F, secured to said ears, substantially as described.

19. The combination, with the knife-carrier having the stops f^5 f^6, of the knife F, hinged thereto and having the opposing stops f^4 f^7, and the seal-holder adapted to hold the card in a plane intersecting the knife prior to the commencement of the cutting action, whereby the aforesaid stops cause the knife to commence the cut at the edge of the card and permit it to swing about the hinge, substantially as set forth.

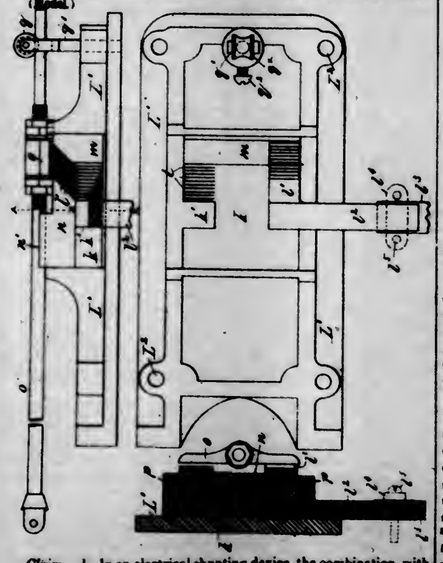
20. The combination, with the seal-holder, the knife, and the knife-carrier, of the latch-arm formed with or secured to the knife-carrier, the fixed fastener *a*, the gravity-lock G, adapted to fall into locking position at the instant the knife reaches the cutting position, and stops which limit the play of the gravity-lock, substantially as set forth.

21. In a sealing device, the combination, with the seal-holder, the knife, and the knife-carrier, of the latch-arm, the locking-plate G, pivoted to the hasp, and the stops g^4 g^5, substantially as set forth.

22. The combination, with the seal-receptacle having the wall c^2 c^4, the side wall, c^5, and the top flange, c^3, projecting to points beyond the wall c^4, of the seal-cover having the glass and the metal frame surrounding the said glass, and having its upper edge adapted to fit under the said flange c^3, substantially as set forth.

23. The combined latching and sealing device having the latch-arm E, pivoted at B, and the heel-extension E' on the side of the pivot opposite to the part E, and the seal-holder secured to the door opposite to the pivot B, whereby the said extension E is caused to move downward when passing out from the locked position, substantially as described.

384,116. ELECTRIC SHUNTING DEVICE. William Baxter, Jr., Baltimore County, assignor to the Baxter Electric Manufacturing and Motor Company, Baltimore, Md. Filed Aug. 20, 1887. Serial No. 247,418. (Model.)



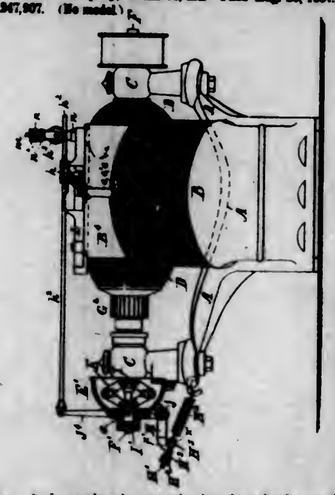
Claim.—1. In an electrical shunting device, the combination, with the different sections of the electric circuit, of a series of yielding springs formed of flat metallic strips, a holder to sustain such springs with their flat sides adjacent, and a movable metallic block arranged and operated to move in succession over the yielding ends of the springs, as and for the purpose set forth.

2. In an electrical shunting device, the combination, with the different sections of the electrical circuit, of a series of yielding springs consisting of flat metallic strips connected with such sections, a spring guide or holder formed with a series of adjacent slits to sustain the yielding springs with their flat sides in proximity, and a movable block arranged and operated to pass in succession upon the yielding ends of said springs, as and for the purpose set forth.

3. In an electrical shunting device, the combination, with the different sections of the electrical circuit, of two series of yielding springs consisting of flat metallic strips connected with such sections, a spring guide or holder formed upon its opposite edges with two series of adjacent slits to sustain the yielding springs with their flat sides in proximity, and a movable block arranged and operated to pass in succession upon the yielding ends of said springs to connect the springs of the opposed series electrically, as and for the purpose set forth.

4. In an electrical shunting device, the combination, with the different sections of the electrical circuit, of two series of yielding springs consisting of flat metallic strips connected with such sections, a spring guide or holder formed upon its opposite edges with two series of adjacent slits to sustain the yielding springs with their flat sides in proximity, and a movable block arranged and operated to pass in succession upon the yielding ends of said springs to connect the springs of the opposed series electrically, and a stop upon the spring guide or holder to arrest the movement of the movable block when retracted from contact with the series of springs, as and for the purpose set forth.

384,117. GOVERNOR FOR ELECTRIC MOTORS. William Baxter, Jr., Baltimore County, assignor to the Baxter Electric Manufacturing and Motor Company, Baltimore, Md. Filed Aug. 20, 1887. Serial No. 247,907. (No model.)



Claim.—1. In an electric motor having the pole-pieces united by a bridge, the combination, with a series of coils wound upon the field-magnet cores, of the shunt-connections c c' c^2, &c., united with the several coils at intervals and extended from the surface of the magnet-coils (at the same point) to the bridge from opposite sides thereof, a shunt-box upon the bridge between the pole-pieces, with contacts united to the said shunt-connections, a shunt-block or connector, and a centrifugal governor actuated by the motor for successively closing the circuit through the shunt-connections, as and for the purpose set forth.

2. In an electric motor, the combination, with the series of coils wound upon the magnet-cores, of a series of shunt-connections connected with the several coils at intervals, means, as a shifting block or piece, for closing successively the electrical circuit through the several shunt-connections, a centrifugal governor mounted upon the armature arbor or shaft, a lever actuated by such governor to operate the shunt-connector, an arm attached to such lever, and a tension-spring resisting the centrifugal force of the governor and arranged at an acute angle with the said arm to operate with a diminishing leverage upon the arm as the speed of the motor increases, as and for the purpose set forth.

3. In an electric motor, the combination, with the main coils upon the magnet-cores, of an auxiliary coil connected with the line or circuit wires and wound upon the cores in the opposite direction from the main coils, a shunt-connection from the ends of such auxiliary coils, shunt-connections attached at intervals to the main coils, contact-pieces attached to such shunt-connections, and a moving contact operating in connection with the same to first close the circuit through the shunt-connections of the main coils, and to subsequently close the shunt-connections from the auxiliary coil to cause a reaction upon the residual magnetism of the field when the motor is very lightly loaded, substantially as herein set forth.

4. In an electric motor, the combination, with the first coil of wire wound upon the magnet-cores, of the line or circuit connection attached to the coil between its ends, an electrical connection from one end of the coil to the other coils, and a shunt-connection from the opposite end of each coil, and means for closing the circuit through such shunt-connection to react on the residual magnetism of the field, as and for the purpose set forth.

5. In an electric motor, the combination, with magnet-cores having poles at opposite sides of the armature, of the magnet-coils wound upon such cores, a shunt-box mounted upon a bridge between the ends of the poles, shunt-connections attached at intervals to the main coils and terminated in electrical connections adjacent to one another in the shunt-box, a governor mounted upon the armature-shaft, and a connector moved thereby to successively close the several shunt-circuits and thus cut out the successive sections of the main coils from the circuit, as and for the purpose set forth.

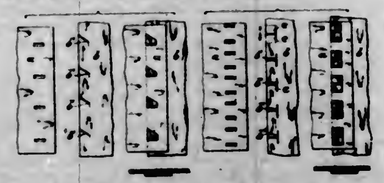
6. In an electric motor, the combination, with magnet-cores having poles at opposite sides of the armature, of the main coils wound upon such poles, a shunt-box mounted upon a bridge between the ends of the poles, shunt-connections formed of metallic strips attached at intervals to the main coils, with the latter wrapped over the same, and the said strips terminated in electrical connections adjacent to one another in the shunt-box, a governor actuated by the motor, and a connector moved thereby to successively close the several shunt-circuits and thus cut out the successive sections of the main coils from the circuit, as and for the purpose set forth.

7. In an electric motor provided with a bridge between the pole-pieces and a shunt-box mounted upon said bridge, the combination, with the cores, of flanges upon the same, field-coils wound between said flanges, shunt-connections attached at intervals to the field-coils with the latter wrapped over the same, a notch, c^3, in one of the flanges, and the shunt-connections brought together and extended through such notch in a single band to the shunt-box, as and for the purpose set forth.

8. In an electric motor, the combination, with a bridge between the pole-pieces and a shunt-box mounted upon said bridge, of the magnet-cores, field-coils wound upon said cores, shunt-connections attached at intervals to the field-coils (with the latter wrapped over the same and extended from the coils toward the shunt-box upon the bridge, elbow-pieces s s', having each one arm fitted in the shunt-box to form a contact-surface and the other arms extended upon the pole-pieces between the several shunt-connections, insulating material between the several shunt-connections, and a clamp pressing such connections and elbow-pieces together, as and for the purpose set forth.

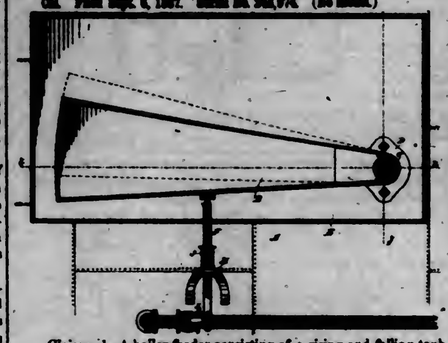
9. In an electric motor, the combination, with a bridge between the pole-pieces and a shunt-box mounted upon said bridge, of the magnet-cores, field-coils wound upon said cores, and shunt-connections formed of flat strips of thin sheet metal attached at intervals to the field-coils and extended beneath the several layers of the field-coils to the same point upon the exterior of the latter and to the shunt-box upon the bridge and connected with contacts therein, as and for the purpose set forth.

384,118. INTERLOCKING THE EDGES OF METAL PLATES. Frank C. Bellingrodt, Pulda, Prussia, Germany. Filed July 19, 1887. Serial No. 244,753. (No model.)



Claim.—The plate *b*, having angular incisions *b'* extending directly from the edge of the plate into the body thereof and then at an angle, whereby said plate is provided with angular laps *c*, in combination with the plate *a*, provided near one edge with slots to receive said laps, substantially as shown and described.

384,119. BOILER-FEEDER. Abraham Blackley, San Francisco, Cal. Filed Sept. 6, 1887. Serial No. 248,974. (No model.)



Claim.—1. A boiler-feeder consisting of a rising and falling tank or reservoir, having a single passage by which it is connected with the boiler, so that water from the boiler may flow out of or into said reservoir and cause it to rise or fall, in combination with a stem or rod connected with the reservoir and with a lever by which the inlet supply-valve for the boiler is actuated, substantially as herein described.

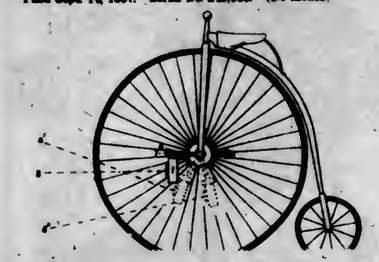
2. A boiler-feeder consisting of a tank or reservoir having one end connected by a rotary joint with the boiler, so that the opposite end may rise and fall about said joint as the water within the reservoir is decreased or increased, and a vertical spring-actuated stem, the upper end of which is connected with the rising and falling end of the reservoir and the lower end with a lever by which the boiler-supply valve is opened or closed, substantially as herein described.

3. A boiler-feeder consisting of a reservoir made wedge-shaped, conical, or enlarged at one end, and having the opposite smaller end connected by a rotary joint with the boiler, so that water will flow to or from the reservoir whenever its bottom line falls below or rises above a horizontal plane, in combination with a supply-valve and an intermediate connection between it and the movable reservoir, substantially as herein described.

4. The reservoir connected at one end with the boiler by a rotary joint and having the other end movable vertically, so that the bottom will rise above or fall below a horizontal plane, in combination with a valve controlling the boiler-feed, a lever, and connecting-rod between the valve and the reservoir, having a lost motion, so that the valve will be opened or closed suddenly by the accelerated motion of the reservoir, substantially as herein described.

5. In combination with a steam-boiler, the rising and falling reservoir connected at one end with said boiler by a rotary joint, the water-supply valve and intermediate connecting mechanism, and the exterior casing, E, inclosing said reservoir, substantially as described.

384,120. BICYCLE-LIGHTING. Walter T. Bowers, Saco, Me. Filed Sept. 14, 1887. Serial No. 249,680. (No model.)



Claim.—1. The combination, with a bicycle-pedal, of a lantern connected thereto in a semi-rigid manner, substantially as herein set forth, and for the purpose specified.

2. The combination, with a bicycle-pedal, of a lantern and a clip or clips connecting the lantern to the pedal, substantially as set forth, and for the purpose specified.

384,121. AUTOMATIC CYLINDER-PIANO. Alessandro Capra and Giovanni B. Rimmer, Clerkenwell, County of Middlesex, England; said Capra assignor to said Rimmer. Filed Mar. 7, 1888. Serial No. 266,654. (No model.) Patented in England Feb. 4, 1884, No. 2,703.

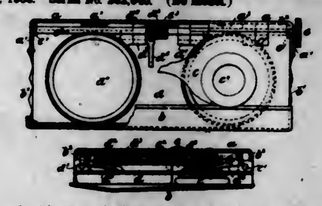
Claim.—In automatic cylinder-pianos, the actuating mechanism consisting of the spring-barrel *c*, with train of wheels and speed-regu-

384,121.



lating device *g g' g³ g⁴ h i' j*, and wheel *z*, combined with and mounted below the pin-barrel *b*, substantially as and for the purposes set forth.

384,122. OPERA, FIELD, OR MARINE GLASS. WILLIAM A. CARDWELL, Meat Croft, Eastbourne, County of Sussex, England. Filed Feb. 1, 1888. Serial No. 262,642. (No model.)



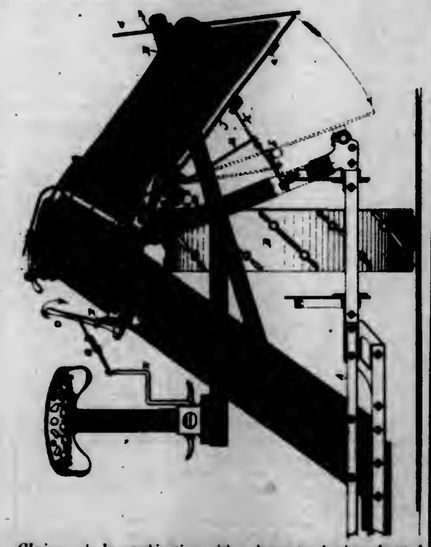
Claim.—1. An opera, field, or marine glass formed with rigid top and bottom and flexible sides, substantially as described.

2. An opera, field, or marine glass formed with rigid top and bottom, flexible sides, and hinged ends, substantially as described.

3. An opera, field, or marine glass formed with rigid top and bottom *a* and *b*, flexible sides *b'*, and hinged ends *c* and *d*, carrying lenses c^2 and d^2, in manner substantially as herein shown and described, and for the purpose stated.

4. An opera, field, or marine glass formed with rigid top and bottom *a* and *b*, flexible sides *b'*, end *c*, carrying lenses c^2 and d^2 hinged to rigid top *a* or bottom *b*, end *d*, carrying lenses d^2 and hinged to a slide, such as d^3, traveling in guides, such as a^3, on top or bottom *a* or *b*, and provided with a rack, d^3, receiving motion from pinion c^3, and spring-levers d^4 d^5, for opening out and retaining the ends *c* and *d* in a vertical position against stops b^3, in manner substantially as herein shown and described, and for the purpose stated.

384,123. DROPPER. HENRY J. CASE, Auburn, assignor of one-half to D. M. Osborne & Company, New York, N. Y. Filed June 11, 1887. Serial No. 241,042. (No model.)



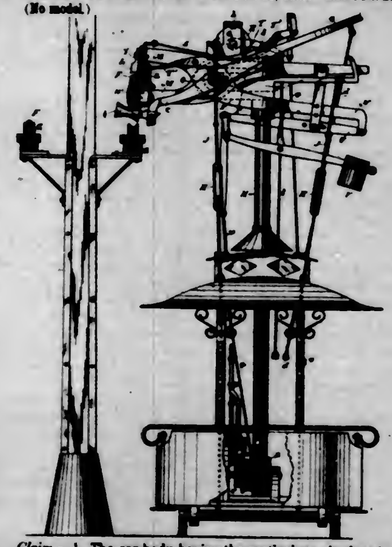
Claim.—1. In combination with a harvester having elevated grain-delivering mechanism, a grain carrying and dropping mechanism consisting of the inclined bottom J, hinged at its upper edge to the harvester, that it may swing inward and downward, the stationary upright wall G, sustained by and at a distance from the harvester to retain the grain on the inclined bottom, and means, substantially as shown, for raising, lowering, and maintaining the lower end of said bottom in contact with said wall at the will of the driver, whereby the grain may be accumulated between said bottom and wall and be delivered at will adjacent to the machine by the swinging of the bottom inward from the wall.

2. In combination with the harvester having the elevator and its sustaining-standards, the outwardly-extending arms E, secured rigidly thereto, the cross-bar F, and upright wall G, connected rigidly to said arms, the inclined bottom J, hinged at its upper edge to the harvester and extending downward and outward to meet the wall G, the links to sustain the inclined bottom in contact with the wall, the said links being jointed and connected one to the harvester and the other to said bottom, and link-controlling means extending to a point adjacent to the driver's seat.

3. In combination with a harvester having an elevated grain-delivery, a grain-receptacle consisting of the inclined bottom J and upright wall G, the bottom being hinged near its upper edge to the harvester, and the cut-off W, hinged to the harvester above and arranged to rest upon the top side of the bottom across its upper end, and means, substantially as described, to operate the hinged bottom, whereby the bottom, in swinging downward and inward, is caused to set at its upper edge beneath the cut-off and lift the same to an active position.

4. In combination with a grain-harvester having the usual elevated grain-delivery, the binder-sustaining brackets H and the binder-shifting shaft N, the grain-receptacle consisting of the stationary outer wall, G, and its sustaining-arms attached to the harvester, the inclined bottom J, having journals mounted in brackets H, and the links connecting the lower edge of the bottom with the harvester-frame and connected with the shaft N.

384,124. ELEVATED CABLE AND CAR-PROPELLER. HENRY CASEBOLT, San Francisco, Cal. Filed Feb. 28, 1888. Serial No. 265,690. (No model.)



Claim.—1. The car-body having the vertical standard projecting above its roof, and the horizontal frame secured upon its upper end, upon which the tongs and other mechanism are carried, in combination with the diverging rods extending downward from the frame and connecting with rods passing downward through the floor of the car, and turn-buckles whereby any desired tension may be given to the rods, substantially as herein described.

2. The supporting post or standard extending above the roof of the car, and having a horizontal slotted frame fixed upon its upper end, with tension bracing-rods, as shown, in combination with levers fulcrumed upon a bar or shaft extending through the slot in the fixed frame, said levers having gripping-jaws secured to one end, and having the other end connected with a lever mechanism whereby the jaws may be opened and closed, substantially as herein described.

3. The tongs for grasping the moving cable, having lever-arms fulcrumed upon a shaft which extends through a frame supported above the roof of the car, the compound-lever connection whereby these jaws are operated, and a rod extending downward through the roof of the car, in combination with a drum around which the rope connected with this rod is coiled, and a lever with pawl and holding

rack whereby the drum is rotated so as to close or enclose the jaws, substantially as herein described.

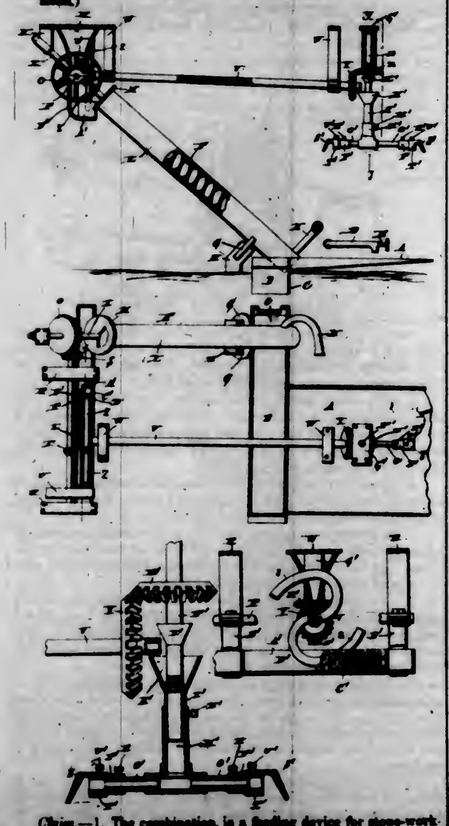
4. The tongs and operating-lever mechanism supported upon a frame-work above the roof of the car, and a rod and flexible rope connecting this lever mechanism with a drum journaled within the car and around which the rope is coiled, in combination with a segmental gear and pinion, a hand-lever for operating the same, and the double segmental rack with which the pawl upon the lever may engage, substantially as herein described.

5. The tongs and the lever mechanism by which they are operated, the fulcrum-shaft of said levers extending through the horizontal slot upon the frame-work supported above the roof of the car, a rotary shaft with winding-drum or pinion, and cords or rack-bars connecting with the tongs and lever mechanism, a lever upon the drum-shaft, and a rod connecting therewith and extending down through the roof of the car, whereby the shaft may be rotated so as to move the grip mechanism to and from the central support, substantially as herein described.

6. The tongs supported above the roof of the car and lever-arms by which said tongs are opened and closed, in combination with the vertically-journaled conical rollers Z, and the levers and operating-rod whereby the rollers are raised to disengage the rope from between the jaws of the tongs, substantially as herein described.

7. The tongs having jaws, the lever mechanism by which they are opened and closed supported above the roof of the car, conical vertically-movable rollers by which the rope is disengaged from the jaws when the latter is opened, and horizontally-journaled rollers *b*, supported on lever-frames which are operated from the interior of the car, said lever and rollers serving to raise the rope and replace it within the jaws, substantially as herein described.

384,125. FEEDER FOR STONE-SAWING MACHINES. PHILIP CHERBA, Detroit, Mich. Filed Nov. 1, 1887. Serial No. 253,266. (No model.)



Claim.—1. The combination, in a feeding device for stone-working machines, of a vertical rotating shaft, F, the radial hollow arms O', communicating with the said shaft, and the hoods at the outer ends of the said hollow arms, for the purpose set forth, substantially as described.

2. The combination, in a feeding device for stone-working machines, of the vertical rotating hollow shaft F, to which water and grits are supplied, the vertical sleeve M', attached to the said shaft and vertically adjustable thereon, the hollow radial arms O', extending from the sleeve M' and communicating therewith, and the deflecting-hoods at the outer ends of the said arms, for the purpose set forth, substantially as described.

3. The combination, in a feeding device for stone-working machines, of the rotating vertical hollow shaft F, the tubular radial arms O', communicating with the said shaft and rotating therewith, the extensible sleeves P' on the said radial arms, and the deflecting-hoods at the outer end of the said sleeves, substantially as described.

4. The combination of the vertical rotating hollow shaft F, the radial hollow arms O', communicating with the said shaft, the extensible sleeves on the outer ends of the said hollow arms, and the deflecting-hoods having the collars attached to the said sleeves and adjustable thereon, substantially as described.

5. The combination, in a feeding device for stone-working machines, of the rotating inclined elevating-screw, the trough to receive the water and sand from the said screw, and the rotating hollow shaft V, having the scoop-arms Z, working in the trough, for the purpose set forth, substantially as described.

6. The combination of the trough A', having the sieve C, and the compartment D', with the rotating hollow shaft V, having the scoop-arm communicating therewith and working in the compartment D', substantially as described.

7. The combination of the trough A', having the sieve C, and the compartment D', with the rotating hollow shaft V, having the scoop-arm Z, working in the compartment D', and the radial arm E', working in the trough on the outer side of the sieve, substantially as described.

8. The combination of the elevating-screw, the trough to receive water and sand therefrom, the hollow shaft V, geared to the screw and having the scoop-arms Z, working in the trough, and the spraying device geared to the said hollow shaft, and in which the contents of the latter are discharged, substantially as described.

9. The combination of the elevated trough, the rotating hollow shaft V, having the scoop-arms Z, working in the trough, the vertical perforated hollow shaft F, geared to the shaft V, and having the funnel K' below the discharge end of the latter, and the hollow radial arms connected to and communicating with the shaft F', substantially as described.

10. The combination, with the tube V, of the vertical rotating tubular shaft F', having the beveled flange L' above the discharge end of the tube V and the funnel K' below the same, and the radial hollow arms O', communicating with and connected to the lower end of the tubular shaft L', substantially as described.

11. In combination with the elevating rotating screw F, the hollow case L, surrounding the same and rotating therewith, the scoop N on the case, the trough A', communicating with the case L, the hollow shaft V, the scoop Z on the said shaft, working in the trough A', and the spraying device communicating with the shaft V and receiving the supply therefrom, as set forth.

12. The combination of the rotating inclined screw having the shaft I projecting from its upper end, the bearing K, in which said shaft is journaled, the trough at the upper end of the screw, the trough at the lower end thereof, and the anti-friction rollers supporting the lower end of the screw, substantially as described.

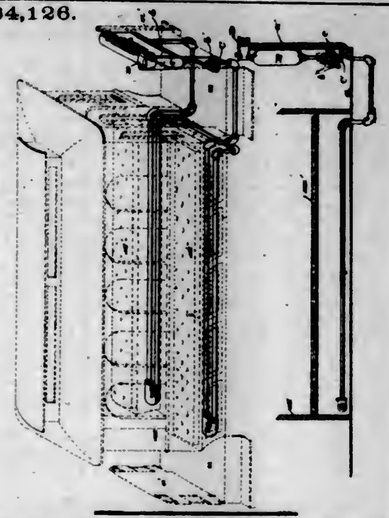
13. In combination with the hollow shaft I', carrying the spraying devices and having the funnel or supply-nozzle K', the hollow rotary shaft V, discharging into the nozzle-funnel K', the scoop Z on the shaft V, the trough A', in which the scoop Z works, the rotating case L, communicating with the trough A', the screw F, working in the case L, and the scoop N on the case, as set forth.

14. In combination with the hollow shaft I', carrying the spraying devices, the hopper A, arranged under the spraying devices, the trough B, communicating with the hopper, the case L, carrying the scoop N, working in the trough B, the screw F in the case, and the hollow shaft V, receiving its supply from the case L and delivering it to the shaft I', as set forth.

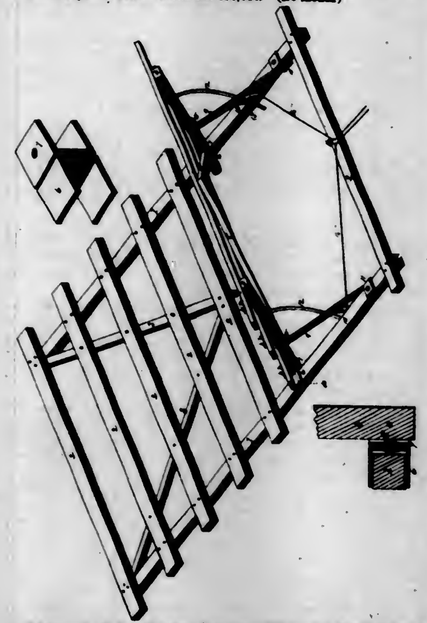
384,126. STREET-CAR-HEATING APPARATUS. MOSES CLEAVE, Cleveland, Ohio. Filed Nov. 4, 1886. Renewed Jan. 12, 1888. Serial No. 260,542. (No model.)

Claim.—The combination of a street-car, a water-tank located by the side of the dash-board of said car, a water-pipe leading from the tank into the car arranged in coils under the seats and returning to the water-tank, the return end of said pipe having a coil, and a vapor-burner for heating the coil at the return end of the pipe and establishing a current of hot water through the car, substantially as set forth.

384,126.



384,127. BED-BOTTOM. ALBERT H. CLEAVELAND, Belvidere, Ill. Filed Sept. 26, 1887. Serial No. 250,707. (No model.)

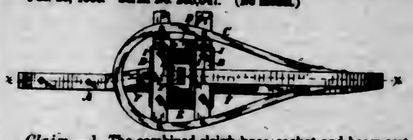


Claim.—1. In combination, a bottom frame, an adjustable head-section, bars loosely connected to the head-section and bottom frame, a segment-brace to support the adjustable head-section at the desired angle, and a vibrating friction-clutch pivotally secured to the said bars, the said friction-clutch consisting, essentially, of an arm provided with an aperture the opposite edges of which bite the opposite edges of the segment-brace when the clutch is allowed to swing freely on its support, substantially as set forth.

2. The combination of a main portion, an adjustable head portion having a sliding connection therewith, a brace connecting the main and head portions, a friction-clutch pivoted to said brace, and a segment-brace connecting the friction-clutch and the adjustable head portion, substantially as and for the purpose set forth.

3. The combination of a main portion, an adjustable head portion having a sliding connection therewith, a brace connecting the main frame and head portion, a friction-clutch pivoted to said brace, a segment-brace connecting the friction-clutch and the head portion, and a cord connected to the friction-clutch for the purpose of releasing it from its engagement with the segment-brace, substantially as and for the purpose set forth.

384,128. SLEIGH-KNEE. JOHN J. OTIS, Grand Rapids, Mich. Filed Feb. 23, 1888. Serial No. 265,047. (No model.)

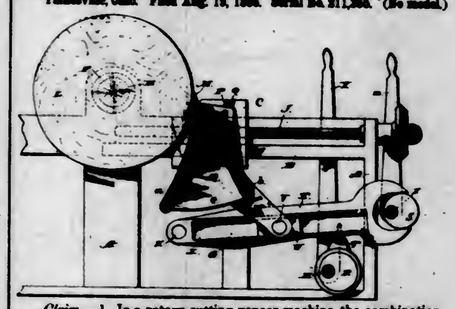


Claim.—1. The combined sleigh-knee socket and beam-rest E, consisting of a metallic piece which may be made of malleable iron cast in a single piece having ribs $I' I^2 I^4 I^3$, forming grooves H H, for supporting and securing beams B B, and having also sockets G G G, for receiving ends of knees $F' F^2 F^3$, arranged between the beams and runner, substantially as described.

2. In a combined sleigh-knee socket and beam-rest, consisting of metallic piece E, constructed as described, having ribs $I' I^2 I^4 I^3$, forming grooves H H, and having sockets G G G, the combination and arrangement of ribs $I' I^2 I^4 I^3$ and grooves H H with the sockets G G G, arranged substantially as described, and for the purpose herein set forth.

3. A gear for sleigh-bobs, composed of the metallic piece E, having ribs $I' I^2 I^4 I^3$ and grooves H H and sockets G G G, in combination with beams B B, knees $F' F^2 F^3$, and runner A, arranged substantially as described, and for the purpose herein set forth.

384,129. ROTARY-CUTTING VENEER-MACHINE. HENRY H. COE, Painesville, Ohio. Filed Aug. 19, 1886. Serial No. 211,366. (No model.)



Claim.—1. In a rotary-cutting veneer-machine, the combination, with slide-blocks having guides thereon curved in the arc of a circle, of a knife-bar arranged to move on said guides and have its inclination regulated thereby, substantially as set forth.

2. In a rotary-cutting veneer-machine, the combination, with slide-blocks having guides thereon curved in the arc of a circle, of a knife-bar arranged to move on said guides and have its inclination regulated thereby, and a feed-screw for shifting the position of the slide-blocks, substantially as set forth.

3. In a rotary-cutting veneer-machine, the combination, with an adjustable knife-bar, of pivoted guides, the knife-bar having a sliding pivotal connection with said guides, substantially as set forth.

4. In a rotary-cutting veneer-machine, the combination, with an adjustable knife-bar, said bar having arms secured thereto, of pivoted guides, and blocks adapted to slide therein and to which said arms are pivoted, substantially as set forth.

5. In a rotary-cutting veneer-machine, the combination, with an adjustable knife-bar, said bar having arms secured thereto, of pivoted guide-bars or guides, blocks adapted to slide therein and to which said arms are pivoted, and cams for regulating the positions of the guide-bars, substantially as set forth.

6. In a rotary-cutting veneer-machine, the combination, with an adjustable knife-bar, said bar having an arm secured thereto, and slides, each having a curved groove therein, of a feed-screw to actuate the slides, and a pivoted guide-bar having a slide-block mounted therein, said block being pivoted to the arm of the knife-bar, substantially as set forth.

7. In a rotary-cutting veneer-machine, the combination, with an adjustable knife-bar, and pivoted guide-bars with which the knife-bars have a sliding pivotal engagement, of pivoted levers, and cams for regulating the position of said levers and guide-bars, substantially as set forth.

8. The combination, with the knife-bar, and pivoted guide-bars with which the knife-bar has sliding pivotal engagement, of levers pivoted on the same axis with the pivoted guide-bars, fulcrums for these levers, and cams for changing both the levers and the guide-bars, substantially as set forth.

9. The combination, in a rotary-cutting veneer-machine, of the adjustable knife-bar D, the annular bearings P Q, the arms U, the slide-blocks W, the adjustable guides X, the eccentrics R, the shaft H, and the hand-lever Y, substantially as described.

10. The combination, in a rotary-cutting veneer-machine, of the adjustable knife-bar D, the annular bearings P Q, the arms U, the slide-blocks W, the adjustable guides X, the eccentrics R, the shaft H, the hand-lever Y, the levers T, the fulcrums G, the eccentrics S, the shaft I, and the hand-lever Z, substantially as described, and for the purpose set forth.

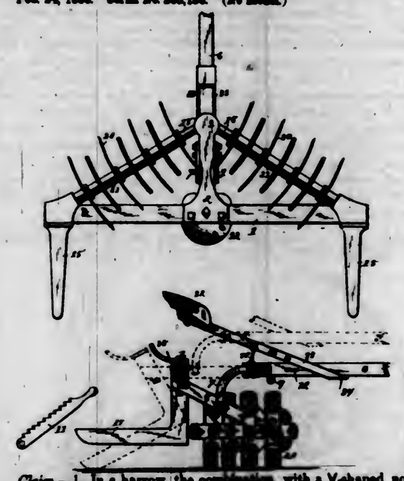
384,130. BAG-FASTENER. HENRY W. COMSTOCK, Lafayette, Ind. Filed Mar. 10, 1888. Serial No. 266,793. (Model.)



Claim.—1. The fastener described, composed of a single piece of metal bent upon itself to form a loop, A, and loops *a a* at the end opposite the loop A, and the ends of the piece extended inward parallel with each other and at their extreme ends diverging, substantially as and for the purpose specified.

2. The combination, with a bag-fastener consisting of a wire provided at one end with a loop, A, loops *a a* at the opposite end between the legs of the wire, and the ends of the wire extended inward and alongside each other between said legs and the extreme ends bent outwardly and laterally, of a cord or rope connected to said fastener, substantially as shown and described.

384,131. HARROW. ADAMS CREEK, Jr., Gouverneur, N. Y. Filed Feb. 24, 1888. Serial No. 265,132. (No model.)



Claim.—1. In a harrow, the combination, with a V-shaped non-rotating supporting-rod adapted to receive upon either side a hollow shaft, of two gangs of rotating stirrers mounted loosely thereon, substantially as set forth.

2. In a harrow, the combination, with the thrust-bar recessed at its front end, of the rotating disk-gangs supported at their inner ends by the thrust-bar, and having their inner ends arranged within the recess, whereby the thrust-bar is adapted to serve as stand-beads, substantially as set forth.

3. In a harrow, the combination, with the recessed thrust-bar, of the supporting-rod and the thimbles 19 for supporting the rod within the recess, substantially as set forth.

4. In a harrow, the combination of the thrust-bar, the cross-bar at the rear end of the thrust-bar, the down-hangers, and the continuous bent supporting-rod mounted at its ends in the down-hangers and connected with the thrust-bar at a point intermediate of its ends, substantially as set forth.

5. In a harrow, the combination of a supporting-frame, a rotating gang mounted at its ends directly upon the supporting-frame, carriers attached to the supporting-frame and projecting rearward therefrom, a tongue hinged to the supporting-frame, and means for suspending the front part of the supporting-frame from the tongue and in a tilted position, whereby both ends of the gang are supported above the soil, substantially as set forth.

6. In a harrow, the combination of a supporting-frame, a rotating gang mounted at its ends in the supporting-frame, carriers attached to and projecting rearward from the supporting-frame and above the surface of the ground when said frame is in its normal position, a tongue hinged to the supporting-frame, and means for suspending the front part of the supporting-frame from the tongue, the said frame and carriers being in a tilted position, substantially as set forth.

7. In a harrow, the combination of a supporting-frame having a cross-bar and downward-projecting hangers at the ends of the cross-bar, a hinged tongue, a rotating gang mounted upon the frame, and carriers projecting rearward from the frame, said carriers being formed integral with the downward-projecting hangers, substantially as set forth.

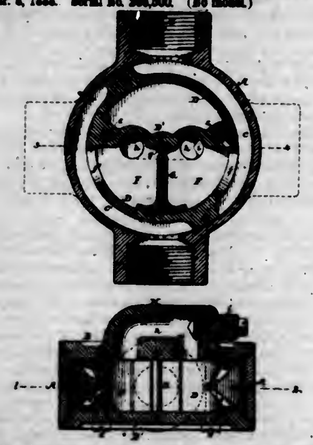
8. In a harrow, the combination of a hinged tongue, a frame having a cross-bar in rear of the tongue and a thrust-bar projecting forward from the cross-bar, with two gangs of rotating stirrers, each connected at its front end to the thrust-bar and at its rear end to the cross-bar, substantially as set forth.

9. In a harrow, the combination, with the cross-bar, of the rearward-projecting shoes, the thrust-bar, the hinged tongue, and devices for connecting the tongue with the thrust-bar in front of the hinging-point of the tongue, substantially as set forth.

10. In a harrow, the combination of a triangular frame having its apex in front, a tongue hinged to the frame, two gangs of rotating stirrers mounted on the frame, and devices for connecting the triangular frame with the tongue and adjusting the vertical position of the frame relative to the tongue, substantially as set forth.

11. In a harrow, a triangular frame having a cross-bar, a bar projecting at an angle from the central part of the cross-bar, two rods connecting the ends of the thrust-bar with the ends of the cross-bar, and rotating gangs of stirrers mounted on the rods, substantially as set forth.

384,132. GAS-GOVERNOR. B. FRANK DAY, Sellersville, Pa. Filed Mar. 8, 1888. Serial No. 266,900. (No model.)



Claim.—1. The combination, in a gas-governor, of the box provided with inlet and outlet ports, a chamber formed in said box, and a regulating-pendulum therein dividing said chamber into two portions, with a passage providing a communication between the two parts of the chamber, substantially as and for the purpose set forth.

2. The combination of the outer shell, A, having the inlets and outlets, a box adjustably secured within said casing and provided with inlet and outlet ports, said box having a chamber, a regulating-pendulum dividing said chamber, and a communicating passage between the two portions of the chamber, substantially as set forth.

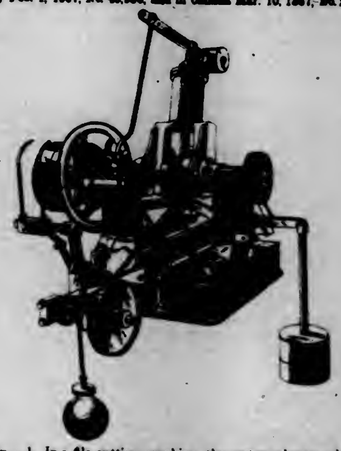
3. The combination of the casing A, side plates, B B', a passage, A,

formed in one of said plates, a ring, D, of smaller diameter than the casing, thus forming a passage, said ring and plates inclosing a chamber, a regulating-pendulum therein, and inlet and outlet ports for said chamber, substantially as set forth.

4. The combination of a ring, D, having a tapered outlet-port, *f'*, said ring forming a chamber, and a pendulum in said chamber, with a side passage communicating with both divisions of the chamber, substantially as set forth.

5. The combination, in a gas-governor, of the ring provided with inlet and outlet ports, a chamber formed in said ring, a pendulum therein dividing said chamber into two portions, and a passage communicating with the two parts of the chamber, with regulating-valve in said passage, substantially as set forth.

384,133. FILE-CUTTING MACHINE. RICHARD DURNELL, Leeds, County of York, England, assignor of one-half to John Blakey, same place. Filed Feb. 19, 1887. Serial No. 228,267. (No model.) Patented in England Jan. 2, 1885, No. 62, and May 1, 1886, No. 5,869; in Belgium Jan. 20, 1887, No. 76,136; in France Jan. 20, 1887, No. 181,316; in Germany Feb. 1, 1887, No. 40,994, and in Canada Mar. 10, 1887, No. 26,194.



Claim.—1. In a file-cutting machine, the rectangular tang-holder partially working in a recess in an oscillating work-supporting anvil, said holder being attached at its top to a releasing-lever fulcrumed at one end to the anvil and curved at its free end, while the bottom of the holder is provided with a pin which, after passing through a hole in said recess, is encircled by a spring working in a second recess in the said anvil, substantially as herein set forth.

2. In a file-cutting machine, the combination, with a tang-holder, as herein described, of a work-supporting anvil capable of oscillating on pins during progress of work in a bed-trough adapted to travel in fixed slides on a supporting bed-plate, and mechanism, as described, for connecting said trough with and propelling it from a single shaft, as set forth.

3. In a file-cutting machine, the combination of a work-supporting anvil, traveling bed-trough, and tang-holder with the device for holding and fixing the oscillating anvil in any required position, consisting of a bar secured to top of anvil with forked projecting end fitting a screwed rod secured to trough, and means for raising and lowering such projecting forked end, substantially as herein set forth.

4. The combination, in a file-cutting machine, of the fixed supporting frame or base having a propelling screw-shaft, mechanism for rotating said shaft in a given direction, a bed-trough adapted to travel in slides on said fixed frame, an anvil capable of being oscillated in said trough at any angle during working of machine, a movable half-nut for engaging and disengaging the trough with the screw-shaft, a weight, pulley, shaft, and cord for returning the trough to the rear end of the machine when released from the screw-shaft, the tang-holder, as herein described, and the device for holding the anvil in a given angular position, substantially as described and set forth.

5. In a file-cutting machine, the combination of a work-supporting anvil, a traveling bed-trough, operating mechanism for said trough, and the tang-holding device herein set forth, with a roller attached loosely to a transverse lever weighted at one end and carried at the other end by an adjusting-screw working in bearings on the side of the machine, whereby horizontal and longitudinal adjustment of the point of pressure on the file-blank, as well as vertical movement, is secured, all as herein set forth.

6. In a file-cutting machine, the combination of a roller attached loosely to a weighted lever, *q*, placed across the anvil and pivoted on an adjusting-screw, Q, carried in bearings on the side of the machine and operating to change horizontally position of lever, and mechanism, substantially as herein described, for raising the roller and lever clear of its work, whereby the position of the roller can be adjusted to the varying angles of the cutting-chisel, substantially as herein set forth.

7. In a file-cutting machine, the combination, with a reciprocating carriage for carrying a file or rasp to be cut, of a cutting chisel or tool having a rounded shank with a flat portion, retaining-bar d^{17}, and set-screw d^{16}, for holding it in position in a U-shaped recess formed in a reciprocating holder in any given angle or position across the blank, substantially as set forth.

8. The combination of cutter d^{10}, holder d^3, cam *f*, for reciprocating same, framing D, provided with slides *d'*, for the reception of the tenons d^{13} on holder d^3, trunnions d^{12}, bearings *e* on standards or uprights C, flanges e^3, slot-holes e^4, and bolts e^5, whereby the cutter can be adapted to cut the teeth of the file to any required angle, as set forth.

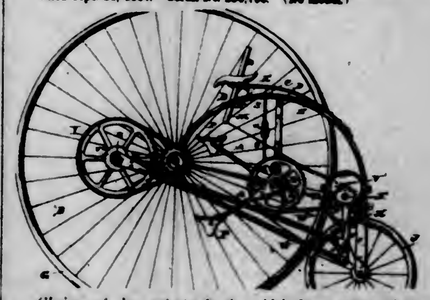
9. In a file-cutting machine, the combination of a reciprocating tool-holder carried in an adjustable framing with a cylinder fixed to the said framing directly over the cutter-holder containing a spiral spring interposed between two pistons, the said cutter-holder being attached to the rod of the lower piston, substantially as set forth.

10. In a file-cutting machine, the combination of a reciprocating cutter-holder mounted in slides in adjustable framing provided with trunnions working in bearings formed in the uprights C, the cam on driving-shaft for raising said holder, the cylinder fixed to the adjustable framing over the cutter-slides, the lower piston attached to the said holder by its rod, the upper piston, a spring interposed between the pistons, and the lever mechanism, substantially as described, whereby the upper piston is adapted to compress the said spring onto the lower piston independently of or simultaneously with the upward movement of the tool-holder, whereby the pressure or force of the blow of the cutting-chisel is regulated, as set forth.

11. In a file-cutting machine, the combination of screw-shaft a^3, half-nut b^9, traveling bed B, incline fixed adjustably to such bed, runner r^4 on lever r^3, working against said incline, the levers r^3, r^5, and R, the rods r^7 r^8, the winged nut r^{10}, the cylinder *d*, the adjustable supporting-frame D, upper piston, d^3, spiral spring d^5, and lower piston, d^6, whereby the spring may be compressed independently of or simultaneously with the lower piston, substantially as and for the purposes herein described.

12. In a file-cutting machine, the combination of the fixed bed-plate, screw-shaft, operating mechanism for said shaft, bed-trough adapted to work in slides on said fixed bed A, half-nut whereby it may be engaged with or disengaged from said screw-shaft, a work-supporting anvil adapted to oscillate in said trough, the file-holding devices, substantially as described, the standards or uprights fixed to said fixed bed A, provided with bearings at the upper ends for the reception of the trunnions d^{12} on adjustable framing D, the adjustable framing D, the cylinder *d*, the pressure-regulating mechanism, substantially as described, the tool-holder, cutting-chisel, and cam on driving-shaft, operated as described, whereby the said holder and chisel may be reciprocated and operated for cutting a tooth while the anvil and bed-trough are stationary, substantially as set forth.

384,134. VELOCIPEDE. LLOYD H. DOREMUS, Winter Park, Fla. Filed Sept. 26, 1887. Serial No. 250,703. (No model.)



Claim.—1. In a velocipede, the vehicle-frame composed of the arched tubular sections C, D, E, *c'*, c^2, and *x'*, constructed and arranged substantially as described.

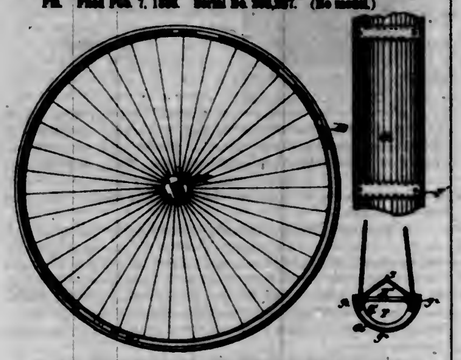
2. The combination, with the tubular frame, constructed substantially as described, of the pedals, the ratchets v' v^2, the eccentrics V V', the sprocket-wheels R Y, and the belts S Z, substantially as specified.

3. In a velocipede, the combination, with the frame thereof, of the alternating device comprising the hanger provided with the adjustable rock-shaft and links for connecting the same with the pedals, substantially as specified.

4. The combination, with the frame of the velocipede, of the curved bars supporting the seat upon the cross-sections of the frame, substantially as specified.

5. In a velocipede, the combination, with the ratchets, of the pawls w, provided on their ends with rubber or leather pieces 3, substantially as specified.

384,135. VEHICLE-WHEEL. LLOYD H. DOREMUS, Winter Park, Fla. Filed Feb. 7, 1888. Serial No. 263,857. (No model.)

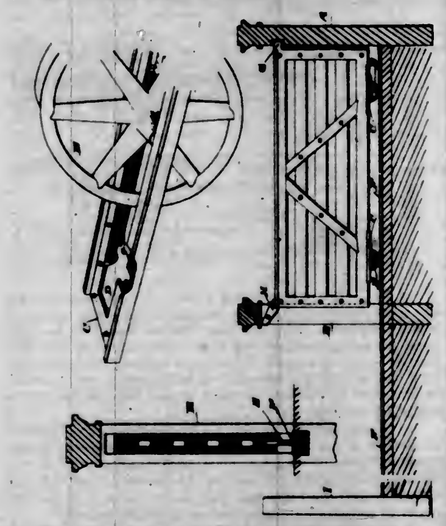


Claim.—1. In combination with the tire, the rib F, consisting of the transverse portion and the semicircular portion adapted to engage against the concave side of the tire, and the leg-rivets f^3, for securing said rib in place, substantially as specified.

2. In combination with the tire, the rib F, and the spokes engaging in said rib, the angular piece S, of spring-steel, held in place by the spokes passing through holes corresponding with the spoke-holes in the rib F, substantially as specified.

3. In a vehicle-wheel, the combination, with the spring-steel tire and the crossed spokes, of the hub H, having the caps fitted over its ends, and bolts for securing the caps in place, substantially as specified.

384,136. GATE. JOHN DURNELLY, San Mateo, Cal. Filed Mar. 15, 1883. Serial No. 267,279. (No model.)



Claim.—The combination, with a gate and its posts, one of which is slotted to permit the passage of said gate, of the plate C, secured to the under surface of the gate, said plate having the slot D, elongated channels *a* upon each side of the slot and open at one end, and the rollers in said slot, with the ends of their axles or shafts mounted loosely in said channels, substantially as described.

384,187. APPARATUS FOR OPENING FURNACE-DOORS. FRANK DOYLE, Chicago, assignor of one-half to John Bateman, Lake View, Ill. Filed Aug. 6, 1887. Serial No. 246,270. (No model.)



Claim.—1. The combination, with the pedal, of the rod *g*, pivoted thereto and to the cam, said cam bearing upon the friction-wheel upon the crank-handle, and the door rigid with the crank-shaft, whereby the door is opened when pressure is applied to the pedal, substantially as specified.

2. The combination, with the door, of the crank and the crank-shaft with which the door is rigidly connected, the friction-wheel upon the crank-handle, a cam bearing against said wheel, and lever mechanism for forcing the cam against the wheel to turn the crank, substantially as described.

3. The combination, with the door rigidly secured to the crank-shaft, of the pin upon the crank and a pivoted dog provided with teeth, whereby the door may be held at any angle desired.

4. The combination, with the crank mechanism and means for operating the same, of the double door, the front portion thereof being rigidly attached to the crank-shaft and the lining loosely mounted thereon, and stop mechanism for holding the lining at a distance from the front when the door is closed, said front coming against the lining when swung by the crank mechanism, substantially as described.

384,138. METHOD OF MAKING BANDING FOR SPINNING-MACHINES. THOMAS H. DUNHAM, Boston, Mass. Filed Aug. 11, 1887. Serial No. 246,746. (No model.)

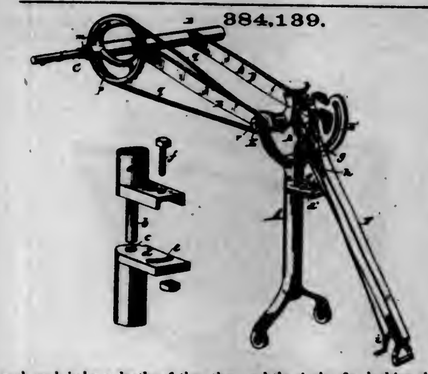
Brief.—The object of the invention is to make banding from cotton water-proof, uniform in draft, and not liable to shrink.

Claim.—The method of making banding from cotton, which consists in softly twisting to the left a slubber of cotton, and then softly twisting two or more slubbers together, twisting to the left, then passing such compound slubbers so twisted through a bath of tar, and drying as described, then softly twisting together two or more such compound slubbers thus tarred, twisted, and dried, twisting to the right, all as and for the purpose specified.

384,139. HARVESTER-REEL. GEORGE EUSTLY, Whitewater, Wis. Filed Mar. 7, 1887. Serial No. 230,019. (No model.)

Claim.—1. In combination with a harvester, a reel-standard jointed thereto to swing forward and backward, said standard consisting of an upper and a lower part connected by a vertical axis, that the upper part may turn horizontally, an arm, B, connected to the upper end of the standard by a horizontal axis, that it may swing upward and downward, a reel having its shaft mounted horizontally in the distal end of said arm, a hand-lever connected rigidly to said arm and extending rearward, for the double purpose of adjusting the reel vertically and turning it horizontally, and a locking device for said lever, also carried by the upper end of the standard, whereby the one lever is enabled to effect the horizontal and the vertical adjustment of the

384,139.



reel, each independently of the other, and the device for locking the lever caused to turn horizontally therewith.

2. A reel-standard divided horizontally into two parts, said parts provided with opposing flanges, in combination with a vertical pivot, and a clamping-bolt distinct from said pivot, as described, whereby the parts may be secured together with more or less firmness, as required, and held in position without the employment of external fastening devices.

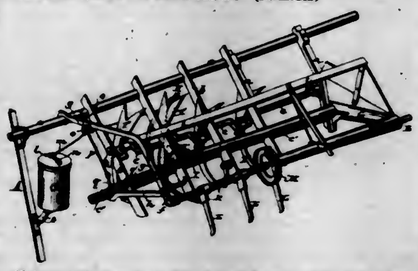
3. In combination with the reel-standard, having its upper end pivoted to turn horizontally and combined with the clamping device, the reel-support sustained thereon by a horizontal axis, and the rearwardly-extending lever attached to said reel-support, whereby the lever is enabled to perform the double duty of adjusting the reel vertically and of turning it horizontally.

4. The reel-support B, mounted on a horizontal axis and provided with the slotted plate B', fixed thereto, in combination with the hand-lever, and the clamping-bolt passing through the slotted plate and seated in the lever, as described.

5. The reel-driving shaft C, provided with a reverse screw-thread, in combination with the reel having the tubular socket or shaft *n*, applied around and screwed upon shaft C, substantially as described.

6. In a harvester, an overhung reel, in combination with a supporting and driving shaft consisting of two members passing one over the other and united by a reverse thread, one of said members mounted permanently in its bearings and the other attached permanently to the reel, substantially as described.

384,140. GRAIN-BINDER. GEORGE BUTLER, Whitewater, Wis. Filed June 3, 1887. Serial No. 240,154. (No model.)



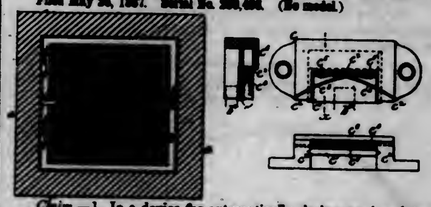
Claim.—1. In a grain-binder, the parallel base-rods *c d*, in combination with the cross-sills connecting them, the rigid binder-standard having the horizontal upper and lower arms, as usual, the shaft *k*, carried by and extended beyond the upper arm, the bearing for said shaft at its overhanging end, and supports for said bearing connected to the base-rods, substantially as shown.

2. In a grain-binder, a base-frame, a gear-standard of the Appleby type secured thereto and overhanging the binding-table, the knotter-driving and ejector-carrying shaft mounted in the top of the standard and prolonged beyond its overhanging end, the bearing for the extended end of the shaft, and supports for said bearing extended downward across the grain-passage to the base.

3. In combination with the circulatory packers rising through and above the grain-space, the overlying breast-plate provided at its sides with the elevated portions above its grain-confining face to cover and protect the points of the packers.

4. In combination with the cord-clamping disk seated therein, the breast-plate provided with the opening and with the downwardly-extending guards or cheeks *y* at the sides of the disk.

384,141. AUTOMATIC SCREEN OR DOOR FOR OBSTRUCTING THE PASSAGE OF FLAME. EDWARD B. FERRET, New York, N. Y. Filed May 26, 1887. Serial No. 239,498. (No model.)



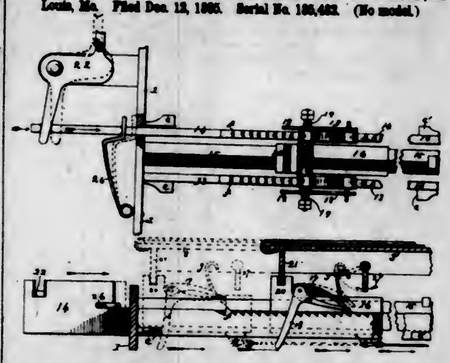
Claim.—1. In a device for automatically closing openings into or through shafts or hoistways of buildings to obstruct the passage of flame, in combination, a door, screen, or shutter, a bolt secured thereto, a fixed nosing which receives the end of the bolt, a movable plate in the nosing, and a fusible retaining device, whereby the movable plate of the nosing is caused to release the bolt upon an abnormal increase of heat.

2. In a device for automatically closing openings into or through shafts or hoistways of buildings to obstruct the passage of flame, in combination, a door, screen, or shutter, a bolt secured thereto, a fixed nosing which receives the end of the bolt, a sliding plate in the nosing, springs which press against the sliding plate, and a solder of fusible metal applied to the plate and springs, whereby the springs are released and move the plate back clear of the bolt upon an abnormal increase of heat.

3. In a device for automatically closing openings to obstruct the passage of flame, in combination, a door, screen, or shutter, a bolt secured thereto, a fixed nosing which receives the end of the bolt, and a movable plate or face in the nosing actuated to release the bolt by an abnormal increase of heat.

4. The device comprising the side posts, c^3 c^3, the sliding plate c', having the flange c^5, springs c^4 c^4, and fusible solder c^6 c^6, the hinged door *b*, and the bolt b^2, secured to the door, substantially as set forth.

384,142. TYPE-WRITING MACHINE. GEORGE L. FERRIS, St. Louis, Mo. Filed Dec. 12, 1885. Serial No. 185,462. (No model.)



Claim.—1. In a type-writing machine, the combination of the type-wheel, the vibrating lever-arm, the pivoted and jointed hand-lever having a segmental end, a spur-gear attached directly to the type-wheel, the notched lettered bars fixed on said lever-arm, the rock-shaft, the reciprocating table, and rod, lever, and bar for connecting the latter two, whereby the depression of the lever-arm and its attachments imparts intermittent movement to said table, substantially as shown and described.

2. In a type-writing machine, the combination, with the table, of the movable ratchet-bar, a feed-pawl engaging therewith and attached to said table, the vibrating type-wheel and rock-shaft, to which it is indirectly attached, and rod and lever for connecting said shaft and ratchet-bar and converting the rotary reciprocation of the one into rectilinear reciprocation of the other, as shown and described.

3. In a type-writing machine, the combination of the pivoted elbow-lever and the vibrating pendent arm connected therein with the movable and fixed ratchet-bars, the table, and a sliding pawl-carrier connected with the latter, the rock-shaft, vibrating lever-arm, type-wheel, and a hand printing-lever, all arranged to operate substantially as shown and described.

4. In a type-writer, the combination of the pivoted pawl-lifters 19 with the sliding table-carrier, the pawls 17, hinged to the latter, the horizontal ratchet-bars, carrier-supporting bar 15, and stops with which said lifters come in contact automatically, as shown and described.

5. In a type-writing machine, the combination of pressure or friction springs with the pivoted pawl-lifters, the carrier, pawls pivoted thereto, and fixed and movable ratchet-bars, substantially as shown and described.

6. In a type-writing machine, the combination, with ratchet-bars, pawl, and table-carrier, and pawls hinged thereto, of the pawl-lifters, which are adapted to maintain their position when raised and thereby hold the pawls elevated, as and for the purpose specified.

7. In a type-writing machine, the combination of the table and its bar 21, the tubular slide 16 and its slotted head 20, the guide-bar 15, the ratchet-bars, and pawls pivoted to said slide, all as shown and described, and operating as specified.

8. In a type-writing machine, the combination of the table, the ratchet-bars, a sliding pawl-carrier and pawls, and a lifter adapted to engage with the latter for raising them out of engagement with the ratchet-bars for the purpose of enabling the table to be moved back to its original position, as shown and described.

9. In a type-writing machine, the combination, with the table and ratchet-bars, of the pivoted bar, the pawls having hooks that lock with the latter, and the sliding pawl-carrier with which said table is connected, all as shown and described.

10. In a type-writing machine, the combination, with the ratchet-bars having a tooth at their left extremity longer than the others, the sliding table and pawl-carrier, and the pawls pivoted thereto, of pivoted levers for lifting the latter, the same turning on their bearings with sufficient friction to enable them to sustain the weight of the pawls, as shown and described.

11. In a type-writing machine, the combination of friction-springs with the pivoted pawl-lifters, the pawls, ratchet-bars, and the table, as shown and described, for the purpose specified.

12. In a type-writing machine, the combination of stops with the pivoted pawl-lifters, the pawls, ratchet-bars, a sliding pawl-carrier, and the table connected thereto, as shown and described.

13. In a type-writing machine, the upwardly-projecting notched letter-bars, in combination with the lever-arm, type-wheel, and jointed printing-lever, as shown and described.

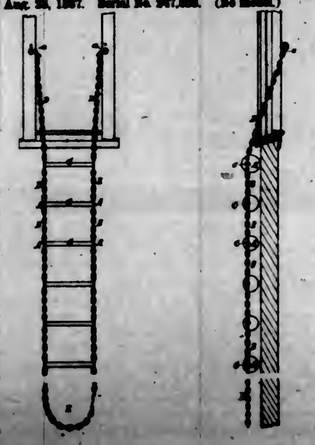
14. In a type-writing machine, the type-wheel arm and rock-shaft having sliding connection which permits vertical adjustment of the wheel, substantially as and for the purpose specified.

15. In a type-writing machine, the combination of type-wheel, rock-shaft, and lever-arm, the socket, the sliding tenon, and a screw for holding them in the desired relative adjustment, all as shown and described, for the purpose specified.

16. In a type-writing machine, the combination, with the type-wheel, of the table and the track on which it runs, both curved or made convex, as shown and described, for the purpose specified.

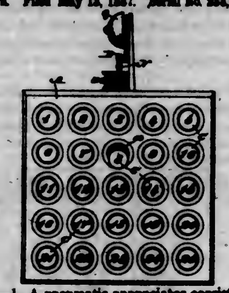
17. In a type-writing machine, the combination, with the rock-shaft and lever-arm carrying the type-wheel, of a clamp attached to said shaft and adapted for adjustment around the same, for the purpose of enabling the lever-arm to be set at the required angle, as shown and described.

384,143. FIRE-ESCAPE. STEPHEN H. GARDINER, Lynn, Mass. Filed Aug. 20, 1887. Serial No. 247,033. (No model.)



Claim.—A fire-escape consisting of the combination of disks A, connected by chains B, rods or rounds C, extending from a disk on one side to a disk on the other and secured eccentrically to said disks, with the two upper chains, D, and the bottom looped chain, E, as set forth.

384,144. PNEUMATIC ANNUNCIATOR. RANDOLF P. GARMAN, Norristown, Pa. Filed May 13, 1887. Serial No. 238,095. (No model.)



Claim.—1. A pneumatic annunciator consisting of a main pipe with branch pipes, air-supply pipes connected with the branch pipes, bellows attached to the branch pipes, a dial-carrying arm operated by said bellows, and check-valves in the branch pipes, the parts being combined substantially as described.

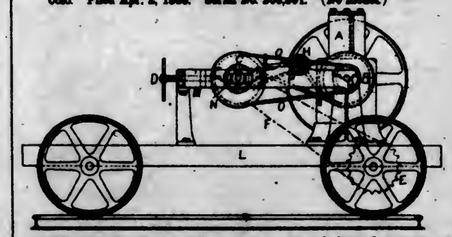
2. In a pneumatic annunciator, the combination of the main pipe H, having an alarm connected therewith, the pipes G, having one end closed and the other leading into the main pipe H, the air-supply tubes J, leading into pipe G, the check-valves K, located at the connection of pipe G and main pipe H, and mechanism, substantially as described, connected to said main pipe and alarm, whereby the inlet of air into said main pipe operates the alarm, substantially as described.

3. A pneumatic annunciator consisting of a board with an inclined opening therein, arm B, passing through said opening and having the dial C on the front end and the ball D on the rear end thereof, the tube J, with air-pump, the branch pipe G, connected with said tube, and the inflated body F, with socket or cup E thereon, said parts being combined substantially as and for the purpose set forth.

4. In a pneumatic annunciator, the main pipe H, with the pipe I, inflated body M, a gong with hammer, and tripping device therefor, in combination with the branch tube G, having check-valve K, the inflated body F, with socket E, a board with an opening, and an arm passing through said opening, and having a dial on its front end and a ball or knob on its rear end, said ball operating in said socket, substantially as described.

5. A pneumatic annunciator consisting of a board with a series of inclined openings therein, arms passing through said openings and having dials at their front ends adapted to close said openings, a main pipe, branch tubes connected with said main pipe, separate tubes leading to each of said branch tubes from air-pumps, a check-valve in each of said branch tubes between said main pipe and air-pump tube, the said arms having pivotal connection with inflated bodies on said branch tubes, and an alarm connected to said main pipe, said parts being combined substantially as and for the purpose set forth.

384,145. MOTOR FOR STREET-CARS. LOUIS B. GIBSON, Pueblo, Colo. Filed Apr. 2, 1888. Serial No. 269,391. (No model.)



Claim.—1. A motor for street-cars, consisting of a source of power, a main driving-shaft, a supplemental shaft, fixed cone-pulleys on the two shafts reversed in position to each other, whereby the motion of the car may be varied, idler-pulleys on the same shafts and a connecting rope or chain between the pulleys on the shafts for communicating the motion of the main shaft to the supplemental shaft, and a driving-connection from the supplemental shaft to the axle of the car, substantially as described.

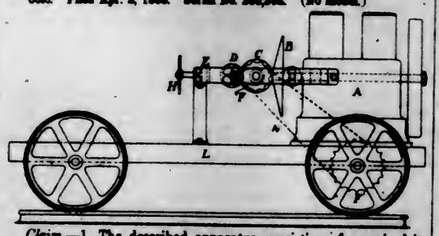
2. A motor for street-cars, consisting of a source of power, a main

driving-shaft, a pulley on said shaft, a supplemental shaft having a pulley fixed thereto, a double set of idler-wheels loosely mounted on said shaft, and connecting ropes or chains extending between the pulleys on the two shafts, one of said driving-ropes being crossed, whereby motion of the car may be reversed.

3. A motor for street-cars, consisting of a source of power, a main driving-shaft, a cone-pulley having a grooved face, a supplemental shaft, a grooved cone-pulley thereon reversed in position to the pulley on the main shaft, idler-pulleys on said shaft, and two connecting ropes or chains for propelling the car in two directions, and a driving-chain between the supplemental shaft and the axle of the car, substantially as described.

4. A motor for street-cars, consisting of a source of power, a main driving-shaft carrying a cone-pulley, and an adjustable supplemental shaft, also carrying a cone-pulley, idler-wheels, connecting-ropes between the pulleys, and a driving-connection between the supplemental shaft and the axle of the car.

884,146. MOTOR FOR STREET-CARS. LOUIS R. GIBSON, Pueblo, Colo. Filed Apr. 2, 1888. Serial No. 269,262. (No model.)



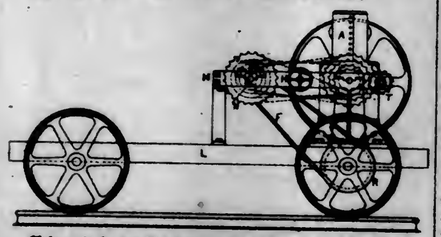
Claim.—1. The described apparatus, consisting of a main driving-shaft, a friction-wheel having its face beveled from the center to the periphery, secured to the end of said shaft at right angles thereto, a supplemental shaft carrying a friction-disk, said shaft being adjustable to make contact between the friction-surfaces, and a driving-connection with the car-axle, substantially as described.

2. The described apparatus, consisting of a main driving-shaft, a friction-wheel secured thereto having its face beveled from the center to the periphery, a supplemental shaft carrying a friction-disk, said disk being adjustable in the shaft to one side or the other of the center, whereby the car is propelled in one direction or the other, means for forcing the disk in contact with the friction-wheel, and driving-connection with the car-axle.

3. The described apparatus, consisting of a driving-shaft, a wheel or disk secured thereto having a beveled front face, a supplemental shaft mounted in an adjustable bracket, a friction-disk feathered on the shaft, means for operating the sliding bracket, means for adjusting the friction-disk, and a driving-connection to the axle, substantially as described.

4. In the described apparatus, the main driving-shaft, the friction-wheel secured thereto having a beveled front face, a shaft in rear of said wheel, carrying idle-pulleys bearing against the rear face of the friction-wheel, an adjustable supplemental shaft, a friction wheel or disk carried thereby adjustable on said shaft, and a driving-connection with the car-axle, substantially as described.

884,147. MOTOR FOR STREET-CARS. LOUIS R. GIBSON, Pueblo, Colo. Filed Apr. 2, 1888. Serial No. 269,263. (No model.)

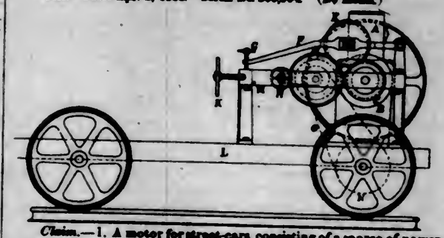


Claim.—1. In combination, a source of power, a main driving-shaft, a supplemental shaft, a driving-connection with the car-axle, and a series of loosely-mounted sprocket-wheels varying in size on the two shafts placed opposite each other, but in reversed position, whereby the speed of the car may be varied, fixed blocks or disks on the shafts for causing the sprocket-wheels to revolve with the shaft, and shifting devices for throwing the wheels into and out of fixed connection therewith.

2. In combination, a source of power, a main driving-shaft, sprocket-wheels mounted loosely thereon, a fixed connection with the shaft adapted to engage the loose wheels, a supplemental shaft having like loose wheels, and means for connecting them with the shaft, sprocket-chains between the wheels, and an idler-sprocket, T, for receiving one of the chains placed in rear of the sprocket-wheel on the main shaft, the chain passing beneath the said sprocket to the idler, whereby when the sprocket is connected with the shaft a reversed motion is given the car, substantially as described.

3. In combination, a source of power, a main driving-shaft, loose wheels thereon, a supplemental shaft pivotally supported at one end and having means of adjustment at the other, loose wheels on said shaft, means for connecting said wheels with the shafts, chains or ropes between the wheels, and a connection with the car-axle, substantially as described.

884,148. MOTOR FOR STREET-CARS. LOUIS R. GIBSON, Pueblo, Colo. Filed Apr. 2, 1888. Serial No. 269,264. (No model.)

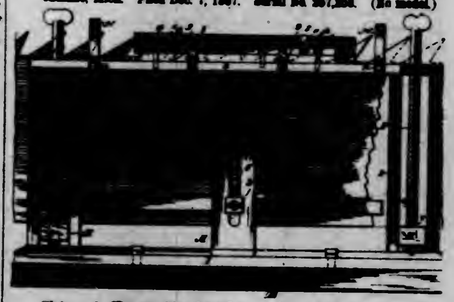


Claim.—1. A motor for street-cars, consisting of a source of power, a main shaft, a supplemental frame, friction-wheels on the main shaft varying in diameter, a supplemental shaft adjustable toward or from the main shaft, friction-wheels on the supplemental shaft, adapted to engage with the wheels on the main shaft, connection between said shaft and the car-axle, and means for adjusting the pulleys on the supplemental shaft laterally, substantially as described.

2. A motor for street-cars, consisting of a source of power, a main driving-shaft carrying pulleys varying in diameter, a supplemental shaft carrying splined pulleys varying in diameter, means for adjusting the pulleys laterally, and an intermediate friction-disk between the main and supplemental shafts, adapted to engage the pulleys of both shafts and to transmit the motion of the main shaft to the supplemental shaft and reverse the movement of the car, substantially as described.

3. A motor for street-cars, consisting of a source of power, a main driving-shaft carrying pulleys varying in diameter, a supplemental shaft mounted in a sliding frame, pulleys varying in diameter splined to said shaft, a yoke for said pulleys, means for adjusting said yoke and pulleys laterally, and a driving-connection from the supplemental shaft to the main driving-shaft, substantially as described.

884,149. DEVICE FOR SIDE-DRESSING SAWS. GEORGE CLARK, Cadillac, Mich. Filed Dec. 7, 1887. Serial No. 257,269. (No model.)



Claim.—1. The combination of a saw-dresser, a support on which such dresser is mounted, a guide for such support, a foot-trip or treadle, a strap or connection between the trip and support, and a guide for such connection, substantially as set forth.

2. In a saw-dresser and as a new article of manufacture, a file adapted to act on or file the under face of a swaged saw-tooth, such file being formed with a smooth bearing-surface, 13, whereby to bear against the saw at the base of the teeth, and with a cutting-surface adjoining and arranged at an incline, whereby to engage the under face of the swaged saw-tooth, substantially as set forth.

3. In a saw-dresser, the improved file herein described, having a smooth bearing-face, 13, and having the rounded or beveled end surface, 14, leading to said bearing-face 13, substantially as set forth.

4. The combination of the framing, the file-supports thereon and adjustable toward and away from each other, and the screws for adjusting said file-supports, substantially as set forth.

5. The combination of saw-dressing files, a support for the back edge of the saw, such support being arranged below the files, whereby the back edge of the saw may form a straight-edge to guide the saw with relation to the files, and suitable framing, substantially as set forth.

6. In a device, substantially as described, the combination of the main frame having slots S, the guides C, having portions c, operating in slots S, the screws for securing such guides, and the file-supports, substantially as set forth.

7. In a device, substantially as described, the combination of the framing, the file-supports, the saw-supports E, and the screws for adjusting said supports, substantially as set forth.

8. The combination of the framing, the file supports or carriers, the files clamped thereon and having smooth bearing-faces 13, and the rounded or beveled end surface, 14, and the support for the saw, substantially as set forth.

9. In a saw-dresser, the combination of the side frames, the file supports or carriers, the saw support and guides, and the connecting arch or arches, substantially as set forth.

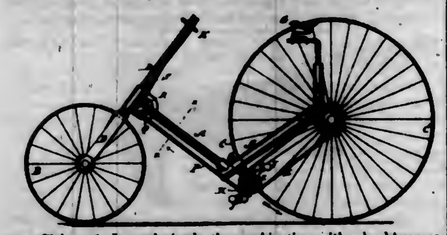
10. In a device for dressing saws, the combination of the framing, the file supports or carriers, the saw-support, and the pulleys O, substantially as set forth.

11. In a saw-dresser, the combination of the framing, the file supports or carriers having main plates provided with seats 10 for the files, clamp-plates 11, and set-screws 12, and screws for adjusting said file-supports, substantially as set forth.

12. The improved saw-dressing device herein described, consisting of the side frames having slots S, the saw-guide having portions c fitting in said slots, the screws for securing said guides in position, the saw-supports E, the threaded screws or shafts for adjusting said saw-supports, the file supports or carriers, and the arch or arches connecting the upper ends of said side frames, substantially as and for the purposes specified.

13. In a saw-dresser, the framing and a support for the saw, combined with the files having smooth bearing-surface 13 and a cutting-surface adjacent the said bearing-surface, and supports or carriers for such files, whereby they may be held with their smooth and cutting surfaces, respectively, against the saw below the swage and in contact with the under face of such swage, substantially as and for the purposes specified.

884,150. VELOCIPEDE. CHARLES H. GOODELL, Poughkeepsie, N. Y. Filed Jan. 20, 1888. Serial No. 261,256. (No model.)



Claim.—1. In a velocipede, the combination, with a backbone or frame, a driving-wheel, and a steering-wheel, of a steering-bar centrally pivoted to the frame of the steering-wheel, a pulley connected to the driving-wheel and having a friction-clutch, and a connection between the pivoted steering-bar and the clutch, substantially as set forth.

2. The combination, with a backbone or frame and a steering and driving wheel, of friction-clutches on the shaft of the driving-pulley, a steering-bar centrally pivoted to the frame, and links connecting said steering-bar to the friction-clutches, substantially as set forth.

3. The combination, with a backbone or frame and a steering and driving wheel, of a friction-clutch connected to said driving-wheel and an actuating-handle and releasing mechanism connected to said friction-clutch, substantially as set forth.

4. The combination, with a backbone or frame, a steering and driving wheel, and a friction-clutch connected to said driving-wheel, of an actuating-handle and a bell-crank lever connected to said handle and to said friction-clutch, substantially as set forth.

5. The combination, with a backbone or frame, and with a driving and steering wheel, of friction-clutches on the shaft of the driving-pulley, bell-cranks mounted on the frame and connected to said friction-clutches, links connected to the bell-cranks, and a steering-bar centrally mounted to oscillate on the frame and connected to said links, substantially as shown and set forth.

6. In a velocipede, the combination, with a backbone or frame, a driving-wheel, and a steering-wheel, of an actuating-handle and an adjustable connection between said handle and the driving-wheel, substantially as set forth.

7. In a velocipede, the combination, with a backbone or frame, a steering-wheel, and a driving-wheel, of an actuating-handle adjustably mounted on the vehicle and adjustably connected to the driving-wheel, substantially as set forth.

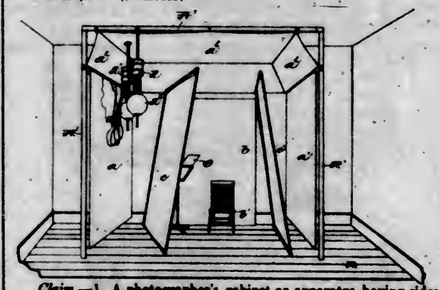
8. The combination, with a backbone or frame, and with a steering and driving wheel, of an actuating-handle, a clutch provided with gripping-rollers L, and made to connect with said actuating-handle and driving-wheel, and releasing-studs N, for holding said rollers L in their releasing position, substantially as set forth.

9. The combination, with the backbone, driving-wheel, and steering-wheel of a velocipede, of a pulley, I, connected with the driving-wheel, a friction-clutch comprising a rotary ring, K, and gripping-rollers L between the ring and a hub on the pulley, a centrally-pivoted steering-bar, E, and connections between said bar and rotary ring, substantially as described.

10. The combination, with the wheel C, treadles J, and the pulley I, connected with said wheel and treadles and having a hub provided with inclined shoulders T, of the rotary ring K, the rollers L, located between said ring and the pulley-hub, the slotted disk U, and the ring M, having pins N extending through the slotted disk, substantially as described.

11. The combination, with a backbone or frame, and with a driving and steering wheel, of clutches on the shaft of the driving-pulley, bell-cranks mounted on the frame and connected to said clutches, links connected to the bell-cranks, and a steering-bar centrally mounted to oscillate on the frame and connected to said links, a lever, O, being applied to said clutches to release said clutches, substantially as set forth.

884,151. APPARATUS FOR PHOTOGRAPHING BY ARTIFICIAL LIGHT. FREDERIC E. GOULD, Hillard, Mass. Filed May 9, 1887. Serial No. 237,577. (No model.)



Claim.—1. A photographer's cabinet or apparatus having sides *a a'* and top a^2 of translucent material rendered opaque on its outer side, and an artificial light located in said cabinet, combined with a translucent screen, *c*, between the said light and the subject to be photographed, and with a second screen located on the opposite side of the said subject, substantially as described.

2. A photographer's cabinet or apparatus having sides *a a'* and top a^2 of translucent material rendered opaque on its outside, an artificial light located in said cabinet, a translucent screen between the said light and the subject to be photographed, and a second screen located on the opposite side of the said subject, combined with a screen, *p*, as and for the purpose specified.

884,152. DEMAGNETIZER. JOHN GRAVES, St. Louis, Mo. Filed Aug. 15, 1887. Serial No. 246,998. (No model.)



Claim.—1. In a demagnetizer, in combination with the magnets and wires, the brushes and a series of pins upon which the brushes bear, said pins being connected with opposite terminals of the magnet, and the alternate pins only being connected with the same terminal of the magnet, whereby the current is reversed or alternated through the magnets, substantially as set forth.

2. In a demagnetizer, in combination with the magnets and wires, the brushes and cylinder provided with rings and pins upon which the brushes bear, and connection between the rings and pins, the whole being arranged in such a manner that the current is reversed or alternated in the magnets as the cylinder is turned, substantially as and for the purpose set forth.

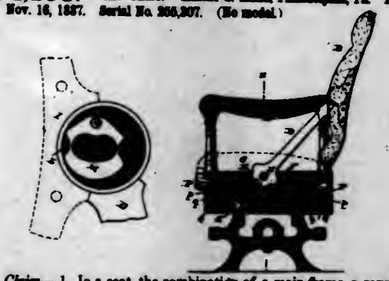
3. In a demagnetizer, in combination with the magnets and wires, the brushes and cylinder, the latter being provided with means for turning it, and with rings upon which two of the brushes bear, and also being provided with series of pins 19, 20, 27, and 28, upon which the brushes bear, all substantially as and for the purpose set forth.

4. In a demagnetizer, the combination, with an electro-magnet having two terminals and with the primary conducting-wires, of contact-brushes connected with said wires, a series of contact-points arranged in pairs and adapted to contact with said brushes, each pair of points being connected with both of said terminals, and the alternate points only being connected with the same terminal of the magnet, substantially as set forth.

5. The combination, with the primary wires 6 7 and an electro-magnet, of a revoluble cylinder, peripheral conductors on said cylinder insulated from each other, contacts bearing upon said peripheral conductor and connected with said wires 6 7, two pairs of commutator-brushes, each pair being connected with both terminals of the magnet, and the brushes of opposite sign being connected to the same terminal, and a row of contact-points for each brush connected with the peripheral conductors and adapted to meet said brushes in pairs alternately.

6. In a demagnetizer, the combination of the electro-magnets having two terminals, the brushes 24, 25, 31, and 32, arranged in pairs, wires 9 10, connecting one brush of each pair with one terminal of the magnet, and wires 9½ 10½, connected one brush of each pair with the opposite terminal, a revoluble cylinder provided with a crank and composed of non-conducting material, conducting rings 14 15 on said cylinder, battery-wires 6 7, having connection with said rings, and two rows of contact-pins, 19 20 and 27 28, connected with rings 14 15, respectively, and the pins connected with each ring adapted to contact alternately with brushes of like sign.

884,158. CAR-SEAT. HENRY S. HALE, Philadelphia, Pa. Filed Nov. 16, 1887. Serial No. 255,307. (No model.)



Claim.—1. In a seat, the combination of a main frame, a reversible seat-back, connecting-arms hinged at one end to the main frame and at the other to the seat-back by a hinge-joint, a lug on the back and close to the hinge-joint, and a pivoted swinging gravity-pawl with two points, which automatically engage on opposite sides of the lug in its two extreme positions, said pawl being carried on the connecting-arms, the said pawl and lug being adapted to lock the seat-back and connecting-arms in their two extreme positions and unlock them in their highest position.

2. In a seat, the combination of the main frame, the seat-back, connecting-arms hinged at one end to the main frame and at the other to the seat-back by a positive hinged joint, a single independent pivoted pawl, M, having two oppositely-located points to engage on opposite sides of a lug on the seat-back, a weighted portion and an open central portion to allow the passage of the hinge between the connecting-arms and back, and carried by each of said connecting-arms and operating by gravity to automatically lock and unlock the said back and arms in reversing the seat-back, and a lug or projection on each end of the seat-back and close to the hinged joints to work in connection with the gravity-pawl.

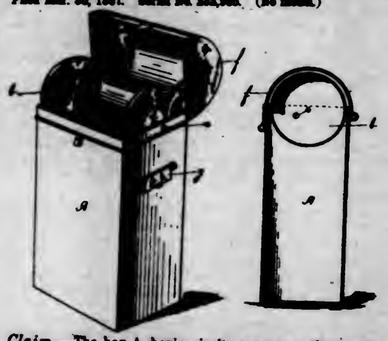
3. In a seat, the combination of the main frame, the back, connecting-arms hinged at one end to the main frame and at the other to the seat-back, and provided with recessed parts, an independent locking device on each arm and arranged in the said recessed part, consisting of a single pawl, M, having notches *m*, pivoted to said connecting-arms at N, and a lug located on each of the seat-back hinges and projecting into said recessed parts of the connecting-arms, to engage with the notches of the pawl and enable it to lock the seat-back on its connecting-arms by the operation of gravity when the back is reversed.

4. In a seat, the combination of the main frame A, seat-back B, connecting-arms D, pawls M, carried by said arms D and having the two recesses or notches *m*, and hinge-plate I of the back, having the lug L on its disk-extension J, adapted to engage in the recesses *m* and lock the arm and seat-back together by the force of gravity when in their lowest positions.

5. In a seat, the combination of main frame A, seat-back B, hinged connecting-arms D between the seat-back and main frame, and each having the disk-extension S, provided with the pin N, the hinge-plates I, each having the disk-extension J, and secured to the seat-back and provided with the lug L, and the gravity-pawl M, pivoted upon the pin N, and having the recesses or notches *m* to receive the lug L, substantially as and for the purpose specified.

6. In a seat, the combination of the main frame A, seat-back B, hinged connecting-arms D between the seat-back and main frame, and each having the disk-extension S, the pawls M, pivoted to and contained within said disk-extensions, and having the notches *m* on opposite sides of their pivotal point, the hinge-plates I, secured to the back, and each having the disk-extension J and lug L to engage with the notches *m* in the pawls, the hinge-pivot K, and the cover or cap-plate T, to hold said disk-extension J to the disk-extension S.

884,154. LETTER-BOX. DENNIS HARRIGAN, Somerville, Mass. Filed Mar. 30, 1887. Serial No. 232,935. (No model.)



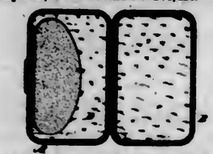
Claim.—The box A, having in its upper part the receptacle *b*, turning on the axis *c*, in combination with the gear *d*, the gear *e*, and the cover *f*, substantially as and for the purpose above described.

884,155. FELT BOOT. HENRY W. HATHORN, Clear Lake, Iowa. Filed Feb. 13, 1888. Serial No. 263,860. (No model.)



Claim.—The combination, with a felt boot having a strap or loop by which it may be removed, of a pocket or receptacle into which the free end of the strap or loop may be inserted, substantially as described.

884,156. BOX OR RECEPTACLE. EDWARD J. HASEK, Brooklyn, N. Y. Filed Apr. 12, 1888. Serial No. 270,416. (Model.)

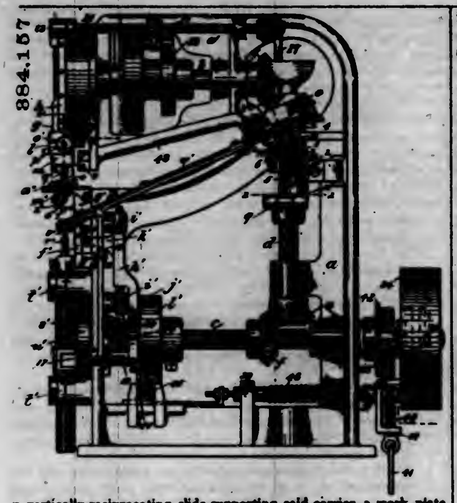


Claim.—1. A box composed of a body, A, a lid, B, and a casing, D, in said body, having an opening, substantially as described.

2. A box composed of a body, A, a lid, B, a casing, D, in said body, having an opening, and a cover, E, for said opening, substantially as described.

884,157. EYELETING-MACHINE. LORENZO D. HAWKINS, Stoneham, and JOHN C. PAINE, Boston, Mass., assignors to the Combination Power Punch and Eyeleting Machine Company, Portland, Me. Filed Oct. 17, 1887. Serial No. 252,577. (No model.)

Claim.—1. In an eyeleting-machine, the combination of the combined punch and top set, a horizontally-reciprocating carrier therefor,



a vertically-reciprocating slide supporting said carrier, a work plate or table, a die-block and a vertically-reciprocating carrier therefor, a vertically-reciprocating bottom set having an eyelet-engaging finger, and an oscillating or reciprocating roadway, all arranged and operating substantially as set forth.

2. The combination of the combined punch and top set, the carrier therefor, the vertically-reciprocating slide having a guide or way on which said carrier is reciprocated horizontally, the reciprocating bar engaged with the carrier, and means, substantially as described, for varying the reciprocating movement of the carrier, and thereby varying the feed movement of the punch, as set forth.

3. The combination of the combined punch and top set, the carrier therefor, the vertically-reciprocating slide having a guide or way on which the carrier is reciprocated horizontally, means, substantially as described, for varying the length of the reciprocating movements of the carrier and punch, a movable stop for said carrier, and means for adjusting said stop and for holding it at any point to which it may be adjusted, as set forth.

4. The combination of the punch and top set, the carrier therefor, the means for reciprocating the carrier vertically, the sliding bar *r*, the slotted lever *t*, and means for oscillating said lever, whereby the carrier is reciprocated horizontally, and the adjustable fulcrum *u* for said lever, whereby the length of the reciprocating movements of the carrier may be adjusted, as set forth.

5. The combination, with the punch and operating mechanism therefor, substantially as described, of the work-table, the die-block having a female die to co-operate with the punch, the carrier *f'*, to which said block is detachably secured, and the devices for vertically reciprocating the die-block carrier, as set forth.

6. The combination, in an eyeleting-machine, of the punch and die-block detachably secured to the machine, the eyelet inserting and upsetting devices, and the eyelet reservoir and roadway secured to the machine by means, substantially as described, whereby said reservoir and roadway can be readily removed and replaced, as set forth.

7. The reservoir having the agitator, combined with the angular sleeve 3, supporting the reservoir, and the shafts 5 6, geared together, as described, one of said shafts being detachably engaged with the hub of the agitator, while the other is provided with operating devices whereby said shafts and agitator are oscillated, as set forth.

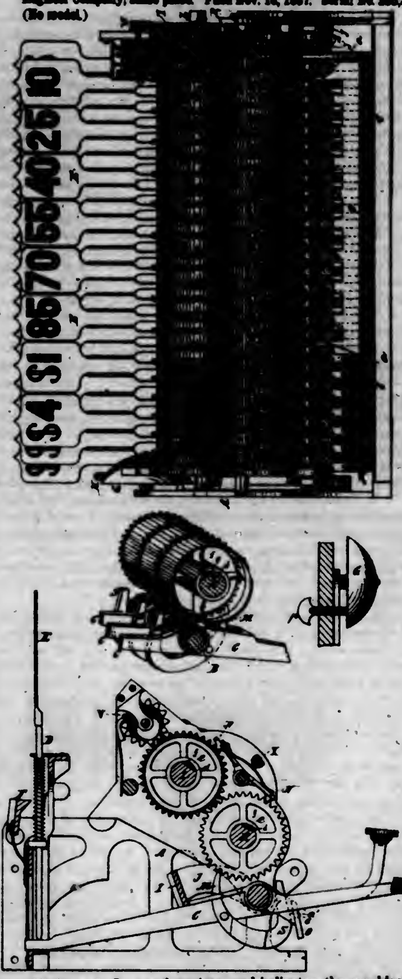
8. The combination of the reservoir and roadway, the latter having the lug 14 and the former having the agitator provided with a projecting shank, 12, the oscillating lever 15, having a socket to receive the lug 14, and the fixed sleeve 3, supporting the reservoir and provided with the oscillating socketed shaft 6, in the socket of which the shank of the agitator is removably inserted, as set forth.

9. The combination, with the eyelet inserting and setting devices, of the pivoted roadway, a spring which presents said roadway to the eyelet-inserting finger and permits said roadway to be held back from said finger, and an oscillating lever whereby the roadway is moved back automatically, as set forth.

10. The combination, with the eyelet inserting and setting devices, of the pivoted roadway, a spring which presents said roadway to the eyelet-inserting finger and permits said roadway to be held back from said finger, and an oscillating lever whereby the roadway is moved back automatically, and devices, substantially as described, whereby the operator may hold the roadway back to intermit the insertion of the eyelets, as set forth.

11. In the eyeleting-machine herein described, the combination of the shaft *c*, the clutch 36, attached thereto, having the cam-shaped flange 42, the sliding driving-pulley, the sliding spring-impelled bar 37, engaged with said pulley and provided with the spring-impelled pin adapted to engage the flange 42, and provided with means whereby it may be depressed by the operator, the wedge 44, secured to said bar, and the brake-shoe 45, arranged to be pressed by said wedge against a disk on the shaft *c*, all arranged and operating substantially as set forth.

884,158. CASH REGISTER AND INDICATOR. JOHN F. READY and JOHN H. PATTERSON, Dayton, Ohio, assignors to the National Cash Register Company, same place. Filed Nov. 16, 1887. Serial No. 255,311. (No model.)



Claim.—1. In a cash register and indicator, the combination, with the five-cent-registering wheel and a series of keys indicating odd multiples of five above the first power, of a five-cent bar independent of the five-cent key and actuated by said series of keys, and a dog pivoted to said five-cent bar and engaging with the teeth of the five cent wheel, substantially as and for the purpose described.

2. In a cash register and indicator, the combination, with a five-cent-registering wheel, a series of wheels registering even multiples of five, and a series of keys indicating odd multiples of five above the first power, of a five-cent bar independent of the five-cent key and

actuated by said series of keys, a dog pivoted to said five-cent bar and engaging with the teeth of the five-cent wheel, and a dog pivoted to each of said odd-numbered keys and engaging with the teeth on the wheel registering the next lower even multiple of five, substantially as and for the purpose described.

3. In a cash register and indicator, the combination, with a five-cent-registering wheel, a series of wheels registering even multiples of five, and a series of keys indicating even and odd multiples of five above the first power, of a five-cent bar actuated by the odd-numbered keys, a dog pivoted to said five-cent bar and engaging with the teeth of the five-cent wheel, a dog pivoted to each odd-numbered key and engaging with the teeth of the wheel registering the next lower even multiple of five, and a dog pivoted to each even-numbered key and engaging with the teeth of the wheel registering the multiple of five indicated by such key, substantially as described.

4. In a cash register and indicator, the combination, with a five-cent-registering wheel, a series of wheels registering even multiples of five, and a series of keys indicating five and the even and odd multiples thereof, of a five-cent bar independent of but arranged to be actuated by each of the odd-numbered keys, a dog pivoted to said five-cent bar and engaging with the teeth of the five-cent wheel, a dog pivoted to each odd-numbered key excepting the five-cent key and engaging with the teeth of the wheel registering the next lower even multiple of five, and a dog pivoted to each even-numbered key and engaging with the teeth of the wheel registering the multiple of five indicated by said key, substantially as and for the purpose described.

5. In a cash register and indicator, the combination, with the five-cent-registering wheel, a series of keys indicating odd multiples of five above the first power, and a series of tablet-rods and indicating-tablets, one for each of said odd-numbered keys, of a five-cent bar independent of the five-cent key and actuated by said series of keys, and a dog pivoted to said five-cent bar and engaging with the teeth of the five-cent wheel, substantially as and for the purpose described.

6. In a cash register and indicator, the combination, with a five-cent-registering wheel, a series of wheels registering even multiples of five, a series of keys indicating both even and odd multiples of five above the first power, and a series of tablet-rods and indicating-tablets, one for each of said keys, of a five-cent bar actuated by the odd-numbered keys, a dog pivoted to said five-cent bar and engaging with the teeth of the five-cent wheel, a dog pivoted to each odd-numbered key and engaging with the teeth of the wheel registering the next lower even multiple of five, and a dog pivoted to each even-numbered key and engaging with the teeth of the wheel registering the multiple of five indicated by said key, substantially as and for the purpose described.

7. In a cash register and indicator, the combination, with a five-cent-registering wheel, a series of keys indicating five and the odd multiples thereof, and a series of tablet-rods and indicating-tablets, one for each key, of a five-cent bar independent of but arranged to be actuated by each of said keys, and a dog pivoted to said five-cent bar and engaging with the teeth of the five-cent wheel, substantially as and for the purpose described.

8. In a cash register and indicator, the combination, with a five-cent-registering wheel, a series of wheels registering even multiples of five, a series of keys indicating five and the even and odd multiples thereof, and a series of tablet-rods and indicating-tablets, one for each key, of a five-cent bar independent of but arranged to be actuated by each of the odd-numbered keys, a dog pivoted to said five-cent bar and engaging with the teeth of the five-cent wheel, a dog pivoted to each odd-numbered key excepting the five-cent key and engaging with the teeth of the wheel registering the next lower even multiple of five, and a dog pivoted to each of the even-numbered keys and engaging with the wheel registering the multiple of five indicated by said key, substantially as and for the purpose described.

9. In a cash register and indicator, the combination of a series of operating-keys representing the even multiples of five, another series of keys representing the odd multiples of five, registering mechanism operated by said keys, a bar actuated by the operation of any one of the keys of either series, a sales-registering wheel and connecting mechanism between said vibrating bar and sales-registering wheel, whereby, upon the operation of any key of either series, said sales-registering wheel will be actuated to register the total number of times the machine has been operated, substantially as described.

10. In a cash register and indicator, the combination of a series of operating-keys representing the even multiples of five, another series of keys representing the odd multiples of five, registering mechanism operated by said keys, a vibrating bar actuated by the operation of any one of the keys of either series, a sales-registering wheel, and a dog pivoted to said vibrating bar and engaging with the teeth of said sales-registering wheel, substantially as described, and for the purpose specified.

11. In a cash register and indicator, the combination, with a series of registering-wheels, of a series of holding-dogs engaging therewith, a series of springs bearing with pressure on said dogs and tending to hold them in engagement with the wheels, and a rock-shaft extending transversely across the machine and operating, when turned in one position, to bear upon the springs and increase their pressure upon the dogs, and when turned in another position to leave said springs bearing with normal pressure only on said dogs, substantially as and for the purpose described.

12. In a cash register and indicator, the combination, with a series of registering-wheels, of a series of holding-dogs engaging therewith, a series of springs bearing with pressure on said dogs and tending to hold them in engagement with the wheels, and a rock-shaft eccentrically journaled in and extending transversely across the machine and operating, when turned in one position, to bear upon the springs and increase their pressure upon the dogs, and when turned in another position to leave said springs bearing with normal pressure only on said dogs, substantially as and for the purpose described.

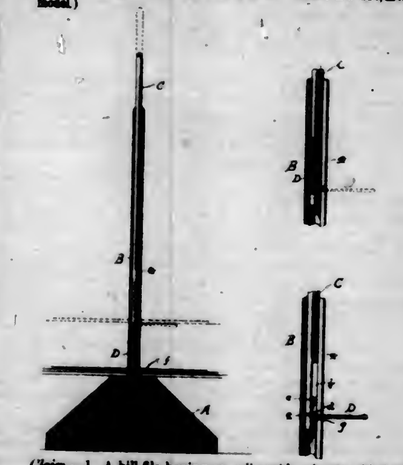
13. In a cash register and indicator, the combination, with a series of registering-wheels, of a series of keys pivoted on an axis parallel to the axis of the registering-wheels, and a series of substantially U-shaped dogs pivoted to the keys in rear of the axis of the latter and embracing said axis, one end of said dogs co-operating with the registering-wheels to propel them and the other end co-operating with said wheels to arrest them after being so propelled, substantially as described.

14. The combination, with the shaft K, provided with a longitudinal groove, *d*, and the registering-wheels strung upon said shaft and the bores of their hubs provided with notches *f*, of the interposed split springs *e*, confined in the groove *d* of the shaft, substantially as and for the purpose described.

15. In a cash register and indicator, the combination, with the tablet-rods and tablets, tablet-supporting wing, gong, gong-hammer and its extension, a series of keys, and a vibrating frame which is actuated whenever any key is operated, of the bell-crank lever A', pivoted to the frame of the machine and to the vibrating frame, and carrying at its upper end a pivoted tripping-dog, *k*, which engages with a wiper-block upon the wing-extension, substantially in the manner and for the purpose described.

16. In a cash register and indicator, the combination, with the gong G, supported on the interior of the casing, of the thumb-screw *p*, screwed through the casing from the outside and impinging on the gong to form an adjustable damper therefor, substantially as described.

384,159. PAPER-FILE. George P. Henderson, Washington, D. C., assignor, by mesne assignments, to John C. Brown and Edwin H. Bond, both of same place. Filed Dec. 9, 1887. Serial No. 257,427. (No model.)



Claim.—1. A bill-file having an adjustable wire provided with a pivoted arm, substantially as described.

2. The combination, with a stationary slotted tube, of a wire adjustable in said tube and provided with an arm extending through said slot and beyond said tube, substantially as described.

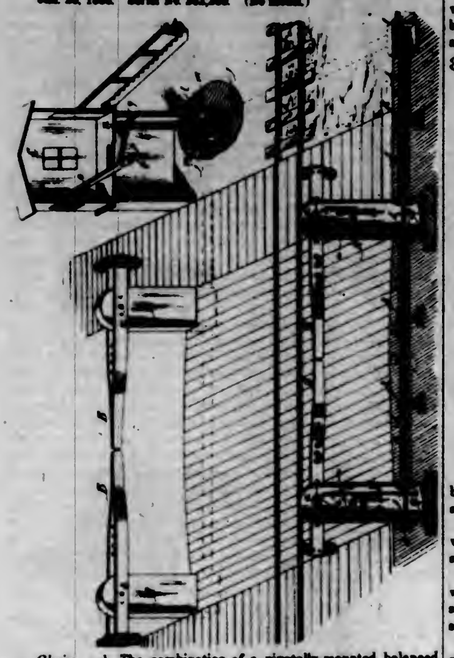
3. The combination, with the slotted tube, of the wire rotatable and vertically adjustable in said tube and a folding arm carried by said wire, substantially as described.

4. The combination, with the slotted tube, of the wire rotatable and vertically adjustable in said tube and formed with a recess, *b*, and an arm pivoted in said recess, substantially as described.

5. The combination, with the slotted tube with a shoulder, *f*, below said slot, of the wire vertically adjustable in said tube and an arm pivoted at its lower end to said wire, substantially as described.

6. The combination, with the slotted tube, of the wire movable therein and formed with recess *b*, the arm D, pivoted at its lower end to said wire within said recess, and a spring, *c*, within the recess acting on the arm, substantially as described.

384,160. GATE FOR RAILWAY-CROSSINGS. Richard W. Hill, Chicago, Ill., assignor to the American Lead and Zinc Works. Filed Jan. 26, 1888. Serial No. 262,209. (No model.)



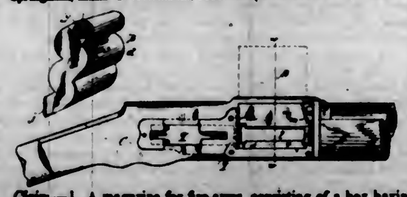
Claim.—1. The combination of a pivotally-mounted balanced gate-bar and a suitably-mounted rock-shaft actuating said bar by crank-and-pitman connection therewith, said rock-shaft being provided with universal joints and actuated by a swinging lever connected with the extremity thereof.

2. In a gate for railway-crossings, the combination of two independent pairs of pivoted arms, two rock-shafts, each actuating a pair of said arms by suitable connections, vertical rock-shafts joined to the first, respectively, by universal couplings, and two adjacent pivoted hand-levers actuating said vertical rock-shafts, whereby a single operator may at will operate either pair of said arms independently or both pairs simultaneously.

3. In a gate for railway-crossings, the combination of a pair of suitably-pivoted bars, a horizontal rock-shaft actuating said bars by suitable connections, a vertical shaft having at its upper extremity a rigid crank-arm, a pivoted lever connected by a link to said crank-arm, and a bar connected with the lower end of said vertical shaft and said horizontal rock-shaft by universal couplings, substantially as set forth.

4. The combination of the guides, pitmen, connecting-rods and crank-arms, the tumbling-rod, and the axle of a balanced gate, substantially as and for the purpose set forth.

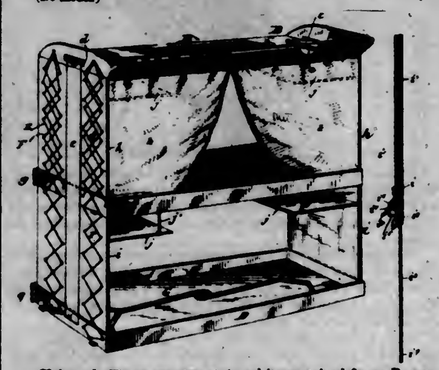
384,161. MAGAZINE FOR FIRE-ARMS. Solomon K. Hindley, Springfield, Mass. Filed Feb. 20, 1888. Serial No. 265,048. (No model.)



Claim.—1. A magazine for fire-arms, consisting of a box having its two opposite side walls internally corrugated, and having in one end wall an opening through which to insert cartridges, and also having in its lifter side wall a discharge-opening, and means whereby the said magazine may be attached to the side of a gun-frame, substantially as and for the purpose described.

2. A magazine for fire-arms, consisting of a box having its two opposite sides internally corrugated and provided near one end wall with the grooves *f f*, and provided with a rear end opening, through which to insert cartridges, and a discharge-opening, and means whereby the said magazine may be attached to a gun-frame, substantially as and for the purpose described.

384,162. BERTH FOR CARS, VESSELS, &c. Alonzo De Witt Hosier, Bergen Point, N. J. Filed Mar. 2, 1883. Serial No. 303,006. (No model.)



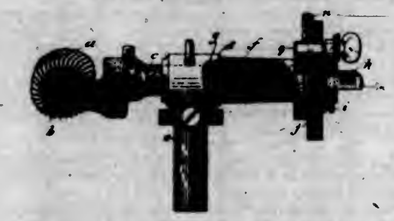
Claim.—1. The compartment A and its contained frame B, combined with berths C D, straps *e*, and lazy-tongs E and F, substantially as described.

2. A vertically-movable berth having end projections, *g*, provided with anti-friction-rollers, combined with guides *f* for said projections, substantially as described.

3. Suspended berths movable bodily in a vertical direction and without disturbing their horizontality, combined with lazy-tongs for staying and assisting them in their movement, substantially as described.

4. A sectional partition the sections of which telescope one within another, combined with spring-bolts on one section to engage openings in another to retain the parts in adjusted position, and a cam-rod for operating said bolts simultaneously, substantially as described.

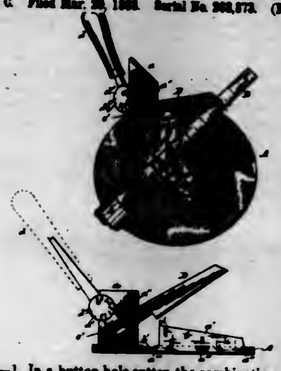
384,163. DEVICE FOR ADJUSTING THE STITCH-WHEELS OF KNITTING-MACHINES. Frank P. Holt, Laconia, N. H. Filed Feb. 13, 1882. Serial No. 264,513. (No model.)



Claim.—1. The stitch-wheel and its supporting-rod, the latter being screw-threaded at its outer end, combined with the bearing for the rod, a spring for pressing the wheel and its rod forward or in one direction in its bearing, an adjusting-nut on the outer end of the rod for drawing the latter rearwardly or against the strain of the spring, an arm, lever, or projection connected with said nut, and stop-pin connected with a fixed part of the device for limiting the extent of movement of the lever or projection, substantially as set forth.

2. The stitch-wheel and its supporting-rod, the latter being screw-threaded at its outer end, combined with the bearing for the rod, a spring for pressing the wheel and its rod forward or in one direction in its bearing, an adjusting-nut on the outer end of the rod for drawing the latter rearwardly or against the strain of the spring, an arm, lever, or projection provided with a stop-pin connected with said nut, a bracket connected with the sleeve and provided with an adjustable stop-pin, and a fixed stop-pin connected with said bracket or sleeve, substantially as set forth.

884,164. BUTTON-HOLE CUTTER. JAMES R. HOPKINS, Washington, D. C. Filed Mar. 29, 1888. Serial No. 268,873. (No model.)



Claim.—1. In a button-hole cutter, the combination, with the cutting-blades *d'* D, of a transversely-movable gage for spacing the button-holes, said gage being provided with a spring-clamp to receive and hold the edge of the fabric to be cut, substantially as shown and described.

2. In a button-hole cutter, the combination, with the cutting-blades *d'* D, one of which is provided with a holding-point, *i*, of a transversely-movable gage for spacing the button-holes, said gage being provided with a clamp to receive and hold the edge of the fabric to be cut, substantially as shown and described.

3. In a button-hole cutter, the combination, with the fixed cutting-blade *d'*, provided with a holding-point, *i*, of the gage C *c'*, to gage the distance between the button-holes and the edge of the fabric, substantially as shown and described.

4. In a button-hole cutter, the combination, with the fixed and pivoted cutting-blades *d'* D, the first of which is provided with a holding-point, *i*, of the transversely-movable gage B, for spacing the button-holes, and the gage C *c'*, for gaging the distance between the button-holes and the edge of the fabric, substantially as shown and described.

5. In a button-hole cutter, the combination of the base-plate A, provided with a fixed cutting-blade, *d'*, and a vertical standard in line with said blade, and a vibrating or swinging cutting-blade, D, pivoted to said standard and having a lever-handle by which it may be operated, substantially as shown and described.

6. In a button-hole cutter, the combination, with the base-plate A, provided with a fixed cutting-blade, *d'*, and a vertical standard in line therewith, of a vibrating or swinging cutting-blade, D, pivoted to said standard and having a lever-handle by which it may be operated, and an adjustable stop to limit the movement of the blade D in the cutting direction, substantially as shown and described.

7. In a button-hole cutter, the combination, with the base-plate A, provided with a fixed cutting-blade, *d'*, and a vertical angular standard, *a c*, in line therewith, the angular part *c* of said standard having a vertical slot, *a''*, of a vibrating or swinging cutting-blade, D, pivoted to said standard and working through said slot and having a lever-handle by which it may be operated, and an adjustable stop to limit the movement of the blade D in the cutting direction, substantially as shown and described.

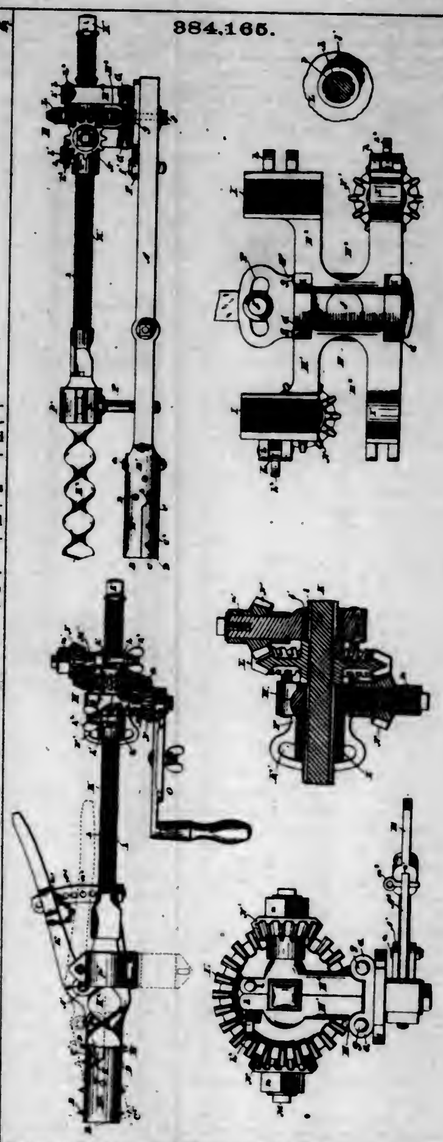
884,165. MINING-DRILL. JOHN E. HOWELLS, Plymouth, assignor of one-half to Richard M. Howells, Wilkes-Barre, Pa. Filed June 8, 1887. Serial No. 240,642. (No model.)

Claim.—1. In a mining-drill, a stock carrying the drilling mechanism and provided on its forward end with a holder or securing device composed of two expansible jaws having gripping-surfaces at their forward and rear ends and pivotally secured to each other at a point between their forward and rear gripping-surfaces, and devices for operating said jaws, whereby the gripping-surfaces of the same may be expanded on each side of the pivotal point, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

2. In a mining-drill, the stock A, carrying the drilling mechanism and having on its forward end the stationary jaw B, formed in two semi-cylindrical parts, B' B², in combination with the removable jaw C, formed in two semi-cylindrical parts, C' C², centrally pivoted to the jaw B and forming with said jaw a drill-holding head, and provided with the operating-lever E, all arranged and operating substantially as shown and described.

3. In a mining-drill, the combination of the stock A, carrying the drilling mechanism and having on its forward end the stationary jaw

884,165.



B, formed in two semi-cylindrical parts, B' B², the movable jaw C, formed in two semi-cylindrical parts, C' C², centrally pivoted to the jaw B and forming with said jaw a drill-holding head, the operating-lever E, having the slot *e'* and the segmental arm A², secured to the stock and provided with pin-holes *a²*, and the securing-pin *a²*, all arranged and operating substantially as shown and described.

4. In a mining-drill, a suitable stock and a plate or turn-table pivotally secured to the rear end of the stock, in combination with a supporting-frame composed of two separable parts, each hinged to the plate or turn-table and having an internally-screw-threaded sleeve formed in the frame, and a screw-feed shaft mounted in the screw-threaded sleeve and having its rear end shouldered or keyed to receive a handle and provided on its forward end with a suitable bit, all constructed, arranged, and operating substantially as shown and described.

5. In a mining-drill, a suitable stock, a plate or turn-table pivotally secured to said stock, a supporting-frame for the drill and operating mechanism, formed in two separate parts, hinged to the plate or turn-table, and having its central portion cut away, as described, and provided with an internally-threaded sleeve and smooth bearing in a line with each other and on opposite sides of its cut-away portion, in combination with a double bevel-gear located in the cut-away portion of the supporting-frame, and having its hub extended and mounted in the bearing on said frame, and provided on the inside of its hub with lugs or keys, a screw-feed shaft provided with longitudinal grooves or key-seats and mounted in the screw-threaded sleeve and extending through the hub of the bevel-gear, the lugs or keys in said hub engaging with the grooves or key-seats on the shaft, and suitable bevel-pinions mounted on bearings projecting from the opposite sides of the supporting-frames, said pinions engaging with the opposite sides of the bevel-gear and being keyed to receive a crank-handle, all constructed, arranged, and operating substantially as shown and described.

6. In a mining-drill, a stock, A, provided on its forward end with a suitable drill-holding head, a plate or turn-table, F, pivotally secured to the rear end of the stock and provided with the segmental slot F' and clamping-bolt *f'*, a supporting-frame, H, formed in two separable parts, H' H², each hinged to the plate F, and having the internally-screw-threaded sleeve I, in combination with a screw-feed shaft, K, mounted in the screw-threaded sleeve and having its rear end shouldered or keyed to receive a crank-handle, and provided on its forward end with a suitable bit, all constructed and arranged substantially as shown and described.

7. In a mining-drill, a stock, A, a plate or turn-table, F, pivotally secured to said stock, a supporting-frame, H, formed in two separable parts, H' H², hinged to the plate F and having its central portion recessed or cut away at H², and provided with the internally-screw-threaded sleeve I and bearing I' in a line with each other and on opposite sides of the cut-away portion of the frame, in combination with a double bevel-gear, L, located in the cut-away portion of the frame and having its hub *l'* extended and mounted in the bearing I', and provided on the inside of its hub with lugs or keys *l*, a screw-feed shaft, K, provided with longitudinal grooves or key-seats *k* and mounted in the screw-threaded sleeve I and extending through the hub of bevel-gear L, the lugs or keys *l* in said hub engaging with the grooves or key-seats *k* on said shaft, and suitable bevel-pinions, N N', mounted on bearings M M', projecting from opposite sides of the supporting-frame, said pinions engaging with opposite sides of the bevel-gear and being keyed at *n n'* to receive crank-handles, all constructed, arranged, and operating substantially as shown and described.

884,166. HAIR-SPRING COLLET AND STUD. HENRY HOWARTH, Waltham, Mass. Filed Feb. 13, 1888. Serial No. 263,955. (No model.)

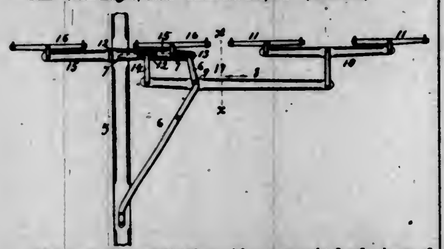


Claim.—1. A hair-spring stud provided with the vertical and horizontal openings, and the vertical locking-pin, substantially as specified.

2. The combination, with the hair-spring, of the collet having the horizontal and vertical intersecting openings, and the pin inserted in the vertical opening.

3. The combination, with the hair-spring, of the stud having the intersecting openings, the collet having the intersecting openings, and the locking-pins, substantially as specified.

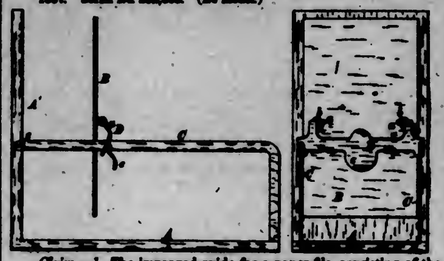
884,167. FOUR-HORSE EVENER. CHARLES C. ISENHOUTH, Huron, Dak. Filed Aug. 6, 1886. Serial No. 210,194. (No model.)



Claim.—1. The combination, with a team-pole, 5, of a brace, 6, secured at one end thereto, a tie, 7, rigidly connecting the other end of the brace with the pole, a lever, 8, eccentrically pivoted to the said brace, the lever 12, pivoted at one end to the same brace, and a tie, 14, connecting the short arms of the said levers, the long arms of the levers extending in opposite directions from the brace 6, and provided at their outer ends with means for attaching horses, substantially as shown and described.

2. The combination of the team-pole 5, the brace 6, rigidly connected at both ends therewith, the lever 8, eccentrically pivoted to the brace, with its long arm extending outward therefrom and provided with means for attaching horses, and with its short arm extending toward the team-pole, the lever 12, pivoted at one end to the said brace at a point forward of the lever 8 and extending across the team-pole, a tie, 14, connecting the short arms of the two levers, a doubletree, 15, centrally pivoted to the outer end of the lever 12 and extending across the team pole, and singletrees 16, attached to the said doubletree, one at each side of the pole, substantially as shown and described.

884,168. PAPER-FILE. H. ROBERTS JOYCE, Rochester, N. Y., assignor to the Schlicht & Field Company, same place. Filed Mar. 26, 1887. Serial No. 232,326. (No model.)

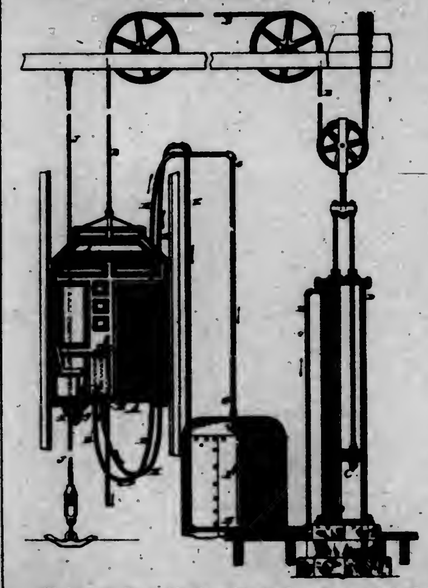


Claim.—1. The improved guide for a paper-file, consisting of the parallel side arms, their downwardly-turned arms, and the connecting member *d*, the whole formed in one piece, as shown.

2. In combination with the base A and end A', and a follower or carrier provided with clamping devices to ride on the guides, the two side guides formed in a single piece of metal, as shown, with the cross-connection at the rear, said guides attached to the front and base, substantially as described.

3. In a bill-file, and in combination with the side guides and the follower, the tilting rocking plate having the upright arms jointed to the follower-board and having the depending arm *c* below the guide, whereby it may be readily unlocked.

884,169. ELEVATOR. WARREN S. JOHNSON, Milwaukee, Wis., assignor of one-half to William Plankinton, same place. Filed Jan. 23, 1887. Serial No. 225,150. (No model.)



Claim.—1. In combination with the elevator-car and the fluid-pressure brake mounted thereon and acting against a stationary surface, such as a rope, a three-way valve mounted on the car, subject to the control of the attendant, a pipe leading from said valve to the brake,

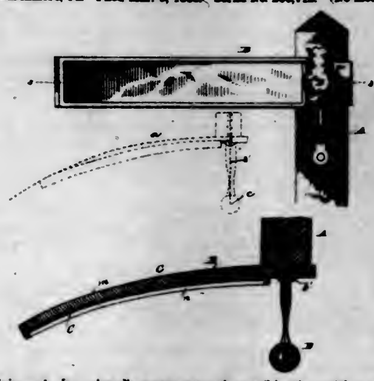
and a flexible pipe leading from the valve to a stationary reservoir or, like source of fluid-pressure supply, whereby the valve is brought in close proximity to the brake and the instantaneous action of the fluid upon the brake permitted.

2. In an elevator, the combination of the movable car, the cylinder and piston, and suitable intermediate connections for raising and lowering the car, the fluid-pressure brake mounted on the car, a stationary reservoir or source of fluid-pressure supply, a flexible pipe communicating with said source of supply and extending to the car, the double valve mounted on the car under control of the attendant and connected with said flexible supply-pipe, a pipe leading from said valve to the brake, and a second and flexible pipe connected with the valve and communicating with the car-operating cylinder.

3. In an elevator, the three-way valve or cock with its actuating-handle, in combination with the independently-operative secondary valve and its actuating devices mounted on said handle, substantially as described, whereby the two valves may be operated independently or simultaneously by one hand.

4. The main valve with its three ports, three-way plug, and operating-handle, in combination with the secondary valve and its actuating spring and rod, all mounted on the handle, and the flexible pipes communicating with the secondary valve, substantially as shown.

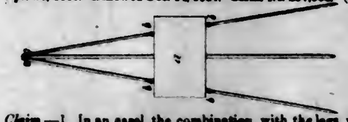
384,170. RAILWAY SEMAPHORE-SIGNAL. C. HENDERSON KOTE, Swarthmore, Pa. Filed Mar. 9, 1888. Serial No. 266,712. (No model.)



Claim.—1. In a signaling apparatus, the combination, with a support or standard, of a reflector having the shape or approximately the shape of the section of a paraboloid, as described, and mounted on or pivoted to said support so as to be rotatable about an axis corresponding to or coincident with the axis of the paraboloid, of which said reflector is a section, substantially as and for the purposes hereinbefore set forth.

2. The combination, in a signaling apparatus, of a support or standard, a reflector having the shape or approximately the shape of the section of a paraboloid, as described, and mounted on or pivoted to said support so as to be rotatable about an axis coincident with the axis of the paraboloid, of which the said reflector is a section, and a lamp or other source of light located on said support at the focal point of the said paraboloidal reflecting-section, substantially as and for the purposes hereinbefore set forth.

384,171. EASEL. EDWARD R. MORRIS, San Francisco, Cal. Filed Apr. 28, 1886. Renewed Dec. 14, 1887. Serial No. 257,908. (No model.)



Claim.—1. In an easel, the combination, with the legs, which are connected together pivotally and at the head-joint only, of clamps placed on said legs and which support the canvas-frame, panel, or board and connect the same with the legs, substantially as specified.

2. The combination, with the legs of an easel, which are connected together pivotally and at the head-joint only, of adjustable clamps placed on said legs and which support the canvas-frame, panel, or board and connect the same with the legs, substantially as specified.

3. The combination, in an easel, of supporting-legs connected together at the head-joint only, and clamps applied to the front legs of the easel, against which the canvas-frame, panel, or board is placed and fastened to the said legs by means of the said clamps, substantially as specified.

4. In combination with the legs of an easel, an adjustable pivot passed directly through the legs transversely and forming a head-joint which can be tightened or loosened at will, substantially as specified.

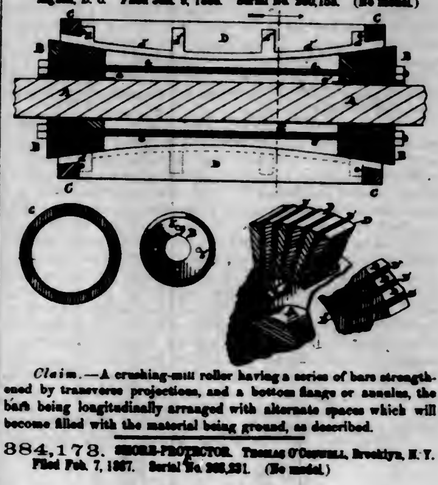
5. The combination, in an easel, of legs having the upper ends beveled, the bevel-faces extending below the pivot, as described, and the adjustable screw-pivot forming a head-joint which can be readily tightened, substantially as specified.

6. In an easel, the slides carrying the clamping-screws and provided with suitable devices for being made fast to the legs, substantially as specified.

7. In combination with the legs and canvas-frame, panel, or board, the adjustable slides provided with clamping-screws *d*, substantially as specified.

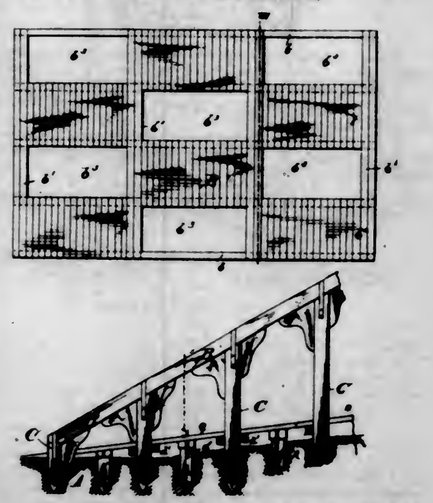
8. In an easel, the combination of the legs J K L, the adjustable head-joint, the adjustable clamping-slides, and the canvas-frame, panel, or board, substantially as specified.

384,172. CRUSHING-MILL ROLLER. GEORGE R. HOYER, Washington, D. C. Filed Jan. 9, 1888. Serial No. 260,163. (No model.)



Claim.—A crushing-mill roller having a series of bars strengthened by transverse projections, and a bottom flange or annulus, the bars being longitudinally arranged with alternate spaces which will become filled with the material being ground, as described.

384,173. SHORE-PROTECTOR. THOMAS O'CONNELL, Brooklyn, N. Y. Filed Feb. 7, 1887. Serial No. 226,231. (No model.)



Claim.—1. The herein-described shore-protector, consisting in the combination, with a breast-board inclined upwardly and landwardly from the water and provided with openings or pockets extending through the same and arranged as described, of piles formed in close rows substantially parallel with the line of the shore and adapted to support the breast-board in its inclined position, said rows being so arranged as to form parallel compartments beneath each longitudinal series of openings or pockets through the breast-board, as set forth.

2. The herein-described shore-protector, consisting of a breast-board provided with pockets or openings and inclined upwardly and rearwardly from the water, and piles to support said breast-board, said piles being formed in rows and provided with openings normally closed by doors, as described.

3. The combination, in a shore-protector, of a breast-board provided with pockets or openings and inclined upwardly and rearwardly from the water, and a series of piles formed in close rows and supporting said breast-board, and provided with openings and doors hinged to normally close said openings and adapted to swing outwardly, substantially as described.

4. The combination, in a shore-protector, with a breast-board provided with pockets and piles to support the same, of planking or flooring above the ground or shore beneath the breast-board, substantially as described.

384,174. CAR-COUPLING. ROBERT M. CLEMHEAD and JOHN V. WHEELS, Schenectady, N. Y. Filed Jan. 20, 1888. Serial No. 261,342. (No model.)



Claim.—1. In a car-coupler, the combination of the draw-head having a slot in the upper portion and a horizontal link-opening located centrally therethrough, the coupling-pin consisting of the main portion or body and the head portion having two pivotal points, at one of which, forward of the main portion or body of the pin, it is pivoted to the draw-head, the rotative horizontal rod suitably journaled, the rigid arm affixed to said rod centrally, and the pivotal connection between said arm and the other pivotal point of the coupling-pin, all arranged to operate substantially as set forth.

2. In a car-coupler, the combination of the draw-head B, having the horizontal centrally-located link-opening *b* and the slot C in the upper portion of the draw-head, the coupling-pin comprising the main part *d* and the head *c*, which is pivoted at *f* to the draw-head, the rotative rod D, having the rigid arm F, and the pivotal connection H between said arm and coupling-pin, all arranged to operate substantially as shown and described.

3. In a car-coupler, the combination of the draw-head having the horizontal centrally-located link-opening *b* and the slot C, the coupling-pin having a main portion or body, *d*, and a head, *c*, said head being pivoted to the draw-head at *f*, the rotative rod D, cranked at either end and having the rigid arm F, the connecting-bar H between said arm F and the body *d* of the coupling-pin, the rod I, and the chain J, connecting said rod I with the arm F, all arranged substantially as and for the purposes described.

384,175. CONSTRUCTION OF TROUGHS FOR WATER-CLOSETS. WILLIAM B. FARRER, Jr., New York, N. Y. Filed Oct. 7, 1887. Serial No. 251,694. (No model.)

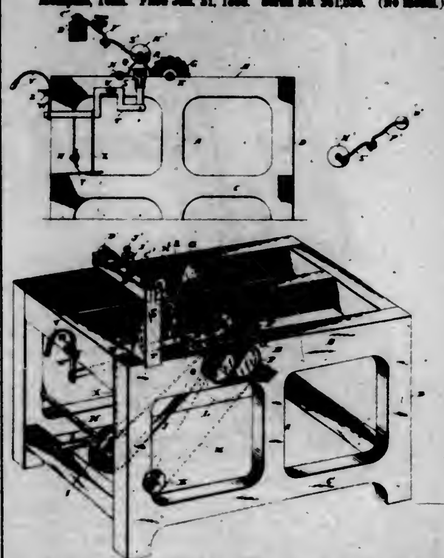


Claim.—1. In a water-closet, a trough formed with a series of basins located at different levels, each having curved sides and being curved upon the bottom, substantially in the manner described, so connected with each other by curved surfaces that a ridge or elevation is formed between the same.

2. In a water-closet, the combination, substantially as hereinbefore set forth, with the trough provided with a series of basins located at different levels, of a seat-board composed of a series of independent boards covering each basin, placed at different levels, and so constructed and arranged that the openings therein shall be in each case the same distance above the level of the corresponding basin in the trough.

3. In a water-closet, a trough composed of detachable sections so constructed and arranged that any number of said sections may be joined together, each section being formed into a series of basins located at different levels and curved upon the bottom, substantially in the manner described, said basins being each so connected with each other by curved surfaces that a ridge or elevation is formed between the same.

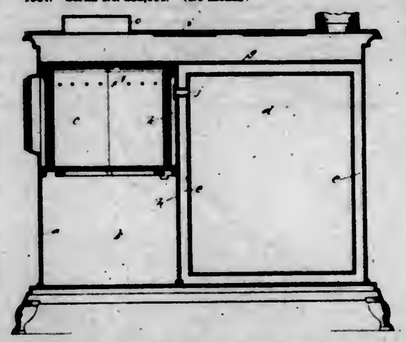
384,176. CIRCULAR SAWING MACHINE. JAMES R. RIPLEY, Memphis, Tenn. Filed Jan. 21, 1888. Serial No. 261,598. (No model.)



Claim.—1. The combination, with the main frame, saw, and saw-operating mechanism, of a presser-roll supported above the main frame by a pair of spring-arms pivotally secured to each other, in the manner and for the purposes herein set forth.

2. The combination, with a saw, means for driving the same, a feed-roller shaft having a gear, and an auxiliary shaft provided with a gear adapted to engage the gear on the feed-roller shaft, of a presser-roll supported by a pair of spring-arms, the adjacent extremities of which are pivotally secured together, and a set-screw to regulate the pressure of the presser-roll.

384,177. OVEN. ROBERT SMITH, Cambridge, Mass. Filed Apr. 7, 1887. Serial No. 233,901. (No model.)

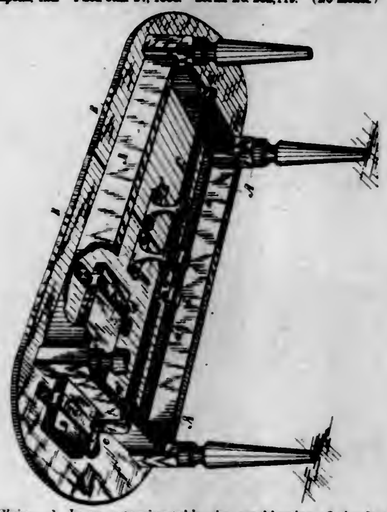


Claim.—1. A stove having a fire-box, a space, *k*, and perforations *l* in the lining thereof, an oven, a confined or dead air chamber surrounding the oven, and a tube or flue, *j*, extending through one side of said chamber and connecting the upper portion of the oven with the space *k*, whereby gases, odors, &c., from articles in the oven may escape to the fire-box.

2. In a stove or range, the combination, with the fire-box, of the bottomless casing *e*, having closed or imperforate sides located above

the top of the stove and coinciding with an opening therein, and provided with a horizontal perforated top higher than the top of the stove, the interior of said casing constituting a chamber above the top of the stove communicating with the fire-box and receiving air through its perforated top to be mingled with the gaseous products of combustion between the fire-box and the top of the stove, as set forth.

384,178. EXTENSION-TABLE. SYLVANUS S. SUTHERLAND, Indianapolis, Ind. Filed Jan. 27, 1888. Serial No. 262,119. (No model.)

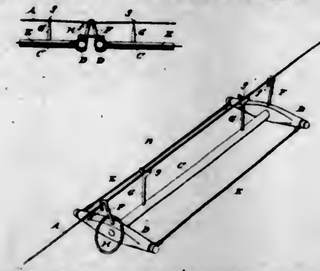


Claim.—1. In an extension-table, the combination of the frame formed as an entire non-extensible part, the top of the table formed in two parts and arranged to slide on said frame, and the means, substantially as described, for operating said top, all substantially as set forth.

2. The combination, in a table, with the frame, of the top arranged to slide on said frame, screw-threaded parts secured to said top, and a right and left hand screw journaled in suitable bearings on said frame and arranged to engage with said screw-threaded parts, substantially as set forth.

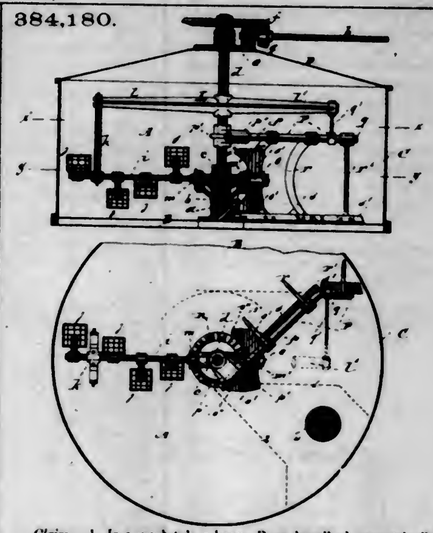
3. The combination, with the frame A, provided with the longitudinal cleats *a* on its side pieces, of the table-top formed of two parts and arranged to slide on said frame, having clips *b*, arranged to engage with said cleats, hangers B', secured to each part of said top, provided with screw-threaded nuts on the lower ends, and the right and left hand screw C, journaled in suitable bearings on the frame and engaging with the nuts on said hangers, substantially as set forth.

384,179. CLOTHES-DRIER. EUGENE S. SUTTON, Snohomish, Wash. Filed Aug. 13, 1887. Serial No. 246,876. (No model.)



Claim.—In a device to hang out clothes to dry, the combination, with the line A, of the sections or frames B, consisting of the bars C D and wires E, the upwardly and outwardly extending rods F, provided with the hooks *f*, the rods G, provided with the forks *g*, and the detachable rings H, substantially as specified.

384,180. MASH-TUB. GUSTAV TILGNER and JULIUS C. WILCKE, Chicago, Ill.; said Wilcke assignor to said Tilgner. Filed Oct. 29, 1887. Serial No. 253,799. (No model.)



Claim.—1. In a mash-tub, a beam, P, as described, eccentrically fastened to a vertical rotary shaft, a beam, L, radially fastened to the same shaft, *d*, and said beams L and P being connected by rod *q'*, and arms *r r* and *r'*, having blades *s* and *s'* attached, running parallel to the respective parts *p* and *q* of the beam P, all combined substantially as and for the purpose specified and shown.

2. In a mash-tub, a beam, P, as described, eccentrically fastened to a vertical rotary shaft, *d*, arms *r r* and *r'*, sweeping-blades *s* and *s'*, being parallel to the respective parts *p* and *q* of beam P, and discharge-openings *u*, all combined substantially as and for the purpose specified and shown.

3. In a mash-tub, the combination of the shaft *i*, provided with stirrers, fixed pinion *m*, loose pinion *m'*, the same being rigidly attached to a screw-propeller, *o*, having wings *o'*, as described, and crown-wheel *n*, secured to a step, *a*, substantially as and for the purpose specified and shown.

4. In a mash-tub, the shafts *d* and *h*, said shaft *d* carrying sweeping-blades *s* and *s'*, bevel-wheels *f* and *g*, pillow-block *a*, casting *c*, having sockets into which are firmly secured the shaft *d* and pivot *b*, the shaft *i*, provided with stirrers and extending through an opening in said casting *c*, so as to rest with one of its ends in bearings forming parts of said casting *c*, fixed and loose pinions *m* and *m'* upon the shaft *i*, the loose one being rigidly attached to a screw-propeller, *o*, and crown-wheel *n* upon the step *a*, all combined substantially as and for the purpose specified and shown.

5. In a mash-tub, the combination of blades *s* and *s'*, when attached by means of arms *r r* and *r'* to a beam, P, and being parallel with the same, said beam eccentrically secured to a vertical rotary shaft, *d*, and stirrers attached to a horizontal rotary shaft revolving around the shaft *d* when said shaft *i* extends with one of its ends through a casting, *c*, provided with bearings for said end of the shaft *i*, the same having a fixed and a loose pinion, *m* and *m'*, and both engaging with a fixed crown-wheel, *n*, upon the shaft *a*, substantially as and for the purpose specified and shown.

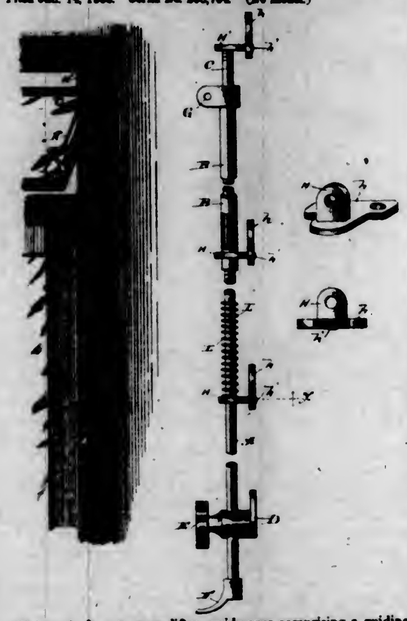
384,181. COFFIN-FASTENER. WILLIAM H. TORRENS, Richmond, Ind., assignor to the J. M. Hutton & Company, same place. Filed Mar. 13, 1888. Serial No. 267,069. (No model.)



Claim.—1. The combination, with the plate A, having segmental cut-away portion I, of the shank rotatably secured in said plate and having an arm working in said cut-away portion, and provided with a handle, the slotted plate, and the spring acting on said shank, substantially as and for the purpose specified.

2. The combination, with the plate A, having upon one side a central boss, D, and the notched lug E, and upon the other side the segmental cut-away portion I, of the shank rotatably secured in said plate and projecting through said boss, the arm on said shank working in said cut-away portion, and the spring having one end secured in the notch of said lug and the other end secured to the shank, substantially as and for the purpose specified.

384,182. TRANSOM-LIFTER. JOHN F. WOLLENSAK, Chicago, Ill. Filed Jan. 14, 1888. Serial No. 260,764. (No model.)



Claim.—1. In a transom-lifter, guide-eyes comprising a guiding-collar and a flange pivotally connected thereto, whereby the flange is adjustable in any position in the plane of the place to which it is attached, substantially as described.

2. In a transom-lifter, the combination of a lifting-rod comprising a lower solid portion and an upper tubular portion having a bearing on a solid guide-rod fixed at the upper end, and a solid guide-rod fixed at the upper end and furnishing a bearing for the hollow lifting-rod, substantially as described.

3. In a transom-lifter, the combination of a lifting-rod comprising a lower solid portion and an upper tubular portion bearing upon a guide-rod fixed at the upper end, a guide-rod fixed at the upper end furnishing a bearing for the hollow lifting-rod, a lifting-arm, and adjustable guide-eyes, substantially as described.

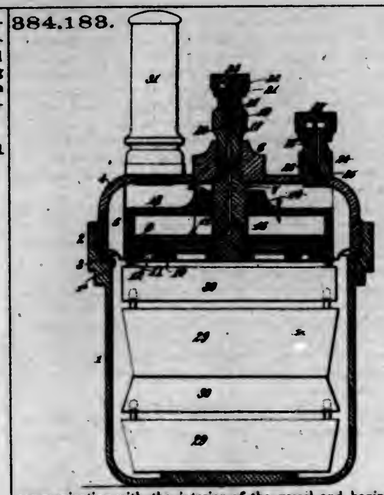
384,183. VULCANIZING APPARATUS. ALONZO B. WOODARD, Andover, assignor of one-half to Richard W. Barney, Hornellsville, N. Y. Filed Aug. 18, 1887. Serial No. 247,391. (No model.)

Claim.—1. The combination, with a vulcanizing-vessel having a rigid bar depending from its cover, of a head and a piston, one rigidly and the other movably mounted on said bar and forming a steam-tight air-chamber between the head and the piston, and an air-escape from said chamber, substantially as described.

2. The combination, with the cover of a vulcanizing-vessel having vertical concentric guides, of a central bar, a piston movable upon said bar and having a depending peripheral flange bearing on the vertical guides, a rigid head on the bar packed within the flange of the piston, and a valve closing a channel in the bar, which communicates with the space between the head and the piston and with the outer air, substantially as described.

3. The combination, in a vulcanizing-vessel, of a cover having interior concentric vertical guides and provided with a central bar depending inside the cover, and having a channel leading to a valve-chamber in a plug above the cover, of a piston moving on said bar and having a depending flange bearing on the guides, a head rigidly mounted on the bar within the flange of the piston, a spring-actuated valve in the chamber of the plug above the cover, a screw-cap adapted to bear against the stem of said valve, and an air-conducting plug

384,183.

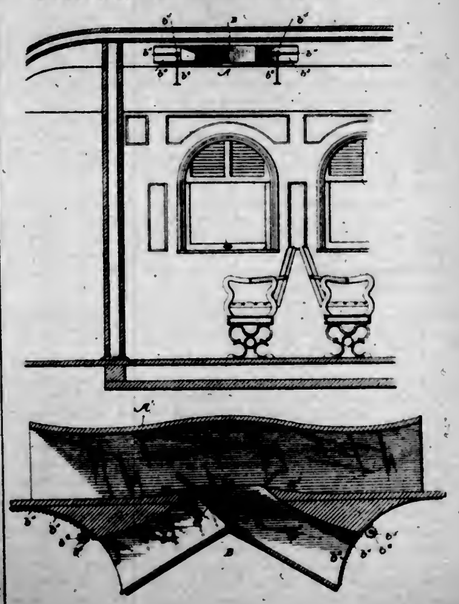


communicating with the interior of the vessel and having a valve closed by a screw-cap, substantially as described.

4. The combination, with a vulcanizing-vessel, of a series of vertical concentric guides mounted internally upon the cover, a central bar depending therefrom, a piston moving on said bar and having a depending flange bearing on said guides, a head rigidly mounted on the bar within said flange, an air-conducting plug having a valve and communicating with the interior of the vessel, and a similar plug having a channel communicating with a channel in the bar, said plug having a valve-seat, a spring-closed valve, and a screw-cap which may be engaged with the valve-stem, substantially as described.

5. The combination, with the cover 4, having vertical guides 5 and provided with a central bar, 7, of the piston 13, having a packing and nut surrounding said bar, the head 8, having a packing, 9, the ring 10, having annular flange 11, the plug 18, having valve-chamber 19, communicating with an air-channel, 17, in the bar 7, the valve 20, and screw-cap 23, substantially as described.

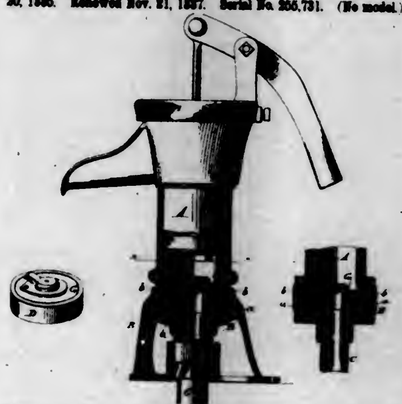
384,184. CAR-VENTILATOR. WASHINGTON WRIGHT, Clayton, N. J. Filed Dec. 12, 1887. Serial No. 257,655. (No model.)



Claim.—1. In a car-ventilator, the combination of a casing to be placed on the outside of a car and forming a continuously-extending passage, the casing having an outward swell or expansion in its exterior face to be opposite an opening in the car when the casing is in position, a casing to be placed on the inside of a car and forming a continuously-extending passage, this casing having an inward-projecting angle in its interior face to be opposite the opening in the car when this casing is in position, and opposite the expansion in the outer casing when both casings are in position, and a vane pivoted at or near the angle and protruding through the opening in the car into the outer casing, substantially as described.

2. In a car-ventilator, the combination of a casing to be placed on the outside of a car and forming a continuously-extending passage, the casing having an outward swell or expansion in its exterior face to be opposite an opening in the car when the casing is in position, a casing to be placed on the inside of a car and forming a continuously-extending passage, this casing having an inward-projecting angle in its interior face to be opposite the opening in the car when this casing is in position, and opposite the expansion in the outer casing when both casings are in position, and being provided with valves or dampers to regulate the draft, and a vane pivoted at or near the angle and protruding through the opening in the car into the outer casing, substantially as described.

384,185. **PUMP.** MILO J. ALTHOUSE, Waupun, Wis. Filed Jan 30, 1886. Renewed Nov. 21, 1887. Serial No. 255,731. (No model.)



Claim.—1. As an improvement in the construction of metallic pumps, the combination of the metallic body, the metallic base, and the intermediate wooden seat having a vertical grain, located between the two metal parts, and the bolts, whereby the latter may be forcibly seated against opposite sides of the wood.

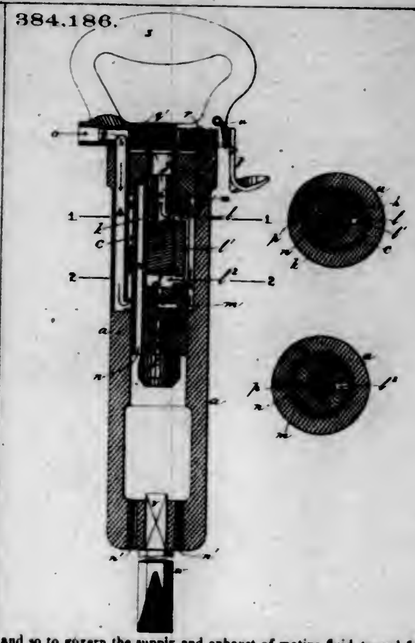
2. In a pump, the combination of metallic body and base portions provided with annular lips on their opposing faces, with the intermediate wooden seat, and the bolts or fastening devices, whereby the metallic parts are bound together and seated into the wood, substantially as described and shown.

3. The pump-base provided with the recess or pocket in its top and with a lip, *a*, therein, and the metal body provided with the lip *b*, in combination with the intermediate wooden valve-seat having its grain arranged vertically, as described and shown, whereby the wood is encircled and confined in position and the metallic parts brought into intimate contact with its upper and lower surfaces.

384,186. **DIRECT-ACTING ENGINE.** GUSTAV A. BARTH, St. Louis, Mo., assignor to Pierre Chouteau, same place. Filed Dec. 16, 1887. Serial No. 258,095. (No model.)

Claim.—1. The combination of a cylinder, a piston fitting therein, a tubular piston-rod formed on or secured to said piston and provided with separate inlet and exhaust passage, a distribution-valve fitting within a chamber or cavity in said piston-rod and having a central supply-passage extending from its open end to a lateral port and annular passage adjacent to its opposite closed end, the port and passages being so arranged as to communicate alternately with the said inlet and exhaust passage of the piston-rod, an inlet-passage in the piston-rod communicating with that portion of the chamber therein beneath the distribution-valve and communicating with the inlet-passage through the piston-rod to the port and central supply-passage of the distribution-valve, and a combined inlet and exhaust passage in the piston-rod leading to and from the bottom of the chamber therein beneath the distribution-valve, the whole operated to hold and reverse the distribution-valve at the proper times, and so to govern the supply and exhaust of motive fluid to and from the piston and distribution-valve, substantially as set forth.

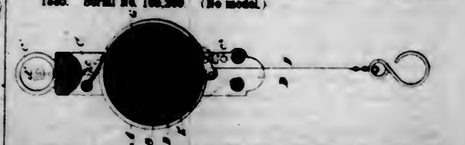
384,186.



2. The combination of a cylinder, a piston fitting therein, a tubular piston-rod formed on or secured to said piston and provided with a separate inlet and exhaust passage, a distribution-valve fitting within a chamber or cavity in said piston-rod and having a central supply-passage extending from its open end to a lateral port and annular passage adjacent to its opposite closed end, the port and passages being so arranged as to communicate alternately with the said inlet and exhaust passage of the piston-rod, an inlet-passage in the piston-rod communicating with that part of the chamber therein beneath the distribution-valve and communicating by a connecting inlet-passage with the inlet-passage through the piston-rod to the port and central supply-passage of the distribution-valve, a combined inlet and exhaust passage in the piston-rod leading to and from the bottom of the chamber therein beneath the distribution-valve, and an inlet-passage in the piston-rod communicating with the chamber therein above the upper shoulder of the distribution-valve when in its lowest position within the said chamber, the whole operating to positively hold and reverse the distribution-valve at the proper times, and so to govern the supply and exhaust of motive fluid to and from the piston and distribution-valve, substantially as set forth.

3. The combination, with a cylinder, a piston and rod working therein, a distribution-valve, and a regulating or controlling valve working in a casing formed diametrically through the base of the handle of the machine for governing the supply of motive fluid to the distribution-valve, of a specially-shaped lever, *l*, connected with the regulating or controlling valve and coupled by a spring with the handle used for directing and holding the machine to its work, substantially as and for the purpose described.

384,187. **SUSPENDING DEVICE.** EDWARD BLACKMAN, Brooklyn, assignor, by mesne assignments, to the Ansonia Brass and Copper Company, and Walcott A. Hull, both of New York, N. Y. Filed May 12, 1886. Serial No. 168,269. (No model.)



Claim.—1. In a suspending device, the combination of a rotary drum, a band or like device wound upon the same and passing to the lamp or other article to be suspended, a counterbalance-spring connected to and acting in conjunction with the drum, a brake extending partly around the drum and acting on said band or like device, and a guide upon said brake, over which said band or like device passes, substantially as specified.

2. The combination of a rotary drum, a band or like device wound upon the same and passing to the lamp or other article to be suspended, a counterbalance-spring connected to and acting in conjunction with the drum, a brake-strap of flexible material, as G, extending partly around the drum and acting on said band or like device, and a guide upon said brake, over which said band or like device passes, substantially as specified.

384,188. **SPRING-TOOTH FOR HARROWS.** WARREN H. BRINKERHOFF, Auburn, N. Y. Filed Jan. 4, 1888. Serial No. 259,764. (No model.)



Claim.—1. A flat spring harrow-tooth, having a narrow portion of greater hardness than adjoining portions, the said harder portion being cohesively joined to the main body of the tooth and extending from the extreme earth-engaging point toward the opposite end of the tooth, the said hardened portion being located at the point of greatest wear and forming a part of the front surface of the tooth, substantially as described.

2. A flat spring-tooth having a narrow central portion of said tooth harder than adjoining side portions, said central portion extending from the earth-engaging point toward the opposite end of said tooth and forming the central part of the front surface of the tooth, substantially as described.

3. A flat spring harrow-tooth having its pointed end provided with a central portion harder than its side portions cohesively joined thereto, said central portion being of greater thickness than the edges, substantially as described.

4. A harrow-tooth having a portion of greater hardness than adjoining portions, said portion extending from the extreme earth-engaging point toward the opposite end of the tooth and gradually diminishing in hardness toward the edge of the tooth, substantially as described.

5. A harrow-tooth the central portion of which is harder than adjoining integral portions, said portions extending from the earth-engaging point toward the opposite end of the tooth and gradually diminishing in hardness toward the edges of the tooth, substantially as described.

6. A flat spring harrow-tooth of curved or arched form, having the front of the earth-engaging portion of the same composed of three transverse sections cohesively united in one integral body, the center portion being of greater hardness than the side portions, substantially as described.

7. As a new article of manufacture, a blade of greater width than thickness for engaging materials having a wearing action thereon, having a centrally-located harder portion, the said blade diminishing in hardness toward its edges, substantially as described.

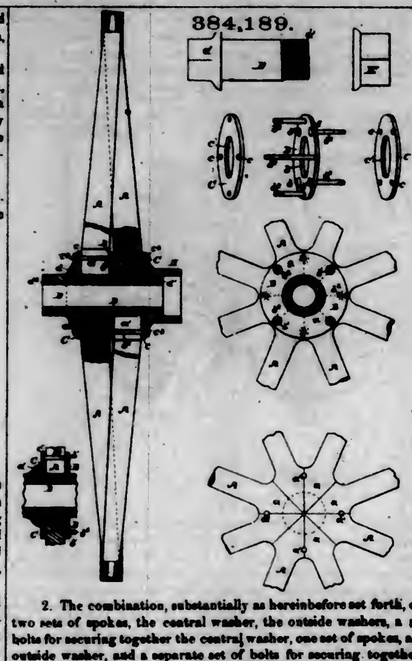
8. As a new article of manufacture, a blade of greater width than thickness for engaging materials having a wearing action thereon, and having its wearing-edge provided with a centrally-located harder portion, the said harder portion gradually diminishing in hardness toward the edges of the blade, substantially as described.

9. A harrow-tooth having the upper part of its main body doubled back upon itself, (to increase vibration and elasticity,) the lower portion of its main body terminating in a forwardly-projecting pointed end, said pointed end having a central portion harder than side portions adjacent thereto, substantially as described.

384,189. **VEHICLE-WHEEL.** GEORGE R. BAGLEY, Ringgold, Ga., assignor of two-thirds to Charles W. Gray and Fred A. Vaughan, both of same place. Filed Aug. 31, 1887. Serial No. 248,205. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the two sets of spokes, a single central washer, the outside washers, the bolts for securing the outside washers to the central washer and for clamping the spokes thereto, and the axle-box that extends through the washers, having a head formed on one end that bears against one of the washers and screw-threaded at the opposite end to receive a nut that bears upon the other outside washer.

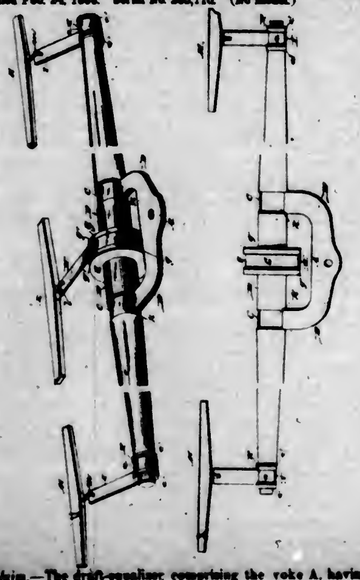
384,189.



2. The combination, substantially as hereinbefore set forth, of the two sets of spokes, the central washer, the outside washers, a set of bolts for securing together the central washer, one set of spokes, and an outside washer, and a separate set of bolts for securing together the central washer, the other set of spokes, and the other outside washer.

3. The combination, substantially as hereinbefore set forth, of the two sets of spokes, each set having their ends brought together to form the center of the wheel, a washer between the two sets of spokes, a washer on the outer side of each set of spokes, bolts extending in opposite directions from the central washer through the outside washers and through the edges of the spokes, the securing-nuts on the bolts, and the axle-box secured to the spokes and washers.

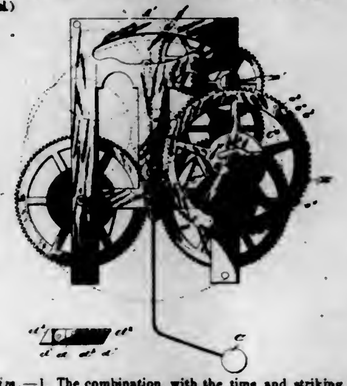
384,190. **DRAFT-EQUALIZER.** CHARLES R. BURNETT, Girard, Ill. Filed Feb. 24, 1888. Serial No. 265,110. (No model.)



Claim.—The draft-equalizer, comprising the yoke A, having the

bearing *a*, mounted on a suitable vertical bolt on the vehicle, and provided with bearings C C at the ends of its arms, the draft-bar D, having peripheral grooves K K, mounted in the said bearings and held from lateral play, and the straps, ropes, or chains wound on the said bar and having the singletrees attached thereto, as specified.

384,191. CLOCK STRIKING MECHANISM. CHARLES R. BURNHAM, White Plains, N. Y. Filed Oct. 27, 1887. Serial No. 253,543. (No model.)



Claim.—1. The combination, with the time and striking train mechanism of a clock, of a count-wheel having a series of beveled teeth intersected by flat-faced stop-teeth, the tops of which are partially beveled, and a series of pins or studs, a stop-pawl connected to the striking-train, and a pinion attached to the time-train, said pawl and pinion relatively operating to respectively stop and start the movement of the count-wheel, substantially as described.

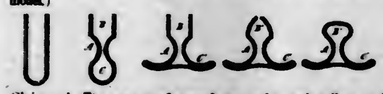
2. The combination, with the time and striking train mechanism of a clock, of a count-wheel constructed as set forth, a pinion to start the movement thereof, and a pawl to limit and stop its movement, substantially as described.

3. The combination, with the time and striking mechanisms of a clock, of the pinion having one or more movable teeth or dogs, the count-wheel constructed with teeth and pins, as set forth, and the stop-pawl, all arranged and operating as set forth.

4. The combination, with the time and striking mechanisms of a clock, of a pinion having one or more movable teeth or dogs mounted on the rear projecting end of the hand-arbor, the count-wheel having the form of teeth set forth, the bearing-stud for the count-wheel having a flange, the bifurcated spring-washer, and the stop in connection with the striking mechanism, substantially as described.

5. The combination, with the time and striking mechanisms of a clock, of a pinion having one or more movable teeth or dogs mounted on the rear projecting end of the central or hand arbor, the count-wheel having a series of teeth and studs or pins, as set forth, the teeth or dogs of said pinion engaging with the said studs or pins, and a revolving stop-pawl arranged above the count-wheel in connection with the striking mechanism, and having a projecting pin which engages with the teeth of the said count-wheel, and bearing on a portion thereof to stop the revolution of the count-wheel, substantially as described.

384,192. METHOD OF MAKING BUTTONS, &c. SHUBAEL CORTLE, New York, N. Y. Filed Dec. 9, 1887. Serial No. 257,384. (No model.)

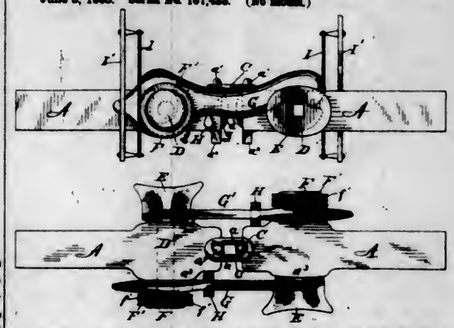


Claim.—1. The process of manufacture of a stud, collar, or sleeve button of thin metal without an opening into its interior, and having two flanged portions and a connecting-shank, substantially as herein described, which consists in first forming a tube of metal of substantially uniform thickness and closed at one end; second, compressing and thereby reducing the diameter of said tube at about its middle portion; third, closing the opening in said tube by pressing together and into close contact the metal around the edge of the opening in said tube, substantially as described.

2. The process of manufacture of a stud, collar, or sleeve button of thin metal without an opening into its interior, and having a hollow head, a double base, and a hollow connecting-shank, which consists in first producing a tube closed at one end; second, compressing and so reducing the diameter of said tube at about its middle portion; third, flattening the closed part of said tube to form a flange of greater diameter than the uncompressed portion of said tube; fourth, closing the opening in said tube by pressing into close contact the metal around the edge of the opening in said tube, substantially as described.

3. The process of manufacture of a stud, collar, or sleeve button of thin metal without an opening into its interior, and having a hollow head, a double base, and a hollow connecting-shank, which consists in first producing a tube closed at one end; second, compressing and so reducing the diameter of said tube at about its middle portion; third, closing the opening in said tube by pressing into close contact the metal around the edge of the opening in said tube, and, fourth, flattening the portion of the tube so closed to produce a flange of greater diameter than the non-compressed part of said tube, substantially as described.

384,193. CAR-COUPLING. JOHN COUP, New York, N. Y. Filed June 3, 1886. Serial No. 167,483. (No model.)



Claim.—1. A car-coupling formed of a hook pivoted to the side of a draw-head by means of a transverse shaft and a cam hub-piece which, by its semi-rotation, is adapted to raise the said hook and throw it forward, so as to disengage it from the adjacent car when it is to be uncoupled, substantially as shown and set forth.

2. A car-coupling formed of a curved hook pivoted to the side of the draw-head on an eccentric-cam, and arranged to swing vertically and hook on to a pallet-shaped cam or coupling-block on the adjacent draw-head, substantially as shown and set forth.

3. In a car-coupling, a transverse shaft or rod passing through the draw-head and carrying on one of its ends an eccentric-cam on which is assembled the coupling-hook for connecting two cars, and on the other end of it a pallet-shaped cam for engaging the hooked end of the coupling of an adjacent car, substantially as shown and set forth.

4. In a car-coupling, a cam for actuating or moving the coupling-hook upward and forward, so as to disengage it from the coupling or draw-head of the adjacent car, substantially as shown and set forth.

5. In a car-coupling, a cam for moving and disengaging the coupling-hook, provided with a hub circumferentially wound with a chain or cord for rotating it, so as to operate or release the coupling-hook, as desired, substantially as shown and set forth.

6. A draw-head for coupling cars, provided with a vertically-swinging coupling-hook pivoted to its side by an eccentric-cam and provided with a laterally-projecting stop, on the top of which the said coupling-hook rests, substantially as shown and set forth.

7. A car-coupling consisting of a draw-head, with a vertically-moving hook pivoted to its side by an eccentric-cam and provided with means for operating the said cam and thereby the coupling-hook by means of a system of levers and rods attached to the car and connected with the periphery of the hub of the cam by cords or chains wound circumferentially thereon, substantially as shown and set forth.

8. In a car-coupling, a coupling piece or cam in approximately pallet shape adapted to receive and hold the hooked end of a coupling-hook pivoted to the side of the draw-head of an adjacent car, substantially as shown and set forth.

9. A stop or guide-rest and a cam-shaped or sloping seat to engage thereon, applied, respectively, to either the coupling-hook or to the side of the draw-head, so as to cause the free end of the coupling-hook to move into position to couple or uncouple accordingly as it is thrown forward or backward by the actuating-cam, substantially as shown and set forth.

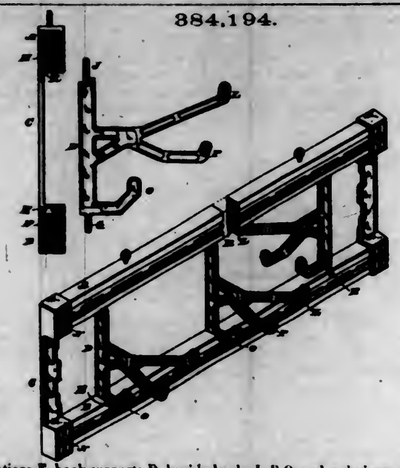
384,194. CLOTHES-RACK. JOHN DANNER, Canton, Ohio, assignor to the John Danner Manufacturing Company, same place. Filed Jan. 13, 1888. Serial No. 260,637. (No model.)

Claim.—1. As a new article of manufacture, a clothes-rack consisting, essentially, of the bar A, having a downwardly-projected flange, K, and perforations H, bar B, having transverse groove E and perforations F, hook-supports D, having hooks L P O, and end pieces, C, for securing the bars A and B to each other at the proper distance apart, when combined and arranged substantially as shown and described, and for the purpose set forth.

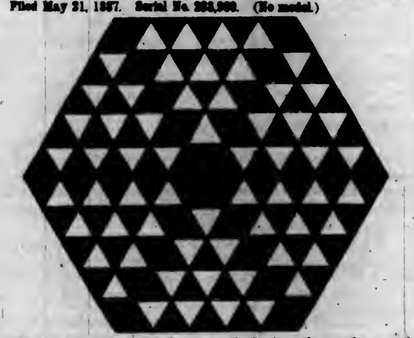
2. The combination, in a clothes-rack, of the bars A and B, the said bar B having cross-grooves E and perforations F, hook-supports D, having end pivots, G and J, and hooks L P O, substantially as described, and for the purpose set forth.

3. The combination, in a clothes-rack, of bars A and B, hook-support D, pivotally secured thereto, and end pieces, C, having outwardly-projecting sockets M, to embrace and cover the ends of the said bars, substantially as shown and described, and for the purpose set forth.

384,194.



384,195. GAME-BOARD. CHARLES R. DURYEA, Washington, D. C. Filed May 21, 1887. Serial No. 238,980. (No model.)



Claim.—1. A game-board composed of triangular sections, each divided into similar smaller sections, of which those are colored whose sides are parallel with the sides of the inclosing section.

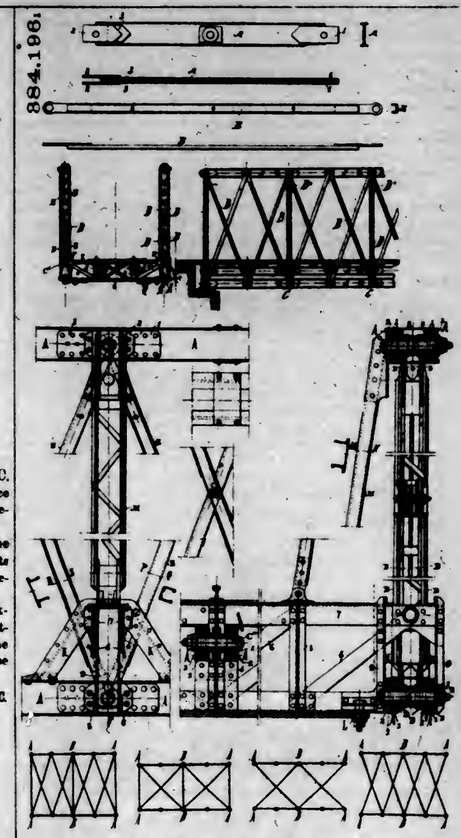
2. A game-board having the form of any regular plane figure and composed of triangular sections, each divided into similar smaller sections, of which those are colored whose sides are parallel with the sides of the inclosing section.

3. A game-board composed of triangles, each divided into smaller triangles, of which those are colored whose sides are parallel with the corresponding sides of the inclosing triangle, and which are so placed that along the lines of junction between the large triangles the smaller colored triangles will lie with their bases abutting the bases of similar-colored triangles in the adjoining large triangles.

4. A game-board having the form of a regular hexagon and composed of six equilateral triangles, each divided into smaller triangles, of which those are colored whose sides are parallel with the corresponding sides of the inclosing triangle.

384,196. METALLIC BRIDGE. MARIUS LÉONARD RODOLPHE DUVAL, Paris, France, assignor to the Compagnie de Fives-Lille, same place. Filed Feb. 6, 1888. Serial No. 263,413. (No model.) Patented in France Mar. 26, 1885, No. 167,570.

384,196.



Claim.—1. A trussed girder of variable height comprising, in combination with diagonals adapted to be more or less inclined, so as to vary the height, a chord or chords provided with holes for the connection of the diagonals and with other spaced holes, so that said diagonals can be connected therewith at different inclinations, substantially as described.

2. A chord or stringer composed of one or more lines of similar-flanged elements, each provided at the ends with forked jaws differently spaced at the two ends and connected together with the jaws intermeshed, substantially as described.

3. In a trussed girder, and in combination with the lattice bars or diagonals, the chord or chords composed of separate sections or elements, and provided with holes in the ends for coupling-pins for connecting the ends of the chord elements and the ends of the diagonals, and provided with other spaced holes additional to those required for the connections aforesaid, whereby the height of the girder can be varied by inclining the diagonals more or less and connecting them with the chord elements by means of such additional holes, substantially as described.

4. A trussed girder of variable height having vertical posts provided with extension-pieces for increasing the length by addition to the main portion thereof, substantially as described.

5. A trussed girder of variable height having vertical posts formed of two channel-irons symmetrically arranged with reference to the vertical axis of the girder and connected with the chords by the coupling-pins which unite together the elements of the said chords, said posts being of variable length between the chords, substantially as described.

6. In a trussed metallic bridge and in combination, the principal girder, skeleton cross-girders connected with the principal girders by a single horizontal pin at each end and stayed to prevent turning on said pins, substantially as described.

7. The skeleton cross-girders with double walls, in combination with the vertical posts of the principal girders embraced by the ends of said walls and secured thereto by a single pin at each end, and the

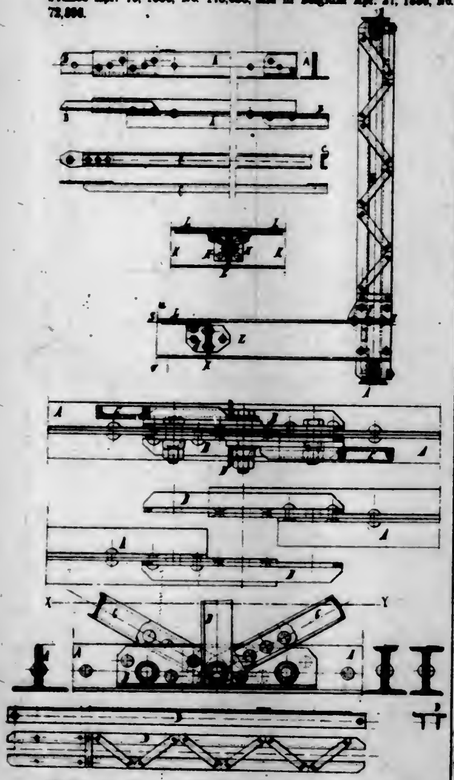
coupling-pins in the chords of the said principal girders, the lower part of the said cross-girders being connected with the heads of the last-mentioned coupling-pins, substantially as described.

8. In combination with the cross-girders, the stringers composed of elements united to each other and to the said cross-girders by a pin at each joint, substantially as described.

9. In a truss or bridge, the combination, with the cross-girders and the lattice or skeleton web of the principal girders, of the upper and lower chords and the stringers, each composed of one or more lines of elements the same for all, joined together, substantially as described.

10. The combination of chord and lattice elements, the cross-girders, the elements of the stringers, and the coupling-pins, the said chord elements having intermediate holes to receive said pins when necessary to vary the height of the principal girders, and the elements of the lattice being adjustable, substantially as described

384,197. METALLIC BRIDGE. MARTIN LEONARD RENOUD DUVAL, Paris, France, assignor to the Compagnie de Five-Lille, same place. Filed Feb. 2, 1888. Serial No. 263,419. (No model.) Patented in France Apr. 19, 1886, No. 175,693, and in Belgium Apr. 27, 1886, No. 72,896.



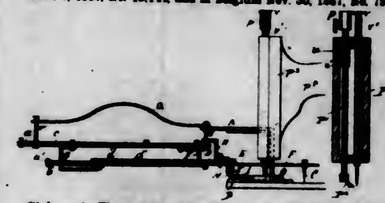
Claim.—1. In a trussed girder, the chord elements, each composed of irons secured together so that one projects beyond the other at each end, and connecting-irons projecting beyond the longer branch of the element, thus forming stepped projections, the ends of adjacent chord elements being overlapped and secured together, substantially as described.

2. The double posts constituted by two angle-bars turned back to back, connected by cross-pieces and spaced, in combination with a chord, lattice-bars or diagonals lapped on the web of said chord, and pins—one at each end of the posts—connecting them with the said chord and said lattice-bars or diagonals, substantially as described.

3. In a truss or bridge, and in combination with the principal girders having vertical posts, the cross-girders of I-iron having the flanges on one side removed and fitted against the sides of said posts, and the angle-pieces between the tops of the cross-girders and the sides of said posts, substantially as described.

4. In a truss or bridge, and in combination with the principal girders, the cross-girders and the stringers, the horizontal diagonals attached to said stringers and said cross-girders by the triple or three-sided angle-pieces, substantially as described.

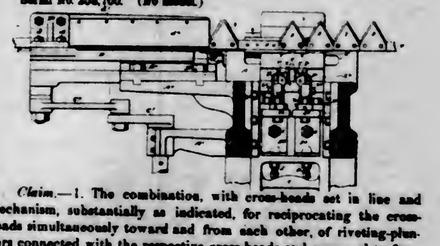
384,198. EMBROIDERING ATTACHMENT FOR SEWING-MACHINES. EDUARD FRANKENBERG, Hanover, Prussia, Germany. Filed Nov. 29, 1887. Serial No. 256,394. (No model.) Patented in England Nov. 7, 1887, No. 15,144, and in Belgium Nov. 30, 1887, No. 79,498.



Claim.—1. The combination of an embroidering-frame provided with an eye, a pantograph provided with a vertical arm, and an angular connecting-bar horizontally adjustable in said eye and vertically adjustable on said arm, substantially as described.

2. The combination of an embroidering-frame, a detachable clamp provided with thumb-screws for attachment to said frame and with an eye, a pantograph provided with a vertical arm, an angular connecting-bar comprising a horizontal arm adjustable in said eye and a slotted vertical arm vertically adjustable on said arm of the pantograph, a set-screw in said eye for clamping said bar, and screws for uniting said vertical arms, substantially as described.

384,199. RIVETING-MACHINE. JOHN B. FREEZ, Akron, Ohio, assignor of one-half to C. B. Sheldon, same place. Filed Dec. 22, 1887. Serial No. 258,700. (No model.)



Claim.—1. The combination, with cross-heads set in line and mechanism, substantially as indicated, for reciprocating the cross-heads simultaneously toward and from each other, of riveting-plungers connected with the respective cross-heads and arranged to form opposing pairs for upsetting the ends of each of the rivets at one operation, substantially as set forth.

2. The combination, with cross-heads having riveting-plungers attached, substantially as indicated, of a push-bar operating at right angles to the movement of the riveting-plungers, and mechanism, substantially as indicated, for reciprocating the push-bar to feed successive sections and move the section-bar between the plungers in position for riveting, substantially as set forth.

3. The combination, with cross-heads and riveting-plungers attached, a push-bar, and mechanism for operating the same, substantially as indicated, of a holder for the sections, said holder having a movable head adapted to move the sections toward the section-bar, substantially as set forth.

4. The combination, with feed-roll having groove for feeding two wires and reciprocating cross-head, the latter having dies attached for severing the wires as they are fed by the rollers, of riveting-plunger for upsetting the rivets formed by the severing-dies, substantially as set forth.

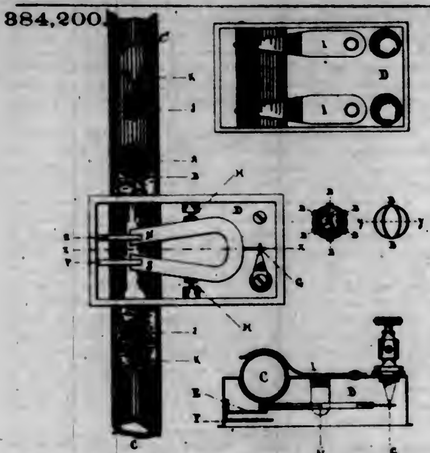
5. The combination, with feed-roller and reciprocating cutting-dies, substantially as indicated, of projecting lip and opposing springs connected with each die adjacent the cutting-surface thereof, and arranged, substantially as indicated, for holding the rivets in place on the cutting-dies, substantially as set forth.

6. The combination of riveting device, mechanism for feeding the sections and section-bar, feed-rolls for feeding the wires, and cutting-dies for cutting the wire into rivets and carrying the rivets into position for riveting, the parts being timed to co-operate with each other, substantially as set forth.

384,200. MAGNETO-ELECTRIC LIQUID-LEVEL INDICATOR. JOHN J. GUNDAR, Newark, N. J. Filed Sept. 5, 1887. Serial No. 248,791. (No model.)

Claim.—1. In magnetic circuit-controllers for liquid-level indicators, a movable permanent magnet whose motion in one direction is limited by a non-magnetic stop and in the opposite direction by an electric contact-point, substantially as described.

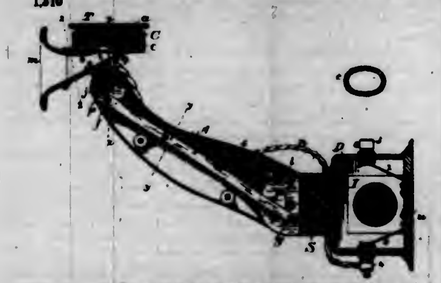
2. A magnetic circuit-controller consisting of a pivoted permanent magnet in a casing of non-magnetic material, and provided with a non-magnetic back-stop and a magnetic attractor for holding the magnet in a normal position against said stop, substantially as described.



3. A float for magneto-electric liquid-level indicators, consisting of a hollow glass ball having magnetic material on its outside, substantially as and for the purpose set forth.

4. In a liquid-level indicator, the combination of the tube of non-magnetic material, C, the magnetically-surrounded glass float A, with the grooved casing of non-magnetic material, D, containing the pivoted magnet N S, the non-magnetic stop E, the magnetic attractor F, and the electric contact-points G, all arranged substantially as described, and for the purpose set forth.

384,201. TELEPHONE-TRANSMITTER. ELISHA T. GILLILAND, Boston, Mass., assignor to the American Bell Telephone Company, same place. Filed Sept. 19, 1885. Serial No. 177,869. (No model.) Patented in Belgium Jan. 27, 1886, No. 71,772, and in England Jan. 29, 1886, No. 1,910.



Claim.—1. The combination of a telephone-transmitter, a hollow arm pivoted to said transmitter and to a fixed support, and a rigid bar inclosed in said hollow arm and pivoted at one end to said transmitter and at the other to said support, substantially as described.

2. A telephone-transmitter having a fixed horizontal diaphragm upon which the current-varying medium rests, a downwardly-projecting tube or passage through which the sound-waves are directed upon the diaphragm, combined with a hinged arm, upon the free end of which the transmitter is pivoted, and a mechanical connection between the transmitter and a fixed support whereby the movement of the transmitter to vary its distance from a fixed point automatically turns the transmitter upon its pivot, so as to keep the diaphragm always in a horizontal position, substantially as described.

3. The combination, with a telephone containing a body of mobile material, of a vertically-swinging arm upon which said telephone is mounted, and means for maintaining said telephone in a horizontal position as the arm is swung up and down, substantially as set forth.

4. The combination, with a telephone containing a body of mobile material, such as finely-divided carbon particles, constituting the current-varying medium, of a vertically-swinging arm upon which said telephone is mounted, and means for maintaining said telephone in a horizontal position as the arm is swung up and down, substantially as described.

384,202. WATER-HEATER. DAVID GROVE, Berlin, Germany. Filed Nov. 16, 1886. Serial No. 152,060. (No model.) Patented in Germany Apr. 18, 1882, No. 20,720, and in England Jan. 4, 1883, No. 61.



Claim.—1. In a heating apparatus, a heating-chamber, water-coils located within said chamber, a gas-flue leading from a suitable generator to a canal within said heater, a burner provided at the upper part of said canal, and an air-duct opening above said burner for supplying air for the combustion of the gases, with an exit or chimney for the products of combustion, substantially as described.

2. In a heating apparatus, a heating-chamber, coils for containing the water to be heated arranged within said chamber, a canal or duct within said chamber in connection with a suitable gas generator or reservoir, a burner at the termination of said canal, air-passages arranged within said heating-chamber, and openings from said air-passages into the chamber above the burner, with an exit to the chimney for the products of combustion, substantially as described.

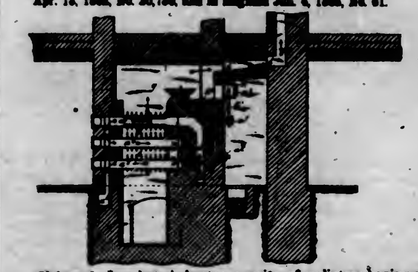
3. In a heating apparatus, a heating-chamber, water-coils in said chamber, and a gas-canal in the center of said chamber, terminating in a burner and in connection with a suitable gas reservoir or generator, with air-passages arranged between said canal and the water-coils, said passages being in connection with each other, with an inlet-opening to the bottom one, and with an outlet from the upper one above the burner, with an exit or chimney for the products of combustion, substantially as described.

4. The combination of the gas-chambers r^4, the canals or flues $r r'$, and the burner b with the coils s and canals or flues s^1 s^2 s^3 s^4, substantially as described and shown.

5. In a heating apparatus, a heating-chamber, water-coils arranged therein, a canal or duct for the gas or other heating medium, said canal terminating in a burner, and a valve arranged within said canal in proximity to the burner, with devices for regulating the same, substantially as described.

6. The combination of the rod or shaft w' with the shaft or axle w^2 and the cams or tappets w^3, and the burner b, substantially as described and shown.

384,203. AIR-HEATER. DAVID GROVE, Berlin, Germany. Filed Dec. 21, 1886. Serial No. 182,269. (No model.) Patented in Germany Apr. 18, 1882, No. 20,720, and in England Jan. 4, 1883, No. 61.



Claim.—1. In a hot-air heater, a series of radiators having passages connected for the products of combustion to pass through, and in connection with a suitable chimney, said flues being arranged within a heating-chamber, a combustion-chamber in connection with one of said flues, a gas-supply for said combustion-chamber, and a burner therein, and air-ducts for supplying air thereto, suitable inlet-pipes to the heating-chamber for the cold air, and outlet-pipes therefrom to the apartments to be heated, combined with a water-receptacle contained in said chamber, substantially as described.

2. A hot-air heater having a combustion-chamber supplied with fuel from a suitable source, a contracted opening forming a burner for the combustion of the fuel, and a series of air-ducts arranged upon either side of the combustion-chamber for supplying air to promote combustion, the air-ducts of each series being in connection with each other, to form circuitous passages, and one of said ducts of each series being in connection with the outside air, substantially as described.

3. In combination, the combustion-chamber and the gas-duct leading into the same, said chamber having a contracted opening serving as a burner formed by two jaws, one of which is adjustable to increase or diminish the size of the opening, substantially as described.

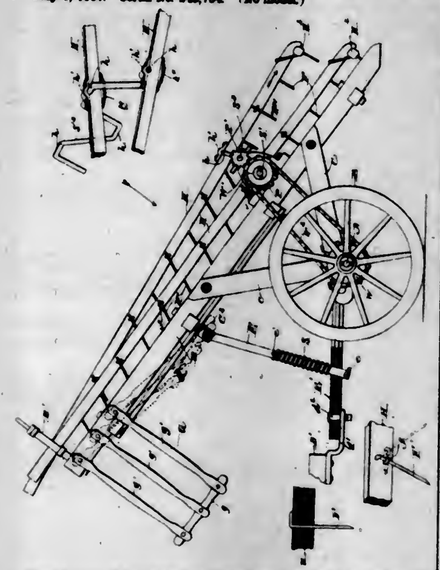
4. An air-heater having a heating-chamber with radiating-tubes therein, a combustion-chamber and a gas-supply duct and an air-supply duct to furnish gas and air to create combustion, and a contracted opening acting as a burner between the gas-supply duct and the combustion-chamber, said opening being formed by two jaws, one of which is adapted to slide, and is provided with rollers and operating-rods, substantially as described.

384,204. NUT-LOCK. JOHAN A. HARD, Denver, Colo., assignor of one-half to Henry L. Prentice, same place. Filed Aug. 27, 1887. Serial No. 247,902. (No model.)



Claim.—A nut-lock composed of the metallic plate A, having projections *b* and *g* formed integral therewith, and provided with the V-shaped spring-arm C, having outer looped end, *c*, substantially as and for the purpose specified.

384,205. HAY-LOADER. CHARLES A. HENRY, Monticello, assignor to William A. Overing and Adam Reichart, Sandy Spring, Iowa. Filed July 8, 1887. Serial No. 243,734. (No model.)



Claim.—1. In combination with the loader-frame D, having its side bars only extended beyond the same at the upper end, the guide-frame H', supported by the extended portions of the side bars, said guide-frame consisting of two parallel horizontal bars and the bolts connecting the said bars, and arranged in pairs so as to form retaining-guides A^3, and the rake-bars H, having their upper ends working through the guides, as set forth.

2. In combination with the loader-frame, the guide-frame H', supported at the upper end thereof, and comprising two parallel bars connected by bolts, which are arranged in pairs, so as to form retaining-guides, and the rake-bars H, working between the bolts, as set forth.

3. In combination with the loader-frame, the folding guard-frame G, consisting of a series of bars which are pivotally attached at their upper ends to the sides of the loader-frame, so as to fold up against the sides of the latter or to open outward and downward therefrom into an operative position, as set forth.

4. In combination with the loader-frame, the folding guard-frame G, pivotally attached at its upper ends to the upper ends of the loader-frame, and consisting of the strips *g'* and cross-strips *g*, the said strips being pivoted together at their meeting points, so that the entire frame can be folded into a small compass against the side of the loader-frame, as set forth.

5. In combination with the vibratory rake-bars H, the feeding-fingers F', having their ends turned at an angle and passed into the bars, whereby the angle ends of the fingers form trunnions therefor, by means of which the fingers can be swung around and thus adjusted into any inclined position, and a staple encircling the fingers and passed into the rake-bars to lock the fingers into the desired position, as set forth.

6. In combination with the rake-bars of a hay-loader, the crank-shaft connected to the same, and the shield-plates A^4, fitted to the under side of the rake-bars at the points where the crank-shaft is attached to prevent the hay from winding on said shaft, as set forth.

7. In combination with the stationary bed of the frame, having the diagonally-crossed beams C', the casting C^3, secured to said beams at their point of crossing the upright E, the lower portion of which is encircled by a coiled spring, S, one end of the spring bearing against the upright and the other end against the tongue-hound, said tongue-hound E' having a slot therein through which the lower end of the upright passes and has movement, substantially as described.

8. In combination with the loader-frame, the guide-frame H', secured to the ends of the frame above, beyond, and forward of the bed, said guide-frame being composed of parallel bars connected together by bolts which are arranged in pairs, so as to form retaining-guides, the rake-bars H, working between the bolts, and the folding frame G, composed of a series of bars which are pivotally attached to the side bars, as set forth.

384,206. BOLT-LOCK. WILLIAM A. JORDAN, New Orleans, La. Filed Dec. 27, 1887. Serial No. 259,178. (No model.)



Claim.—1. A bolt having a shank provided with enlarged flattened inner and outer portions, the enlargement at the outer end having a screw-thread thereon to receive a nut, substantially as and for the purpose set forth.

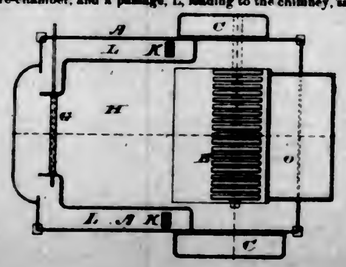
2. A bolt having a shank provided with an enlarged flattened outer end, and shoulders at the inner terminus of the said enlargement, in combination with a washer having a slot therein eccentric to its diameter, whereby the aforesaid shoulders of the bolt are automatically engaged, substantially as described, and for the purpose set forth.

3. The combination of a bolt having a shank provided with enlarged flattened inner and outer portions, the latter having a screw-thread thereon, a washer provided with a slot adapted to slip over the end of the bolt and engage the shoulders at the inner end of its outer enlarged portion, and a screw-nut to fit the threaded end of the bolt, substantially as and for the purpose set forth.

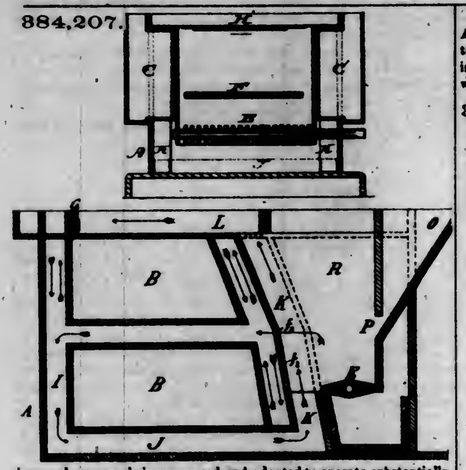
4. In combination with the perforated ends of railroad-rails and the fish-plates adapted to connect same, the bolts E, each having a shank provided with an enlarged flattened inner and outer portion, the washers *m* and *o*, slotted as described, and the screw-nut K, adapted to fit a screw-thread on the outer end of the bolt, substantially as described, and for the purpose specified.

384,207. SELF-FEEDING COOKING-STOVE. CHARLES E. KIDD, Newark, N. J. Filed Feb. 21, 1887. Serial No. 228,315. (No model.)

Claim.—1. The improved cooking-stove herein described, combining therein a fire-chamber, R, ovens B B, a passage, F, between said ovens, a flue, *f'*, formed in the wall f^2 in line with passage F, leading into the passage F, and passages I J, leading below the lower oven, an upward passage, K, leading from the passage J and lying adjacent to the fire-chamber, and a passage, L, leading to the chimney, said cham-



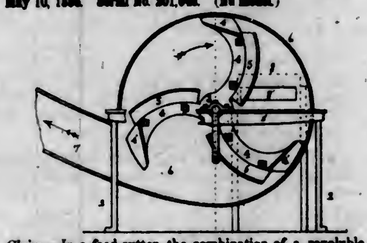
384,207.



bers and passages being arranged and adapted to operate substantially as and for the purposes set forth.

2. The improved cooking-stove combining therein a fire box or chamber, ovens B B, with passage F between, a flue, *f'*, formed in the wall f^2 in line with passage F, leading into said passage F, passages I J, and lateral tubes or passages K, adjacent to the fire-box, passage L to the chimney or smoke-pipe, an upper passage, H, over the upper oven, and a damper, G, said parts being arranged and adapted to operate substantially as set forth.

384,208. FEED-CUTTER. ORTON C. LITTLE, Menasha, Wis. Filed May 10, 1886. Serial No. 201,643. (No model.)



Claim.—In a feed-cutter, the combination of a revoluble spider having the curved arms 4, and curved knives 5, secured upon the outer curve of the arms, said arms being thin the length of the knives in a direction transverse to their plane of rotation, and having their outer extremities extending beyond the knives and enlarged in the aforesaid direction and forming the fan-wings 4', surrounding said spider, with the circular case 6, having the opening 8' in its side and the elevating discharge-spout 7 in its circumference, all arranged and operating substantially as described.

384,209. DADO-CUTTER. JONATHAN R. MERRIAM, Grand Rapids, Mich., assignor, by direct and mesne assignments, to William R. Fox, same place. Filed May 27, 1886. Serial No. 203,493. (No model.)



Claim.—1. In a dado-cutter, the combination of the outer saws, A and B, arranged a parallel distance apart, with a wabble-saw, C, intermediate of the saws A B and arranged at an angle thereto within the space between them, substantially as described.

2. In a dado-cutter, the combination of the outer saws, A B, arranged a parallel distance apart, with a wabble-saw, C, arranged in the space between the saws A B at an angle to said saws, the collars D, for supporting the saws, and fastening means, as E, substantially as described.

3. In a reversing dado-cutter, the combination of the wabble-saw C with the side saws, A and B, each side saw having a segment cut away, so as to permit the overlapping of the saw C, substantially as shown and described.

4. In a dado-cutter, the combination of the outer parallel saws, A B, a wabble-saw arranged at an angle to the outer saws and between the same, with the collars D, having outer parallel faces and inner inclined faces arranged to clamp the saw C between them, and with means for securing the parts together, substantially as described.

384,210. STEP-LADDER. JOHN T. MILLER, Chicago, Ill. Filed Oct. 1, 1887. Serial No. 251,265. (No model.)



Claim.—1. A hinge for step-ladders, consisting of an inverted-U-shaped saddle clip or bracket, C, adapted to be secured by its horizontal plate or member to the top step, D, and by its vertical plates or members to the side bars, A, and rear support, B, in the manner and for the purpose set forth.

2. The combination, with a folding step-ladder, of a supplementary support or legs, E, of a less length than the main support B, and adapted to fold out of the way when not in use in a radial plane parallel with the main support, essentially as herein described.

3. A step-ladder having a shelf or bucket support, C, hinged immediately beneath the top step and near the front edge of same, in combination with the turn-buttons or hooks *g*, essentially as and for the purpose set forth.

384,211. METHOD OF SEWING BOOKS. WILLIAM W. NEIL, Philadelphia, Pa., assignor to William F. Murphy's Sons, same place. Filed May 24, 1887. Serial No. 239,209. (No model.)



Claim.—1. The method of sewing signatures, consisting in passing the thread in at the back of the signature, then carrying the thread along the interior thereof, and then passing it out to the back, returning it to the interior at a point on the back beyond its point of exit, thus forming a loop on the back of the signature, then carrying the thread along the interior of the signature, and then passing it out through the back of the said signature and into the back of the next signature, then along the interior thereof, and then out, interlocking it with the loop on the first signature, then into the back of the said second signature in such a manner as to form a loop on the back thereof, then carrying it along the interior of the second signature, and then out, and after knotting the thread with the thread at the adjacent end of the first signature passing it into the back of the third signature, then forming a loop on the back thereof interlocking with the loop on the back of the first signature, substantially as described.

2. The method of sewing signatures, consisting in passing the thread in at the back of the signature near one end thereof, then carrying the thread along the interior of the signature toward the center, passing the thread out to the back and returning it at a point on the

back beyond the point of exit, thus forming a loop on the back of the signature, then carrying the thread along the interior of the signature and passing it out near the other end, then passing the thread into the interior of the next signature and along the same, then out and interlocking it with the loop on the first signature, then into the second signature in such a manner as to form a loop on the back thereof, and then passed out, and, after knotting it with the thread at the adjacent end of the first signature, into a third signature, forming a loop on the back thereof in a similar manner, interlocking with the loop of the first signature, then forming looms in a similar manner on the backs of other signatures, the loop of each signature interlocking with those of the last two signatures, and the threads at the ends of each signature being knotted with the threads of the adjacent ends of the previous signatures, substantially as described.

384,212. FIRE-BUCKET LOW-WATER ALARM. JOHN NOLAN, Philadelphia, Pa., assignor to the Automatic Electric Alarm Company, Camden, N. J. Filed Oct. 28, 1887. Serial No. 253,563. (No model.)

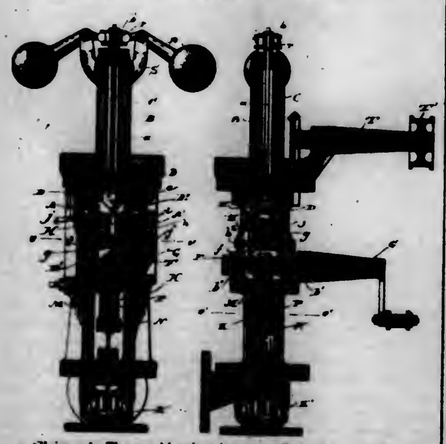


Claim.—1. The combination, with a rigid bracket or bail-support, the guide-bar, and a normally-broken electric circuit connected therewith, of the float, the elastic rod extending therefrom and passing through said guide-bar, the contact-piece attached thereto, and the alarm-bell in said broken circuit, substantially as described.

2. In a fire-bucket low-water alarm, the combination, with the rigid bracket or bail-support, the guide-bar below said bracket, a normally-broken electric circuit connected therewith, and an alarm in said broken circuit, of a float, a rod extending therefrom and passing through said guide-bar, and an adjustable contact-piece on said rod, substantially as described.

3. In a fire-bucket low-water alarm, the combination, with a rigid bucket-support, of a broken circuit having two stationary contact-points in close relation to each other and to the bucket-support, a float, a movable contact-piece adapted to engage said contact-points, a connection between said float and said movable contact-piece, and a guide for said connection, substantially as described.

384,213. CUT-OFF FOR STEAM-ENGINES. BRUNO V. NORDBERG, Milwaukee, Wis., assignor to the Bruno Nordberg Company, same place. Filed Dec. 20, 1887. Serial No. 258,463. (No model.)

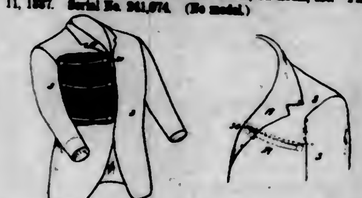


Claim.—1. The combination, in a cut-off for steam-engines, of a tripping-head connected with the governor-arms, a lifting trip-lever toggled to a rock-shaft that is operated by the eccentric of the engine, and a valve-hanger having a pin for engagement with a notch on the lifting trip-lever, as set forth.

2. The combination, with the lifting trip-lever and the trip-head and operating mechanism, of the valve-hanger and its engaging-pin and a spring for forcing the lifting trip-lever into engagement with the engaging-pin, substantially as described.

3. The combination, with the valve-hanger and its engaging-pin, of the jacket, the rock-shaft and lifting trip-lever toggled to the rock-shaft, and the spring for forcing the lifting trip-lever into engagement with the pin of the valve-hanger, as set forth.

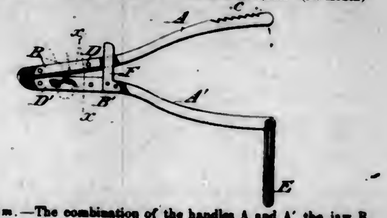
384,214. COAT. WILLIAM H. CRESS, St. Louis, Mo. Filed June 11, 1887. Serial No. 241,074. (No model.)



Claim.—1. A coat or like garment provided at its front breadths with a metallic or suitable water-proof stiffening-brace having its ends transversely thickened, and secured between the arm and front edge of the garment, substantially as described.

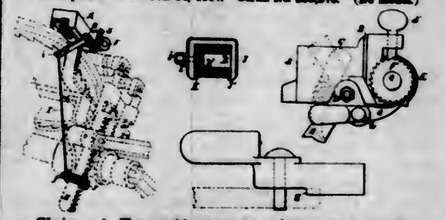
2. A coat or like garment provided at its front with a metallic or suitable water-proof stiffening-brace having its outer end curved to fit the lapel-fold, and secured between the arm and front edge of the garment, substantially as described.

384,215. CASTRATING-INSTRUMENT. JAMES PHILLIPS, Washington, Iowa. Filed Nov. 28, 1887. Serial No. 256,344. (No model.)



Claim.—The combination of the handles A and A', the jaw B, having tongue *b*, the jaw B', having groove *a*, the plates D and D', secured to the jaws and having cutting-edges, and the bar F, all arranged to operate substantially as specified and shown.

384,216. INK-FOUNTAIN FOR PLATEN PRINTING-PRESSES. WILLIAM H. PRIOR, Jr., Cleveland, Ohio, assignor to Chandler & Price, same place. Filed Oct. 24, 1887. Serial No. 253,272. (No model.)



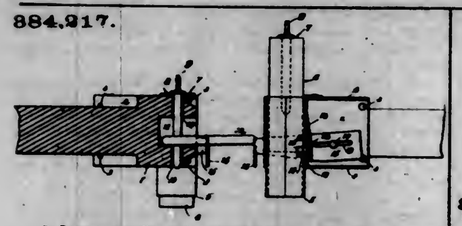
Claim.—1. The combination, with ink-fountain, feed-roll, and ratchet-wheel, substantially as indicated, of bell-crank lever pivoted to the fountain, and push-pawl pivoted to the lever in position to engage the ratchet-wheel, said pawl having an offset and shoulder adapted to engage either side of the lever, substantially as set forth.

2. The combination, with ink-fountain and attachments, substantially as indicated, of clamp J and link L, for actuating the fountain from the movement of the inking-roller frame, said clamp being adapted to embrace three sides of such inking-roller frame, and a set-screw for fastening the clamp, such set-screw serving also as a pivotal connection for the link, substantially as set forth.

384,217. CAR-COUPLING. WILLIAM G. RUTLEDGE, Galveston, Tex. Filed Dec. 28, 1887. Serial No. 259,313. (No model.)

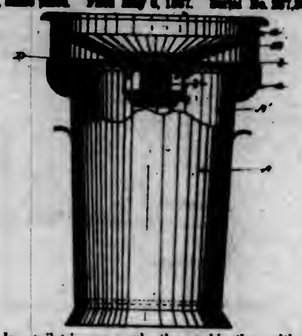
Claim.—1. In a car-coupling, a vertical movable U-shaped frame mounted in guides on a draw-head and adapted to support a coupling-pin, a horizontal movable U-shaped piece mounted in supports on the draw-head and extending across the lower edge of link-recess in draw-head, and spring-catches on the draw-head adapted to engage the coupling-pin frame and to be thrown out of engagement by the horizontal U-shaped piece, substantially as shown and described.

384,217.



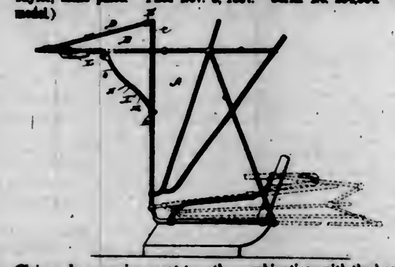
2. In a car-coupling, a draw-head, 1, having casings 2, with guides 5, having notches 15*, and spring-catches 13, U-shaped coupling-pin frame, sliding U-shaped piece 16, having slots 18, engaging pins 17, and the projections 20, substantially as described.

384,218. TOILET JAR COMMODE. LEVI W. SWAFFORD and CHARLES A. BOSSE, Vicksburg, Miss.; said Bosse assignor to A. G. Herdenstein, same place. Filed May 6, 1887. Serial No. 237,203. (No model.)



Claim.—In a toilet jar commode, the combination, with the vessel or body A, having the trough *a*, of the cover B, having the downwardly-projecting wall *b*, and a splash-board, *a'*, secured upon said cover, with an open space between the wall *b* and said splash-board, said splash-board extending down into the trough *a*, as and for the purpose set forth.

384,219. CARRIAGE-TOP. MILES B. TAYLOR, Janesville, Wis., assignor of three-fourths to John Sally, Fred Vandewater, and H. E. Taylor, same place. Filed Nov. 5, 1887. Serial No. 254,304. (No model.)



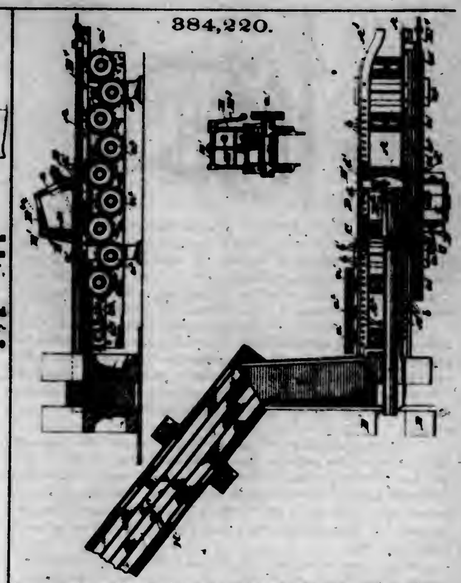
Claim.—In a carriage-cent top, the combination, with the bow C, and the swinging bow B, hinged thereto and provided with bearing-blocks L, of rule-jointed braces I', secured with their rule-jointed ends to said swinging bow and at their opposite ends to the bow C, and formed with the curved portions M, N, and O, substantially as set forth.

384,220. BLOOM-SHEAR TABLE AND CROP-END CONVEYER. FRANCIS H. TRENT, Joliet, Ill., assignor of two-thirds to Reuben S. Smith and Charles Pottgieser, both of same place. Filed June 21, 1887. Serial No. 242,023. (No model.)

Claim.—1. The combination, with a bloom-shear, of a table provided with two guide-rails, the movable part of the shear moving from one guide-rail toward the other, the said guide-rails being located further apart than the width of the bloom, substantially as described.

2. The combination, with a bloom shear and table, of a hinged adjustable bloom-stop, substantially as described.

3. The combination, with a bloom-shear and a table provided with feeding-rollers, of two guide-rails located further apart than the width of the bloom, one of said rails at the end of the table opposite the shear being provided with an inward bend reducing the distance



between the guides to about the width of a bloom, substantially as described.

4. The combination, with a bloom-shear and bloom-table provided with feeding-rollers and provided with guiding-rails, of a bloom-stop mounted on and adjustably secured to said rails, substantially as described.

5. The combination, with a bloom-shear table provided with guiding-rails, of a hinged bloom-stop adjustably secured to the said guide-rails, substantially as described.

6. The combination, with a bloom-shear table provided with guiding-rails, of adjustable bearing-plates mounted on said guide-rails, and a bloom-stop hinged or pivoted upon said bearing-plates, substantially as described.

7. A bloom-stop for a shear-table, consisting of bearing-plates, arms pivoted to said plates, and a yielding cross-head connecting said arms.

8. A bloom-stop for a shear-table, consisting of bearing-plates provided with uprights or standards, arms pivoted to said plates, a cross-head connecting said arms, a rock-shaft mounted in the said standards, having an arm connected by a link to the cross-head, and an actuating-arm, substantially as described.

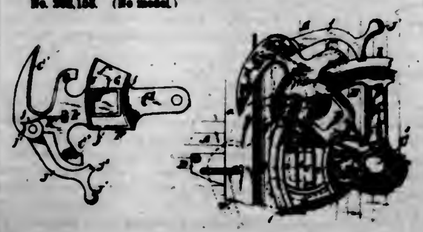
9. The combination, with a bloom-shear, of a crop-end conveyer, substantially as described.

10. The combination, with a bloom-shear, of a crop-end conveyer consisting of a bed, conveyer-chain, guide-rails, and operative mechanism, substantially as described.

11. The combination, with a bloom-shear, of a delivery-chute located beneath the same, and an endless-chain conveyer extending beneath the delivery end of said chute, substantially as described.

12. A crop-end conveyer consisting of a bed having sprocket-wheels on each side of the same, an endless conveyer-chain consisting of two drive-chains and connecting cross-bars, and guiding-rails above and projecting over the conveyer-chain, substantially as described.

384,221. SEAL-LOCK. CHARLES H. WARNER, Omaha, Nebr., assignor to John L. McCague, same place. Filed Jan. 27, 1888. Serial No. 262,164. (No model.)



384,221.



Claim.—1. The combination, with the door and the wall, of the hasp or latch which vibrates about a pivot and which fastens the door to the wall independently of the seal, the seal-receptacle, and means, substantially as described, connected with the hasp or latch for marring the seal at the time when the locking hasp or latch is rocked on its pivot out of its locked position, substantially as described.

2. The combination, with the door and the wall, of the seal-receptacle and the hasp or latch which fastens the door to the wall independently of the seal, of which two parts one rocks relatively to the other about a pivot, and means, substantially as described, connected with one of said parts for marring the seal during the time that the said rocking part is moving around said pivot, substantially as described.

3. The combination, with the door and the wall, of the vibrating hasp or latch which locks the door to the wall independently of the seal, and is directly accessible from the outside of the door, the seal-receptacle adapted to be covered by the hasp when the parts are locked, and a knife which after the parts are locked is immovable until the hasp has commenced to move from the locked position, substantially as set forth.

4. The combination, with the door and the wall, of the vibrating hasp or latch which locks the door to the wall and is situated entirely on the outside of the door, the seal-receptacle, and a knife operated at the time the hasp is moving out of its locked position for marring the seal, substantially as set forth.

5. The combination, with the hasp or latch which rocks about a pivot and which locks the door to the wall and the seal-receptacle, of the knife which is inaccessible when the parts are locked, and is immovable across the seal independently of the hasp, and is movable across the seal independently of the door, substantially as set forth.

6. The combination of the hasp or latch vibrating about a pivot, the fixed fastener with which it engages, the seal-receptacle stationary relatively to the hasp or latch, and the vibrating seal-cover, said seal receptacle and cover being situated between the said pivot and the said fixed fastener for the hasp or latch, substantially as described.

7. The combination of the vibrating hasp or latch, the seal-receptacle stationary relatively to the hasp or latch, and the seal-cover formed with or rigidly attached to the hasp or latch, and having an aperture closed with a glass that vibrates relatively to the receptacle in a plane parallel to the face of the seal, substantially as set forth.

8. The combination of the vibrating hasp or latch, the pivot therefor, the seal-receptacle having flanges concentric with the said pivot, and the seal-cover having flanges also concentric therewith, substantially as set forth.

9. The combination, with the door and the wall, of the vibrating locking hasp or latch pivoted to one of the aforesaid parts, the seal-receptacle rigidly secured to the same, said part, the knife, said knife and seal-receptacle being immovable relatively one to the other, the seal-cover, and the fixed fastener for the hasp or latch secured to the other of said parts, substantially as set forth.

10. The combination, with the door and the wall, of the seal-receptacle secured to one of said parts, the knife, also secured to the same part, the pivot about which the knife vibrates curvilineally across the seal-holder, and an imperforate seal-cover, substantially as described, whereby the knife is rendered inaccessible while the door and the wall are locked together, substantially as set forth.

11. The combination, with the seal-receptacle secured to the door, of the vibrating seal-cover, the pivot which holds the seal-cover, the knife carried by the seal-cover and projecting inwardly therefrom, and the hooked hasp attached to the seal-cover and adapted to be grasped by the hand for causing the knife to move curvilineally across the seal-receptacle, substantially as set forth.

12. The combination, with the seal-receptacle and the cover therefor, of which parts one rocks relatively to the other about a pivot, the knife secured to one of said parts and immovable independently of the hasp, and the hasp connected to the rocking part, of a lock supplemental to the hasp which positively holds the seal and the knife in their closed position relatively to each other, and which is movable relatively to the hasp while the latter is in its closed position, substantially as set forth.

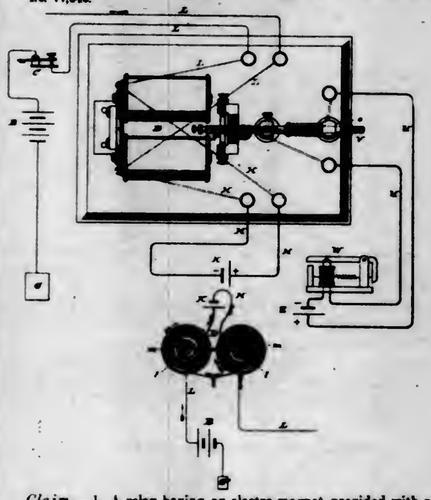
13. The combination, with the seal-receptacle, the hinged hasp, and the staple or fixed fastener, of the lock supplemental and pivoted directly to the hasp and movable relatively to the hasp while the latter remains in the locked position in the staple or fastener, substantially as set forth.

14. The combination of the door and the wall of the seal-receptacle, the rocking hooked hasp, and the knife, all situated entirely outside of the door or wall, the staple or fixed fastener with which the hooked hasp engages, the locking-dog supplemental to the hasp and pivoted thereto above the staple or fastener, and the stationary abutment on the exterior surface of the car or wall for the said dog and situated above the staple, substantially as described.

15. In a seal-lock, the combination, with the knife and the seal-receptacle, of a seal retainer or support independent of the knife bearing against the central part of the upper or outer face of the card or seal to hold said central part from displacement by the knife, substantially as set forth.

16. In a seal-lock, the combination, with the knife and the seal-receptacle, of the seal retainer or support independent of the knife, arranged across the printed or marked portion of the seal, and bearing against the surface on lines in proximity to the line of cut, substantially as set forth.

384,222. RELAY. JOHN R. WATSON, Louisville, Ky., assignor to the International Electric Company, same place. Filed Apr. 11, 1887. Serial No. 234,360. (No model.) Patented in Belgium Apr. 12, 1887. No. 77,046.



Claim.—1. A relay having an electro-magnet provided with a helix of low resistance connected in a constantly-closed local voltaic circuit passing its current in one direction, a permanent magnet with its poles in the magnetic field of said helix, and a helix of high resistance connected in the main voltaic circuit passing its current in the opposite direction, whereby the magnetizing influence of the low-resistance helix is hampered by the main-line current, substantially as specified.

2. An electro-magnetic relay provided with a permanent magnet and having a coil of low resistance on the same core with its main-line helix and included in a constantly-closed local voltaic circuit passing a current of similar polarity to that of the permanent magnet in the opposite direction to that of the main voltaic current in the main-line helix to set up therein induced currents opposite in direction to the extra or otherwise induced currents of said main line to neutralize the same, substantially as specified.

384,223. CLAW-BAR. ARCHIBALD B. WYCKE, Kingman, Kans. Filed Sept. 1, 1887. Serial No. 248,510. (No model.)

Claim.—1. A claw-bar consisting of a handle, said handle having formed on its lower end laterally-extending bearings or projecting portions *b* B, through which pass a pivot-bolt, a wedge formed on said handle in the rear of said bearings, and jaws attached to said handle by the pivot-bolt, so that the wedge formed on the handle will be passed between the heels of the pivoted jaws, so as to bring the points together when the handle is moved rearwardly upon its pivot, substantially as shown, and for the purpose set forth.

2. The combination, in a claw-bar, of a handle provided at its lower end on opposite sides with laterally-projecting bearings or projecting portions *b* B, having a perforation through which passes a bolt,

384,223.



the wedge-shaped portion formed on the lower end of the handle rear of the bearings, jaws having recesses within which the bearings formed on the handle lie, the heels of said jaws being tapered, so that the point of the wedge will lie between the same, and a bolt for connecting the jaws to the handle, substantially as described.

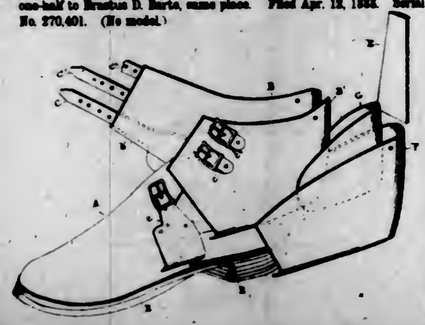
3. In a claw-bar, a handle, A, provided at its lower end with a shoulder-bearing, a wedge, D, formed integral with the handles above and rear of the bearing, jaws E E, having recesses adapted to lie over the shouldered bearings, a bolt for connecting the jaws pivotally to the handle, and compressible washers interposed between the jaws and head and nut of the bolt, the parts being combined substantially as shown, and for the purpose set forth.

4. The combination, in a claw-bar, of a handle provided at its lower end with a depending portion, B, having shoulders *b b*, a wedge-shaped depending portion, D, formed integral with the portion B and the handle, claws having sockets, and a bolt for pivotally securing said claws to the handle, substantially as shown, and for the purpose set forth.

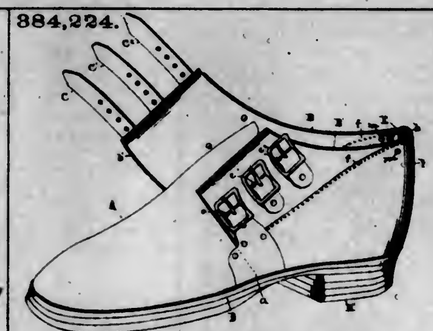
5. The combination, in a claw-bar, of a handle provided at its lower portion with means for pivotally securing thereto claws, said handle-bar also being provided with a wedge-shaped portion, D, and shoulders *g* and *g'*, against which shoulders stops formed on the claw-bars are adapted to abut, substantially as and for the purpose specified.

6. The combination, with a handle, of a claw-bar having shoulders *g g'*, a depending portion with circular shoulders *b* formed thereon, and a wedge-shaped portion, D, claws E E, having sockets adapted to fit over the shoulders *b b*, a bolt for securing the parts to each other, and a spring attached to the lower end of the handle-bar, so as to exert a downward spring-pressure upon the heels of the claws, substantially as and for the purpose set forth.

384,224. SHOE. MARTIN YEAGLE, Watsontown, Pa., assignor of one-half to Brantus D. Barto, same place. Filed Apr. 12, 1888. Serial No. 270,601. (No model.)



384,224.



Claim.—The herein shown and described shoe, composed of the vamp and the quarters secured together by back and side seams, the end of one quarter being extended to form a flap, the inner stay, E, the outer stay, F, of one piece and extending from one side seam to the other, and secured at its ends by the said side seams, the upper edge inclining from back to front, as shown, and secured to the quarters by a row of stitching, and the lower edge being lasted in, the straps C C' C² and the corresponding straps, *c c'* *c²*, provided with buckles, the straps C and *c* being widened at their lower ends to overlap the said side seams and lasted in, and the sole and the heel, substantially as specified.

384,225. FRAME FOR RAILWAY-CARS. MAX A. SCHEIER, Phœnixville, Pa. Filed Oct. 7, 1887. Serial No. 251,776. (No model.)

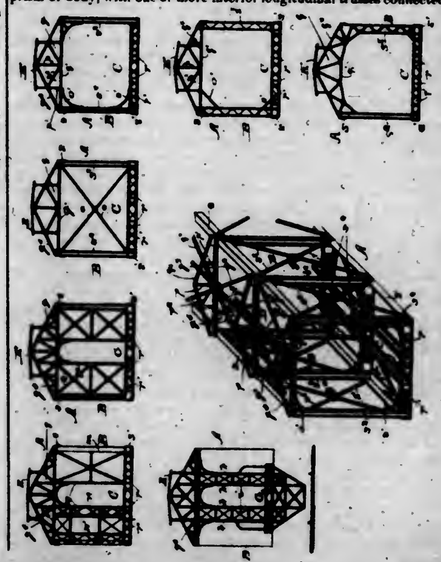
Claim.—1. A railway-car frame in which each exterior longitudinal face is constructed of a statically-formed truss with skeleton members and one chord for each pair of adjacent trusses in common, the whole forming a complete skeleton tube, substantially as described.

2. A railway-car frame consisting of a hollow statically-constructed skeleton prism or body having a number of panel-points in each of the faces of the longitudinal sides of the frame, which panel-points intersect or coincide at the junction of the sides of the frame with the longitudinal chords thereof, substantially as described.

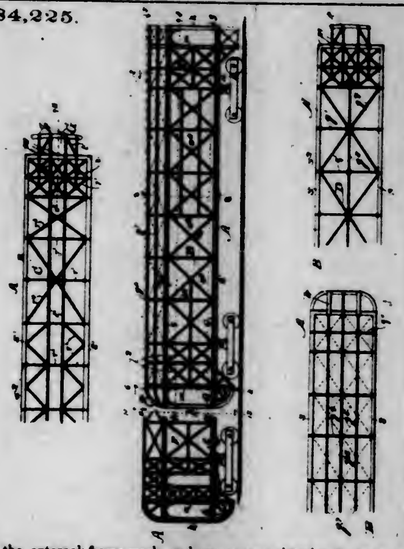
3. A railway-car frame consisting of an exterior longitudinal frame-work having interior transverse-vibration trusses, substantially as described.

4. A railway-car frame consisting externally of a skeleton prism or body, with one or more interior longitudinal trusses connected with the exterior frame-work, substantially as described.

5. A railway-car frame having a body in the form of a skeleton prism or body, with one or more interior longitudinal trusses connected



384,225.



with the external frame-work, and one or more interior transverse-vibration trusses connected also to the frame-work, substantially as described.

6. A railway-car frame having externally a skeleton prism or body, with one or more vertical transverse statically-constructed overhead roof-trusses, having web members throughout its entire length, substantially as described.

7. A railway-car frame having externally a body in the form of a skeleton prism, with one or more interior transverse-vibration trusses and one or more vertical transverse statically-constructed overhead roof-trusses, having web members throughout its entire length, all connected together substantially as described.

8. A railway-car frame having externally a body in the form of a skeleton prism, with one or more interior longitudinal trusses and one or more transverse statically-constructed overhead roof-trusses, having web members throughout its entire length and suitable connections for rigidly connecting the same together, substantially as described.

9. A railway-car frame externally in the form of a skeleton prism or body, with one or more interior longitudinal trusses and one or more vertical transverse statically-constructed overhead trusses, having web members throughout its entire length and one or more interior transverse-vibration trusses, all connected together substantially as described.

10. A railway-car frame having an upper and lower deck frame projecting beyond the ends of the body of the main frame, connected by columns or girders at their extreme ends, substantially as described.

11. A railway-car frame having an upper and lower deck frame projecting beyond the ends of the body of said frame, connected by columns and girders at their extreme ends extending above said upper and below said lower decks, substantially as described.

12. A railway-car frame having a truss-body with an upper and lower deck frame projecting beyond the ends of the body, connected by columns or girders at the ends thereof, and having columns or girders *m* built into the end wall of the body, with projecting ends of members *k*, substantially as described.

13. A railway-car frame in the form of a prism or body having trussed side, top, and bottom faces, in combination with one or more longitudinal interior trusses, substantially as described.

14. A railway-car frame having trussed side, top, and bottom faces, in combination with one or more lateral interior trusses connecting the sides, top, and bottom, substantially as described.

15. A railway-car frame having trussed side, top, and bottom faces, in combination with one or more longitudinal interior trusses and one or more lateral interior trusses, all connected together substantially as described.

16. A railway-car frame consisting of a trussed body, in combination with projecting trussed platforms, substantially as described.

17. A railway-car frame consisting of a trussed body, in combination with trussed platforms and trussed projecting roof portions, connected, respectively, to the body of said frame, substantially as described.

18. A railway-car frame consisting of trussed longitudinal side, top, and bottom faces, in combination with a trussed roof-supporting frame, substantially as described.

19. A railway-car frame having four or more longitudinal external members, with diagonal and vertical members connecting the sides of said frame to said longitudinal members and diagonal and horizontal members connecting the top and bottom of such frame to said longitudinal members, substantially as described.

20. A railway-car frame having vertical and diagonal braces in its side faces, in combination with diagonal and horizontal braces in its top and bottom faces and knee-braces between the sides and top and bottom faces, substantially as described.

384,226. METHOD OF MAKING BUTTONS. SHUBAL CUTLER, New York, N. Y. Filed Dec. 9, 1887. Serial No. 257,335. (No model.)



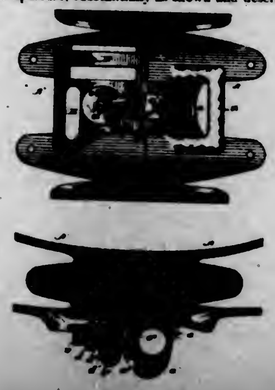
Claim.—1. The process of manufacture from a single piece of metal of a stud, collar, or sleeve button having two flanged portions united by a hollow shank or post, one of said flanged portions being hollow and the other solid, which consists in first producing a tube of thin metal, A, having at one end a solid or thickened portion, B; second, compressing and so reducing the diameter of said tube adjacent to said thickened portion B, as at C, and, third, closing the open end of said tube by pressing into close contact the metal around the edge of the opening in said tube, substantially as described.

2. The process of manufacture from a single piece of metal of a stud, collar, or sleeve button having a hollow head, a hollow shank, and a solid back or base, which consists in first producing a tube of thin metal, A, having at one end a solid or thickened portion, B; second, compressing and so reducing the diameter of said tube adjacent to said thickened portion B, as at C; third, drawing out or flattening said solid or thickened portion B, as at B', and, fourth, closing the open end of said tube by pressing into close contact the metal around the edge of the opening in said tube, substantially as described.

3. The process of manufacture from a single piece of metal of a stud, collar, or sleeve button having a back and shank of thin metal and a solid head, which consists in first producing a tube of thin metal, A, having at one end a solid or thickened portion, B; second, compressing and so reducing the diameter of said tube adjacent to said thickened portion, as at C; third, closing the open end of said tube by pressing into close contact the metal around the edge of the opening in said tube, as at *a'*, and, fourth, flattening the portion so closed, as at *a''*, substantially as described.

384,227. HORSE-COLLAR FASTENING. ARTHUR H. DAVIS and GEORGE KEITH, Earlville, Ill. Filed Mar. 29, 1888. Serial No. 268,790. (No model.)

Claim.—1. As an improvement in collar fasteners or couplings, the herein-described irons or frames having the stud or post provided with an inclined groove and a slot, the pivotally-secured spring-hold button having a central hole or aperture, and the spring inclosed in said hole or aperture, substantially as shown and described.





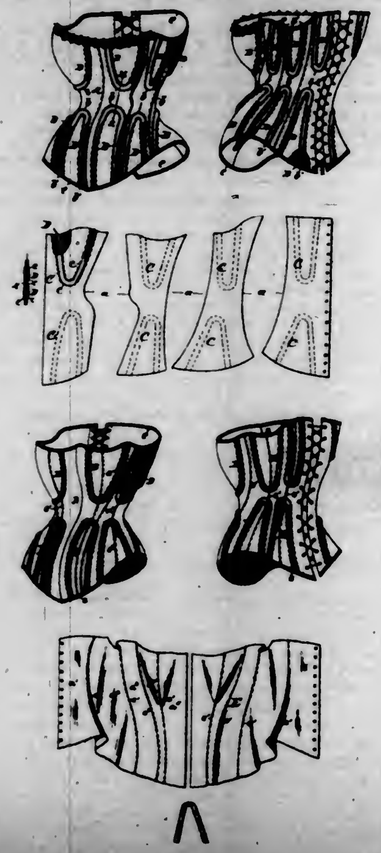
2. The combination, with the iron or frame A, having a groove or recess, *a*, and a stud or post provided with an inclined groove and a horizontal slot or recess, of the frame A', having a loop flying over said stud or post and resting in said groove or recess *a*, and the spring-held button having a nose entering said inclined groove and horizontal slot or recess, substantially as shown and described.

3. As an improvement in fasteners or collar-couplings, the iron or frame having the central groove or recess, the stud or post having an inclined groove and a slot, the button having a projecting nose, the spring located in said button, and the stop-pins, substantially as shown and described.

4. The combination, with the iron or frame having the dovetail and the short studs, a central curved portion, and the stud or post having an inclined groove and a slot, of the iron or frame having a loop, the spring-held button provided with a nose, and the lug or head and the stop-pins, substantially as shown and described.

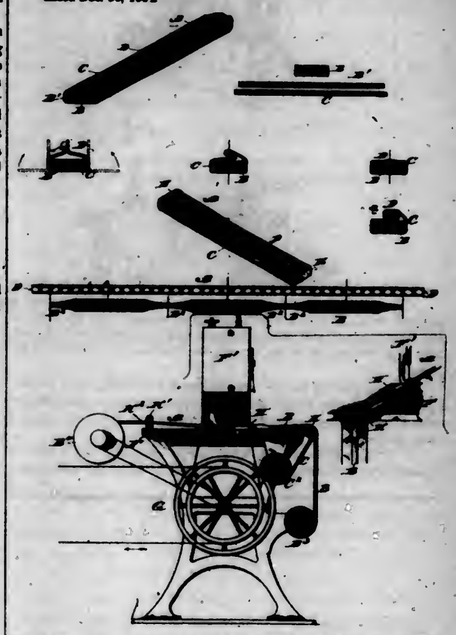
REISSUES.

10,935. CORSET. CATHARINE A. GRISWOLD, New York, N. Y. Filed Dec. 30, 1887. Serial No. 259,491. Original No. 362,949, dated Feb. 23, 1887.



Claim.—A corset provided with longitudinally edgewise-curved stiffeners or stays incorporated and inclosed in correspondingly-curved pockets or folds, constituted in and by the material of the corset-body, and extending in a series along the top or bottom edges, or both, of the corset-body, through said body from said edges to substantially the waist-line of the corset, and with their apices located at said waist-line, and with both extremities of each said curved stiffeners or stays terminating at one and the same edge of the corset-body, substantially as and for the purpose set forth.

10,936. HAIR-CRIMPER. ISAAC W. REYNOLDS, Philadelphia, Pa., assignor to the Philadelphia Novelty Manufacturing Company, same place. Filed Mar. 30, 1888. Serial No. 267,903. Original No. 369,264, dated Dec. 30, 1884.



Claim.—1. As a new article of manufacture, hair-crimper stock consisting of a continuous core of soft-metal wire and a covering-strip of flexible non-metallic fabric applied thereto, said core attached continuously to the said fabric, the edges of said strip seamed by a continuous seam, the said stock adapted to be cut into suitable lengths, substantially as and for the purpose described.

2. As a new article of manufacture, a flat hair-crimper composed of a ductile, non-elastic core of soft-metal wire and a covering-strip of non-metallic fabric, the edges of said fabric secured together by a continuous seam, said wire attached to said covering-strip from end to end, substantially as described.

3. In a hair-crimper, a soft-metal core consisting of a central body, B, and a flat self-sustaining strip, B', in combination with a covering of textile fabric, substantially as and for the purpose set forth.

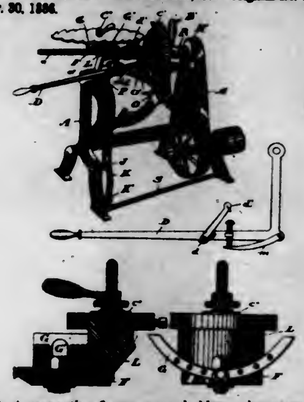
4. In a hair-crimper, a soft-metal core consisting of a central body B in combination with a flat self-sustaining strip, B', laid upon said body B and having thin lateral edges, and a textile covering, C, surrounding said interposed strip B' and attached thereto continuously from end to end, substantially as and for the purposes set forth.

5. As a new article of manufacture, a continuous length of hair-crimper stock, consisting of a soft-metal core and a covering of flexible non-metallic fabric, said fabric being attached to said core by a longitudinally-stitched seam, said stitches passing through both the covering and the core, the said stock adapted to be cut into suitable lengths, substantially as and for the purpose described.

6. A flat metal hair-crimper having a textile or woven covering united thereto from end to end by a series of stitches in which the threads pass through both sides of the covering and through the metallic core of the said crimper, and having the sides of the needle-holes swaged down upon the threads, so that the said covering shall not strip from the said core when the said crimper is cut into various lengths, substantially as described.

7. In a hair-crimper, a soft-metal wire having the length thereof provided with swells and contractions B BP, so that the body of the crimper may be of a different diameter from the ends thereof, in combination with a textile covering, C, attached to said wire continuously from end to end, substantially as described.

10,937. SAW-FILING MACHINE. SAMUEL C. ROGERS, Hamilton, Ontario, Canada, assignor to the Kerr Emery Wheel Company, (Limited.) Filed Mar. 14, 1888. Serial No. 267,189. Original No. 338,787, dated Mar. 30, 1886.



Claim.—1. A supporting-frame, a saw-holder, a sharpener, and a pivoted lever carrying a pawl arranged to engage with the teeth of the saw being operated upon, combined with a templet, and an adjustable stop independent of the templet for regulating the motion of the lever.

2. A supporting-frame, a saw-holder, a sharpener, and a pivoted operating-lever carrying a suitably-shaped templet, in combination with a movable frame carrying the grinding-wheel, and a stop on said movable frame.

3. A supporting-frame, a saw-holder, a sharpener, and a pivoted operating-lever carrying an adjustable templet, combined with a movable frame carrying the grinding-wheel, and a stop on said movable frame.

4. A supporting-frame, a saw-holder, a sharpener, and a pivoted operating-lever carrying an adjustable templet, in combination with a movable frame carrying the grinding-wheel, and an adjustable stop on said movable frame.

5. A supporting-frame, a saw-holder, a sharpener, and a pivoted lever carrying a pawl arranged to engage with the teeth of the saw being operated upon, and a templet pivoted on the said lever and held at any desired angle by an adjusting-screw, in combination with the movable frame, and a stop on said frame carrying the grinding-wheel.

6. A supporting-frame, a saw-holder, a sharpener, and a pivoted lever having attached to it a standard, *d*, carrying the pawl *d'*, working on a vertical pivot and having a spring device to keep the pawl pressed against the saw when the lever is in use.

7. The combination of an arm, *c*, base F, block G, and cone *c'*, provided with means for holding the saw, substantially as described.

8. In a saw-filer, the combination of a lever, D, attached at one end to a table and carrying the pawl *d'*, the arm *c*, the base F, the block G, and the cone *c'*, provided with means for holding the saw, substantially as and for the purpose specified.

9. The combination of the lever D, attached at one end to a table, an adjustable templet, M, an oscillating frame, B, provided with stops O and M', and emery-wheel *c'*, substantially as described.

10. In a saw-filer, the combination of a cone, *c'*, provided with means for holding the saw, a base, F, block G, arm *c*, table A', lever D, pawl *d'*, templet M, oscillating frame B, provided with stops, and emery-wheel, substantially as described.

11. The combination of a slotted arm, *c*, concave base F, convex block G, and cone *c'*, provided with screw and jam-nuts, substantially as described.

12. In a saw-filer, the combination of a bent lever, D, attached at one end to a table and carrying the pawl *d'*, the slotted arm *c*, the concave base F, the convex block G, and the cone *c'*, provided with screw and jam-nuts for holding and moving the saw, substantially as described.

13. The combination of the bent lever D, attached at one end to a table, an adjustable templet, M, and oscillating frame B, provided with stops O and M', and emery-wheel *c'*, substantially as described.

14. In a saw-filer, the combination of a cone, *c'*, provided with screw and jam-nuts, concave base F, convex block G, slotted arm *c*, table A', bent lever D, pawl *d'*, templet M, oscillating frame B, provided with stops, and emery-wheel, substantially as described.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE GÉRARD.

Decided May 22, 1888.

1. EMPLOYMENT OF THE WORDS "AS SHOWN AND DESCRIBED" IN CLAIMS OF DESIGN PATENTS.

It is well understood that, while the courts, when construing the validity, scope, and extent of the claims in patents, will regard the words "as shown and described" as ever present, and when absent will not construe patents to embrace more than is shown and described, it is the policy of the Office while it has control over applications to insist that the form and phraseology adopted and employed by applicants should not be misleading nor unintelligible to the common people who seek to deal with patent property. It has therefore been customary to require that the words "as shown and described" shall be employed in the claims of design patents, in order that the patents may be limited to the subject-matter shown and described. The introduction of such words operates as a guide-post to inform all persons that the patent is limited to the precise invention shown and described, and that there is no hidden mystery nor secret trap by which those who attempt to enter the same field of invention or to use other articles may be arrested in their efforts or mulcted in damages.

2. EMBRACING MORE THAN ONE INVENTION.

A design application will not be permitted to embrace more than one subject of invention. The same principles in this particular which control in mechanical applications must obtain in design applications. A distinct and separate invention relating to the form or configuration cannot be lawfully included in a patent embracing a distinct and separate invention as to surface ornamentation—as, for instance, an alto-relievo cannot be joined with an ornamentation or picture to be worked into a woolen fabric; but when the shape and the ornamentation are parts of the same article of manufacture, so that both unite in producing the same result, then they are not distinct and separate within the purview of the rule.

3. WHAT ELEMENTS OR FEATURES OF DESIGN ARE COVERED AND PROTECTED BY A DESIGN PATENT.

Under the statute the design must be a *finished* and *completed* thing—must be one entire and integral thing. It cannot consist of several integral different designs aggregated, so as to protect the several individual parts, nor so that these parts may be separately applied to other and different articles or parts of articles of manufacture.

4. DOCTRINES OF COMBINATIONS AND GENUS AND SPECIES NOT APPLICABLE IN DESIGNS.

The doctrines of combinations and elements of combinations and of genus and species obtaining in mechanical inventions cannot be applied to designs. In a mechanical combination, when one element is withdrawn that combination ceases; but in a design a subordinate and unimportant feature may be withdrawn and yet the design as a whole remain, and to simulate the predominant features would infringe the whole.

5. TEST OF INFRINGEMENT.

The test of infringement is the "identity of appearance, determined by the eye of the ordinary observer." (*Gorham Company* v. *White.*) As the subject of identity of the design is addressed to the eye of the ordinary observer—the public—so the questions of the extent and character of claims in patents for distinctive and segregable parts must be determined largely by the skill and judgment of the experts of the Office.

6. OBJECTIONS RELATING TO NON-SEGREGABILITY—TO WHOM APPEALABLE.

Objections to claims for non-segregable parts relate to the merits rather than to form, and upon rejection the appeal should go to the Examiners-in-Chief.

7. SUBJECTS FOR DESIGN ALSO SUBJECTS FOR MECHANICAL PATENTS.

A new and original design under the statutes may also be the subject of a mechanical patent. (*Ex parte Schulze-Berge*, 42 O. G., 293.)

DESIGNS FOR PLATES AND OTHER DISHES.

ON appeal.

Application of Emile Gérard, filed November 27, 1885, No. 184,131.

Messrs. Burke, Fraser & Connett for the applicant.

HALL, *Commissioner:*

Applicant appeals in this case from the action of the examiner in the three following particulars:

First. In requiring applicant to incorporate into his specification a brief statement of the leading features of his design.

Second. In requiring applicant to state his respective claims separately and singly as to each subject of the claims, instead of incorporating a preamble introductory to all the claims—"In a design for a plate or dish," &c.—and then adding the statement of what is claimed in such design. The examiner also required that the applicant should add to his claims the usual words, "as shown," &c.

Third. The rejection of claims 3, 5, 6, 7, and 8, in that they were not for distinctive and segregable matter as required by *ex parte Pope*, (26 O. G., 290.)

Applicant in his appeal requests the Commissioner to instruct the examiner by what principles he should be guided in rejecting claims because of non-distinctiveness and non-segregability, in view of the frequency of the citation of *ex parte Pope*, and also to determine whether a rejection on this ground should be regarded as relating to the merits which gives an applicant the right of appeal to the Examiners-in-Chief, or whether it should be regarded as an objection relating to form, which would be appealable to the Commissioner.

The design for which applicant seeks a patent is a dish of certain form and shape, the upper surface of which bears certain ornamentation. The dish is made with a central circular depression or bowl, while the rim is rectangular with defined corners. The corners are ornamented with a peculiar design, while the bowl and panels possess their own respective designs or ornamentation.

The claims are as follows:

In a design for a plate or dish, the following defined novel and

segregable features, substantially as hereinbefore described, and as shown in the accompanying photographs, namely:

1. The design for the shape of the dish, consisting of a rectangular outline with the corners formed by straight lines *a a*, forming obtuse angles with the sides, and the circular arc *b*, interposed between the lines *a a*.

2. The design for the shape of the dish, consisting of the depressed center of circular outline, and the rim with square outline, with its corners formed by lines *a a* at obtuse angles with the sides, and intervening circular arc *b*.

3. The design for the corner of the dish, consisting of circular arc *b* and straight lines *a a*, forming the edge outline of the dish, with a surface ornamentation consisting of a circular figure, A, entering said arc *b*, and a concentric border, B, extending to and interrupted by said lines *a a*.

4. The design for the surface ornamentation of the corner of the dish, consisting of a circular figure, A, composed of a conventionalized flower with radial petals, and the concentric border B, characterized by the circular row of pointed figures *e e*, radiating from the common center.

5. The design for the rim of the dish, consisting of the corner ornamentations A B, and the intervening panels C C, filled with ornamentation consisting of diagonally-arranged figures, as shown.

6. The ornamentation for the panels C C on the rim of the dish, consisting of diagonal bands *h*, *i*, *j*, *k*, and *l*.

7. The ornamentation for the depressed center of the dish, consisting of the figures D D.

8. The ornamentation for the depressed center of the dish, consisting of the annular border G.

9. The ornamentation for the depressed center of the dish, consisting of the radial figures D D, the annular border G, interrupted by said figures and appearing to pass beneath them, and the central rosette, E.

The examiner allowed claims 1, 2, 4, and 9, but rejected claims 3, 5, 6, 7, and 8, the ground of his decision being that these latter claims did not embrace parts or features which were distinctive and segregable from the entire design.

It appears from the official action of the examiner and his statement in reply to the appeal that he has waived and abandoned the formal objections as to the "distinctive features" of the design and the introduction of the preamble to the claims, and only insists upon the use of the customary words "as shown and described," &c. As to the latter subject, I concur with the views expressed by the examiner. It is well understood that, so far as the validity, scope, and extent of a patent are concerned, these words are immaterial. The courts regard them as ever present, for the patent can extend no further and embrace no more than is shown and described; but the Office has control over the form and phraseology of the patents issued by it to the extent of rendering them easily intelligible to the common people, so that they cannot be the means of deluding or misleading those who seek to deal either with patent property or the articles of manufacture made under such exclusive privileges. The introduction of those words operates as a guide-post to point the fact, which many, but by no means all, persons know, that a patent is limited to the very subject-matter "shown and described" and its equivalents, and that there is no hidden mystery nor secret trap by which those who attempt to enter the field of invention in the same class of arts or to use other articles of manufacture may be arrested in their efforts or mulcted in damages. It has always been customary to use those words in claims of design patents. It is the policy of the Office to require them to be used, and the action of the examiner in requiring them in this case must be affirmed.

As to the rejected claims, an examination of the statutes relating to design patents shows that the subject-matter, "a new and original design," relates to an article of manufacture. A new and useful article of manufacture may also be the subject of a mechanical patent, (*ex parte Schulze-Berge*, 43 O. G., 266,) depending upon its construction or mode of construction; but it may possess a new and original form or surface ornamentation, or both. Shape must relate to the outward form or contour, while the surface ornamentation relates to illustrations and delineations that are printed or impressed upon or woven into it.

So far as applicable, the statutes and rules pertaining to mechanical patents relate also to designs. Letters Patent issued on one application will not be permitted to embrace more than one subject of invention in designs. The same principles in this particular which control in mechanical patents must obtain in this. The statute provides (R. S., sec. 4929) that—

> Any person who, by his own industry, genius, efforts, and expense, has invented and produced any new and original design for a manufacture, bust, statue, alto-rilievo, or bas-relief; any new and original design for the printing of woolen, silk, cotton, or other fabrics; any new and original impression, ornament, pattern, print, or picture to be printed, painted, cast, or otherwise placed on or worked into any article of manufacture; or any new, useful, and original shape or configuration of any article of manufacture, the same not having been known or used by others before his invention or production thereof, or patented or described in any printed publication, may * * * obtain a patent therefor.

The peculiar disjunctive character of this section relative to the two classes of invention, *shape* and *ornamentation*, when considered in conjunction with the statutes, decisions of the courts, and rules of practice of the Patent Office applicable to mechanical patents, is conclusive that a distinct and separate invention as to form or configuration cannot be lawfully and properly embraced in the same patent with a distinct and separate invention as to surface ornamentation. An alto-relievo cannot be joined with an ornamentation or picture to be worked into a woolen fabric in the same patent; but when the shape and the ornamentation are parts of the same article of manufacture, so that both unite in producing the same result—viz., the usefulness of beauty in the same article—then they are not distinct and separate within the purview of the rule. Such an instance can scarcely be held to be an exception to the rule. As already stated, the invention which is the subject of the design patent cannot exist separate and apart from the article of manufacture. An article of manufacture may wear the garment of form and also that of surface ornamentation; but both features combine to constitute a single garment, and the article remains the same article of manufacture. Its usefulness is one and integral. The design of form may have been conceived and applied first; but when that of surface-ornamentation came into existence and was applied the two in their application blended and united in a new creation, which was one and indivisible. In such a case a patent for the design consisting of shape and surface ornamentation possibly might not protect the shape alone; but this question is not before me, and I only suggest, but do not express, any opinion upon it. I conclude simply that the designs of form and those of surface ornamentation, when applied to the same article of manufacture, constitute the proper subjects for single Letters Patent.

What elements or features of design are covered and protected by a design patent? In the language of the statute, *the thing* to be patented must be new and original, and it must have been invented and *produced*. It must necessarily be a *finished* and *completed* thing. Whether it consists of form or surface delineations, or both, the design must be one entire and integral thing. It cannot consist of several integral different designs aggregated, so as to protect the several parts individually and separately, nor so that these parts may be separately applied to other and different articles or parts of articles of manufacture made or hereafter to be made. The doctrines of combinations and elements of combinations and of genus and species which obtain in mechanical inventions cannot be applied to designs. Shape and contour and surface delineations may have predominant features—may be divisible, in a certain sense, into parts; but these parts do not co-ordinate and coact as elements in mechanical combinations do. In the latter when an element is withdrawn that combination ceases. In a design some of the subordinate and unimportant features may be withdrawn and yet the design as a whole remain, and to simulate the predominant features would infringe the whole, upon well-known principles to be stated hereinafter.

Curves or outlines, areas or surfaces, and solids, all having forms and contours, may be classified, depending upon their co-ordinates or relations of curve and angle. The curves of conic sections, the sphere, cube, and paraboloid, &c., may be classified mathematically; but they are incapable of differentiation into varieties and species. As matters of beauty and ornamentation addressing themselves to the eye, they are always the same. The moment either loses its quality of cube or sphere, so as to become a variety of cube or sphere, it ceases to exist and becomes something else. If it be cubical or spherical, though not a perfect cube or sphere, it does not change to a species or variety, but retains a resemblance which will still classify and arrange it as one or the other. Genus possesses constant qualities which are common to all included varieties or species. The variations or modifications upon which the species depend relate to features of structure other than mere similitude of form and shape. Every bust could be classified under genus and species if complexion, eyes, nose, mouth, and hair—common features of the races of men—were to be considered; but the design of a bust does not depend upon the representation of these features as such. The bust of Henry Clay would not be patentable as such, for that would prevent other artists from making busts of the same individual. So, also, of portraits to be impressed upon or woven into fabrics. That which is patentable is the ideal characteristic pertaining to the design which the artist has created and not borrowed or copied. There is in this respect but one characteristic which is common to mechanical and design patents, and that is *equivalency*. With reference to mechanical inventions, an equivalent is defined to be—

> a thing that performs the same function, and performs that function in substantially the same manner, as the thing of which it is alleged to be the equivalent. (*Mason* v. *Graham*, 23 Wall., 275; *Potter* v. *Stewart*, 15 Blatch., 360.)

But designs are addressed to the eye, and their usefulness relates to the enjoyment of the beautiful which their consideration and contemplation awaken. The protection afforded by the patent law for such inventions necessarily depends upon identity, which embraces the idea of equivalency in the law of patents. The reproduction and simulation by others of the invented design are forbidden.

The Supreme Court of the United States in *Gorham Manufacturing Company* v. *White* (14 Wall., 511) has clearly stated and limited the force and meaning of a patent for a new and original design. That case was appealed from the Circuit Court for the Southern District of New York. The court below held views approved by the Supreme Court as to the identity of design, but instructed that this identity was to be determined by the eye of the expert and not that of the ordinary observer. The judgment proceeded upon this idea that a design was a subject of art and skill, and its qualities and characteristics must be determined by experts skilled in such arts. As to the standard of distinction in the matter of identity, or the means and manner of defining the subject of a design patent, the Supreme Court differed from the circuit court. The opinion is a leading one upon this subject:

> The thing invented or produced for which a patent is given is that which gives a peculiar or distinctive appearance to the (article of) manufacture, or article to which it may be applied or to which it gives form. The law manifestly contemplates that giving certain new and original appearances to a manufactured article may enhance its salable value, may enlarge the demand for it, and may be a meritorious service to the public. It therefore proposes to secure for a limited time to the ingenious producer of these appearances the advantages flowing from them. Manifestly the mode in which these appearances are produced has very little, if anything, to do with giving increased salableness to the article. It is the appearance itself which attracts attention and calls out favor or dislike. It is the appearance itself, therefore, no matter by what agency caused, that constitutes mainly, if not entirely, the contribution to the public which the law deems worthy of recompense. The appearance may be the result of peculiarity of configuration, or of ornament alone, or of both conjointly; but in whatever way produced, it is the new thing or product which the patent law regards. To speak of the invention as a combination or process, or to treat it as such, is to overlook its peculiarities. As the acts of Congress embrace only designs applied, or to be applied, they must refer to finished products of invention rather than to the process of finishing them, or to the agencies by which they are developed. A patent for a product is a distinct thing from a patent for the elements entering into it, or for the ingredients of which it is composed, or for the combination that causes it. We do not say that in determining whether two designs are substantially the same, differences in the lines, the configuration, or the modes by which the aspects they exhibit are not to be considered; but we think the controlling consideration is the resultant effect. Such was the opinion of Lord Chancellor Hatherly in *McCrea* v. *Holdsworth*. That was a suit to restrain an infringement of a design for ornamenting a woven fabric. The defense was a denial that the design used by the defendants was the same as that to which the plaintiff was entitled. The ornament on both was, in part, a star; but on one it was turned in an opposite direction from that in the other, yet the effect of the ornament was the same to the eye. The Lord Chancellor held the important inquiry was whether there was any difference in the effect of the designs, not whether there were differences in the details of ornament. "If," said he, "the designs are used in exactly the same manner and have the same effect, or nearly the same effect, then of course the shifting or turning round of a star, as in this particular case, cannot be allowed to protect the defendants from the consequences of the piracy." This seems most reasonable, for, as we have said, it is the effect upon the eye which adds value to articles of trade or commerce. So in *Holdsworth* v. *McCrea*, Lord Westbury said: "Now, in the case of those things in which the merit of the invention lies in the drawing, or in forms that can be copied, the appeal is to the eye, and the eye alone is the judge of the identity of the two things. Whether, therefore, there be piracy or not is referred to an unerring judge, namely, the eye, which takes the one figure and the other figure and ascertains whether they are or are not the same." This was said in a case where there was nothing but a drawing of the design.

We are now prepared to inquire what is the true test of identity of design. Plainly, it must be sameness of appearance, and mere difference of lines in the drawing or sketch, a greater or smaller number of lines or slight variances in configuration, if sufficient to change the effect upon the eye, will not destroy the substantial identity. An engraving which has many lines may present to the eye the same picture and to the mind the same idea or conception as another with much fewer lines. The design, however, would be the same. So a pattern for a carpet or a print may be made up of wreaths of flowers arranged in a particular manner, so that none but very acute observers could detect the difference; yet in the wreaths upon one there may be fewer flowers, and the wreaths may be placed at wider distances from each other. Surely in such a case the designs are alike. The same conception was in the mind of the designer, and to that conception he gave expression.

If, then, identity of appearance, or (as expressed in *McCrea* v. *Holdsworth*) sameness of effect upon the eye, is the main test of substantial identity of design, the only remaining question upon this part of the case is, whether it is essential that the appearance should be the same to the eye of an expert. The court below was of opinion that the test of a patent for a design is not the eye of an ordinary observer. The learned judge thought there

could be no infringement unless there was "substantial identity" "in view of the observation of a person versed in designs in the particular trade in question—of a person engaged in the manufacture or sale of articles containing such designs—of a person accustomed to compare such designs one with another, and who sees and examines the articles containing them side by side." There must, he thought, be a comparison of the features which make up the two designs. With this we cannot concur. Such a test would destroy all the protection which the act of Congress intended to give. There never could be piracy of a patented design, for human ingenuity has never yet produced a design in all its details exactly like another, so like that an expert could not distinguish them. No counterfeit bank-note is so identical in appearance with the true that an experienced artist cannot discern a difference. It is said an engraver distinguishes impressions made by the same plate. Experts, therefore, are not the persons to be deceived. Much less than that which would be substantial identity in their eyes would be indistinguishable in the eyes of men generally, of observers of ordinary acuteness, bringing to the examination of the article upon which the design has been placed that degree of observation which men of ordinary intelligence give. It is persons of the latter class who are the principal purchasers of the articles to which designs have given novel appearances, and if they are misled and induced to purchase what is not the article they supposed it to be; if, for example, they are led to purchase forks or spoons, deceived by an apparent resemblance into the belief that they bear the "cottage" design, and therefore are the production of the holders of the Gorham, Thurber, and Dexter patent, when in fact they are not, the patentees are injured, and that advantage of a market which the patent was granted to secure is destroyed. The purpose of the law must be effected if possible; but, plainly, it cannot be if, while the general appearance of the design is preserved, minor differences of detail in the manner in which the appearance is produced, observable by experts but not noticed by ordinary observers—by those who buy and use—are sufficient to relieve an imitating design from condemnation as an infringement.

We hold, therefore, that if in the eye of an ordinary observer giving such attention as a purchaser usually gives, two designs are substantially the same, if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other, the first one patented is infringed by the other. * * *

A large number of witnesses, familiar with designs, and most of them engaged in the trade, testify that, in their opinion, there is no substantial difference in the three designs, and that ordinary purchasers would be likely to mistake the White designs for the "cottage"—viz., that of the plaintiffs. This opinion is repeated in many forms of expression, as that they are the same pattern; that the essential features are the same; that seven out of ten customers who buy silverware would consider them the same; that manufacturers as well as customers would consider them the same; that the trade generally would so consider them; that, though there are differences, they would not be noticed without a critical examination; that they are one and the same patern, &c., &c. This is the testimony of men, who, if there were a substantial difference in the appearance, would most readily appreciate it. Some think the White designs were intended to imitate the other, and they all agree that they are so nearly identical that ordinary purchasers of silverware would mistake one for the other. On the other hand, a large number of witnesses have testified on behalf of the defendant that the designs are substantially unlike; but when they attempt to define the dissimilarity they specify only the minor differences in the ornamentation of which we have heretofore spoken. Not one of them denies that the appearance of the designs is substantially the same, or asserts that the effect upon the eye of an observer is different, or that ordinary purchasers, or even persons in the trade, would not be led by their similarity to mistake one for another. Their idea of what constitutes identity of design seems to be that it is the possibility of being struck from the same die, which of course cannot be if there exists the slightest variation in a single line. They give little importance to configuration, and none to general aspect. Such evidence is not an answer to the complainant's case. It leaves undisputed the facts that whatever differences there may be between the plaintiff's design and those of the defendant in details of ornament, they are still the same in general appearance and effect, so much alike that in the market and with purchasers they would pass for the same thing, so much alike that even persons in the trade would be in danger of being deceived.

From these observations of the Court it is clear that "identity of appearance, determined by the eye of the ordinary observer," is the test of piracy or infringement, and defines the protection which a patent affords to the inventor. This identity does not descend to the mere lines and dots, the various and infinite details of the design, but depends rather upon the predominant and characteristic features, the *tout ensemble*. Even with changes, variations, or omissions of these, if the indicted design contains the dominating features, or as a whole so simulates the original design covered by patent, that "there is identity of appearance," or, as expressed in *McCrea* v. *Holdsworth*, "sameness of effect upon the eye," then it is guilty of infringement:

If in the eyes of an ordinary observer, giving such attention as a purchaser usually gives, two designs are substantially the same—if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other, the first one patented is infringed by the other.

This is the protection afforded, and while an applicant may embrace claims covering distinctive and segregable parts of his design, as recognized in *ex parte Pope*, this will not increase or enlarge the extent of his protection. He does not thereby secure a patent for more than one design, and that one is the whole completed and finished design, made up of the distinctive and segregable parts, combined with the non-distinctive and non-segregable.

I am aware of what was said by Mr. Justice McLean as to combination of parts in *Root* v. *Ball & Davis*, (4 McLean, 177, 1846,) and by Commissioner Fisher (*ex parte Bartholomew*, C. D., 1869, 103) as to generic claims and variations. (See, also, *ex parte Sheppard*, C. D., 1870, 22.) But *Gorham Company* v. *White* is later and higher authority, and certainly is conclusive as to what may be patented as a design.

In *ex parte Bartholomew* Commissioner Fisher says:

Thus, if the invention were of a design for an ornamental button the face of which was grooved with radial rays, it would seem that the first designer of such a button might properly describe a button of five rays, and, having stated that a greater number of rays might be used, might claim a design consisting, generally, of radial rays, or of "five or more" rays, and that it could not be necessary for him to take out a patent for each additional ray that could be cut upon this button. So if the design were the ornamentation of long combs by a chain of pearls it would seem that a claim for such a design might be maintained against one who arranged the pearls either in curved or straight lines, or who used half pearls only, and that such modifications, if they had occurred to the designer, might properly have been enumerated in his specification as possible and equivalent variations. In short, I can see no reason under the law why designs may not be generic, why what are called "broad claims" may not be made to them, and why the doctrine of artistic or æsthetic equivalents may not be applied to them.

But it is evident that whatever form the claim for the button or the comb assumed the patent would protect whatever simulated its identity to the eye of the ordinary observer. In the case of the button this would be true whether there were more or less than five rays. There may be variations and immaterial departures from the specific details set forth in the patent which will be perfectly protected by it. The claim may be made "broadly," so as to cover them; but it cannot state them so broadly or generically as to cover a design not yet conceived, and which, as a work of art, would be so different from that exhibited in the patent that the eye of the ordinary observer would regard it as new and different. To permit such claims would enable the patentee to forestall the future and to usurp the ownership of unconceived and uncreated subjects of shape and ornamentation.

What, then, is the purpose of claims for distinctive and segregable parts? Evidently to enable the applicant for himself, and the Patent Office for the public, to point out those predominant and controlling features in a design the use of which alone would be regarded as preserving the identity of a design, even when other parts are omitted. Unquestionably whatever features or parts of a design which, if used by another, would constitute an infringement may be used by and protected to the patentee, and that is the limit and extent of the variation which the law will sanction or permit. The whole subject resolves itself back into a question of identity—sameness to the eye of an ordinary (unskilled) observer. The common observer is not familiar with the genus and species of design, (if such distinctions can have any existence,) and his liability to be misled or deceived in matters of resemblance and identity does not depend upon them. While, therefore, there is some little analogy between claims for distinctive and segregable parts in design patents and claims for elements and co-acting parts in mechanical patents, they are not founded upon the same principles.

An applicant may seek to patent a design for a stove in which is included the form or shape of the stove with the surface ornamentation for its sides and top. In such case he cannot secure a claim for the design as to ornamentation as applied to the sides and top of *any* stove, regardless of its form and configuration. If he wishes to secure a design for a side or panel of a (any) stove, he must take out a separate patent for that. In the case supposed his patent will cover the ornamentation, with such variations thereof as will preserve its identity upon the form or shape of the stove—with such variations thereof as will preserve its identity to the eye of the ordinary observer of both. He cannot in the same patent secure claims for distinct and separate parts independent of the whole design. (*Ex parte Neil*, MS. Dec., vol. 24, 266; *ex parte Hill*, MS. Dec., vol. 28, 124.)

Undoubtedly in cases like the present, where the design consists of a combination of shape and ornamentation, claims covering greater variation may be allowed, based upon distinctive and segregable parts, than where shape alone or ornamentation alone is the subject of the design. Thus the shape of the dish in the case under consideration, with some slightly distinctive features of ornamentation, might more easily deceive or mislead the eye of the ordinary observer than such distinctive feature of the ornamentation applied to a dish of wholly different shape and contour. As the subject of identity or sameness of design is addressed to the judgment of the eye of the ordinary observer, so the questions of the extent and character of claims in patents for distinctive and segregable parts must be determined largely by the skill and judgment of the experts of the Office. Whenever the claim is to such distinctive and predominant parts as when used and applied to an article of manufacture would induce the ordinary observer to accept them as the whole design, the claim should be allowed; but when the segregation goes so far that the identity of the whole design ceases, and the ordinary observer would not be likely to recognize the sameness or resemblance between the segregated parts and the whole design, they should not be allowed. The ordinary observer—the public—is not learned in patent law nor the nice distinctions in matters of claims. The public is not required to be skilled in matters of art. In dealing with designs, patented or unpatented, ordinary observers judge of the design as a whole, and are not called upon to dissect and analyze it with accuracy. To permit claims for parts that belong to details which possess no distinct and visible resemblance to and create in the mind no impression of the whole design would be to set traps for the unskilled and unwary. This is against public interest and will not be tolerated.

Claims for distinctive and segregable parts of a design indicate the skilled judgment of the Office as to what parts and features of the design, if segregated from the whole and applied to an article of manufacture, would accord with the eye of the ordinary observer and preserve the identity of the original and entire design. Evidently such claims should be carefully scrutinized; otherwise the applicant may in the same patent cover a multiplicity of designs. The courts would probably not interfere to defeat such patents nor to limit them to the one original design, but, regarding each distinct design as an original, would rest the validity of the patent upon the discretion vested in the Commissioner as to such matters.

In the present case there is no claim presented for the design of the form of the dish and its ornamentation as a whole, unless the preamble and nine paragraphs can be regarded as one claim. I do not see how claims can be allowed for distinctive and segregable parts of a design when there is no claim for the whole design. If patented, is the completed design to be free and its distinctive parts subject to patent? Or is the entire and finished design to be protected because the eye of the ordinary observer is required to recognize its identity with some of the segregated parts? Evidently, if variation in designs is to be recognized by allowing claims for distinctive parts, they must be formulated with reference to the whole design. The interests of the public require this.

In the case under consideration claim 1 is for the rectangular rim of the dish with reference to the central bowl or any ornamentation whatever. Claim 2 is for the shape of the bowl with circular outline and the rim, without reference to the ornamentation. These two claims together would cover simply the shape of the dish, "as shown and described," but without such words or the implication of the law would embrace the rim with any kind of a central part, and the bowl with any kind of a rim, and the whole shape without any ornamentation. In effect, as was stated in *ex parte Hill*, the claims would cover two designs, in which case applicant should be required to take out two patents. Claim 3 covers the corners of the dish with their surface ornamentation. Claim 4 is for the surface ornamentation of the corners. Claim 5 is for the ornamentation of the corners and panels, composing the entire rim of the dish. Claim 6 covers the ornamentation of the panels of the rim. Claims 8 and 9 relate alone to the ornamentation; but these claims for ornamentation do not appear to be limited to a dish of the form and shape shown, and, as already stated, this is essential where a design consisting of both form and surface ornamentation is to be embraced in a single patent.

The examiner calls attention to the fact that under *ex parte Harris* (38 O. G., 104) objections to claims for non-segregable parts relate to the merits rather than to form, and an appeal from such rejection should go to the Examiners-in-Chief. I concur in this view and follow that decision; but as the present appeal is taken as to matters of form as well as merits, I have felt justified in giving more consideration to the case than I otherwise would. The decision is affirmed as to the requirement that the words "as shown and described" be used in the claims, and the case is remanded to the Primary Examiner to take such further action on the claims as he may see proper, in view of the principles expressed herein. If applicant desires to appeal from such action, his

appeal from rejection of claims covering distinct and segregable parts must be taken to the Examiners-in-Chief.

EX PARTE GÉRARD.

Decided May 22, 1888.

DESIGN FOR PLATES AND OTHER DISHES.

1. The relation of genus and species does not exist in designs. The question involved in designs is one of identity.
2. A patent for a design must be limited to a single invention; but such patent may cover any variation or modification, provided the distinct and predominant features so far remain as to preserve the identity of the original completed design.

ON appeal.

Application of Emile Gérard, filed April 20, 1887, No. 235,564.

Messrs. A. C. Fraser & Co. for the applicant.

HALL, *Commissioner:*

In this case applicant seeks to patent designs consisting of both shape and surface ornamentation. Six dishes are shown in the drawings, all differing in shape and contour. Each dish is ornamented with its own surface ornamentation; but the entire surface ornamentation of each dish is unlike that of any of the other five. In the shape of each is some slight feature, such as a notch or indentation at a corner, and in the surface ornamentation of each is also found some features which are common to all. These features the applicant chooses to call distinct and segregable parts of his design, and upon them attempts to found a genus of design and its subordinate species. There is, and in the nature of the case can be, no entire and complete design—no one single design. Consequently, there is no claim for a single design as a whole, with other claims for distinct and segregable parts; but an attempt is made to apply the principles of generic and specific claims, which obtain in applications for mechanical patents.

Applicant devises certain rather unimportant forms relating to shape, and certain surface ornamentation; then exercising his skill and ingenuity in producing dishes of various shapes, he introduces his specific features of surface ornamentation. He claims, broadly, his specific features, and also incorporates claims for as many various and different forms of dishes, with their varied and different ornamentation, as his imagination can produce. He has presented nineteen claims, one of which covers the shape of the dish and the remaining eighteen cover the surface ornamentation of eighteen different dishes.

Claim 19 is as follows:

The design for the shape of a plate or similar dish, consisting of straight sides, rounded ends, indentations *a a* at the approximate junction of the sides and ends, and radial ribs *f f*, extending from said indentations across the rim.

With this broad claim for the shape or form applicant presents, as just stated, eighteen claims for as many different designs, based upon the fact that they possess some one or more features of form common to the parent design, or in common with each other.

On July 22, 1887, the examiner advised applicant as follows:

The Statute of Designs (section 4929 R. S.) provides for a new and original shape for an article of manufacture, or a new and original ornamentation thereof. A new and original shape may also have a new and original ornamentation; but a generic claim must be made for applicant's invention in accordance with the doctrine in *ex parte E. N. Eagle*, (C. D. 1870, 127.)

A claim may also be made for one of the species belonging to applicant's invention, but not for all the species which may exist under the generic invention. (*Ibidem.*)

On renewed consideration of the application above entitled it appears that there is no generic claim covering applicant's invention as disclosed, while there are many claims for various species and fragments thereof, contrary to the practice as above indicated. The objections noted in previous Office letter are therefore withdrawn, and will not be insisted on at the present time, being dominated by the above-noted objection.

This action, as I understand, was not a rejection nor an objection to any specific claim, but was simply a declaration that the examiner could not proceed to a consideration of the case until applicant had presented a claim for one entire completed design. He required a generic claim to be made. This action being repeated, the applicant appeals to the Commissioner.

In another appeal by this applicant I have had occasion to discuss the nature and character of claims for distinctive and segregable parts, and my remarks in that case are equally applicable to this. I think the examiner was correct in requiring applicant to submit a claim for the one entire completed design invented by him, for from that alone can it be determined what is and what is not distinct and segregable. As explained in *ex parte Gérard*, above referred to, this depends upon identity as determined by the eye of an ordinary observer. Without the original entire design it is impossible to make comparison or define the segregable parts. The examiner was unfortunate, I am disposed to think, in acting upon this supposed analogy of mechanical patents and requiring—

a generic claim for applicant's invention in accordance with the doctrine in *ex parte Eagle*, (C. D., 1870, 127.)

The relation of genus and species, in my opinion, does not exist in designs. As explained in the other case of applicant, the question is one of indentity. A patent for a design must be limited to a single invention; but such patent will cover any variation or modification, provided the distinct and predominant features so far remain as to preserve the identity of the original completed design.

The decision of the examiner was correct, and is affirmed; but the case is remanded, and the examiner is at liberty to modify his statement of the requirement or take such other action as he may see proper, in accordance with this decision.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 43—No. 11. TUESDAY, JUNE 12, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
FRAUDULENT PRACTICES BY ATTORNEYS	1341
PUBLISHERS' CATALOGUES	1341
NOTICE	1341
ISSUE OF JUNE 12, 1888	1341
DESIGNS	1342
TRADE-MARKS	1343
LABELS	1343
PATENTS GRANTED	1343
RECEIPTS	1344
DECISIONS OF THE COMMISSIONER—	
Ex parte Stoughton	1345
Ex parte Stanbridge	1345
Ex parte Miller	1346
Ex parte Lombard *et al.*	1347
DECISIONS OF THE U. S. COURTS—	
Flower *et al. v.* The City of Detroit	1348
The St. Paul Plow Works *v.* Starling	1350

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 16, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 467 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado.*

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 19, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of envelopes and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of June 12, 1888.

Patents	371	No. 384,226 to No. 384,596, inclusive.
Designs	10	No. 18,378 to No. 18,387, inclusive.
Trade-Marks	25	No. 15,583 to No. 15,607, inclusive.
Labels	9	No. 5,620 to No. 5,628, inclusive.
Reissue	1	No. 10,948.
Total issue	416	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3	.....	Nebraska	2	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	.....	.....	New Hampshire	.....	.....
California	11	.....	New Jersey	18	.....
Colorado	2	.....	New Mexico Terri'ty	.....	.....
Connecticut	20	1	New York	73	6
Dakota Territory	3	1	North Carolina	1	.....
Delaware	1	.....	Ohio	38	1
District of Columbia	2	.....	Oregon	1	.....
Florida	.....	.....	Pennsylvania	57	2
Georgia	1	.....	Rhode Island	5	.....
Idaho Territory	1	.....	South Carolina	1	.....
Illinois	33	1	Tennessee	3	.....
Indian Territory	.....	.....	Texas	2	3
Indiana	10	2	Utah Territory	.....	.....
Iowa	7	.....	Vermont	4	.....
Kansas	4	.....	Virginia	.....	.....
Kentucky	4	.....	Washington Terri'y	2	.....
Louisiana	4	1	West Virginia	.....	.....
Maine	7	1	Wisconsin	3	1
Maryland	4	3	Wyoming Territory	.....	.....
Massachusetts	11	1	United States Army	.....	.....
Michigan	9	1	United States Navy	.....	.....
Minnesota	4	1			
Mississippi	.....	.....	Total to citizens of the United States	348	27
Missouri	12	1			
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	6	2
Australia	.....	.....	Guatemala	.....	.....
Austria-Hungary	.....	.....	Netherlands	1	.....
Belgium	3	.....	New South Wales	1	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	1	.....
Canada	6	.....	Russia	.....	.....
Chili	.....	.....	Scotland	.....	.....
Columbia, U. S. of	.....	.....	South Australia	.....	.....
Cuba	.....	.....	Spain	.....	.....
Denmark	.....	.....	Switzerland	.....	.....
England	13	1			
Finland	.....	.....	Total to citizens of foreign countries	33	7
France	2	4			

DESIGNS.

18,378.—LAMP.—*Samuel Clarke*, Child's Hill Works, county of Middlesex, England. Application filed March 6, 1888. Serial No. 266,351. Term of patent 14 years.

18,379.—BONNET AND MILLINERY STAND.—*James Benjamin Clifford*, San Francisco, Cal. Application filed March 20, 1888. Serial No. 267,908. Term of patent 7 years.

18,380.—CARPET-SWEEPER CASING.—*Walter J. Drew*, Grand Rapids, Mich., assignor to *The Bissell Carpet Sweeper Company*, same place. Application filed February 23, 1888. Serial No. 265,053. Term of patent 14 years.

18,381.—BENCH-PLANE CUTTER.—*Amos Fales*, Rock Fall, Conn. Application filed July 16, 1887. Serial No. 344,551. Term of patent 14 years.

18,382.—ORNAMENTATION OF KNIT FABRICS.—*Jeremiah P. Harriman*, Woonsocket, R. I. Application filed March 10, 1888. Serial No. 266,883. Term of patent 14 years.

18,383.—FRINGE.—*George S. Hensel, Louis D. Valetton*, and *Frank E. Cook*, Philadelphia, Pa., assignors to *Hensel, Colladay Company*, same place. Applications filed April 28, 1888. Serial No. 272,210. Term of patent 7 years.

18,384.—SLIPPER-VAMP.—*Hugo L. Hiller*, New York, N. Y. Application filed April 16, 1888. Serial No. 270,877. Term of patent 7 years.

18,385.—SKIRT.—*Lizzie Roys*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed May 18, 1888. Serial No. 274,315. Term of patent 3½ years.

18,386.—LADY'S COSTUME.—*Jennie Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed May 18, 1888. Serial No. 274,313. Term of patent 3½ years.

18,387.—HANDLE FOR FORKS, &c.—*George W. Shiebler*, Brooklyn, N. Y. Application filed April 9, 1888. Serial No. 270,147. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,583.—LAUNDRY PREPARATIONS.—*Jesse Ascough*, Handsworth, near Birmingham, county of Stafford, England. Application filed February 17, 1888. Used since 1876.
"A disk having a groundwork representing crystals."

15,584.—GINGHAMS.—*Berkshire Manufacturing Company*, (*Limited*,) Frankford, Pa. Application filed April 26, 1888. Used since December, 1867.
"The word 'BERKSHIRE.'"

15,585.—CIGARS AND SMOKING AND CHEWING OR PLUG TOBACCO.—*James Elwin*, Minneapolis, Minn. Application filed March 31, 1888. Used since September 15, 1885.
"The words 'ALL STOCK AND NO STYLE' within quotation-marks embraced within a parallelogram."

15,586.—ANTISEPTIC OR BLOOD-PURIFYING MEDICINE.—*Herman G. Grisbaugh*, Kansas City, Mo. Application filed May 4, 1888. Used since September, 1886.
"The word 'FOAM.'"

15,587.—MEDICATED FOODS.—*Alexander Horlick*, Racine, Wis. Application filed May 15, 1888. Used since April, 1888.
"The word 'MALTOAT.'"

15,588.—EXTRACT OF SARSAPARILLA COMPOUND, EXTRACT OF JAMAICA GINGER, LIVER AND KIDNEY PILLS, AND COUGH-SYRUP.—*Kilgore & Wilson*, Belfast, Me. Application filed April 19, 1888. Used since January 20, 1888.
"The representation of a mortar and pestle, the former bearing the monogram 'K & W,' with two Greek crosses at the extreme right and left of the fac-simile label, with a particular arrangement of the names of the diseases for which the medicines and pills are intended."

15,589.—MEDICINE FOR THE CURE OF RHEUMATISM AND CHRONIC BLOOD DISEASES.—*Charles F. Kirkendall*, Pittsburg, Pa. Application filed May 14, 1888. Used since March 19, 1888.
"The word 'LARUMA.'"

15,590.—MINERAL WATER AND MINERAL SALTS AND PASTILS AND TROCHES MADE FROM THE SALTS.—*Koenig Wilhelm's-Felsenquellen*, Ems, Germany. Application filed April 25, 1888. Used since 1878.
"The representation of a pile of rocks in a pool of water, from the top of which a powerful spring flows, falling into said pool, the whole surmounted by an arch and surrounded by a double circle, within which appear the words 'KOENIG WILHELM'S-FELSENQUELLEN.'"

15,591.—SAFETY-RAZORS.—*Henry B. Leach*, Boston, Mass. Application filed May 2, 1888. Used since April, 1886.
"The word 'GEM.'"

15,592.—MEDICINE FOR HORSES AND CATTLE.—*Fr. J. Leimer*, Chicago, Ill. Application filed May 4, 1888. Used since May 1, 1888.
"The words 'DR. LEIMER'S WALK'ER.'"

15,593.—MEDICINAL PREPARATION FOR THE CURE OF DISEASES OF THE BLOOD AND SKIN.—*Eli Lilly & Company*, Indianapolis, Ind., and Kansas City, Mo. Application filed June 6, 1887. Used since 1882.
"The word 'McDADE.'"

15,594.—LAGER-BEER, SODA, AND MINERAL WATERS.—*Ludorff & Nache*, New York, N. Y. Application filed April 18, 1888. Used since October 1, 1887.
"The representation of a bull's head, defiant, frothing at the mouth, and showing more or less of the neck."

15,595.—SYRUPS FOR COUGHS AND COLDS.—*Marvelous Cough Syrup Company*, Havre de Grace, Md. Application filed April 7, 1888. Used since December 3, 1887.
"The word 'MARVELOUS' in connection with a monogram composed of the letters 'M C S.'"

15,596.—CHAMPAGNE-WINE.—*George H. Mumm & Co.*, Rheims, France. Application filed May 3, 1888. Used since December 15, 1887.
"A gilt, bronze, or copper band applied to the upper part of the neck of the bottle underneath the capsule or foil."

15,597.—HEPATIC COMPOUND.—*John F. Neal*, Lampasas, Tex. Application filed May 3, 1888. Used since January 1, 1888.
"A five-pointed star with its points touching an inclosing circle."

15,598.—LIQUID AND POWDER DISINFECTANTS.—*William Pearson & Co.*, Hamburg, Germany. Application filed May 8, 1888. Used since April 15, 1887.
"The word 'CREOLIN.'"

15,599.—CROUP REMEDY.—*Henry C. Peckham*, Freeport, Mich. Application filed April 23, 1888. Used since April 2, 1888.
"A picture representing a lady and gentleman seated at a center-table, and at the side of each a little girl supporting a banner on which are inscribed the words 'PECKHAM'S CROUP REMEDY SAVES LIVES.'"

15,600.—BUTTER.—*Pfister & McKey*, New Orleans, La. Application filed May 3, 1888. Used since 1878.
"The representation of a moon placed on a shield, with a face therein, showing a crescent, with the words 'ORIGINAL DUNDEE CREAMERY.'"

15,601.—REMEDY FOR PHTHISIS, NEURASTHENIA, CONSTIPATION, AND INTESTINAL INDIGESTION.—*Reed & Carnrick*, New York, N. Y. Application filed May 6, 1888. Used since February 1, 1888.
"The word 'PANCRO-BILIN.'"

15,602.—REMEDIES FOR PROMOTING THE GROWTH OF THE TEETH AND BONES.—*The Reynolds Manufacturing Company*, Cincinnati, Ohio. Application filed May 9, 1888. Used since March 5, 1888.
"The word 'TOOTH-FOOD.'"

15,603.—LEATHER OIL-POLISH.—*Hermann J. Max Stosck*, New York, N. Y. Application filed May 3, 1888. Used since February 15, 1888.
"The representation of a crown."

15,604.—LINIMENT, OINTMENT, AND CONDITION POWDERS.—*Thomas Veazie*, Elmira, N. Y. Application filed February 8, 1888. Used since September, 1886.
"The word 'BROS.'"

15,605.—CHAMPAGNE-WINE.—*Veuve Pommery Fils & Co.*, Rheims, France. Application filed April 4, 1888. Used since February 29, 1888.
"A medallion bearing the representation of a lion rampant, and a band connected with and extending from the said medallion."

15,606.—CHAMPAGNE-WINE.—*Veuve Pommery Fils & Co.*, Rheims, France. Application filed April 4, 1888. Used since February 29, 1888.
"The word 'AUTHENTIQUE' within a parallelogram."

15,607.—CHAMPAGNE-WINE.—*Veuve Pommery Fils & Co.*, Rheims, France. Application filed April 4, 1888. Used since February 29, 1888.
"The word 'GENUINE' within a parallelogram."

LABELS.

5,625.—Title: "GOLDEN RIDGE APPLE WINE."—*Bryan Atwater*, Berlin, Conn. Application filed May 7, 1888.

5,626.—Title: "DR. H. M. BETTS' LIVER CAPSULES."—*H. M. Betts*, La Grange, Ind. Application filed May 21, 1888.

5,627.—Title: "DAVIES' BALM OF GILEAD OR PECTORAL BALSAM."—*E. Gomer Davies*, De Smet, Dak. Ter. Application filed May 15, 1888.

5,628.—Title: "DENTIFRICE ODORATA."—*David Genese*, Baltimore, Md. Application filed May 17, 1888.

5,629.—Title: "NOTE TO PHARMACISTS AND SPECIAL NOTE TO PHYSICIANS." (FOR MIXTURE OF GUAIAC, STILLINGIA, &c.)—*William H. Griffith*, New York, N. Y. Application filed May 16, 1888.

5,630.—Title: "MARVELOUS COUGH SYRUP."—*Marvelous Cough Syrup Company*, Havre de Grace, Md. Application filed April 9, 1888. (Trade-Mark Registered.)

5,631.—Title: "HUNT'S CURE FOR SKIN DISEASES AND ERUPTIONS."—*Albert Benjamin Richards* and *Mathew Venable Cheatham*, Sherman, Tex. Application filed May 16, 1888.

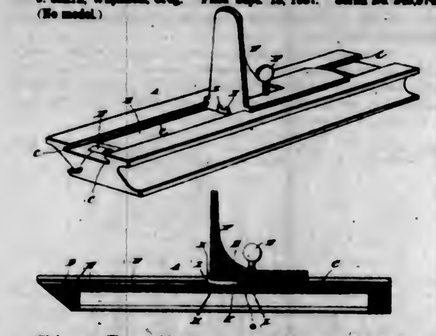
5,632.—Title: "CHEATHAM'S CHEAH BALSAM." (FOR A MEDICINE.)—*Albert Benjamin Richards* and *Mathew Venable Cheatham*, Sherman, Tex. Application filed May 16, 1888.

5,633.—Title: "LA BONTA'S FRENCH SHAMPOO CREAM."—*Rachel R. Westcott*, Syracuse, N. Y. Application filed May 21, 1888.

PATENTS

GRANTED JUNE 12, 1888.

384,228. SAW-MILL DOG. MILTON J. ARMSTRONG and BENJAMIN J. SMITH, Wagontire, Oreg. Filed Sept. 13, 1887. Serial No. 249,574. (No model.)



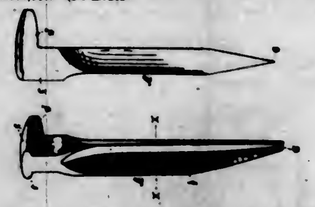
Claim.—1. The combination, in a saw-mill carriage, of the head-block having the bearing-roller on its front end, the longitudinally-movable knee, and the pivoted dog secured to the knee and depending therefrom, said dog being adapted to be raised by the roller, for the purpose set forth, substantially as described.

2. The combination, in a saw-carriage, of the head-block having the bearing-roller, the longitudinally-movable knee arranged on the head-block, and the dog pivoted to the said knee and having the forward-projecting upturned engaging-point, and provided on its under side with the inclined side M, for the purpose set forth, substantially as described.

3. The combination of the head-block having the bearing-roller with the longitudinally-movable knee, the dog pivoted thereto and adapted to be raised by the roller, and the device to adjust the dog, substantially as described.

4. The combination of the head-block, the bearing-roller journaled at one end thereof, the knee movable longitudinally on the head-block, the dog pivoted under the knee, having the points N at its front end adapted to engage a log, and the screw P, bearing on the dog to adjust the latter, so as to cause its front end to ride over the roller, and thereby hold its points in engagement with the log, substantially as described.

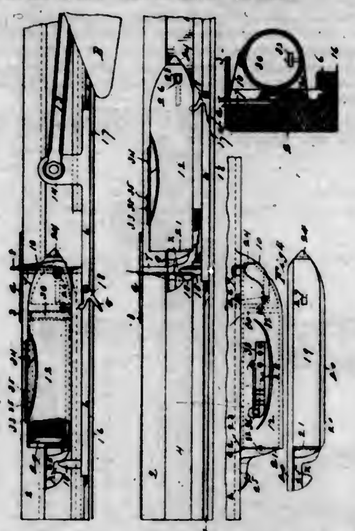
384,229. RAILWAY-SPIKE. CHARLES BAKER, Windsor, Ontario, Canada, assignor to William Gray, Detroit, Mich. Filed Mar. 20, 1888. Serial No. 267,869. (No model.)



Claim.—1. As a new article of manufacture, a railway-spike, A, triangular in cross-section, with parallel edges to the bevel of the point, and provided with an angular groove, b, in its flat face, said groove extending from the solid head to the extreme point of the spike, substantially as described.

2. A railway-spike, A, triangular in cross-section and having parallel edges to the bevel of the point A, an angular groove, b, formed in the flat face of said spike and extending from the head c to the extreme end of the point a, and flanges d e, formed upon the said head c, substantially as and for the purposes described.

384,230. SHUTTLE AND SHUTTLE-OPERATING MECHANISM FOR SEWING-MACHINES. WALTER H. BURDETT, Boston, Mass., assignor to the Morley Button Sewing Machine Company, same place. Filed Jan. 10, 1887. Serial No. 223,987. (No model.)

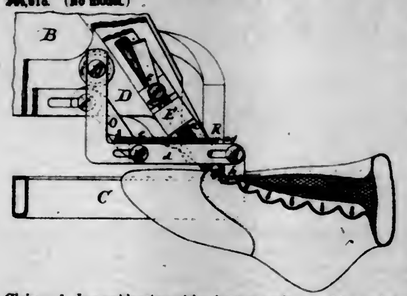


Claim.—1. Shuttle-actuating mechanism for sewing-machines, consisting of a longitudinally-reciprocating bar, 6, having on it a pin engaging with the shuttle-carriage, and having a bell-crank lever pivoted thereon, one of whose arms is capable of swinging against said carriage, a shuttle-carriage having a notch therein in which the end of said pin engages loosely, combined with the shuttle-raceway of a sewing-machine in which said carriage and bar move, having a projection upon one of its walls, against which the second arm of said bell-crank lever is carried by the movement of said bar while the carriage and shuttle are passing through the thread-loop, substantially as set forth.

2. The shuttle 12, having the spring-actuated bell-crank lever 26 pivoted therein, having a hook on one arm thereof, combined with the shuttle-carriage 19, having a socket, 24, to receive the nose of the shuttle, a socket, 27, to receive said hook, and provided with the abutment-plate 21, substantially as set forth.

3. Shuttle-operating mechanism for sewing-machines, combined with the shuttle-race thereof, consisting of a shuttle-carrying slide-bar having a longitudinal reciprocating motion on a line with said race, a shuttle-carriage seated within said race and having an engagement with said slide-bar, and a bell-crank lever, substantially as described, attached to said bar, and having an engagement with a projection upon the wall of the shuttle-race and with the shuttle-carriage while the latter is moving, substantially as set forth.

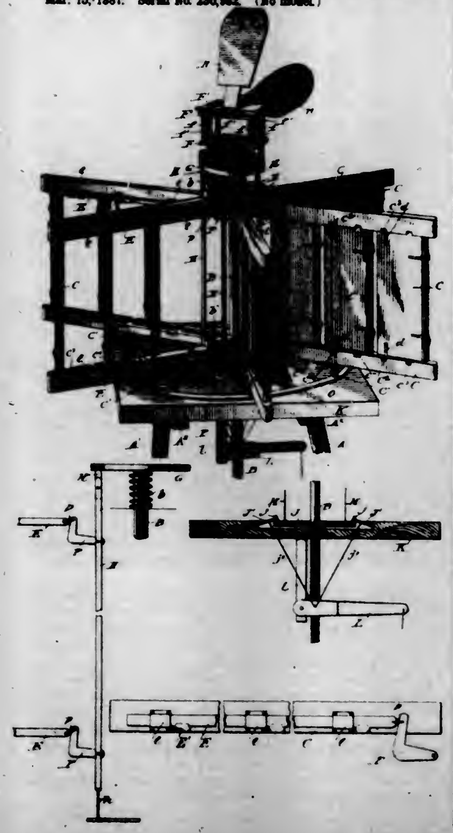
384,231. PRESSER-FOOT FOR BUTTON-SEWING MACHINES. WALTER H. BENNETT, Boston, Mass., assignor to the Morley Button Sewing Machine Company, same place. Filed July 18, 1887. Serial No. 244,618. (No model.)



Claim.—1. In combination with a button-sewing machine and the button-attaching devices thereof, a bearing having slots substantially parallel to the table of the machine, and a presser-foot secured to said bearing by means of pins which engage the slots, the presser-foot having a rearwardly-extending open-ended slot, all substantially as described, for the object set forth.

2. In combination with a button-sewing machine, the button-attaching devices thereof, and a presser-foot having a rearwardly-extending open-ended slot, and secured to a slotted bearing by means of pins which engage the said slots, and a spiral spring connecting said foot and bearing and operating substantially as shown and described, for the object set forth.

384,232. WINDMILL. ALLEN W. BRODRICK, Mahomet, Ill. Filed Mar. 15, 1887. Serial No. 230,962. (No model.)



Claim.—1. In a windmill, a series of radial vertical sections having swinging doors or panels provided with projections, and sliding plates capable of sliding to engage or release said doors or panels.

2. In a windmill, a series of radial vertical wings made up of radial arms, swinging doors or panels arranged between the arms, the said doors or panels being provided with projections, and sliding plates arranged upon the radial arms and having projections engaging the projections from the doors or panels.

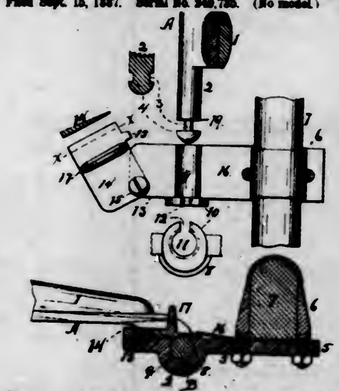
3. In a windmill, radial wings made up of a series of upper and lower radial arms provided with the notches C^3, C^3, and C^3, the swinging doors or panels having the projections *d*, and the sliding plates E, engaging the projections.

4. In a windmill, radial wings having the swinging doors or panels, the sliding plates E, engaging the doors, and the rods connected to the sliding plates and to the plate J, and the shaft J' and wheels *j*, for depressing the plates, substantially as described.

5. In a windmill, radial wings having swinging doors or panels, sliding plates having projections engaging the doors or panels, the vertical operating-rods connected to the sliding plates by bell-crank levers, and the regulating-vanes connected to the operating-rods, substantially as described.

6. In a windmill, radial wings having swinging doors or panels, sliding plates engaging with the doors or panels, vertical operating-rods connected to the sliding plates, the plate G, connected to the operating-rods, and the regulator-vane provided with a cam connected to the plate G, substantially as described.

384,233. THILL-COUPLING. SIMEON R. CASTLE, Syracuse, N. Y. Filed Sept. 15, 1887. Serial No. 249,736. (No model.)



Claim.—1. In a thill-coupling, a thill-iron provided with a coupling-pin having on one end a head and a flattened neck, substantially as described.

2. In a thill-coupling, a thill-iron provided with a coupling-pin having a head and flattened neck, an axle-iron provided with a seat for the coupling-pin and its neck and open on top, a spring having one end secured by the clip-arms, and a lock-piece pivoted upon the axle-iron and beveled across its free end, and swinging horizontally around under the free end of the spring and onto the coupling-pin, substantially as described.

3. The combination, with a coupling-pin seated in the axle-iron, of a spring secured upon the axle clip-arms, and a beveled lock-piece swinging horizontally upon a pivot-bolt in the axle-iron around under the free end of the spring and onto the axle-iron, substantially as described.

384,234. LANTERN. JOHN CHARLESON, Brooklyn, N. Y., assignor to William Vogel & Bro., same place. Filed Feb. 4, 1888. Serial No. 262,965. (No model.)

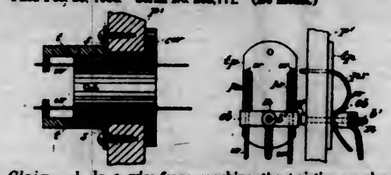


Claim.—1. The combination, with the deflecting-cap of a lantern, a globe, and a supporting-wire, as 1, secured to the deflecting-cap, of a globe-holding device consisting of a single piece of wire curved into a form greater than a semicircle and having the end portions bent up vertically, said bent-up parts having their ends rigidly secured to the deflecting-cap of the lantern, substantially as described.

2. The combination, with the deflecting-cap of a lantern, a globe, and a supporting-wire, as 1, formed with a curved part and an eye, of a globe-holding device consisting of a single piece of wire curved into a form greater than a semicircle and supported at the back by said supporting-wire 1, then carried forward and bent back on itself, and then carried vertically in advance of the diameter of the globe, and having the vertical part secured to the under face of the deflecting-cap, substantially as and for the purpose specified.

3. The globe-holder herein described, consisting of a single wire curved into a circular form of more than one-half of a circle, then having the strand bent down on itself and the end posts carried vertically in advance of the diameter of the circle and formed with a curve, and an additional vertically-arranged supporting-wire secured to the middle of the circular part of the holding-wire, said vertical parts being adapted to be secured to a deflecting-cap of a lantern, substantially as described, and for the purpose stated.

384,235. FENCE-MACHINE. SOLOMON CORBATH, Cookport, Pa. Filed Feb. 20, 1888. Serial No. 264,771. (No model.)

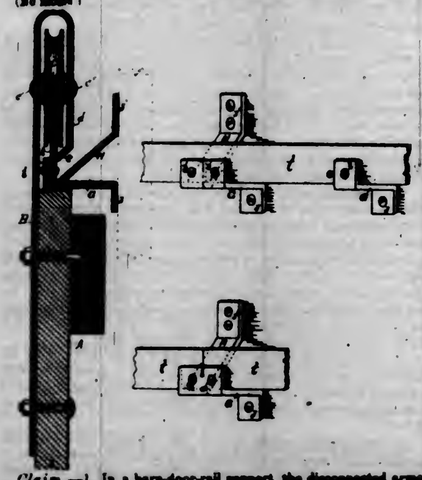


Claim.—1. In a wire-fence machine, the twisting mechanism herein described, comprising the chain-wheel *cw*, having the cylindrical shank *cw'*, revolving in sleeve *s*, the sleeve *s*, secured to the frame, the twister *t*, mounted on said shank, engaging and revolving with it, and having ears *e*, with openings for the fence-wires, substantially as shown and described.

2. The tension device combining the plate *tp* and its grooved semicircular pieces *pr*, the clamp-block *cb*, held to the post by a bolt, and the lever-nut *n*, for tightening the grip of the clamp upon the fence-wire, substantially as shown and described.

3. In combination, in a wire-fence machine, a frame, F, carrying twisters *t*, with ears *e*, rotating within sleeves *s*, secured in the frame, operated by chain-wheels *cw*, connected to the twisters by means as described, and driven by the chain *ci* through crank *c*, substantially as shown and described.

384,236. COMBINED DOOR-HANGER, RAIL, AND RAIL-BRACKET. WILLIAM CROSS, Havana, N. Y. Filed Oct. 10, 1887. Serial No. 251,807. (No model.)



Claim.—1. In a barn-door-rail support, the disconnected arms G H, the arm G horizontally constructed with an upturned front lip, *i*, and a bent foot or rest at its attaching end, the arm H angularly constructed, having an upturned front lip, *i*, and an upturned foot or rest at its attaching end, in combination with rail-section *f*, resting upon and secured to the back of said lips, substantially as shown and described.

2. In combination, the rail-bracket having an upturned front lip, *i*, back of and to which rail-sections *f f*, having square abutting ends resting upon the bracket, are secured, said lip at its foot having an angular arm, H, and a horizontal arm, G, verging therefrom, and each terminating in a bent foot or rest at its attaching end, substantially as described.

3. A door-hanger consisting of a suitable frame bent in U form over the sheave C, and having the angularly-bent end *e* beneath said sheave, at the extremity of its back arm, in combination with rail-sections *f f*, secured to front lip or lips, *i*, of a support having arms G H, in pairs, angularly and horizontally constructed and each terminating in a bent foot or rest at its attaching end.

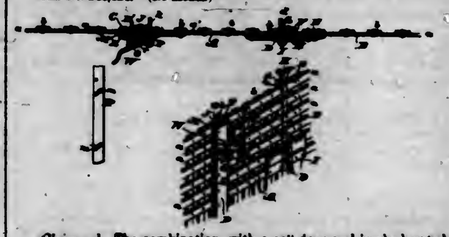
384,237. PENCIL AND INVENTORY CHECK. CALEB S. DE WITT, Lockport, Ill. Filed Dec. 7, 1888. Serial No. 194,915. (Model.)



Claim.—1. A set or series of checks or tickets having the letters and figures marked thereon in the manner substantially as set forth, and numbered in consecutive order to represent the quantity of goods or articles in the box or package to which they attach, substantially as and for the purpose specified.

2. A set or series of checks or tickets having consecutive inventory numbers for constantly showing the quantity of goods sold from the package to which they attach, and also to represent at any time the quantity of goods remaining unsold in the package to which said checks or tickets are attached, substantially as set forth.

384,238. BOLT. CARL DEIBELE, Canton, Ohio, assignor to the Diebold Safe and Lock Company, same place. Filed Aug. 13, 1887. Serial No. 246,826. (No model.)



Claim.—1. The combination, with a coil-door and jambs located along the opposite edges of the door, of plates secured to the jambs and spaced therefrom, forming grooves corresponding to the length of the door, a bar secured to the hinge edge of the door to project in the groove along the jamb, and a locking-bar independent of the door and supported in the groove along the jamb at the free edge of the door, the said locking-bar being supported to move vertically and laterally over the free edge of the closed door, substantially as set forth.

2. The combination, with a jail-coil-door jamb, of the plate L, secured to the jamb to form a groove, *s*, and an angle-iron jamb-support, J, substantially as set forth.

3. The combination, in the door-jamb D, of the vertical bars E and F, the angle-iron G, and the horizontal bars *a*, projected beyond the bar F to form a vertical groove, H, which is adapted to receive and secure the vertical hinged edge of the door, substantially as set forth.

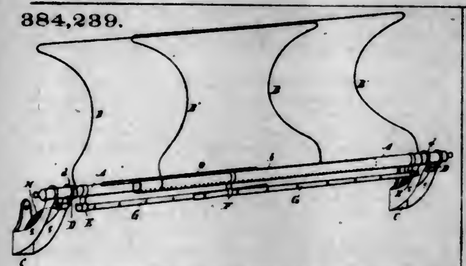
4. The locking-heap W, having the projecting pin *r*, adapted to pass into the perforations *s* and to secure the locking-bar when in locking position, substantially as set forth.

384,239. PILLOW-SHAM HOLDER. JOHN W. DOBIE, Detroit, Mich. Filed Feb. 3, 1887. Serial No. 226,269. (No model.)

Claim.—1. The combination, with the bracket C, having arms *c c*, formed with eyes, as described, the inner one of which is slotted, of the rotatable extensible main bar and the stop D on said main bar, substantially as described.

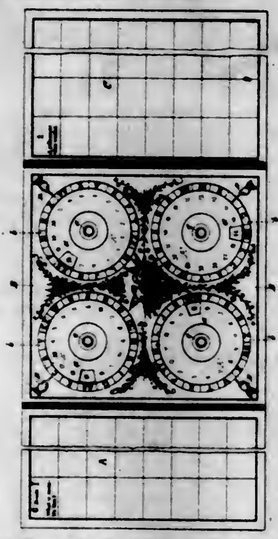
2. The combination, with the bracket C, formed with arms *c c*, having eyes, as shown, the inner one of which is slotted, of the rotatable extensible main bar, the stop D, secured thereto, and the spring

384,239.



H, having one end secured to said bracket, and the other end engaging said stop, substantially as and for the purpose specified.

384,240. GAME. WILLIAM C. DUNN, New York, N. Y. Filed Jan. 27, 1888. Serial No. 262,111. (No model.)



Claim.—1. The combination of disks revoluble about their centers, a radial slot in each disk, and a border on the outer edge of each disk divided into equal spaces and each space containing a symbol, with a sheet of suitable material having a plane surface, to which said revoluble disks are attached, series of numbers inscribed in circles upon said plane surface, so that when said disks are turned said numbers may be successively seen through said slots, index-hands eastamped upon said plane surface—one for each disk—outside the perimeter of said disk and pointing to the center thereof, two leaves of equal size having plane surfaces and flexibly attached by one edge each to an opposite side of said plane-surfaced sheet, so as to fold thereon, a series of equal spaces marked upon the inner side of each leaf, a pair of symbols and a question eastamped within each of said spaces upon one leaf, and a series of numbers and answers eastamped within the spaces upon the other leaf, and the said pairs of symbols so arranged with regard to the symbols on the said revoluble disks that when the corresponding symbols upon two of said disks are set opposite the said index-hands a number corresponding to each disk may be seen through the slot thereof, which numbers constitute an arithmetical problem, the solution of which gives the number of the answer to the question eastamped, as aforesaid, with said pair of symbols upon one of said leaves, which number and answer are eastamped, as aforesaid, upon the other leaf, substantially as and for the purpose set forth.

2. The combination of the disks 1, 2, 3, and 4, the slots *a* of said disks, and the border *b* thereof, divided and marked with symbols, as specified, with the plane-surfaced sheet B, to which the disks 1 2 3 4 are revolubly attached by their centers *e e e e*, the circles of numbers E E E E inscribed, as aforesaid, upon said sheet B, the index-hands D D D D, also eastamped thereon, the leaves A and C, flexibly attached to said sheet B, and each divided into spaces and eastamped, as specified, all substantially as and for the purpose set forth.

384,241. UPRIGHT PIANO. WILLIAM H. DUTTON, Philadelphia, Pa. Filed Oct. 9, 1886. Serial No. 215,705. (No model.)



Claim.—1. An upright piano the upper portion or head of the frame-work of which is of skeleton or box-like structure, in order to render said upper portion of said frame-work a musically-vibratory framing, substantially as set forth.

2. An upright piano the upper portion or head of the frame-work of which is a skeleton or box-like structure, the component members of which are so joined or framed together as to embody between them openings or tone-conductors which both render said head a musically-vibratory framing and afford top channels of egress for the tone which exists to the rear of the sounding-board within the casing of the instrument, substantially as set forth.

3. An upright piano the upper portion or head of the frame-work of which is a skeleton or box-like structure, the component members of which are so joined or framed together as to embody between them openings or tone-conductors which both render said head a musically-vibratory framing and afford top channels of egress for the tone which exists to the rear of the sounding-board within the casing of the instrument, and which is provided with a controllable lid which serves as a swell to said tone-conductors, substantially as set forth.

4. An upright piano the upper portion or head of the frame-work of which is channeled or provided with openings or tone-conductors which render said head a musically-vibratory framing and afford top channels of egress for the tone which exists to the rear of the sounding-board within the casing of the instrument, and which is as to its said head provided with a reverberator or other suitable tone-deflecting device, which serves to deflect the tone escaping from the openings or tone-conductors forward or to the front of the instrument, substantially as and for the purposes set forth.

5. An upright piano the upper portion or head of the frame-work of which is channeled or provided with openings or tone-conductors which render said head a musically-vibratory framing and afford top channels of egress for the tone which exists to the rear of the sounding-board within the casing of the instrument, which is as to its said head or casing provided with a reverberator or other suitable tone-deflecting device, which serves to deflect the tone escaping from the openings or tone-conductors forward or to the front of the instrument, and which is also provided with a controllable lid which serves as a swell to said tone-conductors, substantially as set forth.

6. In combination with the casing and with the action of an upright piano, a sound deadening or muffling dome or action-noise chest composed of material through which sound will not pass, applied in front of and inclosing the action, substantially as and for the purpose set forth.

7. An upright piano the upper portion or head of the frame-work of which is channeled or provided with openings or tone-conductors which render said head a musically-vibratory framing and afford channels of egress for the tone which exists to the rear of the sounding-board within the casing of the instrument, and which is also provided with a muffling-dome or action-noise chest for incasing the key-action and deadening its sound, substantially as set forth.

8. An improved frame-work for an upright piano, consisting of a pin-block, a back board, and a series of vertical framing-studs disposed between said pin-block and back board at given intervals and without intermediate filling-blocks in such manner as to constitute the head of the frame-work a skeleton or vibratory framing, and to form in it a series of vertical passages or tone-conductors, substantially as set forth.

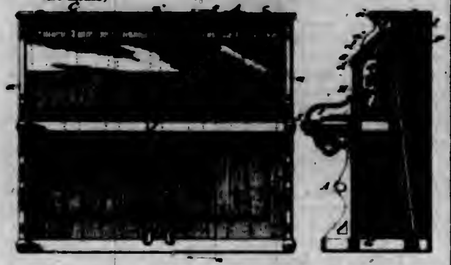
384,242. UPRIGHT PIANO. WILLIAM H. DUTTON, Philadelphia, Pa. Filed Mar. 12, 1887. Renewed Feb. 20, 1888. Serial No. 264,694. (No model.)



Claim.—1. In combination with the casing of an upright piano, and with the action contained in said casing, a sounding-dome of thin sounding-board wood applied in front of and inclosing the action, substantially as and for the purposes set forth.

2. In an upright piano, the sounding-board in front of the action, formed as a dome and secured to the pin-block at its upper portion and to the sides of the casing at its sides, substantially as set forth.

384,243. UPRIGHT PIANO. WILLIAM H. DUTTON, Philadelphia, Pa. Filed July 1, 1887. Renewed Feb. 20, 1888. Serial No. 264,695. (No model.)



Claim.—1. An upright piano the top portion or head of the frame-work of which is provided with channels or tone-conductors having forwardly-facing mouths, substantially as and for the purposes set forth.

2. An upright piano the upper portion or head of the frame-work of which is provided with channels or tone-conductors having forwardly-facing mouths, and which is provided with a sounding-deflector, substantially as and for the purposes set forth.

3. An upright piano the upper portion or head of the frame-work of which is a skeleton or box-like structure, the component members of which are so joined or framed together as to embody between them openings or tone-conductors, and the pin-block of which is, as to its upper level, lowered, dressed off, or notched out, to afford forwardly-facing mouths to said tone-conductors, substantially as set forth.

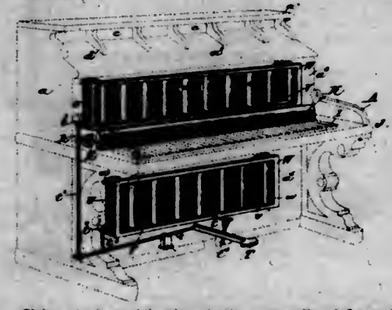
4. In an upright piano of the character hereinbefore set forth, in combination with the tone-conductors having forwardly-facing mouths, the internal deflector, substantially as and for the purposes set forth.

5. An improved frame-work for an upright piano, consisting of a pin-block, a back board, and a series of vertical framing-studs each tapering in two directions, and disposed between said pin-block and back board at given intervals in such manner as to constitute the head of the framing a skeleton or vibratory framing, and to form in it a series of vertical passages or tone-conductors, substantially as set forth.

6. As an article of manufacture, a piano pin-block having a series of notches or openings cut through its upper portion, substantially as and for the purposes set forth.

7. In an upright piano, the following elements in combination: a frame-work having a skeleton head provided with tone-conductors having forwardly-facing mouths, a cover superimposed upon the head, an internal deflector within the tone-conductors beneath said cover, and a sounding-deflector, substantially as and for the purposes set forth.

384,244. UPRIGHT PIANO. WILLIAM H. DUTTON, Philadelphia, Pa. Filed Mar. 12, 1887. Renewed Feb. 20, 1888. Serial No. 264,696. (No model.)



Claim.—1. An upright piano having a sounding-deflector intermediate between and extending from the pin-block to the front of the casing, substantially as and for the purposes set forth.

2. An upright piano having a sounding-deflector intermediate between and extending from the pin-block to the front of the casing, in combination with a casing-front containing or embodying a sounding-board surface, substantially as and for the purposes set forth.

3. An upright piano having a sounding-deflector intermediate between and extending from the pin-block to the front of the casing, in combination with a casing-front containing slats, substantially as set forth.

4. An upright piano having a sounding-deflector intermediate between and extending from the pin-block to the front of the casing, in combination with a casing-front containing slats and provided with a key-board swell, substantially as set forth.

5. An upright piano the top portion or head of the frame-work of which is provided with channels or tone-conductors having forwardly-facing mouths, in combination with a sounding-deflector or sound-board intermediate between and extending from the pin-block to the front of the casing, and with a casing-front containing slats, substantially as set forth.

6. An upright piano the front face of the casing of which contains a panel-surface consisting, essentially, of two series of alternating slats respectively disposed in parallel planes, substantially as set forth.

7. An upright piano the front face of the casing of which contains a panel-surface consisting, essentially, of two series of alternating slats respectively disposed in parallel planes, and which is provided with suitable means for occasioning the approach or recession of the respective series of slats, substantially as set forth.

8. An upright piano the front face of the casing of which contains a panel of slats, the said panel consisting of two series of semi-cylindric reverberating alternating slats lying in parallel planes, and by series reversely disposed, in order that when the slats of one series are brought into contact with the slats of the other series the said slats may register edge to edge and constitute a corrugated panel-surface, substantially as set forth.

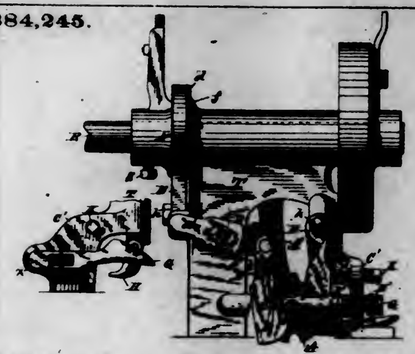
9. The combination, to form the front face of the casing of an upright piano, of a panel frame, a slat frame contained within said panel frame and having a series of separated slats, and a second slat frame containing a corresponding series of separated slats alternately disposed with respect to the slats of the first series, and which is movable with respect to the slat frame first referred to, in order to occasion the meeting or lapping of the edges of the slats, and thereby to provide or to close openings between the slats of the respective series, substantially as set forth.

10. The combination, in an upright piano, of a panel frame for its front face, a slat frame contained within said panel frame and having a series of separated slats, a second slat frame containing a corresponding series of separated slats alternately disposed with respect to the slats of the first series, and which is movable with respect to the slat frame first referred to, in order to occasion the meeting or lapping of the edges of the slats, and thereby to provide or to close openings between the slats of the respective series, and suitable means under the control of the player for occasioning the relative approach or separation of the slats of the aforesaid respective series, substantially as set forth.

384,245. KNOTTER FOR GRAIN-BINDERS. CONRAD FARMER and GEORGE LEUBER, Milwaukee, Wis. Filed Mar. 1, 1886. Serial No. 193,663. (No model.)

Claim.—1. In twine binders for harvesters, the combination of the shaft R, collar N, provided with lug M, slide E, provided with

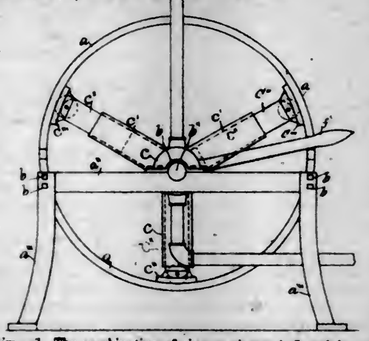
384,245.



elliptically-shaped recess L and angular recesses O and P, said slide being adapted to be moved upward and downward by the circular movement of said lug M within said recess, lever D, centrally pivoted to the supporting-frame T, pawl B, and ratchet-wheel C, affixed to the side of the cord-holding disk A, substantially as and for the purpose set forth.

2. In a cord-knotter for grain-binders, the combination of the shaft R, collar N, provided with lug M, slide E, having recesses L, O, and P, said slide E being guided in its reciprocating movement by the bolt *h*, operating in slot *g* and connecting at its lower end by a movable joint with the pawl-lever D, lever D, formed in two parts adjustably secured together and pivoted to the frame T upon the shaft or trunnion *d'*, pawl B, and ratchet-wheel C, said wheel C being affixed to the side of the cord-holding disk A, substantially as shown and described.

384,246. STEAM-ENGINE. FRIEDRICH FISCHER, Des Moines, Iowa. Filed July 26, 1887. Serial No. 245,073. (No model.)



Claim.—1. The combination of ring *a*, pieces *a'* *a''*, and legs *a'''*, bolts *b*, bearings *b'*, shaft *b''*, wheels *l* and *l'*, rings *d'''*, hub *c*, with cylinder *c'*, pistons *c''*, rollers *c'''*, packing-rings *d*, ports *d'* and *d''*, valve *f*, with handle *f'*, ports *f''*, and grooves *f'''*, ring *g*, with ports *g'*, *g''*, and *g'''*, box *h*, with rim *h'*, rings *h''*, space *h'''*, and small port *k*, substantially as and for purposes stated.

2. The combination of the ring *a*, with rollers *c'''*, pistons *c''*, cylinders *c'*, hub *c*, ports *d'* and *d''*, valve *f*, ports *f''*, grooves *f'''*, the ring *g*, with ports *g'*, *g''*, and *g'''*, and box *h*, with rim *h'*, rings *h''*, space *h'''*, and port *k*, substantially as set forth, for purposes stated.

3. The combination of shaft *b''*, hub *c*, cylinders *c'*, pistons *c''*, rollers *c'''*, with ports *d'* and *d''*, the valve *f*, with ports *f''* and groove *f'''*, the ring *g*, with ports *g'*, *g''*, and *g'''*, substantially as and for the purposes stated.

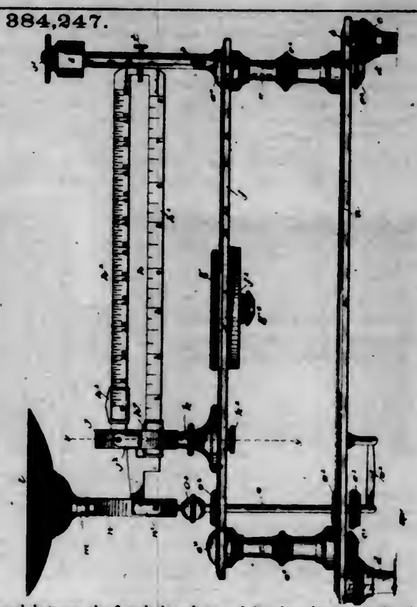
4. The combination of pistons *c''*, cylinders *c'*, hub *c*, and shaft *b''*, with valve *f*, ring *g*, and box *h*, substantially as and for the purposes stated.

5. The combination of ring *g*, with ports *g'* and *k*, and the box *h*, with rim *h'*, rings *h''*, and space *h'''*, substantially as and for purposes stated.

384,247. PRESCRIPTION-WEIGHING SCALE. CALVIN H. FITCH, Poultney, Vt. Filed July 15, 1887. Serial No. 244,304. (No model.)

Claim.—1. A prescription-scale comprising a pan and a beam provided with the permanently-fixed sliding weights, a bearing-plate, a post to which the beam is pivoted and which is detachably connected to the said bearing-plate, a foundation-plate, and removable posts interposed between the foundation-plate and bearing-plate to render the former detachable from the bearing-plate, whereby the parts of the scale may be readily disassembled and the scales "knocked down" for storage and transportation, substantially as described.

384,247.



2. A foundation-plate provided with leveling-feet, a bearing-plate, and detachable posts connecting the two plates, and a spirit-level arranged in the upper plate and rotatable therein, so as to be brought lengthwise and crosswise of the plate, to ascertain the level of said late longitudinally and transversely, combined with a scale-pan, a scale-beam, and bearings therefor arranged upon the bearing-plate, substantially as described.

3. A scale having a rotary spirit-level consisting of a block provided with a bubble-tube, a cap connected with said block by screw-threads, and having a sight for the bubble-tube, and the bearing-plate of the scales having a pocket in which the level is arranged, substantially as described.

4. A scale-beam having two ridgidly-connected or integral graduated members, with the zero-point of the lower member in vertical alignment with the knife-edge of the beam, and provided with permanently-affixed sliding weights, combined with such knife-edge, bearings therefor, and a scale-pan and its counterpoise, substantially as described.

5. The post provided with oppositely-moving beam-locking devices, a cam for moving said devices, and a cap covering the same and adapted to rotate it, substantially as described.

6. A post having longitudinal recesses or kerfs, combined with oppositely-moving beam-locking devices, a serpentine cam engaging said beam-locking devices, and means to rotate said cam to grasp and release the beam, substantially as described.

7. A scale-beam having an equalizing device in the form of a screw arranged at its free end, combined with a post and beam-locking devices co-operating with said equalizing device, and means to move said devices toward and from said equalizing device, substantially as described.

384,248. DADO-CUTTER. WILLIAM R. FOX, Grand Rapids, Mich. Filed Mar. 10, 1888. Serial No. 266,911. (No model.)



Claim.—1. A dado-cutter consisting of two outer saws arranged parallel to each other, and intermediate saws arranged at an angle thereto, adjustable with the outer saws, to lessen or widen the cut, substantially as described.

2. A dado-cutter consisting of outer parallel saws and inner inclined saws occupying the intermediate space, the outer and inner saws being connected in pairs or series, and adjustable toward or from each other, to lessen or widen the cut, substantially as described.

3. A dado-cutter consisting of outer parallel saws and inner inclined saws connected in pairs or series, and mounted upon a right and left hand screw-threaded sleeve, whereby the saws are adjusted to different widths, substantially as described.

4. In a dado-cutter, parallel outer saws, inner inclined saws, flanged rings for connecting the saws together in pairs or series, and outer rings internally screw-threaded, one upon each side, connected one to each set of saws, and a right and left hand screw-threaded sleeve, upon which the rings are mounted and by which the series of saws are adjusted, substantially as described.

5. The combination, in a dado-cutter, of the outer rings A A, having inner flanges, straight and inclined saws arranged in series and supported on said inner flanges, thimbles and screws for securing the rings and saws of each set together, and a right and left hand screw-threaded sleeve adapted to corresponding threads on the rings A A, substantially as described.

6. The combination, in a dado-cutter, of the straight and inclined saws arranged in pairs, a right and left hand screw-threaded sleeve for adjusting the saws, having depressions on its face, and a wrench for operating the sleeve, having projecting pins adapted to the depressions, substantially as described.

7. A dado-cutter consisting of two outer adjustable saws arranged parallel to each other, intermediate inclined saws adjustable with the outer saws, and a fixed inclined saw between the adjustable inclined saws, substantially as described.

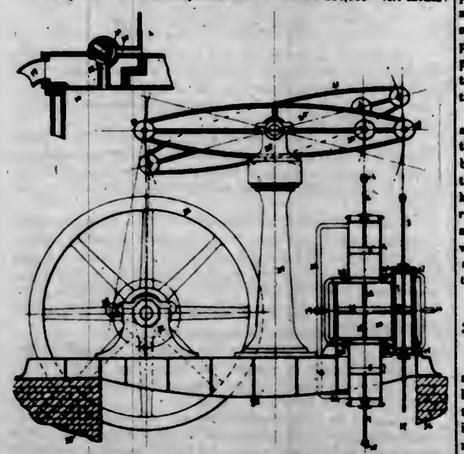
8. A dado-cutter consisting of two outer adjustable saws arranged parallel to each other, and a double set of intermediate inclined saws, the saws of each set being adjustable with the respective outer saws, substantially as described.

384,249. RAILROAD-RAIL JOINT. NATHAN T. FRAME, Jamestown, Ohio. Filed Sept. 24, 1887. Serial No. 250,548. (No model.)



Claim.—The solid coupling-piece, Fig. 2, in combination with the two rails having their crowns and bases meeting not on the same vertical line, so as to give a diagonal strain upon the continuous or combined rails, substantially as set forth.

384,250. TRIPLE-EXPANSION ENGINE. HARVEY F. GASKILL, Lockport, N. Y. Filed Sept. 20, 1887. Serial No. 250,163. (No model.)



Claim.—1. The combination, substantially as set forth, in a triple-expansion engine, of a double-acting high-pressure power-cylinder and a double-acting low-pressure power-cylinder arranged side by side, and two single-acting power-cylinders for intermediate pressure, arranged at the ends of the double-acting cylinders, whereby the exhaust from one grade into the next grade is through short and direct passages.

2. The combination, substantially as set forth, in a triple-expansion engine, of two double-acting power-cylinders arranged side by side, and two single-acting power-cylinders arranged at the ends of the double-acting cylinders, when the pistons of said cylinders move synchronously together in the same direction.

3. The combination, substantially as set forth, in a triple-expansion engine, of the high-pressure, the intermediate-pressure, and the low-pressure power-cylinders with the beam, when said cylinders have their pistons connected to the beam at two or more different points on the same side of its center.

4. The combination, substantially as set forth, in a triple-expansion engine, of the high-pressure power-cylinder, the low-pressure power-cylinder at the side thereof, and the intermediate-pressure power-cylinders at the ends thereof and in line with the low-pressure cylinder.

384,251. SIPHON. FRED H. GILE, Alfred, Me. Filed July 5, 1887. Serial No. 243,772. (No model.)



Claim.—1. In a siphon, the combination, with a valveless tube having at its lower end an enlargement formed substantially as described, a discharge-pipe near its upper end, and a suitable packing at its top, of a valveless plunger fitting in said tube, and a plunger-rod passing through said packing and adapted to raise the plunger to the space in the tube above the discharge-pipe and to depress it into the enlargement at the bottom of said tube, substantially as and for the purpose set forth.

2. In a siphon, the combination, with a tube having an enlargement at its lower end, a discharge-pipe near its upper end, and a suitable packing at its top, of a valveless plunger fitting in said tube, a plunger-rod passing through said packing and adapted to raise the plunger to the space in the tube above the discharge-pipe and to depress it into the enlargement at the bottom of the tube, and a stop adapted to limit the downward motion of the plunger-rod and thus to prevent the depression of the plunger into said enlargement, substantially as and for the purpose set forth.

3. In a siphon, the combination with a tube having a suitable packing at its upper end, of a discharge-pipe opening from the tube at a point below the packing and terminating in a constricted tip, substantially as described, a valveless plunger fitting in said tube, and a plunger-rod passing through the packing and adapted to depress the plunger to the bottom of the tube and to raise it to the space in the tube above the opening of said discharge-pipe, substantially as and for the purpose set forth.

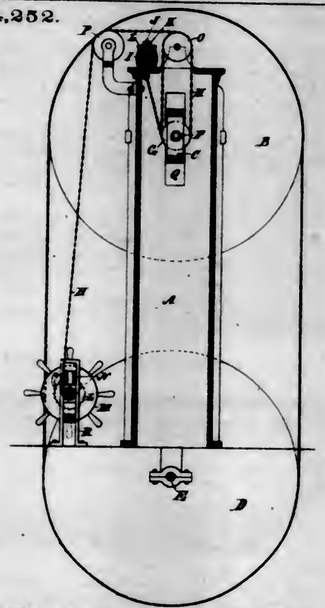
4. The combination with the tube *a*, having the enlargement *a'* and opening *f* at its lower end, the stuffing-box at its upper end, and the discharge-pipe *i j*, opening from it at a point below the stuffing-box, of the plunger lying within the tube, the plunger-rod passing through the packing and adapted to raise and lower the plunger, the knob *d*, fastened to the top of the plunger-rod and formed with the recess *d'*, and the lug *d''*, projecting upward from the top of the tube and adapted to enter the recess *d'* upon the depression of the knob when the same is in one position, but to prevent the complete depression of the knob when it is rotated to a different position, substantially as and for the purpose set forth.

384,252. BAND-SAW MILL. WILLIAM GILLIS, Buckingham, Quebec, Canada. Filed Sept. 20, 1887. Serial No. 251,009. (No model.)

Claim.—1. A band-saw mill comprising, in combination, an upper and lower saw-wheel, the former carried in a yoke and having a pulley on the wheel-shaft, a spring secured to a fixture, a chain attached to said spring and supporting said shaft-pulley, pulleys carrying said chain, and a windlass winding said chain upon a drum journaled on spring-bearings which resist the strain of the chain, whereby all the springs will respond simultaneously to keep the saw at a uniform tension, as set forth.

2. In a band-saw mill, the combination, with the upper saw-wheel journaled in movable bearings and a pulley on said shaft, of a spring secured to a fixture, a chain attached to said spring and supporting

384,252.



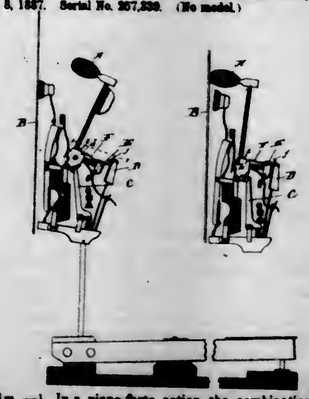
said shaft-pulley, pulleys carrying said chain, and a windlass winding said chain to adjust the tension of the saw, as set forth.

384,253. MAP-CASE. ARTHUR H. HALL, Chicago, Ill. Filed June 25, 1887. Serial No. 242,501. (No model.)



Claim.—A map-case consisting of end pieces, a covering or front piece, and a hinged back piece forming a door for giving access to the interior of the case for the insertion or removal of a wall-map and its roller, said map-case being provided with fastenings for securing the case when closed, substantially as shown and described.

384,254. PIANO-FORTE ACTION. STILLWELL B. HARCOURT, Chicago, Ill., assignor to The W. W. Kimball Company, same place. Filed Dec. 8, 1887. Serial No. 257,339. (No model.)



Claim.—1. In a piano-forte action, the combination, with the hammer and the back-catch, of a spring, F, borne by the hammer and having contact with the catch at the latter part of the key-stroke, substantially as set forth.

2. In a piano-forte action, the combination, with the hammer, the butt, and the back-catch, of a spring, F, secured to the butt and contacting with the catch at the latter part of the stroke, substantially as set forth.

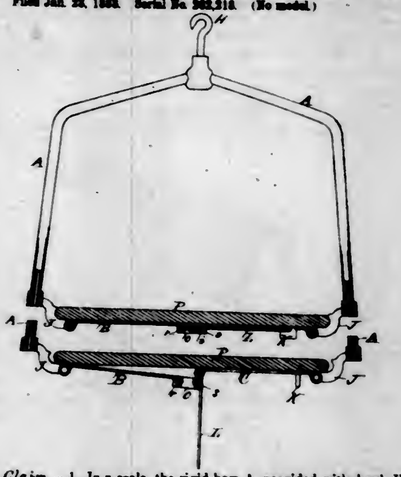
3. In a piano-forte action, the combination, with the hammer, the butt, the bunter, and the back-catch, of the spring secured to the butt resting upon the bunter and striking the catch, substantially as set forth.

384,255. WIRE STRETCHER OR CLAMP. WILLIAM HAVINS, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,192. (No model.)



Claim.—A wire-clamp comprising a stationary jaw, A, provided near one end with a fulcrum-arm, B *b*, at the opposite end with an upright standard, and having an intermediate bearing-shoulder, *a*, a movable jaw, D, eccentrically pivoted to said standard, and a lever-arm, C, resting against the fulcrum *b* and pivoted to the movable jaw D, said stationary and movable jaws and lever-arm being relatively organized, substantially as shown, whereby the wire may be held and stretched approximately in the line thereof, substantially as described.

384,256. SCALE-PAN. HENRY J. HERRINGER, Cincinnati, Ohio. Filed Jan. 28, 1888. Serial No. 262,218. (No model.)



Claim.—1. In a scale, the rigid bow A, provided with hook H and jaws J for the reception of plate P, in combination with draw-levers B C, connecting plates *o o*, and eccentrically-jointed lever L, whereby the plate P is clamped or released, as desired, substantially as shown and described.

2. In a scale, the rigid bow A, its jaws J and hook H, in combination with levers B C, connected together through the instrumentality of links *o o* and eccentrically-hinged lever L, in conjunction with keeper K, substantially as shown and described, and for the purpose specified.

3. The rigid bow A, its retaining-jaws J and hanging hook H, in combination with draw-levers B C, connected together through the instrumentality of links *o o*, and operating-lever L, which is hinged to lever C, and fulcrumed between said links below the said hinge, whereby an eccentric movement is effected, in conjunction with keeper K, properly secured, all substantially as shown and described, and for the purpose noted.

384,257. EMBROIDERING ATTACHMENT FOR SEWING-MACHINES. ALBERT W. JOHNSON, New Haven, Conn., assignor to the Pearlsen Button Hole Attachment Company, of Connecticut. Filed Apr. 26, 1886. Serial No. 200,203. (No model.)

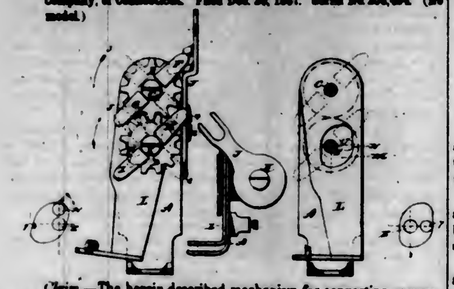
Claim.—1. In an embroidery attachment for sewing-machines, the combination, with a supporting-frame, A, of two wheels, C D, geared together and provided with wings 1 2 3 4, an operating-lug connected and actuated by the needle-bar and impinging alternately against said wings, whereby an intermittent rotary movement is given to said wheels, the thread-carrier, and means for communicating motion from said wheels to the thread-carrier, substantially as described.

384,257.



2. The combination of the frame A, carrier E, wheels C D, provided with wings 1 2 3 4, eccentric or cam F, spring H, and an operating-lug connected to and actuated by the needle-bar and impinging alternately against said wings, substantially as described.

384,258. MECHANICAL MOVEMENT. ALBERT W. JOHNSON, New Haven, Conn., assignor to the Pearlsen Button Hole Attachment Company, of Connecticut. Filed Dec. 20, 1887. Serial No. 258,054. (No model.)



Claim.—The herein-described mechanism for converting reciprocating into an intermittent rotary motion, consisting of a pair of gear-wheels of equal size and teeth working together, each wheel provided with radial arms, with a reciprocating device from which a projection extends and so as to work in a path between said arms, substantially as described, and whereby the said reciprocating-movement in one direction will impart rotation to one wheel, and that one wheel communicate its rotation to the other wheel, but when moving in the opposite direction the said reciprocating movement will impart rotation to the said other wheel, and the said other wheel will communicate its rotation to the first-mentioned wheel, the rotation of the wheels being in the same direction under both operations.

384,259. UPHOLSTERED FURNITURE. FRANK G. JOHNSON, New York, N. Y. Filed Aug. 11, 1886. Serial No. 210,570. (No model.)



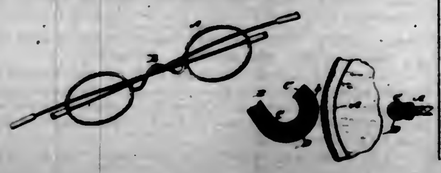
Claim.—1. In upholstered furniture, the socket-plate consisting of the circular sockets *a a a* and plate A A A, in combination with the supporting-strips B B, substantially as and for the purpose set forth.

2. In upholstered furniture, the socket-plate consisting of the circular sockets *a a a* and plate A A A, in combination with the adjustable holding-screw C and supporting-strips B B, substantially in the manner and for purposes described.

3. In upholstered furniture, the socket-plate consisting of the circular sockets *a a a*, plate A A A, and legs *a' a' a'*, in combination with the adjustable holding-screw C and supporting-strips B B, as and for the purposes set forth.

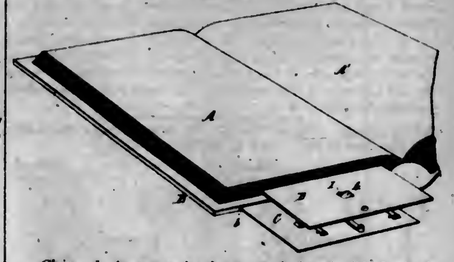
4. In upholstered furniture, the socket-plate consisting of the circular sockets *a a a*, plate A A A, and legs *a' a' a'*, in combination with the springs D' D', adjustable screw C, and supporting-strips B B, as and for the purposes described.

384,260. SPECTACLE-BRIDGE. GEORGE JOHNSON, Detroit, Mich. Filed Sept. 2, 1887. Serial No. 248,632. (No model.)



Claim.—The combination, with the steel eye-frames of spectacles, of a separate bridge made of gold or non-corrosive metal tubing forced into close contact with a steel core, said non-corrosive metal drawed away near the extremities sufficient to expose the steel and form a concaved seat conforming to the eye-frame, said steel frame and steel core being brought together in the said seat and the whole united by solder, substantially as described.

384,261. ARM OR HAND REST. WILL M. KINNARD, Dayton, Ohio. Filed Mar. 5, 1888. Serial No. 266,171. (No model.)



Claim.—1. An arm or hand rest attached to the lid of a book, arranged to be adjusted to any convenient height to correspond with the level of the page to be written upon, substantially as and in the manner described.

2. A hand or arm rest attached to the lid of a book, constructed substantially as described, to be adjusted to various levels, arranged to be folded or moved into the back out of the way when not in use, substantially as set forth.

3. A hand or arm rest for books inclosed in the lid of the book and capable of being drawn out and elevated to any desired height to correspond with the face of the page, substantially as described.

4. A hand-rest for books, consisting of two plates adapted to fold together and fold or slide into an opening in the side of the book when not in use, substantially as and for the purpose described.

5. A book provided with a hand-rest concealed within the side of the book, arranged to be drawn out and adjusted to any desired height, substantially as described.

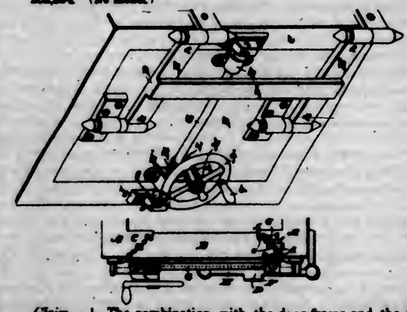
6. A hand-rest for books, consisting of two plates, C D, hinged together by the rods F F, and provided with the pawl G and ratchet H, substantially as described.

7. A rest for books, consisting of two plates hinged together as described, and sliding or folding into the side of a book, in combination with a lock or latch for fastening it in or out, substantially as described.

8. A hand or arm rest for record-books, consisting of two plates inclosed within the lid of the book and adapted to be drawn out sufficiently to permit the elevation of the upper plate, in combination with the internal shoulder or stop, *b'*, substantially as described.

9. A hand-rest for books, consisting of two plates hinged together, the upper one adapted to be raised and adjusted to any convenient height, as described, the whole inclosed within an independent frame or casing to be inserted in the lid of a book, substantially as and for the purpose described.

384,262. OPERATING MECHANISM FOR DOORS OF SAFES AND VAULTS. ALBERT KIRK, Canton, Ohio, assignor to the Diebold Safe and Lock Company, same place. Filed Oct. 14, 1887. Serial No. 252,234. (No model.)



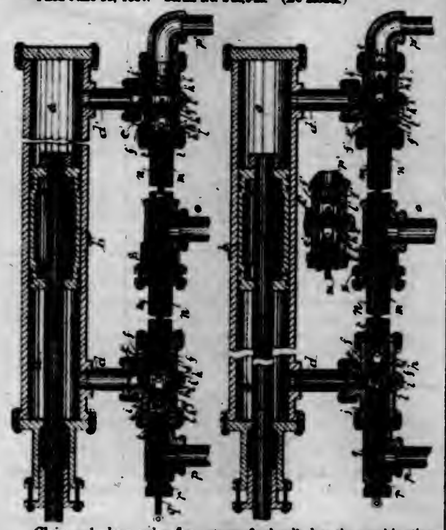
Claim.—1. The combination, with the door-frame and the door hinged thereto and capable of a tilting movement on its own pivotal connection independent of its swinging movement on its hinge-con-

section with the door-frame, of a rotary presser-shaft, a worm-wheel and worm for rotating said shaft, and eccentric mechanism connected with the shaft and frame, whereby the rotary movement of the shaft will cause the door to move bodily toward and away from its seat in the frame, substantially as set forth.

2. The combination, with the door-frame and the door hinged thereto, of presser-shafts having lugs or arms projected laterally therefrom, a link connecting the projecting arms, a worm-wheel having a crank-connection with the link, and a worm in engagement with the worm-wheel and provided with an operating-crank whereby the presser-shafts are simultaneously rotated, substantially as set forth.

3. The combination, with the door-frame and the door hinged thereto, of a presser-shaft having an eccentric aperture or groove in the end thereof, open at one side, a stationary pin adapted to engage the said eccentric groove, and means for rotating the presser-shaft, substantially as set forth.

384,263. STEAM-FEED VALVE. LEWIS T. KLINE, Alpena, Mich. Filed June 30, 1887. Serial No. 242,942. (No model.)

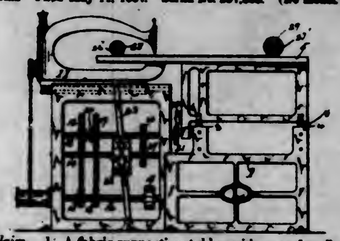


Claim.—1. In a valve for a steam-feed cylinder, the combination with a valve-casing, *f*, having a steam-inlet pipe connected with one end and an exhaust-pipe connected with the opposite end, and provided with a groove, *i*, having a steam-port, *e*, of the valve *g* within the said casing, and provided with the solid portion *h* and the supporting-rings *l* upon each side of the portion *h*, and the bars *k*, connecting the said part *h* to the rings *l*, and the stem *q*, passed through the packing-box *v* and connected to the portion *h*, substantially as set forth.

2. The combination, with a log-carriage and a steam-cylinder inclosing a piston, having a piston-rod connected with the said carriage for propelling the same, of the valve-casing *f*, provided with a groove, *i*, having a steam-port, *e*, connected to one end of the said cylinder by the pipe *d*, the valve *g* within the casing *f*, and provided with the solid portion *h*, and having the bars *k* and supporting-rings *l*, the valve-casing *f'*, provided with a groove, *i'*, having a steam-port, *e'*, connected with the opposite end of the said cylinder by the pipe *d'*, the valve *g'* within the casing *f*, and provided with the solid portion *h'*, and having the bars *k'* and the supporting-rings *l'*, the rod *m*, with its ends secured to the valves *g* and *g'*, the pipe *n*, surrounding the said rod *m*, and with one end connected to the valve-casing *f* and its opposite end connected to the valve-casing *f'*, the valve-stem *q*, connected to one of the said valves, the steam-inlet pipe *o*, connected to the pipe *n*, and the exhaust-pipes *p* and *p'*, connected, respectively, to the outer ends of the valve-casings *f* and *f'*, substantially as and for the purpose set forth.

3. The combination, with a steam-cylinder provided with valve-casings *f* and *f'*, located at and connected by port-openings to each end of the said cylinder, a steam-pipe, *n*, connecting the inner ends of the said casings to each other and provided with a steam-inlet pipe, of the valve-disks *h* and *h'* within the said casings, a rod, *m*, within the pipe *n*, and pivotally secured by its opposite ends to the said disks, the valve-stem *q*, passed into the outer end of one of the said casings, and with its inner end pivotally connected to the outer side of one of the valve-disks, and exhaust-pipes connected to the outer ends of the valve-casings, substantially as and for the purpose set forth.

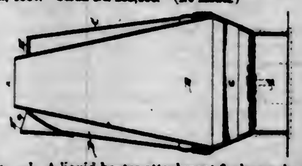
384,264. QUILTING-MACHINE. C. TYLER LAMPHERE, Hyattville, Conn. Filed May 11, 1887. Serial No. 237,893. (No model.)



Claim.—1. A fabric-supporting table, guideways for allowing the reciprocating movement of said table, a rack attached to said table, and a pinion engaging said rack, in combination with a sewing-machine, guideways for said machine arranged transversely with regard to the guideways for said table, a lever for moving said sewing-machine, and a single set of devices for automatically operating said lever and said pinion to produce simultaneous motion of the said table and sewing-machine in the same plane, but at right angles to each other, substantially as set forth.

2. In combination with a fabric-supporting table reciprocally movable in a right line, a sewing-machine simultaneously movable in the same plane, but at right angles to the line of movement of said table, a lever, as at 23, hinged at one end and connected to the sewing-machine at its free end, and a pattern-roll engaging and controlling said lever, as described, and for the purpose specified.

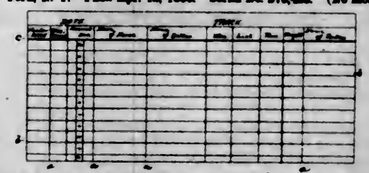
384,265. LIQUID-HEATER. JOHN C. MCFARREN, Hope, Kans. Filed Nov. 22, 1887. Serial No. 255,998. (No model.)



Claim.—1. A liquid-heater attachment for lamps, having a non-conducting portion, G, and a handle, H, secured to said non-conducting portion, as set forth.

2. In a liquid-heater attachment for lamps, the neck A, the inner and outer shells having their lower edges secured together, the reversely-conical non-conducting portion G, connecting the neck with the junction of the lower edges of the shells, and the handle H, secured to the portion G, as set forth.

384,266. TURF-RACING RECORD-BOOK. PETER MITCHELL, New York, N. Y. Filed Apr. 12, 1883. Serial No. 270,423. (No model.)



Claim.—A turf-racing record and memorandum book composed of a series of leaves having their front pages ruled with vertical and horizontal lines *a b c*, to form columns and spaces for the reception of entries comprising a tabulated record of a race, and provided on the top with a horizontal column or space running from end to end, with the words "Date" and "Track" permanently placed therein, and a similar column or space immediately underneath, divided at intervals by the intersecting vertical lines *a* into smaller spaces, and carrying the words permanently placed therein of "Number race, Distance, Amount bet, Name of horse, Name of bettor, Won, Lost, Time, Weight, Name of jockey," constituting the permanent headings, all substantially as described and shown, and for the purpose specified.

384,267. HOE-CULTIVATOR. JAMES W. MELVET, Jeffersville, Ind. Filed Feb. 6, 1888. Serial No. 263,101. (No model.)

Claim.—1. A cultivating implement which embraces two pairs of parallel shoes which have cutting-edges, connecting-bars which secure each pairs of shoes together, and a forwardly and downwardly inclined hoe in each pair of shoes, secured by its ends in each member of each pair, substantially as described.

2. In a cultivating implement, the combination, with a series of

384,267.



cutting shoes or runners, of two coincident inclined hoes or cutters which are arranged transversely of the shoes or runners and are secured thereon at a distance apart corresponding to the width of the rows of plants, and handled bars which connect the hoe-carrying shoes, and which are of such conformation as to bestride and pass over and along the rows of plants, substantially as and for the purposes set forth.

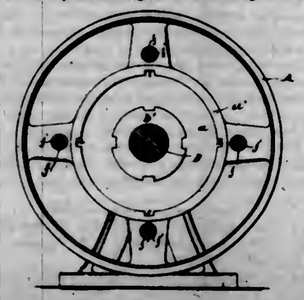
3. The combination, in a cultivator, of the described pairs of shoes or runners having cutting-edges and connected together as shown, each pair being provided with a transversely-placed inclined hoe, the inner end of each of which extends through the inner member of its pair of shoes or runners, substantially as and for the purposes set forth.

4. In a cultivator for plants in rows, the combination, with a pair of cutting shoes or runners, each of which is provided with a forwardly and downwardly inclined slot which is closed above and below, of a hoe which is adapted to such slots, and which projects through the same, and which is provided in its lower portion with an open slot of a width corresponding to the thickness of the shoe or runner, whereby the upper portion of the hoe is embraced by the slot in the shoe or runner, and whereby the lower portion of the shoe or runner is embraced by the slot in the hoe, substantially as described.

384,268. FRICTION-CLUTCH. ANTHONY NELSON, Boston, Mass., assignor to James Bennett Forsyth, same place. Filed Apr. 30, 1887. Serial No. 236,631. (No model.)

Claim.—1. In a friction-clutch, pulley carrying longitudinally-sliding plates *a*, and shaft B, carrying longitudinally-sliding plates *b*, in combination with follower D, having inclines *f'*, and cap F, having corresponding inclines, substantially as and for the purpose set forth.

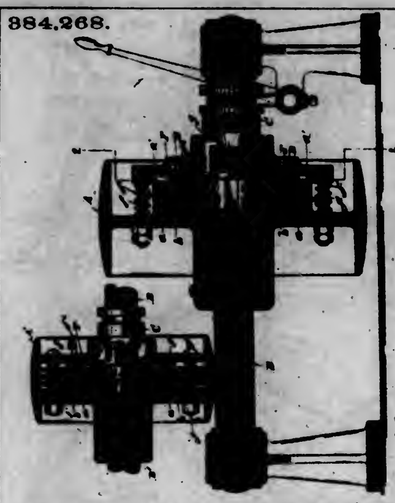
2. In a friction-coupling, pulley A, having a lateral annular flange, *a'*, friction-plates *a b*, follower D, and means for partially rotating it, in combination with cap F, covering the annular flange *a'*, within which



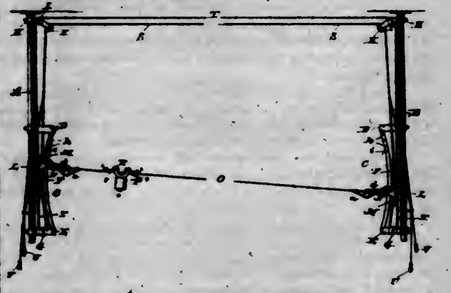
lie the friction-plates and the follower, substantially as described.

3. In a friction-clutch, friction-plates *a b*, provided with grooves 7, substantially as and for the purpose set forth.

384,268.



384,269. ELEVATED WAY. NELSON NEWMAN, Springfield, Ill., assignor to George A. Sanders, same place. Filed Dec. 13, 1887. Serial No. 257,657. (No model.)



Claim.—1. The combination of the posts A B, the frames C, extending from the posts and comprising the horizontal bars D E, and vertical guide-bars F, detachably bolted to said bars, the sheaves G, journaled to the bottom bars, E, the brackets H, secured to the tops of the posts and having the sheaves I K, the vertically-movable travelers guided on bars F, the track-cable stretched between said travelers, the car on the track-cable, the cord S, stretched over sheaves K and connected to the travelers, and the cord T, stretched over the sheaves I, passing under sheaves G, and also attached to the travelers, substantially as described.

2. The combination of the vertical guide-bars F, provided with the series of openings *h*, the adjustable trip-pins *i* in said openings, the travelers movable vertically on the guides and having the spring-catches *d* and the springs *a*, the track-cable stretched between the travelers, and the car on the track-cable, having shoulders adapted to be engaged by the catches, and having the lugs to engage and compress the springs, substantially as described.

3. The combination of the vertical guides having the trip-pins *i*, the travelers movable vertically on said guides, the spring-catches *d*, pivoted to said travelers, and having rearward-extending arms *g*, adapted to engage pins *i*, the spring-arms *a*, attached to the travelers, the cable stretched between the travelers, and the car thereon, said car having the shoulders *s*, adapted to be caught by the catches *d*, and having the lugs *t*, adapted to engage and compress the spring-arms, substantially as shown.

384,270. FENCE. JOHN S. OTT, Augusta, Ky. Filed Mar. 19, 1888. Serial No. 267,793. (No model.)

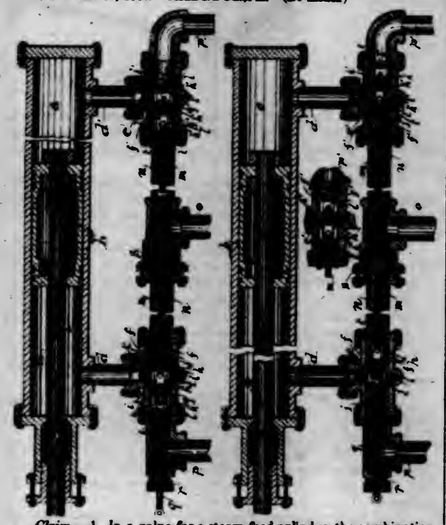
Claim.—1. In a fence, the combination, with the pickets, of the links or connections between the pickets, having the short bars C and

section with the door-frame, of a rotary presser-shaft, a worm-wheel and worm for rotating said shaft, and eccentric mechanism connected with the shaft and frame, whereby the rotary movement of the shaft will cause the door to move bodily toward and away from its seat in the frame, substantially as set forth.

2. The combination, with the door-frame and the door hinged thereto, of presser-shafts having lugs or arms projected laterally therefrom, a link connecting the projecting arms, a worm-wheel having a crank-connection with the link, and a worm in engagement with the worm-wheel and provided with an operating-crank whereby the presser-shafts are simultaneously rotated, substantially as set forth.

3. The combination, with the door-frame and the door hinged thereto, of a presser-shaft having an eccentric aperture or groove in the end thereof, open at one side, a stationary pin adapted to engage the said eccentric groove, and means for rotating the presser-shaft, substantially as set forth.

384,263. STEAM-FEED VALVE. LEWIS T. KLEIN, Alpena, Mich. Filed June 30, 1887. Serial No. 243,242. (No model.)

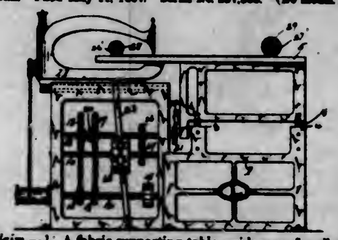


Claim.—1. In a valve for a steam-feed cylinder, the combination with a valve-casing, *f*, having a steam-inlet pipe connected with one end and an exhaust-pipe connected with the opposite end, and provided with a groove, *i*, having a steam-port, *e*, of the valve *g* within the said casing, and provided with the solid portion *h* and the supporting-rings *l* upon each side of the portion *h*, and the bars *k*, connecting the said part *h* to the rings *l*, and the stem *q*, passed through the packing-box *v* and connected to the portion *h*, substantially as set forth.

2. The combination, with a log-carriage and a steam-cylinder inclosing a piston, having a piston-rod connected with the said carriage for propelling the same, of the valve-casing *f*, provided with a groove, *i*, having a steam-port, *e*, connected to one end of the said cylinder by the pipe *d*, the valve *g* within the casing *f*, and provided with the solid portion *h*, and having the bars *k* and supporting-rings *l*, the valve-casing *f'*, provided with a groove, *i'*, having a steam-port, *e'*, connected with the opposite end of the said cylinder by the pipe *d'*, the valve *g'* within the casing *f*, and provided with the solid portion *h'*, and having the bars *k'* and the supporting-rings *l'*, the rod *m*, with its ends secured to the valves *g* and *g'*, the pipe *n*, surrounding the said rod *m*, and with one end connected to the valve-casing *f* and its opposite end connected to the valve-casing *f'*, the valve-stem *q*, connected to one of the said valves, the steam-inlet pipe *o*, connected to the pipe *n*, and the exhaust-pipes *p* and *p'*, connected, respectively, to the outer ends of the valve-casings *f* and *f'*, substantially as and for the purpose set forth.

3. The combination, with a steam-cylinder provided with valve-casings *f* and *f'*, located at and connected by port-openings to each end of the said cylinder, a steam-pipe, *n*, connecting the inner ends of the said casings to each other and provided with a steam-inlet pipe, of the valve-disks *h* and *h'* within the said casings, a rod, *m*, within the pipe *n*, and pivotally secured by its opposite ends to the said disks, the valve-stem *q*, passed into the outer end of one of the said casings, and with its inner end pivotally connected to the outer side of one of the valve-disks, and exhaust-pipes connected to the outer ends of the valve-casings, substantially as and for the purpose set forth.

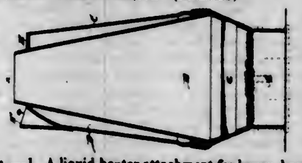
384,264. QUILTING-MACHINE. C. TYLER LADDEMAN, Mystic, Conn. Filed May 11, 1887. Serial No. 237,986. (No model.)



Claim.—1. A fabric-supporting table, guideways for allowing the reciprocating movement of said table, a rack attached to said table, and a pinion engaging said rack, in combination with a sewing-machine, guideways for said machine arranged transversely with regard to the guideways for said table, a lever for moving said sewing-machine, and a single set of devices for automatically operating said lever and said pinion to produce simultaneous motion of the said table and sewing-machine in the same plane, but at right angles to each other, substantially as set forth.

2. In combination with a fabric-supporting table reciprocally movable in a right line, a sewing-machine simultaneously movable in the same plane, but at right angles to the line of movement of said table, a lever, as at 23, hinged at one end and connected to the sewing-machine at its free end, and a pattern-roll engaging and controlling said lever, as described, and for the purpose specified.

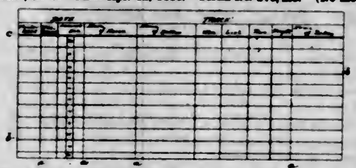
384,265. LIQUID-HEATER. JOHN C. MCFARREN, Hope, Kans. Filed Nov. 22, 1887. Serial No. 255,866. (No model.)



Claim.—1. A liquid-heater attachment for lamps, having a non-conducting portion, G, and a handle, H, secured to said non-conducting portion, as set forth.

2. In a liquid-heater attachment for lamps, the neck A, the inner and outer shells having their lower edges secured together, the reversely-conical non-conducting portion G, connecting the neck with the junction of the lower edges of the shells, and the handle H, secured to the portion G, as set forth.

384,266. TURF-RACING RECORD-BOOK. PETER MITCHELL, New York, N. Y. Filed Apr. 12, 1888. Serial No. 270,423. (No model.)



Claim.—A turf-racing record and memorandum book composed of a series of leaves having their front pages ruled with vertical and horizontal lines *a b c*, to form columns and spaces for the reception of entries comprising a tabulated record of a race, and provided on the top with a horizontal column or space running from end to end, with the words "Date" and "Track" permanently placed therein, and a similar column or space immediately underneath, divided at intervals by the intersecting vertical lines *a* into smaller spaces, and carrying the words permanently placed therein of "Number race, Distance, Amount bet, Name of horse, Name of bettor, Won, Lost, Time, Weight, Name of jockey," constituting the permanent headings, all substantially as described and shown, and for the purpose specified.

384,267. HOE-CULTIVATOR. JAMES W. HULVEY, Jonesville, Ind. Filed Feb. 6, 1888. Serial No. 263,101. (No model.)

Claim.—1. A cultivating implement which embraces two pairs of parallel shoes which have cutting-edges, connecting-bars which secure each pair of shoes together, and a forwardly and downwardly inclined hoe in each pair of shoes, secured by its ends in each member of each pair, substantially as described.

2. In a cultivating implement, the combination, with a series of

384,267.



cutting shoes or runners, of two coincident inclined hoes or cutters which are arranged transversely of the shoes or runners and are secured thereto at a distance apart corresponding to the width of the rows of plants, and handled bars which connect the hoe-carrying shoes, and which are of such conformation as to bestride and pass over and along the rows of plants, substantially as and for the purposes set forth.

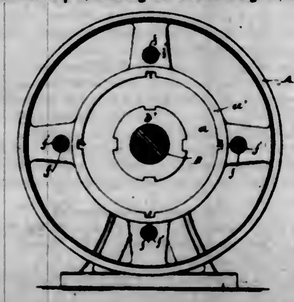
3. The combination, in a cultivator, of the described pairs of shoes or runners having cutting-edges and connected together as shown, each pair being provided with a transversely-placed inclined hoe, the inner end of each of which extends through the inner member of its pair of shoes or runners, substantially as and for the purposes set forth.

4. In a cultivator for plants in rows, the combination, with a pair of cutting shoes or runners, each of which is provided with a forwardly and downwardly inclined slot which is closed above and below, of a hoe which is adapted to such slots, and which projects through the same, and which is provided in its lower portion with an open slot of a width corresponding to the thickness of the shoe or runner, whereby the upper portion of the hoe is embraced by the slot in the shoe or runner, and whereby the lower portion of the shoe or runner is embraced by the slot in the hoe, substantially as described.

384,268. FRICTION-CLUTCH. ANTHONY HALDEN, Boston, Mass., assignor to James Bennett Forsyth, same place. Filed Apr. 20, 1887. Serial No. 235,631. (No model.)

Claim.—1. In a friction-clutch, pulley carrying longitudinally-sliding plates *a*, and shaft B, carrying longitudinally-sliding plates *b*, in combination with follower D, having inclines *f''*, and cap F, having corresponding inclines, substantially as and for the purpose set forth.

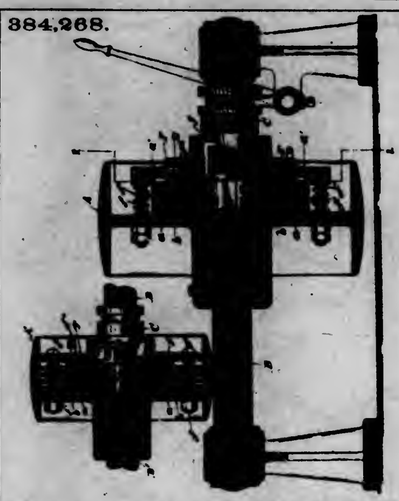
2. In a friction-coupling, pulley A, having a lateral annular flange, *a'*, friction-plates *a b*, follower D, and means for partially rotating it, in combination with cap F, covering the annular flange *a'*, within which



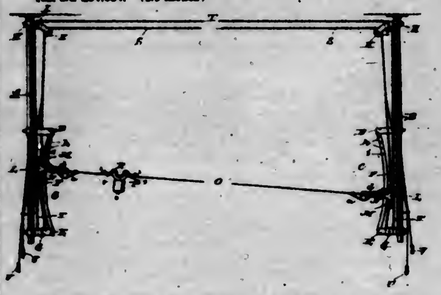
lie the friction-plates and the follower, substantially as described.

3. In a friction-clutch, friction-plates *a b*, provided with grooves 7, substantially as and for the purpose set forth.

384,268.



384,269. ELEVATED WAY. HIRAM HEWHAM, Springfield, Ill., assignor to George A. Sanders, same place. Filed Dec. 12, 1887. Serial No. 257,697. (No model.)



Claim.—1. The combination of the posts A B, the frames C, extending from the posts and comprising the horizontal bars D E, and vertical guide-bars F, detachably bolted to said bars, the sheaves G, journaled to the bottom bars, E, the brackets H, secured to the tops of the posts and having the sheaves I K, the vertically-movable travelers guided on bars F, the track-cable stretched between said travelers, the car on the track-cable, the cord S, stretched over sheaves K and connected to the travelers, and the cord T, stretched over the sheaves I, passing under sheaves G, and also attached to the travelers, substantially as described.

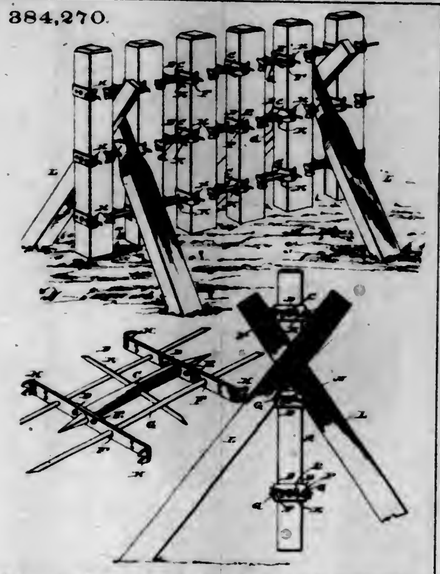
2. The combination of the vertical guide-bars F, provided with the series of openings *h*, the adjustable trip-pins *i* in said openings, the travelers movable vertically on the guides and having the spring-catches *d* and the springs *a*, the track-cable stretched between the travelers, and the car on the track-cable, having shoulders adapted to be engaged by the catches, and having the lugs to engage and compress the springs, substantially as described.

3. The combination of the vertical guides having the trip-pins *i*, the travelers movable vertically on said guides, the spring-catches *d*, pivoted to said travelers, and having rearward-extending arms *g*, adapted to engage pins *i*, the spring-arms *a*, attached to the travelers, the cable stretched between the travelers, and the car thereon, said car having the shoulders *e*, adapted to be caught by the catches *d*, and having the lugs *f*, adapted to engage and compress the spring-arms, substantially as shown.

384,270. FENCE. JAMES S. ORR, Augusta, Ky. Filed Mar. 19, 1888. Serial No. 267,789. (No model.)

Claim.—1. In a fence, the combination, with the pickets, of the links or connections between the pickets, having the short bars C and

384,270.



the lateral arms secured to the edges of the pickets, substantially as specified.

2. In a fence, the combination, with the pickets, of the links or connections having the bars C, sharpened at their ends and driven into the edges of the pickets, and the lateral arms embracing the edges of the pickets and having spurs adapted to be driven thereinto, substantially as specified.

3. In a fence, the combination, with the pickets, of the bar C, the lateral arms attached to the said bar and having spurs on their ends and the rods or wires passing through apertures in the arms and extending parallel with the fence, substantially as specified.

4. In a fence, the combination, with the pickets, of the bars C, the lateral arms attached to the pickets, and the barb-rod attached to the bar and projecting beyond the sides of the pickets, substantially as specified.

5. In a fence, the combination, with the pickets, of the bar C, having its sharpened ends engaged in the edges of the pickets, the lateral arms having perforations E E and I I and the apertures F F therein, the spurs H on the ends of the arms, the rods or wires inserted in the apertures F and engaged by the spurs, and having their ends turned out to form barbs, and the barb-rods inserted in apertures in the bar C and extending beyond the sides of the pickets, substantially as specified.

6. In a fence, the combination of the pickets, the links or connections between the pickets, having the bar C, the arms D D, and the rods or wires G G, engaging the said arms and extending parallel with the fence, and the inclined braces having notches M M in their inner sides engaged with the said rods or wires, substantially as specified.

7. In a fence, the combination, with the vertical pickets, of the intermediate horizontal bars, C, having sharpened ends engaged in the adjacent edges of the pickets, substantially as specified.

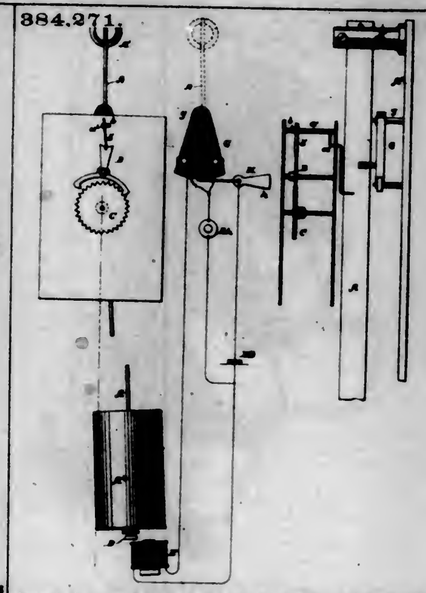
384,271. ELECTRIC PENDULUM CLOCK. ALBERT L. PARDELLE, New York, N. Y., assignor to the Manhattan Clock Company, of Colorado. Filed Mar. 23, 1887. Serial No. 232,141. (No model.)

Claim.—1. The combination, in an electric clock, of an electrically-driven pendulum, the driving-magnet which operates said pendulum, its battery and circuit, the moving switch actuated by the driven pendulum, the electrical contacts thereon, and circuit-connections whereby the driving-magnet is intermittently energized to vibrate the pendulum without opening the battery-circuit.

2. The combination of the electrically-driven pendulum, the driving-magnet, its battery and circuit, switch devices actuated by the pendulum in its vibration, a brush and contacts on the switch, and a branch or short circuit through which the battery is short-circuited when the pendulum is at and near the limit of its swing, substantially as set forth.

3. The combination of the electrically-driven pendulum, the driving-magnet, its battery and circuit, switch devices actuated by the pendulum, three switch-contacts, the middle one being connected

384,271.



through the magnet with one pole of the battery and the other two connected with the same pole of the battery outside of the magnet, and the switch-brush connected with the opposite pole of the battery.

4. The combination of the electrically-driven pendulum, switch devices intermittently operated by the pendulum, the driving-magnet and its battery and circuit, and a weighted or gravity brush which bears on the switch.

5. The combination of the electrically-driven pendulum, electric-switch devices actuated thereby, electric contacts on the under or bottom face of the switch, and a brush which bears on the contacts.

6. The combination of the electrically-driven pendulum, the pendent pivoted switch, the contact or contacts on its curved bottom face, and a brush bearing thereon.

7. The combination of an electric-clock pendulum formed of a strip of flexible non-resilient material; electro-magnetic devices for driving it, and mechanism actuated thereby.

8. A clock-pendulum formed of a flat tape or web of flexible non-resilient material adapted to be suspended at one end and weighted at the other.

9. In an electric clock, the combination of a pendulum, switch devices actuated thereby, a driving-magnet which is intermittently energized by the action of the switch devices, and a spring intermittently drawn against the pendulum by the magnet to impart impulses of vibration thereto.

10. The combination, with a vibrating pendulum, of a spring intermittently drawn against the pendulum to impart impulses of vibration thereto.

11. The combination of a non-resilient pendulum, a spring intermittently draws against the pendulum to impart impulses of vibration thereto, and electro-magnetic devices controlled by the pendulum for operating the spring.

12. The combination of a pendulum composed of non-resilient flexible material, a spring intermittently operated to impart impulses of vibration thereto, and electro-magnetic devices controlled by the pendulum for operating the spring.

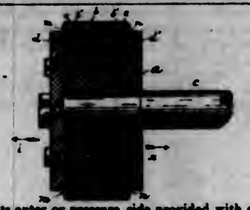
13. The combination, in an electrical clock, of a pendulum, electro-magnetic devices for driving it, a clock-train driving-wheel, C driving devices by which the wheel is driven by the pendulum, and independent locking devices which prevent the movement of the train-driving wheel except by the action of the pendulum.

14. The combination of the notched driving or pallet lever B, the rock-shaft *a'*, actuated by the pendulum, the arm or lever *b'*, and the set-screw or similar device for clamping the arm *b'* in or on the rock-shaft.

384,272. METALLIC PACKING FOR STEAM-CYLINDER PISTONS. JEFFERSON PETTEE, Brooklyn, N. Y. Filed Mar. 17, 1888. Serial No. 267,469. (No model.)

Claim.—1. As an article of manufacture, a packing-ring for steam-

384,272.



pistons, having its outer or pressure side provided with corrugations, whereby steam is admitted beneath the ring, substantially as shown and described.

2. As an article of manufacture, a packing-ring for steam-pistons, having its outer or pressure side and its inner face provided with communicating or coincident corrugations, substantially as shown and described.

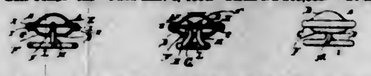
3. The combination, with a steam-piston provided with grooves or recesses, as *b*, of a packing-ring having its outer or pressure side radially corrugated, substantially as shown and described.

4. The combination, with a steam-piston having grooves or recesses, as *b*, of a packing-ring having its outer or pressure side and its inner or under face provided with coincident or communicating corrugations, substantially as shown and described.

5. The combination, with a steam-piston having grooves or recesses, as *b'*, of a packing-ring, as *c*, and corrugations for admitting steam at the side of and under the ring, substantially as shown and described.

6. A packing-ring for steam-cylinder pistons, cut as shown, provided with a tongue fixed to one end thereof and moving in a groove or recess formed in the other end, the tongue being formed of a metal having a higher degree of expansion under the influence of heat than that of which the ring is composed.

384,273. BUTTON. OLE ANDERSEN and THOMAS PATTISON, San Luis Obispo Cal. Filed Mar. 1, 1888. Serial No. 265,968. (No model.)



Claim.—1. In a button, the combination of the head having the slotted plate, the apertured plate, and the cap B, embracing the said plates, and the back having a clutch to engage the apertures in the plate, substantially as specified.

2. In a button, the combination of the head having the slotted plate D, provided with a central depression, the apertured plate E above the slotted plate, and the cap B, and the back having a clutch passing through the slot in the lower plate and engaging the apertures in the upper plate, substantially as and for the purpose specified.

3. In a button, the combination of the apertured plate E, having notches in its periphery, the slotted plate arranged beneath the same and having vertical studs or projections engaging the said notches, and the cap embracing and attached to the said plates, and the back having a clutch passing through the slot in the lower plate and engaging the apertures in the upper plate, substantially as specified.

384,274. INVALID-BED INFLATING AND HEATING APPARATUS COMBINED. RUSSELL K. PELTON, Cleveland, Ohio. Filed Jan. 23, 1888. Serial No. 261,606. (No model.)

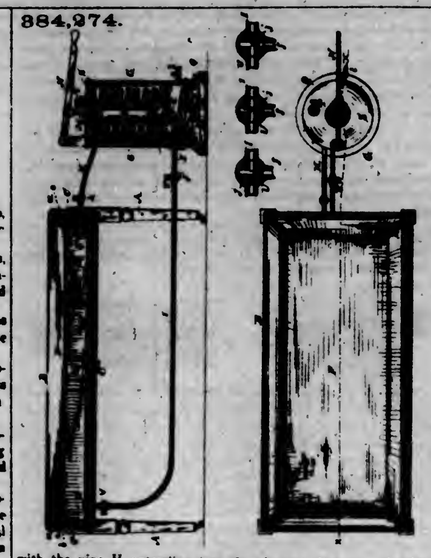
Claim.—1. The combination of an annular chamber, P, having a coiled pipe therein, and a pump within the said coil surrounded by an external casing, the lower terminal of the coil being in open connection with said pump, and its upper end connected with the induction-pipe H, and a pipe, I, with its lower terminal in the cylinder of the pump, with valves *d e*, intermediate between the inlet of the pipe I and outlet to the coil, arranged in conjoint relation to the chamber E and bed B, substantially in the manner as described, and for the purpose set forth.

2. The combination, with the bed connected with a frame forming an air and water chamber below the sacking, of pipes H and I, in open connection with said chamber, provided with faucets, and a three-part cock, U, arranged in connection with the pump and coil J around the pump within the annular chamber P, substantially as described, for the purpose set forth.

3. The pump encircled by a pipe-coil within the annular chamber P, pipes H and I, respectively in connection with the coil, pump, and chamber E, in combination with the faucets and three-part cock, with a base provided with a burner below the said chamber P, arranged to operate conjointly in the manner and for the purposes set forth.

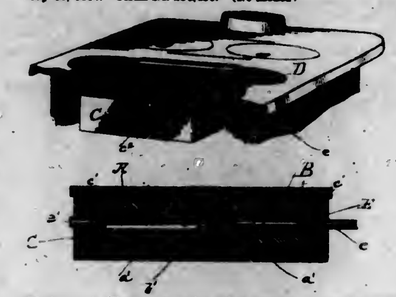
4. The combination, with the pump having operant mechanism connected therewith, a pipe, I, leading from the valve *d*, opening to the chamber E, with a three-part cock forming a connection in said pipe between the pump and chamber E, of a pipe-coil, J, terminating at one end with the valve *e*, opening into the pump, and its upper end

384,274.



with the pipe H, extending into the chamber E, arranged substantially as described, for the purpose set forth.

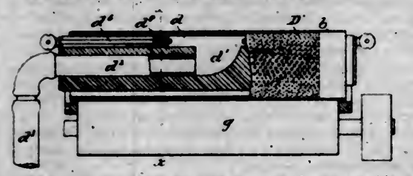
384,275. OIL-BURNER. CHARLES H. PHELPS, Chicago, Ill. Filed May 16, 1887. Serial No. 238,409. (No model.)



Claim.—1. The combination of the retort A, having openings *a' a'*, located on the under side thereof, the supply-pipe B, secured therein and having a downwardly-discharge opening, *b'*, and the box C, having a lid, *c'*, as described, whereby draft-openings may be provided, substantially as specified.

2. The combination of the box C, having a lid, *c'*, and draft-openings *c c*, with a retort, A, supported within said box by pins and having on its under side the openings *a' a'*, and a supply-pipe, B, secured within said retort and having a downwardly-discharge opening, *b'*, at its inner end, substantially as specified.

384,276. SUCTION-BOX FOR PAPER-MAKING MACHINES. JAS D. PICKLES, Manchester, Conn., and WILLIAM F. PICKLES, Lafayette, Pa. Filed Oct. 26, 1887. Serial No. 253,236. (No model.)

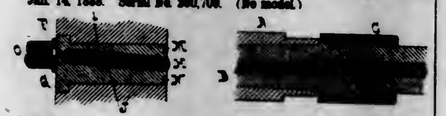


Claim.—1. In combination with the wire of a paper-making machine, the suction-box fixed against rotation, with a revolving perforated shell movable on the box, and the carrier-roll *g*, supporting the shell throughout the length of the perforated part, all substantially as described.

2. The combination, in a paper-making machine, the revolving and perforated shell, the suction-box held within the shell against rotation and having a lengthwise channel with an outlet-opening, the weighted levers pivoted to the frame of the machine and each secured to the suction-box at one end of the lever, the rotary carrier-roll extending beneath and supporting the revolving shell, and the roll-driving mechanism, all substantially as described.

3. In combination, the suction-box D, adjustably supported on the frame of a paper-making machine, with the lengthwise channel d' and outlet d^2, the adjustable heads d^3, movable in the said channel d, the revolving shell mounted on the suction-box, and the rotary carrier-roll that supports and drives the perforated shell, all substantially as described.

384,277. **BREECH-LOADING FIRE-ARM.** HARRY M. POPE, Hartford, Conn., assignor of one-half to Dudley S. Seymour, same place. Filed Jan. 14, 1888. Serial No. 260,709. (No model.)

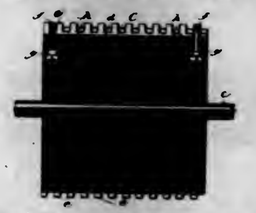


Claim.—1. The combination of the receiver A, provided with a forward extension, the barrel B, provided with a rearward extension accurately and removably fitted within the receiver, and the sleeve C, interiorly screw-threaded and fitted to the exterior of the forward projection of the receiver and to the exterior of the adjacent part of the barrel, and adapted by being turned upon its axis to rigidly fasten the barrel to the receiver, all substantially as described.

2. The combination of the receiver A, provided with an exteriorly screw-threaded forward extension, the barrel B, removably fitted to the receiver and provided with an exterior screw-thread of smaller diameter and less pitch than that of the receiver A, and the sleeve C, provided at one end with an interior screw-thread conforming to the screw-thread of the receiver A, and at the other end with an interior screw-thread conforming to the screw-thread of the barrel B, all substantially as described.

3. The combination of the breech-block F, the bushing G, adjustably fitted within the breech-block, and the firing-pin H, working within that bushing diagonally to the axis thereof, substantially as described.

384,278. **CLAY-DISINTEGRATOR.** GEORGE FOTH, Indianapolis, Ind. Filed Aug. 15, 1887. Serial No. 246,944. (No model.)



Claim.—1. In clay-disintegrators, the combination, with a rotating cylinder having an abutting surface set opposite thereto and co-operating therewith to feed and shred the clay, of a series of teeth projecting beyond said cylinder and furnished with longitudinal cutting edges or crowns at the outer ends thereof, whereby the clay may be clipped or shredded as the same is fed by the cylinder, substantially as described.

2. In clay-disintegrators, the combination, with a rotating cylinder having an abutting surface set opposite thereto and co-operating therewith to feed and shred the clay, of the longitudinal bars retained by said cylinder, and the series of interspaced teeth projecting from said bars and beyond the surface of the cylinder, said teeth being furnished with cutting edges or crowns at the outer ends thereof to coact with the abutting surface and clip or shred the clay as the same is fed by the cylinder, substantially as described.

3. In clay-disintegrators, the combination, with the main frame, and with a rotating cylinder fixed therein and having longitudinal toothed cutting bars projecting beyond the face thereof, of a positively-revolving companion cylinder fixed opposite thereto in said frame, and having a smooth face with which said cutting-bars directly co-operate to shred the clay as the same is fed between said cylinders, substantially as described.

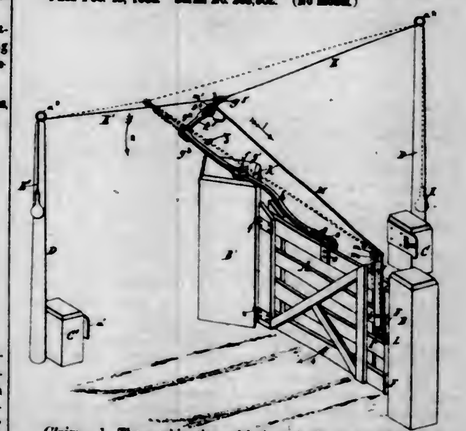
4. In clay-disintegrators, the combination, with the main supporting-frame, of a rotating cylinder having longitudinal bars retained therein and a series of teeth projecting from said bars beyond the surface of the cylinder with cutting-crowns at the outer edges of said teeth, and a positively-revolving companion cylinder fixed in said frame, and having a smooth face with which the cutting-teeth directly co-operate to shred the clay as the same is fed between the cylinders substantially as described.

384,279. **CORN-SHOCK BINDER AND COMPRESSOR.** HENRY B. PFEVENBERGER, Tiffin, Ohio. Filed Jan. 7, 1888. Serial No. 260,050. (No model.)



Claim.—The improved shock-compressor herein described, comprising a plate having the open V-shaped slot in one end, a pair of ears, E, secured to the opposite end of the plate, a hand-lever pivoted at this end of the plate between the said ears and having a recess in its side near the handle, a clamp pivoted in said recess and having a corrugated face to co-operate with one wall of the recess, and a projecting thumb-piece, and a cord secured to the end of the plate near the pivot of the lever and adapted to be passed around the shock through the V-shaped slot and the recess in the lever and to be engaged by the clamp, as set forth.

384,280. **FARM-GATE.** WILLIAM H. RAMSDALE, Versailles, Mo. Filed Feb. 13, 1888. Serial No. 263,802. (No model.)



Claim.—1. The combination, with the swinging gate and its latching-post, of one or more latches, G, levers H H', toggle-joint links I I' and the lever J, substantially as described.

2. The combination, with the swinging gate and its weighted operating-cords E E', of the jointed lever K, pivoted to the hinging-post and formed of parts k k', one of said parts having the slot g, substantially as described.

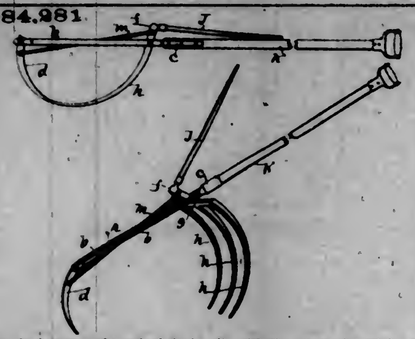
3. The combination, with the gate, its hinging and latching posts standards, and weighted operating-cords, of one or more latches connected to lever mechanism, as H H', I I', and J, and pivoted rod M and slotted jointed lever K, substantially as described.

4. The combination of the jointed slotted lever K, for operating the gate, and the pivoted rod M, for operating the lever J of the latch mechanism, substantially as and for the purpose described.

384,281. **HAY AND FODDER FORK.** SQUAVE S. RAMSLEBAR and MARTIN C. RAMSLEBAR, Carlisle, Iowa. Filed Jan. 16, 1888. Serial No. 260,993. (No model.)

Claim.—1. A fork for handling corn-fodder, comprising a long straight handle having a tine hinged to its lower end, an elbow-shaped lever pivoted to the same handle at some distance from the pivoted tine, two or more tines fixed to the said lever, and a rod connecting

384,281.



the single tine at the end of the handle with the crown-shaped lever, arranged and combined to operate in the manner set forth.

2. The metal handle A, having a socket, e, adapted to receive a wooden handle, a pivoted tine, d, a lever, f, having a cross-head, g, and two or more parallel tines, h, projecting from said cross-head, an arm, J, and a rod, m, constructed and combined substantially as shown and described, for the purposes stated.

384,282. **ORNAMENTED METALLIC SURFACE.** FRANK REED, Meriden, Conn., assignor to Edward Miller & Company, same place. Filed May 31, 1887. Serial No. 239,732. (No model.)



Claim.—As an article of manufacture, a sheet, vessel, or other article of metal having a portion of its surface covered by a polished irisated pattern in relief, the remaining surface being relatively low and having a dead or frosted finish, substantially as described.

384,283. **PLOW.** ALBERT C. RENNEBARK, Evansville, Ind. Filed Apr. 6, 1888. Serial No. 269,796. (No model.)

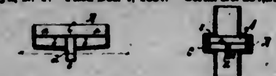


Claim.—1. A plowshare having a landside or gunsel with a notched and rounded or recessed rear portion, a, adapted to fit into a landside having a recess and a counterpart lug, forming a lock-joint, substantially as described.

2. A landside recessed at B, pointed and provided with a lug, b, and a lip or flange, c, having a base flange or rib, d, and an extension, D, adapted to enter the recess D' of the standard E, as shown and described.

3. The combination of the standard E, pointed and recessed, as described, with a plowshare having a gunsel notched at a, and with a landside having a recess, B, a counterpart lug, b, and an extension, D, substantially as described.

384,284. **GAS-PRESSURE REGULATOR.** CHARLES L. ROWLAND, Brooklyn, N. Y. Filed Dec. 7, 1887. Serial No. 257,215. (No model.)



Claim.—In a gas-pressure regulator, the combination of a chamber, A, having a centrally-perforated bottom, and a float, C, consisting of a diaphragm, a, fitting closely in said chamber, and a stem, c, said stem being recessed longitudinally along its side and fitting closely in the perforation in the bottom of the chamber, substantially as and for the purpose described.

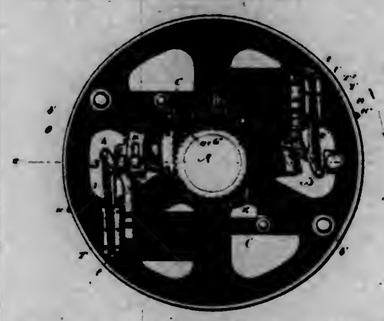
384,285. **ASTRONOMICAL APPARATUS.** HARRY L. RUSS, Woodland, Cal. Filed Sept. 3, 1887. Serial No. 248,765. (No model.)



Claim.—1. In an apparatus illustrating the phenomena of day and night, the oval box h, having a cover, f, which is divided and marked to represent and illustrate the zodiac, the ball d, representing the sun, the envelope of light g, having the rod h and guides j, said rod passing through the center of the ball d, in combination with the ball a, representing the earth, and revolving freely upon the inclined spindle attached to the pedestal c, substantially as and for the purpose set forth.

2. The combination, in a teaching apparatus, of the oval box having a projecting top and bottom, the ball d, the envelope of light g, having the rod h, the globe a, and pedestal c, having an inclined spindle, b, substantially as and for the purpose described.

384,286. **STEAM-ENGINE GOVERNOR.** CHARLES SCHMID, Chicago, Ill., assignor of one-half to George Farnsworth, same place. Filed Sept. 22, 1886. Serial No. 214,316. (No model.)



Claim.—1. In a governor for valve-gears, the combination, with the main governor-wheel and its weighted arms suitably connected with the eccentric for shifting the same on the main shaft, of two springs, V, connected both with said weighted arms and with the main wheel, whereby said springs will exert force at all times against the inward movement of said weighted arms, substantially as described.

2. In a governor for valve-gears, the combination, with the main governor-wheel and its arms suitably connected with the eccentric for shifting the same on the main shaft, of bars R, connected to the weighted arms, and springs V, connected with said bars and with the main wheel, said springs exerting force against the inward movement of the weighted arms, substantially as described.

3. In a governor for valve-gears, the combination, with the main governor-wheel and its weighted arms suitably connected with the eccentric for shifting the same on the main shaft, or adjustable guards suitably connected with said weighted arms for determining the extent of their inward movement, substantially as described.

4. In a governor for valve-gears, the combination, with the main governor-wheel and its weighted arms suitably connected with the eccentric for shifting the same on the main shaft, of bars R, the sliding bars S, and suitable bearings for said sliding bars, substantially as described.

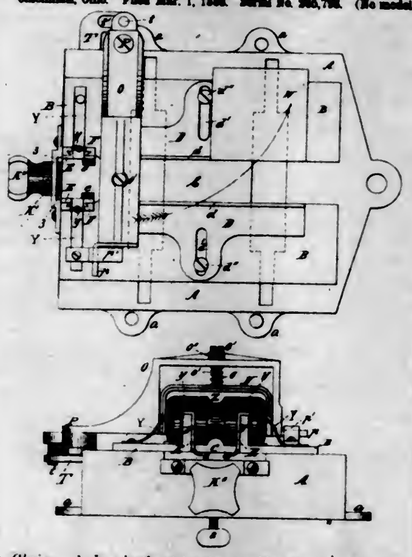
5. In a governor for valve-gears, the combination, with the main governor-wheel and its weighted arms suitably connected with the eccentric for shifting the same on the main shaft, of bars R, the slid-

ing bars S, pivoted to said bars, the pivoted bearings T for the sliding bars, and the springs V, substantially as described.

6. In a governor for valve-gears, the combination, with the main governor-wheel and its weighted arms suitably connected with the eccentric for shifting the same on the main shaft, of the bars R, the slide-bars S, the bearings T for said sliding bars, and suitable mechanism for adjusting the movement of said sliding bars within the bearings, substantially as described.

7. In a governor for valve-gears, the combination, with the main governor-wheel and its weighted arms suitably connected with the eccentric for shifting the same on the main shaft, of the dependent bars R, the sliding bars S, the pivoted bearings T, and the supplemental spring W, substantially as described.

384,287. LEATHER-TRIMMING MACHINE. GOTTLAVE SCHMIDT, Cincinnati, Ohio. Filed Mar. 1, 1888. Serial No. 265,798. (No model.)



Claim.—1. In a leather-trimming machine, the laterally-adjustable guides carrying the cutting-knives, in combination with the pressure-roller mounted in a carrier pivoted to the bed-plate and connected with the guides, whereby the latter are automatically opened and closed by the swinging movements of the roller, substantially as described, and for the purpose set forth.

2. In a leather-trimming machine, a pressure-roller pivoted to the machine and connected with the guides by a cam or eccentric, in the manner described, for opening or closing the guides automatically by the movement of the pressure-roller, substantially as and for the purpose described.

3. In a leather-trimming machine, the guide-plates B B, with depending lugs H H, in combination with the screw-bolt K and sliding wedges J J, substantially as and for the purpose specified.

4. The combination, with the adjustable guides carrying the knives of a pressure-roller journaled in a spring-pressed vertically-sliding yoke mounted in a carrier pivoted in such manner that the roller can be swung clear of the guides, substantially as described, and for the purposes set forth.

5. In a leather-trimming machine, the screw-bolt K and sliding wedges J J, in combination with the adjustable collar S and wedge T, substantially as and for the purpose described.

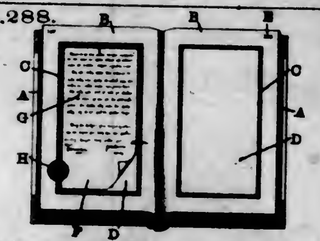
6. In a leather-trimming machine, a pressure-roller provided with a central groove, *z*, in combination with the guides and knives arranged to be adjusted to correspond with the groove *z*, for cutting round strips, substantially as and for the purpose specified.

7. The double guide-plates B B and D D, the latter adjustable upon the former to make the upper part of the channel wider than the lower part, substantially as and for the purpose described.

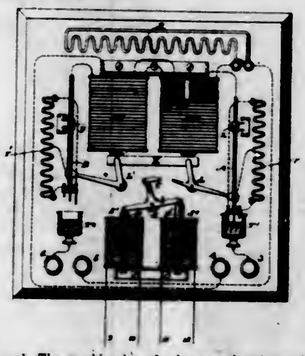
384,288. RECORD-BOOK AND METHOD OF MAKING THE SAME. JAMES W. SEE, Hamilton, Ohio. Filed June 20, 1887. Serial No. 241,821. (No model.)

Claim.—1. That improvement in the art of making records which consists in gumming the appropriate surfaces of the leaves of the record-book, impressing the record-matter with absorbable ink upon the face surface only of a loose sheet of paper, applying moisture to the back of such impressed sheet, affixing such sheet to the gummed leaf of the record-book, and applying a mark of identification jointly upon the surface of the affixed record-sheet and upon the uncovered surface of the book-leaf, substantially as described.

2. In a record, the combination of a book having leaves provided with appropriate gummed surfaces, a record-sheet having record-matter impressed upon its face surface and absorbed toward its other surface affixed to such gummed book-leaf, and a mark of identification applied jointly on the affixed record-sheet and an uncovered portion of the surface of the book-leaf, constructed substantially as and for the purpose set forth.



384,289. AUTOMATIC SWITCH FOR SECONDARY BATTERIES. JOHN S. SELLON, Hatton Gardens, County of Middlesex, England, assignor to the Electrical Accumulator Company, of New York. Filed Aug. 30, 1887. Serial No. 248,262. (No model.) Patented in England Jan. 13, 1883, No. 317; in France June 30, 1883, No. 156,154, and in Germany July 17, 1883, No. 27,868.



Claim.—1. The combination of a dynamo-electric machine and a secondary battery to be charged thereby, a switch or circuit-changer in the charging-circuit, a switch or circuit-changer in a separate circuit, an electro-magnet in the charging-circuit, and an electro-magnet in the said separate circuit, both said magnets controlling the movements of the switch or circuit-changer, a second electro-magnet in the said separate circuit, and an electro-magnet in circuit with the secondary battery, both co-operating to control the movements of the switch or circuit-changer.

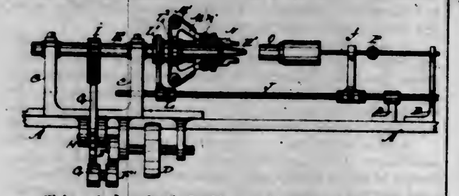
2. The combination of a dynamo-electric machine and a secondary battery in electrically-independent circuits, an electro-magnetic coil in the dynamo-circuit, an electro-magnetic coil in the battery-circuit, and an electro-magnetic switch or circuit-changer controlled by the co-operation of the two first-named magnets to electrically unite the battery and dynamo in one circuit.

3. The combination of a dynamo-electric machine and a secondary battery in electrically-independent circuits, an electro-magnetic switch or circuit-changer for uniting said circuits, and an electro-magnetic coil in the battery-circuit operated by variations in electro-motive force to control said switch or circuit-changer.

4. The combination of a dynamo-electric machine and a secondary battery electrically connected in one circuit, two electro-magnetic coils in multiple-arc branches of said circuit operated by variations in electro-motive force, and an electro-magnetic circuit-changer located in the main circuit between said multiple-arc branches controlled by the first-named electro-magnets.

5. The combination of a dynamo-electric machine and a secondary battery in one circuit, an artificial resistance, and an automatic electro-magnetic circuit-changer operated by variations in the current flowing in said circuit to divide said circuit into two independent closed circuits, one containing the dynamo and resistance and the other the battery.

384,290. MACHINE FOR FINISHING BOTTLE-NECKS. HARRY SIMPLE, Hamilton, Ontario, Canada. Filed Nov. 14, 1887. Serial No. 255,182. (No model.)

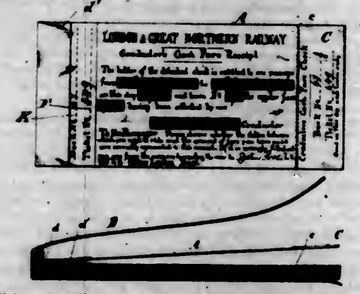


Claim.—1. In a bottle-finishing machine, the combination of an oscillating shaft, E, one end of which is provided with an adjustable plug for shaping the inside of bottle-necks, substantially as and for the purpose hereinbefore described.

2. In a bottle-finishing machine, the combination of an oscillating shaft provided with a clutch, L', collar L², socket-guide M', arms M, knuckle-joints N', and adjustable jaws N, substantially as and for the purpose specified.

3. In a bottle-finishing machine, the combination of an oscillating shaft, E, with plug E', socket-guides M', arms M, with knuckle-joints and jaws, the clutch L', collar L², and the rod J, substantially as set forth and described.

384,291. PASSENGER-TICKET. VERNE R. SHEPARD, Covington, Ky. Filed Dec. 30, 1886. Serial No. 188,793. (No model.)



Claim.—1. A ticket or card having a writing-surface composed of a foundation of some positive color with a preparation of spermaceti, wax, and turpentine, or similar composition spread thereon, and the whole covered by a coating of coloring material of the desired color, substantially as shown and described.

2. A ticket or card having a central portion of uniform thickness with thickened end portions, substantially as and for the purpose set forth.

3. A book of tickets or receipts, A, having blank spaces B, prepared with a composition, substantially such as described, and also provided with checks C and ends *d*, the said ends and checks being thickened, substantially as and for the purpose set forth.

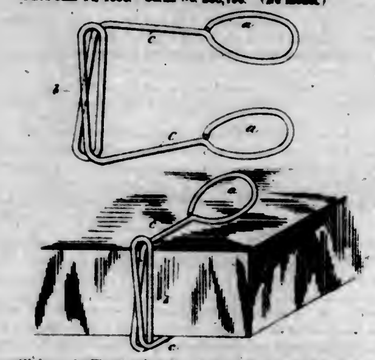
384,292. FIRE-ESCAPE. WILLIAM T. SMITH, Birmingham, Ala. Filed Mar. 7, 1888. Serial No. 266,492. (No model.)



Claim.—1. The combination, with a closed article of furniture having a slot in its front face and doors in its side, of a drum situated within the said piece of furniture, a flexible ladder adapted to be wound around the said drum, a bag or receptacle carried by the said drum, and a lever secured at the rear of the said drum and adapted to engage therewith for the purpose set forth, and having its opposite extremity extending out through the slot in the front face of the article of furniture.

2. A drum, a flexible ladder carried thereby, a receptacle carried by the said ladder, and a spring-lever having its extremity secured at the rear of the drum and adapted to engage therewith, in combination with a support having a slot in its front face to receive the free extremity of the lever.

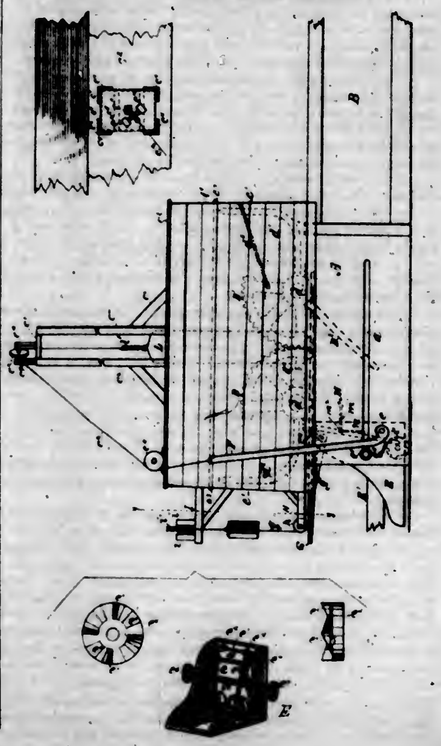
384,293. TIDY-FASTENER. CORA S. SIMMONS, Braddock, Pa. Filed Jan. 14, 1888. Serial No. 260,796. (No model.)



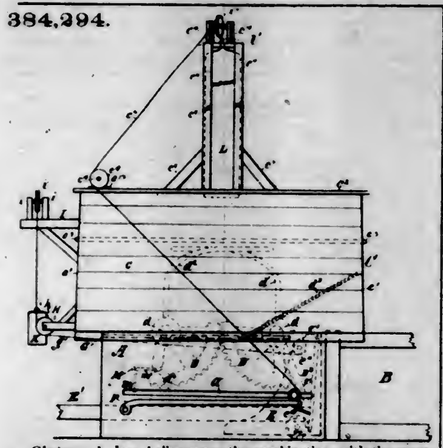
Claim.—1. The fastener herein described, consisting of a piece of wire, *c*, having a loop, *a*, formed at each end, the rectangular spring *b*, formed from the central portion of the wire *c*, and the loops *a*, brought the one directly above the other, substantially as set forth.

2. The herein-described fastener having a circular loop, *a*, on each end of the same and bent in such a manner as to bring the one above the other, and a spring, *b*, formed from the central portion of the wire *c*, as and for the purpose set forth.

384,294. BALING-PRESS. BENJAMIN C. SCOTT, Kansas City, Mo. Filed Mar. 29, 1887. Serial No. 232,913. (No model.)



384,294.



Claim.—1. In a baling-press, the combination, with the receptacle for the material to be baled, provided with a feed-opening, of a reciprocating plunger, feed-compressing clamps over said feed-opening, and an intermediate recoiling-weight actuated by said reciprocating plunger, for the purpose described.

2. In a baling-press, the combination, with the baling-chamber, of the receptacle for the material to be baled, in communication therewith, having a suitable feed-opening, a reciprocating plunger in said receptacle, feed-clamps upon said press upon opposite sides of said feed-opening, a recoiling-weight extending into said feed-opening between the said plunger when retracted and the baling-chamber, and a suitable lever operated by said plunger to raise said weight, for the purpose specified.

3. In a baling-press, the combination, with the receptacle for the material to be baled, having a feed-opening for the said material, of a plunger, transverse rock-shafts geared together upon opposite sides of said feed-opening and provided with arms arranged in a clasping relation, and a lever for operating said shafts, as shown and described.

4. In a baling-press, the combination, with the receptacle for the material to be baled, having a feed-opening for the said material, of a plunger, transverse rock-shafts upon opposite sides of said feed-opening, provided with arms arranged in a clasping relation, opposite meshing-gear on said shafts, and a lever operating said shafts and lying in the path of the said plunger, for the purpose described.

5. In a baling-press, the combination, with the receptacle for the material to be baled, provided with a feed-opening and with longitudinal slots, of a plunger in said receptacle, transverse rocking shafts upon opposite sides of said feed-opening, provided with arms arranged in a clasping relation, opposite meshing-gear on said shafts, a lever on one of said shafts, and a shaft on said plunger extending through said slots in said receptacle and contacting with the said lever, for the purpose described.

6. In a baling-press, the combination, with the receptacle for the material to be baled, having a longitudinal slot in its side and a feed-opening, of a plunger therein, transverse rocking shafts on said receptacle upon opposite sides of said feed-opening and provided with arms arranged in a clasping relation, opposite meshing-gear on said shafts, a lever on one of said shafts, a shaft on said plunger, provided with anti-friction devices extending through said slot in said receptacle and in the path of said lever, a latch on the side of said receptacle, having a flexible end portion lying in the path of and actuated by the said shaft on said plunger, a projection on one of said gears engaging with said latch, and a spring for disengaging said arms, as shown and described.

7. In a baling-press, the combination, with the receptacle for the material to be baled, provided with longitudinal slots and a feed-opening, of a plunger, anti-friction devices on opposite sides of said plunger extending through said slots in said receptacle, a receiving-chamber above said receptacle, provided with an opening, transverse rock-shafts on said press on opposite sides of said feed-opening and provided with arms arranged in a clasping relation, opposite meshing-gear on said shafts, a lever on one of said shafts lying in the path of said anti-friction devices, a latch on the side of said receptacle, having a flexible end portion lying in the path of and actuated by said anti-friction devices on said plunger, a projection on said gear engaging with said latch, a spring connected with the meshing-gear and to the said receiving-chamber, suitable standards upon said receiving-chamber on opposite sides of said opening, a pulley on said standards and another on the side of said receiving-chamber, a lever pivotally attached at one end to the side of the said receptacle opposite to that provided with the said gear and lying in the paths of the said anti-friction devices on said plunger, a weight between and guided by the standards on said receiving-chamber and extending into the said chamber, a spring attached to said weight, and a cable attached to the said spring at one end and extending over the said pulleys on the said standards and the said chamber, and connected to the upper end of the said lever on the side of said receptacle, for the purpose specified.

8. In a baling-press, the combination, with the receptacle for the material to be baled, provided with a feed-opening, of a recoiling-plunger in said receptacle, an automatically-sliding plate adapted to cover said opening, a weight on said press, adapted to propel said plate over said feed-opening in one direction, and a dog on said plunger for engaging said plate and moving it in an opposite direction, as described.

9. In a baling-press, the combination, with the receptacle for the material to be baled, provided with a feed-opening, of a recoiling-plunger in said receptacle, an automatically-sliding plate, adapted to cover said feed-opening, a weight on said press adapted to propel said plate over said feed-opening in one direction, a dog on said plunger adapted to move said plate in an opposite direction, a yielding lever connected with said dog, and a traction-roller provided with a tripping-cam in the path of said lever and in the said receptacle, substantially as described.

10. In a baling-press, the combination, with the receptacle for the material to be baled, provided with a feed-opening, of a recoiling-plunger in said receptacle having traction-rollers, one of which is provided with a cam, a sliding plate adapted to cover said feed-opening, a weight adapted to propel said plate over said feed-opening in one direction, a dog pivotally attached to said plunger and adapted to move said plate in an opposite direction, and a lever connected to said dog at one end and contacting with said cam on one of said rollers at the opposite end, for the purpose described.

11. The combination, in a baling-press, with the hollow plunger provided with the traction-rollers, one of which is provided with a cam, of a transverse rock-shaft journaled in the upper end of said plunger, dogs fixed on said rock-shaft and projecting above the plane of the top of said plunger, and a lever connected with said rock-shaft and said dogs at one end and contacting with the cam on one of said rollers at the opposite end, for the purpose specified.

12. In a baling-press, the combination, with the receptacle for the material to be baled, provided with a feed-opening, of a recoiling plunger in said receptacle having anti-friction devices, an auxiliary receiving-chamber attached to and above said receptacle and provided with an opening registering with said feed-opening, stationary supports on the end of said chamber and pulleys on said supports, a sliding plate adapted to cover said opening between said chamber and said receptacle and provided with longitudinal slots, a cable attached to said plate at its rear end and extending through said slots in said plate and over said anti-friction devices on said plunger, and also over the said pulleys at the end of the said receiving-chamber, and a weight at the end of said cable, as shown and described.

13. In a baling-press, the combination, with the receptacle for the material to be baled, having a suitable feed-opening, of a plunger, transverse shafts on said press on opposite sides of said opening and provided with arms arranged in a clasping relation, a weight provided with longitudinal transverse slots, and a suitable elevating-lever connected with said weight, for the purpose described.

14. In a baling-press, the combination, with the receptacle for the material to be baled, having a suitable feed-opening, of a plunger, transverse shafts on said press on opposite sides of said opening and provided with arms arranged in a clasping relation, a weight provided with longitudinal transverse slots, a spring connected to said weight, and a suitable elevating-lever connected with said spring, for the purpose described.

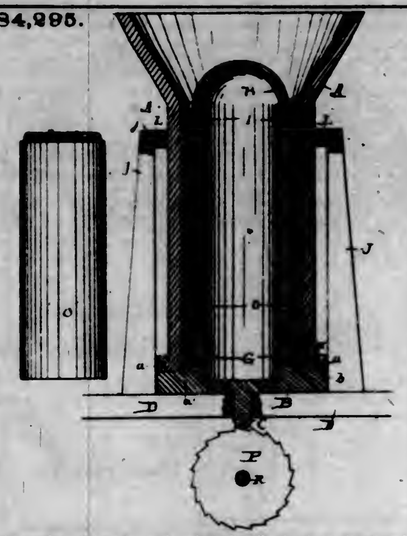
384,295. MANUFACTURE OF ARTICLES FROM HYDRAULIC CEMENT. JOHN W. STOCKWELL, Portland, Me. Filed Mar. 15, 1887. Serial No. 230,934. (No model.)

Claim.—1. The herein-described improvement in the art of manufacturing artificial stone from hydraulic cement and sand or other like material, which consists of first mixing the materials together when in a dry state, then compacting them into suitable molds, and then allowing them to absorb sufficient water to moisten the mass and to effect the chemical combination, substantially as described.

2. The herein-described improvement in the art of manufacturing artificial stone, which consists in mixing together hydraulic cement and sand or other matrix material when in a dry state, then introducing such mixture into a suitable mold, shaking or vibrating the said mold to settle and compact the material, and finally allowing it to absorb sufficient water to moisten the mass, substantially as described.

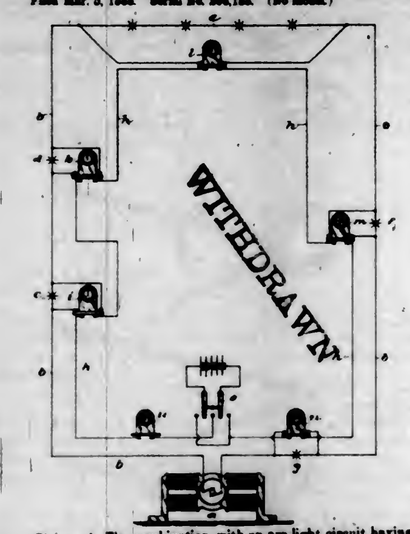
3. The herein-described improvement in the art of manufacturing artificial stone from hydraulic cement, which consists in first mixing the cement with suitable matrix material, then compacting it in the

384,295.



position where it is to be used, and finally allowing it to absorb sufficient water to effect the chemical combination, substantially as described.

384,296. ARC-LIGHT SYSTEM. BERNARD R. SWEET, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,183. (No model.)



Claim.—1. The combination, with an arc-light circuit having the lamps thereon distributed at different stations, of an independent circuit containing individual electro-magnetic circuit-changing devices, said devices being distributed at different stations, a polarized electro-magnetic switch device connected with each individual electro-magnetic circuit-changing device and included in a shunt-wire around a particular lamp or lamps, and a battery and pole-changing switch at the main station, whereby the lamp or lamps of any station may be brought into the arc-circuit or disconnected therefrom, substantially as described.

2. The combination, with an arc-light circuit including lamps arranged in series, of an independent circuit connected with an electro-magnetic circuit-opening mechanism at a particular station, a shunt-circuit around the lamp or lamps of said station, including the armature of an electro-magnetic switch, the electro-magnets of said electro-magnetic switch device being included in said independent circuit, a shunt-wire, *w*, normally closed around said coils, said shunt-wire being open at a particular period of time during the movement of the electro-magnetic circuit-opening mechanism, and the switch and battery at a central station, whereby the electro-magnetic switch may be operated when said shunt-wire is opened, as described.

3. The combination, with an electric-light circuit including lamps placed at different subscribers' stations, of an individual electric circuit extending from the central office through a circuit-opening mechanism placed at each of the different stations, and polarized electro-magnetic switch devices, one placed in connection with the shunt-wire around the lamp or lamps of each station and the individual circuit-opening mechanism of said station, and a battery and pole-changing switch at the central station, whereby, during the simultaneous operation of the various individual circuit-opening devices, the lamp or lamps of any station may be brought into circuit or disconnected therefrom, substantially as described.

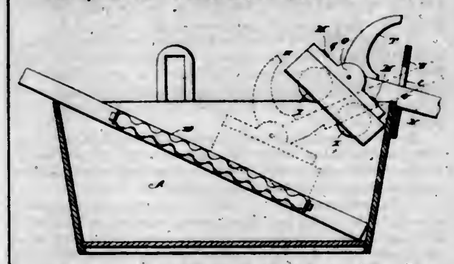
4. The combination, with a circuit including an individual circuit-opening mechanism, of means for throwing current of opposite polarities thereon, and an electro-magnetic switch included in said circuit, and a shunt-circuit around the electric-arc lamp, which is opened or closed by said electro-magnetic switch accordingly as current of one polarity or the other is sent to line.

384,297. ADJUSTABLE JOINT. GEORGE C. SWEETT, Norwich, Conn., assignor to William A. Allen, same place. Filed Mar. 17, 1888. Serial No. 267,495. (No model.)



Claim.—An adjustable joint for display-frames, photo head-rests, and the like articles, consisting of two disks having their confronting faces formed, respectively, with a boss with beveled perimeter and a recess to receive the same, in combination with devices, substantially as herein described, for clamping together said disks.

384,298. WASHING-MACHINE. THEODORE THOEN, St. Clair, Pa. Filed Apr. 21, 1887. Serial No. 235,657. (No model.)



Claim.—1. The combination of the tub having the ear B, provided with opening C, the wash-board, the rubber having the rollers bearing on the wash-board, the guide-arm N, hingnd to the rubber and extending and working loosely through the opening C, and the handle T, projecting upward from the hinged end of arm N, substantially as described.

2. The combination of the tub having the ear B, provided with opening C, the wash-board, the case H, having the rollers bearing on the wash-board, the guide-arm N, hinged to the case and extending through the opening C, said arm having its hinged end inclined upward on its under side at R and provided with the handle T, and the wedge-shaped block S on the upper side of the case H, for the purpose set forth, substantially as described.

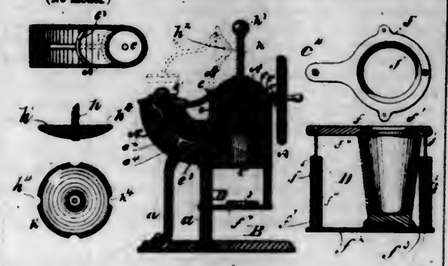
3. In a rubber, the combination of the case H, the guide-bar pivoted on the upper side thereof and having its inner end inclined, and the inclined or wedge-shaped block S, adapted to bear under the inner end of the guide-bar, for the purpose set forth, substantially as described.

4. In combination with the tub having the ear B, provided with opening C, the rubber having the rollers to bear on the wash-board, the guide-arm N, hinged to the rubber and provided with a notch, U, said guide-arm passing and working loosely through the opening C, and its notch engaging the edge of the tub to suspend the rubber when not in use.

5. In combination with the ear B, provided on the tub or sudsbox and having the opening C, the wash-board D, the rubber having the rollers to bear on the wash-board, the guide-arm N, hinged to the

rubber and passing and working loosely through the opening C, and the curved handle T, attached to the arm N at the hinged end thereof, said handle T being curved forward and upward to be grasped by the hand, as set forth.

384,299. ICE-SHAVER. FRANK K. WAY, Springfield, Ohio, assignor to John Foos, same place. Filed Apr. 7, 1886. Serial No. 198,045. (No model.)



Claim.—1. The combination, with the vertical revolving cylinder open at the bottom and provided with suitable cutting-knives in the periphery thereof, of an adjustable receptacle-holding device under said cylinder, substantially as specified.

2. The combination, with the outer casing having a vertical cylinder revolving in a chamber therein, a reservoir or conduit opening into the side of said chamber, and a receptacle-holding device under said cylinder, of the vertically-reciprocating piston adapted to be forced downward through said cylinder and means for automatically returning said piston to its normal position, substantially as set forth.

3. The combination, with the outer casing provided with a chamber for the revolving cutting-cylinder, the curved conduit opening into said chamber, the hinged cover adapted to close said conduit, and the follower pivoted to said cover, substantially as set forth.

4. The combination, with the vertical ice-cutting cylinder, of a stationary plate under said cylinder, a supporting-plate under said stationary plate, and an elastic connection between said stationary plate and said supporting-plate, substantially as and for the purpose set forth.

5. The combination, with the outer casing, the revolving cutting-cylinder therein, suitable gearing for driving said cylinder, and a piston adapted to be forced through said cylinder, of the semi-spherical cap adapted to inclose said gearing and provided with an opening in the top thereof adapted to receive and guide the stem of said piston, substantially as set forth.

6. The combination, with the vertically-revolving cylinder having suitable cutting-knives therein, of an adjustable supporting device under said cylinder and means for expelling the cuttings or shavings from said cylinder into the receptacle, substantially as set forth.

7. The combination, with the vertical revolving cylinder provided with the knives therein and the deflecting-strips over said knives, of the reciprocating piston notched out to fit over said deflecting-strips and adapted to be forced through said cylinder, substantially as set forth.

8. The combination, with the outer casing having the chamber A' and the curved conduit or reservoir A^3, of the vertical revolving cylinder provided with a series of cutting-knives, the said chamber being open at the bottom and adapted to form a bearing for the lower end of the cylinder, which is also open, substantially as set forth.

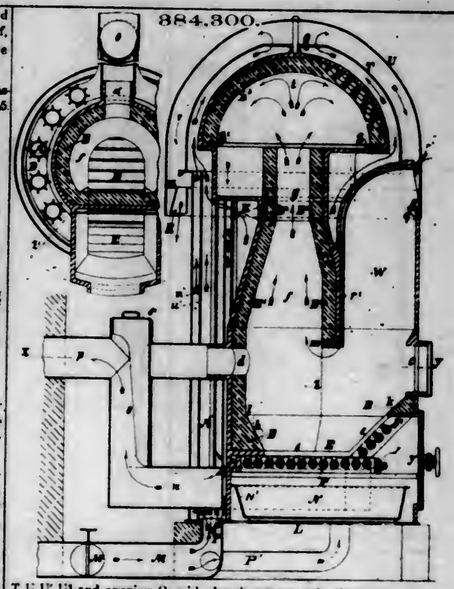
9. The combination, with the revolving cutting-cylinder and the plate provided with an opening therein under said cylinder, of the suspended plate f^3, having the sleeves thereon, springs in said sleeves, and connecting-rods extending through said springs and attached to said plate, substantially as set forth.

10. The combination, with the vertical revolving cutting-cylinder, of the conduit leading thereto and a follower in said conduit, said follower being adapted to fit said conduit, and being curved to conform to said cylinder, substantially as set forth.

384,300. STOVE. KARL WIESE, Landeck Bath, Silesia, Germany. Filed June 10, 1886. Serial No. 204,698. (No model.)

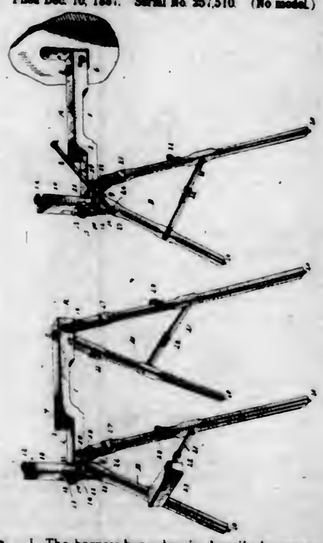
Claim.—The combination, in a furnace having the usual grate, fire-pot, direct and indirect flue-escapes, and ash-pot provided with air-inlets, of the feed-tube W, the air-feed located in the rear thereof and communicating with the fire-pot, the conical flue F, formed by the depending walls B', and situated directly over the fire-pot, the direct flue d, in line with feed-door c, the indirect flue-escape, the flue g, forming a continuation of flue f, the cupola i, surmounting said flues and fed W, diving-flues in communication with said cupola, smoke-chamber D, surrounding the ash-pit and the indirect smoke-escape flue communicating with the latter, a double hot-air chamber formed by the casing

884,300.



T U U^2 U^3 and opening Q, said chamber communicating at its lower end with air-supply pipe M, the pipe P^2, and the exit-pipe R, all operating substantially as and for the purpose set forth.

384,301. HARNESS-HORSE. THEODORE WILLSEA, Rochester N. Y. Filed Dec. 10, 1887. Serial No. 257,510. (No model.)



Claim.—1. The harness-horse herein described, composed of a horizontal bar supported on legs attached thereto to swing outward and fold up against the horizontal bar, a standard, 10, hinged to the upper face of the horizontal bar, and formed with a lug, 14, on its outer face, and a lever, 16, pivotally mounted on the end of the horizontal bar, and formed with a cam-groove in its inner face to engage the lug on the standard, substantially as described, and for the purpose specified.

2. The harness-horse herein described, composed of a horizontal bar, A, formed with a cut-away section, 1, in its under part and a cut-away section, 2, in its upper part, and provided with a stud, 5, near its end and hooks in its sides, a lever, 16, pivoted on the end of the horizontal bar, and formed with a cam-groove in its inner face, a standard, 10, hinged to the horizontal bar, and provided with a lug, 14, to engage the cam-groove of the lever, and legs provided with hinges pivoted to the horizontal bar to turn in the direction thereof, braces formed with keepers to hold the legs, and jointed braces between the legs, substantially as described.

3. The combination, with the holding-frame of a harness-horse, of legs pivoted thereto to fold against the frame or bar, and having jointed braces between them, as 21, and a tool-box fixed to pivots of one link or arm of said jointed braces, substantially as described.

384,302. GAS-BRACKET. JOHN WISSEL, Hoosick Falls, N. Y. Filed Aug. 11, 1887. Serial No. 246,719. (No model.)



Claim.—1. A horn-shaped arm for a bracket or chandelier formed with an air-space extending from the top or smaller end to the larger end thereof, and provided with a pipe and with a burner-receiving connection at its opposite ends, substantially as specified.

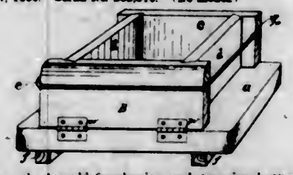
2. In an arm for a bracket or chandelier, the combination of a curved natural horn, a burner-connecting piece secured to its smaller end, and an arm-supporting piece secured to its large end, substantially as specified.

3. A horn-shaped arm or bracket having an aperture extending from tip to butt, in combination with a pipe passing throughout, a non-conducting filling, a flange-plate embracing the butt of the horn, and a tip-receiving thimble mounted on the tip of the bracket, substantially as specified.

4. A horn-shaped bracket, A, bored as at A', and having the tubes or pipes B C, the former screw-threaded, as at B', in combination with the thimble E, tip F, and plate D, substantially as specified.

5. The combination of the service-pipe X with the horn-shaped bracket A, centrally bored and screw-threaded, as at A' A^2, and having the screw-threaded pipe B, the plate D, flanged, as at D^2, perforated, as at D', the tube C, the thimble E, screw-threaded, as at E' A^3, and flanged, as at E^2, and the burner-tip F, substantially as specified.

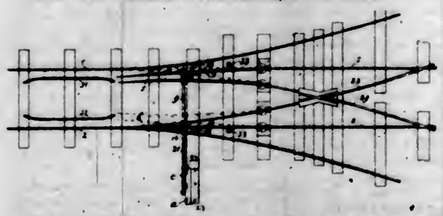
384,303. BUTTER-MOLD. FRANK P. AYER, Lebanon, Conn. Filed June 17, 1886. Serial No. 205,516. (No model.)



Claim.—1. A mold for shaping and stamping butter, consisting of stamped bottom *a*, wedge-shaped ends *d d*, with beveled edges, the grooved and hinged sides, and means for clamping said parts together, substantially as described.

2. In combination with the bottom *a*, the end pieces, *d d*, loosely tenoned thereto and having wedge-shaped ends and beveled edges, the hinged side pieces having grooves on their inner sides shaped to receive the end pieces, and the pivoted wire binder *e*, substantially as described.

384,304. THREE-WAY SPLIT SWITCH. JAMES D. BAILEY, Utica, N. Y. Filed Feb. 16, 1888. Serial No. 264,227. (No model.)



Claim.—1. The combination, with a railroad-track, of four split rails, a shifting-bar for operating the rails, stops on the shifting-bar, the split rails in couples being held between each pair of stops, and each split rail independently movable between the stops on the shifting-bar, and springs for keeping the rails of each couple apart.

2. The combination of the rails 1, 2, 3, 4, 5, and 6, the shifting-bar 9, and the springs 14 and 15.

3. The combination, with the stationary rails, of four movable split rails between the stationary rails, a shifting-bar for moving the split rails, two of the movable rails being adapted to be brought into contact with each of the stationary rails, the two being movable on the shifting-bar to which they are connected, the stationary stops on the shifting-bar, and a spring for separating the rails between the stops, substantially as set forth.

384,305. COUPON-TICKET RACK. HENRY BEDKLEY, Reading, Pa. Filed Jan. 6, 1888. Serial No. 260,972. (No model.)



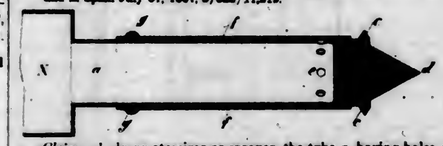
Claim.—1. A ticket-rack consisting of a flat board or plate provided with partitions and stops, in combination with ticket-clips superimposed upon each other between said partitions and supported by said stops, substantially as set forth.

2. A ticket-rack consisting of a flat board or plate provided with partitions and stops, in combination with ticket-clips superimposed upon each other between said partitions and supported by said stops, and with a suitable clamp, E, substantially as set forth.

3. A ticket-rack consisting of a flat board or plate provided with stops and with partitions bent at right angles on their top edge, in combination with ticket-clips superimposed upon each other between said partitions and supported by said stops, substantially as set forth.

4. A ticket-rack consisting of a flat board or plate provided with partitions and stops, in combination with ticket-clips bent in opposite directions at either end and superimposed upon each other between said partitions and supported by said stops, substantially as set forth.

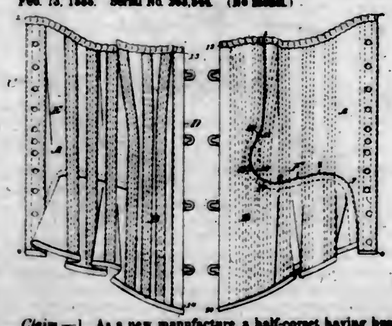
384,306. APPARATUS FOR SPRAYING LIQUIDS. FRANÇOIS FERDAND BOURDIL, Paris, France. Filed Jan. 26, 1888. Serial No. 261,904. (No model.) Patented in France May 12, 1887, No. 183,536; in England May 27, 1887, No. 7,762; in Belgium May 27, 1887, No. 77,631; in Germany June 4, 1887, No. 41,549; in Italy June 30, 1887, XLIII, 186, and in Spain July 31, 1887, 5/322/11,219.



Claim.—1. In an atomizer or sprayer, the tube *a*, having holes *c* for the passage of liquid, and a projecting rim, *e*, against which liquid from the holes abuts, combined with the elastic impervious sheath *f*, that covers the holes *c*, whereby the liquid from the tube *a* is directed by the sheath *f* against the rim *e* and thereby atomized or sprayed, substantially as hereinbefore described.

2. In an atomizer or sprayer, the combination of the tube *a*, having external bead, *g*, and holes *c*, plug *b* in the end of the tube *a*, said plug having rim *e*, and of the impervious elastic sheath *f*, whereby the liquid is directed by the sheath *f* against the rim *e* and thereby atomized, substantially as described.

384,307. CORSET. G. ALBERTUS CLARK, Bridgeport, Conn. Filed Feb. 13, 1888. Serial No. 263,846. (No model.)



Claim.—1. As a new manufacture, a half-corset having bust and hip swells and consisting of sections joined together by a curved and recurved seam extending from the top of the bust-swell downward, then curving forward and recurving backward, then extending back-

ward along the waist-line, and finally curving downward over the hip to the bottom of the corset at or near the back-stay.

2. A half-corset having bust and hip swells and consisting of two sections only, said sections being joined together by a curved and recurved seam extending from the top of the bust-swell downward, then curving forward and recurving backward, then extending backward along the waist-line, and finally curving downward over the hip to the bottom of the corset at or near the back-stay.

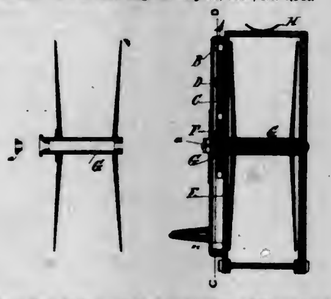
384,308. **ROLLS FOR IRON-ROLLING MILLS.** ARTHUR W. H. COLLARD, Pittsburg, Pa. Filed Apr. 7, 1888. Serial No. 269,961. (No model.)



Claim.—1. In a roll for metal-rolling, an interior central portion formed of brick or earthern material, and the outer portion of metal, which incloses the central portion, substantially as and for the purposes described.

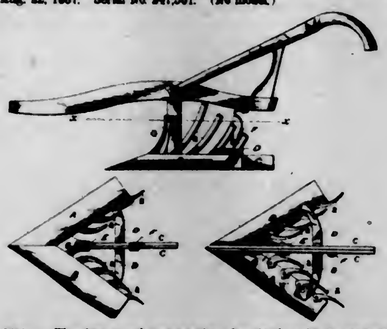
2. The roll formed of an outer portion of metal and a center piece of brick material, having necks *a* and *a'* formed at its extremities, substantially as and for the purpose set forth.

384,309. **FISHING-REEL.** HUBERT H. CORDER, Tuckenhay House, Totnes, South Devon, England. Filed June 9, 1887. Serial No. 240,742. (No model.) Patented in England May 28, 1887, No. 7,841.



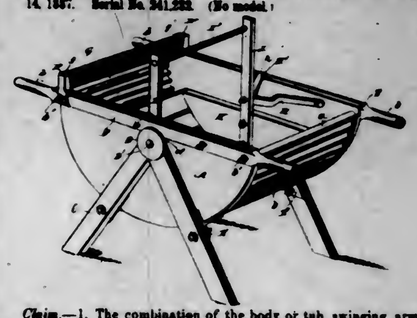
Claim.—In a fishing-reel, the combination of the casing having a side plate, E, the reel G, provided with bearings and journaled upon a central pin carrying at its shouldered end a conical bearing, against which the winch-plate is secured by lock-nuts, the conical bearing *a*, the winch-plate A, the internal wheel-rim, B, the carrier-wheel C, and the wheel F, substantially as set forth.

384,310. **POTATO-PLOW.** SAMUEL DENNOW, Lewis, Iowa. Filed Aug. 22, 1887. Serial No. 247,561. (No model.)



Claim.—The improved potato-plow herein described, consisting of the inclined blades, the shoe or drag secured thereto, as shown, the curved brace-arms secured at their outer ends to the under rear edges of the blades, and their inner ends secured to the said shoe by the bolts which unite them, the standard, and also the rear brace for the beam, supported by the said shoe, the guard on the standard, and the flat curved bars secured at their lower ends to the under inner elevated edges of the blades, substantially as specified.

384,311. **WASHING-MACHINE.** JOHN H. DOUD and FARUS ROBBINS, Walnut, Kans.; said Robbins assignor to said Doud. Filed June 14, 1887. Serial No. 241,232. (No model.)



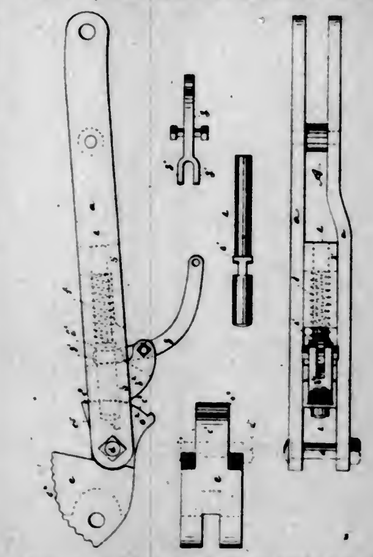
Claim.—1. The combination of the body or tub, swinging arms pivoted at one end to the sides of the tub, the rubber pivoted to the free ends of said arms, and the supporting-arms extending upward from the swinging arms and engaging the upper edges of the sides of the tub, substantially as set forth.

2. In a washing-machine, the combination of the tub A, bars B B, secured to the upper edges thereof, and having their ends extended to form handles *b b*, grooved brackets F F, secured to the bars B B, and the wringer-bar G, removably fitted at its ends in the said brackets, substantially as and for the purpose set forth.

3. In combination with the suds-box, the brackets F, the wringer-bar removably fitted in the brackets, and the splash-plate *g*, secured to the lower edge of the said bar and passing within the upper edge of the tub, substantially as specified.

4. In combination with the suds-box having the corrugated bottom, the bolts *b'*, passing through the ends of the corrugated bottom and the sides of the suds-box, the brackets F, held to the sides of the suds-box by the bolts *b'*, and the wringer-bar fitted in the brackets, substantially as specified.

384,312. **CAR-COUPLING.** FRANK A. FOX, New York, assignor to Charles H. Bishop, Brooklyn, N. Y., and Roderick S. Bourn, Bridgeport, Conn. Filed Mar. 16, 1888. Serial No. 267,304. (No model.)



Claim.—1. The combination of top and bottom bars *a a* and of perforated cross-pieces *b b'*, the cross-piece *b* having lateral extension *b²*, with the draw-head *c*, sliding bolt *e*, and spring *f*, the sliding bolt *e* having shoulder *e'*, and with the operating-lever *g*, pivoted to extension *b²*, and having a forked end, *g'*, that engages bolt *e*, substantially as specified.

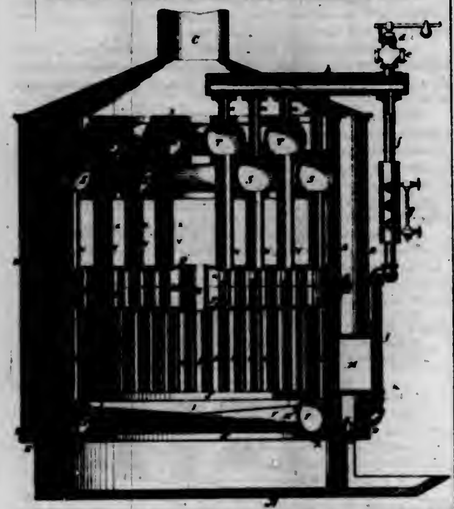
2. The combination of draw-bar A with a sliding bolt, spring, and

operating-lever, and with a pivoted draw-head, *c*, having a corrugated face, *c'*, substantially as specified.

3. The combination of draw-bar A, having the cross-piece *b*, that is provided with lateral extension *b²*, and of sliding bolt, spring, and operating-lever, with a pivoted draw-head, *c*, having the lateral hook-shaped extension *c²*, that is adapted to engage the extension *b²*, substantially as specified.

4. The combination of a draw-bar, A, with a sliding bolt, spring, and operating-lever, and with a pivoted draw-head, *c*, having a perforation for engagement with the sliding bolt, the edge of the draw-head being straight at one side of the perforation and being curved and hook-shaped at the other side of the perforation to limit the motion of the draw-head in both directions, substantially as specified.

384,313. **SECTIONAL STEAM-BOILER.** JOHN A. GREENOUGH, New York, N. Y. Filed Oct. 15, 1887. Serial No. 252,402. (No model.)



Claim.—1. In a boiler, the plates O P, forming the water-chamber and being at the top of the fire-box, combined with the circular pipe at the lower portion of the fire-box, a series of pipes connecting the said pipe and chamber and forming the walls of the fire-box, a series of circular pipes at the top of the boiler, an exit therefrom for steam, and a series of pipes connecting the said series of circular pipes with the said water-chamber, substantially as and for the purposes set forth.

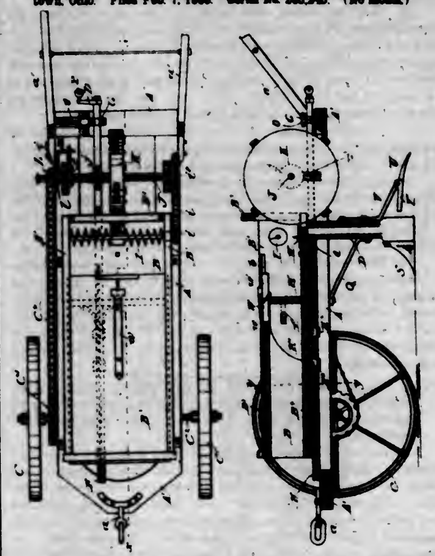
2. In a boiler, the plates located at the top of the fire-box and forming between them the water-chamber, combined with the pipe at the lower portion of the fire-box, a series of pipes connecting said pipe and said chamber and forming the walls of the fire-box, a series of circular pipes at the top of the boiler, an exit therefrom for steam, a series of pipes connecting the said series of circular pipes with said water-chamber, and flue-pipes for the products of combustion extending through said water-chamber, substantially as set forth.

3. In a boiler, the plates located at the top of the fire-box and forming between them the water-chamber, combined with the pipe at the lower portion of the fire-box, a series of pipes connecting said pipe and said chamber and forming the walls of the fire-box, a series of circular pipes at the top of the boiler, an exit therefrom for steam, a series of pipes connecting the said series of circular pipes with said water-chamber, flue-pipes extending through said water-chamber, and flue-pipes passing upward from the fire-box through the said vertical pipes which connect the said series of circular pipes with the said water-chamber, and through the circular pipes at the top of the boiler, substantially as and for the purposes set forth.

4. In a boiler, the plates located at the top of the fire-box and forming between them the water-chamber, combined with the pipe at the lower portion of the fire-box, a series of pipes connecting said pipe and said chamber and forming the walls of the fire-box, a series of circular pipes at the top of the boiler, a series of pipes connecting the said series of circular pipes with said water-chamber, flue-pipes extending through said water-chamber, a steam-dome with its escape and safety valve, and pipes connecting the steam-dome with the said series of circular pipes, substantially as and for the purposes set forth.

5. In a boiler, the plates located at the top of the fire-box and forming between them the water-chamber, combined with the pipe at the lower portion of the fire-box, a series of pipes connecting said pipe and said chamber and forming the walls of the fire-box, the series of alternating circular pipes S T at the top of the boiler, an exit therefrom for steam, a series of pipes connecting the said series of circular pipes with said water-chamber, and flue-pipes for the products of combustion extending through said water-chamber, substantially as set forth.

384,314. **COTTON-SEED PLANTER.** SAMUEL R. HAKE, Youngstown, Ohio. Filed Feb. 7, 1888. Serial No. 263,945. (No model.)



Claim.—1. In a planter, the combination of the hopper having a slot in its end and bottom and having a discharge-opening in its bottom communicating with the said slots, the partition E, means for automatically moving said partition to reduce the capacity of the hopper and force the seed to the said discharge-opening, the feed-shaft having a right and left spiral to feed the seed from the sides of the hopper to the said discharge-opening, and the feed-wheel having its edge adapted to work through the said slots and discharge-opening, substantially as and for the purpose described.

2. The combination, with the hopper, of the grain-tube made in two corresponding parts, each part having a corresponding vertical groove, and the spring for yieldingly holding the said parts together, and the feed-wheel having feed-tappets which are adapted to work through the said grooves and between the parts of the said grain-tube, substantially as and for the purpose described.

3. The combination, with the hopper and the grain-tube having an opening in one side, of the feed-wheel and the feed-tappet having a web portion to fit in the opening and a head or plunger to work through the said grain-tube, substantially as described.

4. The combination, with the hopper having a grain-discharge opening and the feed-wheel, of the feed-tappet having a web portion and a head or plunger which tapers in cross-sectional area from end to end, substantially as set forth.

5. The herein shown and described feed-tappet, composed of a base-plate, a web portion, and a head or plunger.

6. The combination, with the hopper having a discharge-opening and the feed-wheel, of the double-edged knife guard extending vertically in the said hopper, substantially as described, and for the purpose specified.

7. The combination, with the hopper and the adjustable wall or partition, of the extension having a threaded socket and the threaded rod engaging with said socket, substantially as described.

8. The combination, with the hopper having a narrow slot in its bottom, the wall E, the wide extension E', extending through the said slot and having a threaded socket at its lower end below the hopper, of the braces *f* and the threaded rod engaging with the said socket, substantially as specified.

9. The combination, with the hopper and the adjustable wall or partition, of the sliding cover having a stop projecting within the path of the said wall, substantially as described, for the purpose specified.

10. The combination, with the hopper and the adjustable wall or partition, of the sliding cover, the stop set at an incline to the said wall.

and the spring secured to the cover at one end and having the stop secured to its free end, substantially as described.

11. The combination, with the hopper, the adjustable wall or partition, and the threaded shaft for adjusting the said wall or partition, of the counter-shaft, the gearing for imparting motion from the counter-shaft to the threaded shaft, and the adjustable bearing having the outer end of the threaded shaft journaled therein, whereby the said counter and threaded shafts may be thrown in and out of gear at will, substantially as and for the purpose described.

12. The combination, with the hopper, the adjustable wall, the threaded shaft, the counter-shaft, and the gearing connecting the counter and threaded shafts, of the adjustable bearing *i*, having the outer end of the threaded shaft journaled therein, the spring, and the cam-lever for compressing the spring, having the said bearing mounted on its outer end and throwing the said counter and threaded shafts out of gear, substantially as described, for the purpose specified.

13. In a cotton-planter, the combination, with the frame and the grain-spout, of the braces Q and R, adjustably connecting the grain-spout with said frame, substantially as shown and described.

14. In a cotton-planter, the combination, with the grain-spout having a slot in its side, of the combined coverer and cultivator, the bracket V, having a slot and having its upper end bent at right angles to enter the slot in the grain-spout, and the bolt *s'*, adjustably connecting the bracket with the grain-spout, substantially as set forth.

15. The combination, with the hopper, the adjustable wall or partition, the threaded shaft, the counter-shaft, and the gearing connecting the threaded and counter shafts, of the adjustable bearing *i*, having the outer end of the threaded shaft journaled therein, the clutch *k*, the pinion L, having clutch *l*, and the shipper-lever for throwing the clutches *l* and *l'* out of gear, substantially as and for the purpose described.

384,315. MANUFACTURE OF DYE-STUFFS. MARTIN HERZBERG, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Company, same place. Filed Feb. 21, 1888. Serial No. 264,831. (Specimens.)

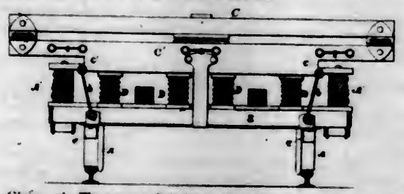
Claim.—1. The process herein described of making new brown dye-stuffs, which consists in combining the salts of diazo compounds of aniline, toluidine, xylidine, cumidine, and the nitro-derivatives of the same, amidoazo-benzol, amidoazo-toluol, amidoazo-xylol, alpha and beta naphthylamine, or their sulpho and carbo acids, and tetrazo compounds of benzidine, benzidine-sulpho, tolidine, diamido-stilbene, or their sulpho or carbo acids, with Bismarck brown, (triamidoazo-benzol or triamidoazo-toluol,) substantially as hereinbefore described.

2. The rendering of the insoluble colors obtained as aforesaid soluble in water by a sulphonating process, substantially as hereinbefore described.

384,316. MANUFACTURE OF DYE-STUFFS. MARTIN HERZBERG, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Company, same place. Filed Feb. 21, 1888. Serial No. 264,832. (Specimens.)

Claim.—The brown coloring-matter herein described, which has the following characteristics: it exists as a brown powder easily soluble in water, dyes cotton, wool, and silk a splendid brown in a boiling bath of common salt, cotton likewise in a boiling alkaline or soap bath, which color will not be altered by acetic acid; by adding muriatic acid to the aqueous solution the free acid of the dye-stuff is formed; with concentrated sulphuric acid the dye-stuff described dissolves into a dirty violet-brown color.

384,317. CAR-TRUCK. MOSES G. HUBBARD, Philadelphia, Pa. Filed July 5, 1887. Serial No. 243,341. (No model.)



Claim.—1. The car-truck bolster pivoted at its center to the car and mounted on the vertical spiral torsional springs, in combination with the draft-links of the car-wheels, whereby the car-wheels can vibrate both vertically and laterally without frictional resistance from the draft, substantially as described.

2. The combination of the elastic draft-links, a car-truck bolster pivoted at its center to the car and mounted on the vertical spiral torsion-springs, with the truck-wheels, whereby the truck-wheels can vibrate in all directions from the rail without frictional resistance from the draft, substantially as and for the purposes set forth.

3. The spiral torsion-springs constructed as described, and located one pair each side of each safety-sill and all in line transversely across the truck-frame, substantially as described and shown.

4. The abetting sills located near the bolster and adapted to act also as supporting-sills, in combination with the pendent links for supporting the bolster, substantially as and for the purposes set forth.

5. The combination of the springs, constructed and located substantially as described, with the flexible truck-frame having double-plated wheel-pieces, whereby the truck may be more safely made with convenient base to admit of the wide thin cross-sills between the bolster and springs, substantially as described.

6. The flexible truck-frame constructed, substantially as described, with double-plated wheel-pieces, and the springs constructed and located therein, as set forth and shown, in combination with the brakes located between the wheels, substantially as and for the purposes described.

7. The combination of the bolster, the vertical springs, the spring-platform, and the vertical check-loop, constructed and arranged substantially as and for the purposes described.

8. The combination of the extended bolster and the vertical spiral torsion-springs with the anti-friction outer bolster-bearings to diminish the circular or twisting strain upon the vertical springs, substantially as set forth.

9. In a car-truck, the combination of the lower spring support or platform rigidly attached to the truck-frame, the spiral torsion-springs mounted thereon, and the truck-bolster mounted, as described, in such manner that the lateral motion thereof shall be controlled by the springs, whereby both the vertical and lateral movements of the car or its wheels are controlled and cushioned by the same springs, for the purposes substantially as described.

10. The combination of a lower spring support or platform rigidly attached to the truck-frame, the vertical spiral torsion-springs mounted thereon, the truck-bolster mounted on the springs, and the elastic draft-links, whereby the attachment of the car to the wheels is made elastic in every direction, for the purposes substantially as set forth.

384,318. RIVET. ALBERT KIRBY, Canton, Ohio, assignor to the Diebold Safe and Lock Company, same place. Filed Nov. 29, 1887. Serial No. 256,449. (No model.)



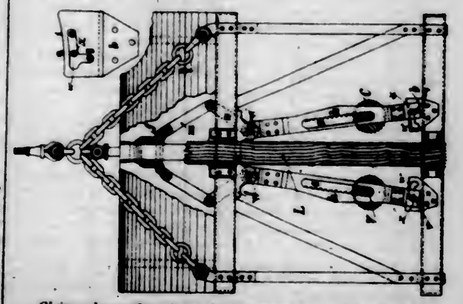
Claim.—1. A rivet having an outside portion of soft iron, embracing a central portion of hardened steel, a portion of which has been removed before hardening, substantially as described, and for the purpose set forth.

2. A rivet having an outside portion of soft iron, embracing a central portion of steel having one head formed by upsetting the iron and steel, the other formed of the soft iron over the end of the steel, substantially as described, and for the purpose set forth.

3. A rivet having a wedge of steel welded in head thereof and hardened, substantially as described, and for the purpose set forth.

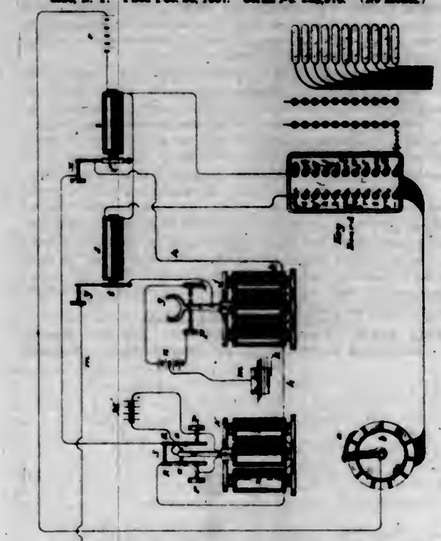
4. A rivet, preferably of soft iron, having a central perforation and hardened-steel pin driven in said perforation, substantially as described, and for the purpose set forth.

384,319. SAFETY DEVICE FOR ELEVATORS. CONSTANTIN KLEIN and FRIEDRICH PIEKOWSKI, Königshütte, and AUGUST GROSS, Beuthen, Prussia, Germany. Filed Jan. 31, 1888. Serial No. 262,590. (No model.)



Claim.—In a safety-clutch for elevators, the combination of the spring F, the toggle-links *m n*, the slotted arms *h*, the guides *b*, the toothed wheels V, provided with pinions adapted to work in the slots in the arms *h*, and the guide-beams I, all substantially as described.

384,320. PRINTING-TELEGRAPH. EDWARD J. HALLETT, Bay Side, N. Y. Filed Feb. 26, 1887. Serial No. 228,978. (No model.)



Claim.—1. In combination with the main-line and the trailer-circuit, two sets of closing-keys or their equivalent included in branches of the trailer-circuit, and a magnet in the branch circuit of one set of keys for altering the condition of the main-line circuit, substantially as and for the purposes hereinbefore set forth.

2. The combination, at the transmitting-station, of the main-line or working circuits, its circuit-breaker and pole-changer, the escapement circuit and automatic pole-changer and escapement operating or controlling devices included therein, the trailer-circuit and the trailer, the two sets of keys or their equivalent, and the magnet of the main-line-circuit controller included therein, said magnet being in the branch circuit of one set of keys, these elements being combined and having the mode of operation substantially as hereinbefore set forth.

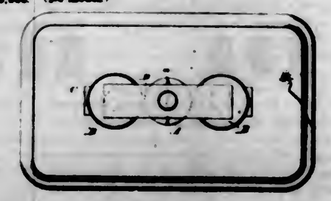
3. Two sets of keys or their equivalent, each set having a common electrical connection insulated from that of the other set, in combination with separately-insulated contacts therefor, one contact of one set and one contact of the other set being electrically connected to the same segment of a sunflower-wheel or segment-disk, substantially as and for the purposes hereinbefore set forth.

4. The main line, the printing-circuit, the neutral relay B, having its magnet in the main line and controlling contacts in the printing-circuit, and the two press-magnets included in branches in said printing-circuit, the connections being substantially such as hereinbefore described, so that the printing-circuit will be through one or the other of said magnets, according to the condition of the main line when reversals on it cease.

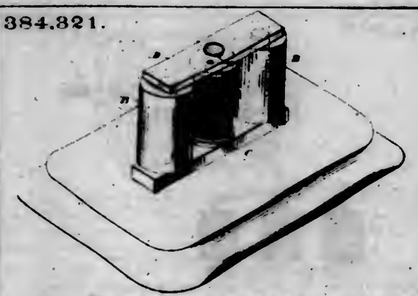
5. The main line, the printing-circuit, the neutral relay B, and the two press-magnets, in combination with a neutral relay, I, a polarized relay, A, and circuit-connections, substantially as described, whereby the printing-circuit is maintained open so long as reversals continue in the main line.

6. The magnet consisting of the spools E E' and the intermediate bare or unwound core, F, affixed to a common yoke, and two independent armatures, substantially as and for the purposes hereinbefore set forth.

384,321. POLARIZED ELECTRO-MAGNET. EDWARD J. HALLETT, Bay Side, N. Y. Filed Feb. 17, 1887. Renewed Apr. 5, 1888. Serial No. 269,660. (No model.)



384,321.



Claim.—The herein-described polarized magnet, consisting of the three electro-magnets affixed to a common yoke, with an armature pivoted to the core of the intermediate magnet and adapted to rock from pole to pole of the exterior magnets, said armature being inductively magnetized through its pivotal connection with the pole of the intermediate magnet, which is maintained in a closed circuit during the operation of the instrument, substantially as and for the purposes set forth.

384,322. PRINTING-TELEGRAPH. EDWARD J. HALLETT, Bay Side, N. Y. Filed Feb. 26, 1887. Renewed Apr. 5, 1888. Serial No. 269,661. (No model.)



Claim.—1. The combination of the laterally-movable type-wheel, the shifting mechanism, the printing-pad, and the press-pallet, which during the first part of its stroke completely shifts and brings to rest the movable type-wheel and subsequently effects the printing, substantially as and for the purposes hereinbefore set forth.

2. The combination of the two laterally-movable type-wheels, the shifting mechanism, the two independent press-pallets, each of which during the first part of the stroke completely shifts and brings to rest the movable type-wheels and subsequently effects the printing, and the press-pad common to the two pallets, substantially as hereinbefore set forth.

3. The combination of the two laterally-movable type-wheels, the shifting mechanism, the slotted shield, the press-pad common to both press-pallets, and two independent press-pallets, each of which during the first part of its stroke completely shifts and brings to rest the movable type-wheels and subsequently effects the printing operation, substantially as hereinbefore set forth.

4. The combination of the two independent press-pallets, the type-wheels, and the two sets of shifting mechanisms, one for each pallet, the combination being and acting substantially as hereinbefore set forth.

5. The two type-wheels, the two independent press-pallets and wheel-shifting mechanism operated thereby, and the press-pad, in combination with the two magnets, one for each pallet, substantially as and for the purposes hereinbefore set forth.

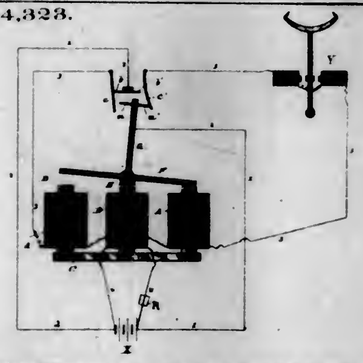
6. The combination of the type-wheel, the press-pallet, the shifting-dog thereon, and the shifting-lever provided with an incline, *g*, and straight face *h*, substantially as and for the purposes hereinbefore set forth.

384,323. AUTOMATIC POLE-CHANGER. EDWARD J. HALLETT, New York, N. Y. Filed Apr. 5, 1888. Serial No. 269,664. (No model.)

Claim.—An automatic pole-changer which contains two coils or sets of coils, the one in circuit with the contacts of the pole-changer, the other in a permanently-closed circuit in derivation thereto, whereby

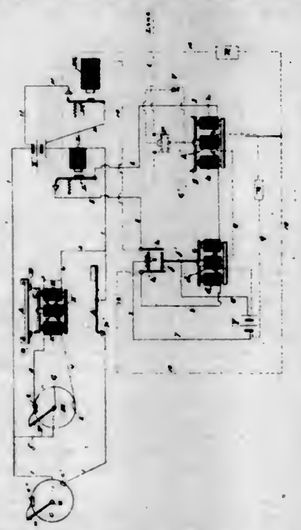


384,323.



a division of the current supplying the pole-changer is effected, a part passing through the contacts and a part acting with permanent induction upon the armature, substantially as and for the purposes herein-before set forth.

384,324. AUTOMATIC TELEGRAPHY. EDWARD J. MALLETT, New York, N. Y. Filed Apr. 5, 1888. Serial No. 269,635. (No model.)



Claim.—1. The combination, with the trailer-circuit and trailer included therein, of the scape-fork circuit, escapement operating or controlling devices therein, an automatic pole-changer for throwing reversals upon the scape-fork circuit, and a stopping-magnet in the trailer-circuit controlling contacts in the scape-fork circuit, whereby the closing of the trailer-circuit shall operate the stopping mechanism to effect the stoppage of said automatic pole-changer and escapement operating or controlling devices, substantially as and for the purposes hereinbefore set forth.

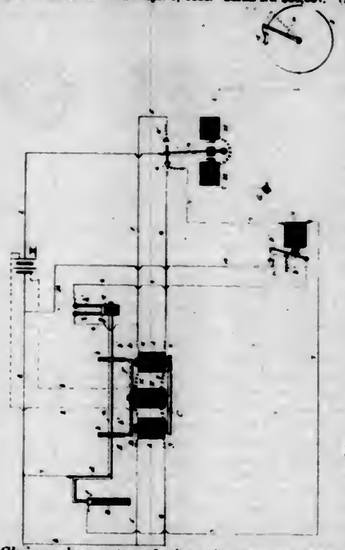
2. The combination, with an automatic telegraph-transmitter, means for actuating the same, and a stopping-magnet in the trailer-circuit of the transmitter controlling contacts in the scape-fork circuit of the transmitter, of a starting-magnet in the scape-fork circuit controlling contacts in the trailer-circuit, said starting-magnet being brought into action by the stoppage of the transmitter, and when thus called into action automatically operating to release the transmitter from the control of the stopping mechanism, substantially as hereinbefore set forth.

3. The combination of the trailer-circuit and trailer included therein, the scape-fork circuit and escapement operating or controlling devices included therein, an automatic pole-changer for throwing reversals upon the scape-fork circuit, a stopping-magnet in the trailer-circuit controlling contacts in the circuit in which the automatic pole-changer is included, and a starting-magnet controlling contacts in the stopping-magnet circuit brought into action by the operation of the stopping mechanism, and operating when thus brought into action to release the automatic pole-changer from the control of the stopping mechanism, substantially as hereinbefore set forth.

4. The trailer-circuit, including the anvils and keys, together with the doubly and oppositely wound car-escapement magnet having its two windings respectively connected with the two branches of a circuit in derivation to that which includes the keys, said branches being connected to separate segments, through one and the other of which alternately the derived circuit is completed at the times and in the manner substantially as and for the purposes hereinbefore set forth.

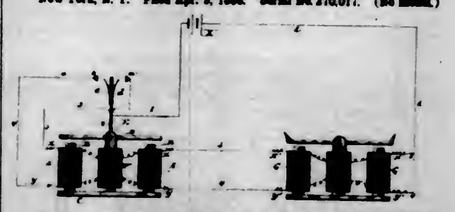
5. The trailer-circuit, including the transmitting-keys or needles and anvils, and the transmitting-trailer and sunflower-disk provided with an interval or car-segment, together with the doubly-wound car-escapement magnet, and the two-segment car-disk and trailer included in a branch of said circuit, the car-trailer revolving at half the speed of the transmitting-trailer and operating to close the branch circuit alternately through opposite segments of the car-disk, substantially as and for the purposes hereinbefore set forth.

384,325. AUTOMATIC TELEGRAPHY. EDWARD J. MALLETT, New York, N. Y. Filed Apr. 5, 1888. Serial No. 269,637. (No model.)



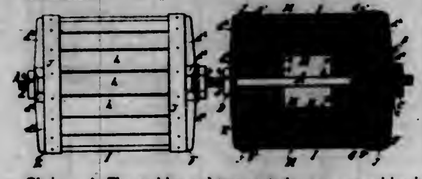
Claim.—In a system of telegraphy, the combination, with the escapement-circuit of the receiving-instrument, the escapement-magnet included therein, and a current-diverter for diverting the current from the said escapement-magnet at regular intervals, of a magnet normally influenced at corresponding intervals from the transmitter and contact-points operated by said magnet when thus influenced to neutralize the action of the current-diverter, substantially as and for the purposes hereinbefore set forth.

384,326. AUTOMATIC POLE-CHANGER. EDWARD J. MALLETT, New York, N. Y. Filed Apr. 9, 1888. Serial No. 270,017. (No model.)



Claim.—An automatic pole-changer the magnet of which is doubly and oppositely wound, one winding included in a circuit completed through one of the sets of contacts of the pole-changer, and the other winding included in a circuit in derivation to the one first named, and completed through the other set of contacts of the pole-changer, substantially as set forth.

384,327. TRANSPORTATION-CASE FOR COILED LEAD PIPE. HENRY J. HILLAR, Utica, N. Y. Filed Feb. 6, 1888. Serial No. 263,066. (No model.)



Claim.—1. The packing and transportation case comprising in its construction a central screw-threaded tie bar or axle, A, provided with a stop collar or shoulder, D, heads E G F, nuts B and C, and protecting inclosing portion I, substantially as and for the purpose described.

2. The combined packing and transportation case comprising the cylinder and inclosing body portion, two outer heads, and an intermediate head, one of which outer heads and the intermediate head being arranged to slip away from the other outer head for the insertion of the coils of pipe, substantially as described.

3. The combination, with the screw-threaded tie bar or axle A, shoulder D, heads E and G, and nut B, of the head F, formed with the counterbore or socket *f*, and the nut C, substantially as and for the purpose described.

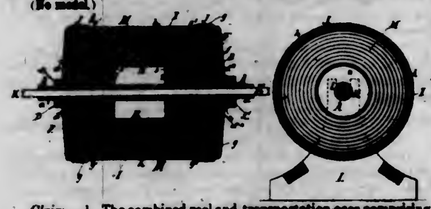
4. The combination, with the body portion, of the heads E and F, chamfered or formed with a bearing and abutting surface at *g*, and provided with hoops which aid in forming endless recesses between themselves and the chamfered or bearing portions of the heads, substantially as and for the purpose described.

5. The combined packing and transportation case comprising the cylinder, an inclosing body portion formed of staves joined together by flexible connections, two outer heads, and an intermediate head, one of which outer heads and the intermediate head being arranged to slip away from the other outer head for the insertion of the coils of pipe, substantially as described.

6. The combination of the outer inclosing portion, I, of the packing and transportation case, formed of staves flexibly connected, except at one edge of each of the last staves, with the outer heads, E, F, and G, cylinder H, a screw-threaded tie axle or bar, A, having shoulder D, and the nut C, substantially as described.

7. The body portion I of the combined reel and transportation-case, formed of staves connected together by flexible connections applied wholly on the inner surface of the staves with no portions of the connections exposed externally of the case and liable to injury by coming in contact with objects over which the case may be rolled, substantially as described.

384,328. COMBINED REEL AND TRANSPORTATION-CASE. HENRY J. HILLAR, Utica, N. Y. Filed Feb. 6, 1888. Serial No. 263,065. (No model.)



Claim.—1. The combined reel and transportation-case comprising in its construction a central screw-threaded tie-tube, A, provided with a stop collar or shoulder, D, heads E G F, nuts B and C, and protecting and inclosing portion I, substantially as and for the purpose described.

2. The combined reel and transportation-case comprising a central screw-threaded tie-tube, A, of greater length than the case stop collar or shoulder D, a laterally-sliding head, F, nut C, an outer removable protecting flexible inclosing portion, I, and a removable axial shaft, K, substantially as described.

3. The combined reel and transportation-case having a body portion formed of staves flexibly connected except at one of the edges of the last two staves, a reel-cylinder, an intermediate slipping head, and two outer heads, one of which slips away from the other for the removal of the body portion, so that the pipe may be wound upon the reel-cylinder, substantially as described.

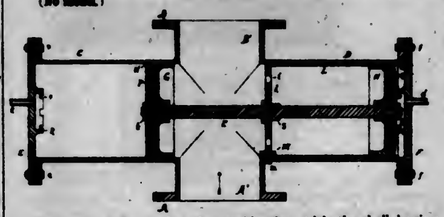
384,329. COMBINED REEL AND TRANSPORTATION-CASE. HENRY J. HILLAR, Utica, N. Y. Filed Apr. 13, 1888. Serial No. 270,620. (No model.)

384,329.



Claim.—The combination of the tie-bar C, either tubular or solid, screw-threaded, and provided with a shoulder and a nut, the heads A A', the body portion B, and the reel F, substantially as and for the purpose described.

384,330. VALVE. GEORGE H. MOORE, Norwich, Conn., assignor to Estelle C. Moore, same place. Filed May 20, 1887. Serial No. 238,085. (No model.)



Claim.—1. In a valve, the combination, with the shell having lateral extensions upon opposite sides of the water-way or passage therethrough, said extensions being in the form of cylinders closed at their outer ends, of a piston-head mounted within each of said cylinders, a stem connecting said piston-heads with each other, an expansible cylinder mounted upon and carried by said stem, and means for exerting pressure against said piston-heads alternately, whereby said expansible cylinder is moved in opposite directions to open and close the passage through the shell and is evenly balanced between said piston-heads, substantially as described.

2. In a valve, the combination, with the shell having lateral extensions upon opposite sides of the water-way or passage therethrough, said extensions being in the form of cylinders closed at their outer ends, a piston-head mounted within each of said cylinders, a stem connecting said piston-heads with each other, a gate consisting of an expansible cylinder mounted upon and carried by said stem, said expansible cylinder having an inlet-opening facing the inlet end of the passage through the shell, and inlet and exhaust pipes communicating with the cylindrical extensions of the shell, whereby fluid or liquid under pressure is admitted thereto to operate said piston-heads, substantially in the manner and for the purpose set forth.

3. In a valve, the combination, with the shell A B, having the lateral cylindrical extensions C D, of the piston-heads G H, stem K, a disk secured to said stem between its ends, expansible cylinder L, supported at one end by said disk and at the opposite end by one of the piston-heads, and pipes *d e*, communicating with the interior of cylinders C D, substantially as shown and described.

4. In a valve, the combination, with shell A B, cylinder C D, located upon opposite sides thereof, heads E F, secured to the outer ends of said cylinders and having the circular flanges R, provided with openings *r*, stem K, piston-heads G H, packing-disks N O, and washers P Q, secured to said stem at its ends, disk I, secured to said stem between its ends, expansible cylinder L, mounted upon said disk and one of the piston-heads, substantially in the manner shown and described, and pipes *e d*, extending through the heads of cylinders C D within the circle described by the flanges R, arranged and operating substantially as set forth.

5. In a valve, the combination, with the shell A B, having the laterally-extending cylinders C D, of piston-heads G H, located within said cylinders, stem K, connecting said piston-heads, disk I, and cylinder L, mounted upon said stem, said latter cylinder having the opening *t*, and a stop for preventing circumferential movement of said cylinder L, whereby its opening *t* is retained in a plane substantially diametrical to the water-way or passage through the shell, substantially as and for the purpose described.

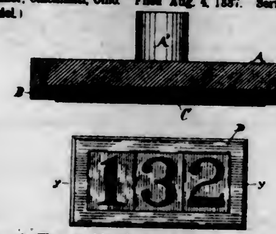
6. In a valve, the combination, with the shell having the lateral cylindrical extensions, the piston-heads located therein, the stem connecting said piston-heads and the disk, and expansible cylinder having opening *t*, mounted on said stem, arranged and operating substantially in the manner set forth, of guide-block M, secured to the inner wall of one of the cylindrical extensions and projecting within said opening *t* of the expansible cylinder, substantially as described.

7. In a valve, the combination, with the shell A B, cylinders C D, stem K, piston-heads G H, disk I, having the perforations *i*, and cyl-

inder L, having an inlet-passage in its side adjacent to the inlet-passage A' of the shell, of a guide for preventing circumferential movement of said cylinder L, and means for introducing fluid or liquid under pressure within the cylinders C D and for exhausting the same therefrom, substantially in the manner shown and described.

8. In a valve, the combination, with the shell A B, cylinder C D, stem K, piston-heads G H, and disk I, of the expansible cylinder L, having its ends located in peripheral grooves in said disk and one of said piston-heads, whereby the periphery of said cylinder is substantially in the plane of the peripheries of said disk and piston-heads, substantially as set forth.

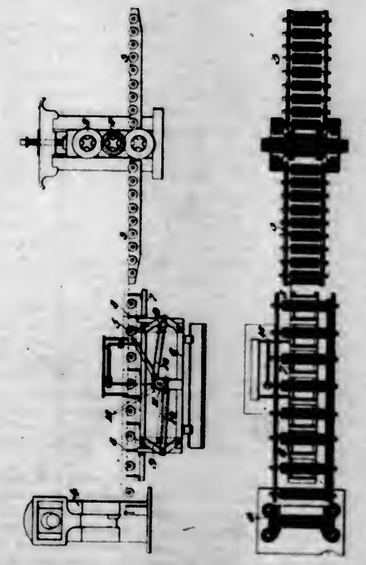
384,331. DEVICE FOR FORMING LETTERS AND DESIGNS ON SHEET METAL. JAMES O'CONNOR, Newport, Ky., assignor to Williams & O'Connor, Cincinnati, Ohio. Filed Aug. 4, 1887. Serial No. 246,096. (No model.)



Claim.—1. The combination, substantially as specified, of the die-frame D, the interchangeable loose steel type fitted to said frame, the rubber counter, and counter-holder, said counter-holder having a shank for attaching it to the movable plunger of a die-press.

2. The combination of the rubber counter C, the counter-holder A A', and stripe B, the die-holder D, the removable dies, and anvil F, substantially as shown and described.

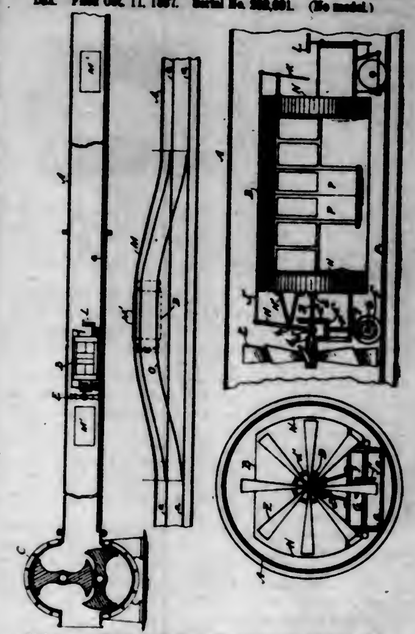
384,332. APPLIANCE FOR ROLLING-MILLS. DAVID B. OLIVER, Allegheny City, Pa. Filed Apr. 25, 1888. Serial No. 271,783. (No model.)



Claim.—1. An improvement in appliances for mills, which consists of the combination of the following elements: a series of driven conveying rollers and scales having their platform arranged beneath the rollers, one of said elements being movable to cause the metal to rest upon the platform, substantially as and for the purposes described.

2. As an improvement in appliances for rolls, the combination, with the rolls and the shears, of the following elements, viz: a series of driven conveying-rollers leading from the rolls to the shears, and scales whose platform is situate beneath the conveying-rollers, one of said elements being movable to cause the metal to rest upon the platform, substantially as and for the purposes described.

384,333. PNEUMATIC RAILWAY. THOMAS W. PEYTON, Welney, Ind. Filed Oct. 11, 1887. Serial No. 252,091. (No model.)



Claim.—1. The combination, with a pneumatic tube and means, as a compressing-engine, for producing a current of air therein, of a car and a fan mounted upon one end of said car and in operative connection with the car-axle, substantially as shown and described.

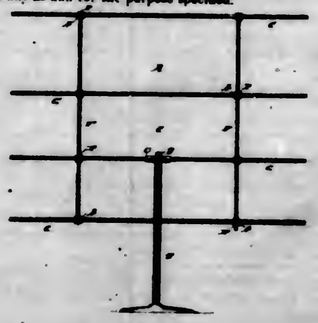
2. The combination, with a pneumatic tube and means, as a blower or compression-engine, for producing a current of air therein, of a car, a fan mounted thereon and in operative connection with the car-axle, and means, as a lever and clutch, for throwing said fan out of gear, substantially as shown and described.

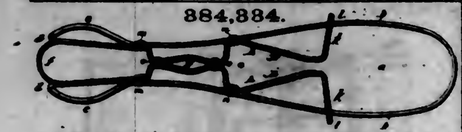
3. The combination, with a pneumatic tube, of means for inducing a current of air therein, a railway-track, a lateral offset or enlargement within the tube, a switch located within said offset, doors in the side of the tube, and a railway-car provided with curved flanges at the respective ends, whereby said flanges may conform to the side of the tube when opposite to the doors, substantially as shown and described.

4. The combination of the car B, flanges N N, tube A, and a switch placed sufficiently near to the outside of the tube to permit the said flanges to touch said tube when opposite to the doors of the station, substantially as shown and described.

384,334. DISPLAY-FRAME. JAMES J. REMMENGAM, Centralia, Ill. Filed Apr. 14, 1888. Serial No. 270,603. (No model.)

Claim.—1. In a shoe-rest, the combination of the outer frame, *b*, open at its rear end and terminating in spring-arms *c*, and the inner frame, *c*, open at its front end and terminating in the spring-arms *b*, substantially as and for the purpose specified.





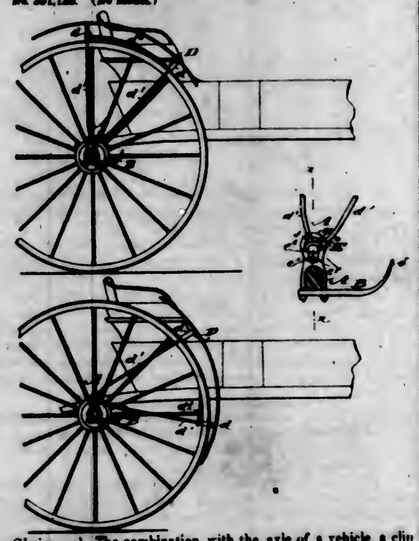
384,334.

2. The within-described shoe-rest, comprising the outer frame, *b*, forming the sole-rest, and the heel-springs *c c*, provided with the jaws *d d*, and the inner frame, *c*, secured to the outer frame and comprising the heel-loop *f*, the forward-extending spring-arms *b b*, having the jaws *l l*, and the intermediate loop or socket to enable the rest to be attached to a frame, substantially as and for the purpose specified.

3. The combination, with the display-frame having the standard B, provided on its upper end with a horizontal sleeve, C, and the frame having horizontal rods G, one of which is mounted in the said sleeve and locked firmly in position by a set-screw, of the collars adjustably mounted on the horizontal bars and having tapped apertures in their sides, the shoe-rests comprising the outer frames, *b*, having spring-arms at their rear ends, and the inner frames having heel-loops, forward-extending spring-arms, and loops or sockets between the same, and the set-screws mounted in the tapped apertures in the collars and engaging the slots or sockets in the shoe-rests, substantially as and for the purpose specified.

4. The herein-described shoe-rest, comprising the two frames *b c*, one arranged within the other, each frame having a closed and an open end and each having spring arms or jaws at the open ends, the spring arms or jaws of one frame engaging and sliding upon the other frame, as set forth.

384,335. WHEEL-FENDER FOR CARRIAGES. ARTHUR C. ROGERS and HENRY STRAW, Faribault, Minn. Filed Sept. 30, 1887. Serial No. 251,129. (No model.)



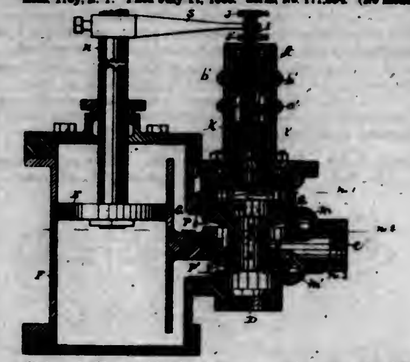
Claim.—1. The combination, with the axle of a vehicle, a clip held upon said axle, and a stop-bar projecting therefrom, of a hub revolving in the clip, arms radiating from the hub, a fender secured to said arms, and means, substantially as described, for retaining the fender over the wheel.

2. The combination, with the axle of a vehicle, a clip held upon said axle, provided with a compound recess in the upper end, and a stop-bar projecting horizontally outward from the axle and clip, of a hub provided with an essentially-rectangular projection upon one face adapted to rotate in said recess, arms radiating from the hub, a fender secured to said arms, and a retaining-cap-plate attached to said projection, substantially as and for the purpose herein set forth.

3. A fender and drum-protector for vehicles, consisting of a clip provided with a compound recess in the upper end and a horizontal stop-bar attached at the lower end, a hub having a projection adapted to turn in said recess, and a fender supported from said hub, whereby the fender may be held above or in front of the wheel, as set forth.

4. A fender and drum-protector for vehicles, consisting of a clip provided with a compound curve in the upper end and a horizontal stop-bar having a bifurcated end attached to the under side, a hub having a projection adapted to enter said recess, a cap attached to said projection adapted to retain the hub and clip in engagement, and a fender supported from said hub, substantially as and for the purpose specified.

384,336. WATER-ENGINE VALVE. GEORGE RAM and WILLIAM RAM, Troy, N. Y. Filed July 17, 1888. Serial No. 171,894. (No model.)



Claim.—1. The combination, in a water-engine valve, of a differential sliding cylinder-port valve having an inclosing-chamber provided with run-around ducts opening at each end by ports into said chamber, the ports at one end of said ducts being opened and closed by said valve, with a piston-operated valve for opening and closing the ports at the other end of said ducts, all arranged and operating substantially as and for the purposes set forth.

2. In a water-engine valve, the combination of a primary piston-operated valve, A, a secondary differential cylinder-port valve, B, an inclosing-chamber provided with run-around ducts *a b*, inlet C, and outlet D, substantially as and for the purposes set forth.

3. In a water-engine valve having a primary piston-operated valve, a secondary differential cylinder-port valve inclosed within a chamber provided with run-around ducts, the combination, with said valves, of a stem or link attached to or projecting from one of said valves and adapted to engage with the others, as and for the purposes set forth.

4. In a water-engine valve having a primary piston-operated valve, a secondary differential cylinder-port valve inclosed within a chamber provided with run-around ducts *a b*, the combination, with said ducts, of adjustable gates therein for changing and regulating their water-discharging capacity, substantially as and for the purposes set forth.

384,337. RECORDER FOR CASH-TILLS. GEORGE B. BROOKS and WILLIAM LOWEY, Hanley, and THOMAS M. FAVELL, Etruria, County of Stafford, England. Filed Aug. 10, 1887. Serial No. 246,641. (No model.)



Claim.—1. A cash-till consisting of a box or case, A, provided with hinged and locked top and containing a smaller cash-drawer, B, a striker carried upon the extended bottom of said drawer and adapted to lift cams, a double-armed cam with lever carrying a pawl adapted to be oscillated by said striker and moving a ratchet-wheel, a ratchet-wheel and a brake-wheel secured upon a shaft carrying a winding-drum, a shaft parallel to said shaft and journaled near the front of the box A, above said drawer B, and provided with a roll of paper strip passing through a friction device, over a block, and under a perforation in the top of the box, exposing a portion thereof to view to the winding-drum, said strip adapted to be wound upon the winding-drum by measured lengths determined by the movement of the ratchet-wheel, substantially as set forth.

2. In a cash-till, the combination of the box A, having hinged lockable top, a drawer, B, lower and shorter than said box, a striker, C, secured upon an extension of the bottom of said drawer, a lever, J, carrying double cam-arms *j j'* and a pawl, *k*, a shaft, E, upon which said device J *j j'* is journaled, a ratchet-wheel, *g*, fast upon said shaft and adapted to be engaged by said pawl *k*, a notched brake-wheel, H, fast upon said shaft and adapted to be engaged by the spring-detent M *m*, a winding-drum, F, fast upon said shaft, pins *l l*, adapted to restrict the movement of the cams *j j'*, a shaft, O, journaled at the

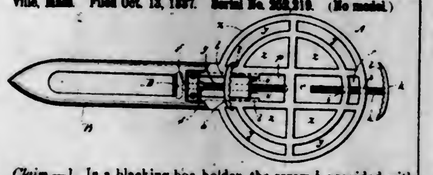
front end of the box, a bobbin, N, fast upon said shaft O and adapted to carry a roll of paper, tension-brackets *s*, a guide-block, *q*, bearing the paper near the surface of the top of the box, a plate, R, with slit *r*, covering an opening in said top and placed over the guide *q*, and a strip of paper, *p*, rolled upon the bobbin N and adapted to be uncoiled therefrom and wound upon the drum F, passing through the tension device and over the guide *q* under the slit *r*, substantially as set forth.

3. In a cash-till, the combination of the drawer B, the striker C, the lever J, having double cam-arms *j j'*, pawl *k*, ratchet-wheel E, and brake-wheel *g* with spring-detent M *m*, substantially as set forth.

4. In a cash-till, the combination of the striker C, lever J, having cam-arms *j j'*, and the limiting-pins *l l*, substantially as set forth.

5. In a cash-till, the combination of the shaft E, carrying drum F, ratchet-wheel *g*, and brake-wheel H, shaft O, carrying drum N brackets *s*, guide *q*, and paper *p*, substantially as set forth.

384,338. **BLACKING-BOX HOLDER.** WESLEY TAYLOR, Somerville, Mass. Filed Oct. 13, 1887. Serial No. 252,219. (No model.)



Claim.—1. In a blacking-box holder, the screw *h*, provided with the serrated head *k*, in combination with the body A, screw *g*, and nut *r*, said nut being fitted to slide in said body and provided with the serrated head *b*, substantially as set forth.

2. In a blacking-box holder, the body A, provided with the curved handle B, and having the ways *l*, in combination with the nut *r*, disposed on said ways and having the serrated head *b*, the threaded rod *g*, journaled in said handle and disposed in a threaded hole in said nut, and the screw *h*, provided with the serrated head *k*, substantially as set forth.

384,339. **SHOE-CLASP.** JACOB J. UEBERROD, Syracuse, N. Y., assignor to Judson L. Thomson & Co., same place. Filed Dec. 2, 1887. Serial No. 256,729. (No model.)



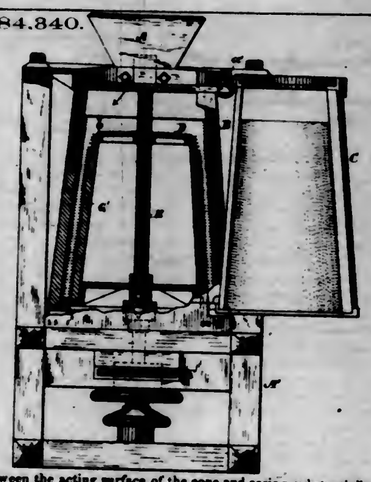
Claim.—1. In a spring-clasp, the combination of a base-plate having its side edges bent at right angles to the main portion of the plate and the bent parts provided with notches or indentations for the reception of the tongue-pivots with the tongue having cam-shaped pivots seated in the indentations or notches in the angular edges of the base-plate, and a supporting spring-plate connected to the base plate and retaining the tongue in the sockets on the base-plate, substantially as and for the purpose set forth.

2. In a spring-clasp, the combination of two sheet-metal plates *a b*, secured together at one end, the plate *a*, bifurcated at its opposite end and provided with sidewise extensions bent at right angles to the plate, and having notches *n n* therein forming bearings for the tongue-pivots, the other plate, *b*, having its free end terminating in extensions *e*, which are adapted to rest against the base of the tongue or holding-lever and confine the tongue-pivots in their bearings in the plate *a*, the hook-shaped tongue-lever *t*, its hook-shaped end constructed with laterally-projecting flat pivots *p*, corresponding to the notches *n* in the bent edges of the plate *a*, substantially as and for the purpose set forth.

384,340. **MACHINE FOR DELINTING COTTON-SEED.** JAMES L. WEATHERHEAD and JAMES S. COCHRAN, Philadelphia, Pa. Filed Feb. 28, 1888. Serial No. 265,637. (No model.)

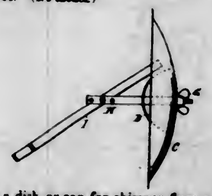
Claim.—The combination, with the conical casing B, having its interior surface clothed with brushes, as described, of the cone D, having its exterior surface clothed with brushes and having its upper portion rounded off or tapered toward its axis at a greater angle than the lower portion of its height, as described, and thereby forming between the said cone and casing a downwardly-contracted or tapering seed-receiving chamber having brush-clothed opposing walls, as described providing for the separation of the seeds and facilitating their entrance

384,340.



between the acting surface of the cone and casing, substantially as described.

384,341. **FLUE-STOPPER.** JACOB P. WETZEL and THOMAS LEE, Cincinnati, Ohio; said Wetzel assignor to said Lee. Filed Nov. 10, 1887. Serial No. 254,810. (No model.)



Claim.—1. In a disk or cap for chimney-flues, a disk having centrally an adjustable stem provided on its inner end with an adjustable weighted lever, substantially as herein set forth.

2. A disk or cap having centrally a rearwardly-projecting stem provided with a centrally-pivoted lever having a weight at one end substantially as herein set forth.

3. In a cap or disk for chimney-flues, the combination of a disk centrally perforated, and provided on its rear side with a bridge, having an opening on a line with the disk perforation, with a stem having its forward end screw-threaded and provided with a thumb-nut, and its rear end provided with a series of perforations, and having hinged thereto a lever weighted at one end, substantially as herein set forth.

384,342. **NEW COLORING-MATTER OBTAINED BY THE ACTION OF TETRAZO-DIAMIDO BENZOLE ON PHENOLS.** RUPERT G. WILLIAMS, Albany, N. Y. Filed Nov. 17, 1887. Serial No. 255,409. (No specimens.)

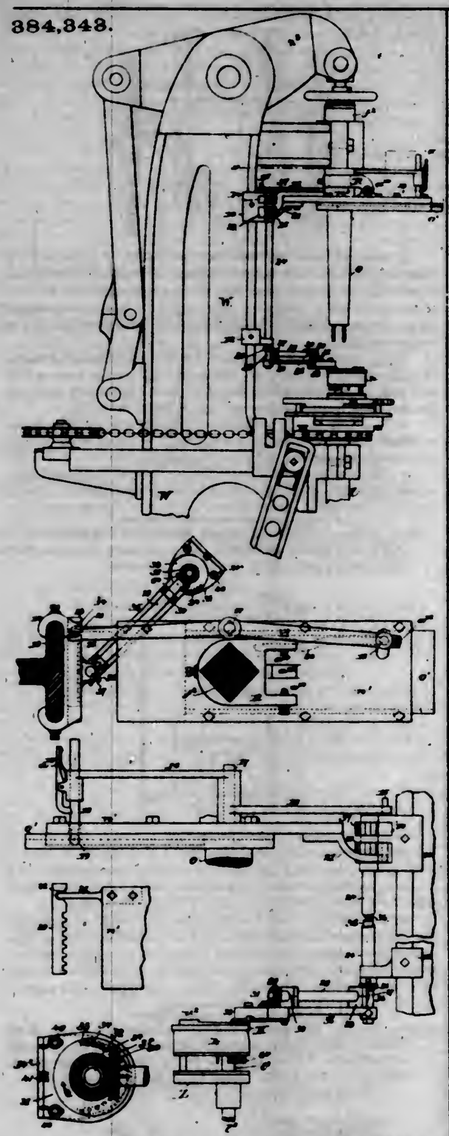
Claim.—The new coloring-matters obtained by the action of tetrazo-diamido benzole (hydrochlorate) or its homologues on resorcin, the phenols, benzoic, the oxybenzoic acids, and alpha-naphthol, or their substitution products, on aniline and its homologues, beta-naphthol and the naphthylamines, or their substitution products, and on the sulpho-acids of the above amines, amides, and phenols, or their substitution products, which coloring-matters have the properties herein set forth.

384,343. **HEEL-NAILING MACHINE.** EDWARD R. ALLEN, Portland, Me., assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Sept. 27, 1887. Serial No. 250,790. (No model.)

Claim.—1. In the herein-described nailing-machine, the combination, with a nail-box having a series of holes at each side for the reception of slug-nails, of the automatically-operated slug-nail-loading device to deposit slug-nails into either series of the slug-nail holes of the nail-box, substantially as described.

2. The herein-described slug-nail-loading device, consisting, essentially, of a movable bar, a perforated controlling-plate, and a movable slug-nail receptacle, the latter by its movement being adapted to cause the nails carried by it to be dropped through some or other of the holes in the said controlling-plate, according to whether a right or left heel is to be slugged, as set forth.

384,343.



3. In a nailing-machine, a head, as *n'*, a lever mounted thereon, a rack-bar, a shaft, and an arm, 35, combined with the shoe-holding spindle and its slide, and a cam to actuate the said lever, substantially as and for the purpose set forth.

4. In a nailing-machine, a nail-box having a series of holes for the reception of slug-nails, an arm, 35, the slug-nail receptacle 33, carried by it, and a movable plate, *n'*, to serve as a support for the spindle carrying the shoe to be slugged, combined with intermediate mechanism whereby the movement of the said plate to adjust the shoe with relation to the nail-box for a right or left shoe will automatically operate the slug-nail receptacle to deposit the slug-nails into holes in the right or left side of the nail-box, substantially as described.

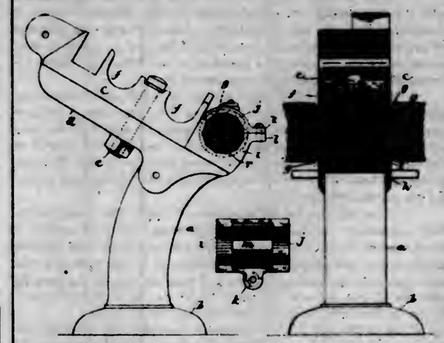
5. In a nailing-machine, the nail-box, the top-lift plate, and the plate 51, provided with a series of holes, 52, combined with fingers or connections 45 46, whereby the movement of the top-lift plate always moves the plate 51 in unison with it, for the purposes set forth.

6. In a nailing-machine, a nail-box having a series of holes for the reception of slug-nails, slug-nail drivers therein having shoulders, combined with the driver-plate having a series of holes, 53*, and a plate, 51, having a series of holes, 52, to operate substantially as described.

7. In a nailing-machine, the arm of the slug-nail-loading mechanism, the slide-plate 38, connected therewith having holes and having a projection, as 61, a spring for moving the said slide-plate in one direction, and a slug-nail receptacle, combined with a nail-box having a top plate against which the said lug strikes as the slug-nail-loading device is brought into operative position above the nail-box, substantially as and for the purpose described.

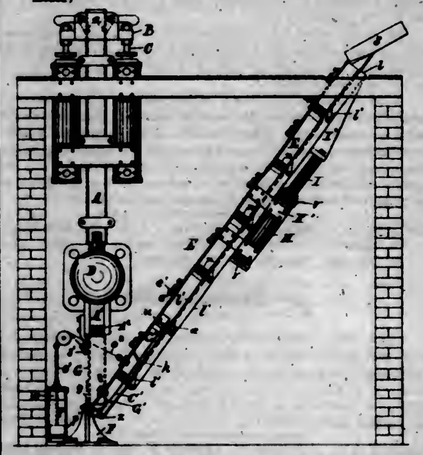
384,344. **BEARING FOR THE JOURNALS OF LOWER DRAWING-ROLLERS IN SPINNING-MACHINES.** JOHN DOUTH, Central Falls, R. I. Filed May 10, 1886. Serial No. 201,606. (No model.)

Brief.—The invention consists in the improved construction and arrangement of roller-bearings for the journals of the lower drawing-rollers.



Claim.—The combination, with the stand having the bearing provided with the inwardly-extending flanges, of the roller *e*, provided with the reduced bearing portion to form shoulders, a series of rollers, *r*, arranged in said bearing to surround and be in contact with said reduced portion, the shoulders of the roller being located close to said bearing, and a removable cap, *j*, for closing the bearing and maintaining the continuity of the arrangement of rollers *r*, substantially as described

384,345. **ELEVATOR FOR INGOT-CASTING MACHINES.** JAMES B. D'ARCY DOULTON, Jersey City, N. J., assignor to the Solid Ingot Company, of New Jersey. Filed Mar. 22, 1886. Serial No. 195,918. (No model.)



Claim.—1. The combination, with a vertical casting-machine adapted for receiving a series of movable mold-sections, of means for sustaining the mold-sections in the machine, means for discharging them from the lower part of the machine, a guiding-trough arranged below each casting-machine to receive the mold-sections from the

same, and means for elevating the mold-sections in the guiding-trough, substantially as herein set forth.

2. In an elevator for ingot sections or molds, the combination, with a guiding-trough, of a reciprocating frame carrying a series of pawls applied to one side of the trough, a series of detents fixed upon the trough, and a series of pressers corresponding in succession with the detents, as and for the purpose set forth.

3. In an elevator for ingot sections or molds, the combination, with a guiding-trough, of a reciprocating frame carrying a series of pawls applied to one side of the trough, a series of detents fixed upon the trough, and a pivoted carrier adapted to move to and from the trough, as and for the purpose set forth.

4. In an elevator for ingot sections or molds, the combination, with a guiding-trough, of a reciprocating frame carrying a series of pawls applied to one side of the trough, arms extended from the base of the trough, and a pivoted carrier adapted to move to and from the trough between the said arms, as and for the purpose set forth.

5. In an elevator for ingot sections or molds, the combination, with a guiding-trough, of a reciprocating frame carrying a series of pawls applied to one side of the trough, arms extended from the base of the trough and sustained by a pivotal bar, and a carrier pivoted at one side upon such bar and movable to and from the trough between the arms, as and for the purpose set forth.

6. In an elevator for ingot sections or molds, the combination, with a guiding-trough, of a reciprocating frame carrying a series of pawls applied to one side of the trough, arms extended from the base of the trough and sustained by a pivotal bar, and a carrier pivoted at one side upon such bar, the carrier being movable to and from the trough between the arms and laterally upon the pivotal bar, as and for the purpose set forth.

7. In an elevator for ingot sections or molds, the combination, with a guiding-trough, of a reciprocating frame carrying a series of pawls applied to one side of the trough, arms extended from the base of the trough and sustained by a pivotal bar, a carrier pivoted at one side upon such bar and movable to and from the trough and laterally upon the pivotal bar, and a spring to hold the carrier laterally upon the bar in line with the trough, substantially as set forth.

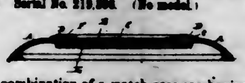
8. In an elevator for ingot sections or molds, the combination, with a guiding-trough sustained at an angle with its base adjacent to an ingot-casting machine, of a reciprocating frame carrying a series of pawls applied to one side of the trough, a pivoted carrier movable to and from the bottom of the casting-machine and the bottom of the trough, and a counter-weight to hold the carrier in line with the casting-machine when empty, as and for the purpose set forth.

9. In an elevator for ingot sections or molds, the combination, with a guiding-trough sustained at an angle with its base adjacent to an ingot-casting machine, of a reciprocating frame carrying a series of pawls applied to one side of the trough, a pivoted carrier movable to and from the bottom of the casting-machine and the bottom of the trough, and a counter-weight, combined with a dash-pot or air-cushion to hold the carrier in line with the casting-machine when empty, as and for the purpose set forth.

10. In an elevator for ingot sections or molds, the combination, with a guiding-trough and reciprocating pawls for elevating the mold, of notches in the side of the mold to engage with the pawls, as and for the purposes set forth.

11. The combination, with a casting-machine having means for sustaining the mold, pawls and means for operating them to move the molds downward, and a guiding-trough below such casting-machine provided with reciprocating pawls for moving the mold, of mold-sections having one set of notches for the application of the pawls in the casting-machine and a separate set of notches for the application of the pawls in the elevator-trough, substantially as set forth.

384,846. WATCH-CASE. EDWARD C. CHAPPATTE, Philadelphia, Pa., assignor to the Keystone Watch Case Company, same place. Filed Nov. 28, 1886. Serial No. 219,206. (No model.)

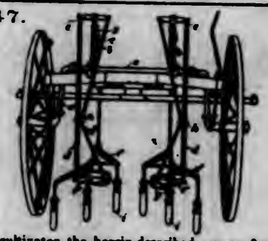


Claim.—The combination of a watch-case cap having a depressed or recessed portion adapted to receive a picture, a glass or equivalent transparent plate loosely fitting into said recessed portion to cover and protect the picture, and a retaining-ring independent of the glass and holding the glass in place by being snapped into the undercut edge of said recessed portion of the cap.

384,847. CULTIVATOR. EDWARD R. CONKLIN, Wauseon, Ohio. Filed Dec. 17, 1887. Serial No. 258,197. (No model.)

Claim.—1. In a cultivator, the combination, with the axle and plow-beam, of supporting-rods in twos or pairs, pivoted to said axle and plow-beam, whereby the plow may be swung from side to side and the horizontal position of the shovels be maintained, substantially as shown and described, for the purpose specified.

384,847.



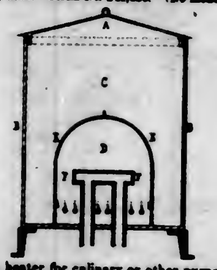
2. In a cultivator, the herein-described means of preserving the horizontal position of the shovels, consisting of vertical supporting-rods in pairs, pivoted at their upper ends to cross-arms rigid upon the axle or axle-frame and at their lower ends pivoted to cross-arms rigid upon the plow frame or beam, substantially as shown and described, for the purpose specified.

3. In a cultivator, the combination, with the axle and plow-beam, of supporting-rods in pairs, the horizontal cross-arms at both ends of said rods, pivoted standard, spring, and chain, substantially as shown and described, for the purpose specified.

4. In a cultivator, in combination with the axle and plow-beam, a pair of equalizing supporting-rods, one of said rods being bent or curved, substantially as and for the purpose specified.

5. The combination of upper cross-arm, *c*, and its supporting mechanism, lower cross-arm, *c'*, and the plow-beam, with supporting-rods *d* and band or ferrule *h*, substantially as and for the purpose specified.

384,848. AUTOMATIC STEAM HEATER OR BOILER FOR CULINARY AND OTHER PURPOSES. ROYAL R. DEANE, New York, N. Y. Filed June 17, 1887. Serial No. 241,689. (No model.)



Claim.—1. A heater for culinary or other purposes, consisting of two chambers, one within the other, the walls of the inner provided with orifices or openings into the outer chamber, in combination with a heating apparatus located within the inner chamber above said openings, in the manner and for the purpose substantially as specified.

2. A heater for culinary or other purposes, divided by a partition into two compartments communicating with each other by one or more orifices or openings located near the bottom of the compartment containing the heating apparatus, in combination with said heating apparatus situated therein above said orifices or openings, in the manner and for the purpose substantially as specified.

384,849. APPARATUS FOR SEPARATING LEAD AND BASE BULLION FROM SLAG. WALTER B. DEVEREUX, Aspen, Colo. Original application filed Feb. 26, 1886, Serial No. 193,190. Divided and this application filed Nov. 2, 1887. Serial No. 254,073. (No model.)



Claim.—1. The combination, with a smelting-furnace, of a portable receiver or collecting-well into which the same discharges, a diaphragm placed in the interior of said receiver, whereby it is subdivided into two separate compartments, an opening in the base of said diaphragm connecting said compartments, a lead-well attached to the exterior of said receiver, and an opening in the wall of said receiver connecting one of said compartments with the extreme base of the lead-well, for the purposes set forth.

2. The combination, with a smelting-furnace, of a portable receiver or collecting-well into which the same discharges, a diaphragm placed in the interior of said receiver, whereby it is subdivided into two separate compartments, an opening in the base of said diaphragm connecting said compartments, a lead-well attached to the exterior of said receiver of equal depth, and an opening in the wall of said receiver connecting one of said compartments with the extreme base of the lead-well, said diaphragm and lead-well being so constructed and arranged that either or both may be removed, raised, lowered, or shifted at pleasure.

384,850. COMBINED TELEGRAPH KEY AND SOUNDER. JOHN DOCHERTY, Pleasant City, Ohio, assignor of one-half to Lemuel J. Kingsman, place. Filed Nov. 30, 1887. Serial No. 256,951. (No model.)



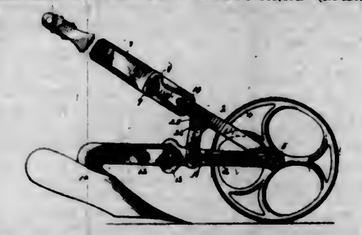
Claim.—1. The combination, in a telegraph-instrument, of the sounding-arm, the key-lever having a long arm and a short arm extending in opposite directions and each provided at its outer end with a press-button, and the rod connecting the sounding-arm and the key-lever, substantially as described.

2. The combination, in a telegraph-instrument, of the sounding-arm, the key-lever adapted to be operated from either end, the rods Y and Z, attached at their upper ends to the sounding-arm on opposite sides of its pivot, and the device to attach the lower end of either of the said rods to the key-lever, substantially as described.

3. The combination, in a telegraph instrument, of the sounding-arm, the key-lever adapted to be operated from either end, the rods Y and Z, attached at their upper ends to the sounding-arm on opposite sides of the pivot, the device to attach the lower end of either of the said rods to the key-lever, and the spring bearing downward on the rod Y, substantially as described.

4. In a telegraph-sounder, the frame having the arm D and the resonant tongue or arm, the percussion-screw L at the outer end of arm D, the sounding-arm pivoted above arm D and having the percussion-screw K, adapted to strike the resonant arm, and the standard F, detachably secured to the frame and having the arm G, provided with the percussion-screws H' and I', to engage the sounding-arm on its upstroke, all in combination, substantially as described.

384,851. HAND-CULTIVATOR. EVERETT C. ELLWOOD, Grant's Farms, Conn. Filed Mar. 26, 1888. Serial No. 268,471. (No model.)



Claim.—1. The upper arm having web 24, provided with slots and lug 25, and the lower arm having bar 11, in combination with the wheel, a bolt passing through the hub thereof and through the forward ends of the arms, and braces 3, passing through the slots in the web and bolted to bar 11 and to lug 25.

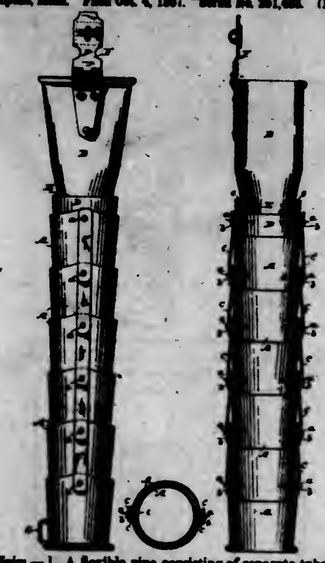
2. The combination, with the upper and lower arms, the wheel, bolt 5, passing through the forward ends of the arms and the hub of the wheel, and braces connecting said arms, of platform 17, which is secured to the lower arm and adapted for the attachment of teeth or blades.

3. The combination, with the lower arm, the wheel, bolt 5, and braces 3, of the upper arm bifurcated at its rear end and having slots 8 and the bolt-holes, and a handle adjustably secured to said upper arm by bolts passing through said bolt-holes and the slots.

4. In a cultivator, the combination, with an arm, 2, having at its rear end a bar provided with bolt-holes 12 and slot 13, of platform 17, having slots 15 for the adjustment of the teeth and blades, and a standard, 17*a*, having bolt-holes corresponding with holes 12 and slot 13.

5. In combination with the cultivator-frame having arm 2, the platform 17, having a standard, 17*a*, whereby it is attached and adjusted, slots 15, ribs upon its under side and notches in said ribs, which are engaged by the edges of cultivator-teeth, and bolts passing through said teeth and said slots, whereby the teeth are held in place.

384,852. FLEXIBLE GRAIN-PIPE. THOMAS W. RUSSEY, Minneapolis, Minn. Filed Oct. 4, 1887. Serial No. 251,462. (No model.)



Claim.—1. A flexible pipe consisting of separate tubular sections pivotally connected by exterior fixed bolts or pivot-pins and straps connecting the bolts or pins of adjacent sections.

2. A flexible pipe consisting of separate tubular sections having inclined exterior bolts, in combination with straps passing over said bolts and connecting said sections.

3. A flexible pipe consisting of separate tubular overlapping sections and exteriorly-extending bolts, said bolts being attached to the overlapping portion of each section, with its head located between said overlapping part and the overlapped portion of the adjacent section, in combination with the straps pivotally connected with said bolts in adjacent sections.

384,853. POTATO-PLANTER. JAMES W. BOYD, East Atchison, Mo. Filed Sept. 28, 1887. Serial No. 250,886. (No model.)

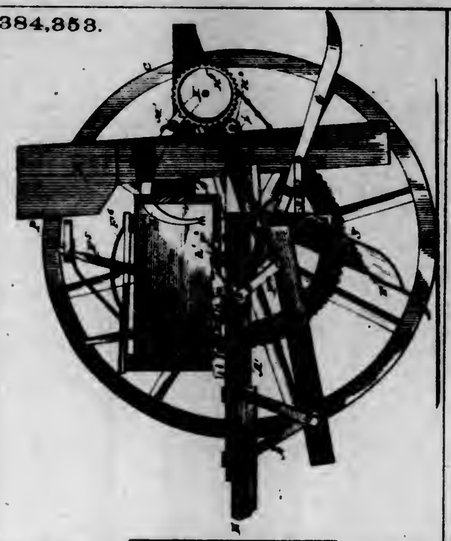
Claim.—1. In a planter, the combination, with the supporting-frame, of the beam carrying at its rear end the shovel-standard and pivotally suspended at its forward end from said frame, said beam being vertically adjustable at its rear end and carrying a rearwardly-projecting pivoted coverer, which coverer is provided with a pivoted stirrup having an adjustable connection with said shovel-standard, substantially as set forth.

2. In a planter, the combination, with the shovel-standard-carrying beam, of the pivoted covering-blade provided with a pivoted stirrup having an adjusting-screw and apertured connection with the shovel-standard, substantially as set forth.

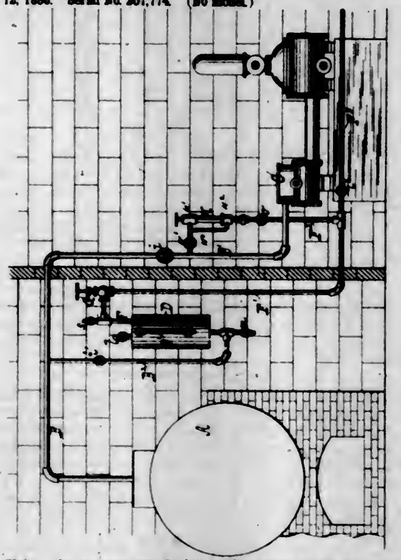
3. In a planter, the combination, with the hopper and dropper-tube, of the vibrating fingers secured upon a shaft and passing through slots in said tube, and springs applied to said shaft and fingers, said fingers having their inner ends adapted to receive a pin placed against said tube and crosswise of said slots to effect the holding of any one or more of said fingers out of operation, substantially as set forth.



384,353.



384,354. APPARATUS FOR AUTOMATICALLY LUBRICATING STEAM-CHESTS. THOMAS FITZPATRICK, New York, N. Y. Filed July 12, 1886. Serial No. 207,774. (No model.)



Claim.—In an apparatus for lubricating steam-chests, the combination of the pipe B B', connecting the boiler with the steam-chest, the oil-reservoir D, the pipe B^3, connecting the pipe B with the lower part of the oil-reservoir, the pipe F F' F^3, connecting the upper part of the reservoir with the pipe B', and the visible-feed tube H, the pipes being fitted with suitable cocks, all substantially as shown, for the purpose described.

384,355. LATHE FOR WOODEN HANDLES. NATHAN B. PLISE, East Hiram, Me. Filed Nov. 23, 1887. Serial No. 256,330. (No model.)

Claim.—1. In a wood-turning lathe, the combination, with a cutter-frame and standards pivoted to said frame and to a suitable support, of bar sliding in said frame and provided with pins projecting on opposite sides of the work to be turned, and the former and springs secured to the opposite sides of the said standards and to the bars, substantially as herein shown and described.

2. In a wood-turning lathe, the combination, with a sliding frame carrying a simultaneously-rotating former and the blocks to be turned, of a pivoted frame adapted to rock according to the shape of the said former, cutter-wheels mounted to rotate on the said rocking frame, yielding bars adapted to slide on the said frame, and pins projecting from said bars and engaging both sides of the said former and the said blocks, substantially as shown and described.

3. In a wood-turning lathe, the combination, with the main frame and driving-shaft O, provided with a pulley at one end, of a sliding frame, rotary dogs carried by said sliding frame, the shaft I^4, for operating said dogs, provided with a pulley at one end, idler-pulleys N^2 N^3 on the sliding frame, idler-pulleys N^4 on the main frame, and a belt passing around the pulleys on the ends of the shafts O I^4 and idlers, substantially as and for the purpose set forth.

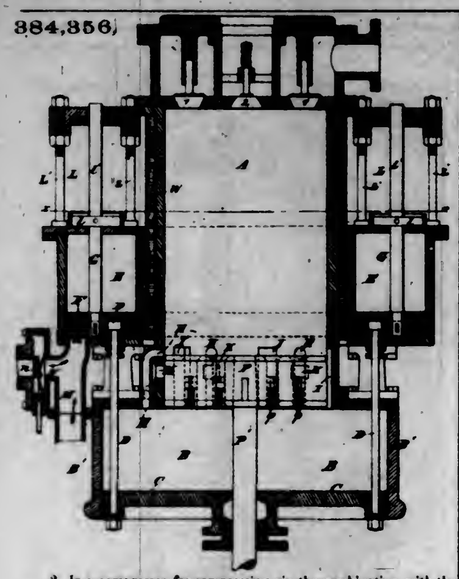
4. In a wood-turning lathe, the combination, with a main frame carrying the main driving-shaft, of a frame held to slide in the said main frame and carrying the former and the wooden blocks to be turned, dogs held on the said sliding frame and rigidly connected with one end of the said former and the blocks to be turned, said dogs being rotated from the said main driving-shaft, a rocking frame held within said sliding frame, cutter-wheels mounted to rotate on the said sliding frame and adapted to cut said wooden blocks, a set-screw held on the said rocking frame and engaging one side of the said former, and a weight for holding said set-screw in contact with the said former, substantially as shown and described.

5. In a wood-turning lathe, the combination, with a main frame carrying the main driving-shaft, of a frame held to slide in said main frame and carrying the former and the wooden blocks to be turned, dogs held on the said sliding frame and rigidly connected with one end of the said former and the blocks to be turned, said dogs being rotated upon the said main driving-shaft, a rocking frame held within said sliding frame, cutter-wheels mounted to rotate on the said sliding frame and adapted to cut said wooden blocks, a set-screw held on the said rocking frame and engaging one side of the said former, a weight for holding said set-screw in contact with the said former, and yielding bars provided with pins engaging both sides of the said former and the said wooden blocks, said bars being mounted on said rocking frame, substantially as shown and described.

384,356. AIR-COMPRESSOR. WILLIAM T. FORSTER, Erie, Pa. Filed June 3, 1887. Serial No. 240,123. (No model.)

Claim.—1. In a compressor for compressing air, an air-cylinder having at one end of the compression-chamber in which the air is compressed, and substantially opposite to the exhaust-valves, an auxiliary chamber capable of being filled with atmospheric air and situated below and opening into the compression-chamber above the piston in the latter when in its lowest position, and provided with a piston actuated by exhaust-steam from the engine, adapted and arranged to force the atmospheric air in the auxiliary chamber into the compression-chamber in front of the compression-piston in the latter, substantially as and for the purpose set forth.

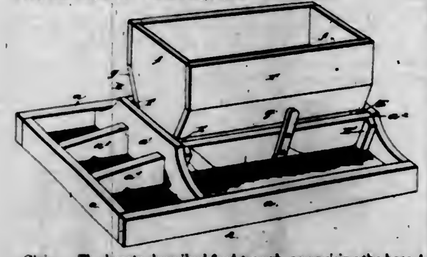
384,356.



2. In a compressor for compressing air, the combination, with the air-cylinder A, having the piston P, in which the air is compressed, of the auxiliary cylinder B, capable of being filled with atmospheric air, situated at the end of the air-cylinder substantially opposite to the exhaust-valves and opening into the air-cylinder in front of the piston P when at its lowest position, and provided with the piston C, adapted to be moved by the rods D, for the purpose of forcing the atmospheric air in the cylinder into the air-cylinder A in front of the piston P, and of the cylinder E, capable of being filled with exhaust-steam from the engine and having the piston F, connected with the rods D and so arranged as to be acted upon by the exhaust-steam to move the piston C, substantially as described, and for the purpose set forth.

3. In a compressor for compressing air, the combination, with the air-cylinder A, in which the air is compressed, provided with the openings K and tubes H, and having the piston P, containing the valves *p*, of the auxiliary cylinder B, capable of being filled with atmospheric air and opening into the cylinder A, through the tubes H and valves *p*, in front of the piston P, when in its lowest position, and provided with the piston C, arranged to be moved by the rods D, for the purpose of forcing the atmospheric air in the cylinder B into the air-cylinder A in front of the piston P, and of the cylinder E, capable of being filled with exhaust-steam from the engine and having the piston F, connected with the rods D, and so arranged as to be acted upon by the exhaust-steam to move the piston C in the cylinder B, and of the buffers L, having the screw-rods L' and the pads *o*, and containing the pistons *l*, having the rods *l'*, and connected with the piston F by the rods G, so as to move with the latter, substantially as described, and for the purpose set forth.

384,357. FEED-TROUGH. WILLIAM H. GARRETT, Geneva, Nebr. Filed Mar. 22, 1888. Serial No. 268,105. (No model.)

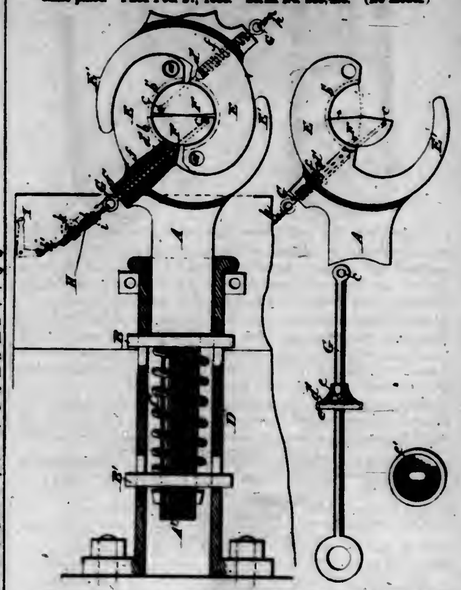


Claim.—The herein-described feed-trough, comprising the base A, provided with the front and sides *a*, the transverse partition *a'*, provided with the notches B, and the rear side, a^2, similar to the partition *a'*, the guide-strips E E', forming the guide-grooves *e*, the upwardly-converging boards D between the partition *a'* and the rear side, a^2, the bottomless hopper F, having the end boards, *f*, provided with downwardly-converging edges G, and notched lower ends, *f'*, to ride on the boards D, and having the side boards, *g*, to rest on the tops of the inner guide-strips, F', and the sliding removable boards H, provided with the arms A, and with their end edges resting in the grooves *e*, substantially as set forth.

384,358. PRODUCING DRIED EXTRACT OF RENNET. FREDERIK GRAEFF, Alkmaar, Holland. Filed Mar. 6, 1888. Serial No. 266,560. (No specimens.)

Claim.—The process of producing dry ferment of rennet, which consists in evaporating liquid extract of rennet to dryness *in vacuo* at a temperature not exceeding 40° centigrade, comminuting the product, washing the same with saturated solution of table-salt, and drying it again, substantially as and for the purpose described.

384,359. CAR-COUPLING. PETER C. GRIESHAWAR, Reading, Pa., assignor of two-thirds to Franklin S. S. Grumbrook and Jacob F. Bolter, same place. Filed Feb. 27, 1888. Serial No. 265,628. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head having bifurcated jaws, of a locking-block occupying a semicircular recess in one of said jaws and retained therein by a system of dovetail tongues and grooves, a rod for operating the block, and a coiled spring surrounding said rod and wholly inclosed within an opening or recess in the jaw, substantially as set forth.

2. In a car-coupling, the combination of a draw-head having bifurcated jaws, one of which is provided with a semicircular recess and dovetail grooves surrounding said recess, with the locking-block adapted to fill the semicircular recess in the jaw and having tongues upon its external rounded surface, which enter the grooves in the jaw and retain the block in place, as specified.

3. In a car-coupling, the combination, with the jaw E, provided with dovetail grooves, as set forth, of the tongued locking-block F, the plane faces of which radiate from the center, so as to form a section of less than a semicircle to facilitate the engagement of said block with that of an opposing draw-head, as set forth.

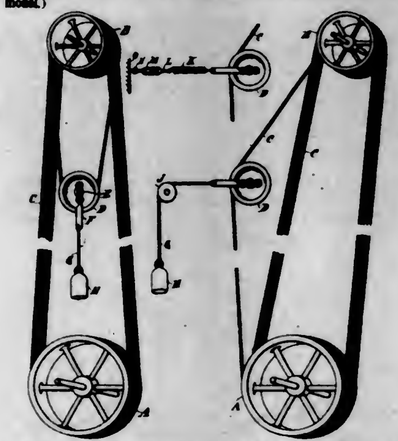
4. As an improvement in car-couplings, the circularly-recessed jaw E and the locking-block F, provided with the slot *d'*, in combination with rod G, its collar *d''*, and the spring *f*, encircling said rod between the collar and shoulder *f''* within the recess *d* of the jaw, substantially as specified.

5. The draw-head A, provided with curved jaws E and E', the inner curvature of the jaw E' being substantially the same as the outside of the jaw E, in combination with the locking-block F, secured to the jaws by dovetail tongues and grooves and forced to retain its locking position by a spring wholly inclosed by the jaw E, as set forth.

6. In a car-coupling, the draw-head having jaws E and E', the locking-block F, and its operating-rod G, surrounded by a spring in a recess of the jaw E, in combination with the bifurcated chains and

cam-levers attached to the car for the purpose of operating said locking-block from either the top or side of the car, substantially as set forth.

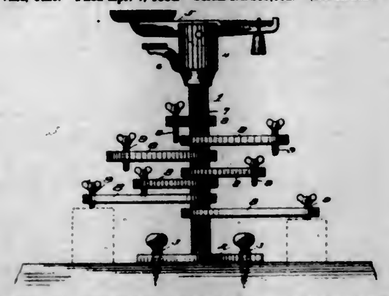
384,360. **TENSION DEVICE FOR ROPE-TRANSMISSION.** JAY E. HALL, Swanton, Ohio. Filed Aug. 29, 1887. Serial No. 248,174. (No model.)



Claim.—1. The combination, with a main driver and a driven pulley, an endless rope having multiple turns around said pulleys and wrapped with one turn thereof passed at the rear face of the driver and the opposite part around the front face of the driven pulley and forming a slack strand, of a grooved idler, journaled in a suspended hanger through which said slack strand is passed and held in tension by flexible attachments to the hanger, as and for the purpose set forth.

2. In combination with a driver and driven pulley, an endless rope passed back and forth around the pulleys and having a strand crossing from one face of the driver to the opposite face of the driven pulley an idler bearing upon the separated strand, said idler journaled in a hanger, and a spring and turn-buckle secured to said hanger for holding said strand to any desired tension, as and for the purpose set forth.

384,361. **CLAMP FOR FRUIT-CANS.** MARY J. HAMLIN, Bartramville, Ohio. Filed Apr. 7, 1888. Serial No. 269,952. (No model.)



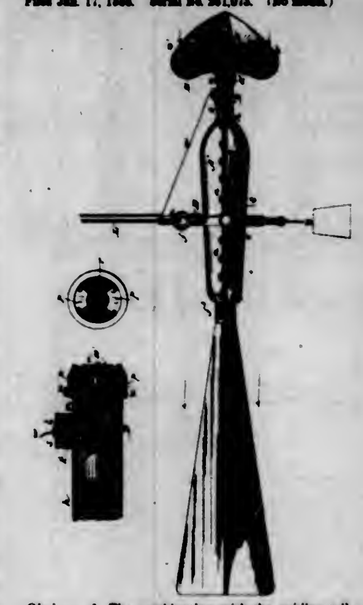
Claim.—1. A clamp-standard for holding covers on cans containing hot fruit while being sealed, consisting of a screw-threaded upright and base and lateral arms having screw-threaded openings at their inner ends engaging the screw-threaded upright and set-screws at their outer ends, the lateral arms being vertically adjustable on the upright, substantially as shown and described.

2. A clamp-standard for holding covers on cans containing hot fruit while being sealed, consisting of an upright and base and lateral arms vertically adjustable on the upright and having set-screws at their outer ends, substantially as shown and described.

3. A clamp-standard for holding covers on cans containing hot fruit while being sealed, consisting of screw-threaded standard 1, mounted on base 2, with thumb-screws 3, and having weighing-scale 5, pivoted in head 4, having bracket-stop 6, and the lateral arms 8, engaging screw-thread 7 of upright 1, and having set-screws 9 of different lengths at their outer ends, substantially as shown and described.

4. A clamp-standard for holding covers on cans containing hot fruit while being sealed, consisting of screw-threaded standard 1, mounted on base 2, with thumb-screws 3, and having lateral arms 8, engaging screw-thread 7 of upright 1, with set-screws 9 of different lengths at the outer ends of arms 8, substantially as shown and described.

384,362. **SHIP'S LOG.** EUGENE E. HASKELL, Forestville, N. Y. Filed Jan. 17, 1888. Serial No. 261,073. (No model.)



Claim.—1. The combination, with the guiding-tail and the suspending device, of the shaft-section having a spindle, D', and the conical spiral wheel E, arranged at the extreme front end of the device, so as to form a clearing-prow, and having a hollow hub fitting with a long bearing on the spindle and inclosing the end thereof, substantially as and for the purpose described.

2. The combination, with a suspending device and guiding-tail, of the shaft-section D, having insulated bushing *k* and binding-post *l*, the insulated spring-seated bolt *n*, in electrical connection with the said post, the speed-wheel E, with contact-and insulating plates *p* and *r* in its hub opposite the spring-bolt, and the electric-current wires, substantially as and for the purpose described.

3. The combination of the speed-wheel E with hub *e*, and flange with set-screw *u*, the shaft-section D, having spindle D', with bearings *d d'*, and groove *s'* for the set-screw.

384,363. **CORN-PLANTER.** RODNEY K. HAYES, Galva, Ill. Filed Oct. 13, 1887. Serial No. 252,244. (No model.)

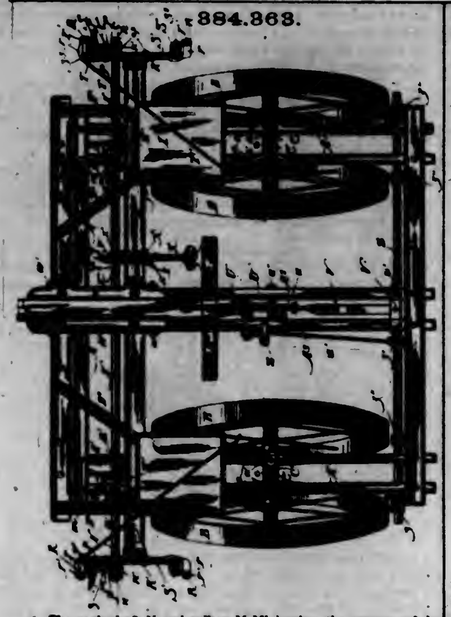
Claim.—1. The wheels B, in combination with the spindle C, each spindle having a plate, C', provided with a hole, *c'*, and a slot, *c²*, for adjusting the spindle to set the wheels at different inclines, substantially as specified.

2. The runner D, provided at its heel with a shelf, *d*, in combination with an oscillating tube, E', having a shelf, *e''*, at its upper end for holding the seed, substantially as specified.

3. The runner D, provided at its heel with a shelf, *d'*, and support E, in combination with the tube E', provided at its upper end with a shelf, *e''*, bar E'', and a rock-shaft for oscillating the tube E', substantially as and for the purpose specified.



384,363.



4. The rock-shaft N and collars M M', having the arms *m m²*, in combination with the fork J, having the arm J' and carrying a pawl, K, bar E'', and tube E', for operating the seed disk and tube, substantially as and for the purpose specified.

5. The arms S S', carrying rollers S'', in combination with the fork F' and check-wire Q, substantially as and for the purpose specified.

6. The arms S S', carrying the rollers S'', and arms T, in combination with the fork F' and check-wire Q, substantially as and for the purpose specified.

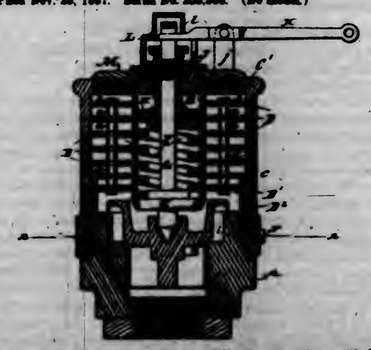
7. The fork F' and arm P, in combination with the collar *n*, having the extension *n'*, and rock-shaft N, for giving the rock-shaft its advance throw, substantially as and for the purpose specified.

8. The arm S, provided with the end *s*, and arm S', provided with the opening *s'*, in combination with the arm T, for operating both arms S S' simultaneously, substantially as and for the purpose specified.

9. A seed-dropping tube, E, having a fore-and-aft movement, in combination with a rock-shaft, and a connection between the shaft and tube, substantially as and for the purpose specified.

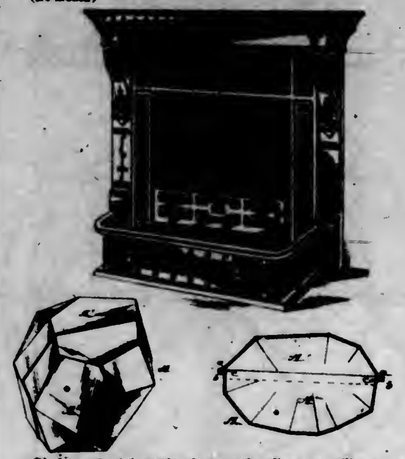
10. In a check-row planter, the combination of the herein-described device for releasing the wire, and a cord by which the operator can disengage the latch and raise the rollers and carry the wire out of the upright fork clear of the machine, substantially as specified.

384,364. **STEAM-MUFFLER.** THOMAS R. HILL, Rahway, N. J. Filed Nov. 23, 1887. Serial No. 256,266. (No model.)



Claim.—The base A, fitted with the valve B and provided with the casing C, in combination with the inner casing, E, spring F, rod G, perforated plates D, surrounding the casing E and held by rods *b* and spaced by the short intermediate tubes, *a*, placed upon the rods *b* between the said perforated plates D, substantially as described.

384,365. **HEAT DEVELOPER AND RADIATOR.** WALTER M. JACKSON, New York, N. Y. Filed Dec. 28, 1887. Serial No. 259,201. (No model.)



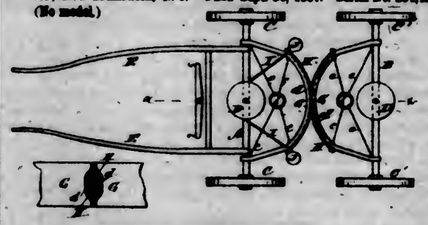
Claim.—1. A heat developer and radiator to utilize gaseous or other fuel, consisting, essentially, of a hollow chamber with numerous angles and a perforated wall, substantially as set forth.

2. A heat developer and radiator to be used in connection with combustible material and atmospheric air, consisting of a hollow polygonal chamber having its wall perforated, substantially as set forth.

3. A device for the economical combustion of gaseous or other fuel, consisting, essentially, of a hollow polygonal chamber that is formed of two half-shells joined at their edges, one or more perforations being made through the wall of the chamber, substantially as set forth.

4. A heat producer and radiator that is adapted to utilize economically a liquid, solid, or gaseous fuel, consisting of a hollow perforated chamber or thin shell made of metal, and provided with such an angular contour or exterior surface that interstices will be afforded for the percolation of air and gas between a mass of these polygonal chambers located in a fire-pot or open grate, substantially as set forth.

384,366. **RUNNING-GEAR FOR VEHICLES.** ALFRED W. JOHNSON, New Brunswick, N. J. Filed Sept. 30, 1887. Serial No. 251,194. (No model.)



Claim.—1. In the running-gear of wagons and other vehicles having centrally-pivoted and swiveling axles united with each other by segments and attached crossing ropes or flexible connections, the segments G G, arranged to roll over and work in contact with one another, whereby said segments are mutually made to support and steady each other, substantially as specified.

2. In the running-gear of wagons and other vehicles, the combination, with the front and rear axles, A B, their fifth-wheels or swiveling-connections D D, the segments G G, and the flexible connections H H, of the stay-rods I I, connecting either swiveling-connection or fifth-wheel with the segment on the axle to which said fifth-wheel belongs, and the stop J, substantially as shown and described.

384,367. **FEATHERING PADDLE-WHEEL.** ROBERT J. JOHN, Carrollton, Wash. Filed Apr. 26, 1887. Serial No. 236,026. (Model.)

Claim.—1. In a paddle-wheel, the combination, with the arms of the wheel and buckets pivoted thereto, of an annular band of less diameter than said wheel, having a crank-connection with said paddles, a

384,367.

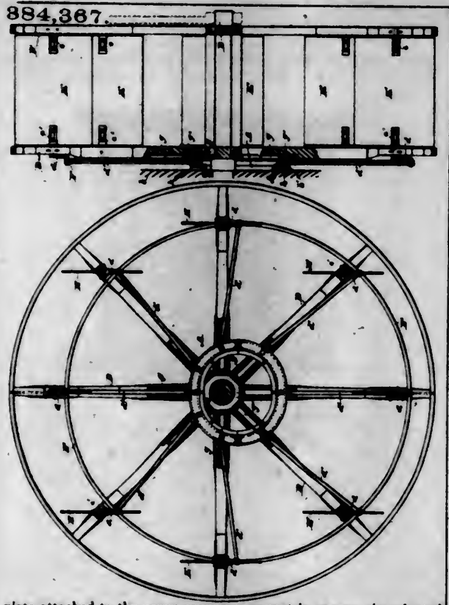


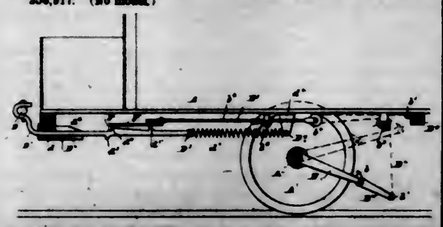
plate attached to the vessel, having an eccentric groove, pins adapted to slide in said grooves, and a crank-connection between said pin and band, substantially as shown and described.

2. In a paddle-wheel, the combination, with the arms of the wheel, the buckets pivoted therein, and an annular band having a crank-connection with said buckets, of a plate attached to the vessel's side, having an eccentric groove in its face, a plate adapted to slide in the arms of said wheel, carrying pins adapted to enter the said eccentric groove, and a pivoted connection between said plate and annular band, substantially as shown and described.

3. In a paddle-wheel, the combination, with the grooved arms of the wheel and a plate having an eccentric groove and attached to the side of a vessel, of an annular band of less diameter than the wheel, buckets pivoted between the arms and each provided with a crank-arm connected to the annular band, a plate sliding in the groove of the arms and provided with pins working in the eccentric groove of the said plate, and a rod connecting the sliding plate with the cranks of the buckets, substantially as herein shown and described.

4. The combination, with the arms D D', of a paddle-wheel provided with a longitudinal groove, *g*, at their inner ends, buckets E, pivoted near the outer ends of said arms, crank-arms *d*, attached to the inner pivots of said buckets, an annular band, F, of less diameter than the wheel, pivotally attached to said crank-arms, a plate, *f*, sliding in said grooves *g*, united at one end with said band by a connecting-rod, *d'*, and having a pin, *h*, upon the other end, of a plate, A, attached to the vessel's side, provided with groove *b'*, eccentric with the axis of said wheel, said groove adapted to receive the pin *h* of the plates *g*, substantially as shown and described, and for the purpose herein set forth.

384,368. CAR-STARTER. HENRY R. KELLER, New Orleans, La., assignor, by direct and mesne assignments, of two-thirds to William H. Belt and Oliver B. Shannon, same place. Filed Dec. 3, 1887. Serial No. 256,917. (No model.)



Claim.—1. The combination of a body having wheels and axles, a bar pivoted upon said axle, a lever fulcrumed upon the end of the bar and having its short arm opposite the periphery of the wheel and its long arm secured to a chain or cable, which in turn is secured to the body, a bar having a pulley for said chain or cable, and a draw-bar connected with said bar, substantially as described.

2. The combination of the body having wheels and axles, the clutching-lever, the draw-head and rollers on it, the draw-bar moving in said draw-head, the connecting device between the clutching-lever and the draw-bar and having a tripping-connection with said draw-bar, substantially as described.

3. The combination of the body having wheels, the clutching-lever, the draw-head having inclined faces, the draw-bar connected with the clutching-lever and having the retracting-springs, and the tripping device operated upon by the inclined faces upon the draw-head, substantially as described.

384,869. TRUCK. WILLIAM J. KENNEDY and LOUIS A. DE MATO, Jersey City, N. J. Filed Nov. 29, 1887. Serial No. 256,422. (No model.)



Claim.—1. The combination, with a truck-body, the axle thereof, a table secured upon said axle, provided with parallel and spaced slots at each end, and standards adjustably held in said slots, of a bucket pivoted in said standards, and means, substantially as shown and described, for dumping said bucket.

2. The combination, with a truck-body, the axle thereof, a table secured upon said axle, provided with parallel and spaced slots at each end, and standards having essentially U-shaped and flaring upper ends adjustably held in said slots, of a bucket pivoted in blocks, which blocks are adapted to the space intervening the members of the standards below their outer ends, a bail secured to said blocks, and a locking device attached to the bucket and engaging the bail, substantially as and for the purpose herein set forth.

3. The combination, with a truck-body provided with vertical standards over the axle between the wheels, having essentially U-shaped and flaring upper ends, of a bucket pivoted in blocks, which blocks are adapted to the space intervening the members of the standards below their outer ends, a bail secured to said blocks, and a locking device attached to the bucket and engaging the bail, substantially as and for the purpose herein set forth.

4. The combination, with a truck-body and vertical standards detachably secured to the axle between the wheels, said standards provided with a bifurcated upper end, the members whereof are oppositely and outwardly carved at their extremities, of blocks adapted to the space intervening the opposing members of the standard below their flaring extremities, a bucket pivoted in said blocks, a bail secured to the upper ends of the same, and a locking device attached to the bucket and engaging said bail, substantially as and for the purpose herein set forth.

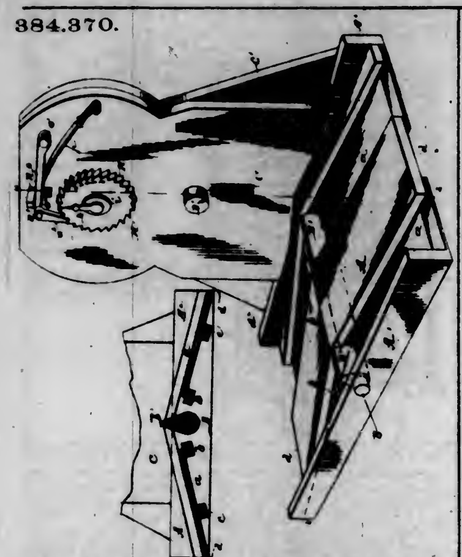
384,870. AUTOMATIC REGISTERING GANG-BOARD. HENRY R. KIRK, Mount Pleasant, S. C. Filed Dec. 19, 1887. Serial No. 258,208. (No model.)

Claim.—1. The combination, with a floor and a registering-box secured thereto, of a rock-shaft stopped in the floor, said shaft having a pair of lugs on one end, and springs secured to the registering-box with their free ends in engagement with the lugs on the shaft, whereby the shaft is held in its normal position, substantially as set forth.

2. The combination, with a floor, a registering-box, and a rock-shaft stopped in the floor, said shaft having a cam-toe and a pair of lugs on one end, of springs secured to the box with their free ends in engagement with the lugs, a set of registering-wheels, a lever in position to be operated by the cam-toe on the rock-shaft, and a spring-actuated pawl adapted to be operated by the lever, whereby motion is communicated to the registering-wheels, substantially as set forth.

3. The combination, with a floor, a registering-box, a rock-shaft, this shaft having a cam-toe and lugs on one end, and springs secured to the box with their free ends in engagement with the lugs, whereby the shaft is retained in its normal position, of a set of registering-wheels adapted to turn in the box, said wheels receiving motion from the rock-shaft, one wheel having a cam thereon, a lever to be operated by said cam, a spring-actuated arm in position to be abutted by the lever, and a ratchet-dog pivoted to this arm with one end in engagement with the teeth on one of the registering-wheels, substantially as set forth.

384,870.



4. The combination, with a floor, a registering-box, and a rock-shaft, the latter having lugs thereon, and springs having engagement with these lugs for holding the shaft in its proper position, of a set of registering-wheels adapted to receive motion from the motion of the shaft, one of these wheels geared to make two revolutions to a single revolution of its adjacent wheels, and a third wheel on the opposite side of the box arranged to move one notch to register every revolution of the large wheel, substantially as set forth.

5. The combination, with a floor and a rock-shaft stopped therein, of a register-box and springs in the latter exerting equal pressure at different points upon the shaft for holding the latter in its proper position, substantially as set forth.

6. The combination, with a floor and a rock-shaft stopped therein said shaft having lugs thereon, of a register-box, a pair of springs having engagement with said lugs for holding the said shaft in proper position, registering-wheels on each side of the box, and connected pawls and levers for communicating motion from the rock-shaft to the registering-wheels, substantially as set forth.

7. The combination, with a floor, a rock-shaft stopped therein, the latter having a pair of lugs thereon, and a registering-box, of a pair of springs in engagement with the lugs for holding the shaft in proper position, registering-wheels in both sides of the box loosely mounted on stationary shafts, indicating-hands secured to said shafts, and connected levers and pawls for communicating motion from the rock-shaft to the indicating-wheels, substantially as set forth.

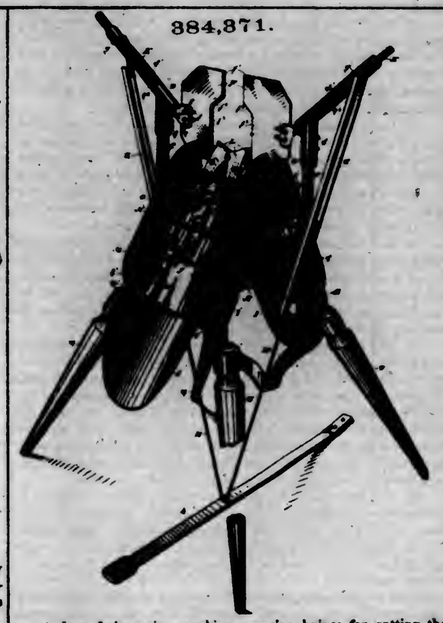
384,871. FRUIT-STONING MACHINE. BENJAMIN A. LELLER, San Francisco, Cal. Filed Mar. 22, 1886. Serial No. 296,139. (No model.)

Claim.—1. In a fruit-stoning machine, opposing knives for cutting the fruit and gripping its pit, and having sliding shanks whereby the knives may move together to close on the pit, in combination with vertically-movable spindles carrying the shanks of the knives, whereby the latter may be driven down after gripping the pit, substantially as herein described.

2. In a fruit-stoning machine, opposing knives for cutting the fruit and gripping its pit, and sliding shanks for said knives mounted at a downwardly-converging inclination with relation to each other, whereby the knives may move together and downwardly to close on the pit, in combination with vertically-movable spindles carrying the shanks of the knives, whereby the latter may be drawn down after gripping the pit, substantially as herein described.

3. In a fruit-stoning machine, opposing knives for cutting the fruit and gripping its pit, and having sliding shanks whereby they may move together to close on the pit, and springs for returning them, in combination with vertically-movable spindles carrying the shanks of the knives, whereby the latter may be drawn down after gripping the pit, and springs for returning the spindles, substantially as herein described.

384,871.



4. In a fruit-stoning machine, opposing knives for cutting the fruit and gripping the pit, and having sliding inclined shanks whereby they may move together to close on the pit, and springs for returning them, vertically-sliding spindles carrying the shanks, whereby the knives may be drawn down after gripping the pit, and springs for returning said spindles, in combination with the treadle, the bail connected therewith, and the yokes connected with the bail and with the shanks of the knives, whereby they are operated, substantially as herein described.

5. In a fruit-stoning machine, the vertically-moving spindles, in combination with the adjustable sleeves on their tops, the socket-bearings carried by the sleeves, and the knives having sliding shanks mounted in the socket-bearings, substantially as herein described.

6. In a fruit-stoning machine, the oppositely-moving knives F, having the cutting-edges *f'* and the underlying opposite recessed portions *f*², substantially as herein described.

7. In a fruit-stoning machine, the knives F, each having a movement in a downwardly-converging plane and provided with the cutting-edges *f'*, the recessed portions *f*², and the gripping-teeth *f*³, substantially as herein described.

8. In a fruit-stoning machine, the oppositely-moving knives F, having the opposing recessed portions in their cutting-edges, whereby the fruit is cut on the sides and top in to the pit, in combination with cutters or scrapers arranged in pairs upon each side of the machine, so as to form a cup against which the base of the fruit is forced by the knives, substantially as herein described.

9. In a fruit-stoning machine, the cutting and gripping knives having the sliding shanks, and the vertically-sliding spindles carrying the shanks, whereby the knives may be drawn together to cut the fruit and grip its pit, and may be moved down with the fruit and pit, in combination with cutters or scrapers below upon which the fruit is forced, whereby the flesh is separated from the pit, substantially as herein described.

10. In a fruit-stoning machine, the cutting and gripping knives having the inclined sliding shanks with a spring for returning them, the vertically-sliding spindles carrying the knife-shanks and having springs for returning them, and the mechanism for operating the knives, consisting of the treadle, the yokes connected with the inclined knife-shanks, and the bail connecting the treadle with the yokes, in combination with cutters or scrapers upon which the fruit is forced by the knives, whereby the flesh is separated from the pit, substantially as herein described.

11. In a fruit-stoning machine, the cutters or scrapers upon which the fruit is forced, said scrapers having sliding stems provided with spiral extensions or twists, in combination with fixed guides in which the extensions play, whereby the scrapers have imparted to them a partial rotary movement as the pit is forced between them, substantially as herein described.

12. In a fruit-stoning machine, the cutters or scrapers upon which the fruit is forced, said scrapers having sliding stems provided with spiral extensions or twists and springs for returning the stems, in combination with fixed guides in which the extensions play, whereby the scrapers have imparted to them a partial rotary movement as the pit is forced between them, substantially as herein described.

13. In a fruit-stoning machine, the cutters or scrapers upon which the fruit is forced, said scrapers having sliding stems with springs for returning them and spiral extensions or twists on their lower ends terminating in straight portions, in combination with fixed guides in which the extensions play, and movable adjustable frames carrying said guides, whereby they may be lowered to the straight terminations of the extensions or twists, substantially as herein described.

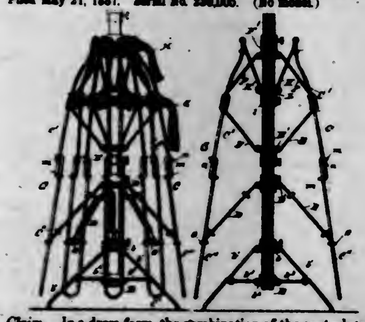
14. In a fruit-stoning machine, the cutters or scrapers having the sliding stems with spiral extensions or twists and the fixed guide pins or lugs in which said extensions play, in combination with the adjustable bracket J, having the sockets in which the stems slide, the adjustable frame with its collars N on the stems, and the springs for returning the stems, substantially as herein described.

15. In a fruit-stoning machine, the convergent cutters or scrapers upon which the fruit is forced, arranged in pairs with meeting or overlapping edges, said cutters or scrapers having sliding stems with spiral extensions or twists projecting in line with the under surface of the stems, in combination with fulcrum-bearings in which the stems are mounted and fixed guides in which the spiral extensions play, whereby the scrapers are given a partial rotary motion and a simultaneous rocking motion to maintain the relative position of the meeting or overlapping edges of each pair, substantially as herein described.

16. In a fruit-stoning machine, the inclined cutters or scrapers, in combination with the chutes I, in which they are mounted, the main frame carrying the chutes and having slots, and the bolts passing through the slots for securing the chutes to the frame, whereby their angle and that of the scrapers they carry may be varied, substantially as herein described.

17. In a fruit-stoning machine, the inclined, yielding, and partially rotary cutters or scrapers upon which the fruit rests, in combination with the knives above for cutting the fruit and gripping its pit, said knives having inclined spring-controlled sliding shanks, the vertically-sliding spring-controlled spindles carrying the knife-shanks, and the treadle and connections with said shanks, whereby the knives are operated to force the pit down between the scrapers, substantially as herein described.

384,372. DRESS-FORM. JOHN W. LITTLEFIELD, Everett, Mass. Filed May 21, 1887. Serial No. 238,005. (No model.)



Claim.—In a dress-form, the combination of the central stationary post, the adjustable and collapsible base, the upright ribs with extensible parts, both having eyes encircling the wires of the other parts, stops a on said upright ribs, a set of single waist-braces hinged to the waist end of said ribs and to a sliding ring on said central post, and the extensible braces D, secured to the extensible parts of said ribs and to a sliding ring on said central post, all constructed and arranged substantially as shown and described.

384,373. ADDING AND WRITING MACHINE. ALBERT C. LEDLIE, Brooklyn, N. Y. Filed Mar. 26, 1887. Serial No. 232,469. (No model.)

Claim.—1. The combination, with type mechanism, of a carriage provided with an impression-surface over which paper to be printed upon may pass, feed-rollers for the paper mounted in said carriage, a number of adding-wheels mounted in an appurtenance of the said carriage, and mechanism, substantially such as described, for operating the type mechanism and adding-wheels and for moving the said carriage and the adding-wheels in unison widthwise of the machine, substantially as specified.

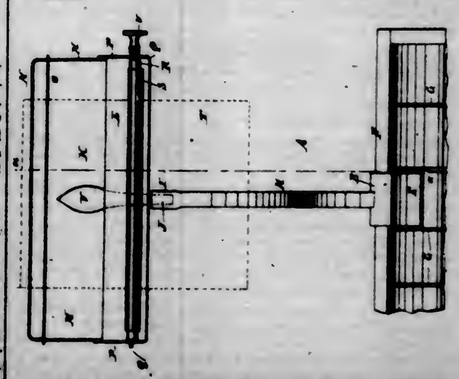
2. The combination of type-levers, an impression-cylinder, a carriage in which said cylinder is mounted, a number of adding-wheels, a carriage in which said wheels are mounted connected to the carriage supporting the impression-cylinder, and mechanism, substantially such as described, for moving the said carriage and operating the type-levers and adding-wheels, substantially as specified.

3. The combination of an impression-cylinder, type-levers for operating in conjunction therewith, finger-levers for operating the type-levers, adding-wheels, a motor-wheel adapted to engage with the adding-wheels one at a time, and a rock-shaft for transmitting motion to the motor-wheel and deriving motion from the operation of the levers which actuate the type-levers, substantially as specified.

4. The combination of writing mechanism consisting, essentially, of type-levers and an impression-cylinder having a rotary and longitudinal movement, a carriage in which said cylinder is supported, adding mechanism, a carriage in which said adding mechanism is supported, connected to the carriage of the impression-cylinder, an oscillating frame supporting the last-named carriage, and a cam-lever whereby this frame may be oscillated to render the adding mechanism inoperative, substantially as specified.

5. The combination of the carriage A', an impression-cylinder supported on said carriage, a rack-bar connected to said carriage, a pawl for engaging with said rack-bar for the purpose of imparting motion to the carriage, adding mechanism, a carriage supporting the adding mechanism and connected to the carriage of the impression-cylinder, an oscillating frame supporting the carriage of the adding mechanism, a cam-lever whereby this frame may be oscillated, a connection between said lever, and a device extending under the said pawl, whereby said pawl may be rendered inoperative at the same time that the adding mechanism is rendered inoperative by the oscillation of the lever, substantially as specified.

384,374. COPY-HOLDER FOR COMPOSITORS. HUGO F. MAAS, Egg Harbor City, N. J. Filed Nov. 18, 1887. Serial No. 255,502. (No model.)



Claim.—1. In a copy-holder, the combination of a double U-shaped base-clamp, an upwardly-extending arm fixed thereto having a socket at its upper end, a copy-rack secured to said socket, and a shifting-roller mounted in said copy-rack, substantially as described.

2. In a copy-holder, the combination, with a rack, K, and rack-supporting arm H, of a double U-shaped spring-clamp, B, the medial plate C of which is considerably nearer one than the other of the outer plates, D E, as and for the purpose specified.

3. In a copy-holder, the combination of a rack, K, having a smooth back plate, L, the ends of which are bent to form parallel lugs P, and a rubber-covered shifting-roller, R, journaled to said lugs P, substantially as described.

4. A rack, K, constructed of a lower back plate, L, and a rectangular skeleton frame, M, formed of a wire, N, bent into inverted-U shape and fastened to the back plate, and a longitudinal wire, O, having its ends looped over the side arms of the bent wire N, as and for the purpose specified.

384,375. ROAD-CART. WILLIAM H. MCCRACKEN, West Branch, Mich. Filed Jan. 23, 1888. Serial No. 261,927. (No model.)



Claim.—1. The improved cart herein described, comprising the dropped axle, the rear springs secured to the dropped portion of the axle, the thills fitted loosely to the spindle-carrying arms of the axle, the barrels secured on the thills and containing springs, and the body secured at its rear end on the rear springs and having connections at their forward end provided with arms entering the spring-carrying barrels, substantially as set forth.

2. A vehicle-body having a hinged box-section, and a spring for closing and holding such section normally closed, substantially as set forth.

3. A vehicle-body having a hinged box-section provided with an extension in rear of such hinge, and a spring connected with such rear extension, substantially as set forth.

4. The vehicle-body herein described, having a hinged box-section, a hinged seat-section, a spring for closing such sections, and a connection therebetween, substantially as and for the purpose specified.

5. The combination of the seat having a hinged section, the seat-brace having a guide for the connecting-cord, the hinged box-section, the spring for operating the same, arranged within the brace, and the connecting-cord passed through the eye on the brace and secured at its opposite ends to the hinged seat and box sections, all substantially as and for the purposes specified.

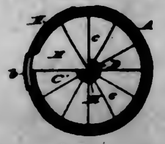
6. The combination of the body, the thills, the spring-carrying barrels secured to and depending from the thills, and braces G, extending between the thills and the lower ends of the barrels, substantially as set forth.

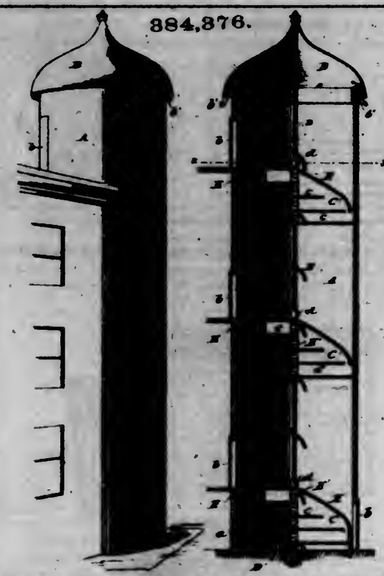
7. The combination of the body, the thills, the spring-barrels slotted longitudinally, the springs in said barrels, and the connections pivotally secured to the body and having arms which enter the slots of the barrels and operate between the springs thereof, substantially as set forth.

8. The improved cart herein described, consisting of the dropped axle, the rear springs and body, the thills fitted loosely at their rear ends on the axle, the barrels secured on the thills and slotted longitudinally, the front springs in said barrels, and the connecting-brackets pivotally secured at one end to the body and having arms which enter the slots of and bear between the springs in the barrels, substantially as set forth.

384,376. FIRE-ESCAPE. WILLIAM HOFFMANN, Chicago, Ill. Filed Dec. 12, 1887. Serial No. 257,762. (No model.)

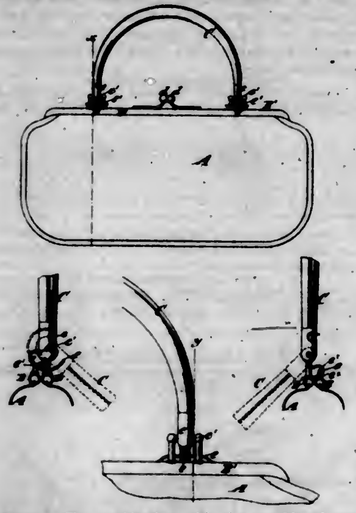
Claim.—The combination, with the fire-proof wall A, built partly in a dwelling, having fire-proof doors *b*, a stand-pipe, D, centrally secured in said wall, provided with nozzles *d*, a hood or top, B, secured centrally to the upper end of the pipe D and resting over the upper end of the well and secured thereto, as shown, and an air-opening, *b'*, formed between said hood and top of the well, of a spiral stairway composed





of triangular steps supported at the inner ends on said pipe D and having their outer ends project in the wall of the well, and the platforms E, secured at their inner ends to the pipe and at their outer ends in the wall of the well, substantially as shown and described.

384,377. HAND-BAG. JOHN MIHL, Jr., Jersey City, N. J. Filed Mar. 26, 1888. Serial No. 268,198. (No model.)

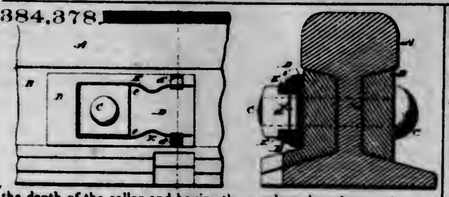


Claim.—The combination, with the two hinged externally-abutting portions of a bag-frame and a handle pivoted to one of said frame portions, of a look between the handle and the other of said frame portions, consisting of a hook on the handle and a loop or bar on the outside of said other frame portion, with which loop or bar said hook engages when the bag is closed and the handle is swung to carrying position, substantially as herein described.

384,378. NUT-LOCK. JOHN MERRIMAN and AARON S. MUNDY, Hancock, R. I. Filed Mar. 6, 1888. Serial No. 266,293. (No model.)

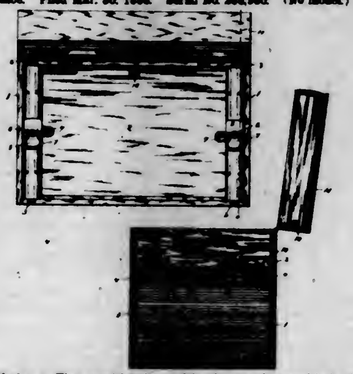
Claim.—A nut-lock consisting of an essentially rectangular plate provided with a collared aperture near one end and spaced lugs at or near the opposite ends, and an essentially U-shaped spring wider than

384,378. [illegible]



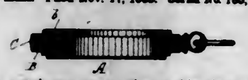
the depth of the collar and having the members slotted to receive said lugs, substantially as shown and described.

384,379. TRUNK TRAY AND FOLLOWER. GEORGE R. MILBURN, Minneapolis, Minn., assignor of one-fourth to Thomas H. Reeves, same place. Filed Mar. 30, 1888. Serial No. 268,980. (No model.)



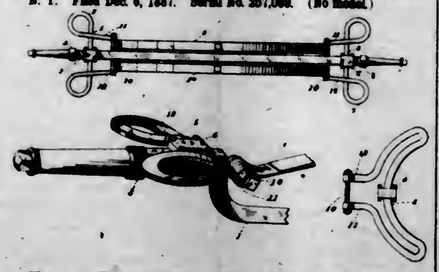
Claim.—The combination, with the trunk provided with the ratchet-bars 3, of the tray or follower 2, provided at each end with the spring-bolts adapted to engage said ratchet-bars, the rotary pins 6, connected with the bolts upon the opposite sides of the tray, and the lock bolts 9, adapted to engage said pins 6 and keep them from turning for the purpose set forth.

384,380. WATCH-CASE. CHARLES F. MORRILL and DAVID C. PERCIVAL, Boston, Mass. Filed Nov. 17, 1886. Serial No. 183,118. (Model.)



Claim.—In a watch-case center, the combination, with the relatively base-metal core or ring, of a separate external covering inclosing the front, back, and side of said core, the said core having a movement-supporting ledge or shoulder projecting inward beyond the outer covering, substantially as described.

384,381. VEHICLE-SPRING. RICHARD MULHOLLAND, Dunkirk, N. Y. Filed Dec. 6, 1887. Serial No. 257,069. (No model.)



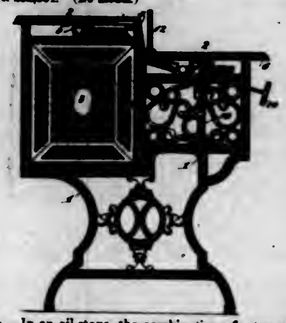
Claim.—1. The combination, with a vehicle-axle and cross-spring, of two flexible springs, each rigidly attached to the axle transversely thereto near the collars, and having two curved arms forming portions of the same projecting outward and then inward approximately parallel with the sides of the axle and yieldingly attached to the cross-spring, so as to have both vertical and horizontal action without the aid of links or swinging shackles, substantially as described.

2. In a vehicle-spring, the combination, with the axle and cross-springs, of two flexible springs having their central portions rigidly secured transversely to points near each collar of the axle, and having the two opposite portions of each spring formed into coils which curve outward and terminate in arms projecting substantially parallel with the sides of the axle, and curve upward, downward, and in toward the cross-springs, to which they are pivotally connected, substantially as and for the purposes described.

3. A vehicle-spring having its central portion adapted to be rigidly secured at right angles to an axle, and its two outer portions formed into coils which curve outward, and then terminate in arms extending inward substantially parallel with each other in a direction downward and opposite to the portion by which it is attached to the axle, and having eyes by which it is pivoted to the cross-spring, substantially as described.

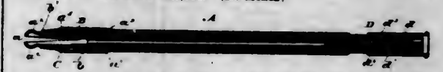
4. A vehicle-spring consisting of a central portion for rigid transverse attachment to an axle, which acts as a torsion-spring, and having two outer portions formed into coils which extend outward and act as coil-springs, the inner sides of each coil being provided with an arm extending inward approximately parallel with each other, substantially as and for the purposes described.

384,382. OIL-STOVE. GARRET MYERS, Chicago, Ill., assignor to the Adams & Westlake Company, same place. Filed Oct. 17, 1887. Serial No. 252,551. (No model.)



Claim.—In an oil-stove, the combination of a top plate having a raised rear extension, a non-generating burner located beneath said rear extension, an oven beneath said burner, a generating-burner beneath the front of said top plate, and a tube passing the truncated edge of said oven for conducting vapor from the generating to the non-generating burner.

384,383. PENCIL. LEWIS R. MYERS, Fremont, Ohio. Filed Sept. 14, 1887. Serial No. 249,690. (No model.)



Claim.—1. The tube having the longitudinal slit extending for a suitable distance of its length, with a clamping-jaw fitting on the open end and provided with an annular shoulder, in combination with a sleeve fitted on said clamping-jaw and having converging ends bearing thereon, and also provided with a shoulder and a coiled spring placed around the clamping-jaw and bearing against the shoulders of the clamping-jaw and sleeve, respectively, for the purpose set forth.

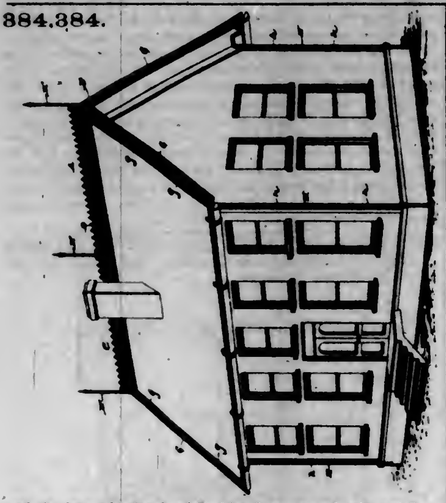
2. The combination, with the closed end of the pencil, of an open tube fitted thereon and provided with a slot, and a sliding sleeve fitted on said tube and provided with a pin working in said slot, which pin divides the stationary tube into two compartments to receive a spring and eraser, the spring bearing against the closed end of the pencil and the pin, for the purpose set forth.

384,384. METALLIC CREST-TILE LIGHTNING-ROD. CLARK B. NELSON, Crawfordsville, Ind., assignor of one-half to James H. Watson, same place. Filed Nov. 16, 1887. Serial No. 255,341. (No model.)

Claim.—A metallic crest-tile forming part of the electric connections of a house with the ground, serving as a part of the lightning-protective system thereof, and consisting of the diverging flanges B, forming the saddle, the vertical flange C, integral with the saddle and provided with the triangular teeth or points D to attract electricity.



384,384.



and the integral pointed rod E, rising from one end, substantially as specified.

384,385. TWINE-HOLDER. ROBERT HUNT, Jr., Chicago, Ill. Filed Dec. 27, 1887. Serial No. 258,351. (No model.)

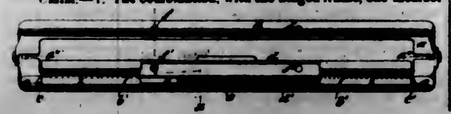


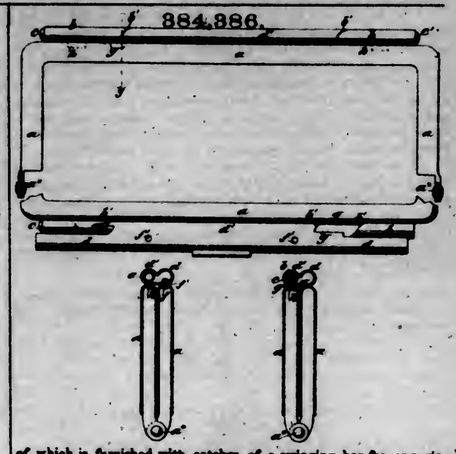
Claim.—1. A twine-holder comprising, in combination, a hollow body formed in parts r and r', hinged together at corresponding ends, an eye on one of the said parts near the opposite end, and a suspension-cord, or the like, C, connected to the other of the said parts and passed through the said eye, whereby when the holder is suspended on the cord C it is closed by its own weight on the suspension-cord and opens by raising it to relax the suspension-cord, substantially as described.

2. A twine-holder comprising, in combination, a hollow body formed in parts r and r', hinged together at corresponding ends and provided with eyes o and n near the opposite ends, and a suspension-cord, or the like, C, extending through the said eyes, whereby when the holder is suspended on the cord C it is closed by its own weight on the suspension-cord, and opens by raising it to relax the suspension-cord, substantially as described.

384,386. POCKET-BOOK, BAG, OR PURSE FRAME. REUBEN OLDENBURG, New York, N. Y., assignor to William Schlenger & Co., same place. Filed May 9, 1888. Serial No. 273,245. (No model.)

Claim.—1. The combination, with the hinged frame, one member





of which is furnished with catches, of a swinging bar for engaging with such catches, having a connection with the other member of the frame by a hinge-joint with spiral abutting surfaces, and a spiral spring arranged within said hinge-joint and exerting a pressure lengthwise thereof, substantially as and for the purpose herein set forth.

2. The combination, with the main frame made in two parts hinged together, and the tubes *b*, secured to one of said parts and formed with spiral or inclined end surfaces, of the swinging clasp hinged between the tubes and formed with corresponding spiral or inclined surfaces, a compression-spring bearing against the tubes and the clasp, and stop-shoulders at the ends of the inclines to limit the motion of the clasp, substantially as and for the purpose set forth.

3. The combination, with the main frame *a*, the tubes *b b*, secured to one member of the frame, and formed with the inclined surfaces *b'*, and the projecting pintle *c*, secured in one of these tubes, of the clasp provided with the cylinder *d'*, having inclines to correspond with those upon the tubes, and provided with the pintle *c'*, and the compression-spring *e*, placed between the ends of the pintles, substantially as and for the purpose set forth.

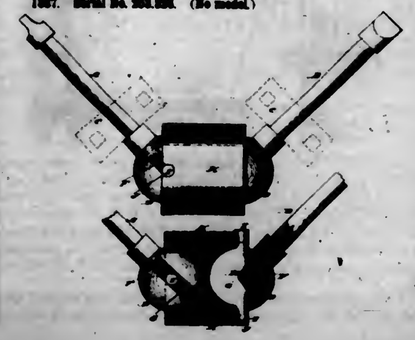
384,387. BUSHING FOR BUNGS. RAFAEL PEYTLABOY, Brooklyn, N. Y. Filed Feb. 23, 1888. Serial No. 264,977. (No model.)



Claim.—1. The combination, in a metallic bushing for a bung, of a screw-threaded body, and a flange having a face formed at an oblique angle to the body, and cutting-teeth formed in the angular face of said flange, as and for the purposes set forth.

2. The combination, in a metallic bushing for a bung, of a screw-threaded body, and a flange having a face formed at an angle to the body, and transverse cutting-teeth in the said angular face of the flange, substantially as described.

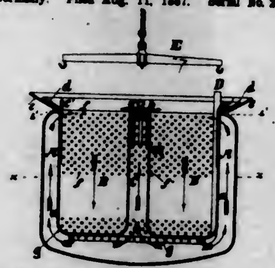
384,388. UNIVERSAL JOINT. CHARLES PIERCE, Springfield, Ohio, assignor of one-third to Charles B. Meyer, same place. Filed Oct. 31, 1887. Serial No. 253,226. (No model.)



Claim.—1. In a universal joint, the combination, with two sections of shafting having slotted spherical heads and tapered at their ends, and journal-boxes which maintain the shafts from moving away from each other, of broad plates loosely fitted in said slots, respectively, and otherwise disconnected from the heads, notched to receive the tapered ends of the shafts, and terminating at each end in an integral journal, and a sleeve having a spherical recess at each end in which the heads are mounted, and open bearings in each end in which plate-journals are mounted and held by the shafts and their boxes.

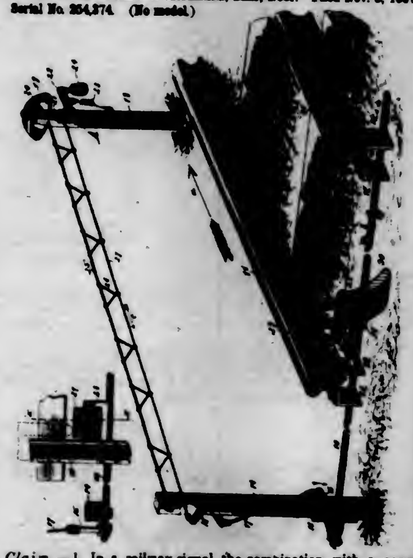
2. In a universal joint, the combination of a section of shafting having a spherical head provided with a slot extending through the greater portion thereof and a plate terminating in an integral journal at each end loosely fitted in said slot and otherwise disconnected from the head, and a sleeve having a spherical recess into which the said head is fitted and having bearings in which said plate-journals are mounted.

384,389. **DYEING APPARATUS.** RUDOLF PERSINA, Aachen, Prussia, Germany. Filed Aug. 11, 1887. Serial No. 246,656. (No model.)



Claim.—The combination of outer vessel, A, having contracted neck *c'* and flange *c*, with the inner perforated vessel, B, having flange *d*, and with the perforated tube C, cover *b*, and inlet-tube D, having perforated lower end, substantially as specified.

384,390. **RAILWAY-CROSSING ALARM-SIGNAL.** GEORGE D. RATHBURN and CHRISTIAN RATHBURN, Blair, Nebr. Filed Nov. 5, 1887. Serial No. 254,374. (No model.)

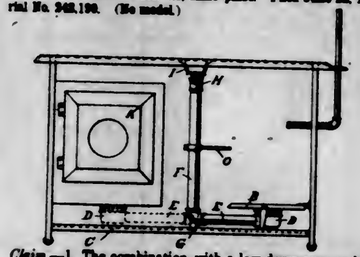


Claim.—1. In a railway-signal, the combination, with a gong supported on a post at one side of the track and a spring-actuated bell-crank lever pivoted to the post and carrying a hammer, of a rock-shaft below the rails and provided with the arm 15, the arms 26, and the stop 31, the tripping-dog 29, pivoted between the arms 26 and having the counterpoise 30, and connections, substantially as described, between the bell-crank lever and the arm 15 of the rock-shaft, as specified.

2. In a railway-signal, the combination of the rock-shaft 10, provided with the forwardly-projecting arms 26 and the stop 31, and the tripping-dog 29, pivoted between the arms 26 and having a counterpoise, 30, on one end, substantially as herein shown and described.

3. In a railway-signal, the combination, with a rock-shaft mounted beneath the bases of the rails and provided with arms 26 and a projection, 31, of a tripping-dog mounted between and supported by the arms 26, a counterpoise arranged in connection with the tripping-dog, a post, 14, an arm, 15, carried by the rock-shaft in close proximity to the post, a second post, 18, a lever, A, carried by said post and provided with a gong-hammer, a spring arranged in connection with the lever, a gong, a supporting-wire, 25, loops carried by said wire, a wire, 27, connected to the lever A and passing through said loops, a lever, 16, mounted upon the post 14, and a wire connecting the lever 16 and the arm 15, substantially as described.

884,391. **VAPOR-STOVE.** BERNARD REIH, Detroit, Mich., assignor of one-half to Jacob Haltenman, same place. Filed June 22, 1887. Serial No. 242,199. (No model.)

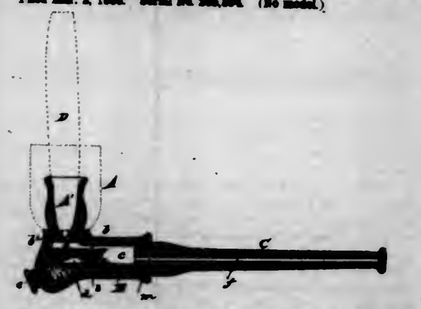


Claim.—1. The combination, with a low-down oven and cooking-shelf supported at opposite ends of the stove, of a swinging tube pivotally secured on a vertical axis between said oven and shelf and forming the means for carrying vapor from the generating-burner to a low-down burner carried by said swinging tube, substantially as described.

2. The combination, with the generating-burner, low-down oven, and cooking-shelf supported at opposite ends of the stove, of a low-down burner carried on a swinging tube between said oven and shelf, and means, substantially as described, for conducting the vapor from the generating-burner through the swinging tube into said low-down burner, all arranged to operate substantially as described.

3. The combination of the generating-burner K, and tube F, having a sleeve-joint at its upper end, with the commingling-tube and a pivot-bearing at its lower end, horizontal arm E, burner D, and handle O, all arranged to operate substantially as described.

384,392. **TOBACCO-PIPE.** FREDERICK ROEHLING, Cleveland, Ohio. Filed Mar. 2, 1888. Serial No. 265,894. (No model.)

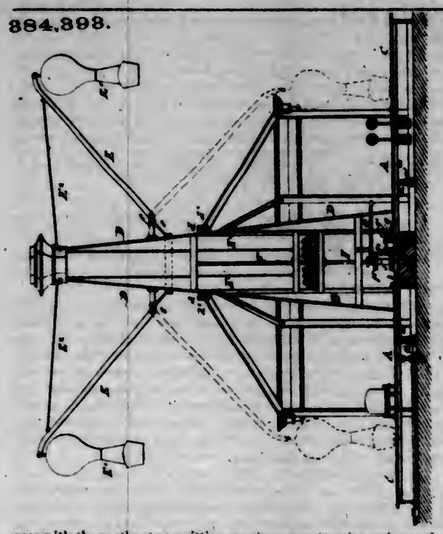


Claim.—In a pipe, the shank B, having the longitudinally-extending smoke-chamber *c* in line with its stem-opening, the bowl-opening *b'*, a passage, *b*, leading therefrom into the rear end of said chamber, the downwardly and rearwardly inclined reservoir *d*, having an inlet-passage, *l*, leading into the bottom of the chamber *c*, and an air-passage, *n*, also leading into the smoke-chamber from said reservoir above the passage *l*.

384,393. **ROUNDABOUT.** WILLIAM RAMAGE, Brooklyn, N. Y. Filed Sept. 20, 1887. Serial No. 249,173. (No model.)

Claim.—1. The combination of a stationary center block, a rotary platform, a tower supported on said platform, arms pivoted to said tower, carriers suspended from the arms, a vertically-traversing and weighted cage guided in said tower, ropes connecting the arms with said cage, a screw supported in bearings of the center block and the frame of the tower, said screw engaging fixed nuts of the cage, gearing for transmitting rotary motion from the platform to the screw, and a clutch mechanism by which said screw is thrown in or out of

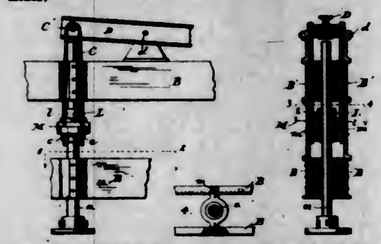
384,393.



gear with the motion-transmitting gearing, so as to raise or lower the cage and thereby lower or raise the carriers, substantially as set forth.

2. The combination of a stationary center block, a rotary platform, a fixed platform concentric to the rotary platform, a tower supported on the rotary platform, arms pivoted to said tower, carriers suspended from said arms, a vertically-traversing and weighted cage guided in said tower, ropes connecting the arms with the cage, a screw supported in bearings of the center block and of the frame of the tower, said screw engaging fixed nuts of the gage, a clutch-sleeve splined to the screw and provided with a crown-wheel at each end, gearing for transmitting rotary motion from the movable platform to the clutch-sleeve and screw, and a lever for moving the clutch-sleeve, so that either one of the crown-wheels is thrown in mesh with the gearing, according as the motion-transmitting screw is to be turned in one or the opposite direction, substantially as set forth.

384,394. **MACHINE FOR GRINDING, SMOOTHING, AND POLISHING GLASS.** FRANK SHERWIN, New Albany, Ind., assignor to H. T. De Pauw, same place. Filed Dec. 28, 1887. Serial No. 259,607. (No model.)

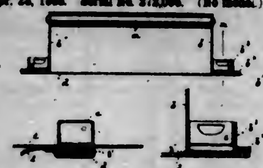


Claim.—1. In combination, a runner, a shaft connected to said runner, a cross-head within which said shaft revolves, a collar surrounding said shaft and normally resting upon the upper surface of said cross-head, a lever, and a link connecting said lever and the cross-head, whereby when said lever is operated the shaft and its runner are elevated or depressed.

2. In combination, a runner, a shaft connected to said runner, a cross-head within which said shaft revolves, a collar normally resting upon the upper surface of said cross-head, a lever, a link connecting the said lever and the cross-head, and a rod threaded at its lower end attached to the outer end of said lever, and a threaded wheel through which the lower end of said rod passes, whereby when the said wheel is revolved the shaft and its runner are elevated or depressed.

3. In combination, a runner, a shaft connected to said runner, a cross-head within which said shaft revolves, ways upon which said cross-head travels, a collar normally resting upon the upper surface of said cross-head, a lever-arm, a U-shaped link connecting said lever and the cross-head, and a rod threaded at its lower end attached to the outer end of said lever, and a threaded wheel through which the lower end of said rod passes, whereby when said wheel is revolved the shaft and its runner are elevated or depressed.

384,395. **BRAWL-STRAP.** SIMON SCHEUER, New York, N. Y. Filed Apr. 23, 1888. Serial No. 272,036. (No model.)



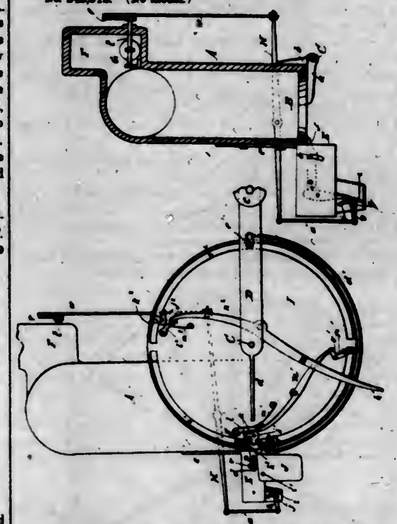
Claim.—1. The combination of a handle, *a*, with the bent plate *b b'*, doubled upon itself to form projection b^2 and bearing b^3, and with the clamp *c*, pivoted between parts *b* b^3, substantially as specified.

2. The combination of handle *a* with the bent plate *b b'*, doubled up to form projection b^2 and bearing b^3, and with the clamp *c*, pivoted between the bearings *b* and b^3, and with cross-bar *d*, each cross-bar being secured to the projection b^2, substantially as specified.

3. The combination of handle *a* with buckle-frames at the ends thereof, and with U-shaped clamps pivoted within the buckle-frames, and with the straps *c*, passing between the buckle-frames and the clamps and engaged by both shanks of the clamps, substantially as specified.

4. The combination of handle *a* with the bent plates *b*, and with the cross-bar *d*, secured to the projections b^2 of plates *b* by means of upset burrs, and with the U-shaped tongues *c*, pivoted between the bearings *b* and b^3, and having finger-pieces *c'*, and with the straps *c*, substantially as specified.

384,396. **VALVE MECHANISM FOR SEWERAGE SYSTEMS.** CHARLES H. SHEPHERD, New York, N. Y. Filed Aug. 9, 1887. Serial No. 246,512. (No model.)



Claim.—1. The combination, with the discharge-pipe provided with a float-chamber and the valve of the sewerage system, of a catch for holding the valve closed, a float placed in the float-chamber for releasing the catch, and mechanism for retarding the closing of the valve, substantially as specified.

2. The combination, in a sewerage system, of the discharge-pipe A, provided with the float-chamber F, the valve B, hinged to the open end of the said pipe and adapted to close it, the latch *f*, provided with the double-acting spring *n*, the catch-lever *i*, cam *j*, the float G, shaft *l*, arm *v*, rod *w*, lever H, rod *d'*, and arm S, intermediate between the said float and the cam-lever *j*, substantially as specified.

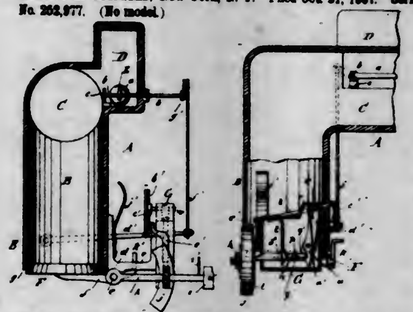
3. The combination, with the valve B and counterweighted arm D, secured to the pivot of the said valve, of an auxiliary retarding-weight, J, the catch k', pawl l', catch k^2, pawl l^2, and the levers n', p', and n^2, substantially as described.

4. The combination, with the valve B and weighted lever D, connected therewith, of the slotted disk I, curved rod *d'*, carrying rollers f' f^2 in the slots of the disk I, the weight J, provided with the pin i'

and rollers k' k^2, the forked levers j' j^2, spring-pressed catch-levers l' l^2, the lever n' and trigger p', and the lever n^2, substantially as specified.

5. In a sewerage system, the combination, with the pipe A and valve B, of the latch j', provided with the stud o, the weighted lever D, attached to the pivot of the valve B and provided with the arm d, the slotted disk I, curved rod d', carried by the arm D and provided with rollers f' f^2, the auxiliary weight J, the catch k', pawl l', lever n', trigger p', catch k^2, pawl l^2, and lever n^2, substantially as specified.

384,397. VALVE MECHANISM FOR SEWERAGE SYSTEMS. CHARLES H. SHEPHERD, New York, N. Y. Filed Oct. 21, 1887. Serial No. 252,977. (No model.)



Claim.—1. In valve mechanism for sewerage systems, the combination of the valve F, hinged to the lower end of the discharge-pipe A, the arm h, connected with the valve F and carrying the spring-actuated ratchet-bar l and the counter-weight i, the latch p, adapted to engage the ratchet-bar l, the spring-actuated trigger u, arranged to engage the latch p, the cam v, the lever b', the lever d', and the float E, substantially as described.

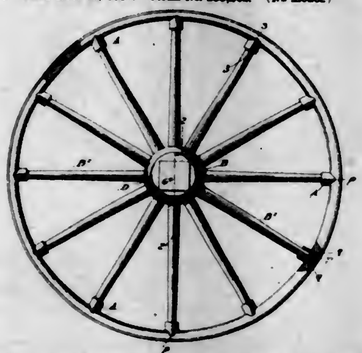
2. The combination, with the lever b', adapted to be operated by the float E, and the latch p, adapted to engage the ratchet l, of the bar c', connected with the end of the lever b', for replacing the latch p after the valve F has been operated, substantially as specified.

3. The combination, with the lever d', float E, lever b', the bar c', and latch p, of the arm k', the shaft c, and the valve F, substantially as specified.

4. The combination, with the valve F and arm h, connected therewith, of the spring f, substantially as specified.

5. The combination, with the valve F, carrying the arm h, of the spring-actuated ratchet-bar l and the spring-actuated latch p, for holding the valve closed or partly open, substantially as specified.

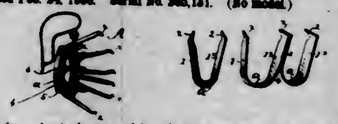
384,398. VEHICLE-WHEEL. HENRY L. SMITH, Jericho Centre, Vt. Filed Nov. 16, 1887. Serial No. 255,282. (No model.)



Claim.—1. The combination, with the spindle F and the stationary thimble G, inclosing the same and having its outer end threaded, and an annular shoulder, G^2, near its inner end, of the hub formed of two sections, C D, the inner adjacent faces of which are recessed to form spoke-sockets, the sleeve E, extending through said hub-sections, provided with external screw-threads, h, at its outer end beyond the section D, and provided with a screw-threaded offset at its rear end, as at k, to receive the shoulder G^2, the inner head-plate, C^2, abutting against the shoulder formed by the offset k, the outer plate, D^2, screwed on the outer end of sleeve E against the outer section, D, the nut G^3, screwed upon the outer end of the stationary thimble G and bearing against the plate D^2, and the offset collar H, screwed upon the offset k, and extending along the inner end of the thimble, substantially as set forth.

2. In a wheel, the combination, with the felly having a convex inner face and a spoke having a concave outer end resting against the convex face of the felly, of the tubular open-ended socket upon the concave end of the spoke and formed with lips p p, to embrace the sides of the felly, and with opposite spurs, q q, on the edge, between the lips, to enter the convex face of the felly, substantially as set forth.

384,399. GEM-SETTING. WARREN G. SMITH, Brooklyn, N. Y. Filed Feb. 24, 1888. Serial No. 265,131. (No model.)

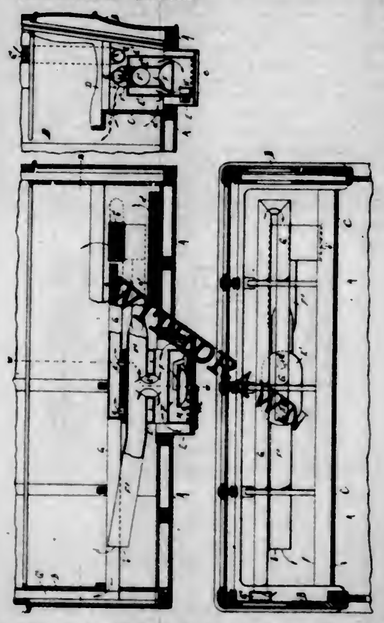


Claim.—1. An improved jewel-setting composed of a series of independent prongs springing from an invertedly-curved base and joined together in couples at their side edges in right lines from a short distance above said base to their terminal points, substantially as described.

2. An improved jewel-setting consisting of a series of independent U-shaped members, adapted and arranged to surround the sides of a gem, the vertical arms 1 1^a of each of the series being alternately joined from their terminal points in alignment down to near their curved base a, in combination with openings 4 at the lower end of each couple of prongs, substantially as described.

3. An improved jewel-setting consisting of a series of independent pairs of prongs extending upwardly from an invertedly-arched base, each uprising prong being connected lengthwise to the next adjoining prong, said bases attached to and in combination with a lower ring, 5, substantially as described.

384,400. APPARATUS FOR HEATING CARS AND SIMILAR STRUCTURES. WILBUR F. STEELE, Steele, Dak. Filed Feb. 23, 1888. Serial No. 265,080. (No model.)



Claim.—1. In a car-heating apparatus, the combination of an outer casing having exit-openings in its upper portion, a smoke and gas pipe connected with said exit-openings, an inner casing provided with laterally-extending cold-air flues which open through the sides of said outer casing, and with laterally-extending hot-air flues which project through the upper portion of said outer casing and communicate at their inner ends with said cold-air flues, and a burner arranged below said inner casing, substantially as described.

2. In a car-heating apparatus, the combination of an outer casing having exit-openings in its upper portion, a smoke and gas pipe connected with said exit-openings, an inner casing provided with laterally-extending cold-air flues which open through the sides of said outer casing, and with laterally-extending hot-air flues which project through the upper portion of said outer casing and communicate at their inner ends with said cold-air flues, and a burner arranged below said inner casing, substantially as described.

3. The combination, in a street-car, with a seat having its front formed with elongated openings near its upper and lower edges, of a jacket, an outer casing arranged within said jacket, with a free air-space between the same and said jacket, and an inner casing provided with laterally-extending hot-air flues, and also with cold-air flues which open through the sides of said outer casing and communicate with said free air-space, whereby the cold air drawn from the interior of the car through the elongated opening near the lower edge of the seat and into said free air-space is heated within said inner casing and discharged back into the interior of the car through the elongated opening near the upper edge of said seat, substantially as described.

4. In a car-heating apparatus, the combination of an outer casing provided at its upper end with an enlarged box or chamber having exit-openings, a smoke-pipe passing through said enlarged chamber and communicating with said exit-openings, an inner casing provided with laterally-extending cold-air flues which open through the sides of said outer casing, and with laterally-extending hot-air flues having open ends, a car-seat formed with elongated openings near its upper and lower edges, and a burner arranged beneath said inner casing, substantially as described.

5. In a car-heating apparatus, the combination of an outer casing provided at its upper end with an enlarged box or chamber having exit-openings, a smoke-pipe passing through said enlarged chamber and communicating with said exit-openings, an inner casing provided with laterally-extending cold-air flues which open through the sides of said outer casing and with laterally-extending hot-air flues having open ends, a car-seat formed with elongated openings near its upper and lower edges, a flanged and open-top jacket supporting said outer casing, and a burner arranged between the bottoms of said chamber and casing, substantially as described.

6. In a car-heating apparatus, the combination of an inner casing provided with laterally-extending hot and cold air flues, an outer casing formed with an annular series of perforations and provided with a door near its lower end, a flanged and open-top jacket surrounding and supporting said outer casing, and provided with a door arranged in alignment with the door of said casing, and a burner arranged intermediate of the bottoms of said jacket and inner casing and adjacent to said doors, substantially as described.

7. The combination, with a street-car formed with an opening in its floor and provided with a seat having its front formed with elongated openings near its upper and lower edges, of a flanged jacket fitted within said opening, an outer casing supported within said flanged jacket and formed with apertures in its sides and with exit-openings in its upper portion, a smoke-pipe connected with said exit-openings, extended to one end of the car, doubled back to the other end of said car, and carried upward through its top, an inner casing formed with laterally-extending cold-air-inlet flues which connect with the apertures in the sides of said outer casing, and with laterally-extending hot-air flues at its upper end which project through the upper portion of said outer casing and into the space beneath the seat of the car, and a burner arranged below and within the lower end of said outer casing and upon the bottom of said flanged jacket, substantially as described.

384,401. CAR-HEATING APPARATUS. WILBUR F. STEELE, Minneapolis, Minn. Filed May 12, 1888. Serial No. 273,730. (No model.)

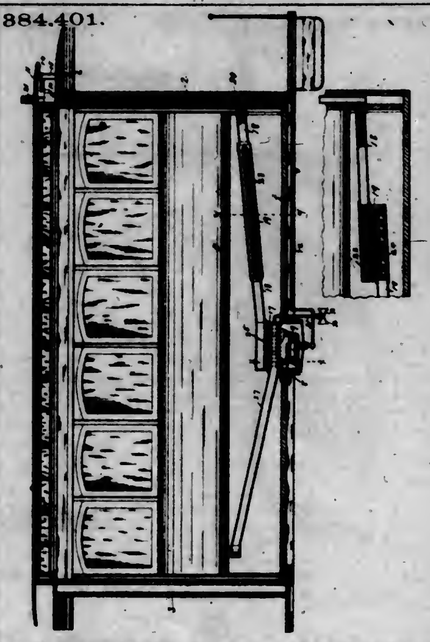
Claim.—1. In a car-heating apparatus, the combination of a casing and a laterally-extending smoke-pipe at or near the top of said casing, provided with a drum and an interior core, a flue extending through the sides of said casing and having one end open, and a hot-air flue secured to the other end of said flue and extending toward the end of the car, and a burner arranged in the bottom of said casing.

2. The combination, with a car, of a heater arranged in the space beneath the seat, a smoke-pipe connected with said heater and extending beneath the seat to one end of the car, an open heating-flue extending through the heater, and a hot-air flue connected with said heating-flue and extending in the space beneath the seat to the opposite end of the car, substantially as described

3. The combination, in a car-heating apparatus, with the burner 9, of the casing 17, surrounding said burner, the flue 25, extending through said casing and provided with open ends, the hot-air flue 27, connected with one end of said flue 25 and extending toward the end of the car in the space beneath the seat, and the pipe 31, provided with the open mouths 33, arranged beneath the floor of the car and having its open end extending into the end of the flue 25, substantially as described.

4. The combination, in a car-heating apparatus, with the burner 9, of the casing 17, surrounding said burner, and the heating-flue 25, extending through said casing and provided with open ends, and the

384,401.



pipe 29, projecting both from the exterior and the interior surfaces of said flue, substantially as described.

5. The combination, in a car-heating apparatus, with the burner 9, of the reservoir 10, arranged above the roof of the car and connected with said burner, the float 13, arranged within said tank, the pivoted lever 14, connected with said float, and the rod 15, connected with said lever and extending through the roof of the car and provided with the indicating-button 16, substantially as described.

6. In a car-heating apparatus, the combination of a casing, a laterally-extending hot-air pipe, and a smoke-pipe provided with a drum having an interior core, with a flue extending through the sides of said casing and having an open end, a pipe projecting into said open end and provided with funnel-shaped mouths arranged outside of the car, substantially as described.

7. The combination, with a street-car having the front of the seat provided with slots opening near its upper and lower edges, of a heater located in the space beneath said seat and consisting of a suitable casing and a burner arranged within said casing, a smoke-pipe connected with said casing and extending beneath the seat of the car toward one end of the car and connected with a pipe extending to the top of the car, an open heating-flue extending through said casing, and a hot-air flue connected with said heating-flue and extending beneath the seat of the car in opposite direction from the said smoke-pipe toward the end of the car, substantially as described.

384,402. HAND-CART. DANIEL R. TRAI, Oneida Castle, N. Y. Filed Feb. 17, 1888. Serial No. 264,406. (No model.)

Claim.—1. A body for carts having a metal frame rectangular in cross-section and a sheet-metal body having its edges folded around said frame and the main body of the metal overlapping its folded edge, as shown and described.

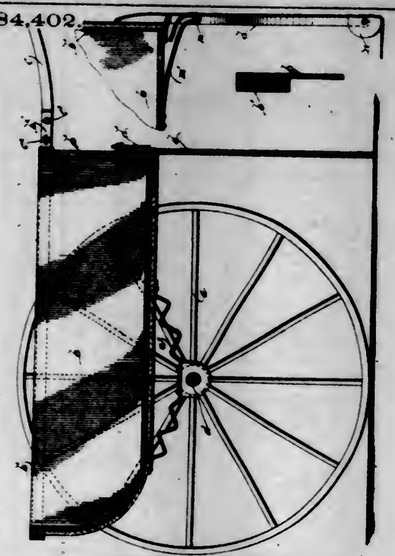
2. In a garden-cart, the combination, with the body and the axle, of an interposed sheet-spring formed with transverse corrugations, substantially as shown and described.

3. The combination, with the body b, having its top frame extended rearward to form the arms b^3, of the handles c, secured in these arms by the bolts c' c^2, substantially as and for the purpose set forth.

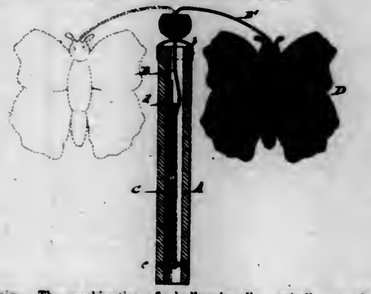
4. The combination, with the body b, of the hinged standard d, extended beyond its hinge and folding beneath the body, and the button d', for securing the standard in both positions, substantially as shown and described.

5. The combination, with the body and its axle having springs interposed between them, of rigid arms pivoted on the axle for turning up under the body to take the weight off the springs, substantially as and for the purpose set forth.

384,402.



384,403. ROTARY TOY. REINARD TEICHMANN, Brooklyn, N. Y. Filed Nov. 22, 1887. Serial No. 255,849. (No model.)



Claim.—The combination of a hollow handle, a spindle extending into said handle, a torsion-spring connecting the inner end of the spindle with the handle, and a figure or figures which are applied to the spindle and weighted at one side of the axis of the same, so as to be adapted to swing by centrifugal action around the handle, set the spring to torsional tension, and return the figure or figures in opposite direction when the handle is held stationary, substantially as set forth.

384,404. MACHINE FOR COVERING OR INSULATING WIRE. JOSEPH D. THOMAS, South Framingham, Mass. Filed Aug. 20, 1887. Serial No. 247,417. (No model.)

Claim.—1. In a wire-covering machine, feeding-rollers having their grasping-surface formed of vulcanized rubber grooved and thus adapted to grasp the covered wire with a firm elastic pressure without injuring the coatings thereof, substantially as set forth.

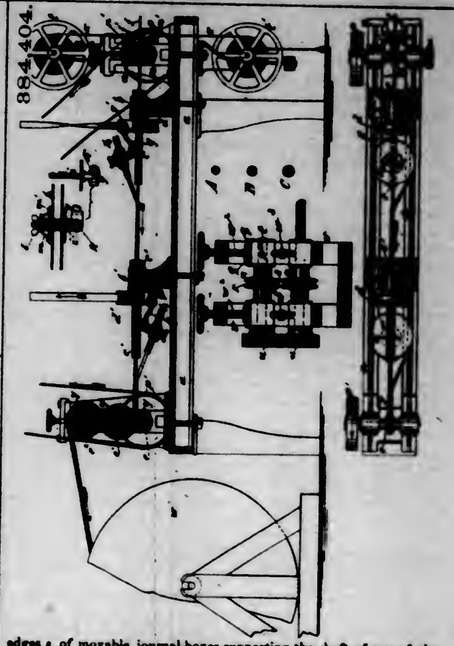
2. The combination, with the bobbin *h* and its supporting spindle or axis *i*, threaded at the end, of the washer *m'*, rotatively engaging the spindle, but free to slide thereon and abutting against the bobbin, with the nut *l*, screwing on the spindle, and the spring *m*, interposed between nut and washer, substantially as shown and described.

3. In a covering-machine, the combination, with the hollow spindle *c*, designed to receive the wire, pulley *d*, and bobbins *h*, of the bent arm *g*, having the bobbin mounted on one end, with the opposite end secured to the pulley and provided with clamp-nut *g'*, substantially as shown and described.

4. The combination, with the narrow rollers *n n*, having cutting-edges *s*, of movable journal-boxes in which the shafts of one or both rollers are supported, and adjustable supports for sustaining the boxes in fixed position, so as to cause the cutting-edges to approach without bearing on each other, substantially as shown and described.

5. The combination, with the narrow rollers *n n*, having cutting-

384,404.



edges *s*, of movable journal-boxes supporting the shaft of one of the rollers, and the adjusting and supporting screws *w'*, engaging and supporting the boxes in both directions, substantially as herein set forth.

6. The combination, with the narrow rollers *n n* and movable journal-boxes in which the shafts of one or both rollers are mounted, of the adjusting-screws w^2, bearing on the outer boxes, and the intermediate adjustable supports, w^3, bearing between the two boxes, substantially as herein shown and described.

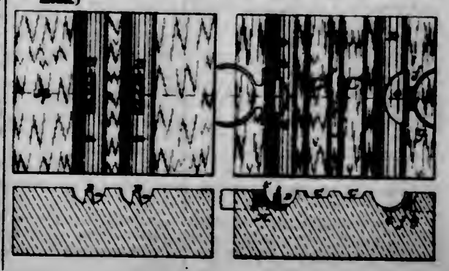
384,405. BENCH-STOP. ISAAC H. TERRELL, New York, N. Y. Filed Mar. 3, 1888. Serial No. 266,563. (No model.)



Claim.—1. A portable carpenter's bench-stop consisting of a plate having one end curved downward and provided with a sharp edge and formed with teeth at its other end and sharp-pointed projections adjacent thereto and perpendicular to the plate, substantially as described.

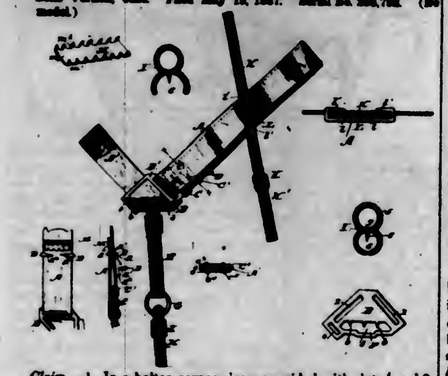
2. A portable carpenter's bench-stop consisting of steel plate 1, formed with the downwardly-curved rear end, 3, with sharp edge 4, and the forward end with teeth 2, and adjacent and perpendicular thereto the tapering sharp-pointed steel projections 6, connected to plate 1 by countersunk ends 9, substantially as described.

384,406. ATTACHING TERRETS TO HAMES. WILLIAM H. WALKER, Milford, Conn. Filed Mar. 30, 1888. Serial No. 268,944. (No model.)



Claim.—The process of securing draft-eyes, terrets, or loops to hame-bodies, herein described, which consists, first, in punching, by means of dies, holes or apertures in the hame-bodies when heated; second, inserting the tenon of a draft-eye, terret, or loop into said aperture while the hame-body is hot, and, third, securing the said draft-eye, terret, or loop to the hame-body by means of shaping-dies under pressure, as set forth, thus unifying and at the same operation shaping them when united, all substantially as herein described.

384,407. COMBINED BRIDLE AND HALTER. JOHN O. WALTON, Bells Verson, Ohio. Filed May 19, 1887. Serial No. 238,792. (No model.)



Claim.—1. In a halter, corner-pieces provided with slots 1 and 2, arranged at right angles with each other, and a diagonally-arranged slot, 3, having a bulged position, 3^x, to receive the jaw-strap, substantially as described.

2. In a halter, corner-pieces provided with slots 1 and 2, arranged at right angles with each other, a diagonal slot, 3, a bulged portion, 3^x, to receive the jaw-strap, and a slot, 4, beneath the vertical slot 2 to receive the bit, substantially as described.

3. In a halter, corner-pieces provided with slots 1 and 2, arranged at right angles with each other, and a diagonally-arranged slot, 3, having spurs *b* projecting from its inner side, substantially as described.

4. In a halter, the combination, with the hitching-rope, of a metal running loop, I, having a solid cylindrical portion, 5, a divided cylindrical portion, 6, a connecting-web, 7, and a spur, 8, substantially as and for the purpose described.

5. In a halter, the combination, with the strap encircling the head and nose, of the malleable-metal U-shaped fastening C, having spurs *c'* projecting inwardly from its sides, substantially as described.

6. In a halter, the combination, with the strap encircling the head and nose, made of fabric, of the leather brow and throat strap formed in a single piece and united to the head and nose strap by a metal fastening, L, having spurs *l* and folding ends *l'*, which respectively pass the one through the fabric portion and the other through the leather portion, substantially as described.

7. The combination of the plates C^3 C^3 and rivets C^4 C^5 with the folded strap A, and the corner-piece through which the said strap passes, as shown and described.

8. The combination, in a halter, with the corner-piece B, having slot 1, of the strap A, passed through the said slot and folded upon itself, the U-shaped fastenings C, embracing the sides of the strap close to the corner-piece, and the end fastening, C', substantially as described.

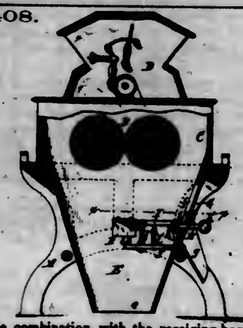
9. The combination, with the fabric strap A of a halter, of the fastening M, having a plate, *m*, placed upon one side of said strap, and spurs m' m^2, passing through the strap and clinched upon the opposite side of said strap, substantially as described.

10. In a halter, the combination, with the strap A, of the corner-piece B, through which the strap is passed, the fastening D, having bar *d*, spurs *d'*, and ends d^2, embracing the free end of said strap, and the metal end fastening M upon the strap to prevent the withdrawal of the same from the fastening D, substantially as described.

384,408. ROLLER-MILL. WALTER W. WHITNEY and GEORGE T. LAMPAFF, Lockport, N. Y. Filed July 12, 1887. Serial No. 244,033. (No model.)

Claim.—1. The combination, with the rollers and the receiving-hopper arranged below the same and provided with a relief-opening in its side above its discharge-opening, of a valve applied to said opening, a locking-lever arranged in the hopper, whereby the valve is held normally closed, and a releasing-plate arranged below the rollers, whereby the lever is automatically unlocked when the material accumulates in the hopper, substantially as set forth.

384,408.



2. The combination, with the receiving-hopper provided at its lower end with a discharge-opening, *e*, and at its side with an opening, *f*, of a valve, G, applied to said opening and provided with a pivoted catch, H, and a locking-lever, I, arranged within the receiving-hopper, and provided at one end with a hook adapted to engage with said catch and at its opposite end with a plate, *k*, substantially as set forth.

3. The combination, with the receiving-hopper provided at its lower end with a discharge-opening, *e*, and at its side with an opening, *f*, of a valve, G, applied to said opening and provided with a pivoted catch, H, and a locking-lever, I, arranged within the receiving-hopper and provided at one end with a hook adapted to engage with said catch and at its opposite end with a plate, *k*, and adjustable stops *l l*, whereby the movement of the locking-lever is limited, substantially as set forth.

384,409. GRATE. LEONARD M. WOODCOCK, Auburn, N. Y. Filed June 14, 1887. Serial No. 241,266. (No model.)



Claim.—1. The combination, with a supporting-frame and oscillating grate-bars connected for joint movement, of a lock for a movable part connected with said bars, the said lock being provided with stops located in the path of said movable part when unlocked, whereby the movement of said bars when unlocked is limited, substantially as described.

2. The combination, with a supporting-frame and oscillating grate-bars connected for joint movement, of a lock for a movable part connected with said bars, the said lock being provided with stops located in the path of the movable part when unlocked, said movable part and said stops being the one movable in relation to the other, whereby the movement of the bars for raking the fire when unlocked is limited and the limitation removed for dumping the grate, substantially as described.

3. The combination, with a supporting-frame and oscillating grate-bars connected for joint movement, and a lever connected with said grate-bars and moving with them, of a hinged plate provided with stops normally in the path of said lever, the pivots of said lever and plate being at right angles to each other, whereby the movement of the said lever and grate-bars is limited in the operation of raking the fire, and the stops made removable by swinging the plate outward to effect the dumping of the grate, substantially as described.

4. The combination, with a supporting-frame and oscillating grate-bars having opposing narrow lateral projections provided with curved ends, securing a uniform space between the ends of said projections, the said bars being connected for joint movement, of stops located in the path of a movable part connected with said bars and holding said bars from entirely passing each other, whereby the movement of the grate-bars for raking the fire is limited to such a movement as will preserve the uniform distance between the grate-bars, substantially as described.

5. The combination, with a supporting-frame and oscillating grate-bars having opposing lateral projections provided with curved ends, securing a uniform space between the ends of said projections, said bars being connected for joint movement, of a lever connected with said bars and moving with them, a hinged locking-plate provided with stops normally in the path of the said lever, but at a short distance from each side of the same, whereby the grate-bars are locked, when desired, and the movement of the same for raking the fire is limited

to preserve the uniform distance between the grate-bars, and the removal of the stops will permit the projections of the bars to be turned to such a position as to increase the space between the bars, substantially as described.

6. The combination, with a supporting-frame and oscillating grate-bars connected for joint movement, of a lever connected with said grate-bars and moving with them, a hinged plate provided with locking projections and stops, and an actuating bar or key with projections for engaging the lever and locking projections of the plate, whereby the movement of the lever and grate-bars is limited in raking the fire and locked when the actuating-bar is removed, substantially as described.

384,410. FURNACE-GRATE. EBENARD H. WOODCOCK, Auburn, N. Y. Filed Feb. 4, 1888. Serial No. 263,026. (No model.)



Claim.—1. The combination, with a supporting-frame and an oscillating grate-bar, of a shaft connected with said grate-bar, journaled in the supporting-frame, and extending outwardly therefrom, and a sleeve movable longitudinally on the shaft and adjacent to a stationary portion of the construction, the said stationary portion and the said sleeve being provided, the one with a lug and the other with stops, adapted to engage when the sleeve is moved toward the stationary part and rocked, substantially as described.

2. The combination, with a supporting-frame and an oscillating grate-bar, of a shaft connected with said grate-bar, mounted in suitable bearings, and extending beyond the face of the frame at one end, and a sleeve movable longitudinally on the shaft, the frame and the sleeve being provided, the one with a lug and the other with stops, adapted to engage when the sleeve is moved toward the frame and rocked, substantially as described.

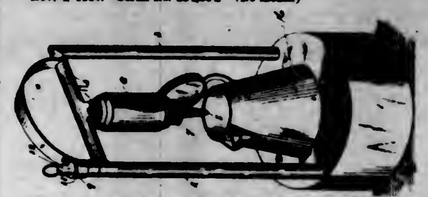
3. The combination, with a supporting-frame and an oscillating grate-bar supported in suitable bearings, of a shaft connected to said grate-bar, extending beyond the face of the frame at one end, and a sleeve movable longitudinally on the shaft, the said frame and the said sleeve being provided, the one with a lug and the other with stops, adapted to engage when the sleeve is moved inward toward the grate, the said lug having a reduced portion adjacent to the stops, whereby the sleeve and shaft are locked when the sleeve is in its inmost position, and are permitted a certain limited movement when the said sleeve is moved outward and the reduced portion only of the lug brought into position to engage the stops, substantially as described.

4. The combination, with a supporting-frame and an oscillating grate-bar supported on suitable bearings, of a shaft connected to said grate-bar, extending beyond the face of the frame at one end, a sleeve movable longitudinally on the shaft, the said frame and the said sleeve being provided, the one with lugs and the other with stops, and the said shaft having a recess the outer side of which inclines outwardly, and the sleeve being provided with a registering opening of less diameter than the outer diameter of the recess lengthwise of the shaft, and an arm for loosely engaging the opening in the sleeve and extending into the recess, whereby the sleeve may be moved longitudinally on the shaft to bring the reduced portion of the lug in line with the stops, and the shaft rocked when the parts are in position, substantially as described.

5. The combination, with a supporting-frame and oscillating grate-bars connected for joint movement, of a shaft of unequal diameters connected with said grate-bars and journaled in the supporting-frame, a sleeve fitting said shaft and capable of longitudinal movement thereon, having a projection or projections extending laterally therefrom, a portion of the inner face of said projection or projections being cut away or reduced, as shown and described, a stop located in the path of the projection or projections, and an arm for rotating said shaft and sleeve, whereby the sleeve can be moved outward to bring the reduced portion of the projection or projections against the stop to permit a lateral oscillation of said shaft, and moved inward for the projection or projections to engage said stop or lock or further limit the movement of the shaft, substantially as described.

6. The combination, with a supporting-frame and oscillating grate-bars connected for joint movement, of a shaft rigidly secured to one of the grate-bars, journaled in the frame, and having one extremity passing through and extending outwardly therefrom, the outwardly-extending portion having unequal diameters, a sleeve fitting said outwardly-extending portion, movable longitudinally therefrom, and provided with a projection or projections having a reduced portion, an arm for rotating said sleeve and shaft and moving the former longitudinally of the shaft, and a stop or stops located in the path of the projection or projections, limiting the movement of said shaft according to the position of the sleeve in respect to said stops, substantially as described.

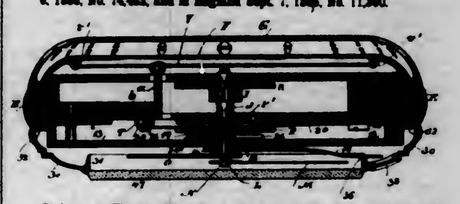
384,411. COFFEE STRAINER OR FILTER. THEOPHILE HAMEL, Houma, La., assignor of one-half to Alexis Pisse, same place. Filed Nov. 4, 1887. Serial No. 254,304. (No model.)



Claim.—1. In a strainer or filter for coffee, the combination of the steam-escape pipe having an interiorly-threaded upper end, the removable screw-threaded cap having a central aperture and provided with an annular flange or collar, and the valve or plug suitably secured to the steam-escape pipe and adapted to be inserted in the central aperture of said removable cap.

2. The combination of the water reservoir or boiler, the steam-escape pipe having interiorly-threaded upper end, the removable screw-threaded cap having central aperture and provided with an annular flange or collar, the valve or plug suitably secured to the steam-escape pipe and adapted to be inserted in the central aperture of said removable cap, the water-pipe, the transverse connecting-pipe, the downwardly-extending discharge-chamber having the lower screw-threaded end, the funnel-shaped interiorly-threaded dripper-chamber, and the cone-shaped perforated dripper-tube.

384,412. TIME-ALARM. GERMAIN BAPST and LOUIS FALIER, Fils, Paris, France. Filed Sept. 27, 1886. Serial No. 214,080. (No model.) Patented in France Dec. 5, 1885, No. 172,730; in Belgium Sept. 6, 1886, No. 74,462, and in England Sept. 7, 1886, No. 11,360.



Claim.—1. The combination, with the watch or clock movement and case, of a sonorous metal plate held securely at its edges within the case, a finger or pin secured to and projecting from said plate, a toothed wheel contiguous to the free end of said finger, and a spring-barrel and train of gearing for rotating the toothed wheel and moving the finger to vibrate the plate, and a movable stop brought into action by the time mechanism for allowing the alarm mechanism to operate, substantially as specified.

2. The combination, with the spring-barrel S, pinion *b*, fly T, and gearing for rotating said fly, of the sonorous plate *c*, finger *a* upon said plate, the wheel P, pin 19, and tubular arbor N, the grooved disk 24, its tubular arbor 12 and hand 18, the spring 20, for pressing the wheel P toward the disk 24, a stop, 21, at the outer end of the spring 20, the wheel P' of the time-movement, and the gearing between the wheels P' and P, for rotating the latter once in every twelve hours, substantially as specified.

3. In an alarm for time-pieces, the combination, with the spring-barrel S, its train of gearing, and a fly rotated by said gearing, of the wheel P and its tubular arbor fitted to slide upon the minute-arbor L, a pin upon the face of said wheel P, the tubular arbor 12, and grooved disk 24, the hand 18, secured to said arbor 12, the spring 20, bearing upon the wheel P, and a stop, 21, at the moving end of said spring, substantially as and for the purposes specified.

4. The combination, with the tubular arbor 12 and its hand 18 of the ring E and its circular rib 32, the bezel 30, fitted to turn upon said rib, and the flange 31 upon said bezel, having a notch to receive the outer end of said hand 18, substantially as and for the purposes specified.

384,413. DOUBLE GAGE. LOREN O. BARRETT, Brattleborough, Vt. Filed Mar. 19, 1888. Serial No. 267,788. (No model.)

Claim.—The gage-stock having within it two holes, one of which has a countersink, and each hole having its set-screw, in combination with the gage-rods B and C, having on their ends the scribing rotary disks *b* and *c*, secured by independent screws *b'* and *c'*, substantially as and for the purpose described.



384,414. MACHINE FOR CUTTING COCOANUT-MEAT. JOEL O. BARTHOLOMEW, New Haven, Conn., assignor of one-half to Benajah H. Douglass, Jr., same place. Filed Mar. 6, 1888. Serial No. 266,562. (No model.)



Claim.—1. In a machine for cutting cocoanut-meat, the combination of a revolving cylinder constructed with one or more longitudinal grooves in its periphery, a longitudinal bar arranged in each of said grooves, with its edge projecting from the periphery of the cylinder, the said projecting edge notched to form a series of cutters, and the said bar made adjustable with relation to the periphery of the cylinder, with a hopper opening against said cylinder, the edge of the hopper around the opening conforming to the shape of the cylinder and adapted to receive the cocoanut-meat and support the meat in contact with the face of the said cylinder, substantially as described.

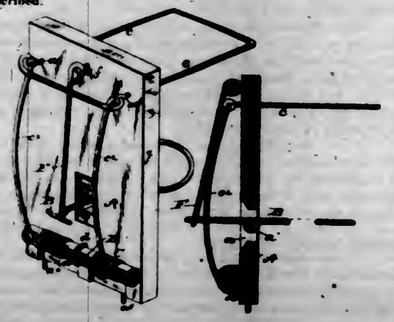
2. The combination of the revolving cylinder B, constructed with one or more longitudinal grooves in its periphery, the said grooves of L shape in transverse section, with longitudinal bars arranged in said grooves of corresponding L shape, the edge of said bars projecting from the periphery and notched to form a series of cutters, adjusting-screws for said bars, and a hopper of concave shape opening to said cylinder, with a follower in said hopper and corresponding to its interior shape, but of less diameter, so as to leave a space between the follower and the hopper, substantially as described.

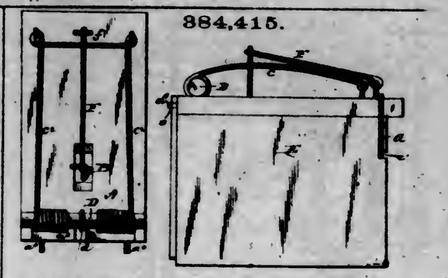
3. The combination of the revolving cylinder B, constructed with one or more longitudinal grooves in its periphery, a bar arranged in each of said grooves, the projecting edge of said bar notched to form a series of cutters on the periphery of the cylinder, and the said bars made radially adjustable, with a hopper, M, of concave shape upon its inside, opening to the periphery of said cylinder, and an adjustable follower, N, within said cylinder, its surface convex corresponding to the inner surface of the hopper, but of less diameter, the said follower provided with springs whereby it is yieldingly adjustable with relation to the inner surface of said hopper, substantially as described.

4. The combination of the cylinder B, constructed with one or more longitudinal grooves in its periphery, longitudinal bars G in said grooves made radially adjustable, the projecting edge of said bars notched to form a series of cutters, and a hopper, M, its inner surface of concave shape, opening toward the cylinder, a spring-follower, N, in said hopper and of corresponding shape, with a feed-roll in an opening through the hopper below the follower, substantially as described.

384,415. ANIMAL-TRAP. PHILEMON T. BEARD, Luling, Tex. Filed Apr. 2, 1888. Serial No. 269,612. (No model.)

Claim.—1. In a trap for gophers and the like, a platform having a rod or bar secured upon its upper face, and around which are coiled the ends of the choke-spring for increasing the tension of the same, in combination with the trigger, choker, and bait-hook, substantially as described.

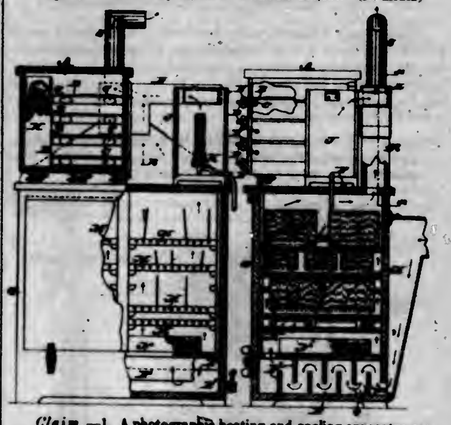




384,415.

2. In an animal-trap, a platform having a rod or bar secured to its upper face, and having the ends of the choke-spring coiled thereon, pins or prongs extending from one edge of the platform for engagement with a side of a box, a box having one of its sides elevated above the others, against which the pronged end of the platform abuts for engagement therewith, and having recesses in its opposite ends for the reception of a loop, which passes thence over the free end of the platform for binding the same to the box, substantially as described.

384,416. APPARATUS FOR HEATING, COOLING, VENTILATING, AND DRYING PHOTOGRAPHIC PLATES. WILLIAM BELL, Philadelphia, Pa. Filed May 10, 1887. Serial No. 237,667. (No model.)



Claim.—1. A photographic heating and cooling apparatus consisting of a chest with shelves for drying the coated plates, in combination with a refrigerating-chamber, substantially as and for the purpose set forth.

2. A photographic heating and cooling apparatus consisting of an adjustable chest with shelves for drying the coated plates, in combination with a refrigerating-chamber at one side and a heating device on another side thereof, substantially as and for the purpose set forth.

3. A chest containing shelves and screws having adjusting-heads C, on which said shelves are rested, substantially as described.

4. A chest provided with leveling-screws and containing plate-supporting shelves with adjusting-screws, substantially as described.

5. A chest with plate-supporting shelves, a storage-chest, with a heating device and exit-flue connected with the storage-chest, combined and operating substantially as described.

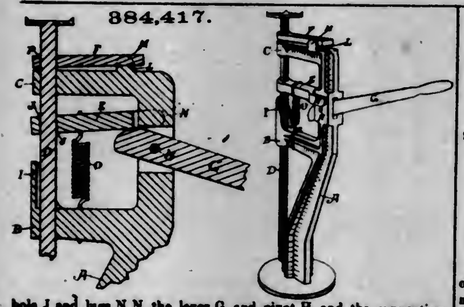
6. A photographic heating and cooling apparatus consisting of the chest G, in combination with the chest A thereon and provided with shelves, the heating-chest J, and the flue R, that portion of the top of said chest G not occupied by the said chests A and J and flue R being flat, substantially as and for the purpose set forth.

7. A photographic heating and cooling apparatus having a plate-receiving chamber with a heating-chamber having zigzag passages, and a flue with horizontal projections alternately secured to the inner wall thereof, substantially as described.

384,417. LIFTING-JACK. WILLIAM H. BIRD, Los Angeles, Cal. Filed Nov. 26, 1887. Serial No. 256,456. (No model.)

Claim.—The lifting-jack comprising the combination of the standard A, having the top arm, C, provided with the bolster L and lugs M M, the lower arm, B, provided with the projection I, the upper clutch-bar, F, provided with the hole P, the lower clutch-bar, E, having the

884,417.



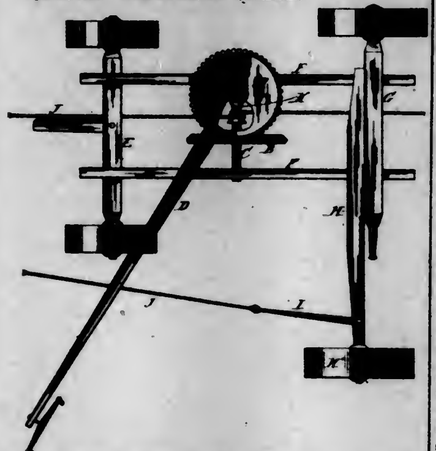
hole J and lugs N N, the lever G, and pivot H, and the supporting-rod D.

884,418. HAIR-CRIMPER. CHARLES H. RUSSELL, Chicago, Ill. Filed Dec. 3, 1886. Serial No. 184,627. (No model.)



Claim.—In a hair-crimper, the combination of the jaws *a* and *a'*, pivoted together, as at *b*, and having handles *b' b'*, provided with shoulders c^2 c^2, containing sockets *c* on their opposing faces away from and behind the pivot, and a spiral spring, *d'*, inserted at its opposite ends into the sockets *c*, and thereby removed from the pivot *b*, substantially as and for the purposes set forth.

884,419. DITCHING-MACHINE. ULRIC BLANCHENAYER, Chicago, Ill., assignor to the Blanchenayer Machine Company, same place. Filed Sept. 21, 1887. Serial No. 250,302. (No model.)



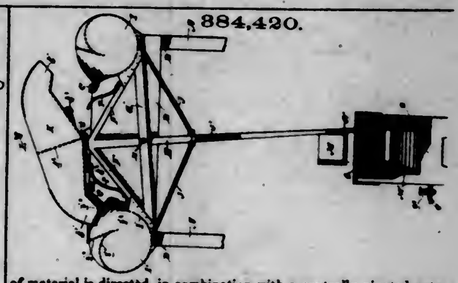
Claim.—1. The combination, with a long or extension axle of a ditching-machine, of a draw-bar, I, for overcoming the side turning or twisting of the machine in use, substantially as specified.

2. The combination, with the long or extension axle of an excavating-wheel ditching-machine, of the draw-bar I and tow-line J, for preventing side turning or swinging of the rear end of the wheel in use, substantially as set forth.

884,420. AUTOMATIC SAMPLING APPARATUS. ALLEN BRADFORD, Wardner, Idaho, assignor of one-half to Victor M. Clement, same place. Filed Feb. 23, 1888. Serial No. 265,095. (No model.)

Claim.—1. In a sampling apparatus, a centrally-pivoted swinging frame having a curved open-ended sampling-cup secured to its lower end and arranged to pass through the stream of material, whereby it receives a sample in one end and delivers it backwardly from the other end, substantially as herein described.

2. In a sampling apparatus, a sluice through which the stream of material passes and a trough in a lower plane and into which the stream



of material is directed, in combination with a centrally pivoted automatically-vibrating frame having a curved open-ended cup arranged to traverse the stream, whereby it receives a sample of the material in one end as it passes through and directs said sample backwardly from its other end, and a settling-tank into which the sample is deposited, substantially as herein described.

3. In a sampling apparatus, a sluice through which the stream of material passes and a trough into which the stream is directed, in combination with an automatically-vibrating frame having a ⊃-shaped open-ended cup passing through the stream of material, whereby it receives a sample of the material in one end and delivers it from the other, and a settling-tank provided with a slot in which the delivery end of the cup moves, substantially as herein described.

4. In a sampling apparatus, a pivoted swinging frame carrying a sample-cup arranged to traverse the stream of material whereby it is charged in passing through it, in combination with the means for automatically vibrating the swinging frame, consisting of self-discharging water-vessels upon each side of the frame and a tilting tank above receiving water and alternately discharging it into the water-vessels on each side, substantially as herein described.

5. In a sampling apparatus, a pivoted swinging frame having a cross-head and carrying on its lower end a sampling-cup arranged to traverse the stream of material, as described, in combination with the self-discharging water-vessels on each end of the cross-head of the frame, the pivoted tilting tank above having its ends arranged to discharge water into the vessels of the swinging frame, and a partition in its middle and a stationary water-supply above the central plane of the tilting tank, whereby the water is delivered to it alternately on each side of its partition, substantially as herein described.

6. In a sampling apparatus, a pivoted swinging frame having a sample-cup arranged to traverse the stream of material, as described, and a cross-head with self-discharging water-vessels on each end, in combination with the compartment tilting tank above arranged to discharge water alternately into the vessel at each end, and the stop-bars of the main frame, by which the vibration of the swinging frame is limited and defined, substantially as herein described.

7. In a sampling apparatus, a pivoted swinging frame carrying a sample-cup arranged to traverse the stream of material, as described, said frame having a cross-head with a self-discharging water-vessel at each end, in combination with the tilting compartment tank above, arranged to discharge its water alternately into the vessels of the swinging frame, the stop-bars by which the tilting of the tank is limited and defined, and the stop-bars by which the swinging of the tank is limited and defined, substantially as herein described.

8. In a sampling apparatus having a swinging frame carrying a sampling-cup traversing the stream of material, as described, the water-vessels I, through which the vibration of the frame takes place, said vessels having their rim-pieces eccentric inwardly at their tops, whereby an opening is formed to receive the water delivered to the vessels, substantially as herein described.

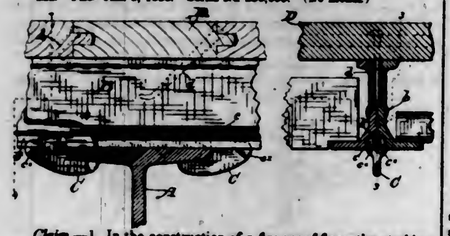
9. In a sampling-apparatus having a swinging frame carrying a sampling-cup arranged to traverse the stream of material, as described, the water-vessels I on the swinging frame, whereby it is overbalanced and its vibration effected, said vessels having their rim-pieces eccentric at their tops, their side pieces flaring, and extensions i^2, whereby a hopper-shaped opening is provided for receiving the charge of water, substantially as herein described.

10. In a sampling apparatus, a pivoted swinging frame having the curved sampling-cup, as described, in combination with the sluice through which the material passes and arranged to direct its stream across the path of the cup, the trough into which the stream is discharged, the settling-tank O, into which the charge from the sample-cup is delivered, and the overflow filter-chamber *q* in said tank, substantially as herein described.

11. In a sampling apparatus, the sluice through which the material passes and the trough into which it is discharged, in combination with the swinging frame and the sampling-cup secured to said frame and arranged to traverse the stream, said cup having an inclined collar on its lower portion, and the settling-tank into which the cup delivers its sample, substantially as herein described.

12. In a sampling apparatus, a sluice through which the material is directed and the trough for receiving it, in combination with the swinging frame, a curved sampling-cup carried by said frame and adapted to traverse the stream, whereby it receives a charge and directs it backward, said cup having a re-enforcing shoe on its back, and the settling-tank into which the cup delivers its sample, substantially as herein described.

884,421. FIRE-PROOF FLOOR. WILLIAM H. BROWN, Indianapolis, Ind. Filed Jan. 3, 1888. Serial No. 259,668. (No model.)

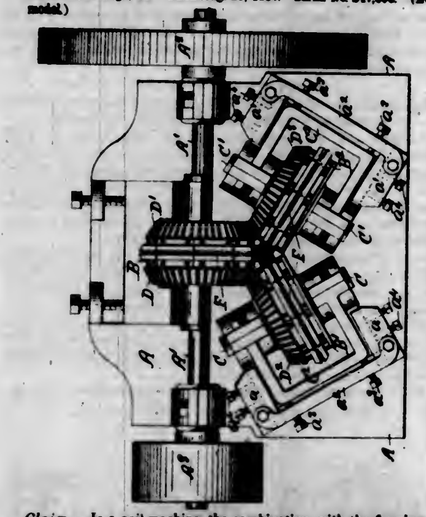


Claim.—1. In the construction of a fire-proof floor, the combination, with the floor-beam A, of the sleeper provided with a longitudinal recess, *b'*, the device C, formed with a head, *c*, adapted to fit into said recess, the ears *c'*, arranged to bear against the under side of said sleeper, and a hooked forwardly-extended portion arranged to engage with the flange of the floor-beam, substantially as set forth.

2. The combination, with the floor-beam, of the sleeper B, formed in two parts, with a longitudinal groove at its bottom and a longitudinal recess in its top, a device engaging with said longitudinal groove in its bottom, and the flange of the floor-beam for securing them together, the flooring arranged on said sleepers and secured thereto by nails driven into the longitudinal recess in the top of said sleepers and clamped between the sides thereof, substantially as set forth.

3. In a fire-proof floor, the combination of the sleeper formed with a recess in its top extending longitudinally thereof, and formed with substantially straight sides arranged to clamp the floor-nail when driven into said recess, and the flooring laid upon said sleeper and secured thereto by nails driven through said flooring and into said recess in its top, between the sides of which they are clamped, substantially as set forth.

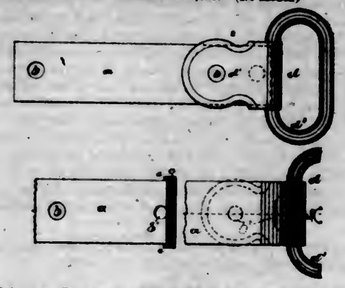
884,422. NAIL-MACHINE. GUSTAVUS H. BERDRICK and FRITZ RAUTERT, Chicago, Ill. Filed Aug. 23, 1887. Serial No. 247,606. (No model.)



Claim.—In a nail-machine, the combination, with the forming-roller B, mounted upon the main shaft, of the companion roller-dies B' B^2, set at an oblique angle relative to the roller B, and mounted upon independent shafts, said dies having a rolling contact and being provided on their peripheries with a depression equal to that of one-third the diameter of a nail, the shank whereof is triangular in cross-section,

the gear-wheels D D' D^2 D^3, the journal-blocks *a a'*, the bridge a^3, the yoke or yokes C^2, and the adjusting-screws a^4 a^5, all combined and arranged to operate substantially as and for the purposes set forth.

884,423. BACK-BAND LOOP. BROWN R. GARDNER, Howard, N. J. Filed Mar. 20, 1888. Serial No. 268,253. (No model.)



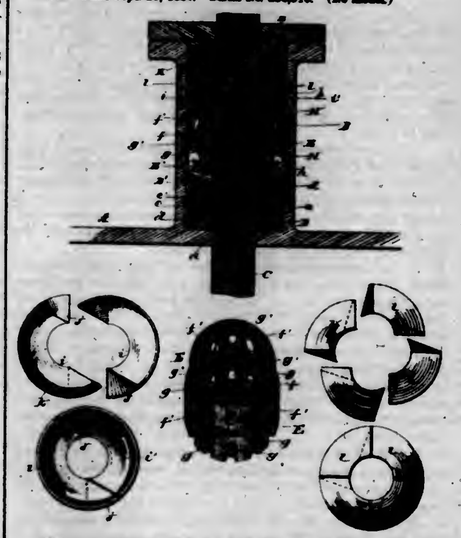
Claim.—1. The improved back-band loop for harness herein described, combining a strap, *a*, and a loop, *d*, cast around the end thereof, said parts being arranged and combined substantially as and for the purposes set forth.

2. The improved back-band loop for harness, combining therein a strap, *a*, perforation *b'*, and a cast loop, the metal of which surrounds the end of strap and passes through the perforation thereof, substantially as and for the purposes set forth.

3. The improved back-band loop for harness herein described, combining a strap bent or turned or provided with a stop at its extremity and a loop cast on and around said bent or turned extremity, as and for the purposes set forth.

4. The improved back-band loop for harness, combining therein a strap, a loop having a flange, *d'*, and downwardly-projecting bearing d^3, formed integral with said loop, the said flange or plate being formed above said plate and away from the same, and said projecting bearing lying below said plate, substantially as and for the purposes set forth.

884,424. STUFFING-BOX. ALEXANDER H. CLARK, Fond du Lac, Wis. Filed Sept. 23, 1887. Serial No. 250,510. (No model.)



Claim.—1. The combination, with the stuffing-box and a piston-rod extending centrally through the same, of a hollow packing-cylinder located within the stuffing-box and having perforations and connecting-ducts therein and elastic packing inside and outside, and automatically-adjustable packing-rings adjacent to the opposite ends of the packing-cylinder, substantially as set forth.

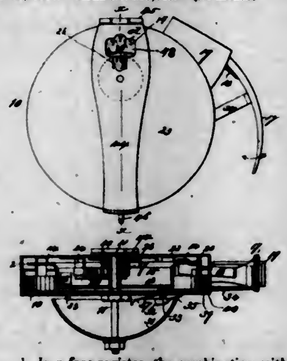
2. The combination, with a stuffing-box and a piston-rod extending centrally through the same, of a hollow packing-cylinder located within the stuffing-box and provided with perforations and connect-

ing-ducts therein and flexible packing inside and outside, and automatically-adjustable packing-rings at the opposite ends of the cylinder, one set of these rings being formed in sections of lead or Babbitt metal, and a flexible ring on the outside of said metallic sectional rings, substantially as set forth.

3. The combination, with the stuffing-box and piston-rod extending centrally therein, of a removable hollow packing-cylinder constructed in a single shell with a recessed portion, and having perforations through the main and recessed portions, and ducts or chambers connecting these perforations in the interior of the cylinder, and also chambers or ducts extending around one end of the cylinder and connecting the perforations in the main portion with the opening through the middle of the cylinder, substantially as set forth.

4. A hollow recessed packing-cylinder beveled at one end, and having perforations through its main portion, and also through the recessed portion, and ducts in the interior connecting the perforations, and also ducts on the exterior connecting the perforations in the main portion of the cylinder with the piston-rod opening, substantially as set forth.

384,425. **FARE-REGISTER.** HENRY R. COFFEY, Stockton, Cal. Filed Oct. 28, 1887. Serial No. 253,613. (No model.)



Claim.—1. In a fare-register, the combination, with the casing 10, the clasp 44, hinged to one side of the casing and provided with a glazed opening, *d*, and the staple 46 at the opposite side of the casing engaged by the free end of the clasp, of the cover 23 on the casing under the clasp, and having an opening, *c*, registering with the glazed opening thereof, and the rotary registering-disks within the casing having their graduations successively brought past said openings, substantially as set forth.

2. The combination, with the case, the disk 13, journaled therein and provided with a rim, 15, and a toothed graduated flange, 14, the projection 28 on the inner face of the rim and the disk 26 in the space inclosed by the said rim, but independent thereof, and having its axis parallel with that of the disk 13, a ratchet-wheel in the path of the projection 28, and the operating-lever having a pawl engaging the teeth of the flange 14, substantially as set forth.

3. The combination, with the case, the rotary disk journaled therein and provided with a rim having a toothed graduated flange and a projection on its inner face, a cover having an opening, *c*, and provided with a bracket, 24, a registering-disk, 26, provided with an operating-ratchet and journaled on said bracket, the ratchet being in the path of the said projection when the cover is in place, and the flange and disk 26 being visible through said opening, the hood 19 on the periphery of the casing, the lever 17, pivoted therein at its inner end, and the pawl 16 on the under side of the lever and projecting through the casing into engagement with the toothed flange, substantially as set forth.

4. The combination, with the casing having a bell, a registering mechanism, hammer-arm 33, and a fixed inclined projection, 37, adjacent to the inner side of said arm, of the lever 17, operating said registering mechanism, and having an arm, 34, provided with a projection, 35, adjacent to the outer side of the said arm, whereby when the arm 34 is moved inward the hammer-arm will be moved up the fixed inclined projection until it is free to pass the engaging edge of the projection 35, substantially as set forth.

5. The combination, with the casing 10, the post 11, secured within the casing, projecting through the rear face thereof, and having a gong, 31, on said outer end, the disk 13, journaled on the inner end of the post and provided with the rim 15, having toothed flange 14 and a projection on the inner side, and the cover 23, having a bracket and the disk 26, journaled thereon, and having ratchet 27 in the path of the said projection, of the lever 17, pivoted at its inner end to the casing and having a pawl, 16, projecting through the rim of the casing into engagement with the toothed flange, and an arm, 34, also projecting into the casing, and having a projection, 35, on its inner end extending through the casing under the gong, and a second projection, 40, the spring 39 acting on said projection, the spring hammer-arm 33, secured at *c* and extending into the path of the projection 35, and the inclined releasing projection 37 in the inward path of the spring-arm 33, substantially as set forth.

6. The combination, with the casing 10, the post 11, the register-ing-disk 13, having a hub notched at 4 and mounted on the post, the disk 26, rotated from the disk 13, and the operating mechanism, of the cover 23, having a central aperture to register with the outer notched end of the hub, and the hinged clasp 44, holding the cover in place on the casing and closing the said central aperture, substantially as set forth.

384,426. **LOCKET.** JOSEPH COHN, New York, N. Y. Filed Dec. 17, 1887. Serial No. 258,181. (No model.)



Claim.—1. In a locket, the combination, with an exterior casing provided with a front and a rear plate, of a picture-casing pivoted between the said plates, a spring-catch for locking the said picture-casing in place in the exterior casing, and a spring acting on the said picture-casing for swinging it open when released by the said spring-catch, substantially as shown and described.

2. In a locket, an exterior casing consisting of front and rear plates held apart at the bottom by a circular projection and at the top by a projection with a slot and a post held between the two plates at their lower ends, in combination with a picture-casing provided with a circular offset fitting on the said circular projection, a spring secured by one end to the said post and by its other end to the said picture-casing, a wedge-shaped lug formed on the said picture-casing, and a spring-catch adapted to engage the said lug and projecting through the said slot in the top projection of the casing, substantially as shown and described.

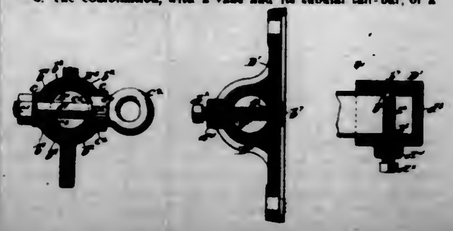
3. In a locket, an exterior casing provided with a front and a rear plate held apart by projections at the top and bottom, a picture-casing fulcrumed between the said two plates and provided with a wedge-shaped lug, a catch fulcrumed on one of the said plates and adapted to engage the said lug on the picture-casing, a spring for pressing the said catch in contact with the said wedge-shaped lug, and a handle formed on the said spring-catch and projecting through a slot in the casing, substantially as shown and described.

384,427. **WINDMILL-VANE.** ANDREW J. CORCORAN, Jersey City, N. J. Filed Mar. 19, 1888. Serial No. 267,600. (No model.)

Claim.—1. The combination, with the tubular tail-bar on which the vane is secured, of the tail-piece having a socket, B^3, receiving the end of the tail-bar, and a bolt, as C, inserted transversely through the socket and tail-bar and having a head or shoulder entering the socket and bearing against one side of the tail-bar, and a nut applied to the bolt and bearing against the exterior of the socket at the other side of the tail-bar, substantially as herein described.

2. The combination, with the tubular tail-bar B', and a tail-piece, B^3, having a socket, B^3, receiving the tail-bar, of the bolt C, having an eye, c^3, at the head and a shoulder, c^3, bearing directly against one side of the tail-bar, and a nut, *c'*, bearing against the exterior of the socket at the other side of the tail-bar, that portion of the bore of the socket on the side of said nut being of slightly smaller curvature than the exterior of the tail-bar, so as to cramp said bar thereinto, substantially as herein described.

3. The combination, with a vane and its tubular tail-bar, of a



384,427.



clip secured to the vane and having a socket receiving the bar, and a set-screw tapped into the outer side of the socket and passing transversely through one side of the bar and impinging against the inner surface of the bar at the opposite side, substantially as herein described.

384,428. **GLOVE-FASTENER.** GEORGE H. CORNELL, Baltimore, Md. Filed Mar. 27, 1888. Serial No. 268,687. (No model.)

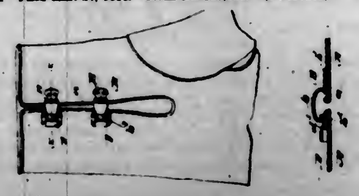


Claim.—1. The glove-fastener consisting of a cylindrical keeper provided with an engaging-tongue and a locking-bar provided with the teeth on its under surface for engaging said tongue, the said bar being held in engagement with the tongue by the inner edge of the keeper resting upon the upper surface of the said bar, substantially as described.

2. In a glove-fastening, the combination, with a cylindrical keeper having one lower outer edge struck up to form a lip, of a radial locking-bar provided with a series of teeth upon the under surface, said bar adapted to project through the keeper and engage the lip thereof, substantially as shown and described.

3. The combination, with a cylindrical keeper having one lower outer edge struck up to form a lip or tongue and an open flanged top, of a button secured to and capping the cylinder and a radial locking-bar having an under toothed surface adapted for engagement with the lip of the keeper, substantially as shown and described.

384,429. **GLOVE-FASTENER.** GEORGE H. CORNELL, Baltimore, Md. Filed Mar. 27, 1888. Serial No. 268,688. (No model.)

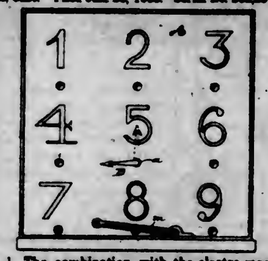


Claim.—1. The herein-described glove-fastener, consisting of a locking-plate provided with an arched body, and in inwardly-curved latch integral with one end having an outwardly-projecting horizontal tongue, and a keeper provided with a slot in its upper surface adapted to receive said latch and tongue, substantially as shown and described.

2. The herein-described glove-fastener, consisting of a locking-plate provided with an arched body, and an inwardly-curved latch integral with one end having an outwardly-projecting horizontal tongue, and a keeper provided with a slot in the upper surface extending from side to side and having inclined side walls, substantially as shown and described.

3. The herein-described glove-fastener, consisting of a locking-plate provided with an arched body, and an inwardly-curved latch integral with one end having an outwardly-projecting horizontal tongue, and a keeper, essentially U-shaped in cross-section, provided with a slot upon the upper face extending from side to side and having inclined side walls, substantially as shown and described.

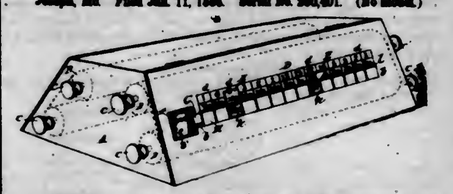
384,430. **ELECTRICAL ANNUNCIATOR.** HIRAM S. DOWNER, Zanesville, Ohio. Filed Jan. 26, 1888. Serial No. 262,267. (No model.)



Claim.—1. The combination, with the electro-magnet B, having heads *b b*, of a spindle, C, journaled in the heads below and to one side of the core, the index at the outer end of the spindle, the armature F, secured to the inner end of the spindle, normally extending upward adjacent to the core and provided on its lower end with a finger, *e*, projecting obliquely therefrom, the arms *d e*, secured to the head above the core, as at *f*, extending downwardly at opposite sides of the core and provided with stops *g h*, respectively, and the vertical rod G, having a lateral projection or arm, *j*, into the path of which the finger *e* at times extends, substantially as set forth.

2. The combination, with the electro-magnet and the spindle having an index and an armature provided with a finger or projection, of the vertical rod G, having a laterally-projecting arm or projection, *j*, into the path of which the said finger at times projects, guides *i i* for said rod, the horizontal rock-shaft *l*, having an arm, *k*, at its inner end engaging the lower end of the rod G, and an arm, *m*, at its outer end, and the spring *n*, exerting an upward strain on the arm *k* and rod, substantially as set forth.

384,431. **INTEREST-CALCULATOR.** CALVIN M. DURHAM, St. Joseph, Mo. Filed Jan. 11, 1888. Serial No. 260,401. (No model.)



Claim.—1. An interest-table consisting of a frame containing rollers, a movable principal and interest web operated by the rollers, a fixed time-indicator, and a series of flexible covers, all constructed and operated as herein shown and described.

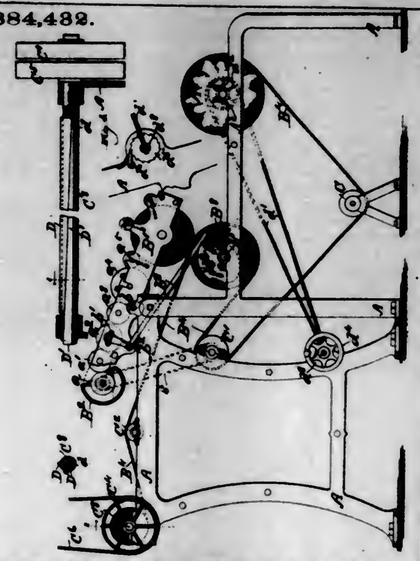
2. In an interest-table, the combination, with the frame A, indicator D, and interest-web C, of the flexible covers E.

384,432. **PRINTING-MACHINE.** JOHN H. RAHL, Chicago, Ill. Filed Apr. 23, 1887. Serial No. 236,441. (No model.)

Claim.—1. In a printing-machine, the combination, with the main frame, of the auxiliary frame B', pivotally connected to said main frame and provided with the slot *b'*, the inking-roller a^2, the arm b^3, the lever b^2, the cam-piece b^4, and the shaft b^5, whereby the inking-roller a^2 is made to have alternate contact with the companion inking-rollers located on each side of the same, substantially as set forth.

2. In a printing-machine, the combination, with the inking apparatus, of the type-roller B, the printing or impression roller B^2, the roller C, and the belt b^6, said rollers B B^2 and belt b^6 being rotated by

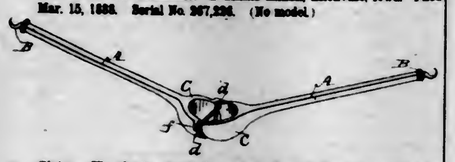
384,432.



the passage of the web to be printed, whereby the ink-rolls have a uniform speed with the printing-rolls, as set forth.

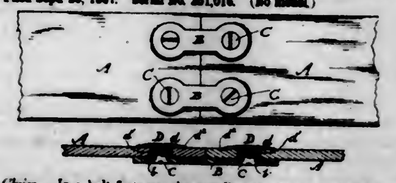
3. In a printing-machine, the combination, with the winding and driving shaft O², of the inking and printing mechanism, the system of carrying or guide rollers, as described, and the bearings supporting the roll of paper to be printed from, whereby the web of paper passing through imparts the required motion to all the working parts of the machine alike, substantially as set forth.

384,433. DEVICE FOR SUSPENDING AND SPREADING SLAUGHTERED ANIMALS. EVERARD EEKER, Knoxville, Iowa. Filed Mar. 15, 1888. Serial No. 267,236. (No model.)



Claim.—The device consisting of the bars A, having hooks B at their outer ends, and the counterparts C of a hinge-joint at their inner ends connected by means of a bolt or pin, and a chain fixed to the center of the said pin or bolt to operate in the manner set forth, for the purposes stated.

384,434. BELT-FASTENER. HJALMAR ELMBLAD, Chicago, Ill. Filed Sept. 20, 1887. Serial No. 251,016. (No model.)



Claim.—In a belt-fastener, the coupling or connecting bar B, having holes *b b*, in combination with screw-bolts C C, and the broad flat-headed nuts D D, having screw-threaded extensions or shanks *d d*, substantially as shown, and for the purposes set forth.

384,435. SAFETY-FLANGE FOR RAILROAD-RAILS. CHARLES M. IRWIN, Birmingham, Ala., assignor, by direct and mesne assignments, of one-half to J. M. Watt and Hudson Whipple, both of Washington, D. C. Filed Dec. 19, 1887. Serial No. 258,264. (No model.)

Claim.—1. The combination of a railroad-rail having a plurality of bolt-holes extending transversely through the sides thereof adjacent to the respective ends of each rail-section or length, the wheel-guard or safety-flange herein described having a curved lower portion adapted

384,435.

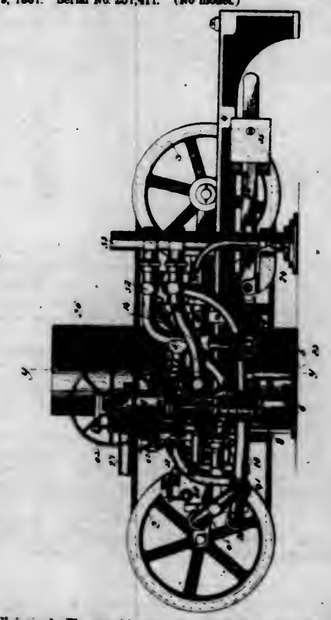


to fit the sides and crown of said rail, a horizontally-curved upper portion in line with the top of the crown of the rail, an upwardly-extending flange to receive the impact of the wheel and guide and retain the same in position upon the rail, and a series of bolt-holes in the side thereof corresponding in number and registering with the bolt-holes in the rail, and a series of bolts and nuts connecting said flange and rail together, substantially as set forth.

2. The wheel-guard or safety-flange herein described having a curved lower portion adapted to fit the sides and crown of a railroad-rail and a horizontally-curved upper portion in line with the top of the crown of the rail, and an upwardly-extending flange to receive the impact of the wheel and guide and retain the same in position upon the rail, substantially as set forth.

3. In combination with a railroad-rail, the safety-flange herein described having a curved lower portion adapted to fit the side and crown of the rail and an outwardly and upwardly extending top portion, the respective lengths of said flange being connected to the rail so as to break joints therewith, substantially as and for the purpose set forth.

384,436. HYDRAULIC ELEVATOR. WILLIAM T. FOX, Rochester, N. Y., assignor to The Crane Elevator Company, Chicago, Ill. Filed Dec. 9, 1887. Serial No. 257,411. (No model.)



Claim.—1. The combination of a main cylinder and an auxiliary cylinder having a piston therein which expels the water from said auxiliary cylinder as the elevator rises, with pipes connecting the auxiliary cylinder to the exhaust, and an automatic balanced valve, 16, comprising piston 19, so located upon the spindle 17 that it may close the passage between said connecting-pipes 14 and 15, or may be moved by said spindle to open said passage, and balancing-pistons 18 and 20

above and below piston 19, said valve being operated by pressure from the main cylinder through the pipe 24, whereby the said valve is opened when a predetermined pressure in the main cylinder is exceeded.

2. In a hydraulic elevator having a main and an auxiliary cylinder, the combination of a set of pipes connecting one end of the auxiliary cylinder to the water-supply, an automatic valve operated by pressure from the main cylinder and controlling the admission of water from said water-supply, a branch pipe communicating with the exhaust-tank, having an inwardly-opening check-valve and connected to the first-named set of pipes at points between the auxiliary cylinder and the automatic valve, and a passage leading from the aforesaid end of the auxiliary cylinder to the main cylinder, said passage being covered by a check-valve opening toward the main cylinder.

3. In a hydraulic elevator having a main and an interior auxiliary cylinder moving on a fixed piston secured to main cylinder, the combination of a set of pipes connecting one end of the auxiliary cylinder to the water-supply, an automatic valve operated by pressure from the main cylinder and controlling the admission of water from said water-supply, a branch pipe communicating with the exhaust-tank, having an inwardly-opening check-valve and connected to the first-named set of pipes at points between the auxiliary cylinder and the automatic valve, and a passage leading from the aforesaid end of the auxiliary cylinder to the main cylinder, said passage being covered by a check-valve opening toward the main cylinder.

4. In an elevator having a main and an auxiliary cylinder, the combination, with an automatic valve controlling the water of the auxiliary cylinder, of a pipe admitting water under the pressure of the main cylinder to operate said valve, and a valve connected to the main control-valve, admitting water to said pipe when the valve is opened to raise the elevator, and exhausting it from said pipe when the main valve is closed, as and for the purpose set forth.

5. In an elevator having a main and an auxiliary cylinder, the combination, with an automatic valve controlling the water of the auxiliary cylinder, of a pipe admitting water under the pressure of the main cylinder to operate said valve, and a valve connected to the main control-valve, admitting water to said pipe when the valve is opened to raise the elevator and exhausting it from said pipe when the main valve is closed, and a check-valve located on said pipe between the main cylinder and the valve last before mentioned, substantially as described.

384,437. BOOT OR SHOE. GEORGE S. PRAPPE, Urbana, Ohio. Filed Oct. 10, 1887. Serial No. 251,935. (No model.)



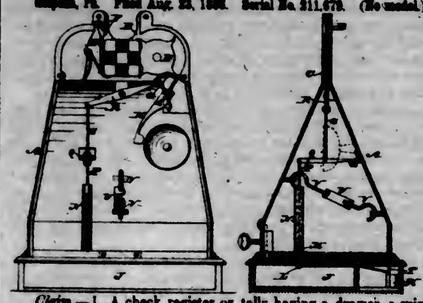


Claim.—1. A pattern for shoe-uppers, consisting of the vamp C and the two quarters A and B, one of the quarters being composed of the two pieces A′ and A², which together are of the same shape and size of the other quarter.

2. A shoe-upper formed of the vamp C, the quarters A and B, one of which, A, is composed of the two pieces A′ and A², which together are of the same shape and size as the quarter B, and a tongue-strip, I, of stiff material secured to the forward edge of the piece A′, said strip being wider than the piece A².

3. A shoe-upper formed of the vamp C, the quarters A and B, one of which, A, is composed of the two pieces A′ and A², which together are of the same shape and size as the quarter B, the facing-strips E and F, one of which is longer than the piece A′, and a top facing-strip, K.

384,438. CHECK REGISTER OR TALLY. ASHER B. GILL, Philadelphia, Pa. Filed Aug. 23, 1888. Serial No. 211,679. (No model.)



Claim.—1. A check register or tally having a drawer, a spindle for locking the same, and a lever operated by the inserted check for moving said spindle, the parts being combined and operating substantially as described.

2. In a check register or tally, a casing with throat, in combination with a spring-opened drawer, and mechanism, substantially as described, intermediate of the drawer and the throat, whereby the drawer is normally locked, but is unlocked and automatically opened when a check is inserted in the said throat, all substantially as described.

3. A casing having the throat B, in combination with toothed wheel D, pivoted lever R, a spring raised by said lever, a spindle connected to said spring and adapted to lock a drawer, and a drawer with a spring adapted to open the same, all substantially as described.

4. A check register or tally having a casing with a throat, a rotary toothed wheel, a spring-opened drawer, and mechanism intermediate of said toothed wheel and said spring-opened drawer for locking and unlocking said drawer, all substantially as described.

5. In a check register or tally, a casing having a throat, a toothed wheel operated by the inserted check, a locked drawer having a spring adapted to open the same, and mechanism intermediate of the wheel and the drawer for locking the same, all so combined and arranged that the insertion of a check operates the wheel, and thereby the intermediate mechanism, so that the drawer is automatically opened, all as described.

384,439. CARD-RACK. ALEXANDER R. GREENWOOD, Cleveland, Ohio. Filed Nov. 2, 1887. Serial No. 204,127. (No model.)



Claim.—The herein-described improvement in card-racks, consisting of an endless spiral coil, B, having its coil spread and flattened to overlap, and secured in the flattened manner to form the circle, heart, or diamond outline, substantially as specified.

384,440. ELECTRIC-CIRCUIT CONTROLLER. OTTO F. GRIEB, Newark, N. J. Filed Dec. 31, 1887. Serial No. 259,451. (No model.)



Claim.—1. The combination of a movable contact-piece, a coil-spring for moving the same in one direction or the opposite, according to the direction of stress exerted thereby, a pivoted support for one end of the spring, and a crank-pin coupled with said support for moving the same, substantially as described.

2. A circuit-closing device consisting of a movable contact-piece,

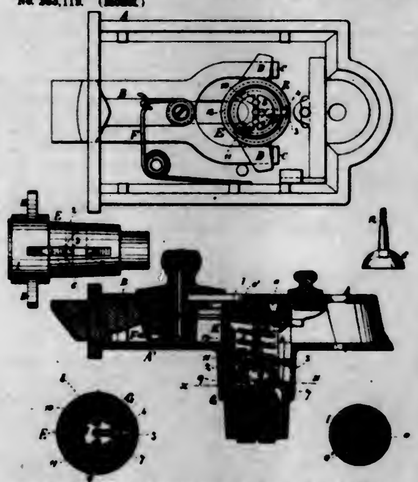
stationary contact-points, a coil-spring for actuating said contact-piece by throwing the same into and out of contact with said contact-points, a pivoted actuating-lever to which one end of the spring is connected for shifting the point of its support and its consequent direction of tension upon the contact-piece, a key for actuating the lever, and a connection between the key and the lever consisting of a crank-pin passing through a slot in the lever.

3. The combination of a movable contact-piece, contact-points for the same constituting the terminals of an electric circuit, a spring attached at one end to the contact-piece, a pivoted lever to the other end of which the remaining end of the spring is attached, said lever having a longitudinal slot and its point of support being intermediate between the ends of the spring, and a crank-pin passing through said slot, whereby the lever may be turned in either direction to carry the point of attachment of the spring upon one side or the other of the point of attachment of the lever.

4. In a circuit-controller, the combination of the movable piece A and its contact-points, the lever G, the spring K, attached at one end to the contact-piece and at the other end to the lever, the key E, and the crank *f*, moved thereby and engaging the lever G, substantially as described.

5. In a circuit-controlling device, the combination, with the base and the key pivoted thereon, of a movable contact-piece surrounding the axis of the key and movable independently thereof, a pivoted lever, a spring connecting the lever and the contact-piece, and a crank-pin operated by the key for moving said lever in one direction or the opposite, thereby changing the direction of pull exerted by the spring upon the contact-piece.

384,441. LOCK. JAMES HARTNESS, Torrington, Conn., assignor to the Union Hardware Company, same place. Filed Feb. 6, 1888. Serial No. 263,119. (Model.)



Claim.—1. The combination, with the bolt or latch and the cylinder for acting upon the same, of tumblers within the cylinder, a universal tumbler with a finger, against which universal tumbler the sliding tumblers act, a follower or support for the universal tumbler, a spring for moving the parts endwise of the cylinder, and a target having one or more openings therein for the passage of the finger, substantially as set forth.

2. The combination, with the cylinder E, of the circular case for supporting the same, a follower within the cylinder having a projection passing through the slot in the cylinder and into a slot in the case, a universal tumbler resting against the follower and having a projecting finger, 12, L-shaped tumblers sliding within the cylinder and acting upon the rim of the universal tumbler, and a perforated target for arresting the end movement of the parts, except when the finger passes into the perforation, substantially as set forth.

3. The combination, in a lock, of sliding tumblers, a universal tumbler against which the sliding tumblers act, and a finger projecting from the universal tumbler, a perforated target for arresting the movements of the parts, except when the finger passes into the perforation, substantially as set forth.

4. The combination, in a lock, of a universal tumbler having a projecting finger, sliding tumblers to act upon the same, and a target having two or more perforations, whereby the lock is adapted to two or more different keys, substantially as set forth.

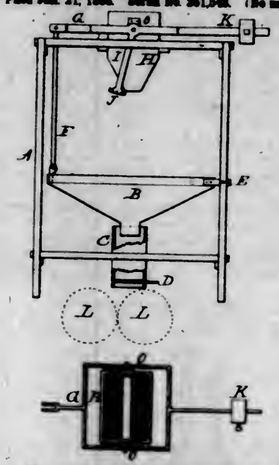
5. The combination, in a lock, with the universal tumbler, means for supporting the same, and tumblers actuated by the key for setting the universal tumbler, of the target having a roughened surface and one or more perforations in the same, substantially as set forth.

384,442. TUNING-KEY. BENJAMIN HERMANCE, Waltham, Mass. Filed Mar. 5, 1888. Serial No. 266,501. (No model.)



Claim.—The improved tuning-key hereinbefore described, made up of a support, B, having a tapered hole, *b*, a tapered peg, D, having a shoulder, *d'*, and a nut, F, support B receiving nut F and peg D, and nut F engaging the shoulder on the peg to force it home, substantially as and for the purpose set forth.

384,443. FEED-REGULATOR. ELLIS A. HOOVER, West Milton, Ohio. Filed Jan. 21, 1888. Serial No. 261,642. (No model.)



Claim.—The combination, with the supply-pipe, of the hopper having one side suspended on pivots and the opposite suspended from a pivotal lever, a valve attached to said lever to close the orifice of the supply-pipe, and a counter-weight thereon to serve as a counter-poise to the unloaded hopper, substantially as set forth.

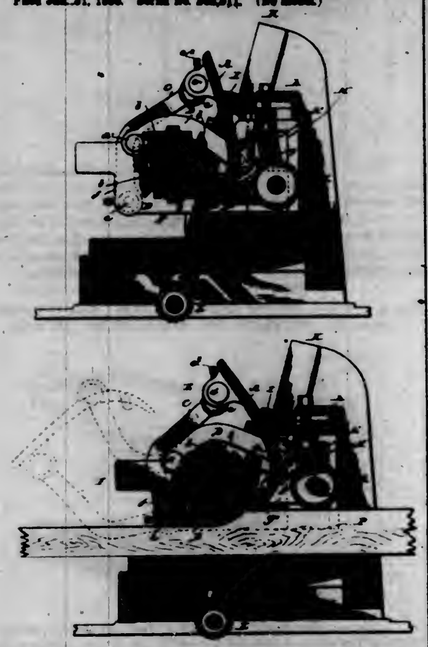
384,444. CHALK-LINE HOLDER. BENJAMIN HOWARD, Sheep Ranch, Cal. Filed Feb. 3, 1888. Serial No. 262,827. (No model.)



Claim.—1. A chalk-line holder consisting of an oval flexible chalk-receptacle with eyelets at its ends, one of which is removable, and having ribs or flanges adjacent to its ends, as and for the purpose shown and described.

2. A hollow chalk-line holder consisting of a rubber chalk-receptacle capable of being compressed, and formed with eyelets at its ends, one of which serves as a stopper, substantially as described.

384,445. PLANING-MACHINE. LOUIS P. HOTT, Aurora, Ill. Filed Jan. 31, 1888. Serial No. 262,511. (No model.)



Claim.—1. In a planing or surfacing machine, the combination, substantially as hereinbefore set forth, with the horizontally-arranged cutter-cylinder, of the chip-breaker arranged to rise and fall in the arc of a circle substantially concentric with the cutting-circle, and the swinging arms hung at the rear of the cutter-cylinder and pivotally attached to the chip-breaker, said arms being arranged to extend forwardly over the axis of the cutter-cylinder in opposition to the thrust of the incoming lumber against the chip-breaker when the latter is in its normal working position in front of the cutter-cylinder, and being further arranged to permit the chip-breaker to be swung over and to the rear of the cutter-cylinder, for the purpose described.

2. The combination, with the cutter-cylinder, of the chip-breaker arranged to rise and fall in the arc of a circle substantially concentric with the cutting-circle, the swinging arms C and D, pivotally connected with and arranged to control the chip-breaker in its said movement, and suitable adjusting devices, such as set forth, adapted to place the toe of the chip-breaker at a greater or less distance from the cutter-cylinder, for the purpose described.

3. The combination, with the cutter-cylinder, of the chip-breaker arranged to rise and fall in the arc of a circle substantially concentric with the cutting-circle, the swinging arms C and D, pivotally connected with and arranged to control the chip-breaker in its said movement, and the adjustable eccentrics E, applied to adjust the connections between the arms C and the upper portion of the chip-breaker, substantially as and for the purpose described.

4. The combination, with the cutter-cylinder, of the chip-breaker arranged to rise and fall in the arc of a circle substantially concentric with the cutting-circle, and the presser-roll mounted in vertically-movable bearings which support and lift the chip-breaker to a height proportional to the height the presser-roll is raised by the incoming lumber, but which permit the incoming lumber upon reaching the chip-breaker to raise the same free from the support of the presser-roll bearings and in the arc of a circle substantially concentric with the cutting-circle, substantially as set forth.

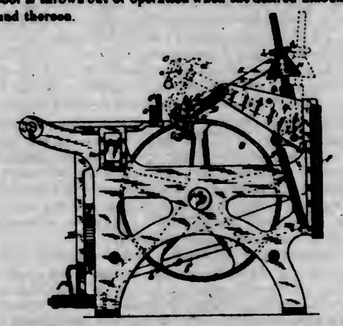
5. The combination, with the chip-breaker arranged to rise and fall in a path substantially concentric with the cutting-circle of the rotary cutter-cylinder, of the presser-roll mounted in vertically-movable bearings provided with stops which engage and lift the chip-breaker to an extent proportional to the extent to which the presser-roll is raised by the incoming lumber, but which permit the lumber upon reaching the chip-breaker to engage and lift the same free from contact with the stops, substantially as described.

6. The combination, with the chip-breaker attached to swinging arms, for the purpose set forth, and provided with lugs *a*, of the presser-roll mounted in vertically-movable bearings provided with stops *g'*, having inclined surfaces which engage the lugs upon the chip-breaker, substantially in the manner described.

7. The combination, with the cutter-cylinder and a vertically-adjustable support therefor, of the presser-roll journaled in bearings arranged to slide in vertical guides in the support for the cutter-cylinder, the chip-breaker arranged to rise and fall in the arc of a circle substantially concentric with the cutting-circle, and the swinging arms C and D, hung upon the support for the cutter-cylinder and pivotally attached to the chip-breaker, substantially as and for the purpose described.

384,446. MACHINE FOR WINDING SPOOLS, &c. ALFRED ISHERWOOD, Philadelphia, Pa., assignor to William P. Uhlinger, same place. Filed Dec. 27, 1887. Serial No. 258,902. (No model.)

Brief.—The invention consists in the improved devices whereby the spool is thrown out of operation when the desired amount of yarn is wound thereon.



Claim.—1. In a spool or quill winding machine, in combination, a wheel having a friction-surface, a frame adapted to receive a spool or quill, a pivoted arm cast with or secured to said frame, a spring-actuated pivoted rod, an adjustable tapering cap upon said rod, and against the surface of which cap the inner end of the pivoted arm rests when the material is being wound upon the spool or quill, substantially as and for the purpose specified.

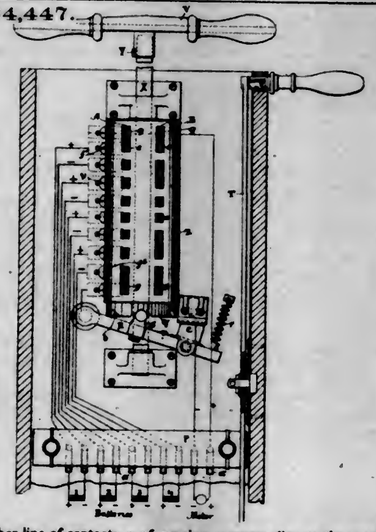
2. In a spool or quill winding machine, in combination, a wheel having a friction-surface, a frame adapted to receive a spool or quill, a pivoted arm cast with or secured to said frame, a pivoted spring-actuated rod threaded at its upper end, and a tapering cap internally threaded and surrounding said rod, and against the surface of which cap the inner end of the pivoted arm rests when the material is being wound on the spool or quill, substantially as and for the purpose specified.

3. In a spool or quill winding machine, in combination, a wheel having a friction-surface, a frame adapted to receive a spool or quill, a pivoted arm cast with or secured to said frame, a pivoted spring-actuated rod threaded at its upper end, a tapering cap internally threaded and surrounding said rod, and against the surface of which cap the inner end of the pivoted arm rests when the material is being wound on the spool or quill, and a nut or washer on said rod above said cap, substantially as and for the purpose specified.

384,447. REGULATING-COMMUTATOR FOR SECONDARY BATTERIES. EDMUND JULIEN, Brussels, Belgium, assignor to the Julien Electric Company, New York, N. Y. Original application filed Feb. 17, 1886, Serial No. 192,349. Divided and this application filed Dec. 9, 1886. Serial No. 221,113. (No model.) Patented in Belgium Feb. 15, 1884, No. 64,170; in Germany Feb. 15, 1886, Nos. 40,688 and 40,641; in England Feb. 19, 1886, No. 2,670; in Italy Mar. 20, 1886, No. 68; in France Nov. 3, 1886, No. 179,809; in Spain Nov. 27, 1886, No. 10,967, and in Portugal Dec. 20, 1886, No. 1,110.

Claim.—1. In combination with a number of independent batteries and a translating device, a current-regulator consisting of a series of brushes forming the terminals of the circuits of said batteries and translating device, and an insulating-block adapted to be moved relatively to said brushes and containing a number of lines of contact-pieces, *e g*, variously connected together in the different lines and adapted to make contact with the brushes of all the batteries and translating device and to arrange the batteries in various groups, and

384,447.



a further line of contacts, *c*, of number corresponding to the number of battery-terminals and so connected as to connect the batteries together in multiple arc at the same time that the translating device is cut out of the circuit, substantially as and for the purpose set forth.

2. In combination with a number of independent sources of electricity, a regulator having multiple couplings for coupling said sources in various orders, and a circuit-breaker operated by said regulator, substantially as and for the purpose set forth.

3. In combination with a current-regulator consisting of an insulating-support, lines of contact terminals carried thereby, and means for including any one of said lines in an electric circuit, the contact-pieces *c c* in the circuit, one fixed, the other carried by a lever operated by the movement of the current-regulator, substantially as and for the purpose set forth.

4. In combination with a current-regulator and a backing whereon the same is mounted, a line of studs on said backing electrically connected with the current-regulator, a movable insulating-bar carrying terminals electrically connected with sources of electricity and a translating device, and springs in rear of said terminals, substantially as and for the purpose set forth.

5. The combination of a number of batteries, a motor, electric circuits, a current-regulator for connecting said batteries in various groups in circuit with said motor and disconnecting the motor from the circuit, a shaft for operating said regulator, a lever for operating said shaft, and a stud and notched disk, substantially as described, whereby removal of the lever is prevented unless the regulator is placed so as to throw the motor out of circuit, substantially as set forth.

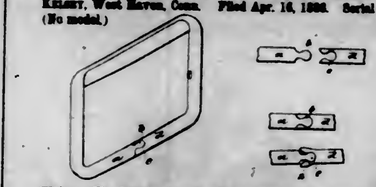
384,448. SHOE-MAKER'S LAST. GEORGE W. KELLER, Philadelphia, Pa. Filed Apr. 29, 1887. Serial No. 236,595. (No model.)



Claim.—1. The within-described flask for making a mold of the foot, said flask comprising a base portion, A, for the sole of the foot, an instep portion, B, covering the top of the foot, a portion, F, at the rear of the heel, opposite side portions, D, interposed between the heel portion and instep portion above the base, said side portions having flanges projecting inwardly toward the foot, which are adapted to separate the side portions from the other portions of the flask, and fastening devices for separably securing the various portions of the flask together in their proper relative positions, all substantially as specified.

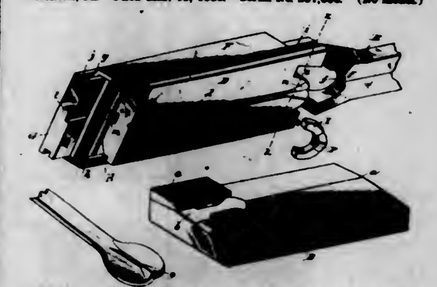
2. A shoe-maker's last composed of cast-lead or equivalent material, as described, and forming a reproduction of an individual human foot, all substantially as specified.

384,449. MANUFACTURE OF BUCKLE-FRAMES. GEORGE B. KELSEY, West Haven, Conn. Filed Apr. 16, 1888. Serial No. 270,810. (No model.)



Claim.—The herein-described improvement in the manufacture of buckle-frames, consisting in constructing the meeting ends of the wire, the one with a dovetail-shaped tenon and the other with a corresponding recess, the tenon set within said recess and contracted in the direction of the plane of the tenon, correspondingly expanding the tenon within the recess at right angles to the plane of the tenon, then closing the recessed portion over the tenon, substantially as described.

384,450. DIE FOR MAKING EYE-BARS. JOHN P. KINSLEY, Athens, Pa. Filed Mar. 13, 1888. Serial No. 267,063. (No model.)



Claim.—1. The combination, with a lower die section having a recess at one end and central longitudinal rib, of the flat upper die-section having central longitudinal groove, substantially as described.

2. The combination, with the upper die-section, flat upon its under face and provided with a central longitudinal groove, of the lower die-section having a central longitudinal rib and recessed at one end and the interchangeable plates at said recessed end, substantially as set forth.

3. The combination, with the lower die-section having central longitudinal rib and a recess at one end, of the upper die-section, flat upon its under face and formed with central longitudinal groove and depression *n*, and the rammer, substantially as described.

4. The combination, with the lower die-section having at one end a recess and the plates at said recessed end, of the upper die-section, the rammer, and the removable piece, all substantially as described.

5. The combination, with the lower die-section having recess at one end and the plates at said recessed end, of the upper die-section formed with depression *n*, the rammer, and the removable piece *l*, having the projection *p*, adapted to fit said depression, substantially as described.

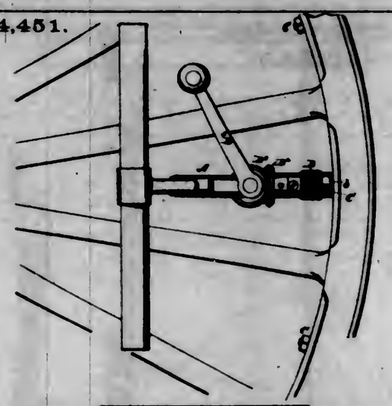
384,451. WRENCH. JOHN S. LAPE, Ypsilanti, Mich., assignor of one-half to Alva Worden, same place. Filed Apr. 5, 1888. Serial No. 269,688. (No model.)

Claim.—1. A tire-bolt wrench consisting of a shaft provided with a wrench-head at its end, and in connection therewith gear-wheels and a crank, whereby said wrench may be operated, and a cross-arm adapted to rest upon the spokes of the wheel, substantially as and for the purpose described.

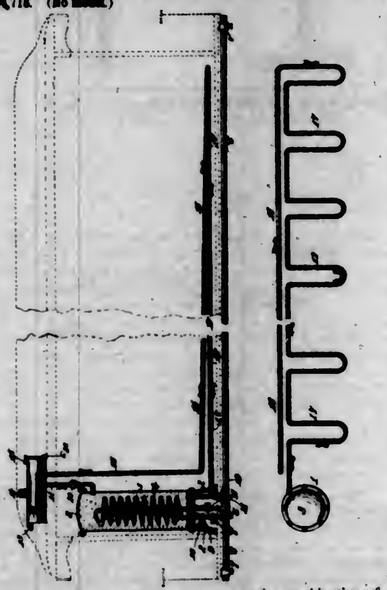
2. A tire-bolt wrench consisting of the combination, with the wrench, its shaft, and connecting-gears, of a cross-arm arranged in a plane above the level of the wrench-shaft, and adapted when resting upon the spokes to properly locate and support the wrench in position for its work, substantially as described.

3. The tire-bolt wrench consisting of a frame provided with shafts B' and B^4, engaged by gears, a crank, B^5, a cross-bar, A', and a removable wrench-head, B, substantially as and for the purposes described.

384,451.



384,452. RAILWAY-CAR-HEATING APPARATUS. EDWIN A. LELAND, Meriden, Conn., assignor to Charles C. Gleek, same place, and Leonard Richardson, Brooklyn, N. Y. Filed Jan. 18, 1887. Serial No. 224,718. (No model.)

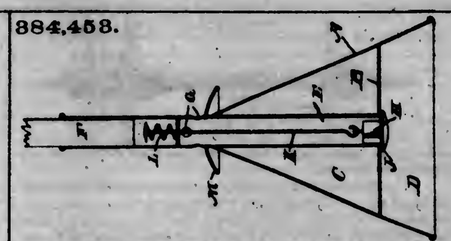


Claim.—1. In a car-heating apparatus, the combination of a water-heating tank located in a railway-car, a return-pipe coil supported in said tank, and having both of its ends extended through the tank-bottom and beneath the car-floor, a steam-pipe located beneath the car-floor and connected with one end or leg of the said pipe-coil for the purpose of conveying live steam into the coil, a blow-off cock, 8, located in the other end or leg of the pipe-coil, a cut-off valve, 21, located in the pipe-coil between the tank and steam-supply pipe, and hot-water-circulating pipes extending through the car and communicating with the water-heating tank, substantially as described.

2. In a car-heating apparatus, the combination of a water-heating tank located in a railway-car, the return-pipe coil 4, supported in said tank and having both ends or legs passed through the tank-bottom and provided with blow-off cock 8, drip-valve 10, and regulating-valve 21, the steam-supply pipe 6, communicating with one leg of said coil, the water-supply tank 12, the valved connecting-pipe 11, and the hot-water-circulating pipes 16 and 17, communicating with the water-heating tank, substantially as described.

384,453. ATMOSPHERIC CLOTHES-WASHER. SAMUEL T. LEMON, Richmond, Ind., assignor of one-third to G. Harland Lemon, same place. Filed July 23, 1887. Serial No. 245,717. (No model.)

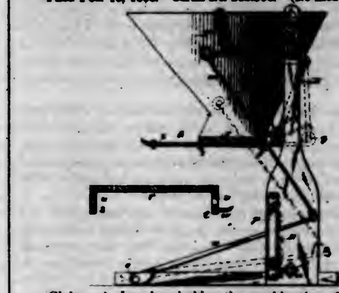
384,453.



Claim.—1. In an atmospheric clothes-washer, the combination, substantially as set forth, of an inverted cone provided with a downwardly-open air-chamber at its bottom, an air-tube disposed axially within said cone and having its lower end in communication with said air-chamber and having its upper end prolonged beyond the top of the cone to form a handle-socket and provided with side openings above the cone and below the handle and with an inwardly-projecting flange disposed above said side openings and below the handle, a valve seating upwardly at the lower end of said tube, a rod reaching upwardly from said valve through the tube and above said flange and provided with a head at its upper end, and a spring engaging the lower side of said head on the rod and the upper side of said supporting-flange within the tube and adapted to hold said valve closed and to permit it to open upon the upstroke of the implement.

2. In an atmospheric clothes-washer, the combination, substantially as set forth, of a cone, A, having diaphragm B and bottom chamber, D, tube E, provided with openings G, valve H, rod K, having its lower end detachably hooked to said valve, and spring L, supporting said rod in its upper position and disposed above said openings G.

384,454. BAG-HOLDER. WILLIAM F. LEWIS, Washington, D. C. Filed Feb. 10, 1888. Serial No. 263,503. (No model.)



Claim.—1. In a bag-holder, the combination of fixed and reciprocating bag-supports, a spring for projecting the movable supporters and keeping the bag stretched at its mouth, and a swinging bar for releasing the bag from the fixed supports, substantially as described.

2. In a bag-holder, the combination of fixed and horizontally-reciprocating supports, a compound crank provided with bends, substantially as shown, to which the reciprocating supports are attached, a spring and a treadle connected to said crank, substantially as described.

3. In a bag-holder, the combination of a hopper, fixed and reciprocating bag-supports, a compound crank crossing and secured to the hopper and provided with an operating-arm, a spring attached to the hopper and to said arm, and a treadle also attached to said arm, substantially as described.

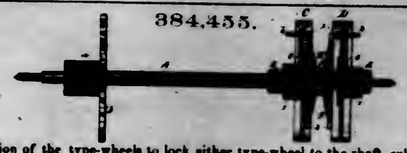
4. In a bag-holder, the combination of a hopper, fixed and reciprocating bag-supports, arms or ways under the hopper for supporting and guiding said supports, a compound crank, a curved swinging rod for releasing the bag from the fixed supports, a connection between said crank and rod, and a tension device for operating the crank, substantially as described.

384,455. PRINTING-TELEGRAPH RECEIVER. HENRY MANDEIN, New York, N. Y., assignor to John Anderson, same place. Filed Nov. 21, 1887. Serial No. 255,735. (No model.)

Claim.—1. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels and a clutch acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, substantially as set forth.

2. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels riding on the shaft and a clutch located between the type-wheels and acting at any point in the revo-

384,455.



lution of the type-wheels to lock either type-wheel to the shaft, substantially as set forth.

3. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels, a clutch acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, and unison-stops acting to stop at unison the wheel not clutched to the shaft, such wheel being rotated by the shaft until stopped at unison, substantially as set forth.

4. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels, a clutch acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, unison-stops acting to stop at unison the wheel not clutched to the shaft, and friction-producing devices causing the idle-wheel to be rotated by the shaft until arrested at unison, substantially as set forth.

5. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels, a clutch acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, unison-stop arms acting to arrest the type-wheels alternately, and a moving shaft or rod connected with the unison-stop arms and clutch-lever for operating them together, substantially as set forth.

6. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels riding on the shaft, a clutch located between the type-wheels and acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, a moving shaft for working the clutch-lever, and an adjustable connection between the shaft and the clutch-lever, substantially as set forth.

7. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels riding on the shaft, a clutch located between the type-wheels and acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, a rock-shaft having an adjustable rocking collar, and a pivoted clutch-lever having a horizontal arm engaging fingers on the rocking collar, substantially as set forth.

8. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels, a clutch acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, springs taking alternately in slots in the type-wheels or bearing thereon to produce friction, and arms acting to withdraw the springs alternately from such slots, substantially as set forth.

9. In a printing-telegraph receiver, the combination, with two rotating type-wheels, of separate inking-rollers bearing thereon and working parts lifting such rollers alternately from the type-wheels, whereby only the wheel that is being printed from will have an inking-roller bearing on it, substantially as set forth.

10. In a printing-telegraph receiver, the combination, with two independently-rotating type-wheels and unison-stop arms thrown alternately into the paths of rotation of working parts for stopping the type-wheels alternately at unison, of separate inking-rollers for such type-wheels and lifting-arms working with the unison-stop arms and acting to lift the inking-rollers alternately from the type-wheels, substantially as set forth.

11. In a printing-telegraph receiver, the combination, with a single driving-shaft, of two type-wheels, a clutch acting at any point in the revolution of the type-wheels to lock either type-wheel to the shaft, unison-stops acting to stop at unison the wheel not clutched to the shaft, such wheel being rotated by the shaft until stopped at unison, separate inking-rollers bearing on the type-wheels, and working parts lifting such rollers alternately from the type-wheels to reduce the friction of the idle-wheel on the shaft, substantially as set forth.

384,456. CARPET-STRETCHER. BRADLEY MANNING, Swanton, Ohio, assignor of two-thirds to Edward D. Manning, Chicago, Ill., and J. Flint Strayer, Swanton, Ohio. Filed Feb. 3, 1888. Serial No. 262,803. (No model.)

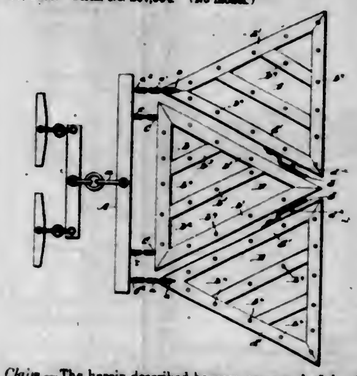
Claim.—1. The herein-described carpet-stretcher, composed of the head and foot sections, C and C', the plates B, secured to the head-section and having a series of coincident openings at different levels, the section C', having a series of horizontal openings at one end and vertical openings at its other end, the pivot-pin *e*, the stop-pin *f*, the clip *d*, and the pin d^2, for adjustably connecting the sections C and C' together, substantially as specified.

2. The combination, with the head having the section C and the foot having the section C', of the plates B, the pivot-pin *e*, and the stop-pin *f*, substantially as and for the purpose described.

384,456.

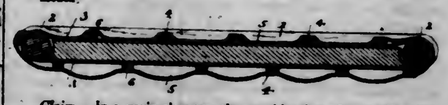


384,457. HARROW. ASA D. MARSH, Overton, Mo. Filed Mar. 21, 1888. Serial No. 267,964. (No model.)



Claim.—The herein-described harrow, composed of the draw-bar A, the triangular frame B, provided with proper teeth and with the staples d^3, secured at corresponding points to its side rails near its apex, the links or chains *c*, connecting the base-rail of the frame B, at equal points from its ends, to the draw-bar A, at equal points from the ends thereof, the triangular frames D, provided with proper teeth and with the pintles *d* on the side rails engaging the corresponding staples, d^3, and having their apices front, and the chains connecting said apices to the draw-bar at equal distances from the ends thereof, substantially as specified.

384,458. ELEVATOR FOR GRAIN-BINDERS. LAWRENCE MATHEWS, Summitville, Ohio. Filed Feb. 7, 1888. Serial No. 263,206. (No model.)



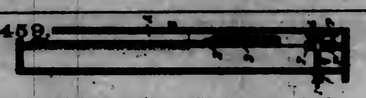
Claim.—In a grain-elevator, the combination of an endless belt, the transverse slats secured thereto upon its outer surface, and a loose endless belt or apron secured to the outer surface of said slats, substantially as set forth.

384,459. SASH-BALANCE. WILLIAM C. MERRELL, New York, N. Y. Filed Mar. 3, 1888. Serial No. 266,072. (No model.)

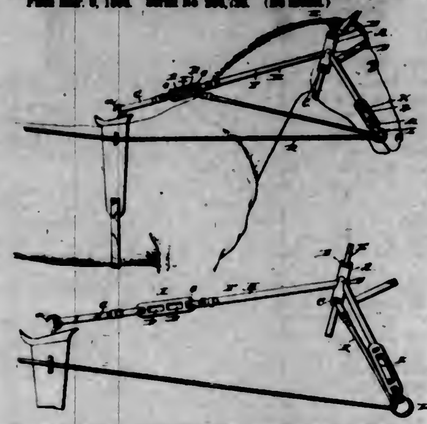
Claim.—1. The combination, with the sash, the cord, and the weight, of sleeve G, having a slot, a pulley, F, loose on the sleeve and to which the cord is connected, and a lengthwise-movable rod, H, in the sleeve, having a lug projecting through the slot to engage and disengage the pulley, substantially as described.

2. The combination, with the sash, the cord, and the weight, of the sleeve G, having a slot, and a ratchet-wheel, I, a pawl, M, a pulley, F, loose on the sleeve, a lengthwise-movable rod, H, in the sleeve, having a lug, K, to engage and disengage the pulley, a handle, I, on the rod, and a retracting-spring, J, substantially as described.

384,459.



384,460. CHECKREIN. ISAAC HILLER, West Lafayette, Ohio. Filed Mar. 9, 1888. Serial No. 266,752. (No model.)



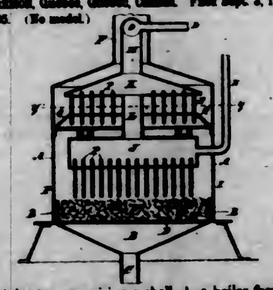
Claim.—1. The combination, with a bridle, of the gag-hooks A, connected to the head-stall, the checkreins attached to the bit-rings adapted to be engaged by the gag-hooks and having the links I, and the lines passed through the bit-rings and adapted to be connected to the links I or to the gag-hooks, substantially as described.

2. The combination, with a bridle, of the gag-hooks A, having the ears or projections D on their outer sides and having the end slots, B C, the straps E, engaging slots B and connecting the gag-hooks to the head-stall, the checkreins attached to the bit-rings engaged by the projections of the gag-hooks and having the links I, and the lines passed through the bit-rings and adapted to be connected to the links I or to the gag-hooks, substantially as described.

3. The checkrein having its ends provided with the links K, the latter having the slots or openings M N in their ends and centers, through which the checkreins are passed, whereby the latter may be lengthened or shortened, substantially as described.

4. The checkreins having the links I, adapted for the attachment of the ends of the lines, the latter being passed through the bit-rings, substantially as described.

384,461. BOILER FOR HOT-WATER HEATERS. ROBERT NEIL and JOHN MORRISON, Quebec, Quebec, Canada. Filed Sept. 3, 1887. Serial No. 248,735. (No model.)



Claim.—1. A heater comprising a shell, A, a boiler formed with a lower horizontal water-section, J, the upper horizontal water-section, K, and a pipe, L, connecting the sections, and the deflectors or dampers Q, hinged to the shell and surrounding the boiler, substantially as described.

2. A heater comprising a shell, A, a boiler formed with a lower horizontal section, J, the upper horizontal section, K, having pendent bars P suspended over the lower section, and a pipe, L, connecting the sections, and the deflectors or dampers Q, surrounding the boiler, hinged to the shell, and resting against the bars, substantially as described.

3. A heater comprising a shell, A, a boiler formed with a lower horizontal section, J, having pendent bars P suspended over the furnace, the upper horizontal section, K, having pendent bars P suspended over the lower section, and a pipe, L, connecting the sections, and the deflectors or dampers Q, substantially as described.

384,462. MUG OR OTHER BRUSH. ROBERT HUNT, Jr., Chicago, Ill. Filed June 20, 1888. Serial No. 266,992. (No model.)

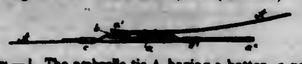


Claim.—1. The within-described top-knot or bristle-carrier for brushes, made in one piece, and consisting of a disk, *b*, having perforations *c* in it, and of a face flange or ring, *d*, substantially as and for the purposes specified.

2. The within-described top-knot or bristle-carrier for brushes, consisting of the disk *b*, having perforations *c* in it, the face flange or ring *d*, and the back rim, *e*, all integral with one another, essentially as and for the purposes specified.

3. The combination, with the handle B of the brush, of the independently-attached top-knot or bristle-carrier A, composed of the perforated disk *b*, face flange or ring *d*, and back rim, *e*, these latter integral with one another, substantially as described.

384,463. UMBRELLA-TIE. DAVID W. OSBORNE, Elizabeth, N. J. Filed Aug. 11, 1887. Serial No. 246,894. (No model.)



Claim.—1. The umbrella-tie A, having a button, *a*, near one end, a ring or eyelet, *b*, near the other end, and said end being folded back and the parts secured together by the eyelets *c c'*, whereby a pocket is formed for the reception of the button *a* between the parts, substantially as specified.

2. The umbrella-tie A, having a fastening, *a*, near the attached end, a ring-eyelet, *b*, secured in the tie near the outer or loose end, and said end being folded back against the opposite side of the tie to that upon which the fastening device *a* is secured, and connections through the tie at each side of the eyelet *b* to form a pocket, substantially as and for the purposes set forth.

384,464. CAN-SOLDERING MACHINE. JOHN O'FERRALL, Baltimore, Md. Filed Aug. 6, 1887. Serial No. 246,577. (No model.)



Claim.—1. In a can-soldering machine, the combination, with a solder-bath, of burners located on opposite sides of and above the point where the can-seam enters and emerges from the bath, whereby the solder is sweated into the seam from the outside, substantially as described.

2. The combination, with a reservoir having a solder-groove, *a*, of the burners E E, located on opposite sides of and above the point where the head or bottom seam of a can is made to enter and emerge from said solder-groove, whereby the solder is sweated into the seam from the outside, substantially as described.

384,465. BELT-FASTENER. WILLARD H. PACKER, Cleveland, Ohio. Filed Apr. 6, 1888. Serial No. 269,944. (No model.)

Claim.—1. A belt-fastener having a central web and a series of fingers on either side, with shoulders on the fingers corresponding to the thickness of the belt, the tips of the fingers projecting laterally from the body, substantially as set forth.

2. The belt-fastener herein described, having opposite rows of fingers, the body of each finger and the extremity thereof being in different but substantially parallel planes, with a shoulder offset between

384,465.



the body and extremity corresponding to the thickness of the belt, and a web connecting the fingers, substantially as set forth.

3. An improved article of manufacture consisting in a metallic belt-fastener formed in a single piece, with a web at its center and a series of fingers projecting oppositely from said web, each finger having a shoulder near its end at about right angles to the web and the plane of the finger above and below the shoulder, substantially as set forth.

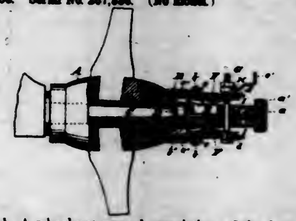
4. A belt-fastener provided with a web along its center and a series of fingers at each side of the web, having their extremities pointed and the points turned inward substantially at right angles to the plane of the fingers, substantially as set forth.

5. The belt-fastener herein described, having a series of fingers, the body and the extremity of each finger being in substantially parallel lines with a shoulder between, and the tips of the fingers extending outward from the body with the end of a belt having the extremities of the fingers directly in contact with the inside thereof, substantially as set forth.

384,466. COUGH REMEDY. GEORGE A. PATTON, Altoona, Pa. Filed Mar. 10, 1888. Serial No. 266,794. (No specimens.)

Claim.—The herein-described medical compound, consisting of elecampane, hoarhound, lovage, wild cherry, sugar, glycerine, aniseseed, and paregoric, for the purposes specified.

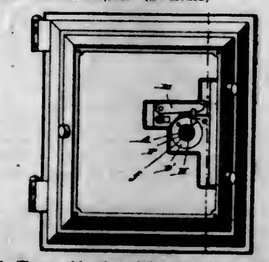
384,467. WRENCH. WILLIAM C. PERKINS, Sandy Point, Me. Filed Mar. 20, 1888. Serial No. 267,886. (No model.)



Claim.—1. A wheel-nut wrench consisting of the jaw pivoted within the rectangular collar, the fixed jaw, the respective jaws being provided in their ends with the nut-seat, the outstanding bearing-lugs, the levers fulcrumed between said lugs, the threaded bolt, the nut, and the springs, substantially as specified.

2. The combination, with jaws E, of the levers fulcrumed thereon, the threaded bolt passing through the slots in the levers and the openings in the jaws, and the nut having the crank-handle, substantially as specified.

384,468. PERMUTATION-LOCK. WILLIAM F. PETERS, Cincinnati, Ohio, assignor of one-half to the Alpine Safe Company, same place. Filed Jan. 23, 1888. Serial No. 261,572. (No model.)

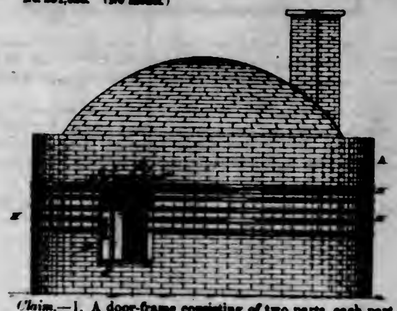


Claim.—1. The combination of the arbor A, tumblers provided with tappets, the inmost tumbler being also provided on its outside face with a hub, F, and an adjustable connection between the hub and arbor, substantially as and for the purpose set forth.

2. The combination of arbor A, provided with slot *a*, tumblers provided with tappets, the inmost tumbler being also provided with hub F, having slots *f*, pin G, and means for holding pin G in place, substantially as and for the purposes specified.

3. The combination of arbor A, provided with slot *a* and socket *a'*, tumblers provided with tappets, the inmost tumbler being also provided with hub F, having radial slots *f*, pin G, and screw H, substantially as and for the purposes specified.

384,469. FRAME FOR BRICK-KILNS. EDWARD H. PEER, JOSEPH CASTLE, and JOSEPH B. SCRUPP, Canton, Ill. Filed Oct. 6, 1887. Serial No. 251,630. (No model.)



Claim.—1. A door-frame consisting of two parts, each part consisting of a side piece and an inwardly-turned top piece forming half of an arch, the outer end of each of said arch-pieces being provided with a flat face, each face being provided with a transverse opening and a tie-bolt in engagement with said openings, substantially as described, and for the purposes set forth.

2. A door-frame consisting of two parts, each part consisting of a side piece and an inwardly-turned top piece provided on its outer inner end with a flat surface adapted to abut the corresponding surface on the adjoining top, the outer side of each top or arch being provided with a flat-faced lug, I, the abutting ends of the two parts of the frame and the lugs aforesaid being provided with openings in alignment for the reception of a bolt, and a bolt provided with nuts for engaging said opening, substantially as specified.

3. A two-part door-frame, each part consisting in a side piece and a top piece turned inward, said top piece forming half of an arch, said side and arched pieces being provided with transverse openings, the inner sides of the arched pieces being provided with flat surfaces D around the bolt-openings, substantially as specified.

4. A two-part door-frame, each part consisting of a side piece and a top piece turned inward, said top piece forming half of an arch, each of the frame-pieces being provided with openings, in combination with the bands H, and means for engaging the ends of said bands in the openings aforesaid, substantially as described.

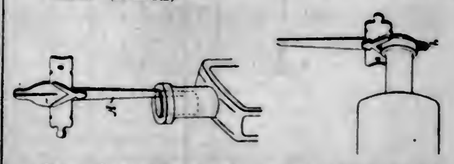
5. A door-frame consisting of two side pieces, each piece being provided with an inwardly-turned top piece, forming half an arch, said sides and top being provided with openings for the reception of bolts, each of said side pieces and its half-arch being provided in the rear with a flange, the outer face of said flange lying within the outer surface of the main frame-pieces and arch, whereby a recess is formed, substantially as described, and for the purposes set forth.

384,470. CRUTCH. JAMES F. PLUMER, Watertown, N. Y. Filed Feb. 15, 1888. Serial No. 264,102. (No model.)



Claim.—As an improvement in crutches, a trussed standard composed of four pieces arranged in pairs on opposite sides, the upper ends of said four pieces being inserted into the under side of the saddle in line with one another, and their lower ends being clustered together into a single column, substantially as and for the purpose shown and set forth.

384,471. COMBINED BOTTLE-OPENER AND LIQUID-DROPPER. EDWARD S. RANDALL, Dayton, Ohio. Filed May 2, 1888. Serial No. 272,555. (No model.)



Claim.—The combination of the arm A, curved in cross-section, and pointed flat end B, provided with guide C and groove B', all as and for the purpose set forth.

384,472. ELECTRIC WINDING ATTACHMENT FOR CLOCKS. ANDREW J. ROBIN, Augusta, Kans. Filed Oct. 20, 1887. Serial No. 252,753. (No model.)



Claim.—1. In an electric winding attachment for clocks, the combination of an electric motor having a reducing-train, a main arbor having a driving-wheel upon it provided with an inwardly-projecting pin, a spring-barrel journaled to revolve upon the main arbor and having a spring within it secured to it and to the arbor and provided with a winding-wheel meshing with the train from the motor and a reducing-pin upon its periphery, a weighted lever upon the shaft between the barrel and the driving-wheel, having an arm at one end projecting over the periphery of the barrel and engaged by the pin of the same, and a switch for opening and closing the circuit for the motor and provided with a spring-actuated lever or arm projecting inward to engage and be depressed by the weighted lever, as and for the purpose shown and set forth.

2. In an electric winding attachment for clocks, the combination of a motor having connection to the battery and to the frame, a winding-wheel and spring-barrel revolved by the motor and having a projecting pin upon the periphery of the barrel, a lever upon the arbor of the barrel, having a weighted end and an arm at the other end projecting over the periphery of the barrel and engaging the pin, a driving-wheel upon the arbor having an inwardly-projecting pin engaging the end of the lever, an insulating-block having a circular recess in its face, a disk pivoted in the recess and having segmental notches in its periphery and an inwardly-projecting insulated arm engaged by the arm of the weighted lever, a spring for raising the arm of the disk, a pin in the recess for stopping the disk projecting in one segmental notch, and strips upon one edge of the insulating-block, having their ends in contact with the portions of the periphery of the disk at the ends of the other segmental notch and having wire-connections to the battery and to the frame of the clock, as and for the purpose shown and set forth.

3. In an electric winding attachment for clocks, the combination of magnets arranged in a segment of a circle and having wire-connection at one end with a switch-plate upon the frame connected to the battery, an armature-cylinder having armature-bars in its periphery, shunt-wire coils between the magnets and having one end of their wires connected to the back of the clock-frame, a commutator upon the armature-shaft, brushes having wire-connection with the magnet-coils and the shunt-coils, a barrel upon the main arbor having the spring secured to it and winding the same by being rotated by the motor, a stop upon the main arbor for engaging a switch-lever, and a stop upon the time-train for carrying the stop of the barrel further, and a switch having a lever engaging the said stops and breaking the circuit when engaged and having wire-connection with the battery and with the frame, as and for the purpose shown and set forth.

384,473. VELOCIPEDE-SADDLE. GEORGE SALTER and JOHN WALKER, West Bromwich, England. Filed Oct. 26, 1887. Serial No. 253,023. (No model.) Patented in England Apr. 7, 1887, No. 5,173.

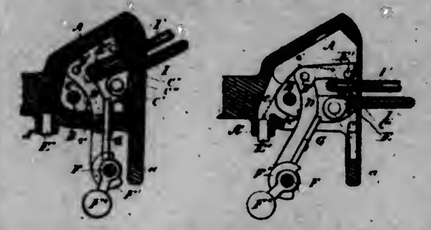
Claim.—1. The combination, with the bank of a velocipede-saddle, of volute springs *b*, connected at their inner ends to the square ends c^2 of a spindle, *c*, whose inner or plain middle part works within bearings or loops d^2 d^2, carried by bracket-framing *d*, secured to a framing of a machine by an adjustable clip, and with the outer end of the said springs connected to the under side of the seat by its hooked ends b^2 engaging and hooking into eyes or loops of hanging-bracket connections *g*, all substantially as set forth.

2. The combination, with a saddle-seat, *a* a^2 a^3, volute or scroll spring *b*, and bracket *d*, of an axis and arm, *e* e^2 e^3, which is operated by a screw passing through a screwed hole in the said bracket, substantially as set forth.

3. The combination, with a spring, *b*, inner end, b^2, and its axis *e* e^2 and arm e^3, of a screw, *c*, and screwed hole d^2 in bracket or framing through which it passes, as set forth.

4. The combination, with the front of the seat of a saddle-frame, *d*, and hooked connection-bracket *h* h^2, of a scroll-bracket, *i*, with its inner end surrounding a square spindle, as set forth.

384,474. CAR-COUPLING. JAMES SCOTT, Brockville, Ontario, Canada. Filed Dec. 14, 1888. Serial No. 135,847. (No model.)



Claim.—1. The combination of the draw-head A, pivot B, lever C, stop C', pins C' C'' and *c'*, notch *c*, link I, lever D, pivot D', hub D'', latch E, pivot E', cord *e*, weight E'', guide A', finger G, shaft F, cams F', and weights F'', substantially as set forth.

2. In a car-coupler, the combination of the lever C, having removably connected to its lower forward end the coupling-link I, held thereon in a fixed position, and having at the upper edge of said end the stop C' and in its lower edge the notch *c*, the lever D, having its upper part forked and pivoted to the lever C forward of its pivot center, and having pivoted to its lower part the swivel-finger G, adapted to enter the notch *c*, and the latch E, pivoted in the upper forked forward end of the lever D and adapted to engage the stop C', substantially as set forth.

3. In a car-coupler, the combination of the lever C, having at its upper edge on the forward end the stop C', the link I, pivoted to said forward end below said stop C', pivot C', and pin *c'*, adapted to carry said link removably in a fixed position and approximately in a line with the upper edge of the forward end of said lever, substantially as set forth.

4. The combination of the lever C, having stop C', lever D, latch E, pivot E', and weight E'', substantially as set forth.

5. The combination of the lever C, lever D, latch E, stop C', and finger G, substantially as set forth.

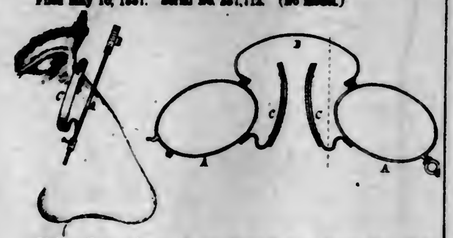
6. The combination of the draw-head A, pivot B, lever C, and link I, substantially as set forth.

7. The combination of the lever D, shaft F, cams F', weights F", and finger G, substantially as set forth.

8. The combination of the lever C, having stop C', pin c', and notch c, lever D, latch E, finger G, and link I, substantially as set forth.

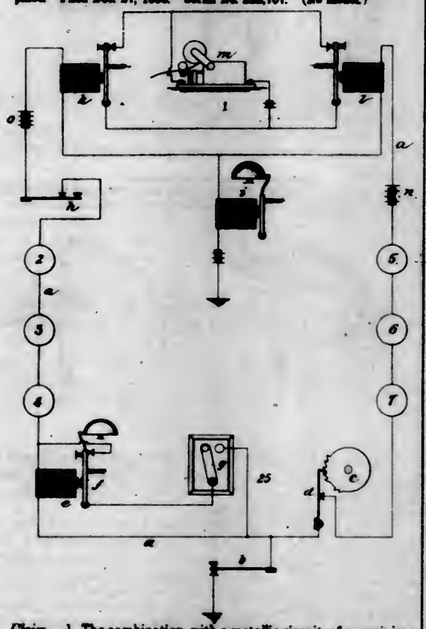
9. The combination of the levers C and D, latch E, stop C', link I, pin C", and finger G, substantially as set forth.

384,475. SPECTACLES. ARMINIA SCHNEIDER, New York, N. Y. Filed May 10, 1887. Serial No. 237,712. (No model.)



Claim.—In eyeglasses, the combination of a flexible bow-spring and frames for lenses, with elastic nose-pieces attached at their lower ends to said frames, the bottom part of said nose-pieces being bent inward toward the eyes, the middle part being bent parallel, or nearly so, to the plane of the lenses, and the upper ends being unattached and freely movable, all substantially as specified.

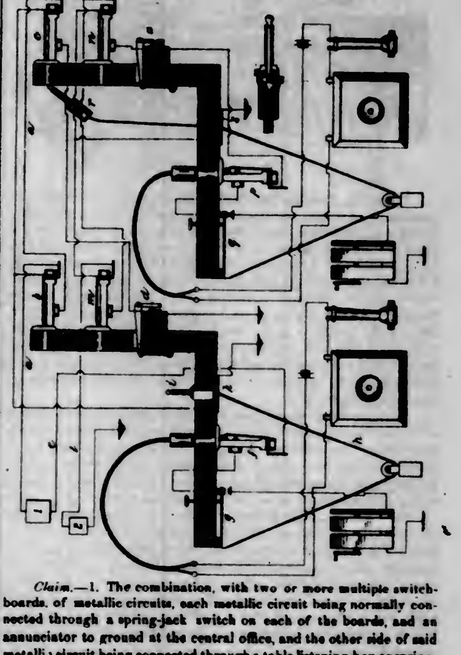
384,476. POLICE ELECTRIC SIGNAL SYSTEM. CHARLES R. SUMNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Serial No. 222,707. (No model.)



Claim.—1. The combination, with a metallic circuit, of a receiving-instrument in a local circuit and two relays, one on each side thereof, a branch circuit to ground, including battery and signal-receiving device, batteries in the metallic circuit, one on each side of said ground-branch, and a circuit-breaking device, all at the central station, and district signal-boxes included in said metallic circuit at different substations, and a normally-open ground-branch at each of said stations, including a key for closing the metallic circuit to ground, and a signal-receiving device at each station, substantially as described.

2. The combination, with a metallic circuit, including a central station and several sub-stations, of a branch circuit at the central station from said metallic circuit to ground, said branch including a battery and electro-magnet of a signal-receiving device and battery included in said metallic circuit on each side of said ground-branch at the central station, signal-transmitting instruments included in said metallic circuit at different stations, and a key at each of one or more of the stations, whereby the metallic circuit may be closed to ground at said key or keys, as desired, substantially as described.

384,477. MULTIPLE SWITCH-BOARD CIRCUIT. CHARLES R. SUMNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Serial No. 222,710. (No model.)



Claim.—1. The combination, with two or more multiple switch-boards, of metallic circuits, each metallic circuit being normally connected through a spring-jack switch on each of the boards, and an annunciator to ground at the central office, and the other side of said metallic circuit being connected through a table listening-key or spring-jack and a flexible cord and plug to ground, a loop-plug, with its cord, including a telephone at each board, and switching devices whereby two metallic circuits may be connected together by inserting the plug which forms the terminal of one line in a spring-jack switch of the other line, while the annunciator of the line whose plug is inserted is left in circuit as clearing-out annunciator.

2. The combination, with two or more multiple switch-boards, of metallic circuits, each metallic circuit being normally connected through a spring-jack switch on each of the boards and an annunciator to ground at the central office, and the other side of said metallic circuit being connected at the central office with a flexible cord and terminal plug normally resting upon a ground-connection, a loop-plug with its cord, including a telephone at each board, and switching devices whereby two metallic circuits may be connected together by inserting the plug which forms a terminal of one line in a spring-jack switch of the other line, while the annunciator of the line whose plug is inserted is left in circuit as clearing-out annunciator.

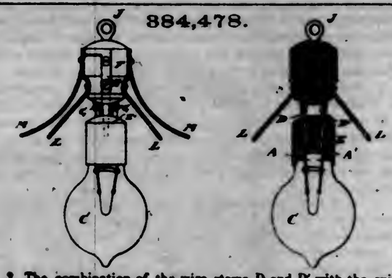
3. In a metallic-circuit telephone system, the combination, with one end of the circuit connected through a switch upon the switch-board, of the other end of the same circuit connected to a flexible cord and plug upon the same switch-board, whereby connections may be made with either or both ends of the said metallic circuit upon the same board.

4. In a telephone-exchange system, a circuit normally connected to ground at the central office and through an annunciator and switch to the subscriber's station and back to the central office, in combination with a flexible cord and plug included in said circuit and a ground-connection for said plug, said plug, when lifted and inserted in the switch of the line, completing a metallic circuit between the central office and subscriber's station and removing both ground-connections.

384,478. INCANDESCENT-LAMP SOCKET. JOHN SPINK and CHARLES GARNETT, Bradford, County of York, England. Filed Jan. 26, 1888. Serial No. 262,092. (No model.)

Claim.—1. The combination of the platinum links or lamp-terminals A and A' with the wire stems D and D' and the collar E, having the interior space E' filled with insulating material, all being arranged substantially in the manner and for the purpose described.

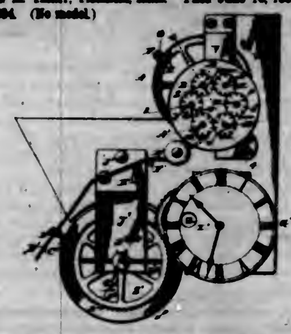
384,478.



2. The combination of the wire stems D and D' with the spiral springs G and terminals H and H', in the manner and for the purpose described.

3. An electric-lamp holder having the two spiral springs G inclosed within a holder-block, and surrounding and embracing the wire stems D D', which are connected with the terminals of the lamp, substantially as described.

384,479. REGISTER AND RECORDER FOR REVOLVING SHAFTS. SILAS H. TERRY, Pittsfield, Mass. Filed June 10, 1887. Serial No. 240,894. (No model.)



Claim.—1. The combination, with the clock having the wide gear-wheel mounted on its mainspring-shaft, and the plate J', having the bearing in its lower end, of the screw having the collar, the screw-cap, the revolving record-drum having the central pillar formed with the longitudinal threaded aperture, and the gear-wheel mounted upon said pillar, substantially as set forth.

2. The combination, with the clock having the wide gear-wheel mounted on its mainspring-shaft, of the bearing-plate having the slot and the bearing at the inner end of the said slot, and the reduced slot, the screw having the collar provided with the lug, the screw-cap, and the revolving record-drum having the central pillar formed with the longitudinal threaded opening and the gear-wheel mounted upon it, substantially as set forth.

3. The combination, with the clock having the wide gear-wheel mounted on its mainspring-shaft, of the bearing-plate formed with the main slot and the bearing at the inner end of the said slot, and having the reduced slot, as described, the screw having the collar provided with the lug, the screw-cap formed with the concaved inner end, and the revolving record-drum having the central pillar formed with the longitudinal threaded opening and the gear-wheel mounted upon it, substantially as and for the purpose herein set forth.

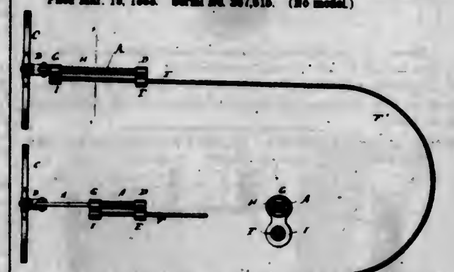
4. The combination, with the mechanism consisting of the parallel disks, the series of shafts mounted therein and having the intermeshing pinions and gear-wheels, the first shaft having the large gear-wheel on its projecting rear end, and one of the said shafts having the lug secured upon it, the dial having the circular scales marked upon it, and the indicator-hands secured upon the outer ends of the said shafts, of the centrally-pivoted spring-actuated lever having the pointed marker at its lower end, and the mechanism consisting of the clock having the wide gear-wheel mounted on its mainspring-shaft, the plate J', having the bearing in its lower end, the screw having the collar, the screw-cap, the revolving drum having the central pillar formed with the longitudinal threaded opening, the gear-wheel mounted upon said pillar, and the record band or strip of paper or other suitable material removably secured around the said drum, all substantially as set forth.

5. The combination, with the mechanism consisting of the parallel disks, the series of shafts mounted therein and having the intermeshing pinions and gear-wheels, the first shaft having the large gear-wheel on its projecting rear end, and one of the said shafts having the lug secured upon it, the dial having the circular scales marked upon it, and the indicator-hands adjustably secured upon the outer ends of the said shafts, of the centrally-pivoted spring-actuated lever having the pointed marker at its lower end, and the mechanism consisting of the clock having the wide gear-wheel mounted on its main-spring-shaft, the bearing-plate formed with the wide slot, the bearing, and the reduced slot, the screw having the collar provided with the lug, the screw-cap, the flanged drum having the central pillar formed with the longitudinal threaded opening, and the gear-wheel mounted upon said pillar, and the record-strip of paper or other suitable material removably secured around the said drum, all substantially as and for the purpose herein set forth.

384,480. PRODUCTION OF BLUE COLORING-MATTER. EDUARD ULLRICH, Hochst-on-the-Main, Prussia, Germany, assignor to the Farbwerke, vormals Meister, Lucius & Brüning, same place. Filed Dec. 14, 1887. Serial No. 257,577. (No specimens.) Patented in Germany Dec. 20, 1883, No. 28,573; in France Dec. 27, 1883, No. 173,137, and in England Jan. 1, 1884, No. 49.

Claim.—The production of methylene-blue by subjecting para-amido-dimethylaniline, hydrochlorate of dimethylaniline, and hyposulphite of sodium to the action of an oxidizing agent, as bichromate, with heat, substantially as set forth.

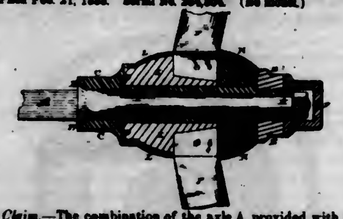
384,481. SPECTACLE-TEMPLE. MAURICE A. VANDERWAAG, Rensselaerville, assignor of one-half to Adolph Reichtold, Brooklyn, N. Y. Filed Mar. 19, 1888. Serial No. 267,615. (No model.)



Claim.—1. In spectacles, the combination, with a lens-frame or lenses, of temples hinged to the same, each temple being composed of a hinged guide-piece and a sliding ear-wire, collars provided with eyes secured on the guide-piece and ear-wire, respectively, and a spiral spring surrounding the guide-piece between said collars, substantially as herein shown and described.

2. In spectacles, the combination, with the lenses or lens-frames, of a guide-piece hinged to the outer end of each lens or lens-frame, which guide-piece is square in cross-section, a collar fixed on the swinging end of each guide-piece, an eye formed on the bottom of each of said collars, an ear-wire having its front end passed through said eye, a collar fixed on the front end of each ear-wire, an eye with square aperture on said collar, through which said square aperture the guide-piece is passed, and a spring coiled around the guide-piece between the fixed collar and movable eye on said guide-piece, substantially as herein shown and described.

384,482. VEHICLE-WHEEL. JOHN K. VAN PELT, Hawkville, Tenn. Filed Feb. 21, 1888. Serial No. 264,994. (No model.)



Claim.—The combination of the axle A, provided with the collar B, which is beveled upon its inner side, the box C, having its inner end made to conform to the collar and provided with the shoulder D at its inner end and a screw-thread at its outer end, the wooden part I, having inclined sockets to receive the tenons O on the inner ends of the spokes P, the wooden part J, the shell N, the nuts E G, and the cap F, substantially as shown and described.

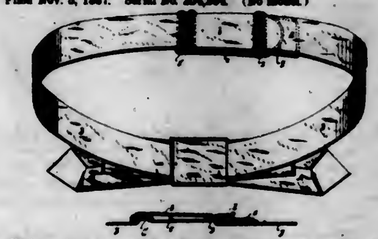
384,483. OVERSHOE. ALBERT B. WALTERS, Philadelphia, assignor of one-half to Joseph H. Black, Columbia, Pa., and David L. Oliver, Camden, N. J. Filed June 21, 1887. Serial No. 241,975. (No model.)

384,483.



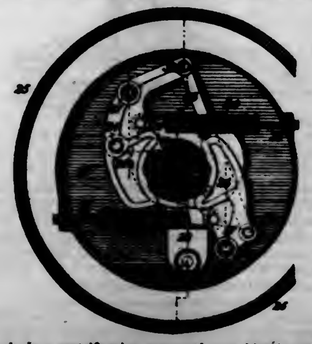
Claim.—As an improved article of manufacture, a rubber boot or shoe having its sole or tread provided with one or more recesses or depressions and strips of textile material cemented in said depressions, so as to be removable therefrom when worn out, substantially as set forth.

384,484. NECKSCARF. WILLIAM I. WEINBERG, New York, N. Y. Filed Nov. 3, 1887. Serial No. 254,994. (No model.)



Claim.—As a new article of manufacture, a scarf or bow having one end, *b*, of the band B turned over outwardly upon itself to form a bight, *c*; a slide, C, to one of the bars of which the end of the band is attached, the body of said band being passed through said slide and under the said bar, a loop, D, running loosely in the bight *c*, and a hook, E, composed of wire forming the parallel bars *e e* and U-shaped engaging-hook, said bars *e e* being laid upon the band and fastened thereto at the end opposite that to which the loop D is attached, substantially as described.

384,485. GOVERNOR. H. HERMAN WESTINGHOUSE and FRANCIS M. ETTER, Pittsburg, Pa., assignors to the Westinghouse Machine Company, same place. Filed Jan. 19, 1888. Serial No. 261,573. (No model.)



Claim.—1. In a centrifugal governor, the combination of a case adapted to be mounted upon and rotate with a driving-shaft, said case constituting a receptacle for lubricating material, which is closed both endwise and peripherally to prevent escape of the same, a weight pivoted to and within said case, and a movable eccentric located outside of said case and coupled to the weight, substantially as set forth.

2. In a centrifugal governor, the combination of a supporting-disk, a case connected by a tight joint at one end to the disk and having an opening adjoining its center at its opposite end, an eccentric located outside of the case and secured to a carrier pivoted on the case, a weight pivoted to and inclosed within the case, and a link inclosed within the case and connecting the weight and eccentric-carrier, substantially as set forth.

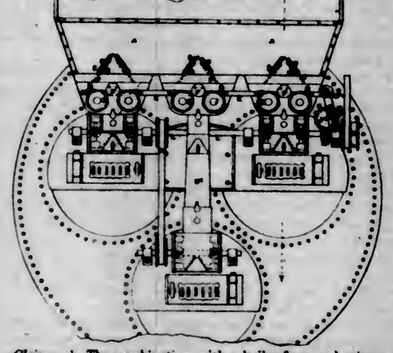
3. In a centrifugal governor, the combination of a supporting-disk, a case connected by a tight joint at one end to the disk and having an opening adjoining its center at its opposite end, a weight and an eccentric-carrier, each pivoted to and inclosed within the case, a link coupling the weight and carrier, and an eccentric secured to the carrier by connections passing through the central opening of the case, substantially as set forth.

4. In a centrifugal governor, the combination of a supporting-disk, a case connected by a tight joint at one end to the disk and having an opening adjoining its center at its opposite end, an eccentric-carrier pivoted to the inside of the case and fitting on one side against the same around the inside of its central opening and on the other side against the hub of the supporting-disk, an eccentric located on the outside of the case and secured to the carrier by connections passing through the opening of the case, a weight pivoted to the inside of the case, and a link coupling said weight to the carrier, substantially as set forth.

5. In a centrifugal governor, the combination of an inclosing-case adapted to be mounted upon a driving-shaft and having an end opening adjoining its center, an eccentric-carrier pivoted to the inside of the case and coupled to a weight also pivoted therein, and an eccentric secured to the carrier through the central opening of the case, and having an internal oil-chamber provided with a passage communicating with the interior of the case, substantially as set forth.

6. In a centrifugal governor, the combination of a supporting plate or disk, a pair of weights pivoted thereto, a connecting-link coupled at its ends to said weights in such relation to their pivots as to form lever-arms of different lengths on the respective weights, which difference of length is maintained in all positions of the weights, and an eccentric coupled to the weight having the longer connecting-link arm, substantially as set forth.

384,486. MECHANICAL STOKER. WILLIAM WHITTAKER, Burnley, County of Lancaster, England. Filed Oct. 13, 1887. Serial No. 252,726. (No model.) Patented in England Jan. 13, 1887, No. 502.

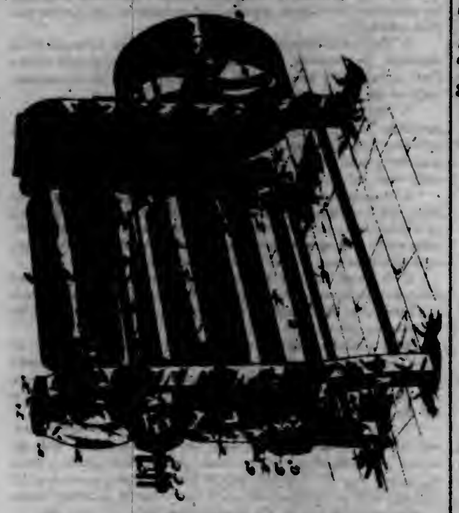


Claim.—1. The combination, with a boiler-furnace having a suitable hopper leading to said furnace, of one or more feed-rolls located in the said hopper, reciprocating pawl-carriers having pawls which engage with ratchets on the shafts of said rolls, and one or more rotary shovels arranged in said hopper below said feed-rolls, substantially as described.

2. The combination, with a boiler-furnace having a hopper leading thereto, of one or more feed-rolls located within the hopper, a reciprocating bar having pawls engaging with ratchets on the feed-rolls, one or more rotary shovels arranged in the hopper below the feed roll or rolls, and a lever pivotally connected to said bar and to a rotating disk having a crank-pin engaging with said lever, substantially as described.

3. The combination, with a boiler-furnace having hoppers leading from the exterior thereto, of feed-rolls arranged in said hoppers, inclines arranged in the hoppers above said feed-rolls, and regulating-slides mounted on said inclines, to decrease or increase the opening leading to the feed-rolls, substantially as described.

384,487. IRONING-MACHINE. THOMAS S. WEAR, Albany, N. Y. Filed Nov. 6, 1886. Serial No. 218,126. (No model.)



Claim.—1. In a machine of the class described, the standards having openings for journal-bearings, lateral flanges, and polygonal openings, in combination with tie-tubes screw-threaded and with flanged couplings having polygonal bodies and threaded to fit the tie-tubes, substantially as specified.

2. In a machine of the class described, standards having polygonal openings, flanged couplings adapted to fit said openings, tie-tubes, and a spacing-tube, these parts being constructed, combined, and arranged substantially as specified.

3. In a machine of the class described, the combination of right and left hand screw-threaded tie-tubes, similarly-threaded couplings, a spacing-tube, and standards constructed to receive the couplings and support the spacing-tube, shafts passing through the tubes and standards, and gears mounted on the ends of the shaft, substantially as specified.

4. In a machine of the class described, the combination of an ironing and a clothed roller, suspension-links having oppositely-arranged legs, boxes arranged between said legs and upon the shaft of the clothed roller, and springs arranged between said boxes and one of the opposite legs of the suspension-links, and means, substantially as described, for raising and lowering the suspension-links and for regulating the tension of the springs, substantially as specified.

5. In a machine of the class described, the combination, with an ironing-roller, a clothed roller arranged above and a clothed roller arranged below said ironing-roller, and with the boxes of said clothed rollers, of suspension-links provided with legs, interposed springs, connecting-rods, a rock-shaft having oppositely-disposed rock-arms, a toothed sector, a pawl, and a sector-operating lever, substantially as and for the purpose set forth.

6. In a machine of the class described, a standard provided with a lateral gear, inclosing-flange, an open-sided seat for a fixed box, openings for movable boxes, and bosses for tie-tubes, substantially as specified.

7. In a machine of the class described, the combination, with a standard having a polygonal opening, of a coupling for a tie-tube, having a polygonal body to fit the opening and a flange to bear upon the wall of the standard, and a tie-tube adapted to fit the coupling, a shaft passing through the tube and taking bearing in the coupling, and a gear mounted on the shaft, substantially as specified.

8. In a machine of the class described, standards each having a bearing for a shaft projected from the wall of the standard to form a hub or boss, in combination with a tube encircling the shaft and supported upon the hubs or bosses of the bearings, and means for binding the standards and tubes together, substantially as specified.

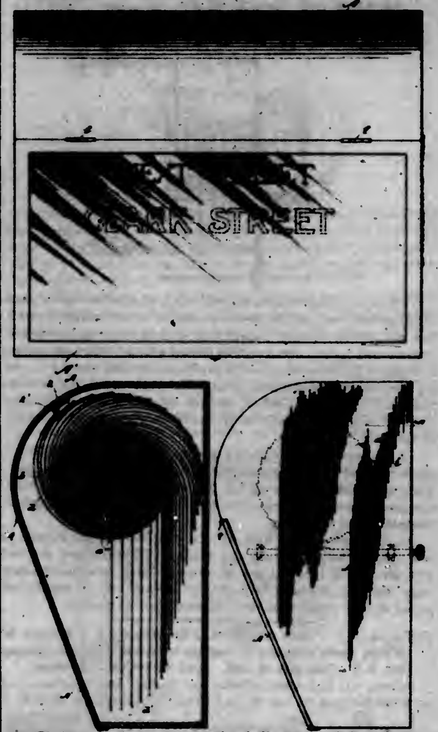
9. The standard D, provided with the lateral flanges D^2, polygonal openings D^3, and box-openings D^4, each having the border D^5, seat D^6, the bracket D^{17}, rock-shaft bearing D^{18}, and bolt-lugs D^{19}, the whole formed as a single casting, substantially as specified.

10. The suspension-link J, perforated to embrace a shaft, and provided with the legs J^2 and J^3, substantially as specified.

11. The combination, with the rock-shaft G, of the toothed sector G', having a socket for the lever K, the pawl G^3, the arms K' K^3, the rods K, and the movable bearings of the clothed rollers, substantially as specified.

12. The combination, with the standard D, having the opening D^4, of the flanged box A^2, the springs I, the tension-bolt I^2, and the suspension-link J, having the lugs J^2 J^3, substantially as specified.

384,488. STREET OR STATION INDICATOR FOR CARS. WILLIAM P. WILLIAMS, Chicago, Ill., assignor of two-thirds to William P. Johnson and Arthur Crandall, both of same place. Filed Jan. 26, 1888. Serial No. 262,204. (No model.)



Claim.—1. A street or station indicator consisting of a case, A, and a revolvable displaying-drum journaled within said case, and consisting of a central shaft, *b*, disks *a a'*, mounted upon said shaft and provided with seats upon their inner surfaces, rods *c*, of flexible material, having their ends sustained within said seats, whereby said rods may be readily sprung into and out of place, and display-sheets attached to said rods, substantially as described.

2. A street or station indicator consisting of an inclosing-case, A, a revolvable display-drum journaled within the upper part of said case and provided with an annular series of dependent flexible display-sheets, said sheets being loaded at their lower ends, and a spring-actuated swinging bar resting upon said sheets and connected by a pivotal joint to the inside of the case, and engaging consecutively the weighted ends of the display-sheets, substantially as described.

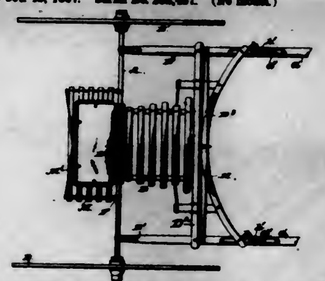
3. A street or station indicator consisting of an inclosing-case, A, having a glass door at its lower part and a revolvable display-drum journaled within its upper part, said drum consisting of a central shaft, *b*, disks *a a'*, mounted upon said shaft and provided with annular seats upon their inner surfaces, rods *c*, of flexible material, having their ends sustained within said seats, display-sheets loaded at their lower ends and attached to said rods, a swinging bar connected by a pivotal joint to the inside of the case and resting upon said sheets, and a spring, *k'*, intermediate between said bar and case, substantially as described.

4. A street or station indicator consisting of an inclosing-case, A, and a revolvable display-drum journaled within said case and composed of a central shaft, *b*, disks *a a'*, mounted upon said shaft, one of said disks having upon its periphery a series of ratchet-teeth, a sliding bar, *j*, journaled within said case and projecting therefrom, said bar being provided with a spring-pawl engaging with the ratchet-

teeth and with stops for limiting its throw, and display-sheets dependent from the drum, substantially as described.

5. A street or station indicator consisting of an inclosing-case, A, a revoluble display-drum journaled within said case and composed of a central shaft, *b*, provided with a series of longitudinal grooves or channels, disks *a a'*, secured to the ends of said cylinder and having on their inner surfaces, respectively, annular seats, and flexible rods *c*, adapted to lie within the grooves of the cylinder and have their ends secured in said seats, substantially as described.

384,489. ROAD-CART. ANDREW M. WHEEL, White Pigeon, Mich. Filed Oct. 15, 1887. Serial No. 252,467. (No model.)



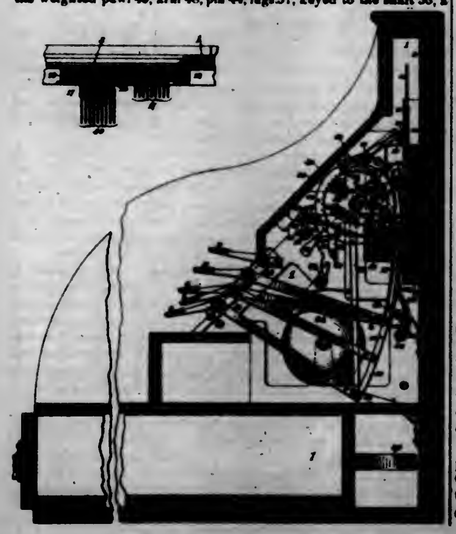
Claim.—1. The combination, with the draft-bars having the plates *b* formed with ears and the circle-bar secured to and uniting the draft-bars and having an under central loop, of the pole having the angular arms secured thereto, with knuckles formed with the outer ends thereof to engage with the ear-plates on the draft-bars, the truss-braces mounted in connection with said angular arms, and the steel plate secured to the under side of the inner end of the pole, which is adapted to engage with the central loop on the under side of the circle-bar, substantially as described.

2. The combination, with the draft-bars having the ear-plates and under lugs and loops and the circle-bar having the central under loop, of the thills and pole having knuckle and under plates to be interchangeably mounted in connection with the draft-bars and circle-plate, substantially as described.

3. The combination, with the axle A, of the rack M, secured in rear thereof, the seat D', and the straps M', which connect the seat with the rack M and cross and are secured to each other immediately under the seat, whereby the motion of the seat will be equally imparted to both ends of the rack, substantially as described.

384,490. CASH REGISTER AND INDICATOR. WILLIAM W. WYTHE, Parker's Landing, Pa., assignor to William H. Wythe, Chautauqua, N. Y. Filed May 16, 1887. Serial No. 238,282. (No model.)

Claim.—1. In a cash indicator and register, the combination of the weighted pawl 49, arm 48, pin 44, lugs 57, keyed to the shaft 55, a



finger, 29, situate in the path of the cash-drawer, arms 27 and 56, and wheels 32 and 34, whereby the pawl is brought into action only when the computing mechanism is at rest, substantially as and for the purpose specified.

2. The combination of the shaft 55 and devices, substantially as described, for operating the same, lugs 57, arranged spirally on the shaft, arms 48 and pawls 49, and registering-wheels 32 36, substantially as and for the purposes specified.

3. The numbered slides arranged in series from front to back, said slides having the arms 17 projecting therefrom and arranged in the same horizontal plane, and also having slots or openings of successively greater width, so that the arms 17 shall not interfere with each other, substantially as and for the purposes described.

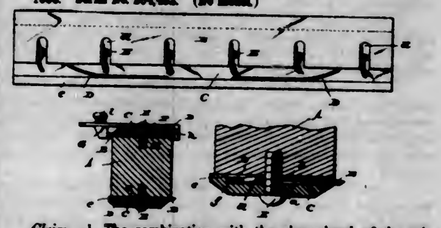
4. The numbered slides arranged in series expressing the different digits, the zero-slides of each series being loosely connected with the zero-slide of the series below, whereby the rise of one of the zero-slides shall carry with it the zero-slides of each of the lower series, substantially as and for the purposes described.

5. In a cash register and indicator having a series of figured slides, the combination of retaining-pawls 23, rods 16, the cash-drawer 7, pivoted arms 25, 26, and 27, and finger 29, substantially as and for the purpose specified.

6. In a cash indicator and register, the combination of two or more series of figured slides representing units, tens, &c., key-levers connected with said slides, graded arms 40, connected with said levers, arms 36, arms 36, pawls 37, and wheels 32 and 35, substantially as and for the purpose specified.

7. In a cash-register, the combination of a series of figured register-wheels representing units, tens, &c., pawls engaging with the second and succeeding register-wheels, pins 44, and lugs 48, a shaft, 55, having lugs 57 arranged spirally thereon, spring gear-wheel 53, and pinion 54, pivoted arms 56 and 27, and finger 29, and cash-drawer 7, substantially as and for the purposes specified.

384,491. CUTTER-HEAD AND MEANS FOR ADJUSTING THE CUTTERS OF THE SAME. WILLIAM R. ALLEN, Cape Vincent, N. Y., assignor of one-half to Lewis C. Martin, same place. Filed Feb. 18, 1888. Serial No. 264,462. (No model.)



Claim.—1. The combination, with the planer-head, of the rabbeted cap-plates, the cutter-blades, and the springs interposed between the cap-plates and the planer-head and adapted to engage the back edge of the cutter, substantially as specified.

2. The combination, with a planer-head, of the cap-plates rabbeted, as described, and being deepest adjacent to the rib forming the rabbet, the springs secured within the rabbeted portion of the caps, and the cutters arranged in advance of the springs, substantially as specified.

3. The combination, with a planer-head, of the cutter-blades constructed as described, the cap rabbeted on its inner side, and the springs D, having one end secured in the said rabbeted portion and adapted to bear against the rib *c*, and their opposite ends curved forwardly to engage the rear edges of the cutters, substantially as specified.

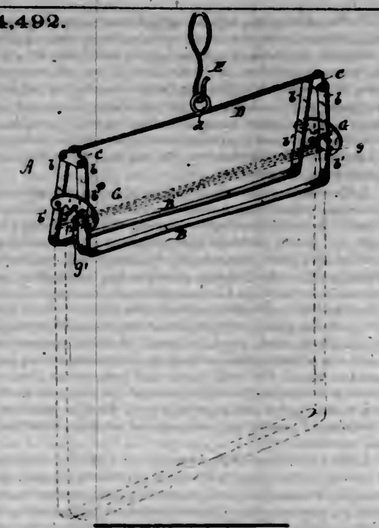
384,492. PANTALOONS OR GARMENT STRETCHER. WILLIAM W. ATHERTON, Philadelphia, Pa., assignor to Eugene Pearson and George P. Freeman, both of New York, N. Y. Filed Sept. 20, 1887. Serial No. 250,214. (No model.)

Claim.—1. A garment holder and stretcher composed of parallel U-shaped frames made of flat or plate bars placed edge to edge and separately pivoted at their ends to links C, a bar, D, connecting said links, and clamping devices at each end of one of said frames for engagement with studs at corresponding ends of the other of said frames, substantially as set forth.

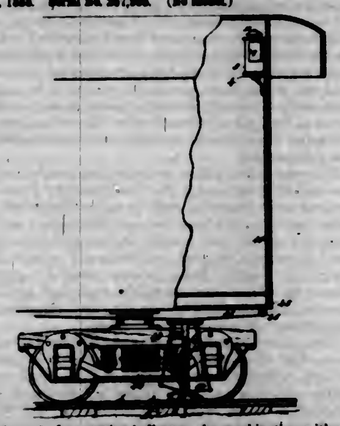
2. The combination of frames B B, having ends *b'*, link-connections C for said ends, segmental or curved notched bars on the ends of one of said frames, and pins on the ends of the remaining frame for engagement with said bars, substantially as set forth.

3. A garment holder and stretcher comprising two parallel frames placed edge to edge and having their ends separately pivoted to links C, a bar, D, connecting said links, and devices at each end of one of the frames for engagement with the other of the frames for holding or clamping them together, substantially as set forth.

384,492.



384,493. AUTOMATIC STATION-INDICATOR. RICHARD H. RADCLIFF, Jr., Savannah, and LEMUEL J. FARRIS, Barroughs, Ga. Filed Mar. 21, 1888. Serial No. 267,903. (No model.)



Claim.—1. In a station-indicator, the combination, with a name-belt and its actuating-rollers provided with gear-wheels, of a shaft carrying a spur-gear and a ratchet-wheel, a chain-wheel loosely mounted on said shaft and provided with a reversible pawl to engage the ratchet-wheel, chains attached to said chain-wheel, levers connected with the lower ends of said chains beneath a railway-car, and cams located adjacent to the track to actuate said levers for operating the chain-wheel and station-indicating mechanism and for setting the chain-wheel back after each station is passed, substantially as described.

2. In a station-indicator, the combination, with a name-belt and its actuating and supporting rollers, of a horizontally-pivoted bar provided at each end with arms, tension-rollers journaled in said arms and located on opposite sides of the name-belt to bear thereon from opposite directions, a pulley on one of said arms, a spiral spring, and a cord connecting said spring with the pulley, whereby the tension of the belt is automatically regulated, substantially as described.

3. In a station-indicator, the combination of the casing 5, the name-belt 12, the rollers 13, provided with gears 14, the shaft 16, carrying a spur-gear, 15, and a ratchet-gear, 35, a chain-wheel, 37, loosely mounted on said shaft 16, a reversible pawl, 38, and its spring 40, carried by said chain-wheel, the chains 43, pulleys 46 and 47, bar 48, levers 54 and 55, supported by said bar and connected with the chains and track-cams 3 to actuate said levers, substantially as described.

4. In a station-indicator, the combination, with the chain-wheel 37 and chains 43, of the bar 48, clipped to the equalizing-beam 49, the levers 54 and 55, supported by said bar, one of said levers being connected with the chains 43 and the other provided with lateral projections or lugs 56 and 57, and the cams 3, located adjacent to the rail on one side of the track and alternately at varying distances therefrom, substantially as described.

5. In a station-indicator, the combination, with the name-belt 12, of the horizontally-pivoted bar 20, having at its ends arms 19, the tension-rollers 18, journaled in said arms, the pulley 22, spring 24, and cord 23, substantially as described.

384,494. BABY-CARRIAGE. GEORGE H. BAKER, Rome, N.Y. Filed Mar. 13, 1888. Serial No. 267,026. (No model.)

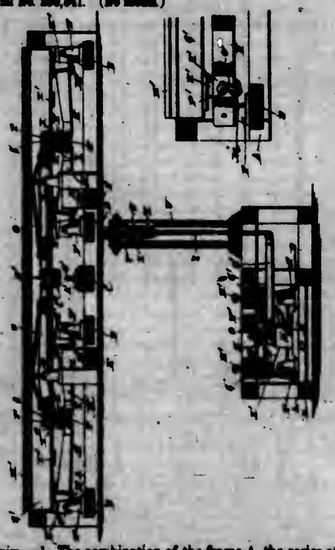


Claim.—1. The combination, with the baby-carriage, of the swinging runners hung on the under side of the carriage, and a lever connected to the runners to raise and lower the same, and having an offset adapted to engage the rear axle of the carriage to lock the runners in their lowered positions, as set forth.

2. The combination of the carriage, the swinging runners hung on the under side of the carriage, and the lever having the downwardly-diverging arms secured at their lower ends to the runners and provided with a locking-offset, as set forth.

3. The combination of the carriage, the longitudinal beams B B, secured to the bottom thereof, the rock-shaft journaled in bearings on said beams and having the integral depending arms at its ends, runners pivoted to the lower ends of said arms, and the lever secured to the runners projecting up in rear of the carriage and having a locking-offset, as set forth.

384,495. SCALES FOR WEIGHING RAILWAY-CARS. JAMES W. BALLARD and HARVEY L. PERRIN, Toledo, Iowa. Filed Jan. 5, 1888. Serial No. 259,941. (No model.)



Claim.—1. The combination of the frame A, the series of pivoted levers arranged in the ends of the frame, the levers of each series converging toward a common center, the blocks I, connected to the inner ends of the levers of each series, the longitudinal levers pivoted within the frame and having their inner ends close together and having their outer ends provided with the openings P, the pins S, inserted transversely through said openings, the bolts R, depending from said pins and passing through the blocks I, the nuts on said bolts below the blocks I, the scale-beam, and connections between the scale-beam and the longitudinal levers, as set forth.

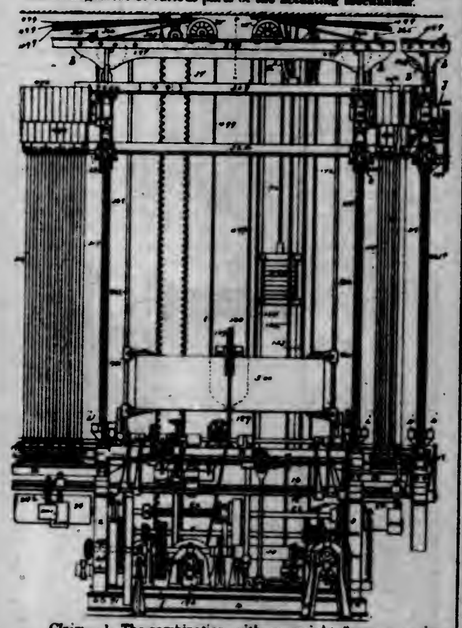
2. The combination of the frame A, the cross-beam C within the same, the series of pivoted converging levers arranged in the ends of the frame, the longitudinal levers O, pivoted within the frame and having their outer ends connected to the ends of the converging levers and their inner ends brought close together, the scale-beam, the lever C', having its opposite ends connected, respectively, to the scale-beam and the levers O, the eye B' on the cross-beam C, and the yoke E', depending from the lever C' and pivotally connected to the eye B', as set forth.

3. The combination of the frame A, the series of converging levers pivoted in the ends of the frame, the blocks I, having the diverging ears K, the links L, having their upper ends pivoted between said ears and their lower ends connected to the inner ends of the converging levers, the longitudinal levers O, having their outer ends connected to the blocks I and their inner ends brought close together, the scale-beam, and connections between the scale-beam and the inner ends of the levers O, as set forth.

4. The combination of the frame A, the series of converging levers pivoted in the ends of the frame and having openings N' in their outer ends, the platform-beams, the hangers K', depending therefrom and composed of parallel arms passing on opposite sides of the levers, the bolts M', passed through the lower ends of said parallel arms beneath the levers, the bolt P', passed transversely through the opening N', the link O', engaging the bolts P' M', the scale-beam, and connections between the scale-beam and the converging levers, as set forth.

384,496. VERTICAL SPINNING-MULE. HERBERT T. BARNWELL, Springfield, Mass. Filed Mar. 10, 1887. Serial No. 230,491. (No model.)

Brief.—The carriage, which has mounted thereon the roving-drums, &c., is vertically reciprocated. Most of the changes are effected by a spring-actuated shipper-rod, which is released for successive movements by a series of stops, and which throws into and out of gear in succession a series of clutches. The principal features of the invention relate to the means for starting, stopping, and holding the carriage; the means for starting and stopping the spinning, backing off, and winding on; the means for regulating the winding on; the means for effecting and regulating the building; the means for regulating the draft; the construction of the carriage, and construction and arrangement of various parts of the actuating mechanism.



Claim.—1. The combination, with an upright frame, a carriage provided with a series of roving-drums and roving-delivery rollers, and means for vertically reciprocating said carriage on said frame, of a vertical rack secured to said frame and extending over a portion of the travel of said carriage, a shaft mounted on said carriage and having geared connection with said roving-drums and roving-delivery rollers, a pinion mounted on said shaft and engaging with said rack, and a pawl-and-ratchet connection between said shaft and said pinion, all constructed, arranged, and operating substantially as shown and described.

2. The combination, with an upright frame, a carriage provided with a series of roving-drums and roving-delivery rollers, and means for vertically reciprocating said carriage on said frame, of a vertical rack, means for adjusting said rack vertically on said frame over a portion of the travel of said carriage, a shaft mounted on said carriage and having geared connection with said roving-drums and roving-delivery rollers, a pinion mounted on said shaft and engaging with said vertical rack, and a pawl-and-ratchet connection between said shaft and said pinion, all constructed, arranged, and operating substantially as shown and described.

3. The combination, with a carriage of a spinning-mule capable of a vertical reciprocating movement, a counter-weight, guide-pulleys mounted in the main frame, ropes connecting said carriage and counter-weight and passing over said guide-pulleys, a shaft, winding-scrolls secured to said shaft, rope-connection between said counter-weight and said scrolls, a clutch loosely mounted, and intermediate gearing connecting said clutch and winding-scroll shaft, of a plunger, a shipper-rod, intermediate mechanism connecting the shipper-rod and plunger, a driving-shaft, a clutch, intermediate mechanism connecting said clutch with said driving-shaft, an arm secured to the shipper-rod and engaging with one of said clutches, and a projection secured to said carriage adapted to engage with said plunger and through the intermediate mechanism to operate the shipper-rod, and the arm secured thereto to throw the clutches into engagement and wind the scrolls to raise the carriage, all constructed, arranged, and operating substantially as shown and described.

4. The combination, with a carriage of a spinning-mule capable of a vertical reciprocating movement; a counter-weight, guide-pulleys mounted in the main frame, ropes connecting said carriage and counter-weight and passing over said guide-pulleys, a shaft, winding-scrolls secured to said shaft, rope-connection between said counter-weight and said scrolls, a clutch loosely mounted, intermediate gearing connecting said clutch and winding-scroll shaft, a clutch, and intermediate mechanism connecting said clutch with the driving-shaft and engaging the said loosely-mounted clutch, of a shipper-rod, a spring engaging with said shipper-rod, an arm secured to said shipper-rod and engaging with one of said clutches, a locking device holding said shipper-rod against the tension of said spring, and a rod connected with said locking device and provided with a projection adapted to be engaged by the reciprocating carriage to release the locking device and allow the shipper-rod to disengage the clutches when the carriage reaches the end of its travel, all constructed, arranged, and operating substantially as shown and described.

5. The combination, with a vertically-reciprocating carriage, a winding-scroll shaft mounted in the main frame and provided with winding-scrolls, rope-connection between said winding-scrolls and reciprocating carriage, a ratchet-wheel, and intermediate mechanism connecting said ratchet-wheel with the winding-scroll shaft, of a pawl engaging with said ratchet-wheel and holding said carriage elevated, and a shipper-rod provided with a projection adapted to engage said pawl, release the ratchet-wheel and winding-scroll shaft, and allow the carriage winding mechanism to operate, all constructed, arranged, and operating substantially as shown and described.

6. The combination, with a reciprocating carriage, winding-scrolls secured to a shaft suitably mounted in the main frame, rope-connection between said carriage and winding-scrolls, a clutch loosely mounted, intermediate gearing connecting said clutch and winding-scroll shaft, a driving-shaft, a clutch, intermediate mechanism connecting said clutch with said driving-shaft, a shipper-rod, and mechanism connecting said shipper-rod with one of said clutches, of a spring engaging with said shipper-rod, a locking device holding said shipper-rod against the tension of said spring, a cam, and intermediate gearing connecting said cam with the driving-shaft, whereby as the cam is rotated it will engage with and release the locking device, allow the spring to actuate the shipper-rod to throw the clutches into engagement, and operate the winding-scrolls to permit the carriage to descend, all constructed, arranged, and operating substantially as shown and described.

7. The combination, with a series of spindles, a shaft mounted in the main frame, a spinning-drum secured to said shaft, bands connecting said spindles with said spinning-drum, a pulley secured to said spinning-drum shaft, a main shaft, a pulley mounted loosely on said main shaft, belt-connections from said loose pulley to said spinning-drum-shaft pulley, and a clutch loosely mounted on the main shaft and secured to said loose pulley, of a clutch splined to said main shaft, a shipper-rod, mechanism connecting said shipper-rod and splined clutch, a vertical plunger, intermediate mechanism connecting said plunger and shipper-rod, a carriage carrying roving-drums and roving-delivery rollers, means for vertically reciprocating said carriage, and a projection secured to said carriage and adapted to engage with the plunger and through the intermediate mechanism to operate the shipper-rod and throw the splined clutch connected therewith into engagement with the loose clutch, and thereby start the spinning, all constructed, arranged, and operating substantially as shown and described.

8. The combination, with a main shaft, a clutch splined to said main shaft, a shipper-rod, mechanism connecting said splined clutch and shipper-rod, a spring acting against a collar on the shipper-rod, a locking device holding said shipper-rod against the tension of the spring, a retainer holding said locking device in engagement with the shipper-rod and provided with a projecting arm, and a releasing-spring engaging with said locking device, of a clutch mounted loosely on the main shaft and engaging with the splined clutch, a pulley secured to said loose clutch, a spinning-drum, intermediate mechanism connecting said pulley with the spinning-drum, and a disk having geared connection with said pulley and provided with a stop adapted to engage with the projecting arm of the retainer to release said retainer, allow the releasing-spring to disengage the locking device, and the shipper-rod spring to operate the shipper-rod, all constructed, arranged, and operating substantially as shown and described.

9. The combination, with a main shaft, a clutch splined to said main shaft, a shipper-rod, and mechanism connecting said splined clutch and shipper-rod, a spring acting against a collar on the shipper-rod, a locking device holding said shipper-rod against the tension of the spring, a retainer holding said locking device in engagement with the shipper-rod and provided with a projecting arm, and a releasing-spring engaging with said locking device, of a clutch loosely mounted on the main shaft and engaging with the splined clutch, a pulley secured to said loose clutch, a spinning-drum, intermediate mechanism connecting said pulley with the spinning-drum, a disk having geared connection with said pulley, and a stop adjustably secured to said disk and adapted to engage with the projecting arm of the retainer to release said retainer, allow the releasing-spring to disengage the locking device, and the shipper-rod spring to operate the shipper-rod, all constructed, arranged, and operating substantially as shown and described.

10. The combination, with a shipper-rod, a spring engaging with the shipper-rod, a locking device holding said shipper-rod against the tension of said spring, a retainer holding said locking device in engagement with the shipper-rod and provided with a projecting arm, a spinning-drum shaft, and a disk having intermediate geared connection with said spinning-drum shaft and provided with a stop adapted to engage with the projecting arm of the retainer to release the locking device, of a pulley loosely mounted, a spring fixed at one end and having its other end secured to said loose pulley, a pulley loosely mounted on the spinning-drum shaft, band-connection between said pulleys, a clutch adapted to connect said spinning-drum-shaft pulley with said shaft, a spring engaging with said clutch, and intermediate mechanism connecting said clutch with the shipper-rod and holding said clutch out of engagement against the tension of said spring, all constructed, arranged, and operating substantially as shown and described, whereby when the shipper-rod is released the spring-actuated clutch connects the loose pulley with the spinning-drum shaft and effects the backing off.

11. The combination, with a winding-weight, a shaft mounted in the main frame, a scroll secured to said shaft, a rope connecting said scroll and weight, intermediate mechanism connecting said shaft with the spinning-drum shaft, a ratchet-wheel secured to the winding-scroll shaft, a pawl engaging with said ratchet, a shipper-rod, and intermediate mechanism connecting said pawl and shipper-rod to disengage said pawl by the movement of said shipper-rod, of a spring engaging with said shipper-rod, a locking device holding said shipper-rod against the tension of said spring, a cam, a driving-shaft, and intermediate gearing connecting said cam with said driving-shaft, whereby as the cam is rotated it will engage with and release the locking device, allow the spring to actuate the shipper-rod to withdraw the pawl, and permit the winding-weight to operate, all constructed, arranged, and operating substantially as shown and described.

12. The combination, with a shaft mounted in the main frame, a winding-weight, mechanism connecting said shaft and winding-weight, a spinning-drum, intermediate driving mechanism connecting said shaft with the spinning-drum, and a ratchet-wheel secured to said winding-shaft, of a pawl adapted to engage with and lock said ratchet-wheel, mechanism for holding said pawl disengaged, a lever connected with and controlling said mechanism, a carriage provided with roving-drums and roving-delivery rollers, means for reciprocating said carriage, and a projection secured to said carriage adapted to engage on the descent of the carriage with said lever, release the mechanism for holding the pawl disengaged, and permit said pawl to engage with and lock said ratchet-wheel, all constructed, arranged, and operating substantially as shown and described.

13. The combination, with a scroll mounted in the main frame, a winding-weight, a rope connecting said winding weight and scroll, and a clutch connecting with said scroll, of a clutch engaging with said scroll-clutch, a main shaft, intermediate mechanism connecting said clutch with the main shaft, a shipper-rod, mechanism connecting the shipper-rod with one of said clutches, a spring engaging with the shipper-rod, a locking device holding said shipper-rod against the tension of said spring, a pivoted projecting arm, and mechanism connecting said arm and winding-scroll to effect the rotation of the arm, said arm being adapted to disengage the locking device to allow the spring to operate the shipper-rod and disengage the clutches, all constructed, arranged, and operating substantially as shown and described, whereby when the winding-weight has reached the proper height the scroll will stop winding.

14. The combination, with a scroll mounted in the main frame, a winding-weight, a rope connecting said winding weight and scroll, and a clutch connected with said scroll, of a clutch engaging with said scroll-clutch, a shipper-rod, intermediate mechanism connecting said clutch with the main shaft, mechanism connecting the shipper-rod with one of said clutches, a spring engaging with the shipper-rod, a locking device holding said shipper-rod against the tension of said spring, a wheel, mechanism connecting said wheel with said scroll, a projecting arm adapted to disengage said locking device to allow the spring to operate the shipper-rod and disengage the clutches, and an escapement-gear connecting said arm with said wheel, all constructed, arranged, and operating substantially as shown and described, whereby at each operation the winding-scrolls are disengaged and the relative position of the projecting arm and the wheel is changed.

15. The combination, with a scroll mounted in the main frame, a winding-weight, a rope connecting said winding weight and scroll, and a clutch connected with said scroll, of a clutch, a main shaft, intermediate mechanism connecting said clutch with the main shaft and engaging with said scroll-clutch, a shipper-rod, mechanism connecting the shipper-rod with one of said clutches, a spring engaging with the shipper-rod, a spring-actuated locking device holding said shipper-rod against the tension of said spring, a wheel, intermediate mechanism connecting said wheel with said winding-scroll, a ratchet-wheel secured to said wheel, an arm centrally pivoted with said wheel, a lever pivoted at the outer end of said arm and having a limited vibratory motion thereon and adapted to disengage said spring-actuated locking device and allow the shipper-rod to operate to disengage the clutches, a spring of less resistance than the locking-device spring secured to the arm and engaging with the vibratory lever, and two pawls pivoted to the arm and engaging with the ratchet-wheel and provided with projections adapted to be engaged by projections on the vibratory lever, all constructed, arranged, and operating substantially as shown and described, whereby at each operation the winding-scrolls are disengaged and the relative position of the arm and wheel is changed, for the purpose specified.

16. The combination, with a carriage carrying roving-drums and roving-delivery rollers, means for reciprocating said carriage, a shaft mounted in the main frame, a cam secured to said shaft, and intermediate mechanism connecting said reciprocating carriage and said shaft to effect the rotation of the shaft by the movement of the carriage, of a rock-shaft mounted in the main frame, having arms secured thereto carrying on their outer ends a building-wire, a rod engaging with the cam, and intermediate mechanism connecting the building-arm rock-shaft with said rod, all constructed, arranged, and operating substantially as shown and described, whereby as the cam is rotated the rock-shaft carrying the building arms and wire is rocked.

17. The combination, with a carriage, means for reciprocating said carriage, a shaft mounted on the main frame, a cam secured to said shaft, mechanism connecting said shaft and carriage to effect the rotation of said shaft by the movement of the carriage, a rock-shaft having arms secured thereto carrying at their outer ends a building-wire, a rod formed in two sections united by screw-threads and engaging with said cam, and mechanism connecting said rod and the building-arm rock-shaft, of a plunger mounted in the main frame, mechanism, including a pawl and ratchet, connecting said plunger and one section of the cam-rod, and a projection secured to the reciprocating carriage, adapted to engage with said plunger and through the intermediate pawl-and-ratchet connection to partially rotate one section of the cam-rod, thereby lengthening the same, all constructed, arranged, and operating substantially as shown and described.

18. The combination of a carriage carrying roving-drums and roving-delivery rollers, means for reciprocating said carriage, a shaft mounted on the main frame, a cam secured to said shaft, mechanism connecting said carriage and said shaft to effect the rotation of the shaft by the movement of the carriage, a rock-shaft having arms secured thereto carrying a building-wire, a rod formed in two sections having a screw-threaded connection with each other, one section of said rod engaging with the cam, mechanism connecting the other section of said rod with the building-arm rock-shaft, a ratchet-wheel, mechanism connecting said ratchet-wheel with one section of said rod, a pawl engaging with said ratchet-wheel, a plunger mounted on the main frame, a projection secured to the reciprocating carriage and adapted to engage with and operate the plunger, and means for adjusting the connection between said pawl and said plunger to regulate the throw of said pawl and amount of rotation of the ratchet-wheel, and the consequent lengthening of the connection between the cam and the building-arm rock-shaft, all constructed, arranged, and operating substantially as shown and described, as and for the purpose specified.

19. The combination, with a rock-shaft provided with arms car-

rying on their outer ends a building-wire, of a pivoted lever, intermediate mechanism connecting said lever with said rock-shaft, a carriage carrying roving-drums and roving-delivery rollers, means for reciprocating said carriage, and a projection secured to said carriage, adapted to engage with and operate said lever, and through said intermediate mechanism to rock said rock-shaft and its arms to carry the building-wire to a position for spinning, all constructed, arranged, and operating substantially as shown and described.

20. The carriage consisting of several pairs of plates, substantially as described, certain of which have thereon the arms *g*, and longitudinal angle-irons 308 and 324, secured to the opposite edges of said plates, substantially as set forth.

21. The carriage consisting of several pairs of plates, substantially as described, having laterally-projecting webs formed on their inner opposite sides, guide-rolls, substantially as described, hung to rotate between said plates, having an engagement with the edges of the post of the frame of the machine which extends between said plates, and longitudinal angle-irons 308 and 324, secured to the opposite edges of said plates, substantially as set forth.

22. The carriage having a series of ropes attached thereto, substantially as described, the frame of the machine having rollers journaled therein, over which said ropes pass, and a counterbalancing-weight, 500, hung on said ropes, of less weight than the carriage, and capable of a vertical movement in the frame of the machine coinciding inversely with the movements of the carriage, combined with two winding-scrolls, as 190 and 205, adjunctive mechanism, as described, for actuating the scrolls, and a rope having its ends attached to said scrolls and passing over and engaging with said counterbalancing-weight, substantially as set forth.

23. The combination of the machine-frame, ropes 449, and pulleys *w*, the counterbalancing-weight 500, and the carriage to which it is suspended, a winding-scroll, 190, and a like scroll, 205, a shaft to which both scrolls are attached, and a rope having its ends attached to said scrolls passing over and engaging with said weight, a clamp-connection on said scroll-shaft, whereby said scroll 205 is capable of adjustment on its shaft to cause the end of the said rope which is attached thereto to be wound onto the higher or lower parts of the scroll, substantially as set forth.

24. The main shaft 188 of the machine, having a driving-gear, 142, fixed thereon, and a loose sleeve, 113, on said shaft, having a driving-gear, 137, fixed thereon, combined with a driving-shaft, as 141, having a geared engagement, substantially as described, with said gears 137 and 142, and a driving-pulley thereon having a frictional engagement with said shaft, substantially as set forth.

25. The spindle-driving shaft 82, the pulley 410, the main shaft 188, adjunctive mechanism, as described, connecting shafts 82 and 188, the shipper-rod 34, having the arm 406 thereon and a slot therein, a clutch, 59, actuated by arm 406, and the collar 64, having an arm extending under said rod, combined with a yoke, a pin, 415, supported on the yoke, as described, and capable of a movement toward and from said rod, a shaft, i^3, having a rocking arm, 61, with which said arm 406 engages, means for moving arm 406 and rod 34 toward shaft i^3, and the spring 95, for moving them oppositely, two rocking arms, as 420 and 421, engaging with said yoke to move said pin against said rod, a spring, 425, to move said yoke and pin upward, a yoke-piece, 422, a shaft, 67, hung in bearings attached to said yoke-piece under the bed of the machine, a spring, 423, to lift said yoke-piece and shaft 67, a collar, 68, on shaft 67, having two arms, as o^3 and o^4, thereon, a worm-gear, 69, fast on said shaft 67, having pin-holes in its side, a pin, o^5, fixed in said gear, and a pin, o^3, adapted to be placed in any of said holes, a pulley, as 220, fixed on shaft 67, having a cord attached thereto, a weight, as 51, hung on said cord, a clutch, 409, loose on shaft 188 and to which clutch the pulley 410 is attached, and the worm 70 on clutch 409 on the main shaft 188, said clutch being loose on said shaft, substantially as set forth.

26. Cop-building mechanism consisting of two parallel rods, 15 and 16, capable of a rocking motion in suitable bearings on opposite sides of the machine and having wire-supporting arms thereon, and suitable weights attached to said rods, substantially as described, to swing said arms and wires toward the yarns, combined with a cam, as 340, a carriage, adjunctive mechanism, as described, for imparting rotary motion imparted to the cam by the downward motion of the carriage, substantially as described, a tube, 38, the rod 106, engaging the tube and resting on said cam, and a rock-shaft, 47, having an arm thereon connected pivotally with said tube and a second arm thereon, and means for connecting said second arm with each of said shafts 16, substantially as set forth.

27. The shaft 11, the main shaft 188, having a connection with shaft 11, as described, a scroll-pulley, 138, fixed on shaft 11, a weight, 294, and a cord, 172, connecting the scroll and weight, the drum-shaft 82, having a connection, as described, with said shaft 11, the ratchet-wheel 144, fixed on the last-named shaft, and a pawl, 143, having a bar, 178, pivotally connected therewith, having a catch-block, a^4, thereon, combined with the rock-shaft 18, having an arm, $179^{\times}$, thereon, with which said bar engages, and means for actuating said shaft 18, substantially as set forth.

28. The carriage having on one of its frame-plates the projecting cam *l*, the spring-actuated pawl 143, the spring $143^{\times}$, for engaging said pawl, the bar 178, and the elbow-lever 187, capable of engagement with said cam and having one arm engaged with said bar, combined with the shaft 11 and the ratchet-wheel 144 on said shaft, means for reciprocating the carriage, means, as described, to actuate shaft 11, and means, as described, to hold the bar 178 and the pawl against the force of the spring, substantially as set forth.

29. In combination, the rock-shaft 47, the rock-shaft 204, having a connection with said shaft 47—namely, the bar 21, as described—and the levers 219 and 256, attached to said shaft 204, the reciprocating mechanism of the carriage, as described, the carriage having the cams *r* and *r'* on the frame-plates thereof, as described, capable of engagement with said levers, the arm 23, and the rods 16, having the building-wire arms thereon and having a connection, as described, with said arm 22 on said rock-shaft 47, substantially as set forth.

30. The tube 38, having a collar, *f'*, thereon, the shipper-rod 34, a collar, 118, and an arm, 341, thereon capable of engagement with said collar *f'*, the plunger 114, the shaft 18, and an arm, 164, thereon engaging the plunger, combined with an elbow-lever, 287, having an engagement with a collar on said plunger and shipper-rod, means for elevating tube 38, and means for actuating shaft 18.

31. The lever 210, pivoted on the bed-plate 1 and having a vibratory motion in a horizontal plane, the shipper-rod 34, having a pivotal connection, as described, with one end of said lever, the longitudinal shipper-rod 358, having the spring 206 thereon, the collar 208, having a free longitudinal movement on said rod 358 and a pivotal connection with one end of the lever 210, and having a fixed hook thereon, as described, a clutch-arm, 231, fixed on said rod 358, having a hook thereon to engage with the hook on said collar, and means, as described, for releasing the hooks, combined with the shaft 11, having the winding-scroll 138 and clutch 225 fast thereon, and *x* clutch, 230, with which said arm 231 engages, and means, as described, for rotating said clutch 230, substantially as set forth.

32. The shipper-rod 358, having the spring 206 and provided with the collar 208, having a hook thereon, and the clutch-arm 231, having a spring-hook, 438, on its collar adapted to engage the hook on collar 208, combined with the gear 211, having lateral projections on its rim mechanism for rotating said gear alternately in opposite directions, a ratchet-wheel, 222, a shaft, 446, on which said gear and ratchet are mounted side by side, an elbow-lever, 224, hung to rotate freely on said shaft, a lever, 223, pivotally connected to one arm of said lever and having a limited vibratory movement capable of engaging with said spring-hook, and two independently-acting pawls carried on said elbow-lever to engage with said ratchet and the lever 223, a saddle-spring engaging with pins on said pawls, a spring attached to said elbow-lever and acting against one end of said lever 223, and mechanism for moving rod 358 against the tension of spring 206, substantially as set forth.

33. The shipper-rod 34, a spring, as described, to move said rod longitudinally, the drum-shaft 82, having the wheel 161, the spring 14, and the friction-collar 13 thereon, a collar on said rod 34, having a buster-arm, 395, thereon, a slotted hook-lever, 290, pivoted on the bed-plate by the side of the rod 34, having its open end opposite the end of said buster-arm, a vertical rocking shipper-rod, 10, having an arm, 288, thereon capable of vibratory motion in a horizontal plane, a spring-actuated pin, carried by arm 28, capable of engagement with the hook in said lever 290, a spring, 292, to hold the free end of said hook-lever upward, and a clutch-arm, 12, on said rod 10, engaging with the friction-collar 13 on said drum-shaft, combined and operating substantially as set forth.

34. In combination, the shipper-rod 10, the arm 288 thereon, having the pin 396 bearing on the end of a spring under said arm, the pivoted hook-lever 290, having its end slotted to receive said arm and having a hook therein to engage said pin, and mechanism for moving arm 288 from said hook when disengaged, combined with the shipper-rod 34, having the buster-arm 395 attached thereto, and a spring to hold the free end of said lever upward, substantially as set forth.

35. The shipper-rod 34, having a slot therein provided with an offset at one end thereof, as described, and carrying the horizontal arm 120, a spring for moving said rod longitudinally, the spring-actuated pin 401, engaging with said slot and having a collar, 402, thereon, a shaft, 396, whose lower end is capable of engagement with said arm, having a rotary motion parallel with said pin and having a disk thereon provided with a cam projection to engage said collar and lift said pin, and with a stop-pin, v^6, therein, said shaft having also a pulley thereon having a cord attached thereto and carrying a crown-gear, 127, and a spring, 404, to force said shaft downward, combined with the sleeve 113, the worm 126, carried thereon, and a weight attached to said cord, substantially as set forth.

36. The shipper-rod 34, a spring for moving it longitudinally, said rod having a slot therein with one end offset, as described, and having

the arm 341 thereon, combined with the tube 38, having a collar thereon to engage with said arm, mechanism for elevating tube 38, the shaft 47, and the rods 16, connected with said tube, lever-connections, substantially as described, between said shaft 47 and the tube 38 and rods 16, the pin 401, engaging in said slot, having the collar 402 and the shaft 396, carrying the rotating disk 131, having a cam projection thereon to engage with and gradually lift said pin, and means, substantially as described, for imparting a rotary motion to said disk, combined and operating substantially as set forth.

37. The shaft 18, having the sliding clutch 167 thereon, mechanism for operating shaft 18 and the arm 186, extending from a loose clutch-sleeve on said shaft, the horizontal shipper-rods 19, having collars 168 and 169 thereon, a lever, 170, pivoted centrally on the machine and having engagement with said rods and with said clutch 167, a driving-shaft, 141, an elbow-lever pivoted under the driving-shaft 141, and a driving-wheel, a sliding friction-collar, 266, also engaging said shaft, a suitable connection, as described, between said arm 186 and said elbow-lever, and a spring, as 151, to swing the latter, combined and operating substantially as set forth.

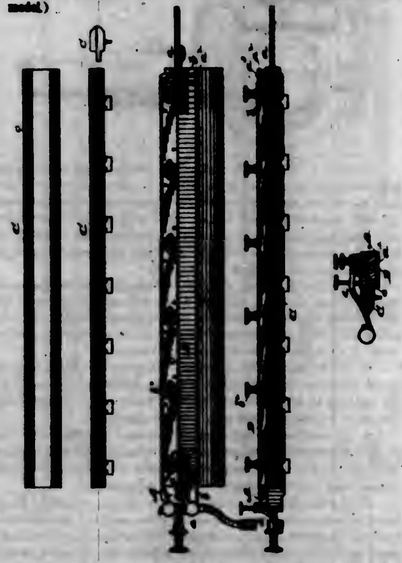
38. The drum-shaft 82, the weight 294, and an intermediate shaft, as 11, means, as described, for imparting thereto a rotary motion by said weight, and a connection, as described, with said drum-shaft and the spindle-driving bands, whereby its said rotary motion is communicated to the last-named shaft and the spindles while the carriage descends, combined and operating substantially as set forth.

39. The shaft 11, having a sleeve, 228, thereon, a clutch, 230, splined and sliding on said sleeve, a gear, 35, a clutch, 225, fast on shaft 11, and the main shaft 188, having a geared connection with said last-named gear, and mechanism for shifting clutch 229, combined and operating substantially as set forth.

40. The main shaft 188, the clutch 25, having a free rotary motion thereon and having a gear, 35, fixed thereto, the sleeve 113, having a free rotary movement, as described, on said main shaft, means for rotating said sleeve, the sliding clutch 9, having a key-connection with said sleeve and capable of engagement with one end of said clutch 25, and the shipper-rod 34, having an arm, 394, engaging with said sliding clutch, combined and operating substantially as set forth.

41. The carriage, the ropes 499, the shaft 30, having the winding-scrolls 190 and 205 thereon, which are connected by ropes, as described, with the carriage-counterbalancing weight, said shaft 30 having a worm-and-gear connection, as described, with the gear 35, and means, as described, for supporting and operating said gear, combined and operating substantially as set forth.

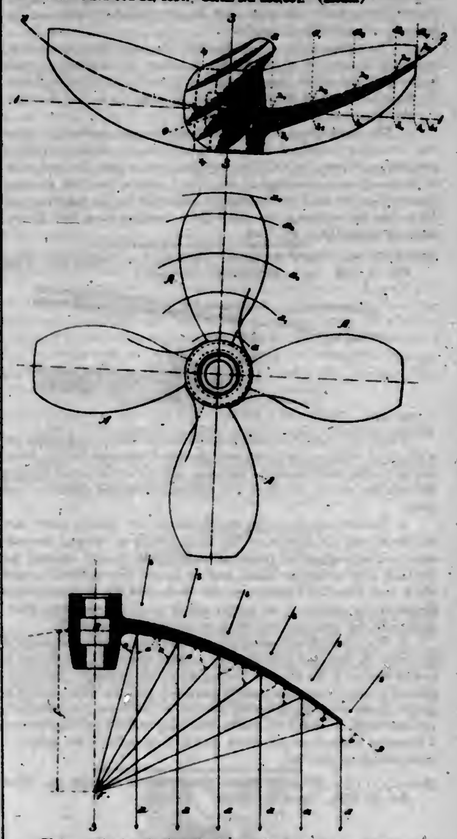
384,497. RULING-MACHINE. George B. Barnard and Edward Knapp, St. Louis, Mo. Filed Aug. 16, 1886. Serial No. 211,092. (No model.)



Claim.—1. In a ruling-machine, the combination of the adjustable holder A, having seat *a'*, the detachable pen-beam B, the bar *b'*, held by nuts and bolts and grooved at *b⁴*, and clamp C, having tongue *c*, substantially as described.

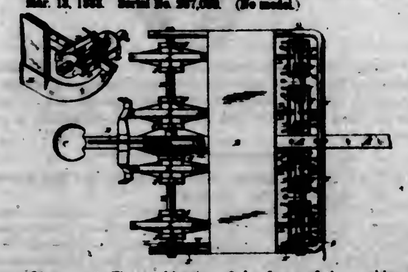
2. The combination of the holder A, having the seat *a'*, the bolts a^4, and the nuts a^5, with the detachable beam B, having the hooks *b*, substantially as described.

384,498. PROPELLER-WHEEL. James R. T. Barclift, New York, N. Y. Filed Oct. 26, 1887. Serial No. 253,661. (Model.)



Claim.—The herein-described propeller-blades curved in the line of a parabolic generatrix to form a driving-surface, consisting of a helicoidal parabolic surface of revolution, and so combined with the propeller-shaft that a plane passed through the axis of the shaft will intersect the driving-surface of each blade in a parabola, substantially as described.

384,499. GRAIN-DRILL. Daniel B. Bearden, Wilson, Kans. Filed Mar. 12, 1888. Serial No. 267,092. (No model.)



Claim.—1. The combination of the frame of the machine, the axle H, journaled in suitable boxes, the ratchet-wheels rigidly secured to the axle, the covering-wheels I, provided with double hubs J, which catch upon opposite sides of the ratchet-wheels, and the spring-

actuated pawls secured to the hubs and which engage with the ratchet-wheel, substantially as set forth.

2. The combination of the shaft O, the drills or furrow-openers provided with frames at their front ends, the stops which are passed through the shaft, and the springs which are applied to the shaft and which return the furrow-openers to position after having been raised, the arm connected to the shaft, and the operating-lever and connecting-rods, substantially as specified.

3. The combination of the clutch U, the pivoted curved lever T, connected thereto, the shaft O, the arm or lever S, which is connected to the shaft and which engages with the lever T, the operating-chain W, the wheel X, shaft H, and the operating-lever for moving the shaft O, substantially as shown and described.

4. The combination of the operating-lever, the connecting rod or rods extending therefrom, the shaft O, and arm extending therefrom and making connection with the connecting rod or rods, the seed-drills or furrow-openers connected at their front ends to the shaft O, stops connected to the shaft for moving the seed-drills in one direction, and the springs for returning the seed-drills to position when left free to move, substantially as set forth.

384,500. SAW-HANDLE. JOHN BEARDSLEE, Arcata, Cal. Filed Feb. 17, 1888. Serial No. 264,339. (No model.)



Claim.—1. The combination of the handle-loop having an eye and a sleeve at right angles to the eye, the block swiveled in said sleeve and projecting from the end of the same, and the slotted screw inserted through the end of the block and adjustably secured therein, as set forth.

2. The combination, with the saw-blade, the slotted screw, and the thumb-nut and washer, of the block having an opening for said screw and a longitudinal groove at right angles to said opening for the back edge of the saw-blade, and the handle-loop swiveled on said block and provided adjacent to the block with the circumferential flange having notches *i*, any one of which may be turned into alignment with the groove in the block, substantially as specified.

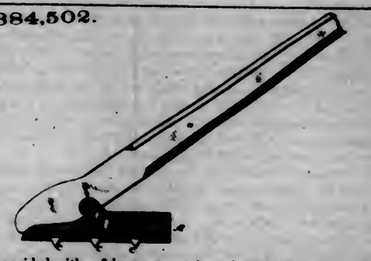
3. The herein-described saw-handle-securing device, composed of the screw B, provided with the longitudinal slot *b*, the thumb-nut D and its washer *d*, the block C, having the screw-opening *c*, the longitudinal groove *c'*, and the stem E, provided with the circumferential groove *e*, the handle-loop having the eye G, the sleeve *f*, and flange I, provided with the notches *i*, and the retaining-screw *g*, passing through a threaded opening on the sleeve, and with its point in the groove *e*, substantially as specified.

384,501. PULLEY. HENRY W. BELSHEIMER, St. Louis, Mo. Filed Nov. 21, 1887. Serial No. 255,664. (No model.)



Claim.—A composite pulley consisting of the cast-metal central portion and the wrought-metal rim, said central portion consisting of a hub, spokes, and a peripheral part channeled, and also widened, and said rim being attached to said peripheral part, substantially as described and shown.

384,502. CAR-MOVER. JOHN BIRD, Warren, Ill. Filed Mar. 23, 1888. Serial No. 268,099. (No model.)



Claim.—1. The combination of a shoe having a shoulder or bearing formed upon its top with the lever having a fulcrum which catches against the shoulder or bearing, the connecting-links, and the steel pieces which are inserted in the bottom of the shoe, substantially as shown.

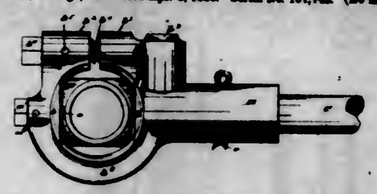
2. The combination of the shoe provided with sharp edges to bite into the rail and a shoulder or bearing upon its top with the lever which is loosely connected by means of links with the shoe, and which is provided with a fulcrum to catch against the shoulder on the shoe, substantially as set forth.

384,503. COMBINED FUR SATCHEL AND MUFF. ABRAHAM BRAHAM, Montreal, Quebec, Canada. Filed Mar. 10, 1888. Serial No. 266,913. (No model.) Patented in Canada Oct. 11, 1887, No. 27,702.



Claim.—As a new article of manufacture, the compound fur satchel-muff having in combination a satchel, a pocket, and a muff-recess situated centrally between satchel and pocket, the whole included within one outer fur-covering, and a fur cap or cover with edge of one of its sides secured to inside of said pocket, and having partially cut ends with flexible connections, for the purpose described.

384,504. PITMAN-BOX FOR HARVESTERS. ALFRED W. BRAHAM, Chicago, Ill. Filed Apr. 3, 1888. Serial No. 197,763. (No model.)



Claim.—1. The box A, having the enlargement of true spherical form flattened or reduced at its sides, in combination with the pitman-head having the transverse opening with spherical surfaces corresponding with those of the box and reduced at the sides in one direction, said members constructed, substantially as described, to admit of the box being inserted in an endwise direction and secured by a partial rotation about its own axis.

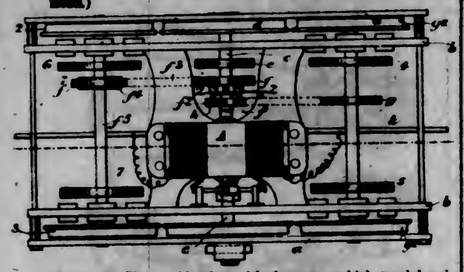
2. The box A, having the globular enlargement, the flattened surfaces, and the groove *a*, in combination with the pitman-head having the opening of greater diameter in one direction than the other to admit the box in an endwise direction, and the screw *a'*, to prevent the rotation of the box when in operative position.

3. The box having the spherical enlargement reduced in thickness in one direction, in combination with the divided pitman-head having the opening to admit the box in one direction only, as described, and the screw *b*⁴, whereby said head may be contracted.

4. In combination with the pitman-head provided with the slot *b*³, the pitman secured therein and the fastening pin or key extended through the slot and pitman, substantially as described, whereby the pitman may be secured under different adjustments.

5. The box having the enlargement of true spherical form flattened or reduced at its sides, in combination with the pitman-head having the transverse opening with spherical surfaces corresponding with those of the box and reduced at the sides in one direction, said members constructed, substantially as described, to admit of the box being inserted in an endwise direction and secured by a partial rotation about its own axis, and means for preventing the accidental rotation of the box when in place.

384,505. CAR-TRUCK. WILLIAM J. BROWN, London, County of Middlesex, England. Filed July 30, 1887. Serial No. 245,220. (No model.)



Claim.—1. The combination, with the car or vehicle truck herein shown and described, of the bearing-blocks *m*, provided with horizontal studs, the springs *n*, encircling said studs, having their guides in the frame *b*, substantially as shown and described.

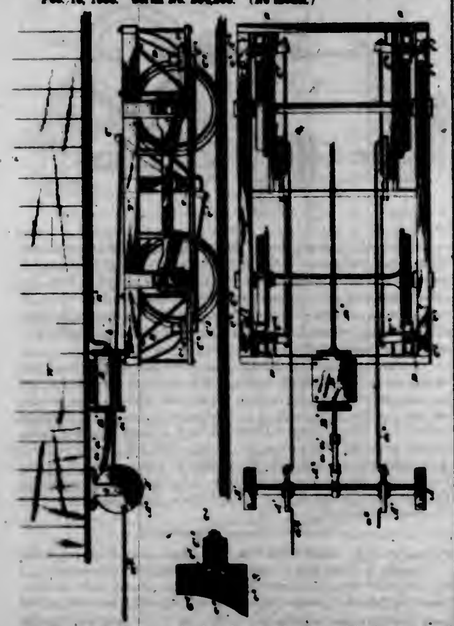
2. The combination, with a car or vehicle truck, of the segmental adjustment composed of the arm 13, carrying the anti-friction wheel 12, wheel 11, and main wheel 10, substantially as shown and described.

384,506. ANTI-FRICTION BEARING FOR SHAFTS. WILLIAM J. BROWN, London, County of Middlesex, England. Filed Oct. 11, 1887. Serial No. 252,077. (No model.)



Claim.—The combination, substantially as shown and described, consisting of the gudgeon or journal-box *a*, the adjustable plate connected therewith, the washers *d*, the anti-friction rollers arranged in said adjustable plate, the armature-shaft *f*, screw-threaded lug *g*, and set-screw A.

384,507. CAR-BRAKE. JAMES H. BROWN, Richmond, Ind. Filed Feb. 16, 1888. Serial No. 264,369. (No model.)



Claim.—1. In a car-brake, the combination, with the truck, of independent brake-supporting levers C', fulcrumed on the side sills of the truck-frame, shoe-heads secured to said levers, brake-operating levers C, pivoted to rigid supports at opposite sides of the frame, connecting-rods secured at their inner ends to the operating-levers at opposite sides of and equidistant from said pivot, and devices for connecting the upper ends of the operating-levers with the power, substantially as described.

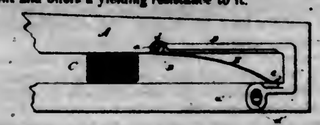
2. In a car-brake, the combination, with the brake-cylinder and its piston, of a rock-shaft provided centrally with a crank-arm which is connected with the piston and at its ends with arms or disks, the trucks provided at the side with rigid supports, brake-operating levers pivoted on said supports, independent brake-supporting levers, fulcrumed in the side sills of the truck-frame and carrying shoe-heads, rods connecting the ends of the supporting-levers with the operating-levers at the opposite sides of their pivots, and rods connecting the upper ends of the operating-levers with the arms or disks on the rock-shaft.

3. In a car-brake, the combination, substantially as described, of the truck, the brake-operating lever mounted on fixed pivots, the independent brake-supporting levers fulcrumed in the side sills of the truck and each connected independently with the operating-lever, the shoe-heads secured to their supporting-levers, a spring interposed between each shoe-head and its supporting-lever, and means for connecting the brake-operating levers with the power.

4. In a car-brake, the combination, substantially as described, of the brake-supporting levers provided each with a circular recess, the shoe-heads provided each with a slot, *e*', to receive the lever, and a recess, *e*², a connecting-bolt passing centrally through the recesses of the shoe-head and its lever, a coiled spring encircling said bolt and seated at its opposite ends in said recesses, and means for connecting the supporting-levers with brake-operating mechanism.

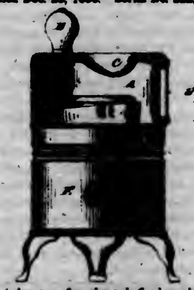
384,508. PICKER-STAFF CHECK FOR LOOMS. BENJAMIN F. CARTER, Woonsocket, R. I. Filed Sept. 22, 1887. Serial No. 250,426. (No model.)

Brief.—The check encounters the picker-staff in its backward movement and offers a yielding resistance to it.



Claim.—In combination with the lay of a loom, the plate D, having the equicircular bearing *d*, clasping the spring E, and having the short arm provided with the transverse slot *d'*, the screw *d'*, passing through said slot, the pivot *e*, and the spring having one end fitted on the pivot *e*, substantially as specified.

384,509. HEATER FOR DENTAL FLASKS. ROLLA H. CRANE, Bethel, Vt. Filed Dec. 28, 1886. Serial No. 222,412. (No model.)



Claim.—1. A heater for dental flasks adapted to inclose and cover the flask, and having at its upper side the depending offset C, corresponding in general shape to the palatal or lingual surface of the model in the lower half of the flask, substantially as described.

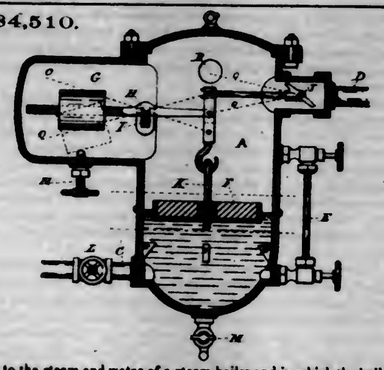
2. The heater for dental flasks having the offset C, for the purpose set forth.

384,510. FEED-WATER REGULATOR. FREDERIC COOK and BERNHARD THOMS, New Orleans, La. Filed Oct. 22, 1887. Serial No. 253,044. (No model.)

Claim.—1. In a feed-water regulator, the combination, with a chamber open to the steam and water of a steam-boiler and internally under its pressure, of a pipe for conveying steam from said chamber to a boiler-feed pump, a partly-immersed weight suspended in the chamber, a counterbalance-weight, a lever carrying said weights, and a balanced valve connected with said lever and located to regulate the supply of steam to the boiler-feed pump, whereby its speed is controlled by the height of the water in the boiler, substantially as described.

2. In a feed-water regulator, the combination, with a chamber

384,510.



open to the steam and water of a steam-boiler and in which the boiler-pressure is maintained, of a pipe for conveying steam from said chamber to a boiler-feed pump, a balanced valve for regulating the supply of steam delivered through said pipe to the boiler-feed pump, a partly-immersed adjustable weight, an adjustable counterbalance-weight, a lever carrying said weights, and a rod connecting said lever with the balanced valve, substantially as described.

3. In a feed-water regulator, the combination of a closed chamber open to the pressure of a steam-boiler, a balanced solid float, a counterbalance-weight, a regulating balanced valve, connecting rod and lever, and adjusting-screw N, substantially as described.

4. In a feed-water regulator, the combination, with the chamber A, float-weight F, counterbalance-weight G, lever H, and rod J^4, of the valve-chamber J^3, of a larger diameter than the steam-pipe D, and the valve J, arranged within the chamber J^3, for the purpose specified, and substantially as described.

5. A feed-water regulator consisting of a tight vessel connected with a steam-boiler above and below its water-line and containing an adjustable partly-immersed weight counterbalanced by an adjustable weight, substantially as described.

6. A feed-water regulator consisting of a tight vessel connected with a steam-boiler above and below its water-line and containing an adjustable partly-immersed weight counterbalanced by an adjustable weight, these weights connected by suitable connections or levers with a balanced regulating-valve leading to the boiler-feeder, substantially as described.

7. A feed-water regulator consisting of a tight vessel connected with a steam-boiler above and below its water-line and containing an adjustable partly-immersed weight counterbalanced by an adjustable weight, these weights connected by suitable connections or levers with a balanced regulating-valve leading to the boiler-feeder, and an adjustable stop to arrest the upward motion of the partly-immersed weight or the downward motion of the counter-weight, substantially as described.

8. A feed-water regulator consisting of a tight vessel connected with a steam-boiler above and below its water-line and containing an adjustable partly-immersed weight counterbalanced by an adjustable weight, these weights connected by suitable connections or levers with a balanced regulating-valve leading to the boiler-feeder, and an adjustable stop to arrest the upward motion of the partly-immersed weight or the downward motion of the counter-weight, a valve in the pipe which connects the regulator-vessel with the boiler below its water-line, and a blow-off valve in the regulator-vessel, substantially as described, and for the purpose set forth.

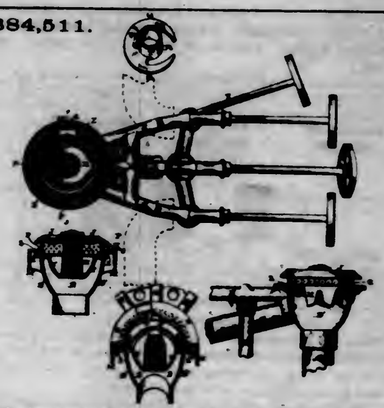
384,511. VAPOR-STOVE BURNER. SHELDON DAVIS, Cleveland, Ohio. Filed July 20, 1887. Serial No. 245,297. (No model.)

Claim.—1. The combination, with the stand-pipe, of the casting B', secured to its top and having the depressed top or portion 1 and the post or standard D cast therewith, the cap J, secured upon the post, and the ring K, which is secured upon the top of the casting by the cap, the casting having the two chambers B H formed therein, substantially as described.

2. The combination, with the stand-pipe, of the casting B', secured upon its top and having the depressed portion or top 1, so as to separate the vaporizing and commingling chambers, and the inclosing-walls M, formed as a part thereof, and the ring and cap J, suitable openings, L, being made through the top of the casting outside of the ring, so as to conduct vaporizing-flames inside of the walls M, substantially as set forth.

3. The casting B', provided with a recess in its top, so as to receive the lower edge of the ring, and provided with the horizontal projections extending inwardly from its inner edge to center the ring,

384,511.



and having openings L through its sides for the escape of the vaporizing-flames, in combination with the ring and cap, substantially as specified.

4. In a vapor-burner, the combination of the casting B', having the commingling-chamber formed in its top, with the plate Q, placed over the top of the chamber and having an opening in one side, with the ring K and cap placed above the plate, substantially as shown.

5. The combination of the casting B', having a recess in its top to receive the ring, and a horizontal flange, Z, extending around the upper edge of the recess outside of the ring, with the ring and cap, substantially as set forth.

6. The combination of the casting B', having a recess in its top to receive the lower edge of the ring, a horizontal flange, P Z, extending around the upper edge of the recess outside of the ring, and openings L through the casting for the escape of vaporizing-flames, with the ring and cap, substantially as specified.

384,512. HARNESS HOOK OR SNAP. WILLIAM S. F. DILLON, Cincinnati, assignee of one-third to George Hall, Lima, Ohio. Filed May 26, 1887. Serial No. 239,411. (No model.)



Claim.—1. In a snap-hook, the combination of two parts or sections, A and B, the outer ends of which together form the hook portion and the opposite end of each of which is provided with a loop, and one of said sections, A, is provided with a bent shank or elbow, F, and the other section, B, is provided with a notch or recess, B', in the side of its loop, adapted to receive the bent shank, which slightly pivots therein, substantially as and for the purpose set forth.

2. In a snap-hook, the combination of two parts or sections, A and B, the outer ends of which together form the hook portion, and the opposite end of one of the sections is provided with one loop and the same end of the other section is provided with a loop and a supplemental loop formed integral therewith, said supplemental loop being further provided with a cross-bar having a pin, one of said sections, A, is provided with a bent shank, F, and the other section, B, is provided with a notch or recess, B', inside of its loop, adapted to receive the bent shank which slightly pivots therein, substantially as and for the purpose set forth.

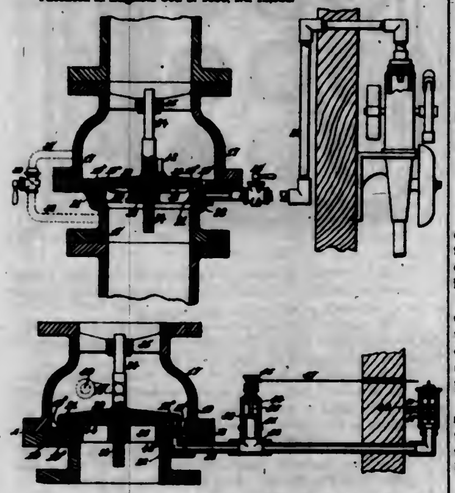
384,513. CHIN-REST FOR THE DEAD. CARL B. DEGEN, Brooklyn, N. Y. Filed Mar. 3, 1888. Serial No. 266,074. (No model.)

Claim.—In a chin-rest for the dead, the elastic frame A, composed of arms B C, bent transversely and laterally, and adapted to have its ends under the chin and on the top of the head and its sides to converge from the points H H, so as to pass around toward the back of the head, substantially as shown and described.

384,513.



384,514. ALARM-VALVE FOR AUTOMATIC FIRE-EXTINGUISHERS. RALPH DOWSON and JOHN TAYLOR, Bolton, County of Lancaster, England. Filed Dec. 23, 1887. Serial No. 258,316. (No model.) Patented in England Oct. 2, 1886, No. 12,888.



Claim.—1. In an automatic fire-extinguisher, the combination, with a valve-casing through which the water passes to the sprinkler, said casing having a passage leading to a pipe communicating with an alarm and being provided with a valve-seat having an opening communicating with said passage, of a valve closing the water-passage through said casing and covering and uncovering said opening in the valve-seat as the valve closes and opens, substantially as described.

2. In combination with the valve 20, provided with the double facing 19^{a}, the annular chamber or cavity 21 between the same, the seating 19, and the slot or opening 45 through same to allow of the annular chamber or cavity 21 being open to the pressure of the atmosphere when the valve 20 is closed, and through which water flows to operate an alarm when the valve 20 opens, substantially as and for the purpose herein set forth.

3. The combination, with the casing, of a main valve, 20, and by-pass consisting of a valve-seat, 40, and valve 37, inclosed by a casing, 42, having discharge-openings, said by-pass being mounted on the main valve, which is provided with a passage communicating with the passage closed by the valve 37, substantially as described.

4. The combination, with the casing 17 18, of the main valve 20, having an annular space or channel, 21, the valve-seat 19, having a slot, 45, communicating with annular chamber 21 and with a pipe, 23, the valve-box 51, valve 53, having stem 55, and the detachable button 56, having a cord or wire connected to the alarm, substantially as described.

5. The combination, with the valve-casing 17 18, having the passage 22, of the main valve 20, having an annular space, 21, valve-seat 19, having a slot, 45, communicating with annular chamber 21 and with a pipe, 23, the valve-box 51, valve 53, having stem 55, and the detachable button 56, having a cord or wire 57, substantially as described.

384,515. MACHINE FOR MAKING WIRE NAILS. HENRY REED, Meadville, Pa. Filed July 27, 1887. Serial No. 245,091. (No model.)



Claim.—1. In combination, two plates, one movable and the other fixed, cutting-dies supported from one of the said plates, and forcing-faces carried upon the other plate for causing the operation of said dies in the changing of the position of the two plates, and driving mechanism for the moving plate, all substantially as described.

2. In combination, two plates, one movable and the other fixed, cutting-dies supported from one of said plates, forcing-faces carried upon the other plate for causing the operation of said dies in the changing of position of the two plates, driving mechanism for the moving plate, and a feeding mechanism carried upon the movable plate, substantially as described.

3. In combination, substantially as described, a bed-plate and a supporting-plate in sliding connection therewith, driving mechanism for the sliding plate, gripping-jaws and cutting-dies supported therefrom, and forcing-faces on the bed-plate for causing the operation of both jaws and cutters, substantially as described.

4. The combination, in a machine for making nails from wire, of a gripper for the wire, dies having longitudinal and lateral movement, a plate carrying the said gripper and dies, and a bed-plate having forcing or contact faces for causing the longitudinal movement of the dies, and an abutment to come in contact with the dies, with a driving-shaft and its connections, all substantially as described.

5. In combination, in a machine for making nails from wire, a gripper, dies arranged to move therewith and to swing inward, forcing-faces for causing the longitudinal movement, and an abutment arranged to press the dies against the gripper, with driving mechanism whereby the wire is held, severed, and the gripped end upset to form the head, all substantially as described.

6. In combination, a plate, B, having an abutment, a plate A, in sliding connection with the plate B, a gripper to hold the wire, and dies arranged to move with the gripper to sever the wire, said movement being caused by forcing-faces on the plate B, said dies being hinged and normally held outward from the gripper, the gripper-face and dies being in line with the abutment, and mechanism for changing the position relatively of the plates, substantially as described.

7. The combination, substantially as described, of a bed-plate and a plate in sliding connection therewith, gripping-jaws, forcing-faces on the bed-plate for causing the gripping-jaws to operate, a pair of dies moving with the gripping-jaws and hinged to swing inward thereto, but held normally outward, and an abutment on the bed-plate arranged to press the dies against the face of the jaws.

8. In combination, the slides carried on the plate A, the gripping-jaws operated thereby, the dies hinged to the slide, with adjustable connections, the abutment to force the dies against the jaws, and the

forcing-faces for causing the slides to operate, substantially as described.

9. In combination with the plates A and B, one movable longitudinally in relation to the other, laterally-movable gripping-jaws and dies carried on one plate, movable pawls carried on one plate, and the holding-grip for retaining the wire while the movable pawls retreat, substantially as described.

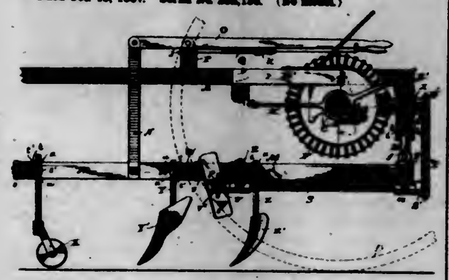
10. In combination, substantially as described, a fixed and movable plate, one carrying gripping-dies connected to slides moving across the line of movement of the plate and rollers on the other plate arranged to press the slides inward.

11. In combination with the base and moving plate, a pair of slides, gripping-jaws operated thereby, dies having beveled ends carried by the slides, springs to hold the dies away from the slides, and an abutment arranged to bear on the dies after they have severed the wire and force them against the end held in the grip, all substantially as described.

12. In combination with the plates A and B, one movable longitudinally in relation to the other, laterally-movable gripping-jaws and dies carried on one plate, feeding-pawls carried on the movable plate, and holding-pawls supported independently of said movable plate for retaining the wire while the feeding-pawls retreat.

13. In combination, the plates A and B, one movable in relation to the other, laterally-movable gripping-jaws and dies carried on one plate, feeding-pawls carried on the movable plate, and holding-pawls supported independently of said movable plate and upon a movable support.

384,516. COTTON-CHOPPER. STEPHEN FREEMAN, Racine, Wis. Filed Oct. 13, 1887. Serial No. 252,193. (No model.)



Claim.—1. In a cotton-chopper, the combination of a carriage, a frame suspended beneath the carriage, a chopping mechanism carried on the frame, and casters and plows secured to said frame by laterally-adjustable couplings that permit a pivotal and vertical adjustment of said casters and plows, substantially as set forth.

2. In a cotton-chopper, the combination of a carriage, a frame suspended beneath the carriage to have a positive horizontal movement and an automatic vertical movement, a chopping mechanism carried by the frame, and casters secured to said frame to have a pivotal, vertical, and lateral adjustment, substantially as set forth.

3. In a cotton-chopper, the combination of a carriage, a sprocket-wheel and pinion carried by a shaft that has its bearing on the carriage, a gear-wheel loose on the carriage-axle and in mesh with the pinion, a clutch feathered on said axle for engagement with the hub of the gear-wheel, a frame suspended beneath said carriage, a knife-shaft having its bearings on the frame and provided with a sprocket-wheel, and a drive-chain arranged on said sprocket-wheels, substantially as set forth.

4. In a cotton-chopper, the combination of a suitable carriage, a vertically-depending thimble secured to the carriage and having suitable transverse openings, a stem arranged in the thimble, and a pin passed through this stem and the openings in said thimble, a frame pivotally connected at its rear to said stem and suspended at its front by a suitable hanger depending from said carriage, and a chopping apparatus carried by said frame, substantially as set forth.

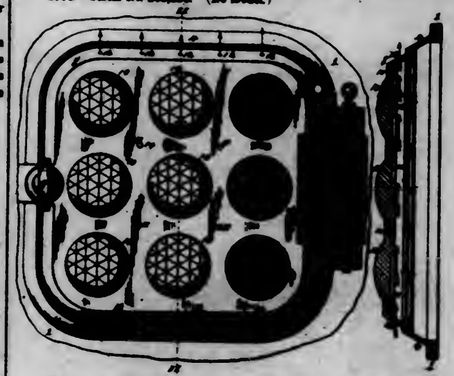
5. In a cotton-chopper, the combination of a carriage, a bearing secured to the carriage, a vertically-depending thimble integral with the bearing and provided with suitable transverse openings, a stem arranged in the thimble and a pin passed through this stem and the openings in said thimble, a frame pivotally connected at its rear to said stem and suspended at its front by a suitable hanger depending from the carriage, a shaft arranged in said bearing, a knife-shaft having its bearings on the frame, and suitable means for imparting motion to said shafts, substantially as set forth.

6. In a cotton-chopper, the combination of a carriage, a rectangular frame carrying the chopping mechanism and swiveled at its rear to the rear of the carriage, a lever swiveled to said carriage, a hanger connecting the lever and forward portion of the frame, a pivoted segmental rack, and a spring-catch arranged on the lever to engage the rack, substantially as set forth.

7. In a cotton-chopper, the combination of a carriage, a frame suspended beneath the carriage to have a positive horizontal adjustment and an automatic vertical movement, a rotary chopper having its bearings on the frame, and casters, plows, and cultivator-teeth secured to said frame by laterally-adjustable couplings that permit a pivotal and vertical adjustment, substantially as set forth.

8. In a cotton-chopper, the combination of a carriage and its axle, a frame suspended beneath the carriage to have a positive horizontal adjustment and an automatic vertical movement, a chopper-shaft having its bearing on the frame, casters, plows, and cultivator-teeth secured to said frame by laterally-adjustable couplings that permit a pivotal and vertical adjustment, a sprocket-wheel upon the chopper-shaft, a sprocket-wheel and shaft upon said carriage driven from the axle, and a drive-chain arranged on said sprocket-wheels, substantially as set forth.

384,517. STOVE. MARY S. GAGE, St. Louis, Mo. Filed Feb. 7, 1888. Serial No. 263,333. (No model.)

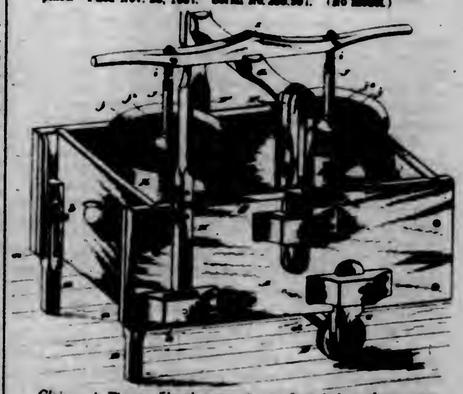


Claim.—1. The combination, in a stove, of the mica plate 5, glass 10, and an air-chamber, 11, between, having orifices 12 for the passage of air, substantially as and for the purpose set forth.

2. The combination of the mica, the glass bull's-eye having fluots, and the air-chamber between them, with provision for the passage of air through the chamber, for the purpose set forth.

3. The combination, in a stove, of the two doors carrying, respectively, the mica 5 and glass 10, and an air-chamber between them, with orifices in the edges or walls of the chamber for the passage of air, substantially as and for the purpose set forth.

384,518. CHURN. CHARLES E. GALE, Plattsburg, N. Y., assignor of one-half to Charles W. Vaughn and Edward H. Wood, both of same place. Filed Nov. 22, 1887. Serial No. 256,267. (No model.)



Claim.—1. The combination, in a churn, of two independent cream-receptacles having independent dashers and perforated inwardly-depressed tops, the bar connecting said dashers, the rock-shaft to which said bar is centrally attached, provided with an operating-lever whereby the dashers are reciprocated, and a containing-box or receptacle for the cream-receptacles having a centrally-arranged trough with which outlets from said receptacles engage, one of the cream-receptacles having side flanges which fit over the said trough, substantially as described.

2. The combination, with a receptacle, A, provided with a longitudinal centrally-arranged trough, L, having an end opening, of independent churn-bodies K K, having independent dashers mounted in said receptacle A, and having outlet-openings communicating with the said trough, one of said churn-bodies K having side flanges cut away to snugly fit over the said trough, substantially as described.

3. In a churn, the combination, with the receptacle or box A, adapted to receive churns having independent dashers, of the slotted blocks E, secured to the upper part of the side of the said receptacle or box A, the slotted block A, secured adjacent to the lower edge and one end of one of the sides of the receptacle or box, the standards F, removably secured in the blocks E, having a rock-shaft, G, mounted in their upper ends, to which an operating-bar, I, is centrally attached and connected to the dasher-rods of the churns, the depending arm or bar *f*, secured at its upper end to the rock-shaft G and having its lower end slotted and provided with a series of apertures, the slotted operating-lever H, pivotally secured at its lower end in the block A, and a link-bar, *g*, connecting the lower end of the arm or bar *f* with the lever H, whereby the churn-dashers may be operated either by the rod I or from one side of the box or receptacle by the lever H, substantially as described.

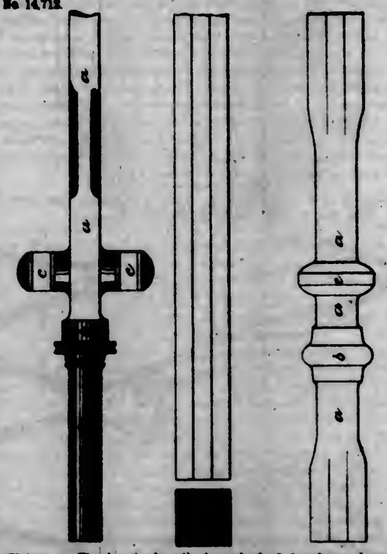
384,519. WITHDRAWN.

384,520. BOLTING-REEL. DAVID L. HANAKER, Chambersburg, Pa. Filed Aug. 30, 1887. Serial No. 247,894. (No model.)



Claim.—The combination, in a polygonal bolting-reel, of the longitudinal ribs of the reel located at the angles of the latter and having recesses formed in their outer edges, with wings projecting from the inner ends of the ribs toward the bolting-cloth at an angle less than a right angle, so as to form V-shaped lifting-pockets, all substantially as specified.

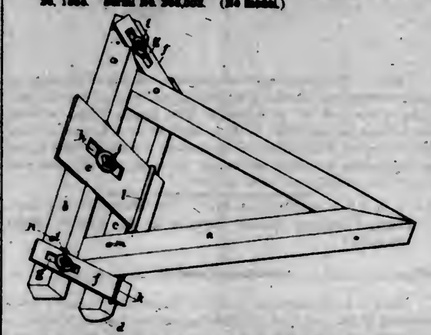
384,521. MANUFACTURE OF AXLES FOR VEHICLES. JOHN G. HARRISON, 11 Heol Road, Blghausen, England. Filed Mar. 8, 1887. Serial No. 230,189. (No model.) Patented in England Dec. 1, 1886, No. 14,712.



Claim.—1. The herein-described method of forming axle-trees, which consists in first subjecting the fagot to the action of dies having ball-shaped recesses for the formation of circular "collar-balls" upon the blank, the blank or fagot being constantly turned during the stamping operation, and then submitting the blank having such collars to the action of dies having laterally-extended recesses, which receive and shape the metal of one of said collars and form the flaps or side wings.

2. The method or process of forming axle-trees from fagots, which consists in first pressing or stamping the fagot in one set of dies, and thereby forming circular rounded beads or balls, and then in a second set of dies pressing said balls into the forms of the side wings or flaps and the collar, respectively, of an axle-tree, substantially as set forth.

384,522. SNOW-PLOW. JOHN B. HAYES, Detroit, Mich. Filed Mar. 26, 1888. Serial No. 268,202. (No model.)

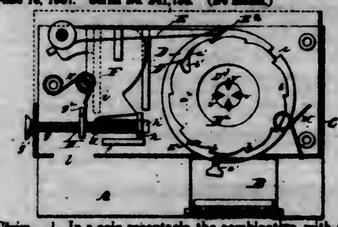


Claim.—1. In a snow-plow, the combination of the tongue *a* with the bar *c*, attached to the tongue, as described, and having its lower edges rounded or beveled, substantially as and for the purposes hereinbefore set forth.

2. In a snow-plow, the combination, with the bars *b* and *c* and the V-shaped tongue, arranged as described, of the plates *f*, having slots *g*, bolts *i*, and staples *k*, all substantially as and for the purposes hereinbefore set forth.

3. In a snow-plow, the combination, with the bars *b* and *c* and the V-shaped tongue, arranged as described, of the plate *e*, having slot *h*, the bolt *j*, and the staple *l*, all substantially as and for the purposes hereinbefore set forth.

384,523. COIN RECEPTACLE AND REGISTER. EDWARD BRADLEY, Jersey City, N. J., and WILLIAM G. HOOPER, Brooklyn, N. Y. Filed June 13, 1887. Serial No. 241,726. (No model.)



Claim.—1. In a coin-receptacle, the combination, with a series of concentric disks representing different values, of the dogs E E', engaging with said disks, the pivotal plates or guards F F', and the slide H, substantially as described.

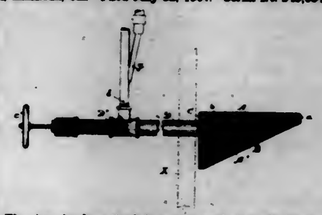
2. The combination, with the concentric disks representing different values and having notched flanges, of the dogs E E', the pivotal plates or disks having tail-pieces, and the slide H, having head *h* and notched cross-bar g^3, substantially as described.

3. In a coin-receptacle, the combination, with the registering-disk and the dogs E E', engaging therewith, of the plates or disks formed with the flanges *i* and tail-pieces *d*, and the slide H, having the head *h* and notched bar g^3, said parts being so arranged as to be conjointly operative only when the space between the head *h* and flange *i* is occupied by an independent body, such as a coin of given diameter, substantially as described.

4. In a coin registering or counting apparatus, the combination of a registering-dial, a dog, E, whereby the same is moved step by step, a pivotal plate or disk to which said dog is attached, having a flange, *i*, on its face and a tail-piece, *d*, and a slide, H, having a head, *h*, and notched cross-piece g^3, to control the movement of the parts when a coin is placed between the head of the slide and the flange on the disk, substantially as described.

5. In a registering apparatus, the combination of the dials comprising the plate D, having the bent lugs, and the interiorly and exteriorly flanged rings D' D^2, substantially as described.

384,524. HYDROCARBON-BURNER FOR FURNACES. ADAM HEBBER, Alameda, Cal. Filed July 22, 1887. Serial No. 245,084. (No model.)



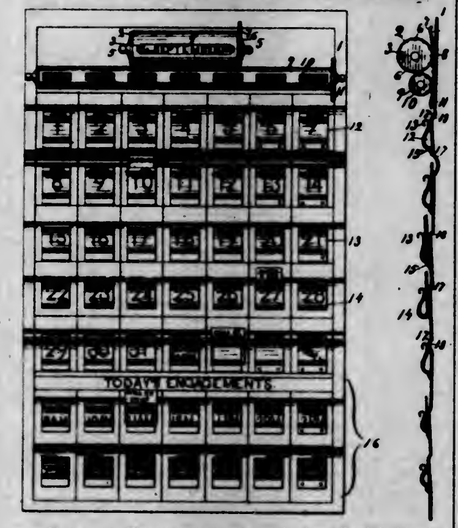
Claim.—The herein-described burner, consisting of the body A, having vertical and parallel sides, flat top, and inclined bottom, producing a chamber, A^x, of triangular form longitudinally, provided with a broad narrow outlet, *a*, the plate B, set to slide upon the bottom of chamber A^x, with beveled front edges, the setting-shaft C, and the supply-tube D, having connection for steam and oil pipes, constructed for operation as herein set forth.

384,525. CATAMENIAL SACK. JOHN HOTHERSALL, Manchester, County of Lancaster, England. Filed Jan. 5, 1888. Serial No. 259,823. (No model.)



Claim.—As an improved article of manufacture, a lady's towel consisting of the pad *a*, of soft fabric—such as Turkish toweling—having the extensions *d d*, of the same material, and the superposed strip *b*, of like material, under which the said extensions are folded for use, and attaching-strips *c c*, connected with the pad, substantially as described.

384,526. MEMORANDUM-CALENDAR. ARISTA H. ISBELL, Asheville, N. C. Filed Sept. 20, 1887. Serial No. 250,294. (No model.)



Claim.—1. The combination, in a calendar-roll, of the board 1, the receptacles 12, secured thereto, seven in a line and numbered from 1 to 31, the cylindrical case 2, having an aperture in its front, the cylinder 3, journaled in the case and having names of months upon it to register with the said apertures, and, further, having the notches 6 around it, the spring 7, provided with a nib, 8, to engage the said notches, the case 9, secured to the board 1 and having seven apertures in a line in its front, the cylinder 10, journaled in the case 9 and having the days of a week in seven zones upon it to register with the said seven apertures, and each aperture to head a column of the said numbered receptacles, the cylinder 10 being notched circumferentially, and a spring, 11, adapted to engage the said notches, substantially as shown and described.

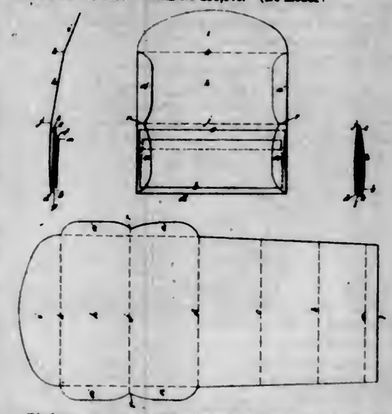
2. The combination, in a calendar, of a board, 1, a cylindrical case secured thereon and having an aperture in its front, a cylinder having the names of divisions of time marked on it in circumferential spaces, and, further, having notches in it to register with the said spaces, and the spring 7, secured at one end to the board 1 and having a nib, 8, to engage the said notches, and a projecting handle portion, substantially as shown and described.

3. The combination, in a calendar, of a back or board, 1, and a series of springs secured thereto and forming receptacles therewith, the receptacles having marks upon their faces outside of the said springs indicating dates, substantially as shown and described.

4. The combination, in a calendar, of a board or back having depressions 17 and card-receptacles secured to the said back below the said depressions, substantially as shown and described.

5. The combination, in a calendar, of a board having depressions 17 and receptacles having fronts adapted to press upon the said board at the projection below the said depressions, substantially as shown and described.

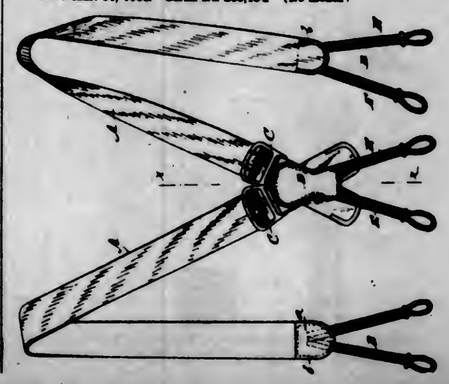
384,527. POCKET-BOOK. ALBERT H. JOCELYN, Montclair, N. J., assignor of one-half to William A. Armstrong, Mount Vernon, N. Y. Filed Jan. 6, 1888. Serial No. 259,970. (No model.)



Claim.—1. A pocket-book made of a strip of fabric, provided with side flaps, *a*, one on each side, and folded in alternately-reversed directions in transverse lines *b c d*, and having the said side flaps each lapped over and cemented upon the several alternately-reversed folds, substantially as herein described, whereby the two flaps combine with the parts between the folds to form several pockets, as herein set forth.

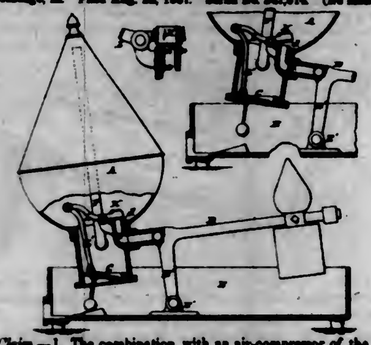
2. A pocket-book made of a strip having transverse folds *b c d* in alternately-reversed directions to form several pockets and a transverse fold, *j*, to form a loose side or back, A, and having side flaps, *a a'*, which are lapped over and cemented over the parts between the folds *b c d* to complete the ends of the several pockets, and also lapped over the ends of the loose side or back A to re-enforce the latter and form double corners *r r* in the fold between the said loose side or back and the pockets, substantially as herein described.

384,528. SUSPENDERS. JACOB KATZENBERG, New York, N. Y. Filed Mar. 31, 1888. Serial No. 269,134. (No model.)



Claim.—The back piece, D, the suspender-ends E E, secured to the lower end of the said back piece, and the buckles C C, secured to the upper end of said back piece, in combination with the webs A A, held by the buckles C C, and provided at the front ends with the permanently-attached suspender-ends B B, substantially as described.

384,529. AUTOMATIC AIR-COMPRESSOR. GEORGE J. KEEHAN, Chicago, Ill. Filed Aug. 29, 1887. Serial No. 247,814. (No model.)



Claim.—1. The combination, with an air-compressor of the type herein described, of a rocking lever, E, having a T form, the vertical member of which extends down in close proximity to the bottom of the supporting-tray and carries the journal-pivot at its lower end, in manner and for the purpose set forth.

2. In an air-compressor of the type herein described, the combination of the water-inlet D, valve K, lever L, one end of which is connected to the link L', while the other end carries the valve K, link L', and foot or outlet valve C, the parts being connected together and operating in the manner and for the purpose set forth.

3. In an air-compressor of the type herein described, the combination, with the chamber A, of the air-pipe F, valved branches G G', valve I, bell-crank I', and link I^2, connected to the tray, the parts being arranged and operating in the manner and for the purpose set forth.

4. In an air-compressor of the type herein described, the water or air inlet valve heads, consisting of a tapering rubber cork or plug inserted in a counterpart hole or opening in its carrying-lever, as described, and for the purpose set forth.

384,530. DUST-GUARD FOR CAR-AXLE BOXES. PETER M. KLINE, St. Louis, Mo. Filed Feb. 13, 1888. Serial No. 263,810. (No model.)



Claim.—1. The combination of the axle-box provided with a flange, 5, disk 7, ring 8, disk 10, and ring 11, having flange 12, substantially as and for the purpose set forth.

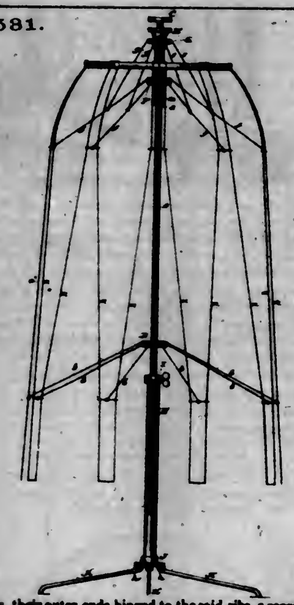
2. The combination of the axle-box, disks 7 and 10, and rings 8 and 11, substantially as and for the purpose set forth.

384,531. DRESS-FORM. WILLIAM H. KNAPP, Brooklyn, N. Y. Filed Jan. 30, 1888. Serial No. 262,669. (No model.)

Claim.—1. In a garment-stand consisting of a central spindle, and a series of ribs surrounding it radially expansible, the combination therewith of a vertically-adjustable collar, F, a stationary collar, G, both supported on said spindle, a series of diagonal braces corresponding to the respective ribs, and a corresponding series of links, the outer end of said braces hinged to the respective ribs, the inner end of said braces and links hung, the one series to the stationary collar G and the other series to the adjustable collar F, the outer ends of the said links hinged to the said braces midway of their length, both the links and braces inclined in the same direction, substantially as described.

2. In a garment-stand, the combination of a central vertical spindle, a series of ribs surrounding said spindle and radially expansible, a collar, B, vertically adjustable on said spindle, a series of braces, *b*, hinged by their inner ends to the said collar B and inclining downward

884,581.



therefrom, their outer ends hinged to the said ribs, a second adjustable collar, F, on said spindle, and a stationary collar, G, above said collar F, a second series of braces inclined in the same direction as the lower series of braces, and a corresponding series of links, the outer ends of the said second series of braces hinged to the respective ribs, the inner ends of the said links and braces, the one hung to the stationary collar and the other to the adjustable collar, the outer ends of the links hung to the said second series of braces midway of their length, substantially as described.

3. In a garment-stand, the combination of the central spindle, A, a series of ribs arranged around said spindle and radially adjustable, an adjustable collar, B, on said spindle, a series of braces, *b*, hung by their inner ends to the said collar B and extending diagonally downward, their outer ends hung to the respective ribs, the tubular sleeve D on said spindle above said collar B, free for independent rotation on said spindle, but held against vertical movement, said sleeve screw-threaded upon its outer surface, a correspondingly screw-threaded collar, F, on said sleeve, a stationary collar, G, above said collar F, a second series of braces, and a corresponding series of links inclined in the same direction as the series of braces below, the said second series of braces hinged by their outer ends to the said ribs, the inner ends of said series of ribs and series of links hinged, the one to the adjustable collar F and the other to the stationary collar G, and the outer ends of the links hung to the respective braces midway of their length, substantially as described.

4. A support for garment-stands and like purposes, consisting of a base, J, having a central opening through it, a standard, H, vertically adjustable in said opening through the base, the said base constructed with radial recesses, the said recesses extending into the central opening, and legs K, hinged in said recesses upon an axis at right angles to the axis of said standard, the said hinging axes being outside the said opening, and the said legs each constructed with an extension from their respective hinged ends, the said extensions being adapted to bear against the central standard within the opening in the base when the legs are extended, substantially as described, and whereby when the standard is withdrawn the legs are free to be folded against the standard.

384,532. PUNCH. HARK D. KNOWLTON, Chicago, Ill. Filed Aug. 10, 1887. Serial No. 247,242. (No model.)

Claim.—1. The combination, with a punch and a die or matrix, of an auxiliary cutter extending outwardly from the punch, said auxiliary cutter having its cutting-edge set back from the cutting-edge of the punch and arranged to act against an opposing flat surface of the die or matrix, substantially as described.

2. The combination, with a punch and a die or matrix, of an auxiliary cutter attached to and extending outwardly from the punch, the cutting-edge of said auxiliary cutter being set back from the cutting-edge of the punch and arranged to act against an opposing flat sur-

384,532.



face of the matrix, and means adjustably connecting said cutter with the punch, whereby the edge of the cutter may be adjusted with relation to the opposing face of the matrix, substantially as described.

3. The combination, with a punch and a die or matrix, of an auxiliary cutter extending outwardly from the cutting-edge of the punch and arranged to act against an opposing flat surface of the matrix, and a holder for the said punch and auxiliary cutter, said cutter being adjustably sustained in the holder by means affording both an endwise and lateral adjustment of the cutter, substantially as described.

4. The combination, with a punch, of a holder for the same provided with a shank for attachment to a punching-machine, and with a plate supporting the punch and provided with a recess in its lower face, an auxiliary cutter, movable clamp-plates located within the said recess, and opposing set-screws inserted through said plate and bearing against the clamp-plates, substantially as described.

384,533. TOY PARACHUTE. WILLIAM J. KUHNEN, Syracuse, N. Y., assignor of one-half to Frederick A. Kuntzsch, same place. Filed Feb. 14, 1888. Serial No. 263,956. (No model.)



Claim.—1. In a toy parachute, a ring suspended from the umbrella portion provided with a suspension-bar having suspended therefrom and integral therewith a weight of desired configuration, substantially as described.

2. In a toy parachute, a horizontal suspension-bar provided at its ends with a neck portion and a head, and a weight configurated as desired, connected therewith, said parts being integral and formed of cast metal, essentially as shown and described.

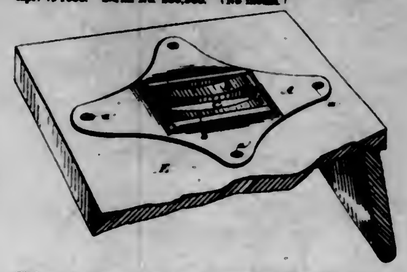
3. In a toy parachute, a horizontal suspension-bar formed at its ends with a neck portion provided with a head, and a weight of preferred configuration connected to the suspension-bar by one or more arms or hangers, said parts being integral and formed of cast metal, for the purpose set forth and described.

4. In a toy parachute, a horizontal suspension or cross bar suitably journaled in the ring portion, a weight suitably configurated depending from said bar by a pair of arms or hangers, said suspension-bar, end portions, weight, and connecting-arms thereof being formed of one integral piece of cast metal, substantially as and for the purpose set forth.

5. In a toy parachute, an umbrella or sustaining portion, cords attached thereto and connected to loops on a ring, said ring portion and its loops being formed from a single piece of wire, a horizontal bar journaled in said ring and maintained centrally therein, and a weight of desired configuration suspended from said bar, said bar and weight being integral and formed of cast metal, all combined substantially as described, and for the purposes specified.

6. The combination, in a toy parachute, of the umbrella portion A, provided with cords 1, connected to the loops 2, formed integral with the ring B, the bar C, provided with the neck portions *a* and heads *b* and extending diametrically across said ring and journaled in loops thereon, and a weight, D, of desired configuration suspended from the bar C by arms or hangers *c c*, said bar and connected weight being integral and formed of cast metal, substantially as described, and for the purposes specified.

384,534. WAGON-SEAT. WILLIAM A. LAPO, Colfax, Wash. Filed Apr. 7, 1888. Serial No. 269,969. (No model.)



Claim.—A wagon-seat support consisting of a plate having end perforations and a central concavity provided with a slot, substantially as set forth.

384,535. SASH-FASTENER. EDWIN W. LOCE, Bolivar, N. Y. Filed Jan. 9, 1888. Serial No. 260,209. (No model.)



Claim.—1. In a window, the frame thereof, in combination with the sash, rods or strips at the rear of the said sash, and springs at the rear of the said rods or strips.

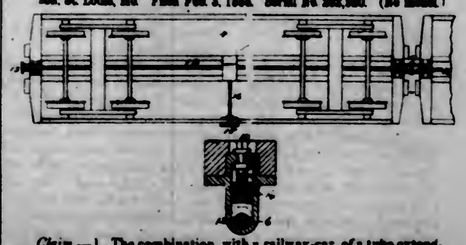
2. The combination, in a window, of the frame A, sashes B and B', rod C, and spring E at the rear of sash B, and springs G and blocks G' at the rear of sash B', all arranged in the manner and for the purposes substantially as shown and set forth.

3. The combination, in a window, of the frame A, sashes B and B', situated therein and having inclined notches deepest at their uppermost extremities, lugs or projections secured to the frame, rods or strips C at the rear of the sash B and on either end thereof, having their uppermost extremities pivotally secured to the frame and their lowermost extremities left free, springs at the rear of said rods, thimbles or sockets within the sash B', springs situated therein, and blocks upon the said springs, all arranged substantially as and for the purposes herein set forth.

4. The combination, with the window-frame and the sash, of rods at the rear of said sash, having their upper extremities pivoted to the window-frame, and springs at the rear of said rods or strips, having their upper extremities secured thereto and their lower extremities abutting against the window-frame, substantially as shown and described.

5. A window-sash having notches at its outer edges, and lugs or projections set in the window-frame, adapted to engage with the said notches, in combination with rods or strips at the rear of said sash and abutting thereagainst, and springs at the rear of said rods for holding the same in contact with the said sash.

384,536. DEVICE FOR COUPLING CARS. WILLIAM H. HOBBS, sen., St. Louis, Mo. Filed Feb. 3, 1888. Serial No. 262,980. (No model.)



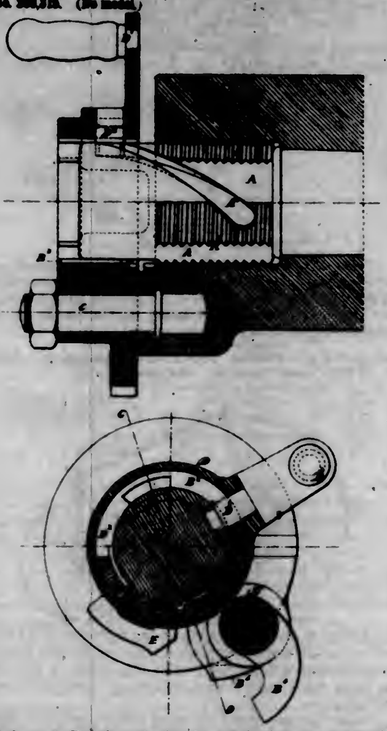
Claim.—1. The combination, with a railway-car, of a tube extending from end to end of the car, and a draft-cable passing through and guided and protected by said tube, by which the cars are coupled together.

2. The combination, with a railway-car, of the tube 12 beneath the same, having flaring ends 13, for guiding the coupling-cable 6, substantially as and for the purpose set forth.

3. The combination, in a railway-train, of the cable-tubes beneath the cars, a cable secured to the locomotive and extending through the tubes, and gripping devices on the cars, for the purpose set forth.

4. The combination, in a cable, of a suitable device upon the locomotive or tender for winding and unwinding the cable, and guide-tubes and gripping devices upon the cars, substantially as and for the purpose set forth.

384,537. BREECH MECHANISM FOR GUNS. THOMAS HEBERT, Westminster, England, assignor to the Hotchkiss Guns and Ammunition Company, (Limited,) same place. Filed Apr. 2, 1888. Serial No. 269,316. (No model.)

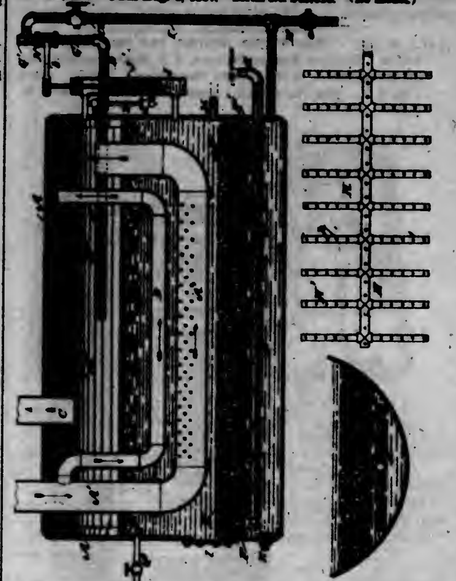


Claim.—1. Breech mechanism for guns having a screw breech-piece with divided segments of screw-threads upon it, corresponding segments in the gun for these segments to lock into, a ring capable of being turned around the rear end of such breech-piece, a lever-handle extending from the ring by which it can be turned, a pin or pins carried by the ring to enter inclined grooves, so disposed that when the ring is turned by its lever-handle it first gives a partial turn to the breech-piece to unlock it, and then draws the breech-piece back clear of the rear end of the gun, and a pin projecting from the rear end of the gun, around which the ring is then turned by the continued movement of its lever-handle, and the breech-piece thereby carried to one side and out of line with the bore of the gun.

2. The combination of a gun having divided segments of screw-threads within its breech end, a breech-piece having corresponding segments to lock into them, and also having an inclined groove passing partly around it, a carrier-ring into which the rear end of the breech-piece extends, a short arm extending from the ring and capable of being turned around a pin projecting rearward from the breech end of the gun, a ring with lever-handle extending from it capable of being turned around the carrier-ring, and a pin projecting inward from the ring and entering the inclined groove in the breech-piece, the whole so disposed that on the ring being turned in one direction the breech-piece has first a partial turn given to it, is then drawn back, and then by the continued movement of its lever-handle carried to one side of the gun.

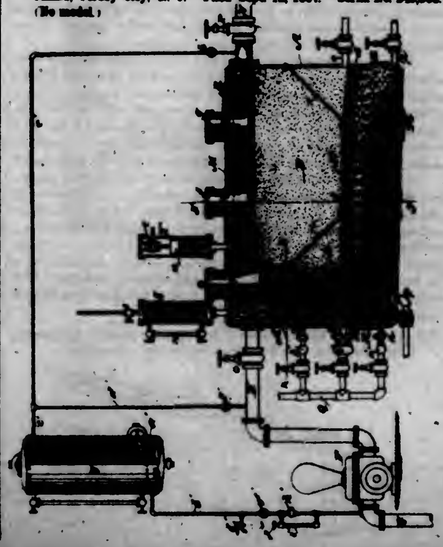
3. The combination of a gun having divided screw-segments within its breech, a breech-piece with corresponding screw-segments, a carrier-ring into which the rear end of the breech-piece extends, a short arm extending from the ring, a pin projecting rearward from the breech end of the gun, around which the arm can be turned, an extractor sliding in a longitudinal groove in the gun and having teeth upon it to engage with the screw-threads on the breech-piece, and a longitudinal groove in the carrier-ring, into which the extractor is drawn when the breech-piece is drawn back from the gun.

384,538. FEED-WATER HEATER. WILLIAM CLEVELAND, Paterson, N. J. Filed Aug. 1, 1887. Serial No. 245,515. (No model.)



Claim.—A feed-water heating and filtering vessel constructed with main and exhaust steam and water chambers having a feed-water supply-pipe with a regulating cock or valve, an exhaust-steam induction-pipe, an exhaust-steam eduction-pipe, a filter-diaphragm, and a terminally-closed branched and perforated blowing-out pipe, the latter being located beneath said diaphragm and the steam-eduction pipe above, substantially as shown.

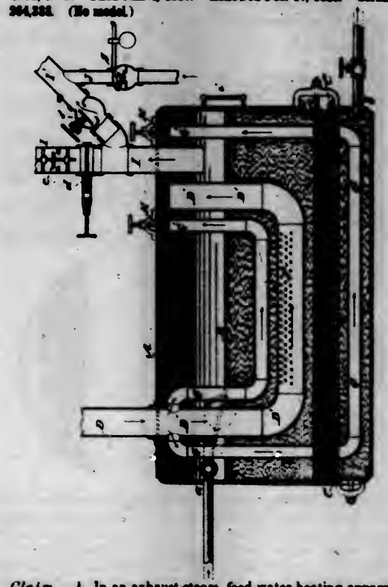
384,539. METHOD OF LIQUID PURIFICATION. WILLIAM CLEVELAND, Jersey City, N. J. Filed Sept. 12, 1887. Serial No. 249,808. (No model.)



Claim.—1. The herein-described method of purifying liquid, consisting in subjecting the same to filtration through a bed of one grade of material, and subsequently through another bed of a different grade of material, said material being subjected to cross cleansing-currents, substantially as described.

2. The method described of discharging and renewing the fouled portion of an up-current filter-bed, the same consisting in forcing a hydraulic counter-current horizontally through the lower portion thereof and replacing the portion so discharged by gravitation of the remaining portion, substantially as and for the purposes set forth.

384,540. FEED-WATER HEATING AND FILTERING APPARATUS. WILLIAM OLIPHANT, Paterson, N. J., assignor, by direct and mesne assignments, to the Oliphant Manufacturing Company, of New York, N. Y. Filed Jan. 4, 1887. Renewed Feb. 17, 1888. Serial No. 264,326. (No model.)



Claim.—1. In an exhaust-steam feed-water-heating apparatus, the combination, substantially as shown, with an exterior shell, of an interior exhaust-steam-conducting pipe having perforations at that portion which is immersed beneath the feed-water, and having its ends connected, respectively, to the exterior source of exhaust-steam and to the interior steam-chamber of said shell, and a separate steam-eduction pipe located relatively thereto, as shown.

2. In an exhaust-steam feed-water-heating apparatus, the combination, substantially as shown, with an exterior shell and interior exhaust-steam-conducting pipe having perforations located as shown, of auxiliary relief exhaust-steam pipes connected with said exhaust-pipe at its point of entrance to said shell and immersed in the feed-water for the purpose of conducting through the same a portion of said steam and delivering the latter to the steam-chamber of said shell.

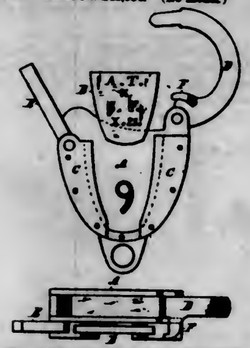
3. In an exhaust-steam feed-water heating and filtering apparatus, the combination of an exterior shell comprising a water-reservoir and steam-chamber, a main steam-exhaust pipe having perforations and steam-chamber communication, as shown, auxiliary exhaust-steam relief-pipes, separate steam-eduction pipe provided with an atmospheric check-valve, a filtering-diaphragm located substantially as shown and described, and means for automatically supplying feed-water above said diaphragm and withdrawing the same from beneath said diaphragm.

384,541. BUILDING-BLOCK. HARRIS S. PALMER, Chattanooga, Tenn. Filed Feb. 15, 1887. Serial No. 227,686. (No model.)



Claim.—As a new article of manufacture, a hollow rectangular concrete building-block having the projecting tongue D on its top and the groove C in its lower side, the tongue of one block fitting in the groove of the superimposed block, and the ends of the block being provided with a series of scallops or vertical corrugations extending entirely across the end thereof, substantially as described and shown.

384,542. SEAL-LOCK. OMAR C. PRATT, San Rafael, Cal. Filed Sept. 6, 1887. Serial No. 248,981. (No model.)



Claim.—The within-described seal-lock A, having secured on one side the grooved jaws C, the seal B, fitting in the said jaws, the locking-lever E, pivoted between one of the grooved jaws and the lock-plate proper, and the shackle D, having near its heel the spur F, all combined in the manner and for the purposes set forth.

384,543. BICYCLE ARM. F. PEIRCE, Philadelphia, Pa. Filed Oct. 15, 1887. Serial No. 252,641. (No model.)



Claim.—1. In a bicycle, a treadle, in combination with a lever or arm having a wrist-pin or stud, and a gear-wheel meshing with a pinion on the shaft of the driving-wheel of the bicycle, the said treadle bearing on said wrist-pin or stud, substantially as and for the purpose set forth.

2. In a bicycle, the fork D, having slotted arms E, in combination with link F, the treadle G, pivoted to said link, the wheel J, having the arm H, and the pinion K, mounted on the axle of the driving-wheel B, the said treadle bearing on and operating the said arm H, substantially as and for the purpose set forth.

3. In a bicycle, a slotted lever or treadle engaging with the crank thereof, in combination with a friction-roller of conical form mounted on said crank, substantially as described.

4. In a bicycle, a slotted lever engaging with the crank thereof and vertically adjustable on the frame of the bicycle, substantially as described.

5. In a bicycle, the fork having a slotted arm, in combination with a link vertically adjustable in said slotted arm and a treadle pivoted to said link, substantially as and for the purpose set forth.

6. In a bicycle, a roller having beveled ends, in combination with a treadle and an arm connected to gearing meshing with and operating a pinion on the driving-wheel, substantially as and for the purpose described.

384,544. RUBY-PIN SETTER. PAUL RAMBER, Dubuque, Iowa. Filed Aug. 27, 1887. Serial No. 248,033. (No model.)

Claim.—1. In a ruby-pin setter for watch-makers, the combination of the chank A, having the head B, and the projecting arm C, for the purpose set forth, with a sliding clamping-jaw arranged on the shank, and the combined tweezers and gage secured to the clamping-jaw and movable thereon, substantially as described.

2. The combination, in a ruby-pin setter for watch-makers, of the shank A, having the head B, and the extended arm D, the sliding jaw

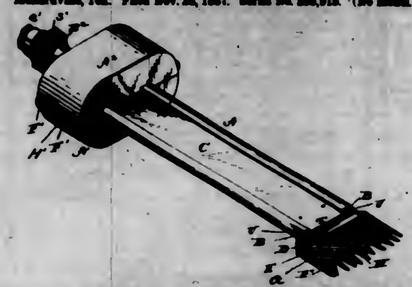
384,544.



secured to the shank, the spring to force the said jaw normally forward toward the head B, for the purpose set forth, and the combined tweezers and gage fitted on one side of the sliding jaw and provided with the longitudinal slot L, and the set-screw S, working in the said slot and secured to the sliding jaw, substantially as described.

3. The combination, with a ruby-pin setter having the rigid head B and the sliding clamping-jaw E, of the tweezers and gage secured to the said sliding jaw and adjustable thereon, said tweezers and gage having the tweezer-arms N and O, the former being provided at its outer end with the curved guide P, adapted to direct the slit between the tweezer-arms onto the ruby-pin, substantially as described.

384,545. SHEEP-SHEARING MACHINE. GEORGE RICHARDSON, Mooresville, Tex. Filed Nov. 22, 1887. Serial No. 255,915. (No model.)





Claim.—1. The combination, with the handle having the casing at its rear end, of the stationary blade having the series of teeth beveled on their lower edges, the pivoted movable blade having the teeth beveled on their upper edges and having the longitudinal slot in its rear end, the centrally-pivoted lever having the pin at its forward end and having at its rear end the projecting arms, the thick rearward portions of which are rounded on their inner sides, the shaft mounted in the end casing, the eccentric disk mounted upon the said shaft, and suitable means for revolving the said shaft.

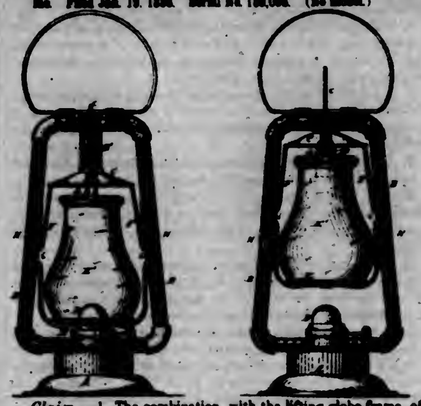
2. The combination, with the handle having the casing at its rear end and formed with the recessed forward end, of the stationary steel blade having the recessed rear end and the series of teeth beveled on their lower edges and rounded on the lower sides of their points, the said teeth increasing in thickness from their base to their points, the pivoted movable steel blade having the teeth beveled on their upper edges and increasing in thickness from their base to their points and formed with the longitudinal slot in its rear end, the centrally-pivoted lever having the pin at its forward end and having at its rear end the projecting arms, the thick rearward portions of which are rounded on their inner sides, the shaft mounted in the end casing, the eccentric disk mounted on the said shaft, and suitable means for revolving the said shaft.

3. The combination, with the shears, substantially as described, the centrally-pivoted lever for operating the lower shear-blade, having at its rear end projecting arms, the thick rearward portions of which are rounded on their inner sides, and the shaft provided with the eccentric disk which engages the said arms, of the flexible shaft secured at its lower end to the rear end of the disk-shaft and mounted at its upper end in a supporting-bracket, the rubber wheel adjustably secured upon the upper end of said flexible shaft, and the large drive-wheel.

4. The combination of the shears, the centrally-pivoted lever operating the upper shear-blade and formed with arms at its rear end, and the shaft having the eccentric disk secured thereon and engaging the said arms of the centrally-pivoted lever, with the flexible shaft, the rope-sockets formed with the ridges on their inner sides and the toothed threaded outer surfaces and the clamping-nuts, the supporting-bracket, the rubber wheel having the grooved sleeve fitting on the upper rope-socket, which is formed with a longitudinal key, the shifting-lever, and the main drive-wheel.

5. The combination, with the handle formed with the cap-pieces at the corners of its forward end, and the recessed forward end, and the casing formed in two halves, as described, of the removable top plate for the cover having the downwardly-bent forward end, the stationary steel blade having the recessed rear end and the series of teeth beveled on their lower edges and increasing in thickness from their base to their points, the pivoted movable steel blade having the teeth beveled on their upper edges and increasing in thickness from their base to their points and formed with the longitudinal slot in its rear end, the centrally-pivoted lever having the pin at its forward end, and suitable means for reciprocating it, substantially as set forth.

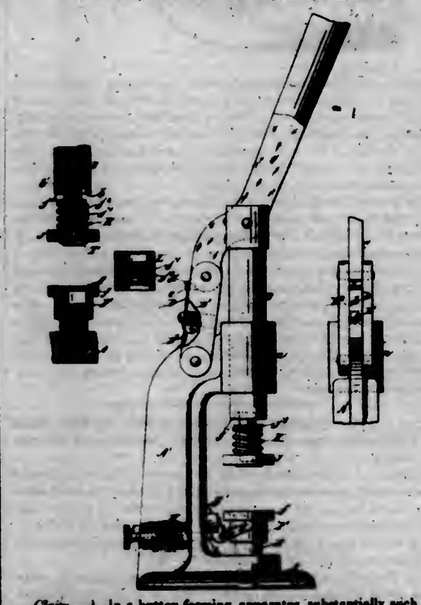
384,546. TUBULAR LANTERN. JOSEPH B. STIMSON, Lincoln, Me. Filed Jan. 19, 1888. Serial No. 260,696. (No model.)



Claim.—1. The combination, with the lifting globe-frame, of a side tube provided with an upright opening, *j*, and a grooved plate, H, secured to the tube over said opening, substantially as set forth.

2. The combination, with the lifting globe-frame having lateral projections *i*, of side tubes provided with upright grooves *h*, having recesses *l* of greater depth than said grooves, in which recesses said projections engage, thereby locking the globe-frame in position, substantially as set forth.

384,547. BUTTON-MAKING DEVICE. JOHN STEWART, Newark, N. J. Filed July 14, 1887. Serial No. 244,351. (No model.)



Claim.—1. In a button-forming apparatus, substantially such as described, the combination, with the lower die or sleeve and its anvil or post, of a spring tension-lever, substantially such as described, ar-

ranged to sustain the said lower die in its normal position by an elastic pressure, substantially in the manner and for the purpose described.

2. In a button-forming apparatus, substantially such as described, the combination, with the die F, anvil E, and lever G, of means, substantially such as described, for sustaining the said lever and die in their normal position by an elastic pressure, for the purpose and substantially in the manner described.

3. In a button-forming apparatus, substantially such as designated, the tension-lever G, formed with the stop or bearing-arm *g*, in combination with the die F and with means for holding the said lever G and die F in their normal positions, substantially in the manner and for the purpose described.

4. In a button-forming apparatus, substantially such as described, the combination, with the die F and tension-lever G, of means for adjusting the tension or pressure exerted by the latter, for the purpose and substantially in the manner described.

5. In a button-forming apparatus, substantially such as described, the combination, with the die F and lever G, of the bolt A, spring H, and adjusting-screw I, substantially in the manner and for the purpose described.

6. In a button-forming apparatus, substantially such as described, the combination, with the plunger B, formed with a spring-compressing shoulder, *b*, of the die J, provided with the compressed spring K, confined thereon by means which admit of its further compression by the said plunger, substantially in the manner and for the purpose described.

7. In a button-forming apparatus, substantially such as described, the combination, with the plunger B and plunger-lever C and the link D, of a spring-latch for holding the said parts in a prescribed position, substantially in the manner and for the purpose described.

8. In a button-forming apparatus, substantially such as described, the combination, with a plunger and with an opposed die, of a die having a spiral spring compressed and confined upon its cylindrical portion between two flanges, one of which latter is formed of less width than the thickness of the said spring, for the purpose and substantially in the manner described.

884,548. SLED-BRAKE. ISAAC C. THOMPSON, Andrew, Iowa. Filed Mar. 15, 1888. Serial No. 267,267. (No model.)



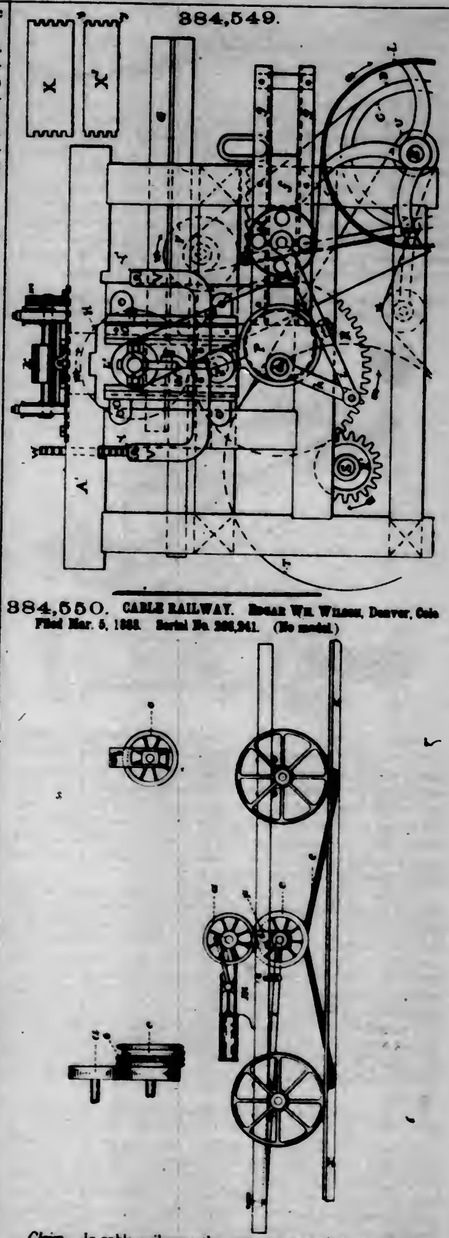
Claim.—1. The combination, with a sled having runners whose rear ends are provided with oblique slots, of the rock bar or shaft secured thereto having integral slotted arms and operated by a lever, the brake-dogs attached to the said arms and working in the oblique slots in the ends of the runners when depressed, and the metallic clips surrounding the ends of the sled-runners and forming retention-guides for the dogs, substantially as described.

2. The combination, with a sled having runners whose rear ends are provided with oblique slots, of the rock bar or shaft secured to the rear end of the sled and provided with integral slotted arms, the brake-dogs pivotally mounted in said arms of the rock-shaft and working in the oblique slots in the ends of the sled-runners, the metallic clips surrounding the ends of the sled-runners and forming retention-guides for the dogs, the arm secured to one end of the rock-shaft at right angles thereto and having a slot in its end, the bell-crank lever fulcrumed to the sled and having a stud or pin projecting from one arm thereof engaging with and moving in the slot in the arm on the one end of the rock-shaft, and a handle attached to the other arm of said lever, substantially as described.

884,549. MACHINE FOR MAKING HONEY-FRAMES. JAMES WARR, Modesto, Cal. Filed Dec. 27, 1887. Serial No. 259,162. (No model.)

Claim.—1. The vertically-reciprocating saw-frame N, having the circular saw H mounted thereon and arranged to cut at top and bottom in its movements up and down, in combination with two pairs of feed-rolls, and means consisting of ratchet W W', spring-pawls Z, bars Y Y', and U-shaped arm V, for operating the feed-rolls from the reciprocating frame, substantially as described.

2. The automatic saw-belt take-up or tightener-pulley M, guides *g g* in which it slides, a shaft, Q, links *i*, and crank *h*, mounted adjustably on the shaft, in combination with the saw-arbor and its movable frame connected by means of an eccentric to said shaft, substantially as described.



884,550. CABLE RAILWAY. EDGAR WM. WILSON, Denver, Colo. Filed Mar. 5, 1888. Serial No. 266,941. (No model.)

Claim.—In cable railways, the motor *m*, provided with the friction driving-pulley *a*, in combination with the friction drum-pulley *c*, carrying the dormant cable *c*, and provided with the lever *i*, all operated as set forth, and for the purpose indicated.

884,551. UMBRELLA. HARRY ALPHAN and LEOPOLD SHARPP, Mobile, Ala. Filed July 16, 1887. Serial No. 244,482. (No model.)

Claim.—1. In an umbrella, the combination, with the stick having a handle at one end and a detachable cap at the other and surrounded by a series of ribs, of a covering having straps sewed thereto provided with hooks and eyes, said straps being constructed and adapted to encircle and hold the covering to the ribs.

884,551.



2. In an umbrella, the combination, with the stick having a handle at one end and a detachable cap at the other and surrounded by a series of ribs, of a covering having metallic fasteners secured to it near the outer ends of the seams, and being provided at a point above the fasteners with straps sewed thereto, said straps having hooks and eyes and being constructed and adapted to encircle and hold the covering to the ribs.

3. In an umbrella, the combination, with the stick having a handle at one end and a detachable cap at the other and surrounded by a series of ribs, of a covering consisting of pieces of material sewed together and terminating at one end in a ring, and having metallic fasteners secured thereto near the outer ends of the seams, and being provided at a point above the fasteners with straps having hooks and eyes, said straps being constructed and adapted to encircle and hold the covering to the ribs.

884,552. GATE. GEORGE H. AYLWORTH, Brighton, Ill. Filed Mar. 30, 1888. Serial No. 268,970. (No model.)



Claim.—1. The combination, with a hinged or swinging gate, of a lever fulcrumed on the top of the post to which the gate is hinged and capable of moving back and forth on its fulcrum, one end of said lever being connected to the top of the gate forward of the hinges and the other end projecting back beyond the said post, substantially as shown and described.

2. The combination, with a hinged or swinging gate, of a lever fulcrumed on the top of the post to which the gate is hinged and capable of moving back and forth on its fulcrum, one end of said lever being connected to the gate forward of the hinges and the other end projecting back beyond the post, and a cord attached to the latch and passing thence through a guide or keeper at the free end of the lever, substantially as shown and described.

3. The combination, with a hinged or swinging gate, of a plate, *c'*, pivoted on the top of the post to which the gate is hinged and carrying guide-rollers c^2 c^2, and a lever passing between said guide-rollers and connected at one of its ends to the top of the gate forward of the hinges and the other end projecting back beyond the said post, the said guide-rollers forming fulcra for said lever, substantially as shown and described.

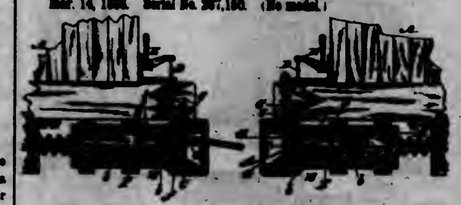
884,553. SASH-FASTENER. GEORGE H. AYLWORTH, Brighton, Ill. Filed Apr. 23, 1888. Serial No. 271,907. (No model.)



Claim.—1. In a sash-lock of the character described, the combination of a curved circularly-movable gravity-bolt, and a stop outside the line of movement with which the forward end of the bolt is adapted to engage to hold the same in retracted and inoperative position, substantially as shown and described.

2. In a sash-lock of the character described, the combination of a base plate or case, a curved circularly-movable gravity-bolt, a link-connection between the base-plate and the inner or upper end of the bolt, and a stop with which the forward end of the bolt is adapted to engage to hold the same in retracted and inoperative position, substantially as shown and described.

884,554. CAR-COUPLING. CHARLES L. BATTINGER, Philadelphia, Pa., assignor of one-half to J. Harry Battinger, Camden, N. J. Filed Mar. 14, 1888. Serial No. 267,160. (No model.)



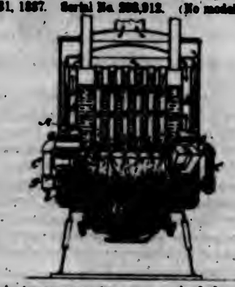
Claim.—1. In a car-coupling, a draw-head with the recess *a* in the upper wall, and the groove *b'*, in combination with a link-retainer having pins at its inner end, substantially as and for the purpose set forth.

2. In a car-coupling, the combination, with the draw-head having the spring-follower, of the pivoted plate adapted to rest on said follower to hold and guide the link, substantially as described.

3. In a car-coupling, a draw-head having the grooves or ways *b'*, and the link-retainer G with pins *g*, and a connecting-link, said parts being combined, substantially as and for the purpose set forth.

4. A car-coupling device consisting of a draw-head with a recess in its upper wall adapted to receive the end of the link, and grooves or ways in the said draw-head, a link-retainer with pins working in said ways, and a spring-actuated coupling-pin, said parts being combined, substantially as described.

884,555. STEAM-GENERATOR. JOHN V. BERRIMAN, Brooklyn, assignor to the Ledgerwood Manufacturing Company, New York, N. Y. Filed Oct. 31, 1887. Serial No. 253,912. (No model.)



Claim.—A steam-generator composed of the sections A and B, the said section B constructed in two parts, having their junction immediately below the fuel-pockets, the lower part consisting of the cast-iron walls *b' b'' b'''*, inclosing the water-space *b*, and the flanges *k* and *j*, the said walls *b'* and *b''* being respectively provided with the openings *k* and *l*, substantially as described.

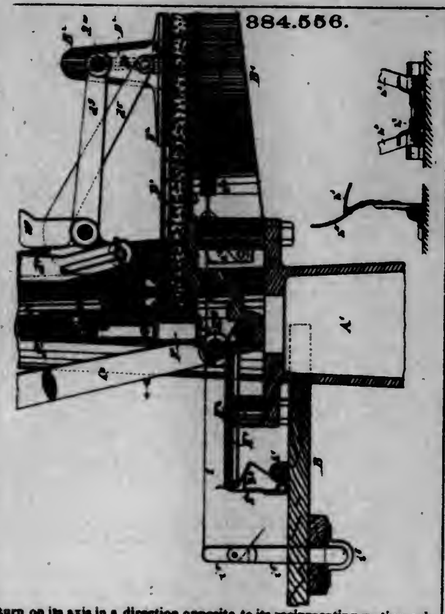
884,556. CIGAR-BUNCHING MACHINE. DAVID J. BOMER and CHARLES P. REED, New York, N. Y., assignors, by direct and mesne assignments, to the North American Cigar Machinery Company of the City of New York. Filed Nov. 1, 1887. Serial No. 254,023. (No model.)

Claim.—1. The combination of a detachable feed-box, means for locking the same in position upon the machine-frame, a vertically and longitudinally reciprocating feed-gripper operating in said box, a vertically-reciprocating cutting-knife, a retaining-chamber having a hinged bottom gate or gates, a vertically-reciprocating plunger operating in said chamber, and a rolling device for rolling the binder around the filler delivered by the plunger, substantially as set forth.

2. The combination of a detachable feed-box, means for locking it in position upon the machine-frame, a vertically and longitudinally reciprocating feed-gripper operating in said box, a vertically-reciprocating cutting-knife, a retaining-chamber having a hinged bottom gate or gates, a vertically-reciprocating plunger operating in said chamber, a rolling-table having a pocket vertically below the plunger, and a rolling-apron attached at one end to a stationary point of support and at the other end to a horizontally-reciprocating roller that is adapted to



884,556.



turn on its axis in a direction opposite to its reciprocating motion, substantially as set forth.

3. The combination of a detachable feed-box having a longitudinally-slotted top plate or cover, a vertically and longitudinally reciprocating feed-gripper operating in said box and having teeth passing through said slotted top plate, a vertically-reciprocating cutting-knife at the front end of the feed-box, a retaining-chamber having a hinged bottom gate or gates, a vertically-reciprocating plunger operating in said chamber, a rolling-table having a pocket vertically below said plunger, a reciprocating roller, and a rolling-apron attached at the front end to a fixed point of support and at the rear end to the roller, said roller having an axial motion in a direction opposite to its reciprocating motion, substantially as set forth.

4. The combination of a detachable feed-box having laterally-adjustable side rails and a slotted top plate, a vertically and longitudinally reciprocating feed-gripper operating in said box and having central stationary teeth and laterally and vertically adjustable side teeth, a vertically-reciprocating cutting-knife, a retaining-chamber having a hinged bottom gate or gates, a vertically-reciprocating plunger operating in said chamber, a rolling-table having a pocket vertically below said plunger, a reciprocating and axially-turning roller, and a rolling-apron attached at the front end to a stationary point or support and at the rear end to the roller, substantially as set forth.

5. The combination of a supporting-frame having a horizontal and longitudinally-grooved bracket, a detachable feed-box provided with a longitudinal bottom tongue located in the grooved bracket, a fulcrumed locking-hook engaging said tongue, a vertically and longitudinally reciprocating feed-gripper operating in said box, a vertically-reciprocating cutting-knife, a retaining-chamber having a bottom gate or gates, and a vertically-reciprocating plunger operating in said chamber, substantially as set forth.

6. The combination of a supporting-standard having a horizontal longitudinally-grooved bracket, a detachable feed-box located therein and having a longitudinal bottom tongue fitting into the groove of said bracket, a longitudinally-slotted top plate and laterally-adjustable side rails, a pivoted and weighted locking-hook for engaging the feed-box, and a vertically and longitudinally reciprocating feed-gripper operating in said box having a central fixed row of teeth and laterally and vertically adjustable side rows of teeth, substantially as set forth.

7. The combination of a detachable feed-box having laterally-adjustable side rails and a longitudinally-slotted top plate, and a vertically and longitudinally reciprocating feed-gripper operating in said box, having a row of fixed center teeth and rows of adjustable side teeth, a vertically-reciprocating cutting-knife, a retaining-chamber having a hinged bottom gate or gates, and a vertically-reciprocating plunger operating in said chamber, the horizontal section of said retaining-chamber and plunger corresponding to the vertical cross-section of the feed-box formed by the bottom, side rails, and top plate of the feed-box, substantially as set forth.

8. The combination of a detachable feed-box having laterally-adjustable and tapering side rails, a vertically and longitudinally reciprocating feed-gripper operating in said box, a vertically-reciprocating cutting-knife, a retaining-chamber having a removable side wall and a hinged bottom gate or gates, and a detachable plunger operating in said chamber, the horizontal cross-section of the retaining-chamber and plunger corresponding with the vertical transverse section of the feed-box, substantially as set forth.

9. The combination of a detachable feed-box, a vertically and longitudinally reciprocating feed-gripper operating therein, a vertically-reciprocating cutting-knife, a retaining-chamber having a hinged bottom gate or gates, a vertically-reciprocating plunger operating in said chamber, a rolling-table having a pocket vertically below the plunger, a horizontally-reciprocating roller, a rolling-apron attached at the front end to a stationary point below the table and at its rear end to the roller, and tension-belts applied in opposite directions to the axle of the roller, whereby an axially-rotary motion is imparted to the roller in a direction opposite to the direction of its reciprocating motion, substantially as set forth.

10. The combination of a detachable feed-box, a vertically and longitudinally reciprocating feed-gripper operating therein, a vertically-reciprocating cutting-knife, a retaining-chamber having a hinged bottom gate or gates, a vertically-reciprocating plunger operating in said chamber, a rolling-table having a pocket vertically below said plunger, spring-actuated retaining-fingers at the front of said rolling-table, a horizontally-reciprocating roller, a rolling-apron attached at its front end to a fixed point of support below the table and at its rear end to said roller, and spring-actuated tension-belts applied in opposite directions to the axle of the roller, so as to impart to the same an axially-rotary motion in a direction opposite to the direction of its reciprocating motion, substantially as set forth.

11. The combination of a supporting-standard having a horizontal bracket provided with grooved upright arms, a detachable feed-box locked to said bracket, longitudinally-grooved guide-pieces guided vertically in said arms, a reciprocating feed-gripper guided by said guide-pieces, cams on the driving-shaft having cam-grooves, and intermediate levers connecting the feed-gripper and the guide-pieces of the same with said cams, so as to impart a vertically and longitudinally reciprocating motion to said feed-gripper, substantially as set forth.

12. The combination of a roller, a rolling-table, a rolling-apron, a forked oscillating lever, a rotary driving-shaft, a cam having a cam-groove engaging the upper end of said lever, and pivot-links connecting the forked lever with fixed points in the supporting-standard, said points being respectively above and below the connection of the forked lever with the cam-groove for imparting horizontally-reciprocating motion to the said roller over the rolling-table, substantially as set forth.

13. The combination of a rolling-table, a rolling-apron, a roller attached to the rear end of said apron, hinged spring-fingers at the front end of said table, tension-belts applied in opposite direction to the axis of the roller, spring-arms attached to opposite ends of said belts, a forked oscillating lever applied to the roller, a rotary driving-shaft, and a cam having a cam-groove engaging the upper end of said lever, so as to impart reciprocating motion to the roller simultaneously with an axially-rotary motion in a direction opposite to the reciprocating motion, substantially as set forth.

14. In a cigar-bunching machine, the combination of the table and apron with an apron-winding bunching-roller and rotating and reciprocating mechanism, whereby the effective bearing-surface of the roller is increased and the bunch is rolled in a gradually-tightening bight, substantially as and for the purposes set forth.

15. In a cigar-bunching machine, the combination of the table and apron, the table having a pocket at its rear end, with an apron-winding bunching-roller and rotating and reciprocating mechanism, the rear end of the apron being secured, as shown, on the circumference of the roller, whereby the apron is first unwound from and then wound upon the roller, substantially as and for the purposes set forth.

16. In a cigar-bunching machine, the combination of the table and apron with an apron-winding bunching-roller having a removable slotted sleeve at its apron-winding part, and rotating and reciprocating mechanism, substantially as and for the purposes set forth.

17. In a cigar-bunching machine, the combination of the table and apron with an apron-winding bunching-roller and reciprocating mechanism, the roller having two drums or pulleys, and with two roller-rotating straps or bands secured, as shown, to the upper periphery of the two drums or pulleys, substantially as and for the purposes set forth.

18. In a cigar-bunching machine, the combination of the table and apron with an apron-winding bunching-roller and reciprocating mechanism, the roller having two drums or pulleys, and with two roller-rotating straps or bands secured at their outer ends to spring devices and at their inner ends to the inner periphery of two drums or pulleys, substantially as and for the purposes set forth.

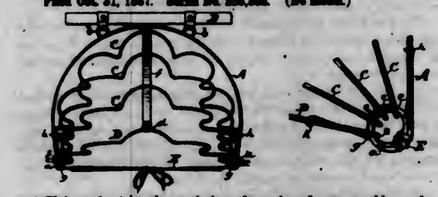
19. In a cigar-bunching machine, the combination of the four-motion toothed feed-gripper, having mechanism to give it the four right-lined motions described, with the stationary closed feed-box having longitudinal slots opposite the teeth of the feed-gripper, whereby the filling is fed bodily forward through the feed-box longitudinally of the same without disturbing its distribution, substantially as and for the purposes set forth.

20. In a cigar-bunching machine, the combination of the four-motion toothed feed-gripper, having mechanism to give it the four right-lined motions described, with the stationary closed feed-box cigar-shaped in transverse section and having slots opposite the teeth of the feed-gripper, whereby the filling is primarily distributed in the feed-box and is fed bodily forward without disturbing that distribution, substantially as and for the purposes set forth.

21. In a cigar-bunching machine, the combination of the four-motion toothed feed-gripper, having mechanism to give it the four right-lined motions described, with the stationary closed feed-box having longitudinal side rails or shaping-strips, and having slots opposite the teeth of the feed-gripper, whereby the filling is primarily distributed in the feed-box and is fed bodily forward without disturbing that distribution, substantially as and for the purposes set forth.

22. In a cigar-bunching machine, the combination of the four-motion toothed feed-gripper with the stationary closed feed-box increasing in depth toward the delivery end and having slots opposite the teeth of the feed-gripper, whereby the filling is fed bodily forward and is loosened up without disturbing its distribution, substantially as and for the purposes set forth.

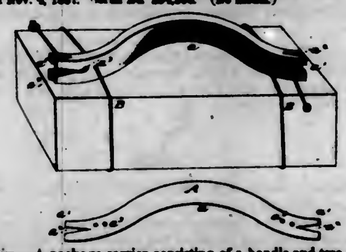
884,557. BUSTLE. FREDERICK J. BEARD, New Britain, Conn. Filed Oct. 31, 1887. Serial No. 253,202. (No model.)



Claim.—1. A bustle consisting of a series of connected bows, having the bows which give form to the clothing corrugated by a series of opposing bends of long and short curves, and forming the series of rounded projections with intervening spaces, substantially as described, and for the purpose specified.

2. In a bustle, the combination of a series of wire bows connected at their ends by coils and the separately-formed springs *g*, having the loops or coils A of their arms encircling the wire of which the bows A D are formed, substantially as described, and for the purpose specified.

884,558. PACKAGE-CARRIER. JAMES W. BRIDWELL, Hillsborough, Ohio, assignor to the Star Manufacturing Company, of Ohio. Filed Nov. 4, 1887. Serial No. 254,260. (No model.)



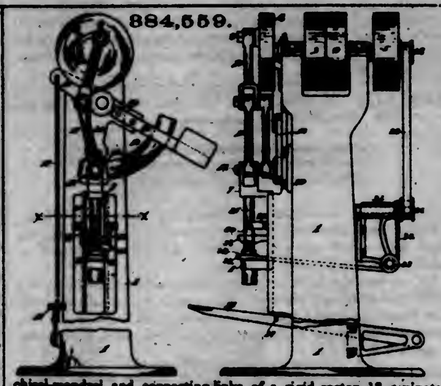
Claim.—A package-carrier consisting of a handle and two cords, said handle having horizontal ends to lie flat on the package, V-shaped end grooves, and pairs of cord-holes adjacent to the latter, substantially as shown and described.

884,559. MORTISING-MACHINE. GEORGE W. DOBBS, Delhi, and FREDERICK DARRIN, Reno City, assignors to the Egan Company, Cincinnati, Ohio. Filed Jan. 3, 1888. Serial No. 259,576. (No model.)

Claim.—1. In a mortising-machine, the combination, with the crank 6, links 10 and 11, and the chisel-mandrel, of the rigid sector 13, the pivoted arm 21, the arm 22, sliding on the sector and loosely engaging the pivoted arm, the crank-arm 15, connected with the said pivoted arm, and a foot-lever and connecting-rod to operate the crank-arm for adjusting the sliding arm on the sector, substantially as and for the purpose described.

2. In a mortising-machine, the combination, with the crank 6,

884,559.



chisel-mandrel, and connecting-links, of a rigid sector, 13, a pivoted arm, 21, an arm, 22, sliding on the sector and loosely engaging the pivoted arm, and means, substantially as described, for operating the pivoted arm to adjust the sliding arm on the sector.

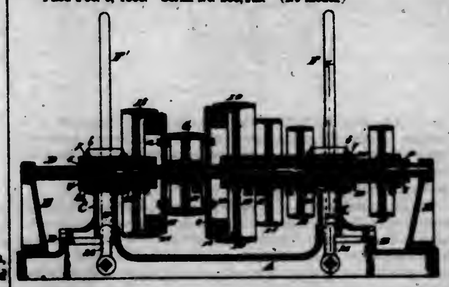
3. The combination, with the chisel-mandrel 25 and drive-shaft of a mortising-machine, of the crank 6, connecting-links 10 and 11, rigid sector 13, a pivoted arm, 21, an arm, 22, sliding on the sector and loosely engaging the pivoted arm, means, substantially as described, for operating the pivoted arm to adjust the sliding arm on the sector, and chisel-reversing devices composed of a pulley on the drive-shaft, a pulley rigid on the chisel-mandrel, endless bands operating the parts, a finger, 36, pivoted on a part of the chisel-mandrel, the pendent arms 40 and 41, to trip said finger, and the notched forked yoke 37 38, substantially as described.

4. The combination, with the chisel-mandrel of a mortising-machine, of a lock-finger, 36, pivoted on a part of the chisel-mandrel, the rigid yoke 37 38, notched at each end, pendent arms 40 and 41, for tripping the lock-finger to release the mandrel, and endless bands for turning the chisel-mandrel when said finger releases the same, substantially as described.

5. The combination, with the chisel-mandrel 25 of a mortising-machine, of the finger 36, pivoted to a part of the mandrel, the rigid yoke having its free ends notched to engage the finger, and finger-tripping arms 40 and 41, substantially as described.

6. In combination with the rotating mandrel 25 of a mortising-machine, the yoke 37 38, provided with the notches 26 and 39, and the finger 36, laterally engaging with one of said notches for locking and holding the mandrel from revolving, substantially as specified.

884,560. COUNTER-SHAFT. GEORGE W. DOBBS and FREDERICK DARRIN, Cincinnati, Ohio, assignors to the Egan Company, same place. Filed Feb. 9, 1888. Serial No. 263,443. (No model.)



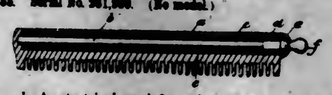
Claim.—1. The combination of the single continuous shaft D, the pulley G, fixed to the shaft and carrying a friction-cone, laterally-movable pillar-block C, the sleeve 4, mounted in the pillar-block, and the driving-pulley on the sleeve, substantially as described.

2. The combination of the counter-shaft D, the pulley G, carrying a friction-cone rigidly secured thereto, the laterally-moving pillar-block C, the sleeve 4, journaling within the said pillar-block C and provided with the collar 20, the crank-shaft 24, having the crank-arm 26 engaging with said pillar-block C, and the lever on the crank-shaft, substantially as described.

3. The combination of the bed-plate A, the counter-shaft D, the laterally-adjustable pillar-blocks C, the sleeves 4 5, journaled in said pillar-blocks C and adjustable therein, the driving-pulley G, having

friction-cones 9 and 11, the friction-pulleys 14 and 18, mounted on the sleeves and moving laterally therewith, the lever and connections between the levers, and the pillar-blocks for moving said pillar-blocks, substantially as specified.

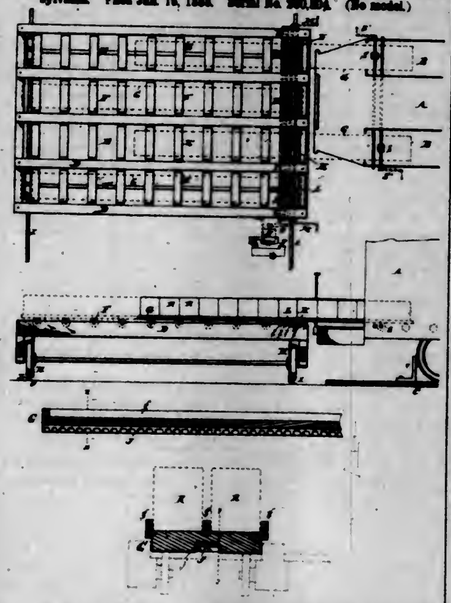
384,561. ELECTRIC COMB. CARL DUBOIS, Chicago, Ill. Filed Jan. 26, 1888. Serial No. 261,800. (No model.)



Claim.—1. An electrical comb formed of a hollow metal cylinder, *a*, having metal comb-teeth, and provided with a core, *b*, having plug *d* and cover *c*, said core provided with a jacket, *e*, charged with an exciting-fluid, substantially as specified.

2. An electrical comb formed of a hollow metal cylinder, *a*, having metal comb-teeth, and provided with a core, *b*, having enlarged plug *d*, to which is attached a shouldered cover, *c*, and knob *f*, said core provided with a jacket, *e*, charged with an exciting-fluid, substantially as specified.

384,562. ELECTRIC RAILWAY. G. HERBERT CONBOY, Philadelphia, Pa., assignor to the Electric Car Company of America, of Pennsylvania. Filed Jan. 16, 1888. Serial No. 260,804. (No model.)



Claim.—1. The combination of a car-track with battery-slide carriage movable transversely across the line of said track, a battery-supporting slide having a rack, a pinion on said battery-slide carriage, and suitable means to rotate the pinion to propel the slide from the carriage into the car, or vice versa.

2. The combination of a car-track with battery-slide carriage movable transversely across the line of said track, a battery-supporting slide having a rack, a pinion on said battery-slide carriage, and suitable means to rotate the pinion to propel the slide from the carriage into the car, or vice versa, and a car adapted to receive the battery-slide, provided with a pinion to assist the pinion on the slide-carriage and to start the battery-slide from the car onto the slide-carriage.

3. The combination of a car-track with battery-slide carriage movable transversely across the line of said track and provided with rollers, a battery-supporting slide having a rack and adapted to run upon said rollers, a pinion on said battery-slide carriage, and suitable means to rotate the pinion to propel the slide from the carriage into the car, or vice versa.

4. The combination of a car-track with a battery-slide carriage movable transversely across the line of said track, a series of rollers on said carriage arranged parallel with each other to form a line parallel with the track, a pinion arranged on said carriage at or near the end adjacent to the car-track, and a battery-slide having a rack, with which the pinion meshes, and adapted to run upon said rollers.

5. The combination of a car-track with a battery-slide carriage movable transversely across the line of said track, a series of rollers on said carriage arranged parallel with each other to form a line parallel with the track, a pinion arranged on said carriage at or near the end adjacent to the car-track, a battery-slide having a rack, with which the pinion meshes, and adapted to run upon said rollers, and a shaft secured to said pinion and extending to opposite sides of the carriage, whereby power may be applied at both ends.

6. The combination of a car-track with a battery-slide carriage movable transversely across the line of said track and having supports for four battery-slides, and having a pinion for each of said supports to propel the four slides, and four battery-slides having racks adapted to be supported upon said carriage and propelled to or from it by the pinions.

7. The combination of a car-track with a battery-slide carriage movable transversely across the line of said track and having roller-supports for four battery-slides, and having a pinion for each of said supports to propel the four slides, and independent shafts extending across the carriage for operating each of said pinions, and four battery-slides having racks adapted to be supported upon said carriage and propelled to or from it by the pinions.

8. The combination of a car-track with a battery-slide carriage movable transversely across the line of said track and having roller-supports for four battery-slides, and having a pinion for each of said supports to propel the four slides, and four battery-slides having racks adapted to be supported upon said carriage and propelled to or from it by the pinions.

9. The frame D, supported on wheels H, in combination with supporting-rollers E F, arranged in parallel rows, and a pinion, K, at one end of each of said rows of rollers.

10. The frame D, supported on wheels H, in combination with supporting-rollers E F, arranged in parallel rows, a pinion, K, at one end of each of said rows of rollers, and independent shafts I, extending across the frame D.

11. The combination of a car-track with a battery-slide carriage movable transversely across the line of said track, a battery-supporting slide having a rack, a pinion on said battery-slide carriage, suitable means to rotate the pinion to propel the slide from the carriage into the car, or vice versa, an electric motor to rotate the pinion, a motor-circuit, and a switch to control the motor.

12. The combination of a car-track with a battery-slide carriage movable transversely across the line of said track and having supports for four battery-slides, and having a pinion for each of said supports to propel the four slides, and a separate battery-slide for each of said supports.

13. The combination of a car having one or more battery-slide supports and an opening thereto, a movable battery-slide carriage movable with respect to said car, so as to pass the openings to said slide-supports, and in which the battery-slide carriage has two or more parallel battery-slide supports and twice as many battery-slides as the car has battery-slide supports, whereby the slides on the car having expended batteries may be run out on the carriage and then the carriage shifted and other slides having charged batteries run into the same openings from the same carriage which received the slides from the car.

384,563. RUBBER-TIP ATTACHMENT FOR PENCILS AND THE LIKE. FREDERICK R. GROSS, Waterbury, Conn., assignor to the Eagle Pencil Company, New York, N. Y. Filed Mar. 31, 1888. Serial No. 269,096. (No model.)



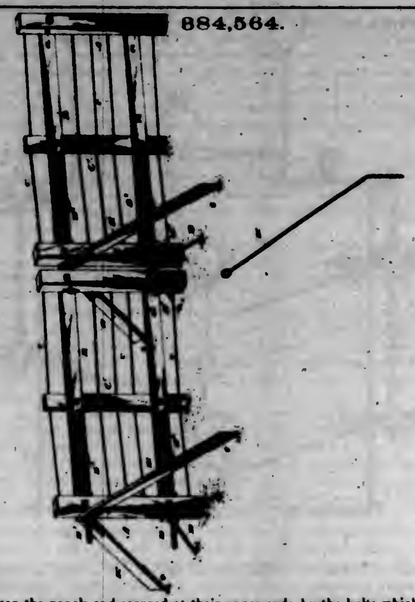
Claim.—1. A rubber-tip attachment for pencils and the like, consisting of a tube, sleeve, or ring open from end to end and adapted to fit upon the pencil, and a rubber or eraser holding socket secured thereto and laterally projecting therefrom and located to one side of the bore of the said tube or sleeve, so that the pencil can project through and beyond both ends of the tube without interfering with or meeting the eraser, as and for the purposes hereinbefore set forth.

2. The rubber-tip attachment consisting of the sleeve or ring B, the inwardly-set spring-arm or friction-pad C, and the laterally-projecting socket or rubber-holder A, these parts being constructed and arranged substantially as and for the purposes hereinbefore set forth.

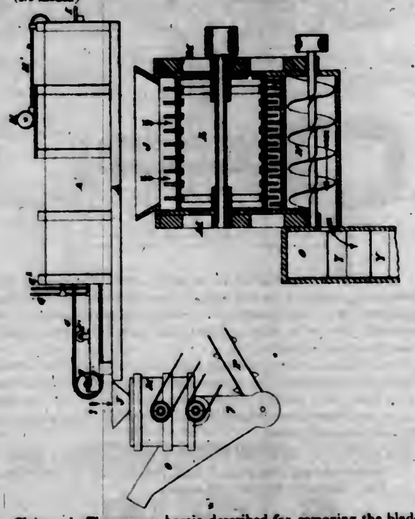
384,564. FENCE. ALPHA B. GELP, Wabarum, Ind. Filed Jan. 12, 1888. Serial No. 260,821. (No model.)

Claim.—A portable fence composed, substantially as before set forth, of a series of panels consisting of horizontal boards, vertical end posts, A A', having horizontal bolt-holes opposite said boards, sliding headed bolts seated in holes of posts A, stops secured to the boards at a distance from post A less than the length of the bolts to prevent the removal thereof, and upper and lower brace-rods interposed between the panels and secured at their upper ends by the bolts which connect adjacent panels.

884,564.



384,565. PROCESS OF UTILIZING TOBACCO WASTE. JAMES T. DUNNAGAN, St. Louis, Mo. Filed Feb. 23, 1884. Serial No. 121,821. (No model.)

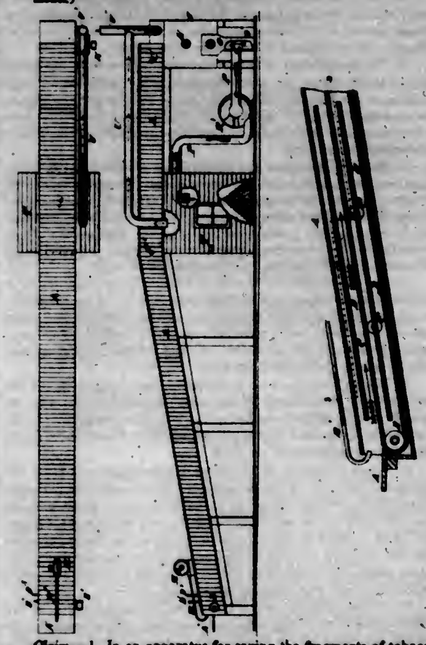


Claim.—1. The process herein described for removing the blade portions from the stem portions in the utilization of tobacco-leaf waste, which consists in thoroughly drying the material to be treated, beating the material for causing the blade portions to become detached from the stem portions, and, finally, subjecting the material to a current of air for separating the blade portions from the stem portions, substantially as described.

2. The process herein described for removing the blade portions from the stem portions in the utilization of tobacco-leaf waste, which consists in thoroughly drying the material to be treated, beating the material for breaking up the stem portions and causing the blade portions to become detached from the stem portions, and, finally, subjecting the material to a current of air for separating the blade portions from the stem portions, substantially as described.

3. The process herein described of removing scraps of tobacco from the stem portion, which consists in first drying the tobacco, then exposing it to the atmosphere to render it brittle, then beating it so as to detach the fragments of leaf from the stems, and, finally, separating the said fragments from the heavier stem portions by air-currents, substantially as set forth.

384,566. APPARATUS FOR STEMMING TOBACCO. JAMES T. DUNNAGAN, St. Louis, Mo. Filed Aug. 3, 1886. Serial No. 159,973. (No model.)



Claim.—1. In an apparatus for saving the fragments of tobacco, the combination of a drier having means for automatically carrying stems of tobacco having particles of leaves attached therethrough, a breaker or separator arranged to receive the discharge of material from the drier, and means for collecting the leaf-fragments from the stem portion, substantially as set forth.

2. The combination, with a case having heating-pipes, of an endless apron passing through the case and supported by drums or rollers and a separator.

3. The combination, with a traveling apron and casing, of a separator located at the end of the traveling apron, a flue which receives the material from the separator, and a fan for inducing air-currents in said flue.

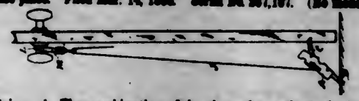
4. The combination of the traveling apron, the case, the heating-pipes therein, the cylinder and concave located at the end of the apron, the conveyer, the flue into which the conveyer discharges, and a fan for inducing air-currents in said flue.

5. The combination, with the drying apparatus consisting of a box or case, of an endless apron supported by drums or rollers within the box or case, power being applied to one of the drums to move the said apron, pipes located within the box through which hot air or steam is circulated, and a separator, substantially as and for the purpose set forth.

6. In combination with a drier, a carrier, and mechanism for creating a draft, the separator consisting of a cylinder and concave, a screw conveyer, and a chamber or shaft through which air is circulated to separate the valuable part from the stems and discharge it into a room, substantially as set forth.

7. The combination of a suitable box, drums located within the box, endless apron supported and operated by the drums, heating or drying pipes located within the box, a feed-table at one end of the box, the cylinder and concave located within a suitable chamber, the screw conveyer at the bottom of said chamber, the shaft into which the conveyer discharges, the collecting-room, the pipe connecting the room with said shaft, fan located in the pipe to separate the valuable part from the stems, and pipes forming vents to the room and cylinder-chamber, substantially as and for the purpose set forth.

384,567. DOOR-FASTENER. ROBERT C. ELLIOTT, Prairie Creek, Ind., assignor of one-half to William K. Elliott and Joseph H. Harper, same place. Filed Mar. 14, 1888. Serial No. 267,167. (No model.)



Claim.—1. The combination of the clasp, the cord attached to the clasp, and the spring-gun alarm, provided with spring-clasp fastening-prongs pivoted to the ends of its frame, and with a trigger to which the said cord is attached, substantially as set forth.

2. The combination of the alarm-frame, the two fastening-prongs pivoted to the frame, the spring-chamber in the frame, the plunger working in the chamber, the spring behind the plunger, the trigger, the cartridge-chamber in line with the plunger, and the thumb-piece for drawing back the plunger so that it may be held by the trigger, substantially as set forth.

3. The combination of the alarm-frame provided with a spring-chamber, the plunger working in the chamber, the spring behind the plunger, the two fastening-prongs pivoted to the frame, the screw closing the end of the spring-chamber, the screws projecting through slots in the frame for guiding and operating the plunger, the trigger pivoted in the frame and engaging with the plunger, and the slot for the insertion of the cartridge, substantially as set forth.

4. The combination of the alarm-frame having a groove in its under side, a flat spring secured in the said groove, the two fastening-prongs pivoted within the said groove so that they may be closed flush with the frame, and a spring-gun formed in the said frame above the said prongs and provided with a trigger for operating it, substantially as and for the purposes set forth.

5. The combination, with a detonating spring-gun alarm, of the clasp-jaws, the guide having sloping sides for operating the jaws, the screwed stem pivotally connected to the jaws, the tube provided with a collar, and the union-nut for tightening up the jaws and retaining the alarm-cord, substantially as set forth.

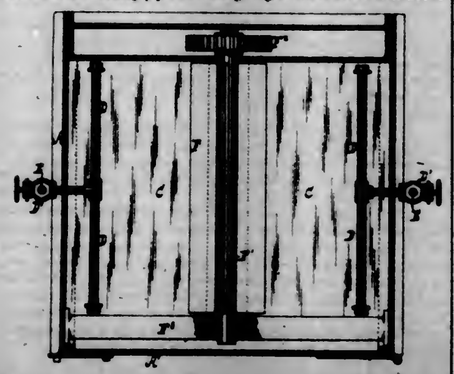
6. The combination, with a detonating spring-gun alarm, of the clasp-jaws, the guide having sloping sides for operating the jaws, the screwed stem pivotally connected to the jaws, and provided with the shoe upon its end, the tube fitting over the end of the stem and provided with a collar at the top, and slots in its sides for engagement with the said shoe, the plug in the bottom of the tube, and the union-nut for tightening up the jaws and retaining the alarm-cord between the said shoe and plug, substantially as set forth.

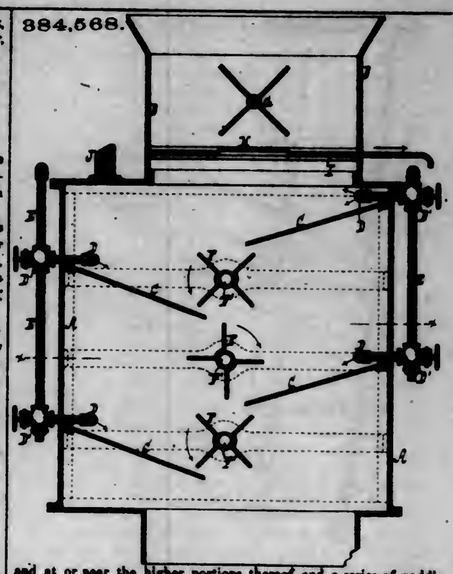
7. The combination, with a detonating spring-gun alarm, of the serrated clasp-jaws having projections on their outside surfaces, the serrated jaw-guide having sloping sides bearing against the said projections, the screwed stem pivotally connected to the jaws, the tube provided with a collar and sliding on the end of the said stem, and the union-nut for tightening up the jaws and retaining the alarm-cord, substantially as set forth.

384,568. MALT-MASHING MACHINE. THOMAS EVANS, New York, N. Y. Filed Oct. 19, 1886. Serial No. 216,635. (No model.)

Claim.—1. In a mashing-machine, a series of inclined chutes on opposite sides of the mashing-chamber, alternately one below the other, a water-supply, and a series of paddle-wheels intermediate of said chutes, the whole combined substantially as and for the purpose herein described.

2. In a mashing-machine, a series of inclined chutes on opposite sides of the mashing-chamber, alternately one below the other, a series of water-distributing pipes extending lengthwise to said chutes above

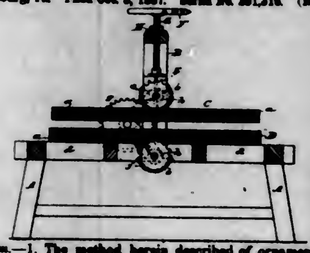




and at or near the higher portions thereof, and a series of paddle-wheels intermediate of said chutes, the whole combined substantially as and for the purpose herein described.

3. In a mashing-machine, a series of inclined chutes, a series of water-distributing pipes, each provided with a valve, and water-supply pipes connected to said valves, the whole combined substantially as and for the purpose herein described.

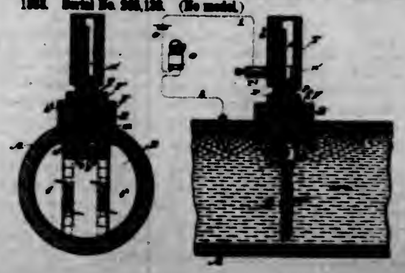
384,569. METHOD OF ORNAMENTING GLASS. MARX FINK, Pittsburg, Pa. Filed Oct. 3, 1887. Serial No. 251,316. (No model.)



Claim.—1. The method herein described of ornamenting glass, metal, &c., consisting in first applying to a plate any suitable design with paint in a rough manner, then placing another plate upon it, next applying pressure to them, and finally affixing the ornamentation to the plates, as specified.

2. The mode of ornamenting glass, &c., herein described, consisting in first applying to the plate a suitable design in a rough manner with paint, then placing another plate upon it, and then applying pressure to them by reciprocating platens or rollers, in the manner and for the purpose set forth.

384,570. ELECTRIC CIRCUIT-CLOSING DEVICE. MILTON W. GROVENSTEIN and FERDINAND G. JAHR, New York, N. Y. Filed Feb. 24, 1888. Serial No. 265,128. (No model.)



Claim.—1. The combination of a movable vane, an arm actuated thereby, a chamber or conduit containing the vane, said arm extending without the chamber, and a flexible tubular packing intervening between the arm and the chamber through which said arm extends.

2. The combination of a movable arm, a vane for giving a lateral movement to the arm, a support for the vane through which the arm extends, and a flexible tubular packing intervening between the arm and the support.

3. A circuit-closing device consisting of a pivoted vane or wing adapted to be placed in a chamber or conduit, a circuit-closing point mechanically coupled therewith and actuated thereby, a contact-point therefor, and a flexible packing between the circuit-closing point and the support of the vane.

4. A circuit-closing device consisting of a pivoted vane, a circuit-closing point mechanically coupled therewith and actuated thereby, a contact-point therefor, and a support for the circuit-closing point consisting of a flexible tube.

5. A circuit-closing device consisting of a pivoted vane, a circuit-closing point mechanically coupled therewith and actuated thereby, a contact-point therefor, a flexible packing between the circuit-closing point and the support of the vane, consisting of a flexible tube one end of which is sealed to the circuit-closing arm and the other to the support of the vane.

6. The combination of a movable vane, an arm or lever one end of which is engaged by or connected with said vane, a hollow post through which said lever extends, a lug upon the lever at the end of the hollow post affording a fulcrum, and a flexible tubular packing intervening between said arm and said post, substantially as described.

7. A circuit-closing attachment which consists of a vane, B, contained in the tube A, the spring normally holding the vane in a given direction, the stop opposed to the spring, the movable circuit-closing arm A, the cap a', through which it extends, the flexible coupling or packing between the arm and cap, and a contact-point applied to the circuit-closing arm, substantially as described.

8. In a circuit-closing device, a vane or valve having wings folding in a given direction, and a circuit-closing arm or points actuated by means of the vane.

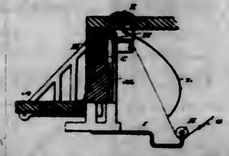
9. The combination, with an electrical attachment for a chamber or conduit, of a circuit-closing point outside of the chamber or conduit, a device within the chamber or conduit for actuating the same, and a flexible tubular packing through which a movable mechanical connection is formed with the circuit-closing device.

384,571. MANUFACTURE OF HARNESS-MOUNTINGS. ROBERT S. GREENING, Newark, N. J., assignor to the Sargent Manufacturing Company, same place. Filed Mar. 24, 1888. Serial No. 268,281. (No model.)



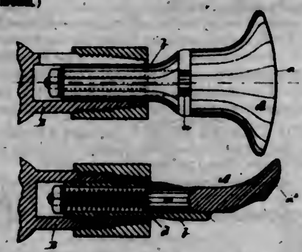
Claim.—The method of making harness-mountings which consists in first casting or roughly forming metallic bodies for the mountings having portions of full size and other portions of smaller size, then covering the smaller portions with a plastic material substantially even with the larger portions and hardening the same, and finally finishing the metallic and hardened plastic surfaces, substantially as herein specified.

384,572. PASSENGER-REGISTER. THOMAS F. HARLY, New Orleans, La., assignor to Frank A. Behan, same place. Filed Mar. 14, 1887. Serial No. 230,812. (No model.)



Claim.—In a passenger-register, the step A, rod F, rod or cord G, pedal-rod and foot-piece I K, spring L, angular guide N, thimp or button O, and pulley H, in combination with the frame S, having bars s s', provided with the spring-pawl 1 and spring-detent 11, the spring 4, the toothed wheel 2, dial T, the link-frame R, and the rod F, connecting the step A with the link-frame R, substantially as specified.

384,573. SHANK-BURNISHING DEVICE. ALBERT HARDEN, East Bridgewater, Mass., assignor of one-half to Hillman A. West, St. Louis, Mo. Filed Oct. 28, 1886. Renewed May 19, 1888. Serial No. 274,373. (No model.)



Claim.—1. The tool A, with its curved edge a' and its long narrow convex face a^2, substantially as and for the purposes specified.

2. In combination, the tool A, with its long narrow convex face a^2, curved at its edge a', the spring d, and the tool-carrier B, substantially as described.

384,574. PROJECTILE. JOSEPH B. HAWLEY, Hartford, Conn. Filed Apr. 26, 1887. Serial No. 236,203. (No model.)



Claim.—1. The combination, with a projectile having a rear extension and slots in its base, of a centrally-perforated leather washer mounted on the projection, the front face of the washer toward the base of the projectile, so that the slots furnish apertures for the entrance of air between the projectile and washer to throw off the washer during the flight of the projectile, substantially as described.

2. The combination, with a projectile and its sabot, of an interposed spring to detach the sabot after the projectile is fired.

3. A projectile having a rear projection and a series of washers thereon, and a spring between the washers and projectile, all arranged and combined substantially as set forth.

4. A projectile having a tapering rearward extension from its base, a series of washers on said projection, slots and pins connecting the washers and projectile to cause the washers and projectile to rotate together, and a spring interposed between the washers and base of the projectile to throw off the sabot after the projectile is fired, all in combination substantially as described.

5. The combination, with a projectile having air-passages in its base, of a series of washers mounted on a projection at the rear of the projectile, the front washer resting against the base, with its outer edge in proximity to the air-passages, substantially as described.

384,575. CAR-COUPLING. EDWARD HOWE, Blunt, Dak., assignor of one-half to Josh F. Williams, same place. Filed Mar. 21, 1888. Serial No. 267,949. (No model.)



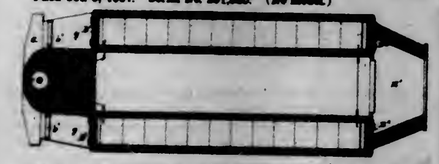
Claim.—1. In a car-coupler, the combination, with the draw-head, of a spring secured within the recess of the draw-head in the path of the link, the rear upwardly-extended free end of which spring extends through a slot in the draw-head, the double-armed lever pivoted on a support on the top of the draw-head, with its lower arm resting on the extended end of the spring and short enough to fall off said end when raised to the proper height, and the pin hanging from the upper arm of said lever in the pin-holes of the draw-head, and a slot in the spring registering with said holes, substantially as specified.

2. In a car-coupler, the combination of the link G with the recessed draw-head A, having the pin-holes a a', the slot a^2 in its roof in rear of the pin-holes, and the recess a^3 in its floor within, the spring

B, having the curved portion *b*, the vertically-extended rear end, *b'*, and the slot *b²*, the double-armed lever C, pivoted on a bracket on top of the draw-head, and the hanging pin pivoted to the upper arm of said lever, substantially as specified.

3. The combination of the link with the recessed draw-head having the slot a^2, the slotted spring B, having the upwardly-extended rear end, *b'*, the double-armed pivoted lever, the pin hanging from the upper arm of said lever, and the spring F, having its outer or front end secured to the upper arm of the double-armed lever and its free rear end bearing on the top of the draw-head, substantially as specified.

384,576. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Filed Oct. 5, 1887. Serial No. 251,825. (No model.)



Claim.—1. An electric car having its front or operator's platform of a width equal to or substantially equal to the distance between the seats, and having the front ends of the compartments under the seats made open for the insertion of batteries within said compartments from the front end of the car.

2. An electric car having its front or operator's platform of a width equal to or substantially equal to the distance between the seats, having the front ends of the compartments under the seats made open for the insertion of batteries within said compartments from the front end of the car, and doors to cover the said openings.

3. An electric car having its front or operator's platform of a width equal to or substantially equal to the distance between the seats, having the front ends of the compartments under the seats made open for the insertion of batteries within said compartments from the front end of the car, and a supporting-platform upon each side of said operator's platform, over which the batteries are pushed.

4. An electric car having its front or operator's platform of a width equal to or substantially equal to the distance between the seats, and having the front ends of the compartments under the seats made open for the insertion of batteries within said compartments from the front end of the car, and a supporting-platform provided with an anti-friction roller upon each side of said operator's platform, over which the batteries are pushed.

5. The combination, in a car, of the seat-compartments B, for the batteries having open ends, and a platform arranged between the openings in the ends, and long battery-supporting slides adapted to run into the seat-compartments.

6. An electric car having its front or operator's platform of a width equal to or substantially equal to the distance between the seats, having the front ends of the compartments under the seats made open for the insertion of batteries within said compartments from the front end of the car, in combination with long slides to run into said compartments, and cells of batteries on each of said slides.

7. An electric car having its front or operator's platform of a width equal to or substantially equal to the distance between the seats, and having the front ends of the compartments under the seats made open for the insertion of batteries within said compartments from the front end of the car, in combination with long slides to run into said compartments, rollers upon which said slides rest, and cells of batteries on each of said slides.

8. In an electric car, a compartment for the battery under the seat and open at one end and a platform-guard cut away or reduced in width at the open end of said compartment, in combination with batteries arranged in said compartment.

9. In an electric car, a compartment for the battery under the seat and open at one end, a platform-guard cut away or reduced in width at the open end of said compartment, in combination with batteries arranged in said compartment and a slide or carriage upon which said batteries rest and by which they are pushed into the compartment.

10. The combination of a car having a compartment under the seat running lengthwise with the car and having an opening at one end, a supporting or operating platform arranged immediately below said opening, and a passenger or operator's platform of a width sufficiently small as to not obstruct said opening, with a long slide to enter said compartment, and batteries arranged upon said slide.

11. The combination, in a car, of a seat-compartment running lengthwise of the car, an opening on the end of said compartment, a door for said opening supported within said compartment, and a removable battery-slide adapted to be moved into or out of said compartment through said opening and resting upon said supports.

12. The combination, in a car, of a seat-compartment running lengthwise of the car, an opening on each end of said compartment, a door for each of said opening-supports within said compartment, and a removable battery-slide adapted to be moved into or out of said compartment through said openings and resting upon said supports.

13. An electric car having a compartment exterior to the passenger-compartment, a removable door or cover to said compartment, two or more battery-cells, and a removable slide or support for said batteries, whereby said slide or support, with its batteries, may be simultaneously inserted or removed from the compartment through the door.

14. An electric car having a compartment exterior to the passenger-compartment, and having an opening extending to the outside of the car, a removable door or cover to the opening to said compartment, two or more battery-cells, and a removable slide or support for said batteries, whereby said slide or support, with its batteries, may be simultaneously inserted or removed from the compartment through the doorway to the outside of the car.

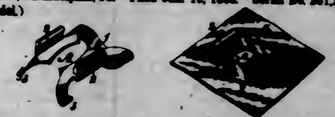
384,577. COMBINED RUBBER-DAM CLAMP AND NAPKIN-HOLDER. JAMES W. IVORY, Philadelphia, Pa. Filed Nov. 21, 1887. Serial No. 255,709. (No model.)



Claim.—1. A combined dental rubber-dam clamp and napkin-holder, consisting of a clamp having the lips B for the engagement of a napkin, substantially as described.

2. A combined dental rubber-dam clamp and napkin-holder, having the clamp portion A and provided with lips B and legs C, substantially as and for the purpose set forth.

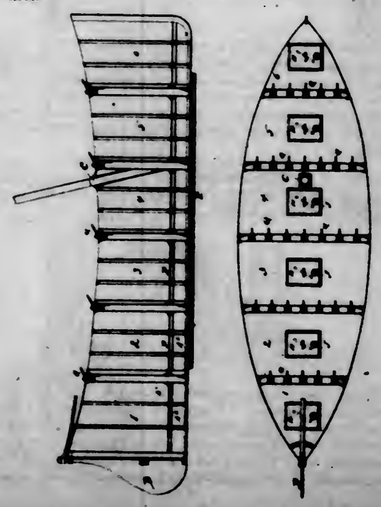
384,578. RUBBER-DAM ADJUSTER AND CLAMP. JAMES W. IVORY, Philadelphia, Pa. Filed Jan. 19, 1888. Serial No. 261,216. (No model.)



Claim.—1. A dental rubber-dam adjuster and clamp having jaws and arms projecting upwardly or downwardly from the frontal ends thereof, so as to pass on the sides of the anterior tooth, substantially as described.

2. A dental rubber-dam adjuster and clamp having jaws with arms on the sides thereof and arms on the frontal ends thereof, the two sets of arms projecting upwardly and downwardly, as the case may be, in opposite directions, or approximately so, substantially as and for the purpose set forth.

384,579. COMBINED WATER-TANK AND LIFE-BOAT. SIMON J. R. JOHANNESEN, Langset, near Risoe, Norway. Filed Feb. 20, 1888. Serial No. 265,742. (No model.) Patented in England Feb. 15, 1888, No. 2,200.



Claim.—1. A life-boat formed of a series of separate sections locked together end to end, each section having two sides, two ends, and a top and bottom, substantially as set forth.

2. A life-boat composed of a series of independent sections locked together, each section having two sides, two ends, and a top and bottom, the sides and bottom projecting some distance beyond one of the end plates, substantially as set forth.

3. A ship's tank having a false bottom a short distance above the actual bottom, a hand-hole in said false bottom, and a cover for closing the hand-hole, substantially as set forth.

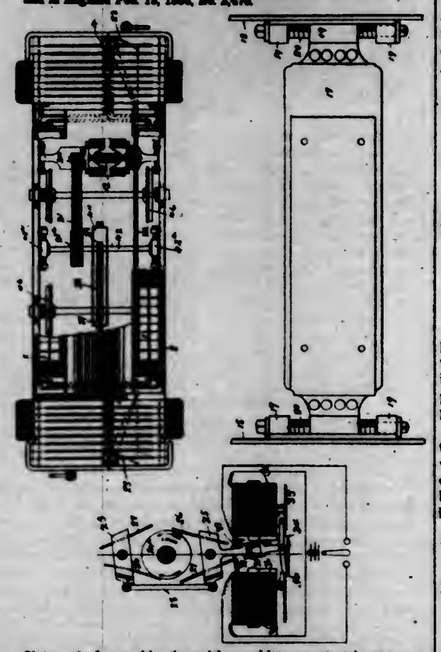
4. A ship's tank having a false bottom subdividing it in two compartments, and an outlet pipe or cock for the upper compartment, substantially as set forth.

5. A ship's tank having a U-iron secured along the sides and bottom at one end and a clip-plate along the sides and bottom of the opposite end, said clip being adapted to pass into the angle-iron on the end of an adjacent tank, substantially as set forth.

6. The combination of two ship's tanks, of a U-iron secured along the sides and bottom of the corresponding end of each tank, a clip-plate along the side and bottom of each tank at the opposite end, and bolts and nuts along the top edges of the tank, substantially as set forth.

7. The combination, with a ship's tank, of a U-iron secured along the sides and bottom at one end, a transverse U-iron secured on the same end a short distance below the top edge, a clip-plate secured along the sides and bottom of the opposite end, a transverse clip-plate secured on the same end a short distance below the top edge, and bolts and nuts at the top edge, substantially as set forth.

384,580. APPARATUS FOR ELECTRIC TRACTION. EDMOND JULIEN, Brussels, Belgium. Filed Feb. 17, 1888. Serial No. 263,949. (No model.) Patented in Belgium Sept. 7, 1883, No. 62,681, Mar. 7, 1884, No. 64,412, Feb. 5, 1886, No. 71,888, and Nov. 19, 1886, No. 78,988, and in England Feb. 19, 1886, No. 2,470.



Claim.—1. In combination with a vehicle, an electric motor, a supporting bar or plate therefor hung from the vehicle, and adjusting-screws at both ends of said support for moving said motor in the plane of its support, substantially as set forth.

2. In combination with a motor, a movable carriage or support, an insulating-block between said motor and support, supporting-lugs on a vehicle and the support, respectively, and adjusting-screw connecting such lugs, substantially as and for the purpose set forth.

3. In an electrically-propelled vehicle, in combination with a casing protecting the power-transmitting mechanism, brooms on said casing, substantially as and for the purpose set forth.

4. In an electrically-propelled vehicle, in combination with the motor and its commutator, a current-reversing device consisting of two pairs of commutator-brushes and their carriers, an armature on one of the brush-carriers, electro-magnets controlling said armature, an electric circuit including a source of electricity and the said magnets, a switch whereby current may be directed into either magnet, and a locking device for holding either of the pairs of brushes in contact with the commutator of the motor, substantially as and for the purpose set forth.

5. In an electrically-propelled vehicle, the combination of an electric battery divided into several independent series, each of said series being placed in a drawer or box carrying exposed terminals, a current-regulator having multiple couplings and connected with the terminals of the said batteries, an electric motor fixed on a movable support and bearing on its field-magnets two distinct exciting-circuits independently controlled, a current-reversing device, flexible transmitting mechanism between motor-shaft and axle, and a protecting casing around such mechanism carrying brooms, all substantially as and for the purpose set forth.

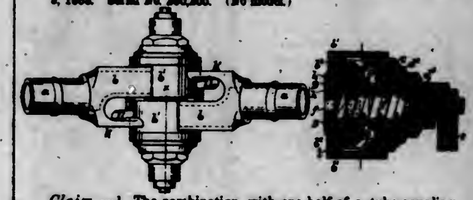
384,581. ELECTRIC RAILWAY-CAR. EDMOND JULIEN, Brussels, Belgium. Filed Mar. 16, 1887. Serial No. 231,164. (No model.) Patented in Belgium Nov. 19, 1886, No. 78,988.



Claim.—1. The combination of the motor A, having armature-shaft *a*, worms *e*, jointed to said shaft, axles having pinions *p*, and rods for elevating one or other of said worms, substantially as and for the purpose set forth.

2. The combination of a car carrying a number of batteries, and a motor in circuit therewith, a regulating-commutator in the circuit for arranging said batteries in various groups, a shaft extending from end to end of the car, and hand-shafts connected therewith for operating said commutator, substantially as and for the purpose set forth.

384,582. TUBE-COUPLING. ANDREW C. KIMBALL, Providence, R. I., assignor of one-half to James D. Anthony, same place. Filed Jan. 9, 1888. Serial No. 260,305. (No model.)



Claim.—1. The combination, with one half of a tube-coupling provided with means for spearing the same to another similar half, of the valve-case *c*, provided with the steam-ports *c' c'*, the valve *d*, having the ports *d'* and operating-handle *e*, and the packing-cylinder *f*, provided with the joint-ring *g* and packing-ring *i*, surrounding the packing-cylinder, substantially as and for the purpose set forth.

2. In a tube-coupling, the combination, with the chamber *b*, of the valve-case *c*, having the ports *c' c'*, the packing-cylinder *f*, provided with the joint-ring *g* and packing-ring *i*, surrounding said packing-cylinder, the valve *d*, provided with the ports *d' d'* and operating-handle *e*, and the spring *f'* for holding the packing-cylinder and valve in operative position, substantially as and for the purpose set forth.

384,583. CHANGE-RECEIVER. JOSEPH A. KIMBALL, New York, N. Y. Filed Nov. 18, 1887. Serial No. 255,473. (No model.)



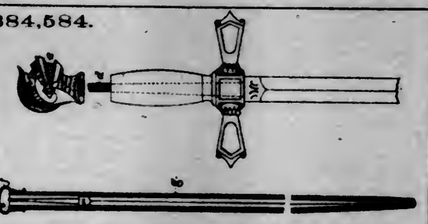
Claim.—1. A change-receiver consisting of a fixed table, A, having a hole, *a*, in combination with a horizontally-moving gate, B, and closing-spring D, arranged to receive change in the aperture *a*, and to deliver it to the hand below by a movement of the gate, substantially as herein specified.

2. The gate B, having the aperture *b* and rim or tube B', in combination with the table A, having the aperture *a*, spring J), stops A^1 A^2, and keeper G, arranged for joint operation, as herein specified.

384,584. SWORD. LA FAYETTE LITTLE, Toledo, Ohio. Filed June 27, 1887. Serial No. 242,612. (No model.)

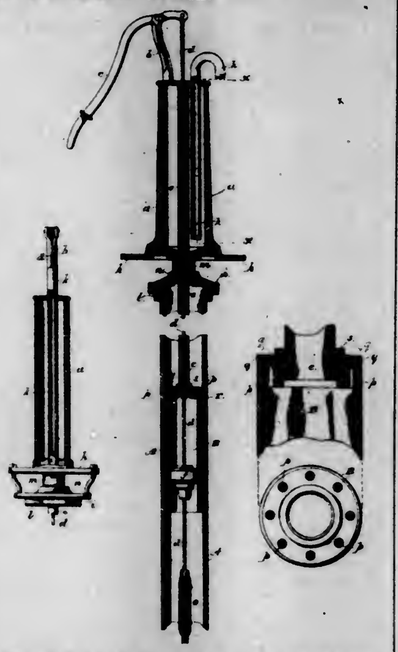
Claim.—1. A sword having a detachable hilt and handle and a sectional scabbard, in combination with a blade-case in the form of a case, substantially as shown and described, for the purposes specified.

384,584.



2. A sword having a detachable hilt and handle, in combination with a blade-case made in the form of a cane, substantially as shown and described, for the purpose specified.

384,585. DEEP-WELL PUMP. PHILIP A. MYERS, Ashland, Ohio, assignor of one-half to Francis H. Myers, same place. Filed Jan. 23, 1888. Serial No. 262,244. (No model.)



Claim.—1. In a pump, the combination, with the main barrel forming a passage for the column of water in its upward movement to the point of discharge, and a discharge-pipe in connection with the upper end thereof, of a submerged cylinder within the same provided with a piston, and an opening in said submerged cylinder into the barrel above its piston, whereby the water which accumulates above the piston of the submerged cylinder is discharged directly into the column of discharging water, substantially as described.

2. The combination, in a pump, of a main barrel forming a discharge-passage to the surface and in connection at its upper end with the discharge, a cylinder within the same, a piston-rod and pistons, and a valved opening in the submerged cylinder between the cylinder and the main barrel, substantially as described.

3. A pump consisting of a main barrel forming a discharge-passage to the surface, a submerged cylinder within the same, a piston-rod carrying pistons of unequal diameter, a guide-pipe for the piston-rod connected to and supporting the submerged cylinder, and valved openings to the main discharge in the head of the submerged cylinder, substantially as described.

4. A pump consisting of a pump-stock, a main barrel, a submerged cylinder within the barrel, and a piston-rod and piston, combined with a flange, *h*, on the pump-stock, a flanged ring, *i*, suspended from the flange *h*, a collar, *n*, seated in a recess in the upper part of the ring *i*, and a pipe, *m*, connecting the stock and collar *n*, substantially as described.

884,586. BLOCK FOR ENGRAVING OR ETCHING UPON. WILLIAM C. NORMAN, Sydney, New South Wales. Filed Dec. 11, 1885. Serial No. 185,344. (No model.) Patented in England Sept. 16, 1884, No. 12,026; in New South Wales Feb. 24, 1885, and in Victoria Oct. 9, 1885, Nos. 4,367 and 4,368.

Claim.—1. An improved block or surface for engraving or etching upon, consisting of an etching-surface and an acid-resisting stippled film submerged below the upper etching film or surface, substantially as set forth.

2. An improved block or surface for engraving or etching upon, consisting of a surface sheet or mass of material in which are embedded separately-arranged quantities (such as dots, strips, &c.) of another material offering more stubborn resistance to the action of a third material that will etch said surface or first material, substantially as herein described and explained.

3. An engraving block or surface comprising a plate or film constituting the etching-surface, having a design indented, engraved, or otherwise sunk in its under face and coated with a stippled acid-resisting film, substantially as and for the purpose set forth.

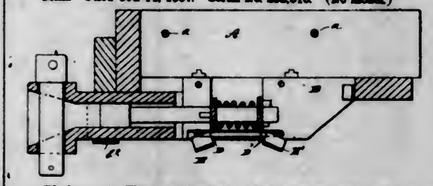
4. The herein-described method of mounting engraving blocks or surfaces of the character described upon a smooth sheet of metal or alloy, consisting in first coating the two surfaces which are to adhere with a film of tin or solder, and then pressing them together at a temperature which will melt and affect only the solder, substantially as herein described and explained.

884,587. CUSPIDOR. JAMES L. O'CONNOR, New York, N. Y., assignor to the New York In Floor Cuspidor Company, same place. Filed Jan. 23, 1888. Serial No. 261,618. (No model.) Patented in England Oct. 15, 1887, No. 13,988.



Claim.—In a cuspidor, a combination of the sink A, let into a floor, the top being flush with the upper surface and provided with a plug, D, for stopping its lower aperture, said plug being provided with a pivot-rod, E, for removing the same, the handle of which is normally covered by the funnel C, the shallow funnel C, located inside the sink A and resting upon a rabbet on the interior of the edge of said sink, and the grating B, resting upon the edge of the funnel C and closing the mouth of the sink A, substantially as described.

884,588. DRAFT-TIMBER FOR CARS. JOHN R. OWEN, Jackson, Tenn. Filed Oct. 11, 1887. Serial No. 252,010. (No model.)



Claim.—1. The combination, with the central sill of a car, and rods projected transversely through the same near the ends, of draft-timbers provided with aligning recesses in their under edge at each side of the center, apertured transverse straps engaging the walls of said recesses, and inclined side bars connecting the said straps and sill-bars, substantially as and for the purpose herein set forth.

2. The combination, with the sill of a car, and rods projected transversely through the same near the ends, of draft-timbers provided with aligning recesses in their under edge at each side of the center and inclined in direction of said center, apertured transverse straps engaging the walls of said recesses, detachable inclined side bars connecting the said straps and sill-rods, and means, substantially as shown and described, for securing the side rods to the straps and sill-rods.

3. The combination, with the center sill of a car, and rods projected transversely through the same near each end, provided with apertured extremities and keys in said apertures, of draft-timbers provided with aligning recesses in their under edge at each side of the center and inclined in direction of said center, apertured transverse straps engaging the walls of said recesses, and detachable inclined side rods connecting said sill-rods and straps, and provided with a thread at one end adapted to receive a nut and an eye at the opposite end, all arranged to operate substantially as set forth.

884,589. INHALER. ROBERT PALMER, Swanton, Ill. Filed July 8, 1887. Serial No. 243,732. (No model.)

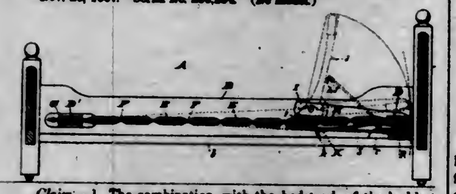


Claim.—1. The flexible tube *b*, formed as described, in combination with the perforated end plates, *c*, and the stop *f*, substantially as set forth.

2. The combination of the tube *b*, formed of coiled wire and adapted to contain medicament, the perforated plates *c*, secured in the ends of the coiled-wire tube, and an exterior cylinder, *a*, substantially as specified.

3. The combination of the tube *b*, formed as described, having the perforated plates *c* and stop *f*, with the outer casing, *a*, and an air-space between the tube and case, substantially as described.

884,590. SPRING MID-BOTTOM. WILLIAM H. PHENNEY, Mermaid, Del., assignor of one-half to Joseph W. Derrickson, same place. Filed Nov. 30, 1887. Serial No. 256,284. (No model.)

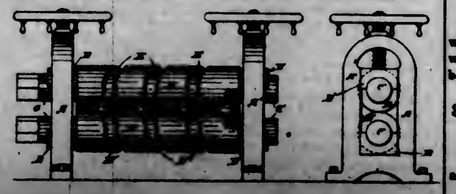


Claim.—1. The combination, with the bedstead, of the bed-bottom composed of the head and foot rails and intervening slats, the longitudinal connecting-wires secured in pairs to the head and foot rails and alternately passing over and under adjacent slats and crossing between the slats, the anchor-bar removably secured to the side bars, the retaining-blocks, the tension-wires extending from said anchor-bar and engaging the wires F, and the lever-arms pivoted near their inner ends to the inner surface of the side rails of the bedstead and at their outer ends to the head-rail, substantially as specified.

2. The combination, with the bedstead and the transversely flexible bed-bottom having its foot-rail removably secured to the bedstead near the foot thereof, and having the anchor-bar removably secured to the side bars near the head thereof, of the pivoted lever-arms having the segmental plate thereon, and the eyebolts set transversely on said lever-arms, and the supporting-bars pivoted at their lower ends to the inner surface of the side rails, B, and having the hook ends to engage the transverse eyebolts, substantially as specified.

3. The combination of the bedstead, the flexible bed-bottom having the foot-rail D', removably secured to the side rails, B, the anchor-bar removably attached to the side bars near the head thereof, and the tension-wires extending therefrom and engaging the wires F, the lever-arms pivoted near their inner ends to the inner surface of the side rails, B, and at the outer ends to the head-rail D, the semicircular plate secured in the recess and flush with the outer surface of the lever-arms I, the said plate being provided with a series of openings in a line concentric with the pivotal point of the lever-arm, the detent M, pivoted in the recess in the side rail, B, having the engaging point, and the arm D, having the button flush with the outer surface of the side rail of the bedstead, and the spring *p* in the recess, substantially as specified.

884,591. ROLLING APPARATUS. WILLIAM L. PENN, Philadelphia, Pa. Filed Oct. 17, 1887. Serial No. 252,513. (No model.)



Claim.—1. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, and the pivoted arm, substantially as specified.

2. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, and the adjustable guide-plate, substantially as specified.

3. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, and the pivoted arm, substantially as specified.

4. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, and the adjustable guide-plate, substantially as specified.

5. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, and the pivoted arm, substantially as specified.

6. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, and the adjustable guide-plate, substantially as specified.

7. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, and the pivoted arm, substantially as specified.

8. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, and the adjustable guide-plate, substantially as specified.

9. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, and the pivoted arm, substantially as specified.

10. The combination, with the rolling-mill, of the guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, the adjustable guide-plate, the pivoted arm, and the adjustable guide-plate, substantially as specified.

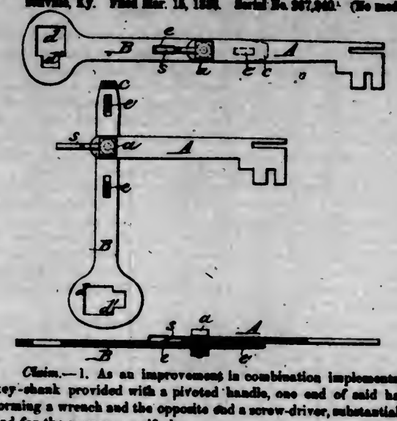
Claim.—1. The improved method of swage-rolling metallic shapes by passing such articles between rolls diagonally to the plane of their axes into helical swages formed in said rolls, substantially as set forth.

2. The improved rolling-swages, consisting of rolls fitted in pairs, with opposing helical swages formed therein, substantially as set forth.

3. The improved swaging-rolls, consisting of a pair of opposing rolls provided with helical opposing recesses formed therein, and cavities at the terminations of said helical recesses adapted to receive removable and adjustable dies, substantially as set forth.

4. Helical swaging-rolls, consisting of a central body or shaft, and removable noses having helical dies or grooves formed therein and arranged to form when assembled dies for varying lengths of work, substantially as set forth.

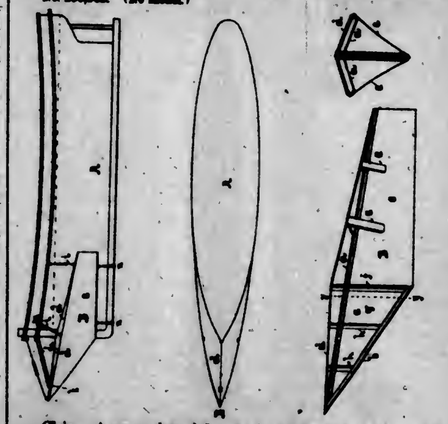
884,592. COMBINATION IMPLEMENT. WILLIAM S. ROSS, Madisonville, Ky. Filed Mar. 15, 1888. Serial No. 267,040. (No model.)



Claim.—1. As an improvement in combination implements, the key-shank provided with a pivoted handle, one end of said handle forming a wrench and the opposite end a screw-driver, substantially as and for the purpose specified.

2. In a combination implement, the key-shank, handle provided with screw-driver and wrench pivoted to said shank, and the spring secured to said shank with its free end entering recesses in the handle, all arranged and operating as set forth.

884,593. ICE-BREAKER FOR VESSELS. FREDERICK W. SMILLIE, Baltimore, Md., assignor of two-thirds to H. Hermann Peine and George W. Umbach, both of same place. Filed May 26, 1887. Serial No. 239,262. (No model.)

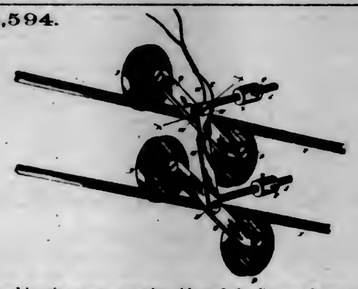


Claim.—A prow adapted for attachment to the bow of a vessel, which consists in a stem-iron, side bars, side and deck sheets, and a water-tight bulk-head placed transversely of the prow, the whole being fastened together, substantially as and for the purpose specified.

884,594. SYSTEM OF ELECTRIC LOCOMOTION. HENRY A. SUTTON, Washington, D. C., assignor to the Brush Electric Company, Cleveland, Ohio. Filed June 7, 1887. Serial No. 240,522. (No model.)

Claim.—1. In an electric railway system, the combination, with a line-conductor, of a rigid frame, contact-rollers journaled on said

384,594.



frame and bearing upon opposite sides of the line-conductor, and a single weight carried by the frame and adapted to hold both rollers in contact with the line-conductor, substantially as set forth.

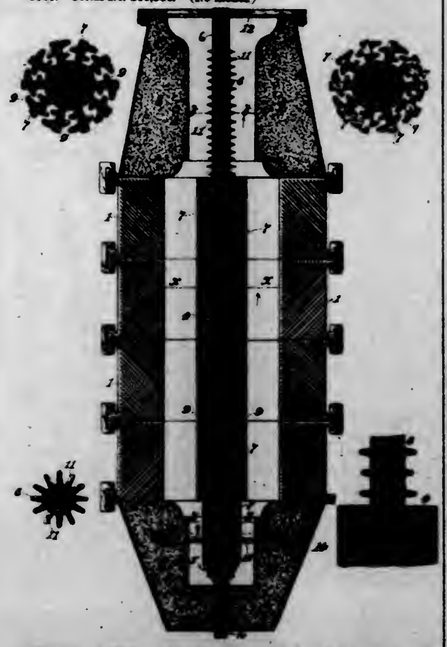
2. In an electric railway system, the combination, with a line-conductor, of a frame carrying at one end a roller adapted to rest against one side of the line-conductor and at its opposite end a roller to rest against the opposite side of the line-conductor, and a weight attached to said frame for turning said frame to establish and maintain contact of the rollers with the line-conductor, substantially as set forth.

3. A contact-truck composed of grooved rollers engaging the opposite sides of the line conductor, a frame for supporting said rollers, and a weight tending to turn said frame about its middle, and the rollers in contact with the conductors, substantially as described.

4. An electrical contact-truck composed of a frame, rollers mounted thereon and engaging opposite sides of a line-conductor, and an adjustable weight tending to turn said frame about its middle, substantially as described.

5. In an electric railway system, two line-conductors parallel to each other and one vertically above the other, in combination with a contact-truck for each conductor, a device tending to hold the contact-points of each truck in contact with its respective conductor, a link loosely connecting the two trucks mechanically, but insulated from one of them electrically, and flexible conductors extending from the trucks to a traveling motor, substantially as set forth.

384,595. MOLD. ROBERT SLESTH, Pittsburg, Pa. Filed Apr. 2, 1888. Serial No. 269,336. (No model.)

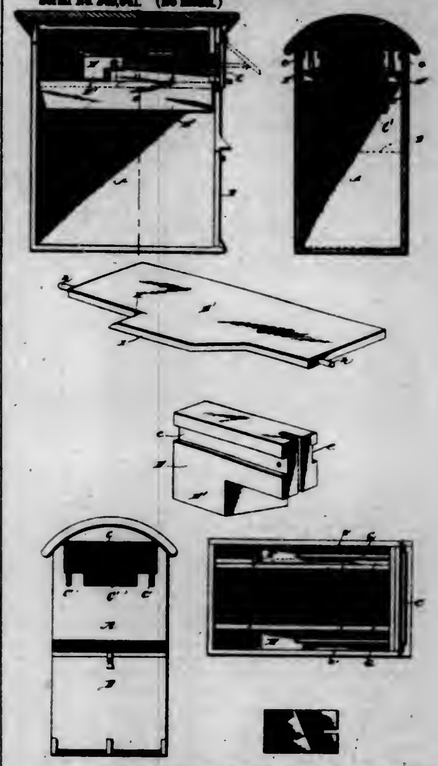


Claim.—1. The combination of a mold for rolls or other analogous articles and an internal chill or cooler provided with a series of wings or projections, substantially as set forth.

2. The combination of a mold for rolls or other analogous articles and an internal chill or cooler provided with a series of radiating wings having nodules or horns formed thereon, substantially as set forth.

3. The combination of a mold for rolls or other analogous articles and an internal chill or cooler provided with a series of wings or projections, and having one of its ends secured as against movement and its opposite end free to move when the chill or cooler is heated by the molten metal, substantially as set forth.

384,596. LETTER-BOX. JAMES R. SMITH, New York, N. Y., assignor of one-half to Walter I. Averill, same place. Filed June 8, 1887. Serial No. 240,641. (No model.)



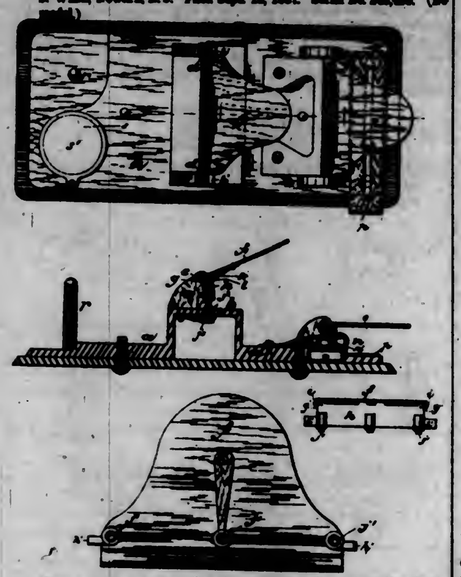
Claim.—1. In a letter-box, the combination of the trap H, arranged across the box, the sliding blocks E, and the door C, connected to the blocks, whereby when the door is opened the trap will be closed by the blocks, substantially as specified.

2. In a letter-box, the combination, with the door C, of the drop-doors H', pivoted near the sides of the box and having tongues I on the outer edges, and the sliding blocks E, connected, substantially as described, to the door C, whereby when the said door is opened the blocks will slide and operate the said tongues to raise the doors H', substantially as and for the purpose set forth.

3. In a letter-box, the combination of the door C, leaves or drop-doors H', pivoted near the sides of the box, and having the tongues I, provided with beveled shoulders thereon, the sliding blocks having the depending legs E', provided with beveled front ends, to impinge against the said beveled shoulders when the blocks are moved forward, and the rods connected at opposite ends to the door C and the blocks E, substantially as and for the purpose set forth.

4. The herein-described letter-box, comprising the box A, door B at the lower end, opening C, having the slots on each side thereof, door C, to cover the said opening and the slots, partitions D D, arranged along each side of the box at the upper end to form the ways D' D', ribs *d d*, disposed in the said ways, leaves or drop-doors H', pivoted at the outer edges under the said partitions D, tongues I, having beveled shoulders K on the outer edges of the said leaves, sliding blocks E, having grooves *e* in the sides to receive and slide on the ribs *d*, depending beveled legs E' on the said blocks, and rods G G, pivoted at the outer ends to the door C and at the other ends to the said sliding blocks, and operating through the said slots on each side of the opening C, all constructed, arranged, and operated substantially as and for the purpose hereinbefore set forth.

384,597. PERFORATING AND EYELETING MACHINE. GEORGE R. WEBB, Newark, N. J. Filed Sept. 12, 1887. Serial No. 249,488. (No model.)



Claim.—1. A perforating-machine substantially such as described, combining therein arms or supports for holding the ends of a lever, a spring-plate for carrying the perforators, perforators arranged on said spring-plate and adapted to be operated by said lever, a bed-plate supporting said lever, spring-plate, and perforators, and provided with openings arranged to receive said perforators, and a drawer arranged under said perforators and adapted to slide in and out of the bed-plate, substantially as and for the purposes set forth.

2. An eyeleting-machine substantially such as herein described, having a bed with lower dies, a plate-like lever, and a gate having dies for forming a second flange on an eyelet, said gate being pivotally connected with and operated by said lever, as and for the purposes set forth.

3. The combination, in an eyeleting-machine, with a bed having reprunible pins, of a lever having a pivoted gate with male dies or formers corresponding in position with said pins and adapted to enter the eyelet and turn the same to form the second flange, all arranged and operating substantially as described.

4. In an eyeleting-machine, the combination, with a bed having reprunible pins adapted to receive eyelets, of a plate-like lever provided with a gate-guides *c*, and a spring for holding said gate against said guides, said gate being provided with dies or formers for turning a flange on said eyelets, substantially as set forth.

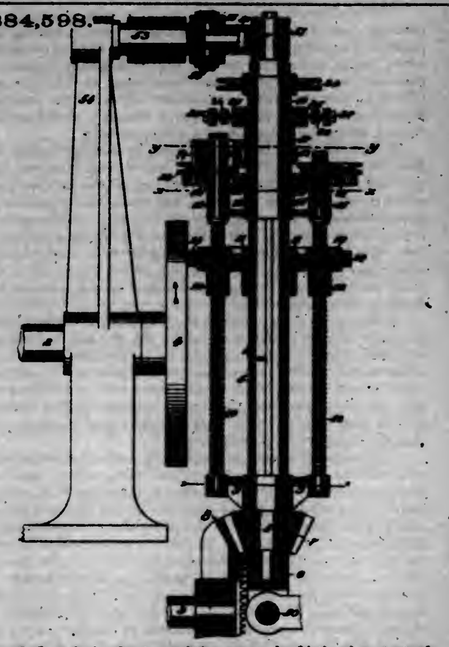
5. The combination, in an eyeleting-machine, with a bed having reprunible pins and lower dies, of a plate-like lever, a gate pivotally connected with and operated by said lever, and dies on said gate, all arranged and operating substantially as described.

6. In an eyeleting-machine, the combination, with a bed having reprunible pins and lower dies, of a plate-like lever, a gate pivotally connected with and operated by said lever, dies or formers on said gate, guides formed on the supporting-arms, and against which the ends of the gate slide, and a spring secured to said lever for holding said gate against said guides, substantially as set forth.

384,598. DEVICE FOR TRANSMITTING POWER. CARL T. A. H. WINKHAUS, New York, N. Y., assignor to John S. Connolly, Philadelphia, Pa., and Thomas R. Connolly, Brooklyn, N. Y. Filed Jan. 3, 1888. Serial No. 259,603. (No model.)

Claim.—1. In a device for transmitting power by means of frictional contact, the combination, with friction-disks, one of which is movable to vary the speed of the transmitted motion, of a screw-connection which engages the movable disk, and gearing which is movable to cause the action of the screw-connection on the friction-disk, whereby it is moved, substantially as and for the purposes described.

384,598.



2. In a device for transmitting power by frictional contact of disks, the combination of the said disks, one being movable toward and from the center of the other to vary the speed of the transmitted motion, and one being movable to and from the surface of the other to vary the contact-pressure, said disks having actuating mechanisms by which said motions are effected, said actuating mechanisms being mechanically connected, whereby on the motion of the one disk toward or from the center of the other the contact-pressure of the disks shall be varied, substantially as and for the purposes set forth.

3. In a device for transmitting motion by means of frictional contact, the combination, with disks and their bearings, one of the disks being movable toward and from the center of the other to vary the speed of transmitted motion, and the bearings of one of the disks being movable to move said disk to and from the surface of the other, of a screw which is connected with and moves said bearings, whereby the pressure of contact of the disks is variable conformably with the position of one disk relatively to the other, substantially as and for the purposes described.

4. In a device for transmitting motion by frictional contact, the combination of the contact elements, one of which is a rotary disk or wheel having an encircling friction-ring, which is fitted loosely to its seat on the disk and bears against the other contact element, whereby on the application of excessive resistance it shall slip on its seat, substantially as and for the purposes described.

5. In a device for transmitting power by means of frictional contact of friction-disks, one of which is movable to vary the speed of the transmitted motion, the combination of a gear-wheel, 22, which rotates on the axis of the friction-disk, other gearing connected therewith, and also connected with the mechanism which moves the movable friction-disk, and a friction-ring, 23, which is in mechanical connection with said gearing, and which normally revolves on the axis of the disk, whereby on retardation of the said ring the mechanism of the movable disk will be driven independently and will effect the motion thereof, substantially as and for the purpose set forth.

6. In a device for transmitting power by means of frictional contact of friction-disks, one of which is movable to vary the speed of the transmitted motion, the combination of a gear-wheel, 22, which rotates on the axis of the friction-disk, other gearing connected therewith, and also connected with the mechanism which moves the movable friction-disk, a friction-ring, 23, which is in mechanical connection with said gearing, and which normally revolves on the axis of the disk, whereby on retardation of the said ring the mechanism of the movable disk will be driven independently and will effect the motion thereof, and means for retardation of the gear-wheel 22 to effect the reverse action of the parts, substantially as and for the purpose set forth.

7. In a device for transmitting power by frictional contact of disks the combination of the said disks, one of which is movable toward and from the center of the other to vary the speed of the transmitted motion, and which is provided with mechanism for producing such movement, and a lever operated in harmony with the movement of said movable disk, which lever automatically causes the cessation of said movement when the disk is moved through a predetermined distance, substantially as and for the purpose set forth.

8. In a device for transmitting power by frictional contact of disks, the combination of the said disks, one of which is movable toward and from the center of the other to vary the speed of the transmitted motion, and which is provided with mechanism for producing such movement, and a cam which through suitable mechanism acts on the mechanism of said movable disk to cause it to operate, and a lever operated in harmony with the said movement of the movable disk, which lever stops the motion of the disk after it has moved to an extent corresponding to the degree of motion of the cam, substantially as and for the purpose set forth.

9. In a device for transmitting power by means of frictional contact, the combination, with friction-disks, one of which is provided with mechanism by which it is movable to vary the speed of the transmitted motion, of differential gearing driven by the power connections which cause the motion of the movable friction-disk, said differential gearing acting automatically to cause the cessation of the motion of the disk when it has moved through a predetermined distance, substantially as and for the purpose set forth.

10. In a device for transmitting power by means of frictional contact of friction-disks, one of which is movable to vary the speed of the transmitted motion, the combination of a gear-wheel, 22, which rotates on the axis of the friction-disk, other gearing connected therewith, and also connected with the mechanism which moves the movable friction-disk, a friction-ring, 23, which is in mechanical connection with said gearing, and which normally revolves on the axis of the disk, whereby on retardation of the said ring the mechanism of the movable disk will be driven independently and will effect the motion thereof, and means for retardation of the gear-wheel 22 to effect the reverse action of the parts, a threaded sleeve, 16, forming part of and rotating with the gear-wheel 22, a threaded sleeve, 17, working thereon, gearing connected with the sleeve 17 and which drives it at a different rate of speed from that of the sleeve 16, whereby the one sleeve is caused to move on the other, and a lever operated by motion of the sleeve, which automatically causes cessation of motion of the gearing when it has moved through a predetermined distance, substantially as and for the purpose set forth.

11. In a device for transmitting power by means of frictional contact, the combination, with frictional disks one of which is movable toward and from the center of the other to vary the speed of transmitted motion, of an epicyclic train of gearing which is connected with the said movable disk and acts thereon to cause its said motion toward and from the center of the other disk, substantially as and for the purposes described.

12. As a device for transmitting power by means of the frictional contact of disks and varying the same, mechanism for moving one of the disks, and retarding devices whereby said mechanism is caused to operate, a lever, 38, by motion of which pressure is caused to be exerted on the retarding devices, and a bar, 30, connected with the moving mechanism of said disk and moved thereby to relieve the pressure exerted on the retarding devices, substantially as and for the purposes described.

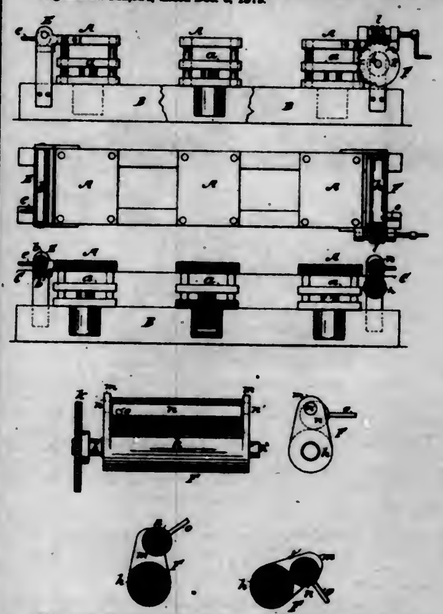
13. As a device for transmitting power by means of frictional contact of disks and varying the same, mechanism for moving one of the disks, in combination with the friction-bars 31 and 32, by motion of which said mechanism is caused to operate, a lever, 34, a movable bar, 30, interposed between this lever and the said friction-bars and connected with the moving mechanism of said disk, a spring connecting the levers 38 and 34, and a stop, 46, substantially as and for the purposes described.

14. As a device for transmitting power by means of frictional contact of disks and varying the same, mechanism for moving one of the disks, in combination with the friction-bar 31, by motion of which said mechanism is caused to operate, a lever, 36, by motion of which pressure is caused to be exerted on the friction-bar, a bar, 30, connected with the moving mechanism of said disk and moved thereby to relieve the pressure exerted by said lever on the friction-bar, and a cam and lever whereby the lever 36 is operated, substantially as and for the purposes described.

15. In a device for transmitting power by frictional contact of disks, the combination, with said disks, one of which is movable to and from the other to effect variation in contact-pressure, of a lever, 39, which effects the motion of one of said disks to vary the speed of the transmitted motion, and a lever, 57, also operated by motion of the lever 39, and connected with the movable bearing of the axis of said disk, whereby a corresponding and simultaneous change of speed and variation of contact-pressure is effected, substantially as and for the purposes described.

REISSUES.

10,988. MACHINE FOR MANUFACTURING RUBBER BELTING. JOHN MURPHY, Brooklyn, N. Y. Filed Apr. 12, 1880. Serial No. 270,403. Original No. 232,894, dated Oct. 5, 1880.



Claim.—1. In a machine for manufacturing rubber belting, a series of presses arranged in line with each other, with intermediate spaces, in combination with suitable end clamp and stretching devices, said presses being operated by any suitable means, substantially as set forth.

2. The combination of the cam-rollers *b n*, fixed cross-bar *b'*, and roller *h*, provided with the projecting arms *m m*, substantially as described.

3. The improvement in machines for manufacturing rubber belting in which the prepared belt is subjected to hot plates, which consists in the adaptation of a fixed clamping device at one end of the machine and a combined clamping and stretching device at its opposite end, whereby the belt is stretched to produce a permanent set that will be practically maintained in use, the said fixed clamping device consisting of a stationary holding-clamp, and the said combined clamping and stretching device consisting of a vibrating stretching-clamp composed of a stationary roller, *h*, having vibrating arms *m m*, carrying a cam-roller, *n*, and suitable devices for operating the same, substantially as set forth.

NORRIS PETERS

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE STOUGHTON.

Decided May 28, 1888.

USE OF TECHNICAL TERMS.

The words "means," "mechanism," and "connections" are proper terms when applied to devices forming no part of the invention, but which are in common use in various kinds of machinery—for instance, when the operation of rollers is governed by gearing, belting, cranks, or other appliances which in themselves are simple and have little or nothing to do with the real invention. Or, as in the present case, the term "means," when applied to the operation or shaking of certain movable screens, is proper, because evidently the same movement of the screens can be effected by an infinite variety of mechanism which would produce the same result and be simply the equivalent of that employed by applicant.

ON petition.

ORE-PULVERIZING MACHINE.

Application of Eli T. Stoughton filed March 7, 1887, No. 230,052.

Messrs. Munn & Co. for the applicant.

HALL, *Commissioner:*

This application comes before the Commissioner on appeal from the action of the Primary Examiner making formal objections to the claims. In his answer to the appeal the examiner says:

> Wishing, however, to have the terms "means," "mechanism," "connections," &c., eliminated from the claims, or to have your honor decide whether they were or were not objectionable, the examiner, in the letter of January 13, refused to give further action until this question had been settled, under *ex parte Mill*, (40 O. G., 919.)

In *ex parte Paige* (40 O. G., 807) the Commissioner attempted to point out as clearly as possible the instances in which these terms were admissible and when they were inadmissible. It was there stated that such terms—

> might be employed * * * to refer to mere adjunctive devices which connect or give co-operation to the various elements or features of the invention, but are in themselves no actual or controlling part of it. It is because any means or mechanism may be used to carry out such adjunctive functions, and need not be defined, that those terms can be thus employed.

With that explanation it seems that the matter must necessarily rest largely with the examiner. In the case of a combination between two elements, A and B, there may be connections or mechanism by means of which the two elements co-operate or unite in their operation, such connection or mechanism being really no part of the invention and being in common use in many other relations and with many other kinds of machinery or apparatus. An invention may consist in the co-operation of two rollers held together by certain devices; but the movements of the two rollers may be governed by gearing, belting, cranks, or other devices which in themselves are simple and common and have little or nothing to do with the real invention. In cases of this kind it requires no skill or knowledge of patent law to understand that such devices can properly be described by the terms "connections" or "mechanism," qualified by proper words.

In the present case, in claim 1, the term "means" is applied to the operation or shaking of certain movable screens. The examiner, I understand, concedes that the invention in no way consists in the particular appliance which is used to produce these movements of the screens, and there seems to be nothing in the invention itself. There is a cam and a connecting-rod attached to the screen, and the movements of this cam give an upward and downward motion to the rod which lifts the screens and causes them to vibrate or oscillate.

In my judgment, it is proper to use the word "means" in referring to these devices, because, evidently, the same movement of the screens can be effected by an infinite variety of mechanism which would produce the same result and be simply the equivalent of that employed and shown in this case.

The terms "mechanism" and "connections," in the second, third, fourth, and fifth claims, are used in precisely the same sense, as I understand the invention, and I am not able to see why they are not properly used, in view of the distinction made in *ex parte Paige*.

In reversing the action of the examiner in this particular I do not intend in any sense to depart from the principle announced in *ex parte Paige*, for it is evident that every case must stand by itself and its own construction, and it will be impossible to apply the decision in this particular application to any other application which is not exactly similar to it in form and construction. This is only an instance in which I apply the decision from which the above quotation has been taken.

EX PARTE STANBRIDGE.

Decided May 24, 1888.

1. The term "mechanism" is not permissible when applied to various and different devices in the several claims which are not adjunctive devices.
2. In a given specific invention which embraces adjunctive devices the adjunctive devices referred to in all the claims must be the same and bear the same relation to the different elements.

APPARATUS FOR AUTOMATICALLY DELIVERING GOODS, &c.

ON petition.

Application of Samuel Stanbridge filed January 30, 1888, No. 262,417.

Mr. M. Bailey for the applicant.

HALL, *Commissioner:*

This petition is taken to vacate and reverse the action of the examiner in objecting to the terms "actuating mechanism," "mechanism for rotating said crank," "mechanism for automatically operating the same," and "automatic actuating mechanism," contained in four separate claims. The objection is that in consequence of the use of those terms the claims are vague and indefinite.

The examiner supports his objections by citing *ex parte Paige*, (40 O. G., 807;) *ex parte Nicholson*, (36 MS. Dec., 406;) *ex parte Deming*, (26 O. G., 1207;) *ex parte Wilkin*, (29 O. G., 950;) *ex parte Holt*, (39 O. G., 171,) and *Rapid Store Service Company* v. *Taylor*, (42 O. G., 721.) Applicant contends that the objections are not supported by these authorities, because the objectionable terms apply in the present case to

adjunctive devices which connect or give co-operation to the various elements or features of the invention, but are in themselves no actual or controlling part of it.

In a given specific invention which embraces adjunctive devices, such devices must be the same and bear the same relation to the different elements or parts which they connect or aid to co-operate, whatever may be the form of the claims or however many claims may be introduced. In the present case there are four claims, and an examination of the specification and drawings shows that the term "mechanism," as used in each, does not comprehend the same devices or parts of devices—that is, it comprehends more and different devices in one claim than in the others. Thus, in claim 2 it covers or comprehends the weighted lever U, spring U', ratchet-wheel W, pawl V, shaft Q, gears O P, and shaft M; while in claim 3 it comprehends the retaining-lever R R', weighted lever U, spring U', shaft Q, ratchet-wheel W, pawl V, wheel S, having stops S' and "surfaces" S², gears O P, and crank-shaft M L. It is evident that if the term "mechanism" can be thus applied in the different combinations claimed to all the devices that operate them, because such devices happen to be somewhat unimportant or immaterial in comparison with others, its use might be indefinitely extended, and it might be ultimately applied to almost every feature of the invention. If the weighted lever U had no other function than to rotate the retaining-wheel W and gearing P O, it might be that the term "mechanism for operating the crank L" could be properly employed, for undoubtedly this might be effected by a mainspring, clock-work, or a weight and pulley, while a belt might be substituted for the gearing O P. But the weighted lever U has other and very important functions: First, it enables the forward movement of the wheels W and P to be arrested synchronously with the restoration of the detent R' to the slot S', so as to prevent violent jar. Second, it enables the movement to be controlled by the lever Z X, on which it rests, by means of the pulley or wheel at the end of the latter. Third, so, also, after the movement of P and W has produced a single revolution of O, and the crank L has driven the pusher I forward and back, the weighted lever U is necessary, because by it alone can the lever Z X be employed to restore the power—the weight—to its normal position, so that the "automatic" operation of the "mechanism" can be repeated. This is clearly shown in both forms of this mechanism, Figures 2 and 4.

It is undoubtedly true that this invention consists of the relation between the element controlling the retaining-lever R R' by means of the coin and the lever Z X, and the element controlling and operating the pusher I, so that the latter can move back and forth only as the retaining-lever R R' is disengaged by the passage of the coin; but evidently the mechanism which controls this relation is the most important part of the device. I see no reason why the case is not fairly within *ex parte Paige*. It is to be noted that the examiner, in his letters of April 18 and 24, 1888, calls attention to the state of the art. This, I think, furnishes additional reason against the use of the term "mechanism" as employed in the present claims. This was shown in *ex parte Nicholson*. For instance, if in the alleged invention all the elements or combinations were old, except the features described by the term "mechanism," which consisted merely in improvements, evidently the term could not be allowed.

The action of the examiner is affirmed.

EX PARTE MILLER.

Decided May 31, 1888.

Applicant claims, broadly, "automatically-operating mechanism to impart alternate fast and slow movements to the driving-shaft" in his needle-grooving machine, but concedes that the principle involved is old and that this varying movement or motion has been accomplished by an infinite variety of means to an infinite variety of kinds and classes of machinery; but he insists that he is the first in this particular kind of machinery to apply *means* for varying the movement. *Held* that applicant has only invented improvements upon mechanism already used to accomplish the same result, and that he must limit his claims to the specific construction by which he obtains this variableness of movement. The courts would undoubtedly construe his patent to cover his specific construction, and to permit such vague and indefinite language in claims would result in misleading the public or in deterring others from entering this particular field of invention, and thus by a species of intimidation applicant would secure a protection to which he is not entitled.

ON petition.

NEEDLE-GROOVING MACHINES.

Application of Lebbeus B. Miller, filed January 24, 1888, No. 261,753.

Mr. S. A. Bennett and *Mr. Henry Calver* for the applicant.

HALL, *Commissioner:*

This application was recently before me upon a petition presenting the question as to whether an appeal from the action of the examiner should go to the Examiners-in-Chief or to the Commissioner. Applicant now comes before me and asks me to review the action of the examiner with reference to some formal objections to claims 8 and 9. The examiner objects to the expression "automatically-operating mechanism to rotate the said cam-shaft," in the eighth claim, and "automatically-operating mechanism to impart alternate fast and slow movements to the driving-shaft," in the ninth claim. Applicant frankly states that he puts his claims in this form and employs these terms because he believes himself to be the first person who has ever applied to this specific class of machinery means for varying the movement so as to cause the same parts of the machinery to move slowly at one period of their operation and more rapidly at another. It is conceded by him that the principle involved is old, and that this varying movement or motion has been applied by practically an infinite variety of means to an infinite variety of kinds and classes of machinery, so that he cannot be said to be the first inventor who has applied the principle or the idea. But he finds existing in this particular art mechanism which he thinks can be improved by the introduction of a device which will cause certain parts of such mechanism to move variably, faster at one time and slower at another, and he invents an improvement upon that mechanism which accomplishes the result sought, and he says, in effect:

Instead of being limited to the particular improvement or construction which I have embodied, I claim that I am entitled to be protected as against any other form or construction of improvement which may accomplish this same result of variableness in the movements of these different parts of the original mechanism.

In my judgment, the applicant is not entitled to such a broad claim, and he must be required to limit his claims to the specific construction by which he accomplishes this variableness of movement. Undoubtedly the courts would hold him to the construction shown in his application should a patent issue, and the only effect of permitting these vague and indefinite terms to remain would be to mislead the public or to deter other inventors from entering upon this field of art, so that by a species of intimidation the applicant would secure in a certain indefinite sense a protection to which he is not justly entitled.

I think, therefore, the action of the examiner was correct, under *ex parte Paige*, (40 O. G., 807,) and that the applicant should be required to set forth a more distinct and specific statement of the construction which he claims to have invented.

EX PARTE LOMBARD *et al.*

Decided May 28, 1888.

STATEMENT OF THE CASE.

Applicants present broad and generic claims and claims for specific constructions. The former have been rejected for lack of novelty, and the latter found to conflict with claims in other pending applications. They insist that they have two years in which to appeal from the rejection, and by refusing to act successfully tie up other applications and prevent the issue of patents, or place the Office in the position of issuing patents which may hereafter be adjudged to interfere with an application pending at the time the patents were granted.

1. *Held* that if applicants refuse to avail themselves for an unreasonable time of their right of appeal, or are unreasonably dilatory in making the protection which the rules offer them, for the purpose of delaying the issue of patents to other parties for their inventions which have been found patentable, the Commissioner would not be justified in permitting such dilatory and unjust action of applicants to work hardship to other applicants who are entitled to the specific constructions, but will issue the patents.

2. In such cases the applicants should be notified that in order to secure an interference they must act with reasonable promptness; but the Office and not the applicants must be the judge of what constitutes reasonable promptness.

REFERENCE by Examiner.

BRAIDING-MACHINES.

Application of Levi W. and Nathaniel Lombard filed December 21, 1887, No. 258,602.

Mr. F. Curtis and *Mr. W. H. Babcock* for the applicants.

HALL, *Commissioner:*

Applicants present broad and generic claims and claims for specific constructions. The former embrace, generically, the subject-matter of more definitely-restricted claims found in other applications pending in the Office. There is no conflict between the specific claims of the respective applications. Two of these other pending applications were months ago found allowable; but they have been withheld from issue to determine whether an interference should be declared between their specific claims and the broad and dominating claims of the applicants Lombard and Lombard.

The broad claims of applicants Lombard have been rejected for want of patentable novelty, and applicants have been repeatedly urged to amend or appeal; but they refuse to act, and insist that they have two years within which to take such action as seems to them best. They thus successfully tie up and delay the issue of other applications, or the Office is put in the position of issuing patents which may possibly hereafter be adjudged to interfere with an application at such time pending in the Office. The examiner has asked the Commissioner for instructions.

Section 4904 requires an interference to be declared whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any other pending application. When, in his opinion, no such interference exists, such declaration is not required. Undoubtedly the interference may, *prima facie*, appear upon the face of the two applications; but an interference is not declared upon the *prima facie* appearance of the applications. The patentability of the invention is first ascertained, and the statute has always been construed as referring to applications whose inventions were recognized and held by the Office to be patentable, and interferences are only declared after such determination. It is also true that when an application has been rejected which would otherwise bring about an interference and an appeal has been taken the other interfering case has been suspended until the appeal has been finally determined. This is done in justice to the rejected applicant, in order that he may take the opinion of the higher tribunals as to the patentability of his invention, and may avoid contest with a patent issued while he was in the Office. But if the application of one of the applicants has been rejected and he refuses to appeal, and knowingly delays other applications ready for allowance, I know of no rule of

practice or reason why the Office should wait and delay in order to afford him that justice and protection which he refuses to accept.

In the case referred by the examiner I am advised that the broad claims of the applicants are not patentable. The Commissioner, then, is not in the situation of having in the Office an application which, in his opinion, would interfere with another pending application. His opinion, as now advised, is that there is no such patentable application pending. What is his duty? Must he await the dilatory and unjust action of the applicants until they can convince him that the Office is in error in its opinion, or shall the public business be dispatched with promptitude and justice? I think there can be but one answer to the proposition. I hereby direct the examiner to proceed in accordance with these views.

I do not intend that there shall be any undue haste in cases of this kind, nor that applications shall go to issue until applicants in other cases are reasonably and fairly notified that to secure interference they must act with reasonable promptness. But it must be understood that the Office, and not the applicants, must determine what constitutes such reasonable promptness.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

FLOWER *et al. v.* THE CITY OF DETROIT.

Decided May 14, 1888.

1. BAILEY—HYDRANTS.

Reissued Letters Patent No. 6,990, granted March 14, 1876, to Thomas R. Bailey, Jr., for an improvement in hydrants, adjudged invalid as to the first claim and not infringed as to the third claim thereof.

2. REISSUE—MODEL ALONE NOT SUFFICIENT BASIS.

The rule in *Parker & Whipple Co.* v. *Yale Lock Co.* (123 U. S., 87; 25 O. G., 290) affirmed that the Patent Office model alone is not to be considered the basis for a reissue in which a change of the invention of the original patent is sought.

APPEAL from the Circuit Court of the United States for the Eastern District of Michigan.

Mr. E. J. Hill for the appellant.
Mr. George L. Roberts for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Eastern District of Michigan by James Flower, Thomas Flower, and George Flower against the City of Detroit, the Fire Commission of the City of Detroit, Benjamin Vernon, president thereof, and the Board of Water Commissioners of the City of Detroit, for the infringement of Reissued Letters Patent No. 6,990, granted March 14, 1876, on an application filed February 17, 1876, to Thomas R. Bailey, Jr., for an improvement in hydrants, the original patent, No. 75,344, having been granted to said Bailey, March 10, 1868.

Among the defenses set up in the answer it was alleged that new matter, not constituting any substantial part of the alleged invention upon which the original patent was granted, was introduced into the specification of the reissue, and that the reissue is not for the same invention as the original patent, and is void.

The specifications and claims of the original and of the reissue are here placed side by side in parallel columns, the parts in each which are not found in the other being in italic.

Original.

To all whom it may concern:

Be it known that I, T. R. BAILEY, Jr., of Lockport, in the county of Niagara and State of New York, have invented a new and Improved Hydrant Fire-Plug; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying *drawings, forming* part of this specification.

This invention relates to a *new and improved method of constructing* fire-plugs or hydrants; *and the invention consists in operating a cylinder-valve in a suitable case, and in the arrangement and combination of parts connected therewith, as hereinafter described.*

Figure 1 represents a longitudinal central section of *the* hydrant, *showing the parts of which it is composed and the manner of their arrangement. Fig. 2 is* a cross-section of *Fig. 1* through *the line x x.*

Similar letters of reference indicate corresponding parts.

A represents the hydrant-tube, from which *the* water is discharged. B is the horizontal section which is connected with the "water-main," and which *forms* the valve-chamber.

C is a loose casing around the hydrant-tube, *for protecting the tube from dirt, &c.* D is the cylinder-valve, *which has* its seat at its lower end, *on* elastic *or leather* packing, secured in a groove, as seen in *the drawing* at *a*. E is a rod, having a screw-thread on its upper end, by which the valve is operated. F is a sleeve-nut, *which engages* with the screw on the rod, *raising* and lowering *it* as the nut is turned. This nut is turned by a wrench on the head G.

The sleeve-nut is secured in the cap of the hydrant by a collar, and packing under the hollow cylinder stuffing-box H, *as seen in the drawing.* J is a yoke, which is attached to the rod E by a set-screw, and *which is secured* in the tube A, and prevented from turning, as it moves up and down, by projecting lugs, *as seen in Fig. 2; and* it will be *seen* that the arrangement is such that the rod and valve may be raised and lowered without being rotated. *This secures* a uniform and perfect bearing of the valve on its seat, the packing *a* remaining undisturbed.

Provision is made for the discharge of the waste water by an orifice beneath the valve D, *marked f*, which orifice is opened and closed by a valve

Reissue.

To all whom it may concern:

Be it known that I, T. R. BAILEY, Jr., of Lockport, in the county of Niagara and State of New York, have invented a new and Improved Hydrant Fire-Plug; and I do hereby declare the following *to be* a full, clear, and exact description thereof, which will enable *others* skilled in the art *to which my invention relates* to make and use the same, reference being had to the accompanying *drawing, which forms* a part of this specification.

This invention relates to *improvements in the construction of* fire-plugs or hydrants.

In the drawing, Figure 1 represents a longitudinal central section of *a* hydrant *according to my invention;* Fig. 2, a cross-section of *the same* through *lines x x of Fig. 1.*

My invention consists in the following parts and combinations, as hereinafter specified and claimed, wherein—

A represents the hydrant-tube from which water is discharged. B is the horizontal section which is connected with the water-main, and which *may form* the valve-chamber.

C is a loose *movable* casing around the hydrant-tube. D is the cylinder-valve, *having* its seat at its lower end, *upon suitable* elastic packing secured in a groove, as *shown* at *a*. E is a rod having a screw-thread on its upper end, by which the valve is operated. F is a sleeve-nut *engaged* with the screw-*nut* on the rod *E, lifting* and lowering *said* rod as the nut is turned *one way or another.* This nut is turned by a wrench *or crank or other suitable device* on the head G.

The sleeve-nut is screwed in the cap of the hydrant by a collar and packing, under the hollow-cylinder stuffing-box H. J is a yoke which is attached to the rod E by a set-screw or *its equivalent,* and *it* is screwed in the tube A, and prevented from turning as it moves up and down by projecting lugs, as *shown in detail at* Fig. 2.

It will be *noticed* that the arrangement is such that the rod and valve may be raised and lowered without being rotated, *thus securing* a uniform and perfect bearing of the valve on its seat, the packing *a* remaining undisturbed.

Provision is made for the discharge of the waste water by an orifice, *f*, beneath the valve D, which orifice is opened and closed by a valve, *g*. A wing, *h*,

marked g, as seen in the drawings. *h is* a wing on the top of this valve.

As the cylinder-valve D descends the angular flange *i* on its inside *strikes* the wing A and raises the valve, as seen in the drawing, *thus allowing* any water which may remain in the hydrant to escape through the orifice *f* and aperture *k*. *It will be thus seen that no water will be left in the hydrant to freeze in cold weather.*

The tube *A* is secured to the horizontal section B by a ring-nut *n*, which contains recesses for packing-rings around the valve, as seen at *o o*. Packing around the valve is secured by another ring-nut *o*, and also under the end of the tube A, as seen in the *drawing.*

P represents the discharge-pipe, with a screw for the attachment of the hose, and a cap-piece for covering the pipe when the hydrant is not in use.

Having thus described my invention, I claim *as new and desire to secure by Letters Patent—*

1. A hydrant or *water* plug, *constructed substantially as shown and described—that is to say, with the parts* A and B *connected together, as shown,*

and with a cylinder-valve and *a waste-water* valve connected and operated *in combination* substantially *as herein specified.*

2. The *arrangement of the* parts A B, valve D, case C, and [illegible] *for the purposes specified.*

to provided upon the top of this valve.

As the cylinder-valve D descends the angular flange *i* on its inside *striking* the wing A, raises the valve, as shown in the drawings, *and allows* any water which may remain in the hydrant to escape down through the orifice *f* and aperture *k*, *thus preventing* any retention *of water above the freezing level.*

The tube *A'* is secured to the horizontal section B by a ring-nut, *n*, which contains recesses for packing-rings around the valve, as shown at *n*. Packing about the valve is also secured by another ring-nut, *o*, and also under the end of the tube A, as *shown* in the drawings.

P represents the discharge-pipe, with a screw for the attachment of the base, and a cap-piece for covering the pipe when the hydrant is not in use.

It will be observed that the casing C loosely rests upon the main B, or upon a branch projecting upward from the same. This casing extends upward, enveloping the main portion of the water-pipe A, at least that portion which is subterraneous. Said casing extends upward and fits loosely about the plug or hydrant at the portion A'. Above the upper terminus of the casing C is provided the bead a upon the hydrant proper. Sufficient space is left between the bead a and the upper terminus of the casing C to permit of sufficient up-and-down play of the said casing C, for the purpose which will hereafter more fully appear. This distance between the bead and casing may be adjusted to any desired distance, thus lengthening or shortening it by means of its screw attachment at its base.

The main function of the casing C is to prevent derangement of parts during cold weather by the ground alternately freezing and thawing around the hydrant or plug. This process of freezing causes the surrounding earth, by its expansion, to lift or upheave, and thus be liable to derange the hydrant or plug. This upheaval or movement is received by the casing C, which, by its capability of sliding loosely up and down, will accommodate the upheaval of the earth above mentioned, without any liability to derange the plug or hydrant. This is the chief function of the casing C, although it likewise serves the purpose of protection to the water-pipe A.

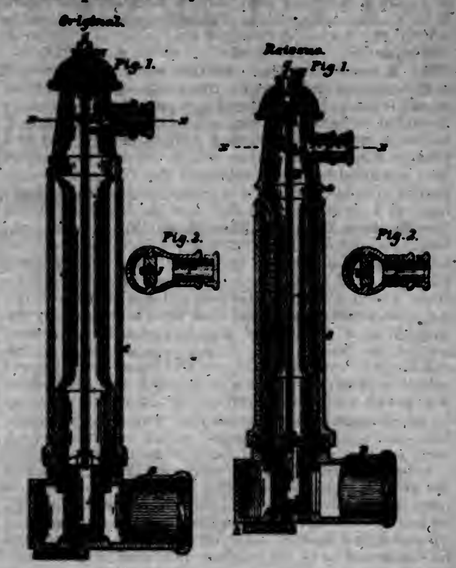
What I claim is—

1. *In combination with a hydrant or fire-plug, a detached and surrounding casing, C, said casing adapted to have an independent up-and-down motion sufficient to receive the entire movement imparted by the upheaval of the surrounding earth by freezing, without derangement or disturbance of the hydrant or plug proper, substantially as shown.*

2. *In combination with a hydrant or fire-plug pipe, A, the supply-pipe B, and cylinder-valve and waste-valve, connected and operated substantially as herein shown and described.*

3. *The combination of the hydrant or fire-plug pipe A, supply-pipe B, casing C, and [illegible]*

The drawings of the original and of the reissue are also here placed side by side.



The material difference between the descriptive parts of the two specifications is that in the reissue it is stated that the casing C is movable, and that sufficient space is left between the bead *a* upon the hydrant proper and the upper terminus of the casing C to permit of sufficient up-and-down play of the casing C to allow it to slide loosely up and down, to accommodate the upward and downward movement of the earth during the process of freezing and thawing, without any liability to derange the plug or hydrant. The casing could not thus slide loosely up and down unless sufficient space were left between the bead *a* and the upper terminus of the casing. No suggestion of such arrangement is found in the specification of the original patent, and the drawing of that patent shows no space between the upper terminus of the casing and the bead or flange above it. This is new matter introduced into the specification of the reissue contrary to the express inhibition of section 4916 of the Revised Statutes.

Claim 1 of the reissue is for an invention not indicated or suggested in the original patent—namely, the independent up-and-down motion of the casing. In addition to this, the drawing of the original patent shows a close contact between the top of the casing and the bead or flange above it, so as absolutely to forbid any such independent up-and-down motion of the casing as is covered by the first claim of the reissue, while the drawing, Figure 1, of the reissue shows a sufficent space between the top of the casing and the bead or flange above it to admit of such independent up-and-down motion.

Issue having been joined, proofs were taken on both sides, and the circuit court entered a decree dismissing the bill, from which the plaintiffs have appealed. Its opinion accompanies the record, and is reported in 23 *Fed. Rep.*, 202. It held that the reissued patent was invalid, as matter of law, upon a comparison of the original with the reissue. We concur in this view.

It is [illegible]

Office with the original application exhibited the invention covered by the first claim of the reissue. It is doubtful whether that fact is satisfactorily established. But, irrespective of this, the case falls directly within the recent decision of this court in *Parker & Whipple Co.* v. *Yale Clock Co.*, (123 U. S., 87; 25 O. G., 290.) It was held in that case that what was suggested in the original specification, drawings, or Patent Office model is not to be considered as a part of the invention intended to have been covered by the original patent, unless it can be seen from a comparison of the two patents that the invention which the original patent was intended to cover embraced the things thus suggested or indicated in the original specification, drawings, or Patent Office model, and unless the original specification indicated that those things were embraced in the invention intended to have been secured by the original patent. (See, also, *Hoskin* v. *Fisher*, 125 U. S., 217.) In the present case it cannot be seen from a comparison of the two patents that the original specification indicated that what is covered by the first claim of the reissue was intended to have been secured by the orignal. In the present case, also, the reissue was not applied for until nearly eight years after the original patent was granted, and the reissue was taken with the manifest intention of covering, by an enlarged claim, structures which in the meantime had gone into extensive public use, and which were not covered by any claim of the original patent.

Infringement is alleged only of claims 1 and 3 of the reissue. As to the casing C of the third claim, it cannot, any more than the casing C of the first claim, be held to cover a casing which has the independent up-and-down motion referred to. Such casing must be construed to be the casing exhibited in the drawing annexed to the original patent—that is, one in which the up-and-down play is restricted by the overlapping bead or flange. On any other construction claim 3 is an unlawful expansion in regard to the casing of what is found in the original patent. In addition to this, if the casing of claim 3 is only a casing which has no end-play, it is anticipated by what is shown in Letters Patent No. 19,206, granted to Race and Mathews, January 26, 1858, which patent was the subject of the decision of this court in *Matheus* v. *Machine Co.*, (105 U. S., 54.)

The decree of the circuit court is affirmed.

Supreme Court of the United States.

THE ST. PAUL PLOW WORKS *v.* STARLING.

Decided May 14, 1888.

JURISDICTION WITHOUT REGARD TO AMOUNT.

In the suit at bar, which was for patent license-fees under a contract, where both the validity of the patent and infringement were put in issue and decided by the circuit court, there is no doubt that this was "a case touching patent rights" and came within the jurisdiction of this Court under section 699 Revised Statutes, without regard to the sum or value in dispute.

MOTION to dismiss for want of jurisdiction.

IN ERROR to the Circuit Court of the United States for the District of Minnesota.

Messrs. J. B. & W. H. Sanborn for the plaintiff.
Messrs. Frackelton & Carenis for the defendant.

Mr. Justice GRAY delivered the opinion of the Court.

The original action was brought in the Circuit Court of the United States for the District of Minnesota by a citizen of Nebraska against a corporation of Minnesota for breach of an agreement in writing, dated December 17, 1877, by which the plaintiff granted to the defendant the right to make and sell within a defined territory a certain kind of plow, under Letters Patent granted August 18, 1874, to the plaintiff for an improvement in plows, (of which he alleged in his complaint that he was the first and original inventor,) and the defendant agreed to make such plows in a good and workmanlike manner, and to advertise and sell them at a price not exceeding the price of similar implements sold by other manufacturers, and to render accounts semi-annually and pay the plaintiff a royalty of $2.50 for each plow sold. The defendant in its answer admitted the agreement sued on, but denied any breach; denied that the plaintiff was the original and first inventor of any improvement in plows, and averred that his alleged improvement had been described in six earlier patents specified; admitted that the defendant had made and sold plows according to the method described in Letters Patent granted March 9, 1880, to one Berthiaume, and averred that those plows were constructed upon an entirely different principle from the plaintiff's. The plaintiff filed a general replication, denying the allegations of the answer.

A jury trial having been duly waived in writing, the case was tried by the court, which, upon facts set forth in detail, found that the defendant had made 960 plows under the Berthiaume patent and 350 other plows; that all those plows infringed the plaintiff's patent, and that the plaintiff's invention was not anticipated by either of the six other patents set up in the answer, and concluded that the plaintiff was entitled to a royalty of $2.50 on each plow sold by the defendant, amounting to $3,275, overruled a motion for a new trial, and gave judgment for the plaintiff accordingly. (29 Fed. Rep., 790; 32 Fed. Rep., 290.)

The defendant sued out this writ of error, which the original plaintiff now moves to dismiss for want of jurisdiction, because the judgment below was for less than $5,000.

The decision of this motion depends upon section 699 of the Revised Statutes, by which a writ of error or appeal may be allowed from any final judgment or decree of the circuit court, without regard to the sum or value in dispute, "in any case touching patent rights." This section substantially re-enacts the corresponding provision of the patent act of 1870, in which the words were—

in any action, suit, controversy, or case at law or in equity touching patent rights. (Act of July 8, 1870, chap. 230, sec. 56, 16 stat., 207.)

The language applied to this subject in the patent act of 1836, under which the cases of *Wilson* v. *Sandford* (10 How., 99) and *Brown* v. *Shannon* (20 How., 55) were decided, was that used in that act in defining the jurisdiction of the circuit court in patent cases, namely:

Actions, suits, controversies, and cases arising under any law of the United States granting or confirming to inventors the exclusive rights to their inventions or discoveries. (Act of July 4, 1836, chap. 357, sec. 17, 5 stat., 124.)

Similar words were used in the patent act of 1861 in defining the jurisdiction of this Court. (Act of February 18, 1861, chap. 37, 12 stat., 130.) But in the act of 1870, as in the Revised Statutes, Congress, while using similar language in defining the jurisdiction of the circuit court, substituted (it must be supposed purposely) the new phrase "touching patent rights" in defining the jurisdiction of this Court.

The present case was an action upon a contract by which the plaintiff licensed the defendant to make and sell a patented article, and not a suit for infringing the plaintiff's patent. But the questions whether that patent was valid and whether it had been infringed were put in issue by the pleadings and decided by the circuit court. Whether, within the meaning of other statutes and in the light of previous decisions, this case should be considered as "arising under" the patent laws of the United States, is a question not before us. (See *Dale Tile Manufacturing Co.* v. *Hyatt*, 125 U. S., 46, and cases there cited.) It is sufficient for the decision of this motion that we have no doubt that a case in which the validity and the infringement of a patent are controverted is a "case touching patent rights," and therefore within the appellate jurisdiction of this Court under section 699 of the Revised Statutes, without regard to the sum or value in dispute.

Motion to dismiss for want of jurisdiction [illegible]

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 43—No. 12. TUESDAY, JUNE 19, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
ATTORNEYS	1351
FRAUDULENT PRACTICES BY ATTORNEYS	1351
ISSUE OF JUNE 19, 1888	1351
DESIGNS	1351
TRADE-MARKS	1352
LABELS	1352
DISCLAIMERS	1352
PATENTS GRANTED	1353
REISSUES	1356
DECISIONS OF THE COMMISSIONER—	
Marsh v. Rein v. Ruppel	1433
Ex parte Page and Krause	1435
DECISIONS OF THE U. S. COURTS—	
The Edison Electric Light Company v. United States Electric Lighting Company	1436

Attorneys—Order No. 482.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 13, 1888.

With the approval of the Secretary of the Interior, Alexander Melhado, of New York, N. Y., is hereby disbarred from practice before this Office, pursuant to section 487 of the Revised Statutes.

BENTON J. HALL,
Commissioner.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *James S. McGlehon*, No. 135 *Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado*.

Issue of June 19, 1888.

Patents	360	No. 384,360 to No. 384,719, inclusive.
Designs	19	No. 18,288 to No. 18,306, inclusive.
Trade-Marks	18	No. 15,008 to No. 15,025, inclusive.
Label	1	No. 5,634.
Reissue	1	No. 10,989.
Total issue	399	

43 O G—13—i

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	4	....
Arizona Territory	1	....	Nevada	1	....
Arkansas	3	....	New Hampshire	4	....
California	6	....	New Jersey	18	....
Colorado	2	....	New Mexico Terri'y	....	....
Connecticut	14	....	New York	61	6
Dakota Territory	3	....	North Carolina	1	....
Delaware	1	....	Ohio	25	2
District of Columbia	....	....	Oregon	1	....
Florida	1	....	Pennsylvania	34	....
Georgia	1	....	Rhode Island	5	1
Idaho Territory	....	....	South Carolina	1	....
Illinois	28	2	Tennessee	3	....
Indiana	11	....	Texas	2	....
Iowa	7	....	Utah Territory	....	....
Kansas	5	....	Vermont	2	....
Kentucky	4	....	Virginia	1	1
Louisiana	2	....	Washington Terri'y	....	....
Maine	2	....	West Virginia	1	....
Maryland	12	2	Wisconsin	9	1
Massachusetts	45	1	Wyoming Terri'y	....	....
Michigan	10	....	U. S. Army	5	....
Minnesota	3	....	U. S. Navy	....	....
Mississippi	1	....			
Missouri	12	1	Total to citizens of the United States	348	17
Montana Territory	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	....	....	Germany	6	....
Barbadoes	....	....	Guatemala	1	....
Belgium	....	....	Ireland	1	....
Bermuda	....	....	Italy	1	....
Brazil	....	....	Russia	1	....
Canada	7	1	Scotland	....	....
Central America	....	....	Sweden	....	....
Columbia, U. S. of	....	....	Switzerland	2	....
Cuba	....	....	Victoria	1	....
Denmark	....	....	West Indies	....	....
Ecuador	....	....			
England	5	1	Total to citizens of foreign countries	35	2
France	2	....			

DESIGNS.

18,286.—SPOOL-CABINET.—*Edwin R. Bullock*, Pawtucket, R. I. Application filed April 27, 1888. Serial No. 272,076. Term of patent 7 years.

18,289.—BADGE.—*Henrietta F. Duke*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited)*, same place. Application filed May 18, 1888. Serial No. 274,814. Term of patent 3½ years.

18,290.—BOTTLE.—*William M. Garton*, Baltimore, Md., assignor to *William Swindell, Walter B. Swindell, Charles J. B. Swindell, and Joseph R. Swindell*, all of same place. Application filed May 10, 1888. Serial No. 273,505. Term of patent 14 years.

18,391.—ORNAMENTATION OF SHEET METAL.—*A. Irving Griggs*, New York, N. Y. Application filed May 7, 1888. Serial No. 273,127. Term of patent 14 years.

18,392.—CARPET.—*Otto Heinigke*, New Utrecht, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Application filed January 26, 1888. Serial No. 262,084. Term of patent 3½ years.

18,393.—BADGE.—*Peter D. Keyser*, Philadelphia, Pa., assignor to *P. H. Sheridan*, U. S. A., trustee, Washington, D. C. Application filed December 20, 1887. Serial No. 258,547. Term of patent 14 years.

18,394.—FONT OF PRINTING-TYPE.—*Ernst Lowenhe*, Chicago, Ill., assignor to *Barnhart Bros. & Spindler*, same place. Application filed April 28, 1888. Serial No. 272,212. Term of patent 14 years.

18,395.—FABRIC.—*Bettie H. Miller*, Philadelphia, Pa., assignor to *The Cheney Brothers*, South Manchester, Conn. Application filed May 15, 1888. Serial No. 273,711. Term of patent 3½ years.

18,396.—TEA-GOWN.—*Ellen Moran*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed May 16, 1888. Serial No. 274,216. Term of patent 3½ years.

18,397 to 18,399, inclusive.—RUG.—*Adolph Petzold*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Applications filed May 24, 1888. Serial Nos. 274,934 to 274,936, inclusive. Term of patents 3½ years.

18,400.—LANTERN-BODY.—*Francis L. Pisch*, New York, N. Y. Application filed May 7, 1888. Serial No. 273,126. Term of patent 7 years.

18,401.—QUILTING.—*Charles T. Wagner*, College Point, N. Y. Application filed January 27, 1888. Serial No. 262,162. Term of patent 7 years.

18,402.—QUILTING.—*Charles T. Wagner*, College Point, N. Y. Application filed January 26, 1888. Serial No. 262,301. Term of patent 7 years.

18,403.—QUILTING.—*Charles T. Wagner*, College Point, N. Y. Application filed January 31, 1888. Serial No. 262,591. Term of patent 7 years.

18,404.—QUILTING.—*Charles T. Wagner*, College Point, N. Y. Application filed February 16, 1888. Serial No. 264,273. Term of patent 7 years.

18,405.—THERMOMETER-BASE.—*Henry L. Weiland*, Rochester, N. Y. Application filed February 8, 1888. Serial No. 263,427. Term of patent 3½ years.

18,406.—BOTTLE-STOPPER.—*Samuel P. Weld*, Bond's Village, Mass. Application filed May 5, 1888. Serial No. 272,730. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 6,191 and upward are registered under the act of March 3, 1881.]

15,608.—WHISKY.—*The Aurora Distilling Company*, Aurora, Ind., and Cincinnatti, Ohio. Application filed May 14, 1888. Used since June 18, 1879.
"The word 'SUNNYSIDE.'"

15,609.—FLAVORING-SYRUP FOR EFFERVESCING AND OTHER DRINKS.—*J. H. Barber & Co.*, New York, N. Y. Application filed April 14, 1888. Used since April 1, 1888.
"The words 'MEXICAN SARSAPARILLA.'"

15,610.—DRESS-SHIELDS.—*August H. Brinkmann*, Baltimore, Md. Application filed May 8, 1888. Used since April 24, 1888.
"The word 'LANGTRY.'"

15,611.—WHISKY.—*Henry Corby*, Belleville, Ontario, Canada. Application filed March 10, 1888. Used since 1864.
"The letters 'I. X. L.'"

15,612.—LEATHER FLY-NETS.—*D. Fischbeck & Son*, Milwaukee, Wis. Application filed May 15, 1888. Used since February, 1887.
"The word 'Boss.'"

15,613.—EMBALMING-FLUID.—*Edwin F. Hill*, Springfield, Ohio. Application filed May 9, 1888. Used since April 30, 1879.
"The word 'CHAMPION.'"

15,614.—USEFUL OR ORNAMENTAL ARTICLES MADE OF SOLID SILVER.—*Howard & Son*, Providence, R. I. Application filed April 9, 1888. Used since July 1, 1886.
"The representation of a four-leafed clover."

15,615.—RIBBONS.—*Johnson, Cousins & Co.*, New York, N. Y. Application filed April 20, 1888. Used since February 1, 1884.
"A monogram of the letters and character 'J C & Co.' and the word 'RIVERSIDE.'"

15,616.—SOAP.—*The Mexican Amollin Soap Company*, Peoria, Ill. Application filed June 10, 1887. Used since February, 1886.
"The words 'AMOLIN DIAMOND KING' and the figure of a rhombold or diamond."

15,617.—REFINED COPPER.—*Orford Copper Company*, New York, N. Y. Application filed May 12, 1888. Used since January 1, 1881.
"The letters 'O. C.'"

15,618.—REFINED COPPER.—*Orford Copper Company*, New York, N. Y. Application filed May 12, 1888. Used since January 1, 1887.
"The letters 'O. R. C.'"

15,619.—CORSETS.—*Shepard, Norwell & Co.*, Boston, Mass. Application filed May 12, 1888. Used since April 1, 1888.
"The word 'BARONESS.'"

15,620.—HOUSEHOLD-NAILS.—*Simmons Hardware Company*, St. Louis, Mo. Application filed May 1, 1888. Used since April 20, 1888.
"The words 'DRIVE WELL' and the letters 'D. W.'"

15,621.—SOAP-POWDERS.—*Strawbridge & Jaeger*, Chicago, Ill. Application filed April 6, 1888. Used since February 1, 1888.
"The words 'CHAMPION AMERICAN.'"

15,622.—BRAND, ALE AND PORTER.—*J. L. Straus & Bro.*, Baltimore, Md. Application filed May 14, 1888. Used since November, 1885.
"The monogram 'J L S & Bro' above the representation of a spread-eagle standing on a shield."

15,623.—SAFETY FUSIBLE PLUGS FOR BOILERS.—*George Van Wagenen*, New York, N. Y. Application filed May 5, 1888. Used since April 10, 1888.
"The figure of a triangle."

15,624.—CHEMICALS, CHEARS, AND CHEARSETTES.—*Philip Whitlock*, Richmond, Va. Application filed May 10, 1888. Used since 1868.
"The picture of a bald-headed old man with spectacles on forehead and hair extending around his chin up each side of his head."

15,625.—EGGS-TONIA.—*A. W. Wills & Son*, Birmingham, county of Warwick, England. Application filed May 22, 1888. Used since March 15, 1888.
"The name 'WILLS.'"

LABELS.

5,624.—Title: "RANO'S DANDELION LIVER PILLS."—*Frederick Seiser* and *Charles O. Rano*, Buffalo, N. Y. Application filed May 28, 1888.

DISCLAIMERS.

8,168, (Reissue.)—*Charles F. Tenny* and *Thomas J. Hobbs*, Baldwinsville, Mass. IMPROVEMENT IN COMBINED CARRIAGE AND CHAIR. Patent dated April 9, 1878. Disclaimer filed June 9, 1888, by the present assignee, *Gilman Wells*, Templeton, Mass.

Enters his disclaimer to the first nine claims, which are in the following words:

"1. As an improved article of manufacture, a child's chair convertible into a high chair or carriage, it being provided with a pair of hinged legs, and rollers carried by and movable with the legs, the rollers being adapted to bear upon the floor when the seat is lowered, to thereby form a carriage, substantially as described.

"2. A child's-chair seat, combined with rollers and seat-supporting legs, connected with such seat and with each other, and a foot-rest so attached as to permit the legs to be extended more or less at the front and rear of the seat, to convert the chair into a high chair or carriage, substantially as described.

"3. In a child's chair convertible into a high chair or carriage at will, the combination of a seat and a pair of hinged roller-carrying legs, connected with the frame of the seat, the legs, by their change of position with reference to the seat, enabling the seat to be elevated to form a high chair for use with a dining-table of usual height, and to lower the seat for a carriage, the same set of legs serving to sustain the seat in both its elevated and lowered position.

"4. The combination, with a chair seat and legs hinged to the seat-frame, of rollers placed near the ends of the legs to permit the ends of the legs to rest upon the floor when the seat is elevated, and the rollers to bear upon the floor when the seat is lowered, by changing the position of the legs with relation to the horizontal portion of the seat.

"5. The combination, with the seat and arms of a child's chair, of a table connected therewith, and adapted to be turned backward over the back of the seat when not in use as a table.

"6. In a child's high chair and carriage, the combination of a seat-frame, hinged legs and rollers, and a holding device, to hold the upper ends of the legs fixed with relation to the seat when in its elevated position as a high chair, the disengagement of the holding devices permitting the legs to turn on the connection joining them with the seat, to thereby permit the high chair to be used as a carriage.

"7. In a combined child's high chair and carriage, rigidly-connected seat, arms, and back, combined with hinged legs and rollers, and a foot-rest and table, adapted to be placed in front of the seat when in use, and to be suspended at the back of the seat when not in use, substantially as described.

"8. A combined child's high chair and carriage, provided with pivoted roller-carrying legs, adapted to be extended in front and behind the seat as the same is lowered to form a carriage, and with a stop to check the outward spreading of the legs, to thereby retain the lowered seat at the desired level to form a carriage, substantially as described.

"9. In a child's high chair and carriage, the combination of legs hinged to the seat-frame at one side of a line drawn laterally through the center of the seat-frame, such legs supporting the seat in its high and low positions, and a holding device to connect such hinged legs with the seat-frame at a point at the opposite side of such central line, to hold such hinged legs in proper position to firmly support the seat each side such central line."

PATENTS

GRANTED JUNE 19, 1888.

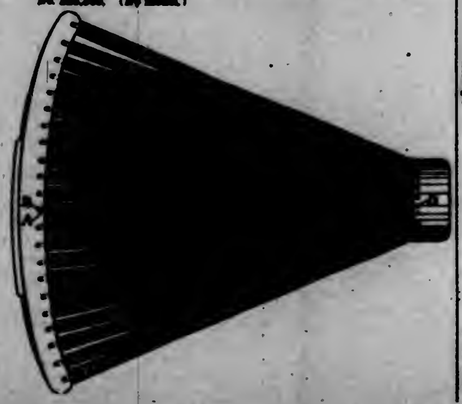
384,599. CAR-HEATER. EDWARD ASHCROFT, Pottsville, assignor of one-half to Alfred S. Seaman, Frackville, Pa. Filed Oct. 26, 1887. Serial No. 253,414. (No model.)



Claim.—1. A car-heater provided with an upper and lower water-chamber and a side passage connecting said chambers, in combination with an intermediate chamber communicating with the upper part of the upper chamber, and with a system of heating-pipes provided with a series of hollow connected flat seats or foot-warmers arranged on the floor of a car, substantially as described.

2. A car-heater provided with upper and lower connected water-chambers, a fire flue or flues passing through the upper chamber, and a furnace in the lower chamber communicating with the flues in the upper chamber, in combination with an intermediate water-chamber connected with the upper part of the upper chamber, and a system of heating-pipes provided with a series of hollow connected foot-warmers arranged on both sides of a car, and a return-pipe communicating with the lower section of the reservoir, substantially as described.

384,600. SADDLE. WILLIAM ASHCROFT, Victoria Works, Victoria Road, Aston, County of Warwick, England. Filed Jan. 3, 1887. Serial No. 223,203. (No model.)



Claim.—A saddle for a bicycle or tricycle having its seat made entirely of springs or equivalent elastic material, as described and illustrated.

384,601. LETTER-FILE. MARY H. BARNARD, Canton, Ill., administratrix of William S. Barnard, deceased. Filed Mar. 31, 1888. Serial No. 268,172. (No model.)

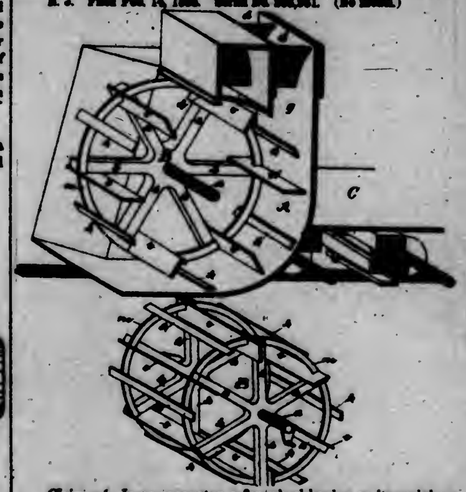


Claim.—1. In a file-box, the two sides hinged together after the manner of a box, provided with overlapping flanges at the edge, and cut away at the corners to expose the contents.

2. In a file-box, two complementary sides hinged together book-like and provided with hinged outwardly-turning supports, substantially as described, whereby they may be sustained when opened, in inclined positions.

3. A file-box consisting of the two flanged sides hinged together book-wise, and each having one corner hinged to turn outward, substantially as described.

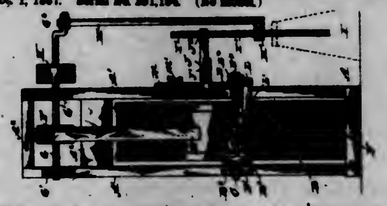
384,602. SNOW-EXCAVATOR. WILLIAM G. BARNES, Paterson, N. J. Filed Feb. 14, 1888. Serial No. 263,861. (No model.)



Claim.—1. In an excavator, a fan-wheel having on its periphery a series of longitudinal knives, each knife being placed a sufficient distance in advance of a vane so as to leave room between the back of the knife and the front of the vane for the escape of the snow or other material, substantially as shown and described.

2. In an excavator fan-wheel, the combination of spokes *b b*, vanes *v v*, rings *m m*, and knives *k k*, substantially as shown and described.

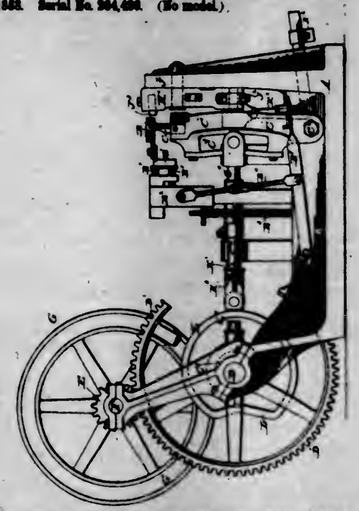
384,603. ANIMAL OR OTHER POWER. JOHN BENTOLA, Henryville, Ind., assignor of one-half to Mathew H. Dunlevy, same place. Filed Oct. 1, 1887. Serial No. 251,184. (No model.)



Claim.—1. The combination of the wheel B, uprights A', bearings D D', the latter extended to form the bracket d^3, the countershaft G, connecting-rod H, guide-rod J, mounted in the bracket, and the rod I', substantially as specified.

2. The combination of the bearing D, having the tubular extensions D^4, forming a long bearing for the shaft C, the leading-bar L, mounted on the extension, and the adjusting-arm M, pivotally connected with the leading-bar, substantially as specified.

384,604. MACHINE FOR SECURING SPOKES IN METAL WHEELS. WILLIAM P. BETTENDORF, Davenport, Iowa. Filed Feb. 17, 1888. Serial No. 264,499. (No model.)



Claim.—1. In a spoke-fastening machine, a spoke-holding clamp, in combination with the pivoted header-carrying arm, the eccentric, the rod connecting the eccentric and arm, and the yielding hub-support.

2. In a spoke-fastening mechanism, the pivoted arm provided with a heading-tool to enter a hub, in combination with an eccentric and a connecting-rod mounted at one end around the eccentric and pivoted at the other end to the header-carrying arm, as shown.

3. In a spoke-fastening machine, in combination with a heading-tool to enter the hub, the hub-sustaining device, in combination with a supporting-spring and a depressing-lever.

4. In combination with the vibratory heading-tool, the hub-support, the vertically-sliding head having a horizontal sliding connection with the support, the spring to retract the support, the spring to lift the head, and the lever to depress the same.

5. In combination with the connected clamp-levers, their operating-pitman, the reciprocating rod connected to the latter, its actuating-cam, and the retracting-spring.

6. In a spoke-fastening machine, the clamping-levers, their actuating-pitman, the reciprocating rod, the lever for starting said rod, its actuating-cam, the cam-driving clutch, and the clutch-controlling lever operated by the rod, as shown, whereby the initial closing of the jaws is caused to set the cam in motion.

7. In combination with the connected clamp-levers, their actuating-pitman, the reciprocating rod connected to the pitman and provided with a stud, the rod-retracting spring, the rod-operating cam, its driving-clutch, and the clutch-operating lever provided with the opening having oblique edges, as described, to move the lever in both directions.

8. In a machine for seating metallic spokes, the combination of a heading-tool and its operating mechanism, a spoke-clamp, and a clamp-operating cam of irregular form timed to release the spoke as soon as the heading-tool completes its action.

384,605. WHIP-SOCKET. JOHN F. BOWER, Chicago, Ill. Filed Feb. 1, 1888. Serial No. [illegible]. (No model.)



Claim.—1. In a whip-socket, a locking-eccentric movable by hand into locking position with the whip and provided with a spring tending to prevent accidental locking, substantially as set forth.

2. The whip-socket provided with a lock for securing the whip, consisting of a clamping-eccentric, a pawl and ratchet for securing the eccentric, a key for disengaging the pawl, and a spring for throwing back the eccentric, substantially as set forth.

3. The combination, with a whip-socket, of the housing, the eccentric borne in the housing and provided with a handle extending to the outside of such housing, the locking-pawl, the ratchet upon the axis of the eccentric, a spring for returning the eccentric, and a key for throwing out the pawl, substantially as set forth.

4. The combination, with the socket, of a lock for holding the whip, a key for releasing the lock and having one or more wards, and a tumbler having its inner end in the path of the key and provided with one or more projections adapted to enter the wards of the key, substantially as set forth.

5. The combination, with the whip-socket and the whip-clamping eccentric, of a key, *o*, and its attached chain, the socket being provided with a horizontal opening, P *p*, adapted to admit said key, substantially as set forth.

384,606. CAR-COUPLING. WARREN I. BRADDOCK, Boston, Mass., assignor of one-half to T. B. Sargeant, Detroit, Mich. Filed Nov. 24, 1886. Renewed Mar. 2, 1888. Serial No. 266,003. (No model.)



Claim.—1. The draw-bar having the chamber *h*, and the pin-receiving orifices *d d'*, communicating with said chamber, combined with the curved lever *f*, pivoted to the lower portion of the draw-bar, and having an arm extending upwardly from the pivot and adapted to support the coupling-pin, and another arm extending forward from the first and adapted to support the link, as set forth.

2. The combination of the draw-bar, the pivoted lever *f*, formed as described, the coupling-pin *e*, the yoke *k*, engaged with said pin, and the rod *h*, having arms *j j*, engaged with the ends of said yoke, as set forth.

3. The combination of the draw-bar, the pivoted lever *f*, the yoke *k*, the longitudinally-movable rod *h*, having the arms *j j*, engaged with the yoke, and the stud *o*, and the fixed bearing *i*, having a notch or groove, *p*, adapted to receive said stud and hold the rod with the pin in a raised position, as set forth.

4. The combination of the draw-bar, the pivoted lever *f*, the pin *e*, the yoke *k*, engaged with the pin, the rod *h*, having the arms *j j*, engaged with the yoke, and the vertical rod *l*, having the loop *m*, engaged with one of the arms *j*, as set forth.

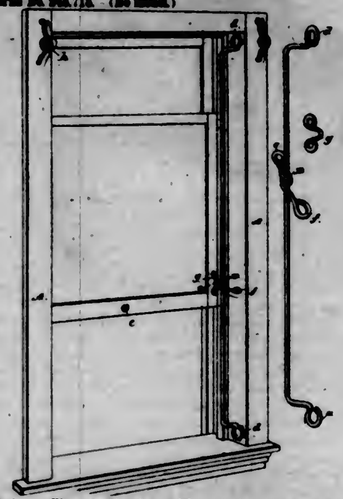
5. The combination of the draw-bar, the pivoted lever, the pin and the operating devices therefor, the arm *q*, pivoted below the draw-bar and having the link-supporting arm *u*, and the rod *r*, having the crank *t*, adapted to operate the arms *q u*, as set forth.

6. The combination of the draw-bar having the lever *f*, the pin *e*, the longitudinally-movable rod *h*, connected, as described, to said pin and provided with the stud *o*, the bearing having a groove to receive said stud and lock the pin in a raised position, and the vertical sliding rod *l*, having a fulcrum upon which it may be turned to move the rod *h* endwise, as set forth.

7. The combination of the draw-bar having the slot, the sliding bearing-block therein, the beams or supports, and the cylindrical axle journaled and movable lengthwise in said beams and block, and the strap supporting the forward end of the draw bar, as set forth.

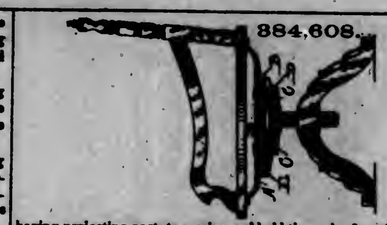
8. The combination of the draw-bar having the slot, the sliding bearing-block therein, the beams or supports, the cylindrical axle journaled and movable lengthwise in said beams and block, the strap supporting the forward end of the draw-bar, and the removable stops bearing against the ends of the axle, as set forth.

384,607. SASH-HOLDER. ISAAC BERGAW, Litchfield, Ill., assignor of one-half to August F. Warnsbe, same place. Filed Sept. 3, 1887. Serial No. 248,713. (No model.)



Claim.—The combination, with a window frame and sash, the latter having a loop secured thereto, of a guide-rod secured to the frame in close proximity to the loop, and a friction-clutch, the latter consisting of a wire coiled loose around the guide-rod and adapted to slide thereon, this clutch having one end bent around the loop on the sash and the opposite end bent to form a thumb-piece, substantially as set forth.

384,608. CHAIR. WILLIAM I. BUSHEE, Chicago, Ill., assignor to the Rocker Spring Company, same place. Filed Mar. 28, 1887. Serial No. 232,559. (No model.)



Claim.—1. The combination, in a tilting or rocking chair, of a seat part, a base part, connectors for securing and holding said parts together, and a movable portion forming the rockers interposed between the seat and base parts for changing the center of oscillation of the chair-seat, substantially as described.

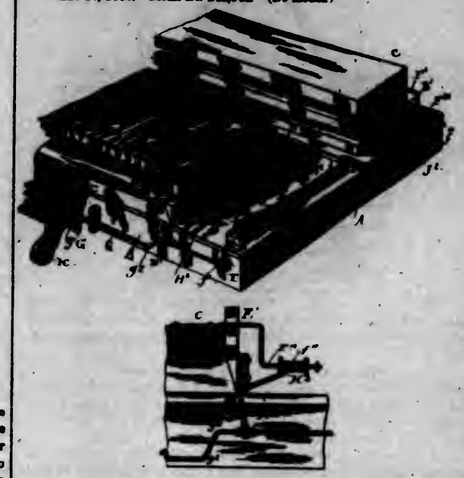
2. The combination, in a tilting or rocking chair, of a seat part, a base part, connectors for securing and holding said parts together, movable rockers interposed between the seat and base parts, and means for moving such rockers back and forth to change the center of oscillation of the chair-seat, substantially as described.

3. The combination, in a tilting or rocking chair, of a seat part



having projecting parts to receive and hold the ends of a coiled spring, a base part having base rails or supports and projecting parts to receive and hold the ends of a coiled spring, connectors for securing and holding said parts together, movable rockers interposed between the seat part and the base-rails, and means for moving said rockers back and forth on the base-rails to change the center of oscillation of the chair-seat, substantially as described.

384,609. REED-ORGAN. MELVILLE CLARK, Chicago, Ill. Filed June 17, 1887. Serial No. 241,944. (No model.)



Claim.—1. In combination with the knee-swell lever K, the slide-bar G, rock-shaft H, journaled transversely to the direction of the length of said bar and having a crank-arm pivoted to said bar, the said rock-shaft having the crank-wrist H^2 and the swell C hinged at one edge to the reed-box, and having the crank-arm F secured to it and bent to form the crank-wrist F^{20}, and the anti-friction roller f^{10}, loosely journaled on said wrist and shorter than the same and flanged, as described, whereby it travels over the wrist H^2 and is by said wrist moved lengthwise on the wrist F^{20}, substantially as set forth.

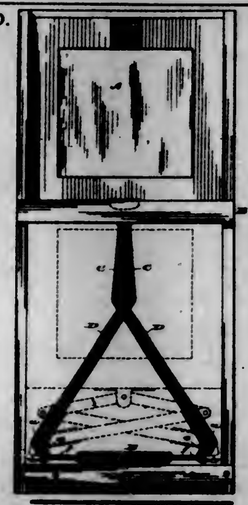
2. In a reed-organ, in combination with the knee-swell lever, the two reed-boxes C and C', one in the rear of the other, their swells respectively hinged thereto and provided with rigid cranked arms, flanged rollers loosely journaled and adapted to slide lengthwise on the cranked wrists of said cranked arms, rock-shafts extending from front to rear, and having crank-wrists in position to contact with the said rollers and further provided with crank-arms at their forward ends, and a slide-bar, as G, pivoted to said crank-arms and adapted to be longitudinally actuated by the knee-swell lever, substantially as and for the purpose set forth.

3. In a reed-organ, the combination, with the swells, of a slide-bar, G, and mechanism which connects it with the swells, said slide-bar being bent to form the vertical portion G', and provided with an anti-friction roller on said portion, and the knee-swell lever contacting with said roller, substantially as set forth.

384,610. COMPENSATING SPRING-LEVER. REUBEN CLARKE, Toronto, Ontario, Canada, assignor of one-half to Daniel McFarlane and John Graham Bowling, both of same place. Filed Feb. 6, 1888. Serial No. 263,662. (No model.) Patented in Canada Feb. 15, 1888, No. 28,482.

Claim.—The combination, with the arms C, pivoted at one end to the movable body, and the levers D, pivoted at one end to said arms and at the other on fixed pivots, as at *a*, of the short arms *c* on said levers, and the spring E, connecting the free ends of said short arms, substantially as and for the purpose specified.

384,610.



384,611. TRUSS. CHARLES CLOVER, Toronto, Ontario, Canada. Filed Oct. 20, 1887. Serial No. 252,915. (No model.)



Claim.—1. A spindle, A, connected directly to the center of the spiral spring C, in combination with a socket, E, connected to said spring at the opposite end, substantially as and for the purpose specified.

2. A spindle, A, connected directly to the center of the spiral spring C, and having a head, *a*, formed on it, in combination with a socket, E, connected to said spring at the end opposite to the end at which the spindle is connected, and having a cap, *b*, substantially as and for the purpose specified.

3. A spindle, A, adjustably connected directly to the center of the spiral spring C, in combination with a socket, E, connected to said spring at the end opposite to that at which the spindle A is connected, and the pad connected to said spindle and spring, substantially as and for the purpose specified.

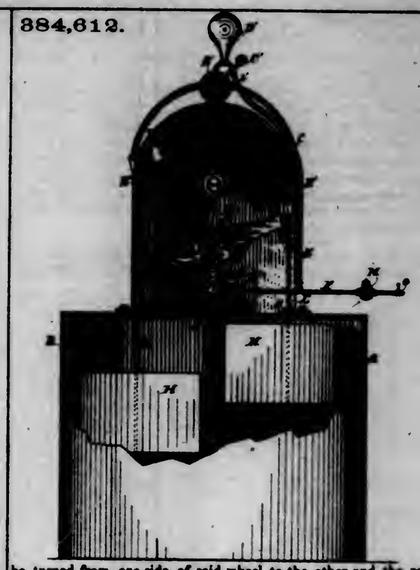
384,612. MOTOR. JAMES B. ERWIN, Milwaukee, Wis. Filed Mar. 31, 1887. Serial No. 233,109. (No model.)

Claim.—1. In a hydropneumatic motor, the combination of a motor-wheel, a wheel-inclosing case, into which case water is forced by the expansive force of compressed air alternately from one and then the other of two separate air-tight water-receivers, two air-tight water-receivers, from one and then the other of which the same water is alternately forced by the direct expansive force of compressed air within such receivers into said wheel-inclosing case, water-ducts provided with checks communicating from said water-receivers into said wheel-inclosing case and from said wheel-inclosing case back to said water-receivers, an air-pipe communicating from a supply with both of said water-receivers, and mechanism for controlling the course of the air alternately to and from each of said water-receivers, substantially as set forth.

2. In a hydropneumatic motor, the combination of two separate liquid-receivers communicating with each other through a third receiver or wheel-inclosing case, a wheel-inclosing case, two branch pipes having return-checks communicating from said liquid-receiver through a single pipe with said wheel-inclosing case, and a single pipe communicating from said wheel-inclosing case through two separate branch pipes having return-checks with each of said liquid-receivers, substantially as and for the purpose specified.

3. In a hydropneumatic motor, the combination of two liquid receivers, A and B, two branch pipes, *a* and *b*, communicating from the respective receiver A and B with the single pipe or duct E, pipe or duct E, water-controlling cock F, and branch pipes or nozzles F′ and F″, communicating between said cock and the wheel-inclosing case D upon the respective sides of the wheel, whereby the course of the water may

384,612.



be turned from one side of said wheel to the other and the rotary movement of the wheel reversed, substantially as set forth.

4. In a hydropneumatic motor, the combination of the wheel-inclosing case D, provided with a motor-wheel, two liquid-receivers, A and B, from one and then the other of which water is alternately forced into said wheel-inclosing case D, valve-chamber I, communicating through ports with the respective receivers B and C, reciprocating slide-valve *c*′, two counterbalanced oscillating floats, H H, located, respectively, in the respective receivers B and C, and suspended by rods from the same supporting-lever, and mechanism for communicating motion from said oscillating floats to said reciprocating valve, whereby, as said floats oscillate in said water-receivers, the same water is forced alternately from one and then the other of said floats containing water-receivers upon a wheel in said wheel-inclosing case, substantially as and for the purpose specified.

5. In a hydropneumatic motor, the combination of the liquid-receivers A and B, valve-chamber I″, communicating from a single air-pipe, F, with the respective liquid-receivers A and B, past the air-controlling valve *c*″, lever R, pivotal support S, valve-rods L L, communicating between said lever R and the interior of said receivers A and B through the stuffing-nuts *a*′, floats H H, counterbalanced in their respective chambers upon the same pivotal support or lever R, located upon the exterior of said chambers, two-armed lever A″, mounted upon the same pivotal support S with the lever R, pivotal support S, stops *g*′ *g*″, projecting from said lever R upon the respective sides of said lever A″, stops D″ D‴, projecting from the side of the short arm C′ of said lever A″, upon the respective side of the lever F″, lever F‴, affixed at one end of the pivotal shaft G″ upon the exterior of the valve-chamber I″, pivotal shaft G″, extending across the interior of the valve-chamber I″, stuffing-nut I, surrounding the protruding end of said shaft G″, lever H‴, affixed to the inner end of said shaft G″, and air-controlling valve *c*′, adapted to be operated by contact with said lever H‴, all substantially as and for the purpose specified.

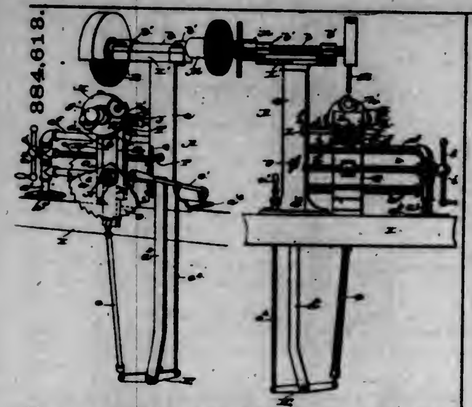
384,613. MACHINE FOR SHARPENING SAWS, &c. CYRUS S. FARRAR, East Saginaw, Mich., assignor of one-half to Fred B. Wiggins, same place. Filed Jan. 28, 1886. Serial No. 191,051. (No model.)

Claim.—1. In a grinding-machine, the combination of the main frame, grinding-wheel shaft journaled in the main frame of the carriage, the actuating means causing the carriage to travel, the slide moving in a groove or way in the carriage, the head-block pivoted to the slide, and means, substantially as described, whereby the slide can be raised and lowered, substantially as described.

2. The combination, with the main frame and the grinding-wheel shaft, of the carriage-actuating screw, the slide-lever E, the pitmen *c*, and link-rod *d*′, substantially as specified.

3. The combination, with the main frame, emery-wheel, and emery-wheel shaft, of the carriage, actuating means therefor, the slide moved up and down by means substantially as described, the pivotal block secured on the slide, the spring-arm K, extending rearward from said block, the retaining-plate *h*, the pivoted head-block being provided

384,613.



with an arm, *g*′, for the attachment of the cutter-head, the spring-arm I, having the detent-edge *i*, and extending from said head-block, and the templet provided with notches on its edge, substantially as specified.

4. In a grinding-machine, the combination, with the reciprocating slide, the pivotal block secured thereto, the spring-arm extending from said block, the retaining-plate secured to the end of said arm, and the templet J, having the notches *j* on its upper edge, of the pivoted head-block G, provided with the pivotal pin *g* and retaining-arm *g*′, and the spring-arm I, provided with the detent-edge *i*, substantially as specified.

5. In a grinding-machine, the combination, with the carriage, the slide moving in a vertical groove or way in the carriage, the pivotal block secured to the top of the slide, the spring-arm K, the curved plate *h*, having the bent ends *h*′, and the curved templet J, provided with the notches *j* and P, respectively, on its upper edge and rear side, of the pivoted head-block G, provided with the pivot-pin *g* and retaining-arm *g*′, the spring-arm I, having the detent-edge *i*, and the spring-detent arm *l*, provided with the detent-plate *l*′, substantially as specified.

6. In a grinding-machine, the combination, with the grinder-shaft journaled to the main frame, and the grinding-wheel secured to said shaft, of the carriage, the slide moving in a vertical groove in the carriage and provided with the vertical series of openings *d*′, the rod N, nut *n*, the supporting-arm P, attached to the standard *a*, and the file Q, attached to said arm, substantially as specified.

7. In a grinding-machine, the main frame carrying the grinding-wheel shaft, the internally-movable carriage, and the slide vertically movable in the carriage, as set forth.

8. In a grinding-machine, the main frame carrying the grinding-wheel shaft, the guide-bars *a*″, the standard *a*′, the screw working in the standard *a*′, and the carriage working laterally on the guide-bars and engaged by the screw, as set forth.

9. In a grinding-machine, the main frame, the grinding-wheel shaft, the laterally-movable carriage, the slide movable vertically in the carriage and carrying the head-block at the upper end, as set forth.

10. In a grinding-machine, the combination of the emery-wheel, the pivotal block, the head-block for the attachment of the cutter-head, and the operative mechanism, substantially as described, whereby the knives may be ground without removal from the cutter-head, and may thereby be made harder than when sharpened by the file, so that they will remain sharp longer, substantially as specified.

384,614. BILLIARD-CUE. WILLIAM H. FIELDS, Columbiana, Ohio. Filed Feb. 20, 1888. Serial No. 264,644. (No model.)

Claim.—1. A billiard-cue having a ferrule provided with a protruding elastic cushion at its outer end, in combination with a surrounding sleeve having a flexible tip at its outer end, the sleeve being secured upon the ferrule to produce contact or tension of the cushion upon the tip, substantially as described.

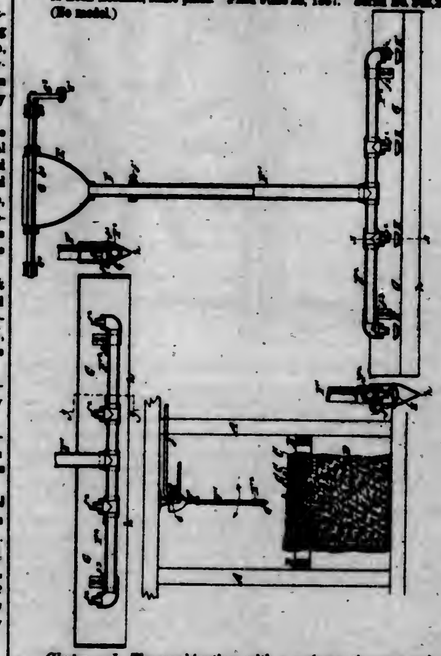
2. A billiard-cue having a ferrule, an elastic cushion on the outer end of the ferrule, and a pin projecting through its wall, in combination with a sleeve rounded at its outer end and supporting a flexible tip, and having slots in its wall for engagement with said pin, substantially as described.



384,614.



384,615. SAND AND WATER DISTRIBUTOR FOR STONE-SAWING MACHINES. JOHN H. FRANCIS, Rutland, Vt., assignor of one-half to Louis Lehman, same place. Filed June 23, 1887. Serial No. 242,304. (No model.)



Claim.—1. The combination, with a reciprocating saw-sash or frame and a gang of saws therein, of a sand and water distributer pivoted parallel with the line of movement of the saws, and a rod or connection for imparting to the distributer an oscillating or swinging movement transverse to such line of movement of the saws, substantially as herein described.

2. The combination, with a reciprocating saw-sash and a gang of saws therein, of a water and sand receiver supported on a pivot above the saws, a pipe depending from the receiver, a horizontal pipe connected to the lower end of the depending pipe and having outlet-openings in its under side for the escape of sand and water, and a rod or connection whereby the receiver and pipes are swung upon said pivot, substantially as herein described.

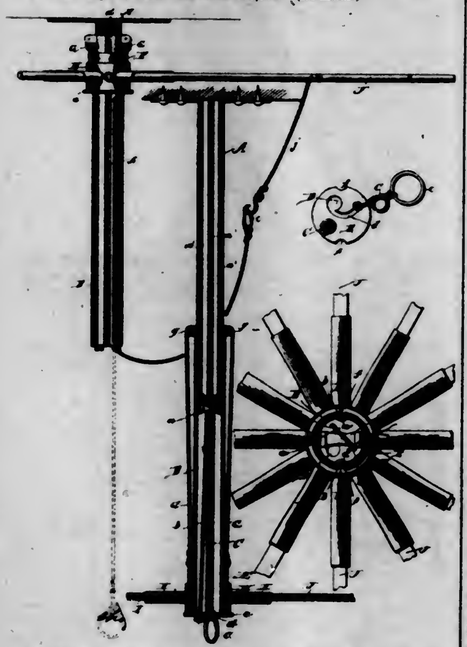
3. The sand and water distributer herein described, consisting of an elevated receiver, a pipe leading downward therefrom, a horizontal pipe with which the lower end of the downwardly-extending pipe communicates and which has outlets at intervals in its length, and a trough within which the horizontal pipe and its outlets deliver and

the sides of which converge to form a narrow slot at the bottom, substantially as herein specified.

4. The sand and water distributer herein described, consisting of a receiver, E, a pipe leading therefrom, the cross-pipe F^3, having outlets f^3, and the trough G, the sides of which converge downward to form the narrow delivery-slot h, and which is provided with abutments H opposite the several outlets, substantially as herein specified.

384,616. CLOTHES-DRIER. WILLIAM I. GALE, Memphis, Mo.

Filed Sept. 6, 1887. Serial No. 248,970. (No model.)



Claim.—1. The combination of the stationary cylinder, the movable cylinder sliding thereon, the operating-cord having one end secured to the bottom of the movable cylinder, then passing up to and around a pulley on the lower end of the stationary cylinder, and then passing down through the bottom of the movable cylinder and having its free end provided with a ring, and the sleeve sliding on the movable cylinder and carrying the drier-arms, one of said drier-arms being provided with a hook adapted to be engaged by the ring on the end of the operating-rope, substantially as set forth.

2. The combination of the stationary cylinder A, having a pulley, a, on its lower end, the movable cylinder sliding on the stationary cylinder and provided in its bottom with the opening D and the slot d, extending therefrom, and the cord C, secured at one end to the bottom of said movable cylinder, thence passing over the pulley a, and thence through the opening D, the said cord being provided with a stop which can pass through the opening D, but not through the slot d, as and for the purpose specified.

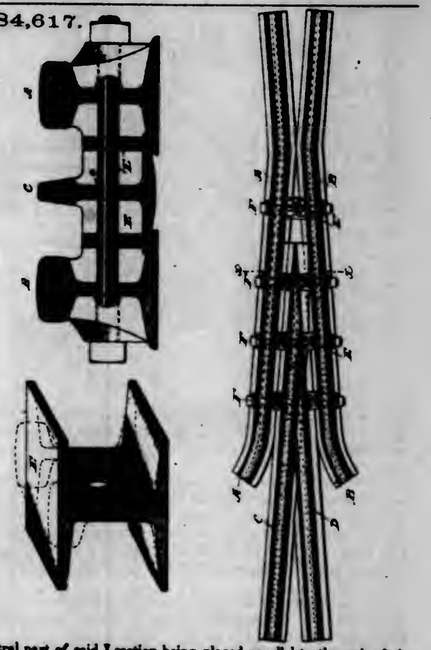
3. The combination of the stationary cylinder having the grooves a', the movable cylinder sliding thereon and having the rollers g at its upper end, the sleeve mounted on said movable cylinder and carrying the drier-arms, the cord G, having its opposite ends secured, respectively, to the said sleeve and the bottom of the stationary cylinder and its intermediate portion passing over the pulley g, and the operating-cord, arranged as set forth, substantially as described.

384,617. RAILWAY-FROG. THOMAS A. GRUVER, Chicago, Ill.

Filed Mar. 15, 1883. Serial No. 267,293. (No model.)

Claim.—1. In a built-up railway-frog, the filling-piece of I-section interposed between the point and wing rails of the frog, the head and foot of said I-section each extending transversely from rail to rail and having its edges shaped to fit the rail, as shown and described.

2. In a built-up railway frog, the filling-piece of I-section interposed between the point and wing rails of the frog, the head and foot of said I-section each extending transversely from rail to rail and having its edges shaped to fit the rail, as shown and described, the

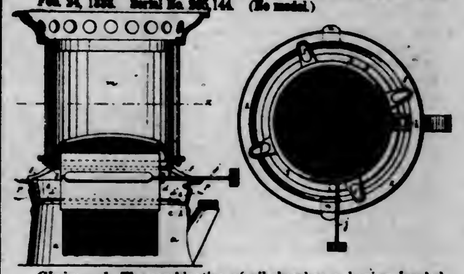


central part of said I-section being placed parallel to the web of the rails and pierced transversely for the passage of the holding-bolts.

3. In a built-up railway-frog, the wrought-metal filling-pieces of I-section, formed by forging out the head of a rail-section and fitting the edges of the piece so formed to conform to the rail composing the frog, substantially as described.

4. A railway-frog having filling-pieces of I-section interposed between the rails composing the frog at the points through which the holding-bolts pass, said filling-pieces being formed by forging out the head of a rail-section and fitting the edges of the piece so formed to conform to the rails composing the frog, substantially as described.

384,618. OIL-STOVE. PAUL J. GRIEBEL, New York, N. Y. Filed Feb. 24, 1888. Serial No. 265,144. (No model.)



Claim.—1. The combination of oil-chamber *a*, having beaded flange *b*, with the water-pan *d*, having flanged bottom *d'*, substantially as specified.

2. The combination of oil-chamber *a* and water-pan *d*, having flange *c*, with the arms *f*, secured to such flange and supporting frame *g*, and with the gauze *h*, wick-tube *i*, and dome *m*, that is hinged to frame *g*, substantially as specified.

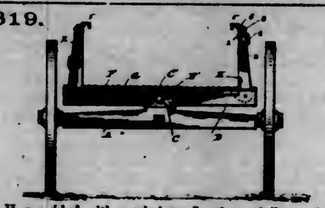
3. The combination of oil-chamber *a* with the water-pan *d*, having flange *c*, such flange being provided with the eyes *p*, and with the spring-hooks *n*, secured to oil-chamber *a* and engaging said eyes, substantially as specified.

384,619. WAGON-BOLSTER. JACOB HAHN, De Kalb, Ill. Filed Feb. 22, 1888. Serial No. 265,030. (No model.)

Claim.—1. The bolster B, provided on its upper surface with the corrugated angle-iron F, substantially as shown, and for the purpose described.

2. The combination of the bolster B, provided with angle-iron F,

384,619.

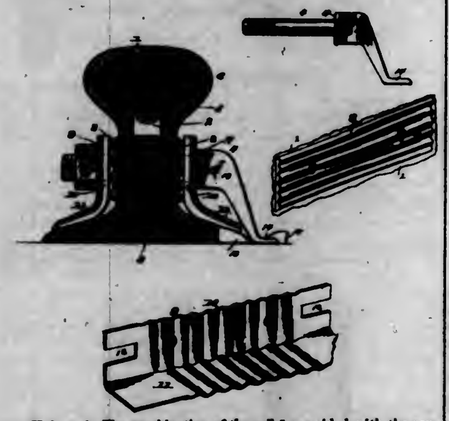


said box H, provided with angle-iron J, substantially as shown, and for the purpose described.

3. The combination of the box H, the bolster B, and stakes K, provided with inwardly-extending flanges K', and pivotally seated in the respective ends of said bolster, substantially as shown, and for the purpose described.

4. The combination of the hook I, provided with corrugated shank 2, stake K, provided with ways 7 and slot 6, and the eccentrically-seated lever 4, substantially as shown, and for the purpose described.

384,620. RAILROAD-TRACK. JAMES HAHN, De Kalb, Ill. Filed Mar. 19, 1888. Serial No. 267,602. (No model.)



Claim.—1. The combination of the rail 1, provided with the central longitudinal vertical slot, 2, a rope, 5, bar 3, and bolts 4, substantially as shown, and for the purpose described.

2. The combination of the rails 1, provided with central longitudinal vertical slots, 2, the bar 3, the interposed block 6, and the bolts 4, substantially as shown, and for the purpose described.

3. The combination of the rails 1, provided with central longitudinal vertical slot, 2, the bar 3, the rope 5, and bolts 4, and the interposed block 6, provided with slot 2, substantially as shown, and for the purpose described.

4. The combination of the rails 1, provided with the corrugations 8 and slot 2, the bar 3, bolts 4, and the plates 9, provided with corrugations 10, substantially as shown, and for the purpose described.

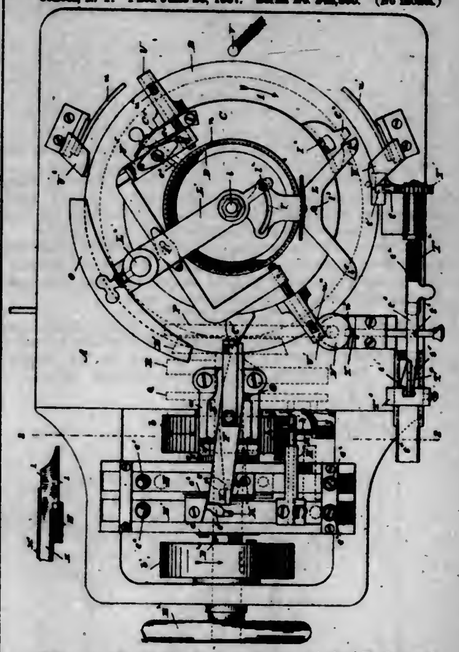
5. The combination of the rails 1, provided with corrugations 8, plates 9, provided with corrugations 10 and slots 12, bolts 4, provided with eccentric heads 13, tie 7, and spike 15, substantially as shown, and for the purpose described.

6. The combination of the rails 1, provided with corrugations 8, fish-plates 9, provided with transverse corrugations 10, and with end slots 12, bolts 4, provided with eccentric heads 13 and lateral shoulders 17, tie 7, and spike 15, substantially as shown, and for the purpose described.

7. The combination of the rails 1, provided with lateral longitudinal corrugations 8 near the ends thereof, and external flange, 11, and slot 16 therein, the plates 9, provided with corrugations 10, bolts 4, provided with eccentric heads 13 and lateral shoulders 17, spike 15, and tie 7, substantially as shown, and for the purpose described.

8. The combination of the rails 1, provided with central recess, 2, corrugations 8, and lateral flanges 11, fish-plates 9, provided with corrugations 10, and adapted to cross and be drawn against the corrugations 8, bolts 4, having eccentric heads 13, adapted to rest upon the tie 7 or flange 11 and external flange, 14, and spike 15, adapted to clamp the flange 14 of bolt 4 and hold the same rigidly upon the tie 7, substantially as shown, and for the purpose described.

384,621. CIRCULAR-KNITTING MACHINE. SAMUEL C. HALL, Osborn, N. Y. Filed June 20, 1887. Serial No. 242,205. (No model.)



Claim.—1. The combination, with the hinged plate F, the mechanism for controlling the position of the same, the stop M, carried by said plate, the lever F, mounted also on said plate, and the reversing mechanism controlled by said lever, of the needle-cylinder, the rotary cam-cylinder and needle-cam carried thereby, the driving devices between the cam-cylinder and the reversing mechanism, the shifting thread-guide adapted to take a position and to deliver thread to the needles at either side of the cam, and the stop O^3, carried by said cam-cylinder, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the needle-cylinder, of the rotary cylinder provided with a horizontal internal groove, I, with portions of the top and bottom walls of the groove removed, so as to leave a vertical passage extending from the top to the bottom of the cylinder of the same depth as the groove, in combination with the slide O^2, provided with filling-plugs c^3 c^4, and a detent, c^5, as and for the purposes hereinbefore set forth.

3. The combination, with the pattern mechanism by which the sequence and duration of the movements of the cam-cylinder are determined and controlled, of a detent or trigger by which said mechanism is held in inoperative position, and trigger actuating and controlling mechanism, whereby said trigger is actuated at predetermined times to release and permit the operation of the pattern mechanism, substantially as and for the purposes hereinbefore set forth.

4. The combination, with the needle-cylinder, the rotating cam-cylinder having cam-plate O, and the mechanism for actuating said last-named cylinder, of the ratchet-wheel P for operating the pattern-cams, the depressible rod N and its pawl N^2 and spring N', the trigger T for locking the rod N in depressed position, where it will not be acted on by cam-plate O, and the mechanism whereby said trigger is disengaged from and caused to release the rod N at the times and in the manner substantially as hereinbefore set forth.

5. The combination, with the needle-cylinder, the rotary cam-cylinder provided with stops $C' C^2$, and the power mechanism for actuating said last-named cylinder, of the pattern cam-wheel Q, provided with surfaces q q' q^3 q^3, the rod G, the hinged plate F', the lever F, and the reversing devices operated on by said lever, substantially as and for the purposes hereinbefore set forth.

6. The combination, with the needle-cylinder, the rotary cam-cylinder having stops $C' C^2$, and cam-plate O, the lever F, its hinged supporting-plate, the clutch-slides E E', the reversing-clutch mechanism controlled by the same, and the bolt H, of the lifter-rod G, the lever S, the pattern-cam Q, provided with surfaces q q' q^3 q^4 and pins S' S^2,

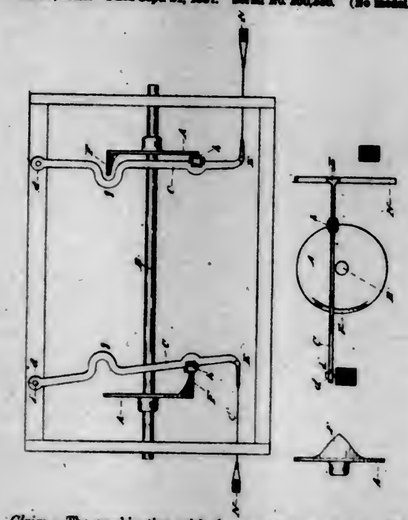
the depressible rod N, pawl N², spring N', and ratchet P, the trigger T for locking said rod N in depressed condition, and the mechanism whereby said trigger is caused to release said rod, substantially as and for the purposes hereinbefore set forth.

7. The combination, with the pattern-cam and the stop P', carried by said cam or some part moving in unison therewith, of the driving-shaft, the reversing mechanism, the fast and slow pulleys W' W², loose on said shaft, the clutch for connecting one or the other of said pulleys with the driving-shaft, the system of shifting-levers for said clutch, the link W⁴, spring X, stop o^5, and the link W³, connected to said system and arranged and adapted to be operated by the stop P' at the time and in the manner substantially as hereinbefore set forth.

8. The combination, with the devices for feeding the needle-lifters and the grooved needle-cylinder, of a supporting-bracket for the latter and clamping devices for adjusting the needle-cylinder upon its support relative to said feeding devices, substantially as set forth.

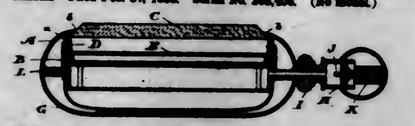
9. The combination, with the ratchets and pawls for feeding the needle-lifters, the bar R², and the bars R' R³, of the double-incline cam-plate r^4, engaging the bars R' R³ and adapted to operate them positively in either direction, substantially as set forth.

384,622. LOOM PICKING MECHANISM. SYLVANUS HAMBLIN and REUBEN M. HAMBLIN, Plymouth, Mass., assignors, by direct and mesne assignments, to Roswell S. Douglass, same place, and Henry Sawyer, Boston, Mass. Filed Sept. 21, 1887. Serial No. 250,258. (No model.)



Claim.—The combination, with the cam-shaft and the cam-disks on the said shaft provided with laterally-projecting V-shaped cams, of picking-levers pivoted at the rear of said cam-shaft and bent or curved at the rear of the said shaft to permit unobstructed passage of the cam projections, the cam projections engaging with the said levers at points in front of the cam-shaft and between the said shaft and forward ends of the said levers, as described, the picker-staffs, and straps connecting the said staffs with the front ends of the said levers, as and for the purpose set forth.

384,623. WATCH-CASE. EDWARD F. EDWARDSEN, Toronto, Ontario, Canada. Filed Feb. 27, 1888. Serial No. 265,606. (No model.)



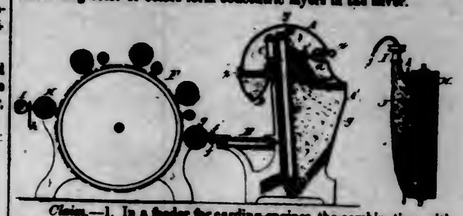
Claim.—1. An open-faced cover having an annular wall extending from a point near the inner edge of the opening, and screw-threaded on its outer circumference to fit a thread formed on the inner circumference of the movement-ring, in combination with the dial-glass fitted within the annular wall to butt against the inner edge of the opening, and having an inwardly-projecting flange to butt against the dial-plate when the movement-ring is moved into the open-faced cover, substantially as and for the purpose specified.

2. A movement-ring screwed into an annular wall formed around the opening in the open-faced cover, and having a thread cut on its outer circumference to receive a ring screwed onto it to butt against the edge of the front cover, in combination with a back cover screwed or snapped onto the said ring, so as to inclose the space surrounding the annular wall, substantially as and for the purpose specified.

3. A cone-shaped ring, H, screwed tightly into the pendant I, and having a hole through it to fit the stem J, in combination with a cap or crown, K, having a soft seat formed on its inner surface, substantially as and for the purpose specified.

384,624. MACHINE FOR MAKING SLIVERS FOR THE PRODUCTION OF CLOUDED YARN. JAMES P. HUNEY, Little Falls, N. Y., assignor of one-half to Walter W. Whitman, same place. Filed June 2, 1887. Serial No. 239,651. (No model.)

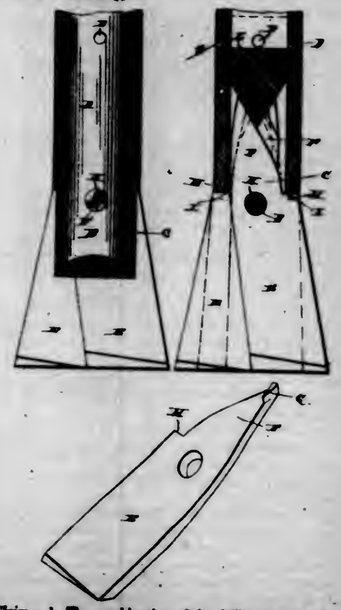
Brief.—The feed-box is divided into compartments for the reception of differently-colored staples, which are fed forward and carded side by side and simultaneously. The formation of the sliver is such that the color first removed from the doffer forms the core, and the succeeding color or colors form concentric layers in the sliver.



Claim.—1. In a feeder for carding-engines, the combination, with the elevating-apron, of several feed-boxes arranged side by side in front of the elevating-apron, whereby fibers of different colors or kinds are simultaneously fed to the elevating-apron side by side, substantially as set forth.

2. In a feeder for carding-engines, the combination, with the elevating-apron, of a fiber-receptacle provided with a longitudinal partition in front of said apron and separate combs arranged in said receptacle on opposite sides of said partition, substantially as set forth.

384,625. SELF-EXPANDING DRILL-BLADE. TALLEF HERRESS and OLAF HERRESS, Henderson, Minn. Filed Aug. 20, 1887. Serial No. 247,405. (No model.)

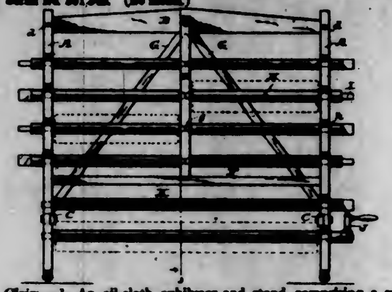


Claim.—1. The combination of the drill-rod having the cam B at its lower end, the drill-blades arranged in the lower end of the drill-rod and pivoted between the cam B, said drill-blades having the upwardly-extending arms F, and being provided with the shoulders H, adapted to come in contact with the shoulders at the lower end of the drill-rod, and the vertically-movable plunger L in the lower end of the drill-rod, and adapted to expand the drill-blades by forcing their arms F apart between the cam and relieve the pivotal bolt or pin of strain, substantially as described.

2. The combination of the drill-rod having the discharge-openings D, the drill-blades pivoted in the lower end of the drill-rod, adapted to be expanded, said drill-blades having the upwardly-extending arms F, and the vertically-movable plunger arranged in the drill-rod and adapted to be forced downward therein by the pressure of the water in the drill-rod, so as to expand the drill-blades by forcing their arms apart, substantially as described.

3. The combination of the drill-rod having the discharge-openings D and the cam B at its lower end, the drill-blades pivoted between the said cam B and having the upwardly-extending arms F, entering the lower end of the drill-rod and provided with the oppositely-extending lugs G, and the vertically-movable plunger arranged in the drill-rod, and having the conical end adapted to force the drill-blades apart by entering in the space between the lugs, substantially as described.

384,626. OIL-CLOTH EXHIBITOR AND STAND. RICHARD W. HILLIARD and JESSE F. PURDUM, Warrenton, Va. Filed Jan. 19, 1888. Serial No. 261,262. (No model.)

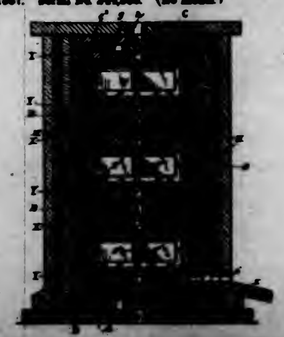


Claim.—1. An oil-cloth exhibitor and stand, comprising a supporting-frame divided horizontally by fixed supports into upper and lower portions, and provided with a double series of single-length spindles, H, at its upper portion and with double-length spindles K at its lower portion, substantially as described.

2. An oil-cloth exhibitor and stand, comprising a V-shaped frame united by horizontal supporting-pieces F F and a central truss, D, central supports, E E, extending between the piece D and the pieces F F, a double set of single-length spindles, H, rotatably mounted between the end and center pieces, and a series of double-length spindles, K, supported between the end pieces below the horizontal supports F, substantially as described.

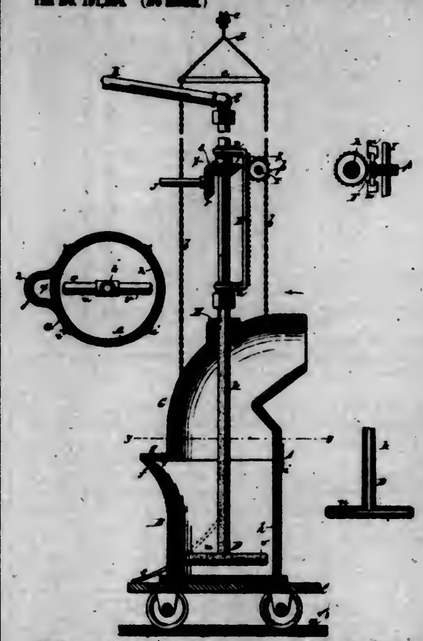
3. An oil-cloth exhibitor and stand, comprising triangular end frames, A A B B, and braces C, a central truss, D, horizontal supports F F, located between the pieces D and the lower extremities of the end pieces, central supports, E E, secured to the pieces D and resting upon and secured to the horizontal pieces F F, and diagonal struts extending from the center of the piece D to and resting upon the cross-pieces C, and a series of single-length spindles, H, rotatably mounted between the end pieces and the center pieces, and an additional series of double-length spindles, K, rotatably mounted between the end pieces and below the horizontal supports F, substantially as described.

384,627. BEE-HIVE. JAMES H. HOWE, Prairieville, Ky. Filed July 16, 1887. Serial No. 244,302. (No model.)



Claim.—In a bee-hive, a suitable supporting frame-work provided with apertures in its base and top and a series of boxes or drawers removably placed therein one over the other, each of said boxes or drawers having apertures in its top and bottom, said apertures being so located that when said boxes are in position in the frame-work they may communicate with each other and also with the exterior of the hive through said apertures in the base and top of the frame-work, and separate cut-off slides for the apertures in the base of the hive and for the top and bottom apertures in each box, said slides being so constructed that when pushed in as far as possible the apertures in the base and top of the frame-work are closed, but all the apertures between the boxes are opened, so that the boxes are in communication with each other, in combination with an inclosing-casing which is placed over the frame-work and boxes, which casing can only be so placed when all the said slides are pushed in as far as possible, substantially as set forth.

384,628. CONVERTER FOR REFINING MOLTEN IRON. ISAAC S. JENNINGS, Spuyten Duyvil, New York, N. Y. Filed Feb. 8, 1888. Serial No. 263,334. (No model.)

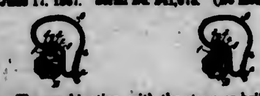


Claim.—1. The combination, in a converter, of a kettle movable upon rails, a hood fitted to the upper end of the kettle and removable bodily therefrom, a tuyere passing through the hood, and mechanism, substantially as described, for both revolving the tuyere and for adjusting it vertically without moving the hood, substantially as set forth.

2. The combination, in a converter, of a kettle mounted upon wheels and carried on rails, a hood fitted thereto, mechanism, substantially as described, for vertically withdrawing the hood bodily from the kettle, a revolving tuyere passing through said hood and moving independently thereof, and mechanism, substantially as described, for simultaneously revolving and vertically adjusting said tuyere, as set forth.

3. The combination, in a converter, of the kettle B, hood C, fitted to said kettle, means, substantially as described, for vertically adjusting the hood, a revolving tuyere having one or more projecting arms, miter-gears E S for revolving the tuyere, said miter-gear S being vertically adjustable on the stem, and mechanism for elevating and depressing the tuyere, all substantially as described.

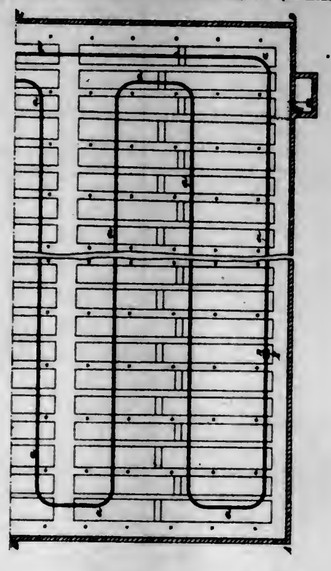
384,629. PENDANT-SETTING. JOHN T. JOYCE, Plainville, Mass. Filed June 17, 1887. Serial No. 241,673. (No model.)

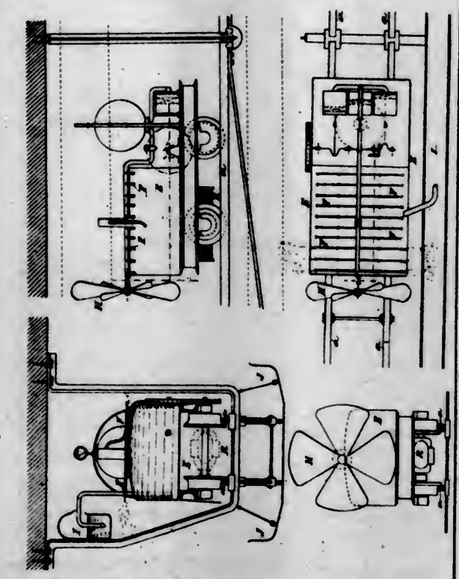


Claim.—The combination, with the stone or brilliant, of the open setting formed in one piece of sheet metal, the arms of the setting being folded over to the stone or brilliant from the flat side of the stock, one of the said arms being provided with an open holding-

notch and a ring or eye which loosely embraces the said arm at the notch, substantially as described.

384,630. APPARATUS FOR MOISTENING THE ATMOSPHERE IN MILLS, FACTORIES, &c. ALBERT KESSELUS, Mülheim, Almen, Germany. Filed Sept. 7, 1886. Serial No. 212,893. (No model.)

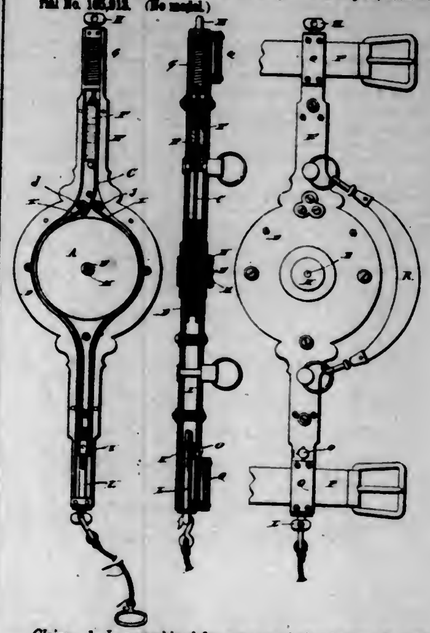




Claim.—1. The combination, in a room, of the carriage E and its spray-pipes F F, with the endless track *a*, and mechanism, substantially as described, for moving said carriage continuously along the endless track and spraying the whole room, substantially as herein shown and described.

2. The combination, in a room, of the carriage E, having a water-tank, spray-pipes F, and fan H, with the endless track *a*, and with the continuous trough I, adapted to keep up a continuous supply of water to the tank, as set forth.

384,631. SHAWL-STRAP AND FIRE-ESCAPE. JOSEPH D. LEE, Dallas, and JOHN H. ASTON, Portland, Oreg. Filed May 13, 1888. Serial No. 165,913. (No model.)

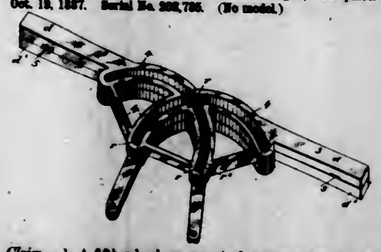


Claim.—1. In a combined fire-escape and shawl-strap, the combination of the casing having the arms E, the reel arranged centrally in the casing, the soft rubber F in one of the arms, and the cable wound on the reel and passing outward through the soft rubber, as set forth.

2. The combination of the casing having the arms E, the reel arranged centrally in the casing, the cable wound on the reel and passing out through one of the arms, the spring-brakes secured within the casing and bearing upon the reel, and then passing out into the other arm E, the nut secured to the ends of said brakes, and a set-screw mounted in the end of said arm and meshing with said nut to adjust the tension of the spring-brakes, as set forth.

3. The combined fire-escape and shawl-strap herein described and shown, comprising the casing having the arms E, the straps P at the ends of said arms, the handle R, secured to the casing, the reel arranged centrally in the casing, the soft rubber F, arranged in one arm of the casing, the cable wound on the reel, passed out through the rubber F, and coiled at the end of the arm, the spring-brakes secured in the casing, passing around and bearing against the reel, the nut secured to the ends of the spring-brakes, and the set-screw mounted in the casing and meshing with said nut, substantially as specified.

384,632. FIFTH-WHEEL. FRED LEES, Syracuse, N. Y., assignor of two-thirds to Frank Hisley and Martin J. Hogan, same place. Filed Oct. 19, 1887. Serial No. 252,736. (No model.)



Claim.—1. A fifth-wheel composed of two parts having two pivotal centers, substantially as and for the purpose set forth.

2. A fifth-wheel composed of intersecting segmental guide-links having ways for friction-rollers, and friction-rollers running in said ways when the vehicle is cramped or turned, substantially as and for the purpose set forth.

3. A fifth-wheel having a guideway composed of segmental links and moving pivot-centers, substantially as and for the purpose set forth.

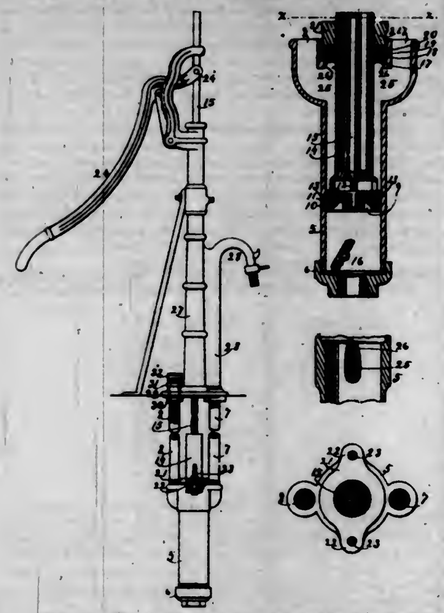
4. A fifth-wheel composed of two segmental guide-links bipeating each other and two corresponding segment-plates having friction-rollers engaging the guide-links, the said friction-rollers being arranged at the angles of an equilateral triangle in relation to each other, substantially as and for the purpose set forth.

5. The combination of the part 3, having bars *d d*, segmental guide-links 4 4, and the part 6, having segmental plates 7 7, friction-rollers *r r r*, and caps 1, substantially as and for the purpose set forth.

6. The part 6, having segmental plates 7, rollers *r*, and links 8, in combination with the segmental guide-links 4, substantially as and for the purpose set forth.

7. The combination, with a vehicle-axle, of the two-part segmental fifth-wheel having moving pivot-centers and a head-block, substantially as and for the purpose set forth.

384,633. FORCE-PUMP. EMERSON M. LOWRIE, Keokuk, Iowa. Filed May 12, 1887. Serial No. 237,941. (No model.)



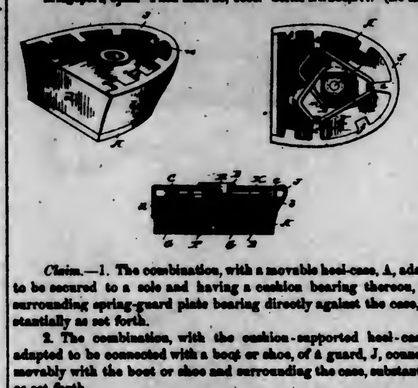
Claim.—1. The combination of a pump-cylinder having an enlarged bore at its upper end terminating in an abrupt shoulder and forming a stuffing-box, a piston having a head fitted to the said bore, a plunger of about one-half the cross-sectional area of the piston and secured to the piston, a packing-ring in one piece of material fitted to the lower circumferential corner of the said stuffing-box and part way up its sides, a metallic ring fitting loosely around the plunger and closely above and within the said packing-ring and conically dished in its upper side, fibrous packing material located around the plunger and above the said metallic ring and packing-ring, a gland conically dished on its lower side located above the said fibrous packing and provided with perforated ears, and screw-bolts removably connecting the said ears with the pump-cylinder, substantially as shown and described.

2. The combination of a pump-cylinder, a standard provided with a base-flange, a pipe screwed at one end into the said cylinder and screwed at the other end into the said flange and rigidly connecting the two, a second pipe screwed into the cylinder at the opposite side thereof to the first-named pipe and screw-threaded along its other end and passing freely through a hole in the said flange to open air above and serving as an air-chamber to the cylinder below, and two nuts screwed upon the said second pipe, one above and the other below the said base-flange, substantially as shown and described, whereby the second pipe may be adjusted to the distance between the cylinder and flange as rigidly fixed by the first pipe, the two pipes thus constituting a frame to support the cylinder in line with the standard, and whereby the second pipe constitutes an air-chamber which is accessible at the top of the well.

3. The combination of a pump-cylinder adapted to be located down in a well, a pump-standard adapted to be located at the top of the well and provided with a base-flange, a pipe to serve as an air-chamber, adapted to be screwed down into the said cylinder and provided with a long screw-thread along its upper end, and two nuts and a cap screwed upon the said long screw, substantially as shown and described.

4. The combination of the pump-cylinder 5, a pump-standard, 27, the connection 7, screwed at one end into the cylinder and at the other end secured to the standard, the connection 8, screwed at one end into the cylinder and screw-threaded along its other end and passing freely through a portion of the said standard, and two screw-nuts, 30 and 31, threaded upon the connection 8, the one below the said portion of the standard and the other above it, substantially as shown and described.

384,634. HEEL FOR BOOTS OR SHOES. CHARLES H. MANTER, Bridgeport, Conn. Filed Mar. 26, 1888. Serial No. 268,277. (No model.)



Claim.—1. The combination, with a movable heel-case, A, adapted to be secured to a sole and having a cushion bearing thereon, of a surrounding spring-guard plate bearing directly against the case, substantially as set forth.

2. The combination, with the cushion-supported heel-case A, adapted to be connected with a boot or shoe, of a guard, J, connected movably with the boot or shoe and surrounding the case, substantially as set forth.

3. The combination, with a shoe having a movable heel-case, A, of a spring-guard, J, adapted to be connected with the shoe to move to a limited extent horizontally and bearing against the outer curved face of the heel-case, substantially as set forth.

4. The combination of the movable heel-case, a surrounding independent guard inclosing the upper portion of the case, and a spring contracting the guard upon the case, substantially as set forth.

5. The combination, with the plate C, heel-case A, connected movably to said plate and interposed cushion, of a guard, J, having a limited horizontal movement in respect to said plate C, and a spring bearing upon the guard and contracting it upon the case, substantially as set forth.

6. The combination, in a cushioned heel, of a plate, C, for attaching the shoe, a heel-case, A, connected movably with the plate C, interposed cushion and a guard, J, provided with inwardly-extending arms *e*, and a spring connected with said arms to contract the guard, substantially as set forth.

7. The combination of the plate C, socket-block D, having a flange, a nut, E, having a head and fitted to the socket-block, screw F, extending through the heel-case into the nut, and cushion interposed between the case and the plate C, substantially as set forth.

8. The combination, in a cushion-heel, of a plate, C, adapted to be connected with the shoe and having a downwardly-extending flange, *d*, a movable heel-case, A, having a recess, *r*, to receive the flange *d* and interposed cushion, substantially as set forth.

9. The combination, in a cushioned heel, of the case A, plate C, supporting a separate block, D, and a screw passing through the block and connecting with the case, substantially as described.

10. The combination of the case, plate C, separate block D, screw F, and nut, substantially as described.

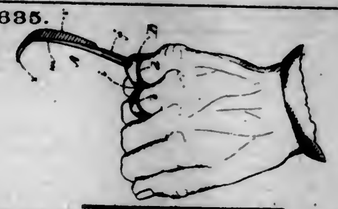
11. The combination of the case, plate having a flange, *b*, springs G, and perforated pad B of elastic material, substantially as described.

12. The combination of the case A, containing an elastic support, and the plate C, having projections *s*, substantially as described.

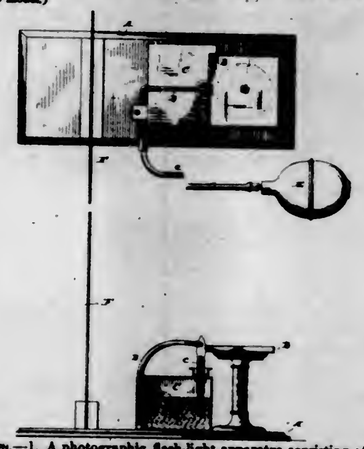
384,635. WEEDING-TOOL. CHARLES MAYNARD, Montague, Mass. Filed Mar. 16, 1883. Serial No. 267,203. (No model.)

Claim.—In a weeding-tool, the rings *b d*, arranged side by side and rigidly connected, said rings being adapted to fit adjacent fingers of the hand, in combination with the curved rod *f*, provided with the curved blade *v*, having the point *z*, said rod being rigidly secured at its inner end to one of said rings, substantially as set forth.

384,635.



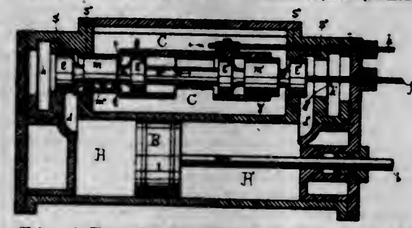
384,636. PHOTOGRAPHIC FLASH-LIGHT APPARATUS. THOMAS H. MCCOLLIN, Philadelphia, Pa. Filed Feb. 20, 1888. Serial No. 265,742. (No model.)



Claim.—1. A photographic flash-light apparatus consisting of a holder for flashing material, a lamp, an air-tube, and a pumping device connected to said air-tube, the burner of said lamp being located between said holder and said air-tube, said parts being combined substantially as and for the purpose set forth.

2. In a flash-light apparatus, the combination, with a receptacle for containing ignitible material, and a lamp or burner, of a pneumatic tube having its nozzle arranged above the burner and adjacent to the material, whereby the air in said tube is heated to a high degree and directed with the flame to the material, thus instantly igniting the same, substantially as described.

384,637. VALVE FOR STEAM-ENGINES. JOHN R. MCDYER, Auburn, N. Y. Filed May 20, 1887. Serial No. 238,295. (No model.)

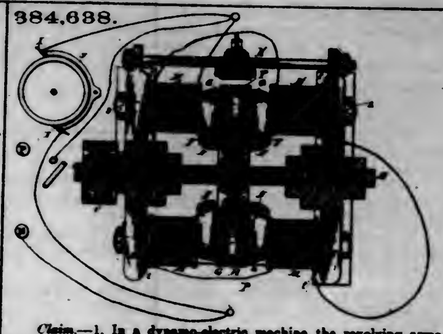


Claim.—1. The combination, with the main valve consisting of the connected but separated disks c c^2 c^3 c' and the hollow cylindrical parts m and m', the former cylindrical part being between the disks c and c^2 and the latter between the disks c^2 and c', of the hollow cylindrical cut-off valve fitted to slide upon the said disks, and the cylindrical parts n and n', and of proper length to extend from the part m to the part m', substantially as shown and described.

2. The combination, with a main valve consisting of a series of connected disks and two hollow cylindrical parts, one near each end of the valve, of a hollow cylindrical cut-off valve supported interiorly upon the said main valve, and two separate and independently-operating rods, one for operating the main valve and the other for operating the cut-off valve, substantially as shown and described.

384,638. DYNAMO-ELECTRIC MACHINE. BENJ. OLIVER, Alpena, Mich. Filed June 2, 1887. Serial No. 240,093. (No model.)

384,638.



Claim.—1. In a dynamo-electric machine, the revolving armature-disk consisting of a skeleton wheel provided with a series of rectangular recesses, a series of generating-bobbins secured within said recesses, retaining-plates secured to the sides of the armature-core, an insulating-ring secured to the rim of the skeleton wheel, and commutator-strips secured to the face of the insulating-ring, all substantially as described.

2. In a dynamo-electric machine, the combination of a revolving armature-disk carrying a series of commutator-strips secured to the rim thereof, separately-removable generating-bobbins secured in rectangular recesses of the iron core of the armature-disk, sectional retaining-plates removably secured to the sides of the armature-disk, and a field-magnet consisting of separately adjustable and removable magnets provided with detachable pole-pieces and arranged in pairs upon opposite sides of the armature, substantially as described.

384,639. BUTTON-LOOP AND SAFETY-PIN. BELLE PRICHARDS, Islington, Mass. Filed Mar. 1, 1888. Serial No. 265,787. (No model.)



Claim.—1. In a combined button-loop and safety-pin, a metallic frame provided with an opening to form a button-loop, through which a button on a garment is adapted to be passed to secure the said loop to the garment, combined with a safety-pin permanently attached to the said metallic frame and adapted to remain inoperative or disengaged from the said garment while the button remains attached thereto, substantially as described.

2. In a combined button-loop and safety-pin, a metallic frame having a button-receiving and a button-holding eye separated by a contracted throat to form a button-loop, combined with a safety-pin permanently attached to the said frame and adapted to remain inoperative or disengaged from the said garment while the button remains attached thereto, substantially as described.

3. The combination, with a metallic button-loop consisting of a frame having independently-movable arms a', bent to form a contracted throat, and leaving an opposite oldes of said throat a button-receiving and a button-holding eye, of a safety-pin, substantially as described.

384,640. WATCH-CASE. ROBERT J. GRESLEY, Toronto, Ontario, Canada. Filed Feb. 9, 1888. Serial No. 263,672. (No model.)

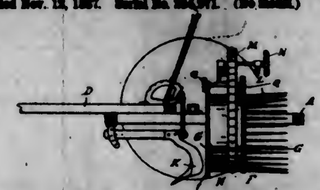


Claim.—1. In a watch-case, the combination of the following elements: a coster of greater width than the movement-ring and threaded on its interior circumference, a movement-ring screw-threaded on its periphery and screwed into the coster, and the back and bezel engaging the coster and permitting adjustment of the movement-ring, substantially as and for the purpose specified.

2. A watch-case having a thread cut in the interior circumference of its coster which is made sufficiently wide to receive the movement-

ring, and screwed projections a, formed on the back C and bezel D, in combination with divided or double movement-ring B, substantially as and for the purpose specified.

384,641. POTATO-DIGGER. ORRIN ROBBINS, Three Rivers, Mich. Filed Nov. 12, 1887. Serial No. 254,971. (No model.)

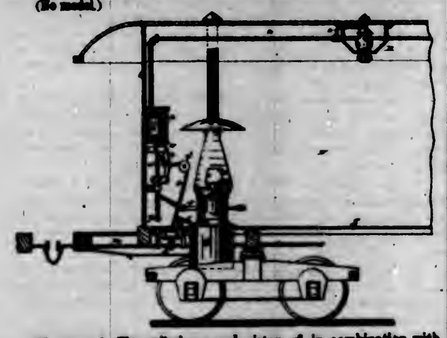


Claim.—1. The combination, with a revolving cage of a potato-digger, of circumferential bearings supporting said cage in position, a drive-chain passing around the head of the cage, and a sprocket-wheel on top of the cage, a hinged frame upon which said sprocket-wheel is journaled, and a lever for raising and lowering said hinged frame, substantially as described.

2. In a potato-digger, a revolving cage or drum, consisting of the annular head and of spring-tines secured thereto and projecting rearwardly from that head, with their rear ends free and having gradually-tapering enlarging interstices between the tines, substantially as described.

3. In a potato-digger, the combination of the drive-wheels, the frame supporting the parts, a scoop-plow provided with devices for independently raising and lowering it, a hinged frame, and a revolving drum supported on circumferential bearings or rollers, and provided with means for vertically adjusting it independent of the plow, substantially as described.

384,642. FIRE-EXTINGUISHER FOR CAR-HEATERS. GEORGE W. RAYMOND, Marshall, Mich. Filed Sept. 27, 1887. Serial No. 250,946. (No model.)



Claim.—1. The cylinder a and piston a', in combination with pipe n, extending from said cylinder to a lamp, a spring, c, which tends to actuate said piston and force air through said pipe, the piston-rod a', provided with a stud, a fixed stud, x, on the body of the car, a jointed bar, p, attached at its ends to said studs, and a chain and rod extending from said jointed bar to the next car, substantially as set forth.

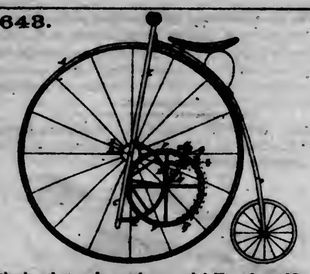
2. A cylinder, piston, piston-rod, said pipe for conducting the expelled air to a lamp, in combination with a spring which tends to force said piston toward said pipe, a lever, k, which engages said rod to retract said piston against the tension of said spring, a device for holding said piston thus retracted, and a chain attached to said device to release it, for the purpose set forth.

3. The longitudinally-movable rod m, attached to one car and connected with a similar rod of another car, in combination with chains 1 and 2 and their pulleys, a hinged grate, a catch for holding said grate horizontal, released by said chains, a reservoir beneath said grate, an automatic air-forcing device for extinguishing lamps, and a bar for holding said air-forcing device out of operation, chain 2 being connected to said bar and serving to release said piston, substantially as set forth.

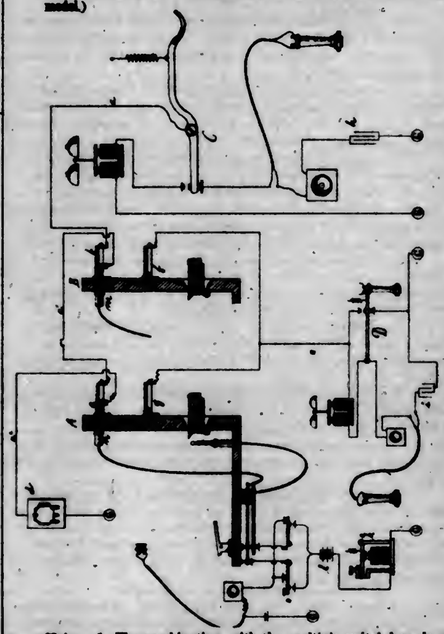
384,643. VELOCIPEDE. FRANCIS ROOKE, London, Ontario, Canada. Filed July 23, 1887. Serial No. 245,145. (No model.)

Claim.—The combination, with the wheel A, axle B, having a pinion, D, and the fork C, extended below the axle, of the bracket E, supported by the fork, an externally and internally cogged spur-wheel, F, journaled in said bracket, an upward-projecting bar, G, pivoted to the bracket and carrying a pedal, H, and pawl I, and a spring, J, having one end attached to the bracket E and the other end to the bar G, substantially as described.

384,643.



384,644. MULTIPLE SWITCH-BOARD TELEPHONE APPARATUS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1884. Serial No. 151,362. (No model.)



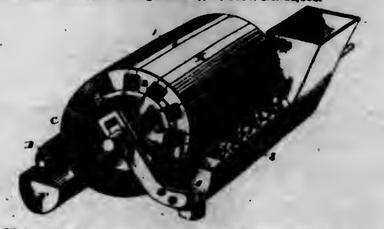
Claim.—1. The combination, with the multiple switch-boards of a telephone-exchange, of telephone-lines connected therewith and each extending to a subscriber's station, a condenser permanently connected in the branch wire containing the telephone between the telephone and ground at each subscriber's station, a telephone-switch at each subscriber's station for bringing the telephone and condenser into the circuit of the line when the telephone is removed from the switch-lever, a battery and signaling instrument or sounder at the different switch-boards at the central office, and switching apparatus, whereby it may be determined at any of the boards whether the telephone of any station is on or off the switch.

2. A telephone-line extending from ground at a subscriber's station through a condenser and a telephone to a switch at said station and thence to the central office, said line being connected at the central office with a spring-jack switch on each of two or more switch-boards and thence to ground, in combination with a sounder or signaling device and battery in a ground-circuit at one of the switch-boards, and switching apparatus for connecting said ground-circuit with said telephone-line at the switch of said board, whereby it may be determined whether the line is open at the spring-jack of said line at any other of the boards, substantially as described.

3. The combination, with the bell, telephone-switch, and telephone at a subscriber's station, of a condenser included in the branch of the switch which includes the telephone, the telephone-line permanently

connected with the switch-lever and extending through a spring-jack on each of two or more multiple switch-boards at the subscriber's station, a sounder and battery in a normally-open ground-circuit at each of the switch-boards, and switching apparatus whereby the position of the switch at the subscriber's station may be determined, substantially as and for the purpose specified.

384,645. MAGNETIC SEPARATOR. M. HOLROYD SMITH, Halifax, County of York, England. Filed Oct. 20, 1887. Serial No. 252,705. (No model.) Patented in England Aug. 8, 1887. No. 12,022.



Claim.—1. In a magnetic separator, the combination of a magnetic cylinder and a trough provided with propellers, whereby the material to be separated is successively brought into contact with the cylinder, substantially as described.

2. In a magnetic separator, the combination of a rotating cylinder having its face made up of a series of magnets, a trough arranged along the face of the cylinder, and a series of propellers in said trough, substantially as described.

3. In a magnetic separator, the combination of a rotating cylinder the face of which is made up of electro-magnets, a trough arranged along the face of the cylinder and having a series of partitions, and a propeller-shaft carrying a series of vanes in said trough and operating to bring the material to be separated in successive contact with the magnets and propel it through the trough, substantially as described.

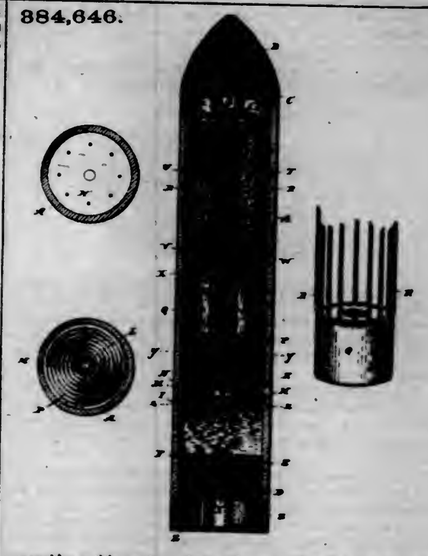
4. In a magnetic separator, the combination, with a magnetic cylinder, of a distributer-trough having propellers arrranged to bring the material repeatedly in contact with different portions of the magnetic cylinder, substantially as described.

5. In a magnetic separator, the combination of a rotating magnetic cylinder and a trough arranged along the surface thereof, the trough being hinged to the shaft of the cylinder, substantially as described.

6. In a magnetic separator, the combination of a rotating magnetic cylinder, a trough having propellers arranged parallel with the axle of the cylinder, supplying material thereto and causing it to traverse the face of the cylinder, and a brush arranged to discharge from the cylinder the iron extracted from the material, substantially as described.

7. In a magnetic separator, the combination, with a magnetic cylinder, of a trough arranged along the face thereof, the said trough being divided into compartments by partitions, the edges of which are cut away adjacent to the cylinder to admit of the passage of the material through the successive compartments and in contact with the cylinder, substantially as described.

384,646. SHELL FOR HIGH EXPLOSIVES. WILLIAM T. SMITH, Birmingham, Ala. Filed Mar. 3, 1888. Serial No. 266,544. (No model.)



Claim.—1. The combination, with a projectile, of an explosive movably mounted therein, an air-chamber at the rear of said explosive, and a liquid-containing chamber at the rear of said air-chamber, and having its front wall elastically connected with the front of the projectile.

2. The combination, with a projectile, of an explosive movably mounted therein, an air-chamber at the rear of said explosive, a liquid-containing chamber at the rear of said air-chamber, a chamber at the rear of said liquid-containing chamber containing a vacuum and formed on its top with an aperture opening communication therewith from the liquid-containing chamber, and a plug normally closing the said aperture.

3. The combination, with a projectile, of an explosive movably mounted therein and inclosed between flexible air-containing chambers, and a series of flexible tubes connecting the said chambers.

4. The combination, with a projectile and an explosive charge located therein, of air-cushions to either side of the said charge, a liquid-containing chamber behind the lower air-cushion, and a vacuum-chamber behind the liquid-containing chamber and having a perforation, and a plug normally closing said perforation and adapted to be displaced by the shock consequent upon the projectile forcibly leaving the gun.

5. The combination, with a projectile and the charge movably mounted therein, of an air-chamber at the rear of said charge, having a movable partition or base-plate at the rear end, and springs connecting the said partition with the front of the projectile.

6. The combination, with a projectile and the charge movably mounted therein, of an air-chamber at the rear of said charge, a liquid-containing chamber at the rear of said air-chamber, and a movable partition dividing said chambers, and a vacuum-chamber at the rear of said liquid-containing chamber and normally separated therefrom by a plug adapted to be displaced by the shock imparted to the projectile in firing the gun.

7. The combination, with a projectile and the charge movably mounted therein, of an air-chamber at the rear of said charge, a movable partition beneath the said charge, and layers consisting of an elastic, felt and hair, and another elastic between the said charge and movable partition.

8. The combination, with a projectile provided with partitions dividing the shell into compartments, of a yielding connection between two of the partitions, said yielding connection passing through the charge and its mountings and firmly yet yieldingly holding them in place.

9. The combination, with the projectile and the charge mounted therein, of an air-cushion at the rear of said charge, and a movable partition at the rear of said air-chamber and having yielding connection with the front of the projectile.

10. The combination, with a projectile and the charge, of an air-cushion supporting the said charge, an elastic packing at the rear of said cushion, a fluid-containing chamber at the rear of said packing, a movable partition between the said packing and fluid-containing chamber, a vacuum-chamber the front wall of which is formed with a perforation, and a plug normally closing said perforation.

11. The combination, with the projectile and its charge movably mounted therein, a movable partition at the rear of said charge, springs connecting the said partition with the front of the projectile, and a tube surrounding the said springs, whereby the same will not come into contact with the charge.

12. The combination, with the projectile and the charge, of air-cushions at the front and rear of said charge, flexible tubes connecting the said cushions, and a movable partition at the rear of the lower air-cushion and having elastic connection with the front of the projectile.

13. The combination, with the projectile and the charge, of air-cushions at the front and rear of said charge, flexible tubes connecting the said cushions, movable partition at the rear of the lower air-cushion having elastic connection with the front of the projectile, and an elastic packing between the said movable partition and air-cushion.

14. The combination, with the projectile and the charge, of a wool packing surrounding the charge, air-cushions at the front and rear of the said charge, flexible tubes connecting the said air-cushions, movable partition at the rear of the lower air-cushion, spring connecting the said partition with the front of the projectile, and a flexible tube surrounding the said spring.

15. The combination, with the projectile, charge, air-cushions at either side of said charge, flexible tubes connecting said air-cushions, and an elastic packing immediately to the rear of the lower air-cushion, of a fluid-containing chamber to the rear of said packing, a movable partition dividing the said chamber and packing, spring connecting the said partition with the front of the projectile, flexible tube surrounding the said spring, a vacuum-chamber at the rear of the fluid-containing chamber and having a perforation in its front wall, and a plug normally closing the said perforation.

16. The combination, with a projectile and the charge movably mounted therein, of an air-chamber at the rear of said charge, a movable partition at the rear of said air-chamber, and having elastic connection with the front of the projectile, and layers consisting of an elastic, felt and hair, and another elastic between the said charge and movable partition.

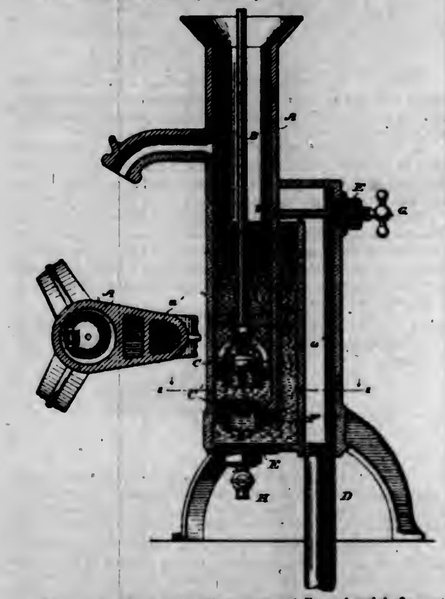
384,647. SPRING ATTACHMENT FOR ROCKING-CHAIRS. ADDIS B. SEVERS, New Bridge, N. J., assignor, by mesne assignments, to the Rocker Spring Company, Chicago, Ill. Filed Jan. 26, 1888. Serial No. 262,033. (No model.)



Claim.—1. The combination of the bracket-bases, the spiral spring, the spring-receiving portions *b'*, having sockets *f*, the laterally-projecting arms *b* of the bracket-bases, and a pin or its described equivalent to unite them, substantially as described.

2. A bracket for spring attachments for base-rockers, having an arm thicker on one side than the other—that is to say, with its bottom beveled or inclined—in combination with the detachable spring-retaining member to give the latter a cant to compensate for the spirality of the spring, substantially as described.

384,648. PUMP. JOHN STEVENS, Neenah, Wis. Filed Feb. 1, 1888. Serial No. 263,712. (No model.)

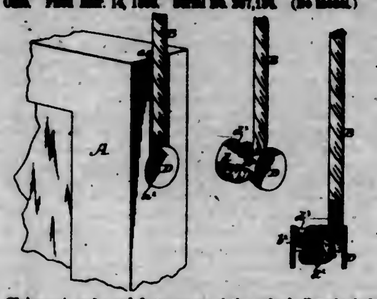


Claim.—1. The combination, substantially as hereinbefore set forth, of a pump-barrel, a siphon supply-pipe the shorter leg of which communicates with the bottom of said barrel beneath the lower valve, an air-duct between the chamber of said barrel and the upper part of the siphon, and a stop-cock to positively close said duct against the passage of air, whereby the pump may be reprimed.

2. The combination, substantially as hereinbefore set forth, of a pump-barrel, a siphon supply-pipe the shorter leg of which communicates with the bottom of the barrel, an air-duct between said barrel and the upper bend of the siphon, a stop-cock to positively shut off the communication of air between the two through said duct, and a discharge-cock at the foot of the shorter leg of said siphon.

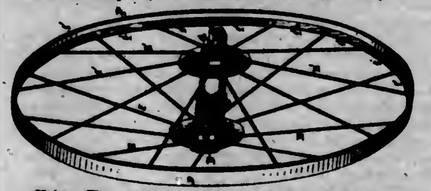
3. The combination, substantially as hereinbefore set forth, with the pump-barrel and two siphon-conduits cast integrally therewith and having the flaring aperture in the dividing-wall between the barrel and upper bend of the siphon, of the beveled screw-plug or cock for closing said aperture at will.

384,649. SASH-CORD FASTENER. LOUIS STRASSER, Columbus, Ohio. Filed Mar. 14, 1888. Serial No. 267,194. (No model.)



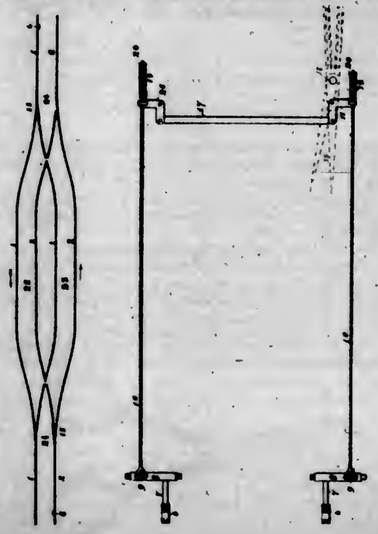
Claim.—A sash-cord fastener consisting of a hollow body having closed ends, perforations d^3 in the side for the passage of a cord, and a diametrically-located pin, substantially as and for the purpose described.

384,650. VEHICLE-WHEEL. JOHN V. STERLING, Westminster, S. C. Filed Sept. 15, 1887. Serial No. 249,742. (No model.)

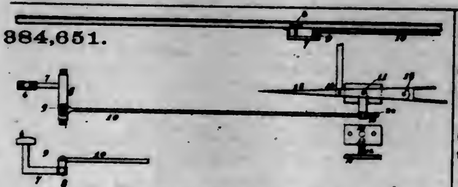


Claim.—The combination of the hub or sleeve B, having a shoulder, *b*, the sleeve B', threaded on the exterior and temporarily secured to the point-band D by a pin, the set-screw *b'*, the sand-band G, the disks C C', the suspension-rods E E', secured to the disks, and the ribbed tire F.

384,651. AUTOMATIC SWITCH FOR RAILROADS. JAMES M. SWAN, Denver, Colo., assignor to the Swan Automatic Switch Company, same place. Filed Nov. 4, 1887. Serial No. 254,357. (No model.)



884,651.



Claim.—1. The combination of a switch-point, the bell-crank lever, pivoted as described, the three-sided lever and pivoted bar, the connecting-rod and spring, and adjusting-nut upon the extension of the connecting-rod, substantially as set forth.

2. The combination of the main rail of a track deflected outwardly at or near the switching-point, an interior guard-rail at such point of enlarged gage, a head or lug of a lever projecting between the main and guard rails at such point, and adapted to be acted on by a passing wheel, and switching mechanism, substantially such as described, controlled thereby, substantially as set forth.

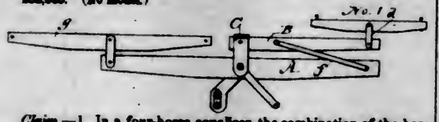
3. The combination of the main rail of a track, a guard-rail at or near a switching-point, a bed-plate common to both rails, a three-sided lever having its outer end projecting as a head or lug through such bed-plate and between the main and guard rails, a switch-point, a bell-crank lever pivoted thereto, and a rod connecting the two levers, substantially as set forth.

4. The combination of a main rail deflected outwardly at or near a switching-point, an interior guard-rail therout, a bed-plate common to both rails, a three-sided lever, as described, having its head projecting upwardly through such bed-plate and between the main and guard rails, and adapted to be acted on by a passing wheel, a switch-tongue, a bell-crank lever pivoted thereto, and a rod connecting the two levers, substantially as set forth.

5. The combination of the main rail of a track deflected outwardly near a switching-point, interior guard-rails therout, and duplicate switching mechanisms, one on either side, each consisting of a three-sided lever, as described, having a head projecting upwardly between the main and guard rails, and adapted to be acted on by a passing wheel, rods connected thereto at one end and at the other to one arm of a double bell-crank lever, the latter being connected by its central arm to the switch-point, and the single switch-point, substantially as set forth.

6. The combination of the main rail of a track, an interior guard-rail, the right-angled lever 7, having head 6 projecting upwardly between such rails, pivoted bar 8, to which lever 7 is attached, having upright arm 9, the bell-crank lever 11, pivoted at its angle to a fixed base, and at one end to the switch-point and at the other to the connecting-rod 10, the connecting-rod pivoted to the arm 9 and lever 11, and the switch-point, all arranged and operating substantially as set forth.

884,652. FOUR-HORSE EQUALIZER. JAMES A. M. TYLER and JAMES S. THOMAS, Plum Creek, Nebr. Filed Oct. 14, 1887. Serial No. 252,389. (No model.)



Claim.—1. In a four-horse equalizer, the combination of the bars A and B, the yoke C, and metal straps *f*, substantially as shown and described, for the purposes stated.

2. The adjustable coupling device consisting of the plate *m*, hinge-iron *n*, and straps *r*, in combination with the bar A, substantially as and for the purposes stated.

3. In a four-horse equalizer, the combination of the bars A and B, the yoke C, and metal straps *f*, and a singletree, and a three-horse evener composed of a bar, *g*, two levers, *h*, two clevises, *i*, two bars, *k*, and three singletrees, arranged and combined to operate in the manner set forth, for the purposes stated.

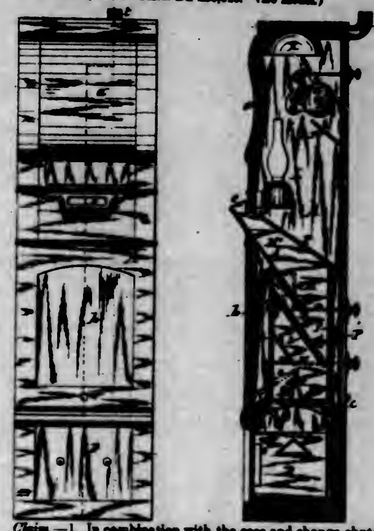
884,653. BUTTON-HOLE CUTTER. WILLIAM P. VROOMAN, Fremont, Ohio. Filed Sept. 29, 1887. Serial No. 251,047. (No model.)



Claim.—1. The combination, with a pair of button-hole cutters, of a stop adjustably attached to one of the handles thereof and movable lengthwise of the said handle, said stop being provided with a set-screw, by which it is positively retained in adjusted positions, and being also provided with a projecting portion extending toward the handle opposite that to which it is attached, substantially as set forth.

2. The combination, with a pair of button-hole cutters, of the head C, having overlapping perforated ends, the stop-block D, having a threaded hole, and the set-screw E, substantially as set forth.

884,654. FARE-BOX CHUTE. WALTER S. WALSH, Syracuse, N. Y. Filed Feb. 6, 1887. Serial No. 226,615. (No model.)

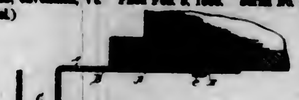


Claim.—1. In combination with the case and change-chute inside thereof, and both provided with transparent fronts, a transparent gate across the interior of the change-chute, and a reflector back of said gate, substantially as and for the purpose set forth.

2. In combination with the case and change-chute inside thereof, and both provided with transparent fronts, a transparent gate across the interior of the change-chute, a reflector back of said gate, and a lamp above the change-chute, substantially as set forth and shown.

3. In combination with the case and change-chute inside thereof, and both provided with transparent fronts, a transparent gate across the interior of the change-chute, a reflector back of said gate, a transparent plate across the top of the change-chute, a lamp in the case above the change-chute, and a reflector above the lamp, substantially as described and shown.

884,655. LINK AND PIN HOLDER FOR CARS. CHARLES L. WARD, Cavendish, Vt. Filed Feb. 3, 1888. Serial No. 262,493. (No model.)



Claim.—1. A coupling-link and coupling-pin holder consisting of a metal strap secured to the end of the car at a proper point by a bolt, and having an opening, D, to receive the pin, and with its free end formed into a hook, C, upon which to hang the link.

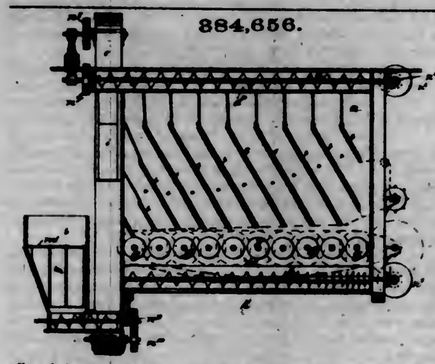
2. The herein-described coupling-link and coupling-pin holder, consisting of the hook C and the plate portion or shank B, having the coupling-pin opening D and the bolt-opening E, and separated from the hook by the lateral shoulders *b b*, substantially as described.

884,656. MACHINE FOR MIXING FLOUR. REINHARD A. WEBER and JOHANN G. ZEISLER, Gratz, Germany. Filed Nov. 6, 1886. Serial No. 218,142. (No model.)

Claim.—1. In flour-mixing machines, the combination, in a chamber, of a series of inclined plates, *f f*, with a series of rollers, *g g*, under said plates, the said rollers being journaled in a substantially horizontal plane, and with their axes parallel to the plane of the plates.

2. The combination, in a chamber, of a series of inclined plates, *f f*, with a series of rollers forming a floor below said plates, the said

884,656.

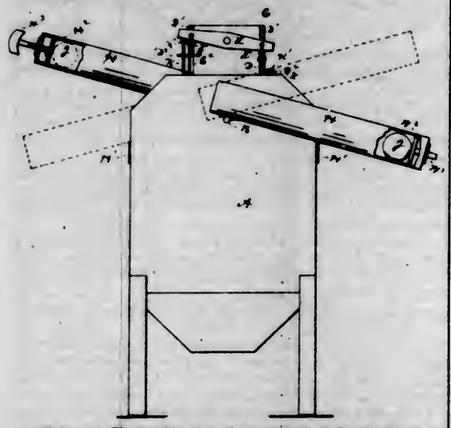


rollers being journaled in a substantially horizontal plane with their axes parallel to said plates, together with vertically-adjustable bearings for alternate rollers, for the purpose set forth.

3. The combination, as set forth, of adjustably-inclined plates *f f*, a horizontal roller-bottom, *g g*, below said plates, the axes of the rollers being parallel to the plane of said plates, spirals *d* above said plates, and spirals *h* under said roller-bottom, the feed-direction of said spirals *d h* being in a direction crosswise of the axes of the rollers.

4. The combination, as set forth, of adjustably-inclined plates *f f*, a horizontal roller-bottom, *g g*, thereunder, the axes of the rollers being parallel to the plane of said plates, means for rendering the axes of alternate rollers vertically adjustable, troughs *d'*, with perforated bottoms *d²* above said plates, spirals *d* in said troughs *d'*, and spirals *h* under said roller-bottom, the feed-direction of said spirals being crosswise of the axes of said rollers, troughs *h'* for said spirals *h*, and shed *h²*, dividing said troughs, the said spirals *h* having increasing pitch and decreasing conical axles in the direction of their feed.

884,657. AUTOMATIC WEIGHING-MACHINE FOR GRAIN. DE WITT WISE, Tampico, Ill. Filed Oct. 31, 1887. Serial No. 253,894. (No model.)



Claim.—1. The combination of the rock-shaft B, suitably journaled in the frame A, hollow levers H, attached at one end to said shaft and projected, respectively, in opposite directions therefrom, movable weights J, placed within said levers H and respectively adapted to roll to and from shaft B from opposite sides of the latter alternately, beams E, attached centrally to said shaft, and buckets F, pivotally attached to said beams at opposite sides, respectively, of said shaft, substantially as shown, and for the purpose described.

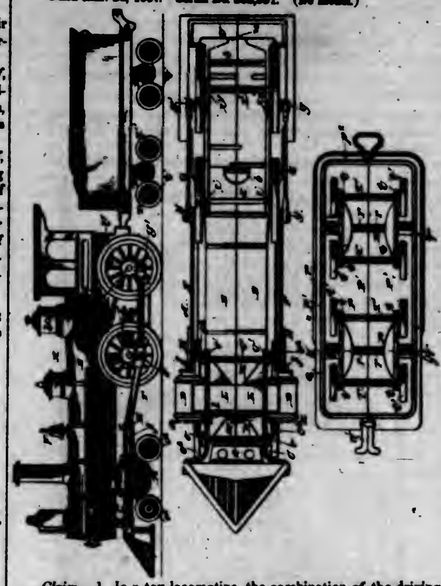
2. The combination of the rock-shaft B, suitably journaled in the frame A, weight-levers H, attached to said shaft and projected therefrom in opposite directions perpendicular thereto, adjustable weights J, stops H', beams E, attached to said shaft, buckets F, suspended to said beams, receiving-box C, provided with discharge-port C², gates D, rods K, walking-beams L, and links L', substantially as shown, and for the purpose described.

3. The buckets F, adapted to receive and discharge grain, consisting of the halves F', pivotally suspended from a common point and provided on their exteriors, respectively, with diagonal flanges M, the frame A, provided with triangular cam N, and the spring G, substantially as shown, and for the purpose described.

4. The combination of the rock-shaft B, suitably journaled in the frame A, hollow levers H, attached at one end to said shaft and projected, respectively, in opposite directions therefrom, movable weights J, placed within said levers H and adapted, respectively, to roll to and from shaft B from opposite sides of the latter alternately, and buckets F, suitably suspended upon said shaft on opposite sides thereof, respectively, substantially as shown, and for the purpose specified.

5. The combination of the rock-shaft B, suitably journaled in the frame A, hollow levers H, attached at one end to said shaft and projected, respectively, in opposite directions therefrom, movable weights J, placed within said levers H and adapted, respectively, to roll to and from shaft B from opposite sides of the latter alternately, buckets F, suitably suspended upon said shaft on opposite sides thereof, respectively, and means, substantially as shown, for admitting grain to and discharging it from said buckets, for the purpose described.

884,658. TOY LOCOMOTIVE. JAMES S. WHEELER, Jr., Keene, N. H. Filed Mar. 26, 1887. Serial No. 232,501. (No model.)



Claim.—1. In a toy locomotive, the combination of the driving-wheels, the cylinder, the fixed guide in rear of the cylinder, having the horizontal longitudinal slot *e*, and the connecting-rod connected with the driving-wheels, and having its front end curved and extended through the slot *e*, and provided with a vertical cross-head, *f*, bearing against one side of the guide, substantially as described.

2. In a toy locomotive, the combination of a cylinder having a longitudinally-slotted guide extending rearwardly therefrom, the front and rear driving-wheels, each having the crank-pins, the front connecting-rod pivoted to the crank-pin of the front driving-wheel, and having its front end curved and extended through the slot in the guide, and provided with a cross-head, *f*, bearing against one side of the guide, and the rear connecting-rod connected at its ends to the crank-pins on the front and rear driving-wheels, as and for the purpose described.

3. In a toy locomotive, the divided truck having the supporting-wheels, both sections of the truck being pivoted to the body of the locomotive and adapted to turn or swing independently in a longitudinal direction, as set forth.

4. In a toy locomotive, the divided truck having the supporting-wheels, each section of the truck carrying a front and a rear wheel, and said sections being pivoted to the body of the locomotive, so as to have an independent movement, as set forth.

5. A toy locomotive formed of two sections secured together and having fixed aligned bearings on its under side, the transverse shaft fitted rigidly in the bearings, and the oscillating divided truck journaled on the said shaft, and each section of the truck carrying the front and rear wheels, whereby said truck-sections are caused to act independently, as set forth.

6. In a toy locomotive, the combination, with a transverse shaft or rod supported beneath the boiler at the front end thereof, of a swinging truck having the bearings in its lower side and pivoted upon the shaft or rod, and the axles fitted in the bearings and carrying the supporting-wheels, as and for the purpose described.

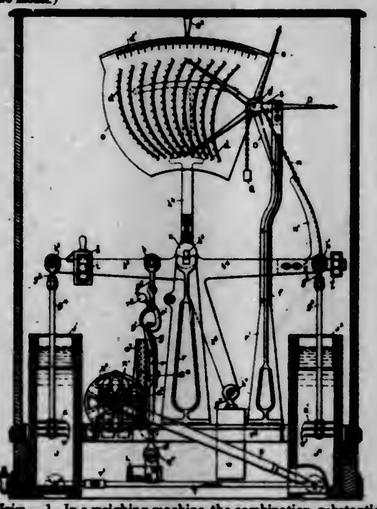
7. A toy locomotive having the depending flange at its rear side provided with the vertical central open slot, in combination with the tender having the integral forward-projecting arm U', provided with the T-shaped head at its front end to engage the slotted flange of the locomotive and couple the tender thereto, substantially as described.

8. A tender for locomotives formed of two longitudinal sections bolted together, embodying the T-headed hook U' at its front end, one portion of the hook being carried by each section of the tender, so that when the sections are connected together a complete hook, U', is formed, as set forth.

9. A toy locomotive formed of two longitudinal sections secured together and having fixed aligned bearings on its under side, the transverse shaft fitted rigidly at its ends in the bearings of the sections, and the oscillating trucks journaled on the transverse shaft A between the said bearings and carrying the supporting-wheels, whereby the trucks are enabled to swing or oscillate longitudinally, as set forth.

10. A toy locomotive formed of two longitudinal sections, B, placed in alignment with each other and secured together, and a bell-frame having the depending headed stud provided with an annular flange to receive the proximate edges of the sections, as and for the purpose described.

384,659. WEIGHING-MACHINE. ROBERT WILSON, Liverpool, County of Lancaster, England. Filed Nov. 6, 1886. Serial No. 218,179. (No model.)



Claim.—1. In a weighing-machine, the combination, substantially such as described, of metal corner-box brackets B^3, with the wooden dovetailed sides B^4, and plates B^5, let into the said brackets and secured with bolts to the same, substantially as shown, whereby a considerable amount of metal is saved.

2. In a weighing-machine substantially such as shown, the combination, with the levers C C', of the platform resting thereon, the links c^3, in which said levers rest, and a rod, c^4, connecting said links.

3. In a weighing-machine, the combination of a diagonal lever, C, having its respective arm L_1 provided with a hollow arm, C^2, capable on the pattern of being placed at any point on the said arm L_1, and fitted with a muff, C^3, a knife-edge, E^3, fitted within on the bottom side of the said muff and fixed to the said arm C^2 by an adjusting device, C^7, at any desired position, whereby machines of different lengths can be supplied with levers to suit them, all cast from the same patterns.

4. In a weighing-machine substantially such as shown, the combination, with the arm L_1 of the arms L_1 and L^2, (the latter being placed centrally on the hanger-shaped ends G,) knife-edges c' and c^2, located on opposite sides of the arm L^2, and stays L^3, L^4, and L^5, connecting the arms L_1 and L^2, substantially as shown.

5. In a weighing-machine, the combination of a minor lever, C', having its arm L^2 capable of being made shorter or longer to suit different lengths of machines, and provided with a hollow extension, C^2, and a muff, C^3, having a knife-edge, c^2, fitted within on the top side of the said muff, and an adjusting device, C^7, whereby the muff C^3 can be fixed in any desired position to adapt itself to the adjustment of the levers.

6. In combination with the major lever C, comprising arms L_1 and L^2 and braces L^3 L^4 L^5, the minor lever C', comprising similar arms, L^7 L^8, and similar braces, L^9 L^{10} L^{11}, the parts of the minor lever corresponding but opposite in arrangement to the parts of the major lever.

7. The combination, with the platform of a weighing-machine, of an indicator-lever having arms h^2 h^4, the knife-edges h' and h^3, and the pistons K and K', formed of a number of plates a little apart from each other, suspended from the knife-edges and working in the plunger-boxes J and J^2, filled with liquid, whereby the liquid forms a sort of hydraulic packing and a slow and steady motion is insured, substantially as and for the purpose described.

8. In a weighing-machine, the combination, with the platform and the dash-pots, of the lever H, provided with an indicator-plate and with dash-pot arms h^2 h^4, a pointer adapted for use in connection with the indicator-plate, an indicator-wheel, and weights I and I', applied to the arms h^2 h^4, all substantially as shown, whereby the arms h^2 h^4 may be used to take the tare instead of having an independent arm therefor.

9. The combination, with the lever H, having laterally-extending arms h^2 and h^4 and vertical arm h^5, of a dial, D, secured to arm h^5, and provided with indicator-scales d' and d, and indicator O, placed to one side of the dial-plate, whereby the main weights can be read off on a scale placed centrally and horizontally, and the smaller weights on another scale placed centrally and vertically.

10. In a weighing-machine, substantially as described, the combination, with the platform and the lever H and its indicator, of the pistons K K', carried by the lever H, and the plunger-boxes J and J^2, having box-formed covers J' and J^2, provided with holes to allow the piston-rods to pass through, whereby the liquid in the plunger-boxes is steadied and cushioned when the movements of the different parts of the indicator take place, thereby avoiding jars and concussions.

11. In a weighing-machine, the combination, with the platform and the lever H, connected therewith and provided with pistons K K', of the plunger-boxes J J^2, and a pipe, T, connecting the boxes and provided with a valve.

12. In combination with the suspension-rod G^2 of a weighing-machine, a shaft, E', provided with a handle, R, and cam-wheel R^3, a shaft, G^3, provided with a pinion, G^4, and with a wheel, R^4, to be actuated by the wheel R^3, and a rack, G^5, adapted to be engaged by wheel G^4, and provided with a bracket, G^6, to engage the rod G^2.

13. In combination with the suspension-rod G^2 of a weighing-machine, a projection or shoulder, *r*, formed thereon, and an adjustable bracket, G^2, adapted to engage said shoulder and to receive the weight of the platform.

14. In combination with the suspension-rod G^2 of a weighing-machine, a shackle, *g*, a hook, *r'*, adapted to engage the hook, a projection, *r*, upon the rod G^2, a guard, *g'*, and a bracket or stop, G^6, adapted to engage the projection *r*.

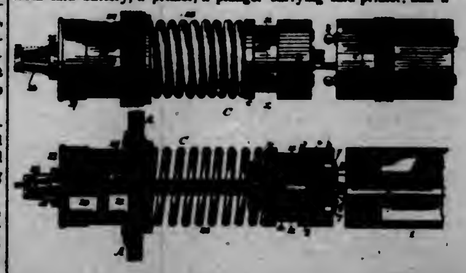
15. In combination with the suspension-rod G^2 of a weighing-machine, a bracket, G^2, adapted to engage the same, shackle *g*, provided with foot f^2, guard-link *g'*, and a pivoted balance-hook, *r'*, adapted to engage the shackle *g*.

16. In combination with the lever-arm h^2 and the rod g^2, a knife-edge, *h*, upon the lever-arm, a shackle, g^2, suspended therefrom, guard-link *g'*, carried by the shackle g^2, balanced pivoted hook *r'*, and a shackle, *g*, carried by the arm G^2.

384,660. SHELL. EDWARD I. ZALINSKI, U. S. ARMY. Filed Oct. 26, 1887. Serial No. 253,207. (No model.)

Claim.—1. In a shell, an electric battery, metallic connections from said battery to a primer of the character described, and a plunger connected to the primer operated by gas-pressure in the bore of the gun when the gun is discharged to hold the primer out of circuit with the battery while the projectile is in the gun.

2. In a shell, an electric battery, a metallic connection extending from said battery, a primer, a plunger carrying said primer, and a



detent which holds the primer out of circuit until released by the action of the gas-pressure in the gun.

3. In a shell, an electric battery, a primer in circuit to be ignited thereby, and an adjustable column of slow-burning compound connecting said primer with the explosive charge.

4. In a shell having an electric fuse, a circuit-breaker having a movable plunger, a piston on said plunger, and a cylinder containing said piston to which cylinder gas is admitted to force back the plunger, as set forth.

5. In a shell, an electric battery, metallic connections therefrom, a spring-plunger carrying primers having a path of movement toward the battery-connections, and a detent for said plunger, which detent is released by the gas-pressure in the bore of the gun when the piece is discharged.

6. An explosive shell, an electric fuse therefor, a metallic connection from said fuse to a front insulated portion of the shell, and a collapsible shield or point in metallic connection with the body of the shell, whereby the collapse of the point will close circuit, as set forth.

7. A shell having an inclosed weighting piece of easily-fusible metal near the front thereof and extending across the front of a charge of high explosive, substantially as described.

8. In a shell, the combination, with a plunger provided with a mechanism for forcing the same forward to close circuit, of a plurality of primers carried by said plunger, and separate batteries having connections in position to close circuit with each of the primers.

9. In a shell, a plunger carrying a plurality of primers, separate battery-connections to each primer, and a single electric connection whereby all the circuits are grounded in the wall of the shell, all in combination, substantially as described.

10. In a shell-fuse, the combination, with a battery inclosed in a casing, of a plurality of partitions between the battery and outer opening in the casing, said partitions having perforations out of line with each other, as set forth.

11. In a shell-fuse, an electric battery provided with a perforated partition, a cover outside of said partition, and retaining-catches for said cover adapted for release by the gas-pressure in the gun.

12. In a shell having an electric fuse, a detachable circuit-breaker which moves a primer carried thereby into circuit with the battery, and a detonator in position to be ignited from the primer, said detonator removably attached to the circuit-breaker, in combination substantially as described.

13. In a shell of the character described, a circuit-breaker in position to move and close the electric circuit, a primer and a detonator, and a delay-action fuse having a connection with the circuit-breaker interposed between the primer and detonator, all combined as stated.

14. In a shell having an electric fuse, an electric battery and a primer, and suitable electric connections between the same, substantially as described, a spring circuit breaker and closer, the spring tending normally to close circuit between the battery and primer, but being forced back by the gas from the propelling charge while under such pressure in the gun, the combination being and operating substantially as described.

15. In a shell having an electric fuse, a circuit breaking and closing plunger, a spring for forcing the same to closed position, a detent operating to hold the spring compressed, and connections to the gas charge, whereby the plunger is held back against the spring-pressure while the projectile is in the gun, substantially as described.

16. In a shell having a fuse containing a chemical which will be thrown into chemical action by the entrance of water, a cover for said fuse, a holder on the shell retaining said cover in place while the shell is in the gun, and mechanism connected with the shell for automatically opening the cover after the shell leaves the gun, combined substantially as described.

17. A shell having a fuse containing a chemical which is made active by the entrance of water, a cover for said fuse, and mechanism on the shell for rupturing said cover by impact with water.

18. The combination, in a shell-fuse and connected to the primer thereof, of a sensitized and a non-sensitized battery, the latter forming part of the circuit of the former, as set forth.

19. In a shell-fuse, a metallic casing having a plurality of electric batteries or cells inclosed, one cell or battery being non-sensitized, but adapted to be thrown into operation by the entrance of water, said non-sensitized battery forming part of the circuit and until made active serving as a circuit-breaker to the other batteries or cells.

384,660.



384,661. SHELL FOR HIGH EXPLOSIVES. EDWARD I. ZALINSKI, U. S. Army. Filed Oct. 31, 1887. Serial No. 253,891. (No model.)



Claim.—1. In a projectile, a cylindrical core-section of high explosive, such as dynamite, an absorbent covering for the same, a surrounding annular body of less sensitive explosive, such as nitro-gelatine, an absorbent covering therefor, and an outer casing forming the body of the projectile, all in combination substantially as described.

2. In a projectile, the combination of a casing, an absorbent envelope containing an alkali, and an inclosed explosive charge of nitro-gelatine or similar high-explosive compound, substantially as described.

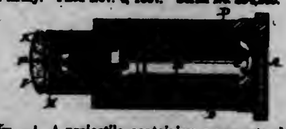
3. In a projectile, the combination of a central core, such as dynamite, an envelope for the same containing an alkali, an explosive compound, such as nitro-gelatine, surrounding said envelope, and an inclosing-casing for the same forming the body of the projectile, whereby the explosive compounds are divided by an absorbent and acid-neutralizing partition, all substantially as stated.

4. In a projectile, the combination of a central core of dynamite or similar high explosive, a surrounding body of nitro-gelatine or similar high explosive of a less sensitive character, a covering of asbestus, and an outer casing constituting the body of the shell, whereby the more sensitive compound at the center is protected from the outside influence of concussion and conducted heat, substantially as described.

5. In a shell or torpedo, a charge of high explosive, consisting of a sensitive core, a surrounding body of a less sensitive explodent, and a front section of a still less sensitive character, and a detonator at the rear of the charge, all combined substantially as stated.

6. A shell or torpedo having a charge of high explosive more sensitive at the center, a rear fuse for firing said explosive, and a buffer interposed between the front of the explosive and shell-casing to prevent explosion of the charge by its own impact, as set forth.

384,662. MAGNETO-ELECTRIC FUSE. EDWARD I. ZALINSKI, U. S. Army. Filed Nov. 4, 1887. Serial No. 254,303. (No model.)



Claim.—1. A projectile containing a magneto-electric fuse consisting, essentially, of a magnet and armature movable relatively to each other and an electric circuit closing through a primer, said circuit being closed by the release of the armature from the magnet, the combination being and operating substantially as described.

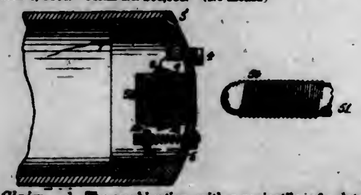
2. In a shell-fuse, the combination of a coil and magnet and armature movable relatively to each other, and conductors leading from the magnet to an electric primer in the shell.

3. In a shell-fuse, the combination of a coil and magnet, an armature, and a projecting spindle in position to separate the armature and magnet, substantially as described.

4. The combination, in a shell-fuse, of a magnet and a coil of wire in proximity to the same, an electric primer connected to the coil, and an armature acting as a plunger held to the magnet by the magnetic attraction but detached by concussion, as set forth.

5. In combination with the usual elements of a shell-fuse, a detonating-plunger held in position in the shell away from the detonator by magnetic attraction, but in position to be detached and permitted to act as a striker when the shell strikes, as set forth.

384,668. PROJECTILE. EDWARD I. ZALINSKI, U. S. ARMY. Filed Jan. 6, 1888. Serial No. 260,006. (No model.)



Claim.—1. The combination, with a projectile, of a detachable guiding-spindle, and a fuse or primer having an operating-trigger in position to be engaged by said spindle, substantially as described.

2. The combination, with a shell, of a detachable guiding-spindle,

and *d* percussion-detonator in the shell and connected with said spindle.

3. The combination, with a shell, of a detachable guiding-spindle, a detent engaged thereby, and a percussion-detonator held in cocked position by said detent.

4. The combination, with a shell, of a detachable guiding-spindle, a detent or trigger engaged thereby, and a spring-actuated detonator wherein the spring is held under compression by said detent, but released to fire the charge when the guiding-spindle is detached, as set forth.

384,664. SHELL-FUSE. REUBEN L. SALISBURY, U. S. ARMY. Filed Jan. 10, 1888. Serial No. 260,314. (No model.)



Claim.—1. The combination, with an explosive shell, of a fuse entering the base thereof, said fuse provided with a sharp-edged ring which finds a seat against the base of the shell and serves as a gas-check, substantially as described.

2. In a shell-fuse, a casing consisting of two parts, one part slightly movable longitudinally relatively to the other under the pressure of the firing-charge in the gun, and a ring in one section closing into a groove in the other to serve as a gas-check, the combination being and operating substantially as described.

3. In a shell-fuse, a two-part casing, one of the parts being slightly movable in a longitudinal direction relatively to the other under the pressure of the gas in the gun, and a gas-check covering the joint between the sections, in combination, substantially as described.

4. In a shell-fuse, a casing having a time composition inclosed therein, a portion of the casing covering said composition being movable relatively to the other part, so as to compress the composition while under the pressure of the firing-charge in the gun.

5. The combination, in a shell-fuse, of a casing having a groove in which a slow-burning composition is placed, and a movable section to said casing having a projection corresponding to said groove, whereby the pressure of the firing-charge against the movable section compresses the same onto the composition, as set forth.

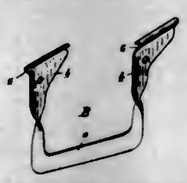
6. In a shell-fuse, the combination of the inclosing-casing, the time-charge of slow-burning compound, and a separate inclosing-envelope for the latter consisting of asbestus or equivalent non-combustible and slow-conducting material, substantially as described.

7. In a shell-fuse, the combination of an electric primer, an electric battery in position to move toward said primer, and an explosive charge in rear of said battery and in position to shoot the battery forward to close circuit with the primer, as set forth.

8. In a shell-fuse, an electric battery, an electric primer in line therewith, an explosive charge in rear of said battery in position to shoot the battery toward the primer, and a time-fuse for igniting said charge, the combination being and operating substantially as described.

9. In a shell time-fuse, the combination of a casing, and a perforated and movable firing-pin extending through said casing to the vicinity of the time composition, and having longitudinal movement, so as to puncture said composition when pressed forward by the explosion of the charge in the gun, substantially as stated.

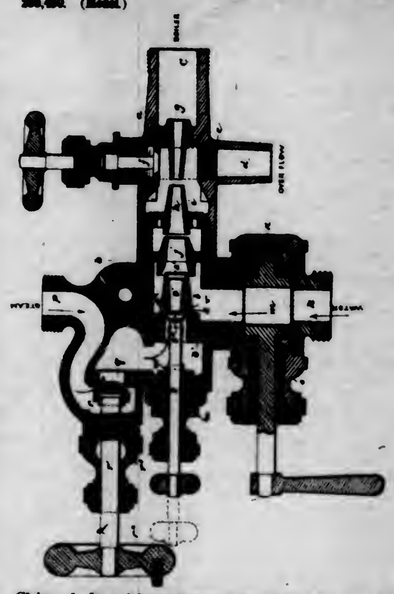
384,665. SCRAPER ATTACHMENT FOR VEHICLE-STEPS. OMAR BATES, Sandusky, Ohio. Filed Sept. 17, 1887. Serial No. 249,904. (No model.)



Claim.—1. The combination, with a vehicle-step, of a foot-scraper consisting of a scraper-bar suspended by hangers below said step, substantially as described.

2. As a new article of manufacture, a foot-scraper for vehicle-steps, consisting of a scraper-bar formed integrally with hangers for suspending it below the vehicle-step, and means for securing such hangers to the edges of the step, substantially as described.

384,666. INJECTOR. EDWIN J. YOUNG and ALBERT LANDERS, Wadsworth, and HIRAM R. FISHER, Cleveland, assignors to the Garfield Injector Company, Wadsworth, Ohio. Filed Oct. 26, 1887. Serial No. 253,492. (Model.)



Claim.—1. In an injector having a steam-inlet, water-supply connections, a suction or lifting tube, *j*, and a steam-jet or forcing-tube, a solid steam-spreading plug provided with a collar and stop and held in place in said jet or tube by the pressure of the steam to throw the steam in a flaring hollow or tubular form into the section or lifting tube, substantially as described.

2. In an injector having a steam-inlet, water-connections, and suction or lifting tube *j*, a forcing-tube having a forwardly-flaring passage opening into the suction or lifting tube, combined with a plug fitted to work in said forcing-tube and make in it an annular passage-way, so as to give a distinctive impact to the outgoing tubular column of steam against the suction or lifting tube and thereby clear the pipes of accumulated water, and provided with a collar and stop against which the steam acts to hold said plug in place, substantially as described.

3. In an injector having a steam-inlet, water-supply connections, a suction or lifting tube, *j*, and a steam-jet or forcing-tube arranged substantially as shown, a plug arranged in the steam-jet and provided with a collar against which the steam acts to hold the said plug in positions of use and disuse, substantially as described.

4. The combination, with the plug *t*, having the collar t^5, of a bonnet provided with a seat to receive the plug's collar, the said plug being held to its seat by steam-pressure and at the same time excluding the waste and leakage of steam through the bonnet, substantially as described.

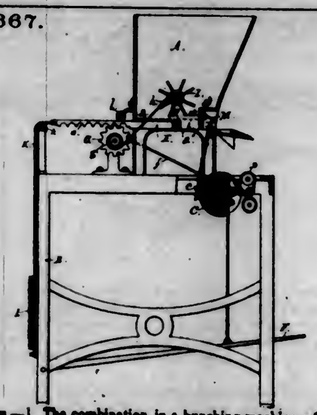
5. The section *b*, provided with a steam-valve seat and also a water-valve seat, combined with and receiving in itself the steam-valve, water-valve, or cock, the forcing-tube, and the plug *t*, substantially as set forth.

6. In an injector, a lifting-tube, *j*, and a forcing-tube aligned with said lifting-tube, and a plug of less diameter than and of substantially or approximately the same contour as the steam-passage in the forcing-tube and stopping short of the outlet of said forcing-tube, whereby is insured the delivery of the steam to the lifting-tube in a tubular column, substantially as described.

7. In an injector, a combining-tube, a separate lifting-tube, *j*, and a forcing-tube, all arranged in alignment, in combination with a plug arranged in the forcing-tube and of less diameter and substantially or approximately the same contour as the passage in said forcing-tube and stopping short of the outlet of said forcing-tube, substantially as and for the purpose set forth.

384,667. CIGAR-BUNCHING MACHINE. JOHN H. ABRAHAM and EDWIN K. MARTIN, Lancaster, Pa., assignors to the Conestoga Cigar Company, same place. Filed Aug. 30, 1887. Serial No. 248,205. (No model.)

384,667.



Claim.—1. The combination, in a bunching-machine, of the hopper having its bottom formed of the two plates a a^5 and provided with an opening, *i*, between the two plates, the bed-plate a', a swinging gate which closes the opening X in the side of the hopper, the plunger provided with a rack, and which forces the tobacco from the bed-plate through the opening in the side of the hopper, a gear which meshes with the rack of the plunger, a belt connected with the shaft of said gear, the stirrer and a belt for operating the same, a spring for retracting the plunger, a device for rolling the filler in the binder, and a treadle which is connected to the belt which passes around the shaft of the gear which operates the plunger, substantially as specified.

2. The combination of the hopper having its bottom formed of the two plates a a^5 and having an opening, *i*, between the plates for the discharge of the tobacco, and an opening, X, through its side under the plate a^5, through which the tobacco is forced by the plunger, the bed-plate a', upon which the tobacco falls from the hopper, and a stirring device placed in the hopper, the belt for operating the stirrer, the plunger provided with a rack, the spring connected to the rear end of the rack, a gear for moving the plunger, a device for rolling the filler in the binder, the treadle, and the belt *f*, which connects the treadle with the shaft *g*, substantially as described.

3. The combination, in a bunching-machine, of the hopper having its bottom formed of the plates a a^5 and having the opening *i* between the plates, and an opening, X, through its side for the discharge of the tobacco by the plunger, the stirrer placed in the hopper, and a belt for operating it, the bed-plate placed a suitable distance below the bottom of the hopper, upon which the tobacco falls through the opening *i*, and the swinging gate located in the opening X, and which keeps the tobacco in position upon the bed-plate, with the plunger provided with a rack, a gear for operating the rack, the spring for returning the plunger to position, and belt extending from the shaft of the gear to the treadle, the treadle, and the device for rolling the filler in the binder, substantially as set forth.

384,668. WATCH HAIR-SPRING STUD. LEO ABBY, Columbus, Ohio. Filed Jan. 10, 1888. Serial No. 260,341. (No model.)



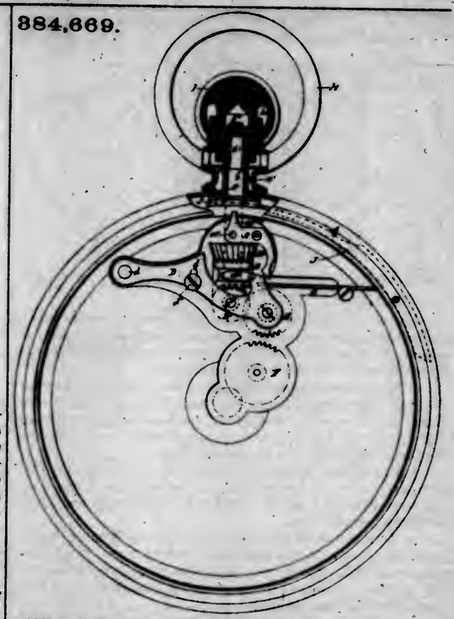
Claim.—In a watch, the combination of a balance-bridge formed with an annular hole or bearing, a cylindrical hair-spring-supporting stud provided with a collet and a vertical V-shaped groove, and a set-screw tapped through the side of said balance-bridge and provided with a conical point adapted to fit within said V-shaped groove, substantially as and for the purpose described.

384,669. STEM WINDING AND SETTING WATCH. LEO ABBY, Columbus, Ohio. Filed Jan. 10, 1888. Serial No. 260,342. (No model.)

Claim.—1. In a stem winding and setting watch, the combination of the dial-wheels and the setting wheel or wheels with an end-pivoted setting-bar carrying said setting wheel or wheels and the sliding stem and clutch-pinions for actuating said bar for throwing said setting and dial wheels into and out of mesh, substantially as and for the purpose described.

2. In a stem winding and setting watch, the combination of the dial-wheels and one or more setting-wheels with an end-pivoted setting-bar carrying said setting wheel or wheels, and provided near its

384,669.



middle with an elongated slot, a screw passing said slot and acting to limit the depth of mesh of the cogs or teeth of said setting and dial wheels, and devices for moving said wheels into and out of mesh, substantially as described.

3. In a stem winding and setting watch, the combination of the dial and setting wheels, the end-pivoted bar carrying said setting-wheels and provided with an upwardly and horizontally extending projection, the spring supporting the inner end of said bar with an upward pressure, the pivoted setting-lever, and the endwise-movable stem, substantially as described.

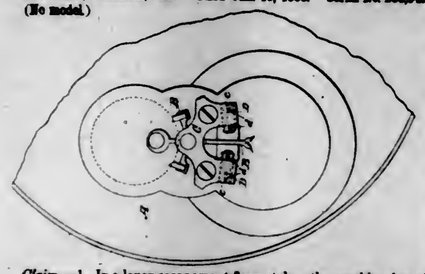
4. In a stem winding and setting watch, the combination of the dial and setting wheels, the end-pivoted bar carrying said setting-wheels and provided with an upwardly and horizontally extending projection, the spring supporting the inner end of said bar with an upward pressure, the setting-lever having a pin on its horizontal arm, the adjustable or screw pivot for said lever, and the stem formed with an annular groove in which said pin engages, substantially as described.

5. In a stem winding and setting watch, the combination of the pillar-plate, the potence or crutch firmly secured to said pillar-plate and provided with a step or extension, the exteriorly and interiorly square sleeve rigidly fitted at its lower end upon said step or extension and provided at its upper end with the angle-pinion, the sliding clutch-pinions, and the stem having a square lower portion fitting in said sleeve, the parts being so constructed and arranged as to retain said pinions in fixed position during the removal and insertion of said stem, substantially as described.

6. In a stem winding and setting watch, the combination of the dial and setting wheels, the spring-controlled end-pivoted setting-bar D, having the projection d^3, the stem A', the clutch-pinions, the pivoted setting-lever A, having the projection or point d^{3*}, and the case-spring J, arranged to have its head *j* in contact with said projection d^{3*}, the construction and arrangement of said projection and case-spring being such as to prevent the outward movement of the stem when the case is closed to permit the outward movement of said stem for setting the hands when the case is open and to automatically force said stem inward and secure the normal or winding position of the parts in closing the case, substantially as described.

7. In a stem winding and setting watch, the combination of the case having the hollow pendant, the crown provided with an interiorly-threaded tubular portion, the exteriorly-threaded sleeve formed interiorly square along its upper portion and provided with an interior shoulder, the case-spring upon which the lower end of said sleeve rests, and the stem provided with a square upper portion of greater length than the interior square portion of said sleeve and having a set upon its upper end, whereby the necessary play for actuating the case-spring and opening the case is effected without affecting the setting mechanism, substantially as described.

384,670. BANKING DEVICE FOR TIME-PIECE ESCAPEMENTS. LEO ARNY, Columbus, Ohio. Filed Jan. 10, 1888. Serial No. 260,242. (No model.)



Claim.—1. In a lever-escapement for watches, the combination of a pillar-plate and a lever with two independent adjustable banking devices arranged parallel to said pillar-plate and having their ends pointing toward said lever, substantially as described.

2. In a lever-escapement for watches, the combination of a pillar-plate and lever with two independent adjustable banking devices arranged parallel to said pillar-plate and at a slight angle or inclination to said lever, and having their inner ends pointing toward the same, substantially as and for the purpose described.

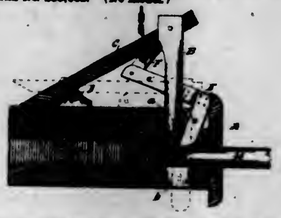
3. In a lever-escapement for watches, the combination of a pillar-plate and a lever with two independent banking-screws arranged parallel to said pillar-plate and at a slight angle or inclination to said lever, substantially as described.

4. In a lever-escapement for watches, the combination of a pillar-plate and a lever with two independent banking-screws arranged parallel to said pillar-plate and at a slight angle or inclination to said lever and provided with holes for pins for moving them forward and backward, substantially as described.

5. In a lever-escapement for watches, the combination of a pillar-plate, a lever, and a lever-bridge provided with wings, with two adjustable banking-screws passing through said wings and arranged parallel to said pillar-plate and at a slight angle or inclination to said lever, substantially as described.

6. In a lever-escapement for watches, the combination of a pillar-plate, a lever, and a lever-bridge provided with split wings, with two adjustable banking-screws passing through said wings and arranged parallel to said pillar-plate and at a slight angle or inclination to said lever, substantially as described.

384,671. CAR-COUPLING. JOHN G. B. ARNEMAN, Pinkville, assignor of one-half to John W. Fuller, Kilbourn City, Wis. Filed Oct. 31, 1887. Serial No. 253,882. (No model.)

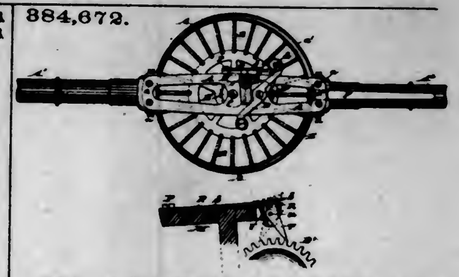


Claim.—1. The combination, with the draw-bar, the pin and the pin-carrying lever extending lengthwise of and pivotally supported on the draw-bar, of the bell-crank trip-lever having its horizontal branch extending beneath and adapted to bear against the pin-carrying lever, and the link connecting the inner end of said branch of the trip-lever with the outer end of the pin-carrying lever, substantially as described.

2. The combination, with the draw-bar, the coupling-pin, the pin-carrying lever pivotally supported between brackets and having its rear end extended beyond its pivotal support, and adapted to bear on the draw-bar for limiting the vertical movement of the pin, the trip-lever, and the link connecting the trip-lever with the pin-carrying lever, substantially as described.

3. The combination, with the draw-bar, the coupling-pin, the pin-carrying lever, the trip-lever having its vertical branch forming a bed for the pin, and its horizontal branch adapted to bear against the under side of the pin-carrying lever, and the link connecting the inner end of the horizontal branch of the trip-lever with the outer end of the pin-carrying lever, substantially as described.

384,672. FISHING-REEL. ALFRED F. BRAENAN, Brooklyn, N. Y., assignor, by mesne assignments, to Sarah J. Burnham, same place. Filed Jan. 6, 1888. Serial No. 259,969. (No model.)



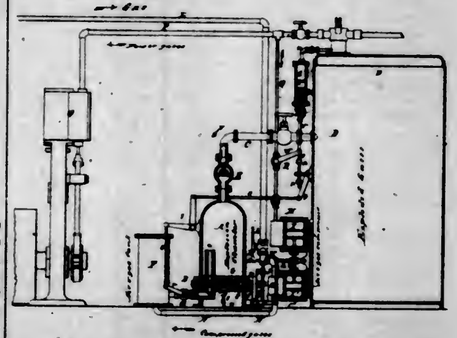
Claim.—1. In a fishing-reel, the frame M, forked at one end, triangular pawl T, pivoted in said fork, and spring S, secured to said frame and normally bearing upon one arm of said pawl, in combination with the toothed wheel D', whose teeth engage the other arm of said pawl, and means for rotating said wheel, as and for the purpose set forth.

2. In a fishing-reel, the frame M, forked at one end, the open-front case U, pivoted in said fork, the triangular pawl T, pivoted in said case, the strong spring R, forked at its front end, whereby it normally bears upon said case in rear of said pivot, but straddles said pawl, the weak spring S, lying upon said strong spring and normally bearing upon one arm of said pawl forward of the pivot, and the screw P, for securing said springs in position, in combination with the toothed wheel D', whose teeth engage the other arm of said pawl, and means for rotating said wheel, as and for the purpose specified.

3. In a fishing-reel, the combination, with the frame A, having slot a^2, the reel B, having gear-wheel B', the gear-wheel D' engaging it, and means for rotating said gear D', of the frame M, exterior slide, N, pin *m*, connecting said frame and slide through said slot, and the spring-actuated pawl T, pivoted in said frame and normally engaging the teeth of said gear D', as and for the purpose specified.

4. In a fishing-reel, the combination, with the reel B and means for rotating it, the frame A, and nearly-straight spring E, one end of which is secured to said frame and the free end of which carries a shoe, E', of the bell-crank lever F, pivoted at its angle to said frame, the long operating-arm of said lever extending along the fish-pole, and the short arm thereof being adapted to impart a radial motion to said shoe toward the center of said reel, as and for the purpose herein specified.

384,673. GAS-MOTOR. REINHOLD ROSELIUS, Brooklyn, N. Y. Filed Aug. 31, 1886. Renewed Sept. 24, 1887. Serial No. 250,580. (No model.)

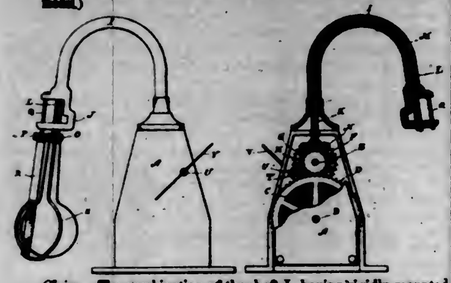


Claim.—1. The combination, with a motor or engine, of a receiver, D, a chamber, A, and a pump, H, and slide-valve B, substantially as and for the purpose herein stated.

2. The combination, with the motor or engine O, of the receiver D and the chamber A and its openings *a* and *b*, with the check-valve E and pipe C, and the pump H, with the pipe L and its cock M and air-inlet K, and the pipe Q, with the valve R, and the tank F, with the pipe N and valve G, and the slide-valve B and its ports *c*, *d*, and *f*, and the gas-jet *e*, substantially as and for the purpose herein mentioned.

3. The combination, with the motor or engine O, of the receiver D and chamber A and the pump H and tank F, with the slide-valve B and its gearing, with the pump H and its ports *c*, *d*, and *f*, with the pipe C and check-valve E, and the pipe P, Q, N, and L, and the air-inlet K, and the valves G, M, and R, and the cylinder S, the piston T, the spring U, and the gearing herein shown and connected with the valves R and G, substantially for automatic operation of the production of the motive power herein set forth.

384,674. MEANS FOR OPERATING EGG-BEATERS. MARY F. BUNNY, Bridgeport, Conn. Filed Feb. 21, 1883. Serial No. 264,726. (No model.)



Claim.—The combination of the shaft L, having rigidly mounted thereon the cog O, the cog P, rigid on the short shaft Q, journaled in the head J, the arched neck I, connecting said head and casing A, the shaft K, extending from the casing within the said neck, the coil-spring connecting the shafts L K, the beveled gear N, mounted on the lower end of the shaft K, the cog-wheels H F, secured on the short shaft E, journaled within the casing, the power-transmitting cog D, and spring C, substantially as and for the purposes set forth.

384,675. CAR-COUPLING. MARION T. BRADY, Bertha, Ind. Filed Sept. 15, 1887. Serial No. 249,880. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head thereof, of a movable carriage mounted therein and provided with a link-operating lever and a pin-operating lever, a shaft for operating the pin-lever, and arms for connecting the pin and link operating levers, substantially as specified.

2. In a car-coupler, the combination, with the draw-head thereof, of a longitudinally-movable carriage carrying pin and link operating levers, a hand-wheel for operating the pin-operating lever, arms pivoted in the link-operating lever and adapted to connect the same with the pin-operating lever, and a rope or chain connecting the pin-operating lever with the pin, substantially as specified.

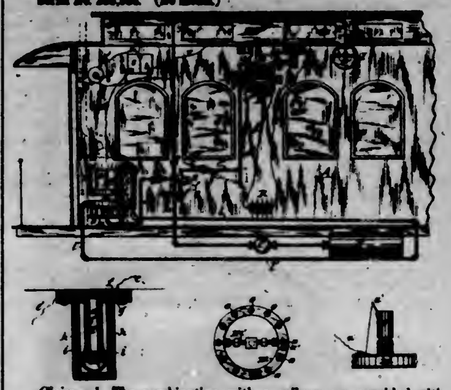
3. In a car-coupler, the combination, with the draw-head thereof, of a longitudinally-movable carriage mounted therein and provided with a notched and grooved pin-operating lever rigidly mounted on an operating-shaft, a link-operating lever pivoted below the first-mentioned lever, arms for connecting the two levers, a bail for limiting the movement of said arms, and a transverse bar for raising the arms for connection with the pin-operating lever, substantially as described.

4. In a car-coupler, the combination, with the draw-head thereof, of a longitudinally-movable carriage mounted therein and provided with pin and link operating levers, the latter being bifurcated to receive the link at its front end and weighted and provided with arms at its rear and adapted to take into shoulders formed in the pin-lever and normally hold from connection therewith, substantially as specified.

5. The combination of the head A with the carriage B, mounted for movement therein and provided with the shaft C, having the lever D mounted rigidly thereon, and with the lever E, pivoted, as at F, bifurcated, as at F^2, weighted, as at F^3, and carrying the arms E^4, for connection with the lever D, substantially as specified.

6. The draw-head A, having the openings A' A^2 A^3 A^4, with the carriage B, mounted for movement within the same and having the shaft C, carrying the hand-wheel C', and lever D, grooved and notched at its rear end, as at D' D^2 D^3, and with the lever E, weighted, as at F^3, and bifurcated, as at F^2, the arms E^4, for connecting the levers, the pulleys A^5, A^6, and A^7, the rope or chain H, and the link G, substantially as specified.

384,676. AUTOMATIC ELECTRIC GAS CUT-OFF FOR RAILROAD-CARS. FREDERICK C. BROWNE, Syracuse, N. Y. Filed Apr. 30, 1887. Serial No. 236,263. (No model.)



Claim.—1. The combination, with a railway-car provided with gas-burners, gas-reservoir, and gas-supply pipe leading from said reservoir to the burners, a stop-cock connected with said gas-pipe and held normally closed, a latch adapted to hold said stop-cock in its open position, a tripper adapted to throw the latch out of engagement with the stop-cock, electro-magnets, an armature adapted to retain the tripper, a battery, a mercury-containing receptacle rigidly secured to the car, an electric conductor extending from the magnets into the mercury-receptacle and terminating a short distance above the mercury, and an electric conductor leading from the battery to the magnets, substantially as and for the purpose set forth.

2. The combination, with a railway-car, of a heater, gas-burners for generating the heat, a gas-reservoir, gas-supply pipes leading from said reservoir to the burners, the stop-cock *a*, arm *b*, projecting from the spigot of the stop-cock, a weight or spring actuating the said arm to automatically close the stop-cock, the latch *c*, adapted to detain the arm *b* in its open position, the vertical guide *d*, weight D, sliding on said guide, magnets M, the armature O, provided with a hook for supporting the weight D, the battery B, the mercury-containing tube T, the wire *e*, extending from the mercury to the battery, the wire *e'*, extending from above the mercury to the magnets, and the wire *e''*, extending from the magnets to the battery, substantially as described and shown.

384,677. METHOD OF MANUFACTURING SPOOLS. REUBEN P. BROWNELL, Beebe Plain, Quebec, Canada. Filed Feb. 10, 1888. Serial No. 263,562. (No model.)



Claim.—1. The improved method of making spools and similar articles, consisting in first cutting longitudinally into the blank to give the proper circumferential shape to the ends and then cutting the central body portion away to less diameter than the ends, substantially as described.

2. The improved method of making spools and similar articles, consisting in cutting longitudinally into the blank from opposite directions distances equal to or greater than the thickness of the edges of the flanges and subsequently cutting the central body portion of the spool down on lines intersecting said cuts to a diameter less than that of said ends, substantially as described.

3. The improved method of making spools and similar articles, consisting in cutting longitudinally into the ends of the blank from opposite directions to give the proper circumferential shape thereto and simultaneously embossing or stamping suitable figures on the face of such ends, substantially as described.

4. The improved method of making spools and similar articles, consisting in forcing annular cutters into the ends of the blank from opposite directions, to give the same the proper circumferential shape, and embossing or stamping suitable figures on the faces of such ends while within the cutters, substantially as described.

5. The improved method of making spools, consisting in first boring the blank, then cutting longitudinally into it to shape the ends and stamping figures on the faces of said ends, and subsequently turning

the central body portion down on lines intersecting the cuts made from the ends to a diameter less than such ends, substantially as described.

6. The herein-described method of making spools and similar articles, consisting, first, in boring the blank; second, facing or turning the ends; third, stamping designs in the ends, or either of them, and simultaneously cutting longitudinally into the blank to shape the ends, and, finally, turning the spool-body down to proper shape on lines intersecting the cuts previously made, as set forth.

7. The herein-described step in the manufacture of spools and similar articles, consisting in cutting longitudinally into the blank by means of a circumferentially-corrugated die, thereby shaping the ends, and subsequently turning the body of the spool down on lines intersecting the cuts previously made.

384,678. PUMP. HENRY M. CLARK, Beaver Falls, Pa. Filed Apr. 13, 1887. Serial No. 234,660. (No model.)



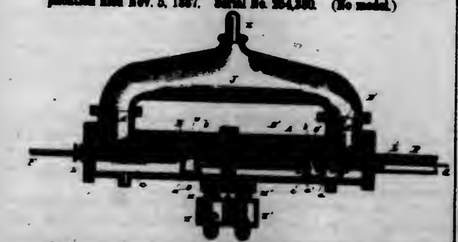
Claim.—1. In a device for transferring liquids from a lower to a higher level, a double-chambered cylinder having inlet and outlet ports in each chamber, a hollow neutral cylinder or piston of smaller diameter, except the heads, which fit the main or double-chambered cylinder, and valves located in the heads of the piston to open and close the ports, said valves being provided with a central opening, so as to leave the neutral cylinder open, as described, whereby the columns of water will rest against each other within the piston or neutral cylinder to balance the same at any point within the main or double-chambered cylinder, as set forth.

2. In a device for raising liquids from a lower to a higher level, a double-chambered cylinder having outlet-pipes at each outer end and inlet-pipes at each inner end of said chambers, and a neutral cylinder or hollow piston provided with valves, as described, and of smaller diameter, except the ends thereof, working within said cylinder, the ends of the piston being open and provided with valves which open and close alternately at each stroke of the neutral cylinder or piston to admit or shut off the water-supply from the space around the piston to the double chambers of the cylinder, as set forth.

3. In a device for transferring liquids from a lower to a higher level, a double-chambered cylinder having inlet and outlet pipes in each chamber, and a hollow neutral cylinder or piston of smaller diameter, except the heads, working within the double-chambered cylinder, the outlet-pipes being open or free from valves, as described, whereby the columns of liquid above the piston will rest against each other within the piston, as set forth.

4. In a pump of the character described, the combination of the double cylinder A and the hollow open-ended neutral cylinder or piston B, reduced between the heads to form a chamber on each side of the partition in the main cylinder, said neutral cylinder or piston being provided with the valves E and E', with the supply-pipes M M', pipes C, and dome or exit-pipe J, as set forth.

384,679. PUMP. HENRY M. CLARK, Beaver Falls, Pa. Original application filed Apr. 13, 1887, Serial No. 234,673. Divided and this application filed Nov. 5, 1887. Serial No. 254,380. (No model.)



Claim.—1. In a device for transferring liquids from a lower to a higher level, a double-chambered cylinder having outlet-pipes in the outer ends and an inlet-pipe at the inner end of each of said chambers, and a hollow piston or neutral cylinder of smaller diameter, except at the ends, working within said cylinder, said piston being provided with automatically-operated valves to close the ends of the piston, as set forth, whereby the column of liquid being raised is caused to rest against the heads or valves of the piston at each alternate stroke of the same and balance the piston or neutral cylinder at any point within the double-chambered cylinder.

2. In a device for transferring liquids from a lower to a higher level, a main exit-pipe divided at its lower end into two branches, each communicating with the outer ends of a double-chambered cylinder, in combination with a piston or neutral cylinder having automatically-operated valves at each end thereof, whereby the column of liquid to be raised is divided into two columns, each of which rests against one or the other of the heads of the neutral cylinder or piston alternately, as set forth.

3. In a device for transferring liquids from a lower to a higher level, a double-chambered cylinder, the piston or neutral cylinder B, with heads which work snugly within the cylinder, and with the main body reduced, a partition through which the reduced portion of the piston works, forming with the heads a space between the outer walls of the piston and the inner walls of the chambered cylinder, supply-pipes communicating with the space in each chamber, and the check-valves and automatically-operated valves in the ends of said piston, as set forth, whereby a vacuum-chamber is formed for the inflow of water in one or the other chamber at each stroke of the piston, as set forth.

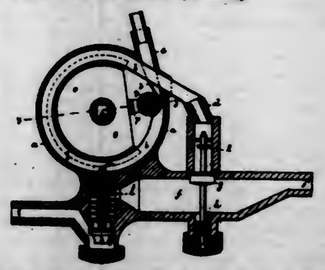
4. In a device for raising or transferring liquids from a lower to a higher level, a divided cylinder having an opening through its partition, a double hollow piston having a reduced portion connecting the heads fitting the opening in the partition to reciprocate therein, and with the heads fitting the cylinder to form chambers between the partition and heads, and the valves, ducts, or ports forming communicating passages between the chambers and the hollow piston, substantially as set forth.

5. In a device for raising liquids, a double-chambered cylinder, the inlet and outlet pipes communicating with each chamber, a double hollow piston or neutral cylinder working therein, and the valved ports in the ends of the piston acting to automatically and alternately open and close to admit and discharge the liquids around the piston or neutral cylinder, substantially as set forth.

6. In a device for raising liquids, a divided cylinder having an opening through its partition, a double hollow piston having a reduced portion connecting the heads, fitting the opening in the partition to reciprocate therein, and the heads fitting the cylinder and forming chambers between the partition and heads, the ends of said piston made hollow, the inner and outer walls of both being provided with valved openings forming communications between the chambers and hollow piston and the hollow piston and outlet, and acting automatically and alternately to admit and discharge the water from the inlet to the outlet, substantially as set forth.

7. In a device for raising liquids, a double-chambered cylinder, A, a double hollow piston or neutral cylinder, B, having the chambers O O', one at each end, and the inlet and outlet pipes, in combination with valves E E', and the rod G for opening the valves automatically in the reciprocation of the piston or neutral cylinder, and the valves D and D', substantially as set forth.

384,680. SHOT-GAGE. JOSEPH CHEVER, New York, N. Y. Filed Jan. 27, 1886. Serial No. 209,142. (No model.)



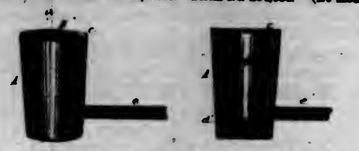
Claim.—1. The combination of drum a with the flexible tube b contained therein, and with a revolving shaft carrying roller g and provided with handle f, carrying cam x, and with a mixing-chamber, f, having a pair of inlet-ports, the port for admitting drop communicating with the flexible tube b, and with a pair of valves controlling the inlet-ports, the valve in the port for admitting charged liquid being operated by cam x on the revolving handle f, substantially as specified.

2. The combination of a drum having a central shaft with a handle for rotating said shaft and carrying a cam, and with a flexible tube and a roller for compressing said tube, and with a mixing-chamber having two inlet-ports, one of which communicates with the flexible tube, while the other port is provided with a valve having a projecting valve-stem that is engaged by the cam, substantially as specified.

3. The combination of drum a with the flexible tube b, and with central squared shaft n, hung across the drum and carrying roller g, and with the block r, having nose c, and fitted on shaft n, and with the handle f, hung loosely on said shaft, and with a mixing-chamber having two inlet-ports, one of which communicates with the flexible tube, while the other port is provided with a valve having a projecting stem that is engaged by the cam, substantially as specified.

4. The combination of a roller with a crank-axle and revolving cam, and with a flexible tube, and with a mixing-chamber connected therewith, and having an inlet-port and valve that is operated by the revolving cam, substantially as specified.

384,681. TOBACCO-PIPE. CHARLES H. DARLING and HENRY PERRY, Lewiston, Me. Filed Feb. 20, 1888. Serial No. 264,692. (No model.)

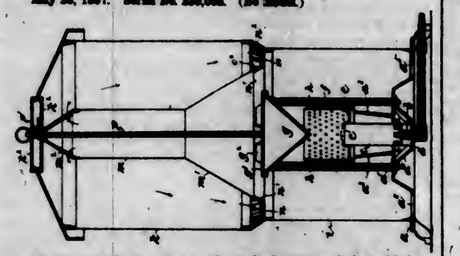


Claim.—The herein-described pipe-bowl, having its interior lined with asbestus, a metal plate located in the bottom thereof, and an interiorly-flanged cap or ring located at the mouth thereof, said cap or ring having holes near its inner edge for the reception of pins for securing the said ring or cap to the mouth of the bowl, thereby retaining the asbestus lining in place, substantially as set forth.

384,682. PROCESS OF OBTAINING THE PRECIOUS METALS FROM SPEISS. LEWIS W. DAVIS, Bucks, Nev. Filed Nov. 16, 1887. Serial No. 255,230. (No specimens.)

Claim.—The method of separating precious metals from speiss, which consists in melting the speiss, then injecting molten lead into the molten speiss, then thoroughly mixing them together, and, finally, allowing the mixture to stand until the lead and precious metals have been precipitated and are ready for removal, as described.

384,683. GAS-STOVE. ALFRED S. DEBERNEE, Boston, Mass. Filed May 28, 1887. Serial No. 239,092. (No model.)

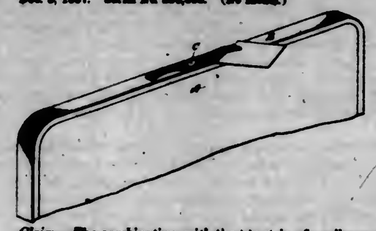


Claim.—1. In a gas-stove, the main frame consisting of a base and uprights supported thereon, combined with a flame-spreading and distributing device of substantially conical shape, having its base tightly held upon said uprights with its apex projecting down between them, and a burner consisting of a tube that receives gas and air at its lower end and is provided with a lateral flange near its upper end, and a perforated chimney of larger diameter than said tube supported on said flange, the said burner being held in supports that engage the lower end of the burner-tube and the flange thereof, whereby the said burner-tube is removable laterally from between the base and spreading device, substantially as and for the purpose set forth.

2. The combination of the main frame composed of a base provided with uprights, with a burner composed of a tube that receives air and gas near its lower end, a lateral flange near the upper end of the said tube, and a perforated chimney on said flange, the said burner being held in a socket near its lower end, and the flange at the upper end of the said tube being seated on uprights supported from the base, and an inverted cone tightly fastened on uprights connected with said base and having its apex extend downward into the said chimney, substantially as described.

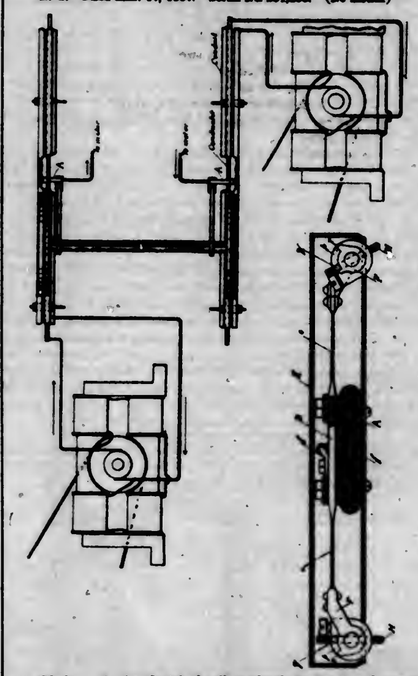
3. The main frame composed of a base provided with standards or uprights, combined with an inverted cone tightly fastened upon said uprights and provided with a plate attached to its base portion for supporting cooking utensils, and a burner composed of a tube provided with a flange near its upper end, and a perforated chimney of larger diameter than said tube connected with said flange, the said burner being supported in the frame beneath the inverted cone and being laterally removable from between the cone and base of the frame-work, substantially as and for the purpose set forth.

384,684. TICKET-HOLDER. HENRY PERRY, Bridgeport, Conn. Filed Dec. 3, 1887. Serial No. 256,602. (No model.)



Claim.—The combination, with the top strip of a railway-car seat, of a flat spring-metal ticket-holder secured directly upon said strip and carved from this point of attachment away from said strip to the end or holding-point, which latter lies closely against the strip, substantially as set forth.

384,685. ELECTRIC RAILWAY. STEPHEN D. FIELD, Yonkers, N. Y. Filed Mar. 17, 1887. Serial No. 231,205. (No model.)



Claim.—1. An electrical railway having a source of energy at each end of the line connected by their opposite terminals with two conductors, returns for said sources of energy, and connections for completing the circuit through a locomotor between said conductors, for the purpose specified, whereby the potential of the system is maintained constant.

2. In an electrical railway, two parallel conductors for supplying current to a locomotor, a source of electricity at each end of the line, connected each to one of said conductors, and a return for the remaining terminals of said sources of electricity, whereby the potential remains the same, whatever be the location of the locomotor.

3. The combination, in an electrical railway, of two sources of electrical energy, conductors connected to two opposite terminals of said sources of electrical energy and suitably insulated, a locomotor, electrical connections for completing the circuit between said conductors through said locomotor, a return for the remaining terminals of said sources of electrical energy, a terminal for said return located upon the locomotor, and a switch, also upon the locomotor, for con-

necting the terminals of said locomotor with one or the other or both sources of electric energy at will.

4. In an electric railway, two sources of electric energy connected to conductors by their opposite poles, respectively, a conduit, within which said conductors are suitably insulated, a motor located upon a car traveling upon the exposed portion of said conduit, circuit-completing connections carried by said car, a lead from the other terminals of said sources of electrical power connected to said conduits, and switches for completing the circuit at either side of the motor through the wheels to the conduit or return-circuit, so that either source of power can be used exclusive of the other whenever desired.

5. An electrical railway having two sources of electrical energy, conductors arranged along the way permanently connected to each respective source, returns for said sources of electricity, and electrical connections on the locomotor adapted to complete the circuit between said conductors through the motor on the car, or to put either terminal of the motor in communication with its respective return, whereby either source of energy or both may be drawn on at will.

6. The combination of a car, as C, carrying an electric motor, two conduits upon the exposed portions of which said car is adapted to travel, two insulated conductors in said conduits, a generator in electrical communication with each of said conductors connected by opposite poles, the remaining poles being connected to the conduit, and electrical connections completing the circuit between said conductors through the motor.

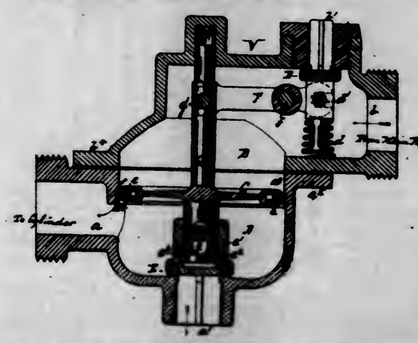
7. The combination, in a railway, of a plow-arm, as A, for transmitting the electric power to the car, two pieces, as *a b*, grooved to accommodate the axle and bolted to said plow-arm, a device for holding the same to the axle, and an extension of the part *a* and guide-pieces *c c*, within which said extension works, whereby the action of the springs of the car is not interfered with and the plow-arm is held in the required position.

8. The combination, as a contacting device movable along an electric circuit, of a metal piece, as B, bolted to a supporting-piece, A, two carriers, F F, attached at each end thereof, and a swiveled carriage, G, mounted in each carrier and carrying the brushes H H.

9. The combination, as a brush-contact device for an electric circuit, of a supporting-arm, as A, a metal plate, as B, bolted thereto but insulated therefrom, a conductor, as *f*, in electrical connection with B and passing through A, from which it is insulated, a carrier, F, at each end of said plate B, a swiveled brush-carrying device, G, borne by each carrier, and means for regulating the play of said brush and carrier, so as to give the brush a lead when traveling in either direction.

10. The combination of a circuit-completing device, as B, adapted to travel in a conduit and having a brush at each end thereof, said brushes being separated by the space described, and an insulating box or housing, K, for said device, having slots therein, through which the brushes protrude, whereby the device is prevented from establishing an electrical connection, except through the brushes.

884,686. VALVE FOR AIR-BRAKES. HERMAN GUMA, St. Louis, Mo., assignor to the American Brake Company, same place. Filed Oct 28, 1887. Serial No. 253,637. (No model.)



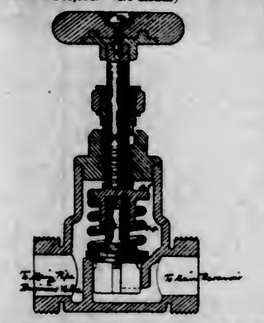
Claim.—1. In an automatic valve for air-brakes, the combination of a piston-valve, a port which is opened and closed thereby, an exhaust-valve, and a lever for actuating the exhaust-valve from the stem of the piston-valve, the connection between the piston-stem and lever being loose to allow of an interval of motion for the valve-stem before it actuates the lever and exhaust-valve, whereby the port of the piston-valve is closed before the exhaust-valve is opened, substantially as and for the purposes specified.

2. In an automatic valve for air-brakes, the combination of a piston valve, an exhaust-valve for the train-pipe loosely connected to the stem of the piston-valve to permit an interval of movement of the piston before it actuates the train-pipe exhaust-valve, and an exhaust-valve for the cylinder loosely connected to the stem of the piston-valve to permit an interval of movement in the piston-valve before it actuates the cylinder exhaust-valve, substantially as and for the purposes specified.

3. In an automatic valve for air-brakes, the combination, with a piston-valve, of a puppet exhaust-valve for the train-pipe and a puppet exhaust-valve for the cylinder, said exhaust-valves connected with and actuated from the stem of the piston-valve, and said valves relatively arranged within the valve-shell, so as to be held on their seats by the pressure in the train-pipe, substantially as and for the purposes specified.

4. In an automatic valve for air-brakes, the combination of a shell composed of two sections, A B, each having an exhaust-port, two exhaust-valves to control said ports, and an intermediate balanced valve for controlling the exhaust-valves, substantially as and for the purposes specified.

384,687. AIR-BRAKE SYSTEM. HERMAN GUMA, St. Louis, Mo., assignor to the American Brake Company, same place. Filed Oct. 28, 1887. Serial No. 253,638. (No model.)



Claim.—1. In an air-brake system, the combination, with a balanced valve, of an exhaust-valve for the cylinder and an exhaust-valve for the train-pipe, said exhaust-valves independent of each other but connected with and actuated by the balanced valve, substantially as and for the purposes specified.

2. In an air-brake system, the combination, with a cylinder, an expansion-chamber, and a main (or train) pipe, of an exhaust-valve arranged to open the cylinder for applying the brakes and a check-valve-operating device arranged to operate the check-valve and equalize the pressure in the cylinder and expansion-chamber when the pressure in the main pipe is raised to release the brakes, substantially as and for the purposes specified.

3. In an air-brake system, the combination, with a cylinder, an expansion-chamber, and a main (or train) pipe for supplying air under pressure to the cylinder and expansion-chamber, of a check-valve-operating device having diaphragms of unequal area, the opposite sides of said diaphragms connected by a port and arranged in the pipe or passage leading to the expansion-chamber to multiply the pressure in the main (or train) pipe sufficiently to overcome the check-valve when the pressure in the expansion-chamber is greater than the pressure in the main supply-pipe, substantially as and for the purposes specified.

4. In an air-brake system, the combination of a cylinder, an expansion-chamber having a check-valve, and a main (or train) pipe for supplying air under pressure to the cylinder and expansion-chamber, of two diaphragms of unequal area connected by a tubular stem and arranged in the port or passage leading to the expansion-chamber, whereby the pressure in the main air-supply pipe is multiplied and applied to operate the check-valve, substantially as and for the purposes specified.

5. In an air-brake system, the combination, with a cylinder, an expansion-chamber, and a main air-supply (or train) pipe, of a reduction-valve, an exhaust-valve arranged to open the cylinder, an exhaust-valve arranged to open the train-pipe, and a check-valve-operating device arranged to operate the check-valve of the expansion-chamber when the pressure is raised in the main pipe to release the brakes, substantially as and for the purposes specified.

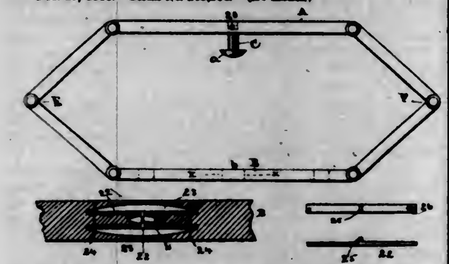
6. In an air-brake system, the combination, with a brake-cylinder and a main air-supply or train pipe, of a valve-chamber having a diaphragm provided with a valve-seat, a valve thereafter, and two exhaust-valves, one for the main air-supply pipe, and one for the cylinder, said valves connected with the diaphragm so as to be actuated thereby, substantially as and for the purposes specified.

7. In an air-brake system, the combination, with a brake-cylinder and a main air-supply or train pipe, of a valve-chamber having a flexible diaphragm provided with a valve-seat, a valve therefor, an exhaust-valve for the cylinder connected directly to the stem of the diaphragm-valve, and an exhaust-valve for the main air-supply or train pipe, connected to the diaphragm-valve stem by an interposed lever having a fulcrum, substantially as and for the purposes specified.

8. In an air-brake system, the combination, with a cylinder, an expansion-chamber, and a main (or train) pipe, of an exhaust-valve arranged to open the train-pipe and a check-valve-operating device arranged to operate the check-valve and equalize the pressure in the cylinder and expansion-chamber when the pressure in the train-pipe is raised to release the brakes, substantially as and for the purposes specified.

9. In an air-brake system, the combination, with a cylinder, an expansion-chamber, and a main supply or train pipe, of a check-valve-operating device arranged to be actuated by the pressure in the main pipe to operate the check-valve of the expansion-chamber when the pressure in the main pipe is lower than that of the expansion-chamber, substantially as and for the purposes specified.

884,688. BAG-LOCK. THOMAS W. HARDESTY, Topeka, Kans. Filed Feb. 25, 1888. Serial No. 265,561. (No model.)



Claim.—1. In a bag-lock, the combination, with the side A and the side B, having an oblong opening, of the lock-bolt C, having an oblong head, and a spring having a locking-leg which is adapted to engage with the said bolt, substantially as and for the purpose described.

2. The combination, with the side A, the side B, the lock-bolt having a longitudinal opening and side openings, and the springs having locking-lugs, of the key composed of two members pivoted together and having oppositely-disposed extensions to enter the lateral openings in the said bolt, substantially as and for the purpose described.

3. The combination, with the side A and the side B, having the oblong opening *b*, the recesses 22, and the lateral openings *b'*, of the springs 22, having locking-lugs, and the lock-bolt having openings in its side to receive the said locking-lugs, substantially as and for the purpose described.

4. The combination of the sides A and B, the springs 22, having locking-lugs, the lock-bolt having a longitudinal bore and lateral openings, and the key composed of two members pivotally connected together midway of their ends, the front ends of the members extending parallel and terminating in oppositely-disposed extensions, and the rear ends of the members curving in opposite directions to form a circle, one end having a socket and a spring and the other end having a tenon which is adapted to enter the said socket, substantially as and for the purpose described.

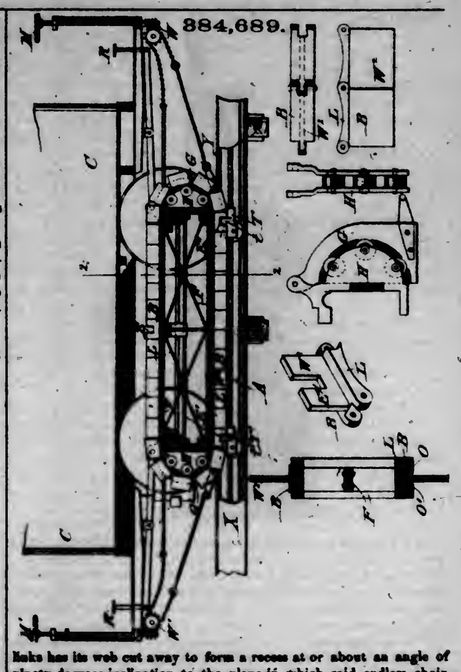
884,689. CHAIN-GRIP FOR CABLE ROADS. WILLIAM HEMENWAY, Yonkers, N. Y., assignor to Benjamin Butterworth, trustee, Cincinnati, Ohio. Filed Apr. 20, 1888. Serial No. 271,202. (No model.)

Claim.—1. In a grip for traction-cable railroads, the combination of a cable having suitable projections and an endless chain carried by the car, having suitable recesses into which the said projections on the cable may be inserted, substantially as described.

2. In a grip for traction-cable railroads, the combination of a cable having suitable projections, a vertically-adjustable frame upon the car, an endless chain running around said frame and having suitable recesses or indentations into which the said projections on the cable may be inserted, together with a friction apparatus by which the chain may be temporarily locked to the adjustable frame and rendered immovable with relation thereto, substantially as described.

3. In a traction-cable railroad, the combination of the cable-conduit and the endless chain adjustably attached to the car, each link in the lower half of which chain has its larger portion within the cable-conduit, substantially as described.

4. In a chain-grip for traction-cable railroads, an endless chain composed of links, each of which links has a long thin web reaching far down into the slot of the cable-conduit, and one or more of which



links has its web cut away to form a recess at or about an angle of ninety degrees inclination to the plane in which said endless chain travels, substantially as described.

884,690. METHOD OF MAKING SLIVERS FOR THE PRODUCTION OF CLOUDED YARN. JAMES F. HENRY, Little Falls, N. Y., assignor of one-half to Walter W. Whitman, same place. Filed June 2, 1887. Serial No. 240,080. (No model.)



Claim.—The herein-described method of producing a sliver composed of concentric layers of different fibers, which consists in feeding loose fibers of different colors or kinds as contradistinguished from slivers or rovings to the carding-engine simultaneously and separately side by side, carding the several colors or kinds of fibers simultaneously side by side, and removing the several colors or kinds of fiber successively from the doffer and forming the same into a single sliver, one color or kind forming the core of the sliver and the following kinds or colors forming successive concentric layers around said core, substantially as set forth.

884,691. CASH INDICATOR AND REGISTER. CARL P. HARKER, Louisville, Ky. Filed Dec. 13, 1886. Serial No. 221,945. (No model.)

Claim.—1. In combination with the upper and lower guide-bars provided with the series of corresponding guide-notches, the indicator-rods guided in such notches and having the forwardly-extending arms at or near their lower ends, plates on such arms parallel to the rods, a fixed plate engaging such plates, and means for holding the upper ends of the rods in the notches of the upper bar, substantially as and for the purpose shown.

2. In combination with the upper and lower bars provided with corresponding notches in their front sides, the indicator-rods guided in such notches and having at or near their lower ends the forwardly-extending arms, the upright plates on such arms, and the fixed plate engaging the front sides of the indicator-bars near their upper ends, substantially as and for the purpose set forth.

3. In combination with the upper and the lower notched guide-

384,691.



bars and the bar in front of the upper one, the indicator-rods sliding in the notches in the upper and lower bars and having arms extending forward from near their lower ends, the slotted plate F, the plates on the arms of the indicator-rods, and the keys rigidly attached to such arms and extending through the slots in plate F, substantially as and for the purpose described.

4. In combination with the locking-bar provided with guide-arms, the open-sided guide-sockets for the arms on the locking-bar, and the swinging plates adapted to close with their ends the open sides of the sockets, substantially as and for the purpose shown.

5. In combination with the locking-bar having the upper and lower arms or lugs at its ends, the sockets for receiving and guiding the lower arms, the sockets for receiving the upper arms, open at one side, and the movable pieces for engaging the upper arms on the open sides of such sockets, substantially as and for the purpose set forth.

6. In combination with the locking-bar having the upper and lower guide-arms on its ends, the guide-sockets for the lower arms, open on their upper sides, the open-sided sockets for the upper guide-arms, and the swinging stops adapted to engage with their ends the sides of the upper guide-arms not engaged by the sockets, substantially as and for the purpose described.

7. In combination with the sliding locking-bar K, the swinging plate adapted to engage a portion of the bar end, and the lock provided with the bolt having the inclined face adapted to engage the plate, substantially as and for the purpose specified.

8. In combination with the sliding bar K, the means for locking the same, consisting of the swinging plate provided with the inwardly-projecting portion adapted to engage a lug or arm on the bar, and the lock having the movable bolt provided with a cam-face or incline to engage the plate, substantially as and for the purpose shown.

9. In combination with the series of indicator-rods having the key-arms, and the short arms *e e* on their lower ends below the key-arms, the swinging frame U, extending over and engaging these lower arms, and a spring suitably connected with the frame to draw it downward, substantially as and for the purpose set forth.

10. In combination with the alarm mechanism and the drawer, a locking device for the latter connected with the alarm mechanism, so as to be operated thereby, substantially as and for the purpose described.

11. In combination with the alarm mechanism and the drawer, the locking device for the latter, and means connected with the alarm mechanism to trip the locking device as the alarm mechanism moves to give the alarm, substantially as and for the purpose specified.

12. In combination with the alarm-striking lever, the drawer, and a locking device for the latter, means whereby the striking-lever in moving to strike the alarm actuates the locking device to unlock the drawer, substantially as and for the purpose shown.

13. In combination with the drawer and a locking device therefor, the lever connected with such device, and the bell-hammer lever adapted to engage and move the locking-device lever, substantially as and for the purpose set forth.

14. In combination with the drawer and the bolt for locking the same, the lever connected with the bolt, and the bell-hammer lever adapted to strike and actuate the bolt-lever, substantially as and for the purpose described.

15. In combination with the drawer-locking bolt and the lever connected therewith, the bell-hammer lever provided with a pin or lug to engage the bolt-lever, substantially as and for the purpose specified.

16. In combination with the drawer-locking bolt, the lever connected therewith, the spring engaging this lever, and the bell-hammer lever of the alarm mechanism, provided with means for engaging the bolt-lever, substantially as and for the purpose shown.

17. In an indicator, in combination with the drawer, the indicating devices, and an alarm mechanism connected with the indicating devices to give an alarm as an indication is made, the drawer-locking device adapted to be actuated by the alarm mechanism to unlock the drawer, substantially as and for the purpose set forth.

18. In an indicator, in combination with the drawer, the indicating devices, and the alarm mechanism connected with the indicating devices, so as to be operated thereby, the locking-bolt and the lever connected therewith adapted to be actuated by the alarm-striking lever of the alarm mechanism as such lever moves to strike the alarm, substantially as and for the purpose described.

19. In combination with the series of indicating devices, the alarm mechanism having the bell-hammer lever for striking the alarm, said lever having a pin or lug, connecting mechanism between the indicating devices and the alarm mechanism, the locking-bolt, the lever connected therewith adapted to be engaged by the pin or lug on the hammer-lever, and the spring engaging the bolt-lever, substantially as and for the purpose specified.

20. In combination with the locking-bolt, the lever for operating the same, having the spring-arm and the inclined portion or projection thereon, and the hammer-lever provided with means for engaging the lever, substantially as and for the purpose shown.

21. In combination with the swinging bell-lever provided with a lug or pin, the locking-bolt and the lever connected therewith having the yielding arm provided with an inclined face to be engaged by the pin on the hammer-lever as the latter draws back for a stroke, and with a portion adapted to stand normally in the track of the said pin, substantially as and for the purpose set forth.

22. In combination with the locking-bolt, the drawer, the swinging plate thereon provided with an incline on its rear end to be engaged by the bolt and with the bolt-engaging notch, the swinging plate above such notched plate having its rear end inclined, and means for swinging such plates inward toward each other, substantially as and for the purpose described.

23. In combination with the bolt and the drawer, the two swinging plates on the drawer, one above the other, having oppositely-inclined surfaces at their rear ends to engage the bolt as the drawer is being closed, and the lower one having a notch on its inner side, and means for normally swinging the plates inward toward each other, so that the upper plate covers the notch in the lower one, substantially as and for the purpose specified.

24. In combination with the lower swinging plate having the notch on its inner side and the inclined surface at its end, the upper swinging plate adapted to cover the notch in the lower plate when the two plates are swung inward toward each other, and having at its end an incline opposite to that on the other plate, and the spring acting to swing the plates toward each other, substantially as and for the purpose shown.

25. In combination with the locking-bolt, the drawer, and the plate thereon provided with a slot, the upper and lower plates pivoted under the slotted plate, so as to swing inward across the slot, having the opposite inclines at their rear ends, and the lower plate having the notch to engage the bolt, suitable stops to limit the inward swing of the plates, and the spring adapted to swing them inward, substantially as and for the purpose set forth.

26. In combination with the two series of register-wheels, the pawl-supporting rod or bar, the pawls pivoted thereon in pairs, of which one pawl engages the teeth of a wheel in one series and the other those of a wheel in the other series, the arms on the respective pawls of each pair, and the spiral springs connected at their opposite ends with such arms, substantially as and for the purpose described.

27. In combination with a series of hollow register-wheels, each provided within, on one side, with a fixed lug having an incline on its forward side with relation to the rotation of the wheel, the longitudinally-movable and rotary shaft provided with the series of pins, substantially as and for the purpose shown.

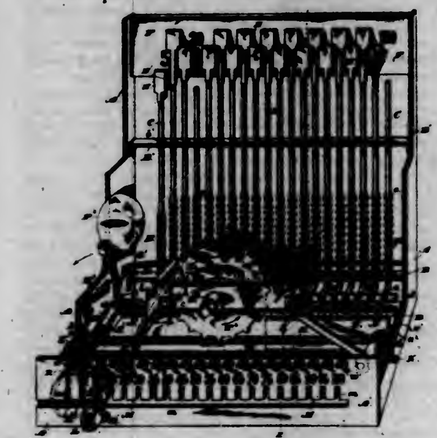
28. In combination with a register-wheel shaft, the means for shifting the shaft and holding the same as shifted, said means consisting of the independent cam-levers engaging the opposite ends of the shaft, substantially as and for the purpose set forth.

29. In combination with the two register-wheel shafts and the supports for their ends, a lever pivoted between the bearings of the shaft ends and provided with the two inclined or cam faces adapted to engage both the shafts, substantially as and for the purpose described.

30. In combination with the two register-shafts and suitable supports for the opposite ends thereof, the two cam-levers, each provided with the two inclines or cams to engage the corresponding ends of the two shafts as the levers are swung on their pivots, substantially as and for the purpose specified.

31. In combination with the two series of register-wheels provided with lugs, the two shafts for supporting the wheels, made longitudinally movable as well as rotary, and the two cam-levers for engaging the opposite ends of the shafts, each having the two cam-surfaces to engage the ends of both shafts at once, substantially as and for the purpose shown.

384,692. CASH REGISTERING AND INDICATING APPARATUS. CASH B. HOWELL, Louisville, Ky. Filed Mar. 10, 1887. Serial No. 230,455. (No model.)



Claim.—1. In combination with the plate provided with the series of numbers or indicating-marks on its opposite sides, the series of movable rods provided with the number-hiding plates, situated on both sides of the numbered plate, substantially as and for the purpose shown.

2. In an indicator, in combination with a plate provided with the series of indicating-numbers, the series of rods below, a plate on each of the rods adapted to hide the numbers on the plate when the rods are raised, and suitable springs for raising the rods and holding them raised, substantially as and for the purpose set forth.

3. In combination with the numbered plate or surface, the indicator-rods below such plate or surface provided with plates to cover the numbers when the rods are raised, spiral springs surrounding the rods and forcing them upward, and suitable stops for limiting the upward travel of the rods, substantially as and for the purpose described.

4. In combination with the plate or surface provided with the series of numbers, the rods provided with plates for hiding the numbers, and with arms or projections, the springs for actuating the rods in one direction, and a lever adapted to be brought at will into engagement with any one of the projections or arms on the rods, substantially as and for the purpose specified.

5. In combination with the series of rods provided with arms or projections, the lever-supporting shaft and the lever supported thereon so as to be capable of being slid along the shaft, with its end passing over the series of arms on the rods, and of being rocked on the shaft, substantially as and for the purpose shown.

6. In combination with the series of rods provided with arms or projections, the shaft parallel to the series of arms and the lever supported on the shaft so as to be free to be moved along the same and rocked thereon, as desired, substantially as and for the purpose set forth.

7. In combination with the series of arms or projections, the key-lever adapted to be moved along the series and rocked to engage any desired one of the arms, and means, substantially as described, for returning the lever to its starting-point when it is released, substantially as and for the purpose shown and described.

8. In combination with the series of indicator-rods and arms or projections thereon, the lever-supporting shaft, the loose sleeve thereon, and the lever carried by the sleeve, the spring-drum, and the cord connected with the drum and the lever, substantially as and for the purpose specified.

9. In combination with the series of indicator-rods provided with portions adapted to be engaged by a lever, the sliding and swinging lever, the swinging frame having the bar under the lever, and the springs for raising the frame, substantially as and for the purpose shown.

10. In combination with the series of indicator-rods provided with portions adapted to be engaged by a lever, the sliding and rocking lever adapted to be moved along the series and rocked to actuate any one of the rods, the rotary drum, a spring for rotating the same, and a cord attached to the drum and to the lever, substantially as and for the purpose set forth.

11. In combination with the sliding and rocking key-lever, the swinging frame having the bar extending across below the lever and a pawl for locking the frame in an elevated position, substantially as and for the purpose described.

12. In combination with the series of indicator-rods and the sliding and rocking lever for actuating them, the swinging frame having the bar extending across in front of the rods and below the lever, and bell-striking mechanism connected with the frame, so as to be operated thereby as it is swung down by the lever, substantially as and for the purpose specified.

13. In combination with the sliding and rocking key-lever, the swinging frame having the bar engaging the lever, the springs connected with the frame, a bell-striking lever, and a tripping device for the same on the frame, substantially as and for the purpose shown.

14. In combination with the series of indicating devices in an indicator and the sliding and rocking lever adapted to actuate any one of such devices, as desired, a swinging frame adapted to hold the lever out of engagement with the indicating devices, a spring-dog for locking the frame, and suitable means on the lever for tripping such dog when the lever is at its starting-point, substantially as and for the purpose set forth.

15. In combination with the series of indicating devices and the sliding and rocking lever for actuating the same, the frame having the bar extending under the lever, the springs for raising such frame to support the lever, a spring-dog adapted to lock the frame in its elevated position when it has been depressed and allowed to rise again, and a suitable trip on the lever for tripping such dog, substantially as and for the purpose described.

16. In combination with the swinging frame and the lug or lip thereon, the swinging pawl provided with a notch to engage the lug and having its notched portion made yielding, so that it can be pushed off of the lug, and the spring for swinging the pawl, substantially as and for the purpose specified.

17. In combination with the swinging frame and the lug thereon, the swinging pawl adapted to engage the rear edge of the lug and having its engaging portion made yielding, so that it can be pushed off of the lug, and the spring for swinging the pawl into engagement with the lug, substantially as and for the purpose shown.

18. In combination with the swinging frame and the lug thereon, the pawl pivoted to swing toward and from the edge of the lug and made yielding in a direction at right angles to its swing, and the spring for swinging the pawl against the edge of the lug, substantially as and for the purpose set forth.

19. In combination with the swinging frame and the lug thereon, the swinging pawl having its lower portion made of spring material to yield in a direction at right angles to its swing, and having its lug-engaging edge notched and cut away below the notch to a point beyond the arc of movement of the lug as the frame swings, and the pawl-spring, substantially as and for the purpose described.

20. In combination with the swinging pawl having its lower portion made of spring material adapted to yield in a direction at right angles to the plane of its swing, a stop adapted to limit its swing, and also the springing of its lower end, and the spring for swinging the pawl, substantially as and for the purpose specified.

21. In combination with the swinging frame and the key thereon, the swinging pawl, whose lower end is of spring material and normally tends to stand out in position to be swung against the rear edge of the key, and is provided with a lug-engaging notch and below such notch is cut away or inclined rearward beyond the path of the rear edge of the lug, and the pawl-actuating spring, substantially as and for the purpose shown.

22. In combination with the swinging frame and means for automatically locking the same in elevated position when the frame has swung down and risen again, one or more springs for raising the frame, and the sliding key-lever provided with means for tripping the frame-locking device when the lever is slid to its starting-point, substantially as and for the purpose set forth.

23. In combination with the series of indicator-rods and the springs for raising and holding them up, arms or shoulders on the rods, and the swinging wing or pawl-plate, substantially as and for the purpose described.

24. In combination with the series of indicator-rods having the arms on their lower ends, the springs for raising the rods and holding them up, the swinging plate, and a spring or springs acting to hold the plate with its lower edge in the path of the arms on the rods as such rods are depressed, substantially as and for the purpose specified.

25. In combination with the series of indicating devices and the sliding and rocking lever adapted to be moved into position to actuate any of the indicating devices and rocked or swung to engage and move such device, the plate having the longitudinal slot along which the lever is moved and the series of upright slots to allow movement of the lever to actuate the different indicating devices, substantially as and for the purpose shown.

26. In combination with the series of indicating devices and the sliding and rocking lever for actuating the same, the plate provided with the longitudinal slot through which the lever projects, and with the series of upright slots extending up from such slot, so situated that when the lever is below any one of them it will be in position to actuate one of the indicating devices and numbered to agree with the indicating-numbers, substantially as and for the purpose set forth.

27. In combination with the sliding and rocking key-lever, the plate provided with the longitudinal slot and the series of upright numbered slots extending up from the upper edge of the longitudinal slot, and sliding gages or stops on the plate beside the upright slots adapted to be moved separately, so as to project down across the longitudinal slot in the plate, substantially as and for the purpose described.

28. In combination with the series of indicating devices and the sliding and rocking key-lever, the plate provided with the longitudinal slot, and with the upright slots extending up from such slot, so situated as to allow the lever to be rocked when it has been slid into position to actuate any of the indicating devices, and suitable movable stops adapted to be moved into position to stop the lever under any of the upright slots, substantially as and for the purpose specified.

29. In combination with the plate having the longitudinal slot and the series of upright slots at the upper side thereof, the sliding gage plates or stops on the slotted plate close beside the upright slots and adapted to be moved in position across the longitudinal slot, substantially as and for the purpose shown.

30. In combination with the plate provided with the longitudinal slot and the series of slots at right angles thereto, the sliding stops on the plate close beside the several slots of the series, provided with projections adapted to stand across such slots when the stops are moved to cause their ends to stand across the longitudinal slot in the plate, substantially as and for the purpose set forth.

31. In combination with the sliding and rocking lever, the plate slotted longitudinally and provided with the series of upright slots extending up from said slot, the series of stops or gages, each adapted to be moved to stand across the longitudinal slot close beside one of the upright slots, and provided with an arm or projection extending over across the upright slot when the stop is so moved, substantially as and for the purpose described.

32. In combination with the series of indicating devices and the sliding and rocking lever for actuating the same, the longitudinally-slotted plate provided with the series of upright slots up which the lever is moved to actuate the different indicating devices, and the stops or gages alongside the respective slots, each having a suitable handle, and being marked with a number corresponding to the number on the indicating device which will be actuated if the lever be raised up the slot under which the gage stops the lever in its movement along the longitudinal slot in the plate, substantially as and for the purpose specified.

33. In combination with the sliding and rocking key-lever, the registering mechanism and suitable connections between the same and the lever, whereby as the latter is slid in one direction the registering mechanism is actuated, substantially as and for the purpose shown.

34. In combination with the lever pivot-shaft and the lever rocking and sliding thereon, registering mechanism and the band connected with the lever and adapted to actuate the registering mechanism, substantially as and for the purpose set forth.

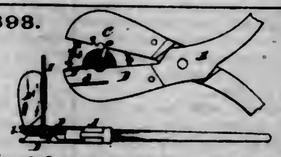
35. In combination with the lever-supporting rod or shaft and the key-lever adapted to be slid along the same, the chain attached to the lever and passing around suitable pulleys, and the registering mechanism having a toothed wheel to mesh with the chain, substantially as and for the purpose described.

36. In combination with the registering-wheels proper and the toothed wheel connected therewith by a pawl-and-ratchet connection, the chain, the two pulleys around which the chain passes, and the sliding key-lever connected with the chain, substantially as and for the purpose specified.

37. In combination with the register-wheel shaft and the toothed register-wheel fixed thereto, the spring-pawl on the wheel, two or more toothed register-wheels loosely journaled on the shaft, and each provided on its one side with one or more ratchet-shaped projections and on its other side with a spring-pawl to engage the projection on the next wheel, one or more teeth projecting out from the periphery of each wheel close to the series of teeth on the next wheel, the carrying-wheels, and the pawls engaging the series of teeth on the several wheels, substantially as and for the purpose described.

384,698. RUBY-PIN SETTER. FRANK HYDE, Sioux Falls, Dak. Filed Sept. 24, 1887. Serial No. 250,256. (No model.)

384,698.



Claim.—1. In a jewel-setting device of the class specified, the blades adapted to hold the balance-staff, and the wing-piece formed on one of said blades and adapted to communicate heat applied thereto to the roller-table resting on said blades, substantially as and for the purpose set forth.

2. In a jewel-setting device, the combination of two hinged blades adapted to pass between the balance-wheel and the roller-table and hold the balance-staff in position, and a wing-piece forming a portion of one of the blades, but separated from the main body thereof by a slot, whereby heat applied to the wing-piece is communicated to the contiguous portion of the blade and the roller-table supported thereby without overheating the other parts, substantially as specified.

3. In a jewel-setting device of the class specified, the combination of two hinged blades adapted to pass between the balance-wheel and the roller-table, a wing-piece formed on one of the blades to receive and communicate heat to the roller-table, and a lower blade adapted to support the stud, substantially as set forth.

4. In a jewel-setting device of the class specified, the combination of two hinged blades adapted to pass between the balance-wheel and the roller-table and hold the same in position, a wing-piece formed on one of said blades, a vertical rod mounted on said wing, said rod having a socket at its lower end adapted to hold the jewel and being free to move vertically, substantially as and for the purpose set forth.

5. In a jewel-setting device of the class specified, the combination of two hinged blades having notches forming the hole *a*, the notch or hole *c*, the wing-piece B', and the slot *d*, substantially as and for the purpose set forth.

6. In a jewel-setting device of the class specified, the combination of the blade B, having the wing-piece B', and the rod E, mounted thereon and having at its lower end the hole to receive the jewel A, and a tongue, *j*, adapted to hold the jewel in position by spring-pressure, said rod having a free vertical movement, substantially as and for the purpose set forth.

384,694. METAL-CUTTER. ALBERT G. IRVIEN, Boston, Mass., assignor to William Smith, same place. Filed Nov. 17, 1887. Serial No. 255,443. (No model.)



Claim.—1. The combination and arrangement of the standard-plate, the lever, and the lower-blade bar with the upper-blade bar divided into two arms at its left-hand end, said arms passing, respectively, on each side of a projection from the lower-blade bar and the standard-plate, all constructed and arranged substantially as shown and described.

2. The combination and arrangement of the two blade-bars with their respective blades, and the standard or supporting plate, and the working-lever provided with segmental gear carrying round-top cogs, and the corresponding segmental gear on the lower-blade bar, all constructed and arranged substantially as shown and described.

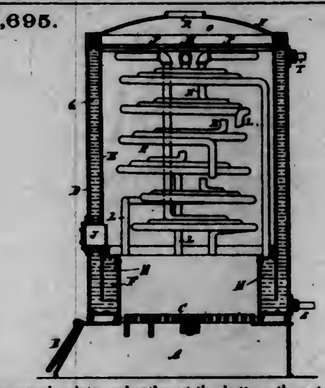
384,695. WATER-HEATER. CHARLES G. JEWETT, Howell, Mich. Filed Feb. 2, 1888. Serial No. 262,739. (No model.)

Claim.—1. In a water heater and circulator, the combination of three concentric shells arranged to form two annular water-chambers communicating with each other at the bottom, the outer chamber extending the height of the heater and the inner chamber the height of the furnace, and heating-coils connecting the top of the inner chamber with the top of the outer one, substantially as described.

2. In a water heater and circulator, the combination of three concentric shells arranged to form an outer and an inner annular water-chamber opening into each other at the bottom, the outer chamber extending to the top of the heater and the inner one to the top of the furnace-chamber, and helical heating-coils in vertical series and arranged to connect the tops of the two water-chambers, substantially as described.

3. In a water heater and circulator, the combination of three concentric shells arranged to form an outer and an inner annular water-

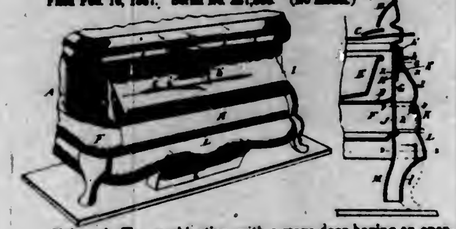
384,695.



chamber opening into each other at the bottom, the outer chamber extending the height of the heater and the inner one the height of the furnace, a ledge formed on top of the inner chamber, and heating-coils arranged in vertical series, said coils consisting of conical helices terminating in downwardly-extending risers at the outer ends which connect with the top of the inner chamber, and in upwardly-extending risers at their inner ends which extend upwardly and then laterally to connect with the top of the outer chamber, substantially as described.

4. In a water heater and circulator, the combination, with the annular water chamber or chambers, of a series of substantially horizontal circulating heating-coils arranged in a vertical series, each coil having its inner end extended upwardly and connected to the top of the water-chamber and its outer end extending downwardly and connected to the bottom of the water-chamber, substantially as described.

384,696. VENTILATING-FLUE FOR STOVES. WILLIAM J. KEEP, Detroit, Mich., assignor to the Michigan Stove Company, same place. Filed Feb. 16, 1887. Serial No. 227,993. (No model.)



Claim.—1. The combination, with a stove-door having an opening communicating with the interior of the stove, of a hood attached thereto and projecting down below the bottom edge of the opening in the door, said door and hood forming a ventilating-flue open at the bottom and terminating above at the opening in the stove-door, substantially as described.

2. The combination, with a stove-door having an opening communicating with the interior of the stove and a damper closing said opening, of a hood connected to the upper part of the door and projecting downward sufficiently to hide the damper and the bottom edge of the stove-door, said door and hood forming a ventilating-passage open at the bottom and terminating above at the opening in the stove-door, substantially as described.

3. The combination, in a stove and with its ash-pit door having an aperture communicating with the interior of the stove, of a damper for closing the same, a hood covering said aperture from sight, said door and hood forming a ventilating-passage open at the bottom and terminating above at the opening in the ash-pit door, and said hood having an opening for a connection with the damper, and a slide closing said opening, substantially as described.

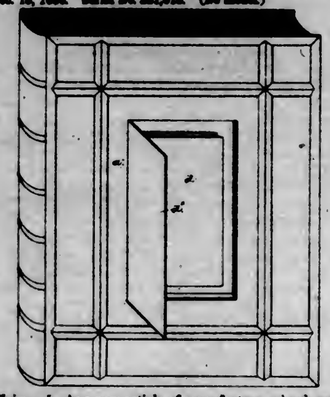
4. The combination, in a stove and with its ash-pit door having an aperture communicating with the interior of the stove, of a damper for closing the same, a hood covering said aperture from sight, said door and hood forming a ventilating-passage open at the bottom and terminating above at the opening in the ash-pit door, and said hood having an opening for a connection with the damper, a slide closing said opening, and an index for indicating the position of the damper, substantially as described.

5. In a stove having an ash-pit, a smoke-flue under the same, and a ventilating-flue communicating with the interior of the stove at top and with the atmosphere at the bottom, a pivoted door dividing said ventilating and smoke flues, and an opening in the outer wall of the ventilating-flue through which access may be had to said door, substantially as described.

6. In a stove having a ventilating-flue communicating with the interior of the stove at top and with the atmosphere at the bottom, the combination of a movable door above an opening in said ventilating-flue with a pivoted door forming one side of the flue and dropping over and bridging said opening, substantially as described.

7. In a stove, a ventilating-flue formed of the door G, provided with suitable openings, the plate I, attached thereto, the wall of the bottom flue-base, the plate K, the leg-base L, the extension *l* thereof, and the plate M, substantially as shown and described.

384,697. BOOK-COVER. THOMAS KELLY, New York, N. Y. Filed Dec. 15, 1886. Serial No. 221,618. (No model.)



Claim.—1. As a new article of manufacture, a book-cover having a box or receptacle within it, an opening at the end of the cover to gain access to the said box or receptacle, and a tongue to conceal the opening, substantially as described.

2. As a new article of manufacture, a book-cover having a box or receptacle within it, a lid, as *d'*, to expose the box or receptacle, and a tongue, as *c*, to also expose or gain access to the box or receptacle, substantially as described.

384,698. LETTER-BOX. JAMES W. LANSFORD, Nashville, Tenn. Filed Mar. 7, 1888. Serial No. 266,464. (No model.)



Claim.—1. In a letter-box, the combination, with the base, sides, and front, of a sloping top having a flanged aperture therein, a sloping cover lying over said top with flanges extending down on the sides and front of the box, and a bolt on which said cover hinges passing through said flanges and the top of the box, substantially as described.

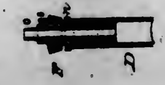
2. The combination, with a letter-box, of a front section extending below the bottom of the box, and a receptacle for newspapers, packages, &c., located behind said extension, substantially as described.

3. The combination, with a letter-box, of a front section extended down below the bottom of the box on a plane slightly back of the general plane of the front, whereby a step is formed on the inside upon which the front edge of the bottom rests, substantially as described.

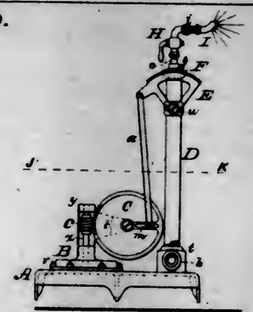
4. The combination, with a letter-box and a front section extending below the bottom of the same, of a tubular receptacle located behind said extension, substantially as described.

384,699. LAWN-SPRINKLER. WILLIAM W. LEE, Northampton, Mass. Filed Apr. 1, 1887. Serial No. 233,280. (No model.)

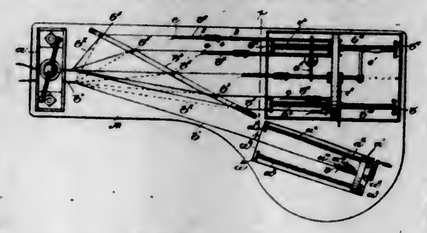
Claim.—In combination, base A, vertical pipe D, water-motor B, swiveling-pipe *e*, elbow H, nozzle I, and mechanism C *a* E F, connecting water-motor B with pipe *e*, the axis of pipe *e* being the continuation of that of vertical pipe D, all substantially as and for the purpose set forth.

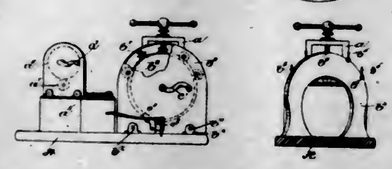


384,699.



384,700. WAX-END MACHINE. ROBERT M. MACINTOSH, Boston, Mass. Filed Jan. 12, 1888. Serial No. 260,510. (No model.)





Claim.—1. In a wax-end-forming machine, a thread holder or clamp to hold the thread at or near one end of the machine and a plurality of spindles or strand-holding devices, combined with a bridge or support intermediate of the said clamp and spindles, and to which the individual strands are secured, the said clamp, bridge, and spindles being arranged with relation to each other to obtain a substantial parallelism between the said bridge and spindles, the said strands being untwisted only between the said spindles and bridge, substantially as described.

2. In a wax-end-forming machine, a thread-holder and a bridge oblique or inclined with relation to said holder, combined with a plurality of spindles or thread-holding devices and means to rotate said spindles, the latter having their ends in a line substantially parallel to the said bridge, substantially as described.

3. In a wax-end-forming machine, a thread-holder and a bridge oblique or inclined with relation to said holder, combined with a plurality of adjustable spindles or thread-holding devices and means to rotate said adjustable spindles, the latter having their ends in a line substantially parallel to the said bridge, substantially as described.

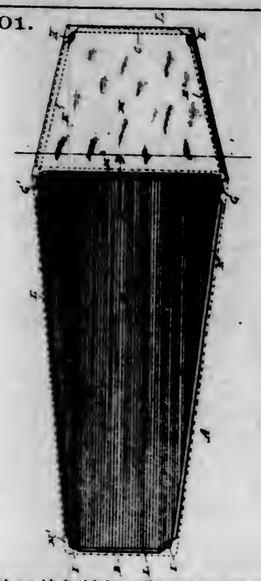
384,701. COFFIN. JAMES P. MARSH and JOHN S. MARSH, New York, N. Y. Filed Feb. 17, 1888. Serial No. 264,264. (No model.)

Claim.—1. In a metallic coffin, the combination, with the body, of a sectional sliding lid, the sections thereof overlapping each other and provided at their overlapped ends with beads engaging each other, substantially as described.

2. In an improved coffin, consisting of a body having its bottom, head, and foot end walls and the forward and rearward converging side walls formed of separate pieces of sheet metal, secured together by lap-joints and provided with guide-flanges on their upper edges, and

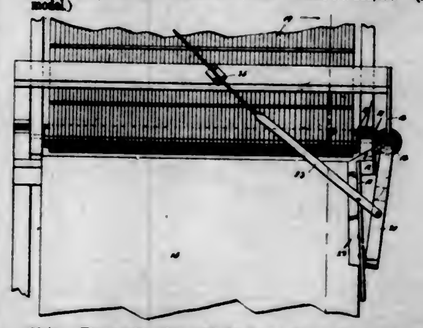


384,701.



a sectional lid provided with inwardly-turned edges, and with beads at their overlapped ends, substantially as herein shown and described.

384,702. GRAIN-ADJUSTER FOR BINDERS. FREDERICK R. B. MALER, Chrisney, Ind. Filed Jan. 9, 1888. Serial No. 260,150. (No model.)



Claim.—The combination, with the frame, the receiving-table 15, the bracket 16, and the crank-shaft 13, journaled in the said bracket, of the butt-board 10, having a block, 12, on the outer side of its inner end loosely connected with the crank of the shaft 13, the frame 20, having arms 21, pivoting on the ends of the shaft 13 beyond its crank and against the inner face of which the board 10 slides, the adjusting-rod 23, and the plate 22, projecting from the lower edge of the frame 20 inwardly under the lower edge of the board 10, substantially as set forth.

384,703. DOUBLE-HARNESS SADDLE AND YOKE. LOUIS A. MARSH, Montclair, N. J. Filed Oct. 1, 1887. Serial No. 251,293. (No model.)

Claim.—1. A double-harness saddle and yoke device consisting of a connecting bar or rod, swiveled pieces or plates adapted to slide thereon and detachably connected thereto, yokes pivoted to the swiveled plates, and saddle-trees pivoted to the yokes to rock laterally and having securing-straps, substantially as described.

2. In the double-harness saddle and yoke device herein described, the combination, with a saddle-tree, of a yoke secured thereto by a removable pin or bolt, substantially as described.

3. In the double-harness saddle and yoke device herein described, a yoke bar or rod connecting the saddle-trees, and having a frame adapted to swing laterally and supporting an adjustable clevis, substantially as described.

4. In the double-harness saddle and yoke device herein described,

384,703.



a yoke bar or rod connecting the saddle-trees, and having a frame carrying pivoted bars and a clevis adjustable in slots in said bars, substantially as described.

5. The combination, with connecting-rod 2, of saddle-trees 1, pivoted pads 10, bolt 7, yoke 3, hook 9, and swiveled piece 4, having hook 5 and link 6, substantially as described.

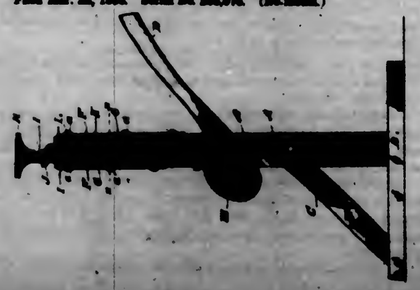
6. The combination, with rod 2 and saddle-trees 1, connected thereto, of a frame and pivoted slotted bars 28, and a clevis consisting of cross-bar 32, having headed ends engaging slots 31 and arms 34, and pivoted bar 36, engaging an arm, 34, substantially as described.

384,704. MACHINE FOR CUTTING WOOD. WILLIAM RUSSELL, East Saginaw, Mich., assignor of one-half to S. S. HOUK, same place. Filed Nov. 23, 1887. Serial No. 255,321. (No model.)



Claim.—In a machine for cutting rotten wood, a knife-bearing wheel having a V-shaped periphery and slots to snugly receive knives, with knives fitting in the close slots, and having cavities in face of wheel under the knives for clearance of chips.

384,705. WAGON-JACK. ANDREAS P. HILLSPANNER, Burton, Ohio. Filed Mar. 22, 1888. Serial No. 268,078. (No model.)



Claim.—In a wagon-jack, the combination, with a slide-bar adapted to be raised and lowered, of a notched axle-support interior of said bar, and a yoke supported by said bar and having teeth adapted to engage with said notches, whereby said yoke and support are secured together in various adjustments, substantially as and for the purposes hereinbefore set forth.

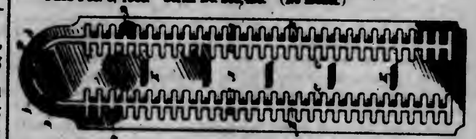
384,706. PUMP. JOHN A. HUBBAT, Yuma, Ariz. Filed Dec. 1, 1887. Serial No. 256,702. (No model.)



Claim.—1. In a pump, a valved plunger or piston consisting of the metal body-band H, having upwardly-extending side wings, the wings h' and c', seated on said side wings, the leather band h^2, encircling the body-band, the ring h^3, bolted to said body-band and confining the leather band, and the stirrup h^4, having its ends bolted within the body-band, substantially as described.

2. In a pump, the combination, with a single cylinder, of a valved plunger or piston having a hollow stem or rod, a second valved plunger or piston below the first with its stem or rod passing through the stem or rod of the first plunger, said rod being flattened where it passes through the upper valve and having its lengths joined by screw-threads cut in opposite directions from those which unite the lengths of the upper piston-rods, substantially as herein described.

384,707. GAME-COUNTER. FRANK G. HAM, San Francisco, Cal. Filed Feb. 8, 1888. Serial No. 263,620. (No model.)



Claim.—1. A counting or scoring board consisting of a plate having a longitudinal slot or slots forming the ways for the scoring-pegs, and cross-slots opening out from each side thereof, and pegs fitted to the plate to move in the way-slots and enter the scoring-slots, substantially as herein described.

2. A counting or scoring board consisting of a plate having longitudinal slots forming ways for the scoring-pegs, and cross-slots opening out from each side thereof, and pegs having turned-down centers fitting and sliding in the slots, and enlarged heads or ends, whereby said pegs are confined in the slots, substantially as herein described.

3. A counting or scoring board consisting of a plate having a plural number of longitudinal slots forming ways for the scoring-pegs, and cross-slots opening out from each side thereof, said cross-slots having an upgrade to the way-slots for preventing the pegs from being jarred from place, and scoring-pegs fitted to the plates to move in the way-slots and enter the scoring-slots, substantially as herein described.

4. A counting or scoring board consisting of a plate having a plural number of longitudinal way-slots, and cross scoring-slots opening out therefrom, said cross-slots having an upgrade to the way-slots, scoring-pegs having turned-down centers fitting and sliding in the slots, and enlarged heads or ends, whereby said pegs are confined in the slots, substantially as herein described.

5. The counting or scoring board consisting of a plate, A, having the way-slots B, with extension-slots *b* at one end, and cross scoring-slots C, opening out from each side of the way-slots, said cross-slots having an upgrade to the way-slots, and the sliding pegs D, fitted in the slots and having enlarged heads or ends, whereby they are confined, substantially as herein described.

384,708. BUMP-CAR. JOSEPH GRIMSHAW, Trinidad, Colo., assignor of three-fourths to Simeon S. Wallace, Frank Gorrell, and Matthew Hewson, same place. Filed Feb. 4, 1888. Serial No. 263,267. (No model.)



Claim.—1. The combination, with a car-body and a gate hinged at its upper edge to the sides of the car, of a chain extended along and above the bottom of the car inside the same, and fastened at one end to the bottom of the car near its middle, and having at the other end fastening devices for connecting with the lower free end of gate, and adapted to hold the gate against swinging open, substantially as described.

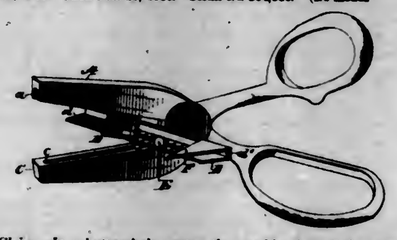
2. The combination of a car-body, a gate hinged at its upper edge to the car-body, and having a slot, *b*, and a pivoted latch with spur *a*, and a chain connected at one end to the bottom of the car inside the same, and bearing at its other end a perforated bar or link, *c*, adapted to pass through the slot in the gate and receive the locking-spur of the latch, substantially as and for the purpose described.

384,709. ALLOY. CHARLES A. PAILLARD, Geneva, Switzerland. Filed Nov. 23, 1887. Serial No. 255,993. (No specimens.)

Claim.—1. An alloy composed of palladium, copper, silver, and steel, in about the proportions stated.

2. An alloy composed of palladium, twenty-five to forty-five parts; copper, thirty to sixty parts; silver, five to twenty parts, and steel, two to five parts, substantially as described.

384,710. BUTTON-HOLE CUTTER. GEORGE W. PETERS, Lancaster, Ohio. Filed Feb. 23, 1888. Serial No. 264,880. (No model.)



Claim.—In a button-hole cutter, the combination of the upper jaw, A, having a slot formed therein, a cutter, B, provided with an arm, *b*, formed at right angles with the said cutter, a lower jaw, C, carrying an adjustable gage, D, having a flange, *d'*, and a pointer, F, formed upon the upper edge thereof and bent parallel with the said gage, and a bolt, E, passing through the slot in the gage and through the longitudinal slot in the lower jaw, substantially as herein described and set forth.

384,711. TRAY FOR COLLECTING COIN. SAMUEL R. PRATT, Boston, Mass. Filed Feb. 13, 1888. Serial No. 263,773. (No model.)

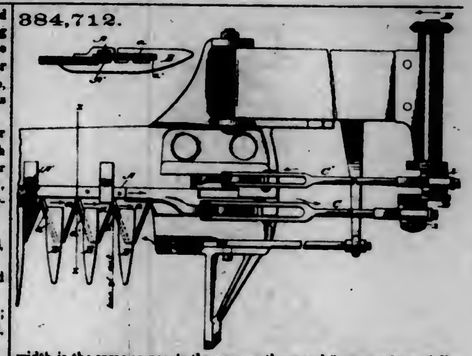


Claim.—The herein-described coin-collecting tray, consisting, essentially, of the main portion or floor A, having suitable upturned edges and one or more raised guiding noses or spouts, B, extending therefrom, said noses or spouts being turned up at an angle with said floor and provided with suitable sides, substantially as and for the purpose set forth.

384,712. MOWER. ALBERT L. GUILLIAN, Chateaugay, N. Y. Filed Nov. 15, 1887. Serial No. 255,218. (No model.)

Claim.—1. In a cutting apparatus of the class hereinbefore indicated, the combination of the double crank whose wrist-pins are set out of alignment with each other and the axis, and at unequal distances from the latter, to wit, five-eighths of an inch and three-eighths of an inch, respectively, a series of guard-fingers placed about two inches apart, and a series of upper cutters and a series of under cutters whose

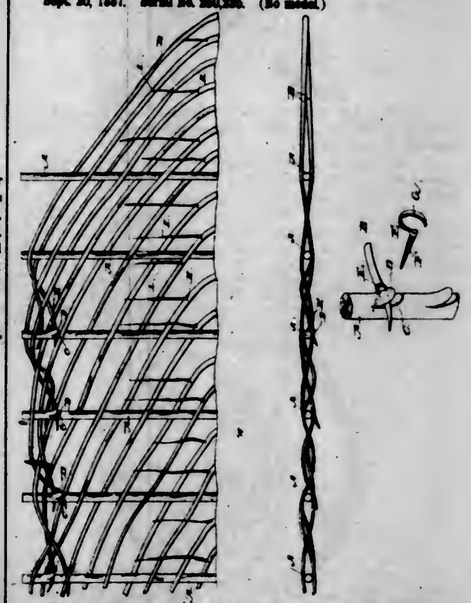




width is the same or nearly the same as the guard-fingers, substantially as shown and described, for the purpose specified.

2. The detachable double crank D, having wrist-pins 1 and 2 set out of alignment with each other and the axis, and at unequal distances from the latter, as shown and described.

384,713. HEDGE FENCE. JOHN H. RACER, Bellbrook, Ohio. Filed Sept. 20, 1887. Serial No. 250,226. (No model.)



Claim.—The combination, in a hedge fence, of the vertically-growing aligned plants A, having lips made by upwardly-inclined incisions in their sides, the inclined plants B, bent across said vertical plants and having their end portions inserted in the wounds formed by said incisions, and the retaining-hooks having their shanks driven into the vertical plants and embracing the inclined plants, for the purpose of preventing the latter from spreading the wounds in the vertically plants, substantially as specified.

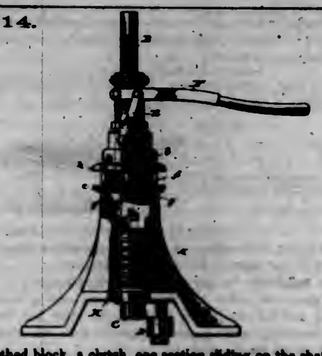
384,714. SWITCH-STAND. WILLIAM A. RHODES, New York, assignor to Fred W. Snow, Hilburn, N. Y. Filed Mar. 1, 1888. Serial No. 265,890. (Model.)

Claim.—1. The combination, in a switch-stand having a target-shaft and sliding toothed block, of a clutch, one section provided with teeth engaging those of the block, and a lock directly engaging the two sections of the clutch, substantially as described.

2. The combination of the stand-frame, sliding toothed block resting on a spring, target-shaft, and clutch, one section sliding on and turning with the shaft, the other with teeth engaging those of the block, and a lock directly engaging with the two sections, substantially as described.

3. The combination of the stand-frame, target-shaft, spring, and

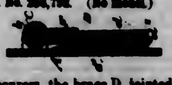
384,714.



sliding toothed block, a clutch, one section sliding on the shaft and a lever for sliding it, the other section having teeth engaging with those of the block, and a projection on one section fitting a slot in the other and recessed to receive a locking-bolt, substantially as set forth.

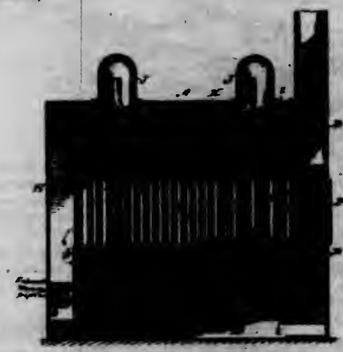
4. The sections of the clutch upon the target-shaft, one section having a series of slots and the other section a series of ears extending through and beyond the slots, substantially as and for the purpose described.

384,715. DOOR-CHECK. RICHARD A. REESE, St. Louis, Mo. Filed Dec. 2, 1887. Serial No. 256,792. (No model.)



Claim.—In door-securers, the brass D, jointed at d^3, pivoted to a door-bracket and provided with a sliding sheath, said sheath being pivotally connected with the bracket, and adapted to be used, substantially as set forth.

384,716. STEAM-BOILER. NORTHERN R. REYNOLDS, Norman, Dak. Filed Aug. 15, 1887. Renewed May 19, 1888. Serial No. 274,373. (No model.)



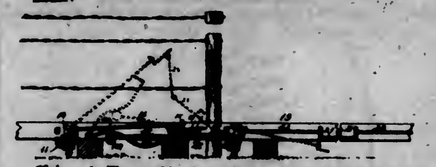
Claim.—1. A steam-boiler consisting of the combination of an upper and lower cylinder with fire-flues through the same, side pipes connecting the boilers, a grate and fire-box placed between the cylinders, a casing or breeching connecting the rear ends of the fire-flues of the two cylinders with the combustion-chamber, and a casing or breeching connecting the fire-flues at the front end of the boiler with the smoke-stack, substantially as shown and described.

2. A steam-boiler consisting of the combination of an upper cylinder having fire-flues *a*, a lower cylinder having fire-flues *b* and exhaust-steam flue *b'*, side pipes connecting the cylinders, a grate and fire-box placed between the cylinders, and the end casings connecting the fire-flues and having chambers b^2 b^2, communicating with the exhaust-steam pipes of the lower cylinder, substantially as and for the purpose described.

3. The combination, with the upper and lower cylinders, of side pipes, C, connecting the two cylindrical boilers and having blow-off cocks or valves C^3 at top and bottom, as shown and described.

4. The combination, with the upper and lower cylinders, of the side pipes, C, connecting the same, hollow-grate bars connecting the side pipes to form the fire-box, and reducer-couplings at the junction of the grate-bars and side pipes, as and for the purpose described.

384,717. RAILWAY-RAIL CROSSING. JAMES RAE, Prairie Creek, Ind., assignor of one-half to Bennet T. De Bean and John M. Talbott, both of same place. Filed Apr. 7, 1888. Serial No. 269,990. (No model.)

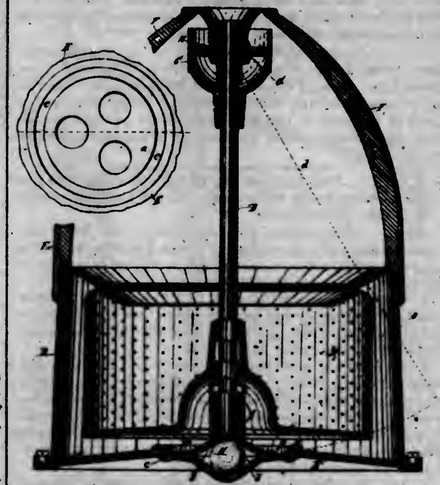


Claim.—1. The combination, with a rock-shaft journaled transversely beneath the track, and trip plates or platforms attached at one end to said rock-shaft, having their other ends unsupported, of a second rock-shaft, also journaled beneath the track to the rear of the first rock-shaft, gates pivoted upon the second rock-shaft, aprons connecting the trip-platforms and gates, and means, substantially as shown and described, for elevating the gates from the trip-platforms, as and for the purpose specified.

2. The combination, with a rock-shaft journaled transversely beneath the track, trip plates or platforms secured upon said rock-shaft, and a yoke projecting lengthwise of the track upon the same, of a second yoke attached centrally between the track, resting upon the yoke of the rock-shaft, a second rock-shaft journaled beneath the track in front of the latter yoke, gates secured to the second rock-shaft, and aprons connecting the trip-platforms and gates, substantially as shown and described.

3. The combination, with a rock-shaft journaled transversely beneath the track, and trip plates or platforms attached at one end to said rock-shaft, having their other ends unsupported, of a second rock-shaft, also journaled beneath the track to the rear of the first rock-shaft, gates pivoted at one end upon the second rock-shaft and provided with barbed points at their free ends, aprons connecting the trip-platforms and gates, and means, substantially as shown and described, for elevating the gates from the trip-platforms, as and for the purpose specified.

384,718. CENTRIFUGAL MACHINE. FRANK H. RICHARDS, Troy, N. Y. Filed May 3, 1886. Serial No. 272,626. (No model.)



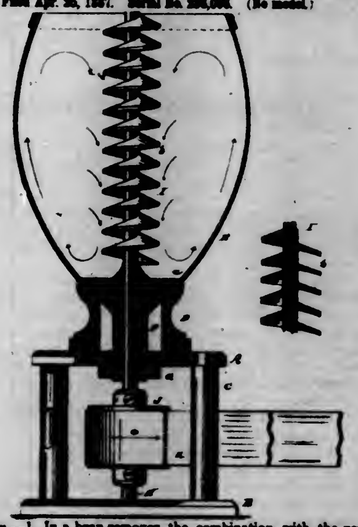
Claim.—1. In a centrifugal machine, the basket-shaft, combined with a movable step at its bottom, a universal joint at its top, and an elastic ball or balls for regulating the travel of the step, substantially as and for the purposes set forth.

2. In a centrifugal machine, the basket-shaft, combined with a movable step at its bottom and a universal joint at its top, said step being mounted and arranged to travel upon a curved surface of which the center is in the center of the universal joint, and an elastic ball or balls interposed between the step and base, substantially as set forth.

3. In a centrifugal machine, the basket-shaft, combined with a movable step at its bottom, and an elastic ball or balls for regulating the travel of the step, the step being mounted upon a curved surface, substantially as and for the purposes set forth.

4. In a centrifugal machine, the combination of the base and the movable stop mounted thereon, said base and stop being provided with recesses for receiving an elastic ball or balls, substantially as explained.

384,719. BRAN-REMOVER. GEORGE W. H. SAFELY, New Orleans La. Filed Apr. 25, 1887. Serial No. 236,004. (No model.)



Claim.—1. In a bran-remover, the combination, with the vessel E, of a vertical shaft provided with screw-threads downwardly inclined on radii of the axis of the shaft, substantially as described.

2. In a bran-remover, the combination of a vessel having approximately the form of the frustum of a hollow ellipsoid, a shaft journaled axially in the said vessel, and a screw provided with threads downwardly inclined on radii of the axis of the shaft, carried by or formed upon the said shaft, substantially as described.

3. In a bran-remover, the combination of the vessel E, having the form of the frustum of an ellipsoid, the collar D, the sleeve F, provided with the concaved flange *a*, the shaft H, the screw I, carried thereby and provided with threads downwardly inclined from radii of the axis of the shaft H, and means, substantially as shown and described, for securing the vessel E and sleeve F to the supporting-frame of the machine.

384,720. FOOD PACKAGE AND PROCESS OF PREPARING THE SAME. HENRY SALEBE, Baltimore, Md. Filed Sept. 26, 1887. Serial No. 250,788. (No specimens.)

Claim.—1. The process of preserving meat or other food article by inclosing the same in an envelope of animal membrane, heating in a vessel containing vaseline, and inclosing in a protective wrapper of gauze coated with plaster-of-paris, substantially as described.

2. The process of preparing meat for preservation by inclosing the same in a wrapper of animal membrane, after disinfecting the latter, and then applying a coating of vaseline combined with a small quantity of paraffine, substantially as described.

3. The process of preserving meat or other food article by first treating the same to destroy bacilli or dangerous organisms, inclosing in a wrapper of animal membrane, after disinfecting the latter, heating in a bath of vaseline and paraffine, cooling without removal from the bath, and finally inclosing the article surrounded with its coating of vaseline and paraffine in a protective wrapper of gauze, after disinfecting the same, substantially as described.

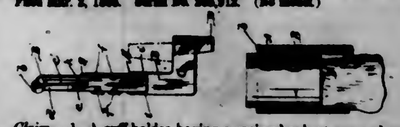
4. As a new article of manufacture, a case or package consisting of an animal intestine having a coating of vaseline and a protective covering of plaster-of-paris and gauze and containing an article of food, substantially as described.

384,721. METHOD OF PRESERVING FOOD. HENRY SALEBE, Baltimore, Md. Filed Mar. 22, 1888. Serial No. 268,002. (No specimens.)

Claim.—1. The method of preserving a food article by inclosing it in an expansible wrapper, heating to reduce its bulk and destroy dangerous germs, coating with plaster-of-paris, drying, immersing in a bath of a plastic substance, such as vaseline, subjecting to heat therein, and cooling and removing from the bath, substantially as described.

2. The method of preserving a food article by inclosing the same in an expansible envelope, heating, coating with plaster-of-paris, immersing in a bath of vaseline or like substance and heating the same, removing from the bath after cooling, and finally dipping in melted paraffine, substantially as described.

384,722. CUFF-HOLDER. ANDREW W. SAWYER, Providence, R. I. Filed Mar. 3, 1888. Serial No. 265,912. (No model.)



Claim.—1. A cuff-holder having a spring-hook at one end and a fastening device at the other end, which consists of two parallel tongues extending in the opposite direction from the hook.

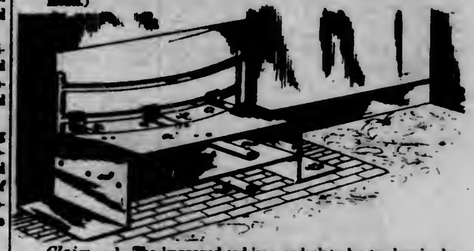
2. A cuff-holder having two shanks which are longitudinally adjustable upon each other, one shank having a spring-hook upon its outer end, and the other shank having at its outer end two parallel tongues extending in the opposite direction from the hook, all substantially as and for the purposes described.

3. A cuff-holder having a spring-hook at one end, a lateral offset extending from its other end, and a tongue extending from the inner edge of said offset and longitudinally outward from the shank, substantially as and for the purposes described.

4. A cuff-holder having two shanks which are longitudinally adjustable upon each other, one shank having a spring-hook upon its outer end and the other shank having a lateral offset extending from its outer end, and a tongue extending from the inner edge of said offset and longitudinally outward from the shank, all substantially as shown, and for the purposes described.

5. The combination, with the two shanks A and B, of the lips *f f*, tongue *h*, slot *d'*, and projections *i i*, all substantially as shown, and for the purposes described.
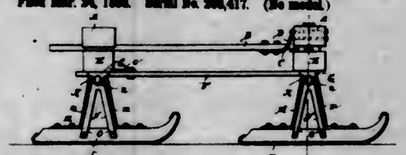
384,723. SAD-IRON AND PLATE HEATER. ROBT SHARER, West Point, Miss. Filed June 21, 1887. Serial No. 242,033. (No model.)



Claim.—1. The improved sad-iron and plate heater herein described and shown, comprising the top *a'* and back *a²*, the rearwardly-projecting supporting-hooks *a*, the sides *a³* at the ends of the top, and the steps A^5 at the lower ends of the sides to support the irons or plates, substantially as specified.

2. The improved sad-iron and plate heater, comprising the top *a'*, the hooks *a*, the sides *a³* at the ends of the top, the feet A^5 at the lower ends of the sides and arranged at an acute angle thereto, and the closed sides *a⁵*, substantially as specified.

384,724. BOB-SLEIGH. JOSEPH W. SHERMAN, Rockford, Wis. Filed Mar. 24, 1888. Serial No. 268,417. (No model.)



Claim.—1. In a bob-sleigh, the combination, with the runner, of the knee attached to the runner and comprising the converging sides or legs *m m*, the beam, and the wear-plate secured to the beam and having a keeper engaging the upper end of the knee, substantially as specified.

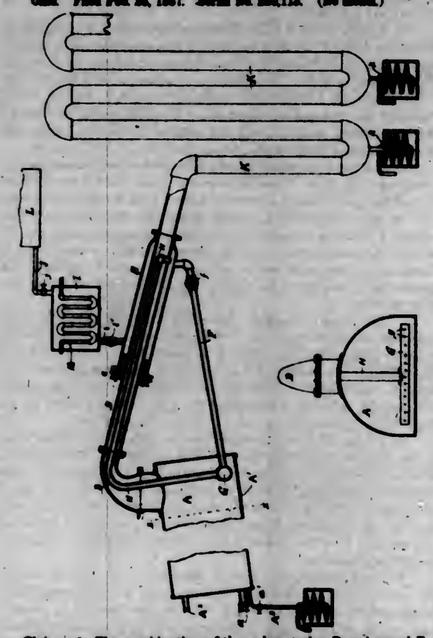
2. In a bob-sleigh, the combination of the wear-plate secured to the beam and having a depending apertured ear, K, the keeper I on the plate, the knee secured to the runner and having the converging legs *m m* mounted at their upper ends on the keeper I, and the brace N, having a hook, *n*, engaging the apertured ear K, and divergent arms O O, attached to the runner, substantially as and for the purpose specified.

3. In a bob-sleigh, the combination, with the front and rear beams mounted on the runners, as described, of the front bolster having keepers D on its rear side, the side raves, B, having loops on their front ends engaged in the keepers, and the rear bolsters attached to the raves, substantially as specified.

4. In a bob-sleigh, the combination, with the beams and the runners, of the side raves loosely connected or pivoted to the sleigh and adapted to be removed, substantially as specified.

5. In a bob-sleigh, the combination of the front and rear beams having the runners attached thereto, the reach attached at its front end to the front beam, the half-circle attached to the rear beam and having a tapped aperture at its center, and the bolt passing through the reach and engaging the said tapped aperture, substantially as and for the purpose specified.

384,725. APPARATUS FOR DISTILLING FATTY ACIDS. PAUL STERNBY, Hoboken, assignor of one-half to James H. Gamble, Hamilton, Ohio. Filed Feb. 20, 1887. Serial No. 228,113. (No model.)



Claim.—1. The combination of the exhaust-pipe D and vessel E, surrounding the exhaust-pipe and rigidly attached thereto at one end and provided with an expansion-joint at the other end, and also provided with inlet and outlet pipes, substantially as and for the purposes specified.

2. In combination with a still, the outlet-pipe D, vessel E, surrounding pipe D, pipe F, communicating with the still from vessel E, and inlet to vessel E, substantially as specified.

3. In combination with a still, the outlet-pipe D, vessel E, surrounding pipe D, pipe H, communicating with the still from vessel E and passing into the still through pipe D, and inlet to vessel E, substantially as specified.

4. In combination with a still, the outlet-pipe D, vessel E, surrounding outlet-pipe D, pipes F and H, communicating with the still from vessel E, the latter pipe passing into the still through the pipe D, and inlet to vessel E, substantially as specified.

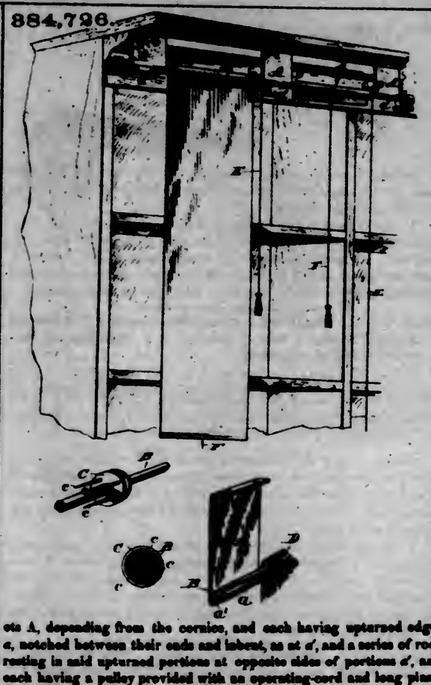
5. In combination with a still, the outlet-pipe D, vessel E, surrounding pipe D, pipe H, passing from vessel E through pipe D into the still, pipe F, passing from vessel E into the still, pipe G, provided with openings *g* and communicating with pipes F and H, and inlet to vessel E, substantially as specified.

6. In combination with a still, heating-box I, containing steam-pipe M, outlet-pipe D, vessel E, surrounding pipe D, pipe *i*, connecting box I and vessel E, and pipe from vessel E communicating with the interior of the still, substantially as specified.

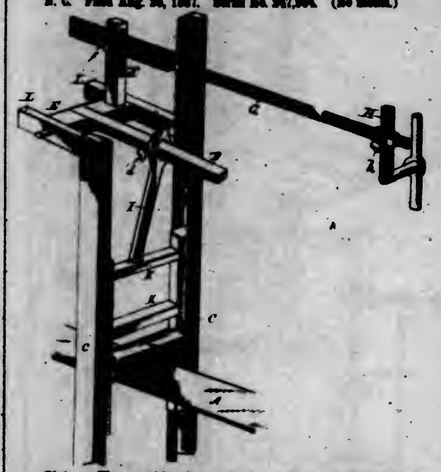
384,726. WALL-PAPER EXHIBITOR. H. OTTO SMITH, Creighton, Mo. Filed Apr. 2, 1888. Serial No. 269,260. (No model.)

Claim.—The combination, with the shelving having a forwardly-projecting cornice at its top, of the several horizontally-aligned bracket-arms A, depending from the cornice, and each having upturned edges *c*, notched between their ends and inbent, as at *c'*, and a series of rods resting in said upturned portions at opposite sides of portions *c'*, and each having a pulley provided with an operating-cord and long pins on its inner face, substantially as set forth.

384,726.



384,727. STEAM-REGULATOR. JOHN W. TAYLOR, Pittsborough, N. C. Filed Aug. 26, 1887. Serial No. 247,994. (No model.)



Claim.—The combination, with the roller journaled in a frame working in vertical guides and resting on and controlled in its movements by the driving-belt and the throttle-valve lever, of the rock-shaft having vertical and horizontal branches, the arm pivotally connected at its lower end with the roller-carrying frame and adjustably connected at its other end with the horizontal branch, and the connecting-rod adjustably connected at one end with said lever and adjustable vertically and horizontally with said vertical branch, substantially as set forth.

384,728. SPREADER FOR HAMMOCKS. THEODORE B. THOMAS, Galway, Minn. Filed Mar. 8, 1888. Serial No. 266,703. (No model.)

Claim.—1. The hammock A, its ends B B looped at *a*, and the slotted spreader C, through which the said ends pass, combined with

384,728.



the fastening-cords D, located in said loops transversely of the hammock, and the suspensory cords c c, which encircle said spreader, substantially as herein described.

2. In a hammock having looped ends, as stated, a spreader composed of two pieces disposed on opposite sides of the looped end, combined with a fastening cord or rod transversely of said hammock within the looped end, said cord resting lengthwise of the spreader, and the whipping-cords which encircle the latter, for purposes specified.

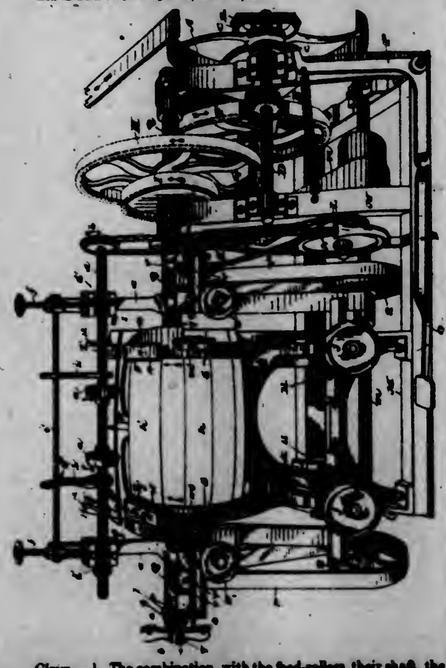
384,729. GRATE-BAR. RICHARD THOMPSON, New York, assignor of one-half to John S. Bushnell, Brooklyn, N. Y. Filed Sept. 20, 1887. Serial No. 251,013. (No model.)



Claim.—1. A grate-bar consisting of an apertured top transversely divided into sections, and longitudinal supporting-ribs connected to the under side of said sectional top and increased in thickness or strength-ened adjacent to the open spaces between the sections of the top, substantially as set forth.

2. In a grate-bar, in combination, an apertured top composed of sections, each comprising the cross-bars *a a* and longitudinal ties *b b*, and having slots *c c* at its ends, and the longitudinal supporting-ribs *c c*, secured to the under side of the apertured top, and having thick-ened parts *d d* adjacent to the open spaces between the sections of the top, substantially as set forth.

384,730. BARREL-MAKING MACHINE. WILLIAM T. VALE, Toronto, Ontario, Canada, assignor to Joshua George Beard, same place. Filed July 20, 1886. Serial No. 208,468. (No model.) Patented in Canada Aug. 28, 1886, No. 24,750; in England Oct. 5, 1886, No. 12,068, and in France Feb. 9, 1887, No. 178,982.



Claim.—1. The combination, with the feed-rollers, their shaft, the shaft Q, and the former carried thereby, of the shaft D, parallel with said shaft Q, driving-pulley A and friction-clutches thereon, gear-wheel E on the shaft D, wheel I on the shaft Q, and intermediate gearing, substantially as described, between the shafts D and Q, sprocket-wheels L N K, the latter driven from the wheel I, and connections with the shaft of the feed-rollers, as and for the purpose specified.

2. The feed-rollers *a* and *a* and a drum or barrel-former, R, driven substantially as specified and fed with staves by the feed-rollers *a*, in combination with hand-levers i on the shaft of said feed-rollers, substantially as and for the purpose specified.

3. The shaft *m*, standards *c*, shaft *d*, and the feed-rollers *a*, located on the shaft *d*, which is journaled in bearing-boxes on the standards *c*, pivoted on the shaft *m*, combined with the barrel-former R, substantially as and for the purpose specified.

4. The standards *c*, spindle *d*, and the rollers *a*, located on the spindle *d*, journaled in bearing-boxes adjustably held on the standards *c*, in combination with the barrel-former R, and the screw-spindles *f*, arranged to adjust the feed-rollers *a* vertically, substantially as and for the purpose specified.

5. A shaft, Q, and a shaft, D, friction-clutches B and C, and barrel-former or drum R, set upon the shaft Q and connected by a series of spur-wheels, H, G, F, and E, to the shaft D, on the end of which the friction-clutches B and C are situated, in combination with the bell-crank P, the pin *c* on said bell-crank, and a lever, O, pivoted on the bed-plate and arranged to bring said pin *c* against the hub of the main driving-pulley A, so as to bring the clutches B and C into gear, substantially as and for the purpose specified.

6. A shaft, Q, a barrel-former, R, carried on said shaft, a series of spur-wheels, H, G, F, and E, connecting said shaft Q to the shaft D, and the gear-wheels I J, in combination with the sprocket-wheels *b*, L, N, and K, the shaft D, spindle *d*, and the feed-rollers *a* on the spindle *d*, which is caused to revolve by the sprocket-wheels *b*, L, N, and K, connected together by sprocket-chain, the sprocket-wheel K being on the same shaft as the gear-wheel J, which is driven by the gear-wheel I, located on the shaft Q, substantially as and for the pur-pose specified.

7. The cutter U, the slide *v*, the end *u* of which fits into the recess between the collars *r* on the cutter spindle or shaft *q*, said shaft *q* and the sliding block *s*, in which it is journaled, in combination with the collars *r* on said shaft, the screw-spindle *x*, bracket V, set-screw *y*, and the hand-wheel *w*, operating the screw-spindle *x*, which projects through the set-screw *y*, extending into the block *s*, situated on the bracket V, substantially as and for the purpose specified.

8. A barrel-former, R, divided into sections W and connected to collars Y on the shaft Q by the arms X, in combination with said arms, shaft, and collars, the spindle 4, key 2, handle 5, and the collar Z, con-nected by the arms 3, slotted, as described, to the arms X of one of the collars Y, the said collar Z being connected to the spindle 4 by the flat key 2, and so arranged that when the handle 5 is drawn out the sections W of the former R will collapse, substantially as and for the purpose specified.

9. The slotted arms 3, arms X, provided with pins 9, the sections W, and the collar Z, connected to the sections W by the arms 3, pro-vided with slots 10, within which the pins 9 on the arms X work or slide to permit the collapse of the sections W, in combination with the spindle 4, connected to the collar Z, the shaft Q, and the handle 5, for operating said collar longitudinally on the shaft Q, substantially as and for the purpose specified.

10. A collar, Z, arms 3, bell-crank 6, and a barrel-former, R, hav-ing sections W, connected by the arms 3 to the collar Z, shaft Q, hav-ing recess 7, and the rod 4, having handle 5, said collar constructed to hold the former or drum R expanded during the time the end of the bell-crank 6, pivoted to the handle 5, fits into the recess 7, sub-stantially as and for the purpose specified.

11. The combination, with the shaft *m*, and the barrel-former R, rotated from said shaft, of the standards *c*, pivoted at their lower ends on said shaft, spindle *d*, journaled in bearings on said standards, feed-rollers carried by said spindle, and means for vertically adjusting said spindle, substantially as and for the purpose specified.

384,731. ALLOY. CHARLES W. WARD, New York, N. Y. Filed Nov. 28, 1887. Serial No. 256,904. (No specimens.)

Claim.—1. An alloy composed of platinum, silver, bismuth, and steel, substantially as described.

2. An alloy composed of platinum, silver, bismuth, and steel, in about the proportions as herein described, as set forth.

3. An alloy composed of platinum, twenty to forty parts; silver, twenty to forty parts; bismuth, twenty to forty parts, and steel, one to ten parts, substantially as described.

384,732. CAR-COUPLING. ROBERT WILSON, Grahville, Mo. Filed Feb. 1, 1888. Serial No. 262,602. (No model.)

Claim.—1. In a car-coupling, the combination, with the draw-head having the lateral perforation 8 extending vertically through it, of the vertically-arranged coupling-pin 9, and spring arranged in a hori-zontal plane and bearing normally on said pin for the purpose of hold-

384,732.

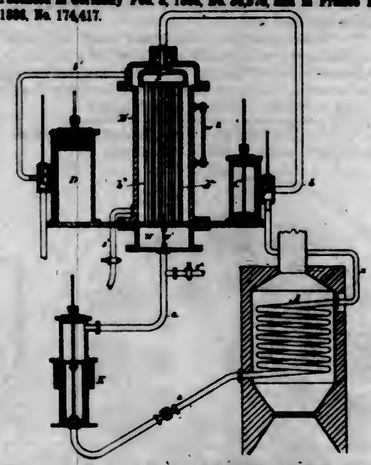


ing it, and links having hooks and lying in a horizontal plane, substan-tially as shown and described.

2. In a car-coupling, the combination, with a draw-head having a recess in its upper and lower sides and a vertical coupling-pin slot or perforation, of spring-actuated arms located in such recesses and adapted to bear against and hold a coupling-pin in position at one end of the said slot, substantially as described.

3. In a car-coupling, the draw-head 1, having recesses 2 at top and bottom, the top recess having extended portion 7, and the perforation 8, with lateral recess 10, located at the corner of said slots 2, and the spring-actuated arms 3, secured by means of the bolt 4 and nut 5, in combination with the link 11, having hooked ends formed with the beveled portion 12, elongated slots 13, and the openings 14, and coup-ling-pin 9, substantially as described.

384,733. MEANS FOR UTILIZING EXHAUST. SAMUEL WALKER, Rochester, Kent. Filed Oct. 7, 1887. Serial No. 251,794. (No model.) Patented in Germany Feb. 3, 1886, No. 36,570, and in France Feb. 20, 1886, No. 174,417.



Claim.—1. The combination of the generator A, the tube *c*, the cylinder C, connecting therewith, the tube *b*, the low-pressure boiler B', connecting therewith, the water-vessel W at the lower end of the boiler, the tubes *e* and *a*, and the pump E, connected therewith to return the condensed water to the generator, all substantially as described.

2. The combination of the cylinders C and D and their connecting-tubes with the generator A, the low-pressure boiler B', having a water vessel or chamber, as described, and the tubes and pump to return the condensed water to the generator, and the generator, substantially as described.

384,734. PLUME, TASSEL, &c. RALPH W. H. ALLEN, North-ampton, Mass. Filed Nov. 11, 1887. Serial No. 254,902. (No model.)

Claim.—1. The combination herein described, with a cap or head support, of a strip of hide having the wool or hair thereon bent upon itself, wool or hair outside to form a body having two contiguous edges united, the said body being adapted for engagement with said cap or head support at one end, substantially as shown and described.

2. A plume or tassel consisting of the tubular body formed of a strip of hide united at its longitudinal edges, and having the hair or

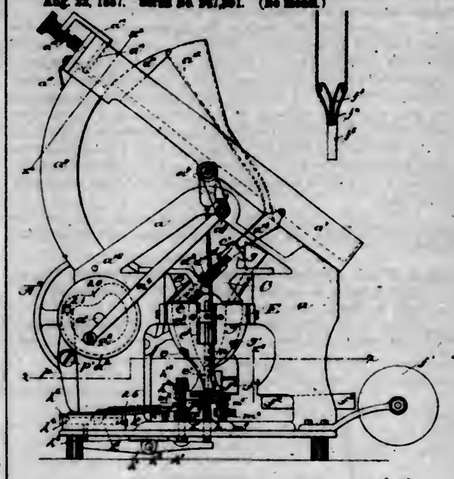


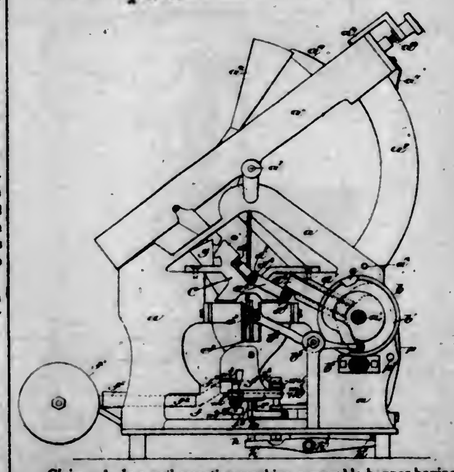
384,734.



wool on the outer side, the link D, passed partly into said body and secured thereto, and the cap E, having a slot, *e*, through which the exposed end of the link passes, substantially as set forth.

384,735. NAIL-ASSORTING MACHINE. EDWARD R. ALLEN, Portland, Me., assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Aug. 22, 1887. Serial No. 247,551. (No model.)





Claim.—1. In a nail-assorting machine, a movable hopper having a pocket at one end and a rest to enter said pocket, combined with a

chute carried by the said hopper and into which each nail deposited upon the rest is delivered singly, substantially as set forth.

2. The oscillating hopper, its guide, the chute connected to its upper side, and the chute extended from its lower side, combined with the rest adapted to work through a slot or pocket in the bottom of the said hopper, substantially as described.

3. The oscillating hopper a^{xi}, having a slotted pocket or recess at one end for the retention of one or more nails, combined with an adjustable end plate to graduate the length of the recess to the length of the nail to be used, substantially as described.

4. In a nail-assorting machine, a beveled guide and a hollow spindle having spring-jaws reciprocating in the said guide, combined with a chute to deliver the said nails to the said spindle, and with a block having a guide-passage in communication with the said spindle for the reception of such nails as pass point foremost through the said spindle, substantially as described.

5. In a nail-assorting machine, a hollow spindle having spring-jaws, a beveled guide therefor, and a chute to deliver nails to the said spindle singly, combined with an auxiliary chute into which the said spindle rejects the nails delivered to it with the head end foremost, substantially as described.

6. In a nail-assorting machine, a reciprocating hollow spindle having spring-jaws, a bearing beveled at its upper end in which the said spindle slides, and a chute to deliver nails to the said spindle, combined with an auxiliary chute into which such nails as are delivered to the spindle head end foremost are rejected, the nails delivered to the spindle point foremost being permitted to pass through the said hollow spindle at its next ascent, substantially as described.

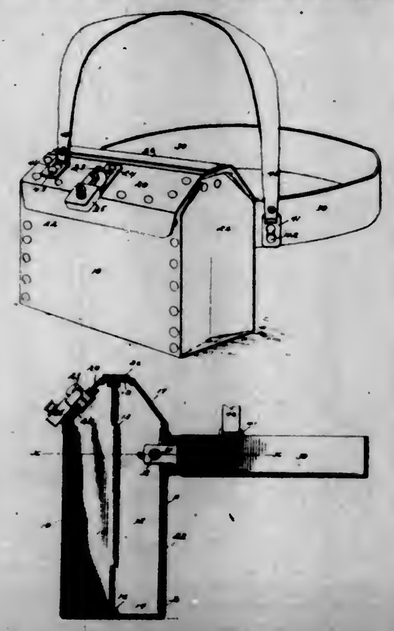
7. In a nail-assorting machine, the guide to hold and present a strip of flexible material for the reception of nails, the nail-driver to drive nails point foremost into the said strip, and the movable anvil, combined with a strip-feeding mechanism, substantially as described, and means to connect the said anvil and feeding mechanism, whereby the latter is set into operation by the movement of the anvil when acted upon by the point of the driven nail, substantially as described.

8. The vibrating lever, the carriage, its latch, and feeding mechanism, substantially as described, actuated by it, combined with a lever, A^{9}, and an anvil which is depressed intermittingly by the point of the driven nail.

9. The guide f^{9} and its open slotted leg or tube, and a spring-arm guard, combined with the anvil A, to operate substantially as described.

384,736. MAIL-POUCH. GEORGE J. BENSON, Anamosa, Iowa, assignor to Amelia B. Lockwood, East Orange, N. J. Filed Oct. 20, 1887. Serial No. 253,073. (No model.)

Claim.—1. The combination, with a pouch, of a metal bolt provided with apertures at one end, an eyebolt carried at the other end





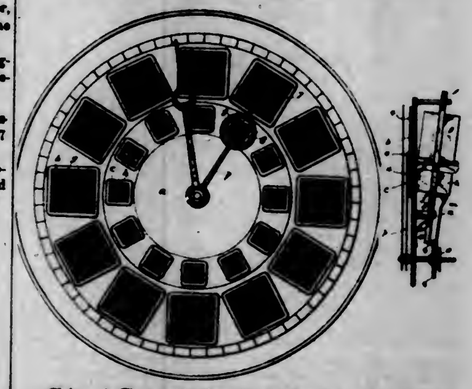
of the bolt and arranged to pass through one of the apertures of the bolt, and a bolt carried by the pouch, said bolt being mounted to cross an aperture formed in the pouch and arranged to engage the eyebolt when such eyebolt is passed through the pouch-aperture, substantially as described.

2. The combination, with a metal-lined pouch, of a metal bolt provided with apertures at one end, an eyebolt carried at the other end of the bolt and arranged to pass through one of the apertures of the bolt, and a bolt carried by the pouch and arranged to engage with the eyebolt, substantially as described.

3. The combination, with a metal-lined pouch, of a metal bolt provided with apertures at one end, an eyebolt carried at the other end of the bolt and arranged to pass through one of the apertures of the bolt, a bolt carried by the pouch and arranged to engage with the eyebolt, and a thumb-screw arranged in connection with the bolt, substantially as described.

4. The combination, with a metal-lined pouch, of a metal bolt provided with apertures at one end, an eyebolt and a turn-button carried at the other end of the bolt and arranged to pass through the apertures of the bolt, and a bolt carried by the pouch and arranged to engage with the eyebolt, substantially as described.

384,737. TIRE-PIECE. CHARLES BEDFORD, Boston, Mass. Filed Jan. 13, 1888. Serial No. 260,854. (No model.)



Claim.—1. The combination of a dial having openings arranged concentrically, a series of levers arranged radially at the inner side of the dial and pivoted to swing from and toward the dial, means for oscillating said levers successively at predetermined intervals, and rotary blocks or character-holders supported by said levers and rotated by the movement of the levers away from the dial, substantially as set forth.

2. The combination of a dial having openings arranged concentrically, a series of oscillatory levers which are oscillated at regular intervals, as described, a series of rotatable blocks or character-holders supported by said levers and partially rotated by the forward movement of the levers, and locking devices, substantially as described, whereby said blocks are locked to the levers after each partial rotation, as set forth.

3. The combination of a dial having openings concentrically arranged and formed with seats at the rear side of the dial, a series of pivoted levers radially arranged at the inner side of the dial, and a series of rotatable blocks or character-holders supported by said levers and formed to fit said seats when the levers are in their normal positions, as set forth.

4. The combination of a dial having concentrically-arranged openings, a series of radial levers pivoted to supports at the inner side of the dial, a series of rotary blocks journaled in said levers and provided with pinions, the flexibly-supported racks engaged with said pinions, whereby the blocks are rotated when the levers are moved away from

the dial, and the inclined ribs on the racks, and the studs or pins on the levers co-operating with said ribs, whereby the racks are prevented from rotating the blocks backwardly, as set forth.

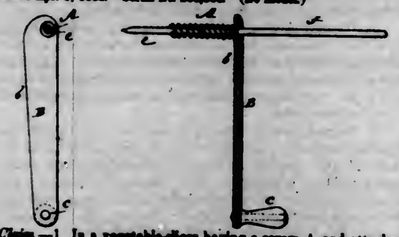
5. The combination of a dial having concentrically-arranged openings, a series of radial levers arranged at the inner side of the dial and pivoted near their inner ends to fixed supports, rotary blocks supported by said levers, a cam impelled by the time-movement and arranged to bear successively against the inner ends of said levers and force the blocks away from the dial, means, as described, whereby the blocks are rotated while being moved by said cam, and springs whereby the levers are forced toward the dial when released by the cam, as set forth.

6. The combination of a dial having two concentric series of openings, one within the other, a series of pivoted levers radially arranged within the dial, two series of rotary blocks supported by said levers, and means, substantially as described, for rotating said blocks simultaneously at predetermined periods, as set forth.

7. The combination of a dial having two concentric series of openings, a series of radial levers pivoted to fixed supports at the rear of the dial, two series of rotary blocks supported by said levers, an arm having a gear-segment revolved by the time mechanism and arranged to successively engage pinions on the blocks of the inner series, a cam also rotated by the time mechanism and arranged to successively swing said levers inwardly from the dial, racks secured to a fixed support and engaged with pinions on the blocks of the outer series, whereby said blocks are rotated when the levers are moved inwardly, devices for disengaging said racks from the block-pinions during the return movement of the levers, and springs to return the levers to their normal positions after they are released by the cam, as set forth.

8. The combination, with a dial having openings concentrically arranged, of a series of radially-arranged pivoted levers and blocks or character-holders detachably secured to said levers, as set forth.

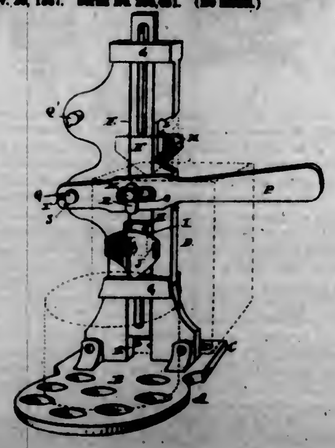
384,738. VEGETABLE-SLICER. VERMEY REMM, Greenville, N. J. Filed Apr. 9, 1888. Serial No. 269,902. (No model.)



Claim.—1. In a vegetable-slicer having a screw, A, and attached knife B, the screw A, provided with an elongated arm or extension, *f*, at its back and in rear of the knife, in axial relation with the screw, essentially as and for the purpose herein set forth.

2. In a vegetable-slicer operating substantially as described, the combination of the screw A, having a forward smooth extension, *e*, the knife B, and the elongated arm or extension *f* in axial relation with the screw, back of the knife, essentially as shown and described.

384,739. CAN-OPENER. JAMES BLACKLER, Story City, Iowa. Filed Nov. 30, 1887. Serial No. 256,651. (No model.)



Claim.—1. In a can-opener, the combination of a standard having guides and a fixed stud formed with a lateral nib, a movable knife-carrier having a projecting pin, a lever having a pivot-hole and a slot for reception of the nibbed stud, and a slot for the pin on the carrier, and a button pivoted to said pin outside the carrier and constructed to pass through the slot in the cams, substantially as described.

2. In a can-opener, a base forming a front can-rest and a rear can-rest, in combination with a slotted standard erected on the base between said front and rear rests, and a carrier mounted to slide vertically in said slot, and having a curved knife on one face and a straight knife on its opposite face working over said front and rear rests, respectively, substantially as described.

384,740. PLOW. THOMAS A. BLANCHARD, Appleg. Ga. Filed Nov. 14, 1887. Serial No. 255,602. (No model.)



Claim.—1. The combination, with a plow-beam provided with a downwardly-projecting plate, of a plow-standard pivoted to the said plate, and an eccentrically-apertured block secured to the rear end of the standard and engaging the rear edge of the said plate, substantially as herein shown and described.

2. The combination, with a plow-beam provided with the downwardly-projecting plate B, and the plate C, secured to the beam in rear of the plate B, of the standard C, pivoted to the plate B, and the eccentrically-apertured block F, secured to the standard and provided with the notches 1 2 3 4, and the laterally-projecting lug f^{3}, substantially as herein shown and described.

3. The eccentrically-apertured block F, having a series of notches, 1 2 3 4, of varying depths, and provided with the laterally-projecting lug f^{3}, substantially as described.

4. The combination, with the mold-board, of a block adjustably secured to the mold-board and having two wedge-shaped face portions with the point of one overlapping the blunt end of the other, and sweeps secured to the mold-board and having their inner ends engaging the said block, substantially as herein shown and described.

5. A sweep-adjusting block having two wedge-shaped face portions with the point of one overlapping the blunt end of the other and provided with the slot *l*, substantially as described.

6. The slotted block L, having two wedge-shaped face portions with the point of one overlapping the blunt end of the other, the blunt ends of the wedge-shaped faces being concave, substantially as herein shown and described.

384,741. SAW-HANDLE ATTACHMENT. LARS P. RASMUS, Marshall, Wis. Filed Oct. 6, 1887. Serial No. 251,955. (No model.)

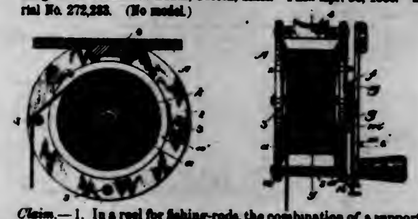


Claim.—1. A removable handle attachment for crescent-saws, consisting of a saw-blade holder formed with an inwardly-extending projection at its lower end and a vertical slot extending through the projection and the holder to receive the entire end of a saw-blade, a step at its upper end adapted to bear against the upper edge of the saw-blade, a slot extending through the sides of the holder and opening into the first-named slot, and a vertically-movable transverse pin or bolt located in the slot, extending through the sides of the holder, and adapted to wedge against the end of the saw-blade and secure it in position, substantially as described.

2. A handle attachment for saw-blades, consisting of a holder, 1,

to hold the end of a saw-blade, having a socket, 2, to receive a handle, an adjustable stop, 15, with convex slots 16, to bear against the upper edge of a saw-blade, a vertical slot, 5, to receive the end of a saw-blade and extending to the end of curved portion 4, a vertical slot, 7, extending transversely through slot 5 and having a circular opening, 8, with projection 12, and a pin, 9, adapted to slide in slot 7 and having heads 10, one of which has a V-shaped slot, 11, adapted to pass over projection 12, substantially as described.

384,742. FISHING-REEL. CHARLES K. BRADFORD, Lynnfield, assignor to William F. Kakas, Boston, Mass. Filed Apr. 30, 1888. Serial No. 272,283. (No model.)



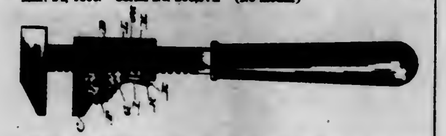
Claim.—1. In a reel for fishing-rods, the combination of a supporting-frame, a shaft journaled in said frame, a drum or barrel mounted to rotate loosely on said shaft, a coiled spring engaged at its inner end with the shaft and at its outer end with the barrel, a crank or handle affixed to the shaft, whereby the operator may hold the shaft and the end of the spring engaged therewith, and thereby enable the spring to rotate the barrel independently of the crank, and a movable locking device, whereby the crank or handle may be locked to the barrel, to enable the latter to be rotated by the crank instead of by the spring, as set forth.

2. The combination of a supporting-frame, a shaft, *h*, journaled therein and provided with a slot or pocket, *j*, a barrel or drum mounted to rotate loosely on the shaft, and a spring having a hook at its inner end detachably engaged with the pocket of the shaft, and having its outer end operatively engaged with the barrel, the described engagement of the inner end of the spring with the shaft enabling the spring to be disconnected from the shaft by a backward rotation of the latter, as set forth.

3. The combination of a supporting-frame, a shaft, *h*, journaled therein, a barrel or drum mounted to rotate loosely on the shaft, and a spring having its inner end engaged with said shaft and its outer portion in frictional contact with the inner surface of the barrel, whereby the spring may slip on the barrel when fully wound, as set forth.

4. The combination of the supporting-frame, a shaft journaled therein and provided with a crank or handle, a barrel or drum mounted to rotate loosely on the shaft and provided with a hub having pins or projections *g*, the spring operatively engaged with the barrel and shaft, and a bolt adapted to slide on the handle of the shaft into or out of engagement with the projections *g* of the barrel, as set forth.

384,743. WRENCH. BERLIN T. BEYAN, Evansville, Wis. Filed Mar. 24, 1888. Serial No. 268,371. (No model.)



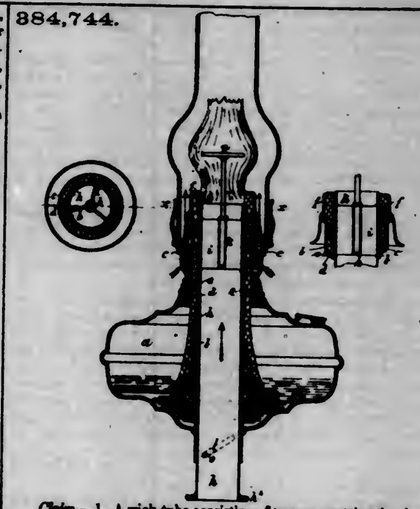
Claim.—1. In a wrench, the combination, with the toothed shank having a jaw rigid therewith, of the sliding jaw, the pinion mounted thereon and engaging the toothed shank, the ratchet-wheels rigidly attached to the pinion, and the pawl engaging the ratchet-wheels, substantially as specified.

2. In a wrench, the combination, with the toothed shank having a jaw rigid therewith, of the sliding jaw, the pinion mounted thereon and having the ratchet-wheels attached thereto, the pawl engaging the ratchet-wheels and having a thumb-hold, and the actuating-spring attached to the pawl and adapted to normally hold it in the engaging position, substantially as specified.

3. In a wrench, the combination, with the toothed shank having a jaw rigid therewith, of the sliding jaw, the pinion mounted on the jaw and engaging the teeth on the shank, the ratchet-wheel attached rigidly to the pinion and having a longer diameter than the pinion, and the spring-actuated pawl engaging the ratchet-wheels, substantially as specified.

384,744. LAMP-BURNER. ARTHUR CAPITIN, Berlin, Germany, assignor to Carl Patzky, same place. Filed Feb. 15, 1887. Serial No. 227,674. (No model.) Patented in Belgium Dec. 15, 1886, No. 73,897.

384,744.

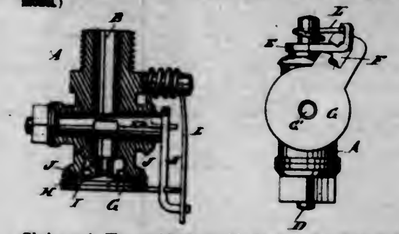


Claim.—1. A wick-tube consisting of two concentric tubes having a space between them forming a wick-chamber, one of the said tubes projecting through the lamp-body and the other projecting above the tube extending through the lamp-body, and provided with a flange covering the wick-chamber, in combination with a regulating-tube sliding in the inner tube, substantially as described.

2. The combination, with a lamp-body and a wick-tube projecting through the same, of a tube secured to the lamp-body and carrying a cap projecting above the first-named tube, with its flange covering the space between the said tubes, and a regulating-tube adjustably held in the tube projecting through the lamp-body, substantially as shown and described.

3. The combination, with the receptacle *a*, provided with the tube *b*, having inclined slot *l*, of the tube *c*, secured to the top of the said receptacle and carrying the cap *f*, projecting above the tube *b*, and having its flange covering the space between the tubes *b c*, and the tube A, fitting in the tube *b* and provided with the pin *a*, working in the slot *l* of the said tube *b*, substantially as herein shown and described.

384,745. COCK FOR FIRE-EXTINGUISHERS. CHARLES C. CORNELL, Haydenville, Mass. Filed Mar. 31, 1887. Serial No. 233,160. (No model.)



Claim.—1. The combination, with the body A, provided with a passage, B, and a valve, D, having a lever bent outward at its lower end, of the plate G, soldered to the body and having a notch, F, into which the arm extends, and the spring I, secured to the body and engaging the outward-bent end, substantially as set forth.

2. In a cock for fire-extinguishers, the combination, with the body having a valve and a sprinkler held on the lower part of said body, of a lever held on the said valve and provided with a spring, and a plate soldered at one end to said sprinkler and at its other end connected with the said lever, so that when heat is applied the said solder melts and disconnects the said plate from the sprinkler, whereby the lever is set free and the valve is opened by the action of the spring, substantially as shown and described.

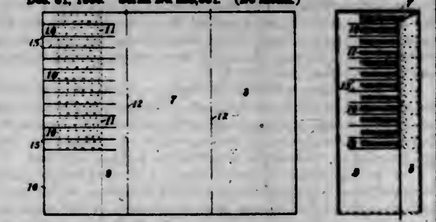
3. In a cock for fire-extinguishers, the sprinkler H, formed of the cone-shaped disk I, having the upward-projecting screw-threaded arms K, the aperture K', leading through said arms, and the flaring central aperture, I', formed in the disk I, and with which the apertures K' communicate, substantially as shown and described.

4. In a cock for fire-extinguishers, the combination, with the body having a concave, J, in its end and internally threaded at J', of the

sprinkler H, comprising the apertured cone-shaped disk I, having the threaded arms K, engaging the threaded part J', and provided with apertures K', leading to the said central aperture in the disk I, substantially as shown and described.

5. In a cock for fire-extinguishers, the combination, with the body having a conical seat on its outer end, of a valve operating in the said body, a lever secured to one outer end of the said valve, a spring pressing on the said lever, a plate for holding the said lever in such a position that the valve is closed, a sprinkler on which the said plate is soldered, provided with a conical disk held out of contact with the said conical seat on the body, and also provided with arms screwing in the body, and having apertures leading into a conical central aperture in the said disk, substantially as shown and described.

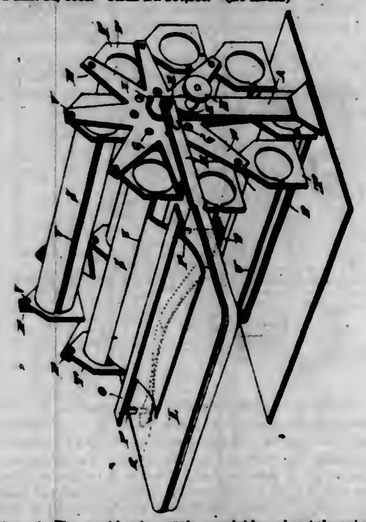
384,746. SCRAP-BOOK. HENRY CHESBRO, Bristol, R. I. Filed Dec. 31, 1886. Serial No. 223,661. (No model.)



Claim.—1. A scrap-book consisting of a sheet of paper or similar material folded into three parts, the surface of one part covered by an adhesive substance and divided into horizontal strips constructed to receive scraps, the whole arranged to fold together, substantially as described.

2. A scrap-book made up of a series of the folded sheets 7 8 9, one of the divisions, 7 or 9, having one surface covered with adhesive material and divided into horizontal strips, as described.

384,747. APPARATUS FOR STORING, MEASURING, AND RE-REELING DRY-GOODS, &c. WILLIAM DOERFLINGER, La Crosse, Wis. Filed Mar. 20, 1883. Serial No. 267,810. (No model.)



Claim.—1. The combination of the revolvable reel and the tubular pendent holders pivotally suspended therefrom and thereby prevented from rotating axially when the reel is turned and having the longitudinal slits, substantially as described.

2. The combination of the revolvable reel and the tubular holders suspended eccentrically therefrom and having the open ends and the longitudinal slits, substantially as described.

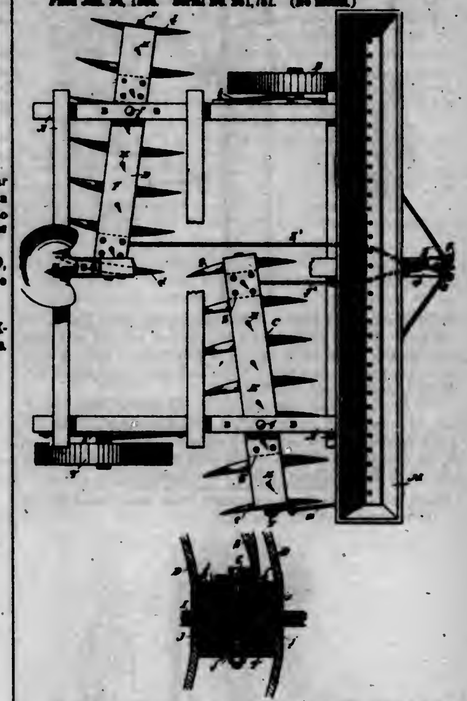
3. The combination of the standards, the reel journaled therein, the holders suspended eccentrically from the outer ends of the reel-arms, and the measuring-board L, having the arms M pivoted to the standards, substantially as described.

4. The combination of the standards having the stops I K on opposite sides of the axis of the reel, the reel journaled in the said standards, the holders suspended from the outer ends of the reel-arms, and the measuring board or table having the arms pivoted to the standards on the axis of the reel and adapted to be supported in a vertical or horizontal position by the stops I K, substantially as described.

5. The combination, with the standards and the reel journaled therein and having the eccentrically-suspended holders, of the measuring table or board supported on one side of the reel, the ruler O arranged transversely over the same and having the arms P arranged and guided in openings in the board or table, and the spring R, secured to the board or table and bearing against the arms P to normally elevate the ruler, substantially as described.

6. In combination with the revolvable reel, the tubular holders pivotally suspended therefrom and arranged eccentrically, and having the longitudinal slits and the measuring-board arranged on one side of the reel and adapted to receive the goods from the holders.

384,748. DISK CULTIVATOR AND SEEDER. RAHL C. DOBBY, Tulare, assignor of one-half to William L. Morrow, San Luis Obispo, Cal. Filed Jan. 24, 1888. Serial No. 261,781. (No model.)



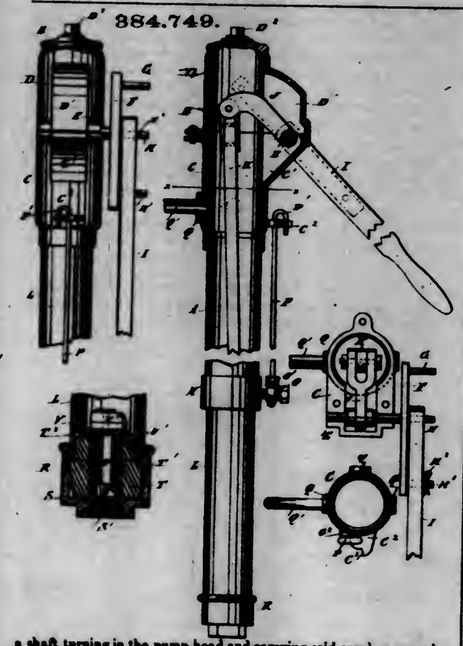
Claim.—1. A disk cultivator and seeder consisting of the frame A, made of longitudinal and transverse bars, the carrying-wheels, one on each side and located at diagonally-opposite corners, the oppositely-inclined bars E F, pivoted to the sides of the frame, the lever and connections for varying and fixing the inclination of the bars, the shafts I, supported from standards carried by the inclined bars, and the disk-gangs carried by the shafts, said gangs having smaller and less concaved disks on each end, and the cleaning-spikes secured to and projecting downwardly from the inclined bars and between the disks, all arranged and adapted to operate substantially as described.

2. In a disk cultivator and seeder, the wheeled frame, the oppositely-inclined pivoted bars E F, and the shafts I, with their disk-gangs, having enlarged journals J, with an encircling groove, in combination with the connection between the gangs and the inclined bars, consisting of the standards S, bolted up under the bars and having a bent foot with an oil-hole, *s'*, and the two-part boxes T, having an oil-hole connecting the oil-holes *s'* with the grooves of the journals J, said boxes encircling the journals J and bolted to the standard-feet, substantially as described.

384,749. PUMP. JOHN B. DRAKE, Goshen, Ind. Filed July 2, 1887. Serial No. 243,269. (No model.)

Claim.—1. In a pump, the combination, with the pitman carrying the plunger, of a crank-arm pivotally connected with said pitman,

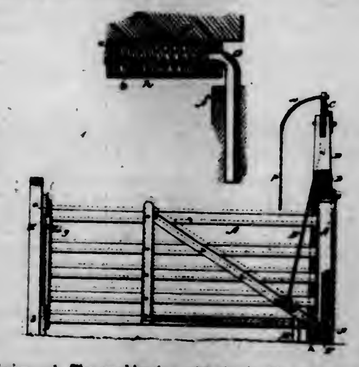
384,749.



a shaft turning in the pump-head and carrying said crank-arm, and an arm secured to the outer end of said shaft and provided with three crank-pins, of which one is adapted to be connected with the windmill-rod and on the other two of which is secured a pump-handle, substantially as shown and described.

2. In a pump, the combination with the shaft E, of the arm F, secured on said shaft, the crank-pin G, secured to one end of said arm F and adapted to be connected with the windmill-rod, the pins H and H', also secured to said arm F, and the pump-handle I, fastened on said pins H and H', substantially as shown and described.

384,750. GATE. JOHN FLEMMER, Boling, Kans. Filed Mar. 16, 1888. Serial No. 267,419. (No model.)



Claim.—1. The combination, with the working-levers and connecting-rods, of a vertically-tilting gate and a compound hinge for said gate having an axis upon which the gate tilts, and a sliding adjustment to permit a retractile initial movement of the gate, substantially as and for the purpose described.

2. The combination, with the gate and its posts, of the compound hinge composed of plate F, with barrel A, the bent rod G, having a head or nut, *n*, and a spiral spring, *t*, the said gate being arranged to turn upon the journal formed by the bent rod.

3. The combination, with the working-levers, in a lever-gate, and the rope for operating them, of a flexible semi-stiff connection for projecting the rope into easy reach from the path of the vehicle, substantially as and for the purpose described.

384,751. DIE FOR FORGING. HENRY H. FOSTER, Pittsburg, Pa. Filed Mar. 1, 1888. Serial No. 265,810. (No model.)



Claim.—1. An improvement in dies for forging or swaging, which consists in the combination of dies whose opposing faces are provided with suitable working-cavities made substantially in arcs of a circle, the general contour of the conjoined die-cavities when the dies are most nearly together being substantially circular, the edges of the cavities of the dies being separated by lateral recesses, substantially as and for the purposes described.

2. An improvement in dies for forging or swaging straight metal articles, which consists in the combination of dies whose opposing faces are suitably formed and steps whereby the motion of the movable die is limited and the edges of the working-faces are prevented from coming into contact, substantially as and for the purposes described.

3. An improvement in dies for forging or swaging straight metal articles circular in cross-section and either of constant or varying longitudinal section, which consists in the combination of dies whose opposing faces are provided with cavities, the cavity of one of the dies having flaring extensions, substantially as and for the purposes described.

384,752. BURGLAR-ALARM. SCOTT C. FREEMAN and JOHN B. SOWARD, Novada, Mo. Filed Mar. 6, 1888. Serial No. 266,394. (No model.)



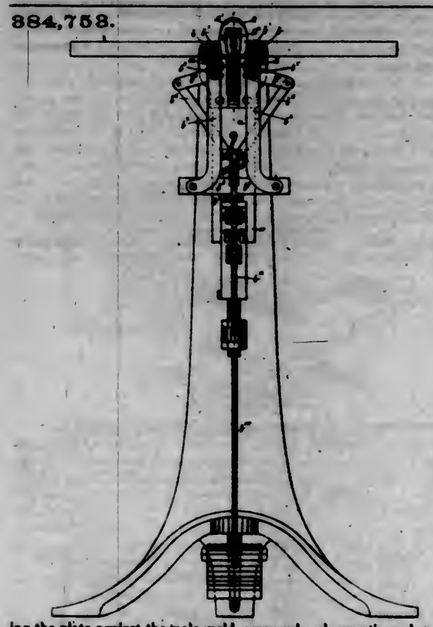
Claim.—In a burglar-alarm, the combination, with the bell, its striking mechanism, and a suitable frame, A', of the detent-lever D, pivoted between its ends on a post, C, and having a hooked inner end, *d*, engaging the ratchet b^9 on said striking mechanism, and a cross piece or rod, *d'*, at its outer end, a spring, d^2, holding said ratchet and hook engaged, the lever F, pivoted between its ends and engaging the bar or rod *d'*, to throw the hooked end thereof out of engagement with said ratchet, the spring-catch *e*, secured to the frame A' adjacent to the lever D, to snap into engagement therewith and hold its hooked end away from the ratchet to allow the striking mechanism to operate until it runs down, and the rod or handle for moving the spring-catch away from the said lever to reset the alarm, substantially as set forth.

384,753. RISE-SUPPORTER MACHINE. GEORGE A. FULLERTON, Boston, Mass. Filed July 30, 1888. Serial No. 282,281. (No model.)

Claim.—1. In a molding-machine, the combination of the male mold or former A with the nippers B, arranged and operating substantially as described.

2. In combination, the male mold or former A, the nippers B, and the plate A', and means, substantially such as are described, for clamping the plate against the male mold, arranged and operating substantially as described.

384,753.

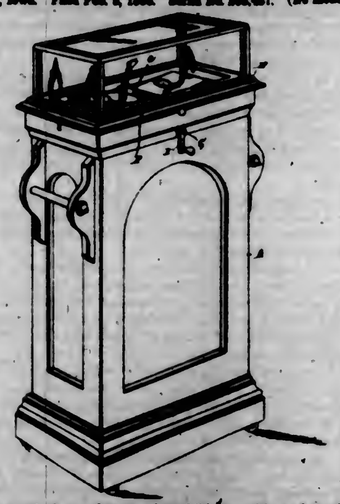


3. The former A, in combination with the jaws *b b'*, levers b^3 b^4, and cross-heads b^5 b^6, arranged and operating substantially as described, so that the power applied through cross-head b^5 acts first to close the jaws *b b'* and then is transmitted through the levers b^3 b^4 to cross-head b^6.

4. The male mold A and the grippers B, in combination with slotted plate *d* and the pins b^7, substantially as described.

5. The cross-head b^5, carrying the levers b^3 b^4 and their jaws *b b'*, in combination with the links b^8, cross-head b^6, and catch b^{10}, all substantially as described.

384,754. PHOTOGRAPHIC CABINET. FRED A. GARRISON, Fort Dodge, Iowa. Filed Feb. 8, 1888. Serial No. 263,457. (No model.)



Claim.—1. In a photograph-exhibiting cabinet, the roller C, mounted in a suitable case near its top, the roller D, mounted therein near the bottom and having a pulley, F, the shaft G, mounted in the case and provided with a handle or crank, I, on its outer end and a pulley, H, on its inner end, the belt K, mounted on the pulleys F and H, and the belt E, mounted on the rollers C and D and having the holders for the photographs attached thereto, substantially as and for the purpose specified.

2. In a photograph-exhibiting cabinet, the combination, with the endless belt E, of the holders comprising the standard M, attached at its inner end to the belt and having clips on its outer end, and the lateral arms on the said standard having clips on their ends, all constructed and arranged substantially as specified.

3. In a photograph-exhibitor, the combination, with the belt E, of the holders attached at intervals thereto and comprising the rigid arms N, N', and O, having clips on their ends, and the arm O', having an extension provided with clips, substantially as and for the purpose specified.

4. In a photograph-exhibitor, the combination, with an endless belt, of the holders comprising the arm N, having apertured ears P P on its free end adapted to be secured to the belt, and the hook-shaped clips between the ears, the arms N' and O, having hook-shaped clips on their outer ends, and the arm O', provided with an extension having clips on its end, substantially as specified.

5. In a photograph-exhibitor, the combination, with the endless belt, of the holder L, attached thereto and having the arms N, N', and O, provided with hook-shaped clips at their ends, the arm O', having guide-clips *o'* on its end, and the extension-arm Q, operating in the said guide-clips and having the clips *g* on its outer end similar to the clips on the arms N, N', and O, and the guide-clips o^2 o^3 on its inner end embracing the arm O, substantially as specified.

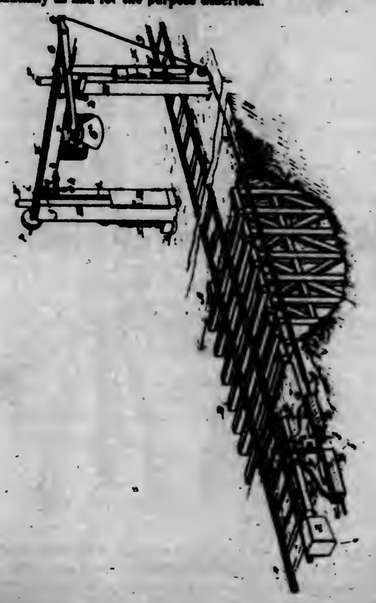
6. As a new article of manufacture, the holder comprising the arms N N', having clips *n n'* on their ends, the lateral arm O, having the clips *o* on its outer end, the arm O', and the extension-arm Q, mounted on the arm O' and having clips *g* on its outer end, the said extension-arm being adapted to be extended to engage a card or photograph in the said clips on the ends of the arms, substantially as specified.

384,755. DANGER-SIGNAL FOR BRIDGES. MILES O. GORDON, Monrovia, Cal. Filed Mar. 2, 1888. Serial No. 265,961. (No model.)

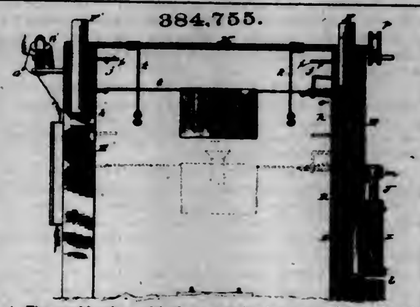
Claim.—1. The combination, with a cord, C, adapted to be distended along the railroad-track, of the bar D, having groove *a*, weighted lever D^2, distending the cord, the trigger-extension *e*, said a hooked kno-wire extending to a distance and provided with signaling devices, substantially as and for the purpose described.

2. The combination, with a combustible cord arranged upon a bridge, of signaling devices connected to and operated at a distance from the bridge by the burning of said cord.

3. The combination of the tripping device, the tension-wire *g*, and the signaling device, consisting of a rock-shaft with a lever connected to the wire and two arms, vertical posts having sliding weights arranged in grooves in the posts and supported by the arms of the rock-shaft, and a cross-connection for the two weights bearing a signal, substantially as and for the purpose described.

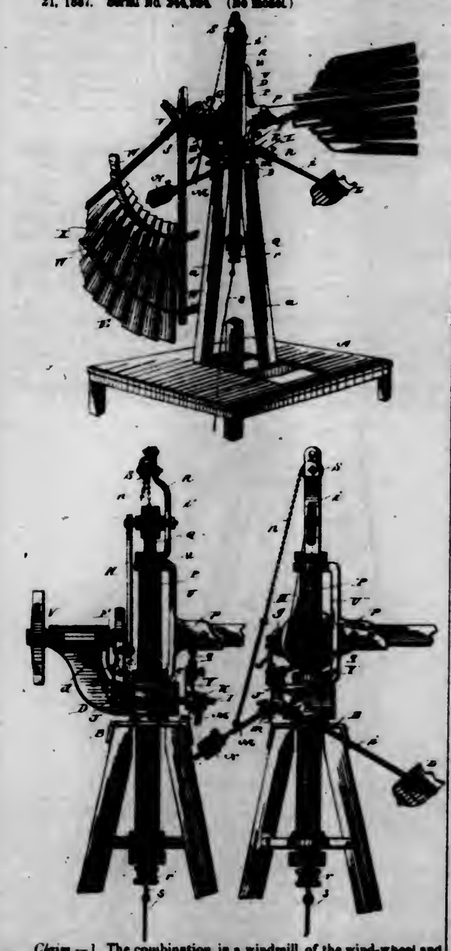


384,755.



4. The combination, with the percussion-hammer, of a catch-rod arranged in one of the posts, the sliding weights, one of which is provided with a spring-hook arranged to release the catch-rod, and a connecting-wire for the two weights, one end of which is attached to the spring-hook to release the percussion-hammer, as described.

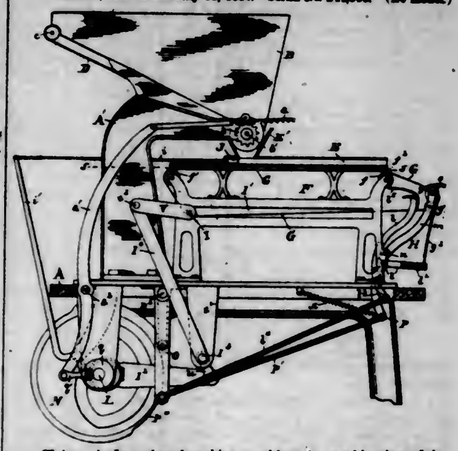
384,756. **WINDMILL.** JOHN B. GORRELL, La Otto, Ind., assignor of two-thirds to W. J. Hague and F. A. Hague, same place. Filed July 21, 1887. Serial No. 244,994. (No model.)



Claim.—1. The combination, in a windmill, of the wind-wheel and the friction-disk on the shaft thereof, the horizontal shaft I, the arm secured to one end thereof and a brake secured to the said arm adapted to engage the friction-disk, and the tri-branched casting on the opposite end of the shaft to receive, respectively, a counter-balance weight, a governor-vane, and a connection for the rudder-vane, substantially as specified.

2. In a windmill, the combination, with the wheel-shaft, of the vertical pipe, the hollow rod passing through the same, the disk on the wheel-shaft, the pitman connecting the said disk with the hollow rod, the pull-rod and chain passing through the said rod, the horizontal shaft I, having an arm secured to one end carrying a brake-shoe, the tri-branched casting secured to the opposite end of this shaft and receiving, respectively, a governor-vane, a counterbalance-weight, and a rod connected with the rudder-vane, and the pull-chain connected to the arm carrying the counterbalance-weight, substantially as specified.

384,757. **CIGAR-BUNCHING MACHINE.** Moses Grunewald, Baltimore, Md. Filed July 18, 1887. Serial No. 244,860. (No model.)



Claim.—1. In a cigar-bunching machine, the combination of the hopper B, having an inclined bottom, B', an oscillating feed-cylinder having a cavity therein and located in the bottom of the hopper, a feed-bolt, D, traveling above the inclined bottom, a bunch-guide, E, beneath the hopper, and a reciprocating pusher, J, in the guide, as set forth.

2. In a cigar-machine, the combination of the hopper B, a feed-cylinder having a cavity therein and located in the bottom of the hopper, a bunch-guide, E, beneath the hopper, a reciprocating pusher, J, in said guide, stationary rollers *f f'*, a pivoted frame, H, having a roller, *g*, and an apron, G, passed over said rollers, the slack thereof forming a bight between one of the stationary rollers and the roller on the pivoted frame, as set forth.

3. In a cigar-bunching machine, the combination of the hopper B, an oscillating feed-cylinder having a cavity and located in the bottom of the hopper, a bunch-guide, E, beneath the hopper, a reciprocating pusher, J, in the guide, a frame having slots I', a bar, I, movable back and forth in the slots, rollers *f f g g'*, the frame H, and an apron, G, passed over the rollers and connected to said bar, substantially as described.

4. In a cigar-bunching machine, the combination of a tubular guide, E, and a pusher in the guide, comprising a cross-head, *j*, and a flexible bar, *j'*, attached to the cross-head, and means whereby the shape of said bar may be changed, as set forth.

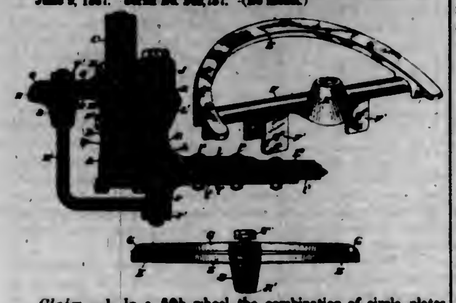
5. In a cigar-bunching machine, the combination of a frame having slots I', a bar, I, movable back and forth in the slots, rollers *f f g g'*, an apron, G, passed over the rollers and connected to the said bar, a pivoted frame, H, and pivoted upright arms *l*, provided at their upper end with flat springs l^3, which are in contact with one of the said rollers, for the purpose set forth.

6. In a cigar-bunching machine, the combination of a frame having slots I', a bar, I, movable back and forth in the slots, rollers *f f g g'*, an apron, G, passed over the rollers and connected to the said bar, and a pivoted frame, H, provided with a rest or support, O, for the leaf or wrapper, as set forth.

7. In a cigar-bunching machine, the combination of a frame having slots I', a bar, I, movable back and forth in the slots, rollers *f f g g'*, an apron, G, passed over the rollers and connected to the said bar, a pivoted frame, H, and pivoted upright arms *l*, having a spring, g^6, which bears against the apron and presses it in contact with the pivoted frame, as set forth.

8. In a cigar-bunching machine, the combination of a frame having slots I', a bar, I, movable back and forth in the slots, rollers *f f g g'*, the frame H, an apron, G, passed over the rollers and connected to the said bar, a pivoted frame, H, and pivoted upright arms *l*, having a spring, g^6, which bears against the apron and presses it in contact with the pivoted frame, as set forth.

384,758. **FIFTH-WHEEL.** William W. Gunn, Baldwin, Pa. Filed June 9, 1887. Serial No. 240,737. (No model.)



Claim.—1. In a fifth-wheel, the combination of circle-plates adapted for receiving the head-block and axle-bed and provided with rearward extensions for the king-bolt, a king-bolt which is situated back of and is independent of the axle and head-block, and a king-bolt brace which connects the circle-plate with the lower end of the king-bolt and the lower end of the king-bolt with the reach, whereby the king-bolt is supported against the strain from the axle and perch, substantially as and for the purposes specified.

2. In a fifth-wheel, the combination of the fifth-wheel plates adapted to receive the head-block and axle-bed and provided with rearward extensions for the king-bolt, a king-bolt brace which connects the front of the circle-plates with the reach and is provided with a socket for the reception of the lower end of the king-bolt, and a king-bolt situate back of and independent of the axle, and which connects the rear of the circle-plates with the brace which extends from the front of the circle-plates to the reach, substantially as and for the purposes specified.

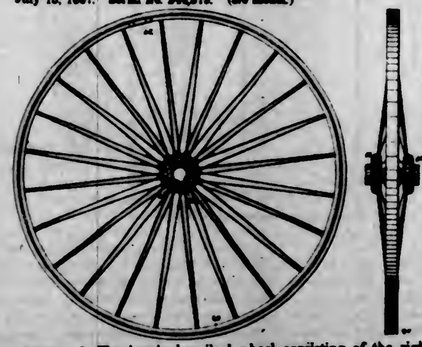
3. In a fifth-wheel, the combination, with the circle-plate, of a brace extending therefrom and a shoe screwed on the brace and supporting the lower circle-plate, substantially as and for the purposes described.

4. In a fifth-wheel, circle-plates the meeting faces of which are bowed or separated, substantially as and for the purposes described.

5. In a fifth-wheel, the combination, with the axle and a king-bolt situate in the rear thereof, of a plug interposed between the king-bolt and axle, substantially as and for the purposes described.

6. In a fifth-wheel, the combination of circle-plates adapted to receive the head-block and axle-bed and provided with rearward extensions for the king-bolt, a brace which extends from the front of the circle-plates to the reach, a king-bolt situated back of and independent of the axle, and which connects the rear of the circle-plates with the brace, and a perch-hanger having a king-bolt socket and which extends from the rear extension of the circle-plates to the brace, substantially as and for the purposes specified.

384,759. **WHEEL.** Abbott J. Haines, Wilmington, Ohio. Filed July 15, 1887. Serial No. 244,379. (No model.)



Claim.—1. The herein-described wheel, consisting of the right and left hand threaded sleeve 70, the disks 65 and 66, the disks 65 being provided with the lugs 66 and the apertures 67 and the disks 68 with the flanges 69, the grooved and apertured felly 60, the spokes formed of a single piece of wire and provided with loops or eyes *a b*, pins for securing the spokes to the felly, and the tire 80, provided with the rib 81, fitting in the groove of the felly, as specified.

2. In a wheel, the combination of the right and left hand threaded sleeve 70, the disks 65, provided with the apertures 67 and the lugs 66, the disks 68, provided with the flanges 69, and the dust-guard 71, fitted on the sleeve between the disks 65, substantially as herein shown and described.

384,760. **ALARM-BOLT FOR DOORS.** Eleazer Harbon, Baltimore, Md. Filed Feb. 17, 1888. Serial No. 264,388. (No model.)



Claim.—1. In an alarm door-bolt, the combination of a movable bolt, A, an alarm device, a hammer suitably mounted to strike said alarm device, a movable bar, E, one end of which is detachably connected with the bolt and is provided at the other end with a trigger which projects in the path of the said hammer, and a knob movable endwise on the bolt and connected with a cam-arm, *d*, which will press on the said connecting-bar and disengage it from the bolt, whereby on grasping the movable knob the bolt may be shifted without sounding the alarm, but if the bolt be moved without using the knob an alarm will be given.

2. In an alarm door-bolt, the combination of a movable bolt, A, an alarm device, a hammer suitably mounted to strike said alarm device, a movable bar, E, one end of which is detachably connected with the bolt and is provided at the other end with a trigger which projects in the path of the said hammer, and a sleeve, C, surrounding the bolt loosely and having a limited movement thereon and provided with a cam, *d*, to disengage the said connecting-bar from the bolt.

3. In an alarm door-bolt, the combination of a movable bolt, A, an alarm device, a hammer suitably mounted to strike said alarm device, a movable bar, E, one end of which is detachably connected with the bolt and is provided at the other end with a trigger which projects in the path of the said hammer, a knob movable endwise on the bolt and connected with a cam-arm, *d*, which will press the said connecting-bar and disengage it from the bolt, and a locking-arm attached to the bolt and capable of being moved to render said knob immovable with respect to the bolt.

384,761. **ALARM-BOLT.** Eleazer Harbon, Baltimore, Md. Filed Feb. 17, 1888. Serial No. 264,390. (No model.)



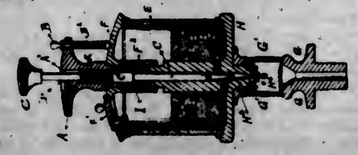
Claim.—1. An alarm-bolt having a reciprocating curvilinear movement, a trigger connected with the inner end of said bolt, the outer end of the same being turned at an angle for engagement with a keeper located in a plane at right angles to the position of the bolt, substantially as shown and described.

2. An alarm-bolt having a longitudinal recess therein, a retracting-spring located in said recess, and a strut-spring and locking-wedge engaging with opposite sides of the bolt, substantially as specified.

3. An alarm-bolt having a recessed lower side, a retracting-spring, a strut-spring engaging with one side of the bolt to give it a lateral thrust, and a locking-wedge on the opposite side thereof, substantially as specified.

4. A locking-bolt having its outer end terminating in an angle and its under side recessed and containing a retracting-spring, a trigger on the inner end of and engaging with a gong-hammer, a keeper located in a plane at right angles to the path of the bolt, and a locking-wedge engaging the side of the bolt and locking the same in the keeper, substantially as specified.

384,762. **OILER.** Peter D. Hay, Detroit, Mich., assignor to the Michigan Lubricator Company. Filed Jan. 17, 1888. Serial No. 261,066. (Model.)



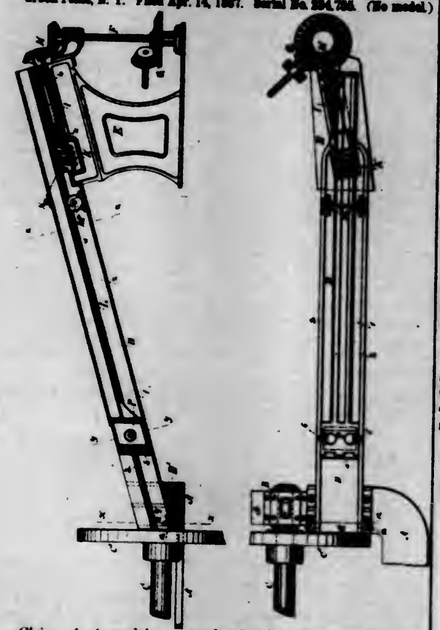
Claim.—1. In combination with the oil-chamber provided with a valve-seat in the oil-passage, the cap F, having a tubular stem, F^3, a plug, A, having a groove, A', and adjustably connected to the cap, and a central needle-valve, C, having a pin, D, substantially as set forth.

2. In combination with the oil-chamber provided with a valve-seat in the oil-passage, the cap F, having a tubular stem, F^3, a plug, A, having a groove, A', and adjustably connected to the cap, a central needle-valve, C, having a pin, D, and a spring, K, acting on the needle, substantially as set forth.

3. In combination with the oil-chamber provided with a valve-seat in the oil-passage, the cap F, having a tubular stem, F^3, the adjustable plug A, having a groove, A', a spring-pressed pin, B, and a central needle-valve, C, having a pin, D, substantially as set forth.

4. In combination with a glass-inclosed chamber, E, the cap F, having a tubular stem, F^3, the bottom plate, H, formed with a tubular stem, H', oil-hole H^3, and a valve-seat, H^2, the spring I, the plug A, having a groove, A', and the central needle-valve, C, having a pin, D, substantially as set forth.

384,763. MACHINERY FOR CUTTING LOGS. JOHN J. HAYES, Green Point, N. Y. Filed Apr. 14, 1887. Serial No. 234,726. (No model.)

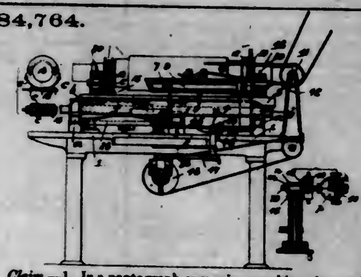


Claim.—1. A revolving cutter-head and the frame for the same and an inclined trough for the reception of the log to be acted upon and having a channel across the lower end of the bottom of the trough and mortises in the sides of the trough, in combination with the removable nose-piece filling the channel and passing through the mortises, and screws for holding down the removable nose-piece, substantially as set forth.

2. The combination, in a machine for cutting logs transversely, of a revolving head with knives, a frame and journal-boxes for supporting the same, an inclined trough for receiving the log to be cut, a head and bar within the trough, and teeth on the under side of the bar, and a screw-pinion below such bar for acting directly upon the teeth, a shaft for revolving the screw-pinion, and rollers above such rack-bar for holding the same down, substantially as set forth.

3. The rack-bar having teeth on its under surface and the screw-pinion for moving the rack-bar endwise, in combination with the trough having longitudinal grooves in its inner faces, the supporting-wheels M below the rack and the rollers N above such rack to hold the same down, the head P, connected to the rack and having holdfast projections 5 upon its front surface, and the guide-rollers 6 upon the sides of the head and within the longitudinal grooves in the inner faces of the trough, substantially as set forth.

384,764. PANTOGRAPHIC ENGRAVING-MACHINE. GARDNER B. HUSSEY, Bradley, Mount Pendleton, Manchester, County of Lancaster, England. Filed Mar. 30, 1883. Serial No. 230,494. (No model.) Patented in England Jan. 12, 1883, No. 494; in France Oct. 13, 1883, No. 170,088, and in Germany Oct. 30, 1883, No. 29,154.



Claim.—1. In a pantograph engraving-machine, the combination, with the drills mounted in stationary supports, of the compound carriage whose parts have motions in different directions, the supporting-blocks for the roller on said carriage, and the pantograph-frame coupled to the compound carriage and giving motion to said roller, substantially as described.

2. The combination, with the pantograph-frame and compound carriage coupled thereto for supporting the roller to be engraved, of the means for maintaining the roller rigid under the action of the drills, said means consisting in friction-wheels, one having a fixed position and the other pressing on the roller by spring-pressure, substantially as described.

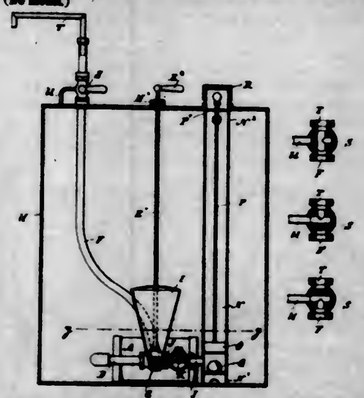
3. The combination, with the drills, compound carriage, pantograph-frame, and tracing-point, of the weighted levers exerting pressure on the drills, the rocking bar or rail for acting on said weighted levers and regulating the depth of action of the drills, and the compound system of levers for communicating the motion of said tracing-point to said rocking bar or rail, substantially as described.

4. In a pantograph-engraving machine, the combination, with the tracer, of a longitudinally-movable rod connected therewith, and a pivoted arm carrying said rod, by the combined movements of which rod and arm the tracer can be moved over the whole surface of the pattern-plate, and the reversing-gear and connections for moving said tracer, substantially as described.

5. A pantograph engraving-machine comprising the following elements in combination: a compound carriage for the article to be engraved, the pantograph-frame coupled to said compound carriage, the drills or graving tools, the system of levers for controlling the depth of action of said drills from said pantograph-frame, the tracer, and the means for guiding said tracer by power, substantially as described.

384,765. WITHDRAWN.

384,766. FLUID DRAWING AND MEASURING DEVICE. JOHN A. KENDALL, Maysville, Mo. Filed July 26, 1887. Serial No. 245,202. (No model.)



Claim.—1. In a fluid drawing and measuring device, the combination, with a tank, of a cylinder located in said tank, a piston operating in said cylinder, a four-way cock connected with the ends of said cylinder, and a pump located in said tank and connected by a pipe and intermediate chamber with said four-way cock, said pipe having a check-valve and said four-way cock connecting with a discharge-pipe, substantially as set forth.

2. In a fluid drawing and measuring device, the combination, with a tank, of a cylinder located in said tank, a piston operating in said cylinder, a four-way cock connected with the ends of said cylinder, a reservoir connected with said four-way cock, a pipe provided with a check-valve and connected with said reservoir, a pump connected with said pipe and located in said tank, and a discharge-pipe connected with said four-way cock, substantially as shown and described.

3. In a fluid drawing and measuring device, the combination, with a tank, of a cylinder located in said tank, a piston operating in said cylinder, a four-way cock connected with the ends of said cylinder, a reservoir connected with said four-way cock, a pipe provided with a check-valve and connected with said reservoir, a pump connected with said pipe and located in said tank, and a discharge-pipe connected with said four-way cock, substantially as shown and described.

4. In a fluid drawing and measuring device, the combination, with a tank, of a cylinder disposed in said tank, a piston operating in said cylinder, a four-way cock connected with the ends of said cylinder, a reservoir connected with said four-way cock, a pipe provided with a check-valve and connected with said reservoir, a pump connected with said pipe and located in said tank, a discharge-pipe connected with said four-way cock, a drip-pipe connecting with said tank and discharge-pipe, and a three-way cock applied to said discharge-pipe at the point of intersection therewith of the drip-pipe, substantially as set forth.

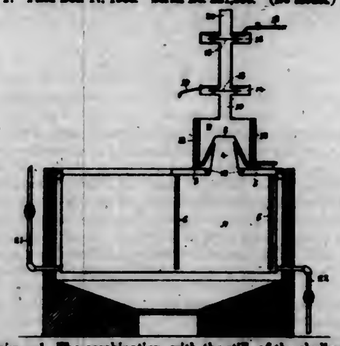
384,767. NUT-LOCK. ANDREW B. KERR, Logan's Ferry, Pa. Filed Feb. 28, 1888. Serial No. 265,602. (No model.)



Claim.—1. As a nut-lock for confining the nuts of adjacent bolts, the combination of a spring-plate which extends between the bolts, a stud or boss which projects from the back of the plate and bears against the surface back of it, so as to hold out the middle of the spring-plate while the ends are forced in by the nuts, and a second plate, which is secured to the spring-plate and which bears against the nuts, substantially as and for the purposes described.

2. As a nut-lock for confining the nuts of adjacent bolts, a spring-plate which extends between the bolts, a rivet extending through the plate having a head projecting from the face of the spring-plate and having a boss which bears against the surface back of the spring-plate, so as to hold out the middle of the said plate while the ends are forced in by the nuts, and a second plate having locking-lips which is removably attached to the rivet back of the head, substantially as and for the purposes described.

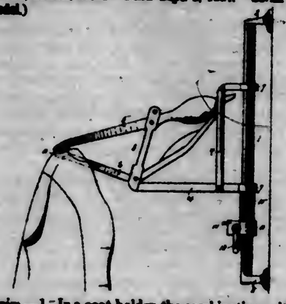
384,768. APPARATUS FOR VAPORIZING LIQUIDS. J. MORRIS KEENAN, Brooklyn, assignor to the Hyatts Oil Company, New York, N. Y. Filed Dec. 17, 1886. Serial No. 221,869. (No model.)



Claim.—1. The combination, with the still, of the shallow chamber above the still and contiguous thereto, the vapor-chamber, the pipe 4, leading from the still to the vapor-chamber, the arresting-cap above pipe for arresting the current of vapor and projecting it downward, the pipes leading from the shallow chamber to the upper part of the vapor-chamber, and the return-pipes leading from the shallow chamber to the still, substantially as described.

2. In a petroleum-distilling apparatus, the combination of the still, the dome or discharge-pipe, the shallow chamber, above the still, the vapor-chamber above the shallow chamber, the pipes leading from the shallow chamber to the top of the vapor-chamber, means, such as the arresting-cap 8 and return-pipes 12 and 6, for arresting and returning the principal portion of the heavy vapors and unevaporated liquid, the series of vessels having concave tops and level rims, forming basins or traps, arranged one above the other, so that water overflowing the top basin will trickle down the sides of the vessel and the intervening pipe to the next beneath, a pipe for flowing cold water on to the upper trap, and a pipe for carrying it away from the lower one, substantially as described.

384,769. COAT-ADJUSTER. RICHARD LAGOMBE and CHARLES LAGOMBE, Bristol, Conn. Filed Sept. 5, 1887. Serial No. 248,801. (No model.)



Claim.—1. In a coat-holder, the combination, with a standard and a frame consisting of collars engaging the standard, an arm, 9, having a slot, and an arm, 8, of upper and lower bifurcated holding-arms, pivoted to arm 8 and adapted to oscillate in the vertical plane, the rear ends of said arms engaging the slot in arm 9, and having weights, as shown, whereby when a coat is placed between the holding-arms they close together, holding the coat in position to receive the arms of the wearer, and when the coat is removed the holding-arms return to the open position.

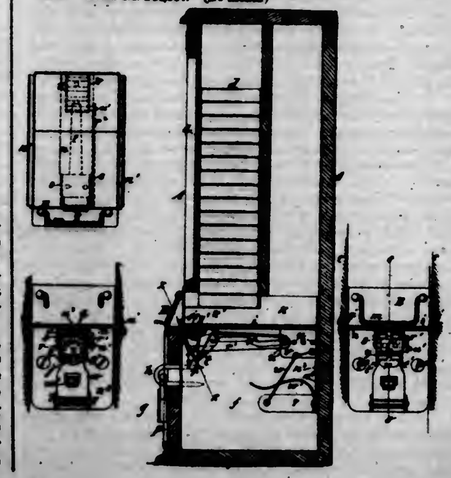
2. The combination, with the standard, bracket 11, adjustable thereon, and spring 15 above said bracket, of the frame engaging the standard and resting on the spring, and bifurcated holding-arms pivoted to the frame to oscillate in the vertical plane and weighted at their rear ends, whereby a coat placed between the holding-arms is held in position to receive the arms of the wearer, the spring acting to throw the coat off from the holding-arms upon the shoulders of the wearer.

3. The standard having rack-teeth and the sliding bracket having a pinion engaging the teeth, and a locking-pawl, in combination with a frame supported by said sliding bracket and pivoted holding-arms carried by the frame.

4. In a coat-holder, the combination, with a frame, of upper and lower pivoted arms, the forward ends of which are bifurcated and provided with holding-pads, and the rear ends of which are weighted, substantially as described.

5. In a coat-holder, the combination, with the standard, sliding bracket 11, and spring 15, of a frame adapted to slide on the standard and rest against the spring and pivoted holding-arms carried by the frame.

384,770. SELLING-MACHINE. FRANK M. LEAVITT, Brooklyn, N. Y., assignor to the R. W. Hoe Company, same place. Filed July 18, 1887. Serial No. 244,567. (No model.)



Claim.—1. In a selling-machine, the combination, with an inclosing-case having a reservoir for packages or articles and a drawer sliding in relation thereto, of a guiding base or way plate for said drawer, and locking mechanism mounted wholly on said drawer and way-plate, said drawer, with its way-plate and locking mechanism, being bodily attachable and removable to and from said case, substantially as herein set forth.

2. In a selling-machine, an inclosing-case having compartments for containing the packages of articles to be sold, each of said compartments having at its lower end grooves in its sides, in combination with a way-plate at the bottom of each compartment fitting in the grooves thereof, said way-plate being itself formed with guide grooves or ways, and a drawer for each compartment resting and sliding on the way-plate for such compartment, said drawer having side flanges which engage the guide-grooves in said way-plate, substantially as set forth.

3. In a selling-machine, an inclosing-case having compartments for containing the packages or articles to be sold, each of said compartments having at its lower end grooves in its sides, in combination with a way-plate at the bottom of each compartment fitting and sliding in the grooves thereof and removably secured in position therein, said way-plate having its edges within said grooves bent over to constitute guide grooves or ways, and a drawer for each compartment resting and sliding on the way-plate for such compartment, said drawer having side flanges which engage and slide in the guide grooves or ways in said way-plate, substantially as set forth.

4. The package-drawer for a selling-machine having a block with a recess at its front end and a raised platform at its rear end, in combination with a metallic bottom plate secured to said block having its ends turned up against the ends of said block, and having its side edges projecting beyond the sides of said block, substantially as set forth.

5. In a selling-machine, the drawer B, in combination with the way-plate *n*, underlying the drawer, having ways in which the drawer slides, with one end of the plate projecting beyond the front of the drawer and containing the coin-slot *q*, with locking mechanism controlling the locking and unlocking of the drawer arranged beneath said slotted way-plate, substantially as herein set forth.

6. In a selling-machine, a drawer resting and adapted to slide on a guiding base or way plate, in combination with said guiding base or way plate having a coin-slot therein at the front edge of said drawer, and which slot is covered when said drawer is drawn out, and remains covered until said drawer is again fully closed, substantially as set forth.

7. In a selling-machine, the combination, with the reservoir-case and movable drawer, of the movable coin-slide *r*, arranged adjacent to the coin-slot, a locking device arranged in juxtaposition to the said slide, the cam-lever *r'*, attached to said slide *r*, and a projection on the drawer engaging said lever, substantially as and for the purpose set forth.

8. In a selling-machine in which the deposit of a coin releases locking mechanism to allow the opening of a package-drawer, a plate having a coin-slot, a coin-slide leading therefrom, and locking devices, in combination with a pivoted escapement-lever located immediately beneath said coin-slot and between it and the locking device, said escapement-lever having two arms, the upper of which is normally out of the path of the coin and the lower of which stands normally across the coin-slide in the path of the coin and is adapted to be struck by a coin when inserted, whereby the upper arm is swung across the slide immediately beneath the coin-slot, said upper arm, when so swung across the coin-slide, being closer to the exterior mouth of the coin-slot than the diameter of the coin which operates the machine, whereby the insertion of such a coin is prevented, substantially as set forth.

9. In a selling-machine in which the deposit of a coin releases locking mechanism to allow the opening of a package-drawer, a plate having the depositing coin-slot, the detent mechanism, a locking-lever, and a coin-slide for conducting the coin from the coin-slot to said lever, in combination with an escapement-lever pivoted immediately beneath the coin-slot and between it and said locking-lever, said escapement-lever having two arms, the upper of which is normally out of the path of the coin and the lower of which stands normally across the coin-slide in the path of the coin and is adapted to be struck by a coin when inserted, whereby the escapement-lever is tilted and the upper arm is swung across the coin-slide to close the same and the lower arm is swung away from said coin-slide to permit the coin to strike the locking-lever to tilt the same, said upper arm of the escapement-lever being closer to the exterior mouth of the coin-slot than the diameter of the coin which operates the machine, and the lower arm of said lever being nearer to the locking-lever when the same is depressed than the diameter of the coin, whereby, when the coin rests on said locking-lever, it holds said escapement-lever with its upper arm across the coin-slide, substantially as set forth.

10. In a selling-machine in which the deposit of a coin releases locking mechanism to allow the opening of a package-drawer, a plate having the depositing coin-slot, the package-drawer sliding on said plate across said coin-slot, the detent locking mechanism, a locking-lever, and a coin-slide for conducting the coin from the coin-slot to said lever, in combination with an escapement-lever pivoted immediately beneath the coin-slot and between it and said locking-lever, said escapement-lever having two arms, the upper of which is normally out of the path of the coin and the lower of which stands normally across the coin-slide in the path of the coin and is adapted to be struck by a coin when inserted, whereby the escapement-lever is tilted and the upper arm is swung across the coin-slide to close the same and the lower arm is swung away from said coin-slide to permit the coin to strike the locking-lever to tilt the same, said upper arm of the escapement-lever being closer to the exterior mouth of the coin-slot than the diameter of the coin which operates the machine, and the lower arm of said lever being nearer to the locking-lever when the same is depressed than the diameter of the coin, whereby, when the coin rests on said locking-lever, it holds said escapement-lever with its upper arm across the coin-slide, substantially as set forth.

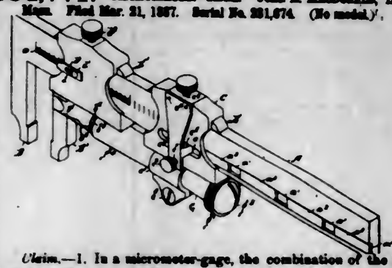
11. In a machine, substantially such as set forth, the combination, with the drawer, of the coin-slide *r*, balanced locking-lever *t*, dumping-lever *r'*, and engaging-pins *w w'*, fixed to the drawer, substantially as shown and described.

12. In a selling-machine, the combination, with the reservoir-case and the movable drawer, of the toggle *w*, having one end fastened to the drawer and the other to the case, and a spring acting on the toggle, substantially as and for the purpose set forth.

13. A selling-machine comprising the following features: an inclosing-case having a package-compartment, a drawer, such as B, to fit said compartment, a way or guiding-base, such as *n*, in which said drawer is mounted, fastening devices securing such base to the case, and a door, such as *p*, closing up against the front end of said guiding-base, whereby, when said door is opened, the drawer and its guide-base can be bodily removed from the case, substantially as herein set forth.

14. A selling-machine comprising the inclosing-case and the package-compartment therein, the drawer B, fitting said compartment, guide-base *n*, in which said drawer is mounted, prolongation *n'* of said base secured to the case, chamber *f*, below said drawer and guide-base, and door *b* to said chamber, substantially as herein shown and described.

884,771. MICROMETER-GAGE. JOHN A. MACDONALD, Lowell, Mass. Filed Mar. 21, 1887. Serial No. 231,674. (No model.)



Claim.—1. In a micrometer-gage, the combination of the beam provided with a jaw rigidly secured thereto, a slide provided with a clamp and adapted to be moved on said beam, or to be immovably secured thereon, a jaw sliding on said beam and provided with a screw, a sleeve turning without advancing in said clamp, and being internally threaded, and said screw being externally threaded and entering and engaging said sleeve, as and for the purpose specified.

2. In a micrometer-gage, the combination of the beam provided with a jaw rigidly secured thereto, a slide provided with a clamp and adapted to be secured on said beam, a jaw sliding on said beam and provided with a screw, a sleeve provided with external annular grooves and projections to receive and fit corresponding annular projections and grooves within said clamp and being internally threaded, and said screw being externally threaded and entering and engaging said sleeve, as and for the purpose specified.

3. The combination of two sleeves, one arranged around the other and adapted to slide the one upon the other, one of said sleeves being provided with a micrometer-screw and the other of said sleeves being internally threaded to engage said screw, the outer one of said sleeves being provided with graduation-marks which extend to its central opening, and the other of said sleeves being provided with an index-line, substantially as described, so that turning said sleeves the one upon the other until the same graduation-mark comes a second time over said index-line will cause said sleeves to advance relatively to each other an amount equal to the pitch of said screw, said index-line being determined by experiment and varying from a straight line more or less, according to the errors of said screw, as and for the purpose specified.

4. In a micrometer-gage, the combination of the beam having a jaw rigidly secured thereto, a slide provided with a clamp and adapted to be secured to said beam, a jaw sliding on said beam and provided with a screw, a sleeve turning without advancing in said clamp, and provided with an internal screw-thread and surrounding and engaging said screw, another sleeve surrounding said first-named sleeve and moving with said screw and having an index-line thereon, and a third sleeve secured to said first-named sleeve and moving therewith and surrounding said second-named sleeve, and having its end beveled and marked with graduation-lines, as and for the purpose specified.

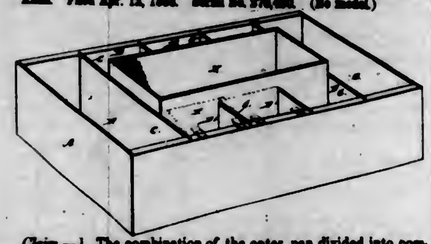
5. The combination of the beam, blocks of steel having their ends hardened and ground secured to said beam at equal intervals from each other, a slide movable on said beam, and a projection carried by said slide and adapted to enter the spaces between said blocks and to reach across said intervals, as and for the purpose specified.

6. The combination of the beam provided in its face with a groove, blocks of steel having their ends hardened, ground and fixed in said groove at equal intervals from each other, and a slide movable on said beam, and a projection carried by said slide adapted to enter the spaces between said blocks and to reach across said intervals, as and for the purpose specified.

7. In a micrometer-gage, the combination of the slide movable on the beam of said gage, a gib interposed between said beam and said slide and having a notch adapted to receive and fit said slide, a semi-elliptic spring arranged between said gib and said slide, and a set-screw turning in said slide and thrusting against said spring to crowd said spring upon said gib and to hold said gib in contact with said beam, as and for the purpose specified.

8. In a micrometer-gage, a graduated indicating-sleeve formed in two overlapping parts, an end of the larger part being tapering, slotted, and externally screw-threaded, in combination with a nut internally tapering and adapted to engage said screw-threaded end of said larger part, and by contracting the same to prevent said parts by friction on each other from slipping or turning on each other, and when loosened to allow said parts to be moved endwise and turned on each other to bring the starting graduating-mark of said sleeve to correspond with the index-line of said gage, as and for the purpose specified.

884,772. EVAPORATING-PAN. THOMAS MACKENZIE, Mound City, Kans. Filed Apr. 12, 1888. Serial No. 270,692. (No model.)



Claim.—1. The combination of the outer pan divided into communicating compartments by transverse partitions having open spaces cut in their upper edges, with the inner pan seated in said open spaces, rising higher than the outer pan, and having its bottom and sides in contact with its supports only, substantially as specified.

2. The combination of the pan A, having its sides of wood and its bottom and ends of metal, the transverse metal partitions having the openings *c* alternately at their opposing ends, the intermediate partitions having their upper edges cut away to form aligned rectangular spaces D, and the end partitions being complete but for the openings *c*, with the inner pan seated in the spaces D and having its sides resting against the edges of said spaces and its ends resting against the inner faces of the end partitions, as specified.

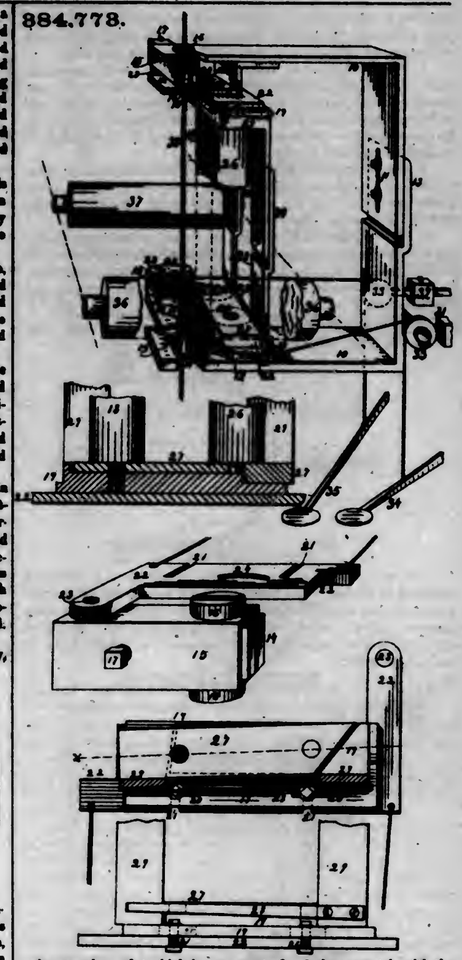
3. The combination of the outer pan having the partitions C, provided with the alternately-opposite openings *c* adjoining the floor of said pan, and the open spaces D in their upper portions, with the inner pan seated in the spaces D, as set forth.

884,773. SAW-GUIDE. JAMES W. MAXWELL, Louisville, Ky. Filed Dec. 8, 1887. Serial No. 257,249. (No model.)

Claim.—1. The combination, in a saw-guide, of a bearing-block slotted to receive the saw-blade, a box fitted for the said block to slide longitudinally in and hung by means of trunnions journaled in bearings in the machine-frame partially surrounding the saw, means for adjusting the bearing-block longitudinally in the box, the said box constituting an arm extending rearward from its trunnions, and guide-rollers journaled in the deflector-frame connected with the said arm, substantially as shown and described.

2. The combination of a machine-frame, a saw-guide in a box hung upon trunnions therein and provided with an arm extending away from the bearings, a deflector fitted to move in the machine-frame upon

884,778.



a pin engaging a slot which is a segment of a circle concentric with the said trunnions, the said deflector and frame constituting two members of a sliding joint and the said slot being in one member and the said pin fixed to the other member, the deflector being pivoted to the said arm of the bearing-box, and guide-rollers journaled in the deflector parallel with the saw, substantially as shown and described.

3. The combination of a saw-guide journaled in the machine-frame parallel with the line of the saw, a frame hung in the machine-frame to move concentrically with the said saw-guide, a roller or rollers journaled in bearings fitted to the said movable frame, and means for adjusting the said bearings both longitudinally and transversely in the frame, substantially as shown and described.

4. The combination of saw-guides hung in a frame upon journals which are near to and parallel with the line of the saw, and provided with an extending arm, a deflector freely pivoted to the said arm, a guide roller or rollers journaled parallel with the saw in the deflector, and guides communicating between the deflector and the frame, substantially as shown and described, whereby the deflector is guided to move concentrically with the said saw-bearing journals.

5. The combination of a saw-guide journaled parallel with the line of the saw, two guide-rollers journaled in separate supports or boxes and connected with the saw-guides, one of the said boxes being hung to move toward and away from the saw, and a spring fitted to press the movable roller toward the saw, substantially as shown and described.

6. The combination of a journaled saw-guide, a frame hung to move concentrically therewith and connected therewith, a guide-roller

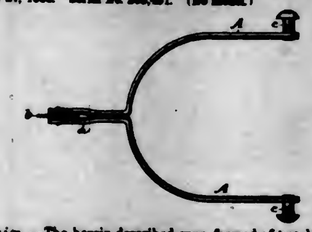
journaled in the said frame, another roller journaled in bearings pivotally connected with the said frame, and a spring acting between the said frame and bearings, substantially as shown and described.

7. The combination of a journaled saw-guide, guide-rollers journaled in a deflector connected with the saw-guide, two weights connected with two opposite arms of the deflector, and treadles connected with the weights, substantially as shown and described, whereby the action of either weight may be suspended and the other weight be permitted to act with full force.

8. The combination, with a journaled saw-guide and a roller therefor, of a weight connected with the saw-guide and roller, and a treadle connected with the weight, substantially as shown and described, whereby the action of the weight may be suspended.

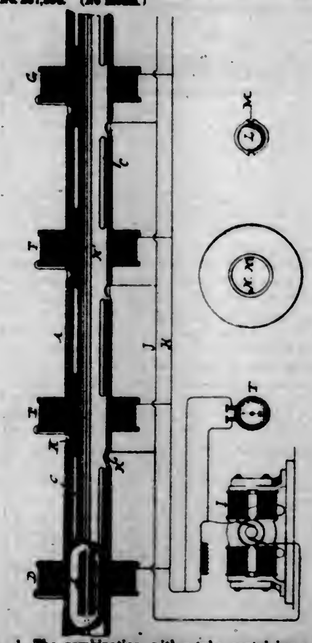
9. The combination of a frame, 10, formed in two parts, having an adjustable lapped joint, saw-guides journaled in the same frame, and guide-rollers journaled in a frame concentric with the said saw-guides, the said roller-frame having a lapped joint, substantially as shown and described.

384,774. SPUR. ALFRED McILHENY, New Britain, Conn. Filed Feb. 27, 1888. Serial No. 265,451. (No model.)



Claim.—The herein-described spur, formed of two blanks, each consisting of one-half of the body of the spur and one side of the rearward extension, the outer ends of said rearward extensions being offset, as shown, and the inner ends placed one against the other face to face and mechanically secured together, substantially as described, and for the purpose specified.

384,775. ELECTRO-MAGNETIC PARCEL-CARRIER. MORRIS C. MEIER, New York, N. Y. Filed Oct. 31, 1888. Renewed Mar. 20, 1888. Serial No. 267,896. (No model.)



Claim.—1. The combination, with a tube containing a guide or track and containing slots or air-passages, of a car or carrier formed of a magnetic metal and adapted to slide or travel on said track, coils or helices surrounding the tube, and circuit-closing devices adapted to be operated by the movement of the carrier, whereby the coils are successively brought into and out of circuit, as herein set forth.

2. The combination, with a longitudinally-slotted tubular guide provided with interior longitudinal rails or guides, of a car or carrier of magnetic metal adapted to move on said rails or guides, coils or helices surrounding the tube, and an electric circuit, to one portion of which one end of each coil is connected permanently, and to the other portion of which the opposite ends of the said coils are adapted to be connected successively by circuit-closing springs placed in the path of the carrier and adapted to be operated thereby.

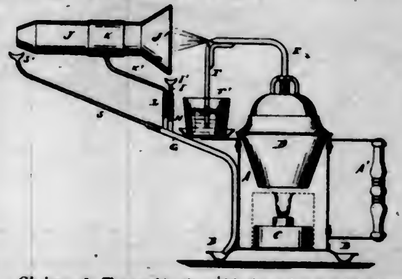
3. The combination, with a tube containing a guide or track and a car or carrier adapted to slide or travel thereon, of coils or helices surrounding said track, an electrical indicator, a circuit or circuits including the indicator and the coils, and circuit-closing devices adapted to be operated by the moving car or carrier, as and for the purpose set forth.

384,776. MEASURING DEVICE FOR ICE-CREAM OR OTHER SIMILAR SUBSTANCES. THOMAS A. HATLER, Baltimore, Md. Filed Feb. 2, 1888. Serial No. 262,982. (No model.)



Claim.—In a device for measuring ice-cream or other similar substances, the combination of a measuring cup or vessel, with a rim or holder for said vessel of such a size as to fit the exterior of said vessel and permit the same to be freely turned therein, with a scraping knife or knives secured to said rim or cup-holder and extending over the edge of the cup and down into its interior, in contact with the sides of the same and conforming in shape thereto.

384,777. ATOMIZER. JOHN J. OTIS, Newark, N. J. Filed Mar. 17, 1888. Serial No. 267,470. (No model.)



Claim.—1. The combination, with the casing A, of the base B, forming a gutter, a spraying device, drip-gutters for the spraying device, and a tube leading from the drip-gutters to the gutter in the base, substantially as herein shown and described.

2. The combination, with the casing A, of a spraying device, the guide-tube J, the drip-gutter I' at the wider end of the guide-tube, the conducting-tube G, the tube I of the drip-gutter, and the tubular standard H on the conducting-tube G, substantially as herein shown and described.

3. The combination, with the casing A, of the conducting-tube G, the tubular standards H and L on the same, the tube I in the standard H, the gutter I' on the tube I, the rod K', the sleeve K, and the guide-tube J, supported by said sleeve, substantially as herein shown and described.

4. The combination, with the casing A, of the conducting-tube G, the standards H and L, the gutter I', the conducting-tube S, having one end inserted in the upper end of the conducting-tube G, and the gutter S' on the opposite end of the said conducting-tube S, substantially as herein shown and described.

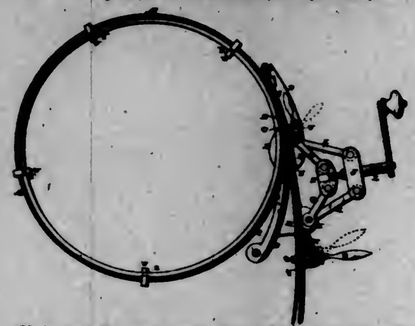
5. In a mouth-piece, the combination, with a tube and a bell-shaped mouth on the same, of a sliding guard on the tube, and a locking device for locking the guard in place on the tube, substantially as herein shown and described.

6. In a mouth-piece, the combination, with a tube and a bell-shaped mouth on the same, of a nose-clamp, substantially as herein shown and described.

7. In a mouth-piece, the combination, with a tube and a bell-shaped mouth on the same, of the U-shaped nose-clamping spring O, pivoted on the mouth-piece, substantially as herein shown and described.

8. The combination, with a tube and a bell-shaped mouth-piece on the same, of the U-shaped nose-clamping spring O, pivoted on the same, and the retaining-bands T, substantially as herein shown and described.

384,778. TIRE-UPSETTER. WILLIAM H. PALMER, Middletown, N. Y. Filed Apr. 24, 1888. Serial No. 271,716. (No model.)



Claim.—1. In a tire-shrinker, the combination of two or more flexible bands which are rigidly secured together at one end with suitable clamps, which are connected to the bands and by means of which the bands may be made to shrink a fire upon the wheel, substantially as shown.

2. The combination of two or more flexible bands with the two clamps D H, and a mechanism, substantially as shown, for forcing the two clamps apart, substantially as described.

3. The combination of the flexible bands, the clamp D, to which the bands are fastened at one end, and through which the free ends of the bands are passed, the second clamp H, provided with means for holding the bands and the links, the block or arm, the nut, and the screw for forcing the two clamps apart, substantially as set forth.

4. The combination of the clamps D H, the flexible bands A, mechanism, substantially as shown, for separating the two clamps, the wedges N P, and the lever O, substantially as specified.

5. The combination of the two clamps D H, and a mechanism for forcing them apart, wedges connected to the clamp H, the flexible bands, the flexible bearing S, connected to the clamp D, and the operating-lever U, substantially as shown.

6. The combination, with the clamps and the endless bands, of the clamps which are applied directly to the bands and provided with supporting-lugs and bearing-surfaces for the wheel inside of the band, substantially as described.

384,779. LOCKING-LEVER FOR CAR-COUPLINGS. FRANCIS W. PARSONS, Philadelphia, Pa. Filed Jan. 21, 1888. Serial No. 262,050. (No model.)



Claim.—1. A locking-lever for car-couplers having an internal chamber provided with a filling, substantially as specified.

2. A locking-lever for car-couplers provided with an internal chamber having a contracted neck and a filling for said chamber, substantially as specified.

3. A locking-lever for car-couplers having an internal chamber formed with internal locking-shoulders and provided with a filling, substantially as specified.

4. A locking-lever for car-couplers formed of cast-steel having an internal chamber provided with a filling of cast-iron, substantially as specified.

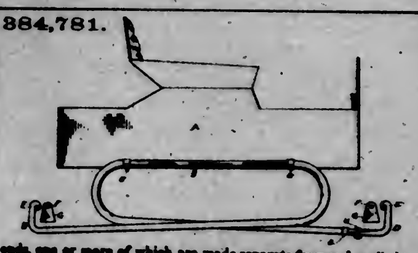
5. A locking-lever, A, having trunnions A' and coupling end A^2, and internally chambered, as at A^3, said chamber having contracted neck A^4 and provided with a filling, B, substantially as specified.

384,780. WITHDRAWN.

384,781. VEHICLE-SPRING. WILLIAM G. PERRY, Charlestown, R. I. Filed June 23, 1887. Serial No. 242,722. (No model.)

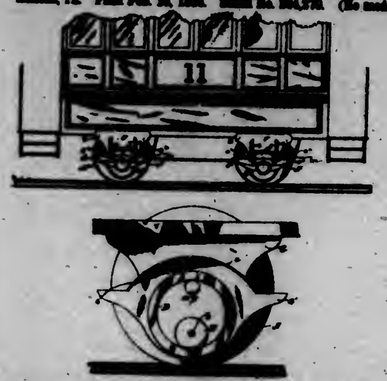
Claim.—The combination, with a vehicle-body, of a pair of supporting-springs, each formed with a central coil or otherwise and secured at remote points to said body, and with projecting upturned

384,781.



ends, one or more of which are made separate from and applied to the springs, substantially as and for the purposes herein set forth.

384,782. BEARING FOR SCREW-CARS. MORRIS L. PERLEE, Athens, Pa. Filed Feb. 10, 1888. Serial No. 264,272. (No model.)



Claim.—1. The combination, with a railroad-car body, of sectional hangers whose upper parts are rigidly attached and whose lower parts are elastically attached to the car-body and provided with friction-rollers, rings supported by the outer ends of the wheel-axles and supporting in turn said hangers, whereby, by the swinging of said ring, the car-body is capable of longitudinal and vertical movement independent of the movement of the trucks.

2. In combination with a railroad-car body, hangers rigidly attached to the same and provided with friction-rollers, rings supported by the outer ends of the wheel-axles and supporting in turn said hangers, a suitable car-starting device in the rear of the hangers, and brake-shoes whereby when the brakes are applied the momentum of the car-body swings the ring and carries the car-body forward and upward, the brakes holding both body and wheels, and when the brakes are released the weight of the car-body causes the ring to swing back and cause the car-starting device to start the car.

3. In combination with a railroad-car body, hangers rigidly attached to the same and provided with friction-rollers, rings supported by the outer ends of the wheel-axles and supporting in turn said hangers, brake-shoes attached to the car-trucks, and ratchet bar and wheel whereby when the brakes are applied the momentum of the car-body swings the ring and carries the car forward and upward, the brakes and ratchet-bar holding both body and wheels, and when the brakes are released the weight of the car-body causes the ratchet-bar to engage with and rotate the ratchet-wheel and start the car.

4. The combination, with the outer end of a car-axle, of the unelastic ring D and friction-wheel E, substantially as set forth.

5. The combination, with the outer end of a car-axle and a ring and friction-wheel supported thereby, of a hanger, F, made in sections, and springs *e* and *e'*, connecting the same, substantially as set forth.

6. The combination, with the axle, of a hanger, F, elastically attached to the car-body, the unelastic ring D, and friction-wheel E, substantially as set forth.

7. The combination, with the axle, of the ring D and hollow friction-wheel E, substantially as set forth, and for the purpose herein mentioned.

8. The combination, with the main axle B, of the ring D and wheel E, rotating on the slotted axle *b*, substantially as set forth.

9. The combination, with the main axle B, of the cup A, fitting over the end of said axle, substantially as described.

10. The combination, with the axle B, of the hanger F and removable cap *g*, substantially as described.

11. The combination, with the axle B, of the hanger F, cap *g*, and slot or trough *g'*, substantially as set forth.

12. The combination, with the axle B, of the hanger F, cap *g*, trough *g'*, and feeder *f'*, as set forth.

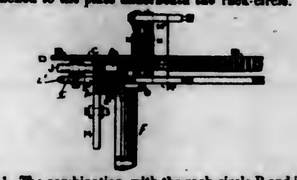
13. The combination, with the axle B, of the ratchet-wheel *k* and ratchet-bar *k'*, substantially as described.

14. The combination, with the axle B and wheel A, of the ratchet-wheel *k*, ratchet-bar *k'*, lever *l*, brake-shoe *m*, projection *m'*, and rod *n*, all arranged substantially as herein set forth, and adapted to operate as described.

15. The combination, with the projection *a*, of the cup *k''* and a cushioning device therein, substantially as set forth.

384,783. COMBING-MACHINE. JOHN PEEL, Bingley, and HENRY W. WHITEHEAD, Leeds, County of York, England. Filed May 11, 1887. Serial No. 237,893. (No model.) Patented in England Mar. 10, 1887, No. 3,663.

Brief.—A circular plate is supported upon standards underneath the rack-circle, said plate having boxes containing adjustable buffers. Upon the buffers is supported the steam-chest independent of the adjacent parts. The rack-circle has a flange outside of the steam-chest, against which bear adjustable rollers to steady the rack-circle in its rotation. The drawing-off rollers are mounted in a stand carried by a bracket attached to the plate underneath the rack-circle.

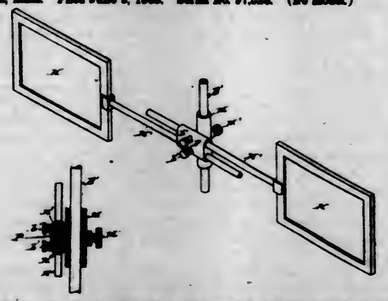


Claim.—1. The combination, with the rack-circle B and its downward flange C, of a separate steam chest or pipe, A, between the flange C and the rack, the circular plate E, boxes F, supported by said plate E, a spring and an adjusting-screw to each box, and a buffer between each spring and the steam-chest, substantially as and for the purposes specified.

2. The combination, with the rack-circle B and its flange C, of the separate steam-chest A between the rack and the flange C, the circular plate E below the steam-chest and rack-circle, and means for supporting said steam-chest and the rollers J outside the flange C, and studs for the rollers supported by said circular plate E, and means for adjusting the position of said studs and rollers J, substantially as and for the purposes specified.

3. The combination, with the rack-circle B, a steam-chest separate from said circle, and means for supporting said steam-chest, of a circular plate, E, below said rack and steam-chest, the standards F, for supporting the said plate E, the drawing-off rollers N N, the bracket O, secured to said plate E, and the stand M', for supporting said rollers attached to the bracket O, substantially as and for the purposes specified.

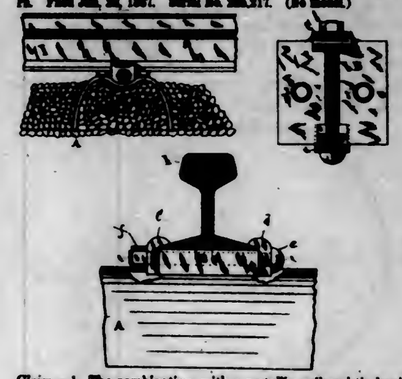
384,784. WINDOW-REFLECTOR. CARL G. A. F. W. R. PIEL, Lowell, Mass. Filed June 9, 1888. Serial No. 97,522. (No model.)



Claim.—1. The combination of the rod, the holder provided with an extension, and the mirror provided with stems, the extension of said holder being drilled through horizontally to receive said stems, as and for the purpose specified.

2. The combination of the rod, mirrors provided with stems, and the holder provided with an extension, the extension of said holder being drilled through horizontally to receive said stems, set-screws turning in threaded holes in said extension and thrusting against said stems, and another set-screw turning in a threaded hole in said holder and thrusting against the vertical rod, as and for the purpose specified.

384,785. METALLIC RAILWAY-TIE. JACOB REESE, Pittsburg, Pa. Filed Jan. 28, 1887. Serial No. 226,217. (No model.)



Claim.—1. The combination, with a metallic railroad-tie having a corrugated top and downwardly-extending sides, of a shoe conforming in shape to the upper portion of said tie and firmly secured thereto, and having a stationary jaw at its outer portion, and an adjustable jaw located at the inner portion of the shoe, and held against vertical movement, and a bolt-and-nut connection between the jaws, as set forth.

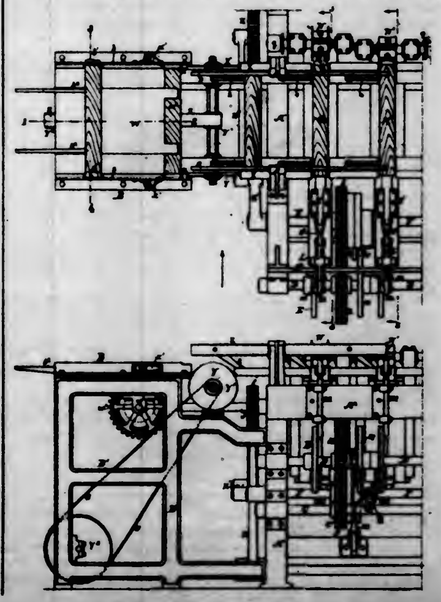
2. The combination, with the shoe having an opening at its inner portion and a stationary jaw at its outer portion, of a movable jaw having shoulders *d* and working in said opening, and a bolt-and-nut connection between the jaws, as set forth.

384,786. BARREL-STAVE-CUTTING MACHINE. GEORGE REEVES, JOHN G. REEVES, and MARTIN O. REEVES, Philadelphia, Pa., assignors to the American Barrel and Stave Company, Camden, N. J. Filed Feb. 16, 1887. Serial No. 227,781. (No model.)

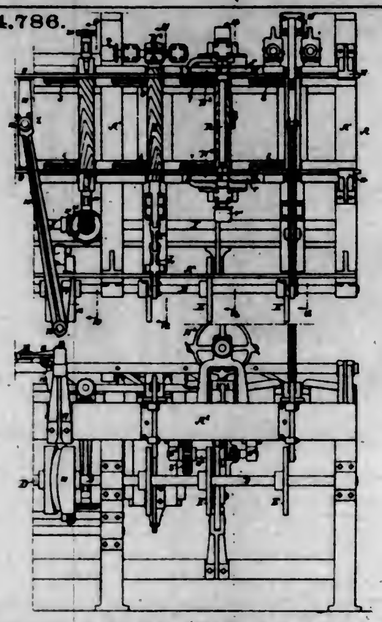
Claim.—1. The combination of a series of stave-cutters, feeders for the staves, and reversible stave-holders located between successive cutters, by which the staves are reversed side for side between the successive cutters, all substantially as and for the purpose set forth.

2. The combination of a series of cutters, a series of transverse reciprocating stave-holding carriages, feeding devices for directing the staves from one carriage to another, and clamps on each carriage for automatically locking and releasing the staves.

3. The combination, in a stave-cutting machine, of the traveling



384,786.



carriage having a fixed jaw at one end and a movable jaw at the opposite end, a link and lever, forming a toggle, connected to said movable jaw, with a cam moving said lever to lock the blank to or release it from the carriage, all substantially as described.

4. The combination, in a stave-cutting machine, of the traveling carriage having a fixed and a movable jaw, a link and lever, forming a toggle, and a sliding bar and cam for operating said toggle, all substantially as described.

5. The combination, in a stave-cutting machine, of two cutters and platforms therefor with a pair of stave-reversing jaws situated between the platforms and adapted to grasp only the ends of the staves, with devices for feeding the staves into and out of the jaws, substantially as and for the purpose described.

6. The combination of a pair of jaws geared together with devices for turning the jaws and friction-pins for retaining a stave-blank when fed into the jaws, substantially as specified.

7. The combination, in a stave-cutting machine, of concave and convex cutters and reciprocated carriages therefor, stave-feeders, stave-turning jaws between said concave and convex cutters, and devices for simultaneously operating said carriages, stave-feeders, and turning-jaws, substantially as set forth.

8. The combination, in a stave-cutting machine, of chamfering and crozing cutters, with a platform movable to or from the said cutters, with automatic locks for the stave-blank, and with a reciprocating feeder to carry a stave onto the platform prior to cutting and remove it after cutting, the whole being timed to work automatically, substantially as set forth.

9. The combination of the chamfering and crozing cutters with a sliding platform, a driving-shaft, an eccentric thereon having a slotted rod, and a toggle-joint connection between the eccentric-rod and the platform, a block carrying the pivot of the toggle being adapted to the slot in said rod, all substantially as specified.

10. The combination of chamfering and crozing cutters, a sliding stave-carrying platform, an adjustable bar, *f*⁶, toggle-levers connecting the platform to the bar, and devices for operating said toggle-levers to move the platform toward and from the cutters, substantially as specified.

11. The combination, in a stave-cutting machine, of stave-cutters and stave-holding carriages on which the staves rest, a frame adapted to guides on the machine and having fingers adapted to push the stave-blanks from one carriage to another, and devices for reciprocating the frame, substantially as described.

12. The combination of the cutters, traveling carriages, each provided with a rack, a shaft having pinions gearing into the racks of the carriages, a segmental rack geared to a pinion on said shaft, with devices for intermittently rotating said segmental rack, all substantially as set forth.

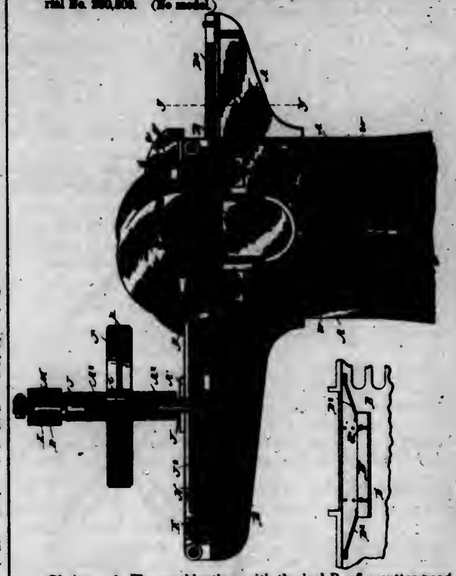
384,787. LAWN-MOWER. IVAN W. REMARIS, Odessa, Md. Filed Apr. 26, 1887. Serial No. 236,027. (No model.)



Claim.—In a lawn-mower, the combination of a frame having the forward-projecting part carrying the cutter-disk and a curved rack-bar at the rear end, a runner pivoted to the under side of the forward-projecting part and extending toward the rear of the frame, a lever, D^2, fulcrumed upon the frame and having a pawl for said rack-bar, and a rod connecting the runner and lever, for the purpose set forth

---

384,788. MACHINE FOR FORMING AND POLISHING DOOR-PANELS. DAVID M. ROBERTS, Chicago, Ill. Filed Jan. 16, 1888. Serial No. 260,809. (No model.)



Claim.—1. The combination, with the bed B, of a cutter-head provided with planing-knives covering the whole surface of the blank and paneling-knives at each side covering the margins along opposite sides of the blank adapted to cut such margins lower than the panel portion, and a sand-paper wheel arranged over said bed at the rear of the cutter-head and adapted to operate on the blank as it passes from said cutter-head in a machine having feed-rollers and operating mechanism, substantially as shown and described.

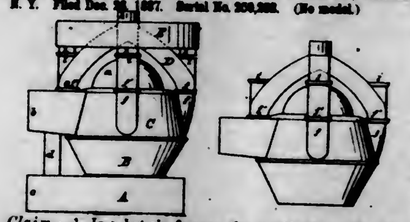
2. The combination, with the bed B, of the cutter-head H, provided with planing-knives *a a* and paneling-knives *a' a'*, and the presser-bar F, having a straight portion adapted to the surface covered by the planing-knives, and a projecting portion at each side of the straight portion adapted to the depressed marginal surfaces covered by the paneling-knives in a machine of the class mentioned provided with feed and operating mechanism, substantially as shown and described.

3. The combination, with the bed B and the bed O, the latter having guide *o*, of the cutter-head H, provided with planing-knives *a a* and paneling-knives *a' a'*, and the cutter-head Q on the same shaft and provided with paneling-knives adapted to form the panel-margin at the end of the panels in a machine of the class mentioned provided with mechanism, substantially as shown and described, for operating said cutter-heads simultaneously, as set forth.

4. A machine for forming panels, consisting of a supporting-frame and bed-plate, B, and supplemental bed O, in combination with a rotary cutter-head, H, provided with planing and paneling knives, a rotary cutter-head, Q, on the same shaft provided with paneling-knives, a sand-paper wheel arranged over the bed B at the rear of cutter-head H, and connected through pulleys K K and J' by a belt running to a pulley on the shaft of said cutter-heads, said machine having feed-

rollers and presser-bar, all arranged to operate substantially as and for the purpose specified.

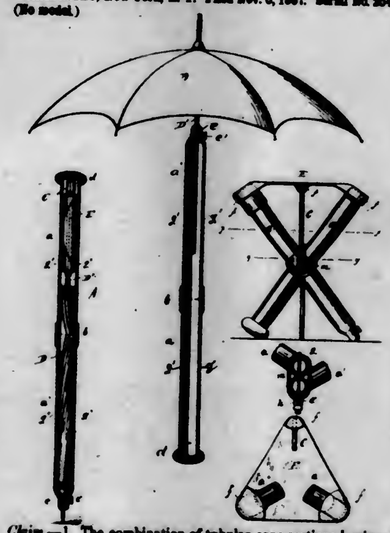
884,789. HOT-AIR FURNACE. GEORGE D. SANFORD, Peekskill, N. Y. Filed Dec. 28, 1887. Serial No. 259,262. (No model.)



Claim.—1. In a hot-air furnace, the combination, with a fire-chamber provided with side flues, *f*, and a dome, *e*, of the radiator D, consisting of tubular arches resting upon the side flues, *f*, and doorway *b*, and uniting centrally above the dome *e*, where they form a chamber which is provided with a pipe-rim, substantially as herein shown and described.

2. In a hot-air furnace, the combination of the tubular arches D, resting upon the side flues, *f*, in the fire-chamber C, and uniting to form a common chamber above the dome *e*, said chamber being provided with a pipe-rim, as shown, and said tubular arches being provided with the outlets *i*, which support and afford communication with the interior of an annular chamber, E, substantially as herein shown and described.

884,790. COMBINED CANE, UMBRELLA, AND CAMP-STOOL. MORITZ SHUPP, New York, N. Y. Filed Nov. 5, 1887. Serial No. 254,265. (No model.)



Claim.—1. The combination of tubular cane-sections having diametrical holes, an extra brace, a flexible seat having pockets for receiving the upper ends of the cane-sections and brace, a pin passing through the holes of the sections, and a fastening-ring connecting the sections and brace, substantially as set forth.

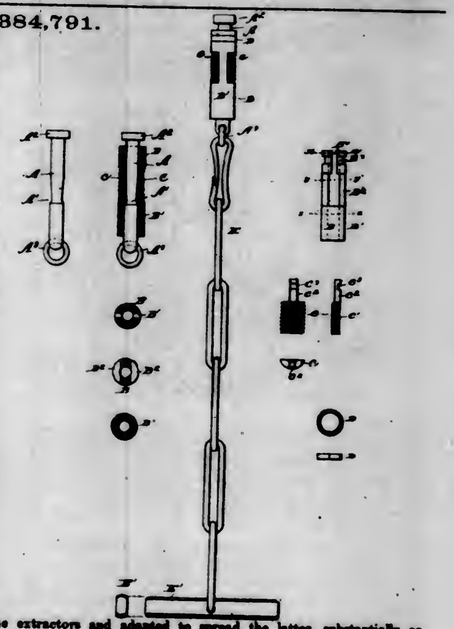
2. The combination of tubular cane-sections, a jointed brace provided with a connecting ferrule or sleeve, a flexible seat having pockets for receiving the outer ends of the cane-sections and brace, and a pin and ring for connecting the cane-sections, substantially as set forth.

884,791. PIPE, TUBE, OR SHELL EXTRACTOR. WALTER S. STOTT, Fort Meade, Dak. Filed Aug. 30, 1887. Serial No. 248,204. (No model.)

Claim.—1. In an extractor of the class described, the combination of an extractor-cylinder recessed at its sides and provided with independent extractors fitted therein, with a spreader mounted between the extractors and adapted to operate the latter, substantially as specified.

2. In an extractor of the class described, the combination, with a hollow extractor-cylinder having recesses at its sides and provided with independent extractors fitted and seated in said recesses, of a spreader having a wedge shape mounted in the cylinder and between

884,791.



the extractors and adapted to spread the latter, substantially as specified.

3. In an extractor of the class described, the combination of an extractor-cylinder having a central bore, milled or threaded extractors mounted in recesses formed in said cylinder, with a spreader adapted to fit said bore and spread the extractors, substantially as specified.

4. In an extractor of the class described, the combination of an extractor-cylinder having opposite recesses, an annular groove, and a central bore, with threaded extractors mounted in said recesses and grooved to register with the annular groove of the cylinder, a binding or assembling ring seated in the grooves, and a wedge-shaped spreader mounted in the bore, substantially as specified.

5. The cylinder B, having the extractors C mounted thereon, in combination with the spreader A, having the reduced portion A', head A^2, and ring A^3, and the chain E, connected to said ring, substantially as specified.

6. The bored cylinder B, having the recesses B^2 B^3 and groove B^4, in combination with the extractors C, mounted in the recesses B^2 and having the necks C^2, extending into the recesses B^3 of the cylinder, and having the grooves C^3, registering with those in the cylinder, and the binding-ring D, mounted in the grooves of the cylinder and extractors, substantially as specified.

884,792. SIGNALING APPARATUS. THOMAS SHAW, Philadelphia, Pa. Filed Sept. 2, 1887. Serial No. 248,057. (No model.) Patented in England Mar. 8, 1887, No. 3,881; in France Mar. 8, 1887, No. 183,077; in Germany Mar. 8, 1887, No. 41,886; in Belgium Mar. 9, 1887, No. 76,088, and in Canada Dec. 28, 1887, No. 28,268.

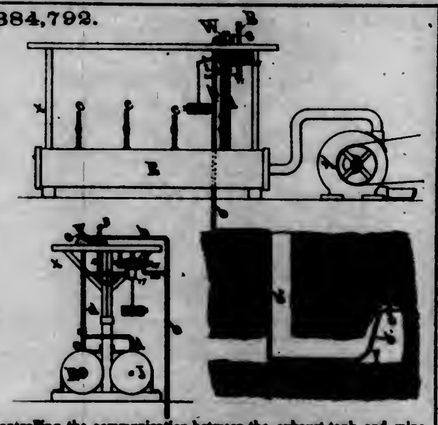
Claim.—1. The combination of a mine, a tube leading from a chamber thereof to a terminal station, an air-exhauster and air-pressure device at such station, and a valve controlling the communication between said tube and the exhauster and pressure devices, substantially as described.

2. The combination, with a pipe leading to a mine-chamber and with an exhauster communicating therewith, of an alarm communicating with the inner end of said pipe, a second alarm near the outer end communicating with an air-tank through a pipe provided with a valve, and a valve-shifter connected with said valve and in line with the communication between the mine-pipe and exhauster, substantially as described.

3. The combination, with the mine-pipe *b*, alarms B C at the terminal station and in the mine, respectively, and air pressure and exhaust pumps, with connections with the pipe *b*, of a valve controlling the flow of air between the exhaust-pump and said pipe and between the pressure-pump and the alarm B, substantially as described.

4. The combination, with the mine-pipe *b*, alarms B C at the terminal station and in the mine, respectively, and air pressure and exhaust pumps, of reservoirs or tanks connected with said pumps, and a valve

884,792.



controlling the communication between the exhaust-tank and mine-pipe and between the pressure-tank and pipe and also with the alarm B, substantially as described.

5. The combination, with the mine pipe and pump connected therewith, and with the alarm at the station end of the pipe, of a chamber communicating with the pipe and provided with a diaphragm and connections between the diaphragm and the alarm whereby the latter is sounded on the movement of the diaphragm under the variation of pressure in the pipe, substantially as described.

6. The combination of a tube leading to a mine, exhaust-pump connected with said tube and with a chamber covered by a diaphragm, a whistle, a valve controlling the passage to the whistle from a reservoir of air under pressure, and a connection between the valve and the diaphragm, and means for interrupting the flow of air through the mine-tube, substantially as described.

7. The combination of the whistle above ground, a whistle in a mine-chamber, connecting-tubes and pump for controlling the flow of air through the mine-tube, a valve for controlling the flow of air to the whistle above ground, a diaphragm in a chamber communicating with the mine-tube and connected to said valve, and a hand-valve constructed to open and close the communication between the exhaust-pump and the mine-tube and also between the exhaust-pump and the chamber covered by the diaphragm, substantially as described.

8. The combination, with a tube leading from a mine-chamber to an outer station, and with a pump controlling the flow of air through said tube, of a valve at the inner end of the pipe, and a signal at the outer end, and a chamber communicating with the tube and having a movable diaphragm connected to operate said signal, substantially as described.

884,793. FENCE-GATE. AUGUSTUS SHEPHERD, Hannepin, Ill. Filed Jan. 3, 1888. Serial No. 259,152. (No model.)



Claim.—1. The combination of a gate hung upon hinges, an opener-shaft vertically journaled to the gate near the hinges and provided with a two-armed lever fixed upon its upper portion and a single arm lower down, a rock-lever pivoted midway to the gate, shoulders or stops at the ends of the path of the said rock-lever, a stiff pitman connecting one arm of the rock-lever with the lower arm of the opener, a latch hung upon the gate, a spring for the latch, an elbow-lever pivoted above the latch, a connection between one arm of the elbow-lever and the latch, a bifurcated connection having flexible legs connecting the other arm of the elbow-lever with the two arms of the said rock-lever, two posts fixed beside the road at a distance from the hinge-post, a cross-lever journaled upon each of the two posts, and connections between the vertical arms of the said cross-levers and two arms of the opener-lever, and chains or cords depending from the horizontal arms of the cross-levers, substantially as shown and described.

2. The combination of a gate, a latch hung thereon, a spring for the latch, a rock-lever pivoted midway to the gate, a flexible bifurcated connection between the latch and the rock-lever, an opener having two upper arms, one lower arm, and a shaft vertically journaled to the gate near its hinges, a stiff connection between the lower arm of the opener and one arm of the rock-lever, and means for operating the opener, substantially as shown and described.

3. The combination of a gate, a rock-lever pivoted midway thereto, a latch hung on the gate, flexible connections between the two arms of the rock-lever and the latch, an opener, substantially as described, journaled to the gate, a stiff pitman connecting an arm of the opener with an arm of the rock-lever, and shoulders or stops fixed at the ends of the path of the latter, substantially as shown and described.

4. A gate hinged upon a post fixed at one side of a road, a latch hung at the outer end of the gate, two catches for the latch fixed in the path thereof, one at each side of the road, a rock-lever pivoted midway to the gate, and stops fixed at each end of its path, flexible connections between the two ends of the rock-lever and the latch, an opener journaled upon the gate, and a stiff connection between the opener and the rock-lever, substantially as shown and described, whereby the action of the opener is to first raise the latch from its catch and then to swing the gate, whether the movement be to open or to close the gate.

884,794. VAPORIZER. GARDNER M. SHERMAN, Springfield, Mass. Filed July 30, 1887. Serial No. 245,611. (No model.)



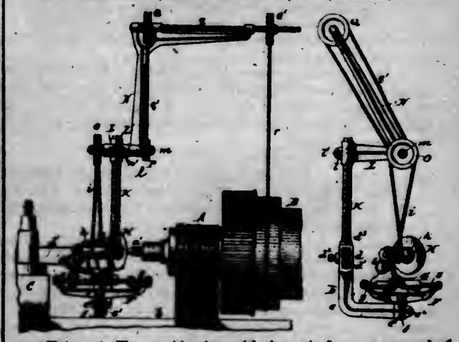
Claim.—1. The combination, with the supporting-casing, of a porous wheel pivoted therein, said wheel having buckets or pockets arranged to lift a liquid when partially turned, substantially as described.

2. In a vaporizer, the combination of a casing, a register in said casing, and a porous disk within the casing having buckets arranged as described, and a handle connected to the disk and extending outside the casing.

3. A wheel of plaster-of-paris or similar porous material having buckets or pockets extending from the outside or periphery in lines crossing radial lines, substantially as described.

4. The combination, in a vaporizer, of the inclosing-casing having an aperture for filling and orifices for the escape of fumes, a plate having corresponding orifices, a disk or wheel pivoted in the casing, the same being of porous material and having buckets, as described, and a handle for rotating said wheel extending outside the casing, all substantially as described.

884,795. GRINDING-MACHINE. FRANK A. SHOEMAKER, Buffalo, N. Y. Filed Nov. 15, 1886. Serial No. 218,502. (No model.)



Claim.—1. The combination, with the main frame, composed of a socket, *d*, an arm, *c*, extending downwardly and inwardly from said socket *d* and provided at its inner end with a vertical socket, *c'*, and

a post, K, extending upwardly from the socket *d* and carrying a shaft, *m*, provided with a pulley, O, of a horizontal frame, F, provided with a vertical pivot, *f*, seated in the socket *d'*, a grinding-wheel, H, provided with a pulley, *h*, capable of free horizontal movement on the frame F, and an endless belt connecting the pulleys O and *h*, substantially as set forth.

2. The combination, with the grinding-wheel and its supporting-frame D, provided with a post, K, of an arm, L, attached to said post, an arm, N, pivoted to the arm L, and a driving-shaft, *g*, journaled in the arm N, whereby the driving-shaft can be adjusted by swinging the arm N on its pivot, substantially as set forth.

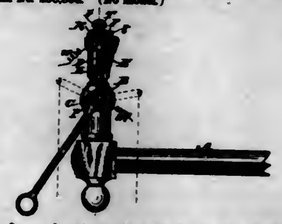
3. The combination, with the grinding-wheel and its supporting-frame D, provided with a post, K, of an arm, L, secured to said post, a counter-shaft, *m*, and an arm, N, journaled concentrically in the arm L, a driving-shaft, *g*, journaled in the arm N, and pulleys and belts whereby the driving-shaft is connected with the counter-shaft and the latter with the grinding-wheel, substantially as set forth.

4. The combination, with the supporting-frame D, provided with a post, K, of a horizontal frame, F, connected with the frame D by a vertical pivot, a sliding frame, G, mounted on the frame F and carrying a grinding-wheel, H, an arm, L, attached to the post K, a counter-shaft, *m*, and arm N, journaled in the arm L, and a driving-shaft, *g*, journaled in the arm N, substantially as set forth.

5. The combination, with the horizontal frame F and the sliding frame G, provided with a cone, *j'*, of a horizontal adjustable arbor, *j*, secured to said frame and provided with a cone, *j²*, and a grinding-wheel, H, provided with a hollow spindle, *h*, mounted on said cones by conical bearings, substantially as set forth.

384,796. ELECTRIC GAS-LIGHTING DEVICE AND GAS-COCK.

WILLIAM TAG and SANFORD G. SMITH, Philadelphia, Pa. Filed Sept. 22, 1887. Serial No. 250,202. (No model.)



Claim.—1. In an electric gas-lighting device, the combination of a stationary electrode, a pivoted movable electrode, and a pivoted rider in the path of said movable electrode, adapted to permit the electrodes to contact in the advance movement of the movable electrode, and to prevent such contact on its retrograde movement, substantially as described.

2. In an electric gas-lighter, a fixed electrode and a movable electrode, in combination with a fixed support or arm carrying a weighted rider, for preventing contact of the electrodes on the back action of the movable electrode, substantially as described.

3. In a gas-lighting device, the combination of the fixed electrode and the movable electrode attached on an arm fixed to the gas-cock, with a tilting rider lying in the path of the movable electrode and pivoted to an arm, which in turn has a bearing against the cock and holds it in place, substantially as described.

4. A burner with an adjustable cock, in combination with an insulated fixed electrode secured to said burner, an actuating-arm of the cock carrying the movable electrode, and the adjusting-arm for the cock carrying a pivoted weighted rider, said parts being combined substantially as described.

5. In an electric gas-burner, an insulated fixed electrode, an arm carrying the pivoted weighted rider and having the stops *a* and *b*, and an actuating-arm of the cock carrying the movable electrode and having the lug *d*, said parts being combined substantially as and for the purpose set forth.

384,797. ENDLESS PLATEWAY FOR WHEELED VEHICLES.

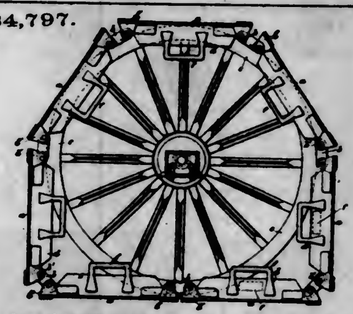
HENRY G. TUTTLE, Kingstown, County of Dublin, Ireland. Filed Mar. 27, 1888. Serial No. 268,612. (No model.) Patented in England Dec. 20, 1886, No. 16,060.

Claim.—1. An endless trackway for wheeled vehicles, consisting of a series of plates, *a*, each having side guides, *d d*, extending nearly the entire length of the plate and adapted to fit over the edges of the wheel, each plate provided at its ends on both sides with socket-pieces *g g*, located outside said guides, a series of links, *b*, and hinge-pins *b'*, connecting the links and socket-pieces, substantially as shown and described.

2. An endless trackway for wheeled vehicles, consisting of a series of plates, *a*, having outwardly-flaring guide-flanges *d d*, and pin-sockets *g g*, located outside said flanges, a series of links, *b*, and hinge-pins *b'*, substantially as shown and described.

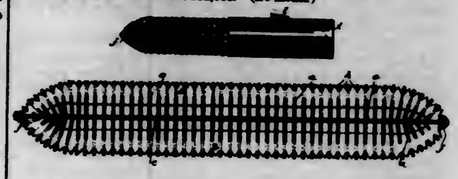
3. In self-laying plateways consisting of a series of plates hinged or connected together, as described, the combination of the handles or apertures *f*, substantially as and for the purposes set forth.

384,797.



384,798. CURRY-COMB.

DUD P. TUTTLE, Brownville, Nebr. Filed Oct. 17, 1887. Serial No. 252,602. (No model.)



Claim.—1. A curry-comb with a working-surface of an elongated cylindrical or equivalent form, substantially as shown and described.

2. A curry-comb with a working-surface of an elongated cylindrical or equivalent form, with an end of a conical form, substantially as shown and described.

3. A curry-comb composed of longitudinal toothed strips and toothed cross-plates interlocked therewith, substantially as set forth.

4. A curry-comb having a body of cylindrical or equivalent form in cross-section, composed of detachable strips and plates and provided with a conical end or ends, substantially as set forth.

5. A curry-comb of cylindrical or equivalent form, provided with a handle longitudinally adjustable thereon, substantially as set forth.

6. A curry-comb consisting of detachable toothed strips and disks or plates arranged at angles to each other and means for securing them in place, substantially as set forth.

7. A curry-comb composed of longitudinal strips and cross plates or disks interlocked therewith, some of said strips and plates being provided with saw-shaped teeth and some with teeth formed by corrugations or scallops, substantially as set forth.

8. In a curry-comb, the combination of the longitudinal strips and cross-plates and the handle slipped over said parts and capable of longitudinal adjustment thereon, substantially as set forth.

9. In combination with the curry-comb constructed as described, the tubular handle adjustable thereon and the locking pawl or dog carried thereby, substantially as described.

10. In a curry-comb, the combination, with the toothed strips *b*, provided with notches on their lower edges, of slotted cross-plates interlocked therewith and means for securing the said parts together, substantially as set forth.

11. In a curry-comb, the combination of longitudinal and transverse interlocking strips and means for securing the ends of the strips, substantially as set forth.

12. A curry-comb of cylindrical or equivalent form in cross-section, having a cellular body, the sides of the cells being formed by the toothed or operating surface of the comb, substantially as described.

13. In a curry-comb, the combination of the central rod, the toothed disks strung thereon, the longitudinal toothed strips interlocking with the disks, and means for securing said parts together, as set forth.

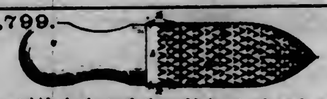
14. In a curry-comb, the combination of the rod *c*, the toothed plates *a*, having slots *d* strung thereon, the longitudinal toothed strips *b*, having notches *e* and curved ends *b'*, the washers *f*, and the nuts *g*, substantially as described.

384,799. CURRY-COMB.

DUD P. TUTTLE, Brownville, Nebr. Filed Mar. 26, 1888. Serial No. 268,865. (No model.)

Claim.—1. A curry-comb of cylindrical or equivalent form made from a metal blank, the teeth thereof being struck up from the body of said blank, substantially as set forth.

384,799.



2. A curry-comb of cylindrical or equivalent form formed from a metal blank having struck-up teeth and provided with a handle extending from one end thereof, substantially as set forth.

3. A curry-comb of cylindrical or equivalent form formed from a blank of metal having teeth struck up from its body, the end or ends of said blank being gored or cut away, whereby the remaining portions, when pressed together, form a conical end or ends, substantially as set forth.

4. A curry-comb of cylindrical or equivalent form, consisting of an interior former and a blank having struck-up teeth thereon, substantially as set forth.

384,800. CURRY-COMB.

DUD P. TUTTLE, Brownville, Nebr. Filed Mar. 26, 1888. Serial No. 268,863. (No model.)



Claim.—1. A curry-comb of cylindrical or equivalent shape formed from toothed rings or bands secured upon a suitable core or former, substantially as shown and described.

2. A curry-comb of cylindrical or equivalent shape formed from toothed rings or bands secured upon a grooved former or core, substantially as shown and described.

3. A curry-comb of cylindrical or equivalent shape formed from toothed rings or bands secured upon a grooved former or core having a conical end, substantially as shown and described.

4. A curry-comb of cylindrical or equivalent shape formed from rings or bands having teeth struck up from their surfaces, said rings or bands being secured upon a core or former, substantially as shown and described.

5. A curry-comb of cylindrical or equivalent shape formed from rings or bands having a double row of teeth formed therefrom, said rings or bands being secured upon a core or former, substantially as shown and described.

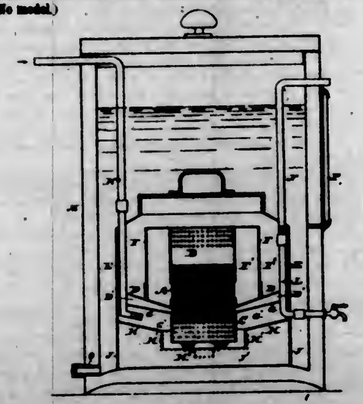
6. A curry-comb of cylindrical or equivalent form formed from toothed rings or bands secured upon a former or core, said rings or bands having notches and projections to enter said notches, whereby to prevent independent rotation upon the core or former, substantially as shown and described.

7. In a curry-comb of cylindrical or equivalent shape, the combination of toothed rings or bands with a former or core having a conical end provided with steps or shoulders, substantially as shown and described.

8. A curry-comb of cylindrical or equivalent shape, consisting of a core or former having a handle at one end and a series of toothed rings or bands secured upon said former or core, all substantially as shown and described.

384,801. WATER COOLER AND FILTER.

GERMAIN VAN DER HEYDEN, Philadelphia, Pa., assignor of one-half to Henry F. Lee, same place. Filed Jan. 12, 1887. Renewed Feb. 8, 1888. Serial No. 263,260. (No model.)



Claim.—1. The cylinder A, with perforated ends or caps, the diaphragm G, and the annulus H, having an opening below the cylinder A and formed with a flange, H', said parts being combined and operating substantially as described.

2. The cylinder A, the diaphragm G, and the annulus H, with an opening below said cylinder and a flange, H', in combination with the outer casing, E, having a perforated rim at bottom, substantially as described.

3. A filter, substantially as described, having an inlet-pipe, K, an outlet-pipe, L, and air-pipe N, in combination with a cooler, said filter having a perforated rim, J, which forms a communication between the filter and cooler, substantially as described.

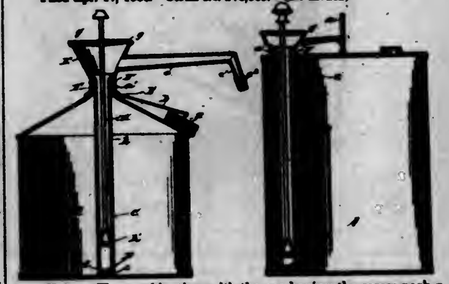
4. The outer casing, E, with an annulus or partition, H, at bottom, and diaphragms G D above the same, forming the chambers G' D', the central cylinder, A, with perforated caps, and the surrounding cylinder F, forming the chambers F' F², said parts being combined and operating substantially as described.

5. A filter consisting of the casing E, with a closed diaphragm, G, perforated diaphragm D, and closed diaphragm H, with flange H' secured thereto and forming chambers G' F' F², the cylinder A, with perforated caps B C, the cylinder F, supported on the diaphragm D, the inlet-pipe K, leading to chamber G', and outlet-pipe L, leading from chamber F², the said casing having caps at top and bottom, all of said parts being arranged and combined substantially as described.

6. A cooler, in combination with a filter inclosed within said cooler, an inlet-pipe leading through said cooler into said filter, an outlet-pipe leading from said filter to outside said cooler, and having an air-pipe connected therewith at its inner end, said filter having the perforated rim J, whereby water-communication is had from said filter to said inclosing-cooler, substantially as described.

384,802. OIL-CAN.

FRANKLIN D. WALPOLE, McKenzie, Tenn. Filed Apr. 17, 1888. Serial No. 270,808. (No model.)

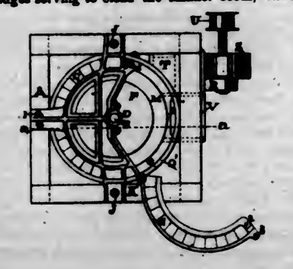


Claim.—The combination, with the can having the screw-neck *a*, of the tube C, extending downward through said neck to the bottom of the can, and having a valve in its lower end, the funnel-shaped enlargement E, secured to the upper end of the tube C, and having the concave top and the depending annular screw-threaded flange F, adapted to engage the screw-neck *a'*, the discharge-spout extending outward and upward from the said enlargements E, and the valved plunger in the tube, having its plunger-rod extending up through the tube C, the enlargement E, and the concave top, substantially as specified.

384,803. COTTON-SEED CLEANER.

JAMES L. WEATHERHEAD and JAMES S. COCHRAN, Philadelphia, Pa. Filed Jan. 3, 1888. Serial No. 259,613. (No model.)

Brief.—The inner cone is carried by a removable section of the driving-shaft and the outer casing is provided with a door, so that the inner cone may be readily removed or access had thereto. Said inner cone is covered with strips of card-clothing arranged spirally and having the wires of different lengths, forming spiral ridges and depressions, the ridges serving to clean the smaller seeds, while the larger



cone are forced into the depressions and acted upon by the shorter wires at the bottoms thereof.

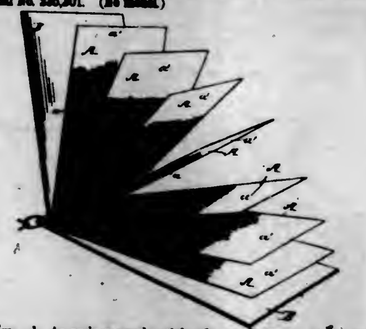
Claim.—1. The combination of the casing G, faced interiorly with a roughened or grated metallic sheathing, with an inner cone, H, provided with a continuous metallic brush having the wires thereof of different lengths and forming spiral ridges and depressions, as described, on the surface of the cone, substantially as described.

2. The combination of the casing G, the interior face of which is provided with a sheathing having projections forming a grating-surface, with a cone, H, provided with a continuous metallic-wire brush having the wires thereof of different lengths and forming spiral ridges and depressions, as described, on the surface of the cone, substantially as described.

3. The combination of a casing, G, provided with the opening flap-section G' and having an inner roughened surface, with the cone H, provided on its outer surface with a brush-clothing, shaft-section E', and detachable shaft-section E, on which said cone H is mounted, whereby when flap-section G' is opened the cone H, with shaft-section E, can be removed through the opening without disturbing the pulleys or other parts, substantially as described.

4. The combination of casing G, having a roughened interior surface, and a cone, H, provided with a continuous outer metallic-wire brush having the wires thereof of different lengths and forming spiral ridges and depressions, as described, on the surface of the cone, substantially as described.

884,804. BLUING-PAPER. GEORGE H. WEBB, Newton, Mass., assignor to Carter, Dinsmore & Co., Brooklyn, N. Y. Filed Apr. 19, 1887. Serial No. 235,301. (No model.)



Claim.—1. As an improved article of manufacture, a bluing leaf, sheet, or strip consisting of a leaf, sheet, or strip of paper or other similar material having one section coated or saturated with a bluing composition soluble, or substantially soluble, in water, and having also a section free from bluing, by which it may be handled without soiling the fingers, and adapted to supply the water or fluid with a given amount of bluing, as and for the purposes described.

2. As a new article of manufacture, a blue-book containing a number of strips or leaves of paper or other similar material having the inner sections, *a*, saturated or coated with a bluing composition soluble in water and the outer sections, *a'*, free from bluing, as and for the purposes specified.

3. The blue-book comprising a number of sheets, leaves, or strips of paper or other material, sections of which are coated or saturated with a bluing composition, and sections of which are uncoated or unsaturated, and which are used for tabs, united together and to their holding-covers, as and for the purposes described.

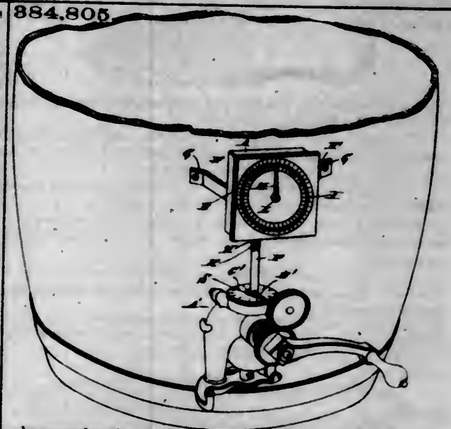
4. The blue-book comprising the covers B, the blued sheets or leaves A, having the blued sections *a* and the tab ends *a'*, united to each other and to the cover, and having perforations or weakened close to the line of the attaching-seam, as and for the purposes described.

884,805. REGISTERING ATTACHMENT FOR MEASURING-FAUCETS. LEWIS P. WHITE and JAMES D. BERRIER, Terra Alta, W. Va. Filed Mar. 12, 1888. Serial No. 267,060. (No model.)

Claim.—1. The registering device for measuring-faucets, comprising the case or frame having the dial, the worm-wheel journaled in said case or frame and having the hand to sweep over the dial, the shaft N, also journaled in said case or frame and having the screw or worm meshing with the worm-wheel, and the connecting-rod flexibly connected to said shaft and adapted to be attached to the hand or pointer of the measuring-faucet, substantially as described.

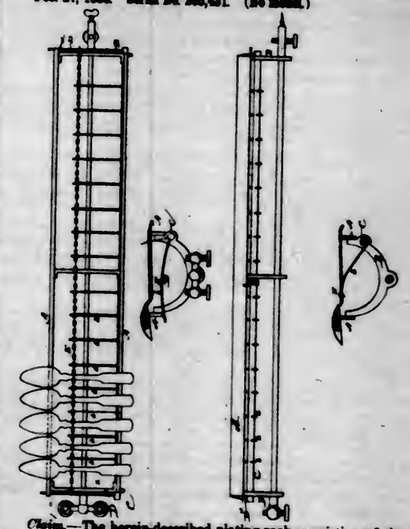
2. The combination of the case or frame having the dial, the worm-wheel journaled in said case or frame and having the hand or pointer to sweep over the dial, the shaft N, journaled in said case or frame and having the worm or screw engaging the worm-wheel, the

884,805



yoke secured to the cone and adapted to be attached to the cask or barrel, and the connecting-rod adapted to connect the hand or pointer of the measuring-faucet with the shaft N, substantially as described.

884,806. RACK FOR ELECTROPLATING. WILLIAM W. WHITE, Waterbury, Conn., assignor to Rogers & Brother, same place. Filed Feb. 27, 1888. Serial No. 265,431. (No model.)



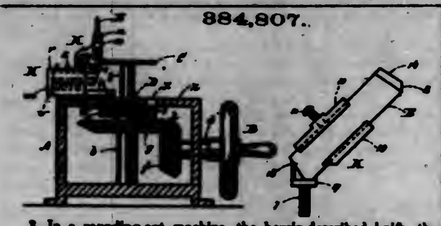
Claim.—The herein-described plating-rack, consisting of the two sides connected at their ends, the said sides forming a support for the articles to be plated, combined with a rock-shaft upon one side, parallel with that side, carrying a series of springs extending toward the opposite side, and with a lever at one or both ends of the shaft adapted to engage with an interlocking device upon the rack, and a connection extending from said lever at one end to the opposite end of the rack and connected with the free ends of the said springs, substantially as described.

884,807. ROUNDING-OUT MACHINE. VESTUS H. WHITTAKER, Bradford, assignor to himself and Ellen V. Whittaker, Gloucester, Mass. Filed Apr. 25, 1888. Serial No. 271,817. (No model.)

Claim.—1. In a rounding-out machine, the herein-described knife having a chisel-shaped edge at one end and a *A*-shaped edge at the opposite end, corresponding corners of said edges being cut off or beveled to adapt it to rest upon the table of the knife-bracket, substantially as set forth.

2. In a rounding-out machine, the herein-described knife having a chisel-edge at one end, a *A*-shaped edge at the opposite end, and longitudinal flanges along the sides of one of its faces, corresponding corners of said edges being cut off or beveled to adapt it to rest upon the table of a knife-bracket, substantially as described.

884,807.



3. In a rounding-out machine, the herein-described knife, the same consisting of the body E, having the chisel-edge 13, A-shaped edge 14, beveled corners 16, and flanges 20, constructed and arranged substantially as and for the purpose described.

4. In a rounding-out machine of the character described, the bracket K, having the table 17, stud 7, inclined clamp 10, and screw 12, in combination with the knife E, carriage H, and adjunctive mechanism for actuating said carriage, substantially as set forth.

5. In a rounding-out machine of the character described, the bracket K, having the table 17, stud 7, inclined clamp 10, and screw 12, in combination with the knife E, provided with the edges 13 and 14 and beveled corners 16, and adjunctive mechanism for causing said bracket to move around the pattern and said knife to press thereon, substantially as specified.

884,808. MIRROR. FRITZ WIESMANN, Stapleton, N. Y. Filed Dec. 24, 1887. Serial No. 258,577. (No model.)

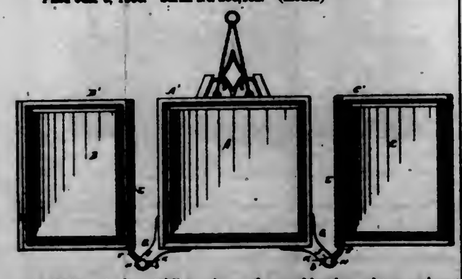


Claim.—1. The combination of a main frame having transverse slots and recesses in its side pieces, wing-mirrors adapted to fold within the opening of the main frame, curved L-shaped hinge-pieces projecting from the inner edges of the frames of the wing-mirrors into the recesses in the side pieces of the main frame, and pintles in the side pieces of the main frame, on which pintles the hinge-pieces turn, substantially as set forth.

2. The combination of a main frame having recesses in the side pieces behind the front faces of the same, and slots in the sides on the inner edges of the side pieces, said slots leading to the recesses, wing-mirrors, L-shaped hinge-pieces on the frames of said wing-mirrors, passed through said slots into the recesses, and pintles in the side pieces of the main frame, on which pintles the hinge-pieces turn, substantially as herein shown and described.

3. The combination of the main frame A and B, composed of the front section, C, having the recesses I and slots K, and the rear section, D, having the recesses L and the rabbet O, the wing-mirrors E and F, having frames E' F', the curved L-shaped hinge-pieces G, secured to the frames of the wing-mirrors at the inner edges and passed through the slots K into the recesses I L, and the pintles P in the side pieces of the main frame, substantially as herein shown and described.

884,809. FOLDING MIRROR. FRITZ WIESMANN, Stapleton, N. Y. Filed Jan. 9, 1888. Serial No. 260,162. (No mdl.)



Claim.—1. In a folding mirror, the combination, with a main or central mirror, of two wing-mirrors pivoted to swing while parallel with the face of the main mirror across the face of the said main mirror in planes parallel with and in close proximity to that of the main mirror, substantially as shown and described.

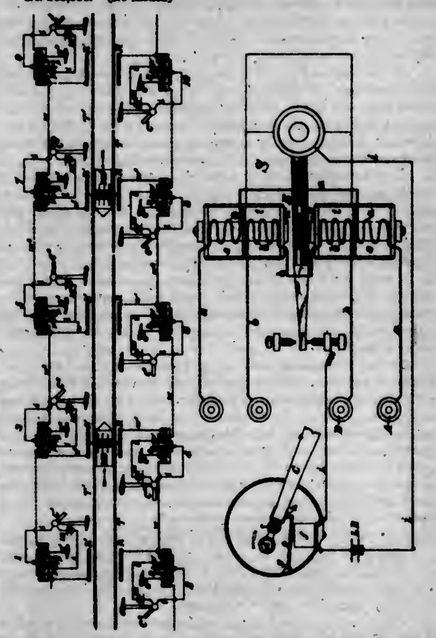
2. In a folding mirror, the combination of a main mirror and two wing-mirrors mounted to swing while parallel with the face of the main mirror across the face of the said main mirror in planes parallel with and in close proximity to that of the main mirror, and also to swing toward and from the face of the main mirror in planes that are at an angle to the plane of the main mirror, substantially as shown and described.

3. In a folding mirror, the combination of a main mirror, two wing-mirrors, rods hinged to the frame of the main mirror at the sides thereof to swing across the face of the main mirror in planes parallel with and in close proximity to that of the main mirror, the wing-mirrors being hinged on said rods, substantially as shown and described.

4. In a folding mirror, the combination of the main mirror, two wing-mirrors, legs or arms at the lower ends of the sides of the main mirror, and rods pivoted on the arms or legs to swing over the face of the main mirror in planes parallel with and in close proximity to that of the main mirror, said wing-mirrors being hinged on said rods, substantially as shown and described.

5. In a folding mirror, the combination, with a main mirror and two wing-mirrors, of legs or arms on the bottom parts of the sides of the main-mirror frame, and stop-pins on said arms or legs, rods mounted to turn on the ends of said arms or legs and provided at their pivoted ends with enlargements having quadrant-notches into which the stop-pins project, substantially as herein shown and described.

884,810. AUTOMATIC ELECTRIC BLOCK-SIGNAL SYSTEM. THOMAS D. WILLIAMS, Allegheny City, and JOHN S. LEECH, Bellevue, assignors of three-fifths to James W. Clark, George H. Ehrenfeller, and George Harris, all of Allegheny County, Pa. Filed Feb. 8, 1888. Serial No. 263,593. (No model.)



Claim.—1. In a block-signal system for railways, the combination, with a source of electrical energy, of two or more differentially-wound polarized relays, each connected with the line-wires of two adjoining circuits or sections and each arranged in connection with a local battery and circuit to open and close the same for the purpose of operating an electric signal at each end of each circuit or section in the same or opposite directions, according to the windings or coils with which each line-wires are connected, substantially as described.

2. The combination, in a block-signal system for railways, of a battery of line-wires and four or more differentially-wound relays placed on opposite sides of a railway-track, each such relay being connected with and operating an electrically-operated signal, said relays and wires being arranged to run from ground at one station through the lower coil of the first such relay, thence to the next station and through the upper coil of the second such relay, and thence to an insulated

portion of the railroad-track and on the opposite side of said track from an insulated portion thereof to a third differentially-wound polarized relay at the station opposite to that last named and through the upper coil thereof, and thence to a fourth such relay at the next station and through the lower coil thereof to ground, the circuit between the two sides of the track, which is normally broken, being made or completed by the arrival of a train at the point between the second and third stations, substantially as described.

3. The arrangement of two or more line-circuits consisting of line-wires and differentially-wound polarized relays connected together in series by connecting one coil of each such polarized relay at each station with the line-wire of one circuit and the other coil of the same relay with the line-wire of the next adjoining circuit, substantially as and for the purposes described.

4. In a block-signal system for railways, the combination, with a source of electrical energy, of insulated rails forming part of or placed near to the railroad-track, four differentially-wound polarized relays, two at adjoining stations on one side of the track and two at adjoining stations at the other side, connected together, excepting between the rails of the track, by a line wire or wires connected with one or other of the coils of each relays, according to the relative direction in which the signal at each station is to be operated, a local battery and circuit at each station, the circuit of which is made or broken by the armature of the polarized relay, and an electrically-operated signal at each station, the same being arranged and operated substantially as described.

5. The combination, with the line-wires of the circuits of a railroad-block-signal system, and with a battery or batteries, of differentially-wound polarized relays arranged in connection with the electrically-operated block-signals and the local battery and circuit thereof, substantially as described, and so that each signal may be automatically operated in different directions, according as the line-wire is connected with one or other of the coils of the relay and according to the name of the current (whether positive or negative) that is passed over the circuit, substantially as described.

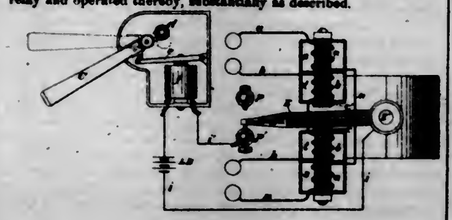
6. The combination of a differentially-wound polarized relay having an armature pivoted at one end and extending between the poles of the relay, and having the other end located between contact-points to make and break the local battery-circuit, a local electro-magnet, and block-signal operated mediately or immediately by the armature thereof, substantially as and for the purposes described.

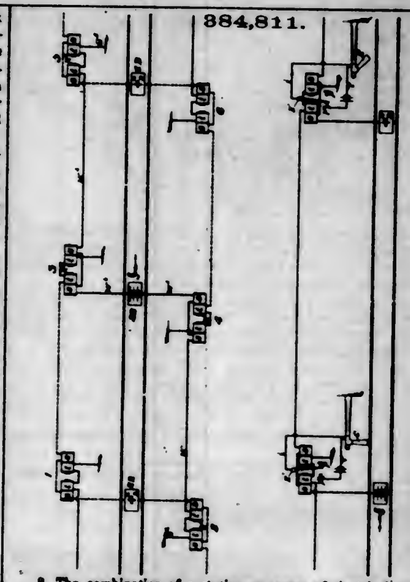
7. The combination, with a battery located on the locomotive, tender, or other car of a train, of two pairs of metallic brushes or contacts mechanically connected with such car, so as to be movable to and from contact with the rails of the track, one brush of each pair being electrically connected with the positive and the other with the negative pole of the battery, and furnished with intermediate gearing for bringing one brush of each pair, having opposite signs, into contact with the opposite rails of the railroad-track, respectively, and for reversing them at pleasure by moving the lever in one direction or the other, and thus changing the direction of the electric current, substantially as described.

8. The combination, with a battery located on the locomotive, tender, or car, of metallic brushes or contacts connected, respectively, with the positive and negative poles of the battery, the lever for reversing the engine of the locomotive, and levers interposed between and connected with said brushes and reversing-lever and capable of operating the brushes to bring alternately the positive and negative pole brushes in contact with the rails of the track, substantially as described, so that the engineer, when reversing his engine, shall also reverse the direction of the electric current to operate the electric block-signals in the manner hereinbefore set forth.

384,811. APPARATUS FOR OPERATING AUTOMATIC BLOCK-SIGNALS. THOMAS D. WILLIAMS, Allegheny City, and JOHN A. LEGGET, Bellevue, assignors of three-fifths to James W. Clark, George M. Bitmiller, and George Morris, all of Allegheny County, Pa. Filed Apr. 30, 1888. Serial No. 272,294. (No model.)

Claim.—1. In a block-signal system, the combination of a source of electrical energy and a differentially-wound polarized relay in circuit therewith, and a railroad-signal connected with the armature of the relay and operated thereby, substantially as described.



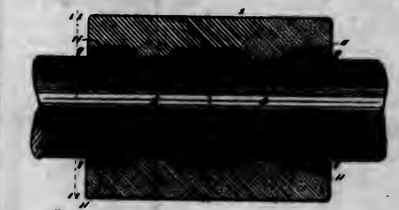


2. The combination of a stationary source of electrical energy, two or more differentially-wound polarized relays, each connected with the line-wires of two adjacent line-circuits or block-sections, and a signal operated mediately or immediately by the armature of a differentially-wound polarized relay, substantially as described.

3. The combination of a stationary source of electrical energy normally disconnected from the line-circuit, mechanism, substantially as described, for connecting and disconnecting the generator to or from the circuit and for reversing the polarity, arranged to be operated by a passing train, and two or more differentially-wound polarized relays in the battery-circuit, and two or more railroad-signals, each arranged in relation to the armature of a differentially-wound polarized relay, so as to be operated thereby, substantially as described.

4. In an automatic electric block-signal system, the combination of a stationary battery or source of electrical energy with a lever placed on or near the line of the railway-track, each lever having an arm extending so as to come in contact and be turned backward or forward by a passing train, and two horizontal vibrating arms, each furnished with two insulated plates, connected, respectively, with opposite poles of the battery, two pairs of contacts electrically connected with the line-wires of the battery-circuit, and so arranged relatively to each other and to the insulated plates of the lever-arm that when one arm is depressed a current of one sign and when the other arm is depressed a current of the opposite sign is sent over the line-wires to differentially-wound polarized relays to operate the block-signals, substantially in the manner hereinbefore described.

384,812. COUPLING FOR SHAFTS, PULLEYS, &c. BENJAMIN I. WILLIAMSON, Little Rock, Ark. Filed Jan. 21, 1888. Serial No. 261,517. (No model.)



Claim.—1. The combination, with the shaft, of the sleeve formed with independent pairs of segmental tapering recesses, one pair at each end, and the pairs of segmental tapering wedges occupying the recesses, substantially as described.

2. The combination, with the shaft, of the sleeve formed with independent pairs of segmental tapering recesses, one pair at each end, and grooves in the recesses, and the segmental tapering wedges occupying the recesses, formed with ribs occupying the grooves, substantially as described.

3. The combination, with the shaft, of the sleeve formed with independent pairs of segmental tapering recesses, one pair at each end, and the pairs of segmental tapering wedges occupying the recesses, having serrated inner surfaces, substantially as described.

4. The combination, with the shaft, of the sleeve formed with independent pairs of segmental tapering recesses, one pair at each end, and grooves in the recesses, and the segmental tapering wedges occupying the recesses, formed with ribs occupying the grooves, and having serrated inner surfaces, substantially as described.

384,813. PROCESS OF REFINING IRON WITH AIR. RILEY P. WILSON, Cleveland, Ohio, assignor of one-half to Franklin J. Wall, New York, N. Y. Filed Nov. 21, 1883. Renewed May 26, 1888. Serial No. 273,993. (No specimens.)

Claim.—The process herein described for treating impure iron for the manufacture of wrought-iron and steel, the same consisting in subjecting the impure iron while in a molten state to the action of a blast of air, in order to oxidize and carry off the impurities, and simultaneously subjecting the iron to the action of a reducing-atmosphere of hydrocarbon gas or vapor held above the surface of the molten metal, substantially as specified.

384,814. CEMENT WASH-TUB. CHARLES WEBLEY, West New York, N. J. Filed Mar. 17, 1888. Serial No. 267,672. (No model.)

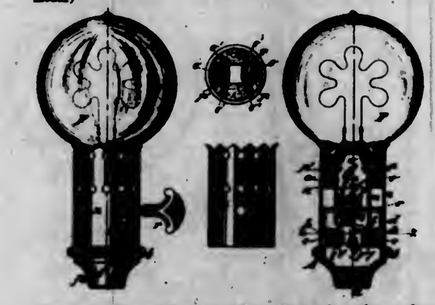


Claim.—1. The combination, with a cement wash-tub having a partition, of a channel having overflow-openings and strainers in the partition, and an enlarged head for the waste-pipe set into the bottom of the same, and provided with a drain-opening and a plug-seat at each side of the partition, and with an intermediate opening communicating with the overflow-channel into the partition, substantially as set forth.

2. A head for the waste-pipes of wash-tubs, composed of a top plate having drain-openings and plug-seats, an overflow-opening between said plug-seats, and a bottom part enlarged at the upper and contracted at the lower end, substantially as set forth.

3. The combination of the enlarged head for the waste-pipe of a cement wash-tub, said head consisting of a top plate provided with drain-openings, plug-seats, an overflow-opening between said plug-seats, and recessed ears at both sides, and a bottom part having a contracted lower end, with a detachable collar or sleeve having recessed side ears, and screw-nuts for connecting the ears, the top plate, and collar, substantially as set forth.

384,815. INCANDESCENT-LAMP SOCKET AND SWITCH. JAMES J. WOOD, Brooklyn, N. Y. Filed Oct. 1, 1884. Serial No. 144,494. (No model.)



Claim.—1. The combination, with an electric incandescent lamp having terminal conductors or contacts in its base or neck, of a holder or tube to receive the neck of the lamp having an internal straight contact-spring, *m*, adapted to spring into engagement with one of the lamp-terminals when the lamp is slipped into the holder, with a second contact-spring, *m*, normally bent away from the opposite terminal of the lamp, and with a manipulating-key to press said bent spring into or out of contact with the lamp-terminal, substantially as herein shown and described.

2. In an electric-lamp holder, the containing-socket A, formed with the indentations *c c*, in combination with circuit-connections fastening to the interior of the holder at or near the indentations, with screws fastening said connections and embedded in said recesses, and the external clamp-sleeve, *n*, embracing the socket outside of said recess, substantially as herein shown and described.

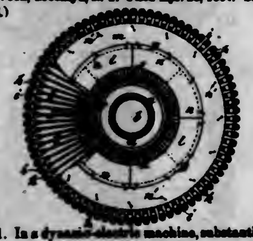
3. An electric-lamp holder formed by the combination, with the socket A, having the lateral binders, *f*, and contact-springs *m m*, of a manipulating-key for acting on one of the springs, and the external clamping-sleeve, *n*, slit to permit its passage over the key and embracing at its base a neck or the socket A, substantially as and for the purpose set forth.

4. The combination, with the holder A, of the binders *f f'* and springs *m m*, with the insulation *l l*, insulated fastening-screws *h*, the key *r*, its cam *t* and its insulating cam-face *t'*, and the surrounding clamping-sleeve *n*, substantially as herein shown and described.

5. In an electric-lamp holder, the combination, with the contact spring or springs *m*, of the key *r*, with its operating-cam and its stop-collar *s*, with the fixed stop *w*, arranged and operating substantially as set forth.

6. In an electric-lamp holder, the combination, with two contact-springs arranged to approach each other and to engage with the contacts of the lamp, of an insulating guard-plate placed at and secured to the top of one or both springs to prevent electric contact between the two, substantially as herein set forth.

384,816. COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES. JAMES J. WOOD, Brooklyn, N. Y. Filed Apr. 30, 1887. Serial No. 236,455. (No model.)



Claim.—1. In a dynamo-electric machine, substantially such as set forth, a shield-plate of insulating material laid upon and secured to the commutator-strips, and embracing the commutator, and extending over the commutator-strips or hollow of the armature, leaving the space between the strips or hollow of the armature open at the periphery, substantially as and for the purpose set forth.

2. In a dynamo-electric machine, the combination, with the commutator, of a shield of fire-proof material embracing the same, and covering the commutator-connections and the end of the armature, substantially as and for the purpose set forth.

3. The combination, with an electric commutator and armature, substantially such as set forth, of an annular shield of mica closely embracing the commutator, and covering the connection between armature and commutator, substantially as and for the purpose set forth.

4. The combination, with an electric commutator, substantially such as shown, of a shield made in segments, *l*, embracing the commutator, and covering the connection between commutator and armature, substantially as shown and described.

5. The combination, with an electric commutator, of a shield made in segments, *l*, in two layers, embracing the commutator and overlying each other, covering the connection between commutator and armature, substantially as shown and described.

6. The combination, with an electric commutator, of the shield B, made in two portions of different materials, the inner part of which is made of mica, and the outer part of paper or its equivalent, substantially as shown and described.

7. The combination, with an electric commutator, of a shield, B, embracing the commutator and resting against the commutator-strips, and loops *n* or *n'*, securing said shield to the strips, substantially as shown and described.

8. The combination, with an electric commutator formed with a peripheral groove, *k*, of a shield-plate or septum let into said groove, and embracing the commutator and extending radially therefrom, forming a septum between commutator and armature, substantially as shown and described.

9. The combination, with an electric commutator, of the shield or septum B, formed of the inner segmental layers, *l l*, and the outer ring, *m*, substantially as shown and described.

10. The combination, with an electric commutator having the groove *k* and strips *t*, of the layered shield-segments *l l* and ring *m*, with the loops *n n'*, substantially as shown and described.

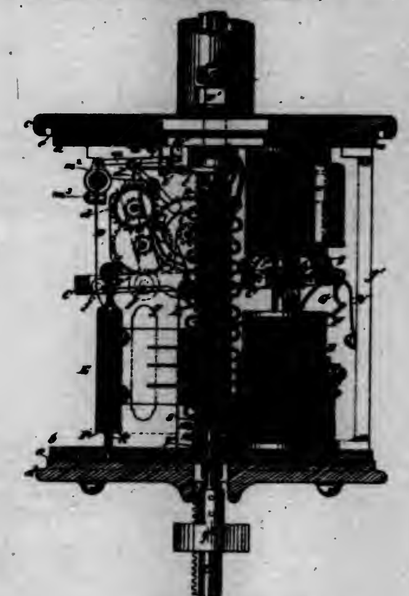
11. The combination, with an electric commutator, substantially such as set forth, of the insulating-ring F, interposed between the segments *d* and base-flange *e*, substantially as and for the purpose set forth.

12. In an electric commutator, substantially such as set forth, a flaring and deflecting ring arranged between the segments and the base flange or hub, substantially as shown and described.

13. In an electric commutator, substantially such as set forth, the ring F, made of insulating material in a flaring form, arranged between the segments and the base flange or hub, substantially as shown and described.

14. In a commutator, the combination of the hub *a*, segments *d*, insulating-ring *e*, base-flange *c*, and guard-ring F, clamped between the segments *d* and ring *e*, substantially as shown and described.

384,817. ELECTRIC-ARC LAMP. JAMES J. WOOD, Brooklyn, N. Y. Filed Aug. 10, 1887. Serial No. 246,859. (No model.)



Claim.—1. In an electric-arc lamp, the combination, with a regulating-magnet and its armature and armature-lever, having a play in the connection between the lever and armature, of a contact on the armature and a contact on the lever, and a by-pass around the arc connected to and completed through said contacts, substantially as and for the purpose set forth.

2. In an electric-arc lamp, the combination, with the adjustable carbons and mechanism to adjust the same, of an electro-magnet in the circuit of the lamp, an armature actuated thereby interposed between the magnet and the regulating mechanism and connected with the same, with a limited play in the connection, contacts operated by said play, and a short circuit or by-pass around the arc which is completed through said contacts, substantially as and for the purpose set forth.

3. In an electric-arc lamp, the combination, with a main magnet in the arc-circuit and a minor magnet in a shunt to the arc, of an armature moving between and actuated by the two, regulating mechanism to control or adjust the carbons connected with said armature with a limited play in the connection, a movable contact on the armature and a second contact adjacent thereto, which contacts are opened or closed by the independent play of the armature, a by-pass or resistance-coil parallel to or around the arc completed through said contacts, whereby the main magnet will pull the armature on one side of its play, open the contacts and cut out the coil, cut in the lamp, separate the carbons, and form the arc, while the shunt-magnet will move the armature to the other side of its play, close the contacts, cut in the coil, and continue the current to the other lamps until the arc in the abnormal lamp is restored, substantially as herein shown and described.

4. In an electric-arc lamp, the combination, with movable or adjustable carbons, an electro-magnet in circuit with the carbons, an armature actuated thereby, an armature-lever for adjusting the carbons connected with said armature with an idle play in the connection, contacts operated by said play, an auxiliary conductor or resistance-coil parallel with or around the arc connected with and completed through said contacts, and a retracting-spring, such as *o*, which normally takes up the play between the armature and armature-lever and closes said contacts, substantially as herein set forth.

5. The combination, in an arc lamp, with mechanism to adjust the carbons, a magnet to control the regulating mechanism, an armature actuated thereby and connected to said mechanism with a limited play in the connection, contacts operated by said play, and an auxiliary conductor in a parallel path with the arc completed through said contacts, with a minor retracting device acting to retract the said armature directly to take up the said play and close said contacts, and a main retracting device connected with the regulating mechanism to move it in opposition to the main attraction of the magnet, substantially as herein shown and described.

6. In an electric-arc lamp, the combination, with a regulating-magnet, its armature actuated thereby, and an armature-lever therewith connected with a limited play in the connection, of a contact on the armature and a contact on the lever of opposite polarities, and a contact on the fixed frame of the same polarity as that on the armature, the lever-contact being adapted to make and break contact with the other two, with a short circuit or by-pass around the arc connected with the lever-contact and put into or out of circuit by the meeting or separation of said contacts, substantially as herein shown and described.

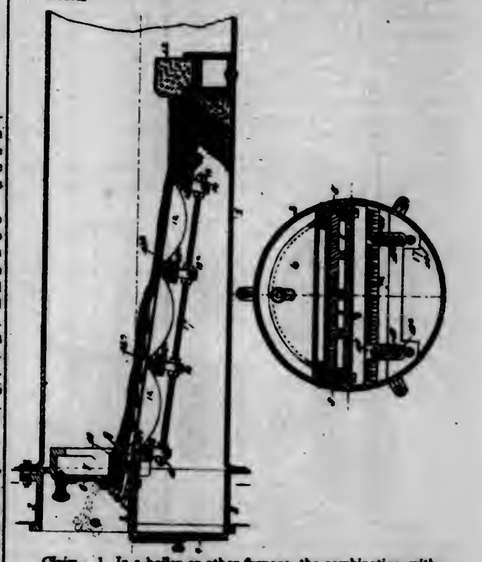
7. In an electric-arc lamp, a hand-switch having an elongated rotary spindle, with a resistance-coil wound over and mounted loosely upon the said spindle.

8. In an electric-arc lamp, the combination, with a hand-switch having an elongated rotary spindle extending vertically between the heads of the lamp-frame and journaled therein, of a fixed resistance-coil wound over and encircling the spindle between the heads, but unattached to or loose upon said spindle, substantially as herein shown and described.

9. In an electric lamp, the combination, with a switch-spindle, *y*, of a resistance-coil, K, mounted upon and loosely encircling the same, and interposing strips *s* of heat-proof insulating material, substantially as described.

10. In an electric lamp, in combination with a rack carbon-holder and a wheel-train meshing therewith, the adjustable crank or toggle-hub *n'* and connecting-link *m*, arranged and operating substantially as and for the purpose set forth.

384,818. SMOKE-CONSUMING FURNACE. RUDOLF ANNEMANN, Zurich, Switzerland. Filed Oct. 14, 1887. Serial No. 252,257. (No model.)



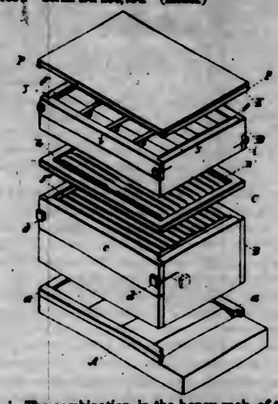
Claim.—1. In a boiler or other furnace, the combination, with a stationary inclined grate, of a front or feed chamber having longitudinal passages, pivoted valves for closing said passages, and sliding shovels or stoking-bars having elevations, ribs, or teeth and adapted to operate upon the grate through the valve-controlled passages, substantially as described.

2. In a boiler or other furnace, the combination, with the fire-chamber, of the front frame having a horizontal floor, the bridge-piece having longitudinal passages and valves, the feed-door, the inclined grate, and the sliding shovels or stoking-bars, substantially as described.

3. In a boiler or other furnace, the combination of a grate formed of the transverse bearer-bars carrying the grate-bars, and the longitudinal tie-rods passing through eyes formed on the bearer-bars and having nuts for firmly clamping all the parts together, substantially as described.

4. In a boiler or other furnace, the combination of the stationary inclined grate and the slag receiver or trough formed in the rear or bottom support thereof, with the fire and feed chambers, substantially as described.

384,819. BEE-HIVE. ELVIN S. ARMSTRONG, Jerseyville, Ill. Filed May 2, 1887. Serial No. 236,754. (Model.)

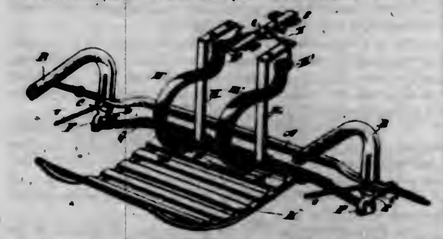


Claim.—1. The combination, in the honey-rack, of the side walls thereof, provided with flanges J, the angle-bars *f f'*, and cross-bars B, said angle-bars and cross-bars being secured in position by having their ends prolonged so as to project beneath the flanges J, all constructed substantially as and for the purpose set forth.

2. The combination, with the fixed ends and removable parts of the sides of the hive, of the fastenings *d*, consisting of flat pieces of metal provided with T-heads, as described, the flat parts or shanks thereof being pivotally secured in slits *e* in the ends or fixed walls of the hive and adapted to swing around horizontally into similar and corresponding slits in the removable parts of the walls, so as to clamp said parts securely in position, all constructed and adapted to operate substantially as and for the purpose specified.

3. The combination, with the brood-chamber having a portion of its front wall removable, and the brood-frames, of supporting angle-bars *f''*, secured to the lower part of the inner faces of the end walls of the brood-chamber, and removable angle-bars *f'''*, adapted to rest upon the ends of the top bars of the brood-frames and secured in position by a prolongation of the ends thereof fitting into cavities *g*, located in the upper part and near the ends of the removable portion of the side wall of the brood-chamber, the opposite or fixed side wall being provided with similar cavities for the reception of the opposite ends of said removable angle-bars, all constructed substantially as and for the purpose set forth.

384,820. ROAD-CART. CHARLES L. BARRETT, Allegan, Mich. Filed Feb. 17, 1888. Serial No. 264,417. (No model.)



Claim.—1. In a road-cart of the character described, the combination, with the axle, the thills rigidly secured to the axle, the couplings F, hung loosely to the under side of the axle by means of the rings E and the clips D, the latter being bolted firmly to the axle, the spring G, pivotally hung to the said couplings in line with the axle, and the foot-rest hinged to the spring and thills, of the seat-standards and seat, whereby the said axle and thills may oscillate without oscillating the spring G and the seat mounted upon the same, substantially as described.

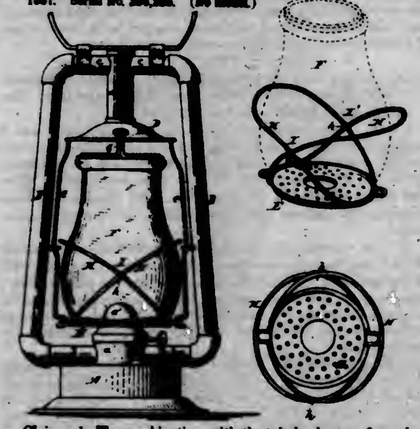
2. The combination, with the foot-rest and the ogee springs, of the spring-bail loosely connected to the ogee springs, the adjustable sliding bar beneath the seat, to which the bail is secured, and the adjusting-pin and seat, whereby the vehicle can be adapted and balanced to a light or heavy driver, substantially as specified.

3. The combination, with the spring loosely connected with the axle, of the loosely-connected foot-rest, the seat-supports, the ogee springs, and the seat, all arranged to operate substantially as specified.

4. The combination, with the spring loosely connected to the axle, of the foot-rest, the seat-supports and seat, and the ogee springs and adjustable bar, whereby the tension of the springs may be adjusted to adapt the seat to light or heavy weights, substantially as set forth.

5. The combination of the axle, the spring loosely hung thereto, so as to oscillate independently of it, the seat-standards and seat, and the ogee springs mounted on the foot-rest and adjustably attached to the bottom of the seat, substantially as described.

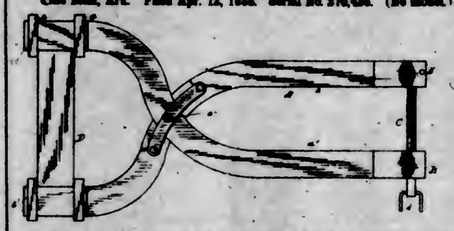
384,821. LANTERN-GUARD. LEWIS F. ROWE, New York, assignor of two-thirds to The R. E. Dietz Company, New York, and the Steam Gauge and Lantern Company, Rochester, N. Y. Filed Nov. 26, 1887. Serial No. 256,265. (No model.)



Claim.—1. The combination, with the tubular lantern-frame having its base provided with a burner, of a globe-supporting plate surrounding the burner, and a rigid guard secured to said plate, open at the top, and provided on the front side of the lantern-frame with a depression through which the globe can be inserted and removed, substantially as set forth.

2. The combination, with the tubular lantern-frame having its base provided with a burner, of a globe-supporting plate surrounding the burner, and rigid oblique guard-bows secured with their lower ends to said plate and having their raised portions arranged opposite the inner sides of the tubes, substantially as set forth.

384,822. TIRE SHRINKER AND EXPANDER. HENRY C. GADY, Cleo Mouf, Ark. Filed Apr. 12, 1888. Serial No. 270,426. (No model.)



Claim.—1. As an improvement in tire shrinkers or expanders, the lever-arms having the threaded rod connecting their ends, substantially as shown and described.

2. The lever-arms having the grooves in their ends, and the threaded rod having a collar and working in a nut in one of said grooves, substantially as shown and described.

3. The lever-arms having the tire secured to their forward ends by links and wedges, and the threaded rod working in the other ends of said lever-arms, substantially as shown and described.

4. The herein-described improved tire shrinker and expander, comprising the lever-arms having the grooved ends, the links and wedges, the threaded rod having the circular collar, and the nut secured in one of said grooved ends, substantially as shown and described.

384,823. LIQUID EXTRACT OF MEAT. STEPHEN M. CAPUTE, Middle Brighton, near Melbourne, Victoria. Filed Mar. 29, 1888. Serial No. 268,991. (No specimens.)

Claim.—As a new article of manufacture, a liquid extract of meat compound consisting of a combination of the raw juices of lean meat with glycerine, to which may be added chloride of sodium or the other ingredients mentioned, neither said compound nor its ingredients being either concentrated or subjected to any degree of heat whatever, substantially as herein described and explained.

384,824. BOTTLE-STOPPER. WILLIAM A. CASWELL, Chicago, Ill. Filed Feb. 20, 1888. Serial No. 264,562. (No model.)



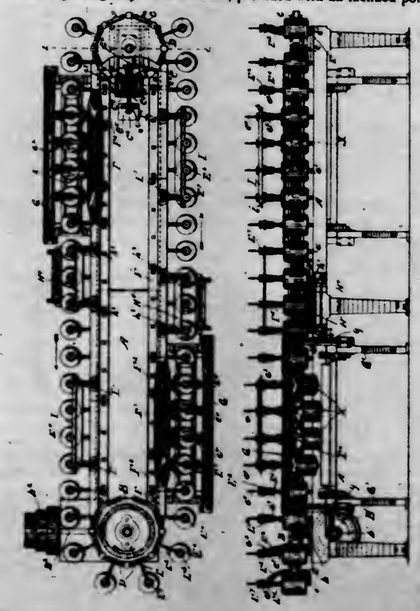
Claim.—The combination, with the bottle having lips *c* and the cork or stopper B, of a metal retaining-plate cut from sheet metal and having one or more ribs or projections stamped in its body portion and furnished with points *c*, substantially as specified.

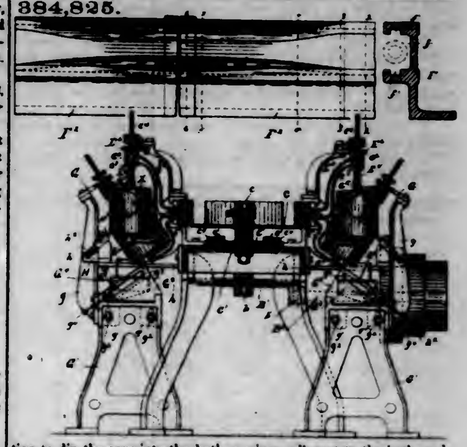
384,825. CAN-SOLDERING MACHINE. ARNOLD D. COLEMAN, Chicago, Ill., assignor of one-half to Michael Cudahy, same place. Filed Dec. 17, 1887. Serial No. 258,250. (No model.)

Claim.—1. In a can-soldering machine, the combination, with a solder bath, of a carrying-chain composed of links connected by swivel-joints and provided with revoluble clamping-chucks to clamp the cans endwise, and a guiding-way for the said chain, provided with an inclined section adjacent to the solder bath to tilt the cans and cause the same to dip into the bath, substantially as and for the purposes specified.

2. In a can-soldering machine, the combination, with a solder bath, of a carrying-chain composed of links connected by swivel-joints and provided with revoluble chucks for clamping the cans endwise, a guiding-way for said chain, provided with an inclined portion to tilt the cans into the bath, and means for revolving the said chucks during their passage along the inclined portion, substantially as and for the purposes specified.

3. In a can-soldering machine, the combination, with a solder bath, of a carrying-chain the links of which are connected by swivel-joints and are provided with revoluble chucks for clamping the cans endwise, a guiding-way for said chain, provided with an inclined portion to dip the cans into the bath, a wiper adjacent to the bath, and means for revolving the chucks and the cans therein while passing the bath and the wiper, substantially as and for the purposes specified.





4. In a can-soldering machine, the combination, with a carrying-chain composed of swiveling links provided with revolable chucks having separable clamping-disks, of a solder bath, a guiding-way for the chain, having an inclined portion to dip the cans in the bath, means for revolving the cans while dipped, and a stationary cam for separating the clamping-disks, substantially as and for the purposes specified.

5. In a can-soldering machine, the combination, with a suitable table or frame having a sprocket-wheel at each end, of a carrying-chain composed of swiveling links, each provided with a revoluble can-holding chuck, guiding-ways on each side of said table, provided with inclined portions for tilting the cans, a solder bath adjacent to each inclined portion, a wiper adjacent to each solder bath, and means for revolving the cans while passing the baths and wipers, substantially as and for the purposes specified.

6. In a can-soldering machine, the combination, with the solder baths, the endless carrying-chain provided with laterally-projecting can-holding chucks, and suitable guiding-ways in which said chain travels, of the sprocket-wheels around which said chain passes, one of said sprocket-wheels being provided with an automatic tension device to keep the chain stretched and upright, substantially as and for the purposes specified.

7. In a can-soldering machine, the combination, with the endless carrying-chain D, provided with can-holders, of the sprocket-wheels B and C, the latter mounted in a slide, C', the spring C^3, bearing against said slide at one end, and an adjustable abutment for the other end of said spring, substantially as and for the purposes specified.

8. In a can-soldering machine, the combination, with the carrying-chain composed of flat body-links provided with can-holders and having projecting lugs *d*, of the guiding-way F, having open groove *f*, with extensions *f'*, to receive the said lugs, substantially as and for the purposes specified.

9. In a can-soldering machine, the combination, with the carrying-chain provided with can-holders and having swiveling joints, of the guiding-way consisting of a straight portion, F, and inclined portion F^2, with intermediate connecting portions, F^3, of gradual curvature, substantially as and for the purposes specified.

10. In a can-soldering machine, the combination, with the guiding-way provided with an inclined portion, of the carrying-chain composed of main links *D'*, provided with can-holders, and intermediate swiveling links, D^2, connecting the main links, substantially as and for the purposes specified.

11. In a can-soldering machine, the combination, with the guiding-way, of the carrying-chain composed of main links *D'*, provided with can-holders, and the intermediate swiveling links pivoted thereto and each consisting of a cylindrical socket-piece, d^2, a grooved head, d^3, and a pin or key, d^4, connecting the two, substantially as and for the purposes specified.

12. The combination, with the guiding-way, of the link *D'*, the bracket E, having arms E' and E^2, the disk E^3, mounted in the former, the revolving sleeve e^3, mounted in the latter and provided with pinion E^4, the rod e^4, splined in the sleeve e^3 and carrying the clamping-disk E^5, the spring E^6, the collar E^7, and a suitable rack and camway with which said pinion and collar respectively engage, substantially as and for the purposes specified.

13. The combination, with the carrying-chain and its revolving chucks, each provided with a pinion, of the guiding-way for said chain, provided with an inclined portion, the solder bath arranged adjacent thereto, and a fixed rack, G, with which the said pinions engage when the chucks are inclined, substantially as and for the purposes specified.

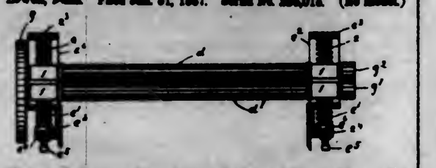
14. The combination, with the fixed wiper, of the rack H^4, adjacent thereto, the carrying-chain provided with revolable chucks, and pinions on said chucks to engage the said rack, substantially as and for the purposes specified.

15. In a can-soldering machine, the combination, with the endless carrying-chain and its can-holding chucks, of a solder bath and inclined ways upon which said bath is mounted, said bath being adjustable on said ways to vary its relation to the ways both vertically and laterally, substantially as and for the purposes specified.

16. The combination, with the uprights G', of the vertically-adjustable end supports, G^2, having inclined slots g^2, the table G^4, carrying the solder bath G^5 and provided with tongues G^6, entering the said inclined slots, and the adjusting-screws g^4, substantially as and for the purposes specified.

17. In a can-soldering machine, the combination, with the inclined ways H, of the oil-reservoir H', mounted and adjustable thereon, and the wiper H^3, consisting of a strip of felt or other absorbent material, extending upward and inward through a suitable slot in said oil-reservoir, substantially as and for the purposes specified.

384,826. MACHINE FOR OPENING COTTON. HENRY A. DAVIS, Lowell, Mass. Filed Jan. 31, 1887. Serial No. 226,012. (No model.)

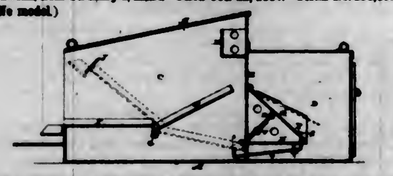


Claim.—1. In a machine for beating or opening cotton or other fibrous material, the combination, with a rotary beater, of a pair of feed-rolls and means for pressing each roll of the pair upon the material interposed between the said rolls, said means being elastic retaining devices whereby the feed-rolls are adapted to yield when said material is struck by the beater, substantially as described.

2. In a machine for beating or opening fibrous materials, the combination, with a beater and pair of feed-rolls, of elastic supporting devices for the purpose of enabling the said rolls to yield in the direction of the blows struck by the said beater, as and for the purpose specified.

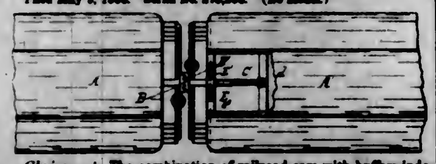
3. In a picker or opener for fibrous materials, the combination, with the feed-rolls *d d'*, provided with vertically-sliding bearings *f f*, of elastic retaining devices *e e'* above and below the said bearings, substantially as herein set forth, for the purpose specified.

384,827. ANIMAL-TRAP. WILLIAM DEVORLD and WILLIAM C. DEVORLD, near St. Mary's, Kans. Filed Oct. 22, 1887. Serial No. 253,156. (No model.)



Claim.—The combination of the frame A, divided by the partition B into the two chambers C D, with the pivoted platform F, the platform N, the inclined door Q, having the rod T secured to its under side, and the rod O, having its two ends bent at an angle, and which is caused to partially revolve by the movement of the door Q, substantially as shown and described.

384,828. RAILROAD-CAR. THOMAS S. B. DUNN, Hyde Park, Ill. Filed May 9, 1888. Serial No. 273,506. (No model.)



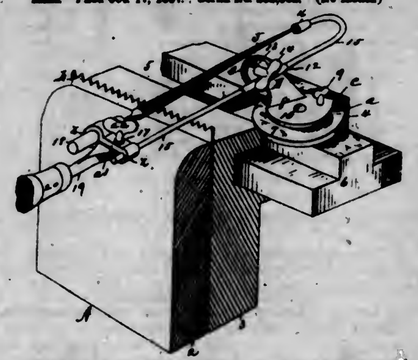
Claim.—1. The combination of railroad-cars with buffers independent of the draw-bar, adapted to automatically lock with and unlock from each other, provided with springs for moving them longitudinally to maintain their engagement, and bodily movable laterally in both directions against an opposing spring force, substantially as described.

2. The combination of railroad-cars with buffers arranged at or near the top of the cars, adapted to automatically lock with and unlock from each other, provided with springs for moving them longitudinally to maintain their engagement, and bodily movable laterally in both directions against an opposing spring force, substantially as described.

3. In a railroad-car, the combination of a buffer movable laterally in both directions from its normal position with two springs exerting their force upon it in opposite directions to resist such movement, and with stops to limit the motion of said springs, substantially as described.

4. In a railroad-car, the combination of a laterally-movable buffer, a spring adapted to resist the lateral movement of the buffer in one direction from its normal position, and a stop adapted to prevent said spring from exerting its force against the buffer when the latter is moving in the other direction from its normal position, substantially as described.

384,829. SAW-FILING DEVICE. EDWIN D. EATON, Springfield, Mass. Filed Oct. 17, 1887. Serial No. 252,582. (No model.)



Claim.—1. A saw-filing machine consisting of a saw-clamp, A, having a longitudinal groove, 5, therein, a block, 6, capable of a free sliding movement in said groove, a file-holder consisting of the frame 15, having a socket on one end to receive the tip of the file, a file-shank receiver, 18, a clamp, 17, having a handle thereon holding said receiver and capable of attachment to and of longitudinal adjustment on said frame, a swivel-stand, 8, pivotally connected to said block, and a swivel, 12, pivotally attached to said stand, in which said frame has a free longitudinal movement, substantially as set forth.

2. In combination, the frame 15, having a socket on one end to receive the tip of the file, the file-shank receiver 18, and the clamp 17, holding said receiver, having a handle thereon and capable of attachment to and of longitudinal adjustment on said frame, substantially as set forth.

3. The swivel-stand 8, the swivel 12, having the flange 13, and the screw 14, combined with the frame 15, having a free longitudinal movement in said swivel, and a socket, 16, thereon to receive the tip of the file, the file-shank receiver 18, and the clamp 17, holding said receiver, having a handle thereon and capable of attachment to and of longitudinal adjustment on said frame, substantially as set forth.

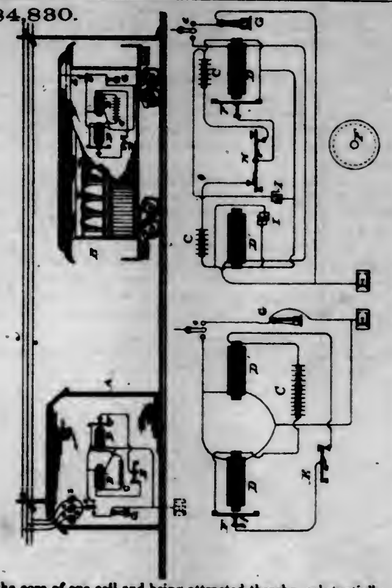
384,830. RAILWAY SIGNALING. THOMAS A. EDISON, Llewellyn Park, N. J., and ERIA T. GILLILAND, New York, N. Y. Filed Nov. 30, 1886. Serial No. 220,115. (No model.)

Claim.—1. In transmitting apparatus for induction railway signaling, the combination, with two or more induction-coils having their secondary circuits connected to line, of a battery, a key, and a vibrator, all located in the primary circuits of the two or more induction-coils, substantially as set forth.

2. In transmitting apparatus for induction railway signaling, the combination, with an induction-coil having its secondary circuit connected to line, of a battery, a key in the primary circuit of such induction-coil, and a diaphragm-vibrator also located in such primary circuit, the diaphragm being located near the end of the core of the induction-coil and being attracted thereby, substantially as set forth.

3. In transmitting apparatus for induction railway signaling, the combination, with two or more induction-coils having their secondary circuits connected to line, of a battery, and a key in the primary circuits of such induction-coils, and a diaphragm-vibrator also located in the primary circuits of both coils, the diaphragm being located oppo-

384,830.



site the core of one coil and being attracted thereby, substantially as set forth.

4. In transmitting apparatus for induction railway signaling, the combination, with the transmitting battery and key, of a diaphragm-vibrator in circuit therewith, substantially as set forth.

384,831. ELEVATOR-ALARM. JOHN BUNS, Jacksonville, Fla. Filed Dec. 13, 1887. Serial No. 257,670. (No model.)

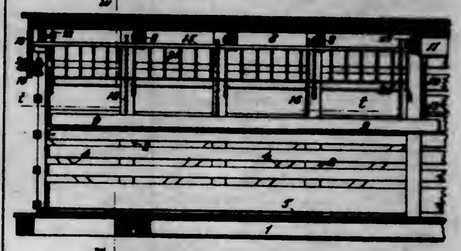


Claim.—1. The combination, with an elevator-car, of an alarm secured thereto, a shaft for operating said alarm, a friction-wheel on said shaft, and a cord extending throughout the extent of the travel of the elevator-car and engaging with said friction-wheel, as set forth.

2. The combination, with the elevator-car, of an alarm secured thereto, a friction-wheel for operating said alarm, and a cord rove on said wheel and stretched vertically in the elevator-shaft, substantially as set forth.

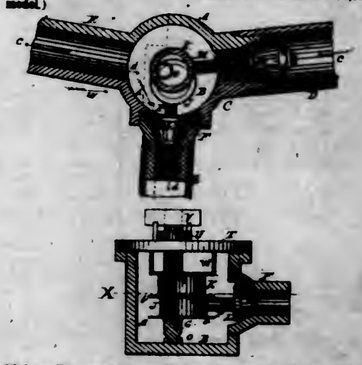
3. The combination, with the elevator-car, of a rotatable shaft journaled thereto, a ball on said shaft, a friction-wheel journaled loosely on said shaft, a perpendicular cord with which said wheel engages, and a pawl and ratchet secured to said shaft and wheel, respectively, whereby the shaft is revolved in one direction only, substantially as set forth.

384,832. STOCK-CAR. JAMES P. BLISS, Philadelphia, Pa. Filed Feb. 7, 1888. Serial No. 263,207. (No model.)



Claim.—The combination, with a railroad-car, of side rails or boarding secured to the outside of its body-posts above its girths, and a vertically-movable trough fitted to traverse adjacent to said side rails and having its side adjoining the same recessed to embrace the posts, so that the trough may project into and be raised and lowered within the spaces between the same, substantially as set forth.

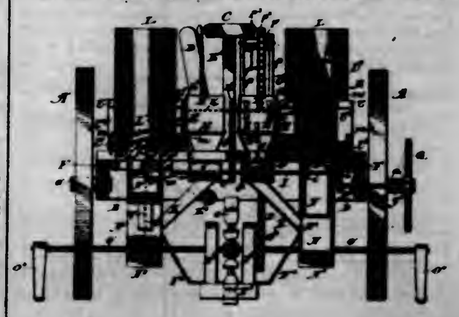
384,833. SUPPLY-CHECK AND WASTE-PIPE VALVE. JOHN FARLEIGH, Austin, Ill. Filed Nov. 29, 1887. Serial No. 256,574. (No model.)



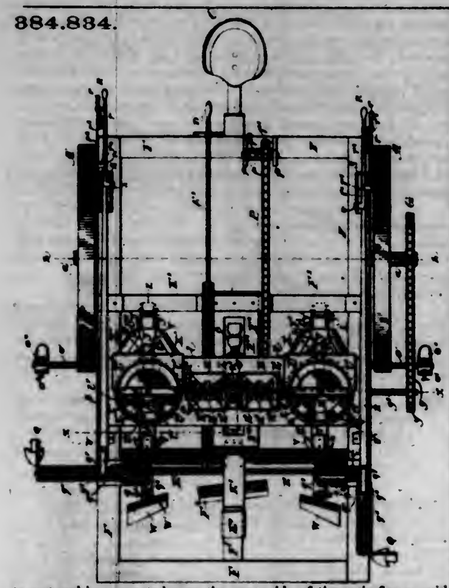
Claim.—The vertical post G, provided with the cams H I, in combination with the case A B T and horizontal pipes C E F, the annular straps J K, surrounding the cams and valves L Q, connected by rigid stems M P, the cup-plate W, and separating-plates *a b*, as and for the purpose specified.

384,834. CORN-PLANTER. JOSEPH FISHER, Frederick, Md., assignor of one-half to Abraham S. Bohn, same place. Filed Dec. 22, 1886. Serial No. 222,414. (No model.)

Claim.—1. In a corn-planter, the combination, with a main frame mounted upon supporting-wheels, of a movable frame of such size as



384,834.



to rest and be supported upon the upper side of the main frame, said movable frame being hinged at its rear end to the rear upper side of the main frame to allow its forward end a limited upward movement, a lever connected to the free forward end of the movable frame and extending rearwardly beneath the frames to the rear ends of the same within easy reach of the driver's seat, whereby the movable frame is raised and lowered, and a rack whereby the frame can be held at the desired adjustment, substantially as described.

2. In a corn-planter, the combination, with a main frame mounted upon supporting-wheels, of a movable frame normally resting upon the upper side of the main frame and pivotally secured to the same at its rear portion to allow its forward free end a limited upward movement from said frame, seed distributing and dropping mechanism carried by the movable frame and thrown in and out of gear with the driving-power by the movement of said frame, a rock-shaft transversely journaled in the main frame beneath the free end of the movable frame and connected with the movable frame at its free end, a lever connected with the rock-shaft and extending to the rear of the main frame, whereby the movable frame is operated, and means for holding said lever, and hence the movable frame, in the desired position, substantially as described.

3. The combination, with a main frame mounted upon supporting-wheels, of a movable frame pivoted to and supported upon the upper side of the main frame, seed-distributing mechanism actuated by one of the supporting-wheels, dropping-spouts in communication with the same, fertilizer-distributing mechanism connected with said dropping-spouts, a horizontal shaft, a ground-wheel to actuate the same, and hill-markers mounted upon said shaft, said seed and fertilizer distributing mechanism and the horizontal shaft being supported and carried by the movable frame, substantially as described.

4. In combination, a main frame, a movable frame hinged at its rear portion upon the same and supporting the seed distributing and dropping mechanism, a rock-shaft journaled in the main frame, tongues secured to the rock-shaft and to the movable frame, a sleeve loosely connecting said tongues, an operating-lever secured to the rock-shaft, and a rack for engaging the operating-lever and holding the movable frame in the desired adjustment, substantially as described.

5. The combination, with a frame and the seed-dropping mechanism of a planter, of a marker pivoted to said frame in vertical and horizontal adjustment and an operating-lever whereby the marker can be thrown upwardly and horizontally out of engagement with the ground, substantially as specified.

6. The combination, with a frame and seed-dropping mechanism of a planter, of changeable row-markers upon opposite sides of said frame, said markers being connected with the frame in vertical and horizontal adjustment, and levers pivoted to said markers, whereby the same can be held in or out of engagement with the ground, substantially as described.

7. The combination, with a frame and the seed-dropping mechanism of a planter, of a horizontal spindle or roller journaled on said frame, a marker hinged to the outer end of said roller, and an operating-lever pivoted to said marker, whereby the same can be held in or out of engagement with the ground, substantially as specified.

8. The combination, with a frame and the seed-dropping mechanism of a planter, of rollers or spindles journaled in horizontal bearings on the frame, outwardly-extending arms hinged to the outer ends of said rollers to have a limited horizontal swing, downwardly-extending arms carrying shovel-blades upon their lower ends, and marker-operating levers pivoted to said outwardly-extending arms, substantially as specified.

9. The combination, with a frame and seed-dropping mechanism, of a marker hinged to a horizontal roller journaled on said frame, an operating-lever pivoted to said row-marker, a hand-lever and locking-lever pivoted to said operating-lever, and a holding-plate secured to the frame and provided with apertures to receive said locking-lever, whereby the marker can be thrown in or out of engagement with the ground and held in the desired adjustment, substantially as specified.

10. The herein-described row-marker, consisting of a roller or spindle journaled in a horizontal bearing or socket in an upright post and provided with a stop upon its inner end, an outwardly-extending arm hinged to the outer end of said arm to swing horizontally, a downwardly-extending arm secured to the free end of said outwardly-extending arm and provided on its lower end with a shovel-blade, an operating-lever, a link pivotally connecting an end of said lever with the inner end of said outwardly-extending arm, a locking-lever and hand-lever pivoted to the handle portion of said operating-lever, and a holding-plate provided with apertures to receive said locking-lever, substantially as set forth.

11. The combination, with the main-frame-supporting wheels and a secondary shaft journaled in said frame and driven by one of the supporting-wheels, the shaft being provided with a gear-wheel, of a movable frame supported upon and pivoted to the main frame, seed and fertilizer distributing mechanisms carried by the movable frame, a shaft journaled in the movable frame and provided with gearing to drive said mechanisms, a gear-wheel upon said shaft to normally mesh with the gear-wheel upon the secondary shaft, and a lever whereby the movable frame can be raised or lowered and the shafts journaled in the frames be thrown in and out of gear with each other, substantially as described.

12. In a corn-planter, the combination, with a main frame, a movable frame supported by the same, and the dropping mechanism, of a runner secured at its upper end to the center forward portion of the movable frame, a brace secured to the movable frame at its ends and bent downward at its center, to which the rear end of the runner is secured, a horizontal shaft journaled in bearings upon the runner, a ground-wheel centrally mounted upon said shaft and adapted to rotate the same, lugs upon said shaft to operate the dropping mechanism, and hill-markers adjustably secured to the outer ends of the shaft, substantially as described.

13. In a corn-planter, the combination, with a main frame and a movable frame supported by the same, of a runner secured at its upper end to the forward central portion of the movable frame and curving downwardly and rearwardly from the same, a downwardly-bent brace secured to the movable frame at its upper end and to the rear end of the runner at its lower central portion, a curved scraper secured across the forward portion of the runner in an oblique position, a horizontal shaft journaled in bearings on the runner, a ground-wheel mounted upon and actuating said shaft, and the seed-dropping valves actuated by said horizontal shaft, substantially as described.

14. In a corn-planter, the combination, with a frame, of the seed-distributing mechanism, the dropping-spouts, spring-actuated dropping-valves provided with laterally-extending lugs and normally closing the lower ends of said spouts, a runner provided with a longitudinal opening, a horizontal shaft carried by the runner, a ground-wheel secured to the horizontal shaft and engaging the ground through the opening in the runner, lugs carried by and revolving with said shaft and adapted to engage the lugs upon the dropping-valves and operate the valves, and hill-markers rotating with said shaft, substantially as described.

15. In a corn-planter, a supporting-frame, a horizontal shaft, a ground-wheel secured to and driving the same, valve-opening lugs, and revolving hill-markers carried by said shaft, in combination with a sprocket-wheel secured to said shaft, an upright frame secured to the supporting-frame near the driver's seat, a horizontal shaft journaled in the upper portion of said upright frame, a sprocket-wheel mounted upon said shaft, a sprocket-chain connecting said two sprocket-wheels, and hand-levers carried by the shaft in the upright frame, substantially as described.

16. The combination, with a seed-dropping spout, of a coverer-standard carving outwardly and downwardly, laterally-extending lugs or arms upon the lower portion of said standard, and curved coverer-blades adjustably secured at their rear portions to said lugs in an oblique position, substantially as described.

17. The combination, with a seed-spout, of a coverer-standard

secured to the same and extending rearwardly and downwardly, and provided with a laterally-extending arm upon each side of its lower portion, a pair of curved coverer-blades, each blade being adjustably secured at its rear upper edge to one of said arms in an oblique position, screws to adjustably secure the coverer-blades to said arms, and a roller journaled in the lower end of the standard, substantially as described.

18. In a planter, a seed-dropping tube, in combination with a vertically-adjustable standard secured to and extending forwardly from said tube, an opener-blade, and a curved scraper carried by said standard in front of the seed-tube, a coverer-standard secured to and extending rearwardly from said tube, and coverer-blades carried by said coverer-standard, substantially as described.

19. Furrow-opener standards carrying opener-blades on their lower ends, in combination with scraper-standards secured to said opener-standards and extending forwardly from the same, and curved scrapers secured to the forward ends of said scraper-standards in an oblique position, substantially as specified.

20. In a corn-planter, the combination, with a frame, of a cylindrical seed-distributing box, a horizontally-rotating seed-conveying plate closing the bottom of said seed-box, a cylinder secured to the upper side of said plate and extending upwardly into the interior of the seed-box, said cylinder being adapted to partially close the lower portion of the seed-box and leave a narrow vertical space between its outer periphery and one side of said box for the passage of seed to the seed-plate, whereby the seed is delivered to the pockets of the seed-plate in an upright position, and downwardly-extending stirrers carried by the upper end of said cylinder, substantially as described.

21. In a corn-planter, the combination, with a supporting-frame and a cross-frame carried by the same, of seed-boxes carried upon the upper side of the cross-frame, seed-dropping spouts in communication with the seed-boxes and depending from the cross-frame below the same, spring-actuated dropping doors or valves normally closing the open bottoms of the spouts, means for intermittently opening said valves, fertiliser-boxes carried upon the upper surface of the cross-frame between the seed-boxes, said cross-frame being provided with openings at the bottoms of the fertiliser-boxes, a horizontal shaft journaled beneath the cross-frame, conveying rollers mounted upon said shaft at the open bottoms of the fertiliser-boxes, a cover or sheath surrounding each roller, and spouts or conduits leading from said covers to the interior of the dropping-spouts above the dropping doors or valves, substantially as described.

22. In a corn-planter, the combination, with a seed-box having a portion of its lower part cut away, of a horizontal plate provided with seed-pockets and revolving in and closing the bottom of said box, a vertical cylinder revolving with said plate and extending upwardly into the box above the cut-away portion, said cylinder being adapted to close the cut-away portion of the box, but leave a vertical space between its periphery and the inner wall of the box opposite the cut-away portion for the passage of seed to the pockets of the rotary plate, whereby the seed is delivered from the seed-box to the seed-pockets of the rotary plate in an upright position, and gearing to drive said plate and cylinder, substantially as described.

23. In a corn-planter, the combination, with a seed-box having a portion of its lower part cut away and horizontal and upright pieces partially closing said cut-away portion, of a horizontal plate provided with seed-pockets and revolving in and closing the bottom of said box, a vertical cylinder provided with a cone-shaped top and revolving with said plate and extending upwardly into the interior of the box, said cylinder being adapted to close the cut-away portion of the box between the horizontal and upright pieces, but leave a space between its periphery and the inner face of the seed-box opposite the cut-away portion for the passage of seed to the pockets of the rotary plate, one or more laterally and downwardly extending stirrers within the seed-box upon the cone-shaped top of the cylinder, and gearing to drive said plate and cylinder, substantially as described.

24. In a corn-planter, the combination of a supporting-frame, a cross-frame, a seed-box carried by the cross-frame, a seed-plate provided with seed-pockets and revolving in and closing the bottom of the seed-box, a seed-discharging chamber extending through the cross-frame and with which the seed-pockets register as the seed-plate revolves, a valve pivoted to the cross-frame and normally closing the bottom of said chamber, said valve being operated by the seed-plate to discharge the seed from said chamber when the desired number of seed has been delivered into the same, a dropping-spout into which the seed from said chamber are adapted to fall, and a dropping-valve normally closing the lower end of said spout, substantially as described.

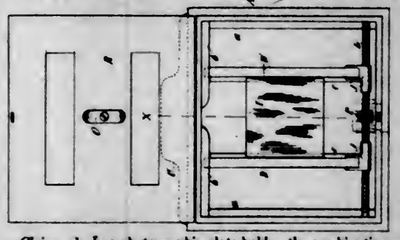
25. In a corn-planter, the combination of a supporting-frame, a cross-frame, a seed-box carried by the cross-frame, a rotary seed-counting plate revolving in and closing the bottom of said box and provided with seed-conveying pockets, a seed-discharging chamber with which said pockets register as the plate revolves, a spring-actuated valve pivoted to the cross-frame and provided with an arm to normally close the bottom of said discharge-chamber and with another arm extending over the face of the rotary plate, one or more lugs extending from the upper face of the plate and adapted to operate said valve to discharge seed from the chamber when the desired number of seed has been received into the same, and a dropping-spout into which the seed from said chamber pass, substantially as described.

26. In a corn-planter, a seed-box, a rotary seed-counting plate provided with seed-conveying pockets, a discharge-chamber provided with a valve, a dropping spout or tube provided with a spring-actuated dropping valve, and a seed-discharge funnel pivoted within said spout or tube beneath the discharge-chamber, substantially as described.

27. In a corn-planter, a seed-box, a rotary seed counting and conveying plate, a dropping tube or spout, a dropping-valve to close the bottom of said tube, and a discharge-funnel pivoted in the upper part of said tube or spout, whereby seed cannot be delivered into the dropping spout or tube until the dropping-valve has been opened and a hill dropped, as described.

28. In a corn-planter, a seed-box, a rotary plate, a dropping spout or tube, a dropping-valve closing the bottom of the same, a discharge-funnel pivoted in said spout or tube, a catch-lever connected with said pivoted funnel and operated by the rotary plate, a trip-lever connected with said dropping-valve, and a spring-catch, for the purpose set forth.

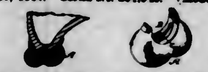
384,835. PHOTOGRAPHIC-PLATE HOLDER. MATHIAS PLAMBECK, Newark, N. J., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Sept. 23, 1886. Serial No. 214,283. (No model.)



Claim.—1. In a photographic-plate holder, the combination, with a frame, of movable jaws, a right-hand screw, a left-hand screw, a hand-piece between said screws for rotating the same, and nuts on the movable jaws having elongated bearings on the screws, substantially as and for the purpose specified.

2. In a photographic-plate holder, the combination, with a frame, of movable jaws, a right-hand screw, a left-hand screw, a bearing between said screws, a hand-piece, also between said screws, and nuts on the movable jaws having elongated bearings on the screws, substantially as and for the purpose specified.

384,836. ARTIFICIAL TOOTH. EDWARD A. FLOYD, Paola, Kans. Filed Mar. 19, 1887. Serial No. 231,549. (Model.)



Claim.—The combination, with the dental plate, of an artificial tooth, A, having a transverse groove, B, extending across its inner end, so that the ends or prongs of the grooved portions of the tooth will fit snugly against the opposite sides of the ridge of the plate, the sides of said tooth being open, and the flat-headed pin C, secured to the tooth in the bottom of the groove and projecting upward a suitable distance beyond the groove, so as to act as a stop for the tooth and to form a space between the tooth and the model, into which the soft hot rubber is swaged, substantially as shown and described.

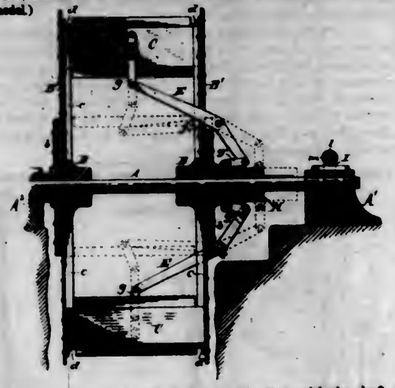
384,837. FURNITURE-CASTER. WILLIAM R. GARD, Meriden, Conn. Filed Feb. 25, 1888. Serial No. 265,296. (No model.)



Claim.—1. In a furniture-caster, the combination, with the pintle having a knob at its inner end, of the combined socket and ferrule made in a single piece and provided with a detaining-spring, as set forth.

2. In combination, the pintle, and the combined socket and ferrule struck up from a single piece of metal, as set forth.

384,838. WATER-WHEEL. ADAM GEORGE and WILLIAM KLEINHANS, Buffalo, N. Y. Filed Jan. 30, 1888. Serial No. 262,221. (No model.)



Claim.—1. In a water-wheel, the combination, with the shaft A and the two annular plates or disks B, provided with radial guides or ways c, of the radially-movable paddles or floats C, arranged between said disks and sliding in the ways c, the shifting collar or sleeve H, mounted on the shaft A, and the actuating-levers E, connecting said paddles or floats with the shifting sleeve H, substantially as set forth.

2. In a water-wheel, the combination, with the shaft A and the two annular plates or rings B' B', provided with radial guides or ways c, of the radially-movable paddles or floats C, arranged in said ways between the plates B' B', the shifting sleeve H, sliding on the shaft A, actuating-levers E, connecting the paddles C with the shifting sleeve H, and a feed screw or screws, whereby said shifting sleeve is actuated, substantially as set forth.

3. The combination, with a water-wheel, its supporting-shaft, and the frame A', of radially-movable paddles or floats C, a shifting sleeve, H, having arms *h h*, actuating-levers E, feed-screws J J, secured with their inner ends to said arms, worm-wheels I I, mounted in the frame A', and having hubs provided with screw-threaded openings, in which the feed-screws J work, worms *l l*, meshing with said worm-wheels, and a horizontal shaft, *m*, upon which said worms are mounted, and provided with a hand-wheel, *m'*, substantially as set forth.

4. In a water-wheel, the combination, with the hubs B B and disks B' B', secured to said hubs, of radial guides *c*, secured to said hubs and disks, and each composed of two parallel angle-irons, and movable paddles or floats C, arranged in said guides between the disks B' B', substantially as set forth.

5. In a water-wheel, the combination, with the hubs B B and disks B' B', secured to said hubs, of radial guides *c*, secured to said hubs and disks and each composed of two parallel angle-irons, and an annular flange or angle-iron, *d*, secured to the inner sides of said disks at the outer ends of said guides or ways, and movable paddles or floats C, arranged in said guides between the disks B' B', substantially as set forth.

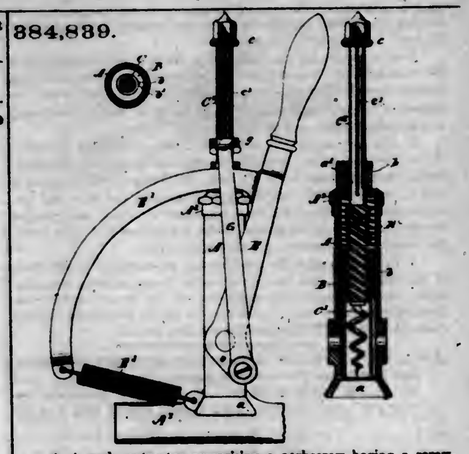
384,839. CORK-EXTRACTOR. RAYMOND B. GLADDING, Peoria, Ill. Filed Jan. 5, 1886. Serial No. 208,223. (No model.)

Claim.—1. A cork-extractor comprising a corkscrew having a screw-threaded extension, a sliding nut engaging the threads on the extension, a rack gearing with a pinion on the corkscrew, and an operating-lever acting during a portion of its throw to raise the corkscrew, substantially as described.

2. A cork-extractor comprising a corkscrew having a screw-threaded extension having the slot, a sliding nut engaging the threads on the extension, a rack, a pinion interposed between the extension and the rack and having a spline entering the slot in the extension, and an operating-lever acting during a portion of its movement to raise the corkscrew, substantially as described.

3. A cork-extractor comprising a corkscrew having a screw-threaded extension, a nut engaging the threads on the extension, a rack operating upon the extension for imparting rotary motion to the corkscrew, an operating-lever having the projection, and the lifting-arm connected to the said projection and to the corkscrew, substantially as described.

384,839. (Second figure)

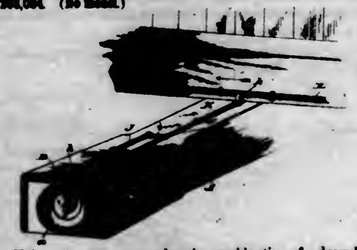


4. A cork-extractor comprising a corkscrew having a screw-threaded extension, a screw-threaded portion engaging the extension, a rack operating upon the extension for imparting motion to the corkscrew, an operating-lever having the projection, the raising-arm connected to the said projection and to the extension of the corkscrew, and the spring connected to the rack and to the base of the extractor, substantially as described.

5. In cork-extractors, the combination of a suitable cylinder, a nut perpendicularly movable therein, an axially and perpendicularly movable screw operatively set within said nut, provided at one end with a corkscrew and at its other end with an extension or stem, a pinion located upon said stem, an operating-lever pivotally held to said cylinder, a rack carried by said lever, which meshes with said pinion, operative to impart rotary motion to said pinion and therethrough to actuate said corkscrew, and a lifting-arm connected with said lever and stem, adapted through the action of said lever to perpendicularly move said corkscrew, all arranged and adapted to be operated substantially as herein described.

6. In cork-extractors, the combination of a suitable cylinder, a nut perpendicularly movable therein, a corkscrew carried fixedly by a screw set in said nut and susceptible of longitudinal and rotary motion therein, a spring within said cylinder interposed between the cap thereof and said nut, operative to exert a tensional strain perpendicularly upon said nut, a pinion carried by an extension or stem of said screw, which is free to move longitudinally therethrough and operative to be rotated thereby, a lever pivoted to said cylinder, a rack carried by said lever, which meshes with said pinion, adapted through the to and fro movements, respectively, of said lever to actuate said corkscrew through its forward and reverse longitudinal and rotary movements, and a lifting-arm connected with said lever and screw-stem, adapted through the action of said lever to move said corkscrew longitudinally, all arranged and adapted to be operated substantially as set forth.

384,840. CAR-COUPLING. EDWARD M. HAMILTON and JOHN O. HAMILTON, Russell's Place, Ohio. Filed Mar. 22, 1888. Serial No. 268,094. (No model.)



Claim.—1. In a car-coupler, the combination of a draw-head having a longitudinal aperture therein and a top transverse slot merging into said aperture, two laterally-movable coupling-blocks mounted in said aperture in the draw-head and having spring-encircled stems removably attached to the outer sides thereof and projecting through the sides of the draw-head and recessed in the rear and top sides, the sliding blocks, the operating-levers connected to said sliding blocks, and

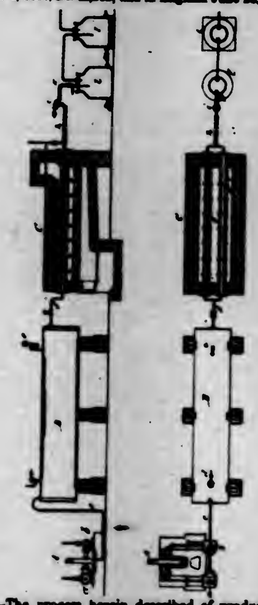
the link whose head engages with the rear recesses in the coupling-blocks.

2. In a car-coupler, the combination, substantially as described, of the draw-head, the laterally-movable spring-actuated coupling-blocks having recesses in the top thereof, sliding blocks mounted in said top recesses of the coupling-blocks, the operating levers and rods connected to said sliding blocks, and the coupling-link.

3. In a car-coupler, the combination, substantially as described, of the draw-head, the laterally-movable spring-actuated coupling-blocks having recesses in the top sides, the sliding blocks mounted in said top recesses of the coupling-blocks, the long and short rod pivoted to the top of the draw-head, connected by a link, and attached at their front ends to the sliding blocks, the operating-lever to which the longer rod is attached, and the coupling-link.

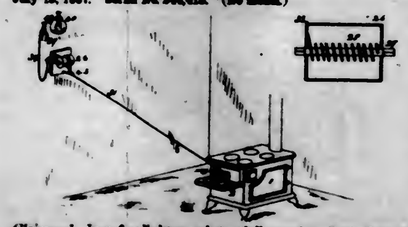
4. In a car-coupler, the combination, substantially as described, of the draw-head, the laterally-movable spring-actuated coupling-blocks having sliding blocks mounted in the top thereof, and the longitudinally-arranged rods attached to the sliding blocks and unitedly operated by a lever to separate the coupling-blocks.

884,841. PROCESS OF PRODUCING SULPHURIC ANHYDRIDE. RUD. HASSEN and MAX SCHRÖDTER, Homburg, Prussia, Germany. Filed Mar. 31, 1888. Serial No. 269,167. (No specimens.) Patented in Germany Feb. 1, 1887, No. 42,315, and in England June 28, 1887, No. 9,168.



Claim.—The process herein described of producing sulphuric anhydride, which consists in reducing the volume of a gaseous mixture of sulphurous acid and oxygen by compression, and subjecting this mixture under pressure to the converting action of a suitable contact-surface at red heat, substantially as set forth.

884,842. FIRE-LIGHTER. WILLIAM HARLOW, St. Louis, Mo. Filed July 15, 1887. Serial No. 244,415. (No model.)

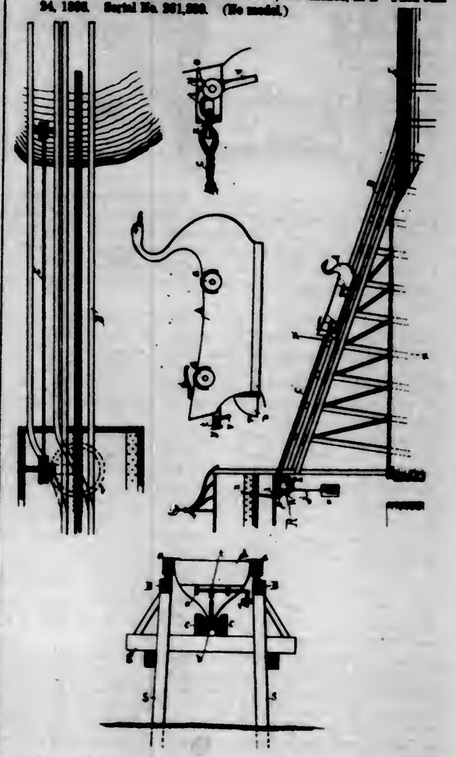


Claim.—1. In a fire-lighter, substantially as described, the combination, with the lighting mechanism having a detent-lever, of means for operating the detent to release said mechanism, which consists of a cord, 31, a spring winding-drum, 26, on which said cord is wound, a lever engaging a notch in said drum, and a weight attached to the end of said detent-lever and held normally in suspension by an arm on the winding-arbor of a clock, to be operated substantially as described.

2. The combination of the segment 9, the match-holder 20, a detent, 14, a detent-releasing cord, 31, a winding-drum rotated by a spring, a detent, 26, engaging said drum, a cord connecting the detent to a weight, and an arm on the winding-shaft of an alarm mechanism adapted to support the weight and to release it on the rotating of the alarm-shaft, substantially as set forth.

3. In a fire-lighter, the combination of the frame carrying a revolving segment having a spring and detent lever, means, substantially as described, for operating the detent-lever, and a match-holding device consisting of the tubes 20, fixed in the top plate, 4, of the frame, and springs 22, entering the transverse slots 23 and holding the matches in contact with the rough face of the segment, the said springs having their outer ends formed into the hooks 24, for holding inflammable material, substantially as set forth.

884,843. INCLINED RAILWAY AND WATER-TOBOGGANING APPARATUS. RANDALL A. HAZELTINE, Providence, R. I. Filed Jan. 24, 1888. Serial No. 261,899. (No model.)



Claim.—1. The combination of a descending railway-track and another track furnished with a cable for drawing up the empty cars, a motive power to operate said cable, and a body of water, substantially as set forth, and for the purpose specified.

2. The combination, with an inclined railway-track terminating in a body of water, and a car fitted to go from one to the other, of the drum R, cable C, rope *j*, weight *w*, ratchet-wheel *n*, and pawls *l p*, with lever *k*, substantially as and for the purpose set forth.

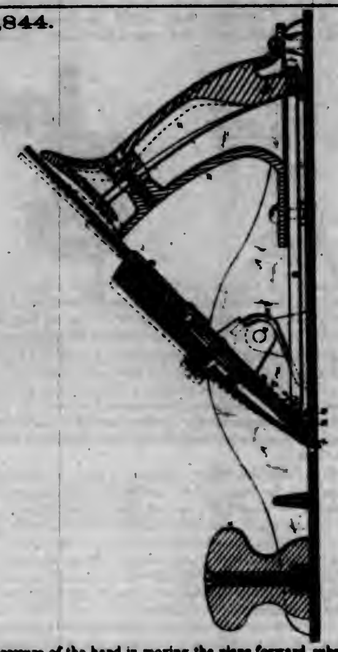
3. The shaft *o*, hook *t*, forked bar *y*, arm *v*, and stud *c*, in combination with the cable C, ring *z*, and car A, substantially as described, and for the purpose set forth.

884,844. PLANE. ANSEL S. HAYNES, Rome, N. Y. Filed Mar. 13, 1886. Serial No. 297,978. (Model.)

Claim.—1. The combination, with the body or frame, of a movable cutter-holder, the cutter secured thereto, a connecting-rod, the handle, and a lever loosely connected to both the rod and the handle and adapted to be grasped with the handle, substantially as shown.

2. The combination of the body or frame of the plane, with the pivoted spring-actuated cutter-holder, the cutter secured thereto, a connecting-rod, and a pivoted lever which is operated by the forward pressure of the hand in moving the plane forward, substantially as described.

884,844.



3. The combination of the stationary handle D, the lever E, pivoted thereon, the adjusting set-screw N, the connecting-rod, the pivoted spring-actuated holder, and the cutter, substantially as set forth.

4. The combination of the body or frame of the plane, provided with stops, a spring-actuated cutter-holder provided with stops near its lower end, the cutter secured to the holder, the connecting-rod fastened to the lower end of the cutter-holder, the stationary handle, the lever pivoted upon the handle and connected at its lower end to the connecting-rod, and an adjusting device for regulating the amount of movement which shall be given to the cutter, substantially as specified.

5. The combination, in a plane, of a cutter-holder having a cutter secured thereto, a spring-actuated lever connected to the handle, and a rod which connects the lever and the cutter-holder together, whereby the cutter is depressed by the lever as the plane is forced forward and is returned to position by the spring as the plane is drawn backward, substantially as specified.

884,845. SHOE. WILLIS B. HILL, Lexington, Ohio. Filed Feb. 2, 1888. Serial No. 262,794. (No model.)

Claim.—As an improved article of manufacture, a turned shoe having the front part of the outsole secured to the upper by stitching, the counter having the upwardly-extended rear part and lower inturned edges and the insole, the inturned rear part of the upper,

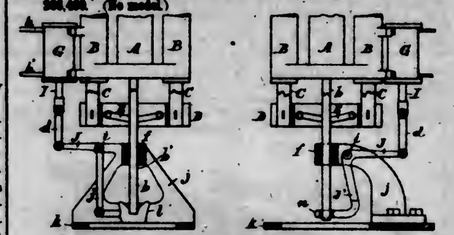


884,845.



together with the inturned lower edges of the counter and the insole, being secured to the outsole by a line of pegs or nails or rivets, *d*, and by a line of stitching, *d'*, extending from the forward termination of said pegs, nails, or rivets *d* to the rear termination of the line of stitching used to secure the forward part of the outsole to the upper before the shoe is turned, the said insole being fastened at rear end only, substantially as described.

884,846. APPARATUS FOR BREAKING STEEL-INGOT BARS. WILLIAM R. KENNEDY, Hoboken, N. J. Filed Mar. 7, 1888. Serial No. 266,402. (No model.)



Claim.—1. In an apparatus for breaking ingot-bars, the combination, with a vertical mold and a vertical cylinder sustained adjacent to the same, of a fixed socket beneath the mold to sustain the ingot-bar during the breaking operation, and a bell-crank with a vertical arm connected to such ingot-bar below the fixed socket, and having a horizontal arm connected with the piston of the vertical cylinder, as and for the purpose set forth.

2. In an apparatus for breaking ingot-bars, the combination, with a vertical mold and a vertical cylinder sustained adjacent to the same, of a fixed socket beneath the mold, an oscillating holder pivoted in the path of the ingot-bar below the fixed socket, and a bell-crank having its vertical arm connected with such holder, and its horizontal arm connected with the piston of the vertical cylinder, as and for the purpose set forth.

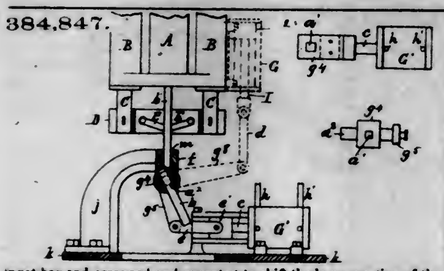
3. In an apparatus for breaking ingot-bars, the combination, with a vertical mold and a vertical cylinder sustained adjacent to the same, of a fixed socket beneath the mold, mechanism operating between the bottom of the mold and the fixed socket for drawing the ingot-bar from the mold, and a bell-crank with a vertical arm connected to such ingot-bar below the fixed socket, and having a horizontal arm connected with the piston of such vertical cylinder, as and for the purpose set forth.

4. In an apparatus for breaking ingot-bars, the combination, with the vertical ingot-mold and vertical cylinder, of a fixed socket beneath the mold, a holder arranged to receive the ingot-bar below the fixed socket and operating by pushing transversely against such bar, and a bell-crank with a vertical arm connected to such transversely-moving holder, and having a horizontal arm connected with the piston of such vertical cylinder, as and for the purpose set forth.

884,847. APPARATUS FOR SEVERING INGOT-BARS. WILLIAM R. KENNEDY, Hoboken, N. J. Original application filed Mar. 30, 1886. Serial No. 266,402. Divided and this application filed Apr. 2, 1888. Serial No. 269,812. (No model.)

Claim.—1. In an apparatus for severing ingot-bars, the combination, with an ingot-casting machine, of a fixed holder in line with the casting-mold, and a movable holder having an aperture fitted to the

384,847.



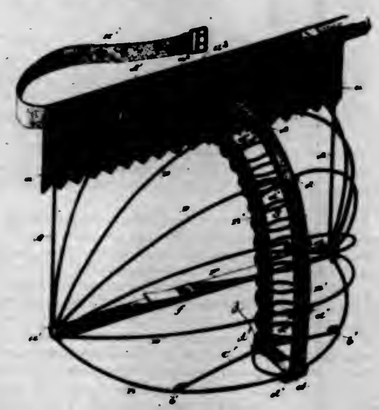
ingot-bar and arranged and operated to shift the lower portion of the ingot-bar transversely at the junction of the two holders, substantially as set forth.

2. In an apparatus for severing ingot-bars, the combination, with an ingot-casting machine, of a fixed holder in line with the casting-mold, and a movable holder having an aperture fitted to the ingot-bar and connected with the piston-rod of a horizontal cylinder arranged and operated to shift the lower portion of the ingot-bar transversely at the junction of the two holders, substantially as set forth.

3. In an apparatus for severing ingot-bars, the combination, with an ingot-casting machine, of a fixed holder in line with the casting-mold, an oscillating holder having its axis transverse to the ingot-bar and provided with an aperture fitted to the ingot-bar, trunnions upon such holder, supports for the same, and an arm connected with the piston-rod of a horizontal cylinder arranged and operated to oscillate such holder upon its trunnions, as and for the purpose set forth.

4. In an apparatus for severing ingot-bars, the combination, with an ingot-casting machine, of a bed-plate arranged beneath the same, a fixed holder attached thereto, a movable holder arranged between the fixed holder and the bed-plate in contact with the fixed holder, and a horizontal cylinder attached to the bed-plate, and the piston-rod of the cylinder connected with the movable holder, as and for the purpose set forth.

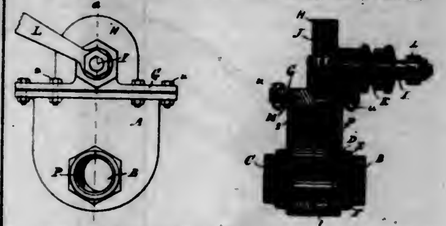
384,848. BUSTLE. JOHN H. HOSSETT, Dayton, Ohio. Filed Feb. 9, 1888. Serial No. 263,431. (No model.)



Claim.—1. In a bustle, the combination, with the main bow arched at the top, the cross-wire secured thereto, the base-bow attached to the lower ends of the main bow and having a brace-bow attached thereto, the intermediate bows having the central offsets, with eyes on each side of said offsets, the coiled spring secured at its lower end to the base-bow and brace-bow intermediately to the intermediate bows and at its upper end to the top arch and cross-wire, and the tape passing on the outside, returning under and through the coils of the spring, substantially as described.

2. In a bustle, the combination, with the main supporting-bow, of the base-bow having the brace-bow, the intermediate bows having central offsets with eyes on each side of said offsets, the coiled spring, the spirals of which are attached to the eyes in the said bows, the band or tape passing through the bends of the bows and returning through said spring, the shield attached to the main supporting-bow having waist-belts secured thereto, and adjusting-straps attached to the lower ends of the main supporting-bow, substantially as described

384,849. STRAIGHT-WAY VALVE. HARRISON P. MOSS, Indianapolis, Ind. Filed Apr. 23, 1888. Serial No. 271,887. (No model.)



Claim.—1. In a valve, the hollow valve-case having an opening in one edge to receive the valve and its bearing and openings in two of its sides adapted to receive the ends of a pipe, the interior valve-seat formed around one of said side openings, the disk having cog-teeth on its periphery and an eccentrically-arranged opening which registers with the opening in said valve-seat, the removable cap-plate having a bearing for the disk projecting from its inner side and a hollow chamber on its outer side, the gear-wheel mounted in said chamber and intermeshing with the teeth on the disk, and the shaft, all combined and arranged to co-operate in the manner and for the purpose set forth.

2. In a valve, the hollow valve-case having an opening in one edge to receive the valve and its bearing and openings in two of its sides adapted to receive the ends of a pipe, the interior valve-seat formed around one of said side openings, the removable cap-plate having a bearing for the valve-disk projecting from its inner side and carrying mechanism on its outer side for turning the disk, and the eccentrically-perforated disk arranged to turn in said bearing and to move longitudinally therein when so turned, all combined and arranged to co-operate substantially as specified.

3. In a valve having a valve-case provided with an interior valve-seat and a rotating valve-disk, the combination, with the valve-case and its valve-seat, of a removable cap-plate having a bearing for the rotating valve-disk projecting from its inner side, the valve-disk mounted in said bearing, and mechanism for turning the valve-disk, mounted also on the cap-plate, all arranged substantially as specified, whereby the valve-disk may be removed from the valve-case without disturbing its relation to its bearing or its driving mechanism, substantially as set forth.

384,850. BUSTLE. ABNER H. JACKSON, Fremont, Ohio. Filed Feb. 11, 1888. Serial No. 263,690. (No model.)



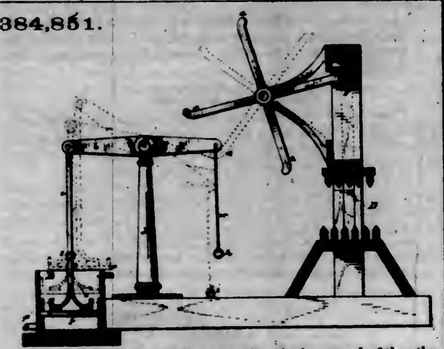
Claim.—The combination of the vertically-disposed frame, the series of three outwardly and downwardly curved coil-springs secured to said frame, the central one of said springs being larger than the other side springs, the coverings or tubes for said springs, the series of horizontally-disposed coil-springs connected at their inner ends to said frame and to each of the springs of said outer series, and the tapes passed through said horizontal springs, connecting said frame and the lower portions of said outer series of springs, substantially as shown and described.

384,851. MACHINE FOR WASHING OUT THE FIBERS OF PLANTS. CHARLES JOHNSON, New Orleans, La. Filed Oct. 31, 1885. Serial No. 181,451. (No model.)

Claim.—In a machine for washing fiber, the combination of a box, a rack secured near its bottom, a post, an eyebolt, a beam pivotally secured to the top of the post, a rod secured to each end of the beam, a rack secured to the lower end of one of the rods adapted to be moved

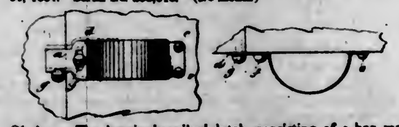


384,851.



vertically within the box, a ring secured to the lower end of the other rod, adapted to be secured to the eyebolt, and means, substantially as described, for operating the beam.

384,852. LATCH. AUGUSTUS H. JOHNS, Meriden, Conn. Filed Oct. 31, 1887. Serial No. 253,810. (No model.)



Claim.—The herein-described latch, consisting of a bar made from elastic metal adapted at one end for rigid attachment, the other end constructed to form the nose of the latch, combined with a guide at the nose end, the latch-bar bent transversely between its point of attachment and the guide and out of the plane of the nose of the latch and the point of attachment, substantially as described.

384,853. SPRING FISH-TRAP. GEORGE H. KELLER, New York, N. Y. Filed Dec. 2, 1887. Serial No. 256,747. (No model.)



Claim.—1. The combination of an exterior casing having a line guide or eye at the upper end, a spring-actuated trigger at the lower end, said trigger being provided with a line guide or eye, a spring-barrel at the interior of the casing provided with a notched flange, and upper and lower line-sections attached to the spring-barrel, the lower line-section being provided with a knot for engaging the trigger and releasing the spring-barrel, substantially as set forth.

2. The combination of an exterior casing, a spring-actuated trigger, a spring-barrel having a notched flange, a filling-piece and stop at the side of the spring-barrel, an upper line-section attached to the spring-barrel, and lower line-section also attached to the barrel and provided with a knot for engaging the trigger, substantially as set forth.

384,854. BORING-MACHINE. FRANK B. KEYES, Peterborough, assignor to the Amoskeag Industrial Fibre Ware Company, Manchester, N. H. Filed Jan. 3, 1888. Serial No. 259,660. (No model.)

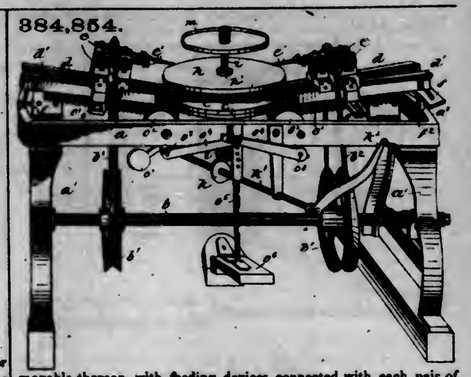
Claim.—1. In a boring-machine, the combination of a number of guideways and two carriages longitudinally movable thereon, with arbors having their bearings solely on said tool-carriages, as described, whereby the boring-tools operated by said arbors are advanced or fed solely by the movement of said tool-carriages and without longitudinal movement of the arbors in any of their bearings, substantially as described.

2. The combination of a series of converging guideways with pivoted central supports for said guideways and outer supports for said guideways, on which the outer ends of the said guideways are laterally adjustable, as described, whereby the angle between the said guideways may be varied without changing the common center or axis toward which they converge, substantially as described.

3. A series of guideways and tool-carriages moving thereon, the guideways being pivotally supported at one end, combined with vertically-adjustable supports for the other ends of said guideways, substantially as described.

4. The combination of two pairs of guideways and tool-carriages

384,854.



movable thereon, with feeding devices connected with each pair of tool-carriages, and actuating mechanism connected with both said feeding devices, whereby the four tool-carriages are moved on their corresponding guideways simultaneously, substantially as described.

5. The combination of a support and centering device for the article to be bored, with a series of guideways radially arranged with relation to said support, and tool-carriages movable on said guideways, and feed mechanism therefor, substantially as described.

6. The combination of a support and a centering device for the article to be bored, with a sliding shaft for moving said support vertically, and a series of guideways converging toward said support, and tool-carriages moving on said guideways, substantially as described.

7. The two pairs of guideways and tool-carriages movable thereon, combined with the slotted cross-arms engaged with the said tool-carriages, rack-bars connected with said cross-arms, and gears connected with said rack-bars, substantially as described.

384,855. STRONG BOX OR COFFER. WILLIAM C. KIDNEY, New York, N. Y. Filed Aug. 29, 1887. Serial No. 248,170. (No model.)



Claim.—1. The combination, with a strong box or coffer provided with a cover or door and a lock therefor, with apertures, as *d*, and a pivoted plate, as F, having branches, as *c'*, of keepers, as *c*, mounted on a base and arranged to project through the apertures *d* into said box, said branches *c'* being adapted to engage with said keepers, as set forth.

2. The combination, with a strong box or coffer provided with a cover or door and lock, with apertures, as *d*, and a pivoted plate, as F, having branches, as *c'*, of a plate, as E, provided with keepers, as *c*, to project through said apertures *d* into said box, said branches *c'* being adapted to engage with said keepers, as set forth.

384,856. ELECTRO-MAGNETIC TIME-LOCK. CHARLES J. KINTNER, New York, N. Y. Filed Dec. 5, 1887. Serial No. 256,963. (No model.)

Claim.—1. The combination of a safe-lock and electrical connections with a time mechanism located outside of the safe for controlling the operation of such lock, substantially as described.

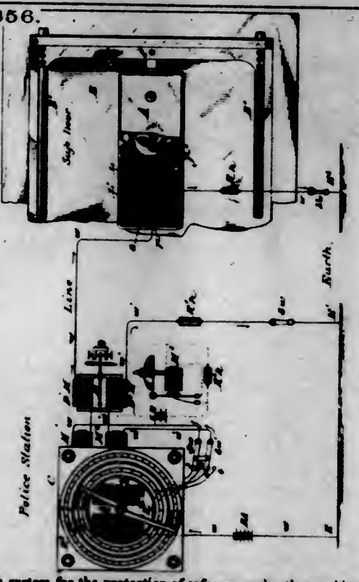
2. The combination of a safe-lock with means for holding the gate out of operative relation with the tumblers, with electrical connections and time mechanism for controlling such means, the time mechanism being located wholly without the safe, substantially as described.

3. The combination of a time mechanism located at an outlying station, with an electrical circuit running from said station into a safe or vault at some distant point through an electro-magnet, also located in the safe, for controlling the operation of the lock, substantially as described.

4. The combination of a time mechanism located outside of a safe and having electrical connections running to the interior of said safe, with means for preventing the withdrawal of the bolts until a predetermined time, substantially as described.

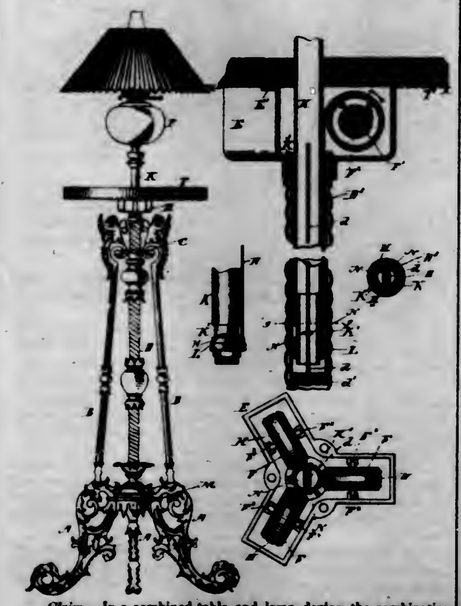
5. In a system for the protection of safes and vaults, the combination of a balanced electrical circuit including a time mechanism and an alarm at one point, with bolt-controlling mechanism located inside of a safe or vault at another point, substantially as described.

384,856.



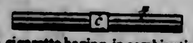
6. In a system for the protection of safes or vaults, the combination of a time mechanism to automatically break a protecting-circuit leading to a distant station at a predetermined time, with electrically-controlled means located within a safe or vault at such distant station for controlling the withdrawal of the bolts, substantially as described.

384,857. COMBINED TABLE AND LAMP. JOSEPH KINTZ, Ballard Vale, Mass., assignor of one-half to the Craighead & Kintz Manufacturing Company, same place. Filed Feb. 23, 1888. Serial No. 264,965. (No model.)



Claim.—In a combined table and lamp device, the combination of the table T, spring-drum F, and strap H with the tube D^3, extension-tube K K', guide-pins N N, bar *d*, and lamp P, all arranged to operate together, substantially as described, and for the purpose set forth.

384,858. CIGARETTE. HENRI F. H. LEBLANC, Paris, France, assignor to Charles C. Dalmonico, New York, N. Y. Filed Jan. 17, 1888. Serial No. 260,984. (No model.) Patented in France May 18, 1885, No. 166,857.



Claim.—1. A cigarette having, in combination, a filling of tobacco, a loose paper wrapper, and a narrow band encircling the wrapper and movable thereon, whereby the band may be slipped along the wrapper as the cigarette is consumed, substantially as set forth.

2. A cigarette having, in combination, a filling of tobacco, a loose paper wrapper, and a narrow paper band encircling the wrapper and movable thereon, whereby the band may be slipped along the wrapper as the cigarette is consumed, substantially as set forth.

384,859. CHECK-REIN-HOOK. ROBERT MASON, Exeter, N. H. Filed Apr. 21, 1888. Serial No. 271,443. (No model.)



Claim.—The combination, with the hook A, of the pin *b*, sliding freely up and down through an aperture, *d*, in the upper portion of said hook and inclined at an angle, as described, and having a stop or enlargement, *g*, at its lower end, adapted when said pin is raised to lie within a countersink, 5, at the bottom of the aperture *d*, substantially as and for the purpose set forth.

384,860. CONDUIT. MERRAM MERRAM, Boston, Mass. Filed June 18, 1887. Serial No. 241,694. (No model.)

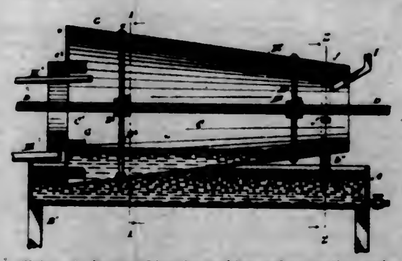


Claim.—1. The combination, with a molded conduit, of the pipe-supports *c*, having concave recesses c' c^2, with drainage-openings c^3 in said recesses, substantially as set forth.

2. The combination, with a molded conduit, of the pipe-supports *c*, having concave recesses c' c^2, with drainage-openings c^3 in said recesses and also below the same, substantially as set forth.

3. The conduit having the cavity B for containing hot-water or steam pipes, electric conductors, &c., and also provided with one or more drain-passages, E, as and for the purposes specified.

384,861. GRAIN-SEPARATOR. FREDERICK MELKERSMAN, St. Charles, Mo. Original application filed July 16, 1887, Serial No. 244,093. Divided and this application filed Dec. 19, 1887. Serial No. 258,396. (No model.)

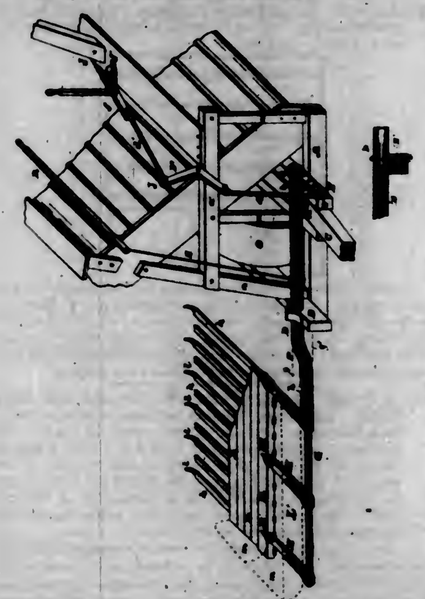


Claim.—1. In a machine for washing and separating grain, the combination, substantially as hereinbefore set forth, of the water-trough, the conical drum contained therein, a chute for delivering the grain to the interior of the drum at its smaller end, the buckets on the smaller end of the drum for delivering water to the interior thereof, and the buckets on the larger end of the drum and within the same for elevating and delivering the good grain from the drum.

2. In a machine for washing and separating grain, the combination, substantially as hereinbefore set forth, of the water-trough, the conical drum mounted therein, a chute for delivering the grain to the interior of the drum at its smaller end, the buckets on the smaller end of the drum for delivering water to the interior thereof, the buckets on the larger end of the drum and within the same for elevating and delivering the good grain, the inclined perforated table extending into the larger end of the drum to receive the grain from the buckets, and the inclined perforated table for receiving the overflow from the drum.

3. The combination, substantially as hereinbefore set forth, of the water-trough, the conical drum mounted therein with its smaller end above the water-level and its larger end below said level, the buckets on the smaller end of the drum for delivering water to the interior thereof, the flange at the larger end of the drum, the buckets arranged within the drum adjacent to the flange for elevating and delivering the grain, the overflow-rim on the edge of the flange, the table extending within the rim under the lifting-buckets to receive the good grain, and the table below the rim to receive the overflow of water and imperfect grain.

384,862. SHEAF-CARRIER. JACOB HELLER, Canton, Ohio. Filed Sept. 14, 1888. Serial No. 177,869. (No model.)



Claim.—1. The combination, with a harvester-frame, of a shaft journaled in bearings on the front side of the frame, and having a crank-bend, substantially as described, at a point outside of said frame, a sheaf-carrier secured to the shaft at a point outside of the bend therein, an arm secured to said shaft, a foot-lever, and a link connecting the arm and foot-lever, substantially as set forth.

2. The combination, with a hollow shaft mounted on a harvester-frame, and a lever and intermediate connections for rocking said shaft, of a shaft, G, one end of which is removably secured within the outer end of the hollow shaft, and a sheaf-carrier rigidly secured to said shaft G.

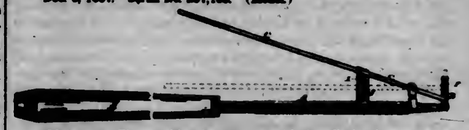
3. The combination, with a harvester-frame, a shaft journaled in bearings on the front end of said frame and having a crank-bend therein at a point outside of the bearings on the frame, and devices for turning the shaft, of a sheaf-carrier rigidly secured to the shaft at a point outside of the bend, the above parts being arranged substantially as set forth, whereby the movement of the dropping-table will be downward and forward, substantially as described.

4. The combination, with a harvester-frame, of a shaft journaled in bearings on said frame, a sheaf-carrier secured thereto, the said shaft having a crank-bend at a point between the bearings on the main frame and the sheaf-carrier, and means for rocking the shaft, whereby the carrier is given a forward movement as the shaft is turned to dump the carrier, substantially as set forth.

5. The combination, with a harvester-frame, of a shaft having a crank-bend therein and supported in bearings, one of which is open and the other constructed to permit the outer end of the shaft to be elevated, a sheaf-carrier secured to said shaft, and means for rocking the shaft, substantially as set forth.

6. The combination, with a harvester-frame, of a shaft journaled thereto and having a crank-bend, the latter being located at a point outside of shaft-bearings on the harvester-frame, and a sheaf-carrier secured to the shaft at a point outside of the bend, the arm E, link *d*, bell-crank F, link d', and lever *f*, substantially as and for the purpose described.

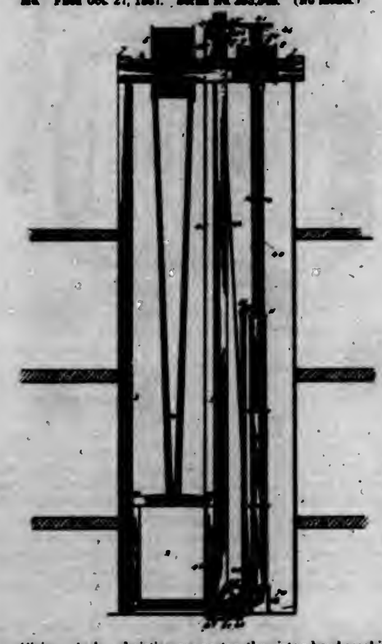
384,863. DENTAL TOOL. JAMES P. MORRIS, Paris, Tex. Filed Dec. 6, 1887. Serial No. 257,102. (Model.)



Claim.—1. The combination of a suitable handle having a cup to receive the amalgam connected thereto, an operating-lever, and a plunger for forcing the amalgam from the cup into the cavity in the tooth, substantially as shown.

2. The combination of the handle having a cup formed upon one end to receive the amalgam, the pivoted lever, the plunger placed inside of the cup, and the spring for operating the lever, substantially as described.

384,864. HYDRAULIC ELEVATOR. WILLIAM O'KEEFE, St. Louis, Mo. Filed Oct. 27, 1887. Serial No. 253,545. (No model.)



Claim.—1. In a hoisting apparatus, the piston-head working in a hydraulic cylinder provided with longitudinal way for the passage of water, a valve having a stem in said way, a pin on said stem, a cam for engaging under said pin, and a shaft extending through said piston-head for operating said cam, substantially as and for the purpose set forth.

2. In a hoisting apparatus, the combination, with the piston having a water-way from end to end, of a valve and valve-seat interposed in said way, a sleeve having a cam-slot, a stem secured to said valve and against rotation projecting through said sleeve, a pin on said stem engaging in said slot, and a shaft adapted to rotate said sleeve, substantially as set forth.

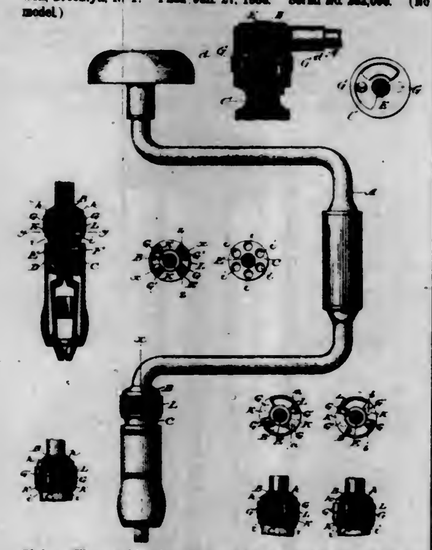
3. The combination of piston-head 13, having water-way through it, a valve in the lower part of the piston-head governing the water-way, the cam-sleeve 33, with cam-slot, a stud-pin on the valve-stem having bearing in the cam-slot, means for preventing the rotation of the valve-stem, a cog-wheel upon the sleeve, and the shaft 38, carrying

a cog-wheel engaging the wheel upon the sleeve 33, substantially as and for the purpose set forth.

4. The combination, in a hydraulic elevator, of a cylinder, a piston working in said cylinder and having a water-way through it, a valve controlling the water-way, a shaft operating said valve and adapted to move endwise with the piston and through a hydraulic packing in the cylinder-head, and a tubular shaft telescoped upon the said valve-operating shaft, which latter has endwise movement in the tubular shaft and connection therewith enforcing their simultaneous rotary movement, substantially as and for the purpose set forth.

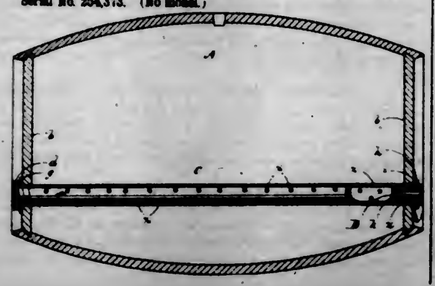
5. The combination of the three valve-stems 29, 54, and 66 of the piston-head valve, the inlet-valve, and the outlet-valve, cam-sleeves on said valve-stems, pins on the stems having bearing in the cam-slots of the sleeves, said slots having circumferential and inclined portions, as set forth, means for preventing the rotation of the valve-stems, the telescoped shaft 38 40, a pulley on this shaft, connected by the operating-cord with a pulley on the shaft 50, and a cog-wheel on shaft 50, engaging cog-wheels upon the cam-sleeves operating the inlet and outlet valves 52 and 64, substantially as and for the purpose set forth.

384,865. PAWL-AND-RATCHET COUPLING FOR BIT-BRACES, &c. HOMER H. PARKER, Winchendon, Mass., assignor to William M. Caldwell, Brooklyn, N. Y. Filed Jan. 27, 1888. Serial No. 262,009. (No model.)



Claim.—The combination, in a tool head or holder formed in two divisions jointed end to end with a butt-joint and pivoted to rotate independently upon a common longitudinal axis, of a ratch formed concentrically in one face of said joint, one or more spring-actuated pawls fitted in the opposite face of the joint to move into and out of engagement with said ratch, and a slotted or perforated annular plate interposed between the pawls and ratch to revolve independently upon said longitudinal axis and control the engagement of the pawls with the ratch, substantially in the manner and for the purpose herein set forth.

384,866. FAUCET. KNOTT H. FREDRICK, Lynn, assignor of one-fourth to Fred H. Safford, Newburyport, Mass. Filed Nov. 5, 1887. Serial No. 254,373. (No model.)



Claim.—1. The combination of a barrel, a perforated tube extending therethrough, the ends of said tube projecting through the heads of the barrel, one of said ends being provided with an interior screw-thread and both with exterior screw-threads, a screw-threaded cap at one end of said tube outside the head and a nut at the opposite end of said tube outside the head, and a faucet-plug provided with exterior screw-threads which mesh with the interior screw-threads of said tube, provided with a dust and with perforations adapted to register with the perforations of the tube, substantially as described.

2. In a device of the character described, the tube C, provided with the openings *x* and cap *d*, in combination with the plug D, having the holes *v*, duct *h*, and sockets *r*, the faucet E, provided with the studs *l*, and the barrel A, substantially as set forth.

3. The tube C, secured in the heads *b* of the barrel A and provided with the perforations *x*, one end of said tube being closed and the other opening outward through one of said heads and being interiorly screw-threaded, in combination with the exteriorly-screw-threaded plug D, provided with the duct *h* and perforations *v*, said last-named perforations being adapted to register with the perforations *x* when the plug is turned in and to be closed by turning the plug outward, substantially as set forth.

384,867. APPARATUS FOR BLEACHING. WILLIAM R. PHILLIPS, Milford, Delaware. Filed Sept. 4, 1886. Renewed Mar. 16, 1888. Serial No. 267,232. (No model.)

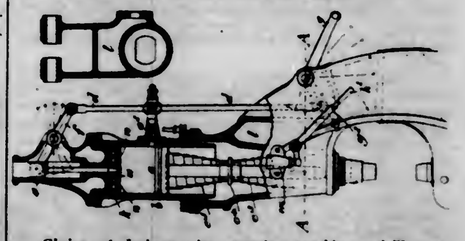


Claim.—In an apparatus for bleaching, the combination of a casing having means for supporting trays, a tube having a swinging door at its lower end and opening into the bottom of the casing with its upper end, a cup for holding burning sulphur fitting in the lower end of the tube, and a steam-boiler having a pipe entering the upper portion of the tube, as and for the purpose shown and set forth.

384,868. PROCESS OF REMOVING FUSEL-OILS FROM CRUDE SPIRITS. JOSÉ PERETA, Guatemala, Guatemala, assignor to Herman Grote, same place. Filed Apr. 30, 1887. Serial No. 236,434. (No specimens.) Patented in France Oct. 18, 1886, No. 178,079; in Belgium Oct. 19, 1886, No. 74,886; in Sweden Oct. 20, 1886, No. 1,068; in Norway Oct. 21, 1886, No. 377; in Spain Nov. 27, 1886, No. 10,126; in Italy Dec. 31, 1886, XX. 20,066, XLI. 188; in Germany Jan. 22, 1887, No. 41,675; in England Feb. 10, 1887, No. 2,109; in Portugal Aug. 4, 1887, No. 1,156, and in Barbadoes Aug. 12, 1887, No. 31.

Claim.—The process herein described of removing fusel-oil and other impurities from crude spirits, or from a mash containing the same, which consists, first, in mixing the crude spirits, or a mash containing the same, with a pulverized purifying compound composed essentially of a mixture of a nitrate and a nitrate of an alkali, and then distilling said spirits or mash, substantially as set forth.

384,869. HAMMERING MACHINERY ACTUATED BY EXPLOSIVE GASEOUS MIXTURES. CHARLES W. PIERSEY, Smethwick, County of Stafford, England. Filed Sept. 20, 1887. Serial No. 250,744. (No model.) Patented in England Feb. 8, 1887, No. 1,966.



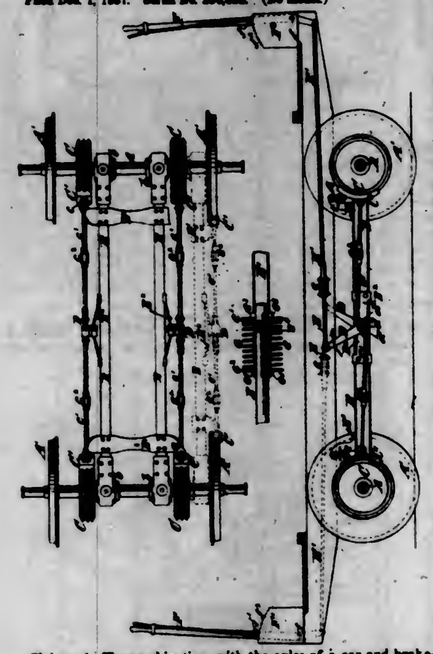
Claim.—1. In hammering, stamping, punching, and like machinery actuated by explosive gaseous mixtures, the combination of a cylinder to receive the explosive mixture, a charging-piston and a hammer-piston located in said cylinder, and means, substantially as described, for adjusting the stroke of the charging-piston to vary the charge of the gaseous mixture drawn into the cylinder, and thereby regulate the blow of the hammer-piston, substantially as described.

2. In a gas-hammer or like machine, the combination of the cylinder *b*, charging-piston *a*, hammer-piston *c*, relief-valve A, and cushion-chamber *l*, substantially as described.

3. In a gas-hammer or like machine, the combination of the cylinder *b*, charging-piston *a*, guide *e*, lever *f*, link *d*, and weighted lever *g g'*, substantially as described.

4. In a gas-hammer or like machine, the combination of the cylinder *b*, charging-piston *a*, hammer-piston *c*, exhaust-port *p*, stop *q*, lever *f*, link *d*, and weighted lever *g*, substantially as described.

384,870. CAR-BRAKE. JOHN H. [illegible], New York, N. Y. Filed Dec. 1, 1887. Serial No. 256,688. (No model.)



Claim.—1. The combination, with the axles of a car and brake-shoes for acting on wheels or drums on the two axles at opposite sides of the car, of levers D, fulcrumed at opposite sides of the car and each having short arms *d'*, connected by rods *e* with the brake-shoes at that side of the car, and brake-applying devices at opposite ends of the car connected, respectively, one to each of the levers D, substantially as herein described.

2. The combination, with a brake-shoe acting upon a wheel or drum upon a car-axle and a lever connected with the shoe for operating it, of a brake-applying device at the end of the car, and a rod connecting the said brake-applying device and lever and composed of two sections, one receiving the other within it, a spiral spring, and collars bearing against opposite ends of the spring and fastened, respectively, to the inner and outer rod-sections, substantially as herein described.

384,871. PULLEY. ALBERT P. SIBLEY, South Bend, Ind., assignor to Sibley & Ware, same place. Filed Jan. 16, 1888. Serial No. 260,912. (No model.)



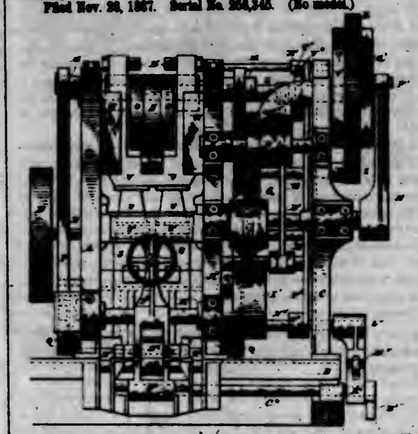
Claim.—1. In a band-pulley, the combination, with a hub, of radial arms secured thereto and provided with screw-threads on their outer ends, a rim, and metallic nuts D, embedded in the rim, the outer screw-threaded ends of the said radial arms working in the said embedded nuts, substantially as described.

2. In a band-pulley, the combination of a hub, radial arms secured thereto and provided with screw-threads on their outer ends, a rim, metallic nuts D, embedded in this rim and adapted to receive the outer screw-threaded ends of the said radial arms, and washers and jam-nuts on the outer screw-threaded portions of the said radial arms, substantially as described.

3. In a pulley, the combination of the two-part hub provided with radial shouldered apertures, the arms B, inserted in these apertures, the said arms being provided with heads c on their inner ends and screw-threads on their outer ends, a rim, C, nuts embedded in this rim and adapted to secure the screw-threaded ends of the arms B, and jam-nuts F, substantially as herein described.

4. In a pulley, the combination of the hub provided with arms B, these arms being screw-threaded at their outer ends, a rim, C, constructed of segmental sections *d*, secured together, metallic nuts D, embedded in recesses in the sections of the rim and adapted to receive the outer screw-threaded ends of the arms B, and jam-nuts and washers, as set forth.

384,872. BRICK-MACHINE. PETER L. SIMPSON, Minneapolis, Minn. Filed Nov. 30, 1887. Serial No. 256,345. (No model.)



Claim.—1. In a brick-machine, an adjustable and movable stop, a lower plunger supported thereon in the mold while the same is being filled with clay and during a portion of the pressing action, said stop adapted to be withdrawn to allow the upper and lower plungers and the partially-pressed clay to move downward within the mold, and a permanent stop to support the same before the final pressure of the upper plunger is applied, substantially as and for the purpose set forth.

2. A brick-machine the upper plungers of which are secured to a yoke working in suitable ways, said yoke being raised by cams having an abrupt termination, whereby the yoke and the plungers are allowed to fall suddenly, the plungers entering the mold to compact the clay prior to receiving the final pressure, as set forth.

3. In a brick-machine, the upper plungers which are secured to a yoke working in suitable ways, said yoke being raised by cams having an abrupt termination to allow the yoke and plungers to fall suddenly on the clay within the mold, in combination with an additional cam for forcing the upper plungers down to execute the final pressure on the top of the brick, as set forth.

4. In a brick-machine of the character described, the shaft L, provided with a cam, N, for moving the upper plungers downward to exert pressure on the brick, and with cams O, for raising said plungers, the cams O being so arranged and timed in their movements that they will operate to raise the plungers after they have been carried up out of the molds, as set forth.

5. In a brick-machine of the character described, the upper plungers secured to a yoke, V, said yoke being provided with pins, studs, or friction-rollers B, and adapted to slide in ways W, in combination with the cams O and shaft L, as set forth.

6. In a brick-machine, the rocking arm E', secured to the levers H' and I' in the manner described, in combination with the wheel K, provided with cam-groove G', whereby the lower plungers are raised to eject the brick from the mold, as set forth.

7. In a brick-machine, the rocking arm E', adapted to raise the lower plungers, said arm being provided with an adjustable pin adapted to engage a cam-groove in the wheel K, whereby the throw of said arm is regulated, as set forth.

8. In a brick-machine, the rocking arm E', provided with segmental slot F', and the block O', carrying the pin F', adapted to slide in said slot, in combination with the screw-rod Q' and hand-wheel R', whereby the pin F' is adjusted and held at any desired point in the slot, as set forth.

9. In a brick-machine, the wedge E⁵, pivoted to the adjustable lever F⁵ and supporting the rubber cushion A⁴, in combination with the rocking arm D⁴ and the mechanism for operating the same, whereby the rubber block or cushion is lowered during the pressing operation to allow the cross-head of the lower plungers to come in contact with rigid or permanent stops before the final pressure is applied to the top of the brick.

10. The shaft C⁵, provided with the weighted lever A⁵ and the arm D⁴, in combination with the pivoted block E⁵, block I⁴, and rubber cushion A⁴, as and for the purpose set forth.

11. In a brick-machine, the combination of the lower plungers provided with the oil-ducts and carrying the oil-reservoir thereon, with a floating piston, and a suitable bracket or stop for forcing the piston down into the reservoir, whereby the molds are oiled automatically at each upward movement of the lower plungers.

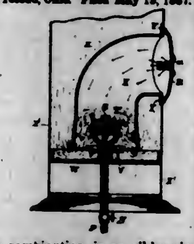
12. In a brick-machine of the character described, the cam N, provided with a surface of different radii, one of which forces the upper plunger down to press the upper side of the brick, while the other surface diminishes or retreats in its radius to allow the upper plunger to retreat during a portion of the pressing operation, in combination with the lower plunger, toggle-levers, and devices, substantially as described, for operating said levers, whereby the upper plunger is checked in its upward movement, forming a moving resistance to the clay while being pressed on the under side by the lower plunger, as set forth.

13. The combination of the cam N, having the retreating surface from 2 to 3, adapted to impinge on the top of the upper plunger, with the rods P, levers Q, toggles R, and plungers S, whereby the upper plungers are permitted to recede at a lower rate of speed than the upward movement of the lower plunger, and the whole body of the clay moved in the mold during the pressing operation, as set forth.

14. In a brick-machine, a cam provided with a surface of different radii, one of which forces the one plunger to press the one side of the brick, while the other surface diminishes or retreats in its radius, so as to allow the other or opposite plunger to advance and exert the final pressure on the brick.

384,873. APPARATUS FOR BURNING CRUDE PETROLEUM-OIL.

ROBERT W. BATTS, Toledo, Ohio. Filed May 19, 1887. Serial No. 238,704. (No model.)



Claim.—1. The combination, in an oil-burning apparatus, of a stove, a downdraft-flue therein, an escape-pipe for the products of combustion, an oil-supply tank, a supply-pipe connected therewith, and an oil-cup mounted on the supply-pipe or oil-connection in the flue and provided with an adjustable cap for admitting oil to flow upwardly through and over the top of said cup, substantially as set forth.

2. The combination, in an oil-burning apparatus, of a stove, a downdraft-flue therein, an escape-pipe for the products of combustion, an oil-supply tank, a supply-pipe connected therewith, a filter interposed in the supply-pipe, and an oil-cup mounted on the oil-supply pipe or oil-connection and provided with an adjustable cap for admitting oil to flow upwardly through and over the top of said cup, substantially as set forth.

3. The combination, in an oil-burning apparatus, of a stove body or barrel, its downwardly-projecting draft-flue, a draft-opening at its upper end, and an oil-cup in the flue, having an oil-connection or supply-pipe in its bottom and an adjustable cap at its top, substantially as set forth.

4. The combination, in an oil-burning apparatus, of a stove body or barrel, its downwardly-projecting draft-flue, a draft-opening at its upper end, an oil-cup in the flue, having an oil-connection or supply-pipe in its bottom and an adjustable cap at its top, a drip-tray beneath the oil-cup, and a diaphragm beneath the drip-tray, substantially as set forth.

5. The combination, in an oil-burning apparatus, of a stove body or barrel, its downwardly-projecting draft-flue, and an oil-cup with an oil connection or opening in its bottom for admitting oil to flow upwardly over the top of said cup, and an adjustable cap to regulate said flow, substantially as set forth.

384,874. WATER-FEEDER.

CHARLES A. SEVERANCE, Peabody, Mass. Filed Aug. 15, 1887. Serial No. 246,986. (No model.)



Claim.—The water-feeder, as described, consisting of the water-supply *c* and reservoir *b*, the pipe *d d'*, connecting the same, the valve D', arranged on said pipe and having pipe *f* entering the water-space of the boiler *a*, the pipe *f e*, leading from the upper portion of the reservoir *b* to the boiler *a*, and terminating within the latter at the normal level of the water in said boiler, and having the valve C' arranged upon said pipe, as described, the said valves C' D' being connected by means of the weighted levers *c' d'* and rod A, combined with the float *b'*, arranged within the reservoir *b*, the float-rod *b''*, having collars B' B² B³ B⁴, and the weighted rocking lever K L, substantially as and for the purpose set forth.

384,875. ELECTRIC FIRE-ALARM APPARATUS.

GEORGE H. SEVERS, Cambridge, Mass. Filed Mar. 12, 1888. Serial No. 267,088. (No model.)



Claim.—1. In an electric signal-box, the combination of a door provided with a projection, H, a pivoted lever, *c d*, having an arm, *c*, to swing in a vertical plane, and located in said box, and provided with a pin, *f*, to engage with said projection, said lever being thus held against the action of gravity between the lever D to be pulled for giving an alarm and the device for releasing the mechanism for making and breaking the circuit, substantially as set forth.

2. The combination, in an electric signal-box, of an electro-magnet, F, armature and lever G therefor, lever *c d*, provided with a projection or pin, *r*, and projection *e*, lever D to be pulled for giving an alarm, and the releasing-lever *j k*, substantially as set forth.

3. The combination of the outer door provided with a projection, H, a lever, *c d*, having an arm, *c*, to swing in a vertical plane, and provided with a pin, *f*, to engage with said projection, and also provided with a projection or pin, *r*, an electro-magnet and armature and lever G therefor, and a lever, D, pivoted to the inner door, substantially as set forth.

4. The combination of the lever *c d*, having an arm, *c*, to swing in a vertical plane, and swung by the outer door and upheld by a magnet, armature and lever G, a lever, D, to be pulled for giving an alarm, and a releasing device, as the lever *j k*, substantially as and for the purpose set forth.

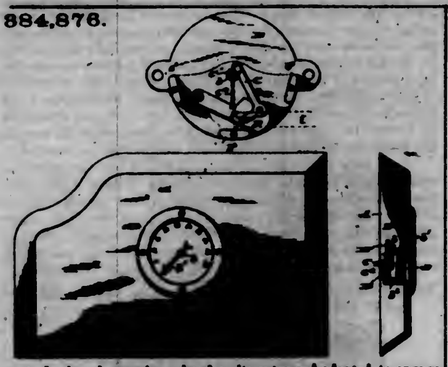
384,876. OVEN-THERMOMETER.

JOHN STINEMAN, Rochester, Pa. Filed Dec. 15, 1887. Serial No. 257,893. (No model.)

Claim.—1. The combination, with the oven-door, of the plates B and B', central arbor, *b*, bell-crank lever C, having wrist-pin *c* on its lower end, chains C' and C², gravity-lever D, and the bars E, all arranged and operating substantially as described.

2. The combination, with the oven-door, of the plates B and B', the central arbor, *b*, carrying a hand on its outer end adapted to engage with the dial-plate, the bell-crank lever C, having the upper end of its longer arm provided with a series of apertures, the chain C', connected at its upper end to said arm of the bell-crank lever and passing around the arbor *b*, the gravity-lever D, secured to the lower end of a chain, C², which is also secured to the arbor *b*, the bars E, pivotally secured to the oven-door at their outer ends and formed with bevels at their inner opposing ends, and an angular clip, within which the inner opposing ends of the said bars E rest, substantially as described.

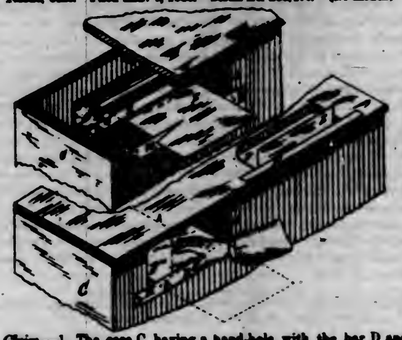
384,876.



central arbor, *b*, carrying a hand on its outer end adapted to engage with the dial-plate, the bell-crank lever C, having the upper end of its longer arm provided with a series of apertures, the chain C', connected at its upper end to said arm of the bell-crank lever and passing around the arbor *b*, the gravity-lever D, secured to the lower end of a chain, C², which is also secured to the arbor *b*, the bars E, pivotally secured to the oven-door at their outer ends and formed with bevels at their inner opposing ends, and an angular clip, within which the inner opposing ends of the said bars E rest, substantially as described.

384,877. ROLL-PAPER-SERVER MACHINE.

KIRK O. ST. JOHN, Toledo, Ohio. Filed Mar. 7, 1888. Serial No. 266,477. (No model.)



Claim.—1. The case C, having a hand-hole, with the bar D and its tensional device K substantially adjacent thereto, and the severer M, in combination with a roll upon which paper is wound, and means adapted to act upon a varying curve to produce a uniform tension upon said paper as it is being unwound, in the usual manner, from the said roll, substantially as shown and described.

2. The case C, having a hand-hole and a severer substantially adjacent thereto, in combination with a roll upon which paper is wound, and means adapted to act upon a varying curve to produce a uniform tension upon said paper as it is being unwound, in the usual manner, from the said roll, substantially as shown and described.

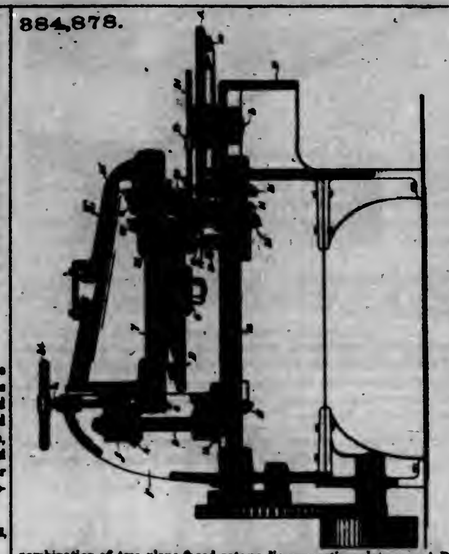
3. The case C, having a hand-hole, with a bar, D, and its tensional device K substantially adjacent thereto, and the severer M, in combination with a roll upon which paper is wound, substantially as shown and described.

4. A paper-serving device having a hand-hole and a severer substantially adjacent thereto, in combination with means for giving necessary tension to the said paper, whereby the said paper is adapted to be clutched by the hand of the operator through the said hand-hole and severed on a line substantially flush with the hand-entering side of said device, substantially as shown and described.

5. A paper-serving device consisting of a roll upon which a scroll of paper is wound, and a tensional device, such as shown, adapted to operate upon said scroll to produce a uniform tension upon said paper as it is being unwound from the said roll, in combination with a severer, substantially as shown and described.

384,878. MACHINE FOR ROLLING METAL ARTICLES TO FORM.

CHARLES F. TOMPKINS, Fitchburg, Mass., assignor to the Tubbette Rolled Forging and Machine Company, Kinney, Me. Filed Dec. 15, 1887. Serial No. 257,892. (No model.)



Claim.—1. In a machine for rolling metal articles to form, the combination of two plane-faced rotary die-supporting platens, as A B, a two-part forming-die mounted, one member on the plane face of one and the other member on the opposing plane face of the other platen, and means for rotating the platens progressively, to bring the co-operating die members up to and past each other repeatedly, substantially as described.

2. In a machine for rolling metal articles to form, two pivotally-supported plane-faced rotary die-supporting platens, one or more two-part forming-dies, one member of each die being mounted on the plane face of one and the co-operating members on the opposing plane face of the other platen, and means for rotating the platens progressively, substantially as and for the purposes described.

3. In a machine for rolling metal articles to form, the combination of two die-supporting platens and a series of two-part forming-dies, one member of each die being mounted on one and the co-operating members on the opposing faces of the other platen, respectively, and supporting and operating mechanism whereby the platens are moved progressively to make the die members approach and pass each other, substantially as described.

4. In a machine for rolling metal articles to form, the combination of two plane-faced rotary die-supporting platens, as A B, a two-part forming-die mounted, one member on the plane face of one and the other member on the opposing plane face of the other platen, and means for rotating the platens progressively, to bring the co-operating die members up to and past each other repeatedly, and a gage for supporting the metallic rod operated on between the dies, substantially as described.

5. In a machine for rolling metal articles to form, the combination of two plane-faced rotary die-supporting platens, as A B, a two-part forming-die mounted, one member on the plane face of one and the other member on the opposing plane face of the other platen, and means for rotating the platens progressively, to bring the co-operating die members up to and past each other repeatedly, and an adjustable gage for supporting the metallic rod operated upon between the dies, substantially as described.

6. In a machine for rolling metal articles to form, the pivotally-supported die-platens A B and dies mounted on the faces thereof, combined with the supporting-rolls 25, arranged to bear upon the platens, and means for rotating the platens, substantially as set forth.

7. In a machine for rolling metal articles to form, the die-supporting platens A B, the dies *a a*, mounted on the faces thereof, the gears 8 11, engaging the platens, as described, the supporting-rolls 25, shafts 7 12, and connecting and operating mechanisms, in combination, substantially as set forth.

8. In a machine for rolling metal articles to form and in combination, substantially as set forth, the standard F, the bracket-arm E, supported movably on said standard, and the die-supporting platens and operating mechanisms, substantially as described.

384,879. HOE.

SAMUEL H. T. THURMAN, Worcester County, Md. Filed Feb. 28, 1888. Serial No. 265,694. (No model.)

Claim.—1. A hoe having a toothed edge, the teeth being sharp-

384,878.

combination of two plane-faced rotary die-supporting platens, as A B, a two-part forming-die mounted, one member on the plane face of one and the other member on the opposing plane face of the other platen, and means for rotating the platens progressively, to bring the co-operating die members up to and past each other repeatedly, substantially as described.

2. In a machine for rolling metal articles to form, two pivotally-supported plane-faced rotary die-supporting platens, one or more two-part forming-dies, one member of each die being mounted on the plane face of one and the co-operating members on the opposing plane face of the other platen, and means for rotating the platens progressively, substantially as and for the purposes described.

3. In a machine for rolling metal articles to form, the combination of two die-supporting platens and a series of two-part forming-dies, one member of each die being mounted on one and the co-operating members on the opposing faces of the other platen, respectively, and supporting and operating mechanism whereby the platens are moved progressively to make the die members approach and pass each other, substantially as described.

4. In a machine for rolling metal articles to form, the combination of two plane-faced rotary die-supporting platens, as A B, a two-part forming-die mounted, one member on the plane face of one and the other member on the opposing plane face of the other platen, and means for rotating the platens progressively, to bring the co-operating die members up to and past each other repeatedly, and a gage for supporting the metallic rod operated on between the dies, substantially as described.

5. In a machine for rolling metal articles to form, the combination of two plane-faced rotary die-supporting platens, as A B, a two-part forming-die mounted, one member on the plane face of one and the other member on the opposing plane face of the other platen, and means for rotating the platens progressively, to bring the co-operating die members up to and past each other repeatedly, and an adjustable gage for supporting the metallic rod operated upon between the dies, substantially as described.

6. In a machine for rolling metal articles to form, the pivotally-supported die-platens A B and dies mounted on the faces thereof, combined with the supporting-rolls 25, arranged to bear upon the platens, and means for rotating the platens, substantially as set forth.

7. In a machine for rolling metal articles to form, the die-supporting platens A B, the dies *a a*, mounted on the faces thereof, the gears 8 11, engaging the platens, as described, the supporting-rolls 25, shafts 7 12, and connecting and operating mechanisms, in combination, substantially as set forth.

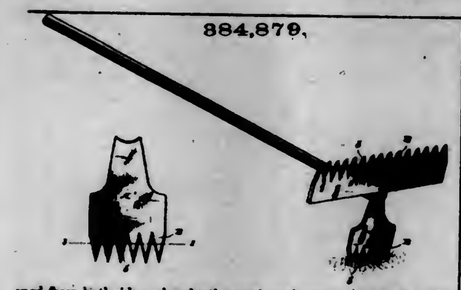
8. In a machine for rolling metal articles to form and in combination, substantially as set forth, the standard F, the bracket-arm E, supported movably on said standard, and the die-supporting platens and operating mechanisms, substantially as described.

384,879. HOE.

SAMUEL H. T. THURMAN, Worcester County, Md. Filed Feb. 28, 1888. Serial No. 265,694. (No model.)

Claim.—1. A hoe having a toothed edge, the teeth being sharp-

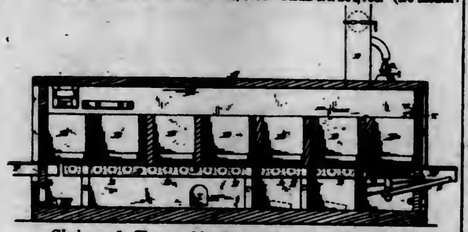
384,879.



ened from both sides, whereby the cutting-edges are between the plain faces of the teeth and parallel therewith, substantially as and for the purpose described.

2. A weeding-hoe having its edge provided with narrow teeth, beveled from both sides to form sharp edges between the plain faces of the teeth, the spaces between the teeth being wedge shape and of a depth greater than the distance between the points of the teeth, whereby weeds and grass may be wedged between the teeth and pulled, substantially as described.

384,880. APPARATUS FOR BLEACHING FRUIT. ASAHEL TODD, Palmyville, N. Y. Filed Feb. 21, 1888. Serial No. 264,782. (No model.)

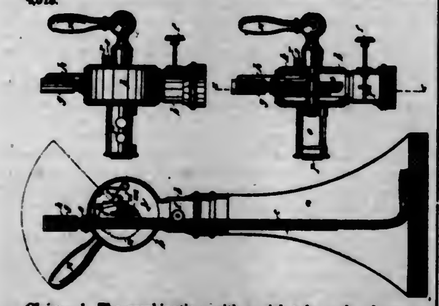


Claim.—1. The combination of the frame A, provided with a series of horizontal rollers, and the boxes B, having open bottoms, so that the sulphur-fumes will rise through the fruit contained therein, with the hinged partitions J, which are placed in the chamber underneath the boxes, and in which the sulphur-fumes are generated, substantially as described.

2. The combination of the frame A, provided with horizontal supports upon which the boxes containing the fruit are placed, and having a chamber or space above the boxes for a free circulation of air, and a chamber below the boxes in which the sulphur-fumes are generated, with the hinged partitions J, the bellows located at one end, and a ventilating-pipe, P, substantially as set forth.

3. The combination, with the frame and the boxes which are to be filled with the fruit, of the trough through which the fruit is fed into the boxes, and the V-shaped leveling device placed in the frame just above the top of the boxes, substantially as described.

384,881. COMBINED LAMP AND CIGAR-CUTTER. OTTO VOLKMANN, Köpenick, near Berlin, assignor to Wilhelm Fischbach, Berlin, Germany. Filed Dec. 22, 1887. Serial No. 258,708. (No model.) Patented in Germany July 3, 1883, No. 25,699; in Austria-Hungary Nov. 7, 1886, No. 40,681 and No. 16,905, and in England Mar. 27, 1886, No. 4,312.



Claim.—1. The combination, with a wick-tube and a sleeve surrounding the upper end of said tube and movable thereon in the direction of its length, of a lever, *h*, connected with said sleeve, a shaft, *d*, having a projection for actuating the lever to lower the sleeve, and springs *l* and *n*, to return the lever and shaft to normal position and raise the sleeve when the shaft is released, substantially as described.

2. The combination, with a wick-tube and *p* sleeve surrounding the upper end of said tube and movable thereon in the direction of its length, of a lever connected with said sleeve, a shaft having a projection for actuating the lever, and stops, one of which is adjustable, for limiting the movement of the shaft and controlling the upward and downward movement of the sleeve, substantially as described.

3. A cigar cutter and lighter consisting of an oil-reservoir, a casing, *b*, and having a projection mounted thereon, a wick-tube passed through said casing, a sleeve surrounding the upper end of said tube and movable thereon in the direction of its length, a lever connected with said sleeve and inclosed in the casing *b*, a shaft, *d*, mounted in the casing *b* to actuate said lever, and a cigar-cutter connected with and actuated by said shaft, substantially as described.

384,882. BACK-BAND HOOK. SIDNEY WARD, Princeton, Ind. Filed Apr. 30, 1888. Serial No. 272,388. (No model.)



Claim.—1. As an improved article of manufacture, a back-band hook formed of a single piece of metal and consisting of the cross-bar B, provided with rivet-holes, the depending converging side bars, C, connected by the rounded portion D, the guards F, formed upon the inner vertical edges of the said side bars and extending nearly their entire length, these guards being carved on their outer edges, as described, and the hook E, formed on the face of the connecting portion D and terminating between the flanges about on a horizontal line with their highest portions, substantially as herein set forth.

2. As an improved article of manufacture, a back-band hook constructed of a single piece of metal and consisting of the cross-bar B, provided with rivet-holes, the depending side bars provided with guards and connected together by portion D, and the hook E, the said cross-bar B being provided with circular depressions *c* in its under side and circular bosses *d* on its face, these depressions and bosses surrounding the rivet-holes in the cross-bars, as and for the purposes herein set forth.

384,883. VALVE. EDWIN F. WILLIAMS, Chicago, Ill. Filed Aug. 20, 1887. Serial No. 247,499. (No model.)



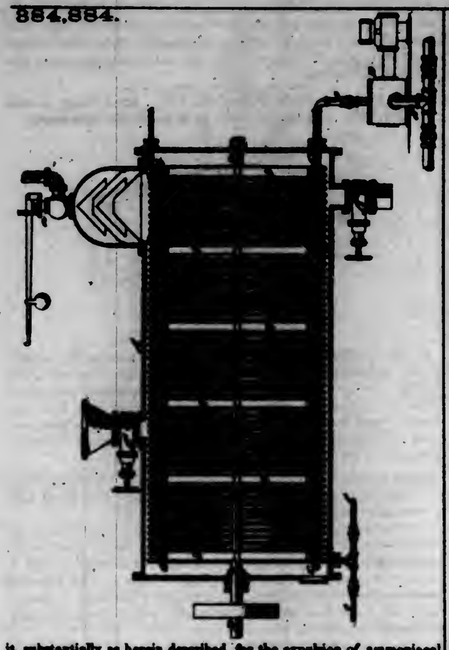
Claim.—1. The combination, with the steam-chest provided with the central live-steam space and exhaust-steam spaces at each end, with end-bearing ribs above the same, of the independent pressure-plates, arranged one at each end of the chest within the central space above the valve and held against the bearing-ribs by the steam-pressure, substantially as and for the purposes specified.

2. The combination, with the steam-chest A, having valve-seats *a*, distance-ledges D on each side of each valve-seat, and bearing-ribs *f'*, one at each end, of the valve E, having a height equal to that of the distance-ledges, and the pressure-plates F, mounted on the distance-ledges and bearing against the ribs *f'*, substantially as and for the purposes specified.

384,884. MANUFACTURE OF BICARBONATE OF SODA. HILTON R. WEBB, Brooklyn, N. Y. Filed Nov. 30, 1886. Serial No. 220,344. (No specimens.)

Claim.—1. The within-described improvement in the purification of the crude bicarbonate of soda obtained by the ammonia process, consisting in mixing said crude bicarbonate with sufficient water to make a mixture of a semi-fluid or cream-like consistency, and heating the said mixture to a temperature of about from 190° to 210° Fahrenheit while it is subjected to pressure by forcing air into and through

384,884.



it, substantially as herein described, for the expulsion of ammoniacal impurities.

2. The within-described improvement in the manufacture of bicarbonate of soda by the ammonia process, consisting in mixing the crude bicarbonate of soda resulting directly from that process with sufficient water to make a mixture of a semi-fluid consistency, heating the said mixture to a temperature of about 190° to 210° Fahrenheit, and while so heated forcing air into or through it for the purpose of expelling the excess of ammoniacal impurities, and afterward forcing through it carbonic-acid gas for the purpose of replacing the carbonic acid which may have been driven off by the air previously forced through it, all substantially as herein described.

384,885. NUT-LOCK. LEE ARMSTRONG, Paris, Tex., assignor of one-half to Thomas Brand, same place. Filed Feb. 21, 1888. Serial No. 264,802. (No model.)



Claim.—1. In a nut-lock, the plate having the outstanding lugs, the retaining-arms pivoted to one of said lugs, the detent between said lugs, and the locking-bolts having the head portion and the corrugated shank, substantially as specified.

2. The nut-lock consisting of the bearing-lug B, the grooved lug B', the arms C, pivoted to the lug B, the free ends entering the grooves *c*, the detent on the plate, the locking-bolts having the corrugated shank, and the head provided with the V-shaped opening, in combination with the plate, the nut, and the bolt, substantially as specified.

384,886. CASTER. EDWARD G. ALLEN, Milwaukee, Wis., assignor of one-half to Charles J. Walker, same place. Filed June 28, 1888. Serial No. 168,544. (No model.)



384,886.



Claim.—1. In a caster, the combination of a stationary base having an annular track, a wheel-frame provided with a flange overhanging and retaining it in connection therewith, a pivotal stud upon which said wheel-frame is fulcrumed and retained in its central position with reference to said base, a caster-wheel journaled in said wheel-frame, and a friction roller or rollers interposed between said flange and base, substantially as and for the purposes set forth.

2. The combination, in a caster, of the base-plate A, wall B, formed separate therefrom and secured thereto by eyelets C, eyelets C, wheel-frame D, and caster-wheel F, substantially as and for the purposes set forth.

384,887. CHAIR. JOHN R. ROOT, Long Meadow, Mass., assignor to William W. Cosmer, same place. Filed Mar. 11, 1886. Serial No. 194,611. (No model.)

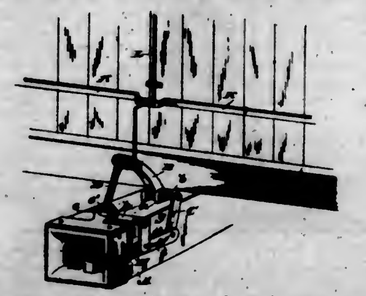


Claim.—1. As a new article of manufacture, a brace for chair-legs, cast in a single piece, consisting of a rectangular frame of four rounds united at the ends by hollow sleeves open at both ends to take and hold the legs of a chair below the seat thereof, substantially as described.

2. The brace for chair-legs herein described, consisting of a rectangular frame of four rounds united at the ends by hollow sleeves open at both ends to take the legs of a chair below the seat thereof, and formed with diagonally-arranged braces having their ends in the sleeves, substantially as described.

384,888. WITHDRAWN.

384,889. CAR-COUPLING. SAMUEL C. CARROLL, Adamsville, Tenn., assignor of one-half to W. R. Hesting and G. W. Thacker, both of same place. Filed Apr. 19, 1888. Serial No. 271,197. (No model.)



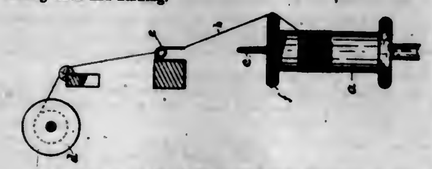
Claim.—1. In a car-coupler, the combination, with the draw-head A, having an arm which carries a coupling-pin pivoted thereto, of a sliding bar having one end projecting beyond the draw-head, a pivoted angle-bar connected to the sliding bar, and a bar, C, for connecting the same to the pivot-pin of the arm B, the parts being organized substantially as shown, and for the purpose set forth.

2. The combination, in a car-coupler, of an arm, B, having a coupling-pin pivoted thereto, a pivot-pin, *b*, mounted in suitable bearings upon the draw-head and provided with a bar, C, an angle-bar, H, having a notch, *h'*, a link for connecting said angle-bar to a sliding bar, F, and spring *g*, interposed between the draw-head and sliding bar, the parts being organized substantially as shown, and for the purpose set forth.

3. The combination, in a car-coupler, of a draw-head provided with upwardly-projecting perforated lugs *c c*, a band encircling the draw-head and provided with a rearward projection, *e*, having a perforation surrounded by an upward flange, an angle-bar, A, pivoted to the projection *e*, a sliding bar, F, having inwardly-bent end, a link, *i*, for connecting the angle-bar to the sliding bar, said sliding bar being connected to the pivot-pin of the arm B, and a coupling-pin, D, the parts being organized substantially as shown, and for the purpose set forth.

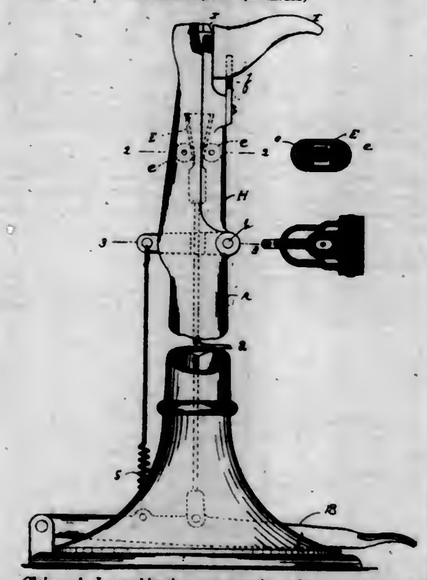
884,890. KINK-PREVENTER FOR SILK-SPINNING MACHINES. JOSEPH A. CHAPMAN, New London, Conn. Filed Oct. 20, 1887. Serial No. 253,754. (No model.)

Brief.—When the bobbin is stopped, the strand falls against the plush thereon, and is thereby prevented from slipping forward and becoming slack and kinking.



Claim.—A bobbin for silk-spinning, having the flange or head at the delivery end grooved annularly and having fixed within said groove a ring of plush or similar material, whose nap projects outward into the path of the strand of silk, substantially as and for the purpose specified.

884,891. LASTING-JACK. GEORGE H. CLARK, Boston, Mass. Filed Sept. 19, 1887. Serial No. 249,668. (No model.)

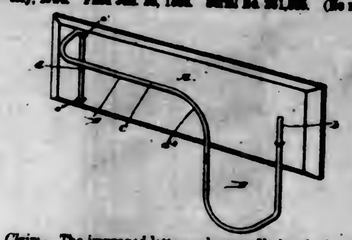


Claim.—1. In combination, a supporting-column having a fixed and movable part, the fixed part forming or carrying the heel portion, and a fore-part last detachably connected to the movable part of the standard, the movable part having separating movement in relation to the fixed part, whereby the fore-part last is forced into the shoe by this movement and retained therein when the shoe is lifted from the column, substantially as described.

2. In combination, a supporting-column having a fixed and a movable part, the fixed part forming or carrying the heel portion and having a slot in its end, a fore-part last having a tang and head adapted to engage with the slot in the fixed portion, the said last being supported by the movable part, said movable part of the column having separating movement in relation to the fixed part, whereby the fore-part last may be forced into the shoe and retained therein when the shoe is lifted from the column, substantially as described.

3. In combination, the column having fixed and movable parts, one forming the heel and the other carrying a vertically-detachable fore-part last, a wedge arranged to separate the parts of the column, a rod connecting the wedge and treadle, and a retracting-spring, substantially as described.

884,892. PAPER AND LETTER FILE. WARD COOPER, La Porte City, Iowa. Filed Jan. 26, 1888. Serial No. 261,865. (No model.)



Claim.—The improved letter and paper file herein described and shown, comprising a horizontal base, a vertical shank secured rigidly thereto near one end, and the retaining-frame consisting of a wire bent to form a vertical arm journaled to the opposite end of the base, then bent outward from the base, then horizontally toward the hook, and then vertically downward, and having a socket in its end to engage the point of the hook, as set forth.

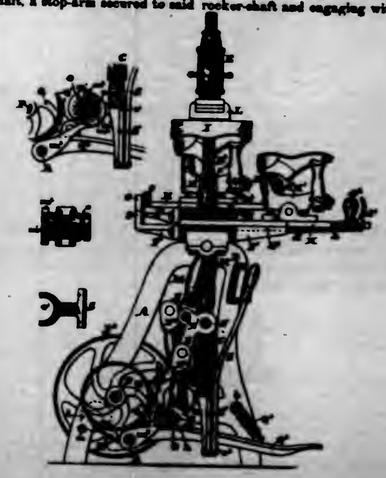
884,893. BEATING-OUT MACHINE. JAMES C. OTTERSEN, Lynn, Mass., assignor to Ottersen & Johnson, same place. Filed Oct. 26, 1887. Serial No. 253,022. (No model.)

Claim.—1. A machine for beating out the soles of boots and shoes, provided with two jacks, two molds, and means, substantially as described, having provision for automatically moving one jack in one direction while the other is being moved in the opposite direction, whereby the sole of the shoe upon one jack will be under pressure while the other jack will be in a convenient position for the removal of the shoe therefrom.

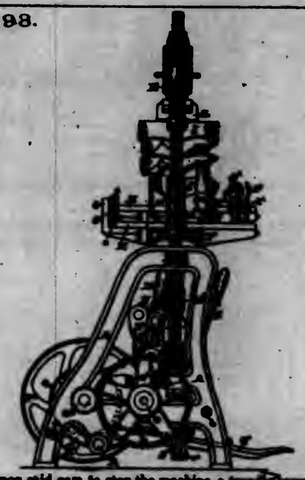
2. In a machine for beating out the soles of boots and shoes, the combination of a mold or die, a vertically-movable table, a shoe-supporting jack mounted upon said table, a pair of toggle-links for moving said table and jack toward and from said mold, an arm projecting laterally from one of said links and integral therewith, a crank, and a connecting-rod connecting said crank with said lateral arm.

3. In a machine for beating out the soles of boots and shoes, the combination of a mold or die, a shoe-supporting jack arranged to be moved vertically, a pair of toggle-links for moving said jack toward and from the mold, an arm projecting laterally from one of said links and integral therewith, a crank, and a rod connecting said crank with said lateral arm.

4. In a machine for beating out the soles of boots and shoes, the combination of a mold or die, a vertically-movable jack, a crank, a toggle mechanism connecting said crank and jack and having provision for the movement of the latter, a crank-shaft, a cam secured to said crank-shaft and provided with an abrupt shoulder, a driving-shaft, gearing for connecting said crank-shaft and said driving-shaft, a rocker-shaft, a stop-arm secured to said rocker-shaft and engaging with the



884,893.



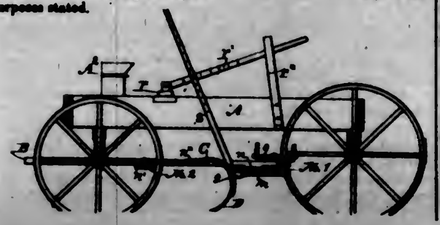
shoulder upon said cam to stop the machine, a treadle secured to said rocker-shaft, a spring connecting said treadle with a stationary part of the machine, a brake-shoe operated by said treadle and acting upon said brake-wheel, and a suitable clutch mechanism for applying power to the driving-shaft when the shoe has been released from contact with the brake-wheel and the stop-arm has been disengaged from the shoulder of said cam.

5. In a machine for beating out the soles of boots and shoes, the combination of a mold or die, a vertically-movable jack, a crank, a toggle mechanism connecting said crank and jack pad having provision for the movement of the latter, a crank-shaft, a driving-shaft, gearing for connecting said crank-shaft and driving-shaft, a rocker-shaft, a stop-arm secured to said rocker-shaft, a cam mounted upon said crank-shaft so as to be moved lengthwise of said shaft and provided with an abrupt shoulder to engage with said stop-arm to stop the machine, a shifter-lever for moving said cam out of or into the plane of motion of said stop-arm, a treadle secured to said rocker-shaft, a spring connecting said treadle with a stationary part of the machine, a brake-shoe operated by said treadle and acting upon said brake-wheel, and a suitable clutch mechanism for applying power to the driving-shaft when the shoe has been released from contact with the brake-wheel and the stop-arm has been disengaged from the shoulder of said cam.

6. In a machine for beating out the soles of boots and shoes, the combination of a mold or die, a vertically-movable jack, a crank, a toggle mechanism connecting said crank and jack and having provision for the movement of the latter, a crank-shaft, a driving-shaft, gearing for connecting said crank-shaft and driving-shaft, a rocker-shaft, a stop-arm secured to said rocker-shaft, a cam secured to said crank-shaft and provided with an abrupt shoulder to engage with said stop-arm to stop the machine, a treadle secured to said rocker-shaft, a spring connecting said treadle with a stationary part of the machine, a forked lever secured to the outer end of said rocker-shaft, a beveled roll mounted in the end of said lever, a friction-wheel secured to the driving-shaft, and a loose driving-pulley mounted upon said driving-shaft and arranged to be pressed into contact with said friction-wheel by the action of said beveled roll upon its hub when it is desired to apply power to said driving-shaft.

884,894. ROAD-GRADING MACHINE. JOSEPH B. DAWSON, Knoxville, assignor of one-half to Henry C. Longsdorfer, Linn, Iowa. Filed Sept. 28, 1887. Serial No. 250,254. (No model.)

Claim.—1. In a road-scraper, the combination of a jointed beam, a scraper, and a carriage, to operate in the manner set forth, for the purposes stated.



884,894.



2. The jointed beam C, the scraper D, having a fixed block, *g*, the chain-wheel No. 1, block *m*, hand-wheel *o*, and chain *n*, arranged and combined substantially as and for the purposes stated.

3. The jointed beam C, having a fixed block, *m*, the scraper D, having a semicircular block, *g*, and fixed draft-bars *n''*, the chain-wheels Nos. 1 and 2, and chains *n* and *n'*, arranged and combined to operate in the manner set forth, for the purposes stated.

4. The jointed beam C, having an elongated slot in its front portion, and the scraper D, pivoted to the rear portion of the said beam, in combination with a tractable carriage and mechanism for adjusting and elevating the scraper and beam, in the manner set forth, for the purposes stated.

5. The pivoted bar *r*, having hinged handles *r'*, the fixed racks *r''*, and the bars *e*, in combination with the scraper D, pivoted to the jointed beam C, to operate in the manner set forth, for the purposes stated.

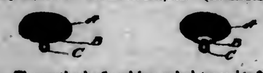
6. The improved road-scraping machine comprising a four-wheeled carriage, a jointed beam having a scraper pivoted to its under side and rear portion; mechanism for adjusting the scraper horizontally relative to the beam, and mechanism for adjusting the scraper vertically relative to the surface of the ground, arranged and combined to operate in the manner set forth.

884,895. LIMEKILN. JAMES W. DAVLIN, Flemington, Pa., assignor of seven-eighths to Austin H. Doyle, same place. Filed Oct. 14, 1887. Serial No. 252,327. (No model.)



Claim.—A limekiln comprising a stone base formed with a lower cooling-chamber, one side of which is gradually curved toward a lower exit-opening, and the opposite wall straight and having radially-arranged burning-chambers in the upper part thereof, and gas-ports over said burning-chambers, a cupola consisting of an inner fire-brick wall built into the upper part of the stone base, the inner opening of which aligns with and forms an upward continuation of the lower cooling-chamber, an outer metallic shell surrounding the inner fire-brick wall to form a compartment therewith, and having a shoulder formed therein to increase the extent of said space between the inner fire-brick wall and outer shell adjacent to the greatest point of heat radiation, and a packing of ashes between said inner fire-brick wall and outer metallic shell, and of increased thickness adjacent to the stone base, substantially as described.

884,896. MANUFACTURE OF UPHOLSTERY-TUFTS. GEORGE DOOLITTLE, Bridgeport, Conn., assignor, by mesne assignments, to S. H. Hubbard, same place, and John E. Beach, New Haven, Conn., trustees. Filed May 12, 1888. Serial No. 274,088. (No model.)



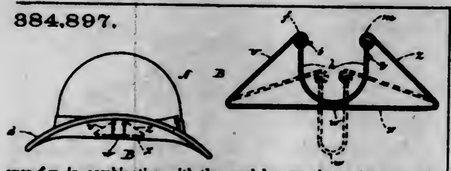
Claim.—The method of making upholsterers' tufts, which consists in inserting a mass of unsewed yarn or other fiber under temporary compression within a cup-shaped metal back and then crimping the sides of said back firmly against said yarn or fiber, substantially as set forth.

884,897. HAT-HANGER. STEPHEN I. DEACH, Swampscott, Mass. Filed Apr. 16, 1888. Serial No. 270,737. (No model.)

Claim.—1. In a device of the character described, the curved body *x*, provided with the elastic arms *v v*, having the eyes *f m*, in combination with the hat A, provided with the sweat-band *k* and with the elastic cord A, secured in said eyes and passing through holes in said band or the brim *d*, substantially as specified.

2. The improved hat-hanger consisting of the inwardly-curved body *x*, provided with the inwardly-bent elastic arms *v v*, having the

384,897.



eyes *f m*, in combination with the cord *A*, secured to said arms, substantially as set forth.

384,898. STEAM-GENERATOR. JAMES A. ROE, Newark, N. J., assignor to the Roe Steam Generator Company, same place. Filed Feb. 7, 1888. Serial No. 263,871. (No model.)



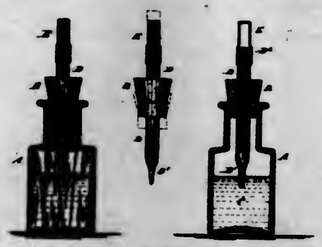
Claim.—1. In a steam-generator, the combination, with a boiler, *a*, circulating-pipes *f f'*, a series of generating-pipes, *c*, a branch pipe, *h*, and vertical connecting-pipes, of a mud-drum having the inlet-pipe thereof disposed beneath the said branch, substantially as set forth.

2. In a steam-generator, the combination, with the boiler and a series or collection of circulating-pipes disposed horizontally beneath the boiler and having a vertical course or turn, as at h^2 h^4 h^3, in their length, and a mud-drum or sediment-receptacle, *i*, disposed beneath the said vertical course or turn in said circulating-pipes, substantially as and for the purposes set forth.

3. In combination, a steam-generator with a series of generating-pipes, *c*, a branch, *h*, and a mud-drum directly connected with said branch and receiving the sediment therefrom, substantially as and for the purposes set forth.

4. The combination, in a steam-generator, with a series of pipes, *c*, a mud-drum, *i*, and circulating-pipes *f f'*, of a branch, *h*, having upwardly-turned extremities h^3 and intermediate pipes, h^4, and a downwardly-extending pipe, h^2, all formed integral with said branch and providing means for coupling with the said pipes, and a mud-drum, substantially as and for the purposes set forth.

384,899. INK-SUPPLYING DEVICE. HERMANN RÖSER, Hoboken, N. J. Filed Nov. 11, 1887. Serial No. 254,857. (No model.)



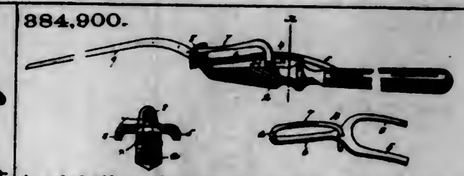
Claim.—1. The ink-supplying device herein described, the same comprising the tube D, and a cylindrical rubber cap, E, fitting upon its upper end and arranged, as shown, so that it may be slid thereon to vary its capacity, as and for the purpose specified.

2. The ink-supplying device herein described, the same comprising a tube, D, contracted and flattened at its lower end, a cylindrical rubber cap, E, fitting adjustably upon its upper end, and a cork, B, fitting adjustably upon its body between the ends, all combined and arranged for joint operation as and for the purpose specified.

384,900. FORK-GUARD. FREDERICK C. FISHER, Northampton, Mass., assignor to the Northampton Cutlery Company, same place. Filed Apr. 4, 1888. Serial No. 269,694. (No model.)

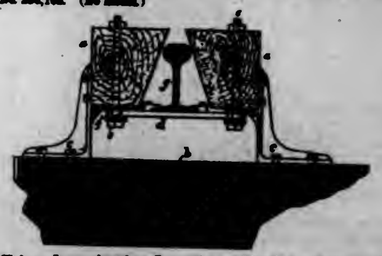
Claim.—A fork-guard having an elastic extension, 7, of its arm 6, the end of which extension passes through the guard, combined with a fork-shank having cheek-pieces thereon to and between which

384,900.



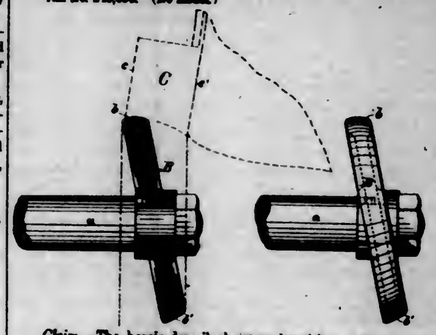
the end of said extension is pivotally connected, substantially as set forth.

384,901. GUARD-RAIL AND INSULATOR FOR ELECTRIC RAILWAYS. EGIDIO A. FRETTO, Boston, Mass. Filed Apr. 26, 1887. Serial No. 236,162. (No model.)



Claim.—In an electric railway, the combination, with trapezoidal guard-rails supported above railway-ties, of an insulated electric conducting-rail suspended between said guard-rails and said ties, substantially as and for the purpose described.

384,902. BURNISHING OR TRIMMING TOOL. ALFRED B. FOULKE and GEORGE R. WARREN, Exeter, N. H., assignors to the Rockingham Machine Company, of New Hampshire. Filed Sept. 14, 1887. Serial No. 249,694. (No model.)



Claim.—The herein-described rotary burnisher or trimmer-tool B, arranged obliquely and eccentrically upon the rotary shaft *a*, as and for the purpose set forth.

384,903. COUNTER-ILLUMINATING ROOM. RUSSELL FRASER, Austin, Ill. Filed Mar. 5, 1888. Serial No. 266,127. (No model.)

Claim.—1. The combination, with the shelving B, having vertical recesses C, of a sliding frame consisting of side pieces, D, movably supported in the upper part of said recesses and connected by end pieces, E, and the curtains H, supported by said frame, whereby, when said frame and curtains are drawn out in front of the shelving, a darkened room will be formed for the display of goods by artificial light, substantially as described.

2. The combination of the shelving B, having vertical recesses C, the sliding side pieces, D, movably supported in the upper part of said recesses and connected by end pieces, E, the side curtains, H, supported by the side pieces, D, the mirror K, supported on the inner side of the front end piece E, the mirror M, supported by the shelving, and a lamp, *g*, whereby an artificially-illuminated room may be formed in front of the shelving when the curtains H and their supports are drawn out, substantially as described.

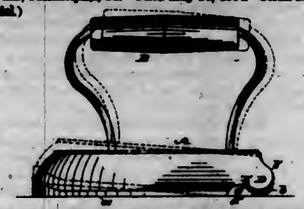
3. The combination, with the counter A and the shelving B, having vertical recesses C, of a sliding frame composed of side pieces, D, movably supported in the upper part of said recesses, the connecting end pieces, E, and the front corner posts, F, arranged to rest on the counter when the said frame is drawn out in front of the shelving, the

384,903.



side curtains, H, supported by the sliding frame, and the mirrors K M, and lamp *g*, located in the space inclosed by said frame and curtains, substantially as described.

384,904. CORRUGATED SMOOTHING AND POLISHING IRON. WILLIAM D. GALE, Philadelphia, Pa. Filed May 26, 1884. Serial No. 133,033. (No model.)



Claim.—1. A combined smoothing and polishing iron having the base or ironing portion thereof a plane surface, and provided with the heel D and the channel C, the latter being between said heel and base, the said heel being above the level of the base and convex or rounded both longitudinally and transversely, all substantially as and for the purpose set forth.

2. A combined smoothing and polishing iron consisting of a base or ironing portion forming a plane surface, and a polishing-heel separated from the ironing portion by a channel, the said heel being convex both longitudinally and transversely, the iron being so weighted as to normally rest on its ironing-surface, the polishing-heel being above the same, substantially as and for the purpose set forth.

384,905. KILN FOR BURNING HYDRAULIC CEMENT. CHARLES R. GOODLIN, Whitehall, assignor of one-half to Saml. R. Wellington, Catasauqua, Pa. Filed Nov. 2, 1887. Serial No. 254,663. (No model.)

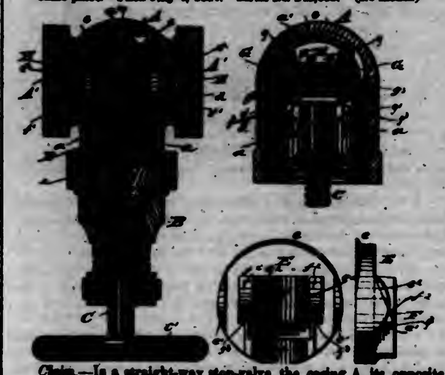
Claim.—1. An apparatus for drying and burning hydraulic cement, consisting of a vertical kiln opening at the top into a horizontal



chamber, in which the slip is dried preparatory to burning, and through which all the products of combustion from the kiln pass on their way to the smoke-stack, as set forth.

2. In kilns for burning cement, a vertical kiln in which the cement is burned; a horizontal tunnel or tunnels communicating with the upper portion of the vertical kiln, said tunnels being divided into compartments, around which the waste products of combustion from the burning-kiln are caused to pass on their way to the stack, as set forth.

384,906. STRAIGHT-WAY STOP-VALVE. HENRY HALL, Lexington, N. Y., assignor to the Rensselaer Manufacturing Company, same place. Filed July 7, 1887. Serial No. 243,603. (No model.)



Claim.—In a straight-way stop-valve, the casing A, its opposite ports, and stop-lug *c'* between said ports, and the valve-stem casing B, valve-stem, and angularly-flanged nut playing on said stem, in combination with the oppositely-facing gates E, hung upon the angular flange of said nut, having pairs of oppositely-facing inclines f^3 on their inner faces, flanges e^2 to the inside of said inclines, flanges *d* to the outside thereof, and shoulders f^4, the independent recessed arms G G, hung between gates E E on the shoulders f^3 thereof, and lying between the flanges *d* and inclines f^3, and the wedges H H, placed in the recesses of said arms and engaging the inclines f^3 of the opposite gates, all substantially as and for the purpose described.

384,907. RELIEF-VALVE FOR DOOR-CHECKS. HENRY A. HOUSE and HENRY A. HOUSE, Jr., Bridgeport, Conn. Filed Dec. 31, 1887. Serial No. 259,469. (No model.)



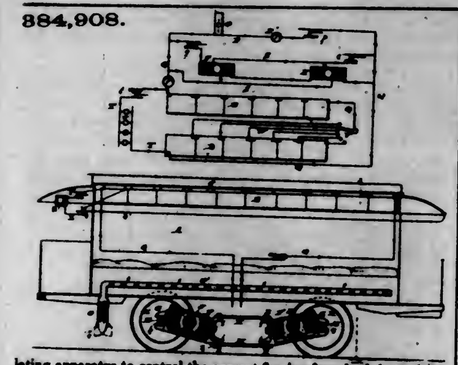
Claim.—1. The combination, with the compressing-piston and the central spindle having ports above and below said piston, and a vertical channel connecting said ports, of the stem suspended from a vertically-adjustable cap, said stem having on its lower extremity a valve-disk which extends immediately over and in close proximity to said vertical channel, and the coil-spring around said stem at the upper end thereof and confined between the cap and a shoulder on the stem, substantially as shown, and for the purposes set forth.

2. The combination of the piston D, the spindle B, having at its lower end ports *a b*, connected by channel 18, having widened conical mouth *c*, said spindle being threaded exteriorly at the upper extremity, the interiorly-threaded cap H, adapted to the threaded end of the spindle, the valve-stem F, extending through said spindle and attached to said cap, and having near the upper end a shoulder, J, and on the lower extremity a valve-disk, G, extending immediately over the channel 18 and within the widened conical mouth *c*, and the coil-spring K around the stem between the shoulder J and the top of the cap, substantially as and for the purposes herein shown and set forth.

384,908. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed June 10, 1887. Serial No. 240,860. (No model.)

Claim.—1. The combination of a vehicle-body supported on springs and having two compartments located one on each side of the vehicle-body in the plane of the wheels, running-gear thereof, an electric motor supported thereon and connecting with the axles, an electric circuit connecting both batteries with the electric motor, and a single regu-

384,908.



lating apparatus to control the current flowing from both batteries to the motor.

2. The combination of a vehicle-body supported on springs and having two compartments located one on each side of the vehicle-body in the plane of the wheels, running-gear therefor, an electric motor supported thereon and connecting with the axles, an electric circuit connecting both batteries with the electric motor, a single regulating apparatus to control the current flowing from both batteries to the motor, and a cut-out device to cut out or in one or more cells of the batteries.

3. The combination of an electrically-propelled vehicle, two sets of batteries on said vehicle, the cells of one of said batteries being coupled in series with the cells of the other battery, a switch device to cut in or out one or more of the cells of one of the batteries, an electric motor, and a circuit connecting the motor in series with the two batteries.

4. The combination of an electrically-propelled vehicle, two sets of batteries on said vehicle, the cells of one of said batteries being coupled in series with the cells of the other battery, a switch device to cut in or out one or more of the cells of one of the batteries, an indicator to indicate the current strength of the batteries to direct the movement of the switch, an electric motor, and a circuit connecting the motor in series with the two batteries.

384,909. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Original application filed Oct. 19, 1886, Serial No. 216,962. Divided and this application filed Aug. 27, 1887. Serial No. 248,051. (No model.)

Claim.—1. In an electric railway, the combination, with the rail-track, of an exposed working-conductor and a shield or guard to protect said working-conductor at portions of its length corresponding to stations or crossings, but allow access thereto by the collector on the vehicle.

2. In an electric railway, the combination, with the rail-track, of an exposed working-conductor and a shield or guard to protect said working-conductor at portions of its length corresponding to stations or crossings, said guard consisting of extended side walls projecting above the working-conductor.

3. In an electric railway, the combination, with the rail-tracks, of an exposed working-conductor having its surface depressed at portions of its length corresponding to stations or crossings to take it out of dangerous exposure at such places, and an open passage-way leading to the conductor at its depressed portions.

4. In an electric railway, the combination, with the rail-tracks, of an exposed working-conductor having its surface depressed at portions of its length corresponding to stations or crossings to place it out of dangerous exposure at such places, and projecting guards or shields extending above said conductor at its depressed portions.

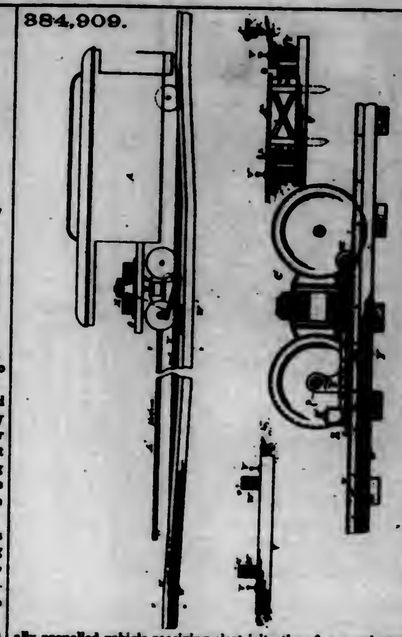
5. In an electric railway, the combination, with the rail-tracks, of an exposed working-conductor having its surface depressed at portions of its length corresponding to stations or crossings to place it out of dangerous exposure at such places, an electrically-propelled vehicle, and vertically-movable current-collectors adapted to follow the surface of the working-conductors.

6. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, and a soft moisture-absorbing wiper carried by said vehicle and adapted to wipe said working-conductor.

7. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, a moisture-wiper carried by said vehicle, adapted to wipe said working-conductor, and current-collectors arranged in the rear of said wiper.

8. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, a pivoted truck supporting said vehicle, and a moisture-wiper carried by said truck and adapted to wipe said working-conductor.

384,909.



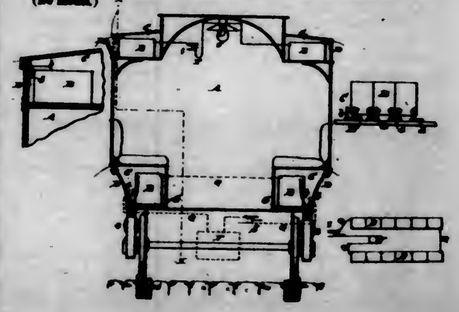
9. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, a moisture-wiper carried by said vehicle, adapted to wipe said working-conductor, current-collectors arranged in the rear of said wiper, and a removable moisture-absorbing sponge, pad, or equivalent device carried by the wiper, whereby said sponge or pad may be removed from time to time to press out the water collected.

10. In an electric railway, the railway-track, combined with a station platform or crossing, an exposed working-conductor parallel to the track, extending to or near each end of the platform or crossing, a section of the working-conductor connecting the two parts of the exposed working-conductor, and a slotted conduit or casing inclosing the connecting-section of the working-conductor.

11. In a railway, the combination, with the rails of the track and a vehicle, of an exposed working-conductor having its exposed surface turned out of line at portions of its length corresponding to stations or crossings to take it out of dangerous exposure at such places, and a current-collector carried by the vehicle and making contact with the conductor.

12. In an electric railway, the combination of a working-conductor, a traveling vehicle, and a moisture-wiper carried thereby on a transverse axis and adapted to wipe the working-conductor.

384,910. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Original application filed June 10, 1887, Serial No. 240,959. Divided and this application filed Apr. 26, 1888. Serial No. 271,893. (No model.)



Claim.—1. The combination of a vehicle having a compartment on its roof and an electric battery located therein.

2. The combination of a vehicle having a compartment on each side of its roof and an electric battery located in each compartment.

3. The combination of a vehicle having a compartment on its roof, an electric battery located therein, and a door to open or close said compartment.

4. The combination of a vehicle having a compartment, a removable battery consisting of separate cells located therein, a door or cover to close said compartment, and circuit-closing devices controlled by the door or cover to couple up the cells of the battery when the door or cover is closed.

5. The combination of a vehicle having a compartment, a removable battery consisting of cells located therein and having contact projections, a hinged door or cover to close said compartment, and circuit-closing spring devices controlled by the door or cover to touch said contact projections and couple up the cells of the battery when the door or cover is closed.

6. The combination of a car or vehicle, a battery arranged upon its roof or upper part, an electric motor arranged upon its lower part, and connecting-circuits between said battery and motor.

7. The combination of a compartment supported on axles by means of springs, a removable door or cover to said compartment, removable secondary battery-cells in said compartment, a circuit-closing device carried by the door or cover to couple up the battery into working connection, an electric motor to propel the compartment, and conductors connecting the battery and motor.

8. The combination of a traveling vehicle having battery-compartments arranged upon each side of the vehicle and over the wheels, and secondary batteries located within said compartments, whereby the weight thereof shall be located in the plane of the wheels, avoiding excessive strains to the car or vehicle frame.

9. The combination of a traveling vehicle having battery-compartments arranged upon each side of the vehicle and over the wheels, a passage-way located longitudinally through the vehicle and having its floor below the top of the batteries and between the battery-compartments, and secondary batteries located within said compartments, whereby the weight thereof shall be located in the plane of the wheels, avoiding excessive strains to the vehicle-frame.

10. The combination of a traveling vehicle having battery-compartments arranged upon each side of the vehicle and over the wheels, and secondary batteries located within said compartments, whereby the weight thereof shall be located in the plane of the wheels, avoiding excessive strains to the vehicle-frame, an electric motor to propel the vehicle, a mechanical connection between the motor and axle, and an electric circuit connecting the motor and both batteries.

11. The combination of an electrically-propelled vehicle, an electric motor to propel said vehicle, a secondary battery composed of a series of cells connected in series to supply current to said motor, a signal-circuit including one cell of the battery, a resistance and an electric bell in said circuit, and a circuit-maker to make or break said signal-circuit.

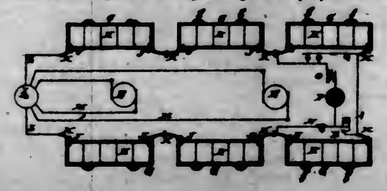
12. The combination of a compartment supported on axles by means of springs, a movable door or cover to said compartment, a series of removable battery-cells on said compartment, an electric motor directly connected to the axles and supported thereon, and conductors connecting the battery and motor.

13. The combination of a car, an electric motor to propel it, a battery on said car, consisting of a large number of cells connected in series with the motor, an electric signal on the car, a circuit including the said electric signal and a small part of the battery employed for the motor, and a switch to control the current flowing over said signal-circuit.

384,911. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Apr. 26, 1888. Serial No. 272,152. (No model.)

Claim.—1. In an electric railway, an electrically-propelled vehicle provided with a compartment under the side seats and windows, and a door extending along the outside of the car, forming the wall of the car-body, in combination with cells of a secondary battery arranged within said compartment independent of said wall-door and capable of removal through said doorway.

2. A car having seats arranged longitudinally upon the car, in



384,911.



combination with compartments under said seats and battery-cells arranged within said compartments.

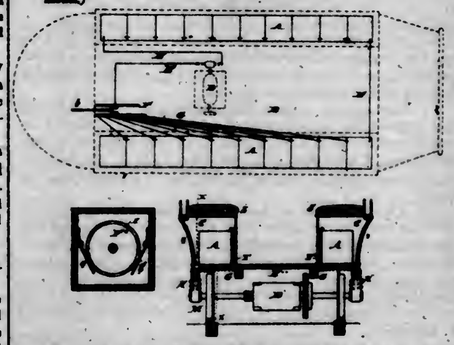
3. The combination of a car-body having seats and compartment under said seats opening to the outside of the car, a removable battery arranged within said compartment, whereby the gases may pass from the battery out into the atmosphere, a loosely-fitting door or cover for said compartment independent of the battery, means to secure it in place on the car so that it forms part of the wall of the car-body, a circuit permanently on the car-body, a translating device in said circuit, and a coupling device or devices permanently located in the compartment for connecting up the battery with the circuit on the car.

4. The combination of a car-body having seats and a battery-compartment under said seats, and in which the car-wall is formed with two or more separate openings to said compartment, separate doors or covers for said openings to said compartment, and separate batteries in the compartment in line with each door, and connecting-circuits for said batteries, whereby any bending or warping of the car-body will not interfere with the doors or batteries.

5. The combination of a car-body having seats and a battery-compartment under said seats, and in which the car-wall is formed with two or more separate openings to said compartment, and to one side of the support of the car-body on the axles, separate doors or covers for said openings to said compartments, and separate batteries in the compartment in line with each door, and connecting-circuits for said batteries, whereby any bending or warping of the car-body will not interfere with the doors or batteries.

6. The combination of a car-body having seats and a battery-compartment under said seats, and in which the car-wall is formed with two or more separate openings to said compartment, separate doors or covers for said openings to said compartment, and separate removable slides or trays supporting batteries in the compartment in line with each door, and connecting-circuits for said batteries, whereby any bending or warping of the car-body will not interfere with the doors or batteries.

384,912. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Original application filed Jan. 20, 1888, Serial No. 261,662. Divided and this application filed May 4, 1888. Serial No. 273,207. (No model.)



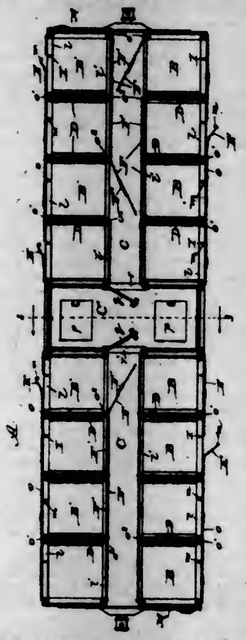
Claim.—1. The combination of a car-body having compartments under its seats for batteries, a series of batteries arranged upon the car above the floor-level, a regulator to modify the coupling up of said batteries, arranged within reach of the operator upon the front platform, an electric motor to propel the car, and a series of circuits leading from the batteries to the regulator, arranged below and close to the floor of the car-body.

2. The combination of a car-body having compartments for electric batteries, a series of removable batteries, a motor to propel the car, electric circuits fixed below and close to the car-body for coupling up the motor with the batteries, a regulator arranged in said circuit, and detachable connections between the circuits and batteries.

3. The combination of a car-body of an electric car supported upon the truck by springs, with freedom of vertical movement, a series

of removable batteries on the car-body, an electric motor under the car-body and connected with the axle of the car, a regulator for the motor on the front platform of the car, and with freedom of vertical movement with respect to the motor, and a looped circuit or circuits fixed to the car, extending from the batteries forward to the regulator, and then back to the motor, with capability of allowing the car-body, batteries, and regulator to rise and fall without breaking the electrical connection with the motor.

884,918. POULTRY-CAR. WILLIAM P. JENKINS, Chicago, Ill., assignor to the Jenkins Live Poultry Car Company, same place. Filed Apr. 17, 1888. Serial No. 270,880. (No model.)



Claim.—1. A live-poultry car comprising, in combination, a car divided internally into tiers of compartments opening laterally of the car, and a longitudinal aisle within the car separating the tiers of compartments into two sets normally closed to and controllably accessible from the aisle, substantially as described.

2. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments opening laterally of the car and provided with doors E, a longitudinal aisle, C, within the car, separating the tiers of compartments into two sets, B and B', and doors for the said compartments, opening into the aisle C, substantially as described.

3. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments having their sides formed with open-work, substantially as described, and opening laterally of the car, doors E for the compartments in the open-work at opposite sides of the car, a longitudinal aisle, C, within the car, separating the tiers of compartments into two sets, B and B', an open-work door, F, for each tier, opening into the aisle C, and doors F' in the doors F, substantially as described.

4. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments opening laterally of the car and provided with doors E, a longitudinal aisle, C, within the car, separating the tiers of compartments into two sets, B and B', doors F for the said compartments, opening into the aisle C, and troughs H, supported in the compartments and removable from and adjustable into the said compartments from the aisle through the doors F when closed, substantially as described.

5. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments opening laterally of the car, a longitudinal aisle, C, within the car, separating the tiers of compartments into two sets, B and B', normally closed to and controllably accessible from the aisle, troughs H in the compartments, and a stationary water-supply tank, L, provided with means for leading water from it to the compartments, substantially as described.

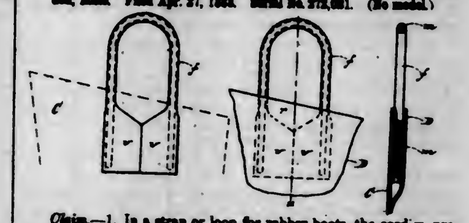
6. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments opening laterally of the car, a longitudinal aisle, C, within the car, separating the tiers of compartments into two sets, B and B', normally closed to and controllably accessible from the aisle, troughs H in the compartments, a transverse aisle, C', crossing the aisle C, and a stationary water-supply tank, L, above the aisle C', and provided with means for leading water from it to the compartments, substantially as described.

7. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments opening laterally of the car and provided with doors E, having staples *m*, a longitudinal aisle, C, within the car, separating the compartments into two sets, B and B', doors for the said compartments, opening into the aisle C, a vertically-reciprocating rod, I, for each tier, having hooks *m'*, to engage with the staples *m*, and a crank-rod, K, for each rod I connected therewith and extending into the aisle C, substantially as described.

8. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments having hinged drop-decks G and opening laterally of the car, and a longitudinal aisle, C, within the car, separating the tiers of compartments into two sets, B and B', normally closed to and controllably accessible from the aisle, substantially as described.

9. A live-poultry car comprising, in combination, a car, A, divided internally into tiers of compartments having hinged drop-decks G and hinged supports *k* for the free ends of the drop-decks and opening laterally of the car, and a longitudinal aisle, C, within the car, separating the tiers of compartments into two sets, B and B', normally closed to and controllably accessible from the aisle, substantially as described.

884,914. STRAP FOR RUBBER BOOTS. FRANK A. JOSEPH, Malden, Mass. Filed Apr. 27, 1888. Serial No. 272,681. (No model.)



Claim.—1. In a strap or loop for rubber boots, the cord *m*, provided with a cover of rubber or rubber cloth having the inwardly-projecting attaching-flanges *v*, substantially as shown and described.

2. A strap or loop for rubber boots, comprising the cord *m*, provided with a cover of rubber or rubber cloth having the inwardly-projecting attaching-flanges *v*, in combination with the boot-leg D, said strap being vulcanized onto the leg, substantially as described.

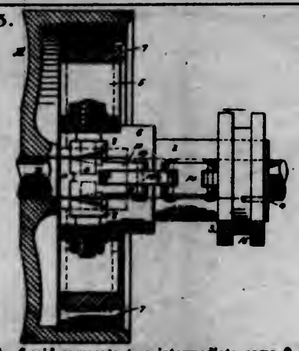
884,915. FRICTION-CLUTCH PULLEY. ARMIDE P. EMELIN, Holyoke, Mass. Filed Mar. 7, 1888. Serial No. 266,468. (No model.)

Claim.—1. A friction-clutch consisting of a cylindrical sleeve having laterally-extending arms 5, two friction-segments engaging with said arms and capable of lateral movements thereon, two cams, 8, oppositely secured to each of said segments, two intermediate cams, 9, engaging with said cams 8, each having a laterally-extending arm, a collar, 3, capable of a longitudinal motion on said sleeve, and links 14, pivotally connected between said collar and the arms on said cams 9, a driving-pulley, A, inclosing said segments, and retracting-springs between the latter, substantially as set forth.

2. A friction-clutch consisting of a cylindrical sleeve having laterally-extending arms 5, two friction-segments engaging with said arms and capable of lateral movements thereon, two cams, 8, oppositely secured to each of said segments, two intermediate cams, 9, engaging with said cams 8, each having a laterally-extending arm adjustably connected thereto, a collar, 3, capable of a longitudinal motion on said sleeve, and links 14, pivotally connected between said collar and the arms on said cams 9, a driving-pulley, A, inclosing said segments, and retracting-springs between the latter, substantially as set forth.

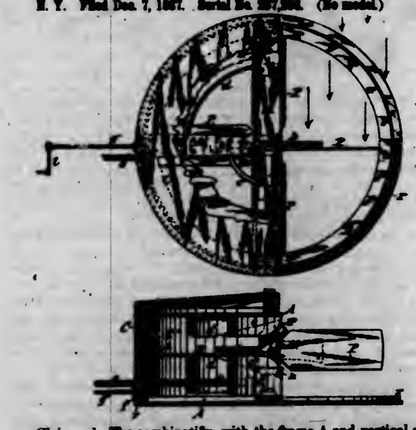


884,915.



3. The driving-pulley A, the friction-segments 7, each having two oppositely-secured cams, 8, thereon, two intermediate cams, 9, engaging with said cams 8, said cams 9 each having a groove, *a*, therein, combined with the sleeve 2, having studs thereon engaging in said grooves, a collar, 3, having a longitudinal movement on said sleeve, and link-and-arm connections, as described, between said collar and intermediate cams, substantially as set forth.

884,916. CURRENT WATER-WHEEL. JOHN H. KINNEY, Buffalo, N. Y. Filed Dec. 7, 1887. Serial No. 257,202. (No model.)



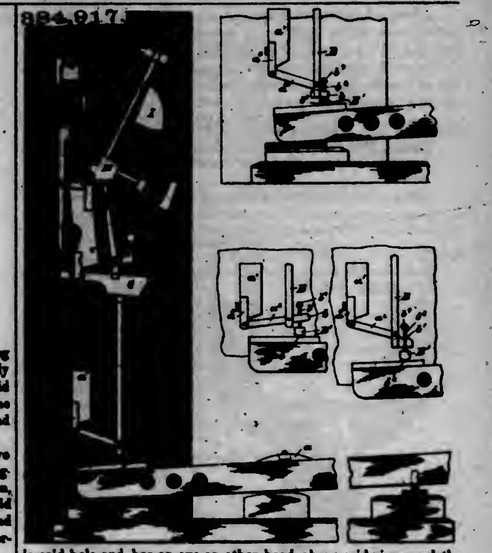
Claim.—1. The combination, with the frame A and vertical shaft *a*, of the arms *b b*, arranged horizontally one above the other at right angles to each other, and extending diametrically through the vertical shaft and journaled therein, paddles P P, rigidly attached to opposite ends of each arm *b* and disposed in planes at right angles to each other, and cams *c* and *d*, projecting, respectively, from the top and bottom of the frame A and engaging the successive paddles alternately at the top and bottom edges to turn each succeeding paddle in opposite direction from the preceding paddle, substantially as set forth.

2. The combination of the frame A, the shaft *a*, pivoted vertically to said frame, the arms *b b*, pivoted horizontally to said vertical shaft, paddles P P, secured to said arms, cams *c d*, secured to the frame A and adapted to turn the paddles on their pivots on the shaft, a stationary semicircular casing inclosing the frame A and one half of the wheel, a semicircular casing pivoted to the vertical shaft *a* and adapted to inclose the other half of the wheel, the pinion *n*, secured to the shaft *a* inside of the casing, the driving-shaft *o*, extending into the casing, and the pinion *n'* on said driving-shaft meshing with the pinion *n*, all combined to operate substantially as described and shown.

884,917. ACTION FOR UPRIGHT PIANOS. PETER KEMMERER, Boston, Mass. Filed Nov. 22, 1887. Serial No. 255,662. (No model.)

Claim.—In an action for upright pianos, the extension having the lateral piece *h*, provided with a hole, *h'*, the screw *h²*, which screws in said hole and has an eye or other head above said piece, and the button E', secured to said screws below said piece *h*, as and for the purposes described.

884,917.



884,918. FLUE-THIMBLE. CHARLES C. LESLEY, Merrill, Wis. Filed July 14, 1887. Renewed May 24, 1888. Serial No. 274,948. (No model.)

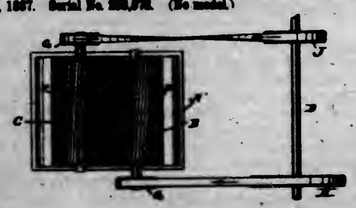


Claim.—1. The combination, with a flue-thimble having at its outer end an internal groove and a lateral slot, of a circular spring-wire arranged in said groove, with one part secured in a stationary position and one end having an arm extending through the lateral slot to the exterior of the thimble, and a device connected with said external arm for operating the spring-wire, substantially as described.

2. The combination, with a flue-thimble having at its outer end an internal circular groove, a lateral slot, and a lateral flange, of a circular spring-wire arranged in the groove, with one part secured in a stationary position, and one end extending through the slot and having a crank-arm, and a lever pivoted to said lateral flange and connected at one side of the pivot with the crank-arm, substantially as described.

3. The combination, with a flue-thimble having at one end the lateral slot 4, orifices 5 and 6, and lateral flange 11, of the circular spring-wire 7, having the leg 8 and leg 9, respectively, engaging said orifices and extending through the lateral slot, and having a crank-arm, 10, and a lever, 13, pivoted to said lateral flange and loosely connected with the crank-arm of the wire, substantially as described.

884,919. ROLLER-MILL. JONATHAN D. MAWSON, Richmond, Ind., assignor to the Richmond City Mill Works, same place. Filed Apr. 4, 1887. Serial No. 233,578. (No model.)

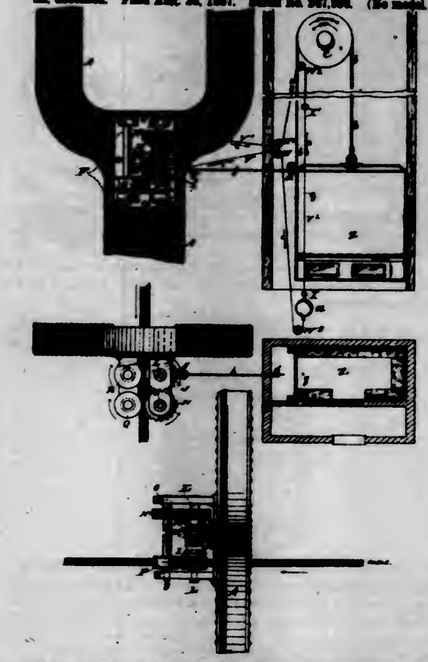


Claim.—A roller-mill comprising a pair of interchangeable transposable rolls having teeth facing reversely relatively upon the two rolls, the faces and backs of the teeth being at dissimilar angles, and a driving-shaft and pulleys arranged to transmit motion to said two rolls and to revolve one roll at a higher rate of speed than the other, substantially as and for the purpose set forth.

384,920. ANTI-FRICTION COMPOUND. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall, same place, executrix of said Thomas J. Mayall, deceased. Filed June 21, 1887. Serial No. 242,024. (Specimens.)

Claim.—The anti-friction compound herein described, consisting of rubber, sulphide of antimony, graphite, oxide of iron, and asbestos, in substantially the proportions hereinbefore set forth.

384,921. ELEVATED RAILWAY. THOMAS J. MAYALL, Reading, Mass.; Lucy A. Mayall, same place, executrix of said Thomas J. Mayall, deceased. Filed Aug. 26, 1887. Serial No. 247,926. (No model.)



Claim.—1. The combination, with the supporting-columns and traction-cable of an elevated railway, of an elevator-car, its hoisting-cable, and mechanism, as set forth, for communicating motion to said car in either direction from said traction-cable, substantially as described.

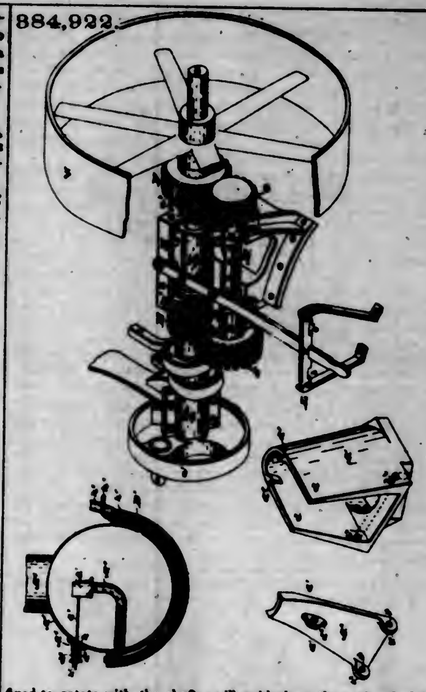
2. The combination, with the supports and traction-cable, of the grip-rollers carried by said supports, the elevator-car, its hoisting-cable, the shifting-drum upon which said cable is wound, and gearing connecting said grip-rollers with said drum for rotating the latter and raising or lowering said car, substantially as described.

3. In combination with a rail-support, A, the actuating mechanism F, embracing a shifting-drum, G, provided with a stop-motion, M M', and having terminal friction-cones H and I integrally connected therewith, a gear, J, to elevate the lift, and a clamp-wheel, K, to lower the same, the auxiliary wheels P Q R, gear N, and shafts L and O, constructed and adapted to receive motion from an elevated horizontal cable to operate an elevator-car, substantially as set forth.

384,922. PORTABLE ENGINE. JAMES MILLER and MARTIN J. HOGAN, Canton, Ohio; said Hogan assignor to said Miller. Filed Apr. 23, 1887. Serial No. 235,951. (No model.)

Claim.—1. In a portable steam-engine, the combination of the engine-shaft, means for rotating the same, gear-wheels of different diameters loosely mounted on the engine-shaft, a shaft counter to the engine-shaft, a pair of gear-wheels of different diameters fixed on said counter-shaft and meshing with the gear-wheels of the engine-shaft, clutches attached to the gear-wheels on the engine-shaft, clutch-sleeves secured on the engine-shaft to slide longitudinally on the shaft and

884,922.



fixed to rotate with the shaft, a pillow-block on the engine-shaft between the said clutch-sleeves, a yoke the branches of which loosely embrace the said clutch-sleeves, a shifting-lever pivoted to a support on the said counter-shaft and to the said yoke, a lever-retaining bracket secured in position to engage the handle of the lever, and detents in the bracket to lock the lever in the several adjustments for running the machine independent of the ground-wheels and for driving the ground-wheels at different speeds, substantially as set forth.

2. An exhaust-nozzle consisting, essentially, of a U-shaped body having converging sides, and a vibrating valve pivoted to said U-shaped body and having converging edges, thereby allowing said valve to freely operate within the U-shaped body, substantially as set forth.

3. In an exhaust-nozzle, the combination of a U-shaped body having converging sides, a valve pivoted to said U-shaped body and having converging edges, a spring-actuated rod loosely pivoted to said valve and extending through the smoke-box, and means whereby the tension of the spring can be regulated, substantially as set forth.

4. In an exhaust-nozzle, the combination of a U-shaped body having converging sides, a valve having converging edges and ears on its lower portion, whereby it is pivoted to said U-shaped body, stops located on the U-shaped body, whereby the inward movement of the valve is limited, a spring-actuated rod loosely connected to said valve, and a nut located on the outer end of said rod, for the purpose substantially as set forth.

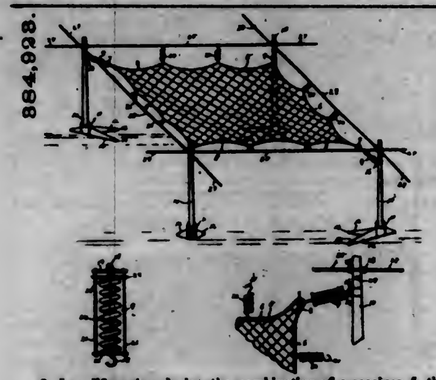
5. In a portable steam-engine, the combination, with the boiler and smoke-box, of a detachable feed-water heater attached to and adapted to conform to the outside of the smoke-box, an exhaust leading from the feed-water heater into the smoke-box, a steam-inlet pipe to the heater, and a water-pipe extending within the heater, substantially as set forth.

384,923. LIFE-SAVING DEVICE. EVERETT D. MOORE, Baltimore, Md., assignor to Thomas C. Chappell, same place. Filed Dec. 22, 1887. Serial No. 258,668. (No model.)

Claim.—1. In a life-saving device, the combination of a flexible landing-net provided at its outer edge with flexible vibrators, said vibrators being connected to handles suitable to be grasped by the hands of persons supporting the net, substantially as described.

2. In a life-saving device, the combination of a flexible landing-net provided at its outer edge with flexible vibrators, said vibrators being connected to lanyards which are provided with handles at their extremities suitable to be grasped by the hands of persons supporting the net, and stanchions to which said lanyards are secured between the handles and the vibrators, substantially as described.

884,923.

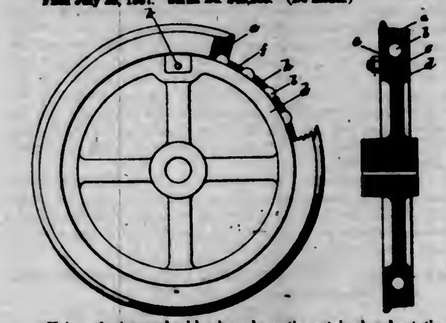


3. In a life-saving device, the combination of a receiver, 5, the stanchions 10, the lanyards 25 and 29, secured to the said stanchions, the rope ends 27, secured to the said stanchions, and vibrators supporting the said receiver and secured to the said stanchions, for the purpose set forth.

4. In a life-saving device, the combination of the receiver 5, the stanchions 10, the vibrators 9, connecting said receiver with the stanchions 10, the lanyards 25 and 29, provided with the steps 28 thereon, the said lanyards terminating in the spare ends 27 and being so reeved through the stanchions that thereby the said stanchions 10 will be mutually supported, and when placed in position for use will insure the proper adjustment for attaching thereto the receiver 5, and the vibrators 30, connecting the said receiver with the lanyards 25 and 29, for the purpose set forth.

5. In a life-saving device, the combination of the receiver 5, the stanchions 10, the shoes 11, provided with the feet 12, attached to the said stanchions, the vibrators 9, connecting the said receiver to the stanchions 10, the lanyards 25 and 29, provided with the steps 28 thereon, the said lanyards terminating in the spare ends 27 and being so reeved through the stanchions 10 that thereby the said stanchions will be mutually supported, and when placed in position for use will insure the proper adjustment for securing thereto the receiver 5, and the vibrators 30, connecting the said receiver with the lanyards 25 and 29, for the purpose set forth.

384,924. CAR-WHEEL. FREDERICK C. MYERS, East Boston, Mass. Filed July 28, 1887. Serial No. 245,205. (No model.)



Claim.—1. A car-wheel having a loose tire retained and rotating upon the body of the wheel by means of spherical friction-balls, substantially as hereinbefore described, and for the purpose set forth.

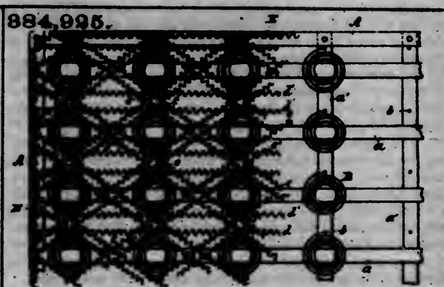
2. A wheel-body having the cavity *h*, in combination with the plate *c* and filling-block *c*, provided with the stud or bolt and nut, substantially as described.

3. A wheel-body and tire each provided with the annular groove, in combination with the friction-balls, distance-pieces, and springs, substantially as described.

384,925. SPRING BED-BOTTOM. HENRY MYERS, Philadelphia, Pa. Filed Dec. 17, 1887. Serial No. 258,164. (No model.)

Claim.—The combination of a spring bed-bottom consisting of a slatted metal bottom frame, helical or spiral springs mounted on said frame at points where the slats thereof cross each other, and the lower extremities of said springs being held to place thereon in eyes formed in said slats, wires arranged in parallel courses and interlaced with each

884,925.



other and said springs, and with a border composed of coiled or spiral wires intertwisted together, thereby forming a solid elastic web-like form of top, in which all strain brought to bear thereon may be uniformly equalized throughout, as shown and described.

384,926. CARPET-STRETCHER. CHARLES C. F. HEIDEMANN, Fort Wayne, Ind. Filed Mar. 8, 1888. Serial No. 266,742. (No model.)



Claim.—In a carpet-stretcher, the combination of the following elements, namely: a guide-bar having at one end means for securing it to the floor, a movable head adapted to engage and hold a carpet and arranged to slide along said bar, a lever pivoted to the bar, and a pair of ratchet-bars pivoted at one end to the lever on opposite sides of its fulcrum and adapted to alternately engage with their free ends the movable head at each forward and backward movement of the lever, all substantially as specified.

384,927. PHOTOGENIC POWDER. HENRY G. PUFFARD, New York, N. Y. Filed Jan. 21, 1888. Serial No. 261,033. (No specimens.)

Claim.—As a new article of manufacture, an improved photogenic powder consisting of magnesium powder intimately mixed with wood powder of any similar nitro-lignin equivalent, substantially as and for the purpose specified.

384,928. DRILL-CHUCK. ROBERT J. PRATT, Greenbush Heights, N. Y. Filed Feb. 14, 1888. Serial No. 264,062. (No model.)



Claim.—1. A chuck consisting of a main body portion having a hollow interior and screw-threaded at its forward end, said forward end being provided with slots or recesses, clamping-jaws located within said recesses and inclined or beveled at their forward ends, a follower against which said jaws abut, an eccentric for actuating said follower, and an internally-screw-threaded sleeve having a tapering aperture and engaging with the external screw-thread of the main body, substantially as described.

2. A chuck consisting of a main body portion having a hollow interior and screw-threaded at its forward end, said forward end being provided with slots or recesses, clamping-jaws located within said recesses and inclined or beveled at their forward ends, a follower consisting of a stem fitting said hollow interior, and side wings against which the clamping-jaws abut, an eccentric for actuating said follower, and an internally-screw-threaded sleeve having a tapering aperture and engaging with the external screw-thread of the main body, substantially as described.

3. A chuck consisting of a main body portion having a hollow

interior and screw-threaded at its forward end, said forward end being provided with slots or recesses, clamping-jaws located within said recesses and inclined or beveled at their forward ends, a spring connecting and distending said jaws, a follower against which said jaws abut, an eccentric for actuating said follower, and an internally-screw-threaded sleeve having a tapering aperture and engaging with the external screw-thread of the main body, substantially as described.

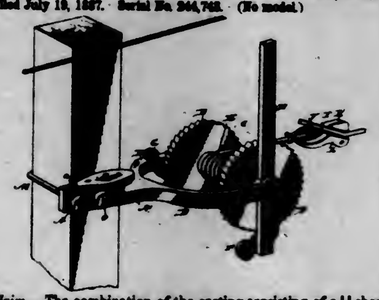
4. A chuck consisting of a main body portion having a hollow interior and screw-threaded at its forward end, said forward end being provided with slots or recesses, clamping-jaws located within said recesses and inclined or beveled at their forward ends, a spring connecting and distending said jaws, a follower consisting of a stem fitting said hollow interior, and side wings against which the clamping-jaws abut, an eccentric for actuating said follower, and an internally-screw-threaded sleeve having a tapering aperture and engaging with the external screw-thread of the main body, substantially as described.

5. In a chuck, the combination, with the clamping-jaws, of a spring, said jaws being provided with recesses having overlapping flanges for the reception and retention of the spring, and one of the jaws having a projection against which the ends of the spring abut, substantially as described.

6. In a chuck, the combination, with the main body portion, sleeve, clamping-jaws, and follower, of an eccentric having its shaft journaled in the walls of the main body of said chuck and substantially flush therewith, said eccentric-shaft having at one end an aperture for the reception of an adjusting key or wrench, substantially as described.

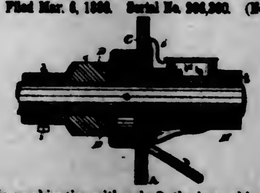
7. In a chuck, the combination, with the main body portion, sleeve, clamping-jaws, and follower, of the eccentric described, consisting of a single piece of metal having at its central portion a cam projection and at its opposite ends bearings or gudgeons adapted to turn within the walls of the main body of the chuck, one of said gudgeons being slotted transversely for the reception of an operating key or wrench, substantially as described.

884,929. WIRE-STRETCHING MACHINE. CHESTER V. PERRY, Bowing Green, Me., assignor to WILLIAM A. HUTCHINSON, same place. Filed July 19, 1887. Serial No. 244,742. (No model.)



Claim.—The combination of the casting consisting of a U-shaped portion having the arms B B and the arm A, extending centrally rearward from the U-shaped portion, the said arm A projecting above the plane of the U shaped portion of the casting, and having the transverse perforation *a* in its rear end and the extended open-ended notch A′ in its front portion, the rope M, passed through the perforation *a*, provided with the knots or stops N O, and adapted to engage the notch A′, the drum C, journaled in and between the free ends of the arms B B and provided with the ratchet wheels or disks D D, the lever E, loosely mounted on the spindle of the drum between one of the disks D and arm B and depending below said drum, the pawl E, pivoted on the lower end of the lever and engaging the adjacent disk, and the pawl G, pivoted to the opposite arm B and engaging the disk adjacent thereto, substantially as specified.

884,930. HORIZONTAL THRUST-BEARING. ALVA C. REED, Dayton, Ohio, assignor to the Stivell & Reeve Manufacturing Company, same place. Filed Mar. 6, 1888. Serial No. 266,260. (No model.)



Claim.—1. In combination with a shaft, the journal-box composed of the sleeve-journal E, having the annular flange D, step *c*, and bearing *d*, secured to the shaft, substantially as specified.

2. In combination with the step *c*, shaft *a*, and bearing *d*, the journal-box E, provided with air-chambers *h*, substantially as specified.

3. In combination with the shaft, the step *c*, bearing *d*, sleeve-journal E, provided with the air-chamber *h*, and pipe A, tapping said chamber, substantially as specified.

4. In combination with the shaft *a*, bearing *d*, and step *c*, the journal E, provided with the flange C, substantially as specified.

5. In combination with the shaft *a*, bearing *d*, and step *c*, the journal E, provided with the flange C, and lubricating-cup *e*, substantially as specified.

884,931. STOCK-CAR. ROYAL H. RIPLEY, Minneapolis, Minn. Filed Apr. 4, 1888. Serial No. 269,851. (No model.)



Claim.—1. The combination, in a stock-car provided with the series of posts 3, of the hay-receptacles 9, having a bottom, 11, and projecting outward beyond said posts and extending between the posts to their inner surface, and the folding racks hinged at their lower edges to the wall of the car and forming the inner walls of said receptacles, substantially as described.

2. The combination, in a stock-car provided with the series of posts 3, of the hay-receptacles 9, having bottoms 11 projecting outward beyond said posts and extending between the posts to their inner surface, the doors in the outer walls of said receptacles, and the folding racks hinged at their lower edges to the wall of the car and forming the inner walls of the receptacles, substantially as described.

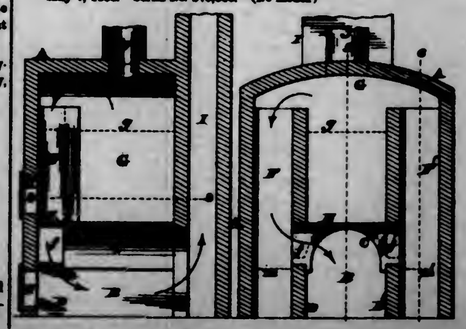
3. The combination, with the stock-car provided with the series of posts 3, of the hay-receptacles 9, arranged partially between and partially outside of said posts, and provided with closed bottoms and with racks at their inner sides secured to the inner surface of the walls of the car, and the water-troughs 19, arranged beneath said hay-receptacles and provided with recesses fitting around said posts, substantially as described.

4. The combination, in a stock-car, of a hay-receptacle arranged entirely outside of the inner surface of the wall of the car and a folding rack hinged to the inner surface of the wall of the car at or near the bottom of the receptacle, and adapted to be turned down to an inclined position within the car or to be folded up flush against the wall of the car, substantially as described.

5. The combination, in a stock-car provided with the series of posts 3, of the hay-receptacles 9, having bottoms 11 projecting outward beyond said posts and extending between the posts to their inner surfaces, the folding racks secured to the inner surface of the walls of the car, forming the inner sides of said receptacles, and the water-troughs arranged beneath said receptacles, and the projecting outward beyond the posts and inward to their inner surfaces, substantially as described.

6. The combination, in a stock-car having the adjustable partitions 25, of the water-troughs and the pipes 29, extending longitudinally in said car and forming supports for said partitions, and also forming conductors for conveying the water to said troughs, substantially as described.

884,932. DRY CLOSET. LUMAN B. REED, Cincinnati, Ohio. Filed May 7, 1888. Serial No. 273,060. (No model.)



Claim.—1. The combination, in a cremating-closet, of a deposit-chamber having means of loading sewage, &c., into the same, a furnace for drying the sewage, an exit for said furnace, and a diverging flue communicating with said chamber and discharging into the furnace at or near the front of the same, for the purpose described.

2. The combination, in a cremating-closet, of furnace B, diverging flues F F′, openings *f f′*, deposit-chamber G, doors H K, exit I, inlet J, and pits L L′, which latter are charged with a non-combustible absorbent-bed, as M, for the purpose described.

884,933. BLANK-BOOK. JAMES H. REED, Syracuse, N. Y. Filed Nov. 11, 1886. Serial No. 218,614. (No model.)



Claim.—1. The combination, in a book, of a signature and a guard united by means of stitching carried through the middle of the signature and through the guard from its outer to its inner edge, substantially as shown, and for the purpose set forth.

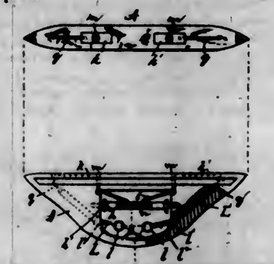
2. A book comprising the leaf-sections, a backing, guard-leaves interposed between each section and the backing, and the binding-stitches carried from the center of the respective sections through the corresponding guard-leaves to the backing, substantially as described.

3. A book embodying leaf-sections, a backing, and guard-leaves, through the center of which a stitching-cord is carried from the respective sections to the backing, and keeper-cords to support the guard-leaves transversely, substantially as described.

4. A book comprising leaf-sections, a backing, guard-leaves interposed between each section and the backing, and binding-stitches carried from the center of the respective sections through the corresponding guards to the backing, in combination with flexible stay-strips secured to the guards and sections at their meeting point, substantially as described.

884,934. ELECTRIC STOPPING MECHANISM FOR LOOMS. JOHN BEAN and EDWIN CLEVELAND, Norwich, Conn. Filed Dec. 1, 1887. Serial No. 256,620. (No model.)

Brief.—The batten carries an electro-magnet the armature of which is provided with a latch adapted to engage one arm of a bell-crank lever connected to the belt-shipper. When the filling breaks or runs out or a warp-thread breaks, the circuit is completed through the shuttle, the latch engages the bell-crank lever, and the belt is shifted. The battery-wires are connected to metallic plates, back of the shuttle-race, and the shuttle-body is provided with similar plates, which register therewith. The shuttle-bobbin is metal or metal-jacketed, and the brake bearing thereon is connected to the plates in the back. The tension-springs are also connected to said plates. The back of the shuttle is also provided with a spring-bow pivoted to one plate, and which, when depressed by a broken warp-thread, makes connection with the other plate.



Claim.—1. In combination with the belt-shipper, shipper-rod, and batten of a loom, devices for actuating said shipper to effect the stopping of the loom, consisting of an electro-magnet moving with the batten, an armature for said magnet formed as a latch or hook, a bell-crank lever, one of whose arms is pivoted to the said shipper-rod and the other arm is in the path of said armature-hook, as set forth, a battery, wire-connections leading from said magnet and battery into the path of the shuttle, and a shuttle with metal-jacketed bobbin having wires leading therefrom adapted to engage the wire-connections first above described, as and for the object specified.

2. In combination with the belt-shipper, shipper-rod, and batten of a loom, an electro-magnet moving with the batten, an armature for said magnet formed as a latch or hook, a bell-crank lever, one of whose arms is connected to said shipper-rod and the other arm is in the path of said armature, as set forth, a battery, wire-connections leading from said magnet and battery into the path of the shuttle, and a shuttle provided with the bow-shaped wire *w*, plates *k k′*, screws *m m*, and pin *n*′, said wire *w* being formed with retaining-heads *s*′, all substantially as and for the purpose specified.

2. The combination, with the belt-shipper and batten of a loom, of the slidable rod K, a bell-crank lever, one of whose arms is pivoted to said rod, a reciprocating electro-magnet whose armature is provided with a hook adapted to engage and operate said bell-crank lever when an electrical current is passed through said magnet, and devices, as herein described, for controlling said electrical current, for the purpose specified.

4. In combination with the batten and belt-shipper of a loom, an electro-magnet, a battery, wires leading from said magnet and battery into the path of the shuttle, mechanism connected therewith for moving the belt-shipper, as herein set forth, and a shuttle having combined therein a metal-jacketed bobbin, spring-brake *i*, screws *m*, and plates *k k′*, all substantially as and for the purpose specified.

5. In combination with the batten and belt-shipper of a loom, an electro-magnet and a battery, wires leading therefrom into the path of the shuttle, mechanism for moving the belt-shipper, and a shuttle having combined therein plates *k k′*, screws *m*, wires *w*, and steel *n*′, all being substantially as and for the purpose specified.

6. In combination with the batten and belt-shipper of a loom, an electro-magnet and battery, wires leading therefrom into the path of the shuttle, mechanism connected therewith for moving the belt-shipper, and a shuttle having combined therein plates *k k′*, wires *g*, springs L L′, with rings *l l*, bushings *l*′, and connecting-wires *p*, all being substantially as described, and for the object set forth.

884,935. TEMPERING STEEL OR STEELY IRON. HENRI SEMMER, Le Creusot, France. Filed Nov. 1, 1887. Serial No. 253,597. (No specimens.)

Claim.—1. The process herein described of hardening steel or other metals, said process consisting in subjecting the metal to a hardening-bath and melting or fusing a solid body therein.

2. In the process of hardening steel or other metals, the mode herein described of maintaining the hardening-bath at a nearly uniform temperature while the hardening is going on by supplying the bath with a solid substance fusing or melting at the temperature of said bath.

3. The process herein described of hardening steel or other metals, said process consisting in subjecting the metal to a hardening-bath and pressing a solid fusible substance at the temperature of the bath in contact with the article to be hardened.

884,936. BUCKLE. ISAAC A. SMITH, Waterbury, Conn., assignor of one-half to Dwight L. Smith, same place. Filed Apr. 23, 1888. Serial No. 271,854. (No model.)



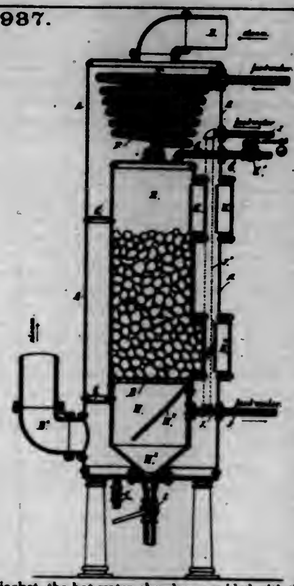
Claim.—1. The herein-described buckle, the frame composed of the front A and the back B, the front and back united at their ends to form a tubular frame through which the strap passes, combined with an L-shaped lever hinged to one of the said parts, and so that its jaw will extend toward the opposite part and with the said opposite part form a clamp within the tubular frame to engage the strap, the plane of the said back being inclined upward and toward the front, so as to contract the opening through the tubular frame at its upper edge, substantially as described.

2. The herein-described buckle, the frame composed of a front, A, and back B, united at their ends to form a tubular frame through which the strap passes, the back inclined upward and toward the front of the frame, so as to contract the opening through the frame toward the top, combined with an L-shaped lever hinged to the back, and so that its jaw will extend toward the front and with the said front form a clamp within the tubular frame to engage the strap, the arm of said lever inclined downward and forward toward the front, substantially as described, and so that the rear of the buckle presents a double-inclined surface toward the front.

884,937. FEED-WATER HEATER. DAVID STARR, San Francisco, Cal. Filed May 21, 1887. Serial No. 238,984. (No model.)

Claim.—1. An apparatus for heating and purifying feed-water, consisting of an inner filtering-cylinder under pressure and an outer shell or steam-jacket provided with a copper heating-coil leading from the supply-pipe or cold-water main into the head of the filtering-cylinder and adapted to discharge hot or heated water upon the filtering material when heated by exhaust-steam admitted to the outer shell

884,937.



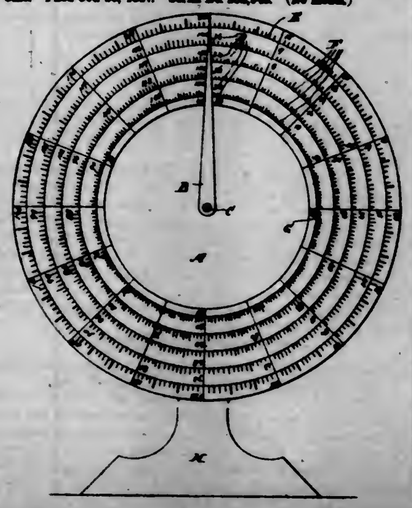
or steam-jacket, the hot-water chamber provided with the deflecting-plate H^{x}, and the funnel-shaped mouth H^{3}, as set forth.

2. The feed-water heater and purifier herein described, consisting in an inner cylinder under pressure, provided with an upper chamber and superposed filtering material, in combination with an outer shell or steam-jacket having inlet and outlet ports or pipes and a water-heating coil therein, through which water heated by the exhaust-steam from a boiler passes into the filtering-chamber, the hot-water chamber located below the filtering-chamber and provided with the deflecting-plate H^{x}, and the funnel-shaped mouth H^{3}, all arranged as set forth.

3. In a feed-water heater and purifier, the combination, with the filtering-chamber, steam-jacket surrounding the same, and heating-coil above, of the hot-water or draw-off chamber of the deflecting or sediment-conducting plate H^{x}, as and for the purpose specified.

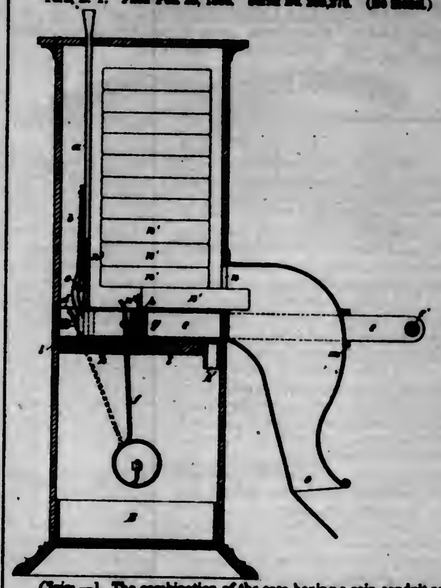
4. In a feed-water heater and purifier, the combination, with the inner filtering and purifying chamber or cylinder and outer shell or steam-jacket, of the man-holes K K K^{x} K^{x}, for the purpose of removing, cleansing, and replacing the filtering material, as specified.

884,938. TOLL-REGISTER. John K. Stewart, West Mansfield, Ohio. Filed Oct. 20, 1887. Serial No. 252,945. (No model.)



Claim.—The dial A, provided with circles E F G, marked with numerals, and the column D, also marked with numerals, in combination with the movable pointer B and the base H, whereby the whole may be attached to a weighing-scale or other object, as and for the purpose set forth.

884,939. VENEER APPARATUS. Lorenz Schlattmeir, Schapen-the-Rhine, Prussia, Germany, assignor to John H. Williams, New York, N. Y. Filed Feb. 23, 1888. Serial No. 265,272. (No model.)

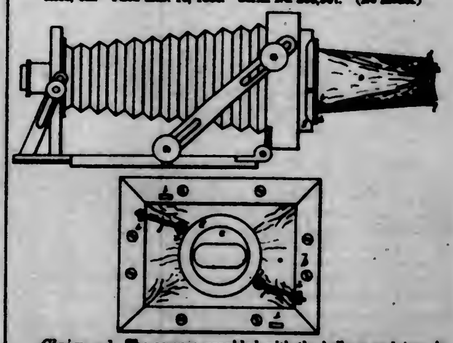


Claim.—1. The combination of the case having a coin conduit or chute, a bar having steps and a coin-opening, a drawer having a slot for receiving the coin, and a drawer-retracting spring, substantially as described.

2. The combination of the case having a coin conduit or chute provided with a slot, a bar having steps and a coin-opening, the drawer having a slot for receiving the coin, the drawer-retracting spring, and the spring having a pin to enter the slot in the conduit or chute, substantially as described.

3. The combination of the case having a coin conduit or chute, the movable steps, the pivoted levers supporting the steps and having counter-weights *g*, adapted to strike chimes located in their path, and the drawer having a slot for receiving the coin, substantially as described.

884,940. PHOTOGRAPHIC CAMERA. Hadwin Swain, San Francisco, Cal. Filed Mar. 16, 1888. Serial No. 267,207. (No model.)



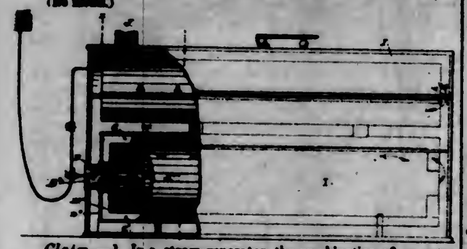
Claim.—1. The camera provided with the bellows and lens, in combination with the cloth tube *c* and an adjustable eye-piece provided with the elongated opening secured thereto, substantially as and for the purpose set forth.

2. The camera provided with the bellows and lens, in combination with the cloth tube *c*, having the ring *d* connected thereto, and the adjustable eye-piece provided with the elongated opening mounted in the ring, substantially as described.

3. The combination, with the camera provided with the bellows and lens, of the cloth tube *c*, having the ring *d*, and the stretching-rods *f f*, secured to the main camera-box and adapted to engage eyes in the ring *d*, substantially as and for the purpose set forth.

4. A cloth tube, *c*, in combination with main frame *a*, stretching-rods *f f*, ring *d*, and eye-piece *e*, substantially as described.

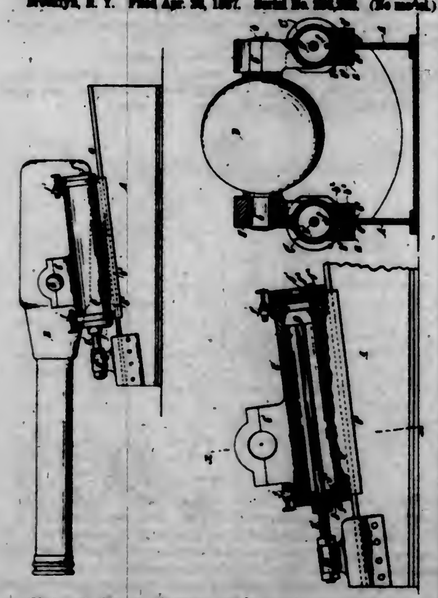
884,941. STEAM-GENERATOR. Elias H. Thompson, Everett, assignor of one-half to E. J. Gantt and J. B. Welch, Tulare, and Cornelius A. Sherman, Los Gatos, Cal. Filed Oct. 14, 1887. Serial No. 252,022. (No model.)



Claim.—1. In a steam-generator, the combination of an outer shell, A^{xx}, and an inner shell, A^{x}, the heads B^{x} and B^{xx}, extending inward past the shell A^{x}, all around at each end thereof, and having the thimbles B, connecting the said heads, substantially as described, and the water-tubes E, placed in a circle all around the fire-flue and communicating at each end with the water-chamber between the shells A^{x} A^{xx}, as and for the purpose set forth.

2. In a steam-generator, the combination, with a cylindrical fire-flue contracted all around at both ends, a water-chamber surrounding said fire-flue on the sides and over a portion of the ends, and thimbles connecting the walls of the ends, of a series of water-tubes extending longitudinally through the said fire-flue on all sides thereof and communicating with the water-chamber at the ends, substantially as and for the purpose set forth.

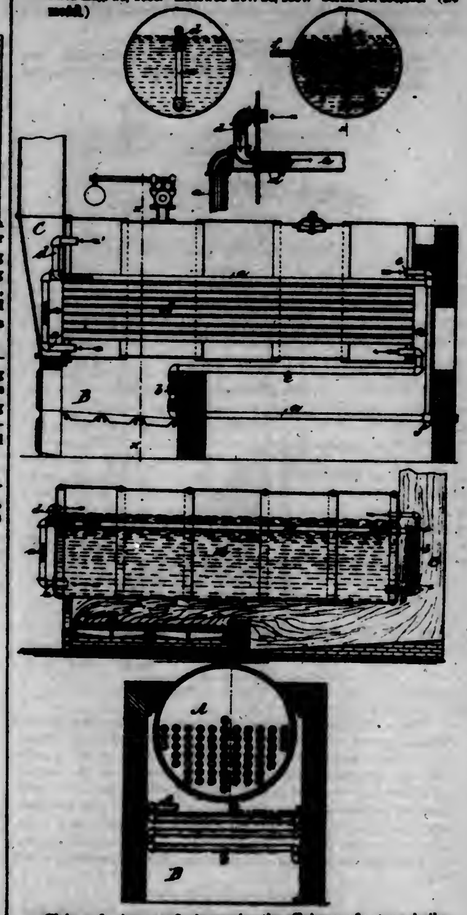
884,942. GUN-CARRIAGE. Louis H. Tuers, New Brighton, assignor of two-thirds to George H. Allen, New York, and Edward H. Reid, Brooklyn, N. Y. Filed Apr. 30, 1887. Serial No. 236,352. (No model.)



Claim.—1. The combination, with a cannon, of a carriage therefor having inclined sides upon which said cannon is supported, a cylinder, a piston within said cylinder, and a valve near each end of said cylinder, said piston and cylinder being one connected with the cannon and the other with a rigid support, and the said valves being alternately opened and closed according as the cannon is moved in one direction or the other by atmospheric pressure, substantially as specified.

2. The combination, with a cannon, of a carriage therefor having inclined sides upon which said cannon is supported, a cylinder, a piston within said cylinder, a valve near each end of said cylinder, said piston and cylinder being one connected with the cannon and the other with a rigid support, and a stop-cock near each end of said cylinder, the said valves being alternately opened and closed according as the cannon is moved in one direction or the other by atmospheric pressure, substantially as specified.

884,948. STEAM-BOILER. Charles H. Tuttle, New York, N. Y. Filed Aug. 30, 1883. Renewed Nov. 22, 1887. Serial No. 255,255. (No model.)



Claim.—1. A means for increasing the efficiency of a steam-boiler, consisting of a pipe located within said boiler and extending from end to end thereof, in combination with one or more steam pipes or jets having communication therewith, said first-mentioned pipe being adapted to receive water and steam from said boiler at or near one end thereof and to discharge the same at or near the opposite end, substantially as and for the purpose set forth.

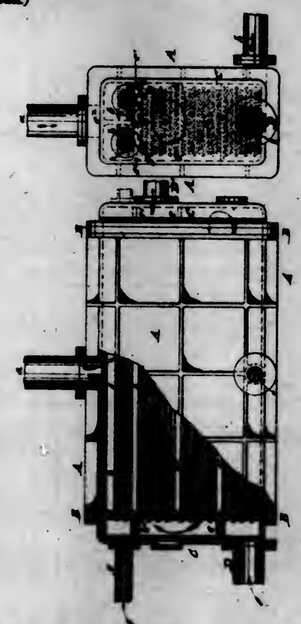
2. A means for increasing the efficiency of a steam-boiler, consisting of one or more circulation-pipes combined therewith and adapted to receive water therefrom at or near the front or fire-box end thereof, said pipe or pipes extending to the rear or colder end of the boiler and communicating with a conduit opening into such rear end, in combination with one or more steam pipes or jets having communication with the said circulation pipe or pipes or with said conduit, whereby the water and steam entering the said circulation pipe or pipes are discharged into the rear or colder end of the boiler and the circulation increased, substantially as and for the purpose set forth.

3. A means for increasing the efficiency of a steam-boiler, consisting of one or more coils or conduits disposed to be heated by the fire, and a feed-water pipe communicating with said coil, in combination with one or more pipes adapted to bring water from the boiler, one or more steam pipes or jets made to enter said water-pipe or said conduit, and a return-pipe for discharging the water from said conduit into the boiler, the whole being arranged substantially as and for the purpose set forth.

4. A means for increasing the efficiency of a steam-boiler, consisting of the pipe *a*, coil *b*, and return-pipe *c*, the same being arranged in the manner shown and described, for the purpose set forth.

5. A means for increasing the efficiency of a steam-boiler, consisting of the pipe *a*, coil *b*, and return-pipe *c*, arranged as described, in combination with the steam-pipes *d* and *e*, substantially as and for the purpose set forth.

384,944. SURFACE-CONDENSER AND WATER-HEATER. WILLIAM B. VOLK, New York, N. Y. Filed Dec. 28, 1887. Serial No. 259,290. (No model.)



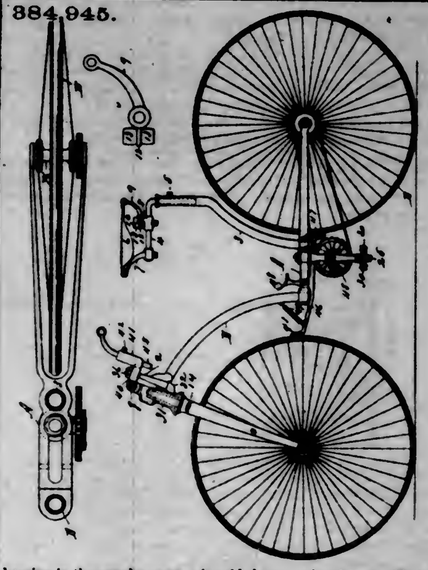
Claim.—In a surface-condenser, the combination, with a series of condensing-tubes arranged at the lower part of the condenser-casing, of a series of feed-water-heating tubes located above and parallel with said condensing-tubes, tube-heads supporting both the heating and condensing tubes, and bonnets provided with horizontal division-plates for separating the water-spaces of the condensing and feed-water-heating tubes, and with a vertical partition-plate located in the bonnet or bonnets of the feed-water-heating pipes intermediately between the feed-water supply and discharge pipes, substantially as set forth.

384,945. VELOCIPEDE. GEORGE T. WARWICK, Springfield, Mass., assignor to the Warwick Cycle Manufacturing Company, same place. Filed May 18, 1887. Serial No. 238,502. (No model.)

Claim.—1. A velocipede-saddle consisting of a seat, 6, of leather or similar material, a spring-box, 8, attached to the frame of the machine beneath the seat, a rigid arm, 9, pivoted to and having one end extending into said spring-box and its upper end extending upward and connected with the rear end of said seat, two springs inclosed in said box, between which the lower end of said arm extends, and an arm, 7, attached to said frame and having the forward end of said seat connected thereto, substantially as set forth.

2. A ball-bearing for velocipedes and analogous vehicles, consisting of the cylindrical case 15, having the internal projections, *n*, the sleeve 18, extending through said case, having an annular groove therein, the ball-case E, consisting of an internally-grooved transversely-divided ring having the beveled projections 230 thereon and the depressions 22, a series of balls inclosed in said ring, having a

384,945.

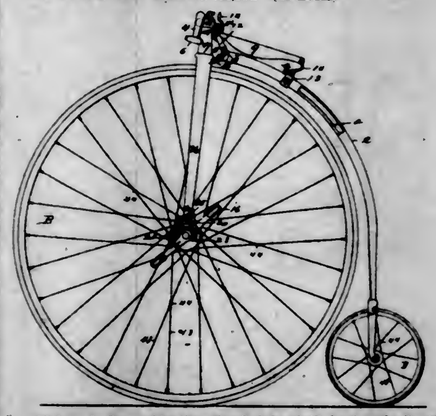


bearing in the annular groove in said sleeve, and a ring-nut, 23, having one end beveled and a screw-connection with the interior of said case 15, and engaging with said ball-case, whereby its parts are drawn together, combined and operating substantially as set forth.

3. The combination, with a velocipede fork-head having a socket in its lower end, of a fork having a spindle thereon entering said socket, and a rubber thimble, 50, interposed between said spindle and the inner sides of said socket, substantially as set forth.

4. The handle-bar holder 44, combined with the holder-frame 40, having a socket to receive the end of said holder, and having a pivotal connection with the upper end of the fork-head, and a set screw or screws to lock said holder in the frame and permit of its adjustment therein, substantially as set forth.

384,946. VELOCIPEDE. GEORGE T. WARWICK, Springfield, Mass., assignor to the Warwick Cycle Manufacturing Company, same place. Filed Dec. 1, 1887. Serial No. 256,564. (No model.)



Claim.—1. In combination, the fork-head 47, having the lip 48, the handle-bar head fitting on said fork-head having a lip, 46, and a suitable bolt passing through said lips, substantially as set forth.

2. A bicycle-handle consisting of the prong-support 7, having prongs thereon holding the hand-grip part 6 at an incline to the axis of said support, substantially as set forth.

3. In combination, the handle-bar 4, the handle consisting of the longitudinally-perforated prong-support 7, receiving the end of said bar and having prongs thereon holding the hand-grip part 6 at an incline to the axis of said support, said handle being capable of turning on said bar, substantially as set forth.

4. In combination, the saddle 9, the rear brace, 10, thereof having the arm *c* engaging with the backbone, the front straps, 12, one having thereon the hook *b* and one having the lever 14 thereon, the trigger 15, engaging with said hook, and the front wheel, B, substantially as set forth.

5. A ball-bearing consisting of the outer case, 19, having a partially screw-threaded interior, the two internally-grooved segments 20, each having the teeth *i* thereon, the grooved sleeve 27, a series of balls, *n*, fitting the grooves in said segments and sleeve, the washer 25, having a spiral rib engaging with said teeth *i* and having a geared periphery, the locking-washer 26, screwing into said case, and the pinion 21, engaging with said washer 25, combined and operating substantially as set forth.

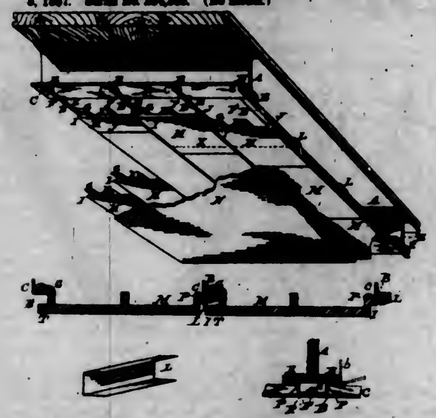
6. In combination with the ball-bearing case 19, having the spring-stops 23 and the post 24 thereon, the posts 31, fixed on said stops, the springs 32, the yoke 30, having legs bearing on the latter-named springs and engaging with the posts 31, the spring 33, interposed between said case and said yoke, and the fork-leg pivotally connected to said yoke, substantially as set forth.

7. The yoke 30, having the projecting step 36, the fork-leg pivoted to said yoke and having the step 37, extending over said step on the yoke, combined with the spring 39, interposed between said two steps, substantially as set forth.

8. In combination with the spokes of a bicycle-wheel, the double longitudinally-perforated sleeve 44, fixed on said spokes at their point of intersection, substantially as set forth.

9. As means for adjusting and holding the grooved segments 20 of the ball-bearing, said segments each having the teeth *i* thereon, combined with the washer having a spiral rib thereon engaging with said teeth, substantially as set forth.

384,947. FIRE-PROOF CEILING. PIERCE B. WIGHT, Hyde Park, Ill., assignor to the Wight Fire Proofing Company, of Illinois. Filed Nov. 5, 1887. Serial No. 254,262. (No model.)



Claim.—1. The L-beams C B, in combination with the tiles M, provided with elevated projecting ends, and the metal clamps L, applied as specified.

2. The hangers consisting of the level parts E, vertical parts P, and the overlapping parts E E, in combination with the L-beams B C, I-beams A, and fastenings F *a*, as specified.

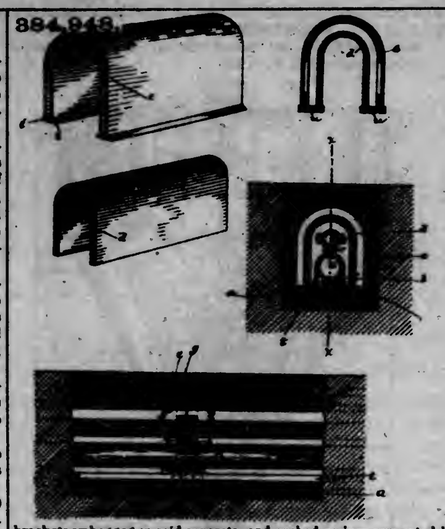
3. The ceiling-tile M, provided with the elevated part G, supported on the L-beam B C, and the groove between it and the end T, the elevated projecting part I, lying on the under side of the L-beam, in combination with the I-beams A, L-beams B C, the hangers E P E, and fastenings F *a*, as specified.

384,948. CONDUIT FOR UNDERGROUND PIPES. THOMAS J. YORK, Boston, Mass., assignor, by mesne assignments, to HIRAM C. L. PERRIN, and MARK WILSMITH, all of same place. Filed Feb. 23, 1888. Serial No. 264,982. (No model.)

Claim.—1. The combination, with a trench and a pipe or pipes therein, of a bed of concrete or like material and supports for said pipes embedded in said concrete, and arched casings supported by said bed and covering the pipe or pipes.

2. The combination, with a trench and a pipe or pipes therein, of a supporting-bed of concrete or like material having a water-conducting drain or groove formed in it under said pipes, pipe-supporting

384,948.



brackets embedded in said concrete, and arched casings supported by said bed and covering the pipe or pipes.

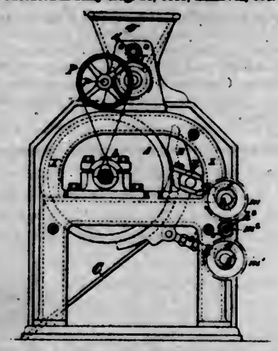
3. The combination of a trench, a heat-conducting pipe or pipes therein, inner casing-sections covering said pipes, outer casing-sections covering the inner sections and separated therefrom by an air-space, whereby loss of heat is reduced, said sections being placed end to end, and protectors *g g* for the joints of said sections, as set forth.

4. The improved casing or conduit for underground pipes hereinbefore described, the same consisting of a bed or base formed in the bottom of a trench, and two series of arched casing-sections supported by said bed, one within the other, and separated by an air-space, the inner section containing the pipe or pipes to be protected and the outer section supporting the filling of the trench, as set forth.

5. The improved casing or conduit for underground pipes hereinbefore described, the same consisting of a bed or base of originally plastic material formed in the bottom of a trench, and two series of arched casing-sections having their edges embedded in the material of said bed, said sections being separated by an air-space, as set forth.

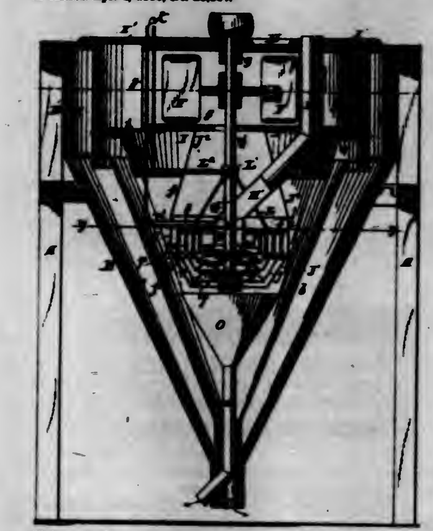
6. The improved casing or conduit for underground pipes hereinbefore described, composed of the concrete bed, the smaller inner casing-sections having their edges embedded in said bed, and the larger outer sections having flanged edges also embedded in said bed, as set forth.

384,949. GRINDING-MILL. GIOVANNI ZOLLA and GIUSEPPE BELLA, Venice, Italy. Filed July 11, 1887. Serial No. 243,963. (No model.) Patented in Italy Aug. 20, 1886, XXXVII, 101.



Claim.—The combination, with the grinding-cylinder A, of the concave B, the shafts *h h'*, the eccentrics *f* and *g*, the eccentric-straps *e e'*, pivoted to the concave, the pinions *m m'*, mounted on shafts *h h'*, respectively, and the idler m^2, mounted on shaft h^2 and gearing with pinions *m m'*, and means for rotating said shaft h^2, said parts being arranged for co-operation as and for the purpose specified.

384,950. SEPARATING-MACHINE. NOAH W. HEIL, Manchester, Mich. Filed Mar. 9, 1888. Serial No. 266,715. (No model.) Patented in Canada Apr. 4, 1888, No. 28,897.



Claim.—1. In a separating-machine, the combination of a fan, an aspirating-chamber below the fan and connected with the eye of the fan, and a separating-chamber surrounding the aspirating-chamber and connected to the mouth of the fan, whereby air put in motion by the fan is caused to travel continuously through the fan, the aspirating-chamber, and the separating-chamber, substantially as set forth.

2. In a separating-machine, the combination of a fan, an aspirating-chamber below the fan and connected with the eye of the fan, a funnel-shaped separating-chamber surrounding the aspirating-chamber and connected to the mouth of the fan, whereby the air-current put in motion by the fan has imparted to it a whirling motion within the separating-chamber and travels in a circular path of reduced diameter after leaving the fan and before entering the lower part of the aspirating-chamber, substantially as set forth.

3. In a separating-machine, the combination of a fan, an aspirating-chamber below the fan and connected with the eye of the fan, a separating-chamber surrounding the aspirating-chamber, and a shelf interposed between the outer wall of the separating-chamber and the aspirating-chamber, substantially as set forth.

4. In a separating-chamber, the combination of a fan, a fan-casing provided with vertical walls around the blades of the fan, a separating-chamber the upper part of which surrounds the fan, and an aspirating-chamber below the fan and connected with its eye, the lower part of the aspirating-chamber being arranged within the funnel-shaped part of the separating-chamber, substantially as set forth.

5. In a separating-machine, the combination of a fan, an aspirating-chamber below the fan, and a series of valves arranged in the air-passages of the aspirator above the point at which the air-currents first act upon the falling material within the aspirating-chamber, substantially as set forth.

6. In a separating-chamber, the combination of a fan, an aspirating-chamber, a separating-chamber surrounding the aspirating-chamber, a funnel-shaped shell open at its upper end and interposed between the outer shell of the separating-chamber and the aspirator, and a downward-projecting flange arranged between the upper open end of the funnel-shaped chamber and the outer wall of the separating-chamber, substantially as set forth.

7. In a separating-machine, the combination, with the outer casing, B B', of the shell C, the fan within the shell C and opening into the chamber between the casing B B' and shell C, the aspirating-chamber below the fan and connected with the eye thereof, a discharge-opening at the bottom of the casing B B', and the hopper below the aspirating-chamber, provided with a discharge-spout, *e*, substantially as set forth.

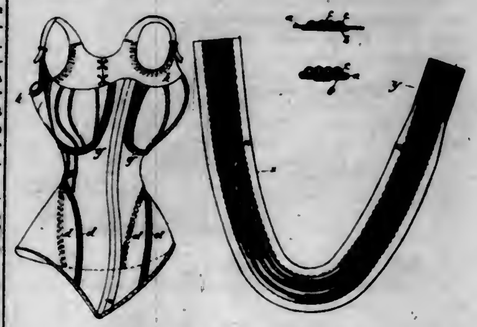
8. In a separating-machine, the combination of the outer casing, the fan arranged within the outer casing, the aspirating-chamber below the fan, the valves, and a lever, L^3, in the wall of the aspirator-chamber, substantially as set forth.

9. In a separating-machine, the combination of the outer casing, the fan within the outer casing, the feeder within the aspirating-chamber, and the lever *s'*, pivoted in the wall of the aspirating-chamber, substantially as set forth.

10. In a separating-machine, the combination of the outer casing, the fan, the aspirating-chamber within the outer casing connected with the eye of the fan above the feeder within the separating-chamber, and the feed-spout arranged eccentric to the fan and passing through the separating-chamber and through the wall of the aspirating-chamber, substantially as set forth.

REISSUES.

10,989. CORSET. CATHARINE A. GREWOLD, New York, N. Y. Filed Dec. 30, 1887. Serial No. 259,494. Original No. 366,348, dated Feb. 22, 1887.



Claim.—A corset provided with the described re-enforcing strips having substantially parallel longitudinal edges secured upon the outside of the corset-body and extending from the top or bottom edge of said body in more or less of a curve over and upon said body and toward but not beyond the waist-line of the corset, and with both extremities terminating at one and the same edge of said corset-body, as and for the purpose set forth.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

MARSH *v.* REIN *v.* RUPPEL.

Decided June 9, 1888.

1. IS A WIFE A COMPETENT WITNESS FOR HER HUSBAND IN AN INTERFERENCE PROCEEDING BEFORE THE PATENT OFFICE?

The question as to whether husband and wife are competent and compellable to testify for or against each other must be determined by the law in force in the jurisdiction in which the Patent Office is located, whether that jurisdiction may be said to be the entire United States or the District of Columbia. The question of competency must be determined in accordance with either the common law, the statute law, or both.

2. WHAT RULE OF EVIDENCE MUST BE OBSERVED BY THE COMMISSIONER OF PATENTS IN THE DISCHARGE OF HIS LIMITED JURISDICTION?

While the Commissioner of Patents is authorized to establish rules and regulations for taking depositions, he is necessarily compelled to proceed under and in accordance with the laws of Congress. He has no power to legislate as to the competency of witnesses, nor as to the admissibility of evidence. Such rules of evidence as Congress establishes or recognizes for courts of general jurisdiction must be deemed to be prescribed for officers and tribunals of inferior and limited powers and jurisdictions, unless they are expressly excepted or special rules are made for them. While sections 876 and 877 (Rev. Stats. of the D. C.) do not specifically name the Patent Office, and may not be held to embrace it as a court or tribunal, still there has never been any law of evidence prescribed for it, except as it has been prescribed for the courts. In other words, the law of evidence recognized in the courts for their guidance, whether common law, statute law, or both, becomes, *proprio vigore*, the law for the Patent Office and other Bureaus, except when otherwise provided.

3. HUSBAND AND WIFE ARE NOT COMPETENT WITNESSES FOR OR AGAINST EACH OTHER IN INTERFERENCE PROCEEDINGS.

Inasmuch as it seems to be well settled that the common-law provision as to husband and wife is in force in the District of Columbia, it follows that husband and wife are not competent witnesses for or against each other in the tribunals and for the purposes mentioned in sections 876 and 877 of the Revised Statutes of the District of Columbia.

APPEAL on motion.

VAPOR-STOVES.

Application of James A. Marsh filed April 1, 1886, No. 197,371. Application of Bernard Rein filed January 25, 1886, No. 189,696. Application of Henry Ruppel filed November 20, 1885, No. 183,438.

Mr. H. T. Fisher and *Mr. W. H. Doolittle* for Marsh.

Mr. George H. Lothrop and *Mr. J. L. Norris* for Rein.

Mr. F. A. Lehmann for Ruppel.

HALL, *Commissioner:*

In this interference case Rein and Ruppel have taken the testimony of their respective wives in support of their respective claims to priority. Marsh moved before the Examiner of Interferences to strike out the testimony of the wives of Rein and Ruppel for the reason that they were not competent witnesses. The Examiner of Interferences overruled this motion, and Marsh has appealed to the Commissioner.

The question presented is whether a wife is competent as a witness for her husband.

Sections 4904, 4905, 4906, 4907, and 4908 Revised Statutes conclusively show that the Commissioner of Patents is an officer invested with what the Supreme Court of the United States in *Butterworth* v. *Hoe* (C. D., 1884, 429) declared to be *quasi-judicial* power. He is expressly authorized to take testimony, to hear the parties, and to decide. This constitutes judicial jurisdiction to the extent granted. The Patent Office is a Bureau in the Department of the Interior, is expressly established at the seat of Government—Washington—where its powers and jurisdiction are to be exercised. While the Commissioner of Patents is authorized to establish rules and regulations for taking depositions, he is necessarily compelled to proceed under and in accordance with the laws of Congress. He has no power to legislate as to the competency of witnesses, nor as to the admissibility of evidence. As to who is a competent witness, and as to whether husband and wife are competent and compellable to testify for or against each other in civil controversies, must be determined by the law in force in the jurisdiction in which the Patent Office is located, whether that jurisdiction may be said to be the entire United States or the District of Columbia. The question of competency must be determined in accordance with either the common law, the statute law, or both. The Congress of the United States has established a rule of evidence for the courts of the United States. Section 858 of the Revised Statutes of the United States provides:

> In the courts of the United States no witness shall be excluded in any action on account of color, or in any civil action because he is a party to or interested in the issue tried. * * * In all other respects the laws of the State in which the court is held shall be the rules of decision as to the competency of witnesses in the courts of the United States in trials at common law, and in equity and admiralty.

The first clause of this section applies to the courts of the United States, wherever situated, and is uniform in its operation. The second clause incorporates the respective laws of the State in which a court is

held, and makes those laws a part of the Federal law, as much as if they were expressly enacted by Congress to be operative in the particular State.

By the common law, husband and wife were not competent or compellable to give evidence for or against each other. This rule was founded upon public policy. It has been modified in many of the States of the Union, in some of which it is provided that the testimony of the wife may be given for her husband in both civil and criminal procedure. But this section 858 of the Revised Statutes of the United States does not affect the common law relating to the competency of husband and wife, but simply removes the objection which existed on account of interest. This has been definitely settled by the Supreme Court of the United States in the case of *Lucas* v. *Brooks* (18 Wall., 436.) It consequently follows that, regardless of the territorial or local jurisdiction of the Commissioner of Patents, there is no Federal statute which changes the common law of evidence in this respect, unless it shall result from the legislation of Congress with reference to the District of Columbia.

Sections 876 and 877 of the Revised Statutes of the District of Columbia are cited as furnishing the legislation which covers this question. They are as follows:

SEC. 876. On the trial of any issue joined, or of any matter or question, or on any inquiry arising in any suit, action, or other proceeding in any court of justice in the District, or before any person having by law, or by consent of parties, authority to hear, receive, and examine evidence within the District, the parties thereto, and the persons in whose behalf any such action or proceeding may be brought or defended, and all persons interested in the same, shall, except as provided in the following section, be competent and compellable to give evidence, either viva voce or by deposition, according to the practice of the court, on behalf of any of the parties to the action or other proceeding.

SEC. 877. Nothing in the preceding section shall render any person who is charged with an offense in any criminal proceeding competent or compellable to give evidence for or against himself; or render any person compellable to answer any question tending to criminate himself; or render a husband competent or compellable to give evidence for or against his wife, or a wife competent or compellable to give evidence for or against her husband, in any criminal proceeding or in any proceeding instituted in consequence of adultery; nor shall a husband be compellable to disclose any communication made to him by his wife during the marriage, nor shall a wife be compellable to disclose any communication made to her by her husband during the marriage.

I think the decision of the Supreme Court of the United States in *Lucas* v. *Brooks*, *supra*, and also of the Supreme Court of the District of Columbia in the case of *Holtzman* v. *Wagner*, (5 Mackey, 15,) are conclusive that these sections do not operate to change the common law with respect to the competency of husband and wife as witnesses for or against each other.

My attention has been called to the case of *Workman* v. *McNaught*, (C. D., 1879, 129,) and also to that of *Koen* v. *Quint*, (C. D., 1883, 26.) In the former case Mr. Commissioner Paine held that in the United States a wife is not at common law a competent witness for her husband, and that section 858 of the Revised Statutes of the United States did not remove this disqualification in the courts of the United States. He also held that sections 856 and 857 of the Revised Statutes relating to the District of Columbia were intended for local courts and tribunals only, and not for national, international, or foreign courts or tribunals whose places of business happened to be within the District of Columbia, and that the Patent Office is not a local institution or tribunal for the adjudication of local interests, and is not, by reason of its location, subject to the statutory provisions relating to the law of evidence in the District of Columbia. He further held that the competency of witnesses in interference cases before the Patent Office is determined by the common law and the statutes, and is not subject to regulations by the Commissioner, whether with or without the approval of the Secretary. On the other hand, Mr. Commissioner Marble in the latter case (*Koen* v. *Quint*) held that a wife was a competent witness for her husband in an interference proceeding, and that the Office must be guided in framing rules for the production of evidence by sections 876 and 877 of the Revised Statutes relating to the District of Columbia, so far as it is not controlled by section 858 of the Revised Statutes of the United States.

Inasmuch as it seems to be well settled that the common-law provision as to husband and wife is in force in the District of Columbia, it follows that husband and wife are not competent witnesses for or against each other in the tribunals and for the purposes mentioned in sections 876 and 877. The common-law rule is definite and certain in that respect. But what rules or law of evidence govern, generally, the proceedings of the Patent Office? What rule of evidence must be observed by the Commissioner of Patents in the discharge of his limited jurisdiction? It is scarcely conceivable, with a civil code such as has been established by Congress for the District of Columbia, and with sections 876 and 877 operative and controlling all the tribunals located and exercising jurisdiction in the District of Columbia or at the seat of Government, that the Patent Office or other Bureaus or Departments of Government, authorized and required to exercise *quasi-judicial* power, to take, receive, and hear evidence, and adjudge the rights involved, are without any statutory law or provisions governing them and are subject to the common-law provisions alone.

It would be anomalous that procedure in the courts of general jurisdiction in the District should be controlled by statutes materially modifying and repealing the common law, but that the Bureaus should be governed by the common law unmodified and unrepealed. The correct view is that such rules of evidence as Congress establishes or recognizes for courts of general jurisdiction must be deemed to be prescribed for officers and tribunals of inferior and limited powers and jurisdictions, unless they are expressly excepted or special rules are made for them. Even though sections 876 and 877 do not specifically name the Patent Office, and may not be held to embrace it as a court or tribunal, still there has never been any law of evidence prescribed for it, except as it has been prescribed for the courts. In other words, the law of evidence recognized in the courts for their guidance, whether common law, statute law, or both, becomes, *proprio vigore*, the law for the Patent Office and other Bureaus, except when otherwise provided.

The Commissioner of Patents has no jurisdiction depending upon *mesne* or final process, nor upon the citizenship of parties. His authority in matters of this kind is limited to questions of interference and public use. But to exercise this jurisdiction power is given to procure the necessary evidence, and the procedure is the same as given to the Federal courts. The Commissioner has no power to subpœna witnesses, compel attendance, punish for contempt, &c. Such matters are expressly placed in the control of the Federal courts having jurisdiction where the depositions are being taken. But although the Patent Office is located at the seat of Government, and is governed by the law applicable to the courts established in the District of Columbia as to the competency of witnesses and of their evidence, and as to who may be compelled to give evidence, yet that law accompanies the procedure to take depositions, and compels the attendance of witnesses, and determines what are and what are not privileged matters, wherever the depositions may be taken. The jurisdiction which secures evidence to be used in the courts of the District of Columbia is in this respect co-extensive with the territorial jurisdiction of the United States; and what is true of the civil courts in this particular is equally true of the Patent Office. That is to say, if the rule of law as to the competency of witnesses be the common law, then the common law follows the procedure of the Patent Office into whatsoever State or Territory it may go for the purpose of taking depositions, and the local Federal court where the depositions are taken will enforce the common law, or whatever law is in force in the District of Columbia, where the evidence is to be used. It is necessary that this should be so, in order that perfect uniformity may prevail in the administration of the Office and in the determination of interference cases. If the competency of the witness were to be determined by the State in which he or she lived, one of the parties to an interference might be able to obtain the testimony of his wife, she being competent in the State in which he lived, while the other party could not secure the testimony of his wife, because living in a State by whose laws the wife was not competent as a witness. This may perhaps be better illustrated by reference to the circuit courts of the United States. As already stated, under section 858 the laws of the respective States as to the competency of witnesses are made the law of the circuit court, so that in Iowa, in the Circuit Court of the United States, the testimony of the wife would be competent in behalf of her husband, because the Iowa laws make the wife a competent witness. Now, if a controversy were pending in that court between a citizen of West Virginia and a citizen of Iowa, it is apparent that unless the laws of Iowa thus incorporated into the Federal statutes shall extend all over the United States for the benefit of the circuit court in that particular case, the citizen of Iowa could obtain and use the evidence of his wife in support of his case, while the citizen of West Virginia, by whose laws the testimony of the wife is incompetent in her husband's behalf, could not procure that of his wife.

I am therefore of the opinion that the common law prevails in respect to the competency of husband and wife to testify for or against each other, and that the testimony of the wife is incompetent in this case, also that this rule, so far as it applies to the Patent Office, is co-extensive with the territorial jurisdiction of the United States, and is unaffected by any of the local statutes of the States.

I am compelled therefore to reverse the decision of the Examiner of Interferences, and to hold that the testimony of the wives of Rein and Ruppel must be stricken from the record.

EX PARTE PAGE AND KRAUSSE.

Decided June 7, 1888.

1. A party who voluntarily takes his patent with full knowledge at the time that the specification or claims are defective and fail to cover his entire invention, or that the patent in other respects is inoperative or invalid, because of the omission of an amendment which he petitioned the Commissioner to admit, which petition was refused because of insufficient showing, cannot thereafter maintain an assertion of inadvertence, accident, or mistake, such as would justify the Office in granting him a reissue to correct the errors.
2. An applicant who has had his day in the Office, and whose application has received full consideration and has been passed to issue, ought not to be permitted to withdraw his case from issue and submit amendments which should have been earlier proposed, and thus put the Office to the trouble of making a reexamination. Unless a showing of irreparable injury is made to appear, such petitions will be denied and applicant required to file a new application covering the subject of his proposed amendment, or he may abandon his original application, pay a new fee, and file another application in the form desired.
3. The inadvertence, accident, or mistake contemplated by the statute relates to the form and character of the specification and claims as they stand at the date of issue. (*Ex parte Mahon*, 40 O. G., 915; 41 O. G., 1269.)

APPEAL from Examiners-in-Chief.

PROCESS OF AND APPARATUS FOR TREATING BARIUM SULPHATE.

Reissue application of William M. Page and Anna L. Krausse, executrix of Emil B. Krausse, deceased, filed June 20, 1887, No. 243,185.

Messrs. Knight Brothers for the applicants.

HALL, *Commissioner:*

This reissue application was rejected by the Primary Examiner for the reason that it did not appear that the alleged invalidity or inoperativeness of the patent heretofore issued was due to inadvertence, accident, or mistake, as contemplated by the statute. An appeal was taken by applicants to the Examiners-in-Chief, who, by a divided decision, affirmed the action of the Primary Examiner, and the case was brought before the Commissioner on appeal.

The facts are as follows: After the original application of William M. Page and Emil B. Krausse had passed to issue a petition was presented to the Commissioner requesting that the case be withdrawn from issue in order to enable applicants to file an amendment. The Commissioner's decision was rendered on the 18th of May, 1887, refusing the request and denying the petition. The decision was based upon the fact that the petition, which requested the withdrawal of the case from the issue, showed no valid reason why it should be granted. It is the well-settled practice in the Office that such petitions will not be granted unless they show that applicant will sustain some irreparable loss or damage if the amendment be not permitted. An applicant who has had his day in the Office, and whose case has received full consideration and has been passed to issue, ought not to be allowed to withdraw his application from issue and submit amendments which should have been previously submitted, and thus put the Office to the trouble of a reexamination. The practice just alluded to has become settled, and in such case an applicant is required to file a new application embracing the subject of the proposed amendment, pay the Office the fees contemplated, and he is then entitled to a new and original

examination. But it sometimes occurs that public use has intervened, or some other circumstances which render it practically impossible for an applicant to successfully prosecute a new application, and whenever this fact appears the Office with equal uniformity allows the application to be withdrawn from issue and amended. In the present case there was no such showing, and the Commissioner had nothing before him which would justify a departure from the well-established practice. Applicants failing to secure the introduction of their proposed amendment, and fully aware of the fact that the patent which would issue would not contain such amendment, saw proper to pay the final fee and take out the patent. This was done by the applicants presumably with a view of obtaining a remedy by reissue, for on the day after the issuance of the patent they prepared and executed the present reissue application and filed the same on June 29, 1887.

It is apparent from this statement of the case that the patent which issued on the 21st day of June, 1887, was not invalid or inoperative in respect to the proposed amendment by reason of any inadvertence, accident, or mistake existing in the minds of the applicants as to the form of the specification or as to what the application contained at the date the patent issued, for they were well advised that it was defective in the very particulars referred to, and notwithstanding that knowledge they saw proper to take the patent in that form.

If the omission to have the amendment, or matter covered by it, introduced into the application or incorporated in the patent had resulted from a mistake on the part of the Office, without any fault on the part of applicants, the mistake would undoubtedly have been corrected, either by an additional certificate or by breaking the seal of the old patent and issuing a new one, in accordance with the practice of the Office. If the omission is to be termed an inadvertence, accident, or mistake, the error occurred long anterior to the issuance of the patent, and, as just stated, was discovered and was capable of rectification by the applicants before the patent was issued to them. There was a clear remedy before them.

If, as suggested hereinbefore, when the petition to be allowed to withdraw the original case from issue for the purposes of amendment was presented to the Commissioner, a showing had been made that irreparable injury would result from a refusal, or that a new application could not be successfully prosecuted in consequence of the existence of public use or other circumstances, then such petition would have been allowed and the amendment would have been incorporated. If, however, no such conditions existed—as was unquestionably true in this case—applicants should have abandoned their original application, paid a new fee, filed a new application in the form desired, and taken their patent on such application. Instead of doing this they chose the other alternative and took out the patent in the objectionable form stated. It is true that in doing this applicants may have misconceived the proper remedy and the proper method to pursue; but it remains true, nevertheless, that at that time there was no inadvertence, accident, or mistake in their minds with reference to the character of the specification and claims embraced in their application, and it cannot be said of the patent that it is invalid or inoperative in consequence of such inadvertence, accident, or mistake as is contemplated by the statute.

In *ex parte Mahnken* (40 O. G., 915) I carefully considered the character of inadvertence, accident, or mistake which would justify a reissue, and reconsidered the subject in the same case, (41 O. G., 1269.) I adhere to the conclusion reached in those decisions, that the inadvertence, accident, or mistake contemplated by the statute is one which relates to the form and character of the specification and claims as they exist at the time the patent issues, and if a party voluntarily causes his patent to issue with a full knowledge at the time that such specification and claims are imperfect and fail to cover his invention, or that the patent in other respects is inoperative or invalid, the right to a reissue will not arise. Certainly such will be the case if before the patent issue there is any remedy furnished by the law or in the practice of the Office for the rectification of such imperfections or defects in the application of which applicant does not avail himself.

The decision of the Examiners-in-Chief is affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

THE EDISON ELECTRIC LIGHT COMPANY *v.* UNITED STATES ELECTRIC LIGHTING COMPANY.

1. EDISON—DYNAMO-ELECTRIC MACHINE.
   Letters Patent No. 263,140, granted August 22, 1882, to Thomas A. Edison, for improvements in dynamo-electric machines, expired with the expiration of the Austro-Hungarian patent for the same invention.
2. ON PLEA.
   The defendant pleaded that it should not be called upon to answer, because by reason of the expiration of a foreign patent for the same invention the patent in suit had expired, and the complainant had a plain, adequate, and complete remedy at law, and the court should not take cognizance in equity of the suit. The complainant contended that such a defense could not be raised by plea, and if it could, that the plea was insufficient both in matters of form and substance to present such a defense.
3. PLEA TO JURISDICTION PROPER.
   A plea to the jurisdiction is proper both in suits at law and in equity.
4. PLEA GOOD EVEN IF PARTLY OR WHOLLY NEGATIVE.
   It is no objection that such a plea is partly a negative and partly an affirmative plea, or indeed negative wholly.
5. PLEA—THE EFFECT OF.
   The effect of the plea is to admit all the facts alleged in the bill except those specifically denied, and to meet the case made by the bill by alleging the new facts intended to show the expiration of the patent in suit.
6. PLEA—WHEN SUFFICIENT.
   A plea is sufficient which sets forth documents according to their tenor or legal effect, and avers the substantive facts relied upon.
7. PLEA—PROOFS WHEN ISSUE IS TAKEN ON IT.
   If issue were taken on the plea, it would only be necessary for defendant to produce a properly authenticated copy of the foreign patent, and show the seal or signature affixed to it to be the act of an officer duly authorized to issue patents.

8. PLEA—THE EFFECT OF—HOW DETERMINED.
   The effect and operation of the patent is to be determined as a question of law by the terms of the document, unless evidence of the foreign law is introduced to qualify or controvert the construction which would otherwise be placed upon the instrument.
9. PLEA—WHAT ALLEGATION NECESSARY.
   It is not necessary in pleading to allege that an instrument was executed by an agent, and that the agent was duly qualified thereto; but it is sufficient to allege its execution by the principal.
10. PRESUMPTIONS ATTENDING FOREIGN OFFICIAL DOCUMENTS.
    The tribunals of every nation take judicial notice of the public seals of foreign States, and the annexation of the seal will be presumed to have been made by a person having custody thereof and competent to do the act.
11. SECTION 4887 REVISED STATUTES CONSTRUED.
    It is not material whether the foreign patent is granted to the inventor who made the application in this country or to some other person to whom he has caused the invention to be patented, nor that the inventor who makes the application here is one of our citizens.
12. STATUTES—HOW CONSTRUED.
    If there is no ambiguity in the statute, it is the duty of the court to give effect to its obvious meaning, without entering into any inquiry as to the supposed intention of Congress, notwithstanding the statute may be thought to make an unreasonable and harsh innovation.
13. SAME.
    Where the meaning of the Revised Statutes is plain, the court cannot look into the source of the revision to ascertain whether errors have or have not been committed by the reviser.
14. STATUTE 4887 CONSTRUED.
    A patent of the United States taken out by the inventor, a citizen of the United States, expires at the date of expiration of a foreign patent for the same invention previously taken out by the same inventor, or by his request, although the patent of the United States had been first applied for and the invention had been put in use in the United States before the foreign patent had been applied for.

Mr. John C. Tomlinson, Mr. Richard N. Dyer, Mr. William M. Evarts, and *Mr. Clarence A. Seward* for the plaintiff.

Mr. Samuel A. Duncan, Mr. Leonard E. Curtis, Mr. Frederic H. Betts, and *Mr. Edmund Wetmore* for the defendant.

WALLACE, *J.:*

The plea to the bill of complaint, which has been set down for argument, alleges in substance that the defendant should not be compelled to answer, because by reason of the facts averred in the plea the remedy of the complainant is plain, adequate, and complete at law, and this court should not take cognizance in equity of the suit.

The bill alleges the infringement by the defendant of Letters Patent of the United States No. 263,140, dated August 22, 1882, granted to the complainant upon the application of Edison, for an improvement in dynamo-electric machines, the invention of Edison. The bill shows that Edison made his application for a patent August 9, 1880, and assigned his title to the complainant June 21, 1881. Besides the averments usually contained in bills to restrain infringements of patents, allegations are introduced by way of anticipation of the supposed defense to the bill in order to meet any issue tendered by the defendants. These averments are in substance that the defendant may wrongfully pretend as an excuse for its wrongful acts in the premises that the complainant's Letters Patent are no longer in force or operative, because at the time they were granted the invention described therein had been first patented in the Austro-Hungarian Empire for the term of 1 year, and that such foreign patent has expired, and consequently the term of complainant's patent has expired; but that the facts are that Edison at the time of making the invention was, and always since has been, a resident and citizen of the United States, and made, perfected, and reduced the invention to practice in the United States, and made and filed his application for a patent in the United States Patent Office August 9, 1880, and prior to any application made by him abroad, and that in order to protect his invention in foreign countries it was necessary that he should promptly apply for Letters Patent abroad, and the issue of the foreign patent preceded the United States patent solely because of the greater diligence and more prompt procedure of the foreign administration.

The bill further avers that the Letters Patent of the Austro-Hungarian Empire were granted for the term of 15 years from their date and are in full force and effect.

The plea alleges that prior to the granting of the complainant's Letters Patent the invention or discovery described and claimed therein had been patented by Edison, or with his knowledge, consent, and procurement, by a public patent of the Austro-Hungarian Empire, granted to Edison, July 21, 1881; that the term for which the foreign patent was granted was 1 year from its date, and expired on the 21st day of July, 1882; that subsequently, by grant made on the 19th day of July, 1882, the foreign patent was extended for a new term of 1 year, and the extended term expired on the 21st day of July, 1883, and that the extended Austro-Hungarian patent was existing and unexpired when the complainant's Letters Patent were granted, but the term thereof expired July 21, 1883, and before the commencement of this suit. The plea denies the averments of the bill that the Austro-Hungarian patent was granted for the term of 15 years, and was in full force and effect when this suit was brought.

If the complainant's patent had expired before the bringing of this suit, it is plain that a court of equity has no jurisdiction of the cause of action for infringement, and the complainant can only proceed by a suit at law for the recovery of damages. (*Root* v. *Railway Co.*, 105 U. S. 189.) It is contended for the complainant that such a defense cannot be raised by a plea, and if it could that the present plea is insufficient both in matters of form and substance to present such a defense.

One of the uses of a plea in suits at law or in chancery is to object to the jurisdiction of the court. (*Livingston* v. *Story*, 11 Pet., 351; *Wickliffe* v. *Owing*, 17 Howd., 47, 51.) In a case where it was urged that the sum involved was not of sufficient amount to authorize a court of chancery to take cognizance of the cause, Chancellor Walworth said:

> If that fact did not appear upon the face of the bill, it might undoubtedly have been pleaded in bar of relief. (*Smets* v. *Williams*, 4 Paige, 364.)

In Beames on Pleas, 55, it is stated:

> Those pleas which are commonly called "pleas to jurisdiction" do not proceed the length of disputing the right of a plaintiff in the subject of the suit, or allege any disability on the part of the plaintiff to prosecute the suit, but simply assert that a court of chancery is not the proper court to take cognizance of those rights.

The present plea falls within this definition.

There is no force in the objection that the plea is a negative plea. Such pleas are sanctioned and are now frequently resorted to. A familiar instance is a plea denying partnership where the bill prays an account of partnership transactions. The present plea is not strictly a negative plea. It is a negative plea so far as it denies the averments of the bill that the term of the Austro-Hungarian patent is for 15 years, and that the patent was in full force when the suit was brought. It is an affirmative plea as to all the other facts which it sets forth. The effect of the plea is to admit all the facts alleged in the bill except those specifically denied, and to meet the case made by the bill by alleging the new facts intended to show that the complainant's patent had expired at the time of the commencement of the suit. If the bill did not contain the anticipatory averments which have been inserted in it, the denial in the plea would have been unnecessary. With this denial in the plea it is only necessary to inquire whether the facts set up affirmatively are a defense to the suit, admitting that everything in the bill not denied is true.

A pleading is sufficient which sets forth documents according to their tenor or legal effect, and avers the substantive facts relied on as a cause of action or defense. Tested by this rule, the plea is sufficient in form without making a profert of the Austro-Hungarian patent, or setting out in detail any of the evidential facts to show that it was a valid grant of Letters Patent for the invention for the term of 1 year. If issue were taken on the plea, it would only be necessary for the defendant to produce a properly-authenticated copy of the foreign patent and show the seal or signature affixed to it to be the act of an officer duly authorized to issue patents. The effect and operation of the patent is to be determined as a question of law by the terms of the document, unless evidence of the foreign law is introduced to qualify or controvert the construction which would otherwise be placed upon the instrument. It is not necessary in a pleading to allege that an instrument was executed by an agent and that the agent was duly authorized thereto. It is sufficient to allege its execution by the principal. (*Delafield* v. *Kinney*, 24 Wend., 345.) The tribunals of every nation take judicial notice of the public seals of sovereign states, (1 Greenleaf Ev., sec. 4,) and the annexation of the seal will be presumed to have been made by a person having custody thereof and competent to do the act. (Phillips Ev., 419.)

The plea sets forth a sufficient defense if the term of a United States patent ends at the same time the term of a foreign patent granted for the same invention ends, when it appears that the foreign patent was not applied for until after the domestic patent was applied for; that it was not applied for by the inventor himself, but by some other person by his procurement, and that the domestic patent was granted to one who at the time of the application was an American citizen and had made and reduced his invention to practice in this country. The question presented depends upon the meaning and effect of section 4887 United States Revised Statutes, which is as follows:

> No person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid by reason of its having been first patented or caused to be patented in a foreign country, unless the same has been introduced into public use in the United States for more than two years prior to the application. But every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent, or, if there be more than one, at the same time with the one having the shortest term, and in no case shall it be in force more than seventeen years.

It is not at all material whether the foreign patent is granted to the inventor who makes the application in this country or to some other person to whom he has caused the invention to be patented. The statute expressly covers both cases. Nor is the fact of any importance that the inventor who makes the application in this country is one of our own citizens, because since the act of July 4, 1836, which repealed all former patent laws and established a comprehensive code covering the whole subject our laws have not made any distinction between our own citizens and foreigners in respect to the privilege of obtaining patents or the conditions and restrictions of the privilege granted, except as to the amount of the fee to be paid and the protection of inventions by caveat. The question may therefore be simplified by eliminating these immaterial ingredients; and the real inquiry is whether the section limits the term of a domestic patent to the term of a foreign patent when the application for the foreign patent is not made until subsequent to the application in this country but the foreign patent issues before the domestic patent.

If it were proper to treat this question as an original one, it would be necessary first to inquire whether there is any ambiguity in the language of the statute. If there is not, the duty of the court is to give effect to its obvious meaning, notwithstanding it may be thought to make an unreasonable and harsh innovation upon the pre-existing privileges of our own inventors. It is not only the safer course to adhere to the words of a statute construed in their ordinary import instead of entering into any inquiry as to the supposed intention of Congress, but it is the imperative duty of the court to do so. Where the meaning of the Revised Statutes is plain, the court cannot look to the sources of the revision to ascertain whether errors have or have not been committed by the revisers. (*United States* v. *Boyd*, 100 U. S., 508.)

There is no practical difference in the phraseology of section 4887 and that of section 25 of the act of July 8, 1870, from which the section is reproduced. The precise point now raised by the complainant, but made with reference to the effect of section 25 of the act of 1870, was considered by this court in *The Gramme Electrical Co.* v. *The Arnoux & Hochhausen Electric Co.*, (21 Blatch., 360.) It was insisted by the defendant in that case that the complainant's patent expired at the date of the expiration of an Austrian patent, and the complainant took the position that the defense was not tenable because the application for his United States patent was filed before the application for the Austrian patent was made. It was held by Judge Blatchford that the date of the application for the United States patent could not affect the question, and that the meaning of the statute was that the United States patent should expire at the time of expiration of the foreign patent, irrespective of the time when the foreign patent was applied for. Judge Blatchford adopted in that case the views of Judge Nixon upon the same question in *Bate Refrigerating Co.* v. *Gillett*, (13 Fed. Rep., 553.) In the Bate case the question arose under section 4887, and it was contended that complainant's United States patent did not expire at the date of the expiration of a Canadian patent, because the application for his patent was filed antecedent to the application for the grant of the Canadian patent. The court was of the opinion that it would be wresting the language of the section from its plain and obvious meaning to sustain that position. These decisions have been followed by Judge Bradley upon a subsequent hearing in the Bate case, and by Judge Colt in *Bate Co.* v. *Hammond*, (First Circuit U. S.)

In view of these adjudications the question should not be considered as an original one. The plea is therefore allowed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 43—NO. 13. TUESDAY, JUNE 26, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
FRAUDULENT PRACTICES BY ATTORNEYS	1459
PUBLISHERS' CATALOGUES	1459
NOTICE	1459
ISSUE OF JUNE 26, 1888	1459
DESIGNS	1460
TRADE-MARKS	1460
LABELS	1460
PATENTS GRANTED	1461
REISSUES	1561
DECISIONS OF THE COMMISSIONER—	
Ex parte de Bassett	1562
Ex parte Weeks	1565
DECISIONS OF THE U. S. COURTS—	
Blaisdell v. National Barrow and Track Company	1567
NEW PATENT LAW OF INDIA	1568

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 16, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 483 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *James S. McGahan, No. 125 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Mahada*.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subdivided in the Scientific Library for convenient and ready reference.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of envelopes and other communications addressed to them, the number of the room and the name of the particular officer or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of June 26, 1888.

Patents	385	No. 384,951 to No. 385,335,	inclusive.
Designs	10	No. 18,407 to No. 18,416,	inclusive.
Trade-Marks	32	No. 13,609 to No. 13,640,	inclusive.
Labels	8	No. 5,625 to No. 5,632,	inclusive.
Reissues	2	No. 10,940 to No. 10,941,	inclusive.
Total issue	436		

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska		1
Arizona Territory			Nevada		
Arkansas	6		New Hampshire	4	
California	5	3	New Jersey	17	3
Colorado	1		New Mexico Terri'y		
Connecticut	14	3	New York	69	7
Dakota Territory	4		North Carolina	1	
Delaware			Ohio	24	
District of Columbia	3	1	Oregon	1	
Florida			Pennsylvania	27	2
Georgia	3	3	Rhode Island	3	1
Idaho Territory			South Carolina		1
Illinois	41		Tennessee	1	
Indian Territory			Texas	4	
Indiana	10	1	Utah Territory	1	
Iowa	7	1	Vermont		
Kansas	5		Virginia	3	
Kentucky	8		Washington Terri'y		
Louisiana			West Virginia	1	
Maine	3		Wisconsin	15	1
Maryland	1		Wyoming Territory		
Massachusetts	37	1	United States Army		
Michigan	11	1	United States Navy	2	
Minnesota	3				
Mississippi			Total to citizens of the United States	373	30
Missouri	9	2			
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Germany	7	
Australia			Guatemala		
Austria-Hungary			Netherlands		1
Belgium	1		New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	4		Russia		
Chili			Scotland		
Columbia, U. S. of			South Australia		
Cuba	1		Spain		
Denmark			Switzerland		
England	9				
Finland			Total to citizens of foreign countries	22	1
France					

DESIGNS.

18,407.—BADGE.—*Eugene A. Crawford*, Pawtucket, R. I. Application filed May 15, 1888. Serial No. 274,001. Term of patent 7 years.

18,408.—CARPET-SWEEPER CASING.—*Walter J. Drew*, Grand Rapids, Mich., assignor to *The Bissell Carpet Sweeper Company*, same place. Application filed February 23, 1888. Serial No. 265,052. Term of patent 14 years.

18,409.—EDUCATIONAL MODEL.—*Ulysses Grant Houston*, Manhattan, Kans. Application filed April 28, 1888. Serial No. 272,214. Term of patent 14 years.

18,410.—PEN AND PENCIL CASE.—*Thomas Richards*, Jersey City, N. J. Application filed March 27, 1888. Serial No. 268,676. Term of patent 7 years.

18,411 and 18,412.—ORNAMENTATION OF GAME-TABLETS.—*J. Walter Spalding*, New York, N. Y., assignor to *A. G. Spalding & Brothers*, Chicago, Ill. Applications filed January 12, 1888. Serial Nos. 260,578 and 260,580. Term of patents 7 years.

18,413.—BURIAL-CASKET.—*Leo Stein*, Rochester, N. Y., assignor to *The Stein Manufacturing Co.*, same place. Application filed December 19, 1887. Serial No. 258,416. Term of patent 14 years.

18,414.—BACK OF ENVELOPES.—*Jonathan Stern*, Savannah, Ga. Application filed May 28, 1888. Serial No. 274,841. Term of patent 7 years.

18,415.—QUILTING.—*Charles T. Wagner*, College Point, N. Y. Application filed January 31, 1888. Serial No. 262,560. Term of patent 7 years.

18,416.—QUILTING.—*Charles T. Wagner*, College Point, N. Y. Application filed February 2, 1888. Serial No. 262,831. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,626.—TONIC MEDICINE.—*James M. Alloways*, Indianapolis, Ind. Application filed May 2, 1888. Used since October, 1887.
"The word 'A. F. A. C. T.'"

15,627.—GLUCOSE, GRAPE-SUGAR, AND CORN-SIRUP.—*The American Glucose Company*, Buffalo, New York; Leavenworth, Kans.; Iowa City, Iowa; Peoria, Ill., and Tippecanoe City, Ohio. Application filed April 14, 1888. Used since March, 1888.
"The representation of a triangle."

15,628.—TONIC MEDICINE.—*Henry Ballantine*, New York, N. Y. Application filed March 10, 1888. Used since August 12, 1887.
"The word 'KORITZA.'"

15,629.—SOLUBLE COCOA.—*Bensdorp & Co.*, Amsterdam, Netherlands. Application filed May 8, 1888. Used since November 16, 1881.
"The words 'BENSDORP & Co., ROYAL DUTCH PURE SOLUBLE COCOA,' in combination with a scene representing registrants' factory and ware-rooms at Amsterdam."

15,630.—EYE-WATER.—*Elizabeth BiEsland*, New York, N. Y. Application filed March 22, 1886. Used since July, 1880.
"The words 'POOR RICHARD'S EYE-WATER.'"

15,631.—EXTRACTS, PERFUMES, OILS, AND SOAPS.—*Bloomingdale & Levy*, New York, N. Y. Application filed April 24, 1888. Used since April 1, 1888.
"The words 'HEARTS EASE.'"

15,632.—EXTRACTS, PERFUMES, OILS, AND SOAPS.—*Bloomingdale & Levy*, New York, N. Y. Application filed April 24, 1888. Used since April 1, 1888.
"The words 'FLOWER DE LUCE.'"

15,633.—EXTRACTS, PERFUMES, OILS, AND SOAPS.—*Bloomingdale & Levy*, New York, N. Y. Application filed April 24, 1888. Used since April 1, 1888.
"The words 'RED LETTER' and the name of the odor and contents of the vessel in red letters."

15,634.—BEER.—*Cramer & Kersten*, Charleston, S. C. Application filed May 3, 1888. Used since April 21, 1888.
"The representation of a palmetto-tree and the monogram 'C & K.'"

15,635.—WATER-CLOSET PAPER.—*H. S. Crocker & Co.*, San Francisco, Cal. Application filed May 9, 1888. Used since March 1, 1888.
"The word 'COSMOPOLITAN.'"

15,636.—BLOTTING-PAPER IN SHEETS AND PADS.—*H. S. Crocker & Co.*, San Francisco, Cal. Application filed May 9, 1888. Used since May 1, 1888.
"The word 'ELECTRIC.'"

15,637.—WATER-CLOSET PAPER.—*H. S. Crocker & Co.*, San Francisco, Cal. Application filed May 9, 1888. Used since March 1, 1888.
"A pictorial scene of the Golden Gate or entrance to the Bay of San Francisco and the words 'TAMALPAIS MILLS.'"

15,638.—MEDICINAL PREPARATION FOR UTERINE DISEASES.—*Dies Chemical Company*, St. Louis, Mo. Application filed May 8, 1888. Used since April 6, 1888.
"The word 'DIOVIBURNIA.'"

15,639.—MEDICATED FOOD FOR ANIMALS.—*F. E. Sunborn*, Omaha, Nebr. Application filed April 20, 1888. Used since July 1, 1886.
"A farm-scene comprising a barn, a group of three horses, four cows or cattle, two sheep, and two swine, and some fowls, with a male and female figure in the left foreground, and also boxes labeled 'STANDARD HOMINY & CATTLE FOOD.'"

15,640.—INDIAN BLOOD REMEDY.—*Henry H. Hopkins*, Hillsdale, Mich. Application filed May 18, 1888. Used since the year 1883.
"The likeness of the registrant 'HENRY H. HOPKINS.'"

15,641.—COAL AND COKE.—*Jumbo Coal and Coke Co.*, Pittsburg, Pa. Application filed May 22, 1888. Used since September, 1884.
"The word 'JUMBO.'"

15,642.—METAL ARTICLES FOR DECORATION AND FOR TOILET AND TABLE USE.—*Watson J. Miller* and *Henry Berry*, Shelton, Conn. Application filed May 9, 1888. Used since April 20, 1888.
"The letters and character 'M & B' with the word 'SMALLING.'"

15,643.—WASHING-MACHINES.—*Recknagel & Co.*, New York, N. Y. Application filed May 18, 1888. Used since May 10, 1888.
"The word 'CATARACT.'"

15,644.—LIQUID POLISH FOR STOVES.—*Isaac H. Reddic*, Boston, Mass. Application filed March 20, 1888. Used since September 7, 1887.
"The word-symbol 'THE SILVER COMET.'"

15,645.—LARD.—*Rohe & Brother*, New York, N. Y. Application filed May 18, 1888. Used since January 1, 1882.
"The word 'UNION.'"

15,646.—BEER.—*Joseph Schlitz Brewing Company*, Milwaukee, Wis. Application filed May 19, 1888. Used since May 1, 1888.
"A representation of the globe of the world with a belt or band about it secured by a buckle."

15,647.—VINEGAR.—*Thal & Howe*, St. Louis, Mo. Application filed May 3, 1888. Used since February, 1888.
"A Maltese cross in red and inclosed in a bronzed frame and bronze center-piece, with four arms reaching to the four corners of said frame, with the words 'TRADE-MARK' crosswise of the bronze circle."

15,648.—CLOTHES-PINS.—*Tobyhanna and Lehigh Lumber Company*, Tobyhanna Mills, Pa. Application filed May 3, 1888. Used since May 1, 1885.
"The word 'TOBYHANNA.'"

LABELS.

5,635.—Title: "CLOSSON'S GERMAN DYSPEPSIA PANACEA."—*W. E. Closson*, Independence, Iowa. Application filed June 2, 1888.

5,636.—Title: "BLACKBERRY AND PEPPERMINT CORDIAL."—*Joseph Jacobs*, Atlanta, Ga. Application filed May 28, 1888.

5,637.—Title: "SWEET GUM AND HONEY."—*Joseph Jacobs*, Atlanta, Ga. Application filed May 28, 1888.

5,638.—Title: "FRAGRANT COLOGNE."—*Joseph Jacobs*, Atlanta, Ga. Application filed May 28, 1888.

5,639.—Title: "DR. MARTIN'S HEALTH RESTORER AND BLOOD PURIFIER."—*Horace J. Martin*, Washington, D. C. Application filed May 28, 1888.

5,640.—Title: "DR. BUTTON'S COFFEE."—*James H. Myers*, Norwich, Conn. Application filed May 31, 1888.

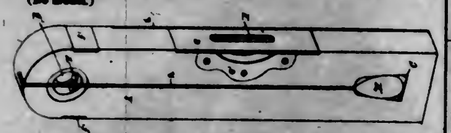
5,641.—Title: "NATIONAL DEMOCRATIC BADGE 1888 PRESIDENTIAL CAMPAIGN."—*Reynolds Jewelry Co.*, Providence, R. I. Application filed June 4, 1888.

5,642.—Title: "CLOVER BLOSSOM COMPOUND" (FOR A BLOOD PURIFYING MEDICINE.)—*Wilbur H. Selleck*, Williamstown, N. Y. Application filed May 28, 1888.

PATENTS

GRANTED JUNE 26, 1888.

384,951. COMBINED RULE, LEVEL, AND PLUMB. CHARLES ANDES, Terre Haute, Ind. Filed Feb. 21, 1888. Serial No. 264,743. (No model.)



Claim.—The herein-described combination-tool, comprising the body A, having flat side edges and the openings B and C, respectively, near its opposite ends, and provided with the central plumb-marks, D, extending between said openings on each side, the longitudinal level E, inserted in one edge of its body and held in place by the socket-plates *e f*, the former being set flush in the edge of the body, while the latter is set flush in the side of the body, the transverse level F, passing through the circular opening B and retained in place in its socket by the metal plates *f'*, set flush in the corresponding side edges of the body, the scales G G', set flush in the side of the body opposite that carrying the socket-plate *e'*, the said scales being of metal, a foot long, each graduated in opposite directions to inches and sixteenths of an inch, and situated adjoining opposite edges of the side of the body, the line A, having one end secured centrally to the end of the body adjacent to the opening B, and the plumb-bob on the end of said line, substantially as specified.

384,952. PLOW. LORENZO D. BALL and JOHN T. BARNES, Canton, Ohio. Filed Feb. 15, 1888. Serial No. 264,004. (No model.)



Claim.—1. The combination of the beam B, provided with the flange *d* and recess *d'*, said flange *d* being formed integral with the beam B, the screw-head H, provided with the collar or flange A, the screw I, provided with the eye *e*, the bolt *f*, and the beam E, pivotally attached to the beam B, substantially as and for the purpose specified.

2. The combination of the beam B, the beam E, having the arms or bars *b b*, the disks J, provided with the lugs K, the draft-bar G, the clamping-bolt *c*, and means for adjusting the beam E, substantially as and for the purpose specified.

384,953. SALT-DRIER. C. TALLEYRAND BARCLAY, Warsaw, N. Y. Filed Apr. 11, 1887. Serial No. 234,376. (No model.)



Claim.—1. A metallic drying-cylinder and mechanism to rotate the same, a lining for said cylinder consisting of wooden staves held in contact with the inner surface of said cylinder, interior rings for retaining said staves in position, and a heating-drum passing longitudinally through the cylinder, all in combination substantially as described.

2. The combination, with a drying-cylinder, of a wooden lining consisting of staves and expansible hoops lying in contact with the interior surface of the staves, substantially as described.

3. The combination, with a metallic drying-cylinder, of a wooden lining consisting of staves lying in proximity to the inner surface of the cylinder, and divided wooden rings in contact with the staves, said rings expansible by means of a wedge between the proximate ends, substantially as described.

4. The combination, with the inner surface of a drying-cylinder having a wooden lining, of a series of expansible wooden rings having beveled edges, substantially as described.

5. The combination, with the metallic cylinder and staves, of a sectional wooden ring bearing against said staves, said ring having a slot through its proximate ends and a wedge lying in said slot, as set forth.

6. The combination, with the metallic drying-cylinder, the wooden lining for the same, and the interior hoops having expanding mechanism, substantially as described, and having elongated perforations therethrough, of bolts passing through the holes in the hoops, staves, and cylinder, substantially as described.

384,954. INSIDE BLIND. EDMAN A. BENEDICT, Syracuse, N. Y., assignor of one-half to George I. Beach, same place. Filed Sept. 19, 1887. Serial No. 249,955. (No model.)



Claim.—1. A sheet for the purposes specified, consisting of a series of pulp boards or layers glued or cemented together, and provided with a metal binding-rod secured thereto, and a wooden strip or binding mounted on the rod, substantially as specified.

2. An inside blind composed of pulp board, a metal binding-rod secured to the edge thereof by a flexible strip, and a wooden binding-strip grooved and adapted to receive said rod, substantially as specified.

3. An inside blind composed of layers of pulp board cemented together, a metal binding-rod secured thereto by a flexible strip, a wooden binding-strip grooved to receive said rod, and a layer of veneer, paper, or other imitation, secured to surface of the blind, substantially as specified.

4. An inside blind formed of layers of pulp board glued together, cut out, and provided with a wooden block, in combination with a hinge secured to said block and to the inside casing of the window, substantially as specified.

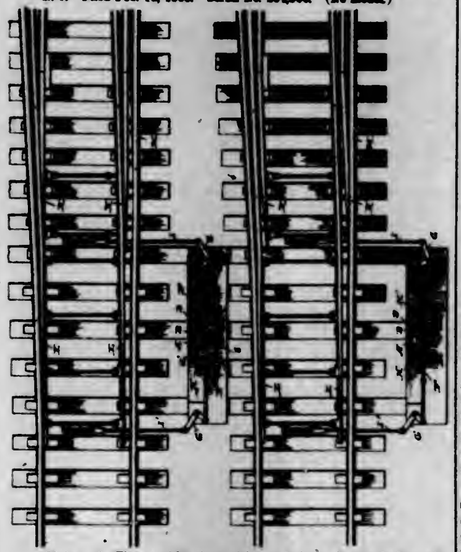
5. An inside blind formed of layers of pulp board cemented together, a binding-rod of metal secured in place by a flexible strip, and a wooden binding-strip grooved and embracing said rod, in combination

with a hinge formed with a sleeve and a set-screw, and a window-casing having a rod adapted to be received by said sleeve, substantially as specified.

6. The combination of the layers B', cemented together, cut out, and provided with the blocks F^3, with the hinge E, comprising the members E' E^2, the member E^2 being perforated and connected to the block and formed with a knee, E^3, and the member K being provided with the sleeve E^4, having the set-screw E^5, the casing A, and the rod G, substantially as specified.

7. The combination of the layers B', cemented together, the veneer F, the binding-rod C, its strip C', the binding-strip D, the hinge E, casing A, and rod G, substantially as specified.

384,955. RAILWAY-SWITCH. LOUIS BLACKSTONE, Jersey City, N. J. Filed Feb. 14, 1888. Serial No. 264,506. (No model.)



Claim.—1. The combination, with two independent switches, of a movable cam engaging in succession with the shifting connections of the two switches to move them separately and successively, substantially as described.

2. The combination, with two independent switches and their shifting connections, of a cam, with which engage in succession projections carried, respectively, by the shifting connections of the switches, and a handle for moving the cam, substantially as described.

3. In a three-way switch, the combination of the switch-rails K and L, the slide-bars F F', each carrying a projection, movable connections between the said bars and the switch-rails, respectively, a plate provided with one or more cam-edges, with which said projections engage, and a handle for turning the plate, substantially as described.

4. In a three-way switch, the combination of the switch-rails K and L, the slide-bars F F', connected, respectively, therewith, and each provided with a projection, a cam-plate provided with a cam, D, with which said projections engage, said cam having a portion, *d*, substantially concentric with the pivot of the plate, and another portion, *d'*, situated at a distance from the pivot greater than the distance of the portion *d* therefrom, substantially as described.

5. In a three-way switch, the combination of the switch-rails K and L, the slide-bars F and F', connected, respectively, therewith, and provided with the studs E and E', respectively, the horizontally-arranged plate A, having formed therein the groove D, having the two portions *d* and *d'*, the shaft upon which the plate is mounted, and the handle, substantially as described.

384,956. DEVICE FOR MAKING PLUMBERS' TRAPS. AUGUST BELL, Berlin, Germany, assignor to Edward Strong Turvey, same place. Filed Sept. 21, 1887. Serial No. 250,278. (No model.)



Claim.—1. In a device for making water traps and bends, sheathing or covering the surfaces of the slide or diaphragm or die with an anti-friction metal, substantially as described in the foregoing specification, and shown in the accompanying drawings.

2. In a device for making water traps and bends, the combination of the sheathed slide *c* with the connecting-rails *g*, shaft *k*, journals *i*, and lever *m*, substantially as described in the foregoing specification, and shown in the accompanying drawings.

3. In a device for making water traps and bends, the device for operating the slide or diaphragm *c*, characterized by the base-plate *a*, connecting-rails *g*, journals *i*, bearings *l*, lever *m*, and shaft *k*, substantially as described in the foregoing specification, and shown in the accompanying drawings.

384,957. HAY-CAP. JAMES BRADY, Sparta, Ill. Filed Mar. 30, 1887. Serial No. 233,057. (No model.)



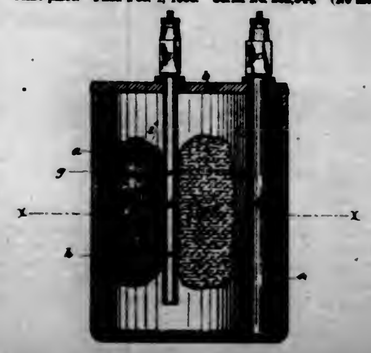
Claim.—1. A hay-cap comprising a section or sections of roofing bent to form inclined sides, said section constituting the apex of the cap and having the side edges provided with vertical flanges to allow lateral attachment of other similar sections thereto, substantially as described.

2. A hay-cap comprising a section of roofing bent to form inclined sides, said section constituting the apex of the cap and having the side edges vertically flanged to permit lateral attachment thereto of other like sections, and the lower edges overlapping other plain flat sections attached to the lower edge of the first section, the side edge of said plain flat sections being also provided with vertical flanges to permit the lateral attachment of like sections, substantially as described.

3. A hay-cap comprising a section of roofing bent to form inclined sides, said section constituting the apex of the cap and having side edges vertically flanged to permit lateral attachment of other like sections, and lower edges overlapping other plain flat sections attached to the lower edge of the first section, the side edges also being provided with vertical flanges to permit the lateral attachment of like sections, and an inclosing-cap to fit over the lateral flanges of the sections, substantially as described.

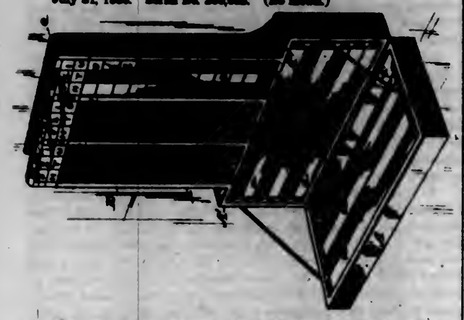
4. A hay-cap comprising a section of roofing bent to form inclined sides, said section constituting the apex of the cap and having side edges vertically flanged to permit lateral attachment of other like sections, and lower edges overlapping other plain flat sections attached to the lower edge of the first section, the cap and the said flat sections being secured together by means of hooks, nuts, and bolts, staples, or the like passed through the overlapping portions of the cap and flat sections, and an inclosing-cap to fit over the lateral flanges of the sections, substantially as described.

384,958. GALVANIC BATTERY. CHARLES A. BROWN and MARTIN M. CLARK, Chicago, Ill., assignors to the Western Electric Company, same place. Filed Feb. 1, 1888. Serial No. 262,644. (No model.)



Claim.—The combination, with the negative element of a galvanic battery, of two bags containing a mixture of carbon and peroxide of manganese, said bags being secured to opposite sides of said negative element, substantially as described.

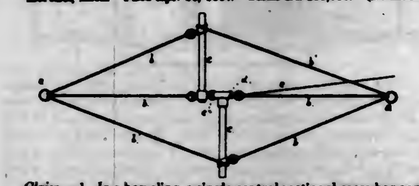
384,959. APPARATUS TO FACILITATE THE TEACHING OF NOTATION AND NUMERATION. WILLIAM R. GARD, Corbon, Ind. Filed July 31, 1882. Serial No. 269,662. (No model.)



Claim.—1. In an apparatus for facilitating the teaching of notation and numeration, the frame E, divided into sections, as shown, and adapted to receive and display the tablets *a a a*, in combination with the rotary base-blocks *c*, having slots *d'*, and set-screws d^2, substantially as shown and described.

2. In an apparatus for facilitating the teaching of notation and numeration, the frame E, having head-board C, provided with inscriptions thereon, in combination with the tablets *a a a*, having letters and figures thereon, the rotary base-blocks *c*, having slots *d'*, and set-screws d^2, all arranged and operated substantially as shown and described.

384,960. HAY-SLING. ANDREW CHURCH and CHARLES A. CHURCH, Harvest, Mich. Filed Apr. 16, 1887. Serial No. 235,089. (No model.)



Claim.—1. In a hay-sling, a single central sectional cross-bar composed of two sections meeting centrally of the sling, in combination with a trip-lock uniting the adjacent ends of said two sections, which sections, when said lock is tripped, become disconnected and fall apart, substantially as shown and described, for the purpose specified.

2. In a hay-sling, ropes *b*, ropes *b'*, terminating in a loop, respectively, and sectional cross-bar *c c'*, in combination with a trip-lock, substantially as shown and described, for the purpose specified.

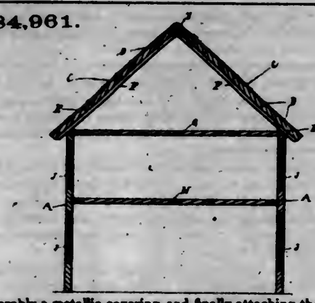
3. In a hay-sling, trip-lock *d*, provided with oscillating bolt *f*, sliding stop *i*, and spring *l*, in combination with sectional cross-bar *c c'*, substantially as shown and described, for the purpose specified.

384,961. ROOF. REUBEN J. CLAFLIN, Edgerwood, Dak. Filed Mar. 24, 1888. Serial No. 268,497. (No model.)

Claim.—In the construction of buildings, the method herein described, which consists in raising the walls to the desired altitude, then superposing upon them a suitable ridge-pole and joists having

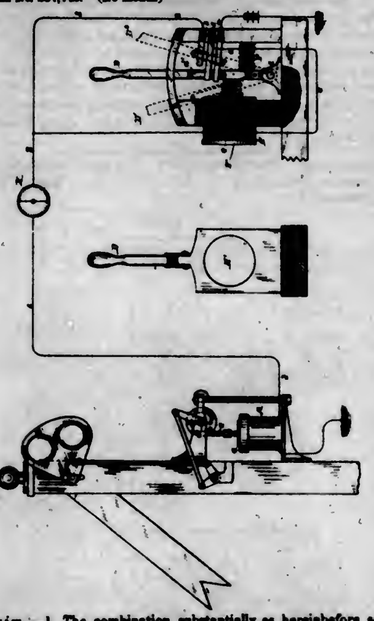


384,961.



preferably a metallic covering, and finally attaching the roof-covering under the said ridge-pole and joists, for the purpose set forth.

384,962. ELECTRIC RAILWAY-SIGNAL. STANLEY G. C. CURRIE, London, County of Middlesex, England, assignor to the Currie-Timmis Electric and Railway Supply Company, (Limited.) Filed May 10, 1887. Serial No. 237,749. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of an electric railway-signal, its actuating-magnet and armature, its normally-open controlling-circuit, a shifting-lever making and breaking this circuit, and an indicator permanently connected with the switch-operating magnet in the controlling-circuit, whereby the indicator is actuated by a momentary return or reactionary current created by the contact of the signal-actuating magnet and its armature.

2. The combination, substantially as hereinbefore set forth, of the signal-actuating magnet, its controlling-circuit, the shifting-lever which makes and breaks this circuit, a high-resistance magnet in a shunt-circuit, and circuit-connections operated by the lever, all operating substantially as set forth—first to energize the signal-magnet, when the lever is pulled back, with the full current, short-circuiting the resistance, and then holding the shifting-lever in an intermediate position by the resistance-magnet, which is cut in as the shifting-lever is advanced.

3. The combination, substantially as hereinbefore set forth, of the signal-controlling circuit, the shifting-lever which makes and breaks it, the high-resistance magnet, which holds the shifting-lever in its intermediate position, and a tension-spring opposing the pull of the magnet automatically to restore the shifting-lever to its normal position when the current stops.

4. The combination, substantially as hereinbefore set forth, of the

shifting-lever, the resistance-magnet, its spindle, and its encircling-spring interposed between the lever and magnet to keep the armature and magnet in contact and ready to act on the lever.

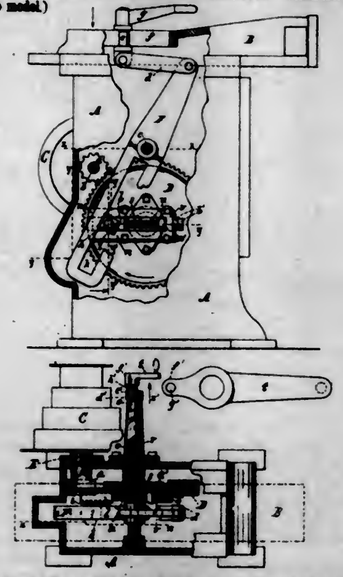
5. The combination, substantially as hereinbefore set forth, of the signal-controlling circuit, its contacts, the shifting-lever, the high-resistance magnet in the shunt-circuit, its protruding armature-spindle, and encircling-spring to keep the magnet-armature in position to act promptly against the shifting-lever when the latter completes the shunt-circuit by its forward movement.

6. The combination, substantially as hereinbefore set forth, of the signal-controlling circuit, its contacts, the shifting-lever, its forward-thrusting spring F, the high-resistance magnet in a shunt-circuit, its protruding armature-spindle, and encircling-spring automatically to throw forward the lever and separate the resistance armature and magnet when the circuit is broken.

7. The hereinbefore-described automatically-retracting railway-signaling apparatus, consisting of the combination, substantially as hereinbefore set forth, of an electric railway-signal, its actuating-magnet in a controlling-circuit, a shifting-lever controlling said circuit, an indicator to show when the signal is set, a resistance-magnet shunted in by the shifting-lever to reduce the current while the signal is stationary, and an actuating-spring automatically shifting the lever to its normal condition when the circuit is broken and the signal reset.

8. The combination, substantially as hereinbefore set forth, of an electric circuit, a generator of electricity, an electro-magnet and its armature, its controlling-circuit, a railway-signal operated by the electro-magnet and armature, switch mechanism in the circuit for energizing the magnet, and an indicator in the same circuit with the magnet and permanently connected therewith, which indicates the return of the signal by means of the momentary return or reactionary current caused by the contact of the magnet-armature or short-circuiting of the field-magnet.

384,963. SHAPING-MACHINE. GEORGE W. DAVISON and JOHN BUCKLEY, Rochester, N. Y. Filed Oct. 17, 1887. Serial No. 252,613. (No model.)



Claim.—1. In combination with the vibrating lever of a shaping-machine, a driving-crank for said lever formed with an adjustable pin, a screw-shaft to move said adjustable pin of the crank, a bevel-gear and pinion to turn said screw-shaft, a shaft for said bevel-gear, and an actuating handle or crank for said shaft for the bevel-gear.

2. In combination with the vibrating lever of a shaping-machine, a driving wheel or crank for said lever, said wheel or crank being supported upon a hollow shaft and formed with an adjustable pin, a screw-shaft to move said adjustable pin of the crank, a gear and pinion to turn said screw-shaft, a shaft for said gear held within the bore of said hollow shaft, and an actuating-handle for said shaft for the gear.

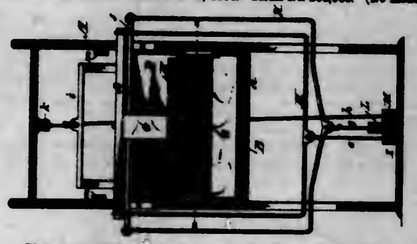
3. In a shaping-machine, in combination with the vibrating lever, a driving-wheel for said lever provided with an adjustable pin and formed with a central opening or cavity, a screw-shaft to operate said adjustable pin, a pinion on said screw-shaft, a gear to turn said pinion, said gear occupying said cavity in the driving-wheel, a shaft for said gear, and an actuating-handle for said shaft.

4. In combination with the vibrating lever of a shaping-machine, a driving wheel or crank for said lever supported by a tapered hollow shaft, said wheel or crank having an adjustable pin, a screw-shaft to operate said adjustable pin, a pinion and gear to turn said screw-shaft, a shaft, *r*, for said gear held in the bore of said tapered shaft, an actuating-crank for said shaft *r*, a holder or bearing for said tapered shaft, and an adjustable collar for said tapered shaft held to bear against said holder for the tapered shaft.

5. In a shaping-machine, in combination with the vibrating lever, a driving wheel or crank for said lever having a hollow shaft and an adjustable pin, a screw-shaft to operate said adjustable pin, a pinion and gear to turn said screw-shaft, a shaft for said gear resting within said hollow shaft, a bearing or holder for said hollow shaft, a disk formed with a series of depressions secured to said hollow shaft, an actuating-handle for said shaft holding the gear, and a needle held by said handle to enter said depressions in the disk.

6. In a shaping-machine, in combination with the vibrating lever, a driving wheel or crank for said lever having a hollow shaft and an adjustable pin, a screw-shaft to operate said adjustable pin, a pinion and gear to turn said screw-shaft, a shaft for said gear resting within said hollow shaft, a bearing or holder for said hollow shaft, a disk formed with a series of depressions secured to said hollow shaft, an actuating-handle for said shaft holding the gear, a needle held by said handle to enter said depressions in the disk, and an actuating-spring to press said needle.

384,964. MACHINE FOR CUTTING DOUGH. ABRAHAM DAY, Moorefield, N. J. Filed Jan. 17, 1883. Serial No. 260,968. (No model.)



Claim.—1. The combination, with the frame, table, and dough-pan, of the guide-box, the cutters carried thereby, the plunger working in said box, the blocks carried by said plunger, the neck to said plunger extending through the top of the box, the yoke connecting with said neck, a treadle connected with the yoke, the long link *f*, connected to the top of the box and having an opening through which said neck loosely works, and a stop, *m*, on the frame for engaging said yoke and link, and a yoke and treadle connected with said link, substantially as described.

2. In a machine for cutting dough, the box D, carrying the cutter C, the plunger E, working in said box, and blocks F, carried by said plunger, in combination with the frame A, having openings *n* and cleats *m*, the yokes H K and ropes *e g h*, connecting with foot-treadles, bar *d*, connected with said plunger, and link *f*, connected to the top of the box and to which the yokes are attached, substantially as and for the purpose specified.

384,965. REFRIGERATOR. AVERY I. DEXTER, Whitewater, Wis. Filed Mar. 1, 1886. Serial No. 203,614. (No model.)

Claim.—1. In a refrigerator, the combination of an ice-chamber, one or more store-rooms or apartments located below said ice-chamber, and an exterior and interior non-conducting wall surrounding said store-rooms, and central or intermediate partition located between said exterior and interior walls, two cold-air spaces being formed thereby, surrounding said store-rooms, one of which cold-air spaces communicates from the lower part of said ice-chamber downward around and beneath the lower apartments, and the other communicates from the lower extremity of said lower apartment to the top of said ice-chamber, whereby exterior heat is excluded and said lower apartments are kept cold by the exclusion of heat without the admission of air from the ice-chamber, substantially as and for the purpose specified.

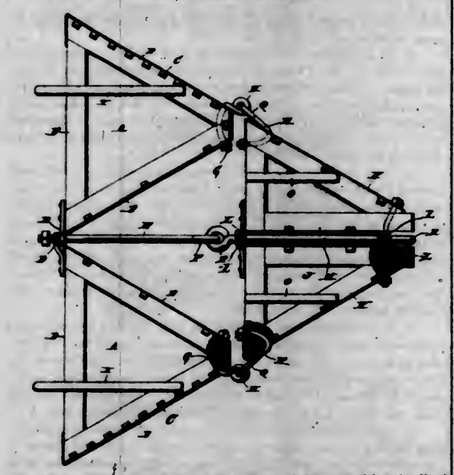
2. In a refrigerator having an ice-chamber and one or more store-rooms or apartments located below said ice-chamber surrounded by exterior and interior non-conducting walls, a central or intermediate partition located between said exterior and interior walls, forming cold-air spaces surrounding said store-rooms between said non-conducting walls, whereby said store-rooms are kept cold by the exclusion of exterior heat without admitting cold air from the ice-chamber, in combination with one or more freezing-tanks located in the upper part of said store-rooms and communicating therefrom with the ice-chamber,

384,965.



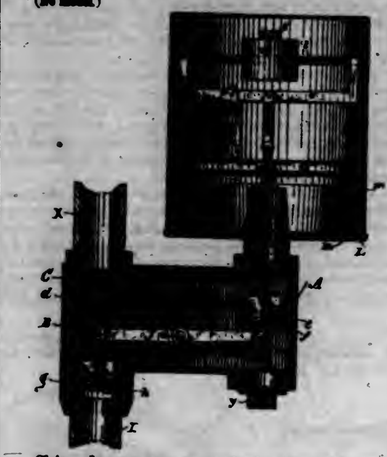
and water-pipes or ducts for conducting the overflow or water accumulating from the melted ice from said freezing-tanks to the exterior of the refrigerator, substantially as and for the purpose specified.

384,966. HARROW. JAMES W. DEXTER, West Lawn, Va. Filed Feb. 13, 1888. Serial No. 263,993. (No model.)



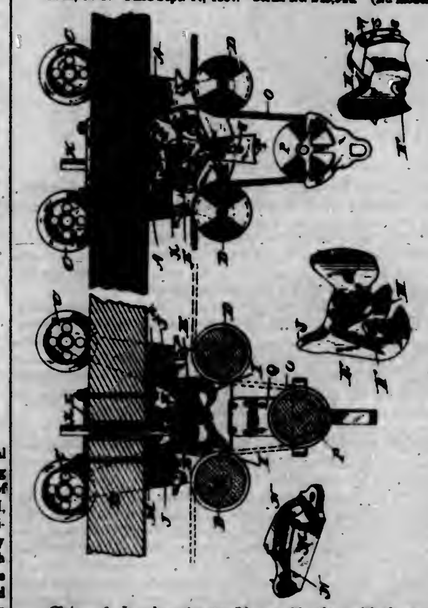
Claim.—The combination, in a harrow, of the central longitudinal draft-rod composed of the sections M and K, connected at their meeting ends by the hooks P and F, having a nut on the threaded rear end of the section F, and the draft-hook N at the front end of the section M, the two similar harrow-frames, K, having the shape of right-angled triangles with their right angles inward, connected to the section M by the eyes L, near the front and rear ends of said sections provided with suitable depending harrow-teeth, and on their upper surfaces with the weights O, and the similar triangular harrow-frames, A A, provided with suitable depending teeth, (connected to their side rails,) and a handle, I, rising from each at corresponding points, connected to the rear portion of the section F of the draw-bar by the eyes D, and to the outer rear corners of the harrow-frames K by the hooks Q, which have shanks R, passing through openings in said corners and engaging nuts on their inner threaded ends, and the hooks H, which have shanks G, passing through openings in the spines of the corresponding frames A and engaging nuts on their inner threaded ends, substantially as specified.

384,967. GAS PRESSURE-REGULATOR AND CUT-OFF. GEORGE S. FARLEIGH, Indianapolis, Ind. Filed Dec. 27, 1887. Serial No. 258,804. (No model.)



Claim.—In a gas pressure-regulator and cut-off, case A, having chamber B, provided with inlet-opening *g*, partition *d*, having opening *e*, and chamber C, having outlet X, cup L, mounted on said chamber C and having groove *m*, cup *o*, having rod *p* and valve *f* secured thereto, valves *f* and *h*, lever J, connecting said valves, lever *s*, pivoted to standard *r* and connected with rod *p*, and weight *z*, adjustably secured to lever *s*, all combined and arranged to co-operate in the manner and for the purpose specified.

384,968. HAY-CARRIER. GEORGE H. FOWLER, Tanghannock Falls, N. Y. Filed Sept. 17, 1887. Serial No. 249,944. (No model.)



Claim.—1. In a hay-elevator, the combination, with the carrier, of a pair of tripping-blocks pivotally secured therein, said blocks being similar to each other and each provided with wings, one of which is larger than the other and has its upper corner projecting upward, said wings being adapted to engage with each other, a plate adapted to be secured to the under side of the track having inclined faces, a locking-pin, and a hoisting-pulley, substantially as described.

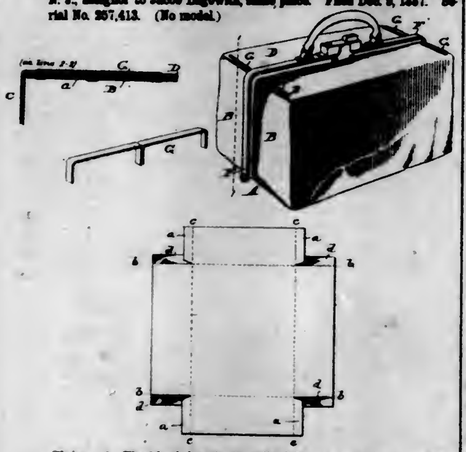
2. In a hay-elevator, the combination, with the carrier, of a pair of tripping-blocks pivotally secured therein, said blocks being similar

to each other and each provided with wings, one of which is larger than the other and projects upward, and the smaller one projects downward, the small wing of each block engaging with the larger wing of the opposite block, a locking-block adapted to be secured to the under side of the track, a locking-pin, and a hoisting-pulley, substantially as described.

3. In a hay-elevator, the combination of the track, a plate secured to the upper side of the track, and a locking-plate secured to the under side of the track, said track, block, and plate being provided with a hole, a spring-actuated pin in the holes, a carrier, a pair of tripping-blocks pivotally secured in the carrier, the upper portions of which are square and adapted to engage with the lower end of the pin, and a hoisting-pulley, substantially as described.

4. In a hoisting device, the combination of the track, the lock-block secured thereto, the locking-pin, the carrier, a pair of tripping-blocks in the carrier, each of which has a hook at its lower end and a tip at its upper end, and two wings projecting from its sides, and a lug or pivot upon each of said wings, the portion of said blocks between the wings being straight and slightly inclined toward each other when in position, and a hoisting-pulley, the frame of which is provided with a bail.

384,969. TRAVELING-BAG. ALEXANDER C. FRANKIN, Newark, N. J., assignor to Jacob Lagowitz, same place. Filed Dec. 9, 1887. Serial No. 257,413. (No model.)



Claim.—1. The blank herein described for constructing traveling-bags, comprising side C, ends B B, bottom E, and top D, the end portions, B B, being provided with flaps *a*, substantially as shown.

2. In a traveling-bag, the combination of the blank comprising the side C, ends B B, top D, and bottom E, flaps *a*, secured to the ends B B, and fastenings G, passing from the outer face of the top and bottom through the flaps *a*, all substantially as shown.

3. In combination with side C, ends B B, and top and bottom D E, formed of straw-board or similar material, flaps *a*, secured or formed upon the end portions, substantially as shown, an impervious covering applied to the outer face of the material forming the side, ends, top, and bottom, and of a length sufficient to cover the exposed edges of the top and bottom portions, and fastenings G, uniting the ends with the top and bottom, all substantially as shown.

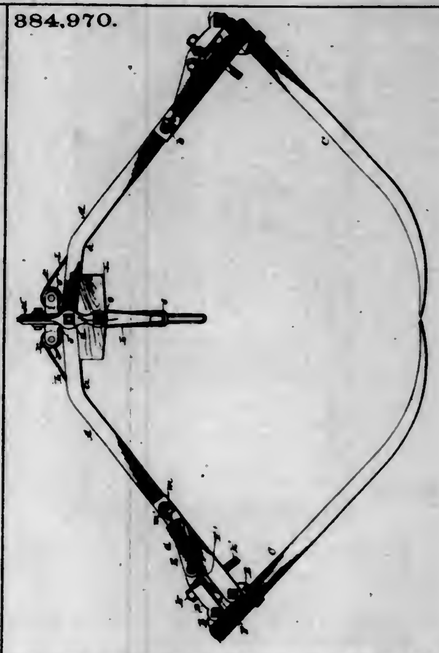
4. In a traveling-bag, the combination of the bent body A and the flanged fastening devices G, uniting the parts of the body A at its corners, substantially as shown, and adapted to protect the exposed edges of the top and bottom.

5. In the manufacture of traveling-bags, the blank herein described, comprising the rectangular body portion C, adapted to form the side of the bag, rectangular sections D E and B B, forming, respectively, the top, bottom, and ends, and adapted to be bent or folded upon lines coinciding with the edges of the body portion C, flaps *a a*, projecting from opposite edges of the end sections and adapted to be folded or bent thereupon on lines coinciding with the top and bottom edges of the body portion C, and a covering applied to the face of the blank and projecting beyond the ends of the top and bottom sections.

384,970. HAY OR STRAW GRAPPLING FORK. ROBERT V. R. GARDNER, West Town, N. Y. Filed Dec. 28, 1887. Serial No. 259,243. (No model.)

Claim.—1. In a hay-fork, the combination, with a clevis, a pair of arms, and tines pivoted in the outer ends of the arms, of links loosely connecting the upper ends of the tines to the arms, and spring-actuated

384,970.



locking-bolts pivoted in two of the links and adapted to engage the arms, substantially as set forth.

2. In a hay-fork, the combination, with a clevis, a pair of arms pivoted therein, the outer ends of said arms being composed of parallel plates, and tines pivoted between the said plates, of links loosely connecting the upper ends of the tines with the arms, and spring-actuated locking-bolts pivoted in two of these links, each of these bolts having a head thereon adapted to pass between the plates of the arms and lock the tines in position.

3. In a hay-fork, the combination, with a clevis, a chock-block secured therein, a pair of arms pivoted above this block, the outer ends of said arms being composed of parallel plates, tines pivoted to the arms, and spring-actuated locking-bolts pivoted in two of the links and adapted by their engagement with the plates to lock the tines in position, of a swinging bracket pivoted to the clevis, said bracket having pulleys and an eye therein, and tripping-ropes attached to the locking-bolts, passing over the pulleys and through the eye in the swinging bracket, substantially as set forth.

4. In a hay-fork, the combination, with a clevis, two arms, two transverse heads having tines, and plates secured to the arms and pivoted to the heads, of spring-actuated locking-bolts located between the plates and provided with heads adapted to enter between and engage the under edges of the plates, and tripping-ropes to rock the locking-bolts and release the transverse heads, substantially as set forth.

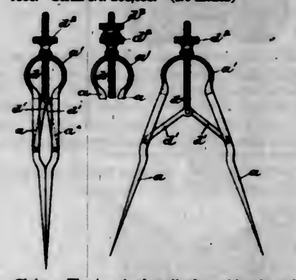
5. In a hay-fork, the combination, with a clevis and two arms pivoted thereto, of two transverse heads, tines for each head, plates secured to the ends of the arms and pivoted upon the transverse heads, spring-actuated locking-bolts that are located between the plates, with heads that are flattened to slide between the plates and lock under their edges, and tripping-ropes to rock the locking-bolts and secure or release the transverse heads and tines when these heads and tines are in position to lift a load of hay or straw or deposit it, substantially as set forth.

6. In a hay-fork, the combination, with two arms loosely connected, two plates affixed to the outer end of each arm, and two transverse heads provided with teeth and pivoted between the plates, of two links for each head, a spring-actuated locking-bolt for each pair of links and pivoted to them, an arm affixed to each locking-bolt to rock them and lock or release the transverse heads and teeth, two ropes attached to the rocking arms to move them and the attached locking bolts, and two springs connected so as to rotate the locking-bolts and lock their heads to the arm-plates when the strain on the tripping-ropes is released and the arms are depressed near their point of pivotal junction, substantially as set forth.

7. In a hay-fork, the combination, with two arms pivoted to a

clevis and two plates affixed to the outer end of each arm so as to be spaced apart and parallel, of two transverse heads pivoted between the ends of the plates, two tines for each head, two links for each head that are jointed together and pivoted to the head and adjacent arm, a locking-bolt loosely secured to one of the links and adapted to be vertically reciprocated when the transverse heads are vibrated on their pivot-connections with the arm-plates, a rocking arm attached to each locking-bolt, two tripping-ropes that are connected to the ends of the rocking arms, and two springs also attached to these arms to cause them to have locked contact with the arm-plates when the tines of the fork are in closed adjustment, substantially as set forth.

384,971. SPRING-DIVIDERS. JAMES F. GUTHRIE, Jr., Somerville, assignor of one-half to Thomas C. Ashley, Boston, Mass. Filed Mar. 6, 1888. Serial No. 266,695. (No model.)



Claim.—The herein-described combination of legs *a a*, connected together by a spring, *a'*, with levers *d' d'*, pinned to legs *a a*, and connected with a stem, *d*, projecting above the spring *a'* to receive a nut, all substantially as and for the purpose set forth.

384,972. STEAM-BOILER. PROSPER HAVENS, Brussels, Belgium. Filed Mar. 10, 1888. Serial No. 266,893. (No model.) Patented in Belgium Nov. 9, 1886, No. 78,167, Feb. 24, 1887, No. 78,483, and Dec. 14, 1887, No. 79,980; in France Nov. 15, 1886, No. 179,647, and Feb. 26, 1887, No. 179,647, and in England Dec. 20, 1887, No. 17,697.

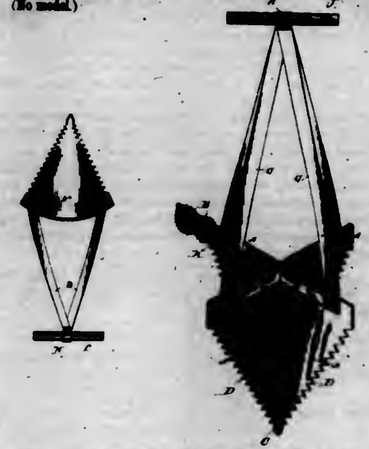
Claim.—1. The combination, in a sectional steam-boiler, of a group of tubes at an angle exceeding forty-five degrees with the horizon, but not quite vertical, and having junction-boxes, steam and water containers and reservoirs, baffle-plates dividing the group of tubes longitudinally into three or more sections, of which the lowest section first receives the action of a furnace placed in front thereof, masonry arches to direct the course of the flames and gases, and inspection and cleaning doors, all arranged substantially as described.

2. The combination, with the tubes and the upper tube-junction box of sectional steam-boilers, arranged as specified, of an internal beveled projection or lip at the upper side of the head of each tube formed on the interior of the separate boxes, substantially as and for the purposes set forth.

3. In a sectional steam-boiler, the combination, with the upper steam and water reservoir and a discharge-pipe, S', disposed as specified, of a series of steam-domes connected successively by pipes, the last pipe descending so far into the last of the series of domes as to compel the steam to alter its direction to arrive at the steam-pipe, and the last dome being provided with a funnel extending below water-level, substantially as and for the purposes set forth.

4. In a sectional steam-boiler, the combination, with the upper junction-boxes for coupling the ends of the tubes, of the tubes secured into the said boxes, and circular beveled projections at the ends of the said tubes inside the boxes for preventing accumulated water from hindering the free escape of the steam, substantially as set forth.

384,973. CAN-OPENER AND SHEET-METAL CUTTER. ELISHA HAWES, Sacramento, Cal. Filed Aug. 24, 1887. Serial No. 247,779. (No model.)



Claim.—1. A can-opener and sheet-metal cutter having a wedge-shaped blade provided with serrations or teeth on its outer converging edges and adapted to be forced through a can from the point of the blade to its base.

2. A can opener and sheet-metal cutter having the radial blades A, provided with toothed downwardly-converging edges, substantially as described.

3. The can-opener having the radial blades A, having the downwardly-converging toothed outer edges, and the upwardly-converging arms G, attached to the upper sides of said blades, substantially as described.

4. The can-opener having the radial cutting-blades A, one of which is provided with the projection or extension K, and the rotary cutters B, journaled on one side of said arm or extension and provided with serrated edges, substantially as described.

384,974. STRAW-STACKER. MARSH HENDRON, Cartinville, Ill. Filed Dec. 8, 1887. Serial No. 257,288. (No model.)

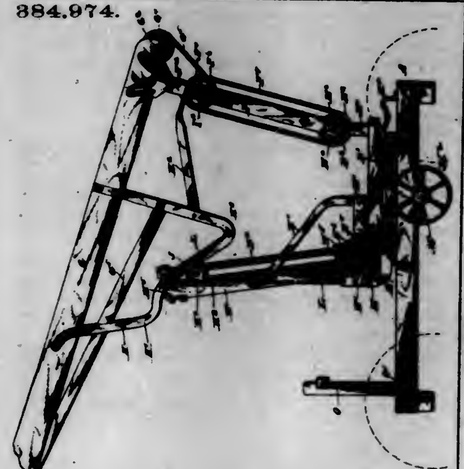
Claim.—1. The combination, with the base A, of the plates B and B' and turn-table C, the frame E, the risers H, the screw-threaded rods H^4, the blocks H^3, the shaft J, spools J', carrier-frame G, pivoted as at F^4, and having the guides K, riding in said spools, the supports F, pivoted as at F^3, and the rope L, substantially as specified.

2. The combination of the frame E, having the risers H, mounted near its rear end and each having the guide H^2, block H^3, and screw-threaded rod H^4, provided with the gear H^5, with the transverse shaft J, having the spools J', and shaft H^3, having the gear H^7, meshing with the gear H^5, substantially as specified.

3. The combination, with the risers H and their screw-threaded rods H^4, blocks H^3, mounted on the rods, and shaft J, journaled in the blocks H^3 and carrying spools J', of the carrier-frame G, having the depending guides K, bearing in said spools, substantially as specified.

4. The carrier-frame G, having the guides K, formed with the bent portions K', depending therefrom, and the straight braces G^2, co-

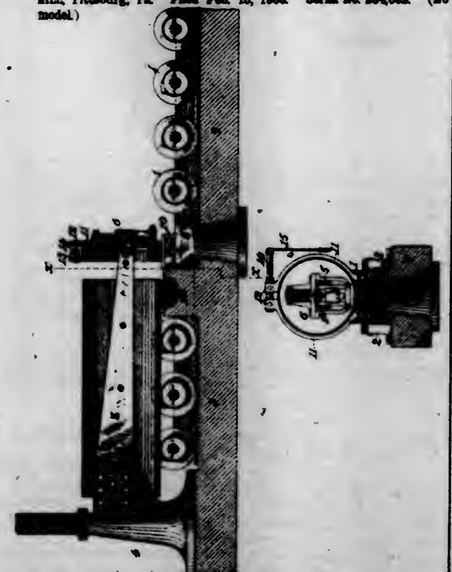
384,974.



cured thereto, in combination with the risers H, screw-threaded rods H^4, blocks H^3, mounted on the rods, shaft J, mounted in the blocks H^3, and provided with spools J', substantially as specified.

5. The combination, with the base A, having the bars A', and plates B and B', having the turn-table C, mounted between said plates, of the frame E', mounted on said turn-table and carrying the risers H, screw-threaded rods H^4, shaft J, the latter carrying spools J', blocks H^3, the pivoted supports F', and carrier-frame G, having guides K and ropes L, substantially as specified.

384,975. APPARATUS FOR WELDING TUBES. JAMES HEMPHILL, Pittsburg, Pa. Filed Feb. 15, 1888. Serial No. 264,062. (No model.)



Claim.—1. In an apparatus for welding tubes, the combination of an anvil for supporting the tube or cylinder and a steam-hammer operative within the cylinder, substantially as set forth.

2. In an apparatus for welding tubes, the combination of a movable anvil for supporting the tube or cylinder and a steam-hammer operative within the tube or cylinder, substantially as set forth.

3. In an apparatus for welding tubes or cylinders, the combination of an anvil having clamping-arms hinged thereto and a steam-hammer operative within the tube or cylinder, substantially as set forth.

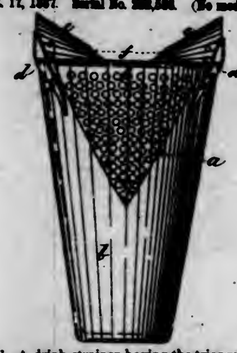
4. In an apparatus for welding tubes or cylinders, the combination of an anvil for supporting the tube or cylinder, a steam-hammer operative within the tube or cylinder, and a heating-furnace in the line of movement of the tube or cylinder along the anvil, substantially as set forth.

384,976. MOLD. JAMES HEMPHILL, Pittsburg, Pa. Filed Apr. 10, 1888. Serial No. 270,168. (No model.)



Claim.—A mold for the production of articles having projections parallel, or approximately so, to its axis, consisting of a sheet-metal shell of a cross-sectional contour corresponding to that of the article to be cast, and a backing of dry sand or other yielding material, whereby provision is made for the transverse yielding of the walls of the mold as the metal solidifies and contracts, substantially as set forth.

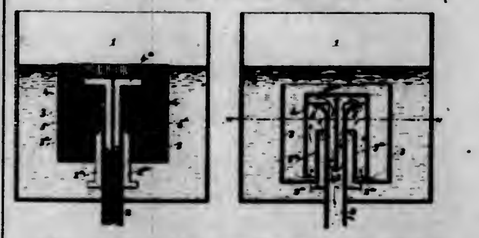
384,977. DRINK-STRAINER. CAREL B. HOPKINS, Louisville, Ky. Filed Oct. 17, 1887. Serial No. 252,502. (No model.)



Claim.—1. A drink-strainer having the triangular perforated section *a* and the flaring wings *c c*, substantially as and for the purposes specified.

2. A drink-strainer having the triangular perforated section *a*, the flaring wings *c c*, and the spring-clips *g g*, which extend in the same direction and substantially parallel with the edges of the triangular perforated section *a*, substantially as and for the purposes specified.

384,978. AUTOMATIC FLUSHING-TANK. HENRY L. HOWE, Canandaigua, N. Y. Filed May 25, 1887. Serial No. 239,240. (No model.)



Claim.—1. The automatic intermittent siphon constituted of the discharge-pipe 2, extending upward within the tank, the annular floating bucket 3, surrounding the discharge-pipe 2, and the inverted bucket 4, covering the top of said discharge-pipe, substantially as and for the purposes set forth.

2. The combination of the tank 1, the vertical discharge-pipe 2, provided with a valve-seat, 5^a, the annular floating bucket 3, provided with a central tube, 5^b, constituting a valve, and suitable guides, 5^c, for the vertical movement of the said floating bucket, as explained.

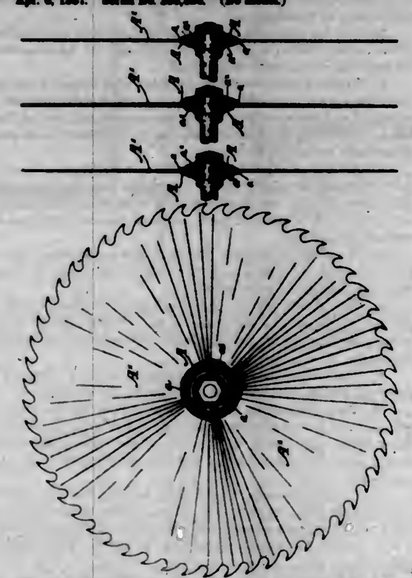
3. The combination of the vertical discharge-pipe 2, the annular floating bucket 3, having limited vertical movement relatively to said discharge-pipe, and the inverted bucket 4, resting on the bottom of the bucket 3 when the latter is elevated and supported, so as to leave

space between the lower margin of the inverted bucket and the bottom of the floating bucket when the latter is lowered, thus serving to regulate the escape of water from said floating bucket, as explained.

4. The combination, with the vertical discharge-pipe 2, floating bucket 3, and inverted bucket 4, of the guides 2^c and 4^c, constituting stops to limit the descent of the floating bucket 3 and inverted bucket 4, as and for the purposes set forth.

5. The combination, with the vertical discharge-pipe 2, floating bucket 3, and inverted bucket 4, of the guides and stops 2^c and 4^c, formed of ribs or plates to prevent eddying or vertical movement in the discharged water.

384,979. CIRCULAR SAW. DENTON H. HOOD, Kokomo, Ind. Filed Apr. 6, 1887. Serial No. 233,893. (No model.)



Claim.—1. A circular saw formed with an abrupt or substantially square shoulder at that distance from its center which will include that portion which does not enter the wood and of substantially parallel sides from said shoulder to its periphery, substantially as herein shown and described.

2. A circular saw formed with a thick central portion, the edge of which forms an abrupt shoulder in the saw-blade, and from said shoulder to its periphery being formed of parallel or substantially parallel sides, substantially as herein shown and described.

3. A circular saw formed with a thick central portion, an abrupt shoulder at the edge of said thick portion, and a thinner portion from said shoulder to the edge of the saw, substantially as set forth.

384,980. SEAT FOR VELOCIPEDES. THOMAS B. JEFFERY, Ravenswood, Ill. Filed Apr. 16, 1887. Serial No. 235,185. (No model.)



Claim.—1. In combination with the backbone or saddle-tree, the seat and supports for the same on the tree at the front and rear ends, both supports being adapted to yield elastically rearward, and check straps or links to limit their reaction upward, substantially as set forth.

2. In combination with the backbone or saddle-tree, the seat, a spring-support for its forward end, a link connecting the seat to such spring-support, a check-strap adjustable in length which ties the end of the spring downward to the backbone, and a rear support for the seat adjustable back and forward, substantially as set forth.

3. In combination with the backbone or tree and a flexile seat, supports for both ends of the seat secured upon the tree, the front support pivoted forward of the seat and extending rearward and upward, the rear support wholly under the seat and having its pivotal point forward of the center of the seat, whereby weight upon the seat causes both springs to yield elastically rearward, substantially as and for the purpose set forth.

4. In combination with the backbone or saddle-tree, a flexile seat, a support on the tree forward of the seat for the forward end of the seat, a support on the tree for the rear end of the seat, wholly under the seat and having its pivotal point forward of the center of the seat, thereby yielding elastically downward and rearward, the said rear support being adjustable back and forward on the tree, whereby the tension of the seat and its height from the tree are made adjustable each with or without change of the other, substantially as set forth.

5. In combination with the backbone or saddle-tree, a flexile seat, a support on the tree for the forward end of the seat, a support on the tree for the rear end of the seat, yielding elastically downward and rearward, and a link adjustable in length connecting the rear end of each rear support down to the tree, the said rear support being adjustable back and forward on the tree, whereby the tension of the seat and its height from the tree are made adjustable each with or without change of the other, substantially as set forth.

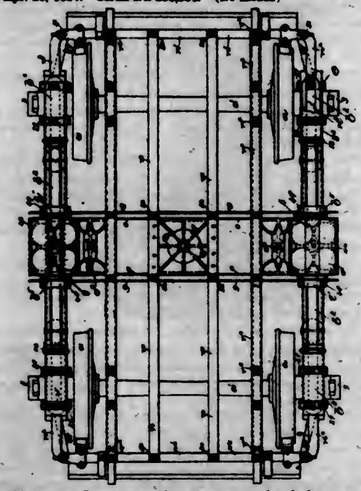
6. In combination with the backbone or saddle-tree, the rear seat-support, D, comprising the portions D^{10} and D^{12} and the connecting coil-spring portion D^{11} at the forward part, the part D^{10} being adjustably secured to the tree and the part D^{12} being fixedly secured to the seat, and the adjusting-strap F, connecting the rear of the part D^{12} to the rear part of the seat, substantially as set forth.

7. In combination, substantially as set forth, the backbone or saddle-tree, the seat, the rear spring-support for the seat, and the adjusting or check strap, the spring-support having its spring flexure at the front and having its lower branches, D^{10}, united rearward of the securement to the backbone and forming a bend above the same, whereby said bend serves as a loop or staple in which to secure the adjusting or check strap to the backbone.

8. In combination with the backbone or tree, a flexile seat, a support on the tree for the forward end of the seat yielding elastically downward and rearward, and a check and adjusting strap, as G, connecting the spring-support down to the tree, and a support for the rear end of the seat secured to the tree and adjustable back and forward thereon, substantially as set forth.

9. In combination with the backbone or saddle-tree and a flexile seat, spring-supports for the seat secured upon the tree and extending rearward and upward to their connection with the seat, whereby they tend to yield rearward and downward, the rear support being longer than the forward support, whereby the seat in yielding toward the rear on both its spring-supports is also stretched to take up the slack caused by the rider's weight, substantially as set forth.

384,981. CAR-TRUCK. LOUDER K. JEWETT, Boston, Mass. Filed Apr. 20, 1887. Serial No. 235,561. (No model.)



Claim.—1. In a car-truck, a transom and end pieces composed of metal plates and transom-braces A, extended upward above the bolster, combined with longitudinal braces between the said end pieces and transom-braces, substantially as described.

2. The metallic side plates of the transom, combined with metallic angle or channel iron braces, having arms extended from a bottom

bar, the side plates being riveted or attached to the arms of the said braces, the bottom bars forming the bottom of the transom, substantially as described.

3. The U-shaped or bifurcated transom-braces having ears 25, combined with transom-plates the edges of which engage the said ears, substantially as described.

4. The metallic transom-plates and the metallic flanged or channeled transom-braces to which the said plates are attached, combined with the arch-bar-sustaining blocks riveted or bolted to the outer sides of the transom-plates, substantially as described.

5. The arch-bar-sustaining blocks recessed at their inner ends to form shoulders 22 and 23 for the reception of the transom-plates, combined with the said transom-plates, substantially as described.

6. The transom-plates, transom-braces to which they are attached, and the arch-bar-sustaining blocks attached to the transom-plates *g g* and having shoulders 47, combined with the shouldered transom-seats *r*, placed between the said blocks, substantially as described.

7. The metallic bolster-plates *o*, combined with end braces, *o'*, to which they are riveted, the edge of the plate and ends of the brace engaging each other, as described, to prevent shearing strain on the rivets uniting the said parts, substantially as described.

8. The bolster-plates and braces *o'* near each end, combined with intermediate flanged braces to sustain the said plates between their ends, substantially as described.

9. The bolster-plates *o* and braces *o'* and flanged braces o^3, combined with the center plate riveted or bolted to the said braces o^3, substantially as described.

10. The plates *o* and braces *o'*, combined with the center plate provided with shoulders 380 and flanges 38, to rest upon and overlap the bolster-plates, the lower end of the said center plate being riveted or bolted to the said bolster-plates, substantially as described.

11. The bolster-plates *o*, the braces *o'*, and the center plate, combined with the king-pin plate o^4, located directly under the center plate and provided with a hole for the king-pin, all the said parts being riveted together, substantially as described.

12. The wheels, axles, housings, the equalizers supported by the housings, the transom, arch-bars, truss *e*, and equalizer-springs, combined with the arch-bar-sustaining blocks attached to the transom and having a foot to rest upon the seat of the top of the equalizer-spring, substantially as described.

13. The bolster-plates *o* and braces to which they are riveted, combined with the center plate, and the curved plates having depending vertical flanges fitted between the bolster-plates and riveted thereto, and also having horizontal shoulders resting upon the upper edges of the bolster-plates, substantially as described.

14. In combination, a transom composed of metal plates and channel-iron transom-braces to which the said plates are attached, the braces being extended above the upper edges of the transom-plates, and a bolster composed of metal plates *o* and braces *o'*, and intermediate flanged braces or center plate attached to the bolster, pedestals, arch-bars extended from one to the other pedestal, trusses extended from one to the other pedestal, a rocker, loops b^3, suspended from the rocker, spring-seats supported by the said loops, and springs mounted on the spring-seats, substantially as described.

15. The pedestals provided at their upper ends with grooves, combined with arch-bars and the trusses *e*, both secured to the pedestals, substantially as described.

16. The pedestals having grooves 10 and 12 12 at their upper sides, combined with the arch-bars and trusses *e*, placed in the said grooves and connected to the said pedestals, substantially as described.

17. The pedestals and the arch-bars, and trusses *e*, attached to the said pedestals, combined with the pedestal-caps and pedestal-straps bolted together, substantially as described.

18. The pedestals and the arch-bars, and trusses *e*, attached to the said pedestals, combined with the pedestal-caps, the end pieces, *n'*, extended between the said arch-bars and pedestal-caps, and with bolts to unite the said parts, substantially as described.

19. The pedestals and the arch-bars, and trusses *e*, attached to the said pedestals, combined with the said pedestal-caps, the end pieces, *n'*, extended between the arch-bars and the pedestal-caps, and with the auxiliary flanged end pieces, *s*, and bolts to unite the said parts together, substantially as described.

20. In a car-truck, a metallic transom, pedestals, and arch-bars, and trusses *e*, connected to the upper ends of the pedestals, combined with arch-bar-sustaining blocks connected to the transom and provided with ears to rest upon shoulders of the pedestals, the pedestals supporting the outer ends of the said blocks, substantially as described.

21. In a car-truck, a metallic transom, pedestals, and arch-bars, and trusses *e*, connected to the upper ends of the pedestals, combined with arch-bar-sustaining blocks connected to the transom and provided with ears to rest upon shoulders of the pedestals, the pedestals supporting the outer ends of the said blocks, and with pedestal-caps to overlap or engage the outer ends of the said blocks and keep them seated on the pedestals, substantially as described.

22. In a car-truck, a metallic transom, pedestals, and arch-bars, and trusses *e*, connected to the upper ends of the pedestals, combined with arch-bar-sustaining blocks connected to the transom and provided with ears to rest upon shoulders of the pedestals, the pedestals supporting the outer ends of the said blocks, pedestal-caps to engage and retain the blocks *f*, seated on the pedestals, and with a bolt, as 33, to hold together the pedestals, pedestal-caps, blocks *f*, arch-bars, and trusses *e*, substantially as described.

23. The metallic transom, arch-bar, the arch-bar-sustaining blocks connected thereto, and the truss *e*, combined with the pedestals having grooves 7 and downwardly-inclined lips at their inner sides to support the trusses where they pass from the horizontal top surface of the pedestals to the under side of the arch-bar-sustaining blocks, substantially as described.

24. In a car-truck, the transom and the arch-bars, combined with pedestals, each having a groove at its upper side for the reception of the arch-bar, substantially as described.

25. The arch-bars, the saddle provided with flanges to embrace it and having ears provided with bolt-holes, the metallic transom, its connected arch-bar-sustaining blocks, trusses, pedestals, and pedestal-straps, combined with bolts to unite the saddle, blocks, and straps, substantially as described.

26. The pedestals provided with the upwardly-turned abutment and the arch-bar-sustaining blocks *f*, provided each with an inclined end to meet the said abutment, combined with the arch-bar extended through grooves in the said blocks and into the said pedestals, substantially as described.

27. The metallic transom, arch-bars, trusses, pedestals, and end pieces, *n'*, combined with the braces r^3 and r^4, connected to the said transom, substantially as described.

28. The metallic transom, arch-bars, trusses, pedestals, and end pieces, *n'*, combined with the braces r^3 and r^4, connected to the said transom, and with the braces *n*, all combined to operate substantially as described.

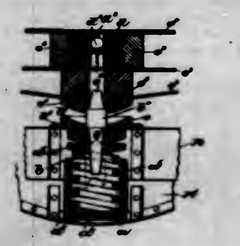
29. The combination, with the pedestals and end pieces, of the diagonally-placed pedestal-braces 58, substantially as described.

30. The combination, with the wheels, axles, and bearings, the arch-bars and trusses arranged in the line of the bearings, and springs also located in the line of the bearings, of an equalizer-bar located directly under the arch-bar and in line with the bearings, substantially as described.

31. In a passenger-car, wheels, axles, bearings therefor, pedestals to receive the bearings, arch-bars, trusses, bolster-supporting springs, links, and spring-seats mounted thereon, combined with equalizers, all located outside the wheels, substantially as and for the purpose described.

32. In a car-truck, end pieces crossing each end of the car-truck and a transom having upwardly-extended transom-braces shaped to receive within them the bolster, combined with channel or flanged braces extended from one to the other of the said end pieces and connected to said transom-braces, substantially as described.

384,982. CAR-TRUCK. LUTHER K. JEWETT, Boston, Mass. Filed Oct. 7, 1887. Serial No. 251,706. (No model.)



Claim.—1. In a swing-motion truck, the combination, with a metallic transom, of a center-bearing support and journal or pivotal bearings therefor, upon which the said center-bearing support is adapted to be rocked or swung, substantially as and for the purpose specified.

2. In a swing-motion truck, a center-bearing support, *a*, and a spring sustained thereby, combined with a rocking cap, a^2, and plate b^2, substantially as described.

3. In a car-truck, the combination, with the king-bolt, of a lubricating cup or receptacle therefor, and a support for said cup located below the car-floor and concealed from view, substantially as described.

4. In a swing-motion car-truck, the combination, with the king-bolt, of the removable bearing caps or blocks b^2 a^2, substantially as and for the purpose specified.

384,983. GRAIN-METER. GEORGE H. LAIRMAN, Champaign, Ill. Filed Dec. 3, 1887. Serial No. 256,882. (No model.)



Claim.—1. The combination, with the frame, of the supporting-shaft journaled in the frame, carrying-arms rigidly fixed to said supporting-shaft formed with bearings in their ends, a scale-beam rigidly projected from the supporting-shaft, the grain-measure having a hinged bottom and swung on trunnions arranged in the bearings of the carrying-arms, and a lever-arm rigidly fixed in the supporting-shaft, arranged with its free end to press against and close the hinged bottom of the measure, substantially as described.

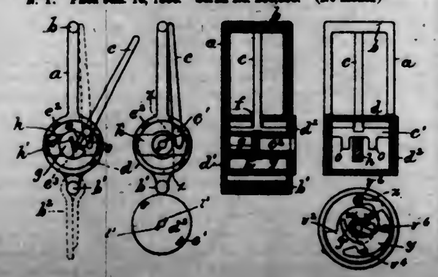
2. The combination, with the frame provided with vertical guide-rods at its sides and a supporting-shaft mounted in the frame provided with carrying-arms having elongated bearings, of the grain-measure having a hinged bottom and supported on trunnions in the slotted bearings of the carrying-arms, and said trunnions being extended and arranged between the vertical guide-rods and having guide-arms near the bottom of the measure to slide between the said guide-rods, and the scale-beam rigidly fixed in the supporting-shaft and arranged with its free end to press against and close the hinged bottom of the measure, substantially as described.

3. The combination of the frame provided with vertical guide-rods, a supporting-shaft journaled in the frame, the grain-measure having horizontal guide-arms projected from its sides provided with anti-friction rollers to fit within the way between the vertical guide-rods of the frame, and carrying-arms rigidly secured to and projected from the supporting-shaft and provided with slotted bearings in which the guide-arms of the measure rest, substantially as described.

4. The combination, in a grain-measuring machine, of a suitably-supported shaft, a graduated beam fixed to the shaft, arms projected from the shaft to support the measure, and a lever-arm on said shaft to close the bottom of the measure after its contents have been discharged, and whereby the said beam, supporting-arms, and lever-arm are operated by the same movement of the shaft, substantially as described.

5. The combination, with the delivery-spout provided with tallying mechanism and the grain-measure having a lift device attached to and extended above the side thereof, of a valve journaled to set across the mouth of the spout and having its journal formed to engage the lift on the measure, and a pawl fixed on said journal to move the tally mechanism, as described.

384,984. SAFETY-BUCKLE. JOSEPH G. KITCHELL, New York, N. Y. Filed Jan. 16, 1886. Serial No. 208,903. (No model.)

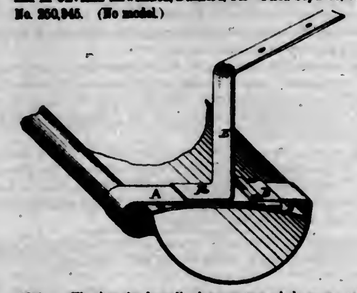


Claim.—1. The safety-buckle herein shown and described, consisting in the frame *a*, constructed integrally with the lock box or casing at its base and the cross-bar *b* at its farther end, the tongue *c*, hinged upon a fixed pivot within the casing and movable to and from the cross-bar *b* when unlocked, and the locking device operating within the casing to prevent the lateral movement of the tongue upon its pivot, substantially as herein set forth.

2. The safety-buckle herein shown and described, consisting in the frame *a*, constructed integrally with the lock box or casing at its base and the cross-bar *b* at its farther end, the tongue *c*, hinged upon a fixed pivot within the casing and movable to and from the cross-bar *b* when unlocked, and a locking device consisting in a rotary cam arranged within the casing and adapted when actuated by the key of said locking device to hold the tongue against the cross-bar *b*, substantially as herein set forth.

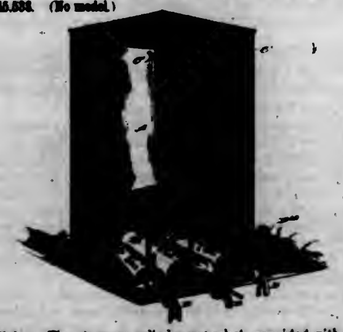
3. The safety-buckle herein shown and described, consisting in the frame *a*, constructed integrally with the lock box or casing at its base and the cross-bar *b* at its farther end, the tongue *c*, hinged upon a fixed pivot within the casing and movable to and from the cross-bar *b* when unlocked, the casing provided with the aperture *f*, to permit the movement of such tongue, and a rotary cam applied to the side of the tongue within the casing to hold the point of the tongue upon the cross-bar *b*, as and for the purpose set forth.

384,985. EAVES-TROUGH HANGER. HOWARD T. LAWRENCE and H. ORVILLE LAWRENCE, Danbury, Pa. Filed Sept. 28, 1887. Serial No. 250,945. (No model.)



Claim.—The herein-described eaves-trough hanger, consisting of the strip A, bent to the form of a trough, with its ends united by a loop, B, as described, the movable brace D, and a suspender, as and for the purpose set forth.

384,986. MEASURING-TANK FOR OIL. MARCELLUS J. LINDSAY and DAVID M. ROSS, Bellevue, Iowa. Filed July 26, 1887. Serial No. 245,533. (No model.)

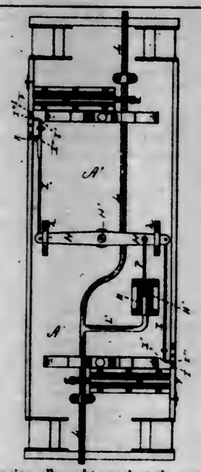


Claim.—The air-tight cylinder or tank A, provided with the graduated measures B B' B², having the air-tubes C, communicating with the air and measures, in combination with the faucets D, having the long and short parallel bores D' D², the outlet-bore D³, and the three-port valve D⁴, having the ports *d d'* at the intersection of said bores, the bore D' terminating in the measure and the bore D² communicating with the tank, substantially as specified.

384,987. RAILWAY-CAR. CHARLES W. LITTLEFIELD, Amesbury, Mass. Filed Nov. 3, 1887. Serial No. 254,190. (No model.)

Claim.—1. In a railway-car, the combination of a stove adapted to slide transversely with the car, a spring arranged to force the stove normally, by means of suitable connections, toward the outside of the car, a swinging door normally locked and placed next said stove, and a lever and suitable intermediate mechanism, whereby said door may

384,987.

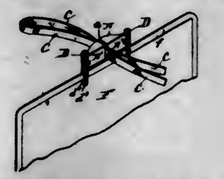


be unlocked and the spring allowed to project the stove from the car, substantially as and for the purpose set forth.

2. The combination of the stove B, provided with the base B' and flanges B'', the plate C, provided with the depression C', grooves C'', and slots C''', the tube E, provided with the spring E'', block E', and slide D, the engaging-pin D', lever K, and rod I, substantially as and for the purpose described.

3. The combination of the stoves B, each provided with the base B', flanges B'', and funnel *b* *b'*, having a miter-joint at *b'*, the plates C, slotted at C''', engaging-pins D, springs E'' and blocks E', tubes E, doors F, rods I, bent, as described, at I' and I'', lever H, and actuating-lever K, substantially as and for the purpose set forth.

384,988. REIN-HOLDER. FREDERICK W. C. MACDONALD, Chicago, Ill. Filed Feb. 27, 1888. Serial No. 265,304. (No model.)



Claim.—1. The rein-holder consisting in the combination of a suitable frame with a toggle-acting rein-clamping lever mounted thereon, said clamping-lever being provided with a yielding cushion on its end to bear against the reins, substantially as specified.

2. The combination, with a box or frame having a transverse vertical slot, of a pair of toggle-acting rein-clamping spring levers or jaws furnished with yielding cushions on their ends, substantially as specified.

3. The combination, with a box formed of part A, with plates A' A' dovetailed thereto, and provided with a transverse vertical slot, *a*, of toggle-acting spring rein-holders B B, substantially as specified.

4. The combination, with a box formed of part A, with plates A' A' dovetailed thereto, and provided with a transverse vertical slot, *a*, of toggle-acting spring rein-holders B B, furnished with cushions b^3 b^3 at their adjoining ends, substantially as specified.

5. The combination, with a box formed of part A, with plates A' A' dovetailed thereto, and provided with a transverse vertical slot, *a*, of toggle-acting spring rein-holders B B, furnished with cushions b^3 b^3 at their adjoining ends, and attachment-posts D D, furnished with dovetail grooves *d*, said box having dovetail tenons at its ends fitting in said grooves, substantially as specified.

6. The combination, with a box formed of part A, with plates A' A' dovetailed thereto, and provided with a transverse vertical slot, *a*, of toggle-acting spring rein-holders B B, furnished with cushions b^3 b^3 at their adjoining ends, and attachment-posts D D, furnished with dovetail grooves *d*, said box having dovetail tenons at its end fitting in said grooves, and said posts D being provided with clips d' d', for securing the same to the dash-board, substantially as specified.

7. The rein-holder consisting of a pair of toggle-acting levers furnished with cushions on their adjoining ends to bear against the reins, substantially as specified.

8. The combination, with posts D, adapted to be secured to the dash-board and provided with dovetail grooves *d*, of a rein-holder frame having ends furnished with tenons to fit in said dovetail grooves, substantially as specified.

384,989. CARRIAGE-WHEEL FENDER. GEORGE C. W. MACOMBER, Tomkinstown, assignor of two-thirds to the American Patent Exchange, Washington, D. C. Filed Dec. 1, 1887. Serial No. 256,512. (No model.)



Claim.—1. The combination, with the flexible overhanging apron, of a holder therefor formed with spring-jaws adapted to embrace the rim of a wheel, as set forth.

2. The combination, with the apron, of a holder therefor attached thereto and formed with spring-jaws, and spring-arms, as *d*, substantially as and for the purpose specified.

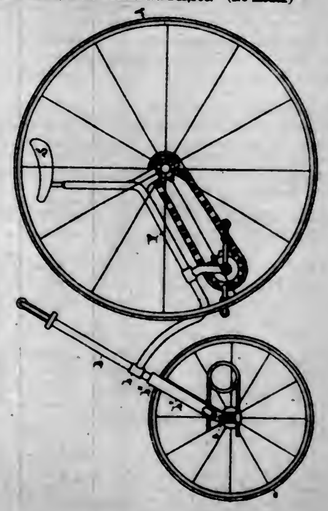
3. A wheel-fender consisting of an apron, a holder therefor formed with spring-jaws and spring-arms, and a back plate, all arranged and operating substantially as and for the purpose specified.

4. A holder for a wheel-fender apron, formed of spring material, and comprising spring-jaws and spring-arms, all formed of a single piece, substantially as described.

5. The improved holder described, consisting of spring-jaws, curved spring-arms, and a back plate, all formed of a single piece, as shown and described.

6. A holder for the purpose described, formed with curved spring-arms and spring-jaws, the clamping ends of which are rounded and bent outwardly, substantially as shown and described, and for the purpose specified.

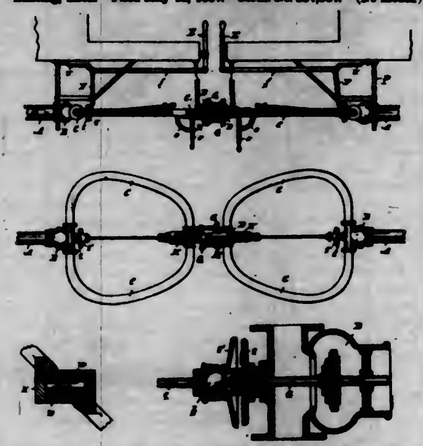
384,990. VELOCIPEDE. MARIAN H. MARLIN, New Haven, Conn. Filed June 6, 1887. Serial No. 240,362. (No model.)



Claim.—1. The combination of the members b^2 b^2 of the fork b^2, having the clips d^2 d^2 attached thereto and the slots *e* therein, the wheel *a*, its axle-bolt *c'*, passing through said slots, the clips c^2 c^2, attached thereto, and the springs *s*, arranged to be held by their projecting ends in said clips, substantially as described.

2. The combination of the members b^2 b^2 of the fork b^2, having the clips d^2 d^2 attached thereto and the slots *e* therein, the wheel *a*, its axle-bolt *c'*, passing through said slots, the clips c^2 c^2 upon the projecting ends of said bolt, the nuts c^2 c^2 upon the same outside of said clips, and the springs *s*, arranged to be held by their projecting ends in said clips, substantially as described.

384,991. AUTOMATIC PIPE-COUPLING. JAMES F. MCELROY, Lansing, Mich. Filed May 12, 1887. Serial No. 237,937. (No model.)



Claim.—1. In a pipe-coupling for railway-trains, the combination, with a train-pipe, of a coupling-head suspended by an elastic hanger or hangers and connected with the end of the train-pipe by one or more lateral curved expansible branch pipes, substantially as described.

2. In a pipe-coupling for railway-trains, the combination with the train-pipe, of a coupling-head suspended by two oblique flexible hangers and connected with the end of the train-pipe by two curved lateral branch pipes of flexible metal, substantially as described.

3. In a pipe-coupling for railway-trains, the combination, with the coupling-head, of a valve secured to the head of the train-pipe, one or more laterally curved or arched branch connections between the coupling-head and valve, and a pull-rod connected with said valve and coupling-head, substantially as and for the purpose specified.

4. In a pipe-coupling for railway-trains, the combination, with the coupling-head, of a valve secured to the head of the train-pipe, one or more laterally curved or arched branch connections between the coupling-head and said valve, a sliding valve-stem in said valve, and a pull-rod connecting said valve-stem with the coupling-head and having a limited sliding play therewith, substantially as described.

5. In a pipe-coupling for railway-trains, the combination, with the coupling-head, of a valve secured to the head of the train-pipe, one or more laterally-arched pipe-connections between said valve and the coupling-head, a sliding valve-stem in said valve, a pull-rod secured to said valve-stem by a universal joint and connecting it by a limited sliding joint with the coupling-head, a disk-fulcrum secured to the valve, and a disk-fulcrum secured to the pull-rod, all arranged to operate substantially as described.

6. In a pipe-coupling for railway-trains, the combination, with a valve located between the coupling-head and the train-pipe, of a hand-lever pivoted to the car for operating the valve, and operating connection comprising a spring connected with the car, and a toggle-lever, one end engaging with the valve-stem and the other with said spring, whereby the angular position of the toggle-lever locks the valve in its open and closed position, substantially as described.

7. In a pipe-coupling for railway-trains, the combination, with a valve located between the coupling-head and the train-pipe, of a hand-lever and connection for operating said valve at will of the operator, and an automatically-operating connection between said valve and the coupling-head, substantially as described.

8. In a pipe-coupling for railway-trains, the combination, with a coupling-head provided with a coupling-flange, of two coupling-hooks hinged together and slidingly secured to said coupling-head, a lever for projecting and retracting said coupling-hooks, and suitable guides for imparting to said coupling-hooks an opening movement when projected and a closing movement when retracted, substantially as described.

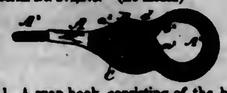
9. In a pipe-coupling for railway-trains, the combination of a coupling-head provided with a coupling-flange, of two flaring guides secured to said coupling-head, at points at an angle to the top and bottom sides of said coupling-head, and of coupling-hooks working in slots in said guides, and means for moving said hooks, all substantially as described.

10. In a pipe-coupling for railway-trains, the combination, with a coupling-head provided with a coupling-flange, of two coupling-hooks hinged together at their rear ends and slidingly secured to said coupling-head upon opposite sides thereof, an operating-lever for said hooks, an incline formed on each coupling-hook and corresponding incline formed on the coupling-head, a spring pressing against the back of each coupling-hook, a locking-guide near the forward end of each coupling-hook, and a guide at the hinged rear end of said coupling-hooks, substantially as described.

11. In a pipe-coupling for railway-trains, the combination of the flanged coupling-head C, the sliding coupling-hooks H, hinged together at their rear ends, the guide-bracket K, the link I, and the lever J, all arranged to operate substantially as described.

12. In a pipe-coupling for railway-trains, the combination, with the train-pipe, of a flanged coupling-head, the pull-rod *c*, a sliding connection between the pull-rod and coupling-head, a valve secured to the end of the train-pipe, the disks *e* *e'*, secured in juxtaposition to each other, one to the valve-case and the other to the pull-rod, a lever and connection for opening and closing said valve by hand, coupling-hooks sliding on and operating in connection with the coupling-head, and a hand-lever and connection for opening and closing said coupling-hooks, all arranged to operate substantially as described.

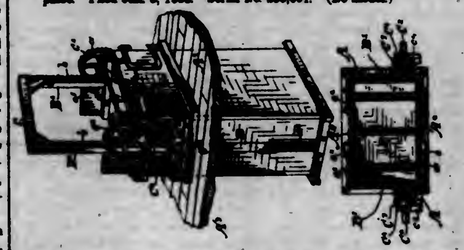
384,992. SNAP-HOOK. HENRY MCPHERSON, Troy, N. Y., assignor to the Sweet & Clark Manufacturing Company, same place. Filed Apr. 20, 1886. Serial No. 271,279. (No model.)



Claim.—1. A snap-hook consisting of the body A, having the semicircular cavity *a* therein, having two flat side walls a^4, integral with said body, and the closure a^2 with the latch B pivoted thereto, and having the shoulder b^2 and a spring interposed on the periphery of said latch between said closure and shoulder, substantially as and for the purpose described.

2. In a snap-hook, the combination of the body A, having the segmental cavity *a* and two flat side walls, a^4, integral with said body, the closure a^2 at one end of said cavity, and the flange a^3 at the other, with the latch B pivoted to said body, and having the shoulder b^2 and a spring interposed on the periphery of said latch between the closure a^2 and said shoulder, substantially as and for the purpose described.

384,993. BALING-PRESS. GEORGE W. L. MEYER and THOMAS J. SEYFFERT, Indianapolis, Ind., assignors of one-third to John C. Ertel, same place. Filed Jan. 3, 1888. Serial No. 259,691. (No model.)

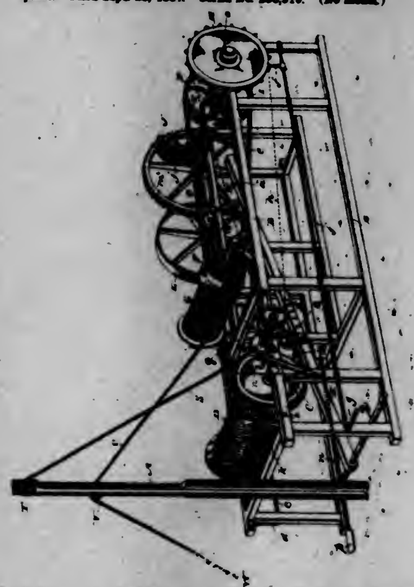


Claim.—1. The combination, in a baling-press, of the box A, provided with the vertical ways a^4 in each side, the follower B, mounted on the uprights B', said uprights B' being mounted in the vertical ways a^4 and provided on their front edges with racks *b* and yoked together at their top, the shaft C, carrying the small pinions *c'*, which mesh with each of said racks on the uprights B' and the large gear-wheels C' on its outer ends, and the short crank-shafts C^3, journaled on the sides of the box and provided with the pinions c^3, which mesh with said gear-wheels C' of said shaft C, substantially as described, and for the purposes specified.

2. In a baling-press, the combination of the box A, the follower B, mounted within said box and supported on uprights B', said uprights B' mounted in vertical ways in each side of said box and provided with a rack on their front sides, a shaft, C, carrying pinions meshing with

said racks, suitable gearing for operating said shaft C, and anti-friction rollers e^1, mounted behind said uprights opposite the points where the pinions engage with the rack-bars on their front sides, substantially as set forth.

384,994. WELL-DRILLING MACHINE. JAMES F. MOORE, Fort Worth, Tex., assignor to the Fort Worth Iron Works Company, same place. Filed Sept. 28, 1887. Serial No. 250,919. (No model.)



Claim.—1. A well-drilling machine which comprises the drill-rope mechanism, including the sprocket-wheel H and clutch O, the handle *g*, and lever *f*, the brake *m'*, having handle *l*, and pawl *i*, having handle K, and the sand-rope mechanism, including the pulley I and clutch P, the compound lever *a b c*, having handle *d*, the treadle *p* and brake *q*, and intermediate levers, *n n*, the treadle *p* and handles *d g k* being all located at the front, two on the left and two on the right of the machine, and the several parts being constructed, arranged, and supported in a frame, substantially as set forth, whereby a foot and both hands can be conveniently used for effecting the several operations described.

2. A well-drilling machine, which comprises the drill-rope mechanism, including the sprocket-wheel H and clutch O, the handle *g* and lever *f*, the brake *m'*, having handle *l*, and pawl *i*, having handle K, the curved depressing-arm provided with friction-rollers, and the sand-rope mechanism, including the pulley I and clutch P, the compound lever *a b c*, having handle *d*, the treadle *p*, and brake *q*, and intermediate levers, *n n*, the treadle *p* and handles *d g k* being all located at the front, two on the left and two on the right of the machine, and the several parts being constructed, arranged, and supported in a frame, substantially as set forth, whereby a foot and both hands can be conveniently used for effecting the several operations described.

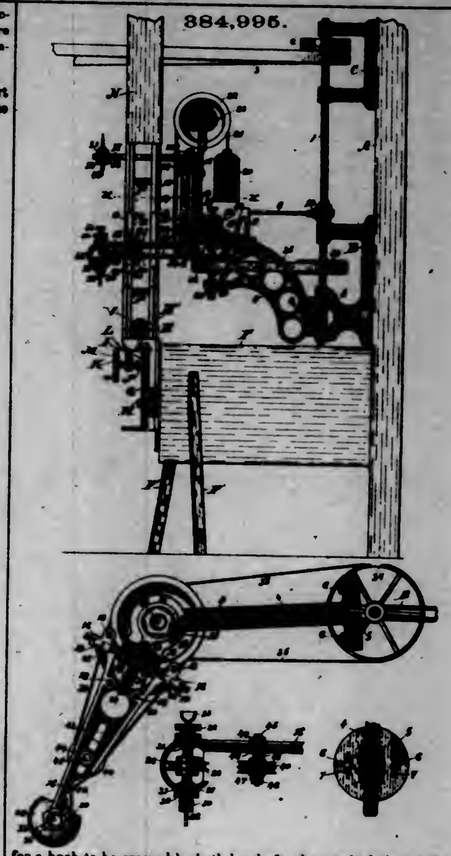
384,995. CARVING-MACHINE. STEPHEN F. MOORE, Milwaukee, Wis. Filed Jan. 7, 1888. Serial No. 260,005. (No model.)

Claim.—1. In a carving-machine, a horizontally-swinging arm, 4, the standard 13, located near to the arm 4 and hinged and swinging horizontally thereon, with the horizontally-projecting arms 16 and 17, one above the other, secured together at their inner ends near to and supported and having a vertical movement on the standard 13, which arms carry in their outer ends, at a distance from the standard 13, the cutting-tool and guide-spindle, respectively, substantially as described.

2. In a carving-machine, a horizontally-swinging arm, 4, the thereon-supported and thereto-pivoted standard 13 and the tool and guide carrying frame, with a band-wheel, 36, pulley 38, pulley 29, located below the lower arm of the tool-carrying frame, and belt 39, said band-wheel, pulleys, and belt being located below the lower arm, 16, of the tool-carrying frame, substantially as described.

3. In a carving-machine, a cutting-tool in a spindle located and supported in a bracket formed in the free end of a swinging arm, which bracket is expanded into a globe-like shield mostly surrounding the spindle and its driving-pulley thereon, said bracket, so expanded, being adapted for a guard for the inclosed mechanism and

384,995.



for a knob to be grasped by both hands for the manipulation of the cutting-tool, substantially as described.

4. The horizontally-swinging hinge 5 and the thereto adjustably-secured arm 4, with collar 10, and the brace-rod 8, adjustably secured at one end to the arm 4 and at the other end to the collar 10, the axis of which collar is the continuation of the axis of hinge 5, substantially as described.

5. In a carving-machine, a spindle-holding sleeve, 50, provided with a flange or head, 52, and a nut, 51, with a supporting-arm, 17, having an aperture, in which the sleeve 50 is located, somewhat larger than said sleeve, substantially as and for the purpose set forth.

6. The horizontally-swinging arm 4, provided with the ring-face 11, in combination with the rotating hinge 12, and the securing pivotal bolt 54, having beveled shoulder 56, adapted to receive a corresponding beveled bearing on the hinge 12, the remainder of that part of the shank of the bolt passing through the hinge 12 being smaller than the aperture through the hinge, substantially as and for the purpose described.

7. The lubricating device consisting of a supporting-arm, 4, provided with a recess, 57, and a face, 11, and the thereon-supported and rotating hinge 12, pivotal bolt 54, and oil-cup 58, having a duct therefrom through the bolt 54 into the recess 57, substantially as described.

8. In a carving-machine, a swinging arm, 4, carrying the cutting-tool and pattern-guide in a frame supported on an arm hinged on said arm 4, said arm 4 being secured adjustably to its pivotal hinge 5 by means of set-screws 6 6, whereby the arm 4 may be rotated limitedly on its longitudinal axis, thereby providing for an inclined or under cut of the tool, substantially as described.

9. In a carving-machine, a pulley, 40, supported on a pivot-bolt, 45, by collars 41 and 47, which bolt is secured in a swinging arm of the machine, in which arm said bolt is adjustable horizontally, whereby said pulley is adapted for use as a belt-tightener in said arm, substantially as described.

10. In a carving-machine, a spindle, 49, supported adjustably in an arm, 17, by a sleeve, 50, provided with a flange, 52, and the thereto-through-turning set-screw 53, and a nut, 51, turning on the sleeve 50, substantially as described.

11. In a carving-machine, a vertically-moving tool and guide-carrying frame connected with and forming a part of a horizontally-swinging portion of the mechanism, and a gravity-weight connected to said frame by a cord running over a pulley, whereby said frame is balanced and supported at any point vertically to which it is moved by extrinsic force, substantially as described.

12. In a carving-machine, a table having a lower and an upper leaf, one directly above the other, the upper one being supported on and connected to the lower one by supporting-rods pivoted thereto, whereby the two leaves are constantly parallel to each other, the table being supported pivotally, whereby it is adapted to be tilted, substantially as described.

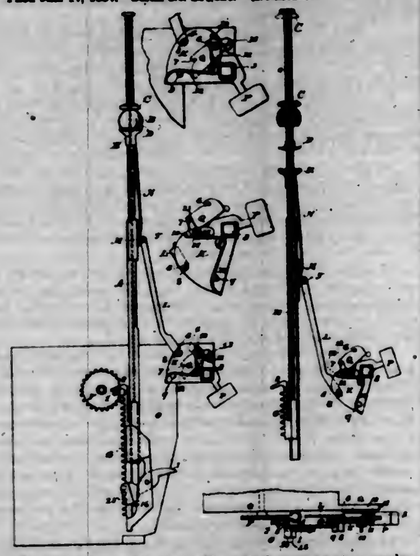
13. In a carving-machine, a vertically-moving frame, E, the thereto-supported tilting parallel leaves D D', and the guide-frame N, substantially as described.

14. A table consisting of the upper and lower leaves, D and D', connected together by thereto-jointed rods O O and supported pivotally on the uprights E' E', the uprights E E' supported movably on and forming a part of the frame E, the frame E supported and having a vertical movement on a sill, F, the upright rails of the frame E being adapted as guides for the ends of the table in its tilting movements, substantially as described.

15. The combination of a frame provided with two horizontal arms, one above the other, carrying the cutting-tool in one arm and the guide in the other arm, said frame being supported and having vertical movement on a standard hinged to a swinging inner arm, 4, with a table having upper and lower leaves for supporting, respectively, the pattern and material to be carved, substantially as described.

16. The combination of the swinging arm 4 and the swinging tool and guide-carrying frame, with the frame E and the two-leaved tilting table D D', all located, supported, and arranged substantially as described.

384,996. TIME-BALL. CHARLES MELLEN, San Francisco, Cal. Filed Jan. 17, 1887. Serial No. 224,693. (No model.)



Claim.—1. In combination with a clock movement or mechanism, the hollow shaft or pipe A, ball or disk C, stationary ball B, hour balls or disks D E, and operating mechanism, substantially as and for the purpose set forth.

2. In a time-ball mechanism operated by clock-work, cog-wheel F, rack-bar G, pawl I, hollow shaft or pipe A, lifting-rod H, stationary ball B, ball or disk C, hour balls or disks D E, rod N, sleeve M, stop-plate Q, pivoted lever 11, pins or projections 8, 9, 10, and 13, and spring 12, substantially as and for the purpose set forth.

384,997. BASE-SCREEN FOR VEHICLES. JOHN H. MURPHY, Hartland, Minn. Filed Nov. 30, 1887. Serial No. 256,122. (No model.)

Claim.—1. A dash-frame for vehicles, consisting of the two cast-

384,997.

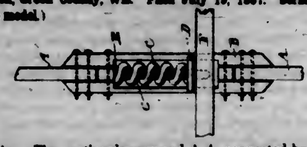


legs A and B, having the integral cast-arms A' and B', respectively, terminating in form for permanent connection with each other, substantially as specified.

2. A dash for vehicles, consisting of the castings A and B, having the integral arms A' B' centrally connected, as at C, substantially as specified.

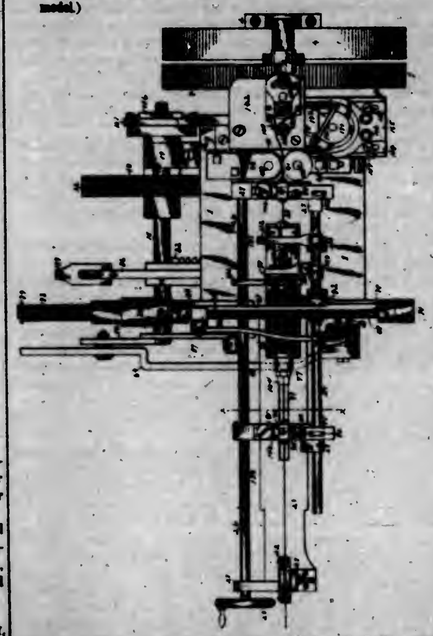
3. A dash for vehicles, consisting of the castings A and B, having the chamfered arms A' B' connected, as at C, and provided with the covering D, substantially as specified.

384,998. PUMP-ROD FOR WINDMILLS. DANIEL B. HEYN, Jefferson, Green County, Wis. Filed July 19, 1887. Serial No. 244,773. (No model.)



Claim.—The sectional pump-rod A A, connected by the parallel cheek-pieces B B, the tongue E, secured between the cheek-pieces, and the spring C, surrounding the tongue E, in combination with the beams F F, and the plate D, supported thereon and adapted to guide the cheek-pieces at each side to receive the tongue through a hole in the center, and to support the spring C, substantially as described.

384,999. WIRE BENDING AND FORMING MACHINE. SAMUEL T. NEWMAN, Danbury, Conn., assignor of two-thirds to the Hat Wire Company, same place. Filed Mar. 19, 1883. Serial No. 267,603. (No model.)



Claim.—1. The combination, with oscillating shaft 30, carrying a gear, 29, the feed-rollers, feed-gears, and feed-pinions, of pins 45 on

opposite sides of the oscillating shaft, each of which carries a gear engaging gear 29, a ratchet under said gear rigidly secured thereto, a disk under said ratchet carrying pawls engaging the ratchet, the teeth of the ratchets being inclined in opposite directions, and a gear under the disk engaging one of the feed-pinions, whereby oscillation of shaft 30 in either direction carries the feed-rollers forward by driving the mechanism on one of the pins 45, the mechanism on the other pin being driven, the return movement of shaft 30 carrying the feed-rollers forward again through the operation of the mechanism on the other pin 45, the driving mechanism in the forward movement being driven during the return movement.

2. The combination, with oscillating shaft 30, carrying a gear, 29, shafts 42, carrying the feed-rollers, feed-gears, and feed-pinions, of pins 45, having journaled thereon gears 46, engaging gear 29, ratchets under said gears secured thereto and having teeth inclined in opposite directions, disks under said ratchets carrying spring-pawls engaging the ratchets, and gears under the disks engaging the feed-pinions.

3. Shafts 42, carrying the feed-rollers, the feed-gears which engage each other, and the feed-pinions not in engagement, in combination with pins having journaled thereon gears 46, under said gears ratchets rigidly secured thereto and having teeth inclined in opposite directions, under said ratchets disks carrying pawls which engage the ratchets, and under said disks gears rigidly secured thereto which engage the respective feed-pinions, whereby forward movement of either of the gears 46 will actuate both of the feed-rollers.

4. Shafts 42, carrying the feed-rollers, the feed-gears which engage each other, and the feed-pinions, in combination with gear 29, gears 46, ratchets 47, moving therewith, disks under said ratchets carrying pawls which engage the ratchets, and gears 49 under said disks and connected thereto, which engage the respective feed-pinions, the teeth of said ratchets being inclined in opposite directions, so that when either of gears 46 is driven the corresponding gear 49 will be driven and will carry both feed-rollers through the engagement of the feed-pinion with said gears 49 and of the feed-gears with each other.

5. The feed-rollers, feed-gears engaging each other, the feed-pinions, and gear 29, in combination with gears 46, ratchets under said gears which are secured thereto and are provided with teeth inclined in opposite directions, disks carrying pawls inclined in opposite directions to engage said ratchets, and gears 49, rigidly secured to said disks, whereby, when either disk 46 is driving the feed-rollers through the corresponding pawls, ratchet, and gear 49, the other gear 49 will be driven in the opposite direction, and the pawls corresponding therewith will drag over the face of the ratchet on that side.

6. The oscillating shaft carrying gear 29, the feed-rollers, feed-gears engaging each other, and the feed-pinions, in combination with gears 46, engaging gear 29, ratchets having teeth inclined in opposite directions, pawls corresponding therewith, and gears 49, engaging the feed-pinions, whereby, when either gear 46 is driving the feed-rollers through the engagement of the corresponding gear 49 with a feed-pinion, the other gear 46 is being driven, but the corresponding gear 49 and disk will be carried in the opposite direction, the pawls being dragged over the face of the ratchet.

7. Shafts 42, journaled in brackets 43 above the bed and bracket 44 below the bed, and carrying the feed-rollers, feed-gears, and feed-pinions, and pins 45, seated in the bed and bracket 44, in combination with gear 29, gears 46, ratchets 47, having teeth inclined in opposite directions, disks 48, carrying pawls engaging the ratchets, and gears 49 under said disks, which engage the feed-rollers.

8. Shafts 42, journaled in brackets 43 above the bed and bracket 44 below the bed, and carrying the feed-rollers, feed-gears, and feed-pinions, and pins 45, seated in the bed and bracket 44, in combination with gears 46, ratchets 47, having teeth inclined in opposite directions, disks 48, carrying pawls engaging the ratchets, gears 49 under said disks, which engage the feed-rollers, and an oscillating shaft carrying a gear, 29, engaging gears 46, as and for the purpose set forth.

9. The combination, with the feed-rollers, feed-gears, and feed-pinions, shaft 30, carrying gear-wheel 29 and pinion 31, and intermediate sets of alternately-acting mechanism which connect gear 29 with the feed-pinions, of a reciprocating rack engaging pinion 31, whereby the feed-rollers are actuated.

10. The combination, with the feed-rollers, shaft 30, having gear-wheel 29 and pinion 31, and intermediate mechanism, substantially as described and shown, of rack 32, lever 37, the crank-disk, and links 36 and 38, whereby each rotation of the crank-disk carries the rack forward and back, thereby actuating the feeding mechanism twice.

11. The combination, with the feed-rollers, oscillating shaft 30, carrying pinion 31, and intermediate sets of mechanism acting alternately, which carry the feed-rollers forward during both movements of shaft 30, of a rack engaging pinion 31, lever 37, a crank-disk having an adjustable block, a link connecting one end of the lever with the rack, and a link connecting the other end of the lever with the adjustable block, whereby adjustment of said block imparts more or less movement to the feeding mechanism and determines the amount of wire drawn forward during each movement.

12. The crank-disk having a sliding block and a gage for adjusting said block, curved and recurved lever 37, rack 32, link 38, connecting one end of said lever with the block, and link 36, connecting the other end with the rack, in combination with the feed-rollers, shaft 30, having a pinion engaged by said rack, and intermediate sets of mechanism, substantially as described and shown, which act alternately and carry the feed-rollers forward during the forward and backward movements of the rack.

13. In a wire bending and forming machine, the combination, with shaft 30, having a gear for actuating the feeding mechanism, and a pinion, 31, and a slide having a rack, of a crank-disk having an adjustable block, and intermediate mechanism, substantially as described, between said crank-disk and rack, whereby reciprocatory movement is imparted to the rack.

14. In a wire bending and forming machine, the combination, with the feed-rollers, feed-gears 54, engaging each other, and the feed-pinions, of oscillating gear-wheel 29 and alternate sets of mechanism, each consisting of a gear, 46, engaging gear 29, a ratchet, 47, connected thereto, a disk having pawls engaging said ratchet, and a gear, 49, connected to the disk and engaging one of the feed-pinions, the teeth of said ratchets being inclined in opposite directions and the pawls arranged to correspond, whereby movement of gear 29 in either direction will carry the feed-wheels forward.

15. In a wire bending and forming machine, the combination, with the feed-rollers, feed-gears 54, engaging each other, and the feed-pinions, of oscillating gear-wheel 29 and alternate sets of mechanism, each consisting of a gear, 46, engaging gear 29, a ratchet, 47, connected thereto, a disk having pawls engaging said ratchet, lugs 52, and springs acting to hold the pawls in operative position, and a gear, 49, connected to the disk and engaging one of the feed-pinions, as and for the purpose set forth.

16. In a wire bending and forming machine, the combination, with suitable feeding mechanism, of holding-clamps which engage the wire at predetermined times, an oscillatory twisting-drum through which the wire passes, and a grip in said drum midway between the clamps, whereby the wire is twisted by movement of the drum.

17. The combination, with the holding-clamps, of slides 95, by which they are operated, and a rock-shaft, 24, having arms 96, whereby the slides are reciprocated.

18. Block 85, having recess 88, with a central boss in the bottom having an opening to receive the wire, in combination with block 91, having a recess to receive boss 89, and slide 95, having incline 101 and 103, whereby block 91 is raised and lowered.

19. Block 85, having a recess in its top, a central boss having an opening to receive the wire, and a vertical block, 91, sliding in said recess and having a recess in its bottom to receive said boss, in combination with a slide having incline which raise and lower block 91.

20. Block 85, having a recess with ways 90, a boss at the bottom having an opening to receive the wire, and a block, 91, sliding on said ways and having a recess in its bottom to receive said boss, in combination with slide 95, having incline 101, to raise the block, and a projection with an incline, 103, whereby block 91 is forced down upon the wire when the slide is drawn outward.

21. Block 85, having ways 90, and boss 89, with an opening to receive the wire, and block 91, sliding on said ways and having a recess to receive said boss, in combination with slide 95, having incline 101 and 103 and slots 98 and 97, guide-screws 99, passing through said slides, and an oscillating arm, 96, engaging slot 97.

22. The combination, with block 85, having boss 89, with an opening to receive the wire, vertical block 91, having a recess in its bottom to receive the boss, and a slide, 95, having incline by which block 91 is raised and lowered, of guides 94 on opposite sides of said block.

23. Block 85, having boss 89, with an opening to receive the wire, a vertical block, 91, having a recess to receive said boss, and an angular slot in line with the opening through the boss, in combination with slide 95, having an incline which forces block 91 downward to clamp the wire in the slot when the slide is moved in one direction and another incline which raises said block to release the wire when the slide is moved in the opposite direction.

24. The combination, with block 85, having bracket 85*, threaded as described, and a recess, 88, with a boss, 89, of block 91, having a recess to receive the boss, and a threaded shaft engaging said bracket, whereby block 85 may be adjusted to any desired position.

25. The bed having extension 21, with slot 87, block 85, having bracket 85*, a recess, 88, and boss 89, and block 91, having a recess to receive said boss, in combination with a threaded shaft engaging said bracket, whereby block 85 may be adjusted, and a screw passing through the slot in the extension and engaging said block, whereby it is locked in position after adjustment.

26. The twisting-drum having within it a cylindrical piece secured thereto, which is provided with a recess having at its bottom a boss, said boss having a hole through which the wire passes, and a block, 111, having an opening in its bottom to receive said boss, in combination with a slide, 110, for raising and lowering said block, and mechanism for reciprocating the slide.

27. The twisting-drum having secured within it a cylindrical piece provided with a recess having at its bottom a boss, said boss having a hole through which the wire passes, and a block, 111, having an opening in its bottom to receive said boss, and a slot for the wire, in combination with a slide, 110, connected to said block by diagonal dovetails, and mechanism for reciprocating the slide.

28. The twisting-drum, cylindrical piece 104, secured thereto, which is provided with guides for the wire, and a recess with a boss at its bottom having an opening for the wire, in combination with a sliding block having a recess in its bottom to receive the boss, a slide for raising and lowering the block, and reciprocating plunger 108, to which the slide is connected, whereby the wire is clamped at predetermined times.

29. The twisting-drum, cylindrical piece 104, constructed as described, block 111, and the slide and plunger, in combination with a sliding plate, 116, which engages the plunger, and a crown-ratchet, 120, whereby the sliding plate and plunger are forced forward, as and for the purpose set forth.

30. The twisting-drum, cylindrical piece 104, constructed as described, block 111, and the slide and plunger, in combination with sliding plate 116, which forces the plunger forward, and sliding cam 127, engaging a flange on said plunger, whereby it is retracted.

31. The twisting-drum and cylindrical piece 104, constructed as described, block 111, and the slide and plunger, in combination with sliding plate 116, which forces the plunger forward, sliding cam 127, engaging a flange on said plunger, whereby it is retracted, said cylindrical piece being rigidly secured to the twisting-drum, and the plunger provided with a key, 115, engaging a groove in the cylindrical piece, whereby said parts are held against independent rotary movement.

32. The twisting-drum, cylindrical piece 104, secured thereto, and standard 77, in which said parts are journaled, in combination with gripping mechanism, substantially as described, within the drum, a grooved reciprocating plunger for actuating the gripping mechanism, and a sliding plate having a bearing engaging the groove in the plunger.

33. The plunger having a flange, 109*, a collar, 129, and a groove, 119, in combination with a sliding plate having a bearing engaging said groove, a crown-ratchet whose teeth force the sliding plate forward, carrying the plunger, and reciprocating cam 127, engaging said plunger and collar, whereby the plunger is retracted, substantially as and for the purpose set forth.

34. The plunger having a flange, 109*, a collar, 129, and a groove, 119, in combination with a sliding plate having a bearing engaging said groove and a roller, 117, and a crown-ratchet whose teeth engage said roller at predetermined times to force the plunger forward, as and for the purpose set forth.

35. The plunger having a groove, 119, and the sliding plate having a bearing engaging said groove, and a roller, 117, in combination with a crown-ratchet, 120, whose teeth engage the roller, a ratchet, 121, secured to the crown-ratchet, and a reciprocating hooked pawl, whereby intermittent rotary motion is imparted to said ratchets, substantially as and for the purpose set forth.

36. The combination, with the plunger, the sliding plate having a bearing engaging said plunger, and a roller, 117, crown-ratchet 120, engaging the roller, and ratchet 121, secured to the crown-ratchet, of rock-shaft 24, having an arm, 123, and a hooked pawl, 122, pivoted to said arm and engaging ratchet 121, substantially as and for the purpose set forth.

37. The combination, with the plunger having flange 109* and collar 129, of rock-shaft 24, having arm 123, and double cam 127, pivoted thereto, which engages said flange, whereby the plunger is retracted when the cam is forced forward, substantially as and for the purpose set forth.

38. The plunger having flange 109*, the sliding plate having a bearing engaging said plunger, crown-ratchet 120, engaging the sliding plate, and ratchet 121, secured to the crown-ratchet, in combination with rock-shaft 24, having arms 123 and 128, a hooked pawl pivoted to one of said arms and engaging ratchet 121, and a cam, 127, pivoted to the other arm and engaging the flange, said arms being so pivoted to the rock-shaft that when the cam moves forward the hooked pawl passes over the face of the ratchet, and when the pawl is carrying the ratchet the cam is moving backward out of operative position, substantially as and for the purpose set forth.

39. The combination, with the plunger, the sliding plate having a bearing engaging the plunger, and a roller, 116, of the crown-ratchet engaging the roller, ratchet 121, secured thereto, a hooked pawl whereby the ratchets are carried forward, and friction-spring 126, whereby the ratchets are held stationary when the pawl moves backward over ratchet 121, substantially as and for the purpose set forth.

40. The sliding frame having bearings 77 and 125, the twisting-drum, and the gripping mechanism, constructed as described, in combination with detachable guide-plate 124 in said bearings, having longitudinal openings to receive the wire.

41. The stationary holding-clamp, frame 78, carrying the twisting mechanism and having a bracket, 122, and block 85, carrying the adjustable holding-clamp and having a bracket, 85*, in combination with shaft 26, having a screw-thread, 180, engaging bracket 85*, and a thread, 181, of half the pitch, engaging bracket 122, whereby rotation of said shaft in either direction will move the twisting mechanism and the adjustable holding-clamp, the position of the twisting mechanism being always midway between the holding-clamps.

42. The bed and extension having, respectively, slots 79 and 87, the stationary holding-clamp secured to the bed, frame 78, carrying the twisting mechanism and having a bracket, 122, and block 85, carrying the adjustable holding-clamp and having a bracket, 85*, in combination with shaft 26, having a screw-thread, 180, engaging bracket 85*, and a screw-thread, 181, of half the pitch, engaging bracket 122, whereby rotation of said shaft in either direction will move the twisting mechanism, and the adjustable holding-clamp and screws 80 and 86, whereby the parts are locked in place after adjustment.

43. The combination, with the holding-clamps and the twisting-drum having gear-teeth on its periphery and a grip midway between the holding-clamps, of a reciprocating rod having rack-teeth engaging the drum.

44. The combination, with the holding-clamps and the twisting-drum having a grip midway between said clamps, of a rack for imparting movement to the twisting-drum in one direction and a spring or weight which causes the return or forward movement of the twisting-drum.

45. The holding-clamps, the twisting-drum having a grip midway between said clamps, and rock-shaft 24, having arms 96, 128, and 126, for operating the clamps and grip, and an arm, 84, in combination with a reciprocating rod having rack-teeth engaging the drum, and lugs 82 and 83, which engage arm 84, to lock and unlock the holding clamps and grip.

46. The combination, with the holding-clamps, the twisting-drum having a grip midway between said clamps, and a reciprocating rod having rack-teeth engaging the twisting-drum and lugs 82 and 83, of rock-shaft 24, carrying arms which operate said clamps and grip, and an arm, 84, which is engaged by said lugs to oscillate the rock-shaft, as and for the purpose set forth.

47. The holding-clamps, the twisting-drum having a grip midway between said clamps, and a reciprocating rod having rack-teeth engaging the twisting-drum and lugs 82 and 83, in combination with a spring surrounding said rod, which is compressed when the drum is turned backward, and rock-shaft 24, carrying arms which operate the clamps and grip, and an arm, 84, which is engaged by said lugs at the completion of the backward movement of said rod to lock the clamps and grip and by lug 82 at the end of the forward movement to unlock them again after the wire has been twisted.

48. The twisting-drum, rod 67, having rack-teeth engaging said drum, and a coil-spring surrounding said rod and bearing against a collar at its outer end, in combination with shaft 61, having arms 62 and 66, said arm 66 being connected to rod 67 by a link, and arm 62 being provided with an offset, 64, and shaft 15, carrying arms 55 and 56, provided with rollers which engage arm 62 from below and raise it until the roller reaches the offset, when the spring acts to return the parts to their normal position.

49. The combination, with the twisting-drum, rod 67, having rack-teeth engaging the drum, and a spring, 73, surrounding said rod, of oscillating arms 62 and 66, the former having an offset, 64, and the latter connected by a link to rod 67, and rotating arms 55 and 56, carrying rollers, which engage arm 62 from below and raise it until the roller in engagement reaches the offset.

50. The combination, with the twisting-drum and rod 67, having a rack engaging the drum, of shaft 61, carrying arms 62 and 66, link 66, and shaft 15, carrying arms 55 and 56, adjustable relatively to each other, said arms being provided with adjustable rollers 58, adapted to engage arm 62.

51. The combination, with the twisting-drum, rod 67, having rack-teeth engaging the drum, a spring surrounding said rod and bearing against its outer end, and a sleeve, 72, inclosing the spring, of arms 62 and 66, link 66, and rotating arms having rollers engaging rod 66.

52. The combination, with the twisting-drum, brackets 85, a key, 70, in one of said brackets, a rod, 67, having a groove engaged by said key, and rack-teeth engaging the twisting-drum, of arms 62 and 66, links 66, and rotating arms having rollers adapted to engage arms 62.

53. The combination, with the twisting-drum and grip, the holding-clamps, and rock-shaft 24, having arms which operate said clamps and grip, and an arm, 84, of rod 67, having rack-teeth engaging the drum, and lugs 82 and 83, the latter being adjustable, and operating mechanism whereby said rod is moved in one direction and the clamp and grip locked at the end of the movement.

54. The combination, with the twisting-drum and grip, the holding-clamps, and rock-shaft 24, having arms which operate said clamps

and grip, and an arm, 84, of rod 67, having rack-teeth engaging the drum and lugs 82 and 83, a coil-spring surrounding said rod and bearing against a collar at its outer end, and operating mechanism whereby said rod is moved in one direction against the power of the spring, and the clamps and grip are locked by lug 83 at the end of the movement and unlocked by lug 82 when the rod is turned by said spring.

55. The holding-clamps and twisting-drum having a grip midway between said clamps, in combination with a reciprocating rod engaging said drum, a spring on said rod which is compressed when the rod moves backward, and mechanism for locking the clamps and grip upon the wire at the end of the backward movement and for releasing them at the end of the forward movement after the wire has been twisted.

56. The holding-clamps, the twisting-drum having a grip midway between said clamps, and adjusting mechanism for the twisting-drum and one of the holding-clamp, whereby the grip is kept midway between the clamps without regard to the length of wire being operated upon, in combination with a reciprocating rod engaging said drum, a spring on said rod which is compressed when the rod moves backward, and mechanism for locking the clamps and grip upon the wire at the end of the backward movement and for releasing them at the end of the forward movement after the wire has been twisted.

57. The holding-clamps and twisting-drum having a grip midway between said clamps, and adjusting mechanism for the twisting-drum and one of the holding-clamps, whereby the grip is kept midway between the clamps without regard to the length of wire being operated upon, in combination with a reciprocating rod engaging said drum, a spring on said rod which is compressed when the rod moves backward, mechanism for locking the clamps and grip upon the wire at the end of the backward movement and then releasing them at the end of the forward movement after the wire has been twisted, and feeding mechanism acting alternately with the twisting mechanism, whereby the wire is drawn forward after being twisted.

58. The twisting-drum having a grip within it, a sliding frame, 78, in which it is journaled and which is provided with a bracket, 132, a reciprocating rack for oscillating said drum, and the stationary and adjustable holding-clamps, in combination with shaft 26, having a screw-thread engaging the adjustable holding-clamp, and a screw-thread of half the size engaging bracket 132, as and for the purpose set forth.

59. The twisting-drum having a grip within it, a reciprocating rack for oscillating said drum, having lugs 82 and 83, and the stationary and adjustable holding-clamps, in combination with rock-shaft 24, having adjustable arms for operating the holding-clamps and grip, and an arm, 84, adapted to be engaged by lugs 82 and 83, as and for the purpose set forth.

60. The combination, with the feeding mechanism and the twisting mechanism, of reciprocating slide 140, carrying bending and forming rollers 150 and 151.

61. The combination, with the feeding mechanism, of reciprocating slide 140, carrying roller 150, and back of said roller a roller, 151, adjustable relatively thereto.

62. In a machine for bending and forming wire, reciprocating slide 140, having at its forward end a roller, 150, in combination with an adjustable plate, 152, carrying roller 151.

63. Reciprocating slide 140, carrying roller 150 and having a slot, 154, in combination with plate 152, having at its forward end a roller, 151, pin 153, passing through said plate and engaging the slot, and a bolt and nut for locking said plate at any desired adjustment.

64. Reciprocating slide 140, carrying a roller, 150, and having a slot, 154, in combination with plate 152, having at its forward end a roller, 151, and at its rear end a curved slot, 155, pin 153, passing through said plate and engaging slot 154, a bolt, 156, passing through slots 154 and 155, and a nut engaging said bolt, whereby roller 151 may be adjusted both longitudinally and laterally relatively to roller 150.

65. Reciprocating plate 144, having slot 146, and block 147, adapted to slide in said slot, in combination with plate 142, having slot 143, and slide 140, carrying the bending and forming rollers and provided on its under side with a box engaging slot 143, and a pin engaging the block in slot 146, whereby the reciprocation of plate 144 causes the slide to reciprocate at right angles thereto.

66. Sliding frame 133, carrying roller 135, slide 140, carrying the bending and forming rollers, and intermediate connecting mechanism whereby reciprocation of the frame causes the slide to reciprocate at right angles thereto, in combination with disk 137, carrying cams 136, adapted to engage said roller to move the frame forward, and spring 138, whereby the frame is returned to its normal position.

67. The combination, with slide 140, carrying the bending and forming rollers, sliding frame 133, having roller 135, and intermediate connecting mechanism, substantially as described, of disk 137, carrying adjustable cams 136, adapted to engage said roller to move the frame, and spring 138, whereby the frame is returned to its normal position.

68. In a machine for bending and forming polygonal wire, the combination, with feeding mechanism and twisting mechanism, of a reciprocating slide carrying bending and forming rollers between which the wire is passed, means for moving the slide forward, and means for simultaneously actuating the feeding mechanism, whereby, when opposite planes of the twisted wire are in contact with the faces of the rollers, any desired set may be given to the wire, depending upon the adjustment of said rollers relatively to each other.

69. In a machine for bending and forming polygonal wire, the combination, with the feeding mechanism and twisting mechanism, of a reciprocating slide carrying at its forward end a roller, 150, and having secured thereto a plate carrying a roller, 151, adjustable both longitudinally and laterally relatively to roller 150, whereby any desired set may be given to the wire and their ends may be caused to meet.

70. The combination, with the feeding mechanism and the twisting mechanism, of bending and forming rollers carried by a reciprocating slide which advances while the feeding mechanism is acting, sliding frame 133, carrying a roller, 135, intermediate connecting mechanism for transmitting the motion of the frame to the slide, and a disk carrying cams which engage said roller and force the frame forward, the amount of movement of said frame and consequently of the bending and forming rollers toward or from the feeding mechanism being governed by the height of the cams, whereby the oval of the hot-wire may be widened or narrowed as required.

71. Slide 140, carrying the bending and forming rollers and having boss 148 and stud 149, plate 142, having a slot engaged by said boss, and a plate, 144, having a diagonal slot and a sliding block therein engaged by said stud, in combination with sliding frame 133, and a bracket, 145, adjustably secured to said frame and carrying plate 144.

72. In a wire bending and forming machine, the combination, with slide 140, having slot 154 and carrying roller 150, of a plate, 152, carrying roller 151 and having a curved slot, 155, pin 153, passing through the plate and engaging slot 154, bolt 156, engaging slots 154 and 155, and a nut engaging said bolt, whereby the parts are locked in position after adjustment.

73. The combination, with the feeding mechanism and the bending and forming rollers carried by a reciprocating slide, 140, of reciprocating plate 158, carrying fixed and movable cutters between which the wire passes, springs 186, for holding said plate to its normal position, and a hammer which strikes the lower cutter while the wire is moving forward.

74. In a wire bending and forming machine, the combination, with reciprocating slide 140, carrying the bending and forming rollers, of plate 158, loosely held in place, springs acting to draw said plate toward the bending and forming mechanism, stationary and movable cutters carried by plate 158, between which the formed wire passes, and a hammer adapted to deliver a blow upon the movable cutter to sever the wire at predetermined times.

75. In a wire bending and forming machine, plate 181, secured to the frame-work, plate 158, carrying stationary and movable cutters between which the formed wire passes, and having slots 160, screws passing through said slots, whereby plate 158 is loosely secured to plate 181, and springs acting to hold it at its forward position, in combination with a hammer which strikes the movable cutter at predetermined times to sever the wire.

76. The combination, with plate 158, loosely held in place and carrying fixed and movable cutters between which the wire passes, and springs for holding said plate at its forward position, of a hammer carried by a rod, 180, a cross-rod, 184, having a bend or offset, 186, one end being pivoted to rod 180, and the other end pivoted at the opposite side of the machine, gear-wheel 7, having cam 19, and a spring, 182, under the hammer, acting to throw the hammer upward against the lower cutter, whereby at each rotation of said gear rod 184 is drawn downward by cam 19, compressing spring 182 until the cam passes off at bend 186, when the spring acts to force the hammer upward against the movable cutter.

77. The combination, with the stationary cutter, the movable cutter, and rod 180, having a hammer at its upper end and a coil-spring under said hammer, of cross-rod 180, having bend 186, one end of said rod being pivoted to rod 180 and the other end to the opposite side of the machine, and gear 7, having cam 19, adapted to engage the cross-rod and draw it down until the cam passes off at the bend, as and for the purpose set forth.

78. The combination, with loose plate 158, carrying fixed and movable cutters, springs 186, acting to hold said plate in operative position, and rod 180, having a hammer at its upper end and a coil-spring under said hammer, of cross-rod 180, having bend 186, one end of said rod being pivoted to rod 180 and the other end to the opposite side of the machine, and a gear, 7, having a cam, 19, adapted to engage the cross-rod and draw it down until the cam passes off at the bend, whereby the blow of the hammer may be delivered while the wire is moving forward, the vibration of plate 158 will insure the perfect separation of the wire, and springs 186 will draw the cutters forward, so that the uncut end cannot pass out.

79. The combination, with the bending and forming mechanism, loose plate 158, and springs 186, which draw said plate toward the bending and forming mechanism, of carrier 163, adjustably secured to plate 158, an upper cutter secured to said carrier, and a vertically-movable block secured to the carrier to which the lower cutter is attached, and a hammer which strikes said block and forces the lower cutter upward to sever the wire.

80. The combination, with the bending and forming mechanism, loose plate 158, and carrier 163, secured to said plate and adjustable in the horizontal plane, of an upper cutter secured to the carrier and a lower cutter carried by a vertically-movable block secured to the carrier.

81. The bending and forming mechanism, plate 158, the carrier having flange 164, and clamping-plate 165, whereby the carrier is adjustably held in place, in combination with an upper cutter secured to the carrier and a lower cutter carried by a vertically-movable block which is secured to the carrier.

82. In a wire bending and forming machine, plate 158, and carrier 163, adjustably secured to said plate and having an opening, 172, and projecting ends 177, in combination with an upper cutter secured to the carrier and a vertically-movable block, 171, carrying the lower cutter, which is provided with shoulders engaging said projecting ends, whereby the downward movement of said block and cutter is limited.

83. Plate 158, the carrier having opening 172 and extension 167, provided with guides 176, and an upper cutter secured to said carrier, in combination with vertically-movable block 171, carrying the lower cutter.

385,000. CAR-COUPLING. FRANCIS W. PARSONS, Philadelphia, Pa.

Filed Jan. 19, 1888. Serial No. 261,322. (No model.)



Claim.—1. In a car-coupler of the class described, the combination of a pivotal jaw with an inclined concentric removable bearing-plate for said jaw, substantially as specified.

2. In a car-coupler of the class described, a draw-head having a pivotal jaw, in combination with a removable bearing-plate for said jaw, comprising inclined concentric ways, substantially as specified.

3. In a car-coupler of the class described, a draw-head having a pivotal jaw having inclined lugs, in combination with a bearing-plate set in a recess in said head and formed with a series of inclined concentric ways for said lugs, substantially as specified.

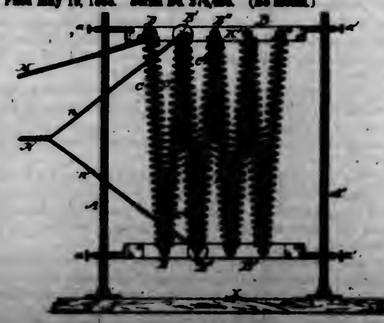
4. In a car-coupler of the class described, the combination of a pivotal jaw having lugs, and a bearing for said jaw comprising inclined concentric ways, with a gravity-lever pivoted to swing vertically in rear of said jaw and adapted to lock the same, substantially as specified.

5. The head A, having recess A^4, the jaw B, formed with the cut-away portion B^4, and lug B^5, in combination with the gravity-lever D, pivoted, as at D', and having the chamfered lug D^2, substantially as specified.

6. The combination of the head A, having the lugs A^5, the plate C, seated therein and having the perforations C', and inclined ways C^2, in combination with the jaw B, the bolt B', and the lugs B^7, substantially as specified.

385,001. RHEOSTAT. JAMES W. PARKER, New York, N. Y.

Filed May 19, 1888. Serial No. 274,498. (No model.)



Claim.—1. A rheostat which has two independently-adjustable contact-pieces to afford connection between one terminal of the external circuit and the internal circuit of the resistance-coils, substantially as described.

2. A rheostat which has two independently-adjustable contact-pieces to afford connection between one terminal of the external circuit and the internal circuit of the resistance-coils, said contact-pieces being in shunt relation one to the other, substantially as described.

3. A rheostat which has the following parts in combination: a skeleton frame, a set of resistance-coils connected in series and insulated from the frame, an electrical connection between one end of the series and one terminal of the external circuit, and two independently-adjustable contact-pieces which afford connection between the other terminal of the external circuit and the resistance-coils, substantially as described.

4. A rheostat which has the following parts in combination: a skeleton frame, a set of resistance-coils connected in series and insulated from the frame, an electrical connection between one end of the series and one terminal of the external circuit, and two independently-adjustable contact-pieces which afford connection between the other terminal of the external circuit and the resistance-coils, said contact-pieces being in shunt relation one to another.

5. A rheostat which has the following parts in combination: a skeleton frame which has suitable cross-bars resting on divided portions of two of its opposite sides, but insulated therefrom, a set of resistance-coils strung on said bars and connected in series, an electrical connection between one terminal of the exterior circuit and one end of the series of coils, and two socket-pieces which are electrically connected to the other terminal of the exterior circuit, and which fit over the projecting ends of any of the said cross-bars, substantially as described.

385,002. CLAPPER OR RATTLER DEVICE. GERSON PAGAN, Philadelphia, Pa., assignor, by direct and mesne assignments, of two-thirds to W. Harry Mattison, same place. Filed Oct. 19, 1887. Serial No. 252,179. (No model.)



Claim.—1. A clapper composed of a plate, A, having bead or raised edge b^3, and a bar, D, having clapping-blocks E at each end for striking bead or edge b^3, substantially as set forth.

2. A clapper composed of plate A, having bead or raised edge b^3, sounding-box F, and flexible bar or band D, having clapping-blocks E, substantially as set forth.

3. A clapper composed of a disk, B, having cross-bar D, with two free ends provided with clapping-blocks E, substantially as set forth.

4. The combination of disk B, having edge b^3, raised center b^4, flexible bar or strip D, and end blocks, E, substantially as set forth.

5. The combination of disk B, having band C, and flexible bar or strip D, having end blocks, E, substantially as set forth.

6. The combination of disk B, having band C and box F, and flexible strip D, having end clappers, E, substantially as set forth.

7. In a clapper, the blocks E, secured to the free ends of a flexible strip or bar, D, substantially as set forth.

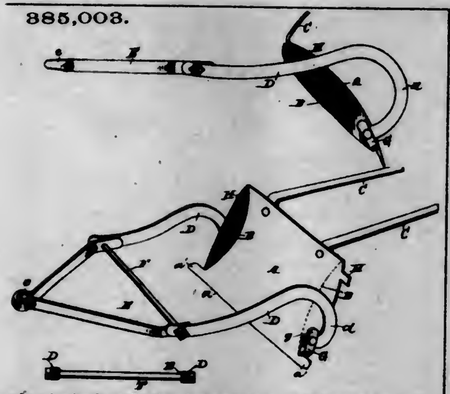
8. The combination of disk B, having a sounding-box, F, in its front face and a disk-shaped rear face, and the clapper-blocks E, substantially as set forth.

385,003. SCRAPER. JAMES C. PRESTON, Fort Wayne, Ind. Filed July 15, 1887. Serial No. 244,303. (No model.)

Claim.—1. In a scraper, the combination, with the body, of the draft-bars, the bail, and the brace-bar F, provided at its ends with the reduced portions which serve as pivots to connect the bail with the bars, substantially as set forth.

2. In a scraper, the combination, with the parallel pivoted draft-bars, of the body provided with steps formed integral with the body

385,003.



and projecting laterally therefrom to engage with the draft-bars when the body is inverted, substantially as set forth.

3. A scraper having draft devices pivoted to its sides, and having also its cutting-edge extended laterally in front of the pivots of the draft devices, substantially as set forth.

4. In a scraper, the combination, with the body and the draft-bars, of the ears G, recessed, as at *g*, upon their rear inner faces, whereby there are formed rearwardly-opening seats for the draft-bars, substantially as set forth.

5. A scraper having the bottom and back formed from a single piece of metal, and having the laterally-projecting cutting-edges *d* also formed from the same piece of metal, substantially as set forth.

6. A scraper having the bottom and back formed from a single piece of metal, and having laterally-projecting stops H H also formed from the same piece of metal, substantially as set forth.

385,004. MACHINE FOR SHARPENING SAWS. REUBEN H. PIER, Columbia City, Ind. Filed Mar. 26, 1888. Serial No. 268,497. (No model.)

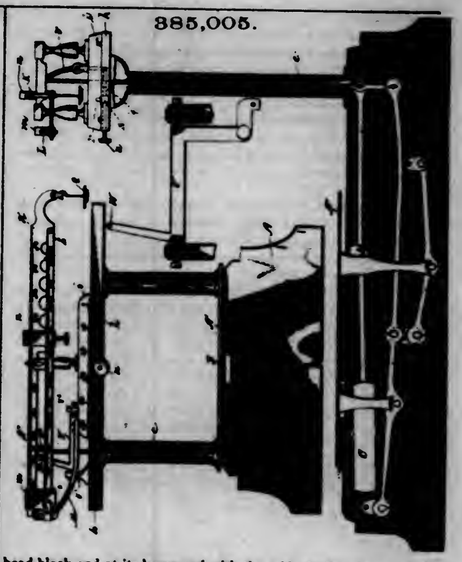


Claim.—1. A saw-sharpening machine comprising the base having the gages and the beveled grinding-wheel mounted on the base, substantially as described.

2. In a saw-sharpening machine, the combination of the base having the standards B B', the shaft C, journaled in standards B and having the crank and the gear wheel D, the inclined shaft F, journaled in standard B' and one of the standards B, and having the beveled grinding-wheel, and the pinion meshing with the wheel D, substantially as described.

3. The combination of the base, the beveled grinding-wheel mounted thereon, means, substantially as specified, to rotate said grinding-wheel, the laterally-adjustable gage I at the ends of the base, and the vertically-adjustable gage H above the base, said gage H being also adapted to be inclined, substantially as described.

385,005. WEIGHING AND PRICE SCALE. JULIUS B. PITRAT, Gallipolis, Ohio. Filed May 30, 1887. Serial No. 239,572. (No model.)



Claim.—1. The combination, with the platform-levers and the price-beam, of the head-block, and the connecting-rod interposed between and connecting the platform-levers directly with the head-block of the price-beam, substantially as and for the purpose described.

2. The combination, with the platform-levers, the price-beam, the head-block carried by the price-beam, and the rod directly connecting the platform-levers with the head-block, of the head-block retaining-lever, and mechanism, substantially as described, for simultaneously operating the lever and moving the price-beam.

3. The combination, with the platform-levers, the price-beam, the head-block, and the rod pivotally connected at its upper end with the head-block and at its lower end with the said platform-levers, of the head-block retaining-lever, the U-shaped engager carried by the upper end of the lever, and mechanism, substantially as set forth, for simultaneously operating the price-beam and actuating the lever.

4. The combination, with the price-beam and the head-block having a vertical slot, of the retaining-lever and engager carried thereby and adapted to enter the slot, substantially as and for the purpose described.

5. The combination, with the price-beam and the head-block having a transverse opening and a vertical slot, of the rod *c*, having a knife-edged hook fitted in the transverse opening, and the retaining-lever provided with an engager adapted to enter the vertical slot, substantially as and for the purpose described.

6. The combination of the price-beam, the head-block mounted on the said beam, the spring interposed between the end of the head-block and the edge of the beam, the rod *c*, pivotally connected with the head-block, and the retaining-lever provided with the engager, substantially as described, for the purpose specified.

7. The combination, with the sub-base, the price-beam mounted on a base and the head-block, of the retaining-lever having lateral projections between its ends, the uprights, and the pivotal supports, substantially as and for the purpose described.

8. The combination, with the sub-base of the price-beam mounted on a base, and the head-block, of the retaining-lever pivotally supported between its ends on the sub-base, the engager carried by the upper end of the retaining-lever, and the spring connecting the lower end of the retaining-lever with the sub-base, substantially as set forth.

9. The combination with the sub-base, the retaining-lever and the price-beam, and the base having a rack on its under side, of the shaft journaled in bearings in the sub-base and free to have a longitudinal motion in said bearings, and having its inner end bearing against the lower end of the retaining-lever, and the pinion keyed to the shaft and always in mesh with the rack, substantially as set forth.

10. The combination, with the platform-levers, the price-beam, the base carrying the price-beam, and the head-block provided with the index or pointer, of the rod connecting the head-block and the said platform-levers and the retaining-lever, substantially as and for the purpose described.

11. The combination, with the platform having multiplying-levers, the price-beam, and the rod connecting the platform-levers with the price-beam, of the weight-counterbalancing lever located in the said platform and connected with the said rod, substantially as and for the purpose described.

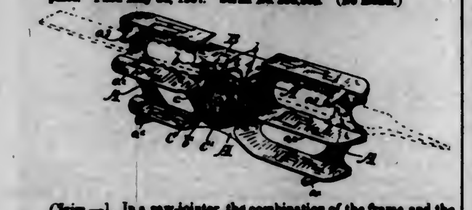
12. The combination, with the price-beam having its left branch slotted, of the head-block having the rod *c* pivotally connected therewith and mounted in said slot, whereby the pivotal supports of the beam and rod *c* may be brought into alignment, as and for the purpose described.

13. The combination, with the price-beam and the platform-levers of the platform provided with a scoop-receiving opening, of the lid or compensating weight for closing said opening, substantially as set forth.

14. The combination of the main and supplemental beams connected together, the one beam having two rows of graduations extended from left to right, the one set of graduations indicating the value and the other set of graduations indicating pounds or units of weight, and the other beam graduated from the center toward each end, representing the rate per unit and the tare of the bob-weight placed on the beam graduated from left to right, the tare-weight placed on the right branch, and the head-block mounted on the left branch of the other beam, substantially as and for the purpose described.

15. The combination, with the sub-base and the two uprights, of the price-beam composed of a main and supplemental beam in the same vertical plane, and the arch or bow shaped pivotal support, the main beam having two rows of graduations extending from left to right, and a third row of graduations extending from the center toward the end, and the supplemental beam having a row of graduations corresponding with the third row on the main beam, and extending from the center toward the opposite end of the beam.

385,006. COMBINED SAW JOINTER AND GAGE. WILLIAM S. RALYA, Indianapolis, Ind., assignor to R. C. Atkins & Company, same place. Filed May 30, 1887. Serial No. 239,594. (No model.)



Claim.—1. In a saw-jointer, the combination of the frame and the clamp for the file, one jaw of which clamp is stationary and the other jaw of which is a cam, substantially as set forth.

2. In a saw-jointer, the combination of the frame with projections formed thereon, a file resting on said projections, and the cam arranged and secured to bear against the opposite side of said file and clamp it in position, substantially as set forth.

3. In a combined saw jointer and gage, the combination, with the frame, of a file-clamp, bearing-points upon which the saw may rest, and adjustable points mounted to bear against the saw-teeth when they are being set, substantially as set forth.

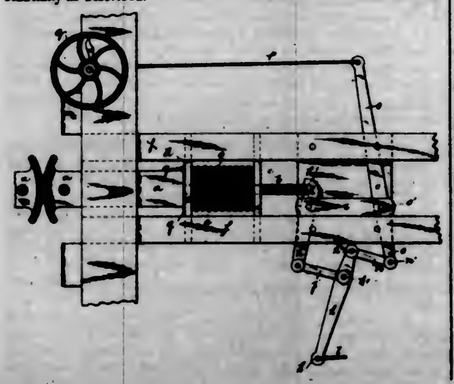
4. A combined jointer and gage consisting of a frame, A, and a frame, B, adjustably mounted thereon and secured in position by a single screw passing through a slot in said adjustable frame, said adjustable frame being seated in a suitable way in said frame A.

5. The combination of the frame A, the adjustable gage-plate B, the cam-wheel C, the sleeve and cap C', and the screw *b'*, substantially as set forth.

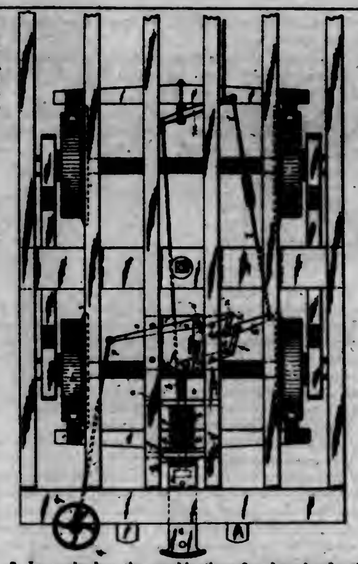
385,007. CAR-BRAKE. ADRIAN REBER, Pittsburg, Pa., assignor to the Reber Safety Brake Company, (Limited,) same place. Filed Oct. 4, 1887. Serial No. 251,451. (No model.)

Claim.—1. In a car-brake, the combination of a draw-head, a pivoted lever interposed in the path of said draw-head or draw-bar, and a brake-operating lever linked to the aforesaid lever and to a stationary pivot, substantially as and for the purpose set forth.

2. In a car-brake, the combination of a draw-head having a draw-bar attached thereto, a spring coiled around said draw-bar and held between two follower-plates, and a disk or bar spring interposed between the rear of the draw-head and the front follower-plate, substantially as described.



385,007.

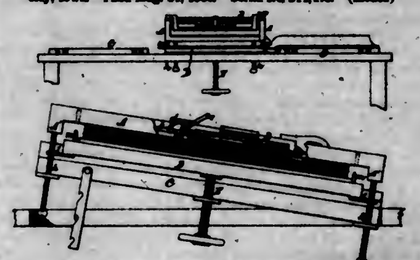


3. In car-brakes, the combination of a draw-head, a lever pivoted in the rear thereof and in the line of movement of the same, another lever pivoted in the rear of the first, and a brake-operating lever having a link-connection with both levers, substantially as and for the purpose set forth.

4. In car-brakes, the combination of the draw-head or draw-bar, a lever, A, interposed in the path of the same, a lever, *o*, pivoted in the rear of said lever A, and a brake-operating lever, *k*, connected to said levers A and *o* by links *j* and *n*, substantially as and for the purpose set forth.

5. In car-brakes, the combination of the draw-head or draw-bar, a lever, A, interposed in the path of the same, a lever, *o*, pivoted in the rear of said lever A, and means for holding said lever stationary, with a brake-operating lever, *k*, connected to said levers A and *o* by the links *j* and *n*, substantially as and for the purpose set forth.

385,008. TYPE-WRITING MACHINE. FRED A. RESLEY, Iowa City, Iowa. Filed Aug. 31, 1886. Serial No. 211,472. (Model.)



Claim.—1. In a type-writer for books or packets, the combination of the frame A, having parallel sides, their upper surfaces forming ways for the carriage, their bottoms adapted to rest upon and hold the paper in position, and being provided with racks *b b*, substantially as shown and described, the carriage B, having dogs *d d*, engaging with the racks, and gibs *c c'* opposite thereto, and a type-writing device, substantially as specified, adapted to print on the upper surface of said paper, substantially as and for the purpose set forth.

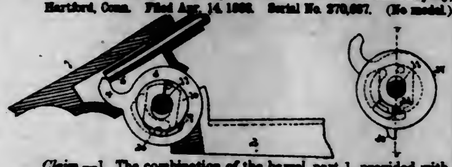
2. In a type-writer for books or packets, the combination of the frame A, having parallel ways adapted to rest upon and hold the page in position, a carriage mounted upon said ways and provided with a transversely-moving type-writing apparatus adapted to print on the upper surface of the paper, and a clamp, D E, adapted to press the book or packet tightly against the bottom of the frame, substantially as and for the purpose specified.

3. In a type-writer for books or packets, the combination of the carriage-supporting frame A, mounted on suitable supports, A A A A, and the plate D, having screw E to press the book or packet tightly

and smoothly against the under side of the frame A, substantially as and for the purpose set forth.

4. In a type-writer of the kind specified, the combination of the frame A, clamping device D E, and supports C, hinged to the table, substantially as and for the purpose set forth.

385,009. EXTRACTING MECHANISM FOR REVOLVERS. DAVID H. ESSE, Brookline, Mass., assignor to the Martin Fire Arms Company, Hartford, Conn. Filed Apr. 14, 1888. Serial No. 270,697. (No model.)



Claim.—1. The combination of the barrel part 1, provided with the cam-shoulders 25 26 and a joint part, the frame part 2, having the attached pivot on which the barrel joint part is hung, the latch 19, mounted in said pivot and adapted to engage with said cam-shoulders, arranged to act thereon in opposite directions and be moved in and out thereby, the annular lifter arranged to revolve on said pivot and provided with the notch 9 for engagement with said latch, and the extractor actuated by said lifter, substantially as described.

2. The combination of the barrel part 1, having its joint part and provided with the cam-shoulders 25 26, the frame part 2, pivoted thereto, the sliding latch 19, mounted in said frame part and adapted to be moved positively both in and out of the same by said cam-shoulders, arranged to act in opposite directions thereon in the opening and closing of the barrel, the lifter pivoted on the joint-pin and provided with the notch 9 for engagement with said sliding latch, and the extractor actuated by said lifter, substantially as described.

3. The combination of the barrel 1, having a hinge part and cam-shoulders 25 26, the frame 2, having a pivot part, 10, around which the barrel turns, the latch 19, arranged to move in and out through a slot in said pivot part by engagement with said cam-shoulders, arranged to act in opposite directions thereon, the lifter surrounding said pivot part 10 and slide 19, and having the internal notch, 9, to receive the nose of said slide, and the extractor actuated by said lifter, substantially as described.

4. The combination of the barrel 1, having the joint-leaf 16, provided with an axial nose adapted to receive the hub 10 and having the joint-leaf 17, provided with cam-shoulders 25 26, the frame 2, provided with the attached hub 10, around which the joint-leaf 16 revolves, the latch in said hub arranged to be moved in and out of the same by engagement with said cam-shoulders, arranged to act in opposite directions thereon, the annular lifter provided with the internal notch, 9, and arranged to revolve around said hub between the barrel joint-leaves 16 and 17, and the extractor actuated by said lifter, substantially as described.

5. The combination of the barrel 1, provided with a joint part, the frame 2, provided with an axis upon which said joint part revolves, the latch 19, located in said axis and arranged to be moved in and out of the same by contact with shoulders on the frame, the lifter 3, surrounding and inclosing the said latch within it, and having the internal notch, 9, to receive the same, the extractor actuated by said lifter, and an independent movable cam-surface connected with said joint of the frame and barrel, and arranged to be moved against said latch by hand and withdraw it into said axis at will, substantially as described.

6. The combination of the barrel 1, provided with joint-leaves 16 and 17, the latter being provided with the slot 24, and cam-shoulders 25 26 at opposite sides of said slot, the frame 2, provided with the axis on which the barrel part turns, the lifter 3, surrounding and turning upon and with said axis and provided with the notch 9, the extractor actuated by said lifter, and the latch mounted in said axis and arranged to move radially inward and outward therein, and having a projecting pin part, 28, reaching into said slot 24, made narrower than the breadth of said slot radially, whereby it is enabled to travel through the outer portion of the slot in one direction and the inner portion of it in the other direction when moved by said cam-shoulders, substantially as described.

7. The combination of the barrel 1, having the joint-leaves 16 17, the frame 2, having the joint-leaves 12 15 and the axis connecting these joint-leaves together, the annular lifter having the notch 9 on its internal edge, a latch mounted in the frame part and arranged to be engaged with and released from said internal notch by contact with shoulders on the barrel arranged to act in opposite directions thereon, and the extractor actuated by said lifter, substantially as described.

8. The combination of the barrel 1, having the joint-leaves 16 17, the frame 2, having the attached axis on which these leaves revolve, the latch 19, mounted in said axis and arranged to move in and out of the same by contact with shoulders on the barrel, the lifter mounted on said axis and provided with the internal notch, 9, to receive the latch, the extractor actuated by said lifter, and the revolving disk 27, provided with the cam-shoulder 31, adapted to be brought against said latch by revolving the disk, substantially as described.

9. The combination of the annular lifter 3, provided with the notch 9, its central pivot, 10, attached to the frame, provided with the latch 19, adapted to engage with said notch, the shoulders 25 26 upon the barrel, arranged to engage with said latch and act in opposite directions thereon and move it into or out of such engagement, and the extractor actuated by said lifter, substantially as described.

10. The combination of the annular lifter provided with the notch 9, its central pivot, 10, attached to the frame, provided with the latch 19, adapted to engage with said notch, the cam-shoulder 25 upon the barrel, arranged to engage with said latch and move it out of engagement with the lifter, and the extractor actuated by said lifter, substantially as described.

385,010. MUSIC-HOLDER. EDWARD W. ROBINSON, Portland, Me. Filed May 17, 1888. Serial No. 273,402. (No model.)



Claim.—In combination with the base *a*, the two slides *c d*, arranged so as to approach and touch each other when moved in one direction and to open when moved in the opposite direction by means of the slots *e*, cut in said slides at an angle, as described, and the pins *f*, set in the base *a*, the whole to operate as herein set forth.

385,011. BOTTLE-CLOSURE. WILLIAM ROGERS, Chicago, Ill. Filed May 8, 1888. Serial No. 273,265. (No model.)



Claim.—1. In combination with a bottle, a closure comprising a lid, a band fitting around the neck of the bottle, and an integral portion extending upwardly from the band, having its upper end passed through a hole in the lid and bent or turned over inwardly in contact with the upper part of the bottle-neck, whereby it is prevented from straightening or pulling out, substantially as described.

2. In combination with a bottle, a closure comprising a lid having a thumb-piece for holding it in position and opening it upwardly, a band fitting around the neck of the bottle, and an integral portion extending upwardly from the band, having its upper end passed through a hole in the lid and bent or turned over inwardly in contact with the upper part of the bottle-neck, whereby it is prevented from straightening or pulling out, substantially as described.

3. In combination with a bottle, a closure comprising a lid having a thumb-piece for holding it in position and opening it upwardly, a band fitting around the neck of the bottle, and an integral portion extending upwardly from the band, having its upper end passed through a hole in the lid and bent or turned over inwardly and passed downwardly between the band and the bottle-neck, whereby it is prevented from straightening or pulling out, substantially as described.

385,012. STAIRWAY. TIMOTHY ROGERS, Keokuk, assignor, by direct and mesne assignments, to the Rogers Frame Company, Springfield, Ohio. Filed Jan. 13, 1888. Serial No. 260,961. (No model.)

Claim.—1. In a stairway, the combination, with risers having vertical passages and vertical ways, and braces having horizontal and vertical portions and vertical passages, the vertical portions fitting said ways, of treads fitted beneath one riser and above the other and between the horizontal portions of the braces, and bolts fitted to the passages in the risers and the braces and arranged to bind the parts together.

2. In a stairway, the combination, with cast-metal risers having vertical passages and front and rear ways at each end, and cast-metal braces having vertical passages at their ends and horizontal portions, of cast-metal treads having grooves on the under side to receive the horizontal portions of the braces and fitted upon one riser and beneath the next riser, and bolts fitted to said passages and arranged to bind the parts together.

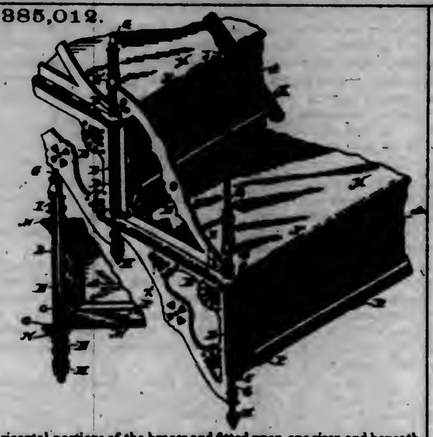
3. In a stairway, the combination, with risers having a vertical passage at each end and vertical front and rear ways, and braces having coincident passages and vertical and horizontal portions, the former portions fitted to said ways, of treads fitted upon one riser and beneath the other and between said braces, and shouldered rods fitted to said passages and having binding-nuts extended upward to form rounds, and railings secured thereto.

4. In a stairway, the combination, with the risers and treads, of separate blocks grooved in their upper surfaces to receive the lower edges of the risers and fitted between the latter and the treads, upper braces, and separate strips grooved to receive the lower portions of said braces and fitted between the braces and the treads, and fastening devices which secure the parts together.

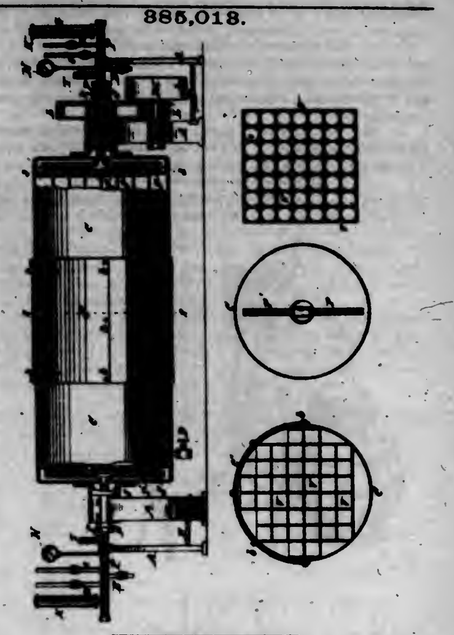
5. In a stairway, the combination, with the risers and the treads, of separate blocks fitted between the risers and treads and constructed to engage one of them to prevent accidental dislodgment of the blocks, upper braces, and separate strips fitted between the braces and the treads and constructed to engage one of them to prevent the accidental dislodgment of the strips, whereby the vertical measurement of the risers is increased and a stairway whose risers and treads are of predetermined sizes is made adjustable in length to fit a location somewhat longer than said stairway, and fastening devices which secure the risers, treads, and braces together, with the blocks and strips intervening, as aforesaid.

6. In a stairway, a cast-metal riser having a vertical passage at each end thereof and vertical ways at the front and rear sides of each end, substantially as described.

385,012.

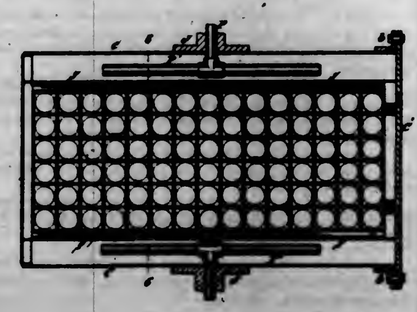


385,013.

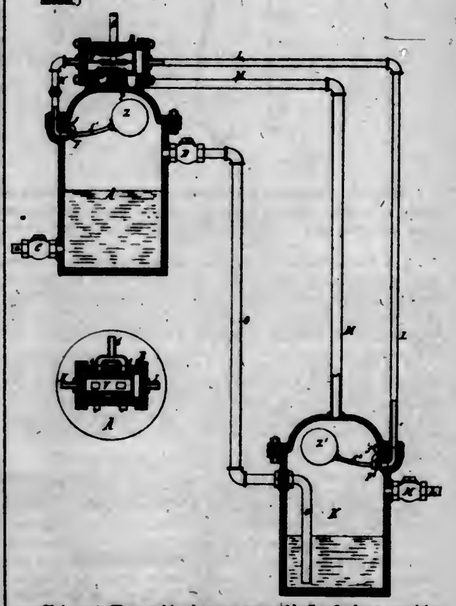


385,013. MILK-PRESERVING MACHINE. GEORGE ROTH, Highland, Ill. Filed Oct. 15, 1887. Serial No. 252,503. (No model.)

Claim.—In a milk-preserving machine, the combination of the revolving cylinder C, provided with hollow journals, pipes P, passing through the ends of the cylinder, perforated pipes P', secured to the inner ends of pipes P and forming angles therewith, crates V, rigidly secured within the cylinder C, and screens S, located between the perforated pipes and crates, substantially as described.



385,014. STEAM-TRAP AND BOILER-FEEDER. WILLIAM SIMPSON, Richmond, Va. Filed Sept. 2, 1887. Serial No. 248,573. (No model.)



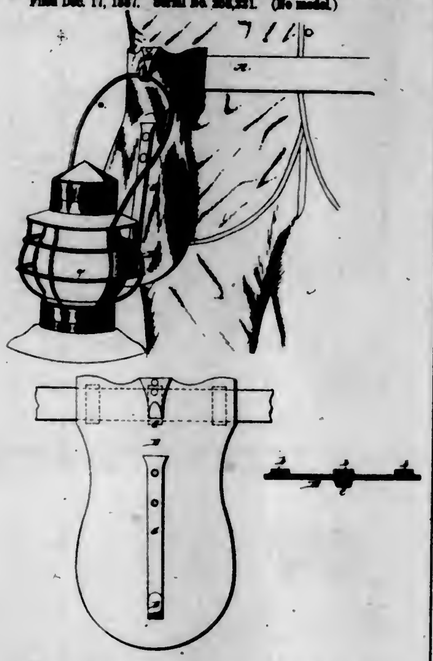
Claim.—1. The combined steam-trap and boiler-feeder, comprising in its construction a steam-chest on the receiver, having passages which place it in communication with the return drip-chamber, receiver, and steam-generator, and a hollow sliding piston-valve, V, which is wholly within the steam-chest and is constructed with passages v v^2 v^3, said valve being moved in said chest and serving itself to control the flow of live and exhaust steam by moving back and forth by reason of a

change alternately of the steam-pressure at its respective ends to atmospheric pressure, substantially as and for the purpose described.

2. The combination of the valve-chamber B, having ports P T U and sliding piston-valve V, the receiver A and drip-box K, a pipe, *c*, of a steam-boiler, and connections *i* L M N O S, and suitable valves, as P P', for operating with the same, substantially as and for the purpose described.

3. The valve-chamber B, having piston slide-valve V, in combination with the receiver A, drip-box K, float-valves P P', and pipes L N, substantially as for the purpose described.

385,015. LANTERN-SUPPORTER. CHARLES SMITH, Rogers, Ark. Filed Dec. 17, 1887. Serial No. 258,231. (No model.)



Claim.—1. A lantern-holder comprising a waistband, a shield connected at its upper edge to said band, and the spring-hooks at the upper and lower ends of the shield for supporting the lantern, as set forth.

2. A lantern-holder comprising a shield provided at its upper edge, on its rear side, with loops *b*, a waistband inserted through said loops transversely to the shield, a hook at the upper end of the shield on its front face, to engage the bail of the lantern, and a hook at the lower end of the shield to engage the guard of the lantern, as set forth.

3. A lantern-holder comprising a shield having loops *b* on its rear side, at its upper end, a waistband inserted transversely through the said loops, the hook at the upper end of the shield to engage the bail of a lantern, and the hook at the lower end of the shield to engage the guard of a lantern, the said hook having a long shank secured to the shield to stiffen the same, as set forth.

385,016. MARINE SIGNAL. WILLIAM G. SPIESS, New York, N. Y., assignor of one-half to Sydney H. Carney, same place. Filed July 26, 1887. Serial No. 245,202. (No model.)



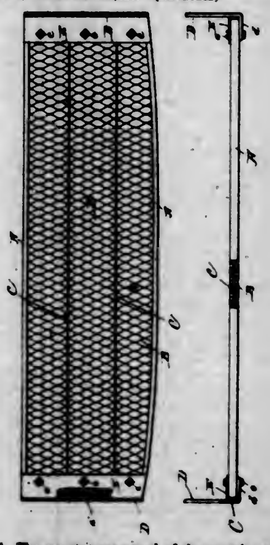
Claim.—1. The improved system for marine signals for ships and stations at sea, consisting of the said ships or stations, each provided with a sound-transmitter and a sound-receiver, the same being a bell or other metallic sounder adapted for being suspended at great depth and producing sounds under water, and a receiving-tube extending under water and having an approved funnel-shaped receiving-mouth thereunder therefor, and an ear-nozzle above—the one for transmitting sound to and the other for receiving sounds from another ship or station—substantially as described.

2. The improved system of marine signals for ships and stations at sea, consisting of the said ships or stations, each provided with a sound-transmitter and a sound-receiver, the same being a bell or other metallic sounder adapted for suspending at great depth and producing sounds under water, a receiving-tube extending under water—the one for transmitting sound to and the other for receiving sounds from another ship or station—and a call-signal or electric sounder connected with the receiver, substantially as described.

3. The combination, in a marine-signal apparatus, of a metallic sounder or bell adapted to be sounded under water from one ship or station, a receiving-tube in another ship or station, having an approved funnel-shaped receiving-mouth extending under water, and an ear-nozzle on the upper terminal, and also having a sound-transmitting diaphragm, said diaphragm being located above the water, substantially as described.

4. The combination, in marine-signal apparatus, of a metallic sounder or bell adapted to be sounded under water from one ship or station, a receiving-tube in another ship or station, having an approved funnel-shaped receiving-mouth extending under water, and an ear-nozzle on the upper terminal above the water, and also having a sound-transmitting diaphragm, also located above the water, and a call-signal, as an electric sounder, adapted to be set in action by the effect of the sound-waves on the diaphragm of the receiver, substantially as described.

385,017. CAR-STEP. FRANK H. STAFWOOD, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,129. (No model.)



Claim.—1. The car-step composed of zigzag strips of sheet metal placed edge upward and side by side, transverse strengthening-rods, and a surrounding frame, in combination with hangers, substantially as specified.

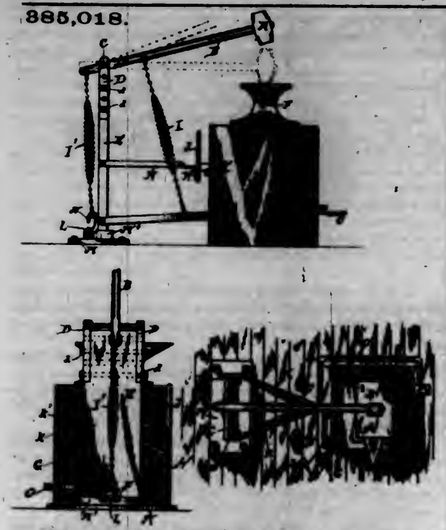
2. The car-step composed of zigzag strips of sheet metal placed edge upward and side by side with their angles abutting, as described, and a suitable surrounding frame, in combination with hangers for suspending the step from the car, substantially as specified.

3. The combination of the strips B B, bent and positioned as described, the rods C, the frame A, and plates E, with the hangers D, substantially as specified.

4. The combination, with the reticulated step-body and its surrounding frame, of the plates E and hangers D, substantially as set forth.

385,018. SPRING-HAMMER FOR BLACKSMITHS. HENRY STEWART and WELLINGTON B. WINSALL, Longmont, Colo. Filed Apr. 30, 1888. Serial No. 272,391. (No model.)

385,018.



Claim.—1. The combination of the support, the hammer, the operating-lever for the hammer, the spring to throw up the hammer after the blow has been struck, and the spring-pitman, all substantially as described, and for the purpose set forth.

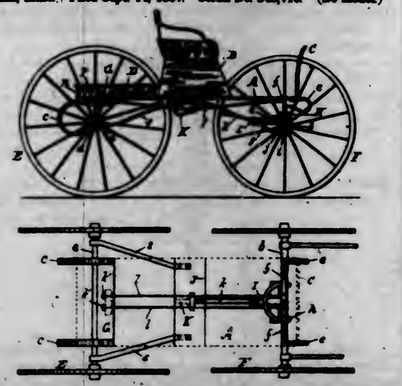
2. The combination of the hammer, the support therefor, its several connections with the floor, and means for adjusting the support so that the hammer may be thrown to strike on fuller or face of the anvil at will, as described.

3. The block M, the block M', swiveled therein, the standard or support E, secured in the block M' and carrying the hammer, the levers H and J, the block K K', and the foot-lever O, all in combination, substantially as described.

4. The combination of the standard E, carrying the hammer, the base-blocks M M', in which the standard is swiveled, the adjusting-lever H J, and the block K K', with the foot-lever O and the springs I I', all substantially as described, and for the purposes set forth.

5. The combination of a hammer, an adjustable support for the hammer, so that the hammer may be swung to deliver its blow at different points in a horizontal plane, a spring-pitman to operate said hammer, and a recoil-spring to throw up the hammer after each blow is given, substantially as described, and for the purposes set forth.

385,019. SPRING-VEHICLE. THOMAS L. SWEETSER, Framingham, Mass. Filed Sept. 14, 1887. Serial No. 249,714. (No model.)



Claim.—1. In vehicles, an elastic reach consisting of a buck-board and the springs whereby it is mounted on the axles, in combination with adjustable stay-rods which support said body and control its elasticity, substantially as set forth.

2. The combination of a buck-board and the vehicle-axles with springs, whereby said board is mounted on said axles, the axle stay-springs *j j k*, and the rod *l*, for regulating the elasticity of the buck-board, substantially as set forth.

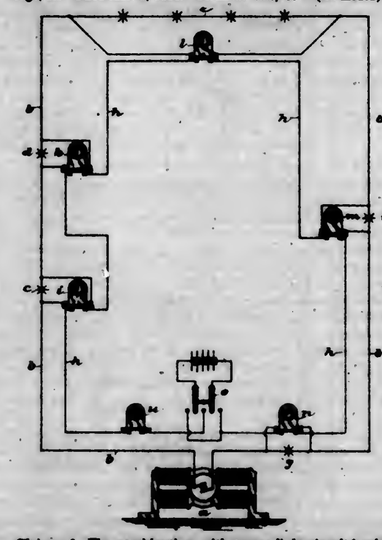
3. In a vehicle, the combination, with front axle, *b*, the axle stay-spring *k*, the transom-bar H, with its cross-spring *f*, and the parallel side springs, *e e*, secured to the opposite ends thereof, of the elastic body A, secured by its front end to said springs *e e*, the parallel springs *e e*, which are attached to its rear, and the diagonal stay-springs *e e*, substantially as specified.

4. In running-gear for vehicles, the combination, with an elastic reach composed of the floor A, of the vehicle mounted upon parallel springs *e e e e* and secured by the diagonal rear stay-springs, *e e*, and the front stay-spring, *k*, of the adjustable stay-rods *l l*, longitudinally disposed and co-operating with the spring-bridge K, substantially as stated.

5. In combination with an elastic body of a vehicle, a flexible-sided box, D, substantially as set forth, composed of the top frame, *m*, secured to the body by points *n n*, and the flexible material *p*, which composes its sides, secured to said body, whereby the latter is free to bend, as and for purposes specified.

6. In vehicles, the combination, with an elastic body suitably mounted and secured to the axles, of the adjustable stay-rods *l l*, secured at front and rear longitudinally beneath said body, and the spring-bridge K, located midway of said body and co-operating with said stay-rods to control the elasticity of said body, as stated.

385,020. ELECTRIC-LIGHT SYSTEM. BERNARD E. SUNNY, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,183. (No model.)



Claim.—1. The combination, with an arc-light circuit having the lamps thereon distributed at different stations, of an independent circuit containing individual electro-magnetic circuit-changing devices, said devices being distributed at different stations, a polarized electro-magnetic switch device connected with each individual electro-magnetic circuit-changing device, and included in a shunt-wire around a particular lamp or lamps, and a battery and pole-changing switch at the main station, whereby the lamp or lamps of any station may be brought into the arc circuit or disconnected therefrom, substantially as described.

2. The combination, with an arc-light circuit, including lamps arranged in series, of an independent circuit connected with an electro-magnetic circuit-opening mechanism at a particular station, a shunt-circuit around the lamp or lamps of said station, including the armature of an electro-magnetic switch, the electro-magnets of said electro-magnetic switch device being included in said independent circuit, a shunt-wire, *w*, normally closed around said coils, said shunt-wire being open at a particular period of time during the movement of the electro-magnetic circuit-opening mechanism, and the switch and battery at a central station, whereby the electro-magnetic switch may be operated when said shunt-wire is opened, as described.

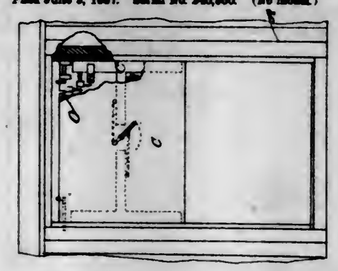
3. The combination, with an electric-light circuit including lamps placed at different subscribers' stations, of an individual electric circuit extending from the central office through a circuit-opening mechanism placed at each of the different stations, and polarized electro-magnetic switch devices, one placed in connection with the shunt-

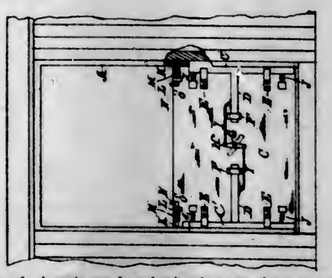
wire around the lamp or lamps of each station and the individual circuit-opening mechanism of said station, and a battery and pole-changing switch at the central station, whereby during the simultaneous operation of the various individual circuit-opening devices the lamp or lamps of any station may be brought into circuit or disconnected therefrom, substantially as described.

4. The combination, with a circuit including an individual circuit-opening mechanism, of means for throwing current of opposite polarities thereon, and an electro-magnetic switch included in said circuit and a shunt-circuit around the electric arc-lamp which is opened or closed by said electro-magnetic switch accordingly as current of one polarity or the other is sent to line.

5. The combination, with a circuit including an individual circuit-opening mechanism, of means for throwing current of opposite polarities thereon, and an electro-magnetic switch included in said circuit, and a shunt-circuit around an electric illuminating device included in the electric-light circuit, said shunt-circuit being opened by the electro-magnetic switch when current of one polarity is sent over the independent circuit, and closed thereby when current is sent in the opposite direction over said independent circuit, substantially as and for the purpose specified.

385,021. GRAIN-CAR DOOR. ABRAHAM R. TAYLOR, Cincinnati, Ohio. Filed June 9, 1887. Serial No. 240,800. (No model.)





Claim.—1. A grain-car door having between the interior and exterior faces a pair of movable cleats, arms D, rods I, and cross-arm H, for operating said cleats, combined with a grooved frame for receiving the cleats and springs for holding said strips or cleats in a normal position, substantially as and for the purposes set forth.

2. In a removable car-door, the combination of the interior and exterior faces provided with vertical movable cleats adapted to be forced into and withdrawn from grooves in the door-frame by means of the arms D, rods I, and cross-arm H, with pivoted hinges Q, and suitable staples or pins on the door-frame to receive the eyes of said hinges, whereby the door may be swung around against the inside of the car, substantially as shown and described.

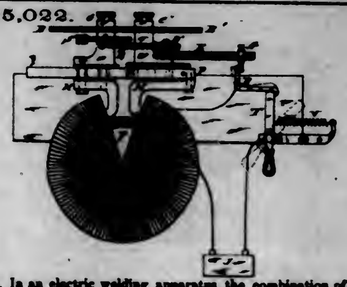
3. In a car-door, C, sliding between the frame-jambs and having notches O, provided at its upper end with sliding bolts K, secured in suitable keepers, L, and having extensions N and coiled springs M on each, whereby said bolts can be used to lock the door and as pivots when the door is swung up against the car-roof.

385,022. APPARATUS FOR ELECTRIC WELDING. ELIHU THOMSON, Lynn, assignor to the Thomson Electric Welding Company, Boston, Mass. Filed July 25, 1887. Serial No. 245,126. (No model.)

Claim.—1. In an electric welding apparatus, the combination, with a movable clamp, of mechanism controlled thereby to cut off the welding-current at a predetermined point, as and for the purpose described.

2. In an electric welding apparatus, the combination of clamps for holding the pieces to be welded, and mechanism controlled by the movement of one or both of the clamps to cut off the welding-current at a predetermined point, substantially as specified.

385,022.



3. In an electric welding apparatus, the combination of clamps for holding the pieces to be welded and adjustable cut-off mechanism controlled thereby to cut off the welding-current at a predetermined point, substantially as specified.

4. In an electric welding apparatus, the combination of clamps for holding the pieces to be welded and conveying the current therethrough and an adjustable cut-off mechanism actuated thereby for cutting off the welding-current from said clamps at a predetermined point, substantially as specified.

5. In an electric welding apparatus, the combination of a movable slide, a clamp mounted thereon, an adjustable stop or equivalent device mounted on said slide, and circuit-controlling devices actuated by said adjustable stop to cut off the welding-current at a predetermined point, substantially as specified.

6. In an electric welding apparatus, the combination of a movable slide, a clamp mounted thereon, an adjustable stop mounted on said slide, a detent actuated by said stop to open a switch to cut off the welding-current at a predetermined point, substantially as specified.

7. In an electric welding apparatus, the combination, with a movable clamp or clamps, of a switch-actuating device controlled thereby for cutting off the welding-current at a predetermined point.

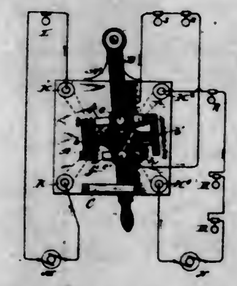
8. In an electric welding apparatus, the combination of a movable clamp or clamps, switching mechanism for cutting off the welding-current, and switch-actuating mechanism controlled by said movable clamp to actuate the switch at a predetermined point.

9. In an electric welding apparatus, the combination of a fixed clamp, a sliding piece moving toward and away from said clamp, a clamp mounted on said slide, and a spring or equivalent device tending to force said clamps together, substantially as specified.

10. In an electric welding apparatus, the combination of a fixed clamp, a sliding piece, a clamp located thereon, a spring tending to force said clamps together, and means for adjusting the tension of said spring, substantially as described.

11. In an electric welding apparatus, the combination of a movable clamp, mechanism controlled thereby for cutting off the welding-current at a predetermined point, and means for varying the amount of current fed to the apparatus, substantially as described.

385,023. ELECTRIC SWITCH. PATRICK J. TRACY, Easton, Wis. Filed Mar. 23, 1887. Renewed May 17, 1888. Serial No. 274,197. (No model.)



Claim.—1. The combination, with two electric generators, of a switch-board supporting the terminals of the generator-circuits, and a switch-arm carrying a bridge for each pair of terminals, and also conducting-strips which form the terminals of a loop-circuit containing translating devices, the arrangement of the parts being such that when one pair of terminals is bridged the other pair will be in contact with the conducting-strips, whereby the loop can be cut out of the circuit of one generator and into that of the other at will.

2. The combination, with the generators M and N, their circuits,

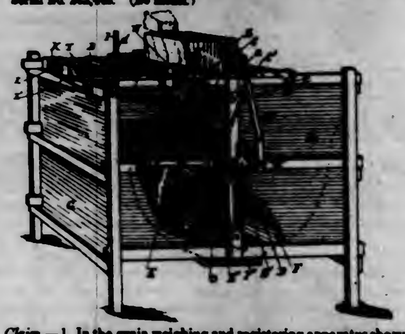
and the circuit-terminals *i i'* and *j j'*, of the switch-lever B, the loop-circuit connected therewith, the binding-posts *e e'*, the strips *f f'*, and bridges *d d'*, whereby the loop can be switched into and out of either circuit at will.

3. The combination, with a loop-circuit containing translating devices and a switch carrying the loop-terminals, of a cut-out, as *h h'*, for making a direct connection between the terminals, as set forth.

4. The combination, with a moving contact-terminal, of a cleaner or polisher located in the path of motion of the said terminal, the said cleaner being elastically supported, as and for the purpose set forth.

5. In an electric switch, the combination, with the switching-lever having bridge-pieces, as described, and a spring-supported cleat tending to force the lever toward contact-pieces, of contact-pieces provided with springs to force them toward the lever, whereby the contacts are continually pressed toward each other to insure good connections, substantially as described.

385,024. AUTOMATIC GRAIN WEIGHING AND REGISTERING APPARATUS. LE ROY C. TAYLOR, Marseilles, Ill. Filed Jan. 30, 1888. Serial No. 262,443. (No model.)



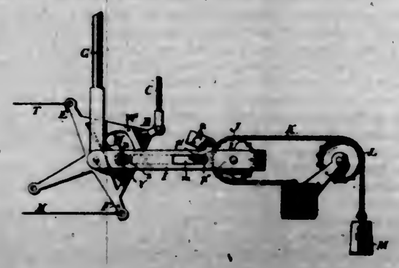
Claim.—1. In the grain weighing and registering apparatus shown and described, the combination of the oscillating buckets B E, shaft S, having the slotted arm D and crank-leg Z, connecting-rod D', having the friction-roller *a'*, scale-beam A, weight W, oscillating chute S, shaft C, having the arm C', and connecting-rod M', substantially as and for the purpose set forth.

2. In the grain weighing and registering apparatus shown and described, the combination of the oscillating buckets E E', shaft S', having the slotted arm D, connecting-rod D', having the friction-roller *a'*, scale-beam A, weight W, bell-crank B, having the gravity-latch *d*, and connecting-rod for connecting said bell-crank with a registering device, substantially as and for the purpose set forth.

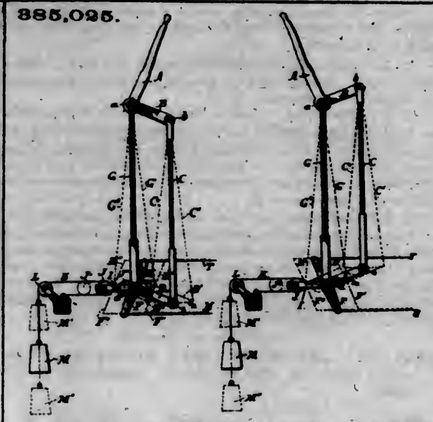
3. In the grain weighing and registering apparatus shown and described, the combination of the oscillating buckets E E', a grain-chute connected therewith and adapted to oscillate alternately to conduct grain to either bucket, and a scale-beam adapted to be overcome by the weight of the grain in a bucket, substantially as and for the purpose set forth.

4. In a grain weighing and registering apparatus, in combination with the oscillating buckets E E', and oscillating chute S, connected therewith and adapted to operate simultaneously in a reverse direction therefrom, the scale-beam A, and the mechanism, substantially as set forth, for connecting said beam and buckets, wherein the grain passing through said apparatus is automatically weighed, substantially as specified.

385,025. SIGNAL-COMPENSATOR. JAMES J. TURNER, Richmond, Ind., assignor to himself and John F. Miller, same place. Filed Jan. 24, 1888. Serial No. 261,610. (No model.)



385,025.



Claim.—1. In a compensator, the combination of a pivoted operating-lever, rods of equal length suspended, respectively, from the pivot and the extremity of one arm of said lever, a double-bell-crank lever having its central arm of equal length to the arm of the operating-lever, from which the rods depend, said bell-crank being suspended centrally on the rod depending from the pivot of the operating-lever and at the end of its central arm on the other rod, a weight arranged to connect with the center of the bell-crank and pull it in the direction opposite to that of its attached connections, and parallel signal-connections attached to the outer arms of the bell-crank.

2. In a compensator, the combination of a pivoted operating-lever, rods of equal length suspended, respectively, from the pivot and the extremity of one arm of said lever, a double-bell-crank lever having its central arm of equal length to the arm of the operating-lever, from which the rods depend, said bell-crank being suspended centrally on the rod depending from the pivot of the operating-lever and at the end of its central arm on the other rod, a strap pivoted at the center of the bell-crank lever and forming bearings for a pulley, a ratchet-wheel secured on one side of said pulley, a pawl arranged to engage the ratchet-wheel and secured to a connecting device, whereby said pawl will be engaged with and disengaged from the ratchet-wheel, according to the position of the bell-crank lever, a weight arranged to draw on the bell-crank by means of a cord passing over the pulley aforesaid, and signal-connections attached to the outer arms of the bell-crank and running in a direction opposite to the pull of the weight.

3. In a compensator, the combination of a pivoted operating-lever, rods of equal length suspended, respectively, from the pivot and the extremity of one arm of said lever, a double-bell-crank lever having its central arm of equal length to the arm of the operating-lever, from which the rods depend, said bell-crank being suspended centrally on the rod depending from the pivot of the operating-lever and at the end of its central arm on the other rod, a strap pivoted at the center of the bell-crank lever and forming bearings for a sprocket-pulley, a ratchet-wheel secured on one side of said pulley, a pawl arranged to engage the ratchet-wheel and secured to a connecting device, whereby said pawl will be engaged with and disengaged from the ratchet-wheel, according to the position of the bell-crank lever, a sprocket-chain passing over the sprocket-pulley, a weight attached to said chain, and parallel signal-connections attached to the outer arms of the bell-crank lever and extending in a direction opposite to the pull of the weight.

385,026. WINDING-ROLL FOR WINDING PAPER AND OTHER FABRICS. JOHN WALDRON, New Brunswick, N. J. Filed July 30, 1887. Serial No. 245,474. (No model.)



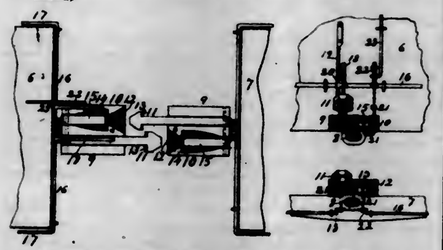
Claim.—1. The combination, to form a winding-roll, of a shaft, a slitted shell of elastic material, and a pair of spreading-heads, substantially as set forth.

2. The combination, to form a winding-roll, of a shaft, a slitted shell of elastic material, a pair of spreading-heads, and a fastening-pin, substantially as set forth.

3. The combination, to form a winding-roll, of a winding-shaft, two spreading-heads fitted for endwise movement upon said shaft and having oppositely-tapering faces, and a longitudinally-slitted shell of elastic material adapted to be diametrically expanded by forcing into it the tapering faces of the spreading-heads, and mounted upon the shaft, substantially as set forth.

4. The combination, to form a winding-roll, of a winding-shaft, two spreading-heads fitted for endwise movement upon said shaft and having oppositely-tapering faces, a longitudinally-slitted shell of elastic material adapted to be diametrically expanded by forcing into it the tapering faces of the spreading-heads, and mounted upon the shaft, and a fastening-pin applied to the heads and passing through the expanded slit of the shell, substantially as set forth.

385,027. CAR-COUPLING. JOHN R. WARD and JOHN A. FALCATTER, Huron, Dak. Filed Mar. 20, 1888. Serial No. 268,745. (No model.)



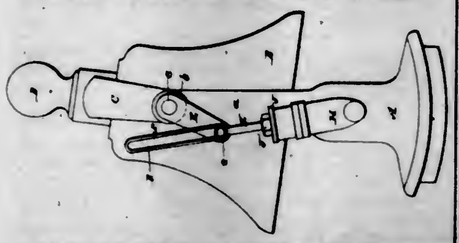
Claim.—The combination, in a car-coupling, of a draw-head provided with the box 10, having the slanting cheeks 12 and the shoulders 14 behind the cheeks, and the box 9 beside the box 10, the link 11, hung in the box 9 and having an arrow-shaped head with shoulders 13, adapted to engage the said shoulders 14 of the box 10, the lifting-bar 16, journaled across the end of the car and provided with levers or handles 17 at the sides of the car, and further provided with two arms, 18 and 22, the guard 15, journaled in the box 10, the lifter consisting of the rod 21, passing up through the bottom of the box 10 beneath the guard, and connections between the said rod and the arm 22 and between the said arm 18 and the link 11, substantially as shown and described.

385,028. ELECTROLYTE FOR GALVANIC BATTERIES. BLOOMFIELD J. WHEELOCK, New York, N. Y. Filed Oct. 26, 1887. Serial No. 253,056. (No specimens.)

Claim.—1. The herein-described composition of matter to be used in primary batteries, consisting of nitric acid, sulphuric acid, pure water, sal-ammoniac, bichromate of potash or bichromate of soda, and sulphate of iron, substantially as and for the purpose set forth.

2. The combination of carbon and zinc elements with a composition of matter consisting of nitric acid, sulphuric acid, pure water, sal-ammoniac, bichromate of potash or bichromate of soda, and sulphate of iron, substantially as described, and for the purpose set forth.

385,029. BELL-RINGING MECHANISM. JOHN S. WHITE, Logansport, Ind. Filed Oct. 12, 1887. Serial No. 252,161. (No model.)



Claim.—1. In a bell-ringer, the combination, with a base or support and a bell journaled thereon and provided with a crank, of an oscillating cylinder, a piston therein, and a rigid piston-rod having a sliding connection with the crank, substantially as set forth.

2. In a bell-ringer, the combination, with a base and a bell journaled thereon and provided with a crank, of an oscillating engine, the two pistons therein loosely connected together, and the rigid piston-rod having a sliding connection with the crank, substantially as set forth.

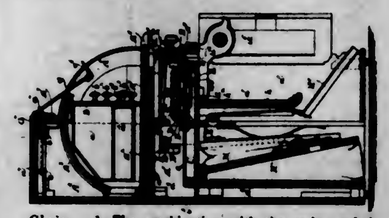
3. The combination, with a bell journaled on a suitable standard, of an oscillating engine having large and small cylinders and large and small pistons, the large piston having a hollow bore and a hollow plug therein, and the latter having a stem adapted to enter the large piston to be held therein, and a supply-duct leading into the smaller cylinder at a point between the large and small pistons, and a rigid piston-rod attached to the larger piston, and having a sliding connection with the bell-crank, substantially as set forth.

385,030. PINCHERS. WILLIAM R. WHITE, Lynn, Mass., assignor of one-half to Joseph M. Rosado, same place. Filed Mar. 12, 1888. Serial No. 266,954. (No model.)



Claim.—A pair of pinchers having a broad flat-faced projection upon one of the jaws thereof, which projection is provided with a central screw-threaded socket, combined with a removable disk provided with a cylindrical shank fitted to said socket, so that the inner face of said disk is in close contact with the face of said projection.

385,031. COMBINED DESK AND ORGAN. OLE R. WICK and GEORGE C. WICK, Humboldt Park, Ill. Filed Apr. 5, 1887. Serial No. 233,703. (No model.)



Claim.—1. The combination, with the casing and the keys of an organ, of a rigid horizontal sliding top located over and adapted to cover the keys and to form a desk-top when drawn forward, and a separate vertically-sliding panel at the front of the case, adapted to be lifted for closing the space in front of the keys and beneath the sliding top when the latter is in its forward position, and to be lowered to expose the keys when the top is thrust backward, substantially as described.

2. The combination, with an organ mechanism embracing keys and stop-valves, of a casing provided with a horizontal sliding top adapted to be drawn forward over the keys and thrust backwardly to uncover the said keys, a series of organ-stops located in the casing above the level of the sliding top at either side of the same, and operative connections joining the said stops with the stop-valves, substantially as described.

3. The combination, with an organ mechanism, of a casing provided with a horizontal top, the front part of which is adapted to be opened and closed for uncovering the keys of the organ, a shallow chamber, A^2, located in the top part of the casing beneath the said horizontal top and containing the main operative parts of the organ mechanism, receptacles A^0 A^1, occupying the side portions of the casing beneath the said chamber A^2, and a central chamber, A^4, containing the bellows of the organ, substantially as described.

4. The combination, with an organ mechanism embracing keys and stop-valves, of a casing having a flat horizontal sliding top, a shallow chamber, A^2, containing the main parts of the organ mechanism, located beneath said horizontal top, a hood located above the level of the horizontal top, a series of stops supported in the hood above and at either side of the horizontal top, and connecting devices between the said stops and the stop-valves, substantially as described.

5. The combination, with a casing provided with a horizontally-movable or sliding top, of an organ mechanism embracing stop-valves located beneath said sliding top, a series of stops located one above another at one side of and above the level of said sliding top, and vertical connections extending from the said stops downwardly to the stop-valves.

6. The combination, with the stop-valves of an organ, of a vertical sliding rod or wire, as L, connected with the stop-valve and provided with transverse parts or surfaces, as *l l*, formed by a series of reversed right-angled bends in the wire, and stop-draws located one above another and provided with inclined edges or surfaces engaging said transverse parts or surfaces of the rod, substantially as described.

7. The combination, with the stop-valves of an organ, of a vertical sliding rod or wire, as L, connected with said stop-valve and provided with two or more transverse parts or surfaces *l l*, formed by a series of reversed right-angled bends in the wire, and stop-draws located one above another and provided with inclined parts or surfaces acting upon said transverse parts *l l* of the rod, one of said parts or inclined surfaces being constructed to move the rod a greater distance than the other one, substantially as described.

8. The combination, with the stop-valves of an organ, of two or more vertical sliding rods, L L', provided with a series of right-angled bends forming transverse parts *l l* l^1 l^1, connected with and actuating the said stop-valves, stops acting upon the parts *l l* l^1 l^1 of said rods, a rock-shaft provided with a crank-arm engaging transverse parts l^1 l^1 of said rods for moving both of them at once, and means connected with and actuating said rock-shaft, substantially as described.

9. The combination, with the stop-valves of an organ and a series of stops located one above another above the level of the stop-valves, of two or more vertical sliding rods, as L L', connected with said stop-valves and provided with transverse parts or surfaces, as l^1 l^1, a rock-shaft provided with a crank-arm engaging the said transverse parts or surfaces of the rods, and means for actuating said rock-shaft, substantially as described.

10. The combination, with an organ frame or casing and stop-valves, of two or more vertical rods, as L L', located at each end of the organ for actuating the said rods, said rods being provided with transverse parts or surfaces, as l^1 l^1, stops connected with and actuating said rods, rock-shafts provided with crank-arms engaging the transverse parts of said rods, a rod, N, connected with and actuating both rock-shafts, and a knee-lever connected with and actuating said rod N, substantially as described.

11. The combination, with an organ-casing provided with a horizontally-sliding top located over the keys and with a vertically-sliding panel located at the front of the keys, beneath and adjacent to the said top for closing the space at the front of the keys, of means connecting the said top and panel, whereby the latter will be raised to close the casing when the top is drawn forward and lowered to open the casing when the top is thrust back, substantially as described.

12. The combination, with the organ-casing, the sliding top A', and sliding panel A^1, of a lever pivoted to the casing and engaged with the sliding panel, and pins or projections upon the sliding top engaging said lever, substantially as described.

13. The combination, with the organ-casing provided with a horizontal sliding top and an organ mechanism located beneath the top, of a stationary wall or panel, a^{10}, located beneath the said sliding top, substantially as described.

14. The combination, with an organ-casing provided with a top or hood, A^3, of a music-rack, O, and a horizontally-sliding support, O', hinged to the rack and fitted to slide in a recess in the upper part of said hood, substantially as described.

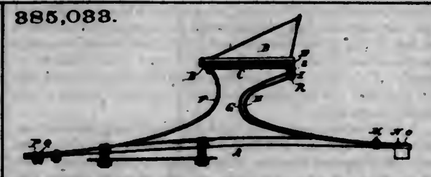
15. The combination, with an organ mechanism, of a casing therefor consisting of a main part or body provided with a sliding top, A', and with a hood, A^3, above said top, organ-stops located in the said hood, and a cylinder or rolling cover, A^3, located to close the front opening of the hood, substantially as described.

385,032. FIRE-CRACKER HOLDER. AMBROSE WILLIS, Troy, N. Y., assignor of one-half to Theodore D. Robinson, same place. Filed Apr. 19, 1888. Serial No. 271,150. (No model.)



Claim.—A fire-cracker holder consisting of a body provided with a cylindrical perforation therein, a conical breech perforation at one end, and a touch-hole axially in the rear of said perforation, the size of said hole being such as to be closed by the fuse of a fire-cracker, substantially as and for the purpose described.

385,033. SPRING-SEAT FOR VEHICLES. LEWIS WARREN, Mo-Grawville, N. Y. Filed July 9, 1887. Serial No. 243,988. (No model.)



Claim.—1. In a spring-seat of a side-bar vehicle, the combination of the seat or seat-frame, the front springs—serving as springs and supports—made of spring-bars of wood or metal, the hind springs made of two or more separate metal springs, suitably shackled or pivoted to the seat or seat-frame and fastened or attached at their rear ends to the side bars, so as to be in contact at said rear ends, but separating at a suitable point at or above the side bars, and the side bars of the vehicle, substantially as shown and described, for the purposes hereinbefore set forth.

2. In a side-bar vehicle, the combination, with the seat and side bars, of the front and rear springs, each composed of two leaves secured at different points to shackles attached to the seat and to the side bars by means of suitable clips, substantially as specified.

385,034. ELECTRO-MOTIVE RAILWAY. GRANVILLE T. WOODS, Cincinnati, Ohio, assignor to the Woods Electric Company, same place. Filed Aug. 23, 1888. Serial No. 311,662. (No model.)



Claim.—1. The combination, in an electric railway, of an outgoing and incoming conductor constituting a closed metallic circuit, the outgoing conductor being divided into two branches and having resistances interposed in opposite branches at successive intervals, normally-closed switches connecting said branches at the generator side of said resistances, adapted to be opened automatically by the passage of the motor-contacts, and locomotives forming traveling contact-bridges between the two branches of the outgoing conductor in the intervals of such resistances, and operated by the excess of current passing from the branch of greater to the branch of lesser resistance, substantially as set forth.

2. In an electro-motive railway, a closed metallic circuit, the outgoing portion of which consists of two continuous parallel branches in sections or blocks having resistances interposed in opposite branches at successive block-junctions, and a normally-closed switch connecting opposite branches at the beginning of each block, in combination with locomotives forming traveling contact-bridges between said branches, and means, substantially as described, for causing the locomotive-contacts to open said switches automatically in succession, thereby alternating the resistances of the branches and shunting the excess of current from one to the other, substantially as and for the purpose set forth.

3. The combination, in an electro-motive railway, of a double outgoing conducting-path in parallel branches of the same polarity, but of unequal resistances, arranged in successive blocks, and electric motors having traveling contacts electrically bridging said branches and in series with each other upon successive blocks, and normally-closed switches connecting the branches at the generator side of said resistances, adapted to be automatically opened by the passage of the motor-contacts, substantially as set forth.

4. The combination, in an electro-motive railway, of an outgoing conducting-path composed of two parallel branches having resistances interposed alternately at predetermined intervals in said branches, with electrically-operative normally-closed switches controlled by

magnets connecting said branches in the intervals between said resistances, said switches being in normally-open loop-circuits formed in each case by one of said branches, and a third independent conductor adjacent to and parallel therewith, and adapted to be closed by an extension of the locomotive traveling contact bridging between said third conductor and its adjacent branch of the main conductor, substantially as set forth.

5. In an electro-motive railway, a double outgoing electrical conducting-path of the same polarity divided into blocks of predetermined length, the respective branches of said conductor crossing each other at the junctions of successive blocks, so as to be out of contact with the motor-brushes, and provided alternately with high resistances at said crossings, and normally-closed switches controlled by the motor-contacts connecting the opposite branches, substantially as set forth.

6. The combination, in an electric railway, of a conductor-conduit constructed and arranged as described, two parallel outgoing conductor-branches secured therein in sheltered positions beneath the overhanging roof-sides, and a return-conductor arranged at or near the bottom of the conduit, substantially as set forth.

7. The combination, in an electric railway, of the motor-supporting rails and an open-slotted conduit parallel therewith upon or in the roadway, two bared parallel conductors within said conduit, adapted to maintain sliding contact with the traveling motor-brushes, said conductors being insulated from each other and from other conductors (such as return-conductors) and the conduit and conduit and carrying electric currents in the same direction, and a third conductor within said conduit arranged as a common return to complete a continuous metallic circuit with the first-mentioned conductors, substantially as set forth.

8. In an electro-motive railway, in combination with the two branches of a divided current-conductor, a connecting-shunt and a magnet for operating the same in a normally-open loop-circuit with one of said branches, a portion of which said loop-circuit is formed by a conductor laid parallel with said main conductor-branch, so as to be temporarily closed by the traveling contact-brush of the electro-motor, substantially as set forth.

9. In combination with an electro-motive railway such as described, a connecting-railway or "side track" having an electrical conducting-path constructed and arranged in the same manner—that is to say, with an outgoing conductor divided into two parallel continuous branches of the same polarity and a return-conductor, said outgoing and return conductor being looped into one branch of the outgoing conductor of the main line, substantially as set forth.

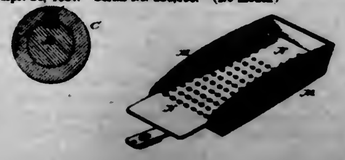
10. In combination with an electro-motive railway having an outgoing conducting-path in two parallel continuous branches of the same polarity and arranged in successive blocks, as described, whereby locomotives upon a block are in series with those of another block, a side track or connecting-railway having a similarly-arranged conducting-path and locomotives upon one of its blocks in series with those upon other blocks, substantially as set forth.

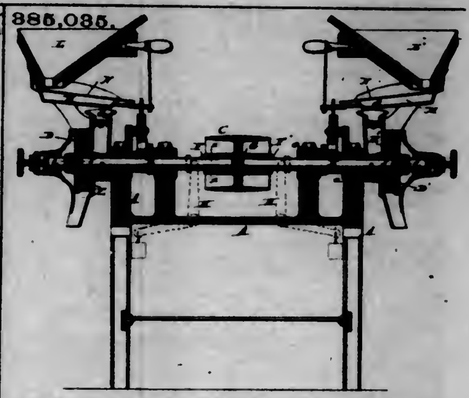
11. In combination with an electro-motive railway having an outgoing conducting-path in two parallel continuous branches of the same polarity, arranged in successive blocks, as described, whereby locomotives upon a block are in series with those of another block, a side track or connecting-railway electrically connected with the main line by means of a switch and similarly arranged, whereby electric motors upon the several blocks of the side track are in series with those upon other blocks of the same and with those of the main line, substantially as set forth.

12. In combination with an electric railway having an outgoing conducting-path composed of two members of the same polarity, a side track or branch looped into said main outgoing conductor, one side of said loop being the branch outgoing conductor and the other or return side of said loop being composed of two parallel branches of unequal resistances, and motors on said side track provided with brushes bridging said return branches of the loop, substantially as set forth.

13. An electric railway having a conducting-path such as described, combined with a side track or branch railway having a conducting-path looped in the main outgoing conductor, an independent generator interposed in the outgoing side of said loop, and a double or "two-way" switch, arranged substantially as and for the purpose set forth.

385,035. GRINDING-MILL. MILO J. ALTHOUSE, Waupun, Wis. Filed Apr. 26, 1887. Serial No. 236,193. (No model.)

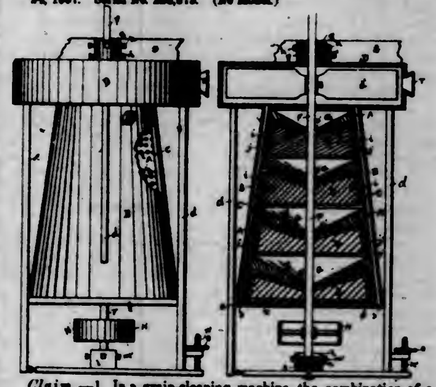




Claim.—1. In a double grinding-mill, and in combination with the divided shaft provided with grinding-disks at its ends, the driving-pulley having the sliding connection with one or both parts of the shaft, and the spring or its described equivalent acting to urge the two portions of the shaft apart.

2. In a double grinding-mill, the transversely-divided shaft, the intermediate spring, and the driving-pulley encircling the ends of both shaft-connections and coupled thereto by a sliding connection, substantially as described.

385,036. GRAIN-CLEANER. JOSEPH S. ASH, Canal Winchester, Ohio, assignor of one-half to Charles B. Crowe, same place. Filed Feb. 24, 1887. Serial No. 228,679. (No model.)



Claim.—1. In a grain-cleaning machine, the combination of a series of revolving concave disks, *b*, having removable rubbing-surfaces on their upper sides and brushes on their peripheries, with the conical case A, having dust-perforations, and stationary concave disks between each pair of brush-covered concave disks, and having rubbing-surfaces on their under sides, substantially as and for the purposes specified.

2. The combination of a series of concave disks, *a*, having rubbing-surfaces on their under side, and a series of revolving concave disks, *b*, having rubbing-surfaces on their upper sides and brushes on their peripheries, with the outer conical case, B, having perforations *p* in the base thereof, and the inner conical perforated case, A, having horizontal corrugations *j* therein between the rows of perforations, substantially as and for the purposes described.

385,037. DUST-COLLECTOR. JOSEPH S. ASH, Canal Winchester, Ohio, assignor of one-half to Charles B. Crowe, same place. Filed June 10, 1887. Serial No. 240,892. (No model.)

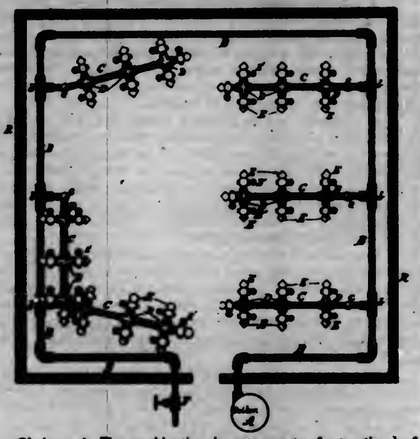


Claim.—1. In a dust-collector, the combination of a cylindrical box having a conical bottom and an opening, *c'*, in the bottom thereof, a top plate, *c*, having a central vertical pipe, *d*, therein and an opening, *h*, on one side of said pipe, an interior wall forming an annular chamber, *d*, around said central pipe, and a lateral inlet-spout, *b*, leading into said annular chamber, the outer wall of said chamber having vertical slots, and a curved slotted damper held against said wall and controlled substantially as described.

2. In a dust-collector, the combination of a cylindrical box having a conical bottom and an opening, *c'*, in the bottom thereof, a top plate, *c*, having a central vertical pipe, *d*, therein, an interior wall forming an annular chamber, *d*, around said central pipe, and a lateral inlet-spout, *b*, leading into said annular chamber, the outer wall of said chamber having vertical slots and inwardly-projecting wings *g*, and a curved slotted damper held against said wall, substantially as described.

3. A dust-collector consisting of a cylindrical box having a top plate, a conical bottom, a central vertical pipe therein, an interior wall forming an annular chamber, *d*, around said central pipe, and a lateral inlet-spout leading into said cylindrical box and into said chamber *d*, the outer walls of said chamber *d* having vertical slots, and a curved slotted damper loosely held against said wall and provided with arms projecting through curved slots in said top plate for actuating said damper.

385,038. APPARATUS FOR TREATING LEAF-TOBACCO. GEO. W. BROOKS, Mahaska, N. C. Filed Apr. 4, 1888. Serial No. 269,594. (No model.)



Claim.—1. The combination, in an apparatus for treating leaf-tobacco, with a steam-boiler and a closed room, of a main line of pipe from said boiler extending around the room adjacent the walls thereof, made in sections, a series of branch pipes projecting laterally from and hinged or jointed to said main pipe, and a series of steam-distributers projecting laterally from said branches, substantially as described, for the purposes specified.

2. The combination, in an apparatus for treating leaf-tobacco, with the boiler A, of the main line of pipe B B, a series of short pipes, C, extending laterally from the main pipe B and having a hinged connection therewith, and a series of distributers, E, extending laterally from the branch pipes C and supplied with cocks or spigots F, substantially as described, for the purposes specified.

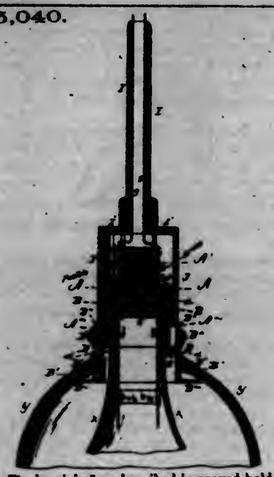
3. In an apparatus for treating leaf-tobacco, the distributers E, having cocks or spigots F, formed with a perforated nozzle, *e*, having an interior cup-shaped recess, *e'*, and water-outlet *e''*, substantially as described, for the purposes specified.

385,039. HOLDER FOR INCANDESCENT LAMPS. WILLIAM A. CAREY, Malden, Mass. Filed Aug. 26, 1887. Serial No. 247,843. (No model.)

Claim.—1. In an incandescent-lamp holder, the core consisting of the central cylindrical portion, A, the upper portion, A', provided with the opposite parallel flat sides A'', and the lower ball-shaped portion, A''', provided with suitable perforations for the passage of the wire from the filament, said core being constructed in a single piece, substantially as and for the purpose set forth.

2. The combination of the core A A', tube B B', provided with the shoulder B'', case J, independent of the means whereby the lamp-holder is suspended and free to move vertically on said core and tube, and annular base I, substantially as and for the purpose described.

385,040.



3. The hereinbefore-described improved holder or socket for incandescent lamps, consisting, essentially, of the core A A' A''', provided with the flattened sides A'', the bar E and fusible bar H, screws *e f*, tube I and base I', tube B B', provided with the shoulder B'', flange B''', and spiral groove C, the shade-clamp D, provided with the flange D', serrated portion D'', and guides *d*, and the case J, substantially as and for the purpose described.

385,040. LUBRICATOR. WILLIAM A. CAREY, Malden, Mass. Filed Sept. 6, 1887. Serial No. 249,092. (No model.)



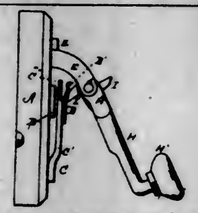
Claim.—1. In a lubricator, the combination, with a reservoir and a valve held normally therein on its seat, of the reservoir-cover C, provided with the central depression, C', surrounding the perforation C'', said depression being provided on its bottom with the perpendicular radial teats or beads *d*, and the cap H, provided on its under side with the radial grooves *h*, of less depth than the thickness of said teats or beads, and the radial grooves *k*, of as great as or greater depth than said teats or beads, said cap being adapted by rotation to raise said valve-stem and allow the lubricant to escape from the reservoir, substantially as and for the purpose set forth.

2. The combination of the reservoir, consisting of the base A, provided with the passage *a*, tube E, and passage E', sides B and cover C, provided with the tube D, depression C', perforation C'', and teats *d d*, the tubular cap H H', provided on its under side with the radial grooves *h h k k*, the two former being of less depth, and the two latter of as great or greater depth than the thickness of said teats, and the tubular valve-stem I, held normally down upon its seat, so as to close said passage *a*, and provided with the perforations *e e*, said valve-stem being held by a check-nut, so as to move with the said cap as the latter rotates and rises, substantially as and for the purpose described.

385,041. SWITCH FOR ELECTRICAL PURPOSES. WILLIAM A. CAREY, Malden, Mass. Filed Sept. 10, 1887. Serial No. 249,314. (No model.)

Claim.—1. In an electrical switch, the combination, with a spring adapted by pressure to close the circuit of the frame K, wheel I, pivotally mounted therein, and whose teeth are provided with rounded or beveled ends, as shown, and bifurcated actuating-lever H, longitudinally chambered out at A, and provided with the spring-bolt K,

385,041.

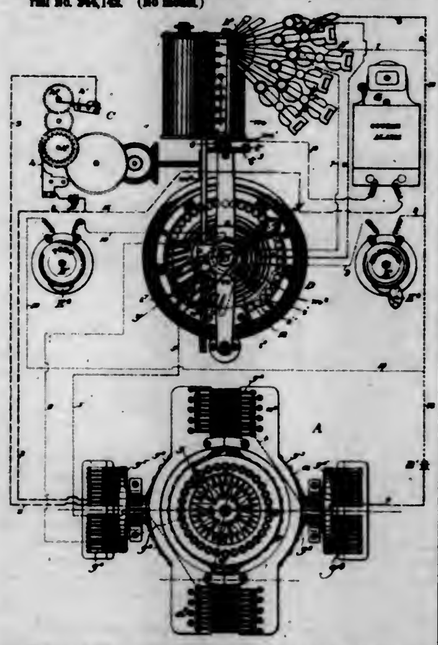


whereby said wheel is locked and released, substantially as and for the purpose described.

2. In an electrical switch, the combination of the base A, plate B, spring C C' C', supplemental spring D, provided with the groove D', and lever H, pivotally secured to a frame and provided with the ratchet-wheel I for engaging said spring D, substantially as and for the purpose described.

3. The combination of the base A, plate B, spring C C' C', supplemental spring D, provided with the groove D', bifurcated frame E, pin or shaft E', ratchet-wheel I, bifurcated lever H, bolt K, and spring L, substantially as and for the purpose set forth.

385,042. MARINER'S RECORDING-COMPASS. HENRY A. CHASE, Stoneham, Mass. Filed July 10, 1886. Renewed July 13, 1887. Serial No. 244,142. (No model.)



Claim.—1. The combination of a movable needle or pointer with a series of electric circuits having terminals in different positions within the range of movement of said needle or pointer, and a circuit-controlling device movable with the said needle or pointer and having an independent movement affecting the said circuits, the circuit at any time affected thus indicating the position of the needle or pointer at that moment, substantially as described.

2. A movable needle or pointer and series of electric circuits having terminals in different positions with relation to said needle or pointer, combined with a circuit-controlling device co-operating with the said circuit-terminals, having a movement corresponding with that of the needle or pointer, and a signaling-instrument connected in circuit with one or more of said terminals, whereby if the needle or pointer and circuit-controlling device move to a predetermined position the said signaling-instrument will be operated, but not otherwise, substantially as described.

3. A movable needle or pointer and series of electric circuits having terminals in different positions with relation to said needle or pointer, combined with a circuit-controlling device co-operating with the said circuit-terminals having a movement corresponding with that of the needle or pointer, and recording-instruments in one more of said circuits, whereby a record may be made of the position of the needle or pointer, substantially as described.

4. A movable needle or pointer and series of electric circuits having terminals in different positions with relation to said needle or pointer, combined with a circuit-controlling device co-operating with the said circuit-terminals, having a movement corresponding with that of the needle or pointer, and a series of recording-instruments and circuit-connecting device or switch-board by which said instruments are connected in circuit with any desired series of the said circuit-terminals co-operating with the controlling device governed by the needle or pointer, substantially as described.

5. A movable needle or pointer and series of electric circuits having terminals in different positions with relation to said needle or pointer, combined with a circuit-controlling device co-operating with the said circuit-terminals having a movement corresponding with that of the needle or pointer, and a series of recording-instruments and circuit-connecting device or switch-board, by which said instruments are connected in circuit with any desired series of the said circuit-terminals, and a recording-surface having a uniform or time movement, and connecting mechanism between the said recording-surface and the switch-board, whereby the position of the former relative to the recording-instruments is varied to correspond with the particular series of circuit-terminals at any time connected with the said recording-instruments, substantially as described.

6. A mariner's compass having a compass-box and pivotally-supported rings, constituting a gimbal-joint therefor, combined with a series of circuit-terminals connected with the inner ring or compass-box, concentric with the axis of oscillation of the said needle, and conductors from said terminals passing from the inner ring to the outer ring and from the latter to the surrounding frame-work at the joints of said rings, substantially as described.

7. A mariner's compass having a compass-box and pivotally-supported rings, constituting a gimbal-joint therefor, combined with a series of circuit-terminals connected with the inner ring or compass-box concentric with the axis of oscillation of the said needle, and a series of contact-pieces connected with the said terminals and concentric with the axis of the supported member of the joint, and a series of contact-springs co-operating therewith on the supporting member of the joint, substantially as described.

8. In a mariner's compass, a compass-box provided with a vessel containing a liquid surrounding the needle-pivot, a needle, its pivot, and an annular float surrounding the said pivot and resting in the said liquid, combined with a circuit-controlling device having its position controlled by the said needle, and with a lifting device and actuating electro-magnet or solenoid therefor, to operate substantially as described.

9. The compass-needle having a free pivotal or angular movement, combined with a circuit-controlling device moved angularly with the needle, and means to move the said device in the direction of the axis of the angular movement of the needle, substantially as described.

10. The compass-needle having a free pivotal or angular movement, and a circuit-controlling device having its position controlled by the said needle, combined with a lifting device and actuating electro-magnet or solenoid therefor, having its axis coincident with that of the needle, substantially as and for the purpose described.

11. A movable needle or pointer and series of electric circuits having terminals in different positions with relation to said needle or pointer, combined with a circuit-controlling device co-operating with the said circuit-terminals, having a movement corresponding with that of the needle or pointer, and two independent signaling-instruments connected in circuit, each with one or more of the circuit-terminals at either side of the normal position of the needle, whereby deviation or apparent movement of the needle in each direction is indicated independently, substantially as described.

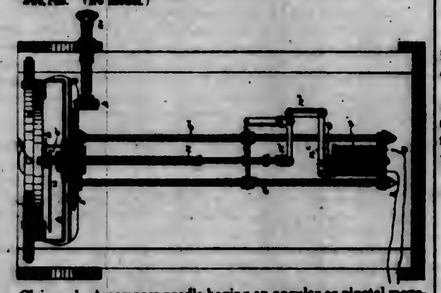
12. A movable needle or pointer and series of electric circuits having terminals in different positions with relation to said needle or pointer, combined with a circuit-controlling device co-operating with the said circuit-terminals, having a movement corresponding with that of the needle or pointer and a series of recording-instruments, and a circuit-connecting device or switch-board, by which said instruments are connected in circuit with any desired series of the said circuit-terminals, and a recording-surface having a uniform or time movement, and connecting mechanism between the said recording-surface and the switch-board, whereby the position of the former relative to the recording-instruments is varied to correspond with the particular series of circuit-terminals at any time connected with the said recording-instrument, and a clock or time-motor actuating the same, and a circuit-closer moved by said motor adapted to be set to operate at the end of any desired interval of time, and a signaling-instrument controlled thereby, substantially as described.

13. A movable needle or pointer and series of electric circuits having terminals in different positions with relation to said needle or pointer, combined with a circuit-controlling device co-operating with the said circuit-terminals, having a movement corresponding with that of the needle or pointer, and recording-instruments in one or more said circuits, whereby a record may be made of the position of the needle or pointer, and two independent signaling-instruments connected in circuit, each with one or more of the circuit-terminals at either side of those connected with the recording-instruments, whereby deviations of the circuits connected with the recording-instruments will be indicated, substantially as described.

14. A recording apparatus comprising a series of recording or marking instruments, and a recording-surface having a slow-timed movement with relation to the said instruments, and a shifting movement, by which different portions of its surface co-operate with the said instruments at different times, combined with shifting mechanism for changing the position of the said recording-surface, and a circuit-controlling device co-operating with the said indicating-instruments, and shifting mechanism, which prevents the indicating-instruments from being operated while the shifting mechanism is being moved, substantially as and for the purpose set forth.

15. A needle or pointer and an electric circuit and circuit-controlling device therefor, having a movement corresponding with the directive movement of the pointer, combined with an electro-magnet and clock or time-train controlling the circuit thereof, the said magnet being energized during definite intervals of time and moving the circuit-controlling device and locking the needle against movement by the directive influence acting on it, substantially as described.

385,043. ELECTRIC ALARM COMPASS. HENRY A. CHASE, Newton, Mass. Filed Feb. 16, 1886. Renewed July 13, 1887. Serial No. 244,143. (No model.)



Claim.—1. A compass-needle having an angular or pivotal movement, and electrical actuating mechanism for moving the said needle bodily in the direction of the axis of the pivot, and an electric circuit controlled by the said needle, substantially as described.

2. The combination of the pivoted needle of a mariner's compass with an electric circuit having terminals co-operating with the said needle, and a shield movable with relation to the compass-box or supporting frame-work of the said needle, the said shield, when in line with the needle, preventing the latter from affecting the said circuit, substantially as and for the purpose described.

3. A pivoted compass-needle and actuating mechanism for moving the needle-pivot, combined with an electric circuit under control of the said needle, and a mechanical motor or clock controlling the movement of the needle-pivot, substantially as described.

4. A compass-needle and supporting-ring therefor, constituting the terminals of an electric circuit, combined with an angularly-movable shield interposed between the said ring and needle, and mechanism for moving the said needle bodily toward the said ring, substantially as described.

5. A compass-needle having an angular and bodily movement and electric circuit controlled thereby, itself controlling the operation of a signal, combined with a clock or motor controlling the bodily movement of the said needle and also controlling the signal, substantially as described.

6. A compass-needle having a movable pivot, combined with a gimbal-joint support for the said needle, forming part of an electric circuit controlled thereby, a non-conducting shield, and mechanism for moving the said needle-pivot, whereby it is caused to close the circuit except when it coincides in position with the said shield, substantially as described.

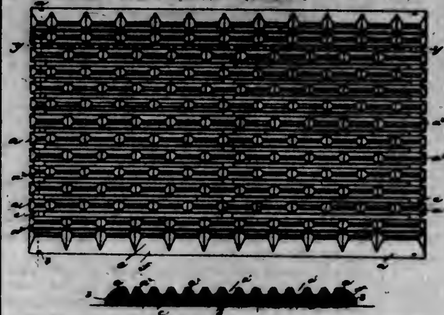
7. The combination, with a pivoted magnetic needle, of circuit-terminals consisting of rings, the plane of which is parallel with the plane of movement of the said needle, which, when moved bodily into contact with the said rings, affords electrical connection between them, substantially as described.

8. The needle and circuit-terminals co-operating therewith, combined with the movable shield and actuating mechanism for the said shield normally disengaged therefrom, substantially as described.

9. A compass-needle having an angular or pivotal movement, and actuating mechanism for moving the said needle bodily in the direction of the axis of the pivot, and a mechanical motor or clock controlling the said bodily movement of the needle, as and for the purpose set forth.

10. A compass-needle having an angular and bodily movement, and electric circuit controlled thereby, itself controlling the operation of a signal, combined with a clock or motor controlling the bodily movement of the said needle, substantially as described.

385,044. DOOR-MAT. Andrew M. Colby, Chicago, Ill. Filed Feb. 2, 1888. Serial No. 262,712. (No model.)



Claim.—1. A mat formed of strips provided with cross-cuts forming elevations and depressions, the strips being spaced and flexibly connected together, substantially as and for the purpose set forth.

2. As an improved article of manufacture, a mat consisting of wooden strips provided with cross-cuts forming elevations and depressions on the surface of the mat at suitable distances, the strips being flexibly connected together by wire and separated by collars on said wire, substantially as and for the purpose set forth.

385,045. SHOE-TONGUE FASTENING. CHARLES F. CROSWELL, Portland, Oreg. Filed Oct. 6, 1887. Serial No. 251,563. (No model.)



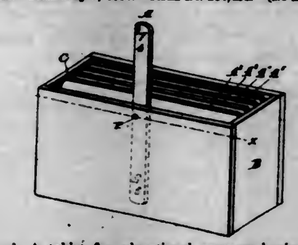
Claim.—1. In a boot, shoe, leggin, or similar article, the combination, with a flap having an eyelet, of a tongue having a hook adapted to project through the eyelet, and a lacing whereby the tongue is retained in place by the lacing engaging with the hook above the eyelet, substantially as described.

2. The combination, with a shoe having eyelets, as described, of a shoe-tongue having hooks adapted to project through the eyelets, and a shoe-lacing whereby the tongue is held in place and the shoe laced up, substantially as hereinbefore set forth.

3. In a shoe, the combination of the strip A, the tongue C, secured thereto, the strip B, hook *c*, eyelet *d*, and lacing-string, substantially as described.

4. The combination of a shoe having the strip A, strip B, tongue C, hooks *c c c' c'*, eyelets *f f d' d'*, and lacing-string, substantially as set forth.

385,046. EDUCATIONAL APPARATUS. JAMES DURHAM, South Bend, Ind. Filed July 8, 1886. Serial No. 207,483. (No model.)



Claim.—1. A tablet for educational purposes having upon its faces various educational devices, such as figures or letters or color, large enough to be seen by the pupils, and smaller devices, words, letters, or figures on each side that will show what is exposed on the other side, substantially as described.

2. A tablet for educational purposes having on each side various combinations of large figures or devices and smaller guide figures or devices identical with the figures or devices exposed on the other side, as and for the purpose described.

3. A tablet for educational purposes having a large device on one side and an indicating or guide device on the other that will show what is on the other side.

4. A tablet for educational purposes having a large device on one side and an indicating or guide device or word on the other that will show what the large device is.

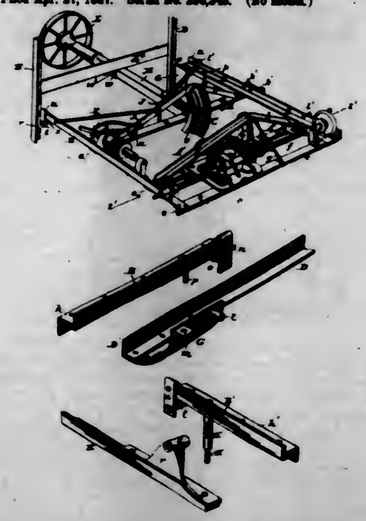
5. A tablet for educational purposes having one or more sets of devices or figures on each side and indicating devices, words, or figures to show what is on the opposite side.

6. A series of tablets revolving on a common axis and provided with means, such as interlocking blocks or lugs, whereby when one tablet is turned out of sight the face of the next succeeding one is brought to view.

7. A series of tablets mounted upon a common axis and provided with interlocking blocks or lugs, substantially as and for the purpose described.

8. The combination of a box, a series of vertically-revolving tablets, and a friction-surface for engaging the ends of said tablets as they pass, substantially as and for the purpose set forth.

385,047. HARVESTER. GEORGE RUSSELL, Whitewater, Wis. Filed Apr. 27, 1887. Serial No. 236,343. (No model.)



Claim.—1. In a harvester, a metallic main-wheel frame consisting of the front and rear cross-bars, B B', and the two trusses A A', each of the latter consisting of the bottom member, *a*, riveted at its ends to the cross-bars, and the angular top member, *b*, riveted at its ends to the bottom member.

2. In a metallic wheel-frame for a harvester, the cross-bars B B', of L shape in cross-section, in combination with the two side bars, *a*, of T shape in cross-section, riveted at their ends to the under side of the cross-bars, the heel bars *b*, of L shape in cross-section, riveted at their ends to the upper faces of the side bars, and the rack-plates connecting the bars *a b*, as shown.

3. In a wheel-frame for a harvester, the combination of the trusses A A', substantially as described, the cross-bars B B' attached thereto and extended on the stubble side, as shown, and the bar *c*, attached to their extended ends, substantially as described, whereby a firm support for the shaft-bearings is secured.

4. In a metallic wheel-frame for a harvester, the combination of the side trusses, A A', the front and rear cross-bars, B B', of angular shape in cross-section, secured rigidly to the ends of and extended grainward beyond the trusses, the re-enforcing bars *h h'*, of L shape in cross-section, riveted to the overhanging ends of the bars B B', their horizontal flanges being applied on top of the horizontal flanges of the bars B B', and their vertical flanges extended downward, as shown.

5. In a wheel-frame for a harvester, the combination of the side trusses, A A', the cross-bars B B', attached thereto and extended stubbleward beyond the truss A', the bar *c*, secured to the extended ends of the cross-bars parallel with the trusses, and the brace *g*, extended from the middle portion of bar *c* to the top of the truss A'.

6. In a harvester, the main-wheel frame having the bar B, of L shape in cross-section, projected at the grain side and provided with the re-enforcing bar *h* in the manner shown, in combination with the plate *n*, secured to bar B, the finger-bar D, the shoe-plate G, secured to the finger-bar, carved forward and upward therefrom and provided with an ear, *m*, the horizontal pivot-bolt *o*, extending through the shoe and the depending flange of plate *h*, and the removable bolt *p*, whereby the finger-bar may be secured rigidly in operative relation to the wheel-frame or permitted to assume a vertical position at will.

7. The main-wheel frame having the bar B', of L shape in cross-section, extended on the grain side, the re-enforcing bar *h'*, of L shape in cross-section, secured to the bar B', in the manner shown, and the depending plate *u*, also secured to the bar B', in combination with the rear platform-sill, the plate *r*, secured thereto, the horizontal pivot passing through said plate and through the plates *h'* and *u*, and the removable bolt H and sleeve I.

8. The improved hinge-joint for connecting a harvester main-wheel frame and platform-frame, consisting of a bar of L shape in cross-section extended grainward from the wheel-frame, a re-enforcing bar of an inverted-L shape in cross-section, as *h*, riveted to the horizontal portion of the first-named bar, with one flange extended downward below the same, a plate, as *n*, secured to and extending below the first-named bar, a plate or arm rising from the platform-frame and and inserted between the plates *h* and *n*, and a horizontal bolt passing through said plates and the intermediate arm.

9. In a harvester, the combination of the main-wheel frame, the platform-frame hinged to its grain side to turn vertically, the removable axle M, bearing beneath the inner end of the upturned platform-frame and upon the grain side of the wheel-frame, and the wheel L, applied to the grain end of said axle.

10. The main-wheel frame having the rack-plate C at its grain side, in combination with the main wheel in said frame, the vertically-folding platform hinged to the grain side of the wheel-frame, the grain-wheel, and the detachable axle M for said wheel, adapted to extend beneath the end of the upturned platform and provided at its stubble end with the plate *v* to engage the rack, and the plate *w* at its other end connecting the axle with the platform-frame, as shown, whereby the grain-wheel is held temporarily in position to support the grain side of the machine when the platform is folded to its upright position.

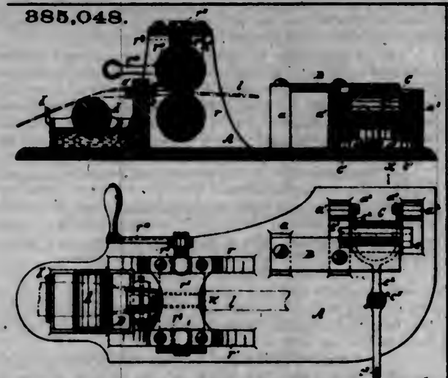
11. In combination with the main-wheel frame and the elevator-frame, substantially as described, the tongue hinged to the wheel-frame, the two vertical bars *x x*, angular in cross-section, secured to the wheel-frame and the elevator-frame, as described and shown, the tilting lever sustained by a pivot passing through the bars *x x*, and the connection from said lever to the tongue.

12. In a metallic main-wheel frame for a harvester, the trusses or side frames and the front and rear cross-bars, B B', projected grainward beyond the inner truss to sustain the platform-frame, in combination with the diagonal braces extending from the overhanging ends of the cross-bars stubbleward to the inner truss or side frame.

385,048. GIMP-MACHINE. GEORGE FARNHAM, Philadelphia, Pa. Filed Mar. 5, 1888. Serial No. 266,267. (No model.)

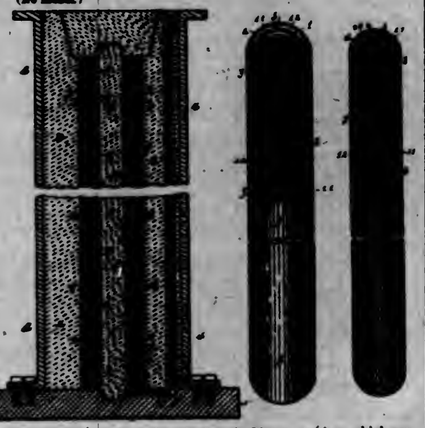
Claim.—A gimp-machine consisting of the leather-splitting device

385,048.



composed of the knife B, roller C, journal-frame *c'*, lever *c²*, adjusting-screw *c³*, and spring *c⁴*, and of a glue-receptacle, D, guide *d'*, roller *d*, former *e*, pressure-roller R, and ornamenting-roller R', all arranged substantially as and for the purposes set forth.

385,049. MANUFACTURE OF SHAFTS AND ORDNANCE. JOHN E. PLASKER, New York, N. Y. Filed May 25, 1887. Serial No. 239,378. (No model.)



Claim.—The method of producing shafting or tubing, which consists in casting steel around and between layers of wrought-metal tubing, then subjecting the ingot or tube thus formed to a rolling operation, substantially as described.

385,050. CLOTH-CUTTING MACHINE. GABRIEL J. W. GALSTER, New York, N. Y. Filed Oct. 27, 1887. Serial No. 253,512. (No model.)

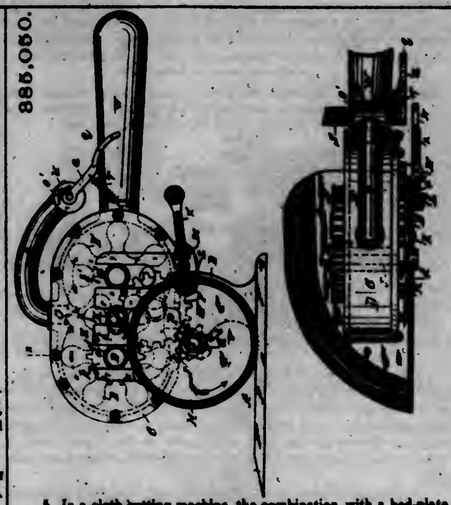
Claim.—1. In a cloth-cutting machine, the combination, with a bed-plate and a vertical standard rigidly connected together, of a rotary air or gas motor secured to the latter, a flexible supply-pipe, and a rotary knife driven by said motor and supported by said standard, as and for the purpose described.

2. In a cloth-cutting machine, the combination, with a bed-plate and a vertical standard rigidly connected together, of a rotary air or gas motor secured to the latter and provided with a handle, a flexible supply-pipe, a rotary knife driven by said motor and supported on said standard, and a supply-cock having a hand-hold in convenient proximity to said handle, as and for the purpose described.

3. In a cloth-cutting machine, the combination, with a bed-plate and a vertical standard, of a rotary air or gas motor secured to the latter, a flexible supply-pipe, a rotary knife driven by said motor, and a sharpening device attached to said motor, said sharpening device having a hand-hold in convenient proximity to the handle of the machine, as and for the purpose described.

4. In a cloth-cutting machine, the combination of a bed-plate, a vertical standard, an air-cylinder adjustably secured to said standard and provided with piston-wheels, a rotary cutter secured to a shaft journaled in said cylinder, and intermediate gearing supported by said cylinder, as and for the purpose described.

385,050.

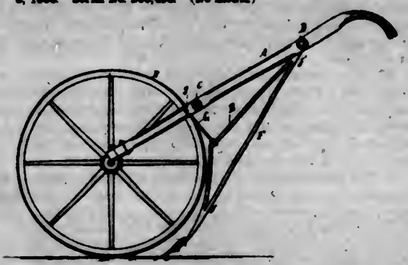


5. In a cloth-cutting machine, the combination, with a bed-plate and a vertical standard, of a rotary motor adjustably secured to the latter, a flexible supply-pipe, and a rotary knife driven by said motor, as and for the purpose described.

6. In a cloth-cutting machine, the combination, with a bed-plate and a vertical standard, of a rotary motor secured to the latter, a flexible supply-pipe, and a rotary knife driven by said motor and adjustably secured to said standard, as and for the purpose described.

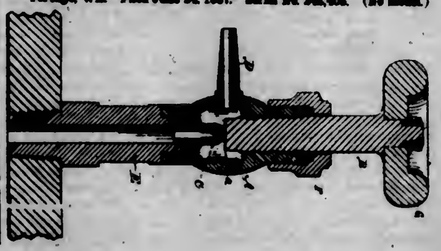
7. In a cloth-cutting machine, the combination, with a bed-plate and a vertical standard, of a rotary motor adjustably secured to the standard, and a rotary knife driven by said motor and adjustably secured to said standard, as and for the purpose described.

385,051. GARDEN-PLOW. WILLIAM H. HEARD, Jacksonville, Ark., assignor of one-half to Martin Josiah McHenry, same place. Filed Apr. 3, 1886. Serial No. 200,498. (No model.)



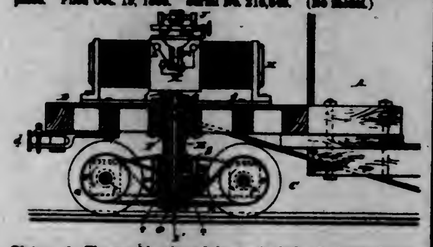
Claim.—The combination of the handles A, wheel B, elbow gram-rod G, eyebolt *e*, securing said gram-rod adjustably to a foot-bar, elbowed foot-bar E, bearing on its lower end a plow-point and having near its elbow the perforation *d'*, elongated at its front end and having its upper end pivotally secured to the cross-rod D, and brace-bar F, secured to foot-bar E, all substantially as shown and described, and for the purposes set forth.

385,052. GAGE-COCK. JOHN R. HODGE and WILLIAM M. DAVIS, Portage, Wis. Filed June 24, 1887. Serial No. 242,403. (No model.)



Claim.—In a gage-cock constructed as herein described, the combination of the removable steel cone-shaped-edged valve-seat C with the screw-stem B, of softer metal, as and for the purpose set forth.

385,053. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Filed Oct. 19, 1886. Serial No. 216,662. (No model.)



Claim.—1. The combination of the car-body having seats for passengers, with an operating-platform at its forward end and exterior to the car-body proper, a centrally-pivoted car-truck arranged under said platform and close to the forward end of the car, and an electric motor carried by the car to impart motion to the truck, having a rotating shaft and a connection between the motor-shaft and truck-axle.

2. The combination of the car-body having a platform at one end projecting beyond the car-body, a four-wheeled truck pivoted beneath the platform at a point between its four wheels, an electric motor to propel said truck, an electric circuit and current-controlling mechanism and a power-transmitting connection between the said motor and truck, whereby the truck may move freely without affecting the motor-connection with it.

3. The combination of the car-body having a platform at one end projecting beyond the car-body, a four-wheeled truck pivoted beneath the platform at a point between its four wheels, an electric motor to propel said truck, an electric circuit and current controlling mechanism, and a power-transmitting connection between the said motor and truck extending through the pivot-connection, whereby the truck may move freely without affecting the motor-connection with it.

4. The combination of the car-body with a motor-platform at its forward end, a truck pivoted to said car-body under the platform, an electric motor to propel said car supported upon said platform and having its shaft arranged vertically and extended down through the pivot or king-bolt of the truck, and a connection between said shaft and truck-axle.

5. The combination of the car-body with a motor-platform at its forward end, a truck pivoted to said car-body under the platform, an electric motor to propel said car supported upon said platform, having its shaft arranged vertically and extended down through the pivot or king-bolt of the truck, and a connection between said shaft and truck-axles, consisting of a sprocket-chain and sprocket-wheels.

6. The combination of the car-body with a motor-platform at its forward end, a truck pivoted to said car-body under the platform, an electric motor to propel said car supported upon said platform, having its shaft arranged vertically and extended down through the pivot or king-bolt of the truck, and a connection between said shaft and truck-axles, consisting of a sprocket-chain and sprocket-wheels and guide-wheel, the chain passing over the sprocket-wheels on the axles and around the sprocket-wheel on the shaft and under the guide-wheel.

7. The combination of the car-body with a motor-platform at its forward end, a truck pivoted to said car-body under the platform, an electric motor to propel said car supported upon said platform, having its shaft arranged vertically and extended down through the pivot or king-bolt of the truck, a flanged sprocket-wheel on the end of said shaft, a sprocket-wheel on the axle of the truck, and a chain passing about said sprocket-wheels.

8. The combination of a car-body supported on springs, a four-wheeled truck pivoted to said car-body between its four wheels, an electric motor carried by the car-body and movable vertically therewith, a source of electric supply, an electric circuit for the motor, a switch to control the motor, and a compensating connection between the said motor and truck-axle, extending through the pivot or king-bolt of the truck and between the four wheels, whereby the connection between the motor and axle is the same irrespective of the vertical movements of said car-body upon the truck, substantially as and for the purpose specified.

9. The combination of a car-body supported on springs, a four-wheeled truck pivoted to said car-body between the four wheels, an electric motor carried by the car-body and movable vertically therewith, and a compensating connection between the said motor and both truck-axles, whereby the connection between the motor and axle is the same irrespective of the vertical movements of said car-body upon the truck, substantially as and for the purpose specified.

10. The combination of a car-body having a forward platform supported on springs, a truck pivoted to said car-body under said platform, an electric motor carried by the car-body platform and movable vertically therewith, and a compensating connection between the said motor and truck-axle, whereby the connection between the motor and axle is the same irrespective of the vertical movements of said car-body upon the truck, substantially as and for the purpose specified.

11. The combination of the car-body having seats for passengers, having a motor-operating platform at its forward end and exterior to the car-body proper, a centrally-pivoted truck under said platform, an electric motor exterior to the car-body arranged immediately above said truck, in operative position from said platform, and a power-transmitting connection between the motor and truck-axle.

12. The combination of the car-body supported on springs, a truck pivoted to said car-body by a hollow king-bolt, an electric motor on said car-body having a vertical shaft extending through the hollow king-bolt, and a compensating power-transmitting connection from the lower part of said shaft to the truck-axle.

13. The combination of the car-body supported on springs, a truck pivoted to said car-body by a hollow king-bolt, an electric motor on said car-body having a vertical shaft extending through the hollow king-bolt, and a compensating power-transmitting connection from the lower part of said shaft to the truck-axle, consisting of, a sprocket-wheel rotating with said shaft, but independent of its vertical movements, a sprocket-wheel on the truck-axle, and a sprocket-chain passing about both sprocket-wheels.

14. The combination of the car-body supported on springs, a truck pivoted to said car-body by a hollow king-bolt, an electric motor on said car-body having a vertical shaft extending through the hollow king-bolt, and a compensating power-transmitting connection from the lower part of said shaft to the truck-axle, consisting of a sprocket-wheel rotating with said shaft, but independent of its vertical movements, a sprocket-wheel on the truck-axle, a sprocket-chain passing about both sprocket-wheels, and a pressure-wheel to keep the chain on the motor-shaft sprocket-wheel.

15. The combination of the passenger-car body arranged low down and close to the rails with the high forward platform, an electrically-propelled truck of greater height than the distance from the car-body to the rails arranged under said raised platform and pivoted thereto, an electric circuit carried by the car to supply electricity to the electrically-propelled truck, and means to control the flow of current in said circuit.

16. The combination of the passenger-car body arranged low down and close to the rails with the high forward platform, an electrically-propelled truck of greater height than the distance from the car-body to the rails arranged under said raised platform and pivoted thereto, a line-conductor arranged parallel with the railway, an electric circuit carried by the car, receiving electricity from said line-conductor, and adapted to supply electricity to the electrically-propelled truck, and means to control the flow of current in said circuit.

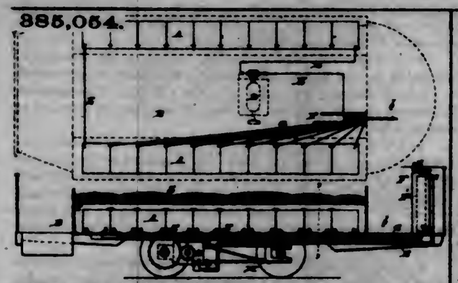
17. The combination of the car-body having provision for passengers and supported on springs, an electrically-propelled truck pivoted to said car-body, which it supports, an electric motor to propel the said truck, a direct mechanical power-transmitting connection between the motor and axle of the truck and arranged within the area of the truck, whereby the truck may freely move and the car-body rise and fall without affecting the motor-connection with the axle, a motor-circuit carried by the car and extending to the motor, and means to control the flow of current through said motor-circuit arranged upon the car-body.

18. The combination of a car-body having accommodations for passengers and a motor-operating platform at its forward end, a centrally-pivoted electrically-propelled truck arranged under said platform, an electric motor for propelling said truck arranged exterior to the car-body and above the truck-base and in operative position from said platform, a power-transmitting connection between the motor and axle of the truck, a source of electric supply, a motor-circuit carried by the car and connecting with the terminals of the motor, and means for regulating the motor within reach of the operator on said platform.

19. The combination of a car-body having a motor-operating platform at its forward end, an electrically-propelled truck pivoted under said platform, a source of electric supply, a motor-circuit carried by the car and supplying current to the motor, and regulating means on or at the platform for controlling the flow of current to the motor of the electrically-propelled truck.

385,054. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Jan. 23, 1888. Serial No. 261,622. (No model.)

Claim.—1. The combination of a car, an electric motor carried thereby to propel it, a number of removable battery-cells having exposed terminals on the car and adapted to be coupled in series connection, a motor-circuit including the motor and batteries and fixed to the car having exposed terminals adapted to contact with the battery-terminals when the cells are placed in position, and thus automatically couple up the battery with the motor-circuit, and a regulator to vary the number of battery-cells in series connection with the motor.

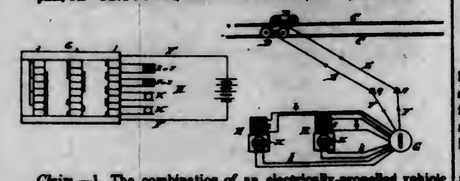


2. The combination of a car or vehicle, an electric motor carried thereby to propel it, a mechanical power-transmitting connection between the motor and axle, a number of removable battery-cells having exposed terminals on the car, a flexible motor-circuit including the motor and battery-cells looped so as to extend to the forward part of the car, and having exposed terminals adapted to contact with the battery-terminals when the cells are placed in position, and thus automatically couple up the battery with the motor-circuit, and a regulator arranged at the front of the car in the motor-circuit and in reach of the operator to vary the current flowing from the battery-cells through the motor.

3. The combination of a car, an electric motor to propel it, a series of removable battery-cells having exposed terminals on the car, circuits including the motor and battery fixed to the car having exposed terminals adapted to contact with the battery-terminals when the cells are placed in position, and thus automatically couple up the battery with the motor, and a regulating device having a single operating-handle within reach of the operator to modify the electrical connection between the battery-cells and motor by coupling them up in series or multiple connection or combinations of these.

4. The combination of a car or vehicle, an electric motor carried thereby to propel it, a number of removable battery-cells having exposed terminals on the car, a motor-circuit including the battery-cells and motor fixed to the car or vehicle, and having exposed terminals adapted to contact with the battery-terminals when the cells are placed in position, and thus automatically couple up the battery with the motor-circuit, and a regulator in the motor-circuit to vary the current flowing from the battery-cells through the motor.

385,055. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Feb. 24, 1888. Serial No. 265,174. (No model.)

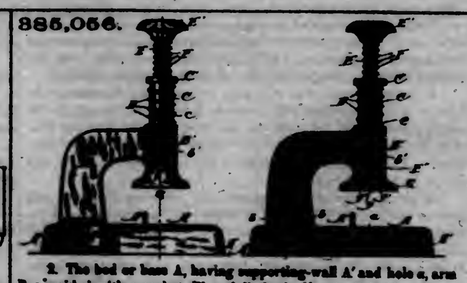


Claim.—1. The combination of an electrically-propelled vehicle having two electric motors, a source of electric supply, and switches for coupling up the motors in series or multiple with the source of supply to vary the speed or power of the motors.

2. The combination of supply-conductors arranged parallel to a railway and adapted to supply positive and negative current, a moving collecting device or contact for each conductor, an electrically-propelled car or train of cars, two or more motors on said car or train to propel it, circuits including all of the coils of the motors and connecting with the collecting devices by conductors, and a switch in said circuits to vary the internal resistance of the motors as a unity by coupling their coils, so as to vary the length of wire of the coils in circuit, and consequently the resistance.

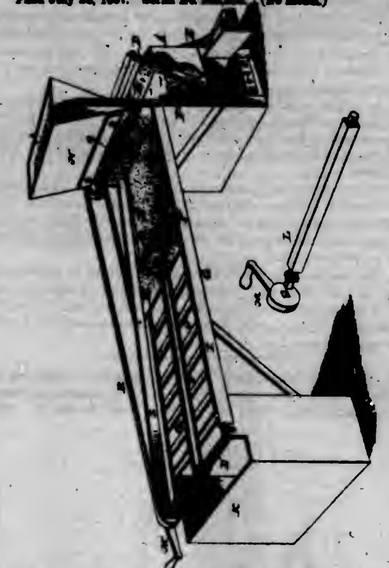
385,056. PAPER-PUNCH. JOHN C. JOHNSON, Chicago, Ill. Filed Jan. 7, 1888. Serial No. 259,101. (No model.)

Claim.—1. The tube C, having screwed thereto the head G, in combination with die rod B, carrying a perforating knife or blade, and springs D and F, of unequal strength, for automatically withdrawing the knife or blade after a perforation has been made, substantially as specified.



2. The bed or base A, having supporting-wall A' and hole a, arm B, provided with a socket, B', and limit-pin b', tube C, having slot c, and hobbing-head G, in combination with the rod B, having groove e and blade or knife E', and coiled springs D and F, of unequal strength, substantially as and for the purpose specified.

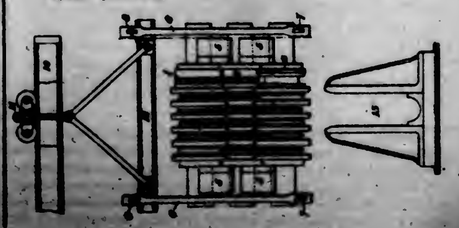
385,057. ROOFING FABRIC. ALEXANDER JOHNS, Boston, Mass. Filed July 23, 1887. Serial No. 244,606. (No model.)



Claim.—1. The herein-described roof-covering, consisting of a layer of felt, a layer of cotton fabric saturated with a mixture of rosin, shellac, litharge, rosin-oil, linseed-oil, and asphaltum, coated on both faces with sand, and a top dressing of mineral paint, linseed-oil, litharge, shellac, and zinc, or the described equivalents of these materials, in substantially the proportions above set forth.

2. The herein-described roofing material, consisting of woven fabric saturated with a mixture of rosin, shellac, litharge, rosin-oil, linseed-oil, and asphaltum, or their described equivalents, in substantially the proportions stated, and coated on both faces with sand or its equivalent.

385,058. APPARATUS FOR REMOVING AND SETTING ROLLS. WILLIAM R. JOHNS, Braddock, Pa. Filed Apr. 10, 1886. Serial No. 270,282. (No model.)



Claim.—1. An improvement in apparatus for removing or setting rolls from of in their housings, which consists in lifting-stirrups adapted to engage the lower roll and to suspend the same together with the roll or rolls above, substantially as and for the purposes described.

2. An improvement in apparatus for removing or setting rolls from or in their housings, which consists in lifting-stirrups adapted to engage the necks of the lower roll and to suspend the same together with the roll or rolls above, said stirrups having side bars which constitute a frame inclosing the necks of the rolls, substantially as and for the purposes described.

3. An improvement in apparatus for removing or setting rolls from or in their housings, which consists in lifting-stirrups adapted to engage the lower roll and to suspend the same together with the roll or rolls above, in combination with a stand or temporary housing for supporting the rolls temporarily, and a lifting device, such as a crane, whereby the rolls are transferred from the housings to the stand or from the stand to the housings, substantially as and for the purposes described.

4. The combination, with roll-housings, of a stand or temporary housing adapted to support the rolls and their bearings temporarily, and a lifting device, such as a crane, for removing the rolls from one to the other, substantially as and for the purposes described.

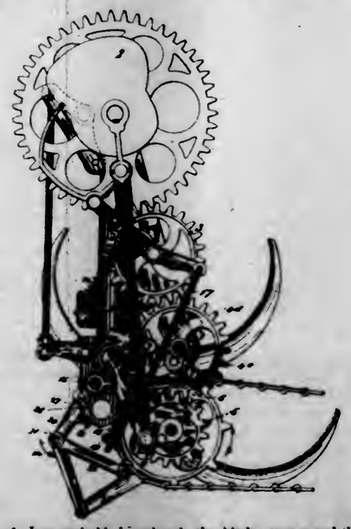
5. The combination, with roll-housings, of a stand or temporary housing for supporting the rolls temporarily, and a rotary crane for removing the rolls from one to the other, said housings and the stand being equidistant from the axis of the crane, substantially as and for the purposes described.

6. An improvement in apparatus for removing or setting rolls, which consists in stirrups composed of open frames having side bars and cross-pieces at the bottom, said stirrups being adapted to be suspended from a crane or lifting device, substantially as and for the purposes described.

7. An improvement in apparatus for removing or setting rolls, which consists in stirrups composed of open frames having side bars and removable cross-pieces at the bottom, said stirrups being adapted to be suspended from a crane or lifting device, substantially as and for the purposes described.

8. The combination, with roll-housings, of a stand or rest for supporting the rolls temporarily, said stand consisting of separated uprights 13, adapted to receive the necks of the rolls and their interposed bearings, and a lifting device, such as a crane, substantially as and for the purposes described.

385,059. GRAIN-BINDER. SAMUEL V. KENNEDY and CHARLES A. ANDERSON, Minneapolis, Minn., assignors to the Minneapolis Harvester Works, same place. Filed Sept. 5, 1887. Serial No. 248,062. (No model.)



Claim.—1. In a grain-binder wherein the binder proper and the packers work and rest alternately, clutching mechanism to drive the binder, and clutching mechanism to drive the packers, in combination with a single stop-dog in the form of an arm pivoted at one end and swinging in the plane in which the said clutching mechanisms are arranged for acting alternately with the clutching mechanisms of the binder and packers to stop and hold one at rest while the other is in operation, substantially as set forth.

2. In a grain-binder, the trip-shaft 15, having the stop-dog 14 secured to one end thereof, the crank-arm 20 at the other end thereof, the yoke 21 sleeved thereon near the crank-arm 20, and the set-screw 23 inserted through a part of the yoke 21, whereby the stop-dog 14 may be adjusted, as described.

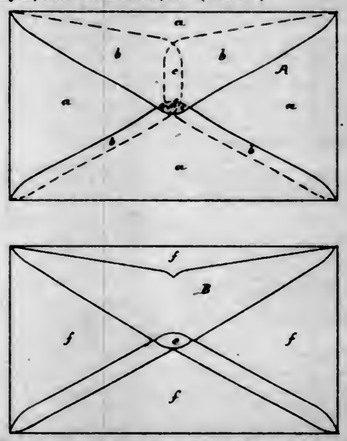
3. In a grain-binder, the trip-shaft 15, having the stop-dog 14 secured to one end thereof, the crank-arm 20 secured to the other end thereof, and the yoke 21 sleeved thereon near the crank-arm 20 and acting upon the crank-arm 20 in one direction to trip the binder, whereby the crank-arm 20, and hence the stop-dog 14, may have a movement independent of the movement of the yoke 21, as and for the purpose described.

4. In a grain-binder, the main frame 1, having formed upon it a flange, *a*, provided with seats or bearings for supporting the inner end or ends of an intermediate gear-wheel stud or studs, and an additional flange, *c*, provided with seats or bearings for supporting the outer end or ends of the intermediate gear-wheel stud or studs, and a seat or bearing for supporting the driving and packer shafts outside of the driving-gears thereof.

5. In a grain-binder wherein the stop-dog is actuated by a cam on the binder-gear, a lever, 16, actuated in one direction by the said cam, in combination with a spring, *n*, for actuating the said lever in the opposite direction, a stop-dog, 14, for controlling the movement of the binder, and a rod, 17, connecting the lever 16 with the said stop-dog, and provided with a shoulder, *l*, for transmitting to the said stop-dog the motion derived from the spring *n*, as and for the purpose described.

6. In a grain-binder wherein the stop-dog is actuated by a cam on the binder-gear, the combination, as herein set forth, of the lever 16, the spring *n*, the stop-dog 14 for controlling the movement of the binder, the rod 17, connecting the lever 16 with the stop-dog 14, and provided with the shoulder *l*, the adjusting-nut 19 upon the lower threaded portion of the rod 17, and the expanding-spring 18, bearing at its lower end against the nut 19 and at its upper end against the under side of the stop-dog 14.

385,060. BLANK ATTACHMENT FOR TYMPAN-SHEETS FOR PRINTING ENVELOPES. GUSTAVUS F. KIMBALL, Topeka, Kans. Filed July 22, 1887. Serial No. 244,997. (No model.)



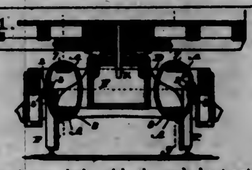
Claim.—1. As a new article of manufacture, the blank B, for attachment to the tympan-sheet of a printing-press, provided with flaps which increase its thickness at those places which register with the thinner portions of the envelopes when the envelopes are placed upon it with their edges guided by and coinciding with its edges, substantially as set forth.

2. As a new article of manufacture, the blank B, for attachment to the tympan-sheet of a printing-press, provided with a hole, *c*, and with the flaps *f*, which make it two-ply thick, and which register with the correspondingly-thinner portions of the envelopes when the envelopes are placed upon the blank with their edges guided by and coinciding with its edges, substantially as set forth.

385,061. RAILWAY-CAR SPRING. BERNARD J. LA MOTHE, New York, N. Y. Filed Aug. 31, 1887. Serial No. 248,308. (No model.)

Claim.—1. The combination, with the car-truck and the upper and lower bearings, 7 and 8, of a suspension-spring formed of a band

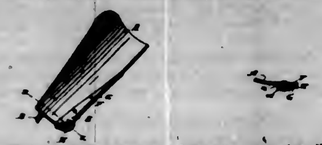
385,061.



of steel rolled up into a circle, with the ends bent outwardly, and a clip-band, 2, surrounding the convolutions, and against the opposite edges of which the outwardly-turned ends of the spring rest, substantially as set forth.

2. The combination, with the transom-beams D E, in a railway car and truck, and the bearings 7 and 8, of a suspension-spring formed of a steel band coiled into a circular form and the ends turned outwardly, and a band, 2, passed around the spring between the outwardly-turned ends for holding the same, substantially as specified.

385,062. TRACK-SCRAPER. HARRIS H. LITTELL, Louisville, Ky. Filed Oct. 31, 1887. Serial No. 253,502. (No model.)



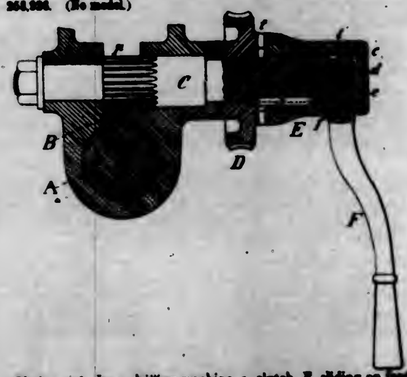
Claim.—1. In a scraper of the character described, the main blade, in combination with the removable shoe, which shoe is made of alternate layers of hard and soft material, substantially as and for the purposes specified.

2. In a scraper of the character described, the main scraper-blade, depressed as described, in combination with a removable shoe made of alternate layers of hard and soft material, the hard material on the outside or front of the shoe, substantially as and for the purposes specified.

3. As a new article of manufacture, a removable shoe for scraper-blades, constructed, substantially as described, with alternate layers of hard and soft material, as and for the purposes set forth.

4. As a new article of manufacture, a detachable shoe for scrapers made of alternate layers of hard and soft material and provided with a curved or dished agitator, substantially as and for the purposes specified.

385,068. FEEDING DEVICE FOR DRILLING. WILLIAM LOGAN and HENRY DRIVER, Cincinnati, Ohio. Filed Dec. 24, 1887. Serial No. 258,998. (No model.)

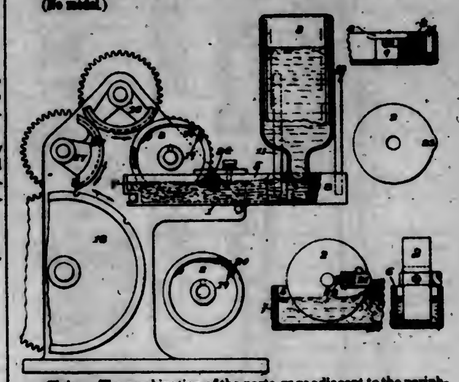


Claim.—1. In a drilling-machine, a clutch, E, sliding on feed-shaft C, in combination with a lever, F, passing through one side of said clutch, pivoted into the slotted feed-shaft C, and so constructed as by moving said lever in the axial plane of shaft C to engage or disengage half-clutch E with clutch *t*, formed on worm-wheel D, substantially as described.

2. The combination, in a drilling-machine, of a slotted feed-shaft, C, the plug *a*, and a spring, *b*, beneath the plug *a*, in connection with lever F, pivoted to shaft C, and adapted to force clutch E into the corresponding clutch, *t*, formed on outside of worm-wheel D, all substantially as set forth.

3. The combination of a clutch, E, with flat spring *i* fastened to it, in connection with lever F, having the projection *s* to enter recess *r* in said spring, substantially as shown, and for the purpose specified.

385,064. PASTING APPARATUS. WILLIAM A. LOGUEE and WILLIAM H. HOUSE, Hartford, Conn. Filed July 30, 1887. Serial No. 245,603. (No model.)



Claim.—The combination of the paste-gage adjacent to the periphery of the paste-roll and the paste-roll provided with a peripheral protuberance coming nearly or quite in contact with the paste-gage, the whole being so constructed and arranged that the paste-gage regulates the depth of the paste on the periphery of the paste-roll, and the peripheral protuberance on the paste-roll keeps paste from accumulating on the edge of the paste-gage, all substantially as described.

385,065. WEATHER-STRIP. THOMAS K. MILROY, Parsons, Kans. Filed Jan. 14, 1888. Serial No. 260,710. (No model.)

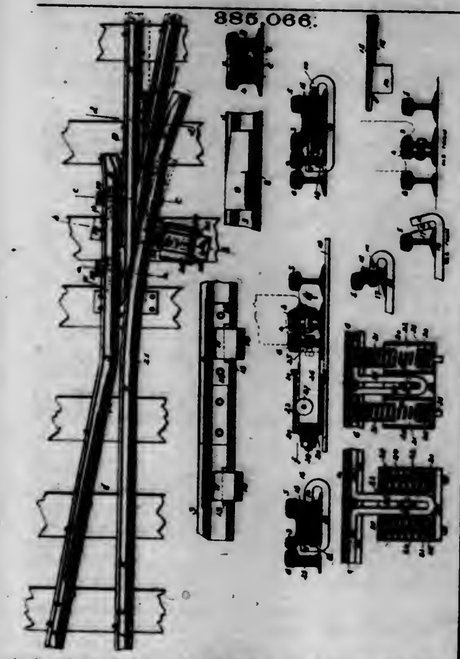


Claim.—The improved weather-strip herein described and shown, consisting of a metallic body having its inner and outer sides bevelled, provided at its inner corners with the laterally-projecting beveled lugs *b*, adapted to bear against the inner face of the door-frame, having the longitudinal groove *c* in its top and the transverse depressions *d* at the ends communicating with said groove, and having the shoulders A at the outer sides of said depressions adapted to fit in recesses in the opposing sides of the door-jambs, substantially as specified.

385,066. RAILWAY-FROG. GEORGE W. PARSONS, Harrisburg, Pa. Filed Oct. 8, 1888. Serial No. 315,731. (No model.)

Claim.—1. In a railway-frog, the point consisting of the rails 3 and 4, in combination with the block 8, secured firmly between them, said block having its top surface inclined gradually upward from the

885,066.



heel to the level of the top of the point-rails, whereby the extra flange on grooved or guttered wheels is prevented from falling between and displacing the point-rails.

2. The wheel-bearing plate for a railway-frog, consisting of the hard-metal plate having the metal body cast thereon.

3. In a spring-frog, the combination of a stationary point and a spring-rail lying in contact with its side from the forward end rearward to a place at which the point is of a width equal to or greater than the width of the tread of the wheels.

4. In a railway-frog, the combination of a fixed point and a spring-rail lying in contact with the side thereof from the forward end of the point rearward in position to receive and sustain the outer edge of the tread of the wheels as soon as they begin to project laterally beyond the point in passing thereover, whereby any extra flange on the outside of the wheel is prevented from descending between the point and the spring-rail.

5. A railway-frog having its spring-rail extended along and in contact with the point and toward the heel of the latter until the point has a width equal to or exceeding that of the tread of the wheels, whereby the derailment of the train by extra flanges on the outside of the wheels is prevented.

6. In a railway-frog, the combination of the spring-rail, the lateral arm attached rigidly thereto, and the stationary guide or housing for said arm.

7. In a railway-frog, the combination of the spring-rail, the lateral arm fixed thereto, the rigid guide or housing, and the anti-friction roller attached to the arm.

8. In a frog, the spring-rail having its flange removed and the strengthening-bar 25 fixed thereto, substantially as described, said bar having the lateral guide-arm formed integral therewith.

9. In a railway-frog, the combination of the point, the spring-rail having its flange cut away that it may close against the point, and a strengthening-bar fixed to the side of the rail and extended beyond the reduced portion, as described, whereby the springing or bending of the rail is prevented.

10. In a railway-frog, the combination of the spring-rail, the lateral arm fixed thereto, a stationary guide or housing for said arm, and springs applied, substantially as described, to urge the rail toward the point.

11. In a railway-frog, the combination of the spring-rail, its lateral arm, the guide or housing for said arm, the yoke-bar acting on the arm, and the springs applied to the yoke-bar.

12. In a railway-frog, the combination of the point, the stationary wing-rail, the movable spring-rail, the underlying stationary plate 19, fixed to the stationary wing-rail at one end and provided with a guide or housing at the opposite end, the lateral arm fixed to the movable rail and acting in said guide, and the springs tending to urge the movable rail inward.

13. In combination with the spring-rail provided with the lateral arm, the guide or housing having a shoulder, 20, to resist and support the movable rail.

14. In a railway-frog, and in combination with the point and wing-rail, the clamping-bar having its end returned in a horizontal position, and the wedge-shaped bearing-plate, against which said end is seated, substantially as described, whereby the derailed wheels are prevented from opening the clamp.

15. In a railway-frog, the combination of the point, the stationary wing-rail, and the clamp 10, having its outer end returned horizontally toward the wing-rail and its inner end extended vertically through the flange of the point-rail and secured by a key, substantially as described.

16. The improved clamp for a railway-frog, consisting of the bar 10, having one end curved upward and inward horizontally and the opposite end turned to a vertical position and provided with a recess for a fastening-key.

17. The combination of the point, the stationary wing-rail, the bearing-plate 15, the clamping-bar 10, having the vertical and the horizontal ends, the fastening-key 12, the bearing-wedge 15, and the fastening-plate 16.

18. In a railway-frog, the combination of the rail, the clamp having its end presented horizontally toward the outer side of the rail, the intermediate wedge, and the fastening plate or strip 16, applied as described and shown.

885,067. ELECTRIC CUT-OUT. CHARLES S. PERKINS, Hartford, Conn. Filed Aug. 27, 1887. Serial No. 248,013. (No model.)

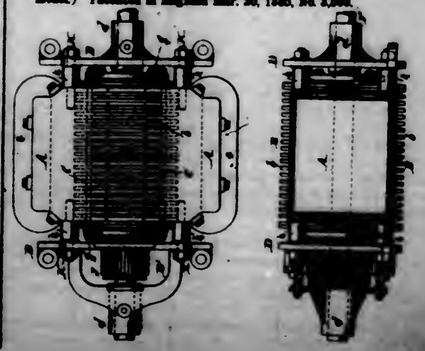


Claim.—1. The combination of a plug carrying a safety-strip and a block for electrical cut-out provided with a chamber having a lateral enlargement, whereby the plug may be readily inserted to close and removed to break the circuit, substantially as described.

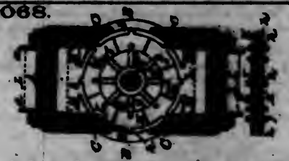
2. The combination, with the main wire, of bolt C, springs D, plug G, carrying the fusible strip *g*, circuit-closer J, and branch line H, all arranged as described.

3. In a cut-out, a plug of insulating material carrying a fusible strip, said plug formed of two parts telescoped together and having a spring between the parts, which tends to force them away from each other in order to maintain good contact at the ends of the plug, as described.

885,068. DYNAMO-ELECTRIC MACHINERY. ANTHONY REKNAGEL, London, England, assignor to the Electric Car Company of America, Philadelphia, Pa. Filed Mar. 20, 1888. Serial No. 268,005. (No model.) Patented in England Mar. 20, 1885, No. 3,569.



885,068.



Claim.—1. In an electric motor or dynamo, a field-core having its polar ends united to polar extensions by bolted connections, in combination with a rigid frame to hold said field-cores and polar extensions rigidly in position to form the armature-space.

2. In an electric motor or dynamo, a field-core having its polar ends united to polar extensions by bolted connections, in combination with a rigid frame of non-magnetic material to hold said field-cores and polar extensions rigidly in position to form the armature-space.

3. In an electric motor or dynamo, a field-core having its polar ends united to polar extensions by bolted connections, in combination with a rigid frame of non-magnetic material on each end to hold said field-cores and polar extensions rigidly in position to form the armature-space, the armature, and the armature-shaft supported by the end frames.

4. In an electric motor or dynamo, a field-core having its polar ends united to polar extensions by bolted connections, in combination with a rigid frame of non-magnetic material on each end to hold said field-cores and polar extensions rigidly in position to form the armature-space, the armature, and the armature-shaft supported by the end frames.

5. In an electric motor or dynamo, a field-core having its polar ends united to polar extensions by bolted connections, in combination with a rigid frame of non-magnetic material on each end to hold said field-cores and polar extensions rigidly in position to form the armature-space, the armature, the armature-shaft supported by the end frames, a commutator on said armature-shaft, a brush-holder supported by said end frames, and brushes carried by said brush-holder.

6. In an electric motor or dynamo, a field-core made without yoke-joints and of horseshoes or U shape, having its polar ends united to polar extensions by bolted connections, in combination with a rigid frame to hold said field-cores and polar extensions rigidly in position to form the armature-space.

7. In an electric motor or dynamo, a field-magnet core of horseshoe shape made in continuous metal from pole to pole, in combination with pole pieces or extensions, and rigid frames to hold said pole-pieces and cores in a fixed relative position.

8. In an electric motor or dynamo, a field-magnet core of horseshoe shape made in continuous metal from pole to pole, with air-spaces, in combination with pole pieces or extensions and rigid frames to hold said pole-pieces and cores in a fixed relative position.

9. In an electric motor or dynamo, a field-magnet core of horseshoe shape made in continuous metal from pole to pole, in combination with a series of sections making up the pole pieces or extensions and forming the armature-space, said sections of each pole being separated laterally by air-spaces, and rigid frames to hold said pole-pieces and cores in a fixed relative position.

10. In an electric motor or dynamo, a field-core having its polar ends united to polar extensions formed of small pieces curved on their inner edges to form the armature-space, in combination with end frames forming standards and rigidly holding the parts together in a fixed relation.

11. In an electric motor or dynamo, a field-core having its polar ends united to polar extensions formed of small pieces extending toward each other from pole to pole and curved on their inner edges to form the armature-space, in combination with end frames forming standards and rigidly holding the parts together in a fixed relation.

12. In an electric motor or dynamo, the combination of two horseshoe or U shaped field-magnets having the polar extensions, such as E, extending toward each other and with their similar poles arranged in line, and frames exterior to the field-magnets forming standards and bolted or secured to said field-magnet cores to hold them in a fixed relation to each other.

13. In an electric motor or dynamo, the combination of two horseshoe or U shaped field-magnets having the polar extensions, such as E, a series of pointed projections of fine metal with interposed air-spaces extending toward each other and with their similar poles arranged in line, and frames exterior to the field-magnets forming standards and bolted or secured to said field-magnet cores to hold them in a fixed relation to each other.

14. In an electric motor or dynamo, the combination of two horseshoe or U shaped field-magnets having the polar extensions, such as E, extending toward each other and with their similar poles arranged in line, and frames of non-magnetic material exterior to the field-magnets forming standards and bolted or secured to said field-magnet cores at each end, to hold them in fixed relation to each other.

15. In an electric motor or dynamo, the combination of two horseshoe or U shaped field-magnets having the polar extensions, such as E, extending toward each other and with their similar poles arranged in line, frames exterior to the field-magnets forming standards and bolted or secured to said field-magnet cores to hold them in a fixed relation to each other, and bridging-pieces extending between the similar poles of the two field-magnets.

16. In an electric motor or dynamo, the combination of two horseshoe or U shaped field-magnets having the polar extensions, such as E, extending toward each other and with their similar poles arranged in line, frames exterior to the field-magnets forming standards and bolted or secured to said field-magnet cores to hold them in a fixed relation to each other, and bridging-pieces extending between the similar poles of the two field-magnets and formed of a series of parallel plates with air-spaces between them.

17. In an electric motor or dynamo, a field-magnet core formed with ductile magnetizable polar extensions bolted to it in grooves at its polar ends.

18. In an electric motor or dynamo, a field-magnet core formed of a ductile magnetizable metal and provided with ductile magnetizable polar extensions bolted to it in grooves at its polar ends.

19. In an electric motor or dynamo, a field-magnet core formed of a ductile magnetizable metal continuous or without yoke-joints and provided with ductile magnetizable polar extensions bolted or otherwise secured to them at their polar ends.

20. In an electric motor or dynamo, two U-shaped field-magnet cores having their similar poles arranged toward each other, in combination with bridging-pieces extending between similar poles to unite them, but separate from the field-magnet cores, and end frames forming standards and holding the field-magnet cores in position.

21. In an electric motor or dynamo, two U-shaped field-magnet cores having their similar poles arranged toward each other, in combination with bridging-pieces extending between similar poles to unite them, but of much smaller sectional area than the field-cores, and end frames forming standards and holding the field-magnet cores in position.

22. In an electric motor or dynamo, the combination of two field-magnets of U shape, having their similar polar ends opposed, brought close to the armature, and united by parallel bridging-pieces, substantially as set out, set down into the polar ends, and secured therein by bolts passing through said polar ends and bridging-pieces.

23. In an electric motor or dynamo, the combination of two field-magnets of U shape, having their similar polar ends opposed, brought close to the armature, and united by parallel, bridging-pieces, substantially as set out; set down into the polar ends, and secured therein by bolts passing through said polar ends and bridging-pieces, and end frames directly secured to the field-magnet cores to hold the parts rigidly together.

24. The combination, in a motor or dynamo, of two U or horseshoe shaped field-magnets placed opposite each other, and each formed of a continuous band of metal from pole to pole, avoiding yoke-joints, and uniting bridging-pieces connecting similar poles of said field-magnets together by being set in grooves in their ends and made flush with the surface thereof.

25. The combination, in a motor or dynamo, of two U or horseshoe shaped field-magnets placed opposite to each other, and each formed of a continuous band of metal from pole to pole, avoiding yoke-joints, and uniting bridging-pieces connecting similar poles of said field-magnets together, but at a fixed distance apart, and end frames bolted to the polar ends to hold all of the parts rigidly and with a fixed relation to each other.

26. In a dynamo-electric machine or motor, the combination of two U or horseshoe shaped field-magnets arranged with their similar poles in line, and two end frames of non-magnetic material forming standards and firmly secured to the said field-magnets to hold them in a fixed relative position with reference to each other to form a clear armature-space.

27. In a dynamo-electric machine or motor, the combination of two U or horseshoe shaped field-magnets arranged with their similar poles in line, two end frames of non-magnetic material forming standards and firmly secured to the said field-magnets to hold them in a fixed relative position with reference to each other to form a clear armature-space, an armature, and an armature-shaft supported in said end frames and independent of the field-magnets.

28. The combination of the two field-magnet cores A A, united by bridging-pieces *b*, frames D D, having supporting-feet and bearings *d* and bolted at K to the field-magnets, an armature-shaft, F, supported in the bearings, and an armature on the shaft.

29. The combination of the two field-magnet cores A A, united by bridging-pieces *b*, frames D D, having bearings *d* and bolted at K to the field-magnets, with distance-pieces *k* to form air-spaces between the end frames and magnets, an armature-shaft, F, supported in the bearings, and an armature on the shaft.

30. The combination of the two field-magnet cores A A, united

by bridging-pieces *b*, having extensions E, bolts C, for uniting said bridging-pieces to the polar ends of the magnet-cores, frames D D, having supporting-feet and bearings *d* and bolted at K to the field-magnets, an armature-shaft, F, supported in the bearings, and an armature on the shaft.

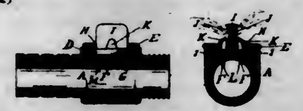
31. In a dynamo-electric machine or motor, the combination, in an armature-core, of the plates H, arranged in circles and parallel rings, with small air-spaces *h'* between adjacent sections of the same ring, and clamping-bolts I, extending through said sections to unite them into a compact annular cylinder or core.

32. In a dynamo-electric machine or motor, the combination, in an armature-core, of the plates H, having polar extensions A, arranged in circles and parallel rings, with small air-spaces *h'* between adjacent sections of the same ring, and clamping-bolts I, extending through said sections and in line with the polar extensions to unite them into a compact annular cylinder or core.

33. In a dynamo-electric machine or motor, the combination, in an armature-core, of the plates H, arranged in circles and parallel rings, with small air-spaces *h'* between adjacent sections of the same ring, clamping-bolts I, extending through said sections to unite them into a compact annular cylinder or core, and end frames or disks of non-magnetic material, through which the bolts I pass and by which the core is secured to the armature-shaft.

34. In a dynamo-electric machine or motor, field-magnet cores forming a continuous magnetic belt around the armature, having two diametrically-opposite parts brought close to the surface of the armature to form poles and coils upon said parts which are intermediate to the pole parts, said magnetic belt being formed of parts linked together, in combination with non-magnetic frames forming standards secured to said magnetic linked-belt core to hold it rigidly together.

385,069. DEVICE FOR SPRINKLING LAWNS. R. JESSIE H. RICHARDSON, Detroit, Mich. Filed Mar. 8, 1888. Serial No. 266,536. (No model.)



Claim.—1. The combination, with the coupling member formed with a hollow boss, of the cap secured to said boss and provided with holes communicating with the interior of said member, and a sprinkling-nipple in said boss formed with an opening communicating with the interior of the coupling, substantially as described.

2. The combination, with a pipe or hose coupling, of the boss C, formed thereon, the disk G, having the thumb-piece I and sprinkler-nipples K, the deflectors J, formed on the thumb-piece I, and the retaining-cap E, all arranged substantially as and for the purposes set forth.

3. The combination, with a pipe or pipe-coupling formed with a boss, as described, of the cap fitted in said boss and communicating with the interior of the pipe, and a disk, G, loosely secured in said boss by said cap and provided with sprinkling-nipples, and provided with a thumb-piece formed with concave deflectors, substantially as and for the purpose specified.

385,070. FEATHER DUSTER. GILBERT M. RICHISON, Chicago, Ill., assignor, by mesne assignments, to Leonard A. Watson, Ashtabula, Ohio. Filed Sept. 17, 1874.



Claim.—1. As a new and useful article of manufacture, a soft, light, feather duster made of stiff heavy feathers reduced in weight and rendered more pliable by splitting or shaving off their ribs, substantially as described.

2. As a new and more useful and perfect article of manufacture, a soft, light, and flexible feather duster made of stiff heavy feathers, rendered soft, light, pliable, and elastic by the removal of the ribs of their shafts and withing the backs thereof, substantially as described.

385,071. POTATO-DIGGER. CYRUS ROSSETTE, Three Rivers, Mich. Filed Nov. 12, 1887. Serial No. 254,972. (No model.)

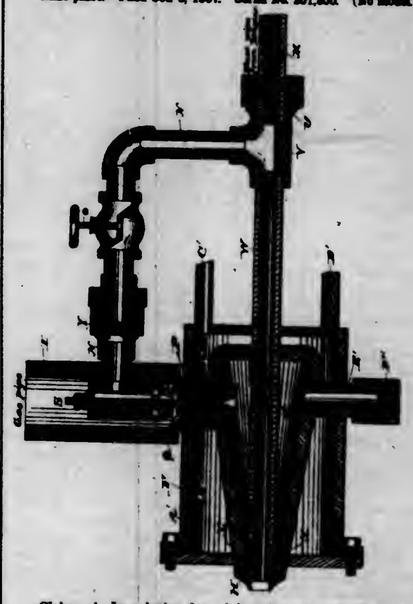


Claim.—1. In a potato-digger, a revolving cage consisting of a head and substantially straight spring-tines secured thereto and projecting obliquely or spirally therefrom to the rear, with their rear ends unsupported, substantially as described.

2. In a potato-digger, the combination, with the cage revolving on circumferential bearings, of a plow independent of said cage at an angle to the line of draft and to one side of the center of the draft, with its point to land, and provided with an extension, U, serving as a scraper, substantially as described.

3. The combination, with the supporting-wheels, axle, and frame of a potato-digger, of the digging-plow independently secured thereto, and provided with the raising and lowering lever Q, and of a revolving cage suspended by means of chains, straps, or equivalents, a hinged frame having suitable drive-pulleys over which said chains or straps pass, and a lever for raising and lowering said hinged frame, all arranged to operate substantially as described.

385,072. DEVICE FOR MIXING AIR AND GAS FOR FURNACES. HENRY SCHLIEBE, Lebanon, Pa., assignor of one-half to Jacob H. Grove, same place. Filed Oct. 8, 1887. Serial No. 251,850. (No model.)



Claim.—1. In a device for mixing air and gas for furnaces, the combination of a gas-receiving chamber having a nozzle on the discharge end thereof, an air-supply pipe extending longitudinally through said chamber and provided with a conical end, a gas-supply pipe and an air-supply pipe communicating with said gas-chamber, and an automatic valve for controlling the supply of gas and air to the gas-chamber, substantially as described.

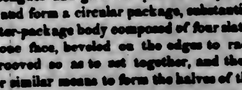
2. In a device for mixing air and gas for blast-furnaces, the combination of a blast-receiver, a conical gas-receiving chamber or heater having a nozzle projecting through one of the end walls of the blast-receiver and provided with a concave outer surface, a major air-supply pipe passing through the gas-chamber, and a minor air-supply pipe communicating with said chamber near its large end, a gas-supply pipe, a compound automatic valve for controlling air and gas supplied to the gas-chamber, and a valve in the minor air-supply pipe, substantially as described.

3. In a device for mixing air and gas for furnaces, a gas-receiving chamber having a tapering discharge end, a gas and air supply communicating with said chamber, and an automatic check-valve controlling the supply of gas and air, in combination with an adjustable air-pipe extending through the gas-chamber and discharging into the nozzle thereof, substantially as described.

4. In a device for mixing air and gas for blast-furnaces, the combination of a blast-receiver, a blast-heater having a nozzle projecting into said receiver, a gas-supply pipe communicating with a furnace and the blast-heater, an air-supply pipe, also communicating with said heater, an automatic valve for controlling the supply of gas and air to the heater, and a main blast-pipe extending through the heater and discharging into the blast-receiver, substantially as described.

5. In a device for mixing air and gas for blast-furnaces, a blast-heater, a bustle-pipe, and tuyeres, in combination with a blast-receiver between the heater and the bustle-pipe, a gas-supply pipe communicating with the furnace-stack and the heater, an auxiliary air-supply pipe, and an automatic valve for cutting off the gas and air, and a blast-supply pipe passing through the heater and discharging into the blast-receiver, substantially as described.

385,073. FINGER-RING. WILLIAM P. SIMMONS, Newark, N. J. Filed Sept. 20, 1887. Serial No. 250,351. (No model.)



Claim.—In a ring of the character described, the finger-band having a perforated seal-head thereon with two or more perforations therethrough for the reception of the hollow tubular rivets, in combination with a stone, similarly perforated through its face or lesser diameter, to be mounted thereon, and the monogram or other device provided with tubular rivets, as described, said rivets passing through the stone and finger-band, upset within the latter, whereby all the parts are rigidly secured together, as set forth.

385,074. PEDAL FOR BICYCLES. WILLIAM H. SMITH, Washington, D. C., assignor to the Smith National Cycle Manufacturing Company, of Colorado. Filed Feb. 20, 1888. Serial No. 265,086. (No model.)



Claim.—1. In a bicycle or analogous machine having a seat for the rider and propelling-cranks below the seat and on opposite sides of the seat, pedals applied to said cranks and having top surfaces higher at the outer than at the inner ends, substantially as described as shown.

2. In a pedal for bicycles and kindred machines, the combination of a spindle and a rotary frame mounted thereon and provided with a foot-receiving surface higher at the outer than at the inner end.

3. The spindle and the rotary frame, in combination with the two tapering foot-pieces *d*, applied thereto.

4. In a pedal, the soft-metal spindle, in combination with the hardened grooved ring fixed on one end, the hardened grooved plate screwed on the other end, the check-nut, the rotary frame having foot-receiving surfaces, and the grooved end plates, *d*, and the balls seated in the grooves, substantially as described.

5. In a bicycle-pedal, the spindle and the circular grooved plates d^2 and d^{11}, secured thereon, in combination with the pedal-frame having its end plates recessed to fit over and around the edges of plates d^2 d^{11} and provided with annular grooves, and the balls seated in the grooves between the plates, as described.

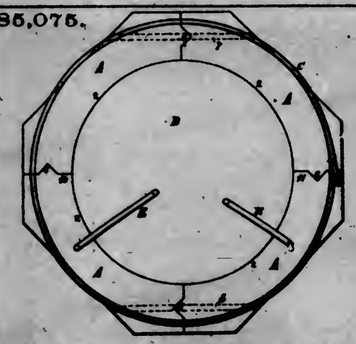
385,075. PACKAGE FOR BUTTER OR SIMILAR MATERIAL. SAMUEL SMITH, Pittston, Pa. Filed Feb. 23, 1888. Serial No. 264,951. (No model.)

Claim.—1. The butter-package body made of slats the inner surfaces of which are concave, the edges beveled upon radial planes, and provided with tongues and grooves upon the respective edges, so as to set together and form a circular package, substantially as set forth.

2. The butter-package body composed of four slats, each of which is concave on one face, beveled on the edges to radial planes, and tongued and grooved so as to set together, and the slats united in pairs by nails or similar means to form the halves of the package, substantially as set forth.

3. The package for butter or similar materials, consisting of a body

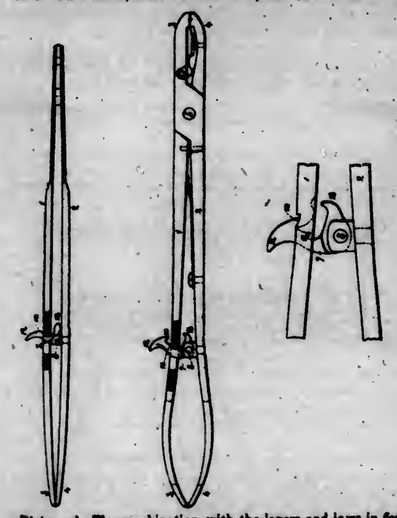
385,075.



formed of slats with a concave inner surface, so as to form an open cylinder when set together, the edges of the slats being tongued and grooved and the exterior surface beveled near the ends, in combination with movable hoops driven upon such beveled ends to hold the slats firmly together, substantially as set forth.

4. A butter-package body having two separable halves, each half being composed of two or more longitudinal slats tongued and grooved on the edges and fastened together, substantially as specified.

385,076. CLAMPING DEVICE FOR FORCEPS, &c. FREDERICK A. STOELHARN, Brooklyn, assignor to George Tiemann & Co., New York, N. Y. Filed Jan. 9, 1888. Serial No. 260,142. (No model.)



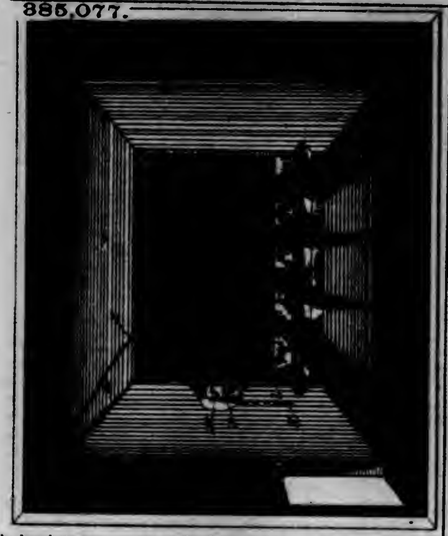
Claim.—1. The combination, with the levers and jaws in forceps or nippers, of a clamping-latch pivoted to one of the levers and having a catch or latch to hold the other lever, and a finger that is acted upon by the moving lever to swing the latch automatically, substantially as set forth.

2. The combination, with the levers and jaws in forceps or nippers, of a clamping-latch and a pivot for connecting the same to one of the levers, such clamping-latch passing through a mortise in the other lever, and having one or more catches and a thumb-piece and the finger 13, whereby the clamp is rendered automatic as the forceps are closed, substantially as set forth.

385,077. ANIMAL-RELEASING DEVICE. JOHN D. SULLIVAN and CHARLES A. SULLIVAN, Windsor, Ontario, Canada. Filed Mar. 20, 1888. Serial No. 267,831. (No model.)

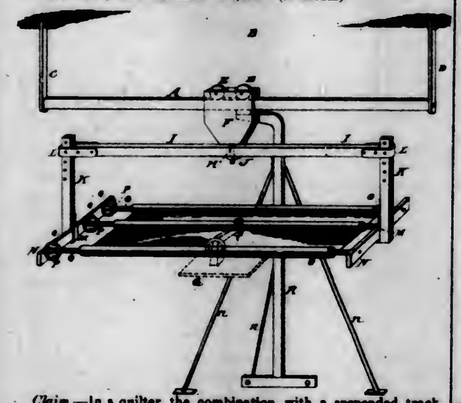
Claim.—The combination of a plurality of brackets, C, a plurality of pins, D, one for each bracket, a ring held in each bracket by the pin therein, an elbow-lever connected with each pin, and a cord connecting all the levers for drawing the pins, with a cord, M, connected with one of the rings, and a detachable support attached to the building and embracing and holding said cord M, but disconnected therefrom, whereby when the pins are drawn the rings are released from

385,077.



the brackets and are free to be drawn out by said cord M, and the drawing of the cord withdraws the supports and removes them from engagement with the cord, substantially as described.

385,078. QUILTING-FRAME. CHARLES A. WEHAL, Savoy, TEX. Filed Oct. 4, 1887. Serial No. 251,432. (No model.)

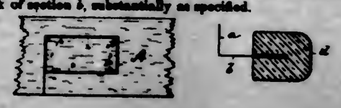


Claim.—In a quilter, the combination, with a suspended track-beam, of a block, F, carrying at the upper end journaled wheels E E which travel on said beam, a quilting-frame swiveled to said block and having inside loops at the lower end, and the quilting-roll end plates, N N, movable through said loops, as shown, whereby the quilt may be balanced, turned in a horizontal plane to a greater or less degree, and fed to the sewing-machine, as described.

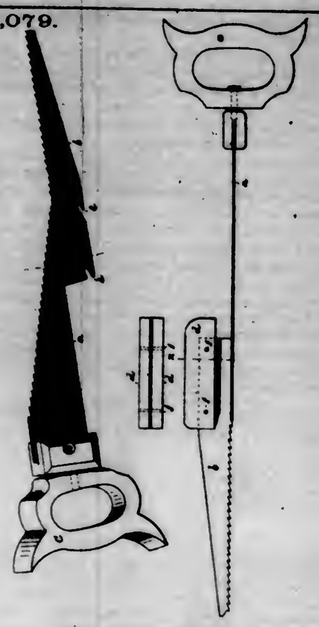
385,079. SAW. ADOLPH WETHAR, Brooklyn, N. Y. Filed Feb. 20, 1888. Serial No. 265,726. (No model.)

Claim.—1. The combination of a saw-handle with a saw-blade made in two serrated sections, *a b*, that are placed at right angles to each other, the sections *a b* overlapping at the center of the saw-blade only, while above and below the overlapping portion each section of the saw-blade lies in one plane only, substantially as specified.

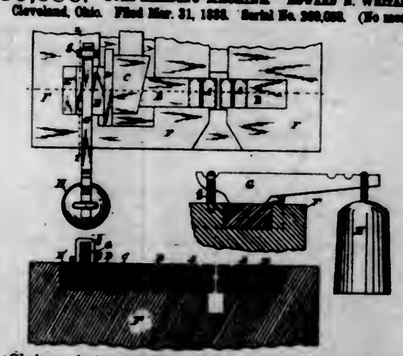
2. The combination of a saw-blade made in two sections, *a b*, placed at right angles to each other, with a swiveled handle, *c*, secured to section *a*, and with a removable handle, *d*, adapted to be secured to the back of section *b*, substantially as specified.



385,079.



385,080. BOLT-HEADING MACHINE. EDWARD H. WHITAKER, Cleveland, Ohio. Filed Mar. 31, 1888. Serial No. 269,093. (No model.)



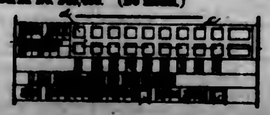
Claim.—1. In a heading-machine, a wedge interposed between the die-actuating mechanism and a stationary inclined face rigidly supported by the bed or frame of the machine, in combination with an adjustable weight or spring for maintaining said wedge in position, substantially as described.

2. In a heading-machine, the wedge E interposed between the die-actuating mechanism and a stationary inclined face, *c*, borne upon or rigidly supported by the bed or frame of the machine, in combination with the lever G and weight H, substantially as described.

3. In a heading-machine, the combination, with the die-actuating mechanism, of the wedge E, the inclined face *c*, the lever G, and weight H, all arranged and operating substantially as described.

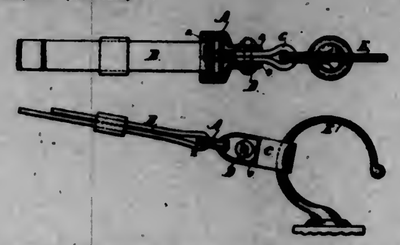
4. In a heading-machine, the combination, with the die-actuating mechanism, of the wedge E, block E' with inclined face *c*, lever G, and weight H, all arranged and operating substantially as described.

385,081. ART OF PRINTING. MOSES B. WALKER, Chicago, Ill., assignor to himself and JAMES J. WEST, same place. Filed Sept. 12, 1887. Serial No. 249,659. (No model.)



Claim.—As an improvement in the art of printing, the method of preparing stereotype-plates, which consists in providing matter from which the stereotype-plate is to be made with blank blocks which are of less height than the type and are provided with holes adapted to receive type, and then making a stereotype-plate from such matter as provided with such blocks, and then inserting type in the holes in the plate, substantially as and for the purposes specified.

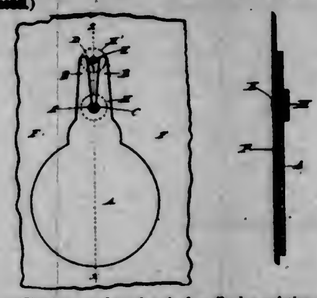
385,082. CHECKREIN ATTACHMENT FOR HARNESS. BENJAMIN J. WEST, Brooklyn, assignor to himself, HENRY C. PALMER, Schenectady, and VALENTINE KOCH, New York, N. Y. Filed Mar. 28, 1888. Serial No. 268,543. (No model.)



Claim.—1. The combination, with the checkrein B and saddle-hook E, of the quadrangular metal frame A, having a bar, 2, around which the rein passes, and cheek-pieces 3 and 4, and the folded leather loop C, for the saddle-hook, and a rivet or screw passing through the cheeks and the folded strap and connecting the parts together, substantially as set forth.

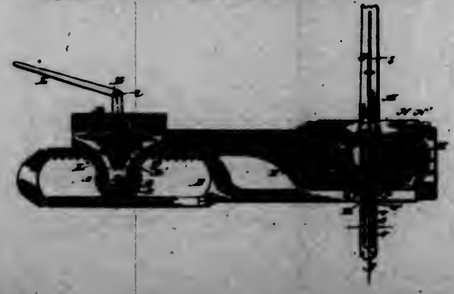
2. The combination, in a checkrein attachment, of a metal frame having a bar, 2, around which the rein passes, and cheek-pieces 3 4, and projections 5 6 on opposite surfaces of the said cheek-pieces, the folded leather loop C, adapted to pass between the cheek-pieces and having its ends notched for the projections 5 6, and a rivet or screw passing through the cheek-pieces and folded loop C and connecting the parts together, substantially as set forth.

385,083. TAG. THEODORE J. VEIT, Amsterdam, N. Y., assignor of three-fourths to THOMAS F. KENNEDY, THOMAS F. KYNE, and CHARLES C. VEIT, all of same place. Filed Mar. 26, 1888. Serial No. 268,927. (No model.)



Claim.—The improved tag herein described, consisting of a blank of paper or other suitable material having the hole or perforation C opening into the diverging aperture D, all substantially as set forth.

385,084. MECHANICAL MOVEMENT. BENJAMIN F. ARMSTRONG, Myers, Ia. Filed Feb. 4, 1888. Serial No. 263,269. (No model.)



Claim.—1. In an apparatus for converting motion, the combination of the shaft, a toothed wheel loose thereon, a pawl-support fixed to said shaft, a double-ended pawl supported thereon and adjustable, whereby either end may be set to engage the toothed wheel, and a pitman having a rack engaging the toothed wheel, substantially as set forth.

2. In an apparatus for converting motion, the combination of the shaft, a toothed wheel and a pawl-support thereon, a double-ended pawl carried by the pawl-support, a pawl-tripper having a portion arranged to engage the pawl and movable, whereby is may adjust either end of said pawl into operative position, and a pitman having a rack to engage the toothed wheel, substantially as set forth.

3. In an apparatus for converting motion, the combination of the shaft, the toothed wheel thereon having a recess in its outer face, the pawl-support, also on said shaft and fitted at its inner end in the recess in the toothed wheel, the double-ended pawl carried by said support and adjustable, whereby either end may be set to engage the toothed wheel, and the pitman having a rack engaging the toothed wheel, substantially as set forth.

4. In an apparatus for converting motion, the combination of the shaft, the toothed wheel thereon, the pitman having a rack engaging said toothed wheel, the pawl-support, the double-ended pawl held adjustably to said support, and the pawl-tripper comprising a ring journaled on the pawl-support and a projection extended inwardly from the ring and arranged to engage the pawl, whereby by the partial turning of the ring the pawl may be adjusted to set either of its ends in operative position, substantially as set forth.

5. In an apparatus for converting motion, and in combination with the shaft, a toothed wheel and a pawl-support on such shaft, a double-ended pawl, and a pawl-tripper comprising a ring journaled on the pawl-support, a projection extended inwardly from said ring, and a spring for actuating such projection, substantially as set forth.

6. In an apparatus for converting motion, the combination of a shaft, a toothed wheel, and a frame-support thereon, a double-ended pawl carried by said pawl-support, a pawl-tripper journaled on the pawl-support and comprising a ring, I', having an opening or socket, *i'*, and guides *j* at the outer end of said opening, a cover-plate, J, movable in said guides over the outer end of opening *i'*, the projection *i*, fitting at its outer end in said opening or socket *i'*, and a spring arranged in said socket and bearing between the projection *i* and the cover-plate J.

7. An apparatus, substantially as described, for converting motion, comprising the shaft, the toothed wheels thereon having their outer faces formed with recesses F, the pawl-carriers on the shaft, and fitted at their inner ends in the recesses F, and provided at such inner ends with recesses *g*, the pawls H, held in said recesses *g*, and adjustable, as described, the pawl-trippers having rings journaled on the pawl-carrier and having projections arranged to engage the pawls, and the slotted pitman having opposite racks, as specified.

8. In an apparatus, substantially as described, the combination of the pitman, the lever to which such pitman is connected, a frame in which such lever is pivotally supported, whereby it may be oscillated, and cushions arranged to be engaged by said lever at the ends of its stroke, substantially as and for the purposes specified.

9. In an apparatus, substantially as described, the combination of a lever having a toothed segment, *m*, and a toothed roller, *m'*, and a frame, N, having racks *n n'*, arranged opposite each other, such racks *n n* being similar, whereby the lever may be reversed, as described.

10. In an apparatus for converting motion, the combination of the lever having openings or sockets O and the guide or keeper frame, the pitman, the spring-actuated locking-stud movable into and out of the sockets O, and the three armed or branched lever connected at the juncture of its arms with the stud, and adapted, when tilted in either direction, to release said stud from the sockets in the lever, substantially as set forth.

11. In combination with the pitman, the main lever, having sockets O and the spring-actuated locking-stud, the lever R, having arms *r r r'*, and connected at the juncture of said arms to the stud, and a rod connected at one end to the arm *r'* of the lever R and extended along the handle end of the main lever, substantially as and for the purposes specified.

12. The combination of, the main lever, having sockets O and guide or keeper frame O', having notches *o*, the pitman, the connecting-block, the spring-actuated stud arranged to enter sockets O, the lever R, having arms *r r r'* and connected at the juncture of such arms to the said stud, and the rod connected with the arm *r'* of lever R, substantially as set forth.

13. In an apparatus, substantially as described, the combination of the shaft, the toothed wheel thereon, the pawl support or carrier, the double-ended pawl, the pawl-tripping ring journaled on the pawl-support, and having a projection arranged to engage the pawl, and having an internal set of notches, and a spring-actuated stud supported in the pawl-carrier and engaging and movable from one to the

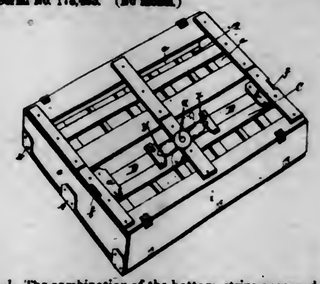
other of the internal notches of the pawl-tripper ring, substantially as set forth.

14. The combination of the shaft, toothed wheel, and pawl-support thereon, the pawl, the pawl-tripper having a ring provided with internal notches, and the spring-actuated stud supported in the pawl-support and arranged to engage the said internal notches, and having at its outer end an extension projected along the outer side of the pawl-tripping ring, substantially as set forth.

15. The combination, with the framing, the shaft, the toothed wheels, the pawl-support, and the pawl-tripper ring having an outwardly-extended projection or projections, of a bar or lever supported on the framing and having an arm or portion movable into the path of such projection, whereby to effect an adjustment of the pawl-tripper, substantially as and for the purposes specified.

16. In an apparatus, substantially as described, the combination of the lever M, having openings O and dovetail groove P' and the guide-frame O', the block P, fitted in said groove P', the pitman, the spring-actuated stud entering the openings O, and a lever for operating said stud, substantially as set forth.

385,085. PORTFOLIO. GEORGE AUTE, Lacon, Ill. Filed Sept. 28, 1886. Serial No. 213,463. (No model.)



Claim.—1. The combination of the bottom, strips *c* secured thereto, the hinged covers, bails or staples *f*, secured to the strips *c*, sliding bars held on the covers and adapted to engage the staples *f*, and a turn-button on the covers to normally hold said sliding bars in engagement with said staples, substantially as specified.

2. The combination of the bottom, strips *c* secured thereto, the hinged covers, bails or staples *f*, secured to the strips *c*, and sliding bars D D, adapted to engage the staples *f* and provided with the blocks *a b c d*, the ends of which rest on the strips composing the covers, substantially as specified.

3. The herein-described portfolio, comprising the slatted bottom A, having the rigid sides *c* and the hinged sides *i*, the slatted cover forming the top for the portfolio, said cover being made in overlapping sections, one section being hinged to one of the rigid sides *c*, and the other section being hinged to the side *i*, the staples *f*, secured to the rigid sides, and the sliding bars on one of said sections engaging the staples *f*, as set forth.

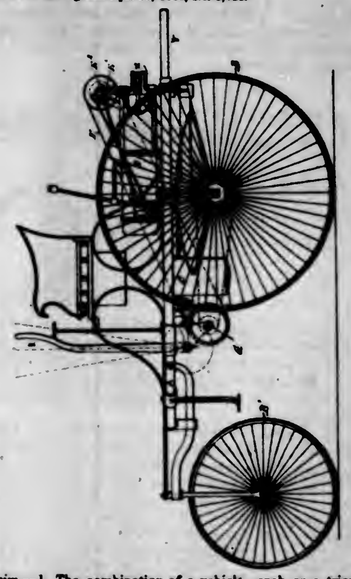
4. In a portfolio, the slatted bottom A, the rigid sides *c*, secured around three of the edges of the bottom A, the hinged side *i*, secured to the other edge of the bottom, and the slatted cover, one section of which is secured to one of the rigid sides, and the other section is secured to the hinged side, the sections of the cover being secured together, as set forth.

385,086. ANIMAL-TRAP. JAMES T. BELDEN, Sparta, Wis. Filed Apr. 12, 1888. Serial No. 270,480. (No model.)



Claim.—The animal-trap herein described, consisting of the upper and lower sections, A B, the upper section having its entire bottom or floor composed of two tilting parts, *a b*, each having a weight on its outer under side, and the section *a* having a notched depending lug, and the section *b* having the downwardly-curved plate *d'*, adapted to engage the notch on the lug of the said adjacent section, substantially as specified.

385,087. SELF-PROPELLING VEHICLE. CARL BENZ, Mannheim, Baden, Germany. Filed July 27, 1886. Serial No. 209,269. (No model.) Patented in England Apr. 26, 1886, No. 5,720.



Claim.—1. The combination of a vehicle—such as a tricycle—with a motor having its crank-shaft *x* placed in a vertical position and its fly-wheel *y* revolved in a horizontal plane, substantially as shown and described.

2. The lever 9, in combination with the devices 20 and 21, the shifter-bar 10, belt F, and fast and loose pulleys 15 16, the whole combined, constructed, and arranged so that by the simple manipulation of the one lever 9 the mechanism may be started, stopped, or the brake applied, substantially as described and set forth.

385,088. DRILLING-TOOL. ALEXANDER BENEIX, Brooklyn, N. Y. Filed Apr. 25, 1882. Serial No. 271,776. (No model.)



Claim.—1. A drilling-tool formed with a shank, A, a centering-point, B, end cutting-edges, C D, and straight side reaming-edges, F G, substantially as shown and described.

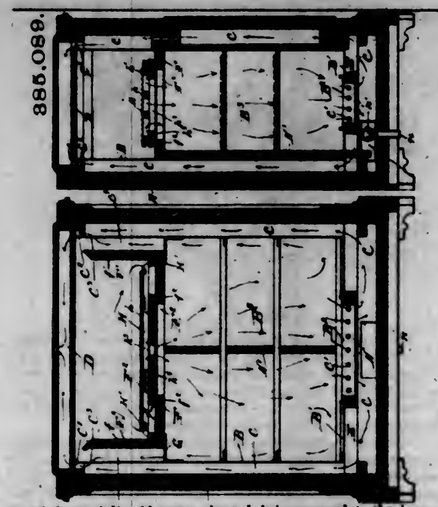
2. A drilling-tool formed with a shank, A, a centering-point, B, end cutting-edges, C D, converging to the point B, and straight longitudinal side reaming-edges, F G, terminating at the outer ends of the end cutting-edges, C D, substantially as shown and described.

3. A drilling-tool formed with a shank, A, a centering-point, B, opposite end cutting-edges, C D, and parallel and diametrically-opposite side reaming-edges, F G, the surface between which is depressed and rises to the surface of the shank A by an incline, I, substantially as shown and described.

385,089. REFRIGERATOR. CHARLES A. BLEES, Michigan City, Ind. Filed Aug. 20, 1887. Serial No. 247,420. (No model.)

Claim.—1. In a refrigerator, the combination, with its ice-pan and drip-pipe N', of a water-pan, N, into which said drip-pipe extends, and a discharge-pipe, *s*, projecting into the water-pan, provided with a float-valve, *s'*, said drip-pipe extending below the orifice of said discharge-pipe and said float-valve operating to close the discharge-pipe except when the water rises above its proper level in said water-pan, substantially as specified.

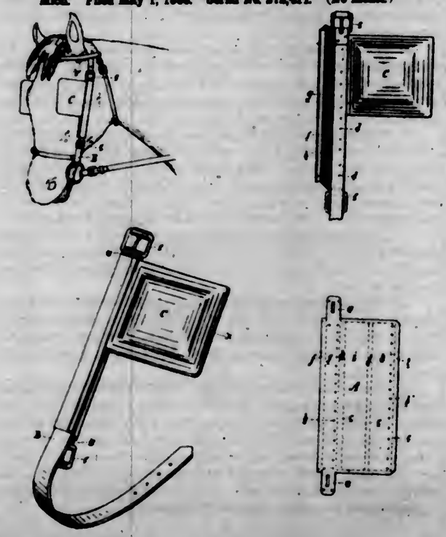
2. The combination, in a refrigerator having double walls at sides, top, and bottom and an air-space between them, of a refrigerating-chamber and an ice-chamber above said refrigerating-chamber, an ice-platform, and an ice-rack, H, provided with upper and lower



metal sheets, A A', said upper sheet, A, being secured to the ice-rack H by guides A^3, attached to the ice-rack at its edges, and guide-grooves A^4 at the edges of said metal sheet A, so that said sheet-metal cover A may be removed from the ice-rack, substantially as specified.

3. The refrigerator having an outer non-conducting wall and an inner metallic or conducting wall, with a continuous or connected air-space between the same at sides, top, and bottom, said inner wall having a central ventilator-opening through the floor or bottom thereof, and said outer wall having a ventilator-opening through its top or cover, said ventilator-openings communicating together through the air-space between said walls, a refrigerating-chamber, and an ice pan or chamber above said refrigerating-chamber, said ice pan or chamber having air spaces or passages between its ends and said inner metallic wall of the refrigerator, the ice-platform or bottom of the ice-chamber being of wood and provided with a central opening, and said refrigerator being furnished with a hollow ice-rack, H, provided with a central opening, A^2, to permit the cold air from the ice to pass centrally downward through the refrigerating-chamber, and said inner sheet-metal wall B being furnished with ventilator-openings C^3, communicating between the space C and the space C^4 between the ends of the ice-platform and the inner wall, substantially as specified.

385,090. CHECK-PIECE FOR BRIDLES. OSCAR BOTSFORD, Bureka, Mich. Filed May 1, 1888. Serial No. 272,411. (No model.)



Claim.—1. The check-piece consisting of the sheet-metal blank tubularly folded and provided with buckles secured to the ends thereof by ears formed on the blank, substantially as specified.

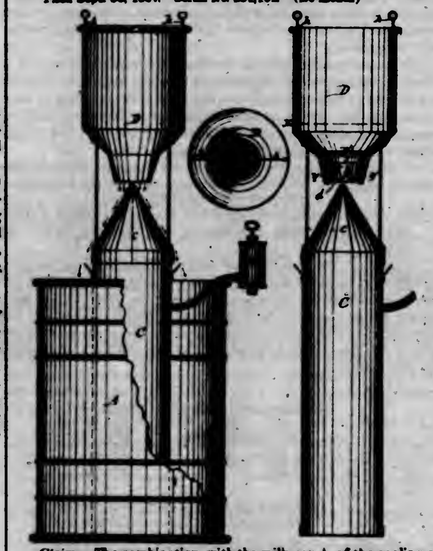
2. The check-piece consisting of a sheet-metal blank tubularly folded, in combination with a billet secured within the fold of each blank, substantially as described.

3. The check-piece consisting of the sheet-metal blank A, tubularly folded and provided with buckles secured to the ends thereof by the ears *a*, formed on the blank, in combination with the billet B, secured within the fold of the blank and carrying the blinder, all arranged substantially as described.

4. The check-piece consisting of the sheet-metal blank A, tubularly folded and provided with the re-enforced ends and the buckles secured thereto by straps formed on the blank, and the billet secured thereto by tacks or rivets between the tubular fold and an outer fold of said blank, substantially as described.

5. As an improved article of manufacture, the check-piece formed of sheet metal folded and provided with a billet inclosed within a fold of the sheet metal and secured thereto by tacks or rivets concealed within folds of the sheet metal, substantially as described.

385,091. MILK-STRAINER. ALBERTUS BOUTELL, Leeds, N. Y. Filed Sept. 30, 1887. Serial No. 251,101. (No model.)



Claim.—The combination, with the milk-can A, of the cooling-can C, the conical cover *c* on the top of the cooling-can, the strainer D supported above the cover *c*, and the plate *a* in the strainer, provided with the aperture *b* over the apex of the cone, substantially as described and shown.

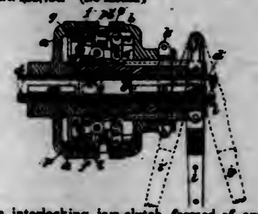
385,092. SWEAT-BAND FOR HATS. THOMAS W. BRACHER, New York, N. Y. Filed Dec. 22, 1887. Serial No. 258,642. (No model.)



Claim.—1. A soft-edge hat-sweat made of single thickness throughout and combined with the doubled flexible backing or slip B, placed along its side and also along the raw edge of the single-thickness band, substantially as described.

2. A soft-edge hat-sweat made of single thickness throughout and having a doubled flexible backing or slip, B, placed along its side and also along and covering the raw edge of the band, said backing being held to the band by threads that pass over the doubled edge of the backing and the band and through the band and doubled parts of the backing, thereby holding the part of the backing between its doubled edge and the perforations for the thread in a thread-loop, substantially as described.

385,093. CLUTCH. JOHN BOOTHBY, Chicago, Ill. Filed Oct. 13, 1887. Serial No. 252,756. (No model.)



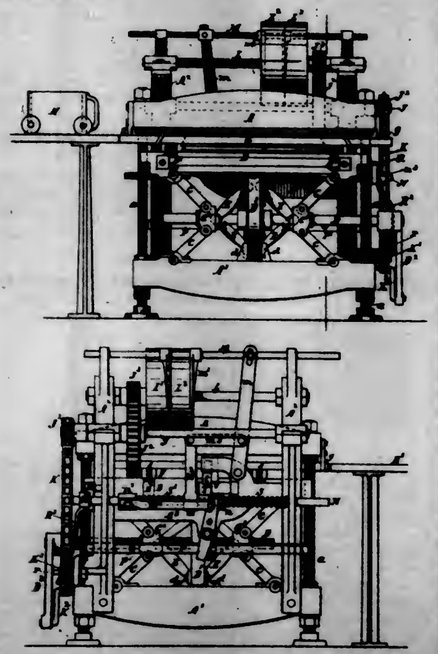
Claim.—1. An interlocking jaw-clutch formed of opposed and toothed crown-wheels, of which one is fixed and the other movable longitudinally on the shaft, in combination with a friction-clutch operating on the cylindrical surface of the fixed crown-wheel through levers fulcrumed between said crown-wheels, connected at one end to said friction-clutch and at the other to the movable crown-wheel by connecting mechanism, whereby the friction-clutch is first and the jaw-clutch next engaged and the friction-clutch released, and, conversely, the jaw-clutch first released and the friction-clutch engaged and next released, each series of acts occurring by moving the loose crown-wheel first in one and then in the opposite direction, substantially as specified.

2. In combination with the line-shafts *d d'* and crown-wheel *a*, a sleeve, *c*, carrying friction-segments against the cylindrical surfaces of the crown-wheel *a*, and levers fulcrumed between their ends on said sleeve, said levers being connected at one end to the said friction-segments and at the other to the movable crown-wheel by intermediate mechanism, substantially as specified.

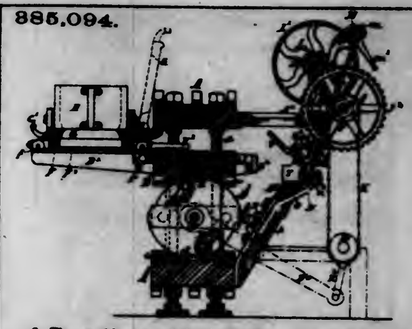
3. In a clutch, the combination of a crown-wheel, *a*, friction-segments *g*, toggles o^1, block o^2, and screw *g*, substantially as specified.

385,094. MOLDING-PRESS FOR OIL-CAKES. OSCAR P. DUNNELL, Worcester, Mass. Filed Sept. 26, 1887. Serial No. 250,703. (No model.)

Claim.—1. The combination, with the fly-table, the press-head, and follower, the press-operating shafts and gear, driving-pulleys, and automatic shipper for stopping and starting the press, of the mold-carrier having a lug that trips the starting-shipper lock when said mold-carrier is introduced or inserted within the press, whereby the press is put into action automatically by the operation of inserting the mold-carrier.



385,094.



2. The combination of the press-follower provided with projecting brackets at front and rear, the pivoted yielding sections I, and springs I', arranged within said brackets, and the mold-carrier frame having front and rear projections provided with supports or truck-wheels F, that rest upon the yielding sections when said frame is in the press, substantially as and for the purpose set forth.

3. The mechanism for applying pressure, consisting of oppositely-directed arms E, having spherical or universal bearing-joints at their ends, the outer ends of which connect with the parts against which pressure is exerted, and their inner ends working in combination with a rotative wheel or operator, whereby said inner ends are caused to move in a circular arc in a plane substantially perpendicular to the direction of the pressure or movement of their outer ends, substantially as set forth.

4. The combination, with the follower B and head A', of the shaft D, carrying the wheel or socket-plate D', the knuckle-joint blocks C, provided with sockets, the arms E, disposed between said wheel and the knuckle-joint blocks, and the arms C between said blocks and the pressing-head and follower, substantially as and for the purpose set forth.

5. The combination, with the pressing-heads and follower, the knuckle-joint C, pressing-arms C, arms E, wheel D', and shaft D, of the fly-table G, the mold-carrier frame F, supporting-trucks *f'*, and means, substantially as described, for operating said shaft.

6. The combination of the knuckle-joint blocks C, arms C C, pressing-follower B, and head A, provided with lugs *d*, the actuating-shaft D, passing through said knuckle-joint blocks, the wheel or socket plate D', fixed on said shaft and having a cam-shaped periphery confined between said lugs, and the arms E, socketed or universally jointed at their respective ends between the said wheel and said knuckle-joint blocks, substantially as and for the purpose set forth.

7. The combination, with the cake-forming press-head and pressing-follower operated by the knuckle-joint arms and shaft D, of the arm D^2, chain K, link K^1, sprocket-wheels K' and J', and operating-shaft J, with driving-gear for imparting motion to said shaft, for the purposes set forth.

8. The combination, with the press-head and pressing-follower, its operating-shaft D and arm D^2, of the chain K, link K^1, sprocket-wheels J' and K', shaft J, gears J^2 J^3, shaft L, pulleys L' L^1, shipper M *m'*, and spring-levers and trip-dogs arranged for automatically operating said shipper, substantially as set forth.

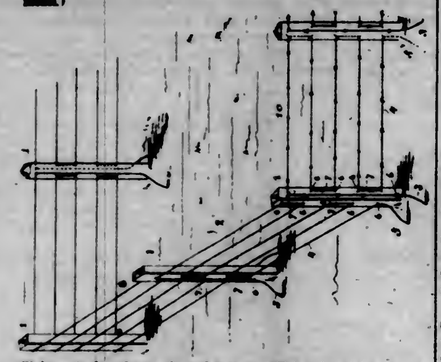
9. In combination with the press-heads, pressing-follower, press-operating knuckle-joint arms, and mold-carrier frame, the bar N, shipper-actuating arm M^3, springs S S', collars *n*, *n'*, and n^2, dogs R and T, setting-lever O, connection P, actuating said setting-lever from the knuckle-joint, the lifting-lever V, tripping-arm *v'* on said mold-carrier, and latch *t*, substantially as and for the purposes set forth.

10. The dog R, having an arm, R', in combination with the press-operating arm D^2, provided with a lug or pin, *r*, and spring-actuated bar N, having the collar or stop device n^2, substantially as and for the purpose set forth.

11. The combination of the partially-rotative wheel D' and the knuckle-joint blocks C, each having bearing-sockets thereon, and the arms E, disposed in oppositely-directed pairs, with their respective ends sustained in said bearing-sockets, substantially as and for the purpose set forth.

12. The pressing-follower having depressed grooves or guideways across its upper surface and attached brackets or extensions having upon their tops guideways or tracks disposed in continuation of said grooves, and provided with yielding or depressible sections at front and rear of said follower, in combination with a mold-carrier frame provided with wheels or trucks that run on said guide-tracks and rest upon said yielding sections while the mold-carrier is in position for condensing the cake, substantially as set forth.

385,095. LIGHTNING-ESCAPE FOR WIRE FENCES. ALLEN CRAMMELL, Lamar, Mo. Filed Oct. 21, 1887. Serial No. 252,573. (No model.)



Claim.—1. In a fence adapted to carry off the electricity directly into the ground at the portion struck by lightning, a section of wire fence constructed with a single strand of wire extending between posts to which it is secured, and having its terminals grounded, substantially as shown and described.

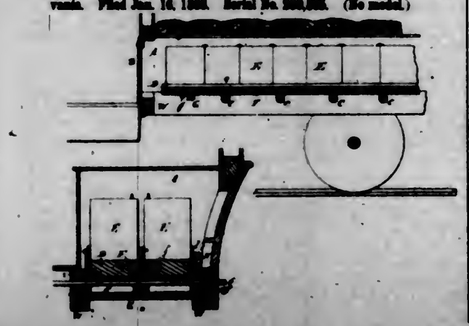
2. A wire fence adapted to carry off the electricity directly into the ground at the portion struck by lightning, constructed of a number of sections, each section consisting of a strand of wire extending backward and forward between posts, secured to the latter on the side of the posts opposite to that on which the strand of the adjacent section is secured, and having its terminals grounded, substantially as described.

385,096. METHOD OF MAKING COATS. WOLF COHEN, New York, N. Y. Filed Mar. 2, 1888. Serial No. 265,892. (No model.)

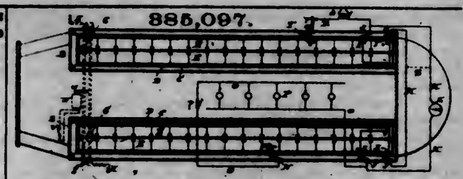


Claim.—The method herein described of making coats, which consists in placing the complete outer fabric of the coat-body face to face with the complete lining therefor, turning the sleeves of both outer body and lining inside out, uniting the outer fabric to the lining, edge to edge, by a seam traversing their entire circumference, with the exception of the small opening, and the extremities of the sleeves to the extremities of the sleeve-linings, then turning the entire garment through said opening, substantially as specified.

385,097. ELECTRIC RAILWAY. G. HERMANN CRESSY, Philadelphia, Pa., assignor to the Electric Car Company of America, of Pennsylvania. Filed Jan. 16, 1888. Serial No. 260,925. (No model.)



385,097.



Claim.—1. A car having a guideway for a secondary battery slide or floor, in combination with a movable battery slide or floor upon which the batteries are arranged, and a mechanical power mechanism to move said battery slide or floor into or out of the car and upon its guideway.

2. A car having a guideway or support for a secondary battery slide or floor, in combination with a movable battery slide or floor upon which the batteries are arranged, provided with a rack, a pinion on the car to mesh with the rack of the slide, and suitable means to rotate said pinion.

3. A car having a guideway or support for a secondary battery slide or floor, in combination with a movable battery slide or floor upon which the batteries are arranged, provided with a rack, a pinion on the car to mesh with the rack of the slide, and a shaft carrying said pinion and extending to both sides of the car, whereby power may be applied at both ends.

4. A car having a guideway or support for a secondary battery slide or floor, in combination with a movable battery slide or floor upon which the batteries are arranged, provided with a rack, a pinion on the car to mesh with the rack of the slide, an electric motor to rotate said pinion, a motor-circuit, and a switch to control the motor.

5. In a car, the combination of guides upon which the battery floor or slide moves and rests, a battery floor or slide having a flat under surface, and a rack set in flush with said under surface, and a pinion on the car to mesh with said rack and move the battery floor or slide over the guides.

6. In a car, the combination of cylindrical drums or rollers upon which the battery floor or slide moves and rests, a battery floor or slide having a flat under surface, and a rack set in flush with said under surface, and a pinion on the car to mesh with said rack and move the battery floor or slide over the guides.

7. The combination of a car having two parallel sills and a battery-support between them and below their upper edges, with a removable battery-supporting slide or floor fitting between said sills and upon said support and having projecting sides extending above said sills for holding the battery-cells in place, and battery-cells supported upon the slide or floor and between the raised sides.

8. The combination of a car having two parallel sills and a battery-slide support between them and below their upper edges, with a battery slide or floor having raised sides and center, in which the sides extend part way down on the slide or floor, forming offsets for the car-sills, and two parallel rows of removable battery-cells arranged upon said slide or floor and respectively between the said raised sides and center.

9. A car-body having a guideway or support for a battery slide or floor and provided with three stationary contacts and an electric motor on the car, in combination with a motor-circuit in connection with two of said contacts, a lighting-circuit in the car in connection with the remaining contact and one of the motor-contacts, a removable battery slide or floor having three contacts corresponding to the three stationary contacts and adapted to make electrical connection with them when put in place on the car-body, and a battery of a large number of cells supported on said slide or floor and having all of its cells connected to the motor-contacts and a portion only of its cells connected to the lighting-circuit contacts.

10. A car-body having a guideway or support for a battery slide or floor and provided with three stationary contacts and an electric motor on the car, in combination with a motor-circuit in connection with two of said contacts, a lighting-circuit on the car in connection with the remaining contact and one of the motor-contacts, a removable battery slide or floor having three contacts corresponding to the three stationary contacts and adapted to make electrical connection with them when put in place on the car-body, a battery of a large number of cells supported on said slide or floor and having all of its cells connected to the motor-contacts, a portion only of its cells connected to the lighting-circuit contacts, and an independent switch to make or break said electric-light circuit.

11. A car-body having a guideway or support for a battery slide or floor and provided with three stationary contacts and an electric motor on the car, in combination with a motor-circuit in connection with two of said contacts, an electric-signal circuit on the car in connection with the remaining contact and one of the motor-contacts, an electric signal in said circuit, a removable battery slide or floor having three contacts corresponding to the three stationary contacts and

adapted to make electrical connection with them when put in place on the car-body, and a battery of a large number of cells supported on said slide or floor and having all of its cells connected to the motor-contacts and a small portion only of its cells connected to the signal-circuit contacts.

12. A car-body having a guideway or support for a battery slide or floor and provided with three stationary contacts and an electric motor on the car, in combination with a motor-circuit in connection with two of said contacts, an electric signal-circuit on the car in connection with the remaining contact and one of the motor-contacts, an electric signal in said circuit, a removable battery slide or floor having three contacts corresponding to the three stationary contacts and adapted to make electrical connection with them when put in place on the car-body, and a battery of a large number of cells supported on said slide or floor and having all of its cells connected to the motor-contacts, a small portion only of its cells connected to the signal-circuit contacts, and an independent switch to interrupt the signal-circuit without affecting the continuity of the motor-circuit.

13. A car-body, in combination with two sets of stationary contacts, an electric circuit connecting one of each of said sets of stationary contacts, a switch or regulator for controlling the motor, electric circuits from the other two stationary contacts connecting with the switch or regulator, two removable floors or battery-supports each having two contacts which make electrical connection with the stationary contacts when the floors or supports are put in place, and a battery supported on each floor and electrically connected with the contacts thereof, whereby the two batteries are connected in series with each other.

14. A car-body, in combination with two sets of stationary contacts, an electric circuit connecting one of each of said sets of stationary contacts, a switch or regulator for controlling the motor, electric circuits from the other two stationary contacts connecting with the switch or regulator, two removable floors or battery-supports each having two contacts which make electrical connection with the stationary contacts when the floors or supports are put in place, and a battery consisting of a number of cells permanently connected in series, supported on each floor, and electrically connected with the contacts thereof, whereby the cells of the two batteries are connected in series with each other and with the regulator.

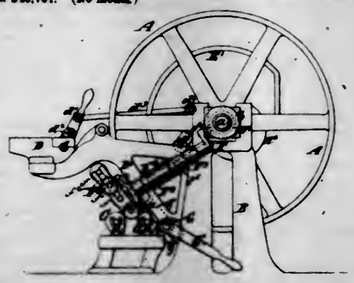
15. The combination of the car-body, an electric-lighting circuit on said car-body, a removable slide or floor, a large number of battery-cells supported by said floor and connected in series, an electric motor-circuit on the car, contact devices controlled by the slide or floor for automatically coupling all of the cells in series with the motor-circuit, and additional contact devices, also controlled by the slide or floor, for coupling a small portion of said cells in circuit with the lighting-circuit upon placing said floor or slide into position on the car-body.

16. A battery slide or floor for a vehicle, consisting of the body part D, having the recess *f* on the bottom, in which is set the rack F, and the raised sides *d* at the top.

17. A battery slide or floor for a vehicle, consisting of the body part D, having the recess *f* on the bottom, in which is set the rack F, and the raised sides *d* at the top, and the central strip, *e*, to keep the two rows of cells separated.

385,098. INKING APPARATUS FOR PRINTING-MACHINES.

CALVERT B. COTTRELL, Stonington, Conn. Filed Aug. 12, 1887. Serial No. 246,761. (No model.)

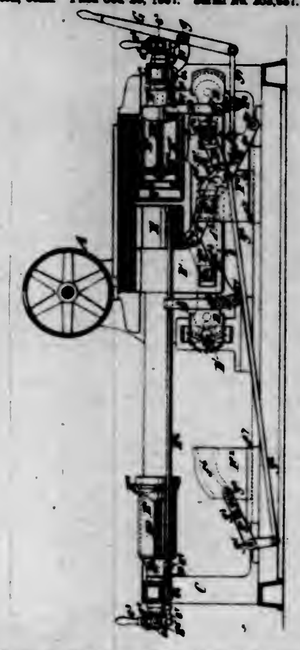


Claim.—1. The combination, with the cylinder and form-rollers for acting upon the form, of a movable frame or stand-top wherein are journaled the vibrating and other distributing rollers, a cam and rock-shaft for vibrating said rollers, and a bearing for the rock-shaft secured to the movable frame and serving to maintain the rock-shaft in engagement with its operating-cam, substantially as herein described.

2. The combination, with the cylinder A and the form-rollers C, of the swinging frame F', carrying the distributing-rollers *f*, the eccentrics *g*, for moving said frame, the cam F', and the rock-shaft F, for vibrating certain of the rollers *f*, and the box F⁸ for said rock-shaft, secured to the swinging frame, substantially as herein described.

385,099. PRINTING-MACHINE.

CALVERT B. COTTRELL, Stonington, Conn. Filed Oct. 29, 1887. Serial No. 253,687. (No model.)



Claim.—1. The combination, with the bed of a cylinder printing-machine and a rack-and-pinion gearing for operating the bed, the rack of the gearing being hung from the bed to provide for a slight lengthwise movement of one relative to the other, of springs or cushions to arrest the movement of the bed without shock, mechanism, substantially as described, for regulating or varying the resistance which the springs or cushions oppose to the movement of the bed, and tappets which are carried by the bed and are shifted by the movement of the bed and rack, one relatively to the other, to operate through the said mechanism for varying the resistance offered by the springs or cushions, substantially as herein set forth.

2. The combination, with the bed of a printing-machine and a rack-and-pinion gearing for reciprocating it, the rack of said gearing sliding in the hanger on the bed and connected with said hanger by swinging links to provide for a slight sliding movement of the rack and bed, one relatively to the other, of toggle-levers having a pivotal point fixed on the rack and other pivotal points upon blocks having a limited sliding movement in the hanger, whereby when the toggle-levers are straightened the bed and rack are locked against sliding movement, one relatively to the other, a cam at one or each end of the machine with which a truck-roll on the toggle-levers engages to break up or deflect the toggle-levers, air springs or cushions for arresting the movement of the bed, and mechanism, substantially as described, for varying the resistance offered by the air springs or cushions, substantially as set forth.

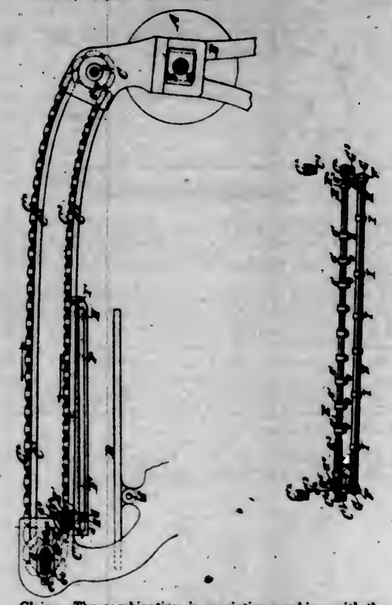
3. The combination, with the bed of a printing-machine and a rack-and-pinion gearing for reciprocating it, the rack of the gearing sliding in the hanger on the bed and connected therewith to have a slight sliding movement between the rack and bed, one relatively to the other, of toggle-levers having a pivotal point fixed on the rack and other pivotal points on blocks having a limited sliding movement in the hanger, whereby when the levers are straightened the bed and rack are locked against sliding movement, one relatively to the other, a sliding cam at one or each end of the machine with which a truck-roll on the toggle-levers engages to break up or deflect the toggle-levers, a hand-lever and connections for sliding said cam into and out of operative position, air springs or cushions for arresting the movement of the bed, and mechanism, substantially as described, whereby

the resistance offered by the air springs or cushions may be varied, substantially as herein set forth.

4. The combination, with the bed of a printing-machine, air springs or cushions for arresting its movement in opposite directions, and mechanism, substantially as described, for varying the resistance offered by the air springs or cushions, the mechanism at opposite ends of the machine being connected by a rod, as F⁹, of the rack-and-pinion gearing for operating the bed, including a rack having a slight sliding movement between it and the bed-hanger, toggle-levers, as described, whereby the rack and bed may be locked to prevent such sliding movement, arms D⁸ D⁸, which are connected with the bed-hanger and rack so as to be operated one by the bed running ahead of the rack and the other by the rack running ahead of the bed, and which operate on the rod E⁸ to vary both air springs or cushions, and cams at opposite ends of the machine for breaking up or deflecting the toggle-levers, substantially as herein set forth.

385,100. SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

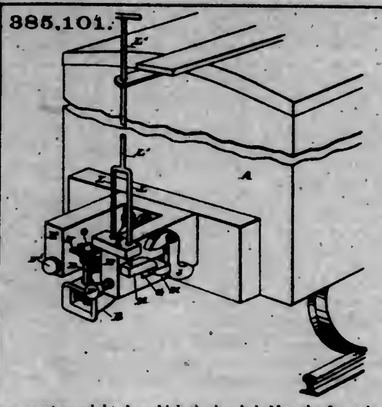
CALVERT B. COTTRELL, Stonington, Conn. Filed Oct. 31, 1887. Serial No. 253,894. (No model.)



Claim.—The combination, in a printing-machine, with the cylinder, a receiving-table at the farther end of the machine, and guides extending between them, of an endless delivery gripper-carrier traversing said guides, a spring-roller and tapes extending therefrom and secured to a bar extending between the guides, guides for the said roller, and a tappet-connection between the gripper-carrier and spring-roller, whereby soon after leaving the cylinder the gripper-carrier will take up and move forward the spring-roller under the sheet, and when released by the carrier the spring-roller will roll back and wind up the tapes, substantially as herein described.

385,101. CAR-COUPLING.

WILLIAM M. OTTER, Marysville, Cal. Filed Apr. 2, 1888. Serial No. 269,339. (No model.)



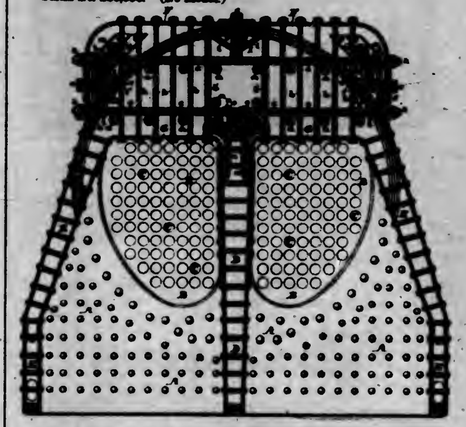
Claim.—1. The back wardly-sliding bumper and the transverse bar connected therewith, a spring or counter-weight by which said bar is forced to the front, in combination with the vertically-moving blocks and the pin-holding link connected therewith, said blocks being supported by a transverse bar, so as to hold the pin above the slot of the draw-head, and released by the impact of the bumper, substantially as herein described.

2. The back wardly-moving bumper, the transverse bar connected with and carried thereby, and the spring and counter-weights by which it is held to the front, in combination with the blocks holding the link, having their rear ends beveled or inclined to correspond with the beveled or inclined front edge of the transverse bar, so that the blocks may force the bar back ward and pass it when rising and be held up by it after they are raised, substantially as herein described.

3. The horizontally-sliding bumper and transverse bar, the spring or counter-weights by which the bar is held to the front, in combination with the vertically-moving lifting-rod, the block secured to its lower end, and the pin-holding link projecting from the inner block and swiveled so as to turn loosely in a horizontal plane, substantially as described.

385,102. BOILER.

FRANCIS W. DEAN, Cambridge, Mass., assignor of one-half to Brunson D. Leavitt, Jr., same place. Filed Apr. 7, 1888. Serial No. 269,966. (No model.)



Claim.—1. In a boiler, the combination of two tie-rods, a bar connecting each end of one of said tie-rods with the same end of the other tie-rod, a bolt passing through said bar and the shell of the boiler, and nuts for clamping said shell and bar together.

2. In a boiler, the combination of two tie-rods the threaded ends of which project through the shell, nuts mounted upon the ends of said rods outside of said shell, a bar connecting each end of one of said tie-rods with the same end of the other, nuts mounted upon said tie-rods and bearing upon said bars to secure them to the shell of the boiler, and means for securing said connecting-bar to the shell of the boiler at a point midway between said tie-rods.

3. In a boiler, the combination of two tie-rods the ends of which are secured to opposite walls of the shell, a bar extending from either end of one of said tie-rods to the same end of the other tie-rod and provided with a hub at right angles to said shell, a bolt passing through said shell and hub, and nuts for clamping said shell and the hub of said bar together.

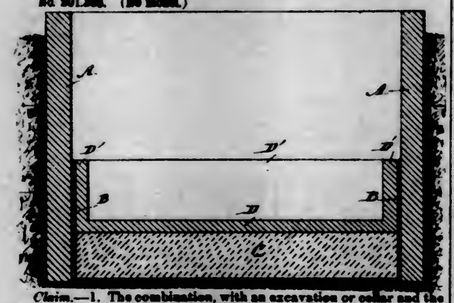
4. In a boiler, the combination of two stay-bolts secured at their upper ends to the shell of the boiler and at their lower ends to the crown-sheets, a bar extending from one bolt to the other at their upper ends, means for securing said bar to said shell midway between said bolts, a similar bar extending from one bolt to the other at their lower ends, and means for securing said lower bar to the walls of the water-leg.

5. The herein-described system of bracing the shell of a steam-chamber of a boiler, consisting of a series of transverse tie-rods, a

series of bars connecting said rods in pairs, means for securing said bars to the shell midway between said rods, a series of vertical stay-bolts connecting said shell to the crown-sheet, a bar extending from the upper end of one to the upper end of another of said stay-bolts, which are further apart than the others, means for securing said bar to the shell of the boiler midway between said stay-bolts, a similar bar extending from the lower end of one to the lower end of the other of said stay-bolts, and means for securing said last-mentioned bar to the water-leg or the crown-sheet, all constructed and arranged so that a man-passage is left between the various rods and bolts for the entire length of the steam-chamber.

6. A system of bracing the shell of a steam-boiler, consisting of a series of transverse tie-rods, a series of bars, each of which connect the ends of two of said tie-rods, bolts passing through said bars and the shell of the boiler, nuts mounted upon the threaded ends of said bolts for clamping said bars to said shell, and a series of vertical stay-bolts connecting said shell to the crown-sheet, all constructed and arranged so that a man-passage is left between the various rods and bolts for the entire length of the steam-chamber.

385,103. RENDERING CELLARS WATER-PROOF. FRANK J DE BOSSET, Babylon, assignor of one-half to Timothy P. Neville, New York, and Samuel Horan, Babylon, N. Y. Filed May 6, 1886. Serial No. 201,393. (No model.)



Claim.—1. The combination, with an excavation or cellar and the walls, A, of masonry, of a water-tight metallic casing, B, formed with a continuous bottom and vertical walls which fit against the walls of masonry, substantially as described.

2. The water-tight metallic casing B, fitted at the bottom of the excavation and against the walls, A, of masonry, in combination with the bed, C, of gravel, and the floor D and vertical walls D', built upon the bed C, substantially as described.

385,104. PUMP ATTACHMENT. THOMAS DUFFLEY, Rosemount, Minn. Filed Feb. 22, 1888. Serial No. 264,902. (No model.)



Claim.—A pump attachment for pump-tubes, consisting of plate 5, secured to tube 1 by metal band 7 and nuts 8, vent-tube 3, fastened in plate 5 and tube 1, valve 12, having groove 26, mounted in vent-tube 3, and formed with flange 22, and arm 11, with guide-pin 24, located in slotted projection 10, coiled spring 23, connecting-rod 16, pivoted lever 17, having lip 19, and frame 21, with rack 20 on well-curb 2, substantially as described

385,105. PROCESS OF MAKING RESIN-SOAP AND GLYCERINE. ALBERT DEMMER and OTTO C. HASSMANN, London, England, assignors to said Demmer and Joseph Gluck, Brooklyn, N. Y. Filed Sept. 14, 1887. Serial No. 249,694. (No specimens.)

Claim.—1. The process of preparing resin-soap from spent lye containing carbonated alkali, which consists in first adding lime to said lye and converting the carbonated alkali it contained into caustic alkali, in then allowing the lime to settle, drawing off the lye and concentrating it, and then adding resin sufficient to combine with said caustic alkali, as set forth.

2. The process herein described of converting lye containing alkali into resin-soap and glycerine, which consists in adding to the lye lime, then resin, then settling the lye to separate the resin-soap, then adding acid in the presence of a mechanical carrier of the resulting precipitate, (of the nature of an insoluble powder,) then soda, then finally boiling down the lye until the salt it contains crystallizes and glycerine is formed, as set forth
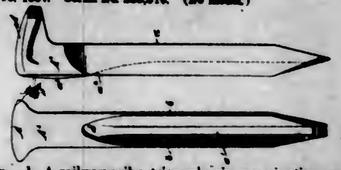
385,106. IDENTIFYING DEVICE. EDWIN P. PIERCE, Auburn, N. Y., assignor of one-half to Cyrenus Wheeler, Jr., same place. Filed Mar. 16, 1888. Serial No. 267,662. (No model.)



Claim.—1. An identifying device consisting of a refractory case having a detachable cover and adapted to be carried upon the person, and containing a refractory tablet bearing marks of identification, substantially as described.

2. An identifying device consisting of a metallic case having a cover, both lined with refractory material, and a metallic tablet contained in said case and bearing marks of identification, substantially as described.

385,107. RAILWAY-SPIKE. JAMES S. FOX, Detroit, Mich. Filed Nov. 16, 1887. Serial No. 255,318. (No model.)

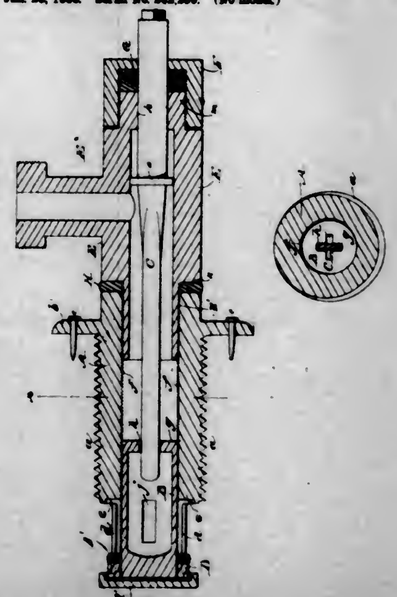


Claim.—1. A railway-spike triangular in cross-section and hollowed out at the back, and having a portion swelled or bulged beyond the general surface of its back immediately below the head, substantially as described.

2. A railway-spike triangular in cross-section, said spike hollowed out at the back only, said hollow terminating a short distance below the neck in a gradually-inclined surface, a^2, whereby the top of the spike is crowded toward the rail, substantially as described.

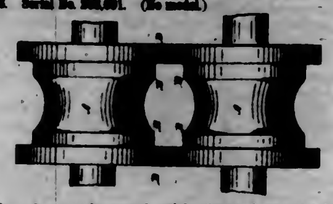
3. The herein-described railway-spike, constructed with a shaft triangular in cross-section and hollowed out at the back, a sloping surface, a^2, at the upper extremity of said hollow, and a portion swelled or bulged beyond the general surface of the back of the spike, as at a^3, substantially as described.

385,108. FAUCET. EDWIN P. J. FREEMAN, Roslyn, N. Y. Filed Jan. 28, 1888. Serial No. 262,220. (No model.)



Claim.—The cap A, externally and internally screw-threaded and formed with the guard or cap A' and separated plates *d*, in combination with the externally-screw-threaded plug B, having flanged cap-nut D, packing D', and openings *j* A, and the faucet E, rod or blade C, packing H, cap-nut F, and packing G, substantially as described.

385,109. TUBE AND MODE OF MAKING THE SAME. DAVID A. GARVER and CLARENCE H. STRAUSS, Bryan, Ohio. Filed Mar. 27, 1888. Serial No. 268,691. (No model.)



Claim.—1. As an improved article of manufacture, a tube having the laterally-projecting flanges or wings, both surfaces of the ends of which are substantially straight, as set forth.

2. As an improved article of manufacture, a tube having the laterally-projecting flanges or wings, the ends of said flanges or wings being relatively thicker than the other portions of the tube, substantially as described.

3. As an improved article of manufacture, a tube having the laterally-projecting flanges or wings, the ends of said flanges or wings being relatively thicker than the other portions of the tube, both surfaces of said thicker portions being substantially straight, as set forth.

4. The herein-described process of forming flanged metal tubes, consisting in compressing a cylindrical blank between suitable dies and causing the intermediate or unconfined portions of said blank to bulge outward, substantially as described.

5. The herein-described process of forming metal tubes with flanges having thickened ends, consisting in compressing a cylindrical blank between suitable dies, allowing the unconfined portion of the blank to bulge outward, limiting the extent of such outward bulge, and subjecting the sides of said bulged portion to pressure, substantially as described.

385,110. CASH AND PACKAGE CARRIER. WILLIAM T. GRIER, Mansfield, Ohio. Filed Mar. 1, 1888. Serial No. 265,794. (No model.)



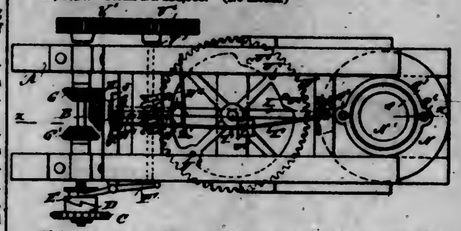
Claim.—1. In a cash and package carrier, the combination, with a suitable support, of a tilting guide pivoted thereon, a holder mounted on said guide and adapted to shift up and down upon the same, a track secured at one end to said holder, and a suitable support at the other end of said track, substantially as set forth.

2. In a cash and package carrier, the combination, with a suitable support, of a tilting guide pivoted thereon, a holder mounted by means of a roller on said guide and adapted to shift up and down upon the same, a track secured at one end to said holder, and a suitable support for the other end of the track, substantially as set forth.

3. In a cash and package carrier apparatus, the combination of a hanger provided with a tilting loop, E, having a guide, E', a yoke, J, provided with a roller mounted on said track, and a track, H, secured at one end to the cashier's desk and at the other end to the yoke J, substantially as described.

4. The combination of the hanger A, having the bracket B, the pivot-plate C, the loop E, the spring D, the yoke J, having the roller C, and the track H, arranged as described, and for the purpose specified.

385,111. DRILL. JOHN C. GOSNEY, Boyne City, Tex. Filed Nov. 11, 1887. Serial No. 255,263. (No model.)



Claim.—1. In a drill, a centrally-apertured drill-operating disk provided with pins projecting parallel with its axis for engaging the drill and directly rotating it, substantially as set forth.

2. In a drill, a centrally-apertured drill-operating disk provided with pins projecting parallel with its axis, in combination with a drill clamp or collar having apertures through which said pins freely pass, substantially as set forth.

3. In a drill, a disk having a forward and backward motion and provided with a central aperture, through which passes a drill-tool, in combination with pins secured to said disk and a clamp fastened to the drill-tool and having apertures through which pass said pins, so that the drill-tool can be moved freely up and down, but is turned forward and backward by the said disk, substantially as shown and described.

4. In a drill, a disk provided with pins and engaging a clamp secured to the drilling-tool, in combination with a gear-wheel formed on said disk, a pinion meshing into said gear-wheel, a shaft carrying said pinion, and a second pinion fastened on the said shaft and engaging alternately gear-wheels on its sides, so as to rotate said shaft in opposite directions, substantially as shown and described.

5. In a drill, the combination, with the main shaft carrying two bevel gear-wheels, of a shaft carrying a bevel gear-wheel adapted to be connected alternately with the two bevel gear-wheels on said main shaft, a pinion secured on the said shaft, and a disk provided with a bevel gear-wheel meshing in the said pinion, said disk being connected with the drilling-tool, so that the latter can move freely up and down, but is turned by the said disk, substantially as shown and described.

6. In a drill, the combination, with a main shaft carrying two bevel gear-wheels, of a shaft carrying a bevel gear-wheel held between said two bevel gear-wheels on the main shaft, a box adapted to slide and in which said shaft is mounted, a lever pivotally connected with said box, a spring-bar connected with said lever, and a block held to slide on said spring-bar and having a rotary motion, substantially as shown and described.

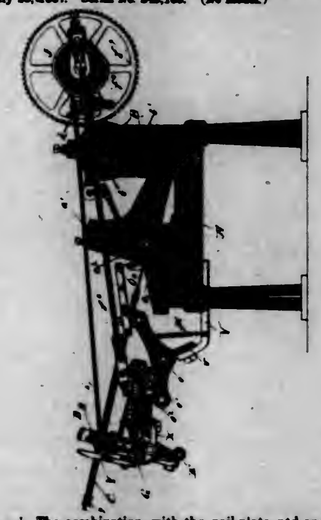
7. In a drill, the combination, with a main shaft carrying two bevel gear-wheels, of a shaft carrying a bevel gear-wheel adapted to be engaged alternately by the said bevel gear-wheels on the main shaft, a sliding box in which the said shaft is mounted, a lever pivotally connected with said box, a spring-bar connected with said lever, a block sliding on said spring-bar, and a worm-wheel receiving its rotary motion from the main shaft and carrying a pin engaging said block, substantially as shown and described.

8. In a drill, the combination, with a main shaft carrying two bevel gear-wheels, of a shaft carrying a bevel gear-wheel adapted to be engaged alternately by said bevel gear-wheels on the main shaft, a sliding box in which said shaft is mounted, a lever pivotally connected with said box, a spring-bar connected with said lever, a block sliding on said spring-bar, and a worm-wheel receiving its rotary motion from the main shaft and carrying a pin engaging said block, and a bar for locking said lever in position, substantially as shown and described.

9. In a drill, the combination, with a main shaft carrying two

bevel gear-wheels, of a shaft provided with a bevel gear-wheel adapted to engage alternately said bevel gear-wheels on the main shaft, a box adapted to slide and in which said shaft is mounted, a lever pivotally connected with said box, a spring-bar connected with said lever, a block adapted to slide on said spring-bar, a worm-wheel carrying a pin engaging said sliding block, said worm-wheel being operated from the main shaft, pins held on said worm-wheel, a block having inclines and engaged by said pins, and a bar connected with said block and adapted to lock said lever in position, substantially as shown and described.

385,112. NAIL-PLATE FEEDER. JOHN C. GOULD, Chicago, Ill. Filed July 25, 1887. Serial No. 245,183. (No model.)



Claim.—1. The combination, with the nail-plate rod and with the knives of the nail-machine, of feeding-grippers reciprocating simultaneously in opposite directions and adapted to reverse the rod, substantially as set forth.

2. The combination, with the nail-plate rod and the cutting-knives, of grippers D, reciprocating simultaneously in opposite directions and adapted to reverse the rod, and a rocking lever or its equivalent for actuating said grippers, substantially as set forth.

3. The combination, with the nail-plate rod and the cutting-knives, of grippers D, reciprocating simultaneously in opposite directions to reverse said rod, and also oscillating to feed said rod, a rocking lever or its equivalent, imparting the reciprocation, and an oscillating support for said lever imparting the oscillation, substantially as set forth.

4. In a nail-plate feeder, the combination, with the nail-plate rod, of oppositely-reciprocating simultaneously-acting grippers adapted to reverse the rod, and arm g, or its equivalent, for operating said grippers and releasing the rod intermittently, substantially as set forth.

5. In a nail-plate feeder, the combination, with the nail-plate rod, of grippers reciprocating simultaneously in opposite directions to reverse the rod and oscillating to feed the plate, and an arm, g, or its equivalent, for intermittently separating such grippers to release the rod, substantially as set forth.

6. The nail-plate feeder wherein are combined grippers adapted to reverse the rod and to feed it and positioning-levers O and P, substantially as set forth.

7. In a nail-plate feeder, the combination of two opposing grippers yieldingly held together by a spring at their upper ends, as shown, and a rocking lever, E, in which said grippers are supported at their lower ends, and by which they are reciprocated, substantially as specified.

8. In a nail-plate feeder, the combination of grippers D with the pivoted inverted-T lever, in the extremities of which the grippers are supported, and a lever, F, for rocking the T-lever, substantially as set forth.

9. The combination of grippers D, the rocking T, and the plate H, the latter supporting the T and the T supporting the grippers, substantially as set forth.

10. The combination, with the oscillating grippers, of a cam and connections for causing such oscillation, the cam having the risers for acting upon the grippers while they have hold of the rod and causing them to withdraw the plate to clear the knife, substantially as specified.

11. The combination, with the oppositely-reciprocating grippers and their actuating-lever, of the cam J, mechanically connected to said grippers and having the risers for oscillating the grippers while they are reciprocating, substantially as specified.

12. The oscillating grippers for feeding the rod, in combination with their actuating-cam, when said cam is provided with risers n, and also adapted to actuate the grippers to withdraw the rod after each cut, substantially as specified.

13. The combination, with the grippers of a nail-plate feeder, of a cam, or its equivalent, for oscillating said grippers, acting to give them two backward oscillations, one while the rod is not held by them and one while it is held, substantially as specified.

14. In a nail-plate feeder, the combination, with the oscillating and oppositely-reciprocating grippers, of the positioning-levers O and P, substantially as specified.

15. In a nail-plate feeder, the combination, with the grippers and the rocking T and their supports, of the lever F, substantially as specified.

16. In a nail-plate feeder, the combination with the grippers and the rocking T and their supports, of the lever F and the plate W, by which all said parts are sustained, substantially as specified.

17. The combination, with the grippers, of the lever F, the separating-arm, and the ears upon said lever striking said arm and separating the grippers, substantially as specified.

18. The frame X, the plate H, pivotally supported in said frame, the grippers, and their actuating T, in combination with the cam and pitman for causing the oscillation of the grippers, substantially as specified.

19. In a nail-plate feeder wherein the plate is reversed and fed by grippers acting upon the rod, the combination, with such grippers, of positioning-levers controlling the point of the plate, such levers being pivoted or jointed so as to be capable of being turned out of the way to give access to the knives of the nail-machine, substantially as set forth.

20. In a nail-plate feeder the support W whereof is laterally adjustable, as set forth, the combination, with support W, of the sector and rack for moving the same in effecting the adjustment and the stationary plate v, upon which the support W is carried, substantially as set forth.

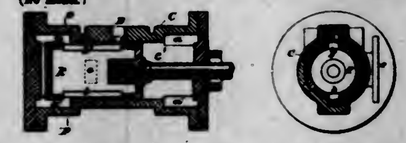
21. In a nail-plate feeder, and in combination with the plate feeding and turning grippers, the lever O, for positioning the plate, when said lever is provided with one or more adjustable joints, o^2, substantially as set forth.

22. The cam Q q, in combination with the lever actuated thereby, when said lever is provided with a set-screw, S, regulating its back-throw, and spring q', substantially as set forth.

23. The nail-plate feeder in which are combined the rod turning and feeding devices and a laterally-positioning lever, P, when the operating-point of said lever is secured to movable sleeve p^2, and is thus made adjustable to accommodate different widths of plates, substantially as set forth.

24. The nail-plate feeder the feeding-grippers whereof reciprocate simultaneously in opposite directions to reverse the plate, and also oscillate backward to withdraw the plate while it is being reversed, and are combined with a lever, or its equivalent, for imparting the reciprocation, and a cam, or its equivalent, for imparting the oscillation, substantially as set forth.

385,113. STEAM-ENGINE. JOHANN C. GRÄBNER, Kupferhammer, and HEINR. REPPERT, Braukwede, assignors to K. & Th. Möller, Kupferhammer, Prussia, Germany. Filed May 19, 1887. Serial No. 238,783. (No model.)

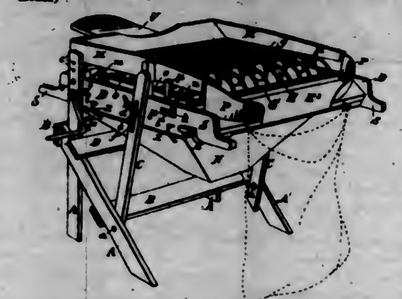


Claim.—1. The combination, with the cylinder C, having end grooves, a a', steam-inlet D between its ends, and an exhaust, of the hollow or tubular piston K, having closed ends and longitudinal openings b b', communicating with grooves a a' when the piston is at the extremes of its movement, the interior of the cylinder always communicating with the steam-inlet D, the exhaust being closed by the side walls of the piston until the ends of the piston pass thereby in both directions, substantially as set forth.

2. The combination, with the cylinder C, having end grooves, a a', steam-inlet D between the grooves, and an exhaust, c c', at opposite sides of the inlet D, of the hollow piston K, closed at its ends and having longitudinal openings b b', connecting the interior of the cylinder at all times with the inlet D, and connecting it with the grooves a a', respectively, at the extremes of its movement, both exhaust-ports being closed by the side wall of the piston and opened successively as the piston passes them in its two movements, substantially as set forth.

3. The combination, with the cylinder having end grooves and inlet- and exhaust ports, of the longitudinally-slitted spring-pistons having closing-pieces o, sealing-pieces g, and springs m, substantially as set forth.

385,114. POTATO SORTER OR GRADER. HENRY D. HERRINGTON, Tuxedo, N. Y. Filed June 25, 1887. Serial No. 242,457. (No model.)



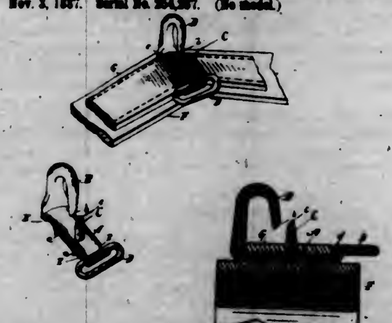
Claim.—1. In a potato-sorter, the combination of a grating composed of a series of parallel bars, endless chains running beneath the grating, a series of rods carried thereby transverse to the grate-bars, and the rollers carried on the transverse rods and projecting above the grate-bars, the rollers on any two successive transverse rods being alternately placed as regards the intervals between the grate-bars, substantially as and for the purpose described.

2. In a potato-sorter, the combination of a grating composed of a series of parallel rods laterally adjustable, endless chains running beneath the grating, the rods carried by said chains, and a series of laterally-adjustable rollers secured thereon and projecting above the grating, substantially as and for the purpose described.

3. In a potato-sorter, the combination of a grating formed of a series of parallel bars, the endless chains running beneath the grating, the transverse rods carried by said chain, and the rollers mounted on the transverse rods and capable of revolution thereon, substantially as and for the purpose specified.

4. The combination, with the rod p, having groove d' and holes d^2, of the spring-wire s and the roller H, substantially as described.

385,115. CHECK-REIN-HOOK. JOSEPH H. HILL, Chicago, Ill. Filed Nov. 3, 1887. Serial No. 254,227. (No model.)

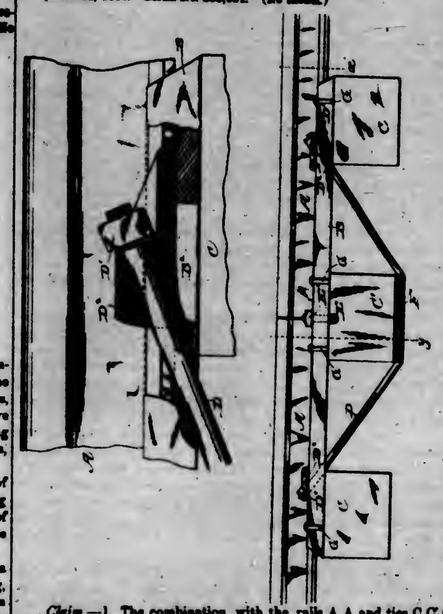


Claim.—1. As an improved article of manufacture, a check-rein-hook for harness-pads, consisting of the base-plate A, the main hook B, formed on one end of the said base-plate, the auxiliary hook or spur C, formed upon the face of the base-plate in close proximity to the end of the hook B, the loop D, formed on the rear end of the base-plate and slightly raised above the same, forming the shoulder d, and the transverse ribs a, formed integral with the base-plate and extending entirely across the lower side thereof, the said base-plate being provided with the notches E in its edges, all arranged as and for the purposes described.

2. A check-rein-hook consisting of a base-plate, A, having formed in its opposite longitudinal edges the notches E, for the purpose described, and the main and auxiliary hooks formed integrally with the said base-plate, substantially as and for the purpose described.

3. A check-rein-hook consisting of the base-plate A, having formed integrally with it the main hook B, the back-strap loop D, formed on the rear end of the base-plate, and the ribs a, formed integrally with the said base-plate and extending entirely across its lower side, all substantially as described.

385,116. RAIL-JOINT. GEORGE H. HOSKINS, Nashua, N. H. Filed Nov. 21, 1887. Serial No. 255,661. (No model.)



Claim.—1. The combination, with the rails A A and ties C C C, of a plate, B, interposed between said ties and rails, and rods D, having their ends secured to said plate B and passing beneath the tie C, substantially as shown and described.

2. The combination, with the rails A A and ties C C C, of a channeled plate, B, interposed between said ties and rails, and rods D, having their ends secured to said plate B and passing beneath the joint-tie C, substantially as shown and described.

3. The combination, with the rails A A and ties C C C, of a plate, B, rods D, nuts D', and leveling-blocks D^2, substantially as shown and described.

4. The combination, with the rails A A and ties C C C, of a plate B, rods D, and U-bolt E, substantially as shown and described.

385,117. TOOTH-REGULATOR. WOODBURY S. HOW, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Feb. 13, 1888. Serial No. 263,672. (No model.)



Claim.—1. The clamp-yoke for dentists' use hereinbefore described, consisting of the bent-wire yoke, both members of which are screw-threaded, the rigid coupling-bar perforated for the passage of the screw-threaded ends of said yoke and provided with a rigid locking clip or finger to fit over the end of the tooth, and the independent clamp-nuts fitting said screw-threaded ends of said yoke, substantially as described, whereby said yoke may be inserted from the palatal side of the tooth by one movement with one leg or end of said yoke at each side of the neck of the tooth to which the yoke is to be clamped and be securely clamped in proper position upon the tooth without bending by the separate clamp-nuts and without interfering with adjacent teeth.

2. The clamp-yoke having a coupling-bar provided with a spring-lip to be compressed by a clamp-nut, substantially as described.

3. The clamp-yoke having a coupling-bar fitted with strengthening or locking ribs next the teeth, substantially as described.

4. The clamp-yoke having an anchoring button or lug at its inner curved portion, substantially as described.

385,118. SPRING BED OR MID-BOTTOM. FRANK M. JEFFERY, Jersey City, N. J. Filed Mar. 9, 1887. Serial No. 230,169. (No model.)



Claim.—1. A roll-up spring-bed consisting of spring supporting-slats, all permanently connected together, coil-springs mounted on said slats and connected together at their tops, and a continuous top frame mounted on the tops of the marginal springs all around, the end bars of said top frame consisting each of short sections hinged permanently together at and between all the rows of springs, the hinges being arranged to flex or fold successively in opposite directions, as set forth.

2. The hinging-plate D, having attaching-studs *d*, for riveting the plate to the slat, a bar, d', an inclined overhanging surface, $d^{\times}$, and a curved prong, d^{3}, in combination with the slat and the flat link, the latter having a hole in its end to engage the prong d^{3}, substantially as set forth.

3. The combination, with the slats arranged parallel and connected by hinged distancing-links, of the springs mounted thereon in the order shown and the end bars of the top frame made up of short sections hinged together at the alternate slats, and also between each row of springs, substantially as set forth.

4. The combination, with the slats arranged parallel of the coil-springs mounted thereon in the order shown, the jointed and hinged end bar of the top frame, supported on the coil-springs at the ends of the rows on alternate slats, the springs *l* on the intermediate slats, and the braces *k*, connecting said springs, respectively, with said jointed end bar and supporting same at the joints, said braces being hinged at their ends to said springs and end bar, as set forth.

5. The combination, with the two adjacent slats of a spring bed-bottom to form a collapsing hinge, of the link $C^{\times}$, hinged at one end to one slat and at the other end to slide *c*, the said slide *c* mounted in a slideway on the other slat extending longitudinally thereof, and the short link $C^{\times\times}$, hinged to the slat having the slideway at its one end and to the link $C^{\times}$ at its other end, said hinges permitting the bed-bottom to be rolled up by the play of the links on their hinging-prongs, substantially as set forth.

6. The combination, with the slats $A^{\times}$ and $A^{\times\times}$ and the hinge-plates D, mounted on same, of the links $C^{\times}$ and $C^{\times\times}$, hinged to the curved prongs of said hinge-plates, respectively, and pivotally connected at *x*, and the slide *c*, mounted in a longitudinal slot, *c'*, in the slat $A^{\times\times}$, the link $C^{\times}$ being hinged to said slide *c*, substantially as set forth.

7. The combination, with two adjacent parallel slats of a spring bed-bottom, of collapsing hinges connecting the same, the springs mounted on said slats in alternating order, as shown, the eyes $b^{\times}$, mounted on the outer or non-adjacent sides of said springs, and a continuous flexible lacing-cord, *b'*, threaded through said eyes and extending in a zigzag manner over said springs, substantially as set forth.

8. The combination, with the slats and springs of a spring-bed, and the side bar, E, mounted on the marginal springs, of the brace *g*, hinged at its upper end to said bar and at its foot to the torsional spring-support A, and the said spring-support constructed and mounted on a slat, substantially as set forth.

9. The combination, with the slat, of the spring-support *l*, mounted on the slat and comprising the coils $l^{\times}$, and a long upwardly-projecting bail, the brace *k*, of flat metal, hinged at its lower end to the top of said bail and secured at its upper end to the sections $i^{\times}$ of the end bar of the top frame, and the hinged sections of which said end bar is composed, the said bail and said brace *k* forming an angle with each other, or knuckle, where they are connected, whereby, when the end bar is depressed in rolling up the bed, said bail will be pressed inward or from the margin of the bed.

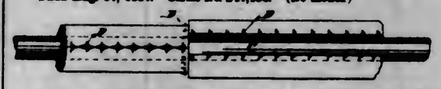
10. The combination, with the marginal springs at the ends of the bed-bottoms, of the sections *i*, secured to the tops of said springs, the sections $i^{\times}$, hinged to the ends of sections *i*, the short sections $i^{\times}$, hinged to the adjacent ends of sections $i^{\times}$, and the hinging-plates *j* and $j^{\times}$, said sections and hinges forming the end bar, $E^{\times}$, substantially as described.

11. The end bar, $E^{\times}$, constructed of sections $i\ i^{\times}\ i^{\times}$, hinged together in the manner set forth, and the hinge-plate *j* on one of said sections, $i^{\times}$, mounted in a slide-bearing, substantially as set forth.

12. The combination, with the slats arranged parallel, and the springs arranged in alternate order on adjacent slats, of the clips *c*, each having two eyes and secured rigidly to the top of the spring, as shown, and the stiff links *c'*, loosely linked to said clips *c* at their ends, and arranged in the following order, namely: a single zigzag row of independent links extending lengthwise of the slats between each row of springs, substantially as set forth.

13. The combination, with the side bar, E, and slats A of a spring-bed, of the main brace *g*, hinged at its upper end to the side bar and at its lower end to a torsion-spring support on the second slat, A, the said torsion-spring support A provided with a hinging bail, as shown, and the auxiliary brace $g^{\times}$, hinged at its one end to the brace *g* and at its other end to the marginal slat A, whereby the said braces *g* and $g^{\times}$ are arranged to stand substantially at right angles with each other normally.

385,119. PIPE-COVERING. HENRY W. JOHNS, New York, N. Y. Filed Aug. 17, 1887. Serial No. 247,132. (No model.)

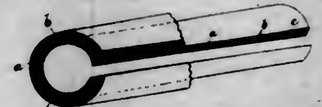


Claim.—1. The herein-described compound sheet, composed of loose fibrous asbestus and disintegrated sponge attached to the surface of an insulating-sheet, substantially as set forth.

2. As a new manufacture, the described boiler and pipe covering, composed of fibrous asbestus and disintegrated sponge attached to the surface of an insulating-sheet and made into cylindrical sections, substantially as set forth.

3. The described improvement in sectional pipe and boiler covering, consisting of hooks or buttons attached at or near the edges of the covering, adapted to engage with a cord, wire, or equivalent article, whereby the edges of the covering may be drawn together and the seam closed, substantially as set forth.

385,120. FILLING, LINING, AND COVERING MATERIAL. HENRY W. JOHNS, New York, N. Y. Filed Nov. 20, 1887. Serial No. 256,666. (No specimens.)



Claim.—1. The herein-described manufacture, composed of fibrous asbestus and fibrous or disintegrated sponge, substantially as set forth.

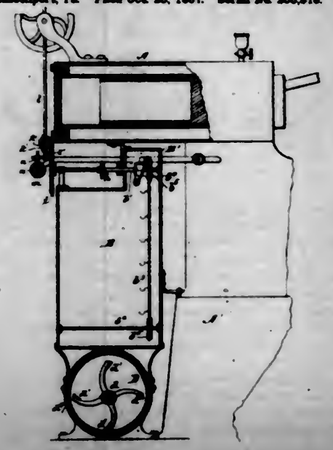
2. The herein-described manufacture, composed, essentially, of fibrous asbestus, fibrous or disintegrated sponge, and an adhesive substance, substantially as set forth.

3. The herein-described manufacture, composed, essentially, of fibrous asbestus, fibrous or disintegrated sponge, and an antiseptic or disinfecting substance, substantially as set forth.

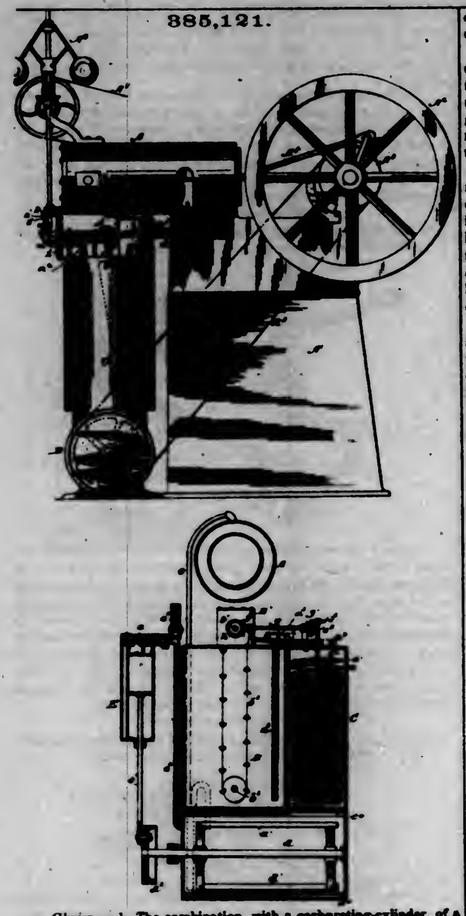
4. The herein-described manufacture, composed, essentially, of fibrous asbestus and fibrous or disintegrated sponge, the sponge being treated with a fireproofing material, substantially as set forth.

5. The herein-described manufacture, composed, essentially, of fibrous asbestus and fibrous or disintegrated sponge, the sponge being treated with oil or like waterproofing material, substantially as set forth.

385,121. CARBURETOR. CHESTER S. KING and EDWARD G. BROWN, Smethport, Pa. Filed Oct. 20, 1887. Serial No. 253,313. (No model.)



385,121.



Claim.—1. The combination, with a carbureting-cylinder, of a cylinder arranged below and communicating with the carbureting-cylinder and provided with an agitater, substantially as and for the purpose set forth.

2. The combination, with a carbureting-cylinder having an open bottom, of a cylinder arranged below the carbureting-cylinder for receiving the heavier particles of hydrocarbon passing through the carbureting-cylinder, and an agitator in said cylinder, substantially as herein shown and described.

3. The combination, with a carbureting-cylinder, of a cylinder arranged below the carbureting-cylinder and communicating therewith and having a water-jacket surrounding it, and an agitator in the said jacketed cylinder, substantially as described, whereby provision is made for heating and breaking up the heavier particles of hydrocarbon passing through the carbureting-cylinder, as set forth.

4. The combination of a carbureting-cylinder, a cylinder arranged below and communicating with the carbureting-cylinder and having a water-jacket surrounding it, an agitater in the jacketed cylinder, and an air-forcing apparatus connected to the said jacketed cylinder, substantially as herein shown and described.

5. In a carburetor, the combination of a cylinder having an open bottom and provided with an inlet for the hydrocarbon and an exit for the carbureted air at the top, a series of concave and centrally-apertured plates secured within the cylinder, a shaft journaled in the cylinder, and a series of convex plates of less diameter than the cylinder and secured to the shaft between the concave plates, substantially as described.

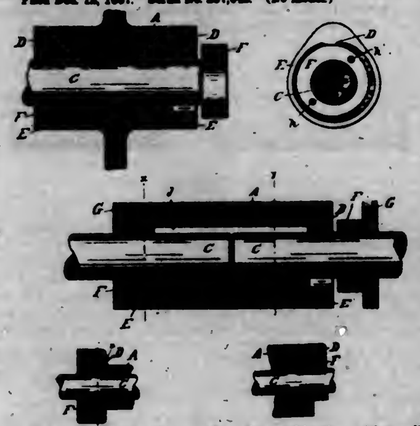
6. The combination, with an engine-governor, of a hydrocarbon-reservoir, a carbureting-cylinder, an endless chain of buckets for supplying the hydrocarbon to the carbureting-cylinder, and intermediate mechanism between the buckets and governor-shaft, substantially as described, whereby provision is made for regulating the supply of hydrocarbon to the carbureting-cylinder from the governor, as set forth.

7. The combination, with an engine-governor, of a carbureting-cylinder, a shaft journaled therein, a hydrocarbon-reservoir, a feeder for supplying the hydrocarbon to the carbureting-cylinder, and intermediate mechanism between the feeder, the carburetor-shaft, and the governor, substantially as described, whereby provision is made for regulating the supply of hydrocarbon to the carbureting-cylinder and the operation of the carburetor from the governor, as set forth.

8. The combination, with an engine and its governor, of a carbureting-cylinder, a hydrocarbon-reservoir, a feeder for supplying hydrocarbon to the carbureting-cylinder, a shaft journaled in said carbureting-cylinder, a pipe for supplying carbureted air to the engine, a valve in the said pipe, and intermediate mechanism between the valve, the feeder, and the carburetor-shaft and the governor, substantially as described, whereby provision is made for regulating the supply of hydrocarbon to the carburetor, the supply of carbureted air to the engine, and for controlling the operation of the carburetor, as set forth.

9. The combination, with the water-jacket of an engine-cylinder and an agitator-cylinder having a water-jacket, of a pipe connecting the two water-spaces and having an extension projecting into the body of the agitator-cylinder for containing mercury, substantially as and the purpose set forth.

385,122. FRICTION-COUPLING. OTTO KRESSE, Sandusky, Ohio. Filed Dec. 13, 1887. Serial No. 257,642. (No model.)



Claim.—1. In a friction-coupling, the combination, with a collar or sleeve provided with a bore for the reception of a shaft, and an abutment on the end of said collar or sleeve, of a ring-wedge having a bore to fit the shaft, and an outer cylindrical face, or its described equivalent, eccentric therewith and adapted to operate in connection with the shaft and abutment on the collar or sleeve, substantially as and for the purpose described.

2. In a shaft-coupling, the combination, with a collar or sleeve provided with a central bore, and an annular flange formed upon the end of said collar or sleeve, and an abutment formed integral with said flange, of a ring-wedge having a corresponding bore with the sleeve and an outer face eccentric therewith, said ring-wedge being adapted to act in connection with the abutment and shaft, substantially as and for the purpose described.

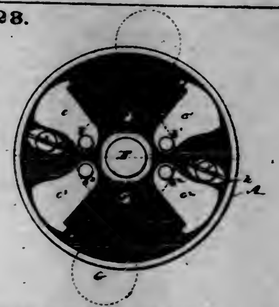
3. In a friction-coupling, the combination, with a sleeve provided with a central bore, a keyway formed in said bore, an annular recess formed on the end of said sleeve eccentric thereto, and an abutment formed on the inner face of said recess, of a ring-wedge having a corresponding bore with the sleeve and adapted to fit into the recess, substantially as and for the purpose described.

385,123. CLUTCH. REBA B. LAKE, Camden, N. J. Filed Apr. 19, 1887. Serial No. 235,307. (No model.)

Claim.—1. The combination, with a rotary shaft, of a double clutch consisting of and comprising a circular plate secured to said shaft, a cylindrical box within which said plate is arranged, eccentrically-pivoted levers attached to said plate on either side of said shaft, springs bearing upon said levers, and a rotary cap provided with keys which engage with said levers and cause the same to be released from engagement with the inner surface of the box, substantially as set forth.

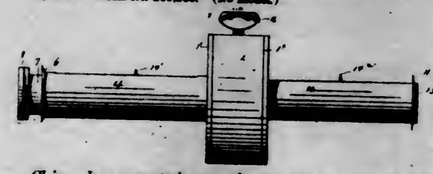
2. The combination, with the rotary shaft F and plate D, rigidly attached thereto and movable therewith, and pivoted levers $c\ c'\ c^{2}$, whose outer ends coincide with the periphery of said plate when the

385,128.



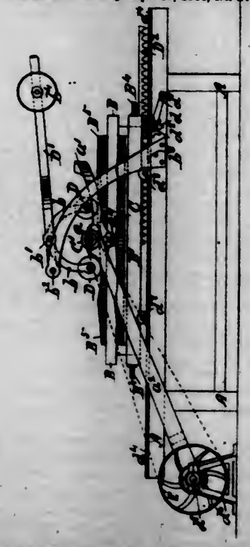
levers are separated a given distance and extend beyond said periphery when they are drawn together, of a releasing and controlling mechanism consisting of the top plate, B, provided with keys *h h'*, and handle G, whereby the initial movement of said handle and plate will separate the levers and allow the continued movement of the handle to rotate the shaft, substantially as shown and described.

385,124. CARPENTER'S GAGE. ARTHUR LAPORTE, Ware, assignor of one-half to J. A. Courtemanche, Worcester, Mass. Filed Apr. 2, 1888. Serial No. 269,265. (No model.)



Claim.—In a carpenter's gage, the combination, with the stock provided with a marking-disk at one end and a supplementary guide-plate at the other end, of the guide-block having a cylindrical shell carrying a marking-disk on its outer end, extending out from one face of said block, in which the stock telescopically slides, and a sliding bar provided with a marking-point at each end, extending in a groove in said stock, and a set-screw for clamping the several parts together, all constructed and arranged substantially as shown and described.

385,125. WOOD WORKING AND PLANING MACHINE. RILEY H. LEE, Chicago, Ill. Filed Nov. 19, 1887. Serial No. 255,865. (No model.) Patented in Norway Sept. 12, 1888, No. 270



Claim.—1. In a wood-working machine, the combination, with a reciprocating carriage consisting of the table B and the table-bed B', of the cutter-head C, the shaft *a*, on which said cutter-head is mounted, the yoke *a'*, the inclined side bars, a^2 a^3, the rock-shaft C^2, the stand C^3, and the guide-rollers a^4 a^5, journaled in the same frame with and below the cutter-head, substantially as and for the purpose set forth.

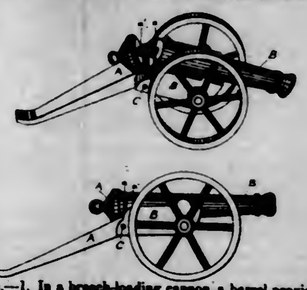
2. The combination, with the presser-rollers D D, of the curved arms *b b*, in which said rollers are journaled, the shaft *b'*, supporting said arms, the weighted lever D', having a fulcrum-bearing on the shaft *b'*, the bearing-pin b^2, with which the forked ends of said lever engage, and the supporting-standards b^3 b^3, whereby said rollers are adapted to conform to and follow the movements of the cutter-head, substantially as and for the purpose set forth.

385,126. PUDDLE-RIDDER. WILLIAM LEHIGH, Catasauqua, Ill. Filed Sept. 20, 1887. Serial No. 251,002. (No model.)



Claim.—The combination of the base B, having the cross foot-cleats F and pins *a* on its upper face, twine-receptacle G, secured on the upper face of said base at one end, yoke E, secured longitudinally on the upper face of said base along one side thereof, so as to leave a space between it and said pins, curved arm D, pivotally secured to the outer side of said base, near one end thereof, and arranged to have its curve opposite the curved part of said yoke and operate in conjunction therewith, and ratchet-post C, secured to the outer side of said yoke, near the outer end of said curved arm, for engaging therewith, substantially as and for the purpose set forth.

385,127. FIRE-CRACKER CANNON. JOHN J. LOSS, Weymouth, Mass. Filed Feb. 20, 1888. Serial No. 264,630. (Model.)



Claim.—1. In a breech-loading cannon, a barrel provided at the breech with a wide vent cut across the whole face of the end of the barrel or of the breech-block above the center, substantially as and for the purposes described.

2. In a breech-loading cannon, a barrel provided with the wide vent *a*, cut across the whole face of the end of the barrel, in combination with a breech-block provided with a boss, *a'*, substantially as and for the purposes described.

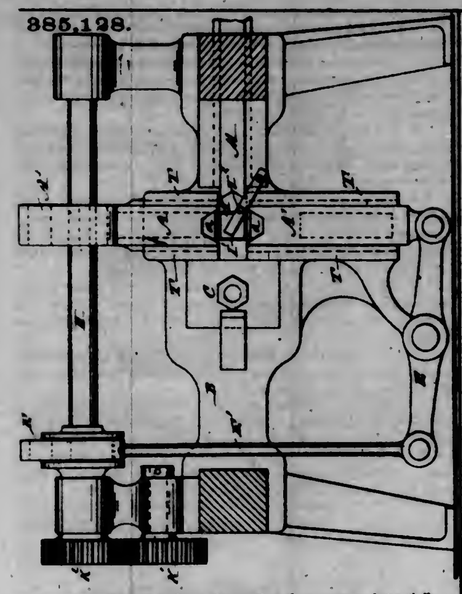
3. A breech-loading cannon provided with a split vent and consisting of a barrel rigidly secured to the carriage-cheeks, in combination with a breech-block hinged to said cheeks and a stock rigidly secured to said breech-block, whereby the stock may be folded between the wheels, thereby reducing the bulk, substantially as and for the purposes described.

385,128. NUT-MACHINE. ALFRED MARLAIS, Pittsburg, Pa. Filed Feb. 21, 1888. Serial No. 264,732. (No model.)

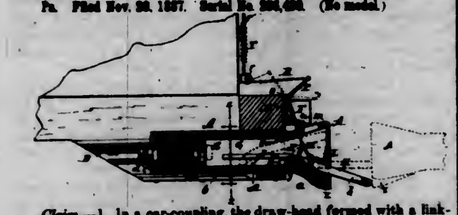
Claim.—1. The combination, with the cross-bar B, having the box B', of the swages A A', and means, substantially as described, for reciprocating one swage at a greater speed than the other, substantially as described.

2. The cross-bar B and the swages A A', having knives *a a*, in combination with means for reciprocating the swages, substantially as described.

385,128.



385,129. CAR-COUPLING. HENRY S. MCCAGUE, McSherrystown, Pa. Filed Nov. 30, 1887. Serial No. 256,696. (No model.)



Claim.—1. In a car-coupling, the draw-head formed with a link-socket, G, having a top opening, *m*, and provided at opposite sides with horizontal longitudinally-extending flanges I, and lugs K, forming ways J, and draft-shoulders *j*, substantially as set forth.

2. In a car-coupling, the draw-head formed with a link-socket having an opening, *m*, in its top, and provided on its inner sides with horizontal longitudinally-extending flanges I, and lugs K at the forward ends thereof, forming ways J, and draft-shoulders *j*, the horn L in its bottom, and the projection T on the outer face of the forward edge of the bottom, substantially as set forth.

3. In a car-coupling, the draw-head made with a link-socket, G, provided at opposite sides with flanges I and lugs K, forming ways J, draft-shoulders *j*, and said draw-head provided also with a horn, L, in combination with a coupling-link, H, formed with front link portion, *h*, a stem, *h'*, and a cross-bar, h^2, and said lugs K having inclined front faces, *k*, and the rearward-sliding link having corresponding inclined faces or shoulders, *i*, substantially as described, for the purposes set forth.

4. In a car-coupling, the draw-head made with a link-socket, G, provided at opposite sides with longitudinally-extending flanges I and lugs K, forming ways J, and draft-shoulders *j*, and said draw-head provided also with a horn, L, and an opening, *m*, in its top, in combination with a rearwardly-sliding coupling-link, H, formed with front link portions, *h*, a stem, *h'*, and a cross-bar, h^2, a rock-shaft, O, journaled on the car and provided with an arm, N, and a flexible connection, M, extending through the opening *m* and connecting said arm and the coupling-link, substantially as shown and described.

5. In a car-coupling, the combination of the draw-head, a coupling-link therein, a rock-shaft, O, journaled on the car and provided with an arm, N, a flexible connection, M, between the link and arm, an arm, P, on the shaft, a lever, S, fulcrumed at the top of the car and formed with axle *s*, and arms *s' s²*, and connections, as R *r'*, between the arm P and lever S, substantially as described, for the purposes set forth.

6. In a car-coupling, the combination, with the draw-head, a coupling-link therein, and a shaft, O, journaled on the car and provided with an arm, N, connected to the link, and an arm, O', on the shaft, of a foot-lever, U, fulcrumed on the car and having an arm, *u*, extending across the shaft-arm O', substantially as described, for the purpose set forth.

7. In a car-coupling, the combination, with the draw-head, a coupling-link therein, and a shaft, O, journaled on the car and provided with an arm, N, connected to the link, of a lever, V, pivoted loosely on the shaft, a spring, W, on the shaft, and connected at one end to the shaft and at the other end to the lever, and a detent, X, for said lever, substantially as described, for the purposes set forth.

8. In a car-coupling, the combination, with the draw-head, a coupling-link therein, and a shaft, O, journaled on the car and provided with an arm, N, connected to the link, of an arm, P, on the shaft, a lever, S, journaled at the top of the car, a connection between the parts P S, and a spring, T, interposed in said connection, substantially as described, for the purposes set forth.

9. The combination, with a draw-head provided with a rearwardly-sliding and vertically-swinging link, of an opposing draw-head provided with a lug on its lower face at the front thereof, to force the link inward and thereby raise it, substantially as set forth.

10. The combination, with a draw-head formed with a rearwardly-sliding and vertically-swinging link, a lever, and a flexible connection extending through the draw-head and engaging the link, of an opposing draw-head having an internal horn and a lug on its lower face at the front end thereof, to strike the link and force it inward and upward, whereby by then operating said lever the link may be shot forward into engagement with the horn of said opposing draw-head, substantially as set forth.

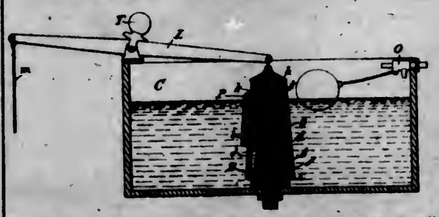
11. The combination, with the draw-head and its coupler, of a spring connected with said coupler and means for setting the spring to exert its force upon the said coupler, whereby when the draft strain is lessened the coupler will be disengaged from the opposing draw-head, substantially as set forth.

12. The combination, with the draw-head and its coupler, of an automatically-operating uncoupler comprising a rock-shaft connected with said coupler and spring connected with said shaft for rocking it and releasing the coupler, substantially as set forth.

13. The combination, with the draw-head and the coupling mechanism, of a spring-actuated uncoupling-shaft connected with said coupling mechanism, and a lever for setting said spring-actuated shaft, substantially as set forth.

14. An automatic uncoupler for cars, consisting in a rock-shaft having flexible connections for connecting it with a coupler, a torsion-spring secured at one end to the shaft, a lever loose upon the said shaft at the side of a car and connected to the opposite end of the spring for putting it under torsional strain, a second lever to be secured at the top of a car and connected to said rock-shaft, and a longitudinally expansible and contractible spring forming part of the connection between said top lever and the rock-shaft, whereby the rock-shaft may be set to be actuated by either spring, substantially as set forth.

385,130. WATER-CLOSET CISTERN. HARRISON S. MILLER, Indianapolis, Ind., assignor to Charles W. Heckel, same place. Filed Oct. 18, 1887. Serial No. 252,660. (No model.)

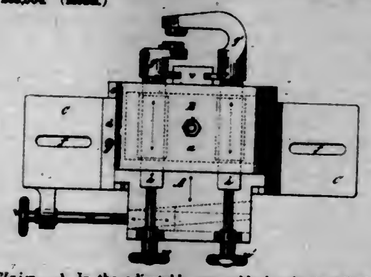


Claim.—1. In a water-closet cistern, the combination of the discharge-pipe arranged to project above the bottom of the cistern, the annular cup surrounding the base of said discharge-pipe, the mercury seal in said cup, and the tubular valve having double walls, the inner one of which enters at one end the annular cup and has openings at the other end communicating with the space between the walls, all arranged to co-operate substantially as and for the purpose specified.

2. In a water-closet cistern, the combination of the discharge-pipe arranged to project above the bottom of the cistern, the annular cup surrounding said discharge-pipe, the mercury seal in said cup, the tubular valve having double walls, the inner one of which enters at one end the annular cup and has openings at the other end communicating with the space between the walls, and the tube extending along the outer wall of the valve, open at both ends, and connecting the interior of the valve near its upper end with the exterior near its

lower end, all arranged to co-operate substantially as and for the purpose specified.

385,131. ADJUSTABLE SAW-GUIDE. DONALD J. MURRAY, Wausau, Wis. Filed Mar. 9, 1888. Renewed Feb. 9, 1888. Serial No. 263,804. (Model.)

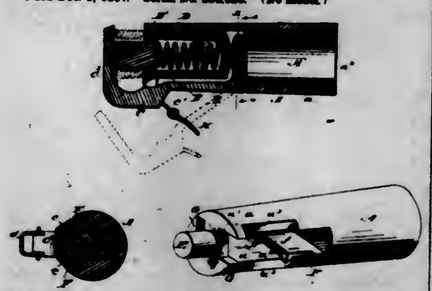


Claim.—1. In the adjustable saw-guide herein described, the adjustively sliding and slid arm-carriage, furnished with the rigid box-frame, having the pair of dovetailing angle-slides cut into its basal ends, and the obliquely-cut slot under the front end of its carrier-plate, in combination with the carriage bed-plate furnished with the correspondingly-inclined and carriage-bearing slide-flanges, the end-adjusted bolt-slots, and the front-placed guide-trough, in which is geared the longitudinally-sliding, laterally-engaging, and regulatively-moving angle-block, all made to adjustably co-operate upon the husk-table of a saw-frame, substantially as and for the purposes herein specified.

2. In the arm-carriage of the saw-guide herein described, the combination, with the rigid box having shaft-bearing sides, the nut-bolted clamping-lid, and the crank-checking bracket-plate, of the pair of longitudinally-adjustable and laterally-turning tube-shafts, furnished each on its rear or saw end with a counterfacing crank-arm, and on its front end with a regulatively-turned screw-rod, each said cranked arm having an eccentrically-curved check-stop shoulder, and within a counterstapering socket a counterfacing bearing guide-pad, all made to regulatively co-operate upon each and both sides of a saw-rim, substantially as and for the purposes herein specified.

3. The combination, with the basal counterfacing angle-slides of the arm-carriage box, containing and clamping the independently-regulative tube-shaft and guide-pad gearing herein described, of the set-screwed clamping-plate intermedially held by the counter-faces of either set of dovetailing slides at each end of said carriage-box, and of the screw-geared angle-block of said bed-plate, the former having its obliquely-edged cap-plate regulatively engaging the correspondingly-oblique under slot of the latter, all substantially as and for the purposes herein specified.

385,132. HORSE-DETACHER. GEORGE T. PARKER, Glasgow, Ky. Filed Dec. 3, 1887. Serial No. 256,999. (No model.)



Claim.—1. The combination, with the ferrule having the trace-stud, of the double-armed stud whereby to force the trace off such stud, the retracting-spring operating between the arms of the slide, and a tripper, substantially as set forth.

2. The ferrule having a trace-stud, the slide whereby to force the trace off the stud, and the tripper having a crank-like arm arranged to engage the rear end of said slide, substantially as set forth.

3. In a horse-detacher, the combination, with the trace-securing stud, of the double-armed slide having arms movable along said stud on opposite sides thereof, substantially as set forth.

4. The improved horse-detacher herein described, consisting of the slide, the tripper, and the ferrule constructed to receive such slide and tripper, substantially as described, whereby such parts may be cast ready for use and be operatively connected without the intervention of connecting-rivets and the like, substantially as set forth.

5. A horse-detacher comprising a ferrule provided with a trace-securing stud and with a socket having its walls grooved, the slide and tripper, and lateral teats to enter the grooves of the socket-walls, substantially as set forth.

6. The ferrule having a socket the walls of which are provided with grooves F F', connected by grooves *f*, the slide, and the tripper having lateral teats to enter the grooves of the socket-walls, substantially as set forth.

7. The ferrule having a socket and formed with a bridge, *c'*, and ways G G, combined with the slide having its arms movable through such ways and having their rear ends connected by a cross-bar, the spring fitted in said slide and operating between its rear cross-bar and the bridge *c'*, and the tripper, substantially as set forth.

8. The combination of the ferrule having stud E, socket A', and mortise a^2, the slide, and the trip arranged to engage said slide and provided with extensions *c'*, to fit in mortise a^2, substantially as set forth.

9. The combination of the ferrule having socket A', cross-bridge *c'*, and ways G G, the double-armed slide operating in said ways, and the tripper, substantially as set forth.

10. The improved horse-detacher herein described, consisting of the ferrule having socket A', cross-bridge *c'*, grooves F *f* F', and mortise a^2, the double-armed slide having lateral teats to enter the grooves of the ferrule, and the tripper having a crank-arm at its rear end, teats to enter the groove F of the ferrule, and provided at its outer ends with a trace-retaining hook, substantially as set forth.

385,133. RIVET-BURR REMOVER. ELIJAH H. PERKINS, Visalia, Cal. Filed Mar. 22, 1888. Serial No. 268,135. (No model.)



Claim.—1. A tool or implement for removing the burrs of rivets, consisting of a tubular stock having holding-teeth upon its lower end for encircling the burr, and a bit fitted within the stock so that it may be rotated, said bit having cutters upon its lower end for cutting the swaged portion of the rivet, substantially as herein described.

2. A tool or implement for removing the burrs of rivets, consisting of a tubular stock having holding-teeth on its lower end for encircling the burr, and a bit fitted within the stock so that it may be rotated therein, said bit having on its lower end cutting-lips for cutting the swaged portion of the rivet and an aperture or hole for receiving the end of the rivet, substantially as herein described.

3. A tool or implement for removing the burrs of rivets, consisting of a tubular stock having holding-teeth on its lower end for encircling the burr, a bit fitted within the stock so that it may be rotated, said bit having cutting-lips and a hole in its inner end, and the spring within the stock, whereby said stock may be pressed down and held stationary while the bit is rotated, substantially as herein described.

4. A tool or implement for removing the burrs of rivets, consisting of the tubular stock having holding-teeth on its lower end, the bit fitted within the stock so as to be rotated therein and having a hole in its lower end and surrounding cutting-lips, the spring within the stock, whereby the stock may be pressed down and held stationary while the bit is rotated, and a nut fitted around the bit and seated in the upper end of the stock for holding the bit in place, substantially as herein described.

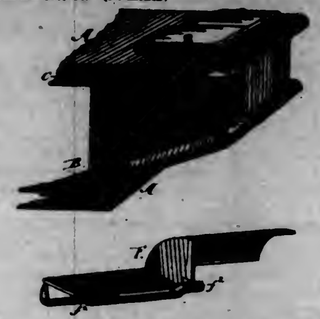
5. A tool or implement for removing the burrs of rivets, consisting of a tubular stock having teeth on its lower end, made with outwardly-inclined sharp edges for gripping the edge of the burr, and the rotary bit within the stock having a hole in its lower end, and surrounding cutters, substantially as herein described.

385,134. COCK FOR GAS-FIXTURES. JOHN PRENTISS, New York, N. Y. Filed Feb. 14, 1887. Serial No. 227,621. (No model.)



Claim.—The combination, with the barrel and plug and the stops to limit the motion in turning the plug, of a latch pivoted upon the barrel and its end holding a stop on the plug of the cock when the gas is turned off, substantially as set forth.

385,135. COOK-STOVE. CLARENCE RAYMOND, Albany, N. Y., assignor to the Raymond Stove Company, same place. Filed Apr. 13, 1886. Serial No. 198,709. (No model.)



Claim.—In a cook-stove, the combination of a single flue, C, at the back of the oven, a reservoir-chamber, D', having an opening, E, which forms a communication between said flue and chamber, and a rolling damper, F, provided with a segmental pocket, *f'*, as and for the purpose herein specified.

385,136. VELOCIPEDE. THOMAS RENSHAW, Bradford, England. Filed Dec. 1, 1887. Serial No. 256,714. (No model.)



Claim.—1. In a velocipede, the combination, with the backbone or frame, of two forks, one provided with wheel-bearings and the other movably mounted upon the bearing-fork and pivoted to the frame, a spring interposed between the two forks, and a stationary rotating screw and movable nut for adjusting the force of said spring, substantially as described.

2. In a velocipede, the combination, with the backbone or frame, of two forks, one provided with wheel-bearings and the other movably mounted upon the bearing-fork and pivoted to the frame and provided with a tubular portion, a coiled spring within said tubular portion, and a stationary rotating screw and movable nut for adjusting the force of said spring, the said movable nut bearing against the upper end of said spring, and the upper end of the bearing-fork bearing against the lower end of the spring, substantially as described.

3. In a velocipede, the combination, with the backbone or frame, of two forks, one provided with wheel-bearings and the other pivoted to the frame and provided near its upper end with a tube parallel therewith, and a coiled spring within said tube, said fork being also provided with guides *l*, said bearing-fork being provided with ears engaging said guides, and having its upper end extending within said tube and engaging the lower end of said spring, substantially as described.

4. In a velocipede, the combination, with the backbone or frame, of two forks, one provided with wheel-bearings and the other movably mounted on the bearing-fork and pivoted to the frame, a spring interposed between the two forks, a stationary rotating screw and movable nut for adjusting the force of said spring, a dial-plate, and a pointer connected with the movable nut, substantially as described.

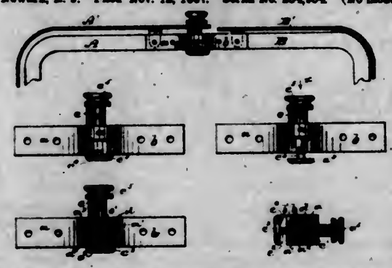
385,137. MALT-KILN. GUSTAV REHBEHMANN, Mayence, Hesse Germany. Filed Aug. 24, 1887. Serial No. 247,776. (No model.)



Claim.—1. In a malt-kiln, the combination, with the malt-kiln floor *d*, of a malt-turner, *a*, and a germ-receiver, *b*, connected thereto, as described, so as to accompany the turner *a* on its way over the floor *d* in both directions, substantially for the purpose as described.

2. In a malt-kiln, the combination, with a malt-kiln floor, *d*, of a malt-turner, *a*, and a germ-receiver, *b*, pulleys *w*, and chains *k*, the latter being wound around said pulleys and connected to the receiver *b* and turner *a*, so as to make the receiver accompany the turner on its way over the floor *d* in both directions, substantially for the purpose as described.

385,138. HINGE FOR TRAVELING-BAGS, &c. CHARLES REHBEIN, Newark, N. J. Filed Nov. 12, 1887. Serial No. 254,904. (No model.)



Claim.—1. A bag-hinge consisting of the portion *a*, provided with a chamber, *c'*, and a journal, a^2, at the joint, the portion *b*, encircling said journal and provided with a stop thereon, a locking-pin moving reciprocally through the chamber *c'* and having a detent thereon which engages with the stop on the portion *b*, and a spring arranged and operating to cause the holding engagement of the said stop and detent, for the purposes set forth.

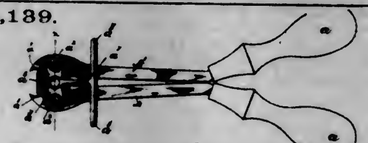
2. The combination, with the frame-sections of a bag, of a hinge therefor consisting of the plates or portions *a* and *b*, secured to said frame-sections, said portion *a* having a chamber, *c'*, and a journal, a^2, the end of the plate *b* being perforated to receive and turn on said journal, and also provided with a recess or stop, *b'*, a spring-actuated locking-pin arranged and moving within and through the chamber *c'* and provided with a lug thereon which engages with the recess or stop *b'*, and a locking device whereby the said locking-pin is prevented from turning within the chamber *c'*, but permits the same to move reciprocally therein, for the purposes set forth.

3. The combination, with a bag-frame, of a bag-hinge consisting of the plates or portions *a* and *b*, adapted to be secured to said frame, said portion *a* having a chamber, *c'*, and a journal, a^2, the portion *b* encircling said journal and provided with a stop thereon, a locking-pin arranged and sliding reciprocally through said chamber and also projecting and moving through the sides of the bag-frame, for the purposes set forth, said locking-pin being provided on one end with a plate, c^2, having a stop thereon, and a finger-piece, c^3, on the opposite end on the outside of the bag-frame, and a spring arranged and operating to cause the automatic holding engagement of said stop and detent, as set forth.

385,139. ROD-CUTTER. HORACE V. ROCHEUX, Fall River, Mass. Filed Dec. 22, 1887. Serial No. 258,781. (No model.)

Claim.—1. In an implement for cutting flat metal straps, bands,

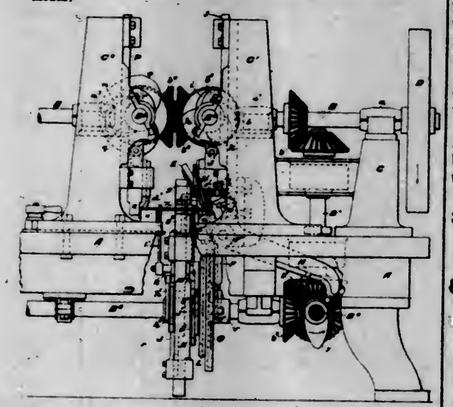
385,139.



or hoops on merchandise, packages, boxes, &c., comprising the levers A A', pivoted to the cross-plates a^2 a^4 at a^3, each of which levers has a handle, a, and the curved cutters a', integral therewith and extending beyond the edge of one of the cross-plates which forms a bed or rest against which the strap or band is drawn and supported during the action of the cutter, substantially as described.

2. The combination of the levers A A', pivoted at a^3 to the plates a^2 a^4 and having the cutters a', the plates a^2 a^4, and the bar or loop a^7, connected with one of the plates and having the stops a^5, substantially as described.

385,140. MACHINE FOR MAKING BUILDING-ANCHORS. JACOB ROEBLI, Brooklyn, N. Y. Filed Feb. 21, 1888. Serial No. 264,726. (No model.)



Claim.—1. The combination of a bed to support the mechanism, a die, c, thereon to support the end of the bar x, a reciprocating presser-foot, d, to hold the anchor-bar down while the work is being performed, a reciprocating plunger-die, f, to form the primary bend for the eye in the end of the anchor-bar, and the reciprocating closing-die c', for closing the eye in said bar, substantially as set forth.

2. The combination of a bed to support the mechanism, a support for the bar, the reciprocating presser-foot, as d, for holding the said bar down firmly while being operated on, and a twister for twisting said bar while thus held, said twister consisting of two reciprocating jaws which move in parallel planes simultaneously in opposite directions, substantially as set forth.

3. In a machine for making building-anchors, the combination of the hollowed die c, the reciprocating plunger-die f, the reciprocating presser-foot d, arranged to bear on the anchor-bar close to the hollow in die c, the anvil or support c' for the other end of the anchor-bar, the reciprocating presser-foot d', and the reciprocating end-bender e, said foot d' serving to hold down the bar while the bend is being made, as set forth.

4. The combination, with the bed to support the mechanism, of the hollowed die c, on which the end of the bar x rests, the reciprocating foot d, to hold the bar down upon said die, the trough-like receiver c', for the spear, aligned properly with the die c, as described, the reciprocating pusher t, aligned with and guided in said receiver, and a reciprocating closing-die, c', adapted to close the eye in said bar when the spear is in place, substantially as set forth.

5. In a machine for making building-anchors, a twister for twisting the body of the anchor, comprising two reciprocating jaws, as g' g^2, which move in parallel planes simultaneously in opposite directions, substantially as set forth.

6. The combination, with the shaft B^3, of the slides K and K', mounted in guides and adapted to play in parallel planes, the jaws g' and g^2 on the respective slides, the cams k' and k^2 on shaft B^3, which impart a reciprocating movement to slide K, and the cams i' and i^2 in the shaft B^3, which impart a reciprocating movement to slide K', said slides moving in opposite directions simultaneously, substantially as set forth.

7. The combination, with the machine-bed, the supports for bar x, and the shaft B^3, of the device for discharging or pushing off the finished anchor, said device consisting of the cam L, the lever M, fulcrumed at k', and the upright arm l' of said lever, said arm being arranged to cross the space between said bar-supports in its vibrations, substantially as set forth.

8. The combination, with the machine-bed, of the frame O', mounted in guides thereon, the rack and pinion for effecting the movement of said frame, mounted on the bed and frame, respectively, the main shaft B, having a sliding bearing in said frame, the shaft B^3, mounted in the said frame, the gears b^3, the slides p m, mounted in guides in said frame, the bender e, attached to slide p, the foot d', attached to slide m, the cams n o q r on shaft B^3, for operating said slides, and the anvil or support c' for the bar x, carried by frame O', substantially as set forth.

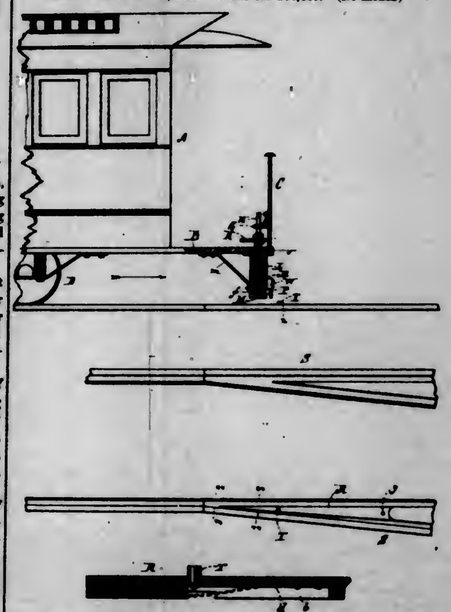
9. The combination, with the bed and the frame C, of the shaft B^4, mounted in said frame, the slides g and j, mounted in guides in said frame, the cams h i k l on shaft B^4, for operating said slides, the plunger-die f, attached to slide j, the presser-foot d, attached to slide g, and the die c, carried by frame C, substantially as set forth.

10. The combination, with the trough-like receiver c' for the spear y, of the guided pusher t, longitudinally aligned with and adapted to play in said receiver, the lever F, fulcrumed at u and coupled at its upper end with pusher t, the slide-bar v, coupled at its lower end to said lever F, and the cam G, provided with a groove engaged by a stud or roller, w, on rod v, substantially as set forth.

11. The combination, with the hopper E, having inturned ends s s, of the trough-like receiver c' at the bottom of said hopper to receive the lower spear of the series, as set forth.

12. The combination, with the slide j, provided with a hollow or recess, r', at its lower end, of the plunger-die f, secured to said plate below said recess, whereby the metal back of said die is weakened, for the purposes set forth.

385,141. RAILWAY-SWITCH. STEPHEN R. SABBEN, New Bedford, Mass. Filed Jan. 12, 1888. Serial No. 260,615. (No model.)



Claim.—1. The tongue R, pivoted to the track S and provided with the depressible stud T, in combination with a car adapted to run on said track and its companion track, and provided with means whereby the driver of the car may cause an attachment thereof to engage said stud and move said switch-tongue to switch the car, substantially as described.

2. The car A, having the platform B, provided with the fender C, the rod H, fitted to work vertically in said platform and provided with the spring L, treadle K, elastic arm t, and head P, the rod J, fitted to work vertically in said platform and provided with the spring L, treadle K, elastic arm r, and head Q, said heads being arranged adjacent to each other, in combination with the tongue R, pivoted to the track S and provided with the stud T and spring d, substantially as set forth.

3. The tongue R, pivoted to the track S and provided with a hole for a stud, in combination with a stud, as T, inserted in said hole, and a spring, as d, for said stud, substantially as set forth.

4. In a device of the character described, the combination of the car A, provided with the platform B, the rod H, provided with the spring L and treadle K, the pivoted tongue R, provided with the yielding stud T, and an elastic arm mounted on the lower end of said rod, the outer end or head of said arm being adapted to strike the stud T in the pivoted tongue R as said car passes over the tracks and swing said tongue to switch the car, substantially as set forth.

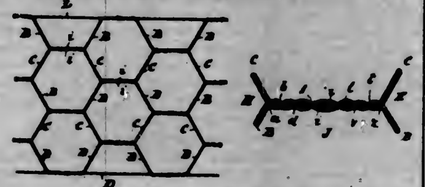
5. The guard W, in combination with the bracket E, platform B, head P, arm t, and rod H, substantially as described.

385,142. DENTAL PLATE. JAMES F. SARGENT, Manchester, N. H. Filed Sept. 1, 1887. Serial No. 248,548. (Model.)



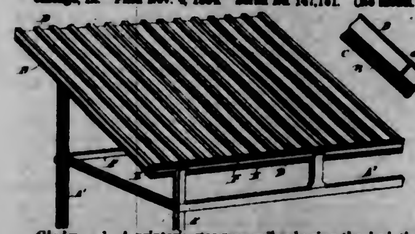
Claim.—A dental plate constructed and adapted to fit on the gums and perforated with a series of holes in its lowest part, which part is arranged to bring said perforations over the apex of the gums, and thereby, and by constructing said perforations so that they are open through their whole length, affording facility for the flow of saliva from under said plate, substantially as and for the purpose set forth.

385,143. WIRE-NETTING. BENJAMIN SEABLER, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Aug. 16, 1886. Serial No. 211,018. (No specimens.)



Claim.—A wire-netting comprising straight selvage-wires and intermediate warp-wires, the intermediate warp-wires being interlocked at intervals by twists which severally comprise a right-hand turn, a left-hand turn, and an intermediate plain portion, one of said warp-wires on each side of the fabric being interlocked at intervals with the adjacent selvage-wire by twists which severally comprise a right-hand turn, a left-hand turn, and an intermediate plain portion, substantially as described.

385,144. PRINTER'S STANDING-GALLEY. WILLIAM SAVERIS, Chicago, Ill. Filed Nov. 4, 1884. Serial No. 147,161. (No model.)

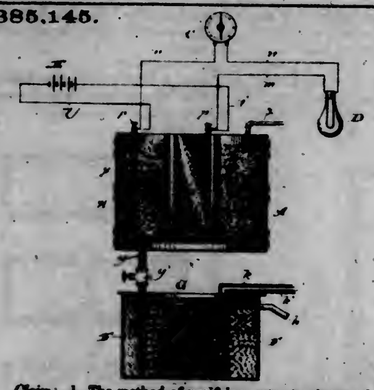


Claim.—1. A printer's standing-galley having the bed thereof placed at a vertical incline, the division-strips to separate columns of dead-matter to be distributed being arranged transversely, substantially as and for the purpose set forth.

2. A printer's galley having an inclined bed, the transverse division-strips D, the tube E, provided with perforations e in the inner side and the perforations in the upper side, and the tube J, substantially as and for the purpose described.

385,145. METHOD OF GENERATING ELECTRICITY AND PURIFYING WATER. JOHN E. SMITH, Chicago, Ill. Filed Nov. 7, 1887. Serial No. 254,553. (No model.)

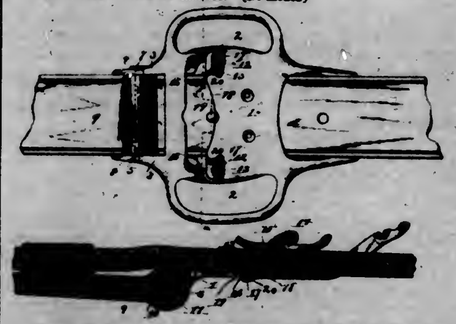
385,145.



Claim.—1. The method of purifying water to abstract from it an inherent substance having a corroding effect on metal, which consists in filtering it through divided pieces of iron or steel and rendering the iron or steel electro-positive to the said inherent substance by connecting it with an electrode electro-negative to the said substance, substantially as described.

2. The method of purifying by galvanic action water containing an inherent substance having a corroding effect on metal and utilizing the water so purified and the electricity excited in the operation of purifying, which consists in employing the water as the exciting-liquid of an electric battery, thereby abstracting the said inherent substance, leading off the purified water to the place of its use, and conducting off to the place of its application the electricity generated by the purifying action, substantially as described.

385,146. TRACE-BUCKLE. BYRON C. SMITH, Auburn, N. Y. Filed Apr. 4, 1888. Serial No. 269,532. (No model.)



Claim.—1. In a buckle, the combination, with the buckle frame or body formed with the transverse opening 19 and with the bearings 12, and provided with the lips or tongues 20, projecting forward and to the sides in the opening toward the inner ends of the bearings, of the bail having its trunnions rocking in the bearings and retained therein by the said lips, and the tongue-plate retained by the bail, substantially as described.

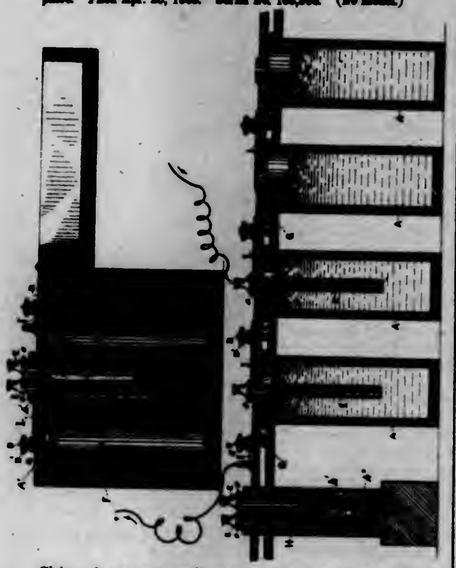
2. In a buckle, the combination, with the buckle frame or body formed with the transverse opening 19 and with the bearings 12 in its sides, and provided at the rear edge of the said opening with the lips or tongues 20, which project forward and to the sides of said opening toward the said bearings, of the bail having its trunnions resting in the said bearings and formed with beveled or shouldered corners at the inner ends of the trunnions, and having the said lips or tongues bearing against the said beveled or shouldered corners and retaining the trunnions in their bearings, and the tongue-plate retained by said bail, substantially as described.

3. The buckle-frame having the open side bearings, 12-12, and the body-plate 1, formed with the arms 20 20 at the front corners of said body-plate opposite the said open bearings, in combination with the bail having its trunnions confined by said arms abutted against them, and a separate tongue-plate, 15, substantially as described, for the purpose specified.

4. The buckle-frame having the open side bearings, 12 12, and the arms 20 20, projecting from the front edge of the body-plate 1 in

a direction toward said bearings and in a plane below the latter, in combination with a bail having trunnions confined within the said open bearings, in the manner stated and shown.

385,147. GALVANIC BATTERY. R. BROWN STARR, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Apr. 26, 1888. Serial No. 162,268. (No model.)



Claim.—1. The carbon electrode constituting the containing-vessel of the cell and provided with a surrounding metal terminal ring, said ring being united to said electrode by fastening devices, substantially as described.

2. A cylindrical carbon electrode having a surrounding metal band or ring at its top united to the carbon cylinder by screws having non-oxidizable points.

3. A battery-vessel having a surrounding band or ring at its top detachably connected therewith and forming an electrical connection with said vessel, substantially as described.

4. A battery-vessel having a surrounding band or ring at its top detachably connected therewith and forming an electrical connection with said vessel, a lid or cover resting on said ring, and a clamp-ring having connections with said first-mentioned band or ring to clamp said cover in place, substantially as described.

5. A battery-vessel forming one electrode of a battery, having a terminal ring at its top provided with a locking-piece at one side and a clamp-screw at the side opposite thereto, a cover for said vessel, with an opening therein for the entrance of the other electrode, and a clamp-ring above said cover having a connection with said locking-piece and said clamp-screw, substantially as described, whereby the cover may be securely clamped in place to close said vessel.

6. The combination, with the flexible or elastic top of a battery-vessel having a hole therein for the passage of an electrode, of an electrode having a body portion fitted to pass through said opening, and provided with an enlargement or shoulder at or near its end to rest upon said cover and be supported thereby, substantially as described, whereby said electrode is readily removed from the battery-vessel and readily inserted in place, while the opening closely fits the electrode to make the cell fluid-tight.

7. An electrode having a detachable shoulder band or enlargement at or near one end and a detachable ring or gasket at or near its opposite end to protect it at that point, substantially as described, whereby when the unprotected portion of the electrode in the battery-fluid is consumed the shoulder or enlargement may be detached and applied to the opposite end at the place before protected by the ring or gasket and secured thereto, so as to permit the opposite end of the electrode to be immersed in the battery-fluid, and thus insure a more thorough consumption of said electrode, as set forth.

8. A battery-electrode having one end of its active portion or body which is immersed in the battery-fluid protected or shielded, so as to render the electrode readily reversible, substantially as described.

9. A reversible battery-electrode having a socket at each end for making the circuit-connections, the socket which is immersed being protected from corrosive action by the insertion of a plug therein, substantially as described.

10. A reversible battery-electrode having a socket at each end for connections and a removable suspending shoulder or enlargement at or near one of said ends and a protection for a portion of the electrode at or near the other of said ends, substantially as described.

11. In a galvanic battery having an electrode-preserving vessel or cup containing a cleansing-liquid, a layer or column of mercury to amalgamate the electrodes placed therein, substantially as described.

12. A galvanic-battery apparatus having an electrode-preserving vessel or cup containing a layer or column of mercury to amalgamate the electrodes placed therein, substantially as described.

13. In a preserving vessel or cup to receive the electrodes of a galvanic battery when not in action, a cushion to receive the jar of the entering electrode, substantially as described.

14. In combination with a galvanic battery, a battery-box having a non-conducting support near its top, with an opening or openings therein through which the battery cell or cells are suspended, substantially as described.

15. In combination with a galvanic battery, a battery-box having a non-conducting support near its top, from which the battery cell or cells are suspended, and a detachable cover above said support for said cell or cells clamped upon the upper open end or ends of said cell or cells, substantially as described.

16. In combination with a galvanic battery, a battery-box having a non-conducting support near its top, from which two or more battery-cells are suspended, and a lid or cover for said cells having the coupling connection or connections for said cells attached thereto, substantially as described.

17. In a galvanic battery, the combination of a battery-box having a non-conducting support near its top, two or more carbon or equivalent cells suspended from said support, a lid or cover for said cells carrying the conducting-coupling connection or connections for said cells, and the zinc or equivalent electrode or electrodes of said cells, completing the connection when in place by contact with said coupling connection or connections, substantially as described.

18. The combination, in a galvanic battery, of the series of carbon containing-vessels forming one series of the electrodes of the battery, the terminal rings thereof, and the circuit-connections united at one end to said terminal rings and fitted with openings at the other ends thereof, through which the zinc electrodes are suspended in the battery-liquid, thereby forming an electrical connection between the electrodes of the series of vessels or cells by simply inserting the zincs through said connections, substantially as described.

385,148. PIPE-COUPLING. JAMES S. STEWART, Philadelphia, Pa., and FREDERICK STOTZ, Brooklyn, N. Y. Filed Apr. 22, 1887. Serial No. 235,739. (No model.)



Claim.—1. In an expansion or slip coupling for pipes, the cylindrical sleeve A, having the annular rounded rib *a* integral therewith on its inner wall, and a groove, *b*, between said rib and the end of the sleeve, in combination with the cylindrical pipe B, said rounded rib being adapted to embrace the pipe B at a distance from its end and to hold the pipe B at a distance from the inner wall of the sleeve A, so that its end may be deflected within the coupling, and to serve also as a guide for longitudinal displacement of the pipe B, the groove *b* being adapted to securely hold lead packing against the pipe B, substantially as and for the purpose herein shown and described.

2. In an expansion or slip coupling for pipes, the combination of the sleeve A, having internal annular rib, *a*, integral therewith, and groove *b* between the end of the sleeve and the rib *a*, with the elastic packing *f* between said rib and said groove, lead packing *g* in said groove, and pipe B, said pipe B being adapted to be embraced by the rib *a* and thereby be held at a distance from the inner wall of the sleeve A, so that its end may be deflected within the coupling, substantially as herein shown and described.

3. The coupling A, constructed with the internal rib, *a*, integral therewith, and groove *b* between the end of the coupling and the rib *a*, both forming an expansion and deflectible joint and with the threaded branch *d* for non-expansion joint, substantially as described, and for the purposes herein set forth.

385,149. MAT FOR HORSE-STALLS. LEROY S. STOWE, Berry Mo. Filed Mar. 26, 1888. Serial No. 268,498. (No model.)

Claim.—1. A mat composed of a series of sections, each section composed of two wooden bars having their upper adjacent edges cut away and being bound and held together by bands which support them above the floor, and a metal plate wound with bedding placed between said bars, substantially as and for the purposes hereinbefore set forth.

385,149.



2. In a mat for horse-stalls, the combination, with a series of sections composed of bars *a* and plate *d*, arranged as above described, of a bar, *l*, passing through the bars and slot in the middle leg of the plate, substantially as set forth.

3. A mat for horse-stalls composed of a series of sections united by a transverse bar, each section composed of two wooden bars bound and held rigidly by a band attached to the outer sides of said bars and extending below and underneath them, and a metal strip between said wooden bars pivoted at one end and having a locking device on the other end, substantially as described.

4. In a mat for horse-stalls, the combination, with racks A, having sockets *g* therein, of a series of sections united by a transverse rod, each section composed of two wooden bars held rigidly by a band, and a thin strip between said bars having projections *f* on its ends, the said projections fitting into the sockets of the racks, substantially as described.

385,150. STIRRUP. THOMAS J. TAYLOR, Howell, Tenn. Filed Apr. 28, 1888. Serial No. 271,992. (No model.)

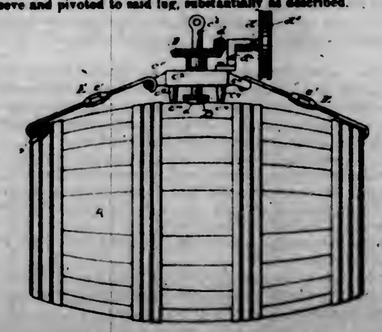


Claim.—1. A stirrup consisting of a curved wooden frame extending from a point beneath the foot over the toe and instep and provided with a strap-connection above, in combination with flexible side pieces, substantially as shown and described.

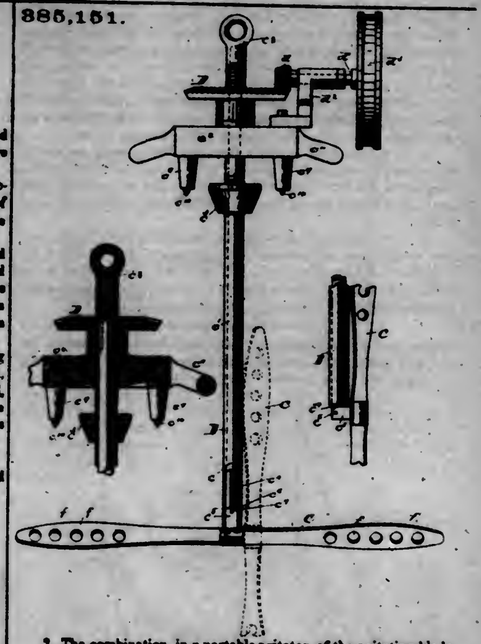
2. A stirrup consisting of a curved frame, A, extending from a point beneath the foot and over the toe and provided with a strap-connection above, in combination with the flexible side pieces, C C, fastened to the edges of the curved frame, and a re-enforcing band, D, extending around the edges of the pocket formed by the stirrup, substantially as and for the purposes described.

385,151. AGITATOR FOR CASKS OR BARRELS. GEORGE M. THOMPSON, Somerville, assignor to Edward H. Ashcroft, Lynn, Mass. Filed June 27, 1887. Serial No. 242,502. (No model.)

Claim.—1. In an agitator for casks or barrels, the combination with the agitating-blade C, having a lug, c^3, projecting at a right angle therefrom, of the sleeve *c* and the shaft c^4, vertically movable in said sleeve and pivoted to said lug, substantially as described.



385,151.

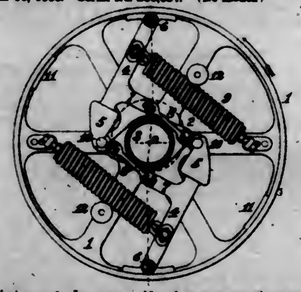


2. The combination, in a portable agitator, of the agitating-blade C, sleeve *c*, shaft c^4, arranged to extend without the barrel, the bevel-gear D d^1, for rotating it, and a lug, c^3, integral with the agitating-blade, or rigidly secured thereto, and extending at a right angle therefrom, connecting the blade C with the end of the shaft, whereby the blade is adapted to have a horizontal position in relation to the shaft and a vertical position in relation thereto, and a locking device for locking the blade to the shaft in its horizontal position when in the barrel, substantially as described.

3. The combination, in an agitator, of the support c^5, the sleeve *c*, the shaft c^4, contained in the sleeve, and a device for moving it vertically therein, the agitating-blade C, and the lug c^3, integral with the agitating-blade, or rigidly secured thereto, and extending at a right angle therefrom and connecting it with the lower end of the said shaft c^4, as and for the purposes described.

4. The combination, in an agitator, of the shaft c^4, the tube c^7, the agitating-blade C, its lug c^3, integral with the blade, or rigidly secured thereto, and extending at a right angle therefrom, the block or support c^5, for supporting the shaft and tube, and its legs c^9, having the points c^{10}, the said block or support being adapted to bear against the side of the barrel over the bung-hole, the bevel-gear D, bevel-gear d^1, the shaft d^2, and the pulley d^3, supported by said block c^5, the agitator-shaft-adjusting nut c^6, the ears or lugs c^{11} upon said block c^5, and tying-rods G, for connecting the said block with the chines of the barrel, substantially as described.

385,152. GOVERNOR. JOSEPH W. THOMPSON, Salem, Ohio, assignor of one-half to the Buckeye Engine Company, same place. Filed Jan. 16, 1886. Serial No. 208,987. (No model.)



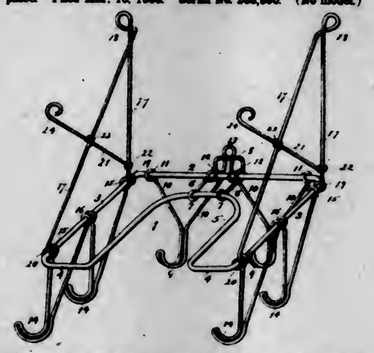
Claim.—1. In a centrifugal governor, the combination of a

supporting-case, a weight-arm pivoted thereto, a movable eccentric, and a link coupling the eccentric and weight-arm, the pivots connecting the link to the eccentric and to the weight-arm being so relatively located that the arcs described by said pivots shall be substantially tangential one to the other, and that each of said pivots may be brought into line with the centers of the case and of the weight-arm pivot in positions of the weight-arm within and adjacent to the outer and the inner limits of its range of movement, substantially as set forth.

2. In a centrifugal governor, the combination of a supporting-case, a weight-arm pivoted thereto, a spring coupled at its ends to the weight-arm and to the case, and a stop connected to the case in position to abut against the outer surface of the spring, substantially as set forth.

3. In a centrifugal governor, the combination of a supporting-case, a weight-arm pivoted thereto, a spring coupled at its ends to the weight-arm and to the case, a stud fixed in the case exterior to the spring, and a friction-roller mounted on the stud and abutting against the outer surface of the spring, substantially as set forth.

385,153. FOLDING HAT AND COAT RACK. GAYNER D. TOLMAN, Shawano, Wis., assignor to himself and Lorenzo D. Roberts, same place. Filed Mar. 10, 1888. Serial No. 266,990. (No model.)



Claim.—1. A folding coat and hat frame, consisting of a shelf formed of wire upon which hats may be placed, side frames hinged thereto, with loops to attach them to nails or other supports, and hooks pivoted to the rear and sides of the shelf, the several parts being constructed of wire and adapted to be folded up together, substantially as described.

2. A combined hat and coat rack, consisting of a shelf forming a support for hats, and having folding double hooks pivoted to its sides and rear, and folding side frames with extended brace-hook arms, and looped ends adapted to be attached to nails or other retaining devices, the several parts being formed of wire and adapted to be folded up together, substantially as described.

3. The combination, with a shelf for supporting hats, formed of a single piece of wire and having a rear wire brace with vertical projection, of double hooks formed of a single piece of wire pivoted to the rear of said shelf, and having an extended portion adapted to bear against the vertical projection at the rear of the shelf, double hooks formed of a single piece of wire pivoted to the shelf, and having braced hook-arms and suspending-loops, the several parts folding together, substantially as described.

4. A folding hat and coat frame, consisting of the shelf 1, having folding side frames, 17, with loops 18 and brace-arms 21, with hooks 24, folding double hooks 9 and 14, the frame 1, having brace-wire 6, with vertical projection 8, and the hooks 9, having extended portion 13, adapted to bear against said vertical projection 8, substantially as described.

385,154. GLOVE. WILLIAM VAUGHAN, Torrington, County of Devon, England. Filed Feb. 16, 1888. Serial No. 264,180. (No model.)

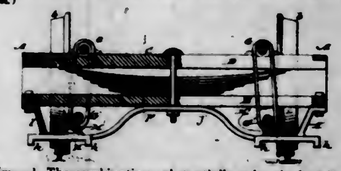
Claim.—1. A fabric glove having rows of stitching transversely of the upper and lower surfaces of the tips of its fingers, between the



seams which unite said fingers and their fourchettes, and also having rows of stitching completely encircling the tip of its thumb, substantially as shown and described.

2. A fabric glove of single thickness having in the front and back of its finger-tips and around the tip of its thumb transverse rows of stitching of coarser thread than that forming the fabric of the glove, substantially as shown and described.

385,155. SAFETY-GUARD FOR CAR-TRUCKS. WILLIAM H. WALKER, Martinez, Ga. Filed Feb. 3, 1888. Serial No. 262,948. (No model.)



Claim.—1. The combination, substantially as herein described and shown, of the truck provided with beams D and E, the spring interposed between beams D and E, the guard having end shoes, H H, the cross-plate or connection J, extended between the shoes at the opposite sides of the truck and secured to the beam E, the links G, lapped over the beams D E, and having bearings G' at their lower ends, the lugs H', projected upwardly from the guard and engaging bearings G', and the braces I for the outer ends of the shoes, all substantially as and for the purposes specified.

2. The herein-described safety-guard for car-trucks, consisting of the cross brace or connection arched upward at its center, shoes supported at the ends of said connection, the short brace-bars projected upward from the inner ends of said shoes, and the brace-brackets projected upward from the outer ends of said shoes, substantially as set forth.

3. The combination, with the truck and bearings G' supported thereon, of the guard comprising shoes and a connection-bar extended between said shoes, lugs H', projected from the guard and engaging bearings G', and brace I', extended from the guard and secured to the truck, all substantially as and for the purposes specified.

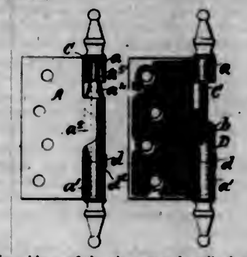
4. The combination of the truck-frame, the links G, and the guard secured to the truck-frame and having short upwardly-projected lugs H', engaging the lower ends of the links G, substantially as set forth.

5. The combination, with the truck, of the guard having two shoes at each side of the truck, and having brackets I, secured to the truck-frame, and connections uniting the two shoes at each side of the truck, substantially as set forth.

6. The truck having links G, provided with bearings G', the guard, and the lugs H', projected therefrom and engaging the bearing G', substantially as set forth.

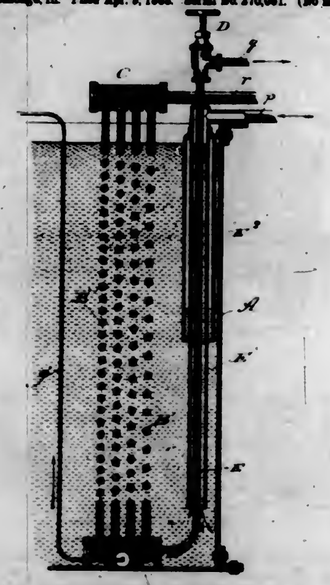
7. The truck having beams D and E and interposed spring F, and provided with links G, having bearings G', and the guard secured to the truck-frame and having lugs engaging the bearings G', substantially as set forth.

385,156. HINGE. JULIUS WEIS, Chicago, Ill., assignor of one-third to James R. Wiggins, same place. Filed Dec. 17, 1887. Serial No. 258,169. (Model.)



Claim.—In a hinge of the character described, the combination, with the leaf A, provided with the central knuckle, a^2, having a spiral surface on the under side, of the independent or loose knuckle D, having the upper side cut away in a corresponding plane and provided with the transverse slot b', the leaf B, the knuckle a' thereof, provided with the vertical slot b^2, which extends into the knuckle D, and the angular key adapted to be inserted in said slots, whereby these parts are rigidly locked together or disengaged, as may be required, substantially as and for the purpose set forth.

385,157. ICE OR REFRIGERATING MACHINE. FREDERICK W. WOLF, Chicago, Ill. Filed Apr. 9, 1883. Serial No. 270,081. (No model.)



Claim.—1. In combination with the condenser of an ice or refrigerating machine, a pipe, E, connecting the lower end of the condenser-coil through the condenser-tank with the regulating-valve D, and provided with a jacket, E', communicating from near its upper end with the water-supply, substantially as described.

2. In combination with the condenser of an ice or refrigerating machine, a pipe, E, connecting the lower end of the condenser-coil through the condenser-tank with the regulating-valve D, and provided with a jacket, E', communicating from near its upper end with the water-supply, and an air-jacket, E², in the tank surrounding the jacket E', substantially as described.

3. In combination with the condenser of an ice or refrigerating machine, manifolds C and C' at opposite ends of the condenser coils, and a pipe, E, connecting the manifold C' through the condenser-tank with the regulating-valve D, and provided with a jacket, E', communicating from near its upper end with the water-supply, and an air-jacket, E², in the tank surrounding the jacket E', substantially as described.

385,158. SAFETY-SEAL FOR CHECKS. ANNA M. WOODRUFF, Freehold, N. J. Filed Apr. 2, 1887. Serial No. 233,414. (No model.)



Claim.—1. As a new article of manufacture, a safety-seal consisting of a disk or plate having one surface coated with a viscid material and provided with a central aperture and a semi-transparent flap covering said aperture, the whole being adapted to be applied over a character to prevent it from being tampered with, as set forth.

2. The combination, with a check, of a centrally-apertured disk and a semi-transparent flap, a stratum of viscid material and the flap being arranged between the check and the disk, substantially as described.

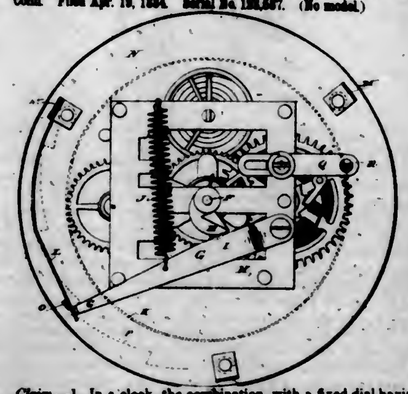
385,159. CUSPIDOR. JOHN P. ANSEN and FRED H. FOX, Chicago, Ill. Filed Jan. 10, 1888. Serial No. 260,273. (No model.)



Claim.—1. In a cuspidor, the combination of the body A and the lugs H and H', combined with the handle D, T-shaped projection E, ends e and e', and grooves b and b', all arranged substantially as set forth and described.

2. In a cuspidor, the combination, with the body A, having the ridge J, of the hinge a, the bottom B, eye G, rubber ring I, lever-hook C, and pivot F, all as and for the purpose substantially as set forth and described.

385,160. CLOCK-DIAL. ARCHIBALD BARRATTER, Waterbury, Conn. Filed Apr. 19, 1884. Serial No. 128,867. (No model.)

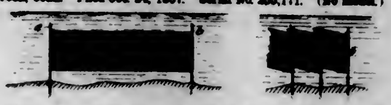


Claim.—1. In a clock, the combination, with a fixed dial having an opening in it, of a movable dial located behind such fixed dial, two ratchets carried by the movable dial, and means, substantially as shown, for engaging with such ratchets to hourly shift the movable dial and limit its forward movement, substantially as set forth.

2. In a clock, the combination, with a fixed dial having an opening in it, of a movable dial located behind such fixed dial, two ratchets carried by the movable dial, a locking-finger engaging with one ratchet, and a lever engaging with the other ratchet to turn the movable dial and operating to disengage such locking-finger from the ratchet with which the same engages, substantially as set forth.

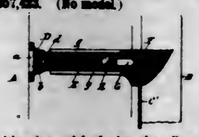
3. In a clock, the combination, with a fixed dial having an opening in it, of a movable dial located behind such fixed dial, two ratchets carried by the movable dial, a locking-finger engaging with one ratchet, a lever engaging with the other ratchet to turn the movable dial, and a finger engaging with the ratchet engaged by the lever and holding the dial between the intervals of its hourly actuations, substantially as set forth.

385,161. OBTAINING OYSTER-SPAT. OLIVER R. BRAGG, Stony Creek, Conn. Filed Oct. 24, 1887. Serial No. 253,171. (No model.)



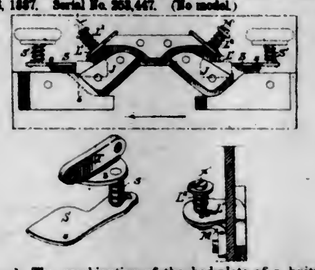
Claim.—The herein-described method for obtaining oyster-spat, consisting in submerging and securing upon the oyster-grounds a surface coated with a soft plastic-like material which adheres to the said surface, the said coating forming the surface upon which the sets may form, substantially as described.

385,162. ROCK-HINGE. THEODORE S. REESE, Albany, N. Y., assignor of one-half to Herman M. Darnell, same place. Filed Dec. 9, 1887. Serial No. 257,623. (No model.)



Claim.—The combination, with the bracket D and the latch-hook having with its head end the incline *f* and holding-slot *f'*, and the arm *f²*, provided with the longitudinal slot G and flanges *g g*, of the arm E, pivoted to said bracket at one of its ends and secured to the slotted arm of the latch-hook by the set-bolt H, substantially as and for the purposes set forth.

385,163. KNITTING-MACHINE. DAVID C. BELLIS, Philadelphia, Pa., assignor of one-half to Sigmund H. Wolfenmayer, same place. Filed Oct. 26, 1887. Serial No. 253,447. (No model.)



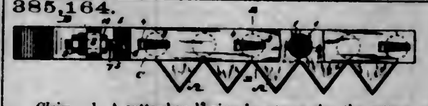
Claim.—1. The combination of the bed-plate of a knitting-machine, the cam-cylinder, and a needle-cylinder, with a supporting-cylinder for the latter, flanged at its lower end and secured to the bed-plate, and a cam-ring on the flange of the supporting-cylinder to raise and lower the needle-cylinder, all substantially as specified.

2. The combination of the needle-cylinder of a knitting-machine, having needles, some with long projecting bits and others with short projecting bits, with a cam-cylinder having a needle-rest, a cam adapted to slide laterally into and from said needle-rest, devices for pushing the said cam inward and drawing it outward, and means for restricting the inward movement before the cam reaches a position to act upon the short bits of the needles, all substantially as specified.

3. The combination of the needles and needle-cylinder of a knitting-machine, with a cam-cylinder having a needle-rest, a cam adapted to slide laterally in said cylinder, a cam-lever to push the said cam inward and springs to draw it outward, and a tripping-pin acting on said cam-lever as the latter rotates with the cam-cylinder, all substantially as specified.

4. The combination of the cam-cylinder of the machine and its fixed cam with the cam-nose, a spring acting thereupon to hold it in operative position, and a pivot-pin for said cam-nose, inclined in respect to the vertical, whereby said cam-nose has an upward and backward yielding movement, all substantially as specified.

385,164. CUTTING APPARATUS FOR HARVESTERS. JAMES A. BLAIR, Philadelphia, Pa., and WILLIAM G. BIRD, Wilmington, Del. Filed Jan. 19, 1888. Serial No. 261,264. (No model.)

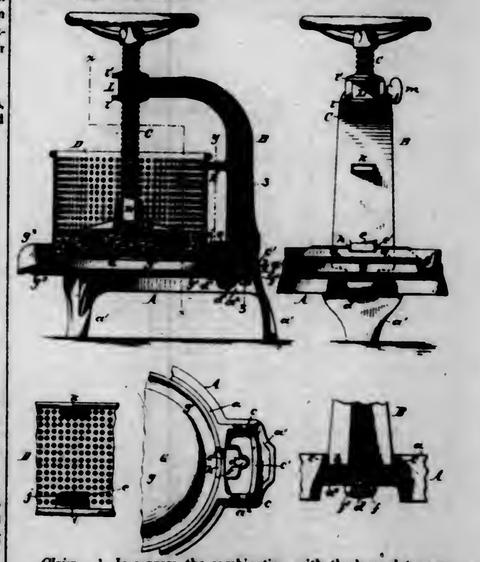


Claim.—1. A cutter-bar having lugs to receive the cutters, and tongues on said lugs tapered toward the outer end of the bar, and a boss at its inner or heel end, a locking-bar with slots tapered to correspond with the tongues and having hook-shaped lugs at one end, a draft-screw passed through said boss and having a cross-head to engage said lugs, and a nut working on said screw against said boss, said parts being combined substantially as described.

2. In a cutting apparatus for harvesters, the combination of the cutter-bar, the knives, and the locking mechanism therefor, of a draft-screw for the locking-bar, a boss on the cutter-bar, forming a bearing for said screw, a nut threaded on the screw to bear against the boss and having teeth on its rim, and a rocking and sliding dog adapted to engage a tooth on said nut to prevent said nut from unscrewing, said dog being secured in a T-shaped slot in the side of the bearing for the screw, and having a handle wherewith the dog is operated, substantially as described.

3. In a cutting apparatus for harvesters, the combination of the cutting-bar having a boss thereon, the knives or cutters, a locking-bar, a draft-screw passing through said boss and having a cross-head securing it to the locking-bar, a nut working on said draft-screw against said boss and having a toothed rim, and a dog secured to said boss adapted to engage the teeth of said rim, substantially as described.

385,165. DOMESTIC HAND-PRESS. JOHN W. CONDON, CHARLES G. SHEPARD, and PETER ADAMS, Buffalo, N. Y.; said Condon and Adams assignors to Walter J. Shepard, same place. Filed Jan. 9, 1888. Serial No. 260,194. (No model.)



Claim.—1. In a press, the combination, with the base-plate provided with an extension, a^3, having an opening, of the standard B, resting upon said extension and provided with a lug or hook engaging under the base-plate, and a fastening-screw whereby the standard is secured to the base-plate, substantially as set forth.

2. In a press, the combination, with a base-plate, A, provided with an extension, a^3, having an opening, d', and lips or flanges *e*, of the standard B, provided at its lower end with a base-flange, *b*, and a lug, *d*, engaging under the base-plate A, and a screw-bolt, *f*, whereby the standard is secured to the extension a^3, substantially as set forth.

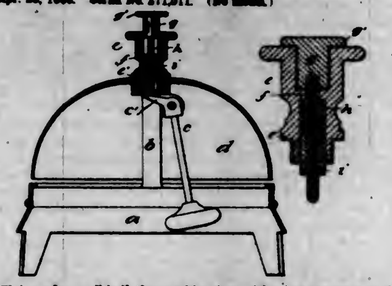
3. The combination, with the base-plate A, cylinder D, and standard B, provided with a lug or projection, *e*, of the removable pan G, provided with a recess, A, in which said lug engages, substantially as set forth.

4. The combination, with the base-plate A and the standard B, provided with a lug or projection, of the cylinder D, provided with a lug engaging with the lug of the standard, substantially as set forth.

5. The combination, with the base-plate A and the standard B, provided with a lug or projection, *e*, of the cylinder D, provided with a lug, *i*, adapted to be interlocked with the lug *e*, and a lug or support, *k*, formed on the standard B, and against which the upper portion of the cylinder D bears, substantially as set forth.

6. In a press, the combination, with the base-plate A and the standard B, provided with a lug, *e*, of the removable pan G, provided with a recess, A, engaging under the lug *e* of the standard, a cylinder, D, provided with a lug, *i*, also engaging under the lug *e* of the standard, a lug, *k*, formed in the standard and bearing against the upper end of the cylinder D, a follower, E, provided with a socket, *n*, and a feed-screw seated loosely in the socket *n* and provided with a screw-nut, L, arranged in a recess in the standard, substantially as set forth.

385,166. CALL-BELL. JOHN P. CONNELL, Kensington, Conn. Filed Apr. 20, 1888. Serial No. 271,511. (No model.)



Claim.—In a call-bell, the combination, with a base to support the bell, a sounding-shell, and a hammer pivotally supported in the sounding-shell and provided with a tappet-arm, of a push-pin sleeve, *e*, formed with a diaphragm, *f*, having a central aperture, and the push-pin *h*, fitted to reciprocate through the aperture in the diaphragm, and provided with pistons *g h*, arranged with a space between their approaching ends, whereby the strokes of the push-pin are limited in both directions, substantially as described.

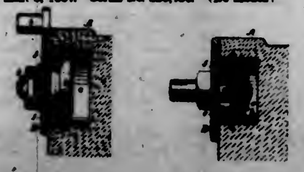
385,167. WATER-CLOSET. WILLIAM S. COOPER, Philadelphia, Pa. Filed Dec. 30, 1886. Serial No. 222,966. (No model.)



Claim.—1. The combination of the earthenware bowl of a water-closet, hinge-plates for the lid or seat, securing-bolts for said plates adapted to recesses in the bowl, and elastic bushings interposed between said bolts and the walls of the recesses, all substantially as specified.

2. The combination of the bowl having recesses, the hinge-plates, the confining-bolts therefor, elastic bushings adapted to the recesses of the bowl, and sleeves confined to said bushings and receiving the bolts which secure the hinge-plates, all substantially as specified.

385,168. WATER-CLOSET. WILLIAM S. COOPER, Philadelphia, Pa. Filed Mar. 6, 1887. Serial No. 229,736. (No model.)



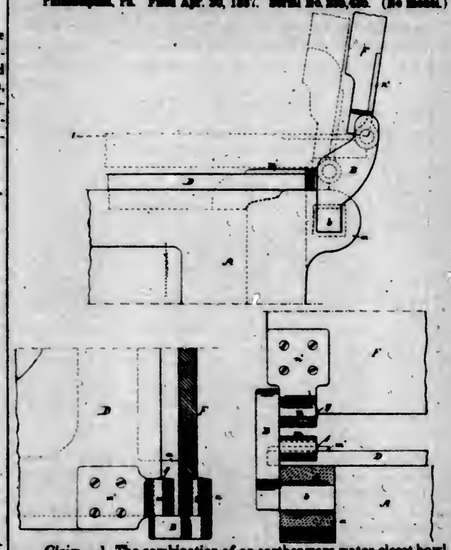
385,168.



Claim.—1. The combination of the recessed bowl of a water-closet, a hinge-plate, a securing-bolt therefor, having a head or nut contained within said recess, and an elastic bushing subjected to the pressure of said head or nut and expanded thereby against the walls of the recess, all substantially as specified.

2. The combination of the bowl of a water-closet having a recess therein, a hinge-plate, a ring, a bolt for securing the hinge-plate, and an elastic bushing compressed between said ring and the head or nut of the bolt, and expanded thereby against the walls of the recess, all substantially as specified.

385,169. WATER-CLOSET STRUCTURE. WILLIAM S. COOPER, Philadelphia, Pa. Filed Apr. 30, 1887. Serial No. 236,625. (No model.)



Claim.—1. The combination of an earthenware water-closet bowl, a lid or seat therefor, and a hinge having one part secured to said lid or seat and the other part secured directly to the bowl, all substantially as specified.

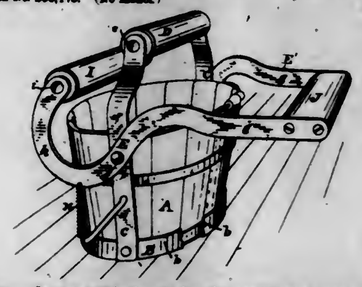
2. The combination of an earthenware water-closet bowl, with a seat and cover both hinged directly to the bowl, all substantially as specified.

3. The combination of the earthenware bowl of a water-closet, having a recess therein, a plate having a shank adapted to and secured within said recess, and a seat or lid hinged to said plate, all substantially as specified.

4. The combination of the earthenware bowl of a water-closet, having a recess therein, with a hinge-plate having a shank adapted to and secured within said recess, and with a seat and lid both hinged to said hinge-plate, the axis of the lid-hinge being in a higher plane than that of the seat-hinge, all substantially as specified.

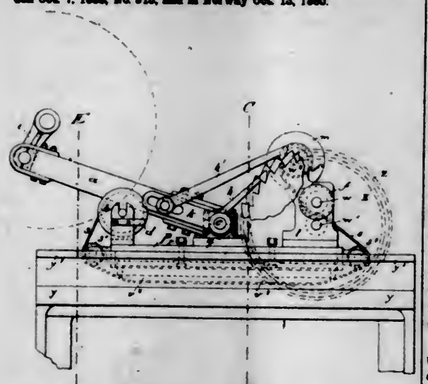
5. The combination of the earthenware bowl of a water-closet, having a recess therein, a plate having a shank adapted to and secured within said recess, and two laterally-projecting hinge-pintles, one of which is in a higher plane than the other, a seat hung to the lower pintle, and a lid hung to the upper pintle, all substantially as specified.

385,170. MOP-WRINGER. JESSE A. CRANDALL, Brooklyn, N. Y., assignor of one-half to John Wood, same place. Filed July 16, 1888. Serial No. 209,173. (No model.)



Claim.—In a mop-wringing device, the combination, with the bottom band, B, having diametrically-opposite uprights C C, bent toward each other at their tops, and having a roll, D, journaled between them in their upper ends, of the spring-actuated angular levers E E', pivoted near their ends on the uprights C C, and having their arms rigidly connected by a suitable foot-piece, and their arms A having a roll, I, similar to roll D, all constructed and arranged substantially as and for the purpose described.

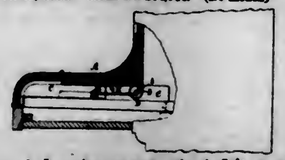
385,171. POLISHING APPARATUS FOR WOOD, &c. THEODOR DAVIDS, Hanover, Prussia, Germany. Filed Feb. 2, 1887. Serial No. 226,293. (No model.) Patented in Germany Jan. 20, 1886, No. 32,290; in Austria-Hungary Sept. 30, 1885, No. 30,463 and No. 67,306; in Sweden Oct. 7, 1885, No. 312, and in Norway Oct. 12, 1885.



Claim.—1. The combination of the sledge P and means for moving it to and fro with the adjustable filling-block v^2, the two grinding-cloth rollers *b* and *m*, the grinding-cloth *a*, the spur-wheel *x'*, with pawl *h* on the connecting-rod *o*, the rollers *w' w*, and the strap-gear *f f'*, for the purpose specified.

2. The combination of the sledge P and means for moving it to and fro with the adjustable filling-block v^2, the adjusting-screws *r*, the grinding-cloth rollers *b* and *m*, the guide-rollers x' x^2, the transporting-rollers *w' w*, the transporting cog-wheel *x'*, the pawl *h* on the connecting-rod *o*, and the strap-gear *f f'*, substantially as described.

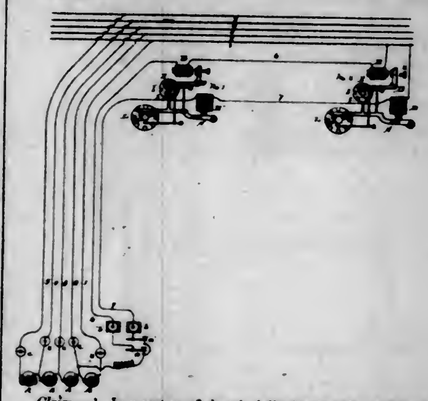
385,172. PIANO-CASE. ALPHONSO F. DELANO, Hyde Park, assignor to the South American Organ and Piano Company, Boston, Mass. Filed Feb. 23, 1888. Serial No. 264,913. (No model.)



Claim.—1. In a piano or organ, the shaft *k*, arranged in bearings in the case, as shown, and having pulleys, the bands connected with said pulleys and with the lid and arranged with each as set forth, and the hangers E, sustaining the shaft in its relation to the lid and serving to limit the said lid in either its inward or outward movement, all substantially as shown and set forth.

2. In a piano or organ, the combination of the lid with the shaft and its pulleys and bands arranged with each other, as shown, and the hangers serving both to connect the shaft with the lid and as stops to limit the said lid in its inward and outward movements, substantially as shown and set forth, all being arranged in the case as represented.

385,173. SYSTEM OF ELECTRICAL DISTRIBUTION. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Dec. 9, 1887. Serial No. 257,269. (No model.)



Claim.—1. In a system of electrical distribution, the combination of two or more electrically-operated switches, two or more simultaneously electrically-controlled stops—one for each switch—such stops being situated or arranged differently relative to their respective switches, whereby any particular switch can be released for action while the others are held from action by the stops, and a circuit controlled by each switch, substantially as set forth.

2. In a system of electrical distribution, the combination of a main circuit extending from a central station, two or more branch circuits supplied therefrom, a switch for each of said branch circuits, a magnet for operating each switch, a circuit from the station including all said magnets, a circuit-breaker in said circuit at the station, a movable stop for each switch, such stops being situated or arranged differently relative to their respective switches, a magnet controlling the position of each stop, a circuit from the station including all said stop-magnets, and a circuit-breaker in said circuit at the station, substantially as set forth.

3. In a system of electrical distribution, the combination of a main circuit composed of four or more conductors, house-circuits, each connected in multiple arc with a pair of said conductors, and switches for certain of said house-circuits, controlled from the central station, for shifting the connections thereof progressively from one pair of conductors to the other pairs, substantially as set forth.

4. In a system of electrical distribution, the combination of a main circuit composed of four or more conductors, a switch having a suitable number of contact-plates, connections from pairs of said plates to the main conductors, two arms bearing on said plates and movable relative thereto, and a house-circuit connected with said arms, whereby the movement of said arms shifts the connections of said house-circuit from one pair of main conductors to another, substantially as set forth.

5. In a system of electrical distribution, the combination of a main circuit composed of four or more conductors, house-circuits, each connected in multiple arc with a pair of said conductors, switches for certain of said house-circuits, for shifting the connections thereof progressively from one pair of conductors to the other pairs, and magnets controlled from the central station for operating said switches, substantially as set forth.

6. In a system of electrical distribution, the combination of a main circuit composed of four or more conductors, a switch having a suitable number of contact-plates, connections from pairs of said plates to the main conductors, two arms bearing on said plates and movable relative thereto, a house-circuit connected with said arms, whereby the movement of said arms shifts the connections of said house-circuit from one pair of main conductors to another, and a magnet controlled from the central station for operating said switch, substantially as set forth.

7. In a system of electrical distribution, the combination of a main circuit extending from a central station, two or more branch circuits supplied therefrom, a switch for each of said branch circuits, a magnet and an armature-lever for operating each switch, a circuit from the station including all said magnets, a circuit-breaker in said circuit at the station, a rotating stop-disk for limiting the movement of each of said armature-levers, said disks each having a notch and such notches being all located at different points on the disks' peripheries, a magnet and suitable gearing controlled thereby for revolving each disk, a circuit from the station including all said magnets, and a circuit-breaker in said circuit at the station, substantially as set forth.

8. In a compensating system of electrical distribution, the combination, with the main and compensating conductors forming the main circuit, of branch circuits connected therewith and unisoned switching mechanism controlled from the central station, for independently controlling said branch circuits, substantially as set forth.

9. In a system of electrical distribution, the combination of the switches revolved by electro-magnets controlled from the station, the stop-disks for said switches revolved by other magnets controlled from the station, unison-stops for the switches, unison-stops for the disks, releasing devices for the stop-disk unisons operated by the switch-magnets, and releasing devices for the switch-unisons operated by the stop-disk magnets, substantially as set forth.

10. In a system of electrical distribution, the combination of a main circuit composed of four or more conductors, switches, each having a suitable number of contact-plates, connections from pairs of contact-plates in each switch to the main conductors, two arms bearing on the plates of each switch and movable relative thereto, a house-circuit connected with the arms of each switch, a magnet for operating each switch, a circuit from the station including all said magnets, a circuit-breaker in said circuit at the station, a movable stop for each switch, such stops being situated or arranged differently relative to their respective switches, a magnet controlling the position of each stop, a circuit from the station including all said stop-magnets, and a circuit-breaker in said circuit at the station, substantially as set forth.

385,174. POTTED-PLANT SUPPORT. FREDERIK S. FARRINGTON, Cohoes, N. Y. Filed Oct. 21, 1887. Serial No. 253,033. (No model.)



Claim.—A potted-plant support consisting of the pan A, having the screw-nut B secured in the bottom thereof, a bracket having a screw-threaded outer end, said outer end being in engagement with the screw-nut aforesaid, and the cock C in the side of the pan, in combination with the plate D, provided with an upwardly and a downwardly extending flange, as specified, said plate being perforated, substantially as described, and for the purposes set forth.

385,175. FLOUR-MILL. JAMES J. FAHLBERG, Jackson, Mich. Filed Aug. 17, 1888. Serial No. 211,128. (No model.)



Claim.—1. The combination, with a casing having a grain-feed and a rotary beater located within the casing, of a series of adjustable grate-bars located in a plane between the planes of the beater and grain-feed, substantially as set forth.

2. The combination, with a casing and an exhaust-chamber in open communication therewith, of a rotary beater located within the casing below the exhaust-chamber, a series of adjustable grate-bars arranged in arched form above the beater, and a flour-conducting pipe connected with the exhaust-chamber, substantially as set forth.

3. The combination, with a tapered exhaust-chamber, a beater-casing, and a set of adjustable grate-bars separating said chamber and casing, of a grain-feed at small end of the exhaust-chamber and an exhaust-fan at the large end of said exhaust-chamber, substantially as set forth.

4. The combination, with a flaring casing and the winged beater journaled therein, of the exhaust-chamber located above the beater, the exhaust-fan in open communication with the exhaust-chamber, and the valves or dampers in the end of the casing for regulating the force of the draft, substantially as set forth.

5. In a pulverizing-mill, the combination, with one or more revolving beaters provided with corrugated or roughened surfaces, of an impact-plate and grate-bars located above the beaters and having corrugated or checked surfaces, substantially as set forth.

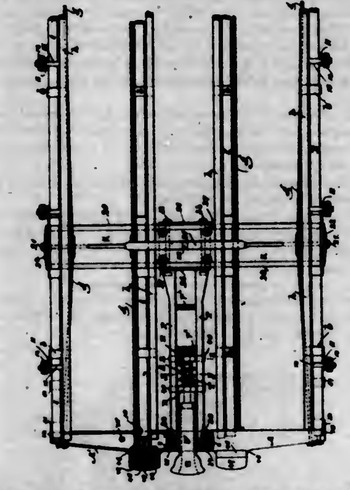
385,176. SICKLE-GRINDER. JOSEPH W. GARDLE and LEVI M. RUFF, Casey, Iowa. Filed Aug. 6, 1887. Serial No. 246,262. (No model.)



Claim.—1. The combination of the frame, the rotating shaft having the series of detachable grindstones N, the vertically-adjustable bearing-blocks, the sickle-holder journaled therein, and the screw to bear upon the upper side of the sickle-holder, substantially as described.

2. The combination of the longitudinally-adjustable frame, the rotating shaft L, journaled therein, the series of detachable grindstones secured to the said shaft, and the sickle-holder, substantially as described.

385,177. METALLIC PLATFORM FOR RAILWAY-CARS. JAMES T. GOODRLLEW, Troy, N. Y., assignor to the Iron Car Company, Stamford, Conn. Filed June 15, 1887. Serial No. 241,266. (No model.)



Claim.—1. The combination, with the tubes and truss-bolts in a car-platform, of cast-metal end sill's that are hollow and box-shaped, and provided with sockets cast with the end sill for the reception of the ends of the tubes, and holes for the passage of the truss-rods, substantially as set forth.

2. The end sills for car-platforms, each formed of right and left hand parts, in combination with the splice-piece C and yoke-piece B for uniting the two parts of the end sill together, substantially as set forth.

3. The combination, with the draw-bar, spring, and followers, of a cast-metal draw-frame composed of two bars, each of which is made in one piece, having holes near the ends for attaching the same firmly in place, and supports for the movable followers at the ends of the spring, substantially as specified.

4. The combination, with the end sill and transom-beam, of draw-

frames, each of which is made with openings and flanges for stiffening the metal, and a boss or circular projection upon the draw-frame, entering a recess in the end sill, and bolts for connecting the respective parts, substantially as set forth.

5. The combination, with the longitudinal tubes, the transom-beam, truck, and king-bolt, of the king-bolt plates, one of which has a cone-shaped projection and the other a similar-shaped recess, and a cylindrical projection on one entering a similar recess in the other, substantially as set forth.

6. The combination, with the transom-beam and the draw-frames, of the upper king-bolt plate having tubular flanges upon the same and the bolts for connecting the ends of the draw-frames with the king-bolt plate, substantially as set forth.

7. The combination, with the draw-frames, draw-bar, and spring, of follower-plates, each one of which is hollow and box-shaped and provided with internal ribs, and with a central hole, and the draw-bar bolt passing through the spring follower-plates and into the draw-bar, substantially as set forth.

8. The combination, with the T-shaped tie-bar *c* and the truss-bolts *g*, of the saddle adapted to receive the T-head of the tie-bar and grooved on the under side for the truss-bolt, substantially as set forth.

9. The transom-beam of wood with trough-shaped metal bars at its sides, in combination with the metal tubes of the car-frame, the floor-sills, the tie-rod passing across the tubes and through the end portions of the transom-beam, and the end plates through which the tie-rod passes, substantially as set forth.

10. The combination, with the metallic tubes in a car-platform, of the U-shaped step, the clip-piece passing around the metallic tube, the coupling-pieces at the upper ends of the step, and the bolts passing through the same and through the clip-pieces, substantially as set forth.

11. The combination, with the longitudinal sills in a car-platform, of hollow box-shaped metallic end sills having sockets or recesses cast upon them for the reception of the longitudinal sills, substantially as set forth.

12. The combination, with the end sill and transom-beam, of draw-frames, each of which is made in one piece with flanges for stiffening the metal and openings for receiving the ends of the followers, and bolts for connecting the ends of the draw-frame to the end sill and transom-beam, respectively, substantially as set forth.

13. The cast-metal draw-frame P, made in one piece, having flanges to strengthen the metal, openings for the attaching-bolts, and an opening for the followers of the draw-bar, substantially as set forth.

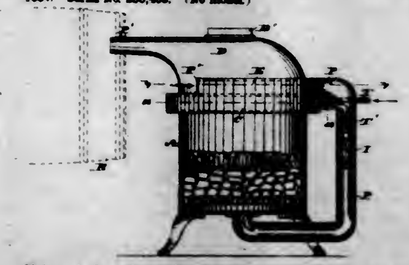
14. The cast-metal end sill formed as a hollow box, with openings to lessen the weight and tapering toward the ends, substantially as set forth.

15. The follower for the draw-bar spring, made of malleable cast-iron in one piece and having front and back plates and connecting plates or flanges, so as to form a hollow box with an opening through it for the draw-bolt, substantially as specified.

16. The compound clip-pieces 50 and 51, adapted to connect the step and tube, substantially as set forth.

17. The end sill formed of cast metal as a hollow box with openings, in combination with the brake-shaft passing through the top of the sill, and having its lower end within a socket in the lower part of the sill, substantially as set forth.

385,178. APPARATUS FOR PITCHING BARRELS. LOUIS HAGENBUCHLER and OTTO HAGENBUCHLER, Philadelphia, Pa. Filed Nov. 18, 1887. Serial No. 255,462. (No model.)



Claim.—1. In a device for pitching barrels, a furnace having a steam-injection pipe connected to a superheating-jacket, in combination with an air-pipe connected to a second superheating-jacket, the air-pipe surrounding the injection-pipe and connected to the base of the furnace at a point below the bed of the fire, substantially as described.

2. In a device for pitching barrels, two superheating-jackets arranged in close proximity to a furnace, in combination with a steam-injecting pipe and an air-pipe, each connected to one of said superheating-jackets, and so arranged that the admission of steam through the injector forces intermingled superheated steam and air through the furnace, substantially as described.

3. A barrel-pitching apparatus consisting of a furnace with hood having a nozzle, an air-heating chamber with air-pipe leading therefrom into the base of the furnace, and a steam-pipe leading into said air-pipe, said parts being combined substantially as described.

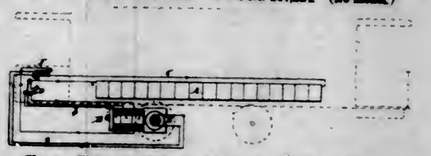
4. In a barrel-pitching apparatus, the combination of an air-tube connected to the base of a furnace with a steam-injector located within said air-tube, the air-tube and the injector being connected, respectively, to superheating chambers and jackets, substantially as described.

385,179. MUG. ZACHARY T. HALL, Philadelphia, Pa. Filed Dec 31, 1887. Serial No. 260,476. (Model.)



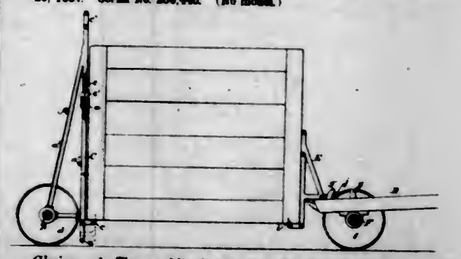
Claim.—A metallic mug consisting of outer and inner walls, the outer wall being embossed or chased and the inner wall plain, the inner wall having a bead at the top inclosing the top of the outer wall, and a bottom with circumferential flange inclosing the base of both walls, substantially as described.

385,180. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Mar. 15, 1888. Serial No. 267,294. (No model.)



Claim.—The method of propelling and controlling an electrically-propelled vehicle supplied with motive power from secondary batteries carried by the vehicle, which consists in coupling up the cells of the battery or batteries in fixed relation, supplying the motor or motors propelling the vehicle with the full current of the battery, and varying the speed and power of the motor or motors by coupling up the coils of the motor or motors in different relations to vary their internal resistance.

385,181. TRUCK. MAURICE HUNTLY, Philadelphia, Pa. Filed Nov. 29, 1887. Serial No. 256,440. (No model.)



Claim.—1. The combination, in a truck, of a wheeled support consisting of a frame-work having a portion adapted to pass under the object to be carried and another portion adapted to press against one end of the object, with a lever mounted on wheels and with a frame adapted to be supported by said lever, and having a portion adapted to bear against the other end of the object to be carried, and a portion passing under said object, so that on raising the lever the object is supported by the two end frames, substantially as specified.

2. The combination, in a truck, of the frame A and wheels therefor, with claws C passing under the object to be carried, with a frame, E, at the opposite end, having claws *i*, with a carrying-truck for this frame E, substantially as described.

3. The combination of the frame A, with the frame E and its carrying-truck B, and a roller, C, sliding on the frame A, and having claws which engage with the object to be carried, substantially as described.

4. The combination of the frame A, carrying-wheels therefor, with a frame, C, adapted to slide on said frame E, and provided at one end with a threaded bolt, which passes through a portion of the frame A, and a nut by which the frame C is hung upon the frame A, substantially as described.

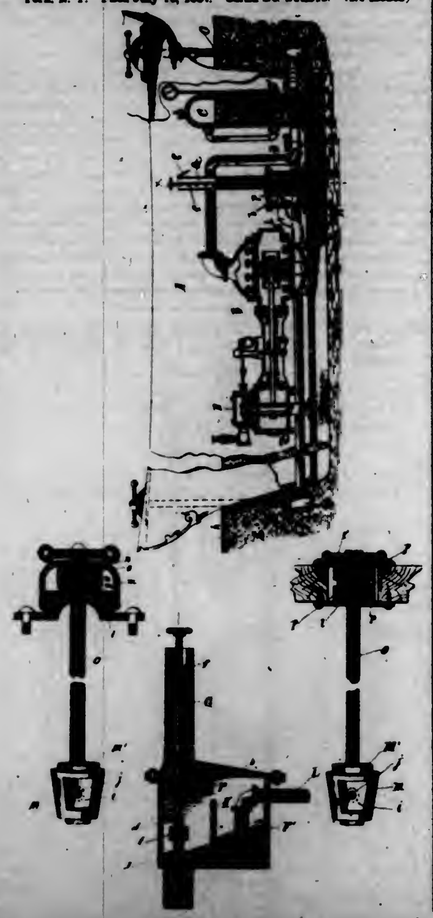
5. The combination of the frame, the rear carrying-frame, A, having wheels and having an eye, *c'*, with the front truck, B, having wheels, and a pin over which the eye of the rear truck passes when the two are connected, substantially as described.

6. The combination of the wheeled rear frame, A, having an eye, *c'*, with a wheeled front truck, B, having a pivot-pin, with a platform, G, having a portion adapted to pass over the said pivot-pin, and a pin adapted to pass through the eye *c'* in the rear truck, substantially as specified.

7. The combination of the front truck, the wheels, the shaft, a crow-bar, *b*, forming the handle for said truck, and a pivot-pin thereon, with a pike, *b'*, substantially as described.

8. The combination of the rear truck, A, mounted on wheels, having a portion adapted to pass under the object to be carried, with a front truck, and a frame, E, thereon, having a portion adapted to pass under the object to be carried, with a cord or chain passing from the front frame, E, to a windlass on the frame A, substantially as described.

385,182. MARINE PROPULSION. WALTER M. JAMESON, New York, N. Y. Filed July 16, 1887. Serial No. 244,519. (No model.)



Claim.—1. In an apparatus for propelling or maneuvering vessels, the combination, with a steam-pump in which the steam-piston is of greater area than the pump-piston, of a receiver connected with the pump and adapted to contain air or other elastic material and the pumped water stored therein under dynamic compression, and submerged outlets (one or more) in communication with said receiver, substantially as set forth.

2. In an apparatus for propelling or maneuvering vessels, the combination, with steam-pistons of different areas and pump-pistons connected therewith, of a submerged water-discharge orifice, for the purpose of propelling or maneuvering a vessel, substantially as set forth.

3. The combination, with the differential pistons of a compound engine and a pump-piston of less area than the high-pressure piston of the engine, of a receiver adapted to contain air or other elastic material, in which the pumped water is stored under dynamic compression, and submerged water-discharging orifices connected therewith, the latter being of less area than the pump-piston to create and maintain a greater pressure to the square inch at the submerged outlets than the initial boiler-pressure, for the purpose of propelling or maneuvering a vessel, substantially as set forth.

4. In apparatus for propelling or maneuvering a vessel, the combination, with a water-forcing device and a submerged discharge-orifice connected therewith, an adjustable discharge-plug, and a pipe leading from the water-forcing device to the discharge-plug, of a water-supply tank having submerged inlet-ports and a pipe connecting the supply-tank and water-forcing device, substantially as set forth.

5. In apparatus for propelling or maneuvering a vessel, the combination, with a water-forcing device and a submerged discharge, of a water-supply tank having submerged inlet-ports and an air and water separating chamber, and a suction-pipe leading from the tank to the water-forcing device, substantially as set forth.

6. In apparatus for propelling or maneuvering a vessel, the combination, with a water-forcing device, a submerged discharge, and a pipe connecting the water-forcing device and submerged discharge, of a chambered water-supply tank having submerged inlet-ports, valves for controlling the ports, elevated air-receiving and discharge stand-pipes, and a suction-pipe leading from one chamber of the tank to the water-forcing device, substantially as set forth.

7. In apparatus for propelling or maneuvering a vessel, the combination, with a water-receiver containing air or other elastic medium and a forcing device for supplying said receiver with water, of a water-supply tank, the latter having submerged inlet-ports, a pipe connecting the supply-tank and water-forcing device, and submerged water-discharge pipe or pipes leading from the receiver, substantially as set forth.

8. In apparatus for propelling or maneuvering a vessel, the combination, with a water-receiver containing air or other elastic medium and a forcing device for supplying said receiver, of a water-supply tank having submerged inlet-ports and an air-receiving chamber, a pipe connecting the supply-tank and water-forcing device, and submerged water-discharge orifice or orifices leading from the water-receiver, substantially as set forth.

9. In apparatus for propelling or maneuvering a vessel, the combination, with a water-receiver containing air or other elastic medium and a forcing device for supplying water to said receiver, of a water-supply tank having submerged water-inlet ports, a pipe connecting the supply-tank and water-forcing device, valves for controlling the ports in said submerged inlet-ports, air-receiving stand-pipes leading upwardly from the water-supply tank, covers for said stand, and submerged water-discharge orifice or orifices leading from the water-receiver, substantially as set forth.

10. In apparatus for propelling or maneuvering a vessel, the combination, with a water-receiver containing air or other elastic medium and a forcing device for supplying said receiver, of a water-supply tank having submerged inlet-ports, valves for controlling the ports, and a partition extending transversely of the tank, pipes connecting the water-forcing device and supply-tank, the ends of the pipe within the tank being below the top of the partition on the opposite side from the inlet-ports, and submerged water-discharge orifice or orifices leading from the receiver, substantially as set forth.

11. In apparatus for propelling and maneuvering a vessel, the combination, with a water and air receiving tank having water-inlet ports and air-chamber, of a water-forcing device having a submerged outlet, and a pipe connecting the water-forcing device and tank, substantially as set forth.

12. In a vessel, a water and air receiving tank having inlet-ports, valves for controlling the ports, air-receiving stand-pipes extending above the tank and in communication therewith, and covers for the stand-pipes, substantially as set forth.

13. In apparatus for propelling or maneuvering a vessel, the combination, with a water-forcing device, a tank having submerged inlet-ports, and a pipe connecting the tank and water-forcing device, of a discharge-pipe leading from the water-forcing device, and means for

controlling the direction of the water-discharge, substantially as set forth.

14. In apparatus for propelling or maneuvering a vessel, the combination, with a forcing device, a water-receiver partly filled with air or other elastic medium, and a tank having submerged inlet-ports, of a submerged fixed discharge-orifice and an adjustable plug adapted to enter the discharge-orifice and open or close or change the direction of the ejected water-jet, substantially as set forth.

15. A propelling and maneuvering device for vessels, consisting of a pump, a discharge-pipe leading therefrom, and a movable discharge-plug located at the end of the discharge-pipe, substantially as set forth.

16. A propelling and maneuvering device for vessels, consisting, essentially, of a fixed discharge hollow casing having inlet and outlet passages located in or approximately in the same plane, and a perforated plug located in the hollow casing and adapted to be turned therein to vary the direction of the discharged jet of water, substantially as set forth.

17. A propelling and maneuvering device consisting, essentially, of a fixed casing having a water inlet and outlet located in or approximately in the same plane, a plug having an orifice therein adapted to enter said casing, and a lock for locking the plug securely in the casing, substantially as set forth.

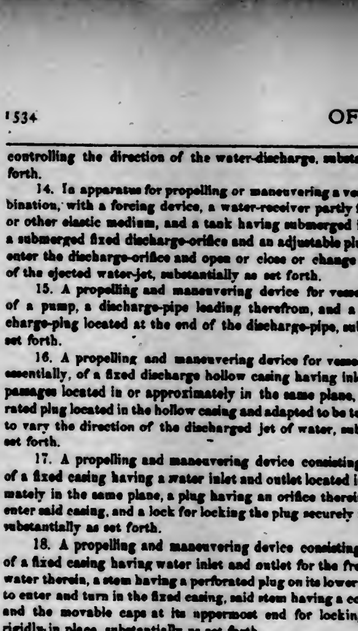
18. A propelling and maneuvering device consisting, essentially, of a fixed casing having water inlet and outlet for the free passage of water therein, a stem having a perforated plug on its lower end adapted to enter and turn in the fixed casing, said stem having a collar thereon and the movable cape at its uppermost end for locking the collar rigidly in place, substantially as set forth.

19. In a vessel, the combination, with a water-forcing device, of submerged discharge-outlets for elevating the vessel to the surface of the water, and pipes connecting the outlets with the water-forcing device, substantially as set forth.

20. In a vessel, the combination, with a water-forcing device, of discharge-outlets at one or both ends of the boat, which direct the discharged water upwardly, and pipes connecting the outlets with the water-forcing device, substantially as set forth.

21. In a vessel, the combination, with a water-forcing device and submerged outlets at the stern for propelling the vessel, of the double discharge-outlets for directing the discharged water up or down, and pipes connecting the water-forcing device with the several outlets, substantially as set forth.

385,183. MARINE PROPULSION. WALTER M. JACKSON, New York, N. Y. Filed Dec. 16, 1886. Renewed Dec. 15, 1887. Serial No. 258,015. (No model.)



Claim.—1. The combination of a suitable pump or water-forcing device having water-inlet pipe and outlet or outlets, the latter being of smaller capacity than the inlet, and water-storage tank or reservoir adapted to contain air or other elastic medium, the said tank being located between the pump or water-forcing device and the propelling or guiding outlet or outlets.

2. In a device for propelling or handling a floating vessel, the combination of a pump or water-forcing device having a water-inlet, an outlet-pipe the submerged discharge end of which is of smaller capacity than the inlet, a tank or receiver adapted to contain air or other elastic medium and located between the pump and discharge-pipe, and valves for cutting off the water to and from the tank, substantially as set forth.

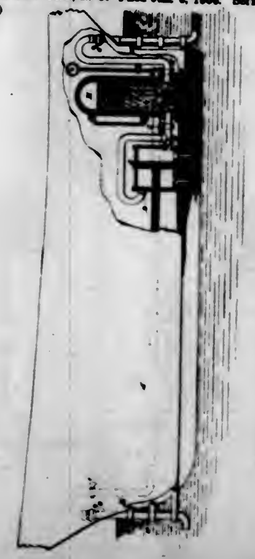
3. In a device for propelling and handling a floating vessel, the combination, with a tank or reservoir provided with an air-cushion, a pump or other device for forcing water into said tank or reservoir, and an inlet-pipe leading to said tank, of a water-discharge pipe connected to said tank or reservoir at or near the bottom thereof, the submerged outlet of said discharge-pipe being of smaller capacity than the inlet, substantially as set forth.

4. In a device for guiding or steering floating vessels, the combination, with a pump having an inlet, of a storage-tank into which the water is forced under a column of air or other elastic medium, a pipe leading from said storage-tank, and a movable discharge-pipe communicating with said tank and having a submerged discharge-orifice of less capacity than the water-inlet, substantially as set forth.

5. In a device for propelling and guiding a floating vessel, the combination, with a pump or water-forcing device and inlet-pipe leading thereto, of a storage-tank into which the water is forced under a column of air, a discharge-pipe a section of which is adapted to rotate and thus change the direction of the issuing jet of water, the submerged outlet of said rotating section being of smaller capacity than the water-inlet, and valves for cutting off the water to and from the tank, substantially as set forth.

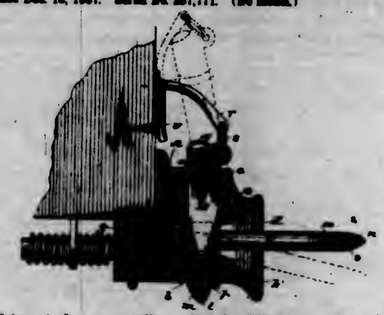
6. The herein-described apparatus for propelling or maneuvering a vessel, consisting, first, in a suitable boiler; second, in any suitable water-forcing device; third, in the employment of any suitable means for taking the water in which the vessel is wholly or partially submerged through the vessel and into said water-forcing device, and, fourth, in discharging said water by means of suitable conduits connecting with said water-forcing device, said conduits having their discharge-orifices opening into the water in which the vessel is wholly or partially submerged at a greater pressure to the square inch than that exerted to the square inch by the boiler, for the purpose of creating aqueous molecular confusion or the impact of water particles in the water in which the vessel is wholly or partially submerged, establishing intense reactionary resistance in said water and attaining a greater percentage of the energy of the boiler for propelling and maneuvering vessels than has heretofore been secured, substantially as specified.

385,184. METHOD OF MARINE PROPULSION. WALTER M. JACKSON, New York, N. Y. Filed Jan. 6, 1888. Serial No. 259,953. (No model.)



Claim.—Claim.—The herein-described method of marine propulsion, which consists in developing a pressure exceeding the boiler-pressure by means located between the boiler and water-exit, subjecting water received into the vessel to such increased pressure, and then discharging said water in the form of one or more submerged jets against the water of flotation.

385,185. CAR-COUPLING. EDWARD L. KEELER, Beaver Falls, Pa. Filed Dec. 13, 1887. Serial No. 257,771. (No model.)



Claim.—1. In a car-coupling, a draw-head having a vertical rectangular slot, one of the walls of which is inclined and provided with two supports for a coupling-pin, in combination with a pin having a notch or seat in its lower end, and an operating-shaft upon which said pin is suspended, substantially as described.

2. In a car-coupling, a draw-head having a chamber in the rear portion thereof, provided with a rearwardly-inclined upper wall, and a projection across the front end of said chamber, in combination with a link having its ends curved, substantially as shown, and for the purpose described.

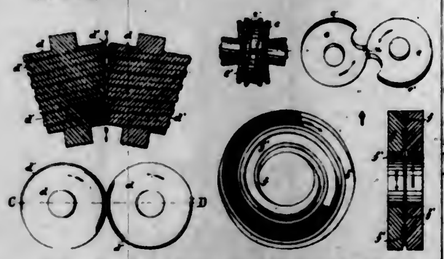
3. In a car-coupling, a draw-head having a vertical right-angular slot and a transverse support, in combination with a pin having a projection on its end provided with front and rear curved surfaces and a notch or seat, and a link having double-curved surfaces on its ends, substantially as described.

4. In a car-coupling, a draw-head provided with a vertical slot having an inclined wall, a transverse shaft secured to the car-body and provided with an arm, and a coupling-pin secured to said arm by a ring or chain on one side of its median line, substantially as described.

5. A coupling-pin weighted on one side of its median line, in combination with an operating-arm to which the pin is attached by a ring or chain on the opposite side of said line, a slotted draw-head, and a link, substantially as described.

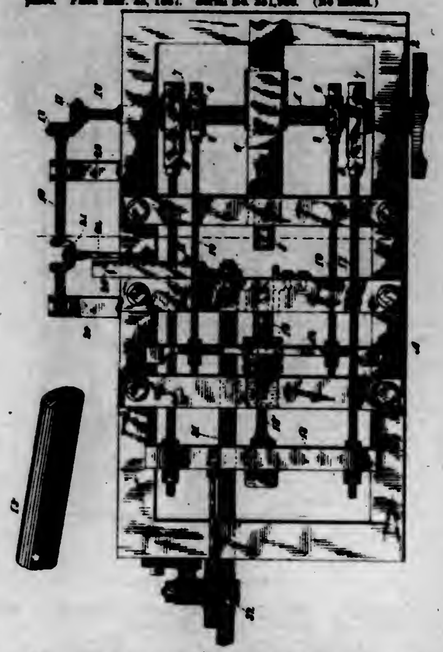
6. In a car-coupling, a slotted draw-head having two transverse supports, a link, and a pin, in combination with an arm of a rock-shaft, the pin being attached to the arm on one side of its median line and supported to swing rearward under said arm at its upper end and forward at its lower end to rest upon said support, substantially as described.

385,186. DIE FOR ROLLING ARTICLES OF METAL. DANIEL R. KENFIELD, Boston, Mass. Filed Feb. 6, 1886. Serial No. 262,360. (No model.)



Claim.—Dies for roll-forging metal articles having circular cross-sectional area from metal blanks separated from the main rod or bar, said dies having their forming, reducing, and spreading surfaces entirely within working-grooves running obliquely to the line of rotation of the metal article being rolled therein, or to the line of movement of the dies proper, substantially as herein specified, and for the purpose set forth.

385,187. NUT-MACHINE. FREDERICK LACKNER, Pittsburg, Pa., assignor to Thomas Healy, Edwin Bindley, and John Bindley, all of same place. Filed Mar. 22, 1887. Serial No. 231,969. (No model.)



Claim.—1. In a nut-machine, the combination of a cutter, adapted to sever the section or blank and transfer it to a position in front of the nut-forming matrix, and a crank having a loose connection with the cutter, said parts being so constructed and combined as to permit of a stop in the movement of the cutter at the opposite limits of its stroke, substantially as set forth.

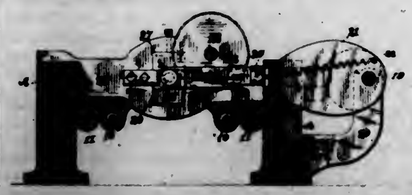
2. In a nut-machine, the combination of a nut-forming matrix, oppositely-acting compressing-dies, and a punch having its entering point or edge eccentric to the axis, but within the perimeter of the punch, substantially as set forth.

385,188. NUT-MACHINE. FREDERICK LACKNER, Pittsburg, Pa., assignor to Thomas Healy, Edwin Bindley, and John Bindley, all of same place. Filed Mar. 22, 1887. Renewed May 7, 1888. Serial No. 273,126. (No model.)

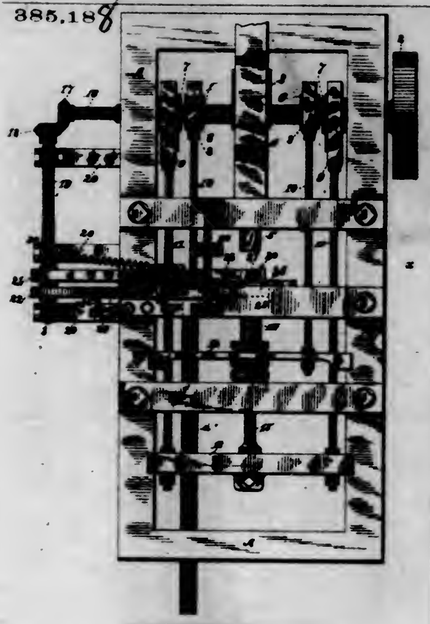
Claim.—1. In a machine for forming polygonal nuts, the combination of nut-shaping mechanism, consisting of a matrix, compressing-die, and a perforating-punch, a saw, and mechanism for feeding the bar to the the saw and the severed blank to the nut-shaping mechanism, substantially as set forth.

2. In a machine for forming polygonal nuts, the combination of nut-shaping mechanism, consisting of a matrix, compressing-dies, and a perforating-punch, a saw, and slides for feeding the bar to the saw and the severed blank to the nut-shaping mechanism, substantially as set forth.

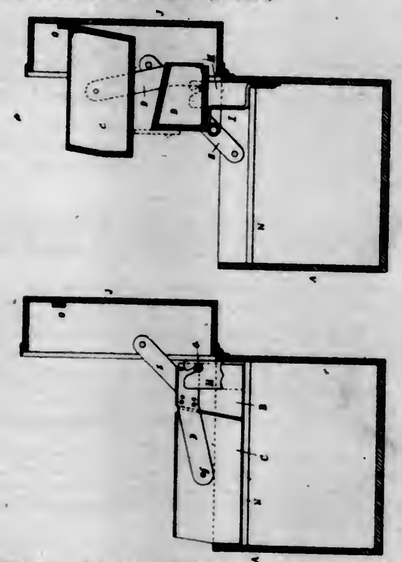
3. In a machine for forming polygonal nuts, the combination of nut-shaping mechanism, consisting of a matrix, compressing-dies, and a perforating-punch, and a saw for dividing a bar into sections or blanks for subsequent shaping by the nut-shaping mechanism, substantially as set forth.



385,188



385,189. TRUNK. WILLIAM J. LARKE, Brooklyn, N. Y. Filed May 3, 1888. Serial No. 273,243. (No model.)



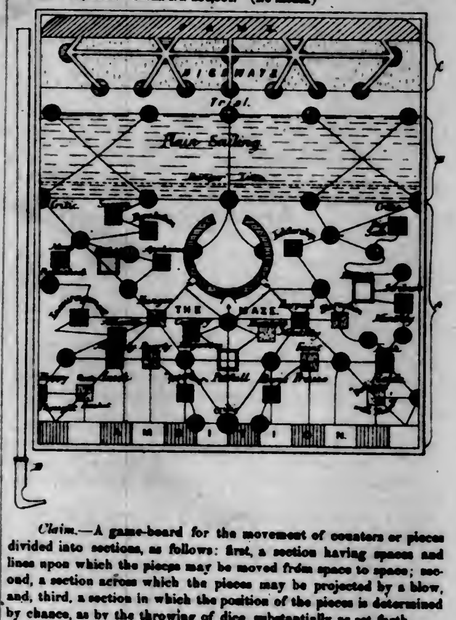
Claim.—1. In a trunk, the combination of two movable tray-sections, end arms fixed to one section and pivoted to the other section, trunnions on the ends of one section, and bearings for said trunnions on the trunk-body, substantially as and for the purpose described.

2. In a trunk, the combination of two movable tray-sections, end arms fixed to the rear section and pivoted to the front section, trunnions on the ends of the rear section, and bearings for said trunnions on the trunk-body, substantially as and for the purpose described.

3. In a trunk, the combination of two movable tray-sections, end arms fixed to the rear section and pivoted to the front section, trunnions on the ends of the rear section, bearings for said trunnions on the trunk-body, and a swinging bracket on the trunk-body, forming a support for the rear section, substantially as and for the purpose described.

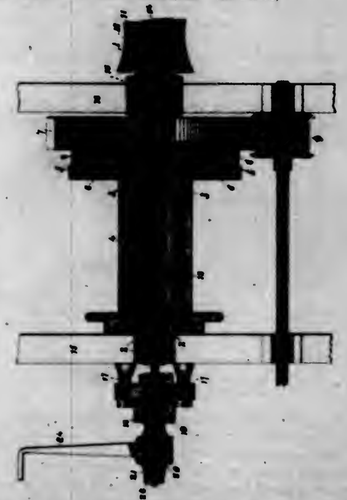
4. In a trunk, the combination of two movable tray-sections, end arms fixed to the rear section and pivoted to the front section, trunnions on the ends of the rear section, bearings for said trunnions on the trunk-body, a swinging bracket on the trunk-body, forming a support for the rear section, and a stop on the trunk-cover to engage the front section, substantially as and for the purpose described.

385,190. GAME. GEORGE P. LATHROP, New London, Conn. Filed Nov. 28, 1887. Serial No. 256,301. (No model.)



Claim.—A game-board for the movement of counters or pieces divided into sections, as follows: first, a section having spaces and lines upon which the pieces may be moved from space to space; second, a section across which the pieces may be projected by a blow, and, third, a section in which the position of the pieces is determined by chance, as by the throwing of dice, substantially as set forth.

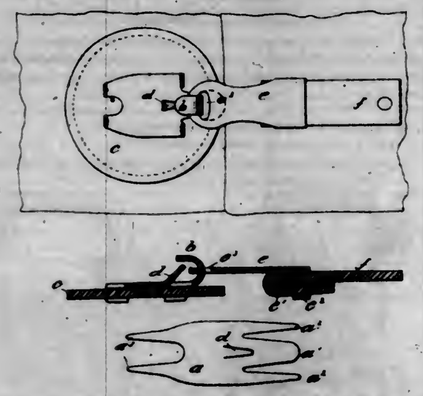
385,191. FRICTION-DRUM. HUGH J. MCKNOWN, Newport, Ky. Filed Feb. 7, 1888. Serial No. 263,310. (No model.)



Claim.—1. In combination with the engaging gear-wheel and the friction-drum mounted on a hollow shaft supported in suitable frames, a tubular screw-threaded piece, a rod fixed to one of the supporting-frames and screw-threaded to receive the said piece, and a rod passing loosely through the tubular piece and the hollow shaft and provided with an engaging device, substantially as shown and described.

2. In combination with the gear-wheel 7, drum 4, provided with friction-surfaces, hollow shaft 1, which receives the wheel and drum, and frames 15 and 16, in which shaft 1 is mounted, studs 17 on frame 15, nut 18, fitted on said studs, tubular piece 20, screwed into said nut, handle 24, fitted on the former, and rod 13, having nuts 21 and 23, wherewith piece 20 is adapted to engage and move rod 13 longitudinally, said rod being provided with an enlargement, 14, adapted to engage the hub of wheel 7 and bring the wheel 7 and friction-surfaces of the drum into contact, substantially as set forth.

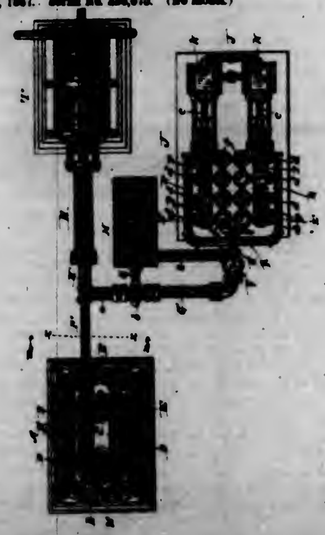
385,192. CLASP. JOSEPH MERRIAM, Middletown, Conn. Filed Apr. 9, 1887. Serial No. 234,204. (No model.)



Claim.—1. The improved base-plate blank made of thin metal cut or stamped to shape with the forward-projecting parts, a' a^2, and the rearward-projecting spurs, a^3, and the tongue-piece cut free from the base-piece on all but one side, all substantially as described, and for the purpose set forth.

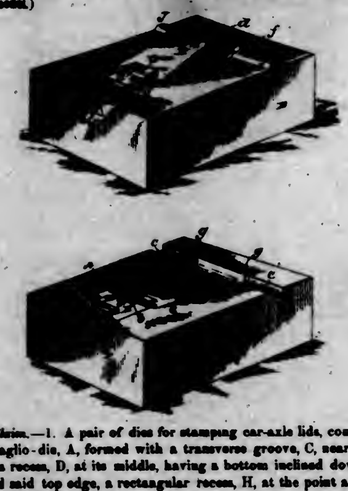
2. In combination with the attaching-disk c, the base-plate having on its front edge the hook b, and the integral rigid tongue d, extending forward at an angle with the base-plate and with its front end lying close to the point of the hook, and the loop-base e, with the integral strap-loop and stop and the slot e^1, and the attaching-strap f, all substantially as described.

385,193. COTTON-PRESS. LEWIS MILLER, Philadelphia, Pa. Filed Feb 8, 1887. Serial No. 226,675. (No model.)



Claim.—The combination, with the hydraulic press, of the hydraulic ram T, connected directly with the leader-pipe of the said press, the primary forcing-pump J, consisting, essentially, of the engines K K, provided with pistons, which operate in pumping-cylinders P, the said cylinders P communicating with the outlet valve-boxes d and the inlet valve-boxes f, the outlet-boxes in turn communicating, by means of the pipe R, with the pipe R', and the inlet-boxes with a pipe, c, the supply-tank connected to the inlet-pipe c of this forcing-pump, the pipe G', connecting the outlet-pipe R' of this pump with the leader-pipe of the press, the automatic check-valve V in the pipe G', adjacent to the outlet-pipe R', and adapted to close automatically when the primary pump reaches its maximum pressure, to protect the valves of the pump from back-pressure, the laterally-enlarged valve-box b, inserted in the pipe G', between the leader-pipe of the press and the check-valve V, and provided with an outlet in its under side, the vertically-working balance-valve b', closing the lower outlet in the valve-box b and passing through the center of the said enlarged valve-box, so as not to obstruct the passage of the pressing-liquid therethrough, and the return-pipe G, connecting the outlet in the valve-box b with the supply-tank H, all arranged as and for the purpose specified.

385,194. DIE FOR MAKING CAR-AXLE-BOX LIDS. GEORGE W. MORRIS, Pittsburg, Pa. Filed Apr. 18, 1888. Serial No. 271,157. (No model.)



Claim.—1. A pair of dies for stamping car-axle lids, comprising an intaglio-die, A, formed with a transverse groove, C, near its top edge, a recess, D, at its middle, having a bottom inclined downward toward said top edge, a rectangular recess, H, at the point at which said inclined bottom merges into the face of said die, and a projection or rib, I, upon the face of the die between said recess H and the front edge of said die, and a relief-die, B, formed with a transverse rib, J, corresponding to and registering with said groove C in the intaglio-die, an inclined bulge, K, corresponding to and registering with said inclined recess D in the said die, a rectangular block or projection, N corresponding to and registering with said rectangular recess H in said die, and a groove or recess, O, corresponding to and registering with said projection or rib I of said die, substantially as described, for the purpose specified.

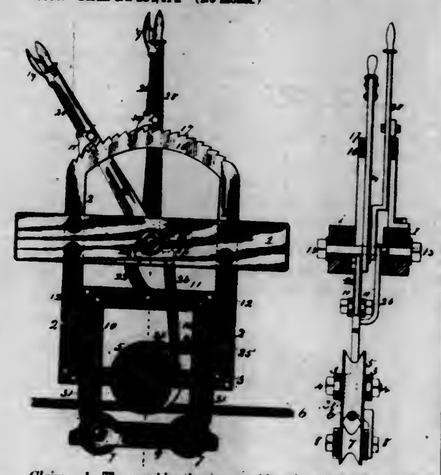
2. The die herein described, consisting of the two flat-faced parts A and B, the part A having a central-longitudinal recess, D F, intersected at one end by transverse surface grooves C C and closed at its other end by a removable part, E, having a surface, C, inclining downward to a feather-edge coincident with the bottom of said recess D F, a surface recess, H, having a shearing-edge, a, its bottom terminating in the inclined surface G and a surface projection, I, the other die part, B, having the inclined surface bulge K, a transverse rib, J, intersecting the inclined bulge at its end of greatest surface projection, a recess, M, intersecting the bulge at its feather-edge, closed by a removable part, L, having a surface projection, N, intersecting the feather-edge of said bulge and having a shearing-edge, b, and the groove or depression O, substantially as described, for the purpose specified.

3. The combination of the intaglio-die A, which is formed with the transverse groove C, inclined recess D, and dovetailed recess F, and the relief-die B, which is formed with the transverse rib J, the inclined swell or bulge K, and the dovetailed recess M, with the dovetailed block E, which is formed with the inclined side G, rectangular recess H, and transverse rectangular rib I, and the dovetailed block L, which is formed with the rectangular projection N and the trans-

verse rectangular groove or recess O, substantially as and for the purpose described.

385,195. CABLE-GRIP.

FREDERICK H. MOSES, St. Louis, Mo., assignor of one-half to Edward M. STAFF, same place. Filed Apr. 11, 1887. Serial No. 234,414. (No model.)



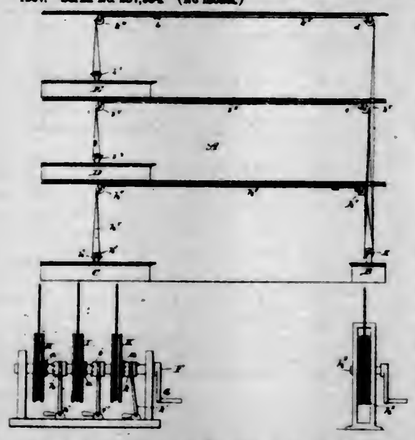
Claim.—1. The combination, in a cable-grip, of a pulley against which the upper side of the cable bears, a break adapted to lock said pulley, and a movable frame carrying pulleys adapted to bear against the under side of the pulley at each side of the top pulley, substantially as and for the purpose set forth.

2. The combination, in a cable-grip, of a pulley adapted to bear upon the top of the cable, and a vertically-sliding frame carrying pulleys adapted to bear against the under side of the cable, and inclines on the frame adapted to push the cable aside as the sliding frame is moved downward, substantially as and for the purpose set forth.

3. The combination, in a cable-grip, of a stationary frame carrying a pulley against which the upper side of the cable bears, a brake adapted to bear against the pulley and operated by a hand-lever, and carrying pulleys adapted to press against the under side of the cable and force it against the upper pulley, for the purpose set forth.

385,196. CASH-CARRIER.

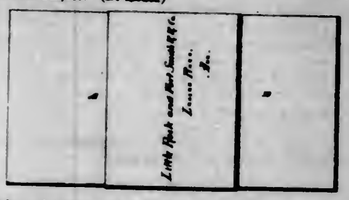
NELSON NEWMAN, Springfield, assignor of one-half to George A. Sanders, Sangamon County, Ill. Filed Dec. 15, 1887. Serial No. 257,984. (No model.)



Claim.—In a cash-carrier, the combination of the endless traveling cord, the car or case suspended therefrom and having the pointed end, the guide-pulleys over which the cord passes, and the finger-fingers *d*, attached to the axles of the pulleys, adapted to engage the pointed end of the car, and thereby swing the same to one side and cause it to clear the guide-pulleys, substantially as described.

385,197. RETURN-PACKET FOR THE TRANSMISSION OF PAPERS, &c.

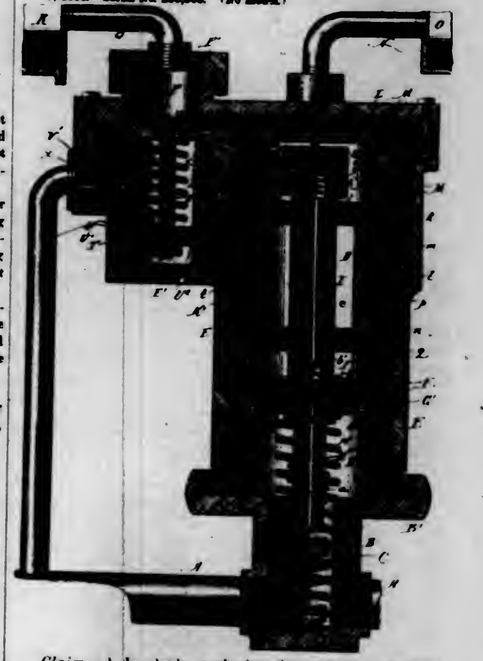
WILLIAM R. HOLLEY, Conway, Ark. Filed July 7, 1887. Serial No. 243,703. (No model.)



Claim.—A return-packet for the transmission of papers, &c., consisting, substantially as before set forth, of a primary unsealed wrapper to inclose the papers transmitted and a secondary wrapper for encircling the primary wrapper, provided on its inner face with a gummed overlapping end, and also with a small gummed patch at a point remote from said gummed overlapping end.

385,198. AIR-BRAKE.

HARVEY S. PARR, Chicago, Ill. Filed Jan. 3, 1888. Serial No. 259,568. (No model.)



Claim.—1. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a brake-cylinder, a chamber having communication with the train-pipe, the car-reservoir, and the brake-cylinder, two slide-valves located and operating in said chamber, a secondary chamber having communication with the train-pipe, brake-cylinder, and car-reservoir, a piston or movable wall located and operating in said chamber, and a valve connected with said piston or movable wall and held seated by air-pressure from the train-pipe on the piston and opened by the admission of air-pressure from the car-reservoir to overcome the train-pipe pressure on the piston for the air-pressure from the train-pipe to act on the valve, substantially as described.

2. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a brake-cylinder, a chamber communicating with the car-reservoir, brake-cylinder, and train-pipe, a second chamber communicating with the train-pipe, brake-cylinder, and car-reservoir through the first chamber, a movable piston or wall in the second chamber controlling a valve between the train-pipe and brake-cylinder, and two slide-valves located in the first chamber and operated by a piston in said chamber, one of said valves at the initial travel of the piston opening a port between the car-reservoir and the brake-cylinder, and the further travel of the same valve opening a communication between the brake-cylinder and atmosphere, and a still further travel of the same valve closing such communication and opening a communication through the other valve between the car-reservoir and the second chamber containing the movable piston or wall to overcome the train-pipe pressure on the piston and open direct communication between the train-pipe and brake-cylinder, substantially as set forth.

3. In a brake mechanism, the combination of a slide-valve, a piston connected with the said valve, a chamber communicating with a car-reservoir and a brake-cylinder, a second chamber connected with the car-reservoir through the first chamber and communicating with the train-pipe and brake-cylinder, a movable wall or piston in the said second chamber, a valve connected with said movable wall or piston and controlling communication between the train-pipe and brake-cylinder, and a second slide-valve operated by the piston of the first slide-valve, whereby the first slide-valve controls the communication between the car-reservoir and brake-cylinder and the brake-cylinder and atmosphere, and the second slide-valve controls the communication between the train-pipe and the brake-cylinder direct by overcoming the train-pipe pressure on the piston in the second chamber, substantially as specified.

4. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a brake-cylinder, two slide-valves, a secondary valve controlled by a piston moving in a chamber, and a piston carried by a hollow stem having at one end a valve seated downward and at the other end a valve seated upward, each held seated by a spring and operating, when said piston is at its normal position, to have the upper valve unseated and the lower valve lifted to permit air to pass from the train-pipe through the piston and hollow stem to the car-reservoir, and with the preliminary travel of the piston to have the upper valve seat and prevent the passage of air from the train-pipe to the car-reservoir and the lower valve seat and prevent the passage of air from the car-reservoir to the train-pipe, substantially as specified.

5. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a chamber communicating with the train-pipe and car-reservoir, a brake-cylinder communicating with said chamber, a slide-valve in said chamber provided with ports controlling ports and passages in the chamber connecting the car-reservoir, brake-cylinder, and atmosphere, a second chamber connected with the car-reservoir through the first chamber, a slide-valve in the first chamber controlling communication between the two chambers, a piston or movable wall in the second chamber, a valve connected with said piston and controlling the communication direct between the train-pipe and brake-cylinder, a hollow stem connecting the slide-valves with the piston, valves for the said stem seated upward and downward, and springs to return the piston for the slide-valves to its normal position, substantially as set forth, and for the purposes specified.

6. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a chamber provided with ports and passages connecting the car-reservoir and brake-cylinder and the brake-cylinder and atmosphere, a piston in said chamber, a slide-valve attached to said piston and provided with a port and recess to coact with the ports and passages of the chamber, and springs for returning the piston, whereby the first movement of the slide-valve opens a port for the car-reservoir and brake-cylinder by lowering the pressure in the train-pipe, the equalization of the pressure through the spring restores the piston and slide-valve to normal position, holding the pressure on the brake-cylinder and refilling the car-reservoir through the stem of the piston from the train-pipe, a further reduction of the train-pipe pressure moving the valve to open the ports for discharging the brake-cylinder to the atmosphere, a further reduction of the train-pipe pressure closing such port, and a further reduction of the train-pipe pressure moving the valve to open a port for increased pressure between the car-reservoir and brake-cylinder, and a quick restoration of the train-pipe pressure returning the piston and valve instantly to normal position, holding the pressure on the brake-cylinder, substantially as set forth, and for the purposes specified.

7. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a brake-cylinder, a chamber connected with the train-pipe car-reservoir, and brake-cylinder, a piston, and two slide-valves located in said chamber, one of said slide-valves controlling the connection between the car-reservoir and brake-cylinder, and the other of said slide-valves controlling a port from its chamber to a second chamber, a piston in said second chamber, and a valve attached to said piston and controlling the supply from the train-pipe to the brake-cylinder, said valve being closed by train-pipe pressure on the piston and raised by train-pipe pressure on the valve when said pressure on the piston is overcome by air admitted from the car-reservoir, substantially as set forth, and for the purposes specified.

8. In a brake mechanism, the combination of the cap L, passage M, passage M', and ports *k m n q*, with slide-valve K, port *o*, and recess *p*, substantially as and for the purposes specified.

9. In a brake mechanism, the combination of a piston or movable wall, a stem, G, having a passage, *e*, and stem I, having a passage, *c*, with the valve *b*, valve *i*, and cap L, substantially as and for the purpose specified.

10. In a brake mechanism, the combination of the slide-valve K', having port *r* and recess *s*, with the chamber S, ports *t* and *u*, a piston or movable wall, valve *w*, and pipe V, substantially as and for the purpose specified.

11. In a brake mechanism, the combination of the slide-valve K', having the port *i* and recess *s*, with the chamber S, ports *t* and *u*, a piston or movable wall, a valve, *w*, a connecting-pipe, V, and a valve, *x*, substantially as and for the purpose specified.

12. The chamber D, connecting-pipe N, car-reservoir O, slide-valve K', having a port, *r*, and a piston or movable wall in the chamber D, in combination with the chamber S, port *u*, a movable wall or piston in the chamber S controlling a valve, *w*, and a valve, *x*, for operating the brake in case of parting of the train-pipe, substantially as specified.

13. In a brake mechanism, the combination of a chamber or casing, S, having connection with a brake-cylinder, a valve, *w*, which opens toward the brake-cylinder and controls communication between the chamber S and the brake-cylinder, a piston or diaphragm, U', a piston-rod, U, and a pipe, V, communicating at one end with the chamber S and at the other end with a train-pipe, a car-reservoir, a chamber, D, and a port, *u*, in the wall of the chamber S, through which air can be admitted to the under side of the piston, substantially as and for the purpose specified.

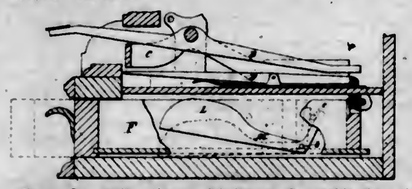
14. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a brake-cylinder, a valve-chamber, D, a slide-valve in said chamber D, a chamber, S, a piston, U', and a valve, *w*, held seated by air on the piston U' and actuated by air-pressure from the train-pipe when by the admission of air from the car-reservoir to the under side of the piston the effect of the air from the train-pipe upon the upper side of the piston has been neutralized, substantially as specified.

15. In a brake mechanism, the combination of a train-pipe, a car-reservoir, a brake-cylinder, a valve-chamber, D, a slide-valve in said chamber operated by the piston I', a port, *m*, opened and closed by the preliminary travel of the piston, ports *n*, recess *p*, and port *q*, for opening communication between the brake-cylinder and atmosphere, ports *r* and *u* to open communication between the chamber D and the chamber S, passage *s* and port *t* to open communication between the chamber S and the atmosphere, and port *k* to open communication between the car-reservoir and the brake-cylinder, substantially as and for the purpose specified.

16. In a brake mechanism, a valve-chamber, D, provided with ports *k*, *m*, *n*, *q*, *r*, and *t*, a slide-valve having passages *p* and *s*, a piston, I', a hollow stem, I, and valves *b* and *i*, in combination with a chamber, S, provided with a port, *u*, valve *w*, piston U', and pipe V, substantially as and for the purpose specified.

385,199. CASH REGISTER AND INDICATOR.

FRANK J. PATTERSON and ISAAC P. DAVIS, Dayton, Ohio, assignors to the National Cash Register Company, same place. Filed Sept. 6, 1886. Serial No. 212,790. (No model.)



Claim.—In a cash register and indicator, the combination, with the money-till and bolt mechanism for unlocking the same, of a bell-crank lever pivoted within the till-compartment and having one end engaging said drawer, while the other end is weighted to cause it to swing on its pivot when the bolt releases the till, and by such movement propel the till from its compartment, substantially as set forth.

385,200. SECONDARY BATTERY.

ANTHONY REICHENBACH, London, England, assignor to the Electric Car Company of America, Philadelphia, Pa. Filed Mar. 22, 1888. Serial No. 268,186. (No model.)

Claim.—1. An electrode for secondary batteries, consisting of a retaining-plate having a series of double-concave grooves parallel to each other and containing therein cylindrical pieces of active material exposed equally on both sides of the plate, the exposed portions being the outwardly curved or raised lateral surfaces of the cylindrical pieces of active material, which project beyond the surface of the retaining-plate.

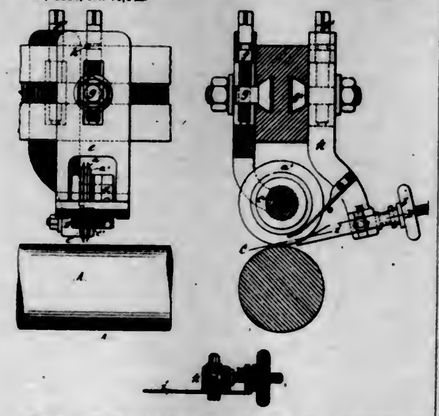
2. An electrode for a secondary battery, consisting of a retain-

ing-plate having a series of parallel openings through the same and a series of parallel previously-formed cylinders of compacted active material arranged in said openings and extending out from both surfaces to form ribs or raised portions of active material extending beyond the surface of the retaining-plate.

3. An electrode for a secondary battery, consisting of a series of cylindrical pieces of active material formed of a firmly-compacted mass under pressure, arranged parallel and close to each other without touching, a retaining-plate of metal cast about said active-material cylindrical pieces and shrunk thereon to form a positive contact and a firm electrode, and in which the cylinders extend out upon each side of the retaining-plate, forming parallel ribs.

4. A cylinder or section of active material for an electrode, consisting of an elongated mass of oxide of lead or equivalent active material compacted into a solid smooth-surfaced cylinder or section by pressure.

385,201. GROOVING APPARATUS FOR CARD-BOARD, LEATHER, AND LIKE MATERIAL. THEODOR REICH, Dresden, Saxony, Germany, assignor of one-half to Jean Siburtel, same place. Filed May 7, 1887. Serial No. 237,403. (No model.) Patented in England Apr. 30, 1886, No. 5,894; in France Mar. 28, 1887, No. 176,049, and in Belgium Mar. 26, 1887, No. 76,842.



Claim.—1. The combination, with a rail, of a longitudinally-slotted holder, a bolt passed through the slot of the holder into the rail, a bolt mounted longitudinally in the slot in the holder and passed through a screw-threaded aperture in the bolt that holds the holder on the rail, and cutters on the holder, substantially as herein shown and described.

2. The combination, with a rail, of the holders *e* and *k* on the same, the cutters *a a'*, mounted to turn in the lower forked end of the holder *e*, the clamping-piece *s* on the holder *k*, the screw *m* on the holder *k*, the nut *l*, mounted on the screw *m* and having an annular groove, the gouge *i*, supported by the clamping device *s* and having a bent end inserted in the groove of the nut *l*, and the scraper *o* on the holder *k*, substantially as herein shown and described.

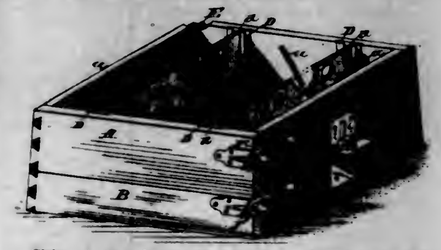
385,202. EVAPORATOR. NATHANIEL R. RICE, Chicago, Ill. Filed Apr. 9, 1887. Serial No. 234,314. (No model.)



Claim.—1. In an evaporator, the combination of the case A, provided with partitions B, said partitions having passages therethrough, with the closed horizontal tubes D, having circulating and heating cross-pipes, said tubes being placed in the chambers formed by the partitions, leaving a space between said tubes and the bottom of the case A, whereby a continuous circulation of the liquid is obtained, substantially as described.

2. In an evaporator, the combination of the case A, provided with partitions B, passages for the liquids at the ends of the partitions, the bottom formed with the inclined sides C, and the horizontal tubes D, having circulating and heating cross-pipes, said tubes being placed within the chambers formed by the partitions, leaving a space between the tubes and the bottom of the case A, substantially as described.

385,203. MOLDER'S SNAP-FLASK. EDWARD RILEY, Milwaukee, Wis., assignor of one-half to the Milwaukee Harvester Company. Filed Apr. 17, 1886. Serial No. 199,173. (No model.)



Claim.—1. As an improved article of manufacture, a snap-flask having the sides thereof tapered inwardly, whereby there is a gradual decrease in the area of said flask from the bottom of the drag to the top of the cope, substantially as set forth.

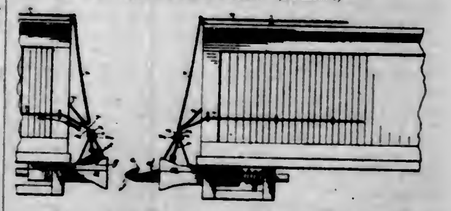
2. A snap-flask having the inner sides of its cope provided with cleats that are more or less inclined and of such contour that they will readily leave the sand when said flask is opened for removal from a mold, substantially as set forth.

3. A snap-flask having two opposite inner sides of its cope and drag provided with ways, in combination with sand-plates having their ends shaped to fit said ways, the latter and said ends of the sand-plates being of such contour as to readily separate when the flask is opened for removal from a mold, substantially as set forth.

4. A snap-flask having the inner sides of its cope provided with beveled cleats that are more or less inclined and wedge-shaped ways secured to two opposite sides of the cope and drag, in combination with sand-plates having their ends of a contour corresponding to that of the ways and adapted to loosely fit the latter, substantially as set forth.

5. A snap-flask, in combination with castings let into two opposite sides of the cope and drag and provided with ways having stops at their lower ends, and sand-plates having their ends shaped to loosely fit said ways, the latter and said ends of the sand-plates being of such contour as to readily separate from each other when the flask is opened, substantially as set forth.

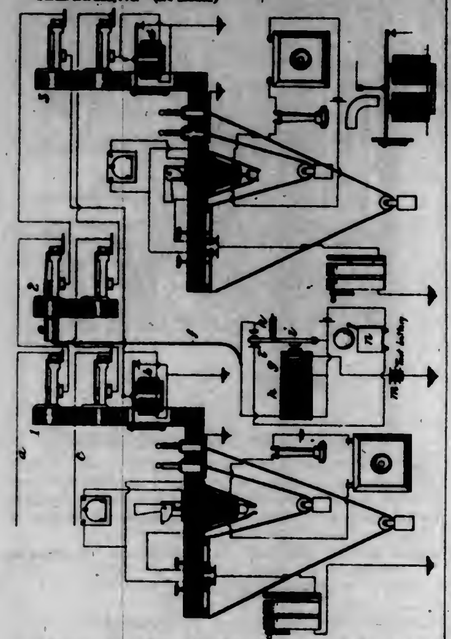
385,204. CAR-COUPLING. HAMPTON S. SANDERS, Magnolia, Ark. Filed Feb. 6, 1888. Serial No. 263,110. (No model.)



Claim.—1. In a car-coupler, as above described, the friction-pulley holder *m*, having the arms *l*, secured to the upper face of the bulk-heads *c*, grooved friction-rollers *n*, pinioned in bearings *o* on said holder, leaving the opening *p*, rope *r*, one end attached to the dog *g*, the other passing up through the opening *r*, then divided into three parts, substantially as shown and described, and for the purposes set forth.

2. A car-coupler consisting of the bulk-heads *c c*, having the dogs *f*, raised points *i*, and depressions *k*, coupling-pin *d*, having the open *o* and straight bottom beyond the raised points *i*, friction-roller holders *m*, supported by the arms *l*, grooved friction-rollers pinioned in bearings *o* on said friction-roller holder, and rope *r*, secured to dog *f* and passing between said friction-rollers, all substantially as shown and described, and for the purposes set forth.

385,205. TEST SYSTEM FOR MULTIPLE SWITCH-BOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Renewed Nov. 21, 1887. Serial No. 255,771. (No model.)



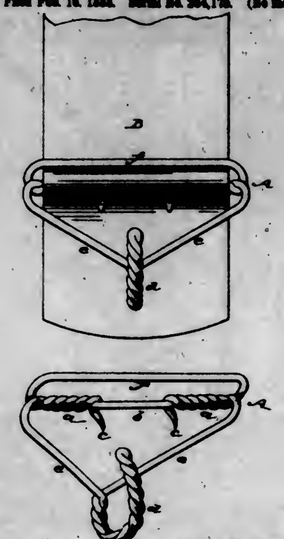
Claim.—1. A telephone-line connected with a switch on each of two or more switch-boards and through a polarized annunciator to ground, in combination with a shunt around said polarized annunciator, which is closed when current is sent in one direction through the annunciator, and testing apparatus consisting of an electro-magnet having two windings, one of low resistance and the other of high resistance, a battery included in a normally-open ground-circuit with said electro-magnet, and switching apparatus whereby on closing said circuit to line at any switch of the line the shunt will be closed around the polarized annunciator, and thereupon the circuit of the testing apparatus is changed so as to include the high-resistance winding, substantially as described.

2. The combination, with a telephone-line passing through a series of spring-jacks, the spring-jack switches being distributed on different boards, of a polarized annunciator included in said line between the switch on the last board and the ground, a shunting device operated by the armature of said polarized annunciator to shunt out the coils immediately on said annunciator-magnet being energized, a ground-circuit including a battery and a doubly-wound electro-magnet of a signal device, said windings being of high and low resistance, respectively, a circuit-closing device actuated by the armature of said relay to bring the fine-wire coil into circuit on closing the battery through the coarse-wire coil directly to ground, and a plug terminal adapted to be inserted in any one of the spring-jack switches of the line, whereby on inserting the plug in any switch the line may be tested in both directions, substantially as specified.

3. A telephone-line passing through a series of spring-jack switches and through a polarized annunciator to ground, a shunt around said polarized annunciator, which is closed when current is sent in one direction through the annunciator, and testing apparatus consisting of a battery included in a ground-circuit with an electro-magnet having two windings, one of low resistance and the other of high resistance, and switching apparatus whereby on closing said circuit to any switch of the line the shunt will be closed around the polarized annunciator, and thereupon, the resistance of the coil of the polarized annunciator being removed from the circuit, the circuit of the testing apparatus will be changed to include the high-resistance winding, substantially as described.

4. The combination, with a telephone-line connected with a different spring-jack switch on different sections of a multiple switch-board, of a polarized annunciator and a shunting device connected by the armature thereof, and testing apparatus consisting of a battery and a doubly-wound electro-magnet, the different windings being of high and low resistance, respectively, a plug forming the terminal of said testing-apparatus circuit, whereby on applying the plug of the testing apparatus to any switch of the line a test may be made first through said polarized relay to determine whether the line is in use on the ground side of the switch at which the test is made, and on inserting the plug further to lift the spring of the switch at which the line is being tested in the other direction, substantially as described.

385,206. BACK-BAND BUCKLE. RAPHAEL T. SEMMES, Atlanta, Ga. Filed Feb. 16, 1888. Serial No. 264,178. (No model.)

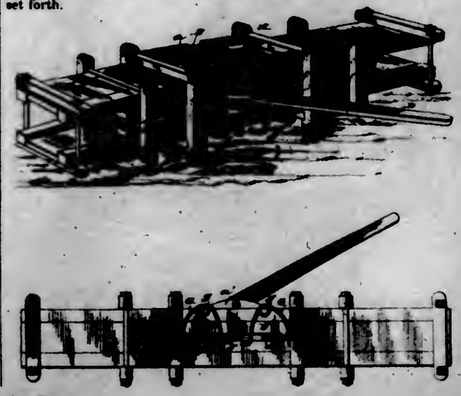


Claim.—1. A back-band hook made of wire, consisting of a loop and a hook proper, and having the free ends *c c* twisted around the center bar, *b*, from its end to its middle portion and terminating in barbs, substantially as described.

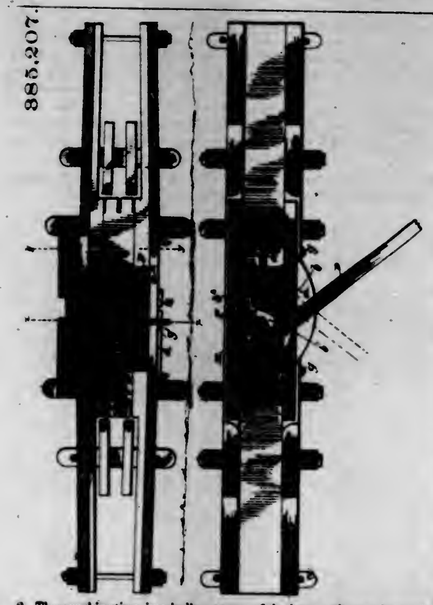
2. A back-band hook made of a single piece of wire having its end portions, *a a*, doubled and twisted with the center-bar portion *b* and terminating in barbs *c c*, and having the hook proper or nose, *d*, also doubled and twisted, essentially as and for the purposes herein set forth.

385,207. BALING-PRESS. WILLIAM P. SHAFER and GEORGE W. SHAFER, Rich Hill, Mo. Filed Dec. 3, 1887. Serial No. 256,868. (No model.)

Claim.—1. The combination, in a baling-press, of the box, a plunger located within said box, a pin projecting from the plunger through a slot in the floor of the box, springs adapted to engage said pin, whereby a recoil action is given to the plunger at the completion of the stroke, and a lever for operating the plunger, substantially as set forth.



385,207.

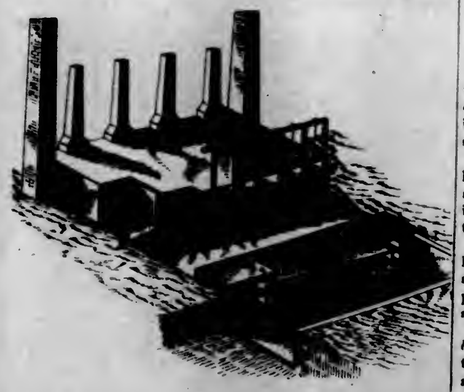


2. The combination, in a baling-press, of the box, a plunger located therein and recessed upon one side and having a slotted semicircular projection within said recessed side, a lever pivoted to the box and having a rounded inner end engaging said recessed portion of the plunger, and a link or plate connecting the plunger and lever and having a slotted end loosely secured within the slotted projection in the plunger, and its other end pivotally secured to the inner end of the lever, substantially as set forth.

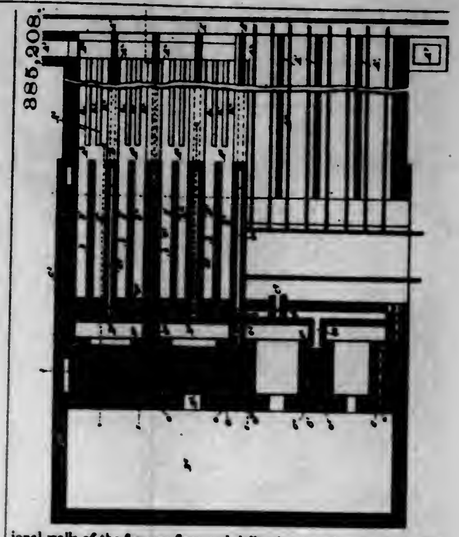
3. The combination, in a baling-press, of a box, a plunger located therein and having spring-boards secured in recesses on top of same, said plunger being recessed on one side and provided with a projection within said recessed portion, a lever pivoted to the box, a link or plate connecting the inner end of the lever and plunger, said inner end of lever engaging the projection, and a pin projecting from the plunger through a slot in the floor of the box and adapted to engage springs upon the under side of the box, whereby, when the lever has nearly completed a stroke, the inner end of the same is disengaged from the projection and is caused to recoil by the tension of one of the springs, substantially as and for the purpose set forth.

385,208. DRIER. GEORGE W. SEARLE, Terre Haute, Ind. Filed Aug. 19, 1887. Serial No. 247,363. (No model.)

Claim.—In a drier, the combination of the drying-chambers having flues under the bottoms, furnaces having flues communicating with the flues beneath the drying-chambers, the air-ducts C and C' in the side walls of the furnaces, and air-ducts c^3 and c^4, formed in the divisional walls of the furnace-flues and delivering into the air-inlets of the drying-chambers, and the air-ducts c^4 being connected with duct C by lateral passages, and air-ducts c^3 being connected together by the duct c^5, and by it with passage or duct C', substantially as described.



385,208.



385,209. BRICK-KILN. GEORGE W. SEARLE, Terre Haute, Ind. Filed Aug. 19, 1887. Serial No. 247,364. (No model.)



Claim.—1. In a brick-kiln, the combination of a furnace, the wall of the kiln having eyes connecting the furnace with the interior of the kiln, and cold-air passages in the wall of the kiln and opening into said eyes through the top wall of the latter, substantially as described.

2. In a brick-kiln, the combination of a furnace, the wall of the kiln having eyes connecting the furnace with the interior of the kiln, and the cold-air passages, one leading to each eye, and the one leading to the middle eye passing under one of the other eyes, substantially as described.

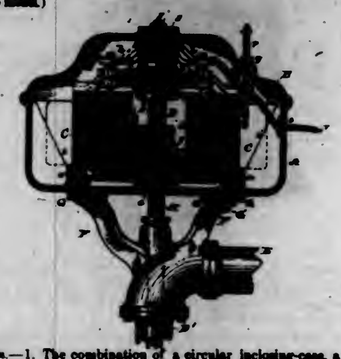
3. In a brick-kiln, the combination of a furnace, the wall of the kiln having eyes connecting the furnace and the interior of the kiln, and cold-air passages leading from the open air into the eyes, and the passage to the middle eye passing around one of the side eyes, substantially as described.

4. In a brick-kiln, the combination of a furnace having passages b' b^2 b^3 and chamber b^4, subdivided by bricks, and the front wall of the furnace having abutments provided with eyes and facets b^5 and b^7 and abutting in the combustion-chamber of the furnace.

385,210. SALVE. JONAS B. SMITH, Newton, Kans. Filed Jan. 27, 1888. Serial No. 262,104. (No specimens.)

Claim.—The herein-described medicinal compound to be used as a salve, consisting of *Phytolacca*, *Arum triphyllum*, saltpeter, copperas, blue vitriol, corrosive sublimate, and vaseline, in the proportions specified.

385,211. ELECTRICAL PUMPING APPARATUS. FRANK J. SPRAGUE, New York, N. Y. Filed June 4, 1887. Serial No. 240,202. (No model.)



Claim.—1. The combination of a circular inclosing-case, a shaft passing vertically through the center of said case, a circular armature on said shaft, and a circular field-magnet resting on the bottom of said case, substantially as set forth.

2. The combination of an electric motor, a case inclosing said motor, a removable cover for said case, and bearings for the motor-shaft supported from the case and independent of the cover, substantially as set forth.

3. The combination of an inclosing-case having a removable cover, and an electric motor in said case having a vertically-placed armature with its upper shaft-bearing independent of the cover, substantially as set forth.

4. The combination of a shaft and a journal inclosing and supporting said shaft, said shaft having a cross-aperture within said journal, an opening for the admission of oil, and a longitudinal bore or aperture extending continuously from said opening to said cross-aperture, substantially as set forth.

5. The combination of a vertically-placed shaft and a journal inclosing said shaft at its lower end, said shaft having a longitudinal bore or aperture extending continuously from its upper end to a point within said journal, where there is a communicating cross-aperture, substantially as set forth.

6. The combination of the inclosing-case, the shaft passing vertically through said case, the bearing-pin in the top of the case entering the end of the shaft, and bearings for the shaft in the lower side of the case, said bearing-pin having a longitudinal aperture extending from its top, a communicating cross-aperture extending to its bearing-surface, and said shaft having a longitudinal bore or aperture extending from its upper end and a cross-aperture at its lower bearing, substantially as set forth.

7. The combination of a pump and a case inclosing an electric motor detachably connected with said pump, said case having guiding projections on its bottom for determining its position on the pump, substantially as set forth.

8. The combination of a rotary pump provided with upwardly-projecting standards and a shaft extending vertically up from said pump, with an inclosing-case, an electric motor placed vertically therein, means for securing said case upon said standards, and means for connecting the pump-shaft with the motor-shaft, substantially as set forth.

9. The circular field-magnet consisting of two semicircular cores wound with wire coils and curved bars secured to the ends of said cores on each side, substantially as set forth.

10. The combination of a separable motor and pump and a spring-connection between their shafts, substantially as set forth.

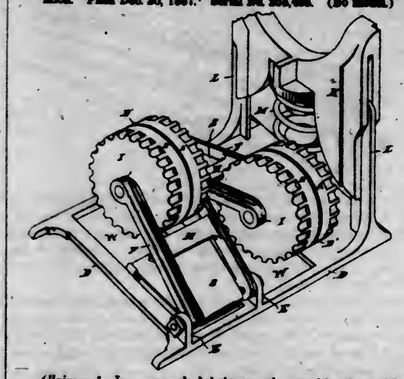
385,212. STOVE-PIPE THIMBLE. ALEXANDER SEARS, Fort Wayne, Ind. Filed May 6, 1886. Serial No. 201,255. (No model.)

Claim.—In a stove-pipe thimble, the combination of the adjustable cylinders A B, the annular flanged plates C C, secured to said cylinders and provided with inner rabbeted edges, *d*, the annular perforated plates D D, having annular inner rims or flanges, *k k*, and the inner cylinders, F F', attached to said flanges, substantially as described.

385,212.



385,218. CAR-AXLE LUBRICATOR. JAMES J. SEEVER, Owosso, Mich. Filed Dec. 20, 1887. Serial No. 258,422. (No model.)

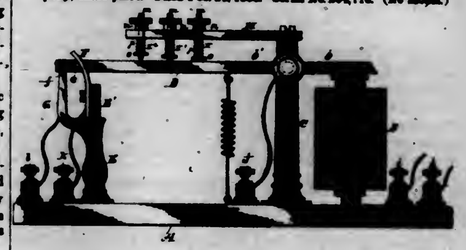


Claim.—1. In a car-axle lubricator, the combination, with a suitable frame, of rollers supported flexibly within said frame, having plain or smooth central parts or surfaces, with shallow corrugations on each side of such plain surfaces and parallel with the axis of the roller, substantially as and for the purposes set forth.

2. In a car-axle lubricator, the combination, with a suitable frame, of rollers supported flexibly with said frame, having the smooth or plain surfaces at A', a continuous centrally-located recess, B', and indentations C upon the edges of the rollers, all arranged substantially as and for the purpose set forth.

3. In a car-axle lubricator, the combination, with a frame, of the rollers flexibly supported within said frame, said rollers being provided with a continuous centrally-located recess, B', and smooth portion A', extending on both sides of said recess to the edges of the rollers, with indentations C at the edges, all constructed substantially as and for the purpose set forth.

385,214. TELEGRAPH-RELAY. FREDERICK SUTTON, and CHARLES WHEELER, Louisville, Ky., assignors to the American Semaphore Company, same place. Filed Feb. 21, 1888. Serial No. 264,716. (No model.)





Claim.—1. In a relay, the combination, with an electro-magnet and a pivoted lever, of a series of yielding abutments arranged in the path of said lever and adapted to be engaged in regular order, substantially as set forth.

2. In a relay, the combination, with an electro-magnet and a pivoted lever, of a series of yielding abutments in the path of said lever.

and a spring-contact with which said lever makes contact, substantially as set forth.

3. In a relay, the combination, with an electro-magnet and a pivoted lever carrying an armature at one end and a contact-point near the other end, of an arm, yielding abutments mounted therein, a curved spring secured to a suitable post and adapted to engage said lever, and an arm with which the lever makes contact, substantially as set forth.

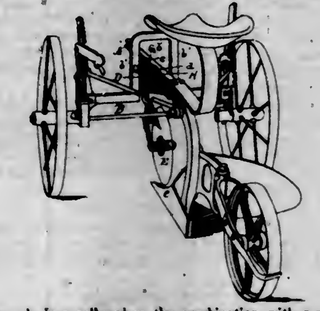
385,215. ELECTRICAL CONNECTOR. FREDERICK STITES, and CHARLES WEHRLE, Louisville, Ky., assignors to the American Semaphore Company, same place. Filed Feb. 21, 1888. Serial No. 264,734. (No model.)



Claim.—1. In an electrical connection, the combination, with two sections of railroad-rail, each of which is provided with a perforation, of collars each having a central opening for the reception of one end of a wire and adapted to closely fit within the perforation in the track-section, and a wire passing through both collars and secured thereto, substantially as set forth.

2. In an electrical connector, the combination, with two sections of a railroad-rail, each of which is provided with a tapering opening, of the collars shaped externally to closely fit within said openings and a wire the ends of which are secured within openings formed in said collars, substantially as set forth.

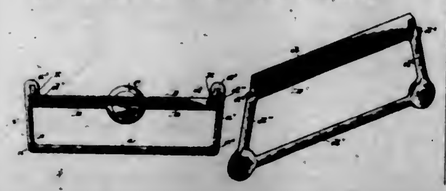
385,216. PLOW. JOHN THOMPSON and SAMUEL R. SHORES, Beloit, Wis.; said Shores assignor to John Thompson & Sons, (Limited,) same place. Filed Sept. 26, 1887. Serial No. 250,656. (No model.)



Claim.—1. In a sulky-plow, the combination, with a widened slotted arch in the frame-work, of a plow-beam provided with a brace fitting within said slotted arch and guided thereby, and a colter secured to said plow-beam, and with its body underneath said slotted arch, whereby the colter can run with its cutting-edge over the plow-point and at one side of the vertical plane of the plow-beam, and can also be raised without obstruction from the frame-work, substantially as described.

2. In a sulky-plow, the combination, with a widened slotted arch in the frame-work, of a plow-beam provided with a brace fitting within said slotted arch and guided thereby, and a colter and its shank, clasps for embracing said shank, and a U-shaped rod for securing said clasps together and to the plow-brace, substantially as described.

385,217. BROOM-HEAD. WILLIAM W. THOMPSON, Guthrie Centre, Iowa. Filed Oct. 3, 1887. Serial No. 251,331. (No model.)



385,217.



Claim.—1. The herein-described broom-head, comprising the frame having the projecting arms provided with hooked ends, the clamping-plate, the nutted bolts, and the blocks or wedges, substantially as shown and described.

2. The combination, with the frame, of the outwardly-projecting arms, the clamping-plate having upper shouldered ends, and the nutted bolts passed through apertures in the outer ends of the lower longitudinal bars of said frame and clamping-plate, substantially as shown and described.

385,218. BOOT OR SHOE. GEORGE VALLIANT, Toronto, Ontario, Canada. Filed May 26, 1887. Serial No. 239,033. (No model.)



Claim.—1. A lace-hole strip of leather having a series of independent tongues bent back on the strip and separately fastened to the body of the strip, so as to form loops for the lacing, substantially as and for the purpose set forth.

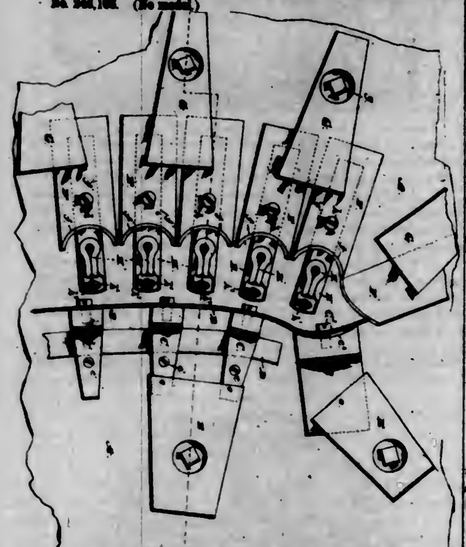
2. A lace-hole strip having the series of lace-holes along its lower portion and the series of loops along its upper portion, substantially as and for the purpose shown.

3. In combination with the quarter of a boot or shoe, the two strips on the quarter-edges, each provided with the series of lacing-holes on their lower portions and with the series of loops for the lacing along their upper portions, substantially as and for the purpose specified.

4. In combination with the quarter of a boot or shoe, the strips fastened on the quarter-edges, each provided with a series of lace-holes, a series of loops made of tongues of the strip folded back and fastened to the strip at their ends and with a lace-hole above the series of loops, substantially as and for the purpose shown.

5. In combination with the quarter of a boot or shoe, the lacing-strips fastened on the quarter-edges, provided with series of lacing-loops made of tongues on the strips folded back and fastened, each loops being situated, substantially as described, that those on one strip come directly opposite those on the other strip, substantially as and for the purpose described.

385,219. MECHANISM FOR STAMPING OR CUTTING OUT BUTTON-HOLE FLIES. GEORGE VALLIANT, Toronto, Ontario, Canada, and CHRISTIAN DAEBER, New York, N. Y. Filed Aug. 4, 1887. Serial No. 246,168. (No model.)



Claim.—1. In combination with a flexible knife, a series of independently-adjustable blocks connected with the knife, whereby the curvature or direction of the knife can be adjusted, substantially as and for the purpose shown.

2. In combination with the flexible knife and a support therefor, a series of independently-adjustable pieces on the support connected with the knife and means for holding the pieces as adjusted on the support, substantially as and for the purpose set forth.

3. In combination with the flexible knife and a support therefor, the adjustable slides attached to the knife and clamps for clamping the slides against the knife-support, substantially as and for the purpose described.

4. In combination with the flexible knife, the series of blocks or slides attached to the knife, a guide, and means for clamping the slides to such guide, substantially as and for the purpose specified.

5. In combination with the flexible knife and the series of blocks or pieces attached to the knife and forked or slotted, the guide embraced within the forks or slots in the blocks and the set-screws for drawing the arms of the forks together to clamp the guide between them, substantially as and for the purpose shown.

6. In combination with the flexible knife, the series of blocks or pieces, each attached at one end to the knife and at the other end slit or slotted, the guide-strip passing through the slots in the blocks, and the set-screws for drawing together the parts of the blocks or pieces on opposite sides of the slot, so as to clamp the blocks to the strip, substantially as and for the purpose set forth.

7. In combination with the flexible knife, the series of slides attached to the knife, a supporting-table, the guide-strip to which the slides are adjustably attached, and the clamps adapted to engage the slides and clamp them to the table, substantially as and for the purpose described.

8. In combination with the flexible knife, a block having a concave face toward the knife and a screw passing through the knife and into the block, substantially as and for the purpose specified.

9. In combination with the flexible knife and a support therefor, the slide provided with a concave face toward the knife, a screw passing through the knife and into the slide between the extremes of the concave face, and a clamp to secure the slide to the support, substantially as and for the purpose shown.

10. In an apparatus for cutting out flies for boots and shoes, in combination with a suitable support, a series of adjustable cutters adapted together to cut out the outer edge of the fly, and the series of button-hole cutters made adjustable to and from the edge-cutters, substantially as and for the purpose specified.

11. In combination with the series of adjustable cutters adapted together to cut out the outer edge of a fly for boots or shoes, the series of button-hole cutters made adjustable to and from the edge-cutters and also as to their angles with reference to such cutters, substantially as and for the purpose set forth.

12. In combination with the series of movable pieces having the scallop-cutting edges, the slides made adjustable with reference to the scallop-cutters and the button-hole cutters on such slides, substantially as and for the purpose described.

13. In combination with the series of pieces, each provided with a scallop-cutting edge and having a longitudinal groove, the slides fitting and guided in these grooves, the button-hole cutters on the slides, and means for fastening the slides at any desired adjustment in the grooves, substantially as and for the purpose shown.

14. In combination with the slides for the button-hole cutters, the cutters pivotally attached to the slides, so as to be capable of being turned thereon, substantially as and for the purpose set forth.

15. In combination with a slide or piece for carrying a button-hole cutter, the cutter pivoted thereon and means for fixing the cutter at any point to which it may be swung on its pivotal connection with the supporting-piece, substantially as and for the purpose described.

16. In an apparatus for cutting out flies for boots and shoes, a flexible knife for cutting the inner or attaching edge of the fly, and adjusting devices for adjusting the curvature of the knife, the series of adjustable pieces carrying cutters to cut the outer edge of the fly and adjustable button-hole cutters, all in combination with each other and with a suitable support, substantially as and for the purpose specified.

385,220. COMPOSITION FOOD FOR CATTLE, HORSES, AND SWINE. WALDEMAR WEHRSEN, Milwaukee, Wis. Filed Aug. 30, 1887. Serial No. 248,570. (No specimens.)

Claim.—A composition food for cattle, horses, and swine, consisting of a mixture of refuse distillery-swill, sawdust, ground linseed, salt, and rye-flour, in practically the proportions hereinbefore named, baked into loaves, substantially as set forth.

385,221. CIGAR-CUTTER. CHARLES P. YOUNG and JOHN W. SHERRER, York, Pa.; said Sherrer assignor to John H. Thomas, same place. Filed Apr. 16, 1888. Serial No. 271,085. (No model.)



Claim.—1. In a cigar-cutter, the combination, with the base and the throat-plate, of the spring-actuated rock-shaft, the operating-lever attached thereto, so as to rotate with it, a rotating cutter mounted loosely upon the rock-shaft, a ratchet-wheel mounted loosely upon the rock-shaft and engaging the said cutter, and the pawl, substantially as described.

2. In a cigar-cutter, the combination, with the base and the throat-plate, of the spring-actuated rock-shaft provided with a head, *e*, a rotating cutter, H, provided with blades A, a ratchet-wheel engaging the cutter H, the said cutter and ratchet-wheel being mounted loosely upon the rock-shaft, the operating-lever, also upon this shaft, the rod G, adapted to secure the operating-lever to the shaft, the handle F, and the spring-pawls, substantially as described.

385,222. TANNING PROCESS. WILLIAM EARL, Newark, N. J. Filed Dec. 26, 1887. Serial No. 259,261. (No specimens.)

Claim.—1. The method herein described of tanning skins, which consists in subjecting the prepared and depilated skins successively to the action of three different tanning solutions: first, to a solution of bichromate of potassium, muriatic acid, and water; secondly, to a solution of hyposulphite of soda, sulphuric acid, and water, and, thirdly, to a mixture of saponified neat's-foot oil and a suitable bark extract, substantially as set forth.

2. The method herein described of tanning skins, which consists, first, in subjecting the skins to the preparatory treatment of unhairing, softening, and cleaning the same; second, subjecting the skins to the action of a solution of bichromate of potassium, salt, muriatic acid, and water; thirdly, to the action of a solution of hyposulphite of soda, sulphuric acid, and water, and, fourthly, to the action of a mixture of saponified neat's-foot oil with a suitable bark extract, substantially as set forth.

385,223. TRACE-LOCK FOR HARNESS. LEE ANDERSON, Paris, Tex. Filed Apr. 14, 1888. Serial No. 271,009. (No model.)

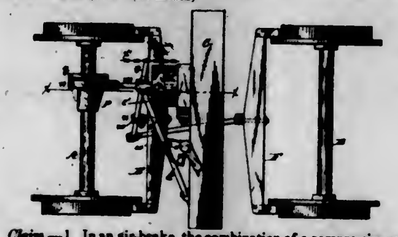


Claim.—1. In a trace-lock, the combination, with the slotted plate adapted to be secured to a trace, and the locking-plate pivoted thereto, of the bolt B, having the angular portion *a*, the shank *c'*, and the head *b*, rounded on its outer side, substantially as specified.

2. In a trace-lock, the combination, with the singletree and the bolt, of the recessed and slotted metal strap, the locking-plate pivoted to said strap, and the spring, substantially as specified.

3. In a trace-lock, the combination of the bolt B, the metal strap secured to the trace, provided with the recess *c*, the projection *c'*, and the slot *d*, having the enlarged opening *d'*, the locking-plate pivoted on the recess, having the opening *g*, and the spring, substantially as specified.

385,224. AIR-BRAKE. EDWARD ANDREWS, Pottsville, Pa., assignor of one-half to William G. Metz, same place. Filed Jan. 26, 1888. Serial No. 261,982. (No model.)



Claim.—1. In an air-brake, the combination of a compressing-cylinder operated from the axle of the car, a conical eccentric-cam, a laterally-adjustable eccentric strap and rod, and a brake-cylinder having its piston-rod in operating contact with a brake-lever, substantially as described.

2. In an air-brake, the combination of a compressing-cylinder operated from the axle of the car, a conical eccentric-cam, an eccentric-strap having a rod connected to the piston of the air-compressing cylinder by a ball-and-socket joint, a brake-cylinder operating upon the brake-levers, and means for putting on and releasing the brakes, substantially as described.

3. In an air-brake, the combination of a compressing-cylinder and a brake-cylinder having their inner ends in the same plane and connected directly by ports in a base common to both cylinders, valve-chambers and valves in said base, and a detachable cover on one side of the base, substantially as described.

4. In an air-brake, the combination of a compressing-cylinder and a brake-cylinder having their inner ends in the same plane and connected directly by ports in a base common to both cylinders, valves for controlling said ports, a relief-port in said base, connections between the compressing-cylinder and the axle of a car, an arm or lever for controlling said relief-port, and suitable means for applying and releasing the brakes, and simultaneously therewith opening and closing the relief-port, substantially as described.

5. In an air-brake, the combination of a compressing-cylinder and a brake-cylinder having their inner ends in the same plane, connected directly by ports and open outer ends, connections between the brake-cylinder and the brake-beam of a car, and an escape-port in the wall of the brake-cylinder uncovered by its piston under excessive pressure, substantially as described.

6. In an air-brake, the combination of a compressing-cylinder operated from the axle of the car, a brake-cylinder communicating therewith, a chipper, a rock-shaft and cam, and toggle-levers, substantially as described.

385,225. TOY MONEY-BOX. CHARLES A. BAILEY, Middletown, Conn. Filed Jan. 19, 1888. Serial No. 261,292. (No model.)

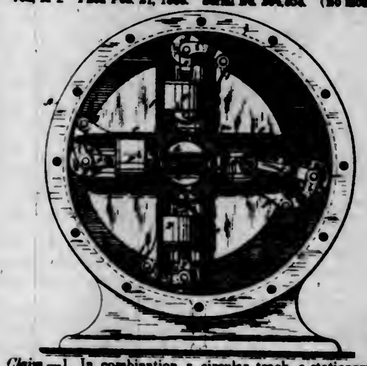


Claim.—1. In a toy bank, the figure of a foot-ball player having a pivoted leg provided with a crank and operating-spring secured to the said crank and to the base, in combination with a catch-trigger pivoted to the rigid portion of the figure, substantially as specified.

2. A toy bank consisting of a slotted base having a slotted coin-receptacle at one end, a foot-ball supported on a pivoted arm in the middle portion, and at the opposite end of said base a figure having a spring-operated crank-leg and trigger, substantially as specified.

3. In a toy bank, the combination, with the rigid portion of the figure of a foot-ball player, of the movable crank-leg and its operating-spring, the transverse shaft carrying the arms of the figure and having a projection, *n*, the rear lug, *m*, the slotted rod N, and the pivoted head portion of said figure, substantially as specified.

385,226. ROTARY CYLINDER-ENGINE. JOHN S. BARNES, Warren, R. I. Filed Feb. 21, 1888. Serial No. 264,858. (No model.)



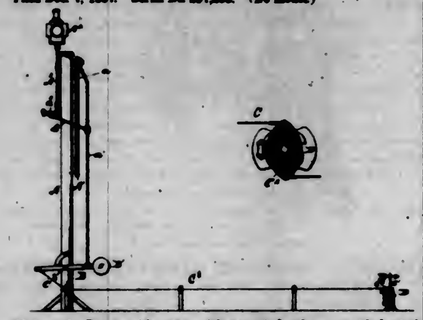
Claim.—1. In combination, a circular track, a stationary valve eccentric with the said track, the radial piston-cylinders adapted to revolve upon the stationary valve, the pistons provided with a pivoted link and roller which are adapted to reciprocate with the piston, and the link pivoted exteriorly of the piston-chamber for guiding the movement of the piston-link and roller, substantially as described.

2. In combination, a closed case the inner periphery of which forms a circular track, a stationary valve eccentric with the said track, the radial piston-cylinders adapted to revolve upon the stationary valve, the pistons provided with a pivoted link and roller which are adapted to reciprocate with the piston, and the link pivoted exteriorly of the piston-chamber for guiding the movement of the piston-link and roller, and a supplementary passage leading from the chamber of the case to the exhaust-passage of the valve, substantially as and for the purpose specified.

3. In combination, a closed case the inner periphery of which forms a circular track, a stationary valve eccentric with the said track, the radial piston-cylinders adapted to revolve upon the stationary valve, the pistons provided with a pivoted link and roller adapted to reciprocate with the piston, the link pivoted exteriorly of the piston-chamber for guiding the movement of the piston-link and roller, the shaft in line with the axis of the stationary valve, a valve-tightening screw between the inner end of the shaft and the inner end of the stationary valve, and means for imparting movement from the rotary piston-cylinders to the shaft, substantially as described.

4. In combination, a closed case the inner periphery of which forms a circular track, a stationary valve eccentric with the said track, the radial piston-cylinders adapted to revolve upon the stationary valve, the pistons provided with a pivoted link and roller adapted to reciprocate with the piston, the link pivoted exteriorly of the piston-chamber for guiding the movement of the piston-link and roller, the shaft in line with the axis of the stationary valve and having a fixed collar provided with a beveled edge, means for imparting rotary motion to the shaft from the rotary piston-cylinders, the beveled bearing for holding the beveled collar of the shaft, the elastic packing, means for tightening the same against the outer face of the collar of the shaft, and the stuffing-box around the shaft, substantially as described.

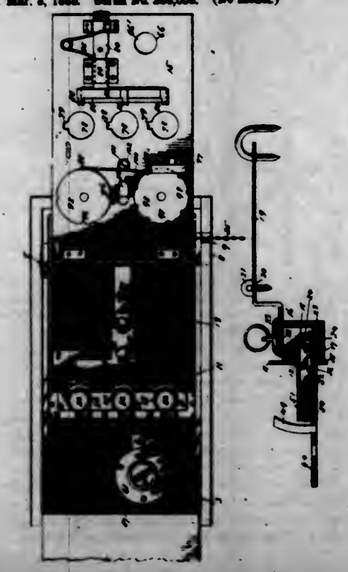
385,227. SEMAPHORE SIGNALING APPARATUS. ABEL BARNES, Pontiac, Mich., assignor of one-half to Robert Le Baron, same place. Filed Dec. 7, 1887. Serial No. 257,295. (No model.)



Claim.—1. The combination, with post A, having arm A' pivoted thereto to swing up and down, and the upright shaft A^3, carrying light A^2 and pivoted thereto to turn, of the rod *a'*, connected with arm A', crank a^6, connected to lower end of shaft A^3, rod a^5, joining rod *a'* and crank a^6, and the pivoted lever B, provided with the adjustable weight B', and having rod *a'* connected to it, substantially as and for the purpose described.

2. The combination, with the post A and rod *a'*, adapted to rise and fall, of the upright shaft A^3, connected with the post to revolve, and the arm A', connected therewith to rise and fall, and both of said parts connected with rod *a'* to be operated thereby, the lever B, having rod *a'* connected thereto, the switch-standard D, and a cable connecting said standard and lever B, the several parts operating as described, for the purpose set forth.

385,228. PERMUTATION-LOCK. JOHN C. BARR, Bismarck, Dak. Filed Mar. 3, 1888. Serial No. 266,053. (No model.)



Claim.—1. The combination of a lock-casing provided with a door and lock mechanism for said door, with a main-lock mechanism within said casing and devices which connect, control, and operate both of said lock mechanisms, substantially as described.

2. The combination of a lock-casing provided with a door having locking devices and a main bolt within said casing, with spindles provided with disks and constructed and arranged to connect, control, and operate said locking devices and main bolt, substantially as described.

3. In a permutation-lock, the combination of the lock-casing provided with a cover having a lock, and the main bolt secured within said casing and provided with a cross-head having lugs or arms, with the spindles and the disks mounted thereon and having radial slots which are adapted to register with and receive said lugs or arms, substantially as described.

4. In a permutation-lock, the combination of a lock-casing, a main bolt within said casing, a bolt upon the door for controlling the closure of said casing, and spindles provided with two sets of disks respectively controlling said main and door bolts, and having suitably-marked disks, substantially as described.

5. In a permutation-lock, the combination of a lock-casing provided with a door, a set of spindles, each provided with two cogged disks formed with a slot or notch in the periphery of each, a main bolt having lips or arms adapted to register with and enter the slots in one set of said disks, and another bolt secured within said lock-casing and adapted to control the door of said casing, and also having lugs or arms adapted to register with and enter the slots of the other set of disks, substantially as described.

6. In a permutation-lock, the combination of a lock-casing provided with a hinged door formed with holes and slots and having a cross-piece formed with bearings, and also with slots or notches in its edge which register with said bearings, spindles mounted in said bearings and provided with a set of inner cogged disks having a radial slot or notch in each, with a set of outer cogged disks, also formed with radial slots or notches which are adapted to register with the slots in said cross-piece, and with knobs and disks on their outer ends which project through said holes in the door, a main bolt provided with a cross-head having lips or arms which are adapted to register with and enter the slots in said inner set of disks, and having a handle projecting through a slot in said door, and a bolt adapted to be slid upon the inner side of said door and provided with a cross-head having lugs or arms which are adapted to register with and enter the slots in said cross-piece, substantially as described.

7. In a permutation-lock, the combination of a lock-casing provided with a hinged door formed with holes and slots, and having a cross-piece formed with bearings and also with slots or notches in its edge which register with said bearings, spindles mounted in said bearings and provided with a set of inner cogged disks having a radial slot or notch in each, with a set of outer cogged disks, also formed with radial slots or notches which are adapted to register with the slots in said cross-piece, and with knobs and disks on their outer ends which project through said holes in the door, a main bolt provided with a cross-head having notched lips or arms which are adapted to register with and enter the slots in said inner set of disks, and having a handle projecting through one of the slots in said door, and a bolt adapted to be slid upon the inner side of said door, and provided with a cross-head having notched lugs or arms which are adapted to register with and enter the slots in said cross-piece, the notched ends of said lips or arms being adapted to bear against the cogs of said inner and outer disks, substantially as and for the purpose described.

8. In a permutation-lock, the combination, with the main bolt 44, having an arm or lip, 48, of the spindle 27, provided with the knob 32, the dial 31, and the cogged disk 38, the disk 39, having the radial slot 40 and the notch 42, and the flat half-moon-shaped spring 41, having a stud, 43, projecting through said notch 42 and engaging the notches of said inner cogged disk, 38, substantially as described.

9. In a permutation-lock, the combination of the spindles 27, the disks 39, adjustably secured thereon and provided with radial slots 40 in their peripheries, the bolt 44, provided with a cross-head, 47, having arms or lips 48, which are adapted to register with and enter said slots in disks 39 and formed with a perforation, 72, the cross piece or bar 74, having a perforation, 73, and the pin 75, adapted to fit in either or both of said perforations, substantially as and for the purposes described.

10. In a permutation-lock, the combination of the outer cross-piece, 26, having the slots 33, the spindles 27, the disks 35, having slots 34, the plate 86, having lips 87, the bolt 80, provided with the beveled end 81, the knob 89, and the cross-head 82, having lips 83, and the spring 85, substantially as described.

11. In a permutation-lock, the combination of a lock-casing provided with a door formed with holes, lock-spindles projecting through said holes and having knobs and marked disks, a lock mechanism controlled and operated by said spindles, and one or more adjustable index-disks pivoted upon the inner side of said door and having marks

or inscriptions thereon for indicating the lock-combination and for registering successively with one or more of said holes in the door, substantially as described.

12. In a permutation-lock, the combination of a lock-casing provided with a door formed with holes, a main bolt, and a bolt for locking the door, with spindles having disks or wheels for controlling said bolts, and also knobs and marked dials projecting through said holes, the adjustable index-disks pivoted upon the inner side of said door and having inscriptions or marks upon their outer faces for indicating the combinations and for successively registering with said holes in the door, and means for holding said index-disks in their adjusted positions, substantially as described.

13. In a permutation-lock, the combination of a lock-casing provided with a door formed with holes, a main bolt, and a bolt for locking the door, with spindles having disks or wheels for controlling said bolts, and also knobs and marked dials projecting through said holes, the adjustable index-disks pivoted upon the inner side of said door and having inscriptions or marks upon their outer faces for indicating the combinations and for successively registering with said holes, and also having notches in their edges which register with their marks, and a spring-wire secured to said door at its middle, between said disks, and having studs upon its ends for engaging said notches, substantially as described.

14. In a permutation-lock, the combination of a lock-casing, a sliding bolt within the same provided with a cross-head having lugs or arms, spindles provided with disks having radial slots adapted to register with and receive said lugs or arms, a rod having one end rigidly secured to said cross-head, and a register or tallying device provided with a plunger against which the other end of said rod is adapted to bear, substantially as described.

15. In a permutation-lock, the combination of the lock-casing 3, the sliding bolt 44, provided with the cross-head 47, having the groove 69 and lugs or arms 48, and the spindles provided with the disks 39, having the radial slots 40, adapted to receive said lugs or arms, with the rod 67, having one end fitted in said groove and provided with the screw 70 and lips 71, which bear against said cross-head, and a register or tallying device, 61, provided with a plunger, 62, against the end of which the other end of said rod is adapted to bear, substantially as described.

16. In a lock, the combination of a main bolt provided with a box or casing, a transverse pin fitted in the sides of said casing, a small bolt sliding within said casing and formed with a recess for said pin and with a beveled outer end, and a spiral spring bearing against the inner end of said bolt and against the end of said casing, substantially as described.

17. In a lock, the combination of a lock-casing having a bolt-slot, a throat or frame secured to the end of said casing and over said bolt-slot, a socket formed with a slot which is smaller than and registers with said bolt-slot, a main bolt provided with a box or casing having a transverse pin, a small bolt formed with a recess for said pin and with a beveled outer end, and a plug formed with a beveled end, and also with a recess for the engagement of the end of said small bolt, substantially as described.

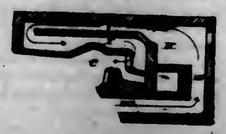
18. The combination, with the car-door, of the hasp 19, formed with the slot 20 and round perforation 22, the eye or staple 21, the plug 23, the main bolt 44, the spring 54, and the small bolt 52, substantially as described.

19. The combination of the lock-casing having a hinged door and the lock mechanism, with the outer casing, also having a hinged door inclosing said lock-casing, and devices for securing the last-named door, substantially as described.

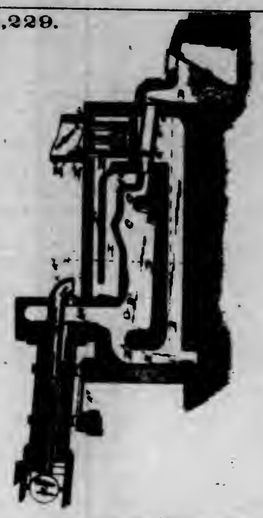
20. The combination of the lock-casing having a hinged door and the lock mechanism, with the outer casing, also having a hinged door inclosing said lock-casing and formed with a notch, 7, and a slot, 8 9, and provided with a flat latch, 6, a wire strap, 10, and a spring, 10', substantially as described.

385,229. ORE-SMELTING FURNACE. CALEB W. BARRY, Keokuk, Iowa. Filed Dec. 30, 1886. Serial No. 222,856. (No model.)

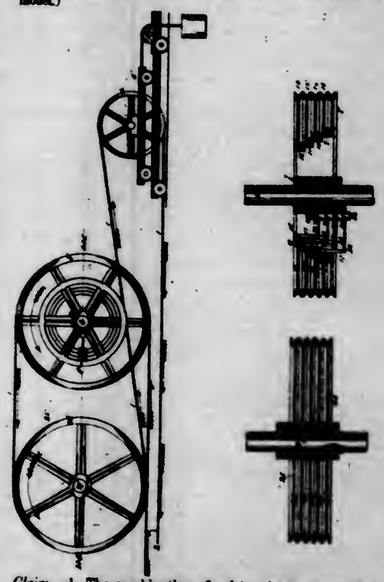
Claim.—The combination of a smelter chamber and hearth having a diving return-flue for waste gases arranged in its sole, a gas-producer connected to said chamber, and means for heating the air-supply to said chamber, consisting of air-supply flues located in said sole, an air-heating chamber provided with pipes connected with said waste-gas flue, and air-heating flues located in the furnace-roof and connecting said air-heating chamber with said smelter chamber or hearth.



385,229.



385,230. DRIVING-DRUM FOR RAILWAY-CABLES. P. A. JOHN BEHEL, St. Louis, Mo. Filed Nov. 10, 1887. Serial No. 254,631. (No model.)



Claim.—1. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, and a grooved loose pulley on the stepped extension driven by frictional contact with the flat pulley, substantially as described.

2. The combination of a drive-shaft, grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, and a grooved loose pulley of greater diameter on the stepped extension driven by frictional contact with the flat pulley, substantially as described.

3. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, and grooved loose pulleys on the stepped extension driven by frictional contact, substantially as described.

4. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, and grooved loose pulleys of gradually-increasing diameter on the stepped extension driven by frictional contact, substantially as described.

5. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, a grooved loose pulley on the stepped extension, and a friction-brake between the flat pulley and the loose pulley, substantially as described.

6. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, grooved loose pulleys on the stepped extension, and friction-brakes between the flat pulley and the loose pulleys, substantially as described.

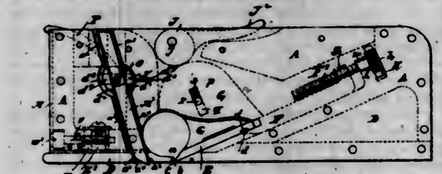
7. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, a grooved loose pulley on the stepped extension, and a friction-brake secured to the stepped extension and bearing against the hub of the loose pulley, substantially as described.

8. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, a grooved loose pulley on the stepped extension, a brake-lever having a shoe bearing against the loose pulley, and an adjusting-screw connected indirectly with the brake-lever, substantially as described.

9. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, a grooved loose pulley on the stepped extension, a brake-lever having a shoe bearing against the loose pulley, adjusting-screw, and spring connecting the brake-lever with the adjusting-screw, substantially as described.

10. The combination of a drive-shaft, a grooved flat pulley on the drive-shaft, said flat pulley having a stepped extension, a grooved loose pulley on the stepped extension, a guide-shaft, and a flat pulley and a loose pulley on the guide-shaft, substantially as described.

385,281. PLANE. JULIUS A. BERNSTEIN, New York, N. Y. Filed Nov. 8, 1887. Serial No. 254,622. (No model.)



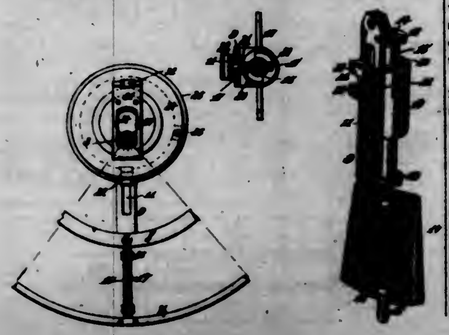
Claim.—1. The combination, with the plane-stock having the pin r, the cam J, and the plane-iron, of the block G between said cam and plane-iron, having slot g, substantially as described.

2. The combination, with the plane-stock having the pin r, the cam J, and the plane-iron, of the block G between said cam and plane-iron, having slot g, and spring e, substantially as and for the purpose described.

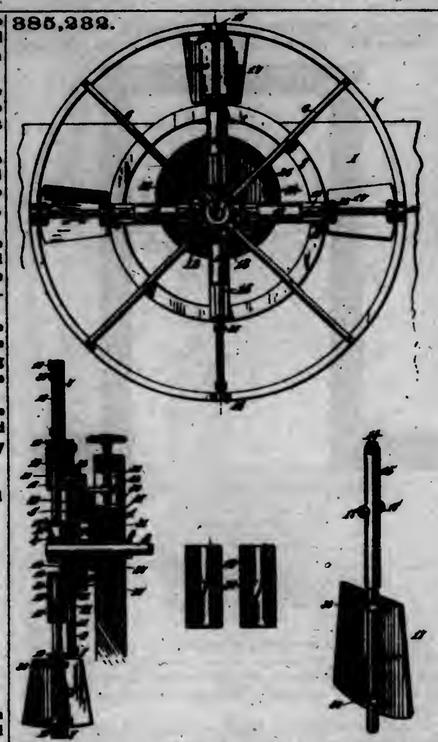
3. The combination, with the recessed plane-stock having lug m, screw F^3, ribbed plane-holder F, having lug g, notched plane-iron E, and pivoted cam J, having handle J^3, of block G between said cam and plane-iron, having slot g, and spring e, substantially as and for the purpose described.

4. The combination, with a plane-stock having vertically-arranged recesses c^2 c^2, and the horizontal grooves d^3 d^3, of the clamping-blocks N N, having dovetailed sockets, inwardly-extending projections d^4, and threaded screw-receiving holes, the right and left threaded screw having the intermediate projecting lovirs, P, and grooving-knives having dovetailed edges bearing in said socketed block, substantially as described, for the purposes set forth.

385,282. FEATHERING PADDLE-WHEELS. DAVID J. BLAKER, Westernville, assignor of one-half to Henry D. Hager, Rome, N. Y. Filed Sept. 10, 1887. Serial No. 249,369. (No model.)



385,282.



Claim.—1. In a paddle or propeller wheel, a series of floats mounted on radial shafts adapted to turn in their bearings, cam-sleeves moving longitudinally on said shafts and having grooves engaging with pins on the shafts, an adjustable annulus eccentric to and mounted on the axis of the wheel, and a connection between the cam-sleeves and said annulus, substantially as described.

2. The combination, with a series of floats mounted on a series of radial shafts provided with cam pins or lugs, of sleeves having cam-grooves engaging with said cam-pins, an annulus having connection with said sleeves, and a circular bearing upon which said annulus is loosely mounted, substantially as described.

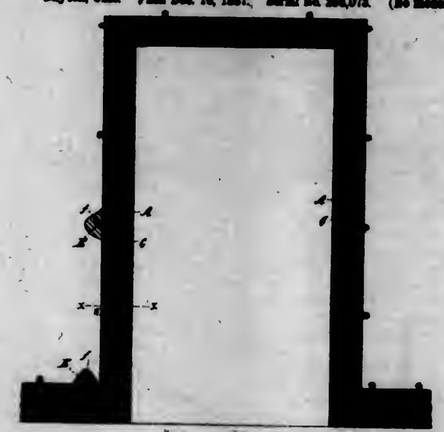
3. The combination, with a wheel having radial slotted brackets, of radial shafts having support therein and in bearings on the hub, cam-sleeves having lugs moving in the slots of said brackets and provided with grooves which engage pins on the shafts, clasps mounted on the lugs of the cam-sleeves, a flanged annulus on which said clasps may slide, a circular bearing on which the annulus may turn, and a set-screw for adjusting the eccentricity of the bearing and annulus, substantially as described.

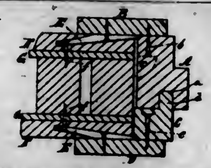
4. The combination, with an adjustable circular bearing through which the wheel-shaft passes, of an annulus having a loose connection with a channel in said bearing, a series of radial float-shafts having support and turning in bearings on the wheel, radially-reciprocating cam-sleeves engaging with the float-shafts, and loose connections between said sleeves and the annulus, substantially as described.

5. The combination, with the wheel having radial shafts for the floats, said shafts being provided with cam-pins, of sleeves moving upon said shafts and having spiral cam-grooves with which said pins engage, an annulus eccentric to said wheel and engaging with said sleeves, and an adjusting-screw engaging with the bearing of said annulus, whereby the eccentricity of the latter may be varied, substantially as described.

6. The combination, with the shaft having a flanged hub, of slotted brackets bolted to said hub and to a concentric ring, float-shafts having bearings in lugs on said brackets, in angle-plates on the hub, and in brackets on an outer annulus, cam-sleeves having grooves 20, engaging pins 18 on the float-shafts, lugs 21 on the sleeves, clasps 22, carried by the lugs, an annulus, 24, with which the clasps engage, a circular bearing with which said annulus has loose connection, and a set-screw swiveled on the wheel-support and engaging with an arm on said bearing, substantially as described.

385,238. FINISHING OF HOUSE INTERIORS. WILLIAM J. BOSA, Dayton, Ohio. Filed Dec. 16, 1887. Serial No. 258,073. (No model.)





Claim.—1. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts, the sections being secured to opposite facings and adapted to be applied to the wall-opening from opposite sides, substantially as described.

2. As a new article of manufacture, a completed door-frame consisting of the facings and an interlocking jamb divided longitudinally in two parts, the sections being secured to the opposite facings and adapted to be applied to the wall-opening from opposite sides and locked together, substantially as described.

3. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts, having their abutting faces tongued and grooved, respectively, the sections being secured to the opposite facings and adapted to interlock with each other when the two parts of the frame are applied to the wall-opening from opposite sides, substantially as described.

4. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts, the sections being secured to the opposite facings and adapted to be applied to the wall-opening from opposite sides, and each of the two parts of the completed frame being provided with fastening devices arranged to secure it to the wall and be covered by the completed wall, substantially as described.

5. As a new article of manufacture, a completed door-frame consisting of the facings and an interlocking jamb divided longitudinally in two parts, the sections being secured to the opposite facings and adapted to be applied to the wall-opening from opposite sides and locked together, and each of the two parts of the completed frame being provided with fastening devices arranged to secure it to the wall and be covered by the completed wall, substantially as described.

6. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts, the sections being secured to the opposite facings and adapted to be applied to the wall-opening from opposite sides, and each of the two parts of the completed frame being provided with fastenings devices which project from beneath the edges of its facings and are arranged to secure it to the wall and be covered by the completed wall, substantially as described.

7. As a new article of manufacture, a completed door-frame consisting of the facings and an interlocking jamb divided longitudinally in two parts, the sections being secured to the opposite facings and adapted to be applied to the wall-opening from opposite sides and locked together, and each of the two parts of the completed frame being provided with fastening devices which project from beneath the edges of its facings and are arranged to secure it to the wall and be covered by the completed wall, substantially as described.

8. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts, the sections being secured to the opposite facings and adapted to be applied to the wall-opening from opposite sides, and each of the two parts of the completed frame being provided with fastening-lugs which project from beneath the edges of its facings and are arranged to secure it to the wall and be covered by the completed wall, substantially as described.

9. As a new article of manufacture, a completed door-frame consisting of the facings and an interlocking jamb divided longitudinally in two parts, the sections being secured to the opposite facings and adapted to be applied to the wall-opening from opposite sides and locked together, and each of the two parts of the completed frame being provided with fastening-lugs which project from beneath the edges of its facings and are arranged to secure it to the wall and be covered by the completed wall, substantially as described.

10. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts, having their abutting faces tongued and grooved, respectively, the sections being secured to the opposite facings and adapted to interlock with each other when applied to the wall-opening from opposite sides, and each of the two parts of said frame being provided with fastening-lugs which project from beneath the edges of its facings and are arranged to secure it to the wall and be covered by the completed wall, substantially as described.

11. As a new article of manufacture, a finished facing provided with narrow fastening-lugs secured to the rear surface thereof at a point removed from the edge and projecting beyond said edges on a plane back of the rear surface of the facing and arranged to secure it to the wall and be covered by the completed wall to a point beneath the edges of the facing, substantially as described.

12. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts adapted to be applied to the wall-opening from opposite sides, the sections of the jamb being secured to the opposite facings by screws, nails, or other fastening devices inserted from the inner side of said sections, substantially as and for the purpose described.

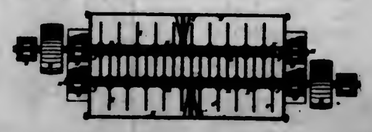
13. As a new article of manufacture, a completed door-frame consisting of the facings and an interlocking jamb divided longitudinally in two parts adapted to be applied to the wall-opening from opposite sides and locked together, the sections of the jamb being secured to the opposite facings by screws, nails, or other fastening devices inserted from the inner side of said sections, substantially as and for the purpose described.

14. As a new article of manufacture, a completed door-frame consisting of the facings and the jamb divided longitudinally in two parts adapted to be applied to the wall-opening from opposite sides, the sections of the jamb being secured to the opposite facings by screws, nails, or other fastening devices inserted from the inner side of said sections, and each of the two parts of the completed door-frame being provided with fastening devices arranged to secure it to the wall and be covered by the completed wall, substantially as described.

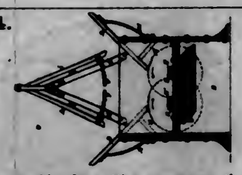
15. As a new article of manufacture, a completed door-frame consisting of the facings and an interlocking jamb divided longitudinally in two parts adapted to be applied to the wall-opening from opposite sides and locked together, the sections of the jamb being secured to the opposite facings by screws, nails, or other fastening devices inserted from the inner part of said sections, and each of the two parts of the completed door-frame being provided with fastening devices which project from beneath the edge of its facings and are arranged to secure it to the wall and be covered by the completed wall, substantially as described.

16. As a new article of manufacture, a completed door-frame made in two parts, consisting of the facings and a two-part jamb, the abutting faces of the two parts of the jamb being tongued and grooved, respectively, to interlock with each other, the set of facings and the portion of the jamb forming each part being united by screws or nails inserted from the inner side of said part, and each of said parts being provided with fastening-lugs which project from beneath the edges of its facings and are arranged to secure it to the wall and be covered by the completed wall, substantially as described.

385,284. MACHINE FOR CUTTING SUGAR-CANE. LEOPOLD BOS, Guantanamo, Cuba. Filed Nov. 3, 1887. Serial No. 254,191. (No model.) Patented in Spain Apr. 21, 1887, No. 7,037, and in England Oct. 15, 1887, No. 14,009.

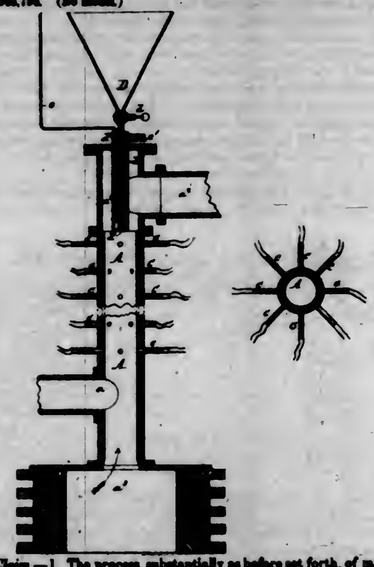


385,284.



Claim.—In a machine for cutting sugar-cane, the combination, with the two oppositely-rotating shafts carrying the series of overlapping saws and the two oppositely-arranged inclined chutes for guiding the cane between said saws from opposite sides, of two inclines pivoted at their upper ends between said chutes and adjustable with relation thereto at their lower ends, whereby the cane passing down said chutes may be regulated, substantially as described.

385,285. PROCESS OF MANUFACTURING OXIDE OF IRON. ARTHUR C. BRADLEY, Brooklyn, N. Y. Filed Aug. 12, 1887. Serial No. 246,796. (No model.)



Claim.—1. The process, substantially as before set forth, of manufacturing an oxide directly from a metal, which consists in subjecting the metal, in a comminuted condition and free from earthy matter, directly to the action of an inclosed gas-flame, with an excess of highly-heated air and in collecting the pulverulent oxide from said current.

2. The process, substantially as before set forth, of manufacturing an oxide directly from a metal, which consists in subjecting the comminuted metal free from earthy matter in a shower directly to the action of an inclosed gas-flame and heated air, and in collecting the pulverulent oxide from said current.

385,286. AUTOMATIC REGULATOR FOR VULCANIZING APPARATUS AND OTHER PURPOSES. OSCAR B. BRAIN, Portland, Me. Filed Aug. 13, 1887. Serial No. 247,248. (No model.)

Claim.—1. In combination with the clock mechanism and the piston-rod, operated as described, the finger-bar, spring, and escapement.

2. An automatic heat-regulating device consisting of a steam-actuated piston, clock mechanism, and alarm-wind, and an automatic cut-off for the gas, substantially as described.

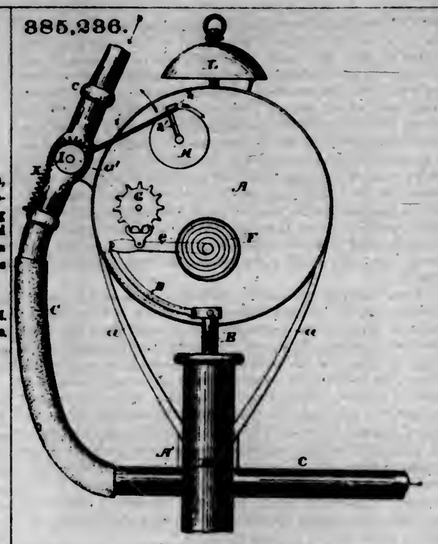
3. In combination with the gas-supply pipe having cock I and spring K attached thereto, the arm A and alarm-wind H, with which one end of the arm is connected, substantially as described.

4. In combination with the steam-actuated piston and the finger pivoted thereto, the clock mechanism, the gas-supply pipe, the cock I thereon, and its spring-actuated arm *i*, substantially as described.

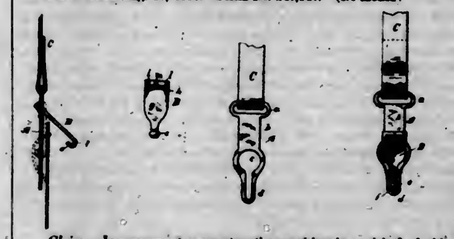
5. The steam-pipe B', its piston B, the finger D, pivoted at one end to said piston, the bar *c*, the spring F, and the escapement G, substantially as and for the purposes set forth.

6. In combination with the gas-supply pipe C, the spring-actuated cock I, the steam-pipe B' and piston B, the escapement, and the alarm-wind, substantially as and for the purposes set forth.

385,286.



385,287. GARMENT-SUPPORTER. FRED R. BRIGHT, Cleveland, Ohio. Filed Aug. 17, 1887. Serial No. 247,147. (No model.)



Claim.—In a garment-supporter, the combination, with the holder A, formed in its upper body portion with the longitudinal shank *b*, and provided at its lower extremity, below said shank, with the key-hole slot *c d*, of the clasp B, having its main body portion *g* provided at its lower extremity with a garment-locking device, and having its upper extremity provided at its two edges, respectively, with the sliding loop *h l*, said loop overlapping opposite sides of said shank *b* and having sliding movement thereon, substantially as set forth.

385,288. MAGAZINE FIRE-ARM. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah. Filed Dec. 13, 1887. Serial No. 257,706. (No model.)



Claim.—1. In a fire-arm in which the barrel opens into the receiver at the rear, the combination therewith of a breech-piece arranged longitudinally in rear of the barrel and constructed with laterally-projecting ribs upon its sides, and the receiver with corresponding grooves, the said grooves being deeper than the depth of the ribs, so as to allow a certain amount of vertical movement to the breech-piece, the said grooves contracting at their rear end to about the depth of the ribs and the said contracting portions opening through the receiver at the rear, the breech-piece constructed with one or more lateral projections upon its sides adapted to engage corresponding recesses in the sides of the receiver, and the breech-piece also constructed with a downward projection at its forward end, and the said projection constructed with a downward and rearwardly inclined groove, a handle arranged forward of the receiver and adapted for longitudinal reciprocating movement, with a bar extending from said handle into the receiver, and with a stud thereon adapted to work in the said groove of the breech-piece, substantially as described.

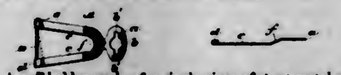
2. The combination, in a fire-arm, of a barrel opening into the

receiver at the rear, a breech-piece arranged longitudinally in the receiver in rear of the barrel and constructed with laterally-projecting ribs upon its sides, the receiver constructed with corresponding longitudinal grooves upon its inner surface, the said grooves in the receiver being deeper than the ribs on the breech-piece, the said grooves extending rearward and opening through the rear end of the receiver, the depth of the rear end being substantially the depth of the said ribs, the said breech-piece constructed with one or more lateral projections, and the receiver with corresponding recesses, with which said projections are adapted to engage when the breech-piece is in the closed position, and the breech-piece also constructed with a cam-shaped groove, a handle forward of the barrel, and a bar extending therefrom into the receiver, adapted to engage the said cam-shaped groove, and an extractor-hook on the side of the carrier adapted to engage the head of a cartridge in the barrel as the breech-piece rises, substantially as described.

3. In a magazine fire-arm, the combination of a barrel, a magazine beneath the barrel, both magazine and barrel opening into the receiver at the rear, the breech-piece E, arranged longitudinally in the receiver in rear of the barrel, constructed with longitudinal ribs H upon its sides, and the receiver with corresponding longitudinal grooves I, the breech-piece constructed with one or more lateral projections, F, and the receiver with corresponding recesses G, the said breech-piece constructed with a cam-shaped groove, L, near its forward end, a handle beneath the barrel arranged for longitudinal movement, a bar, N, extending from said barrel into the receiver and into engagement with said cam-groove L, a carrier, S, hung in the receiver beneath the barrel, with an upward projection, T, therefrom, the breech-piece constructed with a shoulder, V, adapted to engage said finger as the breech-piece approaches its extreme open position, substantially as and for the purpose described.

4. In a magazine fire-arm, the combination of the breech-piece E, constructed with one or more lateral projections, and the receiver with corresponding recesses, with which said projections on the breech-piece are adapted to engage, the breech-piece also constructed with longitudinal ribs H upon its sides, and the receiver with longitudinal grooves I, in which said ribs are adapted to work, the breech-piece also constructed with a cam-shaped groove, L, a handle beneath the barrel forward of the receiver arranged for longitudinal reciprocating movement, a bar extending from said handle into the receiver and into engagement with said cam-groove L, a carrier, S, hung in the receiver beneath the breech-piece with an upward projection therefrom, and the breech-piece provided with a shoulder adapted to engage said finger as the breech-piece approaches its extreme open position, the breech-piece also provided with an extractor, *a*, upon its side, and the carrier constructed with an overhanging finger, W, substantially as and for the purpose described.

885,239. CUFF-HOLDER. EDWARD L. CLARKE, Aberdeen, Dak. Filed Apr. 18, 1888. Serial No. 271,107. (No model.)



Claim.—A cuff-holder made of a single piece of sheet metal and provided with members *c c*, one of said members being bent upon itself to retain in position a pin, D, the point of said pin being adapted to lie under a loop formed upon the end of the opposite member, the portion *a*, having an opening, *b*, and slots connecting therewith, substantially as shown, and for the purpose set forth.

885,240. CASTER FOR STOVES, &c. ANDREW H. COOK, Montezuma, Iowa. Filed Jan. 10, 1888. Serial No. 260,357. (No model.)

Claim.—1. In a combined caster and base for stoves and other articles, the combination of a base mounted upon casters, with a rotatable ring or flange mounted upon the base and adapted to be thrown below or above the plane of its casters, substantially as and for the purpose specified.

2. In a combined caster and base for stoves and other articles, the combination of a base having casters swiveled therein and outwardly-



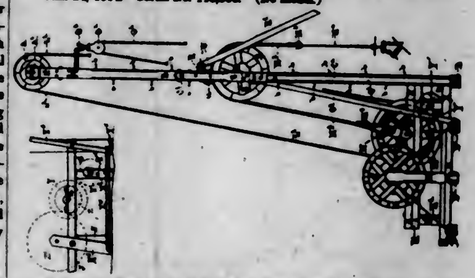


extending lugs or rivets, with a ring or flange mounted on said base and provided with slanting slots adapted to receive said lugs, substantially as specified.

3. In a combined base and caster for stoves and other articles, the combination of a base having casters swiveled therein and outwardly-extending lugs or rivets, with a ring or flange mounted on said base and provided with slanting slots terminating in parallel slots adapted to receive said lugs and lock said flange above or below the plane of the casters, substantially as specified.

4. In a combined base and caster for stoves and other articles, the combination of a base having a countersunk leg-receiving recess, the wall of which is provided with a set-screw, and having depending peripheral perforated lugs or ears provided with rivets, and having a series of casters, with an annular ring or flange loosely mounted on the base and provided with an inwardly-flanged upper edge and a lower flanged edge, and intermediate diagonal slots terminating in horizontal slots adapted to receive said rivets, substantially as specified.

885,241. DRILLING-RIG. GEORGE CORBETT, Bradford, Pa. Filed Jan. 24, 1884. Serial No. 118,868. (No model.)

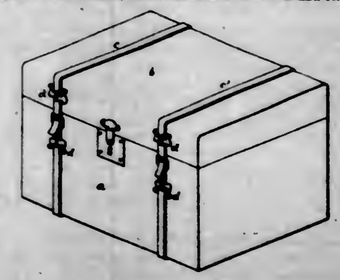


Claim.—1. In combination with a derrick and a pulley or wheel for the working-rope, a pillow-block on which said pulley or wheel is supported, having elongated bearings to allow of transverse movement of such wheel, substantially as and for the purposes set forth.

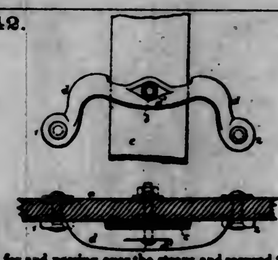
2. The combination, with the driving-shaft n, having the friction-wheel Y, and a friction-wheel, Z, of smaller diameter than the wheel Y thereon, of the bull-wheel friction-wheel and the sand-reel friction-wheel adapted to engage the wheels Z Y, respectively, swinging levers in which said bull-wheel friction-wheel and sand-reel friction-wheel are mounted, a rod connecting the ends of said levers, and a lever connected to said rod for causing the bull-wheel friction-wheel and sand-reel friction-wheel to engage the friction-wheels on the shaft n alternately, as set forth.

885,242. COMBINED TRUNK-LIFT AND STRAP-FASTENING. GEORGE CROSBY, New York, N. Y. Filed May 18, 1888. Serial No. 274,260. (No model.)

Claim.—1. The combination, in a trunk, with the strap or straps passing around the same, of the combined trunk-lift and strap fasten-



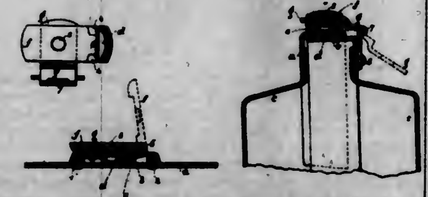
885,242.



ings *d*, slotted for and passing over the straps and secured to the body of the trunk by rivets, and each provided with a rivet or bolt, 3, passing through said lift and fastening, through a slot in the strap, and through the body or shell of the trunk to secure the strap in place, substantially as specified.

2. The combination, in a trunk, with the strap or straps passing around the same, of the combined trunk-lift and strap-fastenings *d*, slotted for and passing over the straps and having at their central portion an overhanging edge, *d'*, beneath which the fingers are adapted to pass in lifting the trunk-lid, the same being secured to the body of the trunk by rivets, and provided with a rivet or bolt, 3, passing through said lift and fastening, through a slot in the strap, and through the body or shell of the trunk, and provided with a fastening upon the inner side to secure the strap in place, substantially as specified.

885,243. FASTENING FOR HAND-BAGS AND SATCHELS. GEORGE CROSBY, New York, N. Y. Filed May 18, 1888. Serial No. 274,261. (No model.)



Claim.—1. The combination, in a fastening for hand-bags and satchels, of a frame-piece secured to one of the hinged sections of the hand-bag and having a stud thereon, a hinged hasp secured to the other hinged section of the bag and adapted to pass over the stud on the frame-piece, and a spring-catch or lifting-plate connected to the frame-piece and adapted to be snapped down upon the hinged hasp-plate, substantially as specified.

2. The combination, with the hinged sections *a b* of the bag, of the frame-piece *d*, secured to the section *a* by lugs or their equivalent and recessed upon its under side, and provided with a spring, *e*, and stud 5, the spring-catch or lifting-plate *f*, pivoted to the frame-piece *d* and acted upon by the spring *e*, and the hinged hasp *g*, secured to the section *b* and adapted to pass over the stud 5 and beneath the spring-catch or lifting-plate *f*, substantially as set forth.

885,244. CAN FOR OIL. EDWARD G. CHESMAN, New York, N. Y. Filed Mar. 30, 1888. Serial No. 268,738. (No model.)

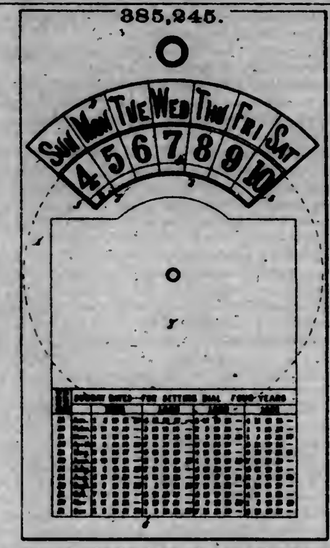


Claim.—The wooden heads for sheet-metal cans, each provided with a central opening to give access to the handle or to the cap of the can, and channeled, in combination with the sheet-metal bands introduced within the channel and soldered at their ends to the can for holding such heads in place, substantially as set forth.

885,245. CALENDAR. JOHN CROSBY, Glen Allen, Va. Filed Mar. 13, 1888. Serial No. 267,005. (No model.)

Claim.—1. As a new article of manufacture, a calendar consisting of a face-plate, 1, having a segmental slot and a corresponding

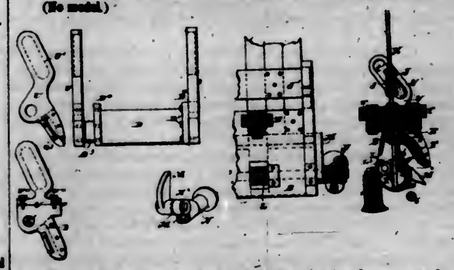
885,245.



space above the slot bearing stationary designations of the names of all the seven days of a week, said face-plate having a rectilinear space, 6, divided vertically into several divisions, one division containing figures giving the number of days each month in regular order in a single vertical column from top to bottom, another division containing in regular order designations of all the months in a year in a single vertical column from top to bottom, and the remaining divisions being substantially equal, and in which, under the current year and one or more succeeding years, are respectively displayed in regular order figures designating the several days of each month upon the initial day in the segmental space above the slot, falls, and a rotating dial behind the face-plate having an annular row of figures designating the thirty-one days of a month, of which figures seven only are exposed through the slot, substantially as and for the purposes described.

2. The combination, with a calendar having a space showing the days of a week in order and provided with a tabular statement showing the day of the month upon which the initial week day will fall throughout each of the months for a series of years, of a dial pivoted centrally upon the calendar-plate and having the numerical designations of the days of the month represented on its margin in spaces adapted to register with the spaces containing the designations of the days of the week, substantially as described.

885,246. CABLE-SHIFTING APPARATUS FOR STREET-RAILWAYS. JOHN H. DALE, Philadelphia, Pa., assignor of one-half to Edward D. Dougherty, same place. Filed Aug. 24, 1887. Serial No. 247,761. (No model.)



Claim.—1. The combination, with a block having flanges upon its ends, of two cam-grooved links adjustably secured to the ends of the block, substantially as set forth.

2. The combination, with a base-block having one inclined face and a wear-plate inserted longitudinally in the gripping-face of this base-block, of an upper grip-jaw having two upright links secured adjustably to its grip-block, said links being slotted diagonally to afford cams, housing-plates to support the base-block, and sliding bars secured together by cross-bars which are provided with bosses, and

thimbles on these bosses to engage the cam-slots of the limbs of the upper swinging jaw, substantially as set forth.

3. A pick-up arm and a cable-ejector limb secured to a single hub and mounted on one shaft, substantially as set forth.

4. A pick-up arm and a cable-ejector limb supported on the same shaft adjacent to each other, they being placed at right angles to each other on this shaft and adapted to move in parallel planes, substantially as set forth.

5. A pick-up arm and a cable-ejector limb affixed on the end of the supporting-shaft, adapted to receive motion from a lever, their relative positions on the shaft being such that the cable-ejector will be nearly upright when the cable-pick-up arm has raised the cable, and said ejector-limb be depressed to eject the cable when the cable-pick-up arm is downwardly moved, substantially as set forth.

6. The combination, with a base-block, housing-plates to support the base-block, a shaft that is longitudinally supported in a perforation of the base-block, a pinion affixed near the center of length of the shaft, and a connected cable pick-up arm and ejector limb mounted upon the same shaft, of a pair of sliding bars, a central rack-bar, and links and levers pivoted to the sliding bars and rack-bar to operate the swinging grip-jaw as well as the cable pick-up and ejecting devices simultaneously or consecutively and independently, substantially as set forth.

7. The combination, with a base-plate having an inclined jaw on one side, a pivoted upper grip-jaw, cam-grooves in the top ends of the limbs of the upper grip-jaw, two housing-plates attached to the base-block, a yoke, and a quadrant on top edge of the yoke, of two sliding bars held spaced apart by rigidly-affixed plates and adapted to engage the cam-grooves of the pivoted upper grip-jaw to vibrate this jaw, a center bar having rack-teeth on lower end, a cross-shaft supported to rotate in the base-block, a pinion on this shaft that engages the teeth of the rack-bar, a jointed cable pick-up arm and ejector limb mounted together, one set at each end of the base-block, links and levers to operate the sliding bars and center rack-bar, and a means for locking the levers to hold the sliding bar and rack-bar in raised or lowered adjustment, substantially as set forth.

8. The combination, with an upper grip-jaw block, of an attached cam-slotted limb adapted to be adjusted to change the pressure of the upper jaw upon the lower jaw or base-block, substantially as set forth.

9. The combination, with a swinging upper grip-jaw and an adjustable wear-plate affixed to this jaw, of a movable cam-grooved limb adapted to be adjusted and regulate the pressure of the upper jaw upon the lower jaw or base-block, substantially as set forth.

10. The combination, with a pick-up arm, of a cable-ejector limb adapted to work in parallel planes and be changed in regard to the angle of divergence of their outer ends and bodies, substantially as set forth.

11. The combination, with a cable-pick-up arm and a cable-ejector limb made to move in parallel planes and have the angle of their divergence changed, of a shaft adapted to support and simultaneously rock the arm and limb, substantially as set forth.

385,247. APPARATUS FOR ANNEALING WIRE. FRED H. DANIELS, Worcester, Mass. Filed Dec. 4, 1886. Serial No. 220,656. (No model.)

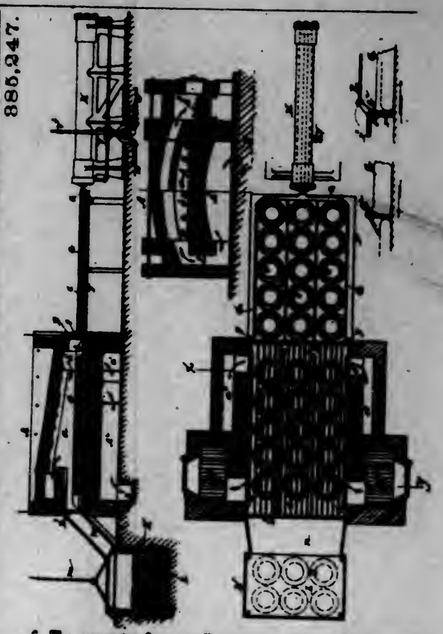
Claim.—1. A furnace-charging device for wire in coils, having a reciprocating movable frame provided with guide-bars between which to receive, carry, and deposit wire in coils upon the receiving bed or hearth of a furnace, and means, substantially as described, for advancing and retracting said frame into and from the furnace, as hereinbefore set forth.

2. A furnace-charging device for wire in coils, consisting of a platform or supporting-way in front of the furnace, a movable frame having guards between which to receive, carry, and deposit the wire coils upon the furnace-bed, and an operating-motor, substantially as described, for advancing and retracting said frame into and from the furnace-chamber, as hereinbefore set forth.

3. In a charging and discharging mechanism for handling wire in coils, the combination of a platform or way, a movable frame having compartments for receiving, supporting, and transferring wire in coils, an operating-motor for reciprocating said frame along the way to and from the annealing-bed, and a swing-gate across said compartments for engaging the coils, substantially as set forth.

4. In an annealing plant for wire, the combination, with a heating-chamber and a charging-frame adapted to receive, advance, and deposit coils of wire, of guiding devices disposed at the entrance of the furnace, as at *g*, for maintaining proper alignment of the charging-frame in its advance movement into said heating and annealing chamber.

5. In an annealing plant for wire in coils, the combination, with the heating-chamber and feed-platform, of a charging or discharging frame having intermediate forks or guide-bars, substantially as set forth, whereby said frame is adapted to maintain separate two or more series of coils of wire when projecting them into or withdrawing them from said heating-chamber, substantially as set forth.



6. The apparatus for annealing wire, consisting of the annealing-furnace having entrance and exit openings or doors at its respective ends, a feed-table, a reciprocating charging-frame having compartments for supporting coils of wire while transferring them from said table to the interior of said furnace, and a cooling or equalizing chamber into which the coils of wire are projected from the furnace by the action of entering the succeeding charge, substantially as set forth.

7. In an annealing apparatus for wire, the combination of the furnace adapted for heating wire in coils, the cooling-chamber into which the coils of wire are ejected from said furnace, a covered guideway for the coils between said furnace and chamber, and a mechanically-operated ejector or charger, substantially as hereinbefore set forth.

8. The combination, with the heating-chamber in an annealing-furnace adapted for heating wire in coils, of a series of longitudinal feeder-bars that separate and confine the coils of wire to their respective lines of advancement in series, substantially as set forth.

9. The combination of a furnace, its heating-chamber having inlet and exit doors at its respective ends, a series of longitudinal feeders for separating series of coils, a reciprocating charging-frame having longitudinal bars for confining and moving forward a plurality of series of coils of wire, and an operating-motor connected with said frame for advancing and retracting it into and from the furnace, substantially as set forth.

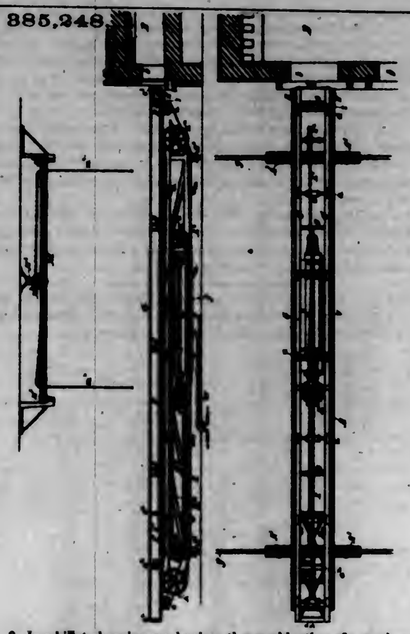
10. An apparatus for annealing wire having a furnace adapted for heating wire in coils and a receiving pit or chamber into which the heated coils pass as they are ejected from the furnace, with a removable platform or cage within said receiving-chamber, onto which the coils are deposited and by means of which the contents of the chamber can be discharged, substantially as set forth.

11. In combination with an annealing-furnace, the charging-frame having the longitudinal bars, and the swinging gates disposed transversely on said bars for engaging with and effecting transfer of wire in coils to or from said furnace, substantially as set forth.

12. The combination, with an annealing-furnace and a reciprocating furcated charging-frame having bars for confining coils of wire in series, of a swinging gate having forwardly and backwardly engaging parts, as *r* and *r'*, and a connection for operating said gate, substantially as set forth.

385,248. APPARATUS FOR CHARGING BILLETS, BARS, &c., INTO FURNACES. FRED H. DANIELS, Worcester, Mass. Filed Jan. 24, 1887. Serial No. 225,204. (No model.)

Claim.—1. A charging mechanism having a reciprocating carrier composed of a pair of longitudinal supporters provided with removable transverse bearers adapted to receive, support, and carry forward billets or bars of metal and deposit them in a heating-furnace, in combination with a power-operating mechanism whereby said carrier is advanced and retracted.



2. In a billet-charging mechanism, the combination of a carriage, A, a reciprocating billet-carrier supported and guided on said carriage, a hydraulic-motor mechanism, and connections upon said carriage for reciprocating said billet-carrier into and from the interior of the heating-furnace, substantially as set forth.

3. In a billet-charging apparatus, a reciprocating carrier-frame composed of side bars and having transverse bearers adapted for supporting billets mounted upon a supporting-frame, in combination with mechanism for advancing and retracting said frame and means for releasing said bearers from the side bars for depositing the billets within the furnace, substantially as set forth.

4. In a charging apparatus, the combination, with the carrier whereby the billets or bars are projected or advanced into the heating-furnace, of supports or bearers formed of combustible material, substantially as and for the purpose set forth.

5. A portable billet-charging apparatus having a reciprocating carrier composed of a pair of long beams connected at their rear ends and furnished at intervals with bearers upon which the billets to be charged are supported, in combination with a supporting frame or carriage mounted on traveling wheels and provided with a guide-way or series of rolls that direct the movement of the carrier thereon, and an operating cylinder and piston supported on said carriage with connections for moving said carrier, substantially as set forth.

6. A billet-charging apparatus provided with a carrier or charging-way for containing a series of billets, in combination with a lifting and transferring mechanism, substantially such as described, for depositing thereon a load of billets preparatory to charging said billets into the heating-furnace, substantially as set forth.

7. In a charging apparatus, the combination, with the billet-carrier, of a wheel or truck disposed at or near the forward end of said carrier for supporting said carrier upon the furnace-bottom, substantially as set forth.

8. In a charging apparatus, the combination, with a carrier adapted for projecting or advancing a billet or series of billets into the heating-furnace, of combustible supports or bearing-bars for containing said billet.

9. In a charging apparatus, the combination, with the carrier and adjustable supports or bearing-bars for sustaining billets while advancing them into the furnace, of means for releasing said supports for depositing the billets within the furnace, substantially as set forth.

10. In a furnace-charging apparatus, the combination of a supporting-frame mounted on wheels and provided with a series of guiding-rolls, a reciprocating carrier supported and guided on said frame and guide-rolls, a hydraulic cylinder and piston with tackle chains and pulleys for imparting backward and forward movement to said carrier, and means for varying the pressure in said cylinder under control of the attendant, substantially as set forth.

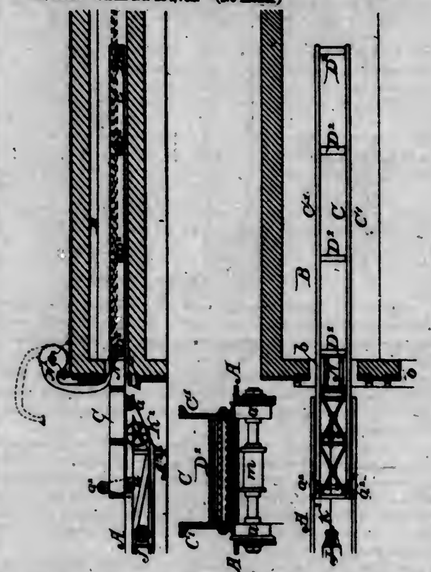
11. In a billet-charging mechanism, the combination of a carrier composed of side bars or beams, a series of transverse supporting-bars sustained by adjustable plates provided with engaging-lugs, and stop-dogs for shifting said plates and releasing said transverse bars when the carrier approaches its forward limit of movement, substantially as and for the purpose set forth.

12. In a billet-charging mechanism, the combination of a carrier composed of side bars or bearers, C C', having recesses *d*, a series of transverse supporting-bars, adjustable plates for sustaining said support-bars, provided with engaging-lugs and recesses *f*, stop-dogs for shifting said plates and releasing the transverse bars when the carrier has reached its forward limit of movement, and stop-lugs for readjusting said plates when the carrier has reached its backward limit of movement, substantially as set forth.

13. In a billet-charging mechanism, the combination, with a supporting-frame, of a carrier consisting of side beams rigidly framed together at their rear ends and having their forward ends linked or connected to each other in a manner to permit upward and downward springing action, while confining them for spreading apart laterally, and transverse supports or bearers for containing a load of billets, substantially as set forth.

14. The combination, with a carrier having the side bars, C, of upright fenders E, for confining the transverse bearers or support-bars and protecting the releasing plates and flanges from the descending billets when the support is released.

385,249. APPARATUS FOR CHARGING BILLETS, BARS, &c., INTO FURNACES. FRED H. DANIELS, Worcester, Mass. Filed Nov. 10, 1887. Serial No. 254,782. (No model.)



Claim.—1. In apparatus for charging heating-furnaces, the combination, with the furnace and the guiding-frame, of a charge-carrier composed of longitudinal beams and transverse supporters, adapted to overhang from said frame when in advanced position, and means for imparting movement to said carrier, to project the load forward into the furnace without contact with the hearth or other portion thereof, as hereinbefore set forth.

2. In apparatus for charging heating-furnaces, the combination of a reciprocating carrier, adapted to support a charge of billets and carry forward the same into a heating-furnace, and an adjustable barrier adapted to be introduced at the rear of the charge of billets, to prevent backward movement of the same when the charging-carrier is withdrawn from the furnace.

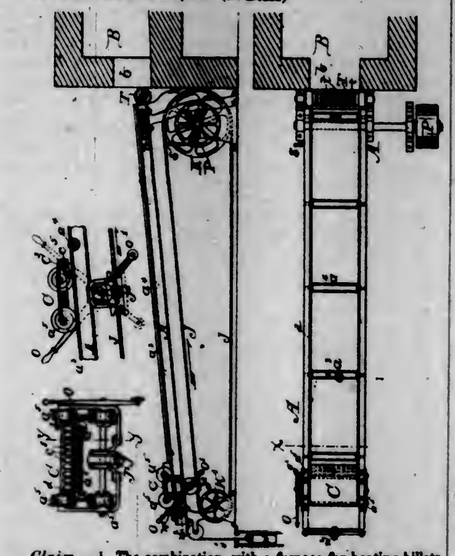
3. In an apparatus for charging heating-furnaces, the combination, with the furnace, of the supporting-frame provided with guiding-rolls, the reciprocating carrier-beams having between them rotatable transverse supporters, whereon the billets or charge is placed and supported while advanced into the furnace, and a stop or barrier that engages with the charge and effects the deposit thereof within the furnace, substantially as set forth.

4. In a charging apparatus, in combination with a heating-fur-

nace, a charge-carrier, an adjustable barrier adapted to be introduced at the furnace-entrance in rear of the charge or billets on said carrier, and mechanism for elevating and depressing said barrier into and from the furnace-entrance, substantially as set forth.

5. In a charging apparatus, the combination of an overhanging charge-carrier mounted for reciprocative action, having guides for said carrier, a supporting-frame, and a counteracting guide or roll, as a^5, connected with said frame, for sustaining the rear end of said charge-carrier against upward movement when the charger is projected forward, substantially as set forth.

385,250. APPARATUS FOR CHARGING BILLETS, BARS, &c., INTO FURNACES. FRED H. DANNER, Worcester, Mass. Filed Nov 10, 1887. Serial No. 254,733. (No model.)



Claim.—1. The combination, with a furnace for heating billets preparatory to rolling them into wire rods, hoops, or other small shapes, of a stationary charging-way provided with a roller table or platform, a carrier running on guides along said way and having a front plate for engaging the rear ends of the billets for projecting them forward, a guide for directing the billets to their place of deposit within the furnace, and means for imparting motion to said carrier, substantially as set forth.

2. In an apparatus for charging billets or bars into a heating-furnace, the combination of a stationary charging-way whereon the billet is received, a movable carrier having a head-plate for projecting the billets forward into the furnace, an operating belt or cable for imparting motion to said carrier, a grip-clutch for connecting and releasing said carrier and cable, and a guide adjacent to the furnace-entrance for directing the billets, substantially as set forth.

3. The charging-way disposed with its platform and guide-bars upwardly inclined toward the furnace-entrance, in combination with the carrier having its traveling rolls mounted on said inclined guides for operation, as set forth, whereby retroctive action is attained by permitting the carrier to roll down the incline after the billet has been projected forward into the furnace.

4. The combination, with a heating-furnace, of an inclined charging-way having charge-supporting rolls and guide-tracks, the carrier mounted to travel on said tracks, an endless cable or operating-band, a grip-clutch for connecting said carrier and cable, a clutch-operating lever, and an automatic trip mechanism for releasing said grip, substantially as set forth.

5. In a charging apparatus, a carrier having a series of recesses or pockets for separately receiving the several billets, in combination with a charging-way and means for advancing said carrier for projecting the billets forward into the furnace.

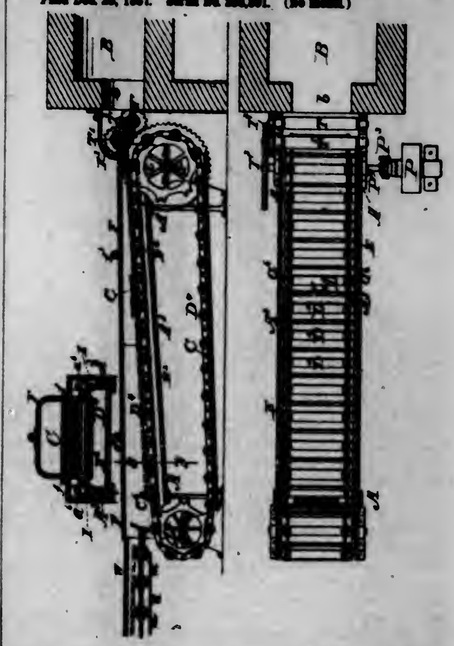
6. In a charging apparatus, the combination of a charging-way whereon the billets are placed, the carrier C, provided with a series of pockets or depressions, c^3, for engaging and confining the ends of the respective billets, a grooved guiding-roller adjacent to the furnace-entrance, the guiding-spaces of which correspond in alignment with the pockets in said carrier, and means for advancing and retracting said carrier, for the purpose set forth.

7. In a charging apparatus for charging billets into a heating-furnace, the combination, with a charging way or guide, a carrier for projecting the billets forward, and an endless operating-band, of a grip-clutch for connecting and releasing said carrier to and from the driving band, and a retracting weight connected with said carrier for returning it to normal position, substantially as set forth.

8. The charging-way having side flanges, *d*, in combination with the carrier C, having a front plate for propelling the billets or bars arranged to run along the charging-way between said flanges, and a roll having guiding-grooves *f*, for directing the bars into the entrance of the furnace.

9. The combination, with the charging-way and the carrier mounted for traveling forward and backward thereon, of the automatic clutch-releasing device, the retracting-weight, and elastic buffers, substantially as and for the purpose set forth.

385,251. APPARATUS FOR CHARGING BILLETS OR BARS INTO HEATING-FURNACES. FRED H. DANNER, Worcester, Mass. Filed Dec. 29, 1887. Serial No. 259,591. (No model.)



Claim.—1. In billet-charging apparatus, the combination of an endless-belt carrier, whereon the billets are received and supported, having a barrier for projecting the billets forward into the heating-furnace, with belt supporting and actuating wheels, and an operating-shaft, whereby said carrier is propelled by constant forward movement, substantially as set forth.

2. The endless-belt carrier having a series of loosely-revolubie rollers and an abutment or barrier for engaging and advancing the billets, respectively supported by bearings that are linked together as a chain, substantially as and for the purpose set forth.

3. The combination, with a heating-furnace, of a billet-charging mechanism consisting of an endless traveling belt or carrier for projecting forward the billets, guide-rolls for directing the billet into the mouth of the furnace, and means for operating said belt, substantially as set forth.

4. In a billet-charging apparatus, the combination of an endless-belt carrier composed of series of bearers or rollers linked together, whereon the billets or bars are supported, and a transverse barrier or flange for engaging and advancing the billets, guiding-rolls, as T T, disposed to direct the billet into the door of the furnace and sustain it elevated from the furnace-bottom, and means for imparting motion to said endless-belt carrier and guide-rolls, substantially as and for the purpose set forth.

5. In a billet-charging apparatus, an endless-belt carrier or charging-way consisting of a roller-belt provided with a barrier or flange for engaging and advancing the billets into the furnace, in combination with a feeder or delivering-way, whereby the billets are delivered onto said carrier, and means for imparting motion to said carrier-belt, for the purpose set forth.

6. In an apparatus for charging billets and bars into heating-furnaces, a hood or cover that incloses the billet or product upon the carrier during the charging operation, for the purpose set forth.

7. In an apparatus for charging billets or bars into a heating-furnace, the combination of a movable carrier, by which the billets are advanced into the furnace, and a stationary hood or cover inclosing said billets while on said carrier, for the purpose set forth.

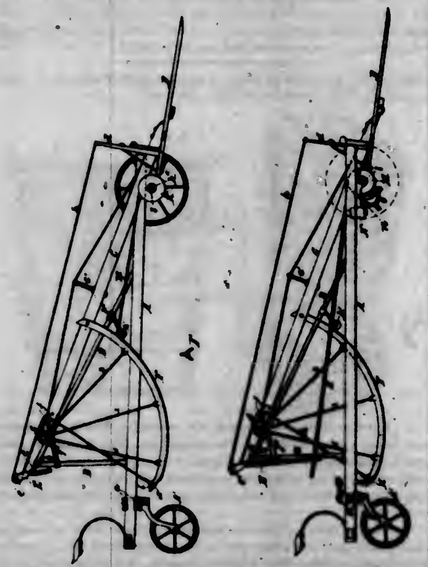
8. An apparatus for charging billets or bars into a heating-furnace, having a movable carrier, by which the billets or bars are propelled forward, a stationary inclosing-case or boxed frame along the charging-way, and a removable hood for covering said carrier and protecting the product, substantially as set forth.

9. In an apparatus for charging billets or bars, a revolable endless-belt carrier, by which the billets are propelled forward, in combination with guiding-rolls for directing the billets into the furnace, a feeder or delivery-way, whereby the billets or bars are delivered to said carrier, and an inclosing hood or casing, substantially as and for the purpose set forth.

10. The combination, with the delivery-bed and the endless-belt carrier having the barrier C^3, for engaging the product, of an automatically-movable guard disposed at the junction of said delivery-bed and carrier, for the purpose set forth.

11. In an apparatus for delivering and charging billets or bars into heating-furnaces, an inclosed passage through which the billet is delivered for inclosing the product while being delivered upon said carrier, in combination with a charging-carrier provided with a hood or cover for maintaining the heat of the product during the charging operation.

385,252. COMBINED HAY RAKE AND RICKER. REUBEN O. DAVIS, Milan, Mo., assignor to the Standard Manufacturing Company, Dayton, Ohio. Filed June 15, 1888. Serial No. 168,514. (No model.)



Claim.—1. In a combined rake and stacker, the combination of the following elements: a carriage-frame having supporting-wheels and axles, hoisting-arms pivoted to said frame, a rake hinged to the front of said hoisting-arms, a drum with mechanism for locking it to the axle of the carrying-frame and for holding it locked independently of said axle, a hoisting-segment secured to the hoisting-arms and arranged concentric with the pivots thereof, a hoisting-rope connecting the segment and the drum, a tilting and dumping rope secured to the rake-head, and a lever operating on said rope to tilt or dump the rake, substantially as and for the purpose specified.

2. In a combined rake and stacker, the combination of the following elements: a carrying-frame, hoisting-arms pivoted to said frame, a rake hinged to the front of said hoisting-arms, a drum with mechanism for locking it to the axle of the carrying-frame and for holding it locked independently of said axle, a hoisting-segment secured to the hoisting-arms and arranged concentric with the pivots thereof, a hoisting-rope secured at one end to one arm of a bell-crank pivoted at the rear of the segment and at the other end to the drum, and a tilting and dumping rope secured at its forward end to the rake and at its rear end to the other arm of said bell-crank, substantially as and for the purpose specified.

3. The combination, with the arms C, journaled in suitable frames, B B, rake D, hinged to the free ends of said arms, of the rope *h*, lever E, having a sheave journaled in its upper end, segmental guide-rope H, co-operating therewith, drum K, axle *s*, and means for operating said drum.

4. In a combined hay rake and stacker, the combination, with the frame having the supporting-wheels, rotating axle, and pivoted hoisting-arms moved by the axle, of reversing-gearing for changing the direction of movement of said arms at will during the continuous forward rotation of the axle, substantially as described.

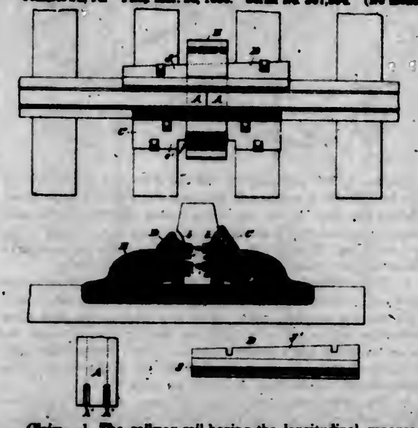
5. In a combined hay rake and stacker, the combination, with axle *s*, drum K, hoisting-rope, and rake hinged to the free ends of suitable pivoted arms, of the bevel-pinion L, having a clutch in its face and fast to the sleeve to which said drum is secured, beveled idle-gear *n*, beveled pinion M, loose on sleeve, reciprocating head T, having counterpart clutch in its end contiguous to pinion L, and having a pawl pivoted to its opposite end, designed to engage a ratchet made in the inner circumference of a circular depression in the contiguous face of pinion M, sleeve *m*, on which said head T reciprocates, secured at its outer end to the contiguous carriage-wheel, axle I, and means for reciprocating said head.

6. The combination, with rake D, arms C, segmental guide F, and hoisting-rope H, of the axle *s*, drum K, pinions L and M, idle-gear *n*, reciprocating head T, collar *w*, fast to axle, sleeve *m*, on which said head reciprocates, axle *l*, and carriage-wheel made fast, the shifter P, bell-crank *e*, and rod S.

7. The combination, with rake D, arms C, segmental guide F, and hoisting-rope H, of the axle *s*, drum K, pinions L and M, idle-gear *n*, reciprocating head T, sleeve *m*, on which said head reciprocates, axle *l*, and carriage-wheel made fast to the end thereof, shifter P, bell-crank *e*, and rod S.

8. The combination, with rake D, arms C, segmental guide F, and hoisting-rope H, of the axle *s*, drum K, pinions L and M, idle-gear *n*, reciprocating head T, sleeve *m*, shifter P, bell-crank *e*, and rod S, the ratchet *r*, made integral with pinion L, pawl r', and rod r^2.

385,253. RAILROAD TRACK AND JOINT. REUBEN S. DORAN, Johnstown, Pa. Filed Mar. 28, 1888. Serial No. 267,894. (No model.)



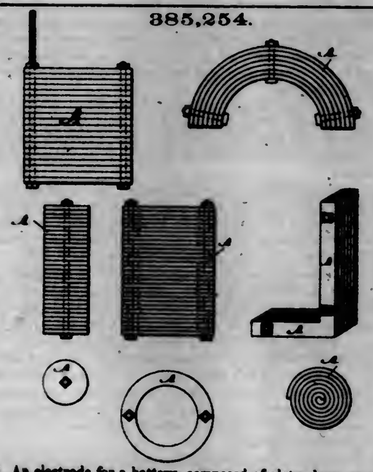
Claim.—1. The railway-rail having the longitudinal grooves in its web, the concave portions, the shoulders *d'*, and the slots *h'* in the base, in combination with the clamp-plates and clamp-chair, substantially as described.

2. The combination of the rails, the side plate having the vertical flange provided with the ribs *d*, the concave portion, the shoulders *d'*, and the horizontal flange having the double recess, the clamp-plate having the vertical flange provided with the ribs and the shoulders, the horizontal flange tapering on its outer edge, and the clamp-chair provided with the transverse ribs, substantially as specified.

385,254. BATTERY-ZINC. JOHN BOYLE, Hoboken, N. J., assignor to himself, and C. Otto Dannenberg, Lake Mahopac, N. Y. Filed Mar. 19, 1888. Serial No. 268,061. (No model.)

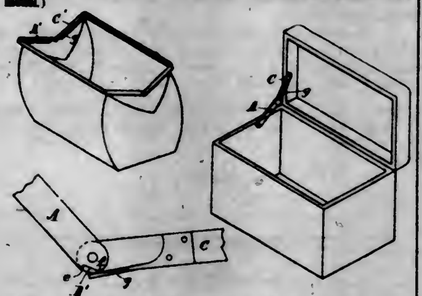
Claim.—1. An electrode for a battery, composed of sheets, plates, bars, or strips having the surface amalgamated with mercury and fastened together, substantially as set forth.

385,254.



2. An electrode for a battery, composed of plates, bars, or strips of metal, the surfaces of which are amalgamated with mercury and placed closely together, in combination with rods passing through holes in the plates to tie the same firmly together, substantially as set forth.

385,255. STAY-HINGE FOR TRUNKS, BAGS, &c. WALLACE DURAND, Newark, N. J. Filed Apr. 6, 1888. Serial No. 269,792. (No model.)



Claim.—1. The combination, with the pivot of a jointed arm, of a cam formed with a rounded surface provided with the single notch D', having the stop *e* at one side, and a jointed arm fitted to the same pivot and provided with a straight spring having its end fitted to the stop *e* at the side of said notch, and adjusted to arrest the movement of the arms when extended, substantially as herein set forth.

2. The combination, with the pivot of a jointed arm, of a cam formed with a rounded surface provided with the single notch D', having the stop *e* at one side, and a jointed arm fitted to the same pivot and provided with a spring having its end fitted to the stop *e* when the arms are extended, and a guard-washer applied to the pivot and operating to cover the notch in the cam and the end of the spring which operates therein, substantially as herein set forth.

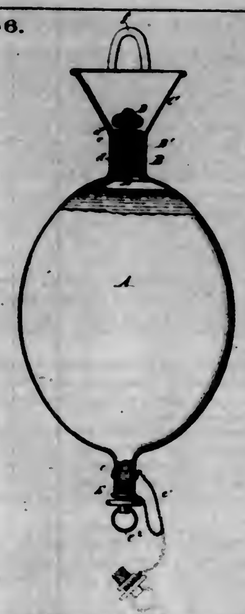
3. The combination, with a pair of jointed arms, of a pivot secured in one arm, a cam constructed substantially as described and secured to a square upon such pivot, a spring attached to the other arm and fitted to the notch in the cam, as set forth, and a guard-washer applied to the pivot to cover the notch in the cam and the end of the spring, as and for the purpose set forth.

385,256. STOPPER FOR RUBBER FOUNTAINS, &c. ARTHUR C. BUSHEE, New York, N. Y. Filed Nov. 14, 1887. Serial No. 255,603. (No model.)

Claim.—The combination, with the neck of a rubber fountain or water-bottle, of an interiorly-threaded re-enforcing sleeve, a funnel



385,256.



extending above said sleeve, and a hollow screw-plug having longitudinal slots or openings, substantially as set forth.

385,257. DINNER-PAIL. F. G. OSCAR BELL, Buffalo, N. Y. Filed Apr. 2, 1888. Serial No. 269,391. (No model.)



Claim.—1. In a dinner-pail, the combination, with a series of superposed pans or vessels, of a cover applied to the uppermost vessel and provided with a handle having hooks or enlargements at its outer ends, and fastening bails or loops pivoted to the lowermost vessel and engaging with the hooks or enlargements of the handle, substantially as set forth.

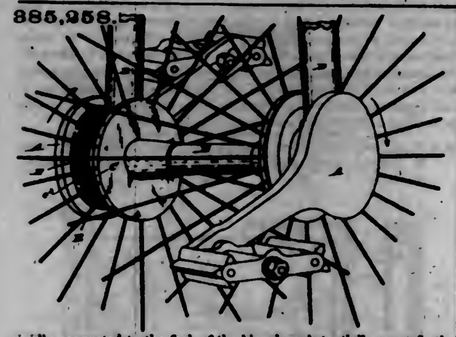
2. In a dinner-pail, the combination, with a series of tapering superposed pans or vessels, of a cover, C, applied to the uppermost vessel and provided with a pivoted handle, D, having hooks or enlargements *d'* at its outer ends, loops or bails E, pivoted to the lowermost vessel and engaging with the hooks *d*, and loops *f*, pivoted to the uppermost or largest of said vessels and adapted to engage with the hooks *d* when the vessels are nested, substantially as set forth.

3. The combination, with the series of tapering superposed vessels and the cover C, applied to the uppermost vessel, of a handle pivoted to said cover and provided with hooks *d* and notches *g*, and loops *f*, pivoted to said uppermost vessel and adapted to engage with the hooks *d* when the handle stands at an angle to the cover and in said notches when the handle is folded against the cover, substantially as set forth.

385,258. VELOCIPEDE. JAMES E. EVANS, Cincinnati, Ohio. Filed Mar. 15, 1888. Serial No. 267,311. (No model.)

Claim.—1. An anti-bender for bicycles, consisting of a ball-clutch or lock located in the cranks, said ball-clutch or lock being

385,258.



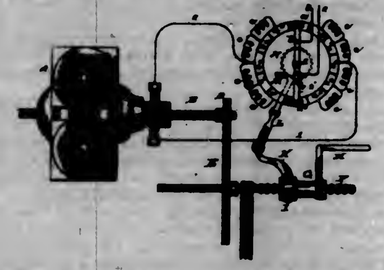
rigidly connected to the fork of the bicycle, substantially as set forth.

2. An anti-bender for bicycles, consisting of a crank circularly countersunk on its inner face, in combination with a suitable toothed disk in said countersunk portion and balls interposed between the outer wall of the countersunk portion of the crank and the toothed disk, the latter being rigidly attached to the fork of the bicycle, substantially as described.

3. An anti-bender for bicycles, consisting of a circularly-countersunk crank, A, having an outer circular wall, *a*, said wall having a groove, *a'*, therein, in combination with a toothed disk, C, having a groove, *a'*, in its outer face, and suitable balls interposed in said grooves between said wall and disk, the latter being attached to the fork of the bicycle, substantially as set forth.

4. The cranks A, rigidly connected to shaft B, said cranks being circularly countersunk on their inner faces, in combination with circularly-toothed disks C in said countersunk portions, and balls E, interposed between walls *a* and the disks C, lugs *a*, attached to said disks, and screws *c'*, substantially as set forth.

385,259. STEERING APPARATUS FOR VESSELS. BRADLEY A. FISKE, U. S. Navy. Filed Feb. 4, 1888. Serial No. 263,231. (No model.)



Claim.—1. The combination, with an electric motor and a regulating-switch having a movable arm, of a screw turned by the motor, a sleeve on said screw connected with said switch-arm, and a handle for turning said sleeve, substantially as set forth.

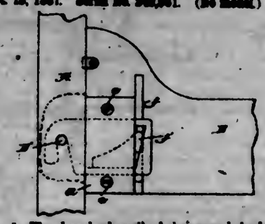
2. The combination, with an electric motor and a regulating-switch having a movable arm at whose normal position a circuit to the motor is broken, while movement to one side or the other closes circuit to the motor in one direction or the other, of a screw turned by the motor, a sleeve on said screw connected with said switch-arm, and a handle for turning said sleeve in either direction, substantially as set forth.

3. The combination, with an electric motor and a regulating-switch having a movable arm at whose normal position a circuit to the motor is broken, while movement to one side or the other closes circuit to the motor in one direction or the other and continued movement increases the speed of the motor, of a screw turned by the motor, a sleeve on said screw connected with said switch-arm, and a handle for turning said sleeve in either direction, substantially as set forth.

4. The combination of an electric motor, a rudder-arm connected therewith so as to be moved thereby in either direction, a regulating-switch having a movable arm, a screw turned by the motor, a sleeve on said screw connected with said switch-arm, and a handle for turning said sleeve in either direction, substantially as set forth.

5. The combination, with an electric motor, of a regulating-switch having a movable arm, a screw turned by the motor, a sleeve on said screw connected with said switch-arm, a handle for turning said sleeve, another sleeve on said screw, and a rudder-arm carried by said last-named sleeve, substantially as set forth.

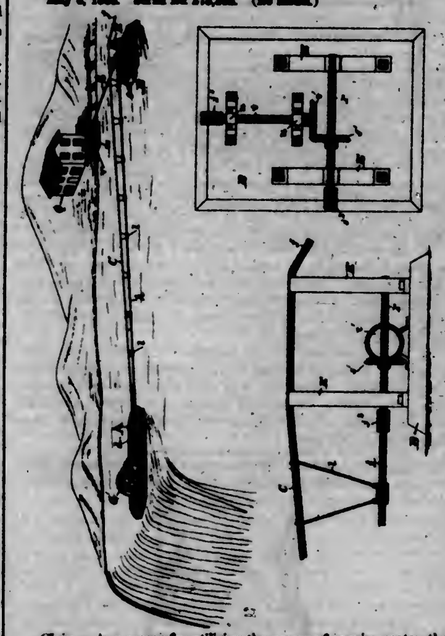
385,260. BEDSTEAD-FASTENER. PETER PETIT, Somerville, Mass. Filed Sept. 12, 1887. Serial No. 249,581. (No model.)



Claim.—1. The herein-described improved bedstead-fastener, consisting, essentially, of the sliding hooked plate having a cam-slot therein, the block *d*, provided with an irregular locking portion, and a locking-slide having a projection to co-operate with the cam-surface of the said hooked plate, substantially as described.

2. The side piece, B, and locking-slide *f* therein, having the projection *f'*, combined with the plate C, having a hooked end, *a*, and an opening, as *b*, having a cam-surface, as *b'*, the said opening being of sufficient length to permit the hooked plate to be thrown back to place its hooked portion *a* within the side piece, as and for the purpose set forth.

385,261. MEANS FOR UTILIZING THE CURRENT FORCE OF RUNNING WATER. CHARLES M. GARDNER, Wichita, Kans. Filed May 5, 1888. Serial No. 273,202. (No model.)



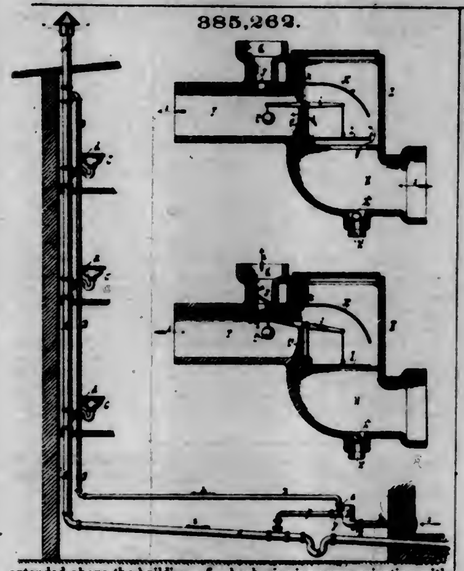
Claim.—As a means for utilizing the power of running water, the combination of a floating vessel, a pier and anchorage, a cable connecting the floating vessel and pier, a screw or wheel on the floating vessel which may be set in motion by the current of running water, a flexible shaft by which the movement of the screw or wheel is transmitted, and hangers suspended from the cable to support the flexible shaft.

385,262. SOIL-PIPE VENTILATOR. JOSEPH HANFIELD, New York, and FLORENCE MCCORMELL, Brooklyn, N. Y. Filed Jan. 12, 1888. Serial No. 260,819. (No model.)

Claim.—1. The combination, with a soil-pipe having its upper open end extended above the building, of a back air-pipe communicating with the soil-pipe above the highest closet or basin, and a ventilating-casing having a valved air-inlet and provided with a passage, F, communicating with the soil-pipe, and a passage, G, communicating with the lower end of the back air-pipe, substantially as described.

2. The combination, with a soil-pipe having its upper open end

385,262.



extended above the building, of a back air-pipe communicating with the soil-pipe above the highest closet or basin, and a valve-casing having a valved air-inlet and provided with a passage, F, communicating with the soil-pipe, and a valved passage, G, communicating with the lower end of the back air-pipe, substantially as described.

3. The combination, with a soil-pipe and a back air-pipe, of a valve-casing having an air-inlet and passages F and G, communicating, respectively, with the soil-pipe and back air-pipe, an inwardly-opening valve controlling the air-inlet, and an outwardly-opening valve in the passage that leads to the back air-pipe, substantially as described.

4. The combination, with the soil-pipe A and back air-pipe D, of the casing E, having an air-inlet, H, and provided with passages F and G, communicating, respectively, with the soil-pipe and back air-pipe, an inwardly-opening balanced valve, I, controlling the air-inlet, and an outwardly-opening valve, J, in the passage that leads to the back air-pipe, substantially as described.

5. The combination, with the soil-pipe A and back air-pipe D, of the casing E, having an air-inlet, H, and provided with passages F and G, communicating, respectively, with the soil-pipe and back air-pipe, a valve, I, controlling the air-inlet, a deflector, K, located above said valve, and a valve, J, in the passage that leads to the back air-pipe, substantially as described.

385,263. DUST-COLLECTOR. CHARLES M. HARDENBERGH, Minneapolis, Minn. Filed May 3, 1888. Serial No. 273,260. (No model.)

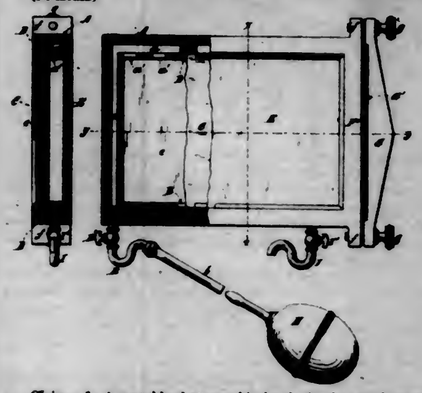


Claim.—1. A dust-collector comprising an annular expansion-chamber, a separating-chamber arranged below the said expansion-chamber, a series of inclined passages leading from the bottom of said expansion-chamber to the top of said separating-chamber, and a radial inlet-spout connected with said expansion-chamber, substantially as described.

2. The combination, in a dust-collector, of a separating-chamber provided in one end with a discharge-opening for the purified air and at its opposite end with a discharge-opening for the separated dust, an annular chamber arranged over said separating-chamber, a series of inclined passages leading from the bottom of said annular chamber to the top of said separating-chamber, and a radial air-inlet spout connected with said annular chamber, substantially as described.

3. The combination, in a dust-collector, of a circular separating-chamber, a circular casing, 4, connected with the top of said chamber, a tube, 9, arranged within said casing 4, with an annular space between said tube 9 and said casing 4, a series of inclined deflectors, 13, arranged between said tube 9 and casing 4, and dividing said space into a series of inclined passages, all communicating with the top of said separating-chamber, and a radial air-inlet spout communicating with all of said passages, substantially as described.

385,264. PORTABLE PHOTOGRAPHIC DEVELOPING-BOX. THEO. W. HARVEY, Orange, N. J. Filed Feb. 27, 1888. Serial No. 265,413. (No model.)



Claim.—1. A portable photographic developing-box made partly of tinted glass impervious to actinic light, and provided with a tight-fitting removable cover and with pipe-connections for introducing into and withdrawing from the box the liquids used in developing a picture upon a sensitized plate which has previously been exposed in a camera and after removal therefrom placed in the developing-box.

2. A photographic developing-box partly made of transparent tinted glass and adapted to contain a photographic plate, and provided with an internal receiving-chamber having perforations in its inner wall, for the purpose of effecting the simultaneous discharge upon different portions of the plate under treatment of liquid introduced into the said receiving-chamber by means of a suitable pipe connected therewith.

3. A photographic developing-box made partly of tinted glass, in combination with a pipe for introducing into and withdrawing from the interior of said box the liquid employed in the developing process, and an air passage or pipe for letting air escape from the box when liquid is injected into it, and for permitting air to enter the box when the liquid previously therein contained is withdrawn from it.

4. A photographic developing-box made partly of tinted glass and provided with an opening for permitting the introduction into the box of a photographic plate, in combination with a removable cover faced with an elastic material, and a fastening for said cover for securing it to the box and closing the said opening water-tight after said photographic plate has been introduced into the box.

5. The herein-described photographic developing-box, made partly of tinted glass, substantially as and for the purpose set forth, in combination with the liquid-supply pipe B, provided with the stop-cock B', and the air-pipe I, provided with the stop-cock I'.

385,265. CASH INDICATOR, REGISTER, AND RECORDER. CASH B. HOUSUM, Louisville, Ky. Filed July 2, 1888. Serial No. 277,693. (No model.)

Claim.—1. In an indicating mechanism, the wheel provided with the series of movable indicating devices, each provided with an arm or handle by which it can be moved, substantially as and for the purpose set forth.

2. In an indicating mechanism, the wheel carrying a series of radially-movable indicating devices, each provided with a handle by which the wheel can be revolved and the indicating devices can be moved outward on the wheel, substantially as and for the purpose described.

3. In combination with the main portion of the indicator-wheel, the series of slides arranged thereon carrying display or indicator tablets, substantially as for the purpose specified.

4. In combination with the main portion of the indicator-wheel, the series of slides carried thereby, having on their outer ends the marked indicating-plates, and the arms attached to the slides, substantially as and for the purpose shown.

5. In combination with the main portion of the wheel provided with the series of radial slots, as shown, the series of radial slides carrying the display devices, and the arms attached to the slides and playing in the slots in the wheel, substantially as and for the purpose set forth.

385,265.



6. In an indicator, in combination with a rotary wheel, radially-movable indicating devices carried thereon, means for moving such devices on the wheel, and means for locking them against such movement until they are brought by revolution of wheel opposite a certain point, substantially as and for the purpose described.

7. In an indicator, in combination with the rotary wheel and the radially-movable indicating devices carried thereon, provided with arms or handles for moving them, a rigid guide engaging such arms and holding them against movement until they are brought opposite a determined point, substantially as and for the purpose specified.

8. In an indicator mechanism in which the indication is made always at the same point, a rotary wheel carrying movable indicating devices, and means, substantially as described, for locking such devices against movement until they are brought by rotation of the wheel to the indicating or display point, substantially as and for the purpose shown.

9. In an indicator mechanism, in combination with the rotary wheel and the series of radially-movable indicating devices on such wheel, the arms or handles for moving such devices, and a fixed circular guide adapted to prevent these arms moving outward, provided with the offset for allowing outward movement of any of the arms brought around to it by rotation of the wheel, substantially as and for the purpose set forth.

10. In an indicator mechanism, in combination with the rotary wheel, the radially-moving tablet carrying slides and the arms or handles attached thereto, the front of the casing provided with the opening having its edge just outside of the series of arms and provided with the offset or slot, substantially as and for the purpose described.

11. In combination with the circular series of arms or handles for moving the indicator devices, the casing-front provided with the circular opening, and the slot or offset from such opening beveled or inclined at one side, substantially as and for the purpose specified.

12. In an indicating mechanism, in combination with a series of movable tablets adapted to be moved along to bring any desired one of the tablets to a desired point where the same can be raised for display, a record-strip, suitable marking devices on the tablets to mark on the strip numbers corresponding with those on the tablets, and a lever above the tablet-raising point for depressing the record-strip against the marking device on a raised tablet, substantially as and for the purpose described.

13. In combination with the rotary wheel, the radially-movable indicating devices, each provided with marking devices for marking its respective number or mark, arranged upon its outer end, and the pressure-lever, substantially as and for the purpose set forth.

14. In combination with the rotary wheel, the radially-movable slides thereon carrying display devices, each provided upon its outer end with points so arranged as to mark the number or mark which the display device carries, and the lever above the wheel, provided with a yielding cushion on its under face, adapted to press a strip of paper down upon the upper end of any display device which has been raised on the wheel up under the lever, substantially as and for the purpose described.

15. In combination with the wheel provided with the series of radial slots, the radially-sliding rods on each wheel carrying the display devices, pins or arms attached to the rods and extending through the slots, and springs for drawing the rods inward on the wheel, substantially as and for the purpose specified.

16. In combination with the wheel, consisting, essentially, of the two parallel plates provided with corresponding series of radial slots, the radially-sliding rods or bars guided in suitable guides between the plates and carrying on their outer ends display-tablets, springs drawing such rods inward, and pins rigidly connected with the rods and playing in the slots in the plates of the wheel, substantially as and for the purpose shown.

17. In an indicating mechanism, in combination with the wheel and the radially-movable indicating devices thereon, adapted to be brought up to the point of display by rotation of the wheel, means for stopping the rotation of the wheel when the entire series of said devices has been brought to each point in succession, substantially as and for the purpose described.

18. In combination with the indicator-wheel and its pivot-shaft, the pulley on such shaft, the spring, and the cord attached to the spring and to the wheel at a point radially beyond the periphery of the pulley, so that after the wheel is turned forward a certain distance the cord will begin to be wrapped around the pulley, substantially as and for the purpose set forth.

19. In combination with the indicator-wheel, the pulley on the pivot-shaft thereof, the spring attached at one end to a fixed support, and the cord attached to the spring and to the wheel at a point radially beyond the periphery of the pulley, substantially as and for the purpose described.

20. In an indicating and registering mechanism, in combination with the rotary indicator-wheel provided with suitable indicating devices, the registering mechanism connected with such wheel, so as to be operated only as the wheel is turned forward, means for stopping the wheel when the last of the series of indicating devices is brought opposite the indicating-point, means for automatically turning the wheel backward, and suitable stop devices for stopping its backward rotation after the first one in the series of indicating devices has passed the indicating-point, substantially as and for the purpose specified.

21. In combination with the indicator-wheel provided with the fixed pin or stop, the swinging plate I, provided with the rib, and the stop limiting the outward swing of the plate, substantially as and for the purpose specified.

22. In combination with the rotary wheel and the pin on the same, the swinging plate I, having the rib to be engaged by the pin, the stop to limit the swing of the plate, and the spring drawing the plate outward toward the stop, substantially as and for the purpose shown.

23. In combination with the rotary wheel provided with the series of radially-movable indicating devices having pins projecting from the wheel, the swinging plate, a spring tending to keep the plate away from the path of the pins on the indicating devices as such devices are raised to make indications, a rib on the plate, and a pin on the wheel adapted to engage the rib and swing the plate inward across the said path of the pin when the wheel is at its starting-point, substantially as and for the purpose set forth.

24. In combination with the wheel and the radially-movable indicating devices thereon provided with pins, the swinging plate I, provided with rib I^2, the stop for limiting the swing of the plate, and the spring tending to swing the plate against the top and the pin on the wheel, substantially as and for the purpose described.

25. In an indicating mechanism, in combination with the wheel and the series of radially-movable indicating devices thereon provided with pins, a suitable passage-way up which the pins on the indicating devices can pass as such devices are raised to make an indication, the swinging plate adapted to stand across this passage as it is swung inward, a spring to swing the plate outward, and a pin on the wheel engaging a rib on the plate to swing it inward when the wheel is at its starting-point, substantially as and for the purpose specified.

26. In combination with the rotary wheel carrying the radially-movable indicating devices and the pins on such devices, the plate adapted to be swung inward across the way up which the pins on the indicating devices move as such devices are raised on the wheel, a spring tending to swing it inward, a pawl-lever for holding it outward adapted to be engaged by any pin moved up the way and caused to release the plate, the swinging setting-plate adapted to move the former plate outward again, and a pin on the wheel adapted to engage such setting-plate when the wheel is turned back to its starting-point, substantially as and for the purpose shown.

27. In combination with the wheel carrying the series of radially-movable indicating devices provided with pins projecting from the wheel, the pawl in the passage up which the pins are moved as the respective indicating devices are raised, adapted to lock such pins as raised, an alarm mechanism adapted to be tripped by the pins, and means for moving the pawl at will, substantially as and for the purpose set forth.

28. In combination with the plate F and the spring for swinging it inward across the way for the pins on the indicating devices when such devices are raised to make an indication, the pawl-lever crossing such way and engaging and holding the plate normally away from the way, substantially as and for the purpose described.

29. In combination with the rotary wheel and the series of outwardly-movable indicating devices thereon provided with pins, a way or passage up which any of the pins can be moved by raising its respective indicating device and means for closing such way after a pin has been raised up it and lowered again, substantially as and for the purpose specified.

30. In combination with a movable indicating device and the pin thereon, a swinging plate, a spring acting to throw the plate inward across the way up which the pin passes as the indicating device is raised, and a pawl-lever for holding the plate outward from the way, adapted to be struck by a pin passing up the way, substantially as and for the purpose shown.

31. In combination with suitable guides, a movable indicating device having a pin or projection adapted to be moved between the guides as the indicating device is moved to make an indication, the swinging plate, the spring pressing it inward, the pawl holding it outward, adapted to be tripped by the pin, the striker carried by the plate, and the bell, substantially as and for the purpose set forth.

32. In combination with suitable guides defining the way for the pin on a movable indicating device, the pawl for holding such pin as raised in the way, the pawl-lever crossing such way, the swinging plate normally held from the way by the pawl-lever, the spring swinging the plate inward across the way when the plate is released, the striker carried by the plate, and the bell, substantially as and for the purpose described.

33. In combination with suitable guides, forming a way between them, the swinging plate adapted when swung inward to bar the way, the spring pressing it inward, the pawl-lever crossing the way, adapted to hold the plate outward, the swinging plate on the other side of the way, having the rib I^2, the stop L, the spring holding such plate outward from the way, the rotary indicator-wheel, and the fixed pin p^2 on the wheel, substantially as and for the purpose specified.

34. In combination with the wheel having the series of radially-moving indicating devices provided with pins projecting from the wheel, the plate having the pawl pivoted thereon and adapted to be brought into position to engage the pins when the plate is moved in one direction, and the pawl pivoted outside of the plate, engaging a pin or stud on the other pawl, and adapted to fall into position to engage the pins when the plate is moved in the other direction, substantially as and for the purpose shown.

35. In combination with the series of pins, the swinging plate, the pawl pivoted thereon so as to yield in one direction, and the second pawl resting on a stud or pin on the other pawl, all so arranged that as the plate is moved in opposition directions the pawls will be alternately brought into position to engage the series of pins, substantially as and for the purpose set forth.

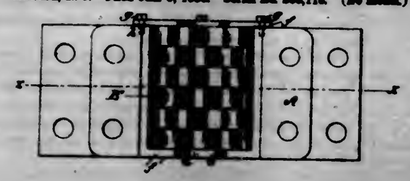
36. In combination with the swinging plate F, the pawl pivoted thereon, the pawl H, resting on a pin or stud on the former pawl, a spring for actuating the pawl H, and the pawl-lever F, for holding the plate, substantially as and for the purpose described.

37. In combination with the rotary wheel and the radially-movable indicating devices thereon provided with pins, two pawls, one adapted to engage the pins so as to allow forward rotation of the wheel and the other to engage them so as to allow the wheel only to revolve back, and means, substantially as described, for causing the first to act before an indication is made and then throwing the other into action, substantially as and for the purpose specified.

38. In combination with the swinging plate F and the pawl pivoted thereon, the second pawl pivoted outside of the plate and resting against a shoulder or stud on the other pawl, and the spring for actuating the pawl not pivoted on the plate, substantially as and for the purpose shown.

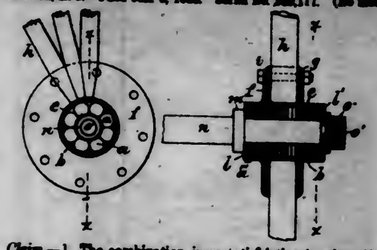
39. In combination with the indicator-wheel, the spring, the cord connected with both the wheel and the spring, and the eccentric pulley rigidly connected with the wheel so as to turn therewith, substantially as and for the purpose described.

385,266. ANTI-FRICTION JOURNAL-BEARING. JOHN W. HYATT, Newark, N. J. Filed Jan. 9, 1888. Serial No. 260,116. (No model.)



Claim.—The combination, in a roller-bearing, of separate independently-rotating series of dimished rolls held in lateral contact in a casing with closed ends, each series of rolls being held in an annular path by the plane of the adjacent series of rolls, substantially as shown and described.

385,267. ANTI-FRICTION JOURNAL-BEARING. JOHN W. HYATT, Newark, N. J. Filed Jan. 9, 1888. Serial No. 260,117. (No model.)



Claim.—1. The combination, in an anti-friction bearing, of a casing formed concentric with the journal, loose disks fitted within the casing around the journal in separate independent series, loose washers surrounding the journal and inserted between the separate series of disks, and means, substantially as described, at the ends of the casing for holding the loose disks in place, as and for the purpose set forth.

2. The combination, in an anti-friction bearing, of a casing formed concentric with the journal, and provided with flanges at its ends, a series of loose washers inserted within the casing around the journal, and separate series of loose disks inserted within the casing alternately with the washers, as and for the purpose set forth.

385,268. ILLUMINATING-TILE. JACOB JACOBS, New York, N. Y. Filed Mar. 17, 1888. Serial No. 267,602. (No model.)



Claim.—1. An illuminating-tile which is composed of a metal plate that is provided with light-openings, glass lenses which are cemented within such openings and have each vertically-parallel sides surmounted by an integral frustum-head that projects horizontally upon all sides and is flat upon its lower side, and cement that is placed upon said plate and caused to fill the space between and beneath the heads of the lenses, substantially as and for the purpose specified.

2. An illuminating-tile which is composed of a metal plate provided with recessed light-openings, glass lenses which are cemented within such openings and have each vertically-parallel sides surmounted by an integral frustum-head that projects horizontally upon all sides and is flat upon its lower side, and cement which is placed upon said plate and caused to fill the space between the heads of the lenses, substantially as and for the purpose shown.

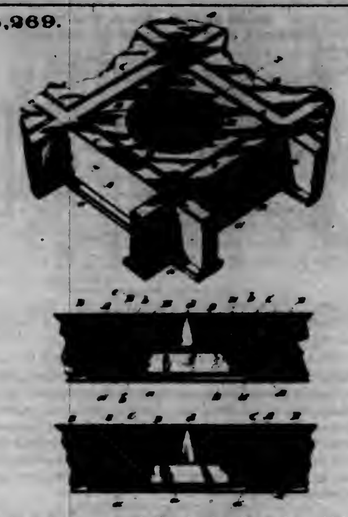
3. As an improvement in illuminating-tiles, the metal body or plate provided with light-openings and having its upper side recessed between such openings, a glass lens which is placed within each opening and has vertically-parallel sides surmounted by an integral frustum-head that projects horizontally upon all sides and is flat upon its lower side, and cement which is placed within and caused to fill the space between the sides of said lens and its opening and between the periphery of its head and the peripheries of the heads of the adjacent lenses, said parts being combined to produce a walking-surface of cement and glass, substantially as and for the purpose specified.

4. The frame-plate provided with light-openings and having rounded ribs upon its lower side between such openings, in combination with lenses which are cemented within said light-openings and have concave lower ends, and troughs that are arranged beneath the lowest portions of said ribs, substantially as and for the purpose shown and described.

385,269. ILLUMINATING-TILE. JACOB JACOBS, New York, N. Y. Filed Feb. 24, 1887. Serial No. 228,703. (No model.)

Claim.—1. An illuminating-tile in which a light-opening is provided with a lens that has a central opening, substantially as and for the purpose specified.

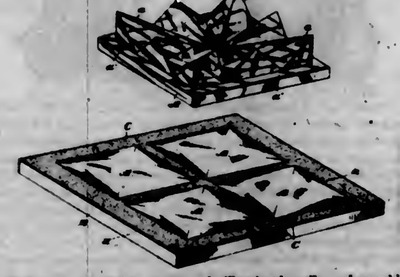
385,269.



2. As an improvement in illuminating-tiles, a lens which is provided with a central opening, substantially as and for the purpose shown.

3. As an improvement in illuminating-tiles, a lens which is provided with a central opening, in combination with a lens that is adapted to inclose the same and to fit into and be secured within the light-opening of a tile, substantially as and for the purpose shown and described.

385,270. ILLUMINATING-TILE AND ROOFING-PLATE. JACOB JACOBS, New York, N. Y. Filed Mar. 19, 1888. Serial No. 267,677. (No model.)



Claim.—1. As an improvement in illuminating-tiles, a lens which upon its lower side is provided with a series of radiating angular ribs, substantially as and for the purpose specified.

2. As an improvement in illuminating-tiles, a lens which upon its lower side is provided with a series of radiating angular ribs that increase in transverse dimensions from their inner ends outward, substantially as and for the purpose shown.

3. As an improvement in illuminating-tiles, a lens which upon its lower side is provided with a series of radiating ribs that increase in transverse dimensions from their inner ends outward and have each an outward and downward inclination, substantially as and for the purpose set forth.

4. As an improvement in illuminating-tiles, a lens which upon its lower side is provided with a series of radiating angular ribs and around and above the outer ends of each rib has a bearing-face, substantially as and for the purpose shown and described.

385,271. ILLUMINATING TILE AND WALL. (On. JACOB JACOBS, New York, N. Y. Filed Mar. 19, 1888. Serial No. 267,678. (No model.)

Claim.—1. As an improvement in illuminating tiles and wall-plates, a lens which upon one side is provided with a series of radial ribs that transversely have curved sides, substantially as and for the purpose specified.

2. As an improvement in illuminating tiles and wall-plates, a lens which is provided upon one side with radial ribs that transversely

385,271.



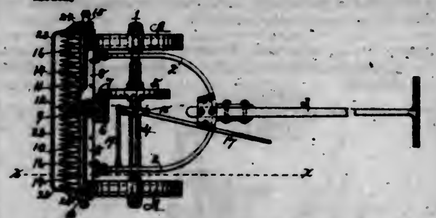
have the form of a pointed arch, substantially as and for the purpose shown.

3. As an improvement in illuminating tiles and wall-plates, a lens which upon one side is provided with radial ribs that transversely have the form of a pointed arch and at their outer ends are curved outward, substantially as and for the purpose set forth.

4. As an improvement in illuminating tiles and wall-plates, a lens which upon one side is provided with radial ribs that transversely have the form of a pointed arch and at their outer ends are ribbed, substantially as and for the purpose shown and described.

5. As an improvement in illuminating tiles and wall-plates, a lens which is provided upon one side with radial ribs that transversely have the form of a pointed arch and at their outer ends are curved outward and ribbed, substantially as and for the purpose specified.

385,272. LAWN-MOWER. HARRY H. JOHNSON, Herkimer, N. Y., assignor of two-thirds to Herbert L. Johnson and Duane C. Johnson, both of same place. Filed Feb. 2, 1888. Serial No. 262,894. (No model.)



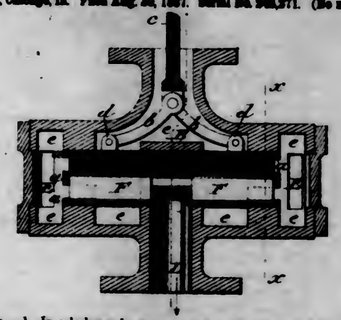
Claim.—1. A lawn-mower consisting of main drive-wheels secured upon an axle, a drive-gear upon the axle, a drive-pinion upon an arbor journaled in a standard erected upon the finger-bar, a disk secured upon the pinion-arbor and provided with a projecting pitman-arbor, an eccentric upon said arbor provided with a pitman-arbor, said pitman-arbors standing diametrically opposite each other, independent pitmen journaled at one end upon the arbors and at the other end to separate knife-bars, a finger-bar slotted longitudinally to receive the knife-bars, the separate knife-bars provided with knives, a knife-guard secured to the finger-bar at its extremities, said guard projecting out beyond the knife-points and horizontally across in front of and above them, clearers arranged at the sides of the guard and connected to it, said clearers being adjacent to the ends of the finger-bar and reciprocating knife-bars, a frame secured to the finger-bar and journaled upon the supporting and driving axle, rollers adjustably mounted in brackets connected to the downwardly-projecting arms of the frame, and a shifting-lever pivoted to a collar loosely mounted on the enlarged portion of the axle and pivotally secured to a rod pivoted to a side of the frame, whereby the frame is adapted to slide a suitable distance upon the contracted extremities of the axle at points situated between the shoulders formed by the enlarged portion of the axle and the hubs of the supporting-wheels, all constructed and operating together, substantially as described and shown, and for the purposes specified.

2. The combination of the finger-bar provided with the guard 23, secured thereto, as shown, said guard projecting out beyond the knife-points and horizontally across in front of and above them, and clearers 24, arranged at the sides of the guard and adjacent to the ends of the finger-bar and reciprocating knife-bars, and connected to the aforesaid guard, and rollers 20, connected to the frame, and the finger-bar with the reciprocating knives, knife-bars sliding in the finger-bar, and pitmen connected to the knife-bars, substantially as described.

3. The combination of the guard 23, secured to the finger-bar at its extremities, and clearers 24, arranged adjacent to the ends of said finger-bar and reciprocating knife-bars and connected to the guard at its sides, and the finger-bar with the reciprocating knives, knife-bars sliding in the finger-bar, and the pitmen connected to the knife-bars, substantially as described.

4. The guard 23, projecting out beyond the knife-points and horizontally across in front of and above them and secured to the finger-bar, and a clearer, 24, arranged at either side of the guard and adjacent to the ends of the finger-bar and knife-bars, and connected to said guard at its sides, in combination with the finger-bar 8, carrying the knife-bars and knives, substantially as described.

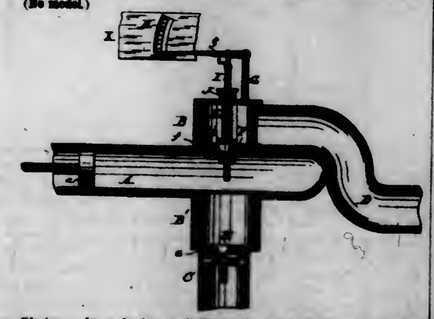
385,273. BALANCED GOVERNOR-VALVE. PHILIP S. KINSLAER, Chicago, Ill. Filed Aug. 20, 1887. Serial No. 248,571. (No model.)



Claim.—1. In a balanced governor-valve, the tubular valves F F, surrounded by steam-spaces *c c*, the links *b b*, and spindle *e*, in combination with the case, all arranged and operated in the manner substantially as shown and described.

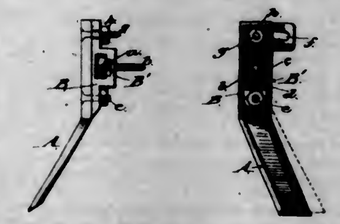
2. In a balanced governor-valve, the outer casing, A, inner casing, B, induction-pipe C, eduction-pipe D, side pipes, E E, and valves F F, inclosed in the annular space *c*, when arranged as shown and described, and for the purposes set forth.

385,274. AUTOMATIC WATER-MEASURING DEVICE. WILLIAM LANDERS, Stone Church, Ill. Filed Dec. 20, 1886. Serial No. 222,067. (No model.)



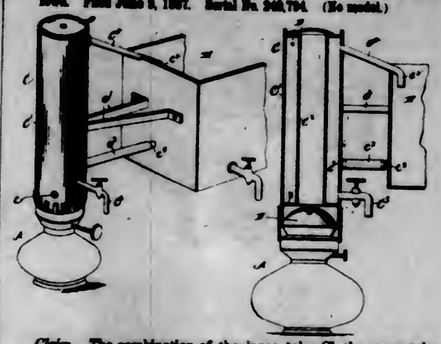
Claim.—In a device to indicate the amount of water passing through a pump, the combination, with the piston and upper and lower valves F, of the standard G, rising from the roof of the chamber of said valve, the index-arm *g*, pivoted to the end of the standard, the scale H, made on the arc of a circle concentric with the pivotal point of the index-arm, the link *i*, pivoted at a suitable point on the index-arm, the rod I, connected by the link with index-arm, and having on its lower end the disk *j*, resting upon but not attached to the valve, and the spring K, surrounding the rod I between the disk *j* and the roof of the valve-chamber, substantially as specified.

385,275. CULTIVATOR-SHOVEL. DANIEL LIMES, Groveport, Ohio. Filed Feb. 20, 1888. Serial No. 265,023. (No model.)



Claim.—The combination, with a cultivator-standard, of the plate B, having the recess *a* and the curved slots *c* and *f*, the headed bolt in the recess projecting through the slot *c* and securing the plate to the standard, and the boot shovel A, pivoted to the bottom of said plate and provided with a bolt, *g*, adapted to pass through the upper slot, *f*, whereby the shovel may be adjusted, and a nut engaging said bolt and securing the shovel to the plate, substantially as described.

385,276. WATER-HEATER. GEORGE W. LOWDEN, Centre Point, Iowa. Filed June 9, 1887. Serial No. 240,704. (No model.)



Claim.—The combination of the inner tube, C', the outer tube, C, connected to the inner tube and forming a water-jacket therewith, an outflow-spigot at the lower end of said water-jacket, a tank, E, arranged to one side of the outer tube, taps *c'*, formed on said tank and outer tube, a pipe, *d'*, fitted on said taps, a pipe, *d*, leading from the upper end of the outer tube over the upper edge of the tank and into the same, and the securing-arms *c'*, projecting laterally from the outer tube, substantially as set forth.

385,277. GAS-STOVE. WILLIAM MOORE, Kokomo, Ind. Filed Jan. 31, 1888. Serial No. 262,802. (No model.)



Claim.—1. In a heating-stove, the combination of the following elements, namely: a combustion-chamber, a hollow base arranged beneath the combustion-chamber and forming a part of the passage for the escape of products of combustion from said chamber, flues connecting the upper part of the combustion-chamber with said hollow base, said hollow base being provided with openings which communicate with an exit-flue, a gas-burner arranged within the combustion-chamber with its discharge-opening downward, and a series of tubes arranged beneath said burner and passing through the hollow base, whereby communication is established between the exterior air beneath the base and the interior of the combustion-chamber and the gas-jet is projected against and surrounded by a series of ascending hot-air currents, substantially as specified.

2. In a heating-stove, the combination, with the combustion-chamber, the flues *n n*, the compartment *e* in the hollow base, having openings *r* and forming a part of the passage for the escape of the products of combustion from said chamber, the exit-flue communicating with said openings *r*, and the series of tubes arranged beneath said burner and passing through the compartment *e*, of the compartment *f*, arranged beneath said compartment *e* and having openings *l*, all arranged to co-operate substantially as and for the purpose specified.

3. In a heating-stove, the combustion-chamber D, having lateral extensions *y y*, base B, having compartment *e*, provided with openings *r*, and compartment *f*, provided with openings *l*, hollow columns *n n*, tubes *j*, walls *h* and *o*, having space *p* between them, said space having no opening, *s*, and forming a passage for the escape of the products of combustion, and the gas-supply pipe arranged in said space *p*, and having a burner attached within the combustion-chamber, all combined and arranged to co-operate substantially as and for the purpose specified.

385,278. FRONT-PROTECTOR FOR FOUNDATIONS. ELIAS H. HOGAN, Hillsdale, N. Y. Filed Nov. 12, 1887. Serial No. 254,988. (No model.)

Claim.—1. In a front-protector, the combination, with the foundation A and the sliding sleeve D, resting on the foundation A, of the post

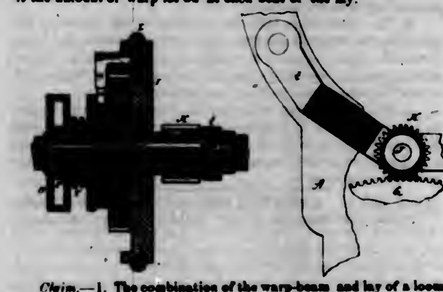


B, provided with the circumferential shoulder *c'* and the plate-piece designed to fit thereon, substantially as specified.

2. In a frost-protector for foundations, the combination, with the foundation A, below the frost-line, of the post B, having the threaded upper end, the plate C, having the threaded opening to engage the threads of the post, and the sleeve D, resting upon the foundation, substantially as specified.

385,279. LET-OFF MECHANISM FOR LOOMS. JAMES HOPKINS, Guttenkill, R. I. Filed Oct. 17, 1887. Serial No. 252,543. (No model.)

Brief.—A bracket pivoted to the loom-frame supports a shaft carrying a spring-actuated drum and a pinion having a disk formed therewith, the drum being provided with teeth to engage a pawl on the disk and the pinion being in gear-connection with the warp-beam. A strap wound about the drum is connected to a lever in the path of one of the lay-swords. At the forward beat of the lay the drum is rotated, winding up the spring within it and communicating motion to the warp-beam. At the return beat of the lay the spring retates the drum reversely, restoring the lever to a position to be again struck by the lay. A tension-bar over which the warps pass is connected to and regulates the position of the lever in front of the lay and through it the amount of warp let off at each beat of the lay.



Claim.—1. The combination of the warp-beam and lay of a loom, the wheel I, the pinion K, concentric with the wheel I, and connected to said wheel I so as to revolve therewith, the said pinion being in gear-connection with said warp-beam, a spring-actuated drum hung concentric with said wheel I, a ratchet, R, concentric with and adapted to rotate with said spring-actuated drum, a pawl on said wheel I, arranged to engage the teeth of the said ratchet, a pulley concentric with and arranged to rotate with said spring-actuated drum and ratchet, a band fixed by one end to said pulley, a lever hung forward of the lay, the free end of said lever adapted to engage with the lay as the lay advances, and a connection between said lever and said band, substantially as and for the purpose described.

2. The combination of the warp-beam and lay of a loom, the bracket *l*, hung to the frame of the loom and so as to swing in a vertical plane, and carrying a shaft, J, the wheel I, and a pinion, K, both on said shaft and connected so as to revolve together, the said pinion K in gear-connection with the warp-beam, the spring-actuated drum O, pulley and ratchet R, arranged loose upon the shaft concentric with said wheel I and adapted to rotate together, a pawl on said wheel I, arranged to engage said ratchet, a lever, *a*, hung forward of the lay, its free end arranged to engage the lay as the lay advances, and a band secured by one end to said pulley and its other end in connection with the said lever *a*, substantially as and for the purpose described.

3. The combination of the warp-beam and lay of a loom, the lever *a*, hung forward of the lay, its free end arranged to engage with the lay as the lay advances, the tension-bar *g*, lever A, carrying said tension-bar, a connection between said lever A and said lever *a*, the wheel I, a pinion concentric with said wheel I and so as to revolve therewith, the said pinion in gear-connection with the warp-beam, the spring-actuated drum O, pulley and ratchet R, arranged to rotate together and concentric with said wheel I, a pawl on said wheel I, adapted to engage the said ratchet R, and a band, one end secured to said pulley and the other in connection with said lever *a*, substantially as and for the purpose described.

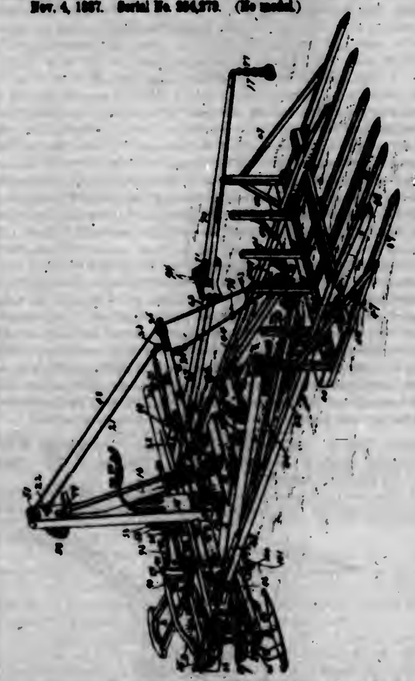
4. The combination of the warp-beam and lay of a loom, with the wheel I, a pinion concentric with said wheel I and so as to revolve therewith, the said pinion in gear-connection with the warp-beam, the spring-actuated drum O, pulley, collar *l*, and ratchet R, arranged to rotate together and concentric with said wheel I, a pawl on said wheel arranged to engage the teeth of said ratchet, a friction-spring, *m*, around said collar, one end of said spring in connection with said pawl, a lever, *a*, forward of the lay and with which the lay is adapted to engage in its advance movement, and a band, one end secured to said pulley and the other end in connection with said lever *a*, substantially as described.

385,280. WATER-WHEEL GOVERNOR. JAMES HOPKINS, Guttenkill, R. I. Filed Oct. 31, 1887. Serial No. 253,510. (No model.)



Claim.—The combination of the gate of a water-wheel and a governor, substantially such as described, with a cylinder, a piston in said cylinder, the piston-rod in connection with said gate, a valve-chamber having ports leading therefrom to the respective ends of said cylinder, and also provided with inlet and escape passages, a valve in said chamber adapted to open and close said ports to said chamber or escape, as the case may be, a bell-crank lever, L, and a rod, M, forming connections between said governor and valve, the said rod constructed with a notch, *f*, adapted to detachably engage said lever L, said lever L constructed with a finger, *i*, adapted to disengage said rod from said lever, substantially as described.

385,281. HAY-LOADER. WALTER S. RUSSELL, Hebron, Ind. Filed Nov. 4, 1887. Serial No. 254,579. (No model.)



Claim.—1. The combination, with the A-frame 3, of the tongue 6, consisting of the stationary front section, 7, and the movable rear section, 8, having the slanting sides, and the plates 9, secured thereto and having the slotted projecting forward ends, 11, and a pivot-bolt, 10, the said stationary section of the tongue being secured to the A-frame.

2. The combination, with the A-frame 3, supported at its forward end by the privalsi wheel 13 and adapted to be movably secured at its rear end to the axle of the wagon, of the main cross-beam 5, having the hooks 46 on its forward side, the fork hinged on the said

hooks, the large centrally-pivoted evener 26, having at one end a singletree, 32, and having secured to its other end the rope-clutch 33, formed with the enlarged portion 36 and the contracted portion 37, the post 15, the movable brace 18, and the hoisting-rope 48, having the singletree 54 secured to its outer end and formed with a stop, 55, near the said end.

3. The combination, with the A-frame 3, supported at its front end by the swivel-wheel 13, and the main cross-beam 5, having the end blocks, 28, of the tongue 6, consisting of the stationary front section, 7, and the movable rear section, 8, having the slanting sides, and the plates 9, secured thereto and having the slotted projecting forward ends, 11, and the pivot-bolt 10, the centrally-pivoted evener 26, and the bails 30, extending over the same.

4. The combination, with the A-frame 3, having the main cross-beam 5, hooks 46, secured in said cross-beam, and the fork 39, having the eye-plates 45 upon the rear ends of its shank-bars 43, and having the central eyebolt, 50, upon its rear cross-bar, 40, of the post 15, having the roller 51 journaled in its upper end, and the eyebolt 22 upon the forward side of said end, the stop-block 79, and the spring-arms 80, the stationary brace 16, the hinged swinging brace 18, formed with the longitudinal slot 20, and having the roller 25 journaled in its outer end, and the eyebolts upon the upper and lower sides of the said end, the stay-rope 21, and the hoisting-rope 48, formed with a stop, 78, and provided with a pulley-block, 49.

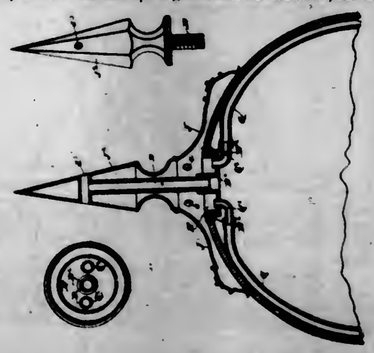
5. In a hay-loader, the combination, with the A-frame, of the rear cross-beam having the bracket secured upon one of its ends, the main cross-beam having the inclined end block provided with a spring-catch, and the front recessed block having a spring-catch, and the adjustable tongue consisting of the rear section having the bracket formed with perforations upon its forward end and the pivoted front section having the perforation in its rear end, and the pin or key, substantially as set forth.

6. In a hay-loader, the combination, with the A-frame having the main cross-beam and the long evener, of the V-shaped drag-frame hinged to the side of the A-frame at its inner end, having the points at its outer ends and the eye upon its center, the connecting-chain, and the hook depending from the evener, substantially as set forth.

7. The combination of the A-frame supported at its front end by the swivel-wheel, having the doubletree pivotally secured beneath it, and having the bails upon its rear ends, the rear cross-beam having the bracket upon its end, the main cross-beam having the front hooks, the straight block upon one end, and the slanting block provided with the spring-catch upon its other end, the tongue consisting of the stationary front section and the movable rear section, the centrally-pivoted evener having the singletree at one end and having secured upon its other end the rope-clutch formed with the enlarged and the contracted portions, the bails extending over the said evener, the removable fork, the post having the roller in its upper end and the front eyebolt, the stop-block, and the spring-arms, the stationary brace, the hinged swinging brace formed with the longitudinal slot and having the roller journaled in its outer end and the upper and lower eyebolts, the stay-rope, the hoisting-rope having the pulley-block 49, and formed with a stop near its inner end, and having another stop formed in it near its outer end, and the singletree secured to the said outer end, the front recessed block having a spring-catch, and the adjustable tongue consisting of the rear section pivoted at its rear end and having the perforated bracket upon its forward end and the pivoted front section having the perforation in its rear end, and the key or pin, all substantially as set forth.

385,282. VENTILATED HAT. MILES POPLEWAITE, Whitehaven, County of Cumberland, England. Filed Jan. 17, 1888. Serial No. 260,970. (No model.)

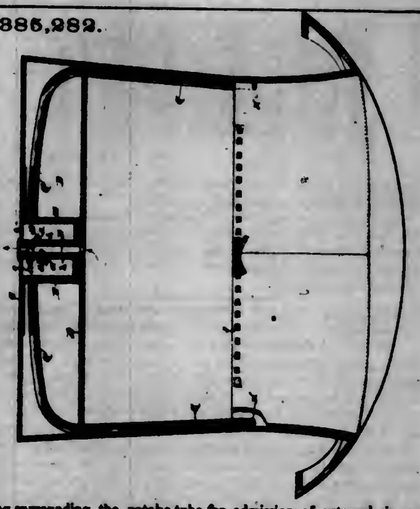
Claim.—1. The combination, with the hat-body, of the uptake or exit tube provided with side openings and internal deflectors, the casing surrounding the uptake-tube for admission of external air, and channels leading therefrom to the interior of the hat, as and for the purposes hereinbefore set forth.



2. The combination, with the hat-body, of the uptake or exit tube provided with side openings and internal deflectors, the casing surrounding the uptake-tube for admission of the external air, and the tubes G, leading from said casing to the lower part of the hat, substantially as and for the purposes hereinbefore set forth.

3. In hat-ventilating apparatus, the combination, with the hat-body and the casing E, for admission of external air, of tubes G, leading from said casing to the lower part of the interior of the hat, with their lower ends shielded or protected from the portion of the hat containing the heated air.

385,283. CONVERTIBLE DRAIN-CLEANER. ERNST J. ROSENDAL, Toledo, Ohio. Filed Dec. 19, 1887. Serial No. 258,302. (No model.)



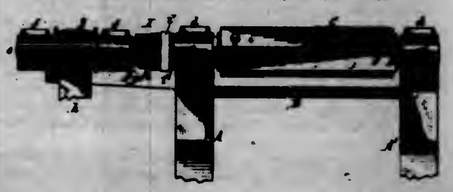
Claim.—1. In a drain-cleaner, a scoop, in combination with a detachable end portion, as and for the purpose set forth.

2. In a drain-cleaner, a scoop, a bail connected therewith, and a removable end portion provided with a bar adjustably connected with the bail, as and for the purpose set forth.

3. In a drain-cleaner, in combination with a scoop, a removable and reversible end portion, as and for the purpose set forth.

4. In a drain-cleaner, a scoop, a removable end portion, in combination with a bail secured to the scoop and having an under-arched portion provided with a dovetail groove in which the end portion is secured, and an upper segmental cogged portion having a handle pivoted thereto and held to any adjustment relatively to the scoop by means of a locking-lever, as and for the purpose set forth.

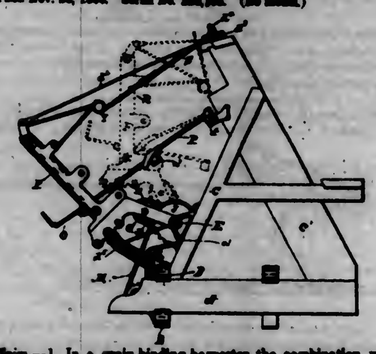
385,284. WOOD-PLANING MACHINE. JONAH BEEM, Buffalo, N. Y. Filed Feb. 28, 1888. Serial No. 265,801. (No model.)



Claim.—1. In a planing-machine, the combination, with the main frame and a rotary cutter-head provided with spindles mounted in the main frame, of an independent driving-shaft and a universal or yielding coupling, whereby said driving-shaft is connected with one of the spindles of the cutter-head, substantially as set forth.

2. In a planing-machine, the combination, with the main frame and a rotary cutter-head or cylinder provided with spindles mounted in bearings in the main frame, of an independent driving-shaft and a universal coupling connecting said driving-shaft with one of the spindles of the cutter-head, and consisting of a sleeve and two connecting-pins secured, respectively, to the ends of the shaft and spindle, and arranged in openings formed in the sleeve, substantially as set forth.

385,285. GRAIN-BINDING HARVESTER. ALEXANDER G. RAMM, Canton, Ohio, assignor to the Pearless Reaper Company, same place. Filed Nov. 29, 1886. Serial No. 220,162. (No model.)



Claim.—1. In a grain-binding harvester, the combination, with the harvester-frame, of a binder-supporting frame having a hinged connection with the harvester-frame at a point outside of the center of the binder and packer actuating shaft, and means for raising and lowering the binder-deck during the progressive movement of the machine, whereby the binder may be raised to pass obstructions or folded over upon the machine and secured in either elevated or depressed adjustment, substantially as set forth.

2. In a grain-binding harvester, the combination, with a binder-frame pivotally secured to a harvester and a packer and binder actuating shaft mounted in said frame, of gearing by which said shaft may be rotated about its own center, while it is moved bodily with the binder-frame as the latter is being moved about its pivot to the harvester-frame.

3. The combination, in a grain-binding harvester, of a binder-supporting frame having a pivotal connection with the harvester-frame, a packer and binder actuating shaft mounted in said binder-supporting frame, a wheel, H, carried by and adapted to rotate said packer and binder shaft, and the wheels I and J, adapted to be rotated about a center corresponding with that of the pivotal connection of the binder-supporting frame with the harvester-frame and geared to wheel H, substantially as set forth.

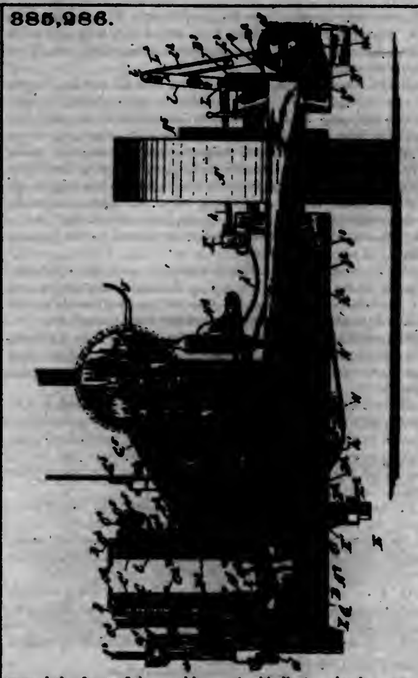
4. The combination, in a grain-binding harvester, of a pivotal binder-frame and a storm-deck adapted to be contracted and expanded to cover the space over the grain-deck between the binder-frame and the upper part of the harvester-frame as the binder is raised or lowered, substantially as shown, and for the purpose set forth.

5. In a grain-binding harvester, the combination of a pivoted binder-frame and a storm-deck, one end secured to the harvester and the other to the binder, and adapted to be contracted or expanded over the grain-deck with the raising, lowering, or folding of the binder, substantially as set forth.

6. In a grain-binding harvester, the combination, with the pivoted binder-frame, of the expansible storm-deck composed of two sections, one section pivoted to the binder-frame and the other section to the harvester-frame, the said sections having interlocking mechanism, whereby they are connected to each other, so as to slide one upon the other as the binder is folded, substantially as set forth.

385,286. CORN-HARVESTER. GILBERT B. SHAW and JAMES T. SHAW, Sugar Grove, Ill. Filed Apr. 15, 1887. Serial No. 234,973. (No model.)

Claim.—1. In a corn-harvester, the combination, with the cutter, of laterally-moving conveyers arranged in the rear of the same, gathering and carrying chains arranged on each side of the cutter in advance of the same and extending diagonally upward and rearward and then horizontally rearward to a point slightly in the rear of the cutter, whereby the stalks are laid upon the conveyers with their butts



toward the front of the machine, and a binding mechanism arranged to receive the stalks from the conveyers and bundle and bind the same, substantially as and for the purposes specified.

2. In a corn-harvester, the combination, with the main frame and the cutter mounted thereon, of the carrying-chains and their guide-supports, the gathering-arms connected to the guide-supports, and the uprights D^2 secured to the guide-supports and adjustably connected to the main frame by eyebolts d^2, substantially as and for the purposes specified.

3. In a corn-harvester, the combination, with the gathering-arms E, of the gathering-fingers E^2, pivoted to the lower ends of said arms, and the adjusting-bolts *e*, each pivoted near the front end of the gathering-fingers, extending rearward through a suitable lug, *d*, on the end of the gathering-arm E, and provided with adjusting-nuts e^2 on each side of said lug, substantially as and for the purposes specified.

4. In a corn-harvester, the carrying-chains C, arranged on each side of the cutter in advance of the same and extending diagonally upward and rearward and then horizontally rearward to a point slightly in the rear of the cutter, substantially as and for the purposes specified.

5. In a corn-harvester, the combination, with the cutter B, the deck I, the reciprocating conveyers G^2, and the binding mechanism, of the transverse vertical shield G^3, arranged in front of the conveyers and extending from the cutter to the binding mechanism, and the endless-belt butter G^4, arranged in a suitable aperture in said shield, substantially as and for the purposes specified.

6. In a corn-harvester, a bundle-discharger pivoted on an axis arranged longitudinally of the machine outside of and below the top of the main wheel, the said bundle-discharger swinging vertically in the arc of a circle over the main wheel to discharge the bundle from the machine, substantially as and for the purposes specified.

7. In a corn-harvester, the combination, with a suitable binding mechanism, of a bundle-discharger arranged to receive the bundle as it comes from the binder, actuating mechanism to cause said bundle-discharger to swing vertically in the arc of a circle to discharge the bundle, and a trip-arm arranged in the path of the bundle and actuated by the same to start the actuating mechanism of the bundle-discharger, substantially as and for the purposes specified.

8. In a corn-harvester, the combination, with the bundle-discharger swinging vertically in the arc of a circle and actuated positively during its outward throw, but free to return quickly to its original position by gravity, of spring-buffers arranged to receive the shock of the bundle-discharger as it falls back to its normal position, substantially as and for the purposes specified.

9. In a corn-harvester, the bundle-discharger K, consisting of a bar, K', provided with spring-arms K', an arm, k, to which said bar is attached, and suitable operating mechanism, substantially as and for the purposes specified.

10. In a corn-harvester, the combination, with the cutter, of lateral conveyers arranged in the rear of the same, carrying-chains to gather the stalks and carry them to the cutter and deliver them with their butts to the front of the machine upon the lateral conveyers, a twine binding mechanism to receive the stalks from the conveyers and bundle and bind the same, and the bundle-discharger arranged at the side of the binding mechanism swinging on a longitudinal axis arranged outside of and below the top of the main wheel to receive the bundle from the binding mechanism and discharge the same from the machine at the side over the main wheel, substantially as and for the purposes specified.

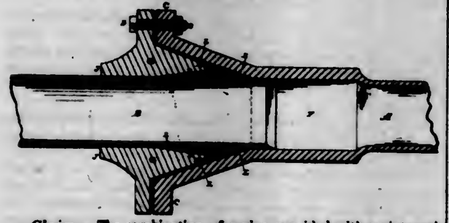
11. In a corn-harvester, the combination, with the bundle-discharger K, of the rock-shaft L, carrying the same and provided with arm *l*, the link L^2 to said arm, the disk M^2, mounted loosely on the continuously-rotating shaft M and provided with a crank-arm connected to said link, and a clutch mechanism controlled by a suitable trip to automatically connect and disconnect said disk, and the shaft to operate the bundle-discharger, substantially as and for the purposes specified.

12. In a corn-harvester, the combination, with the shaft M, having collar M' with pins *m'*, of the disk M^2, provided with a crank-arm connected by a suitable link to the rock-shaft of the bundle-discharger, the spring-pawl N, having arms *n* and *n'*, the stop-arm O, and the trip P, connected to said stop-arm, substantially as and for the purposes specified.

13. In a corn-harvester, the combination, with the rock-shaft L, carrying the bundle-discharger K and having arm *l* with pin *l'*, of the disk M^2, having crank-arm M^3, and the link L^2, connected to said crank-arm and slotted longitudinally to receive the pin *l'*, substantially as and for the purposes specified.

14. In a corn-harvester, the combination, with the bundle-discharger K and its rock-shaft L, having arm *l*, of the disk M^2, having crank-arm M^3, and the link L^2, connected to the arm *l* and provided with the adjustable extension L^3, pivoted to the crank-arm, substantially as and for the purposes specified.

385,287. PIPE-COUPLING. JOHN STOUT, Castle Shannon, Pa. Filed June 13, 1887. Serial No. 241,147. (No model.)



Claim.—The combination of a pipe provided with an integral flaring socket at one end and with a cylindrical chamber adjacent to said socket corresponding in internal diameter with the external diameter of the pipe to be joined, said flaring socket being provided with an exterior flange at its outer end, a pipe having a plain end of the same diameter as said cylindrical chamber, an annular compressor having a collar of a diameter to fit the plain-ended pipe and an exterior flange corresponding with the flange of said socket, the inwardly-projecting portion of said compressor being beveled on both its inner and outer faces, the bevel of the outer face corresponding with the flare of said socket for a certain distance from said collar, and being greater near the inner end of the compressor, packing within said socket surrounding said plain-ended pipe, and bolts passing through said flanges for compressing said packing, substantially as described.

385,288. JOURNAL-BOX. WILLIAM B. TURNER, Schenectady, N. Y. Filed Oct. 14, 1887. Serial No. 252,313. (No model.)

Claim.—1. A journal-bearing having an internal circumferential groove at its middle part, an opening through the bearing from said groove, and spiral grooves or depressions extending from each end to said middle groove, substantially as set forth.

2. A journal-bearing having an internal circumferential groove at its middle part, an opening through the bearing from said groove, and spiral grooves extending from each end to said middle groove, said spiral grooves being filled with soft metal and forming channels for conveying oil along the bearing, substantially as set forth.

3. A journal-bearing having internal spiral grooves or depressions extending from each end to the middle of the bearing, in combination with the lower oil-chamber beneath the bearing, a passage from the middle of the bearing to said oil-chamber, the upper communicating oil-chamber, and a lifting device at each end of the bearing for raising oil from said upper oil-chamber and delivering it to the bearing, substantially as set forth.

385,288.



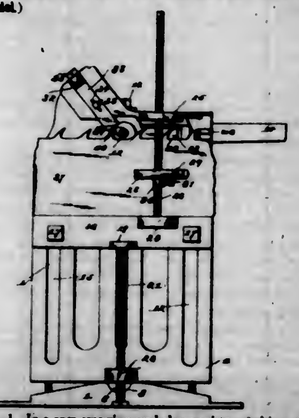
385,289. SLEIGH-RUNNER. EDWARD K. VAN SICKLEN, Haverstraw, N. Y. Filed Mar. 5, 1888. Serial No. 266,602. (No model.)



Claim.—1. The combination, with the bracket having an outwardly-projecting curved arm provided with a groove or recess, of the T-shaped collar having a lower cylindrical portion fitted in said groove or recess and an upper normally-horizontal portion, and the clip having its ends secured to said collar, substantially as shown and described.

2. The combination, with the bracket having the outwardly-projecting arms, one of which is provided with two opposite ears or lugs integral therewith, of the axle-box having the apertured cheek secured between said ears or lugs, the T-shaped collar having a lower cylindrical portion fitted on one of said arms and having an upper normally-horizontal portion, and the clip having its ends secured thereto, substantially as shown and described.

385,290. SAW SWAGE AND SHARPENER. WILLIAM H. WILLIAMS, Huntington, W. Va. Filed Dec. 14, 1887. Serial No. 257,999. (No model.)



Claim.—1. In a saw swaging and sharpening machine, the combination, with the rotted die formed with the cut-away oblong operative end, of the square die cut away at its lower operative end to form the sharp transverse shoulder, substantially as set forth.

2. The combination, with the main frame formed at its upper end with the tubular bearing having the exterior annular groove, of the round die and the handle secured to the outer end of the said die and having the stop-plate, substantially as set forth.

3. The combination of the main frame formed at its upper end with the tubular bearing and the inclined recessed bearing, the square die, and the round die.

4. The combination of the main frame formed at its upper end with the tubular bearing and the inclined recessed bearing, the square die formed with the longitudinal slot, the set-screw and adjusting-screw for the said die, and the round die having the operating-handle, substantially as set forth.

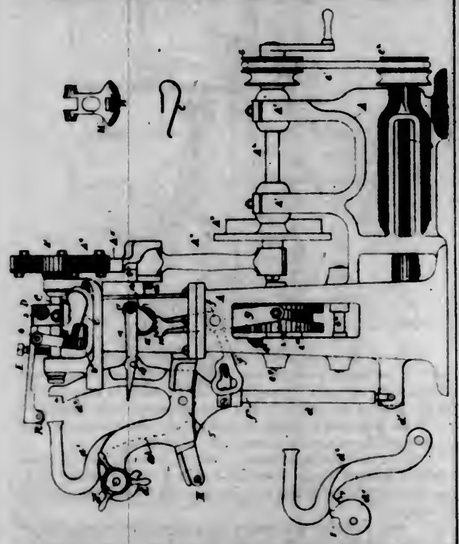
5. The combination, with the main frame formed at its upper end with the tubular bearing, and the horizontal recess opening at its inner end into the forward end of the said bearing, and the inclined recessed bearing, of the square die, the round die having the operating-handle, and the block formed with the curved inner end and having the retaining-screw passing through a slot in the main frame, and the adjusting-screw, substantially as set forth.

6. The combination, with the main frame formed with the longitudinal slots and the bottom lug on its front side, of the transverse bar having the retaining-bolts at its ends and formed with the central lug on its outer side, and cut away along its upper inner edge to form the longitudinal shoulder, and the adjusting-screw, substantially as set forth.

7. The combination, with the main frame formed with the longitudinal slots and the bottom and top lugs on its front side, of the transverse bar having the retaining-bolts at its ends, formed with the two outer lugs, and cut away along its inner upper edge to form the longitudinal shoulder, the adjusting-screw, the rod 26, and the locking-cam, substantially as set forth.

8. The combination of the base formed with the inclined upper side and the central transverse recess, the main frame formed with the wide bottom piece having the end slots and the central bearing, the bottom and top lugs, the longitudinal slots, and the bearings at its upper end, the transverse bar having the end bolts and formed with the longitudinal shoulder and the outer lugs, the adjusting-screw, the rod 26, and the locking-cam, the square die, the round die having the operating-handle, and the adjustable block formed with the curved inner end, substantially as set forth.

385,291. KNEE-PLASTERER. CHARLES J. ABOTT, Malden, Mass., assignor to the Tapley Machine Company, Portland, Me. Filed Feb. 27, 1888. Serial No. 265,502. (No model.)



Claim.—1. In a burnishing-machine, the following elements, viz: a burnisher-carrying arm and a rock-shaft to actuate the said arm, a counterbalance-block pivoted to the said burnisher-carrying arm, and a spring to engage the said block and retain it while the burnisher-arm moves outwardly under the action of the varying shape of the heel being treated, substantially as described.

2. The combination, with the arms d^3 d^4 of the jack, of the pivoted goose-neck and the cam for actuating the goose-neck, substantially as described.

3. The jack having a stud or pin, the hook 18, crank 16, and gear 15, combined with the sector-lever and cam to operate it, substantially as described.

4. The jack having an attached roll or stud, as 16, combined with a vibrating arm, as *f'*, having a cam-slot, *f''*, to receive the said roll or stud and raise and lower the jack, substantially as described.

5. The jack having two studs or projections, as 19 and 10, the hook-arm 18, crank 16, pinion 15, and sector-lever 14, having the cam-slotted arm *f'*, combined with a cam to actuate the said sector-lever, substantially as described.

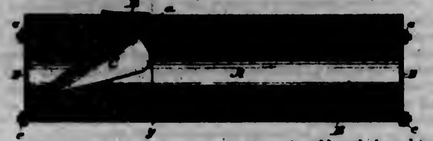
6. In a burnishing-machine, a jack to hold a boot or shoe the heel of which is to be burnished, combined with the cam c^{10}, a lever actuated thereby to raise the jack and permit it to descend at the established time, and intermediate connections between the said lever and jack, whereby the jack is moved automatically in and out, substantially as described.

7. In a burnishing-machine, two shoe-holding jacks and two levers and intermediate connections between them and the said jacks, combined with a cam-wheel to actuate both the said levers simultaneously in opposite directions, each lever and its connections moving each jack independently of the other both in and out under the burnishing-tool and up and down, substantially as described.

8. The combination, with the jacks, of the driving-shaft, the supplemental shaft c^9, the gears, the cam, and the levers, and intermediate connecting devices between the said levers and jacks to throw the jacks in and out, substantially as described.

9. In combination, the two jacks, the cam-wheel, the two levers, and connecting mechanism between them and the two jacks, whereby the jacks are thrown in and out from the machine at different times instead of together, substantially as described.

385,292. DRAIN-TILE. HENRY H. BALDLEY, Assumption, Ill., assignor of three-fourths to Dudley J. Watson, James R. Milligan, and Peter L. Mayer, all of same place. Filed Dec. 28, 1887. Serial No. 258,617. (No model.)



Claim.—1. A drain-tile composed of a series of lengths bound together, and a support having a gate attached thereto clamped in between the ends of two lengths of the series, substantially as described.

2. The combination, with the two drain-tiles placed end to end and means for binding them together, the opposing end of one tile being recessed, of the gate and the spring-support embracing the tile at one side and fitting in said recess, substantially as and for the purpose described.

385,293. POLICEMAN'S BATON OR CLUB. EDWARD D. BEAN, Arlington, Mass. Filed Aug. 6, 1887. Serial No. 246,269. (No model.)



Claim.—1. A policeman's baton having a body composed of a plurality of layers or pieces of thick firm leather, a core or center consisting of a plurality of flexible wires, a weighted slug in the striking end, and a sling-eye swiveled in the end of the handle, substantially as and for the purpose hereinbefore set forth.

2. A policeman's baton or club having a body composed of leather, a core or center consisting of a plurality of steel wires, a weighted slug, *b*, of metal in the striking end, and the whole covered first with canvas, and finally with leather, as set forth.

385,294. ADJUSTABLE DOUBLE PLOW. ASA A. BILLINGSLEA, Cherry Grove, Ark., assignor of one-half to Alberry Childers. Filed Mar. 30, 1888. Serial No. 267,510. (No model.)

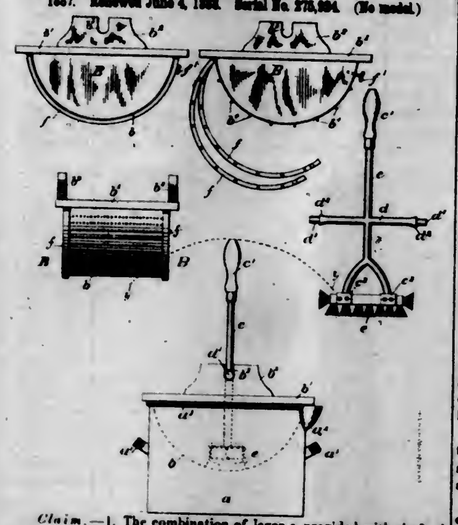


Claim.—1. In a double adjustable plow, as above described, the combination, with the tongue-beam A, cross-beam B, and lock-bar E, of the side bars, C, having the recesses *c*, the plow-standards D, having the solid foot or landside *d*, and perforated arms *d'*, all substantially as shown and described, and for the purposes set forth.

2. The combination, in a plow, as above described, of the recessed plates *c*, slotted plow-standard D, secured to said plates, abutment H, having the mold-board A^2, secured to the front edge of said plow-standard, and plow-point G, having the mold-board *g*, co-operating with said mold-board A^2, substantially as shown and described.

3. The combination, in a plow, as above described, of the tongue-beam A, plow-standard D, having the solid foot or landside *d*, and perforated arms *d'*, said arms one fitting against each side of said beam, collar *j*, fitting over said beam and standard, and bolts *j'*, one passing through the upper perforations and impinging against the upper edge of said beam, and the other passing through the lower perforations and impinging against the lower edge of said beam, substantially as shown and described.

385,295. STRAINER. ARNOLD BOSS, Chicago, Ill. Filed Apr. 19, 1887. Renewed June 4, 1888. Serial No. 276,594. (No model.)



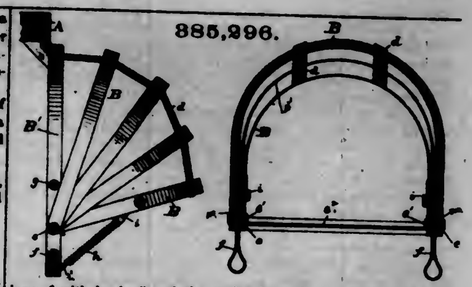
Claim.—1. The combination of lever *c*, provided with shaft *d*, and the brush *e*, with the holding-frame consisting of side walls, B, flange *b'*, and bearing b^3, and the screen *b*.

2. The combination of the detachable screen *b* with the holding-frame provided with pins b^4, beads *f*, and the screws *f'*.

3. The combination of the oscillating lever *c*, provided with shaft *d*, and the brush *e*, with the screen *b*, the holding-frame, and the receiving-pan *a*, having lip a^3.

385,296. BUSTLE. VICTOR H. BRUEHMANN, Baltimore, Md., assignor to Augustus H. Brinkmann, same place. Filed Feb. 23, 1888. Serial No. 264,979. (No model.)

Claim.—In a bustle, the combination, with the waistband, the body-bow B', secured thereto, said bow having on each lower end a loop, *f*, with hooks *f'*, and the eyeleted openings *e*, of the series of bows B, the rod e^2, having looped ends *d'*, connecting the ends of the bows B to body-bow B' through said openings *e*, the lower bow, B, having hooks *i*, and the springs A, connecting said hooks *i i'* in an inclined position, as set forth.



385,297. PHOTOGRAPHIC SHEET. ISAAC COHN, New York, N. Y., assignor to Rideout Cohn, same place. Filed Jan. 21, 1888. Serial No. 261,382. (No specimens.)

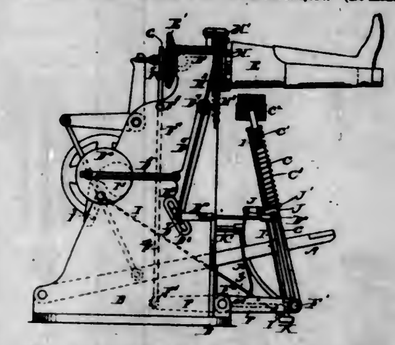
Claim.—1. As a new manufacture, paper coated with gelatine, shellac, and lamp-black and japanned, substantially as set forth.

2. As a new manufacture, paper coated with shellac and lamp-black and japanned, substantially as set forth.

3. The process herein described, consisting in first coating paper with a solution of gelatine, then drying the gelatine, then applying the coating of shellac and lamp-black, then japanning the resulting product and baking or drying the japan, substantially as described.

4. The process herein described, consisting in coating paper with shellac and lamp-black, then japanning the same and baking or drying the japan, substantially as set forth.

385,298. BOOT-TREEING MACHINE. GEORGE W. COPELAND, Malden, Mass. Filed Apr. 28, 1888. Serial No. 271,657. (No model.)



Claim.—1. In a machine for treeing boots, the combination, with a rotary or oscillating boot-tree and a suitable support therefor, of leg-rubbing tools actuated by mechanism, substantially as described, to rub the boot-leg automatically, said tools operating on the leg portion only, in the manner as described, so that the foot may at the same time be operated upon by hand, substantially as set forth.

2. In a boot-treeing machine, a rotating or oscillating tree, a pattern-cam mounted on the end thereof, a series of leg-rubbing tools, and intermediate connecting and operating mechanisms, substantially as described.

3. In a boot-treeing machine, the pattern-cam G, operating to cause the swinging frame F to follow the contour of a revolving boot-leg stretched upon a tree, substantially as described.

4. In a boot-treeing machine, the crank-disk D^4, connecting-rod D^5, pendulum-lever D^6, and intermediate rod, D^{10}, in combination with the tool-carrying arm C, all substantially as shown and described.

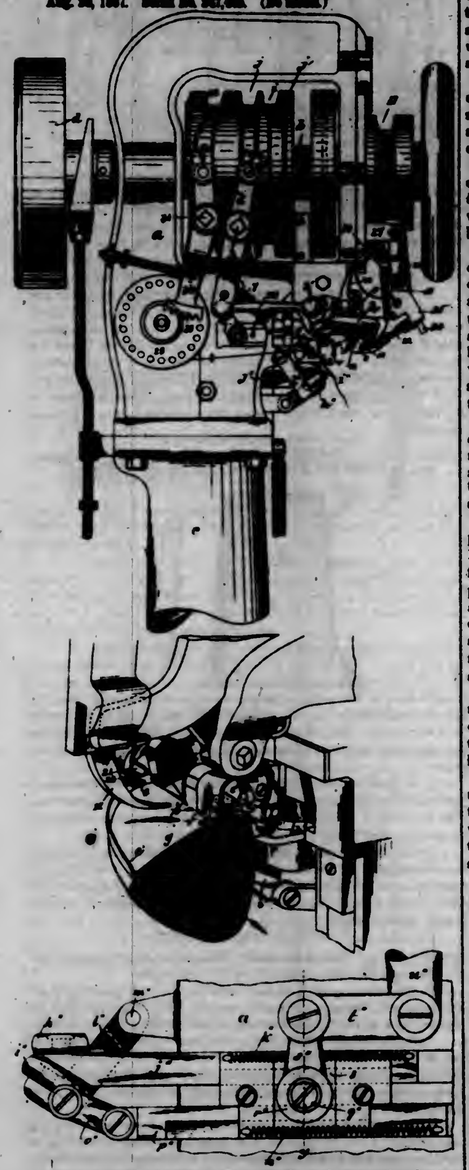
5. In a boot-treeing machine, the combination of the cam H, the lever H', and connecting-rod H^2, with the sliding block D^9 for the slot D^8, operating substantially as described and set forth.

6. In a boot-treeing machine, the combination of the strap I, rocker-arm I^2, and cam F, operating substantially as described.

7. In a boot-treeing machine, the combination of the strap J^2 with the lever J and the swinging frame F, substantially as described, and for the purposes set forth.

8. In a boot-treeing machine, the combination of the latch-lever K^3, latch K^4, spring K^5, and the pin K^6, operating as described, and for the purposes set forth.

385,299. SEWING-MACHINE FOR CHEMICALLY-SOLED AND UPPERS. PIERRE A. GOUAULT and JOSEPH GOUAULT, Boston, Mass., assignors to the Leather Lock Sewing Machine Company, Portland, Me. Filed Aug. 20, 1887. Serial No. 247,465. (No model.)



Claim.—1. The combination of suitable work-supporting devices, a tongue-cutting knife, mechanism to move said knife to and from a sole supported by said work-support, a feeding device to feed the work intermittingly, a curved oscillating needle arranged to enter the incisions made by the tongue-cutting knife, a looper, a cast-off, and tension devices co-operating with said needle, whereby loops of thread are engaged with the tongues cut by the knife, as set forth.

2. The combination of the tongue-forming knife, mechanism to oscillate it, the loop-forming mechanism, the awl arranged to penetrate the outer surface of the shoe, and mechanism for operating the awl, whereby the latter is moved first to penetrate the work, then to withdraw from the work, and finally to return to its starting position, as set forth.

3. The combination of the tongue-forming knife, mechanism to oscillate it, the loop-forming mechanism, the awl arranged to penetrate the outer surface of the shoe, and mechanism to operate said awl, whereby it is caused to feed the work, and the depth-gage, whereby the depth of penetration of the awl and knife is determined, as set forth.

4. The combination of the tongue-forming knife, mechanism to oscillate it, the loop-forming mechanism, the depth-gage adapted to slide horizontally, a spring whereby said gage is normally retracted, and a handle whereby said gage may be moved forward to admit the edge of the upper behind it, as set forth.

5. The combination of the tongue-forming knife, mechanism to oscillate it, the loop-forming mechanism, a normally-yielding rest, as f^7, for the side of the upper, and means, substantially as described, whereby said rest is locked and made rigid during the tongue and loop forming operations, as set forth.

6. The combination of the tongue-forming knife, mechanism to oscillate it, mechanism, substantially as described, for forming loops of thread and interlocking them with the tongues formed by the knife, a normally-yielding spring-projected rest, h^7, arranged to bear on the upper near the sole, a second normally-yielding spring-projected rest, as f^7, arranged to bear on the upper below the other rest, a pivoted lever supporting the rest, whereby the latter is raised and lowered when it is moved forward and back, and means, substantially as described, whereby said rests are locked and made rigid during the tongue and loop forming operations, as set forth.

7. The combination of the tongue-cutting knife, mechanism to oscillate it, the loop-forming and interlocking mechanism, the perforating and work-feeding awl and its operative mechanism, the jaws *s' w'*, adapted the one to penetrate the surface of the sole and the other to support the side of the upper, and mechanism to operate said jaws, substantially as described.

8. The combination, with the feeding mechanism and the complementary stitch-forming mechanism, of the loop-spreader, the slide 13, supporting the same, the lever 14, carrying said slide, mechanism for oscillating said lever, mechanism for reciprocating the slide independently, the cast-off bar journaled in bearings on the loop-spreader and provided with a pinion at one end and a cast-off, 21, at the other end, a rack, 24, adapted to slide in a guide on the loop-spreader, and a connection, 26, between said rack and a fixed support whereby the rack is caused to oscillate the cast-off when the loop-spreader is raised and lowered, as set forth.

9. The combination, with the tongue-forming and stitch-forming mechanisms, of the depth-gage arranged to bear on the outer surface of the sole, and a pointed dog or jaw formed and arranged to penetrate said surface, and mechanism for oscillating said dog, whereby it is caused to hold the sole against the depth-gage, as set forth.

10. The combination, with the tongue-forming and stitch-forming mechanisms, of the pointed dog or jaw formed and arranged to penetrate the outer surface of the sole, mechanism to oscillate said dog whereby it is caused to enter the sole, and a support, as *w'*, to hold the work against the pressure of the dog when it is penetrating the sole, as set forth.

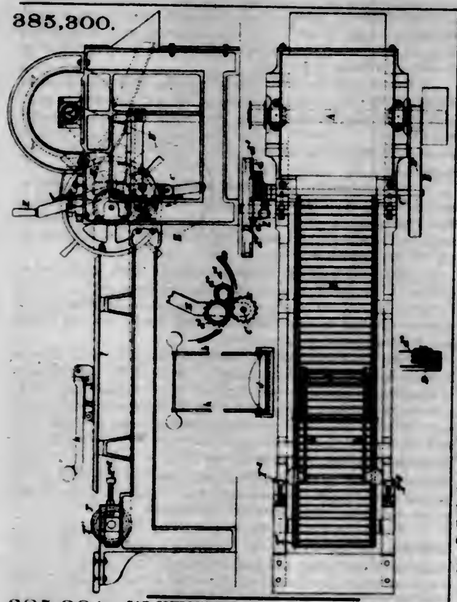
385,300. FEEDING APPARATUS FOR SCUTCHING OR FIBER-CLEANING MACHINES. ALFRED H. DEATH, Leicester, England. Filed May 4, 1887. Serial No. 237,106. (No model.) Patented in England July 2, 1886, No. 8,703; in France Mar. 15, 1887, No. 182,905; in Spain July 7, 1887, Nos. 6,949/11,096, and in India Aug. 5 and Sept. 16, 1887, Nos. 89 and 1,310.

Brief.—The feed-apron is provided with a clip for holding the material to be treated, and the direction of movement thereof is reversed by a lever pivoted on the shaft of the driving-pinion. This pinion gears with one of two pinions carried by the lever, the two latter pinions being geared together and being provided each with a grooved friction-pulley adapted to engage the grooved internal rim of a wheel mounted on the shaft of one of the apron-rollers. By moving the lever one or the other of the friction-pulleys engages the wheel and imparts thereto a corresponding direction of rotation.

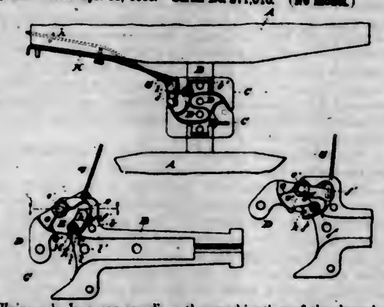
Claim.—1. In a feeding apparatus for scutching or fiber-cleaning machines, the combination of a flexible endless apron, a clip or holder mounted on said apron and provided with side levers, a pair of jaws, one of which is held down by said levers, and mechanism for moving the apron back and forth, substantially as described.

2. In a feeding apparatus for scutching or fiber-cleaning machines, the combination of an apron or carrier, T, the clip or holder H, the side levers, A, hinged to said clip or holder, the transverse jaws J, the upper one of which is held down by said levers, and means for moving the apron or carrier back and forth, substantially as described.

385,300.



385,301. CAR-COUPLING. ROBERT H. DOWLING, Newark, Ohio, assignor of two-thirds to Charles Follett and Charles H. Follett, same place. Filed Apr. 14, 1883. Serial No. 371,010. (No model.)



Claim.—1. In a car-coupling, the combination of the draw-head having the recess for the shank, the coupling-jaw provided with the shank portion having the trunnions thereon, and the crank-arm having the crank portion extending through the draw-head and into an opening in the trunnion provided with the guard to enter the recess, and the operating-bar, substantially as specified.

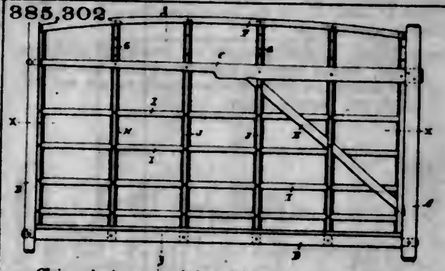
2. The combination of the draw-head having the recess, the trunnion-bearings and the shoulders, the coupling-jaw having the shouldered shank provided with the curved slot, the trunnions, and the recess for the locking-pin, and the locking-pin having the guard at its lower end and the slotted arm I at its upper end, substantially as specified.

3. The locking-pin having the guard on its lower end and the slot-opening in its outer end, and the slotted arm having its bifurcated end inserted through the slot in the pin and turned in opposite directions, in combination with the draw-head, the locking-jaw, and the operating-rod, substantially as specified.

4. The combination of the draw-bar and draw-head made in two longitudinal sections, the dowel-pins therein, the locking-jaw having the shank portion provided with trunnions, the shoulders, the curved slot *k*, and the recess *k'*, the locking-pin H, extending downwardly through an opening in the draw-head and having the guard thereon to engage the recesses in the openings, and the crank-arm extending through the draw-head into the trunnion and having the guard adapted to engage the recess in the trunnion-opening, substantially as specified.

385,302. PARM-GATE. PHILIP DYER, Umatilla, Mich., assignor of one-half to William Abernethy, Mooretown, Ontario, Canada. Filed Jan. 10, 1888. Serial No. 260,266. (No model.)

385,302



Claim.—1. A gate consisting of the main frame composed of the top and bottom rails, C D, and the uprights A B, secured to and extended above said top rails, the arched bar F, secured to the uprights, the vertical slats H, secured to the top and bottom rails and to said bar F, and the vertical braces G, resting upon the top rail and secured to the portions of the slats H above the top rail, and the said bar F resting on said vertical braces, substantially as shown and described.

2. A gate consisting of the main frame composed of the top and bottom rails, C D, and the uprights A B, secured to and extended above said top rails, the arched bar F, secured to the uprights, the vertical slats H, secured to the top and bottom rails and to the bar F, and the vertical braces G, resting upon the top rail, secured to the portions of the slats H above the top rail and to the arched bar F, and the latticed work composed of the vertical and cross slats J J, secured to the slats H and rails C D and to each other, substantially as shown and described.

385,303. MEASURING-VESSEL. WILLIAM EVANS, Jr., Philadelphia, Pa. Filed Mar. 22, 1888. Serial No. 268,086. (No model.)



Claim.—1. The body A, having the partition B therein, forming the two chambers *a b*, in combination with the handle C, connected with the walls of both chambers and spouts on the outer ends of the chambers, said spouts constituting enlarged bases, substantially as described.

2. The body A, having the partition B therein, forming the chambers *a* and *b* of different capacities, and the single handle C, connected with the walls of the two chambers, said parts being combined substantially as described.

3. The measure herein described, consisting of the body A, having the partition B therein, forming the chambers *a b* of different capacities, one of said chambers having on its walls the subdivision-mark K and a single handle, C, said parts being combined and arranged substantially as described.

385,304. FENCE-MACHINE. CHARLES F. GILLET, Springfield, Ill. Filed Nov. 30, 1887. Serial No. 256,546. (No model.)

Claim.—1. In a clamp-shuttle for fence-machines, swinging jaws or wings, in combination with cams up over which the jaws ride as they are swung outward, substantially as and for the purpose specified.

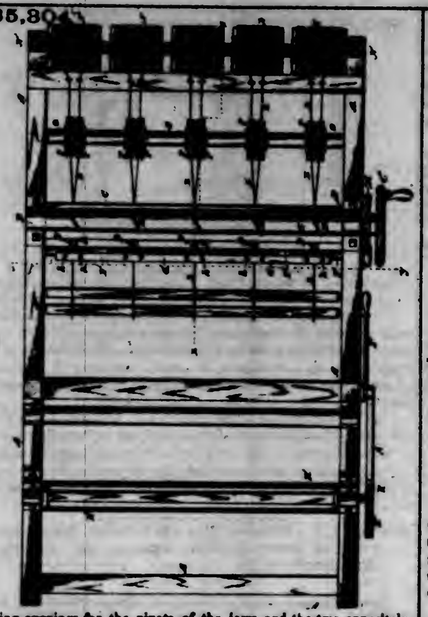
2. In a clamp-shuttle for fence-machines, in combination with the two jaws or wings pivoted so as to be capable of an up-and-down as well as a swinging movement, opposite cams adapted to engage the lower sides or ends of the jaws, substantially as and for the purpose shown.

3. In combination with a suitable supporting-frame, two swinging jaws pivoted in the frame so as to be capable of rising and falling as well as swinging, and the two oppositely-inclined cams adapted, respectively, to engage the two jaws as they are swung away from each other, substantially as and for the purpose set forth.

4. In combination with a suitable frame, two jaws pivoted on upright pivots within the frame so as to be capable of rising and falling as well as swinging, and the two opposite cams having inclined surfaces beginning close to the lower ends of the jaws when the latter are swung toward each other, and extending thence upward and outward, substantially as and for the purpose described.

5. In combination with the swinging wings or jaws, the plate

385,304



having openings for the pivots of the jaws and the two oppositely-inclined cams for engaging the jaw ends, substantially as and for the purpose specified.

6. In combination with the swinging jaws pivoted so as to be capable of longitudinal as well as swinging movement, stops to limit the swing of the jaws in one direction and cams to engage and move the jaws longitudinally as they are swung in the other direction, substantially as and for the purpose shown.

7. In combination with a suitable supporting-frame, two jaws pivoted thereto so as to be capable of an up-and-down as well as a swinging movement, the stops to limit the swing of the jaws in one direction, and the opposite cams to engage and cause the jaws to rise as they are swung in the opposite direction, substantially as and for the purpose set forth.

8. In combination with the swinging and rising and falling jaws, springs forcing the jaws downward and opposite cams inclined upwardly and outwardly adapted to engage the lower ends of the jaws as they are swung outward away from each other, substantially as and for the purpose described.

9. In a clamp-shuttle for fence-machines, in combination with a suitable carrying-frame, the series of jaws arranged in pairs and pivoted to the frame so that the two jaws can swing toward and from each other and also have up-and-down movement, and cams on the frame to force the jaws of each pair upward as they are swung away from each other, substantially as and for the purpose specified.

10. In a clamp-shuttle for fence-machines, in combination with a suitable carrying-frame, the series of jaws arranged in pairs and pivoted in the frame so that the two jaws of each pair can swing toward and from each other and also have an up-and-down movement, cams on the frame having inclines up over which the jaws of each pair must ride as they are swung outward from each other, and springs forcing the jaws downward, substantially as and for the purpose shown.

11. In a clamp-shuttle for fence-machines, in combination with a suitable carrying-frame, the jaws arranged in pairs and pivoted in the frame so as to be capable of swinging and also moving bodily up and down, the plates I I, one for each pair of jaws, the steps *i' i'*, and the cam *i² i²* on the plates, and the springs K K, substantially as and for the purpose set forth.

12. In a fence-machine, in combination with a series of twisters and the reels of wire, the shaft and the grooved pulleys fixed thereon, around which the wires are passed on their way from the reels to the twisters, substantially as and for the purpose described.

13. In a tension device for fence-machines, the shaft and the series of grooved pulleys fixed on and rotating with the shaft, substantially as and for the purpose specified.

14. In a tension device for fence-machines, in combination with the shaft, the pulleys thereon, around which the wires are passed, and connections between the shaft and pulleys, allowing the latter to be adjusted along the shaft, but causing them to rotate with it, substantially as and for the purpose shown.

15. In a tension device for fence-machines, in combination with the rotary shaft having the keyway cut along it, the series of tension-pulleys, each having a keyway, and the series of removable keys engaging the way in the shaft and the ways in the respective pulleys, substantially as and for the purpose described.

16. In a fence-machine, in combination with the series of twisters and the reels for supplying wires thereto, the rotary shaft and the grooved pulleys thereon, around which the wires pass on their way to the twisters, fixed to the shaft so as to turn with the same, but to be adjustable relatively along it, substantially as and for the purpose specified.

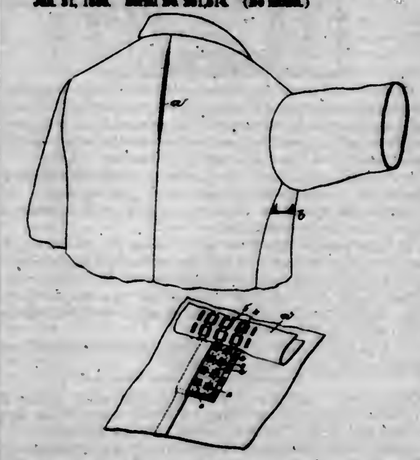
385,305. BOX-LID. WILLIAM D. HARRISON, Pine Bluff, Ark., assignor of one-fourth to John O. Harrison. Filed Apr. 17, 1888. Serial No. 270,970. (No model.)



Claim.—1. The combination, with a box-lid, as above described, of the hinges 5, having the face-pieces 6, edge pieces 7, and extensions 8, roller 11, provided with the pivots 12, working in the perforations in said extensions, said roller adapted to fill the space left between the glasses 3 when the lid is opened, substantially as shown and described.

2. The combination, with a box-lid, as above described, of the hinges 5, having the face-pieces 6, edge pieces 7, and extensions 8, roller 11, provided with the pivots 12, working in the perforations in the said extensions, coil-springs 13, coiled around said pivots 12, their lower ends pressing against the lower end pieces and their upper ends against the upper end pieces, substantially as shown and described, and for the purposes set forth.

385,306. VENTILATED GARMENT. ELLA S. HEWITT, Watertown, assignor of one-half to Daniel W. Crosby, Boston, Mass. Filed Jan. 31, 1888. Serial No. 261,514. (No model.)



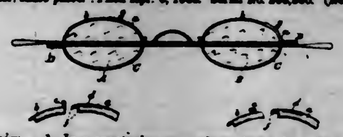
Claim.—1. A garment slitted at the point to be ventilated and having one edge of an independent ventilating-piece presented thereat, the said piece having diagonal air-passages therein and transverse perforations communicating therewith, combined with a perforated lining superimposed upon the said piece and having ribs or projections upon its inner side, substantially as described.

2. A garment having a slit at the point to be ventilated, the piece or portion *c*, provided with several air-passages extending therethrough, one edge of which piece is presented at the slit, and the perforated lining *d'*, having a series of ribs thereon, substantially as described.

3. A garment having a slit at the point to be ventilated, and the piece *c*, having diagonal air-passages 2 and transverse passages 3 com

municating therewith, one edge of said piece *c* being presented at the slit, substantially as described.

385,307. FRAME FOR SPECTACLES OR EYEGLASSES. FREDERICK A. HERRIDGE, Columbia, Mo., assignor of one-half to John Fyfe, same place. Filed Apr. 6, 1888. Serial No. 269,960. (No model.)

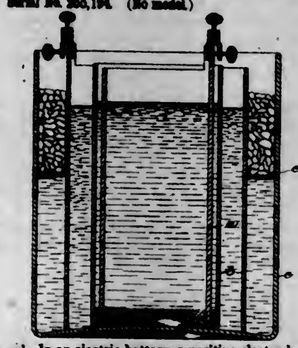


Claim.—1. In a spectacle or eyeglass, means for adjusting the frame to suit different sizes of glasses, consisting in a lengthened slot in one end of a severed frame and a tenon on the opposite end carrying a screw-post at right angles to the line of the rim, and a nut for said post to hold the ends of the frame firmly at different points, substantially as described.

2. The combination of the slotted portion *a* and tenon portion *b*, when made separate from and attached to the respective severed ends of a lens-rim, combined with the securing-nut and post, substantially as herein described.

3. The combination, with the slotted end *a* of a lens-frame, of the screw-threaded post formed integral with the part *b*, and the nut *c*, substantially as herein described.

385,308. ELECTRIC BATTERY. HENRY M. HEWETT, Newton, assignor to Daniel W. Crosby, trustee, Boston, Mass. Filed Nov. 15, 1887. Serial No. 255,194. (No model.)



Claim.—1. In an electric battery, a positive electrode or negative pole and a porous cup containing it, composed, essentially, of infusorial earth, combined with an acid-receiving jar or vessel, *c*, and a negative electrode or positive pole interposed between the porous cup and the acid-receiving jar or vessel, substantially as described.

2. In an electric battery, the zinc electrode and the porous cup containing it, combined with the acid-receiving jar or vessel *c*, the copper electrode having a perforated lower part, and the perforated flange *d*, substantially as described.

3. In an electric battery, the acid-receiving jar and the copper electrode, made, substantially as described, to form the crystal-receiving chamber or pocket, and the chamber beneath it, through which the fluid passes, combined with a porous cup contained within the copper electrode and the zinc electrode contained within the porous cup, substantially as described.

4. In an electric battery, a porous cup composed, essentially, of infusorial earth, substantially as described.

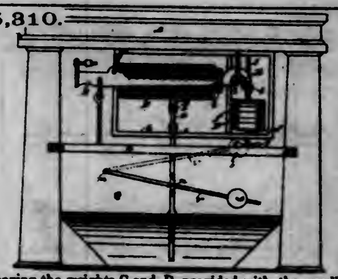
385,309. PROCESS OF AMALGAMATING ZINC. HENRY M. HEWETT, Newton, assignor to Daniel W. Crosby, trustee, Boston, Mass. Filed Nov. 15, 1887. Serial No. 255,200. (No specimens.)

Claim.—That improvement in the art or method of amalgamating zinc which consists, first, in coating the zinc with mercury and then subjecting the mercury-coated zinc to the action of water, or a solution containing water maintained substantially at the boiling-point of water, substantially as described.

385,310. WEIGHT-RECORDER FOR WEIGHING-SCALES. JAMES A. JAMIESON, Montreal, Quebec, Canada. Filed Feb. 2, 1887. Serial No. 226,303. (No model.) Patented in Canada Apr. 12, 1887, No. 28,641.

Claim.—1. An automatic weight-recorder for scales, having the frame G, hinged at H and holding the cylinders E and F, the latter being connected through the bevel-wheels K and L and made to turn through the action of the spring *c*, the ratchet-wheel *f*, and the catch

385,310.



g, also having the weights C and D, provided with the needle-points O and N, substantially as described, and for the purposes set forth.

2. An automatic weight-recorder for scales, one part of which is made to swing backward and forward automatically—that is, the frame G and the mechanism contained—through the action of the levers S T V, the vertical piece W, and the bell-crank X, whose end *e* butts against the catch *d* and the spring *c*, in combination, substantially as described, and for the purposes set forth.

3. The combination of the levers S T V, the vertical piece W, the bell-crank X, and the hopper Q with the frame G, the cylinders E and F, the bevel-wheels K and L, the ratchet-wheel *f*, the catches *d* and *g*, and the weights D and C, provided with the needle-points N and O, also the spring *c*, substantially as described, and for the purposes set forth.

385,311. COMBINED SOFA AND SURGICAL TABLE. CHARLES S. JUDY and MARTIN W. FORNEY, Mannsburg, Ohio. Filed Mar. 13, 1888. Serial No. 267,078. (No model.)



Claim.—1. The combination of the stationary main frame, the vertically-movable frame 5, carrying the table 16, the notched brackets 6, loosely connected with the opposite ends of the movable frame, and two spring push-pins, 9, slidable, respectively, in the opposite ends of the stationary main frame and each having forks 12 and 13, provided at their extremities with keeper-pins 14, engaging the notched brackets, substantially as described.

2. The combination of the stationary main frame, the vertically-movable frame 5, the notched brackets 6, loosely hung to the opposite ends of the movable frame, the push-buttons 9, sliding in the ends of the stationary frame and having pins 14, to engage the brackets, the detachable table 16, having transverse cleats 17, to bear against the insides of the movable frame, and adjustable arm 22, to hold the table in an inclined position on the movable frame, substantially as described.

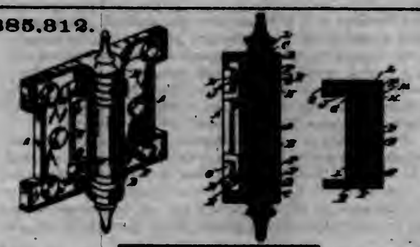
3. The combination, with the stationary main frame and the vertically-adjustable table 16, having a series of perforations, 20, along each longitudinal edge, of the detachable and reversible pillows 18, having dowel-pins 19, adapted to said perforations, substantially as described.

4. The combination of the stationary main frame, the vertically-movable table-carrying frame 5, having the slots 8 in the sides of each end portion, the two pairs of notched brackets 6, each pair connected by a rod, 7, sliding at its ends in said slots, and a sliding push-pin, 9, in each end of the stationary main frame, having forks 12 and 13, provided at their extremities with keeper-pins 14, engaging the notched brackets, substantially as described.

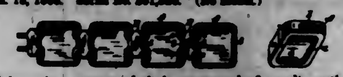
385,312. SPRING-HINGE. HENRY P. KOMMERER, Prospect, Ill. Filed Aug. 5, 1887. Serial No. 246,157. (Model.)

Claim.—The combination, with the hinge-leaves having the projecting pivoted end ears and formed with the bails or bearings at their inner edges, of the tubular casing, the spiral spring, the hook-caps having the recesses or perforations, and the outer hook-pintes connected by the longitudinal rod, substantially as and for the purpose set forth.

385,312.

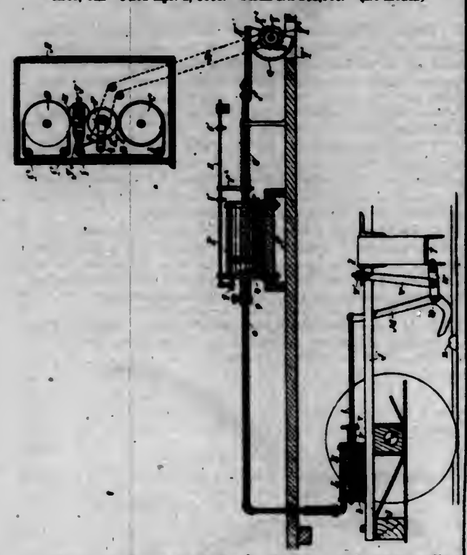


385,313. BRACELET-CHAIN. GERRARD A. LEWIS, Providence, R. I., assignor to himself and W. B. White & Co., same place. Filed Jan. 19, 1888. Serial No. 261,264. (No model.)



Claim.—An ornamental chain composed of an alternating series of cup-formed links and bar-links, the cup-formed links being provided with the end openings and the intermediate bar-links provided with the oppositely-projecting arms, which enter the openings in the cup-formed links and are bent into holding engagement therewith, substantially as described.

385,314. STATION-INDICATOR. BENJAMIN W. LYON, San Francisco, Cal. Filed Apr. 2, 1888. Serial No. 269,262. (No model.)



Claim.—1. In a station-indicator, the lower and upper winding-drums and the indicating-ribbon attached to each, in combination with the driving-drum for the ribbon, and operating on the periphery of one of the winding-drums, the idler-drum operating between and in contact with the driving-drum and the other winding-drum, and means for operating the driving-drum, substantially as herein described.

2. In a station-indicator, the lower and upper winding drums and the indicating-ribbon attached to each, in combination with the driving-drum for the ribbon, mounted in a swinging bearing and operating on the periphery of one of the winding-drums, the idler-drum mounted in a swinging bearing and operating between and in contact with the driving-drum and the periphery of the other winding-drum, and means for operating the driving-drum, substantially as herein described.

3. In a station-indicator, the lower and upper winding-drums, the swinging driving-drum operating on the periphery of the lower main drum, and the swinging adjustable idler-drum operating between and in contact with the driving-drum and the periphery of the upper winding-drum, in combination with the indicating-ribbon attached at each end to the winding-drums and passing in connection with the driving-drum and the idler-drum, and suitable guide-rollers for directing its course, and an endless chain for operating the driving-drum, substantially as herein described.

4. In a station-indicator, the lower winding-drum, the upper winding-drum, and the indicating-ribbon attached to both, in combination with the pivoted bearing E, the shaft *f* in said bearing, the driving-drum on the shaft, and the chain-pulley and endless chain by which the shaft is rotated, the swinging bearing G, the idler-drum mounted in said bearing, and the adjusting-screw for said idler-drum, all arranged and adapted to operate substantially as herein described.

5. In a station-indicator, and in combination with the indicating mechanism, the means for operating it, consisting of a pivoted lever for coming in contact with a fixed lug or obstruction in the road-bed, an air-cylinder supported on the car-trunk, a reciprocating piston therein connected with the lever, whereby it is operated, and connections between said cylinder and the indicating mechanism, by which the air in the cylinder is made to effect the operation of the indicator, substantially as herein described.

6. In a station-indicator, and in combination with the indicating mechanism, the means for operating it, consisting of a pivoted lever for coming in contact with a fixed lug or obstruction in the road-bed, a valved air-cylinder supported on the car-trunk, a piston therein connected with the lever, whereby it is moved in one direction to draw air into the cylinder, springs for returning the piston, whereby the air is forced out of the cylinder, and connections between the cylinder and the indicating mechanism, by which the air is made to effect the operation of the indicator, substantially as herein described.

7. In a station-indicator, and in combination with the indicating mechanism, the means for operating it, consisting of a pivoted lever for coming in contact with a fixed lug or obstruction in the road-bed, an air-cylinder supported on the car-trunk, and reciprocating piston therein connected with the pivoted lever, a second air-cylinder between the first cylinder and indicating mechanism, having the reciprocating piston and communicating with the first air-cylinder, and gearing between the piston of the second air-cylinder and the indicating mechanism, whereby the latter is operated, substantially as herein described.

8. In a station-indicator, and in combination with the indicating mechanism, the means for operating it, consisting of a pivoted lever for coming in contact with a fixed lug or obstruction in the road-bed, a valved air-cylinder adjacent to said lever, a piston therein connected with the lever, whereby it is moved in one direction to draw air into the cylinder, springs for returning the piston, whereby the air is forced out of the cylinder, a second valved air-cylinder between the first cylinder and indicating mechanism and communicating with said first cylinder, a piston therein moving forward under the air-pressure, a spring for returning it to position, and gearing between the piston of the second air-cylinder and the indicating mechanism, whereby the latter is operated, substantially as herein described.

9. In a station-indicator, and in combination with the indicating mechanism, the means for operating it, consisting of the pivoted lever for coming in contact with a fixed lug or obstruction in the road-bed, the air-cylinder on the car-trunk, with the reciprocating piston connected with the pivoted lever, the second air-cylinder on the floor of the car, with reciprocating piston and piston-rod and communicating with the first air-cylinder, a rack on the piston-rod of the second air-cylinder, a gear meshing with the rack, a shaft carrying the gear and having a chain-pulley, and an endless chain from said pulley to the drive-pulley of the indicating mechanism, substantially as herein described.

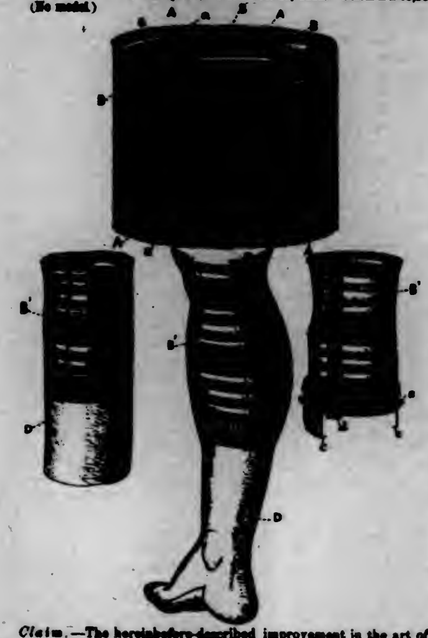
10. In a station-indicator, and in combination with the indicating mechanism, the means for operating it, consisting of the pivoted lever for coming in contact with a fixed lug or obstruction in the road-bed, an air-cylinder near the lever, with reciprocating piston and piston-rod connected with said pivoted lever, a second air-cylinder between the first cylinder and indicating mechanism, with reciprocating piston and piston-rod and communicating with the first air-cylinder by a pipe, the rack on the end of the piston-rod of the second air-cylinder, a gear meshing with the rack, a shaft on which the gear is loosely mounted, a ratchet on the shaft, and pawls on the gear, whereby they are connected in one direction and are free in the other, a chain-pulley on the shaft, and an endless chain from said pulley, by which motion is transmitted to the indicating apparatus, substantially as herein described.

11. In a station-indicator, and in combination with the indicating mechanism, the means by which it is operated, consisting of a pivoted lever for coming in contact with a fixed lug or obstruction in the road-bed, a valved air-cylinder on the car-trunk, a piston in said cylinder and having a rod connected with the pivoted lever, whereby the piston is moved in one direction, and the springs for returning it, the second valved air-cylinder on the floor of the car, the pipe communicating with the two air-cylinders, the piston in the second air-cylinder and spring for returning it, the piston-rod provided with a rack, the loosely-mounted gear meshing with the rack, the shaft, and the pawl-and-ratchet connection between the gear and the shaft, and the chain-pulley and endless chain by which the power is transmitted to the indicating mechanism, all arranged and adapted to operate substantially as herein described.

12. In a station-indicator, and in combination with the indicating mechanism, the means by which it is operated, consisting of the piv-

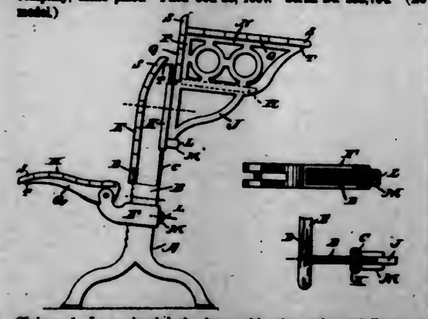
oted lever for coming in contact with a fixed lug or obstruction in the road-bed, a valved air-cylinder on the car-trunk, a piston in said cylinder and having a rod connected with the pivoted lever, whereby the piston is moved in one direction and the springs for returning it, the second valved air-cylinder on the body of the car and communicating with the other air-cylinder, the piston in the second cylinder having a rod, a cut-off valve and connections for operating it, a spring for returning the piston, the rack on the piston-rod, and gearing between said rack and the indicator, whereby the latter is operated, substantially as herein described.

385,315. ART OF MANUFACTURING STOCKINGS. ROBERT HOSLEY and WILLIAM SHERWOOD, Philadelphia, Pa., assignors to Thomas A. Penrce, same place. Filed Dec. 12, 1882. Serial No. 79,869. (No model.)



Claim.—The hereinbefore-described improvement in the art of making stockings, which consists in first cutting, in a line parallel with its axis, from an initial tubular fabric having spiral stripes or patterns thereon, a segment sufficiently large to form the stocking-leg; second, arranging the cut edges of such segment so as to re-form the pattern in annular stripes and then uniting said edges; third, casting onto the needles of a knitting-machine the loops upon one end of the tube thus formed, and, fourth, knitting the remainder of said stocking in the ordinary manner, substantially as set forth.

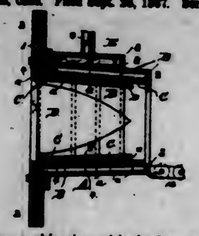
385,316. SCHOOL-DESK. ELI MURRAY, Rushville, Ind., assignor, by direct and mesne assignments, to the Rushville School Furniture Company, same place. Filed Oct. 20, 1887. Serial No. 252,784. (No model.)



Claim.—1. In a school-desk, the combination, substantially as set forth, of standards adapted for attachment to the floor, a seat-bank attached directly to the front edges of the standards, a seat attached to the standards in front of and below the seat-bank, desk-brackets having at their lower front edges open grooves adjustably engaging the rear edges of the standards independent of the seat-bank and seat, and projecting upwardly beyond such engagement, dovetail ribs F upon the said upwardly-projecting front edges of the brackets, a desk-top secured to the tops of these brackets, and a superbank secured to the upper front edges of these brackets.

2. In a school-desk, the combination, substantially as set forth, of standards adapted for attachment to the floor, a seat-bank attached to the front edge thereof, a seat and desk vertically adjustable on the standards, set-screws L, with their points impinging against the rear of the standards, for securing the desk and seat in adjusted position upon the standards, and counterbored bosses M encircling the set-screws.

385,317. LUBRICATING-DIE FOR BRICK AND TILE MACHINES. ROBERT HERRENBRUCK, Chicago, Ill., assignor to Frey, Shoutter & Hoover, Bucyrus, Ohio. Filed Sept. 26, 1887. Serial No. 250,915. (No model.)

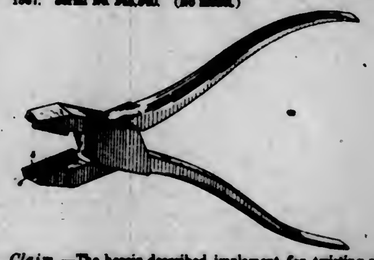


Claim.—1. The combination, with the former-casing of a brick-machine having lubricating-ducts through the casing, of a number of detachable frames formed with grooves in their edges and arranged in succession within the casing, a number of metal plates or liners fitted within and held by the said frames, and the impervious plates or aprons arranged to cover the middle parts of the liners, substantially as described, and for the purpose set forth.

2. The combination, with the casing of a brick-machine die having lubricating-ducts, of metal lining-frames arranged within the casing to discharge the lubricant at one of the edges, and impervious plates or aprons D, arranged equidistant in the casing over the main liners, substantially as described, and for the purpose stated.

3. The combination, with the former-casing of a brick-machine, of liners adapted to admit a lubricant between their lapped edges, and impervious plates arranged equidistant from the corners of said liners and laid flat thereon to prevent the flow of the lubricant on the clay, substantially as described, and for the purpose stated.

385,318. IMPLEMENT FOR BENDING WIRE. DANIEL W. HOBBS, Elgin, Ill., assignor to Wesley Young, Dayton, Ohio. Filed Sept. 5, 1887. Serial No. 248,940. (No model.)



Claim.—The herein-described implement for twisting wire or staples, consisting of the two co-operating jaws pivoted together, each of which is provided with a recess or cavity, substantially as described, and a channel for holding one of the legs of the staple, extending from said recess to the end of the jaw, where it terminates in a flared mouth, the recess formed by the two channels when brought together being oblong and having its greatest dimension transverse to the axis of the pivot of the jaws, as set forth.

385,319. PUMP. JOHN HOBBS, Middletown, Conn. Filed Dec. 6, 1887. Serial No. 257,128. (No model.)

Claim.—1. The combination, with the cylinder having opposite water-passages b, opening into the cylinder at opposite ends thereof, of the valve-seat plate having ports, one of which communicates directly with one of said water-passages and the other with the interior of the cylinder, and the semi-annular valves having their ends abutting against guide-pins, substantially as described.

2. A pump having a valve-seat plate located in the end of the cylinder and provided with semi-annular valves lying loosely upon said

385,319.

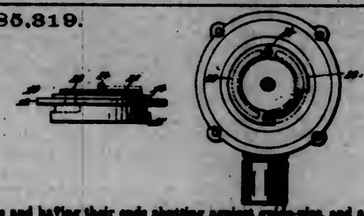


plate and having their ends abutting against guide-pins, and a piston-rod passing centrally through the valve-seat plate, substantially as described.

385,320. ENVELOPE-TABLET. HIRAM PHILLIPS, Columbia, assignor to Kirtley & Phillips, Boone County, Mo. Filed Nov. 3, 1886. Serial No. 217,573. (Model.)



Claim.—1. An envelope-package consisting of the following elements, to wit: the envelopes provided at one edge with a gummed backing and a stiff cover hinged thereto and freely moving thereon, and a thin cover hinged to the backing on the opposite side of the stiff cover, passing around the bottom and front edge, and having a blotter attached to its edge, so as to be freely moved thereon.

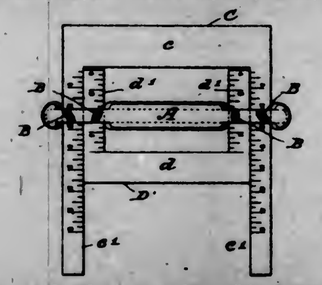
2. A package of envelopes gummed and secured at the rear edge to a backing, *b*, and also at its front edge gummed and secured to a retaining-piece, *b'*, whereby the package is held securely together in a very compact form.

3. In combination with a package of envelopes secured together at the front and rear, but so that each envelope can be easily separated from the pack, a hinged cover or piece adapted to be turned down in front and afford a hand-rest when addressing the envelope.

4. An envelope-package provided with a wrapper to which it is attached at the front and rear edges, and whereby it is completely surrounded and protected from dust, &c., at all points except at the side edges, substantially as described.

5. The envelope-package provided with a hand-rest to aid in addressing the envelopes, and also with a blotter, substantially as described.

385,321. CARPENTER'S FRAMING-GAGE. LEANDER P. PERKINS, Rochester, assignor of one-fourth to Frank W. Yeaton, Concord, N. H. Filed Jan. 18, 1886. Serial No. 281,606. (No model.)



Claim.—1. In a framing-gage, the parallel adjustable frames adapted to fit one within the other and both capable of adjustment within a cross-head, the said cross-head having openings for receiving said frames, and suitable screws threaded therein for securing the same, all substantially as and for the purpose set forth.

2. In a framing-gage, the parallel adjustable frames graduated to inches and fractions, as shown, and adapted to fit one within the other and both capable of adjustment within a cross-head, the said cross-head having openings for receiving said frames and suitable screws threaded therein for securing the same, substantially for the purpose explained.

385,322. REVERSING MECHANISM FOR KNITTING-MACHINES. HARRY C. EISENBRAUN, Philadelphia, Pa., assignor of one-half to Thomas A. Penrce, same place. Filed May 24, 1887. Serial No. 238,551. (No model.)



Claim.—1. The combination of a shaft, a pair of wheels running freely thereon, gearing, substantially as set forth, whereby said wheels are revolved in opposite directions, a pair of disks which engage with said wheels, respectively, by an elastic coupling device, and each of which is provided with a slot, a cylinder rigidly attached to said shaft between said disks, and a bolt sliding longitudinally in said cylinder and of sufficient length when flush at one end with the end of the cylinder to enter the opposite disk-slot and engage therewith.

2. The combination, with the hereinbefore-described reversing mechanism, consisting of a pair of oppositely-running wheels loosely mounted upon a shaft, slotted disks coupled to said wheels, as described, an intermediate cylinder rigidly attached to the shaft, a bolt adapted to couple either of said disks to said cylinder, and a pin projecting from said slot, of a pair of oppositely-inclined cams arranged in the path of rotation of said pin, substantially as and for the purpose set forth.

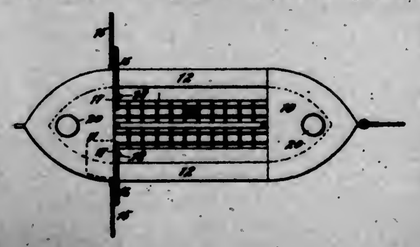
3. The combination, with the hereinbefore-described reversing mechanism, consisting of a pair of oppositely-running wheels loosely mounted upon a shaft, slotted disks coupled to said wheels, as described, an intermediate cylinder rigidly attached to the shaft, a bolt adapted to couple either of said disks to said cylinder, and a pin projecting from said slot, of the pivoted cam-carriers *e* and *f*, whereby either or both of the reversing-cams may be thrown out of play, substantially as set forth.

4. The combination of the shaft C, bevel-gear I, bevel-gears G and H, having in their faces slots *g e*, respectively, disks K L, having pins which enter said slots, and springs *l p*, bearing therein, and having also arc-shaped slots *g h*, the cylinder J, rigidly secured to the shaft and having the longitudinally-movable bolt *d*, adapted to enter either of said slots *g h*, the pin *r*, attached to said bolt and projecting through a slot in the periphery of the cylinder, and the cams *n m*, arranged in the path of rotation of said pin, the whole operating substantially as and for the purposes set forth.

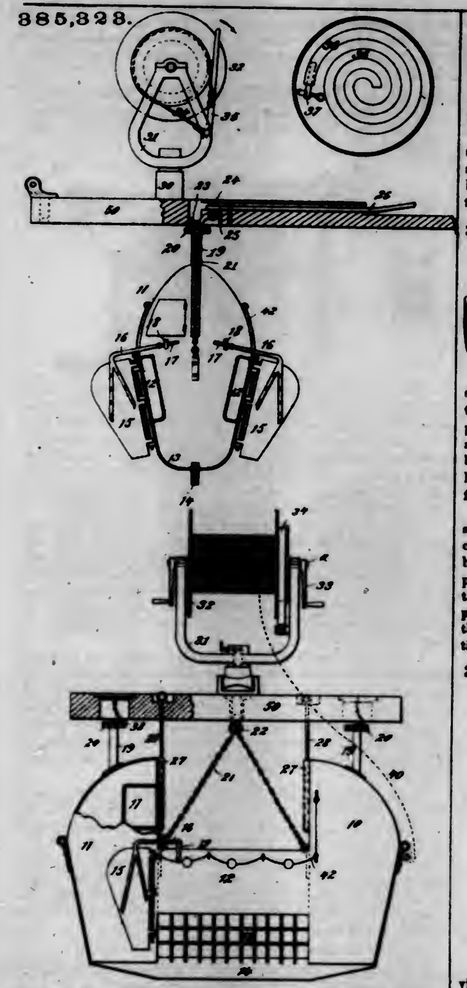
385,323. REEL LIFE-BUOY. ARMSTEAD REID, U. S. Navy. Filed Jan. 21, 1887. Serial No. 225,032. (No model.)

Claim.—1. The combination, with the vessel having a swiveled frame and a reel carried thereby, of the vertically-swinging buoy-supporting hook pivoted to the vessel below the reel, the horizontally-movable releasing-lever pivoted to the vessel and having a hook or projection engaging a leg or arm on the hook, the life-buoy suspended over the vessel's side by the said hook, and the line or cable connecting the reel and buoy, substantially as set forth.

2. The combination, with the vessel, the buoy, and the suspending and releasing mechanism, of a signal composition or material carried by the buoy, and an igniting device connected with the vessel and with the said signal, whereby when the buoy falls the signal will be



385,323.



ignited by the severance of the connection between it and the vessel, substantially as set forth.

3. The combination, with the vessel, the platform extending beyond the edge thereof, and having a reel and a supporting and releasing mechanism, of the buoy having the port-fire box containing a coil signal-fire provided with a friction-primer, and a cover for the box connected to said primer and secured by a lanyard or chain to the platform, whereby when the buoy is released and falls the cover will be pulled off and the friction-primer operated to ignite the coil, substantially as set forth.

4. The combination, with the vessel having a platform, 50, the reel, the buoy suspending and releasing mechanism, and apertures provided with removable covers, of the buoy suspended beneath the platform and provided with port-fire boxes below said platform-apertures and containing coils of signal-fire provided with friction-primers, covers for the said boxes connected to said primers, and chains or lanyards connecting the aperture-covers with the port-fire covers, whereby the covers may be removed and the friction-primers disconnected during the day, substantially as set forth.

5. In a life-saving buoy for vessels, a port-fire box to be carried by the buoy and having a coil of fire provided with friction-primer, and a cover for the box, to which the coil is connected, the said cover being adapted to be connected with the vessel and removed by the falling of the buoy to ignite the coil, substantially as set forth.

6. The combination, with a vessel having a reel and a buoy suspending and releasing mechanism, of a buoy, a line leading from the reel to the buoy, and rearward-swinging fins normally held extended at the sides of the buoy, and means for releasing the fins to allow their free ends to swing rearward, whereby when the buoy falls into the water the extended fins will cause the line to unwind from the reel without moving the buoy forward, and said fins may be released and allowed to swing rearward when the occupant desires the buoy to be drawn to the vessel, substantially as set forth.

7. The combination, with a life-buoy, of fins 15, hinged to the sides of the buoy to swing rearward, arms 16, extending inward from said fins, hinged catches 17 on the inner ends of the said arms, and keepers 18 on the buoy, with which said catches are in engagement to normally hold the fins extended, substantially as set forth.

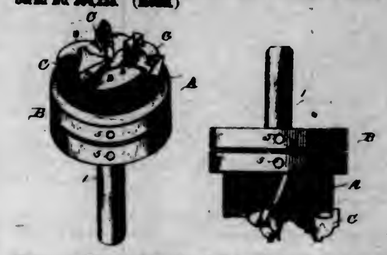
385,324. DIBBLE. THOMAS SELLER, Versailles, Ky., assignor of one-half to Wesley Young, Dayton, Ohio. Filed Sept. 5, 1887. Serial No. 248,849. (No model.)



Claim.—1. In the herein-described dibble, the combination of the straight-pointed blade substantially diamond shape in cross-section, the straight handle, and the socket having the central downwardly-projecting lugs D, embracing the blade at the center on either side, and the arms E, made integral with said socket and extending outward beyond the edges of the blade, forming foot-rests for the operator, lying on and supported by the top of said blade, substantially as and for the purpose set forth.

2. In the herein-described dibble, the combination, with the straight handle having the socket on its lower end provided with the central downwardly-projecting lugs embracing the flat portion of the blade on each side, and the laterally-projecting arms forming foot-rests projecting beyond the edges of the blade formed integral therewith, the blade substantially diamond shape in cross-section with its upper part flattened and tapered to form the shank, and the rivet passing through the socket, handle, and shank for uniting the parts, substantially as and for the purpose set forth.

385,325. CUTTER-HEAD. GEORGE S. SMITH, Milton, Pa., assignor to Samuel J. Shiner & Sons, same place. Filed Feb. 16, 1888. Serial No. 264,228. (Model.)



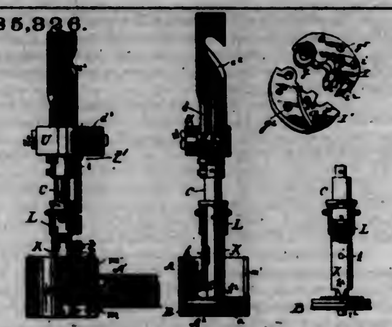
Claim.—1. The combination of the cylindrical head-stock provided with screw-threads on its circumferential face and formed with bit-slots extending longitudinally for its length, bits disposed in said slots, having shanks formed with lugs projecting beyond the face of the head-stock, and threaded clamping-rings fitted to the head-stock to engage the threads on the head-stock and clamp the projecting lugs of the bits in opposite directions, substantially as described, and for the purpose specified.

2. The combination of the cylindrical head-stock provided with screw-threads on a circumferential face and formed with bit-slots longitudinally arranged, bits having shanks formed with double-inclined projections extending beyond the face of the head-stock, and threaded clamping-rings having chamfered inner edges fitted to the head-stock to engage the threads on the head-stock and clamp the faces of the double incline of the bits, substantially as described, and for the purpose specified.

3. The combination of the cylindrical head-stock provided with screw-threads on its circumferential face, and formed with bit-slots and having inclined sections on its under face, bits having shanks formed with double-inclined projections, and threaded clamping-rings having chamfered inner edges fitted to the head-stock to engage the threads on the head-stock and clamp the faces of the double incline of the bit-shanks, substantially as described, and for the purpose specified.

385,326. PILL OR LOZENGE MACHINE. GEORGE A. SMITH, Norristown, assignor to Smith & Caldwell, Philadelphia, Pa. Filed June 18, 1887. Serial No. 241,770. (No model.)

385,326.



Claim.—1. The combination, with the charging box or chamber A, of the rotating plate or false bottom B, having a discharge-opening, and a plunger, P, arranged and operating to forcibly eject powder from said opening, substantially as shown and described.

2. The combination, with the charging-box A and a rotating plate or false bottom, B, having a discharge-opening, of a segmental plate, M, above said false bottom or rotating plate, substantially as shown and described.

3. The combination, with the charging-box A and false bottom or rotating plate B, of the adjustable segmental plates G G', for adjusting the discharge-opening in said false bottom or rotating plate B, substantially as shown and described.

4. The combination, with the charging-box A and rotating plate or false bottom B, having a discharge-opening, of the vertically-adjustable sweep-plate M, substantially as shown and described.

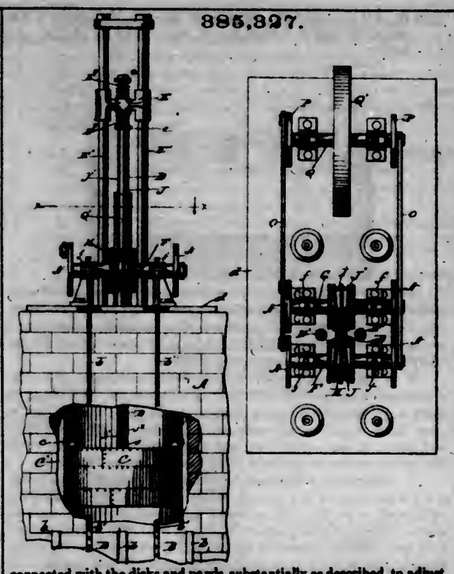
5. The combination, with the charging-box A, of rotating plate or false bottom B, pivoted segmental plates G G', springs H H, and adjustable sleeve K, having a wedge or tapered projection, substantially as shown and described.

6. The combination, with charging-box A, of rotating plate or false bottom B, having a discharging-opening, sweep-plate M, feed-plunger P, having bar *p*, and spiral spring S, with the die cross-head d^2 and rod *t*, whereby when the die descends the plunger will be moved downwardly, and when said die is raised the plunger will be elevated, substantially as shown and described.

7. The combination, with the charging-box A and rotating plate or false bottom B, having a discharging-opening, and plunger P, of spindle C and sleeve U, secured to cross-head d^2, said spindle having a spiral incline leading into a straight groove, whereby said plate will be rotated by the spindle and will dwell when the plunger is in the opening of the discharging-plate, substantially as shown and described.

8. The combination, with the rotating plate or false bottom B, having a discharge-opening, F, of the plates G G' and the detachable interchangeable blocks I I', substantially as shown and described.

385,327. WAVE-POWER MOTOR. FELIX STARKENBURG, Milwaukee, Wis., assignor of one-half to Henry J. Dohmey, same place. Filed Jan. 10, 1888. Serial No. 260,283. (No model.)



Claim.—1. In a hydraulic motor, the combination of a reciprocating float, a cross-head guided in suitable ways, a pitman connected to the float and cross-head, the driven shafts each carrying a winding-drum, and cables passed over the drums and connected with the float and cross-head, substantially as described.

2. In a hydraulic motor, the combination of a reciprocating float operating in a suitable reservoir and guided therein, a cross-head guided in suitable ways, a pitman intermediate to the float and cross-head, two driven shafts, each carrying a winding-drum, and cables wound around the drums in reverse directions and connected with the float and cross-head, substantially as described.

3. The combination of a shaft carrying a ratchet, which is fixed thereto, pawl-carrying disks loosely mounted within the drum and having one or more pawls, and a winding-drum mounted on the shaft and connected with the disks and pawls, substantially as described, to adjust and hold the pawls in their proper positions according to the direction in which the drum is rotated, substantially as described.

4. The combination of a shaft carrying a ratchet, a winding-drum mounted on the shaft to turn freely thereon, and a series of pawls carried by an independent support within the drum and connected with the latter, as described, the pawls being constructed to engage the ratchet when the drum is rotating in one direction and to be lifted clear of the ratchet when the drum is turning in the reverse direction, substantially as described.

5. The combination of a shaft carrying a ratchet, a drum loosely mounted on the shaft to turn freely thereon, loose disks mounted on the shaft within the drum, and a series of pawls pivoted on the loose disks and connected with the drum to be controlled thereby, substantially as described.

6. The combination of a shaft carrying a ratchet, the disks loosely mounted on the shaft and having the slots or notches, the pivoted pawls carried by said disks, and a winding-drum having the transverse shafts or bolts which fit in the notches of the disks and engage the pawls to lift the latter from the ratchet when the drum is rotated reversely, substantially as described.

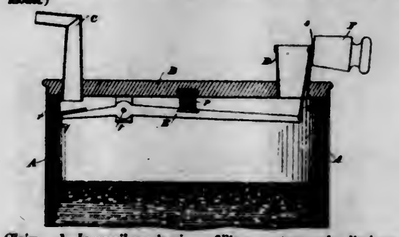
7. The combination of a shaft carrying a ratchet, the notched or slotted disks mounted thereon, the pivoted pawls carried by the disks and having the extended arms, and a winding-drum inclosing the disks and ratchet and having the transverse shafts or bolts which fit in the notches of the disks and between the lifting-arms of the pawls, substantially as described.

8. In a hydraulic motor, the combination of a reciprocating float, two driven shafts, a winding-drum loosely mounted on each shaft and having ratchet mechanism housed therein for alternately coupling and uncoupling the drum to the shaft, a reciprocating cross-head arranged above the driven shafts and connected with the float by an intermediate rod, cables secured at their ends to the float and cross-head and wound in reverse directions around the drums at an intermediate point of their length, and a power-shaft common to both driven shafts and connected therewith by an intermediate pitman, substantially as described, for the purpose set forth.

9. In a hydraulic motor, the combination of a reciprocating float operating in a reservoir and guided therein, upright ways or guides, a cross-head sliding on said ways or guides, a pitman fixed on the float and passing through the cross-head, cushion-springs interposed between said cross-head and the pitman, the driven shafts each carrying a winding-drum, and the cables passed over the drums and connected at one end to the cross-head and having a spring-connection at their opposite ends with the float, substantially as described.

10. In a hydraulic motor, the combination of a reciprocating float, the two driven shafts having crank-disks at their ends, a winding-drum mounted on each shaft, cables connected with the float and passing over the winding-drums, a power-shaft common to both driven shafts, and pitmen connecting the power and driven shafts, substantially as described.

385,328. OIL-CAN. CHARLES H. STRATTON and GEORGE L. ROBERTSON, Chicago, Ill. Filed Mar. 9, 1888. Serial No. 266,754. (No model.)



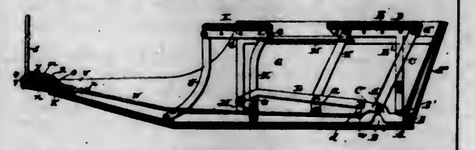
Claim.—1. In an oil-can having a filling-aperture and a discharge-spout, a stopper to the filling-aperture and a valve to the discharge-spout, in combination with a pivoted lever connecting them, and a spring for normally maintaining the valve upon its seat to close the discharge-spout, as and for the purpose specified.

2. In combination, in an oil-can, a filling-aperture, D, and a discharge-spout, C, a pivoted lever, E, a valve, *q*, carried upon one of its arms, a spring, *p*, for normally maintaining the valve upon its seat to close the discharge-spout, a stopper, F, to close the filling-aperture, and means for connecting it with the other arm of the lever, by which the said lever may be operated, as and for the purpose specified.

3. In an oil-can, a filling-aperture, D, its wall provided with a notch, *s*, a discharge-spout, C, a pivoted lever, E, a valve, *q*, carried upon one of its arms, a spring, *p*, for normally maintaining the valve upon its seat to close the discharge-spout, a stopper, F, to close the filling-aperture, and a link, *o*, adapted to lie within the notch *s* in the wall of the filling-aperture, and thus to engage the stopper in a raised position, as described, when desired, whereby the lever E may be sustained in such position that the valve *q* is off of its seat and the discharge-spout open, substantially as specified.

4. In an oil-can, a filling-aperture, D, and a discharge-spout, C, in combination with a lever, E, and a stopper, F, and a valve, *q*, attached to opposite arms of said lever in such manner that the stopper may operate the said lever, and thereby the said valve, to remove it from its seat upon the discharge-spout, as and for the purpose specified.

385,329. JUMP-SEAT VEHICLE. CHARLES H. STRATTON, Salem, Ohio. Filed Feb. 13, 1888. Serial No. 264,461. (No model.)



Claim.—1. The combination, with a vehicle-body and seats pivotally supported therein, of tie-bars secured to the sides of the body and embracing legs of the seat for limiting the movement of said legs.

2. The combination, with a vehicle-body, seats, and supporting-legs pivoted in the body and to the seats, of tie-bars secured to the inner sides of the body and adapted to loosely receive legs of one seat, and thereby regulate their position, substantially as set forth.

3. The combination, with the rear seat, its supporting-limbs, and two rocker-plates, of a pair of tie-bars attached to the sides of the vehicle-body to prevent their outward strain, by tying them together with the seat and its limbs, substantially as set forth.

4. The combination, with a rear seat, its limbs and supporting-standards, of a front seat, legs supporting the same, the rear legs having shoulders formed thereon, and two parallel bars loosely connecting the legs of the two seats and adapted to bear against the shoulder on the legs of the front seat when the seats are elevated, substantially as set forth.

5. The combination, with the body, rear seat, and a pair of connected jump-seats, of supporting-standards secured to the side plates of the rear seat, and tie-bars secured to the inner sides of the body to assist in supporting the seat, substantially as set forth.

6. The combination, with the sides of a vehicle-body and seat-supporting strips affixed to the inner surface of these sides, of a seat adapted to move front and rearward on pivoted limbs, and tie-bars to tie the sides of the body together by sliding connection with them of the front limbs of the rear seat, substantially as set forth.

7. The combination, with the sides of a vehicle-body, tie-bars, and strips that support a rear seat and are affixed to the inner surfaces of these sides, of a rear seat, its pivoted limbs, two seat end plates, and two rocker-plates, substantially as set forth.

8. The combination, with a dash, a foot-board, and a cross-sill on which the foot-board rests, of bifurcated guide-bars, the upper limbs being attached to the foot-board rigidly, and the lower limbs adapted to slide in holes in the cross-sill, and means to move the guide-rods endwise, substantially as set forth.

9. The combination, with a foot-board, a dash fixed to it, and a cross-sill of the vehicle-frame, of parallel guide-bars fastened to the foot-board and adapted to slide in holes in the cross-sill, and connecting-bars pivoted to the inner ends of the guide-bars and also to the limbs of the rear jump-seat, substantially as set forth.

10. The combination, with the body of a vehicle, a cross-sill fixed thereto, and parallel guiding-bars adapted to slide backward or forward in the sill, of a foot-board held fast to the guiding-bars, and a dash secured to said foot-board, substantially as set forth.

11. The combination, with the body of a vehicle, sliding seats therein, and connecting-bars having pivotal connection with legs of the seats, of a fixed cross-sill in the forward end of the body, parallel guiding-bars adapted to slide therein, the latter being pivoted to the connecting-bars, a foot-board held fast to the guiding-bars, and a dash secured to the foot-board, substantially as set forth.

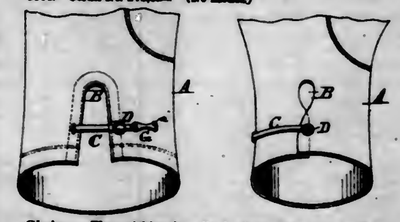
12. The combination, with a pair of pivoted jump-seats, the rear legs of one seat having a downwardly-projecting web thereon, of a sliding dash, and a connecting-rod pivoted to the dash and to the web, whereby the former is operated by a movement of the seat, substantially as set forth.

385,330. STOCKING-SUSPENDER CLIP. FREDERIC R. TAYLOR, Birmingham, County of Warwick, England. Filed Mar. 31, 1887. Renewed Jan. 12, 1888. Serial No. 260,562. (No model.) Patented in England July 21, 1886, No. 8,737.



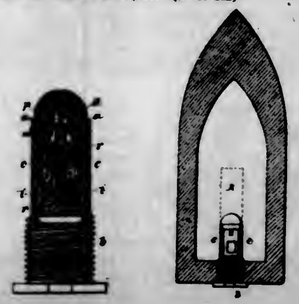
Claim.—In a suspending-clasp, the upper metallic plate, H, shaped, as shown, with prongs H^2 and slot J and fastened to the bottom plate, B, which is made of metal and provided at one end with slots D D and at the other end with oblong slots E E, and acted upon by the lever-arm O, shaped like the letter S, and hinged to plate B at N, substantially as and for the purpose set forth.

385,331. GLOVE-FASTENER. WILLIAM D. THOMPSON, Bath, assignor of one-half to John J. Dunshee, Keene, N. H. Filed Apr. 17, 1888. Serial No. 270,982. (No model.)



Claim.—The within-described glove-fastener, consisting of a thong, C, secured to one of the flaps of the slit B, the re-enforcing eyelet D, through which the said thong passes freely, the clasp G, attached to the free end of said thong and provided with a hook, *e*, and the perforated plate E, secured to the glove, all substantially as described.

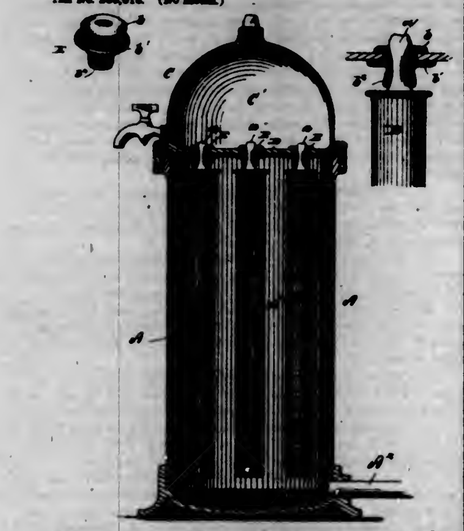
385,332. SHELL. MAX VON FÜRSTEN, Berne, Germany. Filed Mar. 8, 1888. Serial No. 266,622. (No model.)



Claim.—1. In a shell, the combination, with the body of the shell and its bursting-charge, of the tube *c*, a percussion-fuse with initial cartridge *i*, inserted into the tube *c*, and means for fastening the fuse in the tube and adapted to give way when the fuse flies forward in consequence of the impact of the shell against its mark, the bursting-charge being provided on the prolongation of the tube *c* with a channel, *k*, substantially as and for the purpose specified.

2. In a shell, the combination, with the body of the shell and its bursting-charge, of the tube *c*, a percussion-fuse with initial cartridge *i*, inserted into the tube *c*, and the wire *d*, detachably connected to the tube *c* and extending over the fuse-head for retaining it normally in said tube, the bursting-charge being provided on the prolongation of the tube *c* with a channel, *k*, substantially as and for the purpose specified.

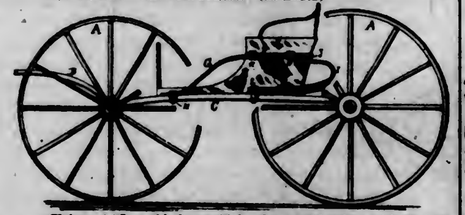
385,333. FILTER. FRANK E. WAY, Springfield, Ohio, assignor of one-half to Henry C. Dimond, same place. Filed Mar. 30, 1886. Serial No. 268,016. (No model.)



Claim.—1. A tube-coupling, substantially as set forth, formed of flexible material, and provided with the upper and lower flanges of a larger diameter than the opening into which said coupler is adapted to be inserted, and the projecting nipple, substantially as and for the purpose set forth.

2. In a filter having a main chamber and a filtering-chamber separated by a partition, of one or more filtering-tubes passing through the said partition, said tubes or pipes being each provided with a coupler having the projecting flanges of larger diameter than the opening in said partition on opposite sides of said partition, and the extending nipple, substantially as and for the purpose set forth.

385,334. VEHICLE-SPRING. FREDERIC H. WETMORE, Cortland, N. Y., assignor of one-half to Ejalmar Malmberg, same place. Filed Sept. 12, 1887. Serial No. 249,698. (No model.)



Claim.—1. In a side-bar vehicle, the combination, with the side bars and body, of the springs composed of two parts, G I, the forward end of G being secured to the forward end of the side bar and its rear end shackled to the forward end of the spring I, the lower end of spring I being secured to the side bar at a suitable distance to the rear of the secured end of part G, the body being suspended between the springs and secured thereto, substantially as specified.

2. The combination, in a side-bar vehicle, of the body and side bars thereof, the springs composed of two parts, G I, the part I secured to the side bar at a suitable distance from the rear end of said bar, said part extending rearward, curving upward and over upon itself, and shackled to the part G, which is secured to the side of the body and curves downward, having its forward end secured to the side bar, substantially as set forth.

385,335. STOVE-POLISH. CHARLES REMBRANDT, Philadelphia, Pa. Filed Nov. 24, 1886. Serial No. 219,764. (Specimens.)

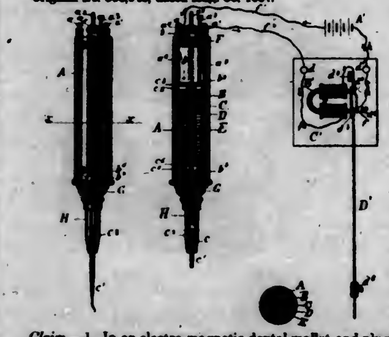
Claim.—1. As a new and improved article of manufacture, a stove-polish in a granulated form, substantially as described.

2. As a new and improved article of manufacture, a stove-polish consisting of a mixture of plumbago and an adhesive substance, granulated and polished, substantially as described.

3. The method herein described of making stove-polish, consisting in first mixing plumbago with soap-stock; second, breaking and grinding the same while drying, and, third, in polishing the granulated article, all substantially as described.

REISSUES.

10,940. ELECTRO-MAGNETIC DENTAL HAMMER AND PLUGGER. PHILIP HEMME, Clinton, Iowa. Filed May 7, 1888. Serial No. 273,120. Original No. 366,946, dated Aug. 30, 1887.



Claim.—1. In an electro-magnetic dental mallet and plugger, the combination of the inner and outer electric coils, B C, the core E, having the disk-head b^2, the mallet-rod b^3, the adjusting-screws a^6 a^7, the tension-spring b', the tubular magnet D, the posts a^8 a^9, supporting the head F, the binding-posts *a a'*, the stem H, the slotted holder *c*, and the plugger *c'*, substantially as and for the purpose described.

2. In an electro-magnetic dental mallet and plugger, the inner and outer electric coils, B C, the core E, having the disk-head b^2, the mallet-rod b^3, the adjusting devices a^5 a^6, the tension-spring b', the tubular magnet D, the supporting devices a^6 a^7, the binding-posts *a a'*, the stem H, the slotted holder *c*, and the plugger *c'*, in combination with the magnets B', the contact-spring d^3, the armature d^2, attached to the spring, the adjustable contact-point *f*, and the pendulum D', attached to the armature and provided with the adjustable weight d^5, substantially as and for the purpose described.

3. In an electro-magnetic dental mallet and plugger, the combination of the inner and outer electric coils, B C, the movable core E, having the disk-head b^2, the mallet-rod b^3, and the fixed tubular magnet D.

10,941. CAR-COUPLING. MADISON J. LORRAINE and CHARLES T. AUBIN, St. Louis, Mo. Filed Dec. 15, 1887. Serial No. 258,041. Original No. 366,195, dated Aug. 30, 1887.

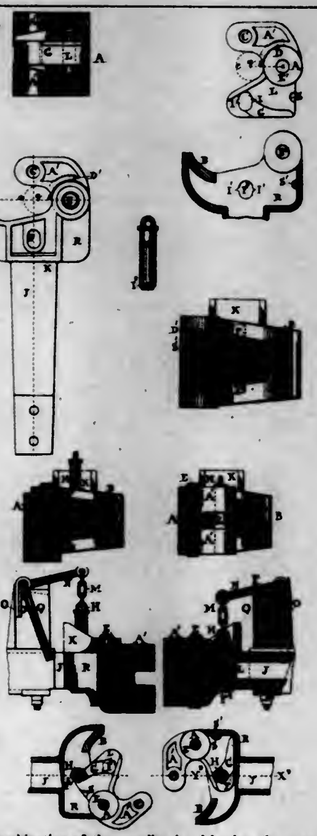
Claim.—1. The combination of the ⊃-shaped coupling-head pivoted at its center, the draw-head, and the automatic locking-pin, for the purposes set forth.

2. The combination of the ⊃-shaped coupling-head, the draw-head; the pivot E, the inclined (or curved) groove D, and the knob or pin D', for the purpose of making an automatically-opening coupling-head.

3. The combination of the ⊃-shaped coupling-head, the groove G, the draw-head, the locking-pin resting on top of the arm L when the coupling-head is open and falling through the holes F and F^2 when the coupling-head is closed, and the lever-arm and chain, substantially as described.

4. The combination of the ⊃-shaped coupling-head pivoted at its center, the draw-head, the locking-pin, the car-body, the lever-arm and chain, and the block P, attached to the timber Q, for the purpose of setting not to couple.

10,941.



5. The combination of the coupling-head having the grooves D and G and the holes F' and F', the pivot E, the draw-head having the holes F^2 F F^3 and the knob D', the buffer B, and the pin H, having the projecting knob I^2, substantially as described.

6. The combination of the ⊃-shaped coupling-head having the recess S, the locking-pin engaged with the rearward arm of said coupling-head, and the draw-head having the rib S', which fits in the recess S only when the coupling-head is closed for making the coupling-head firm and secure when locked.

7. The combination of a coupling-head turning laterally on its pivot, and having an external arm extended to engage with and grip a like fellow and a rearward arm intended to engage with some locking mechanism, with a draw-head carrying a common gravity vertically-moving locking-pin, said automatically-locking pin riding directly upon such rearward arm when opened and locking such inner arm by dropping through a hole perforated in the inner arm of the coupling-head, substantially as described.

8. The combination of two similarly-constructed draw-heads having ⊃-shaped pivoted automatically-opening coupling-heads and the automatic locking-pins, substantially as described, for the purpose of making an automatic coupling.

9. The combination of a coupling-head, the draw-head, the pivot E, the inclined (or curved) groove D, and the knob or pin D', for the purpose of making an automatically-opening coupling-head.

10. The combination of a coupling-head, the draw-head, the groove G, the locking-pin resting on top of the arm L when the coupling-head is open and falling through the holes F' and F^3 when the coupling-head is closed, and the lever-arm and chain, substantially as described.

11. The combination of the draw-head, the pivoted coupling-head, and the locking-pin, said locking-pin resting upon the inner arm of the coupling-head when the coupling-head is opened and riding upon said inner arm when the coupling-head is turned to be closed, and said inner arm being grooved to receive and guide the locking-pin.

12. The combination of the draw-head, the pivoted coupling-head, and the locking-pin, said locking-pin working vertically in a perforation in the draw-head and resting directly upon the inner arm of the coupling-head when the coupling-head is opened, riding directly upon said inner arm when the coupling-head is turned to be closed, and dropping through said inner arm to secure said coupling-head when closed.

13. The combination of the coupling-head having the groove D and the holes F' and F', the pivot E, the draw-head having the holes F^2 F F^3 and the knob D', the buffer B, and the pin H, having the projecting knob I^2, substantially as described.

14. The combination of the pivoted coupling-head having the inclined or curved groove, with the draw-head provided with a knob or pin to travel in said inclined groove, for the purpose described.

15. The combination of the pivoted coupling-head having the grooves D and G and the holes F' and F', the draw-head having the holes F^2 F F^3 and the knob D', the buffer B, and the pin H, substantially as described.

16. The combination of the pivoted coupling-head having the grooves D and G and the holes F' and F', the draw-head having the holes F^2 F F^3 and the knob D', and the pin H, substantially as described.

17. The combination of the coupling-head having the holes F' and F', the pivot E, the draw-head having the holes F^2 F F^3, and the pin H, having the projecting knob I^2, substantially as described.

18. The combination of the draw-head, the pivoted coupling-head, and the vertically-moving locking-pin, the inner arm of said coupling-head, when the coupling-head is closed, being held by said pin and also interlocked with the draw-head at a point between the location of said locking-pin and the coupling-head pivot, for the purpose described.

19. The combination of a coupling-head turning laterally upon its pivot and having an external arm intended to engage with and grip a like fellow, and an inner arm intended to engage with some locking mechanism, with a draw-head carrying a common gravity vertically-moving locking-pin riding directly and solely upon such inner arm when the coupling-head is open and dropping to lock it when closed, substantially as described.

20. The combination of two similarly-constructed draw-heads having pivoted automatically-opening coupling-heads and the automatic gravity-locking pins, substantially as described.

PHOTO LITH. NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE DE BAUSSET.

Decided June 16, 1883.

1. The Office is bound to raise the question of utility of an alleged invention in cases where natural laws and established principles are disregarded, for the reason that the law does not authorize the grant of Letters Patent except for novel and useful inventions. In such cases, even if novelty were admitted, a patent would be withheld until applicant should demonstrate the operativeness of his device. *Ex parte* statements or theoretical arguments are not sufficient; applicant must prove by practical demonstration his assertions.
2. The patent system was not designed to protect the chimerical schemes of visionaries or closet theorists. Invention consists in more than the work of the imagination. To conceive of a scheme of vast dimensions is the work of a dreamer; to make the mathematical computations requires the ordinary knowledge of the student; to face the difficulties of construction and devise means to overcome them is the true work of the inventor.

APPEAL from Examiners-in-Chief.

AIR-SHIPS.

Application of Arthur de Bausset filed March 11, 1886, No. 194,910.

Messrs. Dyrenforth & Dyrenforth for the applicant.

HALL, *Commissioner:*

This application was formally rejected by the Primary Examiner for want of operativeness, that being the only question involved in such action of the Office. Upon appeal, the decision of the examiner was affirmed by the Examiners-in-Chief. Thereupon applicant appealed to the Commissioner. The case was referred to and heard by the Assistant Commissioner, who reversed the action of the Examiners-in-Chief upon the record as it then stood. The attention of the Commissioner having been called to the matter, and it having been suggested that other questions of merit were present in the case which had not been involved in the previous action of the examiner, the application was remanded to the Primary Examiner, with direction "to examine the application on its merits, and allow or reject the case as his judgment may determine." The examiner, regarding this direction as an authority to treat the case *de novo*, went more at length into the question of operativeness, and also based the rejection, which he again made, upon certain references which had been before cited. The case was again appealed to the Examiners-in-Chief, who affirmed the decision of the Primary Examiner, and it is now before the Commissioner on appeal from the decision of the Examiners-in-Chief.

The references are the following patents: Abruzzo, July 21, 1868, No. 80,107; Emsley, April 17, 1883, No. 276,012; Hamon, October 5, 1886, No. 350,303.

In support of the reasons given by the examiner for holding the device inoperative the following publications are referred to: *Strength of Materials*, Thos. Box, London, E. & F. N. Spon, 1883, pp. 448 and 449; *Steam Boilers, their Construction and Management*, W. H. Shock, New York, Van Nostrand, 1880, sec. 13, p. 351; *Appleton's Dictionary of Mechanics*, New York, D. Appleton & Co., article, "Boring Mills;" *Natural Philosophy*, D. Olmsted, New York, Collins & Bro., 1849, pp. 128, 128, and sec. 198; *Encyclopedia Britannica*, Boston, Little, Brown & Co., 1875, article "Aeronautics;" *Mechanic's Almanack*, 1880–1885, Calvert, London, J. Heywood, 1886, p. 39, Fig. 9, p. 41; *History and Practice of Aeronautics*, J. Wise, Philadelphia, Joseph A. Speel, 1850.

The claims are as follows:

1. An air-ship comprising, in combination, a hollow metallic body and a pneumatic pump or pneumatic pumps for producing a vacuum therein, whereby the ship may be caused to rise, substantially as described.
2. An air-ship comprising, in combination, a hollow metallic body, a pneumatic pump or pneumatic pumps for producing a vacuum therein, and a car attached to the hollow metallic body, substantially as described.
3. In an air-ship, a metallic cylinder constructed substantially as described, provided with a pneumatic pump or pneumatic pumps and pointed or cone-shaped ends, substantially as described.
4. In an air-ship, a metallic cylinder provided with a pneumatic pump or pneumatic pumps, pointed or cone-shaped ends, and electrical apparatus for operating the same, substantially as described.
5. In an air-ship, a metallic cylinder provided with a pneumatic pump or pneumatic pumps, pointed or cone-shaped ends, and a spring-support for the points, substantially as described.

The first claim defines nothing but an air-pump, viz: a hollow metallic body and a pneumatic pump or pumps for producing a vacuum therein. The fact that it is called an "air-ship" and that by creating a vacuum in the metallic body the ship may be caused to rise are mere statements of results and not of construction. The same statement may be made of the third claim, except that the air-pump is constructed with cone-shaped ends; but it would be none the less an ordinary air-pump.

Applicant's conception is that a vessel constructed of metal of sufficient dimensions and with the atmos-

phere exhausted may possess a sufficient degree of levitation by means of displacement to float in the atmosphere. The construction and relation are precisely identical with those of the submarine diving-boats, from which the water is either pumped or originally excluded, and the levitation controlled by the admission of more or less water or its expulsion, the only difference between the two being that in the one case the atmosphere is pumped out or allowed in as the aeronaut desires to rise or descend, while in the other the water is pumped out or allowed ingress as the navigator desires to rise or descend in the water.

The patent to Abruzzo clearly shows an air-ship consisting of a hollow metallic body and pumps by which the metallic body may be exhausted, and having a car attached to the said body—in other words, all the elements called for in the first two claims of applicant. In Abruzzo's cylinder there appears only one end cone-shaped, while in applicant's third claim both ends are cone-shaped; but it is obvious, as suggested by the examiner, that there is no invention in making the second end of the vessel of the same shape as the first.

Claim 4, covering a combination the same as the previous claims, with the addition of an operating apparatus, is also anticipated by Abruzzo, and the fact that applicant operates his apparatus with electrical force or machinery gives it no patentability over and above what is disclosed by Abruzzo.

In claim 5 is found the device of a spring-buffer at the extreme point of the cone-shaped end. Spring-buffers are shown in the reference, differently located, it is true; but undoubtedly a mere change in the position of the buffer to a location where it is thought to be more desirable or useful involves no invention.

Applicant proposes to build an air-ship in cylindrical form which he prefers to make about four hundred and fourteen feet long and about one hundred and forty-four feet in diameter, with a cone and prow 120 feet long at each end. The length over all is therefore 654 feet. This vessel is constructed of steel plates one forty-fourth of an inch thick riveted together and to steel ribs inside. These ribs are placed about nine feet apart, and are one and one-fourth inch wide by one-eighth of an inch in thickness. This vessel is not to be inflated like an ordinary balloon, but is to be exhausted of air until it becomes buoyant enough to support the vessel itself and its attachments, consisting of a car for its load, propelling and steering machinery, and pumps for exhausting the vessel as necessity may require. In addition to these light ribs there are interior supports and compartments, and the ribs are particularly set forth as intended to prevent collapse. Applicant has gone into elaborate computations as to the weight of such a cylinder and its appurtenances to show its buoyancy and sustaining power under ordinary atmospheric conditions.

The examiner has denied both the novelty and utility of the alleged invention, and has been fully sustained by the Examiners-in-Chief. There is nothing in any of the claims that is not fully met in the references cited, in which are found the vessel of the same shape as applicant's, pumps for exhausting the air therein, and propellers worked by an electric motor. The idea of using a metallic vessel exhausted so as to be buoyant in the atmosphere is shown to be over two centuries old, so that it appears that there is not a single novel idea embraced in the claims presented.

But apart from these references the examiner has given unusual attention to the reasoning by which applicant attempts to support his hypothesis. His answer to the reasons of appeal demonstrates the fallacies of applicant's argument, and, in our present knowledge of natural laws, is to my mind unanswerable. He observes that in structures showing some analogies to that proposed, an enormous internal bracing has been found necessary in order to enable them to resist a much slighter comparative outside pressure than that upon applicant's cylinder. Such structures are the outcome of the highest engineering skill of the day. They have been planned with careful regard to the tested strength of materials and proportion of parts, and are employed under conditions of stability as remote as can be conceived from those of applicant's cylinder. The force of such illustrations is not to be overcome by closet theorists nor by mathematical computations, however minute, that ignore established natural laws. The record shows no attempt to overcome such objections. The legitimate and unavoidable conclusion reached by the examiner is that to enable the structure to sustain its weight, even prior to the exhaustion of air, it must be supported by enormous bracing, such as is seen in the iron roof of a railway depot or the hull of an ocean steamer. Such bracing by its weight must overcome all the buoyancy the cylinder can derive from the exhaustion of air from its interior, and without such bracing its collapse (even supposing it is built) is as inevitable as the laws of nature. It cannot be built; but supposing the difficulties of building it were overcome, it would be incapable of use. Under the circumstances, even if novelty were admitted, it must be held that a patent must be refused at least until applicant practically demonstrates the operativeness of his device. The patent system was never designed to protect the chimerical schemes of visionaries. Invention consists in more than the work of the imagination. Applicant has only carried his conception up to the point where invention must begin. To conceive of a scheme of vast dimensions is the work of a dreamer; to make the mathematical computations requires only the ordinary knowledge of the student; to face the difficulties of construction and devise means to overcome them is the true work of the inventor, and it is in these means that the invention must consist, where others in the same field have failed.

It is not true that one who simply conceives an invention may obtain a patent if he has never completed such invention or demonstrated beyond a doubt that it is capable of successful operation. (*Gardner* v. *Dudley*, C. D., 1880, 123.)

An imperfect and incomplete invention resting in mere theory or in intellectual motion, or in uncertain experiments, and not actually reduced to practice and embodied in some distinct machinery, apparatus, manufacture, or composition of matter, is not patentable. (*Draper* v. *Potomska Mills Corp.*, 13 O. G., 276.)

Patents are granted only for inventions which possess novelty and utility. The last consideration is rarely raised, since it is generally held that unless a device is actually harmful in some way its utility need not be questioned. But this does not cover the whole ground.

Whether an invention is useful in the sense of the patent laws is not whether it is mischievous or hurtful or frivolous or insignificant, but whether it is capable of use for a purpose from which some advantage may be derived. (*Crouch* v. *Speer*, 6 O. G., 187.)

To constitute utility, it must be a practical method of doing the thing designed. (*Roberts* v. *Ward*, 4 McL., 568.)

The Office is bound to raise the question of utility in cases in which known laws and established principles are disregarded.

When, as in this case, the universal law of gravitation must be ignored in one portion and doubled in another in order to make the device operative, the question as to whether it is "sufficiently useful and important" is pertinent. (*Ex parte Smith*, C. D., 1878, 139.)

When the question of operativeness is raised in cases of this character it is not to be resolved by *ex parte* statements or by theoretical argument. The applicant must overbalance the opposing reasons in the judgment of the tribunals having jurisdiction of the case.

These reasons may be suggested by the laws of nature or by the testimony of witnesses. In case of evident conflict between the two the former must of course prevail. (*Ex parte Winterlich*, C. D., 1879, 240.)

The Office is particularly bound to take notice of the question of utility, because the law does not authorize the grant of patents except for useful inventions, and the fact of a grant is an assurance to the public of the conclusions of the Office in this respect as well as in respect to novelty.

The patent is *prima facie* evidence of utility. (*Vance* v. *Campbell*, 1 Fisher, 483; *Wayne* v. *Holmes*, 1 Bond, 27; *Lee* v. *Blandy*, 1 Bond, 351; *Tilghman* v. *Werk*, 1 Bond, 511.)

The Office cannot be too careful on this point. Cases are not unknown where patents have been secured by a technical compliance with Office requirements, and then used simply to impose on a public not disposed to scrutinize closely the merits of a matter upon which the Patent Office has set the seal of its approval.

The present case deals with ideas long exploded and proposes not a single step in advance of what has long been known. It differs from former schemes only in its gigantic proportions. This cylinder is to be as long as the Capitol, and its diameter equals the width of one of our great avenues. These dimensions may seem to the visionary to demonstrate the greatness of applicant's conception; but it is great in no other respect. Applicant has not only struck out no new track, but confesses that there has been no attempt even at reduction to practice.

I am aware that it is settled by the authorities in the Office that when there is a reasonable doubt as to the utility of an invention it is to be resolved in favor of the applicant. That rule may be applicable either when applicant has made no attempt to reduce to practice, but relies upon a statement and description of his invention, or when he claims that he has substantially reduced it to practice; but in either event it must be a matter of reasonable doubt.

In this case I am not satisfied that there is even a doubt. Indeed, the opinion of all the experts in the Office who by education and experience are qualified and competent to give this subject careful and scientific investigation is unanimous that it is wholly impracticable and impossible to construct such an air-ship.

The decision of the Examiners-in-Chief is therefore affirmed.

EX PARTE WEEKS.

Decided June 15, 1888.

COMBINATION AS DISTINGUISHED FROM ADAPTATION.

Claims for combinations distinguished from claims covering elements having a specific construction and arranged in such peculiar relation as to be adapted to use with each other. While it cannot be doubted that it is the better practice in all cases of novel combination to express the claim in combination form, it sometimes occurs that an invention is of such peculiar character as to render such a claim unimportant.

ON petition.

ACCELERATING GUNS AND CARTRIDGES.

Application of Asa Weeks filed March 29, 1883, No. 89,826.

Mr. Wallace A. Bartlett for the applicant.

HALL, *Commissioner:*

This case comes before the Commissioner on appeal from the action of the examiner requiring division. The application contains nine claims, three of which cover the piece of ordnance having a peculiar construction, in that it possesses one or more small grooves or short rifles in that portion of the bore where the charge is located. The remaining six claims cover a cartridge which is constructed in sections so arranged that when the rear section is exploded the remaining sections are consecutively exploded by means of the flash-flame of the explosion reaching them through the grooves or rifles as the charge advances toward the muzzle of the gun.

A minute or specific description of the invention is not required. It is clear that the flash groove or rifle of the gun has no purpose or function other than to assist in the successive explosion of the sections of the cartridge, and the cartridge as constructed could not be exploded in the manner described in a gun so constructed except by means of the flash-grooves.

The examiner required division between the three claims covering the gun and the six claims covering the cartridge. The Committee on Division were divided in opinion, two of them approving the action of the examiner and the third member dissenting from such approval.

The relation between a cartridge and the gun or engine in which it is discharged is a somewhat peculiar one, and this peculiar relation probably called the attention of the Committee on Division to the ninth claim, with a view of determining whether it was a claim for a combination between the gun and the cartridge. The dissenting member of the Committee was inclined to hold that it was a combination claim; but I am not able to concur in that view and do not think it is capable of such an interpretation. If the case were one in which a combination claim could be maintained, and there existed a real combination, I think the presence of such a claim would be immaterial. It cannot be doubted that it is the better practice in all cases of novel combination to claim such combination, as well as the novel elements which enter into the combination; but this is not absolutely essential or necessary. It sometimes occurs that an invention is of such peculiar character that while a combination claim would be entirely proper

it would be quite unimportant and need not be inserted. In such case, when an applicant shows, but does not claim, a novel combination, I see no reason why he might not present claims for all the novel elements which have not acquired a status in the arts and in invention and are incapable of use in other relations—that is to say, he may claim precisely the same elements without a combination claim which he could with such claim, provided he would be allowed to make the latter claim and it is new.

In the present case, while both elements—the gun and the cartridge—are old, it is asserted that each has a specific construction which constitutes a combination, and that in view of this relation applicant is entitled to present claims for the combination and for all of the elements which are new; that the gun with these peculiar grooves or rifles is new, and that the cartridge arranged in sections and to be discharged by means of the flash-flame operating through the grooves of the gun is also new, and that therefore applicant is entitled to present claims for the two elements, although he has not presented a combination claim.

In the first place, I am not prepared to concede that the relation between the piece of ordnance or gun and the powder or cartridge is such as to constitute a combination. The use of the powder in the shape of cartridges is old, and the use of the gun with or without grooves or rifles is old. There is a certain degree of adaptation between the two which is different from the relation of combination. Originally the javelin or the stone was thrown by the human hand. In the evolution of invention bows and other devices took the place of the hand in hurling the javelin or the stone. From the stone or the javelin, or both, has proceeded the modern projectile, while explosives have taken the place of physical and other forces, and the gun is the fulcrum or engine enabling the explosive power of the powder to react upon the projectile and give it velocity and direction, so that the gun-barrel, which is only the successor of the original tube through which the Indian blew his dart or arrow, has been constructed with regard to adaptation to the projectile and the projectile has been constructed with reference to the gun, and the powder, which is nothing but a composition of matter, bears the same relation to the two which steam, or water, or gas, or other inflammable material does to the apparatus through which they communicate power to certain parts or portions of machinery.

As an illustration of the distinction between adaptation and combination there is the instance of the modern type-writer and the paper upon which it writes. The paper was old, and has been used for an indefinite period. When inventive genius sought to find better and more rapid methods of writing upon it than by the hand and pen, the type-writer was devised, and the type-writer is absolutely useless and of no value whatever except in connection with the writing material which we call "paper," and yet no one will pretend that there is any combination between the paper and the type-writer, although it is a clear case of special and necessary adaptation. The same thing may be said to be true of the wheel of the locomotive and the rail upon which it runs. There is no combination between the two. They are simply adapted to each other; and if some one were to suggest the introduction of a groove in the rim of the wheel and a corresponding ridge in the rail, so that the groove would run upon the ridge, there would be no more combination between the wheel and the rail after such introduction than before. It would be merely an additional adaptation, and so innumerable illustrations may be cited, and I think the relation of a gun and a cartridge precisely the same. The gun is an independent subject of manufacture and invention, and so far as the cartridge is concerned can be used in an infinite variety of other relations. The gun with this specific flash-groove introduced into it is none the less capable of being used in any other relation as a gun. The cartridge itself can be used in other relations, but could not exercise the functions which belong to it as a cartridge constructed in sections to be exploded consecutively; but whether there are other means by which it might be exploded instead of resorting to the grooves of the gun is not developed in the history of this case, and perhaps is immaterial.

It is probably safe to state that the cartridge is so far new and is of such peculiar construction that it could not be used or applied in other relations, and while, as said above, such fact does not make its relation to this gun a combination, it gives it an independent status as a new article of manufacture. It is undeniable that, having reference to the gun with its peculiar function, growing out of the groove or rifle and its peculiarly-constructed cartridge made to be discharged through the efficiency of the groove in the gun, it may be said that each is incapable of exercising its peculiar function without the assistance of the function of the other. But this, it is evident, depends wholly upon the existence of the groove through which the flash-flame may communicate to the forward section of the cartridge. I regard this slight groove or change in the bore of the gun as being nothing more than an adjunctive device, constituting no other part of the invention than would a tube through which a fuse could be admitted through the wall of the gun to the successive chambers of the cartridge. It is only a vent to the cannon, communicating fire from the rear section of the cartridge to the other sections. It has no more mechanical connection with the cartridge than the old and ordinary vent by which fire is communicated to the rear section of the cartridge. It is simply a part of the cannon, and is adapted to such a cartridge just as the original vent is to the ordinary cartridge. Ordinarily in questions of this character when there is any serious doubt the applicant would be entitled to the benefit of the doubt and would be allowed to unite his claims; but guns and ordnance are so entirely distinct and separate from cartridges, both fixed and others, in manufacture, invention, and all other respects, that I do not feel willing to allow claims for them to be comprehended in the same application, unless the necessity and right are clear and obvious.

I therefore affirm the action of the Primary Examiner in requiring division of this application.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

BLAUM *v.* NATIONAL BARROW AND TRUCK COMPANY.

Decided April 24, 1888.

BENJAMIN—WHEELBARROWS.

Letters Patent No. 349,681, granted to William Benjamin, September 28, 1886, for an improvement in metal wheelbarrows, adjudged not infringed by a construction like that described in Patent No. 355,245, granted to Joseph Annin, December 28, 1886, for metal wheelbarrows.

Mr. Worth Osgood for the plaintiff.
Mr. W. B. H. Dowse for the defendant.

SHIPMAN, *J.*:

This is a bill in equity which is founded upon the alleged infringement of Letters Patent No. 349,681, dated September 28, 1886, to William Benjamin, assignor to the plaintiff for an improvement in metal wheelbarrows.

The patented invention was an improvement upon a metallic wheelbarrow the frame of which was composed of two tubular metallic handles or side bars and two cross-bars provided with eyes which fitted upon the handles and were shrunk thereon. This device is shown in Letters Patent No. 246,584, dated August 30, 1881, to William C. Wren, assignor to Joseph Annin. Its method of construction was defective because the barrows could not be "knocked down" or taken apart, and thus economically transported in quantities. The improvement consisted, in brief, in dividing the eyes. The eyes, as shown in the drawings, are composed of curved or semicircular portions upon the ends of the cross-bars and movable U-shaped portions or clips which are pressed toward the cross-bars, and being held in position by one or more bolts clamp the side bars in place. The specification says that—

> The part of the clips or eyes that encircle the side bars or handles must be formed somewhat smaller than the outside diameter of the handles, so that when the bolts are screwed together they will draw the eyes tightly around the handles, thus making a rigid and substantial frame with or without the tray.

The claims of the patent are as follows:

> 1. In a wheelbarrow, the combination, with the metal tray, of the cross-bars C D, for supporting and strengthening the bottom of the same, and the side bars or handles, B, the cross-bars being provided with eyes of adjustable size, and bolts by which said handles may be detachably clamped therein, substantially as set forth.
>
> 2. The herein-described frame for a wheelbarrow, consisting of the front and rear cross-bars, C D, for supporting and strengthening the bottom of the tray, the substantially parallel side bars or handles, B, the cross-bars being provided with eyes of adjustable size for the reception of the handles, and bolts for detachably clamping the handles, substantially as set forth.

The defendant makes wheelbarrows under Letters Patent No. 355,245, dated December 28, 1886, to Joseph Annin. The cross-bars of this barrow are straight flat bars of iron which project beyond the handles. Each extremity is provided with a U-shaped clip for clamping the handles, which clip is provided at one end with a claw which passes around the end of the cross-bar and at the other end with a flange which is perforated for the reception of a bolt which secures the clip.

The question of infringement depends upon the construction of the Benjamin patent, and, in my view of the case, is the only question which demands consideration. I therefore omit discussion in regard to the authorship or the patentability of the invention.

The eyes upon the cross-bars of the William C. Wren patent were integral with the cross-bars, and, having been heated, were slipped over the handles and were shrunk thereon. The form of the improvement which is described in the patent consisted in making one portion of the eye a detachable clip, which was fastened to the cross-bar by a bolt or bolts, these bolts drawing the eye tightly around the handles, and thus enabling the eye to be called adjustable. The Benjamin patent admits the fact that clips and clamping-eyes had been used in various situations, and it is manifest from the history of the art that they had been used to fasten the tubular metallic handles of a wheelbarrow to its tray and to secure the metallic transverse springs of a carriage to its wooden side bars. Inasmuch as in no pre-existing device detachable eyes had been virtually a part of the cross-bars, the effort is made to have the patent broad enough to include all detachable and adjustable eyes, although not integral with the cross-bar, which are secured to and by means of the fastening can be called, in effect, a part of the cross-bars. Any one of these various eyes can be considered adjustable, because the interior diameter of the eye may be varied by screwing or unscrewing the bolts. The claims of the patent are also broad enough to include a split eye which is integral with the cross-bar, the several parts being united by bolts which detachably clamp the handles in the cross-bars. Neither one of these constructions is permissible, because the invention simply consisted in dividing the eye of the Wren patent, in which handles and cross-bars had been united by the eyes of the cross-bars, and making one portion of the eye detachable. Detachable clamping-eyes which screwed the tray to the handles were old. An eye which was part of the cross-bar and clamped the handle was old. Assuming that there was patentable invention in dividing this eye into two parts and making one part detachable, it is improper to extend the patent so as to make it include all detachable clips which encircle the handles and clamp them to the cross-bars. That was not the invention of the patentee, who sought only to improve upon the conception of the pre-existing Wren patent. The invention consisted in the manner in which the eye was constructed, by which method a portion of the eye was integral with the cross-bar, and does not include detachable clips which are secured to a straight cross-bar. There is no infringement.

The bill is dismissed.

NEW PATENT LAW OF INDIA.

(The following copy of the Indian Patent Law, approved March 16, 1888, is furnished for publication by Messrs. W. P. Thompson & Co., of Liverpool, England.)

ACT No. V OF 1888.

The Inventions and Designs Act, 1888.

AN ACT to consolidate and amend the law relating to the Protection of Inventions and Designs.

Whereas it is expedient to consolidate and amend the law relating to the protection of inventions and designs; It is hereby enacted as follows:—

Section 1. (1) This Act may be called the Inventions and Designs Act, 1888.

(2) It shall extend to the whole of British India; and

(3) It shall come into force on the first day of July, 1888.

Sec. 2. (1) The enactments described in the first schedule are hereby repealed to the extent specified in the third column thereof.

(2) But this repeal of enactments shall not affect any exclusive privilege acquired, or any conditions or restrictions imposed with respect to any such privilege, or any right or liability accrued or incurred, under any of those enactments before the commencement of this Act, or any relief in respect of any such privilege, right, or liability.

(3) Any enactment or document referring to any enactment hereby repealed shall be construed to refer to this Act or to the corresponding portion thereof.

Sec. 3. The remainder of this Act is divided into Parts, as follows: Part I, Inventions; Part II, Designs.

PART I.—INVENTIONS.

Sec. 4. In this Part, unless there is something repugnant in the subject or context,—

(1) "invention" includes an improvement:

(2) "inventor" does not include the importer into British India of a new invention unless he is the actual inventor:

(3) "applicant" means a person who has applied under this Part for leave to file a specification of an invention, whether he has filed the specification or not:

(4) "assign" includes a grantee of the exclusive privilege of making, selling or using an invention, or of authorizing others so to do, during the term for which the privilege is to continue or may be extended, or for any shorter term:

(5) "inventor," "actual inventor" and "applicant" include the executors, administrators or assigns of an inventor, actual inventor and applicant, as the case may be:

(6) "manufacture" includes any art, process or manner of producing, preparing or making an article, and also any article prepared or produced by manufacture:

(7) "writs" includes print, lithograph, photograph, engrave, and every other mode in which words or figures can be expressed on paper or on any substance:

(8) "Secretary" means a Secretary to the Government of India appointed by the Governor General in Council to discharge the functions of the Secretary under this Act, and includes any under-secretary, assistant-secretary or other officer subordinate to the Government of India to the extent to which such officer may be authorised by general or special order of the Governor General in Council to discharge any of those functions:

(9) "District Court" has the meaning assigned to that expression by the Code of Civil Procedure: and

(10) "High Court" has the meaning assigned to that expression by the Code of Criminal Procedure, 1882, in reference to proceedings against European British subjects.

Sec. 5. (1) The inventor of a new manufacture, whether he is a British subject or not, may apply to the Governor General in Council for leave to file a specification thereof.

(2) The application must be in writing signed by the applicant and in the form or to the effect of the second schedule if the inventor has not obtained a patent in the United Kingdom, and in the form or to the effect of the third schedule if he has obtained a patent in the United Kingdom.

(3) It must state the name, occupation and address of the applicant, and, where a patent has been obtained in the United Kingdom, the date of the patent and the date of the actual sealing thereof, and must describe with reasonable precision and detail the nature of the invention, and of the particular novelty whereof it consists, and be supplemented by such further particulars relating to the invention, and by such drawings or photographs illustrative thereof, as the Governor General in Council may see fit to require from the applicant.

(4) If in any case it appears to the Governor General in Council that an application ought to be further supplemented by a model of anything alleged to constitute an invention, he may require the applicant to furnish such a model neatly and substantially made of durable material and of dimensions not exceeding those, if any, specified in the requisition therefor.

Sec. 6. (1) Upon an application under the last foregoing section the Governor General in Council may, after such inquiry as he thinks fit, make an order authorizing the applicant to file a specification of the invention.

(2) Before making an order under sub-section (1), the Governor General in Council may direct that the application be referred for inquiry and report to any person whom he thinks fit.

(3) When such enquiry and report are made by a person who is not in the service of the Government, there shall be payable to that person by the applicant such fee as the Governor General in Council, after considering the report, may determine.

(4) When an application is to be referred to such a person, the applicant shall deposit, in such place and within such time as the Governor General in Council may by rule or otherwise prescribe, such sum as will, in the opinion of the Secretary, be sufficient to defray any fee which is likely to be determined under sub-section (3).

(5) If the sum is not deposited in the place and within the time prescribed, the application may be rejected.

(6) If the fee as determined by the Governor General in Council exceeds the sum so deposited, an order shall not be made under sub-section (1) until the applicant has paid the balance of the fee.

(7) If the sum deposited exceeds the fee so determined, the excess shall be refunded to the applicant.

Sec. 7. (1) If two or more inventors apply on the same day for leave to file specifications of inventions which appear to the Governor General in Council to be identical or so similar as to be practically identical, the Governor General in Council may, in his discretion, authorise both or all the applicants, subject to the other provisions of this Part, to file specifications of their respective inventions.

(2) If they apply on different days for leave to file specifications of such inventions as aforesaid, the applicant who applied on the first of the different days shall be deemed to have a preferential claim to an order authorizing the filing of his specification.

Sec. 8. (1) If within six months from the date of an order under section 6, sub-section (1), or within such further time, not exceeding three months, as the Governor General in Council, in his discretion, may, on cause shown to his satisfaction and on payment of the fee prescribed in that behalf in the fourth schedule, see fit to allow, the applicant causes a specification of his invention to be filed in manner by this Part required, and the fee prescribed in the fourth schedule in respect of the filing of the specification to be paid, the applicant shall, subject to the other provisions of this Part, be entitled to the exclusive privilege of making, selling and using the invention in British India, and of authorizing others so to do, for a term of fourteen years from the date of the filing of the specification.

(2) But an exclusive privilege in respect of an invention of a new manufacture shall, notwithstanding anything in sub-section (1) cease if the inventor fails to pay, within the time limited in that behalf by the fourth schedule, any fee prescribed in that schedule in respect of the continuance of the privilege.

(3) If, nevertheless, in any case, by accident, mistake or inadvertence, an inventor fails to pay any such fee within the time so limited, he may apply to the Governor General in Council for an enlargement of the time for making the payment.

(4) Thereupon the Governor General in Council may enlarge the time accordingly, on payment of the fee prescribed in that behalf in the fourth schedule and subject to the following conditions, namely:—(a) the time for making a payment shall not in any case be enlarged for more than three months; and (b) if any suit is instituted in respect of an infringement of the exclusive privilege committed after a failure to make a payment within the time limited for the making thereof and before the enlargement of that time, the Court disposing of the suit may, if it thinks fit, refuse to award or give any damages in respect of the infringement.

Sec. 9. (1) A specification filed under this Part must be in writing signed by the applicant, and must set forth the precise invention in respect of which the applicant claims to become entitled to an exclusive privilege.

(2) If the specification is of an invention which is an improvement only, it must by explicit language distinguish between what is old and what is claimed to be new.

(3) Every specification must explain the principle of the invention set forth therein and the best mode in which the applicant has contemplated applying that principle, and must describe the manner of making and using the invention in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which the invention appertains, or with which it is most closely connected, to make or use the same.

Sec. 10. Every application for leave to file a specification, and every specification filed under this Part, must be left with, or sent by post to, the Secretary, and the date of the delivery or receipt thereof shall be indorsed thereon and recorded in his office.

Sec. 11. (1) At the time of delivering or sending the specification for the purpose of its being filed, the applicant shall cause to be delivered or sent therewith to the Secretary as many copies thereof, not being fewer than four, as may be required by the rules for the time being in force under this Part.

(2) One of these copies shall be retained by the Secretary, and one shall be sent to the Governor of Fort St. George in Council, one to the Governor of Bombay in Council, one to the Chief Commissioner of Burma, and the others, if any, to such authorities as the Governor General in Council may appoint in this behalf.

(3) The copies of the specification which are sent under sub-section (2) to the authorities mentioned or referred to in that sub-section shall be open to the inspection of any person at all reasonable times at places to be appointed by those authorities.

Sec. 12. (1) A book, to be called the register of inventions, shall be kept in the office of the Secretary wherein shall be entered and recorded every application for leave to file a specification, every order made on any such application, every specification filed in pursuance thereof, and every subsequent proceeding relating to the invention described thereby.

(2) Applications for leave to file a specification shall be numbered consecutively in the order in which they are delivered or received, and be dated as of the day of their delivery or receipt, and shall be entered in the register of inventions in the order of their respective numbers.

(3) A reference shall be made in that register, in the margin of the entry of each application, to every order on or in respect of the application, to the specification, if any, filed in pursuance thereof, and to every subsequent proceeding relating to the invention which forms the subject of the application.

Sec. 13. (1) Another book, to be called the address-book, shall be kept in the office of the Secretary wherein any person filing a specification under this Part, or any person in whom an exclusive privilege acquired under this Part, or any share or interest therein, may become vested, may from time to time cause to be stated some place in British India where notice of any rule or proceeding relating to the exclusive privilege may be served on him.

(2) A reference to each entry in the address-book shall be made in the register of inventions in the margin of the entry in that register of the application for leave to file the specification.

Sec. 14. (1) Every entry in the register of inventions or address-book, and every document entered and recorded in the register, shall, for the purposes of the law of evidence for the time being in force, be deemed to be a public document and shall be open to the inspection of any person at all reasonable times at the office of the Secretary.

(2) The books kept under section 11 and section 35 of Act No. XV of 1859 (*an Act for granting exclusive Privileges to Inventors*) shall be deemed to be parts of the register of inventions and address-book respectively.

Sec. 15. (1) The inventor of a new manufacture may, at any time not more than one year and not less than six months before the time limited for the expiration of an exclusive privilege acquired under section 8, apply to the Governor General in Council for an extension of the privilege for a further term.

(2) When an application is made under sub-section (1), the Governor General in Council may, if he thinks fit, refer it to a High Court for report.

(3) The Court to which the application is referred shall, in making its report, have regard to the nature and merits of the invention in relation to the public, to the profits made by the inventor as such, and to all the circumstances of the case.

(4) The procedure on the reference shall be such as the Court thinks fit, and may include the issue of citations calling upon persons claiming to have any interest in the reference to appear before the Court on the day on which the reference is to be considered, or on any day to which the consideration thereof may be adjourned, and make with respect thereto any representation which they may see fit in relation to any of the matters to which the Court is required by the last foregoing sub-section to have regard in making its report.

(5) If the Governor General in Council is of opinion, or, where a reference has been made under sub-section (2), if the Court reports, that the inventor has been inadequately remunerated by his exclusive privilege, the Governor General in Council may, on payment of the fee prescribed in that behalf in the fourth schedule, make an order extending the term of the privilege for a further term not exceeding seven or, in exceptional cases, fourteen years from the expiration of the first term of fourteen years.

(6) But an exclusive privilege of which the term has been extended under the last foregoing sub-section shall, notwithstanding anything in that sub-section, cease if the inventor fails to pay before the expiration of each year of such extended term the fee prescribed in the schedule aforesaid in respect of the continuance of the privilege.

Sec. 16. An order under section 6, sub-section (1), authorizing the filing of a specification, or under section 15, sub-section (5), extending the term of an exclusive privilege, may be made subject to such conditions as the Governor General in Council thinks expedient.

Sec. 17. (1) Subject to any conditions imposed under the last foregoing section—(a) with respect to the filing, by a person employed in the service of Her Majesty in India, of the specification of a manufacture invented by him in the course of his employment, or (b) with respect to the extension, in favour of any person, of the term of an exclusive privilege, an exclusive privilege acquired under this Part shall have to all intents the like effect as against Her Majesty as it has against a subject.

(2) But the officers or authorities administering any department of the service of Her Majesty may, by themselves, their agents, contractors or others, at any time after the delivery or receipt of the application for leave to file the specification of an invention, use the invention for the services of the Government on terms to be before or after the use thereof agreed on, with the approval of the Governor General in Council, between those officers or authorities and the inventor, or, in default of such agreement, on such terms as may be settled by the Governor General in Council.

Sec. 18. (1) If, after the filing of the specification, the applicant has reason to believe that through mistake or inadvertence he has erroneously made any mis-statement in his application or specification or included therein something which at the date of the delivery or receipt of his application was not new or whereof he was not the inventor, or that the specification is in any particular defective or insufficient, he may apply to the Governor General in Council for leave to file a memorandum pointing out the mis-statement or disclaiming any part of the alleged invention, or for leave to file an amended specification, as the case may be.

(2) The application must be in writing signed by the applicant, and must state how the error, defect or insufficiency occurred and that it was not fraudulently intended.

(3) Upon the application the Governor General in Council may make an order allowing the memorandum or amended specification to be filed.

(4) The provisions of section 6 with respect to applications, and of sections 9 and 11 with respect to specifications and copies thereof, shall apply, so far as they can be made applicable, to applications and to amended specifications, respectively, made and filed under this section.

Sec. 19. An amended specification filed under the last foregoing section shall, except as to any suit or proceeding relating to the exclusive privilege which may be pending at the time of the filing of the amended specification, have the same effect as if it had been the specification first filed:

Provided that nothing in an amended specification shall be construed to extend or enlarge an exclusive privilege before acquired.

Sec. 20. A person shall not be entitled to an exclusive privilege under this Part—(a) if the invention is of no utility, or (b) if the invention, at the date of the delivery or receipt of the application for leave to file the specification thereof, was not a new invention within the meaning of this Part, or (c) if the applicant is not the inventor thereof, or (d) if the original or any amended specification does not fulfil the requirements of this Part, or (e) if the original or any subsequent application relating to the invention or the original or any amended specification contains a wilful or fraudulent mis-statement, or (f) if the application for leave to file the specification of the invention was made under this Part after the expiration of one year from the date of the acquisition of an exclusive privilege in respect of the invention in any place beyond the limits of British India and the United Kingdom.

Sec. 21. An invention shall be deemed a new invention within the meaning of this Part if it has not before the date of the delivery or receipt of the application for leave to file the specification thereof been publicly used in any part of British India or of the United Kingdom, or been made publicly known in any part of British India or of the United Kingdom by means of a written publication.

Sec. 22. The public use or knowledge of an invention before the date of the delivery or receipt of the application for leave to file a specification thereof shall not be deemed a public use or knowledge within the meaning of this Part if the knowledge has been obtained surreptitiously or in fraud of the inventor or has been communicated to the public in fraud of the inventor or in breach of confidence:

Provided that the inventor has not acquiesced in the public use of his invention, and that, within six months after the commencement of that use, he applies for leave to file a specification.

Sec. 23. Use of an invention in public by the inventor thereof, or by his servant or agent, or by any other person by his license in writing, for a period not exceeding one year immediately preceding the date of the delivery or receipt of his application for leave to file a specification thereof, or knowledge of the invention resulting from such use thereof in public, shall not be deemed a public use or knowledge within the meaning of this Part.

Sec. 24. If an inventor who has obtained a patent for his invention in the United Kingdom causes an application for leave to file a specification of the invention under this Part to be delivered or received by the Secretary within twelve months from the date of the actual sealing of the patent, the invention shall be deemed a new invention within the meaning of this Part if it was not publicly used or known in any part of British India at or before the date of the application for the patent, notwithstanding that it may have been publicly used or known in some part of British India or of the United Kingdom before the date of the delivery or receipt of the application under this Part for leave to file the specification.

Sec. 25. If an inventor applies for leave to file a specification under this Part while his application for a patent is pending in the United Kingdom, and the interval between the date of his application for the patent and the date of the delivery or receipt of his application under this Part does not exceed twelve months, the invention shall not be deemed to have been publicly used, or made publicly known, within the meaning of this Part, by reason only of the invention having been used, or a description thereof having been published, in any part of British India or of the United Kingdom during the interval.

Sec. 26. If an inventor, being the exhibitor of his invention at an industrial or international exhibition, certified as such by the Governor General in Council, causes an application for leave to file a specification of the invention to be delivered to or received by the Secretary within six months from the date of the admission of the invention into that exhibition, the invention shall not be deemed to have been publicly used, or made publicly known, within the meaning of this Part, by reason only of the invention having at any time after admission into the exhibition been publicly used or made publicly known.

Sec. 27. (1) An exclusive privilege acquired under this Part shall cease if the Governor General in Council declares the privilege, or the mode in which it is exercised, to be mischievous to the State, or generally prejudicial to the public.

(2) It shall also cease if a breach of any condition on which the applicant was authorized to file a specification, or on which the term of the exclusive privilege was extended, is on an application under this Part to a High Court proved to the satisfaction of that Court, and if the Governor General in Council thereupon declares the privilege to have ceased.

Sec. 28. (1) An exclusive privilege acquired under this Part in respect of an invention for which a patent has been obtained in the United Kingdom shall cease on the revocation or expiration of the patent.

(2) Such a privilege in respect of an invention for which a patent has not been obtained in the United Kingdom shall cease on the revocation or expiration of any patent or exclusive privilege which has been obtained or acquired for or in respect of the invention in any other country.

Sec. 29. (1) An inventor may institute a suit in the District Court against any person who, during the continuance of an exclusive privilege acquired by him under this Part in respect of an invention, makes, sells or uses the invention without his license, or counterfeits or imitates it.

(2) The suit shall not be defended upon the ground of any defect or insufficiency of the specification of the invention, or upon the ground that the original or any subsequent application relating to the invention, or the original or any amended specification, contains a wilful or fraudulent mis-statement, or upon the ground that the invention is of no utility.

(3) Nor shall it be defended upon the ground that the plaintiff was not the inventor, unless the defendant shows that he himself is the actual inventor or has obtained from the actual inventor a right to make, sell or use the invention, or to counterfeit or imitate it, as the case may be:

(4) Nor shall it be defended upon the ground that the invention was not new, unless the defendant, or some person through whom he claims, has, before the date of the delivery or receipt of the application for leave to file the specification, publicly or actually used in some part of British India or of the United Kingdom the invention or that part of it with respect to which the exclusive privilege is alleged to have been infringed.

Sec. 30. Any person may apply to a High Court for a rule to show cause why the Court should not declare that an exclusive privilege in respect of an invention to be specified in the rule has not been acquired under this Part by reason of all or any of the objections following (to be specified in the rule), that is to say:—(a) that the invention is of no utility, or (b) that the invention was not, at the date of the delivery or receipt of the application for leave to file the specification, a new invention within the meaning of this Part, or (c) that the applicant was not the inventor thereof, or (d) that the original or any amended specification does not fulfil the requirements of this Part, or (e) that the applicant has knowingly or fraudulently included in the application for leave to file the specification or in the original or any amended specification, as part of his invention, something which was not new or whereof he was not the inventor, or (f) that the original or any subsequent application relating to the invention, or the original or any amended specification, contains a wilful or fraudulent mis-statement, or (g) that some part of the invention, or the manner in which that part is to be made and used, as described in the original or any amended specification, is not thereby sufficiently described, and that this insufficiency was fraudulent and is injurious to the public.

Sec. 31. Any person may apply to a High Court for a rule to show cause why the Court should not declare that an exclusive privilege in respect of any part of an invention, to be specified in the rule has not been acquired under this Part, by reason of all or any of the objections following (to be specified in the rule) that is to say:—(a) that that part of the invention is wholly distinct from the other parts thereof and is of no utility, or (b) that that part of the invention was not, at the date of the delivery of receipt of the application for leave to file the specification, a new invention within the meaning of this Part, or (c) that the applicant was not the inventor of that part of the invention, or (d) that that part of the invention, or the manner in which it is to be made and used, is not sufficiently described in the original or any amended specification, and that this insufficiency is injurious to the public.

Sec. 32. The High Court may, irrespective of any provisions of the Code of Civil Procedure in this behalf, require a person applying for a rule under either of the two last foregoing sections to give security for the payment of all costs incurred or likely to be incurred by any person appearing to show cause against the rule.

Sec. 33. (1) Any person authorised by the Governor General in Council in this behalf may apply to a High Court for rule to show cause why the question of the breach of any condition on which leave to file a specification has been granted, or any other question of fact on which the cessation of an exclusive privilege under section 27 may, in the judgment of the Governor General in Council, depend, should not be tried in the form of an issue directed by the Court.

(2) If the rule is made absolute, the Court, unless the breach or other matter of fact is admitted, may direct the issue to be tried and certify the result of the trial to the Governor General in Council.

Sec. 34. (1) Notice of any rule obtained or proceeding taken under section 30, section 31 or section 33 shall be served on all persons appearing from the address-book to be proprietors of the exclusive privilege, or to have shares or interests therein, and it shall not be necessary to serve the notice on any other person.

(2) The notice shall be deemed to be sufficiently served if a copy thereof is left at the place for the time being stated in the address-book, by delivering the copy to any person resident at or in charge of the place or, if there is no person resident at or in charge of the place, or if the place is not within the local limits of the jurisdiction of the Court, by causing the notice to be sent to the place by post by a registered letter directed to the person to whom the notice is addressed.

Sec. 35. (1) The High Court may, if it thinks fit, direct an issue for the trial, before itself or any other High Court, or any District Court, of any question of fact arising upon an application under section 30, section 31 or section 33, and the issue shall be tried accordingly.

(2) If the issue is directed to another Court, the finding shall be certified by that Court to the Court directing the issue.

(3) If the issue is directed to a District Court, the finding of that Court shall not be subject to appeal, but the evidence taken upon the trial shall be recorded, and a copy thereof, certified by the Judge of the Court, shall be transmitted, together with any remarks which he may think fit to make thereon, to the High Court, and the High Court may thereupon act upon the finding of the District Court, or dispose of the application upon the evidence recorded, or direct a new trial, as the justice of the case may require.

Sec. 36. (1) If it appears to the High Court at the hearing of an application under section 30 or section 31 that, by reason of any of the objections specified in the rule, the exclusive privilege in the invention or in any part thereof has not been acquired, the Court shall make an order accordingly, and thereupon the applicant shall, so long as the order continues in force, cease to be entitled to the exclusive privilege.

(2) If it appears to the High Court, at the hearing of any such application as last aforesaid, that the applicant has, in the description of his invention in the application for leave to file a specification thereof or in the original or any amended specification, erroneously included something which at the date of the delivery or receipt of the application for leave to file the specification was not new or whereof he was not the inventor, or that the specification is in any particular defective or insufficient, but that the error, defect or insufficiency was not fraudulently intended, the Court may adjudge the exclusive privilege to have been acquired and to be valid, save as to the part thereof affected by the error, defect or insufficiency; or

(3) If it appears to the High Court that the error, defect or insufficiency can be amended without injury to the public, the Court may adjudge the exclusive privilege in respect of the whole of the invention to be valid, and may, upon such terms as it thinks reasonable, order the specification to be amended in any particular in which it is erroneous, defective or insufficient; and thereupon the applicant shall, within a time to be limited by the Court for the purpose, file in the office of the Secretary a specification amended according to the order.

(4) The provisions of section 18 with respect to the distribution and dispersal of copies of amended specifications, and of section 19 with respect to the effect of such specifications, shall apply, so far as they can be made applicable, to an amended specification filed under this section.

(5) An exclusive privilege in respect of an invention shall not be defeated upon the ground that the application for leave to file the specification of the invention contains a mis-statement, unless the mis-statement was wilful or fraudulent.

Sec. 37. (1) In a suit for the infringement of an exclusive privilege acquired under this Part the plaintiff shall deliver with his plaint particulars of the breaches complained of in the suit, and the defendant shall deliver a written statement of the particulars of the grounds, if any, upon which he means to contend that the plaintiff is not entitled to an exclusive privilege in respect of the invention.

(2) In like manner, upon an application to a High Court under section 30, section 31 or section 33, the person making the application shall deliver particulars of the objections or grounds on which he means to rely.

(3) At the hearing of any such suit or application, or at the trial of any issue arising out of any such application, evidence shall not be allowed to be given in proof of any breach of the exclusive privilege, or of any ground impeaching the validity of that privilege, or of any objection or ground affecting such a privilege, unless such breach or other matter as aforesaid has been stated in the particulars delivered under this section.

(4) If it is alleged that the invention was publicly used or known before the date of the delivery or receipt of the application for leave to file the specification thereof, the places where and the manner in which the invention was so publicly used or known shall be stated in the particulars.

(5) Notwithstanding anything in the foregoing portion of this section, the Court in which the suit or application is pending, or an issue arising out of the application is being tried, may allow the plaintiff or defendant respectively to amend the particulars delivered under this section upon such terms as it thinks fit.

Sec. 38. If, in a suit instituted in the District Court at any time within fourteen years from the date of the filing of a specification of an invention under this Part, the actual inventor proves to the satisfaction of the Court that the applicant was not the actual inventor, and that at the time of the application for leave to file the specification the applicant knew or had reason to believe that the knowledge of the invention was obtained by himself or by some other person surreptitiously or in fraud of the actual inventor, or by means of a communication made in confidence by the actual inventor to him or to any person through whom he derived the knowledge, the Court may make a decree declaring an exclusive privilege in respect of the invention to be vested, subject to the other provisions of this Part, in the actual inventor for a term of fourteen years from the date on which the specification was filed, and requiring the applicant to account for and pay over to the actual inventor the profits derived by him from the invention or so much of those profits as the Court, having regard to the degree of diligence exerted by the actual inventor in proceeding under this section and to all the other circumstances of the case, may see fit to require the applicant to pay.

Sec. 39. A Court making a decree in a suit under section 29 or section 38, or an order on an application under section 30, section 31 or section 33, shall send a copy of the decree or order, as the case may be, to the Secretary, who shall cause an entry thereof and reference thereto to be made in the register of inventions and against any entry in the address-book affected thereby.

Sec. 40. In the following cases, namely:—(a) when an exclusive privilege acquired under this Part has ceased under section 8 or section 15 by reason of a fee in respect of the continuance of the privilege not having been paid within the time limited by the fourth schedule for the payment thereof, and the period, if any, within which an order might have been made for enlarging the time for the making of the payment has expired; (b) when an exclusive privilege acquired under this Part has been declared by the Governor General in Council under section 27 to have ceased; (c) when an exclusive privilege acquired under this Part has ceased under section 28 by reason of the revocation or expiration of a patent or exclusive privilege; (d) when the whole or any part of an exclusive privilege acquired under this Part has ceased under section 36 in consequence of an order under that section; (e) when an exclusive privilege has been declared by a decree to have vested in an actual inventor under section 38; (f) when an exclusive privilege acquired under this Part has ceased by reason of the expiration of the term for which it was acquired; the Secretary shall cause an entry with respect to the cessation or vesting of the exclusive privilege to be made in the register of inventions, and a reference to that entry to be made in the margin of the entry in that register of the application for leave to file the specification of the inventor.

Sec. 41. (1) If any person is aggrieved by an entry in the register of inventions or address-book, or by the omission of an entry therefrom, and a proceeding is not provided in the foregoing portion of this Part whereby the register or book may be rectified, he may apply to a High Court for an order for the rectification of the register or book, and the Court may make such order on the application as it thinks fit.

(2) A copy of the order shall be forwarded by the Court to the Secretary, who shall cause an entry thereof and reference thereto to be made in the register of inventions and against any entry in the address-book affected thereby.

(3) When the Secretary is a party to an application under this section, the costs of another party thereto shall not be adjudged to be payable by the Secretary.

Sec. 42. A High Court to which an application has been made under section 30, section 31, section 33 or section 41 may stay proceedings on, or dismiss, the application if in its opinion the application would be disposed of more justly or conveniently by another High Court.

Sec. 43. If on the petition of any person interested it is proved to the Governor General in Council that, by reason of an inventor who has acquired an exclusive privilege under this Part failing to grant licenses on reasonable terms,—(a) the exclusive privilege is not being worked in British India, or (b) the reasonable requirements of the public with respect to the invention cannot be supplied, or (c) any person is prevented from working or using to the best advantage an invention of which he is possessed, the Governor General in Council may order the inventor to grant, or may himself on behalf of the inventor grant, licenses on such terms as to the amount of royalties, security for payment, or otherwise, as the Governor General in Council, having regard to the nature of the invention and the circumstances of the case, may deem just.

Sec. 44. Any person for the time being entitled to an exclusive privilege under this Part, or to any share or interest in such a privilege, in any local area may, subject to the conditions of his title thereto, assign the privilege or such share or interest, as the case may be, for any place in or part of that local area.

Sec. 45. If an applicant is absent from British India, an application for leave to file a specification, or a specification, or an application for leave to file a memorandum or amended specification, may, instead of being signed by the applicant under section 5, section 9 or section 18, as the case may be, be signed on behalf of the applicant by an agent in British India authorised by him in writing in that behalf.

Sec. 46. (1) An application under this Part for leave to file a specification, memorandum or amended specification must be verified by the person making the application.

(2) If that person is absent from British India, the application may be verified by the agent who signs the application on his behalf.

(3) The verification must be signed by the person making it, and must be to the effect that the facts stated in the application are true to his knowledge, except as to matters stated on information and belief, and that as to those matters he believes them to be true.

Sec. 47. Subject to the provisions of the two last foregoing sections and of any other enactment for the time being in force, any act which is required or authorised by this Part to be done by any person may be done on his behalf by an agent in British India having authority in writing from that person so to do the act.

Sec. 48. (1) There shall be paid in respect of the several proceedings specified in the fourth schedule the fees in that schedule prescribed.

(2) The Governor General in Council may, if he thinks fit, reduce any of those fees and revoke or vary the reduction.

(3) The fees payable under this section shall be collected by means of stamps or otherwise as the Governor General in Council directs.

(4) A proceeding in respect of which a fee is payable under the fourth schedule shall be of no effect unless the fee has been paid.

Sec. 49. (1) The Governor General in Council may make such rules and prescribe such forms as he thinks necessary for carrying out the purposes of this Part, and may alter or amend either of the forms in the second and third schedules.

(2) Rules under this section may provide, among other matters, for the printing of specifications, memoranda and amended specifications, and for the distribution or sale of printed copies thereof.

PART II.—DESIGNS.

Sec. 50. In this Part, unless there is something repugnant in the subject or context,—

(1) "design" means some peculiar shape, configuration or

form given to an article, or arrangement of lines or the like used on or with an article; but not the article itself:

(2) "copyright" means the exclusive right to apply a design to an article:

(3) the author of any new and original design shall be considered the "proprietor" thereof, unless he executed the work on behalf of another person for a good or valuable consideration, in which case that person shall be considered the "proprietor," and every person acquiring for a good or valuable consideration a new and original design, or the right to apply the same to an article, either exclusively of any other person or otherwise, and also every person on whom the property in the design or the right to the application thereof shall devolve, shall be considered the "proprietor" of the design in the respect in which the same may have been so acquired, and to that extent, but not otherwise: and

(4) "Secretary," "District Court" and "High Court" have the same meanings as in Part I.

Sec. 51. (1) Any person, whether a British subject or not, claiming to be the proprietor of any new and original design not previously published in British India may apply to the Governor General in Council for an order for the registration of the design.

(2) The application must be in writing in the form or to the effect of the fifth schedule, and must contain a statement of the nature of the design and be accompanied by as many copies of drawings, photographs or tracings thereof, not being fewer than four, as may be required by the rules for the time being in force under this Part.

(3) It must be left with, or sent by post to, the Secretary, and the date of the delivery or receipt thereof in the office of the Secretary shall be indorsed thereon and recorded in that office.

Sec. 52. (1) Upon the application the Governor General in Council may, after such inquiry as he thinks fit, make an order authorizing the registration of the design.

(2) When an order has been made under sub-section (1), the Secretary shall cause the design to be registered in a book to be kept by him for the purpose and to be called the register of designs.

(3) The date of registration shall be recorded in the register.

Sec. 53. When a design is registered, the proprietor thereof shall, subject to the other provisions of this Part, have copyright in the design during five years from the date of registration.

Sec. 54. (1) Before delivery on sale of any article to which a registered design has been applied, the proprietor of the design shall cause the article to be marked with the word "registered" either in full or in an abbreviated form.

(2) If he fails to cause the article to be so marked, the copyright in the design shall cease unless the proprietor shows that he took all proper steps to insure the marking of the article.

Sec. 55. If the proprietor of a design exhibited at an industrial or international exhibition, certified as such by the Governor General in Council, causes an application for an order for the registration of the design to be delivered to or received by the Secretary within six months from the date of the admission of the design into that exhibition, the design shall not be deemed not to be a new and original design not previously published in British India within the meaning of section 51 by reason only of the design having been exhibited at the exhibition.

Sec. 56. Any person in whom the copyright in a design has become vested may apply to the Secretary for the entry of his name in the register of designs as proprietor of the copyright, and the Secretary may, if he sees fit, cause the entry to be made.

Sec. 57. (1) The registered proprietor of a design may institute a suit in the District Court for the recovery of any damages arising from the application by any person to any article of the design or of any fraudulent or obvious imitation thereof for the purpose of sale, or from the publication, sale or exposure for sale by any person of any article to which the design, or any fraudulent or obvious imitation thereof, has been applied, that person knowing or having reason to believe that the proprietor had not given his consent to such application.

(2) When the Court makes a decree in a suit under this section, it shall send a copy of the decree to the Secretary, who shall cause an entry thereof to be made in the register of designs.

Sec. 58. (1) When, from the expiration of the term of a copyright or from any other cause, the copyright in a design has ceased, the Secretary shall cause an entry with respect to the cessation of the right to be made in the register of designs.

Sec. 59. (1) A High Court may, on the application of any person aggrieved by an entry in the register of designs, or by the omission of an entry therefrom, make such order for the rectification of the register as it thinks fit.

(2) An order under sub-section (1) may declare copyright in a design not to have been acquired.

(3) A copy of the order shall be forwarded by the Court to the Secretary, who shall cause an entry thereof to be made in the register of designs.

(4) When the Secretary is a party to an application under this section, the costs of another party thereto shall not be adjudged to be payable by the Secretary.

Sec. 60. A High Court to which an application has been made under the last foregoing section may stay proceedings on, or dismiss, the application if, in its opinion, the application would be disposed of more justly or conveniently by another High Court.

Sec. 61. The provisions of the following portions of Part I, namely:—(a) section 11, with respect to copies of specifications, (b) section 14, with respect to the register of inventions and the matters entered therein, and (c) section 47, with respect to the performance by an agent of any act required or authorised by that Part to be done by a principal, shall, so far as they can be made applicable, apply, respectively, to—(a) copies of drawings, photographs or tracings accompanying an application for an order for the registration of a design in respect of which such an order has been made, (b) the register of designs and the matters entered and documents referred to therein, and (c) the performance by an agent of any act required or authorised by this Part to be done by a principal.

Sec. 62. (1) There shall be paid in respect of the several proceedings specified in the sixth schedule the fees in that schedule prescribed.

(2) The Governor General in Council may, if he thinks fit, reduce any of those fees and revoke or vary the reduction.

(3) The fees payable under this section shall be collected by means of stamps or otherwise as the Governor General in Council may direct.

(4) A proceeding in respect of which a fee is payable under the sixth schedule shall be of no effect unless the fee has been paid.

Sec. 63. The Governor General in Council may make such rules and prescribe such forms as he thinks necessary for carrying out the purposes of this Part, and may alter or amend the form in the fifth schedule.

THE FIRST SCHEDULE.

Enactments repealed. (*See Sec.* 2.)

No. and year.	Subject or title.	Extent of repeal.
XV of 1859 ...	For granting exclusive privileges to inventors.	So much as has not been repealed.
XIII of 1872....	Patterns and Designs Protection Act, 1872.	So much as has not been repealed.
XVI of 1883....	Protection of Inventions Act, 1883.	The whole.
I of 1879	Indian Stamp Act, 1879.	Article 48, Schedule I.

THE SECOND SCHEDULE.

Application where Patent has not been obtained. (*See Secs.* 5 *and* 49.)

To the Governor General in Council.

The application of (*here insert name, occupation and address*) for leave to file a specification under Part I of the Inventions and Designs Act, 1888.

1. The applicant is in possession of an invention for (*state the title of the invention*); he is the inventor thereof (*or, as the case may be, the executor, administrator or assign of the inventor*); and, to the best of his information and belief, the invention is new within the meaning of Part I of the Inventions and Designs Act, 1888, and no circumstance exists which, if the applicant is authorised to file a specification and files it in accordance with that Part, will disentitle him to an exclusive privilege thereunder in respect of the invention.

2. The following is a description of the invention (*here describe it and the particular novelty whereof it consists*).

3. The applicant therefore applies for leave to file a specification of the invention pursuant to Part I of the Inventions and Designs Act, 1888.

(*Signature and verification.*)

THE THIRD SCHEDULE.

Application where Patent has been obtained. (*See Secs.* 5 *and* 49.)

To the Governor General in Council.

The application of (*here insert name, occupation and address*) for leave to file a specification under Part I of the Inventions and Designs Act, 1888.

1. The applicant (*or, as the case may be, A. B. of whom the applicant is the executor, administrator or assign*) has obtained a patent in the United Kingdom dated and sealed as of the —— day of ——, and actually sealed on the —— day of ——, for (*state the title of the invention*).

2. To the best of the information and belief of the applicant, the invention is new within the meaning of Part I of the Inventions and Designs Act, 1888, and no circumstance exists which, if the applicant is authorised to file a specification and files it in accordance with that Part, will disentitle him to an exclusive privilege thereunder in respect of the invention.

3. The following is a description of the invention (*here describe it and the particular novelty whereof it consists*).

4. The applicant therefore applies for leave to file a specification of the invention pursuant to Part I of the Inventions and Designs Act, 1888.

(*Signature and verification.*)

THE FOURTH SCHEDULE.

Fees, Inventions. (*See Secs.* 8, 15 *and* 48.)

	Rs.	a.	p.
(1) in respect of an application for leave to file a specification (Sec. 5)	10	0	0
(2) in respect of the filing of a specification (Sec. 8)	20	0	0
(3) in respect of an extension of the time for filing a specification (Sec. 8)	20	0	0
(4) in respect of the continuance of an exclusive privilege (Sec. 8)—			
(*a*) after the filing of the specification and before the expiration of the fourth year from the date of the filing thereof	50	0	0
(*b*) after the expiration of the fourth year and before the expiration of the fifth year from that date	50	0	0
(*c*) after the expiration of the fifth year and before the expiration of the sixth year from that date	50	0	0
(*d*) after the expiration of the sixth year and before the expiration of the seventh year from that date	50	0	0
(*e*) after the expiration of the seventh year and before the expiration of the eighth year from that date	50	0	0
(*f*) after the expiration of the eighth year and before the expiration of the ninth year from that date	100	0	0
(*g*) after the expiration of the ninth year and before the expiration of the tenth year from that date	100	0	0
(*h*) after the expiration of the tenth year and before the expiration of the eleventh year from that date	100	0	0
(*i*) after the expiration of the eleventh year and before the expiration of the twelfth year from that date	100	0	0
(*j*) after the expiration of the twelfth year and before the expiration of the thirteenth year from that date	100	0	0
Provided that the inventor may pay the sum total of the said fees in respect of the continuance of the exclusive privilege, or any part thereof short of the sum total, at any time before the same falls due.			
(5) in respect of an enlargement of the time for payment of a fee under article (4) of this schedule (Sec. 8)—			
(*i*) if the enlargement does not exceed one month	10	0	0
(*ii*) if the enlargement exceeds one month, but does not exceed two months	25	0	0
(*iii*) if the enlargement exceeds two months	50	0	0
(6) in respect of an application for an extension of an exclusive privilege for a further term (Sec. 15)	50	0	0
(7) in respect of an order extending the term of an exclusive privilege (Sec. 15)	100	0	0
(8) in respect of the continuance of an exclusive privilege of which the term has been extended (Sec. 15)	100	0	0 to be paid before the expiration of each year of the extended term:
Provided that the inventor may pay the sum total of the said fees in respect of the continuance of the exclusive privilege, or any part thereof short of the sum total, at any time before the same falls due.			
(9) in respect of an application for leave to file a memorandum or amended specification (Sec. 18)	20	0	0
(10) in respect of a petition to the Governor General in Council for a compulsory license (Sec. 43)	50	0	0
(11) for the inspection of any book or other document which is open to inspection under Part I	1	0	0
(12) for copies—			
(*a*) when the number of words copied does not exceed four hundred	1	0	0
(*b*) for every hundred words in excess of four hundred	0	4	0
(*c*) of drawings or photographs	cost according to agreement.		
(13) for certifying copies— for every hundred words	0	2	0

THE FIFTH SCHEDULE.

Application for Order for Registration of Design. (*See Secs.* 51 *and* 63.)

The application of (*here insert name, occupation and address*) for an order for the registration of a design under Part II of the Inventions and Designs Act, 1888.

1. The applicant claims to be the proprietor of the design of which the nature is hereinafter stated.

2. To the best of his information and belief, that design is within the meaning of Part II of the Inventions and Designs Act, 1888, a new and original design not previously published in British India.

3. copies of (*drawings*), (*photographs*), (*tracings*) of the design accompany this application.

4. The following is a statement of the nature of the design (*here describe its nature*).

5. The applicant therefore applies for an order for the registration of the design pursuant to Part II of the Inventions and Designs Act, 1888.

(*Signature.*)

THE SIXTH SCHEDULE.

Fees, Designs. (*See Sec.* 62.)

	Rs.	a.	p.
(1) in respect of an application for an order for the registration of a design (Sec. 51)	10	0	0
(2) in respect of a mutation of names in the register of designs (Sec. 56)	5	0	0
(3) for the inspection of any book or other document which is open to inspection under Part II	1	0	0
(4) for copies—			
(*a*) when the number of words copied does not exceed four hundred	1	0	0
(*b*) for every hundred words in excess of four hundred	0	4	0
(*c*) of drawings, photographs or tracings	cost according to agreement.		
(5) for certifying copies— for every hundred words	0	2	0

S. HARVEY JAMES,
Secretary to the Government of India.

INDEX TO DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

OFFICIAL GAZETTE—April–June, 1888.

VOL. 43 O. G.—2

INDEX TO DECISIONS.

[Decisions of United States courts designated by an asterisk (*), and of State courts by a dagger (†).]

	Page.
*American Bell Telephone Company. Dolbear *et al.* v.	377
*Babcock & Wilcox Company v. Pioneer Iron Works	756
*Barth. Ott v.	114
Blair, *ex parte*	113
*Blaum v. National Barrow and Truck Company	1567
Boulton v. Illingworth	508
Boyle. Wells v.	753
*Carpenter. Miller Megee Company *et al.* v.	1118
Clark v. La Dow	946
*Cornell v. Weidner	965
*Dale Tile Manufacturing Company (Limited) v. Hyatt	949
De Bausset, *ex parte*	1568
*Detroit, City of. Flower *et al.* v.	1346
*Dolbear *et al.* v. American Bell Telephone Company	377
*Edward Barr Company (Limited) v. New York and New Haven Automatic Sprinkler Company	398
*Edison Electric Light Company v. United States Electric Lighting Company	1456
*Felix v. Scharnweber	251
*Fisher *et al.* Hoskin *et al.* v.	509
*Flower *et al.* v. City of Detroit	1346
*Forncrook v. Root	994
Gérard, *ex parte*	1235, 1240
*Gildersleeve. Thompson *et al.* v.	886
*Golden State and Miners' Iron Works *et al.* Hendy v.	1117
*Hendy v. Golden State and Miners' Iron Works *et al.*	1117
*Hoskin *et al.* v. Fisher *et al*	509
*Hyatt. Dale Tile Manufacturing Company (Limited) v.	949
Illingworth. Boulton v.	508
*James. Yale Lock Manufacturing Company v.	881
Johnson, *ex parte*	507
*Johnston. Palmer v.	758
†Keely. Wilson v.	511
Kohler v. Kohler and Chambers	947
Kohler and Chambers. Kohler v.	947
*La Bau. Welling v.	117
La Dow. Clark v.	946
Lombard *et al.*, *ex parte*	1347
*Lyon v. Perin & Gaff Manufacturing Company	993
Marsh v. Rein v. Ruppel	1458
*Maryland Pavement Company. Van Camp v.	884
Mason, *ex parte*	627
Maxim, *ex parte*	506
Miller, *ex parte*	1346
*Miller Megee Company *et al.* v. Carpenter	1118
*Morden *et al.* Weir v.	753
*Mosler, Bahmaan & Company. Mosler Safe and Lock Company v.	1115
*Mosler Safe and Lock Company v. Mosler, Bahmann & Company	1115
*Moxie Nerve Food Company v. Various Defendants	888
*National Barrow and Truck Company. Blaum v.	1567
*New Haven Savings Bank. Yale Lock Manufacturing Company *et al.* v.	115
*New York and New Haven Automatic Sprinkler Company. Edward Barr Company (Limited) v.	398
*Ott v. Barth	114
Page and Krausse, *ex parte*	1455
*Palmer v. Johnston	758
*Perin & Gaff Manufacturing Company. Lyon v.	993
*Pioneer Iron Works. Babcock & Wilcox Company v.	756
*Proctor *et al.* Tilghman v.	628
Rein v. Ruppel. Marsh v.	1458
*Root. Forncrook v.	994
Ruppel. Marsh v. Rein	1458
*St. Paul Plow Works v. Starling	1350
*Scharnweber. Felix v.	251
Smith, *ex parte*	505
Stanbridge, *ex parte*	1345
*Starling. St. Paul Plow Works v.	1350
Stoughton, *ex parte*	1345
*Thompson *et al.* v. Gildersleeve	886
*Tilghman v. Proctor *et al*	628
*United States Electric Lighting Company. Edison Electric Light Company v.	1456
*Van Camp v. Maryland Pavement Company	884
Weeks, *ex parte*	1565
*Weidner. Cornell v.	965
*Weir v. Morden *et al*	753
*Welling v. La Bau	117
Wells v. Boyle	753
†Wilson v. Keely	511
*Yale Lock Manufacturing Company v. James	881
*Yale Lock Manufacturing Company *et al.* v. New Haven Savings Bank	115
Zabel, *ex parte*	627

SUBJECT-MATTER.

[Decisions of United States courts designated by an asterisk (*), and of State courts by a dagger (†).]

Page.

*Abandonment, Hoskin *et al.* v. Fisher *et al* 509
*Yale Lock Manufacturing Company *et al.* v. New Haven Savings Bank 115
Acquiescence, *ex parte* Page and Krause 1455
Administrators and executors, *ex parte* Smith 505
*Aggregation, Hendy v. Golden State and Miners' Iron Works *et al* 1117
*Mosler Safe and Lock Company v. Mosler, Bahmann & Company 1115
Amendments, *ex parte* Johnson 507
Ex parte Maxim 506
Ex parte Zabel 627
Appeals to Examiners-in-Chief, *ex parte* Gérard 1235
Applications for patents, *ex parte* Blair 113
Ex parte Gérard 1235, 1240
Kohler v. Kohler and Chambers 247
Ex parte Miller 1346
Ex parte Smith 505
Ex parte Stanbridge 1345
Ex parte Stoughton 1345
*Artificial ivory, Welling v. La Bau 117
Assignees, Kohler v. Kohler and Chambers 247
†Assignee's right to the disclosure of an invention, Wilson v. Keely 511
Bill in equity, Wells v. Boyle 758
*Boots and shoes, stiffeners for, Lyon v. Perin and Gaff Manufacturing Company 988
Braiding-machines, *ex parte* Lombard *et al* 1347
*Bungs, metallic bushings for, Cornell v. Weidner 985
Cartridges, *ex parte* Maxim 506
*Cast-metal pulley-box, Palmer v. Johnston 758
Claims, *ex parte* Miller 1346
Ex parte Weeks 1565
*Claims, errors in fatal to, Van Camp v. Maryland Pavement Company 884
*Combinations, Hendy v. Golden State and Miners' Iron Works *et al* 1117
*Mosler Safe and Lock Company v. Mosler, Bahmann & Company 1115
*Thompson *et al.* v. Gildersleeve 886
Ex parte Weeks 1565
*Concrete pavements, Van Camp v. Maryland Pavement Company 884
*Construction of statutes, Edison Electric Light Company v. United States Electric Lighting Company 1456
Marsh v. Rein v. Ruppel 1458
*Miller Megeo Company *et al.* v. Carpenter 1118
*St. Paul Plow Works v. Starling 1360
Ex parte Smith 505
*Contracts, Dale Tile Manufacturing Company v. Hyatt 249
*Felix v. Scharaweber 251
*Damages and profits, Felix v. Scharaweber 251
*St. Paul Plow Works v. Starling 1360
*Damages and profits, interest on, Tilghman v. Proctor *et al* 698
Death of inventor, *ex parte* Smith 505

Page.

*Decree, Lyon v. Perin and Gaff Manufacturing Company. 988
Delay in prosecuting an application, *ex parte* Lombard *et al* 1347
*Description, Dolbear *et al.* v. American Bell Telephone Company 377
Ex parte Miller 1346
Ex parte Stanbridge 1345
Ex parte Stoughton 1345
*Thompson *et al.* v. Gildersleeve 886
Design, *ex parte* Gérard 1235, 1240
†Disclosure of an invention, Wilson v. Keely 511
Division of application, *ex parte* Maxim 506
*Equivalent, Forncrook v. Root 984
Evidence, Boulton v. Illingworth 506
*Fire-extinguishers, Edward Barr Company (Limited) v. New York and New Haven Automatic Sprinkler Company 988
Foreign use, Boulton v. Illingworth 506
*Former decisions affirmed, Flower *et al.* v. City of Detroit 1346
Ex parte Page and Krause 1455
*Yale Lock Manufacturing Company v. James 881
Former decisions construed, *ex parte* Blair 113
*Fraud, Dolbear *et al.* v. American Bell Telephone Company 377
*Moxie Nerve Food Company v. Various Defendants 886
*Honey-frames, Forncrook v. Root 984
Husband and wife, Marsh v. Rein v. Ruppel 1458
*Hydraulic mining apparatus, Hoskin *et al.* v. Fisher *et al.* 509
*Infringement, Blaum v. National Barrow and Truck Company 1567
Ex parte Gérard 1235
*Hendy v. Golden State and Miners' Iron Works *et al.* 1117
*Ott v. Barth 114
*Palmer v. Johnston 758
*Thompson *et al.* v. Gildersleeve 886
*Van Camp v. Maryland Pavement Company 884
Ingots, method of casting, Boulton v. Illingworth 506
Injunction, Babcock & Wilcox Company v. Pioneer Iron Works 756
*Edward Barr Company (Limited) v. New York and New Haven Automatic Sprinkler Company 988
Interference, Boulton v. Illingworth 506
Clark v. La Dow 248
*Edward Barr Company (Limited) v. New York and New Haven Automatic Sprinkler Company .. 988
Kohler v. Kohler and Chambers 247
Ex parte Lombard *et al.* 1347
Wells v. Boyle 758
*Invention, Babcock & Wilcox Company v. Pioneer Iron Works 756
Ex parte De Bausset 1568
*Hendy v. Golden State and Miners' Iron Works *et al* 1117
Joint patentees, Kohler v. Kohler and Chambers 247

Page.

Jurisdiction, Dale Tile Manufacturing Company (Limited) v. Hyatt 249
*Edison Electric Light Company v. United States Electric Lighting Company 1456
*Felix v. Scharnweber 251
*Miller Megee Company *et al.* v. Carpenter 1118
*St. Paul Plow Works v. Starling 1350
*Leather, machines for forming staple-seams in, Thompson *et al.* v. Gildersleeve 886
*License-fees, St. Paul Plow Works v. Starling 1350
*Limitation of United States patents by foreign patents previously granted, Edison Electric Light Company v. United States Electric Lighting Company 1456
*Master's report, Tilghman v. Proctor *et al* 628
*Welling v. La Bau 117
*Measure of damages, Tilghman v. Proctor *et al* 628
*Welling v. La Bau 117
*Mechanical skill, Weir v. Morden *et al* 753
Mistake, *ex parte* Page and Krausse 1455
Model, Flower *et al.* v. City of Detroit 1348
†Motor, Wilson v. Keely 511
Needle-grooving machines, *ex parte* Miller 1346
New matter, *ex parte* Johnson 507
Oath, Kohler v. Kohler and Chambers 247
Oath relative to foreign patents, *ex parte* Mason 627
*Old elements, Van Camp v. Maryland Pavement Company 884
*Ore stamp-feeders, Hendy v. Golden State and Miners' Iron Works *et al* 1117
*Patents, construction of, Van Camp v. Maryland Pavement Company 884
Patents, issue of, Wells v. Boyle 753
Petition, *ex parte* Mason 627
*Plea, Edison Electric Light Company v. United States Electric Lighting Company 1456
*Plea in bar, Lyon v. Perin and Gaff Manufacturing Company 983
Preliminary statement, Boulton v. Illingworth 508
Clark v. La Dow 248
*Presumption of validity, Edward Barr Company (Limited) v. New York and New Haven Automatic Sprinkler Company 392
*Post-office boxes, Yale Lock Manufacturing Company v. James 881
*Practice in the courts, Edison Electric Light Company v. United States Electric Lighting Company 1456
*Felix v. Scharnweber 251
*Hoskin *et al.* v. Fisher *et al* 509
*Lyon v. Perin and Gaff Manufacturing Company 983
*Welling v. La Bau 117
Practice in the Patent Office, *ex parte* Blair 113
Boulton v. Illingworth 508
Clark v. La Dow 248
Ex parte De Bausset 1583
Ex parte Gérard 1235, 1240
Ex parte Johnson 507
Kohler v. Kohler and Chambers 247
Ex parte Lombard *et al* 1347
Marsh v. Rein v. Ruppel 1453
Ex parte Mason 627
Ex parte Maxim 506
Ex parte Miller 1346
Ex parte Page and Krausse 1455
Ex parte Smith 505
Ex parte Stanbridge 1345
Ex parte Stoughton 1345
Ex parte Weeks 1585
Wells v. Boyle 753
Ex parte Zabel 627
Printing-presses, *ex parte* Johnson 507
Process, manifold copying, *ex parte* Zabel 627
Process and apparatus, *ex parte* Blair 113
*Process and product, Mosler Safe and Lock Company v. Mosler, Bahmann & Company 1115
*Van Camp v. Maryland Pavement Company 884
*Railway-frogs, Weir v. Morden *et al* 753
*Record of suit, Hoskin *et al.* v. Fisher *et al* 509
*Lyon v. Perin and Gaff Manufacturing Company 983
References, *ex parte* Blair 113
*Reissues, Cornell v. Weidner 985
*Dale Tile Manufacturing Company (Limited) v. Hyatt 249
*Flower *et al.* v. City of Detroit 1348
*Hoskin *et al.* v. Fisher *et al* 509
Ex parte Page and Krausse 1455
*Yale Lock Manufacturing Company *et al.* v. New Haven Savings Bank 115
Reservation clauses, *ex parte* Blair 113
*Safes, fire-proof, Mosler Safe and Lock Company v. Mosler, Bahmann & Company 1115
*Seals, official, Edison Electric Light Company v. United States Electric Lighting Company 1456
*Sofa-bedstead, Ott v. Barth 114
*State courts, Dale Tile Manufacturing Company (Limited) v. Hyatt 249
*Felix v. Scharnweber 251
*Steam-generators, Babcock & Wilcox Company v. Pioneer Iron Works 736
*Suits for infringement, settlement of, Babcock & Wilcox Company v. Pioneer Iron Works 736
*Technical terms, Babcock & Wilcox Company v. Pioneer Iron Works 736
Ex parte Gérard 1235
*Moxie Nerve Food Company v. Various Defendants 886
Ex parte Stanbridge 1345
Ex parte Stoughton 1345
*Telephones, Dolbear *et al.* v. American Bell Telephone Company 877
Telephones, acoustic, *ex parte* Mason 627
Testimony, Marsh v. Rein v. Ruppel 1453
*Time-locks, Yale Lock Manufacturing Company *et al.* v. New Haven Savings Bank 115
*Trade-Marks, Moxie Nerve Food Company v. Various Defendants 886
*Validity of patents, Edward Barr Company (Limited) v. New York and New Haven Automatic Sprinkler Company 392
*Valid patents, Babcock & Wilcox Company v. Pioneer Iron Works 736
*Dolbear *et al.* v. American Bell Telephone Company 877
*Palmer v. Johnston 738
*Thompson *et al.* v. Gildersleeve 886
*Yale Lock Manufacturing Company *et al.* v. New Haven Savings Bank 115
Vapor-stoves, Marsh v. Rein v. Ruppel 1453
*Void patents, Cornell v. Weidner 985
*Flower *et al.* v. City of Detroit 1348
*Fornerook v. Root 984
*Hendy v. Golden State and Miners' Iron Works *et al* 1117
*Mosler Safe and Lock Company v. Mosler, Bahmann & Co 1115
*Weir v. Morden 753
*Yale Lock Manufacturing Company v. James 881
Withdrawal of cases from issue, *ex parte* Page and Krausse 1455
Witnesses, Marsh v. Rein v. Ruppel 1453

DIGEST OF DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

OFFICIAL GAZETTE—April–June, 1888.

DIGEST OF DECISIONS.

[Decisions of the United States courts designated by an asterisk (*), and of State courts by a dagger (†).]

ABANDONED APPLICATIONS.

(See Withdrawal of Case from Issue, 1.)

ABANDONMENT.

(See Diligence; Reissues, 1, 3.)

ABANDONMENT OF ONE FORM OF PRODUCT NO PROOF OF ABANDONMENT OF PROCESS.

The fact of the abandonment of the manufacture prior to the date of the complainant's invention of asphalt blocks composed of a composition containing the same ingredients as the alleged infringing blocks, presumably because the blocks were not a commercial success, proves nothing, it not appearing that the composition of matter produced by the practice of the complainant's process had ever been tested to prove its possession of new or useful qualities which similar compositions had not before possessed.

[*Van Camp v. The Maryland Pavement Company, 884.

ACQUIESCENCE.

(See Reissues, 7.)

ACTION AT LAW.

(See Damages and Profits, 5.)

AGGREGATION.

(See Invention, 4, 6; Particular Patents, 26.)

AMENDMENTS.

(See Division of Application; Reissues, 7; Withdrawal of Case from Issue.)

1. REFUSAL OF EXAMINER TO RECEIVE AMENDMENTS WHICH DID NOT CURE DEFECT IN ORIGINAL SPECIFICATION.

Applicant has been required to amend his claim by erasing the words "or equivalents." Acquiescing in such requirement, applicant seeks to amend by inserting a description of a device asserted to be the equivalent of that originally described and shown. The examiner refused to enter the amendment, and applicant appeals to the Commissioner. *Held* that the action of the examiner was correct for the following reasons:

The proposed amendment did not cure any defect in the original specification, for the invention therein described was complete and operative. It added nothing which had been omitted, nor omitted anything which ought not to have been originally inserted. [*Ex parte* Johnson, 507.

2. SAME.

The proposed amendment did not explain any matters set forth originally. It simply described in detail devices not originally disclosed, and broadened the scope of the claims which contained the parts of the newly-described devices which are said to be the equivalents of those originally set forth but from which they differ in construction. [Id.

3. SAME—NEW MATTER.

The proposed amendment involved *new matter*, and would compel the Office to pass upon the merits of each newly-introduced device in order to determine the question of equivalency. [Id.

4. SAME—GENUS AND SPECIES.

The proposed amendment would have the effect of permitting applicant to add new and different species—would be analogous to permitting an applicant who originally claimed a genus and one species to amend by adding other species which he did not claim or show, although they might to some extent illustrate the nature and character of the invention. [Id.

5. SAME.

The admission of such amendments would permit an applicant to make a picture-gallery of his application by introducing all the known forms of what might be equivalents, and thus secure an examination of each device. [Id.

6. SAME—ELECTION—DILIGENCE.

An applicant who in his application has elected, through mistake or ignorance, to prosecute claims for one invention must exercise diligence in presenting his amendment correcting such error, and this before the application has been examined and rejected. [*Ex parte* Zabel, 647.

7. SAME—SEPARATE INVENTION.

The examiner was right in refusing to admit an amendment covering a distinct and separate invention from that originally retained and prosecuted to rejection. To enter and consider such an amendment would be to permit the applicant to secure examination of two distinct inventions for one fee. [Id.

AMENDMENTS TO PRELIMINARY STATEMENTS.

(See Preliminary Statements.)

ANALOGOUS DEVICES.

(See Infringement, 5; Particular Patents, 15, 27.)

ANSWER TO BILL.

(See Defense, 2.)

ANTICIPATION.

(See Particular Patents, 8, 10, 12, 25; Preliminary Statement.)

APPEALS.

(See Design Patents, 6.)

APPLICATIONS.

(See Amendments, 6, 7; Application of Executor or Administrator; Claims; Division of Application; Oath in Relation to Foreign Patents; Reservation for Subsequent Patent, 2, 3.)

APPLICATION BY EXECUTOR OR ADMINISTRATOR.

1. SECTION 4896 REVISED STATUTES CONSTRUED.

Section 4896 Revised Statutes construed in connection with the right of the executor or administrator to prosecute the application of a deceased inventor or to file a new application for the invention of the decedent. [*Ex parte* Smith, 505.

2. CONTINUOUS APPLICATION.
Should the executor elect to pay a new fee and file a new application for the invention of the decedent, instead of continuing the prosecution of the original application, the application so filed by the executor should be entitled to the same status and precedence in order of examination as the application of the decedent. Such application is merely a revival and continuation of the original application, and should receive the same action and consideration which belonged to the original application had death not intervened and arrested the progress of decedent's case. [Id.

ASSIGNEE.

RIGHTS OF ASSIGNEES.
The rights of assignees under the joint patent are protected, for if the sole applicant has assigned and transferred all the right and title which he had in the invention, then such assignees become the owners of the sole invention, and the Office, if satisfied on this point, would permit them to take charge of and control all proceedings had in and under the sole application. [*Kohler v. Kohler and Chambers, 247.

ASSIGNMENTS.

(See Damages and Profits, 2.)

1. ORDER OF INSPECTION TO DETERMINE IDENTITY OF INVENTION.
In a proceeding under a bill in equity alleging the assignment of an invention to the complainant and the identity of said invention with an invention alleged by the defendant to have been subsequently made by him and not assigned, and also alleging the consequent ownership by the complainant of both inventions, apparatus embodying both of said inventions being in possession of the defendant and inaccessible to the complainant, the equities of the bill resting upon an affidavit of the complainant, and the allegations of the complainant's bill and affidavit being denied by the counter-affidavit of the defendant, a court in equity will conclude that the alleged *prima facie* rights of the complainant have been sufficiently established to support a reasonable expectation that an examination of the machines alleged to embody said inventions will aid the administration of justice. In such case a court in equity has the inherent power, on motion of the complainant, to grant him an order of inspection of the apparatus in possession of the defendant which is alleged to embody the inventions in controversy, to the end that the complainant may be enabled to adduce evidence in support of the allegations of his bill.
[†Wilson v. Keely, 511.

2. SAME.
Where an invention was assigned to the complainant in the year 1869, and shortly thereafter the defendant alleged to the complainant that the embodiment of it (said invention) in a working machine proved it to be impracticable and unsatisfactory, and where the complainant, by reason of the representations of the defendant, was led to believe that said invention had been abandoned and thrown aside, and, relying upon said representations, rested for a period of nineteen years before asserting his rights in and to said invention, having only a short time before asserting said rights become aware of the fact that said assigned invention had not been abandoned, but that it was in fact the same in principle and mode of operation as an invention at that time alleged by the defendant to be a practical one, a court in equity will consider that the complainant had a right to rely on the statements of the defendant, and that in such a case no laches could be attributed to him. [*Id.

3. SAME.
In a case upon the facts above stated the defendant's denials of the allegations of complainant's bill are insufficient to defeat the equities of the bill or to avoid the complainant's *prima facie* case. To work such result it is necessary for the defendant to fully disclose to the court such facts as will advise it of the non-identity of the invention assigned with the later invention, against which the complainant's bill is directed. [*Id.

BAR TO SUIT.

(See Record of a Court, 1.)

A DECREE ABSOLUTE IN TERMS—EFFECT ON LATER LITIGATION.
A decree absolute in its terms is an adjudication of the merits of the controversy, and constitutes a bar to any further litigation of the same subject between the parties.
[*Lyon v. The Perin and Gaff Manufacturing Company, 963.

BILL IN EQUITY.

(See Assignments; Interference, 4.)

BURDEN OF PROOF.

(See Damages and Profits, 10.)

CHANGE OF MATERIAL.

(See Infringement, 4.)

CLAIMS.

(See Amendments, 6; Technical Terms, 2.)

1. ADJUNCTIVE DEVICES.
In a given specific invention which embraces adjunctive devices the adjunctive devices referred to in all the claims must be the same and bear the same relation to the different elements.
[*Ex parte* Stanbridge, 1345.

2. VAGUE OR INDEFINITE LANGUAGE.
Applicant claims, broadly, "automatically-operating mechanism to impart alternate fast and slow movements to the driving-shaft" in his needle-grooving machine, but concedes that the principle involved is old and that this varying movement or motion has been accomplished by an infinite variety of means to an infinite variety of kinds and classes of machinery; but he insists that he is the first in this particular kind of machinery to apply means for varying the movement. *Held* that applicant has only invented improvements upon mechanism already used to accomplish the same result, and that he must limit his claims to the specific construction by which he obtains this variableness of movement. The courts would undoubtedly construe his patent to cover his specific construction, and to permit such vague and indefinite language in claims would result in misleading the public or in deterring others from entering this particular field of invention, and thus by a species of intimidation applicant would secure a protection to which he is not entitled.
[*Ex parte* Miller, 1346.

3. COMBINATION AS DISTINGUISHED FROM ADAPTATION.
Claims for combinations distinguished from claims covering elements having a specific construction and arranged in such peculiar relation as to be adapted to use with each other. While it cannot be doubted that it is the better practice in all cases of novel combination to express the claim in combination form, it sometimes occurs that an invention is of such peculiar character as to render such a claim unimportant.
[*Ex parte* Weeks, 1565.

COMBINATIONS.

(See Claims, 3; Construction of Claims, 1; Design Patents, 4.)

COMMISSIONER OF PATENTS.

(See Amendments, 1.)

COMPOSITION OF MATTER.

(See Abandonment; Construction of Claims, 3; Infringement, 2; Invention, 3.)

CONSTRUCTION OF CLAIMS.

1. CLAIMS—CERTAINTY OF TERMS OF.
Where a claim covered the combination of one element named with another element named, "or other part," these last words would mean some other equivalent part and the claim would be sufficiently certain.
[*Babcock & Wilcox Company v. Pioneer Iron Works, 756.

2. CONSTRUCTION OF CLAIM—PROCESS—INFRINGEMENT.
A claim in the following words, namely: "In a concrete pavement, the use of crushed and pulverized rock, when the same is heated and saturated with dead-oil, crude petroleum, or the residuum of petroleum, and mixed with natural asphaltum, Cuban, Trinidad, or California, previously dissolved to a pitch by crude petroleum or the residuum of petroleum, substantially as described, and for the purpose set forth," construed as for a process, and also as for a process in which the previous saturation of the rock with dead-oil, crude petroleum, or the residuum of petroleum is one of the essential steps. *Held* that the omission of such step averts the charge of infringement.
[*Van Camp v. The Maryland Pavement Company, 894.

3. PROCESS AND PRODUCT.
Under a proper construction of the language such a claim as the foregoing cannot be held to cover both a process and also a composition of matter. [*Id.

4. ERROR IN CLAIM FATAL.
It is fatal to a patent that a patentee claims as essential a step which is unnecessary. [*Id.

5. INFRINGEMENT—WHEN NOT AVOIDED.
A claim is not avoided because the specification does not describe details of construction in elements of the claims well known in the particular art and employed only by the defendant.
[*Thompson *et al.* v. Gildersleeve, 886.

6. COMBINATION CLAIM—WHAT IT INCLUDES.
A combination claim includes whatever is made a part of the combination by the words of the claim, or by necessary inference is a material part in the construction of the patent.
[*Id.

7. SAME.
Where the elements of a combination in a claim co-operate in a result, these parts constitute the combination claimed, and all the other parts of the machine which make these parts operate in this way to produce the result required are for that purpose equivalents of the parts of any other machine, (however different they may be in themselves,) which also make these parts operate in the same way to produce the same result.
[*Id.

CONSTRUCTION OF RULES.

(See Division of Application, 1.)

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Infringement; Invention; Particular Patents; Patentability; Process and Product; Reissues, 1, 2, 3, 5, 6, 7, 8.)

1. THE INVENTION OF THE BELL PATENT OF MARCH 7, 1876, CONSIDERED.
The sound of articulate speech is one of the "vocal or other sounds" referred to in said patent. The art or process described in said patent consists in gradually changing the intensity of a continuous electric current so as to make it correspond exactly to the changes in the density of the air caused by the sound of the voice, and devising a way in which these changes of density could be made and speech actually transmitted put the art in a condition for practical use. In doing this both discovery and invention, in the popular sense of these terms, were involved—discovery in finding the art and invention in devising the means to make it useful. A patent for the art does not necessarily involve a patent for the particular means for doing it, and the mention of means in the specification is only necessary to show that the art can be used to advantage.
[*Dolbear *et al.* v. American Bell Telephone Company, 877.

2. THE FIFTH CLAIM OF THE BELL PATENT OF MARCH 7, 1876, CONSIDERED AND DEFINED.
What Bell claims is the art of creating changes of intensity in a continuous current of electricity exactly corresponding to the changes of density in the air caused by the vibrations which accompany vocal or other sounds, and of using that electrical condition thus created for sending and receiving articulate speech telegraphically. [*Id.

3. CLAIM NOT INCONSISTENT WITH DECISION IN O'REILLY v. MORSE. (15 How., 62.)
This claim is not in opposition to the decision in *O'Reilly v. Morse*, but is sustained by it, as this claim is not for the use of a current of electricity in its natural state as it comes from the battery, but for putting a continuous current in a closed circuit into a certain specific condition, suited to the transmission of vocal and other sounds and using it in that condition for that purpose. [*Id.

4. SAME.
It may be that electricity cannot be used at all for the transmission of speech except in the way Bell has discovered, and that therefore, practically, his patent gives him its exclusive use for that purpose; but that does not make his claim one for the use of electricity distinct from the particular process with which it is connected in his patent. [*Id.

5. CONSTRUCTION OF PATENTS.
While a patent is to be liberally construed, so as to sustain it as a grant of the invention actually made and actually claimed, it can never by judicial construction be made to cover an invention nowhere claimed in it, and which the public has had no fair notice that the patentee intended to claim.
[*Van Camp v. The Maryland Pavement Company, 884.

CONSTRUCTION OF STATUTES.

(See Application by Executor or Administrator; Construction of Specifications and Patents, 1, 3; Design Patents, 3, 7; Jurisdiction, 3; Jurisdiction of United States Courts, 1; Limitation of United States Patents by Foreign Patents Previously Granted; Patentability, 1; Reissues, 8; Testimony, 2, 3.)

1. STATUTES—HOW CONSTRUED.
If there is no ambiguity in the statute, it is the duty of the court to give effect to its obvious meaning, without entering into any inquiry as to the supposed intention of Congress, notwithstanding the statute may be thought to make an unreasonable and harsh innovation.
[*Edison Electric Light Company v. United States Electric Lighting Company, 1456.

2. SAME.
Where the meaning of the Revised Statutes is plain, the court cannot look into the source of the revision to ascertain whether errors have or have not been committed by the reviser. [*Id.

CONTINUOUS APPLICATION.

(See Application by Executor or Administrator.)

CROSS-REFERENCES.

(See Reservation for Subsequent Patents.)

DAMAGES AND PROFITS.

(See Jurisdiction; Master's Report, 2; Settlement of Suit.)

1. MEASURE OF DAMAGES.
When the invention relates to a new composition of matter and the infringing article is made of the patented material, and this alone, the measure of the patentee's damages may be the entire profit which he would have made.
[*Welling v. La Bau, 117.

2. SAME.
This rule is not changed where the infringing articles are of a poorer quality than the complainant's if they are so nearly alike in appearance as to deceive not only buyers but experts in the trade. [*Id.

3. INTEREST IN COLLECTIONS NOT INVOLVING NECESSARILY INTEREST IN PATENT.
An interest in the net proceeds of collections for infringements of a patent does not necessarily involve an interest in the patent itself.
[*Tilghman v. Proctor *et al.*, 928.

4. RULES FOR SETTLING GAINS AND PROFITS.
The infringer is liable for actual, not for possible, gains; for the fruits of the advantage which he derived from the use of the invention over that which he would have had in using other means then open to the public, and adequate to enable him to obtain an equally beneficial result. [*Id.

5. SAME.
If there was no advantage in the use of the plaintiff's invention, there can be no decree for profits, and the plaintiff's only remedy is by action at law for damages. [*Id.

6. SAME.
If the defendants gained an advantage by using the plaintiff's invention, that advantage is the measure of the profits to be accounted for, even if from other causes the business in which that invention was employed by the defendants did not result in profit. [*Id.

7. SAME.
A court of equity will itself administer full relief by awarding as an equivalent or a substitute for legal damages a compensation computed and measured by the same rule that courts of equity apply in the case of a trustee who has wrongfully used the trust property to his own advantage. [*Id.

8. SAME.
A court in equity will require an infringer to account for the gains and profits which he has made from the use of a patented invention instead of limiting the recovery to the amount of royalties paid to the patentee by third persons. [*Id.

9. SAME.
Where the patent in suit had been adjudged invalid by this Court in a suit against another defendant, and subsequently in this suit the Court had adjudged the patent valid, the defendants must account for infringements committed after the date of the first adjudication that such patent was invalid.
[*Id.

10. SAME.
The plaintiff has the burden of proving the amount of profits the defendants have made by the use of his invention.
[*Id.

11. SAME.
As to the comparative expense of the old process, the cost at which the defendants used it, if at all, is not conclusive evidence that the old process could not have been used at a less cost.
[*Id.

12. INTEREST ON AMOUNT SETTLED—DATE OF SAME.
Interest should be allowed upon the amount found due the plaintiff by this Court from the date when the master's report was submitted to the court below. [*Id.

DECREE.

(See Bar to Suit.)

DEFENSE.

1. DIFFERENCE OF PURPOSE—WHEN NO DEFENSE IN INFRINGEMENT.
It is no defense in a suit for infringement that the defendant's machine was used for forming staple-seams in paper, and not in leather, both machines operating in the same way.
[*Thompson *et al.* v. Gildersleeve, 886.

2. PRACTICE—LACK OF INVENTION.
The defense of no patentable invention can be made without setting it up in an answer.
[*Hendy *v.* The Golden State and Miners' Iron Works *et al.*, 1117.

3. ON PLEA.
The defendant pleaded that he should not be called upon to answer, because by reason of the expiration of a foreign patent for the same invention the patent in suit had expired, and the complainant had a plain, adequate, and complete remedy at law, and the court should not take cognizance in equity of the suit. The complainant contended that such a defense could not be raised by plea, and if it could, that the plea was insufficient both in matters of form and substance to present such a defense.
[*Edison Electric Light Company *v.* United States Electric Lighting Company, 1456.

DELAY IN APPLYING FOR REISSUE.

(See Reissues, 2, 5.)

DELAY IN THE PROSECUTION OF APPLICATION FOR PATENT.

(See Diligence.)

DESCRIPTION.

(Claims; Design Patents, 1; Technical Terms, 2, 3.)

DESIGN PATENTS.

1. EMPLOYMENT OF THE WORDS "AS SHOWN AND DESCRIBED" IN CLAIMS OF DESIGN PATENTS.
It is well understood that, while the courts, when construing the validity, scope, and extent of the claims in patents, will regard the words "as shown and described" as ever present, and when absent will not construe patents to embrace more than is shown and described, it is the policy of the Office while it has control over applications to insist that the form and phraseology adopted and employed by applicants should not be misleading nor unintelligible to the common people who seek to deal with patent property. It has therefore been customary to require that the words "as shown and described" shall be employed in the claims of design patents, in order that the patents may be limited to the subject-matter shown and described. The introduction of such words operates as a guide-post to inform all persons that the patent is limited to the precise invention shown and described, and that there is no hidden mystery nor secret trap by which those who attempt to enter the same field of invention or to use other articles may be arrested in their efforts or mulcted in damages.
Ex parte Gérard, 1235.

2. EMBRACING MORE THAN ONE INVENTION.
A design application will not be permitted to embrace more than one subject of invention. The same principles in this particular which control in mechanical applications must obtain in design applications. A distinct and separate invention relating to the form or configuration cannot be lawfully included in a patent embracing a distinct and separate invention as to surface ornamentation—as, for instance, an alto-rilievo cannot be joined with an ornamentation or picture to be worked into a woolen fabric; but when the shape and the ornamentation are parts of the same article of manufacture, so that both unite in producing the same result, then they are not distinct and separate within the purview of the rule. [Id.

3. WHAT ELEMENTS OR FEATURES OF DESIGN ARE COVERED AND PROTECTED BY A DESIGN PATENT.
Under the statute the design must be a *finished* and *completed* thing—must be one entire and integral thing. It cannot consist of several integral different designs aggregated, so as to protect the several individual parts, nor so that these parts may be separately applied to other and different articles or parts of articles of manufacture. [Id.

4. DOCTRINES OF COMBINATIONS AND GENUS AND SPECIES NOT APPLICABLE IN DESIGNS.
The doctrines of combinations and elements of combinations and of genus and species obtaining in mechanical inventions cannot be applied to designs. In a mechanical combination, when one element is withdrawn that combination ceases; but in a design a subordinate and unimportant feature may be withdrawn and yet the design as a whole remain, and to simulate the predominant features would infringe the whole. [Id.

5. TEST OF INFRINGEMENT.
The test of infringement is the "identity of appearance, determined by the eye of the ordinary observer." (*Gorham Company v. White.*) As the subject of identity of the design is addressed to the eye of the ordinary observer—the public—so the questions of the extent and character of claims in patents for distinctive and severable parts must be determined largely by the skill and judgment of the experts of the Office. [Id.

6. OBJECTIONS RELATING TO NON-SEGREGABILITY—TO WHOM APPEALABLE.
Objections to claims for non-segregable parts relate to the merits rather than to form, and upon rejection the appeal should go to the Examiners-in-Chief. [Id.

7. SUBJECTS FOR DESIGN ALSO SUBJECTS FOR MECHANICAL PATENTS.
A new and original design under the statutes may also be the subject of a mechanical patent. (*Ex parte Schulze-Berge*, 42 O. G., 298.) [Id.

8. GENUS AND SPECIES.
The relation of genus and species does not exist in designs. The question involved in designs is one of identity.
Ex parte Gérard, 1240.

9. LIMITED TO A SINGLE INVENTION.
A patent for a design must be limited to a single invention; but such patent may cover any variation or modification, provided the distinct and predominant features so far remain as to preserve the identity of the original completed design. [Id.

DILIGENCE.

(See Amendments, 6.)

1. CLAIMS CONFLICTING WITH PENDING APPLICATIONS.
Applicants present broad and generic claims and claims for specific constructions. The former have been rejected for lack of novelty, and the latter found to conflict with claims in other pending applications. They insist that they have two years in which to appeal from the rejection, and by refusing to act successfully tie up other applications and prevent the issue of patents, or place the Office in the position of issuing patents which may hereafter be adjudged to interfere with an application pending at the time the patents were granted.
Held that if applicants refuse to avail themselves for an unreasonable time of their right of appeal, or are unreasonably dilatory in seeking the protection which the rules offer them, for the purpose of delaying the issue of patents to other parties for their inventions which have been found patentable, the Commissioner would not be justified in permitting such dilatory and unjust action of applicants to work hardship to other applicants who are entitled to the specific constructions, tions, but will issue the patents.
Ex parte Lombard *et al.*, 1347.

2. SAME.
In such cases the applicants should be notified that in order to secure an interference they must act with reasonable promptness; but the Office and not the applicants must be the judge of what constitutes reasonable promptness. [Id.

DISCLOSURE OF INVENTION.

(See Assignments, 3.)

DIVISION OF APPLICATION.

1. REFUSAL OF AMENDMENT BY EXAMINER WHICH DOES NOT CURE DEFECT IN ORIGINAL SPECIFICATION.
When division of an application has been required and an amendment is presented which does not relieve the application from the objection raised, but simply reduces the number of the inventions, the examiner should refuse to admit it.
Ex parte Maxim, 506.

2. SAME.
The only effect of such amendment, when admitted, is to narrow or limit the right of applicant in making election of the invention he desires to prosecute in his pending application. [Id.

3. FINAL ELECTION.
The objection that applicant has elected and cannot be permitted to further amend his case raises the question of what constitutes an election under these circumstances. *Held* that such action does not put the applicant in the status of having made a final election from which he may not be allowed to recede, and applicant cannot be considered to have made a final election until he shall have complied with the requirement as to division and the Office approves and accepts his action. [Id.

ENLARGEMENT OF CLAIMS.

(See Particular Patents, 2, 3, 16; Reissues, 1, 3, 5.)

EQUIVALENTS.

(See Infringement, 4.)

ESTOPPEL.

(See Joint Application.)

EVIDENCE.

(See Abandonment; Official Documents; Plea, 5, 6, 7; Reissues, 6; Testimony.)

1. PRACTICE—WHAT IS INCLUDED IN THE RECORD.
A stipulation in the suit included the evidence taken in another suit, and a certified copy of Fisher's original patent appearing in the record under the certificate of the clerk of the circuit court that it was a part of the record and of the proceedings in the cause, although there was no separate memorandum in the record of introduction of the original patent in evidence, this Court assumes the same to be properly in the case.
[*Hoskin *et al. v.* Fisher *et al.*, 509.

2. NO PRESUMPTION OF LAW AS TO THE SIMILARITY OF TWO REISSUES, ONE OF WHICH IS NOT IN EVIDENCE.
The reissue in suit being a second reissue, and the first reissue not being found in the record, no presumption of law arises that the first and the second reissues were for the same invention with similar second and third claims. To have the advantage of the first reissue it should have been put in evidence. [*Id.

3. THE COMPARISON CONFINED TO THE REISSUE IN SUIT AND THE ORIGINAL PATENT.
The original patent and the second reissue being properly before the Court, a comparison of the two may be made to determine the validity of the second reissue. [*Id.

EVIDENCE OF INVENTION.

1. UTILITY.
The Office is bound to raise the question of utility of an alleged invention in cases where natural laws and established principles are disregarded, for the reason that the law does not authorise the grant of Letters Patent except for novel and useful inventions. In such cases, even if novelty were admitted, a patent would be withheld until applicant should demonstrate the operativeness of his device. *Ex parte* statements or theoretical arguments are not sufficient; applicant must prove by practical demonstration his assertions.
[*Ex parte* de Bausset, 1583.

2. SAME.
The patent system was not designed to protect the chimerical schemes of visionaries or closet theorists. Invention consists in more than the work of the imagination. To conceive of a scheme of vast dimensions is the work of a dreamer; to make the mathematical computations requires the ordinary knowledge of the student; to face the difficulties of construction and devise means to overcome them is the true work of the inventor. [Id.

EXAMINATION OF APPLICATIONS.

(See Amendments; Evidence of Invention.)

EXAMINERS.

(See Amendments, 7.)

EXAMINERS-IN-CHIEF.

(See Design Patents, 6.)

EXPIRATION OF PATENT.

(See Defense, 3; Limitation of United States Patents by Foreign Patents Previously Granted, 2.)

FOREIGN PATENTS.

(See Limitation of United States Patents by Foreign Patents Previously Granted.)

SECTION 4887 REVISED STATUTES CONSTRUED.
It is not material whether the foreign patent is granted to the inventor who made the application in this country or to some other person to whom he has caused the invention to be patented, nor that the inventor who makes the application here is one of our citizens.
[*Edison Electric Light Company *v.* United States Electric Lighting Company, 1456.

FOREIGN USE.

(See Preliminary Statement.)

FORMER DECISIONS AFFIRMED.

(See Particular Patents, 30; Reissues, 6.)

FORMER DECISIONS CONSTRUED.

(See Reservation for Subsequent Patents, 1, 2, 3.)

FRAUD.

(See Particular Patents, 18; Technical Terms, 1.)

HUSBAND AND WIFE.

(See Testimony.)

IDENTITY OF INVENTION.

(See Assignments, 3; Design Patents, 8, 9.)

INFRINGEMENT.

(See Construction of Claims, 2; Damages and Profits, 3; Design Patents, 5; Injunction; Particular Patents, 1, 2, 3, 4, 15, 17, 18, 27, 28, 30.)

1. HAVING CLAIMED A PART OR STEP ESSENTIAL IT CANNOT BE TREATED AS NON-ESSENTIAL.
When a patentee emphasizes in his specification and makes a part of the claim allowed by the Patent Office a particular step in a particular process, which step in the process the defendant does not use, it is not allowable for him to disregard that step or to contend that it is not essential.
[*Van Camp *v.* The Maryland Pavement Company, 894.

2. CONSTRUCTION OF CLAIM—INFRINGEMENT.
Even in a good claim for a composition of matter which is not described otherwise than by the process of making it nothing can be in infringement which is not made by the process described. [*Id.

3. INFRINGEMENT—WHEN NOT AVOIDED.
Where the defendant's anvil was made in separate parts, while the complainant's was a single piece, if the operation and results of each were the same, one construction was the equivalent of the other.
[*Thompson *et al. v.* Gildersleeve, 886.

4. EQUIVALENT—WHAT IS NOT MECHANICALLY.
The claim of the patent embracing a longitudinal groove, the employment instead of pieces of wax is not a mechanical equivalent.
[*Förncrook *v.* Root, 984.

5. INFRINGEMENT—WHEN NONE.
The cylinder of the claim being described as having chambers or depressions, and the defendants' cylinder being smooth throughout, there was no infringement in this particular.
[*Hendy *v.* The Golden State and Miners' Iron Works *et al.*, 1117.

INJUNCTION.

1. RIGHT TO PRELIMINARY INJUNCTION—PRESUMPTION OF VALIDITY.
To entitle a complainant to a preliminary injunction, restraining the infringement of Letters Patent, there must be a special presumption in favor of the validity of the patents, arising from an adjudication in a Federal court, acquiescence by the public, or a successful interference in the Patent Office.
[*Edward Barr Company (Limited) *v.* New York and New Haven Automatic Sprinkler Company, 892.

2. SAME—FIRE-EXTINGUISHER.
A preliminary injunction, restraining the infringement of Letters Patents No. 307,456, November 4, 1884, and No. 357,987, February 15, 1887, for automatic fire-extinguisher, denied, as nothing appeared in the motion papers showing such a former adjudication, public acquiescence, or successful interference in the Patent Office, between the parties or their privies. [*Id.

3. SAME—PRESUMPTION—PARTIES TO—RESTRICTION OF—INTERFERENCE.
A presumption of validity arising from a successful interference in the Patent Office only applies against the parties to the interference and their privies. It does not extend to litigants who do not make the infringing article under a grant from the interferer. [*Id.

4. INJUNCTION AGAINST DEFENDANT NOT INCLUDED IN TERMS OF SETTLEMENT.
An injunction, however, may be granted against the defendant who was not included in terms by the writing of the settlement.
[*Babcock & Wilcox Company v. Pioneer Iron Works, 756.

INTEREST ON ROYALTY.

(See Damages and Profits, 12.)

INTERFERENCE.

(See Diligence, 2; Preliminary Statement, 1, 2.)

1. JOINT PATENTEES.
One of two joint patentees files a sole application for the invention; an interference is declared between the patent of the joint patentees and the application of the sole applicant, and motion is made to dissolve, based on the ground that the Office has no power to declare the interference and cannot issue a patent to the sole applicant under these circumstances.
Motion overruled, and *Held* that when patent issues to joint inventors as such neither is *the* inventor, but the invention is made by an entity composed of both parties, and that joint patentees are not the same as the sole applicant claiming the invention.
[Kohler v. Kohler and Chambers, 247.

2. INTERFERENCE DECLARED.
It is true that in an interference declared under such circumstances neither party could antedate the other as to the time the invention was conceived and embodied; but the question of priority would necessarily resolve itself into a determination as to whether the entity composed of the joint patentees had ever made the invention at all. If they never made the invention, then no date could be established for them, and the sole applicant would be entitled to the award as the real and true inventor. The interference will develop the truth and the facts, and if it shall appear that the invention was joint, patent will be denied the sole applicant. If, on the other hand, it shall appear that the joint application was prepared and executed through misapprehension or mistake, then the interference should be determined in favor of the sole applicant. [Id.

3. PUBLIC USE—BURDEN OF PROOF.
Two applications of La Dow are involved in this interference, in one of which he is the junior and in the other the senoir applicant. In his preliminary statement he sets up public sale of the invention, which, if established, would bar all parties. Clark moves that La Dow be required to file drawings and descriptions of the invention alleged to have been sold and furnish other information. *Held* that in view of the averments of public use it would be unjust and unnecessary to put Clark to the expense of taking his evidence first, so long as La Dow was attempting to destroy the necessity of an interference, and ordered that La Dow be required to proceed first and take such evidence as he desires which shall establish the facts set forth in his preliminary statement, and also in support of the question of priority. Clark may then follow with evidence rebutting that offered by La Dow.
[Clark v. La Dow, 248.

4. FILING OF BILL IN EQUITY IN CIRCUIT COURT BY DEFEATED PARTY WILL NOT STAY THE ISSUE OF PATENT TO SUCCESSFUL PARTY IN INTERFERENCE.
The filing of a bill in equity in the circuit court of the United States by the defeated party to an interference will not operate to stay the issue of patent to the successful contestant, nor will it justify the Commissioner of Patents in delaying or withholding it until such proceeding in equity is terminated.
[Wells v. Boyle, 753.

INVALIDITY OF PATENTS.

(See Construction of Claims, 4.)

INVENTION.

(See Construction of Specifications and Patents, 1, 2, 3, 4; Evidence of Invention; Patentability.)

1. PATENTABLE INVENTION—WHAT IS NOT.
In a prior patent describing a U-shaped trough for the purpose of connecting outer rails, leaving the central rails to be secured by means of a V-shaped recess in the bed of the plate at the wide end of the trough, there was no invention in dividing the trough into two, so as to connect the central rails on each side by means of a separate U-shaped trough with the outer rail exterior to them. [*Weir v. Morden *et al.*, 753.

2. PATENTABLE INVENTION—WHAT IS NOT.
Where there was merely a good selection from among known joints and involved good workmanship and apparently nothing more, there was no patentable invention.
[*Babcock & Wilcox Company v. Pioneer Iron Works, 756.

3. COMPOSITION OF MATTER—OLD ELEMENTS—INVENTION.
When a mechanically-combined material composed of particular ingredients is old, a person who has merely altered the proportions of ingredients or the process of combining them has not discovered a new composition of matter in the sense of the patent law. To be a new composition of matter the product must have some distinctly new property or be applicable to some new use.
[*Van Camp v. The Maryland Pavement Company, 884.

4. AGGREGATION—NOT PATENTABLE.
Where the same combination was employed in square-cornered safes it was simply an unpatentable aggregation to employ it to round-cornered safes.
[*Mosler Safe and Lock Company v. Mosler, Bahmann & Company, 1115.

5. PATENTABLE INVENTION—WHAT IS NOT.
Merely putting rollers under an article to make it movable when without the rollers it would not be movable does not involve patentable invention.
[*Hendy v. The Golden State and Miners' Iron Works *et al.*, 1117.

6. AGGREGATION—NOT COMBINATION.
There is no patentable combination between rollers which make the support movable and a feeding-cylinder mounted on such support. [*Id.

INVENTION CLAIMED BUT NOT DESCRIBED.

(See Construction of Claims, 5.)

INVENTION DESCRIBED BUT NOT CLAIMED.

(See Reissues, 3.)

JOINT APPLICATION.

(See Interference, 1, 2.)

IS THE SOLE INVENTOR ESTOPPED BY HIS FORMER OATH?
An applicant is not estopped by reason of his oath filed with a joint application from asserting his rights as sole inventor; nor should he be denied a patent on account of having made an error or mistake in the matter of joint inventorship.
[Kohler v. Kohler and Chambers, 247.

JOINT INVENTORS.

(See Assignees; Interference, 2.)

JURISDICTION.

(See Plea.)

1. JURISDICTION—PRACTICE.
Where in a suit at law in a State court for the recovery of license-fees under a written contract the plaintiff recovered damages, and the defendant by writ of error brought the suit into this Court as involving a Federal question, and the defendant in error moved in this Court to dismiss the writ of error for want of jurisdiction, and also moved to affirm the judgment of the State court, *Held* that the motion to dismiss must be denied because the validity of a second release subsequent to that under which the license was given had been set up in defense below and that presented a Federal question. *Held* that the motion to affirm the judgment of the State court must be granted because the same was clearly right.
[*Dale Tile Manufacturing Company (Limited) v. Hyatt, 249.

2. JURISDICTION—PRACTICE.
In an action of assumpsit in a State court for the recovery of license-fees under a written contract the plaintiff recovered damages and the defendant brought the suit into this Court as involving a Federal question, and the defendant in error moved in this Court to dismiss the writ of error for want of jurisdiction. *Held* that as the question at issue in the State court was not of priority of invention or of the validity or construction of any patent, but simply whether the reels made and sold were the same, or substantially the same, as mentioned in the contract, no Federal question was presented. *Held*, in allowing a writ of error to this Court, the certificate of the chief justice of a State court that a Federal question arose is not conclusive upon this Court and cannot supply the want of evidence of such fact in the record. [*Felix v. Scharnweber, 251.

3. JURISDICTION—ACT OF MARCH 3, 1887.
The $2,000 limitation placed upon the jurisdiction of the court under the act of March 3, 1887, does not apply to patent cases or to suits for the infringement of patents.
[*Miller Magee Company *et al.* v. Carpenter, 1113.

JURISDICTION OF UNITED STATES COURTS.

JURISDICTION WITHOUT REGARD TO AMOUNT.
In the suit at bar, which was for patent license-fees under a contract, where both the validity of the patent and infringement were put in issue and decided by the circuit court, there is no doubt that this was "a case touching patent rights" and came within the jurisdiction of this Court under section 689 Revised Statutes, without regard to the sum or value in dispute.
[*St. Paul Plow Works v. Starling, 1120.

LACHES.

(See Assignments, 2.)

LICENSE.

(See Jurisdiction, 1, 2; Jurisdiction of United States Courts.)

LIMITATION OF UNITED STATES PATENTS BY FOREIGN PATENTS PREVIOUSLY GRANTED.

(See Construction of Statutes, 1, 2; Defense, 3; Foreign Patents; Oath in Relation to Foreign Patents; Particular Patents, 20; Plea, 5, 6, 7.)

1. BELL'S PATENT OF JANUARY 30, 1877, NOT AFFECTED BY PRIOR ENGLISH PATENT.
The effect of section 4887 of the Revised Statutes is not to render invalid an American patent by an English patent of an earlier date for the same invention, but only to limit its term.
[*Dolbear *et al.* v. American Bell Telephone Company, 377.

2. STATUTE 4887 CONSTRUED.
A patent of the United States taken out by the inventor, a citizen of the United States, expires at the date of expiration of a foreign patent for the same invention previously taken out by the same inventor, or by his request, although the patent of the United States had been first applied for and the invention had been put in use in the United States before the foreign patent had been applied for.
[*Edison Electric Light Company v. United States Electric Lighting Company, 1456.

MASTER'S REPORT.

(See Damages and Profits.)

1. CONCLUSIVENESS.
The proceedings before a master have almost the same solemnity as a trial before a referee or a jury, and the familiar rule which precludes the court from setting aside a verdict which is not against the weight of evidence is to a great extent applicable. [*Welling v. La Bau, 117.

2. PRESUMPTIONS SUPPORTING.
In dealing with the exceptions to the master's report, his conclusions, depending upon the weighing of conflicting testimony, have every reasonable presumption in their favor, and are not to be modified or set aside unless there clearly appears to have been error or mistake on his part.
[*Tilghman v. Proctor *et al.*, 638.

MEASURE OF DAMAGES.

(See Damages and Profits.)

MECHANICAL SKILL.

(See Invention, 1, 2, 4, 5, 6.)

MISTAKE.

(See Reissues, 7, 8.)

MODEL.

(See Reissues, 6.)

NEW APPLICATION.

(See Withdrawal of Case from Issue.)

NEW MATTER.

(See Amendments, 3.)

OATH IN RELATION TO FOREIGN PATENTS.

1. PETITION AND OATH.
The petition failed to refer to or identify the specification, and the oath accompanying the application contained the statement that the invention had not been patented to the applicant, "nor with his knowledge or consent in any foreign country," the words "to others" being omitted and the word "foreign" inserted before *country*.
Held that the petition was defective, and must be amended to contain a reference to the specification for a full disclosure of the alleged invention.
[*Ex parte* Mason, 887.

2. OATH.
The oath filed by applicant is indefinite and may be construed to mean that the invention has not been patented to applicant in any country, or to himself in any foreign country, or with his knowledge or consent in any foreign country. [Id.

3. MATERIAL DEPARTURES FROM THE RULES NOT PERMITTED.
If the rules are violated or departed from in one material particular, the practice would soon become lax in other particulars. The several requirements of the rule with regard to the oath must be enforced. [Id.

OATH TO JOINT APPLICATION.

(See Joint Application.)

OFFICIAL DOCUMENTS.

PRESUMPTIONS ATTENDING FOREIGN OFFICIAL DOCUMENTS.
The tribunals of every nation take judicial notice of the public seals of foreign States, and the annexation of the seal will be presumed to have been made by a person having custody thereof and competent to do the act.
[*Edison Electric Light Company v. United States Electric Lighting Company, 1456.

OLD DEVICES.

(See Invention, 2.)

OLD ELEMENTS.

(See Invention, 3.)

OMISSION OF PARTS.

(See Construction of Claims, 2; Infringement, 1.)

OPERATIVENESS OF DEVICE.

(See Evidence of Invention.)

ORDER OF INSPECTION OF INVENTION IN SUIT BY ASSIGNEE.

(See Assignments.)

PARTICULAR PATENTS.

(See Construction of Specifications and Patents; Limitation of United States Patents by Foreign Patents Previously Granted.)

1. BABCOCK AND WILCOX—STEAM-GENERATORS.
Letters Patent No. 175,548, dated April 4, 1876, granted to Babcock and Wilcox, for an improvement in sectional steam-generators, adjudged invalid as to the first claim for lack of invention in the same.
[*Babcock & Wilcox Company v. Pioneer Iron Works, 756.

2. BAILEY—HYDRANTS.
Reissued Letters Patent No. 6,990, granted March 14, 1876, to Thomas R. Bailey, Jr., for an improvement in hydrants, adjudged invalid as to the first claim and not infringed as to the third claim thereof.
[*Flower *et al.* v. City of Detroit, 1349.

3. BELL—TELEGRAPHY—No. 174,465.
Letters Patent No. 174,465, granted to Alexander Graham Bell March 7, 1876, for improvements in telegraphy, adjudged valid as to the fifth claim thereof, and to have been infringed.
[*Dolbear *et al. v.* American Bell Telephone Company, 377.

4. BELL—ELECTRIC TELEGRAPHY—No. 186,787.
Letters Patent No. 186,787, granted to Alexander Graham Bell January 30, 1877, for improvements in electric telegraphy, adjudged valid as to the third, fifth, sixth, seventh, and eighth claims thereof, and to have been infringed. [*Id.

5. THE BELL PATENT OF MARCH 7, 1876, NOT LIMITED TO A MAGNETO-INSTRUMENT.
The Bell patent is not confined to a magneto-instrument and such modes of creating electrical undulations as could be produced by that form of apparatus. [*Id.

6. THE FIFTH CLAIM OF SAID PATENT RESTATED.
The method of transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth. The apparatus for transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, substantially as set forth. [*Id.

7. THE SAME EXPLAINED.
The method, as herein described, includes both the magneto method and the variable-resistance method. The current must be kept closed to be used successfully; but this does not necessarily imply that it must be so produced or so operated upon as to be incapable of being closed. There is nothing in the patent which requires it to be operated by instruments which are incapable of making the break. The patent is both for the magneto and variable-resistance methods and for the particular magneto apparatus which is described, or its equivalent. There is no patent for any variable-resistance apparatus. The claim upon this broad construction is not "a claim for speech transmission by transmitting it—or, in other words, for all such doing of a thing as is provable by doing it." No one before Bell knew how to put electricity in a certain condition for successful use in speech transmission. [*Id.

8. NO ANTICIPATION OF THIS CLAIM BY REIS.
Bell's patent is not anticipated by the descriptions of the Reis telephone, which operated by a different method, using an intermittent or make-and-break current. [*Id.

9. NO ANTICIPATION BY VAN DER WEYDE.
Van der Weyde copied Reis, and it was not until after Bell's success that he found out how to use a Reis instrument so as to make it transmit speech. [*Id.

10. NO ANTICIPATION BY MCDONOUGH.
McDonough was anticipated by Reis, and in his application for a patent made a circuit-breaker so adjusted as to break the connection by the vibrations of the membrane one of the elements of his invention. [*Id.

11. NO ANTICIPATION BY VARLEY.
Varley's patents describe a Morse key, or something equivalent, and there is implied an operation on the principle of the electric telegraph—viz., by making and breaking the circuit. [*Id.

12. NO ANTICIPATION BY DRAWBAUGH.
Considering the history of Drawbaugh's inventions as described in evidence with perfected apparatus prior to Bell's invention, and the conduct of Drawbaugh after Bell's telephone had been patented and had become notorious, and the fact that Drawbaugh brought forward and patented other inventions after Bell's telephone had become universally talked about, and did not apply for a patent on his telephone until July, 1880, with other facts detailed at length, the Court comes to this conclusion, viz: "We do not doubt that Drawbaugh may have conceived the idea that speech could be transmitted to a distance by means of electricity, and that he was experimenting upon that subject; but to hold that he had discovered the art of doing it before Bell did would be to construe testimony without regard to the ordinary laws that govern human conduct." [*Id.

13. FRAUD IN PROCURING THE BELL PATENT OF MARCH 7, 1876.
The Court examine the testimony in respect to the charges of fraud in procuring said patent, and conclude that the charges had no foundation in fact. [*Id.

14. THE FIFTH CLAIM OF SAID PATENT CONSTRUED.
The fifth claim of this patent is not for the magnet, but for the telephone of which it forms a part. [*Id.

15. BENJAMIN—WHEELBARROWS.
Letters Patent No. 349,681, granted to William Benjamin September 28, 1886, for an improvement in metal wheelbarrows, adjudged not infringed by a construction like that described in Patent No. 326,945, granted to Joseph Annin December 29, 1885 for metal wheelbarrows.
[*Blaum *v.* National Barrow and Truck Company, 1587.

16. CORNELL—BUNG-BUSHING.
Reissued Letters Patent No. 8,739, granted June 17, 1879, to Lacy and Cornell, for bushes for bungs, adjudged invalid, as for an invention different from that of the original patent.
[*Cornell *v.* Weidner, 955.

17. COWELL—SASH-BALANCES.
The second claim of Patent No. 126,061, granted to John J. Cowell April 23, 1872, for an improvement in sash-balances, adjudged to be valid, and to have been infringed by a construction such as is described in Patent No. 185,260, granted to John Vetterlein, December 12, 1876, for a sash-pulley case.
[*Palmer *v.* Johnston, 756.

18. CRAWFORD—STEAM-GENERATORS.
Letters Patent No. 90,506, dated May 25, 1869, granted to Benjamin Crawford, for an improvement in steam-generators, adjudged valid as to the first, second, third, and fifth claims, and to have been infringed.
[*Babcock & Wilcox Company *v.* Pioneer Iron Works, 756.

19. CUSENBARY AND MARS—ORE-STAMP FEEDERS.
Letters Patent No. 140,250, granted June 24, 1873, to Cusenbary and Mars, for an improvement in ore-stamp feeders, adjudged invalid as to the first claim for lack of patentable invention.
[*Hendy *v.* The Golden State and Miners' Iron Works *et al.*, 1117.

20. EDISON—DYNAMO-ELECTRIC MACHINES.
Letters Patent No. 363,140, granted August 22, 1882, to Thomas A. Edison, for improvements in dynamo-electric machines, expired with the expiration of the Austro-Hungarian patent for the same invention.
[*Edison Electric Light Company *v.* United States Electric Lighting Company, 1456.

21. FISHER—HYDRAULIC-MINING APPARATUS.
Reissued Letters Patent No. 8,876, granted to Frank H. Fisher, September 2, 1879, for an improvement in hydraulic-mining apparatus, adjudged to be invalid.
[*Hoskin *et al. v.* Fisher *et al.*, 309.

22. FORNCROOK—SECTIONAL HONEY-FRAMES.
Letters Patent No. 243,674, granted to James Forncrook June 28, 1881, for an improvement in sectional honey-frames, adjudged to be invalid for lack of patentable novelty.
[*Forncrook *v.* Root, 944.

23. LITTLE—TIME-LOCKS.
Reissued Letters Patent No. 8,550, to Samuel A. Little, for improvements in time-locks, by which the multiple bolt-work of a safe or vault door could be automatically both dogged or locked and unlocked at predetermined times, the dogging and releasing being caused by the operation of the time mechanism, and the time for locking or unlocking being capable of alteration at the will of the operator, without disturbance of the clock-work, contained, *inter alia*, the following claim: "7. In a time-lock, the combination * * * of the time-movements and two adjustable devices, one for determining the time of locking and the other of unlocking." The original letters of the same patent contained, among others, the following claim: "2. The wheels B and C, with the depressions d and *f*, and the projections e and *g*, located relatively to each other as described, to increase and diminish the surface of a common cam, *i*, or depression *h*, by rotation on each other." * * * *Held*, that the seventh claim of the reissue was not an enlargement of the second claim of the original patent, because the latter should be construed broadly, and should not be confined to "a common cam," or to a device which was connected with the compound wheel in the same way in which the cam was connected, but was broad enough to include equivalent means of connection with the dog.
[*Yale Lock Manufacturing Company *et al. v.* New Haven Savings Bank, 115.

24. MOSLER—FIRE-PROOF SAFES—No. 281,640.
Letters Patent No. 281,640, granted July 17, 1883, to Moses Mosler, for improvement in fire-proof safes, adjudged invalid as to the first and second claims for lack of invention and as to the third claim for lack of novelty.
[*The Mosler Safe and Lock Company *v.* Mosler, Bahmann & Company, 1115.

25. SAME—BENDING ANGLE-IRONS.
Letters Patent No. 283,136, granted August 14, 1883, to Moses Mosler, for an improvement in bending angle-irons, adjudged invalid as being for a method of making the article described in the prior patent, No. 281,640. [*Id.

26. SAME.—FIRE-PROOF SAFES—No. 273,585.
Letters Patent No. 273,585, granted March 6, 1883, to Moses Mosler, for an improvement in fire-proof safes, adjudged invalid for lack of novelty, and because the claim covered simply an aggregation of elements. [*Id.

27. OTT—SOFA-BEDSTEADS—INFRINGEMENT.
The second claim of a patent issued to William Ott January 23, 1877, for an improvement in sofa-bedsteads, which is as follows: "In combination with the sections A and B, the folding rods F F, and head-boards D and E, supporting the latter when extended to sustain the bolster, substantially as set forth." *Held* not to be infringed by a device which makes the folding rods rest upon the end pieces of the lounge-frame, instead of upon head-boards, which are dispensed with.
[*Ott *v.* Barth, 114.

28. SHOREY—MACHINES FOR FORMING STAPLE-SEAMS IN LEATHER.
The third claim of Patent No. 186,340, dated February 25, 1873, granted to Samuel W. Shorey, for an improvement in machines for forming staple-seams in leather, adjudged valid and to have been infringed.
[*Thompson *et al. v.* Gildersleeve, 926.

29. WEIR—RAILROAD-FROGS.
Reissued Letters Patent No. 8,914, dated September 30, 1879, granted to Frederick C. Weir, for an improvement in railroad-frogs, adjudged to be invalid as to the second claim for lack of invention.
[*Weir *v.* Morden *et al.*, 753.

30. YALE—POST-OFFICE BOXES.
The first and second claims of Reissued Letters Patent No. 8,788, granted July 1, 1879, to the Yale Lock Manufacturing Company, declared invalid if construed broadly, and not to have been infringed if construed narrowly. The Court concurs in the views and in the result reached by the court below in this case as reported in 22 Blatchford, 294.
[*Yale Lock Manufacturing Company *v.* James, 881.

PATENTABILITY.

(See Construction of Specifications and Patents, 1, 2, 3, 4; Invention.)

PERFECTION IN OPERATION NOT ESSENTIAL TO THE VALIDITY OF A PATENT.
The law does not require that a discoverer or inventor, in order to get a patent for a process, must have succeeded in bringing his art to the highest degree of perfection. It is enough if he describes his method with sufficient clearness and precision to enable those skilled in the matter to understand what the process is, and also if he points out some practical way of putting it in operation.
[*Dolbear *et al. v.* American Bell Telephone Company, 377.

PATENT OFFICE.

(See Testimony, 2.)

PATENTS.

(See Interference, 4; Reissues, 7.)

PETITION.

(See Oath in Relation to Foreign Patents.)

PLEA.

(See Defense, 3.)

1. PLEA TO JURISDICTION PROPER.
A plea to the jurisdiction is proper both in suits at law and in equity.
[*Edison Electric Light Company *v.* United States Electric Lighting Company, 1456.

2. PLEA GOOD EVEN IF PARTLY OR WHOLLY NEGATIVE.
It is no objection that such a plea is partly a negative and partly an affirmative plea, or, indeed, negative wholly. [*Id.

3. PLEA—THE EFFECT OF.
The effect of the plea is to admit all the facts alleged in the bill except those specifically denied, and to meet the case made by the bill by alleging the new facts intended to show the expiration of the patent in suit. [*Id.

4. PLEA—WHEN SUFFICIENT.
A plea is sufficient which sets forth documents according to their tenor or legal effect, and avers the substantive facts relied upon. [*Id.

5. PLEA—PROOFS WHEN ISSUE IS TAKEN ON IT.
If issue were taken on the plea, it would only be necessary for defendant to produce a properly-authenticated copy of the foreign patent, and show the seal or signature affixed to it to be the act of an officer duly authorized to issue patents.
[*Id.

6. PLEA—THE EFFECT OF—HOW DETERMINED.
The effect and operation of the patent is to be determined as a question of law by the terms of the document, unless evidence of the foreign law is introduced to qualify or controvert the construction which would otherwise be placed upon the instrument. [*Id.

7. PLEA—WHAT ALLEGATION NECESSARY.
It is not necessary in pleading to allege that an instrument was executed by an agent, and that the agent was duly qualified thereto; but it is sufficient to allege the execution by the principal. [*Id.

PLEA IN BAR.

(See Plea; Record of a Court, 1.)

PRACTICE IN THE COURTS.

(See Abandonment; Bar to Suit; Damages and Profits; Defense; Injunction; Master's Report; Official Documents; Plea.)

PRACTICE IN THE PATENT OFFICE.

(See Amendments; Application by Executor or Administrator; Assignee; Claims; Design Patents, 1, 2, 3, 8, 9; Diligence; Division of Application; Evidence of Invention; Interference; Joint Application; Oath in Relation to Foreign Patents; Patentability; Preliminary Statement; Reissues, 7; Reservation for Subsequent Patents; Technical Terms, 2, 3; Testimony; Withdrawal of Case from Issue.)

PRACTICE IN THE SUPREME COURT OF THE UNITED STATES.

(See Evidence; Record of a Court, 1; Reissues, 4.)

PRELIMINARY STATEMENT.

(See Interference, 3.)

1. REDUCTION TO PRACTICE IN FOREIGN COUNTRY.
It is well settled that what an inventor did in a foreign country while a citizen of such country cannot in any way be used to antedate an invention made in the United States, and evidence tending to establish such facts would be wholly incompetent. Consequently a motion to amend a preliminary statement to set back the dates of invention and to allege disclosure and reduction to practice in such foreign country should have been denied. [Boulton *v.* Illingworth, 808.

2. SAME.
A party to an interference may have the right to prove what he did as an inventor, although living in a foreign country, for the purpose of showing his *knowledge*, but not for the purpose of establishing facts of invention as such. Such evidence is competent and admissible without the facts being set up in the preliminary statement. [Id.

PRESUMPTION.

(See Official Documents.)

PRESUMPTION OF VALIDITY OF PATENT.

(See Injunction, 1, 3.)

PRIORITY OF INVENTION.

(See Evidence of Invention, 2; Interference, 2, 3.)

PROCESS.

(See Construction of Claims, 2; Infringement, 1.)

PROCESS AND MEANS.

(See Construction of Specifications and Patents, 1.)

PROCESS AND PRODUCT.

(See Construction of Claims, 3.)

LATER PATENT FOR PROCESS INVALID WHEN ARTICLE IS PATENTED TO SAME PARTY IN EARLIER PATENT.
After a patent has been granted for an article described or made in a certain way the inventor cannot afterward obtain a valid patent on an independent application for the method or process of making the article in the way described in the earlier patent.
[*The Mosler Safe and Lock Company *v.* Mosler, Bahmann & Company, 1115.

PROCESS OR ART.

(See Construction of Specifications and Patents, 1, 2, 3, 4.)

PROSECUTION OF AN APPLICATION IN THE PATENT OFFICE.

(See Application by Executor or Administrator; Assignee; Division of Application.)

RECORD OF A COURT.

1. PLEA IN BAR.
The defendants pleaded in bar an adjudication and decree in their favor in a prior suit by the complainant against them for the same infringement, and put in evidence a copy of the decree. The complainant put in evidence a statement of the clerk of the court granting the decree, which statement was dated nearly two years after the decree was made, to the effect that no proof or testimony was filed in the suit by either party; that complainant did not appear nor was represented by counsel, and that the decree dismissing complainant's bill was granted on default of complainant.
[*Lyon *v.* The Perin and Gaff Manufacturing Company, 983.

2. RECORD IS THE EVIDENCE.
The court must look to the record, and not to the statement of the clerk of the court, made two years afterward. [Id.

RECORD OF LOWER COURT.

(See Evidence; Reissues, 4.)

RECORDS.

(See Evidence.)

REISSUES.

(See Jurisdiction, 1; Particular Patents, 2, 16, 23.)

1. REJECTION OF CLAIM—SUBSEQUENT APPLICATION AND REISSUE.
The third claim of the application for a second reissue of the Little patent for time-locks was for devices consisting of a "compound disk composed of two single disks of the same shape and size, placed face to face on a common axis." When these two disks or wheels were fastened together by a thumb-screw, they formed one wheel or disk. In said third claim this compound disk was called "two adjustable devices." The Patent Office held that the compound disk constituted but a single adjustable device or single disk, and rejected the third claim, to which rejection the owners of the patent assented. *Held* that they did not thereby abandon the right to claim in a subsequent reissue a double or compound disk and obtain a valid patent therefor.
[*Yale Lock Manufacturing Company *et al. v.* New Haven Savings Bank, 115.

2. INEXCUSABLE DELAY IN APPLYING FOR REISSUE RENDERS THE SAME INVALID.
The delay in filing the application for the reissue in suit not accounted for nor shown to be reasonable renders such reissue invalid.
[*Hoskin *et al. v.* Fisher *et al.*, 509.

3. INVENTIONS NOT ASSERTED IN OBTAINING ORIGINAL PATENT ABANDONED OR WAIVED.
Where it does not appear that any attempt had been made to secure by the original patent the inventions covered by the new claims in the reissue, those inventions must be regarded as having been waived or abandoned so far as the reissue is concerned. [*Id.

4. PRACTICE—WHEN RECORD IS INCOMPLETE.
Where the contention of the plaintiff was that the inventor only knew of the invalidity of his first reissue by the result in an earlier suit upon the same, and did not have evidence of these facts in the record, he should have brought by *certiorari* before this Court such parts of the record as the defendants had omitted to bring before us. [*Id.

5. REISSUE VOID FOR CHANGE OF ORIGINAL INVENTION.
The original patent and the first reissue having been distinctly limited to a bushing having a notch, the second reissue, obtained nearly seven years afterward, for a bushing without any such notch, is an unwarrantable enlargement.
[*Cornell *v.* Weidner, 985.

6. REISSUE—MODEL ALONE NOT SUFFICIENT BASIS.
The rule in *Parker & Whipple Co. v. Yale Lock Co.* (123 U. S., 87; 35 O. G., 290) affirmed that the Patent Office model alone is not to be considered the basis for a reissue in which a change of the invention of the original patent is sought.
[*Flower *et al. v.* City of Detroit, 1348.

7. ACCEPTANCE OF PATENT WITH KNOWLEDGE OF DEFECT A BAR TO REISSUE.
A party who voluntarily takes his patent with full knowledge at the time that the specification or claims are defective and fails to cover his entire invention, or that the patent in other respects is inoperative or invalid, because of the omission of an amendment which he petitioned the Commissioner to admit, which petition was refused because of insufficient showing, cannot thereafter maintain an assertion of inadvertence, accident, or mistake, such as would justify the Office in granting him a reissue to correct the errors.
[*Ex parte* Page and Krausse, 1455.

8. SAME.
The inadvertence, accident, or mistake contemplated by the statute relates to the form and character of the specification and claims as they stand at the date of issue. (*Ex parte Mahnken*, 40 O. G., 915; 41 O. G., 1389.) [Id.

REJECTED CASES.

(See Reissues, 1.)

REJECTION OF APPLICATIONS FOR DESIGN PATENTS.

(See Design Patents, 6.)

RESERVATION FOR SUBSEQUENT PATENTS.

1. RESERVATION CLAUSES CONDEMNED.
Ex parte Roberts (40 O. G., 573) discussed, and distinction pointed out between cross-references and reservation clauses.
[*Ex parte* Blair, 113.

2. SAME.
The introduction of reservation clauses covering subject-matter intended to be incorporated in future applications erects a warning by which the public is deterred from entering upon the particular field of invention, and also prevents the public from knowing just what property it is purchasing in dealing with patents containing reserved rights. [Id.

3. SAME.
The natural and necessary effect of reservation clauses is to unlawfully prolong the monopoly of the invention. If as a matter of fact and law the subject-matter is properly divisible, the Office is open at all times to applicant, and his rights are safe without any reservation clause. If such be not the case, applicant has ample protection by filing his second application and have it pending concurrently with the first. [Id.

4. APPARATUS AND PROCESS—CROSS-REFERENCES.
If the inventions are so nearly related to each other—as in case of an apparatus and process—that an application covering one invention discloses the other, applicant may fully protect his rights by incorporating in the applications cross-references, the effect of which would be the announcement that the invention claimed in the one was not the same as that claimed in the other. [Id.

RIGHTS OF ASSIGNEES.

(See Assignees.)

ROYALTY.

(See Damages and Profits, 8, 9, 12.)

SEAL.

(See Official Documents.)

SECOND APPLICATION.

(See Reservation for Subsequent Patents, 2, 3.)

SEPARATE INVENTIONS.

(See Amendments, 7; Design Patents, 2.)

SETTLEMENT OF SUIT.

(See Injunction, 4.)

SETTLEMENT OF SUIT BY ONE OF SEVERAL DEFENDANTS WHERE THE INFRINGEMENT WAS JOINT DISCHARGES ALL OF THE DEFENDANTS.
Where in a suit against two defendants for a joint infringement one of the defendants had made a settlement by a writing under seal for the costs and damages by the infringement of such defendant, but by such writing the other defendant was expressly not included in such settlement, the settlement was a satisfaction of the infringement by both defendants both as to damages and costs.
[*Babcock & Wilcox Company *v.* Pioneer Iron Works, 756.

SOLE INVENTOR.

(See Joint Application.)

STATE COURTS.

(See Jurisdiction.)

SUBSEQUENT PATENTS.

(Reservation for Subsequent Patents.)

SUITS AT LAW.

(See Plea.)

SUITS FOR INFRINGEMENT.

(See Bar to Suit; Evidence; Infringement, 1; Jurisdiction, 3; Jurisdiction of United States Courts; Reissues, 4; Settlement of Suit.)

SUITS IN EQUITY.

(See Plea.)

TECHNICAL TERMS.

(See Claims, 2; Construction of Claims, 1; Design Patents, 1.)

1. INFRINGEMENT—INJUNCTION.
The use of words which are technically descriptive will be enjoined where it appears that they are used as a means of effecting a fraud.
[*Moxie Nerve Food Company *v.* Various Defendants, 868.

2. USE OF TECHNICAL TERMS.
The words "means," "mechanism," and "connections" are proper terms when applied to devices forming no part of the invention, but which are in common use in various kinds of machinery—*for* instance, when the operation of rollers is governed by gearing, belting, cranks, or other appliances which in themselves are simple and have little or nothing to do with the real invention. Or, as in the present case, the term "means," when applied to the operation or shaking of certain movable screens, is proper, because evidently the same movement of the screens can be effected by an infinite variety of mechanism which would produce the same result and be simply the equivalent of that employed by applicant.
[*Ex parte* Stoughton, 1345.

3. SAME.
The term "mechanism" is not permissible when applied to various and different devices in the several claims which are not adjunctive devices.
[*Ex parte* Stanbridge, 1345.

TERM OF PATENT.

(See Limitation of United States Patents by Foreign Patents Previously Granted; Particular Patents, 20.)

TESTIMONY.

1. IS A WIFE A COMPETENT WITNESS FOR HER HUSBAND IN AN INTERFERENCE PROCEEDING BEFORE THE PATENT OFFICE?
The question as to whether husband and wife are competent and compellable to testify for or against each other must be determined by the law in force in the jurisdiction in which the Patent Office is located, whether that jurisdiction may be said to be the entire United States or the District of Columbia. The question of competency must be determined in accordance with either the common law, the statute law, or both.
[Marsh *v.* Rein *v.* Ruppel, 1453.

2. WHAT RULE OF EVIDENCE MUST BE OBSERVED BY THE COMMISSIONER OF PATENTS IN THE DISCHARGE OF HIS LIMITED JURISDICTION?
While the Commissioner of Patents is authorized to establish rules and regulations for taking depositions, he is necessarily compelled to proceed under and in accordance with the laws of Congress. He has no power to legislate as to the competency of witnesses, nor as to the admissibility of evidence. Such rules of evidence as Congress establishes or recognizes for courts of general jurisdiction must be deemed to be prescribed for officers and tribunals of inferior and limited powers and jurisdictions, unless they are expressly excepted or special rules are made for them. While sections 876 and 877 (Rev. Stats. of the D. C.) do not specifically name the Patent Office, and may not be held to embrace it as a court or tribunal, still there has never been any law of evidence prescribed for it, except as it has been prescribed for the courts. In other words, the law of evidence recognized in the courts for their guidance, whether common law, statute law, or both, becomes, *proprio vigore*, the law for the Patent Office and other Bureaus, except when otherwise provided. [Id.

3. HUSBAND AND WIFE ARE NOT COMPETENT WITNESSES FOR OR AGAINST EACH OTHER IN INTERFERENCE PROCEEDINGS.
Inasmuch as it seems to be well settled that the common-law provision as to husband and wife is in force in the District of Columbia, it follows that husband and wife are not competent witnesses for or against each other in the tribunals and for the purposes mentioned in sections 876 and 877 of the Revised Statutes of the District of Columbia. [Id.

TESTIMONY IN INTERFERENCE PROCEEDINGS.

(See Interference, 3; Preliminary Statements.)

TWO YEARS' LIMITATION.

(See Diligence.)

UNITED STATES COURTS.

(See Jurisdiction, 1, 2; Jurisdiction of United States Courts.)

VALID PATENTS.

(See Particular Patents, 3, 4, 5, 17, 18, 23, 28.)

VOID PATENTS.

(See Construction of Claims, 4; Invention; Particular Patents, 1, 2, 16, 19, 21, 22, 24, 25, 26, 28, 29, 30; Process and Product; Reissues, 2, 3, 5.)

WITHDRAWAL OF CASE FROM ISSUE.

PETITIONS DENIED UNLESS WORKING IRREPARABLE INJURY.
An applicant who has had his day in the Office, and whose application has received full consideration and has been passed to issue, ought not to be permitted to withdraw his case from issue and submit amendments which should have been earlier proposed, and thus put the Office to the trouble of making a reexamination. Unless a showing of *irreparable injury* is made to appear, such petitions will be denied and applicant required to file a new application covering the subject of his proposed amendment, or he may abandon his original application, pay a new fee, and file another application in the form desired.
[*Ex parte* Page and Krausse, 1455.

WITNESSES.

(See Testimony.)

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING JUNE 30, 1888.

[Claims and drawings of Designs do not appear in the Monthly Volumes or the Gazette. Separate indexes for Designs, Trade-Marks, Labels, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Specification.	Drawing.	Volume.	Page.
Abair, Charlotte. (See O'Day, Charlotte, assignor.)						
Abbott, Arthur V., Brooklyn, N. Y., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Testing-machine	383,385	May 22	2240	595, 596, 597	43	960
Abbott, Essex S., assignor to Bradford Manufacturing Company, Boston, Mass. Sole-machine	383,266	May 22	2078	545, 546	43	939
Abbott, John D., Reading, assignor of one-half to J. A. Armstrong, Ludington, Mich. Wrench	383,334	May 22	2164	572	43	955
Abel, William H., deceased, Laconia, N. H.; G. A. Emerson, administrator. Latch-needle and covering or transferring point for knitting-machines	382,675	May 8	1211	314	43	758
Abeles, Julius D., *et al.* (See Friede, Samuel M., assignor.)						
Abernethy, William. (See Dyer, Philip, assignor.)						
Abraham, John H., and E. K. Martin, assignors to Conestoga Cigar Company, Lancaster, Pa. Cigar-bunching machine	384,667	June 19	1237	398	43	1372
Abrahams, John W., assignor to J. Davis, Allegheny, Pa. Water-conductor	381,664	Apr. 24	2048	536	43	434
Acton, John H. (See Lee and Acton.)						
Adams, Charles F. (See Martin, Morris, assignor.)						
Adams, James W., Chicago, Ill. Elevated street-railway system	382,347	May 8	707	178, 179, 180	43	653
Adams, John P., Cambridge, Mass. Water-closet-supply apparatus	382,128	May 1	371	96, 97	43	581
Adams, Peter. (See Condon, Shepard, and Adams.)						
Adams & Westlake Company. (See Myers, Garson, assignor.)						
Adamson, Charles W. (See Howard, William A., assignor.)						
Adcock, Edmund, assignor to E. B. Preston, Chicago, Ill. Turn-table extension-ladder truck	383,681	May 29	2085	710	43	1064
Addy, Charles J., Malden, assignor to Tapley Machine Company, Boston, Mass. Burnishing-machine	382,581	May 8	1073	275	43	724
Addy, Charles J., Malden, Mass, assignor to Tapley Machine Company, Portland, Me. Heel-burnishing machine	383,934	June 5	139	40	43	1147
Addy, Charles J., Malden, Mass., assignor to Tapley Machine Company, Portland, Me. Heel-burnisher	385,291	June 26	2189	559, 560	43	1569
Ade, William F., Jr., Williamsport, Pa. Bed-bottom	382,501	May 8	945	239	43	699
Adee & Co., Fred. (See Smith, Benjamin C., assignor.)						
Adkins, Charles, Terre Haute, Ind. Combined rule, level, and plumb	384,951	June 26	1657	431	43	1461
Adriance, Benjamin. (See Kittredge and Adriance.)						
Adsit, John C., *et al.* (See Severance, James R., assignor.)						
Ait, Leo F., Waterbury, Conn. Photographic-printing frame	381,315	Apr. 17	1528	412	43	314
Aeby, Leo, Columbus, Ohio. Watch hair-spring stud	384,668	June 19	1239	326	43	1373
Aeby, Leo, Columbus, Ohio. Stem winding and setting watch	384,669	June 19	1240	327	43	1373
Aeby, Leo, Columbus, Ohio. Banking device for time-piece escapements	384,670	June 19	1242	327	43	1374
Affeltranger, Rudolf, Zurich, Switzerland. Smoke consuming furnace	384,818	June 19	1467	383	43	1416
Agenten, Joseph, Sheboygan, assignor to Esterly Harvesting Machine Company, Whitewater, Wis. Reel-driving gear for harvesters	384,109	June 5	386	108	43	1195
Aiken, William A. (See Sweett, George C., assignor.)						
Aikins, Frederick T., Toronto, Ontario, Canada. Device for checking horses	381,316	Apr. 17	1529	412	43	314
Alden Type Machine Company. (See Low, A. Augustus, assignor.)						
Alden, William B., Brooklyn, N. Y. Nail	382,676	May 15	1215	315	43	761
Aldrich, Ralph W. E., Northampton, Mass. Plume, tassel, &c	384,734	June 19	1336	349	43	1391
Aldrich, Wales, Dayton, Ohio. Cash register and indicator	380,542	Apr. 3	355	101, 102	43	72
Aldrich, William H. (See Humble, Albert A., assignor.)						
Alexander, James H., assignor to C. H. Tryon, Syracuse, N. Y. Hand-truck	382,248	May 1	540	138	43	613
Alexander, Urbana D., assignor of one-half to Canonsburg Iron and Steel Company, Canonsburg, Pa. Stove-pipe	381,871	Apr. 24	2364	613, 614	43	474
Alfman, Harry, and L. Scharff, Mobile, Ala. Umbrella	384,551	June 12	1064	278	43	1330
Allbe, Edward P., Boston, Mass. Side-stick for printers' galleys	383,682	May 29	2087	710	43	1064
Allen, Charles. (See Johnson and Allen.)						
Allen, Charles. (See Sibley and Allen.)						
Allen, Charles J., New Orleans, La. Rice-separator	382,931	May 15	1553	407	43	828
Allen, Charles W., Deer Park, Ontario, Canada. Holder for mail-bags	380,543	Apr. 3	366	103	43	74

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Allen, Edward B., Portland, Me., assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-nailing machine	384,343	June 12	756	198	43	1272
Allen, Edward B., Portland, Me., assignor to J. W. Brooks, trustee, Cambridge, Mass. Nail-assorting machine	384,735	June 19	1337	348, 349	43	1391
Allen, Frank W. (See Howland and Allen.)						
Allen, Frank W., Rochester, N. Y. Cuff-fastening	380,415	Apr. 3	158	45	43	33
Allen, George H., *et al.* (See Tonna, Louis N., assignor.)						
Allen, Horace R., Indianapolis, Ind. Car-wheel	383,846	June 5	1	1	43	1121
Allen, John H., Keyser, W. Va. Washing-machine	383,983	May 29	2668	711	43	1065
Allen, John W., Hartford, Conn. Attachment for lathes	381,097	Apr. 17	1235	349	43	255
Allen Paper Car Wheel Company. (See Davies, John R., assignor.)						
Allen, Samuel L., Cinnaminson, N. J. Sled	381,665	Apr. 24	2049	536, 537	43	435
Allen, Walter J., assignor of two-thirds to P. J. Cole and L. J. Hickey, Springfield, Ohio. Valve for steam-engines	383,935	June 5	140	40	43	1147
Allen, William R., assignor of one-half to L. C. Marks, Cape Vincent, N. Y. Cutter-head and means for adjusting the cutters of the same	384,491	June 12	965	251	43	1312
Allfree, James B., Indianapolis, Ind., assignor of one-half to R. Shriver and H. Swartz-welder, Cumberland, Md. Governor for steam-engines	382,932	May 15	1555	407	43	830
Allfree, James B., Indianapolis, Ind., assignor of one-half to R. Shriver and H. Swartz-welder, Cumberland, Md. Governor for steam-engines	383,267	May 22	2079	546	43	940
Allgoever, Augustus, New York, N. Y. Drill-stock	383,031	May 15	1715	446	43	860
Alm, Hans A., Red Lake Falls, Minn. Cash-register	381,590	Apr. 24	1849	489	43	395
Alpine Safe Company. (See Peters, William F., assignor.)						
Alsdorf, Egbert, *et al.* (See Vreeland, Cyrus E., assignor.)						
Alshouse, Henry W., Custer, Ind. Gate	380,306	Apr. 3	1	1	43	3
Alsip, Samuel H. (See Alsip, William and S. H.)						
Alsip, William and S. H., Momence, Ill. Brick-kiln	383,936	June 5	141	40, 41, 42	43	1148
Althouse, Milo J., Waupun, Wis. Pump	384,185	June 5	509	139	43	1220
Althouse, Milo J., Waupun, Wis. Grinding-mill	385,035	June 26	1796	463	43	1490
Altmann, Frank C., New Haven, Conn. Spring for sciasors, &c	381,702	May 8	946	240	43	699
American Aluminum Company. (See Seymour, Frederick J., assignor.)						
American Barrel and Stave Company. (See Beasley and Rehfuss, assignors.)						
American Barrel and Stave Company. (See Rehfuss, George, J. G., and M. O. assignors.)						
American Bell Telephone Company. (See Gilliland, Ezra T., assignor.)						
American Bolster Spring Company. (See Hunter, James M., assignor.)						
American Brake Company. (See Buels, Herman, assignor.)						
American Brake Company. (See Wahlert, Henry A., assignor.)						
American Button Fastener Company. (See Richards, Francis H., assignor.)						
American Concentrated Must Company. (See Springmühl, Ferdinand, assignor.)						
American Fire Hose Manufacturing Company. (See Sibley and Allen, assignors.)						
American Heeling Machine Company. (See Tyler and Merritt, assignors.)						
American Lead and Zinc Works. (See Hill, Richard W., assignor.)						
American Patent Exchange. (See Magruder, George C. W., assignor.)						
American Semaphore Company. (See Stitzel, Frederick, assignor.)						
American Semaphore Company. (See Stitzel and Weinedel, assignors.)						
Ames, David J., Owatonna, Minn. Millstone or mill-plate dress	382,747	May 15	1308	344	43	779
Ames, Emilie N., San Francisco, Cal. Device for closing and carrying purses, &c	380,416	Apr. 3	159	45	43	33
Amet, Edward H., assignor to H. A. Streeter, Chicago, Ill. Automatic weighing and recording scale	380,672	Apr. 10	557	153, 154	43	121
Amoskeag Indurated Fibre Ware Company. (See Keyes, Frank E., assignor.)						
Anderson, Alfred, Stromsburg, Nebr. Trace-supporter	380,471	Apr. 3	242	66	43	49
Anderson, Charles A. (See Kennedy and Anderson.)						
Anderson, Elmer E. (See Barnhard, John W. and D. H., assignors.)						
Anderson, James C., Highland Park, Ill. Apparatus for gaging brick and marking thereon the grade or color thereof	383,503	May 8	947	240	43	699
Anderson, James C., Highland Park, Ill. Assorting bricks with relation to their color and grade	382,504	May 8	949	240, 241	43	700
Anderson, John. (See Mahnken, Henry, assignor.)						
Anderson, Lee, Paris, Tex. Trace-lock for harness	385,223	June 26	2070	530	43	1546
Anderson, Lee, assignor of one-half to T. Broad, Paris, Tex. Nut-lock	384,885	June 19	1568	407	43	1435
Anderson, Milton J., and B. J. Smith, Wapanitia, Oreg. Saw-mill dog	384,238	June 12	563	150	43	1243
Anderson, Ole, and T. Pattison, San Luis Obispo, Cal. Button	384,273	June 12	650	175	43	1255
Anderson, Petter A., Morrellville, Pa. Screw-cutting die	382,983	May 15	1557	407	43	830
Anderson, Thomas, Brooklyn, N. Y. Hat for firemen	381,696	Apr. 24	2051	537	43	635
Andrews, Benjamin F., Myers, Mo. Mechanical movement	385,084	June 26	1873	478	43	1505
Andrews, Edward, Pottsville, assignor of one-half to A. S. Seaman, Frackville, Pa. Car-heater	384,589	June 19	1139	301	43	1258
Andrews, Edward, assignor of one-half to W. G. Matz, Pottsville, Pa. Air-brake	385,224	June 26	2070	530	43	1546
Andrews, Emanuel. (See Georgia and Andrews.)						
Andrews, William, Victoria Works, Victoria Road, Aston, county of Warwick, England. Saddle	384,690	June 19	1140	301	43	1253
Andrisen, Christian. (See Petersen, Henry, assignor.)						
Annen, John P., and F. H. Fox, Chicago, Ill. Cuspidor	385,159	June 26	1979	506	43	1527
Anuin, Bryant W., Minneapolis, Minn. Locomotive-velocipede	382,311	May 8	645	164, 165	43	642
Ansonia Brass and Copper Company, *et al.* (See Blackman, Ebenezer, assignor.)						
Ansonia Clock Company. (See Davies, Walter D., assignor.)						
Anthony, Edgar W., Brookline, Mass. Heating-furnace	380,711	Apr. 10	611	167, 168	43	131
Anthony, Edgar W., Brookline, Mass. Stove or range	382,851	May 15	1444	379, 380	43	807
Anthony, James D. (See Kimball, Andrew C., assignor.)						
Apell, Jacob, assignor to Duncan & Johnston, Chicago, Ill. Board for picture and mirror backs	382,652	May 15	1445	380	43	808
Applegate, Peter N., Kimball, Ind. Combined harrow, leveler, and cultivator	382,204	May 1	478	123	43	601
Appleton, Charles J., Elizabeth, N. J., assignor to L. Sutro, New York, N. Y. Straight-knitting machine	381,898	May 1	1	1	43	515
Appleton, Charles J., Elizabeth, N. J., assignor to L. Sutro, New York, N. Y. Knitted fabric	381,899	May 1	3	1	43	515
Archer, John B., Washington, D. C. Street and station indicator	380,307	Apr. 3	2	1	43	3
Archer, Roger W., assignor of one-third to C. F. Rudolph, Beeville, Tex. Baling-press	380,472	Apr. 3	243	65, 67	43	49

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Argo, John T., Poindexter, Ky. Combined post-office dater, canceler, and register	381,976	May 1	121	98	43	536
Argue, Henry H., assignor of one-half to R. W. Argue, Derrick City, Pa. Oil or Artesian well pumping mechanism	380,615	Apr. 3	465	131, 132	43	94
Argue, Richard W. (See Argue, Henry H., assignor.)						
Armbrust, Ferdinand, New York, N. Y. Machine for beveling glass	380,737	Apr. 10	628	180	43	139
Armoah, John G. E., Plainville, assignor of one-half to J. W. Fuller, Kilbourn City, Wis. Car-coupling	384,671	June 19	1343	328	43	1374
Arms, Harrison, Toledo, Ohio. Stock-car	382,934	May 15	1559	408	43	830
Arms, Henry F., *et al.* (See Robbins, George M., assignor.)						
Armstead, Henry H., Brooklyn, N. Y. Corn-husking machine	381,748	Apr. 24	2168	567	43	457
Armstrong, Elvin S., Jerseyville, Ill. Bee-hive	384,819	June 19	1469	383, 384	43	1417
Armstrong, Frank, and N. W. Vandegrift, assignors to Armstrong Manufacturing Company, Bridgeport, Conn. Vise	383,165	May 22	1924	503	43	910
Armstrong, James A. (See Abbott, John D., assignor.)						
Armstrong, James T., London, England. Construction of stationary and itinerant electrical batteries	380,971	Apr. 10	1012	263, 264, 265	43	295
Armstrong Manufacturing Company. (See Armstrong and Vandegrift, assignors.)						
Armstrong, Mitchell & Co., W. G. (See Murray, Charles H., assignor.)						
Armstrong, Mitchell & Co., W. G. (See Vavasseur, Josiah, assignor.)						
Armstrong, William A. (See Jocelyn, Albert H., assignor.)						
Arnold, George T., Lancaster, Ky. Tug or trace carrier	381,317	Apr. 17	1531	412	43	314
Arnold, William S., Clyde, Kans. Railway-switch	380,979	Apr. 10	1017	266	43	296
Arper, George W., Oakland, Cal. Siphon	381,521	Apr. 24	1851	489	43	395
Arpin, Daniel J., Grand Rapids, Wis. Device for making ice roads	381,051	Apr. 10	1139	304, 305	43	299
Arthur, George H., Chicago, Ill. Multiple transfer-pad	381,201	Apr. 17	1368	365	43	282
Arthur, Joseph, New York, N. Y. Theatrical appliance	382,589	May 8	1074	275, 276	43	735
Arthur, Thomas, assignor of one-half to R. J. Nagle, Bangor, Pa. Hydropneumatic-pressure apparatus	383,429	May 29	2317	615	43	989
Ash, Joseph S., assignor of one-half to C. B. Cowan, Canal Winchester, Ohio. Grain-cleaner	385,036	June 26	1799	463	43	1490
Ash, Joseph S., assignor of one-half to C. B. Cowan, Canal Winchester, Ohio. Dust-collector	385,037	June 26	1800	463	43	1490
Ashburner, Joseph J., London, England. Brush	381,749	Apr. 24	2169	567	43	457
Ashcraft, Allen S., Brandenberg, Ky. Harness-oil	383,591	May 29	2469	.....	43	1014
Ashcroft, Edward H. (See Thompson, George M., assignor.)						
Ashcroft, Edward H., Lynn, Mass. Traction-wheel	381,902	Apr. 17	1369	366	43	282
Ashley, Thomas C. (See Guthrie, James F., Jr., assignor.)						
Ashworth, James A., Yonkers, N. Y. Life-preserving chair	382,935	May 15	1559	408	43	830
Asmus, Edward G., assignor of one-half to C. J. Walser, Milwaukee, Wis. Caster	384,866	June 19	1569	408	43	1435
Atkins & Company, E. C. (See Ralya, William S., assignor.)						
Atkins & Company, E. C. (See Robinson, Don C., assignor.)						
Atkins, Henry, Newark, Ohio. Wire-cloth	383,791	May 29	2869	754	43	1096
Atkinson, Robert F. (See Spencer, Charles F., assignor.)						
Atkinson, Thomas, Richmond, Va. Electric valve-controller for automatic fire-extinguishers	381,459	Apr. 17	1747	467	43	356
Atkinson, William W., Philadelphia, Pa., assignor to E. Pearson and G. P. Freeman, New York, N. Y. Pantaloons or garment stretcher	384,492	June 12	966	252	43	1312
Atwell, William J., Chicago, Ill. Machine for attaching heel-plates	381,604	Apr. 24	1968	518	43	418
Atwell, William J., Chicago, Ill. Machine for attaching heel-plates	381,605	Apr. 24	1970	518	43	418
Atwood, John E., Stonington, Conn. Machine for winding quills and bobbins	384,011	June 5	250	72	43	1176
Aubin, Charles T. (See Lorraine and Aubin.) (Reissue.)						
Aughenbaugh, Robert M., and G. E. Rudley, Glenfield, Pa. Magazine fire-arm	381,821	Apr. 24	2288	595	43	479
Austin, Frank A. (See Warner and Austin.)						
Austin, Frederick C. (See Gall, Harry S., assignor.)						
Austin, Frederick C. (See Miller and Moats, assignors.)						
Austin, James C., Brooklyn, N. Y. Perfumery-stand	380,473	Apr. 3	246	67	43	50
Austin, John H., New York, N. Y. Forcing-cylinder for cleaning traps	382,129	May 1	373	97	43	562
Austin, William K., Brooklyn, N. Y. Steam-engine	383,430	May 29	2318	615	43	989
Auth, George, Lacon, Ill. Portfolio	385,085	June 26	1875	479	43	1506
Automatic Connection Compressed Air Car Motor Company. (See Pressley, Leonidas C., assignor.)						
Automatic Electric Alarm Company. (See Nolan, John, assignor.)						
Averill, Walter I. (See Smith, James E., assignor.)						
Avery, Earl W., Lowell, Mich. Band-saw mill	381,977	May 1	123	28, 29, 30	43	537
Avery, William, assignor of one-half to J. R. Prouty, Spencer, Mass. Sole-fitting machine for boots or shoes	382,631	May 8	1142	294	43	738
Avery, William B., Digbeth, Birmingham, county of Warwick, England. Apparatus for weighing grain	383,032	May 15	1716	446, 447	43	861
Ayer, Alfred, Lake Weir, Fla. Device for grading oranges	383,305	May 22	1978	520	43	921
Ayer, Frank P., Lebanon, Conn. Butter-mold	384,303	June 12	694	185	43	1283
Aylworth, George H., Brighton, Ill. Gate	384,552	June 12	1045	278	43	1331
Aylworth, George H., Brighton, Ill. Sash-fastener	384,553	June 12	1066	278	43	1331
Babbitt, S. William, and H. B. Beach, Meriden, Conn. Lamp	382,636	May 15	1561	408	43	831
Babcock, Egbert, Laurens, N. Y. Folding table	382,537	May 15	1564	408	43	831
Babin, Telesphore, assignor of one-half to A. Picou, Houma, La. Coffee strainer or filter	384,411	June 12	858	223	43	1292
Bacharach, Isidor, *et al.* (See Class, William F., assignor.)						
Bachlett, Richard H., Jr., Savannah, and L. J. Farris, Burroughs, Ga. Automatic station-indicator	384,493	June 12	966	252, 253	43	1313
Bachman, Jacob, Stony Run, Pa. Harvester and binder	382,677	May 15	1215	315	43	761
Bachman, Joseph A., Austin, Tex. Shutter-fastener	380,738	Apr. 10	653	181	43	139
Bachstein, Joseph, assignor of one-half to M. Trott, Cincinnati, Ohio. Millstone-dress	381,522	Apr. 24	1851	490	43	395
Back, Albert. (See Neuville and Back.)						
Back, Tillie. (See Neuville and Back, assignors.)						
Backus Water Motor Company. (See Cissel, Robert B., assignor.)						
Bacon, Clovis N., Boston, Mass. Hot-air furnace	381,750	Apr. 24	2169	568	43	457
Bacon, Earle C., Brooklyn, assignor to Copeland & Bacon, New York, N. Y. Windlass	381,303	Apr. 17	1369	308	43	282
Bacon, Francis, Waterloo, N. Y. Spring-coupler for vehicles	381,900	May 1	5	2	43	515
Bacon, Robert A., New York, N. Y. Tooth-pick	380,739	Apr. 10	654	181	43	140
Badische Anilin und Soda Fabrik. (See Wild, Otto N., assignor.)						
Baermann, Jacob B., New York, N. Y. Fan	382,385	May 1	479	123	43	601

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Baethig, Henry. (See Hager, Charles, assignor.)						
Bailey, Charles A., Middletown, Conn. Toy money-box	385,225	June 26	2072	531	43	1546
Bailey, Elmer E., West Everett, assignor of one-half to W. Sears, Malden, Mass. Automatic electric gas-burner	382,949	May 1	541	136	43	613
Bailey, Gurdon B., Council Bluffs, Iowa, assignor of two-thirds to W. O'Donoghue, St. Joseph, Mo. Grain-separator	383,166	May 22	1998	503	43	910
Bailey, Fred E., assignor of one-half to E. L. Burrows, Manchester, N. H. Garment-stretcher	381,204	Apr. 17	1370	366	43	292
Bailey, James D., Utica, N. Y. Three-way split switch	384,304	June 12	695	185	43	1363
Bailey, John W. (See Hooey and Bailey.)						
Bailey, Justus W., Mansfield, Pa. Device for making post-holes	382,853	May 15	1446	380	43	808
Bailey, William C., Chicago, Ill. Bed-bottom	382,401	May 8	787	200	43	669
Baily, Elisha W. (See Huey and Baily.)						
Baines, Charles, Windsor, Ontario, Canada, assignor to W. Gray, Detroit, Mich. Railway-spike	384,229	June 12	584	159	43	1343
Baird, George D., Amboy, Ill. Combined plow and pulverizer	384,110	June 5	367	109	43	1195
Bairstow, John. (See Doyle, Frank, assignor.)						
Baittinger, Charles L., Philadelphia, Pa., assignor of one-half to J. H. Baittinger, Camden, N. J. Car-coupling	384,554	June 12	1067	278	43	1331
Baittinger, J. Harry. (See Baittinger, Charles L., assignor.)						
Baker, Abner D., and F. P. Huyck, Swanton, assignor of one-third to A. E. Roberts, Norwalk, Ohio. Concentric-piston steam-engine	383,609	May 29	2581	684 685	43	1041
Baker, Albert P., Thawville, Ill. Napkin-holder	383,847	June 5	2	1	43	1121
Baker, Charles F., Minneapolis, Minn. Scale-preventer for boilers	382,748	May 15	1309	344	43	720
Baker, Charles S. (See Douglas, Charles H., assignor.)						
Baker, Elijah E., Cambridgeport, Mass. Car-brake	381,978	May 1	127	30	43	538
Baker, Elmer C., Newport, N. H. Goblet-holder	383,092	May 22	1827	479	43	891
Baker, George H., Rome, N. Y. Baby-carriage	384,494	June 12	989	253	43	1313
Baker, Halsey H., assignor to E. A. Deveau, Plainfield, N. J. Propelling canal-boats	380,781	Apr. 10	722	198	43	152
Baker, Harry G. (See Barrett and Baker.)						
Baker Heater Company. (See Baker, William C., assignor.)						
Baker, Henry B., assignor of one-half to W. B. Devore, Nelsonville, Ohio. Nut-lock	383,968	May 22	2060	546	43	940
Baker, Smith & Co. (See Bell, Alonzo, assignor.)						
Baker, William C., New York, N. Y., assignor to Baker Heater Company, of New York. Support for car-heater grates	380,544	Apr. 3	361	103	43	74
Baker, William N., Damascus, Ohio. Blacking-brush	383,084	May 29	2899	711	43	1065
Baker, William R., Chicago, Ill. Grain-binder	382,998	May 15	1565	409	43	831
Baldwin, Henry D., Shullsburg, assignor of one-half to S. H. Scales, Lafayette County, Wis. Railway-switch	382,068	May 1	283	75	43	566
Baldwin, John A. (See Struck, Charles E., assignor.)						
Baldwin, William D., administrator. (See Hoyle, William J.)						
Baldwin, William D., *et al.* (See Severance, James R., assignor.)						
Ball and Socket Fastener Company. (See Richardson, William S., assignor.)						
Ball and Socket Fastener Company. (See Richardson and Chase, assignors.)						
Ball, Dayton, Albany, N. Y. Last	381,098	Apr. 17	1226	309	43	255
Ball, James P., Philadelphia, Pa. Nut-lock	383,685	May 29	2891	711	43	1065
Ball, Lorenzo D., and J. T. Bender, Canton, Ohio. Plow	384,952	June 26	1658	431	43	1461
Ball, Samuel E., Dayton, Ohio. Confectioner's mold	382,678	May 15	1218	316	43	761
Ballard, James W., and H. L. Fisher, Toledo, Iowa. Scales for weighing railway-cars	384,495	June 12	970	253	43	1313
Ballard, Jordan W., Wilmington, Ohio. Steam-washer	382,289	May 8	615	157	43	637
Ballard, Samuel R., assignor of one-half to G. V. Marshall, Pittsburg, Pa. Telephone-conveyer	383,269	May 22	2081	547	43	940
Ballou, Barton A., Providence, R. I. Manufacture of safety-pins	380,380	Apr. 3	115	33	43	25
Bally, Julius H., Paradise Hill, Ohio. Horse hay-rake	382,067	May 1	284	75	43	566
Baloun, Ignatius, Canton, Ohio. Pencil-sharpener	380,417	Apr. 3	160	45	43	33
Balsbaugh, Henry C., Harrisburg, Pa. Surface-gage	380,740	Apr. 10	655	181	43	140
Balsbaugh, Henry C., Harrisburg, Pa. Slip and shrinkage gage	382,854	May 15	1447	381	43	808
Baltes, Frank W., Portland, Oreg. Receiving-table for cylinder printing-presses	382,402	May 8	789	200	43	669
Baltes, Michael, Pleasant Prairie, Wis. Wagon-spring	382,290	May 8	617	157	43	637
Baltsley, Henry H., assignor of three-fourths to D. J. Watson, J. R. Milligan, and P. L. Meyers, Assumption, Ill. Drain-tile	385,292	June 26	2192	560	43	1569
Bancroft, William, assignor of one-half to Hopedale Machine Company, Hopedale, Mass. Warping-machine	380,642	Apr. 3	498	130	43	109
Bancroft, William F., and H. A. Stone, Worcester, Mass.; said Stone assignor of one-half to said Bancroft. Wire-nail machine	382,632	May 8	1144	294 295	43	738
Banfield, Jose A. (See Sharpe, John, assignor.)						
Banker, William H. (See Lee, George W., assignor.)						
Bannatyne, Archibald, Waterbury, Conn. Clock-dial	385,160	June 26	1960	507	43	1567
Bansen, Wilhelm, Kattowitz, Prussia, Germany. Machine for bundling hoop-iron	383,686	May 29	2891	711	43	1065
Bapet, Germain, and L. Falize, Fils, Paris, France. Time-alarm	384,412	June 12	859	223 224	43	1292
Baratet, Prosper A., Philadelphia, Pa. Corset	383,687	May 29	2892	712	43	1065
Baratini, David, Murphy's, and W. P. Stevenson, Douglas Flat, Cal. Ore-pulverizer	380,843	Apr. 10	808	230	43	160
Barber, Arthur J., assignor to M. V. Teeter, Sodus, N. Y. Folding step for cars	382,679	May 15	1219	316	43	761
Barber, Francis M., Washington, D. C. Coin-spinner	383,512	May 29	2449	649	43	1014
Barber, John C., St. Paul, Minn. Car-truck	383,688	May 29	2893	712	43	1066
Barden, John S., Warren, R. I. Rotary-cylinder engine	385,226	June 26	2073	531	43	1546
Bardwell, Anderson & Co. (See Vornbrock, Frederick, assignor.)						
Bardwell, Herbert T., Springfield, Mass. Vertical spinning-mule	384,496	June 12	972	253 254 255 256 257 258	43	1314
Bargdill, Charles C., Rosedale, Ohio. Fence	383,335	May 22	2165	579	43	955
Barhydt, Frank, Schenectady, N. Y. Metallic railway-tie	382,855	May 15	1448	381	43	808
Barker, Edgar E., Junction City, Kans. Metallic shingle	381,318	Apr. 17	1531	413	43	315
Barker, Lucien B. (See Smith and Barker.)						
Barlow, Howard J., *et al.* (See Bartlett, Thomas J., assignor.)						
Barnard, George D., and E. Knapp, St. Louis, Mo. Ruling-machine	384,497	June 12	992	258	43	1317
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Roller-mill	382,563	May 8	1076	276 277	43	725
Barnard & Leas Manufacturing Company. (See Barnard, Heman A., assignor.)						
Barnard, Mary N., administratrix. (See Barnard, William S.)						
Barnard, William S., deceased, M. N. Barnard, Canton, Ill., administratrix. Letter-file	384,691	June 19	1141	301	43	1353

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Barnes, Amos, assignor of one-half to R. Le Baron, Pontiac, Mich. Semaphore signaling apparatus	385,227	June 26	2074	531	43	1547
Barnes, Frank O. (See Bowling and Barnes.)						
Barnes, Simon H., Lancaborough, Pa. Shaft-coupling	384,012	June 5	253	72	43	1170
Barnes, William O., Paterson, N. J. Snow-excavator	384,602	June 19	1142	302	43	1353
Barney, Frank P., assignor to Bagley, Wetherell & Co., Chartley, Mass. Button	381,319	Apr. 17	1532	413	43	315
Barney, Frank S. (See Morta, Joseph, assignor.)						
Barney, Richard W. (See Woodard, Alonzo B., assignor.)						
Barnhard, David H. (See Barnhard, John W. and D. H.)						
Barnhard, John W. and D. H., New Albany, assignors of one-half to E. E. Anderson, Harlem, Ohio. Gate	380,418	Apr. 3	160	45	43	33
Barnhart, Henry M., Marion, Ohio. Car-unloader	384,111	June 5	368	109	43	1195
Barnhart, William H., Indianapolis, Ind. Hub-boring machine	383,648	June 5	2	1	43	1121
Barnhurst, H. R. (See Ross, Samuel A., assignor.)						
Barnhurst, Henry R., Erie, Pa. Band-saw mill	384,112	June 5	369	110	43	1195
Barnhurst, James I. (See Rietschy, Charles T., assignor.)						
Barns, John, assignor of one-half to L. C. Tower, Rochester, N. Y. Anti-friction roller for drawers	383,689	May 29	2895	712	43	1066
Barr, John C., Bismark, Dak. Ter. Permutation-lock	385,228	June 26	2076	531 532	43	1547
Barr, Samuel W., Mansfield, Ohio. Cash and package carrier	383,937	June 5	144	42, 43	43	1148
Barr, Samuel W., Mansfield, Ohio. Cash and parcel carrying apparatus	384,113	June 5	391	110	43	1196
Barrath, Edward, assignor to V. E. Knecht, Cincinnati, Ohio. Coal-hod	382,939	May 15	1567	409	43	832
Barrett, Charles L., Allegan, Mich. Road-cart	384,620	June 19	1470	384	43	1417
Barrett, Edward, and H. G. Baker, Fall River, Mass. Key-fastener	382,680	May 15	1222	316	43	762
Barrett, Henry, and J. J. Varley, London, England. Screw-stopper for bottles	380,782	Apr. 10	724	198	43	152
Barrett, Henry, and J. J. Varley, London, England. Manufacture of screw-stoppers	382,906	May 1	480	123	43	601
Barrett, Henry E., and J. J. Varley, London, England. Thimble for casings of screw-stoppers	384,013	June 5	254	73	43	1170
Barrett, John A., Brooklyn, N. Y. Repeating induction-coil	382,856	May 15	1449	381	43	808
Barrett, John P. (See Carroll, William, assignor.)						
Barrett, Lucius O., Brattleborough, Vt. Double gage	384,413	June 12	861	224	43	1292
Barrett, Richard, Harrison, N. J. Hat-starting machine	383,270	May 22	2092	547	43	940
Barrow, George, Skaneateles, N. Y. Carpet-fastener	383,849	June 5	4	1	43	1121
Barrow, Marion J., New Bloomfield, Mo. Spring-seat	382,907	May 1	481	124	43	601
Barrows, Albert, Campello, Mass. Rack for use in the manufacture of boots and shoes	383,551	May 29	2514	663	43	1026
Barrows, Charles H., Willimantic, Conn. Machine for splitting wood	383,690	May 29	2896	713	43	1066
Barry, Caleb W., Keokuk, Iowa. Ore-smelting furnace	385,229	June 26	2062	523	43	1546
Barry, Henry, assignor of one-half to D. Norton, Chicago, Ill. Animal-trap	380,643	Apr. 3	500	140	43	108
Barry, Nicholas, Jr., Muscatine, Iowa. Stop-cock box	380,308	Apr. 3	4	1	43	3
Barry, Nicholas, Jr., Muscatine, Iowa. Plumber's trap	384,114	June 5	394	110	43	1196
Barth, Gustav A., assignor to P. Chouteau, St. Louis, Mo. Direct-acting engine	384,146	June 5	510	139 140	43	1220
Bartholomew, George E., assignor of one-half to E. V. Overman, Cincinnati, Ohio. Vehicle spring-gear	383,850	June 5	5	2	43	1122
Bartholomew, Joel O., assignor of one-half to B. H. Douglass, Jr., New Haven, Conn. Machine for cutting cocoanut-meat	384,414	June 12	861	224 225	43	1293
Bartle, John N., assignor of one-half to J. W. Gillespie, Midway, Tex. Baling-press	383,033	May 15	1719	448	43	861
Bartlett, C. Talleyrand, Warsaw, N. Y. Salt-dryer	384,953	June 26	1658	431	43	1461
Bartlett, Edward C., assignor to J. L. McCague, Omaha, Nebr. Seal-lock	384,115	June 5	396	111	43	1197
Bartlett, John E. T., New York, N. Y. Propeller-wheel	384,498	June 12	993	259	43	1317
Bartlett, Thomas J., assignor of one-half to J. C. Gunn, C. W. Regan, C. Oldham, Knoxville, Tenn., and H. J. Barlow, Pomona, Fla. Indicator	381,460	Apr. 17	1749	468	43	356
Bartlett, Wallace A., Washington, D. C., assignor to W. G. Benedict, Boston, Mass. Pneumatic cannon	381,901	May 1	7	2	43	516
Barto, Erastus D. (See Yeagle, Martin, assignor.)						
Barton, Chester M., Hatfield, Mass. Syringe	380,673	Apr. 10	560	154	43	122
Basinger, James M., Buffalo, N. Y. Snap-hook	383,336	May 22	2167	573	43	956
Bassett, Hollis S. (See Pillicd, Charles J., assignor.)						
Bastian, Charles, New Orleans, La. Adjustable chair and swing	383,206	May 22	1960	520	43	921
Batavia Wheel Company. (See True, Moses F., assignor.)						
Bateman, Isaac, Fern, Pa. Prop for top-buggies	382,584	May 8	1078	277	43	736
Bates, Daniel L. (See Bates, Russell H. and D. L.)						
Bates, Edwin G., assignor of one-half to S. Insull, New York, N. Y. Store-service apparatus	383,851	June 5	6	2	43	1122
Bates, Russell H. and D. L., Dayton, Ohio. Ice-shaving machine	380,844	Apr. 10	809	230	43	160
Batter, Frank, Slide, Cal. Heating apparatus for boots or shoes	382,681	May 15	1223	317	43	762
Batter, Frank, Slide, Cal. Traction-engine	382,857	May 15	1452	381 382	43	809
Battin, Lambert B., Elizabeth, N. J. Steam-boiler	381,822	Apr. 24	2269	595	43	679
Bauer, John C., Minneapolis, Minn. Beer-bottling machine	382,023	May 1	214	57	43	553
Baumbach, Michael J., Pittsburg, Pa. Rolls for making barbed wire	381,390	Apr. 17	1533	413	43	315
Bausch, Edward, Rochester, N. Y. Diaphragm and shutter for photographic and other lenses	382,858	May 15	1454	382	43	809
Baxter Electric Manufacturing and Motor Company. (See Baxter, William, Jr., assignor.)						
Baxter, William, Jr., Baltimore County, assignor to Baxter Electric Manufacturing and Motor Company, Baltimore, Md. Electric shunting device	384,116	June 5	402	111 112	43	1198
Baxter, William, Jr., Baltimore County, assignor to Baxter Electric Manufacturing and Motor Company, Baltimore, Md. Governor for electric motors	384,117	June 5	404	112 113	43	1198
Bay, Jacques, Paris, France. Mirror	382,291	May 8	618	157 158	43	637
Bayard, George A., Bellefonte, Pa. Concrete pavement	381,667	Apr. 24	2052	.....	43	435
Bayer, Adolph, Brooklyn, N. Y. Thermometer	383,691	May 29	2897	713	43	1066
Bayer, Karl J., St. Petersburg, Russia. Obtaining alumina	382,505	May 8	951	241	43	700
Bayley, William. (See Whiteley and Bayley.)						
Bazemore, Arnold G., Aulander, N. C. Plow	382,940	May 15	1568	409	43	832
Beach, Adam. (See Simons and Beach.)						
Beach, Brown & Co. (See Beach, Henry L., assignor.)						
Beach, Elias, Chicago, Ill. Argand lamp-burner	381,099	Apr. 17	1227	329	43	255
Beach, Elias, Chicago, Ill. Argand gas-burner	383,337	May 22	2168	573	43	956
Beach, Elias, Chicago, Ill. Argand gas-burner	383,338	May 22	2170	573 574	43	956
Beach, George I. (See Benedict, Heman A., assignor.)						
Beach, Henry B. (See Babbitt and Beach.)						
Beach, Henry L., Montrose, Pa. Scroll-saw	381,751	Apr. 24	2170	568	43	456
Beach, Henry L., assignor to Beach, Brown & Co., Montrose, Pa. Saw-table gage	381,752	Apr. 24	2173	568	43	456

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Beach, John K., *et al.* (See Moore, James L., assignor.)						
Beach, John K., *et al.*, trustees. (See Doolittle, George, assignor.)						
Beach, Oliver B., Stony Creek, Conn. Obtaining oyster-spat	385,161	June 26	1981	567	43	1528
Beach, Philemon T., Luling, Tex. Animal-trap	384,415	June 12	883	825	43	1293
Beaird, Kate P., Tyler, Tex. Hand propelling device for sewing-machines	380,973	Apr. 10	1018	286	43	996
Beal, Thomas W., assignor to Sandwich Enterprise Company, Sandwich, Ill. Cultivator	380,783	Apr. 10	795	198	43	132
Beall, Frank, Decatur, Ill. Rolls for grinding-mills	383,852	June 5	7	2	43	1122
Beals, George C., Buffalo, N. Y. Hook	380,974	Apr. 10	1019	286	43	996
Bean, Charles E., Westport, assignor of one-half to M. C. Yarwood, Fall River, Mass. Heat-regulator for incubators	382,403	May 8	780	200	43	669
Bean, Daniel V., Plover, Wis. Rear sight for fire-arms	382,130	May 1	573	97	43	588
Bean, Edward D., Arlington, Mass. Policeman's baton or club	385,293	June 26	2193	580	43	1569
Bean, Edward D., Arlington, Mass., assignor to Cyclist's and Sportsman's Gun and Rifle Company, Kittery, Me. Cane-gun barrel	380,975	Apr. 10	1020	286	43	996
Bean, Edwin E., assignor to Star Metallic Thread Company, Boston, Mass. Pegging-machine	380,674	Apr. 10	561	154 155	43	122
Beard, John R., Springfield, Ohio. Harvester	381,606	Apr. 24	1971	518	43	419
Beard, Joshua G. (See Vale, William T., assignor.)						
Bearden, Daniel B., Wilson, Kans. Grain-drill	384,499	June 12	995	259	43	1317
Beardsley, William, Beacon, Iowa. Cork-holder for bottles	382,859	May 15	1456	382	43	810
Beasley, Maria E., G., J. G., and M. O Rehfuss, Philadelphia, Pa., assignors to American Barrel and Stave Company, Camden, N. J. Barrel-making machine	380,976	Apr. 10	1021	287	43	996
Beath, William H., assignor to C. H. C. Burlingame, Rockford, Ill. Spring-hinge	381,100	Apr. 17	1230	330	43	256
Beattie Battery Zinc and Electrical Company. (See Beattie, John, Jr., assignor.)						
Beattie, John, Jr., assignor to Beattie Battery Zinc and Electrical Company, Fall River, Mass. Battery-zinc	383,271	May 22	2083	548	43	911
Beatty, Richard W., and G. Hoffner, Pittsburg, Pa. Egg-rack	381,523	Apr. 24	1852	490	43	396
Beaubien, Philip J. (See Gareau, Roch R., assignor.)						
Beaulieu, John, Arcata, Cal. Saw-handle	384,500	June 12	997	259	43	1318
Beauregard, John H., and W. F. Bidwell, Lansingburg; said Beauregard assignor to C. E. Stacks, Troy, N. Y. Blacking-brush	381,607	Apr. 24	1973	518	43	419
Bechtold, Adolph. (See Vanderwaag, Maurice A., assignor.)						
Bechtold, John, assignor of one-half to M. H. Dunlevy, Henryville, Ind. Animal or other power	384,603	June 19	1143	302	43	1354
Bechtold, William, assignor of one-half to D. Eisenhardt, New York, N. Y. Churn	381,668	Apr. 24	2053	537	43	435
Beck, Adam H., assignor of one-half to J. House, Savannah, Ga. Picture-exhibitor	380,977	Apr. 10	1022	287	43	997
Beck, Charles, Philadelphia, Pa. Paper-cutting machine	383,692	May 29	2698	713	43	1066
Beck, Frederick S. (See Smith, Isaac, assignor.)						
Becker, Georges, Lancy, near Geneva, and D. Monnier, Geneva, canton of Geneva, Switzerland. Device for printing musical and other characters	381,902	May 1	8	2	43	516
Bedford, George J., Anamosa, Iowa, assignor to A. R. Lockwood, East Orange, N. J. Mail-pouch	384,736	June 19	1339	349 350	43	1392
Beebe, George, Penn Yan, N. Y. Two-wheeled vehicle	383,907	May 22	1984	521	43	923
Beebe, Theodore S., assignor of one-half to H. M. Dernell, Albany, N. Y. Lock-hinge	385,102	June 26	1992	508	43	1524
Beecher, William F., Cleveland, Ohio. Stove-door	381,101	Apr. 17	1231	330	43	256
Beekman, John V., Brooklyn, assignor to Ledgerwood Manufacturing Company, New York, N. Y. Steam-generator	384,555	June 12	1068	279	43	1321
Beer, Charles H., New York, N. Y. Hinge	382,860	May 15	1457	382	43	810
Beers, Roderick S., *et al.* (See Fox, Frank A., assignor.)						
Beery, John V., *et al.* (See Burdsall, Stephen, assignor.)						
Beggs, John S., assignor to Smith, Beggs & Ranken Machine Company, St. Louis, Mo. Safety device for elevators	382,208	May 1	462	124	43	602
Behan, Frank A. (See Hanly, Thomas F., assignor.)						
Behrns, Gustav, Lubeck, Germany. Dust-collector	381,753	Apr. 24	2174	568 569	43	458
Beigel, F. A. John, St. Louis, Mo. Driving-drum for railway-cables	385,230	June 26	2083	533 534	43	1548
Beimling, Henry F., assignor to C. H. Schwerdfeger and C. S. Weierman, Philadelphia, Pa. Centrifugal creamer	382,506	May 8	952	241	43	700
Beisonhert, William E., assignor of one-half to J. F. Edwards, Formosa, Ill. Rein-holder	381,608	Apr. 24	1974	519	43	419
Belcher, George C. W., St. Louis, Mo. Antiseptic soap	381,853	June 5	8	.....	43	1122
Belden, James T., Sparta, Wis. Animal-trap	385,086	June 26	1876	479	43	1506
Beldsmeier, Henry W., St. Louis, Mo. Pulley	384,501	June 12	978	260	43	1318
Belfield, Reginald, assignor to Westinghouse Electric Company, Pittsburg, Pa. System of electrical translation	380,845	Apr. 10	810	220	43	168
Belfield, Reginald, assignor to Westinghouse Electric Company, Pittsburg, Pa. System of electrical translation	380,846	Apr. 10	812	221	43	168
Belfield, Reginald, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electric cigar-lighter	383,611	May 29	2591	695	43	1043
Belfour, Joseph F. (See Johns, David W., assignor.)						
Belknap, Lydia E., *et al.* (See Simmonds, William, assignor.)						
Belknap, William H., *et al.* (See Simmonds, William, assignor.)						
Bell, Alonzo, Washington, D. C., assignor of one-half to Baker, Smith & Co., New York, N. Y. Safety-casing for car-heaters	383,034	May 15	1721	448	43	802
Bell, Charles E., assignor of one-half to E. L. McClain, Greenfield, Ohio. Regenerative gas-lamp	381,905	Apr. 17	1371	366	43	373
Bell, Charles S., Hillsborough, Ohio. Metal mold	382,633	May 8	1147	295	43	739
Bell, Isaac E., *et al.* (See Neff, Elijah, assignor.)						
Bell, Joseph H., and A. L. Gregory, Edenton, N. C. Stove-truck	383,610	May 29	2590	695	43	1043
Bell, William, Morden, Manitoba, Canada. Sheaf-carrier for grain-harvesters	382,404	May 8	791	201	43	669
Bell, William, Philadelphia, Pa. Apparatus for heating, cooling, ventilating, and drying photographic plates	384,416	June 12	864	225	43	1292
Bell, William N., Pittsburg, Pa. Hoisting-jack	383,035	May 15	1724	449	43	802
Bella, Guiseppe. (See Zocca and Bella.)						
Bellinger, Frans C., Fulda, Prussia, Germany. Interlocking the edges of metal plates	384,118	June 5	409	113	43	1199
Bellis, David C., assignor of one-half to S. H. Weihenmayer, Philadelphia, Pa. Knitting-machine	385,163	June 26	1983	508	43	1526
Belmor, George E., San Francisco, Cal. Apparatus for reducing bituminous rock	381,321	Apr. 17	1535	414	43	315
Belt, William H., *et al.* (See Keller, Henry R., assignor.)						
Bender, John T. (See Ball and Bender.)						
Bending, William P., assignor of one-half to V. S. Seltzer, Columbus, Ohio. Car-heater	382,507	May 8	953	241	43	701
Benedict, Heman A., assignor of one-half to G. I. Beach, Syracuse, N. Y. Inside blind	384,954	June 26	1660	431	43	1461
Benedict, Irving W., assignor of one-fourth to H. Sitterly, Cobleskill, N. Y. Veterinary surgical device	381,491	Apr. 17	1785	478	43	396

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Benedict, Washington G. (See Bartlett, Wallace A., assignor.)						
Benham, Elijah B., Holyoke, Mass. Multiple-cylinder motor	380,647	Apr. 10	813	221	43	169
Benham, Elijah B., Holyoke, Mass. Speed-governor for motors	380,648	Apr. 10	815	222	43	169
Benham, Elijah B., Holyoke, Mass. Valve for multiple-cylinder engines	380,649	Apr. 10	818	222	43	170
Benham, Elijah B., Holyoke, Mass. Pitman-and-crank connection	380,650	Apr. 10	820	223	43	170
Benham, Elijah B., Holyoke, Mass. Hydraulic-elevator mechanism	380,651	Apr. 10	880	243	43	170
Benham, Elijah B., assignor of one-half to J. J. Fraser, Holyoke, Mass. Means for heating railway-cars	381,754	Apr. 24	2175	569	43	456
Benham, Whitman S., *et al.* (See Kelly, Wallace C., assignor.)						
Benner, Lorenzo D., Galesburg, Ill., assignor, by mesne assignments, to Union Paper Bag Machine Company, Philadelphia, Pa. Apparatus for and method of making paper bags	383,689	May 15	1294	317 318 319	43	763
Bennett, David T., Trenton, N. J. Railway-rail	383,431	May 29	2382	616	43	980
Bennett, Thomas G., assignor to Winchester Repeating Arms Company, New Haven, Conn. Cartridge-reloading implement	383,693	May 29	2700	713	43	1067
Bennett, Walter E., assignor to Morley Button Sewing Machine Company, Boston Mass. Shuttle and shuttle-operating mechanism for sewing-machines	384,230	June 12	584	150	43	1243
Bennett, Walter E., assignor to Morley Button Sewing Machine Company, Boston Mass. Presser-foot for button-sewing machines	384,231	June 12	587	150	43	1244
Benze, William H. (See White, George A., assignor.)						
Benzinger, Adolph, Mannheim, Baden, Germany. Ornamenting celluloid surfaces	383,272	May 22	2064	.....	43	941
Benzon, James D. (See White and Benzon.)						
Bentley, Edward M., New York, N. Y. Electrical agricultural system	382,941	May 15	1569	410	43	698
Bentley, Roland, Dresden, and T. Ford, Longton, county of Stafford, England. Cut-off valve	380,474	Apr. 3	247	66	43	51
Benton, Louis J., Alpine, N. Y. Nut-lock	382,789	May 15	1371	360	43	791
Benz, Carl, Mannheim, Baden, Germany. Self-propelling vehicle	385,067	June 26	1877	479 480	43	1506
Benz, Carl, assignor to Benz & Co., Mannheim, Baden, Germany. Carburetor	382,585	May 8	1079	277 278	43	798
Benz & Co. (See Benz, Carl, assignor.)						
Benzie, Alexander, Brooklyn, N. Y. Drilling-tool	385,088	June 26	1878	480	43	1506
Berger, Gustav, Stapleton, N. Y. Bell-ringing device for buoys and boats	383,552	May 29	2516	684	43	1066
Bergman, John, Galveston, Tex. Combination-lock	381,903	May 1	9	3	43	516
Bergmann & Company. (See Robb, James T., assignor.)						
Bering, James E., assignor to Chambers, Bering, Quinlan Company, Decatur, Ill. Check-row corn-planter	381,102	Apr. 17	1233	330 331	43	256
Berkey, Julius, Grand Rapids, Mich. Article of furniture	380,741	Apr. 10	657	181	43	140
Berkey, Julius, Grand Rapids, Mich. Making wooden bowls	380,742	Apr. 10	658	182	43	140
Berlin, George G., Del Norte, Colo. Tenoning-machine	382,791	May 15	1374	360	43	792
Berliner, Emile, Washington, D. C. Pneumatic hook	380,309	Apr. 3	5	1	43	3
Berliner, Emile, Washington, D. C. Producing records of sound	382,790	May 15	1372	.....	43	791
Bernard, William A., and B. W. Rhodes, Danville, Va. Stock-car	382,405	May 8	792	201 202	43	669
Bernstein, Adolph, and A. Goldstein, assignors of one-half to J. Cohen, Pittsburg, Pa. Fire-escape	383,432	May 29	2383	616	43	980
Bernstein, Louis H. (See Bitterman and Bernstein.)						
Berry, Austin, Warden, Quebec, Canada. Automatic pneumatic car-lamp extinguisher	380,361	Apr. 3	115	33, 34	43	25
Berry, Henry, assignor to Derby Silver Company, Shelton, Conn. Brush	381,306	Apr. 17	1372	367	43	263
Berry, John, assignor to National Needle Company, Springfield, Mass. Needle-grooving machine	382,250	May 1	543	138 139	43	613
Berry, Joshua, assignor of one-half to F. C. Betts, Jonesborough, Ga. Grain-cradle	382,024	May 1	216	57	43	553
Berry, William F. (See Speed, Berry, and Snoddy.)						
Berryman, Henry B. (See Munroe, Thomas W., assignor.)						
Bertling, Henry, Cincinnati, Ohio. Constructing cornices	383,612	May 29	2592	696	43	1044
Berton, Camille, Paris, France. Arc lamp	380,545	Apr. 3	362	104	43	74
Best, William N., Los Angeles, Cal. Lifting-jack	384,417	June 12	865	225 226	43	1293
Best, Wilson I., Boston, Mass. Check-protector	383,854	June 5	9	3	43	1122
Bettendorf, William P., Davenport, Iowa. Machine for securing spokes in metal wheels	384,604	June 19	1144	302 303	43	1354
Bettes, Alexander, Kansas City, Mo. Swing	383,553	May 29	2518	664	43	1027
Betts, Charles L., assignor to R. E. Dietz Company, New York, N. Y. Tubular lamp	381,461	Apr. 17	1751	468	43	357
Betts, F. C. (See Berry, Joshua, assignor.)						
Betts, Lewis F., assignor of one-half to R. E. Dietz, New York, N. Y. Tubular lantern	381,755	Apr. 24	2178	569	43	459
Betts, Lewis F., assignor of two-thirds to R. E. Dietz Company, New York, and Steam Gauge and Lantern Company, Rochester, N. Y. Lantern-guard	384,821	June 19	1471	384	43	1417
Biber, Albert, Des Moines, Iowa. Tongs	383,855	June 5	10	3	43	1122
Bickford, Charles, Boston, Mass. Time-piece	384,737	June 19	1341	350	43	1392
Bickford, John H., Salem, Mass. Combined station-indicator and signaling apparatus for railway-trains	381,660	Apr. 24	2054	537	43	435
Bickford, John H., Salem, Mass. Electrical bell or mechanical striker	381,823	Apr. 24	2290	596	43	479
Bidwell, William T. (See Beauregard and Bidwell.)						
Bigelman, Augustus, Troy, N. Y. Registering and canceling ballot-box	380,978	Apr. 10	1024	268	43	997
Bigelow Carpet Company. (See Skinner, Albert L., assignor.)						
Bigelow, Hobart B., *et al.* (See Morton, William F., assignor.)						
Bignall, Burnett B., and R. A. Marsh, assignors to V. S. Bignall, St. Charles, Ill. Sectional jacket drive-well point	380,419	Apr. 3	102	46	43	33
Bignall, Viola S. (See Bignall and Marsh, assignors.)						
Bignell, William, Nebraska City, Nebr. Pavement	382,683	May 15	1228	319	43	764
Billings, Arthur T. (See Billings, Avery W. and W. G., assignors.)						
Billings, Avery W., and W. G., Larned, assignors of one-third to A. T. Billings, Jetmore, Kans. Rotary engine	382,209	May 1	463	124 125	43	602
Billings, Charles E., Hartford, Conn. Beam-calipers	382,348	May 8	712	190	43	654
Billings, Luther G., Washington, D. C. Type-writer cabinet	382,942	May 15	1571	410	43	883
Billings, Luther G., Washington, D. C. Reed-organ stop-action	382,943	May 15	1573	410 411	43	883
Billings, William G. (See Billings, Avery W. and W. G.)						
Billingsley, Asa A., Cherry Grove, Ark., assignor of one-half to A. Childers. Adjustable double plow	385,284	June 26	2193	560	43	1570
Bilsborough, Thomas. (See Stubbs, Daniel H., assignor.)						
Binckley, Henry, Reading, Pa. Coupon-ticket rack	384,305	June 12	696	185	43	1293

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Bindley, Edwin, *et al.* (See Lackner, Frederick, assignor.)						
Bindley, John, *et al.* (See Lackner, Frederick, assignor.)						
Bines, Robert, *et al.* (See Collins, William H., assignor.)						
Bingham, Edward W. (See Bingham, John E. and E. W.)						
Bingham, John E., Walla Walla, Wash. Ter., and E. W. Bingham, Portland, Oreg. Horse-shoe	382,131	May 1	374	97	43	568
Bingham, John E., Walla Walla, Wash. Ter., and E. W. Bingham, Portland, Oreg. Horse-shoe	383,694	May 29	2702	714	43	1067
Binks, Joseph, Chicago, Ill. Removing impurities from steam-boilers	382,566	May 8	955	242	43	701
Binns, Leedham, Philadelphia, Pa. Spindle-driving device for spinning-machines, &c	380,784	Apr. 10	726	199	43	153
Binns, Leedham, Philadelphia, Pa. Belting	383,208	May 22	1985	521	43	921
Bippart, Achill, Newark, N. J. Button	381,103	Apr. 17	1235	331	43	257
Birch, James C. (See Eaton and Birch.)						
Bird, John, Warren, Ill. Car-mover	384,502	June 12	998	260	43	1316
Bird, Joseph, Saxton, Pa. Apparatus for detecting leakage in furnace-blocks	382,792	May 15	1375	361	43	792
Birdsell Manufacturing Company. (See Sheets, Alfred T., assignor.)						
Bisbee, Charles R., *et al.* (See Earnest, Jacob T., assignor.)						
Bischoff, Hugo. (See Mieg and Bischoff.)						
Bishop, Charles E., *et al.* (See Fox, Frank A., assignor.)						
Bishop, Jason S., assignor of one-half to F. W. Higgins, Olean, N. Y. Propeller-wheel	381,104	Apr. 17	1236	331, 332	43	257
Bishop, John J., assignor of one-third to H. Wood, Greenwood, Ind. Combined cooking and can-filling apparatus	383,792	May 29	2870	735	43	1068
Bishop, Louis J., Cleveland, Ohio. Cash-carrier	380,979	Apr. 10	1028	268	43	266
Bishop, Mary F., Bridgeport, Conn. Means for operating egg-beaters	384,674	June 19	1247	328	43	1375
Blasegger, Julius A., New York, N. Y. Piano	385,231	June 26	2065	534	43	1549
Blasell, Charles H., Chicago, Ill. Hair-crimper	384,418	June 12	866	226	43	1294
Blasig, Vincent, Greenville, N. J. Vegetable-slicer	384,738	June 19	1344	351	43	1393
Bitterman, Bernard, and L. H. Bernstein, North Topeka, Kans. Bread-machine	383,938	June 5	147	43	43	1149
Black, Alfred W., Traverse City, Mich. Planter	382,069	May 1	286	76	43	566
Black, Charles R., Topeka, Kans. Saw-jointer	381,207	Apr. 17	1373	367	43	281
Black, Henry A., assignor to A. H. Mulliken, Chicago, Ill. Lamp	382,210	May 1	495	125	43	603
Black, John M., London, England. Numbering mechanism	381,105	Apr. 17	1238	332	43	257
Blackburn, Albert B., assignor of one-half to E. F. Darby, Springfield, Ohio. Spring-seat for chairs	380,490	Apr. 3	163	46	43	34
Blackman, Ebenezer, Brooklyn, assignor, by mesne assignments, to Ansonia Brass and Copper Company and W. A. Hall, New York, N. Y. Suspending device	384,187	June 5	512	140	43	1220
Blackstone, Louis, Jersey City, N. J. Railway-switch	384,955	June 26	1661	432	43	1402
Blair, George F. (See Ingalls, Charles L., assignor.)						
Blair, John A., Philadelphia, Pa., and W. C. Bush, Wilmington, Del. Cutting apparatus for harvesters	385,164	June 26	1985	508	43	1528
Blais, Joseph, Duluth, Minn. Vehicle-wheel	380,852	Apr. 10	823	223	43	170
Blake, Henry T., New Haven, Conn. Electrical tramway	383,273	May 22	2085	548	43	941
Blake, Henry T., New Haven, and C. Sterling, Bridgeport, Conn. Electrical tramway	383,274	May 22	2087	548, 549	43	941
Blakeslee, George G., Waterbury, Conn. Wire-drawing machine	382,861	May 15	1457	383	43	810
Blakeslee, Jared, Story City, Iowa. Can-opener	384,739	June 19	1344	351	43	1393
Blakey, John. (See Denison, Richard, assignor.)						
Blanchard, James A., Brooklyn, N. Y. Composition for lining vessels	380,853	Apr. 10	824	.....	43	171
Blanchard, Thomas A., Appling, Ga. Plow	384,740	June 19	1345	351	43	1393
Blaney, William R., Swampscott, Mass. Trap	381,524	Apr. 24	1853	490	43	396
Blaster, David J., Westernville, assignor of one-half to H. D. Hager, Rome, N. Y. Feathering paddle-wheel	385,232	June 26	2066	534	43	1549
Blatchley, Ambrose, San Francisco, Cal. Boiler-feeder	384,119	June 5	410	114	43	1199
Blegen, Lars T., Martell, Wis. Saw-handle attachment	384,741	June 19	1347	352	43	1393
Bleichert, Adolf, assignor to A. Bleichert & Co., Gohlis, near Leipsic, Saxony, Germany. Grip for elevated wire-rope lines	380,982	Apr. 10	1032	270, 271, 272, 273, 274	43	209
Bleichert, Adolf, assignor to A. Bleichert & Co., Gohlis, Saxony, Germany. Coupling device for wire ropes	380,983	Apr. 10	1035	274	43	210
Bleichert, Adolf, assignor to A. Bleichert & Co., Gohlis, Saxony, Germany. Rail for elevated wire-rope lines	380,984	Apr. 10	1036	274	43	210
Bleichert & Co., Adolf. (See Bleichert, Adolf, assignor.)						
Blevens, Nathan W., assignor of one-half to W. D. Trewhitt, Aurora, Tex. Wagon-axle	382,211	May 1	486	125	43	603
Blickensderfer, George C., Stamford, Conn. Conveyer apparatus	381,322	Apr. 17	1536	414, 415	43	316
Blickensderfer, George C., and J. K. Hallock, Erie, Pa., assignors to said Blickensderfer, trustee. Electric elevator	381,492	Apr. 17	1796	478	43	366
Blickensderfer Machine Company. (See Blickensderfer, Ulric, assignor.)						
Blickensderfer, Ulric, assignor to Blickensderfer Machine Company, Chicago, Ill. Ditching-machine	384,419	June 12	867	226	43	1294
Bliss Company, E. W. (See Leavitt, Frank M., assignor.)						
Block, William, St. Petersburg, Russia. Fire-escape	383,613	May 29	2563	686	43	1044
Blom, Frans L., New York, N. Y. Ladder fire escape	382,872	May 15	1450	383	43	810
Blondel, Jules A., Sioux City, Iowa. Registering device for measuring-faucets	382,944	May 15	1574	411	43	833
Bloom, Joseph H. (See Bloom, Nicklas H. and J. H.)						
Bloom, Nicklas H. and J. H., Charles City, Iowa. Running-gear for vehicles	382,406	May 8	794	202	43	670
Bloomberg, William, New York, N. Y. Clasp	382,793	May 15	1376	361	43	792
Blue, Dennis S., and L. Halter, Fremont, Ohio. Cultivator	382,945	May 15	1575	411	43	833
Bluhm, Charles A., Michigan City, Ind. Refrigerator	385,089	June 26	1879	480	43	1506
Blydenburgh, Charles M., Riverhead, N. Y. Vehicle-spring	383,339	May 22	2172	574	43	957
Boalt, John H. (See Lane, Charles C., assignor.)						
Boardman, Alphonso F., assignor, by mesne assignments, to S. J. Boardman, Brooklyn, N. Y. Fishing-reel	384,672	June 19	1244	328	43	1374
Boardman, Sarah J. (See Boardman, Alphonso F., assignor.)						
Bobrick, Gabriel A., Boston, Mass., assignor, by mesne assignments, to Coupon Envelope Company, Portland, Me. Envelope	380,816	Apr. 3	467	122	43	95
Bocks, Frits, Barmen, Prussia, Germany. Machine for making buttons	380,980	Apr. 10	1029	269	43	209
Boda, William J., Dayton, Ohio. Finishing of house interiors	385,233	June 26	2068	535, 536	43	1550

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Bodine, William I. A. (See Elliott, John R., assignor.)						
Boeckstiegel, Louis F. (See Wittheoft, William, Jr., assignor.)						
Boehm, David J., and C. F. Reed, New York, N. Y., assignors to North American Cigar Machinery Company of the City of New York. Cigar-bunching machine	384,556	June 12	1069	279, 280, 281	43	1231
Boehler, Reinhold, Brooklyn, N. Y. Gas-motor	384,673	June 19	1246	328	43	1374
Bogert, John L., Flushing, N. Y. Lathe for turning axles	380,785	Apr. 10	727	199, 200	43	153
Boggis, Herbert J., assignor of one-half to R. H. Boggis, Cleveland, Ohio. Cork-extractor	383,093	May 22	1827	479	43	891
Boggis, Robert H. (See Boggis, Herbert J., assignor.)						
Bohn, Abraham S. (See Fehrer, Joseph, assignor.)						
Bohnert, J. A. (See Kight, William E., assignor.)						
Boissonnet, Louis, St. Vallier, France. Porcelain-kiln	383,695	May 29	2703	714, 715	43	1067
Bole, William A., assignor to Westinghouse Machine Company, Pittsburg, Pa. Governor	382,450	May 8	865	221	43	683
Boll, August, assignor to E. S. Torrey, Berlin, Germany. Device for making plumbers' traps	384,956	June 26	1662	432	43	1402
Bolles, John E. (See King, Henry N., assignor.)						
Bolles, John H. (See Roe, Alpheus E., assignor.)						
Bollmann, Louis, Vienna, Austria-Hungary. Machine for sewing bags	380,981	Apr. 10	1031	269, 270	43	209
Bolton, Gideon S., *et al.* (See Dunn, William, assignor.)						
Bolusa, Alfred R., Norwood, Ohio. Air-brake	382,749	May 15	1311	344	43	789
Boman, Claes W., assignor to Eagle Pencil Company, New York, N. Y. Pencil-sharpener	382,132	May 1	376	98	43	582
Bommer, Lorenz, Brooklyn, N. Y. Spring-hinge	383,554	May 29	2519	664	43	1027
Bommer, Lorenz, Brooklyn, N. Y. Spring-hinge	383,555	May 29	2520	665	43	1027
Bon, Leopold, Guantanamo, Cuba. Machine for cutting sugar-cane	385,234	June 26	2091	536	43	1550
Bond, Edwin H., *et al.* (See Herndon, George P., assignor.)						
Bond Furniture Improvement Company. (See Bond, Nathan O., assignor.)						
Bond, Nathan O., Fairfax Court-House, Va., assignor to Bond Furniture Improvement Company, Washington, D. C. Wash-stand bowl	382,251	May 1	550	139	43	614
Bonte, Philipp, Chicago, Ill. Acidometer	383,433	May 29	2324	616	43	990
Bontems, Blaise, Paris, France. Apparatus for aerial navigation	381,106	Apr. 17	1242	333, 334	43	257
Bookman, Henry J. (See Constantin, Henry C., assignor.)						
Boone, Annie L., San Francisco, Cal. Gas-light shield and reflector	381,323	Apr. 17	1538	415	43	316
Booth, John, Central Falls, R. I. Bearing for the journals of lower drawing-rollers in spinning-machines	384,344	June 12	759	199	43	1273
Booze, Charles, Buffalo, N. Y. Adjustable garden-hose and pipe supporter	381,107	Apr. 17	1243	334	43	258
Borden, Wilbur H., Sheridan, Mich. Chain-coupling for stump-extractors	382,451	May 8	866	221	43	683
Borland, David R., Montreal, Quebec, Canada. Telegraph-key	380,310	Apr. 3	6	2	43	4
Bormann, Hermann, assignor of one-half to J. W. Douglass, Philadelphia, Pa. Ellipsograph	383,696	May 29	2704	715	43	1067
Bormann, Hermann, assignor of one-half to J. W. Douglass, Philadelphia, Pa. Ellipsograph	383,697	May 29	2707	715	43	1068
Bosche, Philip, New Philadelphia, Ohio. Buggy-boot	382,349	May 8	713	180	43	654
Bosher, Charles C., *et al.* (See Robbins, George M., assignor.)						
Bosse, Arnold, Chicago, Ill. Strainer	385,295	June 26	2195	561	43	1570
Bossler, Joseph B., Middletown, Pa. Steam-generator	382,863	May 15	1461	383	43	811
Bostian, Charles P., Milton, assignor to himself, J. F. Meckley, Watsontown, and C. H. Dougal, Milton, Pa. Sewing-machine	382,794	May 15	1376	361	43	792
Boston Tow Boat Company. (See Shaw and Spiegle, assignors.)						
Botsford, Frederick G., assignor, by mesne assignments, to Erie Car Heating Company, Erie, Pa. Steam-trap	381,670	Apr. 24	2036	538	43	436
Botsford, Oscar, Eureka, Mich. Cheek-piece for bridles	385,090	June 26	1881	480	43	1507
Boughton, Jared M., East Saginaw, Mich. Washing-machine	380,675	Apr. 10	564	155	43	123
Boulton, James B. D., Jersey City, N. J., assignor to Solid Ingot Company, of New Jersey. Elevator for ingot-casting machines	384,345	June 12	760	199	43	1273
Bourdil, François F., Paris, France. Apparatus for spraying liquids	384,306	June 12	697	186	43	1263
Bouse, Michael, Wilmot, Ind. Cultivator	383,094	May 22	1829	479	43	891
Bowdish, Albertis, Locke, N. Y. Milk-strainer	385,091	June 26	1882	481	43	1507
Bowen, David, Shannopin, Pa. Steam-engine	383,614	May 29	2565	686	43	1044
Bowen, George A., assignor to H. M. Clark, Oshkosh, Wis. Running-gear for vehicles	381,981	May 1	134	32	43	539
Bower, John F., Chicago, Ill. Whip-socket	384,605	June 19	1146	303	43	1354
Bowers, George W., Somerville, Mass. Guitar	383,275	May 22	2069	549	43	941
Bowers, Walter T., Saco, Me. Bicycle-lighting	384,180	June 5	411	114	43	1199
Bowersock, Sallie E., Baltimore, Md. Bread, cake, or cheese box	381,624	Apr. 24	2291	596	43	499
Bowling, Donald E., Lynchburg, and F. O. Barnes, Allegheny Springs, Va. Vehicle-brake	382,586	May 8	1081	278	43	726
Bowman, Thomas S., St. Louis, Mo. Printing-machine	382,684	May 15	1230	320, 321	43	764
Bowyer, Charles D., and W. H. Casperson, Camden, N. J. Painter's stage	382,252	May 1	552	140	43	615
Boyd, Harry J. (See Smith and Boyd.)						
Boyd, Nathaniel W., Steelton, Pa. Railway switch-stand and signal	383,909	May 22	1986	521	43	921
Boyd, Robert L., New York, N. Y. Pocket-book fastening	382,795	May 15	1378	362	43	793
Boyer, Zaccar P., Philadelphia, Pa. Elevated cable-motor or other railway structure	382,407	May 8	795	202, 203, 204	43	670
Boyle, Charles W., Bradley, Mich. Cider-mill	382,408	May 8	797	203, 204	43	671
Boyle, Homer L., Grand Rapids, Mich. Fire-escape	381,982	May 1	135	32	43	539
Boyle, James E., Brooklyn, N. Y. Pneumatic flushing-tank	380,854	Apr. 10	825	224, 225	43	171
Boylen, James F. (See Driscoll and Boylen.)						
Brace, William, Washingtonville, Ohio. Fruit-jar fastening	382,212	May 1	487	125	43	603
Bracher, Thomas W., New York, N. Y. Sweat-band for hats	381,908	Apr. 17	1374	367	43	283
Bracher, Thomas W., New York, N. Y. Sweat-band for hats	385,092	June 26	1882	481	43	1507
Braddock, Warren L., Boston, Mass., assignor of one-half to T. B. Sargeant, Detroit, Mich. Car-coupling	384,606	June 19	1147	303	43	1354
Braeda, Hezekiah, Kansas City, Mo. Scaffolding	380,546	Apr. 3	365	104	43	75
Bradford, Allen, assignor of one-half to V. M. Clement, Wardner, Idaho Ter. Automatic sampling apparatus	384,490	June 12	668	226	43	1294
Bradford, Charles K., Lynnfield, assignor to G. H. P. Flagg and G. A. Fullerton, Boston, Mass. Sewing-tool	382,750	May 15	1312	345	43	780
Bradford, Charles K., Lynnfield, assignor to W. F. Kakas, Boston, Mass. Fishing-reel	384,742	June 19	1349	352	43	1394
Bradford, Cornelius F., Plymouth, Mass. Machine for winding cotton, &c., upon a core	383,856	June 5	11	3, 4	43	1123

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bradford Manufacturing Company. (See Abbott, Essex S., assignor.)						
Bradley, Arthur C., Brooklyn, N. Y. Manufacturing orange mineral and red lead	382,070	May 1	287	76, 77	43	567
Bradley, Arthur C., Brooklyn, N. Y. Manufacturing the oxides of readily-oxidizable metals for paints, &c	382,133	May 1	377	98, 99	43	582
Bradley, Edwin C. (See Freeland, James R., assignor.)	385,235	June 26	2092	536	43	1551
Bradley Manufacturing Company, David. (See Packer, John F., assignor.)						
Bradley, Milton. (See Easley and Bradley.)						
Bradt, Samuel E., *et al.* (See Reynolds, Walter S., assignor.)						
Brady, James, Sonora, Ill. Hay-cap	384,957	June 26	1663	432	43	1462
Brady, Peter L., Hearne, Tex. Nut-lock	380,712	Apr. 10	612	108	43	131
Brahadl, Abraham, Montreal, Quebec, Canada. Combined fur satchel and muff	384,503	June 12	999	260	43	1318
Brainard, Amos H., Hyde Park, Mass. Milling-machine	381,108	Apr. 17	1244	334	43	259
Brainard, Amos H., Hyde Park, Mass. Milling-machine	381,525	Apr. 24	1854	490 / 491	43	396
Brainard, Amos H., Hyde Park, Mass. Conveyer	383,556	May 29	2321	605	43	1027
Braman, Alfred W., Chicago, Ill. Pitman-box for harvesters	384,504	June 12	1000	260	43	1318
Brand, Frederick J., New Britain, Conn. Bustle	384,557	June 12	1076	281	43	1333
Brandenburg, Fowler A., Vandalia, Ohio. Carriage-curtain fixture	382,287	May 1	604	153	43	624
Braun, Oscar B., Portland, Me. Automatic regulator for vulcanizing apparatus and other purposes	385,236	June 26	2094	536 / 537	43	1551
Bratach, Albert L., Renville, Minn. Pole and shafts for vehicles	383,939	June 5	148	43	43	1149
Bray, John, Jr., Washington, D. C. Flag or rush matting and making the same	381,209	Apr. 17	1374	367	43	263
Bray, Thomas J., assignor of one-half to Riverside Iron Works, Wheeling, W. Va. Pipe welding apparatus	382,452	May 8	867	221 / 222	43	683
Bray, Thomas J., assignor of one-half to Riverside Iron Works, Wheeling, W. Va. Mechanism for the manufacture of paper	382,453	May 8	869	222	43	683
Bray, Thomas J., assignor of one-half to Riverside Iron Works, Wheeling, W. Va. Mechanism for the manufacture of angular tubes	382,454	May 8	871	222 / 223	43	684
Bray, William C., Newton, Mass. Rivet-setting machine	382,350	May 8	714	181	43	654
Bray, William H., Boston, and C. Nickerson, Chelsea, Mass. Valve for water-gages	381,609	Apr. 24	1974	519	43	419
Bredel, Frederick, New York, N. Y. Automatic gas-governor	380,743	Apr. 10	659	182	43	141
Breese, John H., Minneapolis, Minn. Cistern-cleaner	382,864	May 15	1462	363	43	811
Breese, John H., Minneapolis, Minn. Pocket-box for postage-stamps	383,036	May 15	1724	449	43	862
Breese, John H., Minneapolis, Minn. Device for holding and moistening postage-stamps	383,037	May 15	1726	449	43	863
Brennan & Co. Southwestern Agricultural Works. (See Wolfe, Harvey R., assignor.)						
Brettell, George E., assignor of one-third to W. A. Wilson, Rochester, N. Y. Automatic fuel-regulator for boilers	383,557	May 29	2522	665	43	1027
Brewer, Horatio J., New York, N. Y. Galvanic battery	380,855	Apr. 10	629	225	43	171
Brewer, Horatio J., New York, N. Y. Galvanic battery	380,856	Apr. 10	630	225	43	172
Brewer, Ora A. (See Brewer, Thomas R. and O. A.)						
Brewer, Thomas H. and O. A., Pawnee Rock, Kans. Windmill	380,547	Apr. 3	366	104	43	75
Brewer, William J., London, county of Middlesex, England. Car-truck	384,505	June 12	1001	261	43	1319
Brewer, William J., London, county of Middlesex, England. Anti-friction bearing for shafts	384,506	June 12	1002	261	43	1319
Brewers Ice Company. (See Reis, John, assignor.)						
Brewington, Henry S., Baltimore, Md. Wash-board	382,751	May 15	1313	345	43	780
Brewster, Edward E., Holly, Mich. Rein-holder	380,676	Apr. 10	565	156	43	123
Brice, Thomas, Sandy Hill, N. Y. Fire-escape	383,340	May 22	2173	574	43	957
Bridenbaugh, Phillip H. (See Gorsuch, George W., assignor.)						
Bridenthal, Hezekiah Vincennes, Ind., assignor of eleven-twelfths to J. E. Hall, St. Louis, Mo. Bolting-reel	381,324	Apr. 17	1539	415	43	316
Bridge, Lewis, Philadelphia, Pa., assignor to Pennsylvania Globe Gas Light Company, of Pennsylvania. Gas-stove	383,793	May 29	2873	755	43	1099
Bridger, Edward K. (See Jones and Bridger.)						
Bridwell, James W., Hillsborough, Ohio, assignor to Star Manufacturing Company, of Ohio. Package-carrier	384,558	June 12	1077	281	43	1333
Briggs, Louis W., *et al.* (See Lore, George W., assignor.)						
Brigham, Kasson A., Gilroy, Cal. Two-wheeled vehicle	380,744	Apr. 10	661	182	43	141
Bright, Fred E., Cleveland, Ohio. Garment-supporter	385,237	June 26	2095	537	43	1551
Brinckerhoff, Henry W., Brooklyn, N. Y. Expansible joint for pipes	381,825	Apr. 24	2292	596	43	480
Brinckerhoff, Henry W., Brooklyn, N. Y., assignor to J. F. Ward, Jersey City, N. J. Spherical pipe-joint	381,826	Apr. 24	2293	596 / 597	43	480
Bringold, John H., assignor of one-half to W. N. Percy, Albany, N. Y. Belt-tightener	382,587	May 8	1083	278 / 279	43	727
Brinkerhoff, Alexander W., deceased, Upper Sandusky, Ohio; M. H. and W. C. Brinkerhoff executors. Syringe	383,940	June 5	149	43	43	1149
Brinkerhoff, Milford H., *et al.*, executors. (See Brinkerhoff, Alexander W.)						
Brinkerhoff, Warren M., Auburn, N. Y. Spring-tooth for harrows	384,188	June 5	513	140	43	1281
Brinkerhoff, Willie C., *et al.*, executors. (See Brinkerhoff, Alexander W.)						
Brinkmann, Augustus H. (See Buschmann, Victor H., assignor.)						
Bristol, Lambert J., New Haven, Conn. Whiffletree-snap	381,325	Apr. 17	1540	415	43	316
Bristol, William H., and W. E. Geyer, Hoboken, N. J. Differential expansion device for galvanometers	383,095	May 22	1929	480	43	891
Britton, Clarence R., *et al.* (See Peacock, John W., assignor.)						
Britton, William H., assignor of one-half to W. H. Britton, Jr., J. M. Richmond, and A. S. McAllaster, Buffalo, N. Y. Railway-tie	382,134	May 1	379	99	43	583
Broad, Thomas. (See Anderson, Lee, assignor.)						
Broadbent, Charles F., Baltimore, Md. Composition of matter to be used in the manufacture of medallions, &c	383,698	May 29	2709	.....	43	1069
Broadhurst, Daniel, Dunmore, Pa. Spring for locomotives	380,548	Apr. 3	368	105	43	75
Broady, Marion T., Bartle, Ind. Car-coupling	384,675	June 19	1248	329	43	1375
Brock, Matthias, Boston, Mass. Mechanism for grinding dies	380,985	Apr. 10	1037	275	41	210
Broderick, Martin, Bedias, Tex. Hammock or swing	381,827	Apr. 24	2295	597	43	480
Brodrick, Allen W., Mahomet, Ill. Windmill	384,232	June 12	569	160	43	1244
Brokaw, Isaac, assignor of one-half to A. F. Warneke, Litchfield, Ill. Sash-holder	384,607	June 19	1149	304	43	1355
Bronka & Company, E. J., *et al.* (See Brooks, Edward J., assignor.)						
Brooks, David, Jr., assignor to Electric Cable Construction and Maintenance Company, Philadelphia, Pa. Anti-induction composition for electric cables	383,096	May 22	1831	.....	43	891
Brooks, David, Jr., assignor to Electric Cable Construction and Maintenance Company, Philadelphia, Pa. Support for electric wires	383,097	May 22	1831	480	43	892
Brooks, David, Jr., assignor to Electric Cable Construction and Maintenance Company, Philadelphia, Pa. Covering for electric wires and cables	383,098	May 22	1832	.....	43	892

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y., and C. H. Crosby, Chicago, Ill. Safety-case for money-packages, &c	381,326	Apr. 17	1541	416	43	317
Brooks, George W., Mebane, N. C. Apparatus for treating leaf-tobacco	385,038	June 26	1802	463	43	1491
Brooks, James W., trustee. (See Allen, Edward B., assignor.)						
Brooks, James W., trustee. (See Cunningham, James H., assignor.)						
Brooks, James W., trustee. (See Glidden, Charles W., assignor.)						
Brooks, James W., trustee. (See Goddu, Louis, assignor.)						
Broslus, John M., Atlanta, Ga. Motor	382,865	May 15	1463	381	43	811
Broslus, John M., assignor of one-half to T. H. Jones, Atlanta, Ga. Running-gear. (Reissue)	10,922	Apr. 17	1841	487	43	375
Brott, John R., assignor to W. W. Coomes, Long Meadow, Mass. Chair	384,887	June 19	1570	408	43	1435
Brougher, David J., Cincinnati, Ohio, assignor of two-thirds to W. Griffith, Covington, Ky., and J. Seymour, Oakley, Ohio. Angle-clamp for the corners of tables, desks, &c	383,167	May 22	1927	504	43	911
Brower, Fredrick C., Syracuse, N. Y. Automatic electric gas cut-off for railway-cars	384,676	June 19	1250	330	43	1375
Brown, Alexander E. (See Thompson, Charles H., assignor.)						
Brown, Alexander E., Cleveland, Ohio. Tramway for carrying elevated loads	382,634	May 8	1148	295 / 296	43	739
Brown, Alexander E., Cleveland, Ohio. Elevated tramway for hoisting and conveying machines	382,635	May 8	1150	296	43	739
Brown, Alexander E., Cleveland, Ohio. Apparatus for handling material	382,846	May 15	1577	419	43	854
Brown, Alexander T., Syracuse, N. Y. Air-gun	381,109	Apr. 17	1945	335	43	260
Brown, Charles A., and M. M. Clark, assignors to Western Electric Company, Chicago, Ill. Galvanic battery	384,958	June 26	1665	433	43	1468
Brown, Charles F. (See Hodskinson, Jabez, assignor.)						
Brown, Charles F. (See Riedell, John H., assignor.)						
Brown, Charles M., Rockford, Ill. Compound-lever punch	382,947	May 15	1580	412	43	834
Brown, Charles T., assignor to F. L. Brown, Chicago, Ill. Electric smelling-bottle	383,794	May 29	2875	756	43	1099
Brown, Daniel T., Roxbury, Conn. Knife-blade burnisher	380,327	Apr. 17	1543	416	43	317
Brown, Edward G. (See King and Brown.)						
Brown, Elmer E., Portland, Me., assignor of one-half to J. S. Williams, Boston, Mass. Safety rein-fastener	382,796	May 15	1379	302	43	783
Brown, Flora L. (See Brown, Charles T., assignor.)						
Brown, George, San Francisco, Cal. Protecting piles	381,671	Apr. 24	2057	538	43	436
Brown, George A., Pittsburg, Pa. Shield or cover for heaters and stoves for use on railway-cars	383,615	May 29	2597	686	43	1045
Brown, Gilman W., West Newbury, Mass. Lubricator	382,752	May 15	1313	345	43	780
Brown, Henry A., Denver, Colo. Apparatus for drilling and countersinking	381,311	Apr. 3	7	2	43	4
Brown, James C., Sedalia, Mo. Mail-bag lock	380,986	Apr. 10	1041	275	43	211
Brown, James H., Richmond, Ind. Car-brake	384,507	June 12	1003	261	43	1319
Brown, James O. (See Newell and Brown.)						
Brown, John C., *et al.* (See Herndon, George P., assignor.)						
Brown, John E., Honolulu, Hawaii. Sash-fastener	381,210	Apr. 17	1375	308	43	263
Brown, John H. (See McGaffey, Ives W., assignor.)						
Brown, John W. (See Smidow, John M., assignor.)						
Brown, Joseph W., Miltonvale, Kans. Cultivator for listed corn	380,549	Apr. 3	369	105	43	75
Brown, Morris H., Yonkers, N. Y. Rail or bar bender	383,168	May 22	1928	504	43	911
Brown, Perry, Louisville, Ky. Freight-car	382,685	May 15	1380	330	43	764
Brown, Perry, Louisville, Ky. Seal-lock	383,434	May 29	2325	616 / 617	43	990
Brown, Peter S. (See Orr and Brown.)						
Brown Specialty Manufacturing Company. (See Campfield, Matthew E., assignor.)						
Brown, William, Selkirk, Scotland. Carding-engine	383,435	May 29	2327	617 / 618	43	991
Brown, William, Duncannon, assignor of one-half to H. W. Sheibley, Philadelphia, Pa. Portable fire-escape	381,672	Apr. 24	2056	538	43	437
Brown, William H. (See Wright and Brown.)						
Brown, William H., Indianapolis, Ind. Fire-proof floor	384,491	June 12	871	227	43	1295
Brown, William J., Jr., assignor to Wire Staple Company, Philadelphia, Pa. Machine for setting staples	382,025	May 1	217	58	43	553
Browne, Charles H., Milwaukee, Wis. Flour-bolt	382,135	May 1	380	99	43	583
Browne, Thomas E. (See Huffman, Orlando, assignor.)						
Browne, Walker G., Atlanta, Ga., assignor to United States Automatic Water Cut-Off Company, of Georgia. Automatic cut-off	380,987	Apr. 10	1042	275 / 276	43	211
Browne, Walker G., Atlanta, Ga., assignor to United States Automatic Water Cut-Off Company, of Georgia. Anti-freezing device for water-pipes	382,588	May 8	1084	279	43	727
Browne, Walter D., Seneca Falls, assignor to F. C. Timpson, Auburn, N. Y. Electric signaling-box	383,941	June 5	150	44	43	1149
Brownell, Daniel W., Newton Centre, Mass. Harness-hook	383,341	May 22	2174	575	43	957
Brownell, Emerson P., Beebe Plain, Quebec, Canada. Manufacturing spools	384,677	June 19	1252	329	43	1375
Brownell, Frederick B., St. Louis, Mo. Passenger-vehicle	380,617	Apr. 3	468	132	43	95
Browning, Clinton, Shoosetown, Pa. Cigar-bunching machine	383,342	May 22	2175	575 / 576	43	957
Browning, John M. and M. S., Ogden, Utah Ter. Magazine fire-arm	385,238	June 26	2096	537	43	1551
Browning, Matthew S. (See Browning, John M. and M. S.)						
Broylea, George E., assignor of two-thirds to C. W. Gray and F. A. Vaughan, Ringgold, Ga. Vehicle-wheel	384,189	June 5	515	140	43	1221
Bruce, Hunter, St. Thomas, Ontario, assignor of one-half to I. H. Radford, Toronto, Canada. Spark-arrester	382,948	May 15	1582	413	43	834
Bruegger, Abraham, Jr., assignor to E. B. Preston, Chicago, Ill. Water-tower truck	383,699	May 29	2710	715 / 716	43	1069
Brumbaugh, Samuel A., Chicago, Ill. Automatic feed for boring bars	383,210	May 22	1987	521	43	923
Brüser, Frank, assignor of one-half to W. Charles, Pittsburg, Pa. Nut-making machine	381,872	Apr. 24	2365	614 / 615	43	494
Brush, Charles F., Cleveland, Ohio. Governor for electro-magnetic motors	383,857	June 5	11	4	43	1123
Brush Electric Company. (See Seymour, Henry A., assignor.)						
Brusie, James, Oakland, Cal. Animal-trap	383,700	May 29	2714	717	43	1070
Brusa, Julius, Milwaukee, Wis. Split pulley	384,014	June 5	255	73	43	1170
Bruyière, John, Chicago, Ill. Clutch	385,083	June 26	1881	481	43	1500
Bryan, Belden T., Evansville, Wis. Wrench	384,743	June 19	1350	352	43	1394
Bryan, Thomas A. (See Smith, Ely, and Bryan.)						
Bryant, Calvin, assignor of one-half to S. C. Keeler, Keene, N. H. Band sawing-machine	380,857	Apr. 10	631	226	43	172
Bryant, Clark B. (See Goodrich, E. Elmer, assignor.)						
Bryant, Edson L., assignor of one-half to Wallace & Sons, Ansonia, Conn. Lamp-extinguisher	380,858	Apr. 10	632	226	43	172

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bryant, Zenas F., Malden, assignor of one-half to W. H. Park, Boston, Mass. Curtain-fixture	382,797	May 15	1380	342	43	783
Bryar, Samuel B., Pittsburg, Pa. Feed-pipe for boilers	382,753	May 15	1315	{345 346}	43	781
Buchanan, Charles H., Philadelphia, Pa. Last	384,015	June 5	255	73	43	1171
Buchanan, James, Indianapolis, Ind. Band-cutter	382,686	May 15	1292	321	43	764
Buchanan, Jesse J., Bridgeport, Ill. Wire fence	384,016	June 5	256	73	43	1171
Buckeye Engine Company. (See Thompson, Joseph W., assignor.)						
Buckley, Chauncey, Meriden Conn. Curtain-fixture	382,509	May 8	956	242	43	701
Buckley, John. (See Davison and Buckley.)						
Buckman, Benjamin J., assignor to Heywood Brothers & Co., Gardner, Mass. Knockdown rattan chair	383,169	May 22	1930	{504 505}	43	911
Buckwalter, Joseph A., assignor to Buckwalter Stove Company, Royer's Ford, Pa. Dust-fine for stoves	383,386	May 22	2249	598	43	970
Buckwalter Stove Company. (See Buckwalter, Joseph A., assignor.)						
Buffington, Leroy S., Minneapolis, Minn. Iron-building construction	383,170	May 22	1931	{505 506}	43	911
Bugbee, Almon C. (See Lamprey and Bugbee.)						
Bugbee, George C., North Attleborough, Mass., assignor of one-half to S. K. Merrill & Co., Providence, R. I. Hinged shoe-button	381,398	Apr. 17	1543	416	43	317
Bugbee, George W., Delhi, and F. Danner, Home City, assignors to Egan Company, Cincinnati, Ohio. Mortising-machine	384,559	June 12	1077	282	43	1333
Bugbee, George W., and F. Danner, assignors to Egan Company, Cincinnati, Ohio. Countershaft	384,560	June 12	1079	282	43	1333
Bugg, Owen T., Louisville, Ky., assignor, by mesne assignments, to United States Cotton Harvester Company, of New York. Cotton-harvester	383,099	May 22	1833	480	43	892
Buick, David D., Detroit, Mich. Siphon water-closet	383,032	May 15	1728	450	43	863
Bull, William B., Quincy, Ill. Device for preventing incrustation in steam-boilers	383,795	May 29	2875	756	43	1099
Bullitt, Logan M., and O. C. Greene, St. Paul, Minn. Electro-magnetic signaling device for mines	380,382	Apr. 3	116	34	43	25
Bump, Herman L., McMillan, Wis. Saw-filing machine	381,610	Apr. 24	1975	519	43	420
Bundy, Nathan A. (See Hebbard, George H., assignor.)						
Bunker, William I., assignor to Rocker Spring Company, Chicago, Ill. Chair	384,608	June 19	1150	304	43	1355
Burckard, Augustus, assignor of one-third to E. D. Miller, Baltimore, Md. Carpet-cleaning machine	381,110	Apr. 17	1246	335	43	259
Burdett, John F., Lowell, Mass. Cash-carrier apparatus	381,052	Apr. 10	1141	305	43	229
Burdon, Levi L., Providence, R. I. Straightening tubes	381,526	Apr. 24	1855	491	43	396
Burdon, Levi L., Providence, R. I. Making compound ingots	381,527	Apr. 24	1857	491	43	396
Burdsall, Ellwood. (See Preston, Henry M., assignor.)						
Burdsall, Stephen, assignor to J. V. Beery and D. Davis, Fremont, Ohio. Running-gear for vehicles	382,636	May 8	1151	297	43	730
Burfeind, Hermann, Frohna, Mo. Clover-seed harvester	383,796	May 29	2876	{756 757}	43	1100
Burger, F. Alonzo. (See Robinson, Clark, assignor.)						
Burke, J. A. (See Ritchel, Charles F., assignor.)						
Burkhardt, George, *et al.* (See Marks, Louis, assignor.)						
Burlin, Anson A., Jamestown, N. Y. Table attachment for chairs	382,687	May 15	1233	321	43	764
Burlingame, Charles H. C. (See Beath, William H., assignor.)						
Burman, William. (See Phipps and Burman.) (Reissue.)						
Burnett, Charles E., Girard, Ill. Draft-equalizer	384,190	June 5	516	141	43	1221
Burnham, Charles E., White Plains, N. Y. Clock striking mechanism	384,191	June 5	517	141	43	1222
Burnham, Nathan F., York, Pa. Turbine water-wheel	382,026	May 1	219	58	43	554
Burnham, Walter, Hyde Park, Ill. Molding viscous metals	383,039	May 15	1729	.....	43	863
Burnham, William H., and J. H. Miller, assignors to United States Wind Engine and Pump Company, Batavia, Ill. Compensating pump-rod	381,211	Apr. 17	1376	368	43	284
Burnham, William H., and J. H. Miller, assignors to United States Wind Engine and Pump Company, Batavia, Ill. Pump	381,212	Apr. 17	1377	368	43	284
Burns, Charles A. (See Swafford and Burns.)						
Burns, Silver & Co. (See Crofut, David F., assignor.)						
Burridge, Thomas H., St. Louis, Mo. Car-brake	383,387	May 22	2249	598	43	970
Burritt, Albert M., Waterbury, Conn. Machine for tapping steam, gas, or water fittings	381,053	Apr. 10	1141	305	43	230
Burrows, Everett L. (See Bailey, Fred E., assignor.)						
Burson, Samuel M., Hanoverton, Ohio. Tail-piece for stringed instruments	383,276	May 22	2091	549	43	942
Burton, Augustus G., Chicago, Ill. Safe-lock	383,040	May 15	1731	{450 451}	43	863
Burton, Augustus G., Chicago, Ill. Safe-lock	383,041	May 15	1737	{451 452}	43	864
Burton, Augustus G., Chicago, Ill., assignor of one-half to J. C. Harris, Dayton, Ohio. Safe-lock	382,071	May 1	290	77, 78	43	567
Busch, Carl, Chicago, Ill. Electric comb	384,561	June 12	1081	282	43	1334
Buschick, Gustavus E., and F. Rautert, Chicago, Ill. Nail-machine	384,422	June 12	872	227	43	1295
Buschmann, Victor H., assignor to A. H. Brinkmann, Baltimore, Md. Bustle	385,296	June 26	2196	561	43	1570
Bush, M. M. (See Herrington, Ephraim, assignor.)						
Bush, William C. (See Blair and Bush.)						
Bushnell, John S. (See Thompson, Richard, assignor.)						
Bushnell, Oscar P., Worcester, Mass. Molding-press for oil-cakes	385,094	June 26	1885	{481 482}	43	1508
Bussler, Otto, Nuremberg, Bavaria, Germany. Lead-pencil holder	381,611	Apr. 24	1977	520	43	420
Bussler, Otto, Nuremberg, Bavaria, Germany. Pencil-holder	381,612	Apr. 24	1979	520	43	420
Butenschon, John B., Portland, Oreg. Counter-scale	381,673	Apr. 24	2062	539	43	437
Butler, Edward S., New York, N. Y. Cartridge-feed indicator for fire-arms	382,455	May 8	873	223	43	694
Butler, Samuel A., *et al.* (See Dean, Henry W., assignor.)						
Butler, William H. (See Gill, Butler, and Smith.)						
Butterworth, Benjamin, trustee. (See Heckert, William, assignor.)						
Buxton, Levi W. (See Shaw and Buxton.)						
Byar, John. (See Tatman and Byar.)						
Byllesby, Henry M. (See Schmid and Byllesby.)						
Byllesby Henry M. (See Shallenberger and Byllesby.)						
Byllesby, Henry M., assignor to Westinghouse Electric Company, Pittsburg, Pa. Armature for dynamos and motors	383,617	May 29	2599	687	43	1045
Byllesby, Henry M., assignor to Westinghouse Electric Company, Pittsburg, Pa. Synchronizing device for alternate-current dynamos	383,618	May 29	2599	687	43	1045
Byllesby, Henry M., assignor to Westinghouse Electric Company, Pittsburg, Pa. Armature for dynamos and motors	383,619	May 29	2600	687	43	1046

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Byllesby, Henry M., assignor to Westinghouse Electric Company, Pittsburg, Pa. Combined alternate-current and storage system of electrical distribution	383,620	May 29	2601	688	43	1046
Byllesby, Henry M., assignor to Westinghouse Electric Company, Pittsburg, Pa. Alternate-current and storage system of electrical distribution	383,621	May 29	2603	{688 689}	43	1046
Byllesby, Henry M., assignor to Westinghouse Electric Company, Pittsburg, Pa. Alternate-current and storage system of electrical distribution	383,622	May 29	2605	689	43	1047
Byllesby, Henry M., assignor to Westinghouse Electric Company, Pittsburg, Pa. Combined alternate-current and storage system of electrical distribution	383,623	May 29	2606	689	43	1047
Byllesby, Henry M., Pittsburg, and O. B. Shallenberger, Rochester, assignors to Westinghouse Electric Company, Pittsburg, Pa. Alternate-current system of electrical distribution	381,054	Apr. 10	1143	{305 306}	43	230
Byllesby, Henry M., and P. Lange, assignors to Westinghouse Electric Company, Pittsburg, Pa. Incandescent lamp	383,616	May 29	2598	687	43	1045
Byrne, George W., *et al.* (See Grelle, Henry W., assignor.)						
Cady, George W., Chicago, Ill. Veterinary drenching-tube	382,668	May 15	1234	321	43	765
Cady, Henry G., Pine Bluff, Ark. Tire shrinker and expander	384,222	June 19	1473	345	43	1417
Caesar, Peter J., Rotheay, Mina. Device for sharpening razors	382,087	May 1	290	58	43	554
Caffyn, Stephen M., Middle Brighton, near Melbourne, Victoria. Liquid extract of meat	384,223	June 19	1473	.....	43	1418
Cahill, Benjamin F., Atlanta, Ga. Adjustable jamb	381,329	Apr. 17	1545	417	43	317
Cahoone, Edwin R., Newark, N. J. Checkrein-loop	384,017	June 5	257	74	43	1171
Cahoone, Edwin R., Newark, N. J. Back-band loop	384,423	June 12	873	227	43	1295
Caldera, Andrea L., Turin, Italy. Key-board musical instrument	382,028	May 1	221	56, 59	43	554
Caldwell, Benjamin F., Wheeling, W. Va. Cap and anchor for metallic roofing	381,756	Apr. 24	2179	570	43	459
Caldwell, Benjamin F., and W. F. Peterson, Wheeling, W. Va. Machine for painting metallic roofing	381,757	Apr. 24	2180	570	43	459
Caldwell, Homer M., assignor to Harrington & Richardson Arms Company, Worcester, Mass. Revolving fire-arm	383,701	May 29	2715	717	43	1071
Caldwell, William M. (See Parker, Homer N., assignor.)						
Calkins, A. C., trustee. (See Thacher and Morris, assignors.)						
Calkins, Henry B., Hyndaville, N. Y. Fire-escape	383,211	May 22	1900	522	43	894
Calkins, James B., Pacific, Mo. Stock-car	382,456	May 8	875	243	43	695
Callahan, Edward, *et al.* (See Griffin, Patrick, assignor.)						
Callahan, Henry, Dayton, Ohio. Hot-air furnace	383,100	May 22	1835	481	43	893
Callan, John P., Aurora, Ill. Two-wheeled vehicle	381,758	Apr. 24	2181	570	43	459
Calmeyn, Joseph. (See Weldon, Richard H., assignor.)						
Cambria Iron Company. (See Hogan, William J., assignor.)						
Campbell, Cydnor B., Glouster, Ohio. Churn	380,988	Apr. 10	1044	276	43	211
Campbell, David M., Danville, Ill. Hay-stacker	382,213	May 1	487	120	43	603
Campbell, John D., New York, N. Y. Car-heater	383,513	May 29	2450	649	43	1014
Campbell, John W., Toronto, Ontario, Canada. Head-rest	382,949	May 15	1563	413	43	835
Campbell, Mark, Chicago, Ill. Hair curling and crimping device	381,963	May 1	137	32	43	540
Campbell Printing Press and Manufacturing Company. (See Huson, Winfield S., assignor.)						
Campbell, Thomas, and J. H. McFartland, St. John, New Brunswick, Canada. Double flush-valve for water-closets	383,858	June 5	13	4	43	1123
Campbell, Wareham S., New Britain, Conn. Governor for wind-wheel shafts	382,950	May 15	1563	413	43	835
Campfield, Matthew E., Pittsburg, assignor to Brown Specialty Manufacturing Company, Etna, Pa. Wrench	380,850	Apr. 10	834	220	43	173
Campiche, Louis, assignor to Mermod Frères, St. Croix, Switzerland. Music-box	382,292	May 8	619	158	43	648
Canfield, Patrick E., assignor of one-half to A. W. Pond, Chicago, Ill. Automatic latch for grain-garners	381,528	Apr. 24	1858	491	43	397
Canfield, William W., assignor, by mesne assignments, to National Heating Company, New York, N. Y. Radiator for steam or hot water	381,984	May 1	138	33	43	540
Canonsburg Iron and Steel Company. (See Alexander, Urbana D., assignor.)						
Capra, Alessandro, and G. B. Risaone, Clerkenwell, county of Middlesex, England; said Capra assignor to said Risaone. Automatic cylinder-piano	384,121	June 5	412	114	43	1199
Card, Andrew C. (See Conwell, George S., assignor.)						
Card, George F., assignor to G. F. Card Manufacturing Company, Covington, Ky. Electric motor	382,589	May 8	1086	{279 280}	43	727
Card, George F., assignor to G. F. Card Manufacturing Company, Covington, Ky. Retouching device	383,436	May 29	2328	618	43	991
Card Manufacturing Company, George F. (See Card, George F., assignor.)						
Carder, Joseph H., Buffalo, N. Y. Cuff-holder	382,754	May 15	1316	346	43	781
Cardwell, William A., Meat Croft, Eastbourne, county of Sussex, England. Opera, field, or marine glass	384,122	June 5	413	115	43	1200
Carey, William A., Malden, Mass. Holder for incandescent lamps	385,039	June 26	1893	464	43	1491
Carey, William A., Malden, Mass. Lubricator	385,040	June 26	1894	464	43	1491
Carey, William A., Malden, Mass. Switch for electrical purposes	385,041	June 26	1895	464	43	1491
Carll, George L., Brooklyn, assignor to A. V. Whiteman, Port Chester, N. Y. Jar	381,331	Apr. 17	1548	417	43	318
Carlough, Daniel. (See Cooke and Carlough.)						
Carmichael, Alexander, and S. D. Townsend, Westerly, R. I. Check-book	382,457	May 8	876	223	43	695
Carmichael, John P., Milwaukee, Wis. Trunk or furniture caster	381,759	Apr. 24	2182	570	43	460
Carmichael, William, Baird, Tex. Yoke for connecting animals	381,332	Apr. 17	1549	418	43	318
Carney, Sydney H. (See Spiegel, William G., assignor.)						
Carpenter, Amos H., West Waterford, Vt. Feathering-paddle wheel	381,674	Apr. 24	2063	539	43	437
Carpenter, Charles W., *et al.* (See Crowell, Luther C., assignor.)						
Carpenter, Daniel A., New York, N. Y. Safety-pin	381,613	Apr. 24	1980	520	43	421
Carpenter, Daniel A., New York, N. Y. Glove-fastener	383,702	May 29	2717	717	43	1071
Carpenter, Daniel H., Orlando, Fla. Plow	381,529	Apr. 24	1860	492	43	397
Carpenter, Hiram H., New York, N. Y. Secondary battery	380,989	Apr. 10	1046	276	43	212
Carr, John E. (See Carr, William J. E., assignor.)						
Carr, William E., Carbon, Ind. Apparatus to facilitate the teaching of notation and numeration	384,959	June 26	1666	433	43	1463
Carr, William J. E., assignor to himself and J. E. Carr, Leavenworth, Kans. Cable-grip	381,904	May 1	12	3	43	517
Carr, William J. E., assignor to himself and J. E. Carr, Leavenworth, Kans. Cable-grip	381,905	May 1	13	4	43	517
Carrico, Thomas W., San Antonio, Tex. Barrel for outhouses	382,510	May 8	958	242	43	701
Carroll, Craft C. (See Holmes, Joseph E., assignor.)						
Carroll, D. S. (See Jenkins, John B., assignor.)						
Carroll, Daniel W., assignor of one-half to E. A. Chapoton, Detroit, Mich. Fire-hydrant	382,951	May 15	1564	{413 414}	43	835
Carroll, John W., *et al.* (See Sayre, Reuben H., assignor.)						
Carroll, Samuel C., assignor of one-half to W. R. Hasting and G. W. Thacker, Adamsville, Tenn. Car-coupling	384,889	June 19	1571	409	43	1495
Carroll, Thomas W., *et al.* (See Sayre, Reuben H., assignor.)						
Carroll, William, assignor to J. P. Barrett, Chicago, Ill. Fire-alarm signal circuit	382,253	May 1	554	140	43	615

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Carter Benjamin F., Woonsocket, R. I. Picker-staff check for looms	384,508	June 12	1004	202	43	1319
Carter, Dinamore & Co. (See Weiss, George H., assignor.)						
Carter, George A., Des Moines, Iowa. Force-pump	383,703	May 29	2718	717	43	1071
Carter, James. (See Holt, Richard L., assignor.)						
Carter, John V. B., assignor of one-third to Co-Operative Foundry Company, Rochester, N. Y. Stove	382,511	May 8	959	242	43	702
Carter, William D., West Bridgewater, and W. S. Louther, West Bellevue, Pa. Fastening device	380,990	Apr. 10	1048	277	43	212
Cary, Alanson, New York, N. Y. Hat-wire	381,530	Apr. 24	1882	492	43	397
Casaday, William L., South Bend, Ind. Wheel-cultivator	381,985	May 1	139	33	43	540
Case, Adelbert B., Springfield, Mass. Ratchet-and-pawl device	383,624	May 29	2666	669 / 670	43	1048
Case, Adelbert B., Springfield, Mass. Traction-wheel	383,625	May 29	2669	680	43	1048
Case, Henry J., Auburn, assignor of one-half to D. M. Osborne & Company, New York, N. Y. Dropper	384,123	June 5	414	115	43	1200
Casebolt, Henry, San Francisco, Cal. Elevated cable and car-propeller	381,124	June 5	416	115 / 116	43	1200
Casey, Thomas B., Cedar Falls, Iowa. Tire-bolt holder	382,029	May 1	224	50	43	555
Cashill, John D., Princeton, N. J. Chimney cowl and ventilator	383,626	May 29	2610	660	43	1048
Casperson, William H. (See Bowyer and Casperson.)						
Caspian, Paschal G., Philadelphia, Pa. Printing-film	383,042	May 15	1747	.....	43	866
Case, Nason W. (See Tuesdell, Lucius E., assignor.)						
Casselman, Christian F., Chicago, Ill. System and apparatus for propelling canal-boats	381,675	Apr. 24	2065	539	43	438
Castle, Justus. (See Pike, Castle, and Schopp.)						
Castle, Orlando L., Upper Alton, Ill., assignor to Gordian Nut Lock Association, Lakeport, Cal. Nut-lock	383,212	May 22	1991	522	43	924
Castle, Simeon B., Syracuse, N. Y. Thill-coupling	384,243	June 12	980	160	43	1244
Caswell, William A., Chicago, Ill. Bottle-stopper	384,824	June 19	1474	385	43	1418
Cately, Shepard W., assignor of one-half to A. M. Ettling, Cortland, N. Y. Carriage-top spring	382,293	May 8	621	158	43	638
Cathcart, James L., Alexandria, Va. Releasing device for boats, &c.	380,786	Apr. 10	733	201	43	154
Catlin, Abel D. (See Garland and Catlin.)						
Catlin, Abel D., Bay City, Mich. Cylinder for cotton-seed-hulling machines	380,787	Apr. 10	735	201	43	154
Caughy, S. Hamilton. (See McAvoy, Hugh L., assignor.)						
Caullet, Henry T., Trenton, N. J. Pantaloons	382,630	May 1	226	59	43	555
Cautius, Arthur, assignor to C. Pataky, Berlin, Germany. Lamp-burner	384,744	June 19	1351	352 / 353	43	1394
Cavalli, G. Andrea, San Francisco, Cal. Nail or rivet for boots or shoes	382,072	May 1	298	78	43	568
Caverhill, Frank, *et al.* (See Jamieson, James A., assignor.)						
Caverhill, John B., *et al.* (See Jamieson, James A., assignor.)						
Central Electrical Company. (See Russell, Samuel, assignor.)						
Chadd, William, Wilkes-Barré, Pa. Water and fire proof composite roofing	383,101	May 22	1836	481	43	893
Chadsey, William R., Chicago, Ill., assignor to W. A. O. Hegeman, New York, N. Y. Car-coupling	384,018	June 5	258	74	43	1171
Challenge Corn Planter Company. (See Scofield, Levi, assignor.)						
Chamberlain, Charles C., Muskegon, Mich. Breech-loading ordnance	381,330	Apr. 17	1546	417	43	318
Chamberlain, Charles C., Passaic, N. J. Bill-file	381,859	June 5	15	5	43	1124
Chamberlain, Edward G., San José, Costa Rica, Central America. Compound rail	382,409	May 8	799	204	43	671
Chamberlain, William D. (See Murphey, Frank P., assignor.)						
Chamberlin, George S., New York, N. Y. Bottle-stopper	383,277	May 22	2092	550	43	942
Chamberlin, Philander, Santa Cruz, Cal. Speculum	380,745	Apr. 10	662	183	43	141
Chambers, Alexander, Toledo, Ohio. Water-trap for gas-mains	380,860	Apr. 10	835	226 / 227	43	173
Chambers, Bering, Quinlan Company. (See Bering, James E., assignor.)						
Chambers, John H., Schenectady, N. Y. Coffin	382,136	May 1	382	100	43	583
Chandler, Jesse, Red Stone, Kans. Gate	383,213	May 22	1992	522	43	924
Chandler & Price. (See Price, William H., Jr., assignor.)						
Chapman, Henry J., Middleville, Mich. Table-leaf support	382,952	May 15	1587	414	43	835
Chapman, Joseph A., New London, Conn. Kink-preventer for silk-spinning machines	384,890	June 19	1572	409	43	1436
Chapman, Matthew T., Aurora, Ill. Apparatus for sinking wells	382,689	May 15	1234	321 / 322 / 323	43	765
Chapman, Thomas L., Richmond, Va. Railway semaphore-signal	381,333	Apr. 17	1550	418	43	318
Chapoton, Edmund A. (See Carroll, Daniel W., assignor.)						
Chappatte, Edward C., assignor to Keystone Watch Case Company, Philadelphia, Pa. Watch-case	384,346	June 12	764	199	43	1274
Chappell, Chase, Maxwell & Co. (See Lottridge and Einsfield, assignors.)						
Chappell, Thomas C. (See Moore, Everett D., assignor.)						
Charbonean, Pascal B., Bay City, assignor of one-half to T. H. Smith, East Saginaw, Mich. Apparatus for distilling water	383,704	May 29	2720	718	43	1072
Charles, John. (See Charles, Lewis and J.)						
Charles, Lewis and J., Clear Spring, Md. Planter and fertilizer-distributer	381,335	Apr. 17	1552	418 / 419	43	319
Charles, William. (See Brüser, Frank, assignor.)						
Charleson, John, assignor to W. Vogel & Bros., Brooklyn, N. Y. Lantern	384,234	June 12	991	160	43	1244
Chase Elevator Company. (See Chase, Philander F., assignor.)						
Chase, Henry A., Stoneham, Mass. Mariner's recording-compass	385,042	June 26	1806	465	43	1492
Chase, Henry A., Newton, Mass. Electric alarm compass	385,043	June 26	1813	465	43	1493
Chase, Josiah B. (See Richardson and Chase.)						
Chase, Philander F., assignor to Chase Elevator Company, Chicago, Ill. Grain transferring and weighing elevator apparatus	383,860	June 5	17	5, 6	43	1124
Chase, Rolla M., Bethel, Vt. Heater for dental flasks	384,509	June 12	1005	302	43	1319
Chase, Wellington. (See Pratt and Chase.)						
Cheetham, Frederick W., Hyde, county of Chester, England. Manufacture of felt hats, caps, &c	382,798	May 15	1381	.....	43	793
Chemische Fabrik Güssnitz, Bottiger E. Seidler. (See Omholt, Johannes, assignor.)						
Cherry, Matthew A., Washington, D. C. Velocipede	382,351	May 8	715	181	43	655
Chester, Elijah G., Philadelphia, Pa., assignor of two-thirds to E. Sutro, Brooklyn, N. Y., and P. E. Sutro, Philadelphia, Pa. Making stockings	380,421	Apr. 3	164	46	43	34
Cheyenne Manufacturing Company. (See Harrington, Patrick S., assignor.)						
Chicago Manila Paper Works. (See Hicks, Oliver H., assignor.) (Reissue.)						
Chicago Roller Spring Company. (See Noyes, Walter B., assignor.)						
Child, Arthur W., and G. B. Childs, Clerkenwell, county of Middlesex, England. Carriage-window	383,437	May 29	2729	616	43	991

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Childers, Alberry. (See Billingsley, Asa A., assignor.)						
Childs, George B. (See Child and Childs.)						
Chouteau, Pierre. (See Barth, Gustav A., assignor.)						
Christa, Philip, Detroit, Mich. Feeder for stone-sawing machines	384,125	June 5	418	116	43	1201
Christen, Frank, St. Louis, Mo. Bellows	382,214	May 1	480	126	43	602
Christie, James H., Brooklyn, N. Y. Wrench	381,213	Apr. 17	1378	368	43	294
Christophersen, Christian. (See Hansen, Sigvart, assignor.)						
Church, Andrew and C. A., Morenci, Mich. Hay-sling	384,960	June 26	1667	433	43	1463
Church, Charles A. (See Church, Andrew and C. A.)						
Circle, Franklin P., assignor of one-half to A. K. Hahn, Springfield, Ohio. Tug-fastener	381,906	May 1	14	4	43	518
Cissel, Robert B., Elizabeth, assignor to Backus Water Motor Company, Newark, N. J. Rotary fan	380,788	Apr. 10	736	201	43	155
City Button Works. (See Liebmann, Rudolph, assignor.)						
Clabaugh, Norman B., Frederick, Md. Washing-machine	382,755	May 15	1317	346	43	781
Claflin, Charles R. B., Jr., and J. W. Flagg, Worcester, Mass. Galvanic battery	381,376	Apr. 17	1554	419	43	319
Claflin, Reuben J., Lidgerwood, Dak. Ter. Roof	384,961	June 26	1668	434	43	1463
Clancy, Edward L., Aberdeen, Dak. Ter. Cuff-holder	385,239	June 26	2099	538	43	1552
Clapp, Cyrus C. (See Walker, Albert H., assignor.)						
Clapp, Dwight C., assignor of one-half to D. M. Estey, Owosso, Mich. Bureau	381,337	Apr. 17	1555	419	43	320
Clapp, Dwight C., assignor of one-half to D. M. Estey, Owosso, Mich. Bureau	381,760	Apr. 24	2182	571	43	460
Clare, Edwin H., L'Original, Ontario, Canada. Vegetable or root cutter	383,434	May 29	2330	619	43	991
Clark, Alexander H., Fond du Lac, Wis. Stuffing-box	384,424	June 12	974	298	43	1296
Clark, Charles E., *et al.* (See Lorce, Manfred, assignor.)						
Clark & Company, George M. (See Wallace, J. Bennett, assignor.)						
Clark, David P., *et al.* (See Lorce, Manfred, assignor.)						
Clark, E. J., *et al.* (See Thompson, Silas H., assignor.)						
Clark, Embury P., and N. D. Ingraham, Holyoke, Mass. Button-fastener	384,019	June 5	258	74	43	1171
Clark, George H., Boston, Mass. Lasting-jack	384,891	June 19	1573	409	43	1436
Clark, George M., Higganum, Conn. Combined seeder and harrow	380,422	Apr. 3	165	46, 47	43	34
Clark, Herbert M. (See Bowen, George A., assignor.)						
Clark, James F., Morenci, Mich. Manufacturing brick	382,866	May 15	1465	384	43	811
Clark, James W., *et al.* (See Williams and Lucock, assignors.)						
Clark, Julius S., Rockford, Ill. Trace-fastening	381,334	Apr. 17	1551	418	43	319
Clark, Martin M. (See Brown and Clark.)						
Clark, Melville, Chicago, Ill. Reed-organ	384,609	June 19	1151	304 / 305	43	1355
Clark, Philo B., and G. J. Klingler, Brooklyn, N. Y. Knife-sharpening attchment for skiving-machines	384,020	June 5	261	74, 75	43	1172
Clark, Phineas W., Lowell, Mass. Wire-cutter	380,618	Apr. 3	468	133	43	95
Clark, William H. H., St. Louis, Mo. Stamping-press	380,423	Apr. 3	169	47	43	35
Clark, William S. (See Smith, Frank L., assignor.)						
Clarke, Joseph. (See Goulden and Clarke.)						
Clarke, Reuben, assignor of one-half to W. F. Munro, Toronto, Ontario, Canada. Sash-fastener	380,424	Apr. 3	171	47	43	35
Clarke, Reuben, assignor of one-half to D. McFarlane and J. G. Darling, Toronto, Ontario, Canada. Compensating spring-lever	384,610	June 19	1153	305	43	1355
Clarke, Samuel, Childs Hill Works, London, county of Middlesex, England. Candle-lamp	383,861	June 5	19	6	43	1124
Clarke, Samuel, Childs Hill Works, London, county of Middlesex, England. Candle lamp and stand	383,862	June 5	19	6, 7	43	1124
Clarkson, William H. (See Houser and Clarkson.)						
Clasby, James H., Atlanta, Ga. Automatic locking attachment for fare-boxes	382,867	May 15	1466	384 / 385	43	811
Claus, William F., assignor of two-thirds to J. H. Harris and I. Bacharach, Chicago, Ill. Steam-engine	380,991	Apr. 10	1049	277	43	212
Clawson, Clement C., Newark, N. J., assignor to United States Machine and Inventions Company, New York, N. Y. Coin-controlled musical weighing and weight-printing machinery	381,338	Apr. 17	1556	420	43	320
Clawson, Clement C., Newark, N. J., assignor to United States Machine and Inventions Company, New York, N. Y. Coin-controlled weighing and weight-printing machinery	381,339	Apr. 17	1562	420 / 421	43	321
Clawson, Henry T., Newark, N. J. Shelf of wire-netting for lathes	380,789	Apr. 10	737	202	43	155
Clay, William H., Waterbury, Conn. Soldering-clamp	382,590	May 8	1067	280	43	727
Cleave, Moses, Cleveland, Ohio. Street-car-heating apparatus	384,126	June 5	421	117	43	1201
Cleaveland, Albert H., Belvidere, Ill. Bed-bottom	384,127	June 5	421	117	43	1202
Clement, Nelson, Chicago, Ill. Sectional mattress	380,713	Apr. 10	613	169	43	131
Clement, Nelson, Chicago, Ill. Buckle	383,102	May 22	1837	491	43	893
Clement, Victor M. (See Bradford, Allen, assignor.)						
Cliff, Edward, Rochester, N. Y. Vehicle-spring	382,137	May 1	383	100	43	583
Clifford, William P., Ottumwa, assignor to D. W. Templeton, Fairfield, and Western Machine Works, Ottumwa, Iowa. Grain-cleaning cylinder	383,627	May 29	2611	660	43	1048
Clingman, Thomas L., Asheville, N. C. Electric-light carbon	381,614	Apr. 24	1981	.....	43	421
Clinton Wire Cloth Company. (See Scarles, Benjamin, assignor.)						
Clive, David L., *et al.* (See Walters, Almera B., assignor.)						
Close, G. Alburtus, Bridgeport, Conn. Corset	384,301	June 12	698	186	43	1263
Close, Henry M., Beaver Falls, Pa. Pump	384,678	June 19	1253	329	43	1376
Close, Henry M., Beaver Falls, Pa. Pump	384,679	June 19	1255	330	43	1376
Close, Philipp C., Augusta, Ga. Sewage and night-soil deslecating apparatus	380,383	Apr. 3	118	34	43	25
Cloudman, Francis A. (See Warren and Cloudman.)						
Clough, George A., Jr. (See Cree and Clough.)						
Cleaves, Benjamin H., New York, N. Y. Trousers-stretcher	380,550	Apr. 3	370	105	43	76
Clothe, Charles, Toronto, Ontario, Canada. Truss	384,611	June 19	1153	305	43	1356
Clinton, James R., Xenia, Ohio. Wash-board	382,512	May 8	960	243	43	702
Coady, Thomas, New York, N. Y. Stirrup	382,690	May 15	1239	323	43	765
Cobb, John J., Grand Rapids, Mich. Sleigh-knee	384,198	June 5	422	117	43	1202
Coburn, John A., Springfield, Mass., assignor to J. C. Dueber, Newport, Ky. Engraving and chasing machine	381,214	Apr. 17	1379	369	43	294
Cochennour, John S., Olney, Ill. Vehicle-spring support	381,111	Apr. 17	1248	335	43	250
Cochran, James S. (See Weatherhead and Cochran.)						
Cockrell, Allis, Lamar, Mo. Lightning-escape for wire fences	385,095	June 26	1889	482	43	1509
Codling, Robert B., Bristol, Conn. Manufacturing caster-rollers	380,790	Apr. 10	738	202	43	155
Coe, Henry H., Painesville, Ohio. Rotary-cutting veneer-machine	384,129	June 5	423	117 / 118	43	1202
Coes, Frederic L. (See Coes, John H. and F. L.)						
Coes, John H. and F. L., Worcester, Mass. Wrench	382,138	May 1	384	100	43	583
Coffey, Henry R., Stockton, Cal. Fare-register	384,425	June 12	975	298	43	1296

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Coffin, Charles E., assignor of one-half to R. N. Jones, Denver, Colo. Composition of matter for paving-blocks, &c	383,942	June 5	151	.....	43	1149
Cohen, Abraham, *et al.* (See Wulff, Henry F., assignor.)						
Cohen, Josiah. (See Bernstein and Goldstein, assignors.)						
Cohen, Wolf, New York, N. Y. Making coats	385,096	June 26	1889	482	43	1509
Cohn, Isidor, assignor to R. Cohn, New York, N. Y. Photographic sheet	385,207	June 26	2197	.....	43	1570
Cohn, Joseph, New York, N. Y. Locket	384,426	June 12	877	286	43	1296
Cohn, Rebecca. (See Cohn, Isidor, assignor.)						
Cointe, Aristide J., Green Bay, Wis. Wire gate	383,705	May 29	2721	716	43	1072
Coke, Levi, Elmira, N. Y. Oven	382,073	May 1	298	78	43	568
Coker, William H., Macon, Ga. Iron fence	383,341	May 22	2178	576	43	956
Colby, Edward J., Chicago, Ill. Ventilator	381,112	Apr. 17	1249	335	43	990
Colby, Edward J., Chicago, Ill. Electric alarm-clock	383,439	May 29	2731	619	43	992
Colby, Edward J., Chicago, Ill. Ink-well	383,514	May 29	2451	650	43	1014
Cole, Philip J., *et al.* (See Allen, Walter J., assignor.)						
Cole, Robert B., Palmersville, Tenn. Muzzle	381,615	Apr. 24	1002	530	43	421
Cole, Warren, Jr., Keokuk, Iowa. Axle-lubricator	382,458	May 8	878	294	43	685
Coleman, Arnold D., assignor of one-half to M. Cudahy, Chicago, Ill. Can-soldering machine	384,925	June 19	1475	{385 386}	43	1418
Coles, Henry J. (See Turner, Simeon, assignor.)						
Collard, Arthur W. H., Pittsburg, Pa. Rolls for iron-rolling mills	381,308	June 12	700	186	43	1264
Collett, Europe N., Whelen Springs, Ark. Reversing-gear for saw-mills	381,215	Apr. 17	1382	340	43	995
Collins, Charles M., South Bend, Ind. Sprinkler	381,986	May 1	141	{33 34}	43	541
Collins, James I., Amsterdam, N. Y. Steam coupling for railway-cars	383,629	May 29	2612	691	43	1048
Collins, John K. (See Logan and Culley, assignors.)						
Collins, Kate J., New York, N. Y. Paper box	380,861	Apr. 10	837	227	43	173
Collins Manufacturing Company. (See Jewett, Charles W. and G. H., assignors.)						
Collins, William H., Chicago, Ill., assignor of one-half to J. Kirkner, New York, N. Y., and R. Bines, Chicago, Ill. Telephone-receiver	381,531	Apr. 24	1863	{492 493}	43	397
Collyer, Charles W., Harrisburg, Pa. Apparatus for administering medicine to animals	383,440	May 29	2732	619	43	992
Colt, Emma S., Kansas City, Mo. Dust-pan	380,551	Apr. 3	371	106	43	76
Combination Power Punch and Eyeleting Machine Company. (See Hawkins and Paige, assignors.)						
Comly, Eli H. (See Motherwell and Comly.)						
Comly, Eli B., and D. Motherwell, Logan, Ohio. Cultivator	381,021	June 5	263	75	43	1172
Compagnie de Fives-Lille. (See Duval, Martin L. E., assignor.)						
Comstock, Henry W., Lafayette, Ind. Bag-fastener	381,130	June 5	425	118	43	1203
Comstock, William H., Oskaloosa, Iowa. Bottle-filler	381,022	June 5	204	75	43	1172
Conaty, James H., West Haven, Conn. Clasp	382,074	May 1	299	79	43	568
Conde, Alonzo B., Albany, N. Y. Culinary vessel	381,943	June 5	152	45	43	1149
Condell, John, New York, N. Y. Shoe	380,552	Apr. 3	372	106	43	76
Condict, G. Herbert, Philadelphia, Pa., assignor to Electric Car Company of America, of Pennsylvania. Electric railway	384,562	June 12	1081	283	43	1334
Condict, G. Herbert, Philadelphia, Pa., assignor to Electric Car Company of America, of Pennsylvania. Electric railway	385,097	June 26	1890	483	43	1509
Condon, John W., C. G. Shepard, and P. Adams; said Condon and Adams assignors to W. J. Shepard, Buffalo, N. Y. Domestic hand-press	385,165	June 26	1906	509	43	1528
Cone, Jonathan, Philadelphia, Pa. Furnace-grate	380,312	Apr. 3	9	2	43	4
Conestoga Cigar Company. (See Abraham and Martin, assignors.)						
Conklin, Edward R., Wauseon, Ohio. Cultivator	384,347	June 12	765	200	43	1274
Conkling, Gurdon, Glens Falls, N. Y. Magnetic separator	381,863	June 5	20	7	43	1124
Conn, Andrew H., Blairstown, Iowa. Caster for stoves, &c	382,139	May 1	305	100	43	584
Connell, Charles C., Haydenville, Mass. Cock for fire extinguishers	385,240	June 26	2099	538	43	1552
Connell, John P., Kensington, Conn. Call-bell	384,745	June 19	1352	353	43	1304
Connelly, John S., *et al.* (See Wiedling, Carl T. A. H., assignor.)	385,166	June 26	1908	509	43	1529
Connelly, Thomas E., *et al.* (See Wiedling, Carl T. A. H., assignor.)						
Conner, Joseph, New York, N. Y. Bottle-stopper	382,459	May 8	879	294	43	685
Conner, Joseph, New York, N. Y. Sirup-gage	384,680	June 19	1257	330	43	1276
Connett, Matthew F., Jr., assignor, by mesne assignments, to Star Fence Machine Company, Peoria, Ill. Combined wire stretcher and tension	381,462	Apr. 17	1752	468	43	357
Connolly, Anthony A. (See Connolly, Thomas A. and A. A.)						
Connolly, Charles, Holyoke, Mass. Glove-package binder	382,075	May 1	300	79	43	568
Connolly, Thomas A., and A. A., Washington, D. C. Pneumatic railway and conveyer	381,907	May 1	16	4	43	518
Conrad, Merton G., McGrawville, N. Y. Thill-coupling	383,864	June 5	21	8	43	1125
Conradson, Poutus, Altoona, Pa. Snow-skate	382,254	May 1	556	140	43	616
Conrath, Solomon, Cookport, Pa. Fence-machine	384,235	June 12	592	161	43	1245
Consolidated Vapor Stove Company. (See Davis, Zebulon, assignor.)						
Constantin, Henry C., assignor to himself and H. J. Bookman, Brooklyn, N. Y. Shell-fish refrigerator	382,410	May 8	799	204	43	671
Converse, Lyman P., Chicago, Ill. Air-heating device for cars	383,171	May 22	1932	{506 507}	43	912
Conwell, George S., assignor of one-half to A. C. Card, Booneville, Tenn. Wagon	383,344	May 22	2179	577	43	956
Cook, Frederic, New Orleans, La. Bagasse-furnace	380,992	Apr. 10	1052	277	43	213
Cook, Frederic, and B. Thoens, New Orleans, La. Feed-water regulator	384,510	June 12	1006	262	43	1319
Cook, Frederick W., Moline, Ill. Napkin-supporter	382,691	May 15	1240	323	43	766
Cook, Frederick W., San Francisco, Cal. Inserted saw-tooth	383,103	May 22	1838	481	43	892
Cook, George W., assignor to M. J. Hoover, Chicago, Ill. Folding bed	382,460	May 8	880	294	43	685
Cook, Gustave, assignor of one-third to H. May & Co., New Orleans, La. Nut-lock	381,463	Apr. 17	1753	469	43	357
Cook, Walter, Christchurch, Canterbury, New Zealand. Machinery for washing wool	383,515	May 29	2453	650	43	1015
Cooke, Osborn, R., Salem, Ohio. Sash-fastener	381,113	Apr. 17	1250	316	43	989
Cooke, Watts, and D. Carlough, Paterson, N. J. Upsetting-machine	380,862	Apr. 10	838	227	43	173
Cooke, Watts, and D. Carlough, Paterson, N. J. Machine for upsetting eye-bars	380,863	Apr. 10	840	227	43	174
Cool, James D., *et al.* (See Kree, Hiram C., assignor.)						
Cooley, Arthur M., Chicago, Ill. Door-mat	385,044	June 26	1815	466	43	1493
Coomes, William W. (See Brott, John R., assignor.)						
Coon, Thomas R., Hood River, Oreg. Transplanting implement	383,629	May 29	2613	691	43	1049
Cooper, Arthur W., Chicago, Ill. Tile roofing	380,864	Apr. 10	842	222	43	174
Cooper, Charles F. (See Hermite and Cooper.)						
Cooper, George W., New Orleans, La. Compound oil-dressing for rubber belts	380,993	Apr. 10	1053	.....	43	213
Cooper, Samuel, Yorkshire Centre, N. Y. Harrow	382,513	May 8	961	243	43	709
Cooper, Ward, La Porte City, Iowa. Paper and letter file	384,898	June 19	1574	409	43	1436

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Cooper, William S., Philadelphia, Pa. Water-closet	385,167	June 26	1888	509	43	1529
Cooper, William S., Philadelphia, Pa. Water-closet	385,168	June 26	1889	509	43	1529
Cooper, William S., Philadelphia, Pa. Water-closet structure	385,169	June 26	1890	510	43	1529
Co-Operative Foundry Company. (See Carter, John V. B., assignor.)						
Copeland & Bacon. (See Bacon, Earle C., assignor.)						
Copeland, Daniel T. (See Copeland, George W., assignor.)						
Copeland, Daniel T. (See Copeland and Crisp, assignors.)						
Copeland, George W., Malden, Mass. Heading nails, tacks, &c	383,043	May 15	1748	452	43	866
Copeland, George W., Malden, Mass. Boot-treeing machine	385,298	June 26	2197	{551 552}	43	1570
Copeland, George W., assignor to D. T. Copeland, Malden, Mass. Strip-tack-heading machine	383,278	May 22	2093	550	43	942
Copeland, George W., Malden, and J. E. Crisp, Somerville, assignors, by mesne assignments, to D. T. Copeland, Malden, Mass. Machine for treeing shoes	383,279	May 22	2094	{551 552 553 554}	43	942
Copeland, Lucius D., Camden, N. J. Steam-boiler indicator	382,140	May 1	386	101	43	584
Copeland, Lucius D., Camden, N. J. Fly-wheel governor for steam-engines	383,044	May 15	1749	452	43	866
Copeland, William M. (See Stockwell, George E., assignor.)						
Copland, Robert, Eureka, Cal. Pipe-wrench	382,799	May 15	1382	362	43	793
Corbett, Frank, New York, N. Y. Anti-friction bearing	384,023	June 5	265	75	43	1172
Corbett, George, Bradford, Pa. Drilling-rig	385,241	June 26	2101	538	43	1552
Corbin, Amasa, Jr., Gouverneur, N. Y. Disk harrow	381,808	May 1	17	5	43	518
Corbin, Amasa, Jr., Gouverneur, N. Y. Harrow	384,131	June 5	426	118	43	1203
Corcoran, Andrew J., Jersey City, N. J. Windmill-vane	384,427	June 12	878	229	43	1296
Cordes, Hubert H., Tuckenhay House, Totnes, South Devon, England. Fishing-reel	384,309	June 12	701	186	43	1264
Corgan, Daniel, Luzerne, Pa. Coal-drill bit	381,114	Apr. 17	1252	336	43	990
Corkhill, Henry R., Sr., assignor to A. Sorge, Jr., Rochester, N. Y. Button-fly-marking machine	380,994	Apr. 10	1053	278	43	213
Corn, Robert A., Hale Wood, N. C. Hillside-plow	381,909	May 1	18	5	43	518
Corse, William F., Cambridge, Mass. Method of and apparatus for treating fiber-coated seed	381,616	Apr. 24	1983	521	43	421
Cornell, Elijah B., Philadelphia, Pa. Air-injecting device for boiler-furnaces	380,475	Apr. 3	248	68	43	51
Cornell, Joseph, Petersburg, Colo. Water-distributing appa. atus	380,313	Apr. 3	10	2	43	4
Corsbie, James H., assignor of one-half to M. J. Speaks, Hartsell's, Ala. Sash-balance	383,280	May 22	2099	554	43	942
Coté, Alphonse, Galway, N. Y. Pipe-coupling	383,805	June 5	22	8	43	1125
Cottle, Freeman N., Hyde Park, Mass. Tripod	381,340	Apr. 17	1570	421	43	992
Cottle, Shubael, New York, N. Y. Making buttons, &c	384,192	June 5	519	141	43	1222
Cottle, Shubael, New York, N. Y. Making buttons	384,226	June 5	572	156	43	1232
Cotton, Clifton H., *et al.* (See Rothe, Angust, assignor.)						
Cotton, William W., *et al.* (See Rothe, Angust, assignor.)						
Cottrell, Calvert B., Stonington, Conn. Inking apparatus for printing-machines	385,098	June 26	1893	483	43	1510
Cottrell, Calvert B., Stonington, Conn. Printing-machine	385,099	June 26	1894	{483 484}	43	1510
Cottrell, Calvert B., Stonington, Conn. Sheet-delivery apparatus for printing-machines	385,100	June 26	1898	484	43	1511
Cottrell, Charles P., assignor to C. B. Cottrell & Sons, Stonington, Conn. Air spring or cushion for printing-machines	383,630	May 29	2614	691	43	1049
Cottrell & Sons, C. B. (See Cottrell, Charles P., assignor.)						
Coup, John, New York, N. Y. Car-coupling	384,193	June 5	521	{141 142}	43	1222
Coupal, Joseph. (See Coupal, Peter A. and J.)						
Coupal, Peter A., Boston, Mass., assignor to Leather Lock Sewing Machine Association, Portland, Me. Sewing-machine for uniting soles to uppers	381,988	May 1	147	{36 37 38}	43	542
Coupal, Peter A., Boston, and J. Coupal, Quincy, Mass., assignors to Leather Lock Sewing Machine Association, Portland, Me. Sewing-machine for connecting soles and uppers	381,987	May 1	143	{34 35 36}	43	541
Coupal, Peter A. and J., Boston, Mass., assignors to Leather Lock Sewing Machine Company, Portland, Me. Sewing-machine for connecting soles and uppers	385,299	June 26	2199	{562 563 564 565}	43	1571
Coupon Envelope Company. (See Bolrick, Gabriel A., assignor.)						
Courson, George H., Baltimore, Md. Nail-brush	380,476	Apr. 3	250	69	43	51
Courson, George H., Baltimore, Md. Glove-fastener	384,428	June 12	880	229	43	1297
Courson, George H., Baltimore, Md. Glove-fastener	384,429	June 12	881	229	43	1297
Courtemanche, J. A. (See Laport, Arthur, assignor.)						
Covel, Milo, Chicago, Ill. Machine for straightening and hammering saws	380,865	Apr. 10	845	228	43	174
Covell, William W., Providence, R. I. Detachable button	383,441	May 29	2733	620	43	992
Covert, Enoch, Farmer Village, N. Y. Harness-strap attachment	381,216	Apr. 17	1382	370	43	995
Covert, James C., West Troy, N. Y. Halter	382,692	May 15	1242	324	43	766
Cowan, Charles B. (See Ash, Joseph S., assignor.)						
Cowden, Reynolds I., assignor of one-half to C. N. Schmick, Leetonia, Ohio. Paving-block	381,341	Apr. 17	1572	422	43	323
Cowen, Martin. (See Tilton and Cowen.)						
Cowles, Frank L., Delavan, Wis. Surgeon's combined operating-table and desk	380,866	Apr. 10	847	229	43	175
Cowles, Martin, Bridgeport, Conn. Knife	382,591	May 8	1088	280	43	737
Cox, George C. (See Cox, Harry B., assignor.)						
Cox, Harry B., assignor to G. C. Cox, Cincinnati, Ohio. Galvanic battery	383,706	May 29	2722	718	43	1072
Cox, Isaac H., Bridgeton, N. J. Apparatus for cleaning soldering-irons	381,761	Apr. 24	2184	571	43	460
Coxe, Eckley B., and S. Salmon, Drifton, Pa.; said Salmon assignor to said Coxe. Automatic slate-picker	382,915	May 1	490	127	43	604
Craig, Archibald F., Paisley, A. Neilson, Inkermann, county of Renfrew, and J. Snodgrass Pumpherston, county of Mid-Lothian, Scotland. Centrifugal apparatus for separating oils	383,707	May 29	2725	{718 719}	43	1072
Craig, Isaac E., Camden, Ohio. Manufacture of sheet-iron	382,352	May 8	717	.....	43	655
Craig, John E., South West City, Mo. Car-coupling	383,631	May 29	2615	692	43	1049
Craighead & Kintz Manufacturing Company. (See Kintz, Joseph, assignor.)						
Cram, Alonzo W., Haverhill, Mass. Time closing-valve for water-closets	380,619	Apr. 3	470	133	43	95
Cram, D. Henry, Boston, Mass. Derrick	382,141	May 1	387	101	43	584
Crandall, Albert C., West Dennis, Mass. Spinnaker-boom for yachts, &c	383,172	May 22	1934	507	43	912
Crandall, Arthur, *et al.* (See Williams, William P., assignor.)						
Crandall, Charles M., assignor to M. Lyman, Waverly, N. Y. Toy	383,442	May 29	2334	620	43	992
Crandall, Edward H. (See Sperbeck, James O., assignor.)						
Crandall, Henry F., assignor to Milwaukee Harvester Company, Milwaukee, Wis. Windlass	380,995	Apr. 10	1054	278	43	213

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Crandall, Jesse A., Brooklyn, N. Y. Umbrella-hanger	380,996	Apr. 10	1055	276	43	813
Crandall, Jesse A., assignor of one-half to J. Wood, Brooklyn, N. Y. Mop-wringer	385,170	June 26	1990	510	43	1530
Crandall, Lucien S., Syracuse, N. Y. Inking device for type-writing machines	381,910	May 1	19	5	43	518
Crane, Andrew J., assignor of one-half to G. B. Smith, Dunmore, Pa. Draft-equalizer and spark-arrester	380,677	Apr. 10	566	156	43	193
Crane, Edward N., *et al.* (See Stanley, James, assignor.)						
Crane Elevator Company. (See Fox, William T., assignor.)						
Crane Elevator Company of Illinois. (See Eichbaum, Henry, assignor.)						
Crane, Frederick, *et al.* (See Stanley, James, assignor.)						
Crane, George W., Minneapolis, Minn. Sweep for horse-powers	383,443	May 29	2334	620	43	993
Crane, Jason, *et al.* (See Stanley, James, assignor.)						
Crane, Origen C., New York, N. Y. Slack-adjuster for brakes	381,828	Apr. 24	2296	597	43	481
Crane, Origen C., New York, N. Y. Cable-supporting sheave for cable railways	383,708	May 29	2727	719	43	1073
Crane, Thomas R., Heathsville, Va. Harrow	381,464	Apr. 17	1754	469	43	357
Crane, Thomas R., Heathsville, Va. Shoe for grain-drill tubes	381,465	Apr. 17	1755	469	43	357
Crawford, Francis E., New Sharon, Iowa. Butter-worker	380,967	Apr. 10	849	229	43	175
Crawford, James, Cambridge, Mass. Service-box for water-closets	381,934	May 1	20	5	43	518
Crawford, James, Cambridge, Mass. Water-closet	383,045	May 15	1749	452	43	806
Crawford, William H., assignor of one-half to J. R. Snow, Paris, Tex. Churn	383,866	June 5	24	8	43	1125
Crecelius, Louis J., assignor of one-half to A. Warren, St. Louis, Mo. Lifting-jack	383,709	May 29	2728	720	43	1073
Crecelius, Louis J., assignor of one-half to A. Warren, St. Louis, Mo. Lifting and lowering jack	383,710	May 29	2730	720	43	1074
Cree, William O., and G. A. Clough, Jr., Beverly, Mass. Dieing-out machine for boot or shoe soles	382,294	May 8	692	159	43	638
Creelman, John A., assignor of one-half to G. H. Graham, Rochester, N. Y. Stop-valve	381,055	Apr. 10	1146	306	43	230
Crippen, Edwin, and W. King, New Orleans, La. Snap-hook	380,997	Apr. 10	1056	279	43	213
Crisp, Joseph E. (See Copeland and Crisp.)						
Criswell, James A., Philadelphia, Pa. Lubricating attachment for railway-cars	383,558	May 29	2723	665	43	1029
Crocker, Henry, Bristol, R. I. Scrap-book	384,746	June 19	1353	353	43	1385
Crockett, Edward R., assignor of one-half to J. H. Hodges, Georgetown, Tex. Trace-carrier	382,216	May 1	492	127	43	604
Crofut, David F., assignor to Burns, Silver & Co., Bridgeport, Conn. Ticket-holder	383,797	May 29	2878	757	43	1100
Cromer, Lawrence W., and G. Gavin, assignors to themselves and F. M. Heitman, Eureka, Nev. Automatic switch and frog for railways	381,676	Apr. 24	2066	540	43	436
Crompton Loom Works. (See Wyman, Horace, assignor.)						
Crompton, Rookes E. B., and G. Kapp, Chelmsford, county of Essex, England. Galvanometer	383,444	May 29	2335	620	43	993
Cronk, William, Havana, N. Y. Combined door-hanger, rail, and rail-bracket	384,296	June 12	594	161	43	1245
Crosby, Chauncey H., *et al.* (See Brooks, Edward J., assignor.)						
Crosby, Daniel W. (See Helwitz, Ellis S., assignor.)						
Crosby, Daniel W., trustee. (See Hewett, Ernest M., assignor.)						
Crosby, Joseph E., Westfield, N. J. Ash-sifter	383,173	May 22	1935	507, 508	43	913
Crosier, Byron A., Sandusky, Ohio. Lawn-mower attachment	383,632	May 29	2816	692	43	1049
Cross, Frederick E., Waterbury, Conn., assignor to Eagle Pencil Company, New York, N. Y. Rubber-tip attachment for pencils and the like	384,563	June 12	1064	283	43	1334
Crouch, Frank J., Eugene City, Oreg. Rheostat	383,345	May 22	2160	577	43	958
Crouch, George, New York, N. Y. Combined trunk-lift and strap-fastening	385,942	June 26	2102	538	43	1502
Crouch, George, New York, N. Y. Fastening for hand-bags and satchels	385,943	June 26	2103	539	43	1553
Crouch, Robert B. (See Wiser, Clinton B., assignor.)						
Crowdus, Walter A., Dallas, Tex. Fare-box	382,756	May 15	1318	347	43	791
Crowdus, Walter A., and H. M. Sutton, Dallas, Tex. Dynamo electric machine	380,620	Apr. 3	471	133	43	96
Crowell, Charles F., Portland, Oreg. Shoe-tongue fastening	385,045	June 26	1815	466	43	1493
Crowell, Hilen C., Erie, Pa. Friction-clutch	380,584	Apr. 3	190	35	43	25
Crowell, Hilen C., Cuyahoga Falls, Ohio. Friction-clutch	383,104	May 22	1839	492	43	893
Crowell, Luther C., Brooklyn, assignor to R. and P. S. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Folding-machine	383,798	May 29	2879	757, 758, 759	43	1100
Crowell, Luther C., Brooklyn, assignor to R. and P. S. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Delivery mechanism for printing-machines	383,799	May 29	2883	759, 760, 761	43	1101
Crowell, Luther C., Brooklyn, assignor to R. and P. S. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Delivery mechanism for printing-machines	383,800	May 29	2888	761, 762, 763	43	1101
Crull, Lafayette. (See McLaughlin, James T. W., assignor.)						
Crumley, David M., Steubenville, Ohio. Fire-grate	381,969	May 1	151	38	43	542
Cudahy, Michael. (See Coleman, Arnold D., assignor.)						
Culley, George H. (See Logan and Culley.)						
Cully, William W., Wilson, Kans. Pump	381,532	Apr. 24	1865	493	43	398
Culp, Alpha B., Wakarusa, Ind. Fence	384,764	June 12	1084	283	43	1334
Culp, James D., San Felipe, Cal. Electrophorus	383,165	May 22	1840	492	43	893
Culver, Lucian M., and W. F. Smith, Kiowa, Kans. Envelope-holder	381,677	Apr. 24	2068	540	43	439
Cumming, George, assignor of one-half to F. Smith, San Francisco, Cal. Pipe-riveting machine	382,142	May 1	389	101, 102	43	585
Cumming, James, Buffalo, N. Y. Railway-crossing	381,056	Apr. 10	1147	306	43	230
Cumming, James, Boston, Mass. Tension mechanism for sewing-machines	381,912	May 1	21	6	43	519
Cummings, Michael J., New York, N. Y. Wheel for hand-trucks	383,314	May 22	1993	502	43	924
Cumnock, Alexander G. (See Falls, Alonzo, assignor.)						
Cuningham, John, Manito, Ill. End-gate	381,057	Apr. 10	1149	306	43	231
Cunningham, Henry C., Manchester, N. H., assignor to G. Draper & Sons, Hopedale, Mass. Yarn-separator for spinning-frames	380,644	Apr. 3	501	140	43	102
Cunningham, James H., Brockton, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-machine	381,493	Apr. 17	1798	478	43	367
Curl, Jesse B., Des Moines, Iowa. Self-heating flat-iron	383,346	May 22	2181	577	43	958
Currey, Edward C., South Evanston, Ill., assignor to Evener Spring Company, of New York. Whiffletree-spring	382,353	May 8	718	181	43	655
Currie, Stanley C. C. (See Timmis and Currie.)						
Currie, Stanley C. C., London, county of Middlesex, England, assignor to Currie-Timmis Electric and Railway Supply Company, (limited.) Electric railway-signal	384,902	June 26	1669	434	43	1463
Currie-Timmis Electric and Railway Supply Company. (See Currie, Stanley C. C., assignor.)						
Currier, George S., Garnett, Kans. Car-mover	382,757	May 15	1320	347	43	792
Curtin, Henry, assignor of one-half to W. Hose, Little Falls, N. Y. Circular-knitting machine	380,385	Apr. 3	121	35	43	26
Curtis, Charles A., *et al.* (See Kree, Hiram C., assignor.)						
Curtis, John L., Milwaukee, Wis. Ratchet	382,637	May 8	1158	297	43	740

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Curson, James, Darien, Conn. Apparatus for setting writing-copies	382,143	May 1	391	102	43	585
Cushman, Edward G., New York, N. Y. Can for oil	385,244	June 26	2104	539	43	1553
Cussons, Japhet S., assignor of two-thirds to J. F. and C. E. Glidden, De Kalb, Ill. Sweat-pad fastener	383,368	May 22	2250	589	43	970
Cussons, John, Glen Allen, Va. Calender	385,245	June 26	2105	539	43	1553
Cutcheon, James C., assignor to Cutcheon & Johnson, Lynn, Mass. Beating-out machine	384,883	June 19	1575	410	43	1436
Cutcheon & Johnson. (See Cutcheon, James C., assignor.)						
Cutler, James G., Rochester, N. Y. Air-cushion for letter-boxes	381,058	Apr. 10	1150	307	43	231
Cutter, William M., Marysville, Cal. Car-coupling	385,101	June 26	1900	484	43	1511
Cutting, Fred C., Lowell, Mass. Show-case	383,867	June 5	26	8	43	1126
Cyclist's and Sportsman's Gun and Rifle Company. (See Bean, Edward D., assignor.)						
D'Escalonne, Elisabeth. (See Quarante and D'Escalonne.)						
Dain, Joseph, Jr., Kansas City, Mo. Mowing-machine	382,502	May 8	1069	280, 281	43	788
Dale, D. I. (See Lane, David T., assignor.)						
Dale, John R., assignor of one-half to E. D. Dougherty, Philadelphia, Pa. Cable-gripping apparatus for street-railways	385,246	June 26	2106	539	43	1553
Dancel, Christian. (See Valiant and Dancel.)						
Daniels, Fred H., Worcester, Mass. Reeling apparatus for rod-rolling mills	381,217	Apr. 17	1384	370	43	285
Daniels, Fred H., Worcester, Mass. Apparatus for annealing wire	385,247	June 26	2110	540	43	1554
Daniels, Fred H., Worcester, Mass. Apparatus for charging billets, bars, &c., into furnaces	385,248	June 26	2112	540	43	1554
Daniels, Fred H., Worcester, Mass. Apparatus for charging billets, bars, &c., into furnaces	385,249	June 26	2116	540	43	1555
Daniels, Fred H., Worcester, Mass. Apparatus for charging billets, bars, &c., into furnaces	385,250	June 26	2118	541	43	1556
Daniels, Fred H., Worcester, Mass. Apparatus for charging billets or bars into heating-furnaces	385,251	June 26	2120	541	43	1556
Daniels, Joseph, Cleveland, Ohio. Open ring	382,853	May 15	1588	414	43	838
Danielson, Carl R., Rockford, Ill. Soldering-iron	381,533	Apr. 24	1866	493	43	398
Dann Bros. & Company. (See Dann, John A., assignor.)						
Dann, John A., assignor to Dann Bros. & Company, New Haven, Conn. Paneling-machine	383,711	May 29	2732	720	43	1074
Danner, Frederick. (See Bugbee and Danner.)						
Danner, John, assignor to J. Danner Manufacturing Company, Canton, Ohio. Clothes-rack	384,194	June 5	523	142	43	1228
Danner Manufacturing Company, John. (See Danner, John, assignor.)						
Darby, Elijah F. (See Blackburn and Darby.)						
Darling, Charles E., and H. Free, Lewiston, Me. Tobacco-pipe	384,681	June 19	1258	330	43	1377
Darling, John G., *et al.* (See Clarke, Reuben, assignor.)						
Dart, J. W. (See Swarts, Henry J., assignor.)						
Daul, Anthony, Brooklyn, assignor to G. Heerbrandt, New York, N. Y. Churn	380,553	Apr. 3	373	106	43	76
Davey, Petherick, assignor of three-fourths to S. W. Leedom, Philadelphia, Pa. Berth, chair, &c	383,868	June 5	27	9	43	1126
Davids, Theodor, Hanover, Prussia, Germany. Polishing apparatus for wood, &c	385,171	June 26	1991	510	43	1530
Davidson, Joseph F., assignor to E. N. Hatcher, Columbus, Ohio. Manufacture of thimble-skeins for axles	381,218	Apr. 17	1386	370	43	286
Davie, William M. (See Hodges and Davie.)						
Davies, James, Wednesbury, county of Stafford, England. Disk water-meter	384,024	June 5	266	76	43	1173
Davies, John R., Pullman, Ill. Sand-molding machine	382,217	May 1	493	128, 129	43	604
Davies, John R., Pullman, Ill., assignor to Allen Paper Car Wheel Company, of New Jersey. Apparatus for casting car-wheels	381,115	Apr. 17	1253	336	43	260
Davies, Lewis W., Eureka, Nev. Obtaining the precious metals from ores	384,662	June 19	1258	.....	43	1377
Davies, Thomas, Peabody, Mass. Apparatus for bleaching and dyeing	383,869	June 5	28	9	43	1126
Davies, Walter D., Brooklyn, N. Y., assignor to Ansonia Clock Company, Ansonia, Conn. Stem winding and setting watch	381,219	Apr. 17	1387	371	43	286
Davis, Arthur H., and G. Keith, Earlville, Ill. Horse-collar fastening	384,227	June 5	573	156	43	1228
Davis, Charles A., Washington, D. C. Railway-car	383,712	May 29	2733	721	43	1074
Davis, Charles E., assignor to J. W. Norris, Chicago, Ill. Seal-lock	381,534	Apr. 24	1867	493	43	398
Davis, David, *et al.* (See Burdsall, Stephen, assignor.)						
Davis, Edward E., Detroit, Mich. Fifth-wheel for vehicles	380,868	Apr. 10	850	230	43	175
Davis, Erneat J. S., Great Bend, Kans. Barrel-truck	381,769	Apr. 24	2185	571	43	469
Davis, Everette O., Jersey, Ga. Plow-fender	380,998	Apr. 10	1057	279	43	214
Davis & Farber Machine Company. (See Wright, Elijah, assignor.)						
Davis, Henry A., Lowell, Mass. Machine for opening cotton	384,826	June 19	1478	386	43	1419
Davis, Isaac P. (See Patterson and Davis.)						
Davis, Jay C., assignor of one-half to G. Suebert, Marshfield, Wis. Whiffletree-hook	380,621	Apr. 3	473	133	43	96
Davis, John. (See Abrahams, John W., assignor.)						
Davis, John, Allegheny, Pa. Pipe-coupling	381,913	May 1	22	6	43	519
Davis, John, Allegheny, Pa. Pipe-coupling	382,514	May 8	963	243	43	702
Davis, John S., Toledo, assignor to A. E. Sumner, Cleveland, Ohio. Harvester	384,025	June 5	267	76, 77	43	1173
Davis, Minor M., Brooklyn, N. Y. Static compensator for telegraphs	381,220	Apr. 17	1388	371	43	286
Davis, Reese O., Milan, Mo., assignor to Steddard Manufacturing Company, Dayton, Ohio. Combined hay rake and ricker	385,252	June 26	2122	541, 542	43	1557
Davis, Willis, assignor of one-half to A. D. Rose, Woodstock, N. Y. Hobby-horse	381,116	Apr. 17	1254	336	43	261
Davis, Zebulon, Cleveland, Ohio. Vapor-stove burner	384,511	June 12	1008	262	43	1280
Davis, Zebulon, assignor to Consolidated Vapor Stove Company, Cleveland, Ohio. Vapor-stove	383,870	June 5	30	10	43	1127
Davison, George W., and J. Buckley, Rochester, N. Y. Shaping-machine	384,963	June 26	1671	434	43	1464
Davy, John W., assignor to Excelsior Iron Fence Company, (limited,) Kingston, Ontario, Canada. Fence-post	381,873	Apr. 24	2406	615	43	494
Dawes, John L., and W. G. Walter, Pittsburg, Pa. Druggist's sign	383,445	May 29	2338	621	43	993
Dawson, Joseph R., Knoxville, assignor of one-half to H. C. Longbertels, Star, Iowa. Road-grading machine	384,894	June 19	1577	410	43	1437
Day, Abraham, Bloomfield, N. J. Machine for cutting dough	384,964	June 26	1673	435	43	1464
Day, Andrew J., *et al.* (See Roberts, Henry, assignor.)						
Day, B. Frank, Sellersville, Pa. Gas-governor	384,132	June 5	428	119	43	1203
De Aguiar, Abelardo G., Havana, Cuba. Bagasse drier and furnace	380,999	Apr. 10	1058	279, 280	43	214
DeBaun, Benoni T., *et al.* (See Rice, James, assignor.)						
De Benardos, Nicholas, St. Petersburg, Russia. Secondary battery	380,554	Apr. 3	374	107	43	77
DeBorger, Frank J., Babylon, assignor of one-half to T. F. Neville, New York, and S. Morse, Babylon, N. Y. Rendering collars water-proof	385,163	June 26	1903	485	43	1512
De Cew, William, Aylmer, Ontario, Canada. Car-coupling	381,914	May 1	23	6	43	519

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
De Coer, Thomas, and W. Keast, Russell Gulch, Colo. Cap-protector for blasting-cartridges.	380,477	Apr. 3	250	69	43	51
De Land, Levi J., Fairport, N. Y. Bulletin-board	381,342	Apr. 17	1572	422	43	323
De Mayo, Louis A. (See Kennedy and De Mayo.)						
De Mier Electric Train Signal Company. (See De Mier, John R., assignor.)						
De Mier, John R., Las Cruces, N. Mex. Ter. Electric train-signaling apparatus	381,343	Apr. 17	1573	422	43	323
De Mier, John R., Las Cruces, N. Mex. Ter. Electric train-signaling apparatus	381,344	Apr. 17	1575	422	43	324
De Mier, John R., Las Cruces, N. Mex. Ter., assignor, by mesne assignments, to De Mier Electric Train Signal Company. Electrical signal apparatus	380,646	Apr. 3	505	141	43	103
De Mier, John R., Las Cruces, N. Mex. Ter., assignor, by mesne assignments, to De Mier Electric Train Signal Company. Electric signal for railway-cars	380,647	Apr. 3	507	142	43	103
De Pauw, N. T. (See Schefold, Frank, assignor.)						
De Puy, William H., New York, N. Y. Tack or nail holder	383,516	May 29	2455	650	43	1015
De Redon, Constant F., New York, N. Y. Electric railway-signal	382,515	May 8	964	245	43	702
De Redon, Constant F., assignor to Pearce & Jones, New York, N. Y. Electric bell	381,765	Apr. 24	2189	572	43	461
De Silva, José J., Guanajuato, Guanajuato, Mexico. Chain-pump	380,425	Apr. 3	172	47	43	35
De Villepigue, August E. D. F., Paris, France. Apparatus for recording the direction and gradients of a road	382,868	May 15	1467	385	43	812
De Willers, Leopold C., Brooklyn, assignor of one-half to P. Floquet, New York, N. Y. Composition for softening and renovating leather	381,680	Apr. 24	2072	.....	43	439
De Witt, Caleb S., Lockport, Ill. Price and inventory check	384,237	June 12	594	161	43	1245
De Zeng, Henry L., Geneva, N. Y. Metallic railway-tie and fastening for rails	380,623	Apr. 3	474	134	43	96
Dean, Francis W., assignor of one-half to E. D. Leavitt, Jr., Cambridge, Mass. Boiler	385,102	June 26	1901	485	43	1511
Dean, Henry W., Sharon, assignor of two-thirds to L. R. Lothrop, Lynn, and S. A. Butler, Boston, Mass. Nailing-machine	380,645	Apr. 3	502	141	43	103
Dean, William E., Minneapolis, Minn. Boiler	380,746	Apr. 10	663	183	43	149
Deane, Royal E., New York, N. Y. Automatic steam heater or boiler for culinary and other purposes	384,348	June 12	766	200	43	1274
Dearing, Octavus A., San Francisco, Cal. Printer's galley	381,117	Apr. 17	1256	337	43	261
Dearlove, Joseph H., and H. Thresher, London, county of Middlesex, England, assignors to A. H. Overman, Boston, Mass. Tricycle	381,763	Apr. 24	2185	572	43	460
Death, Alfred H., Leicester, England. Feeding apparatus for scutching or fiber-cleaning machines	385,300	June 26	2204	565	43	1571
Debarry, Arnold. (See Herren, Christian, assignor.)						
Debrinke, Julius, Salt Lake City, Utah Ter. Watch-protector	380,869	Apr. 10	851	230	43	175
Decker, Charles W. (See Grace, Henry S., assignor.)						
Dederick, Levi, Albany, N. Y. Extension fire-ladder	383,106	May 22	1843	{482 / 483}	43	894
Dederick, Levi, Albany, N. Y. Extension fire-ladder	383,107	May 22	1846	483	43	895
Dederick, Peter K., Loudonville, N. Y. Baling-press	382,144	May 1	392	102	43	585
Dederick, Peter K., Albany, N. Y. Baling-press	382,954	May 15	1589	415	43	836
Deevy, Patrick, Hastings, Nebr. Wheeled scraper	380,314	Apr. 3	11	3	43	4
Dehnert, Max, Deuben, Saxony, Germany. Pneumatic mustard-pot	382,218	May 1	496	129	43	605
Deininger, Michael F., Brooklyn, N. Y. Hearse	380,622	Apr. 3	474	134	43	96
Deissler, Peter and W., Philadelphia, Pa. Meat-cutter	383,713	May 29	2736	721	43	1075
Deissler, William. (See Deissler, Peter and W.)						
Delaney, Henry J. (See Starkenberg, Felix, assignor.)						
Delano, Alphonso F., Hyde Park, assignor to Smith American Organ and Piano Company, Boston, Mass. Piano-case	385,172	June 26	1993	511	43	1530
Delany, Patrick B., New York, N. Y. Telegraphy	381,764	Apr. 24	2187	572	43	461
Delmonico, Charles C. (See Lemaire, Henri F. M., assignor.)						
Demarest, John, assignor to J. L. Mott Iron Works, New York, N. Y. Flushing apparatus for water-closets, &c.	381,221	Apr. 17	1389	371	43	286
Dengolesky, William, Booneville, Mo. Brick-machine	381,315	Apr. 17	1576	421	43	324
Denison, Richard, assignor of one-half to J. Blakey, Leeds, county of York, England. File-cutting machine	384,133	June 5	429	{119 / 120}	43	1204
Denny, Edward B., Newark, N. J. Device for mixing gas and air	382,076	May 1	301	79, 80	43	568
Densmore, Edwin, assignor to W. T. Powers & Son, Grand Rapids, Mich. Veneer-cutting machine	382,219	May 1	497	129	43	605
Derby Silver Company. (See Berry, Henry, assignor.)						
Derington, John H., and H. J. Parker, Springfield, Mo.; said Derington assignor to said Parker. Machine for making barbs for hog-nose rings	382,603	May 15	1243	324	43	766
Dernell, Herman M. (See Beebe, Theodore S., assignor.)						
Derrickson, Joseph W. (See Pennock, William H., assignor.)						
Des Brisay, James, Kamloops, British Columbia, Canada. Valve-gear	381,678	Apr. 24	2069	{540 / 541}	43	439
Determann, John B., assignor of one-half to J. F. Wagner, Louisville, Ky. Sheet-metal siding for covering the walls of buildings	381,600	Apr. 10	1060	280	43	216
Detroit Car Wheel Company. (See Pasco, Thomas H., assignor.)						
Detroit Motor Company. (See Slater, Henry B., assignor.)						
Detroit Steam Radiator Company. (See Taylor, Harrison H., assignor.)						
Detroit Steel and Spring Works. (See Holmes, William G., assignor.)						
Deuther, Lorenz A., Buffalo, N. Y. Advertising-sign	381,766	Apr. 24	2190	572	43	462
Deutsch, Eugen. (See Nöltner, Ambrosius, assignor.)						
Devean, Edward A. (See Baker, Halsey H., assignor.)						
Devereux, Joel, assignor to G. S. Lord, Culbertson, Nebr. Windmill	381,679	Apr. 24	2071	541	43	439
Devereux, Walter B., Aspen, Colo. Apparatus for separating lead or base bullion in smelting from slag, matties, and speiss	381,118	Apr. 17	1257	337	43	261
Devereux, Walter B., Aspen, Colo. Apparatus for separating base bullion from slag, matties, and speiss	381,119	Apr. 17	1259	337	43	262
Devereux, Walter B., Aspen, Colo. Apparatus for separating lead and base bullion from slag	384,349	June 12	767	200	43	1274
Devling, Amelia E. (See Devling, James W., assignor.)						
Devling, James W., assignor of seven-eighths to A. E. Devling, Flemington, Pa. Limekiln	384,895	June 19	1578	411	43	1437
Devoll, William C. (See Devolld and Devoll.)						
Devolld, William, and W. C. Devoll, near St. Mary's, Kans. Animal-trap	384,827	June 19	1479	386	43	1419
Devore, Levi M., assignor of one-half to R. H. Wiles and W. Greene, Freeport, Ill. Ornamental wire coil	382,220	May 1	499	129	43	606
Devore, Levi M., and W. Greene, Freeport, Ill. Stove-back	381,535	Apr. 24	1869	494	43	398
Devore, William B. (See Baker, Henry R., assignor.)						
Devoy, Martin, Syracuse, N. Y. Caster attachment for stoves or furniture	381,120	Apr. 17	1262	338	43	262
Dewberry, William A., Peace, Ark. Sawing-machine	380,386	Apr. 3	122	36	43	26
Dewees Fabric Trimmer Company. (See Dewees, John W., assignor.)						
Dewees, John W., Philadelphia, Pa. Trimming attachment for sewing-machines	381,537	Apr. 24	1871	{494 / 495}	43	309

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Dewees, John W., assignor to Dewees Fabric Trimmer Company, (limited,) Philadelphia, Pa. Welt-trimmer for sewing-machines	381,536	Apr. 24	1870	494	43	308
Dexter, Avelyn I., Whitewater, Wis. Refrigerator	384,965	June 26	1675	435	43	1464
Day, Anna L., New York, N. Y. Buffet for housekeeping	383,871	June 5	31	10	43	1127
Day, Harry E., New York, N. Y. Electric-lighting apparatus for railway-cars	381,915	May 1	25	7	43	519
Day, Lewis R., Camden, N. J. Carpet-stretcher	382,295	May 8	624	159	43	670
Dick, Augustus C., Cincinnati, Ohio. Apparatus for springing target-traps	383,446	May 29	2339	621	43	983
Dick, Frank W., Glasgow, county of Lanark, Scotland. Piston water-meter	382,145	May 1	394	103	43	586
Dick, Jacob, Jerseyville, Ill. Portable elevator	382,077	May 1	305	80	43	569
Dick, Robert. (See Kennedy, Rankin, assignor.)						
Dickerson, Edward N., Jr. (See Haasenkamp, Ernst, assignor.)						
Dickerson, William M., assignor of one-half to L. W. Holloway, Indianapolis, Ind. Band-saw mill	381,406	Apr. 17	1756	470	43	358
Dickey, Adam, Hamilton, Ohio. Hammock	381,538	Apr. 24	1873	495	43	309
Dickey, Cyrus M. and E. E., New Garden, Ohio. Churn	383,633	May 29	2617	692	43	1049
Dickey, Etta E. (See Dickey, Cyrus M. and E. E.)						
Dickinson, P. P. (See Plumb, William H., assignor.)						
Dickson, John A., Pulaski, Tenn. Horse-detacher	383,447	May 29	2340	621	43	994
Diebold, Carl, assignor to Diebold Safe and Lock Company, Canton, Ohio. Bolt	384,238	June 12	596	161	43	1245
Diebold Safe and Lock Company. (See Diebold, Carl, assignor.)						
Diebold Safe and Lock Company. (See Kirks, Albert, assignor.)						
Diehl, Philip, Elizabeth, N. J. Electric motor	381,222	Apr. 17	1391	{371 / 372}	43	287
Dieterich, Daniel D., *et al.* (See Powell, John B., assignor.)						
Dietz Company, R. E. (See Betts, Charles L., assignor.)						
Dietz Company, R. E., *et al.* (See Betts, Lewis F., assignor.)						
Dietz, Robert E. (See Betts, Lewis F., assignor.)						
Dietz, William H., Chicago, Ill. Dating device	384,026	June 5	274	77	43	1173
Diffley, Thomas, Rosemount, Minn. Pump attachment	385,104	June 26	1903	485	43	1512
Dilger, Theodore, Liberal, Ind. Brake-lever	384,027	June 5	276	77	43	1174
Dilley, Clarence M., Jackson, Mich. Combined door bell and alarm	381,539	Apr. 24	1875	495	43	309
Dillon, James M. (See Lutz and Dillon.)						
Dillon, Philip F., Savannah, Ga. Metallic mold	382,411	May 8	801	{304 / 305}	43	671
Dillon, William S. F., Cincinnati, assignor of one-third to G. Hall, Lima, Ohio. Harness hook or snap	384,512	June 12	1010	263	43	1330
Dimmick, Charles M., *et al.* (See Gasking, George H., assignor.)						
Dimon, Frank S., Fort Scott, Kans. Tire-tightener	382,955	May 15	1591	415	43	836
Dimond, Henry C. (See Way, Frank K., assignor.)						
Dinkel, George, Jersey City, N. J. Steam-trap	380,791	Apr. 10	739	202	43	155
Dinsmore, Alfred S., Boston, Mass. Gas-stove	384,683	June 19	1259	{330 / 331}	43	1377
Dinsmore, John H. R., Liverpool, county of Lancaster, England. Manufacturing illuminating-gas from coal	383,634	May 29	2018	693	43	1050
Dinsmore, John H. R., Liverpool, county of Lancaster, England. Apparatus for washing and purifying illuminating-gas	383,635	May 29	2020	693	43	1050
Disbrow, Samuel, Lewis, Iowa. Potato-plow	384,310	June 12	702	187	43	1264
Diss, Louis P., Ilion, N. Y. Breech-loading gun	383,108	May 22	1848	{483 / 484}	43	895
Dithridge, George W., New York, N. Y. Center bearing for car-trucks	380,870	Apr. 10	852	230	43	175
Divekey, John J., Aurora, Ill. Garden-hose carriage	381,540	Apr. 24	1876	495	43	400
Dixon, Charles A., assignor to R. Whitehill, Newburg, N. Y. Releasing valve-gear	381,001	Apr. 10	1061	{280 / 281 / 282}	43	214
Dixon, John F., Clay Centre, Kans. Vehicle-axle	381,829	Apr. 24	2297	597	43	481
Dixon, John G., New York, N. Y. Collar and cuff drier and dampener	382,800	May 15	1383	363	43	794
Dixon, Theron S. E., Hyde Park, Ill. Railway-car	384,828	June 19	1480	386	43	1419
Dixon, Theron S. E., assignor of one-half to L. Hill, Chicago, Ill. Air-brake	382,031	May 1	227	60	43	555
Dixon, Theron S. E., assignor of one-half to L. Hill, Chicago, Ill. Air-brake for railway cars	382,032	May 1	234	60, 61	43	556
Doak, Robert, Sidney, Ohio. Drag-saw	381,830	Apr. 24	2298	598	43	481
Dobler, Anton, assignor to C. Dobler, New York, N. Y. Grinding-mill	381,346	Apr. 17	1579	423	43	324
Dobler, Charles. (See Dobler, Anton, assignor.)						
Dohyns, James W., Wood Lawn, Va. Harrow	384,966	June 26	1676	435	43	1465
Dodge, James M., Philadelphia, Pa. Chain conveyer for handling coal	382,638	May 8	1153	297	43	740
Dodge Manufacturing Company. (See Phillon, George, assignor.)						
Dodge, Wallace H., Mishawaka, Ind. Means for securing pulleys on shafts	383,281	May 22	2100	554	43	943
Dodge, Wallace H., Mishawaka, Ind. Slack-take-up for rope transmission	383,282	May 22	2101	554	43	944
Dodge, Walter E., Everett, assignor to National Tube Works Company, Boston, Mass. Injector	383,109	May 22	1850	484	43	896
Dodsworth, Robert. (See Holdsworth, John W., assignor.)						
Doerflinger, William, La Crosse, Wis. Apparatus for storing, measuring, and exhibiting dry goods, &c.	384,747	June 19	1354	{353 / 354}	43	1395
Doetschmann, Albert, Nyack, N. Y. Extinguishing fires in stoves	383,283	May 22	2102	555	43	944
Doggett, John, assignor of one-half to L. J. King, Plain City, Ohio. Combined telegraph key and sounder	384,350	June 12	770	200	43	1275
Dohis, Prosper A., Paris, France. Spring-motor	382,033	May 1	239	61	43	557
Dolge, Carl B., Brooklyn, N. Y. Chin-rest for the dead	384,513	June 12	1011	263	43	1330
Dollner, Charles F. (See Rose, John, assignor.)						
Dolsen, William B., Moberly, Mo. Device for loading vehicles	383,636	May 29	2022	694	43	1050
Domeier, Albert, and O. C. Hagemann, London, England, assignors to said Domeier and J. Glatz, Brooklyn, N. Y. Making resin-soap and glycerine	385,105	June 26	1904	.....	43	1512
Donahue, John J. (See Thompson, William D., assignor.)						
Donaldson, Walter H., assignor of one-half to R. B. Reid, San Francisco, Cal. Metallic railway-tie	381,059	Apr. 10	1151	307	43	231
Doney, Charles, Ottawa, Ontario, Canada. Heel-plate	382,694	May 15	1244	324	43	708
Donkel, Lloyd H., Winter Park, Fla. Velocipede	381,134	June 5	434	120	43	1204
Donkel, Lloyd H., Winter Park, Fla. Vehicle-wheel	384,135	June 5	435	121	43	1205
Donnell, Columbus W., Fulton, Mo. Bed-spring	381,060	Apr. 10	1152	307	43	231
Donnell, Edward P., Chicago, Ill. Paper-cutting machine	383,714	May 29	2738	{721 / 722}	43	1075
Donnelly, John, San Mateo, Cal. Gate	384,136	June 5	436	121	43	1205
Doolittle, George, assignor, by mesne assignments, to S. H. Hubbard, Bridgeport, and J. K. Beach, New Haven, Conn., trustees. Manufacture of upholstery-tufts	384,896	June 19	1580	411	43	1437
Doran, Bernard S., Johnstown, Pa. Railway track and joint	385,253	June 26	2126	542	43	1557

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Dorman, Benjamin H. (See Phillips, John O., assignor.)						
Dorsey, Basil C., Tulare, assignor of one-half to W. L. Morrow, San Luis Obispo, Cal. Disk cultivator and seeder	384,748	June 19	1356	354	43	1395
Dorst, John W., Detroit, Mich. Pillow-sham holder	384,330	June 12	597	168	43	1245
Doty, Hezekiah, San José, Cal. Churn	382,639	May 8	1155	287	43	749
Doty, Joseph, Wellsville, N. Y. Corner-iron	380,871	Apr. 10	853	230	43	176
Doub, John H., and F. Robbins, Walnut, Kans.; said Robbins assignor to said Doub. Washing-machine	384,311	June 12	702	187	43	1284
Doubleday, Harry M., Columbus, Ohio. Incandescent-lamp attachment	383,046	May 15	1751	453	43	867
Dougal, Charles H., *et al.* (See Bostian, Charles P., assignor.)						
Dougherty, Edward D. (See Dale, John H., assignor.)						
Douglas, Charles H., assignor of one-half to C. S. Baker, Chicago, Ill. Machine for making blanks for chain-cutter teeth	383,347	May 22	2189	578	43	939
Douglass, Benajah H., Jr. (See Bartholomew, Joel O., assignor.)						
Douglass, J. Walter. (See Bormann, Hermann, assignor.)						
Douglass, Roswell S., *et al.* (See Hamblin, Silvanus and S. M., assignors.)						
Dover Stamping Company. (See Hadley, Ethan, assignor.)						
Dowling, Robert H., assignor of two-thirds to C. and C. H. Follett, Newark, Ohio. Car-coupling	385,301	June 26	2205	565	43	1572
Dowling, Thomas W., Detroit, Mich. Window-screen	380,747	Apr. 10	654	{183 / 184}	43	143
Downerd, Hiram S., Zanesville, Ohio. Electrical annunciator	384,430	June 12	881	229	43	1297
Downes, David H., Pullman, Ill. Forging-machine	383,047	May 15	1751	453	43	867
Downs, George N., Chicago, Ill., assignor to Troy Laundry Machinery Company, Troy, N. Y. Centrifugal machine	380,555	Apr. 3	376	107	43	77
Downton, Robert L., St. Louis, Mo. Dust arrester and collector	382,801	May 29	2692	783	43	1102
Dowson, Ralph, and J. Taylor, Bolton, county of Lancaster, England. Alarm-valve for automatic fire-extinguishers	384,514	June 12	1012	263	43	1301
Doyle, Frank, Chicago, assignor of one-half to J. Bairstow, Lake View, Ill. Apparatus for opening furnace-doors	384,137	June 5	436	121	43	1205
Doyle, John, Hoboken, N. J., assignor to himself and C. C. Dusenbury, Lake Mahopac, N. Y. Battery-zinc	385,254	June 26	2127	543	43	1557
Drake, John B., Goshen, Ind. Pump	384,749	June 19	1357	354	43	1395
Drake, John C., Altus, Ark. Washing-machine	383,110	May 22	1852	484	43	896
Drake, Spencer L., Swampscott, Mass. Hat-hanger	384,897	June 19	1580	411	43	1437
Draper, Charles, Springfield, Mass. Electric stop-motion for knitting-machines	382,583	May 8	1092	281	43	729
Draper, Daniel, Hastings-upon-Hudson, N. Y. Recording-thermometer	380,872	Apr. 10	854	231	43	176
Draper & Sons, George. (See Draper, William F. and G. A.)						
Draper & Sons, George. (See Cunningham, Henry C., assignor.)						
Draper & Sons, George. (See Draper, William F. and G. A., assignors.)						
Draper & Sons, George. (See Driscoll and Boylen, assignors.)						
Draper & Sons, George. (See Durkin, Daniel, assignor.)						
Draper, William F. and G. A., assignors to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	383,048	May 15	1754	453	43	867
Dreadul, Paul, Chicago, Ill., assignor to Gilbert & Bennett Manufacturing Company, Georgetown, Conn. Conductor-strainer	380,873	Apr. 10	856	231	43	176
Dreabach, Clifton R. (See Grove, William H., assignor.)						
Dresse, Henry. (See Lodge and Dresse.)						
Dresser, Solomon R., Bradford, Pa. Pipe-coupling	381,916	May 1	96	7, 8	43	519
Drew, Hudson M., and J. A. Grant, New Limerick, Me. Lantern	381,636	Apr. 24	2304	599	43	482
Driller, Frank, Port Jervis, N. Y. Cut-off for spouts	381,990	May 1	152	39	43	543
Driscoll, William, and J. F. Boylen, Taunton, assignors of one-half to G. Draper & Sons, Hopedale, Mass. Fulcrum for the weight-levers for the rolls of spinning-frames	381,681	Apr. 24	2072	542	43	439
Driver, William, Manville, R. I. Picker-check for looms	382,640	May 8	1156	288	43	740
Droughton, John J., East Newark, N. J. Concentrator	383,284	May 22	2103	535	43	944
Drummond, James T., St. Louis, Mo. Utilizing tobacco waste	384,565	June 12	1066	{283 / 284}	43	1335
Drummond, James T., St. Louis, Mo. Apparatus for stemming tobacco	384,566	June 12	1067	284	43	1335
Drummond, John J. (See Gaseley, Frederick, assignor.)						
Du Bois, Louis, *et al.* (See Eldredge, John V. D., assignor.)						
Du Boulay, Digby, London, England. Motor	380,648	Apr. 3	511	143	43	104
Du Brul, Napoleon, Cincinnati, Ohio. Temporary partition for cigar-boxes	382,221	May 1	500	130	43	686
Du Cray, Charles C., Iowa County, Wis., assignor to himself and H. J. F. Webb, Dubuque, Iowa. Corn-planter	381,223	Apr. 17	1392	372	43	287
Du Pont, Alfred V., Louisville, Ky., assignor to Johnson Steel Street Rail Company, of Kentucky. Portable connecting track	381,674	Apr. 24	2367	{615 / 616}	43	494
Dudley, Plimmon H., New York, N. Y. Apparatus for impregnating wood	381,682	Apr. 24	2073	542	43	440
Dueber, John C. (See Coburn, John A., assignor.)						
Duffey, Hugh. (See Winter and Duffey.)						
Duffy, Kate M., Astoria, Oreg. Bed-pan	380,478	Apr. 3	251	69	43	51
Duffy, James, Buffalo, N. Y. Tube-expander	383,111	May 22	1853	484	43	896
Dugnan, John A., Quincy, Mass. Store-service apparatus	380,315	Apr. 3	13	3	43	5
Duhrkop, Frits, New York, N. Y. Baker's oven	380,536	Apr. 3	379	108	43	77
Duke, James B. (See Underwood, Joseph B., assignor.)						
Dulebohn, John G. (See Herr and Dulebohn.)						
Dum, William J., South Bloomfield, Ohio. Motor	380,557	Apr. 3	379	108	43	77
Dunbar, Andy L. (See Wilkins, Alexander G., assignor.)						
Dunbar, William E., Waxahachie, Tex. Machine for putting ties on bales	382,229	May 1	501	130	43	686
Duncan, Beverly W., assignor of one-half to I. Leedy, Dora, Ind. Hog-trap	380,649	Apr. 3	511	143	43	104
Duncan & Johnston. (See Apoil, Jacob, assignor.)						
Dunham, Calvin M., St. Joseph, Mo. Interest-calculator	384,431	June 12	882	220	43	1297
Dunham, Charles H., *et al.* (See Wellman, Willard F., assignor.)						
Dunham, Thomas H., Boston, Mass. Making banding for spinning-machines	384,138	June 5	438	.....	43	1205
Dunlevy, Mathew H. (See Beckfold, John, assignor.)						
Dunn, Andrew S., New Brighton, Pa. Band-saw-filing machine	383,944	June 5	153	45	43	1149
Dunn, William, assignor of two-thirds to D. B. Ruffner and G. S. Bolton, Philadelphia, Pa. Nut-lock	382,078	May 1	306	89	43	589
Dunn, William C., New York, N. Y. Game	384,240	June 12	598	168	43	1246
Dunnett, William, assignor of one-half to J. Regester & Sons, Baltimore, Md. Flushing-cisterns	381,294	Apr. 17	1394	372	43	287
Dunnett, William, assignor of one-half to J. Regester & Sons, Baltimore, Md. Attachment for wash-stands, bath-tubs, and sinks	381,295	Apr. 17	1395	373	43	288
Düninghaus, Gerhard, Unna, Westphalia, assignor, by mesne assignments, to R. Hinrichsen, Hamburg, Germany. Busk for corsets	381,661	Apr. 10	1153	307	43	338

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Dunton, Clark B., Portland, Me. Valve for water-gages	383,448	May 29	2341	621	43	994
Duplessis, Elowild, Lake Weedon, assignor to himself and J. Roche, Quebec, Quebec, Canada. Weighing-scale for railway-cars	382,412	May 8	802	205	43	673
Duplex Shoe Trimmer Company. (See Trask, Charles H., assignor.)						
Dupré, August, and C. N. Hake, Westminster, England. Disinfectant	383,559	May 29	2524	.....	43	1088
Durand, Wallace, Newark, N. J. Stay-hinge for trunks, bags, &c.	385,255	June 26	2128	543	43	1558
Durell, Frank H., Bay City, and W. Goldie, West Bay City, assignors to J. Reid & Co., St. Ignace, Mich. Boom-stick	381,494	Apr. 17	1799	478	43	367
Durkee, George B. (See Golding and Durkee.)						
Durkee, George B., assignor to J. W. Taft, Chicago, Ill. Power-feed sawing-machine	383,112	May 22	1854	485	43	897
Durkin, Daniel, Northbridge, assignor to G. Draper & Sons, Hopedale, Mass. Whip-roll for looms	381,617	Apr. 24	1984	521	43	421
Durkin, Michael T., Brooklyn, N. Y. Embossing-machine	382,801	May 15	1385	363	43	794
Duryea, Charles E., Washington, D. C. Game-board	384,195	June 5	524	142	43	1223
Duseabury, C. Coles. (See Doyle, John, assignor.)						
Dushane, James, South Bend, Ind. Educational device	383,389	May 22	2251	599	43	979
Dushane, James, South Bend, Ind. Educational apparatus	385,046	June 26	1816	466	43	1494
Dustin, Charles E. (See Stirling, Clarence C., assignor.)						
Dutcher, William L., Paterson, N. J. Bolt-cutter	382,034	May 1	239	61	43	557
Dutemple, William R., Providence, R. I. Initial finger-ring	383,758	May 15	1321	347	43	788
Dutton, William H. Philadelphia, Pa. Upright piano	384,241	June 12	599	169	43	1246
Dutton, William H., Philadelphia, Pa. Upright piano	384,242	June 12	602	163	43	1247
Dutton, William H., Philadelphia, Pa. Upright piano	384,243	June 12	603	163	43	1247
Dutton, William H., Philadelphia, Pa. Upright piano	384,244	June 12	606	{163 / 164}	43	1247
Duval, Martin L. E., assignor to Compagnie de Fives-Lille, Paris, France. Metallic bridge	384,196	June 5	525	{142 / 143 / 144}	43	1223
Duval, Martin L. E., assignor to Compagnie de Fives-Lille, Paris, France. Metallic bridge	384,197	June 5	529	144	43	1224
Dwyer, Edward. (See Hicks, Frank, assignor.)						
Dyer, Louise M., Yazoo City, Miss. Combined slate and ruler	382,413	May 8	803	205	43	673
Dyer, Lucius, Millbridge, Me. Anti-frictional chock or leader	381,831	Apr. 24	2298	596	43	481
Dyer, Philip, Unadilla, Mich., assignor of one-half to W. Abernethy, Mooretown, Ontario, Canada. Farm-gate	385,302	June 26	2207	566	43	1573
Dyer, Richard N., East Orange, N. J. Switch for store-service apparatus	381,495	Apr. 17	1801	479	43	367
Dyer, Richard N., New York, N. Y. Telephone system	382,461	May 8	681	{224 / 225}	43	685
Eads, Rowland S. (See Hageman, Noggle, and Eads.)						
Eagle Lock Company. (See Judson, Charles W., assignor.)						
Eagle Pencil Company. (See Bowman, Claes W., assignor.)						
Eagle Pencil Company. (See Cross, Frederick E., assignor.)						
Eames Vacuum Brake Company. (See Massey, Albert P., assignor.)						
Earl, John H., Chicago, Ill. Printing-machine	384,432	June 12	884	230	43	1297
Earnest, George H., assignor of one-half to Rogers Fence Company, Springfield, Ohio. Haytedder	383,872	June 5	32	10, 11	43	1127
Earnest, Jacob T., assignor of three-fourths to J. H. Stephens, C. R. Bisbee, and R. S. Marvin, Jacksonville, Fla. Car heating and ventilating apparatus	382,956	May 15	1591	415	43	836
Easley, Frederick C., and M. Bradley, Springfield, Mass.; said Easley assignor to said Bradley. Weaving-needle	382,641	May 8	1157	288	43	741
East, Elias, Armour, Tex. Cultivator	381,002	Apr. 10	1063	282	43	215
Eastman Freight Car Heater Company. (See Eastman, William E., assignor.)						
Eastman, John A., assignor of one-half to C. E. Hill, Bangor, Me. Rim-joint and spoke-socket for vehicle-wheels	381,121	Apr. 17	1263	338	43	292
Eastman, Rufus M. (See Simmons and Eastman.)						
Eastman, William E., Boston, Mass., assignor to Eastman Freight Car Heater Company, Portland, Me. Float and level-indicator for liquid-reservoirs	381,541	Apr. 24	1878	496	43	400
Easton, James W., New York, N. Y. Dynamo-electric machine	383,113	May 22	1858	485	43	897
Easton, James W., New York, N. Y. Automatic tightening device for armatures of dynamo-electric machines	383,114	May 22	1859	486	43	898
Eaton, Edwin D., Springfield, Mass. Saw-filing device	384,929	June 19	1492	387	43	1419
Eaton, George H., Boston, Mass. Opera, field, or marine glass	381,347	Apr. 17	1579	423	43	394
Eaton, George S., and J. C. Birch, Brooklyn, N. Y., assignors to said Eaton. Machine for rubbing type	380,558	Apr. 3	381	{108 / 109}	43	78
Eaton, George S., and J. C. Birch, Brooklyn, N. Y., assignors to said Eaton. Machinery for rubbing type	380,559	Apr. 3	384	{109 / 110}	43	78
Eaton, Harold B. (See Wiley, John, assignor.)						
Eaton, M. Harvey, Philadelphia, Pa. Construction of buildings	381,767	Apr. 24	2191	573	43	462
Eaton, Oliver N., New York, N. Y. Universal joint	381,348	Apr. 17	1580	424	43	394
Eberhard, George F., Cleveland, Ohio. Buckle	382,516	May 8	965	244	43	703
Eberhard, George F., Cleveland, Ohio. Buckle	382,594	May 8	1094	281	43	729
Eby, Christie, Rhinelander, Wis. Car-coupling	382,750	May 15	1322	348	43	782
Ecarbert, Frederic, Brooklyn, N. Y. Die for making watch-cases or other articles	382,517	May 8	965	244	43	703
Eckermann, Fred, assignor to P. A. Wagner, Paterson, N. J. Loom for weaving loom-harness	383,215	May 22	1994	223	43	925
Eclipse Wind Engine Company. (See Havens, William R., assignor.) (Reissue.)						
Eddy, George W., New London, assignor to H. C. Williams, New Britain, Conn. Signal-bell	381,917	May 1	27	8	43	520
Eddy, James A. (See Howe, George H., assignor.)						
Ede, Samuel. (See Lux and Ede.)						
Edgerton, Edward E., and R. Metcalf, Chicago, Ill. Window	381,683	Apr. 24	2076	543	43	440
Edighoffer, Martin. (See Paillet, Joseph, assignor.)						
Edison Phonograph Toy Manufacturing Company. (See Jacques, William W., assignor.)						
Edison, Thomas A., Llewellyn Park, N. J. Burnishing attachment for phonographs	382,414	May 8	804	205	43	673
Edison, Thomas A., Llewellyn Park, N. J. System of electrical distribution	382,415	May 8	805	206	43	673
Edison, Thomas A., Llewellyn Park, N. J. Feed and return mechanism for phonographs	382,416	May 8	808	206	43	673
Edison, Thomas A., Llewellyn Park, N. J. Making phonogram-blanks	382,417	May 8	809	206	43	673
Edison, Thomas A., Llewellyn Park, N. J. Phonogram-blank	382,418	May 8	810	207	43	673
Edison, Thomas A., Llewellyn Park, N. J. Duplicating phonograms	382,419	May 8	811	207	43	674
Edison, Thomas A., Llewellyn Park, N. J. Phonogram-blank	382,462	May 8	894	225	43	686
Edison, Thomas A., Llewellyn Park, N. J. System of electrical distribution	385,173	June 26	1993	511	43	1530
Edison, Thomas A., Llewellyn Park, N. J., and E. T. Gilliland, New York, N. Y. Railway signaling	384,630	June 19	1484	387	43	1419
Edson, Jacob, Boston, assignor of one-half to J. S. Rice, Cambridgeport, Mass. Pen cleaner and holder	380,650	Apr. 3	512	143	43	104

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Edwards, Albert N. (See Phillips and Edwards.)						
Edwards, Daniel, R. Lewis, and P. Jones, Swansea, England. Coating metal plates with tin or other metals	381,226	Apr. 17	1396	373, 374, 375	43	288
Edwards, James F. (See Beisonhert, William E., assignor.)						
Edwards, Richard J., Galena, Ill. Car-coupling	381,349	Apr. 17	1582	424	43	325
Egan, Charles E., assignor to W. Y. Miles and S. W. Smith, Columbus, Ohio. Solution for voltaic batteries	381,542	Apr. 24	1879	.....	43	400
Egan Company. (See Bugbee and Danner, assignors.)						
Ege, Alexander H. (See Richardson and Rapp, assignors.)						
Egen, Carl. (See Heidmann, Hättges, and Egen.)						
Egerton, James O., Springfield, Mass. Steam cooking utensil	382,595	May 8	1095	292	43	729
Eggleston, Carlos, St. Louis, Mo. Bracket or support for shelves, desks, and tables	382,296	May 8	625	159, 160	43	639
Eggers, Anton C., New York, N. Y. Stopper for rubber fountains, &c.	385,256	June 26	2129	543	43	1558
Eggis, Adolphe P., Fribourg, Switzerland. Type-writing machine	380,792	Apr. 10	741	203	43	155
Egner, Frederic, St. Louis, Mo. Obtaining ammonia and bone-black	381,832	Apr. 24	2299	598	43	481
Ehlers, Fridrech H., Montevideo, Minn. Grain-measure	385,257	June 26	2130	543	43	1558
Eichbaum, Henry, Mount Vernon, N. Y., assignor to himself and Crane Elevator Company, of Illinois, Chicago, Ill. Elevator-indicator	381,350	Apr. 17	1584	424	43	325
Elden, Joseph, Oconomowoc, Wis. Step-ladder	382,354	May 8	719	182	43	655
Einig, John, Jacksonville, Fla. Elevator-alarm	383,449	May 29	2242	622	43	994
Einsfield, John V. (See Lottridge and Einsfield.)	384,831	June 19	1495	387	43	1490
Eisenhardt, David. (See Bechtold and Eisenhardt.)						
Eitemiller, George M., *et al.* (See Williams and Lucock, assignors.)						
Ekker, Everard, Knoxville, Iowa. Device for suspending and spreading slaughtered animals	384,433	June 12	895	230	43	1298
Elam, William E., Port Royal, S. C. Device for stringing and filing papers	381,351	Apr. 17	1585	425	43	325
Elastic Nut Company. (See Johnson, William H., assignor.)						
Elder, James F., Philadelphia, Pa. Stock-car	384,832	June 19	1496	387	43	1490
Eldred, Horace H., Boston, Mass, assignor to Western Electric Company, Chicago, Ill. Telephone-exchange	382,518	May 8	967	244	43	703
Eldredge, John V. D., assignor of one-half to L. Du Bois and H. Wunsch, Detroit, Mich. Car-coupling	380,874	Apr. 10	857	231, 232	43	177
Eldridge, Warren H., *et al.* (See Munz, Theodore C., assignor.)						
Electric Cable Construction and Maintenance Company. (See Brooks, David, Jr., assignor.)						
Electric Car Company. (See Hunter, Rudolph M., assignor.)						
Electric Car Company of America. (See Condict, G. Herbert, assignor.)						
Electric Car Company of America. (See Hunter, Rudolph M., assignor.)						
Electric Car Company of America. (See Reckenzaum, Anthony, assignor.)						
Electrical Accumulator Company. (See Faure, Camille A., assignor.)						
Electrical Accumulator Company. (See Madden, Albert F., assignor.)						
Electrical Accumulator Company. (See Sellon, John S., assignor.)						
Eley, Hiram J., *et al.* (See Neff, Elijah, assignor.)						
Elger, William D. (See Randall, Charles A. assignor.)						
Ellacott, Joseph P. (See Olcott and Ellacott.)						
Ellington, Edward B., Westminster, England. Elevator	383,715	May 29	2742	722	43	1075
Elliot, William G. (See Grassler, William F., assignor.)						
Elliott, Charles W., Moncton, New Brunswick, Canada. Paper box	380,748	Apr. 10	665	184	43	142
Elliott, Charles W., Boston, Mass. Shade-pull	381,543	Apr. 24	1879	496	43	400
Elliott, John R., assignor of one-half to W. I. A. Bodine, Clinton, Mo. Washing-machine	381,003	Apr. 10	1064	292	43	215
Elliott, Robert C., assignor of one-half to W. K. Elliott and J. H. Harper, Prairie Creek, Ind. Door-fastener	381,567	June 12	1088	285	43	1336
Elliott, William K., *et al.* (See Elliott, Robert C., assignor.)						
Ellis, Charles S., assignor of one-half to J. J. Sturla, Memphis, Tenn. Numbering-machine	381,227	Apr. 17	1399	375	43	288
Ellis, James M., New Haven, Conn. Button	380,678	Apr. 10	567	156	43	123
Ellwood, Everett C., Green's Farms, Conn. Hand-cultivator	384,351	June 12	771	201	43	1275
Elmblad, Hjalmar, Chicago, Ill. Belt-fastener	384,434	June 12	896	230	43	1298
Elward, John H., assignor of one-half to J. F. Mitchell and J. A. Partridge, Whitewater, Wis. Car-heater	383,115	May 22	1860	486	43	898
Ely, George A. (See Smith, Ely, and Bryan.)						
Emerson, Charles H., and W. H. Wetmore, Burlington, Vt.; said Wetmore assignor to said Emerson. Toboggan	380,875	Apr. 10	860	232	43	177
Emerson, George A., administrator. (See Abel, William H.)						
Emerson, James, Springfield, Mass. Steam-heating apparatus for railway-cars	382,596	May 8	1096	292	43	729
Emerson, James, Willimansett, Mass. Steam-heating pipe-connection for cars	382,597	May 8	1098	292	43	729
Emerson, James, Willimansett, Mass. Heating system for railway-cars	383,637	May 29	2623	694, 695	43	1051
Emerson, John W. (See Youmans, Walter, assignor.)						
Emerson, Talcott & Company. (See Jones, James H., assignor.)						
Emery, George D. (See Emery, Jonathan, assignor.)						
Emery, Jonathan, St. Louis, Mo., assignor of one-half to G. D. Emery, Leroy, Kans. Button-machine	383,802	May 29	2893	763, 764	43	1102
Emery, Thomas W., Minneapolis, Minn. Flexible grain-pipe	384,352	June 12	773	201	43	1275
Emley, S. F. (See Randall and Smith, assignors.)						
Emmart, William M., Baltimore, Md. Can-soldering machine	382,463	May 8	895	226	43	606
Emmons, Thomas A., Lawrence, Mass. Machine for making loom-harness	383,716	May 29	2743	722, 723, 724	43	1076
Engelberg, Evaristo C., Piracicaba, Brazil. Rice-hulling machine	383,285	May 22	2105	556	43	944
Engley, Wetherell & Co. (See Barney, Frank P., assignor.)						
English, Andrew J., Cincinnati, Ohio. Gas-burner	382,695	May 15	1244	325	43	766
English, James G., assignor to English & Mersick, New Haven, Conn. Carriage-curtain-cord holder	382,957	May 15	1593	416	43	837
English & Mersick. (See English, James G., assignor.)						
Eno, Joseph A., assignor to Eno Steam Generator Company, Newark, N. J. Steam-generator	384,898	June 19	1581	411	43	1438
Eno Steam Generator Company. (See Eno, Joseph A., assignor.)						
Entwisle, Edward B., Johnstown, Pa., assignor to Johnson Steel Street Rail Company, of Kentucky. Die for making railway-chairs	381,875	Apr. 24	2069	616	43	495
Epstein, Ludwig, Martinikenfelde, near Berlin, Germany. Secondary battery	382,430	May 8	812	207	43	674
Epstein, Ludwig, Martinikenfelde, near Berlin, Germany. Secondary battery	383,216	May 22	1998	523, 524	43	925
Erb, Fred, Jr., assignor to J. O. Perrin, Lafayette, Ind. Flying target	383,348	May 22	2106	578	43	969
Erbe, Barthel, Pittsburg, Pa. Wire-gripper	380,749	Apr. 10	666	184	43	142

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Erbe, Barthel, Pittsburg, Pa. Wire-stretcher	380,750	Apr. 10	667	185	43	142
Ericson, John, Sabine Pass, La. Floating oil-distributer for vessels	380,479	Apr. 3	252	69	43	58
Erie Car Heating Company. (See Botsford, Frederick G., assignor.)						
Ernst, George D., Buffalo, N. Y. Reversing-gear for printing-press cylinders	381,991	May 1	153	39	43	543
Ertel, John C. (See Meyer and Sutphen, assignors.)						
Erwin, Charles M., Birmingham, Ala., assignor of one-half to J. M. Watt and M. Whipple, Washington, D. C. Safety-flange for railway-rails	384,435	June 12	886	231	43	1298
Erwin, James B., Milwaukee, Wis. Air-compressor	382,760	May 15	1324	348	43	782
Erwin, James B., Milwaukee, Wis. Motor	384,612	June 19	1154	305, 306	43	1336
Eschner, Louis, Philadelphia, Pa. Implement for turning tubular fabrics	382,958	May 15	1594	416	43	837
Escobar, Juan de la Cruz, Matanzas, Cuba, assignor to F. G. Tilton, Newark, N. J. Type-writing machine	382,146	May 1	395	103	43	586
Escovar, Fernando, Mexico, Mexico. Alterative tonic	380,676	Apr. 10	862	.....	43	177
Esselbach, Joseph, Dresden, Saxony, Germany. Wire fastener for boxes	381,684	Apr. 24	2078	543	43	440
Esselburn, John. (See Marts and Esselburn.)						
Esser, Hermann, Hoboken, N. J. Ink-supplying device	384,699	June 19	1582	412	43	1438
Essex, Henry, Meadville, Pa. Machine for making wire nails	384,515	June 12	1014	264	43	1321
Essick, Samuel V., Brooklyn, N. Y. Printing-telegraph	383,450	May 29	2343	622, 623	43	994
Essig, Benton, assignor of one-half to S. Essig, Disko, Ind. Harrow	381,467	Apr. 17	1758	470	43	358
Essig, Selton. (See Essig, Benton, assignor.)						
Estabrook, Harry F., assignor to S. B. Estabrook, Worcester, Mass. Bird-food holder	382,255	May 1	558	141	43	616
Estabrook, Sarah B. (See Estabrook, Harry F., assignor.)						
Esterly, George, Whitewater, Wis. Harvester-reel	384,139	June 5	438	122	43	1205
Esterly, George, Whitewater, Wis. Grain-binder	384,140	June 5	440	122	43	1206
Esterly, George, Whitewater, Wis. Harvester	385,047	June 26	1817	466, 467	43	1494
Esterly Harvesting Machine Company. (See Agenten, Joseph, assignor.)						
Estes, James W., East Atchison, Mo. Potato-planter	384,353	June 12	774	201, 202	43	1275
Estey, David M. (See Clapp, Dwight C., assignor.)						
Ethridge, Martin V. B., Boston, assignor of one-half to H. E. Waite, West Newton, Mass. Water-current-power transmitter	382,959	May 15	1595	416	43	837
Ette, Charles G., St. Louis, Mo. Hydrant	382,642	May 8	1158	298	43	741
Ette, Charles G., St. Louis, Mo. Hydrant	382,960	May 15	1596	417	43	837
Ettling, Alice M. (See Cately, Shepard W., assignor.)						
Evans, Arthur K., Toronto, Ontario, Canada. Rope-grip or selvagee-strop	383,803	May 29	2895	764	43	1103
Evans, David, Ansonia, Conn. Machine for tinning copper sheets	383,116	May 22	1861	486	43	898
Evans, Hampton W., Philadelphia, Pa. Combined center, T, and try square, bevel, and clinometer	380,714	Apr. 10	614	169	43	131
Evans, James E., Cincinnati, Ohio. Velocipede	383,258	June 26	2131	544	43	1558
Evans, John W., Cleveland, Ohio. Percolator	381,062	Apr. 10	1154	308	43	232
Evans, Joseph W., Newburyport, Mass. Street-car	381,918	May 1	98	8	43	520
Evans, Lucius S., Alvarado, Tex. Combined revolving harrow and cultivator	383,286	May 22	2106	556	43	944
Evans, Thomas, New York, N. Y. Malt-mashing machine	384,568	June 12	1069	285, 286	43	1336
Evans, William, Jr., Philadelphia, Pa. Measuring-vessel	385,303	June 26	2207	566	43	1572
Evener Spring Company. (See Carrey, Edward C., assignor.)						
Everett, Charles J., Tenafly, N. J. Constructing street-curbing of artificial stone	382,602	May 15	1386	364	43	794
Everett, Willard S., Hyde Park, Mass. Harness-saddle tree	380,624	Apr. 3	476	134	43	97
Everitt, Percival, London, England. Apparatus for automatically closing receptacles for coins, &c.	382,606	May 15	1245	325	43	767
Everson, George R., assignor of one-half to W. L. Rockenfield, Cincinnati, Ohio. Sheet-metal folder	383,390	May 22	2252	599	43	970
Everson, George R., assignor of one-half to W. L. Rockenfield, Cincinnati, Ohio. Sheet-metal-bending machine	383,391	May 22	2254	599	43	971
Ewart Manufacturing Company. (See Ewart, William D., assignor.)						
Ewart, William D., assignor to Ewart Manufacturing Company, Chicago, Ill. Sprocket-wheel	382,079	May 1	306	80	43	569
Excelsior Iron Fence Company. (See Davy, John W., assignor.)						
Excelsior Manufacturing Company. (See O'Keefe, John, assignor.)						
Excelsior Metallic Packing Company. (See Pineh, Frank, assignor.)						
Expanded Metal Company. (See Golding, John F., assignor.)						
Expanded Metal Company. (See Golding and Burkee, assignors.)						
Eyaenbach, Henry P., Delphos, Ohio. Elastic folding display envelope	381,919	May 1	99	9	43	520
Faber, Eberhard. (See Musselman, Oscar, Jr., assignor.)						
Faber, William A., Danbury, Conn. Adjustable handle	384,098	June 5	277	77	43	1174
Facer, John. (See Hampton and Facer.)						
Fackenthall, Hart J., and D. Wallace, Philadelphia, Pa. Railway-rail pad	382,603	May 15	1387	364	43	795
Fahlberg, Constantin, assignor to Fahlberg, List & Co., Salbke Westerhüsen, Prussia, Germany. Apparatus for obtaining phosphorous trichloride	381,685	Apr. 24	2078	543	43	440
Fahlberg, List & Co. (See Fahlberg, Constantin, assignor.)						
Fahnestock, Fredrick S., Cohoes, N. Y. Potted-plant support	385,174	June 26	1997	511	43	1531
Fairbanks & Company, E. & T. (See Abbott, Arthur V., assignor.)						
Fairbanks, Crawford M., Lincoln, R. I. Machine for cutting files	380,751	Apr. 10	668	185	43	142
Fairbanks, Thaddeus, assignor to Feed-Water Heater Company, St. Johnsbury, Vt. Feed-water heater	381,618	Apr. 24	1986	521	43	422
Fairman, Simon, assignor to B. G. Harris, Baltimore, Md. Car-coupling	381,352	Apr. 17	1586	425	43	325
Fairman, Simon assignor to B. G. Harris, Baltimore, Md. Car-brake	381,353	Apr. 17	1587	425	43	326
Falen, Orange B., Canfield, Ohio. Hopple	382,869	May 15	1469	385	43	812
Falize, Lucien, Fils. (See Bapst and Falize.)						
Fallgatter, John A. (See Ward and Fallgatter.)						
Falls, Alonzo, assignor of one-half to A. G. Cumnock, Lowell, Mass. Mechanism for stripping the top-flats of carding-machines	382,598	May 8	1100	283	43	729
Falls Rivet Company. (See Keller, John A., assignor.)						
Farbenfabriken, vormals Fr. Bayer & Company. (See Hernberg, Martin, assignor.)						
Farbwerke, vormals Meister, Lucius & Brüning. (See Ullrich, Eduard, assignor.)						
Fargue, Robert H., Brooklyn, N. Y. Truss	383,717	May 29	2748	724	43	1076
Farina, Antoninus, assignor, by mesne assignments, to P. Farina, New York, N. Y. Shoe-heel	381,686	Apr. 24	2079	543	43	441
Farina, Petrina. (See Farina, Antoninus, assignor.)						
Farlow, James N., Lander, Wyo. Ter. Strap-edging machine	384,029	June 5	278	78	43	1174

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Farlow, James N., Lander, Wyo. Ter. Hame	384,030	June 5	279	78	43	1174
Farmer, Moses G., Elliot, Me. Telephone-transmitter	380,426	Apr. 3	173	48	43	36
Farmer, Moses G., Elliot, Me. Telephone-transmitter	380,427	Apr. 3	175	48	43	36
Farmer, Moses G., Elliot, Me. Apparatus for forming sheets of nickel or other metal by electrolysis	381,004	Apr. 10	1065	283	43	215
Farmer, Conrad and G. Linder, Milwaukee, Wis. Knotter for grain-binders	384,245	June 12	610	164	43	1247
Farnham, Isaiah H., Malden, assignor to New England Telephone and Telegraph Company, Boston, Mass. Telephone-transmitter	380,752	Apr. 10	668	185	43	142
Farnsworth, George. (See Schmid, Charles, assignor.)						
Farr, William A., East Carmel, Ohio. Tension device for use in making fences	382,464	May 8	887	226	43	667
Farrar, Cyrus S., assignor of one-half to F. B. Wiggins, East Saginaw, Mich. Machine for sharpening saws, &c	384,613	June 19	1157	306	43	1356
Farrar, Frederick, Brooklyn, N. Y. Appliance for cleaning pipe-coils	382,147	May 1	396	{103 104}	43	566
Farrar, J. Hamilton, Chicago, Ill. Railway-signal	380,316	Apr. 3	14	3	43	5
Farrin, Lemuel J. (See Bachlott and Farris.)	382,870	May 15	1470	386	43	812
Farwell, Frederic E., Fitchburg, Mass. Bench for circular saws	380,560	Apr. 3	347	110	43	79
Fate, John L., Milwaukee, Wis. Station and street indicator	382,519	May 8	970	244	43	703
Fate, John L., Milwaukee, Wis. Station and street indicator	382,520	May 8	972	245	43	704
Faulkner, George S., Indianapoli Ind. Gas pressure-regulator and cut-off	384,967	June 26	1677	435	43	1465
Faulkner, James J., Jackson, Mich. Flour-mill	385,175	June 26	1997	512	43	1571
Faulkner, John, Austin, Ill. Supply-check and waste-pipe valve	384,633	June 19	1488	388	43	1490
Faure, Camille A., New York, N. Y., assignor to Electrical Accumulator Company, of New York. Automatic switch for secondary batteries	382,509	May 8	1102	283	43	730
Faure, Camille A., New York, N. Y., assignor to Electrical Accumulator Company, of New York. Propelling vehicles by electricity	383,561	May 29	2525	666	43	1028
Faure, Camille A., New York, N. Y., assignor to Electrical Accumulator Company, of New York. Secondary battery	383,562	May 29	2527	666	43	1028
Faure, Camille A., Paris, France, assignor to Electrical Accumulator Company, of New York. Secondary battery	383,560	May 29	2525	666	43	1028
Fanstmann, George, Philadelphia, Pa. Gimp-machine	385,048	June 26	1821	467	43	1484
Favell, Thomas M. (See Stokes, Loney, and Favell.)						
Fawell, Joseph, and J. Hemphill, Pittsburg, Pa. Rolling-mill	382,035	May 1	240	61, 62	43	558
Fay, Charles R., Auburn, N. Y. Suspending device	383,577	June 5	34	11	43	1128
Fay, Henry C., Worcester, Mass. Folding case	382,604	May 15	1368	364	43	785
Fearon, Charles, Philadelphia, Pa. Game-counter	380,428	Apr. 3	176	48	43	36
Feed Water Heater Company. (See Fairbanks, Thaddeus, assignor.)						
Feeney, Michael B., New York, N. Y. Automatic screen or door for obstructing the passage of flame	384,141	June 5	443	{122 123}	43	1206
Fehrer, Joseph, assignor of one-half to A. S. Bohn, Frederick, Md. Corn-planter	384,834	June 19	1489	{388 [illegible]}	43	1490
Feicker, Fredrick C., assignor to Northampton Cutlery Company, Northampton, Mass. Fork-guard	380,798	Apr. 10	742	203	43	156
Feicker, Fredrick C., assignor to Northampton Cutlery Company, Northampton, Mass. Fork-guard	384,900	June 19	1583	412	43	1438
Feldhaus, Henry B. (See Fink, John M., assignor.)						
Fellows, George A., Chicago, Ill. Cabinet-case for holding railway-folders	380,877	Apr. 10	863	232	43	177
Felthousen, E. G., *et al.* (See Hart, Thomas J., assignor.)						
Fenn, Henry, Bridgeport, Conn. Ticket-holder	384,684	June 19	1261	331	43	1377
Fenner, Richard E., assignor to C. K. Giles, Chicago, Ill. Electric-arc lamp	382,421	May 8	813	207	43	674
Ferguson, James. (See Humstone, Edwin M., assignor.)						
Ferguson, James. (See Rice, David H., assignor.)						
Ferce, Alfred E., Boston, Mass., assignor to E. C. Potts, Tivoli, N. Y. Making syrup and beer from maize. (Reissue)	10,925	May 1	606	{153 154}	43	694
Ferrell, Leonidas C., and D. Israel, Donaldsonville, La. Shackle	381,005	Apr. 10	1067	283	43	215
Ferrier, Philo, Ypsilanti, Mich. Roller-mill	380,878	Apr. 10	864	233	43	178
Ferris, George L., St. Louis, Mo. Type-writing machine	384,142	June 5	444	{123 124}	43	1206
Ferris, Hiram R. (See Young, Lambert, and Ferris.)						
Fesler, William H., Columbiana, Ohio. Billiard cue	384,614	June 19	1159	306	43	1357
Fessenden, George B., Boston, Mass. Watchman's time-detector	381,992	May 1	154	39	43	543
Fessenden, George B., Boston, Mass. Watchman's time-detector	381,993	May 1	156	39, 40	43	543
Field, Benjamin F., Chicago, Ill. Barrel-cover attachment	383,349	May 22	2187	578	43	960
Field, Stephen D., Yonkers, N. Y. Electric locomotor	380,879	Apr. 10	865	{233 234}	43	178
Field, Stephen D., Yonkers, N. Y. Electric locomotive	380,880	Apr. 10	871	234	43	179
Field, Stephen D., Yonkers, N. Y. Regulation of electric motors	381,768	Apr. 24	2192	574	43	462
Field, Stephen D., Yonkers, N. Y. Electric railway	384,685	June 19	1262	{331 332}	43	1377
Field, Walter D., Short Hills, N. J. Pyroxyline varnish	381,354	Apr. 17	1560	.....	43	326
Fielder, Edwin H. J., Providence, R. I. Picking sweep-strap connection for looms	382,600	May 8	1103	283	43	730
Fields, James H., Lebanon, Tenn. Car-coupling	382,517	May 29	2456	651	43	1015
Fifield, Charles S., Revere, Mass. Seam-rubbing machine	383,574	June 5	34	11	43	1128
Fifield, Zacheus B., St. Paul, Minn. Self-cleaning smoke-jack	383,575	June 5	35	12	43	1128
Fillebrown, Augustus A. (See Frost, Oscar F., assignor.)						
Filstrup, Lars L., Ravenswood, and G. Van Zandt, Chicago, Ill. Tuning-peg for stringed instruments	382,465	May 8	888	226	43	667
Finigan, Peter A., San Francisco, Cal. Stalls for separating horses on race-tracks	382,961	May 15	1597	417	43	837
Fink, John M., assignor of one-half to H. B. Feldhaus, Louisville, Ky. Press for forming leather saddle-trees	382,962	May 15	1599	{417 418}	43	837
Fink, Marx, Pittsburg, Pa. Ornamenting glass	384,569	June 12	1091	296	43	1336
Fink, Millard F., Middletown, Md. Gate	382,601	May 8	1104	283	43	730
Finke, Alberto, New Berlin, N. Y. Road-grader	383,350	May 22	2189	579	43	960
Finlay, Alexander K., New Orleans, La. Cooler for soda-water apparatus, &c	383,518	May 29	2457	651	43	1016
Finley, John E., Memphis, Tenn. Churn-dasher	380,753	Apr. 10	672	185	43	143
Firth, Edwin, A. and I. Tompkins, Troy, N. Y. Manufacture of axle-skeins	381,355	Apr. 17	1561	426	43	296
Fischbach, Wilhelm. (See Volkmann, Otto, assignor.)						
Fischer, Frank G., Harrold, Dak. Ter. Bag-holder	380,794	Apr. 10	743	204	43	156
Fischer, Frederick. (See Zelly, John, assignor.)						
Fischer, Frederick G., assignor of one-half to J. C. Higdon, Kansas City, Mo. Base-ball glove	381,687	Apr. 24	2090	544	43	441
Fischer, Friedrich, Des Moines, Iowa. Steam-engine	384,246	June 12	612	164	43	1246

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Fish, Henry C. (See Pond and Norton, assignors.)						
Fisher, Charles. (See Rensland and Fisher.)						
Fisher, Edmund G., Minneapolis, Minn. Registering and recording weighing-scale	383,451	May 29	2344	{823 824}	43	994
Fisher, Frank E., Detroit, Mich. Telephone call-bell system	383,568	May 29	2548	{866 867}	43	1069
Fisher, Frank E., Detroit, Mich. Armature for electric motors	383,564	May 29	2529	667	43	1029
Fisher, Frank E., Detroit, Mich. Dynamo-armature	383,565	May 29	2530	667	43	1029
Fisher, Frank E., Detroit, Mich. Annunciator	383,566	May 29	2531	668	43	1029
Fisher, Frank E., Detroit, Mich. Armature for dynamos	383,567	May 29	2532	668	43	1029
Fisher, George, and P. Rappold, Toledo, Ohio. Alarm water-gage	380,681	Apr. 10	872	234	43	179
Fisher, Harvey L. (See Ballard and Fisher.)						
Fisher, James L., *et al.* (See Payne, Samuel A., assignor.)						
Fisher, Joseph H., Merchantville, N. J. Automatic wagon-brake	380,754	Apr. 10	672	186	43	143
Fiske, Bradley A., U. S. Navy. Means for regulating and controlling electric motors	381,228	Apr. 17	1461	375	43	288
Fiske, Bradley A., U. S. Navy. Steering apparatus for vessels	385,230	June 26	2173	544	43	1550
Fiske, John D., Baltimore, Md. Valve for steam-engines	383,987	May 22	2108	567	43	945
Fitch, Arden S. (See Volney, Carl W., assignor.)						
Fitch, Calvin H., Poultney, Vt. Prescription-weighing scale	384,247	June 12	613	165	43	1246
Fitch, Edwin E., assignor of one-half to C. Wheeler, Jr., Auburn, N.Y. Identifying device	385,106	June 26	1905	485	43	1512
Fitchburg Machine Works. (See Marble, George L., assignor.)						
Fitzgerald, James A., Philadelphia, Pa. Display-rack	383,117	May 22	1864	487	43	899
Fitzgerald, Mathew, assignor of one-half to T. McDonough, Troy, N. Y. Steel tie for railway-tracks	383,118	May 22	1865	487	43	899
Fitzpatrick, Thomas, New York, N. Y. Apparatus for automatically lubricating steam-chests	384,354	June 12	776	202	43	1276
Flagg, George H. P., *et al.* (See Bradford, Charles K., assignor.)						
Flagg, George H. P., trustee. (See Fullerton, George A., assignor.)						
Flagg, George H. P., trustee. (See Helms, Charles H., assignor.)						
Flagg, Joseph W. (See Claflin and Flagg.)						
Flagler, John H., New York, N. Y. Manufacture of shafts and ordnance	385,049	June 26	1822	467	43	1485
Flammang, Mathias, Newark, N. J., assignor to Scovill Manufacturing Company, New York, N. Y. Photographic-plate holder	384,835	June 19	1496	389	43	1422
Fleischmann, Charles L., Washington, D. C. Sewing-machine	380,317	Apr. 3	15	4	43	6
Fleming, Alexander, Cedar Town, Ga. Cotton-chopper	380,429	Apr. 3	176	48	43	36
Fleming, Mayhury W., New Brighton, and C. R. Le Sauvage, Brooklyn, N. Y. School-slate and ruler therefor	383,945	June 5	154	45	43	1150
Fletcher, James R., Clarksville, Iowa. Elliptic spring	381,688	Apr. 24	2081	544	43	441
Flinner, John, Boling, Kans. Gate	384,750	June 19	1358	355	43	1306
Flint, Nathan R., East Hiram, Me. Lathe for wooden handles	384,355	June 12	776	203	43	1276
Floquet, Paulin. (See De Willers, Leopold C., assignor.)						
Florence Machine Company. (See Gaylord, George B., assignor.)						
Florence Machine Company. (See Shumway, Albert W., assignor.)						
Floyd, Edward A., Paola, Kans. Artificial tooth	384,836	June 19	1497	389	43	1422
Floyd, John. (See Murphy and Floyd.)						
Fogarty, James H., New York, N. Y., and F. M. Wheeler, Montclair, N. J. Steam-actuated valve	380,882	Apr. 10	873	235	43	179
Fohlin, Ernest V., Salt Lake City, Utah Ter. Book-cover	342,148	May 1	398	104	43	567
Foland, Charles G., *et al.*, administrators. (See Sherman, Wardell B.)						
Foland, Marion E., *et al.*, administrators. (See Sherman, Wardell B.)						
Folkers, Sarah B. (See Wolff, Jnatus, assignor.)						
Follett, Charles, *et al.* (See Dowling, Robert H., assignor.)						
Follett, Charles H., *et al.* (See Dowling, Robert H., assignor.)						
Folsom, Charles, New York, N. Y. Sample-fastener	381,769	Apr. 24	2193	573	43	462
Foos, John. (See Way, Frank K., assignor.)						
Foote, Theodore M., assignor to W. Lumb, trustee, Boston, Mass. Speed-regulator	383,452	May 29	2347	{624 625}	43	995
Forbes, Martin W. (See Judy and Forbes.)						
Ford, George, New Harmony, Ind. Gate	381,063	Apr. 10	1156	308	43	232
Ford, Robert, Sr., Earling, Iowa. Wagon-brake	380,679	Apr. 10	568	156	43	122
Ford, Thomas. (See Bentley and Ford.)						
Foreman, Samuel E., Randolph, Kans. Cover for strainer-pails	380,318	Apr. 3	16	4	43	6
Foreshaw, Nathan, St. Louis, Mo. Sad-iron heater	381,468	Apr. 17	1761	471	43	350
Forg, Peter, Somerville, Mass. Bedstead-fastener	385,260	June 26	2125	544	43	1550
Fornachon, Edmund, La Mothe, near Yverdon, Switzerland. Musical box	382,080	May 1	309	81	43	570
Forry, Charles E. (See Linsley and Forry.)						
Forster, William T., Erie, Pa. Air-compressor	384,356	June 12	779	203	43	1276
Forsyth, Henry H., Pittsburg, Pa. Die for forging	384,751	June 19	1359	365	43	1306
Forsyth, James B. (See Nelson, Anthony, assignor.)						
Forsyth, John H., Fargo, Dak. Ter. Measuring-lagger	381,122	Apr. 17	1264	338	43	263
Fort Worth Iron Works Company. (See Moore, John F., assignor.)						
Foss, Oscar J., Minneapolis, Minn. Bundle-carrier for harvesters	383,718	May 29	2750	724	43	1076
Foster, Horatio A., Boston, Mass. Guard-rail and insulator for electric railways	384,801	June 19	1585	412	43	1438
Foster, Lucian M., assignor to S. Foster, Brunswick, N. Y. Railway-gate	380,319	Apr. 3	17	4, 5	43	6
Foster, Samuel. (See Foster, Lucian M., assignor.)						
Foust, George B. M., Pittsburg, Pa. Lock	383,638	May 29	2626	695	43	1051
Fowler, Alfred S., and G. E. Warren, Exeter, N. H., assignors to Rockingham Machine Company, of New Hampshire. Burnishing or trimming tool	384,902	June 19	1585	412	43	1438
Fowler, Forman P., and M. V. B. Waldorf, Wolcott, N. Y. Coiled spring	380,651	Apr. 3	513	143	43	104
Fowler, George H., Tanghannock Falls, N. Y. Hay-carrier	384,968	June 26	1678	436	43	1465
Fowler, John W. (See Hutton, John, assignor.)						
Fowler, Joseph C., and E. A. Hankin, Washington, D. C. Web turning and reversing device for printing-machines	383,568	May 29	2532	668	43	1029
Fowler, Joseph E., Mack's Creek, Mo. Wagon-standard	382,963	May 15	1600	418	43	838
Fowler, William C., and W. G. Schaefer, St. Louis, Mo. Baker's oven	380,561	Apr. 3	387	{110 111}	43	79
Fowles, Warren, Mexico, Mo. Washing-machine	382,149	May 1	399	104	43	567
Fox & Co., Samuel. (See Jeffery, Henry, assignor.)						
Fox, Edward, assignor of one-half to P. Reilly, Brooklyn, N. Y. Ventilating-wheel	383,217	May 29	1980	524	43	925
Fox, Frank A., New York, assignor to C. E. Bishop, Brooklyn, N. Y., and R. S. Beers, Bridgeport, Conn. Car-coupling	384,312	June 12	704	187	43	1264
Fox, Fred H. (See Annen and Fox.)						
Fox, Hugh L. (See Tolle, Morris, assignor.)						
Fox, James S., Detroit, Mich. Railway-spike	385,107	June 26	1906	486	43	1512

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Fox, John B., Milwaukee, Wis. Carriage-bow	383,876	June 5	36	12	43	1198
Fox, Samson, Leeds, county of York, England. Corrugating-machine	384,031	June 5	280	78, 79	43	1175
Fox, William R. (See Mentzer, Jonathan R., assignor.)						
Fox, William R., Grand Rapids, Mich. Safety-valve	382,643	May 8	1159	296	43	741
Fox, William R., Grand Rapids, Mich. Dado-cutter	384,248	June 12	615	165	43	1348
Fox, William T., Rochester, N. Y., assignor to Crane Elevator Company, Chicago, Ill. Hydraulic elevator	384,436	June 12	888	231, 232	43	1296
Fraenkel, Louis. (See Weiss and Fraenkel.)						
Fraley, Robert M., Forest Hill, Ind. Lifting-jack	382,964	May 15	1601	418	43	938
Frame, Nathan T., Jamestown, Ohio. Railway-rail joint	384,249	June 12	617	166	43	1349
Francillon & Co., Ernest. (See Gerber, Henri, assignor.)						
Francis, Edmund, Austin, Ill. Counter-illuminating room	384,903	June 19	1586	413	43	1438
Frank, Fred. (See Garrett and Frank.)						
Frank, Joseph W., Emporia, Fla. Circular sawing machine	382,081	May 1	311	81	43	570
Frankel, Alexander C., assignor to J. Lagowitz, Newark, N. J. Traveling-bag	384,969	June 26	1680	436	43	1466
Frankenberg, Eduard, Hanover, Prussia, Germany. Embroidering attachment for sewing-machines	384,198	June 5	530	145	43	1234
Frantz, George S., Urbana, Ohio. Boot or shoe	384,437	June 12	891	232, 233	43	1299
Frazer, J. J. (See Benham, Elijah B., assignor.)						
Fred, Matts, Hancock, Mich. Water-proof paint	380,795	Apr. 10	744	.....	43	156
Frederick, Carl C., Lancaster, Mo. Hanging sheet-metal guttering to the eaves of houses	381,770	Apr. 24	2194	574	43	463
Fredericks, William H., Johnstown, Pa. Apparatus for transferring pig-iron from its bed	380,025	Apr. 3	477	134	43	97
Free, Henry. (See Darling and Free.)						
Freeland, James R., assignor of one-half to E. C. Bradley, Wellsville, N. Y. Singletree	383,351	May 22	2192	579	43	961
Freeman, Edwin P. J., Roslyn, N. Y. Faucet	385,108	June 26	1906	486	43	1512
Freeman, George R., Middleville, Mich. Mop-wringer	382,965	May 15	1602	419	43	838
Freeman, George P., *et al.* (See Atkinson, William W., assignor.)						
Freeman, Scott C., and J. B. Soward, Nevada, Mo. Burglar-alarm	384,752	June 19	1361	355	43	1396
Freeman, Stephen, Racine, Wis. Cotton-chopper	384,516	June 12	1017	265	43	1322
Freese, John S., Brooklyn, N. Y. Button-hole sewing-machine	382,466	May 8	890	227, 228	43	687
Freese, Peter C., Cayuga, N. Y. Wire fence	383,804	May 29	2296	764	43	1103
Freitag, Andreas, assignor to Naamlooze Vennootschap Wester Suiker-Raffinaderij, Amsterdam, Netherlands. Centrifugal machine	382,966	May 15	1603	419	43	839
French, George B., Fremont, Nebr. Machine for softening and bending the horns of cattle	383,519	May 29	2458	651	43	1016
French, Nahum W., North Haverhill, N. H. Fence	381,496	Apr. 17	1803	479	43	368
French, Zachary T., and W. C. Meyer, Boston, Mass. Leather-gouging machine	381,994	May 1	159	40, 41	43	543
French, Zachary T., and W. C. Meyer, Boston, Mass. Machine for cutting and embossing button-holes	381,995	May 1	163	41, 42, 43	43	544
Frenier, John H., assignor of one-half to L. Leblanc, Rutland, Vt. Sand and water distributer for stone-sawing machines	384,615	June 19	1160	307	43	1357
Frey, John W., Baltimore, Md. Fire-escape ladder	382,150	May 1	400	105	43	587
Frey, Sheckler & Hoover. (See Niedergeaess, Robert, assignor.)						
Fridy, Sam M. (See Slaughter, David, assignor.)						
Fried, Hermann, Cannstadt, Würtemberg, Germany. Suspender-fastening	381,833	Apr. 24	2301	598	43	482
Friede, Samuel M., assignor of one-half to J. D. Abeles and L. Goldman, St. Louis, Mo. Street and station indicator	383,392	May 22	2255	600	43	971
Fries, Jacob, Reading, Pa. House-warming apparatus and stove	383,119	May 22	1866	487	43	899
Frischels, Fablan S., Lititz, Pa. Automatic car-link	383,453	May 29	2348	625	43	995
Frishmuth, William, assignor to W. H. Gaw, Philadelphia, Pa. Galvanic cell	380,430	Apr. 3	177	49	43	36
Fritts, Charles E., New York, N. Y. Production, transmission, and distribution of electric currents	383,580	May 29	2460	651, 652	43	1016
Froling, Hermann. (See Karges, Robert, assignor.)						
Frost, Daniel C., Springfield, Mass. Halter	381,123	Apr. 17	1265	338	43	263
Frost, Edward J., Philadelphia, Pa. Device for regulating the quality of carbureted vapor or gas	381,619	Apr. 24	1988	522	43	422
Frost, George, *et al.* (See Preston, Charles A., assignor.)						
Frost, George A., *et al.* (See Preston, Charles A., assignor.)						
Frost, John B., assignor of one half to C. E. Sheldon, Akron, Ohio. Riveting-machine	384,199	June 5	532	145, 146	43	1234
Frost, Oscar F., Monmouth, Me., assignor of one-half to A. A. Fillebrown, Ayer, Mass. Detachable shelf and heat regulator for ovens	381,229	Apr. 17	1404	375	43	289
Frost, Walter E., Lewiston, Me., assignor to Mousam Manufacturing Company, of Maine. Machine for stripping leather-board	384,032	June 5	282	79, 80	43	1175
Fry, Joseph H., Washington, D. C. Plow	382,297	May 8	686	160	43	639
Fuchs, Charles H., Sandusky, Ohio. Machine for the manufacture of chalk, crayons, &c.	383,174	May 22	1937	508	43	913
Fuller, Arthur, trustee. (See Gordon, William, assignor.)						
Fuller, Henry W. and W., Seneca, Kans. Calf-weaner	380,796	Apr. 10	744	204	43	156
Fuller, John W. (See Armeah, John G. E., assignor.)						
Fuller, Walter. (See Fuller, Henry W. and W.)						
Fullerton, George A., *et al.* (See Bradford, Charles K., assignor.)						
Fullerton, George A., Boston, Mass. Heel-stiffener machine	384,753	June 19	1362	356	43	1396
Fullerton, George A., assignor to G. H. P. Flagg, trustee, Boston, Mass. Machine for buffing boot or shoe soles	382,967	May 15	1604	419, 420	43	839
Fullmer, A. J. (See Williams, Walter D., assignor.)						
Fulton, Samuel W., near Northwood, Ohio. Fence-post	382,256	May 1	550	141	43	616
Furber, Harrison W., Boston, Mass. Boot or shoe	380,715	Apr. 10	616	169	43	132
Furnas, John D., Waynesville, Ohio. Spring	380,480	Apr. 3	251	70	43	52
Furniss, Frederick H., Waterloo, N. Y. Drive-well point	382,697	May 15	1246	326	43	767
Fyfer, John T. (See Henninger, Frederick A., assignor.)						
Gabbs, William H., San Francisco, Cal. Trunk-harness	380,431	Apr. 3	178	49	43	37
Gage, Loren F. (See Merithew, Zacheus W., assignor.)						
Gage, Mary S., St. Louis, Mo. Stove	381,517	June 12	1019	265	43	1322
Gail, Harry S., Highland Park, assignor to F. C. Austin, Chicago, Ill. Drilling-tool	381,124	Apr. 17	1266	339	43	264
Gaitley, John E., Troy, N. Y. Fire-poker	381,356	Apr. 17	1592	426	43	336
Gale, Charles E., assignor of one-half to C. W. Vaughn and E. H. Wood, Plattsburg, N. Y. Churn	384,518	June 12	1020	265	43	1322
Gale, Horatio, and C. D. Wiselogel, Albion, Mich. Pressure-regulator	381,877	June 5	38	12	43	1128
Gale, William L., Memphis, Mo. Clothes-drier	384,616	June 19	1161	307	43	1358
Gallaher, Benjamin D. (See Zallud, Karl, assignor.)						
Galland, Charles, Lyons, France. Newspaper-selling apparatus	382,521	May 8	974	245	43	704

Name residence and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Gally, Merritt, New York, N. Y. Mechanical musical instrument	380,716	Apr. 10	617	170	43	132
Galstee, Gabriel J. W., New York, N. Y. Cloth-cutting machine	385,050	June 26	1894	468	43	1495
Gamble, James N. (See Stickney, Paul, assignor.)						
Gamble, Joseph W., assignor of one-half to J. McCarney, Adair, Iowa. Draft-evener	380,755	Apr. 10	674	188	43	144
Gamble, Joseph W., and L. M. Ratt, Casey, Iowa. Sickle-grinder	385,176	June 26	1999	518	43	1531
Gauss, Hervey D., Chicago, Ill. Device for operating a set of levers	382,398	May 8	698	160, 161	43	639
Gaster, Edward D., Glasgow, Ky. Lock pin or breech	383,719	May 29	2751	725	43	1077
Gard, William E., Meriden, Conn. Furniture-caster	384,837	June 19	1498	392	43	1432
Gardiner, Stephen H., Lynn, Mass. Fire-escape	384,143	June 5	448	104	43	1237
Gardner, Emmet V. R., West Town, N. Y. Hay or straw grappling fork	384,970	June 26	1681	436, 437	43	1466
Gardner, James C., Chicago, Ill. Extension-ladder	382,871	May 15	1471	388	43	812
Gardner, John A., Calico, N. C. Rice-rake, cotton-chopper, and cultivator	380,883	Apr. 10	875	235	43	179
Gardner, Marshall. (See Stone and Gardner.)						
Gardner, Marshall, assignor of one-half to J. Stone, Aurora, Ill. Box of plastic material	383,175	May 22	1940	509	43	914
Gardner, Rufus, Scotland Neck, N. C. Peanut-planter	381,357	Apr. 17	1583	426	43	337
Gareau, Roch R., assignor of one-half to P. J. Beaubien, Detroit, Mich. Office-indicator	383,393	May 22	2259	600	43	972
Garfield Injector Company. (See Young, Lambert, and Ferris, assignors.)						
Garland, Michael, and A. D. Catlin, Bay City, Mich.; said Catlin assignor to said Garland. Direct-acting steam-engine	382,092	May 1	312	82	43	570
Garland, Milton H., Somerville, Mass. Inkstand	382,698	May 15	1248	326	43	767
Garner, Henry, *et al.* (See Gasking, George H., assignor.)						
Garnier, Emile. (See Lecouteux and Garnier.)						
Garrett, Albert F. M., and F. Frank, Daderille, Ala., assignors to said Garrett. Wrench	382,049	May 15	1756	454	43	887
Garrett, William, and S. T. Wellman, Cleveland, Ohio. Rolling-mill plant	381,689	Apr. 24	2092	545	43	441
Garrett, William H., Geneva, Nebr. Feed-trough	384,357	June 12	781	204	43	1277
Garrison, Charles M., Wichita, Kans. Means for utilising the current force of running water	385,961	June 26	2130	544, 545	43	1530
Garrison, Fred A., Fort Dodge, Iowa. Photographic cabinet	384,754	June 19	1363	357	43	1397
Garrison, Rheuben W., *et al.* (See Pope, James M., assignor.)						
Garsed, Joshua, Philadelphia, Pa. Skein-reel	381,771	Apr. 24	2195	574	43	463
Garsed, Robert P., Norristown, Pa. Track-buffer	380,640	Apr. 10	569	157	43	123
Garsed, Robert P., Norristown, Pa. Pneumatic annunciator	384,144	June 5	448	124	43	1237
Garst, Stephen H., Greenville, Ohio. Manure-distributer	383,639	May 29	2626	695, 696	43	1051
Gärtner, Albert F. (See Gemünden and Gärtner.)						
Gartside, William N., Richmond, Ind. Door-plate and indicator	380,652	Apr. 3	514	144	43	104
Garver, David A., and C. H. Straight, Bryan, Ohio. Tray for wheelbarrows	380,562	Apr. 3	389	111	43	79
Garver, David A., and C. H. Straight, Bryan, Ohio. Wheelbarrow	381,358	Apr. 17	1594	426	43	337
Garver, David A., and C. H. Straight, Bryan, Ohio. Tube and making the same	385,109	June 26	1907	4-6	43	1513
Garvey, Owen F., Pawtucket, R. I. Soldering-pliers	381,544	Apr. 24	1880	496	43	400
Gas Consumers Benefit Company of the United States. (See Jackson, Walter M., assignor.)						
Gas Motoren Fabrik Deutz. (See Otto, Nicolaus A., assignor.)						
Gash, Edgar, Macomb, Ill. Broom-holder	380,390	Apr. 3	19	5	43	6
Gaskill, Harvey F., Lockport, N. Y. Triple-expansion engine	384,250	June 19	618	166, 167	43	1249
Gaskin, Robert, Jr., Portland, New Brunswick, Canada. Machine for truing the teeth of saws	383,720	May 29	2752	725	43	1077
Gasking, George H., assignor to H. Garner and C. M. Dimmick, Newburg, N. Y. Combined whip-socket and rein-holder	381,359	Apr. 17	1595	427	43	337
Gaskins, Thomas, Arcadia, Fla. Car-coupling	382,602	May 8	1105	294	43	730
Gaston, Augustine J., Beloit, Wis. Paint-mill	383,332	May 22	2193	579, 580	43	961
Gates, George W., Oshkosh, Wis. Match-frame	383,721	May 29	2753	725	43	1077
Gates, George W., Oshkosh, Wis. Match press or frame	383,722	May 29	2754	725	43	1077
Gates, Philetus W., Chicago, Ill. Pulverizer	380,432	Apr. 3	179	49, 50	43	37
Gathmann, Louis. (See Wemple, Andrew, assignor.)						
Gatling, Richard J., Hartford, Conn. Apparatus for casting ordnance	380,756	Apr. 10	675	186, 187	43	144
Gault, Alexander, Medford, Minn. Artificial leg	383,569	May 29	2533	609	43	1030
Gauzentes, Charles. (See Spink and Gauzentes.)						
Gavin, George. (See Cromer and Gavin.)						
Gaw, William H. (See Frishmuth, William, assignor.)						
Gayler, Adolph L., New Britain, Conn. Razor	380,387	Apr. 3	123	36	43	26
Gaylord, George B., Providence, R. I., assignor to Florence Machine Company, Florence, Mass. Oil-stove	383,805	May 29	2897	764, 765	43	1103
Gazeley, Frederick, Montreal, Quebec, Canada, assignor to J. J. Drummond, Chicago, Ill. Office-file for letters, papers, &c.	381,360	Apr. 17	1596	427	43	337
Geary, John, Philadelphia, Pa. Electric annunciator	381,772	Apr. 24	2196	574	43	463
Gedge, Burton H., Covington, Ky. Electric railway-signal	382,299	May 8	632	161	43	640
Geesen, Adolph, Beloit, Kans. Attachment for bridles	383,176	May 22	1941	509	43	914
Geis, Michael. (See Leibert, Anthony, assignor.)						
Geltz, William T., Mansfield, Ohio. Cash and package carrier	385,110	June 26	1908	486	43	1513
Gemünden, George A., and A. F. Gärtner, Savannah, Ga. Bung-fastener	381,920	May 1	30	9	43	569
Gendron, Peter, Toledo, Ohio. Upsetting-machine	382,355	May 8	722	182	43	656
Gendron, Peter, Toledo, Ohio. Vehicle-wheel	382,356	May 8	723	182	43	656
Gendron, Peter, Toledo, Ohio. Rolling tires	383,521	May 29	2470	652	43	1017
Gennert, Emil F., Brooklyn, N. Y. Adjustable nipple for incandescent electric lamps	381,921	May 1	31	9	43	569
Gennert, Emil F., and D. N. Gleason, Brooklyn, assignors to E. P. Gleason Manufacturing Company, New York, N. Y. Punch and die	382,357	May 8	724	182, 183	43	656
Gentry, Joshua H., Sheldon, Mo. Hog-trap	383,218	May 22	2001	524	43	936
George, Adam, and W. Kleindinst, Buffalo, N. Y. Water-wheel	384,438	June 19	1498	390	43	1423
Georget, François X., Camden, N. J. Railway-bedding	381,125	Apr. 17	1268	339	43	263
Georgia, Harrison W., Smethport, and E. Andrews, Williamsport, Pa. Device for jointing, dressing, and sharpening saws	382,467	May 8	802	228	43	687
Gerardi, Pascal, et al. (See Odorizzi, Joseph, assignor.)						
Gerber, Henri, assignor to E. Francillon & Co., St. Imier, Switzerland. Watch-case pendant	383,219	May 22	2002	524	43	936
Gere, George H., Fort Plain, N. Y. Device for derailing cars	383,723	May 29	2755	726	43	1077
Germann, John M., New York, N. Y. Spoke-drawer	381,690	Apr. 24	2084	545	43	442
Gersch, Charles H., Chicago, Ill. Cable-covering machine	383,353	May 22	2195	580	43	961
Getty, George G., Adams, Mass. Door-screener	383,794	May 29	2756	726	43	1078
Geyer, William E. (See Bristol and Geyer.)						
Geyser, Jacob, Allegheny, assignor of one-half to C. H. Miller, Pottsville, Pa. Arrow for passing cord through pipe-lines	382,257	May 1	560	141	43	616

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Ghegan, John J., Newark, N. J. Boiler-alarm	383,946	June 5	155	45	43	1150
Ghegan, John J., Newark, N. J. Magneto-electric liquid-level indicator	384,200	June 5	535	146	43	1224
Gibbs, George, Milwaukee, Wis. Interlocking switch and signal	381,773	Apr. 24	2197	575	43	463
Gibson, Charles D. P., New York, N. Y. Plate for storage-batteries	382,356	May 8	726	183	43	657
Gibson, Charles D. P., New York, N. Y. Storage-battery	382,969	May 15	1605	420	43	839
Gibson, Charles D. P., New York, N. Y. Storage-battery plate	383,640	May 29	2631	686	43	1032
Gibson, Jacob H., New York, N. Y. Baby-carriage	381,834	Apr. 24	2302	580	43	482
Gibson, Lucius B., Pueblo, Colo. Motor for street-cars	384,145	June 5	449	134	43	1207
Gibson, Lucius B., Pueblo, Colo. Motor for street-cars	384,146	June 5	451	125	43	1208
Gibson, Lucius B., Pueblo, Colo. Motor for street-cars	384,147	June 5	452	125	43	1208
Gibson, Parish & Company. (See Phelps, Charles H., assignor.)	381,148	June 5	453	125	43	1208
Gibson, Samuel, San Francisco, Cal. Construction of subway-yokes for cable roads	382,969	May 15	1608	420, 421	43	839
Gibson, Samuel, San Francisco, Cal. Cable-railway grip	382,970	May 15	1609	421	43	840
Gifford, Cyrus. (See Necker and Gifford.)						
Gilbert & Bennett Manufacturing Company. (See Dreadul, Paul, assignor.)						
Gilbert, Wallace B. (See Reynolds, John, assignor.)						
Gilchrist, Raymond B., Peoria, Ill. Cork-extractor	384,839	June 19	1500	380	43	1423
Gildea, John, *et al.* (See King, William H., assignor.)						
Gile, Fred H., Alfred, Me. Siphon	384,251	June 12	619	167	43	1249
Giles, Charles K. (See Fenner, Richard E., assignor.)						
Gill, Asher B., Philadelphia, Pa. Check register or tally	384,438	June 12	893	233	43	1299
Gill, James B., San Francisco, Cal. District-telegraph call-box	383,220	May 22	2092	525	43	926
Gill, Richard, W. H. Butler, and S. Smith, Lawrence, Mass. Spinning-frame	380,563	Apr. 3	349	111	43	79
Gill, William E., and R. Segerdahl, assignors to J. F. Wollensak, Chicago, Ill. Electrical needle annunciator	383,727	May 29	2757	726	43	1078
Gillies, Herman, and D. Stern, Meadville, Pa. Alarm-lock	382,971	May 15	1611	421	43	840
Gillespie, James W. (See Battle, John N., assignor.)						
Gillespie, Thomas A. (See McSweeney, Terrence, assignor.)						
Gillet, Charles F., Springfield, Ill. Fence-machine	385,304	June 26	2308	566, 567	43	1572
Gillette, George H., Newark, N. J. Fruit-basket	382,761	May 15	1325	348	43	783
Gillie, William M., Tonawanda, N. Y. Steering apparatus and windlass	380,481	Apr. 3	254	70	43	52
Gilliland, Ezra T. (See Edison and Gilliland.)						
Gilliland, Ezra T., assignor to American Bell Telephone Company, Boston, Mass. Telephone-transmitter	384,201	June 5	536	146	43	1225
Gillis, William, Buckingham, Quebec, Canada. Band-saw mill	384,252	June 12	621	167	43	1249
Gilmore, Isaac C. H., and H. B. Stafford, Oskaloosa, Iowa. Sad-iron	381,006	Apr. 10	1067	263	43	216
Glass, George, Cadillac, Mich. Device for side-dressing saws	384,149	June 5	425	125, 126	43	1208
Glass, H. L. (See Kendrick, William F., assignor.)						
Glatz, Joseph. (See Domeier and Hagemann, assignors.)						
Glazbrook, Charles A. (See Tolhurst, Glazbrook, Philbey, and Lockerbie.)						
Glazier, George P. (See Wood, James P., assignor.)						
Gleason, Duane A. (See Gennert and Gleason.)						
Gleason Manufacturing Company, E. P. (See Gennert and Gleason, assignors.)						
Gleason, William J. (See Jones, Edmund C., assignor.)						
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heeling-machine	382,762	May 15	1326	349	43	783
Glidden, Chase E., *et al.* (See Cuason, Japhet S., assignor.)						
Glidden, Joseph F., *et al.* (See Cuason, Japhet S., assignor.)						
Glidden, Oscar F., assignor, by mesne assignments, to Michigan Washing Machine Company, Grand Rapids, Mich. Washing-machine	383,425	May 22	2309	612	43	981
Glock, Charles C., *et al.* (See Leland, Edwin A., assignor.)						
Glover, Almon B., Birmingham, Conn. Wire-nail machine	383,878	June 5	39	12, 13, 14	43	1129
Glover, Joshua E., *et al.* (See Jarboe and McHale, assignors.)						
Godding, Milon O. (See Godding, Talmai F. and M. O.)						
Godding, Milon O., Monrovia, Cal. Danger-signal for bridges	384,755	June 19	1365	357	43	1397
Godding, Talmai F., Longmont, Colo., and M. O. Godding, Santa Anita, Cal. Hay-rake	383,454	May 29	2349	625	43	995
Goddu, Louis, Winchester, Mass. Car-truck	381,620	Apr. 24	1989	522	43	422
Goddu, Louis, Winchester, assignor to J. W. Brooks, trustee, Cambridge, Mass. Nailing-machine	383,455	May 29	2350	625, 626, 627	43	995
Godley, George F., Philadelphia, Pa. Car-axle lubricator	381,691	Apr. 24	2085	546	43	442
Godwin, John C., Royse City, Tex. Drill	385,111	June 26	1909	487	43	1513
Goetze, George H., Bahner, Mo. Sheaf-carrier	382,603	May 8	1106	284	43	731
Goggans, Daniel P., *et al.* (See Parkston, George W., assignor.)						
Gohen, James A., Huntington, W. Va. Detachable car-seat arm	383,726	May 29	2758	727	43	1078
Goldie, William. (See Durell and Goldie.)	384,904	June 19	1588	413	43	1439
Golding, John F., Chicago, Ill., assignor to Expanded Metal Company, of Missouri. Machine for making slashed metallic screening	381,231	Apr. 17	1407	377, 378	43	289
Golding, John F., and G. B. Darkee, Chicago, Ill., assignors to Expanded Metal Company, of Missouri. Machine for slashing and expanding flat sheet metal to form meshes	381,230	Apr. 17	1405	376	43	289
Goldman, Leon, *et al.* (See Friede, Samuel M., assignor.)						
Goldsmith, Gustavus A. (See Hoffman, Joseph, assignor.)						
Goldsmith, Max S., Cincinnati, Ohio. Burglar-proof safe	380,717	Apr. 10	619	170	43	132
Goldstein, Abraham. (See Bernstein and Goldstein.)						
Gooch, John, Brompton Road, county of Middlesex, England. Shop-front	381,361	Apr. 17	1397	327	43	327
Good, William E., Reading, assignor to Southwark Foundry and Machine Company, Philadelphia, Pa. Compressing or blowing engine	381,876	Apr. 24	2370	616, 617	43	495
Goodale, Stephen L., Saco, Me. Fertilizer	382,604	May 8	1107		43	731
Goode, Joseph T., Point Peter, Ga. Sweep	382,592	May 8	976	246	43	704
Goode, William H. C., assignor of one-half to W. E. Kilborn, Sidney, Ohio. Wheelbarrow	382,593	May 8	977	246	43	704
Goodell Company. (See Oaks, William A. C., assignor.)						
Goodell, Henry, *et al.* (See Kelly, Wallace C., assignor.)						
Goodenough, Frankl'n L., *et al.* (See Heath, Watson A., assignor.)						
Goodfellow, James, New York, N. Y. Appliance for railway-cars	383,456	May 29	2355	627	43	996
Goodfellow, James T. (See Hart and Goodfellow.)						
Goodfellow, James T., Troy, N. Y., assignor to Iron Car Company, Stamford, Conn. Metallic platform for railway-cars	385,177	June 26	2000	513	43	1531

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Goodfellow, John H., Troy, N. Y., assignor to Lamson Store Service Company, Boston, Mass. Store-service apparatus	381,545	Apr. 24	1881	496	43	460
Goodrich, R. Elmer, assignor of one-half to C. B. Bryant, New Haven, Conn. Sheet-metal joint	382,151	May 1	400	105	43	587
Goodsell, Charles H., Poughkeepsie, N. Y. Velocipede	384,150	June 5	456	126	43	1209
Goodwin, Edward F., assignor to E. F. Goodwin, trustee, Taunton, Mass. Lock	383,522	May 29	2471	652	43	1018
Goodwin, Edward F., assignor to E. F. Goodwin, trustee, Taunton, Mass. Tag-holder	383,523	May 29	2473	653	43	1018
Goodwin, George. (See Goodwin, John B. and G.)						
Goodwin, John B., assignor to W. P. Goodwin, Providence, R. I. Folding and swinging gate	381,064	Apr. 10	1157	309	43	233
Goodwin, John B., assignor to W. P. Goodwin, Providence, R. I. Folding and swinging gate	381,065	Apr. 10	1159	309	43	233
Goodwin, John B. and G., assignors to said G. Goodwin and W. P. Goodwin, Providence, R. I. Folding and swinging gate	381,066	Apr. 10	1161	309, 310	43	234
Goodwin, William P. (See Goodwin, John B., assignor.)						
Goodwin, William P. (See Goodwin, John B. and G., assignors.)						
Goodyear, Albert, New Haven, Conn. Harvesting-machine	381,232	Apr. 17	1409	378, 379, 380	43	290
Goodyear, Lewis, Trumansburg, N. Y. Twine guide and cutter	383,120	May 22	1867	488	43	899
Gordian Nut Lock Association. (See Castle, Orlando L., assignor.)						
Gordon, Fred. W., assignor to Gordon, Strobel & Laureau, Philadelphia, Pa. Dust-catcher for blast-furnaces	381,774	Apr. 24	2199	575	43	464
Gordon, John H. (See Storle, Ole O., assignor.)						
Gordon, Strobel & Laureau. (See Gordon, Fred. W., assignor.)						
Gordon, William, Melrose, assignor to A. Fuller, trustee, Boston, Mass. Sole-edge-burnishing machine	381,497	Apr. 17	1804	479	43	368
Gore, Henry A., H. W. Rn Ton, and G. W. Kelley; said Kelley assignor to E. W. Walker, Goshen, Ind. Carpet-sweeper	383,806	May 29	2899	765	43	1104
Gorrell, John B., assignor of two-thirds to W. J. and F. A. Hogue, La Otto, Ind. Windmill	384,756	June 19	1366	358	43	1398
Gorrell, Thomas S., and E. M. Tubbs, Pittsburg, Kans. Hay-press	381,007	Apr. 10	1069	263	43	216
Gorsuch, George W., assignor of one-third to P. H. Bridenbaugh, Martinsburg, Pa. Harrow	381,835	Apr. 24	2303	599	43	482
Gorton, William E., Moline, Ill. Belting-reel frame	382,152	May 1	401	105	43	587
Goss, Lucius, New York, N. Y. Machine for planing stereotype-plates	383,221	May 22	2004	525	43	926
Gostling, Charles R., Whitehall, assignor of one-half to S. B. Wellington, Catasauqua, Pa. Kiln for burning hydraulic cement	384,905	June 19	1589	414	43	1439
Gottschalk, Andrew, Martin's Ferry, Ohio. Collar for lamps	382,605	May 8	1108	285	43	731
Gould, Eugene H., Beverly, Mass. Knife-blade holder	381,333	Apr. 17	1413	340	43	291
Gould, Forrest B., Milford, Mass. Apparatus for photographing by artificial light	384,151	June 5	458	126	43	1209
Gould, John C., Chicago, Ill. Nail-plate feeder	385,112	June 26	1912	487, 488	43	1514
Gould, John D. (See Tisdale, Charles D., assignor.)						
Gould, John H., Philadelphia, Pa. Flexible pipe-coupling	381,008	Apr. 10	1070	264	43	216
Goulden, Samuel, and J. Clarke, Toronto, Ontario, Canada. Burglar-alarm	382,972	May 15	1612	422	43	840
Gowen, William, Wausau, Wis. Automatic offset for saw-mill carriages	383,457	May 29	2356	627	43	997
Gowen, William, Wausau, Wis. Band-saw mill	383,458	May 29	2358	628	43	997
Gowen, William, Wausau, Wis. Band-saw mill	383,459	May 29	2363	628, 629	43	998
Gowen, William, Wausau, Wis. Offsetting mechanism for saw-mill carriages	383,460	May 29	2365	629	43	998
Gowen, William, Wausau, Wis. Saw-mill	383,461	May 29	2366	629, 630	43	999
Grabler, Peter, St. Louis, Mo. Drill-socket	383,280	May 22	2110	557	43	945
Grabler, Peter, St. Louis, Mo. Screw-cutting die and stock	383,354	May 22	2197	580	43	962
Gräbner, Johann C., Kupferhammer, and H. Rupertl, Brackwede, assignors to K. & Th. Möller, Kupferhammer, Prussia, Germany. Steam-engine	385,113	June 26	1915	488	43	1514
Grace, Henry S., assignor of one-half to C. W. Decker, San Francisco, Cal. Hand-piece for dental engines	380,433	Apr. 3	181	50	43	37
Graeff, Friedrich, Alkmaar, Holland. Producing dried extract of rennet	384,358	June 12	782	.....	43	1277
Grafstrom, Edward. (See Harrington and Grafstrom.)						
Graham, George H. (See Crealman, John A., assignor.)						
Graham, James, Detroit, Mich. Combined pencil-rack and eyeglass-hook	381,692	Apr. 24	2087	546	43	442
Graham, James A., Milwaukee, Wis., assignor to Milwaukee Harvester Company. Grain-binder	383,462	May 29	2368	630	43	1000
Graham, John, Barnesbury, county of Middlesex, England. Apparatus for receiving tickets from ticket printing or numbering machines	381,196	Apr. 17	1269	339, 340	43	264
Graham, John C. (See Pearson, Fred, assignor.)						
Graham, John M., assignor to himself, S. C., M., and T. C. L. Graham, Pittsburg, Pa. Telephone-transmitter	381,234	Apr. 17	1414	381	43	291
Graham, Martha, *et al.* (See Graham, John M., assignor.)						
Graham, Oliver J., Spokane Falls, Wash. Ter. Washing-machine	381,302	Apr. 17	1599	428	43	398
Graham, Sarah C., *et al.* (See Graham, John M., assignor.)						
Graham, Thomas C. L., *et al.* (See Graham, John M., assignor.)						
Grange, William. (See Smith, Orren M., assignor.)						
Granger, Alson M., Glenwood, Mass., assignor to Volker & Felthousen Manufacturing Company, Buffalo, N. Y. Valve	382,594	May 8	978	246	43	704
Grant, John, Beverly, Mass. Fire-escape	383,570	May 29	2534	660	43	1030
Grant, Joseph A. (See Drew and Grant.)						
Granville, Bernard, Chicago, Ill. Type-writing machine	382,036	May 1	242	62, 63	43	558
Graesler, William F., assignor of three-fourths to W. G. Elliot, Williamsport, Pa. Automatic pipe-coupling for railway-cars	383,288	May 22	2108	557	43	945
Gravit, William, Elkhart, Ind. Mechanism for operating derailing switches and semaphores	383,947	June 5	156	46	43	1150
Gray, Carroll E. Waukesha, Wis. Draft-regulator	382,699	May 15	1249	326	43	767
Gray, Charles W., *et al.* (See Broyles, George E., assignor.)						
Gray, George, New York, N. Y. Mulled frame for school-slates	381,363	Apr. 17	1600	428	43	398
Gray, William. (See Baines, Charles, assignor.)						
Graydon Dynamite Projectile Cartridge and High Explosive Company. (See Graydon, James W. assignor.)						
Graydon, James W., assignor, by mesne assignments, to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. Shell for explosives	382,223	May 1	502	130	43	606
Graydon, James W., assignor, by mesne assignments, to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. Shell	382,226	May 1	508	131	43	607
Graydon, James W., assignor, by mesne assignments, to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. Contact-fuse for projectiles	382,227	May 1	511	131	43	607

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Graydon, James W., assignor, by mesne assignments, to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. Preparing explosives for use	382,223	May 1	512	132	43	608
Graydon, James W., assignor to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. High-explosive shell	382,224	May 1	504	130	43	606
Graydon, James W., assignor to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. High-explosive shell	382,225	May 1	506	131	43	607
Graydon, James W., assignor to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. Explosive charge	382,229	May 1	513	132	43	608
Greaves, John, St. Louis, Mo. Demagnetizer	384,152	June 5	459	{126 127	43	1209
Green, George F., Kalamazoo, Mich., assignor of two-thirds to O. S. Kelley, Springfield, Ohio. Cash and parcel carrier	381,127	Apr. 17	1271	340	43	264
Greenawalt, Franklin S. S., *et al.* (See Greenawalt, Peter C., assignor.)						
Greenawalt, Peter C., assignor of two-thirds to F. S. S. Greenawalt and J. F. Holder, Reading, Pa. Car-coupling	384,359	June 12	781	204	43	1277
Greene, Edward F., and F. H. Hendryx, Bath, N. Y. Baking-pan	383,177	May 22	1941	508	43	914
Greene, Merritt, Marshalltown, Iowa. Wire barb	380,884	Apr. 10	876	235	43	180
Greene, Oscar C. (See Bullitt and Greene.)						
Greene, Wallace. (See Devore and Greene.)						
Greene, Wallace, *et al.* (See Devore, Levi M., assignor.)						
Greene, Webster M., assignor of one-half to F. W. Puffer, Lowell, Mass. Lamp-extinguisher	380,885	Apr. 10	877	235	43	180
Greening, Samuel O., Hamilton, Ontario, Canada. Lathe-pitman for wire-weaving looms	383,879	June 5	41	14	43	1129
Greenman, Corwin M., Wyandotte, Kans. Hatchway-gate for elevators	382,037	May 1	246	63	43	558
Greenfelder, Moses, Baltimore, Md. Cigar-bunching machine	384,757	June 10	1368	{358 359	43	1398
Greenwood, Alexander S., Cleveland, Ohio. Card-rack	384,439	June 12	894	233	43	1299
Greenwood, William. (See Morley and Greenwood.)						
Gregory, Alphonso L. (See Bell and Gregory.)						
Greim, Otto F., Newark, N. J. Electric-circuit controller	384,440	June 12	894	233	43	1299
Grelle, Henry W., assignor of two-thirds to F. J. Koerner and G. W. Byrne, Jr., New Orleans, La. Water-filter	381,067	Apr. 10	1167	310	43	235
Gresham, James, Stratford, near Manchester, England. Apparatus for applying sand to the driving-wheels of locomotives	381,837	Apr. 24	2305	600	43	483
Grier, William W., Hulton, Pa. Fifth-wheel	384,758	June 19	1370	359	43	1399
Gries, Wilhelm, Gummerabach, Prussia, Germany. Buckle or clasp	383,290	May 22	2112	557	43	946
Griest, John M., Chicago, Ill., assignor to Singer Manufacturing Company of New Jersey. Attachment-holder for sewing-machines	381,546	Apr. 24	1892	497	43	401
Griffin, Heber C., assignor to Griffin Lock Company, Franklin Falls, N. H. Combination-lock	381,068	Apr. 10	1168	311	43	236
Griffin Lock Company. (See Griffin, Heber C., assignor.)						
Griffin, Patrick, assignor of three-fourths to J. F. Leahy, E. Callahan, and J. Hackett, Utica, N. Y. Paving streets and roads	382,153	May 1	404	106	43	567
Griffin, Thomas A., Chicago, Ill. Foot-guard for railways	382,083	May 1	315	82	43	571
Griffin, Thomas A., Chicago, Ill. Railway-frog	384,617	June 19	1163	307	43	1358
Griffith, C. M., *et al.* (See Harris, Noah, assignor.)						
Griffith, Henry E., Rochester, N. Y. Ash-sifter	383,571	May 29	2535	669	43	1031
Griffith, William, *et al.* (See Brougher, David J., assignor.)						
Griffon, Emmanuel, Bordeaux, France. Apparatus for the propulsion of ships or vessels	381,235	Apr. 17	1416	{381 382	43	291
Griggs, George H., Elizabethport, N. J. Dumping-car	383,463	May 29	2369	630	43	1000
Grimes, Franklin, Richland Station, Pa. Land-roller	383,807	May 29	2900	765	43	1104
Grinberg, Paul J., New York, N. Y. Oil-stove	384,618	June 19	1163	{307 308	43	1358
Grissom, Abram J., White Wright, Tex. Automatic grain-measuring machine	380,718	Apr. 10	620	{170 171	43	133
Griswold, Catharine A., New York, N. Y. Corset. (Reissue)	10,935	June 5	575	157	43	1233
Griswold, Catharine A., New York, N. Y. Corset. (Reissue)	10,939	June 19	1655	430	43	1452
Griswold, J. Wool, Troy, N. Y. Barb-wire fence	380,388	Apr. 3	124	36	43	96
Griswold, Lewis F. (See Parker and Griswold.)						
Griswold, Stephen M., Brooklyn, N. Y. Handkerchief-holder	382,805	May 15	1369	364	43	795
Groat, Elias, San Francisco, Cal. Machine for disintegrating bituminous substances	383,973	May 15	1613	422	43	940
Grobecker, Paul, Artirn, Saxony, Germany. Apparatus for testing grain	381,469	Apr. 17	1763	471	43	359
Groff, Fayette, Saratoga Springs, N. Y. Child's vehicle	383,948	June 5	157	46	43	1150
Groner, J. A. C. (See Reynolds, Henry C., assignor.)						
Groom, Thomas, Highfield House, Wellington, county of Salop, England. Wheel	384,033	June 5	284	80	43	1175
Groshon, John A., New York, N. Y. Sectional steam-boiler	384,313	June 12	705	{187 188	43	1265
Gross, August. (See Klinik, Pinkowski, and Gross.)						
Gross, Augustus, Newcastle, New South Wales. Electric alarm for ships' compasses	381,693	Apr. 24	2087	{546 547	43	442
Grote, Herman. (See Pinetta, José, assignor.)						
Grove, David, Berlin, Germany. Water-heater	384,202	June 5	537	{146 147	43	1225
Grove, David, Berlin, Germany. Air-heater	384,203	June 5	538	147	43	1225
Grove, Jacob H. (See Schlimme, Henry, assignor.)						
Grove, William H., assignor of one-half to C. R. Drosbach, Circleville, Ohio. Wheel-planter	382,644	May 8	1160	299	43	741
Grovesteen, Milton W., and F. G. Jahn, New York, N. Y. Electric-circuit-closing device	384,570	June 12	1092	287	43	1336
Grunmon, Robert S., assignor to Sargeant Manufacturing Company, Newark, N. J. Manufacture of harness-mountings	384,571	June 12	1094	287	43	1337
Grusenwerk. (See Röstel, Carl, assignor.)						
Guastavino, Rafael, New York, N. Y. Fire-proof building	383,050	May 15	1756	454	43	868
Guela, Herman, assignor to American Brake Company, St. Louis, Mo. Valve for air-brakes	384,686	June 19	1365	338	43	1378
Guels, Herman, assignor to American Brake Company, St. Louis, Mo. Air-brake system	384,687	June 19	1367	333	43	1378
Guile, George H., Three Mile Bay, N. Y. Metallic fence	383,222	May 22	2005	526	43	927
Gülcher, Robert J., Berlin, Germany. Thermo-electric generator	383,464	May 29	2370	631	43	1000
Gulickson, George, Chicago, Ill. Grate and furnace for steam-boilers	380,719	Apr. 10	623	{171 172	43	133
Gulliver, William C., *et al.*, administrators. (See Hotchkiss, Benjamin B.)						
Gunn, John C., *et al.* (See Bartlett, Thomas J., assignor.)						
Gustavesen, Charles J., Salt Lake City, Utah Ter. Sweat-pad	383,051	May 15	1758	454	43	868
Gustlin, Abram, Boone, Iowa. Water-power	383,291	May 22	2113	558	43	946
Guthrie, James F., Jr., Somerville, assignor of one-half to T. C. Ashley, Boston, Mass. Spring-dividers	384,971	June 26	1685	437	43	1467
Haag, John C., Lansing, Mich. Machine for making picket fences	380,482	Apr. 3	255	70	43	52

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Haase, Leo G., Oak Park, Ill. Machine for making cement pipes	382,974	May 15	1614	{422 423	43	841
Hack, Henry S., Taunton, Mass. Card-hanger	384,034	June 5	285	80	43	1175
Hackaley, John, *et al.* (See Hackaley, William, assignor.)						
Hackaley, William, assignor of two-thirds to J. Hackaley and J. P. Hillard, Fall River, Mass. Spinning-mule	381,089	Apr. 10	1169	311	43	236
Hackett, John, *et al.* (See Griffin, Patrick, assignor.)						
Hackett, John C., St. Louis, Mo. Hame-fastener	383,727	May 29	2759	727	43	1078
Haddock, Worcester, assignor of one-half to Sillie & Dahlmeier, Cincinnati, Ohio. Machine for cutting moldings	380,434	Apr. 3	183	50, 51	43	97
Haddow, William, Newton, Mass. Planer-gage and caliper	380,797	Apr. 10	745	204	43	157
Hadfield, Joseph, New York, and F. McConnell, Brooklyn, N. Y. Soil-pipe ventilator	385,302	June 26	2187	545	43	1539
Hadley, Charles F., Chicopee, assignor to Overman Wheel Company, Boston, Mass. Bicycle	380,686	Apr. 10	878	236	43	180
Hadley, Ethan, Chicopee Falls, assignor to Dover Stamping Company, Boston, Mass. Egg-beater	380,564	Apr. 3	391	118	43	89
Hagar, Benjamin R., Bradford, Pa. Wrench	384,975	May 15	1616	423	43	841
Hagemann, Randolph F., D. Noggle, and R. S. Eads, New Madison, Ohio. Corn-shuck compressor	383,355	May 22	2196	581	43	988
Hagemann, Otto C. (See Domeier and Hagemann.)						
Hager, Charles, assignor of one-half to H Berthig, Buffalo, N. Y. Freight-car door	382,154	May 1	404	106	43	568
Hager, Henry D. (See Blasier, David J. assignor.)						
Hagerty, Thomas F., San Francisco, Cal. Button-hole sewing-machine	382,762	May 15	1398	349	43	793
Hagg, William L., Lansing, Mich. Machine for splicing wire	383,178	May 22	1942	509	43	914
Haggenmiller, Louis and O., Philadelphia, Pa. Apparatus for pitching barrels	385,178	June 26	2003	513	43	1538
Haggenmiller, Otto. (See Haggenmiller, Louis and O.)						
Hahn, Albert K. (See Circle, Franklin P., assignor.)						
Hahn, Isaac H., New York, N. Y. Automatic car-alarm operator	383,524	May 29	2474	653	43	1018
Haines, Byron W., San Francisco, Cal. Dental plugger	381,364	Apr. 17	1601	428	43	328
Haines, John H. J., Flushing, N. Y. Attachment for filling cans	381,236	Apr. 17	1422	382	43	298
Haines, Samuel A., Guide, Tex. Mechanical motor	382,525	May 8	979	247	43	705
Hairgrove, George W. (See Irwin and Hairgrove.)						
Haischer, Victor, *et al.* (See Stasch, Emil R., assignor.)						
Haish, Jacob, De Kalb, Ill. End-gate	380,483	Apr. 3	256	71	43	33
Haish, Jacob, De Kalb, Ill. Wagon-bolster	384,619	June 19	1164	308	43	1358
Haish, Jacob, De Kalb, Ill. Railway-truck	384,620	June 19	1165	308	43	1359
Hake, Cecil N. (See Dupré and Hake.)						
Hake, Samuel E., Youngstown, Ohio. Cotton-seed planter	384,314	June 12	706	{186 189	43	1265
Hale, Henry S., Philadelphia, Pa. Car-seat	384,153	June 5	461	127	43	1210
Hale, James W., Newburyport, Mass. Mechanical toy	381,992	May 1	32	9	43	540
Haley, Thomas, Boston, Mass. Hose or pipe coupling	382,488	May 8	895	228	43	698
Hall, Arthur H., Chicago, Ill. Map-case	384,259	June 12	621	168	43	1250
Hall & Co., B. L. (See Lewis, Russell H., assignor.)						
Hall, Edward H., *et al.* (See Temme, Louis N., assignor.)						
Hall, Frederick C., Chicago, Ill. Buckle	383,121	May 22	1808	486	43	889
Hall, George. (See Dillon, William S. F., assignor.)						
Hall, George F., Boston, Mass., assignor to Nonantum Worsted Company, of Massachusetts. Reel-support	381,198	Apr. 17	1271	340	43	264
Hall, George F., New York, N. Y., assignor of one-half to P. Lowentrast, Newark, N. J. Rocking-chair	383,898	May 29	2901	{765 766	43	1164
Hall, Henry, assignor to Rensselaer Manufacturing Company, Lansingburg, N. Y. Straight-way stop-valve	384,986	June 19	1500	414	43	1439
Hall, Jay E., Swanton, Ohio. Tension device for rope transmission	384,360	June 12	785	205	43	1276
Hall, John D., Philadelphia, Pa. Wash-stand	381,621	Apr. 24	1991	{522 523	43	422
Hall, John E. (See Bridenthal, Hezekiah, assignor.)						
Hall, Samuel G., Cohoes, N. Y. Circular-knitting machine	384,621	June 19	1168	{308 309	43	1359
Hall, Zachary T., Philadelphia, Pa. Mug	385,179	June 26	2004	514	43	1538
Halladay Manufacturing Company, William H. (See Halladay, William H., assignor.)						
Halladay, William H., assignor to W. H. Halladay Manufacturing Company, Chicago, Ill. Saw-sharpening machine	381,775	Apr. 24	2200	576	43	464
Hallida, James G., Waterbury, Conn., assignor to S. E. May, New York, N. Y. Lamp	381,009	Apr. 10	1071	284	43	216
Hallidie, Andrew S., San Francisco, Cal. Wire-rope-making machine	381,365	Apr. 17	1604	429	43	329
Hallock, John K. (See Blickensderfer and Hallock.)						
Hallowes, James M., New York, N. Y. Car-axle box	383,738	May 29	2760	727	43	1078
Halsey, William S., Bridgeport, Conn. Machine for cutting the threads on bolts	380,887	Apr. 10	880	{236 237	43	180
Haltenan, Jacob. (See Rein, Burnard, assignor.)						
Halter, Leander. (See Rine and Halter.)						
Hamaker, David L., Chambersburg, Pa. Bolting-reel	384,520	June 12	1021	266	43	1323
Hambien, Rodney F. (See Hooper and Hambien.)						
Hambleton, Francis H., Baltimore, Md. Gas-pressure-governing apparatus	380,565	Apr. 3	391	112	43	89
Hamblin, Robert E., *et al.* (See Newsom and Oxley, assignors.)						
Hamblin, Silvanus and S. M., assignors to E. S. Douglass, Plymouth, and H. Sawyer, Boston, Mass. Loom picking mechanism	384,622	June 19	1175	310	43	1360
Hamblin, Stephen M. (See Hamblin, Silvanus and S. M.)						
Hamblin, Stephen M., Plymouth, Mass. Picker-stick for looms	382,645	May 8	1163	299	43	742
Hambruch, Heinrich F., assignor to A. F. Richter, Hamburg, Germany. Detachable button or stud	383,052	May 15	1759	454	43	868
Hamilton, Edward M. and J. Q., Russell's Place, Ohio. Car-coupling	384,840	June 19	1502	391	43	1423
Hamilton, John Q. (See Hamilton, Edward M. and J. Q.)						
Hamilton, Jonathan E., assignor of one-half to L. R. Palmer, Minneapolis, Minn. Apparatus for cooling or warming the rectum or vagina	380,696	Apr. 3	477	135	42	97
Hamilton, Joseph B., Springfield, Mass. Electro-magnetic separator	384,035	June 5	285	81	43	1176
Hamlet, David B., Bristol, Ind. Wagon and carriage lifter	382,700	May 15	1351	327	43	768
Hamlin, Mary J., Bartramville, Ohio. Clamp for fruit-cans	384,361	June 12	786	205	43	1278
Hammelrath, John M. (See Schumpe, Friedrich, assignor.)						
Hammer, Thorvald F. (See Lindner and Hammer.)						
Hammer, Thorvald F., Branford, Conn. Machine for tapping pipe-elbows	382,606	May 8	1160	285	43	731
Hammett, Hiram G., Troy, N. Y. Packing for balanced valves	382,300	May 8	633	161	43	649
Hammond, George W., Boston, Mass. Apparatus for canesticising soda, &c.	381,986	May 1	167	43	43	545
Hammond, Henry, Charlton, Mass. Fruit picker	382,764	May 15	1330	349	43	793

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Hampton, Robert I., Athens, Ga. Railway-ticket	380,566	Apr. 3	394	112, 113	43	81
Hampton, Thomas, and J. Facer, Barrow-in-Furness, county of Lancaster, England, assignors of one-third to P. S. Justice & Co., Philadelphia, Pa., and London, England. Mold for casting ingots	380,331	Apr. 3	20	6	43	6
Hand Power Test Machine Company. (See Mosser, Ferdinand, assignor.)						
Hanes, George W. (See Rand, Jefferson C., assignor.)						
Haney, John Q. A. (See Mitzel and Haney.)						
Hanford, Clarence C., Medford, Mass. Making malt liquors	382,155	May 1	406	106	43	569
Hanford, Clarence C., Medford, Mass. Apparatus for cooling liquids	382,156	May 1	407	106	43	569
Hänisch, Emil, and M. Schroeder, Hamborn, Prussia, Germany. Producing sulphuric anhydride	384,841	June 19	1503	391	43	1424
Hankin, William, Sr., Brooklyn, N. Y. Buck-saw-brace	380,567	Apr. 3	395	113	43	81
Hanks, Austin J., Wilmington, Ohio. Wheel	384,759	June 19	1372	359	43	1399
Hanly, Thomas F., assignor to F. A. Behan, New Orleans, La. Passenger-register	384,572	June 12	1095	287, 288	43	1337
Hanmore, Hiram M., Camden, N. J. Fire-kindler	381,237	Apr. 17	1423	382	43	892
Hanrez, Prosper, Brussels, Belgium. Steam-boiler	384,972	June 26	1685	438	43	1467
Hanscom, William W., San Francisco, Cal. Steam-actuated valve	380,868	Apr. 10	887	237, 238	43	189
Hansen, Alfred M., Fulton, Ill. Facing for walls of buildings	382,359	May 8	728	193	43	657
Hansen, Andrew, assignor of one-third to C. P. Jorgensen, Racine, Wis. Brake-lock	381,010	Apr. 10	1072	284	43	216
Hansen, Peder, Chicago, Ill. Tank-supply-regulating valve	382,301	May 8	634	161	43	646
Hansen, Sigvart, Bohn, assignor to C. Christophersen, Christiania, Norway. Horseshoe-nail machine	382,646	May 8	1163	300, 301	43	749
Hapgood Plow Company. (See Neff, Joseph B., assignor.)						
Harnain, Matthew, *et al.* (See Odorizzi, Joseph, assignor.)						
Harbert, William S., *et al.* (See Jewell, Crews, assignor.)						
Harbison, James, Schenectady, N. Y. Harness-bracket	381,776	Apr. 24	2202	576	43	464
Harcourt, Stillwell R., assignor to W. W. Kimball Company, Chicago, Ill. Piano-action	381,129	Apr. 17	1272	340	43	264
Harcourt, Stillwell R., assignor to W. W. Kimball Company, Chicago, Ill. Piano-forte action	384,254	June 12	623	166	43	1250
Harden, Albert, East Bridgewater, Mass., assignor of one-half to S. A. West, St. Louis, Mo. Shank-burnishing device	384,204	June 5	540	142	43	1226
Hardenbergh, Charles M., Minneapolis, Minn. Dust-collector	384,573	June 12	1096	288	43	1337
Hardenstein, A. O. (See Swafford and Burns, assignors.)	385,363	June 26	2138	545	43	1560
Harding, August, Oakland, Cal. Electric-arc lamp	380,435	Apr. 3	186	51, 52	43	38
Hardinge, Harry W., Leadville, Colo. Electric tele-thermoscope	382,976	May 15	1617	424	43	841
Hardwick, Harry, Philadelphia, Pa. Carpet fabric	382,157	May 1	409	107	43	569
Hardwicke, James K., and J. J. Redmon, Marshall, N. C. Apparatus for coloring tobacco	382,084	May 1	316	83	43	571
Hardy, John J., assignor to himself, L. W. Hardy, Lake View, J. A. Yale, J. E. Young, and D. L. Hough, Chicago, Ill. Universal table for drills	380,322	Apr. 3	23	6	43	7
Hardy, Lewis W., *et al.* (See Hardy, John J., assignor.)	381,130	Apr. 17	1273	341	43	265
Hardy, Moses F., Remsen, N. Y. Invalid-bedstead	382,872	May 15	1472	386	43	813
Harles, William, St. Louis, Mo. Fire-lighter	384,642	June 19	1504	391	43	1424
Harman, William, Oak Park, Ill. Bridge	383,880	June 5	42	14, 15	43	1129
Harmel, Albert, assignor to Société Harmel Frères, Val-des-Bois, near Warmeriville, France. Apparatus for dyeing	382,977	May 15	1619	423, 424	43	841
Harmon, Charles H., assignor to himself and W. H. Reed, Lebanon, Oreg. Oven attachment	381,470	Apr. 17	1764	471	43	359
Harmon, Eleazer, Baltimore, Md. Alarm-bolt for doors	384,760	June 19	1373	359, 360	43	1399
Harmon, Eleazer, Baltimore, Md. Alarm-bolt	384,761	June 19	1374	360	43	1399
Harmon, Legrand B., Caryaville, and J. N. Nutt, Sidney, Ohio. Fence-post	380,627	Apr. 3	478	135	43	97
Harmony, William P., Sidney, Ohio. Type-case stand	383,292	May 22	2114	558	43	946
Harness, Cornelius B., London, England. Electric belt	380,568	Apr. 3	396	113	43	81
Harper, Albertus V., Tower Hill, Ill. Fence-machine	382,596	May 8	981	247	43	705
Harper, Joseph H., *et al.* (See Elliott, Robert C., assignor.)						
Harpham, Julius C., Lincoln, Nebr. Rosette attachment for bridles	383,122	May 22	1868	498	43	899
Harrigan, Dennis, Somerville, Mass. Letter-box	384,154	June 5	464	127	43	1210
Harrington, Daniel, and M. A. Keane, New Brunswick, N. J. Combined tie, chair, and fish-plate	381,238	Apr. 17	1424	383	43	892
Harrington, Patrick S., Cheyenne, Wyo. Ter., assignor to Cheyenne Manufacturing Company, of Wyoming. Whip	382,258	May 1	561	141	43	617
Harrington, Randall A., Providence, R. I. Inclined railway and water-tobogganing apparatus	384,843	June 19	1506	391, 392	43	1424
Harrington & Richardson Arms Company. (See Caldwell, Homer M., assignor.)						
Harrington, Samuel H., Columbus, Ohio. Device for extinguishing fires and preventing the escape of steam in railway-cars	381,924	May 1	35	10	43	521
Harrington, Samuel H., and E. Grafstrom, Columbus, Ohio. Device for extinguishing fires in railway-cars	381,923	May 1	33	10	43	521
Harris, Benjamin G. (See Fairman, Simon, assignor.)						
Harris Button Hole Attachment Company. (See Williams, Henry J., assignor.)						
Harris, Carleton C., Rochester, N. Y. Fabric-turfing implement	381,997	May 1	170	44	43	545
Harris, Enoch, Evansville, Ind. Saw-tooth	381,011	Apr. 10	1073	285	43	217
Harris, George F., New York, N. Y. Laying railway-track	381,366	Apr. 17	1606	429, 430	43	329
Harris, James, Columbia, Mo. Fence	382,806	May 15	1390	365	43	795
Harris, James C. (See Burton, Augustus G., assignor.)						
Harris, John E., *et al.* (See Class, William F., assignor.)						
Harris, Lorenzo H., Aurora, Ill. Car-coupling	383,729	May 29	2760	728	43	1078
Harris, Morris C., San José, Cal. Printer's rule-case	382,038	May 1	247	63, 64	43	559
Harris, Noah, assignor of one-half to H. W. Porter and C. M. Griffith, Vincennes, Ind. Axle-washer	382,250	May 1	562	142	43	617
Harris, Rozell, Hackensack, N. J. Wagon-jack	382,807	May 15	1391	365	43	795
Harrison John, Winchester, county of Hants, England. Crank for velocipedes	381,547	Apr. 24	1884	497	43	401
Harrison, John G., 11 Noel Road, Edgbaston, England. Manufacture of axles for vehicles	384,521	June 12	1022	266, 267	43	1323
Harrison, John O. (See Harrison, William D., assignor.)						
Harrison, Thomas W., Topeka, Kans. Bag-lock	384,668	June 19	1371	333	43	1379
Harrison, William D., Pine Bluff, Ark., assignor of one-fourth to J. O. Harrison. Box lid	385,305	June 26	2211	567	43	1573
Hart, Anselem G., Chicago, Ill. Cigar-vending apparatus	381,239	Apr. 17	1425	383	43	892
Hart Emery Wheel Company. (See Rogers, Samuel C., assignor.) (Reissue.)						
Hart, Hubert C., Unionville, Conn. Caster-frame	383,595	May 29	2475	653	43	1018

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Hart, Thomas J., Detroit, Mich., assignor to E. G. Felthousen and C. A. Sherwood, Buffalo, N. Y. Lubricator	382,978	May 15	1623	424	43	842
Hart, William H., Brooklyn, and J. T. Goodfellow, Troy, N. Y., assignors to W. H. Johnstone, Philadelphia, Pa. System of electrical distribution	380,757	Apr. 10	677	188, 189	43	145
Hartman, John, Jr., Philadelphia, Pa. Sash-holder	381,131	Apr. 17	1274	341	43	265
Hartman, Samuel M., Reading, Pa. Trace-eye protector	383,526	May 29	2476	654	43	1019
Hartman, William M., Denver, Colo. Combined concentrator and amalgamator	382,701	May 15	1251	327	43	768
Hartness, James, assignor to Union Hardware Company, Torrington, Conn. Lock	384,441	June 12	895	234	43	1300
Harvey, Hayward A., Orange, N. J. Screw-swaging machine	383,949	June 5	158	46, 47	43	1151
Harvey, Thomas W., Orange, N. J. Portable photographic developing-box	385,264	June 26	2139	545	43	1560
Harwood, Alphranso A., McKeesport, Pa. Oil-furnace	383,123	May 22	1869	488, 489	43	899
Harwood, Herbert J., Littleton, assignor to Harwood Manufacturing Company, Boston, Mass. Folding chair	381,367	Apr. 17	1608	430	43	330
Harwood Manufacturing Company. (See Harwood, Herbert J., assignor.)						
Haselton, Daniel B., Charleston, S. C. Cotton-gin	383,223	May 22	2006	526	43	927
Haskell, Eugene E., Forestville, N. Y. Ship's log	384,362	June 12	787	205	43	1278
Haskell, Frank, Westbrook, Me. Machine for splitting warps	381,996	May 1	171	44, 45	43	545
Haskins, William E., Scarland, Ill. Watering-trough for cattle	383,124	May 22	1871	489	43	900
Hass, Theodore M., New York, N. Y. Album-clasp	382,392	May 8	636	162	43	649
Hassenkamp, Ernst, Elberfeld, Germany, assignor, by mesne assignments, to E. N. Dickerson, Jr., New York, N. Y. Production of blue-red azo dye-stuff by the action of tetrazoditolyl salts on beta naphthylamine monosulphe-acid	381,132	Apr. 17	1275	.....	43	265
Hassenkamp, Ernst, Elberfeld, Prussia, Germany, assignor, by mesne assignments, to E. N. Dickerson, Jr., New York, N. Y. Producing blue-red coloring-matter	381,471	Apr. 17	1765	.....	43	359
Hasslacher, Jacob, *et al.* (See Rumpf, Gustav, assignor.)						
Hasting, W. R., *et al.* (See Carroll, Samuel C., assignor.)						
Hat Wire Company. (See Newman, Samuel T., assignor.)						
Hatcher, Edmund N. (See Davidson, Joseph F., assignor.)						
Hatcher, Judson N., Americus, Mo. Gate	381,094	Apr. 24	2090	547	43	443
Hatcher, Richard M., St. Bethlehem, Tenn. Feeding device for sewing-machines	381,778	Apr. 24	2203	577	43	465
Hathaway, Henry E., Merrill, Wis. Clamp	382,808	May 15	1392	365	43	796
Hathorn, Henry W., Clear Lake, Iowa. Felt boot	384,155	June 5	464	128	43	1210
Hattersley, Alfred, Fort Wayne, Ind. Pop safety-valve	383,125	May 22	1871	489	43	900
Hattersley, Richard L., and J. Hill, Keighley, county of York, England. Loom	383,465	May 29	2374	631, 632, 633	43	1000
Hauck, Edward J., Brooklyn, N. Y. Box or receptacle	384,156	June 5	465	128	43	1210
Haupt, Lewis M., Philadelphia, Pa. Dike or breakwater	380,569	Apr. 3	397	113, 114	43	81
Hanaman, Athanasius, Louisville, Ky. Watering-stand	380,570	Apr. 3	400	114	43	82
Hauss, George, Decatur, Ill. Hair-crimper	381,133	Apr. 17	1275	341	43	265
Havens, William, Chicago, Ill. Wire stretcher or clamp	384,255	June 12	623	168	43	1250
Havens, William R., Denver, Colo., assignor to Eclipse Wind Engine Company, Beloit, Wis. Friction-clutch. (Reissue)	10,926	May 1	609	154	43	625
Hawes, Elisha, Sacramento, Cal. Can-opener and sheet-metal cutter	384,973	June 26	1687	438	43	1467
Hawkins, John T., Taunton, Mass. Inking apparatus for printing-machines	382,979	May 15	1623	424	43	842
Hawkins, Lorenzo D., Stoneham, and J. C. Paige, Boston, Mass., assignors to Combination Power Punch and Eyeleting Machine Company, Portland, Me. Eyeleting-machine	384,157	June 5	465	128, 129	43	1210
Hawkridge, Samuel, Hoboken, N. J. Stop-cock	383,356	May 22	2198	581	43	962
Hawley, Alfred A., Kennebunk, Me. Steam-box used in making felt or felted articles	381,012	Apr. 10	1074	285	43	217
Hawley, Eli J., Manchester, Vt. Method of and apparatus for feeding chilled shot in stone-sawing machines	381,999	May 1	173	45	43	546
Hawley, Joseph R., Hartford, Conn. Projectile	384,574	June 12	1097	288	43	1337
Haworth, George D., Decatur, Ill. Corn-planter	380,860	Apr. 10	889	238	43	192
Hawthorn, John, New Mills, county of Chester, and S. Moorhouse, Staleybridge, county of Lancaster, England. Stop-valve	382,409	May 8	896	229	43	698
Haxtun Steam Heater Company. (See Haxtun, William E., assignor.)						
Haxtun, William E., assignor to Haxtun Steam Heater Company, Kewanee, Ill. Boiler	381,240	Apr. 17	1426	383	43	893
Hay, Edwin L., Lilly, Ill. Hay-loader	381,779	Apr. 24	2205	577, 578	43	465
Hay, Peter D., Detroit, Mich., assignor to Michigan Lubricator Company. Oiler	384,702	June 19	1376	360	43	1399
Hayes, Eugenio K., Galva, Ill. Corn-planter	384,363	June 12	788	206, 207	43	1278
Hayes, Hammond V., Cambridge, Mass. Electrical-measurement apparatus	381,780	Apr. 24	2207	578	43	465
Hayes, John R., Detroit, Mo. Snow-plow	384,582	June 12	1024	267	43	1323
Hayes, John J., Green Point, N. Y. Machinery for cutting logs	384,763	June 19	1377	361	43	1400
Hayna, Clementina J. M., St. Louis, Mo. Steam-boiler	381,368	Apr. 17	1608	430	43	330
Haynes, Andre S., Rome, N. Y. Plane	384,644	June 19	1507	392	43	1424
Haynes, Erwin W., Franklin Falls, N. H. Damper-regulator	383,950	June 5	161	48	43	1151
Hays, James D., Mount Morris, Ill. Swing	382,303	May 8	637	162	43	641
Head, Joseph, York, Pa. Tan-vat	380,890	Apr. 10	890	238	43	192
Head, Leah F., Germantown, Pa. Plastic compound	382,607	May 8	1113	.....	43	732
Headley, Elwood, Jersey City, N. J., and W. G. Horton, Brooklyn, N. Y. Coin receptacle and register	384,523	June 12	1025	267, 268	43	1323
Headly, Willard L. (See Moock and Headly.)						
Heady, John F. (See Patterson and Heady.)						
Heady, John F., and J. H. Patterson, assignors to National Cash Register Company, Dayton, Ohio. Cash indicator and recorder	382,647	May 8	1167	301, 302	43	743
Hwady, John F., and J. H. Patterson, assignors to National Cash Register Company, Dayton, Ohio. Cash register and indicator	384,158	June 5	469	129, 130	43	1211
Healey, Thomas M., Cumberland, Md. Syringe	381,622	Apr. 24	1993	523	43	493
Heard, William H., assignor of one-half to M. J. McHenry, Jacksonville, Ark. Garden-plow	385,051	June 26	1825	468	43	1495
Heath, Watson A., Binghamton, assignor of two-thirds to F. L. Goodenough and R. N. Randall, Windsor, N. Y. Whip-button-rolling machine	382,230	May 1	515	132	43	608
Hebbard, George H., Sherburne, assignor of one-half to N. A. Bundy, Oxford, N. Y. Spring for rockers	380,891	Apr. 10	891	239	43	193
Heberer, Adam, Alameda, Cal. Filter-press	381,369	Apr. 17	1609	430	43	330
Heberer, Adam, Alameda, Cal. Hydrocarbon-burner for furnaces	384,584	June 12	1027	268	43	1324
Heck, Louis, Newark, N. J. Automatic gas-light extinguisher	381,370	Apr. 17	1611	431	43	330
Heckert, William. (See Scribner and Heckert.)						
Heckert, William. (See Taylor and Heckert.)						
Heckert, William, Yonkers, N. Y., assignor to B. Butterworth, trustee, Cincinnati, Ohio. Cable conduit and truck	382,810	May 15	1393	366	43	796

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Heckert, William, Yonkers, N. Y., assignor to B. Butterworth, trustee, Cincinnati, Ohio, Driving machinery for cable roads	383,460	May 29	2381	633 634	43	1002
Heckert, William, Yonkers, N. Y., assignor to B. Butterworth, trustee, Cincinnati, Ohio. Chain-grip for cable roads	384,689	June 19	1272	333	43	1379
Hedges, Marcus, Murrietta, Cal. Lifting-jack	383,293	May 22	2115	558	43	946
Heerbrandt, Gustav. (See Dani, Anthony, assignor.)						
Hefferman, Edward F., Toronto, Ontario, Canada. Watch-case	384,623	June 19	1176	310	43	1360
Hegbom, Marcellus, assignor to F. Voss, Chicago, Ill. Device for securing wire lathing to wooden joists and studs of buildings	383,951	June 5	162	48	43	1151
Hegbom, Marcellus, assignor to F. Voss, Chicago, Ill. Device for securing wire lathing to the wooden joists and studs of buildings	383,952	June 5	163	48	43	1151
Hegeman, W. A. Ogden. (See Chadsey, William R., assignor.)						
Heidmann, Gottlieb, E. Höttges, and C. Egen, assignors to Heidmann & Höttges, Barmen, Prussia, Germany. Machine for manufacturing buttons	383 881	June 5	45	15	43	1130
Heidmann & Höttges. (See Heidmann, Höttges, and Egen, assignors.)						
Heimlich, John, assignor of one-half to E. Thierwechter, Oak Harbor, Ohio, Car starter and brake	340,681	Apr. 10	574	157	43	194
Heine, August, Silver Creek, N. Y. Middlings-purifier	382,873	May 15	1474	387	43	813
Heine, Herman, assignor to H. G. Underwood, Milwaukee, Wis. Clothes-drier	382,422	May 8	815	206	43	674
Heinecke, Martin, Carlinville, Ill. Straw-stacker	384,974	June 26	1628	434 439	43	1467
Heitman, Fred M. (See Cromer and Gavin, assignors.)						
Heitsman, Charles J., New York, N. Y. Express-call	381,472	Apr. 17	1766	471 472	43	360
Hellenberg, Adolph, New York, N. Y. Necktie-fastener	384,036	June 5	280	81	43	1176
Hellenbrand, Charles W., Salem, Oreg. Receptacle and heater for tea, coffee, milk, &c	383,572	May 29	2536	670	43	1031
Heller, Gottlieb, Dillon, Kans. Mill-feed	381,371	Apr. 17	1612	431	43	331
Helm, Louis. (See Slaughter, Joel C., assignor.)						
Helmer, Philip, Clinton, Iowa. Electro-magnetic dental hammer and plugger. (Reissue.)	10,940	June 26	2257	578	43	1581
Helms, Charles H., Poughkeepsie, N. Y., assignor to G. H. P. Flagg, trustee, Boston, Mass. Lasting-tool	382,874	May 15	1476	387	43	813
Helwitz, Ellis S., Watertown, assignor of one-half to D. W. Crosby, Boston, Mass. Ventilated garment	385,306	June 26	2212	567	43	1573
Hemingway, Frederick B., assignor to Hemingway & Kelly, Clinton, Iowa. Device employed in the manufacture of spring-bottoms of lounges and other articles of furniture	380,323	Apr. 3	24	7	43	7
Hemingway & Kelly. (See Hemingway, Frederick B., assignor.)						
Hemphill, James. (See Fawell and Hemphill.)						
Hemphill, James, Pittsburg, Pa. Apparatus for welding tubes	384,975	June 26	1689	439	43	1468
Hemphill, James, Pittsburg, Pa. Mold	384,976	June 26	1691	439	43	1468
Hen, Léon, and R. Weinmann, Brussels, Belgium. Electric igniting apparatus	382,231	May 1	516	132	43	608
Henderson, Albert H. (See Ries, Elias E., assignor.)						
Henderson, Albert H. (See Ries and Henderson.)						
Henderson, James L., Bloomington, Ind. Corn-planter	380,571	Apr. 3	401	114	43	92
Heudey, Arthur, Denver, Colo., assignor to C. Wahl, Milwaukee, Wis., and L. Wahl, Chicago, Ill. Ore-washer	382,423	May 8	815	208 209	43	674
Hendryx, Frank H. (See Greene and Hendryx.)						
Hendy, Joshua. (See Martin, John H., assignor.)						
Henlser, Nicholas, Randolph, assignor of one-half to H. Reitenour, Union City, Ind. End-gate	381,070	Apr. 10	1172	311	43	236
Henkle, Edward A. (See Fowler and Henkle.)						
Henley, Micajah C., Richmond, Ind. Machine for boring, drilling, &c	383,730	May 29	2761	728	43	1078
Henn, Eduard, Jersey City, N. J. Heating-stove	382,158	May 1	411	107	43	589
Henninger, Frederick A., assignor of one-half to J. T. Fyfer, Columbia, Mo. Frame for spectacles or eyeglasses	385,307	June 26	2213	568	43	1574
Henrichson, Henry J., Cincinnati, Ohio. Scale-pan	384,256	June 12	625	168	43	1250
Henry, Charles A., Monticello, assignor to W. A. Overing and A. Reichart, Sandy Spring, Iowa. Hay-loader	381,205	June 5	540	148	43	1226
Henry, Hiram F., Gowanda, N. Y. Folding chair	380,484	Apr. 3	258	71	43	53
Henry, Jacob B., Boston, Mass. Inhaler	380,730	Apr. 10	627	172	43	134
Henry, James F., assignor of one-half to W. W. Whitman, Little Falls, N. Y. Machine for making slivers for the production of clouded yarn	384,624	June 19	1177	310	43	1360
Henry, James F., assignor of one-half to W. W. Whitman, Little Falls, N. Y. Making slivers for the production of clouded yarn	384,690	June 19	1274	334	43	1379
Henry, John, assignor of two-thirds to J. G. Neilson and W. T. Shepard, Antioch, Dak. Ter. Automatic grain-weigher	381 126	May 22	1873	489	43	900
Henry, Simon, Brooklyn, N. Y. Mold for measuring and partly shaping cigar-fillers	382 608	May 8	1114	286	43	772
Henry, Thomas J., New York, N. Y. Dental foil	382,0r5	May 1	317	83	43	578
Hense, Henry C., Brooklyn, N. Y. Safety-pin	382,232	May 1	518	133	43	608
Herberg, Olaf. (See Herberg, Tollef and O.)						
Herberg, Tollef and O., Hendrum, Minn. Self-expanding drill-blade	384,625	June 19	1178	310	43	1360
Herendeen, Edward W., Geneva, N. Y. Harrow	382,301	May 8	638	162	43	641
Herman, Emile J., assignor to Safety Hatch Door Company, St. Louis, Mo. Elevator-lock	382,960	May 15	1624	424	43	842
Hermann, Carl J., Bielefeld, Westphalia, Prussia, Germany. Vise	382,360	May 8	728	183 184	43	657
Hermite, Eugène, Paris, France. Bleaching	382,159	May 1	412	107 108	43	589
Hermite, Eugene, and C. F. Cooper, assignors of one-third to E. J. Paterson, Pownall Road, Dalston, county of Middlesex, England. Apparatus for electrolysis	381,378	Apr. 17	1613	431	43	331
Hernandez, Melquiades, Waltham, Mass. Tuning-key	384,442	June 12	897	234	43	1300
Herndon, George P., assignor, by mesne assignments, to J. C. Brown and E. H. Bond, Washington, D. C. Paper-file	384,150	June 5	472	130	43	1212
Herr, Henry C., Williamsville, N. Y. Belt-fastener	382,305	May 8	638	162	43	641
Herr, John K., and J. G. Dulebohn, Elizabethtown, Pa. Stove-truck	382,361	May 8	730	184	43	657
Herren, Christian, Laupen, Switzerland, assignor to himself and A. Debarry, San Francisco, Cal. Drill-plow	383,294	May 22	2007	527	43	987
Herrick, Edward. (See Smith, Thomas J., assignor.)						
Herrick, Frank A., Jackson, Mich. Rack for agricultural tools	383,527	May 29	2477	654	43	1019
Herrick, Frank J., assignor to H. C. Noble, New Britain, Conn. Heel-protector	382,360	May 1	563	142	43	617
Herrick, Frank J., New Britain, assignor of one-half to W. E. Simonds, Hartford, Conn. Door-button	382,686	May 1	318	83	43	572
Herrick, Frank J., New Britain, assignor of one-half to W. E. Simonds, Hartford, Conn. Door-check	383,800	May 29	2803	706	43	1105
Herrington, Ephraim, Mount Vernon, assignor of one-half to M. M. Bush, Towns, Ga. Corn-sheller	380,389	Apr. 3	125	37	43	27
Herrington, Henry D., Tiaskoke, N. Y. Potato sorter or grader	385,114	June 26	1916	469	43	1515

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Herschel, Clemens, Holyoke, Mass. Apparatus for measuring the quantity of water flowing through a pipe	381,373	Apr. 17	1614	431	43	331
Hersey Meter Company. (See Tilden, James A., assignor.)						
Hersberg, Martin, assignor to Farbenfabriken, vormals Fr. Bayer & Company, Elberfeld, Germany. Manufacture of dye-stuffs	384,315	June 12	710	.....	43	1206
Hersberg, Martin, assignor to Farbenfabriken, vormals Fr. Bayer & Company, Elberfeld, Germany. Manufacture of dye-stuffs	384,316	June 12	711	.....	43	1206
Hetherington, John, Jr., Hayward, Cal. Trousers or overalls	381,694	Apr. 24	1995	523 524	43	498
Hetherington, John M., Manchester, county of Lancaster, England. Carding-engine	381,781	Apr. 24	2210	578	43	498
Hett, Henry, New York, N. Y. Fastener for wagon-panels	380,798	Apr. 10	747	205	43	157
Hewett, Ernest M., Newton, assignor to D. W. Crosby, trustee, Boston, Mass. Electric battery	385,308	June 26	2214	568	43	1574
Hewett, Ernest M., Newton, assignor to D. W. Crosby, trustee, Boston, Mass. Amalgamating zinc	385,309	June 26	2215	.....	43	1574
Hewit, Hamilton W. (See Huffman, Orlando, assignor.)						
Hewitt, William, Chambersburg, assignor to Trenton Iron Company, Trenton, N. J. Wire hole-tie	381,071	Apr. 10	1172	312	43	236
Hewson, Robert, San Francisco, Cal. Rotary vapor-engine	382,424	May 8	817	209	43	674
Heysinger, Isaac W., assignor to Philadelphia Novelty Manufactoring Company, Philadelphia, Pa. Hair-crimper. (Re-issue)	10,936	June 5	576	157	43	1233
Heywood Brothers & Co. (See Buckman, Benjamin J., assignor.)						
Heywood Brothers & Co. (See Taft and Jones, assignors.)						
Hiatt, Thomas, Leesburg, Fla. Automatic fruit-assorter	381,241	Apr. 17	1427	383 384	43	293
Hickey, Lawrence J., *et al.* (See Allen, Walter J., assignor.)						
Hickres, William W. (See Williamson and Hickres.)						
Hickman, Elijah, Red Bluff, Cal. Running-gear	381,695	Apr. 24	2091	547	43	443
Hicks, Charles, assignor to E. B. Preston, Chicago, Ill. Turn-table extension-ladder truck	383,731	May 29	2764	728	43	1079
Hicks, Frank, assignor of one-half to E. Dwyer, Buffalo, N. Y. Indicator for street-cars	380,799	Apr. 10	748	205	43	157
Hicks, Oliver H., Chicago, Ill. Paper receptacle	381,134	Apr. 17	1276	341	43	205
Hicks, Oliver H., Chicago, Ill. Paper receptacle	381,135	Apr. 17	1277	342	43	205
Hicks, Oliver H., assignor to Chicago Manila Paper Works, Chicago, Ill. Paper receptacle. (Reissue.)	10,929	May 15	1620	476	43	879
Higdon, John C. (See Fischer, Frederick G., assignor.)						
Higgins, Frank W. (See Bishop, Jason S., assignor.)						
Higgins, Joseph C., assignor of one-half to F. B. Kilmer, New Brunswick, N. J. Poison-bottle indicator	383,394	May 22	2200	601	43	972
Hildebrandt, Fredrick, New York, N. Y. Petroleum cooking-stove	382,425	May 8	819	209	43	675
Hildesheim, Joseph, Alton, Iowa. Harrow	381,023	Apr. 24	1993	523	43	493
Hildreth, J. Homer. (See Price, Henry C., assignor.)						
Hildreth, William W., Decatur, Ind. Windmill	382,981	May 15	1625	425	43	842
Hildrup, William T., Sr., *et al.* (See Patton, William P., assignor.)						
Hile, John W., Valley Falls, Kans. Temperature-regulator for incubators	383,732	May 29	2765	728 729	43	1079
Hiler, George A., Grand Haven, Mich. Life-saving garment	382,306	May 8	639	163	43	641
Hill, Charles E. (See Eastman, John A., assignor.)						
Hill, Elijah R. (See Hill, John R. and E. R.)						
Hill, Henry. (See Mathews and Hill.)						
Hill, James. (See Hattersley and Hill.)						
Hill, John R. and E. R., New Albany, Miss. Bell-collar for cattle	384,037	June 5	280	81	43	1176
Hill, Jonathan, New York, N. Y. Twine-holder	383,573	May 29	2537	670	43	1031
Hill, Justin B., Chicago, Ill. Checkrein-hook	385,115	June 26	1917	489	43	1515
Hill, Lysander. (See Dixon, Theron S. P., assignor.)						
Hill, McCord, and J. N. Rider, Walnut Grove, assignors of one-third to W. H. Williams, Springfield, Mo. Upright wire and-picket-fence-making machine	381,548	Apr. 24	1884	497	43	491
Hill, Richard W., Chicago, Ill., assignor to American Lead and Zinc Works. Gate for railway-crossings	384,160	June 5	474	130 131	43	1213
Hill, Samuel, Ottawa, Ontario, Canada. Saw-swage	380,758	Apr. 10	686	190	43	146
Hill, Thomas E., Rahway, N. J. Steam-muffler	384,364	June 12	793	207	43	1279
Hill, Warren E., *et al.* (See Rowland, Hill, and McLachlan.)						
Hill, Wilson B., Lexington, Ohio. Shoe	384,845	June 19	1509	392 393	43	1425
Hillard, James P., *et al.* (See Hackaley, William, assignor.)						
Hilleary, Richard W., and J. F. Poulton, Warrenton, Va. Oil-cloth exhibitor and stand	384,626	June 19	1179	311	43	1361
Hiller, Frederick, Jr., San Francisco, Cal. Heater for muffs, &c	381,549	Apr. 24	1885	497	43	401
Hillier, Walter H., Nailsworth, England. Incubator	382,527	May 8	992	247 248	43	705
Hindley, Solomon K., Springfield, Mass. Magazine-gun	383,641	May 29	2632	696	43	1053
Hindley, Solomon K., Springfield, Mass. Magazine for fire-arms	384,161	June 5	475	131	43	1213
Hine, Frank A., Tenafly, N. J. Separator	381,374	Apr. 17	1617	432	43	331
Hinman, George B. (See Smith and Hinman.)						
Hinrichsen, Robert. (See Dünnighaus, Gerhard, assignor.)						
Hinsdale, William R., Hoboken, N. J. Apparatus for breaking steel-ingot bars	384,846	June 19	1510	393	43	1425
Hinsdale, William R., Hoboken, N. J. Apparatus for severing ingot-bars	384,847	June 19	1512	394	43	1425
Hird, Urbane B., Cleveland, Ohio. Curry-comb	381,550	Apr. 24	1886	498	43	401
Hirsch, Carl. (See Jonas and Hirsch.)						
Hirsch, Feodor, assignor to L. T. Samuel, New York, N. Y. Bag-punching machine	381,696	Apr. 24	2092	548	43	443
Hirsch, John G., Milwaukee, Wis. Cork-retainer	381,136	Apr. 17	1278	342	43	206
Hirsh, Morris M. (See Monsop, William F., assignor.)						
Hisley, Frank, *et al.* (See Lines, Fred, assignor.)						
Hitchcock, Robert, Springfield, Mass. Vehicle-spring	380,390	Apr. 3	125	37	43	27
Hitchcock, Theron S., assignor to G. A. Waller, Seneca Falls, N. Y. Ice-dog	382,261	May 1	563	142	43	617
Hitzfeld, Fredrick G., assignor to M. E. Hitzfeld, Denver, Colo. Making shoe-makers' lasts	381,551	Apr. 24	1887	.....	43	498
Hitzfeld, M. E. (See Hitzfeld, Fredrick G., assignor.)						
Headley, Isaac N., assignor to Headley Packer Company, (limited,) Bradford, Pa. Packer for oil and gas wells	381,013	Apr. 10	1075	265	43	217
Headley Packer Company. (See Headley, Isaac N., assignor.)						
Hoagland, John B., assignor of one-half to E. F. Meacham, Nashville, Tenn. Track-clearer	381,072	Apr. 10	1174	312	43	236
Hobbie, Alonso D., Bergen Point, N. J. Berth for cars, vessels, &c	384,102	June 5	477	131 132	43	1213
Hobson, Arthur E., assignor of one-half to L. J. Steane & Co., Hartford, Conn. Hydraulic shaping-press	381,242	Apr. 17	1429	384	43	293

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hobson, Arthur E., assignor of one-half to I. J. Steane & Co., Hartford, Conn. Hydraulic shaping-press. (Reissue)	10,934	May 29	2053	782	43	1114
Hocking Valley Manufacturing Company. (See Kissner, Leonard, assignor.)						
Hodgdon, George N., Nashua, N. H. Rail-joint	385,116	June 26	1918	489 490	43	1515
Hodges, Charles C., *et al.* (See McCoy, Elijah, assignor.)						
Hodges, Henry C., *et al.* (See McCoy, Elijah, assignor.)						
Hodges, Henry C., Detroit, Mich. Construction of roofs, &c	381,137	Apr. 17	1279	342	43	266
Hodges, J. H. (See Crockett, Edward R., assignor.)						
Hodges, John R., and W. M. Davie, Portage, Wis. Lubricator	381,375	Apr. 17	1617	432	43	332
Hodges, John R., and W. M. Davie, Portage, Wis. Gage-cock	385,052	June 26	1626	468	43	1495
Hodgson, John G. (See Norton and Hodgson.)						
Hodgson, William H., Winona, Minn. Plow-standard	381,014	Apr. 10	1076	295	43	217
Hodskinson, Jabez, Salem, assignor of one-half to C. F. Brown, Reading, Mass. Leather-scraping machine	382,262	May 1	564	142 143	43	617
Hoel Peter S., *et al.* (See Crowell, Luther C., assignor.)						
Hoe, Robert, *et al.* (See Crowell, Luther C., assignor.)						
Hoffman, Horace J., Milwaukee, Wis. Filing case and drawer	382,875	May 15	1476	388	43	813
Hoffman, Joseph, Hoboken, N. J., assignor to G. A. Goldsmith, New York, N. Y. Propeller-pencil	381,877	Apr. 24	2373	617	43	496
Hoffman, Joseph, Hoboken, N. J., assignor to G. A Goldsmith, New York, N. Y. Eraser-holder for pencils	383,357	May 22	2300	581	43	962
Hoffman, Lanson, Hartford, Conn. Stilt	381,552	Apr. 24	1888	498	43	402
Hoffmann, Otto C., assignor to J. H. Romain, Chicago, Ill. Device for displaying advertising-cards	380,391	Apr. 3	126	37, 38	43	27
Hoffmann, Robert. (See Puchta and Hoffmann.)						
Hoffner, George. (See Beatty and Hoffner.)						
Hogan, Martin J. (See Miller and Hogan.)						
Hogan, Martin J., *et al.* (See Lines, Fred, assignor.)						
Hogan, William J., Johnstown, Pa., assignor to Cambria Iron Company, of Pennsylvania. Manufacture of harrow-disks	383,882	June 5	47	15 16	43	1130
Hogg, William S., U. S. Navy. Ship's log	382,302	May 8	731	184	43	657
Hogsett, John E., Dayton, Ohio. Bustle	384,848	June 19	1515	394	43	1436
Hogue, F. A., *et al.* (See Gorrell, John B., assignor.)						
Hogue, W. J., *et al.* (See Gorrell, John B., assignor.)						
Hohenahell, Walter B., Streator, Ill. Nut-lock	383,810	May 29	2003	766	43	1104
Hohenstein, Archie G., Brooklyn, N. Y., assignor to Hohenstein Manufacturing Company, Newark, N. J. Pressure-regulator	383,225	May 22	2009	528	43	928
Hohenstein, Archie G., Brooklyn, N. Y., assignor to Hohenstein Manufacturing Company, Newark, N. J. Automatic pressure-regulator and safety-valve	383,226	May 22	2010	528	43	928
Hohenstein Manufacturing Company. (See Hohenstein, Archie G., assignor.)						
Hoke, Lewis A., assignor of one-half to N. Stump, York, Pa. Letter-box	382,000	May 1	175	45	43	546
Holbrook, Charles W. F., Newark, N. J. Dental abrading-disk	382,609	May 8	1115	286	43	799
Holcomb Brothers & Co. (See Morton, William F., assignor.)						
Holcomb, George F., *et al.* (See Morton, William F., assignor.)						
Holcomb, H. Sherman, *et al.* (See Morton, William F., assignor.)						
Holder, Jacob F., *et al.* (See Greenawalt, Peter C., assignor.)						
Holdsworth, John W., assignor of one-half to R. Dodsworth, St. Louis, Mo. Alarm for elevators	381,015	Apr. 10	1077	286	43	218
Holland, Ed. (See Smith, Hiram B., assignor.)						
Holland, Ed. (See Smith and Hinman, assignors.)						
Holland, James M., Mount Pleasant, Iowa. Ditcher and grader	383,574	May 29	2538	670	43	1031
Hollick, Thomas D., and W. E. Rickard, London, county of Middlesex, England. Apparatus for the transmission of power	381,138	Apr. 17	1280	342 343	43	266
Hollingsworth, Charles E., Minneapolis, Kans. Oven attachment	383,127	May 22	1874	490	43	900
Hollis, Charles H., Boston, Mass. Can for printers' ink, &c	381,553	Apr. 24	1888	498	43	402
Holloway, Henderson, Harrisonville, Mo. Gearing	380,721	Apr. 10	627	172	43	134
Holloway, Josephus F., New York, N. Y. Stone-channeling machine	382,528	May 8	984	248	43	706
Holloway, Lewis W. (See Dickerson, William M., assignor.)						
Hollyday, Virginia M., Carroll, Md. Hat or bonnet holder for tables and wardrobes	381,016	Apr. 10	1079	286	43	218
Holm, Edward, Chicago, Ill. Furnace for heating soldering-coppers	381,782	Apr. 24	2211	578 579	43	466
Holman, Strange A., Chicago, Ill., assignor to S. A. Smith & Co., Brattleborough, Vt. Attachment for baby-carriages, cribs, or cradles	381,878	Apr. 24	2375	617	43	496
Holmes, Britain. (See Holmes, Edward and B.)						
Holmes, Edward and B., Buffalo, N. Y. Fastener for burial-caskets	382,160	May 1	415	109	43	589
Holmes, Francis G. D., Phillipsburg, N. J. Breech-loading fire-arm	380,682	Apr. 10	575	158	43	195
Holmes, Joseph E., Washington, D. C. Apparatus for transporting and transferring gases or liquids under pressure	382,610	May 8	1115	286	43	798
Holmes, Joseph E., Washington, D. C., assignor to C. C. Carroll, Meadville, Pa. Crucible	382,087	May 1	318	83	43	572
Holmes, Nathan L., Racine, Wis. Wagon-axle	380,992	Apr. 10	892	229	43	163
Holmes, Nathan L., Racine, Wis. Wagon-gear	380,893	Apr. 10	895	239 240	43	163
Holmes, William C., Atlanta, Ga. Leveling-instrument	381,243	Apr. 17	1431	384	43	293
Holmes, William G., assignor of one-half to Detroit Steel and Spring Works, Detroit, Mich. Elliptic spring	381,925	May 1	38	10	43	562
Holt, Frank. P., Laconia, N. H. Device for adjusting the stitch-wheels of knitting-machines	384,163	June 5	476	138	43	1213
Holt, Noah W., Manchester, Mich. Separating-machine	384,950	June 19	1651	429 430	43	1452
Holt, Richard L., Oldham, county of Lancaster, assignor to J. Carter, Stalybridge, county of Chester, England. Nosing mechanism for self-acting spinning-mules, &c	380,485	Apr. 3	250	71, 72	43	53
Holtzer, Charles W., Brookline, Mass. Electric gas-lighter	382,001	May 1	176	46	43	546
Homer, Charles S., assignor to Valentine & Company, New York, N. Y. Package for oils, &c	380,894	Apr. 10	898	240	43	164
Hondiette, Fred H., *et al.* (See Wellman, Willard F., assignor.)						
Honigmann, Moritz, Grevenberg, Germany. Utilizing exhaust-steam	381,344	Apr. 17	1432	385	43	294
Höninger, Sebastian, Milwaukee, Wis. Drilling-machine	380,466	Apr. 3	263	73	43	54
Honiss, William H. (See Lorenz and Honiss.)						
Honiss, William H., and W. A. Lorenz, Hartford, Conn. Mechanical motion	380,392	Apr. 3	198	38, 39	43	27
Hood, Harrison P., Indianapolis, Ind. Straight-way valve	384,849	June 19	1516	395	43	1436
Hood, John, and S. H. Reynolds, Boston, Mass. Dental engine	381,765	Apr. 24	2213	579	43	466
Honey, Wilbert, Toronto, and J. W. Bailey, Cartwright, Ontario, Canada. Machine for destroying potato-bugs	383,994	May 22	2116	558	43	947

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hooper, William A., and R. F. Hamblen, Maryville, Mo. Hay-derrick	383,358	May 22	2201	581	43	962
Hoover, Ellis A., West Milton, Ohio. Feed-regulator	384,443	June 12	998	234	43	1300
Hoover, Isaac W., Avery, Ohio. Combined potato digger and separator	382,363	May 8	733	185	43	658
Hoover, Myra J. (See Cook, George W., assignor.)						
Hopedale Machine Company. (See Bancroft, William, assignor.)						
Hopkins, Cabel B., Louisville, Ky. Cash indicator and register	384,691	June 19	1275	334 335 336	43	1379
Hopkins, Cabel B., Louisville, Ky. Cash registering and indicating apparatus	384,692	June 19	1283	336 337	43	1381
Hopkins, Cabel B., Louisville, Ky. Drink-strainer	384,977	June 26	1691	440	43	1468
Hopkins, Cabel B., Louisville, Ky. Cash indicator, register, and recorder	385,265	June 26	2141	546 547	43	1560
Hopkins, Jason R., Washington, D. C. Button-hole cutter	384,164	June 5	480	132	43	1214
Hopper, Joseph B., Newark, N. J. Painter's hook	383,883	June 5	50	16	43	1130
Hopson, Franklin O., assignor of two-thirds to J. F. Strickland and W. C. Jones, Waxahachie, Tex. Thrust-latch fastener	381,245	Apr. 17	1433	385	43	294
Horack, Charles L., Brooklyn, N. Y. Automatic fire-extinguisher	381,276	Apr. 17	1619	432	43	332
Hörmann Rudolph, Hoboken, N. J. Button-forming machine	380,722	Apr. 10	628	172	43	134
Hornish, Harry C., Peoria, Ill. Combined steam cooker and frier	381,784	Apr. 24	2215	580	43	467
Horst, Jacob L., Oberlin, Pa. Band-cutter	381,926	May 1	39	11	43	562
Horst, Peter, Sioux City, Iowa. Electro-medical apparatus	382,811	May 15	1395	366	43	796
Horton, William G. (See Headley and Horton.)						
Hose, Wallace. (See Curtin, Henry, assignor.)						
Hotchkin, Frederick L., and P. A. Raby, Brooklyn, N. Y. Automatic fire-extinguisher for stoves and heaters	382,812	May 15	1396	366	43	797
Hotchkiss, Arthur E., Cheshire, Conn. Clock-movement. (Reissue)	10,920	Apr. 10	1220	327	43	946
Hotchkiss, Benjamin B., deceased, Paris, France; M. H. Hotchkiss and W. C. Gulliver, administrators, and assignors to Hotchkiss Ordnance Company, London, England. Breech-loading ordnance	381,097	Apr. 24	2094	548	43	444
Hotchkiss, George R., Chicago, Ill., and G. F. Smith, Michigan City, Ind. Refrigerator	382,962	May 15	1627	425 426	43	842
Hotchkiss, Maria H., *et al.*, administrators. (See Hotchkiss, Benjamin B.)						
Hotchkiss Ordnance Company. (See Hotchkiss, Benjamin B., assignor.)						
Hotchkiss Ordnance Company (See Koerner, Alfred C., assignor.)						
Hotchkiss, Zeroy P., assignor of one-fourth to C. J. Ward, Oak Park, Ill. Telegraphy	381,246	Apr. 17	1434	385	43	294
Hothersall, John, Manchester, county of Lancaster, England. Catamenial sack	384,525	June 12	1028	268	43	1294
Höttges, Emil. (See Heidmann, Höttges, and Egen.)						
Houck, Austin S. and E., Bedford, Iowa. Corn-planter	381,073	Apr. 10	1175	312 313	43	237
Houck, Edwin. (See Houck, Austin S. and E.)						
Houck, Thomas, Black Creek, Ohio. Fence	382,233	May 1	518	133	43	609
Hough, David L., *et al.* (See Hardy, John J., assignor.)						
Houghton, Charles E., assignor to H. R. Johnson and I. M. Houghton, Northumberland, Pa. Nail-plate feeder	380,572	Apr. 3	401	115	43	82
Houghton, Ida M., *et al.* (See Houghton, Charles E., assignor.)						
Houghton, Thomas J., Lancaster, Pa. Pole-tip	382,520	May 8	987	248	43	706
House, Henry A., and Henry A., Jr., Bridgeport, Conn. Relief-valve for door-checks	384,907	June 19	1591	414	43	1439
House Improved Telephone Company. (See House, Warren D., assignor.)						
House, John. (See Beck, Adam H., assignor.)						
House, Warren D., Kansas City, Mo., assignor to House Improved Telephone Company, Philadelphia, Pa. Telephone	380,437	Apr. 3	193	52, 53	43	39
House, Warren D., Kansas City, Mo., assignor to House Improved Telephone Company, Philadelphia, Pa. Telephone	380,438	Apr. 3	193	53	43	40
Hound, Elmer, Summit, Ohio. Car-axle oiler	380,436	Apr. 3	190	52	43	39
Houser, Frank, and W. H. Clarkson, assignors to J. Smith Woolen Machinery Company, Philadelphia, Pa. Device for clothing grooved cylinders with toothed strips of metal	381,473	Apr. 17	1767	472	43	360
Houtz, Edward, assignor of one-half to J. F. Williams, Blunt, Dak. Ter. Car-coupling	384,575	June 12	1098	289	43	1337
How, Woodbury S., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Cervix-clamp	382,039	May 1	248	64	43	559
How, Woodbury S., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Tooth-regulator	385,117	June 26	1919	490	43	1515
Howard, Benjamin, Sheep Ranch, Cal. Chalk-line holder	384,444	June 12	999	234	43	1300
Howard, Henry G. M., Kalamazoo, Mich. Two-wheeled vehicle	381,927	May 1	39	11	43	562
Howard, James. (See Snow and Howard.)						
Howard, John W., *et al.* (See Solano, Reinaldo, assignor.)						
Howard, Robert W., Chelsea, assignor of one-half to E. F. Reed, Everett, Mass. Elastic band	381,879	Apr. 24	2376	617	43	496
Howard, William A., assignor of one-half to C. W. Adamson, Petaluma, Cal. Power mechanism	383,295	May 22	2118	550	43	947
Howard, Willie J., Mariposa, Cal. Trace attachment	382,002	May 1	177	46	43	546
Howat, Andrew, Manchester, county of Lancaster, England. Miner's safety-lamp	382,161	May 1	416	109	43	589
Howe, Alexander C., Idana, Kans. Butter-tub	380,487	Apr. 3	264	73	43	54
Howe, Eugene L., Cleveland, Ohio. Snap-hook	382,611	May 8	1116	286	43	732
Howe, George H., Hoosick Falls, assignor to J. A. Eddy, Troy, N. Y. Crank-bending machine	382,496	May 8	819	210	43	675
Howe, Henry L., Canandaigua, N. Y. Automatic flushing-tank	384,978	June 26	1692	440	43	1468
Howe, James H., Paintsville, Ky. Bee-hive	384,627	June 19	1481	311	43	1361
Howe, Orion P., Streator, Ill. Sweat-pad	382,702	May 15	1252	327	43	768
Howe, Warren B., Chicago, Ill. Paper box	384,038	June 5	290	81, 82	43	1176
Howell, Israel G., Hopewell, N. J. Horseshoe	380,800	Apr. 10	749	205	43	157
Howell, Valentine, Geneva, Ill. Cigar-tip cutter	380,324	Apr. 3	26	7	43	7
Howells, John R., Plymouth, assignor of one-half to R. M. Howells, Wilkes-Barré, Pa. Mining-drill	384,165	June 5	481	132 133	43	1214
Howells, Richard M. (See Howells, John R., assignor.)						
Howland, George B., Chicago, Ill., and F. W. Allen, Chanute, Kans. Thill-coupling	383,953	June 5	164	48	43	1158
Hoyle, William J., deceased; W. D. Baldwin, Washington, D. C., administrator. Carriage for heavy ordnance for land defenses	381,979	May 1	130	31	43	536
Hoyle, William J., deceased; W. D. Baldwin, Washington, D. C., administrator. Mounting for heavy ordnance for land defenses	381,980	May 1	132	31, 32	43	539
Hoyt, Charles F., Sioux City, Iowa. Pump-valve	383,811	May 29	2904	766	43	1104
Hoyt, Charles H., New York, N. Y. Pavement	383,528	May 29	2478	654	43	1019
Hoyt, Gabriel. (See Walker, Enos L., assignor.)						
Hoyt, Lewis S., Boston, Mass. Bottle-stopper	383,812	May 29	2905	767	43	1105

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfs.	Official Gazette. Vol.	Official Gazette. Page.
Hoyt, Lucius P., Aurora, Ill. Planing-machine	384,445	June 12	899	235	43	1301
Hubbard, Franklin, *et al.* (See Munn, Theodore C., assignor.)						
Hubbard, Moses G., Philadelphia, Pa. Car-truck	384,317	June 12	711	189	43	1266
Hubbard, S. H., *et al.* (See Moore, James L., assignor.)						
Hubbard, S. H., *et al.*, trustees. (See Doolittle, George, assignor.)						
Hubbard, William H., Indianapolis, Ind. Fastening for envelopes	383,642	May 29	2634	697	43	1053
Hubbell, Algernon S., Norwich, Conn. Umbrella	381,128	May 22	1675	440	43	991
Hubert, H. Gengembre, New York, N. Y. Mold for casting saw-teeth	382,088	May 1	320	84	43	572
Hudson, C. C., *et al.* (See Pitts, Andrew J. and G. W., assignors.)						
Hudson, J. G., *et al.* (See Pitts, Andrew J. and G. W., assignors.)						
Huey, William, Baltimore, Md., and E. W. Baily, Philadelphia, Pa. Egg-carrier	381,928	May 1	40	11	43	523
Huff, Charley F., Golden, and W. B. Huff, Basco, Ill. Ticket-printing machine	383,954	June 5	164	49	43	1152
Huff, William B. (See Huff, Charley F. and W. B.)						
Huffer, Anna, Jeffersonville, Ill. Window-shade	383,053	May 15	1750	455	43	998
Huffman, Orlando, assignor of one-half to T. E. Browne, Friend, Nebr. Animal-trap	380,439	Apr. 3	195	54	43	40
Huffman, Orlando, assignor of one-half to H. W. Hewit, Friend, Nebr. Barbed fence	380,573	Apr. 3	405	116	43	86
Hughes, Alonzo, Orlando, Fla. Glass-cutting table	382,234	May 1	519	133	43	609
Hugon, Gabriel R., Seedley, Mount Pendleton, Manchester, county of Lancaster, England. Pantographic engraving-machine	384,764	June 19	1378	361	43	1400
Huguenin, Henry, Waltham, Mass. Means for bevelling watch-wheels	381,785	Apr. 24	2216	580	43	467
Huguenin, Henry, Waltham, Mass. Hair-spring collet and stud	384,166	June 5	484	133	43	1215
Huidekoper, Arthur C., Meadville, Pa. Gas-generator for locomotives	383,395	May 22	2260	601	43	972
Hull, Wolcott A., *et al.* (See Blackman, Ebenezer, assignor.)						
Humble, Albert A., assignor of one-half to W. H. Aldrich, Chicago, Ill. Bread-making machine	381,554	Apr. 24	1889	498 / 499	43	462
Humble, Joseph P., Plainfield, N. J. Coffee-mill	381,074	Apr. 10	1176	313	43	237
Hunstone, Edwin M., Hartford, Conn., assignor to J. Ferguson, Bridgewater, Mass. Engine-valve	380,325	Apr. 3	26	7, 8	43	7
Hunger, C. F. (See Schmuck, Solomon H., assignor.)						
Hunsaker, Andrew R., Fulton, Ky. Draft-detaching device	380,628	Apr. 3	479	135	43	98
Hunter, Elizabeth. (See Hunter, George D., assignor.)						
Hunter, George C., Chebanse, Ill. Auxiliary motor for windmills	381,698	Apr. 24	2005	548	43	444
Hunter, George D., assignor of one-half to E. Hunter, Auburn, Ill. Cartridge-loading machine	381,498	Apr. 17	1805	479 / 480	43	368
Hunter, George D., assignor of one-half to E. Hunter, Auburn, Ill. Cartridge-loading machine	381,499	Apr. 17	1811	480	43	370
Hunter, George D., assignor of one-half to E. Hunter, Auburn, Ill. Machine for cutting and crimping cartridge-shells	383,520	May 29	2481	655	43	1019
Hunter, James M., assignor to American Bolster Spring Company, St. Louis, Mo. Bolster-spring for wagons	380,574	Apr. 3	406	116	43	83
Hunter, Rudolph M., Philadelphia, Pa. Street-railway	380,575	Apr. 3	407	116	43	83
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	384,906	June 19	1503	415	43	1439
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	384,910	June 19	1506	415	43	1440
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	384,911	June 19	1598	415	43	1441
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	384,912	June 19	1600	416	43	1441
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	385,054	June 26	1830	469	43	1496
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	385,055	June 26	1832	469	43	1497
Hunter, Rudolph M., assignor to Electric Car Company, Philadelphia, Pa. Electric railway	385,180	June 26	2005	514	43	1532
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	382,877	May 15	1468	388 / 389	43	815
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	381,555	Apr. 24	1891	499	43	463
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	381,556	Apr. 24	1894	499	43	463
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	382,876	May 15	1479	388	43	814
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	384,576	June 12	1099	269	43	1338
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	384,909	June 19	1594	415	43	1440
Hunter, Rudolph M., Philadelphia, Pa., assignor to Electric Car Company of America, of Pennsylvania. Manufacture of secondary batteries	385,053	June 26	1827	469	43	1496
Hunter, Rudolph M., Philadelphia, Pa., assignor to Taylor Metallic Railway Tie Company, of New Jersey. Railway	383,575	May 29	2539	670	43	1032
Huntley, William W., Silver Creek, N. Y. Rudder	382,476	May 8	897	229	43	688
Huntly, Maurice, Philadelphia, Pa. Truck	381,786	Apr. 24	2217	580	43	467
Hunzinger, George, New York, N. Y. Chair	385,181	June 26	2006	514	43	1532
Hurd, Dexter N., Kokomo, Ind. Circular saw	380,628	Apr. 3	480	135	43	98
Hurley, Simon J., assignor of one-half to P. McDermott, New Haven, Conn. Horseshoe-pillers	384,979	June 26	1693	440	43	1469
Huson, Winfield S., Taunton, Mass., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Ratchet-movement	382,263	May 1	566	143	43	617
Husselman, Samuel B., Chicago, Ill. Iron fence	383,054	May 15	1760	455	43	998
Hussey, Everett, Hudson, Mass. Portable folding hammock-stand	383,296	May 22	2119	559	43	947
Huston, Winfield S., Fayette County, Ohio. Flood-gate	382,642	May 8	1172	303	43	744
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Let-off mechanism for looms	380,653	Apr. 3	516	144	43	105
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Planer attachment for cutting internal gears	381,787	Apr. 24	2218	581	43	467
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Clutch-coupling	381,788	Apr. 24	2219	581	43	467
Hutchinson, John B., Penn's Grove, N. J. Wagon-standard	383,297	May 22	2120	559	43	948
Hutchinson, Stephen G., Columbus, Ohio. Pile	383,055	May 15	1761	455	43	998
Hutchinson, William A. (See Pugh, Cortes V., assignor.)	383,884	June 5	51	16	43	1131
Huth, John A., Bayard, Ohio. Portable crane	382,307	May 8	640	163	43	641
Hutton & Company, J. M. (See Torbeck, William H., assignor.)						
Hutton, John, New Utrecht, assignor of one-half to J. W. Fowler, Brooklyn, N. Y. Car-ventilator	380,440	Apr. 3	196	54	43	40
Huyck, Francis P. (See Baker and Huyck.)						
Hyatt, Frank A., and E. D. Tankersley, Alamosa, Colo. Manacle	380,441	Apr. 3	197	54	43	40
Hyatt, John W., Newark, N. J. Porous filter-cup	382,649	May 8	1173	303	43	744
Hyatt, John W., Newark, N. J. Anti-friction journal-bearing	385,286	June 26	2149	547	43	1502
Hyatt, John W., Newark, N. J. Anti-friction journal-bearing	385,287	June 26	2150	548	43	1502

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfs.	Official Gazette. Vol.	Official Gazette. Page.
Hyatt School Slate Company. (See Knauss, George L., assignor.)						
Hyde, Frank, Sioux Falls, Dak. Ter. Ruby-pin setter	381,603	June 19	1290	337	43	1398
Ide, Albert L., Springfield, Ill. Steam-engine indicator. (Reissue)	10,918	Apr. 3	551	151	43	111
Illingworth, John, Newark, N. J. Ingot-forming apparatus	382,497	May 8	822	210 / 211	43	675
Illston, George, assignor to Royal Machine Manufacturing Company, (limited,) Birmingham, county of Warwick, England. Velocipede	383,306	May 22	2262	601 / 602	43	972
Imbach, Martin G., Brooklyn, assignor to Improved Horse Shoe Company, New York, N. Y. Mold	383,885	June 5	52	17	43	1131
Immisch, Moritz, London, county of Middlesex, England. Dynamo-electric machine and motor	381,789	Apr. 24	2221	581 / 582	43	468
Improved Horse Shoe Company. (See Imbach, Martin G., assignor.)						
Ingalls, Asa H., Hanover Centre, N. H. Insect-destroyer	381,377	Apr. 17	1623	433	43	338
Ingalls, Charles L., assignor of one-half to G. F. Blair, Lowell, Mass. Lamp-chimney	380,891	Apr. 10	750	205	43	157
Ingersoll, Simon, Glenbrook, Conn. Rock-drill	381,838	Apr. 24	2209	600	43	483
Ingleton, Edward, Toronto, Ontario, Canada. Steam plowing apparatus	382,963	May 15	1698	496	43	842
Ingraham, Nathan D. (See Clark and Ingraham.)						
Ingram, J. C. (See Jefferis and Thurman, assignors.)						
Inslinger, Alfred, assignor to W. P. Uhlinger, Philadelphia, Pa. Machine for winding spools, &c	384,446	June 12	904	235	43	1301
Insull, Samuel. (See Estes, Edwin G., assignor.)						
International Electric Company. (See Watson, John E., assignor.)						
International Fastening Company. (See Kruetzer, Edwin J., assignor.)						
International Fastening Company. (See Mead, Albert G., assignor.)						
Ireland, David M. (See Matthews and Ireland.)						
Iron Car Company. (See Goodfellow, James T., assignor.)						
Irvine, Albert C., assignor to W. Smith, Boston, Mass. Metal-cutter	384,694	June 19	1291	337	43	1398
Irwin, Hall M., Hanford, Cal. Gang-plow	380,895	Apr. 10	898	240	43	184
Irwin, William H., and G. W. Hairgrove, Wilderville, Tex. Cotton-cultivator	382,162	May 1	417	109	43	580
Isbell, Arista H., Asheville, N. C. Memorandum-calendar	384,536	June 12	1020	269	43	1334
Israel, David. (See Ferrell and Israel.)						
Isenhuth, Charles C., Huron, Dak. Ter. Four-horse evener	384,167	June 5	485	133	43	1215
Ithaca Gun Co. (See Smith, Leroy H., assignor.)						
Ivers, Alfred, New York, N. Y. Water-closet hopper and bowl	382,089	May 1	323	84	43	578
Ivers & Pond Piano Company. (See Ivers, William H., assignor.)						
Ivers, William H., Dedham, assignor to Ivers & Pond Piano Company, Boston, Mass. Piano-key bottom	382,471	May 8	899	229	43	689
Ives, Benjamin, Chicago, Ill. Vest-protector	380,576	Apr. 3	410	117	43	83
Ivory, James W., Philadelphia, Pa. Combined rubber-dam clamp and napkin-holder	384,577	June 12	1101	269	43	1338
Ivory, James W., Philadelphia, Pa. Rubber-dam adjuster and clamp	384,578	June 12	1102	269	43	1338
Ivory, John C., Somerville, Mass. Manufacture of boots or shoes	382,878	May 15	1487	389	43	817
Jaccard, Eugène F., Ste. Croix, Switzerland. Music-box	382,879	May 15	1488	389 / 390	43	817
Jackson, Amos H., Fremont, Ohio. Bustle	384,850	June 19	1517	395	43	1426
Jackson, Isaac, Kingman, Kans. Check-row attachment for planters	382,628	May 8	894	211	43	676
Jackson, John, Clinton, Iowa. Sash-fastener	383,886	June 5	54	17	43	1131
Jackson, John, Springfield Gravelly Hill, near Birmingham, county of Warwick, assignor to P. A. Martin, Birmingham, England. Spring-wire band	381,017	Apr. 10	1060	286	43	210
Jackson, Peter H., San Francisco, Cal. Floor, roof, or area covering. (Reissue)	10,921	Apr. 10	1222	328	43	946
Jackson, Walter M., New York, N. Y. Gas-burner	381,378	Apr. 17	1623	433	43	338
Jackson, Walter M., New York, N. Y. Mechanism for utilizing and controlling hydro-dynamic forces	383,887	June 5	55	18	43	1131
Jackson, Walter M., New York, N. Y. Heat developer and radiator	381,365	June 12	794	207	43	1279
Jackson, Walter M., New York, N. Y. Marine propulsion	385,182	June 26	2007	515	43	1533
Jackson, Walter M., New York, N. Y. Marine propulsion	385,183	June 26	2011	515	43	1534
Jackson, Walter M., New York, N. Y. Marine propulsion	385,184	June 26	2013	516	43	1534
Jackson, Walter M., assignor to Gas Consumers Benefit Company of the United States, New York, N. Y. Gas-burner	380,802	Apr. 10	751	206		157
Jackson, Walter M., assignor to Gas Consumers Benefit Company of the United States, New York, N. Y. Regulator for gas-burners	380,803	Apr. 10	752	206	43	158
Jackson, Walter M., assignor to Gas Consumers Benefit Company of the United States, New York, N. Y. Burner-tip	381,379	Apr. 17	1625	433	43	338
Jackson, Walter M., assignor to Gas Consumers Benefit Company of the United States New York, N. Y. Gas-tip and pillar	381,380	Apr. 17	1626	433	43	338
Jacobs, Jacob, New York, N. Y. Illuminating-tile	385,268	June 26	2152	548	43	1502
Jacobs, Jacob, New York, N. Y. Illuminating-tile	385,269	June 26	2153	548 / 549	43	1502
Jacobs, Jacob, New York, N. Y. Illuminating-tile and roofing-plate	385,270	June 26	2154	549 / 550	43	1503
Jacobs, Jacob, New York, N. Y. Illuminating tile, side wall, &c	385,271	June 26	2155	550	43	1503
Jacobs, William E., Columbus, Ohio. Harrow	383,298	May 22	2121	559 / 560	43	948
Jacques, Joseph R., Hancock, Mich. Lasting-tool	382,429	May 8	826	212	43	676
Jacques, William W., Newton, Mass., assignor to Edison Phonograph Toy Manufacturing Company, of Maine. Combined doll and phonograph	383,299	May 22	2123	560	43	948
Jahn, Frederick G. (See Grovesteen and Jahn.)						
James, David B., Visalia, Cal. Traction-engine	383,179	May 22	1943	510	43	915
James, George C., Cincinnati, Ohio. Machine-gage	380,683	Apr. 10	576	158	43	125
James, Lindorf H., Vanceburg, Ky. Churn	382,162	May 1	418	110	43	580
James, William, Port Pirie, South Australia. Combined buckle and spring-hook	382,164	May 1	419	110	43	580
Jamieson, Augustus, Elizabeth, N. J., assignor of one-half to W. A. Lottimer, New York, N. Y. Pulverizer	382,364	May 8	735	185 / 186	43	656
Jamieson, James A., Montreal, Quebec, Canada. Weight-recorder for weighing-scales	385,310	June 26	2216	568	43	1571
Jamieson, James A., assignor of one-fourth to F. and J. B. Caverhill, Montreal, Quebec, Canada. Safety appliance for railway-cars	380,630	Apr. 3	481	136	43	78
Janney, Morris P., Easton, Pa. Boiler-feeding attachment	383,227	May 22	2012	528	43	928
Jarboe, Charles S., and J. McHale, Terre Haute; said McHale assignor to A. H. Tuesh and J. E. Glover, Vigo County, Ind. Hydrocarbon-burner	383,888	June 5	58	18	43	1132
Jarvis, Joseph C., Huntington, W. Va. Rotary engine	383,530	May 29	2485	655 / 656	43	1020
Jarvis, Samuel E., Lansing, Mich. Steam-engine	380,492	Apr. 3	264	73	43	54
Jefferis, Albin L., and W. C. Thurman, assignors of one-fourth to J. C. Ingram, Lincoln, Cal. Rotary engine	380,489	Apr. 3	266	73	43	55

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Jefferson, John T., assignor of one-half to G. Wells, Annapolis, Md. Loading apparatus for ordnance-cartridges	384,039	June 5	295	82, 83	43	1177
Jeffery, Frank M., Jersey City, N. J. Spring bed or bed-bottom	385,118	June 26	1921	490, 491	43	1516
Jeffery, Henry, assignor to S. Fox & Co., (limited,) Stocksbridge Works, near Sheffield, county of York, England. Umbrella	381,139	Apr. 17	1293	343	43	999
Jeffery, Thomas B., Ravenswood, Ill. Vehicle-wheel	383,129	May 22	1877	490	43	901
Jeffery, Thomas B., Ravenswood, Ill. Vehicle-wheel	383,130	May 22	1878	490	43	901
Jeffery, Thomas B., Ravenswood, Ill. Velocipede	383,131	May 22	1880	491	43	999
Jeffery, Thomas B., Ravenswood, Ill. Seat for velocipedes	384,980	June 26	1694	440	43	1462
Jenkins, Ambrose N., Sidney, Ohio. Harness	383,359	May 22	2202	582	43	962
Jenkins, Joel, Montclair, N. J. Safety-pin	380,896	Apr. 10	899	240	43	184
Jenkins, John H., Pittsburg, assignor of one-half to D. S. Carroll, Allegheny City, Pa. Wire-drawing die	382,650	May 8	1175	303	43	744
Jenkins Live Poultry Car Company. (See Jenkins, William P., assignor.)						
Jenkins, Salmon F., East Braintree, Mass. Making needles	383,733	May 29	2766	729	43	1088
Jenkins, William P., assignor to Jenkins Live Poultry Car Company, Chicago, Ill. Poultry-car	384,913	June 19	1601	416, 417	43	1442
Jenkinson, Richard C., Newark, N. J. Sheet-metal bag-handle	381,790	Apr. 24	2223	582	43	468
Jenks, Thomas M., Chicago, Ill. Railway-signal	381,247	Apr. 17	1436	386	43	994
Jenks, Thomas M., Chicago, Ill. Railway-freight-train signal	383,813	May 29	2806	767	43	1105
Jennings, William C., Camden, N. J. Portable drill	382,472	May 8	900	229, 230	43	689
Jensen, C. Louis, Milwaukee, Wis. Combined clod-crusher and land-roller	382,612	May 8	1117	287	43	739
Jensen, John C., Chicago, Ill. Paper-punch	385,056	June 26	1834	470	43	1497
Jewell Belting Company. (See Potter, Wilson L., assignor.)						
Jewell, Crews, Winter Park, Fla., assignor of three-fourths to W. S. Harbert and W. T. Rickards, Evanston, Ill. Revolving shelf	380,897	Apr. 10	900	241	43	184
Jewell, Harriet A., Cleveland, Ohio. Bustle	381,140	Apr. 17	1293	343	43	999
Jewell, Harvey L., Bangor, Me. Lantern	381,557	Apr. 24	1896	500	43	404
Jewell, M. Romeyn, assignor to Schlicht & Field Company, Rochester, N. Y. Suspension file-box	380,490	Apr. 3	268	74	43	55
Jewell, M. Romeyn, assignor to Schlicht & Field Company, Rochester, N. Y. Paper-file	384,168	June 5	485	133	43	1215
Jewell, Omar H., assignor of one-half to W. M. Mathisen, Chicago, Ill. Boot or shoe	380,804	Apr. 10	753	206	43	158
Jewell, William M., Pine, assignor, by mesne assignments, to J. A. McAnulty, Denver, Colo., and S. W. Sperry, Stockton, Cal. Automatic shelf-feeder (Reissue.)	10,933	May 29	2951	781	43	1114
Jewett, Charles C. and D. C., Sand Spring, Iowa. Hay-loader	381,248	Apr. 17	1438	386, 387	43	995
Jewett, Charles G., Howell, Mich. Water-heater	384,695	June 19	1293	337	43	1382
Jewett, Charles W. and G. H., assignors to Collins Manufacturing Company, Jackson, Mich. Road-cart	382,984	May 15	1631	427	43	843
Jewett, Dewitt C. (See Jewett, Charles C. and D. C.)						
Jewett, George H. (See Jewett, Charles W. and G. H.)						
Jewett, Luther K., Boston, Mass. Car-truck	383,180	May 22	1945	510	43	915
Jewett, Luther K., Boston, Mass. Car-truck	383,181	May 22	1946	510	43	915
Jewett, Luther K., Boston, Mass. Car-truck	384,981	June 26	1697	441	43	1469
Jewett, Luther K., Boston, Mass. Car-truck	384,982	June 26	1701	441	43	1470
Jocelyn, Albert H., Montclair, N. J., assignor of one half to W. A. Armstrong, Mount Vernon, N. Y. Pocket-book	384,527	June 12	1031	269	43	1324
Johns, David W., assignor of one-half to J. F. Belfour, Allegheny City, Pa. Saw-filing machine	381,249	Apr. 17	1440	387	43	995
Johns, Henry W. (See Pratt and Johns.)						
Johns, Henry W., New York, N. Y. Pipe-covering	385,119	June 26	1925	491	43	1516
Johns, Henry W., New York, N. Y. Filling, lining, and covering material	385,120	June 26	1926	491	43	1516
Johns, John B. and R., Massillon, Ohio. Fruit-jar	381,250	Apr. 17	1442	388	43	996
Johns, Samuel E., assignor of one-third to A. R. Monroe, Indianapolis, Ind. Machine for gathering and collating book-signatures	380,898	Apr. 10	901	241	43	185
Johnson, Albert W., New Haven, Conn., assignor to Peerless Button Hole Attachment Company, of Connecticut. Embroidering attachment for sewing-machines	384,257	June 12	625	169	43	1250
Johnson, Albert W., New Haven, Conn., assignor to Peerless Button Hole Attachment Company, of Connecticut. Mechanical movement	384,258	June 12	627	169	43	1251
Johnson, Alexander, assignor of one-half to J. N. Keefer, Camillus, N. Y. Door-check	383,643	May 29	2636	697	43	1053
Johnson, Alfred W., New Brunswick, N. J. Running-gear for vehicles	384,366	June 12	796	208	43	1279
Johnson, Andrew H., and A. G. Mahaffy, Tryus, Miss. Railway-gate	381,381	Apr. 17	1027	434	43	333
Johnson, Axel, and P. Larsson, Chicago, Ill. Door-mat	383,132	May 22	1882	491	43	902
Johnson, Charles, New Orleans, La. Machine for washing out the fibers of plants	384,851	June 19	1518	395	43	1426
Johnson, Charles H., and C. Allen, Chillicothe, Iowa. Locking mechanism for railway-switches	382,530	May 8	988	249	43	706
Johnson, Charles W. (See Pruitt, Eugene R., assignor.)						
Johnson, Duane C., *et al.* (See Johnson, Elmer E., assignor.)						
Johnson, Edward H., New York, N. Y. Telephone-transmitter	381,382	Apr. 17	1028	434	43	333
Johnson, Edward S. (See Johnson, Nathan S., assignor.)						
Johnson, Elmer E., assignor of two-thirds to H. L. and D. C. Johnson, Herkimer, N. Y. Lawn-mower	385,272	June 26	2156	550	43	1563
Johnson, Ernest V., Chicago, Ill. Brick-drying tunnel	381,383	Apr. 17	1631	434, 435	43	334
Johnson, Frank G., New York, N. Y. Upholstered furniture	384,259	June 12	629	169	43	1251
Johnson, Henry B., Clay Centre, Kans. Wind-wheel	383,467	May 29	2293	634	43	1092
Johnson, Henry C., El Dorado, Ark. Back-band	382,365	May 8	736	186	43	658
Johnson, Henry J., Providence, R. I., assignor to Plumb, Burdict & Barnard, Buffalo, N. Y. Stop-motion	384,040	June 5	297	83	43	1177
Johnson, Herbert L., *et al.* (See Johnson, Elmer E., assignor.)						
Johnson, Horace R., *et al.* (See Houghton, Charles E., assignor.)						
Johnson, Isaac G., Spuyten Duyvil, New York, N. Y. Converter for refining molten iron	384,628	June 19	1183	311, 312	43	1361
Johnson, Iver. (See Torkelson and Johnson.)						
Johnson, Iver, and R. T. Torkelson, Worcester, Mass.; said Torkelson assignor to said Johnson. Bench-plane	381,141	Apr. 17	1285	343	43	987
Johnson, J. Althens, *et al.* (See Kearney, William F., assignor.)						
Johnson, Jonathan, Lowell, Mass. Steam-boiler	381,791	Apr. 24	2224	582, 583	43	468
Johnson, Louis W., Spencer, Mo. Device for teaching fractions and percentage	383,300	May 22	2126	560	43	948

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Johnson, Luman F., Cleveland, Ohio. Device for handling heavy masses of metal	381,474	Apr. 17	1769	472	43	360
Johnson, Nathan S., assignor of one-half to E. S. Johnson, Mendon, Mich. Hay-loader	381,699	Apr. 24	2097	549	43	444
Johnson Steel Street Rail Company. (See Du Pont, Alfred V., assignor.)						
Johnson Steel Street Rail Company. (See Entwisle, Edward B., assignor.)						
Johnson, Victor D., and V. Oppfelt, Mount Pleasant, Iowa. Farm-gate	382,703	May 15	1253	327	43	768
Johnson, Warren S., Milwaukee, Wis. Automatic temperature-regulator	382,165	May 1	420	110	43	580
Johnson, Warren S., assignor of one-half to W. Pinkinton, Milwaukee, Wis. Elevator	384,169	June 5	486	134	43	1215
Johnson, William, Jr. (See Tangye and Johnson.)						
Johnson, William H., Racine, assignor to Elastic Nut Company, Milwaukee, Wis. Nut-making machine	380,383	Apr. 3	129	39	43	28
Johnson, William P., *et al.* (See Williams, William P., assignor.)						
Johnston, Columbus. (See Johnston, Sylvester T. and C.)						
Johnston, Edward P., Decatur, Ala. Air-ship	383,889	June 5	59	18, 19	43	1139
Johnston, Georgd, Detroit, Mich. Spectacle-bridge	384,260	June 12	630	170	43	1251
Johnston, Sylvester T., St. Louis, and C. Johnston, Clarksville, Mo. Plow and pulverizer	381,142	Apr. 17	1286	344	43	997
Johnston, T. Reddiman, Edinburgh, Scotland. Ink-mill	383,576	May 29	2541	671	43	1039
Johnston, William, Pittsburg, Pa. Propelling device	381,625	Apr. 24	1806	524	43	473
Johnstone, James S., Portland, Oreg. Machine for soldering cylindrical cans	383,301	May 22	2127	561	43	949
Johnstone, William H. (See Hart and Goodfellow, assignors.)						
Jolly, Benjamin R., Raleigh, N. C. Trigger mechanism for guns	383,614	May 29	2806	767, 768	43	1105
Jonas, Heinrich, and C. Hirsch, Dresden, Saxony, Germany. Horseshoe	382,040	May 1	249	64	43	559
Jones, Alexander, Racine, Wis. Roofing fabric	385,057	June 26	1835	470	43	1497
Jones, Augustus H., Meriden, Conn. Double-acting latch	381,792	Apr. 24	2226	583	43	468
Jones, Augustus H., Meriden, Conn. Latch	384,852	June 19	1519	395	43	1427
Jones, Augustus H., and E. H. Peck, Meriden, Conn. Mirror pivot	383,468	May 29	2384	634	43	1002
Jones, Charles L. (See Taft and Jones.)						
Jones, Charles S., Yates Centre, Kans. Machine for excavating	384,041	June 5	299	83, 84	43	1177
Jones, Edmund C., assignor of one-half to W. J. Gleason, San Francisco, Cal. Coin-actuated billiard-marker	383,228	May 22	2013	528, 529	43	988
Jones, Francis W., New York, N. Y. Dynamo-telegraphy	381,251	Apr. 17	1443	388	43	996
Jones, Francis W., New York, N. Y. Dynamo-telegraphy	381,839	Apr. 24	2112	601	43	484
Jones, Henry W., Ottawa, Ill. Two-wheeled vehicle	383,229	May 22	2016	529, 530	43	989
Jones, James H., assignor to Emerson, Talcott & Company, Rockford, Ill. Divider for mowing-machines	380,900	Apr. 10	904	242	43	185
Jones, John H., Manchester, county of Lancaster, England. Sash-cord fastener	381,018	Apr. 10	1081	286	43	218
Jones, John J. (See Woermann, Dietrich, assignor.)						
Jones, John W., Shoreditch, county of Middlesex, and E. K. Bridger, London, England. Boot or shoe	382,985	May 15	1632	427	43	843
Jones, Joseph M., Paris, Ky. Gummed paper-fastener	382,813	May 15	1397	367	43	797
Jones, Lyman M., Johnson, Vt. Fishing-reel signal	380,899	Apr. 10	903	242	43	185
Jones, Mary P., Mineral City, Tex. Baby-jumper	382,814	May 15	1398	367	43	797
Jones, Philip. (See Edwards, Lewis, and Jones.)						
Jones, Richard W., Syracuse, N. Y. Harness-rosette attachment	382,880	May 15	1489	390	43	817
Jones, Robert J., Carrollton, Wash. Ter. Feathering paddle-wheel	384,367	June 12	798	208	43	1279
Jones, Robert N. (See Coffin, Charles E., assignor.)						
Jones, Thomas, Danville, Pa. Sash-balance	380,805	Apr. 10	754	206, 207	43	158
Jones, Thomas, Ravenswood, Ill. Finish for plastered walls	383,307	May 22	2261	.....	43	973
Jones, Thomas C., Lynchburg, Va. Reheating-furnace	382,986	May 15	1633	427	43	843
Jones, Thompson H. (See Brosius, John M., assignor.) (Reissue.)						
Jones, W. C., *et al.* (See Hopson, Franklin O., assignor.)						
Jones, William R., Braddock, Pa. Appliance for rolls	382,704	May 15	1254	328	43	768
Jones, William R., Braddock, Pa. Housing-cap for rolls	383,056	May 15	1702	455	43	989
Jones, William R., Braddock, Pa. Apparatus for removing and setting rolls	385,058	June 26	1837	470	43	1497
Jordan, James J., New York, N. Y. Shoe	381,929	May 1	42	12	43	523
Jordan, James J., Syracuse, N. Y. Shoe	381,930	May 1	43	12	43	523
Jordan, William A., New Orleans, La. Bolt-lock	384,206	June 5	543	149	43	1226
Jorgensen, Charles P. (See Hansen, Andrew, assignor.)						
Jürgensen, Simon J. E., Laugot, near Riace, Norway. Combined water-tank and life-boat	384,579	June 12	1103	290	43	1338
Joseph, Frank A., Malden, Mass. Strap for rubber boots	384,914	June 19	1604	417	43	1442
Josselyn, John A., Brookfield, Mass. Machine for splitting scrap-leather	381,075	Apr. 10	1178	313	43	237
Joyce, John T., Plainville, Mass. Pendant-setting	384,629	June 19	1184	312	43	1361
Joyner, William C., *et al.* (See Pope, James M., assignor.)						
Judd, Edward H., *et al.* (See Long, George S., assignor.)						
Judson, Charles W., assignor to Eagle Lock Company, Terryville, Conn. Machine for making sheet-metal blanks	383,302	May 22	2129	561, 562	43	949
Judy, Charles S., and M. W. Forbes, Miamisburg, Ohio. Combined sofa and surgical table	385,311	June 26	2217	568	43	1574
Julien, Edmond, Brussels, Belgium. Apparatus for electric traction	384,580	June 12	1105	291, 292, 293	43	1339
Julien, Edmond, Brussels, Belgium. Electric railway-car	384,581	June 12	1110	293, 294	43	1339
Julien, Edmond, Brussels, Belgium, assignor to Julien Electric Company, New York, N. Y. Regulating-commutator for secondary batteries	384,447	June 12	905	236	43	1301
Julien Electric Company. (See Julien, Edmond, assignor.)						
Jung, J. George, *et al.* (See Thomas, Conrad, assignor.)						
Junghans, Arthur and H. E., Schramberg, Würtemberg, Germany. Clock	381,626	Apr. 24	1997	524	43	494
Junghans, Heinrich E. (See Junghans, Arthur and H. E.)						
Justi, H. D. (See Stuck, Levi, assignor.)						
Justi, Henry D., Philadelphia, Pa. Dental or other chairs	382,473	May 8	902	230	43	689
Justice & Co., Philip S. (See Hampton and Facer, assignors.)						
Kahn, Amelia, St. Joseph, Mo. Eyeglasses	380,491	Apr. 3	269	74	43	55
Kahn, Amelia, St. Joseph, Mo. Eyeglasses	382,987	May 15	1634	428	43	844
Kakas, William F. (See Bradford, Charles K., assignor.)						
Kalbaugh, I. N. (See Manning, William T., assignor.)						
Kamerer, John H., Lake, Ohio. Combined cane and chair	382,308	May 8	642	163	43	642
Kamman, George H., Champaign, Ill. Grain-meter	384,963	June 26	1703	442	43	1471
Kane, John, Green Isle, Minn. Blackboard and wiping and dust-collecting apparatus	382,705	May 15	1255	328	43	769
Kane, John H., Huntington, W. Va. Apparatus for making drills	380,577	Apr. 3	410	117	43	64
Kapp, Gisbert. (See Crompton and Kapp.)						
Kargus, Robert, assignor to H. Fraling, Brunswick, Prussia, Germany. Pea-shelling machine	382,988	May 15	1635	428	43	844
Katzenberg, Jacob, New York, N. Y. Suspenders	384,528	June 12	1032	269	43	1324

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Kanfer, Constantin, San Francisco, Cal. Device for hitching horses	382,989	May 15	1636	428	43	844
Kaufman, Gustave. (See Meise, Eduard, assignor.)						
Kaufman, Peter, Bloomington, Ill. Corn-husking implement	382,706	May 15	1256	338	43	709
Keane, Morris A. (See Harrington and Keane.)						
Kearney, William F., Washington, D. C., assignor of one-fifth to G. D. Tillman, Edgefield, S. C., J. A. Johnson, H. C. Wall, L. H. Rowe, and T. Parker, Washington, D. C. Boot or shoe	383,303	May 22	2131	562	43	949
Keast, William. (See De Coar and Keast.)						
Keating, Charles J., Beverly, N. J., assignor of one-half to J. A. Mundy, Philadelphia, Pa. Adjustable shutter	382,707	May 15	1257	329	43	709
Keavy, Thomas E., Cleveland, assignor of one-half to A. A. Tillotson, Akron, Ohio. Buffing-machine	382,041	May 1	250	64, 65	43	559
Keefer, Jerome N. (See Johnson, Alexander, assignor.)						
Keeler, Edward L., Beaver Falls, Pa. Car-coupling	385,185	June 26	2018	516	43	1535
Keeler, Samuel C. (See Bryant, Calvin, assignor.)						
Keen & De Lang. (See Powell, Samuel, assignor.)						
Keenan, George J., Chicago, Ill. Automatic air-compressor	384,589	June 12	1032	269	43	1325
Keep, William J., Detroit, Mich. Cooking-stove	381,793	Apr. 24	2228	563	43	469
Keep, William J., assignor to Michigan Stove Company, Detroit, Mich. Fire-pot for stoves	382,690	May 1	324	84	43	572
Keep, William J., assignor to Michigan Stove Company, Detroit, Mich. Stove	382,531	May 8	969	{249 250}	43	707
Keep, William J., assignor to Michigan Stove Company, Detroit, Mich. Ventilating-flue for stoves	384,696	June 19	1294	338	43	1383
Keilholtz, Pierre O., Baltimore, Md. Lightning-arrester	382,613	May 8	1118	287	43	733
Keith, George. (See Davis and Keith.)	384,042	June 5	301	85	43	1178
Keith, George, Freedom, Ill. Horse hay-rake	381,840	Apr. 24	2214	601	43	484
Keith, Jarrett M., Greenville, S. C. Mail-bag catcher	381,841	Apr. 24	2216	602	43	485
Keith, Myron L., Brockton, Mass. Manufacture of welted boots or shoes	381,384	Apr. 17	1634	433	43	314
Keller, Georg H., New York, N. Y. Spring fish-trap	384,853	June 19	1590	396	43	1427
Keller, George W., Philadelphia, Pa. Shoe-maker's last	384,448	June 12	907	236	43	1302
Keller, Henry R., assignor of two-thirds to W. H. Belt and O. B. Sansum, New Orleans, La. Car-starter	384,368	June 12	799	208	43	1280
Keller, John A., Hamilton, assignor to Falls Rivet Company, Cuyahoga Falls, Ohio. Friction-clutch	380,326	Apr. 3	27	8	43	7
Keller, Moses A., Batavia, N. Y. Bundle-ejecting mechanism for grain-binding machines	380,901	Apr. 10	905	242	43	185
Kelley, Charles H., Boston, assignor to C. R. Lancaster, Newton, Mass. Lasting-machine	381,019	Apr. 10	1061	287	43	218
Kelley, George W. (See Gore, Ro Ton, and Kelley.)						
Kelley, Harry E. (See Sears and Kelley.)						
Kelley, Oliver S. (See Green, George F., assignor.)						
Kellogg, Marmaduke B., San Francisco, Cal. Mechanical movement	383,577	May 29	2542	671	43	1032
Kellogg, Milo G., Hyde Park, Ill. Multiple switch-board	382,474	May 8	903	240	43	690
Kellogg, Milo G., Hyde Park, Ill. Multiple switch-board	382,475	May 8	907	240	43	690
Kellogg, Milo G., Hyde Park, Ill. Multiple switch-board	382,476	May 8	910	241	43	691
Kellogg, Milo G., Hyde Park, Ill. Multiple switch-board	382,477	May 8	913	241	43	692
Kelly, John F., assignor to United States Electric Lighting Company, New York, N. Y. Armature for dynamos	382,881	May 15	1490	390	43	817
Kelly, Thomas. (See Smith and Kelly.)	381,700	Apr. 24	2099	549	43	444
Kelly, Thomas, New York, N. Y. Book-cover	384,697	June 19	1296	338	43	1383
Kelly, William H., Greenville, Va. Convertible shafts and pole for vehicles	380,806	Apr. 10	755	207	43	158
Kelsea, Joseph N., Antrim, N. H., assignor to E. I. K. Noyes, Cambridge, Mass. Platform-scale	381,931	May 1	45	13	43	523
Kelsea, Joseph N., Antrim, N. H., assignor to E. I. K. Noyes, Cambridge, Mass. Spool or bobbin	382,091	May 1	326	85	43	573
Kelsey, George R., West Haven, Conn. Manufacture of buckle-frames	384,449	June 12	909	237	43	1302
Kempster, Daniel E., Boston, Mass. Metal-rolling machine	380,750	Apr. 10	687	190	43	146
Kempster, Daniel E., Boston, Mass. Die for rolling articles of metal	385,186	June 26	2019	516	43	1535
Kendall, John A., Mayaville, Mo. Fluid drawing and measuring device	384,766	June 19	1380	362	43	1400
Kendrick, William F., assignor of one-half to H. L. Glass, Winfield, Iowa. Cutter-bar	383,057	May 15	1764	456	43	869
Kenna, Joseph W., Chicago, Ill., assignor to J. W. Vail, trustee, Port Washington, Wis. Tilting-chair	382,235	May 1	590	{133 134}	43	689
Kennedy, George. (See Kennedy, Robert and G.)						
Kennedy, John W., Miltonvale, Kans. Fender for cultivators	381,701	Apr. 24	2100	549	43	445
Kennedy, Rankin, assignor of one-half to R. Dick, Glasgow, county of Lanark, Scotland. Transformation and distribution of electric energy	381,794	Apr. 24	2229	{583 584}	43	469
Kennedy, Robert and G., New Westminster, British Columbia, Canada. Perforator for printing-presses	380,578	Apr. 3	412	117	43	84
Kennedy, Samuel V., assignor to Minneapolis Harvester Works, Minneapolis, Minn. Wheel	383,645	May 29	2638	686	43	1054
Kennedy, Samuel V., and C. A. Anderson, assignors to Minneapolis Harvester Works, Minneapolis, Minn. Self-binding harvester	382,532	May 8	990	{250 251 252}	43	707
Kennedy, Samuel V., and C. A. Anderson, assignors to Minneapolis Harvester Works, Minneapolis, Minn. Grain-binder	385,059	June 26	1839	471	43	1498
Kennedy, Samuel V., and D. Strunk, assignors to Minneapolis Harvester Works, Minneapolis, Minn. Mowing-machine	383,644	May 29	2636	{697 698}	43	1053
Kennedy, Thomas F., *et al.* (See Yund, Theodore J., assignor.)						
Kennedy, William J., and L. A. De Mayo, Jersey City, N. J. Truck	384,369	June 12	800	208	43	1280
Kent, William. (See Springer and Kent.)						
Kernan, Francis, Jr., Utica, N. Y. Heating-furnace	383,489	May 29	2385	615	43	1002
Kerr, Andrew B., Logan's Ferry, Pa. Nut-lock	384,767	June 19	1382	342	43	1401
Kersteter, Charles W., Chicago, Ill. Automatic sprinkler	381,890	June 5	63	19	43	1132
Keyes, Frank E., Peterborough, N. H. Insulator for electrical wires	383,734	May 29	2767	729	43	1060
Keyes, Frank E., Peterborough, assignor to Amoskeag Indurated Fiber Ware Company, Manchester, N. H. Boring-machine	384,854	June 19	1521	396	43	1427
Keystone Watch Case Company. (See Chappatte, Edward C., assignor.)						
Kiblinger, Lee, Jackson, La. Screw-driver attachment	84,043	June 5	302	85	43	1178
Kidney, William C., New York, N. Y. Strong box or coffer	384,855	June 19	1523	396	43	1427
Kiefer, Charles, Toledo, Ohio. Hose-coupling	383,360	May 22	2202	562	43	923
Kiesele, John A., New York, N. Y. Composition of matter	382,882	May 15	1491	.....	43	817
Kight, William K., assignor of one-fifth to J. A. Bohnert, Keener's, Mo. Steam-engine	382,309	May 8	642	164	43	644
Kilborn, Wilber E. (See Goode, William H. C., assignor.)						
Kilborn, William W., assignor to C. Parker Company, Meriden, Conn. Locking device in extension-chandeliers	383,615	May 29	2910	769	43	1106

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Kilham, John T., Wilmington, N. C. Theatrical appliance	383,361	May 29	2203	{582 583}	43	963
Killefer, John, Bloomingdale, Mich. Washing-machine	380,902	Apr. 10	906	243	43	186
Kilmer, Frederic B. (See Higgins, Joseph C., assignor.)						
Kilpatrick, Andrew, Morton, Pa. Car-brake	383,310	May 8	643	164	43	642
Kimball, Andrew C., assignor of one-half to J. D. Anthony, Providence, R. I. Tube-coupling	384,582	June 12	1111	294	43	1339
Kimball, Benjamin M. (See Kimball, Charles M., assignor.)						
Kimball, Charles M., assignor to himself and B. M. Kimball, Haverhill, Mass. Apparatus for treating skins	381,832	May 1	46	13	43	524
Kimball, Charles M., assignor to himself and B. M. Kimball, Haverhill, Mass. Treating morocco-skins and other leather	381,833	May 1	47	13	43	524
Kimball Company, W. W. (See Harcourt, Stillwell R., assignor.)						
Kimball, Gustavus P., Topeka, Kans. Blank attachment to tympan-sheets for printing envelopes	385,080	June 26	1842	471	43	1496
Kimball, J. Albert, New York, N. Y. Table-ware	381,795	Apr. 24	2231	564	43	469
Kimball, Joseph A., New York, N. Y. Dental-tool holder	381,143	Apr. 17	1289	345	43	266
Kimball, Joseph A., New York, N. Y. Change-receiver	384,583	June 12	1112	294	43	1339
Kimble, Smith W., Denver, Colo. Ore-crushing machine	381,365	Apr. 17	1635	435	43	334
Kincaid, Henry L., York, Mont. Ter. Handle for crescent-saws	381,796	Apr. 24	2232	564	43	469
King, Benjamin D. and J. B., Baldwyn, Miss. Cotton-seed planter	380,723	Apr. 10	631	173	43	135
King, Charles E., Newark, N. J. Self-feeding cooking-stove	384,207	June 5	544	{148 150}	43	1226
King, Chester S., and E. G. Brown, Smethport, Pa. Carburetor	385,121	June 26	1927	{491 492}	43	1516
King, De Witt C., Boston, Mass. Pillow sham holder and lifter	383,304	May 22	2132	563	43	949
King, Henry N., Adrian, assignor of one-half to J. E. Bolles, Detroit, Mich. Roll-paper holder	383,578	May 29	2543	672	43	1033
King, Jabes W., Toledo, Ohio. Paper-clip	381,702	Apr. 24	2101	550	43	445
King, Jacob C., York, Pa. Automatic grain-meter	383,362	May 22	2205	563	43	963
King, Jefferson B. (See King, Benjamin D. and J. B.)						
King, Jeremiah J., New York, N. Y. Pigeon-trap	381,366	Apr. 17	1636	{435 436}	43	335
King, Leonidas J. (See Doggett, John, assignor.)						
King, Peter C., Sycamore, Ohio. Harrow	383,305	May 22	2133	563	43	950
King, William. (See Crippen and King.)						
King, William C., Pittsburg, Pa. Leer-pan	381,367	Apr. 17	1639	436	43	335
King, William H., assignor of one-half to J. Gildea and J. J. O'Keefe, Kansas City, Mo. Pulley	382,042	May 1	252	65	43	550
Kingsland, Philip S., Chicago, Ill. Balanced governor-valve	385,273	June 26	2157	551	43	1564
Kingsley, John F., Athens, Pa. Die for making eye-bars	384,450	June 12	910	237	43	1302
Kingston, Samuel, East Bridgewater, and W. H. McGunnigle, Brockton, Mass. Detachable sole plate and spike for boots or shoes	383,133	May 22	1984	491	43	892
Kinnard, Will M., Dayton, Ohio. Book-binding and book	381,252	Apr. 17	1414	384	43	296
Kinnard, Will M., Dayton, Ohio. Arm or hand rest	384,961	June 12	611	170	43	1251
Kinnear William R., Columbus, Ohio. Metallic ceiling	382,092	May 1	327	85	43	573
Kinnear, William R., Columbus, Ohio. Metallic ceiling	382,093	May 1	328	85	43	573
Kinnear, William R., Columbus, Ohio. Metallic ceiling	382,094	May 1	329	86	43	574
Kinports, Hedwig L., Annville, Pa. Drip-can	381,253	Apr. 17	1445	389	43	296
Kinsey, Moses, Newark, N. J. Horse-boot	381,398	Apr. 17	1640	436	43	335
Kintner, Charles J., New York, N. Y. Electro-magnetic time-lock	384,856	June 19	1524	{396 397}	43	1427
Kints, Joseph, assignor of one-half to Craighead & Kints Manufacturing Company, Ballard Vale, Mass. Combined table and lamp	384,857	June 19	1527	397	43	1428
Kirk, Henry B., Mount Pleasant, S. C. Automatic registering gang-board	384,370	June 12	892	200	43	1280
Kirker, Milton B., McKees Rocks, Pa. Hydraulic valve	382,003	May 1	178	46	43	547
Kirkevaag, Peter, Youngstown, Ohio. Eccentric-rod	383,735	May 29	2768	729	43	1060
Kirkham, Henry P., Brooklyn, N. Y. Portable caisson	381,797	Apr. 24	2233	{584 585}	43	470
Kirkner, Jacob, *et al.* (See Collins, William H., assignor.)						
Kirks, Albert, assignor to Diebold Safe and Lock Company, Canton, Ohio. Operating mechanism for doors of safes and vaults	384,992	June 12	633	170	43	1251
Kirks, Albert, assignor to Diebold Safe and Lock Company, Canton, Ohio. Rivet	384,318	June 12	713	189	43	1266
Kirtley & Phillips. (See Phillips, Hiram, assignor.)						
Kissell, Abraham S., Chicago, Ill. Dust-proof thermostat	380,394	Apr. 3	131	39	43	98
Kissner, Leonard, Lancaster, Ohio, assignor to Hocking Valley Manufacturing Company. Means for operating feed-rolls	380,579	Apr. 3	413	118	43	84
Kister, William H., Chicago, Ill. Combined letter-sheet and envelope	381,558	Apr. 24	1897	500	43	404
Kitchell, Joseph G., New York, N. Y. Safety-buckle	384,964	June 26	1704	449	43	1471
Kitson, Arthur, Philadelphia, Pa. Carburetting gas-lamp	381,834	May 1	48	13	43	524
Kittell, Ferdinand A., Hollidaysburg, Pa. Collection box	383,579	May 29	2545	672	43	1033
Kittredge, Anson O., Slate Hill, and B. Adriance, Brooklyn, N. Y., assignors to Vulcan Company, of Pennsylvania. Sheet-metal-scroll cutter	383,309	May 22	2264	602	43	973
Kjeller, Anders P., Holyoke, Mass. Friction-clutch pulley	384,915	June 19	1605	417	43	1442
Kleindinst, William. (See George and Kleindinst.)						
Kleinert, Isaac B., New York N. Y., and R. C. Manville, Waterbury, Conn., said Manville assignor to said Kleinert. Ear muff	381,559	Apr. 24	1898	500	43	404
Kline, Lewis A. (See Neal, Frank S., assignor.)						
Kline, Lewis F., Alpena, Mich. Steam-feed valve	384,263	June 12	634	171	43	1276
Kling, Peter M., St. Louis, Mo. Dust-guard for car-axle boxes	384,530	June 12	1034	270	43	1325
Klingler, George J. (See Clark and Klingler.)						
Klinik, Constantin C., F. Pinkowski, and A. Sellmann, Königshütte, Prussia, Germany. Drawing-chain	382,043	May 1	253	65	43	550
Klinik, Constantin, and F. Pinkowski, Königshütte, and A. Gross, Benthen, Prussia, Germany. Safety device for elevators	384,319	June 12	714	190	43	1266
Klotzbach, A. F. (See Rau, John, assignor.)						
Knapp, Edward. (See Barnard and Knapp.)						
Knapp, George W., Baltimore, Md. Milk-strainer	383,307	May 22	2135	563	43	950
Knapp, William H., Brooklyn, N. Y. Dress-form	383,470	May 29	2366	635	43	1002
Knapp, William H., Brooklyn, N. Y. Dress-form	384,531	June 12	1034	270	43	1325
Knauss, George L., Allentown, Pa., assignor to Hyatt School Slate Company, (limited.) Machine for making school-slate frames	383,965	June 5	167	49, 50	43	1130
Knecht, Victor E. (See Berrath, Edward, assignor.)						
Knickerbocker, Charles R., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	382,614	May 8	1119	288	43	738

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Knickerbocker Company. (See Knickerbocker, Charles R., assignor.)						
Knickerbocker Company. (See Morse, Orville M., assignor.)						
Kniffler, Bruno, Cleveland, Ohio. Flour-dresser	381,020	Apr. 10	1083	287	43	219
Kniffler, Bruno, Cleveland, Ohio. Bolting-reel	382,095	May 1	331	86	43	574
Knight, John H., Buffalo, N. Y. Current water-wheel	384,916	June 19	1607	418	43	1443
Knight, Thaddeus W., Kyle, Tex. Cotton-sweep	382,533	May 8	995	252	43	709
Knight, Walter H., New York, N. Y. Electrically-propelled vehicle	382,980	May 15	1637	429	43	844
Knight, Walter H., New York, N. Y. Rheostat	384,044	June 5	303	86	43	1178
Knipfer, Otto, assignor of one-half to C. Spooner, Bridgeport, Conn. Wooden faucet	382,166	May 1	422	110	43	591
Knott, Robert. (See Mehl and Knott.)	382,651	May 8	1176	304	43	745
Knous, John, Hartford, Conn., assignor to Pope Manufacturing Company, Portland, Me. Velocipede-saddle	382,430	May 8	827	212	43	676
Knowles, Edward R., Brooklyn, N. Y., assignor to Mutual Electric Manufacturing Company, of New York. Regulator for electric currents	381,254	Apr. 17	1446	389	43	206
Knowles Loom Works. (See Hutchins, George F., assignor.)						
Knowles Loom Works. (See Wattie, William, assignor.)						
Knowles, William R., Columbiana, Ohio. Harness-saddle	383,956	June 5	170	59	43	1153
Knowlton, Mark D., Chicago, Ill. Punch	384,532	June 12	1036	270	43	1325
Knox, George A., Lynn, Mass. Machine for molding heel-stiffeners for boots or shoes	383,580	May 29	2545	672	43	1033
Knudtson, Thurston L., and J. Uhri, Chicago, Ill. Adjustable side guide for printing-presses	383,816	May 29	2911	768	43	1106
Koch, Adolph P. and W. C., Effingham, Ill. Neck-yoke fastening	380,492	Apr. 3	270	74	43	56
Koch, William, New York, N. Y. Quilling-machine	381,798	Apr. 24	2234	585	43	470
Koch, William C. (See Koch, Adolph P. and W. C.)						
Koehendorfer, George, and J. Roth, Marysville, Ohio. Cuspidor	380,631	Apr. 3	483	136	43	98
Koeber, William, and W. J. Ranck, assignors of one-third to L. R. Young, Lockbourne, Ohio. Corn-planter	381,076	Apr. 10	1179	313	43	338
Kochsmeier, Henry P., Freeport, Ill. Bracket	381,389	Apr. 17	1641	436	43	336
Kochsmeier, Henry P., Freeport, Ill. Spring-hinge	385,312	June 26	2218	569	43	1574
Koechlin, Albert, Mülhausen, Alsace, Germany. Apparatus for moistening the atmosphere in mills, factories, &c.	381,390	Apr. 17	1641	.....	43	336
Koegel, Henry C. (See Warter and Koegel.)	384,630	June 19	1185	312 313	43	1362
Koenig, Nicolas, North Tarrytown, assignor to J. Brombacher's Sons, New York, N. Y. Machine for folding sheet metal	380,580	Apr. 3	414	118	43	84
Koerner, Alfred C., Paris, France, assignor to Hotchkiss Ordnance Company, (limited,) of England. Elastic pedestal for mounting guns	381,475	Apr. 17	1771	473	43	361
Koerner, Frank J., *et al.* (See Grelle, Henry W., assignor.)						
Koesling, Rudolph F., and W. Mecklenburg, Clermont, Iowa. Standard for wagon-bolsters	381,627	Apr. 24	1997	524	43	424
Kohler, Frederick E., Canton, Ohio. Tricycle	381,144	Apr. 17	1291	345	43	269
Kohler Improved Cattle Car Company. (See Miller and Seitz, assignors.)						
Kohler Improved Cattle Car Company. (See Seitz, Nathaniel Z., assignor.)						
Kolb, Valentine, *et al.* (See Wing, Hiram J., assignor.)						
Kolbe, Carl, assignor to F. von Heyden, Nachfolger, Radebeul, Saxony, Germany. Manufacture of salicylic-acid esters	383,306	May 22	2134	.....	43	950
Konitzky, J. Henry, Philadelphia, Pa. Combined bearing and stuffing box for rudders	383,646	May 29	2639	699	43	1054
Koons, Ezra P., Ligonier, Ind. Implement for exterminating rodents	382,478	May 8	914	231	43	692
Koss, John V., North Yakima, Wash. Ter. Rail-joint	382,708	May 15	1258	329	43	769
Koyl, C. Herschel, Swarthmore, Pa. Railway semaphore-signal	382,815	May 15	1399	367	43	797
Kraetzer, Edwin J., Boston, Mass. Fastener for gloves, &c	381,170	June 5	488	134	43	1216
Kraetzer, Edwin J., Boston, Mass., assignor to International Fastening Company, Portland, Me. Fastener for gloves, &c	384,703	Apr. 24	2102	550	43	445
Kraetzer, Edwin J., Boston, Mass., assignor to International Fastening Company, Portland, Me. Glove-fastener	381,935	May 1	50	14	43	524
Krafft, Charles S., Albany, N. Y. Pool-register	382,366	May 8	736	186	43	650
Kramer, Frederick, Los Angeles, Cal. Roof-climbing device	383,561	May 29	2547	673	43	1033
Krauts, Joseph G. (See Ware, Joseph G., assignor.)	380,395	Apr. 3	133	40	43	98
Krebs, Otto, Pittsburg, Pa. Transferring phototypes to lithographic stones	383,308	May 22	2136	.....	43	950
Kree, Hiram C., assignor of two-thirds to J. D. Cool and C. A. Curtis, Freeport, Mich. Reclining-chair	383,058	May 15	1765	456	43	869
Krieger, George F., Chicago, Ill. Fastening device for shoes, gloves, &c	380,327	Apr. 3	28	8, 9	43	8
Krieger, Joseph. (See Matthiessen and Krieger.)						
Kriesor, J. Morita, Brooklyn, assignor to Mystic Oil Company, New York, N. Y. Apparatus for vaporising liquids	384,768	June 19	1383	362	43	1401
Kroeck, Philip M. (See Roberts, Frank E., assignor.)						
Kromer, Otto, Sandusky, Ohio. Friction-coupling	385,122	June 26	1929	492	43	1517
Kroupa, Joseph, St. Louis, Mo. Car-coupling	380,624	Apr. 10	577	156	43	125
Kruesi, Conrad, Chicago, Ill. Window sash and frame	383,134	May 22	1885	492	43	903
Kruger, John W., Litchfield, Minn. Fabric-measuring apparatus	381,842	Apr. 24	2317	602	43	485
Krumscheid, Jacob, Boston, Mass. Multiple divider	381,560	Apr. 24	1899	500	43	404
Krumscheid, Peter, Boston, Mass. Action for upright pianos	384,917	June 19	1608	418	43	1443
Kuhn, Edmond, Brooklyn, assignor to Manhattan Watch Company, New York, N. Y. Stop-watch	383,059	May 15	1766	456	43	869
Kulage, Joseph J., St. Louis, Mo. Brick-machine	383,399	May 22	2266	602 603	43	973
Kuntzsch, Frederick A. (See Kuntzsch, William J., assignor.)						
Kuntzsch, William J., assignor of one-half to F. A. Kuntzsch, Syracuse, N. Y. Toy parachute	384,533	June 12	1039	271	43	1326
Kupfer, Charles A., Burlington, Iowa. Hame-tug	380,903	Apr. 10	907	243	43	186
Kupferle Marcellus O., St. Louis Mo. Hose-nozzle	381,500	Apr. 17	1815	469	43	370
Kustel, Oscar, San Francisco, Cal. Ship's log	382,816	May 15	1401	367 368	43	798
Kyne, Thomas F., *et al.* (See Ynnd, Theodore J., assignor.)						
La Boiteaux, Frank M., Cincinnati, Ohio. Machine for making bungs	382,004	May 1	180	46, 47	43	547
La Mothe, Bernard J., New York, N. Y. Railway-car spring	385,061	June 26	1843	472	43	1489
La Point, Augustine, Wessington Springs, Dak. Ter. Powder and shot cabinet	382,817	May 15	1403	368	43	798
Lackner, Frederick, assignor to T. Neely, E. and J. Bindley, Pittsburg, Pa. Nut-machine	385,187	June 26	2021	517	43	1535
Lackner, Frederick, assignor to T. Neely, E. and J. Bindley, Pittsburg, Pa. Nut-machine	385,188	June 26	2023	517	43	1535
Lacourse, Octave. (See Lacourse, Richard and O.)						
Lacourse, Richard and O., Bristol, Conn. Coat-adjuster	384,769	June 19	1384	363	43	1401
Lacroix, Charles. (See Ostermann and Lacroix.)						
Lacroix, Louis J. T. (See Pigeon and Lacroix.)						
Lacy, Maurice, Wheaton, Ill. Painter's scaffold	383,471	May 29	2383	635	43	1083
Ladd, Daniel A., assignor to Newark Collar Button Company, Newark, N. J. Manufacture of buttons	380,607	Apr. 10	756	207	43	156
Ladd, Dennis, Madison, Ind. Car-coupling	381,145	Apr. 17	1292	345	43	269
Ladd, Dudley P. (See McElroy, Charles E., assignor.)						
Ladd, William A., Colfax, Wash. Ter. Wagon-seat	384,534	June 12	1040	271	43	1326
Laflin & Rand Powder Company *et al.* (See Olds, Chauncey J., assignor.)						
Lafo, Lemuel, Pittsburg, N. H. Stump-puller	382,096	May 1	332	86	43	574
Lagowitz, Jacob. (See Frankel, Alexander C., assignor.)						
Laidlaw, William A., Cherokee, Kans. Baling-press	382,167	May 1	494	111	43	591
Lake, Ezra B., Camden, N. J. Clutch	385,123	June 26	1931	492	43	1517
Lakin, David R., assignor of one-half to W. I. Vawter, Eugene City, Oreg. Whiffletree attachment	381,255	Apr. 17	1447	290	43	227
Lamb, Watson F., New York, N. Y. Cash-register	381,561	Apr. 24	1899	501	43	404
Lambert, Albert. (See Young, Lambert, and Ferris.)						
Lammers, William, Stone Church, Ill. Automatic water-measuring device	385,274	June 26	2158	551	43	1564
Lamplugh, James A., Birmingham, county of Warwick, England. Spring-shackle	382,534	May 8	996	253	43	708
Lampman, Nelson, Woodstock, Ontario, Canada. Sulky-plow	383,309	May 22	2137	563 564	43	950
Lamprey, Benjamin B., and A. C. Bugbee, Lake Village, N. H., assignors to Lamprey Manufacturing Company. Knitting-machine	383,817	May 29	2913	769	43	1106
Lamprey Manufacturing Company. (See Lamprey and Bugbee, assignors.)						
Lamson Store Service Company. (See Goodfellow, John H., assignor.)						
Lamson, William H., Chicago, Ill. Cutter-head	381,799	Apr. 24	2237	590	43	470
Lancaster, Charles B. (See Kelley, Charles H., assignor.)						
Landenberger Charles H., Philadelphia, Pa. Warp for pattern-making	383,182	May 22	1947	510 511	43	915
Landis, Ezra F. (See Miller, Walton B., assignor.)						
Landphere, C. Tyler, Mystic, Conn. Quilting-machine	384,264	June 12	636	171	43	1252
Lane, Charles C., assignor to J. H. Boalt, San Francisco, Cal. Preserving piles	383,531	May 29	2487	656	43	1021
Lane, Charles C., assignor to J. H. Boalt, San Francisco, Cal. Protecting and preserving piles	383,736	May 29	2769	730	43	1080
Lane, David T., assignor of one-half to D. I. Dale, Franklin Pa. Crane	381,256	Apr. 17	1448	290	43	227
Lane, Henry G., Bucyrus, Ohio. Ditching-machine	381,704	Apr. 24	2103	550 551	43	445
Lang, Henry, Albany, and E. J. Watson, Troy, N. Y.; said Watson assignor to said Lang. Printing-stamp	381,880	Apr. 24	2376	618	43	497
Lang, John S., assignor of one-half to A. Worden, Ypsilanti, Mich. Wrench	384,451	June 12	911	237	43	1302
Lange, Philip. (See Bylleshy and Lange.)						
Lange, Philip. (See Westinghouse and Lange.)						
Lange, Philip, assignor to Westinghouse Electric Company, Pittsburg, Pa. Switch for adjustable resistances	383,647	May 29	2645	699	43	1054
Lange, Philip, assignor to Westinghouse Electric Company, Pittsburg, Pa. Apparatus for connecting alternate-current dynamos	383,648	May 29	2641	699	43	1054
Lange, Philip, assignor to Westinghouse Electric Company, Pittsburg, Pa. Voltmeter	383,649	May 29	2643	699	43	1055
Langebartels, Henry C. (See Dawson, Joseph R., assignor.)						
Langford, James W., Nashville, Tenn. Letter-box	384,696	June 19	1296	338	43	1383
Langguth, Charles, Boston, assignor of two-thirds to J. R. Wood, Woburn, and J. L. Ripley, Somerville, Mass. Medicine-spoon	380,734	Apr. 10	632	173	43	135
Langguth, Charles, Boston, assignor of two-thirds to J. R. Wood, Woburn, Mass., and C. A. Sinclair, Portsmouth, N. H. Stock-car	380,735	Apr. 10	632	173 174 175	43	135
Langley Cotton Harvester Company of New York City. (See Langley, William L., assignor.)						
Langley, William L., Newark, N. J., assignor to Langley Cotton Harvester Company of New York City. Picker-stem for cotton-harvesters	382,535	May 8	998	254	43	709
Langley, William L., Newark, N. J., assignor to Langley Cotton Harvester Company of New York City. Picker-stem for cotton-harvesters	382,536	May 8	1000	254	43	709
Langworthy, Oliver L., Nortonville, Kans. Trace-carrier	382,709	May 15	1259	328 330	43	769
Lansden, Thomas G. (See McIlhenny and Lansden.)						
Lantaff, George T. (See Westrup and Lantaff.)						
Laporte, Arthur, Ware, assignor of one-half to J. A. Courtemanche, Worcester, Mass. Carpenter's gage	385,124	June 26	1932	493	43	1518
Larew, William H., Mariposa, assignor of one-half to W. C. Reid, Mariposa County, Cal. Adjustable map and chart support	383,818	May 29	2915	769	43	1107
Large, William J., Brooklyn, N. Y. Trunk	380,493	Apr. 3	271	75	43	56
Large, William J., Brooklyn, N. Y. Trunk	385,189	June 26	2024	518	43	1536
Larsson, Pehr. (See Johnson and Larsson.)						
Lascelles & Co., A. S. (See Lazard, Edward J., assignor.)						
Laser, John, Bremen, Ind. Bee-hive	383,737	May 29	2770	730	43	1081
Lasher, Morgan E., Champaign, Ill. Hame-link	382,483	May 15	1491	391	43	617
Laspeyre, Mathew, Brunswick, Ga. Bedstead	383,650	May 29	2644	700	43	1055
Latchaw, Jacob T., Bradford, Pa. Nut-lock	380,494	Apr. 3	272	75	43	56
Latchmere, Edward, London, England. Bow for stringed instruments	384,045	June 5	304	86	43	1179
Lathrop, Benjamin G., Oakland, Cal. Baby-jumper	382,864	May 15	1493	391	43	618
Lathrop, George F., New London, Conn. Game	385,190	June 26	2025	518	43	1536
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede	380,495	Apr. 3	273	75, 76	43	56
Latta, Emmit G., Friendship, N. Y., assignor to Pope Manufacturing Company, Portland, Me. Velocipede-wheel	382,865	May 15	1493	391	43	618
Laubach & Iddings. (See Schmidt, Theodore F. W., assignor.)						
Lauderholm, Andrew F., and O. F. Olson, Chicago, Ill.; said Lauderholm assignor to said Olson. Water-gage indicator	382,044	May 1	255	65	43	569
Laundry, Andrew, Côte St. Paul, Quebec, Canada, assignor of one-half to H. H. Warren, Massena, N. Y. Die for making sugars	382,710	May 15	1260	330	43	769
Law, Isaac D., assignor of one-half to J. G. R. McCorkill, Philadelphia, Pa. Toy	381,391	Apr. 17	1642	437	43	338
Lawless, William, Ottawa, Ill. Two-wheeled vehicle	381,705	Apr. 24	2110	552	43	446
Lawrence, H. Orville. (See Lawrence, Howard T. and H. O.)						
Lawrence, Howard T. and H. O., Dunbore, Pa. Eaves-trough hanger	384,865	June 26	1706	442	43	1471
Lawson, William H., New York, N. Y. Coat and hat hook	382,097	May 1	332	87	43	574
Lawton, Manley C., Staten Island, Cal. Dredger-dipper	381,257	Apr. 17	1450	390	43	297
Lawton, Manley C., Staten Island, Cal. Dredger-dipper	381,258	Apr. 17	1451	391	43	298
Le Barron, Robert. (See Barnes, Amos, assignor.)						
Le Beau, Jean M. V., New Orleans, La. Fan for cars	382,818	May 15	1404	368	43	799

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Le Gay, Edward J., Boston, Mass. Heel-mold	382,888	May 15	1498	393	43	819
Le Gay Heel Company. (See Mitchell and Reynolds, assignors.)						
Le Sauvage, Charles R. (See Fleming and Le Sauvage.)						
Lea, Richard H. (See Singer and Lea.)						
Leach, Joseph, Haughville, assignor of one-half to C. G. Udell, North Indianapolis, Ind. Hoop	382,364	May 1	567	143	43	617
Leahy, James F., *et al.* (See Griffin, Patrick, assignor.)						
Leake, Frank, Philadelphia, Pa. Towel	381,046	June 5	805	86	43	1079
Leasure, Harvey E., Williamsburg, Iowa. Bill-holder	380,685	Apr. 10	579	150	43	125
Leather Lock Sewing Machine Association. (See Coupal, Peter A., assignor.)						
Leather Lock Sewing Machine Association. (See Coupal, Peter A. and J., assignors.)						
Leather Lock Sewing Machine Company. (See Coupal, Peter A. and J., assignors.)						
Leavell, Leonidas W., Jr., and R. E. L., Kearney, Mo. Tongue-support	383,183	May 22	1948	511	43	915
Leavell, Robert E. L. (See Leavell, Leonidas W., Jr., and R. E. L.)						
Leavitt, Erasmus D., Jr. (See Dean, Francis W., assignor.)						
Leavitt, Erasmus D., Jr., Cambridgeport, Mass. Valve-gear	380,328	Apr. 3	29	9, 10	43	8
Leavitt, Erasmus D., Jr., Cambridgeport, Mass. Valve-gear	380,329	Apr. 3	31	11, 12, 13	43	8
Leavitt, Erasmus D., Jr., Cambridgeport, Mass. Pump	380,330	Apr. 3	35	13	43	9
Leavitt, Frank M., assignor to E. W. Bliss Company, Brooklyn, N. Y. Drop-hammer	380,808	Apr. 10	757	207, 208	43	156
Leavitt, Frank M., assignor to E. W. Bliss Company, Brooklyn, N. Y. Selling-machine	384,770	June 19	1385	361	43	1401
Leavitt, Frank M., Brooklyn, N. Y., assignor to E. and O. W. Norton, Chicago, Ill. Apparatus for forming sheet-metal can-bodies	382,537	May 8	1001	254, 255, 256	43	709
Leavitt, Frank M., Brooklyn, N. Y., assignor to E. and O. W. Norton, Chicago, Ill. Can-heading machine	382,538	May 8	1006	256, 257	43	710
Leblanc, Leon. (See Frenier, John H., assignor.)						
Lechner Manufacturing Company. (See Lowry, Frank, assignor.)						
Lechner Manufacturing Company. (See Schenck, Edward, assignor.)						
Lechtenberg, Henry, Quincy, Ill. Valve-gear	382,168	May 1	425	111	43	301
Leconteux, Hippolyte, and E. Garnier, Paris, France. Steam-engine	382,479	May 8	915	231, 232	43	692
Ledgerwood Manufacturing Company. (See Beekman, John V., assignor.)						
Lee, Charles T., Boston, Mass. Shoe	381,259	Apr. 17	1452	301	43	299
Lee, Eliel H., Chicago, Ill. Wood working and planing machine	385,125	June 26	1933	493	43	1516
Lee, George W., assignor of one-half to W. H. Banker, Wooster, Ohio. Running-gear for vehicles	381,146	Apr. 17	1293	345	43	300
Lee, Henry F. (See Van der Hölen, Georges, assignor.)						
Lee, James, Linton, Iowa. Potato-digger	381,706	Apr. 24	2111	559	43	447
Lee, James D., Chicago, Ill. Smoke-consuming furnace	383,310	May 22	2138	564	43	950
Lee, James P., New York, N. Y. Magazine fire-arm	383,363	May 22	2207	584, 585, 586	43	964
Lee, Joseph D., Dallas, and J. H. Acton, Portland, Oreg. Shawl-strap and fire-escape	384,631	June 19	1186	313	43	1302
Lee, Lewis S., Philadelphia, Pa. Hair-clipping machine	382,288	May 1	905	153	43	624
Lee, Louis S. (See Phippa and Burman, assignors.) (Reissue.)						
Lee, Richard H., Altoona, Dak. Ter. Designation-badge	382,367	May 8	737	187	43	659
Lee, Thomas. (See Weitzel and Lee.)						
Lee, William W., Northampton, Mass. Lawn-sprinkler	384,699	June 19	1297	339	43	1393
Lee, Zachary T., Kosciusko, Miss. Pea, cotton-seed, or corn planter	382,886	May 15	1495	392	43	818
Leedom, Samuel W. (See Davey, Petherick, assignor.)						
Leeds, Albert R., Hoboken, N. J. Electrical apparatus for purifying water	383,184	May 22	1949	511	43	915
Leedy, Isaac. (See Duncan, Beverly W., assignor.)						
Lefeber, Henry, assignor of one-half to J. C. Wilson, Philadelphia, Pa. Cutting attachment for sewing-machines	382,169	May 1	426	111	43	592
Lefferts, Marshall C., New York, N. Y., and J. H. Stevens, Newark, N. J. Ink	380,654	Apr. 3	517	.....	43	105
Leffmann, Henry, Philadelphia, Pa. Manufacture of carbonic acid and heavy magnesia	381,957	June 5	171	50	43	1153
Leforestier, Alexander, Philadelphia, Pa. Musical wind-instrument	382,991	May 15	1638	429	43	845
Lefort, Jules F., Paris, France. Construction of water-wheels with movable floats or paddles	382,867	May 15	1496	392	43	818
Lehmann, Adolf, assignor of one-half to J. F. Luth, New York, N. Y. Caster	381,476	Apr. 17	1172	473	43	361
Lehnert, Henry G., Philadelphia, Pa. Drum	382,045	May 1	256	66	43	560
Leiby, Geoffrey B., Boston, Mass. Air-brake attachment	381,392	Apr. 17	1643	437	43	336
Leichsenring, Hermann R., Schönebeck, Prussia, Germany. Apparatus for putting driving-belts on pulleys	382,046	May 1	256	66	43	560
Leigh, Daniel, Groveport, Ohio. Cultivator-shovel	380,275	June 26	2159	551	43	1564
Leighton, John T., Edinburgh, county of Edinburgh, Scotland. Electro-magnetic spectacles	381,260	Apr. 17	1453	391	43	298
Leinbach, Felix W., *et al.* (See Lorens, William A., assignor.)						
Leland, Edwin A., assignor to C. C. Glock, Meriden, Conn., and L. Richardson, Brooklyn, N. Y. Railway-car-heating apparatus	384,452	June 12	912	237	43	1303
Lemaire, Henri F. M., Paris, France, assignor to C. C. Delmonico, New York, N. Y. Cigarette	384,858	June 19	1528	397	43	1428
Leman, Frank, Elgin, Ill. Machine for pointing, drilling, and reaming	380,496	Apr. 3	276	76, 77, 78	43	57
Leman, Frank, Elgin, Ill. Machine for the manufacture of pillars for watch-plates	380,497	Apr. 3	279	78, 79, 80	43	57
Leman, Frank, Elgin, Ill. Machine for the manufacture of gear-wheels	380,498	Apr. 3	283	80, 81, 82	43	58
Leman, Frank, Elgin, Ill. Manufacture of pinion-blanks	380,499	Apr. 3	287	82, 83, 84	43	58
Lemassena, Lillian. (See Zeliff, James, assignor.)						
Lemly, Charles C., Merrill, Wis. Flue-thimble	384,918	June 19	1609	418	43	1443
Lemon, G. Harland. (See Lemon, Hamlin T., assignor.)						
Lemon, Hamlin T., assignor of one-third to G. H. Lemon, Richmond, Ind. Atmospheric clothes-washer	384,453	June 12	913	238	43	1309
Lemp, Hermann, and M. J. Wightman, Hartford, Conn. Cut-out for incandescent lamps	383,091	June 5	63	20	43	1133
Lenau, Gustavus A., assignor to himself and W. E. White & Co., Providence, R. I. Bracelet-chain	385,313	June 26	2230	569	43	1575

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Lenhart, George E., assignor of one-half to C. W. McIntyre, St. Paul, Minn. Switch-stand	383,738	May 29	2772	710	43	1081
Leslie, Benjamin J., Butler, Ky. Plaits or pinchers	380,331	Apr. 3	36	13	43	9
Leslie, Edward, Orangeville, Ontario, Canada. Rotary excavator for removing snow	380,689	Apr. 10	756	206	43	130
Lethert, Anthony, assignor to himself and M. Geis, Jordan, Minn. Vegetable-cutter	381,261	Apr. 17	1454	291, 292	43	299
Leukhardt, August. (See Medery and Leukhardt.)						
Leupold, William, Channahon, Ill. Fodder-binder	383,198	June 26	1934	494	43	1516
Lewis, Charles P., Sweet Springs, W. Va. Brace for bedsteads	381,892	Apr. 17	1456	302	43	299
Lewis, Ellsworth J., Bellaire, Ohio. Automatic air-brake	383,819	May 29	2916	770	43	1147
Lewis, Eugene F., Preston, Conn. Coal-chute	381,147	Apr. 17	1294	346	43	300
Lewis, Richard. (See Edwards, Lewis, and Jones.)						
Lewis, Russell H., assignor to B. L. Hall & Co., Providence, R. I. Hinged shoe-button	381,477	Apr. 17	1773	473	43	361
Lewis, William F., Washington, D. C. Bag-holder	384,434	June 19	914	238	43	1303
Lewton, George W., Centre Point, Iowa. Water-heater	385,976	June 26	2159	552	43	1564
Lezard, Edward J., London, county of Middlesex, England, assignor of one-half to A. S. Lascelles & Co., New York, N. Y. Device for holding watches	381,936	May 1	51	14	43	295
Libbey, Hosea W., Boston, Mass. Spark-arrester	381,707	Apr. 24	2112	559	43	447
Libby, Frederick M., Portland, Me. Perforated pen-holder	383,185	May 22	1951	512	43	916
Liberoth, Jesper J. H., New York, N. Y. Ironing-board	382,170	May 1	426	113	43	560
Licardie, Camille, Clermont, De San Marcos, Guatemala. Fish-plate	382,047	May 1	256	67	43	561
Liddell, Walter J. F., assignor of one-half to W. S. Liddell, Charlotte, N. C. Baling-press	381,263	Apr. 17	1457	303	43	299
Liddell, Walter S. (See Liddell, Walter J. F., assignor.)						
Liebmann, Rudolph, assignor to City Button Works, New York, N. Y. Button	380,561	Apr. 3	416	110	43	95
Lilea, Charles E. (See McMahon, Sharp, and Lilea.)						
Lillie, Benjamin A., San Francisco, Cal. Fruit-stoning machine	383,739	May 29	2773	730, 731	43	1081
Lillie, Benjamin A., San Francisco, Cal. Fruit-stoning machine	384,371	June 12	804	209	43	1301
Lincoln, Charles L., assignor of one-half to A. P. Van Tuyl, Jr., Brooklyn, N. Y. Dumb-waiter	381,958	June 5	172	50	43	1153
Lincoln, John L., Chicago, Ill. Clothes-drier	380,332	Apr. 3	37	14	43	10
Lindenthal, Gustav, Pittsburg, Pa. Refining iron	380,442	Apr. 3	198	.....	43	41
Linder, George. (See Farmer and Linder.)						
Lindley, Lafayette W., Louisville, Ky. Fence-post	382,992	May 15	1639	429	43	845
Lindner, Charles, and T. F. Hammer, Branford, Conn. Salt-feeding device	382,048	May 1	256	67	43	561
Lindsay, Marcellus J., and D. M. Ross, Bellevue, Iowa. Measuring-tank for oil	384,906	June 26	1707	443	43	1471
Lindsey, Leroy J., Seymour, Iowa. Railway-switch	380,562	Apr. 3	417	118, 119	43	95
Lindsley, Edward, Cleveland, Ohio. Street-box and shut-off for water, gas, or other fluid service	383,478	May 29	2390	626	43	1082
Lines, Fred, assignor of two-thirds to F. Hisley and M. J. Hogan, Syracuse, N. Y. Fifth-wheel	384,638	June 19	1187	313, 314	43	1302
Lines, Samuel M., Indianapolis, Ind. Clasp	382,469	May 8	916	232	43	693
Linscott, John F., Jefferson, Ill. Cook-stove ventilator	380,500	Apr. 3	290	84, 85	43	89
Linscott, John M., Worcester, Mass. Car-starter	381,393	Apr. 17	1644	438	43	337
Linsley, Newton, and C. E. Forry, Freeport, Ill. Surface-gage	381,937	May 1	52	14	43	295
Linville, Benjamin A. (See Miller, John F., assignor.)						
Lippincott, Jesse H., *et al.* (See Niemstädt, Ernst, assignor.)						
List, William A., Wheeling, W. Va. Stove-pipe	381,021	Apr. 10	1084	288	43	319
Littell, Hardin H., Louisville, Ky. Track-scraper	385,063	June 26	1644	472	43	1499
Little, Addison M., Menasha, Wis. Machine for making excelsior	382,431	May 8	889	212	43	677
Little, Charles H., Pittsburg, Pa. Device for carrying cars over temporary obstructions	382,711	May 15	1261	330	43	770
Little, Orton C., Menasha, Wis. Feed-cutter	384,908	June 5	545	150	43	1297
Littlefield, Charles A., assignor to E. A. Tuttle and J. T. Milne, Fall River, Mass. Loom for cross-weaving	380,760	Apr. 10	692	190, 191	43	147
Littlefield, Charles A., assignor to E. A. Tuttle and J. T. Milne, Fall River, Mass. Loom for cross-weaving	380,761	Apr. 10	693	191, 192	43	147
Littlefield, Charles W., Amesbury, Mass. Railway-car	384,987	June 26	1708	443	43	1471
Littlefield, John W., Everett, Mass. Dress-form	384,372	June 12	807	210	43	1302
Livingstone, William, Jersey City, N. J. Door-knob and connecting-shank for the same	382,333	Apr. 3	36	14	43	10
Lloyd, Walter C., *et al.* (See Patterson and Noteman, assignors.)						
Locke, Edward A., Manchester, county of Lancaster, England. Piano-forte, organ, harmonium, or other musical instrument	382,481	May 8	917	232	43	693
Locke, Sylvanus D., Hoosick Falls, N. Y., assignor of one-half to McCormick Harvesting Machine Company, Chicago, Ill. Mold for casting metal	383,060	May 15	1766	456	43	870
Lockerbie, Thomas. (See Tolhurst, Glasbrook, Philbar, and Lockerbie.)						
Lockett, John E., Dancyville, assignor of one-half to J. S. and J. W. Rhea, Somerville, Tenn. Cotton-press	380,334	Apr. 3	40	15	43	10
Lockhart, Horatio J., Fostoria, Ohio. Washing-machine	380,306	Apr. 3	133	40	43	99
Lockwood, Amelia R. (See Bedford, George J., assignor.)						
Lockwood, Charles L., Philadelphia, Pa. Knockdown box	382,312	May 8	647	165	43	643
Loder, George D., Covington, Ky. Sash-fastener	380,501	Apr. 3	291	85	43	89
Lodge, William, and H. Dreses, Cincinnati, Ohio. Feeding device for drilling	385,063	June 26	1645	472	43	1499
Loehner, August, St. Louis, Mo. Shaft-hanger	383,532	May 29	2488	656	43	1081
Loewenbach, Hugo, and W. F. H. Matter, Milwaukee, Wis. Sheet-straightener for printing-presses	381,800	Apr. 24	2237	588	43	471
Logan, Ralph H., and G. H. Culley, Allegheny, assignors to J. K. Collins, Glenfield, Pa. Cigar-bunching machine	384,265	May 1	567	143, 144	43	618
Losey, William. (See Stokes, Losey, and Favell.)						
Long, Charles R., Louisville, Ky. Window-ventilator	383,562	May 29	2549	673	43	1034
Long, George S., assignor of two-thirds to E. H. Judd and F. C. Rockwell, Hartford, Conn. Barrel	381,077	Apr. 10	1181	314	43	326
Long, Joseph N., and J. McCaffrey, Le Claire, Iowa. Bearing and support of rudder-stocks upon vessels	381,148	Apr. 17	1295	346	43	299
Loomis Electric Manufacturing Company. (See Loomis, Osborn P., assignor.)						
Loomis, Osborn P., Somerville, Mass., assignor to Loomis Electric Manufacturing Company, New York, N. Y. Commutator-brush for electric generators	381,394	Apr. 17	1646	438	43	337
Lord, George S. (See Devereux, Joel, assignor.)						
Lore, George W., assignor of four-fifths to G. L. and C. T. Sill, L. W. Briggs, and J. S. Spencer, Detroit, Mich. Machine for scouring cans	383,400	May 22	2268	603	43	975
Loree, Manfred, assignor of two-thirds to D. P. Clark, Miamisburg, and C. E. Clark, Dayton, Ohio. Truck	380,335	Apr. 3	42	15	43	10
Lorenz, Wilhelm, Carlsruhe, Baden, Germany. Compressing gunpowder or analogous materials	380,696	Apr. 10	579	150	43	125
Lorenz, Wilhelm, Carlsruhe, Baden, Germany. Percussion-fuse	381,264	Apr. 17	1459	303	43	299

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lorenz, Wilhelm, Carlsruhe, Baden, Germany. Vertical breech-closing mechanism for looms	381,698	Apr. 24	1908	525	43	424
Lorenz, William A. (See Heniss and Lorenz.)						
Lorenz, William A., Hartford, Conn., assignor to F. W. Leinbach and C. A. Wolle, Bethlehem, Pa. Making creases in sheets of flexible or elastic material	380,397	Apr. 3	135	40	43	89
Lorenz, William A., and W. H. Heniss, Hartford, Conn. Pasting apparatus	3-5,064	June 26	1846	472	43	1499
Loreta, Arthur J. L., Brooklyn, N. Y. Cutting-machine	383,899	June 5	65	20	43	1133
Lorillard, Pierre, Jr., New York, N. Y. Receptacle for tobacco	381,801	Apr. 24	2229	598	43	471
Lorraine, Madison J., and C. T. Aubin, St. Louis, Mo. Car-coupling. (Reissue.)	10,941	June 26	2250	578	43	1561
Loseman, James F. (See Stewart, William A., assignor.)						
Lothrop, Leonard R., *et al.* (See Dean, Henry W., assignor.)						
Lottimer, William A. (See Jamieson, Augustus, assignor.)						
Lottridge, Thomas A., Rochester, and J. V. Einsfield, assignors to Chappell, Chase, Maxwell & Co., Oneida, N. Y. Coffin-fastener	383,311	May 22	2139	564	43	951
Loud, John J., Weymouth, Mass. Fire-cracker cannon	385,137	June 26	1935	494	43	1518
Lourie, Herbert M., Keokuk, Iowa. Force-pump	384,633	June 19	1188	314	43	1363
Louther, Winfield S. (See Carter and Louther.)						
Love, John C., Philadelphia, Pa. Electrical railway	381 395	Apr. 17	1647	{438 439}	{43 43}	337
Love, John C., and J. F. Snediker, Philadelphia, Pa., assignors to said Love. Railway-car	381,396	Apr. 17	1649	{439 440}	{43 43}	338
Lovejoy, Henry L., Lowell, Mass. Cash and parcel carrying apparatus	382,809	May 15	1499	393	43	819
Lovejoy, Russel P., Greig, N. Y. Sprinkling-machine	383,740	May 29	2775	731	43	1092
Lovell, James L., Austin, Nev. Ore-roasting furnace	381,639	Apr. 24	2001	525	43	494
Low, A. Augustus, Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type containing channel	381,892	Apr. 24	2240	587	43	471
Low, A. Augustus, Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Lead and rule holder	383,959	June 5	174	51	43	1154
Low, A. Augustus, Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Lead and rule holder	383,960	June 5	177	51, 52	43	1154
Low, A. Augustus, Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Lead and rule holder	383,961	June 5	180	52	43	1155
Low, A. Augustus, Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Lead and rule holder	383,962	June 5	183	53	43	1155
Lowden, James J., Boston, Mass. Regulating live steam and exhaust from steam-engines	381,149	Apr. 17	1296	346	43	269
Lowden, James J., Boston, Mass. Separator	381,150	Apr. 17	1297	347	43	269
Lowentraut, Peter. (See Hall, George F., assignor.)						
Lowry, Frank, assignor to Lechner Manufacturing Company, Columbus, Ohio. Mining-machine	383,061	May 15	1768	457	43	870
Lubker, Henry, Columbus, Nebr. Guard-finger for mowers and reapers	383,473	May 29	2302	636	43	1004
Lucas, William M., Uhrichsville, Ohio. Flour-bolt	383,068	May 15	1769	{457 458}	{43 43}	870
Luce, Edwin W., Bolivar, N. Y. Throttle-valve	382,983	May 15	1640	429	43	845
Luce, Edwin W., Bolivar, N. Y. Automatic car-brake	382,984	May 15	1642	430	43	846
Luce, Edwin W., Bolivar, N. Y. Sash fastener	384,535	June 12	1040	271	43	1328
Lucock, John S. (See Williams and Lucock.)						
Ludlum, Albert C., Brooklyn, N. Y. Adding and writing machine	384,373	June 12	808	210	43	1262
Ludwig, Bernhard, Vienna, Austria-Hungary. Machine for embossing wood or other material	380,904	Apr. 10	907	{243 244}	{43 43}	166
Ludwig, Hermann C., New York, N. Y. Embroidering frame and stand	383,533	May 29	2490	657	43	1021
Ludwig, John C., San Francisco, Cal. Station-indicator	383,230	May 22	2018	{529 530}	{43 43}	999
Lull, Albert G., Chicago, Ill. Garment-supporter	383,893	June 5	66	20	43	1133
Lumb, William, trustee. (See Foote, Theodore M., assignor.)						
Lund, John C., Eau Claire, Wis. Fire-escape	381,478	Apr. 17	1775	474	43	362
Lund, William, Philadelphia, Pa., assignor to H. Wyman, Worcester, Mass. Wool-combing machine. (Reissue)	10,930	May 15	1922	476	43	879
Lundborg, Charles G., New York, N. Y. Construction of ships, &c	384,047	June 5	306	87, 88	43	1179
Lung, Charles J., Jamestown, N. Y. Ice-creeper	382,432	May 8	831	213	43	678
Lunkenheimer, Frederick, Cincinnati, Ohio. Non-conducting hand-wheel for cocks, valves, and other steam-fittings	382,474	May 29	2393	636	43	1004
Lupien, Edmond A., Wayland, Mass. Breasting attachment for beeling-machines	382,615	May 8	1121	{288 289}	{43 43}	733
Luth, John F. (See Lehmann, Adolf, assignor.)						
Luther, James D. (See Sharp and Luther.)						
Lutz, George W., assignor of one-half to J. S. Trimble, Wheeling, W. Va. Pipe-hanger	382,171	May 1	429	112	43	362
Lutz, George W., assignor of one-half to J. S. Trimble, Wheeling, W. Va. Apparatus for testing pipes	382,172	May 1	429	112	43	362
Lutz, George W., and J. M. Dillon; said Dillon assignor, by mesne assignments, to J. S. Trimble, Wheeling, W. Va. Apparatus for testing pipes	382,205	May 1	569	144	43	618
Lutz, William F., Jr., New York, N. Y. Car-axle	383,930	May 29	2919	770	43	1107
Lux, John H., P. Lux, deceased, (J. H. Lux administrator,) and S. Ede, Earlville, Iowa. Hay rake and loader	380,336	Apr. 3	43	15, 16	43	10
Lux, Philip. (See Lux and Ede.)						
Lyman, Charles, Clarinda, Iowa. Miter-box	380,632	Apr. 3	485	126	43	89
Lyman, Fordyce A., Cleveland, Ohio. Vapor-burner	381,843	Apr. 24	2319	603	43	496
Lyman, Fordyce A., Cleveland, Ohio. Vapor-burner	382,658	May 8	1177	304	43	745
Lyman, Moses. (See Crandall, Charles M., assignor.)						
Lynch, Edward P., Davenport, Iowa. Walking-cultivator	384,048	June 5	309	88	43	1180
Lynch, Michael, Chicago, Ill. Ash-sifter	383,312	May 22	2140	565	43	951
Lyon, Benjamin W., San Francisco, Cal. Station-indicator	385,314	June 26	2290	589	43	1575
Lyon, James G., Brooklyn, N. Y. Broiling-oven for ranges	384,049	June 5	310	88	43	1180
Lyon, Louis A., Shorter's Depot, Ala. Automatic fire-extinguisher for car-heaters	381,561	Apr. 17	1816	481	43	371
Lytle, Henry B., Webb's Mills, N. Y. Liquid-forcing apparatus	382,876	May 1	522	134	43	666
Lyttle, La Fayette, Toledo, Ohio. Sword	384,560	June 12	1113	295	43	1330
Maas, Hugo F., Egg Harbor City, N. J. Copy-holder for compositors	384,374	June 12	811	210	43	1262
Mabbey, Jesse T., Forest, Ohio. Railway-crossing	382,173	May 1	429	{112 113}	{43 43}	362
MacDonald, John A., Lowell, Mass. Micrometer-gage	384,771	June 19	1380	363	43	1462
Macdonald, Franklin, New York, N. Y. Inking apparatus for lithographic presses	381,709	Apr. 24	2113	553	43	447
Macdonald, Frederick W. C., Chicago, Ill. Rein-holder	384,980	June 26	1709	443	43	1472
Macer, Jacob F., Allendale, Ill. Car-coupling	380,389	Apr. 3	128	40	43	89
Macintosh, Robert M., Boston, Mass. Wax-end machine	384,709	June 19	1368	339	43	1384
Mackay, George H., assignor of one-half to O. Woodbury, Salem, N. H. Shaft-coupling	382,725	May 15	1331	350	43	794
Mackay, Robert, Warren, Pa. Valve-gear	383,983	June 5	185	56	43	1156

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Mackel, Thomas, Pawtucket, R. I. Coupling for hose and faucets	381,502	Apr. 24	1991	501	43	405
Mackey, William J., Truro, Ill. Wagon-brake	380,502	Apr. 3	202	85	43	89
Mackie, Robb, assignor to J. B. Tibbitts, Troy, N. Y. Armature for dynamo-electric machines	382,174	May 1	434	113	43	362
Mackintosh, John C., assignor of one-half to A. F. Tillotson, Erie, Pa. Bottle-washer	381,944	June 5	186	54	43	1156
Maddan, Albert F., Newark, N. J., assignor to Electrical Accumulator Company, of New York. Apparatus for preparing secondary-battery plates	382,086	May 1	333	87, 88	43	674
Maddin, Mary. (See Maddin, Samuel D., assignor.)						
Maddin, Samuel D., assignor to M. Maddin, Miamisburg, Ohio. Harvester	382,040	May 1	361	87, 88	43	361
Magruder, George C. W., Tenallytown, assignor of two-thirds to American Patent Exchange, Washington, D. C. Carriage-wheel fender	384,980	June 26	1710	444	43	1472
Mahaffa, John. (See Newbanks and Mahaffa.)						
Mahaffy, Albert G. (See Johnson, and Mahaffy.)						
Mahaffy, Henry, assignor to J. Anderson, New York, N. Y. Printing-telegraph receiver	384,455	June 12	916	238	43	1303
Mahan, Charles, Washington, D. C. Device for removing obstructions or preventing accidents on street-railways	381,881	Apr. 24	2377	618	43	497
Mahan, James P. and J. S., New York, N. Y. Coffin	384,701	June 19	1300	339	43	1364
Mahan, John S. (See Mahan, James P. and J. S.)						
Mahoney, John J., Holden, Mass. Pulley-bushing	381,151	Apr. 17	1298	347	43	269
Maier, Wilhelm, Grünau, near Berlin, and G. Richter, Falkenberg, near Grünau, Prussia, Germany. Making hydrogen	380,726	Apr. 10	635	175	43	136
Makemson, Thomas, Mound City, Kans. Evaporating-pan	384,772	June 19	1392	364	43	1403
Malke, Frederick E. R., Chrisney, Ind. Grain-adjuster for binders	384,702	June 19	1301	{339 340}	{43 43}	1364
Mallary, Richard S. (See White, Alice, assignor.)						
Mallett, Edward J., Bay Side, N. Y. Printing-telegraph	384,320	June 12	715	{190 191}	{43 43}	1267
Mallett, Edward J., Bay Side, N. Y. Polarized electro-magnet	384,321	June 12	720	191	43	1267
Mallett, Edward J., Bay Side, N. Y. Printing-telegraph	384,322	June 12	720	191	43	1267
Mallett, Edward J., New York, N. Y. Automatic pole-changer	384,323	June 12	722	191	43	1267
Mallett, Edward J., New York, N. Y. Automatic telegraphy	384,324	June 12	724	192	43	1268
Mallett, Edward J., New York, N. Y. Automatic telegraphy	384,325	June 12	726	193	43	1269
Mallett, Edward J., New York, N. Y. Automatic pole-changer	384,326	June 12	732	193	43	1269
Malmberg, Hjalmar. (See Whiting, Preston H., assignor.)						
Malmberg, Hjalmar, Cortland, N. Y. Two-wheeled vehicle	382,175	May 1	436	{113 114}	{43 43}	362
Malone, Micajah C., Palmyra, Ill. Pruning implement	380,583	Apr. 3	419	119	43	85
Maloue, Peter J., Altoona, Pa. Model for dental plates	382,539	May 8	1008	257	43	711
Mancini, Louis A., Montclair, N. J. Double-harness saddle and yoke	384,703	June 19	1302	340	43	1364
Mandelbaum, Solomon, Chicago, Ill. Adjustable pattern-chart	381,563	Apr. 24	1902	501	43	405
Mandell, Michael, *et al.* (See Maurino, Henry Q., assignor.)						
Mangan, Thomas, New Orleans, La. Rein-holder	380,337	Apr. 3	45	16	43	11
Mangum, Daniel D. (See McMahon and Mangum.)						
Manhattan Clock Company. (See Parcells, Albert L., assignor.)						
Manhattan Watch Company. (See Kuhn, Edmond, assignor.)						
Manlove, George W., and E. A. Parker, Nashville, Ill., assignors to said E. A. Parker and H. Parker, Milwaukee, Wis., and E. L. Parker, Minneapolis, Minn. Wagon-box	381,479	Apr. 17	1778	474	43	362
Mann, Edgar E., assignor, by mesne assignments, to W. J. Scott, Newburg, N. Y. Fog-signal	380,584	Apr. 3	420	{119 120}	{43 43}	86
Manning, Bradley, Swanton, Ohio, assignor of two-thirds to E. D. Manning, Chicago, Ill., and J. F. Strayer, Swanton, Ohio. Carpet-stretcher	384,456	June 12	918	238	43	1304
Manning, Edward D., *et al.* (See Manning, Bradley, assignor.)						
Manning, William T., assignor of one-half to I. N. Kalbaugh, Pittsburg, Pa. Railway-switch lock	383,985	June 5	187	55	43	1156
Manny, Eugene S., Montreal, Quebec, Canada. Hot-water boiler	382,313	May 8	648	165	43	643
Maser, Lewis J., Delphi, Ind. Tongue-support	380,503	Apr. 3	203	86	43	89
Mansfield, Edward, Orono, Me. Making cant-hook ferrules	383,135	May 22	1666	420	43	903
Manson, Asa D., Overton, Mass. Harrow	384,457	June 12	919	239	43	1304
Manville, Robert C. (See Kleinert and Manville.)						
Maple, Alfred L. (See Vandegrift and Maple.)						
Marble, George L., assignor to Fitchburg Machine Works, Fitchburg, Mass. Clamping device for cross-beams of planers	382,653	May 8	1179	{304 305}	{43 43}	745
Marble, William S., assignor of one half to C. J. Spielberger, Philadelphia, Pa. Sleigh	383,401	May 22	2270	602	43	974
March, John W., *et al.* (See Phillips, Elwood C., assignor.)						
Marcoux, Moise, Springfield, Mass. Automatic fan attachment for rocking-chairs	381,897	Apr. 24	2404	625	43	503
Marelle, René, Paris, France. Vending apparatus	381,397	Apr. 17	1650	440	43	336
Margeson, Manly E., Rogersville, Mich. Portable fence	383,475	May 29	2394	637	43	1004
Marjerison, James, Lawrence, Mass. Spinning-machine	381,586	Apr. 24	1905	502	43	406
Marjerison, James, Lawrence, Mass. Spinning-machine	381,587	Apr. 24	1906	503	43	406
Markle, Walter, Tanganoxie, Kans., assignor of one-half to F. M. Vanden, Kansas City, Mo. Heating-drum	383,741	May 29	2776	731	43	1093
Marks, Lewis C. (See Allen, William R., assignor.)						
Marks, Louis, assignor of two-thirds to G. Schlesinger and G. Burkhardt, San Francisco, Cal. Carburetor	382,819	May 15	1405	{358 359}	{43 43}	799
Mariand, Alfred J., Pittsburg, Pa. Nut-machine	385,198	June 26	1936	{494 495}	{43 43}	1518
Marlin Fire Arms Company. (See Rice, David H., assignor.)						
Marlin, Mahlon H., New Haven, Conn. Velocipede	384,980	June 26	1711	444	43	1472
Marmon, Daniel W., assignor to Nordyke & Marmon Company, Indianapolis, Ind. Shifting gate for conveyers	382,880	May 15	1501	393	43	819
Marquis, Daniel M., Kokomo, Ind. Sliding joint for gas-mains	381,603	Apr. 24	2242	567	43	471
Marr, Augustus D., Boston, Mass. Chair	383,231	May 22	2019	530	43	930
Marr, William C., Onawa, Iowa. Pliers	382,718	May 15	1262	330	43	770
Marsh, Robert A. (See Bignall and Marsh.)						
Marsh, William H., New York, N. Y. Hydraulic elevator	383,232	May 22	2021	530	43	930
Marshall, Charles P., Memphis, Tenn. Steam-boiler	383,364	May 22	2212	{566 567}	{43 43}	964
Marshall, George F., Brooklyn, N. Y. Valve-connection for hopper water-closets	382,880	May 15	1406	360	43	799
Marshall, George V. (See Ballard, Samuel R., assignor.)						
Marshall, Godfrey, Indiana, Pa. Horse-collar fastener	382,540	May 8	1009	257	43	711
Marshall, John S., Imlay City, Mich. Valve for steam-engines	381,158	Apr. 17	1269	347	43	270
Marshall, Robert, Pittsburg, Pa. Lubricator	381,404	Apr. 24	2243	567	43	472
Marsters, Joseph D., Boston, Mass. Combination-tool	382,621	May 15	1407	360	43	799

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g's	Official Gazette. Vol.	Official Gazette. Page.
Marston, F. Du Pont, Philadelphia, Pa. Electrical telephone	380,905	Apr. 10	908	244	43	196
Martens, Henry A., St. Joseph, Dak. Ter. Bag-fastener	381,985	Apr. 17	1462	383	43	300
Martin, Charles H., Bridgeport, Conn. Heel for boots or shoes	384,634	June 19	1190	314	43	1353
Martin, Charles W., Wallaceburg, Ontario, Canada. Swing-bridge	380,906	Apr. 10	960	244	43	196
Martin, Edward G. Concordia, Kans. Vapor-burner	381,153	Apr. 17	1301	{347 / 348	43	270
Martin, Edwin K. (See Abraham and Martin.)						
Martin, Henry, Cortland, Ill. Flour-sieve	382,541	May 8	1011	258	43	711
Martin, Homer. (See McHenry and Martin.)						
Martin, Hudson, and J. R. Palmer, Roanoke, Mo. Combined whip and robe lock and line-holder	380,633	Apr. 3	486	136	43	99
Martin, Isaac J., Honey Grove, Tex. Plow-point	383,402	May 22	2272	604	43	974
Martin, John L., Canton, Kans. Snap-hook	380,987	Apr. 10	562	159	43	196
Martin, John H., Oroville, assignor of one-half to J. Hendy, San Francisco, Cal. Hydraulic pump	381,050	June 5	311	89	43	1140
Martin, John W., assignor of one-third to A. S. Mason, St. Louis, Mo. Wagon-brake	381,502	Apr. 17	1818	481	43	371
Martin, Morris, Malden, Mass., assignor to Municipal Signal Company, Portsmouth, N. H. Municipal signaling	380,635	Apr. 3	520	144	43	105
Martin, Morris, Malden, assignor of one-half to C. F. Adams, Boston, Mass. Annunciator and signaling apparatus	381,709	Apr. 24	2115	553	43	447
Martin, Patrick A. (See Jackson, John, assignor.)						
Martine, Charles F., Boston, Mass. Boot or shoe. (Reissue)	10,919	Apr. 3	555	151	43	112
Marty, John M., Cleveland, Ohio. Ejector	380,907	Apr. 10	910	244	43	187
Marts, Oliver M., and J. Esselburn, West Salem, Ohio. Thill-coupling	382,177	May 1	439	114	43	594
Marvil, Joshua H., Laurel, Del. Fruit-basket	382,176	May 1	437	114	43	594
Marvin, Robert S., *et al.* (See Earnest, Jacob T., assignor.)						
Mason, Asa S. (See Martin, John W., assignor.)						
Mason, Charles T., Jr., Sumter, S. C. Cotton-gin	381,564	Apr. 24	1903	502	43	405
Mason, Charles T., Jr., Sumter, S. C. Cotton-gin	381,565	Apr. 24	1904	502	43	405
Mason, Peter L., West Salem, assignor of one-half to H. B. West, Cleveland, Ohio. Mechanical telephone	382,713	May 15	1263	331	43	770
Mason Regulator Company. (See Mason, William B., assignor.)						
Mason, Robert, Exeter, N. H. Checkrein-hook	384,859	June 19	1528	398	43	1498
Mason, Rodney, and J. M. Smith, Detroit, Mich. Lubricator	384,051	June 5	312	89	43	1140
Mason, William, New Haven, Conn., assignor to Winchester Repeating Arms Company. Cartridge-reloading implement	382,482	May 8	917	233	43	693
Mason, William B., assignor to Mason Regulator Company, Boston, Mass. Fluid-pressure regulator	383,496	May 22	2311	613	43	981
Mason, William B., assignor to Mason Regulator Company, Boston, Mass. Governor-valve	383,497	May 22	2313	613	43	981
Mason, William D., Providence, R. I. Drop-light attachment	384,058	June 5	315	89	43	1141
Massey, Albert P., assignor to Eames Vacuum Brake Company, Watertown, N. Y. Electro-magnetic car-brake	382,706	May 15	1338	340	43	784
Mater, Henry, Lagro, Ind. Fence	382,178	May 1	440	115	43	594
Mather, Richard H., Windsor, Conn. Dynamo-electric machine	381,388	Apr. 17	1652	441	43	339
Mather, Richard H., Windsor, Conn. Steam dynamo-electric machine	381,568	Apr. 24	1911	{503 / 504	43	406
Mather, Richard H., Windsor, Conn. Switch for electric motors	382,714	May 15	1264	331	43	770
Mather, Richard H., Windsor, Conn. Switching device for electric motors	382,715	May 15	1266	{331 / 332	43	771
Mather, Richard H., Windsor, Conn. Governor for electric motors	383,651	May 29	2645	709	43	1055
Mathews, Lawrence, Summitville, Ohio. Elevator for grain-binders	384,458	June 12	920	239	43	1304
Mathews, Milton, Warren, and H. Hill, Chester Cross Roads, Ohio. Evaporating-pan	382,314	May 8	649	{165 / 166	43	643
Mathias, Henry R., *et al.* (See Newsom and Oxley, assignors.)						
Mathison, William M. (See Jewell, Omar H., assignor.)						
Mathison, Joseph, Lynn, Mass., assignor to Standard Button Fastening Company. Presser-foot-operating mechanism for sewing-machines	380,656	Apr. 3	523	144	43	105
Matlack, Alexander C., Independence, Cal. Flume	381,399	Apr. 17	1653	441	43	339
Matter, William H. (See Loewenbach and Matter.)						
Matteson, Don C., Stockton, Cal. Combined harvester and thrasher	383,238	May 22	2022	{530 / 531	43	930
Mattheissen, Conrad H., and J. Krieger, Chicago, Ill. Refining dextrine	382,368	May 8	736	.....	43	650
Matthews, Edwin L., Ada, Minn. Bill-file	382,716	May 15	1268	338	43	771
Matthews, Henry A., and D. M. Ireland, Waterbury, Conn. Lantern	384,033	June 5	315	89, 90	43	1141
Mattijets, Andreas, Giddings, Tex. Baling-press	380,810	Apr. 10	760	{298 / 299	43	150
Mattison, Charles J., Oswego, N. Y. Machine for packing pulverulent substances	383,136	May 22	1887	492	43	903
Mattison, W. Harry. (See Pagin, Orestes, assignor.)						
Mattson, Charles G., Lindstrom, Minn. Water-fetching machine	383,894	June 5	66	20	43	1133
Mats, William G. (See Andrews, Edward, assignor.)						
Maule, Francis I., Philadelphia, Pa. Screw-cutting die	380,908	Apr. 10	911	245	43	187
Maurino, Henry Q., assignor to himself, A. Trorlicht, and M. Mandell, Albuquerque, N. Mex. Ter. Wheel	383,966	June 5	188	55	43	1156
Maury, Theodore, and E. Roubinet, Terrasson, France. Horse-detacher	382,742	May 29	2778	732	43	1062
Mauser, Paul, assignor to Waffenfabrik Mauser, Oberndorf-on-the-Neckar, Würtemberg, Germany. Detachable magazine for fire-arms	383,895	June 5	67	21	43	1134
Mawhood, Jonathan D., assignor to Richmond City Mill Works, Richmond, Ind. Roller-mill	381,710	Apr. 24	2116	553	43	448
Mawhood, Jonathan D., assignor to Richmond City Mill Works, Richmond, Ind. Roller-mill	384,919	June 19	1519	418	43	1443
Maxwell, Harry B., Rome, N. Y. Gag-runner	381,400	Apr. 17	1654	441	43	339
Maxwell, Joseph W., Louisville, Ky. Saw-guide	384,773	June 19	1393	364	43	1403
May & Co., Hilder. (See Cook, Gustave, assignor.)						
May, S. Elwood. (See Hallas, James G., assignor.)						
Mayall, John J. E., Southwick, county of Sussex, England. Producing uncolored and colored photographic impressions	382,369	May 8	739	.....	43	650
Mayall, Lucy A., executrix. (See Mayall, Thomas J.)						
Mayall, Thomas J., deceased, Reading, Mass.; L. A. Mayall, executrix. Pneumatic-railway system	381,401	Apr. 17	1655	{441 / 442	43	339
Mayall, Thomas J., deceased, Reading, Mass., L. A. Mayall, executrix. Thread-guide for loom-shuttles	381,402	Apr. 17	1657	443	43	340
Mayall, Thomas J., deceased, Reading, Mass.; L. A. Mayall, executrix. Elevated railway	381,403	Apr. 17	1658	443	43	340
Mayall, Thomas J., deceased, Reading, Mass.; L. A. Mayall executrix. Friction-roller for cable-grips and other purposes	381,404	Apr. 17	1660	444	43	341

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g's	Official Gazette. Vol.	Official Gazette. Page.
Mayall, Thomas J., deceased, Reading, Mass.; L. A. Mayall, executrix. Combined elevated and surface railway	381,405	Apr. 17	1662	{444 / 445	43	341
Mayall, Thomas J., deceased, Reading, Mass.; L. A. Mayall executrix. Quaternary yielding lever	382,967	May 1	571	144	43	616
Mayall, Thomas J., deceased, Reading, Mass.; L. A. Mayall, executrix. Railway system	384,054	June 5	317	90, 91	43	1141
Mayall, Thomas J., deceased; L. A. Mayall, executrix, Reading, Mass. Anti-friction compound	384,920	June 19	1611	.....	43	1444
Mayall, Thomas J., deceased; L. A. Mayall, executrix, Reading, Mass. Elevated railway	384,921	June 19	1612	419	43	1444
Mayer, Max B., *et al.* (See Wulff, Henry F., assignor.)						
Maynadier, James E., Taunton, assignor to Bucell Trimmer Company, Boston, Mass. Rotary cutter	380,328	Apr. 3	46	16	43	11
Maynard, Charles, Montague, Mass. Weeding-tool	384,625	June 19	1492	315	43	1363
McAfferty, Julia, Chicago, Ill. Photograph-holder	381,154	Apr. 17	1303	348	43	270
McAllaster, Alva S., *et al.* (See Britton, William H., assignor.)						
McAnulty, J. A., *et al.* (See Jewell, William M., assignor.) (Reissue.)						
McArthur, Robert X., Albert Lea, Minn. Combined hat and coat rack	382,315	May 8	650	166	43	643
McAvoy, Hugh L., assignor of one-half to S. H. Caughy, Baltimore, Md. Pneumatic fire-hydrant	381,805	Apr. 24	2244	567	43	472
McBride, John G., San Francisco, Cal. Paper and twine holder	381,155	Apr. 17	1304	348	43	271
McCaffrey, John. (See Long and McCaffrey.)						
McCague, John L. (See Bartlett, Edward C., assignor.)						
McCague, John L. (See Watson, Charles H., assignor.)						
McCall, Charles S., and J. L. Napier, Bennettsville, S. C. Cotton-cultivator	383,743	May 29	2780	732	43	1063
McCall, Joseph W., Kansas City, Mo. Plant-protector	382,370	May 8	741	187	43	650
McCarney, Jacob. (See Gamble, Joseph W., assignor.)						
McCarthy, Pierce, and P. Thesia, North Vernon, Ind. Cork-screw	382,005	May 1	183	47	43	547
McCarty, Daniel, Harlem, Ill. Gate	382,316	May 8	651	166	43	643
McCausland, James M., Pepperell, Mass. Paper-board machine	383,744	May 29	2781	732	43	1063
McClain, Edward L. (See Bell, Charles E., assignor.)						
McClellan, Ezra S., Paterson, N. J. Air-inlet for sewers and drains	381,711	Apr. 24	2119	553	43	448
McClellan, John W., Middletown, Ohio. Lawn-mower	383,896	June 5	72	21	43	1135
McClintock, George W., Quincy, Mass. Landing-net	382,317	May 8	652	166	43	643
McCloud, Sidney, Chicago, Ill. Machine for reducing railway-rails	380,564	Apr. 3	295	86	43	69
McCluey, Hugh, Keokuk, Iowa. Detachable plow-point	382,179	May 1	441	115	43	594
McCollin, Thomas H., Philadelphia, Pa. Photographic flash-light apparatus	384,636	June 19	1193	315	43	1364
McConnell, Florence. (See Hatfield and McConnell.)						
McCorkill, John G. R. (See Law, Isaac D., assignor.)						
McCormick Harvesting Machine Company. (See Locke, Sylvanus D., assignor.)						
McCormick Harvesting Machine Company. (See Pridmore, Henry E., assignor.)						
McCormick, John R., Holyoke, Mass. Molding apparatus	381,156	Apr. 17	1305	349	43	271
McCourt, James. (See Wilkinson and McCourt.)						
McCoy, Elijah, assignor to H. C. and C. C. Hodges, Detroit, Mich. Lubricator	383,745	May 29	2782	733	43	1063
McCoy, Elijah, assignor to H. C. and C. C. Hodges, Detroit, Mich. Lubricator	383,746	May 29	2785	733	43	1063
McCoy, Henry L., Lake, Ind. Cultivator	382,180	May 1	442	115	43	594
McCoy, John A., Medford, Mass. System of telephonic intercommunication	381,088	May 1	53	14	43	525
McCray, Millard F., Cowgill, Mo., and J. E. Norton, Detroit, Mich. Combination-tool	382,181	May 1	443	115	43	595
McCrossan, Thomas, Winnipeg, Manitoba, Canada. Heater for cars and buildings	381,806	Apr. 24	2245	568	43	472
McCrossen, Wilber M., West Branch, Mich. Road-cart	384,375	June 12	812	211	43	1293
McCullough, Mary T. (See McCullough, Robert A., assignor.)						
McCullough, Robert A., assignor to M. T. McCullough, Milwaukee, Wis. Making soap	381,503	Apr. 17	1819	.....	43	371
McCurdy, Thomas B., Lancaster, Tex. Vehicle-top	381,630	Apr. 24	2002	525	43	424
McDermott, Patrick. (See Hurley, Simon J., assignor.)						
McDonald, Alexander E., Brooklyn, N. Y. Hand-measure for fitting gloves	383,385	May 22	2213	587	43	984
McDonald, Alexander J., Chicago, Ill. Tie for railway-gates	384,967	June 5	180	55	43	1136
McDonald, Alexander J., Chicago, Ill. Railway-gate lamp	383,968	June 5	190	55	43	1157
McDonald, Alexander J., Chicago, Ill. Railway-gate	383,969	June 5	191	56	43	1157
McDonald, Donald, Louisville, Ky. Sliding jail-door	380,443	Apr. 3	199	54	43	41
McDonald, Frank R. (See St. Cyr and McDonald.)						
McDonald, Marshall, Washington, D. C. Filter	381,406	Apr. 17	1663	445	43	341
McDonough, Thomas. (See Fitzgerald, Mathew, assignor.)						
McDougall, William M., East Orange, N. J., Electric motor for railway-cars	382,483	May 8	919	233	43	693
McElroy, Charles E., Brockton, assignor of one-half to D. P. Ladd, Medford, Mass. Show-rack	382,542	May 8	1011	256	43	719
McElroy, Frank C., Columbus, Ohio. Car-heater	384,055	June 5	318	91	43	1141
McElroy, James F., Lansing, Mich. Automatic pipe-coupling	384,091	June 26	1712	{444 / 445	43	1473
McElroy, Robert G., Uniontown, Ala. Horse-power	381,807	Apr. 24	2246	568	43	472
McFadden, Thomas B., Peoria, Ill. Baker's oven	380,339	Apr. 3	46	17	43	11
McFarlane, Daniel, *et al.* (See Clarke, Reuben, assignor.)						
McGaffey, Ives W., assignor to J. H. Brown, Chicago, Ill. Hose-nozzle	382,099	May 1	336	86	43	575
McGann, Owen J., Pittsburg, Pa. Pressure-regulator and cut-off	380,444	Apr. 3	201	55	43	41
McGarvey, William B., assignor of one-half to W. A. Rose, Rochester, Pa. Composition for converting india-rubber or its compounds into hardened rubber	383,137	May 22	1888	.....	43	903
McGee, Joseph D., Chipley, Ga. Tire-shrinker	381,939	May 1	58	15	43	526
McGee, Patrick, Providence, R. I. Apparatus for cleaning charged gas-pipes	380,910	Apr. 10	914	245	43	187
McGill, George W. (See Shipley, Ralph J., assignor.)						
McGlashan, Charles F., Truckee, Cal. Show-case for entomological and other specimens	380,762	Apr. 10	695	192	43	147
McGowan, Frank P., *et al.* (See Parkerton, George W., assignor.)						
McGuire, Alexander. (See Teed, Ralph L., assignor.)						
McGunnigle, William H. (See Kingston and McGunnigle.)						
McHale, John. (See Jarboe and McHale.)						
McHenry, Feargus G., and H. Martin, Bloomington, Kans. Combined wire-tightener and staple driver and extractor	383,970	June 5	192	56	43	1157
McHenry, John T., Chicago, Ill. Corn-harvester	382,100	May 1	336	88, 89	43	575
McHenry, Martin J. (See Heard, William H., assignor.)						
McHugh, Timothy, assignor to W. H. Ward & Co., Boston, Mass. Self-closing faucet	383,138	May 22	1889	492	43	903
McIlhenny, George A., and T. G. Lasseter, Washington, D. C. Hydraulic main for gas-works	380,911	Apr. 10	916	245	43	187
McIntosh, John E., Auburn, N. Y. Valve for steam-engines	384,527	June 19	1193	315	43	1364
McIntosh, William E., Keene, N. H. Burglar-alarm	382,484	May 8	920	233	43	694
McIntosh, William E., assignor of one-half to F. H. Wyman, Keene, N. H. Burglar-alarm	380,912	Apr. 10	917	246	43	188
McIntyre, C. W. (See Lenhart, George E., assignor.)						
McIntyre, John B., Salteberg, Pa. Ticket-holder for railway-cars	380,505	Apr. 3	298	86	43	69

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
McKague, Herbert S., McElhattan, Pa. Car-coupling	385,129	June 26	1937	495	43	1819
McKeown, Hugh J., Newport, Ky. Friction-drum	385,191	June 26	2026	518	43	1536
McKinney, Charles B., Tarport, assignor of one-half to W. C. Walker, Bradford, Pa. Drilling-jar	380,634	Apr. 3	487	137	43	99
McKinney, Finch, San Diego, Cal. Hay-press	382,822	May 15	1408	369 / 370	43	690
McKinney, Z. Taylor, Piedmont, S. C. Loom-shuttle relief mechanism	382,985	May 15	1647	431	43	846
McKinnon, James W., Newark, N. J. Ventilator	383,318	May 22	2142	565	43	951
McKnight, Thomas R., Mount Pleasant, Iowa. Mechanical movement	382,101	May 1	338	89	43	575
McLachlan, Angus, (See Rowland, Hill, and McLachlan.)						
McLaren, Francis J., New York, N. Y. Blow-pipe furnace	383,971	June 5	193	56	43	1157
McLaughlin, Edgar A., assignor of one-half to H. J. Waller, Horseheads, N. Y. Self-acting or automatic pressure-regulator	383,314	May 22	2143	565	43	951
McLaughlin, James F., Philadelphia, Pa. Electro-magnetic register	383,563	May 29	2550	674	43	1634
McLaughlin, James T. W., assignor of one-half to L. Crull, Harrisburg, Pa. Step-ladder with jump-shelf	382,102	May 1	339	89	43	575
McLellan, Donald. (See Quinn and McLellan.)						
McLeod, Angus G., Hallock, Minn. Hame-fastener	382,103	May 1	340	90	43	576
McMahon, Frank, A. C. Sharp, and C. E. Lilee, Darlington, Indian Ter. Pitman attachment for mowing-machines	382,891	May 15	1502	393	43	690
McMahon, James H., New Milford, and D. D. Mangum, Lanesville, Conn.; said Mangum assignor to said McMahon. Wire-stretcher	381,569	Apr. 24	1918	504	43	497
McManus, Alonzo, New Britain, Conn. Spur	384,774	June 19	1395	364	43	1494
McMorries, James, Thorp's Spring, Tex. Horse-detacher	381,712	Apr. 24	2121	554	43	648
McMullin, William, Chicago, Ill. Fire-escape	384,376	June 12	813	211	43	1293
McNeal, Andrew H., and W. A. Stinerack, Burlington, N. J. Pipe-molding apparatus	383,534	May 29	2491	657	43	1632
McNeal, Luther C., Rochester, N. Y. Button-hole scissors	382,998	May 15	1648	431	43	847
McNamee, John C., Hope, Kans. Liquid-meter	384,265	June 12	698	171	43	1296
McPartland, James H. (See Campbell and McPartland.)						
McPherson, Ebenezer M., Boston, Mass. Dress-form	383,535	May 29	2492	657	43	1632
McPherson, Henry, assignor to Sweet & Clark Manufacturing Company, Troy, N. Y. Snap-hook	384,992	June 26	1714	445	43	1473
McSweeney, Terrence, Allegheny, assignor of one-half to T. A. Gillespie, Pittsburg, Pa. Composition for surfacing structural articles	381,682	Apr. 24	2080	.....	43	497
McTighe, Thomas J., New York, N. Y. Directory-indicator for buildings, &c.	382,997	May 15	1650	431	43	847
Meacham, E. F. (See Hoagland, John B., assignor.)						
Mead, Albert G., Boston, Mass., assignor to International Fastening Company, Portland, Me. Machine for rolling flanged eyelets	383,403	May 22	2272	604	43	974
Mead, Charles L., New York, N. Y., assignor to Stanley Rule and Level Company, New Britain, Conn. Chisel-gage	380,821	Apr. 10	762	209	43	169
Mead, Theodore H., *et al.* (See Crowell, Luther C., assignor.)						
Mears, Camden and J. W., Bloomsburg, Pa. Washing-machine	380,445	Apr. 3	394	55, 56	43	62
Mears, John W. (See Mears, Camden and J. W.)						
Mecklenburg, William. (See Koesling and Mecklenburg.)						
Meckley, John F., *et al.* (See Bostian, Charles P., assignor.)						
Meehan, Michael, Boston, Mass. Cendnit	384,690	June 19	1530	390	43	1468
Meehan, Patrick W., Providence, R. I. Valve	381,656	June 5	380	91	43	1188
Meese, Arthur G., Redhill, county of Surrey, England. Apparatus for the manufacture of gas	382,371	May 8	742	187 / 188	43	639
Meese, Arthur G., Redhill, county of Surrey, England. Manufacturing gas from oil and steam	382,372	May 8	746	188	43	639
Meese, Arthur G., Redhill, county of Surrey, England. Making coal-gas	382,373	May 8	747	189	43	641
Meese, Arthur G., Redhill, county of Surrey, England. Manufacturing gas	382,374	May 8	749	189	43	641
Meese, Arthur G., Redhill, county of Surrey, England. Apparatus for the manufacture of gas	382,375	May 8	751	189	43	641
Megee, Andrew J., assignor to Miller Megee Company, Philadelphia, Pa. Binding of books	383,315	May 22	2144	565 / 566	43	950
Mehl, John, Jr., Jersey City, N. J. Hand-bag	384,377	June 12	814	211	43	1293
Mehl, Robert H., and R. Knott, Brooklyn, N. Y. Candlestick	380,506	Apr. 3	390	67	43	61
Meikel, Charles W. (See Miller, Harrison S., assignor.)						
Meiners & Schuette. (See Rohde, Peter W., assignor.)						
Meise, Eduard, Pittsburg, assignor of one-half to G. Kaufman, Cresson, Pa. Seal-lock	380,446	Apr. 3	388	56	43	62
Melchior, Edward, Chicago, Ill. Barber's chair	380,909	Apr. 10	912	245	43	187
Melendy, Bryant H., Battle Creek, Mich. Dough-kneading machine	381,631	Apr. 24	2083	565	43	495
Melhorn, Lewis M. (See Neiman and Melhorn.)						
Melkersman, Fredrich, St. Charles, Mo. Centrifugal grain-drying machine	383,747	May 29	2786	733	43	1634
Melkersman, Fredrick, St. Charles, Mo. Grain-separator	384,861	June 19	1531	398	43	1492
Mellert, Albert H., assignor to Mellert Foundry and Machine Company, (limited,) Reading, Pa. Fire-hydrant	381,940	May 1	59	15	43	566
Mellert Foundry and Machine Company. (See Mellert, Albert H., assignor.)						
Melone, Thomas L., Chillicothe, Ohio. Sewing-machine	383,748	May 29	2787	733 / 734	43	1634
Menche, John A. (See Stille, Theodore J. and O. Q., assignors.)						
Mengis, Morris C., New York, N. Y. Electro-magnetic parcel-carrier	384,775	June 19	1396	365	43	1494
Menke, Robert W. and W., Sanborn, Dak. Ter. Belt-carrier tightener	380,400	Apr. 3	138	41	43	99
Menke, William. (See Menke, Robert W. and W.)						
Mentzel, Henry D., Baltimore, Md. Grease-cup	381,157	Apr. 17	1307	349	43	271
Mentzer, Jonathan R., assignor to W. R. Fox, Grand Rapids, Mich. Dado-cutter	384,209	June 5	546	150	43	1227
Merckel, William C., New York, N. Y. Sash-balance	384,459	June 12	991	239	43	1384
Merriam, Joseph, Middletown, Conn. Clasp	385,192	June 26	2027	519	43	1537
Merithew, Zacheus W., assignor of one-half to L. F. Gage, Grand View, Ind. Fruit-drier	382,617	May 8	1194	299 / 300	43	734
Mermod Frères. (See Campiche, Louis, assignor.)						
Merrill, Charles L., Indianapolis, Ind. Machine for cutting veneers	384,057	June 5	322	91, 92	43	1188
Merrill & Co., S. K. (See Bugbee, George C., assignor.)						
Merrill, William, assignor of one-half to S. S. Mitts, East Saginaw, Mich. Machine for cutting wood	384,764	June 19	1393	340	43	1365
Merriss, John, and A. S. Muncey, Shannock, R. I. Nut-lock	384,378	June 12	815	212	43	1293
Merritt, Edward. (See Tyler and Merritt.)						
Merritt, Henry W., Somerville, Mass. Stove-grate	382,543	May 8	1013	258	43	712
Meserean, Edgar W., Brooklyn, N. Y. Pan	383,658	May 29	2647	700	43	1656
Meserole, Abraham V., New York, N. Y. Secondary battery	381,941	May 1	61	15	43	566
Messinger, William T., Cambridge, Mass., assignor to G. T. Power, Chicago, Ill. Combined pipe-coupling and check valve or chamber	383,498	May 22	2314	613	43	992

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Metcalf, Robert. (See Edgerton and Metcalf.)						
Metzinger, William, Cleveland, Ohio. Vapor-burner	382,892	May 15	1503	394	43	690
Metzner, William C., Chicago, Ill. Stove-back	381,713	Apr. 24	2122	554	43	649
Meyer, August, Hamburg, Germany. Wick-trimmer	382,050	May 1	264	68, 69	43	582
Meyer, Charles E. (See Perrin, Charles, assignor.)						
Meyer, George A., Brooklyn, N. Y. Cheek and pad protector	382,998	May 15	1651	431	43	847
Meyer, George W. L., and T. J. Satphen, assignors of one-third to J. C. Ertel, Indianapolis, Ind. Bailing-press	384,993	June 26	1715	445	43	1473
Meyer, William C. (See French and Meyer.)						
Meyers, Andrew, Port Arthur, Ontario, Canada. Steam shoveling device	383,584	May 29	2552	674 / 675	43	1634
Meyers, Peter L., *et al.* (See Baltzley, Henry H., assignor.)						
Meylan, Charles H., New York, N. Y. Split-seconds stop-watch	383,746	May 29	2782	734	43	1635
Michaud, Gilbert, New York, N. Y. Water-closet	383,750	May 29	2785	735	43	1635
Michigan Lubricator Company. (See Hay, Peter D., assignor.)						
Michigan Stove Company. (See Keep, William J., assignor.)						
Michigan Washing Machine Company. (See Glidden, Oscar F., assignor.)						
Mieg, Armand, Leipsic, Saxony, and H. Bischoff, Dürkheim, Bavaria, Germany. Wolfram projectile	382,717	May 15	1260	332	43	771
Millburn, George E., assignor of one-fourth to T. H. Reeves, Minneapolis, Minn. Trunk tray and follower	384,370	June 12	816	212	43	1294
Mild, William, Hamilton, Ohio. Aerating attachment for chain-pumps	383,476	May 29	2304	637	43	1604
Miles, Enos P., Clay Centre, Kans. Windmill	383,477	May 29	2306	637 / 638	43	1605
Miles, Purchee, Brooklyn, N. Y. Fence	381,942	May 1	62	16	43	566
Miles, William Y., *et al.* (See Egan, Charles E., assignor.)						
Milfeil, William, St. Louis, Mo. Sad-iron	383,404	May 22	2274	604	43	975
Millar, Henry J., Utica, N. Y. Transportation-case for coiled lead pipe	384,327	June 12	743	194	43	1389
Millar, Henry J., Utica, N. Y. Combined reel and transportation-case	384,328	June 12	735	194	43	1389
Millar, Henry J., Utica, N. Y. Combined reel and transportation-case	384,329	June 12	737	194	43	1389
Millard, William, Indianapolis, Ind. Lubricator	382,544	May 8	1014	259	43	712
Miller, Adolph. (See Stiebritz and Miller.)						
Miller, Andrew J., Arion, Ohio. Separating-machine	384,058	June 5	325	92	43	1188
Miller, Basil, West Lafayette, Ohio. Checkrein	384,460	June 12	992	239	43	1385
Miller, Charles H. (See Geyser, Jacob, assignor.)						
Miller, Charles H., Erie, Pa. Gas-fuel burner	380,913	Apr. 10	918	246	43	188
Miller, Charles H., Erie, Pa. Sectional hood for gas and air fuel mixing chambers	381,632	Apr. 24	2004	506	43	495
Miller & Company, Edward. (See Rhind, Frank, assignor.)						
Miller, Edward D. (See Burckard, Augustus, assignor.)						
Miller, George N., Ashton, and O. E. Meeks, assignors to F. C. Austin, Chicago, Ill. Road-scraper	383,751	May 29	2786	735	43	1635
Miller, Harrison S., assignor to C. W. Meikel, Indianapolis, Ind. Water-closet cistern	385,130	June 26	1940	495	43	1519
Miller, Jacob, Canton, Ohio. Sheaf-carrier	384,892	June 19	1532	398 / 399	43	1469
Miller, Jacob, and M. J. Hogan, Canton, Ohio; said Hogan assignor to said Miller. Portable engine	384,922	June 19	1615	419 / 420	43	1444
Miller, John C., assignor to Thomas Manufacturing Company, Springfield, Ohio. Journal-box	382,893	May 15	1505	394	43	690
Miller, John F. (See Turner, James J., assignor.)						
Miller, John F., Lee, assignor of one-half to B. A. Linville, White, Ind. Weaning-muzzle for animals	382,237	May 1	594	134	43	610
Miller, John H. (See Burnham and Miller.)						
Miller, John L., York, Pa. Wringer	381,158	Apr. 17	1307	349	43	271
Miller, John T., Thayer, Kans. Shutter	380,914	Apr. 10	919	246	43	188
Miller, John T., Chicago, Ill. Step-ladder	384,210	June 5	547	150 / 151	43	1227
Miller, Lewis, Philadelphia, Pa. Cotton-press	385,193	June 26	2028	519	43	1537
Miller, Louis L., Newport, assignor of one-half to F. H. Perkins, Covington, Ky. Sewing-machine	384,059	June 5	326	92, 93	43	1123
Miller Megee Company. (See Megee, Andrew J., assignor.)						
Miller, Walton B., Strasburg, assignor of one-half to E. F. Landis, Lancaster, Pa. Nut-lock	382,989	May 15	1652	432	43	847
Miller, William B., Altoona, Pa. Dentist's disk-holder	381,266	Apr. 17	1402	393	43	300
Miller, William H. York, Pa., and N. Z. Seitz, Washington, D. C., assignors to Kohler Improved Cattle Car Company, New York, N. Y. Stock-car	382,238	May 1	595	134 / 135	43	610
Milligan, James E., *et al.* (See Baltzley, Henry H., assignor.)						
Milligan, Patrick F., Washington, D. C. Portable bullet-proof watch-box	383,752	May 29	2789	735 / 736	43	1635
Mills, Frank W. (See Mills, Mortimer B. and F. W.)						
Mills, Frank W., Chicago, Ill. Car-brake	381,570	Apr. 24	1913	504	43	497
Mills, Mortimer B., Chicago, Ill. Car-brake	381,571	Apr. 24	1915	505	43	497
Mills, Mortimer B., assignor to Pneumatic Gate Company, Chicago, Ill. Gate for railway-crossings	380,447	Apr. 3	210	57	43	62
Mills, Mortimer B. and F. W., assignors to Mills Railroad Gate Company, Chicago, Ill. Gate	381,150	Apr. 17	1308	349 / 350	43	272
Mills Railroad Gate Company. (See Mills, Mortimer B. and F. W., assignors.)						
Millsap, Thomas H. B., Harper, Kans. Bench-plane	383,274	May 22	2023	531	43	930
Millspaugh, Andreas P., Darien, Conn. Wagon-jack	384,705	June 19	1304	341	43	1365
Milne, James T., *et al.* (See Littlefield, Charles A., assignor.)						
Milroy, Thomas E., Parsons, Kans. Weather-strip	385,065	June 26	1847	473	43	1490
Milwaukee Harvester Company. (See Crandall, Henry F., assignor.)						
Milwaukee Harvester Company. (See Graham, James A., assignor.)						
Milwaukee Harvester Company. (See Riley, Edward, assignor.)						
Minard, Horace C. and L. C., St. Charles, Iowa. Tug-buckle	382,545	May 8	1014	259	43	712
Minard, Laurence C. (See Minard, Horace C. and L. C.)						
Mindemann, John. (See Wels, George, assignor.)						
Miner, Henry M., Green Point, N. Y. Manufacture of roofing-felt	380,915	Apr. 10	921	246	43	188
Miner, James H., Baton Rouge, La. Saw-mill dog	380,916	Apr. 10	922	247	43	189
Miner, James H., Baton Rouge, La. Saw-swage	381,633	Apr. 24	2005	506	43	495
Minneapolis Harvester Works. (See Kennedy, Samuel V., assignor.)						
Minneapolis Harvester Works. (See Kennedy and Anderson, assignors.)						
Minneapolis Harvester Works. (See Kennedy and Strunk, assignors.)						
Minter, Henry, Worcester, Mass. Machine for shaving heads of bolts, nuts, &c.	380,917	Apr. 10	922	247	43	189
Minter, Thomas H., Winfield, Colo. Miner and settler	382,433	May 8	852	213	43	678

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Mishler, Phares M., Hagerstown, Md. Hedge	380,448	Apr. 3	213	57	43	43
Mitchell, Albion L. F., Beachmont, and J. P. Reynolds, Jr., Milton, Mass., assignors to Le Gay Heel Company, Portland, Me. Manufacture of heels for boots or shoes	383,139	May 22	1890	493	43	993
Mitchell, J. F., *et al.* (See Elward, John H., assignor.)						
Mitchell, James A., Westminster, Md. Hedge	380,449	Apr. 3	213	58	43	43
Mitchell, James A., Westminster, Md. Hedge	380,450	Apr. 3	214	58	43	43
Mitchell, John W., Macon City, Mo. Harness-saddle	380,451	Apr. 3	215	58	43	44
Mitchell, Joseph R., Oakland, Cal. Steam-engine indicator attachment	380,919	Apr. 10	377	908	43	780
Mitchell, Peter, New York, N. Y. Turf-racing record-book	384,288	June 12	630	172	43	1322
Mitchell, Robert J., Seneca, Mo. Wagon-brake	382,187	May 22	1953	512	43	916
Mittler, Charles H., Marthasville, Mo. Animal-trap	383,972	June 5	195	56	43	1138
Mitta, S. S. (See Merrill, William, assignor.)						
Mitsel, Philip M. (See Mitsel and Haney.)						
Mitsel, Walter L. and P. M., and J. Q. A. Haney, Felton, Pa. Horse-detacher	384,080	June 5	327	93	43	1183
Mosta, Lewis R., Jamestown, Pa. Thill-coupling	380,458	Apr. 3	216	59	43	44
Mosta, Ortus E. (See Miller and Mosta.)						
Mowery, Ambrosius, and A. Leukhardt, Indianapolis, Ind. Flat-iron heater	382,718	May 15	1370	333	43	771
Moehring, Hermann, and A. Pfüger, Frankfort-on-the-Main, Prussia, Germany. Steam or other motor	383,405	May 22	2274	605	43	975
Moehring, Hermann, and A. Pfüger, Frankfort-on-the-Main, Prussia, Germany. Valve for steam or other engines	383,406	May 22	2279	605 606	43	975
Moehring, Hermann, and A. Pfüger, Frankfort-on-the-Main, Prussia, Germany. Mechanical movement	383,407	May 22	2281	606	43	976
Moehring, Hermann, and A. Pfüger, Frankfort-on-the-Main, Prussia, Germany. Mechanical movement	383,408	May 22	2283	606	43	976
Moffet, Joseph, Cleveland, Ohio. Ship	381,943	May 1	64	16	43	327
Mögel, Ernst, Dresden, Saxony, Germany. Holder for tickets, &c.	382,822	May 15	1409	370	43	880
Müller, K. & Th. (See Gräbner and Ruperti, assignors.)						
Molloy, James F., West Haven, Conn. Buckle	383,753	May 29	2590	726	43	1066
Moltzen, Augustus F., Oakland, Cal. Thill-coupling	381,957	Apr. 17	1464	393	43	300
Molyneax, Patrick, London, England. Composition for lining petroleum-tanks and similar vessels	380,396	Apr. 3	136	.....	43	29
Momberg, Christian, Copenhagen, Denmark. Top plate for stair-steps	381,407	Apr. 17	1065	446	43	341
Monahan, Lawrence, Jr., Morris Plains, N. J. Hoof-expander	383,585	May 29	2553	675	43	1035
Monks, George H., Boston, Mass. Game of skill	383,653	May 29	2648	701	43	1056
Monnier, Denys. (See Becker and Monnier.)						
Monroe, Alexander R. (See Johns, Samuel E., assignor.)						
Monroe, Isaac C., and W. H. H. Sisum, Brooklyn, N. Y.; said Sisum assignor to said Monroe. Paddle-wheel boat	383,897	June 5	73	21	43	1135
Montague, John R., Auburn, N. Y., assignor to Montague Roller Cotton-Gin Company, Toledo, Ohio. Machine for opening, cleaning, and ginning seed-cotton	383,754	May 29	2089	736 737	43	1026
Montague Roller Cotton-Gin Company. (See Montague, John R., assignor.)						
Montgomery, Harry C., Cleveland, Ohio. Self-closing faucet	382,654	May 8	1180	305	43	745
Montgomery, Harry C., Cleveland, Ohio. Check-valve	382,655	May 8	1181	305	43	746
Montgomery, Harry C., Cleveland, Ohio. Sewer gas-trap	382,656	May 8	1182	306	43	746
Montgomery, James H., Denver, Colo. Automatic tack-driver	383,478	May 29	2397	630	43	1005
Moock, Otto T., and W. L. Headly, Philadelphia, Pa.; said Moock assignor to said Headly. Sleeve-button	382,495	May 8	921	234	43	694
Moon, Dewitt A., Orlando, Fla. Rolling colter	382,539	May 1	566	135	43	610
Moon, Edward A., Chicago, Ill. Device for converting motion	381,160	Apr. 17	1311	350	43	272
Moon, Edward A., Cleveland, Ohio. Device for converting motion	381,161	Apr. 17	1312	350	43	272
Mooney, William A., Philadelphia, Pa. Spring bed-bottom	382,496	May 8	922	234	43	694
Moore, Charles C., assignor to J. B. Moore, New York, N. Y. Adding-machine	383,973	June 5	196	57, 58	43	1138
Moore, Edward J., Philadelphia, Pa. Feed-water heater	382,546	May 8	1015	259	43	713
Moore, Estelle C. (See Moore, George H., assignor.)						
Moore, Everett D., assignor to T. C. Chappell, Baltimore, Md. Life-saving device	384,923	June 19	1615	420	43	1444
Moore, George A., Cambridge, Mass. Elevator	382,467	May 8	914	234	43	694
Moore, George H., assignor to E. C. Moore, Norwich, Conn. Valve	384,330	June 12	730	194	43	1299
Moore, Harvey E., Lena, Ohio. Gate	381,634	Apr. 24	2006	508	43	485
Moore, Jacob B. (See Moore, Charles C., assignor.)						
Moore, James L., Stratford, assignor, by mesne assignments, to S. H. Hubbard, Bridgeport, and J. K. Beach, New Haven, Conn. Machine for making upholsterers' tufts	383,755	May 29	2095	737 738	43	1027
Moore, John F., assignor to Fort Worth Iron Works Company, Fort Worth, Tex. Well-drilling machine	384,984	June 26	1716	445 446	43	1474
Moore, Rufus R., Modesto, Cal. Traveling thrasher	380,453	Apr. 3	210	59, 60	43	44
Moore, Stephen F., Milwaukee, Wis. Carving-machine	384,985	June 26	1718	446	43	1474
Moore, Thomas W., assignor to T. W. Moore, Jr., Plainfield, N. J. Car-platform	381,032	Apr. 10	1025	266	43	219
Moore, William, Kokomo, Ind. Gas-stove	385,277	June 26	2160	552	43	1504
Moorhouse, Sidney. (See Hawthorn and Moorhouse.)						
Moore, Frank B., San Francisco, Cal. Sash-holder	381,988	Apr. 17	1465	394	43	300
Morán, Samuel, *et al.* (See De Berger, Frank J., assignor.)						
Moreau, Eugène, Philadelphia, Pa. Stock for skeleton burners for incandescent lighting and making the same	383,896	June 5	74	22	43	1135
Morgan, Charles F., Cleveland, Ohio. Book-cover	382,719	May 15	1370	333	43	772
Morgan, Charles H., Buffalo, N. Y. Gear-wheel	380,454	Apr. 3	220	60	43	45
Morgan, Charles H., Worcester, Mass. Wire-rod-reeling machine	381,408	Apr. 17	1066	446 447	43	342
Morgan, Horace H., Killbuck, N. Y. Frost-protector for foundations	385,278	June 26	2162	552	43	1504
Morgan, Joseph, Jr., Johnstown, Pa. Feeding appliance for rolling-mills	383,000	May 15	1653	432 433	43	848
Morley Button Sewing Machine Company. (See Bennett, Walter R., assignor.)						
Morley, Robert, and W. Greenwood, assignors to T. A. Pearce, Philadelphia, Pa. Manufacturing stockings	385,315	June 26	2223	569	43	1576
Morrill, Charles F., and D. C. Percival, Boston, Mass. Watch-case	384,340	June 12	617	212	43	1284
Morris, Edward R., San Francisco, Cal. Easel	384,171	June 5	499	134	43	1210
Morris, George, *et al.* (See Williams and Lucock, assignors.)						
Morris, George W., Pittsburg, Pa. Die for making car-axle-box lids	385,194	June 26	2031	520	43	1537
Morris, Henry G., Philadelphia, Pa. Crawler for electric and other conduits	383,756	May 29	2607	736	43	1027
Morris, Henry G., and P. G. Salom, Philadelphia, Pa. Filling secondary-battery plates	383,757	May 29	2608	736	43	1027
Morris, James P., Paris, Tex. Dental tool	384,883	June 19	1534	399	43	1459
Morris, Miles H. (See Thacher and Morris.)						
Morris, William D. (See Thacher and Morris.)						
Morrison, John. (See Nell and Morrison.)						
Morrison, William N., St. Louis, Mo. Device for coupling cars	384,536	June 12	1042	271	43	1366

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Morrow Bros. Manufacturing Company. (See Morrow, James, assignor.)						
Morrow, James, assignor to Morrow Bros. Manufacturing Company, Washington Court-House, Ohio. Saddle-pad	383,621	May 29	2919	771	43	1169
Morrow, John O., Thomas Mills, Tenn. Saw guide	381,635	Apr. 24	2007	506 507	43	486
Morrow, William L. (See Dorsey, Basil C., assignor.)						
Morse, David R., *et al.* (See Solano, Rosalia, assignor.)						
Morse, Everett F., Ithaca, N. Y. Vehicle spring and gear	382,974	June 5	199	58	43	1159
Morse, Frederick M., assignor of one-half to E. M. Starr, St. Louis, Mo. Cable-grip	385,193	June 26	2032	520	43	1537
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Bolting-reel	381,083	Apr. 10	1026	266	43	219
Morse, Preston C., Natick, Mass. Electric contact-changer	381,289	Apr. 17	1403	394	43	301
Morse, Preston C., Natick, Mass. Dental plugger	381,244	Apr. 24	2288	603	43	468
Morse, Robert A., Chicago, Ill. Passenger-vehicle	380,813	Apr. 10	763	209	43	189
Morton, Abner C., assignor of one-fourth to S. G. Morton, Chicago, Ill. Grate	382,730	May 15	1271	324 325 326	43	772
Morton, Frederic C., Chelsea, Mass. Steam-engine	382,547	May 8	1016	259	43	713
Morton, James, Quidnick, R. I. Let-off mechanism for looms	385,279	June 26	2163	553	43	1505
Morton, James, Quidnick, R. I. Water-wheel governor	385,280	June 26	2165	553	43	1505
Morton, Samuel G. (See Morton, Abner C., assignor.)						
Morton, William F., assignor of one-half to Holcomb Brothers & Co., New Haven, Conn. Machine for compressing tenons	380,727	Apr. 10	636	176 176	43	136
Morton, William F., assignor of one-half to Holcomb Brothers & Co., New Haven, Conn. Forming compressed spoke-tenons	380,728	Apr. 10	640	177 178	43	137
Morton, William F., assignor of one-half to G. F. and H. S. Holcomb and H. B. Bigelow, New Haven, Conn. Spoke-tenon	381,270	Apr. 17	1468	394	43	301
Mörwitz, Joseph. (See Pape, Anthony, assignor.)						
Mortz, Joseph, assignor of one-half to F. S. Barney, Corry, Pa. Folding carriage-top	381,944	May 1	65	16	43	327
Mortz, Joseph, assignor of one-half to F. S. Barney, Corry, Pa. Carriage-top	381,945	May 1	66	16	43	327
Moses, Otto A., New York, N. Y., assignor to Westinghouse Electric Company, Pittsburg, Pa. Manufacture of incandescent electric lamps	383,149	May 22	1891	493	43	904
Moskovits, Cæsarina. (See Moskovits, Maximilian H., assignor.)						
Moskovits, Maximilian H., assignor of one-half to C. Moskovits, Kansas City, Mo. Grate-bar	382,104	May 1	341	90	43	576
Mosser, Ferdinand, New York, N. Y., assignor, by mesne assignments, to Hand Power Trot Machine Company, of New Jersey. Coin-controlled cigar-delivering exercising-machine	381,469	Apr. 17	1069	447	43	342
Mosnop, William F., Philadelphia, Pa., assignor of one-half to M. M. Hirsh, Chicago, Ill. Convertible freight-car	381,410	Apr. 17	1671	448	43	342
Motherwell, David. (See Cowly and Motherwell.)						
Motherwell, David, and E. B. Cowly, Logan, Ohio. Cultivator	383,146	May 22	1962	512	43	916
Mott, Charles S., Patchogue, assignor to himself and G. H. Shaffer, Brooklyn, N. Y. Mast-hoop	383,586	May 29	2554	675	43	1035
Mott, E. Hicks, Oneida, N. Y. Device for moving barrels	382,619	May 8	1125	290	43	734
Mott Iron Works, J. L. (See Demarest, John, assignor.)						
Mott, Samuel D., New York, N. Y., assignor to Schuyler Electric Company, Middletown, Conn. Electric meter	381,480	Apr. 17	1779	474	43	388
Mouzam Manufacturing Company. (See Frost, Walter E., assignor.)						
Mower, Jacob K. (See Normand, Joseph M., assignor.)						
Mowry, Levi G., Buffalo, N. Y. Detachable draft-frame for vehicles	381,481	Apr. 17	1781	475	43	363
Moxham, Arthur J., Johnstown, Pa. Grooved girder-rail	383,001	May 15	1657	433	43	848
Moxham, Arthur J., Johnstown, Pa. Double-grooved girder-rail	383,002	May 15	1659	434	43	849
Moxham, Arthur J., Johnstown, Pa. Acute curve-crossing	383,003	May 15	1660	434	43	849
Muckle, Alfred. (See Whiting, Louis R., assignor.)						
Mueller, Emil T., La Crosse, Wis. Slate for telephone-desks	381,271	Apr. 17	1469	395	43	301
Mueller, Henry E., Pittsburg, Pa. Coloring glassware	382,105	May 1	342	90	43	576
Mueseh, Robert, Chicago, Ill. Night-latch	381,109	Apr. 17	1314	351	43	273
Mulhall, James J., assignor to J. O'Hagan, Jr., Albany, N. Y. Railway-rail joint	384,061	June 5	328	93	43	1163
Mulholland, Richard, Dunkirk, N. Y. Vehicle-spring	384,381	June 12	818	218	43	1324
Mull, William H., assignor to J. M. Zook, Lawrence, Kans. Sad-iron	381,573	Apr. 24	1917	505	43	466
Mullen James B., Rochester, N. Y. Last	381,845	Apr. 24	2224	603	43	467
Müller, Antoine, Terre Haute, Ind. Car coupling	380,595	Apr. 3	482	120	43	95
Müller, Charles, San Francisco, Cal. Time-ball	381,996	June 26	1721	447	43	1475
Müller, Moritz A., Newark, N. J., assignor to United States Electric Lighting Company, New York, N. Y. Armature for dynamos	381,636	Apr. 24	2009	507	43	486
Mullica, Benjamin F. (See Mullica, John and B. F.)						
Mullica, John and B. F., Williamstown, assignors of one-half to J. P. Stanger and H. Rowen, Glassborough, N. J. Incrustation preventive	380,340	Apr. 3	48	.....	43	12
Mulliken, A. Henry. (See Black, Henry A., assignor.)						
Mullins, Richard, Newark, Ind. Tricycle	381,504	Apr. 17	1819	481	43	371
Mulvey, James W., Jeffersville, Ind. Rice-cultivator	384,987	June 12	639	172	43	1252
Mumford, Joseph A., Hantsport, Nova Scotia, Canada. Steam-boiler	382,657	May 8	1184	306	43	746
Muncey, Aaron S. (See Merries and Muncey.)						
Mundt, Lobrecht, Berlin, Germany. Manufacture of artificial-stone coffins	382,824	May 15	1410	370	43	880
Mundy, James A. (See Keating, Charles J., assignor.)						
Munger, Ernest A., assignor to G. E. Swan, Beaver Dam, Wis. Spring-heel	380,507	Apr. 3	300	87	43	61
Munger, Ernest A., assignor to G. E. Swan, Beaver Dam, Wis. Elastic or spring heel	380,508	Apr. 3	303	88	43	61
Munger, Eugene H., New York, N. Y. Support for shade-rollers	381,714	Apr. 24	2194	555	43	449
Munger, George, East River, Conn. Wick	383,922	May 29	2920	771	43	1169
Municipal Signal Company. (See Martin, Morris, assignor.)						
Municipal Signal Company. (See Wilcox, John C., assignor.)						
Munro, William F. (See Clarke, Reuben, assignor.)						
Munroe, Thomas W., San Francisco, assignor of two-thirds to H. B. Berryman, Berkeley, Cal. Station-indicator	380,341	Apr. 3	48	17	43	12
Mantes, James, Maywood, Ill. Making tires	381,505	Apr. 17	1821	482	43	372
Muns, Theodore C., assignor of one-half to W. H. Eldridge and F. Hubbard, Toledo, Ohio. Making axles of sheet metal	383,188	May 22	1954	513	43	916
Muns, Theodore C., assignor of one-half to W. H. Eldridge and F. Hubbard, Toledo, Ohio. Running-gear for vehicles	383,408	May 22	2285	606 607	43	976
Murdoch, George D., Brooklyn, N. Y. Bolt	380,613	Apr. 10	764	210	43	189
Murphey, Frank P., assignor of one-half to W. D. Chamberlain, Decatur, Ill. Corn-planter	381,263	Apr. 24	2261	618 619 620	43	497
Murphy, Edward J., and J. Floyd, Lynchburg, Va. Electro-therapeutic battery	383,899	June 5	75	22	43	1135

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Murphy, Francis, Chicago, Ill. Ventilating apparatus	381,978	Apr. 10	1182	314	43	838
Murphy, John, Columbus, Ohio. Hydraulic cement	382,376	May 8	753	.....	43	988
Murphy, John, Brooklyn, N. Y. Machine for manufacturing rubber belting. (Reissue)	10,898	June 12	1137	280	43	1344
Murphy, John H., Merrimac, Mass. Dash-screen for vehicles	384,997	June 26	1723	447	43	1475
Murphy, Junius A. (See Murphy, Marcus T. and J. A.)						
Murphy, Marcus T. and J. A., New Orleans, La. Frame for use in the manufacture of oil-press mats	381,872	Apr. 17	1470	395	43	391
Murphy, Matthew H., Portland, Oreg. Fruit-ladder	380,763	Apr. 10	696	198	43	140
Murphy, Thomas J., assignor of one-half to R. Potter, New York, N. Y. Rock-drilling machine	383,663	May 15	1772	458	43	871
Murphy, Thomas J., assignor of one-half to R. Potter, New York, N. Y. Tripod for rock-drilling machines	383,664	May 15	1774	459	43	871
Murphy's Sons, William F. (See Noel, William W., assignor.)						
Murray, Charles H., assignor to W. H. Armstrong, Mitchell & Co., (limited,) Elswick Works, Newcastle-upon-Tyne, England. Apparatus for loading heavy guns	380,688	Apr. 10	583	{160 161	43	136
Murray, Charles H., assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Apparatus for conveying ammunition to guns	381,715	Apr. 24	2125	{555 556 557	43	449
Murray, Charles H., assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Means for controlling hydraulic apparatus for training heavy guns	382,377	May 8	753	{189 190 191 192	43	988
Murray, Donald J., Wausau, Wis. Adjustable saw-guide	385,131	June 26	1942	466	43	1289
Murray, Eli, assignor to Rushville School Furniture Company, Rushville, Ind. School-desk	385,316	June 26	2285	570	43	1578
Murray, John, St. Louis, Mo. Nose-bag support for vehicles	383,883	May 29	2080	771	43	1166
Murray, John A., Tucson, Ariz. Ter. Pump	384,706	June 19	1304	341	43	1265
Murray, Samuel J., assignor to Russell & Morgan Printing Company, Cincinnati, Ohio. Machine for punching cards	381,716	Apr. 24	2127	{557 558	43	450
Muser, Joseph, New York, N. Y. Guard-railing	380,657	Apr. 3	585	145	43	106
Mussman, Oscar, Jr., assignor to E. Faber, New York, N. Y. Pencil	382,488	May 8	925	235	43	994
Mutual Electric Manufacturing Company. (See Knowles, Edward R., assignor.)						
Myers, Charles K., Stockton, Cal. Traveling thrasher	380,342	Apr. 3	50	18	43	12
Myers, Francis E. (See Myers, Philip A., assignor.)						
Myers, Frederick G., East Boston, Mass. Car-wheel	384,924	June 19	1617	420	43	1445
Myers, Garson, assignor to Adams & Westlake Company, Chicago, Ill. Oil-stove	384,362	June 12	819	213	43	1284
Myers, Henry, Philadelphia, Pa. Spring bed-bottom	384,925	June 19	1618	420	43	1445
Myers, Lewis B., Fremont, Ohio. Pencil	384,363	June 12	820	213	43	1284
Myers, Philip A., assignor of one-half to F. E. Myers, Ashland, Ohio. Deep-well pump	384,585	June 12	1114	295	43	1340
Myers, William M., and A. Smith, Cosby, Mo. Clip for whiffletrees	383,909	June 5	76	22	43	1135
Myatic Oil Company. (See Kriesor, J. Moritz, assignor.)						
Naamlooze Vennootschap Wester-Suiker-Raffinaderij. (See Freitag, Andreas, assignor.)						
Nadermann, Henry, Cincinnati, Ohio. Washing-machine	380,614	Apr. 10	765	210	43	160
Nagle, Robert J. See Arthur, Thomas, assignor.)						
Napier, James L. (See McCall and Napier.)						
Nash, Albert M., Owego, N. Y. Plow	380,919	Apr. 10	929	248	43	190
Nash, Frank G., San Francisco, Cal. Game-counter	384,707	June 19	1306	341	43	1265
National Cash Register Company. (See Heady and Patterson, assignors.)						
National Cash Register Company. (See Patterson and Davis, assignors.)						
National Cash Register Company. (See Patterson and Heady, assignors.)						
National Heating Company. (See Canfield, William W., assignor.)						
National Heating Company. (See Prall, William E., assignor.)						
National Heating Company. (See Prall, William E., assignor.) (Reissue.)						
National Needle Company. (See Berry John, assignor.)						
National Safe and Lock Company. (See White, James, assignor.)						
National Steam Excavating Company. (See Watson, William, assignor.)						
National Tube Works Company. (See Dodge, Walter E., assignor.)						
National Tube Works Company. (See Paterson, Andrew, assignor.)						
National Weighing Machine Company. (See Weber, Theodore A., assignor.)						
Naylor, George W., Jersey City, N. J. Bell-cord attachment	383,567	May 29	2555	676	43	1035
Naylor, Thomas A., Baltimore, Md. Measuring device for ice-cream or other similar substances	384,776	June 19	1397	365	43	1404
Neal, Frank S., Plainfield, assignor to himself, and L. A. Kline, North Plainfield, N. J. Curry-comb	381,637	Apr. 24	2010	527	43	698
Necker, John J., and C. Gifford, assignors of one-third to J. F. Oldbach, North East, Pa. Ribbon-spool	383,141	May 22	1892	493	43	994
Nedler, Wilhelm F., Hamburg, Germany. Fare-indicating device for vehicles	383,758	May 29	2069	{739 740	43	1087
Neel, William W., assignor to W. F. Murphy's Sons, Philadelphia, Pa. Sewing books	384,211	June 5	548	151	43	1227
Neely, Thomas, *et al.* (See Leckner, Frederick, assignor.)						
Neff, Adie P., Relay, Pa. Cigar-perforating machine	382,548	May 8	1016	260	43	713
Neff, Elijah, assignor of two-thirds to I. E. Bell and H. J. Eley, Mentone, Ind. Pump	381,808	Apr. 24	2047	533	43	473
Neff, Joseph B., Burlington, Iowa, assignor to Hapgood Plow Company, Alton, Ill. Plow	380,676	Apr. 3	536	145	43	106
Neil, Robert, and J. Morrison, Quebec, Quebec, Canada. Boiler for hot-water heaters	384,461	June 12	923	240	43	1305
Neilson, Alexander. (See Craig, Neilson, and Snodgrass.)						
Neilson, Alexander, and J. Taylor, Inkermann, county of Renfrew, Scotland. Oil spray or vapor lamp	382,108	May 1	343	90	43	576
Neilson, John G., *et al.* (See Henry, John, assignor.)						
Neiman, Alvin B., and L. M. Melhorn, York, Pa. Nut lock	383,366	May 22	2214	567	43	995
Nelms, Eugene A., Atlanta, Ga. Show-case for cutlery	384,662	June 5	339	93	43	1188
Nelson, Anthony, assignor to J. B. Forsyth, Boston, Mass. Friction-clutch	384,988	June 12	641	{172 173	43	1283
Nelson, Clark B., assignor of one-half to J. H. Watson, Crawfordsville, Ind. Metallic crest-tile lightning-rod	384,364	June 12	821	213	43	1284
Nelson Manufacturing Company, N. O. (See Wells, Frank A., assignor.)						
Netts, Daniel B., Jefferson, Wis. Pump-rod for windmills	384,989	June 26	1723	447	43	1475
Neu, Gustave S., New York, N. Y. Electric power-controller	383,991	June 5	78	22	43	1136
Neumann, William, St. Louis, Mo. Adjustable car-step	383,598	May 29	2556	676	43	1035
Neuville, Adolph, St. Louis, Mo., and A. Back; said Back assignor to T. Back, New York, N. Y. Rack for exhibiting goods	383,975	June 5	201	58, 59	43	1139
Nevens, George, Brunswick, Me. Foot-guard for frogs, switches, &c.	380,586	Apr. 3	493	130	43	94
Nevens, George, Brunswick, Me. Guard-rail	380,587	Apr. 3	494	130	43	97

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Neverslip Horse Shoe Company. (See Stone, Samuel, assignor.)						
Neville, Timothy F., *et al.* (See De Berger, Frank J., assignor.)						
New England Telephone and Telegraph Company. (See Farnham, Isaiah H., assignor.)						
New Haven Clock Company. (See Sibley, Clarence C., assignor.)						
New Haven Clock Company. (See Wood, Frank B., assignor.)						
New York In Floor Compactor Company. (See O'Connor, James L., assignor.)						
Newark Collar Button Company. (See Ladd, Daniel A., assignor.)						
Newbanks, Eli P., and J. Mahaffa, Beloit, Kans. Feed-trough	382,721	May 15	1274	334	43	778
Newbern, Stephen, *et al.* (See Piper, William M., assignor.)						
Newbery, James C., and C. T. J. Vautin, London, England. Chloridizing finely-divided auriferous materials	380,940	Apr. 10	930	248	43	190
Newell, James S., and J. O. Brown, Boston, Mass. Tree-protector	383,624	May 29	2081	771	43	1166
Newman Anti-Freezing Water Pipe Company. (See Newman, Edwin A., assignor.)						
Newman, Edwin A., Washington, D. C., assignor to Newman Anti-Freezing Water Pipe Company, Chicago, Ill. Thermo-electric apparatus for controlling the temperature of water in pipes	383,536	May 29	2493	656	43	1022
Newman, Nelson, assignor to G. A. Sanders, Springfield, Ill. Elevated way	384,209	June 12	643	173	43	1253
Newman, Nelson, Springfield, assignor of one-half to G. A. Sanders, Sangamon County, Ill. Cash-carrier	385,196	June 26	2033	521	43	1536
Newman, Samuel T., assignor of two-thirds to Hat Wire Company, Danbury, Conn. Wire-bending and forming machine	381,809	June 26	1734	{447 448 449 450	43	1475
Newsom, Charles S., and L. Orley, assignors to said Newsom, R. E. Hamblin, and H. R. Mathias, Athens, Ohio. Trace-fastening	381,894	Apr. 24	2324	620	43	496
Newsom, Logan C. (See Sabine, Hylas, assignor.)						
Newton, Robert, Providence, R. I. Temperature-regulator	381,411	Apr. 17	1473	448	43	843
Nicholas, Alexander H., Bronson, Kans. Folding step	383,902	June 5	80	22	43	1136
Nichols, Emory L., San Francisco, Cal. Vise	380,401	Apr. 3	139	41	43	39
Nichols Harvester Company. (See Nichols, Marion L., assignor.)						
Nichols, Marion L., assignor to Nichols Harvester Company, New York, N. Y. Grain-binder	381,979	Apr. 10	1166	{315 316 317	43	239
Nichols, Marion L., assignor to Nichols Harvester Company, New York, N. Y. Grain-binding harvester	381,980	Apr. 10	1192	{317 318 319 320	43	240
Nichols, Walter S., Hebron, Ind. Hay-loader	385,281	June 26	2167	{553 554	43	1585
Nickerson, Cornelius. (See Bray and Nickerson.)						
Nickerson, Fred. A., assignor, by mesne assignments, to Warwick Cycle Manufacturing Company, Springfield, Mass. Metallic wheel	382,656	May 8	1185	306	43	746
Nickerson, Kingsbury S., Passaic, N. J. Station-indicator	382,906	May 1	164	47	43	548
Nicol, Robert, Jr., Chicago, Ill. Twine-holder	384,365	June 12	822	214	43	1285
Nicol, Robert, Jr., Chicago, Ill. Shoe or other brush	384,462	June 12	924	240	43	1306
Niedergeneses, Robert, Chicago, Ill., assignor to Frey, Sheckler & Hoover, Bucyrus, Ohio. Lubricating-die for brick and tile machines	385,317	June 26	2227	570	43	1576
Nicholf, Henry, New York, N. Y. Railway-car	382,434	May 8	833	213	43	678
Niemstedt, Ernst, assignor to J. H. Lippincott, New York, N. Y., and H. Schulze-Berge, Rochester, Pa. Etching glass	382,318	May 8	833	.....	43	644
Nienchang, Charles C. F., Fort Wayne, Ind. Carpet-stretcher	384,926	June 19	1619	421	43	1443
Nighman, Charles A., Canton, Ohio. Rolling-mill	384,063	June 5	330	94	43	1184
Niles, William F., Jersey City, N. J., assignor to Vulcanite Manufacturing Company, New York, N. Y. Button	384,064	June 5	332	94	43	1184
Nilson, Nils J., Meridian, Wis. Hay rake and cocker	382,479	May 29	2368	{638 639	43	1065
Nilsson, George F., Belmont, Mass. Boiler	382,722	May 15	1275	334	43	778
Nitschmann, Franz, Flatonia, Tex. Plow	381,946	May 1	67	17	43	387
Noble, H. C. (See Herrick, Frank J., assignor.)						
Noble, Oscar W., Lynn, Mass., assignor to Noble Stove Company, Manchester, N. H. Hot-water boiler	382,657	May 8	1186	{306 307	43	747
Noble, Oscar W., Lynn, Mass., assignor to Noble Stove Company, Manchester, N. H. Hot-water boiler	382,660	May 8	1188	{307 308	43	747
Noble Stove Company. (See Noble, Oscar W., assignor.)						
Noble, William J., New York, N. Y. Coffin-fastener	383,235	May 22	2095	531	43	951
Nobs, Charles, Newark, N. J. Apparatus for tempering metallic blanks	383,142	May 22	1893	494	43	901
Noggle, David. (See Hageman, Noggle, and Eads.)						
Nolan, John, Philadelphia, Pa., assignor to Automatic Electric Alarm Company, Camden, N. J. Fire-bucket low-water alarm	384,219	June 5	549	151	43	1228
Nolley, William B., Conway, Ark. Return-pocket for the transmission of papers, &c	385,197	June 26	2035	521	43	1536
Nöltner, Ambrosius, Dürkheim, Bavaria, assignor to E. Deutsch, Munsbach, Germany. Fruit-jar	381,482	Apr. 17	1783	475	43	864
Nonantum Worsted Company. (See Hall, George F., assignor.)						
Nordberg, Bruno V., assignor to B. Nordberg Company, Milwaukee, Wis. Cut-off for steam-engines	384,213	June 5	551	{151 152	43	1228
Nordberg Company, Bruno. (See Nordberg, Bruno V., assignor.)						
Nordenfalk, Otto W. K. J., Linköping, Sweden. Book-cover	381,846	Apr. 24	2326	604	43	467
Nordenfelt Guns and Ammunition Company. (See Nordenfelt, Thorsten, assignor.)						
Nordenfelt, Thorsten, Westminster, England. Shell-fuse	381,717	Apr. 24	2130	556	43	450
Nordenfelt, Thorsten, assignor to Nordenfelt Guns and Ammunition Company, (limited,) Westminster, England. Turret-mounting for ordnance	382,182	May 1	444	116	43	595
Nordenfelt, Thorsten, assignor to Nordenfelt Guns and Ammunition Company, (limited,) Westminster, England. Breech mechanism for guns	384,537	June 19	1043	{272 273	43	1307
Nordyke & Marmon Company. (See Marmon, Daniel W., assignor.)						
Nordyke & Marmon Company. (See Warrington, Jesse, assignor.)						
Norfolk, John R., Boston, Mass. Piston-meter	384,065	June 5	333	94	43	1184
Norman, William C., Sydney, New South Wales. Block for engraving or etching upon	384,566	June 19	1116	.....	43	1340
Normand, Joseph M., assignor of one-half to J. K. Mower, Springfield, Ohio. Double-acting force-pump	381,865	Apr. 24	2385	620	43	498
Normand, Joseph M., assignor of one-half to Thomas Manufacturing Company, Springfield, Ohio. Journal-box	383,410	May 22	2286	607	43	976
Norris, Daniel W., Elgin, Ill., assignor to W. Young, Dayton, Ohio. Implement for bending wire	385,318	June 26	2228	571	43	1576

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Norris, John W. (See Davis, Charles E., assignor.)						
North American Cigar Machinery Company of the City of New York. (See Boehm and Reed, assignors.)						
North, John, Middletown, Conn. Lift or force pump	380,509	Apr. 3	306	89	43	62
North, John, Middletown, Conn. Pump	380,510	Apr. 3	306	89	43	62
North, John, Middletown, Conn. Pump	385,319	June 26	2229	571	43	1576
Northampton Cutlery Company. (See Feicker, Fredrick C., assignor.)						
Norton, Dennis. (See Barry, Henry, assignor.)						
Norton, Edwin. (See Willcox and Norton.)						
Norton, Edwin, *et al.* (See Leavitt, Frank M., assignor.)						
Norton, Edwin, Maywood, assignor to himself and O. W. Norton, Chicago, Ill. Can-soldering machine	382,320	May 8	659	168	43	645
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said E. Norton and O. W. Norton, Chicago, Ill. Apparatus for making sheet metal	382,319	May 8	654	167	43	644
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said E. Norton and O. W. Norton, Chicago, Ill. Manufacture of sheet metal	382,321	May 8	660	168	43	645
Norton, Frederick E. (See Pond and Norton.)						
Norton, James A., Odebolt, Iowa, and J. A. Stones, Chicago, Ill. Corn-harvester	381,163	Apr. 17	1316	351	43	978
Norton, John E. (See McCray and Norton.)						
Norton, Oliver W. (See Norton, Edwin, assignor.)						
Norton, Oliver W. (See Norton and Hodgson, assignors.)						
Norton, Oliver W. (See Willcox and Norton, assignors.)						
Norton, Oliver W., *et al.* (See Leavitt, Frank M., assignor.)						
Noteman, Alonzo. (See Patterson and Noteman.)						
Noth, Henry and J., Davenport, Iowa. Malting-machine	380,588	Apr. 3	425	121	43	67
Noth, John. (See Noth, Henry and J.)						
Noyes, E. I. K. (See Kelsea, Joseph N., assignor.)						
Noyes, George E., Washington, D. C. Crushing-mill roller	384,179	June 5	491	135	43	1216
Noyes, La Verne W., Chicago, Ill. Horse-collar pad	383,143	May 22	1895	494	43	994
Noyes, Walter B., Buffalo, N. Y., assignor to Chicago Roller Spring Company, Chicago, Ill. Bed-bottom	381,694	Apr. 10	1067	289	43	219
Nunn, Charles H., Rochester, N. Y. Oil-cup	380,659	Apr. 3	527	145	43	106
Nutt, Jasper N. (See Harmon and Nutt.)						
Nygaard, Christian, Oshkosh, Wis. Cant-hook	382,940	May 1	529	135	43	611
O'Connell, Thomas, Brooklyn, N. Y. Shore-protector	384,173	June 5	492	135	43	1216
O'Connor, James, Newport, Ky., assignor to Williams & O'Connor, Cincinnati, Ohio. Device for forming letters and designs on sheet metal	384,331	June 12	742	195	43	1270
O'Connor, James L., assignor to New York In Floor Cuspidor Company, New York, N. Y. Cuspidor	384,587	June 12	1118	295	43	1340
O'Connor, John D., New York, N. Y. Billard-cushion	383,086	May 15	1662	435	43	849
O'Connor, John F. K., Yonkers, N. Y. Inkstand	382,894	May 15	1506	394 / 395	43	690
O'Day, Charlotte, assignor to C. Abair, Denver, Colo. Bustle	382,778	May 8	756	192	43	692
O'Donnell, James, San Francisco, Cal. Rotary valve	383,976	June 5	902	59	43	1159
O'Donohue, William. (See Bailey, Gurdon B., assignor.)						
O'Ferrall, John, Baltimore, Md. Can-soldering machine	384,464	June 12	925	241	43	1305
O'Hagan, James, Jr. (See Mulhall, James J., assignor.)						
O'Keefe, John, assignor to Excelsior Manufacturing Company, St. Louis, Mo. Grate	381,886	Apr. 24	2387	620 / 621	43	488
O'Keefe, John J., *et al.* (See King, William H., assignor.)						
O'Keefe, William, Elliston, Mont. Ter. Rock-drill	382,695	May 15	1507	395	43	691
O Keefe, William, St. Louis, Mo. Hydraulic elevator	384,864	June 19	1535	399 / 400	43	1429
O'Keenan, Charles E., St. Cloud, near Paris, France. Galvanic battery	380,589	Apr. 3	427	121	43	67
O'Leary, Charles M., Washington, D. C. Automatic bell	383,936	May 22	2095	531	43	931
O'Leary, Dennis, San Bernardino, Cal. Grindstone-hanger	381,977	June 5	903	59	43	1159
O'Rielly, Michael J., Buffalo, N. Y. Gas-stove	383,316	May 22	2145	548	43	952
Oakley, Edward H. A., Aiken, S. C. Nut-lock	381,573	Apr. 24	1918	505	43	802
Oaks, William A. C., assignor to Goodell Company, Antrim, N. H. Fork for fruit-paring machines	382,549	May 8	1019	260	43	713
Oborn, George W., Columbus, Ohio. Fire extinguisher for railway-cars	383,004	May 15	1661	434	43	849
Ochs, John J., Newark, N. J. Atomizer	384,777	June 19	1536	365	43	1404
Odiorne, David W., Elizabeth, N. J. Umbrella-tie	384,463	June 12	924	240	43	1305
Odorizzi, Joseph, assignor of three-fourths to S. S. Wallace, P. Gerardi, and M. Harasin, Trinidad, Colo. Dump-car	384,709	June 19	1307	341	43	1385
Oehler, K. (See Rudolph, Christian, assignor.)						
Ohio Rake Company. (See Thomas and Ritty, assignors.)						
Ohmart, Eli C., New York, N. Y., assignor, by mesne assignments, to Ohmart-Homans Electric Lighting Company, of New York. Electric lamp	383,411	May 22	2288	607 / 608	43	976
Ohmart-Homans Electric Lighting Company. (See Ohmart, Eli C., assignor.)						
Olcott, Charles S., and J. P. Ellacott, Chicago, Ill. Paper-reel for short-hand machines	381,506	Apr. 17	1022	482	43	872
Oldbach, John F. (See Necker and Gifford, assignors.)						
Oldenbusch, Ernest, assignor to W. Schimper & Co., New York, N. Y. Pocket-book, bag, or purse frame	384,386	June 12	923	214	43	1285
Oldershaw, John B., Baltimore, Md. Hot-air furnace	381,574	Apr. 24	1919	506	43	802
Oldfield, Edwin. (See Rush and Oldfield.)						
Oldham, C., *et al.* (See Bartlett, Thomas J., assignor.)						
Oldham, Joshua, Brooklyn, N. Y. Apparatus for tempering steel bands	381,575	Apr. 24	1920	506	43	802
Olds, Chauncey J., Valley Falls, assignor to Schaghticoke Powder Company, Schaghticoke, and Laflin & Rand Powder Company, New York, N. Y. Gunpowder	381,507	Apr. 17	1023		43	872
Olds, Frank W., Munith, Mich. Wood-sawing machine	382,723	May 15	1276	334 / 335	43	772
Oliphant Manufacturing Company. (See Oliphant, William, assignor.)						
Oliphant, William, Jersey City, N. J. Liquid purification	384,539	June 12	1047	273 / 274	43	1287
Oliphant, William, Paterson, N. J. Feed-water heater	384,538	June 12	1046	273	43	1287
Oliphant, William, Paterson, N. J., assignor to Oliphant Manufacturing Company, New York, N. Y. Feed-water heating and filtering apparatus	384,540	June 12	1049	274	43	1288
Oliver, David B., Allegheny City, Pa. Appliance for rolling-mills	384,338	June 19	743	195	43	1270
Oliver, George T., *et al.* (See Roberts, Henry, assignor.)						
Oliver, Paul A., Oliver's Mills, Pa. Gunpowder-mill	382,885	May 15	1411	371	43	880
Oliver, Reuben W., Lockport, N. Y. Hedge-trimming machine	381,569	Apr. 17	1024	482	43	872
Oliver, Robert, Alpena, Mich. Dynamo-electric machine	384,636	June 19	1194	315 / 316	43	1264

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Olmstead, Homer P., New York, N. Y. Bustle	383,903	June 5	81	22	43	1136
Olmstead, Eugene M., and J. V. Wemple, Schenectady, N. Y. Car-coupling	384,174	June 5	494	135	43	1217
Olson, Otto F. (See Lauderholm and Olson.)						
Onbelt, Johannes, assignor to Chemische Fabrik Gösnitz, Bottiger E. Seidler, Gösnitz, Saxe-Altenburg, Germany. Apparatus for producing metals by means of electrolysis	382,183	May 1	446	116	43	595
Oneida Community. (See Scars and Kelley, assignors.)						
Oppfelt, Victor. (See Johnson and Oppfelt.)						
Orr, John S., Augusta, Ky. Lifting-jack	384,068	June 5	336	95	43	1184
Orr, John S., Augusta, Ky. Fence	384,270	June 12	644	173	43	1253
Orr, William, and P. S. Brown, Glasgow, county of Lanark, Scotland. Sheet-metal structure	383,759	May 29	2618	740 / 741	43	1062
Orrell, Ephraim E., assignor to Otis Company, Ware, Mass. Warping and bailing machine	381,164	Apr. 17	1317	328	43	973
Osborn, Bennet, Newark, N. J. Paper box	383,537	May 29	2496	638	43	1023
Osborne & Company, D. M. (See Case, Henry J., assignor.)						
Osborne & Company, D. M. (See Young, Calvin, assignor.)						
Osborne, John W., Washington, D. C. Type-writing machine	383,480	May 29	2409	639	43	1006
Osborne, John W., Washington, D. C. Type-writing machine	383,481	May 29	2402	639	43	1006
Osborne, John W., Washington, D. C. Type-writing machine	383,482	May 29	2407	640	43	1006
Osborne, John W., Washington, D. C. Eraser	383,483	May 29	2410	640	43	1007
Ostner, William H., St. Louis, Mo. Cast	384,214	June 5	552	152	43	1222
Osmond, William W., Grove Ridge, Pa. Device for sealing fruit-jars	380,921	Apr. 10	939	248	43	191
Ostermann, Heinrich, and A. Prip, Geneva, Switzerland. Metallic alloy	381,718	Apr. 24	2132	.....	43	451
Ostermann, Heinrich, and A. Prip, Geneva, Switzerland. Alloy	382,686	May 15	1413	.....	43	801
Ostermann, Heinrich, and A. Prip, Geneva, Switzerland. Alloy	382,687	May 15	1413	.....	43	801
Ostermann, Heinrich, and C. Lacroix, assignors to Usine Genevoise de Degrossissage d'Or, Geneva, Switzerland. Metallic alloy	381,719	Apr. 24	2133	.....	43	451
Ostrander, Christopher, San Prairie, Wis. Dressing-table	383,189	May 22	1955	513	43	917
Ostrander, William R., Brooklyn, N. Y. Pneumatic annunciator	382,051	May 1	965	60	43	568
Otis Company. (See Orrell, E. E., assignor.)						
Otto, Nicolaus A., Cologne, Prussia, assignor to Gas Motoren Fabrik Deutz, Deutz on the Rhine, Germany. Motor-engine worked by combustible gas	383,065	May 15	1775	459	43	879
Overaker, William, Hillsborough, N. C. Stock-tether	381,373	Apr. 17	1471	395	43	902
Overbey, Hugh L. T., Summerville, Ga. Belt-punch	383,237	May 22	2027	538	43	981
Overing, William A., *et al.* (See Henry, Charles A., assignor.)						
Overman, Albert H. (See Dearlove and Thresher, assignors.)						
Overman, Albert H. (See Starley, William, assignor.)						
Overman, Albert H., Newton, assignor to Overman Wheel Company, Boston, Mass. Velocipede	381,374	Apr. 17	1472	396	43	903
Overman, Eugene V. (See Bartholomew, George E., assignor.)						
Overman Wheel Company. (See Hedley, Charles F., assignor.)						
Overman Wheel Company. (See Overman, Albert H., assignor.)						
Owasco Company. (See Schreiber, Charles, assignor.)						
Owen, Charles F., Mechanicsburg, Pa. Swathing attachment for harvesters	383,317	May 22	2147	568	43	932
Owens, John B., Jackson, Tenn. Draft-timber for cars	384,568	June 12	1118	295	43	1340
Oxland, Charles. (See Oxland, Robert and C.)						
Oxland, Robert, Plymouth, county of Devon, and C. Oxland, Sydenham, county of Surrey, England. Treatment of ores and materials containing sulphur for the extraction of metals and other constituents	381,899	Apr. 24	2248	.....	43	473
Oxley, Lemuel. (See Newman and Oxley.)						
Packard, James W., New York, N. Y. Manufacture of filaments for electric incandescent lamps	383,484	May 29	2412	641	43	1007
Packard, James W., New York, N. Y. Rheostat	385,001	June 26	1741	450	43	1479
Packer, John F., assignor to D. Bradley Manufacturing Company, Chicago, Ill. Cultivator	382,184	May 1	447	117	43	596
Packer, John F., assignor to D. Bradley Manufacturing Company, Chicago, Ill. Attaching mold-boards	382,185	May 1	448	117	43	596
Packer, John F., assignor to D. Bradley Manufacturing Company, Chicago, Ill. Attaching colters	382,435	May 8	634	214	43	678
Packer, Richard, Chester, Pa. Electrode for secondary batteries	380,922	Apr. 10	933	249	43	191
Packer, Willard N., Cleveland, Ohio. Belt fastener	384,465	June 12	996	241	43	1305
Pagin, Orestes, assignor of two-thirds to W. H. Mattison, Philadelphia, Pa. Clapper or rattler device	385,002	June 26	1742	450 / 451	43	1479
Paige, John C. (See Hawkins and Paige.)						
Paillard, Charles A., Geneva, Switzerland. Alloy	384,709	June 19	1307	.....	43	1286
Paillet, Joseph, assignor of one-half to M. Edlgheffer, Springfield, Ohio. Lock	380,455	Apr. 3	221	61	43	45
Painter, George M., Arcola, Mo. Alterative remedy	380,343	Apr. 3	51	.....	43	13
Palmer, Augustus C., Utica, N. Y. Electric punch-register	383,485	May 29	2414	641	43	1007
Palmer, Ellen M. (See Palmer, Seymour C., assignor.)						
Palmer, Frank L., New London, Conn. Machine for sewing comfortables and other fabrics	380,615	Apr. 10	766	210	43	161
Palmer, Harmon S., Chattanooga, Tenn. Building-block	384,541	June 12	1050	274	43	1289
Palmer, Henry, San Francisco, Cal. Bottle-washing machine	381,638	Apr. 24	2011	528	43	837
Palmer, Henry, Evanston, Ill. Inhaler	384,589	June 12	1119	296	43	1341
Palmer, Henry U., Brooklyn, N. Y. Conveying apparatus	382,052	May 1	966	69, 70	43	568
Palmer, Joel R. (See Martin and Palmer.)						
Palmer, John S., Providence, R. I. Preparing hollow stock for the manufacture of jewelry	383,238	May 22	2028	532	43	931
Palmer, John S., Providence, R. I. Plate for shaving gold-plated shells, &c	383,239	May 22	2030	532	43	932
Palmer, John S., Providence, R. I. Manufacture of gold-plated-wire stock for jewelry	383,240	May 22	2031	533	43	932
Palmer, John S., Providence, R. I. Plate for the manufacture of plated-wire stock	383,241	May 22	2033	533	43	932
Palmer, Lyman R. (See Hamilton, Jonathan R., assignor.)						
Palmer, Seymour C., assignor to E. M. Palmer, South Norwalk, Conn. Machine for hardening hats	382,379	May 8	757	192 / 193	43	692
Palmer, Stephen B., Cleveland, Ohio. Suspending-holder for paper, paper bags, &c	381,412	Apr. 17	1474	448	43	843
Palmer, Timothy G., *et al.* (See Wing, Hiram J., assignor.)						
Palmer, William, Jr., Rincon, New Mexico Ter. Combined square, bevel, protractor, and level	383,942	May 22	2034	535	43	933
Palmer, William M., Middletown, N. Y. Tire-upsetter	384,778	June 19	1399	365 / 366	43	1405
Papo, Anthony, assignor to J. Merwin, Philadelphia, Pa. Bung and air vent	381,811	Apr. 10	1197	320	43	940
Pagtelin, Claude A., Paris, France. Apparatus for automatically generating and burning inflammable vapors	383,538	May 29	2497	650	43	1023
Parcelle, Albert L., New York, N. Y. Pendulum for clocks	383,539	May 29	2499	650	43	1023
Parcelle, Albert L., New York, N. Y., assignor to Manhattan Clock Company of Colorado. Electric pendulum clock	384,271	June 12	645	174	43	1254
Pardee, Joel S., New Troy, Mich. Thill-coupling	382,688	May 15	1414	371	43	801

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Park, Harvey S., Chicago, Ill. Air-brake	385,196	June 26	2036	861	43	1396
Park, William H. (See Bryant, Zenas F., assignor.)						
Parker, Anthony F., Charleston, S. C. Whip-roll for looms	381,780	Apr. 24	2133	558	43	451
Parker Company, Charles. (See Kilborn, William W., assignor.)						
Parker Company, Charles. (See Parker, Dexter W., assignor.)						
Parker Company, Charles. (See Parker and Griswold, assignors.)						
Parker, Dexter W., assignor to C. Parker Company, Meriden, Conn. Lamp-fixture	381,275	Apr. 17	1473	306	43	302
Parker, Dexter W., and L. F. Griswold, assignors to C. Parker Company, Meriden, Conn. Ornamenting metallic surfaces	383,661	May 8	1189	309	43	747
Parker, Edmund A. (See Manlove and Parker.)						
Parker, Edmund A., Rushville, Ill. Wagon-brake	381,413	Apr. 17	1675	449	43	343
Parker, Edmund L., *et al.* (See Manlove and Parker, assignors.)						
Parker, Edward K., Randolph, Mass. Portable fire-extinguisher	381,276	Apr. 17	1475	306	43	306
Parker, Gardner E., assignor to Richardson Manufacturing Company, Worcester, Mass. Lubricating crank-pin	382,896	May 15	1509	395	43	991
Parker, George T., Glasgow, Ky. Horse-detacher	385,130	June 26	1944	497	43	1320
Parker, Hiram J. (See Derington and Parker.)						
Parker, Homer N., Winchendon, Mass., assignor to W. M. Caldwell, Brooklyn, N. Y. Pawl-and-ratchet coupling for bit-braces, &c.	384,865	June 19	1538	400	43	1430
Parker, Hubbard, *et al.* (See Manlove and Parker, assignors.)						
Parker, John B., Grand Rapids, Mich. Artificial tooth	383,789	May 29	2813	741	43	1669
Parker, Sewell A., San Jose, Cal. Clothes-stand	381,414	Apr. 17	1675	449	43	344
Parker, Simon B., Springfield, Mass. Fire-escape	382,556	May 8	1020	261	43	713
Parker, Thomas, *et al.* (See Kearney, William F., assignor.)						
Parketon, George W., Laurens, assignor of one-half to D. P. Goggans and F. P. McGowan, Laurens County, S. C. Boiler-furnace	381,892	Apr. 10	1198	321	43	940
Parmelee, Wilbur F., assignor to D. J. Payne, Middletown, Conn. Frame for hammocks, &c.	381,025	Apr. 10	1069	289 290	43	889
Parmelee, William L., assignor to A. C. Rex, Philadelphia, Pa. Skate-clamp	380,456	Apr. 3	223	61	43	45
Parmenter, Zenas. (See Peck, Joseph W., assignor.)						
Parnell, Edward W., and J. Simpson, Liverpool, county of Lancaster, England. Making sodium carbonates by sulphides of the alkaline earths	382,551	May 8	1021	.....	43	713
Parrish Bros. and Peck Electrical Company. (See Parrish, Myron W., assignor.)						
Parrish, Myron W., assignor to Parrish Bros. and Peck Electrical Company, Detroit, Mich. Electric-signaling apparatus	381,576	Apr. 24	1921	506	43	499
Parry, William H., New York, N. Y. Groove-cutting tool	383,589	May 29	2557	676	43	1636
Parsons, Charles C., assignor to J. M. Parsons, Hempstead, N. Y. Detergent	383,322	May 8	664	.....	43	645
Parsons, Charles C., assignor to J. M. Parsons, Hempstead, N. Y. Detergent	383,323	May 8	666	.....	43	645
Parsons, Francis W., Philadelphia, Pa. Locking-lever for car-couplings	384,779	June 19	1401	366	43	1405
Parsons, Francis W., Philadelphia, Pa. Car-coupling	385,660	June 26	1740	450	43	1479
Parsons, George W., Harrisburg, Pa. Railway-frog	385,086	June 26	1648	473	43	1499
Parsons, John G., Columbus, Ohio, assignor of one-half to E. Storm, Poughkeepsie, N. Y. Top-prop joint for vehicles	382,682	May 8	1190	309	43	747
Parsons, Joseph A., Rocky River, Ohio. Portable force-pump apparatus	382,486	May 29	2417	641	43	1602
Parrons, Julia M. (See Parsons, Charles C., assignor.)						
Parsons, Seneca B., Chicago, Ill. Machine for making axle-skeins	383,761	May 29	2814	741 749	43	1665
Parsons, William B., Jr., New York, N. Y. Construction of troughs for water-closets	384,175	June 5	495	135	43	1217
Partridge, J. A., *et al.* (See Elward, John H., assignor.)						
Pasco, Thomas H., assignor to Detroit Car Wheel Company, Detroit, Mich. Mold for casting	383,318	May 22	2148	567	43	932
Pataky, Carl. (See Cantius, Arthur, assignor.)						
Patterson, Andrew, McKeesport, Pa., assignor to National Tube Works Company, Boston, Mass. Vehicle-axle	380,344	Apr. 3	52	18	43	13
Paterson, Andrew, McKeesport, Pa., assignor to National Tube Works Company, Boston, Mass. Lathe-tool	382,794	May 15	1977	335	43	773
Paterson, Andrew, McKeesport, Pa., assignor to National Tube Works Company, Boston, Mass. Machine for turning axle-ends	382,795	May 15	1978	335	43	772
Paterson, Andrew, McKeesport, Pa., assignor to National Tube Works Company, Boston, Mass. Axle-box-milling machine	383,540	May 29	2560	680	43	1663
Paterson, Edward J. (See Hermite and Cooper, assignors.)						
Paterson, James. (See Reynolds and Paterson.)						
Paterson, William. (See Reynolds and Paterson.)						
Paterson, William A., Flint, Mich. Road-cart	381,415	Apr. 17	1677	449	43	344
Patric, Charles E., Springfield, Ohio. Cultivator	383,541	May 29	2502	660 661	43	1664
Patrick, John J. R., Belleville, Ill. Artificial tooth	380,512	Apr. 3	311	90	43	63
Patrick, John J. R., Belleville, Ill. Die and punch for making metal crowns for teeth	381,416	Apr. 17	1678	449 450	43	344
Patrick, John J. R., Belleville, Ill. Device for regulating teeth	382,897	May 15	1516	396	43	991
Patrick, John J. R., Belleville, Ill. Dental tool	383,367	May 22	2215	588	43	985
Patten, Jefferson, Brooklyn, N. Y. Metallic packing for steam-cylinder pistons	384,272	June 12	649	174	43	1254
Patten, Stafford & Myer. (See Stafford, Norman, assignor.)						
Patterson, Frank J., and I. P. Davis, assignors to National Cash Register Company, Dayton, Ohio. Cash register and indicator	385,199	June 26	2040	561 562	43	1539
Patterson, Jesse E., and A. Noteman, assignors of one-third to W. C. Lloyd and G. F. Worts, Toledo, Ohio. Hydrocarbon-burner	381,067	June 5	337	95	43	1183
Patterson, Jesse E., and A. Noteman, assignors of one-third to W. C. Lloyd and G. F. Worts, Toledo, Ohio. Hydrocarbon vaporiser and burner	384,068	June 5	339	95	43	1185
Patterson, John H. (See Heady and Patterson.)						
Patterson, John H., Dayton, Ohio. Cash indicator and register	382,558	May 8	1021	261 262	43	713
Patterson, John H., Dayton, Ohio. Cash indicator and register	383,098	May 15	1664	435 436	43	849
Patterson, John H., Dayton, Ohio. Cash register and indicator	383,097	May 15	1671	436	43	852
Patterson, John H., and J. F. Heady, assignors to National Cash Register Company, Dayton, Ohio. Cash register and indicator	380,513	Apr. 3	312	90, 91	43	63
Patterson, John S. (See Rancovau, John, assignor.)						
Patterson, Samuel S., Wilkes-Barré, Pa. Venetian blind	383,978	June 5	294	59	43	1189
Patterson, Samuel W., Ringgold, Ohio. Trimming-table	383,369	May 22	2216	562	43	985
Patterson, Thomas H., East Saginaw, Mich. Sad-iron	383,319	May 22	2140	567	43	933
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Locking device for cable-splices	382,793	May 15	1979	335 336	43	774
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Manufacture of telegraph-cables	382,767	May 15	1234	351	43	784

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Manufacturing electric cables	382,768	May 15	1334	351	43	784
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Telegraph-cable	382,829	May 15	1415	371 372	43	801
Pattison, Thomas. (See Anderson and Pattison.)						
Patton, George A., Altoona, Pa. Cough remedy	384,466	June 12	928	.....	43	1306
Patton, J. Hervey, *et al.* (See Patton, William P., assignor.)						
Patton, Robert J., Waterbury, Conn. Torpedo-signal holder	381,277	Apr. 17	1476	306	43	303
Patton, William P., assignor of three-fourths to W. T., Sr., and W. T. Hildrup, Jr., J. H. Patton, Harrisburg, Pa., and S. W. Tulleck, Washington, D. C. Generating-retort and burner attached	380,514	Apr. 3	319	91, 92	43	66
Paul, George D., *et al.* (See Vrooland, Cyrus E., assignor.)						
Paul, Ludwig, Fürstenberg-on-Oder, Prussia, Germany. Production of disulphe and dicarbo acids of the diamidoazo-benzidines	380,402	Apr. 3	140	.....	43	30
Paul, Ludwig, Fürstenberg-on-Oder, Prussia, Germany. Production of disulphe and dicarbo acids of the diamidoazo-benzidines	380,403	Apr. 3	143	.....	43	30
Paulus, Jacob, Brooklyn, N. Y. Faucet attachment for barrels	382,186	May 1	449	117	43	590
Payne, Dwight J. (See Parmelee, Wilbur F., assignor.)						
Payne, Samuel A., assignor of two-thirds to J. L. Fisher and J. M. Stout, Scottsburg, Ind. Hand-planter	381,983	Apr. 10	1199	321	43	941
Peabody, George H., Kansas City, Mo. Cartridge for tobacco-pipes	380,580	Apr. 3	229	121	43	48
Pearce, John W., assignor of two-thirds to C. R. Britton and E. S. Waller, Cleveland, Ohio. Step-ladder and bench combined	383,943	May 22	2036	534	43	936
Pearce, Jacob A., Denver, Colo. Fountain-brush	380,345	Apr. 3	53	18	43	13
Pearce & Jones. (See De Rodon, Constant F., assignor.)						
Pearce, Thomas A. (See Merley and Greenwood, assignors.)						
Pearce, Thomas A. (See Rightmire, Harry C., assignor.)						
Pearn, George R. (See Sprague and Pearn.)						
Pearnall, Howard D., London, England. Hydraulic apparatus for raising water, &c	382,360	May 8	760	193	43	663
Pearson, Eugene, *et al.* (See Atkinson, William W., assignor.)						
Pearson, Fred, assignor of one-half to J. C. Graham, Philadelphia, Pa. Pile-warp delivery mechanism for double-pile-fabric looms	383,925	May 29	2923	773	43	1169
Pearson, William E., Saugus, assignor to G. M. Swasey, Boston, Mass. Rotary liquid-meter	380,764	Apr. 10	697	193	43	148
Pease Furnace Company, J. F. (See Warner and Austin, assignors.)						
Peay, Walter W., Toronto, Ontario, Canada. Trap for wells	381,577	Apr. 24	1982	506	43	499
Peck, Charles F. (See Tesla, Nikola, assignor.)						
Peck, Eugene H. (See Jones and Peck.)						
Peck, Joseph W., assignor to Z. Parmenter, Waltham, Mass. Machine for the manufacture of crayon pencils	381,810	Apr. 24	2250	588	43	473
Peckham Car Wheel Company. (See Richards, William G., assignor.)						
Peckham, Merritt, Utica, N. Y. Heating-stove	383,144	May 22	1897	494 495 496	43	905
Peckover, James, Philadelphia, Pa. Stone-saw	381,811	Apr. 24	2253	589	43	473
Pedrick, Knott H., Lynn, assignor of one-fourth to F. H. Safford, Newburyport, Mass. Faucet	384,886	June 19	1540	400	43	1409
Peerless Button Hole Attachment Company. (See Johnson, Albert W., assignor.)						
Peerless Reaper Company. (See Sloats, Albertice O., assignor.)						
Peirce, Arthur H., Chicago, Ill. Seal-lock	384,089	June 5	340	96	43	1185
Peirce, Ira C., Hyde Park, Mass. Mechanism for operating sliding doors	380,690	Apr. 10	585	161	43	197
Pellant, Frank E., Janesville, Wis. Cigar-machine	381,812	Apr. 24	2254	589	43	474
Pellieger, George, Akron, Ohio. Fountain-pen	381,417	Apr. 17	1679	450	43	344
Pelton, Russell K., Cleveland, Ohio. Invalid-bed inflating and heating apparatus combined	384,274	June 12	651	175	43	1256
Pendleton, John M., New Brighton, N. Y. Electric accumulator	380,765	Apr. 10	698	193	43	149
Peninsular Novelty Company. (See Vinton, John H., assignor.)						
Pennington, John C., Paterson, N. J. Preparing paper for wrapping metallic articles to prevent tarnishing, &c	380,515	Apr. 3	322	.....	43	66
Pennock, William H., assignor of one-half to J. W. Derrickson, Mermaid, Del. Spring bed-bottom	384,590	June 12	1120	296	43	1341
Pennsylvania Globe Gas Light Company. (See Bridge, Lewis, assignor.)						
Pentlarge, Rafael, Brooklyn, N. Y. Bushing for bangs	384,367	June 12	894	214	43	1295
Pequinot, Joseph C., Fort Wayne, Ind. Scraper	385,003	June 26	1743	451	43	1479
Percival, David C. (See Merrill and Percival.)						
Percy, William N. (See Bringold, John H., assignor.)						
Perine, Aaron B., Topeka, Kans. Thill-coupling	382,381	May 8	762	193	43	664
Perkins, Charles G., Hartford, Conn. Electric cut-out	385,067	June 26	1851	473	43	1500
Perkins, Charles G., and J. Tregoning, Hartford, Conn. Electric cut-out	380,706	Apr. 10	699	193	43	149
Perkins, Elijah H., Visalia, Cal. Rivet-burr remover	385,133	June 26	1945	497	43	1320
Perkins, Frank H. (See Miller, Louis L., assignor.)						
Perkins, George H., Philadelphia, Pa. Box for filling cans with oil or other liquids	382,979	June 5	295	60	43	1160
Perkins, George H., Philadelphia, Pa. Device for testing the physical condition of liquids at given temperatures	383,980	June 5	296	60, 61	43	1160
Perkins, George H., Philadelphia, Pa. Machine for filling cans	383,981	June 5	297	61 62 63	43	1160
Perkins, Hasen H., Kewanee, Ill. Hanking-pin	380,516	Apr. 3	323	92	43	66
Perkins, William C., Sandy Point, Me. Wrench	384,467	June 12	928	241	43	1306
Perkins, Willis J., Grand Rapids, Mich. Shingle-sawing machine	380,746	Apr. 3	53	19, 20	43	13
Perrigo, Albert S. (See Whiteley and Perrigo.)						
Perrigo, Oscar E. (See Whiteley and Perrigo.)						
Perrin, C. L., *et al.* (See Young, Thomas J., assignor.)						
Perrin, Charles, assignor of one-third to C. E. Meyer, Springfield, Ohio. Universal joint	384,388	June 12	896	214	43	1295
Perrin, John O. (See Erb, Fred, Jr., assignor.)						
Perrine, Alfred T., Providence, R. I., assignor to A. H. Reeder, Cincinnati, Ohio. Shoe or glove fastener	382,782	May 29	2819	742	43	1669
Perry, Francis H., assignor to C. J. Webb and M. B. Perry, Philadelphia, Pa. Coal-sifter	383,412	May 22	2240	609	43	977
Perry, Isaac A., Wilmington, Del. Railway-frog	380,923	Apr. 10	925	240	43	191
Perry, John R., Wakefield, R. I. Stamp for canceling, &c	383,487	May 29	2418	642	43	1666
Perry, Judson D., Detroit, Mich. Potato-digger	383,488	May 29	2419	642	43	1666
Perry, Maggie R., *et al.* (See Perry, Francis H., assignor.)						
Perry, Thomas O., Tecumseh, Mich. Pneumatic water-elevator	382,324	May 8	668	169	43	646
Perry, Thomas O., Tecumseh, Mich. Pneumatic water-elevator	382,727	May 15	1280	336	43	774
Perry, William C., Charlestown, R. I. Vehicle-spring	384,781	June 19	1401	366	43	1405
Persius, Rudolf, Aachen, Prussia, Germany. Dyeing apparatus	384,369	June 12	897	215	43	1296

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Peters, Daniel, Cincinnati, Ohio. Egg-beater	383,489	May 29	2429	649	43	1686
Peters, Fridrich H. A., Detroit, Mich. Hoisting-machine	382,436	May 8	835	214	43	679
Peters, G. Moore, Xenia, Ohio. Cartridge	380,689	Apr. 10	864	161	43	127
Peters, G. Moore, Xenia, Ohio. Cartridge-loading machine	383,905	June 5	85	24, 25, 26, 27	43	1137
Peters, George W., Lancaster, Ohio. Button-hole cutter	384,710	June 19	1369	542	43	1398
Peters, John. Pottstown, Pa. Adjustable clevis	381,578	Apr. 24	1963	567	43	409
Peters, Richard G., Manistee, Mich. Discharge mechanism for vacuum-pans	384,070	June 5	241	96	43	1135
Peters, Richard G., Manistee, Mich. Discharge mechanism for vacuum-pans	384,071	June 5	242	96	43	1136
Peters, William F., assignor of one-half to Alpine Safe Company, Cincinnati, Ohio. Permutation-lock	384,468	June 12	929	241	43	1306
Petersen, Henry, assignor of one-half to C. Andriesen, St. Louis, Mo. Sectional pedestal-grate	382,583	May 8	1027	262	43	715
Petersen, Niels, Copenhagen, Denmark. Machine for grooming animals	380,934	Apr. 10	937	249	43	192
Peterson, Albert, Detroit, Mich. Lock for bags or satchels	382,788	May 15	1248	336	43	774
Peterson, George W., Leonardville, Kans. Block-signal	382,053	May 1	208	70, 71	43	582
Peterson, William F. (See Caldwell and Peterson.)						
Petry, Peter, Newark, N. J. Pencil-sharpener	382,437	May 8	836	214	43	678
Pettee Machine Works. (See Sheridan, James, assignor.)						
Pettigrew, Charles, *et al.* (See Trent, Francis H., assignor.)						
Petze, H. Hermann, *et al.* (See Schiller, Frederick W., assignor.)						
Pfister, John G., Buffalo, N. Y. Pipe-coupling	382,107	May 1	344	91	43	576
Pflüger, Albert. (See Meehring and Pflüger.)						
Pheatt, Gideon K., Toledo, Ohio. Oar and oar-lock	380,944	May 22	2036	534	43	933
Phelps, Charles H., Chicago, Ill. Oil-burner	384,275	June 12	653	175	43	1255
Phelps, Charles H., assignor to Gibson, Pariah & Company, Chicago, Ill. Machine for cutting disks from wood	381,947	May 1	68	17	43	398
Phelps, George H., *et al.* (See Preston, Charles A., assignor.)						
Phelps, George M., Brooklyn, assignor to Western Union Telegraph Company, New York, N. Y. Microphone-transmitter	380,925	Apr. 10	938	250	43	192
Phelps, Homer L., Athens, Pa. Bearing for street-cars	384,782	June 19	1402	397	43	1405
Phelps, James L., Meadville, Pa. Fruit-drier	383,845	May 22	2026	534, 535	43	933
Philadelphia Novelty Manufacturing Company. (See Heysinger, Isaac W., assignor.) (Reissue.)						
Philbey, Abel. (See Tolhurst, Glasbrook, Philbey, and Lockerbie.)						
Phillon, George, assignor to Dodge Manufacturing Company, Mishawaka, Ind. Upright-saw machine	383,946	May 22	2040	535	43	933
Phillon, George, assignor to Dodge Manufacturing Company, Mishawaka, Ind. Turning-lathe	383,309	May 22	2217	588	43	965
Phillips, Charles F. (See Phillips, William L., assignor.)						
Phillips, Cornelius J., New York, N. Y. Combined plug and ferrule for wash-tray connections	383,982	June 5	213	63	43	1162
Phillips, Elwood C., Richmond, Ind., assignor to A. Warren, St. Louis, Mo., and J. W. March, Cincinnati, Ohio. Tension apparatus	380,347	Apr. 3	92	21	43	15
Phillips, Emory, and A. N. Edwards, Wichita, Kans. Harness-rack	383,961	June 5	214	63	43	1162
Phillips, Hiram, Columbia, assignor to Kirtley & Phillips, Boone County, Mo. Envelope-tablet	385,390	June 26	2230	571, 572	43	1577
Phillips, James, Washington, Iowa. Castrating-instrument	384,215	June 5	553	152	43	1228
Phillips, John O., assignor of one-half to B. H. Dorman, Lynn, Mass. Embroidering-machine	382,619	May 8	1126	290, 291	43	735
Phillips, Marshman H., Verschoyle, Ontario, Canada. Nut-lock	382,654	May 1	989	71	43	563
Phillips, Selah, Arnot, Pa. Fish-plate	383,765	May 29	2230	762	43	1069
Phillips, William L., assignor to C. F. Phillips, Brooklyn, N. Y. Bed-bottom	381,948	May 1	69	17, 18	43	398
Phillips, William R., Milford, Del. Apparatus for bleaching	384,457	June 19	1541	409	43	1430
Phipps, Edward H., New Haven, Conn. Joint for cement-lined pipes	383,413	May 22	2291	606	43	977
Phipps, Thomas L., and W. Burman, Ryland Road, Edgbaston, near Birmingham, county of Warwick, England, assignors to L. S. Lee, Philadelphia, Pa. Hair-clipper. (Reissue)	10,931	May 15	1624	477	43	899
Piatt, William M., assignor of one-third to B. P. Runkle, Mac-o-chee, Ohio. Grain-binder	384,072	June 5	243	96, 97	43	1136
Pickering, Leander P., Rochester, assignor of one-fourth to F. W. Yeaton, Concord, N. H. Carpenter's framing-gage	385,321	June 26	2222	572	43	1577
Pickhardt, Emile, Islington, Mass. Button-loop and safety-pin	384,630	June 19	1195	316	43	1364
Pickles, James D., Manchester, Conn., and W. F. Pickles, Lafayette, Pa. Suction-box for paper-making machines	384,276	June 12	454	175	43	1255
Pickles, John, Bingley, and H. W. Whitehead, Leeds, county of York, England. Combing-machine	384,783	June 19	1405	397, 398	43	1406
Pickles, William F. (See Pickles, James D. and W. F.)						
Picon, Alexis. (See Babin, Telesphore, assignor.)						
Pidduck, George A., Englewood, Ill. Street-indicator for cars	382,769	May 15	1335	351	43	785
Pietetieker, Carl M., London, county of Middlesex, England. Machine for drawing rods and tubes	382,729	May 15	1284	336	43	775
Pierce, Charles, Monticello, Iowa. Belt-tightener	382,007	May 1	185	48	43	548
Pierce, Ray V. (See Smith, Elmer S., assignor.)						
Pierpont, Louis E., Cambridge, Nebr. Vapor-burner	380,404	Apr. 3	144	41	43	30
Piffard, Henry G., New York, N. Y. Photogenic cartridge	383,984	June 5	215	64	43	1162
Piffard, Henry G., New York, N. Y. Photogenic powder	384,927	June 19	1630		43	1415
Pigeon, Charles J., and L. J. T. Lacroix, Paris, France. Tubular floating mattress	381,813	Apr. 24	2256	559, 560	43	474
Pigott Time and Fare Register Company. (See Pigott, William, assignor.)						
Pigott, William, assignor to Pigott Time and Fare Register Company, Chicago, Ill. Fare-register	383,008	May 15	1672	437, 438	43	852
Pihl, Carl G. A. F. W. E., Lowell, Mass. Window-reflector	384,784	June 19	1406	398	43	1406
Pike, Edward M., J. Castle, and J. B. Schopp, Chenoa, Ill. Frame for brick-kilns	384,469	June 12	930	242	43	1306
Pike, James E., Plymouth, Ind. Foot-rest	383,906	June 5	92	27	43	1128
Pilliod, Charles J., assignor of one-half to H. S. Bassett, Swanton, Ohio. Automatically-adjustable feed device	383,145	May 22	1880	496	43	965
Pillsbury, Samuel G., assignor of one-half to A. V. Whitcomb, Long Island, Kans. Corn-sheller	380,767	Apr. 10	761	194	43	149
Pilood, David W., Weelder, Tex. Combined cotton chopping, planting, and cultivating machine	383,149	May 22	1901	496	43	966
Pinch, Frank, Sidney, assignor to Excelsior Metallic Packing Company, Middletown, N. Y. Red-packing	382,187	May 1	459	117	43	586

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Pine, Reuben M., Columbia City, Ind. Machine for sharpening saws	383,004	June 26	1745	451	43	1489
Pinelta, José, assignor to H. Grote, Guatemala, Guatemala. Removing fusel-oils from crude spirits	384,668	June 19	1542		43	1430
Pinkney, Charles W., Smethwick, county of Stafford, England. Hammering machinery actuated by explosive gaseous mixtures	384,889	June 19	1543	401, 402	43	1430
Pinkowski, Friedrich. (See Klinik, Pinkowski, and Gross.)						
Pinkowski, Friedrich. (See Klinik, Pinkowski, and Sellmann.)						
Piper, Edwin S., assignor of one-half to S. E. Root, Bristol, Conn. Rotary nozzle-head for water-motors	380,021	Apr. 10	596	161	43	127
Piper, John H., Brooklyn, N. Y. Nut-lock	380,896	Apr. 10	941	250	43	193
Piper, William M., assignor of two-thirds to S. Newborn and C. W. Wolfendale, Allegheny City, Pa. Glass-blowing apparatus	381,887	Apr. 24	2388	621	43	489
Pitrat, Julius E., Gallipolis, Ohio. Weighing and price scale	385,005	June 26	1748	451, 452	43	1489
Pitt, William A., Glenbrook, Conn. Means and apparatus for collecting and separating sewage	382,188	May 1	451	116	43	527
Pitt, William A., Glenbrook, Conn. Crank and lever motion	382,189	May 1	454	116	43	527
Pitt, William A., Glenbrook, Conn. Steam-engine for equalizing power	383,764	May 29	2221	743	43	1069
Pitts, Andrew J. and G. W., assignor of one-half to J. G. and C. C. Hudson, De Armanville, Ala. Fence	382,382	May 8	763	194	43	664
Pitts, George W. (See Pitts, Andrew J. and G. W.)						
Pitts, Thomas W., Wolsey, Dak. Ter. Pneumatic railway	384,333	June 12	744	195	43	1270
Pittsburgh Forge and Iron Company. (See Wilson, John T., assignor.)						
Plankinton, William. (See Johnson, Warren S., assignor.)						
Plache, James F., Watertown, N. Y. Crutch	384,470	June 12	931	243	43	1306
Plumb, Bardlet & Barnard. (See Johnson, Henry J., assignor.)						
Plumb, William H., Lake City, Colo., assignor of one-half to P. P. Dickinson, New York, N. Y. Apparatus for heating railway-cars	383,247	May 22	2041	535	43	934
Pneumatic Dynamite Gun Company. (See Pratt, Nat. W., assignor.)						
Pneumatic Gate Company. (See Mills, Mortimer B., assignor.)						
Poh, Benjamin W., assignor to himself and P. Steingoetter, Buffalo, N. Y. Pipe-coupling	384,073	June 5	245	97	43	1136
Poirrier, Alcide F., and D. A. Rosenstiehl, assignors to Société Anonyme des Matières Colorantes et Produits Chimiques de St. Denis, Paris, France. Production of azo colors	380,927	Apr. 10	943		43	193
Poirrier, Alcide F., and Z. Roussin, assignors to Société Anonyme des Matières Colorantes et Produits Chimiques de St. Denis, Paris, France. Production of diazoic coloring-matters	380,998	Apr. 10	945		43	193
Poland, Lawrence N. P., Cincinnati, Ohio. Dynamo-electric machine	383,330	May 22	2150	547	43	953
Pole, Benjamin C., Camden, N. J. Motor for street-railways	381,847	Apr. 24	2327	604, 605	43	487
Pole, Benjamin C., Camden, N. J. Steam or gas motor engine	382,008	May 1	186	48, 49	43	548
Polhemus, Benjamin F. (See Polhemus, James H. and B. F.)						
Polhemus, James H. and B. F., Brooklyn, N. Y. Spokeshave	383,509	May 29	2357	676	43	1038
Pollock, Alexander, Nyack, N. Y. Switch-lock	383,654	May 29	2049	701	43	1056
Pomeroy, Henry N., assignor to J. A. Warner, Sparta, Wis. Dust-collector	381,630	Apr. 24	2012	528	43	427
Pomroy, John R., assignor of one-half to R. J. Townley, Belvidere, Ill. Pavement	381,674	June 5	246		43	1137
Pond, Alexander W. (See Camfield, Patrick E., assignor.)						
Pond, Chester H., Brooklyn, N. Y. Circuit-closing device for electric clocks	383,655	May 29	2050	701	43	1056
Pond, Lucius W., and F. E. Norton, assignors to H. C. Fish, Worcester, Mass. Metal-planing machine	380,692	Apr. 10	587	162	43	127
Pope, Harry M., Hartford, Conn., assignor to Pope Manufacturing Company, Portland, Me. Velocipede-seat	381,165	Apr. 17	1321	353	43	273
Pope, Harry M., assignor of one-half to D. S. Seymour, Hartford, Conn. Breech-loading fire-arm	384,277	June 12	655	176	43	1256
Pope, James M., assignor of part to R. W. Garrison, Canton, and W. C. Joyner, Madison County, Miss. Combined planter and fertilizer-distributer	380,929	Apr. 10	946	250, 251	43	193
Pope Manufacturing Company. (See Knous, John, assignor.)						
Pope Manufacturing Company. (See Latin, Emmit G., assignor.)						
Pope Manufacturing Company. (See Pope, Harry M., assignor.)						
Popham, Richard M., *et al.* (See Powell, John B., assignor.)						
Peppert, George, Milwaukee, Wis. Blind-rod for sliding blinds	380,930	Apr. 10	948	251	43	194
Porter, Annie G., *et al.* (See Porter, Henry K., assignor.)						
Porter, Clinton J., Bowling Green, Ky. Corn splitting and cutting machine	382,108	May 1	345	91	43	577
Porter Drop Cabinet Company. (See Porter, William H., assignor.) (Reissue.)						
Porter, H. W., *et al.* (See Harris, Noah, assignor.)						
Porter, Henry K., Boston, assignor of one-half to A. G. and T. W. Porter, Chelsea, Mass. Extension-tool for planers	382,268	May 1	572	145	43	619
Porter, John C., New York, N. Y. Folding cot	383,985	June 5	216	64	43	1162
Porter, T. W., *et al.* (See Porter, Henry K., assignor.)						
Porter, William H., Washington, D. C., assignor to Porter Drop Cabinet Company, New York, N. Y. Combined desk and type-writer cabinet. (Reissue)	10,924	Apr. 24	2405	625	43	504
Post, Charles A., New York, N. Y. Rig and gear for gaff-topsails	381,278	Apr. 17	1477	397	43	393
Postlethwaite, Miles, Whitehaven, county of Cumberland, England. Ventilated hat	385,282	June 26	2172	554, 555	43	1506
Potter, Edward R., Grinnell, Iowa. Wire gate	380,591	Apr. 3	429	122	43	88
Potter, James R., Providence, R. I. Automatic car-switch	381,949	May 1	71	18	43	598
Potter, Roger. (See Murphy, Thomas J., assignor.)						
Potter, William, Stockton, Kans. Grapple	380,405	Apr. 3	145	41	43	30
Potter, Wilson L., assignor to Jewell Belting Company, Hartford, Conn. Belt-fastener	381,640	Apr. 24	2012	528	43	427
Potts, Edward C. (See Perse, Alfred E., assignor.) (Reissue.)						
Potts, George, Indianapolis, Ind. Clay-disintegrator	384,278	June 12	656	176	43	1256
Poulton, John F. (See Hilleary and Poulton.)						
Powell, John B., assignor of one-fourth to D. D. Dieterich and R. M. Popham, Philadelphia, Pa. Spring-motor	382,663	May 8	1190	300	43	748
Powell, Samuel, Ravenswood, assignor to Keen & De Lang, Chicago, Ill. Paper-holding spindle	380,592	Apr. 3	431	122	43	88
Powell, William L., Kansas City, Mo. Door-hanger	382,770	May 15	1337	352	43	795
Power, George T. (See Messinger, William T., assignee.)						
Powers & Son, William T. (See Densmore, Edwin, assignor.)						
Perbes, Josiah, assignor, by mesne assignments, to C. R. Vincent, New York, N. Y. Weather-strip	381,166	Apr. 17	1322	353	43	273
Prall, William E., Washington, D. C., assignor, by mesne assignments, to National Heating Company, New York, N. Y. Means for supplying heat and steam or water power to cities, towns, &c. (Reissue)	10,923	Apr. 17	1842	487	43	376

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Prall, William E., Washington, D. C., assignor, by mesne assignments, to National Heating Company, New York, N. Y. Cooking stove and range	382,941	May 1	531	136	43	611
Prall, William E., Washington, D. C., assignor to National Heating Company, New York, N. Y. Means for supplying heat and power to large districts of buildings	382,383	May 8	764	194	43	664
Prall, William E., Washington, D. C., assignor to National Heating Company, New York, N. Y. Supplying heat and power to large districts of buildings	382,384	May 8	766	194 195	43	665
Prankard, Charles J., Troy, N. Y. File-handle	380,660	Apr. 3	528	145	43	106
Pranke, August, Detroit, Mich. Bow-drill	380,517	Apr. 3	382	99	43	66
Pratt, Jacob F., and W. Chase, Coldwater, Mich. Child's sled	380,693	Apr. 10	569	162	43	127
Pratt, Nat. W., Brooklyn, N. Y. Apportioning furnace-draft for batteries of steam-boilers	382,489	May 8	936	235	43	665
Pratt, Nat. W., Brooklyn, N. Y. Apportioning furnace-draft for batteries of steam-boilers	382,490	May 8	938	235	43	665
Pratt, Nat. W., Brooklyn, assignor to Pneumatic Dynamite Gun Company, New York, N. Y. Pneumatic ordnance	381,950	May 1	72	18	43	598
Pratt, Oscar C., San Rafael, Cal. Seal-lock	384,542	June 12	1051	274	43	1324
Pratt, Robert J., Greenbush Heights, N. Y. Drill-chuck	384,928	June 19	1620	421	43	1445
Pratt, Rufus N., Hartford, Conn., and H. W. Johns, New York, N. Y. Boot or shoe	381,579	Apr. 24	1924	507	43	469
Pratt, Samuel B., Boston, Mass. Tray for collecting coin	384,711	June 19	1308	342	43	1346
Prengel, Eugen, deceased, Oakland, Cal.; H. G. Prengel executrix. Hay-press	382,664	May 8	1192	310	43	748
Prengel, Helena G., executrix. (See Prengel, Eugen.)						
Prentice, George W., Providence, R. I. Button-machine	383,490	May 29	2421	643	43	1009
Prentice, Henry L. (See Hard, Josiah, assignor.)						
Prentice, John, New York, N. Y. Cock for gas-fixtures	385,134	June 26	1946	497	43	1520
Prescott, James E., assignor of one-half to J. W. Reynolds, Waynesborough, Ga. Axle for vehicles	383,066	May 15	1777	459	43	872
Pressley, Leonidas C., assignor to Automatic Connection Compressed Air Car Motor Company, San Francisco, Cal. Automatic air-supply for propelling cars	383,896	May 29	2994	772	43	1169
Preston, Charles A., Cambridgeport, assignor to G. Frost, G. H. Phelps, and G. A. Frost, Newton, Mass. Garment-supporter	383,827	May 29	2926	773	43	1169
Preston, E. Bruce. (See Bruegger, Abraham, Jr., assignor.)						
Preston, Edward F. (See Preston, William W. and E. F.)						
Preston, Everett B. (See Adcock, Edmund, assignor.)						
Preston, Everett B. (See Hicks, Charles, assignor.)						
Preston, Everett B., Chicago, Ill. Turn-table extension-ladder truck	383,828	May 29	2927	773 774	43	1169
Preston, Frederick L., Darien, Wis. Breaker and crusher	383,986	June 5	216	64, 65	43	1102
Preston, Henry M., New Haven, Conn., assignor to E. Burdsall, Port Chester, N. Y. Drill-chuck	383,948	May 22	2042	536	43	934
Preston, William W. and E. F., Bismarck, Mich. Ice-creeper	380,816	Apr. 10	769	210	43	161
Prewitt, David H., Perryville, Ky. Bundle-carrier for harvesters	383,009	May 15	1185	458	43	854
Price, Abel F., Philadelphia, Pa. Bicycle	384,543	June 12	1052	275	43	1328
Price, Henry C., assignor of one-third to J. H. Hildreth, New York, N. Y. Clothes-drier	382,969	May 1	573	145	43	619
Price, John A., Scranton, Pa. Heating-stove	381,096	Apr. 10	1091	290 291	43	220
Price, Orrin J., Detroit, Mich. Soda-water-dispensing apparatus	381,097	Apr. 10	1095	291	43	221
Price, William H., Jr., assignor to Chandler & Price, Cleveland, Ohio. Ink-fountain for platen printing-presses	384,216	June 5	554	152	43	1228
Price, William L., Philadelphia, Pa. Rolling apparatus	384,581	June 12	1122	286	43	1341
Prichard, Frank E., Cedar Falls, Iowa. Electrical governor	380,817	Apr. 10	770	211	43	161
Pridmore, Henry E., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Grain-binder	382,898	May 15	1511	396	43	821
Pridmore, Henry E., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Wheel	382,899	May 15	1513	396	43	822
Pringle, Eugene, Gloversville, N. Y. Glove-fastening	380,694	Apr. 10	500	162	43	128
Pringle, William J., Cleveland, Ohio. Brick or tile for building purposes	383,987	June 5	218	65	43	1163
Prins, Faustin, Milwaukee, Wis. Smut-machine	380,348	Apr. 3	63	21, 22	43	15
Prins, Faustin, Milwaukee, Wis. Elevating-bolt	381,848	Apr. 24	2330	605	43	467
Prip, Axel. (See Ostermann and Prip.)						
Pritchard, Frederick, Meriden, Conn. Octave-coupler	381,416	Apr. 17	1680	450	43	345
Prochowics, Albert, Winona, Minn. Ointment	381,483	Apr. 17	1783	.....	43	364
Prout, Joseph A., New York, N. Y. Cock	382,900	May 15	1514	396	43	822
Prouty, Jonas R. (See Avery, William, assignor.)						
Prouty, Jonas R., Spencer, Mass. Nail-strip	381,907	June 5	93	28	43	1138
Prouty, Jonas R., Spencer, Mass. Nail-strip	381,908	June 5	94	28	43	1138
Prouty, Jonas R., Spencer, Mass. Pegging-machine	381,909	June 5	95	28	43	1139
Prouty, Jonas R., Spencer, Mass. Machine for loading nail-strips	381,910	June 5	96	28 29	43	1139
Pruden, Samuel M., Newark, N. J. Electrical registering device	381,279	Apr. 17	1478	397	43	303
Pruitt, Eugene R., assignor of one-half to C. W. Johnson, Baltimore, Md. Safety attachment for gas-burners	381,484	Apr. 17	1784	475	43	364
Puchta, Emil, and R. Hoffmann, Washington, Mo. Tile-machine	381,591	May 29	2559	677	43	1096
Puffenberger, Henry B., Tiffin, Ohio. Corn-shock binder and compressor	384,279	June 12	658	176	43	1256
Puffer, Freeman W. (See Greene, Webster M., assignor.)						
Puffer, Stephen, Oxford, N. Y. Vehicle-wheel	381,509	Apr. 17	1826	483	43	372
Pugh, Cortes V., assignor to W. A. Hutchinson, Bowling Green, Mo. Wire-stretching machine	384,929	June 19	1622	421	43	1446
Pullman, George M., Chicago, Ill. Railway-car	383,067	May 15	1779	460	43	872
Pullman's Palace Car Company. (See Sessions, Henry H., assignor.)						
Purdy, Elbridge H., Cincinnati, Ohio. Car-brake	381,064	Apr. 10	1201	321	43	211
Purdy, Hiram, Burlington, Iowa. Reflector for electric lamps	381,167	Apr. 17	1323	353	43	274
Putman, John, assignor to M. A. Putman, Boardstown, Ill. Draft-equaliser	380,635	Apr. 3	488	137	43	99
Putman, Martha A. (See Putman, John, assignor.)						
Quarante, Pierre L., and E. D'Escalonne, Paris, France. Composition for preserving wood, &c.	380,393	Apr. 3	432	.....	43	88
Queateil, William P., Kansas City, Mo. Can-opener	380,406	Apr. 3	146	41	43	30
Quigg, George B., Thornton, assignor to himself and J. N. Young, Chicago, Ill. Car-brake	383,994	June 5	81	24	43	1137
Quigley, Robert J., Toronto, Ontario, Canada. Watch-case	382,190	May 1	455	118	43	597
Quigley, Robert J., Toronto, Ontario, Canada. Watch-case	384,640	June 19	1196	316	43	1354
Quilliam, Albert L., Chateaugray, N. Y. Mower	384,712	June 19	1309	342	43	1346
Quine, William W. (See Schleber, Henry H., assignor.)						
Quinn, James, Jr., assignor to W. Wharton, Jr., and Company, Philadelphia, Pa. Rail-chair	383,765	May 29	2988	743	43	1089
Quinn, Thomas J., and D. McLellan, Woodstock, Ontario, Canada. Device for checking horses	381,580	Apr. 24	1925	507	43	469
Quris, Nicolas, Kirchberg-on-the-Wechsel, Lower Austria, Austria-Hungary. Belt-coupling	380,695	Apr. 10	502	162	43	128

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Raby, Pierre A. (See Hutchkin and Raby.)						
Racer, John H., Bellbrook, Ohio. Hedge fence	384,713	June 19	1311	342	43	1388
Radford, Isaac H. (See Bruce, Hunter, assignor.)						
Ragsdale, William H., Versailles, Mo. Farm gate	384,280	June 12	659	176	43	1256
Rainnie, Gavin, Portland, New Brunswick, Canada. Track-lifter	383,983	June 5	219	65	43	1163
Ralston, Thomas B., Bothwell, county of Lanark, Scotland. Target and indicating device therefor	381,028	Apr. 10	1097	291	43	221
Ralya, John J., Springport, Ind. Saw	381,814	Apr. 24	2258	590	43	475
Ralya, William S., assignor to E. C. Atkins & Company, Indianapolis, Ind. Combined saw-jointer and gage	385,006	June 26	1749	452	43	1481
Ramey, Henry M., Grinnell, Iowa. Portable pantry	381,641	Apr. 24	2013	528	43	427
Ramsay, Henry W., Lincoln, Nebr. Truss-bridge	381,168	Apr. 17	1324	353	43	274
Ramsey, Paul, Dubuque, Iowa. Ruby-pin setter	384,544	June 12	1053	275	43	1328
Rancovan, John, assignor of one-half to J. S. Patterson, Cincinnati, Ohio. Car-coupling	382,730	May 15	1225	337	43	775
Ranck, William J. (See Kocher and Ranck.)						
Rand, Jefferson C., assignor of one-half to G. W. Hanes, Maynard, Iowa. Tool for removing watch-hands	380,407	Apr. 3	147	42	43	31
Randall, Charles A., New York, N. Y. Electrical time-stamp	380,584	Apr. 3	432	122 123	43	88
Randall, Charles A., New York, N. Y. Electrical time-stamp	380,585	Apr. 3	436	123	43	89
Randall, Charles A., New York, assignor, by mesne assignments, to W. D. Elger, Brooklyn, N. Y. Machine for cutting or punching checks, &c.	383,766	May 29	2983	742 744	43	1090
Randall, Charles W., and J. H. Smith, assignors of one-third to S. F. Emley, Jersey City, N. J. Scaffold for wooden buildings	382,901	May 15	1515	397	43	822
Randall, Edward S., Dayton, Ohio. Combined bottle-opener and liquid-dropper	384,471	June 12	932	242	43	1306
Randall, Isaac H., Boston, Mass. Advertising-rack	380,696	Apr. 10	503	163	43	128
Randall, Isaac H., Boston, Mass. Rail for street-railways and chairs	382,385	May 8	768	195	43	665
Randall, James, San Francisco, Cal. Fire-kindler	381,951	May 1	74	19	43	599
Randall, James D. (See Randall, Silas H., assignor.)						
Randall, Richard N., *et al.* (See Heath, Watson A., assignor.)						
Randall, Silas H., assignor of one-half to J. D. Randall, Wyoming, Ohio. Leather-creasing machine	381,029	Apr. 10	1098	292	43	221
Randleman, Martin C. (See Randleman, Zouave S. and M. C.)						
Randleman, Zouave S. and M. C., Carlisle, Iowa. Hay and fodder fork	384,281	June 12	660	177	43	1256
Randol, Harriet, Pottersburg, Kans. Provision-safe	381,721	Apr. 24	2134	559	43	451
Rank, George, Salem, Ohio. Harness-saddle	381,952	May 1	75	19	43	599
Ransom Stove Company. (See Rathbone, Clarence, assignor.)						
Rapp, Aaron. (See Richardson and Rapp.)						
Rappold, Peter. (See Flaher and Rappold.)						
Rarlon, William. (See Snow and Howard, assignors.)						
Rathbone, Clarence, assignor to Ransom Stove Company, Albany, N. Y. Cook-stove	385,135	June 26	1947	497	43	1521
Rathmann, Christian. (See Rathmann, George D. and C.)						
Rathmann, George D. and C., Blair, Nebr. Railway-crossing alarm-signal	384,390	June 12	827	215	43	1286
Rau, John, Belleville, Ill. Oven for cooking-stoves	383,147	May 22	1903	497	43	906
Rau, John, St. Louis, Mo. Oil-can	383,370	May 22	2218	568	43	965
Rau, John, assignor of one-half to A. F. Klotsbach, Belleville, Ill. Fan attachment for cradles	382,386	May 8	769	195	43	665
Rauch, Edward C. (See Saunders and Rauch.)						
Rautert, Fritz. (See Buschick and Rautert.)						
Rawson, Edmund G. (See Rhodes, Stephen E., assignor.)						
Ray, Sevrin, Alderley, Wis. Grain-divider	383,542	May 29	2505	661	43	1024
Raymond, Freeborn F., 2d, Newton, Mass. Nail making and distributing machine	380,596	Apr. 3	438	123 124	43	89
Raymond, Freeborn F., 2d, Newton, Mass. Nail making and distributing machine	380,818	Apr. 10	772	211	43	162
Raymond, Freeborn F., 2d, Newton, Mass. Machine for making, distributing, and driving nails	381,980	Apr. 17	1480	397 398	43	304
Raymond, Freeborn F., 2d, Newton, Mass. Nail feeding and distributing machine	383,911	June 5	98	29	43	1139
Read, John H., San Francisco, Cal. Cartridge-loading apparatus	382,630	May 15	1416	372	43	801
Reade, Charles A., Chicago, Ill. Vehicle-wheel	381,722	Apr. 24	2135	559	43	451
Reams, Andrew J., Augusta, Kans. Electric winding attachment for clocks	384,472	June 12	932	242 243	43	1307
Reardo, Joseph M. (See White, William E., assignor.)						
Reckenzaun, Anthony, London, England, assignor to Electric Car Company of America, Philadelphia, Pa. Dynamo-electric machinery	385,008	June 26	1852	474	43	1500
Reckenzaun, Anthony, London, England, assignor to Electric Car Company of America, Philadelphia, Pa. Secondary battery	385,009	June 26	9041	522	43	1530
Redding, William A., New York, assignor to F. W. Snow, Hillburn, N. Y. Switch-stand	384,714	June 19	1312	343	43	1368
Reddy, James M., Chicago, Ill. Steam-washer	380,739	Apr. 10	643	178	43	138
Redick, Joseph H. (See Redick, Reubin F. and J. H.)						
Redick, Reubin F. and J. H., Spencerville, Ohio. Detachable-link chain	382,554	May 8	1028	262	43	716
Redick, Reubin F. and J. H., Spencerville, Ohio. Saw-mill dog	382,555	May 8	1029	262	43	716
Redington, William H. (See Redliger, William, assignor.)						
Redington, William H., Chicago, Ill. Bottle-stopper	382,191	May 1	456	118	43	598
Redman, Thomas, Bradford, England. Velocipede	385,136	June 26	1948	498	43	1521
Redmon, James J. (See Hardwicke and Redmon.)						
Reed, Charles F. (See Boehm and Reed.)						
Reed, Edward F. (See Howard, Robert W., assignor.)						
Reed, James D. S., assignor of one-half to W. G. F. Reed, Chicago, Ill. Road-scraper	383,668	May 15	1779	460	43	872
Reed, James H., Lynn, Mass. Cuff-holder	381,642	Apr. 24	2014	529	43	427
Reed, William G. F. (See Reed, James D. S., assignor.)						
Reed, William H. (See Harmon, Charles H., assignor.)						
Reeder, Allen H. (See Perrine, Alfred T., assignor.)						
Rees, Thomas M., Pittsburg, Pa. Securing stanchions of vessels in place	382,630	May 8	1130	291	43	735
Reese, Abram, assignor to Reese Safety Brake Company, (limited,) Pittsburg, Pa. Car-brake	385,007	June 26	1750	453	43	1481
Reese, Charles D. (See Wallace and Reese.)						
Reese, Jacob, Pittsburg, Pa. Metallic railway-tie	384,785	June 19	1406	368	43	1406
Reese Safety Brake Company. (See Reese, Abram, assignor.)						
Reese, Thomas, Jr., Erie, Pa. Furnace bridge-wall	382,109	May 1	347	91	43	577
Reese, Zach J., *et al.* (See Ruteredo, John, assignor.)						
Reeves, Paul S., Philadelphia, Pa. Hand-charger for combining metals with chemicals, minerals, &c.	384,675	June 5	346	96	43	1187

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Reeves, Thomas H. (See Milburn, George E., assignor.)						
Regester & Sons, J. (See Dunnett, William D., assignor.)						
Rehfuss, George. (See Beasley and Rehfuss.)						
Rehfuss, George, J. G., and M. O., Philadelphia, Pa., assignors to American Barrel and Stave Company, Camden, N. J. Barrel-making machine	380,931	Apr. 10	949	251, 252	43	194
Rehfuss, George, J. G., and M. O., Philadelphia, Pa., assignor to American Barrel and Stave Company, Camden, N. J. Barrel-stave-cutting machine	384,786	June 19	1407	368, 369, 370	43	1406
Rehfuss, J. George. (See Beasley and Rehfuss.)						
Rehfuss, John G. (See Rehfuss, George, J. G., and M. O.)						
Rehfuss, Martin O. (See Beasley and Rehfuss.)						
Rehfuss, Martin O. (See Rehfuss, George, J. G., and M. O.)						
Reichart, Adam, *et al.* (See Henry, Charles A., assignor.)						
Reichenbach, Edward, Orrville, Ohio. Ditching-level	383,767	May 29	2825	744	43	1080
Reichenbach, Jacob J., Centralia, Ill. Display-frame	384,334	June 12	745	195, 196	43	1270
Reid & Co., James. (See Durell and Goldie, assignors.)						
Reid, Robert B. (See Donaldson, Walter H., assignor.)						
Reid, W. C. (See Larew, William H., assignor.)						
Reilly, Christopher P., New York, assignor of two-thirds to T. F. Ryder, West New Brighton, N. Y. Protector for electric-lamp sockets	382,110	May 1	346	91	43	577
Reilly, Patrick. (See Fox, Edward, assignor.)						
Reimers, Henry, Perry, Tex. Fire-escape	383,491	May 29	2422	643	43	1089
Rein, Burnard, assignor of one-half to J. Halteman, Detroit, Mich. Vapor-stove	384,391	June 12	889	215, 216	43	1286
Reinhard, Henry A., Columbus, Ohio. Inkstand	382,621	May 8	1131	291	43	735
Reinhardt, Louisa, Louisville, Ky. Washing-machine	381,643	Apr. 24	2015	529	43	928
Reininghaus, Gustav, Mayence, Hesse, Germany. Malt-kiln	385,137	June 26	1949	488, 489	43	1521
Reinisch, Charles, Newark, N. J. Shoe for traveling-bags	380,768	Apr. 10	702	184	43	149
Reinisch, Charles, Newark, N. J. Hinge for traveling-bags, &c	385,138	June 26	1950	499	43	1521
Reinohl, David C. (See Scott, William H., assignor.)						
Reins, William S. (See Seal, William B., assignor.)						
Reis, John, Rondout, N. Y., assignor of one-half to Brewers Ice Company, of New York. Switch for ice-runs	381,419	Apr. 17	1681	450, 451	43	345
Reisse, Richard A., St. Louis, Mo. Door-check	384,715	June 19	1313	343	43	1397
Reitenour, Henry. (See Heniser, Nicholas, assignor.)						
Reitler, Charles W., Denver, Colo. Electric pen-holder	381,953	May 1	78	19	43	529
Remley, Fred A., Iowa City, Iowa. Type-writing machine	385,008	June 26	1752	453	43	1481
Remus, Theodor, assignor of one-half to J. Scherbel, Dresden, Saxony, Germany. Apparatus for applying strips to boxes	383,656	May 29	2652	702, 703	43	1057
Remus, Theodor, assignor of one-half to J. Scherbel, Dresden, Saxony, Germany. Grooving apparatus for card-board, leather, and like material	385,201	June 26	2042	522	43	1540
Rendel, George W., Newcastle-upon-Tyne, England. Mounting and loading apparatus for guns	383,768	May 29	2827	744, 745	43	1080
Rensland, Peter, and C. Fisher, Port Jervis, N. Y. Dumping-grate	382,055	May 1	270	71	43	583
Rensselaer Manufacturing Company. (See Hall, Henry, assignor.)						
Restein, Julius, Philadelphia, Pa. Device for operating churns, washing-machines, &c	383,610	May 15	1666	438	43	854
Reuter, Conrad, Henderson, Ky. Egg-tester	380,518	Apr. 3	394	92, 93	43	66
Rex, Alfred C. (See Parmelee, William L., assignor.)						
Rexford, Mortimer S., Norman, Dak. Ter. Intermittent gripping device	383,371	May 22	2219	589	43	965
Rexford, Mortimer S., Norman, Dak. Ter. Steam-boiler	384,716	June 19	1313	343, 344	43	1397
Reynolds, Edwin, Providence, R. I. Rubber stamp	380,349	Apr. 3	68	22, 23	43	16
Reynolds, Edwin, Providence, R. I. Rubber stamp	383,321	May 22	2151	568	43	953
Reynolds, Gilbert C., J. and W. Paterson, Stockton, Cal. Combined header and thrasher	381,723	Apr. 24	2136	559	43	452
Reynolds, Henry C., assignor of one-half to J. A. C. Groner, Norfolk, Va. Sash lock and fastener	381,485	Apr. 17	1766	476	43	364
Reynolds, John, Chicago, assignor to W. B. Gilbert Austin, Ill. Paper holder and cutter	381,281	Apr. 17	1482	398	43	304
Reynolds, John H., Troy, N. Y. Ventilator	383,502	May 29	2560	677	43	1036
Reynolds, John P., Jr. (See Mitchell and Reynolds.)						
Reynolds, John W. (See Prescott, James E., assignor.)						
Reynolds, Nelson G., Bangor, Mich. Sleigh	380,819	Apr. 10	775	212	43	169
Reynolds, Stephen H. (See Hood and Reynolds.)						
Reynolds, Walter S., assignor to himself, S. E. Bradt, and L. E. Tomblin, De Kalb, Ill. Piano-mover	383,190	May 22	1956	513	43	917
Reynolds, William W., Rutland, Vt. Scale-beam	383,912	June 5	100	30	43	1140
Rhea, J. S., *et al.* (See Lockett, John E., assignor.)						
Rhea, John W., *et al.* (See Lockett, John E., assignor.)						
Rhind, Frank, Meriden, Conn., assignor of one-half to C. S. Upton, New York, N. Y. Central-draft lamp and burner	382,270	May 1	575	145	43	619
Rhind, Frank, assignor of one-half to E. Miller & Company, Meriden, Conn. Lantern	382,831	May 15	1412	378	43	802
Rhind, Frank, assignor of one-half to E. Miller & Company, Meriden, Conn. Extension-lamp fixture	383,769	May 29	2829	745	43	1091
Rhind, Frank, assignor to E. Miller & Company, Meriden, Conn. Ornamented metallic surface	384,282	June 12	661	177	43	1257
Rhodes, Benjamin W. (See Bernard and Rhodes.)						
Rhodes, James B., Cheboygan, Mich. Saw-tooth swage	382,325	May 8	671	169	43	646
Rhodes, Stephen E., assignor of one-half to E. G. Rawson, Saratoga Springs, N. Y. Steam-radiator	381,954	May 1	78	20	43	529
Rhodes, Stephen E., assignor of one-half to E. G. Rawson, Saratoga Springs, N. Y. Radiator	381,955	May 1	80	20	43	530
Rhodes, Vernon, Memphis, Tenn. Cultivator	381,169	Apr. 17	1365	354	43	274
Ribble, George W., Harrisonburg, Va. Combination-tool	381,794	Apr. 24	2137	559	43	452
Rice, Alva C., assignor to Stilwell & Bierce Manufacturing Company, Dayton, Ohio. Horizontal thrust-bearing	384,930	June 19	1663	421	43	1446
Rice, David H., Brookline, assignor to J. Ferguson, Bridgewater, Mass. Steam-valve	380,661	Apr. 3	389	146, 147	43	109
Rice, David, H., Brookline, Mass., assignor to Marlin Fire Arms Company, Hartford, Conn. Extracting mechanism for revolvers	385,009	June 26	1754	454	43	1488
Rice, E. Wilbur, Jr., Lynn, Mass. Reactive coil	381,489	Apr. 17	1682	451	43	345
Rice, E. Wilbur, Jr., Lynn, Mass. Rheostat	383,913	June 5	101	30	43	1140
Rice, Fred, Shopiere, Wis. Wagon-brake	382,271	May 1	576	146	43	619
Rice, Gerrett S., deceased, Chicago, Ill.; S. Rice, administratrix. Music-chart	383,011	May 15	1667	439	43	864

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Rice, James, assignor of one-half to B. T. De Bean and J. M. Talbott, Prairie Creek, Ind. Railway-rail crossing	384,717	June 19	1315	344	43	1397
Rice, John S. (See Edson, Jacob, assignor.)						
Rice, Nathaniel B., Chicago, Ill. Evaporator	385,902	June 26	2043	523	43	1540
Rice, Sarah, administratrix. (See Rice, Gerrett S.)						
Ried, Stephen L., Scranton, Pa. Combined coat and pantaloons supporter	381,888	Apr. 24	2389	621	43	499
Richards, Francis H., Hartford, assignor to American Button Fastener Company, New Britain, Conn. Button-setting machine	381,030	Apr. 10	1099	292, 293	43	223
Richards, Francis H., Hartford, assignor to American Button Fastener Company, New Britain, Conn. Button-setting machine	381,031	Apr. 10	1103	294, 295	43	223
Richards, Frank H., Troy, N. Y. Centrifugal machine	384,718	June 19	1316	344	43	1397
Richards, Ivan W., Colora, Md. Lawn-mower	384,787	June 19	1411	370	43	1407
Richards, John, assignor of two-thirds to Z. J. Reese and J. D. Sinclair, Fort Worth, Tex. Chairs	382,387	May 8	770	195	43	985
Richards, Lovell A., Grayson, Cal. Disk harrow	382,731	May 15	1267	337	43	775
Richards, William G., Brooklyn, assignor to Peckham Car Wheel Company, New York, N. Y. Car-wheel	383,089	June 5	219	65	43	1163
Richardson, Benjamin F., Cincinnati, Ohio. Vehicle-axle	382,902	May 15	1516	397	43	893
Richardson, Benjamin P., Boston, Mass. Type-writer cabinet	383,492	May 29	2423	643	43	1089
Richardson, E. Jessie H., Detroit, Mich. Device for sprinkling lawns	385,069	June 26	1856	474	43	1502
Richardson, George, Masardville, Tex. Sheep-shearing machine	384,545	June 12	1054	275	43	1339
Richardson, John T., Harrisburg, Pa., and A. Rapp, Holland, N. J., assignors of one-third to A. H. Ege, Mechanicsburg, Pa. Rolling-mill	383,990	June 5	220	66	43	1163
Richardson, Leonard, *et al.* (See Leland, Edwin A., assignor.)						
Richardson Manufacturing Company. (See Parker, Gardner R., assignor.)						
Richardson, William S., Boston, Mass. Fastening for gloves	383,069	May 15	1781	460	43	878
Richardson, William S., Boston, Mass. Glove-fastening	383,070	May 15	1782	460	43	873
Richardson, William S., Boston, Mass. Fastening for gloves	383,071	May 15	1783	461	43	873
Richardson, William S., Boston, Mass. Fastening for gloves	383,072	May 15	1784	461	43	873
Richardson, William S., Boston, Mass. Glove-fastening	383,073	May 15	1785	461	43	873
Richardson, William S., Boston, Mass. Glove-fastening	383,074	May 15	1786	462	43	873
Richardson, William S., Boston, Mass., assignor to Ball and Socket Fastener Company, Nashua, N. H. Fastening for gloves	382,904	May 15	1519	397, 398	43	893
Richardson, William S., Boston, Mass., assignor to Ball and Socket Fastener Company, Nashua, N. H. Fastening for gloves	382,905	May 15	1520	398	43	893
Richardson, William S., Boston, and J. B. Chase, Newton, Mass., assignors to Ball and Socket Fastener Company, Nashua, N. H. Glove-fastening	382,903	May 15	1518	397	43	893
Richmond City Mill Works. (See Mawhood, Jonathan D., assignor.)						
Richmond, Gilbert M., Chicago, Ill., assignor, by mesne assignments, to L. A. Watson, Ashtabula, Ohio. Feather duster	385,070	June 26	1857	474	43	1502
Richmond, Jewett M., *et al.* (See Britton, William H., assignor.)						
Richter, Aug. F. (See Hambruch, Heinrich F., assignor.)						
Richter, Gustav. (See Majert and Richter.)						
Richwine, Harvy, Dora, Ind. Fence	380,457	Apr. 3	224	61	43	46
Rickard, Daniel H., Washington, D. C. Draft-equaliser	382,336	May 8	671	169	43	646
Rickard, William E. (See Bollick and Rickard.)						
Richards, William T., *et al.* (See Jewell, Crewe, assignor.)						
Ricketson, James M., New Bedford, Mass. Grubbing-pinchers	381,581	Apr. 24	1926	507	43	410
Ricks, Hiram L., Eureka, Cal. Preserving submerged timbers	380,820	Apr. 10	776	212	43	169
Rider, John N. (See Hill and Rider.)						
Riedell, John H., Lynn, assignor to C. F. Brown, trustee, Reading, Mass. Abrading-pad	384,076	June 5	347	98	43	1187
Ries, Elias E., assignor of one-half to A. H. Henderson, Baltimore, Md. Dynamo-electric generator	381,421	Apr. 17	1685	452, 453	43	345
Ries, Elias E., assignor of one-half to A. H. Henderson, Baltimore, Md. Heating by electricity	381,815	Apr. 24	2260	500, 501	43	475
Ries, Elias E., assignor of one-half to A. H. Henderson, Baltimore, Md. Electric heating apparatus for railway-cars	381,816	Apr. 24	2264	501, 502	43	475
Ries, Elias E., assignor of one-half to A. H. Henderson, Baltimore, Md. Electric heating system	381,817	Apr. 24	2271	502, 503	43	476
Ries, Elias E., assignor of one-half to A. H. Henderson, Baltimore, Md. Electro-chemical heating	381,818	Apr. 24	2275	503, 504	43	477
Ries, Elias E., assignor of one-half to A. H. Henderson, Baltimore, Md. Heating railway-cars by electro-chemical means	381,819	Apr. 24	2280	504, 505	43	477
Ries, Elias E., and A. H. Henderson, Baltimore, Md. Underground conduit and grip for electric railways	383,770	May 29	2833	746	43	1091
Ries, George A., Poplar Bluff, Mo. Cloth-cutting machine	381,644	Apr. 24	2016	529	43	488
Riesh, Peter, assignor to L. Wolf Manufacturing Company, Chicago, Ill. Core-arbor for casting carved pipe	381,645	Apr. 24	2017	529	43	488
Rietschy, Charles T., assignor to J. I. Barnhurst, Philadelphia, Pa. Machine for attaching forks to umbrella-stretchers	383,075	May 15	1786	462	43	874
Riexinger, George, Buffalo, N. Y. Child's carriage	382,491	May 8	929	235	43	695
Rigby, Robert M., Kansas City, Mo. Combined book and index	383,543	May 29	2506	661	43	1035
Riggs, William A., Jr., New Orleans, La. Cistern-clamp fastener	381,282	Apr. 17	1483	399	43	304
Rightmire, Harry C., assignor of one-half to T. A. Pearce, Philadelphia, Pa. Reversing mechanism for knitting-machines	385,322	June 26	2223	578	43	1577
Riker, Andrew L., New York, N. Y. Electrical indicator	381,492	Apr. 17	1689	453	43	346
Riker, Andrew L., New York, N. Y. Dynamo-electric machine or motor	384,077	June 5	348	98	43	1187
Riley, Edward, Milwaukee, Wis., assignor of one-half to Milwaukee Harvester Company. Molder's snap-flask	385,903	June 26	2044	523	43	1540
Ringe, Julius, New York, N. Y. Curtain-pole	380,932	Apr. 10	951	258	43	194
Rinman, G. Oscar, and J. Zimmerman, Cincinnati, Ohio; said Rinman assignor to said Zimmerman. Meat-cutting machine	382,192	May 1	457	119	43	598
Ripley, James L., *et al.* (See Langguth, Charles, assignor.)						
Ripley, James R., Memphis, Tenn. Circular sawing machine	381,176	June 5	497	136	43	1217
Ripley, Royal H., Minneapolis, Minn. Stock-car	384,931	June 19	1624	422	43	1446
Rissone, Giovanni B. (See Capra and Rissone.)						
Ritchel, Charles F., Bridgeport, Conn., assignor to J. A. Burke, New York County, N. Y. Lawn-mower	382,388	May 8	771	196	43	986
Ritea, Francis M. (See Westinghouse and Ritea.)						
Ritea, Francis M., assignor to Westinghouse Machine Company, Pittsburg, Pa. Steam-engine	382,322	May 22	2151	568	43	953
Ritter, John L., Milnes, Va. Egg crate and tray	382,632	May 8	1132	292	43	736
Ritter, Wilhelm, Altona, Prussia, Germany. Jointing-machine for barrel-staves	382,340	May 22	2043	536	43	894

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Ritty, Sebastian. (See Thomas and Ritty.)						
Rivers, Thomas L., Newark, N. J. Handle	381,646	Apr. 24	2019	530	43	498
Riverside Iron Works. (See Bray, Thomas J., assignor.)						
Robards, Edward, Stilesville, Ind. Land-measuring machine	382,436	May 8	837	215	43	679
Robb, James T., assignor to Bergmann & Company, New York, N. Y. Insulating-joint	382,272	May 1	577	146	43	339
Robb, Lucian B., Cincinnati, Ohio. Dry closet	384,932	June 19	1625	428	43	1446
Robbins, Fabius. (See Donh and Robbins.)						
Robbins, George M., assignor of two-thirds to H. F. Arms and C. C. Bosher, Worcester, Mass. Car-coupling	383,991	June 5	222	96	43	1164
Robbins, Isaiah, Jr. (See Shawand Buxton, assignors.)						
Roberts, Albert E. (See Baker and Huyck, assignors.)						
Roberts, Benjamin, Indianapolis, Ind. Smoke-condenser	382,665	May 8	1196	311	43	749
Roberts, Cyrus, Three Rivers, Mich. Potato-digger	384,641	June 19	1197	317	43	1365
Roberts, Cyrus, Three Rivers, Mich. Potato-digger	385,071	June 26	1859	475	43	1502
Roberts, David M., Chicago, Ill. Machine for forming and polishing door-panels	384,788	June 19	1412	370 / 371	43	1407
Roberts, Frank E., assignor of one-half to P. M. Kroeck, Austintown, Ohio. Boot-frame for vehicles	380,933	Apr. 10	962	253	43	194
Roberts, Henry, Pittsburg, Pa. Reel for wire-rod mills	382,492	May 8	830	236	43	695
Roberts, Henry, assignor to himself, G. T. Oliver, and A. J. Day, Pittsburg, Pa. Guide for wire-rod mills	381,582	Apr. 24	1927	508	43	410
Roberts, Lorenzo D. (See Tolman, Gayger D., assignor.)						
Roberts, Lorenzo D. (See Tolman and Roberts.)						
Roberts, W. E. (See Stuart, Levi B., assignor.)						
Roberts, William B., Sullivan, Ind. Cultivator, grain-drill, and harrow	382,076	May 15	1789	463	43	674
Robertson, George L. (See Straffin and Robertson.)						
Robertson, John H., New York, N. Y. Car-brake	384,870	June 19	1546	402	43	1431
Robidean, Peter, Plattsburg, N. Y. Machine for cutting box-sections	383,148	May 22	1903	497 / 498	43	986
Robinson, Charles H., St. Paul, Minn. Tube-expander	381,583	Apr. 24	1928	508	43	410
Robinson, Clark, Hartley, Iowa, assignor of one-half to F. A. Burger, St. Paul, Minn. Eraser	383,149	May 22	1906	496	43	907
Robinson, Don C., Madison, Ind., assignor to E. C. Atkins & Company, of Indiana. Saw-jointer	382,327	May 8	672	170	43	646
Robinson, Edward W., Portland, Me. Music-holder	385,010	June 26	1757	454	43	1482
Robinson, Eston J., Toledo, Ohio. Convertible drain-cleaner	385,283	June 26	2174	555	43	1566
Robinson, Francis W., Richmond, Ind. Axle for thrashing-machines	382,009	May 1	198	49	43	548
Robinson, George W., Marshall, Mich. Fire-extinguisher for car-heaters	384,642	June 19	1198	317	43	1365
Robinson, Horace V., Fall River, Mass. Rod-cutter	385,139	June 26	1952	499	43	1521
Robinson, John E., Philadelphia, Pa. Construction of canals, railway-beds, &c	380,934	Apr. 10	953	253	43	194
Robinson, John S., Mannington, assignor to L. G. Robinson, Marion County, W. Va. Saw-guide	381,423	Apr. 17	1690	453	43	348
Robinson, L. G. (See Robinson, John S., assignor.)						
Robinson, Mark H. (See Willams and Robinson.)						
Robinson, Stillman W., Columbus, Ohio. Machine for uniting the soles and uppers of boots or shoes	380,662	Apr. 3	531	147	43	107
Robinson, Theodore D. (See Willis, Ambrose, assignor.)						
Robinson, Thomas, Philadelphia, Pa. Reticulated or open work of metal bars	383,270	May 22	2044	537	43	934
Robison, Charles W. and R. B., Allegheny City, Pa. Vehicle-seat	380,663	Apr. 3	534	147	43	107
Robison, Robert B. (See Robison, Charles W. and R. B.)						
Roby, De Witt C., Eureka, Kans. Hay-rack	382,328	May 8	672	170	43	647
Roche, John. (See Duplessis, Elonild, assignor.)						
Roche, William W., Hampton, Va. Truck	384,078	June 5	349	98	43	1187
Rockenfield, William L. (See Everson, George R., assignor.)						
Rocker Spring Company. (See Bunker, William I., assignor.)						
Rocker Spring Company. (See Stevens, Asher B., assignor.)						
Rockingham Machine Company. (See Fowler and Warren, assignors.)						
Rockwell, Frederick C., *et al.* (See Long, George S., assignor.)						
Rodgers, William H., Whitestone, N. Y. Indicator for boiler-feeds	382,732	May 15	1288	337 / 338	43	776
Rodiger, William, Chicago, Ill. Bottle-closure	385,011	June 26	1757	455	43	1482
Rodiger, William, assignor of one-half to W. H. Redington, Chicago, Ill. Mucilage-bottle	380,458	Apr. 3	225	61	43	46
Roe, Alpheus E., assignor to Tatum & Bowen, San Francisco, Cal. Crushing-mill	380,821	Apr. 10	776	212	43	163
Roe, Alpheus E., assignor of one-half to J. H. Bolles, San Francisco, Cal. Cable-railway grip	381,632	Apr. 10	1107	295 / 296	43	223
Roe, Cyrenius C., Wales, N. Y. Pilot's and engineer's signal for steamboats	380,350	Apr. 3	70	23	43	17
Roesling, Frederich, Cleveland, Ohio. Tobacco-pipe	384,392	June 12	830	216	43	1296
Roessler, Franz, *et al.* (See Rumpf, Gustav, assignor.)						
Rogan, C. W., *et al.* (See Bartlett, Thomas J., assignor.)						
Rogers, Arthur C., and H. Stens, Faribault, Minn. Wheel-fender for carriages	384,335	June 12	746	198	43	1271
Rogers & Brother. (See White, William W., assignor.)						
Rogers, Edmund D., Church End, Finchley, county of Middlesex, England, assignor to P. Wilcox, New York, N. Y. Means for securing stereotype-plates which are cast separately from their beds	381,820	Apr. 24	2287	595	43	479
Rogers, Elias H., Durham, Conn. Pipe-stem	381,170	Apr. 17	1327	354	43	274
Rogers Fence Company. (See Earnest, George H., assignor.)						
Rogers Fence Company. (See Rogers, Timothy, assignor.)						
Rogers, Samuel C., Hamilton, Ontario, Canada, assignor to Hart Emery Wheel Company, (limited.) Saw-filing machine. (Reissue.)	10,937	June 5	579	157	43	1234
Rogers, Timothy, Kenton, assignor to Rogers Fence Company, Springfield, Ohio. Stairway	385,012	June 26	1758	455	43	1482
Rogers, William, Pittsburg, Pa., and W. H. Rogers, Wheeling, W. Va. Manufacture of planished sheet-iron	380,822	Apr. 10	777	213	43	163
Rogers, William H. (See Rogers, William and W. H.)						
Rohde, Peter W., assignor of one-half to Meinera & Schuette, New York, N. Y. Watch-balance	380,709	Apr. 10	704	194	43	149
Rolapp, Otto F. B., Fulton, Ky. Stump-extractor	380,351	Apr. 3	71	23	43	17
Rollings, Winfield S., assignor to R. R. Rouse, Indianapolis, Ind. Chain-wrench	381,494	Apr. 17	1690	453	43	346
Romain, James H. (See Hoffmann, Otto C., assignor.)						
Romer Bros. Manufacturing Co. (See Romer, John P. and N., assignors.)						
Romer, John P. and N., assignors to Romer Bros. Manufacturing Co., Gowanda, N. Y. Saw-gummer	383,191	May 22	1959	513	43	917
Romer, Nicholas. (See Romer, John P. and N.)						
Rood, John, and I. Vaughan, Salem, Mass. Machine for shaving hides or skins	383,914	June 5	104	30	43	1141

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Roome, Henry C., Jersey City, N. J. Electric burglar-alarm	382,439	May 8	838	215 / 216	43	679
Root, S. Emerson. (See Piper, Edwin S., assignor.)						
Roots, James, Wolseley Gardens, Gunnersbury, county of Middlesex, England. Oil-lamp	384,079	June 5	350	99	43	1187
Roovers, Alfred. (See Williams and Roovers.)						
Rose, Abram D. (See Davis, Willis, assignor.)						
Rose, Henry C., Leadville, Colo. Addition-register for pencils	380,519	Apr. 3	325	83	43	66
Rose, Henry C., Leadville, Colo. Mouth-piece for pipes	380,520	Apr. 3	326	83	43	67
Rose, James, Franklin, Mass. Pipe-wrench	383,544	May 29	2507	662	43	1025
Rose, James M., Syracuse, N. Y. Blank-book	384,933	June 19	1626	422	43	1447
Rose, John, assignor of one-half to C. F. Dellner, Philadelphia, Pa. Umbrella-runner retainer	380,935	Apr. 10	954	253	43	195
Rose, Reuben A., Geneseo, N. Y. Spring-tooth harrow	381,171	Apr. 17	1327	354	43	274
Rose, Walter A. (See McGarvey, William B., assignor.)						
Rosencrans, Albert C., Evansville, Ind. Plow	384,283	June 12	868	177 / 178	43	1257
Rosenthiehl, Daniel A. (See Poirrier and Rosenthiehl.)						
Rosenwasser, Nathan, Cleveland, Ohio, and F. Rosewater, Omaha, Nebr. Game-counter	381,425	Apr. 17	1691	454	43	346
Rosewater, Frank. (See Rosenwasser and Rosewater.)						
Ross, David M. (See Lindsay and Ross.)						
Ross, George and W., Troy, N. Y. Water-engine valve	384,336	June 12	747	196	43	1271
Ross, Josiah, Buffalo, N. Y. Wood-planing machine	385,284	June 26	2175	555	43	1566
Ross, Lester E., St. Paul, Minn., assignor to Ross Loom Company, Nashua, N. H. Shuttle-motion for looms	382,077	May 15	1791	463	43	674
Ross, Levi J., Geodwin, Dak. Ter. Rope-measuring device	381,193	May 1	450	119	43	598
Ross Loom Company. (See Ross, Lester E., assignor.)						
Ross, Samuel A., assignor of one-half to H. R. Barnhurst, Erie, Pa. Pipe expander and cutter	384,080	June 5	352	99	43	1188
Ross, William. (See Ross, George and W.)						
Ross, William, Troy, N. Y. Cylinder for hydraulic motors	382,389	May 8	772	196	43	698
Ross, William S., Madisonville, Ky. Combination implement	384,592	June 12	1123	297	43	1311
Rossman, William P., Hudson, N. Y. Hot-air register for fire-place heaters	381,283	Apr. 17	1483	380	43	304
Rötel, Carl, assignor to Grusonwerk, Magdeburg-Buckau, Prussia, Germany. Breech-loading ordnance	383,378	May 22	2219	569	43	965
Roswald, Raymond F., New York, N. Y. Apparatus for refrigerating and ice-making by the use of ammonia	383,251	May 22	2045	537 / 538 / 539	43	934
Roth, George, Highland, Ill. Machine for liquidizing condensed milk	383,915	June 5	105	31	43	1141
Roth, George, Highland, Ill. Milk-preserving machine	385,013	June 26	1760	455	43	1482
Roth, Julius. (See Kochendorfer and Roth.)						
Rothe, August, New York, assignor, by mesne assignments, to W. W. and C. H. Cotton, Brooklyn, N. Y. Book-index-cutting machine	383,276	May 22	2053	539	43	936
Rothwell, William E., assignor to Warnock & Co., Galt, Ontario, Canada. Fifth-wheel	383,323	May 22	2153	568	43	953
Roubinet, Eli. (See Maury and Roubinet.)						
Roullié, Edmond J., and L. A. Singler, Paris, France. Car-coupling	381,033	Apr. 10	1108	296 / 297	43	224
Rourk, Francis, London, Ontario, Canada. Velocipede	384,643	June 19	1199	317	43	1365
Rouse, Roswell R. (See Rollings, Winfield S., assignor.)						
Rowe, Lewis H., *et al.* (See Kearney, William F., assignor.)						
Rowen, Henry, *et al.* (See Mullica, John and R. F., assignors.)						
Rowland, Charles L., Brooklyn, N. Y. Gas-pressure regulator	384,284	June 12	663	178	43	1257
Rowland, Thomas F., New York, W. E. Hill and A. McLachlan, Brooklyn, N. Y.; said Hill and McLachlan assignors to said Rowland. Cylinder-welding apparatus	384,081	June 5	353	100	43	1188
Rowland, Thomas F., New York, W. E. Hill and A. McLachlan, Brooklyn, N. Y.; said Hill and McLachlan assignors to said Rowland. Cylinder-welding apparatus	384,082	June 5	354	100	43	1189
Rowlett, Jacob V., Richmond, Ind. Lawn-mower	383,829	May 29	2030	774 / 775	43	1110
Rownd, R. M. (See Timms, James, assignor.)						
Royal Machine Manufacturing Company. (See Ilsley, George, assignor.)						
Royce, Henry W., Chicago, Ill. Receptacle for check-slips, &c	382,733	May 15	1290	338	43	776
Royle, John J., Manchester, county of Lancaster, England. Coffee or tea pot	380,521	Apr. 3	326	93, 94	43	67
Ru Tou, Hiram W. (See Gere, Ru Tou, and Kelley.)						
Rubin, Max, New York, N. Y. Fan	382,242	May 1	532	136	43	611
Rudolph, Calvin F. (See Archer, Roger W., assignor.)						
Rudolph, Christian, assignor to K. Oehler, Offenbach, near Frankfort-on-the-Main, Germany. Production of yellow coloring-matter	382,832	May 15	1420	.....	43	802
Rueger, Charles C., Anaconda, Mont. Ter. Ore-concentrator	382,833	May 15	1421	372	43	802
Ruesch, Jacob, Milwaukee, Wis. Lock-up for printers' forms	380,597	Apr. 3	441	124	43	90
Ruffhead, Thomas G., Renovo, Pa. Car-door	382,943	May 1	533	136	43	611
Ruffley, George E. (See Aughenbaugh and Ruffley.)						
Ruffner, Daniel B., *et al.* (See Dunn, William, assignor.)						
Rugg, Datus E., assignor to R. E. Rugg, Albany, N. Y. Music-holder	381,486	Apr. 17	1737	476	43	364
Rugg, Earle L., Woodland, Cal. Astronomical apparatus	384,285	June 12	664	178	43	1257
Rugg, Rittie R. (See Rugg, Datus E., assignor.)						
Ruggles, Daniel, Fredericksburg, Va. Signaling at sea	382,056	May 1	271	.....	43	562
Rumpf, Gustav, Frankfort-on-the-Main, Germany, assignor to F. Roessler and J. Haasbacher, New York, N. Y. Manufacture of chloroform from acetone	383,992	June 5	224	66	43	1164
Rumsey, Albert R. (See Skinner, Thomas, assignor.)						
Rumsey, Charles B., Homer, N. Y. Wire-twisting tool	382,666	May 8	1199	311	43	749
Rumsey, Charles B., assignor to Wire Fabric Company, Homer, N. Y. Bobbin-winding machine	380,352	Apr. 3	72	24	43	17
Runkel, John P., Milwaukee, Wis. Automatic door for elevator-wells	384,083	June 5	356	101	43	1189
Runkle, Benjamin P. (See Platt, William M., assignor.)						
Ruperti, Henri. (See Grätzner and Ruperti.)						
Rush, John, and E. Oldfield, Norwich, Conn. Electric stopping mechanism for looms	384,934	June 19	1627	423	43	1447
Rush, John G., West Willow, Pa. Portable trestle	381,510	Apr. 17	1887	483	43	373
Rushton, John H., Canton, N. Y. Locking steering-gear	383,593	May 29	2561	677	43	1037
Rushton, John H., Canton, N. Y. Boom-fastening	383,594	May 29	2562	678	43	1037
Rushville School Furniture Company. (See Murray, Eli, assignor.)						
Russ, Norman W., London, England. Coin-operated electrical apparatus	382,734	May 15	1292	338 / 339 / 340	43	776
Russell, Robert F., Abilene, Kans. Hame-attachment	384,084	June 5	357	101	43	1189
Russell, Robert F., Abilene, Kans. Hame-tug	384,085	June 5	358	101	43	1189

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Russell, Edward H., Park City, Utah Ter. Treating ores and metallurgical products	381,849	Apr. 24	2332	.....	43	488
Russell, Edward H., Park City, Utah Ter. Treating ores and metallurgical products	381,850	Apr. 24	2334	.....	43	488
Russell, Jacob, Brooklyn, N. Y. Machine for making building-anchors	385,140	June 26	1953	500	43	1522
Russell, Michael J., Jersey City, N. J. Piston-packing	383,253	May 22	2054	539	43	936
Russell & Morgan Printing Company. (See Murray, Samuel J., assignor.)						
Russell, Samuel, Brooklyn, N. Y., assignor to Central Electrical Company, of New York. Secondary battery	383,150	May 22	1997	498	43	907
Russell, Trumbull G., St. Louis, Mo. Sash-balance	383,414	May 22	2292	606	43	977
Rust, Armistead, U. S. Navy. Reel life-buoy	385,383	June 26	2235	{572 573}	43	1577
Rust, Theodore S., Meriden, Conn., assignor to Scovill Manufacturing Company, New York, N. Y. Photographic camera	382,735	May 15	1295	310	43	777
Rutledge, John W., Shannondale, Ind. Gate	380,636	Apr. 3	489	137	43	169
Rutledge, William O., Galveston, Tex. Car-coupling	384,217	June 5	555	153	43	1268
Rutt, Levi M. (See Gamble and Rutt.)						
Rutter, Robert, Butte City, Mont. Ter. Tire-upsetting machine	381,685	Apr. 10	1201	392	43	241
Ryder, Henry M., assignor of one-half to L. E. White, Taunton, Mass. Wrench	380,353	Apr. 3	75	24	43	18
Ryder, Thomas F. (See Reilly, Christopher P., assignor.)						
Sabens, Stephen B., New Bedford, Mass. Railway-switch	385,141	June 26	1956	{500 501}	43	1522
Sabine, Hylas, Richwood, assignor of one-half to L. C. Newsom, Columbus, Ohio. Car-coupling	380,936	Apr. 10	955	{253 254}	43	195
Sackett, Howard T. (See Trowbridge, Frank, assignor.)						
Safely, George W. H., New Orleans, La. Bran-remover	384,719	June 19	1318	344	43	1309
Safety Hatch Door Company. (See Herman, Emile J., assignor.)						
Safford, Fred H. (See Pedrick, Knott H., assignor.)						
Sally, John, *et al.* (See Taylor, Miles D., assignor.)						
Salmon, Samuel. (See Coxe and Salmon.)						
Salom, Pedro G. (See Morris and Salom.)						
Salter, George, and J. Walker, West Bromwich, England. Velocipede-saddle	381,473	June 12	935	243	43	1307
Salzer, Henry, Baltimore, Md. Food package and preparing the same	384,720	June 19	1319	.....	43	1308
Salzer, Henry, Baltimore, Md. Preserving food	384,721	June 19	1320	.....	43	1308
Sampson, Luther B., Rochester, N. H. Car-coupling	382,390	May 8	774	196	43	686
Samuel, Lewis T. (See Hirsch, Feodor, assignor.)						
Sanchez, José, Mexico, Mexico. Exercising-machine	382,440	May 8	847	216	43	680
Sanders, George A. (See Newman, Nelson, assignor.)						
Sanders, George A. (See Newman and Sanders.)						
Sanders, Hampton S., Magnolia, Ark. Car-coupling	385,204	June 26	2046	523	43	1540
Sandwich Enterprise Company. (See Real, Thomas W., assignor.)						
Sanford, George D., Peekskill, N. Y. Hot-air furnace	384,789	June 19	1414	371	43	1408
Sansum, Oliver B., *et al.* (See Keller, Henry R., assignor.)						
Sargeant, Edmund K., Brockville, Ontario, Canada. Machine for making coffee	382,111	May 1	349	92	43	577
Sargeant Manufacturing Company. (See Grummon, Robert S., assignor.)						
Sargeant, T. B. (See Braddock, Warren L., assignor.)						
Sargent & Company. (See Sargent, Henry B. assignor.)						
Sargent, Henry B., assignor to Sargent & Company, New Haven, Conn. Manufacture of door-keys	383,012	May 15	1688	439	43	854
Sargent, James F., Manchester, N. H. Dental plate	385,142	June 26	1957	501	43	1522
Sargent, John N., Aurora, assignor to himself and G. H. Wymond, Dearborn County, Ind. Draw-band	381,426	Apr. 17	1693	454	43	847
Sargent, William B., San Francisco, Cal. Necktie-fastener	383,903	June 5	226	66	43	1164
Sargent, William H., Weymouth, Mass. Filtering-faucet	383,493	May 29	2423	644	43	1010
Sassack, William, Brooklyn, N. Y. Roundabout	384,393	June 12	831	216	43	1306
Sauer, William D., Ashton, Iowa. Four-horse evener	380,522	Apr. 3	328	94	43	67
Saunders, Alexander, Yonkers, N. Y. Combined pipe cutting and threading tool	380,537	Apr. 10	957	254	43	195
Saunders, Alfred D., Brooklyn, N. Y. Spring-motor	382,556	May 8	1030	263	43	716
Saunders, Alfred D., Brooklyn, N. Y. Mail-conveying apparatus	383,771	May 29	2838	{740 747}	43	1099
Saunders, Harry, Toledo, Ohio, and E. C. Ranch, Monroe, Mich. Felt-boot protector	380,923	Apr. 10	779	213	43	163
Saunders, Samuel L., Lynn, Mass. Rack for holding boots and shoes	380,938	Apr. 10	959	255	43	195
Sawyer, Albert. (See Tenney, Charles L., assignor.)						
Sawyer, Andrew W., Providence, R. I. Cuff-holder	384,722	June 19	1321	345	43	1309
Sawyer, Charles H., assignor of one-half to H. A. Smith, Minneapolis, Minn. Wheel-scraper	380,354	Apr. 3	76	24, 25	43	18
Sawyer, George M., Glens Falls, N. Y. Fastening for lacing-cords	380,523	Apr. 3	329	94	43	67
Sawyer, Henry, *et al.* (See Hamblin, Silvanus and S. M., assignors.)						
Sawyer Spindle Company. (See Wood, Anris, assignor.)						
Sawyer, Ruben A., Columbus, Ohio Bridge	381,584	Apr. 24	1920	{508 509}	43	410
Sayre, Reuben H., New Martinsville, assignor of two-thirds to T. W. and J. W. Carroll, Keyser, W. Va. Gate	382,906	May 15	1521	388	43	822
Scales, Charles H., Toronto, Ontario, Canada. Suspender attachment	382,834	May 15	1492	373	43	803
Scales, Samuel H. (See Baldwin, Henry D., assignor.)						
Scarles, Benjamin, assignor to Clinton Wire Cloth Company, Clinton, Mass. Wire-netting machine	380,664	Apr. 3	534	{147 148}	43	107
Scarles, Benjamin, assignor to Clinton Wire Cloth Company, Clinton, Mass. Wire-netting machine	380,665	Apr. 3	540	146	43	109
Scarles, Benjamin, assignor to Clinton Wire Cloth Company, Clinton, Mass. Mechanical movement	380,666	Apr. 3	542	149	43	109
Scarles, Benjamin, assignor to Clinton Wire Cloth Company, Clinton, Mass. Wire twisting and winding mechanism	380,667	Apr. 3	544	149	43	109
Scarles, Benjamin, assignor to Clinton Wire Cloth Company, Clinton, Mass. Wire-netting	385,143	June 26	1958	501	43	1523
Schaal, Engen, Stuttgart, Würtemberg, Germany. Manufacture of artificial copal	382,907	May 15	1503	.....	43	694
Schaefer, William G. (See Fowler and Schaefer.)						
Schaghticoke Powder Company *et al.* (See Olds, Chauncey J., assignor.)						
Scharff, Leopold. (See Altman and Scharff.)						
Schartau, Ellert O., Philadelphia, Pa. Regenerating exhaust-steam	381,172	Apr. 17	1339	366	43	875
Schefold, Frank, assignor to N. T. De Pauw, New Albany, Ind. Machine for grinding, smoothing, and polishing glass	384,394	June 12	838	217	43	1287
Scheunnel, Julius, Chippewa Falls, Wis. Velocipede	381,956	May 1	61	20	43	539
Schenck, Edward, assignor to Lechner Manufacturing Company, Columbus, Ohio. Drive-chain	382,857	May 1	273	71	43	562
Schenck, Garrett, Austin, Ill. Mechanical movement	380,697	Apr. 10	584	160	43	122
Schenck, Martin B., Meriden, Conn. Caster	381,173	Apr. 17	1330	336	43	875

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Scherbel, Jean. (See Remus, Theodor, assignor.)						
Scheuer, Simon, New York, N. Y. Shawl-strap	384,395	June 12	833	217	43	1287
Scheurer, Philip H., Nashville, Ill. Hot-air furnace	381,427	Apr. 17	1694	{454 455}	43	847
Schiele & Co., Lewis. (See Keon, Joseph, assignor.)						
Schieren, Charles A., Brooklyn, N. Y. Machine-belting	383,373	May 22	2220	589	43	986
Schiermeyer, Henry W., Daykin, Nebr. Tricycle	380,779	Apr. 10	705	195	43	149
Schiess, Otto, New York, N. Y. Vending apparatus	381,428	Apr. 17	1696	{455 456}	43	847
Schiff, Moritz, New York, N. Y. Combined cane, umbrella, and camp stool	384,790	June 19	1415	371	43	1408
Schildhauer, Joachim, New Holstein, Wis. Willow-bark-stripping machine	380,730	Apr. 10	644	178	43	138
Schiller, Frederick W., assignor of two-thirds to H. H. Petse and G. W. Umbach, Baltimore, Md. Ice-breaker for vessels	384,503	June 12	1184	297	43	1341
Schimper & Co., William. (See Ohlenbusch, Ernest, assignor.)						
Schimper, Frederick, Weehawken, N. J., assignor of one-half to W. M. Schwenker, New York, N. Y. Hose-clamp	382,557	May 8	1033	263	43	717
Schlapp, Herman H., Pueblo, Colo. Desilverizing lead bullion	380,524	Apr. 3	330	94	43	67
Schleiber, Henry H., assignor of one-half to W. W. Quinn, Rochester, N. Y. Wire mat	383,772	May 29	2840	747	43	1092
Schlepegrell, Frederick W., Charleston, S. C. Electrical speed-indicator	380,894	Apr. 10	780	213	43	163
Schlesinger, G., *et al.* (See Marks, Louis, assignor.)						
Schlesinger, William M., Philadelphia, Pa. Trap for electric-railway conduits	381,585	Apr. 24	1923	{509 510}	43	411
Schlicht & Field Company. (See Jewell, M. Rosseyn, assignor.)						
Schlimme, Henry, assignor of one-half to J. H. Grove, Lebanon, Pa. Device for mixing air and gas for furnaces	385,078	June 26	1869	475	43	1502
Schlumberger, Robert, Allegheny, Pa. Soldering-iron	382,558	May 8	1034	263	43	717
Schmick, Charles M. (See Cowden, Reynolds I., assignor.)						
Schmid, Albert, Allegheny, assignor to Westinghouse Electric Company, Pittsburg, Pa. Bobbin for the field-magnets of dynamos	383,657	May 29	2653	703	43	1057
Schmid, Albert, Allegheny, assignor to Westinghouse Electric Company, Pittsburg, Pa. Brush-holder for electric generators	383,658	May 29	2654	703	43	1057
Schmid, Albert, Allegheny, and H. M. Byllesby, assignors to Westinghouse Electric Company, Pittsburg, Pa. Armature for dynamos	383,659	May 29	2655	703	43	1057
Schmid, Charles, assignor of one-half to G. Farnsworth, Chicago, Ill. Steam-engine governor	384,398	June 12	865	178	43	1277
Schmid, Gottlob F., Beardstown, Ill. Feed-cutter	383,494	May 29	2652	644	43	1010
Schmidt, Ferdinand C., Newark, N. J. Traveling-bag	382,771	May 15	1339	358	43	795
Schmidt, Gustave, Cincinnati, Ohio. Hame-tug	383,151	May 22	1907	498	43	907
Schmidt, Gustave, Cincinnati, Ohio. Leather-trimming machine	384,287	June 12	667	179	43	1258
Schmidt, Theodore F. W., assignor of one-half to Laubach & Iddings, Dayton, Ohio. Paper vessel	382,559	May 8	1036	264	43	717
Schmidt, Wilhelm, Halberstadt, Prussia, Germany. Utilising exhaust	381,957	May 1	62	20	43	539
Schmidt, Wilhelm, Halberstadt, Prussia, Germany. Steam-generator	382,235	May 15	1493	376	43	808
Schmuck, Solomon H., assignor of one-half to C. F. Hunger, Cleveland, Ohio. Reclining-chair	380,585	Apr. 3	331	95	43	68
Schneider, Henri, Le Creuzot, France. Tempering steel or steely iron	384,985	June 19	1630	.....	43	1447
Schneider, Henry. (See Weber and Schneider.)						
Schneider, John, New York, N. Y. Electric door-opener	381,725	Apr. 24	2120	500	43	452
Schneider, Max, Doos, near Nuremberg, Bavaria, Germany. Lubricator	381,568	Apr. 24	1936	510	43	412
Schneller, William, New Waterford, Ohio. Mower	380,459	Apr. 3	296	82	43	46
Schoen, Charles T., Philadelphia, Pa. Stake-pocket for cars	381,174	Apr. 17	1331	335	43	875
Schoen, Charles T., Philadelphia, Pa. Die for making stake-pockets for cars	381,175	Apr. 17	1332	356	43	875
Schoessel, Christian A., Rock Island, Ill. Saw-swaging device	381,851	Apr. 24	2235	605	43	488
Scholes, John, Philadelphia, Pa. Machine for making heavy rovings	382,908	May 15	1524	398	43	694
Schopp, Joseph B. (See Pike, Castle, and Schopp.)						
Schott, Joseph S., Burlington, Iowa. Hame-tug	382,058	May 1	274	72	43	562
Schott, William, Brooklyn, N. Y. Surgical knife	380,688	Apr. 10	595	163	43	133
Schreiber, Charles, Methuen, Mass., assignor, by mesne assignments, to Owasco Company, Portland, Me. Apparatus for carbonizing the vegetable matter in wool	380,508	Apr. 3	442	125	43	90
Schreiber, Charles, Methuen, Mass., assignor, by mesne assignments, to Owasco Company, Portland, Me. Carbonizing vegetable matter in wool	380,509	Apr. 3	443	.....	43	90
Schroeder, Emil, San Francisco, Cal. Machine for pulling hair from skins of fur animals	382,736	May 15	1296	{340 341}	43	777
Schroeder, Max. (See Hänisch and Schroeder.)						
Schuchman, Andrew, Springfield, Ill. Electric fire and burglar alarm	381,862	Apr. 24	2336	606	43	489
Schuchman, John P., Owensville, Mo. Pump and windmill head	384,086	June 5	558	101	43	1180
Schultze, Augusta, New York, N. Y. Eyeglasses	384,475	June 12	938	244	43	1302
Schulz, Richard, Tessel, near Berlin, Germany. Hoisting machinery	380,637	Apr. 3	490	137	43	109
Schulze-Berge, Herman, *et al.* (See Niemstädt, Ernst, assignor.)						
Schumacher, Emil M., West View, Pa. Hen's nest	380,809	Apr. 10	595	163	43	133
Schumann, Charles B., South Norwalk, Conn. Combined extension-ladder, fire-escape, and hose-carriage	381,587	Apr. 24	1938	{510 511}	43	412
Schumann, Charles B., South Norwalk, Conn. Flexible ladder	381,853	Apr. 24	2237	606	43	489
Schumpe, Friedrich, assignor of one-half to J. M. Hammelrath, Cincinnati, Ohio. Washing-machine	380,938	Apr. 10	960	255	43	196
Schutte, Louis, Philadelphia, Pa. Check-valve	380,940	Apr. 10	961	255	43	196
Schutte, Louis, Philadelphia, Pa. Device for operating valves and other mechanisms	380,941	Apr. 10	962	256	43	196
Schuyler Electric Company. (See Mott, Samuel D., assignor.)						
Schwamm, Leonhard T., Cleveland, Ohio. Portable stock-cooler	381,438	Apr. 17	1700	457	43	350
Schwartz, Jacob, Portland, Oreg. Dentifrice	380,700	Apr. 10	596	.....	43	133
Schweek, Samuel Z., Pottstown, Pa. Lifting-jack	382,194	May 1	460	119	43	596
Schwenker, William M. (See Schimper, Frederick, assignor.)						
Schwerdfeger, Charles H., *et al.* (See Beasling, Henry F., assignor.)						
Seefeld, Levi, assignor to Challenge Corn Planter Company, Grand Haven, Mich. Drill attachment for planters	383,994	June 5	227	67	43	1165
Seales, Jordan J. D. (See Warner and Seales.)						
Scott, Alexander, guardian. (See Scott, William H.)						
Scott, Edward, Cedarville, Ark. Wagon-step	381,498	Apr. 17	1700	456	43	349
Scott, James, Brockville, Ontario, Canada. Car-coupling	384,474	June 19	936	242	44	1307
Scott, Walter S., Fort Meade, Dak. Ter. Pipe, tube, or shell extractor	384,791	June 19	1416	372	43	1408
Scott, William, Malden, Mass. Operating-lever for valves, &c	384,687	June 5	359	102	43	1159
Scott, William H., minor, A. Scott, guardian, assignor of one-half to D. C. Reinoil, Washington, D. C. Box	381,889	Apr. 24	2300	621	43	500
Scott, William J. (See Mann, Edgar E., assignor.)						
Scott, William M., Cambridge, Vt. Hoisting railway-cars	381,647	Apr. 24	2021	530	43	429
Seargal, Angus, Hickory Corners, Mich. Vent-stopper for pumps	383,773	May 29	2841	747	43	1093

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Scovill Manufacturing Company. (See Flammang, Mathias, assignor.)						
Scovill Manufacturing Company. (See Rust, Theodore S., assignor.)						
Scovill Manufacturing Company. (See Shipley, Alfred J., assignor.)						
Scoville, Elijah U., Manlius, N. Y. Faucet	383,995	June 5	230	67	43	1165
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Circuit for double-stranded telephone-switch-board cords	382,909	May 15	1525	399	43	894
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Long-distance connection for multiple switch-boards	381,430	Apr. 17	1702	456	43	349
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange system	381,431	Apr. 17	1704	457	43	349
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Switch-board	383,013	May 15	1689	{439 440	{43	854
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Clearing-out annunciator	383,014	May 15	1693	440	43	855
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Automatic shunt for magneto-generators	383,015	May 15	1694	440	43	856
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test-circuit for telephone call-boxes	383,016	May 15	1695	440	43	856
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Key-board apparatus for telephone-exchanges	383,017	May 15	1696	441	43	856
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test-circuits for multiple switch-boards	383,018	May 15	1697	441	43	856
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Electric annunciator	383,495	May 29	2427	{644 645	{43	1010
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Police electric signal system	384,088	June 5	361	102	43	1190
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple switch-board circuit	384,476	June 12	938	244	43	1308
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple switch-board-testing apparatus	384,477	June 12	940	244	43	1308
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test system for multiple switch-boards	384,644	June 19	1200	317	43	1365
Scribner, G. Hilton, and W. Heckert, Yonkers, N. Y. Steam-engine	385,205	June 26	2047	523	43	1541
Seal, William B., assignor to W. S. Reina, Baltimore, Md. Car-coupling	381,854	Apr. 24	2338	{606 607	{43	489
Seaman, Alfred S. (See Andrews, Edward, assignor.)	381,648	Apr. 24	2022	530	43	429
Seaman, Frederick W., Sheffield, county of York, England. Ingot or bar for tools	383,192	May 22	1960	514	43	917
Search, Casper F., assignor to Winona Harvester Works, Winona, Minn. Platform-adjustment for harvesters	383,660	May 29	2656	{704 705	{43	1058
Sears, John F., Clifton, Ontario, Canada and H. E. Kelley, Niagara Falls, assignors to Oneida Community, (limited,) Community, N. Y. Chain-fastener	381,855	Apr. 24	2341	607	43	489
Sears, William (See Bailey, Elmer E., assignor.)						
Sears, William N., assignor of one-half to M. V. B. Holmes, Wellington, Kans. Nut-lock	380,526	Apr. 3	332	95	43	68
Sedgwick, Frederick, Chicago, Ill. Mainspring for watches	381,176	Apr. 17	1333	356	43	275
Seel, Carl, Berlin, Germany. Electric-lamp filament	384,288	June 12	669	179	43	1258
Seeley, Marquis F., Fremont, Nebr. Elevator-boot	382,560	May 8	1037	284	43	718
Sefton, William E., Canton, Ohio. Rolling colter	382,772	May 15	1340	359	43	785
Segar, Charles T., Utica, N. Y. Folding cot	382,737	May 15	1299	341	43	777
Segerdahl, Rudolph. (See Gill and Segerdahl.)	381,433	Apr. 17	1707	457	43	350
Segschneider, Gustave, assignor to Waring Hat Manufacturing Company, Yonkers, N. Y. Pile-wire for looms						
Seibert, Antony, Rock Rift, N. Y. Machine for delinting cotton-seed	383,545	May 29	2508	662	43	1025
Seifert, Oswald, San Francisco, Cal. Rotary pump	383,374	May 22	2221	590	43	966
Seimel, Conrad, Brooklyn, N. Y. Can-filling machine	383,996	June 5	230	67	43	1166
Seitz, Nathaniel Z. (See Miller and Seitz.)	383,595	May 29	2562	678	43	1037
Seitz, Nathaniel Z., Washington, D. C., assignor to Kohler Improved Cattle Car Company, New York, N. Y. Stock-car	380,600	Apr. 3	445	125	43	90
Seitz, Nathaniel Z., Glen Rock, Pa., assignor to Shellabarger Live-Stock Car Company, Washington, D. C. Stock-car	380,638	Apr. 3	491	138	43	100
Selby, James, Peoria, Ill. Corn-planter	381,588	Apr. 24	1942	{511 512	{43	413
Selby, Prentiss, Oakland, Cal. Wad-printing machine	382,441	May 8	848	{216 217	{43	680
Selby, Prentiss, Oakland, Cal. Cartridge-loading machine	384,089	June 5	362	102	43	1190
Selden, Charles, Baltimore, Md. Telegraph-receiver	382,195	May 1	461	119	43	580
Sellon, John S., Hatton Gardens, county of Middlesex, England, assignor to Electrical Accumulator Company, of New York. Automatic switch for secondary batteries	385,324	June 26	2237	573	43	1578
Sellon, John S., Hatton Gardens, county of Middlesex, England, assignor to Electrical Accumulator Company, of New York. Automatic switch for secondary batteries	382,112	May 1	350	92	43	578
Sellon, John S., Sydenham, county of Kent, England, assignor to Electrical Accumulator Company, of New York. Secondary battery	384,289	June 12	671	{179 180	{43	1258
Seltzer, Van S. (See Bending, William P., assignor.)	383,193	May 22	1961	514	43	917
Semmes, Raphael T., Atlanta, Ga. Back-band buckle	385,206	June 26	2049	523	43	1541
Semple, Harry, Hamilton, Ontario, Canada. Machine for finishing bottle-necks	384,290	June 12	673	180	43	1259
Sergeson, James C., Philadelphia, Pa. Loom-shuttle	383,774	May 29	2642	747	43	1093
Servus, Ferdinand, Berlin, Germany. Picture-frame support	380,671	Apr. 3	550	{150 151	{43	111
Sessions, Henry H., Pullman, assignor to Pullman's Palace Car Company, Chicago, Ill. Equalizer for car-vestibules	383,619	May 15	1608	441	43	857
Severance, James R., Fremont, Ohio, assignor of two-thirds to W. D. Baldwin, Montclair, N. J., and J. C. Adsett, Hornellsville, N. Y. Knot-tying mechanism for grain-binders	382,773	May 15	1341	{353 354	{43	786
Severin, William, Chicago, Ill. Printer's standing-galley	385,144	June 26	1959	501	43	1523
Seymour, Dudley S. (See Pope, Harry M., assignor.)						
Seymour, Frederick J., Findlay, Ohio. Furnace for reducing aluminum	382,196	May 1	464	120	43	580
Seymour, Frederick J., Findlay, Ohio. Obtaining alumina from clay	382,273	May 1	576	146	43	609
Seymour, Frederick J., Findlay, Ohio, assignor to American Aluminum Company, Detroit, Mich. Obtaining alumina from clay	382,197	May 1	467	.....	43	580
Seymour, Frederick J., Findlay, Ohio, assignor to American Aluminum Company, Detroit, Mich. Purification and alloying of copper	382,198	May 1	467	.....	43	580
Seymour, Henry A., Washington, D. C., assignor to Brush Electric Company, Cleveland, Ohio. System of electric locomotion	384,394	June 12	1135	297	43	1341

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Seymour, James A., Auburn, N. Y. Combined relief-valve and cylinder-cock	382,339	May 8	674	170	43	647
Seymour, John, *et al.* (See Brougher, David J., assignor.)						
Shafer, George W. (See Shafer, William F. and G. W.)						
Shafer, William F. and G. W., Rich Hill, Mo. Baling-press	385,207	June 26	2050	524	43	1741
Shafer, Abraham and G. M., Cassopolis, Mich. Gang-plow	383,496	May 29	2429	645	43	1011
Shaffer, George H. (See Meit, Charles S., assignor.)						
Shaffer, George M. (See Shaffer, Abraham and G. M.)						
Shaffer, Simon B., Ekalaka, assignor to himself and H. E. Gibb, Miles City, Mont. Ter. Spoke-auger	380,701	Apr. 10	597	164	43	196
Shallenberger, Oliver B. (See Bylleshy and Shallenberger.)						
Shallenberger, Oliver B., Rochester, assignor to G. Westinghouse, Jr., Pittsburg, Pa. Electric indicator	380,942	Apr. 10	963	256	43	196
Shallenberger, Oliver B., Rochester, assignor to G. Westinghouse, Jr., Pittsburg, Pa. Circuit-controlling apparatus for electric-lighting circuits	383,661	May 29	2660	705	43	1058
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Volt-ammeter	380,943	Apr. 10	965	256	43	197
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electrical pressure-indicator	380,944	Apr. 10	965	256	43	197
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Adjustable inductive resistance	380,945	Apr. 10	967	257	43	197
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electrical indicator	380,947	Apr. 10	970	257	43	198
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Coupling of alternate-electric-current generators	383,662	May 29	2661	705	43	1059
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Armature for dynamos	383,663	May 29	2662	706	43	1059
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Armature for electric machines	383,664	May 29	2663	706	43	1059
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Indicator for electric currents	383,665	May 29	2663	706	43	1059
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Apparatus for detecting ground-connections in electric circuits	383,666	May 29	2665	706	43	1060
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Indicating electric currents	383,667	May 29	2666	707	43	1060
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electrical indicator for alternating electric currents	383,668	May 29	2667	707	43	1060
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electrical indicator	383,669	May 29	2669	707	43	1061
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electrical indicator	383,670	May 29	2671	707	43	1061
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electrical indicator	383,671	May 29	2673	708	43	1061
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Indicating electric currents	383,672	May 29	2675	708	43	1062
Shallenberger, Oliver B., Rochester, and H. M. Bylleshy, assignors to Westinghouse Electric Company, Pittsburg, Pa. Central station for alternate-current systems of electrical distribution	380,946	Apr. 10	968	257	43	197
Shaner, Maconius, Beaver Falls, Pa. Belting-reel	380,567	Apr. 3	333	95	43	68
Shank, James, Clayton, Ill. Cultivator	380,948	Apr. 10	972	258	43	198
Shannon, Oscar M., Chicago, Ill. Clothes-drier	380,949	Apr. 10	973	258	43	198
Shanta, Abram B., Sliters, N. Y. Potato-digger	380,771	Apr. 10	706	195	43	150
Sharer, George W., Terre Haute, Ind. Drier	385,208	June 26	2051	{524 525 526 527	{43	1542
Sharer, George W., Terre Haute, Ind. Brick-kiln	385,209	June 26	2053			
Sharp, Asa C. (See McMahon, Sharp, and Liles.)						
Sharp, Christopher C., Indianapolis, Ind. Inhaler	382,113	May 1	351	92	43	578
Sharp, James L., New York, N. Y. Gas-stove	380,355	Apr. 3	79	25	43	18
Sharp, James L., New York, and J. D. Luther, Brooklyn, N. Y. Sad-iron	381,434	Apr. 17	1708	458	43	350
Sharp, John H., Columbus, N. J. Sand-band for vehicle-axles	380,538	Apr. 3	334	96	43	68
Sharpe, John, assignor of one-half to J. A. Banfield, Toronto, Ontario, Canada. Combined latch and lock	381,435	Apr. 17	1709	458	43	350
Shaver Corporation. (See Shaver, George F., assignor.)						
Shaver, George F., assignor, by mesne assignments, to Shaver Corporation, New York, N. Y. Mechanical telephone	383,324	May 22	2154	569	43	954
Shaver, Sebern R. (See Wright and Shaver.)						
Shaw, Charles A., Boston, Mass., and L. W. Buxton; said Shaw assignor to said Buxton and I. Robbins, Jr., Nashua, N. H. Coffee-filter	383,916	June 5	106	31	43	1141
Shaw, T. Jackson, Wilmington, Del., and J. M. Spiegle, Philadelphia, Pa., assignors to Boston Tow Boat Company, Boston, Mass. Towing-machine	383,917	June 5	107	31	43	1141
Shaw, Thomas, Philadelphia, Pa. Signaling apparatus	381,792	June 19	1418	372	43	1406
Shay, James L., assignor of one-half to C. E. Thompson, Bridgeport, Conn. Ticket-clasp	382,274	May 1	580	147	43	630
Shea, Albert, Boston, Mass. Button-piece for boots or shoes	380,731	Apr. 10	645	178	43	138
Shea, Albert, assignor of one-half to F. A. Shea, Boston, Mass. Lemon-squeezer	382,774	May 15	1347	354	43	787
Shea, Francis A. (See Shea, Albert, assignor.)						
Shearer, Brent, West Point, Miss. Sad-iron and plate-holder	384,723	June 19	1323	345	43	1308
Sheeley, Robert S., Galesburg, Ill. Vaporizer	382,636	May 15	1424	374	43	883
Sheets, Alfred T., Germany, assignor of one-half to Birdsell Manufacturing Company, South Bend, Ind. Clover-huller	381,687	Apr. 17	1788	476	43	364
Sheibley, Henry W. (See Brown, William, assignor.)						
Sheldon, C. E. (See Frost, John B., assignor.)						
Shell, John W., Evening Shade, Ark. Last collecting and compacting apparatus	382,775	May 15	1348	354	43	787
Shellabarger Live-Stock Car Company. (See Seitz, Nathaniel Z., assignor.)						
Shelley, George E., Butler, Ky. Fence	380,539	Apr. 3	335	96	43	68
Shenfield, Abraham. (See Voorhis, Calvin, assignor.)						
Shepard, Charles G., *et al.* (See Condon, Shepard, and Adams.)						
Shepard, Lewis, Mace, Ind. Farm-gate	383,676	May 15	1792	464	43	675
Shepard, Vinton R., Covington, Ky. Passenger-ticket	384,291	June 12	674	180	43	1259
Shepard, Walter J. (See Condon, Shepard, and Adams, assignors.)						
Shepard, William T., *et al.* (See Henry, John, assignor.)						
Shepherd, Augustus, Hennepin, Ill. Piano-gate	381,793	June 19	1420	372	43	1406
Shepherd, Charles H., New York, N. Y. Valve mechanism for sewerage systems	384,396	June 12	834	217	43	1267
Shepherd, Charles H., New York, N. Y. Valve mechanism for sewerage systems	384,397	June 12	835	218	43	1268
Shepherd, Thomas W., Peabody, Mass. Metallic thermometer	382,561	May 6	1038	264	43	718

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Sheridan, James, assignor to Pettee Machine Works, Newton, Mass. Evener for railway-heads	381,284	Apr. 17	1484	{389 400}	43	395
Sherington, John A., New York, N. Y. Slatted blind	381,649	Apr. 24	2024	531	43	489
Sherman, Cornelius A., *et al.* (See Thompson, Elias H., assignor.)						
Sherman, Eugene A., Plover, Wis. Ladder	382,114	May 1	358	93	43	579
Sherman, Gardiner M., Springfield, Mass. Vaporizer	384,794	June 19	1423	373	43	1409
Sherman, Lewis, Milwaukee, Wis. Triturator	383,030	May 15	1699	442	43	997
Sherman, Wardell B., deceased, Oneida, N. Y.; M. E. and C. G. Foland administrators. Railway-signal	381,086	Apr. 10	1902	392	43	242
Sherman, Willis S., Marinette, Wis. Pneumatic dental plugger	383,152	May 22	1908	400	43	997
Shertzer, John W. (See Young and Shertzer.)						
Sherwood, Alexander B., Chicago, Ill. Paper-file	381,959	May 1	85	21	43	831
Sherwood, C. A., *et al.* (See Hart, Thomas J., assignor.)						
Sherwood, Calvin W., Chicago, Ill. Paper-holder	382,603	May 8	1133	292	43	736
Sherwood, James H., Brooklyn, N. Y. Bung	381,436	Apr. 17	1711	458	43	351
Shickle, Joseph, Broadway, Va. Harvester	382,910	May 15	1598	399	43	894
Shimer, George S., assignor to S. J. Shimer & Sons, Milton, Pa. Cutter-head	385,385	June 26	2238	{373 374}	43	1578
Shimer, Samuel J., assignor to S. J. Shimer & Sons, Milton, Pa. Cutter-head and cutter-head gage	380,530	Apr. 3	336	96	43	68
Shimer & Sons, Samuel J. (See Shimer, George S., assignor.)						
Shimer & Sons, Samuel J. (See Shimer, Samuel J., assignor.)						
Shinn, Thornton A., Coolbaugh's, Pa. Thill-coupling	382,502	May 8	1049	265	43	718
Shipley, Alfred J., assignor to Scovill Manufacturing Company, Waterbury, Conn. Button	382,115	May 1	353	93	43	579
Shipley, John F., assignor of one-half to W. T. Cole, Council Bluffs, Iowa. Wire-stretcher	380,531	Apr. 3	337	96	43	68
Shipley, Ralph J., Waterbury, Conn., assignor to G. W. McGill, New York, N. Y. Blank-holder for punching-machines	382,911	May 15	1598	400	43	925
Shoemaker, Frank A., Buffalo, N. Y. Grinding-machine	384,795	June 19	1422	373	43	1409
Sholder, Louis H., Cleveland, Ohio. Wire scoop	384,090	June 5	363	103	43	1191
Short, Jacob, Concordia, Kans. Instrument for measuring vertical and horizontal distances	383,375	May 22	2224	590	43	986
Short, Sidney H., assignor to United States Electric Company, Denver, Colo. Electric motor for railways	381,650	Apr. 24	2025	531	43	490
Shourds, Joseph W., Reedsburg, Wis. Bob-sleigh	384,724	June 19	1324	345	43	1368
Shrader, Louis I., New Albany, Ind. Boot or shoe	380,408	Apr. 3	147	42	43	31
Shriver, Robert, *et al.* (See Allfree, James B., assignor.)						
Shue, Clement S., Shepherd, Mich. Bridle attachment	381,285	Apr. 17	1465	400	43	395
Shultz, Charles H., St. Joseph, Mo. Vapor-burner	380,356	Apr. 3	80	25	43	18
Shumway, Albert W., Northampton, assignor to Florence Machine Company, Florence, Mass. Portable tin oven for oil or gas stoves	383,630	May 29	2703	775	43	1111
Sibley, Albert P., assignor to Sibley & Ware, South Bend, Ind. Pulley	384,671	June 19	1548	402	43	1431
Sibley, Clarence C., New York, N. Y., assignor to New Haven Clock Company, New Haven, Conn. Electrical apparatus	381,856	Apr. 24	2341	607	43	489
Sibley, Edwin E., and C. Allen, assignors to American Fire Hose Manufacturing Company, Chelsea, Mass. Tool for applying couplings to hose	382,776	May 15	1349	355	43	787
Sibley & Ware. (See Sibley, Albert P., assignor.)						
Sickler, Hernando O., Buffalo, N. Y. Traction-engine	380,601	Apr. 3	446	126	43	91
Siddell, George, Sheffield, county of York, England. Appliance for manipulating large forgings	380,950	Apr. 10	976	{256 259}	43	199
Siebel, John E., Chicago, Ill. Generating electricity and purifying water	385,145	June 26	1960	502	43	1563
Siebler, George E., Dayton, Ohio. Saw-handle	383,376	May 22	2225	590	43	998
Siefert, Henry O. R., Milwaukee, Wis. Educational appliance	380,539	Apr. 3	338	97	43	69
Siemens & Co., Gebrüder. (See Siemens, Louis, assignor.)						
Siemens, Louis, assignor to Gebrüder Siemens & Co., Charlottenburg, Prussia, Germany. Specific-gravity apparatus	380,533	Apr. 3	340	97	43	69
Sierdorfer, Michael, Louisville, Ky. Siphon for starting the flow of liquids	383,153	May 22	1910	400	43	906
Sierdorfer, Michael, Louisville, Ky. Automatic gas-extinguisher	383,497	May 29	2431	646	43	1011
Sill, Charles T., *et al.* (See Lore, George W., assignor.)						
Sill, George L., *et al.* (See Lore, George W., assignor.)						
Silsby, William H., Martin's Ferry, Cal. Paddle-belt for propellers	381,986	Apr. 17	1486	400	43	395
Simmonds, William, Yonkers, N. Y. Window-blind fastener	383,596	May 29	2565	679	43	1036
Simmonds, William, assignor of two-thirds to L. E. and W. H. Belknap, Yonkers, N. Y. Hat-stretching machine	383,254	May 22	2056	540	43	930
Simmons, George O., Brooklyn, N. Y. Elastic buckle-shield	382,244	May 1	535	134	43	612
Simmons, Thornton H., and R. M. Eastman, Boston, Mass. Automatic coat-holder	380,688	Apr. 3	447	126	43	91
Simonds, George F., Fitchburg, Mass. Die for making rolled forgings	384,091	June 5	364	103	43	1191
Simonds, George F., Fitchburg, Mass. Die for making rolled forgings	384,092	June 5	365	103	43	1191
Simonds, George F., assignor to Simonds Rolling Machine Company, Fitchburg, Mass. Die for making rolled forgings. (Reissue)	10,928	May 8	1212	314	43	752
Simonds Rolling Machine Company. (See Simonds, George F., assignor.) (Reissue.)						
Simonds, William E. (See Herrick, Frank J., assignor.)						
Simons, Frank D. (See Simons and Beach.)						
Simons, Thomas A. and F. D., and A. Beach, Columbus, Ohio. Store-service apparatus	382,010	May 1	189	49	43	549
Simpkin, William, Richmond, Va. Steam-trap and boiler-feeder	385,014	June 26	1761	456	43	1483
Simpson, James. (See Parnell and Simpson.)						
Simpson, Peter L., Minneapolis, Minn. Brick-machine	384,872	June 19	1549	{402 403}	43	1431
Simpson, Thomas J., Worthington, Minn. Heating by compressed hot or superheated air	381,589	Apr. 24	1944	{512 513}	43	413
Sinclair, J. D., *et al.* (See Richards, John, assignor.)						
Singer, George, and R. H. Lea, Coventry, county of Warwick, England. Velocipede	382,837	May 15	1495	374	43	883
Singer Manufacturing Company of New Jersey. (See Griest, John M., assignor.)	381,960	May 1	87	21	43	831
Singler, Léonce A. (See Reallié and Singler.)						
Sinnock, William P., Newark, N. J. Finger-ring	385,073	June 26	1892	475	43	1508
Sinsabaugh, Edwin L., *et al.* (See Whalen, Michael H., assignor.)						
Sintz, Clark, Springfield, Ohio. Gas-engine	383,775	May 29	2844	{748 749}	43	1068
Sipe, Henry, Cleburne, Tex. Swinging gate	380,772	Apr. 10	707	195	43	159
Sisum, William H. H. (See Monroe and Sisum.)						
Sisum, William H. H., Brooklyn, N. Y. Machine for cutting match-sticks	382,442	May 8	850	217	43	669
Sitterly, Henry. (See Benedict, Irving W., assignor.)						
Sittig, Herman C., Normal Park, Ill. Stool	382,777	May 15	1351	356	43	788

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Skinner, Albert L., Yonkers, N. Y., assignor to Bigelow Carpet Company, Clinton, Mass. Needle-loom	383,079	May 15	1703	{464 465}	43	875
Skinner, James N., New Britain, Conn. Drill-chuck	381,857	Apr. 24	2343	607	43	489
Skinner, Thomas, Chicago, Ill., assignor of one-half to A. R. Rumsey, Cleveland, Ohio. Steering vessels	382,563	May 8	1041	265	43	718
Slane, McGuire, La Cinta, N. Mex. Ter. Shingling-gage	383,507	May 29	2565	679	43	1036
Slater, Henry E., assignor to Detroit Motor Company, Detroit, Mich. Dynamo	380,702	Apr. 10	508	164	43	159
Slater, John, Parthenia, Pa. Circular-saw holder	381,651	Apr. 24	2026	531	43	490
Slaughter, David, assignor of one-half to S. M. Fridy, Mountville, Pa. Cigar-mold press	381,177	Apr. 17	1334	356	43	276
Slaughter, Joel C., assignor of one-half to L. Helm, St. Louis, Mo. Extractor for coffee-pots	383,831	May 29	2835	776	43	1111
Sleeth, Robert, Pittsburg, Pa. Mold	384,595	June 12	1127	287	43	1349
Sleicher, William, Jr., Troy, N. Y. Wheelbarrow	384,093	June 5	366	{103 104}	43	1191
Slentz, Albertice O., assignor to Peerless Reaper Company, Canton, Ohio. Grain-binding harvester	385,285	June 26	2176	556	43	1567
Slicer, William T., Colora, Md. Device for setting saws	382,110	May 1	352	93	43	579
Sloan, William D., Brooklyn, N. Y. Hand-rest for book-keepers	384,776	May 29	2847	749	43	1094
Sloane, George H., Boston, Mass. Galvanic battery	382,738	May 15	1300	341	43	778
Sluts, Marion, Canton, Ohio. Tricycle	381,560	Apr. 24	1946	513	43	414
Smith, Albert D. (See Smith, Dwight L. and A. D.)						
Smith, Albert H., Memphis, Tenn. Scale-beam	381,087	Apr. 10	1205	323	43	242
Smith, Almira A., Hadley, Mass. Canopy attachment for chairs, &c	382,493	May 8	931	236	43	695
Smith American Organ and Piano Company. (See Delano, Alphonso F., assignor.)						
Smith, Archibald F., Philadelphia, Pa. Show-stand	381,437	Apr. 17	1712	{458 459}	43	351
Smith, Augustus. (See Myers and Smith.)						
Smith, Beggs & Ranken Machine Company. (See Beggs, John S., assignor.)						
Smith, Benjamin C., Brooklyn, assignor to F. Adee & Co., New York, N. Y. Needle-bath	382,011	May 1	191	49	43	549
Smith, Benjamin F., Somerville, Mass. Sand-trap	382,117	May 1	355	93	43	579
Smith, Benjamin J. (See Anderson and Smith.)						
Smith, Byron C., Auburn, N. Y. Trace-buckle	385,146	June 26	1962	502	43	1523
Smith & Caldwell. (See Smith, George A., assignor.)						
Smith, Charles, Rogers, Ark. Lasting-supporter	385,015	June 26	1763	456	43	1484
Smith & Co., S. A. (See Holman, Strange A., assignor.)						
Smith, Dwight L. (See Smith, Earl A., assignor.)						
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Loop for suspender-buckles	382,494	May 8	933	236	43	696
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Snap-hook	382,495	May 8	933	237	43	696
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	383,496	May 29	2432	646	43	1011
Smith, Dwight L. and A. D., Waterbury, Conn. Garment-clasp	380,951	Apr. 10	977	259	43	199
Smith, Earl A. (See Smith, Dwight L., assignor.)						
Smith, Earl A., assignor of one-half to D. L. Smith, Waterbury, Conn. Buckle	384,936	June 19	1631	423	43	1447
Smith, Elmer S., assignor of one-half to R. V. Pierce, Buffalo, N. Y. Steam-engine	380,825	Apr. 10	781	{213 214}	43	164
Smith, Francis. (See Cumming, George, assignor.)						
Smith, Frank L., assignor of one-half to W. S. Clark, Holton, Mich. Valve for steam-engines	382,564	May 8	1042	265	43	719
Smith, Franklin A., Jr., Providence, R. I. Combined needle and cord	380,773	Apr. 10	708	196	43	159
Smith, Furmen S., and T. Kelly, Diamond Lake, Mich. Band-saw mill	381,736	Apr. 24	2140	560	43	452
Smith, George A., Norristown, assignor to Smith & Caldwell, Philadelphia, Pa. Pill or lozenge machine	385,386	June 26	2230	574	43	1578
Smith, George B. (See Crane, Andrew J., assignor.)						
Smith, George F. (See Hotchkiss and Smith.)						
Smith, George G., St. Albans, Vt. Pipe-wrench	382,391	May 8	775	197	43	666
Smith, George G., St. Albans, Vt. Fusible coupling for electric fire-alarm circuits	383,377	May 22	2226	591	43	998
Smith, H. A. (See Sawyer, Charles H., assignor.)						
Smith, Henry, Buffalo, N. Y. Key-hole guard for fire-alarm signal-boxes	380,357	Apr. 3	81	25	43	19
Smith, Henry L., Jericho Centre, Vt. Vehicle-wheel	384,398	June 12	837	218	43	1288
Smith, Hiram B., assignor of one-half to E. Holland, Atlanta, Ga. Head and back rest for railway-cars	380,360	Apr. 3	227	62	43	46
Smith, Hiram B., and G. B. Hinman, assignors of one-third to E. Holland, Atlanta, Ga. Self-closing vise	380,461	Apr. 3	228	62	43	47
Smith, Horace S., *et al.* (See Treat, Francis H., assignor.)						
Smith, Isaac, assignor of one-half to F. S. Beck, Brooklyn, N. Y. Button	381,438	Apr. 17	1713	459	43	351
Smith, James, Cleveland, Ohio. Fire-proof material	381,439	Apr. 17	1714	459	43	351
Smith, James, and H. J. Boyd, London, Ontario, Canada. Gas-stove	381,732	Apr. 10	646	178	43	136
Smith, James E., assignor of one-half to W. I. Averill, New York, N. Y. Letter-box	384,596	June 12	1128	296	43	1342
Smith, James G. (See Spencer and Smith.)						
Smith, James H. (See Randall and Smith.)						
Smith, James R., assignor to Standard Natural Gas Burner Company, Chicago, Ill. Gas-burning torch	383,154	May 22	1911	499	43	906
Smith, Jesse M. (See Mason and Smith.)						
Smith, John C., and L. B. Parker, Bellefontaine, Ohio. Steam-cooker	382,286	May 1	603	153	43	694
Smith, John S. and S., Glasgow, county of Lanark, Scotland. Jacquard machine for looms	380,462	Apr. 3	229	63	43	47
Smith, Jonas R., Newton, Kans. Salve	383,210	June 26	2054	.....	43	1543
Smith, Jud, assignor of one-half to E. E. Warren, Chemung, N. Y. Wagon-brake	382,912	May 15	1529	400	43	895
Smith, Lena, New York, N. Y. Bustle	382,050	May 1	274	72	43	564
Smith, Leroy H., Lisle, N. Y. Breech-loading gun	381,088	Apr. 10	1205	327	43	242
Smith, Leroy H., Lisle, assignor to Ithaca Gun Co., Ithaca, N. Y. Breech-loading gun	383,325	May 22	2154	569	43	954
Smith, M. Holroyd, Halifax, county of York, England. Magnetic separator	384,645	June 19	1292	318	43	1336
Smith, M. Otto, Creighton, Mo. Wall-paper exhibitor	381,726	June 19	1326	346	43	1289
Smith, Michael H., Halifax, county of York, England. Magnetic separator	381,916	June 5	109	30	43	1161
Smith National Cycle Manufacturing Company. (See Smith, William E., assignor.)						
Smith, Orren M., assignor to W. Grange, Philadelphia, Pa. Ferrule for umbrellas, canes, &c	383,378	May 22	2227	591	43	998
Smith, Robert W., Toledo, Ohio. Apparatus for burning crude petroleum oil	384,873	June 19	1552	404	43	1472
Smith, S. Morgan, York, Pa. Turbine water-wheel	383,777	May 29	2848	750	43	1094
Smith, S. W., *et al.* (See Egan, Charles E., assignor.)						
Smith, Samuel. (See Gill, Butler, and Smith.)						
Smith, Samuel. (See Smith, John S. and S.)						
Smith, Sanford C. (See Tag and Smith.)						
Smith, Shea. (See White, Samuel K., assignor.)						
Smith, Sidney, Pine Bluff, Ark. Bicycle	382,913	May 15	1530	{400 401}	43	895

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Smith, Sidney, Cambridge, Mass. Oven	384,177	June 5	496	136	43	1217
Smith, Thomas H. (See Charbonneau, Pascal B., assignor.)						
Smith, Thomas J., Omega, assignor of one-half to E. Herrick, Kinmundy, Ill. Churn	382,739	May 15	1301	349	43	778
Smith, Walter F., Philadelphia, Pa. Underground conduit for electric wires	382,778	May 15	1351	{355 356}	43	788
Smith, Warren G., Brooklyn, N. Y. Gem-setting	384,399	June 12	838	218	43	1288
Smith, Warren S., St. Johnsbury, Vt. Saw-setting machine	384,094	June 5	367	104	43	1191
Smith, Willard A., and I. A. Weston, Syracuse; said Smith assignor to said I. A. Weston, and H. D. Weston, Jamesville, N. Y. Wheel						
Smith, William. (See Irvine, Albert C., assignor.)	380,358	Apr. 3	82	26	43	10
Smith, William E., Washington, D. C., assignor to Smith National Cycle Manufacturing Company, of Colorado. Pedal for bicycles	385,074	June 26	1862	476	43	1563
Smith, William F. (See Culver and Smith.)						
Smith, William H., Chicago, Ill. Clutch for band-pulleys	380,956	Apr. 10	979	259	43	199
Smith, William T., Birmingham, Ala. Fire-escape	384,292	June 12	675	180	43	1259
Smith, William T., Birmingham, Ala. Shell for high explosives	384,646	June 19	1203	318	43	1364
Smith, William T., G. A. Ely, and T. A. Bryan, Baltimore, Md. Gaseous-fuel burner	380,350	Apr. 3	83	26	43	10
Smith Woolen Machinery Company, James. (See Houser and Clarkson, assignors.)	382,565	May 8	1044	266	43	719
Smyth, Samuel, Pittston, Pa. Package for butter or similar material	385,075	June 26	1864	476	43	1561
Snedden, Cora S., Braddock, Pa. Tidy-fastener	384,293	June 12	676	181	43	1259
Snedeker, Edgar W., Jamesburg, N. J. Combined mortising, tenoning, and planing machine, and turning-lathe						
Snedeker, Edgar W., Jamesburg, N. J. Wood-working machine	380,953	Apr. 10	980	260	43	200
Snediker, James F. (See Love and Snediker.)	382,330	May 8	675	171	43	647
Snelling, John H., Peru, N. J. Steering apparatus for vessels	382,738	May 15	1426	374	43	804
Snevely, James E., Chetopa, Kans. Rotary engine	381,287	Apr. 17	1487	401	43	305
Snidow, John M., Big Stony Creek, Va., assignor of one-third to J. W. Brown, Mercer County, W. Va. Drying attachment for tobacco-barns	383,778	May 29	2850	750	43	1094
Snitzel, Philip, Harmony, Pa. Rivet-extractor	380,703	Apr. 10	599	165	43	129
Snoddy, James T. (See Spaet, Berry, and Snoddy.)						
Snodgrass, Albert K., Ellensburg, Oreg. Side-hill plow	383,997	June 5	232	68	43	1166
Snodgrass, James. (See Craig, Neilson, and Snodgrass.)						
Snow, Fred W. (See Redding, William A., assignor.)						
Snow, George B., Buffalo, N. Y. Regulating-valve for gas-burners	382,566	May 8	1046	266	43	719
Snow, George B., Buffalo, N. Y. Steam bell-ringer	384,095	June 5	369	104	43	1192
Snow, Gilbert B. and J. T., Sugar Grove, Ill. Corn-harvester	385,266	June 26	2177	{557 558}	43	1567
Snow, James T. (See Snow, Gilbert B. and J. T.)						
Snow, John R. (See Crawford, William H., assignor.)						
Snow, Levi B., and J. Howard; said Howard assignor to W. Rardon, Wichita, Kans. Composition of matter for tanning hides	383,379	May 22	2228	.....	43	967
Snyder, Frederick, Lancaster, Pa. Checkrein-holder	382,392	May 8	776	197	43	666
Snyder, Henry, Frankfort, N. Y. Street-sweeping machine	380,534	Apr. 3	341	97, 98	43	70
Société Anonyme des Matières Colorantes et Produits Chimiques de St. Denis. (See Poirrier and Rosenstiehl, assignors.)						
Société Harmel Frères. (See Harmel, Albert, assignor.)						
Solano, Renaldo, assignor of two-thirds to J. W. Howard and D. R. Morse, Brooklyn, N. Y. Automatic air-brake	382,667	May 8	1200	311	43	749
Solid Ingot Company. (See Boulton, James B. D., assignor.)						
Sollmann, Anton. (See Klinik, Pinkowski, and Sollmann.)						
Solter, John, Baltimore, Md. Can-heading machine	382,567	May 8	1047	{266 267}	43	719
Sooy, Ephraim C., Kansas City, Mo. Baling-press	384,294	June 12	677	181	43	1259
Sorensen, Nels, Chicago, Ill. Tank	383,194	May 22	1902	514	43	918
Sorge, Adolph, Jr. (See Corkhill, Henry R., Sr., assignor.)						
Soule, William S., Cambridge, Mass. Dust-guard for car-axles	381,591	Apr. 24	1947	513	43	414
Southwark Foundry and Machine Company. (See Good, William E., assignor.)						
Southwick, Charles A., Peabody, Mass. Water-feeder	384,874	June 19	1554	404	43	1432
Soward, John B. (See Freeman and Soward.)						
Spaet, Joseph F. A., W. F. Berry, and J. T. Snoddy, Mount Pleasant, Iowa. Folding chair	383,255	May 22	2057	540	43	936
Sparks, William A., assignor to Stein Manufacturing Company, Rochester, N. Y. Fastener for coffins	380,704	Apr. 10	600	165	43	129
Speaks, Milton J. (See Corsbie, J. H., assignor.)						
Speer, Henry, Chelsea, Mass. Window-screen	383,155	May 22	1912	509	43	908
Spence, Joseph, assignor to L. A. Spence, near New Lisbon, Ohio. Corn-husker	382,568	May 8	1050	268	43	720
Spence, Lydia A. (See Spence, Joseph, assignor.)						
Spencer, Charles C., Cortland, N. Y. Two-wheeled vehicle	382,639	May 15	1427	375	43	804
Spencer, Charles F., assignor of one-half to H. F. Atkinson, Rochester, N. Y. Switch for street-railways	382,275	May 1	581	147	43	630
Spencer, Hiram A., Valley Mills, Tex. Gate	381,592	Apr. 24	1948	{513 514}	43	414
Spencer, James C., Rochester, and J. G. Smith, Jamestown, N. Y. Combined rule, square, bevel, calipers, dividers, &c	380,360	Apr. 3	86	27	43	10
Spencer, James S., *et al.* (See Lore, George W., assignor.)						
Sperbeck, James O., assignor of one-half to E. H. Crandall, Oswego Falls, N. Y. Tire-heater	383,195	May 22	1963	514	43	918
Sperry, Simon W., *et al.* (See Jewell, William M., assignor.) (Reissue.)						
Spiegel, William G., assignor of one-half to S. H. Carney, New York, N. Y. Marine signal	385,016	June 26	1764	456	43	1464
Spiegle, John M. (See Shaw and Spiegle.)						
Spielberger, Charles J. (See Marble, William S., assignor.)						
Spiller, Samuel B. (See Yates, William H., assignor.)						
Spink, John, and C. Gaussentes, Bradford, county of York, England. Incandescent-lamp socket	384,478	June 12	949	244	43	1308
Spire, Charles, New York, N. Y. Type-writing machine	381,652	Apr. 24	2028	532	43	430
Splitdorf, Henry, assignor to Splitdorf Wire Company, New York, N. Y. Insulated wire	383,919	June 5	110	32	43	1142
Splitdorf Wire Company. (See Splitdorf, Henry, assignor.)						
Spoehr, Friederich, Philadelphia, Pa. Spring bed-bottom	382,496	May 8	935	237	43	696
Spooner, Clapp. (See Knipfer, Otto, assignor.)						
Sprague, Charles H., and W. J. Wiley, Danbury, Conn. Hat-sizing roll	383,998	June 5	233	66	43	1166
Sprague, Edwin L., Boston, and G. R. Peare, Lynn, Mass.; said Peare assignor to said Sprague. Work-holding horn for shoe-sewing machines	383,546	May 29	2459	662	43	1085
Sprague, Frank J., New York, N. Y. Electrical pumping apparatus	385,211	June 26	2054	567	43	1543
Sprague, William H., Jamestown, N. Y. Revolver	380,361	Apr. 3	87	27	43	10

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Springer, Alfred, Cincinnati, Ohio, and W. Kent, Passaic, N. J. Weight and price indicating balance	383,499	May 29	2434	646	43	1011
Springmuhl, Ferdinand, London, England, assignor to American Concentrated Must Company, San Francisco, Cal. Preserving grape must and skins	380,463	Apr. 3	231	.....	43	47
St. Cyr, William B., and F. R. McDonald, Minneapolis, Minn. Safety-switch	381,034	Apr. 10	1110	297	43	894
St. John, King O., Toledo, Ohio. Roll-paper-service machine	384,877	June 19	1568	405	43	1463
Stacks, Clarence E. (See Beauregard and Bidwell, assignors.)						
Stadler, Nicholas, Manitowoc, Wis. Scaffold and staging	382,945	May 1	536	137	43	613
Stafford, Henry B. (See Gilmore and Stafford.)						
Stafford, Norman, assignor to Patten, Stafford & Myer, Canastota, N. Y. Cleaner-arm for the teeth of horse hay-rakes	381,503	Apr. 24	1950	514	43	415
Stagner, Lytle R., Marshall, Mo. Combined rake and fork	381,504	Apr. 24	1950	514	43	415
Stalmeake, Alfred, New York, N. Y. Machine for making pendants for watches	383,326	May 22	2156	569	43	954
Standard Button Fastening Company. (See Mathieux, Joseph, assignor.)						
Standard Natural Gas Burner Company. (See Smith, James R., assignor.)						
Stanger, Jonathan P., *et al.* (See Mullica, John and B. F., assignors.)						
Stanley, James, assignor to E. N., F., and J. Crane, Newark, N. J. Bridle-bit die and making bridle-bits	382,276	May 1	583	{147 148}	43	631
Stanley, James Z., Springdale, Mich. Fence	381,858	Apr. 24	2344	608	43	889
Stanley, James Z., Springdale, Mich. Gate	381,859	Apr. 24	2346	{608 609}	43	890
Stanley Rule and Level Company. (See Mead, Charles L., assignor.)						
Stanley, William, Jr., Great Barrington, Mass. Current-collector for electric machines	383,632	May 29	2936	776	43	1111
Stanwood, Frank H., Chicago, Ill. Step or platform	382,331	May 8	678	172	43	648
Stanwood, Frank H., Chicago, Ill. Car-step	385,017	June 26	1765	456	43	1464
Star Fence Machine Company. (See Cannett, Matthew F., Jr., assignor.)						
Star Manufacturing Company. (See Bridwell, James W., assignor.)						
Star Metallic Thread Company. (See Bean, Edwin E., assignor.)						
Stark, David, San Francisco, Cal. Feed-water heater	384,937	June 19	1632	424	43	1447
Starkenberg, Felix, assignor of one-half to H. J. Delaney, Milwaukee, Wis. Wave-power motor	385,397	June 26	2342	{574 575}	43	1579
Starkey, David W., Appleton, Wis. Vise	381,178	Apr. 17	1334	356	43	276
Starley, William, Coventry, county of Warwick, England, assignor to A. H. Overman, Newton, Mass. Button	383,156	May 22	1913	500	43	908
Starr, Charles E., Logansport, Ind. Draw-gear for railway-cars	382,840	May 15	1428	375	43	804
Starr, E. Eugene, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Galvanic battery	385,147	June 26	1964	{502 503}	43	1396
Starr, Edward M. (See Morse, Frederick H., assignor.)						
Starr, Eli T., Philadelphia, Pa. Envelope for protecting grapes while maturing	383,327	May 22	2157	569	43	964
Starr, Eli T., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Hot-air syringe	382,012	May 1	192	50	43	549
Stasch, Bertha, *et al.* (See Stasch, Emil R., assignor.)						
Stasch, Emil R., assignor to V. Haischer and B. Stasch, Corning, N. Y. Machine for corrugating and edging sheet metal	382,277	May 1	585	{148 149}	43	631
Staub, Alexander, Fort Wayne, Ind. Stove-pipe thimble	385,212	June 26	2056	507	43	1543
Staub, Emil, Leipsic, Saxony, Germany, assignor to G. Thomas, Manchester, England. Balance apparatus for ascertaining counts or numbers of yarn	380,896	Apr. 10	788	214	43	164
Stauffer, Henri O., Ponts Martel, Neufchâtel, Switzerland. Repeating-watch	383,256	May 22	2050	{540 541}	43	937
Steam Gauge and Lantern Company *et al.* (See Betts, Lewis F., assignor.)						
Steane & Co., I. J. (See Hobson, Arthur E., assignor.)						
Steane & Co., I. J. (See Hobson, Arthur E., assignor.) (Reissue.)						
Stears, Emily A., Brooklyn, N. Y. Trap	381,288	Apr. 17	1488	401	43	306
Steck, Ernst F., Chicago, Ill. Ladder for city fire-department service	380,733	Apr. 10	647	179	43	138
Steel, James, Paterson, N. J. Conduit	381,653	Apr. 24	2033	{532 533}	43	431
Steele, James C., Statesville, N. C. Brick-truck	380,603	Apr. 3	448	126	43	91
Steele, Patterson, Fayette County, Ky. Gate	383,920	June 5	111	32, 33	43	1142
Steele, Wilbur F., Minneapolis, Minn. Car-heating apparatus	384,401	June 12	841	219	43	1289
Steigleder, Charles H., Northampton, Mass. Fork-guard	382,060	May 1	275	72	43	564
Stein Manufacturing Company. (See Sparks, William A., assignor.)						
Steiner, Albert, Chicago, Ill. Glove-fastener	380,604	Apr. 3	449	126	43	91
Steingoetter, Philip. (See Poh, Benjamin W., assignor.)						
Stellwagen, Edward J., Washington, D. C. Elevator	382,841	May 15	1429	{375 376}	43	804
Stens, Henry. (See Rogers and Stens.)						
Stephens, Edward, assignor to E. C. Stephens, Arlington, N. J. Tubular iron railing	381,289	Apr. 17	1489	401	43	306
Stephens, Edward C. (See Stephens, Edward, assignor.)						
Stephens, John H., *et al.* (See Earnest, Jacob T., assignor.)						
Stephens, John O. (See Thompson and Stephens.)						
Stephens, John R., Portland, Oreg. Button-hole opener	383,021	May 15	1700	442	43	857
Sterling, Clarence. (See Blake and Sterling.)						
Stern, David. (See Gilles and Stern.)						
Stern, Henry, Shelbyville, Ky. Show-case	381,961	May 1	87	22	43	531
Sterrett, Jacob S., Philadelphia, Pa. Car-brake	382,013	May 1	193	50	43	549
Stetson, Joseph B., Lincoln, Me. Tubular lantern	384,546	June 12	1057	276	43	1339
Stevens, Asher B., Brooklyn, N. Y. Umbrella-support	382,118	May 1	355	93	43	579
Stevens, Asher B., New Bridge, N. J., assignor, by mesne assignments, to Rocker Spring Company, Chicago, Ill. Spring attachment for rocking-chairs	384,647	June 19	1605	418	43	1367
Stevens, Benjamin A., Toledo, Ohio. Sectional meat-block	381,854	Apr. 24	2035	533	43	431
Stevens, Frederick M., Brooklyn, N. Y. Pattern for casting	380,827	Apr. 10	785	{214 215}	43	164
Stevens, George M., Cambridge, Mass. Electric fire-alarm apparatus	384,875	June 19	1556	404	43	1432
Stevens, Henry A., Lake City, Minn. Ventilated boot or shoe	381,992	May 1	88	22	43	532
Stevens, Henry K. (See Stevens, William H., assignor.)						
Stevens, John, Neenah, Wis. Pump	384,648	June 19	1606	418	43	1367
Stevens, John H. (See Lefferts and Stevens.)						
Stevens, Joseph, San Francisco, Cal. Feeder for can-body-making machines	380,774	Apr. 10	709	196	43	159
Stevens, Lewis, assignor of one-half to B. F. Winfield, Binghamton, N. Y. Apparatus for manufacturing baskets, &c	382,278	May 1	586	149	43	632
Stevens, Thomas G., Rectory Cottage, Swanscombe, county of Kent, England. Apparatus for controlling ships' rudders	381,035	Apr. 10	1112	{297 298}	43	895
Stevens, William, Philadelphia, Pa. Hatch-door	380,410	Apr. 3	152	43	43	30
Stevens, William H., Abbott, Miss. Attachment for corn-planters	381,036	Apr. 10	1115	{298 299}	43	895

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Stevens, William H., assignor of one-half to H. K. Stevens, Buffalo, N. Y. Stem winding and setting watch	383,673	May 29	2677	798	43	1668
Stevens, William X., Washington, D. C. Making combined wire-and-picket fences	383,022	May 15	1701	442	43	957
Stevenson, Thomas F., Brooklyn, N. Y. Hollow vessel and making the same	383,023	May 15	1702	442	43	958
Stevenson, William P. (See Baratini and Stevenson.)						
Stever, James J., Owosso, Mich. Car-axle lubricator	386,913	June 26	2057	598	43	1543
Steward, John F., Chicago, Ill. Grain-binder	382,842	May 15	1431	{376 377}	43	895
Stewart, Edgar J., Sheboygan, Wis. Packing for bottles	381,980	Apr. 17	1490	401	43	306
Stewart, George W., New York, N. Y. Gas-engine	381,486	Apr. 17	1790	{476 477}	43	365
Stewart, Henry, and W. B. Wiswall, Longmont, Colo. Spring-hammer for blacksmiths	385,018	June 26	1766	457	43	1464
Stewart, James S., Philadelphia, Pa., and F. Stone, Brooklyn, N. Y. Pipe-coupling	385,148	June 26	1867	503	43	1504
Stewart, John, Newark, N. J. Fan for ventilating purposes	382,119	May 1	357	94	43	579
Stewart, John, Newark, N. J. Button-making device	384,547	June 12	1058	276	43	1369
Stewart, John K., West Mansfield, Ohio. Toll-register	384,936	June 19	1633	434	43	1448
Stewart, Walter H., Franklin, N. H. Knitting-machine	381,943	May 1	89	22, 23	43	542
Stewart, William A., assignor of one-half to J. F. Loesman, Crisfield, Md. Oyster-dredge	382,634	May 8	1134	292	43	736
Stewart, William H., Brooklyn, N. Y. Combined pants-protector and pull-strap for shoes	383,500	May 29	2436	646	43	1012
Stewart, William W., Brooklyn, N. Y. Pen-holder	381,179	Apr. 17	1336	357	43	276
Stickney, Henry C., Portland, Oreg. Truss	381,727	Apr. 24	2141	561	43	453
Stickney, Paul, Madeira, assignor of one-half to J. N. Gamble, Hamilton, Ohio. Apparatus for distilling fatty acids	384,725	June 19	1395	{345 346}	43	1389
Stidham, John, Rochester, Pa. Oven-thermometer	384,876	June 19	1557	{404 405}	43	1432
Stiebritz, Moritz, and A. Miller, Schentzen Park, N. Y. Utensil-head for canes, &c	383,598	May 29	2566	670	43	1026
Stiles, Edward R., Litchfield, Ill. Weather-strip for car-doors	381,037	Apr. 10	1117	299	43	225
Stiles, Edward R., Litchfield, Ill. Combined metal tie and fastening for railways	381,960	Apr. 24	2347	609	43	469
Stiles, Luther R., Chicago, Ill. Stock-car	382,843	May 15	1433	377	43	895
Stille & Dubbleier. (See Haddock, Worcester, assignor.)						
Stille, Oscar Q. (See Stille, Theodore J. and O. Q.)						
Stille, Theodore J. and O. Q., assignors of one-fifth to J. A. Menche, St. Louis, Mo. Folding coop or crate	383,533	May 29	2936	776	43	1111
Stillman, Charles F., New York, N. Y. Velocipede	381,035	Apr. 10	1118	299	43	226
Stilson, George W., Brooklyn, N. Y. Chamber-pail	381,180	Apr. 17	1338	357	43	276
Stilwell & Bierce Manufacturing Company. (See Rice, Alva C., assignor.)						
Stilwell, Emeline C., *et al.* (See Stilwell, Rickason, assignor.)						
Stilwell, Rickason, assignor to B. Willard and E. C. Stilwell, New York, N. Y. Screw	383,834	May 29	2937	776	43	1111
Stinernck, William A. (See McNeal and Stinernck.)						
Stirling, Allan, Yonkers, N. Y. Boiler and furnace	381,595	Apr. 24	1953	515	43	415
Stirling, Clarence C., assignor to C. E. Dustin, Hartford, Conn. Switch for electric circuits	382,332	May 8	679	172	43	608
Stirling, Clarence C., assignor to C. E. Dustin, Hartford, Conn. Switch for electric circuits	382,333	May 8	681	172	43	644
Stitzel, Frederick, assignor to American Semaphore Company, Louisville, Ky. Automatic electrical switch	382,625	May 8	1135	292	43	736
Stitzel, Frederick, and C. Weinedel, Louisville, Ky. Semaphore signal apparatus	380,409	Apr. 3	146	42, 43	43	31
Stitzel, Frederick, and C. Weinedel, assignors to American Semaphore Company, Louisville, Ky. Telegraph-relay	385,214	June 26	2058	598	43	1543
Stitzel, Frederick, and C. Weinedel, assignors to American Semaphore Company, Louisville, Ky. Electrical connector	385,215	June 26	2059	598	43	1544
Stockwell, George E., assignor of one-half to W. M. Copeland, Fitchburg, Mass. Lamp-shade holder and shade	383,415	May 22	2293	609	43	977
Stockwell, John W., Portland, Me. Manufacture of articles from hydraulic cement	384,295	June 12	682	182	43	1289
Stoddard Manufacturing Company. (See Davis, Reese O., assignor.)						
Stohlmann, Frederick A., Brooklyn, assignor to G. Tiemann & Co., New York, N. Y. Clamping device for forceps, &c	385,076	June 26	1865	476	43	1503
Stokes, George R., W. Loney, Hanley, and T. M. Favell, Etruria, county of Stafford, England. Recorder for cash-tills	384,337	June 12	750	197	43	1271
Stokes, Philip S., Tennent, N. J. Rasp	383 999	June 5	234	68	43	1160
Stokes, Samuel E., Philadelphia, Pa. Elevator	384,006	June 5	371	{164 165}	43	1192
Stollwerck, Ludwig, Cologne-on-the-Rhine, Prussia, Germany, assignor to J. H. Volkmann, New York, N. Y. Vending apparatus	384,939	June 19	1634	{424 425}	43	1448
Stone, Frederic M., Union Hill, N. J. Bill-hook file	382,497	May 8	235	237	43	606
Stone, Frederick. (See Stewart and Stone.)						
Stone, Harley A. (See Bancroft and Stone.)						
Stone, James. (See Gardiner, Marshall, assignor.)						
Stone, James, and M. Gardiner, Aurora, Ill. Apparatus for shaping corsets	383,416	May 22	2284	609	43	976
Stone, John H., Hamilton, Ontario, Canada. Tubular lantern	382,625	May 8	1137	293	43	737
Stone, Myron, Texas, N. Y. Beer-pitcher	381,291	Apr. 17	1491	402	43	306
Stone, Samuel, North Manchester, Conn., assignor to Neverslip Horse Shoe Company, Boston, Mass. Horseshoe-calk	380,363	Apr. 3	88	97	43	29
Stones, John A. (See Norton and Stones.)						
Storey, Albert H., assignor to Storey Patent Case Company, (limited,) London, England. Box or case	382,120	May 1	360	94	43	580
Storey Patent Case Company. (See Storey, Albert H., assignor.)						
Stork, Frederick, Kewaunee, Wis. Milk-can cover	383,094	May 15	1704	442	43	956
Storle, Ole O., Milwaukee, Wis., assignor of one-half to J. H. Gordon, Rochester, N. Y. Automatic trip for grain-binders	380,605	Apr. 3	450	127	43	91
Storm, Edward. (See Parsons, John G., assignor.)						
Storm, Edward, assignor to E. Storm Spring Company, (limited,) Poughkeepsie, N. Y. Spring-vehicle	382,443	May 8	851	217	43	681
Storm Spring Company, Edward. (See Storm, Edward, assignor.)						
Storrs, Joseph W., New London, Conn. Boot for carriages	381,985	May 1	94	23	43	542
Storrs, Joseph W., New London, Conn. Car-heater	383,835	May 29	2938	777	43	1111
Story, John, Castle Shannon, Pa. Pipe-coupling	381,986	May 1	97	23	43	533
Story, John, Castle Shannon, Pa. Pipe-coupling	386,977	June 26	2178	594	43	1360
Stout, Elisha, Lambertville, N. J. Rubber shoe	384,697	June 5	373	165	43	1192
Stout, John M., *et al.* (See Payne, Samuel A., assignor.)						
Stover, Cochran C., Bradford, Pa. Apparatus for operating oil-well pumps	382,625	May 15	1705	443	43	956
Stover, Daniel C., Freeport, Ill., assignor of one-half to Washburn & Moen Manufacturing Company, Worcester, Mass. Casting metal	381,635	Apr. 24	2026	533	43	420
Stow, Audley H., Baltimore, Md. Caustic-soda steam-engine	381,987	May 1	98	24	43	533
Stowe, Leroy S., Newry, Me. Mat for horse-stalls	386,149	June 26	1868	503	43	1504
Strachan, Joseph, Brooklyn, N. Y. Photographic-printing frame	380,639	Apr. 3	462	128	43	101
Straffin, Charles H., and G. L. Robertson, Chicago, Ill. Oil-can	385,388	June 26	2045	575	43	1460

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Straight, Clarence H. (See Garver and Straight.)						
Strasser, Louis, Columbus, Ohio. Sash-cord fastener	384,649	June 19	1208	319	43	1267
Stratton, Charles H., Salem, Ohio. Jump-seat vehicle	385,329	June 26	2046	{575 576}	43	1389
Stratton, Charles M. (See Stratton, Edwin A. and C. M.)						
Stratton, Edwin A. and C. M., Greenfield, Mass. Spirit-level	383,195	May 22	1964	515	43	918
Straub, Carl, Syracuse, N. Y. Wall-covering composition	382,740	May 15	1302	.....	43	778
Strauss, Ferdinand, New York, N. Y. Pocket postal-stamp and ticket holder	384,089	June 5	234	68	43	1160
Strayer, J. Fink, *et al.* (See Manning, Bradley, assignor.)						
Streeter, George D., Waco, Tex. Fire-kindler	380,606	Apr. 3	452	128	43	99
Streeter, George D., Waco, Tex. Fire-kindler	380,607	Apr. 3	453	128	43	99
Streeter, Herbert A. (See Amet, Edward H., assignor.)						
Streeter, Martin V., Franklin Falls, N. H. Screen-scraper for pulp or paper mills	383,696	May 15	1706	443	43	956
Streetman, Willard, Ad Hall, Tex. Syringe	381,511	Apr. 17	1622	483	43	373
Stribling, John V., Westminster, S. C. Vehicle-wheel	384,650	June 19	1208	319	43	1267
Strickland, John F., *et al.* (See Hopson, Franklin O., assignor.)						
Striegel, George F., Buffalo, N. Y. Bar-guide	380,636	Apr. 3	786	215	43	164
Strom, Axel A. Austin, Ill. Forming a rail-brace from T-metal	380,608	Apr. 3	545	149	43	110
Strong, George M., Boston, Mass. Water-hook for harness	384,088	June 5	373	165	43	1192
Strong, George S., New York, N. Y. Junction-piece for steam-boilers	381,639	Apr. 10	1118	{299 300}	43	226
Strong, George S., New York, N. Y. Steam-boiler	382,961	May 1	276	72, 73	43	564
Stroud, Henry M., Chase, Kans. Watch-chain attachment	382,627	May 8	1138	293	43	737
Stroup, George M., Philomath, Oreg. Stump-extractor	381,881	Apr. 24	2348	609	43	490
Struck, Charles E., assignor of one-half to J. A. Baldwin, Newark, N. J. Car-heater	383,417	May 22	2286	{609 610}	43	978
Strunk, Daniel. (See Keanedy and Strunk.)						
Strupp, Josef, New York, N. Y. Cooking-stove	383,418	May 22	2296	610	43	978
Stuart, David M., Traer, Iowa. Halter	383,836	May 29	2940	777	43	1112
Stuart, Levi B., assignor of one-half to W. E. Roberts, Seymour, Conn. Truss	381,089	Apr. 10	1209	323	43	243
Stuart, Sinclair, Plainfield, N. J. Separator	383,674	May 29	2677	798	43	1068
Stubbs, Daniel H., assignor to T. Ellsborough, Prescot, county of Lancaster, England. Rein-holder	381,988	Apr. 17	1492	402	43	307
Stuck, Levi, Hart, Mich., assignor to H. D. Justi, Philadelphia, Pa. Dental chair	381,040	Apr. 10	1120	300	43	226
Stump, Noah. (See Hoke, Lewis A., assignor.)						
Sturgeon, John C., Erie, Pa. Pipe or hose coupling	380,363	Apr. 3	89	97	43	30
Sturla, Jacob J. (See Ellis, Charles S., assignor.)						
Sturtevant, Thomas L., Framingham, Mass. Spring-vehicle	385,019	June 26	1767	457	43	1465
Suelbert, George. (See Davis, Jay C., assignor.)						
Sugg, William T., Westminster, England. Apparatus for heating water and other liquids	383,921	June 5	115	33	43	1143
Suhr, William M., Brooklyn, N. Y. Covering	383,599	May 29	2567	679	43	1038
Sullivan, Charles A. (See Sullivan, John D. and C. A.)						
Sullivan, Charles A. and J. D., Windsor, Ontario, Canada. Hood for horses	382,608	May 8	1202	312	43	750
Sullivan, John D. (See Sullivan, Charles A. and J. D.)						
Sullivan, John D. and C. A., Windsor, Ontario, Canada. Animal-pleasing device	385,077	June 26	1866	476	43	1503
Sumner, Adien E. (See Davis, John S., assignor.)						
Sunny, Bernard E., Chicago, Ill. Electric-light system	385,930	June 26	1769	457	43	1465
Surles, Susan E., Chipley, Ga. Folding hat-box	380,364	Apr. 3	91	27, 28	43	30
Sutherland, Daniel A., Lynn, Mass. Presser-foot for sewing-machines	381,090	Apr. 10	1210	324	43	243
Sutherland, John B., Detroit, Mich. Railway	382,393	May 8	777	197	43	667
Sutherland, John B., Detroit, Mich. Railway	382,394	May 8	778	197	43	667
Sutherland, Sylvanus S., Indianapolis, Ind. Extension-table	384,178	June 5	500	{136 137}	43	1216
Sutphen, Thomas J. (See Meyer and Sutphen.)						
Sutro, Emil, *et al.* (See Chester, Elijah G., assignor.)						
Sutro, Ludwig. (See Appleton, Charles J., assignor.)						
Sutro, Paul E., *et al.* (See Chester, Elijah G., assignor.)						
Sutton, Benjamin F., Brooklyn, N. Y. Syringe	383,257	May 22	2092	541	43	937
Sutton, Eugene S., Snohomish, Wash. Ter. Clothes-drier	384,179	June 5	501	137	43	1216
Sutton, Henry, Ballarat, Victoria. Converting a photographic image on a gelatine surface into a relief or intaglio	381,091	Apr. 10	1210	.....	43	243
Sutton, Henry M. (See Crowdus and Sutton.)						
Sutton, John W., New York, N. Y. Machine for plucking furs	383,258	May 22	2093	{541 542}	43	937
Swafford, Levi W., and C. A. Burns; said Burns assignor to A. O. Hardenstein, Vicksburg, Miss. Toilet jar commode	384,218	June 5	556	153	43	1229
Swain, Hadwen, San Francisco, Cal. Photographic camera	384,940	June 19	1635	425	43	1448
Swan, George E. (See Munger, Ernest A., assignor.)						
Swan, Henry C., Oshkosh, Wis. Gear-iron for vehicles	381,181	Apr. 17	1338	357	43	276
Swan, James, Seymour, Conn. Machine for grooving bit-blanks	381,092	Apr. 10	1211	324	43	243
Swan, William L., Lansing, Mich. Burglar-alarm	382,669	May 8	1203	312	43	750
Swank, Irwin, Paris, Ill. Head-block for saw-mills	383,600	May 29	2567	680	43	1038
Swarthout, James J., Stone's Prairie, Ill. Gate roller and hinge	382,844	May 15	1435	377	43	896
Swarts, Henry J., assignor of one-half to J. W. Dart, Detroit, Mich. Electrical hand-cord tip	380,829	Apr. 10	787	215	43	165
Swartzwelder, Harrison, *et al.* (See Allfree, James B., assignor.)						
Sweasy, George R. (See Pearson, William E., assignor.)						
Sweet & Clark Manufacturing Company. (See McPherson, Henry, assignor.)						
Sweet, William A., Syracuse, N. Y. Making wire	383,398	May 22	2150	570	43	954
Sweet, William A., Syracuse, N. Y. Elliptic spring	383,399	May 22	2150	570	43	954
Sweetl, George C., assignor to W. A. Aiken, Merwick, Conn. Adjustable joint	384,297	June 12	685	182	43	1261
Swem Automatic Switch Company. (See Swem, James M., assignor.)						
Swem, James M., assignor to Swem Automatic Switch Company, Denver, Colo. Automatic switch for railways	384,651	June 19	1209	319	43	1267
Swift, Orrin W., New Haven, Conn. Couch-lamp	382,049	May 15	1796	465	43	875
Swift, Orrin W., New Haven, Conn. Die for shaping sheet metal	383,061	May 15	1797	465	43	875
Syester, William, Asherville, Ind. Weather-strip	383,537	May 29	2941	{777 778}	43	1112
Sylvén, Walfrid T., Washington, D. C. Stern-post and stern-frame for steamships	382,614	May 1	194	50	43	550
Symmes, Frederick W., George's Station, S. C. Cotton-planter	381,964	May 1	94	22	43	532
Tabor, Byron D., Wilson, N. Y. Apple paring, coring, and slicing machine	383,922	June 5	117	{34 35 36}	43	1143
Taft, Edward L., and C. L. Jones, assignors to Heywood Brothers & Co., Gardner, Mass. Rattan-measuring machine	383,197	May 22	1965	{515 516}	43	918

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Taft, George F., Boston, Mass. Electric burglar-alarm	382,444	May 8	853	218	43	681
Taft, George W., Kennett Square, Pa. Machine for making, repairing, and clearing roads	380,854	Apr. 10	906	261	43	201
Taft, George W., Kennett Square, Pa. Pole-attaching axle-plate for wheeled scrapers, agricultural machines, and similar purposes	382,015	May 1	196	50	43	550
Taft, Joseph W. (See Durkee, George R., assignor.)						
Tag, William, and S. C. Smith, Philadelphia, Pa. Electric gas-lighting device and gas-cock	384,796	June 19	1424	373	43	1410
Tainter, Charles S., Washington, D. C. Gruphophone	380,535	Apr. 3	343	98, 99	43	70
Talbot, George E., Tyngsborough, assignor of one-half to L. A. Thomas, Middleborough, Mass. Temperature-regulator for incubators	382,779	May 15	1352	356	43	788
Talbott, John M., *et al.* (See Rice, James, assignor.)						
Tallman, Frank G., Beaver Falls, Pa. Jar-clamp	384,099	June 5	374	105	43	1192
Tangye, John H., Soho, and W. Johnson, Jr., Moxley, county of Stafford, England. Cut-off mechanism for slide-valves	380,955	Apr. 10	988	{361 382.	43	201
Tankersley, Ewing D. (See Hyatt and Tankersley.)						
Tanner, Oscar A., Jersey City, N. J. Artificial stone	380,830	Apr. 10	788	.....	43	165
Tapley Machine Company. (See Addy, Charles J., assignor.)						
Tasker, Stephen P. M., Philadelphia, Pa. Roller-mandrel	382,016	May 1	197	51, 52	43	550
Tasker, Stephen P. M., Philadelphia, Pa. Rolling-mill for making tubes	382,017	May 1	202	53	43	551
Tatman, Oliver, and J. Byar, Augusta, Ky. Weather-strip	382,780	May 15	1355	356	43	788
Tatum & Bowen. (See Roe, Alpheus E., assignor.)						
Taylor, Abraham B., Cincinnati, Ohio. Grain-car door	385,021	June 26	1770	458	43	1486
Taylor, Cyrus, Denver, Colo. Heating railway-cars	383,340	May 22	2228	591	43	967
Taylor, Edward T., Oakland, Cal. Cash register and indicator	380,831	Apr. 10	788	{215 216	43	165
Taylor, Frederic E., Birmingham, county of Warwick, England. Stocking-suspender clip	385,330	June 26	2252	576	43	1580
Taylor, Frederick, Lowell, Mass. Coat and hat hook	384,001	June 5	215	69	43	1165
Taylor, George R., Birmingham, England. Machine-vise	381,890	Apr. 24	2391	622	43	580
Taylor, George R., Louisville, Ky., and W. Heckert, Yonkers, N. Y. Suspended cable and electric railway	381,862	Apr. 24	2350	609	43	491
Taylor, H. E., *et al.* (See Taylor, Miles D., assignor.)						
Taylor, Harrison H., assignor to Detroit Steam Radiator Company, Detroit, Mich. Machine for assembling radiator-loops	380,536	Apr. 3	347	{99 100	43	71
Taylor, Hilbert E., Bloomington, assignor of one-half to M. D. Taylor, Janesville, Wis. Machine for turning irregular forms	384,002	June 5	236	69	43	1167
Taylor, Israel B., Boston, Mass. Reed-organ	382,018	May 1	208	54, 55	43	552
Taylor, James. (See Neilson and Taylor.)						
Taylor, James H., Westfield, Mass. Churn-cover	380,832	Apr. 10	791	216	43	165
Taylor, John. (See Dowson and Taylor.)						
Taylor, John W., Pittsborough, N. C. Steam-regulator	384,727	June 19	1337	346	43	1389
Taylor Metallic Railway Tie Company. (See Hunter, Rudolph M., assignor.)						
Taylor, Miles D. (See Taylor, Hilbert E., assignor.)						
Taylor, Miles D., assignor of three-fourths to J. Sally, F. Vandewater, and H. E. Taylor, Janesville, Wis. Carriage-top	381,219	June 5	557	153	43	1229
Taylor, Thomas J., Howell, Tenn. Stirrup	385,150	June 26	1969	504	43	1585
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	380,537	Apr. 3	349	100	43	72
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn.) Lock	381,293	Apr. 17	1492	{492 493	43	307
Taylor, Wesley, Somerville, Mass. Blacking-box holder	384,338	June 12	751	197	43	1272
Taylor, William H., Hampton, Ontario, Canada. Loom-temple	383,501	May 29	2437	647	43	1012
Tea, William A., Clyde, Ohio. Wire-cloth holder	381,294	Apr. 17	1494	493	43	307
Teal, Daniel E., Oneida Castle, N. Y. Hand-cart	384,402	June 12	843	{219 230	43	1229
Tebbetts, Charles F., Fitchburg, Mass., assignor to Tebbetts Rolled Forging and Machine Company, Kittery, Me. Machine for rolling metal articles to form	384,878	June 19	1559	405	43	1432
Tebbetts Rolled Forging and Machine Company. (See Tebbetts, Charles F., assignor.)						
Tedder, Louis, near Alvord, Tex. Corn and cotton planter	382,569	May 8	1051	268	43	720
Teed, Ralph L., assignor of one-half to A. McGuire, Chicago, Ill. Elevator-brake	380,465	Apr. 3	233	63	43	47
Teichmann, Richard, Brooklyn, N. Y. Rotary toy						
Templeton, David W., *et al.* (See Clifford, William P., assignor.)	384,403	June 12	844	230	43	1230
Tenney, Charles L., assignor of one-half to A. Sawyer, Fitchburg, Mass. Counter-stiffener machine	380,464	Apr. 3	232	63	43	47
Terrell, Isaac H., New York, N. Y. Bench-stop	384,405	June 12	849	221	43	1230
Terry, Solon M., Pittsfield, Mass. Register and recorder for revolving shafts	384,479	June 12	943	245	43	1309
Tesla, Nikola, New York, N. Y. Electrical transmission of power	382,280	May 1	502	150	43	682
Tesla, Nikola, New York, N. Y. Electrical transmission of power	382,281	May 1	506	151	43	682
Tesla, Nikola, New York, N.Y., assignor of one-half to C. F. Peck, Englewood, N.J. Electro-magnetic motor	382,282	May 1	507	151	43	682
Tesla, Nikola, New York, N.Y., assignor of one-half to C. F. Peck, Englewood, N.J. Electro-magnetic motor	381,968	May 1	101	24, 25	43	534
Tesla, Nikola, New York, N. Y., assignor of one-half to C. F. Peck, Englewood, N.J. System of electrical distribution	381,969	May 1	105	25	43	534
Tesla, Nikola, New York, N.Y., assignor of one-half to C. F. Peck, Englewood, N.J. Electro-magnetic motor	381,970	May 1	107	26	43	534
Tesla, Nikola, New York, N. Y., assignor of one-half to C. F. Peck, Englewood, N.J. Commutator for dynamo-electric machines	382,279	May 1	569	149	43	682
Thacher, Peter, M. H. and W. D. Morris, assignors to A. C. Calkins, trustee, Chicago, Ill. Adjustable packing for stuffing-boxes	382,845	May 15	1436	378	43	886
Thacker, G. W., *et al.* (See Carroll, Samuel C., assignor)	382,334	May 8	663	173	43	649
Thaisen, John H., Chicago, Ill. Roller for producing alto-relievo ornamentation	380,833	Apr. 10	793	216	43	165
Thaxter, George E., Boston, Mass. Machine for lighting and extinguishing gas	381,440	Apr. 17	1715	{459 460	43	358
Thenis, Peter. (See McCarthy and Thenis.)						
Thibouville, Louis E. J., Paris, France. Mechanical musical instrument	380,608	Apr. 3	454	{128 129	43	93
Thierwechter, Emery. (See Heimlich, John, assignor.)						
Thoens, Burchard. (See Cook and Thoens.)						
Thomas, Allen E., and S. Ritty, assignors to Ohio Rake Company, Dayton, Ohio. Draft apparatus for vehicles	384,169	June 5	375	105	43	1189
Thomas, Benjamin F., Delaware, Ohio. Dash-board	383,691	May 29	2529	699	43	1089
Thomas, Benjamin F. and J. C., Louisa, Ky. Wicket-dam	382,395	May 8	779	199	43	687

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Thomas, Conrad, assignor of two-thirds to W. Windus and J. G. Jung, Baltimore, Md. Door-check	382,283	May 1	600	152	43	683
Thomas, George. (See Staub, Emil, assignor.)						
Thomas, James S. (See Tyler and Thomas.)						
Thomas, John C. (See Thomas, Benjamin F. and J. C.)						
Thomas, John H. (See Young and Shertzer, assignors.)						
Thomas, John W., Tyrone, Pa. Railway-car	380,705	Apr. 10	601	{165 166	43	129
Thomas, Joseph D., South Framingham, Mass. Rubber boot	382,498	May 8	836	237	43	697
Thomas, Joseph D., South Framingham, Mass. Machine for covering or insulating wire	384,404	June 12	845	230	43	1230
Thomas, Joseph D., New York, N. Y. Insulated wire	382,781	May 15	1356	356	43	789
Thomas, Lyman A. (See Talbot, George E., assignor.)						
Thomas Manufacturing Company. (See Miller, John C., assignor.)						
Thomas Manufacturing Company. (See Normand, Joseph M., assignor.)						
Thomas, Theodore B., Quincy, Mass. Spreader for hammocks	384,728	June 19	1328	346	43	1269
Thompson, Adelbert L., East Avon, N. Y. Tightener and fastener for wires	381,296	Apr. 17	1494	493	43	307
Thompson, Charles H., Bartow, Fla., assignor to A. E. Brown, Cleveland, Ohio. Suspended tramway	382,789	May 15	1359	357	43	789
Thompson, Charles K. (See Shay, James L., assignor.)						
Thompson, Edward P., Elizabeth, N. J. Manufacture of incandescent electric lamps	382,846	May 15	1438	378	43	886
Thompson, Edward P., Elizabeth, N. J. Manufacture of incandescent electric lamps	383,675	May 29	2678	709	43	1062
Thompson, Edward P., Elizabeth, N. J. Evacuating electric lamps	383,676	May 29	2680	709	43	1062
Thompson, Elias H., Newark, assignor of one-half to E. J. Clark and J. B. Welch, Tulare, and C. A. Sherman, Los Gatos, Cal. Steam-generator	384,941	June 19	1636	425	43	1449
Thompson, George H., Reading, Pa. Ladder	381,636	Apr. 24	2037	{532 534	43	428
Thompson, George L., Englewood, Ill. Sash-cord fastener	381,738	Apr. 24	2142	561	43	453
Thompson, George M., Somerville, assignor to E. H. Ashcroft, Lynn, Mass. Agitator for casks or barrels	385,151	June 26	1970	504	43	1585
Thompson, Isaac C., Andrew, Iowa. Sled-brake	384,548	June 12	1061	276	43	1230
Thompson, John, and S. B. Secrist; said Secrist assignor to J. Thompson & Sons, (limited,) Beloit, Wis. Plow	385,210	June 26	2060	{548 549	43	1544
Thompson, John C., administrator. (See Thompson, Nathan.)						
Thompson, Joseph, and J. O. Stephens, St. Joseph, Mo. Weather-strip	384,003	June 5	240	70	43	1168
Thompson, Joseph W., assignor to Buckeye Engine Company, Salem, Ohio. Valve-gear	381,596	Apr. 24	1955	515	43	416
Thompson, Joseph W., assignor to Buckeye Engine Company, Salem, Ohio. Governor	381,597	Apr 24	1958	516	43	416
Thompson, Joseph W., assignor of one-half to Buckeye Engine Company, Salem, Ohio. Governor	385,152	June 26	1971	504	43	1585
Thompson, Nathan, deceased, Brooklyn, N. Y., J. C. Thompson administrator. Filling and pouring nozzle	381,971	May 1	109	26	43	534
Thompson, Richard, New York, assignor of one-half to J. S. Bushnell, Brooklyn, N. Y. Grate-bar	384,729	June 19	1329	347	43	1269
Thompson & Sons, John. (See Thompson and Secrist, assignors.)						
Thompson, William D., Bath, assignor of one-half to J. J. Donahue, Keene, N. H. Glove-fastener	385,331	June 26	2258	577	43	1589
Thompson, William W., Guthrie Centre, Iowa. Broom-head	385,217	June 26	2062	549	43	1544
Thomson & Co., Judson L. (See Unbehend, Jacob J., assignor.)						
Thomson Electric Welding Company. (See Thomson, Elihu, assignor.)						
Thomson, Elihu, Lynn, Mass. Electric meter	381,441	Apr. 17	1718	490	43	358
Thomson, Elihu, Lynn, Mass. Electro-mechanical device	381,442	Apr. 17	1721	{491 492	43	358
Thomson, Elihu, Lynn, Mass. Electric meter	381,443	Apr. 17	1726	492	43	358
Thomson, Elihu, Lynn, Mass. Alternating-current regulator	382,336	May 8	688	174	43	649
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Alternating-current dynamo-electric machine	382,335	May 8	684	173	43	649
Thomson, Elihu, Lynn, assignor to Thomson Electric Welding Company, Boston, Mass. Apparatus for electric welding	385,022	June 26	1772	458	43	1486
Thomson-Houston Electric Company. (See Thomson, Elihu, assignor.)						
Thorn, Theodore, St. Clair, Pa. Washing-machine	384,298	June 12	686	183	43	1261
Thowless, Orlando M., Newark, N. J. Obtaining sodium, &c	380,775	Apr. 10	711	.....	43	151
Thowless, Orlando M., Newark, N. J. Apparatus for obtaining sodium, &c	380,776	Apr. 10	712	196	43	151
Threlkeld, Charles D., Benton, Ill. Case for the preservation of books	381,188	Apr. 17	1341	{357 358	43	277
Thresher, Harry. (See Dearlove and Thresher.)						
Thurman, William C. (See Jefferis and Thurman.)						
Tibbitts, John B. (See Mackie, Robb, assignor.)						
Tibbles, Charles E., Chicago, Ill. Sewing-machine	383,419	May 22	2298	610	43	976
Tibbles, Charles E., Chicago, Ill. Sewing-machine	383,924	June 5	196	37	43	1145
Tibbles, George N., Jersey City, N. J. Boat	381,739	Apr. 24	2143	{561 562	43	453
Tichenor, Robert R., and P. Walker, Henning, Minn. Stump-puller	383,198	May 22	1966	516	43	916
Tiemann & Co., George. (See Stohlmann, Frederick A., assignor.)						
Tiffany, John H., Dimock, Pa. Draft attachment for vehicles	381,183	Apr. 17	1341	358	43	277
Tilden, Bert E., Youngstown, Ohio. Car and engine replacing frog	383,779	May 29	2651	750	43	1085
Tilden, James A., Hyde Park, Mass., assignor to Hersey Meter Company, Portland, Me. Rotary water-meter	380,669	Apr. 3	547	150	43	110
Tilghman, Samuel H. T., Worcester County, Md. Hoe	384,879	June 19	1561	406	43	1433
Tilgner, Gustav, and J. C. Wilcke, Chicago, Ill.; said Wilcke assignor to said Tilgner. Mash-tub	384,180	June 5	502	137	43	1218
Tillman, George D., *et al.* (See Kearney, William F., assignor.)						
Tilletson, A. Fred. (See Mackintosh, John C., assignor.)						
Tilletson, Augustine A. (See Keavy, Terrence E., assignor.)						
Tilton, Fred C. (See Escobar, Juan de la Cruz, assignor.)						
Tilton, Ralph, New York, N. Y., and M. Cowen, Chicago, Ill. Drapery-hook	384,004	June 5	241	70	43	1168
Timberlake, Mahlon H., Layfette, Ind. Pump	383,780	May 29	2653	750	43	1085
Timmis, Illius A., and S. C. C. Currie, London, county of Middlesex, England. Apparatus for lighting railway-cars by electricity	383,592	May 29	2438	647	43	1012
Tinsman, Thomas J., Godwin, Tenn. Vehicle-brake	380,365	Apr. 3	91	26	43	20
Tinsman, James, assignor of one-half to E. M. Reward, Columbus, Ohio. Car-coupling	381,184	Apr. 17	1342	358	43	277
Tinpson, Fred C. (See Browne, Walter D., assignor.)						
Tipping, Henry G., Kingstown, county of Dublin, Ireland. Endless plateway for wheeled vehicles	384,797	June 19	1425	373	43	1410
Tipton, Dio P., Brownville, Nebr. Curry-comb	384,798	June 19	1427	374	43	1410
Tipton, Dio P., Brownville, Nebr. Curry-comb	384,799	June 19	1429	{374 375	43	1410

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Tipton, Dio P., Brownville, Nebr. Curry-comb	384,690	June 19	1439	375	43	1411
Tisdale, Charles D., assignor to himself and J. D. Gould, Boston, Mass. Railway-signal	382,741	May 15	1392	349	43	776
Titus, Herman P., Lisbon, N. H. Sleigh-knee	382,259	May 22	2066	542	43	930
Tobey, William L., Boston, Mass. Vise	380,734	Apr. 10	949	179	43	139
Tobey, William L., Boston, Mass. Wrench	380,735	Apr. 10	950	180	43	139
Todd, Asahel, Pulneyville, N. Y. Apparatus for bleaching fruit	384,880	June 19	1502	408	43	1434
Todd, Edmund N., Newark, N. J. Varnish	384,005	June 5	948	.....	43	1143
Toler, George W., Neodesha, Kans. Car-coupling	383,781	May 29	2854	751	43	1095
Toles, Samuel H., Rosendale, Mo. Combined back-band buckle and trace-carrier	383,782	May 29	2855	751	43	1096
Tolhurst, Alfred, Gravesend, C. A. Glasbrook, Charlton, A. Philbey, Gravesend, county of Kent, and T. Lockerbie, Commercial Road, county of Essex, England; said Glasbrook, Philbey, and Lockerbie assignors to said Tolhurst. Grate	381,185	Apr. 17	1343	350	43	277
Tolle, Morris, assignor of one-third to H. L. Fox, St. Louis, Mo. Grip-gear for cable roads	381,489	Apr. 17	1791	477	43	365
Tolman, Gayger D., assignor to himself and L. D. Roberts, Shawano, Wis. Folding hat and coat rack	383,153	June 26	1973	505	43	1368
Tolman, Gayger D., and L. D. Roberts, Shawano, Wis. Commode	384,096	June 5	943	70	43	1139
Tolson, James C. (See Tolson, Stephen B. and J. C.)						
Tolson, Stephen B. and J. C., Kansas City, Mo. Three-wheel riding-plow	382,019	May 1	899	55,56	43	9
Tomblin, Lee E., *et al.* (See Reynolds, Walter S., assignor.)						
Tomlin, Albert B., Fort Collins, Colo. Twine-holder	383,157	May 22	1914	500	43	998
Tompkins, Albert. (See Firth and Tompkins.)						
Tompkins, Ira. (See Firth and Tompkins.)						
Tonge, Richard, Alderley Edge, county of Chester, England. Piston and plunger	383,783	May 29	2856	751	43	1096
Tonna, Louis N., New Brighton, assignor of two-thirds to G. H. Allen, New York, and E. H. Hall, Brooklyn, N. Y. Gun-carriage	384,942	June 19	1637	425	43	1449
Tooker, George W., New York, N. Y. Invalid's bed-pan	381,972	May 1	111	26	43	535
Topham, Charles. (See Topham, Henry and C.)						
Topham, Henry and C., Philadelphia, Pa. Loom for weaving lene fabrics	383,638	May 29	2842	778	43	1119
Toppan, Charles, Salem, Mass. Scouring composition for fibers and fabrics	381,444	Apr. 17	1740	.....	43	353
Torbeck, William H., assignor to J. M. Hutton & Company, Richmond, Ind. Coffin-fastener	384,181	June 5	504	136	43	1218
Torkelson, Reichard T. (See Johnson and Torkelson.)						
Torkelson, Reichard T., and I. Johnson, Worcester, Mass. Plane	381,186	Apr. 17	1345	360	43	278
Torrey, Edward S. (See Bull, August, assignor.)						
Toucey, Sarah E., New York, N. Y. Grape-seed extractor	381,657	Apr. 24	2039	534	43	433
Tousley, Reuben J. (See Pomroy, John R., assignor.)						
Tower, Lewis C. (See Barns, John, assignor.)						
Townley, Carter S., Gainesville, Tex. Heating railway-cars	383,839	May 29	2843	779	43	1112
Townsend, Joseph, Glasgow, county of Lanark, Scotland. Depilating and bating	381,730	Apr. 24	2145	.....	43	453
Townsend, Samuel D. (See Carmichael and Townsend.)						
Tracy, Jacob H. (See Tracy, William and J. H.)						
Tracy, Patrick J., Racine, Wis. Electric switch	385,022	June 26	1775	459	43	1486
Tracy, William and J. H., Cambridge, Mass. Rowing-machine	381,187	Apr. 17	1346	360	43	278
Trapp, Ferdinand, Chicago, Ill. Folding table and blackboard combined	380,366	Apr. 3	93	28,29	43	91
Trask, Charles H., Lynn, Mass., assignor to Duplex Shoe Trimmer Company, Portland, Me. Boot and shoe sole trimming machine	380,609	Apr. 3	456	129	43	93
Trask, Charles H., Lynn, Mass., assignor to Duplex Shoe Trimmer Company, Portland, Me. Boot or shoe trimming machine	383,331	May 22	2160	570 / 571	43	864
Travers, Vincent P., New York, N. Y. Hammock-spreader	381,863	Apr. 24	2351	610	43	491
Travers, Vincent P., New York, N. Y. Holder for hammock-supporting ropes	381,864	Apr. 24	2352	610	43	491
Treat, Francis H., assignor of two-thirds to H. S. Smith and C. Pettigrew, Joliet, Ill. Bloom shear-table and crop-end conveyer	384,220	June 5	558	153 / 154	43	1229
Tregoning, John. (See Perkins and Tregoning.)						
Tregoning, John, Hartford, Conn. Electric indicator	382,914	May 15	1532	401	43	926
Trenton Iron Company. (See Hewitt, William, assignor.)						
Trenton Iron Company. (See Withington, James, assignor.)						
Trowbitt, Wayne D. (See Blevens, Nathan W., assignor.)						
Tridell, John F., Clinton, Iowa. Machine for swaging saw-teeth	382,062	May 1	277	73	43	564
Trim, Eunice A., Malone, N. Mex. Ter. Canteen	382,020	May 1	211	56	43	552
Trimble, John S. (See Lutz, George W., assignor.)						
Trimble, John S. (See Lutz and Dillon, assignors.)						
Tripp, George W., Auburn, N. Y. Adjustable stool or chair	381,188	Apr. 17	1347	360	43	278
Tripp, Ira B., Aurora, Ill. Window-curtain bar	381,189	Apr. 17	1348	360	43	278
Trisler, John W. (See Wallace, John M., assignor.)						
Trorlicht, August, *et al.* (See Maurino, Henry Q., assignor.)						
Trott, Michael. (See Bachulcin, Joseph, assignor.)						
Trovillion, James C., Sanburn, Ill. Combined screw-holder, screw-driver, and countersink	382,670	May 8	1204	312	43	750
Trowbridge, Frank, assignor to H. T. Sackett, Fond du Lac, Wis. Car-heater	381,512	Apr. 17	1820	483	43	373
Troy Laundry Machinery Company. (See Downs, George N., assignor.)						
True, Irving J., Hope Valley, R. I. Tag or label for poultry	381,598	Apr. 24	1900	516	43	417
True, Moses R., assignor to Batavia Wheel Company, Batavia, N. Y. Vehicle-hub	381,591	Apr. 24	2283	622	43	500
Truesdell, Lucius E., Bristol, N. H. Locomotive fire-extinguishing apparatus	380,956	Apr. 10	969	202	43	201
Truesdell, Lucius E., assignor of one-half to N. W. Cass, Bristol, N. H. Car heater and lighter	380,411	Apr. 3	153	44	43	32
Tryon, Charles H. (See Alexander, James H., assignor.)						
Tryon, Le Roy C., Marseilles, Ill. Automatic grain weighing and registering apparatus	385,024	June 26	1776	459	43	1487
Tubbs, Edward M. (See Gorrell and Tubbs.)						
Tucker, Stephen D., *et al.* (See Crowell, Luther C., assignor.)						
Tucker, Thomas, Marseilles, Ill. Compensating gear	382,337	May 8	691	174	43	650
Tuesh, Ambrose H., *et al.* (See Jarboe and McHale, assignors.)						
Tullar, Samuel, Warden, Quebec, Canada. Stain for brick-work	383,330	May 22	2160	.....	43	954
Tullock, Seymour W., *et al.* (See Patton, William P., assignor.)						
Tully, Charles H., Middletown, Cal. Revolving show-case	382,445	May 8	854	218	43	681
Turner, J. Stanley, Rockland, Mass. Last	382,338	May 8	692	174	43	650
Turner, J. Stanley, Rockland, Mass. Last	382,339	May 8	693	174	43	650
Turner, James J., assignor to himself and J. F. Miller, Richmond, Ind. Switch and signal interlocking	381,603	Apr. 10	1214	305 / 306	43	944
Turner, James J., assignor to himself and J. F. Miller, Richmond, Ind. Device for actuating railway-signals	382,984	May 1	699	152	43	625
Turner, James J., assignor to himself and J. F. Miller, Richmond, Ind. Signal-compensator	385,025	June 26	1778	459	43	1487
Turner, Simeon, assignor of one-half to H. J. Coles, Warren, Ind. Barrel-lifter	380,640	Apr. 3	406	128	43	101
Turner, Thomas G., New York, N. Y. Chemical fire-extinguisher	381,656	Apr. 24	2040	534	43	433
Turner, William B., Schenectady, N. Y. Journal-box	385,288	June 26	2184	558	43	1508
Tuttle, Elias A., *et al.* (See Littlefield, Charles A., assignor.)						
Tuttes, Arthur W., Eau Claire, Mich. Hay-carrier	380,413	Apr. 3	154	44	43	32
Twist, Charles H., New York, N. Y. Steam-boiler	384,943	June 19	1638	426	43	1449

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Twitchell, Frank M., assignor to H. Twitchell & Son, Naugatuck, Conn. Safety-pin	381,513	Apr. 17	1631	484	43	372
Twitchell, Selden, Philadelphia, Pa. Bottle-stopper	380,957	Apr. 10	960	202	43	201
Twitchell & Son, H. (See Twitchell, Frank M., assignor.)						
Tyden, Emil, Chicago, Ill. Door-check	380,267	Apr. 3	94	29	43	91
Tyler, George L., Troy, N. Y. Curtain-roller support	381,041	Apr. 10	1121	301	43	226
Tyler, James A. M., and J. S. Thomas, Plum Creek, Nebr. Four-horse equalizer	384,652	June 19	1211	330	43	1366
Tyler, Merrill A., Easton, and E. Merrist, Brockton, Mass., assignors to American Heeling Machine Company, Portland, Me. Heeling-machine	382,121	May 1	361	95	43	589
Tyrrell, Asahel H., Tyrrell Hill, Ohio. Mail-plate feeder	381,589	Apr. 24	1900	516	43	417
Udell, Calvin G. (See Leach, Joseph, assignor.)						
Uhlenhart, William L., Astoria, Oreg. Car-coupling	382,783	May 15	1389	357	43	789
Uhlinger, William P. (See Uhlinger, Alfred, assignor.)						
Uhlmann, Charles R., Peoria, Ill. Key-hole guard	382,122	May 1	363	95	43	589
Uhrl, Jacob. (See Kunelson and Uhrl.)						
Ullrich, Eduard, assignor to Farbwerke, vormals Meister, Lucius & Brüning, Höchst-on-the-Main, Prussia, Germany. Production of blue coloring-matter	384,480	June 12	947	.....	43	1302
Umbach, George W., *et al.* (See Schiller, Frederick W., assignor.)						
Unkenhend, Jacob J., assignor to J. L. Thomson & Co., Syracuse, N. Y. Machine for slot-tiding rivet-shanks	381,514	Apr. 17	1632	484 / 485	43	374
Unkenhead, Jacob J., assignor to J. L. Thomson & Co., Syracuse, N. Y. Shoe-clasp	384,339	June 12	758	197	43	1372
Underwood, Harold G. (See Heine, Herman, assignor.)						
Underwood, Joseph B., Fayetteville, assignor to J. B. Duke, Durham, N. C. Vending apparatus	381,892	Apr. 24	2294	623	43	500
Union Hardware Company. (See Hartness, James, assignor.)						
Union Paper Bag Machine Company. (See Reamer, Lorenzo D., assignor.)						
United States Automatic Water Cut-Off Company. (See Browne, Walker G., assignor.)						
United States Cotton Harvester Company. (See Bagg, Owen T., assignor.)						
United States Electric Company. (See Short, Sidney H., assignor.)						
United States Electric Lighting Company. (See Kelly, John F., assignor.)						
United States Electric Lighting Company. (See Miller, Morris A., assignor.)						
United States Machine and Investione Company. (See Clawson, Clement C., assignor.)						
United States Wind Engine and Pump Company. (See Burnham and Miller, assignors.)						
Unscold, J. George, Chicago, Ill. Draft attachment for wagons	383,784	May 29	2857	752	43	1096
Unverferth, David, Dayton, Ohio. Saddle	382,446	May 8	855	218	43	681
Upington, James T., Lexington, Ky. Wheel	381,445	Apr. 17	1731	462	43	353
Upton, Charles S. (See Rhind, Frank, assignor.)						
Upton, Charles S., New York, N. Y. Lamp	381,042	Apr. 10	1122	301	43	226
Urso, Vincent D., Evansville, Ind. Heating-drum	383,381	May 22	2229	591 / 592	43	967
Usine Genevoise de Degrossissage d'Or. (See Ostermann and Lacroix, assignors.)						
Vail, James B. (See Vail, John E. and J. B.)						
Vail, James W., trustee. (See Kenna, Joseph W., assignor.)						
Vail, John E. and J. B., Fairfield, Mich. Thill coupling-pin	381,659	Apr. 24	2042	534	43	433
Vale, William T., assignor to J. G. Beard, Toronto, Ontario, Canada. Barrel-making machine	384,730	June 19	1330	347	43	1300
Valentine & Company. (See Homer, Charles S., assignor.)						
Valentine, Julius S., Albion, Mich. Ox-yoke	382,570	May 8	1052	268	43	720
Valiant, George, Toronto, Ontario, Canada. Boot or shoe	385,218	June 26	2062	529	43	1544
Vhliant, George, Toronto, Ontario, Canada, and C. Dancel, New York, N. Y. Mechanism for stamping or cutting out button-hole flies	385,219	June 26	2064	529 / 530	43	1545
Van Brunt, John C., *et al.* (See Whalen, Michael H., assignor.)						
Van der Hyden, Georges, assignor of one-half to H. F. Lee, Philadelphia, Pa. Water cooler and filter	384,801	June 19	1432	376	43	1411
Van Fleet, Voorhees T., Somerville, N. J. Apparatus for steaming cloth and other fabrics	382,063	May 1	278	73	43	564
Van Gestel, Jean T., New York, N. Y. Machine for covering wire with layers of different materials	380,610	Apr. 3	457	130	43	93
Van Gorden, Edward K., Horseheads, N. Y. Sleigh-runner	385,269	June 26	2185	559	43	1508
Van Guysling, Aaron, Albany, N. Y. Cut-off valve	381,190	Apr. 17	1349	361	43	279
Van Heusen, Frank H., Rochester, N. Y. Lathe-chuck	382,123	May 1	364	95	43	589
Van Keuren, George C., Dupuoin, Ill. Pipe-expander	381,094	Apr. 10	1217	306	43	245
Van Pelt, John K., Nashville, Tenn. Vehicle-wheel	384,482	June 12	949	246	43	1309
Van Slyke, Reuben N., Hawpatch, Ind. Tire-tightener	380,538	Apr. 3	350	100	43	72
Van Tine, Charles M., Matteawan, N. Y. Ordnance	380,368	Apr. 3	95	29	43	91
Van Tuyl, Andrew P., Jr. (See Lincoln, Charles L., assignor.)						
Van Valkenburg, Randall T., Manchester, Mich. Chemical engine	383,503	May 29	2440	647	43	1013
Van Wagoner, Horace, Newark, N. J. Horse-collar	381,191	Apr. 17	1350	361	43	279
Van Zandt, George. (See Filstrup and Van Zandt.)						
Van Zandt, George, Chicago, Ill. Hook for drum-head strainers	382,124	May 1	365	95	43	589
Vance, James R., Geneva, N. Y. Tube-cutter	380,777	Apr. 10	713	197	43	151
Vance, Samuel B. H., New York, N. Y. Combined gas and electric-light fixture	383,158	May 22	1915	500	43	908
Vance, Samuel B. H., New York, N. Y. Combined gas and electric-light fixture	383,339	May 22	2162	572	43	955
Vandegrift, Nathaniel W. (See Armstrong and Vandegrift.)						
Vandegrift, Theodore F., Noah, and A. L. Maple, Shelbyville, Ind. Fence-machine	383,785	May 29	2857	752	43	1096
Vanden, Francis M. (See Markle, Walter, assignor.)						
Vanderwaag, Maurice A., Ronkonkoma, assignor of one-half to A. Bechtold, Brooklyn, N. Y. Spectacle-temple	384,481	June 12	948	245	43	1309
Vandewater, Fred, *et al.* (See Taylor, Miles D., assignor.)						
Varley, John J. (See Barrett and Varley.)						
Vanclain, Samuel M., Philadelphia, Pa. Hoisting-tackle	381,043	Apr. 10	1123	301	43	227
Vaughan, Fred A., *et al.* (See Brooks, George E., assignor.)						
Vaughan, Ira. (See Rood and Vaughan.)						
Vaughan, William, Torrington, county of Devon, England. Glove	385,154	June 26	1974	505	43	1508
Vaughn, Charles W., *et al.* (See Gale, Charles E., assignor.)						
Vautin, Claude T. J. (See Newbery and Vautin.)						
Vavasseur, Josiah, Bear Lane, Southwark, county of Surrey, assignor to W. G. Armstrong, Mitchell & Co., (limited,) Newcastle-upon-Tyne, England. Apparatus for training guns	381,095	Apr. 10	1217	326 / 327	43	945
Vawter, William I. (See Lakin, David R., assignor.)						
Vehring, Charles, New York, N. Y. Inkstand and frame	383,199	May 22	1967	516	43	919
Verny, Etienne, Rémuzat, France. Lubricator	382,915	May 15	1533	402	43	898
Vessot, Samuel, Joliette, Quebec, Canada. Car-axle lubricator	382,246	May 1	537	137	43	612
Vestal, Charles A., Savoy, Tex. Quilting-frame	385,078	June 26	1967	477	43	1304
Vian, Mariano, Bilbao, Spain. Electric apparatus for winding clocks	383,788	May 29	2860	752	43	1096
Vianney, Jean B., Paris, France. Mirror	381,600	Apr. 24	1902	516	43	417

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Vincent, Charles R. (See Poyton, Josiah, assignor.)						
Vincent, John, Houlton, Me. Snow-plow	383,925	June 5	197	37	43	1145
Vinton, John H., Boston, Mass., assignor to Peninsular Novelty Company, Grand Rapids, Mich. Apparatus for making raceways for button-setting machines	381,296	Apr. 17	1496	404	43	307
Vinton, John H., Boston, Mass., assignor to Peninsular Novelty Company, Grand Rapids, Mich. Machine for slotting tubes	381,297	Apr. 17	1497	404	43	308
Vinton, John H., Boston, Mass., assignor to Peninsular Novelty Company, Grand Rapids, Mich. Making raceways for button-setting machines	381,298	Apr. 17	1498	404	43	308
Vinton, John H., Boston, Mass., assignor to Peninsular Novelty Company, Grand Rapids, Mich. Die for button-setting machines	382,340	May 8	694	175	43	651
Vinton, John H., Boston, Mass., assignor to Peninsular Novelty Company, Grand Rapids, Mich. Button-setting machines	382,341	May 8	695	175	43	651
Virgien, Friedrich, Yonkers, N. Y. Pipe-threading die	383,787	May 29	2083	728 / 733	43	1097
Vogel & Bros., William. (See Charleson, John, assignor.)						
Vogel & Brothers, William. (See Vogel, William, assignor.)						
Vogel, Charles, San Francisco, Cal. Safety-catch for cable railways	383,159	May 22	1916	501	43	909
Vogel Petroleum Heating Company. (See Vogel, William, assignor.)						
Vogel, William, assignor to Vogel Petroleum Heating Company, Chicago, Ill. Steam street-car motor	381,192	Apr. 17	1351	361 / 362	43	279
Vogel, William, assignor to W. Vogel & Brothers, Brooklyn, N. Y. Nozzle for sheet-metal cans	383,840	May 29	2044	779	43	1112
Vogelsang, Alexander, New York, assignor to Vogelsang Screw Propeller Company, Brooklyn, N. Y. Screw-propeller	381,193	Apr. 17	1357	363	43	280
Vogelsang Screw Propeller Company. (See Vogelsang, Alexander, assignor.)						
Volker & Felthousen Manufacturing Company. (See Granger, Almon M., assignor.)						
Volkmann, John H. (See Stollwerck, Ludwig, assignor.)						
Volkmann, Otto, Köpenick, near Berlin, assignor to W. Fischbach, Berlin, Germany. Combined lamp and cigar-cutter	384,881	June 19	1563	406	43	1434
Vollmer, Henry, Manchester, county of Lancaster, England. Button	384,007	June 5	214	70	43	1169
Volney, Carl W., Tom's River, N. J., assignor to A. S. Fitch, New York, N. Y. Explosive compound	383,420	May 22	2300	.....	43	979
Vols, William E., New York, N. Y. Surface-condenser and water-heater	384,944	June 19	1641	426	43	1450
Vom Eigen, Benno, Newark, N. J. Pocket-book frame	380,834	Apr. 10	793	217	43	166
Von der Kammer, John, Newark, N. J. Switch, circuit-breaker, &c	381,446	Apr. 17	1732	463	43	354
Von Förster, Max, Berlin, Germany. Shell	385,332	June 26	2253	577	43	1368
Von Heyden, F., Nachfolger. (See Kolbe, Carl, assignor.)						
Von Metzradt, Hans J., New York, N. Y. Carbon conductor for electric lamps	383,602	May 29	2570	.....	43	1039
Von Metzradt, Hans J., New York, N. Y. Galvanic-battery fluid	383,677	May 29	2681	.....	43	1063
Voorhis, Calvin, assignor to himself and A. Shenfield, New York, N. Y. Suspender-buckle	382,199	May 1	468	120	43	599
Vornbrock, Frederick, Boston, assignor to Bardwell, Anderson & Co., Cambridge, Mass. Corner brace or bracket for furniture	383,841	May 29	2045	779	43	1113
Vorwerk, Adolph. (See Vorwerk, Carl, assignor.)						
Vorwerk, Carl, assignor to A. Vorwerk, Barmen, Prussia, Germany. Woven skirt-waist-band	383,842	May 29	2046	780	43	1113
Voss, Frederick. (See Hegbom, Marsellus, assignor.)						
Vreeland, Cyrus E., Orange, assignor to E. Aladorf and G. D. Paul, Newark, N. J. Button-fastener	382,342	May 8	697	175	43	651
Vrooman, William P., Fremont, Ohio. Button-hole cutter	384,653	June 19	1212	320	43	1368
Vulcan Company. (See Kittredge and Adriance, assignors.)						
Vulcanite Manufacturing Company. (See Niles, William F., assignor.)						
Wächter, Anton, Berlin, Germany. Adjustable device for outlining patterns for garments	383,926	June 5	198	37, 38	43	1145
Waddel, John M., Greenfield, Ohio. Coffee-mill	382,742	May 15	1304	342	43	778
Wadleigh, Joseph, Milk's Grove, Ill. Car-coupling	383,504	May 29	2442	647	43	1013
Waffenfabrik Mauser. (See Mauser, Paul, assignor.)						
Wagner, Emil, Washington, D. C. Bird-cage spring	382,571	May 8	1053	268	43	721
Wagner, Frank, Cleveland, Ohio. Apparatus for embalming	383,505	May 29	2442	648	43	1013
Wagner, Joseph F. (See Determann, John B., assignor.)						
Wagner, Paul A. (See Eckermann, Fred, assignor.)						
Wagner, Philip, New York, N. Y. Brush	383,506	May 29	2444	648	43	1013
Wahl, Christian, *et al.* (See Hendey, Arthur, assignor.)						
Wahl, Louis, *et al.* (See Hendey, Arthur, assignor.)						
Wahlert, Henry A., assignor to American Brake Company, St. Louis, Mo. Hose-coupling	385,160	May 22	1917	501	43	909
Waine, David and I., Willenhall, county of Stafford, England. Padlock	380,961	Apr. 10	995	264	43	202
Waine, Isaac. (See Waine, David and I.)						
Waite, Henry E. (See Ethridge, Martin V. B., assignor.)						
Walcott, Henry, Rochester, Vt. Cover for sap-buckets	380,958	Apr. 10	991	262	43	202
Walden, Frank D., Jeffersonville, Ind. Shoe-upper-turning machine	380,959	Apr. 10	992	263	43	202
Waldkircher, Donat, Sandusky, Ohio. Pump	380,468	Apr. 3	234	63	43	48
Waldo, Charles P., Cincinnati, Ohio. Combined extensible sofa and bed	382,743	May 15	1305	342 / 343	43	778
Waldorf, Martin V. B. (See Fowler and Waldorf.)						
Waldron, John, New Brunswick, N. J. Winding-roll for winding paper and other fabrics	385,036	June 26	1780	460	43	1487
Wales, Walter S., Syracuse, N. Y. Fare-box chute	384,654	June 19	1213	320	43	1368
Walker, Albert H., Hartford, Conn. Sea-oiling cartridge	380,369	Apr. 3	97	29	43	22
Walker, Albert H., Hartford, Conn. Sea-oiling projectile	380,370	Apr. 3	99	30	43	22
Walker, Albert H., Hartford, Conn. Projector for sea-oiling shells	380,371	Apr. 3	100	30	43	22
Walker, Albert H., Hartford, Conn. Projector for sea-oiling shells	381,732	Apr. 24	2148	562	43	454
Walker, Albert H., Hartford, Conn. Projector for sea-oiling shells	381,733	Apr. 24	2148	562	43	454
Walker, Albert H., assignor to C. C. Clapp, Hartford, Conn. Plumber's air-cushion	381,731	Apr. 24	2146	562	43	453
Walker, Chauncey L. S., Newark, N. J. Machine for forming saw-handles	382,064	May 1	280	74	43	595
Walker, Edward, and D. Williams, Cohoes, N. Y. Making cotton-batting	382,916	May 15	1534	402	43	925
Walker, Edward W. (See Gore, Ra Ton, and Kelley, assignors.)						
Walker, Enos L., St. Louis, Mo., assignor of one-half to G. Heyt, Brooklyn, N. Y. Making egg-cases	380,960	Apr. 10	993	263	43	202
Walker, James, Chicago, Ill. Burial-casket	381,194	Apr. 17	1358	363	43	280
Walker, John. (See Salter and Walker.)						
Walker, Joseph B., Treasvant, Tenn. Wagon-brake	381,665	Apr. 24	2353	610	43	491
Walker, Philetus. (See Tichenor and Walker.)						
Walker, William C. (See McKinney, Charles B., assignor.)						
Walker, William R., and G. E. Wilbur, Taunton, Mass. Heating-stove	381,666	Apr. 10	1216	327	43	246
Walker, William H., Milford, Conn. Die for attaching terrets to hames	381,447	Apr. 17	1734	463	43	354
Walker, William H., Milford, Conn. Attaching terrets to hames	384,498	June 12	858	221	43	1299

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Walker, William H., Martinez, Ga. Safety-guard for car-trucks	385,155	June 26	1975	505	43	1368
Wall, Franklin J. (See Wilcox, Riley P., assignor.)						
Wall, Howard C., *et al.* (See Kearney, William F., assignor.)						
Wallace, J. Bennett, Chicago, Ill. Vapor-stove	380,611	Apr. 3	458	130	43	93
Wallace, J. Bennett, assignor to G. M. Clark & Company, Chicago, Ill. Vapor-stove	382,681	May 1	212	56	43	588
Wallace, James E., and C. D. Reese, La Crosse, Wis. Extension-trestle	380,539	Apr. 3	351	100	43	72
Wallace, John M., assignor to J. W. Trieler, St. Louis, Mo. Steering apparatus	380,467	Apr. 3	226	64	43	46
Wallace, Lewis. (See Packenthall and Wallace.)						
Wallace, Simeon S., *et al.* (See Odoriani, Joseph, assignor.)						
Wallace & Sons. (See Bryant, Edson L., assignor.)						
Waller, Edgar S., *et al.* (See Peacock, John W., assignor.)						
Waller, George A. (See Hitchcock, Theron S., assignor.)						
Wallstrom, John H., Rockford, Ill. Linoleum	380,706	Apr. 10	604	166	43	130
Walpole, Franklin D., McKenzie, Tenn. Oil-can	384,692	June 19	1433	376	43	1411
Walser, Charles J. (See Asmus, Edward G., assignor.)						
Walsh, Francis A., Milwaukee, Wis. Seaming-machine for sheet-metal vessels	382,499	May 8	937	236 / 239	43	697
Walsh, Francis A., Milwaukee, Wis. Seaming-machine	382,572	May 8	1054	269	43	721
Walsh, Francis A., Milwaukee, Wis. Sheet-metal vessel	383,507	May 29	2444	648	43	1013
Walter, Edward, Buffalo, N. Y. Stove-grate	381,299	Apr. 17	1500	404	43	308
Walter, William G. (See Dawes and Walter.)						
Walters, Almera R., Philadelphia, assignor of one-half to J. H. Black, Columbia, Pa., and D. L. Oliver, Camden, N. J. Overshoe	384,483	June 12	849	246	43	1309
Walters, William J., Prospect, N. Y. Suspender-buckle	381,300	Apr. 17	1501	405	43	308
Walton, John O., Belle Vernon, Ohio. Combined bridle and halter	384,407	June 12	851	221	43	1291
Walzer, Justin, Chaux-de-Fonds, Switzerland. Striking-watch	383,260	May 22	2067	542	43	938
Wanda, John C., St. Louis, Mo. Car-door	382,917	May 15	1535	402	43	925
Ward, Carlos J. (See Hotchkiss, Zerny P., assignor.)						
Ward, Charles L., Cavendish, Vt. Link and pin holder for cars	384,635	June 19	1215	321	43	1368
Ward, Charles W., New York, N. Y. (Alley	384,731	June 19	1333	.....	43	1390
Ward & Co., W. H. (See McHugh, Timothy, assignor.)						
Ward, George H., Joplin, Mo. Apparatus for collecting and utilizing waste lead-fumes	381,301	Apr. 17	1501	405	43	308
Ward, John E., and J. A. Fallgatter, Huron, Dak. Ter. Car-coupling	385,027	June 26	1781	460	43	1488
Ward, John F. (See Brinckerhoff, Henry W., assignor.)						
Ward, Seth, Princeton, Ind. Back-band hook	384,882	June 19	1565	407	43	1434
Ware, James, Madera, Cal. Machine for making honey-frames	384,549	June 12	1092	277	43	1230
Ware, Joseph G., assignor of one-half to J. G. Krantz, Marengo, Iowa. Nut-lock	382,920	May 1	470	120	43	599
Ware, Walter, Chandler, Minn. Og-bow key	380,468	Apr. 3	237	64	43	46
Ware, Walter F., Camden, N. J. Nursing-bottle	380,635	Apr. 10	794	217	43	166
Warfield, Oliver D., Chicopee Falls, Mass. Combined outside and inside calipers	380,836	Apr. 10	794	217	43	166
Waring Hat Manufacturing Company. (See Segschneider, Gustave, assignor.)						
Warnecke, August F. (See Brokaw, Isaac, assignor.)						
Warner, Austin, and J. J. D. Scoles, Knoxville, Iowa. Two-wheeled vehicle	381,449	Apr. 17	1735	463 / 464	43	354
Warner, Charles F., Orange, N. J. Pen-holder	384,101	June 5	377	106	43	1193
Warner, George W., Freeport, Ill. Spring-hinge	384,102	June 5	379	106	43	1193
Warner, George W., Freeport, Ill. Spring-hinge	384,103	June 5	380	107	43	1194
Warner, Hulbert H., Rochester, N. Y. Chute	380,707	Apr. 10	606	166 / 167	43	130
Warner, J. A. (See Pomeroy, Henry M., assignor.)						
Warner, Warren E., and F. A. Austin, assignors to J. F. Prase Furnace Company, Syracuse, N. Y. Core-arbor for hollow castings	383,603	May 29	2570	681	43	1039
Warnock & Co. (See Rothwell, William E., assignor.)						
Warren, Andrew. (See Crecelius, Louis J., assignor.)						
Warren, Andrew, *et al.* (See Phillips, Elwood C., assignor.)						
Warren & Company, S. D. (See Warren and Cloudman, assignors.)						
Warren, Elmer E. (See Smith, Jud, assignor.)						
Warren, George E. (See Fowler and Warren.)						
Warren, Henry H. (See Laundry, Andrew, assignor.)						
Warren, John E., and F. A. Cloudman, Cumberland Mills, Me., assignors to S. D. Warren & Company, Boston, Mass. Apparatus for the recovery of soda	380,670	Apr. 3	548	150	43	110
Warren, Lewis, McGrawville, N. Y. Spring-seat for vehicles	385,033	June 26	1792	462	43	1469
Warrington, Jesse, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Grain-heater	383,027	May 15	1767	443	43	830
Warter, Antoine, and H. C. Koegel, Newark, N. J. Tanning	380,708	Apr. 10	606	.....	43	130
Warter, Antoine, and H. C. Koegel, Newark, N. J. Alum-tanned skin	381,734	Apr. 24	2149	.....	43	454
Warth, Albin, Stapleton, N. Y. Cloth-cutting machine	380,962	Apr. 10	996	264 / 265	43	202
Warth, Albin, Stapleton, N. Y. Cloth-cutting machine	380,963	Apr. 10	998	265 / 266	43	203
Warwick Cycle Manufacturing Company. (See Nickerson, Fred. A., assignor.)						
Warwick Cycle Manufacturing Company. (See Warwick, George T., assignor.)						
Warwick, George T., assignor to Warwick Cycle Manufacturing Company, Springfield, Mass. Velocipede	384,945	June 19	1642	426 / 427 / 428	43	1450
Warwick, George T., assignor to Warwick Cycle Manufacturing Company, Springfield, Mass. Velocipede	384,946	June 19	1645	427 / 428	43	1450
Washburn, Frank S., Chicago, Ill. Three-throw switch for railways	383,382	May 22	2230	502	43	987
Washburn & Moen Manufacturing Company. (See Stever, Daniel C., assignor.)						
Waters, Frank M., Springfield, Ohio. Lawn-mower	383,927	June 5	139	38	43	1146
Watkins, William, Chicago, Ill. Cement for calking metallic joints	381,449	Apr. 17	1737	.....	43	354
Watmore, William, Philadelphia, Pa. Manufacture of files	383,647	May 29	2511	662	43	1025
Watrous, Emma D., Freetown Corners, N. Y. Underwaist	382,628	May 8	1139	283	43	737
Watson, Charles H., assignor to J. L. McCague, Omaha, Nebr. Seal-lock	384,221	June 5	560	154	43	1239
Watson, Dudley J., *et al.* (See Raitzley, Henry E., assignor.)						
Watson, Edward J. (See Lang and Watson.)						
Watson, James H. (See Nelson, Clark B., assignor.)						
Watson, John E., assignor to International Electric Company, Louisville, Ky. Relay	383,843	May 29	2047	780	43	1113
Watson, John E., assignor to International Electric Company, Louisville, Ky. Relay	384,222	June 5	564	154 / 155	43	1239
Watson, Leonard A. (See Richmond, Gilbert M., assignor.)						
Watson, Mary J., Sacramento, Cal. Street and station indicator	382,083	May 1	262	75	43	595
Watson, William, Ilion, N. Y. Pillow-sham holder	380,964	Apr. 10	1000	256	43	202
Watson, William, Minneapolis, Minn., assignor to National Steam Excavating Company, of Minnesota. Cutting device for sewers and other excavations	382,573	May 8	1057	269 / 270	43	721
Watt, J. M., *et al.* (See Erwin, Charles M., assignor.)						
Wattle, William, assignor to Knowles Loom Works, Worcester, Mass. Shuttle-holder attachment for looms	380,736	Apr. 10	651	180	43	139

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Watts Campbell Company. (See Young, John, assignor.)						
Way, Frank K., assignor to J. Foos, Springfield, Ohio. Ice-shaver	383,928	June 5	132	38	43	1146
Way, Frank K., assignor to J. Foos, Springfield, Ohio. Ice-shaver	384,399	June 12	687	183	43	1302
Way, Frank K., assignor of one-half to H. C. Dimond, Springfield, Ohio. Filter	385,333	June 26	2254	577	43	1301
Weaber, Adam, Vineland, N. J. Spraying-pump	383,261	May 22	2070	543	43	926
Weatherhead, Edward H., Cleveland, Ohio. Hydraulic air-pump	383,028	May 15	1708	444	43	850
Weatherhead, James L., and J. S. Cochran, Philadelphia, Pa. Machine for delinting cotton	384,340	June 12	754	197	43	1275
Weatherhead, James L., and J. S. Cochran, Philadelphia, Pa. Cotton-seed cleaner	384,803	June 19	1434	376	43	1411
Weathers, James, Indianapolis, Ind. Lifting-jack	383,029	May 15	1710	444	43	850
Weaver, Isaac H., Toledo, Ohio. Bag-holder	384,104	June 5	381	107	43	1194
Weaver, James W., Toronto, Ontario, Canada. Feed-water regulator	381,450	Apr. 17	1737	464	43	354
Webb, Charles J., *et al.* (See Perry, Francis H., assignor.)						
Webb, George B., Newark, N. J. Perforating and eyeleting machine	384,597	June 12	1130	298	43	1345
Webb, Harry J. P. (See Du Cray, Charles C., assignor.)						
Weber, Christian, Oak Glenn, Ill. Well-drilling machine	382,500	May 8	943	239	43	694
Weber, Claus, and H. Schneider, Parker, Dak. Ter. Punching and shearing machine	383,209	May 22	1968	{516 517}	43	919
Weber, Frank, Pittsburg, Pa. Toy	382,744	May 15	1306	343	43	779
Weber, Hermann A., and J. G. Zeidler, Görlitz, Germany. Machine for mixing flour	384,656	June 19	1215	321	43	1356
Weber, Theodore A., assignor to National Weighing Machine Company, New York, N. Y. Coin-operated weighing-machine	380,837	Apr. 10	795	{217 218}	43	166
Webster, William R., Athens, Pa. Die for upsetting metal bars	380,413	Apr. 3	155	44	43	32
Webster, William R., Philadelphia, Pa. Spreading the ends of rectangular metal bars	380,414	Apr. 3	157	44	43	33
Webster, William R., Philadelphia, Pa. Spreading the ends of eye-bars	383,508	May 29	2446	648	43	1014
Webster, William R., Philadelphia, Pa. Blank for eye-bars	383,509	May 29	2447	648	43	1014
Wedekind, August, Brooklyn, N. Y. Device for stopping horses	381,735	Apr. 24	2150	563	43	454
Wehse, Karl, Landeck Bath, Silesia, Germany. Stove	384,300	June 12	690	{193 194}	43	1293
Weichhart, John, San Francisco, Cal. Hand nail-driving implement	380,612	Apr. 3	461	130	43	94
Weierman, Charles S., *et al.* (See Beimling, Henry F., assignor.)						
Weihe, Louis, Connellsville, Pa. Leak-stopper for vessels	381,302	Apr. 17	1504	405	43	309
Weihenmayer, Sigmund H. (See Bellis, David C., assignor.)						
Weil, Leopold, New York, N. Y. Electrical method of automatically controlling the supply of water or gas	381,866	Apr. 24	2354	{610 611}	43	492
Weinberg, William L., New York, N. Y. Neckscarf	384,484	June 12	951	246	43	1316
Weinedel, Charles. (See Stitzel and Weinedel.)						
Weinmann, Rodolphe. (See Hen and Weinmann.)						
Weiss, Emil and L., Fraenkel, Berlin, Germany. Middlings-purifier	383,262	May 22	2072	544	43	930
Weiss, George H., Newton, Mass., assignor to Carter, Dinsmore & Co., Brooklyn, N. Y. Bluing-paper	384,804	June 19	1436	377	43	1412
Weiss, Louis T., Brooklyn, N. Y. Type-segment for type-writers	380,372	Apr. 3	102	30	43	22
Weiss, Morris, Brooklyn, N. Y. Type-writing machine	383,383	May 22	2223	583	43	962
Weitzel, Jacob F., and T. Lee, Cincinnati, Ohio; said Weitzel, assignor to said Lee. Flue-stopper	384,341	June 12	755	198	43	1272
Welch, J. B., *et al.* (See Thompson, Elias H., assignor.)						
Welden, Richard H., assignor to self and J. Calmeyn, Chicago, Ill. Electric switch-board	381,303	Apr. 17	1505	406	43	309
Weldon, Urban, Cohoes, N. Y. Dyeing apparatus	380,838	Apr. 10	799	218	43	166
Weldon, Urban, Cohoes, N. Y. Dyeing apparatus	382,918	May 15	1538	403	43	827
Weller, Horace J. (See McLaughlin, Edgar A., assignor.)						
Wellington, Arthur M., New York, N. Y. Appliance for handling rapid-transit passenger traffic. (Reissue)	10,927	May 1	610	155	43	698
Wellington, Samuel B. (See Gostling, Charles R., assignor.)						
Wellman, Samuel T. (See Garrett and Wellman.)						
Wellman, Willard F., assignor to C. H. Dunham, Boston, and F. H. Hondlette, Waltham, Mass. Road-scraping machine	381,867	Apr. 24	2357	{611 612}	43	492
Wells, Frank A., Allegheny City, Pa. Combined overflow, supply, and waste for tubs	380,373	Apr. 3	103	31	43	22
Wells, Frank A., Chicago, Ill., assignor of one-third to N. O. Nelson Manufacturing Company, St. Louis, Mo. Water-closet	381,660	Apr. 24	2043	535	43	433
Wells, George. (See Jefferson, John T., assignor.)						
Wells, Philip F., assignor of one-half to R. S. Wells, Milford, Mich. Spring-tooth	382,847	May 15	1439	378	43	807
Wells, R. S. (See Wells, Philip F., assignor.)						
Wells, Thomas T., Union, Miss. Bale-tie	382,396	May 8	781	198	43	667
Wells, Walter S., New York, N. Y. Nose-guard for eyeglasses	382,848	May 15	1440	379	43	807
Wells, Walter S., New York, N. Y. Eyeglasses	383,604	May 29	2572	661	43	1030
Wells, William T., Hackensack, N. J. Coating iron and steel with rustless oxide	382,447	May 8	856	{218 219}	43	682
Wemple, Andrew, assignor of one-half to L. Gathmann, Chicago, Ill. Separator	380,639	Apr. 10	800	219	43	167
Wemple, John V. (See Olmstead and Wemple.)						
Wenström, Jonas, Örebro, Sweden. Dynamo-electric machine	381,451	Apr. 17	1738	{464 465}	43	355
Wernich, Waldemar, Milwaukee, Wis. Composition food for cattle, horses, and swine	385,220	June 26	2067	.....	43	1545
Weseely, Charles, West New York, N. J. Cement wash-tub	384,814	June 19	1455	380	43	1415
Wesemann, Dietrich, assignor of one-half to J. J. Jones, Los Angeles, Cal. Wire screen, &c.	383,161	May 22	1918	501	43	889
Wesemann, Dietrich, assignor of one-half to J. J. Jones, Los Angeles, Cal. Screen	383,510	May 29	2448	649	43	1014
Weale, Henry. (See Weale, Herman and H.)						
Weale, Herman and H., Medford, Wis. Sleigh-knee	382,397	May 8	781	198	43	667
West, De Witt, Tampico, Ill. Automatic weighing-machine for grain	384,657	June 19	1217	{321 322}	43	1360
West, Henry B. (See Mason Peter L., assignor.)						
West, Henry J., 116 Southwark Bridge Road, County of Surrey, England. Apparatus for the production of transparent ice	381,195	Apr. 17	1350	363	43	280
West, James J. (See Wilkins, Morris D., assignor.)						
West, John T., Bowling Green, Ky. Cleaner and gage attachment for grain-drills	384,105	June 5	383	107	43	1194
West, Stillman A. (See Harden, Albert, assignor.)						
Westbrook, Frank A., Port Jervis, N. Y. Fire-escape	383,574	May 8	1060	270	43	788
Western Electric Company. (See Brown and Clark, assignors.)						
Western Electric Company. (See Eldred, Horace H., assignor.)						
Western Electric Company. (See Patterson, William R., assignor.)						
Western Electric Company. (See Scribner, Charles E., assignor.)						
Western Electric Company. (See Young, John, assignor.)						
Western Machine Works *et al.* (See Clifford, William P., assignor.)						
Western Union Telegraph Company. (See Phelps, George M., assignor.)						
Westervelt, Edmund C., South Bend, Ind. Sulky-plow	382,919	May 15	1539	403	43	827

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Westinghouse Electric Company. (See Belfield, Reginald, assignor.)						
Westinghouse Electric Company. (See Bylleshy, Henry M., assignor.)						
Westinghouse Electric Company. (See Bylleshy and Lange, assignors.)						
Westinghouse Electric Company. (See Bylleshy and Shallenberger, assignors.)						
Westinghouse Electric Company. (See Lange, Philip, assignor.)						
Westinghouse Electric Company. (See Meese, Otto A., assignor.)						
Westinghouse Electric Company. (See Schmid, Albert, assignor.)						
Westinghouse Electric Company. (See Schmid and Bylleshy, assignors.)						
Westinghouse Electric Company. (See Shallenberger, Oliver B., assignor.)						
Westinghouse Electric Company. (See Shallenberger and Bylleshy, assignors.)						
Westinghouse Electric Company. (See Westinghouse, George, Jr., assignor.)						
Westinghouse Electric Company. (See Westinghouse and Lange, assignors.)						
Westinghouse, George, Jr. (See Shallenberger, Oliver B., assignor.)						
Westinghouse, George, Jr., Pittsburg, Pa. Nut-lock	382,990	May 15	1540	{403 404}	43	827
Westinghouse, George, Jr., Pittsburg, Pa. Electric meter	383,678	May 29	2681	720	43	1063
Westinghouse, George, Jr., assignor to Westinghouse Electric Company, Pittsburg, Pa. Mounting armatures of dynamos	383,679	May 29	2683	709	43	1063
Westinghouse, George, Jr., and P. Lange, assignors to Westinghouse Electric Company, Pittsburg, Pa. Electric meter	383,680	May 29	2683	710	43	1063
Westinghouse, H. Herman, and F. M. Rites, assignors to Westinghouse Machine Company, Pittsburg, Pa. Governor	384,485	June 12	951	247	43	1310
Westinghouse Machine Company. (See Bole, William A., assignor.)						
Westinghouse Machine Company. (See Rites, Francis M., assignor.)						
Westinghouse Machine Company. (See Westinghouse and Rites, assignors.)						
Westman, Gustaf M., Stockholm, Sweden. Reducing iron ores	383,201	May 22	1970	{517 518}	43	930
Westman, Gustaf M., New York, N. Y. Reducing zinc ores	383,202	May 22	1972	{518 519}	43	930
Weston, Edward, Newark, N. J. Electrical coil and conductor	381,304	Apr. 17	1508	406	43	310
Weston, Edward, Newark, N. J. Electrical coil and conductor	381,305	Apr. 17	1509	406	43	310
Weston, Edward, Newark, N. J. Electric indicator	381,736	Apr. 24	2151	563	43	454
Weston, Edwin J., San Francisco, Cal. Cable road and machinery for operating the same	382,875	May 8	1062	{271 272}	43	722
Weston, Henry D. (See Smith and Weston, assignors.)						
Weston, Irving A. (See Smith and Weston.)						
Westrup, Walter W., and G. T. Lanstaff, Lockport, N. Y. Roller-mill	384,408	June 12	853	221	43	1291
Wetmore, Willis H. (See Emerson and Wetmore.)						
Weymar, Adolph, Brooklyn, N. Y. Saw	385,079	June 26	1867	477	43	1504
Whalen, Michael H., assignor to himself, J. C. Van Brunt, and E. L. Sinsabaugh, Brooklyn, N. Y. Releasing device	384,106	June 5	383	107	43	1194
Wharton and Company, William, Jr. (See Quinn, James, Jr., assignor.)						
Wharton, William J., Washington, D. C. Privy	380,540	Apr. 3	358	101	43	78
Wheat, Albert, Reading, N. Y. Portable fence	381,306	Apr. 17	1509	406	43	310
Wheeler, Alden D., Hyde Park, Mass. Apparatus for testing electric circuits	383,605	May 29	2574	{661 662}	43	1040
Wheeler, Cyreana, Jr. (See Fitch, Edwin R., assignor.)						
Wheeler, Edward H., Waterbury, Conn. Buckle	381,973	May 1	119	27	43	535
Wheeler, Frank, Meriden, Conn. Shock-arrester for the rigging of vessels	384,988	June 5	245	72	43	1169
Wheeler, Frederick M. (See Fogarty and Wheeler.)						
Wheeler, John T., Chicago, Ill. Fuel-cartridge	382,671	May 8	1205	312	43	750
Wheeler, Orrin A., Springfield, Mo. Wheeled coaster	381,861	Apr. 24	2344	535	43	434
Wheelock, Bloomfield J., New York, N. Y. Electrolyte for galvanic batteries	385,098	June 26	1783	.....	43	1488
Whipple, Joel N., Volga, Iowa. Stem winding and setting watch	381,601	Apr. 24	1963	517	43	417
Whipple, Madison, *et al.* (See Erwin, Charles M., assignor.)						
Whipple, S. Arca, Detroit, Mich. Underground conduit for electric railways	380,469	Apr. 3	230	65	43	49
Whitaker, Edward N., Cleveland, Ohio. Bolt-heading machine	385,080	June 26	1868	477	43	1504
Whitaker, George, London, county of Middlesex, and L. L. B. Williams, Shortlands, county of Kent, England. Apparatus for pressing trousers	380,985	Apr. 10	1001	{256 257}	43	203
Whitcomb, Alice V. (See Pillsbury, Samuel G., assignor.)						
White, Alice, assignor of one-half to R. S. Mallary, Detroit, Mich. Bustle	383,421	May 22	2302	611	43	979
White & Co., W. E. (See Leman, Gustavus A., assignor.)						
White Dental Manufacturing Company, S. S. (See How, Woodbury S., assignor.)						
White Dental Manufacturing Company, S. S. (See Starr, Eli T., assignor.)						
White Dental Manufacturing Company, S. S. (See Starr, E. Eugene, assignor.)						
White, Frank G., Englewood, Ill. Screw-propeller for vessels	382,396	May 8	782	199	43	668
White, George A., Sharon, assignor of one-half to W. H. Benne, Canton, Mass. Molder's draw-iron	383,203	May 22	1974	519	43	930
White, Harry D., Cottonwood, Cal. Horse-power pumping apparatus	380,840	Apr. 10	865	219	43	167
White, Harvey, Syracuse, N. Y., assignor to Whitman & Barnes Manufacturing Company of Ohio. Machine for beating and hardening metal articles	383,030	May 15	1712	{445 446}	43	850
White, Jacob R., Greenville, Ala. Cotton-planter	380,841	Apr. 10	806	219	43	167
White, James, Brooklyn, N. Y. Heating-furnace	381,307	Apr. 17	1509	407	43	310
White, James, assignor to National Safe and Lock Company, Cleveland, Ohio. Safe-lock	381,883	Apr. 24	2366	623	43	501
White, Jesse, Silver Cliff, Colo. Ore-concentrator	382,578	May 8	1066	272	43	723
White, John Z., Logansport, Ind. Bell-ringing mechanism	385,089	June 26	1784	460	43	1489
White, Lewis P., and J. D. Bonora, Terra Alta, W. Va. Registering attachment for measuring-faucets	384,805	June 19	1436	377	43	1412
White, Lloyd E. (See Ryder, Henry M., assignor.)						
White, Otis C., Worcester, Mass. Photographic head-screen	382,125	May 1	367	96	43	561
White, Samuel K., assignor to S. Smith, Chicago, Ill. Numbering-machine	381,974	May 1	113	27	43	535
White, William E., assignor of one-half to J. M. Rosado, Lynn, Mass. Pinchers	385,090	June 26	1785	461	43	1489
White, William J., Cleveland, Ohio. Confectionery-box	383,606	May 29	2575	662	43	1040
White, William R., Meoga, Ill. Sifting gate	380,613	Apr. 3	402	131	43	94
White, William W., assignor to Rogers & Brother, Waterbury, Conn. Rack for electro-plating	381,808	June 19	1439	377	43	1412
Whitehead, Henry W. (See Fletcher and Whitehead.)						
Whitehill, Robert. (See Brown, Charles A., assignor.)						
Whitmore, James H., [illegible], Ohio, and Bagley assignors to said White-	380,614	Apr. 3	464	131	43	94
Whitney, [illegible]	381,308	Apr. 17	1511	{497 498}	43	331
[illegible]						

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Whiteley, William N., O. E. and A. S. Perrigo, Springfield, Ohio, assignors to said Whiteley. Bolt-heading machine	383,083	May 15	1600	466 467 468 469 470 471	43	876
Whiteman, Abraham V. (See Carll, George L., assignor.)						
Whiting, Louis R., Fort Worth, assignor of one-fourth to A. Muckle, Bobbin, Tex. Machine for shucking and shelling corn	382,285	May 1	602	159	43	623
Whiting, Preston, H., assignor of one-half to H. Malmberg, Cortland, N. Y. Vehicle-spring	385,334	June 26	2255	577	43	1561
Whitman & Barnes Manufacturing Company of Ohio. (See White, Harvey, assignor.)						
Whitman, Walter W. (See Henry, James F., assignor.)						
Whitman, William E., Winthrop, Me. Feed-cutter	380,966	Apr. 10	1003	257	43	884
Whitson, Robert J., Chicago, Ill. Alarm-bell	382,343	May 8	698	175	43	651
Whittaker, Ellen V. (See Whittaker, Victor H., assignor.)						
Whittaker, Victor H., Bradford, assignor to himself and E. V. Whittaker, Gloucester, Mass. Rounding-out machine	384,807	June 19	1440	377	43	1412
Whittaker, William, Burnley, county of Lancaster, England. Mechanical stoker	384,486	June 12	954	247	43	1310
Whitteck, Paul, Butler, N. J. Automatic weighing-scale for liquids	382,849	May 15	1441	379	43	807
Whittier, Thomas P., East Saginaw, Mich. Galvanic-battery excitant	383,263	May 22	2073	544	43	939
Whittingham, Alfred C., Toledo, Ohio. Combined necktie and collar-button	383,929	June 5	133	38	43	1146
Wick, George C. (See Wick, Ole E. and G. C.)						
Wick, Ole E. and G. C., Humboldt Park, Ill. Combined desk and organ	385,071	June 26	1786	461	43	1488
Widman, Henry A., Jr., St. Louis, Mo. Carpet-cleaner and dust-conveyer	383,422	May 22	2303	611	43	979
Wiecking, Christian W., Jr., Walhalla, S. C. Car-heater	381,490	Apr. 17	1792	477	43	365
Wiederer, Peter, Stapleton, N. Y. Folding mirror	381,452	Apr. 17	1740	465	43	355
Wiederer, Peter, Stapleton, N. Y. Mirror	384,808	June 19	1442	378	43	1413
Wiederer, Peter, Stapleton, N. Y. Folding mirror	384,809	June 19	1443	378	43	1413
Wiedling, Carl T. A. H., New York, N. Y., assignor to J. S. Connelly, Plainfield, N. J., and T. E. Connelly, Brooklyn, N. Y. Device for transmitting power	384,598	June 12	1132	298 299	43	1313
Wien, Julius, assignor of one-third to J. R. Wiggins, Chicago, Ill. Hinge	385,156	June 26	1976	506	43	1527
Wier, Stephen M., New Haven, Conn. Reach-coupling for vehicles	380,541	Apr. 3	354	101	43	72
Wiestner, John H., Philadelphia, Pa. Split-hoof clamp for horses	381,868	Apr. 24	2359	612	43	493
Wiggins, Fred B. (See Farrar, Cyrus S., assignor.)						
Wiggins, James R. (See Wien, Julius, assignor.)						
Wiggins, Ransome H., New Salem, Tex. Elevator for cotton-cleaning machines	383,264	May 22	2074	544	43	939
Wight Fire Proofing Company. (See Wight, Peter B., assignor.)						
Wight, Peter B., Hyde Park, Ill., assignor to Wight Fire Proofing Company, of Illinois. Fire-proof ceiling	384,947	June 19	1648	428	43	1451
Wightman, Merle J. (See Lemp and Wightman.)						
Wilbur, George E. (See Walker and Wilbur.)						
Wilbur, John E., Rochester, N. Y. Lamp-stove	382,579	May 8	1671	274	43	724
Wilby, Richard, Mirfield, county of York, England. Apparatus for controlling the speed of steam-engines	382,577	May 8	1067	272 273	43	723
Wilcke, Julius C. (See Tilgner and Wilcke.)						
Wilcox, Darius, Derby, assignor to Wilcox & Howe, Birmingham, Conn. Wagon-spring	381,309	Apr. 17	1515	409	43	311
Wilcox, Edward B., *et al.* (See Kelly, Wallace C., assignor.)						
Wilcox & Howe. (See Wilcox, Darius, assignor.)						
Wilcox, Paul. (See Rogers, Edmund D., assignor.)						
Wilcox, Robert, London, England. Feathering-propeller	380,967	Apr. 10	1003	258 259	43	884
Wilcox, Stephen, Brooklyn, N. Y. Valve mechanism for engines	382,578	May 8	1069	273 274	43	724
Wilcox, William W., Middletown, Conn. Sail-grommet	382,921	May 15	1542	404	43	827
Wilcox, William W., Middletown, Conn. Sail-grommet	382,922	May 15	1542	404	43	828
Wilcox, William W., Middletown, Conn. Sail-grommet	382,923	May 15	1543	404	43	828
Wilcox, William W., Middletown, Conn. Punch and die for sail-grommets, &c.	382,924	May 15	1544	405	43	828
Wilder, Charles O., South Bend, Ind., assignor to Williams, White & Co., Moline, Ill. Machine for forming eyes on rods	383,084	May 15	1608	471	43	877
Wildt, Edward A., Long Island City, N. Y. Electric battery	383,548	May 29	2512	663	43	1025
Wiles, Robert H., *et al.* (See Devore, Levi M., assignor.)						
Wiles, Thomas S., Albany, N. Y. Ironing-machine	384,487	June 12	955	248 249	43	1311
Wiley, Edgar C., Independence, Va. Hillside cultivator	383,697	May 29	2576	682	43	1040
Wiley, John, assignor of one-half to H. B. Eaton, Fitchburg, Mass. Band-pulley	382,448	May 8	859	219	43	682
Wiley, William H., Stockton, Kans. Grapple	384,107	June 5	384	108	43	1194
Wiley, William J. (See Sprague and Wiley.)						
Wilkening, Gottlieb, Dayton, Ohio. Slate-eraser	382,925	May 15	1544	405	43	828
Wilkin, George, Dundee, N. Y. Berry-harvester	382,745	May 15	1508	343	43	779
Wilkins, Alexander G., assignor of one-half to A. L. Dunbar, Meadville, Pa. Button-setting machine	381,310	Apr. 17	1517	408 410	43	311
Wilkins, James S., Jr., Keene, N. H. Toy locomotive	384,658	June 19	1290	322	43	1369
Wilkins, Morris D., assignor to himself and J. J. West, Chicago, Ill. Printing	385,091	June 26	1869	477	43	1504
Wilkinson, George, and J. McCourt, Acampo, Cal. Earth-scraper	380,374	Apr. 3	105	31	43	23
Wilkins, Peter W., Thames Ditton, and M. H. Robinson, Kingston-on-Thames, county of Surrey, England. High-speed engine	380,375	Apr. 3	106	31	43	23
Willard, Bradford, *et al.* (See Stilwell, Rickason, assignor.)						
Willcox, Alfred B., and E. Norton, Maywood, assignors to said Norton and O. W. Norton, Chicago, Ill. Machine for soldering side seams of cans	382,344	May 8	689	176	43	652
Willey, Lewis B., Pawaano, Mich. Sheaf-carrier	380,968	Apr. 10	1005	259	43	884
Williams, Carmi H., New York, N. Y. Machine for making timber-hangers	383,265	May 22	2075	545	43	939
Williams, Charles K., Newark, N. Y. Coin-controlled height-measuring machine	383,608	May 29	2577	683	43	1040
Williams Company, John R. (See Williams, John R., assignor.)						
Williams, David. (See Walker and Williams.)						
Williams, David A., Denver, Colo. Dumping-wagon	383,930	June 5	134	39	43	1146
Williams, Edwin F., Chicago, Ill. Valve	384,883	June 19	1566	407	43	1434
Williams, Frank, Holyoke, Mass. Renewing strainer-plates for paper-machines	381,737	Apr. 24	2152	563	43	455
Williams, Frank A., Albrighton, county of Salop, England. Tube-coupling	381,869	Apr. 24	2360	612	43	493
Williams, Frank F., *et al.* (See Williams, John G., assignor.)						
Williams, Frank R., Rochester, N. Y. Apple-parer	381,044	Apr. 10	1124	302	43	927
Williams, Frederick, Alexandra, New Zealand. Automatic wool-washing machine	380,470	Apr. 3	241	65	43	49
Williams, George B., La Crosse, Wis. Triple valve for air-brakes	384,009	June 5	947	71	43	1169
Williams, Hamilton W., Nashville, Tenn. Device for side-dressing the teeth of saws	383,931	June 5	135	39	43	1147

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Williams, Henry A., Taunton, Mass. Machine for cold-rolling wire	381,311	Apr. 17	1503	410 411	43	313
Williams, Henry A., assignor to H. A. Williams Manufacturing Company, Taunton, Mass. Machine for reducing metal rods. (Reissue)	10,939	May 15	1685	477	43	880
Williams, Henry C. (See Eddy, George W., assignor.)						
Williams, Henry J., assignor to Harris Button Hole Attachment Company, New York, N. Y. Button-hole attachment for sewing-machines	383,483	May 22	2305	612	43	980
Williams, Horace D., Cincinnati, Ohio. Doweling-machine	383,003	May 15	1609	472	43	877
Williams, James M., Jr., Hamilton, Ontario, Canada. Stove-pipe damper	382,130	May 1	566	96	43	586
Williams, Jeab F. (See Beste, Edward, assignor.)						
Williams, John, Port Colborne, Ontario, Canada. Insect-trap	383,788	May 29	2305	753	43	1097
Williams, John G., assignor to F. F. and M. M. Williams, Chicago, Ill. Car-coupling	384,709	Apr. 10	999	167	43	130
Williams, John R., Newark, N. J., assignor to J. R. Williams Company, New York, N. Y., Cigar-bunching machine	382,989	Apr. 10	1006	220 221 222 223	43	894
Williams, John R., Newark, N. J., assignor to J. R. Williams Company, New York, N. Y., Cigar-bunching machine	382,449	May 8	861	219 220 221	43	802
Williams, John S. (See Brown, Elmer E., assignor.)						
Williams, Llewellyn L. E. (See Whittaker and Williams.)						
Williams Manufacturing Company, H. A. (See Williams, Henry A., assignor.) (Reissue.)						
Williams, Mary M., *et al.* (See Williams, John G., assignor.)						
Williams, Meade, Mount Vernon, Ind. Harness	382,376	Apr. 3	109	33	43	23
Williams, Melvin D., Dexter, Minn. Bob-sleigh	382,990	May 15	1545	405	43	828
Williams & O'Connor. (See O'Connor, James, assignor.)						
Williams, Percy G., and A. W. Roevers, Brooklyn, N. Y., said Roevers assignor to said Williams. Cash-drawer	384,010	June 5	248	72	43	1169
Williams, Rupert G., Albany, N. Y. New coloring-matter obtained by the action of tetrazo-diamido benzole on phenols	384,342	June 12	755	.....	43	1272
Williams, Thomas D., Allegheny City, and J. S. Lacock, Bellevue, assignors of three-fifths to J. W. Clark, G. M. Ettemiller, and G. Morris, Allegheny County, Pa. Automatic electric block-signal system	384,810	June 19	1444	378 379	43	1413
Williams, Thomas D., Allegheny City, and J. S. Lacock, Bellevue, assignors of three-fifths to J. W. Clark, G. M. Ettemiller, and G. Morris, Allegheny County, Pa. Apparatus for operating automatic block-signals	384,811	June 19	1449	379 380	43	1414
Williams, Walter D., assignor of one-half to A. J. Fullmer, Camden, N. J. Dental hand-piece	382,672	May 8	1206	313	43	750
Williams, Walter D., assignor of one-half to A. J. Fullmer, Camden, N. J. Dental hand-piece	382,673	May 8	1207	313	43	751
Williams, White & Co. (See Wilder, Charles O., assignor.)						
Williams, William, Huntingdon, Pa. Metallic socket-connection for stone coping	380,710	Apr. 10	610	167	43	131
Williams, William H. (See Hill and Rider, assignors.)						
Williams, William H., Huntington, W. Va. Saw swage and sharpener	385,290	June 26	2166	530	43	1508
Williams, William P., assignor of two-thirds to W. P. Johnson and A. Crandall, Chicago, Ill. Street or station indicator for cars	384,498	June 12	950	249	43	1311
Williamson, Benjamin L., Little Rock, Ark. Coupling for shafts, pulleys, &c	384,612	June 19	1453	380	43	1414
Williamson, John E., Seattle, Wash. Ter., and W. W. Hickies, Oakland, Cal. Apparatus for examining ores	380,842	Apr. 10	807	219	43	167
Willingham, William A., Chattanooga, Tenn. Split pulley	383,789	May 29	2698	753	43	1097
Willis, Ambrose, assignor of one-half to T. D. Robinson, Troy, N. Y. Fire-cracker holder	385,038	June 26	1791	468	43	1469
Willis, James, Rascadale, Bournemouth, county of Hants, England. Manufacture of gits for umbrella-frames	380,377	Apr. 3	110	32	43	24
Willis, James B., Portsmouth, county of Hants, England. Telegraphic signaling apparatus	381,738	Apr. 24	2154	563 564	43	456
Willis, Harry A., Chicago, Ill. Cutting horseshoe-nails	382,927	May 15	1546	405	43	828
Willis, Harry A., Chicago, Ill. Machine for making horseshoe-nails	382,928	May 15	1549	406	43	829
Willis, James A., Philadelphia, Pa. Urinal	382,389	May 8	784	199	43	666
Willsea, Theodore, Rochester, N. Y. Harness-horse	384,301	June 12	692	184	43	1292
Wilson, Walter V. H., Troy, N. Y. Sand-box for street-cars	382,847	May 1	539	137	43	612
Wilmarth, Mark, *et al.* (See Young, Thomas J., assignor.)						
Wilmot, F. Ashley. (See Wilmot, Samuel R. and F. A.)						
Wilmot, Samuel R. and F. A., Bridgeport, Conn. Device for catching flies	382,540	May 8	1072	274	43	724
Wilson, Alexander, Sheffield, county of York, England. Apparatus for manufacturing compound plates of iron and steel	380,970	Apr. 10	1010	262 263	43	885
Wilson, Alexander, Sheffield, county of York, England. Apparatus for the manufacture of armor-plates	381,433	Apr. 17	1741	465 466	43	355
Wilson, Arthur M., White Pigeon, Mich. Road-cart	384,489	June 12	861	249 250	43	1312
Wilson, Columbus E., Dora, Ind. Fence	382,690	May 8	1130	294	43	737
Wilson, Edgar W., Denver, Colo. Cable railway	384,350	June 12	1063	277	43	1330
Wilson, Edward A., Dockertown, N. J. Snap-hook	381,739	Apr. 24	2155	564	43	455
Wilson, James P., Newark, N. J. Carburetor	385,204	May 22	1974	510	43	939
Wilson, John C. (See Lefeber, Henry, assignor.)						
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portsmouth, N. H. Municipal telegraph apparatus	380,778	Apr. 10	714	197	43	151
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portsmouth, N. H. Municipal telegraph	380,779	Apr. 10	718	197	43	151
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portsmouth, N. H. Telephone signaling-circuit	380,780	Apr. 10	721	197	43	152
Wilson, John T., assignor of one-half to Pittsburgh Forge and Iron Company, Pittsburg, Pa. Die for making draw-bars	381,694	Apr. 24	2401	624	43	502
Wilson, John T., assignor of one-half to Pittsburgh Forge and Iron Company, Pittsburg, Pa. Making draw-bars	381,695	Apr. 24	2402	624	43	502
Wilson, Oscar B., Collinsville, Ill. Hydrant-valve	381,602	Apr. 24	2045	535	43	444
Wilson, Riley P., Cleveland, Ohio, assignor of one-half to F. J. Wall, New York, N. Y. Refining iron with air	384,613	June 19	1455	.....	43	1415
Wilson, Robert, Grubville, Mo. Car-coupling	384,732	June 19	1524	398	43	1399
Wilson, Samuel R., Adelaide, South Australia. Changeable gage-truck for cars	381,212	Apr. 17	1393	411	43	313
Wilson, William A. (See Bretzell, George E., assignor.)						
Wilson, William H., Camden, N. J. Tool for grooving the mouths of bottles	382,920	May 15	1551	406	43	829
Wiman, Ernst A., Stockholm, Sweden. Heating-stove	382,930	May 15	1552	406	43	830
Winchell, Alvin T., Albion, Mich. Wind-engine	381,313	Apr. 17	1525	411	43	313
Winchell, James F., Springfield, Ohio. Crushing and grinding mill	381,515	Apr. 17	1636	485	43	374
Winchester, Edwin S., Boston, Mass. Lock	384,166	June 5	385	108	43	1194

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Winchester Repeating Arms Company. (See Bennett, Thomas G., assignor.)						
Winchester Repeating Arms Company. (See Mason, William, assignor.)						
Windus, Werner, *et al.* (See Thomas, Conrad, assignor.)						
Winfield, Benjamin F. (See Stevens, Lewis, assignor.)						
Wing, Hiram J., Brooklyn, assignor to himself and T. G. Palmer, Schultzville, and V. Kolb, New York, N. Y. Checkrein attachment for harness	365,068	June 28	1870	478	43	1505
Winn, Adelbert H., Nashville, Mich. Dental drill	361,196	Apr. 17	1361	364	43	891
Winona Harvester Works. (See Search, Casper F., assignor.)						
Winslow, W. Henry, Boston, Mass. Stain or paint	363,096	May 15	1810	.....	43	877
Winter, William H., and H. Duffey, Cortland, N. Y. Vehicle-spring	362,630	May 8	1141	294	43	736
Wire Fabric Company. (See Rumsey, Charles B., assignor.)						
Wire Staple Company. (See Brown, William J., Jr., assignor.)						
Wise, Charles L., New York, N. Y. Receptacle for keeping press-copying pads moist	361,454	Apr. 17	1742	498	43	355
Wise, Daniel W., Chicago, Ill. Window-shade fixture	362,784	May 15	1360	357	43	789
Wiselogel, Christian D. (See Gale and Wiselogel.)						
Wiser, Clinton B., assignor to himself and R. B. Crouch, Chicago, Ill. Apparatus for making brine	360,378	Apr. 3	111	32	43	94
Wiswall, Wellington B. (See Stewart and Wiswall.)						
Witherington, Absalom M., Rutherford Depot, Tenn. Horse-detacher	362,901	May 1	471	121	43	699
Withington, James, Chambersburg, assignor to Trenton Iron Company, Trenton, N. J. Dellvering and stretching mechanism for machines for the manufacture of wire rope	363,087	May 15	1811	{472 {473	{43	877
Withington, James, Chambersburg, assignor to Trenton Iron Company, Trenton, N. J. Vertical wire-rope-closing machine	363,088	May 15	1812	{473 {474	{43	878
Witt, Julius, Chicago, Ill. Mechanical movement	362,785	May 15	1361	358	43	790
Witt, Otto N., Westend, near Berlin, assignor to Badische Anilin and Soda Fabrik, Mannheim, Germany. Manufacture of purple-black azo dye-stuff	361,045	Apr. 10	1130	.....	43	228
Witt, Otto N., Westend, near Berlin, assignor to Badische Anilin and Soda Fabrik, Mannheim, Germany. Purple azo dye-stuff	361,046	Apr. 10	1131	.....	43	228
Witthoeft, William, Jr., assignor of one-third to L. F. Boeckatiegel, St. Louis, Mo. Automatic stationary water-filter	363,089	May 15	1816	475	43	878
Wittig, Albert, New York, N. Y. Button-machine	362,786	May 15	1363	358	43	790
Witzel, Hermann, Neustadt, Prussia, Germany. Shoe	363,090	May 15	1818	{475 {476	{43	879
Woerz, Ernest G. W., New York, N. Y. Conveyer for brewers' grains	361,455	Apr. 17	1744	486	43	355
Wolcott, Clayton, Hartford, Conn. Sash-fastener	363,549	May 29	2513	663	43	1025
Wolf, Frederick W., Chicago, Ill. Ice or refrigerating machine	365,157	June 26	1977	506	43	1527
Wolfe, Harvey R., assignor of one-half to Brennan & Co. Southwestern Agricultural Works, Louisville, Ky. Baling-press	361,975	May 1	120	28	43	536
Wolfendale, Charles W., *et al.* (See Piper, William M., assignor.)						
Wolff, Justus, Union, N. J., assignor of three-fourths to S. B. Folkers, Brooklyn, N. Y. Composition for making cement	363,932	June 5	136	.....	43	1147
Wolff Manufacturing Company, L. (See Rieth, Peter, assignor.)						
Wolfsen, Samuel, Zaschnick, Russia. Means for utilising exhaust	364,733	June 19	1335	348	43	1391
Wolle, Clarence A., *et al.* (See Lorenz, William A., assignor.)						
Wollensak, John F. (See Gill and Segerdahl, assignors.)						
Wollensak, John F., Chicago, Ill. Lever latch and handle	361,740	Apr. 24	2156	564	43	455
Wollensak, John F., Chicago, Ill. Transom-lifter	361,741	Apr. 24	2157	565	43	455
Wollensak, John F., Chicago, Ill. Transom-lifter	361,742	Apr. 24	2159	565	43	455
Wollensak, John F., Chicago, Ill. Transom-lifter	361,743	Apr. 24	2161	565	43	456
Wollensak, John F., Chicago, Ill. Transom-lifter	361,744	Apr. 24	2162	565	43	456
Wollensak, John F., Chicago, Ill. Transom-lifter	364,182	June 5	505	138	43	1219
Wolner, Eugen, Liverpool, county of Lancaster, England. Weighing-machine	364,650	June 19	1222	{322 {323 {324	{43	1370
Wols, George, assignor of one-half to J. Mindemann, Detroit, Mich. Table	363,333	May 22	2163	572	43	955
Wood, Aurin, Worcester, assignor to Sawyer Spindle Company, Boston, Mass. Support for spinning spindles	363,091	May 15	1819	476	43	879
Wood, Edward H., *et al.* (See Gale, Charles E., assignor.)						
Wood, Frank B., New York, N. Y., assignor to New Haven Clock Company, New Haven, Conn. Electric bell	361,314	Apr. 17	1596	412	43	314
Wood, Freman E., Alpine, Mich. Fence	361,047	Apr. 10	1131	302	43	229
Wood, George, Crawford, Colo. Cough-mixture	362,850	May 15	1443	.....	43	807
Wood, Henry. (See Bishop, John J., assignor.)						
Wood, James J., Brooklyn, N. Y. Switch or cut-out for electric circuits	363 933	June 5	136	39, 40	43	1147
Wood, James J., Brooklyn, N. Y. Incandescent-lamp socket and switch	364,815	June 19	1456	381	43	1415
Wood, James J., Brooklyn, N. Y. Commutator for dynamo-electric machines	364,816	June 19	1459	381	43	1415
Wood, James J., Brooklyn, N. Y. Electric-arc lamp	364,817	June 19	1462	{381 {382	{43	1416
Wood, James P., assignor of one-half to G. P. Glasier, Chelsea, Mich. Cream-testing churn	363,092	May 15	1798	466	43	876
Wood, James R., *et al.* (See Langguth, Charles, assignor.)						
Wood, John. (See Crandall, Jesse A., assignor.)						
Wood, Milton R., Brooklyn, N. Y. Manufacture of bicarbonate of soda	364,884	June 19	1567	407	43	1434
Woodard, Alonzo B., Andover, assignor of one-half to R. W. Barney, Hornellsville, N. Y. Vulcanizing apparatus	364,183	June 5	506	138	43	1219
Woodbury, Daniel A., Rochester, N. Y. Adjusting relief-plate wedges of slide-valves	362,674	May 8	1309	313	41	751
Woodbury, George E., San Francisco, Cal. Apron for ore-concentrating machines	361,456	Apr. 17	1745	467	43	356
Woodbury, Leander S., Calumet, Mich. Locomotive	363,790	May 29	2668	754	43	1098
Woodbury, Orlando. (See Mackay, George H., assignor.)						
Woodcock, James S., New Lexington, Ohio. Grinding-mill	362,392	May 1	472	121	43	699
Woodcock, Leonard M., Auburn, N. Y. Grate	364,409	June 12	854	222	43	1291
Woodcock, Leonard M., Auburn, N. Y. Furnace-grate	364,410	June 12	856	{222 {223	{43	1292
Woodhull, Anna M., Freehold, N. J. Safety-seal for checks	365,158	June 26	1978	506	43	1527
Woodman, Alvin, Marysville, New Brunswick, Canada. Lease-forming mechanism for warping-machines	360,641	Apr. 3	497	139	43	102
Woodman, Charles, Chelsea, Mass. Machine for winding sewing-machine bobbins	361,457	Apr. 17	1746	467	43	356
Woodnutt, Henry C., Mineola, N. Y. Device for assisting in training horses	361,745	Apr. 24	2164	566	43	456
Woods Electric Company. (See Woods, Granville T., assignor.)						
Woods, Granville T., assignor to Woods Electric Company, Cincinnati, Ohio. Overhead conducting system for electric railways	363,844	May 29	2650	760	43	1113
Woods, Granville T., assignor to Woods Electric Company, Cincinnati, Ohio. Electro-motive railway	365,631	June 26	1793	468	43	1469
Woodward, Ellen E. L., Chicago, assignor of one-half to F. S. Woodward, Turner, Ill. Safety-car	363,845	May 29	2651	761	43	1113

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Woodward, Frederick S. (See Woodward, Ellen E. L., assignor.)						
Woolf, Samuel, New York, N. Y. Reversible vest for ladies' garments	363,850	May 29	2514	663	43	1026
Woolfolk, Alexander M., Chicago, Ill. Dumping-wagon	362,787	May 15	1365	{359 {360	{43	790
Wootten, John E., Reading, Pa. Mashing-can	362,746	May 15	1397	362	43	779
Worden, Alva. (See Lang, John S., assignor.)						
Worrall, Thomas D., Lynn, Mass. Printing-press	362,345	May 8	703	177	43	632
Worrall, Thomas H., Laconia, N. H. Needle-cylinder for knitting-machines	361,197	Apr. 17	1368	364	43	891
Worthington, Amasa, Brooklyn, N. Y. Boiler	361,870	Apr. 24	2060	{612 {613	{43	499
Worts, George F., *et al.* (See Patterson and Nelson, assignors.)						
Wright, Elijah, assignor to Davis & Furber Machine Company, North Andover, Mass. Mechanism for operating doffer-combs of carding-machines	361,516	Apr. 17	1637	{488 {489	{43	374
Wright, Franklin H., Lake View, Ill. Rolling sheet metal	361,746	Apr. 24	2164	566	43	457
Wright, John, Mechanic Falls, N. Y. Gas-bracket	364,392	June 12	698	185	43	1093
Wright, Nathan, and S. R. Shaver, Ingram, Ark. Railway or farm gate	362,642	May 1	213	56, 57	43	532
Wright, Walter K., and W. H. Brown, Fort Concho, Tex. Self-registering target	361,517	Apr. 17	1638	488	43	375
Wright, Washington, Clayton, N. J. Car-ventilator	364,184	June 5	507	138	43	1219
Wright, William B., Ashland, Nebr. Ribbon-holder	361,198	Apr. 17	1363	364	43	891
Wulff, Henry F., assignor of one-half to M. B. Mayer and A. Cohen, San Antonio, Tex. Combined wardrobe, bureau, and wash-stand	362,400	May 8	708	180	43	668
Wunsch, Henry, *et al.* (See Eldredge, John V. D., assignor.)						
Wylie, Archibald E., Kingman, Kans. Claw-bar	364,923	June 5	565	155	43	1230
Wylie, Andrew J., Richland, Mich. Rut-lock	363,149	May 22	1919	502	43	969
Wyman, Frank H. (See McIntosh, William E., assignor.)						
Wyman, Horace. (See Lund, William, assignor.) (Reissue.)						
Wyman, Horace, Worcester, Mass. Stopping mechanism for looms	362,163	May 22	1920	503	43	969
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Loom driving-gear	361,518	Apr. 17	1639	488	43	375
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Shuttle-box for looms	361,519	Apr. 17	1640	487	43	375
Wyman, John A., New York, N. Y. Mechanism for cleaning sewers	362,127	May 1	369	96	43	561
Wymond, Gilbert H. (See Sargent, John N., assignor.)						
Wynne, Frank, Westminster, county of Middlesex, England. Contact-making device for electric railways	361,048	Apr. 10	1132	363	43	228
Wythe, William H. (See Wythe, William W., assignor.)						
Wythe, William W., Parker's Landing, Pa., assignor to W. H. Wythe, Chautauqua, N. Y. Cash register and indicator	364,490	June 12	908	{250 {251	{43	1242
Yale, John A., *et al.* (See Hardy, John J., assignor.)						
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.)						
Yäger, Adolfe S., New York, N. Y. Instrument for dividing angles	361,049	Apr. 10	1135	363	43	229
Yarwood, Mathew C. (See Bean, Charles E., assignor.)						
Yaryan, Homer T., Toledo, Ohio. Vacuum evaporating apparatus	363,364	May 22	2634	{503 {504 {505	{43	968
Yates, William H., assignor of one-third to S. B. Spiller, Auburn, N. Y. Convertible vehicle	361,663	Apr. 24	2046	536	43	434
Yaeger, Elam R., Rockwood, Tenn. Car-coupling	363,494	May 22	2308	612	43	949
Yeagle, Martin, assignor of one-half to E. D. Barto, Watsontown, Pa. Shoe	364,294	June 5	567	155	43	1231
Yeaton, Frank W. (See Pickering, Leander P., assignor.)						
York, Frank C., Salina, Kans. Line-protector	361,458	Apr. 17	1747	467	43	356
Youmans, Walter, assignor, by mesne assignments, to J. W. Emerson, New York, N. Y. Car-truck	363,164	May 22	1922	{502 {503	{43	919
Young, Calvin, Auburn, assignor of one-half to D. M. Osborne & Company, New York, N. Y. Grain-binding machine	362,983	May 1	475	{121 {122	{43	699
Young, Charles P., and J. W. Shertzer, said Shertzer assignor to J. H. Thomas, York, Pa. Cigar-cutter	365,921	June 26	2067	530	43	1545
Young, Edwin J., A. Lambert, Wadsworth, and H. B. Ferris, Cleveland, assignors to Garfield Injector Company, Wadsworth, Ohio. Injector	364,688	June 19	1235	396	43	1372
Young, Hiram C., Washington, N. H. Knitting-machine	362,346	May 8	706	178	43	663
Young, Horace A., Worcester, Mass. Wire-rod-reeling machine	361,199	Apr. 17	1364	{364 {365	{43	891
Young, John, Chicago, Ill. Automatic fire-alarm system	361,696	Apr. 24	2403	625	43	503
Young, John, assignor to Watts Campbell Company, Newark, N. J. Valve-gear	361,747	Apr. 24	2166	567	43	457
Young, John, assignor to Western Electric Company, Chicago, Ill. Automatic fire-alarm	362,788	May 15	1370	{359 {360	{43	791
Young, John N. (See Quigg, George B., assignor.)						
Young, Joseph E., *et al.* (See Hardy, John J., assignor.)						
Young, Lewis R. (See Kocher and Ranck, assignors.)						
Young, Thomas J., assignor, by mesne assignments, to himself, C. L. Perrin, and M. Willmarth, Boston, Mass. Conduit for underground pipes	364,948	June 19	1649	428	43	1451
Young, Wesley. (See Norris, Daniel W., assignor.)						
Young, Wesley. (See Salter, Thomas, assignor.)						
Yund, Charles C., *et al.* (See Yund, Theodore J., assignor.)						
Yund, Theodore J., assignor of three-fourths to T. F. Kennedy, T. F. Kyne, and C. C. Yund, Amsterdam, N. Y. Tap	365,083	June 26	1871	478	43	1505
Zahn, William, Newark, N. J. Tanning process	365,222	June 26	2049	.....	43	1545
Zalinski, Edmund L., U. S. Army. Shell	364,649	June 19	1236	394	43	1370
Zalinski, Edmund L., U. S. Army. Shell for high explosives	364,651	June 19	1239	395	43	1371
Zalinski, Edmund L., U. S. Army. Magneto-electric fuse	364,652	June 19	1231	395	43	1371
Zalinski, Edmund L., U. S. Army. Projectile	364,653	June 19	1232	395	43	1371
Zalinski, Edmund L., U. S. Army. Shell-fuse	364,654	June 19	1233	395	43	1372
Zalud, Karl, assignor of one-half to R. D. Gallaher, New York, N. Y. Car-axle box	360,379	Apr. 3	113	33	43	94
Zeidler, Johann G. (See Weber and Zeidler.)						
Zeliff, James, assignor of one-half to L. Lemassena, Newark, N. J. Car-starter	361,692	Apr. 24	1964	517	43	418
Zelly, John, assignor of one-half to F. Fischer, Cincinnati, Ohio. Winding and setting attachment for clocks	361,693	Apr. 24	1966	517	43	418
Zimmerling, Charles, Philadelphia, Pa. Stove-polish	365,335	June 26	2226	.....	43	1561
Zimmermann, John. (See Rinman and Zimmermann.)						
Zintel, Oscar, Sandusky, Ohio. Scraper attachment for vehicle-steps	364,685	June 19	1225	396	43	1372
Zitzmann, George, Millvale, Pa. Automatic method of draining coal-mines	361,200	Apr. 17	1367	365	43	891
Zocca, Gaudenzio, and G. Bolla, Venice, Italy. Grinding-mill	364,949	June 19	1650	429	43	1451
Zook, Jacob M. (See Mail, William H., assignor.)						
Zugalia, Albert H., Brooklyn, N. Y. Paper box	361,650	Apr. 10	1128	364	43	229
Zürcher, Max A., Phœnixville, Pa. Frame for railway-cars	364,285	June 5	568	156	43	1231

ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

Name, residence, and design.	No.	Date.	Official Gazette. Volume.	Page.
Andrews, Willard J., assignor of one-half to J. U. Musick, St. Louis, Mo. Cooking-stove	18,263	Apr. 24	43	394
Atterbury & Co. (See Walter, William G., assignor.)				
Atterbury, Thomas B., Pittsburg, Pa. Bottle or jar	18,218 to 18,220	Apr. 3	43	2
Atwater, Richard M., Millville, N. J., assignor to J. and J. M. Whitall, J. W. Nicholson, Philadelphia, Pa., C. A. Tatum, F. M. Underhill, New York, N. Y., and J. Mickle, Millville, N. J. Bottle	18,221	Apr. 3	43	2
Bailey, Charles J., Boston, Mass. Bath-brush	18,222	Apr. 3	43	2
Bannatyne, Archibald, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-dial	18,264	Apr. 24	43	394
Bannatyne, Archibald, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-dial	18,299	May 8	43	636
Bannatyne, Archibald, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-dial	18,306 to 18,307	May 15	43	750
Barnhart Bros. & Spindler. (See Hayer, Charles E., assignor.)				
Barnhart Bros. & Spindler. (See Lauschke, Ernst, assignor.)				
Barr, William H., assignor to A. J. Beatty & Sons, Steubenville, Ohio. Jar	18,223 to 18,225	Apr. 3	43	2
Bartel Otto, New York, N. Y. Clock-dial	18,262 to 18,263	May 1	43	514
Beatty & Sons, Alexander J. (See Barr, William H., assignor.)				
Beeston, Henry, Philadelphia, Pa. Cuspidor	18,259	Apr. 17	43	254
Binns, Leedham, assignor to E. H. Godshalk, Philadelphia, Pa. Cord	18,244	Apr. 10	43	130
Bissell Carpet Sweeper Company. (See Drew, Walter J., assignor.)				
Bond, Joseph. (See Pierce and Bond.)				
Bradley & Hubbard Manufacturing Company. (See Patitz, Albert, assignor.)				
Branford Lock Works. (See Village, Thomas, assignor.)				
Bromley & Sons, John. (See Petzold, Adolph, assignor.)				
Brown, John W., Jr., Philadelphia, Pa., assignor to Enterprise Manufacturing Company, of Pennsylvania. Frame of a cutting or forcing press	18,359	June 5	43	1139
Bryant, Alva, *et al.* (See Lockwood, James F., assignor.)				
Bullock, Edwin R., Pawtucket, R. I. Spool-cabinet	18,368	June 19	43	1351
Burdick, Charles L., Kansas City, Mo. Air-brush case	18,329	May 22	43	890
Butterick Publishing Company. (See Duke, Henrietta, assignor.)				
Butterick Publishing Company. (See Jenkins, Etta L., assignor.)				
Butterick Publishing Company. (See Kent, Minnie, assignor.)				
Butterick Publishing Company. (See Moran, Ellen, assignor.)				
Butterick Publishing Company. (See Roya, Lizzie, assignor.)				
Butterick Publishing Company. (See Sheils, Jennie, assignor.)				
Butterick Publishing Company. (See Soderholm, Louise, assignor.)				
Butterick Publishing Company. (See Turner, Mary, assignor.)				
Channon-Emery Stove Company. (See Gobeille, Joseph L., assignor.)				
Channon-Emery Stove Company. (See Schermerhorn and Weller.)				
Chase, William D., Hackensack, N. J. Chewing-gum	18,300	May 8	43	636
Cheney Brothers. (See Miller, Bettie H., assignor.)				
Chicago Hardware Manufacturing Company. (See Wells, George J., assignor.)				
Christie, John, Halifax, England, assignor to J. Crossley & Sons, New York, N. Y., and London, England. Carpet	18,308	May 15	43	750
Clark, Melville, Chicago, Ill. Organ-stop knob	18,330	May 22	43	890
Clarke, Samuel, Child's Hill Works, county of Middlesex, England. Lamp	18,378	June 12	43	1342
Clifford, James B., San Francisco, Cal. Bonnet and millinery stand	18,379	June 12	43	1342
Coffin, Francis A., Indianapolis, Ind. Writing-desk	18,226	Apr. 3	43	2
Coffin, Francis A., Indianapolis, Ind. Cabinet-desk	18,227	Apr. 3	43	2
Consumers Gas Saving and Inspection Company. (See Martin, Charles T., assignor.)				
Cook, Frank E. (See Hensel, Valetten, and Cook.)				
Co-Operative Foundry Company. (See King, Edward J., assignor.)				
Co-Operative Foundry Company. (See Wilkinson, William H., assignor.)				
Cottle, Shubael, New York, N. Y. Button-hook	18,331	May 22	43	890
Crawford, Eugene A., Pawtucket, R. I. Badge	18,407	June 26	43	1489
Crossley & Sons, John. (See Christie, John, assignor.)				
Davis, John A., Springfield, Ohio. Chamber-vessel	18,260	Apr. 17	43	254
Detroit Steam Radiator Company. (See Hedges, Charles H., assignor.)				
Detroit Steam Radiator Company. (See Hedges, Henry C., assignor.)				
Drew, Walter J., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper casing	18,360	June 5	43	1139
Drew, Walter J., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper casing	18,380	June 12	43	1342
Drew, Walter J., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper casing	18,408	June 26	43	1489
Duke, Henrietta F., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,245 to 18,246	Apr. 10	43	130
Duke, Henrietta F., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,284	May 1	43	514
Duke, Henrietta F., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Basque	18,369	June 19	43	1351
Durell, Frank H., Bay City, Mich. Advertising-picture frame	18,265	Apr. 24	43	394
Enterprise Manufacturing Company. (See Brown, John W., Jr., assignor.)				
Fales, Amos, Rock Fall, Conn. Bench-plane cutter	18,361	June 12	43	1342
Folsom, James L., Brooklyn, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,228 to 18,234	Apr. 3	43	2
Foster, Adelbert M., Chicago, Ill. Bottle	18,309	May 15	43	750
Garet, Emile, Hoboken, N. J., assignor to Merklen Brothers, New York, N. Y. Furniture-caster	18,266	Apr. 24	43	394

Alphabetical list of patentees of designs, April to June, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Garton, William M., assignor to W., W. B., C. J. B., and J. R. Swindell, Baltimore, Md. Bottle	18,330	June 19	43	1351
Gobeille, Joseph L., Cleveland, Ohio, assignor to Channon-Emery Stove Company, Quincy, Ill. Cooking-stove	18,332	May 22	43	880
Gobeille, Joseph L., Cleveland, Ohio, assignor to Channon-Emery Stove Company, Quincy, Ill. Heating-stove	18,333	May 22	43	880
Gobeille, Joseph L., Cleveland, Ohio, assignor to Channon-Emery Stove Company, Quincy, Ill. Cooking-stove	18,334	May 22	43	880
Godshalk, Edward H. (See Binns, Leedham, assignor.)				
Graff, Jacob A., Brooklyn, N. Y. Toy bank	18,352	May 29	43	987
Grant, Lorenzo D., Lansingburg, N. Y. Brush	18,281	Apr. 17	43	274
Griggs, A. Irving, New York, N. Y. Ornamentation of sheet metal	18,301	June 19	43	1352
Gurney, Caleb S., Kennebunk, Me. Business-certificate	18,247	Apr. 10	43	130
Hamborg, Ole P., and G. O. Weding, Mankato, Minn. Box	18,248	Apr. 10	43	130
Harriman, Jeremiah P., Woonsocket, R. I. Ornamentation of knit fabrics	18,351 to 18,364	June 5	43	1130
Harriman, Jeremiah P., Woonsocket, R. I. Ornamentation of knit fabrics	18,362	June 12	43	1242
Hartford Carpet Company. (See Folsom, James L., assignor.)				
Hartford Carpet Company. (See Heinigke, Otto, assignor.)				
Hartford Carpet Company. (See Hunt, Henry, assignor.)				
Hawkes, Thomas G., Corning, N. Y. Ornamentation of glassware, &c	18,267 to 18,268	Apr. 24	43	394
Hawkes, Thomas G., Corning, N. Y. Ornamental border for glassware, &c	18,301	May 8	43	636
Heinigke, Otto, New Utrecht, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,235	Apr. 3	43	2
Heinigke, Otto, New Utrecht, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,302	June 19	43	1352
Heller, Charles J., Philadelphia, Pa. Badge for hats	18,249	Apr. 10	43	130
Hensel, Colladay Company. (See Hensel, Valetton, and Cook, assignors.)				
Hensel, George S., L. D. Valetton, and F. E. Cook, assignors to Hensel, Colladay Company, Philadelphia, Pa. Fringe	18,365 to 18,366	June 5	43	1130
Hensel, George S., L. D. Valetton, and F. E. Cook, assignors to Hensel, Colladay Company, Philadelphia, Pa. Fringe	18,363	June 12	43	1242
Heyer, Charles E., assignor to Barnhart Bros. & Spindler, Chicago, Ill. Type	18,250	Apr. 10	43	130
Heyer, Charles E., assignor to Barnhart Bros. & Spindler, Chicago, Ill. Font of combination type ornaments	18,295	May 1	43	514
Hiller, Hugo L., New York, N. Y. Slipper-vamp	18,364	June 12	43	1242
Hodges, Charles H., assignor to Detroit Steam Radiator Company, Detroit, Mich. Radiator ornamentation	18,311	May 15	43	760
Hodges, Charles H., assignor to Detroit Steam Radiator Company, Detroit, Mich. Radiator	18,312 to 18,313	May 15	43	760
Hodges, Charles H., assignor to Detroit Steam Radiator Company, Detroit, Mich. Radiator ornamentation	18,314	May 15	43	760
Hodges, Henry C., assignor to Detroit Steam Radiator Company, Detroit, Mich. Radiator	18,310	May 15	43	760
Holmes & Edward Silver Company. (See Klingel, Robert H., assignor.)				
Houston, Ulysses G., Manhattan, Kans. Educational model	18,409	June 26	43	1460
Hunt, Henry, Greenville, N. J., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	18,236	Apr. 3	43	2
Jackson, Peter H., San Francisco, Cal. Sidewalk dead-light frame	18,296	May 1	43	514
Jackson, William W., assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	18,269	Apr. 24	43	394
Jenkins, Etta L., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Girl's street-costume	18,287	May 1	43	514
Jenkins, Etta L., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Infant's cloak	18,288	May 1	43	514
Kahn & Brothers, F. & L. (See Kahn and Thiem, assignors.)				
Kahn, Lazard, and R. Thiem, assignors to F. & L. Kahn & Brothers, Hamilton, Ohio. Fire-basket	18,367	June 5	43	1130
Keep, William J., and C. Wipfler, assignors to Michigan Stove Company, Detroit, Mich. Cooking-stove	18,251	Apr. 10	43	130
Kent, Minnie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,252	Apr. 10	43	130
Kent, Minnie B., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,289	May 1	43	514
Kent, Minnie B., assignor to Butterick Publishing Company, (limited,) New York, N. Y. Miss's costume	18,335	May 22	43	880
Keyser, Peter D., Philadelphia, Pa., assignor to P. H. Sheridan, U. S. Army, trustee, Washington, D. C. Badge	18,303	June 19	43	1352
King, Edward J., assignor to Co-Operative Foundry Company, Rochester, N. Y. Cooking-stove	18,302	May 8	43	636
Kingsbury, John, Albany, N. Y. Coupelet-sleigh	18,237	Apr. 3	43	2
Kittinger, Levi, Akron, Ohio. Match	18,270	Apr. 24	43	394
Klingel, Robert H., Bridgeport, assignor to Holmes & Edward Silver Company, West Stratford, Conn. Spoon, fork, &c	18,315 to 18,316	May 15	43	760
Knorpp, Philipp, and D. A. Mayer, Stapleton, N. Y. Christmas-tree ornament	18,238	Apr. 3	43	2
Koskul, Frederick, Williamsport, Pa. Surface ornamentation of walls	18,368	June 5	43	1130
Lauschke, Ernst, assignor to Barnhart Bros. & Spindler, Chicago, Ill. Type	18,239	Apr. 3	43	2
Lauschke, Ernst, assignor to Barnhart Bros. & Spindler, Chicago, Ill. Type	18,271	Apr. 24	43	394
Lauschke, Ernst, assignor to Barnhart Bros. & Spindler, Chicago, Ill. Font of printing-type	18,304	June 19	43	1352
Lawson, William, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-dial	18,272	Apr. 24	43	394
Lazarus, Augustus A., *et al.* (See Lipper, Benjamin, assignor.)				
Lipper, Benjamin, assignor to himself, A. A. Lazarus, and I. A. Schwarz, Philadelphia, Pa. Trimming	18,253	Apr. 10	43	130
Lockwood, James F., assignor to himself, T. J. Whitney, and A. Bryant, Philadelphia, Pa. Whisk-holder and match-safe	18,353	May 29	43	987
Lowell Manufacturing Company. (See Poole, Edward, assignor.)				
Lowell Manufacturing Company. (See Saner, Emil G., assignor.)				
MacKellar, Smiths & Jordan Company. (See Jackson, William W., assignor.)				
Maslehof, Joachim, New York, N. Y. Trimming	18,369	June 5	43	1130
Martin, Charles T., assignor to Consumers Gas Saving and Inspection Company, Chicago, Ill. Nursery-burner	18,274	Apr. 24	43	394
Mayer, Gustave A. (See Knorpp and Mayer.)				
McCarthy, Oliver, assignor to Meriden Britannia Company, Meriden, Conn. Coffin-plate	18,273	Apr. 24	43	394
Meriden Britannia Company. (See McCarthy, Oliver, assignor.)				
Merkien Brothers. (See Garst, Emile, assignor.)				
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	18,275 to 18,289	Apr. 24	43	394

Alphabetical list of patentees of designs, April to June, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	18,336 to 18,340	May 22	43	880
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	18,370 to 18,371	June 5	43	1130
Meyer, George A., Brooklyn, N. Y. Sign-box	18,372	June 5	43	1130
Meyer, Victor E. (See Meyer, Charles T. and V. E.)				
Michigan Stove Company. (See Keep and Wipfler, assignors.)				
Mickle, John, *et al.* (See Atwater, Richard M., assignor.)				
Miller, Hettie H., Philadelphia, Pa., assignor to Cheney Brothers, South Manchester, Conn. Fabric	18,305	June 19	43	1353
Mitchell, Frederick, Brooklyn, N. Y. Calendar	18,373	June 5	43	1130
Mix, Garry L., Yalesville, Conn. Spoon	18,280	May 1	43	514
Moore, Joseph C., Montreal, Quebec, Canada. Dentifrice-case	18,354	May 29	43	987
Moran, Ellen, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's princess costume	18,281	May 1	43	514
Moran, Ellen, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's wrap	18,282	May 1	43	514
Moran, Ellen, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,317 to 18,318	May 15	43	760
Moran, Ellen, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Tea-gown	18,306	June 19	43	1353
Moulton, Frank W., Washington, D. C. Cigar-stand and ash-receiver	18,240	Apr. 3	43	2
Musick, John U. (See Andrews, Willard J., assignor.)				
Nicholson, J. Whitall, *et al.* (See Atwater, Richard M., assignor.)				
O'Brien, Daniel, Washington, D. C. Shirt-cuff	18,343	May 29	43	990
Pattis, Albert, assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Lamp-foot	18,266	Apr. 17	43	274
Peters, William, Johnstone, county of Renfrew, Scotland. Exhibit for shoe-laces	18,263	May 8	43	636
Peck, Stow & Wilcox Company. (See Whitney, Pardon A., assignor.)				
Peck, Stow & Wilcox Company. (See Wilcox, Marcellus B., assignor.)				
Petsold, Adolph, assignor to J. Bromley & Sons, Philadelphia, Pa. Rug	18,307 to 18,309	June 19	43	1353
Pierce, John B., and J. Bond, Buffalo, N. Y. Radiator	18,241	Apr. 3	43	2
Pirkl, John, Brooklyn, N. Y. Window-guard	18,283	May 1	43	514
Pisch, Francis L., New York, N. Y. Lantern-body	18,400	June 19	43	1353
Poole, Edward, Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	18,284	May 1	43	514
Price, John A., Scranton, Pa. Cooking-stove	18,304	May 8	43	636
Richards, Lucius J., Philadelphia, Pa. Coffee or tea pot	18,355	May 29	43	987
Richards, Thomas, Jersey City, N. J. Pen and pencil case	18,410	June 26	43	1461
Roya, Lizzie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's wrapper	18,285	May 1	43	514
Roya, Lizzie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Miss's apron	18,319	May 15	43	760
Roya, Lizzie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Walking-skirt	18,320	May 15	43	760
Roya, Lizzie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Walking-skirt	18,344	May 22	43	880
Roya, Lizzie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Skirt	18,365	June 12	43	1242
Sampson, Edward C. (See Meyer, Charles T. and V. E., assignors.)				
Samuel, Edward. (See Wharton and Samuel.)				
Saner, Emil G., Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	18,296 to 18,297	May 1	43	514
Schoermerhorn, Rodney F., and F. S Weller, assignors to Channon Emery Stove Company, Quincy, Ill. Cooking-range	18,254	Apr. 10	43	130
Schott, Joseph S., Burlington, Iowa. Hame attachment	18,345	May 22	43	880
Schwarz, Isaac A., *et al.* (See Lipper, Benjamin, assignor.)				
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's tea-gown	18,255	Apr. 10	43	130
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,305	May 8	43	636
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,321	May 15	43	760
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,346	May 22	43	880
Sheils, Jennie, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's costume	18,396	June 12	43	1242
Sheridan, P. H., trustee. (See Keyser, Peter D., assignor.)				
Shiebler, George W., Brooklyn, N. Y. Handle for forks, &c	18,357	June 12	43	1242
Slater, Warren G., Fremont, Mich. Button-fastener	18,261	Apr. 24	43	394
Smith, Charles B., Fitchburg, Mass. Fabric	18,347 to 18,350	May 22	43	880
Soderholm, Louise, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Miss's costume	18,256	Apr. 10	43	130
Spalding & Brothers, A. G. (See Spalding, J. Walter, assignor.)				
Spalding, J. Walter, New York, N. Y., assignor to A. G. Spalding & Brothers, Chicago, Ill. Ornamentation of game-tablets	18,411 to 18,412	June 26	43	1460
Stein, Lee, assignor to Stein Manufacturing Co., Rochester, N. Y. Burial-casket	18,413	June 26	43	1460
Stein Manufacturing Co. (See Stein, Lee, assignor.)				
Stern, Jonathan, Savannah, Ga. Back of envelopes	18,414	June 26	43	1460
Stiff, Charles W., and J. Watrous, Foxborough, Mass. Book-cover protector	18,286	May 1	43	514
Stockstrom, Charles A. and L., St. Louis, Mo. Gas or vapor stove	18,257 to 18,258	Apr. 10	43	130
Stockstrom, Louis. (See Stockstrom, Charles A. and L.)				
Swindell, Charles J. B., *et al.* (See Garton, William M., assignor.)				
Swindell, Joseph R., *et al.* (See Garton, William M., assignor.)				
Swindell, Walter B., *et al.* (See Garton, William M., assignor.)				
Swindell, William, *et al.* (See Garton, William M., assignor.)				
Tatum, C. Albert, *et al.* (See Atwater, Richard M., assignor.)				
Terry, Edwin, Brooklyn, N. Y. Watch-charm	18,356	May 29	43	987
Thiem, Rudolph. (See Kahn and Thiem.)				
Thomas, Frank S., Topeka, Kans. Desk-cabinet	18,282	May 15	43	760
Turner, Mary, assignor to Butterick Publishing Company, (limited,) New York, N. Y. Lady's basque	18,283	May 15	43	760
Underhill, Francis M., *et al.* (See Atwater, Richard M., assignor.)				
Valetton, Louis D. (See Hensel, Valetton, and Cook.)				
Varwig, George C., Philadelphia, Pa. Toilet-case	18,262	Apr. 3	43	2

Alphabetical list of patentees of designs, April to June, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Varwig, George C., Philadelphia, Pa. Whisk-broom holder	18,374	June 5	43	1139
Village, Thomas, South Norwalk, assignor to Branford Lock Works, Branford, Conn. Ornamentation of builders' hardware	18,357	May 29	43	987
Wagner, Charles T., College Point, N. Y. Quilting	18,401 to 18,404	June 19	43	1352
Wagner, Charles T., College Point, N. Y. Quilting	18,415 to 18,416	June 26	43	1499
Walter, William G., assignor to Atterbury & Co., Pittsburg, Pa. Dish	18,398	May 29	43	987
Waterbury Clock Company. (See Bannatyne, Archibald, assignor.)				
Waterbury Clock Company. (See Lawson, William, assignor.)				
Watrous, Joseph. (See Stiff and Watrous.)				
Weding, George O. (See Hamberg and Weding.)				
Weiland, Henry L., Rochester, N. Y. Thermometer-back	18,405	June 19	43	1352
Weld, Samuel P., Bond's Village, Mass. Bottle-stopper	18,406	June 19	43	1352
Weller, Ferdinand S. (See Schermerhorn and Weller.)				
Wells, George J., Albany, N. Y., assignor to Chicago Hardware Manufacturing Company, Chicago, Ill. Door-trimming	18,351	May 22	43	800
Whalley, Edward, Washington, D. C. Tile	18,375	June 5	43	1139
Wharton and Company, William, Jr. (See Wharton and Samuel, assignors.)				
Wharton, William, Jr., and E. Samuel, assignors to W. Wharton, Jr., and Company, (incorporated,) Philadelphia, Pa. Railway-rail	18,384 to 18,388	May 15	43	769
Whitall, James, *et al.* (See Atwater, Richard M., assignor.)				
Whitall, John M., *et al.* (See Atwater, Richard M., assignor.)				
Whitney, Pardon A., assignor to Peck, Stow & Wilcox Company, Southington, Conn. Clamp-frame	18,376	June 5	43	1139
Whitney, Thomas J., *et al.* (See Lockwood, James F., assignor.)				
Wilkinson, William H., assignor to Co-Operative Foundry Company, Rochester, N. Y. Heating-stove	18,377	June 5	43	1139
Willcox, Marcellus B., Cleveland, Ohio, assignor to Peck, Stow & Wilcox Company, Southington, Conn. Coffee-mill box	18,343	Apr. 3	43	2
Wipfler, Charles. (See Keep and Wipfler.)				

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Acme Staple and Machine Company, Philadelphia, Pa. Metallic staples and goods united by such staples	15,346	Apr. 10	43	130
Acreman & Son, Fordyce, Ark. Purgative pills	15,417	May 8	43	626
Acreman & Son, Fordyce, Ark. Medicinal oil or liniment	15,418	May 8	43	626
Adamant Manufacturing Company, Syracuse, N. Y. Plaster compositions for architectural purposes	15,476	May 22	43	880
Albany Perforated Wrapping Paper Company, Albany, N. Y. Toilet and wrapping paper	15,347	Apr. 10	43	130
Allen & Hanburys, Lawless, England. Confectionery and medicated confectionery	15,389	Apr. 3	43	2
Alloways, James M., Indianapolis, Ind. Tonic medicine	15,696	June 26	43	1499
American Glucose Company, Buffalo, N. Y.; Leavenworth, Kans.; Iowa City, Iowa; Peoria, Ill., and Tippecanoe City, Ohio. Glucose, grape-sugar, and corn-syrup	15,687	June 26	43	1499
American Improved Anti-Friction Metal Company, Mobile, Ala.; Bremen, Germany, and Paris, France. Anti-friction metal	15,380	May 1	43	514
Anthony & Company, E. & H. T., New York, N. Y. Photographic paper for making prints	15,440	May 1	43	514
Arata, Peter, New York, N. Y. Envelopes	15,390	Apr. 17	43	254
Arad & Ball, Baltimore, Md. Plug or twist tobacco, or tobacco in bulk	15,401	May 1	43	514
Arthur Company, New York, N. Y. Gate-valves	15,453	May 15	43	769
Ascough, Jesse, Handsworth, near Birmingham, county of Stafford, England. Toilet preparations	15,419	May 8	43	626
Ascough, Jesse, Handsworth, near Birmingham, county of Stafford, England. Starch, blue, and other laundry preparations	15,477	May 22	43	880
Ascough, Jesse, Handsworth, near Birmingham, county of Stafford, England. Preparations for the toilet	15,562	June 5	43	1139
Ascough, Jesse, Handsworth, near Birmingham, county of Stafford, England. Laundry preparations	15,563	June 12	43	1242
Aurora Distilling Company, Aurora, Ind., and Cincinnati, Ohio. Whisky	15,606	June 19	43	1338
Austen, Edward W., Oswego, N. Y. Liquid tonic for women	15,454	May 15	43	769
Bach & Co., David, Madison, Wis. Medical tea	15,348	Apr. 10	43	130
Baker Wire Company, Des Moines, Iowa. Barbed fence-cable	15,361	Apr. 17	43	254
Baldwin & Co., A., New Orleans, La. Cultivator	15,455	May 15	43	769
Ballantine, Henry, New York, N. Y. Tonic medicine	15,698	June 26	43	1499
Barker & Co., J. H., New York, N. Y. Flavoring-syrup for effervescing and other drinks	15,609	June 19	43	1338
Barranco & Co., M., New York, N. Y. Cigars	15,563	June 5	43	1139
Barranco & Co., M., New York, N. Y. Cigars	15,564	June 5	43	1139
Bas-Relief Manufacturing Company, New York, N. Y. Plaster bas-reliefs, statuary, statuettes, moldings, and signs	15,390	Apr. 24	43	384
Beaver & Co., Dayton, Ohio. Toilet and laundry soap	15,565	June 5	43	1139
Bensdorp & Co., Amsterdam, Holland. Preparations of cocoa and chocolate	15,479	May 22	43	880
Bensdorp & Co., Amsterdam, Netherlands. Soluble cocoa	15,629	June 26	43	1499
Berkshire Manufacturing Company, (limited,) Frankford, Pa. Ginghams	15,584	June 12	43	1243
Berthold, Augustus, St. Louis, Mo. Salve	15,480	May 22	43	880
Berthold, Augustus, St. Louis, Mo. Salve	15,481	May 22	43	880
Berry, Henry. (See Miller and Berry.)				
Best Brewing Company, Phillip, Milwaukee, Wis. Tonic nutrient beverage	15,354	Apr. 10	43	130
Bierman, Heidelberg & Co., New York, N. Y. Outer clothing and overcoats	15,456	May 15	43	769
Billsland, Elizabeth, New York, N. Y. Eye-water	15,630	June 26	43	1499
Bitting & Hay, Winston, N. C. Plug chewing-tobacco, smoking-tobacco, cigars, and snuff	15,566	June 5	43	1139
Blake, Bruce & Co. Omaha, Nebr. Whisky	15,567	June 5	43	1139
Blatz, Valentin, Milwaukee, Wis. Beer	15,349	Apr. 10	43	130
Bloomingdale & Levy, New York, N. Y. Extracts, perfumes, oils, and soaps	15,631	June 26	43	1499
Bloomingdale & Levy, New York, N. Y. Extracts, perfumes, oils, and soaps	15,632	June 26	43	1499
Bloomingdale & Levy, New York, N. Y. Extracts, perfumes, oils, and soaps	15,633	June 26	43	1499
Bonzor & Co., G. H., London, England. Biscuits for dogs, horses, cattle, and other animals	15,392	Apr. 17	43	254
Beord & Son, London, England. Gin, wine, whisky, rum, liqueurs, brandy, and other similar liquors	15,591	May 29	43	988
Bourne, Graham & Fell, New York, N. Y. Wheat-flour	15,353	Apr. 17	43	254
Bowen's Sons, S., Philadelphia, Pa. Stains for mortars and cements	15,482	May 22	43	880
Brinkmann, August H., Baltimore, Md. Dress-shields	15,610	June 19	43	1338
Brooklyn Watch Case Company, Brooklyn, N. Y. Watch-cases	15,592	May 29	43	988
Butler Brothers, Chicago, Ill., and New York, N. Y. Hard soap	15,483	May 22	43	880
Chase, Merritt & Co., Boston, Marlborough, and Milford, Mass. Men's boots and shoes	15,391	Apr. 24	43	384
Chase & Sanborn, Boston, Mass. Coffee	15,457	May 15	43	769
China and Japan Trading Company, (limited,) New York, N. Y. Woven cotton and woolen fabrics	15,484	May 22	43	880
Cincinnati Desiccating Company, Cincinnati, Ohio. Fertilizer	15,330	Apr. 3	43	2
Clark, Fairhead & Co., Jacksonville, Fla. Cypress shingles	15,593	May 29	43	988
Clark, Fairhead & Co., Jacksonville, Fla. Cypress shingles	15,594	May 29	43	988
Cleaveland, Charles F., Indianapolis, Ind. Medical powders	15,485	May 22	43	880
Cobb, Wight & Co., Rockland, Me. Japan and Oolong tea	15,458	May 15	43	769
Cohen, Abraham, Boston, Mass. Cotton underwear	15,486	May 22	43	880
Columbia Manufacturing Company, Boston, Mass. Hard soap for laundry and general purposes	15,595	May 29	43	988
Conroy, John S., New York, N. Y. Newspapers	15,392	Apr. 24	43	384
Cook, Lyman, Smith & Company, Chicago, Ill. Men's soft and stiff fur and wool hats	15,331	Apr. 3	43	2
Corbett, John, Stoke Prior Salt Works, near Bromsgrove, county of Worcester, and London, England. Salt	15,420	May 8	43	626
Corbett, John, Stoke Prior Salt Works, near Bromsgrove, county of Worcester, and London, England. Salt	15,421	May 8	43	626
Corby, Henry, Belleville, Ontario, Canada. Whisky	15,611	June 19	43	1338
Cramer & Kersten, Charleston, S. C. Beer	15,634	June 26	43	1499
Crocker & Co., H. S., San Francisco, Cal. Water-closet paper	15,625	June 26	43	1499
Crocker & Co., H. S., San Francisco, Cal. Matting-paper in sheets and pads	15,626	June 26	43	1499
Crocker & Co., H. S., San Francisco, Cal. Water-closet paper	15,627	June 26	43	1499
Cushing, Ira B., Brookline, Mass. Catarrh remedy	15,338	Apr. 3	43	2
Custnano Bros., New Orleans, La., and Palermo, Italy. Olive-oil	15,459	May 15	43	769
Davis, James E., Detroit, Mich. Whisky	15,596	May 29	43	988
Deschamps, Frères, Vieux-Jeand-Heurs, Meuse, France. Ultramarine	15,422	May 1	43	514

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Diamond Crystal Salt Company, St. Clair, Mich. Table and dairy salt	15,488	May 8	43	636
Dios Chemical Company, St. Louis, Mo. Medicinal preparation for uterine diseases	15,539	June 26	43	1460
Donnelly, Joseph M., College Point, N. Y. Malt and carbonated beverages	15,327	May 29	43	968
Donovan, John. (See Kenney, Donovan, and Rodway.)				
Dorsean French Perfumery Company, New Orleans, La. Perfumery	15,467	May 22	43	890
Drysdale & Co., Thomas, New York, N. Y. Spades, shovels, and agricultural implements	15,363	Apr. 24	43	394
Dunlap, Lawton & Hall, Chicago, Ill. Rubber boots, shoes, umbrellas, and conducting-hose	15,466	May 22	43	890
Durant & Co., Trinidad, British West Indies. Bitters	15,423	May 8	43	636
Eclipse Cement Co., Philadelphia, Pa. Shoe polish or dressing	15,424	May 8	43	636
El Modelo Cigar Manufacturing Co., Jacksonville, Fla. Cigars	15,368	June 5	43	1120
Elgin National Watch Company, Chicago, Ill. Watches	15,425	May 8	43	636
Elgin National Watch Company, Chicago, Ill. Watches	15,426	May 8	43	636
Elgin National Watch Company, Chicago, Ill. Watches	15,427	May 8	43	636
Elgin National Watch Company, Chicago, Ill. Watches	15,452	May 8	43	636
Elvin, James, Minneapolis, Minn. Cigars and smoking and chewing or plug tobacco	15,585	June 12	43	1242
Enterprise Coffee Company, Baltimore, Md. Roasted coffee	15,460	May 15	43	760
Enterprise Coffee Company, Baltimore, Md. Mixed tea	15,461	May 15	43	760
Enterprise Coffee Company, Baltimore, Md. Roasted coffee	15,462	May 15	43	760
Eureka Fire Hose Company, New York, N. Y. Hydraulic hose	15,528	May 29	43	968
Farnum & Co., John, Philadelphia, Pa. Ginghams, tickings, and all cotton goods	15,529	May 29	43	968
Fischbeck & Son, D., Milwaukee, Wis. Leather fly-nets	15,612	June 19	43	1352
Fishburne Bros., Roanoke City, Va. Smoking and chewing tobacco	15,402	May 1	43	514
Fishburne Bros., Roanoke, Va. Smoking and chewing tobacco	15,424	May 8	43	636
Fly & Co., David R., Galveston, Tex. Pills, liniment, tonic, cough-sirup, and female regulator	15,449	May 22	43	890
Foley, John, New York, N. Y. Gold pens	15,530	May 29	43	968
Fragner, B., Prague, Bohemia, Austria-Hungary. Pharmacentical and medical preparations generally	15,350	Apr. 10	43	190
Fragner, B., Prague, Bohemia, Austria-Hungary. Liquid medicine for internal use and for certain diseases	15,569	June 5	43	1120
Gage, James C., Stockton, Cal. Condition-powders	15,303	Apr. 3	43	2
Gem City Stove Company, Dayton, Ohio. Gas-stoves	15,531	May 29	43	968
Giering, Anna. (See Giering, Joseph and A.)				
Giering, Joseph and A., Baltimore, Md. Remedy for skin diseases	15,334	Apr. 3	43	2
Gipps Brewing Company, Peoria, Ill. Lager-beer	15,570	June 5	43	1120
Gordon, Louise H., Boston, Mass. Toilet application for the skin	15,491	May 22	43	890
Gotzian & Company, C., St. Paul, Minn. Shoes for men, misses, ladies, and children	15,429	May 8	43	636
Gradle & Stretz, Chicago, Ill. Smoking and chewing tobacco	15,492	May 22	43	890
Greenwood Horse Shoe Company, Philadelphia, Pa. Horse and mule shoes	15,463	May 15	43	760
Griffing Iron Company, A. A., Jersey City, N. J., and Chicago, Ill. Radiators	15,404	May 1	43	514
Grisbaugh, Herman G., Kansas City, Mo. Antiseptic or blood-purifying medicine	15,586	June 12	43	1242
Griswold, Catharine A., New York, N. Y. Corsets	15,493	May 22	43	890
Griswold, Catharine A., New York, N. Y. Corsets	15,494	May 22	43	890
Grommes & Ullrich, Chicago, Ill. Key West cigars	15,335	Apr. 3	43	2
Guinness, Son & Company, (limited,) Arthur, London, England. Beer	15,464	May 15	43	760
Gwinnell, John M., Newark, N. J. Harness-soap	15,495	May 22	43	890
Hanau, John H., New York, N. Y. Leather, cloth, and rubber boots and shoes	15,571	June 5	43	1120
Hance Brothers & White, Philadelphia, Pa. Medicinal extracts, pills, elixirs, and chemicals	15,364	Apr. 17	43	254
Hargrave & Son, J. H., Chatham, Va. Plug-tobacco for chewing	15,465	May 1	43	514
Harper, Martha M., Rochester, N. Y. Hair-tonic	15,572	June 5	43	1120
Harper & Reynolds Company, Los Angeles, Cal. Rubber hose	15,496	May 22	43	890
Hawkins & Co., Colin M., Raleigh, N. C. Dowle or finely-divided portions of feathers resembling down	15,532	May 29	43	968
Healey & Co., New York, N. Y. Pleasure carriages	15,365	Apr. 17	43	254
Heath, Robert F. S., Camden, N. J. Liquid shoe-dressing	15,430	May 8	43	636
Hecker & Co., George V., New York, N. Y. Wheat-flour	15,573	June 5	43	1120
Heinze & Co., Otto, New York, N. Y. Hosiery	15,351	Apr. 10	43	190
Heisel, Charles T., Cleveland, Ohio. Chewing-gum	15,533	May 29	43	968
Highland Slate Manufacturing Company, Portland and Brownville, Me., and Boston, Mass. Pulverized slate	15,384	Apr. 24	43	394
Hill, Edwin F., Springfield, Ohio. Embalming-fluid	15,613	June 19	43	1352
Holmes & Edwards Silver Company, West Stratford, Conn. Metallic table-ware, both hollow and flat	15,431	May 8	43	636
Holmes & Edwards Silver Company, West Stratford, Conn. Metallic table-ware, both hollow and flat	15,432	May 8	43	636
Holmes & Edwards Silver Company, West Stratford, Conn. Metal table-ware	15,490	May 22	43	890
Hopkins, Henry H., Hillsdale, Mich. Indian blood remedy	15,640	June 26	43	1460
Horlick, Alexander, Racine, Wis. Medicated foods	15,587	June 12	43	1242
Horsey Manufacturing Co., Utica, N. Y. Tooth powder or preparation	15,497	May 22	43	890
Horsey Manufacturing Co., Utica, N. Y. Tooth brushes and polishers	15,574	June 5	43	1120
Horsey Manufacturing Co., Utica, N. Y. Tooth brushes and polishers	15,575	June 5	43	1120
Howard & Son, Providence, R. I. Useful or ornamental articles made of solid silver	15,614	June 19	43	1352
Howe & Co., J. D., New York, N. Y. Liquid medicine for the ear	15,433	May 8	43	636
Hughes, Walter J., Minneapolis, Minn. Liniment	15,434	May 8	43	636
Hunt Kiddie Company, Gloucester, Mass., and New York, N. Y. Medicine for dyspepsia and pulmonary diseases	15,366	Apr. 17	43	254
Illingworth, Thomas, Bradford, county of York, England. Woolen and cotton fabrics for linings and outer clothing	15,534	May 29	43	968
Imperial Chemical Co., Philadelphia, Pa. Boiler-incrustation preventive and remover	15,385	Apr. 24	43	394
Irroy, Ernest, Rheims, France. Champagne	15,535	May 29	43	968
Irwin & Co., Boston, Mass. Cigars, cigarettes, and smoking and chewing tobacco	15,536	May 29	43	968
Jaffé & Darmstaedter, Benno, Charlottenburg, near Berlin, Prussia, Germany. Medical compounds for curing skin diseases	15,478	May 22	43	890
Johnson, Cowdin & Co., New York, N. Y. Ribbons	15,498	May 22	43	890
Johnson, Cowdin & Co., New York, N. Y. Ribbons	15,499	May 22	43	890
Johnson, Cowdin & Co., New York, N. Y. Ribbons	15,615	June 19	43	1352
Johnson & Jefferson, New Haven, Conn. Laundry-starch	15,435	May 8	43	636
Jumbo Coal & Coke Co., Pittsburg, Pa. Coal and coke	15,641	June 26	43	1460
Kelly & Co., Horace R., New York, N. Y. Cigars	15,465	May 15	43	760
Kenney, C. T., J. Donovan, and W. K. Rodway, Griggsville, Ill. Boot and shoe blacking	15,466	May 15	43	760
Kayes, Minnie L., New York, N. Y. Cough medicine	15,537	May 29	43	968
Kilgore & Wilson, Belfast, Me. Extract of sarsaparilla compound, extract of Jamaica ginger, liver and kidney pills, and cough-sirup	15,588	June 12	43	1242
Kinney Tobacco Company, New York, N. Y. Cigarettes	15,336	Apr. 3	43	2
Kinney Tobacco Company, New York, N. Y. Cigarettes	15,337	Apr. 3	43	2

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Kinney Tobacco Company, New York, N. Y. Cigarettes	15,338	Apr. 3	43	2
Kirkendall, Charles F., Pittsburg, Pa. Medicine for the cure of rheumatism and chronic blood diseases	15,589	June 12	43	1242
Kittredge, Charles F., Rockland, Me. Medical compound for the cure of certain named diseases	15,538	May 29	43	968
Kleinert, Isaac B., New York, N. Y. Dress-shields	15,366	Apr. 24	43	394
Kleinert, Isaac B., New York, N. Y. Dress-shields	15,367	Apr. 24	43	394
Kleinert, Isaac B., New York, N. Y. Dress-shields	15,368	Apr. 24	43	394
Kleinert, Isaac B., New York, N. Y. Dress-shields	15,436	May 8	43	636
Knorr, John A., New York, N. Y. Albumen paper for photographic purposes	15,437	May 8	43	636
Kessig Wilhelm's-Fuhsenqueilen, Esse, Germany. Mineral water and mineral salts and pastils and troches made from the salts	15,590	June 12	43	1242
Kosmic Oil Co., New York, N. Y. Illuminating and lubricating oils	15,540	May 29	43	968
Krause & Son, William, Philadelphia, Pa. Artificial stone and cement and concrete pavements	15,539	May 29	43	968
Kreiser, August, New York, N. Y. Wines	15,352	Apr. 10	43	190
Lackawanna Mills, Scranton, Pa. Knit wearing-apparel	15,581	May 22	43	890
Lagmann, Antoine, New Orleans, La. Remedy for diphtheria	15,540	May 29	43	968
Lancaster Mills, Clinton and Boston, Mass. Cotton fabrics of all kinds	15,585	May 22	43	890
Leach, Henry B., Boston, Mass. Safety-reserve	15,591	June 12	43	1242
Leimer, Fr. J., Chicago, Ill. Medicine for horses and cattle	15,592	June 12	43	1242
Lessedit & Co., D., Birmingham, county of Warwick, England. Metallic pens, except those made of precious metals or in imitation of the same	15,389	Apr. 24	43	394
Lewis Manufacturing Company, Sioux City, Iowa. Compound for preventing incrustation and for removing scale in boilers	15,490	May 1	43	514
Lilly & Company, Eli, Indianapolis, Ind., and Kansas City, Mo. Medicinal preparation for the cure of diseases of the blood and skin	15,593	June 12	43	1242
Lindley, William T., Chicago, Ill. Remedy for diseases of the urinary system	15,467	May 15	43	760
Livingston Nail Co., New York, N. Y. Hose-nails	15,502	May 22	43	890
Ludorff & Nacke, New York, N. Y. Lager-beer, soda, and mineral waters	15,594	June 12	43	1242
Maine Balsam Fir Co., Boston, Mass. Toilet-soap	15,503	May 22	43	890
Marks, Caroline, San Francisco, Cal. Preparation of herbs used as a remedy for diseases of the blood and liver, and for rheumatism	15,339	Apr. 3	43	2
Marshall, Kennedy & Co., (limited,) Pittsburg, Pa. Flour	15,390	Apr. 24	43	394
Marshall, Kennedy & Co., (limited,) Pittsburg, Pa. Flour	15,407	May 1	43	514
Marshall, Kennedy & Co., (limited,) Pittsburg, Pa. Flour	15,468	May 15	43	760
Marvelous Cough Syrup Company, Havre de Grace, Md. Sirups for coughs and colds	15,595	June 12	43	1242
Mayo, Urial K., Boston, Mass. Certain anæsthetic compound	15,426	May 8	43	636
McClung & Co., Calvin M., Knoxville, Tenn. Horse-nails	15,549	May 29	43	968
McDonald Drug Company, R. H., New York, N. Y. Toilet-water sachet-powder	15,469	May 15	43	760
McDonald Drug Company, R. H., New York, N. Y. Toilet, medicated, and commercial soap	15,543	May 29	43	968
McKitrick, David F., Marysville, Ohio. Remedy for chicken-cholera	15,470	May 15	43	760
McLeish, John, Cincinnati, Ohio. Cough medicine	15,541	May 29	43	968
Merchant & Co., Philadelphia, Pa. Tin plates and terne plates	15,504	May 22	43	890
Merriman Manufacturing Company, Oakland, Cal. California olive-oil	15,439	May 8	43	636
Mexican Amollia Soap Company, Peoria, Ill. Soap	15,616	June 19	43	1352
Miller, Watson J., and H. Berry, Shelton, Conn. Metal articles for decoration and for toilet and table use	15,642	June 26	43	1460
Miller, William D. W., New York, N. Y. Wood-incased cans and glass vessels	15,576	June 5	43	1120
Minneapolis Glass Company, Minneapolis, Minn. Lamp-chimneys	15,391	Apr. 24	43	394
Mix & Co., G. I., Yalesville, Conn. Spoons, forks, ladles, &c.	15,440	May 8	43	636
Moore, John T., Bellows Falls, Vt. Toilet-paper	15,577	June 5	43	1120
Moore, Joseph C., Montreal, Quebec, Canada. Dentifrices	15,505	May 22	43	890
Mumm & Co., George H., Rheims, France. Champagne-wine	15,596	June 12	43	1242
Murphy, Grant & Co., San Francisco, Cal., and New York, N. Y. Ribbons and piece silks	15,403	May 1	43	514
Neal, John F., Lampasas, Tex. Hepatic compound	15,597	June 12	43	1242
Neumann, Morris D., Chicago, Ill. Cigars, cigarettes, smoking and chewing tobacco, and snuff	15,578	June 5	43	1120
New York Belting and Packing Company, New York, N. Y. Rubber mats	15,353	Apr. 10	43	190
New York Pharmacal Association, Yonkers, N. Y. Medical compound for aiding digestion and curing dyspepsia	15,368	Apr. 17	43	254
Nonantum Worsted Company, Newton and Boston, Mass. Worsted and woolen yarns	15,340	Apr. 3	43	2
Nonantum Worsted Company, Newton and Boston, Mass. Worsted, woolen, silk, and cotton yarns	15,507	May 22	43	890
Nonantum Worsted Company, Newton and Boston, Mass. Worsted, woolen, and silk yarns	15,508	May 22	43	890
Norddeutsche Kartoffelmehl Fabrik, Chatrin, Germany. Potato-flour and potato-starch and all potato-starch products, including dextrine	15,509	May 22	43	890
North River Coal and Wharf Company, Jersey City, N. J. Anthracite and bituminous coal	15,499	May 1	43	514
Nott Company, W. S., Minneapolis, Minn. Leather belting	15,510	May 22	43	890
O'Neil, Henry M., New York, N. Y. Medicinal preparations generally	15,389	Apr. 17	43	254
Olcovich, Joseph, San Francisco, Cal. Emollient compound	15,471	May 15	43	760
Orford Copper Company, New York, N. Y. Refined copper	15,511	May 22	43	890
Orford Copper Company, New York, N. Y. Refined copper	15,617	June 19	43	1352
Orford Copper Company, New York, N. Y. Refined copper	15,618	June 19	43	1352
Parnalla, Adrian, Brooklyn, N. Y. Pharmaceutical preparations	15,370	Apr. 17	43	254
Patterson, James A., Birmingham, Ala. Manufactured tobacco, cigars, and cigarettes	15,472	May 15	43	760
Pearson & Co., C. H., Baltimore, Md. Fresh oysters, fruits, and vegetables in contradistinction to canned or preserved goods	15,512	May 22	43	890
Pearson & Co., William, Hamburg, Germany. Liquid and powder disinfectants	15,598	June 12	43	1242
Peckham, Henry C., Freeport, Mich. Croup remedy	15,599	June 12	43	1242
Pepper, George W., Peabody, Mass. Cough-drops	15,371	Apr. 17	43	254
Pfister & McKay, New Orleans, La. Batter	15,600	June 12	43	1242
Phelps, Charles S., Gowanda, N. Y. Salve	15,544	May 29	43	968
Phéniques Chemical Company, St. Louis, Mo. Antiseptic chemical compound	15,545	May 29	43	968
Pierce, Butler & Pierce Manufacturing Company, Syracuse, N. Y. Steam and hot-water boilers	15,410	May 1	43	514
Pierce Steam Heating Co., Buffalo, N. Y. Steam or hot-water radiators	15,441	May 8	43	636
Pittsburg Wire Nail Company, Pittsburg, Pa. Wire nails	15,372	Apr. 17	43	254
Pommery Fils & Co., Veuve, Rheims, France. Champagne-wine	15,581	June 5	43	1120
Pommery Fils & Co., Veuve, Rheims, France. Champagne-wine	15,582	June 5	43	1120
Pommery Fils & Co., Veuve, Rheims, France. Champagne-wine	15,605	June 12	43	1242
Pommery Fils & Co., Veuve, Rheims, France. Champagne-wine	15,606	June 12	43	1242
Pommery Fils & Co., Veuve, Rheims, France. Champagne-wine	15,607	June 12	43	1242
Powell, D. Frank, La Crosse, Wis. Pulmonary medicine and lung-healer	15,356	Apr. 10	43	190
Prentes & Sons, J. H., Webster, Md. Canned vegetables, corn, tomatoes, and fruits	15,392	Apr. 24	43	394
Prince's Metallic Paint Company, Philadelphia, Pa., and New York, N. Y. Metallic paint	15,546	May 29	43	968
Quaker Remedies Co., Philadelphia, Pa. Composition of herbs to be used as a tea	15,373	Apr. 17	43	254
Rockwagel & Co., New York, N. Y. Washing-machines	15,643	June 26	43	1460
Reddig, Isaac H., Boston, Mass. Liquid polish for stoves	15,644	June 26	43	1460

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Pge.
Read & Carnrick, New York, N. Y. Remedy for phthisis, neurasthenia, constipation, and intestinal indigestion	15,491	June 12	63	1248
Read, Francis H., Smithborough, Mass. Liniments	15,492	May 8	62	1248
Reid, Murdoch & Fischer, Chicago, Ill. Cigars	15,547	May 29	62	1248
Reid, Murdoch & Fischer, Chicago, Ill. Cigars	15,548	May 29	62	1248
Reid, Murdoch & Fischer, Chicago, Ill. Cigars	15,549	May 29	62	1248
Reiff, Benjamin, Philadelphia, Pa. Canned green corn	15,393	Apr. 24	62	1248
Reynolds, John H., Troy, N. Y. Ventilators	15,411	May 1	62	514
Reynolds Manufacturing Company, Cincinnati, Ohio. Remedies for promoting the growth of the teeth and bones	15,402	June 12	62	1262
Rice & Co., Thomas, Shrewsbury and Boston, Mass. Leather boots and shoes	15,550	May 29	62	1248
Ricketson Mineral Paint Works, Milwaukee, Wis. Mortar colors of all shades and tints	15,513	May 22	62	1248
Riker, William H., New York, N. Y. Expectorant medicine	15,514	May 22	62	1248
Riverside Soap Company, Paterson, N. J. Granulated washing-powder	15,394	Apr. 24	62	1248
Robinson & Co., Wm. H., Providence, R. I. Filled gold chains	15,579	June 5	63	1120
Rodway, Will. K. (See Keaney, Donovan, and Rodway.)				
Rohe & Brother, New York, N. Y. Lard				
Rohe & Brother, New York, N. Y. Lard	15,341	Apr. 3	62	2
Rosenthal, Fleischer & Co., Göppingen, Germany. Corsets and other white underwear	15,545	June 26	63	1440
Rothschild & Co., V. Henry, New York, N. Y. Shirts	15,515	May 22	62	1248
Salter, William T., New York, N. Y. Folding beds	15,516	May 22	62	1248
Sam & Co., Mayer, New York, N. Y. Boots and shoes	15,580	June 5	63	1120
Sanborn, F. E., Omaha, Nebr. Medicated food for animals	15,387	Apr. 17	62	254
Saxe, Matthew D., New York, N. Y. Certain named confectionery	15,639	June 26	63	1440
Saxlehner, Andreas, Buda Pesth, Austria-Hungary. Natural aperient water	15,351	May 29	62	1248
Sayer, Robert C., Redland, Bristol, England. Apparatus for collecting, filtering, and storing water	15,395	Apr. 24	62	1248
Sebastian & Co., Edward, New York, N. Y. Hosiery	15,396	Apr. 24	62	1248
Schlieder, Eduard G., New Orleans, La. Lager-beer	15,412	May 1	62	514
Schlitz Brewing Company, Joseph, Milwaukee, Wis. Beer	15,342	Apr. 3	62	2
Schloss, Joseph, New York, N. Y. Shirt-bosoms	15,646	June 26	63	1440
Schloss, Joseph, New York, N. Y. Shirt-bosoms	15,517	May 22	62	1248
Scotch Oats Essence Company, New York, N. Y. Pills	15,518	May 22	62	1248
Scotte, Britha A., Chicago, Ill. Pulmonary bitters and blood-tonic	15,443	May 8	62	636
Seeger & Guernsey Company, New York, N. Y. Printed periodical publication	15,356	Apr. 10	62	130
Seely, Frank, New York, N. Y. Beer	15,552	May 29	62	1248
Shelton Company, Birmingham, Conn. Screws, bolts, rivets, tacks, and similar metallic fastenings	15,553	May 29	62	1248
Shepard, Norwell & Co., Boston, Mass. Corsets	15,473	May 15	62	760
Shute & Merchant, Gloucester, Mass. Boneless fish	15,619	June 19	63	1388
Simmons Hardware Company, St. Louis, Mo. Horseshoe-nails	15,374	Apr. 17	62	254
Smith & Egge Manufacturing Company, Bridgeport, Conn. Window-sash chains	15,620	June 19	63	1352
Smith, George & John G., Inverarven, Banff, Scotland. Whisky	15,554	May 29	62	1248
Seltmann, Edward G., New York, N. Y. Certain supplies and instruments for draftsmen and engineers	15,397	Apr. 24	62	1248
Spencer & Brown, Greeneville, Tenn. Horse and cattle powders	15,555	May 29	62	1248
Staiger & Co., A. H., New Orleans, La. Self-raising flour	15,444	May 8	62	636
Standard Typewriter Manufacturing Company, New York, N. Y. Type-writing machines	15,445	May 8	62	636
Standard Typewriter Manufacturing Company, New York, N. Y. Type-writing machines	15,357	Apr. 10	62	130
Standard Typewriter Manufacturing Company, New York, N. Y. Type-writing machines	15,375	Apr. 17	62	254
Stärker, William, New York, N. Y. Stockings	15,376	Apr. 17	62	254
Starr & Bro., Salem, N. J. Canned tomatoes	15,413	May 1	62	514
Stesch, Hermann J. M., New York, N. Y. Leather oil-polish	15,398	Apr. 10	62	130
Straasheim & Jaeger, Chicago, Ill. Soap powders	15,620	June 19	63	1352
Straus & Bro., J. L., Baltimore County, Md. Beer, ale, and porter	13,021	June 19	63	1352
Swanton Suspender Company, Swanton, Vt. Suspenders	15,622	June 19	63	1352
Swinborne & Co., G. P., St. Andrew's Hill, London, England. Isinglass, gelatine, and gelatinous substances	15,377	Apr. 17	62	254
Swinborne & Co., G. P., St. Andrew's Hill, London, England. Isinglass, gelatine, and gelatinous substances	15,447	May 8	62	636
Thal & Howe, St. Louis, Mo. Vinegar	15,446	May 8	62	636
Thomson, William S., London, England. Perfumed soaps, cosmetics, hair-oils, and perfumes	15,647	June 26	63	1440
Tobyhanna and Lehigh Lumber Company, Tobyhanna Mills, Pa. Clothes-pins	15,519	May 22	62	1248
Tompkins, Samuel D. (See Williams and Tompkins.)	15,648	June 26	63	1440
Towne, Frank M., San Bernardino, Cal. Toilet salve	15,556	May 29	62	1248
Trenton Iron Company, Trenton, N. J. Wire bale-ties	15,343	Apr. 3	62	2
Triest & Co., New York, N. Y., and San Francisco, Cal. Hats	15,344	Apr. 3	62	2
Turnbull Wagon Company, Defiance, Ohio. Freight or farm wagons	15,557	May 29	62	1248
Tuthill & Stoddard, Camden, N. Y. Preserved corn and succotash	15,446	May 8	62	636
Union Bag and Paper Company, Chicago, Ill. Paper bags	15,558	May 29	62	1248
Union Bag and Paper Company, Chicago, Ill. Paper bags	15,559	May 29	62	1248
Union Bag and Paper Company, Chicago, Ill. Paper bags	15,560	May 29	62	1248
Upton, Charles S., New York, N. Y. Lamp chimneys and wicks for certain lamps	15,399	Apr. 24	62	1248
Vastakis, James H., Bethany and Peoria, Ill. Vegetable preparation for assimilating food, promoting digestion, and regulating the bowels	15,475	May 15	62	760
Van Wagenen, George, New York, N. Y. Safety fusible plugs for boilers	15,642	June 19	63	1352
Vensie, Thomas, Elmira, N. Y. Liniment, ointment, and condition powders	15,621	June 19	63	1352
Warfield, Solomon D., Baltimore, Md. Canned oysters and vegetables	15,378	Apr. 17	62	254
Warner, H. H., Rochester, N. Y. Yeast	15,345	Apr. 3	62	2
Warren, Duncan, Detroit, Mich. Table-sauce	14,250	Apr. 10	62	130
Weid, Loretta B., Falmouth, Mass. Preparation of quinine	15,449	May 8	62	636
Weid, Loretta B., Falmouth, Mass. Preparation of quinine	15,450	May 8	62	636
Wex & Söhne, Chemnitz, Saxony, Germany. Hosiery	15,379	Apr. 17	62	254
Whitall, Tatum & Co., New York, N. Y. Corks	15,451	May 8	62	636
White Dental Manufacturing Company, S. S., Philadelphia, Pa., Chicago, Ill., New York and Brooklyn, N. Y., and Boston, Mass. Dental goods and materials of all kinds	15,474	May 15	62	760
Whitlock, Philip, Richmond, Va. Cheroots, cigars, and cigarettes	15,624	June 19	63	1352
Williams, Thomas H., and S. D. Tompkins, Jersey City, N. J., and Chicago, Ill. Radiators	15,414	May 1	62	514
Williams, Thomas H., and S. D. Tompkins, Jersey City, N. J. Radiators	15,560	May 29	62	1248
Wills & Son, A. W., Birmingham, county of Warwick, England. Edge-tools	15,625	June 19	63	1352
Woelrich & Co., Palmer, Mass. Condiment for animal-food	15,399	Apr. 3	62	2
Wertz, Frank, Jr., Wausau, Wis. Catarrh remedy	15,561	May 29	62	1248
Zerban, Andrew, New York, N. Y. Cotton underwear	15,415	May 1	62	514
Zerban, Andrew, New York, N. Y. Woolen underwear	15,416	May 1	62	514

ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Abbott, Frank I. (See Abbott, Lawrence, J., and F. I.)				
Abbott, James. (See Abbott, Lawrence, J., and F. I.)				
Abbott, Lawrence, J., and F. I., Chicago, Ill. "Rheumatic Cure"	5,591	May 15	63	760
Allen, W. C. (See Bailey, Willis, and Allen.)				
Atwater, Bryan, Berlin, Conn. "Golden Ridge Apple Wine"	5,625	June 12	63	1248
Bailey & Co., Charles J., Boston, Mass. "Bailey's Rubber Toilet Brush"	5,557	Apr. 17	63	254
Bailey, Lewis J., G. W. Willis, and W. C. Allen, Atlanta, Tex. "W. C. Allen's Nerve Balm"	5,540	Apr. 10	63	130
Beebe, James A., Philadelphia, Pa. "Lavender Cream." (For the Toilet)	5,564	Apr. 24	63	394
Bennett, E. R., Brooklyn, N. Y. "Bennett's Healing Dust for Horses"	5,565	Apr. 24	63	394
Best Brewing Company, Phillip, Milwaukee, Wis. "The "Best" Tonic"	5,560	Apr. 24	63	394
Betts, H. M., La Grange, Ind. "Dr. H. M. Betts' Liver Capsules"	5,626	June 12	63	1248
Binder, Samuel M., Boyertown, Pa. "Glycerine Bay Rum"	5,571	May 1	63	514
Bixby, Samuel M., New York, N. Y. "Ready Glue"	5,629	May 29	63	1248
Blume, William M., New York, N. Y. "Blume's Tokayer Grape and Fruit Wine"	5,562	May 15	63	760
Blume, William M., New York, N. Y. "Blume's Tokayer Grape and Fruit Wine"	5,563	May 15	63	760
Bonham, John C., Sutherland, Iowa. "Bonham's Calendula Oil Compound"	5,572	May 1	63	514
Bowen's Sons, S., Philadelphia, Pa. "Corn Starch Substitute Wood Filler"	5,566	Apr. 17	63	254
Bunting, Elwood S., Burlington, N. J. "Special." (For Ointment)	5,573	May 1	63	514
Calver, George W. H., Columbus, N. J. "Dr. Hartshorne's Harmless Bowel Corrector for Offensive Diarrhœa"	5,630	May 22	63	1248
Carey, John, East Syracuse, N. Y. "Carey's German Dyspepsia Remedy"	5,601	May 22	63	1248
Cheatham, Mathew V. (See Richards and Cheatham.)				
Clossen, W. E., Independence, Iowa. "Clossen's German Dyspepsia Panacea"	5,635	June 26	63	1440
Crowther, Llewellyn, Laurel, Md. "Roman Cement"	5,564	May 8	63	636
Davies, E. Gomez, De Smet, Dak. Ter. "The Sioux Indian Antidote." (For a Medicine)	5,565	May 8	63	636
Davies, E. Gomez, De Smet, Dak. Ter. "Davies' Balm of Gilead or Pectoral Balsam"	5,627	June 12	63	1248
Day, Albert, Boston, Mass. "Manganese and Iron." (For a Medical Preparation)	5,602	May 22	63	1248
De Fremery & Co., James, San Francisco, Cal. "Extra Black Bird Gin"	5,559	Apr. 17	63	254
Dean, Foster & Co., Boston, Mass. "The Boston Feeder." (For Nursing Bottles)	5,566	May 8	63	636
Dement, W. E., Astoria, Oreg. "Norwegian Pile Cure"	5,536	Apr. 3	63	2
Diffusible Tonic Company, Sturgis, Mich. "Diffusible Tonic"	5,603	May 22	63	1248
Dorman, Charity, Van Etteenville, N. Y. "Mrs C. Dorman's Ointment"	5,567	May 8	63	636
Earnest, I. W., San Antonio, Tex. "West India Hair Tonic and Dandrifuge"	5,574	May 1	63	514
Earnest, I. W., San Antonio, Tex. "West India Liver Elixir"	5,575	May 1	63	514
Earnest, I. W., San Antonio, Tex. "West India Tonic Elixir of Sarsaparilla"	5,576	May 1	63	514
Earnest, I. W., San Antonio, Tex. "West India Balsam of Horehound and Coltsfoot"	5,577	May 1	63	514
El Modelo Cigar Manufacturing Co., Jacksonville, Fla. "El Modelo Cigar Man'f'g Company"	5,618	June 5	63	1120
El Modelo Cigar Manufacturing Co., Jacksonville, Fla. "El Modelo Cigar Man'f'g Comp"	5,619	June 5	63	1120
Finlay & Brunswig, New Orleans, La. "Turner's Hair Tint"	5,610	May 29	63	1248
Fithian, William W., Philadelphia, Pa. "Dyspepsia Remedy"	5,596	Apr. 24	63	394
Genese, David, Baltimore, Md. "Dentifrice Odorata"	5,628	June 12	63	1248
Gibbs & Ball Plow Company, Canton, Ohio. "Genuine Perfect Fitting Chilled Edge Share." (For Plows)	5,620	June 5	63	1120
Gradle & Streit, Chicago, Ill. "Tip Top Smoking and Chewing Tobacco"	5,604	May 22	63	1248
Griffith, William H., New York, N. Y. "Note to Pharmacists and Special Note to Physicians," (For Mixture of Guaiac, Stillingia, &c.)	5,620	June 12	63	1248
Hance Brothers & White, Philadelphia, Pa. "Fruit Phosphates. (For a Syrup)	5,605	May 22	63	1248
Harper, Martha M., Rochester, N. Y. "Maccaro Tonique for the Hair"	5,621	June 5	63	1120
Hawley & Hoops, New York, N. Y. "German Cocoa Powder"	5,611	May 29	63	1248
Hawley & Hoops, New York, N. Y. "German Cocoa Powder"	5,622	June 5	63	1120
Hegeman & Company, New York, N. Y. "Rudolph's Phosphorized Elixir of Oats"	5,541	Apr. 10	63	130
Holster, H. J., Memphis, Tenn. "Florida Syrup of Tamarinds and Prunes"	5,542	Apr. 10	63	130
Ives, Frederick, Ogdensburg, N. Y. "The Balm of Zantheras." (For a Medicine)	5,570	May 1	63	514
Jacobs, Joseph, Atlanta, Ga. "Blackberry and Peppermint Cordial"	5,636	June 26	63	1440
Jacobs, Joseph, Atlanta, Ga. "Sweet Gum and Honey"	5,637	June 26	63	1440
Jacobs, Joseph, Atlanta, Ga. "Fragrant Colegne"	5,638	June 26	63	1440
Kelly & Co., Horace R., New York, N. Y. "La Segna," (For Cigars and Cigarettes)	5,594	May 15	63	760
Kerr, M. A., Olney, Ill. "Mrs M. A. Kerr's Cough Syrup"	5,567	Apr. 24	63	394
King, Susan H., Providence, R. I. "King's Purely Vegetable Cough Medicine"	5,537	Apr. 3	63	2
Kinney Tobacco Company, New York, N. Y. "Special Pavoure," (For Cigarettes)	5,538	Apr. 3	63	2
Kittredge, Charles F., Rockland, Me. "Cole's Rheumatic Pain Annihilator"	5,612	May 29	63	1248
Kleinert, Isaac B., New York, N. Y. "The Feather Weight," (For Dress Shields)	5,568	May 8	63	636
Kleinert, Isaac B., New York, N. Y. "Kleinert's Celebrated Indestructible." (For Dress Shields)	5,569	May 8	63	636
Lawton Valentine Company, New York, N. Y. "Points of Rubbing Varnish"	5,598	Apr. 24	63	394
Le Sure & Co., John G., Keene, N. H., and Boston, Mass. "Le Sure's Spavin Cure"	5,543	Apr. 10	63	130
Locher, Charles A., Lancaster, Pa. "Locher's Renowned Rheumatic Remedy"	5,579	May 1	63	514
Maas, Abraham W., New York, N. Y. "Art Flowers." (For Artificial Flowers)	5,613	May 29	63	1248
Manitou Mineral Water Company, Manitou Springs, Colo. "Manitou Natural Mineral Table Water"	5,544	Apr. 10	63	130
Mansfield, George L., New Haven, Conn. "Chinese Corn Salve"	5,580	May 1	63	514
Martin, Horace J., Washington, D. C. "Dr. Martin's Health Restorer and Blood Purifier"	5,639	June 26	63	1440
Marvaleaux Cough Syrup Company, Havre de Grace, Md. "Marvaleaux Cough Syrup"	5,608	June 12	63	1248
McGreevy, G. L., Baltimore, Md. "G. L. McGreevy's Compound Tonic"	5,605	May 22	63	1248
McKelvey, James W., Atchison, Kans. "Atchison Cornice Works." (For Metal Cornices, &c.)	5,614	May 29	63	1248
Milburn & Williamson, Detroit, Mich. "Golden Seal and Sandal Wood Combination." (For a Medicine)	5,581	May 1	63	514
Milburn & Williamson, Detroit, Mich. "Baby Cough Syrup"	5,582	May 1	63	514
Myers, James H., Norwich, Conn. "Dr. Batten's Coffee"	5,640	June 26	63	1440
Niagara White Grape Company, Lockport, N. Y. "The Niagara White Grape Company"	5,596	May 15	63	760
Nonantum Worsted Company, Boston and Newton, Mass. "Dr. Hall's Sanitary Knitting Yarn"	5,545	Apr. 10	63	130
Partridge & Co., A. P., St. Paul, Minn. "Dr. Partridge's Pain Queller." (For a Medicine)	5,623	June 5	63	1120
Peacock, William C., Atlanta, Ga. "F. S. Peacock's Aromatic Extract of Blackberry and Ginger"	5,569	Apr. 17	63	254

Alphabetical list of registrants of labels, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Pemberton Medicine Co., Atlanta, Ga. "Lemon and Orange Elixir"	5,546	Apr. 10	43	190
Price, Russell C., Waukegan, Ill. "Dr. Price's Stomachic Powders"	5,547	Apr. 10	43	190
Price, Russell C., Waukegan, Ill. "Dr. Price's Heart Regulator." (For a Medicine)	5,548	Apr. 10	43	190
Price, Russell C., Waukegan, Ill. "Dr. Prices Red Liniment"	5,549	Apr. 10	43	190
Price, Russell C., Waukegan, Ill. "Dr. Price's Black Liniment"	5,550	Apr. 10	43	190
Rane, Charles O. (See Scissor and Rane.)				
Reynolds Jewelry Co., Providence, R. I. "National Democratic Badge 1888 Presidential Campaign"	5,641	June 26	43	1460
Richards, Albert B., and M. V. Cheatham, Sherman, Tex. "Hunt's Cure for Skin Diseases and Eruptions"	5,631	June 12	43	1342
Richards, Albert B., and M. V. Cheatham, Sherman, Tex. "Cheatham's Cream Balsam," (For a Medicine.)	5,632	June 12	43	1342
Sanborn, F. E., Omaha, Nebr. "Standard Stock Liniment"	5,503	May 1	43	514
Sanna & Son, P. A., Gallipolis, Ohio. "Sanna' Rheumatic Specific"	5,607	May 22	43	890
Schmidt, Clara H., and W. B. Starbird, Stockton, Cal. "Kickapoo Springs Mineral Water"	5,570	Apr. 24	43	394
Seaman, John F., New York, N. Y. "Lemon Honey." (For a Pulmonary Remedy)	5,551	Apr. 10	43	190
Seaton, John W., Louisville, Ky. "Walker's Rheumatic Cure"	5,552	Apr 10	43	190
Seisser, Frederick, and C. O. Rano, Buffalo, N. Y. "Rano's Dandelion Liver Pills"	5,634	June 19	43	1352
Selleck, Wilbur H., Williamstown, N. Y. "Clover Blossom Compound" (For a Blood Purifying Medicine	5,642	June 26	43	1460
Shafer, William, Camden, N. J. "Searching Syrup." (For a Cough)	5,508	May 15	43	700
Smith, Mary V., Baltimore, Md. "Baltimore Brand Crab-Meat"	5,580	May 8	43	636
Snell, Heitshu & Woodard, Portland, Oreg. "Dutard's Specific." (For a Remedy for Skin Diseases)	5,539	Apr. 3	43	9
Snell, Heitshu & Woodard, Portland, Oreg. "Dr. Healey's Dandelion Tonic"	5,553	Apr. 10	43	190
Starbird, Walter B. (See Schmidt and Starbird.)				
Stiner, Heumber & Co., Columbus, Ga. "Wooldridge's Wonderful Cure"	5,597	May 15	43	700
Stockton & Willis, Richmond, Ky. "White's Worm Powders." (For a Medicine)	5,554	Apr. 10	43	190
Trimble, R. F. P., Seymour, Mo. "Trimble's Ozark Mountain Herb Salve"	5,615	May 29	43	889
Trischka, John, New York, N. Y. "Improved Stencils"	5,561	Apr. 17	43	254
Union Bag and Paper Company, Chicago, Ill. "Kangaroo." (For Paper Bags)	5,616	May 29	43	978
Union Bag and Paper Company, Chicago, Ill. "Lion." (For Paper Bags)	5,617	May 29	43	978
Van Derveer & Holmes Biscuit Company, New York, N. Y. "Triangular." (For Biscuits)	5,555	Apr. 10	43	190
Vandergrift, William K., Jamestown, N. Y. "Carson's Celebrated Remedy for Purifying the Blood"	5,598	May 15	43	700
Wanamaker, John, Philadelphia, Pa. "Wanamaker's Shoe Dressing"	5,556	Apr. 10	43	190
Warner, William R., Philadelphia, Pa. "Chalybeate Saline"	5,569	Apr. 17	43	254
Westcott, Rachel R., Syracuse, N. Y. "La Bonta's French Shampoo Cream"	5,633	June 12	43	1342
Whittington, James A., Montrose, Ill. "New Discovery for Rheumatism"	5,624	June 5	43	1190
Willis, G. W. (See Bailey, Willis, and Allen.)				
Winship, Henry S., New Haven, Conn. "Fly Paper"	5,608	May 22	43	890
Wright, Heilig & Co., Salisbury, N. C. "Sure Venereal Cure"	5,509	May 15	43	700
Yehling & Coenen, New York, N. Y. "Brilliant Coffee." (For Roasted Coffee)	5,563	Apr. 17	43	254

DISCLAIMERS.

Name, residence, and invention.	No.	Filed.	Official Gazette. Vol.	Page.
Johns, Henry W., New York, N. Y.; disclaimer to first, second, and third claims filed by patentee and the assignee, The H. W. Johns Manufacturing Company. Boiler coverings	262,429	May 1, 1888	43	636
Tenny, Charles F., and Thomas J. Hobbs, Baldwinsville, Mass.; disclaimer to the first nine claims filed by the assignee, Gilman Waite, Templeton, Mass. Combined carriage and chair. (Reissue)	8,166	June 9, 1868	43	1352
Wilson, James G., New York, N. Y.; disclaimer to a part of specification. Corrugated metal rolling-shutters	296,373	May 8, 1888	43	709

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Drawing.	Official Gazette. Volume.	Page.
Abrading-pad	J. H. Riedell	381,076	June 5	347	98	43	1187
Acid and heavy magnesia. Manufacture of carbonic	H. Leffmann	383,957	June 5	171	50	43	1153
Acid esters. Manufacture of salicylic	C. Kolbe	383,306	May 22	2134	.....	43	959
Acids of the diamidoazo-benzidines. Production of disulpho and disorbo	L. Paul	380,402	Apr. 3	140	.....	43	30
Acids of the diamidoazo-benzidines. Production of disulpho and disorbo	L. Paul	380,403	Apr. 3	143	.....	43	30
Acidometer	P. Bonte	383,433	May 29	2224	616	43	999
Adding and writing machine	A. C. Ladlam	384,378	June 12	808	210	43	1288
Adding-machine	C. C. Moore	383,973	June 5	196	57, 58	43	1158
Adjustable chair and swing	C. Bastian	383,286	May 22	1960	580	43	921
Adjustable handle	W. A. Faber	384,028	June 5	277	77	43	1174
Adjustable joint	G. C. Sweett	384,227	June 12	695	182	43	1261
Advertising-cards. Device for displaying	O. C. Hoffmann	380,391	Apr. 3	136	37, 38	43	27
Advertising-rack	I. H. Randall	380,696	Apr. 10	363	163	43	188
Aerial navigation. Apparatus for	B. Bontems	381,106	Apr. 17	1942	{383 / 384}	43	257
Air-brake	E. Andrews	385,284	June 26	2670	538	43	1546
Air-brake	A. B. Bolman	382,749	May 15	1511	344	43	709
Air-brake	T. S. E. Dixon	382,031	May 1	1357	60	43	555
Air-brake	H. S. Park	385,198	June 26	2036	581	43	1538
Air-brake attachment	G. B. Lehy	381,387	Apr. 17	1643	437	43	326
Air-brake. Automatic	E. J. Lewis	383,619	May 29	2216	770	43	1167
Air-brake. Automatic	R. Solano	382,067	May 8	1900	911	43	749
Air-brake system	H. Guela	384,067	June 19	1967	323	43	1378
Air-brake valve	H. Guela	384,066	June 19	1965	338	43	1378
Air-compressor	J. B. Erwin	382,709	May 15	1394	348	43	709
Air-compressor	W. T. Forster	384,256	June 12	779	203	43	1276
Air-compressor. Automatic	G. J. Keenan	384,589	June 12	1082	980	43	1325
Air-heater	D. Grove	384,203	June 5	538	147	43	1235
Air-ship	E. P. Johnston	765,889	June 5	50	18, 19	43	1138
Alarm:							
See Boiler-alarm. Burglar-alarm. Elevator-alarm. Fire-alarm. Fire and burglar alarm. Low-water alarm.							
Alarm-bolt	E. Harmon	384,761	June 19	1374	360	43	1360
Alarm-bolt for doors	E. Harmon	384,760	June 19	1373	{359 / 360}	43	1360
Alarm-lock	H. Gilles and D. Stern	382,971	May 15	1611	421	43	840
Album-clasp	T. M. Hase	382,302	May 8	636	162	43	640
Alloy	H. Ostermann and A. Prip	382,126	May 15	1413	.....	43	801
Alloy	H. Ostermann and A. Prip	382,627	May 15	1413	.....	43	801
Alloy	C. A. Paillard	384,709	June 19	1307	.....	43	1288
Alloy	C. W. Ward	384,731	June 19	1333	.....	43	1300
Alloy. Metallic	H. Ostermann and C. Lacroix	381,719	Apr. 24	2123	.....	43	451
Alloy. Metallic	H. Ostermann and A. Prip	381,718	Apr. 24	2122	.....	43	451
Alto-rilievo ornamentation. Roller for producing	J. H. Thelen	380,833	Apr. 10	198	216	43	165
Alumina from clay. Obtaining	F. J. Seymour	382,197	May 1	467	.....	43	589
Alumina from clay. Obtaining	F. J. Seymour	382,273	May 1	578	146	43	600
Alumina. Obtaining	K. J. Bayer	382,595	May 8	951	241	43	700
Aluminum. Furnace for reducing	F. J. Seymour	382,196	May 1	464	190	43	589
Ammonia and bone-black. Obtaining	F. Egner	381,632	Apr. 24	2280	508	43	481
Anchors. Machine for making building	J. Russell	385,140	June 26	1953	500	43	1528
Angle-clamp for the corners of tables, desks, &c.	D. J. Brougher	383,167	May 22	1937	504	43	911
Angles. Instrument for dividing	A. S. Yates	381,049	Apr. 10	1135	393	43	249
Animal or other power	J. Bechtold	384,603	June 19	1143	302	43	1254
Animal-releasing device	J. D. and C. A. Sullivan	385,077	June 26	1866	476	43	1502
Animal-trap	H. Barry	380,643	Apr. 3	500	140	43	102
Animal-trap	P. T. Beach	384,415	June 12	903	285	43	1293
Animal-trap	J. T. Belden	385,086	June 26	1876	479	43	1506
Animal-trap	J. Brasie	383,700	May 29	2214	717	43	1070
Animal-trap	W. Devolld and W. C. Devoll	384,627	June 19	1479	396	43	1419
Animal-trap	O. Huffman	380,439	Apr. 3	135	54	43	40
Animal-trap	C. H. Mittler	383,972	June 5	195	56	43	1158
Animals. Device for suspending and spreading slaughtered	E. Ekker	384,433	June 12	885	230	43	1320
Animals. Machine for grooming	N. Petersen	380,924	Apr. 10	237	249	43	192
Annunciator	F. E. Fisher	383,566	May 29	2231	668	43	1029
Annunciator and signaling apparatus	M. Martin	381,709	Apr. 24	2115	542	43	447
Annunciator. Clearing-out	C. E. Scribner	382,015	May 15	1494	440	43	756
Annunciator. Electric	J. Geary	381,772	Apr. 24	2198	574	43	463
Annunciator. Electric	C. E. Scribner	384,088	June 5	301	102	43	1190
Annunciator. Electrical	H. S. Dwyer	384,430	June 12	881	229	43	1307
Annunciator. Electrical needle	W. R. Gill and E. Segerdahl	383,725	May 29	2257	736	43	1078
Annunciator. Pneumatic	E. P. Garnell	384,144	June 5	448	124	43	1207
Annunciator. Pneumatic	W. E. Ostrander	382,051	May 1	365	60	43	562
Anti-friction compound	T. J. Mayall	384,920	June 19	1611	.....	43	1444

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Anti-friction roller for drawers	J. Barns	383,699	May 29	2695	712	43	1666
Arm or hand rest	W. M. Kinnard	384,221	June 12	631	170	43	1851
Armature. Dynamo	F. E. Fisher	383,585	May 29	2539	667	43	1669
Armature. Dynamo	F. E. Fisher	383,587	May 29	2538	666	43	1669
Armature. Dynamo	J. F. Kelly	381,799	Apr. 24	2060	540	43	444
Armature. Dynamo	M. A. Müller	381,636	Apr. 24	2060	537	43	436
Armature Dynamo	A. Schmid and H. M. Byllesby	383,659	May 29	2655	703	43	1657
Armature for dynamos and motors	O. B. Shallenberger	383,663	May 29	2662	708	43	1658
Armature for dynamos and motors	H. M. Byllesby	383,617	May 29	2590	687	43	1645
Armature for electric machines	H. M. Byllesby	383,619	May 29	2600	687	43	1646
Armature for electric motors	O. B. Shallenberger	383,664	May 29	2663	706	43	1659
Armatures of dynamos. Mounting	F. E. Fisher	383,564	May 29	2569	647	43	1639
	G. Westinghouse, Jr.	383,679	May 29	2683	709	43	1663
Armor-plates. Apparatus for the manufacture of	A. Wilson	381,453	Apr. 17	1741	{465 / 466}	43	355
Arrow for passing cord through pipe-lines	J. Geyser	382,257	May 1	560	141	43	616
Astronomical apparatus	E. L. Rugg	384,296	June 19	664	178	43	1857
Atomizer	J. J. Ochs	384,777	June 19	1398	365	43	1464
Auger. Spoke	S. B. Shaffer	380,701	Apr. 10	597	164	43	128
Augers. Die for making	A. Laundry	382,710	May 15	1988	330	43	769
Automatic sprinkler	C. W. Kernstetor	383,890	June 5	63	19	43	1132
Axle box. Car	J. M. Hallowes	383,738	May 29	2786	727	43	1678
Axle-box lids. Die for making car	K. Zallud	380,879	Apr. 3	113	33	43	94
Axle-box-milling machine	G. W. Morris	385,194	June 26	2031	530	43	1577
Axle boxes. Dust-guard for car	A. Paterson	383,540	May 29	2560	660	43	1661
Axle. Car	P. M. Kling	384,539	June 12	1034	270	43	1585
Axle-ends. Machine for turning	W. F. Lutz, Jr.	383,680	May 29	2918	770	43	1667
Axle for thrashing-machines	A. Paterson	382,725	May 15	1278	335	43	723
Axle for vehicles	F. W. Robinson	382,009	May 1	184	49	43	548
Axle-lubricator	J. R. Prescott	383,066	May 15	1777	459	43	872
Axle lubricator. Car	W. Cole, Jr.	382,458	May 8	878	224	43	595
Axle lubricator. Car	G. F. Godley	381,691	Apr. 24	2065	540	43	442
Axle lubricator. Car	J. J. Stever	385,213	June 26	2057	528	43	1542
Axle oiler. Car	S. Yeomet	382,946	May 1	537	137	43	612
Axle-plate for wheeled scrapers, agricultural machines, and similar purposes. Pole-attaching	E. Hounsel	380,436	Apr. 3	190	52	43	39
	G. W. Taft	382,015	May 1	196	50	43	550
Axle-skeins. Machine for making	S. B. Parsons	383,761	May 29	2814	{741 / 742}	43	1668
Axle-skeins. Manufacture of	E. Firth and A. and I. Tompkins	381,355	Apr. 17	1501	426	43	326
Axle. Vehicle	J. F. Dixon	381,849	Apr. 24	2297	597	43	461
Axle. Vehicle	A. Paterson	380,344	Apr. 3	52	18	43	13
Axle. Wagon	B. F. Richardson	382,902	May 15	1516	397	43	808
Axle. Wagon	N. W. Blevens	382,211	May 1	498	135	43	603
Axle-washer	N. L. Holmes	380,892	Apr. 10	892	250	43	193
Axles. Dust-guard for car	N. Harris	382,250	May 1	567	143	43	617
	W. S. Soule	381,591	Apr. 24	1947	513	43	414
Axles for vehicles. Manufacture of	J. G. Harrison	384,891	June 12	1022	{386 / 387}	43	1383
Axles. Manufacture of thimble-skeins for	J. F. Davidson	381,918	Apr. 17	1396	370	43	286
Axles of sheet metal. Making	T. C. Muns	383,188	May 22	1854	513	43	916
Axles. Sand-band for vehicle	J. H. Sharp	380,528	Apr. 3	334	96	43	68
Baby-jumper	M. P. Jones	382,614	May 15	1398	367	43	797
Baby-jumper	B. G. Lathrop	382,884	May 15	1493	391	43	818
Back-band	H. C. Johnson	382,365	May 8	736	188	43	656
Back-band hook	S. Ward	381,892	June 19	1565	407	43	1434
Back-band loop	E. R. Cahoone	384,423	June 12	873	227	43	1895
Badge. Designation	R. H. Lee	382,307	May 8	737	187	43	650
Bag: *See* Hand-bag. Traveling-bag.							
Bag-fastener	H. W. Comstock	384,130	June 5	495	118	43	1203
Bag-fastener	H. A. Mertens	381,365	Apr. 17	1492	393	43	300
Bag-handle. Sheet-metal	R. C. Jenkinson	381,790	Apr. 24	2223	582	43	468
Bag-holder	F. G. Fischer	380,794	Apr. 10	743	204	43	156
Bag-holder	W. F. Lewis	384,454	June 12	914	238	43	1363
Bag-holder	I. H. Weaver	384,104	June 5	381	107	43	1194
Bag-lock	T. W. Harrison	381,668	June 19	1271	333	43	1179
Bags and satchels. Fastening for hand	G. Crouch	385,243	June 26	2101	530	43	1553
Bags. Shoe for traveling	C. Reluisch	380,768	Apr. 10	702	194	43	149
Bagasse drier and furnace	A. G. De Aguiar	380,989	Apr. 10	1058	{279 / 280}	43	214
Bagasse-furnace	F. Cook	380,992	Apr. 10	1059	277	43	213
Baking-pan	E. F. Greene and F. H. Hendryx	383,177	May 22	1941	509	43	914
Bale-tie	T. T. Wells	382,396	May 8	781	198	43	667
Bale-tie. Wire	W. Hewitt	381,671	Apr. 10	1172	312	43	246
Baler. Machine for putting ties on	W. E. Dunbar	382,922	May 1	501	130	43	606
Baling-press	R. W. Archer	380,472	Apr. 3	943	66.67	43	49
Baling-press	J. N. Bartle	383,033	May 15	1719	448	43	851
Baling-press	P. K. Dederick	382,144	May 1	392	102	43	565
Baling-press	P. K. Dederick	382,954	May 15	1569	415	43	838
Baling-press	W. A. Laidlaw	382,167	May 1	464	111	43	594
	W. J. F. Liddell	381,983	Apr. 17	1457	382	43	380
Baling-press	A. Mattijets	380,810	Apr. 10	700	{189 / 190}	43	139
Baling-press	G. W. L. Meyer and F. J. Sutphen	384,993	June 26	1715	445	43	1472
Baling-press	W. F. and G. W. Shafer	385,397	June 26	2050	524	43	1561
Baling-press	E. C. Seay	384,284	June 12	977	181	43	1350
Ballot-box. Registering and canceling	H. R. Wolfe	381,975	May 1	120	29	43	280
Band-cutter	A. Bigelman	380,978	Apr. 10	1044	268	43	207
Band-cutter	J. Buchanan	382,680	May 15	1382	351	43	764
Band. Draw	J. L. Horst	381,926	May 1	30	11	43	288
Band. Elastic	J. N. Sargent	381,686	Apr. 17	1493	454	43	307
	R. W. Howard	381,579	Apr. 24	2276	617	43	426

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Bar: *See* Claw-bar. Cutter-bar. Curtain-bar. Grate-bar.							
Barber's chair	E. Melchior	380,909	Apr. 10	912	245	43	167
Bark-stripping machine. Willow	J. Schildhauer	380,730	Apr. 10	644	178	43	139
Barrel	G. S. Long	381,077	Apr. 10	1181	314	43	238
Barrel-cover attachment	B. F. Field	383,349	May 22	2187	578	43	980
Barrel for earthenware	T. W. Carrico	382,510	May 8	958	242	43	701
Barrel-lifter	S. Turner	380,440	Apr. 3	496	134	43	101
Barrel-making machine	M. E. Beasley, G., J. G., and M. O. Rohfuss.	380,976	Apr. 10	1021	267	43	206
Barrel-making machine	G., J. G., and M. O. Rohfuss	380,931	Apr. 10	949	{251 / 252}	43	194
Barrel-making machine	W. T. Vale	384,736	June 19	1339	347	43	1300
Barrels. Apparatus for pitching	L. and O. Haggenmiller	385,178	June 26	2022	513	43	1532
Barrels. Device for moving	E. H. Mott	382,618	May 8	1125	290	43	734
Basket. Fruit	G. H. Gillette	382,761	May 15	1325	348	43	783
Basket. Fruit	J. H. Marvil	383,176	May 1	457	114	43	594
Baskets, &c. Apparatus for manufacturing	L. Stevens	382,978	May 1	568	149	43	622
Bath: *See* Needle-bath.							
Baton or club. Policeman's	E. D. Bean	385,298	June 26	2193	560	43	1569
Batteries. Automatic switch for secondary	C. A. Faure	382,509	May 6	1102	283	43	730
Batteries. Automatic switch for secondary	J. S. Sellon	382,112	May 1	350	92	43	578
Batteries. Automatic switch for secondary	J. S. Sellon	384,289	June 12	671	{179 / 180}	43	1256
Batteries. Construction of stationary and itinerant electrical	J. T. Armstrong	380,971	Apr. 10	1012	{263 / 264 / 265}	43	205
Batteries. Electrolyte for galvanic	B. J. Wheelock	385,028	June 26	1783	464	43	1488
Batteries. Manufacture of secondary	R. M. Hunter	383,575	May 29	2529	670	43	1636
Batteries. Plate for storage	C. D. P. Gibson	382,358	May 8	795	193	43	657
Batteries. Regulating-commutator for secondary	E. Julien	384,447	June 12	905	236	43	1301
Battery: *See* Electric battery. Galvanic battery. Electro-therapeutic battery. Secondary battery. Storage-battery.							
Battery plate. Storage	C. D. P. Gibson	383,640	May 29	2631	686	43	1652
Battery plates. Apparatus for preparing secondary	A. F. Madden	382,098	May 1	333	87.88	43	574
Battery plates. Filling secondary	H. G. Morris and P. G. Salom	383,757	May 29	2808	738	43	1667
Battery-zinc	J. Beattie, Jr	383,971	May 22	2063	548	43	941
Battery-zinc	J. Doyle	385,254	June 26	2127	543	43	1557
Bearing. Anti-friction	F. Corbett	384,083	June 5	365	75	43	1172
Bearing for shafts. Anti-friction	W. J. Brewer	384,508	June 12	1062	261	43	1319
Bearing. Horizontal thrust	A. C. Rice	384,920	June 19	1623	421	43	1446
Beating-out machine	J. C. Cutcheon	384,293	June 19	1575	410	43	1450
Bed-bottom	W. F. Ade, Jr	382,501	May 8	945	239	43	698
Bed-bottom	W. C. Bailey	382,401	May 8	787	200	43	680
Bed-bottom	A. H. Cleaveland	384,127	June 5	421	117	43	1200
Bed-bottom	W. B. Noyes	381,994	Apr. 10	1067	289	43	210
Bed-bottom	W. L. Phillips	381,948	May 1	69	17.18	43	582
Bed-bottom. Spring	W. A. Mooney	382,445	May 8	922	234	43	694
Bed-bottom. Spring	W. H. Pennock	381,500	June 12	1190	296	43	1361
Bed-bottom. Spring	F. Spoehr	382,496	May 8	935	237	43	696
Bed-bottom spring	H. Myers	384,925	June 19	1618	420	43	1445
Bed. Folding	G. W. Cook	382,460	May 8	880	224	43	685
Bed infanting and heating apparatus combined. Invalid	R. K. Pelton	384,874	June 12	951	175	43	1253
Bed or bed-bottom. Spring	F. M. Jeffery	385,118	June 26	1921	{490 / 491}	43	1516
Bed-pan	K. M. Duffey	380,478	Apr. 3	251	69	43	51
Bed-pan. Invalid's	G. W. Tucker	381,972	May 1	111	26	43	535
Bed-spring	C. W. Donnell	381,040	Apr. 10	1158	307	43	231
Bedstead	M. Lespeyre	383,050	May 29	2644	700	43	1655
Bedstead-brace	C. P. Lewis	381,262	Apr. 17	1456	392	43	249
Bedstead-fastener	P. Ferry	385,060	June 26	2135	544	43	1539
Bedstead. Invalid	M. F. Hardy	382,672	May 15	1472	366	43	813
Bee-hive	E. S. Armstrong	384,819	June 19	1469	{382 / 384}	43	1417
Bee-hive	J. H. Howe	384,697	June 19	1181	314	43	1361
Bee-hive	J. Lacer	383,737	May 29	2770	730	43	1681
Bell and alarm. Combined door	C. M. Dilley	381,539	Apr. 24	1975	495	43	309
Bell. Alarm	R. J. Whitson	382,343	May 8	698	175	43	651
Bell. Automatic	C. M. O'Leary	383,230	May 22	2096	531	43	931
Bell. Call	J. P. Connell	385,168	June 26	1998	509	43	1520
Bell-cord attachment	G. W. Naylor	383,567	May 29	2555	676	43	1635
Bell. Electric	C. F. De Redon	381,745	Apr. 24	2189	572	43	461
Bell. Electric	F. B. Wood	381,314	Apr. 17	1526	412	43	314
Bell or mechanical striker. Electrical	J. H. Brickford	381,923	Apr. 24	2250	586	43	479
Bell-ringer. Steam	G. B Snow	384,095	June 5	369	104	43	1192
Bell-ringing mechanism	J. Z. White	385,089	June 26	1784	460	43	1488
Bell. Signal	G. W. Eddy	381,917	May 1	27	8	43	580
Bellows	F. Christen	382,214	May 1	469	126	43	603
Belt-carrier tightener	R. W. and W. Menke	380,400	Apr. 3	138	41	43	87
Belt-coupling	N. Qurin	380,685	Apr. 10	592	168	43	132
Belt. Electric	C. E. Harness	380,582	Apr. 3	398	113	43	81
Belt-fastener	H. Ebbeke	384,434	June 12	886	230	43	1296
Belt-fastener	H. C. Herr	382,282	May 8	726	182	43	641
Belt-fastener	W. H. Packer	381,465	June 12	996	261	43	1365
Belt-fastener	W. L. Potter	381,640	Apr. 24	2013	528	43	427
Belt-tightener	J. H. Bringold	382,567	May 8	1063	{276 / 279}	43	727
Belt-fastener	C. Pierce	382,697	May 1	165	48	43	542
Belts. Compound oil-dressing for rubber	G. W. Cooper	380,988	Apr. 10	1053		43	213

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Belting	L. Binns	383,306	May 22	1985	521	43	983
Belting. Machine	C. A. Schieren	383,373	May 22	2220	559	43	996
Belting. Machine for manufacturing rubber	J. Murphy. (Reissue)	10,930	June 12	1137	289	43	1344
Bench-stop	I. H. Terrell	384,405	June 12	840	201	43	1290
Berth, chair, &c.	P. Davey	383,868	June 5	97	9	43	1158
Berth for cars, vessels, &c.	A. D. Hobbie	384,182	June 5	477	131, 132	43	1213
Bicycle	C. F. Hadley	380,886	Apr. 10	878	236	43	180
Bicycle	A. F. Price	384,543	June 12	1052	275	43	1328
Bicycle	S. Smith	382,913	May 15	1580	401	43	925
Bicycle-lighting	W. T. Bowers	384,130	June 5	411	114	43	1199
Bicycle-pedal	W. E. Smith	383,074	June 26	1602	476	43	1568
Bill-holder	H. E. Leasure	380,685	Apr. 10	579	159	43	195
Billiard-cue	W. H. Fesler	384,614	June 19	1150	306	43	1357
Billiard-cushion	J. D. O'Connor	383,005	May 15	1602	435	43	949
Billiard-marker. Coin-actuated	E. C. Jones	383,228	May 22	9013	508, 509	43	988
Bird-cage spring	E. Wagner	385,571	May 8	1053	276	43	721
Bird-food holder	H. F. Estabrook	382,256	May 1	556	141	43	616
Bit: *See* Coal-drill bit.							
Bit-blanks. Machine for grooving	J. Swan	381,092	Apr. 10	1211	304	43	943
Bituminous substances. Machine for disintegrating	E. Groat	382,973	May 15	1613	423	43	940
Blackboard and wiping and dust-collecting apparatus	J. Kane	382,705	May 15	1255	333	43	769
Blacking-box holder	W. Taylor	384,318	June 12	731	197	43	1272
Blast-furnaces. Dust-catcher for	F. W. Gordon	381,774	Apr. 24	2199	575	43	464
Blasting-cartridges. Cap-protector for	T. De Coar and W. Keast	380,477	Apr. 3	250	60	43	51
Bleaching	E. Hermite	382,159	May 1	412	107, 108	43	580
Bleaching and dyeing apparatus	T. Davies	383,869	June 5	98	9	43	1196
Bleaching apparatus	W. R. Phillips	384,667	June 19	1541	400	43	1430
Blind fastener. Window	W. Simmonds	383,596	May 29	2565	679	43	1038
Blind. Inside	H. A. Benedict	384,954	June 26	1660	431	43	1461
Blind. Slatted	J. A. Sherington	381,649	Apr. 24	2024	531	43	429
Blind. Venetian	S. S. Patterson	383,978	June 5	204	50	43	1170
Blinds. Blind-rod for sliding	G. Poppert	380,930	Apr. 10	948	251	43	194
Block: *See* Building-block. Paving-block. Meat-block. Saw-mill head-block.							
Block-signal	G. W. Peterson	382,053	May 1	968	70, 71	43	582
Bloom shear-table and crop-end conveyer	F. H. Treat	384,220	June 5	538	153, 154	43	1229
Blow-pipe furnace	F. J. McLaren	383,971	June 5	193	56	43	1157
Board: *See* Bulletin-board. Ironing-board. Dash-board. Mold-board. Electric switch-board. Multiple switch-board. Game-board. Switch-board. Gang-board. Wash-board.							
Boat: *See* Paddle-wheel boat.							
Boat	G. N. Tibbles	381,729	Apr. 24	2143	561, 562	43	453
Boats, &c. Releasing device for	J. L. Cathcart	380,766	Apr. 10	733	201	43	154
Bobbin-winding machine	C. B. Rumsey	380,352	Apr. 3	72	24	43	17
Boiler: *See* Hot-water boiler. Steam-boiler.							
Boiler	F. W. Dean	385,102	June 26	1901	495	43	1511
Boiler	W. E. Dean	380,746	Apr. 10	663	183	43	141
Boiler	W. E. Haxtun	381,240	Apr. 17	1426	383	43	283
Boiler	G. F. Nilsson	382,722	May 15	1275	334	43	772
Boiler	A. Worthington	381,870	Apr. 24	2302	612, 613	43	493
Boiler-alarm	J. J. Ghegan	383,946	June 5	155	45	43	1150
Boiler and furnace	A. Stirling	381,595	Apr. 24	1953	515	43	415
Boiler-feed indicator	W. H. Rodgers	382,738	May 15	1288	337, 338	43	776
Boiler-feed pipe	S. B. Bryar	382,753	May 15	1315	345, 346	43	781
Boiler-feeder	A. Blatchley	384,119	June 5	410	114	43	1199
Boiler-feeding attachment	M. P. Janney	383,227	May 22	2012	528	43	988
Boiler for hot-water heaters	R. Neil and J. Morrison	384,461	June 12	923	240	43	1305
Boiler-furnace	G. W. Parkston	381,082	Apr. 10	1196	321	43	940
Boiler grate and furnace. Steam	G. Gulickson	380,719	Apr. 10	623	171, 172	43	133
Boiler-scale preventer	C. F. Baker	382,748	May 15	1309	344	43	780
Boilers. Apportioning furnace-draft for batteries of steam	N. W. Pratt	382,489	May 8	998	235	43	695
Boilers. Apportioning furnace-draft for batteries of steam	N. W. Pratt	382,490	May 8	998	235	43	695
Boilers. Automatic fuel-regulator for	G. E. Brettell	383,557	May 29	2582	685	43	1067
Boilers. Device for preventing incrustation in steam	W. B. Bull	383,795	May 29	2675	756	43	1089
Boilers. Junction-piece for steam	G. S. Strong	381,030	Apr. 10	1118	299, 300	43	226
Boilers. Removing impurities from steam	J. Binks	382,508	May 8	955	242	43	701
Bolt: *See* Alarm-bolt. Flour-bolt. Elevating-bolt.							
Bolt	C. Diebold	384,288	June 12	596	161	43	1245
Bolt	G. D. Murdock	380,813	Apr. 10	764	210	43	159
Bolt-cutter	W. L. Dutcher	382,084	May 1	230	61	43	557
Bolt-heading machine	E. N. Whitaker	385,680	June 26	1860	477	43	1504

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bolt-heading machine	W. N. Whiteley, O. E. and A. S. Perrige.	383,083	May 15	1900	466, 467, 468, 469, 470, 471	43	676
Bolt-lock	W. A. Jordan	384,206	June 5	543	149	43	1236
Bolts. Machine for cutting the threads on	W. S. Halsey	380,867	Apr. 10	880	236, 237	43	180
Bolts, nuts, &c. Machine for shaving heads of	H. Minter	380,917	Apr. 10	922	247	43	189
Belting-reel	H. Bridenthal	381,304	Apr. 17	1539	415	43	316
Belting-reel	D. L. Hamaker	384,580	June 12	1021	266	43	1323
Belting-reel	B. Kniffler	382,695	May 1	331	86	43	574
Belting-reel	O. M. Morse	381,023	Apr. 10	1096	288	43	219
Belting-reel	M. Shaner	380,527	Apr. 3	333	95	43	68
Belting-reel frame	W. E. Gerton	382,132	May 1	491	105	43	567
Book and index. Combined	E. M. Rigby	383,543	May 29	2536	661	43	1035
Book and making the same. Record	J. W. Sea	384,248	June 12	669	179	43	1258
Book-binding and book	W. M. Kinnard	381,252	Apr. 17	1444	368	43	286
Book. Blank	J. M. Rose	384,033	June 19	1096	492	43	1447
Book. Check	A. Carmichael and S. D. Townsend	382,457	May 8	876	223	43	685
Book-cover	E. V. Foblin	382,148	May 1	398	104	43	567
Book-cover	T. Kelly	384,697	June 19	1296	338	43	1362
Book-cover	C. F. Morgan	382,719	May 15	1270	333	43	772
Book-cover	O. W. K. J. Nordenfalk	381,846	Apr. 24	2236	604	43	487
Book-index-cutting machine	A. Rothe	383,258	May 22	2033	530	43	936
Book. Scrap	H. Crocker	384,746	June 19	1353	353	43	1385
Book-signatures. Machine for gathering and collating	S. E. Johns	380,898	Apr. 10	901	241	43	185
Book. Turf-racing record	P. Mitchell	384,206	June 12	638	172	43	1252
Books. Binding of	A. J. Megee	383,315	May 22	9144	565, 566, 567, 568	43	952
Books. Case for the preservation of	C. D. Threlkeld	381,182	Apr. 17	1341	357, 358	43	277
Boom-fastening	J. H. Rushton	383,594	May 29	2562	678	43	1037
Boom for yachts, &c. Spinnaker	A. C. Crandall	383,172	May 22	1934	507	43	912
Boom-stick	F. H. Durell and W. Goldie	381,494	Apr. 17	1799	478	43	367
Boot. Felt	H. W. Hathorn	384,135	June 5	464	126	43	1210
Boot or shoe	G. S. Frantz	384,487	June 12	891	232, 233	43	1299
Boot or shoe	H. W. Furber	380,715	Apr. 10	616	169	43	132
Boot or shoe	O. H. Jewell	380,804	Apr. 10	753	206	43	156
Boot or shoe	J. W. Jones and E. K. Bridger	382,985	May 15	1630	427	43	842
Boot or shoe	W. F. Kearney	383,303	May 22	2131	562	43	949
Boot or shoe	C. F. Martine. (Reissue)	10,919	Apr. 3	555	151	43	112
Boot or shoe	R. N. Pratt and H. W. Johns	381,579	Apr. 24	1934	507	43	409
Boot or shoe	L. I. Shrader	380,408	Apr. 3	147	42	43	31
Boot or shoe	G. Valiant	385,218	June 26	2062	529	43	1544
Boot or shoe heel	C. H. Martin	384,634	June 19	1190	314	43	1362
Boot or shoe nail or rivet	G. A. Cavalli	382,072	May 1	298	78	43	568
Boot or shoe sole fitting machine	W. Avery	382,631	May 8	1148	294	43	736
Boot or shoe sole trimming machine	C. H. Trask	380,609	Apr. 3	456	129, 130	43	93
Boot or shoe soles. Dicing-cut machine for	W. O. Cree and G. A. Clough, Jr.	382,294	May 8	622	159	43	636
Boot or shoe soles. Machine for buffing	G. A. Fullerton	382,967	May 15	1604	410, 480, 570, 571	43	839
Boot or shoe trimming machine	C. H. Trask	383,331	May 22	2160	570, 571	43	954
Boot or shoe. Ventilated	H. A. Stevens	381,962	May 1	88	22	43	539
Boot protector. Felt	H. Saunders and E. C. Rauch	380,823	Apr. 10	779	213	43	163
Boot-tracing machine	G. W. Copeland	385,296	June 26	2197	561, 562	43	1570
Boots and shoes. Rack for holding	S. L. Saunders	380,938	Apr. 10	959	255	43	195
Boots and shoes. Rack for use in the manufacture of	A. Barrows	383,551	May 29	2514	663	43	1026
Boots or shoes. Button-piece for	A. Shea	380,731	Apr. 10	645	178	43	136
Boots or shoes. Detachable sole plate and spike for	S. Kingston and W. H. McGunnigal	383,133	May 22	1884	491	43	902
Boots or shoes. Heating apparatus for	F. Batter	382,661	May 15	1232	317	43	768
Boots or shoes. Machine for molding heel-stiffeners for	G. A. Knox	383,580	May 29	2545	672	43	1033
Boots or shoes. Machine for uniting the soles and uppers of	S. W. Robinson	380,662	Apr. 3	531	147	43	107
Boots or shoes. Manufacture of	J. C. Ivory	382,878	May 15	1487	389	43	817
Boots or shoes. Manufacture of heels for	A. L. F. Mitchell and J. P. Reynolds, Jr.	383,139	May 22	1890	493	43	903
Boots or shoes. Manufacture of welted	M. L. Keith	381,384	Apr. 17	1634	435	43	334
Boring bars. Automatic feed for	S. A. Brumbaugh	383,410	May 29	1967	521	43	922
Boring, drilling, &c. Machine for	M. C. Henley	382,730	May 29	2761	738	43	1078
Boring-machine	F. E. Keyes	384,654	June 19	1521	393	43	1407
Bottle-closure	W. Rediger	385,011	June 26	1757	455	43	1482
Bottle-filler	W. H. Comstock	384,022	June 5	984	75	43	1173
Bottle. Medicine	W. Rediger	380,456	Apr. 3	225	61	43	46
Bottle-necks. Machine for finishing	H. Semple	384,290	June 12	978	180	43	1259
Bottle. Nursing	W. F. Ware	380,635	Apr. 10	794	217	43	168
Bottle-opener and liquid-dropper. Combined	E. S. Randall	384,471	June 19	902	242	43	1396
Bottle-stopper	W. A. Caswell	384,824	June 19	1474	385	43	1418
Bottle-stopper	G. S. Chamberlin	382,277	May 22	2098	550	43	949
Bottle-stopper	J. Conner	382,459	May 8	879	224	43	685
Bottle-stopper	L. S. Hoyt	383,812	May 29	2805	767	43	1105
Bottle-stopper	W. H. Redington	382,191	May 1	456	118	43	598
Bottle-stopper	S. Twitchell	380,957	Apr. 10	990	262	43	201
Bottle-washer	J. C. Mackintosh	382,984	June 5	188	54	43	1156
Bottle-washing machine	H. Palmer	381,638	Apr. 24	2011	500	43	427
Bottles. Cork-holder for	W. Beardsley	382,650	May 15	1456	362	43	810

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Bottles. Packing for	E. J. Stewart	381,290	Apr. 17	1490	401	43	396
Bottles. Screw-stopper for	H. Barrett and J. J. Varley	380,769	Apr. 10	794	186	43	152
Bottles. Tool for grooving the mouths of	W. H. Wilson	382,929	May 15	1551	406	43	1013
Bottling machine. Beer	J. C. Bauer	382,023	May 1	214	57	43	555
Bow-drill	A. Franke	380,517	Apr. 3	342	92	43	68
Bowls. Making wooden	J. Berkey	380,742	Apr. 10	656	168	43	140
Box:							
See Axle-box. Music-box.							
Ballot-box. Musical box.							
Bread, cake, or cheese box. Paper box.							
Cash-box. Photographic developing-box.							
Collection-box. Signaling-box.							
Confectionery-box. Street-box.							
Fare-box. Strong box.							
File-box. Stuffing-box.							
Hat-box. Telegraph call-box.							
Journal-box. Toy money-box.							
Knockdown box. Wagon-box.							
Letter-box. Watch-box.							
Miter-box.							
Box	W. H. Scott	381,889	Apr. 24	2300	621	43	599
Box-lid	W. D. Harrison	383,305	June 26	2211	567	43	1573
Box or case	A. H. Storey	382,120	May 1	360	94	43	549
Box or receptacle	E. J. Hanck	381,156	June 5	495	128	43	1210
Box-sections. Machine for cutting	P. Robideau	383,148	May 22	1903	{497 / 498}	43	906
Boxes. Apparatus for applying stripe to	T. Remus	383,656	May 29	2032	{702 / 703}	43	1057
Boxes. Wire fastener for	J. Esselbach	381,684	Apr. 24	2078	543	43	449
Brace:							
See Beadstead-brace. Saw-brace.							
Bracelet-chain	G. A. Lenau	385,313	June 26	2220	569	43	1575
Bracket:							
See Gas-bracket. Harness-bracket.							
Bracket	H. P. Kochsmeier	381,389	Apr. 17	1641	426	43	336
Bracket or support for shelves, desks, and tables	C. Eggleston	382,296	May 8	825	{159 / 160}	43	639
Brake:							
See Air-brake. Sled-brake.							
Car-brake. Vehicle-brake.							
Elevator-brake. Wagon-brake.							
Brake-lever	T. Dilger	384,027	June 5	276	77	43	1174
Brake-lock	A. Hansen	381,010	Apr. 10	1072	284	43	216
Brakes. Slack-adjuster for	O. C. Crane	381,828	Apr. 24	2296	597	43	491
Bran-remover	G. W. H. Safely	384,719	June 19	1318	344	43	1289
Bread, cake, or cheese box	S. E. Bowersock	381,824	Apr. 24	2291	596	43	449
Bread-machine	B. Bitterman and L. H. Bernstein	383,938	June 5	147	43	43	1149
Bread-making machine	A. A. Humble	381,554	Apr. 24	1869	{466 / 469}	43	402
Breaker and crusher	F. L. Preston	383,986	June 5	216	64, 65	43	1162
Brewer's grains. Conveyer for	E. G. W. Woers	381,455	Apr. 17	1744	466	43	355
Brick and marking thereon the grade or color thereof. Apparatus for gaging	J. C. Anderson	382,509	May 8	947	240	43	689
Brick and tile machines. Lubricating-die for	R. Niedergesaess	385,317	June 26	2227	570	43	1576
Brick-drying tunnel	E. V. Johnson	381,383	Apr. 17	1631	{434 / 435}	43	334
Brick-kiln	W. and S. H. Alsip	383,936	June 5	141	{40 / 41 / 42}	43	1148
Brick-kiln	G. W. Sharer	385,909	June 26	2203	{326 / 327}	43	1542
Brick-kiln frame	E. M. Pike, J. Castle, and J. B. Schopp	384,469	June 12	930	240	43	1306
Brick-machine	W. Dengolesky	381,345	Apr. 17	1576	422	43	324
Brick-machine	J. J. Kulage	383,389	May 22	2066	{688 / 689}	43	973
Brick-machine	P. L. Simpson	384,672	June 19	1549	{99 / 100}	43	1431
Brick. Manufacturing	J. F. Clark	382,866	May 15	1465	384	43	911
Brick or tile for building purposes	W. J. Pringle	381,967	June 5	218	65	43	1163
Bricks with relation to their color and grade. Assorting	J. C. Anderson	382,504	May 8	940	240	43	700
Bridge	W. Harman	383,800	June 5	43	14, 15	43	1139
Bridge	R. A. Sawyier	381,584	Apr. 24	1889	{500 / 502}	43	410
Bridge. Metallic	M. L. E. Duval	384,196	June 5	505	{142 / 143 / 144}	43	1209
Bridge. Metallic	M. L. E. Duval	384,197	June 5	509	144	43	1204
Bridge. Swing	C. W. Martin	380,906	Apr. 10	800	244	43	168
Bridge. Truss	H. W. Ramsay	381,168	Apr. 17	1394	353	43	274
Bridges. Danger-signal for	M. O. Godding	384,755	June 19	1365	357	43	1277
Bridle and halter. Combined	J. O. Walton	384,497	June 12	851	221	43	1221
Bridle attachment	A. Gerzen	383,176	May 29	1941	509	43	914
Bridle attachment	C. S. Shue	381,985	Apr. 17	1485	400	43	395
Bridle-bit die and making bridle-bits	J. Stanley	382,276	May 1	583	{147 / 148}	43	681
Bridles. Cheek-piece for	O. Botsford	385,699	June 26	1981	499	43	1597
Bridles. Rosette attachment for	J. C. Harpham	383,122	May 22	1899	496	43	899
Brine. Apparatus for making	C. B. Wiser	380,376	Apr. 3	111	30	43	54
Brooder. Poultry	G. S. Singer	381,980	May 1	67	21	43	551
Broom-head	W. W. Thompson	385,917	June 26	2202	569	43	1544
Broom-holder	E. Gash	380,380	Apr. 3	19	5	43	6

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Brush	J. J. Ashburner	381,749	Apr. 24	2189	567	43	457
Brush	H. Berry	381,926	Apr. 17	1372	367	43	268
Brush	P. Wagner	382,898	May 29	2044	646	43	1013
Brush. Blacking	W. M. Baker	383,694	May 29	2050	711	43	1065
Brush. Blacking	J. H. Beauregard and W. F. Bidwell	381,607	Apr. 24	1973	516	43	419
Brush. Fountain	J. A. Pearce	380,345	Apr. 3	53	18	43	13
Brush. Nail	G. H. Conrean	380,470	Apr. 3	250	69	43	51
Brush. Shoe and other	R. Nicol, Jr.	384,462	June 19	1304	340	43	1305
Bucket cover. Sap	H. Walcott	380,958	Apr. 10	901	228	43	192
Buckle	M. Clement	383,198	May 22	1837	481	43	893
Buckle	G. F. Eberhard	382,516	May 8	985	244	43	703
Buckle	G. F. Eberhard	382,594	May 8	1004	261	43	720
Buckle	F. C. Hall	383,121	May 22	1888	496	43	899
Buckle	J. F. Molloy	383,783	May 29	2090	736	43	1068
Buckle	D. L. Smith	383,498	May 29	2038	646	43	1011
Buckle	E. A. Smith	384,936	June 19	1631	423	43	1447
Buckle	E. H. Wheeler	381,973	May 1	119	27	43	535
Buckle and spring-hook. Combined	W. James	382,164	May 1	419	110	43	560
Buckle and trace-carrier. Combined back-band	S. H. Teles	383,788	May 29	2055	751	43	1066
Buckle. Back-band	E. T. Seamon	385,936	June 26	2040	563	43	1541
Buckle-frames. Manufacture of	G. R. Kelsey	384,449	June 12	909	237	43	1302
Buckle or clasp	W. Grise	383,390	May 22	2112	537	43	946
Buckle. Safety	J. G. Kitchell	384,981	June 26	1704	442	43	1471
Buckle-shield. Elastic	G. O. Simmons	382,944	May 1	525	136	43	619
Buckle. Suspender	C. Voorhis	382,199	May 1	488	130	43	589
Buckle. Suspender	W. J. Walters	381,360	Apr. 17	1561	405	43	309
Buckle. Trace	B. C. Smith	385,146	June 26	1992	502	43	1523
Buckle. Tug	H. C. and L. C. Minard	382,545	May 8	1014	259	43	712
Buckles. Loop for suspender	D. L. Smith	382,494	May 8	933	236	43	694
Buffet for housekeeping	A. L. Dey	383,871	June 5	31	10	43	1137
Buffing-machine	T. E. Keavy	382,641	May 1	250	64, 65	43	580
Buggy-boot	P. Bosche	382,340	May 8	712	180	43	654
Buggy prop. Top	L. Bateman	382,564	May 8	1078	277	43	728
Bugs. Machine for destroying potato	W. Heney and J. W. Bailey	383,284	May 22	2116	558	43	947
Building-block	H. S. Palmer	384,541	June 12	1650	274	43	1269
Building construction. Iron	L. S. Buffington	383,170	May 22	1931	{505 / 506}	43	911
Buckeye brace	W. Hankin, Sr	380,567	Apr. 3	305	113	43	81
Buildings. Construction of	M. H. Eaton	381,767	Apr. 24	2191	573	43	442
Bulletin-board	L. J. De Land	381,242	Apr. 17	1578	423	43	283
Bullion from slag, matter, and spelss. Apparatus for separating base	W. B. Devereux	381,119	Apr. 17	1959	337	43	262
Bung	J. H. Sherwood	381,636	Apr. 17	1711	458	43	361
Bung and air-vent	A. Pape	381,981	Apr. 10	1197	320	43	240
Bung-bushing	R. Pantlarge	384,887	June 19	894	214	43	1288
Bung-fastener	G. A. Gerlinden and A. F. Gärtner	381,980	May 1	30	9	43	532
Bung-making machine	F. M. La Boiteaux	382,004	May 1	180	46, 47	43	547
Buoys and boats. Bell-ringing device for	G. Berger	383,532	May 29	2516	664	43	1046
Burners	D. C. Clapp	381,327	Apr. 17	1565	419	43	320
Burners	D. C. Clapp	381,760	Apr. 24	2182	571	43	466
Burglar-alarm	S. C. Freeman and J. B. Seward	384,728	June 19	1361	355	43	1280
Burglar-alarm	S. Goulden and J. Clarke	382,972	May 15	1510	423	43	640
Burglar-alarm	W. E. McIntosh	380,918	Apr. 10	917	246	43	182
Burglar-alarm	W. E. McIntosh	382,484	May 8	930	232	43	694
Burglar-alarm	W. L. Swan	382,669	May 8	1203	218	43	750
Burglar-alarm. Electric	H. C. Reeme	382,430	May 8	838	{215 / 216}	43	679
Burglar-alarm. Electric	G. F. Taft	382,444	May 8	853	218	43	681
Burial-casket	J. Walker	381,194	Apr. 17	1358	363	43	260
Burial-caskets. Fastener for	E. and B. Holmes	382,160	May 1	415	109	43	569
Burner:							
See Gas-burner. Lamp-burner.							
Gas-fuel burner. Oil-burner.							
Gaseous-fuel burner. Stove-burner.							
Hydrocarbon-burner. Vapor-burner.							
Burner-tip	W. M. Jackson	381,779	Apr. 17	1685	433	43	333
Burners for incandescent lighting and making the same. Stock for skeleton	E. Moreau	383,348	June 5	74	22	43	1135
Burnishing-machine	C. J. Addy	382,881	May 8	1073	275	43	704
Burnishing or trimming tool	A. B. Fowler and G. E. Warren	384,904	June 19	1585	412	43	1426
Bustle	F. J. Brand	384,557	June 12	1076	281	43	1283
Bustle	V. H. Buschmann	385,206	June 26	2196	561	43	1570
Bustle	J. E. Hegsett	384,849	June 19	1515	394	43	1426
Bustle	A. H. Jackson	384,650	June 19	1517	395	43	1426
Bustle	H. A. Jewell	381,140	Apr. 17	1393	343	43	268
Bustle	C. O'Day	382,378	May 8	756	196	43	668
Bustle	H. P. Olmstead	383,963	June 5	81	23	43	1136
Bustle	L. Smith	382,659	May 1	274	78	43	564
Bustle	A. White	382,421	May 22	2092	611	43	979
Butter-mold	F. P. Ayer	384,363	June 12	694	185	43	1253
Butter-tub	A. C. Howe	380,467	Apr. 3	264	73	43	54
Butter-worker	F. E. Crawford	380,887	Apr. 10	849	220	43	175
Button	O. Anderson and T. Pattison	384,873	June 12	650	175	43	1256
Button	F. P. Barney	381,319	Apr. 17	1538	413	43	315
Button	A. Bippart	381,103	Apr. 17	1235	331	43	257
Button	J. M. Ellis	380,678	Apr. 10	567	150	43	123
Button	R. Liebmann	380,681	Apr. 3	416	118	43	85
Button	W. F. Niles	384,054	June 5	332	94	43	1184
Button	A. J. Shipley	382,115	May 1	353	93	43	579
Button	L. Smith	381,430	Apr. 17	1713	459	43	351
Button	W. Stanley	383,136	May 22	1913	500	43	900
Button	H. Vellmer	384,607	June 5	244	70	43	1169
Button. Detachable	W. W. Covell	383,441	May 29	2333	630	43	992
Button-fastener	E. P. Clark and N. D. Ingraham	384,019	June 5	256	74	43	1171

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Button-fastener	C. E. Vreeland	382,342	May 8	697	175	43	651
Button-fly-marking machine	H. R. Corkhill, Sr	380,904	Apr. 10	1653	278	43	213
Button-forming machine	R. Hörmann	380,782	Apr. 10	692	173	43	134
Button. Hinged shoe	O. C. Bugbee	381,398	Apr. 17	1543	416	43	317
Button. Hinged shoe	R. H. Lewis	381,477	Apr. 17	1773	473	43	361
Button-hole cutter	J. R. Hopkins	384,164	June 5	480	138	43	1216
Button-hole cutter	G. W. Peters	384,710	June 19	1308	342	43	1326
Button-hole cutter	W. P. Vrooman	384,653	June 19	1212	340	43	1308
Button-hole cutting and embossing machine	Z. T. French and W. C. Meyer	381,995	May 1	163	41 42 43	43	511
Button-hole files. Mechanism for stamping and cutting out	G. Valiant and C. Dancel	385,319	June 26	2064	569 550	43	1545
Button-hole opener	J. R. Stephens	383,021	May 15	1770	442	43	857
Button-loop and safety-pin	E. Pickhardt	381,639	June 19	1195	316	43	1304
Button-machine	J. Emery	383,802	May 29	2193	763 764	43	1102
Button-machine	G. W. Prentice	383,490	May 29	2421	643	43	1009
Button-machine	A. Wittig	382,786	May 15	1363	358	43	790
Button-making device	J. Stewart	384,547	June 12	1058	276	43	1329
Button-making machine	F. Bocks	380,980	Apr. 10	1029	269	43	206
Button-manufacturing machine	G. Heidmann, E. Höltgen, and C. Egen	383,881	June 5	45	15	43	1130
Button or stud. Detachable	H. F. Hambruch	383,092	May 15	1750	454	43	868
Button-setting machine	F. H. Richards	381,030	Apr. 10	1089	292 293	43	222
Button-setting machine	F. H. Richards	381,031	Apr. 10	1103	294 295	43	222
Button-setting machine	J. H. Vinton	382,341	May 8	695	175	43	651
Button-setting machine	A. G. Wilkins	381,310	Apr. 17	1517	409 410	43	311
Button-setting machines. Apparatus for making raceways for	J. H. Vinton	381,296	Apr. 17	1495	404	43	307
Button-setting machines. Die for	J. H. Vinton	382,340	May 8	694	175	43	651
Button-setting machines. Making raceways for	J. H. Vinton	381,298	Apr. 17	1498	404	43	308
Button. Sleeve	O. T. Moock and W. L. Headley	382,485	May 8	981	234	43	894
Buttons, &c. Making	S. Cottle	384,192	June 5	519	141	43	1222
Buttons. Making	S. Cottle	384,236	June 5	572	156	43	1232
Buttons. Manufacture of	D. A. Ladd	380,807	Apr. 10	756	207	43	158
Cabinet-case for holding railway-folders	G. A. Fellows	380,877	Apr. 10	863	236	43	177
Cable and car-propeller. Elevated	H. Casebolt	384,124	June 5	416	115 116	43	1200
Cable conduit and truck	W. Heckert	382,810	May 15	1303	366	43	796
Cable-covering machine	C. H. Gersch	383,353	May 22	2195	589	43	961
Cable-grip	W. J. E. Carr	381,994	May 1	12	3	43	517
Cable-grip	W. J. E. Carr	381,995	May 1	13	4	43	517
Cable-grip	F. H. Morse	385,195	June 26	2032	560	43	1538
Cable-grips and other purposes. Friction-roller for	T. J. Mayall	381,404	Apr. 17	1660	444	43	341
Cable road and machinery for operating the same	E. J. Weston	382,575	May 8	1002	271 272	43	722
Cable-road grip-gear	M. Tolle	381,489	Apr. 17	1791	477	43	365
Cable roads. Chain-grip for	W. Heckert	381,689	June 19	1272	333	43	1370
Cable roads. Driving machinery for	W. Heckert	383,486	May 29	2381	633 634	43	1002
Cable-splices. Locking device for	W. R. Patterson	382,736	May 15	1279	335 336	43	774
Caisson. Portable	H. P. Kirkham	381,797	Apr. 24	2233	584 585	43	470
Calculator. Interest	C. M. Dunham	384,431	June 12	892	230	43	1297
Calendar	J. Cussons	385,245	June 26	2105	539	43	1553
Calendar. Memorandum	A. H. Isbell	384,526	June 12	1029	269	43	1324
Calipers. Beam	C. E. Billings	382,348	May 8	712	180	43	654
Calipers. Combined outside and inside	O. D. Warfield	380,836	Apr. 10	794	217	43	166
Camera: *See* Photographic camera.							
Can: *See* Drip-can. Oil-can. Mucilage-can.							
Can-bodies. Apparatus for forming sheet-metal	F. M. Leavitt	382,537	May 8	1001	254 255 256	43	760
Can-body-making machines. Feeder for	J. Stevens	380,774	Apr. 10	709	196	43	150
Can clamp. Fruit	M. J. Hamlin	384,361	June 12	788	205	43	1278
Can cover. Milk	F. Stark	383,024	May 15	1764	443	43	858
Can-filling attachment	J. H. J. Haines	381,236	Apr. 17	1422	388	43	292
Can-filling machine	G. H. Perkins	381,281	June 5	207	61 62 63	43	1160
Can-filling machine	C. Seimel	383,505	May 29	2502	678	43	1037
Can for printers' ink, &c.	C. H. Hollis	381,553	Apr. 24	1868	498	43	402
Can-heading machine	F. M. Leavitt	382,538	May 8	1006	256 257 258	43	710
Can-heading machine	J. Solter	382,567	May 8	1047	266 267	43	719
Can-opener	J. Blakeslee	384,759	June 19	1344	351	43	1383
Can-opener	W. P. Quesnell	380,406	Apr. 3	146	42	43	30
Can-opener and sheet-metal cutter	E. Hawes	384,973	June 26	1687	439	43	1467
Cans. Nozzle for sheet-metal	W. Vogel	383,040	May 29	2344	779	43	1112
Cans with oils and other liquids. Box for filling	G. H. Perkins	383,979	June 5	205	60	43	1160
Canals, railway-beds, &c. Construction of	J. E. Robinson	380,934	Apr. 10	953	253	43	194
Candlestick	R. H. Mehl and R. Knott	380,506	Apr. 3	300	87	43	61
Cane and chair. Combined	J. H. Kamerer	382,388	May 8	642	168	43	642
Cane. Machine for cutting sugar-	L. Rea	385,484	June 26	2091	538	43	1550
Cane, umbrella, and camp-stool. Combined	M. Schiff	384,799	June 19	1415	371	43	1408

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Canes, &c. Utensil-head for	M. Stiebritz and A. Miller	383,588	May 29	2566	679	43	1039
Cannon. Pneumatic	W. A. Bartlett	381,901	May 1	7	3	43	515
Cant-hook	C. Nygaard	382,940	May 1	589	135	43	611
Canteen	E. A. Trim	382,040	May 1	211	56	43	522
Car-alarm operator. Automatic	I. H. Hahn	383,394	May 29	2474	653	43	1018
Car and engine replacing frog	B. E. Tibbets	383,779	May 29	2651	750	43	1085
Car-brake	E. E. Baker	381,976	May 1	127	30	43	530
Car-brake	J. H. Brown	384,507	June 12	1003	261	43	1319
Car-brake	T. H. Burridge	383,387	May 22	2249	586	43	970
Car-brake	S. Fairman	381,353	Apr. 17	1567	425	43	325
Car-brake	A. Kilpatrick	382,310	May 8	643	164	43	648
Car-brake	F. W. Mills	381,570	Apr. 24	1913	504	43	407
Car-brake	M. B. Mills	381,571	Apr. 24	1915	505	43	407
Car-brake	E. H. Purdy	381,864	Apr. 10	1901	331	43	241
Car-brake	G. B. Quigg	383,904	June 5	83	24	43	1137
Car-brake	A. Reese	385,697	June 26	1750	453	43	1481
Car-brake	J. H. Robertson	384,870	June 19	1546	408	43	1431
Car-brake	J. S. Sterrett	382,013	May 1	198	50	43	540
Car-brake	E. W. Luce	382,804	May 15	1642	430	43	846
Car-brake. Electro-magnetic	A. P. Massey	382,706	May 15	1238	350	43	764
Car. Convertible freight	W. F. Mossop	381,410	Apr. 17	1671	448	43	348
Car-coupling	J. G. E. Armeah	384,671	June 19	1943	398	43	1374
Car-coupling	C. L. Baltzinger	384,554	June 12	1067	278	43	1331
Car-coupling	W. L. Braddock	384,606	June 19	1147	303	43	1364
Car-coupling	M. T. Broady	384,675	June 19	1948	399	43	1375
Car-coupling	S. C. Carroll	384,889	June 19	1571	409	43	1435
Car-coupling	W. R. Chadsey	384,018	June 5	258	74	43	1171
Car-coupling	J. Coup	384,193	June 5	521	141 142	43	1222
Car-coupling	J. E. Craig	383,631	May 29	2615	702	43	1049
Car-coupling	W. M. Cutler	385,101	June 26	1900	484	43	1511
Car-coupling	W. De Cew	381,914	May 1	23	6	43	519
Car-coupling	R. H. Dowling	385,301	June 26	2205	565	43	1573
Car-coupling	C. Eby	382,759	May 15	1329	348	43	788
Car-coupling	R. J. Edwards	381,349	Apr. 17	1569	424	43	325
Car-coupling	J. V. D. Eldredge	380,874	Apr. 10	857	231 232	43	177
Car-coupling	S. Fairman	381,352	Apr. 17	1566	425	43	325
Car-coupling	J. H. Fields	383,517	May 29	2456	651	43	1015
Car-coupling	F. A. Fox	384,312	June 12	704	187	43	1264
Car-coupling	T. Gaskins	382,602	May 8	1105	294	43	730
Car-coupling	P. C. Greenawalt	384,350	June 12	783	209	43	1277
Car-coupling	E. M. and J. Q. Hamilton	384,869	June 19	1502	391	43	1403
Car-coupling	L. H. Harris	383,739	May 29	2760	798	43	1078
Car-coupling	E. Houts	384,575	June 12	1098	289	43	1337
Car-coupling	E. L. Keeler	385,185	June 26	2018	516	43	1535
Car-coupling	J. Kroupa	380,694	Apr. 10	577	158	43	125
Car-coupling	D. Ladd	381,145	Apr. 17	1392	345	43	268
Car-coupling	M. J. Lorraine and C. T. Aubin. (Reissue.)	10,941	June 26	2259	578	43	1561
Car-coupling	J. F. Macer	380,399	Apr. 3	136	40	43	29
Car-coupling	H. S. McKague	385,120	June 26	1937	495	43	1519
Car-coupling	A. Müller	380,585	Apr. 3	422	120	43	88
Car-coupling	R. M. Olmstead and J. V. Wemple	384,174	June 5	494	135	43	1217
Car-coupling	F. W. Parsons	385,000	June 26	1740	450	43	1479
Car-coupling	J. Rancevan	382,730	May 15	1285	337	43	775
Car-coupling	G. M. Robbins	383,991	June 5	222	66	43	1164
Car-coupling	E. J. Roullié and L. A. Singier	381,033	Apr. 10	1108	296 297	43	224
Car-coupling	W. O. Rutledge	384,217	June 5	555	153	43	1238
Car-coupling	H. Sabine	380,936	Apr. 10	955	253 254	43	195
Car-coupling	L. B. Sampson	382,390	May 8	774	198	43	666
Car-coupling	H. S. Sanders	385,204	June 26	2046	523	43	1540
Car-coupling	J. Scott	384,474	June 12	936	243	43	1307
Car-coupling	W. B. Seal	381,648	Apr. 24	2092	530	43	429
Car-coupling	J. Timms	381,784	Apr. 17	1342	358	43	277
Car-coupling	G. W. Toler	383,781	May 29	2654	732 733	43	1095
Car-coupling	W. L. Uhlenhart	382,783	May 15	1360	357	43	789
Car-coupling	J. Wadleigh	383,504	May 29	2442	647	43	1013
Car-coupling	J. E. Ward and J. A. Fallgatter	385,027	June 26	1781	460	43	1468
Car-coupling	J. G. Williams	380,709	Apr. 10	609	167	43	130
Car-coupling	R. Wilson	384,722	June 19	1334	348	43	1380
Car-coupling	E. R. Yauger	383,494	May 22	2206	612	43	920
Car-coupling device	W. N. Morrison	384,536	June 12	1042	271	43	1326
Car-couplings. Locking-lever for	F. W. Parsons	384,779	June 19	1401	360	43	1405
Car-door	T. G. Ruffhead	382,943	May 1	533	136	43	611
Car-door	J. C. Wands	382,917	May 15	1535	409	43	898
Car door. Freight	C. Hager	382,154	May 1	404	106	43	598
Car door. Grain	A. B. Taylor	385,021	June 26	1770	458	43	1486
Car. Dump	J. Odorizzi	384,708	June 19	1397	341	43	1395
Car. Dumping	G. H. Griggs	383,463	May 29	2360	630	43	1000
Car. Electro-railway	E. Julien	384,581	June 12	1110	303 304	43	1330
Car. Freight	P. Brown	382,685	May 15	1230	330	43	764
Car-heater	E. Andrews	384,599	June 19	1139	301	43	1353
Car-heater	W. P. Beadling	382,567	May 8	963	241	43	701
Car-heater	J. D. Campbell	383,513	May 29	2450	649	43	1014
Car-heater	J. H. Elward	383,115	May 22	1860	486	43	898
Car-heater	F. C. McElroy	384,655	June 5	318	91	43	1181
Car-heater	J. W. Storrs	383,835	May 29	2938	777	43	1111
Car-heater	G. B. Strunk	383,417	May 22	2104	606 610	43	976

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Car-heater	F. Trowbridge	381,512	Apr. 17	1880	463	43	873
Car-heater	C. W. Wiecking, Jr	381,490	Apr. 17	1792	477	43	865
Car heater and lighter	L. E. Truesdell	380,411	Apr. 3	153	44	43	36
Car-heater grates. Support for	W. C. Baker	380,544	Apr. 3	361	103	43	74
Car-heaters. Safety-casing for	A. Bell	383,034	May 15	1781	446	43	882
Car heating and ventilating apparatus	J. T. Earnest	382,956	May 15	1591	415	43	836
Car-heating apparatus	W. F. Steele	384,491	June 12	841	219	43	1289
Car-heating apparatus. Railway	E. A. Leland	384,452	June 12	912	257	43	1283
Car-heating apparatus. Street	M. Cleave	384,198	June 5	421	117	43	1201
Car-link. Automatic	F. S. Frischeis	383,433	May 29	2348	625	43	995
Car motor. Steam street	W. Vogel	381,192	Apr. 17	1351	{361 / 362}	43	879
Car motor. Street	L. B. Gibson	384,145	June 5	449	194	43	1207
Car motor. Street	L. B. Gibson	384,146	June 5	451	195	43	1208
Car motor. Street	L. B. Gibson	384,147	June 5	452	195	43	1208
Car motor. Street	L. B. Gibson	384,148	June 5	453	195	43	1208
Car-mover	J. Bird	384,502	June 12	909	269	43	1314
Car-mover	G. S. Currier	382,757	May 15	1330	347	43	792
Car-platform	T. W. Moore	381,022	Apr. 10	1085	2nd	43	819
Car. Poultry	W. P. Jenkins	384,913	June 19	1601	{416 / 417}	43	1462
Car. Railway	C. A. Davis	383,712	May 29	2733	721	43	1074
Car. Railway	T. S. E. Dixon	384,828	June 19	1480	386	43	1419
Car. Railway	C. W. Littlefield	384,967	June 26	1708	443	43	1471
Car. Railway	J. C. Love and J. F. Snedliker	381,396	Apr. 17	1649	{439 / 440}	43	338
Car. Railway	H. Niehoff	382,434	May 8	833	213	43	678
Car. Railway	G. M. Pullman	383,067	May 15	1778	460	43	872
Car. Railway	J. W. Thomas	380,705	Apr. 10	601	{165 / 166}	43	129
Car. Safety	E. E. L. Woodward	383,845	May 29	2951	781	43	1113
Car-seat	H. S. Hale	384,153	June 5	461	127	43	1210
Car-seat arm. Detachable	J. A. Gohen	383,726	May 29	2758	727	43	1078
Car spring. Railway	B. J. La Motte	385,061	June 26	1843	472	43	1498
Car-starter	H. R. Keller	384,269	June 12	799	208	43	1260
Car-starter	J. M. Linscott	381,303	Apr. 17	1644	438	43	337
Car-starter	J. Zeliff	381,662	Apr. 24	1964	517	43	416
Car starter and brake	J. Heimlich	380,681	Apr. 10	574	157	43	134
Car-step	F. A. Stanwood	385,017	June 26	1785	456	43	1484
Car-step. Adjustable	W. Neumann	383,566	May 29	2556	676	43	1035
Car. Stock	H. Arms	382,934	May 15	1559	408	43	830
Car. Stock	W. A. Bernard and B. W. Rhodes	382,405	May 8	792	{201 / 202}	43	669
Car. Stock	J. B. Calkins	382,456	May 8	875	223	43	685
Car. Stock	J. F. Elder	384,832	June 19	1486	387	43	1439
Car. Stock	C. Langguth	380,725	Apr. 10	632	{173 / 174 / 175}	43	135
Car. Stock	W. H. Miller and N. Z. Seitz	382,238	May 1	525	{134 / 135}	43	610
Car. Stock	R. H. Ripley	384,931	June 19	1624	422	43	1446
Car. Stock	N. Z. Seitz	380,600	Apr. 3	445	125	43	90
Car. Stock	N. Z. Seitz	380,638	Apr. 3	491	138	43	100
Car. Stock	L. R. Stiles	382,843	May 15	1433	377	43	805
Car. Street	J. W. Evans	381,918	May 1	98	8	43	580
Car-switch. Automatic	J. R. Potter	381,949	May 1	71	18	43	588
Car-unloader	H. M. Barnhart	384,111	June 5	388	109	43	1195
Car-ventilator	J. Hutton	380,440	Apr. 3	196	54	43	40
Car-ventilator	W. Wright	384,184	June 5	507	139	43	1219
Car-vestibules. Equalizer for	H. H. Sessions	383,619	May 15	1698	441	43	857
Car-wheel	H. R. Allen	381,846	June 5	1	1	44	1121
Car-wheel	F. G. Myers	384,924	June 19	1617	420	43	1445
Car-wheel	W. G. Richards	383,989	June 5	210	63	43	1163
Cars. Air-brake for railway	T. S. E. Dixon	382,632	May 1	234	60, 61	43	556
Cars. Air-heating device for	L. P. Converse	383,171	May 22	1932	{506 / 507}	43	912
Cars. Apparatus for heating railway	W. H. Plumb	383,247	May 22	2041	536	43	934
Cars. Appliance for railway	J. Goodfellow	383,456	May 29	2355	627	43	996
Cars. Automatic air-supply for propelling	L. C. Pressley	383,826	May 29	2924	772	43	1109
Cars. Automatic electric gas cut-off for railway	F. C. Brower	384,676	June 19	1250	329	43	1375
Cars. Automatic pipe-coupling for railway	W. F. Grassler	383,298	May 22	2108	557	43	945
Cars. Bearing for street	H. L. Phelps	384,782	June 19	1402	367	43	1405
Cars by electricity. Apparatus for lighting railway	I. A. Timmis and S. C. C. Currie	383,502	May 29	2438	647	43	1012
Cars by electro-chemical means. Heating railway	E. E. Rice	381,819	Apr. 24	2280	{584 / 585}	43	477
Cars. Device for derailing	G. H. Gere	383,723	May 29	2735	726	43	1077
Cars. Die for making stake-pockets for	C. T. Schoen	381,175	Apr. 17	1332	356	43	275
Cars. Draft-timber for	J. B. Owens	384,588	June 12	1118	295	43	1340
Cars. Draw-gear for railway	C. H. Starr	382,840	May 15	1428	375	43	804
Cars. Electric heating apparatus for railway	E. E. Rice	381,816	Apr. 24	2264	{591 / 592}	43	475
Cars. Electric-lighting apparatus for railway	H. E. Dey	381,915	May 1	25	7	43	519
Cars. Electric motor for railway	W. M. McDougall	382,483	May 8	919	233	43	683
Cars. Electric signal for railway	J. R. De Mier	380,647	Apr. 3	507	142	43	103
Cars. Folding step for	A. J. Barber	382,670	May 15	1219	316	43	761
Cars. Frame for railway	M. A. Zurcher	384,225	June 5	568	158	43	1231
Cars. Head and back rest for railway	H. B. Smith	380,460	Apr. 3	227	62	43	66
Cars. Heating railway	E. B. Benham	381,754	Apr. 24	2175	569	43	459
Cars. Heating railway	W. M. Scott	381,647	Apr. 24	2021	530	43	429
Cars. Heating railway	C. Taylor	383,269	May 22	2228	591	43	987
Cars. Heating railway	C. S. Townley	383,639	May 29	2943	779	43	1119
Cars. Heating system for railway	J. Emerson	383,687	May 29	2923	{694 / 695}	43	1051
Cars. Indicator for street	F. Hicks	380,709	Apr. 10	748	205	43	157

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Cars. Link and pin holder for	C. L. Ward	384,655	June 19	1215	331	43	1269
Cars. Lubricating attachment for railway	J. A. Criswell	383,556	May 29	2563	685	43	1033
Cars. Metallic platform for railway	J. T. Goodfellow	385,177	June 26	2600	513	43	1521
Cars over temporary obstructions. Device for carrying	C. H. Little	382,711	May 15	1261	330	43	779
Cars. Safety appliance for railway	J. A. Jamieson	380,630	Apr. 3	481	136	43	98
Cars. Sand-box for street	W. V. H. Willson	382,947	May 1	530	137	43	812
Cars. Shield or cover for heaters and stoves for use on railway	G. A. Brown	382,615	May 29	2397	666	43	1045
Cars. Stake-pocket for	C. T. Schoen	381,174	Apr. 17	1331	355	43	275
Cars. Steam-coupling for railway	J. I. Collins	383,688	May 29	2619	691	43	1046
Cars. Steam-heating apparatus for railway	J. Emerson	382,596	May 8	1696	432	43	720
Cars. Steam-heating pipe-connection for	J. Emerson	382,597	May 8	1696	382	43	720
Cars. Street-indicator for	G. A. Piddock	382,709	May 15	1335	351	43	765
Cars. Street or station indicator for	W. F. Williams	384,468	June 12	950	249	43	1311
Cars. Ticket-holder for railway	J. B. McIntyre	380,505	Apr. 3	298	86	43	80
Carburetor	C. Bens	382,565	May 8	1679	{277 / 278}	43	726
Carburetor	C. S. King and E. G. Brown	385,121	June 26	1927	{491 / 492}	43	1516
Carburetor	L. Marks	382,619	May 15	1405	{368 / 369}	43	780
Carburetor	J. P. Wilson	383,204	May 22	1974	519	43	939
Card-hanger	H. S. Hack	384,084	June 5	225	60	43	1175
Card-rack	A. S. Greenwood	384,439	June 12	894	233	43	1289
Carding-engine	W. Brown	383,435	May 29	2367	{617 / 618}	43	991
Carding-engine	J. M. Hetherington	381,781	Apr. 24	2210	578	43	466
Carding-machines. Mechanism for operating doffer-combs of	E. Wright	381,516	Apr. 17	1637	{485 / 486}	43	374
Carding-machines. Mechanism for stripping the top-flats of	A. Falls	382,398	May 8	1100	283	43	789
Carpenter's framing-gage	L. P. Pickering	385,321	June 26	2222	572	43	1577
Carpenter's gage	A. Laporte	385,194	June 26	1932	493	43	1518
Carpet-cleaner and dust-conveyer	H. A. Widman, Jr	383,428	May 29	2303	611	43	979
Carpet-cleaning machine	A. Burckard	381,110	Apr. 17	1246	335	43	259
Carpet fabric	H. Hardwick	382,157	May 1	409	107	43	569
Carpet-fastener	G. Barrow	383,849	June 5	4	1	43	1181
Carpet-stretcher	L. R. Dey	382,925	May 8	894	159	43	639
Carpet-stretcher	B. Manning	384,456	June 12	918	238	43	1304
Carpet-stretcher	C. C. F. Nieschang	381,926	June 19	1619	421	43	1443
Carpet-sweeper	H. A. Gore, H. W. Bu Ton and G. W. Kelley.	383,806	May 29	2690	765	43	1104
Carriage. Baby	G. H. Baker	384,494	June 12	969	253	43	1313
Carriage. Baby	J. H. Gibson	381,634	Apr. 24	2302	509	43	462
Carriage-boot	J. W. Storrs	381,965	May 1	96	23	43	533
Carriage-bow	J. R. Fox	383,576	June 5	36	18	43	1138
Carriage. Child's	G. Riexinger	382,491	May 8	929	235	43	685
Carriage-curtain-cord holder	J. G. English	382,957	May 15	1563	418	43	837
Carriage-curtain fixture	F. A. Brandenburg	382,287	May 1	604	153	43	604
Carriage-top	J. Morts	381,945	May 1	66	16	43	587
Carriage-top	M. D. Taylor	384,219	June 5	557	153	43	1239
Carriage-top. Folding	J. Morts	381,944	May 1	65	16	43	587
Carriage-top spring	S. W. Cately	382,293	May 8	921	156	43	636
Carriage-wheel fender	G. C. W. Magruder	384,989	June 26	1710	444	43	1472
Carriage-window	A. W. Child and G. B. Childs	383,437	May 29	2329	618	43	991
Carriages, cribs, or cradles. Attachment for baby	S. A. Holman	381,878	Apr. 24	2275	617	43	496
Carriages. Wheel-fender for	A. C. Rogers and H. Steas	384,335	June 12	746	196	43	1271
Carrier:							
See Cash-carrier. Hay-carrier.							
Cash and package carrier. Package-carrier.							
Cash and parcel carrier. Parcel-carrier.							
Egg-carrier. Sheaf-carrier.							
Harvester bundle-carrier. Trace-carrier.							
Cart. Hand	D. E. Teal	384,402	June 12	843	{219 / 220}	43	1289
Cart. Road	C. L. Barrett	384,220	June 19	1470	364	43	1417
Cart. Road	C. W. and G. H. Jewett	382,984	May 15	1631	467	43	843
Cart. Road	W. M. McCrosson	384,375	June 12	812	211	43	1263
Cart. Road	W. A. Peterson	381,415	Apr. 17	1677	449	43	344
Cart. Road	A. M. Wilson	384,489	June 12	961	{249 / 250}	43	1312
Cartridge	G. M. Peters	380,669	Apr. 10	584	161	43	127
Cartridge loading apparatus	J. H. Read	382,830	May 15	1416	372	43	801
Cartridge-loading machine	G. D. Hunter	381,498	Apr. 17	1805	{479 / 480}	43	368
Cartridge-loading machine	G. D. Hunter	381,499	Apr. 17	1811	480	43	370
Cartridge-loading machine	G. M. Peters	383,905	June 5	85	{24 / 25 / 26 / 27}	43	1137
Cartridge-loading machine	P. Selby	384,089	June 5	302	108	43	1190
Cartridge. Photogenic	H. G. Piffard	383,884	June 5	215	64	43	1162
Cartridge-reloading implement	T. G. Bennett	383,693	May 29	2700	713	43	1067
Cartridge-reloading implement	W. Mason	382,462	May 8	917	223	43	682
Cartridge-shells. Machine for cutting and crimping	G. D. Hunter	383,522	May 29	2461	635	43	1019
Cartridges. Loading apparatus for ordnance	J. T. Jefferson	384,038	June 5	295	88, 89	43	1177
Carving-machine	S. F. Moore	384,985	June 26	1718	446	43	1474
Case:							
See Cabinet-case. Piano-case.							
Filing-case. Printer's rule-case.							
Folding case. Show-case.							
Map-case. Watch-case.							
Cash and package carrier	S. W. Barr	383,937	June 5	144	42, 43	43	1143

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cash and package carrier	W. T. Gelta	385,110	June 26	1908	486	43	1513
Cash and parcel carrier	G. F. Green	381,127	Apr. 17	1271	340	43	994
Cash and parcel carrying apparatus	S. W. Barr	384,113	June 5	391	110	43	1196
Cash and parcel carrying apparatus	H. L. Lovejoy	382,889	May 15	1499	392	43	819
Cash-carrier	L. J. Bishop	380,979	Apr. 10	1028	268	43	998
Cash-carrier	N. Newman	385,196	June 26	2033	581	43	1538
Cash-carrier apparatus	J. F. Burdett	381,032	Apr. 10	1141	305	43	999
Cash indicator and recorder	J. F. Heady and J. H. Patterson	382,647	May 8	1167	{301 302	43	743
Cash indicator and register	C. B. Hopkins	384,691	June 19	1975	{324 335	43	1379
Cash indicator and register	J. H. Patterson	382,532	May 8	1091	{336 362	43	713
Cash indicator and register	J. H. Patterson	383,006	May 15	1664	{435 436	43	849
Cash indicator, register, and recorder	C. B. Hopkins	385,265	June 26	2141	{546 547	43	1560
Cash-register	H. A. Alm	381,560	Apr. 24	1849	469	43	305
Cash-register	W. F. Lamb	381,561	Apr. 24	1899	501	43	404
Cash register and indicator	W. Aldrich	380,542	Apr. 3	355	{101 102	43	72
Cash register and indicator	J. F. Heady and J. H. Patterson	384,158	June 5	469	{129 130	43	1211
Cash register and indicator	J. H. Patterson	382,007	May 15	1671	436	43	852
Cash register and indicator	J. H. Patterson and J. F. Heady	380,513	Apr. 3	312	90, 91	43	63
Cash register and indicator	F. J. Patterson and I. P. Davis	385,199	June 26	2040	{521 522	43	1539
Cash register and indicator	E. T. Taylor	380,831	Apr. 10	788	{215 216	43	165
Cash register and indicator	W. W. Wythe	384,490	June 12	962	{250 251	43	1312
Cash registering and indicating apparatus	C. B. Hopkins	384,692	June 19	1283	{336 337	43	1381
Cash-tills. Recorder for	G. R. Stokes, W. Loney, and T. M. Favell.	384,337	June 12	750	197	43	1271
Casks or barrels. Agitator for	G. M. Thompson	385,151	June 26	1970	504	43	1525
Caster	E. G. Asmus	384,886	June 19	1569	408	43	1435
Caster	A. Lehmann	381,476	Apr. 17	1772	473	43	361
Caster	M. B. Schenck	381,173	Apr. 17	1330	355	43	275
Caster attachment for stoves or furniture	M. Devoy	381,120	Apr. 17	1262	338	43	232
Caster for stoves, &c.	A. H. Conn	385,240	June 26	2000	538	43	1562
Caster-frame	H. C. Hart	383,525	May 29	2475	653	43	1018
Caster. Furniture	W. E. Gard	384,837	June 19	1498	389	43	1422
Caster-rollers. Manufacturing	R. B. Codling	380,790	Apr. 10	736	202	43	155
Caster. Trunk or furniture	J. P. Carmichael	381,759	Apr. 24	2168	570	43	460
Casting car-wheels. Apparatus for	J. R. Davies	381,115	Apr. 17	1253	336	43	230
Casting curved pipe. Core-arbor for	P. Rieth	381,645	Apr. 24	2017	389	43	494
Casting ingots. Mold for	T. Hampton and J. Facer	380,321	Apr. 3	20	6	43	6
Casting machines. Elevator for ingot	J. B. D. Boulton	384,345	June 12	760	199	43	1273
Casting metal	D. C. Stover	381,658	Apr. 24	2036	533	43	430
Casting metal. Mold for	S. D. Locke	383,060	May 15	1766	456	43	870
Casting-mold	T. H. Pasco	383,318	May 22	2148	567	43	959
Casting ordnance. Apparatus for	R. J. Gatling	380,756	Apr. 10	675	{186 187	43	144
Casting-pattern	F. M. Stevens	380,827	Apr. 10	785	{214 215	43	164
Casting saw-teeth. Mold for	H. G. Hubert	382,089	May 1	320	84	43	572
Castings. Core-arbor for hollow	W. E. Warner and F. A. Austin	383,603	May 29	2570	681	43	1039
Castrating instrument	J. Phillips	384,215	June 5	553	152	43	1228
Catamenial sack	J. Hothersall	384,525	June 12	1029	268	43	1394
Ceiling. Fire-proof	P. B. Wight	384,947	June 19	1648	428	43	1451
Ceiling. Metallic	W. R. Kinnear	382,092	May 1	327	85	43	573
Ceiling. Metallic	W. R. Kinnear	382,093	May 1	328	85	43	573
Ceiling. Metallic	W. R. Kinnear	382,094	May 1	329	86	43	574
Cellars water-proof. Rendering	F. J. De Borger	385,103	June 26	1903	485	43	1519
Celluloid surfaces. Ornamenting	A. Bensinger	380,272	May 22	2094	.....	43	941
Cement. Composition for making	J. Wolff	383,932	June 5	136	.....	43	1147
Cement for calking metallic joints	W. Watkins	381,449	Apr. 17	1737	.....	43	354
Cement. Hydraulic	J. Murphy	382,376	May 8	753	.....	43	662
Cement. Manufacture of articles from hydraulic	J. W. Stockwell	381,295	June 12	692	192	43	1260
Cement pipes. Machine for making	L. G. Haase	382,974	May 15	1614	{422 423	43	841
Centrifugal machine	G. N. Downe	380,555	Apr. 3	376	107	43	77
Centrifugal machine	A. Freitag	382,966	May 15	1603	419	43	838
Centrifugal machine	F. H. Richards	384,718	June 19	1316	344	43	1397
Cervix-clamp	W. S. How	382,039	May 1	248	64	43	559
Chain attachment. Watch	H. M. Stroud	382,697	May 8	1138	293	43	737
Chain-cutter teeth. Machine for making blanks for	C. H. Douglas	383,347	May 22	2162	578	43	980
Chain. Detachable-link	R. F. and J. H. Redick	382,554	May 8	1088	282	43	716
Chain. Drawing	C. C. Klink, F. Pinkowski, and A. Sullmann.	382,043	May 1	253	65	43	559
Chain. Drive	E. Schenck	382,057	May 1	272	71	43	563
Chain-fastener	J. F. Sears and H. E. Kelley	381,855	Apr. 24	2341	607	43	469
Chain-wrench	W. S. Rollings	381,424	Apr. 17	1690	453	43	346
Chair: *See* Adjustable chair. Barber's chair. Dental chair. Dental and other chair. Folding chair. Life-preserving chair. Rail-chair. Rattan chair. Reclining-chair. Rocking-chair. Tilting-chair.							
Chair	J. R. Brott	384,887	June 19	1570	408	43	1435
Chair	W. I. Bunker	384,688	June 19	1150	301	43	1355
Chair	G. Hunzinger	380,629	Apr. 3	480	135	43	99

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Chair	A. D. Marr	383,321	May 22	2019	530	43	980
Chairs. Automatic fan attachment for rocking	M. Marcoux	381,697	Apr. 24	2404	625	43	503
Chairs, &c. Canopy attachment for	A. A. Smith	382,493	May 8	951	230	43	695
Chairs. Spring attachment for rocking	A. B. Stevens	384,647	June 19	1905	318	43	1357
Chairs. Spring-seat for	A. B. Blackburn	380,490	Apr. 3	163	46	43	34
Chairs. Table attachment for	A. A. Berlin	382,667	May 15	1533	381	43	764
Chalk, crayon, &c. Machine for the manufacture of	C. H. Fuchs	383,174	May 22	1987	508	43	913
Chalk-line holder	B. Howard	384,444	June 12	870	234	43	1300
Chandeliers. Locking device in extension	W. W. Kilborn	383,815	May 29	2910	768	43	1108
Change receiver	J. A. Kimball	384,583	June 12	1112	284	43	1330
Chart. Adjustable pattern	S. Mandelbaum	381,563	Apr. 24	1902	501	43	405
Check and pad protector	G. A. Meyer	382,998	May 15	1651	431	43	847
Check. Price and inventory	C. S. De Witt	384,237	June 12	594	161	43	1245
Check-protector	W. I. Best	383,854	June 5	9	3	43	1122
Check register or tally	A. B. Gill	384,438	June 12	893	233	43	1299
Check-slips, &c. Receptacle for	H. W. Royce	382,733	May 15	1290	338	43	776
Checks, &c. Machine for cutting or punching	C. A. Randall	383,706	May 29	2293	{743 744	43	1090
Checkrein	B. Miller	384,489	June 12	922	239	43	1305
Checkrein attachment for harness	H. J. Wing	385,089	June 26	1870	478	43	1505
Checkrein-holder	F. Snyder	382,392	May 8	776	197	43	648
Checkrein-hook	J. H. Hill	385,115	June 26	1917	489	43	1515
Checkrein-hook	R. Mason	384,859	June 19	1528	398	43	1402
Checkrein-loop	E. R. Cahoone	384,017	June 5	257	74	43	1171
Chemical engine	E. T. Van Valkenburg	383,583	May 29	2440	647	43	1013
Chimney cowl and ventilator	J. D. Cashill	383,636	May 29	2610	690	43	1040
Chin-rest for the dead	C. B. Dolge	384,513	June 19	1011	263	43	1320
Chisel-gage	C. L. Mead	380,811	Apr. 10	762	208	43	160
Chloridizing finely-divided auriferous materials	J. C. Newbery and C. T. J. Vautin	380,990	Apr. 10	930	240	43	190
Chloroform from acetone. Manufacture of	G. Rumpf	383,992	June 5	224	66	43	1164
Chock or leader. Anti-frictional	L. Dyer	381,831	Apr. 24	2298	596	43	481
Chopper: *See* Cotton-chopper.							
Chuck. Drill	R. J. Pratt	384,928	June 19	1680	421	43	1445
Chuck. Drill	H. M. Preston	383,548	May 22	1942	536	43	934
Chuck. Drill	J. N. Skinner	381,657	Apr. 24	2343	607	43	469
Chuck. Lathe	F. H. Van Houten	382,123	May 1	364	95	43	580
Churn	W. Bechtold	381,668	Apr. 24	2053	537	43	435
Churn	C. B. Campbell	380,998	Apr. 10	1044	276	43	211
Churn	W. H. Crawford	383,856	June 5	24	8	43	1135
Churn	A. Daul	380,553	Apr. 3	372	106	43	76
Churn	C. M. and E. E. Dickey	383,632	May 29	2617	692	43	1040
Churn	H. Doty	382,639	May 8	1155	297	43	740
Churn	C. E. Gale	384,518	June 12	1030	265	43	1322
Churn	L. H. James	382,163	May 1	418	110	43	600
Churn	J. Richards	382,367	May 8	770	195	43	645
Churn	T. J. Smith	382,730	May 15	1301	342	43	778
Churn-cover	J. H. Taylor	380,632	Apr. 10	791	216	43	165
Churn. Cream-testing	J. P. Wood	383,092	May 15	1798	466	43	876
Churn-dasher	J. E. Finley	380,753	Apr. 10	672	165	43	143
Churns, washing-machines, &c. Device for operating	J. Eestein	383,010	May 15	1666	438	43	854
Chute	H. H. Warner	380,707	Apr. 10	606	{166 167	43	139
Chute. Coal	E. F. Lewis	381,147	Apr. 17	1294	346	43	266
Cider-mill	C. W. Boyle	382,408	May 8	797	{303 304	43	671
Cigar-boxes. Temporary partition for	N. Du Brul	382,221	May 1	500	130	43	608
Cigar-bunching machine	J. H. Abraham and E. K. Martin	384,667	June 19	1237	326	43	1372
Cigar-bunching machine	D. J. Boehm and C. F. Reed	384,556	June 12	1089	{279 280 281	43	1331
Cigar-bunching machine	C. Browning	383,342	May 22	2175	{575 576	43	957
Cigar-bunching machine	M. Greenafelder	384,757	June 19	1368	{356 359	43	1398
Cigar-bunching machine	R. H. Logan and G. H. Culley	382,965	May 1	567	{143 144	43	618
Cigar-bunching machine	J. R. Williams	380,980	Apr. 10	1006	{260 261 262	43	204
Cigar-bunching machine	J. R. Williams	382,449	May 8	881	{319 320 321	43	668
Cigar-cutter	C. P. Young and J. W. Shertzer	385,221	June 26	2057	530	43	1545
Cigar-fillers. Mold for measuring and partly shaping	S. Henry	382,606	May 8	1114	288	43	722
Cigar-lighter. Electric	R. Baldeld	383,611	May 29	2591	685	43	1042
Cigar-machine	F. E. Pellant	381,812	Apr. 24	2324	549	43	474
Cigar-mold press	D. Slaughter	381,177	Apr. 17	1294	356	43	270
Cigar-perforating machine	A. P. Nolf	382,548	May 8	1018	260	43	713
Cigar-tip cutter	V. Howell	380,394	Apr. 3	95	7	43	7
Cigar-vending apparatus	A. G. Hart	381,320	Apr. 17	1455	383	43	298
Cigarette	H. F. M. Lemaire	384,856	June 19	1536	397	43	1426
Cistern-clamp fastener	W. A. Riggs, Jr.	381,992	Apr. 17	1462	380	43	294
Cistern-cleaner	J. H. Breese	382,864	May 15	1496	393	43	811
Cistern. Flushing	W. Dunnett	381,234	Apr. 17	1304	378	43	267
Clamp: *See* Cam-clamp. Cervix-clamp. Hose-clamp. Jar-clamp. Rubber-dam clamp. Skate-clamp. Soldering-clamp.							
Clamp	H. E. Hathaway	382,886	May 15	1392	365	43	796
Clapper or rattler device	O. Pagin	385,009	June 26	1743	{450 451	43	1479

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Clasp:							
See Album-clasp. Garment-clasp. Shoe-clasp. Ticket-clasp.							
Clasp	W. Bloomberg	382,783	May 15	1376	361	43	798
Clasp	J. H. Conaty	382,074	May 1	329	79	43	584
Clasp	S. M. Lines	382,480	May 8	916	232	43	683
Clasp	J. Merriam	385,192	June 26	2267	519	43	1337
Claw-bar	A. R. Wygle	384,223	June 5	585	155	43	1179
Clay-disintegrator	G. Potts	384,278	June 12	656	176	43	1256
Cleaner:							
See Carpet-cleaner. Cistern-cleaner. Drain-cleaner. Grain-cleaner. Pen-cleaner. Seed-cleaner.							
Clevis. Adjustable	J. Peters	381,578	Apr. 24	1923	507	43	409
Clip:							
See Stocking-suspender clip. Whiffletree-clip.							
Clipper. Hair	T. L. Phipps and W. Burman. (Reissue.)	10,931	May 15	1824	477	43	899
Clipping machine. Hair	L. S. Lee	382,998	May 1	605	153	43	624
Clock	A. and H. E. Junghans	381,926	Apr. 24	1997	524	43	494
Clock-dial	A. Bannatyne	385,109	June 26	1940	507	43	1327
Clock. Electric alarm	E. J. Colby	383,439	May 29	2231	619	43	992
Clock. Electric pendulum	A. L. Parcelle	384,271	June 12	645	174	43	1254
Clock-movement	A. E. Hotchkiss. (Reissue)	10,920	Apr. 10	1220	327	43	246
Clock-pendulum	A. L. Parcelle	383,539	May 29	2499	659	43	1023
Clock striking mechanism	C. E. Burnham	384,191	June 5	517	141	43	1242
Clocks. Circuit-closing device for electric	C. H. Pond	383,655	May 29	2650	701	43	1076
Clocks. Electric apparatus for winding	M. Vian	383,786	May 29	2680	732	43	1096
Clocks. Electric winding attachment for	A. J. Reams	384,472	June 12	932	{942 / 943}	43	1307
Clocks. Winding and setting attachment for	J. Zelly	381,603	Apr. 24	1966	517	43	418
Clod-crusher and land-roller. Combined	C. L. Jensen	382,612	May 8	1117	287	43	733
Closet:							
See Dry closet. Water-closet.							
Cloth-cutting machine	G. J. W. Galster	385,050	June 26	1824	468	43	1495
Cloth-cutting machine	G. A. Ries	381,644	Apr. 24	2016	549	43	429
Cloth-cutting machine	A. Warth	380,962	Apr. 10	996	{964 / 965}	43	202
Cloth-cutting machine	A. Warth	380,963	Apr. 10	996	{965 / 966}	43	203
Clothes-drier	W. L. Gale	384,616	June 19	1161	307	43	1356
Clothes-drier	H. Heine	382,422	May 8	815	208	43	674
Clothes-drier	J. L. Lincoln	380,332	Apr. 3	37	14	43	10
Clothes-drier	H. C. Price	382,209	May 1	573	145	43	619
Clothes-drier	O. M. Shannon	380,949	Apr. 10	973	258	43	198
Clothes-drier	E. S. Sutton	384,179	June 5	501	137	43	1218
Clothes-drier	J. Danner	384,194	June 5	523	142	43	1232
Clothes-rack	S. A. Parker	381,414	Apr. 17	1675	449	43	344
Clothes-stand	H. T. Lemon	384,453	June 19	913	236	43	1383
Clothes-washer. Atmospheric	A. T. Sheets	381,467	Apr. 17	1709	476	43	374
Clover-huller	J. Bruyière	385,093	June 26	1893	481	43	1508
Clutch	E. B. Lake	385,123	June 26	1931	493	43	1517
Clutch-coupling	G. F. Hutchins	383,297	May 22	2130	559	43	946
Clutch. Friction	H. C. Crowell	380,384	Apr. 3	130	35	43	25
Clutch. Friction	H. C. Crowell	383,104	May 22	1830	492	43	843
Clutch. Friction	W. R. Havens. (Reissue)	10,926	May 1	609	154	43	625
Clutch. Friction	J. A. Keller	380,336	Apr. 3	37	6	43	7
Clutch. Friction	A. Nelson	384,260	June 12	641	{172 / 173}	43	1239
Coal. Chain conveyer for handling	J. M. Dodge	382,638	May 8	1153	297	43	749
Coal-drill bit	D. Corgan	381,114	Apr. 17	1258	336	43	289
Coal-hod	E. Barrath	382,939	May 15	1567	408	43	852
Coaster. Wheeled	O. A. Wheeler	381,661	Apr. 24	447	126	43	91
Coat-adjuster	W. H. Osmer	384,214	June 5	552	152	43	1238
Coat and hat hook	R. and O. Lacourse	384,760	June 19	1394	363	43	1401
Coat and hat hook	W. H. Lawson	382,697	May 1	332	87	43	574
Coat and pantaloons supporter. Combined	F. Taylor	384,001	June 5	435	69	43	1166
Coat-holder. Automatic	S. L. Rice	381,898	Apr. 24	2044	545	43	434
Coats. Making	T. H. Simmons and R. M. Eastman	380,602	Apr. 3	2389	621	43	499
Cock	W. Cohen	385,058	June 26	1879	492	43	1500
Cock box. Stop	J. A. Prout	382,900	May 15	1514	396	43	632
Cock. Gage	N. Barry, Jr	380,308	Apr. 3	4	1	43	3
Cock. Stop	J. R. Hodges and W. M. Davis	385,052	June 26	1892	488	43	1495
Cocks, valves, and other steam-fittings. Non-conducting hand-wheel for	S. Hawkridge	383,356	May 22	2198	567	43	908
	F. Lunkenheimer	383,474	May 29	2.93	636	43	1004
Cocoanut-meat. Machine for cutting	J. O. Bartholomew	384,414	June 12	861	{224 / 225}	43	1293
Coffee-making machine	E. K. Sargeant	382,111	May 1	340	98	43	577
Coffee-mill	J. P. Humble	381,674	Apr. 10	1176	312	43	327
Coffee-mill	J. M. Waddell	382,742	May 15	1394	342	43	778
Coffee or tea pot	J. J. Royle	380,361	Apr. 3	288	94	43	67
Coffee-pots. Extractor for	J. C. Slaughter	383,871	May 29	2835	776	43	1111
Coffin	J. H. Chambers	382,176	May 1	388	109	43	563
Coffin-fastener	J. P. and J. S. Mahon	384,761	June 19	1360	330	43	1264
Coffin-fastener	T. A. Lethbridge and J. V. Ensfield	383,311	May 22	2139	564	43	951
Coffin-fastener	W. J. Noble	383,836	May 22	2075	531	43	931
Coffin-fastener	W. A. Sparks	382,794	Apr. 10	980	165	43	199
Coffin-fastener	W. H. Torbeck	384,181	June 5	504	138	43	1218
Coffins. Manufacture of artificial-stone	L. Mundt	382,894	May 15	1416	370	43	889
Coil. Reactive	E. W. Rice, Jr	381,669	Apr. 17	1662	451	43	395
Coiled spring	F. F. Fowler and M. V. B. Waldorf	380,881	Apr. 3	513	143	43	104

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Coin receptacle and register	E. Headley and W. G. Herten	384,583	June 12	1025	{267 / 268}	43	1222
Coin-spinner	F. M. Barber	383,512	May 29	2449	649	43	1014
Coins, &c. Apparatus for automatically closing receptacles for	P. Everitt	382,696	May 15	1945	325	43	767
Collar and cuff drier and dampener	J. G. Dixon	382,880	May 15	1383	363	43	794
Collar fastener. Horse	G. Marshall	382,540	May 8	1009	257	43	711
Collar fastening. Horse	A. H. Davis and G. Keith	384,227	June 5	573	156	43	1228
Collar for cattle. Bell	J. E. and E. R. Hill	384,037	June 5	290	81	43	1176
Collar. Horse	H. Van Wagoner	381,191	Apr. 17	1250	361	43	279
Collar pad. Horse	L. W. Noyes	383,143	May 22	1695	494	43	894
Collection-box	F. A. Kittell	383,579	May 29	2545	679	43	1033
Coloring-matter obtained by the action of tetramidiamido benzole on phenols. New	E. G. Williams	384,348	June 12	755	.....	43	1272
Coloring-matter. Producing blue-red	E. Haasenkamp	381,471	Apr. 17	1765	.....	43	350
Coloring-matter. Production of blue	E. Ullrich	384,480	June 12	947	.....	43	1289
Coloring-matter. Production of yellow	C. Radolph	382,832	May 15	1420	.....	43	803
Coloring-matters. Production of diazole	A. F. Poirrier and Z. Roussin	380,926	Apr. 10	945	.....	43	193
Colors. Production of azo	A. F. Poirrier and D. A. Rosenthiehl	380,927	Apr. 10	943	.....	43	193
Colter. Rolling	D. A. Moon	382,339	May 1	528	135	43	610
Colter. Rolling	W. E. Sefton	382,737	May 15	1299	341	43	777
Colters. Attaching	J. F. Packer	382,435	May 8	834	214	43	678
Comb:							
See Curry-comb. Electric comb.							
Combing-machine	J. Pickles and H. W. Whitehead	384,783	June 19	1405	{367 / 368}	43	1406
Combination-lock	J. Bergman	381,903	May 1	9	3	43	516
Combination-lock	H. C. Griffin	381,993	Apr. 10	1168	311	43	238
Commode	G. D. Tolman and L. D. Roberts	384,008	June 5	243	70	43	1169
Commode. Toilet jar	L. W. Swafford and C. A. Burns	384,218	June 5	556	153	43	1239
Compass. Electric alarm	H. A. Chase	385,043	June 26	1812	465	43	1492
Compass. Mariner's recording	H. A. Chase	385,042	June 26	1800	465	43	1492
Compasses. Electric alarm for ships'	A. Gross	381,893	Apr. 24	2067	{546 / 547}	43	448
Composition of matter	J. A. Kissele	382,668	May 15	1491	.....	43	617
Compressing or blowing engine	W. E. Good	381,676	Apr. 24	2370	{616 / 617}	43	495
Concentrator	J. J. Droughton	383,894	May 22	2103	555	43	944
Concentrator and amalgamator. Combined	W. M. Hartman	382,701	May 15	1951	327	43	768
Condenser and water-heater. Surface	W. E. Vols	384,944	June 19	1641	426	43	1459
Conduit	M. Meehan	384,669	June 19	1530	396	43	1423
Conduit	J. Steel	381,653	Apr. 24	2033	{532 / 533}	43	431
Confectioner's mold	S. E. Ball	382,678	May 15	1818	316	43	761
Confectionery-box	W. J. White	383,606	May 29	2575	662	43	1040
Conveyer	A. H. Brainard	383,556	May 29	2561	665	43	1037
Conveyer apparatus	G. C. Blickensderfer	381,382	Apr. 17	1536	{414 / 415}	43	316
Conveyers. Shifting gate for	D. W. Marmon	382,890	May 15	1501	393	43	819
Conveying apparatus	H. D. Palmer	382,052	May 1	306	69, 70	43	562
Cooker and frier. Combined steam	H. C. Hornish	381,784	Apr. 24	2215	580	43	467
Cooker. Steam	J. C. Smith and L. B. Barker	382,286	May 1	403	153	43	624
Cooking and can-filling apparatus. Combined	J. J. Bishop	383,792	May 29	2870	755	43	1096
Cooking utensils. Steam	J. O. Egerton	382,595	May 8	1005	262	43	709
Cooler:							
See Stock-cooler. Water-cooler.							
Cooler for soda-water apparatus, &c	A. K. Finlay	383,518	May 29	2457	651	43	1016
Coop or crate. Folding	T. J. and O. Q. Stille	383,693	May 29	2936	776	43	1111
Copal. Manufacture of artificial	E. Schaal	382,907	May 15	1523	.....	43	824
Copies. Apparatus for setting writing	J. Curson	382,143	May 1	391	102	43	585
Coping. Metallic socket-connection for stone	W. Williams	380,710	Apr. 10	810	167	43	151
Copper. Purification and alloying of	F. J. Seymour	382,198	May 1	467	.....	43	599
Copy-holder for compositors	H. F. Mass	384,374	June 12	811	210	43	1262
Copying pads moist. Receptacle for keeping press	C. L. Wise	381,454	Apr. 17	1748	466	43	355
Cork-extractor	H. J. Boggis	383,093	May 22	1827	479	43	891
Cork-extractor	R. B. Gilchrist	384,529	June 19	1509	390	43	1423
Cork-retainer	J. G. Hirsch	381,536	Apr. 17	1278	342	43	288
Corkscrew	P. McCarthy and P. Theis	382,005	May 1	183	47	43	547
Corn-husker	J. Spence	382,568	May 8	1050	268	43	720
Corn-husking implement	P. Kaufman	382,706	May 15	1256	308	43	769
Corn-husking machine	H. H. Armstead	381,748	Apr. 24	2168	567	43	457
Corn-sheller	E. Herrington	380,369	Apr. 3	125	37	43	27
Corn-sheller	S. G. Pillsbury	380,767	Apr. 10	701	194	43	148
Corn-shock binder and compressor	H. B. Puffenberger	384,979	June 12	658	176	43	1256
Corn-shuck compressor	R. F. Hageman, D. Noggle, and R. S. Eads	383,355	May 22	2198	561	43	902
Corn shucking and shelling machine	L. R. Whiting	382,985	May 1	602	152	43	633
Corn splitting and cutting machine	C. J. Porter	382,108	May 1	345	91	43	577
Corner-iron	J. Doty	380,671	Apr. 10	853	220	43	176
Cornices. Constructing	H. Berding	383,612	May 29	2592	666	43	1044
Corrugating-machine	S. Fox	384,031	June 5	480	78, 79	43	1175
Corset	P. A. Raratet	383,687	May 29	2892	712	43	1085
Corset	G. A. Close	384,307	June 12	498	188	43	1283
Corset	C. A. Griswold. (Reissue)	10,935	June 5	575	157	43	1252
Corset	C. A. Griswold. (Reissue)	10,939	June 19	1655	430	43	1472
Corset	J. Knon	382,478	May 8	914	231	43	673
Corset-busk	G. Dünninghaus	381,961	Apr. 24	1153	287	43	382
Corset-shaping apparatus	J. Stone and M. Gardner	382,416	May 22	2234	600	43	878
Cot. Folding	J. C. Porter	383,663	June 5	216	64	43	1162
Cot. Folding	C. T. Segar	381,633	Apr. 17	1707	457	43	380
Cotton-batting. Making	E. Walker and D. Williams	382,916	May 15	1534	402	43	893
Cotton-chopper	A. Fleming	380,489	Apr. 3	176	46	43	36
Cotton-chopper	S. Freeman	384,516	June 12	1017	264	43	1288
Cotton chopping, planting, and cultivating machine. Combined	D. W. Pilcod	383,148	May 22	1901	496	43	893

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Cotton-cleaning machines. Elevator for	R. H. Wiggins	383,264	May 22	2074	544	43	989
Cotton-gin	D. B. Hazelton	383,223	May 22	2066	526	43	987
Cotton-gin	C. T. Mason, Jr	381,544	Apr. 24	1903	501	43	665
Cotton-gin	C. T. Mason, Jr	381,545	Apr. 24	1904	502	43	665
Cotton. Machine for opening	H. A. Davis	384,896	June 19	1478	306	43	1419
Cotton. Machine for opening, cleaning, and ginning seed	J. R. Montague	383,754	May 29	2202	{736 737	{43	1066
Cotton-press	J. E. Lockett	380,334	Apr. 3	40	15	43	10
Cotton-press	L. Miller	385,193	June 26	2728	519	43	1737
Cough-mixture	T. W. Knight	382,533	May 8	995	252	43	709
Counter-illuminating room	G. Wood	382,859	May 15	1443	.....	43	897
Counter-shaft	E. Francis	381,903	June 19	1526	413	43	1439
Counter-stiffener machine	G. W. Bugbee and F. Danner	384,569	June 19	1579	382	43	1533
Coupling:	C. L. Tenney	380,464	Apr. 3	232	63	43	47
See Belt-coupling. Pawl-and-ratchet coupling.							
Car-coupling. Pipe-coupling.							
Clutch-coupling. Pipe or hose coupling.							
Friction-coupling. Shaft-coupling.							
Hose-coupling. Thill-coupling.							
Hose and faucet coupling. Tube-coupling.							
Hose or pipe coupling. Vehicle-reach coupling.							
Covering	W. M. Suhr	383,509	May 29	2567	679	43	1038
Cradles. Fan attachment for	J. Ran	382,386	May 8	769	195	43	665
Crane	D. T. Lane	381,256	Apr. 17	1448	399	43	397
Crane. Portable	J. A. Hath	382,307	May 8	840	163	43	641
Crank and lever motion	W. A. Pitt	382,189	May 1	454	118	43	567
Crank-bending machine	G. H. Howe	382,498	May 8	819	210	43	675
Crank-pin. Lubricating	G. R. Parker	382,986	May 15	1509	385	43	921
Creamer. Centrifugal	H. F. Belmling	382,506	May 8	992	241	43	709
Creases in sheets of flexible or elastic material. Making	W. A. Lorena	380,397	Apr. 3	135	40	43	29
Crossing. Acute curve	A. J. Moxham	383,603	May 15	1460	434	43	849
Crucible	J. E. Holmes	382,087	May 1	318	83	43	572
Crusher:							
See Clod-crusher.							
Crushing and grinding mill	J. F. Winchell	381,515	Apr. 17	1836	485	43	374
Crushing-mill	A. E. Roe	380,921	Apr. 10	776	212	43	163
Crushing-mill roller	G. E. Noyes	384,178	June 5	491	135	43	1216
Crutch	J. F. Pluche	384,470	June 12	981	242	43	1366
Cuff-fastening	F. W. Allen	380,415	Apr. 3	158	45	43	33
Cuff-holder	J. H. Carder	382,754	May 15	1346	346	43	781
Cuff-holder	E. L. Clancy	385,239	June 26	2699	539	43	1556
Cuff-holder	J. H. Reed	381,642	Apr. 24	1914	503	43	427
Cuff-holder	A. W. Sawyer	384,738	June 19	1521	345	43	1396
Culinary vessel	A. B. Conde	383,943	June 5	158	45	43	1140
Cultivator	T. W. Beal	380,723	Apr. 10	725	198	43	159
Cultivator	D. S. Blue and L. Halter	382,945	May 15	1575	411	43	833
Cultivator	M. Bouse	383,084	May 22	1629	479	43	891
Cultivator	E. B. Comly and D. Motherwell	381,021	June 5	303	75	43	1172
Cultivator	E. R. Conklin	384,347	June 12	765	200	43	1274
Cultivator	E. East	381,002	Apr. 10	1063	288	43	915
Cultivator	H. L. McCoy	382,189	May 1	442	115	43	594
Cultivator	D. Motherwell and E. B. Comly	383,186	May 22	1652	512	43	916
Cultivator	J. F. Packer	382,184	May 1	447	117	43	596
Cultivator	C. E. Patric	383,541	May 29	2502	{660 661	{43	1004
Cultivator	V. Rhodes	381,169	Apr. 17	1395	354	43	374
Cultivator	J. Shank	380,948	Apr. 10	972	256	43	198
Cultivator	B. C. Dorsey	384,748	June 19	1536	384	43	1395
Cultivator. Cotton	W. H. Irwin and G. W. Hairgrove	382,168	May 1	417	109	43	590
Cultivator. Cotton	C. S. McCall and J. L. Napier	383,743	May 29	2700	722	43	1063
Cultivator-fender	J. W. Kennedy	381,701	Apr. 24	2100	540	43	445
Cultivator for listed corn	J. W. Brown	380,549	Apr. 3	309	105	43	75
Cultivator, grain-drill, and harrow	W. B. Roberts	382,076	May 15	1789	463	43	874
Cultivator. Hand	E. C. Ellwood	384,351	June 12	771	201	43	1275
Cultivator. Hillside	E. C. Wiley	383,607	May 29	2576	692	43	1040
Cultivator. Hoe	J. W. Mulvey	384,267	June 12	639	172	43	1250
Cultivator-shovel	D. Leigh	385,275	June 26	2150	551	43	1564
Cultivator. Walking	E. P. Lynch	384,048	June 5	308	88	43	1189
Cultivator. Wheel	W. L. Casseday	381,985	May 1	139	38	43	540
Cup:							
See Filter-cup. Oil-cup.							
Grease-cup.							
Curbing of artificial stone. Constructing street	C. J. Everett	382,892	May 15	1348	354	43	794
Current regulator. Alternating	E. Thomson	382,336	May 8	688	174	43	649
Curry-comb	U. B. Hird	381,550	Apr. 24	1846	496	43	661
Curry-comb	F. S. Neal	381,677	Apr. 24	2010	527	43	426
Curry-comb	D. P. Tipton	384,798	June 19	1437	374	43	1410
Curry-comb	D. P. Tipton	384,799	June 19	1439	{374 375	{43	1410
Curry-comb	D. P. Tipton	384,800	June 19	1439	375	43	1411
Curtain bar. Window	I. B. Tripp	381,189	Apr. 17	1348	369	43	376
Curtain-fixture	Z. F. Bryant	382,797	May 15	1380	356	43	780
Curtain-fixture	C. Buckley	382,560	May 8	956	242	43	701
Curtain-pole	J. Ringo	382,838	Apr. 10	951	252	43	724
Curtain-roller support	G. L. Tyler	381,941	Apr. 10	1121	301	43	535
Cushion:							
See Billiard-cushion. Plumber's air-cushion.							
Cuspidor	J. P. Annen and F. H. Fox	385,159	June 26	1979	535	43	1552
Cuspidor	G. Kochendorfer and J. Roth	380,631	Apr. 3	468	130	43	63
Cuspidor	J. L. O'Connor	384,867	June 19	1116	329	43	1349

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Cut-off. Automatic	W. G. Browne	380,987	Apr. 10	1042	{275 276	{43	611
Cut-off for spouts	F. Driller	381,990	May 1	152	39	43	543
Cut-off for steam-engines	B. V. Nordberg	384,213	June 5	551	{151 152	{43	1236
Cut-off valve	R. Bentley and T. Ford	380,474	Apr. 3	247	66	43	51
Cut-off valve	A. Van Gaysling	381,190	Apr. 17	1340	351	43	379
Cutlery. Show-case for	E. A. Nelms	384,062	June 5	369	93	43	1162
Cutter:							
See Bead-cutter. Metal-cutter.							
Belt-cutter. Rod-cutter.							
Button-hole cutter. Rotary cutter.							
Cigar-cutter. Sheet-metal-scroll cutter.							
Cigar-tip cutter. Tube-cutter.							
Dado-cutter. Vegetable-cutter.							
Feed-cutter. Vegetable or root cutter.							
Meat-cutter. Wire-cutter.							
Cutter-bar	W. F. Kendrick	383,057	May 15	1764	456	43	889
Cutter-head	W. H. Lemson	381,799	Apr. 24	2237	566	43	476
Cutter-head	G. S. Shimer	385,325	June 26	2236	{573 574	{43	1578
Cutter-head and cutter-head gage	S. J. Shimer	380,539	Apr. 3	236	94	43	62
Cutter-head and means for adjusting the cutters of the same	W. R. Allen	384,491	June 12	945	251	43	1218
Cutting-machine	A. J. L. Loreta	383,692	June 5	65	20	43	1133
Cylinders with toothed stripe of metal. Device for clothing grooved	F. Houser and W. H. Clarkson	381,473	Apr. 17	1767	472	43	360
Dado-cutter	W. R. Fox	384,248	June 12	615	{165 166	{43	1248
Dado-cutter	J. R. Mentzer	384,209	June 5	546	150	43	1227
Dam. Wicket	B. F. and J. C. Thomas	382,385	May 8	770	196	43	667
Damper-regulator	E. W. Haynes	383,950	June 5	161	42	43	1151
Damper. Stove-pipe	J. M. Williams, Jr	382,190	May 1	268	96	43	591
Dash-board	B. F. Thomas	383,601	May 29	2560	680	43	1039
Dating device	W. H. Dietz	384,096	June 5	274	77	43	1173
Demagnetizer	J. Greaves	384,152	June 5	450	{126 127	{43	1209
Dental abrading-disk	C. W. F. Holbrook	382,609	May 8	1115	286	43	736
Dental chair	L. Stuck	381,040	Apr. 10	1190	300	43	206
Dental drill	A. H. Winn	381,196	Apr. 17	1361	364	43	381
Dental engine	J. Hood and S. H. Reynolds	381,783	Apr. 24	2213	570	43	466
Dental engine hand-piece	H. S. Grace	380,433	Apr. 3	181	50	43	37
Dental flasks. Heater for	R. M. Chase	384,500	June 19	1005	262	43	1319
Dental foil	T. J. Henry	382,065	May 1	317	83	43	572
Dental hammer and plugger. Electro-magnetic	P. Helmer. (Reissue)	10,940	June 26	2257	578	43	1561
Dental hand-piece	W. D. Williams	382,672	May 8	1206	313	43	780
Dental hand-piece	W. D. Williams	382,673	May 8	1207	313	43	751
Dental or other chair	H. D. Justi	382,473	May 8	902	230	43	689
Dental plate	J. F. Sargent	385,142	June 26	1957	501	43	1563
Dental plates. Model for	P. J. Malone	382,530	May 8	1008	257	43	711
Dental plugger	B. W. Haines	381,364	Apr. 17	1001	428	43	388
Dental plugger	P. C. Morse	381,844	Apr. 24	2232	603	43	486
Dental plugger. Pneumatic	W. S. Sherman	383,152	May 22	1908	490	43	907
Dental tool	J. P. Morris	384,463	June 19	1534	390	43	1432
Dental tool	J. J. R. Patrick	383,367	May 22	2215	566	43	965
Dental-tool holder	J. A. Kimball	381,143	Apr. 17	1329	345	43	368
Dentifrice	J. Schwartz	380,700	Apr. 10	596	.....	43	128
Dentist's disk-holder	W. B. Miller	381,986	Apr. 17	1402	363	43	389
Depilating and bating	J. Townsend	381,730	Apr. 24	2145	.....	43	453
Derrick	D. H. Cram	382,141	May 1	327	101	43	584
Derrick. Hay	W. A. Hooper and R. F. Hamblen	383,236	May 22	2201	581	43	992
Desk and organ. Combined	O. E. and G. C. Wick	385,031	June 26	1736	461	43	1492
Desk and type-writer cabinet. Combined	W. H. Porter. (Reissue)	10,994	Apr. 24	2405	625	43	504
Desk. School	E. Murray	385,316	June 26	2225	570	43	1576
Detergent	C. C. Parsons	382,262	May 8	664	.....	43	646
Detergent	C. C. Parsons	382,263	May 8	666	.....	43	645
Dextrine. Refining	C. H. Matthiessen and J. Krieger	382,368	May 8	798	.....	43	650
Dibble	T. Seller	385,324	June 26	2237	573	43	1576
Die:							
See Forging-die. Screw-cutting die.							
Pipe-threading die. Wire-drawing die.							
Die-grinding mechanism	M. Brock	380,985	Apr. 10	1037	275	43	210
Digger:							
See Potato-digger.							
Dike or breakwater	L. M. Haupt	380,569	Apr. 3	397	{113 114 139 140	{43	61 1230
Direct-acting engine	G. A. Barth	384,186	June 5	510			
Directory-indicator for buildings, &c	T. J. McTighe	382,997	May 15	1650	431	43	847
Disinfectant	A. Dupré and C. N. Hake	383,550	May 29	2524	.....	43	1038
Disks from wood. Machine for cutting	C. H. Phelps	381,947	May 1	68	17	43	568
Display-frame	J. J. Reichenbach	384,334	June 12	745	{195 196	{43	1270
Display-rack	J. A. Fitzgerald	383,117	May 22	1864	467	43	898
Distilling apparatus. Water	P. B. Charbeneau	383,704	May 29	2730	716	43	1072
Distilling fatty acids. Apparatus for	P. Stickney	384,725	June 19	1325	{345 346	{43	1389
Ditcher and grader	J. M. Holland	383,574	May 29	2539	670	43	1031
Ditching-machine	U. Bilckenderfer	384,419	June 19	1587	295	43	1294
Ditching-machine	H. G. Lane	381,704	Apr. 24	2103	{550 551	{43	445
Ditcher. Mobile	J. Krumenacker	381,560	Apr. 24	1899	500	43	494
Ditcher. Rotary	J. P. Guthrie, Jr	384,871	June 26	1695	437	43	1467
Ditching-machine. Combined	W. W. Jacques	383,280	May 22	2123	569	43	949

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Door-button	F. J. Herrick	382,666	May 1	318	85	42	879
Door-check	F. J. Herrick	382,669	May 29	2642	709	43	1104
Door-check	A. Johnson	382,643	May 29	2636	687	43	1053
Door-check	R. A. Reisse	384,715	June 19	1313	342	43	1397
Door-check	C. Thomas	382,383	May 1	600	156	42	888
Door-check	R. Tyden	389,367	Apr. 3	94	20	42	21
Door-checks. Relief-valve for	H. A. and H. A. Hoose, Jr.	384,907	June 19	1301	414	43	1439
Door-fastener	R. C. Elliott	384,367	June 12	1068	285	43	1336
Door-hanger	W. L. Powell	382,770	May 15	1237	350	42	795
Door-hanger, rail, and rail-bracket. Combined	W. Cronk	384,236	June 12	594	161	43	1345
Door-mat	A. M. Cooley	385,044	June 26	1815	466	43	1493
Door-mat	A. Johnson and P. Larsson	383,138	May 22	1662	481	43	992
Door-opener. Electric	J. Schneider	381,785	Apr. 24	2120	599	43	458
Door-panels. Machine for forming and polishing	D. M. Roberts	384,789	June 19	1412	370 / 371	43	1407
Door-plate and indicator	W. N. Gartside	389,629	Apr. 3	514	144	43	104
Door-securer	G. G. Getty	383,724	May 29	2758	726	43	1078
Door. Sliding jail	D. McDonald	389,443	Apr. 3	199	54	43	41
Doors. Mechanism for operating sliding	I. C. Peirce	389,699	Apr. 10	585	161	43	127
Double gage	L. O. Barrett	384,413	June 12	961	224	43	1329
Dough-cutting machine	A. Day	384,964	June 26	1673	425	43	1464
Dowelling-machine	H. D. Williams	383,085	May 15	1289	472	42	977
Draft apparatus. Vehicle	A. E. Thomas and S. Ritty	384,109	June 5	375	108	43	1138
Draft attachment for vehicles	J. H. Tiffany	381,183	Apr. 17	1341	358	43	377
Draft attachment for wagons	J. G. Unseld	383,784	May 29	2757	728	43	1066
Draft-detaching device	A. R. Hunsaker	3-0,686	Apr. 3	479	135	43	98
Draft-equalizer	C. E. Burnett	384,199	June 5	516	141	43	1231
Draft-equalizer	J. Putman	380,635	Apr. 3	498	137	43	99
Draft-equalizer	D. H. Ricard	382,286	May 8	671	169	42	646
Draft-equalizer and spark-arrester	A. J. Crane	389,677	Apr. 10	588	156	43	123
Draft-evener	J. W. Gamble	389,755	Apr. 10	674	186	43	144
Draft-frame for vehicles. Detachable	L. G. Mowry	381,481	Apr. 17	1761	475	43	363
Draft-regulator	C. E. Gray	382,689	May 15	1249	330	42	787
Drain-cleaner. Convertible	E. J. Robinson	385,263	June 26	2174	535	43	1566
Drapery-hook	R. Tilton and M. Cowen	384,664	June 5	241	70	43	1168
Draw-bars. Die for making	J. T. Wilson	381,894	Apr. 24	2401	624	43	502
Draw-bars. Making	J. T. Wilson	381,895	Apr. 24	2402	624	43	502
Drawer. Cash	P. G. Williams and A. W. Roovers	384,010	June 5	248	72	43	1169
Dredger-dipper	M. C. Lawton	381,257	Apr. 17	1450	380	43	297
Dredger-dipper	M. C. Lawton	381,256	Apr. 17	1451	381	43	298
Dress-form	W. H. Knapp	383,479	May 29	2649	675	43	1003
Dress-form	W. H. Knapp	384,531	June 12	1034	270	43	1345
Dress-form	J. W. Littlefield	384,372	June 12	807	210	43	1282
Dress-form	E. M. McPherson	383,535	May 29	2492	657	43	1022
Drier: *See* Bagasse-drier. Clothes-drier. Collar and cuff drier. Fruit-drier. Salt-drier.							
Drier	G. W. Sharer	385,208	June 26	2061	534 / 535	43	1542
Drill: *See* Bow-drill. Dental drill. Grain-drill. Mining-drill. Portable drill. Rock-drill.							
Drill	J. C. Godwin	385,111	June 26	1909	487	43	1513
Drill-blade. Self-expanding	T. and O. Herberg	384,025	June 19	1178	310	43	1300
Drill-socket	P. Grabler	383,249	May 22	2110	557	43	945
Drill-stock	A. Allgoever	383,631	May 15	1715	446	43	699
Drills. Apparatus for making	J. H. Kane	380,577	Apr. 3	410	117	43	84
Drills. Universal table for	J. J. Hardy	389,382	Apr. 3	93	6	43	7
Drilling and countersinking apparatus	H. A. Brown	389,341	Apr. 3	7	2	43	4
Drilling. Feeding device for	W. Lodge and H. Dreses	385,057	June 26	1845	472	43	1499
Drilling-jar	C. B. McKinney	389,634	Apr. 3	497	137	43	99
Drilling-machine	S. Höninger	380,446	Apr. 3	383	73	43	84
Drilling-rig	G. Corbett	385,241	June 26	2101	536	43	1529
Drilling-tool	A. Benzie	385,008	June 26	1878	479	43	1506
Drilling-tool	H. S. Gail	381,124	Apr. 17	1286	330	43	263
Drip-can	H. L. Kinports	381,253	Apr. 17	1445	369	43	296
Drop-light attachment	W. D. Mason	384,652	June 5	215	60	43	1181
Dropper	H. J. Case	386,123	June 5	414	115	43	1300
Drums	H. G. Lehnert	382,045	May 1	256	66	42	560
Drum. Friction	H. J. McKeown	385,191	June 26	2026	518	43	1536
Drum-head strainers. Hook for	G. Van Zandt	382,124	May 1	365	95	42	560
Drum. Heating	W. Markle	382,616	May 8	1122	240	42	734
Drum. Heating	V. D. Urso	382,321	May 22	2220	591 / 592	43	967
Dry closet	L. B. Robb	384,938	June 19	1625	422	43	1446
Dry goods, &c. Apparatus for storing, measuring, and exhibiting	W. Doerflinger	384,747	June 19	1354	353 / 354	43	1395
Dumb-waiter	C. L. Lincoln	383,950	June 5	172	50	43	1153
Dust arrester and collector	R. L. Downton	382,891	May 29	2643	703	43	1102
Dust-collector	J. S. Ash	385,637	June 26	1800	463	43	1489
Dust-collector	G. Behrns	381,753	Apr. 24	2174	548 / 549	43	456
Dust-collector	C. M. Hardenbergh	385,283	June 26	2128	543	43	1560
Dust-collector	C. R. Knickerbocker	382,614	May 8	1119	239	42	733
Dust-collector	H. N. Pomeroy	381,889	Apr. 24	2392	623	43	477
Dust-pan	E. S. Celt	389,851	Apr. 3	371	100	43	76
Duster. Feather	G. M. Richmond	388,970	June 26	1957	474	43	1502
Dye-stuff by the action of tetrazo-ditolyl salts on beta-naphthylamine monosulpho-acid. Production of blue-red azo	E. Hasenkamp	383,139	Apr. 17	1275	.....	43	985
Dye-stuff. Manufacture of purple-black azo	O. N. Witt	382,645	Apr. 10	1120	.....	42	888
Dye-stuff. Purple azo	O. N. Witt	382,646	Apr. 10	1121	.....	42	888

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Dye-stuffs. Manufacture of	M. Hersberg	384,315	June 12	716	.....	43	1296
Dye-stuffs. Manufacture of	M. Hersberg	384,316	June 12	711	.....	43	1296
Dyeing apparatus	A. Harmel	382,977	May 15	1619	423 / 424	43	841
Dyeing apparatus	R. Persins	384,369	June 12	837	215	43	1296
Dyeing apparatus	U. Weldon	380,236	Apr. 10	709	218	43	166
Dyeing apparatus	U. Weldon	382,918	May 15	1538	403	43	827
Dynamo	H. B. Slater	389,709	Apr. 10	596	144	43	129
Dynamos. Apparatus for connecting alternate-current	P. Lange	383,648	May 29	2641	699	43	1054
Dynamos. Bobbin for the field-magnets of	A. Schmid	383,657	May 29	2653	703	43	1057
Dynamos. Synchronizing device for alternate-current	H. M. Byllesby	383,618	May 29	2589	687	43	1045
Ear-muff	I. R. Kleinert and R. C. Manville	381,539	Apr. 24	1988	500	43	464
Easel	R. R. Morris	384,171	June 5	490	134	43	1216
Eaves-trough hanger	H. T. and H. O. Lawrence	384,985	June 26	1796	442	43	1471
Eccentric-rod	P. Kirkevaag	383,735	May 29	2768	729	43	1069
Educational apparatus	J. Deahane	385,046	June 26	1816	466	43	1494
Educational appliances	H. O. R. Siefert	389,538	Apr. 3	339	97	43	69
Educational device	J. Deahane	383,369	May 22	2261	580	43	976
Egg-beater	E. Hadley	389,564	Apr. 3	391	112	43	80
Egg-beater	D. Peters	383,469	May 29	2430	642	43	1008
Egg-beaters. Means for operating	M. F. Bishop	384,674	June 19	1247	398	43	1375
Egg-carrier	W. Huey and E. W. Baily	381,928	May 1	40	11	43	823
Egg-cases. Making	E. L. Walker	389,909	Apr. 10	983	263	43	202
Egg crate and tray	J. L. Ritter	382,022	May 8	1133	292	43	736
Egg-rack	R. W. Beatty and G. Hoffner	381,563	Apr. 24	1852	490	43	306
Egg-tester	C. Reuter	380,518	Apr. 3	394	93	43	66
Ejector	J. M. Marty	389,907	Apr. 10	910	244	43	187
Electric accumulator	J. M. Pendleton	380,765	Apr. 10	698	193	43	146
Electric battery	E. M. Hewitt	385,386	June 26	2214	588	43	1574
Electric battery	E. A. Wildt	383,066	May 29	2519	663	43	1065
Electric cables. Anti-induction composition for	D. Brooks, Jr	383,066	May 29	1431	.....	43	894
Electric cables. Manufacturing	W. R. Patterson	382,769	May 15	1234	351	43	784
Electric-circuit-closing device	M. W. Grovesteen and F. G. Jahn	384,570	June 19	1092	287	43	1336
Electric-circuit controller	O. F. Greim	384,440	June 12	894	233	43	1299
Electric-circuit indicator	O. B. Shallenberger	383,665	May 29	2663	708	43	1059
Electric-circuit switch	C. C. Stirling	389,336	May 8	679	172	43	648
Electric-circuit switch	C. C. Stirling	388,333	May 8	681	172	43	648
Electric-circuit switch or cut-out	J. J. Wood	383,933	June 5	136	30, 40	43	1147
Electric-circuit-testing apparatus	A. D. Wheeler	383,665	May 29	2574	681 / 682	43	1040
Electric circuits. Apparatus for detecting ground-connections in	O. B. Shallenberger	383,666	May 29	2665	706	43	1060
Electric comb	C. Busch	384,561	June 12	1081	282	43	1324
Electric contact-changer	P. C. Morse	381,389	Apr. 17	1466	394	43	301
Electric-current generators. Coupling of alternate	O. B. Shallenberger	383,662	May 29	2661	705	43	1059
Electric-current regulator	E. R. Knowles	381,254	Apr. 17	1446	369	42	920
Electric currents. Converting and distributing	N. Tesla	382,282	May 1	597	151	42	622
Electric currents. Electrical indicator for alternating	O. B. Shallenberger	383,666	May 29	2667	707	43	1060
Electric currents. Indicating	O. B. Shallenberger	383,667	May 29	2666	707	43	1060
Electric currents. Indicating	O. B. Shallenberger	381,672	May 29	2675	708	43	1063
Electric currents. Production, transmission, and distribution of	C. E. Fritts	383,580	May 29	2460	631 / 632	43	1016
Electric cut-out	C. G. Perkins	385,067	June 26	1851	473	43	1500
Electric cut-out	C. G. Perkins and J. Tregoning	380,705	Apr. 10	699	193	43	148
Electric elevator	G. C. Blickensderfer and J. K. Hallock	381,499	Apr. 17	1796	478	43	366
Electric energy. Transformation and distribution of	R. Kennedy	381,794	Apr. 24	2229	583 / 584 / 452 / 453	43	469
Electric generator. Dynamo	E. E. Rice	381,421	Apr. 17	1665	453	43	345
Electric generators. Brush-holder for	A. Schmid	383,658	May 29	2654	703	43	1057
Electric generators. Commutator-brush for	O. P. Loomis	381,394	Apr. 17	1646	437	43	337
Electric indicator	O. B. Shallenberger	380,942	Apr. 10	963	256	43	198
Electric indicator	J. Tregoning	382,914	May 15	1532	401	43	833
Electric indicator	E. Weston	381,736	Apr. 24	2151	563	43	454
Electric-light carbon	T. L. Clingman	381,614	Apr. 24	1981	.....	43	421
Electric light system	B. E. Sunny	385,020	June 26	1769	457	43	1485
Electric-lighting circuits. Circuit-controlling apparatus for	O. B. Shallenberger	383,661	May 29	2660	705	43	1058
Electric locomotion. System of	H. A. Seymour	384,594	June 12	1125	297	43	1341
Electric machine. Alternating-current dynamo	E. Thomson	382,335	May 8	634	173	43	649
Electric machine and motor. Dynamo	M. Immisch	381,789	Apr. 24	2221	561 / 562	43	466
Electric machine. Dynamo	W. A. Crowdus and H. M. Sutton	380,690	Apr. 3	471	139	43	96
Electric machine. Dynamo	J. W. Easton	389,113	May 22	1858	495	43	807
Electric machine. Dynamo	E. H. Mather	381,398	Apr. 17	1652	441	43	330
Electric machine. Dynamo	R. Oliver	384,636	June 19	1194	315 / 316	43	1364
Electric machine. Dynamo	L. N. P. Poland	382,380	May 22	2150	567	43	963
Electric machine. Dynamo	J. Wenström	381,451	Apr. 17	1738	464 / 465	43	355
Electric machine or motor. Dynamo	A. L. Biker	384,077	June 5	248	98	43	1187
Electric machine. Steam dynamo	E. H. Mather	381,568	Apr. 24	1911	503 / 504	43	406
Electric machines. Armature for dynamo	R. Mackie	382,174	May 1	624	113	43	383
Electric machines. Automatic tightening device for armatures of dynamo	J. W. Easton	383,114	May 22	1850	496	43	808
Electric machines. Commutator for dynamo	N. Tesla	382,845	May 15	1436	378	43	806
Electric machines. Commutator for dynamo	J. J. Wood	384,816	June 19	1459	381	43	1416
Electric machines. Current-collector for	W. Stanley, Jr.	385,638	May 29	2636	776	43	1111
Electric machinery. Dynamo	A. Reckenzaun	385,066	June 26	1852	474	43	1500

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Electric meter	S. D. Mott	381,480	Apr. 17	1779	474	43	383
Electric meter	E. Thomson	381,441	Apr. 17	1718	460	43	352
Electric meter	E. Thomson	381,443	Apr. 17	1720	462	43	353
Electric meter	G. Westinghouse, Jr	382,676	May 29	2681	709	43	1062
Electric meter	G. Westinghouse, Jr., and P. Lange	383,680	May 29	2683	710	43	1063
Electric motor	G. F. Card	382,569	May 8	1966	279 / 280	43	727
Electric motor	P. Diehl	381,282	Apr. 17	1701	371 / 372	43	327
Electric-motor switch	R. H. Mather	382,714	May 15	1964	331	43	770
Electric motors. Governor for	W. Baxter, Jr	384,117	June 5	404	112 / 113	43	1196
Electric motors. Governor for	R. H. Mather	382,651	May 29	2645	700	43	1055
Electric motors. Means for regulating and controlling	B. A. Fiske	381,228	Apr. 17	1401	375	43	266
Electric motors. Regulation of	S. D. Field	381,768	Apr. 24	2192	573	43	488
Electric motors. Switching device for	R. H. Mather	382,715	May 15	1966	331 / 332	43	771
Electric or other conduits. Crawler for	H. G. Morris	383,756	May 29	2707	736	43	1067
Electric power-controller	G. S. Neu	383,901	June 5	78	23	43	1136
Electric shunting device	W. Baxter, Jr	384,116	June 5	402	111 / 112	43	1196
Electric smelling-bottle	C. T. Brown	383,794	May 29	3675	756	43	1069
Electric switch	P. J. Tracy	385,023	June 26	1775	459	43	1486
Electric switch-board	R. H. Welden	381,303	Apr. 17	1505	406	43	309
Electric traction. Apparatus for	E. Julien	384,580	June 12	1105	291 / 292 / 293	43	1339
Electric wires and cables. Covering for	D. Brooks, Jr	383,096	May 29	1938	490	43	892
Electric wires. Support for	D. Brooks, Jr	383,097	May 22	1831	480	43	892
Electric wires. Underground conduit for	W. F. Smith	382,778	May 15	1351	355 / 356	43	788
Electrical agricultural system	E. M. Bentley	382,941	May 15	1569	410	43	832
Electrical apparatus	C. C. Sibley	381,856	Apr. 24	2241	607	43	469
Electrical apparatus. Coin-operated	N. W. Ruse	382,734	May 15	1292	338 / 339 / 340	43	776
Electrical coil and conductor	E. Weston	381,304	Apr. 17	1506	406	43	310
Electrical coil and conductor	E. Weston	381,305	Apr. 17	1508	406	43	310
Electrical connector	F. Stitsel and C. Weinedel	385,215	June 26	2059	598	43	1544
Electrical distribution. Alternate-current and storage system of	H. M. Byllesby	383,681	May 29	2603	688 / 689	43	1046
Electrical distribution. Alternate-current and storage system of	H. M. Byllesby	383,682	May 29	2605	689	43	1047
Electrical distribution. Alternate current system of	H. M. Byllesby and O. B. Shallenberger.	381,054	Apr. 10	1143	305 / 306	43	230
Electrical distribution. Central station for alternate-current systems of	O. B. Shallenberger and H. M. Byllesby.	380,946	Apr. 10	968	257	43	197
Electrical distribution. Combined alternate-current and storage system of	H. M. Byllesby	383,680	May 29	2601	688	43	1046
Electrical distribution. Combined alternate current and storage system of	H. M. Byllesby	383,683	May 29	2606	689	43	1047
Electrical distribution. System of	T. A. Edison	382,415	May 8	805	206	43	673
Electrical distribution. System of	T. A. Edison	385,173	June 26	1993	511	43	1530
Electrical distribution. System of	W. H. Hart and J. T. Goodfellow	380,757	Apr. 10	677	188 / 189	43	145
Electrical distribution. System of	N. Tesla	381,970	May 1	107	26	43	534
Electrical governor	F. E. Prichard	380,817	Apr. 10	770	211	43	161
Electrical hand-cord tip	H. J. Swarts	380,889	Apr. 10	787	215	43	165
Electrical indicator	A. L. Riker	381,422	Apr. 17	1669	453	43	346
Electrical indicator	O. B. Shallenberger	380,947	Apr. 10	970	257	43	198
Electrical indicator	O. B. Shallenberger	383,669	May 29	2669	707	43	1061
Electrical indicator	O. B. Shallenberger	383,670	May 29	2671	707	43	1061
Electrical indicator	O. B. Shallenberger	383,671	May 29	2673	708	43	1061
Electrical purposes. Switch for	W. A. Carey	385,041	June 26	1805	464	43	1491
Electrical switch. Automatic	F. Stitsel	381,625	May 8	1135	292	43	736
Electrical transmission of power	N. Tesla	382,280	May 1	592	150	43	642
Electrical transmission of power	N. Tesla	382,281	May 1	596	151	43	642
Electrical translation. System of	R. Belfield	380,845	Apr. 10	810	220	43	168
Electrical translation. System of	R. Belfield	380,846	Apr. 10	818	221	43	169
Electricity and purifying water. Generating	J. E. Siebel	385,145	June 26	1990	504	43	1523
Electro-magnetic motor	N. Tesla	381,968	May 1	101	24, 25	43	534
Electro-magnetic motor	N. Tesla	381,969	May 1	105	25	43	534
Electro-magnetic motor	N. Tesla	382,279	May 1	589	149	43	642
Electro-magnetic motors. Governor for	C. F. Brush	381,857	June 5	11	4	43	1152
Electro-magnetic register	J. F. McLaughlin	383,563	May 29	2550	674	43	1034
Electro-magnetic separator	J. B. Hamilton	384,035	June 5	385	84	43	1176
Electro-mechanical device	E. Thomson	381,443	Apr. 17	1721	461 / 462	43	353
Electro-therapeutic battery	E. J. Murphy and J. Floyd	383,899	June 5	75	22	43	1135
Electrode for secondary batteries	R. Packer	380,998	Apr. 10	983	249	43	208
Electrolysis. Apparatus for	E. Hermite and C. F. Cooper	381,372	Apr. 17	1613	431	43	333
Electrophorus	J. D. Culp	382,165	May 22	1740	468	43	758
Electroplating. Rack for	W. W. White	384,686	June 19	1439	377	43	1469
Elevated way	N. Newman	384,229	June 12	643	173	43	1269
Elevating-belt	F. Prinz	381,848	Apr. 24	2330	625	43	532
Elevator: See Electric elevator. Grain-binder elevator. Hydraulic elevator. Portable elevator. Water-elevator.							
Elevator	E. B. Ellingham	382,715	May 29	2748	728	43	1076
Elevator	W. S. Johnson	384,149	June 5	403	111	43	1196
Elevator	G. A. Moore	382,457	May 8	825	211	43	676

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Elevator	E. J. Stellwagen	382,841	May 15	1439	375 / 376	43	804
Elevator	S. E. Stokes	384,696	June 5	871	104 / 105	43	1192
Elevator-alarm	J. Elsig	384,831	June 19	1485	367	43	1420
Elevator-alarm	J. W. Heidsworth	381,015	Apr. 10	1077	286	43	218
Elevator-boot	M. F. Seeley	382,772	May 15	1340	358	43	785
Elevator-brake	E. L. Teed	380,465	Apr. 3	223	64	43	47
Elevator-indicator	H. Eichbaum	382,354	May 8	719	182	43	655
Elevator-lock	E. J. Herman	382,9 0	May 15	1624	424	43	842
Elevator safety device	J. S. Bogue	382,206	May 1	492	124	43	602
Elevator safety device	C. Klinik, F. Piskowski, and A. Gross.	384,319	June 12	714	190	43	1206
Elevator-wells. Automatic door for	J. P. Runkel	384,083	June 5	366	101	43	1189
Ellipsograph	H. Bormann	383,696	May 29	2704	715	43	1067
Ellipsograph	H. Bormann	383,697	May 29	2707	715	43	1068
Elliptic spring	J. R. Fletcher	381,698	Apr. 24	2021	544	43	441
Elliptic spring	W. G. Holmes	381,945	May 1	93	10	43	532
Elliptic spring	W. A. Sweet	383,289	May 29	2139	570	43	954
Embalming apparatus	F. Wagner	383,565	May 29	2442	648	43	1013
Embossing-machine	M. T. Durkin	382,801	May 15	1385	363	43	794
Embossing wood or other material. Machine for	B. Ludwig	380,904	Apr. 10	907	243 / 244	43	186
Embroidering frame and stand	H. C. Ludwig	383,533	May 29	2490	657	43	1021
Embroidering-machine	J. O. Phillips	382,619	May 8	1196	290 / 291	43	735
End-gate	J. Cuningham	381,057	Apr. 10	1149	306	43	231
End-gate	J. Haish	380,483	Apr. 3	256	71	43	53
End-gate	N. Henlzer	381,070	Apr. 10	1172	311	43	236
Engine: See Carding-engine. Chemical engine. Compressing or blowing engine. Dental engine. Direct-acting engine. Expansion-engine. Gas-engine. High-speed engine. Motor-engine. Portable engine. Rotary engine. Rotary-cylinder engine. Rotary vapor-engine. Steam-engine. Steam or gas motor engine. Traction-engine. Wind-engine.							
Engines. Apparatus for controlling the speed of steam-	R. Wilby	382,577	May 8	1067	272 / 273	43	723
Engraving and chasing machine	J. A. Coburn	381,314	Apr. 17	1379	360	43	304
Engraving-machine. Pantographic	G. R. Hugon	384,764	June 19	1378	361	43	1469
Engraving or etching upon. Block for	W. C. Norman	384,566	June 12	1116	.....	43	1340
Envelope	G. A. Bobrick	380,616	Apr. 3	467	132	43	95
Envelope. Elastic folding display	H. P. Evernbach	381,019	May 1	29	9	43	209
Envelope-fastening	W. H. Hubbard	383,642	May 29	2634	697	43	1053
Envelope-holder	L. M. Culver and W. F. Smith	381,677	Apr. 24	2008	540	43	439
Envelope-tablet	H. Phillips	385,320	June 26	2230	571 / 572	43	1577
Equalizer. Four-horse	J. A. M. Tyler and J. S. Thomas	384,652	June 19	1211	320	43	1268
Eraser	J. W. Osborne	383,463	May 29	2410	640	43	1007
Eraser	C. Robinson	383,149	May 22	1906	498	43	907
Eraser. Slate	G. Wilkening	382,925	May 15	1544	405	43	798
Etching glass	E. Niemstädt	382,318	May 8	653	.....	43	644
Evaporating apparatus. Vacuum	H. T. Yaryan	383,394	May 22	2224	593 / 594 / 595	43	988
Evaporating-pan	T. Makemson	384,772	June 19	1392	364	43	1403
Evaporating-pan	M. Mathews and H. Hill	382,314	May 8	649	185 / 186	43	643
Evaporator	N. B. Rice	385,202	June 26	2043	532	43	1540
Evener. Four-horse	C. C. Isenebuth	384,167	June 5	485	133	43	1215
Evener. Four-horse	W. D. Sauer	380,882	Apr. 3	348	94	43	67
Excavating-machine	C. S. Jones	384,041	June 5	399	83, 84	43	1177
Excelsior. Machine for making	A. M. Little	382,431	May 8	688	212	43	677
Exercising-machine	J. Sanches	382,440	May 8	847	216	43	680
Exercising-machine. Coin-controlled cigar-delivering	F. Messer	381,469	Apr. 17	1469	447	43	348
Exhaust. Means for utilizing	S. Welfson	384,733	June 19	1335	348	43	1291
Exhaust. Utilizing	W. Schmidt	381,957	May 1	88	20	43	530
Expansion engine. Triple	H. F. Gaskill	384,250	June 12	619	146 / 147	43	1249
Explosive charge	J. W. Graydon	382,229	May 1	513	138	43	636
Explosive compound	C. W. Volney	383,490	May 22	2300	.....	43	979
Explosives for use. Preparing	J. W. Graydon	382,228	May 1	512	138	43	636
Express-call	C. J. Heitsman	381,472	Apr. 17	1706	471 / 472	43	389
Extension-table	S. S. Sutherland	384,178	June 5	500	136 / 137	43	1218
Extract of meat. Liquid	S. M. Caffyn	384,823	June 19	1472	.....	43	1418
Extractors: See Cork-extractor. Pipe, tube, or shell extractor. Rivet-extractor. Seed-extractor. Stump-extractor.							
Eyelet. Blank for	W. R. Webster	383,569	May 29	2447	649	43	1014
Eyelet. Die for making	J. F. Kingsley	384,438	June 12	910	237	43	1268
Eyelet. Machine for upsetting	W. Cooke and D. Carlough	380,893	Apr. 10	840	227	43	174
Eyelet. Upsetting the ends of	W. R. Webster	383,568	May 29	2446	649	43	1014
[illegible]	A. Kahn	380,491	Apr. 3	269	74	43	55
[illegible]	A. Kahn	382,837	May 15	1634	426	43	844
[illegible]	A. Gessner	384,479	June 12	988	244	43	1268
[illegible]	W. S. Wells	382,694	May 29	2673	691	43	1069

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Eyeglasses. Nose-guard for	W. S. Wells	382,848	May 15	1440	379	43	897
Eyeleting-machine	L. D. Hawkins and J. C. Paige	384,157	June 5	465	128	43	1210
Eyelets. Machine for rolling flanged	A. G. Mead	383,403	May 22	2272	604	43	974
Fabric: *See* Carpet fabric. Roofing fabric. Knitted fabric.							
Fabric-turfing implement	C. C. Harris	381,997	May 1	170	44	43	543
Fabrics. Implement for turning tubular	L. Eschner	382,958	May 15	1504	416	43	857
Fan	J. B. Baermann	382,205	May 1	479	123	43	0+1
Fan	M. Rubin	382,942	May 1	532	136	43	611
Fan for cars	J. M. V. Le Beau	382,818	May 15	1404	366	43	799
Fan for ventilating purposes	J. Stewart	382,119	May 1	357	94	43	579
Fan. Rotary	R. B. Cissel	380,788	Apr. 10	736	201	43	155
Fare-box	W. A. Crowdus	382,756	May 15	1318	347	43	781
Fare-box chute	W. S. Wales	384,654	June 19	1213	320	43	1360
Fare-boxes. Automatic locking attachment for	J. H. Claspy	382,867	May 15	1466	384 / 385	43	811
Fare-register	H. R. Coffey	384,425	June 12	875	229	43	1296
Fare-register	W. Pigott	383,008	May 15	1673	437 / 438	43	858
Farm-gate	P. Dyer	385,302	June 26	2207	586	43	1572
Farm-gate	V. D. Johnson and V. Oppfelt	382,703	May 15	1253	327	43	768
Farm-gate	W. H. Ragsdale	384,350	June 12	859	176	43	1296
Farm-gate	L. Shepard	383,078	May 15	1702	464	43	875
Fastening device	W. D. Carter and W. S. Louther	3+0,990	Apr. 10	1048	277	43	212
Faucet	E. P. J. Freeman	385,108	June 26	1905	498	43	1612
Faucet	K. H. Pedrick	384,856	June 19	1540	400	43	1430
Faucet	E. U. Scoville	383,995	June 5	930	67	43	1165
Faucet attachment for barrels	J. Paulus	382,188	May 1	449	117	43	596
Faucet. Filtering	W. H. Sargent	383,493	May 29	9425	644	43	1010
Faucet. Self-closing	T. McHugh	383,138	May 22	1669	488	43	903
Faucet. Self-closing	H. C. Montgomery	382,654	May 8	1180	305	43	745
Faucet. Wooden	O. Knipfer	382,165	May 1	422	110	43	591
Faucets. Registering attachment for measuring	L. P. White and J. D. Benson	384,805	June 19	1438	377	43	1412
Faucets. Registering device for measuring	J. A. Blondel	382,944	May 15	1574	411	43	833
Feed-cutter	O. C. Little	384,208	June 5	545	150	43	1237
Feed-cutter	G. F. Schmid	3+3,494	May 29	9428	644	43	1010
Feed-cutter	W. E. Whitman	380,966	Apr. 10	1008	267	43	204
Feed device. Automatically-adjustable	C. J. Pilliod	383,145	May 22	1680	486	43	895
Feed-regulator	E. A. Hoover	384,443	June 12	898	234	43	1300
Feed-rolls. Means for operating	L. Kissner	380,579	Apr. 3	413	118	43	84
Feed-trough	W. H. Garrett	384,357	June 12	751	204	43	1277
Feed-trough	E. P. Newtsanks and J. Mahaffa	382,721	May 15	1274	334	43	772
Feed-water heater	T. Fairbanks	381,618	Apr. 24	1986	381	43	402
Feed-water heater	E. J. Moore	382,546	May 8	1015	259	43	712
Feed-water heater	W. Oliphant	384,538	June 12	1046	273	43	1327
Feed-water heater	D. Stark	381,937	June 19	1632	424	43	1447
Feed-water heating and filtering apparatus	W. Oliphant	384,540	June 12	1049	274	43	1328
Feed-water regulator	F. Cook and B. Thoens	384,510	June 12	1006	262	43	1319
Feed-water regulator	J. W. Weaver	381,450	Apr. 17	1737	464	43	354
Feeder. Automatic shelf	W. M. Jewell. (Reissue)	10,932	May 29	2051	781	43	1114
Feeding device. Salt	C. Lindner and T. F. Hammer	382,048	May 1	250	67	43	561
Felt or felted articles. Steam-box used in making	A. A. Hawley	381,012	Apr. 10	1076	285	43	217
Fence	C. C. Bargdill	383,335	May 22	9165	578	43	955
Fence	A. B. Culp	384,564	June 12	1084	282	43	1334
Fence	N. W. French	381,496	Apr. 17	1693	579	43	360
Fence	J. Harris	382,806	May 15	1390	365	43	795
Fence	T. Houck	382,233	May 1	518	123	43	603
Fence	H. Mater	382,178	May 1	440	115	43	594
Fence	P. Miles	381,942	May 1	62	18	43	565
Fence	J. S. Orr	384,270	June 12	644	173	43	1253
Fence	A. J. and G. W. Pitts	382,382	May 8	763	194	43	664
Fence	H. Richwine	380,457	Apr. 3	324	91	43	46
Fence	G. E. Shelley	380,529	Apr. 3	335	96	43	69
Fence	J. Z. Stanley	381,858	Apr. 24	2344	606	43	469
Fence	C. E. Wilson	382,689	May 8	1139	294	43	737
Fence	F. E. Wood	381,947	Apr. 10	1131	302	43	298
Fence	J. W. Griswold	380,386	Apr. 3	124	26	43	26
Fence	O. Huffman	380,573	Apr. 3	405	116	43	62
Fence	A. Shepherd	381,793	June 19	1429	373	43	1409
Fence	J. H. Racer	384,713	June 19	1511	342	43	1326
Fence	W. H. Coker	385,343	May 22	2176	576	43	958
Fence	S. B. Husselman	3+3,396	May 22	2119	560	43	947
Fence-machine	S. Conrath	384,235	June 12	592	161	43	1245
Fence-machine	C. F. Gillet	385,304	June 26	2208	566 / 567	43	1572
Fence-machine	A. V. Harper	382,526	May 8	981	247	43	705
Fence-machine	T. F. Vandegrift and A. L. Maple	383,795	May 29	2657	726	43	1026
Fence-making machine. Upright wire-and-picket	M. Hill and J. N. Rider	381,548	Apr. 24	1684	497	43	491
Fence. Metallic	G. H. Guile	383,923	May 22	2005	538	43	927
Fence. Portable	M. C. Margeson	383,475	May 29	2394	657	43	1004
Fence. Portable	A. Wheat	381,306	Apr. 17	1540	406	43	310
Fence-post	J. W. Davy	381,673	Apr. 24	2306	615	43	404
Fence-post	S. W. Fulton	382,256	May 1	559	141	43	616
Fence-post	L. B. Harmon and J. N. Nutt	380,627	Apr. 3	478	135	43	97
Fence-post	L. W. Lindley	382,992	May 15	1630	429	43	845
Fence-post	J. J. Buchanan	384,016	June 5	256	73	43	1171
Fences. Lightning-escape for wire	P. C. Freese	383,894	May 29	2676	764	43	1048
Fences. Machine for making picket	A. Cockrell	385,665	June 26	1889	498	43	1589
Fences. Making combined wire-and-picket	J. C. Haag	380,498	Apr. 3	226	70	43	38
Fences. Tension device for use in making	W. X. Stevens	383,683	May 15	1701	442	43	887
	W. A. Farr	382,464	May 8	887	226	43	687

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Feeder. *See* Cultivator-feeder.							
Ferrule for umbrellas, canes, &c	O. M. Smith	383,378	May 22	2237	591	43	965
Ferrules. Making cant-hook	E. Mansfield	383,135	May 22	1666	492	43	903
Fertilizer	S. L. Goodale	382,604	May 8	1167	.....	43	731
Fibers and fabrics. Securing composition for	C. Tappan	381,444	Apr. 17	1730	.....	43	253
Fibers of plants. Machine for washing out the	C. Johnson	384,851	June 19	1518	395	43	1436
Fifth-wheel	W. W. Grier	384,758	June 19	1370	350	43	1369
Fifth-wheel	F. Lines	384,639	June 19	1187	313 / 314	43	1362
Fifth-wheel	W. E. Rothwell	382,383	May 22	2153	566	43	963
Fifth-wheel. Vehicle	E. E. Davis	380,668	Apr. 10	650	330	43	176
File. Bill	C. C. Chamberlain	383,830	June 5	15	5	43	1130
File. Bill	E. L. Matthews	382,716	May 15	1268	332	43	771
File. Bill-hook	F. M. Stone	382,497	May 8	985	257	43	698
File-box. Suspension	M. R. Jewell	380,490	Apr. 3	208	74	43	55
File-cutting machine	R. Denison	384,133	June 5	489	119 / 120	43	1264
File for letters, papers, &c. Office	F. Gansley	381,389	Apr. 17	1696	427	43	267
File-handle	C. J. Frankard	382,699	Apr. 3	288	145	43	102
File. Letter	W. S. Barnard	384,601	June 19	1141	301	43	1332
File. Paper	G. P. Herndon	384,139	June 5	472	130	43	1212
File. Paper	M. R. Jewell	384,109	June 5	465	133	43	1215
File. Paper	A. B. Sherwood	381,909	May 1	65	21	43	531
File. Paper and letter	W. Cooper	384,698	June 19	1574	409	43	1426
Files. Machine for cutting	C. M. Fairbanks	380,751	Apr. 10	698	185	43	142
Files. Manufacture of	W. Watmough	382,547	May 29	2511	662	43	1085
Filling case and drawer	H. J. Huffman	382,975	May 15	1476	388	43	813
Filling, lining, and covering material	H. W. Johns	385,190	June 26	1906	491	43	1510
Filling and securing material	M. McDonald	381,406	Apr. 17	1683	445	43	341
Filter	F. K. Way	385,233	June 26	2254	577	43	1561
Filter	W. Wiltheeft, Jr	383,689	May 15	1516	475	43	878
Filter. Automatic stationary water	C. A. Shaw and L. W. Buxton	383,916	June 5	106	21	43	1141
Filter. Coffee	J. W. Hyatt	382,649	May 8	1173	303	43	744
Filter-cup. Porous	A. Heberer	381,389	Apr. 17	1689	430	43	336
Filter. Water	H. W. Grelle	381,667	Apr. 10	1167	310	43	235
Finger-ring	W. P. Stimeck	385,673	June 26	1902	475	43	1502
Finger-ring. Initial	W. R. Dutemple	382,736	May 15	1281	347	43	792
Fire-alarm apparatus. Electric	G. M. Stevens	384,675	June 19	1556	404	43	1478
Fire-alarm. Automatic	J. Young	382,788	May 15	1370	359 / 360	43	791
Fire-alarm circuits. Fusible coupling for electric	G. G. Smith	383,377	May 22	2236	591	43	966
Fire-alarm signal-boxes. Key-hole guard for	E. Smith	380,857	Apr. 3	81	25	43	19
Fire-alarm signal circuit	W. Carroll	382,253	May 1	554	140	43	615
Fire-alarm system. Automatic	J. Young	381,896	Apr. 24	2403	675	43	508
Fire and burglar alarm. Electric	A. Schuchman	381,898	Apr. 24	2336	608	43	488
Fire-arm. Breech-loading	P. G. D. Holmes	380,698	Apr. 10	575	156	43	125
Fire-arm. Breech-loading	H. M. Pope	384,977	June 12	655	178	43	1256
Fire-arm. Magazine	R. M. Aughenbaugh and G. E. Ruffley.	381,821	Apr. 24	2268	585	43	479
Fire-arm. Magazine	J. M. and M. S. Browning	386,228	June 26	2096	537	43	1551
Fire-arm. Magazine	J. P. Lee	383,863	May 22	2207	564 / 565 / 566	43	964
Fire-arm magazine	S. K. Hindley	384,161	June 5	475	131	43	1213
Fire-arm. Revolving	H. M. Caldwell	383,701	May 29	2715	717	43	1071
Fire-arms. Cartridge feed-indicator for	E. S. Butler	382,455	May 8	873	223	43	684
Fire-arms. Detachable magazine for	P. Mauser	383,895	June 5	67	21	43	1134
Fire-arms. Rear sight for	D. V. Bean	382,130	May 1	373	97	43	568
Fire-cracker cannon	J. J. Loud	385,127	June 26	1935	494	43	1518
Fire-cracker holder	A. Willis	386,632	June 26	1791	462	43	1489
Fire-escape	A. Bernstein and A. Goldstein	383,438	May 29	2283	616	43	990
Fire escape	W. Block	383,613	May 29	2563	666	43	1044
Fire escape	H. L. Boyle	381,968	May 1	135	32	43	539
Fire-escape	T. Brice	383,340	May 22	2173	574	43	957
Fire-escape	H. H. Calkins	383,211	May 22	1900	509	43	924
Fire-escape	S. H. Gardiner	384,143	June 5	448	124	43	1207
Fire-escape	J. Grant	383,570	May 29	2534	669	43	1030
Fire-escape	J. C. Lund	381,478	Apr. 17	1775	474	43	362
Fire-escape	W. McMullin	384,376	June 12	813	211	43	1283
Fire-escape	S. B. Parker	382,550	May 8	1020	261	43	712
Fire-escape	H. Reimers	383,491	May 29	2422	643	43	1009
Fire-escape	W. T. Smith	384,599	June 12	675	180	43	1300
Fire-escape	F. A. Westbrook	382,574	May 8	1060	270	43	722
Fire-escape. Ladder	F. L. Blem	382,868	May 15	1450	383	43	910
Fire-escape ladder	J. W. Frey	382,150	May 1	400	105	43	567
Fire-escape. Portable	W. Brown	381,672	Apr. 24	2058	536	43	447
Fire-extinguisher. Automatic	C. L. Horack	381,376	Apr. 17	1619	438	43	339
Fire-extinguisher. Chemical	T. G. Turner	381,658	Apr. 24	2040	534	43	433
Fire-extinguisher for car-heaters	G. W. Robinson	384,642	June 19	1198	317	43	1385
Fire-extinguisher for car-heaters. Automatic	L. A. Lyon	381,501	Apr. 17	1616	461	43	371
Fire-extinguisher for railway-cars	G. W. Oborn	383,004	May 15	1661	434	43	849
Fire-extinguisher for stoves and heaters. Automatic	F. L. Hotchkin and P. A. Raby	382,812	May 15	1396	366	43	797
Fire-extinguisher. Portable	E. K. Parker	381,276	Apr. 17	1475	396	43	307
Fire-extinguishers. Alarm-valve for automatic	R. Dowson and J. Taylor	384,514	June 12	1012	263	43	1321
Fire-extinguishers. Cock for	C. C. Connell	384,745	June 19	1352	333	43	1394
Fire-extinguishers. Electric valve-controller for automatic	T. Atkinson	381,450	Apr. 17	1747	467	43	358
Fire-extinguishing apparatus. Locomotive	L. E. Truesdell	380,956	Apr. 10	989	262	43	201
Fire-hydrant	A. H. Mellert	381,940	May 1	60	15	43	529
Fire-hydrant. Pneumatic	H. L. McAvoy	381,695	Apr. 24	2244	567	43	472
Fire-kindler	H. M. Hammers	381,527	Apr. 17	1472	392	43	327
Fire-kindler	J. Randall	381,951	May 1	74	19	43	529
Fire-kindler	G. D. Streeter	380,696	Apr. 3	452	126	43	92

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Fire-kindler	G. D. Streeter	380,607	Apr. 3	453	126	43	93
Fire-lighter	W. Harles	384,548	June 19	1584	391	43	1484
Fire-proof building	R. Guastavino	383,050	May 15	1756	454	43	898
Fire-proof material	J. Smith	381,430	Apr. 17	1714	439	43	351
Fires and preventing the escape of steam in railway-cars. Device for extinguishing	S. H. Harrington	381,994	May 1	35	10	43	821
Fires in railway-cars. Device for extinguishing	S. H. Harrington and E. Grafstrom	381,993	May 1	33	10	43	821
Fires in stoves. Extinguishing	A. Doetschmann	383,393	May 22	2102	566	43	944
Fish-plate	C. Licardie	382,047	May 1	259	67	43	561
Fish-plate	S. Phillips	382,763	May 22	2090	742	43	1049
Fishing-reel	G. H. Keller	381,853	June 19	1580	396	43	1497
Fishing-reel	A. F. Boardman	384,672	June 19	1944	528	43	1571
Fishing-reel	C. K. Bradford	384,743	June 19	1349	338	43	1394
Fishing-reel	H. H. Cordes	384,309	June 12	701	188	43	1264
Fishing-reel signal	L. M. Jones	380,699	Apr. 10	903	261	43	185
Flask: *See* Molder's snap-flask.							
Flat-iron heater	A. Modery and A. Leukhardt	382,718	May 15	1570	393	43	771
Flat-iron. Self-heating	J. B. Curl	383,346	May 22	2101	577	43	956
Flies. Device for catching	S. R. and F. A. Wilmot	382,590	May 8	1072	274	43	724
Flood-gate	W. S. Huston	380,653	Apr. 3	516	144	43	165
Floor. Fire-proof	W. H. Brown	384,421	June 12	871	227	43	1295
Floor, roof, or area covering	P. H. Jackson. (Reissue)	10,921	Apr. 10	1222	338	43	944
Flour-bolt	C. H. Browne	382,135	May 1	360	99	43	563
Flour-bolt	W. M. Lucas	383,092	May 15	1769	{457 456}	43	870
Flour-dresser	B. Kniffler	381,020	Apr. 10	1063	297	43	219
Flour-mill	J. J. Faulkner	385,175	June 26	1907	513	43	1531
Flour-mixing machine	H. A. Weber and J. G. Zeidler	384,656	June 19	1215	331	43	1388
Flue-stopper	J. F. Weitzel and T. Lee	384,341	June 12	755	198	43	1278
Flue-thimble	C. C. Lemly	384,918	June 19	1609	418	43	1443
Fluid drawing and measuring device	J. A. Kendall	384,766	June 19	1390	362	43	1400
Flushing-tank. Automatic	L. Howe	384,978	June 26	1692	440	43	1468
Flushing-tank. Pneumatic	J. E. Boyle	380,854	Apr. 10	925	{234 235}	43	171
Fodder-binder	W. Leupold	385,126	June 26	1934	494	43	1518
Fog-signal	E. E. Mann	380,584	Apr. 3	420	{119 120}	43	86
Folding and swinging gate	J. B. Goodwin	381,064	Apr. 10	1157	309	43	228
Folding and swinging gate	J. B. Goodwin	381,065	Apr. 10	1159	309	43	233
Folding and swinging gate	J. B. and G. Goodwin	381,066	Apr. 10	1161	{309 310}	43	234
Folding case	H. C. Fay	382,804	May 15	1398	364	43	795
Folding chair	H. J. Harwood	381,367	Apr. 17	1608	430	43	330
Folding chair	H. F. Henry	380,484	Apr. 3	258	71	43	53
Folding chair	J. F. A. Spaet, W. F. Berry, and J. T. Snoddy.	383,255	May 22	2057	540	43	936
Folding-machine	L. C. Crowell	383,798	May 29	2279	{757 758 759}	43	1160
Folding table	E. Babcock	382,937	May 15	1564	408	43	831
Folding table and blackboard. Combined	F. Trapp	380,366	Apr. 3	93	28, 29	43	91
Food for cattle, horses, and swine. Composition	W. Wernich	385,250	June 26	2067	.....	43	1545
Foot-rest	J. E. Pike	383,906	June 5	92	27	43	1139
Forceps, &c. Clamping device for	F. A. Stohlmann	385,676	June 26	1865	476	43	1503
Forging-die	H. H. Forsyth	384,751	June 19	1350	355	43	1396
Forging-machine	D. H. Downes	383,047	May 15	1751	453	43	867
Forgings. Appliance for manipulating large	G. Siddell	380,950	Apr. 10	976	{258 259}	43	199
Forgings. Die for making rolled	G. F. Simonds. (Reissue)	10,998	May 8	1212	314	43	758
Forgings. Die for making rolled	G. F. Simonds	384,091	June 5	364	103	43	1191
Forgings. Die for making rolled	G. F. Simonds	384,092	June 5	365	103	43	1191
Fork: *See* Hay and fodder fork. Hay or straw grappling fork.							
Fork-guard	F. C. Feicker	380,793	Apr. 10	742	203	43	156
Fork-guard	F. C. Feicker	384,900	June 19	1583	412	43	1424
Fork-guard	C. H. Steigleder	382,060	May 1	275	72	43	564
Foundations. Frost-protector for	H. H. Morgan	385,278	June 26	2102	532	43	1564
Frame: *See* Bolting-reel frame. Brick-kiln frame. Caster-frame. Display-frame. Draft-frame. Embroidering-frame. Match-frame. Photographic-printing frame. Pocket-book frame. Pocket-book, bag, and purse frame. Quilting-frame. Spinning-frame.							
Friction-coupling	O. Kromer	385,122	June 26	1929	492	43	1517
Frogs, switches, &c. Foot-guard for	G. Nevens	380,566	Apr. 3	423	120	43	86
Fruit-assorter. Automatic	T. Hiatt	381,941	Apr. 17	1427	{303 304}	43	293
Fruit-bleaching apparatus	A. Todd	384,880	June 19	1562	406	43	1434
Fruit-drier	Z. W. Merithew	382,617	May 8	1194	{299 300}	43	734
Fruit-drier	J. L. Phelps	383,945	May 22	2089	{550 551 552}	43	989
Fruit-jar	J. B. and R. Johns	381,250	Apr. 17	1442	366	43	296
Fruit-jar	A. Nöltner	381,462	Apr. 17	1783	475	43	345
Fruit-picker	H. Hammond	382,764	May 15	1389	349	43	792
Fruit-stoning machine	B. A. Lillie	383,739	May 29	2273	{730 731}	43	1091
Fruit-stoning machine	B. A. Lillie	384,371	June 12	894	230	43	1291
Fuel-cartridge	J. T. Wheeler	382,671	May 8	1205	312	43	730

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Fur animals. Machine for pulling hair from skins of	E. Schroeder	382,736	May 15	1380	{340 341}	43	777
Fur-plucking machine	J. W. Sutton	383,858	May 29	2269	{540 541 542}	43	987
Fur satchel and muff. Combined	A. Brahall	384,263	June 12	999	269	43	1315
Furnace: *See* Bagasse-furnace. Boiler-furnace. Blow-pipe furnace. Heating-furnace. Hot-air furnace. Oil-furnace. Ore-roasting furnace. Ore-smelting furnace. Reheating-furnace. Smoke-consuming furnace.							
Furnace-blocks. Apparatus for detecting leakage in	J. Bird	382,738	May 15	1375	341	43	783
Furnace br dge-wall	T. Reese, Jr	379,109	May 1	247	91	43	577
Furnace-doors. Apparatus for opening	F. Doyle	384,127	June 5	430	121	43	1295
Furnace for heating soldering-coppers	E. Hohn	381,788	Apr. 24	2321	{379 380}	43	466
Furnace-grate	J. Cano	380,318	Apr. 3	9	3	43	4
Furnace-grate	L. M. Woodcock	384,410	June 12	850	{222 223}	43	1289
Furnaces. Air-injecting device for boiler	E. B. Cornell	380,475	Apr. 3	348	98	43	51
Furnaces. Apparatus for charging billets, bars, &c., into	F. H. Daniels	385,248	June 26	2112	540	43	1554
Furnaces. Apparatus for charging billets, bars, &c., into	F. H. Daniels	385,249	June 26	2116	540	43	1555
Furnaces. Apparatus for charging billets, bars, &c., into	F. H. Daniels	385,250	June 26	2118	541	43	1556
Furnaces. Apparatus for charging billets or bars into heating	F. H. Daniels	385,251	June 26	2120	541	43	1556
Furnaces. Device for mixing air and gas for	H. Schlimme	385,072	June 26	1899	475	43	1502
Furnaces. Hydrocarbon-burner for	A. Heberer	384,594	June 19	1607	398	43	1394
Furniture. Article of	J. Berkey	380,741	Apr. 10	887	261	43	149
Furniture. Corner brace or bracket for	F. Vornbrook	383,841	May 29	2245	779	43	1113
Furniture. Upholstered	F. G. Johnson	384,250	June 12	689	169	43	1283
Fuse for projectiles. Contact	J. W. Grayden	3?2,227	May 1	511	131	43	697
Fuse. Magneto-electric	E. L. Zalinski	384,662	June 19	1521	385	43	1471
Fuse. Percussion	W. Lorenz	381,284	Apr. 17	1459	368	43	299
Fuse. Shell	T. Bordentsit	381,717	Apr. 24	2120	.....	43	489
Fuse. Shell	E. L. Zalinski	384,664	June 19	1523	385	43	1472
Gag-runner	H. B. Maxwell	381,400	Apr. 17	1454	441	43	339
Gage: *See* Carpenter's gage. Carpenter's framing-gage. Chisel-gage. Double gage. Machine-gage. Micrometer-gage. Planer-gage. Saw-table gage. Shingling-gage. Strap-gage. Slip and shrinkage gage. Surface-gage. Water-gage.							
Galvanic battery	H. J. Brower	380,855	Apr. 10	929	235	43	171
Galvanic battery	H. J. Brower	380,856	Apr. 10	930	235	43	172
Galvanic battery	C. A. Brown and M. M. Clark	384,958	June 26	1665	433	43	1462
Galvanic battery	C. R. B. Cladin, Jr., and J. W. Flagg	381,336	Apr. 17	1454	419	43	319
Galvanic battery	H. B. Cox	383,706	May 29	2722	718	43	1072
Galvanic battery	C. E. O'Keenan	380,569	Apr. 3	427	121	43	87
Galvanic battery	G. H. Sloane	382,726	May 15	1300	341	43	778
Galvanic battery	E. E. Starr	383,147	June 26	1964	{502 503}	43	1504
Galvanic-battery excitant	T. P. Whittier	382,262	May 22	2073	544	43	930
Galvanic-battery fluid	H. J. Von Metzradt	383,677	May 29	2661	.....	43	1063
Galvanic coil	W. Prishmuth	380,630	Apr. 3	177	49	43	30
Galvanometer	R. E. B. Crompton and G. Kapp	383,444	May 29	2235	689	43	993
Galvanometers. Differential expansion device for	W. H. Bristol and W. E. Geyer	383,695	May 22	1859	460	43	891
Game	W. C. Dunn	384,949	June 19	1502	382	43	1469
Game	G. P. Lathrop	385,199	June 26	2025	518	43	1520
Game-board	C. E. Duryea	384,193	June 5	594	142	43	1269
Game-counter	C. Fearon	380,620	Apr. 3	176	48	43	30
Game-counter	F. G. Nash	384,767	June 19	1393	341	43	1395
Game-counter	N. Rosenwasser and F. Rosewater	381,465	Apr. 17	1601	454	43	345
Game of skill	G. H. Monks	383,659	May 29	2246	701	43	1056
Gang-board. Automatic registering	H. B. Kirk	384,370	June 12	892	229	43	1289
Garment-clasp	D. L. and A. D. Smith	380,951	Apr. 10	977	259	43	199
Garment-stretcher	F. E. Bailey	381,304	Apr. 17	1370	368	43	298
Garment-supporter	F. E. Bright	385,227	June 26	2085	527	43	1521
Garment-supporter	A. G. Lull	382,893	June 5	66	20	43	1133
Garment-supporter	C. A. Preston	383,627	May 29	2236	773	43	1169
Garment. Ventilated	E. S. Helwitz	386,206	June 26	2213	567	43	1573
Garments. Reversible vest for ladies'	S. Woolf	383,550	May 29	2514	663	43	1066
Gas and air. Device for mixing	E. B. Denny	382,670	May 1	201	78, 80	43	568
Gas and air fuel mixing chambers. Sectional head for	C. H. Miller	381,638	Apr. 24	2004	396	43	425
Gas and electric-light fixture. Combined	S. B. H. Vance	383,158	May 22	1915	501	43	902
Gas and electric-light fixture. Combined	S. B. H. Vance	383,238	May 22	2102	573	43	935
Gas. Apparatus for the manufacture of	A. G. Meese	382,371	May 8	749	{187 188}	43	689
Gas. Apparatus for the manufacture of	A. G. Meese	382,375	May 8	751	189	43	691
Gas. Apparatus for washing and purifying illuminating	J. H. R. Dinsmore	383,635	May 29	2260	696	43	1050
Gas-bracket	J. Wright	384,302	June 12	883	225	43	1283
Gas-burner	A. J. English	382,692	May 15	1244	325	43	762
Gas-burner	W. M. Jackson	380,580	Apr. 10	761	208	43	197
Gas-burner	W. M. Jackson	381,370	Apr. 17	1388	423	43	320
Gas-burner. Argand	E. Beach	383,237	May 22	2102	573	43	935
Gas-burner. Argand	E. Beach	383,238	May 29	2170	{573 574}	43	988
Gas-burner. Automatic electric	E. E. Bailey	382,289	May 1	541	139	43	613

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's	Official Gazette. Vol.	Official Gazette. Page.
Gas-burner regulator	W. M. Jackson	380,888	Apr. 10	736	206	43	156
Gas-burners. Regulating-valve for	G. B. Snow	382,506	May 8	1046	206	43	719
Gas-burners. Safety attachment for	E. R. Pruitt	381,494	Apr. 17	1784	475	43	364
Gas-burning torch	J. R. Smith	383,154	May 22	1911	499	43	968
Gas-engine	C. Sintz	383,775	May 29	2344	{748 749	43	1663
Gas-engine	G. W. Stewart	381,488	Apr. 17	1780	{476 477	43	365
Gas-extinguisher. Automatic	M. Sieradorfer	383,497	May 29	2421	646	43	1011
Gas-fixtures. Cock for	J. Prentice	385,134	June 26	1946	497	43	1520
Gas from coal. Manufacturing illuminating	J. H. R. Dinsmore	383,634	May 29	2378	623	43	1050
Gas from oil and steam. Manufacturing	A. G. Meeze	382,372	May 8	746	198	43	680
Gas-fuel burner	C. H. Miller	380,913	Apr. 10	919	246	43	188
Gas-generator for locomotives	A. C. Huidekoper	383,395	May 22	2260	601	43	772
Gas-governor	B. F. Day	384,132	June 5	488	119	43	1263
Gas-governor. Automatic	F. Bredel	380,743	Apr. 10	650	182	43	141
Gas-light extinguisher. Automatic	L. Heck	381,370	Apr. 17	1611	431	43	330
Gas-light shield and reflector	A. L. Boone	381,393	Apr. 17	1538	415	43	316
Gas-lighter. Electric	C. W. Holtzer	382,001	May 1	176	46	43	546
Gas-lighting device and gas-cock. Electric	W. Tag and S. C. Smith	384,796	June 19	1424	373	43	1410
Gas. Machine for lighting and extinguishing	G. E. Thaxter	381,440	Apr. 17	1715	{459 460	43	338
Gas-mains. Sliding joint for	D. M. Marquis	381,803	Apr. 24	2242	587	43	471
Gas-mains. Water-trap for	A. Chambers	380,860	Apr. 10	835	{226 227	43	173
Gas. Making coal	A. G. Meeze	382,373	May 8	747	189	43	681
Gas. Manufacturing	A. G. Meeze	382,374	May 8	749	190	43	681
Gas-motor	R. Boekien	384,673	June 19	1246	326	43	1374
Gas-pipes. Apparatus for cleaning charged	P. McGee	380,910	Apr. 10	914	245	43	187
Gas-pressure-governing apparatus	F. H. Hambleton	380,565	Apr. 3	391	112	43	80
Gas-pressure regulator	C. L. Rowland	384,284	June 12	663	178	43	1257
Gas pressure-regulator and cut-off	G. S. Faulkner	384,967	June 26	1677	435	43	1465
Gas tip and pillar	W. M. Jackson	381,389	Apr. 17	1696	433	43	333
Gas-trap. Sewer	H. C. Montgomery	382,456	May 8	1192	306	43	746
Gas-works. Hydraulic main for	G. A. McIlhenny and T. G. Lanelen.	380,911	Apr. 10	916	245	43	187
Gases or liquids under pressure. Apparatus for transporting and transferring	J. E. Holmes	382,610	May 8	1115	286	43	732
Gaseous-fuel burner	W. T. Smith, G. A. Ely, and T. A. Bryan.	380,350	Apr. 3	83	26	43	19
Gate: *See* End-gate. Farm-gate. Fence-gate. Flood-gate. Folding and swinging gate. Hatchway-gate. Railway-gate. Railway-crossing gate. Railway or farm gate. Sliding gate. Swinging gate. Wire gate.							
Gate	H. W. Alshouse	380,366	Apr. 3	1	1	43	3
Gate	G. H. Aylworth	384,552	June 12	1065	278	43	1331
Gate	J. W. and D. H. Barnhard	380,418	Apr. 3	160	45	43	23
Gate	F. W. Berning	382,068	May 1	296	76	43	586
Gate	J. Chandler	383,213	May 22	1992	502	43	984
Gate	J. Donnelly	384,136	June 5	436	121	43	1265
Gate	M. F. Fink	382,601	May 8	1104	283	43	760
Gate	J. Flinner	384,750	June 19	1358	355	43	1396
Gate	G. Ford	381,663	Apr. 10	1156	300	43	232
Gate	J. N. Hatcher	381,694	Apr. 24	2090	547	43	443
Gate	D. McCarty	382,316	May 8	651	166	43	643
Gate	M. B and F. W. Mills	381,159	Apr. 17	1308	{349 350	43	278
Gate	H. E. Moore	381,634	Apr. 24	2006	526	43	425
Gate	J. W. Rutledge	380,636	Apr. 3	469	137	43	100
Gate	R. H. Sayre	382,906	May 15	1521	398	43	823
Gate	H. A. Spencer	381,592	Apr. 24	1948	{513 514	43	414
Gate	J. Z. Stanley	381,859	Apr. 24	2346	{608 609	43	490
Gate	P. Steele	383,920	June 5	111	32, 33	43	1142
Gate roller and hinge	J. J. Swarthout	382,844	May 15	1435	377	43	806
Gear. Compensating	T. Tucker	382,337	May 8	691	174	43	650
Gear-wheel	C. H. Morgan	380,454	Apr. 3	220	60	43	45
Gear-wheels. Machine for the manufacture of	F. Leman	380,498	Apr. 3	263	{80 81 82	43	56
Gearing	H. Holloway	380,731	Apr. 10	627	172	43	134
Gem-setting	W. G. Smith	384,399	June 12	838	218	43	1286
Generator: *See* Gas-generator. Electric generator. Steam-generator. Thermo-electric generator.							
Gimp-machine	G. Faustmann	385,048	June 26	1881	467	43	1494
Glass: *See* Opera, field, or marine glass.							
Glass-beveling machine	F. Armbrust	380,737	Apr. 10	652	180	43	130
Glass-blowing apparatus	W. M. Piper	381,867	Apr. 24	2388	621	43	488
Glass-cutting table	A. Hughes	382,224	May 1	519	133	43	660
Glass. Machine for grinding, smoothing, and polishing	F. Schefold	384,394	June 12	832	217	43	1287
Glass. Ornamenting	M. Fink	384,569	June 12	1491	245	43	1336
Glassware. Coloring	H. E. Mueller	382,185	May 1	342	90	43	576
Glove	W. Vaughan	385,154	June 26	1974	505	43	1523
Glove. Base-ball	F. G. Flacher	381,677	Apr. 24	2220	544	43	441
Glove-fastener	D. A. Carpenter	383,708	May 29	2717	777	43	1071

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's	Official Gazette. Vol.	Official Gazette. Page.
Glove-fastener	G. H. Courcen	384,498	June 12	880	220	43	1297
Glove-fastener	G. H. Courcen	384,499	June 12	881	220	43	1297
Glove-fastener	E. J. Kraetzer	382,366	May 8	776	186	43	639
Glove-fastener	A. Steiner	380,664	Apr. 3	440	126	43	91
Glove-fastener	W. D. Thompson	385,231	June 26	2236	577	43	1489
Glove-fastener	E. Pringle	380,694	Apr. 10	580	168	43	126
Glove-fastening	W. S. Richardson	382,904	May 15	1519	{397 398	43	823
Glove-fastening	W. S. Richardson	382,905	May 15	1520	398	43	823
Glove-fastening	W. S. Richardson	383,069	May 15	1761	460	43	973
Glove-fastening	W. S. Richardson	383,070	May 15	1762	460	43	973
Glove-fastening	W. S. Richardson	383,071	May 15	1763	461	43	973
Glove-fastening	W. S. Richardson	383,072	May 15	1764	461	43	973
Glove-fastening	W. S. Richardson	383,073	May 15	1765	461	43	973
Glove-fastening	W. S. Richardson	383,074	May 15	1766	462	43	973
Glove-fastening	W. S. Richardson and J. B. Chase	382,903	May 15	1518	397	43	823
Glove-package binder	C. Connelly	383,075	May 1	300	79	43	582
Gloves, &c. Fastener for	E. J. Kraetzer	381,703	Apr. 24	2102	550	43	445
Gloves, &c. Fastener for	E. J. Kraetzer	381,935	May 1	50	14	43	524
Goblet-holder	E. C. Baker	383,009	May 22	1967	497	43	991
Gold-plated shells, &c. Plate for shaving	J. S. Palmer	383,520	May 22	2020	509	43	1039
Governor	W. A. Bole	382,450	May 8	865	221	43	683
Governor	J. W. Thompson	381,897	Apr. 24	1958	516	43	416
Governor	J. W. Thompson	385,158	June 26	1971	504	43	1525
Governor	H. H. Westinghouse and F. M. Rites	384,485	June 12	951	247	43	1310
Governor	L. D. Copeland	385,044	May 15	1749	458	43	966
Governor. Steam-engine	J. B. Allfree	382,936	May 15	1555	407	43	839
Governor. Steam-engine	J. B. Allfree	383,987	May 22	2079	546	43	949
Governor. Steam-engine	C. Schmid	384,286	June 12	665	178	43	1257
Governor. Steam-engine	A. Finks	383,350	May 22	2180	570	43	960
Grader. Road	J. R. Dawson	384,894	June 19	1577	410	43	1437
Grading machine. Road	F. E. R. Malke	384,708	June 19	1391	{339 340	43	1264
Grain adjuster for binders	P. Grobecker	381,449	Apr. 17	1763	471	43	339
Grain. Apparatus for testing	W. R. Baker	382,938	May 15	1565	409	43	831
Grain-binder	G. Esterly	384,140	June 5	440	122	43	1266
Grain-binder	J. A. Graham	383,462	May 22	2368	630	43	1060
Grain-binder	S. V. Kennedy and C. A. Anderson	385,059	June 26	1839	471	43	1496
Grain-binder	M. L. Nichols	381,079	Apr. 10	1186	{315 316 317	43	220
Grain-binder	W. M. Platt	384,672	June 5	343	94, 97	43	1139
Grain-binder	H. E. Pridmore	382,896	May 15	1511	392	43	821
Grain-binder	J. F. Steward	382,942	May 15	1431	{376 377	43	805
Grain-binder elevator	L. Mathews	384,458	June 12	980	239	43	1304
Grain-binder knotter	C. Farmer and G. Lieder	384,945	June 12	610	164	43	1247
Grain-binders. Automatic trip for	O. O. Storle	380,905	Apr. 3	450	127	43	91
Grain-binders. Knot-tying mechanism for	J. R. Severance	382,773	May 15	1341	{353 354	43	786
Grain-binding machine	C. Young	382,903	May 1	475	{121 122	43	600
Grain-binding machines. Bundle-ejecting mechanism for	M. A. Keller	380,901	Apr. 10	905	242	43	185
Grain-cleaner	J. S. Ash	385,036	June 26	1799	463	43	1489
Grain-cleaning cylinder	W. P. Clifford	383,627	May 29	2611	600	43	1048
Grain-cradle	J. Berry	382,024	May 1	216	57	43	553
Grain-divider	S. Ray	383,542	May 29	2505	661	43	1004
Grain-drill	D. B. Beardon	384,469	June 12	995	250	43	1317
Grain-drill tubes. Shoe for	T. K. Craue	381,465	Apr. 17	1755	469	43	357
Grain-drills. Cleaner and gage attachment for	J. T. West	384,105	June 5	382	107	43	1194
Grain-drying machine. Centrifugal	F. Melkerman	383,747	May 29	2726	733	43	1084
Grain-garners. Automatic latch for	P. E. Canfield	381,588	Apr. 24	1956	491	43	397
Grain-heater	J. Warrington	383,027	May 15	1707	442	43	950
Grain-meter	G. H. Kamman	384,963	June 26	1703	442	43	1471
Grain-meter. Automatic	J. C. King	382,383	May 22	2205	549	43	963
Grain-pipe. Flexible	T. W. Emery	384,352	June 12	773	201	43	1275
Grain-separator	G. B. Bailey	383,106	May 22	1926	503	43	910
Grain-separator	F. Melkerman	384,861	June 19	1531	396	43	1423
Grain transferring and weighing elevator apparatus	P. F. Chase	383,809	June 5	17	5, 6	43	1124
Grape must and skins. Preserving	F. Springmühl	380,463	Apr. 3	231	.....	43	47
Grapes while maturing. Envelope for protecting	E. T. Starr	383,827	May 22	2157	569	43	954
Graphophone	C. S. Tainter	380,535	Apr. 3	243	96, 99	43	70
Grapple	W. Potter	380,405	Apr. 3	145	41	43	30
Grapple	W. H. Wiley	384,107	June 5	384	106	43	1194
Grate	A. C. Morton	382,720	May 15	1271	{323 324 325	43	772
Grate	J. O'Keefe	381,866	Apr. 24	2387	{626 627	43	490
Grate	A. Tolhurst, C. A. Glasbrook, A. Philbey, and T. Lockerbie.	381,185	Apr. 17	1343	350	43	277
Grate	L. M. Woodcock	384,409	June 12	854	222	43	1291
Grate-bar	M. H. Meskevite	382,104	May 1	341	90	43	576
Grate-bar	R. Thompson	384,720	June 19	1339	347	43	1389
Grate. Dumping	P. Rossland and C. Fisher	382,055	May 1	270	71	43	563
Grate. Fire	D. M. Crumley	381,909	May 1	151	38	43	542
Grate. Sectional pedestal	H. Petersen	382,553	May 8	1027	262	43	715
Gravity apparatus. Specific	L. Simons	380,533	Apr. 3	240	97	43	69
Grease-cup	H. D. Montsel	381,157	Apr. 17	1307	349	43	271
Grinding-machine	F. A. Shoemaker	384,795	June 19	1462	373	43	1403
Grinding-mill	M. J. Althouse	385,035	June 26	1798	463	43	1489
Grinding-mill	A. Dobler	381,346	Apr. 17	1579	423	43	304
Grinding-mill	J. S. Woodcock	382,202	May 1	472	121	43	599
Grinding-mill	G. Zenes and G. Bolle	384,949	June 19	1450	429	43	1451

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Grinding-mill rolls	F. Beall	383,859	June 5	7	2	43	1132
Grindstone-hanger	D. O'Leary	381,977	June 5	283	58	43	1150
Gripping device. Intermittent	M. S. Rexford	383,371	May 22	2219	589	43	905
Groove-cutting tool	W. H. Parry	383,380	May 22	2257	676	43	1036
Grooving apparatus for card-board, leather, and like material.	T. Remus	385,201	June 26	2042	382	43	1531
Guard: *See* Fork-guard. Lantern-guard.							
Guitar	G. W. Bowers	383,275	May 22	2060	540	43	941
Gun. Air	A. T. Brown	381,109	Apr. 17	1945	325	43	559
Gun barrel. Cane	E. D. Bean	380,975	Apr. 10	1690	288	43	306
Gun. Breech-loading	L. P. Dise	383,108	May 22	1848	463 / 464	43	896
Gun. Breech-loading	L. H. Smith	381,088	Apr. 10	1985	333	43	342
Gun. Breech-loading	L. H. Smith	383,325	May 22	2154	500	43	954
Gun-carriage	L. N. Tonna	384,942	June 19	1637	425	43	1449
Gun. Magazine	S. K. Hindley	383,641	May 29	2632	696	43	1053
Gun-training apparatus	J. Vavasseur	381,095	Apr. 10	1917	326 / 327	43	346
Guns. Apparatus for conveying ammunition to	C. H. Murray	381,715	Apr. 24	2125	555 / 556 / 557	43	449
Guns. Apparatus for loading heavy	C. H. Murray	380,668	Apr. 10	583	160 / 161	43	198
Guns. Breech mechanism for	T. Nordenfelt	384,537	June 12	1043	272 / 273	43	1327
Guns. Elastic pedestal for mounting	A. C. Koerner	381,475	Apr. 17	1771	473	43	361
Guns. Means for controlling hydraulic apparatus for training heavy	C. H. Murray	382,377	May 8	753	189 / 190 / 191 / 192	43	662
Guns. Mounting and loading apparatus for	G. W. Rendel	383,768	May 29	2697	744 / 745	43	1090
Guns. Trigger mechanism for	B. R. Jolly	383,814	May 29	2908	767 / 768	43	1165
Guns. Vertical breech-closing mechanism for	W. Lorenz	381,698	Apr. 24	1998	365	43	494
Gunpowder	C. J. Olds	381,507	Apr. 17	1693	.....	43	378
Gunpowder-mill	P. A. Oliver	382,925	May 15	1411	371	43	800
Gunpowder or analogous materials. Compressing	W. Lorenz	380,698	Apr. 10	579	150	43	125
Guttering to the eaves of houses. Hanging sheet-metal	C. C. Frederick	381,770	Apr. 24	2194	574	43	463
Hair-crimper	C. H. Bissell	384,418	June 12	966	236	43	1294
Hair-crimper	G. Haas	381,133	Apr. 17	1275	341	43	285
Hair-crimper	I. W. Heysinger. (Reissue)	10,936	June 5	576	157	43	1233
Hair curling and crimping device	M. Campbell	381,983	May 1	127	38	43	540
Hairspring collet and stud	H. Hugnenin	384,166	June 5	484	133	43	1215
Halter	J. C. Covert	382,092	May 15	1342	294	43	708
Halter	D. C. Frost	381,123	Apr. 17	1965	338	43	283
Halter	D. M. Stuart	383,526	May 29	2240	777	43	1119
Hame	J. N. Farlow	384,089	June 5	279	78	43	1174
Hame	A. C. Matlack	381,389	Apr. 17	1453	441	43	330
Hame attachment	R. F. Russell	384,084	June 5	257	101	43	1169
Hame-fastener	J. C. Hackett	383,727	May 29	2759	727	43	1078
Hame-fastener	A. G. McLeod	382,103	May 1	340	90	43	576
Hame-link	M. E. Lasher	382,863	May 15	1491	391	43	817
Hames. Die for attaching terrets to	W. H. Walker	381,447	Apr. 17	1734	463	43	354
Hammer. Drop	F. M. Leavitt	380,608	Apr. 10	757	207 / 208	43	158
Hammer for blacksmiths. Spring	H. Stewart and W. B. Wiswall	385,018	June 26	1766	457	43	1464
Hammering machinery actuated by explosive gaseous mixtures.	C. W. Pinkney	384,869	June 19	1543	401 / 402	43	1430
Hammock	A. Dickey	381,536	Apr. 24	1873	485	43	389
Hammock or swing	M. Broderick	381,897	Apr. 24	2205	567	43	469
Hammock-spreader	T. B. Thomas	384,738	June 19	1398	346	43	1369
Hammock-spreader	V. P. Travers	381,863	Apr. 24	2351	610	43	491
Hammock-stand. Portable folding	E. Hussey	382,648	May 8	1179	303	43	744
Hammock-supporting ropes. Holder for	V. P. Travers	381,864	Apr. 24	2352	610	43	491
Hammocks, &c. Frame for	W. F. Parmelee	381,095	Apr. 10	1089	280 / 281	43	339
Hand-bag	J. Mehl, Jr	384,377	June 12	814	211	43	1281
Hand-press. Domestic	J. W. Condon, C. G. Shepard, and P. Adams.	385,165	June 26	1986	509	43	1526
Hand-rest for book-keepers	W. D. Sloan	382,776	May 22	2047	749	43	1084
Handkerchief-holder	S. M. Griswold	382,895	May 15	1389	364	43	795
Handle: *See* Adjustable handle. File-handle. Bag-handle. Saw-handle.							
Handle	T. L. Rivers	381,646	Apr. 24	2019	530	43	426
Handling material. Apparatus for	A. E. Brown	382,946	May 15	1577	412	43	834
Hanger: *See* Card-hanger. Hat-hanger. Door-hanger. Pipe-hanger. Eaves trough hanger. Shaft-hanger. Grindstone-hanger. Umbrella-hanger.							
Harness	A. N. Jenkins	383,359	May 22	2092	522	43	903
Harness	M. Williams	380,376	Apr. 3	109	30	43	32
Harness-bracket	J. Harbison	381,776	Apr. 24	2202	576	43	464
Harness-hook	D. W. Brownell	382,341	May 22	2174	573	43	997
Harness hook or snap	W. S. F. Dillon	384,518	June 12	1010	262	43	1309
Harness-horse	T. Wilkes	384,301	June 12	988	184	43	1282
Harness-mountings. Manufacture of	R. S. Grummon	384,571	June 12	1094	287	43	1327
Harness-rack	E. Phillips and A. N. Edwards	382,923	June 5	214	63	43	1168
Harness-rosette attachment	R. W. Jones	382,459	May 15	1469	388	43	817
Harness-strap attachment	E. Covert	382,256	Apr. 17	1288	370	43	305

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Harness. Trace-lock for	L. Anderson	385,923	June 26	2070	530	43	1566
Harness. Water-hook for	G. M. Streng	384,068	June 5	373	105	43	1198
Harrow	S. Cooper	382,513	May 8	961	243	43	760
Harrow	A. Corbin, Jr	384,131	June 5	426	118	43	1209
Harrow	T. R. Crane	381,464	Apr. 17	1754	469	43	357
Harrow	J. W. Dobyns	384,968	June 26	1676	455	43	1465
Harrow	B. Essig	381,467	Apr. 17	1756	470	43	358
Harrow	G. W. Gorsuch	381,835	Apr. 24	2203	580	43	488
Harrow	E. W. Herendeen	382,304	May 8	836	168	43	641
Harrow	J. Hildesheim	381,683	Apr. 24	1963	383	43	483
Harrow	W. E. Jacobs	383,398	May 22	2121	550 / 560	43	949
Harrow	P. C. King	383,395	May 22	2133	563	43	959
Harrow	A. D. Manson	384,457	June 12	919	229	43	1324
Harrow and cultivator. Combined revolving	L. S. Evans	383,298	May 22	2106	556	43	944
Harrow. Disk	A. Corbin, Jr	381,908	May 1	17	5	43	512
Harrow. Disk	L. A. Richards	382,731	May 15	1287	337	43	778
Harrow-disks. Manufacture of	W. J. Hogan	383,088	June 5	47	15, 16	43	1169
Harrow, leveler, and cultivator. Combined	P. N. Applegate	382,204	May 1	478	123	43	603
Harrow. Spring-tooth	R. A. Rose	381,171	Apr. 17	1287	354	43	274
Harrows. Spring-tooth for	W. M. Brinkerhoff	384,188	June 5	513	140	43	1221
Harvester	J. R. Beard	381,605	Apr. 24	1971	518	43	419
Harvester	J. S. Davis	384,085	June 5	267	76, 77	43	1173
Harvester	G. Esterly	385,947	June 26	1817	466 / 467	43	1494
Harvester	S. D. Maddin	382,049	May 1	361	97, 98	43	561
Harvester	J. Shickle	382,910	May 15	1526	360	43	804
Harvester	W. N. Whiteley and W. Bayley	381,306	Apr. 17	1511	407 / 408	43	311
Harvester and binder	J. Bachman	382,677	May 15	1215	315	43	761
Harvester and thrasher. Combined	D. C. Matteson	383,253	May 22	2088	530 / 531	43	930
Harvester. Berry	G. Wilkin	382,745	May 15	1306	343	43	779
Harvester bundle-carrier	O. J. Foss	383,718	May 29	2750	734	43	1076
Harvester. Clover-seed	H. Burfeind	383,786	May 29	2878	756 / 757	43	1160
Harvester. Corn	J. T. McHenry	382,100	May 1	336	88, 89	43	575
Harvester. Corn	J. A. Norton and J. A. Stones	381,163	Apr. 17	1316	361	43	272
Harvester. Corn	G. B. and J. T. Snow	385,266	June 26	2177	557 / 558	43	1567
Harvester. Cotton	O. T. Bagg	383,099	May 22	1833	499	43	898
Harvester. Grain-binding	M. L. Nichols	381,080	Apr. 10	1192	317 / 318 / 319 / 320	43	340
Harvester. Grain-binding	A. O. Sleeta	385,285	June 26	2176	556	43	1567
Harvester-reel	G. Esterly	384,139	June 5	426	122	43	1205
Harvester. Self-binding	S. V. Kennedy and C. A. Anderson	382,532	May 8	990	250 / 251 / 252	43	707
Harvesters. Bundle-carrier for	D. H. Prewitt	383,009	May 15	1885	436	43	854
Harvesters. Cutting apparatus for	J. A. Blair and W. C. Bush	385,164	June 26	1965	508	43	1523
Harvesters. Picker-stem for cotton	W. L. Langley	382,535	May 8	988	254	43	708
Harvesters. Picker-stem for cotton	W. L. Langley	382,536	May 8	1000	254	43	709
Harvesters. Pitman-box for	A. W. Braman	384,504	June 12	1009	260	43	1318
Harvesters. Platform-adjustment for	C. F. Search	383,600	May 29	2856	704 / 705	43	1058
Harvesters. Reel-driving gear for	J. Agenten	384,109	June 5	398	108	43	1195
Harvesters. Sheaf-carrier for grain	W. Bell	382,494	May 8	791	201	43	689
Harvesters. Swathing attachment for	C. M. Owen	382,317	May 22	2147	569	43	966
Harvesting-machine	A. Goodyear	381,232	Apr. 17	1400	378 / 379 / 380	43	320
Hat and coat rack. Combined	R. X. McArthur	382,315	May 8	650	168	43	643
Hat and coat rack. Folding	G. D. Tolman	385,153	June 26	1973	505	43	1522
Hat-box. Folding	S. E. Sarles	380,264	Apr. 3	91	27, 28	43	29
Hat for firemen	T. Anderson	381,088	Apr. 24	2051	527	43	435
Hat-hanger	S. L. Drake	384,897	June 19	1560	411	43	1437
Hat or bonnet holder for tables and wardrobes	V. M. Hollyday	381,616	Apr. 10	1979	326	43	350
Hat-oiling roll	C. H. Sprague and W. J. Wiley	383,998	June 5	223	66	43	1165
Hat-starching machine	E. Barrett	383,270	May 22	2098	547	43	940
Hat-stretching machine	W. Simmonds	383,254	May 22	2056	540	43	930
Hat. Ventilated	M. Postlethwaite	385,228	June 26	2172	554 / 555	43	1566
Hat-wire	A. Cary	381,530	Apr. 24	1882	498	43	397
Hats, caps, &c. Manufacture of felt	F. W. Cheetham	382,796	May 15	1241	.....	43	783
Hats. Machine for hardening	S. C. Palmer	382,379	May 8	757	192 / 193	43	666
Hats. Sweat-band for	T. W. Bracher	381,926	Apr. 17	1374	397	43	333
Hats. Sweat-band for	T. W. Bracher	385,092	June 26	1893	491	43	1527
Hatch-door	W. Stevens	380,410	Apr. 3	156	43	43	33
Hatchway-gate for elevators	C. M. Greenman	382,037	May 1	346	93	43	576
Hay and fodder fork	Z. S. and M. C. Randleman	384,221	June 12	899	177	43	1256
Hay-cap	J. Brady	384,057	June 5	1063	232	43	1402
Hay-carrier	G. H. Fowler	384,948	June 26	1678	456	43	1465
Hay-carrier	A. W. Tutton	380,412	Apr. 3	156	44	43	33
Hay-loader	E. L. Hay	381,779	Apr. 24	2205	577 / 578	43	465
Hay-loader	C. A. Henry	384,205	June 5	540	140	43	1205
Hay-loader	C. C. and D. C. Jewett	381,248	Apr. 17	1438	366 / 367	43	336
Hay-loader	M. E. Johnson	381,699	Apr. 24	2007	549	43	444
Hay-loader	W. S. Nichols	385,281	June 26	2167	552 / 564	43	1205

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Hay or straw grappling fork	E. V. R. Gardner	384,970	June 26	1661	436	43	1496
Hay-press	T. S. Gorrell and E. M. Tubbs	381,007	Apr. 10	1089	427	43	216
Hay-press	F. McKinney	382,822	May 15	1408	369	43	899
Hay-press	E. Prengel	382,664	May 8	1192	370	43	748
Hay-rack	D. C. Roby	382,328	May 8	673	210	43	747
Hay-rake	T. F. and M. O. Godding	383,454	May 29	2349	170	43	647
Hay rake and cocker	N. J. Nilson	383,479	May 29	2398	685	43	905
Hay rake and ricker. Combined	R. O. Davis	385,252	June 26	2122	539	43	1665
Hay-rake. Horse	J. H. Bally	382,667	May 1	284	542	43	1557
Hay-rake. Horse	G. Keith	381,840	Apr. 24	2314	75	43	508
Hay-rakes. Cleaner-arm for the teeth of horse	N. Stafford	381,562	Apr. 24	1950	691	43	484
Hay raker and loader	J. H. and P. Lux and S. Ede	380,336	Apr. 3	43	514	43	415
Hay-sling	A. and C. A. Church	384,940	June 26	1657	15, 16	43	10
Hay-stacker	D. M. Campbell	382,213	May 1	467	433	43	1463
Hay-tedder	G. H. Earnest	381,872	June 5	38	126	43	898
Head-rest	J. W. Campbell	382,940	May 15	1563	10, 11	43	1127
Header and thrasher. Combined	G. C. Reynolds, J. and W. Paterson	381,723	Apr. 24	2136	413	43	825
Hearse	M. F. Deisinger	380,622	Apr. 3	474	539	43	452
Heat and power to large districts of buildings. Means for supplying	W. E. Prall	382,383	May 8	764	194	43	86
Heat and power to large districts of buildings. Supplying	W. E. Prall	382,384	May 8	766	194	43	985
Heat and steam or water power to cities, towns, &c. Means for supplying	W. E. Prall. (Reissue)	10,923	Apr. 17	1842	195	43	376
Heat developer and radiator	W. M. Jackson	384,365	June 12	794	497	43	1979
Heater: *See* Air-heater. Car-heater. Feed-water heater. Flat-iron heater. Grain-heater. Liquid-heater. Sad-iron heater. Sad-iron and plate heater. Steam-heater. Tire-heater. Water-heater.							
Heater for cars and buildings	T. McCrossan	381,806	Apr. 24	2245	598	43	472
Heater for muffs, &c	F. Hiller, Jr	381,549	Apr. 24	1885	497	43	401
Heating by compressed hot or superheated air	T. J. Simpson	381,589	Apr. 24	1944	519	43	413
Heating by electricity	E. E. Ries	381,815	Apr. 24	2260	512	43	475
Heating. Electro-chemical	E. E. Ries	381,818	Apr. 24	2275	590	43	477
Heating-furnace	E. W. Anthony	380,711	Apr. 10	611	594	43	131
Heating-furnace	F. Kernan, Jr	383,469	May 29	2385	167	43	1002
Heating-furnace	J. White	381,307	Apr. 17	1509	635	43	810
Heating system. Electric	E. E. Ries	381,817	Apr. 24	2271	607	43	476
Heating water and other liquids. Apparatus for	W. T. Sugg	383,921	June 5	115	592	43	1143
Hedge	P. M. Mishler	380,448	Apr. 3	213	33	43	43
Hedge	J. A. Mitchell	380,449	Apr. 3	213	57	43	43
Hedge	J. A. Mitchell	380,450	Apr. 3	214	58	43	43
Hedge-trimming machine	R. W. Oliver	381,508	Apr. 17	1564	482	43	372
Heel-burnisher	C. J. Addy	385,291	June 26	2189	539	43	1560
Heel-burnishing machine	C. J. Addy	383,934	June 5	139	40	43	1147
Heel. Elastic or spring	E. A. Munger	380,508	Apr. 3	303	88	43	61
Heel-machine	J. H. Cunningham	381,493	Apr. 17	1798	478	43	367
Heel-mold	E. J. Le Gay	382,868	May 15	1498	393	43	819
Heel-nailing machine	E. B. Allen	384,343	June 12	756	198	43	1273
Heel-plate	C. Doney	382,694	May 15	1244	394	43	796
Heel-plate-attaching machine	W. J. Atwell	381,604	Apr. 24	1968	518	43	418
Heel-plate-attaching machine	W. J. Atwell	381,605	Apr. 24	1970	518	43	418
Heel-protector	F. J. Herrick	382,260	May 1	563	142	43	617
Heel. Spring	E. A. Munger	380,507	Apr. 3	300	87	43	61
Heel-stiffener machine	G. A. Fullerton	384,753	June 19	1362	356	43	1396
Heeling-machine	C. W. Glidden	382,709	May 15	1286	349	43	793
Heeling-machine	M. A. Tyler and E. Merritt	382,121	May 1	361	93	43	560
Heeling-machines. Breasting attachment for	E. A. Lupien	382,615	May 8	1121	360	43	733
Hides or skins. Machine for shaving	J. Rood and I. Vaughan	383,914	June 5	104	30	43	1141
High-speed engine	P. W. Willans and M. H. Robinson	380,375	Apr. 3	106	31	43	33
Hinge	C. H. Beer	382,860	May 15	1457	382	43	840
Hinge	J. Wien	385,156	June 18	1976	506	43	1567
Hinge for traveling-bags, &c	C. Reinisch	385,138	June 18	1950	499	43	1561
Hinge for trunks, bags, &c. Stay	W. Durand	385,255	June 26	2128	543	43	1656
Hinge. Lock	T. S. Beebe	385,168	June 26	1992	508	43	1568
Hinge. Spring	W. H. Beath	381,100	Apr. 17	1220	330	43	256
Hinge. Spring	L. Bommer	383,554	May 29	2519	664	43	1057
Hinge. Spring	L. Bommer	383,555	May 29	2520	665	43	1057
Hinge. Spring	H. P. Kochsmeier	385,312	June 26	2218	560	43	1574
Hinge. Spring	G. W. Warner	384,102	June 5	379	106	43	1193
Hinge. Spring	G. W. Warner	384,103	June 5	380	107	43	1194
Hobby-horse	W. Davis	381,110	Apr. 17	1254	336	43	261
Hoe	S. H. T. Tilghman	384,579	June 19	1561	406	43	1423
Hog-trap	B. W. Duncan	380,649	Apr. 3	511	143	43	104
Hog-trap	J. H. Gentry	383,216	May 22	2001	534	43	988
Hoisting-jack	W. N. Bell	383,035	May 15	1794	449	43	888
Hoisting-machine	F. H. A. Peters	382,436	May 8	635	214	43	673
Hoisting machinery	R. Schuls	380,637	Apr. 3	480	137	43	109
Hoisting-tackle	S. M. Vauclain	381,043	Apr. 10	1123	361	43	227

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Holder: *See* Bag-holder. Bill-holder. Bird-feed holder. Blacking-box holder. Broom-holder. Carriage-curtain-cord holder. Chalk-line holder. Checkrein-holder. Coat-holder. Copy-holder. Cuff-holder. Dental holder. Dentist's disk-holder. Envelope-holder. Fire-cracker holder. Goblet-holder. Handkerchief-holder. Knife-blade holder. Lamp-holder. Lamp-shade holder. Lead and rule holder. Mail-bag holder. Music-holder. Napkin-holder. Paper-holder. Paper and twine holder. Pen-holder. Pencil-holder. Photograph-holder. Photographic-plate holder. Pillow-sham holder. Rein-holder. Ribbon-holder. Sash-holder. Screw-holder. Tack or nail holder. Tag-holder. Ticket-holder. Tire-bolt holder. Torpedo-holder. Twine-holder. Wire-cloth holder.							
Honey-frames. Machine for making	J. Ware	384,549	June 12	1092	277	43	1230
Hoof-expander	L. Monahan Jr.	383,585	May 29	2553	675	43	1035
Hook: *See* Back-band hook. Cant-hook. Checkrein-hook. Coat and hat hook. Drapery-hook. Harness-hook. Painter's hook. Pneumatic hook. Snap-hook. Whiffletree-hook.							
Hook	G. C. Beals	380,974	Apr. 10	1019	286	43	208
Hoop: *See* Mast-hoop.							
Hoop	J. Leach	382,264	May 1	567	143	43	617
Hoop-iron. Machine for bundling	W. Hansen	383,686	May 29	2691	711	43	1085
Hopple	O. B. Falea	382,809	May 15	1469	385	43	812
Horns of cattle. Machine for softening and bending the	G. B. French	383,519	May 29	2456	651	43	1016
Horse-boot	M. Kinsey	381,386	Apr. 17	1640	436	43	335
Horse-detacher	J. A. Dickson	383,447	May 29	2340	621	43	994
Horse-detacher	T. Manry and E. Roubinet	383,742	May 29	2778	732	43	1088
Horse-detacher	J. McMorries	381,712	Apr. 24	2121	554	43	448
Horse-detacher	W. L. and P. M. Mitzel and J. Q. A. Haney	384,000	June 5	327	93	43	1183
Horse-detacher	G. T. Parker	385,138	June 26	1944	497	43	1560
Horse-detacher	A. M. Witherington	382,891	May 1	471	121	43	600
Horse-power	R. G. McElroy	381,807	Apr. 24	2246	598	43	472
Horse-power sweep	G. W. Crane	383,443	May 29	2334	620	43	992
Horses. Device for assisting in training	H. C. Woodnutt	381,745	Apr. 24	2164	566	43	456
Horses. Device for checking	F. T. Atkins	381,316	Apr. 17	1589	412	43	314
Horses. Device for checking	T. J. Quinn and D. McLellan	381,580	Apr. 24	1925	507	43	409
Horses. Device for hitching	C. Kauler	382,989	May 15	1636	428	43	844
Horses. Device for stopping	A. Wedekind	381,735	Apr. 24	2150	563	43	454
Horses. Hood for	C. A. and J. D. Sullivan	382,668	May 8	1208	312	43	750
Horses. Split-hoof clamp for	J. H. Wiestner	381,868	Apr. 24	2350	612	43	493
Horseshoe	J. E. and E. W. Bingham	382,131	May 1	374	97	43	562
Horseshoe	J. E. and E. W. Bingham	383,604	May 29	2702	714	43	1067
Horseshoe	I. G. Howell	380,800	Apr. 10	749	205	43	157
Horseshoe	H. Jonas and C. Hirsch	382,040	May 1	249	64	43	559
Horseshoe-calk	S. Stone	380,302	Apr. 3	88	27	43	99
Horseshoe-nail machine	S. Hansen	382,646	May 8	1163	300	43	748
					301		
Horseshoe-nails. Cutting	H. A. Wills	382,927	May 15	1546	405	43	888
Horseshoe-nails. Machine for making	H. A. Wills	382,928	May 15	1549	406	43	889
Horseshoe-pliers	S. J. Hurley	382,263	May 1	566	143	43	617
Hose and faucet coupling	T. Mackel	381,582	Apr. 24	1901	501	43	405
Hose and pipe supporter. Adjustable garden	C. Bosse	381,107	Apr. 17	1243	344	43	258
Hose carriage. Garden	J. J. Divokey	381,540	Apr. 24	1876	493	43	400
Hose-clamp	F. Schimper	382,557	May 8	1033	263	43	717
Hose-coupling	G. Kiefer	383,360	May 22	2392	569	43	983
Hose-coupling	H. A. Wahlert	383,160	May 22	1917	501	43	900
Hose-nozzle	M. O. Ruperle	381,500	Apr. 17	1815	480	43	370
Hose-nozzle	I. W. McGaffey	382,099	May 1	336	88	43	575
Hose or pipe coupling	T. Haley	382,468	May 8	895	236	43	688
Hose. Tool for applying couplings to	E. E. Sibley and C. Allen	382,776	May 15	1340	355	43	767
Hot-air furnace	C. N. Bacon	381,750	Apr. 24	2169	568	43	457
Hot-air furnace	H. Callahan	383,100	May 22	1835	481	43	893
Hot-air furnace	J. B. Oldershaw	381,574	Apr. 24	1919	506	43	409
Hot-air furnace	G. D. Sanford	384,789	June 19	1414	371	43	1400
Hot-air furnace	P. H. Scheurer	381,427	Apr. 17	1694	454	43	347
					455		
Hot-air register for fire-place heaters	W. F. Rossman	381,263	Apr. 17	1493	399	43	294
Hot-water boiler	E. S. Manny	382,313	May 8	648	165	43	645
Hot-water boiler	O. W. Noble	382,659	May 8	1186	306	43	747
					307		
Hot-water boiler	O. W. Noble	382,660	May 8	1188	307	43	747
					308		
House interiors. Finishing of	W. J. Boda	385,223	June 26	2098	535	43	1650
					536		
Hub-boring machine	W. H. Barnhart	383,848	June 5	2	1	43	1121
Hub. Vehicle	M. E. True	381,891	Apr. 24	2193	622	43	500
Huller: *See* Clover-huller.							
Hunking-pin	H. H. Perkins	380,516	Apr. 3	322	92	43	66

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hydrant	C. G. Ette	382,642	May 8	1138	203	43	741
Hydrant	C. G. Ette	382,960	May 15	1506	417	43	837
Hydrant. Fire	D. W. Carroll	382,951	May 15	1504	412 / 414	43	835
Hydraulic elevator	W. T. Fox	384,436	June 12	868	229 / 230	43	1286
Hydraulic elevator	W. H. Marsh	383,338	May 22	2021	289	43	939
Hydraulic elevator	W. O'Keefe	384,864	June 19	1535	389 / 400	43	1429
Hydraulic-elevator mechanism	E. B. Benham	380,851	Apr. 10	680	223	43	170
Hydraulic shaping-press	A. E. Hobson. (Reissue.)	10,934	May 29	2053	799	43	1114
Hydrocarbon-burner	C. S. Jarboe and J. McHale	383,688	June 5	58	18	43	1132
Hydrocarbon-burner	J. E. Patterson and A. Noteman	384,097	June 5	337	95	43	1165
Hydrodynamic forces. Mechanism for utilizing and controlling	W. M. Jackson	383,887	June 5	55	18	43	1131
Hydrogen. Making	W. Majert and G. Richter	380,788	Apr. 10	635	178	43	126
Ice. Apparatus for the production of transparent	H. J. West	381,195	Apr. 17	1359	388	43	300
Ice-creeper	C. J. Lung	382,438	May 8	831	213	43	678
Ice-creeper	W. W. and E. F. Preston	380,616	Apr. 10	709	210	43	161
Ice-dog	T. S. Hitchcock	382,291	May 1	563	148	43	617
Ice or refrigerating machine	F. W. Wolf	385,157	June 26	1977	566	43	1327
Ice-roads. Device for making	D. J. Arpin	381,651	Apr. 10	1139	304 / 305	43	289
Ice-runs. Switch for	J. Reis	381,419	Apr. 17	1081	459 / 461	43	345
Ice-shaver	F. K. Way	383,998	June 5	138	39	43	1146
Ice-shaver	F. K. Way	384,299	June 12	667	188	43	1282
Ice-shaving machine	R. H. and D. L. Bates	380,644	Apr. 10	1000	289	43	160
Identifying device	E. R. Fitch	385,196	June 26	1905	445	43	1319
Igniting apparatus. Electric	L. Hen and R. Weinmann	382,231	May 1	516	139	43	626
Implement. Combination	W. S. Rees	384,598	June 12	1193	297	43	1341
Incrustation-preventive	F. C. Keighley	382,613	May 8	1118	287	43	723
Incubator	J. and B. F. Mullica	380,340	Apr. 3	48	.....	43	13
Incubators. Heat-regulator for	W. H. Hillier	382,587	May 8	982	247 / 248	43	705
Incubators. Temperature-regulator for	C. E. Bean	382,403	May 8	790	200	43	669
Incubators. Temperature-regulator for	J. W. Hile	383,732	May 29	2765	738 / 739	43	1079
Indicator:	G. E. Talbot	382,779	May 15	1352	356	43	788
See Boiler-feed indicator. Cash-indicator. Directory-indicator. Electric indicator. Electric-circuit indicator. Electrical indicator. Elevator-indicator. Liquid-level indicator. Office-indicator. Poison-bottle indicator. Pressure-indicator. Speed-indicator. Station-indicator. Station and street indicator. Steam-boiler indicator. Steam-engine indicator. Street and station indicator. Water-gage indicator.							
Indicator	T. J. Bartlett	381,480	Apr. 17	1749	468	43	358
Induction-coil. Repeating	J. A. Barrett	382,856	May 15	1449	381	43	798
Inductive resistance. Adjustable	O. B. Shallenberger	380,945	Apr. 10	967	257	43	197
Ingot-bars. Apparatus for breaking steel	W. R. Hinsdale	384,846	June 19	1510	393	43	1425
Ingot-bars. Apparatus for severing	W. R. Hinsdale	384,847	June 19	1512	394	43	1425
Ingot-forming apparatus	J. Illingworth	382,497	May 8	822	210 / 211	43	675
Ingot or bar for tools	F. W. Seaman	382,192	May 22	1960	514	43	917
Ingots. Making compound	L. L. Burton	381,527	Apr. 24	1857	491	43	336
Inhaler	J. B. Henry	380,730	Apr. 10	667	179	43	134
Inhaler	H. Palmer	384,589	June 12	1110	286	43	1341
Injector	C. C. Sharp	382,113	May 1	351	91	43	578
Injector	W. E. Dodge	383,109	May 22	1830	464	43	993
	E. J. Young, A. Lambert, and H. R. Ferris	384,686	June 19	1235	322	43	1372
Ink	M. C. Lefferts and J. H. Stevens	380,654	Apr. 3	517	.....	43	165
Ink-mill	T. R. Johnston	383,576	May 29	2541	671	43	1033
Ink-supplying device	H. Esser	384,899	June 19	1502	412	43	1430
Ink-well	E. J. Colby	383,514	May 29	2451	650	43	1014
Inkstand	M. H. Garland	382,696	May 15	1248	326	43	767
Inkstand	J. F. K. O'Connor	382,894	May 15	1506	394 / 395	43	800
Inkstand and frame	H. A. Reinhard	382,621	May 8	1131	291	43	725
Insect-destroyer	C. Vehring	383,199	May 22	1947	516	43	919
Insect-trap	A. H. Ingalls	381,377	Apr. 17	1068	462	43	338
Insulated wire	J. Williams	382,788	May 29	2688	702	43	1007
Insulated wire	H. Splitdorf	383,910	June 5	110	30	43	1148
Insulating-joint	J. D. Thomas	382,781	May 15	1356	362	43	788
Insulator for electrical wires	J. T. Robb	382,972	May 1	577	146	43	628
Interlocking switch and signal	F. E. Keyes	383,734	May 29	276.	732	43	1080
Iron:	G. Gibbs	381,773	Apr. 24	2197	575	43	463
See Corner-iron. Flat-iron. Molder's draw-iron. Sad-iron. Smoothing and polishing iron. Soldering-iron. Vehicle-gear iron.							
Iron and steel. Apparatus for manufacturing compound plates of	A. Wilson	382,970	Apr. 10	1010	268 / 269	43	805
Iron and steel with rustless oxide. Coating	W. T. Wells	382,647	May 8	856	219 / 220	43	689
Iron. Converter for refining molten	I. G. Johnson	384,686	June 19	1183	309 / 311	43	1366
Iron from its bed. Apparatus for transferring pig	W. H. Fredericks	380,688	Apr. 3	477	124	43	97
Iron. Manufacture of planished sheet	W. and W. H. Rogers	380,686	Apr. 10	777	213	43	165

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Iron. Manufacture of sheet	I. E. Craig	382,358	May 8	717	.....	43	655
Iron. Manufacturing oxide of	A. C. Bradley	385,235	June 26	2086	536	43	1351
Iron ores. Reducing	G. M. Westman	383,391	May 22	1970	517 / 518	43	999
Iron. Refining	G. Lindenthal	380,462	Apr. 3	198	.....	43	41
Iron with air. Refining	R. P. Wilson	384,813	June 19	1455	.....	43	1415
Ironing-board	J. J. H. Liberath	382,170	May 1	488	119	43	578
Ironing-machine	T. S. Wiles	384,487	June 12	985	248 / 249	43	1311
Ironing-table	C. Ostrander	383,189	May 22	1955	513	43	917
Jack:							
See Hoisting-jack. Lasting-jack. Lifting-jack. Lifting and lowering jack. Smoke-jack. Wagon-jack.							
Jamb. Adjustable	B. F. Cahill	381,389	Apr. 17	1545	417	43	317
Jar:							
See Drilling-jar. Fruit-jar.							
Jar	G. L. Carll	381,231	Apr. 17	1543	417	43	318
Jar-clamp	F. G. Tallman	384,659	June 5	374	105	43	1192
Jar fastening. Fruit	W. Bruce	382,512	May 1	497	128	43	673
Jewelry. Manufacture of gold-plated wire stock for	J. S. Palmer	383,240	May 22	2021	533	43	934
Jewelry. Preparing hollow stock for the manufacture of	J. S. Palmer	383,238	May 22	2020	532	43	951
Joint:							
See Adjustable joint. Insulating joint. Pipe-joint. Rail-joint. Railway-rail joint. Sheet-metal joint. Universal joint. Vehicle-top-prop joint.							
Journal-bearing. Anti-friction	J. W. Hyatt	385,266	June 26	2140	547	43	1562
Journal-bearing. Anti-friction	J. W. Hyatt	385,267	June 26	2150	549	43	1562
Journal-box	J. C. Miller	382,883	May 15	1505	394	43	800
Journal-box	J. M. Normand	382,410	May 22	2026	607	43	976
Journal-box	W. B. Turner	385,268	June 26	2184	556	43	1548
Key:							
See Ox-bow key. Telegraph-key. Tuning-key.							
Key-fastener	E Barrett and H. G. Baker	382,690	May 15	1222	316	43	793
Key-hole guard	C. R. Uhlmann	382,122	May 1	363	95	43	549
Keys. Manufacture of door	H. B. Sargent	383,012	May 15	1666	439	43	854
Kiln:							
See Brick-kiln. Lime-kiln. Malt-kiln. Porcelain-kiln.							
Kiln for burning hydraulic cement	C. R. Goething	384,905	June 19	1589	414	43	1439
Kneading machine. Dough	B. H. Melendy	381,631	Apr. 24	2003	526	43	495
Knife:							
See Surgical knife.							
Knife	M. Cowles	382,501	May 8	1068	280	43	727
Knife-blade burnisher	D. T. Brown	381,327	Apr. 17	1543	416	43	317
Knife-blade holder	E. H. Gould	381,233	Apr. 17	1413	369	43	291
Knitted fabric	C. J. Appleton	381,890	May 1	3	1	43	515
Knitting-machine	D. C. Bellis	385,163	June 26	1963	506	43	1536
Knitting-machine	R. B. Lamprey and A. C. Boghee	383,817	May 29	2813	709	43	1106
Knitting-machine	W. H. Stewart	381,963	May 1	80	22 23	43	532
Knitting-machine	H. C. Young	382,240	May 8	706	178	43	653
Knitting machine. Circular	H. Curtis	380,385	Apr. 3	121	35	43	98
Knitting machine. Circular	S. G. Hall	384,631	June 19	1168	300 / 300	43	1359
Knitting machine. Straight	C. J. Appleton	381,891	May 1	1	1	43	515
Knitting-machines. Device for adjusting the stitch-wheels of	F. P. Holt	384,163	June 5	478	132	43	1213
Knitting-machines. Electric stop-motion for	C. Draper	382,503	May 8	1092	281	43	730
Knitting-machines. Latch-needle and covering or transferring point for	W. H. Abel	382,675	May 8	1211	314	43	732
Knitting-machines. Needle-cylinder for	T. H. Worrall	381,197	Apr. 17	1362	364	43	281
Knitting-machines. Reversing mechanism for	H. C. Rightmire	385,328	June 26	2233	572	43	1577
Knob and connecting-shank for the same. Door	W. Livingstone	380,333	Apr. 3	36	14	43	10
Knockdown box	C. L. Lockwood	382,312	May 8	647	165	43	642
Lace pin or brooch	E. D. Ganter	383,719	May 29	2751	725	43	1077
Lacing-cords. Fastening for	G. M. Sawyer	380,588	Apr. 3	320	94	43	67
Ladder	E. A. Sherman	382,114	May 1	350	92	43	578
Ladder	G. H. Thompson	381,656	Apr. 24	2087	532 / 534	43	438
Ladder and bench combined. Step	J. W. Peacock	382,843	May 22	2020	584	43	990
Ladder. Extension	J. C. Gardner	382,871	May 15	1471	388	43	814
Ladder. Extension fire	L. Dederick	383,105	May 22	1843	462 / 463	43	894
Ladder. Extension fire	L. Dederick	383,107	May 22	1846	462	43	895
Ladder, fire-escape, and hose-carriage. Combined extension	C. B. Schumann	381,567	Apr. 24	1936	510 / 511	43	412
Ladder. Flexible	C. B. Schumann	381,653	Apr. 24	2337	606	43	466
Ladder for city fire-department service	B. F. Steck	382,733	Apr. 10	647	179	43	138
Ladder. Fruit	M. H. Murphy	380,763	Apr. 10	696	198	43	140
Ladder. Step	J. Elden	383,649	May 29	2648	663	43	994
Ladder. Step	J. T. Miller	384,210	June 5	547	150 / 151	43	1227
Ladder with jump-shelf. Step	J. T. W. McLaughlin	382,108	May 1	330	89	43	575
Lamp	S. W. Babbitt and H. B. Beach	382,286	May 15	1561	408	43	831
Lamp	R. A. Black	382 210	May 1	465	125	43	602
Lamp	J. G. Hallen	381,060	Apr. 10	1071	284	43	216
Lamp	C. B. Upton	381,042	Apr. 10	1123	301	43	220
Lamp and burner. Central-draft	F. Rhind	382,270	May 1	575	145	43	619
Lamp and cigar-cutter. Combined	O. Vollmann	384,881	June 19	1562	408	43	1434
Lamp and wheel. Candle	S. Clarke	383,898	June 5	19	6 7	43	1234
Lamp. Arc	C. Barton	380,546	Apr. 3	300	104	43	76
Lamp attachment. Incandescent	E. M. Doubleday	382,040	May 15	1751	453	43	687

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Lamp-burner	A. Cantius	384,744	June 19	1351	332 / 333	43	1394
Lamp-burner. Argand	E. Beach	381,089	Apr. 17	1227	239	43	856
Lamp. Candle	S. Clarke	383,861	June 5	19	6	43	1194
Lamp. Carbureting gas	A. Kitson	381,984	May 1	48	13	43	594
Lamp-chimney	C. L. Ingalls	380,801	Apr. 10	730	285	43	157
Lamp. Coach	O. W. Swift	383,690	May 15	1796	465	43	975
Lamp-collar	A. Gottschalk	382,905	May 8	1108	285	43	731
Lamp. Electric	E. C. Ohmart	383,411	May 22	2388	697 / 698	43	976
Lamp. Electric-arc	R. E. Fenner	382,421	May 8	813	207	43	674
Lamp. Electric-arc	A. Harding	380,435	Apr. 3	186	51, 52	43	36
Lamp. Electric-arc	J. J. Wood	384,817	June 19	1462	361 / 362	43	1416
Lamp-extinguisher	E. L. Bryant	380,858	Apr. 10	832	226	43	172
Lamp-extinguisher	W. M. Greene	380,985	Apr. 10	877	235	43	180
Lamp extinguisher. Automatic pneumatic car	A. Berry	380,381	Apr. 3	115	33, 34	43	25
Lamp filament. Electric	C. Seel	382,560	May 8	1037	264	43	718
Lamp-fixture	D. W. Parker	381,275	Apr. 17	1473	396	43	368
Lamp fixture. Extension	F. Rhind	383,709	May 29	2929	745	43	1091
Lamp holder. Incandescent	W. A. Carey	385,039	June 26	1803	464	43	1491
Lamp. Incandescent	H. M. Byllesby and P. Lange	383,616	May 29	2598	667	43	1045
Lamp. Miner's safety	A. Howat	382,161	May 1	416	109	43	569
Lamp. Oil	J. Roots	384,079	June 5	350	90	43	1187
Lamp. Oil spray or vapor	A. Neilson and J. Taylor	382,109	May 1	343	90	43	576
Lamp. Railway-gate	A. J. McDonald	383,968	June 5	190	55	43	1157
Lamp. Regenerative gas	C. E. Bell	381,905	Apr. 17	1371	366	43	368
Lamp-shade holder and shade	G. E. Stockwell	383,415	May 22	2393	609	43	977
Lamp socket and switch. Incandescent	J. J. Wood	384,815	June 19	1456	361	43	1415
Lamp socket. Incandescent	J. Spink and C. Ganzentee	384,478	June 12	948	244	43	1368
Lamp sockets. Protector for electric	C. P. Reilly	382,110	May 1	349	91	43	577
Lamp. Tubular	C. L. Betts	381,461	Apr. 17	1751	469	43	357
Lamps. Adjustable nipple for incandescent electric	E. F. Gennert	381,921	May 1	31	9	43	590
Lamps. Carbon conductor for electric	H. J. Von Metzradt	383,602	May 29	2570	.....	43	1030
Lamps. Cut-out for incandescent	H. Lemp and M. J. Wightman	383,891	June 5	63	20	43	1133
Lamps. Evacuating electric	E. P. Thompson	383,676	May 29	2680	709	43	1062
Lamps. Manufacture of filaments for electric incandescent	J. W. Packard	383,484	May 29	2412	641	43	1007
Lamps. Manufacture of incandescent electric	O. A. Moses	383,140	May 22	1891	493	43	804
Lamps. Manufacture of incandescent electric	E. P. Thompson	382,846	May 15	1438	378	43	806
Lamps. Manufacture of incandescent electric	E. P. Thompson	383,675	May 29	2678	709	43	1062
Lamps. Reflector for electric	H. Purdy	381,167	Apr. 17	1323	353	43	274
Land-roller	F. Grimes	383,807	May 29	2900	765	43	1104
Lantern	J. Charleson	384,234	June 12	501	130	43	1244
Lantern	H. M. Drew and J. A. Grant	381,836	Apr. 24	2304	589	43	442
Lantern	H. L. Jewell	381,557	Apr. 24	1896	500	43	404
Lantern	H. A. Matthews and D. M. Ireland	384,053	June 5	315	83, 90	43	1151
Lantern-guard	F. Rhind	383,631	May 15	1418	372	43	802
Lantern-guard	L. F. Betts	384,891	June 19	1471	384	43	1417
Lantern-supporter	C. Smith	385,015	June 26	1761	456	43	1484
Lantern. Tubular	L. F. Betts	381,755	Apr. 24	2176	560	43	439
Lantern. Tubular	J. H. Stone	382,026	May 8	1137	293	43	737
Lantern. Tubular	J. B. Stetson	384,548	June 12	1057	276	43	1329
Last	D. Ball	381,098	Apr. 17	1298	339	43	255
Last	C. H. Buchanan	384,015	June 5	255	73	43	1171
Last	J. B. Mullen	381,845	Apr. 24	2284	603	43	467
Last	J. S. Turner	382,338	May 8	692	174	43	650
Last	J. S. Turner	382,339	May 8	693	174	43	650
Last. Shoe-maker's	G. W. Keller	384,448	June 12	907	236	43	1309
Lasts. Making shoe-makers'	F. G. Hitzfeld	381,551	Apr. 24	1887	.....	43	492
Lasting-jack	G. H. Clark	384,891	June 19	1573	409	43	1436
Lasting-machine	C. H. Kelley	381,019	Apr. 10	1061	267	43	218
Lasting-tool	C. H. Helms	382,574	May 15	1476	387	43	812
Lasting-tool	J. R. Jacques	382,429	May 8	895	212	43	676
Latch	A. H. Jones	384,858	June 19	1519	395	43	1427
Latch and handle. Lever	J. F. Wollensak	381,740	Apr. 24	2156	564	43	455
Latch and lock. Combined	J. Sharpe	381,436	Apr. 17	1709	456	43	350
Latch. Double-acting	A. H. Jones	381,793	Apr. 24	2226	583	43	468
Latch. Night	R. Muench	381,162	Apr. 17	1314	351	43	272
Lathe attachment	J. W. Allen	381,097	Apr. 17	1225	329	43	255
Lathe for turning axles	J. L. Bogert	380,785	Apr. 10	727	199 / 200	43	153
Lathe for wooden handles	N. R. Flint	384,353	June 12	776	203	43	1276
Lathe. Polishing	H. H. Scoville	382,909	May 15	1585	399	43	824
Lathe-tool	A. Paterson	382,724	May 15	1377	335	43	773
Lathe. Turning	G. Philion	383,369	May 22	2217	549	43	965
Lathes. Shelf of wire-netting for	H. T. Clawson	380,789	Apr. 10	727	202	43	155
Lathing to the wooden joists and studs of buildings. Device for securing wire	M. Hegbom	383,950	June 5	163	48	43	1151
Lathing to wooden joists and studs of buildings. Device for securing wire	M. Hegbom	383,951	June 5	162	48	43	1151
Lawn-sprinkler	W. W. Lee	384,109	May 1	349	91	43	577
Lead and base bullion from slag. Apparatus for separating	W. B. Devereux	384,349	June 12	767	200	43	1274
Lead and rule holder	A. A. Low	383,959	June 5	174	51	43	1154
Lead and rule holder	A. A. Low	383,960	June 5	177	51, 52	43	1154
Lead and rule holder	A. A. Low	383,961	June 5	180	52	43	1155
Lead and rule holder	A. A. Low	383,962	June 5	183	53	43	1155
Lead bullion. Desilverising	H. H. Schlapp	382,594	Apr. 3	330	94	43	67
Lead-fumes. Apparatus for collecting and utilising waste	G. H. Ward	381,301	Apr. 17	1501	405	43	309
Lead or base bullion in smelting from slag, matte, and speiss. Apparatus for separating	W. B. Devereux	381,118	Apr. 17	1257	337	43	261
Leather-board. Machine for stripping	W. E. Frost	384,633	June 5	209	78, 80	43	1125
Leather. Composition for softening and renovating	L. C. De Willers	381,620	Apr. 24	2072	.....	43	430

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Leather-creasing machine	S. H. Randall	381,038	Apr. 10	1098	269	43	221
Leather-gauging machine	Z. T. French and W. C. Meyer	381,994	May 1	189	40, 41	43	542
Leather. Machine for splitting scrap	J. A. Josselyn	381,975	Apr. 10	1178	312	43	337
Leather-scraping machine	J. Hodskinson	382,982	May 1	564	142 / 143	43	617
Leather-trimming machine	G. Schmidt	384,287	June 12	987	179	43	1256
Lear-pan	W. C. King	381,367	Apr. 17	1630	436	43	335
Leg. Artificial	A. Gault	383,569	May 29	2533	689	43	1039
Leg. Artificial	A. Shea	382,774	May 15	1347	354	43	787
Letter-box	D. Harrigan	384,154	June 5	464	127	43	1210
Letter-box	L. A. Hoke	382,089	May 1	175	45	43	548
Letter-box	J. W. Langford	384,698	June 19	1396	358	43	1362
Letter-box	J. E. Smith	384,596	June 12	1198	298	43	1340
Letter-boxes. Air-cushion for	J. G. Cutler	381,056	Apr. 10	1150	307	43	231
Letter-sheet and envelope. Combined	W. H. Kister	381,556	Apr. 24	1897	500	43	404
Level. Ditching	E. Reichenbach	383,767	May 29	2825	744	43	1089
Level. Spirit	E. A. and C. M. Stratton	383,196	May 22	1944	515	43	918
Leveling-instrument	W. C. Holmes	381,243	Apr. 17	1431	384	43	293
Lever. Compensating spring	R. Clarke	384,510	June 19	1153	305	43	1235
Lever. Quaternary yielding	T. J. Mayall	382,967	May 1	571	144	43	618
Levers. Device for operating a set of	H. D. Ganoe	382,298	May 8	688	160 / 161	43	639
Life-buoy. Reel	A. Rust	385,323	June 26	2235	572 / 573	43	1577
Life-preserving chair	J. A. Ashworth	382,935	May 15	1559	408	43	830
Life-saving device	E. D. Moore	381,923	June 19	1615	420	43	1444
Life-saving garment	G. A. Hiler	382,306	May 8	699	163	43	641
Lifter: *See* Track-lifter. Wagon and carriage lifter. Transom-lifter.							
Lifting and lowering jack	L. J. Crecelius	383,710	May 29	2730	730	43	1074
Lifting-jack	W. N. Best	384,417	June 12	985	235 / 236	43	1293
Lifting-jack	L. J. Crecelius	383,709	May 29	2728	730	43	1073
Lifting-jack	R. M. Fraley	382,964	May 15	1601	418	43	838
Lifting-jack	M. Hedges	382,293	May 22	2115	556	43	946
Lifting-jack	J. S. Orr	384,066	June 5	336	95	43	1184
Lifting-jack	S. Z. Schwenk	382,184	May 1	460	119	43	596
Lifting-jack	J. Weathers	383,029	May 15	1710	444	43	859
Lightning-arrester	P. O. Keilholtz	384,042	June 5	301	85	43	1178
Lightning-rod. Metallic crest-tile	C. B. Nelson	381,304	June 12	921	213	43	1284
Limekiln	J. W. Devling	384,895	June 19	1578	411	43	1437
Limekiln	J. H. Wallstrom	380,706	Apr. 10	604	166	43	139
Line-protector	F. C. York	381,458	Apr. 17	1747	467	43	354
Lint collecting and compacting apparatus	J. W. Shell	382,775	May 15	1346	354	43	787
Liquid-forcing apparatus	H. B. Lytle	382,296	May 1	522	134	43	599
Liquid-heater	J. C. McNamee	384,905	June 12	638	171	43	1293
Liquid-level indicator. Magneto-electric	J. J. Ghegan	384,200	June 5	535	146	43	1284
Liquid purification	W. Oliphant	384,539	June 12	1047	273 / 274	43	1327
Liquid-reservoirs. Float and level-indicator for	W. E. Eastman	381,541	Apr. 24	1878	496	43	402
Liquid-vaporising apparatus	J. M. Kriesert	384,768	June 19	1383	362	43	1401
Liquids. Apparatus for cooling	G. C. Hanford	382,156	May 1	407	106	43	568
Liquids. Apparatus for spraying	F. F. Bourdill	384,300	June 12	687	186	43	1283
Liquids at given temperatures. Device for testing the physical condition of	G. H. Perkins	383,980	June 5	206	60, 61	43	1160
Lithographic presses. Inking apparatus for	F. Macdonald	381,708	Apr. 24	2113	553	43	447
Lithographic stones. Transferring phototypes to	O. Krebs	383,308	May 22	2136	.....	43	930
Lock: *See* Alarm-lock. Bag-lock. Bolt-lock. Brake-lock. Combination-lock. Elevator-lock. Mail-bag lock. Nut-lock. Permutation-lock. Railway-switch lock. Safe-lock. Sash-lock. Seal-lock. Switch-lock. Time-lock. Whip and robe lock.							
Lock	G. B. M. Foust	383,638	May 29	2698	695	43	1051
Lock	E. F. Goodwin	383,529	May 29	2471	652	43	1018
Lock	J. Hartsens	384,441	June 12	975	234	43	1299
Lock	J. Paillet	380,455	Apr. 3	221	61	43	45
Lock	W. H. Taylor	380,537	Apr. 3	349	100	43	78
Lock	W. H. Taylor	381,893	Apr. 17	1492	402 / 403	43	307
Lock	E. S. Winchester	384,108	June 5	385	108	43	1194
Lock for bags or satchels	A. Peterson	382,738	May 15	1282	336	43	774
Locket	J. Cohn	384,426	June 12	877	226	43	1286
Locomotive	L. S. Woodbury	383,780	May 29	2698	754	43	1088
Locomotive. Electric	S. D. Field	380,880	Apr. 10	871	234	43	179
Locomotive-spring	D. Broadhurst	380,548	Apr. 3	366	105	43	75
Locomotives. Apparatus for applying sand to the driving-wheels of	J. Greaham	381,837	Apr. 24	2305	600	43	463
Locomotor. Electric	S. D. Field	380,879	Apr. 10	885	233 / 234	43	178
Logs. Machinery for cutting	J. J. Hayes	384,763	June 19	1377	361	43	1400
Loom	R. L. Hattersley and J. Hill	383,465	May 29	2374	631 / 632 / 633	43	1000
Loom driving-gear	H. Wyman	381,518	Apr. 17	1630	466	43	375
Loom for cross-weaving	C. A. Littlefield	380,760	Apr. 10	692	190 / 191	43	147
Loom for cross-weaving	C. A. Littlefield	380,761	Apr. 10	693	191 / 192	43	147
Loom hit-off mechanism	G. F. Hutchins	381,787	Apr. 24	2218	581	43	467

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Loom let-off mechanism	J. Morton	385,979	June 26	2169	538 / 539 / 553	43	1565
Loom for weaving leno fabrics	H. and C. Topham	383,836	May 29	2042	779	43	1112
Loom for weaving loom-harness	F. Eckermann	383,215	May 22	1984	363	43	985
Loom-harness. Machine for making	T. A. Emmons	383,716	May 29	2043	728 / 733 / 734	43	1076
Loom. Needle	A. L. Skinner	383,079	May 15	1793	464 / 465	43	875
Loom picker-check	W. Driver	382,640	May 8	1158	288	43	740
Loom picker-staff check	B. F. Carter	384,108	June 12	1084	388	43	1319
Loom picker-stick	S. M. Hamblin	382,645	May 8	1163	289	43	742
Loom picking-mechanism	S. and S. M. Hamblin	384,622	June 19	1175	310	43	1360
Loom pile-wire	G. Seguchneider	383,545	May 29	2006	668	43	1025
Loom-shuttle	J. C. Sergeson	383,774	May 29	2042	747	43	1093
Loom shuttle-box	H. Wyman	381,510	Apr. 17	1640	467	43	575
Loom shuttle-motion	L. E. Ross	383,077	May 15	1791	462	43	874
Loom-shuttle relief mechanism	Z. T. McKinney	383,995	May 15	1847	431	43	648
Loom-shuttles. Thread-guide for	T. J. Mayall	381,402	Apr. 17	1657	443	43	589
Loom-stopping mechanism	H. Wyman	382,163	May 22	1990	508	43	999
Loom-temple	W. H. Taylor	383,501	May 29	2037	647	43	1019
Looms. Electric stopping mechanism for	J. Rush and E. Oldfield	384,934	June 19	1027	483	43	1447
Looms. Jacquard machine for	J. S. and S. Smith	380,462	Apr. 3	229	66	43	47
Looms. Picking sweep-strap connection for	E. H. J. Fielder	382,690	May 8	1161	283	43	730
Looms. Pile-warp delivery mechanism for double-pile-fabric	F. Pearson	383,825	May 29	2023	773	43	1106
Looms. Shuttle-holder attachment for	W. Wattie	380,736	Apr. 10	651	189	43	130
Looms. Whip-roll for	D. Durkin	381,617	Apr. 24	1964	561	43	491
Looms. Whip-roll for	A. F. Parker	381,780	Apr. 24	2133	559	43	451
Lounges and other articles of furniture. Device employed in the manufacture of spring-bottoms of	F. B. Hemingway	380,323	Apr. 3	24	7	43	7
Low-water alarm. Fire-bucket	J. Nolan	384,212	June 5	549	151	43	1228
Lubricator: *See* Axle-lubricator.							
Lubricator	G. W. Brown	382,732	May 15	1313	345	43	799
Lubricator	W. A. Carey	385,040	June 26	1804	464	43	1491
Lubricator	T. J. Hart	382,978	May 15	1628	424	43	842
Lubricator	J. R. Hodges and W. M. Davis	381,375	Apr. 17	1617	438	43	536
Lubricator	R. Marshall	381,804	Apr. 24	2043	567	43	472
Lubricator	R. Mason and J. M. Smith	384,051	June 5	312	80	43	1180
Lubricator	E. McCoy	382,745	May 29	2782	733	43	1026
Lubricator	E. McCoy	383,746	May 29	2785	733	43	1053
Lubricator	W. Millard	382,544	May 8	1014	250	43	719
Lubricator	M. Schneider	381,596	Apr. 24	1936	510	43	413
Lubricator	E. Verny	382,915	May 15	1533	402	43	888
Machine-gage	G. C. James	380,683	Apr. 10	576	166	43	125
Magnet. Polarized electro-	E. J. Mallett	384,321	June 12	730	191	43	1297
Magnetic separator	G. Conkling	383,888	June 5	20	7	43	1154
Magnetic separator	M. H. Smith	383,918	June 5	109	32	43	1141
Magnetic separator	M. H. Smith	384,845	June 19	1262	318	43	1366
Magneto-generators. Automatic shunt for	C. E. Scribner	382,016	May 15	1695	440	43	856
Mail-bag catcher	J. M. Keith	381,841	Apr. 24	2316	602	43	465
Mail-bag holder	C. W. Allen	380,543	Apr. 3	360	103	43	74
Mail-bag lock	J. C. Brown	380,986	Apr. 10	1041	275	43	211
Mail-conveying apparatus	A. D. Saunders	383,771	May 29	2038	746 / 747	43	1092
Mail-pouch	G. J. Bedford	384,736	June 19	1339	349 / 350	43	1392
Malt-kiln	G. Reisingbaus	385,127	June 26	1949	496 / 499	43	1521
Malt liquors. Making	C. C. Hanford	382,155	May 1	466	108	43	588
Malt-mashing machine	T. Evans	384,508	June 12	1069	385 / 386	43	1336
Malting-machine	H. and J. Noth	380,566	Apr. 3	425	121	43	97
Manacle	F. A. Hyatt and E. D. Tankersley	380,441	Apr. 3	197	54	43	40
Mandrel. Roller-	S. P. M. Tasker	382,916	May 1	197	51, 52	43	550
Manure-distributer	S. H. Garst	383,630	May 29	2036	695 / 696	43	1051
Map and chart support. Adjustable	W. H. Larew	383,618	May 29	2015	709	43	1107
Map-case	A. H. Hall	384,253	June 12	981	168	43	1256
Marine signal	W. G. Spiegel	385,016	June 26	1764	456	43	1484
Mash-tub	G. Tilgner and J. C. Wilcke	384,180	June 5	502	137	43	1218
Mast-hoop	C. S. Mott	383,366	May 29	2584	675	43	1035
Mat: *See* Door-mat. Wire mat.							
Match-frame	G. W. Gates	383,721	May 29	2753	735	43	1077
Match press or frame	G. W. Gates	383,722	May 29	2754	736	43	1077
Match-sticks. Machine for cutting	W. H. H. Sisum	382,442	May 8	850	217	43	649
Matting and making the same. Flag or rush	J. Bray, Jr	381,309	Apr. 17	1374	367	43	293
Mattress. Sectional	N. Clement	380,713	Apr. 10	613	169	43	131
Mattress. Tubular floating	C. J. Pigeon and L. J. T. Lacroix	381,613	Apr. 24	2256	549 / 550	43	474
Measure for fitting gloves. Hand-	A. E. McDonald	383,365	May 29	2813	567	43	954
Measure. Grain-	F. H. Ehlers	381,350	Apr. 17	1584	424	43	525
Measurement apparatus. Electrical-	H. V. Hayes	381,789	Apr. 24	2287	578	43	485
Measuring apparatus. Fabric-	J. W. Kruger	381,842	Apr. 24	2317	602	43	485
Measuring-bagger	J. H. Forsyth	381,129	Apr. 17	1284	338	43	283
Measuring device. Automatic water-	W. Lammers	385,274	June 26	2158	551	43	1564
Measuring device for ice-cream and other similar substances	T. A. Naylor	384,776	June 19	1397	365	43	1404
Measuring device. Rope-	L. J. Ross	382,193	May 1	459	119	43	590
Measuring machine. Automatic grain-	A. J. Grissom	380,718	Apr. 10	630	170 / 171	43	130
Measuring machine. Coin-controlled height-	C. R. Williams	383,668	May 29	2577	693	43	1060

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Measuring machine. Land-	R. Roberds	382,436	May 8	837	215	43	679
Measuring machine. Rattan-	E. L. Taft and C. L. Jones	383,197	May 22	1965	545 / 546	43	916
Measuring-tank for oil	M. J. Lindsay and D. M. Rose	384,968	June 26	1767	443	43	1471
Measuring the quantity of water flowing through a pipe. Apparatus for	C. Herschel	381,373	Apr. 17	1614	431	43	531
Measuring utensil	T. B. Farrington	382,670	May 15	1470	366	43	808
Measuring vertical and horizontal distances. Instrument for	J. Short	383,375	May 22	2004	809	43	985
Measuring-vessel	W. Evans, Jr	385,363	June 26	2207	606	43	1579
Meat-block. Sectional	B. A. Stevens	381,654	Apr. 24	2085	563	43	481
Meat-cutter	P. and W. Deischer	382,713	May 29	2736	721	43	1073
Meat-cutting machine	G. O. Rimmon and J. Zimmerman	382,192	May 1	467	119	43	588
Mechanical motion	W. H. Heaton and W. A. Loveas	382,289	Apr. 3	189	38, 39	43	67
Mechanical motor	S. A. Holmes	382,882	May 8	979	267	43	795
Mechanical movement	B. F. Anderson	383,956	June 26	1572	676	43	1389
Mechanical movement	A. W. Johnson	384,350	June 12	687	189	43	1314
Mechanical movement	M. R. Kellogg	383,577	May 29	2049	671	43	1033
Mechanical movement	T. B. McKnight	380,160	May 1	320	80	43	613
Mechanical movement	H. Mechring and A. Pfläger	383,467	May 29	2021	666	43	1018
Mechanical movement	H. Mechring and A. Pfläger	383,468	May 29	2023	666	43	1018
Mechanical movement	B. Scaries	380,660	Apr. 3	543	149	43	109
Mechanical movement	G. Schenck	380,697	Apr. 10	594	163	43	123
Mechanical movement	J. Wiet	382,725	May 15	1261	356	43	788
Medicines, &c. Composition of matter to be used in the manufacture of	C. F. Breadbent	382,680	May 22	2760	.....	43	1000
Medical apparatus. Electro-	P. Horst	382,811	May 15	1395	386	43	760
(Medicine.) Alterative remedy	G. M. Painter	380,346	Apr. 3	51	.....	43	13
(Medicine.) Alterative tonic	P. Hoover	3 0,878	Apr. 10	688	.....	43	177
(Medicine.) Cough remedy	G. A. Patton	384,466	June 12	926	.....	43	1266
Medicine to animals. Apparatus for administering	C. W. Collyer	383,440	May 22	2230	619	43	988
Metal articles. Machine for heating and hardening	H. White	383,030	May 15	1712	445 / 446	43	869
Metal bars. Die for upsetting	W. R. Webster	380,413	Apr. 3	155	44	43	76
Metal bars. Reticulated or open work of	T. Robbins	382,250	May 22	2044	537	43	894
Metal bars. Spreading the ends of rectangular	W. R. Webster	380,414	Apr. 3	157	44	43	76
Metal-cutter	A. C. Irvine	384,694	June 19	1291	337	43	1326
Metal. Device for handling heavy masses of	L. F. Johnson	381,474	Apr. 17	1769	472	43	568
Metal mold	C. S. Bell	382,633	May 8	1147	262	43	780
Metal plates. Interlocking the edges of	F. C. Bellinger	384,118	June 5	469	113	43	1189
Metal plates with tin and other metals. Coating	D. Edwards, R. Lewis, and P. Jones	381,286	Apr. 17	1306	272 / 274 / 275	43	268
Metal rods. Machine for reducing	H. A. Williams. (Reissue.)	10,982	May 15	1695	477	43	889
Metals by means of electrolysis. Apparatus for producing	J. Ombelt	382,183	May 1	446	116	43	585
Metals from ores. Obtaining the precious	L. W. Davies	384,688	June 19	1250	.....	43	1277
Metals. Molding viscous	W. Barnham	382,030	May 15	1720	.....	43	888
Metals with chemicals, minerals, &c. Hand-charger for combining	P. S. Reeves	384,675	June 5	346	98	43	1197
Metallic blanks. Apparatus for tapering	C. Nobs	383,142	May 22	1893	494	43	906
Metallic mold	P. F. Dillon	382,411	May 8	901	254 / 255	43	671
Metallic surface. Ornamented	F. Rhind	384,922	June 12	961	177	43	1257
Metallic surfaces. Ornamenting	D. W. Parker and L. F. Griswold	382,681	May 8	1159	269	43	747
Metallic wheel	F. A. Nickerson	382,686	May 8	1165	266	43	748
Meter: *See* Electric meter. Rotary liquid-meter. Grain-meter. Water-meter. Piston meter.							
Micrometer-gage	J. A. MacDonald	384,771	June 19	1380	353	43	1402
Microphone-transmitter	G. M. Phelps	380,925	Apr. 10	928	260	43	183
Middlings-purifier	A. Heine	382,572	May 15	1474	367	43	812
Middlings-purifier	E. Weiss and L. Fraenkel	383,388	May 22	2073	544	43	920
Milk. Machine for liquidizing condensed	G. Roth	382,915	June 5	105	31	43	1141
Milk-preserving machine	G. Roth	385,013	June 26	1760	455	43	1469
Mill: *See* Cider-mill. Gunpowder-mill. Coffee-mill. Ink-mill. Crushing-mill. Paint-mill. Crushing and grinding-mill. Roller-mill. Log mill. Rolling-mill. Flour-mill. Saw-mill. Grinding-mill.							
Mill-feed	G. Heller	381,871	Apr. 17	1619	431	43	531
Mills, factories, &c. Apparatus for moistening the atmosphere in	A. Koechlin	384,630	June 19	1185	312 / 313	43	1269
Milling-machine	A. H. Brainard	381,166	Apr. 17	1244	324	43	289
Milling-machine	A. H. Brainard	381,585	Apr. 24	1854	490 / 491	43	396
Millstone-dress	J. Buchuleh	381,289	Apr. 24	1851	490	43	395
Millstone or mill-plate dress	D. J. Ames	382,747	May 15	1269	344	43	779
Mines. Draining coal-	G. Zitsmann	381,980	Apr. 17	1367	365	43	301
Mining-drill	J. R. Howells	384,165	June 5	491	128 / 129	43	1214
Mining-machine	F. Lowry	383,661	May 15	1703	487	43	879
Mirror	J. Bay	382,891	May 8	618	157 / 158	43	657
Mirror	J. B. Vicenty	381,660	Apr. 24	1982	516	43	417
Mirror	P. Wiedorer	384,468	June 19	1442	378	43	1413
Mirror. Folding	P. Wiedorer	381,488	Apr. 17	1749	465	43	555
Mirror. Folding	P. Wiedorer	384,469	June 19	1443	378	43	1413
Mirror-pivot	A. E. Jones and E. H. Peck	383,468	May 29	2004	634	43	1008
Miter-box	C. Lymon	380,638	Apr. 3	486	136	43	99

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Mold:							
See Butter-mold. Heel-mold.							
See Casting-mold. Metal mold.							
Confectioner's mold. Metallic mold.							
Mold	J. Hemphill	384,976	June 26	1691	439	43	1660
Mold	M. G. Imbach	383,885	June 5	56	17	43	1131
Mold	R. Sleeth	384,505	June 12	1127	397	43	1262
Mold-boards. Attaching	J. F. Packer	382,185	May 1	446	117	43	290
Molder's draw-iron	G. A. White	382,903	May 22	1974	519	43	780
Molder's snap-flask	E. Riley	385,903	June 26	2044	668	43	1540
Molding apparatus	J. B. McCormick	381,156	Apr. 17	1305	340	43	871
Molding machine. Sand-	J. R. Davies	382,217	May 1	498	{139 / 139}	43	604
Moldings. Machine for cutting	W. Haddock	380,634	Apr. 3	183	50, 51	43	37
Money-packages, &c. Safety-case for	E. J. Brooks	381,326	Apr. 17	1541	416	43	317
Mop-wringer	J. A. Crandall	385,170	June 26	1980	510	43	1530
Mop-wringer	G. B. Freeman	382,965	May 15	1692	419	43	630
Mortising-machine	G. W. Bugbee and F. Danner	384,559	June 12	1077	288	43	1233
Mortising, tenoning, and planing machine, and turning-lathe. Combined	E. W. Snedeker	380,953	Apr. 10	980	290	43	290
Motion. Device for converting	S. F. Kellogg	382,861	May 15	1490	380	43	817
Motion. Device for converting	E. A. Moon	381,160	Apr. 17	1311	350	43	872
Motion. Device for converting	E. A. Moon	381,161	Apr. 17	1312	350	43	872
Motor:							
See Cable-motor. Mechanical motor.							
Car-motor. Multiple-cylinder motor.							
Electric motor. Spring-motor.							
Electro-magnetic motor. Steam or other motor.							
Gas-motor. Wave-power motor.							
Motor	J. M. Brosius	382,865	May 15	1463	384	43	811
Motor	D. du Boulay	380,648	Apr. 3	511	143	43	104
Motor	W. J. Dam	380,557	Apr. 3	379	106	43	77
Motor	J. B. Erwin	384,612	June 19	1154	{305 / 306}	43	1256
Motor-engine worked by combustible gas	N. A. Otto	383,065	May 15	1775	459	43	872
Motors. Cylinder for hydraulic	W. Ross	382,389	May 8	772	196	43	606
Mower	A. L. Quilliam	384,712	June 19	1309	342	43	1396
Mower	W. Schoeller	380,459	Apr. 3	286	68	43	46
Mower attachment. Lawn-	B. A. Crozier	383,632	May 29	2616	692	43	1049
Mower. Lawn-	E. E. Johnson	385,272	June 26	2156	550	43	1562
Mower. Lawn-	J. W. McClellan	383,806	June 5	72	21	43	1135
Mower. Lawn-	I. W. Richards	384,787	June 19	1411	370	43	1407
Mower. Lawn-	C. F. Ritchel	382,388	May 8	771	196	43	606
Mower. Lawn-	J. V. Rowlett	383,629	May 29	2630	{774 / 775}	43	1110
Mower. Lawn-	F. M. Waters	383,927	June 5	129	38	43	1146
Mowers and reapers. Guard-finger for	H. Lubker	383,473	May 29	2392	636	43	1004
Mowing-machine	J. Dain, Jr	382,598	May 8	1089	{280 / 281}	43	730
Mowing-machine	S. V. Kennedy and D. Strunk	383,644	May 29	2636	{697 / 698}	43	1053
Mowing-machine divider	J. H. Jones	380,900	Apr. 10	904	242	43	185
Mowing-machines. Pitman attachment for	F. McMahon, A. C. Sharp, and C. E. Liles	382,891	May 15	1502	393	43	630
Mucilage-can	J. E. Wootten	382,746	May 15	1307	343	43	779
Muffler. Steam-	T. E. Hill	384,364	June 12	793	207	43	1279
Mug	Z. T. Hall	385,179	June 26	2004	514	43	1532
Multiple-cylinder motor	E. B. Benham	380,847	Apr. 10	813	221	43	169
Multiple switch-board	M. G. Kellogg	382,474	May 8	903	230	43	689
Multiple switch-board	M. G. Kellogg	382,475	May 8	907	230	43	689
Multiple switch-board	M. G. Kellogg	382,476	May 8	910	231	43	691
Multiple switch-board	M. G. Kellogg	382,477	May 8	913	231	43	692
Multiple switch-board circuit	C. E. Scribner	384,477	June 12	940	244	43	1262
Multiple switch-board-testing apparatus	C. E. Scribner	384,644	June 19	1200	317	43	1305
Multiple switch-boards. Long-distance connection for	C. E. Scribner	381,431	Apr. 17	1704	457	43	340
Multiple switch-boards. Test-circuit for	C. E. Scribner	383,495	May 29	2427	{644 / 645}	43	1010
Multiple switch-boards. Test system for	C. E. Scribner	385,205	June 26	2047	523	43	1541
Multiple transfer-pad	G. H. Arthur	381,201	Apr. 17	1368	365	43	902
Music-box	L. Campiche	382,292	May 8	619	158	43	636
Music-box	E. F. Jaccard	382,879	May 15	1488	{389 / 390}	43	817
Music-chart	G. S. Rice	383,011	May 15	1667	430	43	854
Music-holder	E. W. Robinson	385,010	June 26	1757	454	43	1462
Music-holder	D. E. Rugg	381,498	Apr. 17	1787	476	43	364
Musical box	E. Fornachon	382,040	May 1	360	61	43	570
Musical instrument. Key-board	A. L. Caldera	382,028	May 1	221	58, 59	43	554
Musical instrument. Mechanical	M. Gally	380,716	Apr. 10	617	170	43	132
Musical instrument. Mechanical	L. E. J. Thibouville	380,698	Apr. 3	454	{128 / 129}	43	93
Musical wind-instrument	A. Leforestier	382,991	May 15	1639	420	43	845
Mustard-pot. Pneumatic	M. Dehnert	382,218	May 1	496	129	43	605
Muzzle	R. B. Cole	381,615	Apr. 24	1782	500	43	421
Nail	W. B. Alden	382,676	May 15	1215	315	43	761
Nail-assorting machine	E. B. Allen	384,735	June 19	1337	{348 / 349}	43	1301
Nail-driving implement. Hand	J. Weichhart	380,612	Apr. 3	461	120	43	94
Nail feeding and distributing machine	F. F. Raymond, 2d	383,911	June 5	96	29	43	1139
Nail-machine	G. E. Buschick and F. Rautert	384,422	June 12	872	227	43	1295
Nail machine. Wire-	W. F. Bancroft and H. A. Stone	382,632	May 8	1144	{294 / 295}	43	738

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Nail machine. Wire-	A. B. Glover	383,878	June 5	29	{13 / 13 / 14}	43	1130
Nail making and distributing machine	F. F. Raymond, 2d	380,396	Apr. 3	426	{123 / 124}	43	69
Nail making and distributing machine	F. F. Raymond, 2d	380,618	Apr. 10	772	{211 / 212}	43	182
Nail making, distributing, and driving machine	F. F. Raymond, 2d	381,280	Apr. 17	1480	{367 / 368}	43	304
Nail-plate feeder	J. C. Gould	385,112	June 26	1912	{466 / 467}	43	1514
Nail-plate feeder	C. E. Houghton	380,572	Apr. 3	401	115	43	88
Nail-plate feeder	A. H. Tyrrell	381,589	Apr. 24	1960	516	43	417
Nail-strip	J. R. Prouty	383,907	June 5	93	29	43	1138
Nail-strip	J. R. Prouty	383,908	June 5	94	29	43	1138
Nail-strips. Machine for loading	J. R. Prouty	383,910	June 5	96	29, 30	43	1139
Nails. Machine for making wire	H. Essex	384,515	June 12	1014	264	43	1231
Nails, tacks, &c. Heading	G. W. Copeland	383,043	May 15	1748	458	43	866
Nailing-machine	H. W. Dean	380,645	Apr. 3	502	141	43	103
Nailing-machine	L. Godda	383,455	May 29	2350	{625 / 626 / 627}	43	996
Napkin-holder	A. P. Baker	383,847	June 5	2	1	43	1121
Napkin-supporter	F. W. Cook	382,691	May 15	1240	323	43	782
Necktie and collar-button combined	A. C. Whittingham	383,989	June 5	133	38	43	1146
Necktie-fastener	A. Heilenberg	384,020	June 5	260	81	43	1178
Necktie-fastener	W. B. Sargent	383,983	June 5	236	68	43	1164
Needle and cord. Combined	F. A. Smith, Jr	380,773	Apr. 10	709	196	43	150
Needle-bath	B. C. Smith	382,611	May 1	191	49	43	589
Needle-grooving machine	J. Berry	382,250	May 1	543	{128 / 129}	43	613
Needles. Making	S. F. Jenkins	383,733	May 29	2706	729	43	1069
Nest. Hen's	E. M. Schumacher	380,680	Apr. 10	585	168	43	126
Net. Landing-	G. W. McClintock	382,317	May 8	652	166	43	643
Newspaper-selling apparatus	C. Galland	382,321	May 8	974	245	43	704
Nickel or other metal by electrolysis. Apparatus for forming sheets of	M. G. Farmer	381,004	Apr. 10	1065	263	43	215
Nose-bag support for vehicles	J. Murray	383,623	May 29	2280	771	43	1108
Nose-rings. Machine for making barbs for beg-	J. H. Derington and H. J. Parker	382,693	May 15	1242	324	43	786
Nozzle. Filling and pouring	N. Thompson	381,971	May 1	109	26	43	534
Numbering-machine	C. S. Ellis	381,227	Apr. 17	1309	376	43	869
Numbering-machine	S. K. White	381,974	May 1	113	27	43	535
Numbering mechanism	J. M. Black	381,105	Apr. 17	1238	332	43	257
Nut-lock	L. Anderson	384,685	June 19	1548	407	43	1435
Nut-lock	H. B. Baker	383,959	May 29	2060	546	43	949
Nut-lock	J. P. Ball	383,665	May 29	2691	711	43	1065
Nut-lock	L. J. Benton	382,789	May 15	1271	300	43	791
Nut-lock	P. L. Brady	380,712	Apr. 10	812	168	43	131
Nut-lock	O. L. Castle	383,212	May 22	1901	502	43	924
Nut-lock	G. Cook	381,463	Apr. 17	1753	462	43	357
Nut-lock	W. Dunn	382,078	May 1	306	80	43	559
Nut-lock	J. A. Hard	384,904	June 5	540	148	43	1286
Nut-lock	W. B. Hohenshell	383,810	May 29	2903	766	43	1104
Nut-lock	A. B. Kerr	384,767	June 19	1382	362	43	1401
Nut-lock	J. T. Latchaw	380,494	Apr. 3	272	75	43	56
Nut-lock	J. Merrins and A. S. Muncey	384,378	June 12	815	212	43	1263
Nut-lock	W. B. Miller	382,990	May 15	1652	432	43	847
Nut-lock	A. R. Neiman and L. M. Melhorn	383,368	May 22	2214	587	43	985
Nut-lock	E. H. A. Oakley	381,573	Apr. 24	1918	505	43	408
Nut-lock	M. H. Phillips	382,054	May 1	249	71	43	563
Nut-lock	J. H. Piper	380,926	Apr. 10	941	250	43	193
Nut-lock	W. N. Sears	380,586	Apr. 3	332	95	43	69
Nut-lock	J. G. Ware	382,900	May 1	470	120	43	580
Nut-lock	G. Westinghouse, Jr	382,920	May 15	1540	{403 / 404}	43	827
Nut-lock	A. J. Wylie	383,103	May 22	1919	502	43	900
Nut-machine	F. Lackner	385,187	June 26	2021	517	43	1535
Nut-machine	F. Lackner	385,188	June 26	2022	517	43	1535
Nut-machine	A. Marland	385,198	June 26	1936	{494 / 495}	43	1518
Nut-making machine	F. Brüser	381,872	Apr. 24	2365	{614 / 615}	43	484
Nut-making machine	W. H. Johnson	380,383	Apr. 3	199	50	43	38
Oar and oar-lock	G. K. Pheatt	383,944	May 22	2038	534	43	933
Octave-coupler	F. Pritchard	381,418	Apr. 17	1660	450	43	345
Office-indicator	R. R. Garran	383,393	May 22	2258	600	43	978
Oil. Apparatus for burning crude petroleum	R. W. Smith	384,673	June 19	1552	404	43	1432
Oil-burner	C. H. Phelps	384,275	June 12	653	175	43	1255
Oil-cakes. Molding-press for	O. P. Bushnell	385,094	June 26	1885	{481 / 482}	43	1509
Oil-can	E. G. Cushman	385,244	June 26	2104	530	43	1553
Oil-can	J. Rau	381,370	May 22	2018	538	43	965
Oil-can	C. H. Straffin and G. L. Robertson	385,328	June 26	2245	575	43	1580
Oil-can	F. D. Walpole	384,602	June 19	1453	376	43	1411
Oil-cloth exhibitor and stand	R. W. Hilleary and J. F. Poulton	384,636	June 19	1179	311	43	1261
Oil-cup	C. H. Nunn	380,659	Apr. 3	527	145	43	109
Oil-distributer for vessels. Floating	J. Ericson	380,479	Apr. 3	252	69	43	52
Oil-furnace	A. A. Harwood	383,123	May 22	1880	{468 / 469}	43	880
Oil. Harness-	A. S. Ashcraft	383,511	May 29	2449	.....	43	1014
Oil-press mats. Frame for use in the manufacture of	M. T. and J. A. Murphy	381,272	Apr. 17	1479	365	43	301
Oils. Centrifugal apparatus for separating grease.	A. F. Craig, A. Neilson, and J. Snod	383,707	May 29	2725	{718 / 719}	43	1073
Oils from crude spirits. Removing fusel-	J. Panitta	384,888	June 19	1542	.....	43	1430

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Oils, &c. Package for	C. S. Homer	380,894	Apr. 10	890	246	43	184
Oiler	P. D. Hay	384,769	June 19	1376	388	43	1289
Oiling cartridge. See							
Oiling projectile. See							
Oiling shells. Projector for use	A. H. Walker	380,369	Apr. 3	97	23	43	23
Oiling shells. Projector for use	A. H. Walker	380,370	Apr. 3	99	23	43	23
Oiling shells. Projector for use	A. H. Walker	380,371	Apr. 3	1139	23	43	23
Oiling shells. Projector for use	A. H. Walker	381,738	Apr. 24	2146	532	43	454
Ointment	A. H. Walker	381,733	Apr. 24	2146	532	43	454
Open ring	A. Prochowics	381,483	Apr. 17	1783		43	344
Opera, field, or marine glass	J. Daniels	382,858	May 15	1566	414	43	1035
Opera, field, or marine glass	W. A. Cardwell	384,122	June 5	413	115	43	1289
Operating-table and desk. Surgeon's combined	G. H. Eaton	381,247	Apr. 17	1579	423	43	304
Orange-grading device	F. L. Cowles	380,886	Apr. 10	847	220	43	175
Orange mineral and red lead. Manufacturing	A. Ayer	383,385	May 22	1978	530	43	961
Ordnance	A. C. Bradley	382,070	May 1	287	76, 77	43	567
Ordnance. Breech-loading	C. M. Van Tine	380,366	Apr. 3	95	20	43	21
Ordnance. Breech-loading	C. C. Chamberlain	381,330	Apr. 17	1546	417	43	316
Ordnance. Breech-loading	B. B. Hotchkiss	381,697	Apr. 24	2094	548	43	444
Ordnance. Breech-loading	C. Röstel	383,572	May 22	2219	589	43	985
Ordnance for land defenses. Carriage for heavy	W. J. Hoyle	381,979	May 1	139	31	43	539
Ordnance for land defenses. Mounting for heavy	W. J. Hoyle	381,980	May 1	139	31, 32	43	539
Ordnance. Pneumatic	N. W. Pratt	381,950	May 1	78	18	43	536
Ordnance. Turret-mounting for	T. Nordenfelt	382,182	May 1	444	116	43	595
Ore-concentrating machines. Apron for	G. E. Woodbury	381,458	Apr. 17	1745	467	43	354
Ore-concentrator	C. C. Rueger	382,253	May 15	1481	372	43	688
Ore-concentrator	J. White	382,578	May 8	1088	272	43	728
Ore-crushing machine	S. W. Kimble	381,385	Apr. 17	1602	425	43	326
Ore-pulverizer	D. Baratini and W. P. Stevenson	380,243	Apr. 10	630	220	43	168
Ore-roasting furnace	J. L. Lovell	381,629	Apr. 24	2091	535	43	434
Ore-smelting furnace	C. W. Barry	385,230	June 26	2068	520	43	1546
Ore-washer	A. Hendey	382,433	May 8	815	204 / 205	43	674
Ores and materials containing sulphur for the extraction of metals and other constituents. Treatment of	R. and C. Oxland	381,809	Apr. 24	2046	.....	43	473
Ores and metallurgical products. Treating	E. H. Russell	381,849	Apr. 24	2330	.....	43	488
Ores and metallurgical products. Treating	E. H. Russell	381,850	Apr. 24	2334	.....	43	488
Ores. Apparatus for examining	J. R. Williamson and W. W. Hickies	380,843	Apr. 10	807	210	43	167
Organ, Reed	M. Clark	384,680	June 19	1151	304 / 305	43	1355
Organ. Reed	I. B. Taylor	382,018	May 1	286	54, 55	43	556
Organ stop-action. Reed	L. G. Billings	382,943	May 15	1573	410 / 411	43	833
Oven	L. Coke	382,673	May 1	286	70	43	580
Oven	S. Smith	384,177	June 5	490	136	43	1217
Oven attachment	C. H. Harmon	381,476	Apr. 17	1764	471	43	350
Oven attachment	C. E. Hollingsworth	382,127	May 22	1874	490	43	580
Oven. Baker's	F. Dührkop	380,536	Apr. 3	379	106	43	77
Oven. Baker's	W. C. Fowler and W. G. Schaefer	380,561	Apr. 3	387	110 / 111	43	79
Oven. Baker's	T. B. McFadden	380,389	Apr. 3	46	17	43	11
Ovens. Detachable shelf and heat-regulator for	O. F. Frost	381,229	Apr. 17	1494	375	43	290
Overshoe	A. B. Walters	384,483	June 12	949	246	43	1289
Ox-bow key	W. Ware	380,668	Apr. 3	237	64	43	48
Oyster-dredge	W. A. Stewart	382,624	May 8	1134	288	43	726
Oyster-spat. Obtaining	O. B. Beach	385,161	June 26	1981	507	43	1548
Package and preparing the same. Food	H. Salzer	381,720	June 19	1319	.....	43	1295
Package-carrier	J. W. Bridwell	384,556	June 12	1077	281	43	1233
Package for butter or similar material	S. Smyth	385,675	June 26	1864	476	43	1548
Packing for balanced valves	H. G. Hammett	382,309	May 8	833	161	43	640
Packing for steam-cylinder pistons. Metallic	J. Patten	384,972	June 12	649	174	43	1254
Packing for stuffing-boxes. Adjustable	P. Thacher, M. H. and W. D. Morris	382,334	May 8	833	173	43	640
Packing. Piston	M. J. Russell	383,253	May 22	2055	530	43	985
Packing pulverulent substances. Machine for	C. J. Mattison	383,126	May 22	1897	498	43	985
Packing. Rod	F. Pinch	382,167	May 1	450	117	43	595
Pad:							
See Abrading-pad. Collar-pad. Multiple transfer-pad. Railway-rail pad. Saddle-pad. Sweat-pad.							
Paddle-wheel boat	I. C. Monroe and W. H. H. Sieum	381,897	June 5	73	21	43	1125
Paddle-wheel. Feathering	A. H. Carpenter	381,674	Apr. 24	2082	539	43	427
Paddle-wheel. Feathering	R. J. Jones	384,367	June 12	746	208	43	1279
Paddle-wheels. Feathering	D. J. Blaster	385,230	June 26	2066	524	43	1549
Padlock	D. and I. Waino	380,961	Apr. 10	995	254	43	202
Pail. Chamber	G. W. Stilson	381,189	Apr. 17	1338	357	43	276
Pail. Dinner	F. G. O. Ehle	385,257	June 26	2130	543	43	1550
Pails. Cover for strainer	S. E. Forman	380,318	Apr. 3	16	4	43	6
Paint-mill	A. J. Gaston	383,302	May 22	2100	579 / 580	43	961
Paint. Water-proof	M. Fred	380,785	Apr. 10	744	.....	43	186
Paints, &c. Manufacturing the oxides of readily-oxidizable metals for	A. C. Bradley	382,133	May 1	377	98, 99	43	582
Painter's hook	J. B. Hopper	383,883	June 5	50	16	43	1130
Painter's stage	C. D. Bowyer and W. H. Casperson	382,250	May 1	532	140	43	635
Pan:							
See Baking-pan. Bed-pan. Dust-pan. Evaporating-pan. Leer-pan. Scale-pan.							
Pan	E. W. Monroson	383,689	May 29	2247	799	43	1089
Paneling-machine	J. A. Dean	383,711	May 29	2732	782	43	1074
Pantaloons	H. T. Caullet	382,689	May 1	288	58	43	580
Pantaloons or garment stretcher	W. W. Atkinson	384,498	June 12	936	238	43	1240
Pants-protector and pull-strap for shoes. Combined	W. H. Stewart	382,269	May 29	2036	543	43	1049
Pantry. Portable	H. M. Ramey	382,641	Apr. 24	2013	532	43	687

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Paper and twine holder	J. G. McBride	381,155	Apr. 17	1204	348	43	271
Paper bags. Apparatus for and method of making	L. D. Benner	382,662	May 15	1294	317 / 318 / 319	43	768
Paper. Bluing	G. H. Weiss	384,804	June 19	1436	377	43	1412
Paper-board machine	J. M. McCausland	383,744	May 29	2761	736	43	1092
Paper box	K. J. Collins	380,861	Apr. 10	837	207	43	172
Paper box	C. W. Elliott	380,748	Apr. 10	665	194	43	146
Paper box	W. B. Howe	384,038	June 5	200	81, 82	43	1176
Paper box	B. Osborn	383,537	May 29	2494	650	43	1042
Paper box	A. H. Zagalla	381,050	Apr. 10	1136	304	43	229
Paper-clip	J. W. King	381,702	Apr. 24	2101	550	43	445
Paper-cutting machine	C. Beck	383,692	May 29	2698	713	43	1066
Paper-cutting machine	E. P. Donnell	383,714	May 29	2738	731 / 732	43	1075
Paper-fastener. Gummed	J. M. Jones	382,813	May 15	1397	367	43	797
Paper for wrapping metallic articles to prevent tarnishing, &c. Preparing	J. C. Pennington	380,515	Apr. 3	382	.....	43	66
Paper-holder	C. W. Sherwood	382,623	May 8	1133	292	43	736
Paper holder and cutter	J. Reynolds	381,281	Apr. 17	1402	366	43	304
Paper holder. Roll	H. N. King	383,518	May 29	2543	672	43	1033
Paper-holding spindle	S. Powell	380,392	Apr. 3	431	122	43	66
Paper-machines. Renewing strainer-plates for	F. Williams	381,737	Apr. 24	2152	563	43	455
Paper-making machines. Section-box for	J. D. and W. F. Pickles	384,976	June 12	654	172	43	1235
Paper, paper bags, &c. Suspending-holder for	S. B. Palmer	381,419	Apr. 17	1674	448	43	343
Paper receptacle	O. H. Hicks	381,134	Apr. 17	1576	341	43	286
Paper receptacle	O. H. Hicks	381,135	Apr. 17	1577	342	43	285
Paper receptacle	O. H. Hicks. (Reissue)	10,929	May 15	1290	476	43	679
Paper-service machine. Roll	K. O. St. John	384,817	June 19	1558	405	43	1433
Paper vessel	T. F. W. Schmidt	382,559	May 8	1036	264	43	717
Papers. Device for stringing and filing	W. E. Klam	381,351	Apr. 17	1585	426	43	305
Papers, &c. Return-packet for the transmission of	W. B. Nolley	385,197	June 26	2035	521	43	1536
Parcel-carrier. Electro-magnetic	M. C. Mengis	384,775	June 19	1396	385	43	1404
Parer. Apple	F. R. Williams	381,044	Apr. 10	1124	302	43	267
Paring, coring, and slicing machine. Apple	B. D. Tabor	383,922	June 5	117	34 / 35 / 36	43	1143
Paring machines. Fork for fruit	W. A. C. Oaks	382,849	May 8	1019	260	43	713
Passenger-register	T. F. Hanly	384,572	June 12	1095	287 / 288	43	1237
Pasting apparatus	W. A. Lorenz and W. H. Honiss	385,064	June 26	1846	472	43	1499
Pattern:							
See Casting-pattern.							
Patterns for garments. Adjustable device for outlining	A. Wachter	383,926	June 5	128	37, 38	43	1145
Pavement	W. Bignell	382,663	May 15	1298	319	43	764
Pavement	C. H. Hoyt	382,528	May 29	2478	654	43	1019
Pavement	J. R. Pomroy	384,074	June 5	346	.....	43	1187
Pavement. Concrete	G. A. Bayard	381,667	Apr. 24	2052,	.....	43	435
Paving-block	R. I. Cowden	381,341	Apr. 17	1572	422	43	328
Paving-blocks, &c. Composition of matter for	C. E. Coffin	383,942	June 5	151	.....	43	1149
Paving streets and roads	P. Griffin	382,153	May 1	404	106	43	587
Pawl-and-ratchet coupling for bit-braces, &c	H. N. Parker	384,665	June 19	1538	400	43	1430
Pea-shelling machine	R. Karges	382,966	May 15	1635	428	43	844
Pegging-machine	E. E. Bean	380,674	Apr. 10	561	154 / 155	43	122
Pegging-machine	J. R. Prouty	383,909	June 5	95	28	43	1139
Pen cleaner and holder	J. Edson	380,650	Apr. 3	512	143	43	104
Pen. Fountain	G. Pellinger	381,417	Apr. 17	1679	450	43	344
Pen-holder	W. W. Stewart	381,179	Apr. 17	1396	357	43	276
Pen-holder	C. F. Warner	384,101	June 5	377	106	43	1193
Pen-holder. Electric	C. W. Reitler	381,953	May 1	78	19	43	539
Pen-holder. Perforated	F. M. Libby	383,185	May 22	1951	512	43	916
Pencil	O. Mussinan, Jr	382,488	May 8	925	235	43	694
Pencil	L. B. Myers	384,383	June 12	890	213	43	1264
Pencil-holder	O. Bussler	381,612	Apr. 24	1979	520	43	440
Pencil holder. Lead	O. Bussler	381,611	Apr. 24	1977	520	43	440
Pencil. Propeller	J. Hoffman	381,877	Apr. 24	2273	617	43	496
Pencil-rack and eyeglass-hook. Combined	J. Graham	381,692	Apr. 24	2087	546	43	442
Pencil-sharpener	I. Baloun	380,417	Apr. 3	160	45	43	33
Pencil-sharpener	C. W. Boman	382,132	May 1	378	99	43	580
Pencil-sharpener	P. Petry	382,437	May 8	836	214	43	678
Pencils. Addition-register for	H. C. Rose	380,519	Apr. 3	385	93	43	66
Pencils and the like. Rubber-tip attachment for	F. E. Cross	384,563	June 12	1084	283	43	1234
Pencils. Eraser-holder for	J. Hoffman	383,357	May 22	2200	561	43	988
Pencils. Machine for the manufacture of crayon	J. W. Peck	381,810	Apr. 24	2250	566	43	473
Pendant-setting	J. T. Joyce	384,629	June 19	1184	312	43	1301
Percolator	J. W. Evans	381,662	Apr. 10	1154	308	43	238
Perforating and eyeleting machine	G. B. Webb	384,597	June 12	1120	299	43	1343
Perforator	J. Whitelaw	380,614	Apr. 3	464	121	43	94
Perfumery-stand	J. C. Austin	380,473	Apr. 3	246	67	43	50
Permutation-lock	J. C. Barr	385,228	June 26	2076	531 / 532 / 533	43	1547
Permutation-lock	W. F. Peters	384,468	June 12	920	241	43	1206
Phonogram-blank	T. A. Edison	382,418	May 8	810	207	43	673
Phonogram-blank	T. A. Edison	382,402	May 8	804	225	43	696
Phonogram-blanks. Making	T. A. Edison	382,417	May 8	809	206	43	673
Phonograms. Duplicating	T. A. Edison	382,419	May 8	811	207	43	674
Phonographs. Barraishing attachment for	T. A. Edison	382,414	May 8	804	205	43	672
Phonographs. Feed and return mechanism for	T. A. Edison	382,416	May 8	808	205	43	672
Phosphorus trichloride. Apparatus for obtaining	C. Fahlberg	381,695	Apr. 24	2079	543	43	440
Photogenic powder	H. G. Pillard	384,997	June 19	1530	.....	43	1445
Photograph-holder	J. McAfferty	381,154	Apr. 17	1203	348	43	270

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Photographic and other lenses. Diaphragm and shutter for	E. Bausch	382,658	May 15	1454	362	43	980
Photographic cabinet	F. A. Garrison	384,754	June 19	1363	357	43	1397
Photographic camera	T. S. Rust	382,735	May 15	1285	340	43	777
Photographic camera	H. Swain	384,940	June 19	1635	425	43	1449
Photographic developing-box. Portable	T. W. Harvey	383,364	June 26	2139	545	43	1589
Photographic flash-light apparatus	T. H. McCollin	384,698	June 19	1193	315	43	1304
Photographic head-screen	O. C. White	382,125	May 1	267	96	43	561
Photographic image on a gelatine surface into a relief or intaglio. Converting a	H. Sutton	381,091	Apr. 10	1210	.....	43	943
Photographic impressions. Producing uncolored and colored	J. J. E. Mayall	382,369	May 8	739	.....	43	650
Photographic-plate holder	M. Flammang	384,685	June 19	1406	369	43	1402
Photographic plates. Apparatus for heating, cooling, ventilating, and drying	W. Bell	384,416	June 12	864	225	43	1293
Photographic-printing frame	L. F. Adt	381,315	Apr. 17	1288	412	43	314
Photographic-printing frame	J. Strachan	380,630	Apr. 3	493	138	43	101
Photographic sheet	I. Cohn	385,397	June 26	2197	.....	43	1570
Photographing by artificial light. Apparatus for	F. B. Gould	384,151	June 5	458	128	43	1289
Piano-action	S. R. Harcourt	381,129	Apr. 17	1272	340	43	284
Piano action. Upright	P. Krumscheid	384,917	June 19	1608	418	43	1443
Piano-case	A. F. Delano	383,179	June 26	1993	511	43	1580
Piano-forte action	S. R. Harcourt	384,254	June 12	889	168	43	1250
Piano-forte, organ, harmonium, or other musical instrument	E. A. Locke	382,461	May 8	917	238	43	693
Piano key-bottom	W. H. Ivers	382,471	May 8	890	239	43	699
Piano-mover	W. S. Reynolds	383,190	May 22	1956	513	43	917
Piano. Upright	W. H. Dutton	384,941	June 19	589	188	43	1348
Piano. Upright	W. H. Dutton	384,942	June 19	692	163	43	1347
Piano. Upright	W. H. Dutton	384,943	June 19	603	163	43	1347
Piano. Upright	W. H. Dutton	384,944	June 19	696	163 / 164	43	1347
Pianos. Automatic cylinder for	A. Capra and G. B. Rissone	384,121	June 5	412	114	43	1199
Picture and mirror backs. Board for	J. Apoll	382,852	May 15	1445	380	43	808
Picture-exhibitor	A. H. Beck	380,977	Apr. 10	1083	267	43	267
Picture-frame support	F. Servus	380,671	Apr. 3	550	150 / 151	43	111
Pigeon-trap	J. J. King	381,388	Apr. 17	1436	435 / 436	43	335
Pile	S. G. Hutchinson	383,884	June 5	51	16	43	1121
Piles. Preserving	C. C. Lane	383,531	May 29	2467	656	43	1021
Piles. Protecting	G. Brown	381,671	Apr. 24	2057	576	43	476
Piles. Protecting and preserving	C. C. Lane	383,730	May 29	2769	730	43	1040
Pill or lozenge machine	G. A. Smith	385,396	June 26	2289	574	43	1578
Pillow-sham holder	J. W. Dorst	384,320	June 12	896	168	43	1245
Pillow-sham holder	W. Watson	380,864	Apr. 10	1000	250	43	253
Pillow-sham holder and lifter	D. C. King	383,304	May 29	2138	563	43	949
Pin: *See* Crank-pin. Husking-pin. Lace-pin. Safety-pin. Thill coupling-pin.							
Pinchers	W. E. White	385,030	June 26	1785	461	43	1498
Pinchers. Grubbing	J. M. Ricketson	381,561	Apr. 24	1936	507	43	416
Pinion-blanks. Manufacture of	F. Leman	380,499	Apr. 3	267	82 / 83 / 84	43	59
Pipe: *See* Boiler-feed pipe. Grain-pipe. Stove-pipe. Tobacco-pipe.							
Pipe-coils. Appliance for cleaning	F. Farrar	382,147	May 1	306	103 / 104	43	566
Pipe conduit. Underground	T. J. Young	384,948	June 19	1649	426	43	1451
Pipe-coupling	A. Coté	383,865	June 5	22	8	43	1125
Pipe-coupling	J. Davis	381,913	May 1	23	6	43	519
Pipe-coupling	J. Davis	382,514	May 8	963	243	43	702
Pipe-coupling	S. R. Dresser	381,916	May 1	26	7, 8	43	519
Pipe-coupling	J. G. Pfister	382,107	May 1	344	91	43	576
Pipe-coupling	B. W. Poh	384,073	June 5	345	97	43	1186
Pipe-coupling	J. S. Stewart and F. Stone	383,148	June 26	1967	503	43	1594
Pipe-coupling	J. Story	381,986	May 1	97	23	43	533
Pipe-coupling	J. Story	385,287	June 26	2182	558	43	1566
Pipe-coupling and check valve or chamber. Combined	W. T. Messinger	383,488	May 22	2314	613	43	982
Pipe-coupling. Automatic	J. F. McElroy	384,991	June 26	1712	444 / 445	43	1473
Pipe-coupling. Flexible	J. H. Gould	381,008	Apr. 10	1070	264	43	216
Pipe-covering	H. W. Johns	385,119	June 26	1925	491	43	1516
Pipe cutting and threading tool. Combined	A. Saunders	380,937	Apr. 10	957	254	43	185
Pipe-expander	G. C. Van Keuren	381,094	Apr. 10	1217	306	43	945
Pipe expander and cutter	S. A. Ross	384,060	June 5	352	99	43	1188
Pipe-hanger	G. W. Luts	382,171	May 1	429	112	43	568
Pipe-joint. Spherical	H. W. Brinckerhoff	381,826	Apr. 24	2283	596 / 597	43	480
Pipe. Mechanism for the manufacture of	T. J. Bray	382,453	May 8	889	228	43	683
Pipe-molding apparatus	A. H. McNeal and W. A. Stinerock	383,534	May 29	2491	657	43	1022
Pipe or hose coupling	J. C. Sturgeon	380,363	Apr. 3	89	27	43	59
Pipe-riveting machine	G. Cumming	382,142	May 1	369	101 / 102	43	565
Pipe-stem	E. H. Rogers	381,170	Apr. 17	1327	354	43	374
Pipe-testing apparatus	G. W. Luts	382,172	May 1	429	113	43	568
Pipe-testing apparatus	G. W. Luts and J. M. Dillon	382,266	May 1	569	144	43	616
Pipe-threading die	F. Virgieu	383,767	May 29	2863	752 / 753	43	1007
Pipe. Transportation-case for coiled lead	H. J. Miller	384,327	June 12	733	194	43	1269

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Pipe, tube, or shell extractor	W. T. Scott	384,791	June 19	1416	372	43	1406
Pipe-welding apparatus	T. J. Bray	382,452	May 8	887	231 / 232	43	682
Pipe-wrench	R. Copland	382,709	May 15	1368	362	43	782
Pipe-wrench	J. Rose	383,544	May 29	2507	662	43	1025
Pipe-wrench	G. G. Smith	382,381	May 8	775	197	43	626
Pipes. Anti-freezing device for water	W. G. Browne	382,398	May 8	1034	279	43	737
Pipes. Expansible joint for	H. W. Brinckerhoff	381,825	Apr. 24	2282	596	43	480
Pipes. Joint for cement-lined	E. H. Phipps	382,413	May 22	2261	606	43	977
Pipes. Mouth-piece for	H. C. Rose	380,389	Apr. 3	93	23	43	67
Pipes. Thermo-electric apparatus for controlling the temperature of water in	E. A. Newman	383,536	May 29	2483	658	43	1023
Piston and plunger	R. Tonge	383,763	May 29	2856	751	43	1006
Piston meter	J. E. Norfolk	384,685	June 5	333	94	43	1184
Pitcher. Beer	M. Stone	381,291	Apr. 17	1401	402	43	302
Pitman-and-crank connection	E. B. Benham	380,650	Apr. 10	820	223	43	170
Plane	J. A. Biesegger	385,231	June 26	2065	534	43	1549
Plane	A. S. Haynes	384,644	June 19	1597	392	43	1434
Plane. Bench	R. T. Torkelson and I. Johnson	381,140	Apr. 17	1275	340	43	276
Plane. Bench	I. Johnson and R. T. Torkelson	381,141	Apr. 17	1295	343	43	277
Plane. Bench	T. H. B. Millsap	383,634	May 22	2083	531	43	930
Planer attachment for cutting internal gears	G. F. Hutchins	381,788	Apr. 24	2219	581	43	467
Planer-gage and calipers	W. Haddow	380,797	Apr. 10	745	204	43	157
Planers. Clamping device for cross-beams of	G. L. Marble	382,653	May 8	1179	304 / 305	43	745
Planers. Extension-tool for	H. K. Porter	382,268	May 1	572	145	43	619
Planing-machine	L. P. Hoyt	384,445	June 12	809	235	43	1304
Planing machine. Metal	L. W. Pond and F. E. Norton	380,692	Apr. 10	567	168	43	127
Planing machine. Wood	J. Rose	383,284	June 26	2175	556	43	1586
Plant-protector	J. W. McCall	382,370	May 8	741	187	43	650
Plant support. Potted	F. S. Fahnestock	383,174	June 26	1997	511	43	1731
Planter	A. W. Black	382,069	May 1	286	76	43	560
Planter and fertilizer distributer	L. and J. Charles	381,335	Apr. 17	1358	418 / 419	43	319
Planter and fertilizer-distributer. Combined	J. M. Pope	380,920	Apr. 10	946	250 / 251	43	193
Planter. Check-row corn	J. E. Bering	381,102	Apr. 17	1233	330 / 331	43	226
Planter. Corn	C. C. Du Cray	381,252	Apr. 17	1393	378	43	247
Planter. Corn	J. Fehrer	384,834	June 19	1489	388 / 389	43	1400
Planter. Corn	G. D. Haworth	380,889	Apr. 10	869	236	43	188
Planter. Corn	E. K. Hayes	384,363	June 12	788	206 / 207	43	1279
Planter. Corn	J. L. Henderson	380,571	Apr. 3	401	114	43	69
Planter. Corn	A. S. and E. Houck	381,073	Apr. 10	1175	312 / 313	43	237
Planter. Corn	W. Kecher and W. J. Ranck	381,076	Apr. 10	1179	313	43	238
Planter. Corn	F. P. Murphey	381,883	Apr. 24	2331	616 / 619	43	497
Planter. Corn	J. Selby	381,588	Apr. 24	1942	511 / 519	43	413
Planter. Corn and cotton	L. Tedder	382,540	May 8	1051	277	43	709
Planter. Cotton	F. W. Symmes	381,864	May 1	94	23	43	532
Planter. Cotton	J. R. White	380,841	Apr. 10	806	219	43	167
Planter. Cotton-seed	S. E. Hake	384,314	June 12	706	186 / 189	43	1265
Planter. Cotton-seed	B. D. and J. B. King	380,723	Apr. 10	631	173	43	135
Planter. Hand	S. A. Payne	381,023	Apr. 10	1159	301	43	241
Planter. Pea, cotton-seed, or corn	Z. T. Lee	382,666	May 15	1495	392	43	816
Planter. Peanut	R. Gardner	381,357	Apr. 17	1368	424	43	327
Planter. Potato	J. W. Estes	384,353	June 12	774	201 / 202	43	1275
Planter. Wheel	W. H. Grove	382,644	May 8	1160	299	43	741
Planters. Attachment for corn	W. H. Stevens	381,026	Apr. 10	1115	289 / 290	43	225
Planters. Check-row attachment for	I. Jackson	382,488	May 8	884	211	43	676
Planters. Drill attachment for	L. Scofield	383,994	June 5	287	97	43	1165
Plastic compound	L. F. Head	382,607	May 8	1113	.....	43	723
Plastic material. Box of	M. Gardner	383,175	May 22	1940	509	43	914
Plated-wire stock. Plate for the manufacture of	J. S. Palmer	383,941	May 22	2033	523	43	938
Platform: *See* Car-platform.							
Pliers	W. C. Marr	382,712	May 15	1393	330	43	770
Pliers or pinchers	B. J. Leslie	380,331	Apr. 3	36	13	43	9
Plow	L. D. Bell and J. T. Bender	384,936	June 26	1658	434	43	1461
Plow	A. G. Bessemer	382,949	May 15	1508	400	43	828
Plow	T. A. Blanchard	384,749	June 19	1345	351	43	1393
Plow	D. H. Carpenter	381,529	Apr. 24	1980	498	43	397
Plow	J. H. Fry	382,227	May 8	698	169	43	630
Plow	A. M. Nash	380,919	Apr. 10	949	249	43	193
Plow	J. B. Neff	380,634	Apr. 3	526	145	43	106
Plow	F. Hitschmann	381,946	May 1	67	17	43	527
Plow	A. C. Rosencrans	384,283	June 12	668	177 / 179	43	1257
Plow	J. Thompson and S. B. Scorist	385,216	June 26	2060	528 / 529	43	1544
Plow. Adjustable double	A. A. Billingsley	385,294	June 26	2198	550	43	1570
Plow and pulverizer	S. T. and C. Johnston	381,142	Apr. 17	1296	344	43	287
Plow and pulverizer. Combined	G. D. Baird	384,110	June 5	397	109	43	1195
Plow. Drill	C. Herren	383,284	May 22	2007	527	43	987
Plow-fender	R. O. Davis	380,986	Apr. 10	1057	279	43	214
Plow. Gang	H. M. Irwin	380,685	Apr. 10	896	240	43	184
Plow. Gang	A. and G. M. Shaffer	383,494	May 29	2469	645	43	1011

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Plow. Garden	W. H. Heard	385,051	June 26	1825	466	43	1495
Plow. Hillside	R. A. Corn	381,909	May 1	16	5	43	518
Plow-point	I. J. Martin	383,402	May 22	2272	604	43	974
Plow-point. Detachable	H. McCluey	382,179	May 1	441	115	43	584
Plow. Potato	S. Disbrow	384,310	June 12	702	187	43	1284
Plow. Side-hill	A. K. Snodgrass	383,997	June 5	282	68	43	1166
Plow-standard	W. H. Hodgson	381,014	Apr. 10	1076	295	43	217
Plow. Sulky	N. Lampman	383,309	May 22	2137	{563 564}	43	950
Plow. Sulky	E. C. Westervelt	382,919	May 15	1539	403	43	827
Plow. Three-wheel riding	S. B. and J. C. Tolson	382,019	May 1	209	55, 56	43	558
Plowing apparatus. Steam	E. Ingleton	382,963	May 15	1629	426	43	843
Plug and ferrule for wash-tray connections. Combined	C. J. Phillips	383,982	June 5	213	63	43	1162
Plumber's air-cushion	A. H. Walker	381,731	Apr. 24	2146	568	43	453
Plumber's trap	N. Barry, Jr	384,114	June 5	394	110	43	1196
Plumbers' traps. Device for making	A. Boll	384,956	June 26	1662	432	43	1463
Plume, tassel, &c	R. W. E. Aldrich	384,734	June 19	1336	348	43	1301
Pneumatic book	E. Berliner	380,809	Apr. 3	5	1	43	3
Pocket-book	A. H. Jocelyn	384,527	June 12	1031	269	43	1234
Pocket-book, bag, or purse frame	E. Oldenbusch	384,396	June 12	823	214	43	1205
Pocket-book fastening	R. L. Bovd	382,695	May 15	1378	362	43	793
Pocket-book frame	B. Vom Eigen	380,634	Apr. 10	783	217	43	106
Pointing, drilling, and reaming machine	F. Leman	380,496	Apr. 3	276	{76 77 78}	43	57
Poison-bottle indicator	J. C. Higgins	383,394	May 22	2280	601	43	972
Poker. Fire	J. E. Gaitley	381,356	Apr. 17	1592	426	43	326
Pole and shafts. Vehicle	A. L. Bratsch	383,930	June 5	148	43	43	1149
Pole-changer. Automatic	E. J. Mallett	384,323	June 12	722	191	43	1267
Pole-changer. Automatic	E. J. Mallett	384,396	June 12	722	193	43	1268
Pole-tip	T. J. Houghton	382,529	May 8	987	248	43	708
Polishing apparatus for wood, &c	T. Davids	385,171	June 26	1991	516	43	1530
Pool-register	C. S. Krafft	383,581	May 29	2547	673	43	1033
Porcelain-kiln	L. Boissonnet	383,696	May 29	2703	{714 715}	43	1067
Portable drill	W. C. Jennings	382,472	May 8	900	{229 230}	43	689
Portable elevator	J. Dick	382,077	May 1	305	80	43	560
Portable engine	J. Miller and M. J. Hogan	384,922	June 19	1613	{419 420}	43	1444
Portfolio	G. Auth	385,085	June 26	1675	479	43	1506
Post: *See* Fence-post.							
Post-holes. Device for making	J. W. Bailey	382,853	May 15	1446	380	43	808
Post-office dater, canceler, and register. Combined	J. T. Argo	381,976	May 1	121	28	43	536
Pot: *See* Coffee or tea pot. Mustard-pot.							
Potato-digger	J. Lee	381,706	Apr. 24	2111	552	43	447
Potato-digger	J. D. Perry	383,488	May 29	2419	642	43	1008
Potato-digger	C. Roberts	384,641	June 19	1197	317	43	1365
Potato-digger	C. Roberts	385,071	June 26	1850	475	43	1502
Potato-digger	A. B. Shantz	380,771	Apr. 10	706	195	43	150
Potato digger and separator. Combined	I. W. Hoover	382,363	May 8	733	185	43	656
Potato sorter or grader	H. D. Herrington	385,114	June 26	1916	489	43	1515
Powder: *See* Photogenic powder.							
Powder and shot cabinet	A. La Point	382,817	May 15	1403	368	43	796
Power: *See* Animal or other power. Horse-power. Water-power.							
Power. Apparatus for the transmission of	T. D. Hollick and W. E. Rickard	381,138	Apr. 17	1280	{342 343}	43	266
Power. Device for transmitting	C. T. A. H. Wiedling	384,508	June 12	1132	{298 299}	43	1243
Power mechanism	W. A. Howard	383,295	May 22	2118	559	43	947
Power transmitter. Water-current	M. V. B. Ethridge	382,950	May 15	1585	416	43	837
Preserving food	H. Salzer	384,721	June 19	1330	.....	43	1300
Press. *See* Baling-press. Cigar-mold press. Cotton-press. Filter-press. Hand-press. Hay-press. Hydraulic shaping-press. Match-press. Printing-press. Shaping-press. Stamping-press.							
Pressure apparatus. Hydro-pneumatic	T. Arthur	383,429	May 29	2317	615	43	989
Pressure-indicator. Electrical	O. B. Shallenberger	380,944	Apr. 10	965	256	43	197
Pressure-regulator	H. Gale and C. D. Wiselogel	383,877	June 5	38	13	43	1138
Pressure-regulator	A. G. Hobenstein	382,235	May 22	2009	530	43	920
Pressure-regulator and cut off	O. J. McGann	380,444	Apr. 3	201	55	43	41
Pressure-regulator and safety-valve. Automatic	A. G. Hobenstein	382,236	May 22	2010	530	43	920
Pressure regulator. Fluid	W. B. Mason	383,496	May 29	2311	613	43	991
Pressure-regulator. Self-acting or automatic	E. A. McLaughlin	383,314	May 22	2143	565	43	951
Printers' forms. Lock-up for	J. Ruesch	380,507	Apr. 3	441	124	43	99
Printer's galley	O. A. Dearing	381,117	Apr. 17	1266	327	43	261
Printers' galleys. Side-stick for	E. P. Allbe	383,698	May 29	2697	710	43	1066
Printer's rule-case	M. C. Harris	382,699	May 1	947	63, 64	43	559
Printer's standing-galley	W. Severin	385,144	June 26	1939	501	43	1523
Printing	M. D. Wilkins	385,081	June 26	1669	477	43	1504
Printing envelopes. Blank attachment for tympan-sheets for	G. F. Kimball	385,089	June 26	1842	671	43	1499
Printing-film	P. G. Caspian	383,049	May 15	1747	.....	43	896
Printing-machine	T. S. Bowman	382,694	May 15	1539	{310 309}	43	794

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Printing-machine	C. B. Cottrell	385,099	June 26	1894	{483 484}	43	1510
Printing-machine	J. H. Earl	384,432	June 12	884	230	43	1207
Printing machine. Ticket	C. F. and W. B. Huff	383,954	June 5	164	49	43	1152
Printing machine. Wad	P. Selby	382,441	May 8	848	{216 217}	43	680
Printing-machines. Air spring or cushion for	C. P. Cottrell	383,630	May 29	2614	691	43	1049
Printing-machines. Delivery mechanism for	L. C. Crowell	383,799	May 29	2883	{759 760 761}	43	1101
Printing-machines. Delivery mechanism for	L. C. Crowell	383,800	May 29	2888	{761 762 763}	43	1101
Printing-machines. Inking apparatus for	C. B. Cottrell	385,098	June 26	1893	483	43	1510
Printing-machines. Inking apparatus for	J. T. Hawkins	382,979	May 15	1623	424	43	842
Printing-machines. Sheet-delivery apparatus for	C. B. Cottrell	385,100	June 26	1898	484	43	1511
Printing-machines. Web turning and reversing device for	J. C. Fowler and E. A. Henkl	383,568	May 29	2532	668	43	1039
Printing musical and other characters. Device for	G. Becker and D. Monnier	381,902	May 1	8	2	43	516
Printing or numbering machines. Apparatus for receiving tickets from ticket	J. Graham	381,126	Apr. 17	1269	{339 340}	43	264
Printing-press	T. D. Worrall	382,345	May 8	703	177	43	632
Printing-press cylinders. Reversing-gear for	G. D. Ernst	381,901	May 1	153	39	43	543
Printing-presses. Adjustable side guide for	T. L. Knudtson and J. Ubri	382,616	May 29	2911	768	43	1106
Printing-presses. Ink-fountain for platen	W. H. Price, Jr	384,516	June 5	554	152	43	1220
Printing-presses. Perforator for	R. and G. Kennedy	380,578	Apr. 3	419	117	43	84
Printing-presses. Receiving-table for cylinder	F. W. Baltes	382,402	May 8	789	200	43	669
Printing-presses. Sheet-straightener for	H. Loewenbach and W. F. H. Matter	381,800	Apr. 24	2237	586	43	471
Privy	W. J. Wharton	380,540	Apr. 3	352	101	43	73
Projectile	J. R. Hawley	384,574	June 12	1097	288	43	1237
Projectile	E. L. Zalinski	384,662	June 19	1223	325	43	1271
Projectile. Wolfram	A. Mieg and H. Bischoff	382,717	May 15	1209	338	43	771
Propeller. Feathering	R. Wilcox	380,967	Apr. 10	1003	{256 259}	43	204
Propeller for vessels. Screw	F. G. White	382,398	May 8	782	199	43	666
Propeller. Screw	A. Vogelsang	381,193	Apr. 17	1357	363	43	280
Propeller-wheel	J. E. T. Bartlett	384,498	June 12	993	259	43	1317
Propeller-wheel	J. S. Bishop	381,104	Apr. 17	1236	{331 332}	43	257
Propellers. Paddle-belt for	W. H. Silsby	381,286	Apr. 17	1486	400	43	305
Propelling canal-boats	H. H. Baker	380,781	Apr. 10	722	198	43	152
Propelling canal-boats. System and apparatus for	C. F. Cassleman	381,675	Apr. 24	2065	539	43	436
Propelling device	W. Johnston	381,625	Apr. 24	1998	524	43	427
Propulsion. Marine	W. M. Jackson	385,182	June 26	2007	515	43	1533
Propulsion. Marine	W. M. Jackson	385,183	June 26	2011	515	43	1534
Propulsion. Marine	W. M. Jackson	385,184	June 26	2013	516	43	1534
Propulsion of ships or vessels. Apparatus for the	E. Griffon	381,235	Apr. 17	1416	{381 382}	43	291
Protector: *See* Boot-protector. Check-protector. Check and pad protector. Heel-protector. Line-protector. Pants-protector. Plant-protector. Shoe-protector. Trace-eye protector. Tree-protector. Vest-protector. Watch-protector.							
Pruning implement	M. C. Malone	380,563	Apr. 3	419	119	43	85
Puller: *See* Stump-puller.							
Pulley	H. W. Baldsmeier	384,501	June 12	998	260	43	1318
Pulley	W. H. King	382,042	May 1	252	65	43	550
Pulley	A. P. Sibley	384,871	June 19	1548	402	43	1431
Pulley. Band	J. Wiley	382,448	May 8	859	219	43	682
Pulley-bushing	J. J. Mahoney	381,151	Apr. 17	1298	347	43	269
Pulley. Friction-clutch	A. P. Kjoller	384,915	June 19	1605	417	43	1442
Pulley. Split	J. Bruss	384,014	June 5	255	73	43	1170
Pulley. Split	W. A. Willingham	383,789	May 29	2886	753	43	1097
Pulleys. Apparatus for putting driving-belts on	H. R. Leichsenring	382,046	May 1	258	66	43	550
Pulleys. Clutch for band	W. H. Smith	380,952	Apr. 10	979	259	43	199
Pulp or paper mills. Screen-scraper for	M. V. Streeter	383,026	May 15	1706	443	43	858
Pulverizer	P. W. Gates	380,432	Apr. 3	179	49, 50	43	57
Pulverizer	A. Jamieson	382,364	May 8	735	{185 186}	43	658
Pump	M. J. Althouse	384,185	June 5	509	130	43	1220
Pump	W. H. Burnham and J. H. Miller	381,212	Apr. 17	1377	366	43	284
Pump	H. M. Close	384,678	June 19	1253	329	43	1276
Pump	H. M. Close	384,679	June 19	1255	330	43	1276
Pump	W. W. Cully	381,532	Apr. 24	1685	493	43	396
Pump	J. B. Drake	384,749	June 19	1357	354	43	1305
Pump	E. D. Leavitt, Jr	380,330	Apr. 3	35	13	43	9
Pump	J. A. Murray	384,706	June 19	1304	341	43	1285
Pump	E. Neff	381,808	Apr. 24	2247	588	43	472
Pump	J. North	380,510	Apr. 3	308	89	43	64
Pump	J. North	385,319	June 26	2329	571	43	1576
Pump	J. Stevens	384,648	June 19	1206	318	43	1267
Pump	M. H. Timberlake	383,780	May 29	2853	750	43	1095
Pump	D. Waldkircher	380,466	Apr. 3	234	63	43	46
Pump and windmill head	J. P. Schuckman	384,086	June 5	356	101	43	1189
Pump apparatus. Portable force	J. A. Parsons	383,486	May 29	2417	641	43	1008
Pump attachment	T. Diffley	385,004	June 26	1663	485	43	1512
Pump. Chain	J. J. De Silva	380,625	Apr. 3	179	47	43	35
Pump. Deep-well	P. A. Myers	384,585	June 19	1114	295	43	1249
Pump. Double-acting force	J. M. Normand	381,685	Apr. 24	2265	600	43	480
Pump. Force	G. A. Carter	383,703	May 29	2718	717	43	1071

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Pump. Force	H. M. Lourie	384,633	June 19	1188	314	43	1383
Pump. Hydraulic	J. H. Martin	384,650	June 5	711	83	43	1189
Pump. Hydraulic air	E. H. Weatherhead	383,028	May 15	1704	444	43	859
Pump. Lift or force	J. North	380,560	Apr. 3	306	80	43	88
Pump-rod. Compensating	W. H. Burnham and J. H. Miller	381,911	Apr. 17	1376	368	43	894
Pump. Rotary	O. Seifert	383,998	June 5	230	67	43	1165
Pump. Spraying	A. Weaber	383,381	May 22	2070	543	43	936
Pump-valve	C. F. Hoyt	383,811	May 22	2004	766	43	1164
Pumps. Aerating attachment for chain	W. Mild	382,476	May 22	2304	627	43	1004
Pumps. Apparatus for operating oil-well	C. C. Stover	383,685	May 15	1705	443	43	858
Pumps. Vent-stopper for	A. Scougal	383,773	May 22	2041	747	43	1008
Pumping apparatus. Electrical	F. J. Sprague	385,311	June 26	2054	807	43	1543
Pumping apparatus. Horse-power	H. D. White	380,640	Apr. 10	905	219	43	167
Pumping mechanism. Oil or Artesian well	H. H. Argue	380,615	Apr. 3	465	131 138	43	94
Punch	M. D. Knowlton	384,892	June 19	1036	270	43	1385
Punch and die	E. F. Gennert and D. N. Gleason	382,857	May 8	794	188 183	43	656
Punch. Belt	H. L. T. Overbey	383,237	May 22	2087	538	43	931
Punch. Compound-lever	C. M. Brown	382,947	May 15	1569	412	43	854
Punch. Paper	J. C. Jensen	385,056	June 26	1834	470	43	1497
Punch-register. Electric	A. C. Palmer	383,485	May 29	2414	641	43	1007
Punching and shearing machine	C. Weber and H. Schneider	383,980	May 22	1988	516 517	43	919
Punching cards. Machine for	S. J. Murray	381,716	Apr. 24	2127	557 558	43	450
Punching machine. Bag	F. Hirsch	381,696	Apr. 24	2090	546	43	443
Punching-machines. Blank-holder for	R. J. Shipley	382,911	May 15	1538	400	43	825
Purses, &c. Device for closing and carrying	E. N. Ames	380,416	Apr. 3	150	45	43	33
Quilting-frame	C. A. Vestal	385,078	June 26	1867	477	43	1504
Quilting-machine	W. Koch	381,786	Apr. 24	2234	585	43	470
Quilting-machine	C. T. Landphere	384,364	June 12	636	171	43	1252
Rack: *See* Advertising-rack. Card-rack. Clothes-rack. Display-rack. Egg-rack. Harness-rack. Hat and coat rack. Hay-rack. Pencil-rack. Show-rack. Ticket-rack. Tool-rack.							
Rack for exhibiting goods	A. Neuville and A. Back	383,975	June 5	201	58, 59	43	1159
Radiator	S. E. Rhodes	381,955	May 1	80	20	43	530
Radiator for steam or hot water	W. W. Canfield	381,984	May 1	138	33	43	540
Radiator-loops. Machine for assembling	H. H. Taylor	380,536	Apr. 3	347	99 100	43	71
Radiator. Steam	S. E. Rhodes	381,954	May 1	78	20	43	529
Rail-brace from T-metal. Forming a	A. A. Strom	380,668	Apr. 3	545	149	43	110
Rail-chair	J. Quinn, Jr	383,765	May 29	2222	743	43	1000
Rail. Compound	E. G. Chamberlain	382,409	May 8	799	204	43	671
Rail. Double-grooved girder	A. J. Moxham	383,002	May 15	1650	434	43	849
Rail for street-railways and chairs	I. H. Randall	382,395	May 8	708	195	43	665
Rail. Grooved girder	A. J. Moxham	383,001	May 15	1657	453	43	848
Rail. Guard	G. Nevens	380,567	Apr. 3	424	109	43	67
Rail-joint	G. N. Hodgdon	385,116	June 26	1918	499 500	43	1515
Rail-joint	J. V. Koss	382,615	May 15	1300	367	43	797
Rail or bar bender	M. H. Brown	383,168	May 22	1928	504	43	911
Railing. Guard	J. Muser	380,657	Apr. 3	525	145	43	106
Railing. Tubular iron	E. Stephens	381,289	Apr 17	1489	401	43	306
Railway	R. M. Hunter	382,470	May 8	807	209	43	668
Railway	J. B. Sutherland	382,393	May 8	777	197	43	667
Railway	J. B. Sutherland	382,394	May 8	778	197	43	667
Railway and conveyer. Pneumatic	T. A. and A. A. Connolly	381,907	May 1	16	4	43	518
Railway and water-tobogganing apparatus. Inclined	R. A. Harrington	384,843	June 19	1506	391 392	43	1494
Railway-bedding	F. X. Georget	381,125	Apr. 17	1388	330	43	283
Railway. Cable	E. W. Wilson	384,550	June 12	1063	277	43	1330
Railway-cables. Driving-drum for	F. A. J. Beigel	385,230	June 26	2083	533 534	43	1548
Railway-chairs. Die for making	E. B. Entwisle	381,875	Apr. 24	2240	616	43	495
Railway. Combined elevated and surface	T. J. Mayall	381,405	Apr. 17	1602	444 445	43	341
Railway conduits. Trap for electric	W. M. Schlesinger	381,585	Apr. 24	1933	509 510	43	411
Railway-crossing	J. Cumming	381,056	Apr. 10	1147	300	43	230
Railway-crossing	J. T. Mabbey	382,173	May 1	432	112 113	43	563
Railway-crossing alarm-signal	G. D. and C. Rathmann	384,360	June 12	887	215	43	1288
Railway-crossing gate	R. W. Hill	384,160	June 5	474	130 131	43	1213
Railway-crossing gate	M. B. Mills	380,447	Apr. 3	210	57	43	62
Railway. Electric	G. H. Condict	384,588	June 12	1081	283	43	1334
Railway. Electric	G. H. Condict	385,097	June 26	1880	483	43	1509
Railway. Electric	S. D. Field	384,685	June 19	1262	331 332	43	1377
Railway. Electric	R. M. Hunter	381,555	Apr. 24	1891	499	43	433
Railway. Electric	R. M. Hunter	381,556	Apr. 24	1894	499	43	433
Railway. Electric	R. M. Hunter	382,576	May 15	1479	382	43	834
Railway. Electric	R. M. Hunter	382,577	May 15	1480	382 383	43	835
Railway. Electric	R. M. Hunter	384,576	June 19	1260	330	43	1376
Railway. Electric	R. M. Hunter	384,586	June 19	1260	330	43	1376
Railway. Electric	R. M. Hunter	384,680	June 19	1260	330	43	1376
Railway. Electric	R. M. Hunter	384,710	June 19	1260	330	43	1376
Railway. Electric	R. M. Hunter	384,711	June 19	1260	330	43	1376

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Railway. Electric	R. M. Hunter	384,912	June 19	1260	330	43	1441
Railway. Electric	R. M. Hunter	385,053	June 26	1827	469	43	1496
Railway. Electric	R. M. Hunter	385,054	June 26	1830	469	43	1496
Railway. Electric	R. M. Hunter	385,055	June 26	1832	469	43	1497
Railway. Electric	R. M. Hunter	385,189	June 26	2005	514	43	1532
Railway. Electrical	J. C. Love	381,395	Apr. 17	1647	426 429	43	287
Railway. Electro-motive	G. T. Woods	385,634	June 26	1798	462	43	1469
Railway. Elevated	T. J. Mayall	381,402	Apr. 17	1656	443	43	340
Railway. Elevated	T. J. Mayall	384,921	June 19	1612	419	43	1444
Railway-freight-train signal	T. M. Jenks	383,613	May 29	2206	767	43	1165
Railway-frog	T. A. Griffin	384,617	June 19	1163	307	43	1358
Railway-frog	G. W. Parsons	385,086	June 26	1848	473	43	1499
Railway-frog	I. A. Perry	380,923	Apr. 10	935	240	43	191
Railway-gate	L. M. Foster	380,319	Apr. 3	17	4, 5	43	6
Railway-gate	A. H. Johnson and A. G. Mahaffy	381,381	Apr. 17	1627	434	43	323
Railway-gate	A. J. McDonald	383,009	June 5	191	56	43	1157
Railway-gate tie	A. J. McDonald	383,007	June 5	189	55	43	1156
Railway grip. Cable	S. Gibson	380,970	May 15	1600	421	43	849
Railway grip. Cable	A. E. Roe	381,632	Apr. 10	1107	295 296 299	43	228
Railway-head evener	J. Sheridan	381,294	Apr. 17	1484	399 400	43	305
Railway or farm gate	N. Wright and S. R. Shaver	382,682	May 1	913	56, 57	43	532
Railway. Pneumatic	T. W. Pitts	384,333	June 12	744	195	43	1270
Railway-rail	D. T. Bennett	383,431	May 29	2382	616	43	990
Railway-rail crossing	J. Rice	384,717	June 19	1315	344	43	1387
Railway-rail joint	M. T. Frame	384,949	June 12	617	166	43	1340
Railway-rail joint	J. J. Mulhall	384,061	June 5	396	93	43	1183
Railway-rail pad	H. J. Fackenthall and L. Wallace	382,803	May 15	1367	364	43	795
Railway-rails. Machine for reducing	S. McCloud	380,504	Apr. 3	295	88	43	89
Railway-rails. Safety-flange for	C. M. Erwin	384,435	June 12	886	231	43	1298
Railway semaphore-signal	T. L. Chapman	381,383	Apr. 17	1550	418	43	316
Railway semaphore-signal	C. H. Keyl	384,170	June 5	488	134	43	1216
Railway-signal	J. H. Farrar	380,316	Apr. 3	14	3	43	5
Railway-signal	T. M. Jenks	381,947	Apr. 17	1436	386	43	294
Railway-signal	W. B. Sherman	381,096	Apr. 10	1202	322	43	242
Railway-signal	C. D. Tisdale	382,741	May 15	1302	343	43	778
Railway-signal. Electric	S. C. C. Currie	384,998	June 26	1963	494	43	1452
Railway-signal. Electric	C. F. De Redon	382,515	May 8	864	243	43	702
Railway-signal. Electric	B. H. Gedge	382,390	May 8	832	161	43	646
Railway-signals. Device for actuating	J. J. Turner	382,984	May 1	600	152	43	623
Railway signaling	T. A. Edison and E. T. Gilliland	384,820	June 19	1484	387	43	1419
Railway-spike	C. Baines	384,220	June 12	584	150	43	1243
Railway-spike	J. S. Fox	385,107	June 26	1906	485	43	1519
Railway. Street	R. M. Hunter	380,575	Apr. 3	407	116	43	83
Railway structures. Elevated cable-motor or other	Z. P. Boyer	382,407	May 8	795	202 203	43	670
Railway. Suspended cable and electric	G. R. Taylor and W. Heckert	381,882	Apr. 24	2350	609	43	491
Railway-switch	W. S. Arnold	380,972	Apr. 10	1017	266	43	206
Railway-switch	H. D. Baldwin	382,066	May 1	293	75	43	585
Railway-switch	L. Blackstone	384,955	June 26	1661	432	43	1402
Railway-switch	L. J. Lindsey	380,582	Apr. 3	417	118 119	43	85
Railway-switch	S. B. Sabens	385,141	June 26	1956	500 501	43	1502
Railway-switch lock	W. T. Manning	383,965	June 5	187	55	43	1156
Railway-switch stand and signal	N. W. Boyd	383,209	May 22	1986	521	43	923
Railway-switches. Locking mechanism for	C. H. Johnson and C. Allen	382,530	May 8	968	249	43	706
Railway system	T. J. Mayall	384,054	June 5	317	90, 91	43	1181
Railway system. Elevated street	J. W. Adams	382,347	May 8	707	176 179 180	43	653
Railway system. Pneumatic	T. J. Mayall	381,401	Apr. 17	1655	441 442	43	339
Railway-tie	W. H. Britton	382,134	May 1	379	99	43	563
Railway-tie and fastening for rails. Metallic	H. L. De Zeng	380,623	Apr. 3	474	134	43	96
Railway-tie. Metallic	F. Barhydt	382,855	May 15	1448	381	43	808
Railway-tie. Metallic	W. H. Donaldson	381,050	Apr. 10	1151	307	43	231
Railway-tie. Metallic	J. Reese	384,785	June 19	1406	368	43	1406
Railway-track	J. Haish	384,690	June 19	1166	308	43	1389
Railway-track	J. M. Hardy	381,130	Apr. 17	1273	341	43	285
Railway track and joint	B. S. Doran	385,253	June 26	2126	542	43	1557
Railway-track. Laying	G. F. Harris	381,366	Apr. 17	1406	429 430	43	289
Railway-tracks. Steel-tie for	M. Fitzgerald	383,118	May 22	1885	487	43	890
Railway-trains. Combined station-indicator and signaling apparatus for	J. H. Bickford	381,669	Apr. 24	2054	537	43	435
Railways. Automatic switch and frog for	L. W. Cromer and G. Gavin	381,676	Apr. 24	2086	540	43	436
Railways. Automatic switch for	J. M. Swem	384,651	June 19	1309	319	43	1287
Railways. Cable-gripping apparatus for street	J. H. Dale	385,246	June 26	2102	530	43	1553
Railways. Cable-supporting sheaf for cable	O. C. Crane	383,703	May 29	2237	719	43	1073
Railways. Combined metal tie and fastening for	E. R. Stiles	381,660	Apr. 24	2347	600	43	490
Railways. Contact-making device for electric	F. Wynne	381,040	Apr. 10	1138	303	43	228
Railways. Device for removing obstructions or preventing accidents on street	C. Mahon	381,631	Apr. 24	2277	618	43	497
Railways. Electric motor for	S. H. Short	381,680	Apr. 24	2095	531	43	430
Railways. Foot-guard for	T. A. Griffin	382,678	May 1	315	88	43	571
Railways. Guard-rail and insulator for electric	E. A. Foster	384,901	June 19	1585	412	43	1436
Railways. Motor for street	R. C. Pole	381,667	Apr. 24	2337	604 605	43	497
Railways. Overhead conducting system for electric	G. T. Woods	383,644	May 29	2230	760	43	1112
Railways. Overhead line for electric	C. Vogel	382,130	May 22	1916	501	43	849
Railways. Steam-engine for	C. F. Spencer	382,975	May 1	561	147	43	880

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Railways. Three-throw switch for	F. S. Washburn	383,382	May 22	2230	592	43	987
Railways. Underground conduit and grip for electric	E. E. Rice and A. H. Henderson	383,770	May 29	2833	746	43	1091
Railways. Underground conduit for electric	S. A. Whipple	380,469	Apr. 3	239	65	43	49
Rake: *See* Hay-rake. Rice-rake.							
Rake and fork. Combined	L. R. Stagner	381,594	Apr. 24	1952	514	43	415
Ranges. Broiling-oven for	J. G. Lyon	384,049	June 5	310	88	43	1180
Rasp	P. S. Stokes	383,999	June 5	234	68	43	1166
Ratchet	J. L. Curtis	382,637	May 8	1152	297	43	740
Ratchet-and-pawl device	A. B. Case	383,624	May 29	2698	{649 650}	43	1048
Ratchet-movement	W. S. Huson	383,054	May 15	1760	455	43	866
Rattan chair. Knockdown	B. J. Buckman	383,169	May 22	1930	{504 505}	43	911
Razor	A. L. Gayler	380,387	Apr. 3	123	36	43	96
Razors. Device for sharpening	P. J. Caesar	382,027	May 1	220	59	43	554
Reclining-chair	H. C. Kree	383,058	May 15	1765	456	43	869
Reclining-chair	S. H. Schmuck	380,525	Apr. 3	331	95	43	99
Rectum or vagina. Apparatus for cooling and warming the	J. R. Hamilton	380,626	Apr. 3	477	135	43	97
Reel: *See* Bolting-reel. Harvester-reel. Fishing-reel. Skein-reel.							
Reel and transportation-case. Combined	H. J. Millar	384,328	June 12	735	194	43	1289
Reel and transportation-case. Combined	H. J. Millar	384,329	June 12	737	194	43	1289
Reel-support	G. F. Hall	381,128	Apr. 17	1271	340	43	264
Reflector. Window	C. G. A. F. W. E. Pihl	384,784	June 19	1406	368	43	1406
Refrigerating and ice-making by the use of ammonia. Apparatus for	R. F. Roswald	383,251	May 22	2045	{537 538 539}	43	934
Refrigerator	C. A. Bluhm	385,089	June 26	1879	480	43	1506
Refrigerator	A. I. Dexter	384,965	June 26	1675	435	43	1464
Refrigerator	G. R. Hotchkiss and G. F. Smith	382,982	May 15	1697	{425 426}	43	842
Refrigerator. Shell-fish	H. C. Constantin	382,410	May 8	799	204	43	671
Register: *See* Cash-register. Hot-air register. Check-register. Passenger-register. Electro-magnetic register. Pool-register. Fare-register. Punch-register. Toll-register.							
Registering device. Electrical	S. M. Pruden	381,279	Apr. 17	1478	397	43	303
Regulator: *See* Current-regulator. Gas-burner regulator. Damper-regulator. Gas-pressure regulator. Draft-regulator. Pressure-regulator. Electric-current regulator. Speed-regulator. Steam-regulator. Feed-regulator. Tooth-regulator. Feed-water regulator. Temperature-regulator.							
Reheating-furnace	T. C. Jones	382,986	May 15	1633	427	43	843
Rein-fastener. Safety	E. E. Brown	382,796	May 15	1379	362	43	783
Rein-holder	W. E. Beisonhert	381,608	Apr. 24	1974	519	43	419
Rein-holder	E. E. Brewster	380,676	Apr. 10	585	156	43	123
Rein-holder	F. W. C. Macdonald	384,988	June 26	1709	443	43	1472
Rein-holder	T. Mangan	380,337	Apr. 3	45	16	43	11
Rein-holder	D. H. Stubbs	381,292	Apr. 17	1492	402	43	307
Relay	J. E. Watson	383,843	May 29	2947	780	43	1113
Relay	J. E. Watson	384,222	June 5	564	{154 155}	43	1230
Releasing device	M. H. Whalen	384,106	June 5	383	107	43	1194
Rennet. Producing dried extract of	F. Graeff	384,358	June 12	782	.....	43	1277
Retort and burner attached. Generating	W. P. Patton	380,514	Apr. 3	319	91, 92	43	66
Retouching device	G. F. Card	383,436	May 29	2328	618	43	991
Revolver	W. H. Sprague	380,361	Apr. 3	87	37	43	20
Revolvers. Extracting mechanism for	D. H. Rice	385,009	June 26	1754	454	43	1482
Rheostat	F. J. Cronch	383,345	May 22	2180	577	43	958
Rheostat	W. H. Knight	384,044	June 5	303	80	43	1178
Rheostat	J. W. Packard	385,001	June 26	1741	450	43	1479
Rheostat	E. W. Rice, Jr.	383,913	June 5	101	30	43	1140
Ribbon-holder	W. E. Wright	381,196	Apr. 17	1363	364	43	281
Ribbon-spool	J. J. Necker and C. Gifford	383,141	May 22	1999	493	43	904
Rice-hulling machine	E. C. Engelberg	383,285	May 22	2105	556	43	944
Rice-rake, cotton-chopper, and cultivator	J. A. Gardner	380,883	Apr. 10	875	225	43	179
Rice-separator	C. J. Allen	382,931	May 15	1553	407	43	829
Ring: *See* Finger-ring. Open ring.							
Rivet	A. Kirks	384,318	June 12	713	189	43	1266
Rivet-burr remover	E. H. Perkins	383,133	June 26	1945	497	43	1520
Rivet-extractor	P. Suitzel	380,703	Apr. 10	599	165	43	130
Rivet-setting machine	W. C. Bray	382,350	May 8	714	181	43	654
Rivet-shanks. Machine for slotting	J. J. Unbehend	381,514	Apr. 17	1838	{484 485}	43	376
Riveting-machine	J. B. Frost	384,189	June 5	530	{143 144}	43	1224
Road. Apparatus for recording the direction and gradients of a	A. R. D. F. de Villepigue	382,886	May 15	1467	385	43	629
Roads. Machine for making, repairing, and clearing	G. W. Taft	380,954	Apr. 10	698	183	43	151
Rock. Apparatus for reducing bituminous	G. E. Belmore	381,321	Apr. 17	1525	414	43	315
Rock-drill	S. Ingersoll	381,698	Apr. 24	2080	545	43	433
Rock-drill	W. O'Keefe	382,685	May 15	1397	370	43	783
Rock-drilling machine	T. J. Murphy	382,683	May 15	1779	464	43	1371
Rock-drilling-machine tripod	T. J. Murphy	382,684	May 15	1776	463	43	1371
Rocker-spring	G. H. Hobbard	380,691	Apr. 10	686	180	43	148

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Rocking-chair	G. F. Hall	383,808	May 29	2901	{765 766}	43	1104
Rod: *See* Eccentric-rod. Pump-rod. Lightning-rod.							
Rod-cutter	H. V. Robinson	385,139	June 26	1939	499	43	1501
Rods and tubes. Machine for drawing	C. M. Pielsticker	382,729	May 15	1384	336	43	775
Rods. Machine for forming eyes on	C. O. Wilder	383,664	May 15	1666	471	43	977
Rodents. Implement for exterminating	E. P. Koonts	382,708	May 15	1458	389	43	769
Roller: *See* Anti-friction roller. Gate-roller. Crushing-mill roller. Land-roller.							
Roller-mill	H. A. Barnard	382,563	May 8	1076	{276 277}	43	725
Roller-mill	P. Ferrier	380,678	Apr. 10	864	233	43	178
Roller-mill	J. D. Mawhood	381,710	Apr. 24	2116	553	43	446
Roller-mill	J. D. Mawhood	384,919	June 19	1610	418	43	1443
Roller-mill	W. W. Westrup and G. T. Lantaff	384,408	June 12	853	221	43	1291
Rolling apparatus	W. L. Price	384,501	June 12	1122	290	43	1341
Rolling articles of metal. Die for	D. E. Kempster	385,186	June 26	2019	516	43	1535
Rolling machine. Metal	D. E. Kempster	380,759	Apr. 10	867	190	43	146
Rolling metal articles to form. Machine for	C. F. Tebbetts	384,878	June 19	1559	405	43	1433
Rolling-mill	J. Fawell and J. Hemphill	382,035	May 1	940	61, 62	43	556
Rolling-mill	C. A. Nighman	384,063	June 5	330	94	43	1184
Rolling-mill	J. T. Richardson and A. Rapp	383,990	June 5	220	66	43	1163
Rolling-mill for making tubes	S. P. M. Tasker	382,017	May 1	202	53, 54	43	551
Rolling-mill plant	W. Garrett and S. T. Wellman	381,689	Apr. 24	2062	545	43	441
Rolling-mills. Appliance for	D. B. Oliver	384,332	June 12	743	195	43	1270
Rolling-mills. Feeding appliance for	J. Morgan, Jr.	383,000	May 15	1653	{422 423}	43	846
Rolling mills. Reeling apparatus for rod	F. H. Daniels	381,217	Apr. 17	1304	370	43	265
Rolling mills. Rolls for iron	A. W. H. Collard	384,308	June 12	700	188	43	1264
Rolling sheet metal	F. H. Wright	381,146	Apr. 24	2164	568	43	457
Rolling tires	P. Gendron	383,521	May 29	2470	632	43	1017
Rolls. Apparatus for removing and setting	W. R. Jones	385,058	June 26	1837	470	43	1497
Rolls. Appliance for	W. R. Jones	382,704	May 15	1354	328	43	766
Rolls. Housing-cap for	W. R. Jones	383,056	May 15	1762	455	43	869
Roof	R. J. Claflin	384,961	June 26	1668	434	43	1462
Roof-climbing device	F. Kramer	380,395	Apr. 3	133	40	43	28
Roofs, &c. Construction of	H. C. Hodges	381,137	Apr. 17	1279	342	43	266
Roofing. Cap and anchor for metallic	B. F. Caldwell	381,756	Apr. 24	2179	570	43	459
Roofing fabric	A. Jones	385,057	June 26	1835	470	43	1497
Roofing-felt. Manufacture of	H. M. Miner	380,915	Apr. 10	921	246	43	188
Roofing. Machine for painting metallic	B. F. Caldwell and W. F. Peterson	381,757	Apr. 24	2180	570	43	459
Roofing. Tile	A. W. Cooper	380,864	Apr. 10	842	228	43	174
Roofing. Water and fire proof composite	W. Chadd	383,101	May 22	1836	481	43	883
Rope-grip or selvagee-strop	A. K. Evans	383,603	May 29	2695	704	43	1161
Rope transmission. Slack-take-up for	W. H. Dodge	383,282	May 22	2101	554	43	944
Rope transmission. Tension device for	J. E. Hall	384,360	June 12	785	205	43	1278
Rotary cutter	J. E. Maynadier	380,338	Apr. 3	46	16	43	11
Rotary-cylinder engine	J. S. Barden	385,226	June 26	2073	531	43	1546
Rotary engine	A. W. and W. G. Billings	382,909	May 1	483	{124 125 656}	43	602
Rotary engine	J. C. Jarvis	383,530	May 29	2485	{653 654}	43	1020
Rotary engine	A. L. Jefferis and W. C. Thurman	380,489	Apr. 3	266	72	43	55
Rotary engine	J. E. Smevely	381,287	Apr. 17	1487	401	43	305
Rotary liquid-meter	W. B. Pearson	380,784	Apr. 10	697	193	43	148
Rotary vapor-engine	R. Hewson	382,424	May 8	817	209	43	675
Roundabout	W. Seasack	384,393	June 12	831	216	43	1286
Rounding-out machine	V. H. Whittaker	384,807	June 19	1440	377	43	1412
Rovings. Machine for making heavy	J. Scholes	382,908	May 15	1594	398	43	884
Rowing-machine	W. and J. H. Tracy	381,187	Apr. 17	1346	360	43	278
Rubber boot	J. D. Thomas	382,498	May 8	936	237	43	647
Rubber boots. Strap for	F. A. Joseph	384,914	June 19	1604	417	43	1442
Rubber dam adjuster and clamp	J. W. Ivory	384,578	June 12	1102	290	43	1378
Rubber-dam clamp and napkin-holder. Combined	J. W. Ivory	384,577	June 12	1101	289	43	1338
Rubber fountains, &c. Stopper for	A. C. Eggers	385,256	June 26	2129	543	43	1558
Rubber or its compounds into hardened rubber. Composition for converting india-	W. B. McGarvey	383,137	May 22	1888	.....	43	903
Rubber shoe	E. Stout	384,097	June 5	372	107	43	1192
Ruby-pin setter	F. Hyde	384,683	June 19	1580	337	43	1382
Ruby-pin setter	P. Ramaer	384,544	June 12	1053	275	43	13 8
Rudder	W. W. Huntley	381,786	Apr. 24	2217	580	43	467
Rudder-stocks upon vessels. Bearing and support of	J. N. Long and J. McCaffrey	381,148	Apr. 17	1295	346	43	269
Rudders. Apparatus for controlling ships'	T. G. Stevens	381,035	Apr. 10	1113	{297 298}	43	225
Rudders. Combined bearing and stuffing-box for	J. H. Konitzky	383,646	May 29	2639	689	43	1054
Rule, level, and plumb. Combined	C. Adkins	384,951	June 26	1657	431	43	1461
Rule, square, bevel, calipers, dividers, &c. Combined	J. C. Spencer and J. G. Smith	380,380	Apr. 3	86	27	43	19
Ruling-machine	G. D. Barnard and E. Knapp	384,497	June 12	992	258	43	1317
Running-gear	J. M. Brosius. (Reissue)	10,922	Apr. 17	1841	467	43	315
Running-gear	R. Hickman	381,695	Apr. 24	2091	547	43	443
Sad-iron	I. C. H. Gilmore and H. B. Stafford	381,668	Apr. 10	1067	283	43	216
Sad-iron	W. Milfoil	383,494	May 22	2074	604	43	975
Sad-iron	W. H. Mull	381,572	Apr. 24	1917	505	43	408
Sad-iron	T. R. Patterson	382,349	May 22	2149	567	43	953
Sad-iron and plate heater	J. S. Sharp and J. D. Luther	381,634	Apr. 17	1760	456	43	320
Sad-iron heater	S. Spencer	384,722	June 19	1502	345	43	1302
Sad-iron	E. Terrehaw	384,662	Apr. 17	1761	471	43	320
Sad-iron	W. Andrews	384,999	June 19	1140	301	43	1359
Sad-iron	D. Wadsworth	382,446	May 8	855	218	43	691
Sad-iron	E. A. Stanstad	384,789	June 19	1388	349	43	1384

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Saddle. Harness	W. R. Knowles	383,956	June 5	170	50	43	1153
Saddle. Harness	S. A. Marker	383,741	May 29	2776	731	43	1069
Saddle. Harness	J. W. Mitchell	380,451	Apr. 3	215	56	43	44
Saddle. Harness	G. Rank	381,852	May 1	75	19	43	599
Saddle-pad	J. Morrow	383,821	May 29	2919	771	43	1106
Saddle-tree. Harness	W. S. Everett	380,624	Apr. 3	476	134	43	97
Saddle-trees. Press for forming leather	J. M. Fink	382,909	May 15	1589	{417 418	43	837
Safe. Burglar-proof	M. S. Goldsmith	380,717	Apr. 10	619	170	43	138
Safe-lock	A. G. Burton	382,071	May 1	290	77, 78	43	567
Safe-lock	A. G. Burton	383,040	May 15	1731	{450 451	43	983
Safe-lock	A. G. Burton	383,041	May 15	1737	{451 452	43	984
Safe-lock	J. White	381,893	Apr. 24	2398	665	43	591
Safe. Provision	H. Randol	381,721	Apr. 24	2134	589	43	451
Safes and vaults. Operating mechanism for doors of	A. Kirks	384,282	June 12	633	170	43	1251
Safety-pin	D. A. Carpenter	381,613	Apr. 24	1960	530	43	491
Safety-pin	H. C. Hense	382,232	May 1	518	133	43	606
Safety-pin	J. Jenkins	380,986	Apr. 10	990	240	43	184
Safety-pin	F. M. Twitchell	381,513	Apr. 17	1631	434	43	373
Safety-pins. Manufacture of	R. A. Ballou	380,360	Apr. 3	115	33	43	25
Safety-switch	W. B. St. Cyr and F. R. McDonald	381,034	Apr. 10	1110	297	43	234
Sail-grommet	W. W. Wilcox	382,921	May 15	1542	404	43	837
Sail-grommet	W. W. Wilcox	382,922	May 15	1542	404	43	838
Sail-grommet	W. W. Wilcox	382,923	May 15	1543	404	43	838
Sail-grommets, &c. Punch or die for	W. W. Wilcox	382,924	May 15	1544	405	43	838
Salt-drier	C. T. Bartlett	384,953	June 26	1658	431	43	1461
Salve	J. R. Smith	385,210	June 26	2054	.....	43	1542
Sampling apparatus. Automatic	C. Folsom	381,769	Apr. 24	2183	572	43	462
Sand-trap	A. Bradford	384,420	June 12	868	226	43	1254
Sash and frame. Window	B. F. Smith	382,117	May 1	355	93	43	579
Sash-balance	C. Kruesi	383,134	May 22	1685	438	43	983
Sash-balance	J. H. Corbin	383,280	May 22	2089	554	43	943
Sash-balance	T. Jones	380,805	Apr. 10	754	{396 397	43	158
Sash-balance	W. C. Merckel	384,459	June 12	991	259	43	1304
Sash-balance	T. G. Russell	383,414	May 22	2029	008	43	977
Sash-cord fastener	J. H. Jones	381,018	Apr. 10	1061	276	43	218
Sash-cord fastener	L. Strasser	384,649	June 19	1206	319	43	1367
Sash-cord fastener	G. L. Thompson	381,728	Apr. 24	2142	561	43	453
Sash-fastener	G. H. Aylworth	384,553	June 12	1066	278	43	1331
Sash-fastener	J. E. Brown	381,210	Apr. 17	1375	366	43	283
Sash-fastener	R. Clarke	380,424	Apr. 3	171	47	43	35
Sash-fastener	O. R. Cooke	381,113	Apr. 17	1250	336	43	260
Sash-fastener	J. Jackson	383,886	June 5	54	17	43	1131
Sash-fastener	G. D. Loder	380,501	Apr. 3	391	85	43	50
Sash-fastener	E. W. Luce	384,535	June 12	1040	271	43	1326
Sash-fastener	C. Wolcott	383,549	May 29	2513	663	43	1025
Sash-holder	I. Brokaw	384,607	June 19	1149	304	43	1355
Sash-holder	J. Hartman, Jr	381,131	Apr. 17	1274	341	43	265
Sash-holder	F. B. Moore	381,268	Apr. 17	1465	394	43	300
Sash lock and fastener	H. C. Reynolds	381,485	Apr. 17	1788	476	43	364
Saw	J. J. Ralya	381,614	Apr. 24	9258	580	43	475
Saw. Circular	A. Weymar	385,079	June 26	1867	477	43	1504
Saw. Drag	D. N. Hurd	384,979	June 26	1693	440	43	1469
Saw-filing device	R. Doak	381,830	Apr. 24	2298	598	43	481
Saw-filing machine	E. D. Eaton	384,929	June 19	1483	387	43	1419
Saw-filing machine	H. L. Bump	381,610	Apr. 24	1975	519	43	430
Saw-filing machine	D. W. Johns	381,249	Apr. 17	1440	367	43	295
Saw-filing machine. Band	S. C. Rogers. (Reissue)	10,967	June 5	570	157	43	1234
Saw-guide	A. S. Dunn	383,944	June 5	153	45	43	1149
Saw-guide	J. W. Maxwell	384,773	June 19	1393	364	43	1403
Saw-guide	J. O. Morrow	381,635	Apr. 24	2007	{502 503	43	426
Saw-guide	J. S. Robinson	381,423	Apr. 17	1690	453	43	346
Saw-guide	G. F. Striegel	380,928	Apr. 10	786	215	43	164
Saw-guide. Adjustable	D. J. Murray	385,131	June 26	1942	496	43	1520
Saw-gummer	J. P. and N. Romer	383,191	May 22	1959	513	43	917
Saw-handle	J. Beaulieu	384,500	June 12	997	259	43	1316
Saw-handle	G. E. Siebler	383,376	May 22	2025	530	43	986
Saw-handle attachment	L. T. Blegen	384,741	June 19	1347	350	43	1393
Saw handle. Crosscut	H. L. Kincaid	381,796	Apr. 24	2232	584	43	469
Saw-handles. Machine for forming	C. L. S. Walker	382,064	May 1	280	74	43	565
Saw holder. Circular	J. Slater	381,651	Apr. 24	2096	531	43	430
Saw-jointer	C. R. Black	381,307	Apr. 17	1373	367	43	283
Saw-jointer	D. C. Robinson	382,327	May 8	672	176	43	646
Saw jointer and gage. Combined	W. S. Ralya	385,006	June 26	1749	464	43	1491
Saw machine. Upright	G. Phillion	383,946	May 22	2040	535	43	932
Saw-mill	W. Gowen	383,461	May 29	2306	{889 890	43	999
Saw mill. Band	E. W. Avery	381,977	May 1	192	{39 39 39	43	537
Saw mill. Band	H. R. Barnhurst	384,112	June 5	390	110	43	1195
Saw mill. Band	W. M. Dickerson	381,496	Apr. 17	1758	470	43	358
Saw mill. Band	W. Gillis	384,228	June 12	621	167	43	1249
Saw mill. Band	W. Gowen	383,458	May 29	2303	888	43	997
Saw mill. Band	W. Gowen	383,459	May 29	2303	{888 889	43	998
Saw mill. Band	F. S. Smith and T. Kelly	381,788	Apr. 24	2240	590	43	488
Saw-mill carriages. Automatic offset for	W. Gowen	383,457	May 29	2302	887	43	997
Saw-mill carriages. Offsetting mechanism for	W. Gowen	383,460	May 29	2305	888	43	998
Saw-mill dog	M. J. Anderson and B. J. Smith	384,998	June 12	563	159	43	1243

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Saw-mill dog	J. H. Miner	380,916	Apr. 10	982	247	43	189
Saw-mill dog	R. F. and J. H. Rodick	382,555	May 8	1089	288	43	716
Saw-mill head-block	I. Swank	383,680	May 22	2567	630	43	1088
Saw-mills. Reversing-gear for	E. N. Collett	381,915	Apr. 17	1362	349	43	295
Saw. Scroll	H. L. Beach	381,751	Apr. 24	2170	580	43	458
Saw-setting device	W. T. Silcox	382,110	May 1	353	93	43	579
Saw-setting machine	W. S. Smith	384,694	June 5	367	104	43	1191
Saw-sharpening machine	W. H. Halladay	381,775	Apr. 24	2280	576	43	464
Saw-sharpening machine	R. M. Pine	385,004	June 26	1745	451	43	1459
Saw-swage	S. Hill	380,758	Apr. 10	698	180	43	142
Saw-swage	J. H. Miner	381,633	Apr. 24	2005	525	43	425
Saw swage and sharpener	W. H. Williams	385,980	June 26	2185	559	43	1560
Saw-swaging device	C. A. Schoensel	381,851	Apr. 24	2235	595	43	480
Saw-table gage	H. L. Beach	381,752	Apr. 24	2172	568	43	458
Saw-teeth. Machine for swaging	J. F. Tridell	382,602	May 1	277	72	43	564
Saw-teeth	E. Harris	381,911	Apr. 10	1073	285	43	217
Saw-teeth. Inserted	F. W. Cook	383,108	May 22	1638	431	43	983
Saw-teeth swage	J. B. Rhodes	382,335	May 8	671	169	43	646
Saws. Bench for circular	F. E. Farwell	380,560	Apr. 3	367	110	43	79
Saws. Device for jointing and sharpening	H. W. Georgia and E. Andrews	382,467	May 8	888	238	43	857
Saws. Device for side-dressing	G. Glass	384,149	June 5	455	{125 126	43	1206
Saws. Device for side-dressing the teeth of	H. W. Williams	383,931	June 5	135	30	43	1147
Saws, &c. Machine for sharpening	C. S. Farrar	384,613	June 19	1157	306	43	1286
Saws. Machine for straightening and hammering	M. Coval	380,665	Apr. 10	845	226	43	174
Saws. Machine for truing the teeth of	R. Gaskin, Jr	383,730	May 22	2752	725	43	1077
Sawing-machine	W. A. Dewberry	380,356	Apr. 3	122	30	43	26
Sawing-machine. Band	C. Bryant	380,657	Apr. 10	831	220	43	172
Sawing machine. Circular	J. W. Frank	382,021	May 1	311	81	43	570
Sawing machine. Circular	J. R. Ripley	384,176	June 5	497	136	43	1217
Sawing-machine. Power-feed	G. B. Darkee	383,112	May 22	1884	495	43	897
Sawing machine. Wood	F. W. Olds	382,733	May 15	1276	{234 235	43	772
Scaffold and staging	N. Stadler	382,945	May 1	586	137	43	615
Scaffold for wooden buildings	C. W. Randall and J. H. Smith	382,901	May 15	1515	397	43	822
Scaffold. Painter's	M. Lacy	383,471	May 29	2388	635	43	1003
Scaffolding	H. Bradds	380,546	Apr. 3	365	104	43	75
Scale. Automatic weighing and recording	E. H. Amet	380,678	Apr. 10	567	{153 154	43	191
Scale-beam	W. W. Reynolds	383,912	June 5	100	30	43	1140
Scale-beam	A. H. Smith	381,067	Apr. 10	1205	323	43	206
Scale. Counter	J. B. Butenschon	381,673	Apr. 24	2062	530	43	437
Scale for liquids. Automatic weighing	P. Whitlock	382,849	May 15	1441	379	43	807
Scale for railway-cars. Weighing	E. Duplessis	382,412	May 8	808	205	43	672
Scale-pan	H. J. Henrichson	384,256	June 12	625	166	43	1250
Scale. Platform	W. C. Kelly	381,831	May 1	45	12	43	563
Scale. Prescription-weighing	C. H. Fitch	384,947	June 19	613	165	43	1248
Scale. Registering and recording weighing	E. G. Fisher	383,451	May 29	2244	{923 924 451 452	43	994
Scale. Weighing and price	J. E. Pitrat	385,005	June 26	1746	{458 459	43	1460
Scales for weighing railway-cars	J. W. Ballard and H. L. Fisher	384,495	June 19	970	258	43	1313
Scales. Weight-recorder for weighing	J. A. Jamieson	385,310	June 26	2018	508	43	1574
Scarf. Neck	W. I. Weinberg	384,484	June 12	961	246	43	1310
Scissors. Button-hole	L. C. McNeal	382,996	May 15	1648	431	43	847
Scissors, &c. Spring for	F. C. Altmann	382,502	May 8	946	240	43	689
Scoop. Wire	L. H. Shedder	384,098	June 5	362	103	43	1191
Scraper	J. C. Pequnot	385,003	June 26	1743	451	43	1479
Scraper. Earth	G. Wilkinson and J. McCourt	380,374	Apr. 3	105	31	43	32
Scraper. Road	G. N. Miller and O. E. Meets	383,751	May 29	2795	735	43	1085
Scraper. Road	J. D. S. Read	382,083	May 15	1779	460	43	872
Scraper. Track	H. H. Littell	385,083	June 26	1844	472	43	1490
Scraper. Wheel	C. H. Sawyer	380,354	Apr. 3	76	94, 95	43	18
Scraper. Wheeled	P. Deevy	380,314	Apr. 3	11	3	43	4
Scraping machine. Road	W. F. Wellman	381,887	Apr. 24	2357	{611 612	43	492
Screen: *See* Photographic head. Window-screen.							
Screen	D. Wesemann	383,510	May 29	2448	649	43	1014
Screen or door for obstructing the passage of flame. Automatic	M. B. Feeney	384,141	June 5	443	{122 123 377 378	43	1206
Screening. Machine for making slashed metallic	J. F. Golding	381,831	Apr. 17	1487		43	389
Screw	R. Stilwell	383,834	May 29	2837	776	43	1141
Screw-cutting die	P. A. Anderson	382,933	May 15	1557	407	43	830
Screw-cutting die	F. I. Manle	380,908	Apr. 10	911	245	43	197
Screw-cutting die and stock	P. Grabler	383,354	May 22	2197	560	43	998
Screw-driver attachment	L. Kiblinger	384,043	June 5	308	85	43	1176
Screw-holder, screw-driver, and countersink. Combined	J. C. Trovillion	382,670	May 8	1204	319	43	720
Screw-stoppers. Manufacture of	H. Barrett and J. J. Varley	382,286	May 1	460	123	43	601
Screw-swaging machine	H. A. Harvey	381,849	June 5	158	46 47	43	1151
Scutching or fiber-cleaning machines. Feeding apparatus for	A. H. Death	385,300	June 26	2304	565	43	1571
Seal for checks. Safety	A. M. Woodhull	385,158	June 26	1978	506	43	1527
Seal-lock	E. C. Bartlett	384,115	June 5	386	111	43	1197
Seal-lock	P. Brown	382,434	May 29	2285	{616 617	43	999
Seal-lock	C. E. Davis	381,584	Apr. 24	1867	493	43	398
Seal-lock	E. Mates	380,446	Apr. 3	206	56	43	42
Seal-lock	A. H. Peirce	384,697	June 5	340	94	43	1183
Seal-lock	O. C. Pratt	384,549	June 12	1051	274	43	1322
Seal-lock	C. E. Watson	384,231	June 5	500	154	43	1229

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Sealing fruit-jars. Device for	W. W. Osmond	380,921	Apr. 10	932	269	43	191
Seam-rubbing machine	C. S. Fifield	383,874	June 5	34	11	43	1138
Seaming-machine	F. A. Walsh	382,572	May 8	1054	290	43	721
Seaming machine. Can-	G. W. Lore	383,400	May 22	2208	662	43	973
Seaming-machine for sheet-metal vessels	F. A. Walsh	382,499	May 8	937	{236 / 239}	43	697
Seat: *See* Car-seat. Velocipede-seat. Spring-seat. Wagon-seat. Vehicle-seat.							
Secondary battery	H. H. Carpenter	380,969	Apr. 10	1046	276	43	212
Secondary battery	N. De Benardos	380,534	Apr. 3	374	107	43	77
Secondary battery	L. Epstein	382,420	May 8	812	207	43	674
Secondary battery	L. Epstein	383,216	May 22	1908	{353 / 354}	43	985
Secondary battery	C. A. Faure	383,560	May 29	2595	666	43	1089
Secondary battery	C. A. Faure	383,562	May 29	2597	666	43	1089
Secondary battery	A. V. Meserole	381,941	May 1	61	15	43	396
Secondary battery	A. Reckenzaun	385,200	June 26	2041	522	43	1539
Secondary battery	S. Russell	382,150	May 22	1907	498	43	997
Secondary battery	J. S. Sellon	383,193	May 22	1961	514	43	917
Secondary battery	J. L. Weatherhead and J. S. Cochran	384,808	June 19	1434	376	43	1411
Seed-hulling machines. Cylinder for cotton	S. E. Toucey	381,657	Apr. 24	2030	534	43	433
Seed. Machine for delinting cotton	A. D. Catlin	380,787	Apr. 10	735	201	43	154
Seed. Machine for delinting cotton	A. Seibert	383,374	May 22	2221	590	43	986
Seed. Method of and apparatus for treating fiber-coated	J. L. Weatherhead and J. S. Cochran	384,340	June 12	754	197	43	1279
Seeder and harrow. Combined	W. F. Corne	381,616	Apr. 24	1983	521	43	421
Selling-machine	G. M. Clark	380,422	Apr. 3	165	46, 47	43	34
Semaphore signal apparatus	F. M. Leavitt	384,770	June 19	1385	363	43	1401
Separating-machine	F. Stitzel and C. Weinedel	380,409	Apr. 3	148	42, 43	43	31
Separating-machine	N. W. Holt	384,950	June 19	1651	{429 / 430}	43	1452
Separator: *See* Electro-magnetic separator. Magnetic separator. Grain-separator. Rice-separator.	A. J. Miller	384,058	June 5	325	92	43	1182
Separator	F. A. Hine	381,374	Apr. 17	1617	432	43	331
Separator	J. J. Lowden	381,150	Apr. 17	1297	347	43	249
Separator	S. Stuart	383,674	May 29	2677	709	43	1062
Sewage and night-soil desiccating apparatus	A. Wemple	380,839	Apr. 10	800	219	43	167
Sewage. Means and apparatus for collecting and separating	P. C. Close	380,383	Apr. 3	118	34	43	25
Sewer-cleaning mechanism	W. A. Pitt	382,188	May 1	451	118	43	597
Sewers and drains. Air-inlet for	J. A. Wyman	382,127	May 1	389	96	43	561
Sewers and other excavations. Cutting device for	E. S. McClellan	381,711	Apr. 24	2119	553	43	448
Sewing bags. Machine for	W. Watson	382,573	May 8	1057	{269 / 270}	43	721
Sewing books	L. Bollmann	380,981	Apr. 10	1031	{269 / 270}	43	204
Sewing comfortables and other fabrics. Machine for	W. W. Neel	384,211	June 5	548	151	43	1227
Sewing-machine	F. L. Palmer	380,815	Apr. 10	766	210	43	161
Sewing-machine	C. P. Bostian	382,794	May 15	1376	361	43	792
Sewing-machine	C. L. Fleischmann	380,317	Apr. 3	15	4	43	6
Sewing-machine	T. L. Melone	383,748	May 29	2787	{733 / 734}	43	1084
Sewing-machine	L. L. Miller	384,059	June 5	326	92, 93	43	1183
Sewing-machine	C. E. Tibbles	383,419	May 22	2296	610	43	979
Sewing-machine	C. E. Tibbles	383,924	June 5	126	37	43	1145
Sewing-machine-attachment holder	J. M. Grieat	381,546	Apr. 24	1882	497	43	401
Sewing-machine bobbins. Machine for winding	C. Woodman	381,457	Apr. 17	1746	467	43	356
Sewing-machine. Button-hole	J. S. Freese	382,466	May 8	890	{227 / 228}	43	687
Sewing-machine. Button-hole	T. F. Hagerty	382,763	May 15	1398	349	43	763
Sewing-machine button-hole attachment	H. J. Williams	383,423	May 22	2305	612	43	980
Sewing-machine embroidering attachment	E. Frankenberg	384,198	June 5	530	145	43	1224
Sewing-machine embroidering attachment	A. W. Johnson	384,257	June 12	625	169	43	1250
Sewing-machine feeding device	R. M. Hatcher	381,778	Apr. 24	2303	577	43	465
Sewing-machine for connecting soles and uppers	P. A. and J. Conpal	381,987	May 1	143	{34 / 35 / 36}	43	541
Sewing-machine for connecting soles and uppers	P. A. and J. Conpal	385,299	June 26	2199	{562 / 563 / 564 / 565}	43	1571
Sewing-machine for uniting soles to uppers	P. A. Coupal	381,988	May 1	147	{36 / 37 / 38}	43	542
Sewing-machine presser-foot	D. A. Sutherland	381,090	Apr. 10	1210	324	43	243
Sewing-machine shuttle and shuttle-operating mechanism	W. E. Bennett	384,230	June 12	581	159	43	1243
Sewing-machine tension mechanism	J. Cumming	381,912	May 1	21	6	43	519
Sewing-machine trimming attachment	J. W. Dewees	381,537	Apr. 24	1871	{494 / 495}	43	399
Sewing-machine welt-trimmer	J. W. Dewees	381,536	Apr. 24	1870	494	43	399
Sewing-machines. Cutting attachment for	H. Lefeber	382,169	May 1	498	111	43	592
Sewing-machines. Hand propelling device for	K. P. Beaird	380,573	Apr. 10	1018	286	43	205
Sewing-machines. Presser-foot for button-	W. E. Bennett	384,231	June 12	567	159	43	1244
Sewing-machines. Presser-foot-operating mechanism for	J. Mathison	380,656	Apr. 3	583	144	43	105
Sewing machines. Work-holding horn for shoe-	E. L. Sprague and G. R. Peare	385,546	May 29	2569	699	43	1605
Sewing-tool	C. K. Bradford	382,759	May 15	1312	345	43	759
Shackle	L. C. Ferrell and D. Israel	381,695	Apr. 10	1057	283	43	205

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Shackle. Spring-	J. A. Lamplugh	382,534	May 8	986	{252 / 253}	43	708
Shade fixture. Window-	D. W. Wise	382,784	May 15	1380	357	43	790
Shade-pull	C. W. Elliott	381,543	Apr. 24	1879	496	43	420
Shade-roller support	E. H. Manger	381,714	Apr. 24	2194	555	43	449
Shade. Window-	A. Huffer	383,653	May 15	1759	455	43	868
Shaft-coupling	S. H. Barnes	384,013	June 5	253	72	43	1170
Shaft-coupling	G. H. Mackay	382,765	May 15	1331	350	43	784
Shaft-hanger	A. Lechner	383,532	May 29	2468	656	43	1021
Shafts and ordnance. Manufacture of	J. H. Flagler	385,048	June 26	1822	467	43	1495
Shafts and pole for vehicles. Convertible	W. H. Kelly	380,806	Apr. 10	755	207	43	158
Shafts. Means for securing pulleys on	W. H. Dodge	382,281	May 22	2100	554	43	943
Shafts, pulleys, &c. Coupling for	B. L. Williamson	384,812	June 19	1453	380	43	1414
Shafts. Register and recorder for revolving	S. M. Terry	384,479	June 12	943	245	43	1309
Shank-burnishing device	A. Harden	384,573	June 12	1086	286	43	1337
Shaping-machine	G. W. Davison and J. Buckley	384,963	June 26	1671	434	43	1464
Shaping-press. Hydraulic	A. R. Hobson	381,949	Apr. 17	1499	384	43	332
Shawl-strap	S. Scheuer	384,395	June 12	633	217	43	1297
Shawl-strap and fire-escape	J. D. Lee and J. H. Acton	384,631	June 19	1106	313	43	1362
Sheaf-carrier	G. H. Goetze	382,663	May 8	1106	294	43	731
Sheaf-carrier	J. Miller	384,802	June 19	1532	{298 / 299}	43	1429
Sheaf-carrier	L. B. Willey	380,908	Apr. 10	1005	259	43	204
Sheep-shearing machine	G. Richardson	384,545	June 12	1054	275	43	1389
Sheet metal. Apparatus for making	E. Norton and J. G. Hodgson	382,319	May 8	654	167	43	644
Sheet-metal-bending machine	G. R. Everson	383,391	May 22	2254	599	43	971
Sheet-metal blanks. Machine for making	C. W. Judson	383,368	May 22	2129	{561 / 562}	43	949
Sheet-metal corrugating and edging machine	E. R. Stasch	382,977	May 1	585	{146 / 149}	43	681
Sheet metal. Device for forming letters and designs on	J. O'Connor	384,331	June 12	742	195	43	1270
Sheet metal. Die for shaping	O. W. Swift	383,081	May 15	1797	465	43	875
Sheet-metal folder	G. R. Everson	383,390	May 22	2252	599	43	970
Sheet-metal-folding machine	N. Koenig	380,580	Apr. 3	414	118	43	84
Sheet-metal joint	R. E. Goodrich	382,151	May 1	400	105	43	567
Sheet metal. Manufacture of	E. Norton and J. G. Hodgson	382,321	May 8	660	{168 / 169}	43	645
Sheet metal. Ornamentation of	J. Koebel	381,290	Apr. 17	1641	.....	43	336
Sheet-metal-scroll cutter	A. O. Kittridge and B. Adriance	383,398	May 22	2264	602	43	973
Sheet-metal structure	W. Orr and P. S. Brown	383,759	May 29	2812	{740 / 741}	43	1068
Sheet metal to form meshes. Machine for slashing and expanding flat	J. F. Golding and G. B. Durkee	381,230	Apr. 17	1405	376	43	289
Sheet-metal vessel	F. A. Walsh	383,507	May 29	2444	648	43	1013
Shelf. Revolving	C. Jewull	380,887	Apr. 10	900	241	43	184
Shell	J. W. Graydon	382,223	May 1	508	131	43	607
Shell	M. Von Förster	385,332	June 26	2253	577	43	1509
Shell	E. L. Zalinski	384,660	June 19	1296	294	43	1370
Shell for explosives	J. W. Graydon	382,222	May 1	502	130	43	606
Shell for high explosives	W. T. Smith	384,646	June 19	1303	318	43	1366
Shell for high explosives	E. L. Zalinski	384,661	June 19	1299	295	43	1371
Shell. High-explosive	J. W. Graydon	382,224	May 1	504	130	43	606
Shell. High-explosive	J. W. Graydon	382,225	May 1	506	131	43	607
Sheller: *See* Corn-sheller.							
Shingle. Metallic	E. E. Barker	381,318	Apr. 17	1531	413	43	315
Shingle-sawing machine	W. J. Perkins	380,346	Apr. 3	53	19, 20	43	13
Shingling-gage	M. Slane	383,507	May 29	2565	679	43	1030
Ship	J. Moffett	381,943	May 1	64	16	43	397
Ships, &c. Construction of	C. G. Lundborg	384,047	June 5	306	87, 88	43	1179
Ship's log	E. E. Haskell	384,362	June 12	767	205	43	1278
Ship's log	W. S. Hogg	382,362	May 8	731	184	43	657
Ship's log	O. Kustal	382,816	May 15	1401	{367 / 368}	43	796
Shoe	J. Condell	380,558	Apr. 3	372	105	43	76
Shoe	W. B. Hill	384,845	June 19	1509	{302 / 303}	43	1425
Shoe	J. J. Jordan	381,929	May 1	43	12	43	583
Shoe	J. J. Jordan	381,930	May 1	43	12	43	583
Shoe	C. T. Lee	381,259	Apr. 17	1452	391	43	290
Shoe	H. Witzel	383,090	May 15	1818	{475 / 476}	43	879
Shoe	M. Yeagle	384,224	June 5	567	155	43	1231
Shoe-clasp	J. J. Unbehend	384,339	June 12	752	197	43	1272
Shoe-fastening	C. Knopp	382,651	May 8	1176	304	43	745
Shoe-heel	A. Farina	381,686	Apr. 24	2079	543	43	441
Shoe or glove fastener	A. T. Perrine	383,702	May 29	2819	742	43	1079
Shoe-tongue fastening	C. F. Crowell	385,045	June 26	1815	466	43	1493
Shoe-upper-turning machine	F. D. Walden	380,859	Apr. 10	902	263	43	202
Shoes, gloves, &c. Fastening device for	G. F. Krieger	380,327	Apr. 3	28	8, 9	43	8
Shoes. Machine for treeing	G. W. Copeland and J. E. Crisp	383,279	May 22	2094	{551 / 552 / 553 / 554}	43	942
Shop-front	J. Gooch	381,361	Apr. 17	1597	427	43	327
Shore-protector	T. O'Connell	384,173	June 5	492	136	43	1216
Short-hand machines. Paper-reel for	C. S. Olcott and J. P. Ellacott	381,566	Apr. 17	1883	488	43	372
Shoveling device. Steam	A. Meyers	383,584	May 29	2532	{674 / 675}	43	1034
Show-case	F. C. Cutting	383,857	June 5	25	8	43	1126
Show-case	H. Stern	381,981	May 1	87	23	43	331
Show-case for entomological and other specimens	C. F. McGlashan	382,708	Apr. 10	695	192	43	147
Show-case. Revolving	C. H. Tully	382,445	May 8	864	218	43	661

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Show-rack	C. E. McElroy	382,542	May 8	1011	256	43	712
Show-stand	A. F. Smith	381,437	Apr. 17	1712	488	43	351
Shutter	J. T. Miller	380,914	Apr. 10	919	489	43	351
Shutter. Adjustable	C. J. Keating	382,767	May 15	1357	348	43	188
Shutter-fastener	J. A. Bachman	382,738	Apr. 10	853	249	43	703
Sickle-grinder	J. W. Gamble and L. M. Ratt	385,176	June 26	1999	101	43	139
Sieve. Flour	H. Martin	382,541	May 8	1011	518	43	1531
Sifter. Ash	J. E. Crosby	382,173	May 22	1935	259	43	711
Sifter. Ash	H. E. Griffith	383,571	May 29	2535	507	43	913
Sifter. Ash	M. Lynch	383,312	May 29	2140	505	43	1631
Sifter. Coal	F. H. Perry	383,412	May 29	2280	509	43	931
Sign. Advertising	L. A. Deuther	381,786	Apr. 24	2190	572	43	977
Sign. Druggist's	J. L. Dawes and W. G. Walter	383,445	May 29	2336	621	43	1631
Signal:							
See Block-signal. Fishing-reel signal. Fog-signal. Marine signal. Railway-signal. Railway-crossing alarm-signal. Railway-freight-train signal. Railway semaphore-signal.							
Signal apparatus. Electrical	J. R. De Mier	380,646	Apr. 3	505	141	43	163
Signal-compensator	J. J. Turner	385,025	June 26	1778	450	43	1497
Signal system. Automatic electric block	T. D. Williams and J. S. Lucock	384,810	June 19	1444	378	43	1413
Signal system. Police electric	C. E. Scribner	384,476	June 12	936	244	43	1309
Signals. Apparatus for operating automatic block	T. D. Williams and J. S. Lucock	384,811	June 19	1449	379	43	1414
Signaling apparatus	T. Shaw	384,792	June 19	1418	373	43	1402
Signaling apparatus. Electric	M. W. Parrish	381,576	Apr. 24	1921	506	43	449
Signaling apparatus. Electric train	J. R. De Mier	381,343	Apr. 17	1573	413	43	353
Signaling apparatus. Electric train	J. R. De Mier	381,344	Apr. 17	1575	422	43	354
Signaling apparatus. Semaphore	A. Barnes	385,287	June 26	2074	531	43	1547
Signaling apparatus. Telegraphic	J. B. Willis	381,738	Apr. 24	2154	563	43	455
Signaling at sea	D. Ruggles	382,056	May 1	271	.....	43	563
Signaling-box. Electric	W. D. Browne	383,941	June 5	150	44	43	1149
Signaling device for mines. Electro-magnetic	L. M. Balliett and O. C. Greene	380,382	Apr. 3	116	34	43	35
Signaling. Municipal	M. Martin	380,655	Apr. 3	580	144	43	165
Singletree	J. R. Freeland	383,351	May 22	2190	579	43	961
Siphon	G. W. Arper	381,521	Apr. 24	1851	489	43	395
Siphon	F. H. Gile	384,951	June 12	619	167	43	1349
Siphon for starting the flow of liquids	M. Sieradorfer	381,153	May 22	1910	499	43	899
Strup and beer from maize. Making	A. E. Feroe. (Reissue)	10,925	May 1	606	153 154	43	604
Strup-gage	J. Conner	384,660	June 19	1257	330	43	1276
Skate-clamp	W. L. Parmelee	380,456	Apr. 3	283	91	43	65
Skate. Snow	P. Conradson	382,254	May 1	556	140	43	616
Skein-reel	J. Garsed	381,771	Apr. 24	2195	574	43	463
Skins. Alum-tanned	A. Warter and H. C. Koegel	381,734	Apr. 24	2149	.....	43	454
Skins and other leather. Treating morocco	C. M. Kimball	381,933	May 1	47	13	43	594
Skins. Apparatus for treating	C. M. Kimball	381,932	May 1	46	13	43	594
Skirt-waistband. Woven	C. Vorwerk	383,842	May 29	2946	780	43	1113
Skiving-machines. Knife-sharpening attachment for	P. B. Clark and G. J. Klingler	384,099	June 5	261	74, 75	43	1178
Slate and ruler. Combined	L. M. Dyer	382,413	May 8	803	205	43	672
Slate and ruler therefor. School	M. W. Fleming and C. R. Le Sauvage	383,945	June 5	154	45	43	1150
Slate-frames. Machine for making school	G. L. Knauss	383,955	June 5	167	49, 50	43	1152
Slate-picker. Automatic	E. B. Coxe and S. Salmon	382,915	May 1	490	127	43	604
Slates. Muffled frame for school	G. Gray	381,363	Apr. 17	1609	420	43	326
Sled	S. L. Allen	381,665	Apr. 24	2049	536 557	43	435
Sled-brake	I. C. Thompson	384,548	June 19	1061	276	43	1330
Sled. Child's	J. F. Pratt and W. Chase	380,693	Apr. 10	589	152	43	127
Sleigh	W. S. Marble	383,401	May 22	2270	603	43	974
Sleigh	N. G. Reynolds	380,819	Apr. 10	775	219	43	163
Sleigh. Bob	J. W. Shourds	384,794	June 19	1394	345	43	1392
Sleigh. Bob	M. D. Williams	382,998	May 15	1545	405	43	1033
Sleigh-knee	J. J. Cobb	384,126	June 5	462	117	43	1292
Sleigh-knee	H. P. Titus	382,230	May 22	2086	548	43	938
Sleigh-knee	H. and H. Weale	382,307	May 8	781	198	43	667
Sleigh-runner	E. K. Van Gorden	385,289	June 26	2165	559	43	1569
Sliding gate	W. R. White	380,613	Apr. 3	462	121	43	94
Slimer and settler	T. H. Minter	382,433	May 8	802	213	43	674
Slip and shrinkage gage	H. C. Balshaugh	382,854	May 15	1447	381	43	989
Smoke-condenser	B. Roberts	382,685	May 8	1196	311	43	749
Smoke-consuming furnace	R. Affeltranger	384,818	June 19	1467	388	43	1416
Smoke-consuming furnace	J. D. Lee	383,310	May 22	2138	564	43	930
Smoke-jack. Self-cleaning	Z. B. Fifield	383,875	June 5	35	12	43	1138
Smoothing and polishing iron. Combined	W. D. Gold	384,994	June 19	1588	413	43	1430
Smut-machine	F. Prina	380,346	Apr. 3	63	21, 22	43	15
Snap-hook	J. M. Basinger	383,336	May 22	2167	573	43	976
Snap-hook	E. Crippen and W. King	380,987	Apr. 10	1656	479	43	315
Snap-hook	E. L. Howe	382,611	May 8	1118	295	43	720
Snap-hook	J. L. Martin	380,667	Apr. 10	569	139	43	168
Snap-hook	H. McPherson	384,998	June 26	1714	445	43	1473
Snap-hook	D. L. Smith	382,485	May 8	983	257	43	688
Snap-hook	R. A. Wilson	381,739	Apr. 24	2155	564	43	455
Snap-hook	W. O. Barnes	384,608	June 19	1149	299	43	1288
Snow-excavator	J. B. Hayes	384,582	June 12	1004	267	43	1288
Snow-plow	J. Vincent	383,925	June 5	127	37	43	1146
Snow-plow	E. Leslie	380,780	Apr. 10	758	200	43	189
Snow. Rotary excavator for removing	A. Domeier and O. C. Hagemann	385,165	June 26	1994	.....	43	1543
Soap and glycerine. Making resin	G. C. W. Belcher	383,853	June 5	8	.....	43	1136

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Soap. Making	R. A. McCullough	381,863	Apr. 17	1619	.....	43	371
Soda, &c. Apparatus for causticizing	G. W. Hammond	381,998	May 1	167	43	43	545
Soda. Apparatus for the recovery of	J. E. Warren and F. A. Cloudman	380,670	Apr. 3	548	159	43	149
Soda. Manufacture of bicarbonate of	M. E. Wood	384,994	June 19	1567	407	43	1434
Soda-water-dispensing apparatus	O. J. Price	381,987	Apr. 10	1695	391	43	331
Sodium, &c. Apparatus for obtaining	O. M. Thowless	380,776	Apr. 10	712	196	43	151
Sodium carbonates by sulphides of the alkaline earths. Making	E. W. Parnell and J. Simpson	382,551	May 8	1021	.....	43	713
Sodium, &c. Obtaining	O. M. Thowless	380,775	Apr. 10	711	.....	43	151
Sofa and bed. Combined extensible	C. P. Waldo	382,743	May 15	1265	342 343	43	778
Sofa and surgical table. Combined	C. S. Judy and M. W. Forbes	385,311	June 26	2217	566	43	1574
Soil-pipe ventilator	J. Haddald and F. McConnell	385,268	June 26	2137	545	43	1539
Soldering-clamp	W. H. Clay	382,590	May 8	1067	269	43	727
Soldering cylindrical cans. Machine for	J. S. Johnstone	383,391	May 22	2187	561	43	949
Soldering-iron	C. E. Danielson	381,533	Apr. 24	1866	483	43	399
Soldering-iron	R. Schlumberger	382,538	May 8	1034	263	43	717
Soldering-irons. Apparatus for cleaning	I. H. Cox	381,761	Apr. 24	2184	571	43	469
Soldering machine. Can	A. D. Coleman	384,685	June 19	1476	385 386	43	1418
Soldering machine. Can	W. M. Emmart	382,453	May 8	695	236	43	696
Soldering machine. Can	E. Norton	382,330	May 8	659	169	43	641
Soldering machine. Can	J. O'Ferrall	384,464	June 12	925	241	43	1302
Soldering-pliers	O. F. Garvey	381,544	Apr. 24	1869	486	43	400
Soldering side seams of cans. Machine for	A. B. Willcox and E. Norton	382,344	May 8	699	176	43	650
Sole-edge-burnishing machine	W. Gordon	381,497	Apr. 17	1604	479	43	360
Sole-machine	E. S. Abbott	383,986	May 29	2978	545 546	43	939
Sound. Producing records of	E. Berliner	382,780	May 15	1372	.....	43	791
Spark-arrester	H. Bruce	382,948	May 15	1568	413	43	834
Spark-arrester	H. W. Libbey	381,707	Apr. 24	2119	558	43	447
Spectacle-bridge	G. Johnston	384,280	June 19	630	170	43	1251
Spectacle-temple	M. A. Vanderwaag	384,481	June 12	948	245	43	1303
Spectacles. Electro-magnetic	J. T. Leighton	381,980	Apr. 17	1453	391	43	326
Spectacles or eyeglasses. Frame for	F. A. Henninger	385,307	June 26	2213	568	43	1576
Speculum	P. Chamberlin	380,745	Apr. 10	603	183	43	141
Speed-governor for motors	E. B. Benham	380,648	Apr. 10	815	228	43	169
Speed-indicator. Electrical	F. W. Schlepegrell	380,694	Apr. 10	780	213	43	163
Speed-regulator	T. M. Foote	383,458	May 29	2347	824 825	43	986
Spinning-frame	R. Gill, W. H. Butler, and S. Smith	380,563	Apr. 3	389	111	43	79
Spinning-frames. Fulcrum for the weight-levers for the rolls of	W. Driscoll and J. F. Boylen	381,681	Apr. 24	2072	542	43	439
Spinning-frames. Yarn-separator for	H. C. Cunningham	380,644	Apr. 3	501	140	43	102
Spinning-machine	J. Marjerison	381,566	Apr. 24	1905	503	43	406
Spinning-machine	J. Marjerison	381,567	Apr. 24	1906	503	43	406
Spinning-machines. Bearing for the journals of lower drawing-rollers in	J. Booth	384,344	June 12	759	199	43	1273
Spinning machines. Kink-preventer for silk	J. A. Chapman	384,689	June 19	1578	409	43	1436
Spinning-machines. Making banding for	T. H. Dunham	384,136	June 5	438	.....	43	1205
Spinning-machines, &c. Spindle-driving device for	L. Binns	380,784	Apr. 10	796	199	43	153
Spinning-mule	T. H. Conley	382,139	May 1	365	100	43	584
Spinning-mule	W. Hacksley	381,069	Apr. 10	1169	311	43	236
Spinning-mule. Vertical	H. T. Bardwell	384,496	June 12	972	253 254 255 256 257 258	43	1314
Spinning-mules, &c. Nosing mechanism for self-acting	R. L. Holt	380,685	Apr. 3	259	71, 72	43	83
Spinning-spindle support	W. F. and G. A. Draper	383,048	May 15	1754	453	43	867
Spinning-spindle support	A. Weed	383,091	May 15	1810	476	43	879
Spoke-drawer	J. M. Germann	381,680	Apr. 24	2054	545	43	442
Spoke-tenon	W. F. Morton	381,270	Apr. 17	1468	394	43	301
Spokeshave	J. H. and B. F. Polhemus	383,590	May 29	2557	676	43	1036
Spool or bobbin	J. N. Kelsey	382,691	May 1	826	85	43	573
Spools. Manufacturing	E. P. Brownell	384,677	June 19	1566	349	43	1375
Spoon. Medicine	C. Langguth	380,734	Apr. 10	632	173	43	185
Spring:							
See Bed-spring. Bird-cage spring. Car-spring. Carriage-top spring. Coiled spring. Elliptic spring. Locomotive-spring. Rocker-spring. Vehicle-spring. Wagon-spring. Wagon bolster-spring. Whiffletree-spring.							
Spring	J. D. Furnas	380,469	Apr. 3	253	70	43	59
Spring-motor	P. A. Dobie	382,033	May 1	339	61	43	557
Spring-motor	J. B. Powell	382,053	May 8	1199	309	43	748
Spring-motor	A. D. Saunders	382,556	May 8	1029	263	43	719
Spring-seat	M. J. Barrow	382,207	May 1	491	124	43	601
Spring-tooth	P. F. Wells	382,847	May 15	1439	378	43	807
Sprinkler:							
See Automatic sprinkler. Lawn-sprinkler.							
Sprinkler	C. M. Collins	381,966	May 1	141	33, 34	43	561
Sprinkling lawns. Device for	E. J. H. Richardson	385,089	June 26	1656	474	43	1522
Sprinkling-machine	R. P. Lovejoy	383,740	May 29	2775	731	43	1032
Sprocket-wheel	W. D. Ewart	382,679	May 1	806	89	43	589
Spur	A. McManus	384,774	June 19	1395	364	43	1404
Square, bevel, and clinometer. Combined center, T, and try	H. W. Evans	380,714	Apr. 10	614	169	43	131
Square, bevel, protractor, and level. Combined	W. Palmer, Jr.	382,942	May 22	2034	532	43	992
Stain for brick-work	S. Tuller	383,230	May 22	2109	.....	43	954
Stain or paint	W. H. Winslow	383,966	May 15	1619	.....	43	977

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Stair-steps. Top plate for	C. Momberg	381,407	Apr. 17	1685	446	43	341
Stairway	T. Rogers	385,012	June 26	1758	455	43	1468
Stalls for separating horses on race-tracks	P. A. Finigan	382,981	May 15	1597	508	43	1304
Stalls. Mat for horse	L. S. Stowe	385,149	June 26	1968	66	43	1164
Stamp and ticket holder. Pocket postal	F. Strauss	384,060	June 5	294	417	43	657
Stamp. Electrical time	C. A. Randall	380,594	Apr. 3	432	122	43	86
Stamp. Electrical time	C. A. Randall	380,595	Apr. 3	436	123	43	89
Stamp for canceling, &c	J. E. Perry	383,487	May 29	2418	662	43	1686
Stamp. Printing	H. Lang and E. Watson	381,890	Apr. 24	2376	618	43	497
Stamp. Rubber	E. Reynolds	380,349	Apr. 3	68	23, 23	43	16
Stamp. Rubber	E. Reynolds	383,321	May 22	2151	589	43	953
Stamps. Device for holding and moistening postage	J. H. Breese	383,037	May 15	1726	449	43	953
Stamps. Pocket-box for postage	J. H. Breese	383,036	May 15	1724	449	43	888
Stamping-press	W. H. H. Clark	380,423	Apr. 3	169	47	43	35
Stanchions of vessels in place. Securing	T. M. Rees	382,920	May 8	1130	291	43	745
Stand:							
See Clothes-stand. Hammock-stand. Perfumery-stand. Railway-switch stand. Show-stand. Switch-stand. Type-case stand. Wash-stand. Watering-stand.							
Staple-setting machine	W. J. Brown, Jr	382,025	May 1	217	58	43	553
Station and street indicator	J. L. Fate	382,519	May 8	970	244	43	708
Station and street indicator	J. L. Fate	382,520	May 8	972	245	43	704
Station-indicator	J. C. Ludwig	383,230	May 22	2018	{529 / 530}	43	989
Station-indicator	B. W. Lyon	385,314	June 26	2220	589	43	1575
Station-indicator	T. W. Munroe	380,341	Apr. 3	48	17, 18	43	12
Station-indicator	K. S. Nickerson	382,006	May 1	184	47	43	548
Station-indicator. Automatic	R. H. Bachlotte, Jr., and L. J. Farris	384,493	June 12	966	252	43	1315
Stave-cutting machine. Barrel	G., J. G., and M. O. Rehfuss	384,786	June 19	1407	{368 / 369 / 370}	43	1406
Staves. Jointing-machine for barrel	W. Ritter	383,949	May 22	2043	536	43	934
Steam-boiler	L. B. Battin	381,922	Apr. 24	2389	595	43	479
Steam-boiler	P. Hanrez	384,972	June 26	1685	438	43	1467
Steam-boiler	C. J. M. Hayna	381,366	Apr. 17	1606	430	43	330
Steam-boiler	J. Johnson	381,791	Apr. 24	2294	{582 / 583}	43	468
Steam-boiler	C. P. Marshall	383,364	May 22	2212	586	43	964
Steam-boiler	J. A. Mumford	382,657	May 8	1184	306	43	746
Steam-boiler	M. S. Rexford	384,716	June 19	1313	{343 / 344}	43	1397
Steam-boiler	G. S. Strong	382,061	May 1	276	72, 73	43	564
Steam-boiler	C. H. Twist	384,943	June 19	1638	426	43	1449
Steam-boiler indicator	L. D. Copeland	382,140	May 1	396	101	43	564
Steam-boiler. Sectional	J. A. Groshon	384,313	June 12	705	{187 / 188}	43	1285
Steam-chests. Apparatus for automatically lubricating	T. Fitzpatrick	384,354	June 12	776	202	43	1276
Steam-engine	W. K. Austin	383,439	May 22	2218	615	43	989
Steam-engine	D. Bowen	383,614	May 29	2505	686	43	1044
Steam-engine	W. F. Clasa	380,991	Apr. 10	1049	277	43	212
Steam-engine	F. Fischer	384,946	June 12	812	164	43	1248
Steam-engine	J. C. Gräbner and H. Ruperti	385,113	June 26	1915	488	43	1514
Steam-engine	S. E. Jarvis	380,488	Apr. 3	264	73	43	54
Steam-engine	W. K. Kight	382,309	May 8	642	164	43	642
Steam-engine	H. Lecoutenx and E. Garnier	382,479	May 8	915	{231 / 232}	43	692
Steam-engine	F. C. Morton	382,547	May 8	1016	{259 / 260}	43	712
Steam-engine	F. M. Rites	383,322	May 22	2151	588	43	953
Steam-engine	G. H. Scribner and W. Heckert	381,854	Apr. 24	2338	{606 / 607}	43	489
Steam-engine	E. S. Smith	380,825	Apr. 10	781	{213 / 214}	43	164
Steam-engine. Caustic-soda	A. H. Stow	381,967	May 1	98	24	43	533
Steam-engine. Concentric-piston	A. D. Baker and F. P. Huyck	383,609	May 29	2581	{684 / 685}	43	1041
Steam-engine. Direct-acting	M. Garland and A. D. Catlin	382,092	May 1	312	82	43	570
Steam-engine for equalizing power	W. A. Pitt	383,764	May 29	2821	743	43	1069
Steam-engine indicator	A. L. Ide. (Reissue)	10,918	Apr. 3	551	151	43	111
Steam-engine indicator attachment	J. R. Mitchell	380,918	Apr. 10	987	248	43	190
Steam-engines. Regulating live steam and exhaust from	J. J. Lowden	381,149	Apr. 17	1296	346	43	269
Steam-generator	J. V. Beekman	384,555	June 12	1068	279	43	1331
Steam-generator	J. B. Bossler	382,863	May 15	1461	383	43	811
Steam-generator	J. A. Eno	384,898	June 19	1561	411	43	1438
Steam-generator	W. Schmidt	382,895	May 15	1493	373	43	805
Steam-generator	E. H. Thompson	384,941	June 19	1638	425	43	1449
Steam heater or boiler for culinary and other purposes. Automatic	R. E. Deane	384,348	June 12	766	200	43	1274
Steam or gas motor engine	B. C. Pole	382,008	May 1	186	48, 49	43	548
Steam or other motor	H. Moehring and A. Pflüger	383,405	May 22	2074	605	43	975
Steam. Regenerating exhaust	E. O. Scharlau	381,172	Apr. 17	1339	355	43	275
Steam-regulator	J. W. Taylor	384,787	June 19	1397	346	43	1389
Steam-trap	F. G. Botsford	381,670	Apr. 24	2056	536	43	626
Steam-trap	G. Dinkel	380,791	Apr. 10	739	202	43	155
Steam-trap and boiler-feeder	W. Simpkin	385,014	June 26	1761	456	43	1463
Steam. Utilizing exhaust	M. Hornigmann	381,944	Apr. 17	1432	385	43	274
Steam-washer	J. W. Ballard	382,240	May 8	615	157	43	537
Steam-washer	J. M. Reddy	380,729	Apr. 10	643	178	43	134
Steamboats. Pilot's and engineer's signal for	C. C. Roe	380,350	Apr. 3	70	23	43	17
Steaming cloth and other fabrics. Apparatus for	V. T. Van Fleet	382,683	May 1	278	73	43	564

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Steamships. Stern-post and stern-frame for	W. T. Sylvan	382,014	May 1	194	50	43	550
Steel bands. Apparatus for tempering	J. Oldham	381,575	Apr. 24	1990	506	43	402
Steel or steely iron. Tempering	H. Schneider	384,935	June 19	1630	.....	43	1447
Steering apparatus	J. M. Wallace	380,467	Apr. 3	226	64	43	42
Steering apparatus and windlass	W. M. Gillie	380,481	Apr. 3	254	70	43	88
Steering apparatus for vessels	B. A. Fiske	385,259	June 26	2133	544	43	1520
Steering apparatus for vessels	J. H. Snelling	382,838	May 15	1498	374	43	894
Steering-gear. Locking	J. H. Rushton	383,593	May 29	2561	677	43	1037
Steering vessels	T. Skinner	382,563	May 8	1041	285	43	718
Step. Folding	A. H. Nicholas	383,908	June 5	80	23	43	1180
Step or platform	F. H. Stanwood	382,331	May 8	676	178	43	646
Stereotype-plates. Machine for planing	L. Goss	383,821	May 22	2004	566	43	888
Stereotype-plates which are cast separately from their beds. Means for securing	E. D. Rogers	381,280	Apr. 24	2367	595	43	479
Stilt	L. Hoffman	381,558	Apr. 24	1888	498	43	402
Stirrup	T. Condy	382,090	May 15	1220	333	43	725
Stirrup	T. J. Taylor	385,150	June 26	1969	504	43	1525
Stock-cooler. Portable	L. T. Schwamm	381,422	Apr. 17	1706	457	43	350
Stocking-suspender clip	F. E. Taylor	385,330	June 26	2202	576	43	1580
Stockings. Making	E. C. Chester	380,491	Apr. 3	164	44	43	24
Stockings. Manufacturing	R. Morley and W. Greenwood	385,315	June 26	2223	589	43	1576
Stoker. Mechanical	W. Whittaker	384,486	June 12	954	247	43	1310
Stone. Artificial	O. A. Tanner	380,830	Apr. 10	788	.....	43	165
Stone-channeling machine	J. F. Holloway	382,588	May 8	984	248	43	700
Stone-saw	J. Packover	381,811	Apr. 24	2253	589	43	473
Stone-sawing machines. Feeder for	P. Christa	384,125	June 5	418	116	43	1301
Stone-sawing machines. Method of and apparatus for feeding chilled shot in	E. J. Hawley	381,999	May 1	173	45	43	546
Stone-sawing machines. Sand and water distributer for	J. H. Frenier	384,615	June 19	1100	307	43	1367
Steel	H. C. Sittig	382,777	May 15	1351	355	43	788
Stool or chair. Adjustable	G. W. Tripp	381,188	Apr. 17	1347	360	43	278
Stop-motion	H. J. Johnson	384,040	June 5	207	53	43	1177
Stopper:							
See Bottle-stopper. Flue-stopper.							
Stoppers. Thimble for castings of screw	H. Barrett and J. J. Varley	384,013	June 5	254	73	43	1170
Storage-battery	C. D. P. Gibson	382,988	May 15	1605	420	43	820
Store-service apparatus	E. G. Bates	384,854	June 5	6	3	43	1132
Store-service apparatus	J. A. Duggan	380,315	Apr. 3	13	3	43	5
Store-service apparatus	J. H. Goodfellow	381,545	Apr. 24	1981	496	43	400
Store-service apparatus	T. A. and F. D. Simonds and A. Beach.	382,010	May 1	189	49	43	549
Store-service-apparatus switch	R. N. Dyer	381,495	Apr. 17	1801	479	43	387
Stove	J. V. B. Carter	382,511	May 8	950	242	43	700
Stove	M. S. Cage	384,517	June 12	1019	265	43	1288
Stove	W. J. Keep	382,531	May 8	969	{249 / 250}	43	707
Stove	K. Wehse	384,300	June 12	690	{183 / 184}	43	1268
Stove and range. Cooking	W. E. Prall	382,941	May 1	531	136	43	611
Stove-back	L. M. Devore and W. Greene	381,535	Apr. 24	1982	494	43	398
Stove-back	W. C. Metzner	381,712	Apr. 24	2122	554	43	449
Stove burner. Vapor	Z. Davis	384,511	June 12	1008	262	43	1289
Stove. Cook	C. Rathbone	385,135	June 26	1947	497	43	1521
Stove. Cooking	W. J. Keep	381,793	Apr. 24	2293	583	43	469
Stove. Cooking	J. Strupp	383,418	May 22	2486	610	43	979
Stove-door	W. F. Beecher	381,101	Apr. 17	1231	330	43	256
Stove. Gas	L. Bridge	383,783	May 29	2673	755	43	1089
Stove. Gas	A. S. Dinsmore	384,683	June 19	1259	{330 / 331}	43	1377
Stove. Gas	W. Moore	385,277	June 26	2160	532	43	1504
Stove. Gas	M. J. O'Rielly	383,316	May 22	2145	566	43	938
Stove. Gas	J. L. Sharp	380,355	Apr. 3	79	25	43	16
Stove. Gas	J. Smith and H. J. Boyd	380,732	Apr. 10	646	179	43	130
Stove-grate	H. W. Merritt	382,543	May 8	1013	258	43	712
Stove-grate	E. Walter	381,299	Apr. 17	1509	404	43	308
Stove. Heating	E. Hean	382,158	May 1	411	107	43	559
Stove. Heating	M. Peckham	383,144	May 22	1897	{494 / 495 / 496}	43	905
Stove. Heating	J. A. Price	381,036	Apr. 10	1091	{289 / 291}	43	209
Stove. Heating	W. E. Walker and G. E. Wilbur	381,086	Apr. 10	1218	327	43	208
Stove. Heating	E. A. Wiman	382,930	May 15	1552	406	43	809
Stove. Lamp	J. E. Wilbur	382,579	May 8	1071	274	43	724
Stove. Oil	G. B. Gaylord	383,805	May 29	2697	{764 / 765}	43	1103
Stove. Oil	P. J. Grinberg	384,618	June 19	1163	{307 / 308}	43	1258
Stove. Oil	G. Myers	384,368	June 12	819	213	43	1284
Stove or range	E. W. Anthony	382,851	May 15	1444	{379 / 380}	43	807
Stove. Petroleum cooking	F. Hildebrandt	382,425	May 8	819	209	43	675
Stove-pipe	U. D. Alexander	381,871	Apr. 24	2364	{613 / 614}	43	494
Stove-pipe	W. A. List	381,021	Apr. 10	1084	286	43	210
Stove-pipe thimble	A. Staab	385,212	June 26	2056	547	43	1540
Stove-polish	C. Zimmerling	385,335	June 26	2256	.....	43	1581
Stove. Self-feeding cooking	C. E. King	384,207	June 5	544	{149 / 150}	43	1226
Stove. Vapor	Z. Davis	382,670	June 5	30	10	43	1127
Stove. Vapor	B. Rein	384,301	June 12	889	{215 / 216}	43	1268
Stove. Vapor	J. B. Wallace	380,611	Apr. 3	456	130	43	93

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfs.	Official Gazette. Vol.	Official Gazette. Page.
Stove. Vapor	J. B. Wallace	382,021	May 1	218	56	43	838
Stove ventilator. Cook	J. F. Linscott	380,500	Apr. 3	200	84, 85	43	89
Stoves. Dust-flue for	J. A. Buckwalter	383,326	May 29	2248	366	43	970
Stoves. Fire-pot for	W. J. Keep	382,080	May 1	304	84	43	572
Stoves. Oven for cooking	J. Rau	383,147	May 22	1903	477	43	986
Stoves. Portable tin oven for oil or gas	A. W. Shumaway	383,830	May 29	2303	775	43	1111
Stoves. Ventilating-flue for	W. J. Keep	381,606	June 19	1294	336	43	1363
Strainer	A. Boss	385,295	June 26	2195	561	43	1570
Strainer. Conductor	P. Drendnl	380,673	Apr. 10	856	231	43	176
Strainer. Drink	C. B. Hopkins	384,977	June 26	1691	440	43	1468
Strainer. Milk	A. Bowdish	385,081	June 26	1692	461	43	1567
Strainer. Milk	G. W. Knapp	383,307	May 22	2135	563	43	959
Strainer or filter. Coffee	T. Babin	384,411	June 12	516	223	43	1292
Strap: *See* Shawl-strap.							
Strap-edging machine	J. N. Farlow	384,029	June 5	278	78	43	1174
Straw-stacker	M. Heinecke	384,974	June 26	1668	{ 438 / 439	43	1467
Street and station indicator	J. B. Archer	380,307	Apr. 3	2	1	43	3
Street and station indicator	S. M. Friede	383,398	May 22	2255	600	43	971
Street and station indicator	M. J. Watson	382,065	May 1	293	75	43	565
Street-box and shut-off for water, gas, or other fluid service.	E. Lindaley	383,472	May 29	2290	636	43	1003
Street-sweeping machine	H. Snyder	380,534	Apr. 3	341	97, 98	43	70
Stringed instruments. Bow for	E. Latchmore	384,045	June 5	304	88	43	1179
Stringed instruments. Tail-piece for	S. M. Burson	383,976	May 22	2301	549	43	948
Strong box or coffer	W. C. Kidney	384,855	June 19	1388	390	43	1427
Structural articles. Composition for surfacing	T. McSweeney	381,669	Apr. 24	2300	.....	43	697
Stuffing-box	A. H. Clark	384,494	June 12	574	226	43	1295
Stump-extractor	O. F. B. Rolapp	380,351	Apr. 3	71	23	43	17
Stump-extractor	G. M. Stroup	381,861	Apr. 24	2348	609	43	899
Stump-extractors. Chain-coupling for	W. H. Borden	382,451	May 8	606	231	43	683
Stump-puller	L. Lafo	382,096	May 1	332	86	43	574
Stump-puller	R. R. Tichenor and P. Walker	383,198	May 22	1966	516	43	918
Sulphuric anhydride. Producing	E. Hänisch and M. Schroeder	384,841	June 19	1503	391	43	1494
Supply-check and waste-pipe valve	J. Faulkner	384,833	June 19	1488	386	43	1439
Supporter: *See* Coat and pantaloons supporter. Garment-supporter. Lantern-supporter. Napkin-supporter. Trace-supporter.							
Surface-gage	H. C. Balsbaugh	380,740	Apr. 10	655	181	43	140
Surface-gage	N. Linsley and C. E. Forry	381,937	May 1	32	14	43	585
Surgical knife	W. Schott	380,699	Apr. 10	695	163	43	138
Suspender attachment	C. H. Scales	382,834	May 15	1422	373	43	883
Suspender-fastening	H. Fried	381,823	Apr. 24	2301	596	43	878
Suspenders	J. Katzenberg	384,598	June 12	1032	289	43	1394
Suspending device	E. Blackman	384,187	June 5	512	140	43	1289
Suspending device	C. R. Fay	383,673	June 5	34	11	43	1138
Sweat-pad	C. J. Gustaveson	383,051	May 15	1758	454	43	888
Sweat-pad	O. P. Howe	382,702	May 15	1259	327	43	708
Sweat-pad fastener	J. S. Cuscon	383,386	May 22	2250	599	43	970
Sweep	J. T. Goode	382,522	May 8	976	246	43	704
Swing	A. Bettes	383,553	May 29	2518	664	43	1027
Swinging gate	J. D. Hays	382,303	May 8	637	169	43	641
Switch: *See* Car-switch. Electric switch. Electric-circuit switch. Electric-motor switch. Electrical switch. Interlocking switch. Railway-switch. Safety-switch. Store-service-apparatus switch. Three-way split switch.	H. Sipe	380,772	Apr. 10	707	195	43	150
Switch and signal. Interlocking	J. J. Turner	381,093	Apr. 10	1214	{ 385 / 386	43	944
Switch-board	C. E. Scribner	383,014	May 15	1663	440	43	855
Switch, circuit-breaker, &c	J. Von der Kammer	381,446	Apr. 17	1720	463	43	354
Switch for adjustable resistances	P. Lange	383,647	May 29	2640	699	43	1054
Switch-lock	A. Pollock	383,654	May 29	2649	701	43	1056
Switch-stand	G. E. Lenhart	383,738	May 29	2772	730	43	1061
Switch-stand	W. A. Redding	384,714	June 19	1312	343	43	1366
Switches and semaphores. Mechanism for operating derailing.	W. Gravit	383,947	June 5	156	46	43	1150
Sword	J. Lyttle	384,584	June 12	1113	295	43	1339
Syringe	C. M. Barton	380,673	Apr. 10	540	154	43	132
Syringe	A. W. Brinkerhoff	383,940	June 5	149	43	43	1149
Syringe	T. M. Healey	381,622	Apr. 24	1993	562	43	688
Syringe	W. Streetman	381,511	Apr. 17	1898	483	43	373
Syringe. Hot-air	B. F. Sutton	382,257	May 22	2092	541	43	987
Table: *See* Bloom shear-table. Extension-table. Folding table. Glass-cutting table. Ironing-table. Operating-table. Trimming-table.	E. T. Starr	382,019	May 1	192	50	43	549
Table	G. Wolz	383,733	May 22	2163	579	43	955
Table and lamp. Combined	J. Kints	384,857	June 19	1527	397	43	1492
Table-leaf support	H. J. Chapman	382,958	May 15	1567	414	43	835
Table-ware	J. A. Kimball	381,795	Apr. 24	2231	584	43	889
Tack-driver, Automatic	J. H. Montgomery	383,478	May 29	2397	638	43	1005
Tack-heading machine. Strip	G. W. Copeland	383,278	May 22	2083	539	43	942
Tack or nail holder	W. H. De Puy	383,516	May 29	2455	650	43	1015
Tag	T. J. Yund	385,062	June 26	1671	478	43	1505
Tag-holder	E. F. Goodwin	383,583	May 29	2473	653	43	1016

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfs.	Official Gazette. Vol.	Official Gazette. Page.
Tag or label for poultry	I. J. True	381,598	Apr. 24	1960	516	43	417
Tan-vat	J. Head	380,890	Apr. 10	880	236	43	188
Tank: *See* Flushing-tank. Measuring-tank.							
Tank	N. Sorensen	383,194	May 22	1982	514	43	918
Tanks and similar vessels. Composition for lining petroleum-	P. Melyneux	380,396	Apr. 3	136	.....	43	39
Tanning	A. Warter and H. C. Koegel	380,708	Apr. 10	608	.....	43	139
Tanning hides. Composition of matter for	L. B. Snow and J. Howard	383,379	May 22	2228	.....	43	927
Tanning process	W. Zahn	385,222	June 26	2069	.....	43	1545
Tapping pipe-elbows. Machine for	T. F. Hammer	382,606	May 6	1109	285	43	731
Tapping steam, gas, or water fittings. Machine for	A. M. Burritt	381,053	Apr. 10	1141	305	43	930
Target and indicating device therefor	T. B. Raleton	381,028	Apr. 10	1097	291	43	921
Target. Flying	F. Erb, Jr	383,348	May 22	2186	578	43	960
Target. Self-registering	W. K. Wright and W. H. Brown	381,517	Apr. 17	1838	488	43	375
Target-traps. Apparatus for springing	A. C. Dick	383,446	May 29	2330	621	43	993
Tea, coffee, milk, &c. Receptacle and heater for	C. W. Hellenbrand	383,573	May 29	2536	670	43	1031
Teaching fractions and percentage. Device for	L. W. Johnson	383,300	May 22	2128	560	43	948
Teaching of notation and numeration. Apparatus to facilitate the	W. E. Carr	384,950	June 26	1666	433	43	1468
Teeth. Device for regulating	J. J. R. Patrick	382,697	May 15	1510	396	43	881
Teeth. Die and punch for making metal crowns for	J. J. R. Patrick	381,416	Apr. 17	1678	{ 449 / 450	43	344
Tele-thermoscope. Electric	H. W. Hardinge	382 976	May 15	1617	423	43	841
Telegraph apparatus. Municipal	J. C. Wilson	380,778	Apr. 10	714	197	43	151
Telegraph-cable	W. R. Patterson	382,699	May 15	1415	{ 371 / 372	43	891
Telegraph-cables. Manufacture of	W. R. Patterson	382,767	May 15	1334	351	43	784
Telegraph call-box. District	J. B. Gill	383,220	May 22	2002	525	43	986
Telegraph-key	D. R. Borland	380,310	Apr. 3	6	2	43	4
Telegraph key and sounder. Combined	J. Doggett	384,350	June 12	770	200	43	1275
Telegraph. Municipal	J. C. Wilson	380,779	Apr. 10	718	197	43	151
Telegraph. Printing	S. V. Essick	383,450	May 29	2343	{ 632 / 633	43	994
Telegraph. Printing	E. J. Mallett	384,390	June 12	715	{ 190 / 191	43	1287
Telegraph. Printing	E. J. Mallett	384,392	June 12	720	191	43	1287
Telegraph-receiver	C. Selden	382,195	May 1	461	119	43	599
Telegraph receiver. Printing	H. Mahnken	384,455	June 12	916	238	43	1303
Telegraph-relay	F. Stitzel and C. Weinedel	385,214	June 26	2058	528	43	1543
Telegraphs. Static compensator for	M. M. Davis	381,290	Apr. 17	1368	371	43	926
Telegraphy	P. B. Delany	381,764	Apr. 24	2187	572	43	461
Telegraphy	Z. P. Hotchkiss	381,946	Apr. 17	1434	365	43	294
Telegraphy. Automatic	E. J. Mallett	384,394	June 12	724	192	43	1268
Telegraphy. Automatic	E. J. Mallett	384,395	June 12	728	193	43	1268
Telegraphy. Dynamo	F. W. Jones	381,251	Apr. 17	1443	388	43	296
Telegraphy. Dynamo	F. W. Jones	381,839	Apr. 24	2212	601	43	484
Telephone	W. D. House	380,437	Apr. 3	192	52, 53	43	39
Telephone	W. D. House	380,438	Apr. 3	193	53	43	40
Telephone and signaling circuit	J. C. Wilson	380,780	Apr. 10	721	197	43	152
Telephone call-bell system	F. E. Fisher	383,563	May 29	2598	{ 666 / 667	43	1039
Telephone call-boxes. Test-circuit for	C. E. Scribner	383,017	May 15	1696	441	43	856
Telephone-conveyer	S. R. Ballard	383,269	May 22	2021	547	43	940
Telephone-desks. Slate for	E. T. Mueller	381,371	Apr. 17	1469	395	43	301
Telephone. Electrical	F. D. Marston	380,905	Apr. 10	908	244	43	186
Telephone-exchange	H. H. Eldred	382,518	May 8	967	244	43	703
Telephone-exchange system	C. E. Scribner	383,013	May 15	1689	{ 439 / 440	43	854
Telephone-exchanges. Key-board apparatus for	C. E. Scribner	383,016	May 15	1697	441	43	856
Telephone. Mechanical	P. L. Mason	382,713	May 15	1963	331	43	770
Telephone. Mechanical	G. F. Shaver	383,394	May 22	2154	569	43	954
Telephone-receiver	W. H. Collins	381,531	Apr. 24	1863	{ 492 / 493	43	397
Telephone-switch-board cords. Circuit for double-stranded	C. E. Scribner	381,430	Apr. 17	1702	456	43	349
Telephone system	R. N. Dyer	382,461	May 8	881	{ 224 / 225	43	665
Telephone-transmitter	M. G. Farmer	380,426	Apr. 3	173	48	43	36
Telephone-transmitter	M. G. Farmer	380,427	Apr. 3	175	48	43	36
Telephone-transmitter	I. H. Farnham	380,752	Apr. 10	666	185	43	142
Telephone-transmitter	R. T. Gilliland	384,301	June 5	536	146	43	1225
Telephone-transmitter	J. M. Graham	381,234	Apr. 17	1414	381	43	291
Telephone-transmitter	E. H. Johnson	381,392	Apr. 17	1696	434	43	338
Telephonic intercommunication. System of	J. A. McCoy	381,936	May 1	53	14	43	585
Temperature-controller	R. Newton	381,411	Apr. 17	1673	448	43	343
Temperature-regulator. Automatic	W. S. Johnson	382,165	May 1	430	110	43	590
Tenoning-machine	G. C. Berlin	382,791	May 15	1374	360	43	792
Tenons. Forming compressed spoke-	W. F. Morton	380,728	Apr. 10	640	{ 177 / 178	43	137
Tenons. Machine for compressing	W. F. Morton	380,727	Apr. 10	636	{ 175 / 176	43	136
Tension apparatus	E. C. Phillips	380,347	Apr. 3	62	21	43	15
Terrets to hames. Attaching	W. H. Walker	384,406	June 12	850	231	43	1290
Testing-machine	A. V. Abbott	383,385	May 22	2240	{ 595 / 596 / 597	43	989
Tether. Stock	W. Overaker	381,273	Apr. 17	1471	395	43	302
Theatrical appliance	J. Arthur	382,592	May 8	1074	{ 275 / 276	43	725
Theatrical appliance	J. T. Kitham	383,361	May 22	2203	{ 582 / 583	43	963
Thermo-electric generator	R. J. Gülcher	383,464	May 29	2370	631	43	1009
Thermometer	A. Bayer	383,691	May 29	2647	713	43	1076

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Thermometer. Metallic	T. W. Shepherd	382,561	May 8	1038	284	43	718
Thermometer. Oven	J. Stidham	384,876	June 19	1557	494	43	1432
					495		
Thermometer. Recording	D. Draper	380,872	Apr. 10	854	231	43	176
Thermostat. Dust-proof	A. S. Kissell	380,394	Apr. 3	131	39	43	88
Thill-coupling	S. B. Castle	384,233	June 12	590	166	43	1044
Thill-coupling	M. G. Conrad	383,884	June 5	21	8	43	1135
Thill-coupling	G. B. Howland and F. W. Allen	383,933	June 5	164	48	43	1132
Thill-coupling	O. M. Marts and J. Esselburn	382,177	May 1	439	114	43	594
Thill-coupling	L. B. Monts	380,456	Apr. 3	218	56	43	44
Thill-coupling	A. F. Molitzen	381,267	Apr. 17	1464	393	43	269
Thill-coupling	J. S. Pardee	382,628	May 15	1414	371	43	691
Thill-coupling	A. B. Perine	382,361	May 8	782	192	43	684
Thill-coupling	T. A. Shinn	382,582	May 8	1040	265	43	716
Thill coupling-pin	J. E. and J. B. Vail	381,659	Apr. 24	2042	531	43	433
Thrasher. Traveling	R. R. Moore	380,453	Apr. 3	216	59, 60	43	44
Thrasher. Traveling	C. K. Myers	380,342	Apr. 3	59	16	43	19
Three-way split switch	J. D. Bailey	384,304	June 12	695	185	43	1253
Throat-latch fastener	F. O. Hopson	381,245	Apr. 17	1433	386	43	264
Ticket-clasp	J. L. Shay	382,274	May 1	560	147	43	620
Ticket-holder	D. F. Crofut	383,797	May 29	2878	757	43	1160
Ticket-holder	H. Fenn	384,684	June 19	1261	331	43	1377
Ticket. Passenger	V. R. Shepard	384,291	June 12	674	180	43	1250
Ticket rack. Coupon	H. Binckley	384,305	June 12	696	185	43	1263
Ticket. Railway	R. I. Hampton	380,566	Apr. 3	384	112	43	91
Tickets, &c. Holder for	E. Mögel	382,823	May 15	1469	376	43	800
Tidy-fastener	C. S. Snedden	384,293	June 12	676	181	43	1250
Tie:							
See Bale-tie. Railway-gate tie. Railway-tie. Umbrella-tie.							
Tie, chair, and fish-plate. Combined	D. Harrington and M. A. Keane	381,238	Apr. 17	1424	363	43	262
Tile and roofing-plate. Illuminating	J. Jacobs	385,270	June 26	2154	549	43	1563
					550		
Tile. Drain	H. H. Baltzley	385,292	June 26	2192	560	43	1569
Tile. Illuminating	J. Jacobs	385,268	June 26	2152	548	43	1562
Tile. Illuminating	J. Jacobs	385,269	June 26	2153	548	43	1562
					549		
Tile-machine	E. Puchta and R. Hoffmann	383,591	May 29	2559	677	43	1036
Tile, side wall, &c. Illuminating	J. Jacobs	385,271	June 26	2155	550	43	1563
Tilting-chair	J. W. Kenna	382,235	May 1	590	133	43	609
					134		
Timber-hangers. Machine for making	C. H. Williams	383,265	May 22	2075	545	43	930
Timbers. Preserving submerged	H. L. Ricks	380,890	Apr. 10	776	212	43	163
Time-alarm	G. Bapst and L. Falize, Fils	384,412	June 12	859	223	43	1292
					224		
Time-ball	C. Müller	384,996	June 26	1731	447	43	1475
Time-detector. Watchman's	G. B. Fessenden	381,992	May 1	154	39	43	543
Time-detector. Watchman's	G. B. Fessenden	381,993	May 1	156	39, 40	43	543
Time-lock. Electro-magnetic	C. J. Kintner	384,856	June 19	1524	396	43	1427
					397		
Time-piece	C. Bickford	384,737	June 19	1341	350	43	1309
Time-piece escapements. Banking device for	L. Aeby	384,670	June 19	1242	327	43	1274
Tinning copper sheets. Machine for	D. Evans	383,116	May 22	1963	486	43	898
Tire-bolt holder	T. B. Casey	382,029	May 1	224	59	43	555
Tire-heater	J. O. Sperbeck	383,195	May 22	1963	514	43	918
Tire-shrinker	J. D. McGee	381,939	May 1	58	15	43	536
Tire shrinker and expander	H. G. Cady	384,822	June 19	1472	385	43	1417
Tire-tightener	F. S. Dimon	382,955	May 15	1591	415	43	836
Tire-tightener	R. N. Van Slyke	380,538	Apr. 3	350	100	43	78
Tire-upsetter	W. M. Palmer	384,778	June 19	1399	365	43	1405
					366		
Tire-upsetting machine	R. Rutter	381,085	Apr. 10	1201	322	43	241
Tires. Making	J. Munton	381,505	Apr. 17	1621	422	43	372
Tobacco. Apparatus for treating leaf	G. W. Brooks	385,038	June 26	1802	463	43	1491
Tobacco-barns. Drying attachment for	J. M. Snidow	383,778	May 29	2850	750	43	1094
Tobacco-coloring apparatus	J. K. Hardwicke and J. J. Redmon	382,084	May 1	316	83	43	571
Tobacco-granulating machine	W. W. Smith	382,565	May 8	1044	266	43	719
Tobacco-pipe	C. E. Darling and H. Free	384,681	June 19	1258	330	43	1377
Tobacco-pipe	F. Roesling	384,392	June 12	830	216	43	1286
Tobacco-pipes. Cartridge for	G. H. Peabody	380,590	Apr. 3	429	121	43	89
Tobacco-receptacle	P. Lorillard, Jr	381,801	Apr. 24	2230	586	43	471
Tobacco-stemming apparatus	J. T. Drummond	384,566	June 12	1087	284	43	1335
Tobacco waste. Utilizing	J. T. Drummond	384,565	June 12	1086	283	43	1335
					284		
Toboggan	C. H. Emerson and W. H. Wetmore	380,875	Apr. 10	860	232	43	177
Toll-register	J. K. Stewart	384,938	June 19	1633	424	43	1449
Tongs	A. Biber	383,855	June 5	10	3	43	1122
Tongue-support	L. W. Jr., and R. E. L. Leavell	383,189	May 22	1948	511	43	915
Tongue-support	L. J. Manor	380,503	Apr. 3	393	96	43	60
Tool. Combination	J. D. Marsters	382,821	May 15	1467	389	43	799
Tool. Combination	M. F. McCray and J. E. Norton	382,181	May 1	443	115	43	595
Tool. Combination	G. W. Ribble	381,724	Apr. 24	2137	559	43	438
Tool rack. Agricultural	F. A. Herrick	383,527	May 29	2477	654	43	1019
Tooth. Artificial	E. A. Floyd	384,696	June 19	1497	389	43	1422
Tooth. Artificial	J. B. Parker	383,760	May 29	2813	741	43	1089
Tooth. Artificial	J. J. R. Patrick	380,512	Apr. 3	311	80	43	63
Tooth-pick	R. A. Bacon	380,739	Apr. 10	654	181	43	149
Tooth-regulator	W. S. How	385,117	June 26	1919	499	43	1515
Topsails. Rig and gear for gaff	C. A. Post	381,278	Apr. 17	1477	397	43	280
Torpedo-signal holder	R. J. Patten	381,277	Apr. 17	1476	393	43	280
Towel	F. Leake	384,946	June 5	365	88	43	1170
Towing-machine	T. J. Shaw and J. M. Spiegle	382,917	June 5	107	32	43	1170
Toy	C. M. Crandall	383,443	May 29	2884	759	43	1093
Toy	I. D. Law	381,301	Apr. 17	1442	387	43	285

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Toy	F. Weber	382,744	May 15	1306	343	43	779
Toy locomotive	J. S. Wilkins, Jr	384,656	June 19	1390	362	43	1390
Toy. Mechanical	J. W. Hale	381,982	May 1	22	9	43	530
Toy money-box	C. A. Bailey	385,225	June 26	2078	531	43	1548
Toy parachute	W. J. Kantzeck	384,533	June 12	1039	271	43	1328
Toy. Rotary	R. Teichmann	384,403	June 12	844	220	43	1300
Trace attachment	W. J. Howard	382,008	May 1	177	46	43	548
Trace-carrier	E. R. Crockett	382,216	May 1	482	127	43	604
Trace-carrier	O. I. Langworthy	382,709	May 15	1259	329	43	769
					330		
Trace-eye protector	S. M. Hartman	383,586	May 29	2476	634	43	1019
Trace-fastening	J. S. Clark	381,834	Apr. 17	1551	418	43	319
Trace-fastening	C. S. Newsom and L. Oxley	381,984	Apr. 24	2284	600	43	502
Trace-supporter	A. Anderson	380,471	Apr. 3	242	66	43	69
Track-builder	E. P. Garsed	380,640	Apr. 10	560	157	43	123
Track-clearer	J. B. Heagland	381,072	Apr. 10	1174	312	43	236
Track-lifter	G. Rainnie	383,966	June 5	219	65	43	1163
Track. Portable connecting	A. V. Du Pont	381,874	Apr. 24	2367	615	43	404
					616		
					361		
Traction-engine	F. Batter	382,857	May 15	1458	362	43	800
Traction-engine	D. B. James	382,179	May 22	1943	510	43	915
Traction-engine	H. O. Sickler	380,601	Apr. 3	446	126	43	91
Traction-wheel	E. H. Ashcroft	381,202	Apr. 17	1369	366	43	262
Traction-wheel	A. B. Case	383,625	May 29	2609	690	43	1048
Traffic. Appliance for handling rapid-transit passenger	A. M. Wellington. (Reissue)	10,927	May 1	610	155	43	605
Tramway. Electrical	H. T. Blake	383,973	May 22	2065	548	43	941
Tramway. Electrical	H. T. Blake and C. Sterling	383,974	May 22	2067	548	43	941
					549		
					295		
					296		
Tramway for carrying elevated loads	A. E. Brown	382,634	May 8	1148	295	43	730
Tramway for hoisting and conveying machines Elevated	A. E. Brown	382,635	May 8	1150	296	43	730
Tramway. Suspended	C. H. Thompson	382,782	May 15	1350	357	43	780
Transom-lifter	J. F. Wollensak	381,741	Apr. 24	2157	565	43	455
Transom-lifter	J. F. Wollensak	381,742	Apr. 24	2159	565	43	455
Transom-lifter	J. F. Wollensak	381,743	Apr. 24	2161	565	43	456
Transom-lifter	J. F. Wollensak	381,744	Apr. 24	2162	565	43	456
Transom-lifter	J. F. Wollensak	384,182	June 5	505	138	43	1219
Transplanting implement	T. R. Coon	383,629	May 29	2613	691	43	1049
Trap:							
See Animal-trap. Pigeon-trap. Fish-trap. Plumber's trap. Gas-trap. Sand-trap. Hog-trap. Steam-trap. Insect-trap. Well-trap.							
Trap	W. R. Blaney	381,594	Apr. 24	1853	490	43	306
Trap	E. A. Stears	381,988	Apr. 17	1468	401	43	306
Traps. Forcing-cylinder for cleaning	J. H. Austin	382,139	May 1	372	97	43	562
Traveling-bag	A. C. Frankel	384,969	June 26	1680	436	43	1466
Traveling-bag	F. C. Schmidt	382,771	May 15	1339	352	43	785
Tray for collecting coin	S. B. Pratt	384,711	June 19	1308	342	43	1360
Tree-protector	J. S. Newell and J. O. Brown	383,824	May 29	2921	771	43	1160
Trestle. Extension	J. R. Wallace and C. D. Reese	380,539	Apr. 3	351	100	43	78
Trestle. Portable	J. G. Rush	381,516	Apr. 17	1627	423	43	373
Tricycle	J. H. Dearlove and H. Thresher	381,763	Apr. 24	2185	572	43	460
Tricycle	F. E. Kobler	381,144	Apr. 17	1291	345	43	260
Tricycle	R. Mullins	381,504	Apr. 17	1819	481	43	371
Tricycle	H. W. Schlermeyer	380,770	Apr. 10	705	195	43	149
Tricycle	M. Sluis	381,590	Apr. 24	1948	513	43	414
Trimming-table	S. W. Patterson	383,368	May 22	2216	588	43	985
Tripod	F. N. Cottle	381,340	Apr. 17	1570	421	43	383
Triturator	L. Sherman	383,020	May 15	1699	442	43	857
Trough:							
See Feed-trough. Watering-trough.							
Trousers. Apparatus for pressing	G. Whitaker and L. L. B. Williams	380,965	Apr. 10	1001	256	43	983
					257		
Trousers or overalls	J. Hetherington, Jr	381,024	Apr. 24	1995	523	43	493
					524		
Trousers-stretcher	B. H. Clowes	380,550	Apr. 3	370	105	43	78
Truck	M. Huntley	385,161	June 26	2006	514	43	1532
Truck	W. J. Kennedy and L. A. DeMayo	384,369	June 12	800	206	43	1289
Truck	M. Lorce	380,335	Apr. 3	42	15	43	10
Truck	W. W. Roche	384,078	June 5	349	90	43	1167
Truck. Barrel	E. J. S. Davis	381,769	Apr. 24	2185	571	43	460
Truck. Brick	J. C. Steele	380,603	Apr. 3	448	126	43	91
Truck. Car	J. C. Barber	383,698	May 29	2603	712	43	1036
Truck. Car	W. J. Brewer	384,505	June 12	1001	261	43	1310
Truck. Cat	L. Godda	381,680	Apr. 24	1969	522	43	482
Truck. Car	M. G. Hubbard	384,317	June 12	711	189	43	1262
Truck. Car	L. K. Jewett	383,180	May 22	1945	510	43	915
Truck. Car	L. K. Jewett	383,181	May 22	1946	510	43	915
Truck. Car	L. K. Jewett	384,961	June 26	1707	441	43	1469
Truck. Car	L. K. Jewett	384,962	June 26	1701	441	43	1470
Truck. Car	W. Youmans	383,164	May 22	1922	509	43	910
					508		
Truck for cars. Changeable gage	S. R. Wilson	381,312	Apr. 17	1523	411	43	313
Truck. Hand	J. H. Alexander	382,948	May 1	540	138	43	613
Truck. Stove	J. H. Bell and A. L. Gregory	383,619	May 29	2599	695	43	1043
Truck. Stove	J. K. Horr and J. G. Dulebohn	382,381	May 8	720	184	43	687
Truck. Turn-table extension-ladder	B. Adcock	383,681	May 29	2885	710	43	1044
Truck. Turn-table extension-ladder	C. Bleke	383,731	May 29	2764	733	43	1079

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfs.	Official Gazette. Vol.	Official Gazette. Page.
Truck. Turn-table extension-ladder	E. B. Preston	383,828	May 29	2927	773	43	1109
					774		
Truck. Water-tower	A. Bruegger, Jr	383,609	May 29	2710	715	43	1089
					716		
Truck wheel. Hand	M. J. Cummings	383,214	May 22	1993	522	43	994
Trucks. Center bearing for car	G. W. Dithridge	380,870	Apr. 10	892	230	43	175
Trucks. Safety-guard for car	W. H. Walker	385,155	June 26	1975	505	43	1356
Trunk	W. J. Large	380,493	Apr. 3	271	75	43	56
Trunk-harness	W. J. Large	385,180	June 26	2094	518	43	1536
Trunk-lift and strap-fastening. Combined	W. H. Gabbe	380,431	Apr. 3	178	49	43	37
Trunk tray and follower	G. Crouch	385,242	June 26	2102	538	43	1552
Truss	G. E. Milburn	384,379	June 12	816	212	43	1264
Truss	C. Cluthe	384,611	June 19	1153	305	43	1356
Truss	R. H. Pargue	383,717	May 29	2748	794	43	1076
Truss	H. C. Stickney	381,727	Apr. 24	2141	561	43	433
Truss	L. B. Stuart	381,089	Apr. 10	1209	323	43	243
Tub:							
See Butter-tub. Wash-tub.							
Mash-tub.							
Tube. Combined overflow, supply, and waste for	F. A. Welle	380,373	Apr. 3	103	31	43	22
Tube:							
See Veterinary drenching-tube.							
Tube and making the same	D. A. Garver and C. H. Straight	385,109	June 26	1907	486	43	1513
Tube-coupling	A. C. Kimball	384,582	June 12	1111	294	43	1339
Tube-coupling	F. A. Williams	381,869	Apr. 24	2269	619	43	493
Tube-cutter	J. R. Vance	380,777	Apr. 10	713	197	43	151
Tube-expander	J. Duffy	383,111	May 22	1868	484	43	895
Tube-expander	C. H. Robinson	381,583	Apr. 24	1928	508	43	410
Tubes. Machine for slotting	J. H. Vinton	381,297	Apr. 17	1497	404	43	1468
Tubes. Mechanism for the manufacture of angular	T. J. Bray	382,454	May 8	871	223	43	684
					222		
Tubes. Straightening	L. L. Burdon	381,526	Apr. 24	1855	491	43	396
Tug-fastener	F. P. Circle	381,906	May 1	14	4	43	518
Tug. Hame	C. A. Kupfer	380,903	Apr. 10	907	243	43	186
Tug. Hame	R. F. Russell	384,085	June 5	358	101	43	1189
Tug. Hame	G. Schmidt	383,151	May 22	1907	498	43	907
Tug or trace carrier	J. S. Schott	382,058	May 1	274	78	43	563
Tuning-key	G. T. Arnold	381,317	Apr. 17	1531	412	43	314
Turning irregular forms. Machine for	M. Hernandez	384,442	June 12	897	234	43	1300
Tuning-peg for stringed instruments	H. E. Taylor	384,002	June 5	236	69	43	1167
Twine guide and cutter	L. L. Filstrup and G. Van Zant	382,465	May 8	886	228	43	687
Twine-holder	L. Goodyear	383,120	May 22	1867	489	43	899
Twine-holder	J. Hill	383,573	May 29	2537	670	43	1031
Twine-holder	R. Nicol, Jr	381,385	June 12	822	214	43	1295
Type-case stand	A. B. Tomlin	383,157	May 22	1914	500	43	1283
Type-containing channel	W. P. Harmony	383,292	May 22	2114	556	43	946
	A. A. Low	381,892	Apr. 24	2240	587	43	471
Type-rubbing machine	G. S. Eaton and J. C. Birch	380,558	Apr. 3	381	108	43	78
					109		
Type-rubbing machinery	G. S. Eaton and J. C. Birch	380,559	Apr. 3	384	109	43	78
					110		
Type-writer cabinet	L. G. Billings	382,942	May 15	1571	410	43	633
Type-writer cabinet	B. P. Richardson	383,492	May 29	2423	643	43	1009
Type-writers. Type-segment for	L. T. Weiss	380,372	Apr. 3	102	30	43	22
Type-writing machine	A. P. Eggis	380,792	Apr. 10	741	203	43	155
Type-writing machine	J. D. Escobar	382,146	May 1	395	102	43	586
Type-writing machine	G. L. Ferris	384,142	June 5	444	122	43	1206
					124		
Type-writing machine	B. Granville	382,036	May 1	242	63	43	550
Type-writing machine	J. W. Osborne	383,480	May 29	2400	630	43	1006
Type-writing machine	J. W. Osborne	383,481	May 29	2402	630	43	1006
Type-writing machine	J. W. Osborne	383,482	May 29	2407	640	43	1006
Type-writing machine	F. A. Remley	385,008	June 26	1752	453	43	1461
Type-writing machine	C. Spiro	381,652	Apr. 24	2028	532	43	430
Type-writing machines. Inking device for	M. Weiss	383,383	May 22	2238	583	43	988
Umbrella	L. S. Crandall	381,910	May 1	19	5	43	518
Umbrella	H. Altman and L. Scharff	384,551	June 12	1064	278	43	1330
Umbrella	A. S. Hubbell	383,128	May 22	1875	490	43	901
Umbrella-frames. Manufacture of gits for	H. Jeffery	381,139	Apr. 17	1249	343	43	288
Umbrella-hanger	J. Willis	380,377	Apr. 3	110	32	43	24
Umbrella-runner retainer	J. A. Crandall	380,996	Apr. 10	1055	278	43	213
Umbrella-stretchers. Machine for attaching forks to	J. Rose	380,935	Apr. 10	954	253	43	195
Umbrella-support	C. T. Rietschy	383,075	May 15	1788	468	43	874
Umbrella-tie	A. B. Stevens	382,118	May 1	355	93	43	579
Underwaist	D. W. Odiorne	384,463	June 12	994	240	43	1305
Universal joint	E. D. Watrous	382,628	May 8	1139	293	43	737
Universal joint	O. N. Eaton	381,348	Apr. 17	1580	404	43	294
	C. Perrin	384,388	June 12	886	214	43	1285
Upholsterers' tufts. Machine for making	J. L. Moore	383,755	May 29	2805	737	43	1067
					738		
Upholstery-tufts. Manufacture of	G. Doolittle	384,896	June 19	1580	411	43	1437
Upsetting-machine	W. Cooke and D. Carlough	380,862	Apr. 10	836	227	43	173
Upsetting-machine	P. Gendron	382,355	May 8	723	188	43	626
Urinal	J. A. Wills	382,399	May 8	784	199	43	669
Vacuum-pans. Discharge mechanism for	R. G. Peters	384,070	June 5	341	96	43	1185
Vacuum-pans. Discharge mechanism for	R. G. Peters	384,071	June 5	342	96	43	1185
Valve	A. M. Grmager	382,384	May 8	678	248	43	704
Valve	P. W. Meehan	384,056	June 5	330	91	43	1183
Valve	G. H. Moore	384,330	June 12	720	194	43	1289
Valve	E. F. Williams	384,823	June 19	1561	407	43	1434
Valve and cylinder-cock. Combined relief	J. A. Seymour	382,309	May 8	674	179	43	657
Valve. Balanced governor	P. S. Kingsland	385,578	June 26	2157	551	43	1564

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfs.	Official Gazette. Vol.	Official Gazette. Page.
Valve. Check	H. C. Montgomery	382,655	May 8	1181	305	43	748
Valve. Check	L. Schutte	380,940	Apr. 10	961	255	43	196
Valve. Engine	E. M. Hamstone	380,395	Apr. 3	26	7, 8	43	7
Valve for air-brakes. Triple	G. B. Williams	384,009	June 5	247	71	43	1160
Valve for multiple-cylinder engines	E. B. Benham	380,849	Apr. 10	818	222	43	170
Valve for steam or other engines	H. Moehring and A. Pflüger	383,406	May 22	2270	605	43	975
					606		
Valve for water-gages	W. H. Bray and C. Nickerson	381,609	Apr. 24	1974	519	43	419
Valve for water-gages	C. B. Dunton	383,448	May 29	2341	631	43	994
Valve-gear	J. Des Brisay	381,678	Apr. 24	2069	540	43	430
					541		
Valve-gear	E. D. Leavitt, Jr	380,328	Apr. 3	29	9, 10	43	8
Valve-gear	E. D. Leavitt, Jr	380,329	Apr. 3	31	11	43	8
					12		
					13		
Valve-gear	H. Leobtemberg	382,168	May 1	425	111	43	591
Valve-gear	R. Mackay	383,963	June 5	185	54	43	1156
Valve-gear	J. W. Thompson	381,596	Apr. 24	1953	515	43	416
Valve-gear	J. Young	381,747	Apr. 24	2166	567	43	457
Valve-gear. Releasing	C. A. Dixon	381,001	Apr. 10	1061	280	43	214
					281		
					282		
Valve. Governor	W. B. Mason	383,427	May 22	2218	613	43	981
Valve. Hydrant	O. B. Wilson	381,662	Apr. 24	2045	535	43	434
Valve. Hydraulic	M. B. Kirker	382,003	May 1	178	46	43	547
Valve mechanism for engines	S. Wilcox	382,578	May 8	1069	273	43	724
					274		
Valve mechanism for sewerage systems	C. H. Shepherd	384,396	June 12	834	217	43	1287
Valve mechanism for sewerage systems	C. H. Shepherd	384,397	June 12	835	218	43	1288
Valve. Pop safety	A. Hattersley	383,185	May 22	1871	489	43	899
Valve. Rotary	J. O'Donnell	383,976	June 5	302	80	43	1159
Valve. Safety	W. R. Fox	382,643	May 8	1150	298	43	741
Valve. Steam	D. H. Rice	380,661	Apr. 3	589	146	43	166
					147		
Valve. Steam-actuated	J. H. Fogarty and F. M. Wheeler	380,882	Apr. 10	873	225	43	179
Valve. Steam-actuated	W. W. Hanscom	380,888	Apr. 10	887	227	43	183
					228		
Valve. Steam-engine	W. J. Allen	383,935	June 5	140	40	43	1147
Valve. Steam-engine	J. D. Fiske	383,287	May 22	2108	557	43	945
Valve. Steam-engine	J. S. Marshall	381,152	Apr. 17	1289	347	43	270
Valve. Steam-engine	J. E. McIntosh	384,637	June 19	1193	315	43	1264
Valve. Steam-engine	F. L. Smith	382,564	May 8	1049	265	43	719
Valve. Steam-feed	L. T. Kline	384,263	June 12	634	171	43	1252
Valve. Stop	J. A. Creelman	381,055	Apr. 10	1146	306	43	239
Valve. Stop	J. Hawthorn and S. Moorhouse	382,469	May 8	896	239	43	683
Valve. Straight-way	H. P. Hood	384,849	June 19	1516	395	43	1426
Valve. Straight-way stop	H. Hall	384,906	June 19	1590	414	43	1459
Valve. Tank-supply-regulating	P. Hansen	382,301	May 8	634	161	43	640
Valve. Throttle	E. W. Lace	382,993	May 15	1640	429	43	845
Valve. Water-engine	G. and W. Ross	384,336	June 12	747	196	43	1271
Valves. Adjusting relief-plate wedges for slide	D. A. Woodbury	382,674	May 8	1209	313	43	751
Valves and other mechanisms. Device for operating	L. Schutte	380,941	Apr. 10	962	256	43	196
Valves. Cut-off mechanism for slide	J. H. Tangye and W. Johnson, Jr	380,955	Apr. 10	966	261	43	201
					262		
Valves, &c. Operating-lever for	W. Scott	384,067	June 5	359	102	43	1189
Vane. Windmill	A. J. Corcoran	384,427	June 12	876	229	43	1296
Vapor-burner	F. A. Lyman	381,843	Apr. 24	2319	603	43	498
Vapor-burner	F. A. Lyman	382,652	May 8	1177	304	43	745
Vapor-burner	E. G. Martin	381,153	Apr. 17	1301	347	43	270
					348		
Vapor-burner	W. Metzinger	382,992	May 15	1503	394	43	630
Vapor-burner	L. R. Pierpont	380,404	Apr. 3	144	41	43	30
Vapor-burner	C. H. Shultz	380,356	Apr. 3	80	25	43	18
Vapor or gas. Device for regulating the quality of carburreted	E. J. Frost	381,619	Apr. 24	1968	522	43	422
Vapors. Apparatus for automatically generating and burning inflammable	C. A. Paquelin	383,538	May 29	2497	659	43	1023
Vaporizer	R. S. Sheeley	382,836	May 15	1424	374	43	588
Vaporizer	G. M. Shermann	384,794	June 19	1422	373	43	1409
Vaporizer and burner. Hydrocarbon	J. E. Patterson and A. Noteman	384,068	June 5	339	95	43	1185
Varnish	E. N. Todd	384,005	June 5	242	.....	43	1160
Varnish. Pyroxyline	W. D. Field	381,354	Apr. 17	1590	.....	43	288
Vat:							
See Tan-vat.							
Vegetable-cutter	A. Lethert	381,261	Apr. 17	1454	391	43	328
					392		
Vegetable or root cutter	E. H. Clare	383,438	May 29	2330	619	43	991
Vegetable-slicer	V. Biesig	384,738	June 19	1344	351	43	1293
Vehicle-brake	D. E. Bowling and F. O. Barnes	382,566	May 8	1081	278	43	722
Vehicle-brake	T. J. Timmons	380,365	Apr. 3	91	28	43	20
Vehicle. Child's	F. Graff	383,946	June 5	157	46	43	1150
Vehicle. Convertible	W. H. Yates	381,663	Apr. 24	2046	536	43	434
Vehicle dash-screen	J. H. Murphy	384,297	June 26	1783	447	43	1475
Vehicle. Electrically-propelled	W. H. Knight	382,990	May 15	1637	429	43	844
Vehicle gear-iron	H. C. Swan	381,161	Apr. 17	1332	357	43	276
Vehicle. Jump-seat	C. H. Stratton	385,389	June 26	2266	575	43	1560
					576		
Vehicle. Passenger	F. B. Brownell	380,617	Apr. 3	498	132	43	95
Vehicle. Passenger	R. A. Morse	380,812	Apr. 10	763	200	43	159
Vehicle-reach coupling	S. M. Wier	380,541	Apr. 3	354	101	43	73
Vehicle running-gear	N. H and J. H. Bloom	382,498	May 8	794	208	43	670
Vehicle running-gear	G. A. Bowen	381,981	May 1	134	32	43	539
Vehicle running-gear	S. Burdall	382,625	May 8	1151	297	43	720
Vehicle running-gear	A. W. Johnson	384,366	June 12	796	206	43	1279

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Vehicle running-gear	G. W. Lee	381,146	Apr. 17	1293	345	43	988
Vehicle running-gear	T. C. Munz	383,409	May 22	2285	{606 607}	43	976
Vehicle-seat	C. W. and E. B. Robison	380,663	Apr. 3	534	147	43	107
Vehicle. Self-propelling	C. Benz	385,087	June 26	1877	{479 480}	43	1506
Vehicle. Spring-	E. Storm	382,443	May 8	851	217	43	681
Vehicle. Spring-	T. L. Sturtevant	385,019	June 26	1767	457	43	1495
Vehicle-spring	C. M. Blydenburgh	383,330	May 22	2172	574	43	957
Vehicle-spring	E. Cliff	382,137	May 1	363	100	43	568
Vehicle-spring	R. Hitchcock	380,380	Apr. 3	125	37	43	97
Vehicle-spring	R. Malholland	384,361	June 19	818	212	43	1284
Vehicle-spring	W. C. Perry	384,781	June 19	1401	366	43	1405
Vehicle-spring	P. H. Whiting	385,324	June 26	2255	577	43	1571
Vehicle spring and gear	W. H. Winter and H. Duffey	382,630	May 8	1141	294	43	739
Vehicle spring-gear	E. F. Morse	383,974	June 5	199	58	43	1158
Vehicle-spring support	G. E Bartholomew	381,850	June 5	5	2	43	1192
Vehicle-steps. Scraper attachment for	J. S. Cochennour	381,111	Apr. 17	1045	335	43	979
Vehicle-top	O. Zistel	384,685	June 19	1225	308	43	1372
Vehicle-top-prop joint	T. B. McCurdy	381,630	Apr. 24	2008	525	43	494
Vehicle. Two-wheeled	J. G. Parsons	382,602	May 8	1190	309	43	747
Vehicle. Two-wheeled	G. Beebe	383,207	May 22	1964	501	43	923
Vehicle. Two-wheeled	K. A. Brigham	380,744	Apr. 10	661	182	43	141
Vehicle. Two-wheeled	J. P. Callan	381,758	Apr. 24	2181	570	43	456
Vehicle. Two-wheeled	H. G. M. Howard	381,927	May 1	39	11	43	562
Vehicle. Two-wheeled	H. W. Jones	383,229	May 22	2016	529	43	930
Vehicle. Two-wheeled	W. Lawless	381,705	Apr. 24	2110	552	43	446
Vehicle. Two-wheeled	H. Malmberg	382,175	May 1	436	{113 114}	43	683
Vehicle. Two-wheeled	C. C. Spencer	382,839	May 15	1427	375	43	804
Vehicle. Two-wheeled	A. Warner and J. J. D. Scoles	381,448	Apr. 17	1735	{462 464}	43	354
Vehicle-wheel	J. Blais	380,858	Apr. 10	823	223	43	170
Vehicle-wheel	G. E. Broyles	381,189	June 5	515	140	43	1221
Vehicle-wheel	L. H. Donkel	384,135	June 5	435	121	43	1205
Vehicle-wheel	P. Gendron	382,356	May 8	723	192	43	656
Vehicle-wheel	T. B. Jeffery	383,129	May 22	1877	490	43	901
Vehicle-wheel	T. B. Jeffery	383,130	May 22	1878	490	43	901
Vehicle-wheel	S. Puffer	381,509	Apr. 17	1636	433	43	372
Vehicle-wheel	C. A. Reade	381,722	Apr. 24	2135	558	43	451
Vehicle-wheel	H. L. Smith	384,388	June 12	637	218	43	1288
Vehicle-wheel	J. V. Stribling	384,650	June 19	1206	319	43	1357
Vehicle-wheel	J. K. Van Pelt	384,482	June 12	949	246	43	1309
Vehicles. Boot-frame for	F. E. Roberts	380,933	Apr. 10	952	253	43	194
Vehicles by electricity. Propelling	C. A. Fanre	383,561	May 29	2525	666	43	1028
Vehicles. Device for loading	W. B. Dolsen	383,616	May 29	2622	694	43	1050
Vehicles. Endless plateway for wheeled	H. G. Tipping	384,797	June 19	1425	373	43	1410
Vehicles. Fare-indicating device for	W. F. Nedler	383,758	May 29	2809	{739 740}	43	1067
Vehicles. Spring-coupler for	F. Bacon	381,900	May 1	5	2	43	515
Vehicles. Spring-seat for	L. Warren	385,033	June 26	1792	462	43	1489
Velocipede	M. A. Cherry	382,351	May 8	715	181	43	655
Velocipede	L. H. Donkel	384,134	June 5	434	120	43	1204
Velocipede	J. E. Evans	385,258	June 26	2131	544	43	1550
Velocipede	C. H. Goodsell	384,150	June 5	456	126	43	1209
Velocipede	G. Illston	383,396	May 22	2282	{601 602}	43	972
Velocipede	T. B. Jeffery	383,131	May 22	1880	491	43	902
Velocipede	R. G. Latta	380,495	Apr. 3	273	75, 76	43	56
Velocipede	M. H. Marlin	384,900	June 26	1711	444	43	1473
Velocipede	A. H. Overman	381,274	Apr. 17	1472	396	43	208
Velocipede	T. Redman	385,136	June 26	1948	498	43	1521
Velocipede	F. Rourk	384,643	June 19	1199	317	43	1365
Velocipede	J. Schemmel	381,956	May 1	61	20	43	530
Velocipede	G. Singer and R. H. Lea	382,037	May 15	1425	374	43	803
Velocipede	C. F. Stillman	381,036	Apr. 10	1118	299	43	986
Velocipede	G. T. Warwick	384,945	June 19	1642	{436 437}	43	1450
Velocipede	G. T. Warwick	384,946	June 19	1645	{437 438}	43	1450
Velocipede-crank	J. Harrison	381,547	Apr. 24	1864	497	43	401
Velocipede. Locomotive	B. W. Annin	382,311	May 8	645	{164 165}	43	642
Velocipede-saddle	J. Knous	382,430	May 8	687	212	43	676
Velocipede-saddle	G. Salter and J. Walker	384,473	June 12	935	243	43	1297
Velocipede-seat	T. B. Jeffery	384,900	June 26	1694	440	43	1469
Velocipede-seat	H. M. Pope	381,165	Apr. 17	1321	358	43	273
Velocipede-wheel	R. G. Latta	382,665	May 15	1483	391	43	818
Vending apparatus	R. Marelle	381,397	Apr. 17	1650	440	43	338
Vending apparatus	O. Schiess	381,498	Apr. 17	1696	{455 456}	43	347
Vending apparatus	L. Stollwerck	384,930	June 19	1634	{434 435}	43	1446
Vending apparatus	J. B. Underwood	381,898	Apr. 24	2284	583	43	500
Veneer-cutting machine	E. Densmore	382,219	May 1	497	129	43	605
Veneer-cutting machine	C. L. Merrill	384,057	June 5	383	91, 92	43	1188
Veneer-machine. Rotary-cutting	H. H. Coe	384,120	June 5	469	{117 118}	43	1208
Ventilating apparatus	F. Murphy	381 078	Apr. 10	1168	314	43	228
Ventilating-wheel	E. Fox	383,217	May 22	1980	504	43	925
Ventilator: *See* Car-ventilator. Stove-ventilator. Soil-pipe ventilator. Window-ventilator.							
Ventilator	E. J. Colby	381,112	Apr. 17	1249	335	43	209

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Ventilator	J. W. McKinnon	383,312	May 22	2142	565	43	961
Ventilator	J. H. Reynolds	383,398	May 29	2569	677	43	1036
Vessel and making the same. Hollow	T. F. Stevenson	383,023	May 15	1703	442	43	856
Vessels. Composition for lining	J. A. Blanchard	380,653	Apr. 10	894	.....	43	171
Vessels. Ice-breaker for	F. W. Schiller	384,583	June 19	1194	307	43	1341
Vessels. Leak-stopper for	L. Weibe	381,302	Apr. 17	1564	405	43	309
Vessels. Shock-arrester for the rigging of	F. Wheeler	384,008	June 5	345	71	43	1169
Vest-protector	B. Ives	380,576	Apr. 3	410	117	43	83
Veterinary drenching-tube	G. W. Cady	382,689	May 15	1234	321	43	703
Veterinary surgical device	I. W. Benedict	381,491	Apr. 17	1785	478	43	366
Vise	F. Armstrong and N. W. Vandegrift	383,165	May 22	1994	503	43	910
Vise	C. J. Hermann	382,360	May 8	728	{183 184}	43	657
Vise	E. I. Nichols	380,401	Apr. 3	139	41	43	89
Vise	D. W. Starkey	381,178	Apr. 17	1334	356	43	276
Vise	W. L. Tobey	380,734	Apr. 10	649	179	43	139
Vise. Machine-	G. B. Taylor	381,890	Apr. 24	2291	622	43	880
Vise. Self-closing	H. B. Smith and G. B. Hinman	380,461	Apr. 3	226	68	43	47
Voltaic batteries. Solution for	C. E. Egan	381,542	Apr. 24	1879	.....	43	409
Volt-ammeter	O. B. Shallenberger	380,943	Apr. 10	965	256	43	197
Voltmeter	P. Lange	383,649	May 29	2643	699	43	1055
Vulcanizing apparatus	A. B. Woodard	384,188	June 5	506	138	43	1219
Vulcanizing apparatus and other purposes. Automatic regulator for	O. B. Braun	385,236	June 26	2094	{536 537}	43	1551
Wagon	G. S. Conwell	383,344	May 22	2179	577	43	959
Wagon and carriage lifter	D. B. Hamlet	382,700	May 15	1251	327	43	788
Wagon-bolster	J. Haish	384,619	June 19	1164	308	43	1356
Wagon bolster-spring	J. M. Hunter	380,574	Apr. 3	406	116	43	63
Wagon-bolster standard	R. F. Koesling and W. Mecklenburg	381,927	Apr. 24	1997	524	43	464
Wagon-box	G. W. Manlove and E. A. Parker	381,479	Apr. 17	1778	474	43	362
Wagon-brake	R. Ford, Sr	380,679	Apr. 10	568	156	43	123
Wagon-brake	W. J. Mackey	380,502	Apr. 3	293	85	43	59
Wagon-brake	J. W. Martin	381,502	Apr. 17	1818	481	43	371
Wagon-brake	R. J. Mitchell	383,187	May 22	1953	513	43	916
Wagon-brake	E. A. Parker	381,413	Apr. 17	1675	449	43	343
Wagon-brake	F. Rice	382,871	May 1	578	146	43	619
Wagon-brake	J. Smith	382,912	May 15	1369	400	43	825
Wagon-brake	J. B. Walker	381,665	Apr. 24	2253	610	43	491
Wagon-brake. Automatic	J. H. Fisher	380,754	Apr. 10	672	186	43	143
Wagon. Dumping	D. A. Williams	383,930	June 5	134	39	43	1146
Wagon. Dumping	A. M. Woolfolk	382,787	May 15	1365	{356 360}	43	780
Wagon-gear	N. L. Holmes	380,893	Apr. 10	885	{230 240}	43	183
Wagon-jack	R. Harris	382,807	May 15	1301	365	43	795
Wagon-jack	A. P. Millspaugh	384,705	June 19	1304	341	43	1326
Wagon-panel fastener	H. Hotz	380,796	Apr. 10	747	205	43	157
Wagon-seat	W. A. Ladd	384,534	June 19	1040	271	43	1326
Wagon-spring	M. Baltes	382,290	May 8	617	157	43	637
Wagon-spring	D. Wilcox	381,309	Apr. 17	1515	409	43	311
Wagon-standard	J. E. Fowler	382,963	May 15	1600	418	43	836
Wagon-standard	J. B. Hutchinson	383,053	May 15	1761	455	43	866
Wagon-step	E. Scott	381,429	Apr. 17	1700	456	43	349
Wall-covering composition	C. Straub	382,740	May 15	1303	.....	43	778
Wall-paper exhibitor	M. O. Smith	384,726	June 19	1396	346	43	13-0
Walls. Finish for plastered	T. Jones	383,397	May 22	2283	.....	43	973
Walls of buildings. Facing for	A. M. Hansen	382,359	May 8	726	183	43	657
Walls of buildings. Sheet-metal siding for covering the	J. B. Determann	381,000	Apr. 10	1060	280	43	214
Wardrobe, bureau, and wash-stand. Combined	H. F. Wulff	382,400	May 8	786	199	43	668
Warming apparatus and stove. House-	J. Fries	383,119	May 22	1866	487	43	899
Warp for pattern-making	C. H. Landenberger	383,182	May 22	1947	510	43	915
Warp-splitting machine	F. Haskell	381,098	May 1	171	44, 45	43	545
Warping and balling machine	E. E. Orrell	381,184	Apr. 17	1317	350	43	273
Warping-machine	W. Beacroft	380,642	Apr. 3	496	139	43	109
Warping-machines. Lease-forming mechanism for	A. Woodman	380,641	Apr. 3	497	139	43	109
Wash-board	H. S. Brewington	382,751	May 15	1313	345	43	780
Wash-board	J. R. Cluxton	382,512	May 8	960	243	43	702
Wash-stand	J. D. Hall	381,621	Apr. 24	1991	{522 523}	43	422
Wash-stand bowl	N. O. Bond	382,251	May 1	550	139	43	614
Wash-stands, bath-tubs, and sinks. Attachment for	W. Dunnett	381,225	Apr. 17	1305	373	43	288
Wash-tub. Cement	C. Wesely	384,814	June 19	1455	360	43	1415
Washer: *See* Axle-washer. Ore-washer. Bottle-washer. Steam-washer. Clothes-washer.							
Washing-machine	J. H. Allen	383,683	May 29	2668	711	43	1085
Washing-machine	J. M. Boughton	380,675	Apr. 10	564	155	43	122
Washing-machine	N. B. Clabaugh	382,755	May 15	1317	344	43	781
Washing-machine	J. H. Doub and F. Robbins	384,311	June 12	703	187	43	1264
Washing-machine	J. C. Drake	383,110	May 22	1862	484	43	896
Washing-machine	J. R. Elliott	381,003	Apr. 10	1064	282	43	215
Washing-machine	W. Fowler	382,149	May 1	399	104	43	587
Washing-machine	O. F. Glidden	383,625	May 22	2260	612	43	991
Washing-machine	O. J. Graham	381,362	Apr. 17	1589	428	43	328
Washing-machine	J. Killefer	380,902	Apr. 10	906	243	43	186
Washing-machine	H. J. Lockhart	380,396	Apr. 3	133	40	43	38
Washing-machine	C. and J. W. Mears	380,445	Apr. 3	204	56, 58	43	42
Washing-machine	H. Naderman	380,814	Apr. 10	785	210	43	160
Washing-machine	L. Reinhardt	381,643	Apr. 24	2015	529	43	428
Washing-machine	F. Schumpe	380,930	Apr. 10	960	265	43	196
Washing-machine	T. Thorn	384,898	June 12	686	183	43	1261
Watch-balance	P. W. Rohde	380,769	Apr. 10	704	194	43	140

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Watch-box. Portable bullet-proof	P. F. Milligan	383,752	May 29	2799	735	43	1086
Watch-case	E. C. Chappatte	384,346	June 12	764	199	43	1974
Watch-case	E. F. Heffernan	384,621	June 19	1176	310	43	1320
Watch-case	C. F. Morrill and D. C. Percival	384,380	June 12	817	212	43	1394
Watch-case	R. J. Quigley	382,190	May 1	455	118	43	807
Watch-case pendant	R. J. Quigley	384,640	June 19	1196	316	43	1364
Watch-cases or other articles. Die for making	H. Gerber	383,219	May 22	2008	594	43	926
Watch hair-spring stud	F. Ecaubert	382,517	May 8	965	244	43	703
Watch-hands. Tool for removing	L. Aeby	384,668	June 19	1239	326	43	1373
Watch-plates. Machine for the manufacture of pillars for	J. C. Rand	380,407	Apr. 3	147	42	43	31
Watch-protector	F. Leman	380,497	Apr. 3	279	78 79 89	43	57
Watch. Repeating	J. Debrinke	380,669	Apr. 10	851	230	43	175
Watch. Split-seconds stop	H. O. Stauffer	383,256	May 22	2059	540 541	43	937
Watch. Stem winding and setting	C. H. Meylan	383,749	May 29	2793	734	43	1085
Watch. Stem winding and setting	L. Aeby	384,669	June 19	1240	327	43	1373
Watch. Stem winding and setting	W. D Davies	381,319	Apr. 17	1387	371	43	296
Watch. Stem winding and setting	W. H. Stevens	383,673	May 29	2777	702	43	1062
Watch. Stem-winding and setting	J. N. Whipple	381,601	Apr. 24	1963	517	43	417
Watch. Stop	E. Kuhn	383,050	May 15	1706	456	43	930
Watch. Striking	J. Walzer	383,980	May 29	2067	548	43	938
Watch-wheels. Means for beveling	H. Huguenin	381,785	Apr. 24	2216	589	43	467
Watches. Device for holding	E. J. Lezard	381,936	May 1	51	14	43	585
Watches. Machine for making pendants for	A. Stalnacke	383,398	May 22	2156	569	43	954
Watches. Mainspring for	F. Sedgwick	381,176	Apr. 17	1333	356	43	275
Water-closet	W. S. Cooper	385,167	June 26	1968	508	43	1920
Water-closet	W. S. Cooper	385,168	June 26	1980	509	43	1589
Water-closet	J. Crawford	383,045	May 15	1749	468	43	906
Water-closet	G. Michaud	383,750	May 29	2795	735	43	1085
Water-closet	F. A. Wells	381,660	Apr. 24	2043	535	43	433
Water-closet hopper and bowl	A. Ivers	382,069	May 1	323	84	43	578
Water-closet. Siphon	D. D. Buick	383,039	May 15	1726	450	43	883
Water-closet structure	W. S. Cooper	385,169	June 26	1990	510	43	1589
Water-closet supply apparatus	J. P. Adams	382,128	May 1	371	96, 97	43	561
Water-closet system	H. S. Miller	385,130	June 26	1940	495	43	1519
Water-closets. Construction of troughs for	W. B. Parsons, Jr	384,175	June 5	495	135	43	1217
Water-closets. Double flush-valve for	T. Campbell and J. H. McPartland	383,858	June 5	13	4	43	1193
Water-closets. Flushing apparatus for	J. Demarest	381,221	Apr. 17	1389	371	43	296
Water-closets. Service-box for	J. Crawford	381,911	May 1	20	5	43	518
Water-closets. Time closing-valve for	A. W. Cram	380,619	Apr. 3	470	133	43	95
Water-closets. Valve-connection for hopper	G. F. Marshall	382,820	May 15	1406	369	43	799
Water-conductor	J. W. Abrahams	381,664	Apr. 24	2048	536	43	434
Water cooler and filter	G. Van der Hylen	384,801	June 19	1430	376	43	1411
Water distributing apparatus	J. Cornell	380,313	Apr. 3	10	2	43	4
Water. Electrical apparatus for purifying	A. R. Leeds	383,184	May 22	1949	511	43	915
Water-elevator. Pneumatic	T. O. Perry	382,324	May 8	668	169	43	646
Water-elevator. Pneumatic	T. O. Perry	382,727	May 15	1280	336	43	774
Water-gage. Alarm	G. Fisher and P. Rappold	380,881	Apr. 10	872	234	43	179
Water-gage indicator	A. F. Lauderholm and O. F. Olson	382,044	May 1	255	65	43	560
Water-feeder	C. A. Southwick	381,874	June 19	1554	404	43	1432
Water-fetching machine	C. G. Mattson	381,804	June 5	66	20	43	1133
Water-heater	D. Grove	384,202	June 5	537	146 147	43	1225
Water-heater	C. G. Jewett	384,695	June 19	1283	337	43	1382
Water-heater	G. W. Lewton	385,276	June 26	2159	559	43	1564
Water, &c. Hydraulic apparatus for raising	H. D. Pearsall	382,380	May 8	760	193	43	663
Water. Means for utilizing the current force of running	C. M. Garrison	383,261	June 26	2136	544 545	43	1550
Water-meter. Disk	J. Davies	384,024	June 5	266	76	43	1173
Water-meter. Piston	F. W. Dick	382,145	May 1	394	103	43	586
Water-meter. Rotary	J. A. Tilden	380,669	Apr. 3	547	150	43	110
Water-motors. Rotary nozzle-head for	E. S. Piper	380,691	Apr. 10	586	161	43	127
Water or gas. Electrical method of automatically controlling the supply of	L. Well	381,866	Apr. 24	2354	610 611	43	492
Water-power	A. Gustlin	383,291	May 22	2113	558	43	946
Water-tank and life-boat. Combined	S. J. E. Jörgensen	384,579	June 12	1103	290	43	1338
Water-wheel	A. Georg and W. Kleindinst	384,838	June 19	1498	390	43	1423
Water-wheel. Current	J. H. Knight	384,916	June 19	1607	418	43	1443
Water-wheel governor	J. Morton	385,240	June 26	2165	553	43	1565
Water-wheel. Turbine	N. F. Burnham	382,026	May 1	219	58	43	554
Water-wheel. Turbine	S. M. Smith	383,177	May 29	2848	750	43	1094
Water-wheels with movable floats or paddles. Construction of	J. F. Lefort	382,887	May 15	1496	392	43	818
Watering-stand	A. Hanaman	380,570	Apr. 3	400	114	43	82
Watering-trough for cattle	W. E. Haskins	383,124	May 22	1871	489	43	900
Wave-power motor	F. Starkenberg	385,327	June 26	2242	574 575	43	1579
Wax-end machine	R. M. Macintosh	384,700	June 19	1296	339	43	1384
Weaner. Calf	H. W. and W. Fuller	380,796	Apr. 10	744	204	43	156
Weaning-muzzle for animals	J. F. Miller	382,937	May 1	584	134	43	610
Weather-strip	T. K. Milroy	385,065	June 26	1847	473	43	1499
Weather-strip	J. Poyton	381,166	Apr. 17	1323	353	43	273
Weather-strip	W. Syester	383,837	May 29	2941	777 778	43	1112
Weather-strip	O. Tatman and J. Byar	382,780	May 15	1355	356	43	798
Weather-strip	J. Thompson and J. O. Stephens	381,093	June 5	240	70	43	1168
Weather-strip for car-doors	E. R. Stiles	381,627	Apr. 10	1117	299	43	225
Weaving-needle	F. C. Easley and M. Bradley	382,641	May 8	1157	296	43	741
Weeding-tool	C. Maynard	384,635	June 19	1192	315	43	1383
Weigher. Automatic grain	J. Henry	383,198	May 22	1873	489	43	900
Weighing and registering apparatus. Automatic grain	L. C. Tryon	385,094	June 26	1776	459	43	1467

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Weighing and weight-printing machinery. Coin-controlled	C. C. Clawson	381,339	Apr. 17	1562	490 491	43	321
Weighing and weight-printing machinery. Coin-controlled musical	C. C. Clawson	381,338	Apr. 17	1556	490	43	320
Weighing apparatus. Grain	W. B. Avery	383,032	May 15	1716	446 447	43	861
Weighing-machine	E. Wölner	384,650	June 19	1222	322 323 324	43	1370
Weighing-machine. Coin-operated	T. A. Weber	380,837	Apr. 10	795	217 218	43	166
Weighing-machine for grain. Automatic	D. West	384,657	June 19	1217	321 322	43	1369
Weight and price indicating balance	A. Springer and W. Kent	383,499	May 29	2434	646	43	1011
Welding apparatus. Cylinder	T. F. Rowland, W. E. Hill, and A. McLachlan.	384,081	June 5	353	100	43	1186
Welding apparatus. Cylinder	T. F. Rowland, W. E. Hill, and A. McLachlan.	384,082	June 5	354	100	43	1189
Welding. Apparatus for electric	E. Thomson	385,022	June 26	1772	458	43	1486
Well-drilling machine	J. F. Moore	384,994	June 26	1716	445 446	43	1474
Well-drilling machine	C. Weber	382,500	May 8	943	239	43	699
Well point. Drive	F. H. Furniss	382,697	May 15	1246	308	43	767
Well point. Sectional jacket drive	B. B. Bignall and R. A. Marsh	380,419	Apr. 3	162	46	43	33
Well-sinking apparatus	M. T. Chapman	382,689	May 15	1234	321 322 323	43	765
Well-trap	W. W. Peay	381,577	Apr. 24	1922	506	43	409
Wells. Packer for oil and gas	I. N. Hoadley	381,013	Apr. 10	1075	285	43	217
Wheel:							
See Car-wheel.	Traction-wheel.						
Fifth-wheel.	Truck-wheel.						
Gear-wheel.	Vehicle-wheel.						
Metallic wheel.	Velocipede-wheel.						
Paddle-wheel.	Ventilating-wheel.						
Propeller-wheel.	Water-wheel.						
Sprocket-wheel.	Wind-wheel.						
Wheel	T. Groom	384,033	June 5	324	90	43	1175
Wheel	A. J. Hanks	384,759	June 19	1372	359	43	1399
Wheel	S. V. Kennedy	383,645	May 29	2838	699	43	1054
Wheel	H. Q. Maurino	383,966	June 5	188	55	43	1156
Wheel	H. E. Pridmore	382,899	May 15	1513	396	43	822
Wheel	W. A. Smith and I. A. Weston	380,358	Apr. 3	82	26	43	19
Wheel	J. T. Upington	381,445	Apr. 17	1731	462	43	353
Wheels. Machine for securing spokes in metal	W. P. Bettendorf	384,604	June 19	1144	302 303	43	1354
Wheels. Rim-joint and spoke-socket for vehicle	J. A. Eastman	381,121	Apr. 17	1263	338	43	292
Wheelbarrow	D. A. Garver and C. H. Straight	381,358	Apr. 17	1394	426	43	327
Wheelbarrow	W. H. C. Goode	382,523	May 8	977	946	43	704
Wheelbarrow	W. Sleicher, Jr	384,093	June 5	366	103 104	43	1191
Wheelbarrow-tray	D. A. Garver and C. H. Straight	380,502	Apr. 3	389	111	43	79
Whiffletree attachment	D. R. Lakin	381,255	Apr. 17	1447	390	43	297
Whiffletree-clip	W. M. Myers and A. Smith	383,900	June 5	76	22	43	1135
Whiffletree-hook	J. C. Davis	380,621	Apr. 3	473	133	43	96
Whiffletree snap	L. J. Bristol	381,325	Apr. 17	1540	415	43	316
Whiffletree-spring	E. C. Curry	382,353	May 8	718	181	43	635
Whip	P. S. Harrington	382,258	May 1	561	141	43	617
Whip and robe lock and line-holder. Combined	H. Martin and J. R. Palmer	380,633	Apr. 3	486	136	43	98
Whip-button-rolling machine	W. A. Heath	382,230	May 1	515	132	43	608
Whip-socket	J. F. Bower	384,605	June 19	1148	302	43	1354
Whip-socket and rein-holder. Combined	G. H. Gaskins	381,350	Apr. 17	1505	427	43	327
Wick	G. Munger	383,929	May 29	2920	771	43	1106
Wick-trimmer	A. Meyer	382,050	May 1	264	66, 69	43	562
Wind-engine	A. T. Winchell	381,313	Apr. 17	1525	411	43	313
Wind-wheel	H. V. Johnson	383,467	May 29	2383	634	43	1002
Wind-wheel shafts. Governor for	W. S. Campbell	382,950	May 15	1583	413	43	835
Winding cotton, &c., upon a core. Machine for	C. F. Bradford	383,856	June 5	11	3, 4	43	1122
Winding quills and bobbins. Machine for	J. E. Atwood	384,011	June 5	250	72	43	1170
Winding-roll for winding paper and other fabrics	J. Waldron	385,026	June 26	1780	460	43	1467
Winding spools, &c. Machine for	A. Insinger	384,416	June 12	904	235	43	1301
Windlass	E. C. Bacon	381,203	Apr. 17	1369	366	43	292
Windlass	H. F. Crandall	380,095	Apr. 10	1054	278	43	213
Windmill	T. H. and O. A. Brewer	380,547	Apr. 3	366	104	43	75
Windmill	A. W. Brodrick	384,232	June 12	580	160	43	1244
Windmill	J. Devereux	381,679	Apr. 24	2071	541	43	439
Windmill	J. B. Gorrell	384,756	June 19	1366	358	43	1398
Windmill	W. W. Hildreth	382,981	May 15	1625	425	43	842
Windmill	E. P. Miles	383,477	May 29	2396	637 638	43	1065
Windmills. Auxiliary motor for	G. C. Hunter	381,698	Apr. 24	2095	548	43	444
Windmills. Pump-rod for	D. B. Nettz	384,998	June 26	1723	447	43	1475
Window	E. E Edgerton and R. Metcalf	381,683	Apr. 24	2076	543	43	440
Window-screen	T. W. Dowling	380,747	Apr. 10	664	183 184	43	142
Window-screen	H. Speer	383,155	May 22	1912	500	43	908
Window-ventilator	C. R. Long	383,582	May 29	2549	673	43	1034
Wire-annealing apparatus	F. H. Daniels	385,247	June 26	2110	540	43	1554
Wire band. Spring	J. Jackson	381,017	Apr. 10	1040	286	43	218
Wire barb	M. Greene	380,884	Apr. 10	876	235	43	189
Wire bending and forming machine	S. T. Newman	384,999	June 26	1734	447 448 449 450	43	1475
Wire-bending implement	D. W. Norris	385,318	June 26	2238	571	43	1576

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wire-cloth	H. Atkins	383,791	May 29	2089	754	43	1686
Wire-cloth holder	W. A. Tea	381,294	Apr. 17	1494	403	43	307
Wire coil. Ornamental	L. M. Devore	382,220	May 1	499	139	43	606
Wire-cutter	P. W. Clark	380,618	Apr. 3	468	133	43	95
Wire-drawing die	J. B. Jenkins	382,650	May 8	1175	308	43	744
Wire-drawing machine	G. G. Blakeslee	382,861	May 15	1457	368	43	810
Wire gate	A. J. Cointe	383,705	May 29	2721	716	43	1672
Wire gate	E. R. Potter	380,591	Apr. 3	439	122	43	86
Wire-gripper	B. Erbe	380,749	Apr. 10	666	184	43	142
Wire. Machine for cold-rolling	H. A. Williams	381,311	Apr. 17	1522	410 411	43	313
Wire. Machine for covering and insulating	J. D. Thomas	384,404	June 12	845	220	43	1286
Wire. Making	W. A. Sweet	383,328	May 22	2159	570	43	954
Wire mat	H. H. Schieber	383,772	May 29	2640	747	43	1692
Wire-netting	B. Scarles	385,143	June 26	1958	501	43	1583
Wire-netting machine	B. Scarles	380,664	Apr. 3	534	147 148	43	107
Wire-netting machine	B. Scarles	380,665	Apr. 3	540	148	43	109
Wire-rod-mill guide	H. Roberts	381,562	Apr. 24	1927	508	43	410
Wire-rod mills. Reel for	H. Roberts	382,492	May 8	930	236	43	695
Wire-rod-reeling machine	C. H. Morgan	381,408	Apr. 17	1666	446 447	43	342
Wire-rod-reeling machine	H. A. Young	381,199	Apr. 17	1364	364 365	43	281
Wire. Rolls for making barbed	M. J. Baumbach	381,320	Apr. 17	1533	413	43	315
Wire-rope-closing machine. Vertical	J. Withington	383,088	May 15	1812	473 474	43	678
Wire-rope-coupling device	A. Bleichert	380,983	Apr. 10	1035	274	43	210
Wire rope. Delivery and stretching mechanism for machines for the manufacture of	J. Withington	383,087	May 15	1811	472 473	43	677
Wire-rope lines. Grip for elevated	A. Bleichert	380,982	Apr. 10	1032	270 271 272 273 274	43	209
Wire-rope lines. Rail for elevated	A. Bleichert	380,984	Apr. 10	1036	274	43	210
Wire-rope-making machine	A. S. Hallidie	381,365	Apr. 17	1604	429	43	329
Wire screen, &c.	D. Weesmann	383,161	May 22	1918	501	43	909
Wire-splicing machine	W. L. Haag	383,178	May 22	1942	509	43	914
Wire-stretcher	B. Erbe	380,750	Apr. 10	667	185	43	142
Wire-stretcher	J. H. McMahon and D. D. Mangum	381,569	Apr. 24	1912	504	43	407
Wire-stretcher	J. F. Shipley	380,531	Apr. 3	337	96	43	89
Wire stretcher and tension. Combined	M. F. Connett, Jr.	381,408	Apr. 17	1752	468	43	357
Wire stretcher or clamp	W. Havens	384,255	June 12	822	168	43	1250
Wire-stretching machine	C. V. Pugh	384,929	June 19	1622	421	43	1446
Wire-tightener and staple driver and extractor. Combined	F. G. McHenry and H. Martin	383,970	June 5	192	56	43	1157
Wire twisting and winding mechanism	B. Scarles	380,667	Apr. 3	544	149	43	109
Wire-twisting tool	C. B. Rumsey	382,666	May 8	1199	311	43	749
Wire-weaving looms. Lathe-pitman for	S. O. Greening	383,879	June 5	41	14	43	1129
Wire with layers of different materials. Machine for covering	J. T. Van Gestel	380,610	Apr. 3	457	120	43	93
Wires. Tightener and fastener for	A. L. Thompson	381,295	Apr. 17	1494	403	43	307
Wood. Apparatus for impregnating	P. H. Dudley	381,682	Apr. 24	2073	542	43	440
Wood, &c. Composition for preserving	P. L. Quarante and E. D'Escalonne	380,583	Apr. 3	432	.....	43	88
Wood-cutting machine	W. Merrill	384,704	June 19	1363	340	43	1385
Wood-splitting machine	C. H. Barrows	383,690	May 22	2096	713	43	1066
Wood working and planing machine	E. H. Lee	385,125	June 26	1933	493	43	1518
Wood-working machine	E. W. Snedeker	382,330	May 8	875	171	43	647
Wool. Apparatus for carbonizing the vegetable matter in	C. Schrebler	380,598	Apr. 3	442	125	43	90
Wool. Carbonizing vegetable matter in	C. Schrebler	380,599	Apr. 3	443	.....	43	90
Wool-combing machine	W. Lund. (Reissue)	10,930	May 15	1822	476	43	879
Wool. Machinery for washing	W. Cook	383,515	May 29	2453	650	43	1015
Wool-washing machine. Automatic	F. Williams	380,470	Apr. 3	241	65	43	49
Wrench: *See* Chain-wrench. Pipe-wrench.							
Wrench	J. D. Abbott	383,334	May 22	2164	572	43	955
Wrench	B. T. Bryan	384,743	June 19	1350	352	43	1304
Wrench	M. E. Campfield	380,859	Apr. 10	834	226	43	173
Wrench	J. H. Christie	381,313	Apr. 17	1378	368	43	291
Wrench	J. H. and F. L. Coes	382,136	May 1	384	100	43	561
Wrench	A. F. M. Garrett and F. Frank	383,049	May 15	1756	454	43	867
Wrench	B. R. Hagar	382,975	May 15	1616	423	43	841
Wrench	J. S. Lang	384,451	June 12	911	227	43	1302
Wrench	W. C. Perkins	384,467	June 12	993	241	43	1306
Wrench	H. M. Ryder	380,353	Apr. 3	75	24	43	18
Wrench	W. L. Tobey	380,735	Apr. 10	650	180	43	139
Wringer: *See* Mop-wringer.							
Wringer	J. L. Miller	381,158	Apr. 17	1367	349	43	271
Yarn. Balance apparatus for ascertaining counts or numbers of	E. Stanb	380,626	Apr. 10	783	214	43	164
Yarn. Machine for making slivers for the production of clouded	J. F. Henry	384,624	June 19	1177	310	43	1300
Yarn. Making slivers for the production of clouded	J. F. Henry	384,690	June 19	1274	334	43	1370
Yoke fastening. Neck	A. P. and W. C. Koch	380,492	Apr. 3	270	74	43	56
Yoke for connecting animals	W. Carmichael	381,332	Apr. 17	1549	418	43	318
Yoke. Ox	J. S. Valentine	382,570	May 8	1058	288	43	720
Yokes for cable roads. Construction of subway	S. Gibson	382,909	May 15	1608	420 421	43	839
Zinc. Amalgamating	E. M. Hewett	385,309	June 26	2215	.....	43	1574
Zinc ores. Reducing	G. M. Westman	383,208	May 22	1972	518 519	43	989

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Advertising-picture frame	F. H. Durell	18,365	Apr. 24	43	394
Apron. Miss's	L. Roys	18,319	May 15	43	709
Badge	E. A. Crawford	18,407	June 26	43	1460
Badge	F. D. Keyser	18,393	June 19	43	1358
Badge for hats	C. J. Heller	18,349	Apr. 10	43	139
Basque	H. F. Duke	18,388	June 19	43	1351
Basque. Lady's	M. Turner	18,333	May 15	43	709
Bonnet and millinery stand	J. B. Clifford	18,379	June 12	43	1242
Book-cover protector	C. W. Stiff and J. Watrous	18,298	May 1	43	514
Bottle	R. M. Atwater	18,321	Apr. 3	43	2
Bottle	A. M. Foster	18,309	May 15	43	739
Bottle	W. M. Garton	18,390	June 19	43	1351
Bottle or jar	T. B. Atterbury	18,218 to 18,220	Apr. 3	43	2
Bottle-stopper	S. P. Weld	18,405	June 19	43	1338
Box	O. P. Hamborg and G. O. Weding	18,340	Apr. 10	43	139
Broom holder. Whisk	G. C. Varwig	18,374	June 5	43	1139
Brush	L. D. Grant	18,261	Apr. 17	43	254
Brush. Bath	C. J. Bailey	18,222	Apr. 3	43	2
Brush cases. Air	C. L. Burdick	18,339	May 22	43	889
Builders' hardware. Ornamentation of	T. Villago	18,357	May 29	43	967
Burial-casket	L. Stein	18,413	June 26	43	1460
Burner. Nursery	C. T. Martin	18,274	Apr. 24	43	304
Button-hook	S. Cottle	18,331	May 22	43	889
Button-fastener	W. G. Slater	18,281	Apr. 24	43	304
Calendar	F. Mitchell	18,273	June 5	43	1139
Carpet	J. Christie	18,308	May 15	43	739
Carpet	J. L. Folsom	18,223 to 18,234	Apr. 3	43	2
Carpet	O. Heinigke	18,235	Apr. 3	43	2
Carpet	O. Heinigke	18,399	June 19	43	1358
Carpet	H. Hunt	18,236	Apr. 3	43	2
Carpet	E. Poole	18,294	May 1	43	514
Carpet	E. G. Sauer	18,296 18,297	May 1	43	514
Carpet-sweeper casing	W. J. Drew	18,360	June 5	43	1139
Carpet-sweeper casing	W. J. Drew	18,360	June 12	43	1242
Carpet-sweeper casing	W. J. Drew	18,408	June 26	43	1460
Caster. Furniture	E. Garet	18,256	Apr. 24	43	304
Certificate. Business	C. S. Garney	18,247	Apr. 10	43	139
Chamber-vessel	J. A. Davis	18,260	Apr. 17	43	254
Christmas-tree ornament	P. Knorpp and G. A. Mayer	18,238	Apr. 3	43	2
Cigar-stand and ash-receiver	F. W. Moulton	18,240	Apr. 3	43	2
Clamp-frame	P. A. Whitney	18,378	June 5	43	1139
Cloak. Infant's	E. L. Jenkins	18,293	May 1	43	514
Clock-dial	A. Bannatyne	18,264	Apr. 24	43	304
Clock-dial	A. Bannatyne	18,280	May 8	43	636
Clock-dial	A. Bannatyne	18,306 18,307 18,292 18,293	May 15	43	739
Clock-dial	O. Bartel		May 1	43	514
Clock-dial	W. Lawson	18,272	Apr. 24	43	304
Coffee-mill box	M. B. Willcox	18,243	Apr. 3	43	2
Coffee or tea pot	L. J. Richards	18,355	May 29	43	967
Coffin-plate	O. McCarthy	18,273	Apr. 24	43	304
Cord	L. Binns	18,244	Apr. 10	43	139
Costume. Girl's street	E. L. Jenkins	18,287	May 1	43	514
Costume. Lady's	H. F. Duke	18,245 18,246	Apr. 10	43	139
Costume. Lady's	H. F. Duke	18,284	May 1	43	514
Costume. Lady's	M. Kent	18,252	Apr. 10	43	139
Costume. Lady's	M. B. Kent	18,289	May 1	43	514
Costume. Lady's	E. Moran	18,317 18,318	May 15	43	709
Costume. Lady's	J. Sheils	18,305	May 8	43	636
Costume. Lady's	J. Sheils	18,321	May 15	43	709
Costume. Lady's	J. Sheils	18,346	May 22	43	889
Costume. Lady's	J. Sheils	18,396	June 12	43	1242
Costume. Lady's princess	E. Moran	18,291	May 1	43	514
Costume. Miss's	M. B. Kent	18,335	May 22	43	889
Costume. Miss's	L. Sederholm	18,256	Apr. 10	43	139
Cuff. Shirt	D. O'Brien	18,343	May 22	43	889
Cuspidor	H. Beeston	18,269	Apr. 17	43	254
Dentifrice-case	J. C. Moore	18,354	May 29	43	967
Desk. Cabinet	F. A. Coffin	18,227	Apr. 3	43	2
Desk-cabinet	F. S. Thomas	18,302	May 15	43	709
Desk. Writing	F. A. Coffin	18,226	Apr. 3	43	2
Dish	W. G. Walter	18,358	May 29	43	967

Alphabetical list of designs, April to June, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Door-trimming	G. J. Wells	18,351	May 22	43	890
Educational model	U. G. Houston	18,409	June 26	43	1460
Envelopes. Back of	J. Stern	18,414	June 26	43	1460
Fabric	B. H. Miller	18,395	June 19	43	1352
Fabric	C. B. Smith	18,347 to 18,350	May 22	43	890
Fire-basket	L. Kahn and R. Thiem	18,367	June 5	43	1120
Fringe	G. S. Hensel, L. D. Valetton, and F. E. Cook.	18,365	June 5	43	1120
Fringe	G. S. Hensel, L. D. Valetton, and F. E. Cook.	18,366	June 5	43	1120
Game-tablets. Ornamentation of	J. W. Spalding	18,383	June 12	43	1242
Glassware, &c. Ornamental border for	T. G. Hawkes	18,411 18,419	June 26	43	1460
Glassware, &c. Ornamentation of	T. G. Hawkes	18,301	May 8	43	636
Gown. Lady's tea	J. Sheils	18,267 18,268	Apr. 24	43	304
Gown. Tea	E. Moran	18,255	Apr. 10	43	190
Gum. Chewing	W. D. Chase	18,396	June 19	43	1352
Hame attachment	J. S. Schott	18,300	May 8	43	636
Handle for forks, &c	G. W. Shiebler	18,345	May 22	43	890
Jar	W. H. Barr	18,387	June 12	43	1242
Knit fabrics. Ornamentation of	J. P. Harriman	18,223 to 18,225	Apr. 3	43	2
Knit fabrics. Ornamentation of	J. P. Harriman	18,361 to 18,364	June 5	43	1120
Laces. Exhibit for shoe	W. Paton	18,389	June 12	43	1242
Lamp	S. Clarke	18,303	May 8	43	636
Lamp-fount	A. Patitz	18,378	June 12	43	1242
Lantern-body	F. L. Pisch	18,262	Apr. 17	43	254
Match	L. Kittinger	18,400	June 19	43	1352
Oil-cloth	C. T. and V. E. Meyer	18,270	Apr. 24	43	304
Oil-cloth	C. T. and V. E. Meyer	18,275 to 18,280	Apr. 24	43	304
Oil-cloth	C. T. and V. E. Meyer	18,336 to 18,342	May 22	43	890
Oil-cloth	C. T. and V. E. Meyer	18,370 18,371	June 5	43	1120
Organ-stop knob	M. Clark	18,330	May 22	43	890
Pen and pencil case	T. Richards	18,410	June 26	43	1460
Plane cutter. Bench	A. Fales	18,381	June 12	43	1242
Press frame. Cutting or forcing	J. W. Brown, Jr	18,359	June 5	43	1120
Quilting	C. T. Wagner	18,401 to 18,404	June 19	43	1352
Quilting	C. T. Wagner	18,415 18,416	June 26	43	1460
Radiator	H. C. Hodges	18,310	May 15	43	760
Radiator	C. H. Hodges	18,312 18,313	May 15	43	760
Radiator	J. B. Pierce and J. Bond	18,241	Apr. 3	43	2
Radiator ornamentation	C. H. Hodges	18,311	May 15	43	760
Radiator ornamentation	C. H. Hodges	18,314	May 15	43	760
Railway-rail	W. Wharton, Jr., and E. Samuel	18,324 to 18,328	May 15	43	760
Range. Cooking	R. F. Schermerhorn and F. S. Weller	18,254	Apr. 10	43	190
Rug	A. Petzold	18,397 to 18,399	June 19	43	1352
Sheet metal. Ornamentation of	A. I. Griggs	18,391	June 19	43	1352
Sidewalk dead-light frame	P. H. Jackson	18,286	May 1	43	514
Sign-box	G. E. Meyer	18,272	June 5	43	1120
Skirt	L. Roys	18,385	June 13	43	1242
Skirt. Walking	L. Roys	18,320	May 15	43	760
Skirt. Walking	L. Roys	18,344	May 22	43	890
Sleigh. Coupelet	J. Kingsbury	18,237	Apr. 3	43	2
Slipper-vamp	H. L. Hiller	18,384	June 12	43	1242
Spool-cabinet	E. R. Bullock	18,388	June 19	43	1351
Spoon	G. I. Mix	18,290	May 1	43	514
Spoon, fork, &c	R. H. Klingel	18,315 18,316	May 15	43	760
Stove. Cooking	W. J. Andrews	18,263	Apr. 24	43	304
Stove. Cooking	J. L. Gobeille	18,332	May 22	43	890
Stove. Cooking	J. L. Gobeille	18,334	May 22	43	890
Stove. Cooking	W. J. Krep and C. Wipfler	18,251	Apr. 10	43	190
Stove. Cooking	E. J. King	18,302	May 8	43	636
Stove. Cooking	J. A. Price	18,304	May 8	43	636
Stove. Gas or vapor	C. A. and L. Stockstrom	18,257 18,258	Apr. 10	43	190
Stove. Heating	J. L. Gobeille	18,333	May 22	43	890
Stove. Heating	W. H. Wilkinson	18,377	June 5	43	1120
Thermometer-back	H. L. Welland	18,405	June 19	43	1352
Tile	E. Whalley	18,375	June 5	43	1120
Toilet-case	G. C. Varwig	18,242	Apr. 3	43	2
Toy bank	J. A. Graff	18,352	May 29	43	987
Trimming	B. Lipper	18,253	Apr. 10	43	190
Trimming	J. Maidhof	18,340	June 5	43	1120
Type	C. E. Heyer	18,250	Apr. 10	43	190

Alphabetical list of designs, April to June, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Type	E. Lauschke	18,239	Apr. 3	43	2
Type	E. Lauschke	18,271	Apr. 24	43	304
Type. Font of printing	W. W. Jackson	18,269	Apr. 24	43	304
Type. Font of printing	E. Lauschke	18,394	June 19	43	1352
Type ornaments. Font of combination	C. E. Heyer	18,285	May 1	43	514
Walls. Surface ornamentation of	F. Koskul	18,368	June 5	43	1120
Watch-charm	E. Terry	18,356	May 29	43	987
Whisk-holder and match-safe	J. F. Lockwood	18,353	May 29	43	987
Window-guard	J. Pirkl	18,293	May 1	43	514
Wrap. Lady's	E. Moran	18,292	May 1	43	514
Wrapper. Lady's	L. Roys	18,295	May 1	43	514

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Anæsthetic compound. Certain	U. K. Mayo	15,426	May 8	43	698
Antiseptic chemical compound	Phénique Chemical Company	15,545	May 29	43	1283
Aperient water. Natural	A. Saxlehner	15,395	Apr. 24	43	324
Bale-ties. Wire	Trenton Iron Company	15,343	Apr. 3	43	8
Beds. Folding	W. T. Salter	15,589	June 5	43	1139
Beer	V. Blatz	15,349	Apr. 10	43	139
Beer	Cramer & Kersten	15,634	June 26	43	1469
Beer	A. Gunnison, Son & Company	15,464	May 15	43	709
Beer	J. Schlitz Brewing Company	15,646	June 26	43	1469
Beer	F. Seely	15,553	May 29	43	1283
Beer, ale, and porter	J. L. Straus & Bro	15,622	June 19	43	1299
Beer. Lager	Gipps Brewing Company	15,570	June 5	43	1139
Beer. Lager	E. G. Schlieder	15,342	Apr. 3	43	8
Beer, soda, and mineral waters. Lager	Ludorff & Necke	15,594	June 12	43	1283
Belting. Leather	W. S. Nott Company	15,510	May 22	43	1283
Beverages. Malt and carbonated	J. M. Donnelly	15,527	May 29	43	1283
Biscuits for dogs, horses, cattle, and other animals	G. H. Benner & Co	15,366	Apr. 17	43	354
Bitters	Durant & Co	15,423	May 8	43	698
Bitters and blood-tonic. Pulmonary	B. A. Scotte	15,356	Apr. 10	43	139
Blacking. Boot and shoe	C. T. Kenney, J. Donovan, and W. K. Redway	15,466	May 15	43	709
Blood and liver and for rheumatism. Preparation of herbs used as a remedy for diseases of the	C. Marks	15,339	Apr. 3	43	8
Boilers. Compound for preventing incrustation and for removing scale in	Lowis Manufacturing Company	15,466	May 1	43	514
Boilers. Safety fusible plugs for	G. Van Wagenen	15,623	June 19	43	1299
Boilers. Steam and hot-water	Pierce, Butler & Pierce Manufacturing Company.	15,410	May 1	43	514
Boots and shoes	M. Sam & Co	15,367	Apr. 17	43	354
Boots and shoes. Leather	T. Rice & Co	15,550	May 29	43	1283
Boots and shoes. Leather, cloth, and rubber	J. H. Hanan	15,571	June 5	43	1139
Boots and shoes. Men's	Chase, Merritt & Co	15,381	Apr. 24	43	324
Brushes and polishers. Tooth	Horsey Manufacturing Co	15,574	June 5	43	1139
Brushes and polishers. Tooth	Horsey Manufacturing Co	15,575	June 5	43	1139
Butter	Pfister & McKey	15,600	June 12	43	1283
Canned green corn	R. Reiff	15,373	Apr. 24	43	324
Canned oysters and vegetables	S. D. Warfield	15,370	Apr. 17	43	354
Canned tomatoes	Starr & Bro	15,358	Apr. 10	43	139
Canned vegetables, corn, tomatoes, and fruits	J. H. Preston & Sons	15,398	Apr. 24	43	324
Cans and glass vessels. Wood-incased	W. D. W. Miller	15,576	June 5	43	1139
Carriages. Pleasure	Healey & Co	15,365	Apr. 17	43	354
Catarrh remedy	I. B. Cushing	15,332	Apr. 3	43	8
Chains. Filled gold	W. H. Robinson & Co	15,579	June 5	43	1139
Champagne	E. Irroy	15,535	May 29	43	1283
Cheroots, cigars, and cigarettes	P. Whitlock	15,624	June 19	43	1299
Cigarettes	Kinney Tobacco Company	15,336	Apr. 3	43	8
Cigarettes	Kinney Tobacco Company	15,337	Apr. 3	43	8
Cigarettes	Kinney Tobacco Company	15,338	Apr. 3	43	8
Cigars	M. Barranco & Co	15,563	June 5	43	1139
Cigars	M. Barranco & Co	15,564	June 5	43	1139
Cigars	El Modelo Cigar Manufacturing Co	15,566	June 5	43	1139
Cigars	H. R. Kelly & Co	16,465	May 15	43	709
Cigars	Reid, Murdoch & Fischer	15,547	May 29	43	1283
Cigars	Reid, Murdoch & Fischer	15,548	May 29	43	1283
Cigars	Reid, Murdoch & Fischer	15,549	May 29	43	1283
Cigars	J. Elwin	15,585	June 12	43	1283
Cigars and smoking and chewing or plug tobacco	Irwin & Co	15,536	May 29	43	1283
Cigars, cigarettes, and smoking and chewing tobacco	M. D. Neumann	15,578	June 5	43	1139
Cigars, cigarettes, smoking and chewing tobacco, and snuff	Grommes & Ullrich	15,325	Apr. 3	43	8
Cigars. Key West	Tobyhanna and Lehigh Lumber Company.	15,648	June 26	43	1469
Clothes-pins	Bierman, Heidelberg & Co	15,456	May 15	43	709
Clothing and overcoats. Outer	Jumbo Coal and Coke Co	15,641	June 26	43	1469
Coal and coke	North River Coal and Wharf Company.	15,469	May 1	43	514
Coal. Anthracite and bituminous	Benedorp & Co	15,479	May 22	43	1283
Cocoa and chocolate. Preparation of	Benedorp & Co	15,649	June 26	43	1469
Cocoa. Soluble	Chase & Sanborn	15,457	May 15	43	709
Coffee	Enterprise Coffee Company	15,469	May 15	43	709
Coffee. Roasted	Enterprise Coffee Company	15,468	May 15	43	709
Coffee. Roasted	Richardson Mineral Paint Works	15,512	May 22	43	1283
Colors of all shades and tints. Mortar	Allen & Hanburys	15,382	Apr. 3	43	8
Confectionery and medicated confectionery	M. D. Saxe	15,551	May 29	43	1283
Confectionery. Certain named	Orford Copper Company	15,511	May 22	43	1283
Copper. Refined	Orford Copper Company	15,617	June 19	43	1299
Copper. Refined	Orford Copper Company	15,618	June 19	43	1299
Copper. Refined	Whitall, Tatum & Co	15,451	May 8	43	698
Corks	Tuthill & Stoddard	15,446	May 8	43	698
Corn and succotash. Preserved	C. A. Griswold	15,493	May 22	43	1283
Corsets	C. A. Griswold	15,494	May 22	43	1283
Corsets	Shepard, Norwell & Co	15,619	June 19	43	1299

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Corsets and other white underwear	Rosenthal, Fleischer & Co	15,515	May 22	43	699
Cotton and woolen fabrics. Woven	China and Japan Trading Company	15,464	May 22	43	699
Cotton fabrics of all kinds	Lancaster Mills	15,505	May 29	43	699
Cough-drops	G. W. Pepper	15,371	Apr. 17	43	254
Cultivator	A. Baldwin & Co	15,455	May 15	43	709
Dental goods and materials of all kinds	S. S. White Dental Manufacturing Company.	15,474	May 15	43	709
Dentifrices	J. C. Moore	15,506	May 22	43	699
Disinfectant. Liquid and powder	W. Pearson & Co	15,508	June 12	43	1242
Dowle or finely-divided portions of feathers resembling down.	C. M. Hawkins & Co	15,532	May 29	43	969
Draftsmen and engineers. Certain supplies and instruments for	E. G. Soltmann	15,555	May 29	43	969
Dress-shields	A. H. Brinkmann	15,610	June 19	43	1352
Dress-shields	I. B. Kleinert	15,386	Apr. 24	43	394
Dress-shields	I. B. Kleinert	15,387	Apr. 24	43	394
Dress-shields	I. B. Kleinert	15,388	Apr. 24	43	394
Dress-shields	E. F. Hill	15,436	May 8	43	626
Embalming-fluid	J. Olcovich	15,613	June 19	43	1352
Emollient compound	P. Arata	15,471	May 15	43	709
Envelopes	Kilgore & Wilson	15,360	Apr. 17	43	254
Extract of sarsaparilla compound, extract of Jamaica ginger, liver and kidney pills, and cough sirup.	Bloomingdale & Levy	15,589	June 12	43	1242
Extracts, perfumes, oils, and soaps	Bloomingdale & Levy	15,631	June 26	43	1469
Extracts, perfumes, oils, and soaps	Bloomingdale & Levy	15,632	June 26	43	1469
Extracts, perfumes, oils, and soaps	E. Billaland	15,633	June 26	43	1469
Eye-water	Baker Wire Company	15,630	June 26	43	1469
Fence-cable. Barbed	Cincinnati Desiccating Company	15,361	Apr. 17	43	254
Fertilizer	Shute & Merchant	15,330	Apr. 3	43	2
Fish. Boneless	Marshall, Kennedy & Co	15,374	Apr. 17	43	254
Flour	Marshall, Kennedy & Co	15,396	Apr. 24	43	394
Flour	Marshall, Kennedy & Co	15,407	May 1	43	514
Flour. Self-raising	A. H. Staiger & Co	15,469	May 15	43	709
Flour. Wheat	Bourne, Graham & Fell	15,445	May 8	43	626
Flour. Wheat	G. V. Hecker & Co	15,362	Apr. 17	43	254
Food. Condiment for animal	Woolrich & Co	15,573	June 5	43	1129
Gin, wine, whisky, rum, liqueurs, brandy, and other similar liquors.	Boord & Son	15,328	Apr. 3	43	2
Ginghams	Berkshire Manufacturing Company	15,381	May 29	43	969
Ginghams, tickings, and all cotton goods	J. Farnum & Co	15,584	June 12	43	1242
Glucose, grape-sugar, and corn-sirup	American Glucose Company	15,509	May 29	43	969
Gum. Chewing	C. T. Heisel	15,627	June 26	43	1460
Hair-tonic	M. M. Harper	15,533	May 29	43	969
Hats	Triest & Co	15,572	June 5	43	1129
Hats. Men's soft and stiff fur and wool	Cook, Lyman, Smith & Company	15,344	Apr. 3	43	2
Hepatic compound	J. F. Neal	15,331	Apr. 3	43	2
Herbs to be used as a tea. Composition of	Quaker Remedies Co	15,597	June 19	43	1242
Horse and mule shoes	Greenwood Horse Shoe Company	15,373	Apr. 17	43	254
Horseshoe-nails	Simmons Hardware Company	15,463	May 15	43	709
Hose. Hydraulic	Eureka Fire Hose Company	15,610	June 19	43	1352
Hose. Rubber	Harper & Reynolds Company	15,598	May 29	43	969
Hosiery	O. Heinze & Co	15,496	May 22	43	699
Hosiery	E. Scheitlin & Co	15,351	Apr. 10	43	139
Hosiery	Wex & Söhne	15,412	May 1	43	514
Incrustation preventive and remover. Boiler	Imperial Chemical Co	15,379	Apr. 17	43	254
Isinglass, gelatine, and gelatinous substances	G. P. Swinborne & Co	15,395	Apr. 24	43	394
Isinglass, gelatine, and gelatinous substances	G. P. Swinborne & Co	15,447	May 8	43	626
Knit wearing-apparel	Lackawana Mills	15,448	May 8	43	626
Lamp-chimneys	Minneapolis Glass Company	15,501	May 22	43	699
Lamp chimneys and wicks for certain lamps	C. S. Upton	15,391	Apr. 24	43	394
Lard	Rohe & Brother	15,393	Apr. 24	43	394
Lard	Rohe & Brother	15,341	Apr. 3	43	2
Laundry preparations	J. Ascough	15,645	June 26	43	1469
Liniment	W. J. Hughes	15,583	June 12	43	1242
Liniment, ointment, and condition powders	T. Veasie	15,434	May 8	43	626
Liniments	F. H. Reed	15,604	June 12	43	1242
Medical compound for aiding digestion and curing dyspepsia.	New York Pharmacal Association	15,442	May 8	43	626
Medical compound for the cure of certain named diseases	C. F. Kittredge	15,368	Apr. 17	43	254
Medical compounds for curing skin diseases	B. Jaffé & Darmstaedter	15,538	May 29	43	969
Medical powders	C. F. Cleaveland	15,478	May 22	43	699
Medical tea	D. Beck & Co	15,485	May 22	43	699
Medicated food for animals	F. E. Sanborn	15,348	Apr. 10	43	139
Medicated foods	A. Horlick	15,639	June 26	43	1469
Medicinal extracts, pills, elixirs, and chemicals	Hance Brothers & White	15,587	June 12	43	1242
Medicinal oil or liniment	Acrsman & Son	15,364	Apr. 17	43	254
Medicinal preparation for the cure of diseases of the blood and skin	E. Lilly & Company	15,418	May 8	43	626
Medicinal preparation for uterine diseases	Dice Chemical Company	15,503	June 12	43	1242
Medicinal preparations generally	H. M. O'Neil	15,638	June 26	43	1469
Medicine and lung-healer. Pulmonary	D. F. Powell	15,369	Apr. 17	43	254
Medicine. Antiseptic or blood-purifying	H. G. Grisbaugh	15,355	Apr. 10	43	139
Medicine. Cough	M. L. Keyes	15,586	June 12	43	1242
Medicine. Cough	J. McLeish	15,537	May 29	43	969
Medicine. Expectorant	W. H. Riker	15,541	May 29	43	969
Medicine for dyspepsia and pulmonary diseases	Hunt Kiddie Company	15,514	May 22	43	699
Medicine for horses and cattle	P. J. Lolmer	15,366	Apr. 17	43	254
Medicine for internal use and for certain diseases. Liquid	B. Fragner	15,592	June 12	43	1242
Medicine for the cure of rheumatism and chronic blood diseases.	C. F. Kirkendall	15,589	June 5	43	1129
Medicine for the ear. Liquid	J. D. Howe & Co	15,589	June 12	43	1242
Medicine. Tonic	J. M. Alloways	15,433	May 8	43	626
Medicine. Tonic	H. Ballantine	15,626	June 26	43	1469
		15,628	June 26	43	1469

Alphabetical list of trade-marks, April to June, inclusive—Con...

Title.	Name.	No.	Date.	Vol.	Page.
Metal. Anti-friction	American Improved Anti-Friction Metal Company.	15,399	May 1	43	514
Metal articles for decoration and for toilet and table use	W. J. Miller and H. Berry	15,648	June 26	43	1469
Mineral water and mineral salts and pastils and troches made from the salts.	Koenig Wilhelm's-Felsenquellen	15,599	June 19	43	1352
Nails. Horse	Livingston Nail Co	15,508	May 29	43	969
Nails. Horse	C. M. McClung & Co	15,543	May 29	43	969
Nails. Wire	Pittsburgh Wire Nail Company	15,376	Apr. 17	43	254
Nets. Leather fly	D. Fishbeck & Son	15,612	June 19	43	1352
Newspapers	J. S. Conroy	15,393	Apr. 24	43	394
Oil. California olive	Merriman Manufacturing Company	15,439	May 8	43	626
Oil. Illuminating and lubricating	Kosmic Oil Co	15,509	May 29	43	969
Oil. Olive	Castanare Bros	15,459	May 15	43	709
Oysters, fruits, and vegetables in contradistinction to canned or preserved goods. Fresh	C. H. Penrose & Co	15,512	May 29	43	969
Paint. Metallic	Prince's Metallic Paint Company	15,646	May 29	43	969
Paper bags	Union Bag and Paper Company	15,556	May 29	43	969
Paper bags	Union Bag and Paper Company	15,559	May 29	43	969
Paper bags	Union Bag and Paper Company	15,560	May 29	43	969
Paper in sheets and pads. Blotting	H. S. Crocker & Co	15,636	June 26	43	1469
Paper. Toilet	J. T. Moore	15,577	June 5	43	1129
Paper. Toilet and wrapping	Albany Perforated Wrapping Paper Company.	15,347	Apr. 10	43	139
Paper. Water-closet	H. S. Crocker & Co	15,635	June 26	43	1469
Paper. Water-closet	H. S. Crocker & Co	15,637	June 26	43	1469
Pavements. Artificial stone and cement and concrete	W. Krause & Son	15,530	May 29	43	969
Pens, except those made of precious metals or in imitation of the same. Metallic	D. Leonardt & Co	15,389	Apr. 24	43	394
Pens. Gold	J. Foley	15,530	May 29	43	969
Perfumery	Dennan French Perfumery Company.	15,467	May 29	43	969
Pharmaceutical and medical preparations generally	B. Fragner	15,350	Apr. 10	43	139
Pharmaceutical preparations	A. Paradis	15,370	Apr. 17	43	254
Photographic paper for making prints	E. & H. T. Anthony & Company	15,460	May 1	43	514
Photographic purposes. Albumen paper for	J. A. Kaier	15,457	May 8	43	626
Pills	Scotch Oats Essence Company	15,443	May 8	43	626
Pills, liniment, tonic, cough-sirup, and female regulator	D. R. Fly & Co	15,469	May 29	43	969
Pills. Purgative	Acrsman & Son	15,417	May 8	43	626
Plaster bas-reliefs, statuary, statuettes, mouldings, and signs	Bas-Relief Manufacturing Company	15,360	Apr. 24	43	394
Plaster composition for architectural purposes	Adamant Manufacturing Company	15,476	May 29	43	969
Polish. Leather oil	H. J. Max Stoerk	15,603	June 12	43	1242
Polish or dressing. Shoe	Bulpan Cement Company	15,484	May 8	43	626
Potato-flour and potato-starch and all potato-starch products, including dextrine.	Norddeutsche Kartoffel mehl Fabrik	15,509	May 29	43	969
Powders. Condition	J. C. Gage	15,322	Apr. 3	43	2
Powders. Horse and cattle	Spencer & Brown	15,444	May 8	43	626
Preparation for assimilating food, promoting digestion, and regulating the bowels. Vegetable	J. H. Vedakis	15,475	May 15	43	709
Printed periodical publication	Seeger & Guerney Company	15,558	May 29	43	969
Quinine. Preparation of	L. B. Weld	15,440	May 8	43	626
Quinine. Preparation of	L. B. Weld	15,459	May 8	43	626
Radiators	A. A. Griffing Iron Company	15,404	May 1	43	514
Radiators	T. H. Williams and S. D. Tompkins	15,414	May 1	43	514
Radiators	T. H. Williams and S. D. Tompkins	15,599	May 29	43	969
Radiators. Steam or hot-water	Pierce Steam Heating Co	15,441	May 8	43	626
Razors. Safety	E. B. Leach	15,591	June 12	43	1242
Remedies for promoting the growth of the teeth and bones	Reynolds Manufacturing Company	15,602	June 12	43	1242
Remedy. Catarrh	F. Wertz, Jr	15,561	May 29	43	969
Remedy. Croup	H. C. Peckham	15,599	June 12	43	1242
Remedy for chicken-cholera	D. F. McKitrick	15,470	May 15	43	709
Remedy for diphtheria	A. Lagmann	15,540	May 29	43	969
Remedy for diseases of the urinary system	W. T. Lindley	15,467	May 15	43	709
Remedy for phthisis, neurasthenia, constipation, and intestinal indigestion.	Reed & Carnrick	15,601	June 12	43	1242
Remedy. Indian blood	E. H. Hopkins	15,640	June 26	43	1469
Ribbons	Johnson, Cowdin & Co	15,498	May 22	43	699
Ribbons	Johnson, Cowdin & Co	15,499	May 22	43	699
Ribbons	Johnson, Cowdin & Co	15,615	June 19	43	1352
Ribbons and piece silks	Murphy, Grant & Co	15,408	May 1	43	514
Rubber boots, shoes, umbrellas, and conducting-hose	Dunlap, Lawton & Hall	15,493	May 22	43	699
Rubber mats	New York Belting and Packing Company.	15,362	Apr. 10	43	139
Salt	J. Corbett	15,490	May 8	43	626
Salt	J. Corbett	15,491	May 8	43	626
Salt. Table and dairy	Diamond Crystal Salt Company	15,622	May 8	43	626
Salve	A. Berthold	15,480	May 22	43	699
Salve	A. Berthold	15,481	May 22	43	699
Salve	C. S. Phelps	15,544	May 29	43	969
Salve. Toilet	F. M. Towne	15,550	May 29	43	969
Sash chains. Window	Smith & Egge Manufacturing Company.	15,554	May 29	43	969
Sauces. Table	D. Warren	15,329	Apr. 10	43	139
Screws, bolts, rivets, tacks, and similar metallic fastenings	Shelton Company	15,472	May 15	43	709
Shingles. Cypress	Clark, Fairbend & Co	15,502	May 29	43	969
Shingles. Cypress	Clark, Fairbend & Co	15,504	May 29	43	969
Shirt-bosoms	J. Schloss	15,517	May 22	43	699
Shirt-bosoms	J. Schloss	15,518	May 29	43	969
Shirts	V. H. Rothschild & Co	15,510	May 29	43	969
Shoe-dressing. Liquid	E. F. S. Heath	15,625	May 8	43	626
Shoes for men, misses, ladies, and children	C. Gottlieb & Company	15,620	May 8	43	626
Signet. Useful or ornamental articles made of solid	Howard & Son	15,614	June 19	43	1352
Syrup for effervescing and other drinks. Flavoring	J. H. Barker & Co	15,620	June 19	43	1352
Syrups for coughs and colds	Marvelous Cough Syrup Company	15,395	June 12	43	1242
Skin diseases. Remedy for	J. and A. Gluring	15,324	Apr. 3	43	2

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name	No.	Date.	Official Gazette. Vol.	Pages.
Slate. Pulverized	Highland Slate Manufacturing Company.	15,304	Apr. 24	63	294
Soap	Mexican Amollin Soap Company	15,616	June 19	63	1302
Soap for laundry and general purposes. Hard	Columbia Manufacturing Company	15,582	May 29	63	1032
Soap. Hard	Butler Brothers	15,483	May 22	63	889
Soap. Harness	J. M. Gwinnell	15,495	May 22	63	889
Soap-powders	Strassheim & Jaeger	15,621	June 19	63	1303
Soap. Toilet	Maine Balsam Fir Co	15,503	May 22	63	889
Soap. Toilet and laundry	Beaver & Co	15,565	June 5	63	1119
Soap. Toilet, medicated, and commercial	R. H. McDonald Drug Company	15,542	May 29	63	1032
Soaps, cosmetics, hair-oils, and perfumes. Perfumed	W. S. Thomson	15,519	May 22	63	889
Spades, shovels, and agricultural implements	T. Drysdale & Co	15,363	Apr. 24	63	294
Spoons, forks, ladles, &c	G. I. Mix & Co	15,440	May 8	63	636
Stains for mortars and cements	S. Bowen's Sons	15,468	May 22	63	889
Staples and goods united by such staples. Metallic	Acme Staple and Machine Company	15,346	Apr. 10	63	190
Starch, blue, and other laundry preparations	J. Ascough	15,477	May 22	63	889
Starch. Laundry	Johnson & Jefferson	15,425	May 8	63	636
Stockings	W. Stärker	15,413	May 1	63	514
Stoves. Gas	Gem City Stove Company	15,531	May 29	63	978
Stoves. Liquid polish for	I. H. Reddic	15,644	June 26	63	1489
Suspenders	Swanton Suspender Company	15,377	Apr. 17	63	254
Table-ware, both hollow and flat. Metallic	Holmes & Edwards Silver Company	15,431	May 8	63	636
Table-ware. Metal	Holmes & Edwards Silver Company	15,432	May 8	63	636
Tea. Japan and Oolong	Holmes & Edwards Silver Company	15,490	May 22	63	889
Tea. Mixed	Cobb, Wight & Co	15,458	May 15	63	789
Tin plates and terne plates	Enterprise Coffee Company	15,461	May 15	63	789
Tobacco, cigars, and cigarettes. Manufactured	Merchant & Co	15,504	May 29	63	1032
Tobacco for chewing. Plug	J. A. Patterson	15,472	May 15	63	789
Tobacco, or tobacco in bulk. Plug or twist	J. H. Hargrave & Son	15,405	May 1	63	514
Tobacco. Smoking and chewing	Arnd & Bell	15,401	May 1	63	514
Tobacco. Smoking and chewing	Fishburne Bros	15,403	May 1	63	514
Tobacco. Smoking and chewing	Fishburne Bros	15,438	May 8	63	636
Tobacco, smoking-tobacco, cigars, and snuff. Plug chewing	Gradle & Strotz	15,492	May 22	63	889
Toilet application for the skin	Bitting & Hay	15,566	June 5	63	1119
Toilet preparations	L. H. Gordon	15,491	May 22	63	889
Toilet. Preparations for the	J. Ascough	15,419	May 8	63	636
Toilet-water sachet-powder	R. H. McDonald Drug Company	15,562	June 5	63	1119
Tonic for women. Liquid	E. W. Austen	15,469	May 15	63	789
Tonic nutrient beverage	Phillip Best Brewing Company	15,454	May 15	63	789
Tools. Edge	A. W. Willis & Son	15,334	Apr. 10	63	190
Tooth powder or preparation	Horsey Manufacturing Co	15,625	June 19	63	1302
Type-writing machines	Standard Typewriter Manufacturing Company.	15,497	May 22	63	889
Type-writing machines	Standard Typewriter Manufacturing Company.	15,357	Apr. 10	63	190
Type-writing machines	Standard Typewriter Manufacturing Company.	15,375	Apr. 17	63	254
Ultramarine	Standard Typewriter Manufacturing Company.	15,376	Apr. 17	63	254
Underwear. Cotton	Deschamps Frères	15,402	May 1	63	514
Underwear. Cotton	A. Cohen	15,498	May 22	63	889
Underwear. Woolen	A. Zerban	15,415	May 1	63	514
Valves. Gate	A. Zerban	15,416	May 1	63	514
Ventilators	Arthur Company	15,453	May 15	63	789
Vinegar	J. H. Reynolds	15,411	May 1	63	514
Wagons. Freight or farm	Thal & Howe	15,647	June 26	63	1489
Washing-machines	Turnbull Wagon Company	15,557	May 29	63	969
Washing-powder. Granulated	Rechnagel & Co	15,643	June 26	63	1489
Watch-cases	Riverside Soap Company	15,384	Apr. 24	63	294
Watches	Brooklyn Watch Case Company	15,522	May 29	63	969
Watches	Elgin National Watch Company	15,435	May 8	63	636
Watches	Elgin National Watch Company	15,436	May 8	63	636
Watches	Elgin National Watch Company	15,437	May 8	63	636
Watches	Elgin National Watch Company	15,439	May 8	63	636
Water. Apparatus for collecting, filtering, and storing	R. C. Sayer	15,396	Apr. 24	63	294
Whisky	Aurora Distilling Company	15,600	June 19	63	1302
Whisky	Blake, Bruce & Co	15,567	June 5	63	1120
Whisky	H. Corby	15,611	June 19	63	1302
Whisky	J. E. Davis	15,505	May 29	63	969
Wine. Champagne	G. & J. G. Smith	15,397	Apr. 24	63	294
Wine. Champagne	G. H. Mumm & Co	15,596	June 12	63	1303
Wine. Champagne	Veuve Pommery Fils & Co	15,561	June 5	63	1120
Wine. Champagne	Veuve Pommery Fils & Co	15,562	June 5	63	1120
Wine. Champagne	Veuve Pommery Fils & Co	15,605	June 12	63	1303
Wine. Champagne	Veuve Pommery Fils & Co	15,606	June 12	63	1303
Wines	Veuve Pommery Fils & Co	15,607	June 12	63	1303
Woolen and cotton fabrics for linings and outer clothing	A. Kreiser	15,392	Apr. 10	63	190
Yarns. Worsted and woolen	T. Illingworth	15,534	May 29	63	969
Yarns. Worsted, woolen, and silk	Nonantum Worsted Company	15,340	Apr. 3	63	2
Yarns. Worsted, woolen, silk, and cotton	Nonantum Worsted Company	15,566	May 22	63	889
Yeast	Nonantum Worsted Company	15,567	May 22	63	889
	H. H. Warner	15,345	Apr. 3	63	2

ALPHABETICAL LIST OF LABELS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Pages.
"Art Flowers." (For Artificial Flowers)	A. W. Maas	2,613	May 29	63	969
"Atchison Cornice Works." (For Metal Cornices, &c)	J. W. McKelvey	5,614	May 29	63	969
"Baby Cough Syrup"	Milburn & Williamson	5,588	May 1	63	514
"Bailey's Rubber Toilet Brush"	C. J. Bailey & Co	5,557	Apr. 17	63	254
"Baltimore Brand Crab-Meat"	M. V. Smith	5,590	May 8	63	636
"Bennett's Hunting Dust for Horses"	R. R. Bennett	5,565	Apr. 24	63	294
"Blackberry and Peppermint Cordial"	J. Jacobs	5,626	June 26	63	1489
"Blume's Tokayer Grape and Fruit Wine"	W. M. Blume	5,602	May 15	63	789
"Blume's Tokayer Grape and Fruit Wine"	W. M. Blume	5,603	May 15	63	789
"Bonham's Calendula Oil Compound"	J. C. Bonham	5,578	May 1	63	514
"Brilliant Coffee." (For Roasted Coffee)	Yohling & Coenen	5,563	Apr. 17	63	254
"Carey's German Dyspepsia Remedy"	J. Carey	5,601	May 29	63	969
"Carman's (Celebrated Remedy for Purifying the Blood"	W. K. Vandergrift	5,596	May 15	63	789
"Chalybeate Saline"	W. E. Warner	5,562	Apr. 17	63	254
"Cheatham's Cream Balsam," (For a Medicine)	A. B. Richards and M. V. Cheatham	5,632	June 19	63	1303
"Chinese Corn Salve"	G. L. Mansfield	5,560	May 1	63	514
"Closson's German Dyspepsia Panacea"	W. E. Closson	5,635	June 26	63	1489
"Clover Blossom Compound" (For a Blood Purifying Medicine.)	W. H. Selleck	5,649	June 26	63	1489
"Cole's Rheumatic Pain Annihilator"	C. F. Kittredge	5,612	May 29	63	969
"Corn Starch Substitute Wood Pillow"	S. Bowen's Sons	5,558	Apr. 17	63	254
"Davies' Balm of Gilead or Pectoral Balsam"	R. G. Davies	5,627	June 12	63	1303
"Dentifrice Odorata"	D. Genese	5,636	June 12	63	1303
"Diffusible Tonic"	Diffusible Tonic Company	5,603	May 22	63	889
"Dr. Button's Coffee"	J. H. Myers	5,640	June 26	63	1489
"Dr. H. M. Betts' Liver Capsules"	H. M. Betts	5,625	June 12	63	1303
"Dr. Hall's Sanitary Knitting Yarn"	Nonantum Worsted Company	5,545	Apr. 10	63	190
"Dr. Hertzberg's Harmless Bowel Corrector for Offensive Diarrhœa."	G. W. H. Calver	5,600	May 22	63	890
"Dr. Hensley's Dandelion Tonic"	Snell, Heitshu & Woodard	5,553	Apr. 10	63	190
"Dr. Martin's Health Restorer and Blood Purifier"	H. J. Martin	5,639	June 26	63	1489
"Dr. Partridge's Pain Quelier." (For a Medicine)	A. P. Partridge & Co	5,623	June 5	63	1120
"Dr. Price's Black Liniment"	R. C. Price	5,550	Apr. 10	63	190
"Dr. Price's Heart Regulator." (For a Medicine)	R. C. Price	5,548	Apr. 10	63	190
"Dr. Price's Red Liniment"	R. C. Price	5,549	Apr. 10	63	190
"Dr. Price's Stomachic Powders"	R. C. Price	5,547	Apr. 10	63	190
"Dutard's Specific." (For a Remedy for Skin Diseases)	Snell, Heitshu & Woodard	5,539	Apr. 3	63	2
"Dyspepsia Remedy"	W. W. Fithian	5,566	Apr. 24	63	294
"El Modelo Cigar Man'f'g Company"	El Modelo Cigar Manufacturing Co	5,618	June 5	63	1120
"El Modelo Cigar Man'f'g Comp"	El Modelo Cigar Manufacturing Co	5,619	June 5	63	1120
"Extra Black Bird Gin"	J. de Fremery & Co	5,559	Apr. 17	63	254
"F. S. Peacock's Aromatic Extract of Blackberry and Ginger"	W. C. Peacock	5,560	Apr. 17	63	254
"Florida Syrup of Tamarinds and Prunes"	H. J. Heister	5,542	Apr. 10	63	190
"Fly-paper"	H. S. Winship	5,608	May 22	63	890
"Fragrant Cologne"	J. Jacobs	5,638	June 26	63	1489
"Fruit Phosphates." (For a Syrup)	Hance Brothers & White	5,605	May 22	63	890
"G. L. McGreevy's Compound Tonic"	G. L. McGreevy	5,606	May 22	63	890
"Genuine Perfect Fitting Chilled Edge Share." (For Plows)	Gibbs & Ball Plow Company	5,620	June 5	63	1120
"German Cocoa Powder"	Hawley & Hoops	5,611	May 29	63	969
"German Cocoa Powder"	Hawley & Hoops	5,622	June 5	63	1120
"Glycerine Bay Rum"	S. M. Binder	5,571	May 1	63	514
"Golden Ridge Apple Wine"	B. Atwater	5,625	June 12	63	1302
"Golden Seal and Sandal Wood Combination." (For a Medicine.)	Milburn & Williamson	5,561	May 1	63	514
"Hunt's Cure for Skin Diseases and Eruptions"	A. B. Richards and M. V. Cheatham	5,631	June 19	63	1303
"Improved Stencils"	J. Trischka	5,561	Apr. 17	63	254
"Kangaroo." (For Paper Bags)	Union Bag and Paper Company	5,616	May 29	63	969
"Kickapoo Springs Mineral Water"	C. H. Schmidt and W. B. Starbird	5,570	Apr. 24	63	294
"King's Purely Vegetable Cough Medicine."	S. H. King	5,537	Apr. 3	63	2
"Kleinert's Celebrated Indestructible." (For Dress Shields)	I. B. Kleinert	5,5-9	May 8	63	636
"La Reata's French Shampoo Cream"	R. R. Westcott	5,633	June 19	63	1303
"La Segna." (For Cigars and Cigarettes)	H. R. Kelly & Co	5,594	May 15	63	789
"Lavender Cream." (For the Toilet)	J. A. Beebe	5,564	Apr. 24	63	294
"Le Boro's Scorvin Cure"	J. G. Le Boro & Co	5,543	Apr. 10	63	190
"Lemon and Orange Elixir"	Pemberton Medicine Co	5,546	Apr. 10	63	190
"Lemon Honey." (For a Pulmonary Remedy)	J. F. Seaman	5,551	Apr. 10	63	190
"Linn." (For Paper Bags)	Union Bag and Paper Company	5,617	May 29	63	969
"Locher's Renovated Rheumatic Remedy"	C. A. Locher	5,570	May 1	63	514
"Manganese and Iron." (For a Medical Preparation)	A. Day	5,608	May 22	63	890
"Manitou Natural Mineral Table Water"	Manitou Mineral Water Company	5,544	Apr. 10	63	190
"Marvelous Cough Syrup"	Marvelous Cough Syrup Company	5,630	June 12	63	1303
"Massaro Tonique for the Hair"	M. M. Harper	5,631	June 5	63	1120
"Mrs. C. Derman's Ointment"	C. Derman	5,567	May 8	63	636
"Mrs. M. A. Kerr's Cough Syrup"	M. A. Kerr	5,567	Apr. 24	63	294
"National Democratic Badge 1884 Presidential Campaign"	Reynolds Jewelry Co	5,641	June 26	63	1489
"New Discovery for Rheumatism"	J. A. Whittington	5,624	June 5	63	1120
"Norwegian Pile Cure."	W. E. Dement	5,536	Apr. 3	63	2
"Note to Pharmacists and Special Note to Physicians," (For Mixture of Gentian, Stillingia, &c.)	W. H. Griffith	5,629	June 12	63	1303
"Points of Bobbing Varnish"	Lawson Valentine Company	5,560	Apr. 24	63	294
"Rano's Dandelion Liver Pills"	F. Scisser and C. O. Rano	5,634	June 19	63	1303

Alphabetical list of labels, April to June, inclusive)—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Official Gazette. Page.
"Ready Glue"	S. M. Bixby	5,699	May 29	43	1[illegible]
"Rheumatic Cure"	L., J., and F. I. Abbott	5,701	May 15	43	1[illegible]
"Roman Cement"	L. Crowther	5,704	May 8	43	1[illegible]
"Rudolph's Phosphorized Elixir of Oats"	Horsman & Company	5,541	Apr. 10	43	1[illegible]
"Sanny Rheumatic Specific"	P. A. Sanns & Son	5,697	May 29	43	1[illegible]
"Scorching Syrup." (For a Cough)	W. Shafer	5,698	May 29	43	1[illegible]
"Special." (For Ointment)	E. B. Bunting	5,572	May 15	43	7[illegible]
"Special Favorite." (For Cigarettes)	Kinney Tobacco Company	5,573	May 1	43	51[illegible]
"Standard Stock Liniment"	F. E. Southern	5,538	Apr. 3	43	9
"Sure Venereal Cure"	Wright, Heilig & Co	5,563	May 1	43	51[illegible]
"Sweet Gum and Honey"	J. Jacobs	5,569	May 15	43	7[illegible]
"The Balm of Zoatheros." (For a Medicine)	F. Ives	5,637	June 26	43	1[illegible]
"The "Best" Tonic"	Phillip Best Brewing Company	5,570	May 1	43	51[illegible]
"The Boston Feeder." (For Nursing Bottles)	Dean, Foster & Co	5,567	Apr. 24	43	51[illegible]
"The Feather Weight." (For Dress Shields)	I. B. Kleinert	5,568	May 8	43	51[illegible]
"The Niagara White Grape Company"	The Niagara White Grape Company	5,566	May 8	43	51[illegible]
"The Sioux Indian Antiseptic." (For a Medicine)	E. G. Davies	5,565	May 15	43	7[illegible]
"Tip Top Smoking and Chewing Tobacco"	Gradle & Stretz	5,562	May 8	43	51[illegible]
"Triangular." (For Biscuits)	Van Derveer & Holmes Biscuit Company.	5,564	May 22	43	1[illegible]
"Trimble's Ozark Mountain Herb Salve"	R. F. P. Trimble	5,555	Apr. 10	43	1[illegible]
"Turner's Hair Tint"	Finlay & Brunswig	5,615	May 29	43	1[illegible]
"W. C. Allen's Nerve Balm"	L. J. Bailey, G. W. Willis, and W. C. Allen.	5,610	May 29	43	1[illegible]
"Walker's Rheumatic Cure"	J. W. Seaton	5,540	Apr. 10	43	1[illegible]
"Wanamaker's Shoe Dressing"	J. Wanamaker	5,539	Apr. 10	43	1[illegible]
"West India Balsam of Horehound and Coltsfoot"	I. W. Earnest	5,556	Apr. 10	43	1[illegible]
"West India Hair Tonic and Dandriffuge"	I. W. Earnest	5,577	May 1	43	51[illegible]
"West India Liver Elixir"	I. W. Earnest	5,574	May 1	43	51[illegible]
"West India Tonic Elixir of Sarsaparilla"	I. W. Earnest	5,575	May 1	43	51[illegible]
"White's Worm Powders." (For a Medicine)	I. W. Earnest	5,576	May 1	43	51[illegible]
"Wooldridge's Wonderful Cure"	Stockton & Willis	5,554	Apr. 10	43	1[illegible]
	Stiner, Heumber & Co	5,597	May 15	43	7[illegible]

DISCLAIMERS.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Vol.	Official Gazette. Page.
Roller coverings	Henry W. Johns	262,429	Aug. 8, 1882	May 1, 1888	43	936
Combined carriage and chair	Charles F. Fenny and Thomas J. Hobbs. (Reissue.)	8,166	Apr. 9, 1878	June 9, 1888	43	1356
Corrugated-metal rolling-shutters	James G. Wilson	296,373	Apr. 8, 1884	May 8, 1888	43	909

OFFICIAL GAZETTE

3/23.14 P.L. Bride Match

OF THE

UNITED STATES PATENT OFFICE.

VOLUME XLIV.

JULY 3 TO SEPTEMBER 25, INCLUSIVE,

1888.

WASHINGTON:
GOVERNMENT PRINTING OFFICE,
1889.

CONTENTS.

ERRATA FOR VOLUME XLIV OF THE OFFICIAL GAZETTE.

ANNOUNCEMENTS—VOLUME XLIV.

DISCLAIMERS—VOLUME XLIV.

TEXT OF THE OFFICIAL GAZETTE, JULY 3 TO SEPTEMBER 25, 1888, INCLUSIVE.

INDEX TO THE DECISIONS OF THE COMMISSIONER OF PATENTS AND OF THE UNITED STATES COURTS IN PATENT CASES.

DIGEST OF DECISIONS OF THE COMMISSIONER OF PATENTS AND OF THE UNITED STATES COURTS IN PATENT CASES.

INDEX OF PATENTS AND PATENTEES FOR THE QUARTER YEAR, JULY TO SEPTEMBER, 1888.

ERRATA.

385,527, page 60, in title, name of assignee, for "Maurice J. Sheehan" read *Maurice J. Sheahan.*

385,535, page 62, in title, residence of inventor, for "Columbiana" read *Salem.*

385,669, page 97, in title, name of assignee, for "United States Arc Gas Company" read *United States Arc Gas Lamp Company.*

386,119, page 241, in title, for "(No model)" read (*Specimens.*)

386,612, page 393, in title, after residence of inventor insert *assignor of one-half to Franklin C. Houser.*

386,766, page 432, second claim, line 2, strike out "and the rods for moving said levers" and insert the same after "yokes" in line 2, third claim.

387,174, page 559, in title, after residence of inventors insert *said Faber, Jr., assignor to said McCleane.*

387,200, page 566, in title, French patent, for "Aug. 17, 1886," read *Dec.* 16, 1886, *No.* 178,016; Belgian patent, for "Aug. 24, 1886," read *Sept.* 15, 1886, *No.* 74,344, and Italian patent, for "Aug. 31, 1886," read *Sept.* 30, 1886, *No.* 20,457.

387,244, page 584, in title, for "(No model)" read (*Specimens.*)

387,296, page 600, first claim, lines 1–2, insert *bed-plate or* between "attendant" and "bed-plates."

387,394, pages 625–626, strike out all after number—title, drawing, and claims—and insert CANCELED.

387,461, page 649, strike out all after number—title, drawings, and claims—and insert WITHDRAWN.

387,671, page 718, in title, name of assignees, for "Adam Wartham" read *Adam Warthman.*

387,967, page 805, in title, after "assignor to" insert *himself,*.

388,336, page 927, in title, residence of assignee, for "New York" read *New Jersey*, and claim 2, line 3, for "perforating" read *perforated.*

388,361, page 935, in title, strike out "Patented in England Nov. 26, 1887, No. 16,304."

388,445, page 964, in title, after "(No model)" insert *Patented in Canada June* 14, 1888, *No.* 29,365.

388,603, page 1008, in title, name of inventor, for "Joseph W. Vornick" read *Joseph W. Vorwick.*

388,695, page 1032, in title, after residence of inventor insert *assignor of one-half to J. Frank Bond, of same place.*

389,097, page 1153, third claim, line 2, strike out "switch-blocks" and insert instead *electric-circuit-changing switch*, and in fourth claim strike out "electric-circuit-changing switches" and insert *switch-blocks* instead.

389,221, page 1199, in title, name of assignee, for "E. A. Blatchford" read *E. W. Blatchford.*

389,325, page 1233, in title, name of assignee, for "Gustav A. Adler" read *Gustav A. Edler.*

389,385, page 1250, in title, name of assignee, for "E. S. Blatchford" read *E. W. Blatchford.*

389,507, page 1282, in title, name of assignee, for "Ira S. Milliken" read *Ira S. Millikin.*

389,551, page 1303, first claim, line 4, for "cable N" read *cable M.*

389,829, page 1384, in title, after "assignor" insert *of one-half.*

389,849, pages 1391–1392, strike out all after number—title, drawings, and claims—and insert CANCELED.

389,857, page 1394, in title, for "assignor of one-half, by mesne assignments, to Charles A. Kellogg, Newton, Mass.," read *assignor, by direct and mesne assignments, to the American Electric Register Company, Portland, Maine.*

390,195, page 1504, in claim, line 5, for "number" read *members.*

18,562, Design, page 948, firm-name of assignee, for "Warren, Lang & Co." read *Warren, Lange & Co.*

18,618, Design, page 1296, after residence of inventors insert *said Adams assignor to Walter J. Shepard.*

ANNOUNCEMENTS—VOL. XLIV.

Page.

ATTORNEYS—

Fraudulent practices of 1, 111, 235, 571, 701, 835, 947, 1071, 1188, 1295

CHANGES IN CLASSIFICATION 345, 451, 701

FOREIGN PATENT LAWS—

South African Republic 1507

South Australia 1510

NOTICES—

To correspondents and attorneys in regard to indorsing mail-matter 111, 825

ORDER—

No. 499 relative to indorsing applications and subsequent papers and entering them upon the file-wrapper 451

PHOTOLITHOGRAPHING—

Proposals for 345, 451, 571

PUBLISHERS' CATALOGUES—

Request for 947, 1071, 1188, 1295, 1403

Report of the Commissioner of Patents for the fiscal year ending June 30, 1888 1188

DISCLAIMERS.

(None.)

OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

JULY–SEPTEMBER, 1888.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 44—NO. 1. TUESDAY, JULY 3, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	1
FRAUDULENT PRACTICES BY ATTORNEYS	1
PUBLISHERS' CATALOGUES	1
ISSUE OF JULY 3, 1888	1
DESIGNS	2
TRADE-MARKS	2
LABELS	2
PATENTS GRANTED	2
REISSUES	2
DECISIONS OF THE U. S. COURTS—	None
Joyce v. The Chillicothe Foundry and Machine Works Company et al.	1
Geis v. Kimber	107
Consolidated Electric Light Company v. The McKeesport Light Company	108
	110

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehon, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Mellado.*

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Issue of July 3, 1888.

Patents	356	No. 385,336 to No. 385,691, inclusive.
Designs	23	No. 18,417 to No. 18,439, inclusive.
Trade-Marks	17	No. 15,649 to No. 15,665, inclusive.
Labels	5	No. 5,643 to No. 5,647, inclusive.
Reissues	None.	
Total issue	401	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	2	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	....	....	New Hampshire	3	1
California	15	1	New Jersey	12	1
Colorado	4	....	New Mexico Terr'y	....	....
Connecticut	16	....	New York	61	5
Dakota Territory	2	....	North Carolina	1	....
Delaware	....	....	Ohio	21	....
District of Columbia	4	1	Oregon	5	....
Florida	....	....	Pennsylvania	46	3
Georgia	1	....	Rhode Island	4	....
Idaho Territory	....	....	South Carolina	....	....
Illinois	21	3	Tennessee	2	....
Indiana	13	....	Texas	5	....
Iowa	9	....	Utah Territory	....	....
Kansas	12	....	Vermont	2	....
Kentucky	4	....	Virginia	4	....
Louisiana	1	....	Washington Terr'y	....	....
Maine	....	....	West Virginia	1	....
Maryland	4	1	Wisconsin	7	1
Massachusetts	37	2	Wyoming Terr'y	1	....
Michigan	16	1	U. S. Army	....	....
Minnesota	4	....	U. S. Navy	....	....
Mississippi	....	....			
Missouri	10	1	Total to citizens of the United States	355	21
Montana Territory	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	....	....	Germany	3	....
Barbadoes	....	....	Guatemala	....	....
Belgium	....	....	Ireland	....	....
Bermuda	....	....	Italy	....	....
Brazil	....	....	Russia	....	....
Canada	8	....	Scotland	1	....
Central America	....	....	Sweden	....	....
Colombia, U. S. of	....	....	Switzerland	....	....
Cuba	....	....	Victoria	....	....
Denmark	....	....	West Indies	....	....
Ecuador	....	....			
England	10	1	Total to citizens of foreign countries	24	1
France	2	....			

DESIGNS.

18,417.—GLOVE.—*Charles P. Button*, Milwaukee, Wis. Application filed February 28, 1888. Serial No. 265,560. Term of patent 7 years.

18,418 and 18,419.—UPHOLSTERY FABRIC.—*George A. Crimson*, Philadelphia, Pa. Applications filed May 28, 1888. Serial Nos. 275,408 and 275,404. Term of patents 3½ years.

18,420.—NURSING-BOTTLE.—*Andrew Geyer*, Cambridge, Mass. Application filed April 28, 1888. Serial No. 271,645. Term of patent 7 years.

18,421.—CIGAR LIGHTER AND CUTTER STAND.—*Joseph Kaufmann*, New York, N. Y. Application filed April 17, 1888. Serial No. 270,960½. Term of patent 3½ years.

18,422.—HEATING-STOVE.—*Edward J. King* and *William H. Wilkinson*, Rochester, N. Y., assignors to *The Co-Operative Foundry Company*, same place. Application filed May 16, 1888. Serial No. 274,082. Term of patent 7 years.

18,423 to 18,430, inclusive.—SURFACE ORNAMENTATION OF WALLS.—*Frederick Koebel*, Williamsport, Pa. Applications filed March 17, 1888. Serial Nos. 267,570, 267,571, 267,572, 267,575, 267,576, 267,577, 267,579, and 267,582. Term of patents 14 years.

18,431 to 18,433, inclusive.—RUG.—*Julius Pegel*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Applications filed June 4, 1888. Serial Nos. 276,021 to 276,023, inclusive. Term of patents 3½ years.

18,434.—DRESS-TRIMMING.—*Annie V. Schoonmaker*, New York, N. Y., assignor to *Dunham, Buckley & Co.*, same place. Application filed February 21, 1888. Serial No. 264,874. Term of patent 3½ years.

18,435.—HOT-AIR-REGISTER FRONT.—*Enoch Shenton*, Malden, Mass. Application filed May 31, 1888. Serial No. 275,655. Term of patent 7 years.

18,436.—PADLOCK-CASE.—*John J. Tower*, Brooklyn, N. Y. Application filed May 25, 1888. Serial No. 275,079. Term of patent 14 years.

18,437 to 18,439, inclusive.—RUG.—*Albert Weiss*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Applications filed June 4, 1888. Serial Nos. 276,017 to 276,019, inclusive. Term of patents 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,649.—CORSETS.—*Wallis I. Allen*, New York, N. Y. Application filed May 29, 1888. Used since September 1, 1887.

"The word 'EULALIE.'"

15,650.—EXTRACTS OR SIRUPS FOR MAKING A BEVERAGE.—*Coffin & Wood Chemical Company*, Detroit, Mich. Application filed May 28, 1888. Used since February 13, 1888.

"The words 'CELERY PHOSPHATE.'"

15,651.—REMEDY FOR DYSPEPSIA, LIVER COMPLAINT, AND CONSUMPTION.—*John L. Connelly*, New York, N. Y. Application filed May 11, 1888. Used since September 1, 1886.

"The word 'FLORAPLEXION.'"

15,652.—BUTTER IN PRINTS.—*Samuel T. Edel, Sr.*, Baltimore, Md. Application filed May 28, 1888. Used since 1847.

"The representation of a bee-hive."

15,653.—LIQUID SHOE-DRESSING.—*Robert F. S. Heath*, Camden, N. J. Application filed May 28, 1888. Used since February 1, 1888.

"The word 'CLIMAX.'"

15,654.—PORTER, ALE, STOUT, LAGER-BEER, AND SODA AND MINERAL WATERS.—*William Frederick Hollwedel*, Brooklyn, N. Y. Application filed March 2, 1888. Used since July, 1886.

"The three capital letters 'W. F. H.' with a small-capital 'w' placed at the right and bottom of the large capital letter 'H.'"

15,655.—DRESS GOODS.—*R. B. MacLea & Co.*, New York, N. Y. Application filed May 29, 1888. Used since December, 1886.

"The picture of a shield, a ribbon-like scroll passing across it, a branch having berries thereon arranged at one side, and a branch carrying acorns at the opposite side of the shield."

15,656.—NEEDLES.—*Henry Milward & Sons*, Redditch, England. Application filed May 28, 1888. Used since January 1, 1887.

"The word 'CALENDRED.'"

15,657.—BAKING-POWDER.—*Harry W. Mott*, Chicago, Ill. Application filed March 12, 1888. Used since September 1, 1887.

"The words 'GOLDEN ROD.'"

15,658.—ALLOY FOR JEWELRY.—*Joseph Muhr*, Philadelphia, Pa. Application filed May 28, 1888. Used since May 1, 1888.

"The word 'CROWN' or a pictorial representation thereof."

15,659.—SKATES.—*Charles L. Peirce*, Milwaukee, Wis. Application filed April 26, 1888. Used since May 1, 1885.

"The word 'MERCURY.'"

15,660.—C. ALDEN'S CHOCOLATE.—*Henry L. Pierce*, Boston and Milton, Mass. Application filed May 17, 1888. Used since March 1, 1888.

"The representation of a circular plate with a border of points and bearing the letters and figure 'No. 1,' and above a scroll having on it 'DIRECTIONS,' all appearing on a background of a branch of cocoa-plant with leaves and pods thereon."

15,661.—CERTAIN NAMED MEDICAL COMPOUNDS.—*William B. Riker & Son*, New York, N. Y. Application filed February 2, 1888. Used since January, 1886.

"The mottoes 'PRO BONO PUBLICO' and 'QUID PRO QUO' and a fac-simile of the signature of 'WM. B. RIKER & SON.'"

15,662.—WHISKY.—*M. Shaughnessy & Co.*, St. Louis, Mo. Application filed May 10, 1888. Used since April, 1882.

"The representation of a club-house, race-track, and stand and the words 'CLUB HOUSE.'"

15,663.—RAZORS.—*Son Brothers & Co.*, San Francisco, Cal. Application filed May 24, 1888. Used since January 1, 1888.

"The word 'SULTANA.'"

15,664.—ELECTRIC BELLS.—*John F. Wollensak*, Chicago, Ill. Application filed May 17, 1888. Used since February 14, 1888.

"The word 'CROWN' or the representation of a crown."

15,665.—TRANSOM-LIFTERS.—*John F. Wollensak*, Chicago, Ill. Application filed May 17, 1888. Used since February 14, 1888.

"The word 'EAGLE' or the representation of an eagle."

LABELS.

5,643.—Title: "COMPOUND EXTRACT OF GINGER WITH CHAMOMILE." *Horatio S. Bagnall*, Brockton, Mass. Application filed June 5, 1888.

5,644.—Title: "AMERICAN FURNITURE POLISH."—*Thomas W. Brennan*, Washington, D. C. Application filed June 11, 1888.

5,645.—Title: "PHILADELPHIA EXTRA. WEIGHT & COLOR." (FOR GINGHAMS, TICKINGS, AND OTHER COTTON GOODS.)—*John Farnum & Co.*, Philadelphia, Pa. Application filed June 8, 1888.

5,646.—Title: "VACUUM." (FOR FEED WATER PURIFIERS AND HEATERS.)—*Warren Webster & Co.*, Philadelphia, Pa. Application filed June 6, 1888.

5,647.—Title: "WILLIAMS SURE CURE." (FOR SALVE.)—*George H. A. Williams*, Concord, N. H. Application filed June 5, 1888.

PATENTS

GRANTED JULY 3, 1888.

385,336. MACHINE FOR CLEANING PIGS' FEET. WILLIAM ARMSTRONG, Indianapolis, Ind., assignor to Mary T. Archibeson, same place. Filed Feb. 7, 1888. Serial No. 263,502. (No model.)



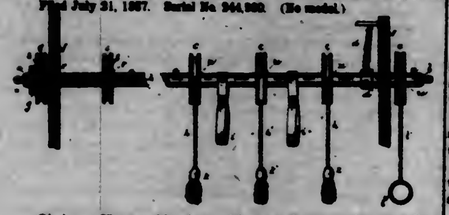
Claim.—1. A machine for cleaning pigs' feet, consisting of a suitable frame, a cylinder mounted on a driving-shaft in said frame, and knives or scrapers secured to said cylinder by a flexible connection, substantially as set forth.

2. In a cleaning-machine, the combination, with the cylinder carrying the scrapers, of a disk provided with pointed knives in its edge for cleaning the creases, substantially as set forth.

3. The combination, with the cylinder C, of the strips of flexible material C', secured thereon, the scrapers *c*, mounted on the outer edge of said flexible material, and means for driving the same, substantially as set forth.

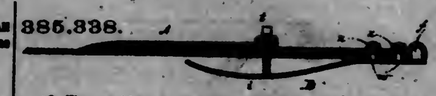
4. In a machine for cleaning pigs' feet, the combination of the frame A, the driving-shaft B, the cylinder C, mounted on said driving-shaft, the disk C', secured at one end thereof and provided with knives *c'* in its periphery, the strips of flexible material C', secured at intervals on said cylinder C longitudinally thereof, and the scrapers *c*, secured to the outer edge of said strips of flexible material, substantially as set forth.

385,337. CAR-BELL STRAP. JOSEPH ARBAIB, New York, N. Y. Filed July 21, 1887. Serial No. 244,902. (No model.)



Claim.—The combination, with a stationary tube extending through the whole length of a car, supported by and projecting outwardly beyond the end walls thereof, and a rod within the bore of said tube extending through its whole length and movable therein, of pulleys mounted on said tube having each a screw passing through a transverse slot in said tube and connecting said pulleys with said interior rod to turn the same within said tube, when said pulleys are turned, through the length of said transverse slot, mechanism connecting said rod with bells fixed on each end of said car to ring said bells, and means for turning said pulleys, substantially as and for the purpose set forth.

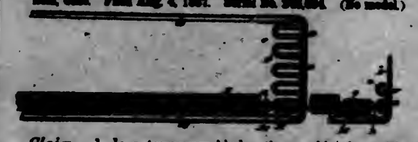
385,338. SHUTTLE-BINDER FOR LOOMS. HENRY BARNLEY, Fitchburg, Mass., assignor of one-half to William Barnley, same place. Filed Jan. 10, 1888. Serial No. 260,288. (No model.)



Claim.—1. A shuttle-binder comprising a body provided with a groove in its heel for the pivot-pin and a curved face-plate detachably secured to said body, said face-plate extending past said heel-groove for closing it, substantially as described.

2. The combination of a shuttle-binder body provided with a groove in its heel for the pivot-pin, a face-plate detachably secured to said body and extending over said groove for closing it, and a set-screw passing through said body in contact with said face-plate for adjusting the latter, substantially as described.

385,339. TEMPORARY BINDER. FREDERICK W. BARNETT, Springfield, Ohio. Filed Aug. 4, 1887. Serial No. 246,094. (No model.)



Claim.—1. In a temporary binder, the combination, with the cover and pads, of a series of tubes and a series of spindles, one series being arranged to engage with the other series, and both series being located between the back of the cover and the ends of the pads, and running transversely to the cover and pads, and adapted to connect the back and pads together.

2. In a temporary binder, the combination, with the back and a series of tubes secured thereto, of pads and a tube secured to each pad, and a locking device which engages the ends of the tubes secured to the back with those secured to the pads.

3. In a temporary binder, the combination, with the cover and pads, of tubes secured to the back of the cover and tubes secured to the pads, and having two sides flattened and a slot in one of the narrower portions of the tube, near each end thereof, and a connecting device composed of two members, one of which has a bend therein, whereby when the members are projected into the tubes the bends extend into either of the said slots.

4. In a temporary binder, the combination, with the back, of a series of tubes on the inside thereof, and a strip of strong material secured to the back and passed over the successive tubes, whereby they are held in place.

5. In a temporary binder, the combination, with the back, of a series of tubes secured to the inside thereof, and a strip of strong material united to the back and said tubes by an adhesive material.

6. The combination, with a pad of printed forms, of a tube secured thereto along one end thereof and in the direction of the edges of the sheets of which the pad is composed.

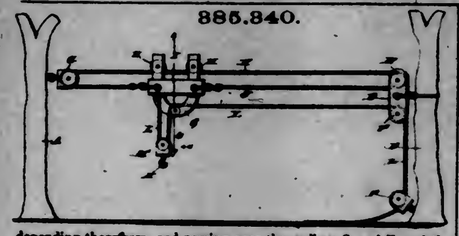
7. The combination, with a pad composed of blank forms, of a tube and a strip of material passing around the tube and connected to the pad by an adhesive substance.

8. The combination, with a tube, of a strip of material secured thereto and constructed to be secured to the pad along one end thereof, so as to secure the tube in the direction of the edges of the sheets composing the pad.

385,340. STUMP-EXTRACTOR AND LOG-MOVER. JULIUS C. BURKE and CHARLES EKERMEIR, Winona, Wis. Filed Jan. 21, 1888. Serial No. 261,512. (No model.)

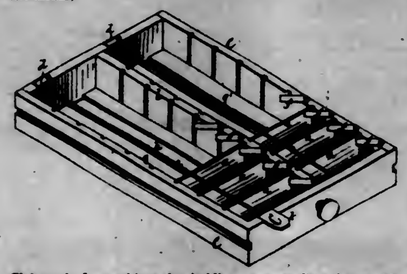
Claim.—The improved stump-extractor and log-mover herein described and shown, comprising the pulley C, the elongated block D, having the pulleys E F in its ends, the cable J, passing around the pulleys C E and forming two parallel branches, the carriage having the rollers H H in its upper portion, resting on the upper branch of the cable J, the longitudinal block I, secured to the carriage and having the ends of the cable attached thereto, the pulley O, mounted in the lower portion of the carriage, the cable L, secured to the carriage,

385,840.



depending therefrom, and passing over the pulleys O and F, and the pulley M, mounted loosely on the cable L, between its point of securement and the pulley O, substantially as specified.

385,841. CABINET FOR HOLDING ACCOUNT-SLIPS. JAMES R. CHESEBROUGH, Cameron, N. Y. Filed Sept. 12, 1887. Serial No. 249,698. (No model.)

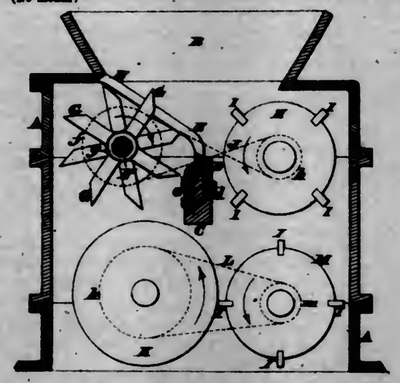


Claim.—1. In a cabinet for holding account-slips, the combination, with the drawers C C, of the strips *g g*, with the opening *h* between the partitions *a a*, forming cells, the wire *c*, extending longitudinally over the top of the drawer on one side, and the pivoted clamps *f f*, for holding the papers down, as herein shown and described.

2. In a cabinet for holding account-slips, the combination, with the drawers C'C, of the strips *g g*, the partitions *a a*, the wire *c*, the clamps *f f*, and the tags *k k*, as shown and described, and for the purpose specified.

3. In a cabinet for holding account-slips, the combination of open frames, forming drawers containing separate cells to hold the folded papers, and index-tags projecting outward from the drawers with letters thereon indicating surnames, as and for the purpose specified.

385,842. CLAY-PULVERIZER. JONATHAN CREAGER and HARRY M. CREAGER, Cincinnati, Ohio. Filed Nov. 3, 1887. Serial No. 254,164. (No model.)



Claim.—1. The combination, in a pulverizer, of cutting-bar D, a grating, E, sloping down to said bar, blades G, operating within the slots of said grating, and a cylinder, H, having knives I, which knives reduce the clay, as described.

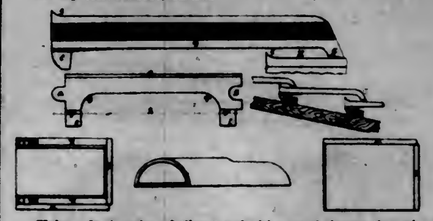
2. The combination, in a pulverizer, of a pair of regrinding-cylinders, K M, the cylinder K having a smooth periphery and revolving in the same direction as the other cylinder, M, which latter is armed with knives or cutters I, as herein described.

3. A grinding-cylinder having a chamber, P, knives I, and throats T, which latter communicate with said chamber, as herein described.

4. The combination, in a pulverizer, of cutting-bar D, inclined grating E, blades G, main cutting-cylinder H, and regrinding cylinders K M, as described.

5. A grinding-cylinder having a chamber, P, throats T, and flat faces *e*, to which faces the slotted knives I *r* are secured by bolts S, as herein described.

385,843. TILE. ALBERT DIETRICH, Berlin, Germany. Filed Nov. 12, 1886. Serial No. 218,737. (No model.) Patented in Germany Feb. 17, 1886, No. 36,649; in England June 7, 1886, No. 7,947; in Belgium June 15, 1886, No. 73,314; in France Oct. 6, 1886, No. 176,471, and in Norway Mar. 30, 1887, No. 266.



Claim.—1. A series of tiles interlocking at their meeting edges by means of grooves B and ridges A, and provided with bearing-ribs D, sloping elevations IV, gutter-edges F, and recess *e*, all substantially as set forth.

2. A series of tiles, each having a groove, B, in one edge and a ridge, A, in the other, for interlocking with neighboring tiles, and being provided with a downwardly-inclined gutter-edge, F, at its lowest point, and with a raised edge, *g*, at its highest point, the gutter-edge of each higher row of tiles resting on the edge *g* of the next lower row, for the purposes set forth.

3. In combination with roof-tiles interlocking laterally and provided with the parts *F e g*, arranged and operating as set forth, a curved tapering ridge, substantially as shown.

385,844. POROUS CUP FOR GALVANIC BATTERIES. ASAHEL K. HATCH, Brooklyn, N. Y., assignor of one-third to Colin M. Thompson, same place. Filed Oct. 7, 1887. Serial No. 251,782. (No specimens.)

Claim.—The method of producing an indestructible cup for a galvanic battery, which consists in first forming the cup of sheet-asbestos or pressing pulp-asbestos into a suitable mold to form the cup, then soaking the cup thus formed in a mixture of suitable carbonaceous substance and silicate of soda, removing it from the mixture and allowing it to dry, and finally subjecting the cup to a high heat to leave a strengthening and binding material in the body, substantially as described.

385,845. PROCESS OF OBTAINING ALUMINIUM CHLORIDE. CAMILLE A. FAURE, New York, N. Y. Filed Feb. 20, 1886. Serial No. 264,065. (No specimens.)

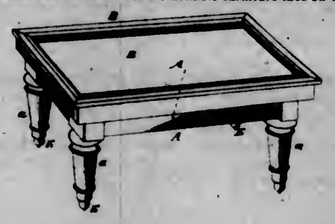
Claim.—1. The process of manufacturing chloride of alumina, which consists in heating an ore containing aluminium in direct contact with the flame of a furnace, cutting off the flame, passing over the heated ore a gaseous mixture containing a hydrocarbon vapor and a gas containing chlorine, and then condensing the resulting vapor.

2. The process of manufacturing aluminium chloride, consisting in heating the aluminium ore to a proper combining-temperature, passing over the heated ore a mixture of hydrochloric-acid gas and hydrocarbon vapor, and then condensing the resulting vapor.

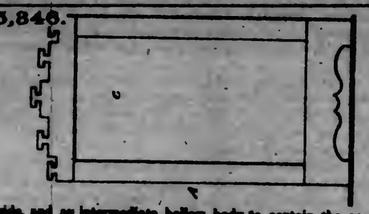
3. The process of manufacturing aluminium chloride, consisting in heating the aluminium ore to a proper combining-temperature, cutting off the flame, passing over the heated ore a gaseous mixture containing carbon and chlorine, and then condensing the resulting vapor.

385,846. BILLIARD-TABLE. WILLIAM P. FLINT, Marysville, Cal. Filed Nov. 26, 1887. Serial No. 256,115. (No model.)

Claim.—The described article having an undivided billiard-table face on one side, an undivided detachable furniture-face on the opposite side, and an intermediate hollow body to contain the appurtenances of a billiard-table, as set forth, and for the purpose specified.



385,846.



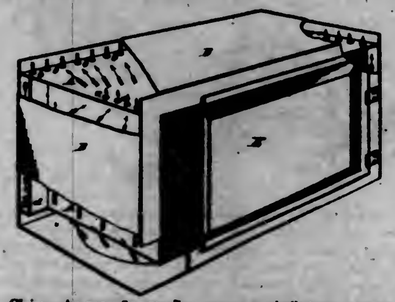
385,847. METAL-HARDENING DEVICE. JOHN G. PRINCE, Winchendon, Mass. Filed Dec. 28, 1887. Serial No. 259,792. (No model.)



Claim.—1. The hardening device, as described, consisting of a series of clamping jaws or levers, *a a*, pivoted in one end to a base-plate, *b*, or its equivalent, with inner convex faces adapted to fit or mesh the grooves on screw-taps, and having means, substantially as described, for clamping the article between such levers, as and for the purpose set forth.

2. The hardening device, as described, consisting of a series of clamping jaws or levers, *a a*, pivoted in one end to a base-plate, *b*, or its equivalent, in combination with the clamping ring or annulus *d*, substantially as and for the purpose set forth.

385,848. OVEN FOR GASOLINE, GAS, OR COAL-OIL STOVES. ANDREW GREBE, St. Louis, Mo. Filed Nov. 14, 1887. Serial No. 255,170. (No model.)



Claim.—An oven for gasoline, gas, or coal-oil stoves, composed of an outside and an inside shell having a space between the shells, the outside shell being provided with an opening or openings at the back near the bottom for the escape of the heat, said shells being united together at both ends at the top and back, and at the back near the bottom by partitions, the partitions uniting the shells at the top being provided with holes or a slot near the front of the inside shell, substantially as described.

385,849. GRAVEL-FOUNTAIN SPRING. GEORGE W. GRAY, Sr., Ariel, Va. Filed Oct. 1, 1887. Serial No. 251,207. (No model.)

Claim.—The filter herein described, consisting of the upright frames A F F K, which are inserted in a spring or well and form containing-walls for the filtering media, N, in combination with the communicating reservoirs F' J', formed by the said upright walls and cross-pieces B E, the hinged top C, and the aperture M', the base O, and the wall G, having apertures H M, for the purpose set forth.

385,849.



385,850. VELOCIPEDE. CHARLES F. HARLEY, Chicopee, assignor to the Overman Wheel Company, Boston, Mass. Filed Sept. 3, 1887. Serial No. 248,666. (No model.)



Claim.—1. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle, of a tubular steering-rod entering such sleeve, bearings between the sleeve and rod, and a spring located within the rod and adapted to pull the bearings of the sleeve and rod together, substantially as set forth.

2. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and provided with bearings at its upper and lower ends, of a steering-rod entering such sleeve, a collar loosely mounted on the rod and co-operating with the upper bearing of the sleeve, a head connected with the steering-wheel and having the lower end of the rod attached to it, a bearing co-operating with the lower bearing of the sleeve carried by such head, and a spring located within the rod and pulling the said bearings together, substantially as set forth.

3. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle, of a steering-rod turning in such sleeve, a movable bearing for the upper end of the sleeve, a coupler located within the rod and connected with such bearing, a follower carried by the lower end of the coupler, a spring-stop located in the rod and coupled with the sleeve so as to permit the same to slide over the rod, a spring located within the rod and interposed between the said follower and stop, a wheel-head to which the lower end of the rod is attached, and a bearing carried by such head for the lower end of the sleeve, substantially as set forth.

4. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and provided with a bearing at its upper and at its lower end, of a steering-rod turning in such sleeve, a bearing-collar for the upper bearing of the sleeve loosely mounted on the rod, a bolt passing through such collar and through elongated slots in the rod, a coupler located in the rod and having an eye in its upper end through which the bolt passes, and a spring located in the rod and pulling such coupler down to pull the movable collar down onto its bearing, substantially as set forth.

5. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and having a bearing at its upper end and at its lower end, of a steering-rod entering such sleeve and turning therein, a movable collar co-operating with the upper bearing of the sleeve and embracing the rod, a bolt carried by such collar and extending transversely through the rod thereto provided with elongated openings, a coupler located in the rod and extending lengthwise thereof and provided at its upper end with an eye receiving the said bolt, and at its lower end with a follower, a spiral spring supported by such follower

and controlling the coupler, a spring-stop located in the rod and coupled with the sleeve, a wheel-head to which the rod is attached, and a bearing carried by such head and co-operating with the lower bearing of the sleeve, substantially as set forth.

6. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and provided with a bearing at its upper end and at its lower end, of a steering-rod turning in such a sleeve, a coupler connected with such movable bearing, a spring-stop consisting of a disk coupled with the sleeve by screws passing through elongated openings in the rod in which the coupler is located, and a spring located in the rod and pushing from the stop to pull the movable collar and sleeve down over the rod, substantially as set forth.

7. In a velocipede, the combination, with a sleeve connected with the vehicle-frame, of a steering-rod turning in such sleeve, a spring located in the rod and pulling the said bearings together, and means for adjusting the tension of the spring, substantially as set forth.

8. In a velocipede, the combination, with a steering-rod, of a sleeve receiving the lower end of the rod and provided upon its lower face with an extension having segmental slots, and with a perforated lug, two parallel perforated arms extending forward from the machine-frame and embracing such extension and lug, and means for coupling the said extension, lug, and arms together, substantially as set forth.

9. In a velocipede, the combination, with a steering-rod, of a sleeve receiving the lower end of the steering-rod and provided upon its lower face with a perforated lug, perforated arms extending forward from the machine-frame, a spindle passing through such arms and lug and forming a fulcrum and a foot-rest, and means for limiting the pivotal action of the sleeve and arms on the spindle, substantially as set forth.

10. In a velocipede, the combination, with a handle-bar having its ends exteriorly threaded in one direction and interiorly threaded in an opposite direction, of a handle-frame having a sleeve interiorly threaded to correspond to the exterior threading of the bar, and a screw passing through the handle-frame concentric with the sleeve and entering the end of the bar and threaded to correspond to the interior threading thereof, substantially as set forth.

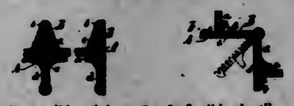
385,351. CHURN-DASHER. THOMAS H. HAMLIN, Pittsburg, Pa. Filed Feb. 10, 1888. Serial No. 263,947. (No model.)



Claim.—1. The combination of a sleeve fixed to a staff or handle and having a socket in its lower end, a spindle adjustable longitudinally in the socket and having means for holding it in position thereon, and the metallic sleeves *b*, fitted loosely on the lower end of the spindle and provided with the annular flanges, which are inserted in the blades of the dashers, substantially as and for the purpose described.

2. The combination of a sleeve having open sockets in its opposite ends, a staff fixed in the upper socket of the sleeve, a spindle adjustable longitudinally in the lower socket of the sleeve and having a flange, *c*, at its lower extremity, a bolt for securing the spindle to the sleeve, the dashers, and the sleeves fitted loosely on the spindle and provided with the annular rims, which are fixed to the blades of the dashers, substantially as and for the purpose described.

385,352. BAR FOR SKYLIGHTS, CONSERVATORIES, &c. GEORGE HAYES, New York, N. Y. Filed July 30, 1887. Serial No. 245,073. (No model.)



Claim.—1. A solid sash-bar of soft, flexible, ductile, and pliable metal, molded upon a hard-metal core apertured at intervals throughout its length, through which apertures the soft metal unites, securing the parts together, essentially as shown and described.

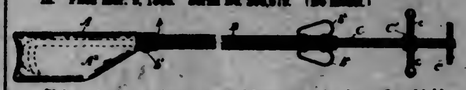
2. A solid soft-metal sash-bar, A, grooved, as at *c*, re-enforced and stiffened edgewise by a hard-metal core, B, completely inclosed within the soft metal, said core apertured, as at *c*, the soft metal uniting in said apertures and keying with said core, essentially as shown and described.

3. A solid sash-bar formed of soft metal, having two sets of rabbets for double glazing, two caps, one at each edge, and a body between the rabbets, completely inclosing a hard-metal core provided with spaces through which the soft metal unites and keys with the core, essentially as shown and described.

4. A soft-metal sash-bar having an outward ridge with cap solid thereto, grooves to receive glass plates, rabbets or ledges to sustain glass plates, narrow body below the rabbets, and gutters at the base or interior edge, all molded solid upon a hard-metal core provided with apertures or spaces intermediate of its width, through which the soft metal unites and keys with the core, essentially as shown and described.

5. An angle-bar formed as two wings of soft, ductile, flexible, and pliable metal molded solid upon a core of hard metal apertured at intervals throughout its length and adapted for adjustment to suit angles, essentially as shown and described.

385,353. VETERINARY SURGICAL INSTRUMENT. JOSEPH HUTTON, Aurora, Ind., assignor of one-third to Charles H. Sayre, Chicago, Ill. Filed Mar. 9, 1888. Serial No. 266,672. (No model.)



Claim.—1. A veterinary surgical instrument having a flat shield the body of which is extended laterally from the line of the handle, in combination with a series of interchangeable operating-instruments extending laterally from the line of the shank, substantially as shown and described.

2. A veterinary surgical instrument having a flat shield the body of which is extended laterally from the line of the handle, in combination with a series of interchangeable operating-instruments extending laterally from the line of the shank, each of said instruments having its said shank constructed in a polygonal shape with the shield conforming thereto, while the handle thereof is round, substantially as shown and described.

385,354. MOWING-MACHINE. IRA T. JAMES, Lincoln, Nebr., assignor of one-half to Charles H. Hunt, same place. Filed May 9, 1887. Serial No. 237,255. (No model.)



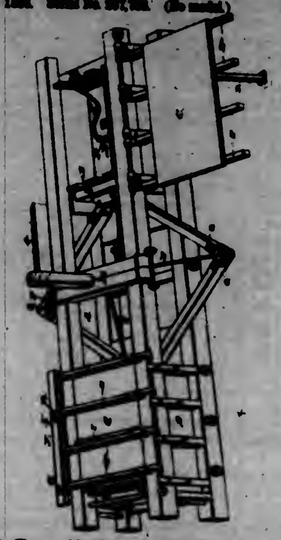
Claim.—1. The combination of the driving-wheel F, having cylinders G on its opposite sides formed with cams on their outer face edges, the frame A, having bearing-arms 27 28 projected from the side pieces of the frame, the vibrating arms H, formed with vertical sleeves 31, having cross-heads 32, with rollers 33, the bearing-pins 34, arranged in said bearing-arms and sleeves, and the cutter-bars, all substantially as described.

2. The combination of the frame A, supported on the drive-wheel at the rear and pivotally connected to standards on the gear-shoe at its front end, the forward-projecting arms 8 9, pivotally connected at their rear ends to the standards of the gear-shoe, the front carriage carrying the front ends of the arms 8 9, the seat-platform arranged on the machine with its front end to slide on the front carriage, the rack-bar 15, connected to the gear-shoe and projected through the seat-platform, and a lever mounted on the platform, having a segmental rack to engage the rack-bar and fit the gear-shoe and frame-bars, substantially as described.

3. The combination, with the driving-wheel, the gear-shoe, and the front carriage, of the main frame supported at the rear on the drive-wheel and having the front ends pivotally connected to standards on the gear-shoe, the forward-projecting arms 8 9, having their rear ends pivotally connected to the standards of the gear-shoe and their front ends secured to the front carriage, the seat-platform supported

at its rear on the main frame and at its front on the front carriage, and formed at its front end with a slot, 10, to engage the king-bolt in the front carriage, and a lever mounted on the seat-platform connected with the gear-shoe to lift it, substantially as described.

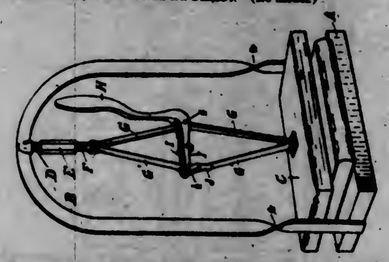
385,355. BALING-PRESS. ARMAN JAMISON, Wilmot, Ill. Filed Mar. 19, 1888. Serial No. 267,722. (No model.)



Claim.—1. The combination of the press-boxes having the closed outer ends, the plungers moving therein and carrying the pins D on their upper sides, and the ropes E, secured permanently to the closed ends of the press-boxes and having the loops F on their free ends adapted to engage the pins D, whereby, when the plunger is withdrawn, the bale will be raised, as set forth.

2. The combination of the frame-work having the press-boxes at its ends, the plungers working in the press-boxes, the jointed levers extending between the plungers and connected thereto, the windlass erected centrally in the frame-work, the cables O, secured to the windlass and the plungers, and the cables P, secured to the windlass and the joints of the levers, as set forth.

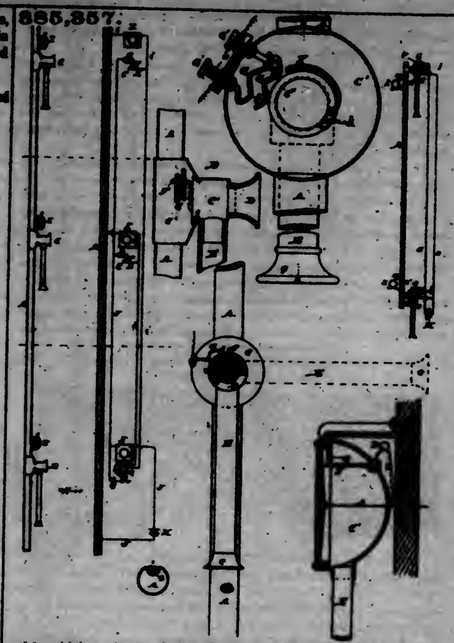
385,356. COPYING-PRESS. JEREMIAH P. JOHNSON, Detroit, Mich. Filed June 25, 1887. Serial No. 242,287. (No model.)



Claim.—1. In a letter-press, the combination of the frame B and platen C, having a vertical adjustment in said frame, with the toggle-levers G G', threaded bolts D F, the latter pivotally connected directly to the upper ends of the toggle-levers, bifurcated lever H, and links I, the parts being constructed, arranged, and operating substantially in the manner and for the purpose described.

2. In a letter-press, the combination of the bed A, frame B, platen C, screw-bolts D F, turn-buckle E, toggle-levers G G', bifurcated lever H, links I, spring J, and stop *c*, all combined and operating substantially in the manner and for the purpose described.

385,357. SPEAKING AND SIGNALING APPARATUS. JOHN R. KELLY, Camden, N. J. Filed May 12, 1887. Serial No. 238,017. (No model.)



Claim.—1. The combination of a speaking-tube, two mouth-pieces, and hearing or ear pieces, arranged in pairs and at a distance apart, and in which each mouth-piece has a movable ear-piece, an electric circuit, including electric signals in said circuit and located near the ear-piece, and switches operated by the movable ear-piece to complete or break said circuit to ring the distant signal.

2. The combination of a speaking-tube, two mouth-pieces, and hearing or ear pieces, arranged in pairs and at a distance apart, and in which each mouth-piece has a movable ear-piece, an electric circuit, including electric signals in said circuit and located near the ear-piece, and switches operated by the movable ear-piece at one transmitter to complete or break said circuit to ring the home and also the distant signal.

3. The combination of an office speech-transmitting instrument, two or more distant transmitting-instruments, the office-transmitter having a movable ear-piece, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, and key-board to bring either circuit-controlling device into operative position.

4. The combination of an office speech-transmitting instrument, two or more distant transmitting-instruments, all of said instruments having movable ear-pieces, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, a key-board to bring either circuit-controlling device into operative position, and a signal in the office, also operated by the movable ear-piece, whereby the office and distant signals are simultaneously rung.

5. The combination of an office speech-transmitting instrument, two or more distant transmitting-instruments, all of said instruments having movable ear-pieces, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, a key-board to bring either circuit-controlling device into operative position, an electric circuit from said distant transmitting-instruments, including the office-signal, and circuit-controlling devices operated by the movable ear-piece of either of said distant transmitters.

6. The combination of an office speech-transmitting instrument, two or more distant transmitting-instruments, all of said instruments having movable ear-pieces, electric signals at the office and distant transmitting-instruments, a separate electric circuit to connect each of the distant signals with the office, two or more circuit-controlling devices operated by the movable ear-piece of the office-transmitter, a key-board to bring either circuit-controlling device into operative position, an electric circuit from said distant transmitting-instruments,

including the distant and office signal, and circuit-controlling devices operated by the movable ear-piece of either of said distant transmitters to simultaneously ring the office and distant signals.

7. A speech-transmitting instrument consisting of a stationary part and a movable ear-piece, a signaling contact-finger secured to the stationary part, and a signaling contact-finger secured to the movable ear-piece, said contacts being insulated from each other and adapted to touch upon moving the ear-piece, and a signaling-circuit including said contacts.

8. A speech-transmitting instrument consisting of a stationary part and a movable ear-piece, in combination with two or more movable signaling contact-fingers carried by the stationary piece, and a movable signaling contact-finger carried by the ear-piece, whereby either contact carried by the stationary piece may be moved into operative position for contact with the movable contact-finger carried by the ear-piece, and signaling-circuits, each including one of said contacts.

9. The combination of stationary part C³ with movable part C of a transmitting device for speech, a movable spring contact-finger, F, secured to part C, and a stationary contact-finger, G, made W-shaped, to interrupt the circuit, substantially as and for the purpose specified.

385,358. COFFER-DAM. ARMEN KIRK, Sharpsburg, Pa. Filed July 2, 1888. Serial No. 30,720. (No model.)



Claim.—1. The combination of an air-tight pontoon or float provided with a suitable scuttle-valve and with pipes for exhausting the water therefrom and admitting it thereto, with the platform placed on top and hinged to one side of the same, substantially as and for the purposes described.

2. The combination of an air-tight float having means for admitting and exhausting water therefrom, with a platform placed upon and hinged thereto, and movable braces for sustaining the platform in an inclined position on the pontoon, substantially as and for the purposes described.

3. The combination of an air-tight float having means for admitting and exhausting water therefrom, with a platform placed upon and hinged thereto, pivoted braces for sustaining the platform in an inclined position, and means for withdrawing the said braces from their supporting position to permit the return of the platform to its normal position, substantially as and for the purposes described.

4. A tipping dam having a mat or cushion of fibrous material at its lower outer corner or edge, and a skirt of gum-cloth or similar material secured along its outer edge, substantially as and for the purposes described.

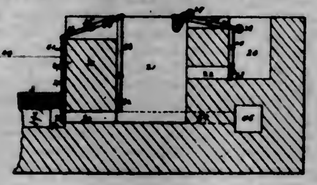
5. A tipping-dam platform provided with a skirt attached by one edge to its outer side, in combination with movable pins placed in sockets in the upper side of the platform, bolts projecting below the lower side for dislodging the pins, and cords fastened to the outer edge of the skirt, secured to the pins and extending to the inner side of the platform, substantially as and for the purposes described.

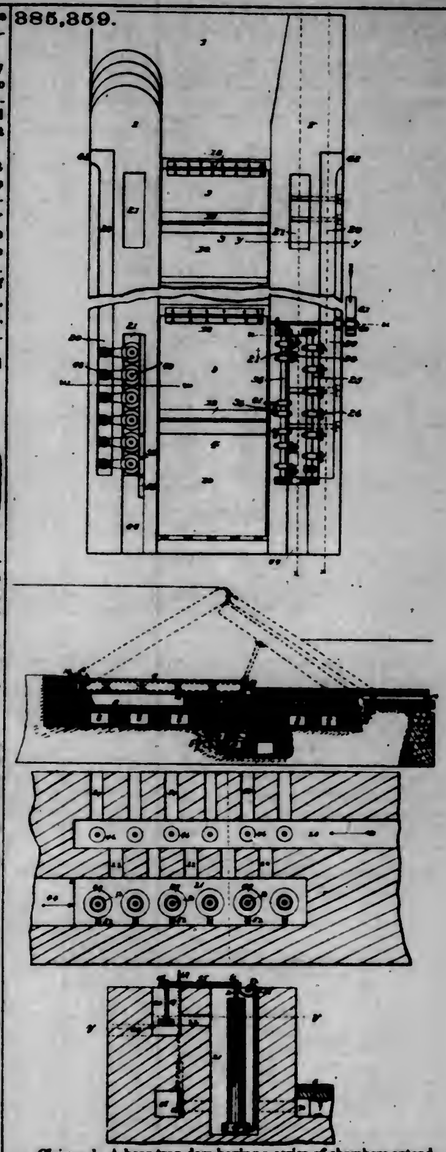
6. A tipping-dam platform pivoted at or near the middle to a suitable pontoon or base, so that one edge shall project beyond the same over the water, in combination with a tank extending along said projecting edge, and means for admitting and removing water from the tank, substantially as and for the purposes described.

7. A tipping-dam platform provided with tanks extending along its inner and outer edges, and with pipes for admitting and withdrawing water from the tanks, substantially as and for the purposes described.

8. A tipping-dam platform pivoted at or near its middle to one edge of its support, with one edge projecting beyond the side of the support, so as to be capable of being tipped downward to constitute a dam, substantially as and for the purposes described.

385,359. NAVIGATION-LOCK. ARMEN KIRK, Sharpsburg, Pa. Filed July 2, 1888. Serial No. 30,742. (No model.)





Claim.—1. A bear-trap dam having a series of chambers extending longitudinally of the dam under the same and communicating with the inlet and outlet openings, in combination with a floor having holes extending vertically from said chambers up to the gates, substantially as and for the purposes described.

2. A bear-trap dam, in combination with a shaft extending under the gate, and pitmen pivotally connected to such shaft and gate, substantially as and for the purposes described.

3. A lock having a bear-trap gate or gates, in combination with a forebay communicating with the upper pool and with the under side of the gate or gates, and an elevated tail-sheate for sustaining the gate at the desired level, substantially as and for the purposes described.

4. A lock having a bear-trap gate or gates, in combination with inlet and outlet passages controlled by suitable valves for admitting water to and discharging it from under the gate or gates, said valves being connected with and operated by a common shaft, whereby the outlet-passages are closed as the inlet-passages are opened, and vice versa, substantially as and for the purposes described.

5. A lock having a bear-trap gate, in combination with a forebay, an intermediate supply-chamber, passages controlled by valves leading from the forebay to the supply-chamber and from the supply-chamber to below the gate, a discharge-passage leading from under the gate, and a valve controlling said passage, whereby the entrance of the water to the gate and its discharge therefrom may be regulated or controlled, substantially as and for the purposes described.

6. The combination, in a bear-trap dam, of an inlet or discharge valve, with devices for causing the closing or opening of the same, respectively, automatically by the gate itself when raised to an abnormal height, substantially as and for the purposes described.

7. The combination, in a bear-trap dam, of inlet and discharge passages controlled by valves, with devices for automatically closing and opening the same, respectively, by the gate itself when raised to an abnormal height, substantially as and for the purposes described.

8. The combination, with a bear-trap dam having inlet-passages through the end wall for admitting the water under the dam to raise it, of an inlet-valve secured to one end of a pivoted lever, tanks or buckets with a retarded outlet mounted on the other end of the lever, and when filled capable of overbalancing and thereby opening or closing the valve, and a pipe for discharging water into the buckets, substantially as and for the purposes described.

9. The combination of a bear-trap dam, which opens below the lower level of the stream, with devices for raising and discharging the water from under the gate, substantially as and for the purposes described.

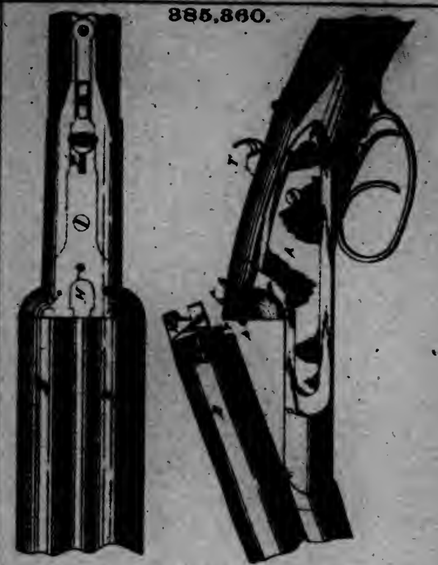
10. The combination of a bear-trap dam which when open is below the lower level of the stream, with an elevated forebay, turbine wheels placed and operating in the forebay, and pumps placed below the level of the gate and operated by the turbine wheels for raising and discharging the water from under the gate, substantially as and for the purposes described.

11. In combination with a bear-trap dam having outlet-valves, a paddle or bucket placed above the ordinary level of the stream so as to be acted upon thereby when at an abnormal height, and power connections between the said paddle and the outlet-valves of the dam, substantially as and for the purposes described.

385,360. CHARGE-INDICATOR FOR BREECH-LOADING FIRE-ARMS. RASMUS M. LEUVER, Syracuse, N. Y., assignor to the Le Power Arms Company, same place. Filed June 18, 1887. Serial No. 241,703. (No model.)

Claim.—1. The combination, with the barrel of a breech-loading fire-arm formed with a recess in its rear end, separated by a perforated web of metal from the base, of an indicator-pin having an inclined end projected into said base, a spring seated in the recess to bear on the indicator, and a screw-cap for holding the spring in place, perforated for the passage of the stem of the indicator, substantially as and for the purpose set forth.





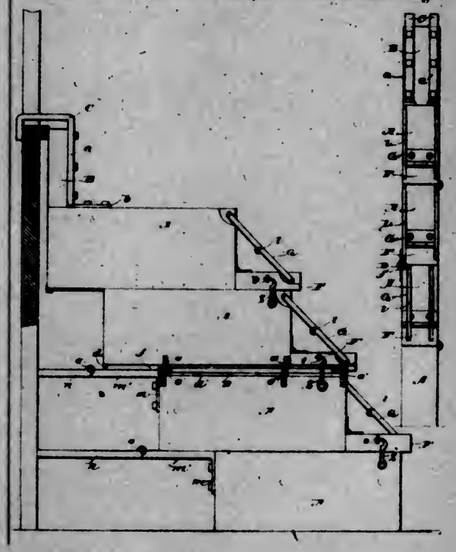
2. The combination, with the barrel B, formed with a recess, *d*, having a slotted bottom web, of the indicator *a*, formed with the shouldered spring-seat *c* and inclined extension *b*, the spring *f*, and the confining screw-cap *e*, all constructed and arranged for use substantially as and for the purpose set forth.

385,361. FIRE-ESCAPE. SOLOMON LEVY, Harrisonville, Mo. Filed Mar. 13, 1888. Serial No. 267,169. (No model.)

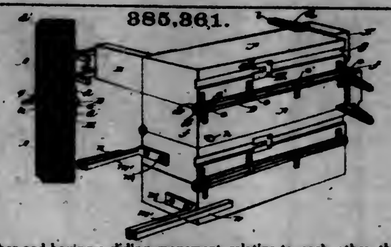
Claim.—1. The combination, in a fire-escape, of a series of hinged blocks having a longitudinal sliding movement relative to each other and devices for locking said sections together after each sliding movement, as set forth.

2. The combination, in a fire-escape, of a series of hinged blocks adapted to slide relative to each other and a hinged step connected to each block, as set forth.

3. The combination, in a fire-escape, of a series of blocks hinged



385,861.



together and having a sliding movement relative to each other, the top block being provided with grappling-hooks, as set forth.

4. The combination, in a fire-escape, of a series of pivoted blocks having a sliding hinged connection, each block having a groove and key-plate in its lower face and a pin upon the upper face, as set forth.

5. The combination, in a fire-escape, of a series of blocks having alternate-sliding hinged connections, as set forth.

6. The combination, in a fire-escape, of a series of blocks each having one of its corners beveled and located adjacent to the beveled face of the block beneath, eyebolts located at said beveled edges, and a rod passing through both sets of eyebolts, as set forth.

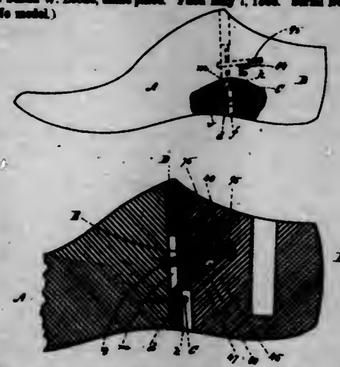
7. The combination, in a fire-escape, of a series of blocks having a sliding hinged connection and a hinged step connected to the end of block and connected by braces having rule-joints, as set forth.

8. The combination, with the sliding blocks, of a hinged step connected to the end of each block and connected by braces having rule-joints, and hooks located on the sides of the blocks for engaging loops on the side of the step, as set forth.

9. The combination, with the blocks, of a hinged step connected to the end of each block, the lower step being slotted, and rule-joint brace having its lower end pivoted in said slot, as set forth.

10. The combination of the series of blocks and the end braces secured thereto and consisting of a fixed and a swinging member, as set forth.

385,862. LAST. EDWARD G. LOCKE, Weymouth, Mass., assignor to Susan W. Locke, same place. Filed May 7, 1888. Serial No. 273,033. (No model.)



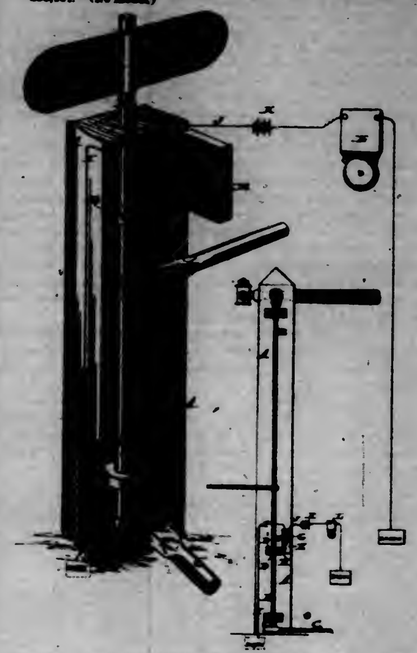
Claim.—1. In a boot or shoe last, the body-section A, provided with the groove *m*, eye C, and spring *f*, and the heel-section B, provided with the socket *h*, guide-piece D, and plate E, having the notched bar *d*, combined and arranged to operate substantially as described.

2. In a boot or shoe last, a section, as A, provided with a socket, as *t*, for receiving the end of the locking-bar, and a section, as B, provided with a socket, as 40, a slot, as 64, opening into the socket 40, a stop-plate, as 47, a spring, as 95, and a locking-bar, as 75, said stop-plate, spring, and bar being disposed in the socket 40, and said bar provided with a spur, as 80, and adapted to enter the socket *t*, substantially as set forth.

3. In a boot or shoe last, the body-section A, provided with the groove *m*, socket *t*, eye C, and spring *f*, and the heel-section B, provided with the socket *h*, guide-piece D, socket 40, spring 95, stop-plate 47, locking-bar 75, having the spur 80, and the plate E, having the notched bar *d* and hole 88, all being combined and arranged to operate substantially as described.

4. In a boot or shoe last, the body-section A, provided with the eye C and having the socket *v* and spring *f*, said spring being disposed longitudinally in said socket, in combination with the heel-section B, provided with the bar *d*, having the notch *i*, said notch being provided with inclined sides, substantially as set forth.

385,868. SWITCH-SIGNAL. ARMAND F. HARRIS, Montreal, Quebec, Canada, assignor of three-fourths to Jean Baptiste Amable Bourgeois, Bignal, and Narcisse Dresseau and Marie H. Philomène Guig, both of Montreal, Quebec, Canada. Filed Oct. 22, 1887. Serial No. 253,101. (No model.)



Claim.—1. In combination with post A and shaft B, a collar, D, provided with pin D' and secured to the shaft, contact-arms F G, mounted upon the post or a plate thereon and included in an electric circuit, a link, H, connected at opposite ends with the pin D' and arm G, and a bell or signal also located in the circuit.

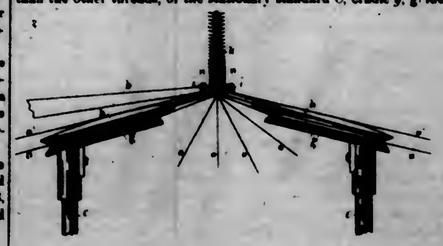
2. In combination with post A, a shaft, B, provided with a two-part collar, D, having a pin, D', an electrical circuit, contact-arms F and G, secured to the post and included in the circuit, a link connecting the pin D' and the arm G, and a bell or signal included in the circuit.

3. In combination with a switch-stand and its operating-shaft, the devices herein described for electrically indicating whether the switch is open or closed, comprising a plate with suitable contact-fingers, a collar provided with a pin or stud and secured to the operating-shaft, a link connecting the pin or stud with one of the contact-arms, wires I and J, connected with the contact-arms and with the earth, and a battery and an alarm or signal also included in the circuit formed by the wires and the contact-fingers.

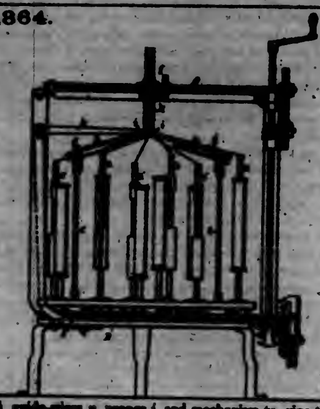
385,864. BRAIDING-MACHINE. JOHN MCCARRY, Providence, R. I., assignor to the New England Butt Company, same place. Filed Mar. 9, 1888. Serial No. 266,709. (No model.)

Brief.—The object of the invention is to produce improved mechanism for making loop-edged braid.

Claim.—1. The combination, with mechanism for interbraiding threads, embracing devices for carrying intermediate threads higher than the other threads, of the stationary standard C, cradle *g*, guide-



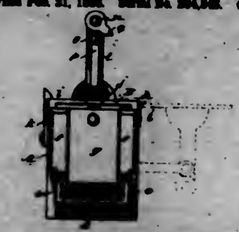
385,864.



holder A, guide-wires *n*, prongs *i*, and mechanism to give the prongs an intermittent motion.

2. The combination, with mechanism for interbraiding threads, having two sets of guide-bars of different lengths, of the stationary standard C, cradle *g*, guide-holder A, guide-wires *n*, prongs *i*, cam *c*, lever *b*, and spring *d*, substantially as and for the purpose set forth.

385,865. SAD-IRON. PETER KIESELS and JOSIAH KLEMMER, Chicago, Ill. Filed Feb. 21, 1888. Serial No. 264,963. (No model.)



Claim.—In a sad-iron, the combination, with casing or body A, of cover B, secured by hinge *h* and provided with standards *l*, for securing handle *m*, one of which standards *l* has a shoulder, *q*, and of arm *p*, pivoted against each standard *l* and swinging against shoulder *q*, all substantially as set forth.

385,866. WRENCH. JAMES P. HUTCHINS, New Bedford, Mass. Filed Mar. 22, 1888. Serial No. 268,178. (No model.)



Claim.—In a wrench, the combination of the jaw *a*, having angular recess *c*, shank *d*, exteriorly screw-threaded at *e* and provided with the stop *k*, the jaw *b*, having angular recess *c*, rectangular opening *s*, round opening *w*, and shoulder *i*, the tube *g*, having enlarged head or shoulder *h* and interiorly screw-threaded in a portion of its length, the remaining portion enlarged to the depth of the screw-thread and provided with the holes *t x v*, the collar *m*, adapted to be rigidly secured to the tube *g*, and the handle *x*, adapted to be secured to and inclose that portion of the tube *g* which projects below the collar *m*, all as shown and described.

385,867. PROCESS OF RECOVERING GLYCERINE FROM SPENT SOAP-LYES. BENJAMIN K. HUTCHIN, Brooklyn, N. Y., assignor to Joseph Gleis, same place, and Albert Bommer, London, England. Filed Sept. 16, 1887. Serial No. 249,761. (No model.)

Claim.—1. The process herein described of treating lye for the recovery of glycerine, which consists in first adding acid to neutralize any free alkali, then heating the lye, and in then adding a soluble salt, of barium or strontium, and, finally, sulphuric acid, as set forth.

2. The process herein described of treating lye for the recovery of glycerine, which consists in adding thereto a soluble salt of barium, and in then adding sulphuric acid and producing in the lye the insoluble sulphate of baryta, which constitutes a mechanical carrier of the precipitate in the lye, as set forth.

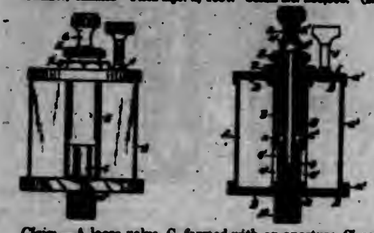
3. The process herein described of recovering glycerine from lye, which consists in first adding acid to neutralize any free alkali, next adding a soluble salt of barium, then adding sulphuric acid, then an alkali, and, finally, concentrating the remaining liquid by boiling, as set forth.

385,868. BASE-BURNER. SAMUEL HYDES and MARION H. WHITE, Manheim, Pa. Filed Oct. 24, 1887. Serial No. 252,902. (No model.)



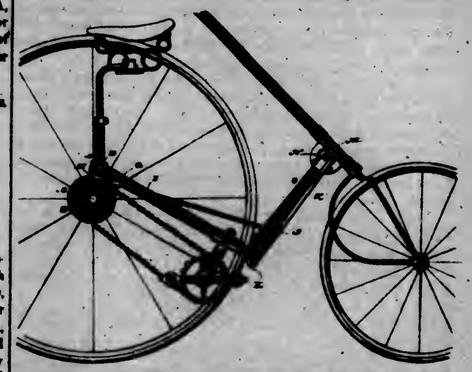
Claim.—A cook-holder comprising the plates C C, secured together and having the aligned grooves G G in their inner faces, thereby forming sockets, the spring-loop H, secured at the ends in the said sockets, and the roller journaled on the end of the loop, substantially as and for the purpose specified.

385,869. AUTOMATIC LUBRICATOR. THOMAS HOPPER, London, Ontario, Canada. Filed Apr. 2, 1887. Serial No. 233,203. (No model.)



Claim.—A loose valve, C, formed with an aperture, C', extending longitudinally through the same to permit the free access of air to the lubricant under the valve, and to allow the lubricant to flow regularly and perfectly true when the valve is raised, in combination with a guide, E, set-nut G, formed with a longitudinal aperture, G', and reservoir A, substantially as shown and described, and for the purpose set forth.

385,870. BRAKE FOR VELOCIPEDES. ALBERT H. OVERMAN, Boston, and CHARLES F. HARLEY, Chicopee, assignors to the Overman Wheel Company, Boston, Mass. Filed Sept. 6, 1887. Serial No. 249,095. (No model.)

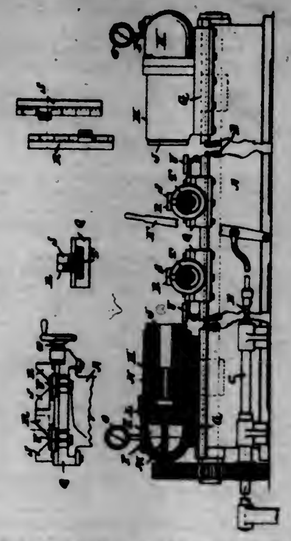


Claim.—1. In a velocipede, the combination, with a drum located upon the driving-axle, of a strap for engaging the periphery of such drum and provided with an opening located near its fixed end, a rod connected with the free end of the strap through such opening, and a foot-lever fulcrumed to the machine-frame and having the rod pivoted to it, substantially as set forth.

2. In a velocipede, the combination, with a drum located upon the driving-axle, of a strap for engaging the periphery of such drum, a threaded sleeve connected with the free end of the strap, a rod threaded into such sleeve, and a foot-lever fulcrumed to the machine-frame and having the rod pivoted to it, substantially as set forth.

3. In a velocipede, the combination, with a drum, of a strap for engaging the periphery thereof, a rod connected with the free end of the strap, a foot-lever fulcrumed to the frame of the machine and having the rod pivoted to it, and a foot-rest holding the foot-lever in place, substantially as set forth.

385,871. AXLE-COLLAR PRESS. ANDREW PATTERSON, Highland Park, Pa., assignor to the National Tube Works Company, Boston, Mass. Filed Mar. 5, 1888. Serial No. 266,242. (No model.)



Claim.—1. In an axle-collar press, the combination, substantially as set forth, with means for holding an axle, of a socket arranged for forcible movement longitudinally upon the end of the axle, a plunger fitted therein and adapted to go over the end of the axle and bear upon the collar to be pressed thereon, and a plunger to the rear of said plunger arranged to make contact at the end of the axle and limit the degree of advance of the axle within the socket.

2. In an axle-collar press, the combination, substantially as set forth, with means for holding an axle, of a socket arranged for forcible movement longitudinally upon the end of the axle, a plunger fitting said socket and adapted to receive the end of the axle and press against the collar, a water-cylinder arranged to the rear of said socket provided with a pressure-indicator, and a piston in said water-cylinder arranged to receive pressure from said plunger.

3. In an axle-collar press, the combination, substantially as set forth, with means for holding an axle, of a socket arranged for forcible movement longitudinally upon the end of the axle, a plunger fitting said socket and adapted to engage the end of the axle and the collar thereon, a water-cylinder to the rear of said socket provided with a pressure-indicator, and a piston in said water-cylinder arranged to receive pressure from said plunger and provided with a stop-piece to limit its retreat.

4. In an axle-collar press, the combination, substantially as set forth, with means for holding an axle, of a socket arranged for forcible movement longitudinally upon the end of the axle, a separable plunger fitting said socket, and having a bore suited to the diameter of axle being operated upon and having a length suited to the spindle length of the axle, and a separable plunger to the rear of said first-mentioned plunger, having a bore suited to the nipple of the axle being operated upon.

5. In an axle-collar press, the combination, substantially as set forth, of a bed provided with means for holding an axle, a saddle fitted to slide on said bed and carrying an axle-forcing socket, a screw journaled in said bed and engaging said saddle, and a driving-shaft arranged for the transmission of motion to said screw, and friction-pulleys upon said driving-shaft.

6. In an axle-collar press, the combination, substantially as set forth, of a bed, A, saddles G, fitted thereon, sockets H, carried thereby, means, substantially as described, for forcibly approaching the saddles, water-cylinders K, provided with pressure indicators and pistons, and plungers within the sockets adapted for engagement with the ends of the axles.

7. In an axle-collar press, the combination, substantially as set forth, of a bed, a saddle upon each end thereof fitted for sliding movement thereon, plunger-receiving sockets carried by said saddles and adapted to engage the ends of axles, and means, substantially as described, for moving the two saddles to and from each other.

8. In an axle-collar press, the combination, substantially as and for the purpose set forth, of a bed, saddles carrying sockets and plungers and fitted for movement thereon, means, substantially as described, for moving the saddles to and from each other, rests Q, supported by the bed between the saddles, jaw-pieces R and S, disposed in pairs alongside each other and fitted for sliding motion in the rests transverse to the bed, and provided with oppositely-facing inclined upward projections, and screws T, for adjusting said jaw-pieces endwise with reference to each other.

9. In an axle-collar press, the combination, substantially as set forth, of a bed, saddles fitted to slide thereon and carrying sockets and plungers, means, substantially as described, for moving said saddles to and from each other, and vertically-adjustable gage-tables U, disposed below the axial lines of said sockets.

10. In an axle-collar press, the combination, substantially as set forth, of a bed, pressing-sockets carrying plungers and fitted for sliding movement on said bed, screw B, engaging said saddles, hollow driving-shaft C, geared to said screw, friction-clutches D on said driving-shaft, clutch-rod E, disposed in the hollow of said driving-shaft, and arranged, substantially as described, for operating said friction-clutches, and hand-lever F, for longitudinally shifting said rod.

11. In an axle-collar press, the combination, substantially as set forth, of a bed, a screw journaled therein, means, substantially as described, for rotating said screw in either direction, saddles G, fitted to slide on said bed and engaging said screw, sockets H, carried by said saddles and provided with plungers, rests Q, adjustably secured to said bed between said saddles, and rest-jaws R and S, carried by said rests.

385,872. CARPET-STRETCHER. SHERMAN S. PEASE, Halsey, Oreg. Filed Dec. 14, 1887. Serial No. 257,886. (No model.)



Claim.—1. The combination, with the upright and the arm C, secured thereto and extending at right angles therefrom, of the curved rack uniting the outer end of the arm with said upright, the lever pivoted to said arm near the base of the upright, and the claw carried by said lever and working in the guide at the junction of the arm and rack, substantially as described.

2. The combination, with the upright formed with handle and grip, and the arm C, extending at right angles from the base of said upright, of the curved bar uniting the outer end of said arm and the upright, the slotted lever embracing said arm and bar, and the claw pivoted between the bifurcations of the lever and working through a guide at the junction of the arm and bar, substantially as shown and described, and for the purpose specified.

385,873. METHOD OF MAKING CUT NAILS. REUBEN H. PLAIS, New York, N. Y. Filed Sept. 10, 1888. Serial No. 313,817. (No model.)



Claim.—The improvement in the method of making cut nails which consists in rolling a piece of metal into sheets, to provide said sheets with heads or flanges at each edge and a corresponding flange of double width along the center, each of said flanges projecting a uniform distance beyond both surfaces of the sheet, and then stamping, cutting, or shearing out the finished nails in such manner that the smaller portion of one nail is adjacent to the larger portion of the next nail, substantially as described.

385,874. THILL-COUPLING. PHILIP A. REMY, Holden, Mass., assignor of one-half to Albert M. Hitz, same place. Filed Feb. 16, 1888. Serial No. 264,267. (No model.)

Claim.—1. In a thill-coupling, the combination of the clip, two parallel lugs thereon, and two rollers pivoted between said lugs, said

385,874.



rollers being located so as to receive a thill-iron between them, and one of said rollers having a circumferential groove to receive the thill-iron, substantially as and for the purpose set forth.

2. The combination of the clip A, provided with lugs B B, rubber roller C, roller D, pivots *c* and *d*, thill-iron E, and strap F, substantially as described.

3. The combination of the clip A, provided with lugs B B, roller C, having a circumferential groove, roller D, thill-iron E, formed to partly surround the roller D, and the strap F, substantially as described.

4. The combination of the clip A, provided with lugs B B, roller C, having a metallic bushing, roller D, and pivots *c* and *d*, said rollers being suitably formed and located to receive and press upon a thill-iron between them, substantially as set forth.

385,875. GRAIN-ADJUSTER FOR BINDERS. HERBERT O. BENSON, Minneapolis, Minn. Filed Nov. 10, 1887. Serial No. 254,732. (No model.)

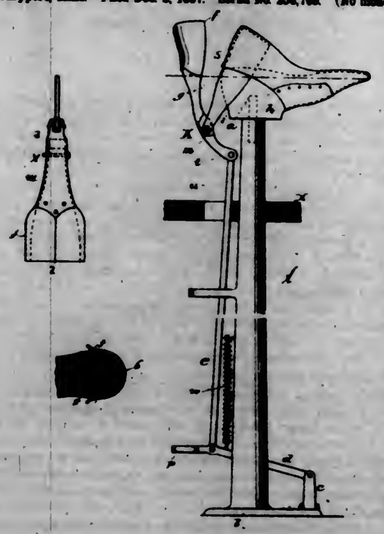


Claim.—1. In a butt-adjuster for grain-binders, an endless slatted adjuster-belt having the non-elastic portion 5, the elastic portion 6, and the slats 7, in combination with the rivets 10 and washers 11, for joining the ends of the elastic and the non-elastic portions and attaching the slats thereto at the junction thereof, as described.

2. In a butt-adjuster for grain-binders, an endless slatted adjuster-belt formed partly of elastic and partly of non-elastic material, and having the junction of the latter with the former made at the point of attachment of the slats, whereby the same means used to attach the slats to the belt may be used to join the ends of the elastic and non-elastic portions, in combination with the adjuster-frame 1, the supporting-bracket 2, and the removable clip 3, whereby the adjuster-frame may be removed from the supporting-bracket to remove or replace the adjuster-belt, as described.

3. In a butt-adjuster for grain-binders, an endless slatted adjuster-belt formed partly of elastic and partly of non-elastic material, and having the union or junction of the former with the latter made at the point of attachment of the slats, whereby the same means used to attach the slats to the belt may be used to join the ends of the elastic and non-elastic portions, substantially as described.

385,876. RELASTING-MACHINE. WARREN R. SARGENT, Newburyport, Mass. Filed Dec. 2, 1887. Serial No. 256,769. (No model.)

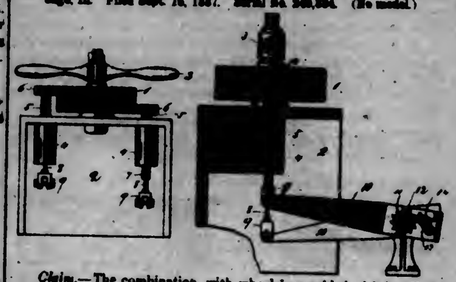


Claim.—1. The herein-described relasting-machine for turned boots and shoes, which consists of a relasting-horn, *g*, and auxiliary horn *f*, with their co-operating mechanism, in combination with a relasting-post, A, constructed and adapted as and for the purpose specified.

2. In a relasting-machine for turned boots and shoes, the auxiliary horn *f*, with the slot *l* and shank *m*, or its equivalent, constructed and adapted as and for the purpose specified.

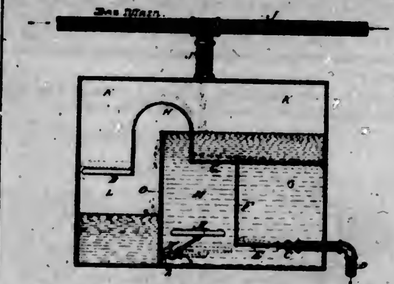
3. In a relasting-machine for turned boots and shoes, the relasting-post A, having a projecting shaft, *a*, and iron shoe *l*, with the beam *e* and the treadle-lever *d*, in combination with the spiral spring *w*, the connecting-bar *c*, auxiliary horn *f*, and relasting-horn *g*, constructed and arranged as and for the purposes set forth.

385,877. MECHANICAL MOVEMENT. JOHN F. SCHEETTER, Chicago, Ill. Filed Sept. 16, 1887. Serial No. 249,804. (No model.)



Claim.—The combination, with wheel 1, provided with handle 3 two oppositely-threaded screws, 5, with pinions 6, and with connecting-rods 8, of levers 10, pivoted on shaft 11, and provided with ratchet wheels 12, mounted upon such shaft 11, all substantially as described to operate as specified.

385,878. DEVICE FOR REMOVING WATER FROM GAS AND OTHER PIPES. JAMES F. SHAY, Toledo, Ohio. Filed July 7, 1887. Serial No. 243,615. (No model.)



Claim.—1. As a draining device for gas, steam, or other pipes, the combination of a fluid receptacle or tank, a discharge-valve controlling it, a secondary fluid-receiving chamber or receptacle, and a float situated within this secondary chamber and controlling the discharge-valve, substantially as and for the purposes described.

2. As a draining device for gas, steam, or other pipes, the combination, with the tank having two compartments or chambers, L and M, connected by an overflow, of a discharge pipe and valve in one chamber, M, a float in the other chamber, L, controlling the valve of the chamber M, and a discharge-valve from the chamber L, which valve is opened by the fall of water in the chamber M, substantially as and for the purposes described.

385,879. CURRENT-COLLECTOR FOR SERIES ELECTRIC RAILWAYS. ERNEST H. SHORT, Denver, Colo., assignor, by direct and mesne assignments, to the United States Electric Company, same place. Filed Feb. 16, 1887. Serial No. 226,924. (No model.)

Claim.—1. The current-gatherer for electrical railways, composed of a bar of insulating material provided with contact conducting-strips connected to said bar and adapted to move thereon when the bar is bent, whereby buckling of the strips is prevented, substantially as described.

2. The current-gatherer for electrical railways, composed of a bar of insulating material provided with metallic strips on its sides, strips being bent around the ends of the bar and arranged to leave insulated spaces on the bar between the ends of the strips, said strips

385,379.



being connected to the bar by slipping connections, substantially as described.

3. The combination, with a current-collector consisting of an insulating-bar having metallic contact-strips upon its sides, insulated supports for said bar, a shoe connected with said supports and adapted to travel above the slot of the conduit, guides at each end of said shoe adapted to travel within the slot, and wearing-plates connected on each side of the insulated supports on the line of the slot, above and below the same, substantially as described.

4. In combination, an insulated bar having contact-strips upon each side, shoes for supporting said insulated bar, adapted to travel above the slot of the conduit, guides on said shoes extending into the conduit, and stay-rods m between the series of shoes, substantially as described.

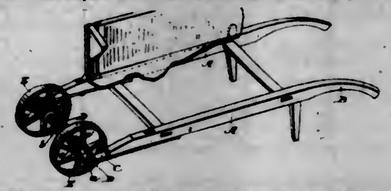
385,380. PIANO. FREDERICK G. SMITH, Brooklyn, N. Y. Filed Nov. 26, 1887. Serial No. 256,147. (No model.)



Claim.—1. In combination with the bottom frame and pedals of a piano, said pedals having horizontal pivots, a front plate attached to the face of said frame and having on its back abutments, upon the shoulders of which said pivots are supported, substantially as herein-before set forth.

2. In combination with the bottom frame and pedals of a piano, the front rail of said bottom frame having recesses in its lower edge to accommodate the shanks of said pedals, and the latter having horizontal pivots at the face of said rail, a front plate attached to said face of the front rail and having openings which coincide with said recesses, and bottom guards integral with the body of the plate to partly close said openings beneath the pedals, substantially as herein-before set forth.

385,381. WHEELBARROW. CHARLES D. SPALDING, Rice Lake, Wis. Filed Apr. 7, 1888. Serial No. 269,949. (No model.)



Claim.—As a new article of manufacture, the wheelbarrow A, having the usual handles, B, terminating forwardly in the bearing-shaft D, whereon two wheels, E, are adjustably mounted by reason of the collar *c*, having a bayonet-joint, *c*², and a set-screw, *c'*, whereby the distance between said wheels is variable and their directions of motions in turning opposite to each other.

385,382. COMBINED HARROW AND PULVERIZER. JONATHAN F. STARK, Losta, Ind. Filed Feb. 25, 1888. Serial No. 265,244. (No model.)

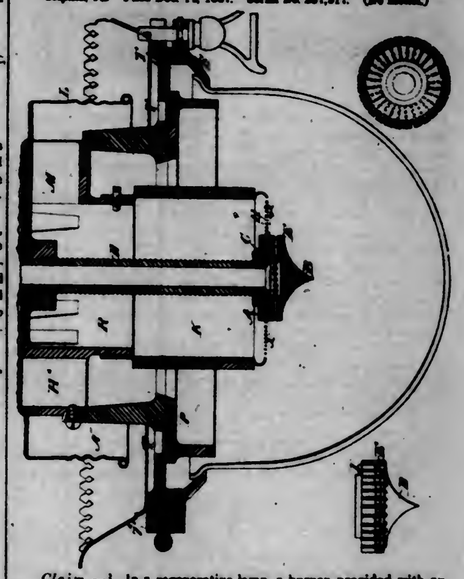


Claim.—1. The combination, with the main frame, of the drums mounted therein, the carrying-wheels, the gear-wheels E on the shafts of the carrying-wheels, the gear-wheels *a* on the shafts of the drums, the yokes *d*, pivoted to the main frame, and the gear-wheel J, carried by said yokes and adapted to mesh with the gear-wheels E and *a*, as set forth.

2. The combination of the main frame, the drums mounted therein, the gear-wheels *a* on the shafts of the drums, the carrying-wheels, the gear-wheels E on the shafts of the carrying-wheels, the standards *b* on the main frame, the yokes *d*, pivoted at their lower ends to the main frame and adjustably connected at their upper ends to the standards *b*, and the gear-wheel J, carried by the yokes and adapted to mesh with the gear-wheels E and *a*, as set forth.

3. The combination of the main frame having the slotted side bars, the drums mounted in the said frame, the gear-wheels *a* on the shafts of the drum projecting through the slotted side bars of the main frame, the stub-shafts F, mounted in the said side bars, the carrying-wheels mounted on said shafts, the gear-wheels E, mounted on said shafts and projecting through the slotted side bars, the standards *b*, erected on the side bars, the yokes *d*, pivoted at their lower ends to the side bars and adjustably secured at their upper ends to the standards *b*, and the gear-wheel J, carried by said yokes and adapted to engage the gear-wheels E and *a*, as set forth.

385,383. REGENERATIVE GAS-LAMP. SAMUEL SUSSE, Philadelphia, Pa. Filed Dec. 14, 1887. Serial No. 257,917. (No model.)



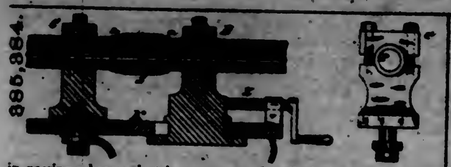
Claim.—1. In a regenerative lamp, a burner provided with an interior gas-chamber and radial gas-conduits leading outward therefrom, together with vertical slits or air-conduits on the outside of said burner, through which the air passes downward between the gas-conduits, as and for the purposes described.

2. In a regenerative lamp, the combination of the globe, the supporting-frame provided with air-inlets, the flue, the central air-supply cylinder, the tubes extending through said flue and connecting the central cylinder with the outer air, the burner made in the form of a short cylinder with a conoidal lower portion, the central part of said cylinder being hollowed out, forming a gas-chamber and having horizontal radial gas-passages extending from the chamber to the outside of the cylinder, and vertical slits on the outside of the said cylinder, alternating with the openings of the said gas-passages, the gas-pipe connected with and supporting said burner, and a perforated air-distributing plate extending from the burner to the air-supply cylinder, as and for the purposes described.

385,384. METHOD OF JOINING PIPES BY ELECTRICITY. ELIHU THOMSON, Lynn, assignor to the Thomson Electric Welding Company, Boston, Mass. Filed Aug. 22, 1887. Serial No. 247,003. (No model.)

Claim.—1. The herein-described method of uniting sections of pipe, consisting in applying a sleeve or collar or coupling-tube to the adjoining ends of the sections, and then passing a heavy electric current through the parts to effect a union of the sleeve and pipe, thus completing the joint.

2. The herein-described method of making pipe-joints, consisting



in passing a heavy electric current, as described, through the sleeve or collar or coupling at the abutting ends of the pipes, and of a volume sufficient to raise the parts to welding temperature, and then welding the sleeve or its equivalent and the pipes together, as and for the purposes described.

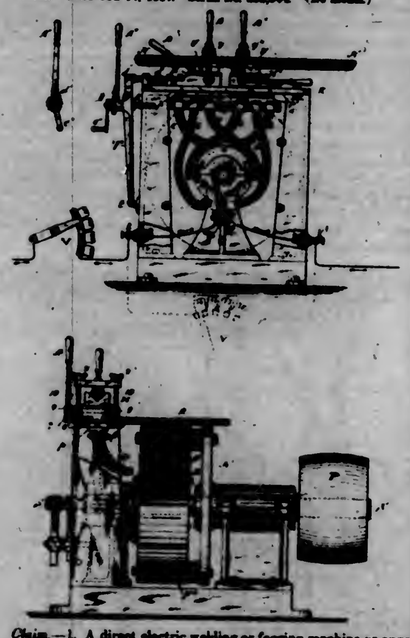
385,385. METHOD OF ELECTRICALLY WELDING CHAINS AND LINKS. ELIHU THOMSON, Lynn, assignor to the Thomson Electric Welding Company, Boston, Mass. Filed Aug. 22, 1887. Serial No. 247,002. (No model.)



Claim.—1. The herein-described process of manufacturing links, rings, and other endless shapes of metal, consisting in forming two U or horseshoe shaped portions, placing the open or free ends of the same together, and then passing a welding, soldering, or brazing current of electricity across the joint between the two halves or portions, as and for the purposes described.

2. The herein-described process of manufacturing chains, which consists in forming looped, bent, or horseshoe-shaped pieces, placing the two free ends of one piece in contact with the two free ends of another while threaded through a formed link, and passing an electric current across the joint from one piece to the other of a volume sufficient to heat the same to the requisite welding, soldering, or brazing temperature.

385,386. DIRECT ELECTRIC WELDING-MACHINE. ELIHU THOMSON, Lynn, assignor to the Thomson Electric Welding Company, Boston, Mass. Filed Oct. 17, 1887. Serial No. 252,004. (No model.)



Claim.—1. A direct electric welding or forging machine or apparatus consisting of a dynamo-generator constructed to generate currents of great volume, and suitable clamps or holding devices connected with the part of the machine in which the heavy currents are generated, said devices being all mounted in a proper frame and in convenient proximity to one another, as and for the purpose described.

2. A direct welding or forging apparatus consisting of a dynamo-generator having a stationary armature, suitable clamps or holding devices for holding the work, and direct electrical connections from the terminals of the armature-coils to said clamps, as and for the purpose described.

3. The combination, in a direct electric welding-machine, of an armature-conductor in which currents are induced by the revolution of the moving parts, extensions or connections from said armature-conductor, and welding-clamps and guides or supports attached to or supported by the frame of the machine bearing said clamps.

4. In a direct electric welding or forging machine, a revolving multipolar field-magnet, in combination with a fixed armature and conductors wound thereon and connected to a set of holding and welding clamps.

5. In a direct electric welding or forging machine, a multipolar revolving field-magnet, in combination with fixed armature and conductors wound thereon, and direct connections from said conductors to a set of holding or welding clamps, one or both of which clamps are movable.

6. In a self-exciting direct electric welding or forging machine, an armature-conductor in which currents are induced by the revolution of moving parts, extensions or connections from said armature-conductors to a set of holding and welding clamps, and guides or supports attached to or supported by the frame of the machine bearing such clamps, in combination with a second and distinct armature-conductor and connections therefrom to a variable resistance, *r*, through a variable reactive coil or its equivalent to commutating devices or commutator, which commutes the currents for the excitation of the field-magnet.

7. In a dynamo-electric machine for electric welding or forging, a laminated and grooved armature-core, the armature-conductors in said grooves consisting of bundles of insulated wires whose ends or terminals are connected with the welding-clamps, either directly or indirectly, which armature-conductor passes solely from one end of the armature-core to the other and back, forming thereby about one complete convolution on the core.

8. In a machine of the kind described, an armature having two sets of grooves, relatively large and small, in one of which are wound the main-circuit conductors and in the other and smaller grooves the exciting conductor or conductors for the field-magnets.

9. In a dynamo-electric machine or motor, an armature-core with two sets of grooves, large and small, alternately cut in the core.

10. In a dynamo-electric machine, a circular laminated field-magnet core made in sections, having pole-pieces pointing radially inward, in combination with an iron or other metal external ring or casing in which the sections are borne or carried, substantially as shown and described.

11. In an electric welding or forging apparatus, the combination, with one of the clamps, of a ratchet-wheel and lever and an intermediate screw-connection, as and for the purpose described.

12. The combination, in an electric welding or forging apparatus, of a movable clamp, a propelling rod loosely connected therewith, a screw provided with a ratchet-wheel, and an operating-wheel having a propelling-pawl, as and for the purpose described.

13. The combination, in an electric welding or forging apparatus, with a movable portion of the clamp, of a rock bar or shaft having an attached operating-handle, one or more eccentrics secured to said shaft, and one or more collars or sleeves embracing said eccentrics and connected with a movable portion of the clamp, as and for the purpose described.

14. The combination, in an electric welding or forging apparatus, of a clamp, a base-plate, *p*, connected with a source of heavy currents, and a gang of contact-springs between said base-plate and the movable clamp, as and for the purpose described.

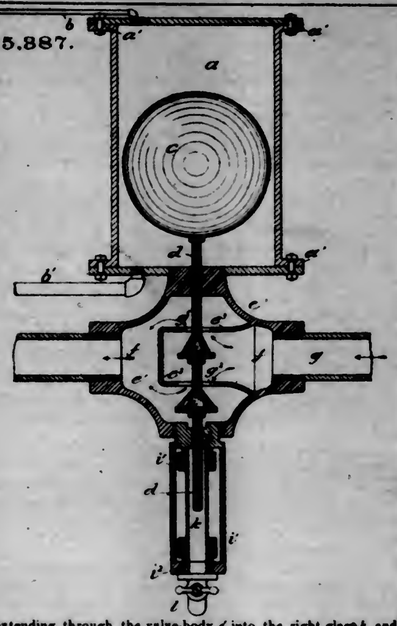
15. In an electric welding or forging apparatus, a self-exciting dynamo-machine having a stationary armature and a movable field-magnet, said armature being provided with two sets of conductors, one of which is connected directly with the clamps or holders of the apparatus without the intervention of conducting-rings or other moving devices, while the other armature-conductor is connected with the field-magnet of the machine through a suitable rectifying-commutator.

385,387. FEED-WATER REGULATOR. WALLACE TROMPEN, South Manchester, Conn. Filed Nov. 26, 1887. Serial No. 256,217. (No model.)

Claim.—1. In combination with the float-chamber having the pipes *b b'*, the valve-body *c'*, with threaded stem *c*², and throughway *f*, divided by the diaphragm *c*³, having therein the ports *g g'*, the float *e*, secured to the upper end of the valve-rod *d*, that bears the conical valves *h h'*, and extending through the valve-body *c'* into the sight-glass *k*, and the frame *i*, supporting the glass and secured to the bottom of the valve-body, all substantially as described.

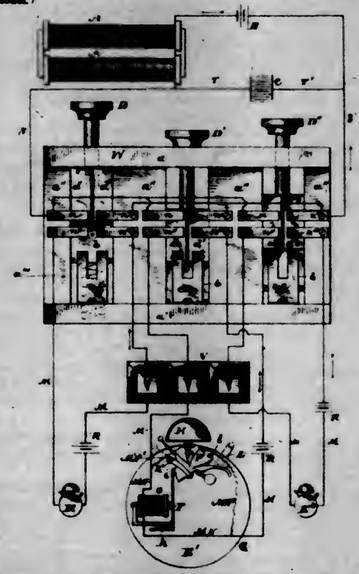
2. In combination with the float-chamber having the pipes *b b'*, the valve-body *c'*, with threaded stem *c*², and throughway *f*, divided by the diaphragm *c*³, having therein the ports *g g'*, the float *e*, secured to the upper end of the valve-rod *d*, that bears the conical valves *h h'*,

385,387.



and extending through the valve-body *c'* into the sight-glass *k*, and the frame *i'*, supporting the glass and secured to the bottom of the valve-body, and the plug i^2, secured in the lower end of the frame and bearing a petcock, *l*, all substantially as described.

385,388. ELECTRIC SIGNAL-TRANSMITTER. WILLIAM C. THOMPSON, Minneapolis, Minn. Filed Apr. 19, 1887. Serial No. 235,413. (No model.)



Claim.—1. In an electric-call system, the combination, with the main electric circuit, of a local electric circuit, a call-box in said main electric circuit, having an answering device inoperative under the normal force of the main and local circuits, self-inductive coils in the local circuit, and switches for breaking said local circuit and closing said local and main circuits in series, substantially as described.

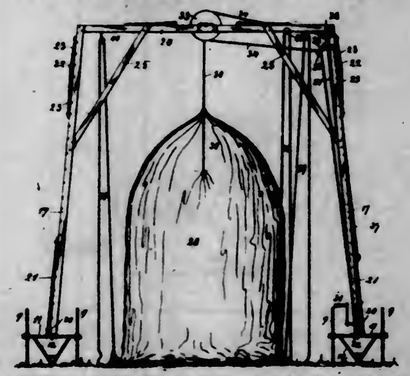
2. In an electric-call system, the combination, with a central station and switch-board thereat, of a main line provided with an electric circuit normally closed through said switch-board, a local circuit at the central station connected with the switch-board, normally open, self-inductive coils in said local circuit, a call-box in the main line having an electro-magnet operating an answering device, said magnet being inoperative under the normal power of the main and local circuits, and switches for closing the local circuit, then breaking the local circuit and throwing the local and main circuits in series, substantially as described.

3. In an electric-call system having a central and outlying stations, the combination, with a switch-board in the central office, of electric call-boxes at the outlying stations, provided with an electro-magnet and an armature-lever adapted to operate a bell or other signal device, a main battery, a main-line circuit normally closed through said battery, electro-magnet and switch-board, a local battery in the central office, a local circuit through said local battery, and said switch-board normally open at said board, a resistance to the movement of the armature-levers in the call-boxes slightly exceeding the power of the magnet from the main and local circuits combined, and a switch for closing said local circuit at the board and then breaking the local circuit and throwing the main and local circuits in series, substantially as described.

4. In an electric-call system having a central and outlying stations, in combination, the switch-board W, provided with a suitable groove or seat for a movable switch-block, and having the contact-strips *n*, *n'*, *n''*, *n'''*, and *c* projecting over said switch-block seat, the movable spring-retracted switch-block D, provided with the contact-strips *d d' b*, insulated from each other, the main-line battery R, the main-line wire M through battery R and connecting with the contact-strip *n n'*, an electric call-box, E, on said main circuit, provided with the magnet *e* on the main circuit, the hooked armature-lever F, resistance-spring *h*, ball H, spring-actuated bell-hammer K, provided with the notch *i*, self-inductive coils A A, local battery B, and the local wires S S' through said local battery and said coils, and connecting with the contacts *n n'*, respectively, substantially as and for the purpose set forth.

5. In an electric-call system having a central and outlying stations, in combination, the switch-board W, provided with a suitable seat for a movable switch-block, the contact-strips *n*, *n'*, *n''*, *n'''*, and *c*, attached to said board adjacent to said switch-block seat, the movable spring-retracted switch-block D, located in said seat and provided with contact-strips *d d' b*, insulated from each other, the main-line battery R, the main-line wire M through battery R and connecting with the contact-strips *n n'*, an electric call-box, E, on said main circuit and provided with an electric answer-back device, consisting of the magnet *e*, hooked armature-lever F, resistance-spring *h*, ball H, spring-actuated bell-hammer K, provided with the notch *i* for engagement with the hook on the lever F, self-inductive coils A A, local battery B, local wires S S through said local battery and inductive coils, and connecting with the contacts *n n'*, respectively, the condenser C, and the branch wires T T', connecting the same with wires S S', respectively, all substantially as and for the purpose set forth.

385,389. DEVICE FOR FUMIGATING TREES. LUTHER H. TITUS, San Gabriel, Cal. Filed July 5, 1887. Serial No. 243,494. (No model.)



Claim.—1. The combination, with a portable frame adapted to travel between rows of trees, of a vertically-movable tent suspended from the top of the frame and ropes for manipulating the same, whereby the said tent may be adjusted to envelop trees of various sizes, substantially as specified.

2. The combination, with a portable frame adapted to travel between rows of trees, of a rotatable drum journaled in the top thereof and a rope suspending a tent and connected with the drum, substantially as specified.

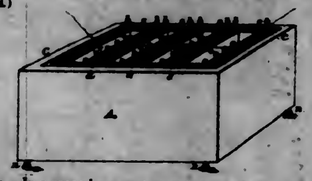
3. The combination, with a vertical frame adapted to travel between rows of trees, of a horizontal rotatable drum journaled in the top thereof, a vertically-movable tent suspended from the said drum, ropes for raising and lowering the tent, and ropes for manipulating its lower edges, substantially as specified.

4. In a device to fumigate trees, the combination of an upright frame consisting of horizontal sills 20, standards 17, angular braces, top longitudinal rails, top cross-rails, 24, wheels whereon said frame rests and moves, a tent suspended from the upper horizontal portion of the frame, and suitable ropes to raise and lower said tent, as and for the purpose specified.

5. In a device to fumigate trees, the combination of a suitable frame, the uprights of which each rest on an individual truck of wheels or runners, a horizontal drum journaled in the top of said frame, and a tent suspended therefrom.

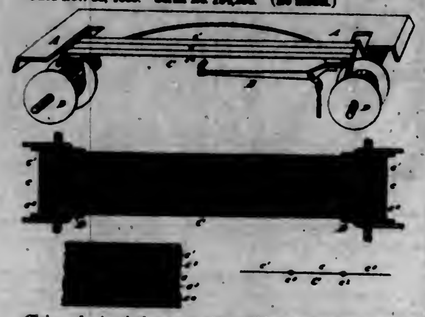
6. In a device to fumigate trees, the combination of an upright frame resting on trucks, a drum supported in the top of said frame, a tent suspended from the drum, and ropes to raise and lower said frame, so as to suit the height of the tree.

385,390. SECONDARY OR STORAGE ELECTRIC BATTERY. SYLVANUS L. TRIPP, Denver, Colo., assignor to the Electric Storage Light and Power Company. Filed Aug. 27, 1888. Serial No. 283,988. (No model.)



Claim.—In a secondary or storage battery, the wooden insulated case, in combination with the glass or porcelain cans provided with a cover of the same material, said cans having coils the outer walls of which are provided with perforations, substantially as described.

385,391. INK-RIBBON FOR TYPE-WRITING MACHINES. JOHN T. UNDERWOOD, Brooklyn, N. Y., and W. COLBURNE BRUSHA, Jersey City, N. J.; EMMA Brusha executrix of said W. Colburne Brusha, deceased. Filed Nov. 30, 1888. Serial No. 194,998. (No model.)



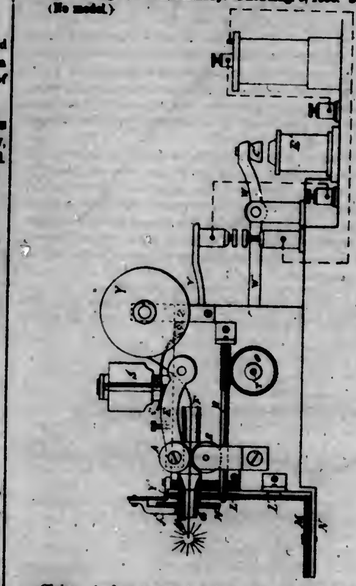
Claim.—1. A printing or marking ribbon or band composed of a plurality of connected parallel sections, each section being coated or saturated with printing or marking material of different color or character, and adapted to be employed intermittently at will or continuously in position in a type-writing or marking machine to produce the desired color or description of impression, substantially as and for the purpose stated.

2. A printing or marking ribbon or band having a plurality of parallel sections provided with printing or marking material of different colors or character, each adapted to be employed intermittently at will or continuously in position in a writing or marking machine, the coated or saturated surfaces of the sections of the said ribbon or band being separated one from the other by a dividing means, *c*, substantially as shown and described.

385,392. HORSE-POWER. ALBERT B. VARY, Marshall, Mich. Filed Aug. 11, 1887. Serial No. 246,782. (No model.)

Claim.—In a horse-power, the vertical shaft *g*, having a rib, *i*, in combination with the sweep-plate B, having a groove, *k*, and set-screws *n* and *u*, substantially as shown and described.

385,393. MAGNESIUM LAMP. THEODOR WEIMER, Vöröstorok, near Villingen, Baden, Germany. Filed Aug. 9, 1888. Serial No. 282,465. (No model.)



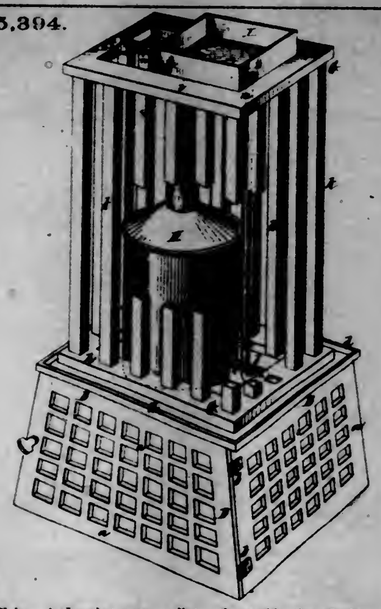
Claim.—1. In a magnesium lamp, the combination of the tube F, the rollers A and B, the rotating tube G, and means for operating said rollers and tube, substantially as described.

2. In a magnesium lamp, the combination of the rotating tube G, with disk H, and stationary scraper *f'*, with cutter *g'*, substantially as set forth.

3. In a magnesium lamp, the combination of the rollers A and B, pinion *a''*, wheel U, wheel Z, with pin Z', lever V, an electric motor, pinion *b'*, wheel T, and the lever W, with segment *a'*, wheel X, provided with pawl and ratchet, and spring-box P, substantially as and for the purpose described.

385,394. HOT-WATER RADIATOR. MARY S. WEST, West Somerville, Mass., administratrix of CLARK S. WEST, deceased. Filed Aug. 6, 1887. Serial No. 246,302. (No model.)

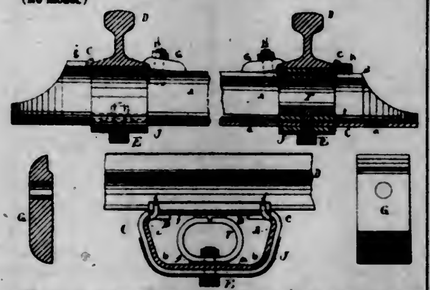
385,394.



Claim.—1. In a hot-water radiator, the combination of a burner a water-heating receptacle, a radiator connected therewith at different levels, a water-receptacle, I, supported above the radiator, a pipe, *m*, connecting the water-receptacle I with the water-heating receptacle, and a steam-pipe leading into the water-receptacle I below the water-level, whereby escape-steam is condensed, substantially as described.

2. The combination of the hollow frame B, having a flat top provided with a central opening, the burner mounted therein below the opening, a water-heating receptacle, H, arranged over said opening, a radiator, G, having a hollow stand, *h*, resting on the flat top of the frame B, a hollow top, *i*, and connecting-tubes *k*, water-connections at different levels between the radiator and the boiler, and a water-receptacle, I, resting upon the top *i* of the radiator and connected with the heating-receptacle, as set forth.

385,395. METALLIC TIE OR SLEEPER FOR RAILROADS. REYNOLDS T. WHITE, Boston, Mass. Filed Oct. 10, 1887. Serial No. 251,888. (No model.)



Claim.—1. A tie or sleeper, A, consisting of a sheet of steel bent to the form shown—that is, flat on the bottom A, rounded at the bottom corners, *b*, then straight, but on a slight outward incline, to the upper corners, *c*, and then turned over inwardly to form the flanges B B—in combination with the bands C, shrunk around the said tie and which carry the rails D, substantially as shown and described.

2. A tie or sleeper made of sheet-steel constructed to form a spring its entire length and provided with bands around said tie under the rails to prevent the body of the tie from flattening down, substantially as set forth.

3. A tie or sleeper made of sheet-steel to form a spring its entire length, having bands shrunk around it at or near its ends, in combination with springs secured between the under side of the bands and bottom of the tie, substantially as and for the purposes set forth.

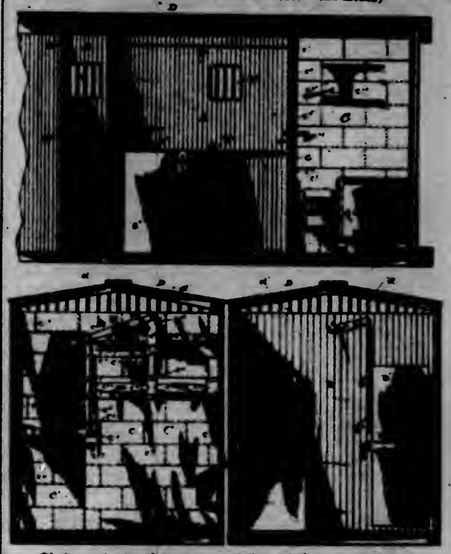
4. The combination of the tie or sleeper A, constructed as described, the straps C, spring F, wearing-plates *f*, and clamps G G, substantially as shown.

5. In combination with a metallic tie or sleeper, A, a layer, J, of paper, felt, or other material saturated with any water-proof substance and secured to the under side of the bearing-surface, substantially as shown and described, and for the purposes set forth.

6. A tie or sleeper, A, having straps or bands C around its outside, and having stud K in flanges B at one end and a part of flanges B turned upward on the other end outside of straps C and rails D, as and for the purposes set forth.

7. A railroad tie or sleeper for steam-railroads having the following elements: a sheet of steel formed to make it flexible, and bands around its outside, with a part of said bands on the top of the tie formed to fit the lower edge of a rail, and springs between said bands and bottom of tie, and studs on one end of the flanges, and a part of the flanges turned up on the other end, all arranged substantially as shown and described, and for the purposes set forth.

385,396. SAFETY EXPRESS-CAR. SAMUEL WORKMAN, Boston, Mass. Filed Oct. 16, 1886. Serial No. 216,662. (No model.)



Claim.—1. A safety-car consisting of three compartments—namely, an outer narrow compartment, a middle compartment, and an inner compartment—the doors between the said compartments being provided with locking devices operated from the inner compartment.

2. A railway-car having three compartments, the doors between the said compartments being provided with locking devices and connected by means of a shaft in such manner that the motion of one locking device is communicated to the other, substantially as described.

3. A railway-car divided into compartments, devices locking the doors between the said compartments, and a common lever situated in an inner compartment and operating said locking devices.

4. A railway-car divided into compartments, the partitions between the compartments being provided with doors locked by means of hasps, staples, and bolts, the bolts of the two doors being so arranged that they shall move simultaneously in opposite directions in order that one may be locked simultaneously with the unlocking of the other, and a lever operating both bolts.

5. In a railway-car, the compartments, doors leading into the same, and the mechanism for locking the doors, consisting of the vertically-sliding bolts, the lever for operating these, and the spring-bar for holding the bolts in the desired position, substantially as described.

6. In a railway-car, the compartments, doors to the same, and mechanism for locking the doors, consisting of vertically-sliding bolts and the spring sliding bars for holding the parts in any desired position, one of the sliding bars being provided with a beveled end engaged by a door to release the parts when the door is closed, substantially as described.

7. The herein-described means for locking a door and simultaneously unlocking a distant door, consisting of vertical locking-bolts and the operating-lever, to which one of the said bolts is connected directly and the other indirectly by means of a rock-shaft and arm, substantially as set forth.

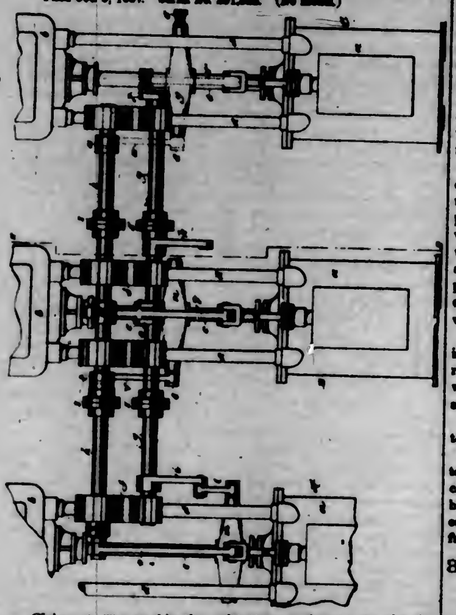
8. The means herein described for locking a door and simultaneously unlocking a distant door, consisting in the vertical locking-bolts, the operating-lever, to which one of the said bolts is connected directly, and to which the other is connected by means of the rock-shaft and a second lever, and the spring slide-bars for locking the parts, substantially as described.

9. A safety-car divided by transverse partitions into a narrow outer compartment, a middle receiving-compartment formed with a caged receiving-door, and an inner compartment or magazine, there being a lever and intermediate devices for locking from the inner compartment the doors in the partitions between the compartments.

10. The safety-car divided by the transverse partitions, the inner one of which, with its door, is bullet-proof, into the narrow outer chamber, the middle receiving-chamber having the caged receiving-door, and the bullet-proof chamber, safe, or magazine, and the lever and intermediate devices for locking the doors in the partitions from the inner chamber or magazine.

11. A safety express-car having a bullet-proof partition, a block journaled therein, and another or inner block pivoted in a different plane to the first block and perforated for a fire-arm, substantially as described.

385,397. ENGINE. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed Oct. 5, 1887. Serial No. 251,852. (No model.)



Claim.—1. The combination, with three engines arranged to be operated in pairs upon the duplex principle, of valve-operating connections for operating the valve or valves of each engine from either of the others, substantially as described.

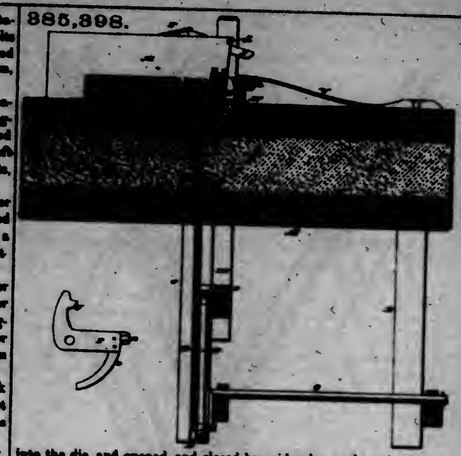
2. The combination, with the three engines A B C, of the rock-shafts *g A*, each having connections for attachment to the piston-rods of two of said engines and to the valve-rods of two of said engines, substantially as described.

3. The combination, with the three engines A B C, of the rock-shafts *g A*, made in parts and connected by couplings, as S, substantially as described.

4. The combination, with the shafts *g A*, having the rock-arms *s x*, of the link *q*, connected to the valve-rod *s* and arranged to be connected to either of said arms, substantially as described.

385,398. BRICK CUTTING AND SANDING MACHINE. PETER S. SOUER, Glen Morris, Md. Filed July 11, 1887. Serial No. 243,903. (No model.)

Claim.—1. The combination, with a brick-forming die, of a blade mounted to reciprocate across it, a valve, and a sand-passage leading into the die and opened and closed by said valve, and mechanism to operate the blade and the valve.



2. The combination, with a brick-forming die, of a blade mounted to reciprocate across it, a valve located opposite the blade, and a sand-passage leading into the die opposite the blade and opened and closed by the said valve, a bar or projection connected with the blade and arranged to engage the valve and open the passage as the blade nears the limit of its cutting stroke, and a trip which holds the valve in an open position during the reverse movement of the blade until it nears the limit of the said movement, and devices carried by the blade to release said trip when the blade is in the said latter position.

3. The combination, with a brick-forming die having a slot in the one side and a sand-passage leading into it at an opposite point, of a reciprocating blade fitted in said slot, a valve located across the sand-passage, and pivotal arms, to which the valve is connected, springs which hold the valve in a closed position, spring-actuated detents which engage the ends of said arms, bars connected with the blade and having projections which engage the valve when the blade accomplishes its cutting stroke, and other projections which engage said detents and release the pivotal arms when the blade reaches its reverse limit of movement, and mechanism which actuates the blade.

4. The combination, with a brick-forming die, one wall of which is recessed, of a sand-receptacle leading into the die adjacent to said recess, and a curved valve fitted in said recess, pivotal arms connected with the valve, detents arranged to engage the free ends of the said arms, and springs to return the valve to normal position.

5. The combination, with a brick-forming die, of a blade mounted to reciprocate across the same and mechanism to actuate said blade.

6. The combination, with a brick-forming die, of a blade or cutter arranged to move transversely to the die and through a bar of clay, and to form a partial vacuum when withdrawn from the severed bar, and a sand-supply passage or duct leading between the severed ends of the bar, to coat said ends as the bar throws the severed brick from the die, and suitable operating mechanism.

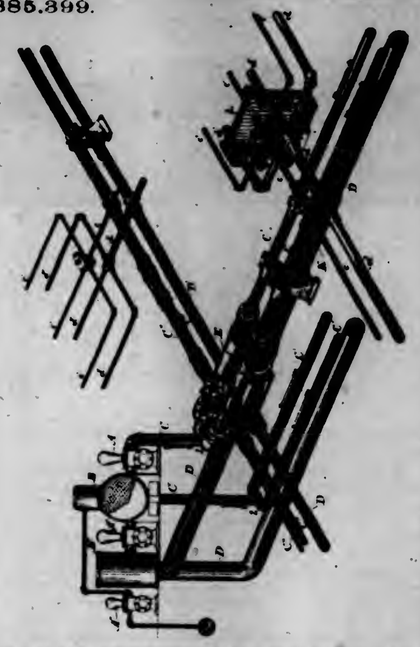
385,399. CENTRAL-STATION HEATING SYSTEM. ARTHUR V. ARNOT, Chester, N. J., and FRANK C. P. KRAAK, New York, N. Y., assignors, by mesne assignments, to the National Heating Company, New York, N. Y. Filed Oct. 7, 1887. Serial No. 251,703. (No model.)

Claim.—1. In a heating system, the combination of a heater, a double-supply main, a force-pump, pipes for conducting the heating medium from the supply-main to the building to be heated, a coupler for the main having a chamber with which both branches of the main communicate, and valves located in the coupler for controlling the flow from one branch of the main to the other, and whereby either or both branches of said main may be employed for circulating purposes, substantially as shown and described.

2. In a hot-water-heating system, the combination of a heater, two supply street-mains, a force-pump, pipes for conducting the water from the mains into the building to be heated, return-pipes and a return-main for conveying the water after it has been used for heating purposes back to the heater, a coupler having a central chamber with which both of the supply-mains communicate, and valves for controlling the flow from one main to the other, and whereby either or both of the supply-mains may be employed for circulating purposes, substantially as shown and described.

3. A coupler cast in a single piece having a central cavity or chamber, two longitudinal and two transverse bores each in the same

385,399.



plane and each communicating with said central chamber, a longitudinal and a transverse bore arranged in a plane parallel to that of the first-named bores, communicating at their junction, and cocks or valves by which the communication between the said first-mentioned bores and the central chamber is controlled, substantially as shown and described.

4. A coupler cast in a single piece provided with a central cavity or chamber, two longitudinal bores communicating with said central chamber at opposite sides thereof by means of a single opening, two transverse bores communicating with the central chamber at opposite sides thereof by means of a single opening, and cocks or valves, as F F and G G, by means of which the communication between each or all of the said bores and the central chamber is controlled, substantially as shown and described.

5. The combination, with the supply-mains C C and the branch mains C' C', of the coupler provided with the central chamber, E", the longitudinal bores E' E', the transverse bores E" E", and the cocks F F and G G, the construction and arrangement being substantially as described and shown.

6. The combination, with the supply-mains C C, the return-main D, and branch return-main D', of the coupler cast in a single piece, provided with a central chamber, and two longitudinal and two transverse bores arranged in the same plane and each communicating with the central chamber, and a longitudinal and transverse bore arranged in a plane parallel with that of the first-named bores, communicating at their junction, and cocks or valves by which the communication between the first-named bores and the central chamber is controlled, substantially as shown and described.

7. In a heating system, the combination of a heater, two supply-mains, means for directing the flow of the heating medium through either or both of said mains, a coupler cast in a single piece provided with a central chamber or passage, two longitudinal bores communicating at separate points with the central chamber or passage, a transverse bore communicating at opposite points with the central chamber or passage, and a valve, H, provided with a central cavity and four passages communicating therewith, the construction being such that communication between either of the longitudinal bores and either of the transverse bores, or both of them, with the central cavity of the cock or valve may be established, or the communication of the transverse bores with the central cavity may be cut and the communication of all the longitudinal bores with the central cavity established, or the communication between each of the longitudinal and each of the transverse bores of the said cavity may be cut off, substantially as shown and described.

8. In a heating system, the combination, with a heater, a double-supply main, and means for directing the flow of the heating medium through either or both branches of said main, of a coupler cast in a single piece provided with a central chamber and with two longitudinal bores which communicate at four separate points with the said central chamber and with a transverse bore which communicates at opposite points with said central chamber, and a cock or valve located in said chamber and having a central cavity and four passages communicating therewith, whereby communication between the said longitudinal and transverse bores and the central cavity of the cock or valve may be controlled, substantially as shown and described.

9. In a heating system, the combination, with a heater and two supply-mains provided with means whereby the flow of the heating medium may be directed through either or both of said mains, of a coupler cast in a single piece having a central chamber, two longitudinal and one transverse bore, each of which communicates with the central chamber at two separate points, and a cock or valve having a central cavity and passages communicating therewith, whereby the communication between the said cavity and each of the longitudinal and transverse bores is established, regulated, or prevented, as desired, substantially as shown and described.

10. In a heating system, the combination, with a heater and a double-supply main provided with means for directing the flow of the heating medium through either or both branches thereof, of a coupler having a central chamber, two longitudinal bores extending from each end thereof and communicating with the central chamber at separate points, a transverse bore communicating with the said chamber at separate points, and means for controlling the communication between said chamber and each of said bores, substantially as shown and described.

11. In a heating system, the combination, with a heater and a double-supply main provided with means for directing the flow of the heating medium through either or both of the branches thereof, of a coupler, K, having the longitudinal bores K' K" and central chamber, K", of the cock or valve H, having a central cavity and passages communicating therewith, substantially as shown and described.

12. In a heating system, the combination, with a heater, the supply-mains C C, and means for directing the flow of the heating medium through either or both of said mains, of the coupler K, having the bores K' K", the central chamber, K", and cock H, having a central cavity and passages communicating therewith, and the pipes for conducting the heating medium into the building or buildings where heat is required, substantially as shown and described.

13. In a hot-water-circulating system, the combination, with the heater and the supply-mains C C, of a bracket for supporting the mains, composed of a base, H, and top H', having openings M and A A, substantially as shown and described.

14. In a heating system, the combination of a heater, double-supply mains C C, and a bracket for supporting the street-mains of a hot-water-circulating system, consisting of a base, H, and top H', said bracket being provided with openings M and A A and rollers m and N N, substantially as shown and described.

15. The combination of the heater, the double-supply mains, the return-main, and the bracket provided with the openings M and A A, substantially as shown and described.

16. The combination, with the heater and supply-mains, of a coupler provided with a flanged base, as p, a perforated plate, as O', and a grooved support, P, provided with a pinion or pivot, the parts being loosely connected, substantially as shown and described.

17. The combination, with the heater and supply-mains, of the supply-pipes c', a perforated plate, O', a grooved support, P, and a coupler, R, provided with a flanged base, R', substantially as shown and described.

18. The combination, with the heater and supply-mains, of the housing L, the supply-main, the plate O', the pivoted support grooved to receive the dovetail shank of the coupler, the supply-pipe, and the coupler, substantially as shown and described.

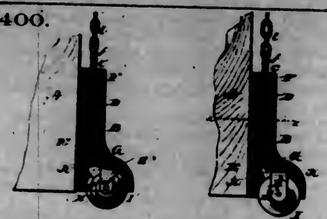
19. The combination, with the heater and supply-main, of a coupler provided with a flanged base and a pivoted support provided with a dovetail groove, the flanged base of the coupler being movable within the groove of the support, substantially as shown and described.

20. In a heating system, the combination of a heater, two supply-mains leading from and returning to the heater, a force-pump, and pipes for conducting the heating medium from the supply-mains to the building to be heated, said mains being in communication and provided with cocks or valves for controlling the flow from one of said mains to the other, whereby either or both of said mains may be employed for circulating purposes, substantially as shown and described.

385,400. DOOR-CHECK. JOSEPH A. BACHMAN, Austin, Tex. Filed Nov. 8, 1887. Serial No. 254,656. (No model.)

Claim.—1. The combination, with the housing or sheath fixed to the door and the bearing-wheel journaled therein, of the brake provided with a spindle, and the spring influencing said brake and wheel, as and for the purpose specified.

385,400.

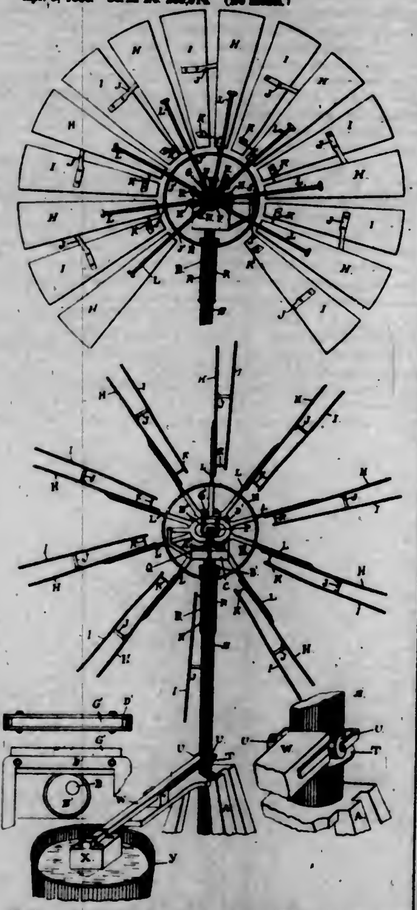


2. The combination, with the wheel journaled in a movable bearing, as set forth, the brake, under the influence of the spring, resting upon a bearing-surface of the wheel, of the sheath or housing secured to the door, substantially as specified.

3. The combination, with a wheel provided with annular offsets and journaled in a movable bearing, the brake, and the spring, of the sheath provided with vertical grooves for the U-shaped bearing, as and for the purpose set forth.

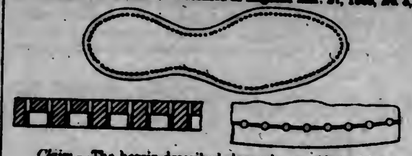
4. The combination, with the brake and bearing-wheel, of the lever pivoted to the door and the chain or cord connecting said lever and brake, as and for the purpose specified.

385,401. WINDMILL. FRANCIS BOSSARD, Oakland, Cal. Filed Apr. 3, 1888. Serial No. 269,514. (No model.)



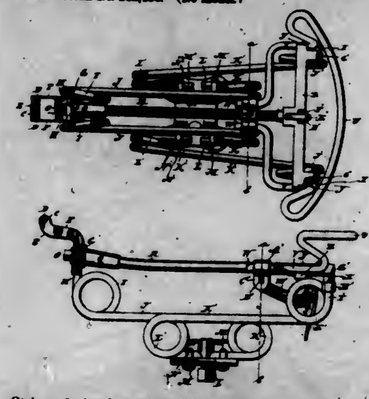
Claim.—In combination with a wind-wheel having the wings formed of the sections H and I, connected by bars J and K and attached to the pivot-rods L, the crank N, connecting-rods G, hinge-plate F, central connecting-rod, O, link P, lever Q, rods R, sleeve S, shaft T, lever W, and foot X, for the purpose of regulating and adjusting the wings H I, constructed and operated substantially as and for the purposes set forth.

385,402. SOLE FOR BOOTS OR SHOES. JAMES BOOTH, Birmingham, County of Warwick, England. Filed Mar. 28, 1887. Serial No. 232,621. (No model.) Patented in England Mar. 27, 1886, No. 3,905.



Claim.—The herein-described shoe-sole, provided with marginal perforations and indentations connecting said perforations, as shown, whereby the sewing-thread is embedded within the sole, as set forth.

385,408. VELOCIPEDE-SADDLE. LOUIS BOUDREAU, Boston, Mass., assignor to the Overman Wheel Company, same place. Filed Jan. 27, 1888. Serial No. 262,124. (No model.)



Claim.—1. A velocipede-saddle having a covering, spring-support for the forward end thereof, and a horn made vertically adjustable upon such support, substantially as set forth.

2. A velocipede-saddle having a covering, spring-support for the forward end thereof, and a bent and flanged horn, such support and horn being secured together for vertical adjustment between them, substantially as set forth.

3. A velocipede-saddle having a covering, spring-support for the forward end thereof, a horn, and a bar, the horn and bar being clamped to the spring-support, upon which they are vertically adjusted, substantially as set forth.

4. A velocipede-saddle having a covering, a spring-support for the forward end thereof, a horn, a bar provided at its forward end with a head, and a bolt passing through the horn and into such head and clamping them to the spring-support, which is located between them, substantially as set forth.

5. A velocipede-saddle having a covering, two spring ends, a horn, a bar having a head provided with two vertical grooves, and a bolt clamping the horn and head upon the spring ends, which enter the grooves of the head, substantially as set forth.

6. A velocipede-saddle having a covering, a rear spring-support, and a horizontally-movable frame mounted upon such support, adapted to have the rear end of the covering removably connected with it, and made of wire bowed and bent downward at the ends for mounting upon the said spring-support, substantially as set forth.

7. A velocipede-saddle having a covering, a movable frame with which the rear end of the covering is connected, a support for such frame, and a hand-lever connecting the support and frame for shifting the latter, so as to slack the covering for its removal and put it under tension for use, substantially as set forth.

8. A velocipede-saddle having a covering, a bar having a cross-piece at its rear end, a bowed frame having movable bearing in the ends of such cross-piece, a head movably mounted on the bar and having the frame connected with it, and a lever connected with the head and bar for operating the frame, substantially as set forth.

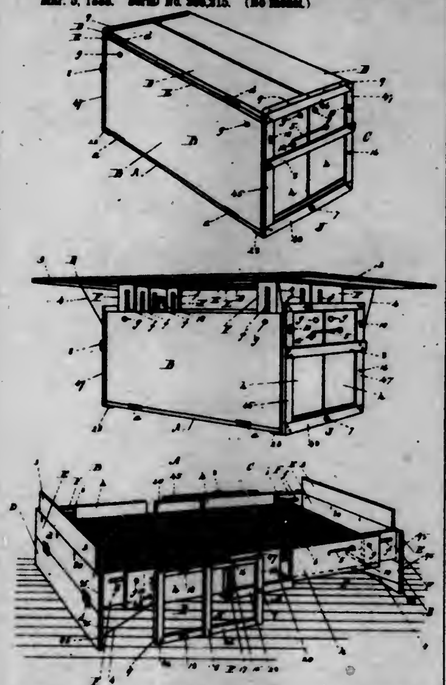
9. A velocipede-saddle having a cross-piece located at its rear end and provided with split sockets opening downward and carrying nuts,

and spring ends entering such sockets and secured in place by the said nuts, substantially as set forth.

10. A velocipede-saddle having two forward and two rear coiled springs, the lower ends of each springs being arranged to pass each other, substantially as set forth.

11. A velocipede-saddle having a forward spring-support, a horn, a horizontal bar having a head at its forward end, such head and horn being clamped to opposite faces of the said spring-support, a cross-piece located at the rear end of such bar, a bowed frame horizontally movable upon the said cross-piece, a rear spring-support for the cross-piece, and a hand-lever for operating the said frame, substantially as set forth.

385,404. TRUNK. WILLIAM J. BOYNTON, Boston, Mass. Filed Mar. 5, 1888. Serial No. 266,215. (No model.)



Claim.—1. In a trunk of the character described, the combination of the following instrumentalities, to wit: a bottom piece provided at each end with an upwardly-projecting board adapted to form a portion of the side of the bed, a side piece hinged to each side of said bottom and provided with a laterally-projecting board at each end adapted to form a portion of the end of the trunk, two top pieces each provided with slides fitted to work in the free or outer ends of said side pieces, a leaf hinged to the outer edge of each of said top pieces and adapted to be folded inwardly onto the same, a frame loosely pivoted to each end of the bottom piece, said frames being adapted to assist in keeping the trunk closed and also to serve as legs for the bed, means for adjustably securing said slides on said side pieces, and means for securing the sides, ends, top, leaves, and frames in position when the trunk is closed, substantially as set forth.

2. In a trunk of the character described, the bottom A, provided with the upright boards 20, the sides B C, hinged to said bottom and provided with the laterally-projecting boards A, the tops E, provided with the slotted slides F, fitted to work on the sides B C, the leaves D, hinged to the tops E, the frames J, loosely pivoted to the bottom A, the staples 10, connected with the sides B C and adapted to enter mortises in said frames, the nuts i and bolts g, for adjustably securing said slides, and the hasps 4 and 5, combined and arranged to operate substantially as described.

3. In a trunk of the character described, the cloth 6, having its ends attached to the square bars 19, in combination with the slides F and lugs 18, said lugs being provided with angular recesses 75, for receiving said bars and preventing them from turning therein, whereby any desired tension may be exerted on the cloth, substantially as set forth.

4. In a trunk, the combination of a bottom, sides hinged to said bottom and provided with laterally-projecting boards at their ends adapted to form portions of the ends of the trunk, adjustable slotted extension-slides attached to said laterally-projecting boards, fastening devices for locking said slides in position, and tops connecting the ends of said slides.

5. In a trunk, the combination of a bottom, sides hinged to said bottom and provided with laterally-projecting boards at their ends adapted to form portions of the ends of the trunk, adjustable slotted extension-slides attached to said laterally-projecting boards, fastening devices for locking said slides in position, tops connecting the ends of said slides, and leaves hinged to said top.

6. In a trunk, the combination of a bottom, sides hinged to said bottom, extension-slides adjustable on said sides, tops connecting said slides, leaves hinged to said tops, end frames pivoted to said bottom and provided at their upper ends with inwardly-projecting flanges for holding the leaves in folded position when the trunk is closed, and fasteners for said frame.

7. The combination, with the folding trunk-body, of end frames pivoted to said body, said frames being provided with transverse braces, which serve as handles for the trunk.

8. In a trunk, the combination of a bottom, sides hinged thereto, adjustable slides connected with said sides, lugs attached to said slides, bars supported by said lugs, and a bed-bottom stretched between said bars.

9. In a trunk, the combination of a bottom, sides hinged thereto, adjustable slides connected with said sides, lugs attached to said slides, bars supported by said lugs, a bed-bottom stretched between said bars, and spiral springs interposed between said bottom and said bed-bottom.

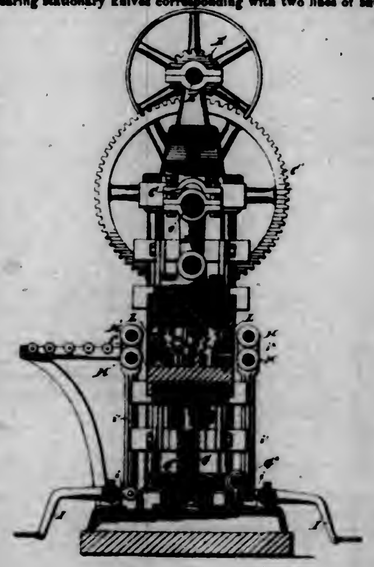
10. In a trunk, the combination of a bottom, sides hinged thereto, adjustable slides connected with said sides, tops connecting said slides, leaves hinged to said tops, said tops and leaves being provided with dowel-sockets at their ends, and auxiliary boards provided with dowels for engaging said dowel-sockets when the trunk is converted into a table.

11. In a trunk, the combination of a bottom, A, provided with staples 17 at its opposite ends, sides hinged to said bottom, end frames, J, pivoted to said bottom, and hasps 15, pivoted to said frames and adapted to engage said staples.

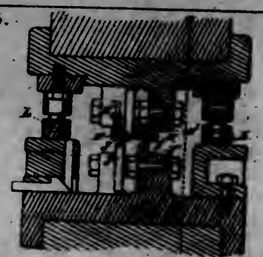
12. In a trunk, the combination of the bottom A, provided at its opposite ends with the angular guards 23 and near said ends with vertical end boards 20, and sides hinged to said bottom, provided with inwardly-projecting end boards A, which close between the guards 23 and boards 20 and constitute the ends of the trunk.

385,405. MACHINE FOR SLITTING METALLIC SHEETS FOR METALLIC LATHING. JEFFERIS B. BRADBURY, Detroit, Mich., assignor to Charles G. Hodges and Henry C. Hodges, same place. Filed Feb. 17, 1888. Serial No. 264,562. (No model.)

Claim.—1. In a slitting-machine for slitting metallic sheets for the manufacture of lathing, &c., the combination of a lower platform bearing stationary knives corresponding with two lines of slits, those



385,405.



in one line breaking joints with those in the other, an upper reciprocating platen bearing the companion knives of the lower set, driving mechanism for reciprocating the platen, and feeding mechanism adapted to automatically feed the sheet, substantially as described.

2. In a slitting-machine for slitting metallic sheets for lathing, &c., the combination of an upper reciprocating platen with means for reciprocating the same, a lower platform with means for adjusting the same to a higher or lower level, said platen and platform provided with companion knives corresponding with two adjacent lines of slits, and automatic feeding mechanism for feeding the sheet, substantially as described.

3. In a machine for slitting a metallic sheet for the manufacture of lathing, &c., the combination, with an upper reciprocating platen, lower adjustable platform, and knives corresponding with two adjacent lines of slits, of feed-rolls between which the sheet is fed, means for operating said rolls, and an adjustable crank for regulating the amount of feed, substantially as described.

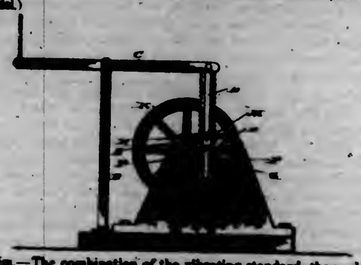
4. The combination, with the upper platen and lower platform and their knives, of feeding mechanism for automatically feeding the sheet, and spring-grips L, constructed to engage and hold the sheet during the operation and retraction of the knives, substantially as described.

5. The combination, with the platen, the platform, and their knives, of the feed-rollers, springs for pressing the upper roller against the lower, and mechanism for separating the rolls, substantially as described.

6. The combination, with the cutting-knives, of the feed-rollers at the entrance and exit ends of the machine; those at the exit end made a shade larger than those at the entrance end, substantially as and for the purpose described.

7. The combination, with the knives, of the freeing-bars N, constructed to strip the metal from the knives, substantially as described.

385,406. DEVICE FOR CONVERTING MOTION. ROBERT BRETTHOWER, Jr., Albion, Nebr. Filed Mar. 24, 1888. Serial No. 268,373. (No model.)



Claim.—The combination of the vibrating standard, the rocking lever mounted at the upper end thereof, the rack-bar pivoted to and depending from the rocking lever, the guide through which the rack-bar passes, the parallel shafts, the gear-wheels loosely mounted on said shafts and engaged by the rack-bar, the sprocket-wheels, the sprocket-chain connecting the same, and the pawl-and-ratchet connection between the gear-wheels and the shafts, substantially as specified.

385,407. FASTENING FOR MINERS' CAR CHECKS OR LABELS. HARLEY CORNELIUS, Forest City, Pa. Filed Mar. 12, 1888. Serial No. 267,120. (No model.)

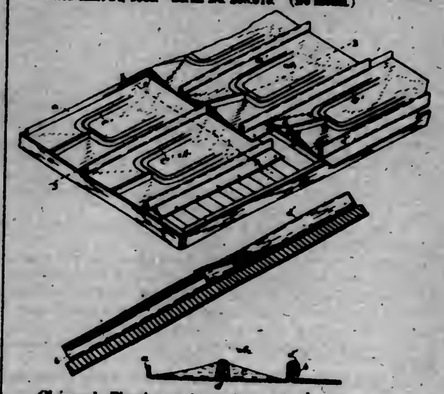


385,407.



Claim.—A miner's car-check fastener consisting of a bolt or pin with a bifurcated shank and a gravity drop-latch pivoted between the prongs of the bifurcation, the bolt or pin being headed to retain a tag or label and being locked in position by the drop-latch after said bolt or pin has been passed through a suitable opening in the side of a car, substantially as described.

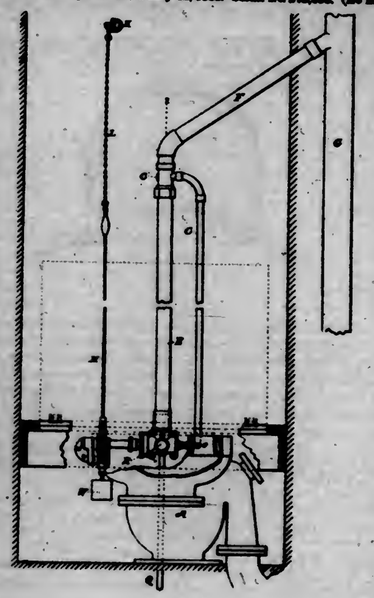
385,408. METAL ROOFING. ABEL A. CORNELIUS, Shreve, Ohio. Filed Mar. 24, 1888. Serial No. 268,310. (No model.)



Claim.—1. The shingle A, provided with the bent or tongued-up portion *a*, the groove *b*, the ridge *d'*, the bent portion *c*, and the notch *d*, substantially as and for the purpose specified.

2. The shingle A, provided with the ridge *d'* and pitched from the center to each side upon its lower portion, the bent portions *c*, and the notch *d*, substantially as and for the purpose specified.

385,409. WATER-CLOSET. ALBERT HAMMOND, New London, Conn., assignor of one-half to Stephen A. Gardner and Charles Prentis, both of same place. Filed May 12, 1888. Serial No. 273,093. (No model.)



Claim.—1. In a water-closet, the combination of a flushing stand-pipe connected to the service-pipe and a ventilating-extension thereof, with a ventilating-pipe opening at its upper end into the stand-pipe and at its lower end into the air-space of the bowl, and a valve at its upper end opening inward toward said stand-pipe, all as and for the purpose described.

2. In a water-closet, the combination of a flushing stand-pipe connected to the service-pipe by a three-way cock, and a ventilating-extension of said pipe, with a ventilating-pipe provided with a valve opening into its upper end and at its lower end into the air-space of the bowl, and with a float-valve at the upper end of the stand-pipe to cut off the flow of water when said pipe is full, all as and for the purpose set forth.

3. In a water-closet, the combination of a flushing stand-pipe with a ventilating-pipe connecting the air-space of the bowl with said stand-pipe, and of the floating valve at the upper end of the stand-pipe to cut off the flow of water, a valve in the stand-pipe above its connection with the ventilating-pipe opening upward and adapted to be closed by a current flowing down the pipe from the flue or roof-pipe, and a valve in said ventilating-pipe, all as and for the purpose set forth.

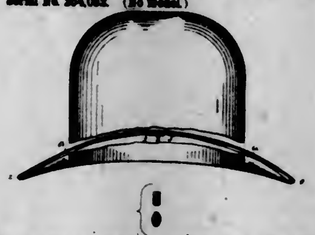
4. In a water-closet, the combination of the following elements, viz: a flushing stand-pipe, a three-way cock connecting its lower end with the service-pipe, a float-valve at its upper end to cut off the flow of the water, a ventilating-extension of said pipe, a ventilating-pipe entering the stand-pipe above the float-valve and opening at its lower end into the bowl, and a valve above the connection of the stand-pipe and its ventilating-extension to prevent undue air-pressure from above, all as and for the purpose set forth and described.

5. The combination of a flushing stand-pipe, a ventilating-extension thereof, a ventilating-pipe connecting the stand-pipe with the bowl, and the valves, all as set forth, with the three-way cock at base of stand-pipe, with its openings arranged, as set forth, for filling the stand-pipe while in one position and flushing the bowl when turned to another, and with the small drip orifice or pipe in the three-way-cock cone to permit a slight flow of water to moisten the bowl while it is in use and before the cock is opened for flushing, all as and for the purpose described.

6. The combination of the stand-pipe with its valves, the ventilating-extension thereof, the ventilating-pipe connecting said pipe with the bowl and provided with its openings and valves, as set forth, the three-way cock, located as described, with the drip-pipe in its cone, and a set-screw for regulating the amount of flow of water through the same for moistening the bowl, all as and for the purpose set forth.

7. In a water-closet, the combination of the following elements, viz: the stand-pipe, the three-way cock located at the lower end of the same, the ventilating-pipe and valves connected, as described, with the stand-pipe and the bowl, a ventilation-extension of the stand-pipe, and the valves and slip-joint located at the junction of the stand-pipe, its ventilating-extension, and the bowl-ventilating pipe, all substantially as described.

385,410. HAT-WIRE. FREDERICK D. FRY, Danbury, Conn., assignor of one-half to Theodore H. Benedict, same place. Filed Nov. 2, 1887. Serial No. 254,052. (No model.)



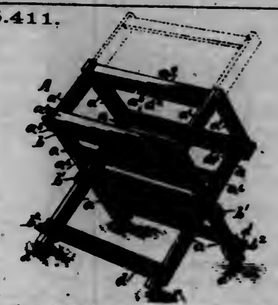
Claim.—A hat-wire having a greater and a less diameter in cross-section, and being completely turned twice before the ends are joined, so that at the front, back, and sides of a hat-brim the greater diameter lies in the horizontal plane and at points midway between in the vertical plane, thereby giving great strength at the quarters of the brim and permitting the brim to be pressed over backward at the front and back.

385,411. MERCHANT'S DISPLAY-FRAME. GEORGE R. FULLER, Savanna, Ill. Filed Oct. 20, 1887. Serial No. 253,710. (No model.)

Claim.—1. A merchant's display-rack the open or skeleton body whereof is in the form of a parallelopipedon and set at an angle to bring the sides thereof in a diagonal plane relative to a vertical line, the lower end bars of said body being a continuation of the supporting-legs, substantially as and for the purpose set forth.

2. In a display-rack of the character described, the combination, with the inclined cross-bars $a\ a\ a\ a$, of the bars $a'\ a'\ a'\ a'$, extending in-

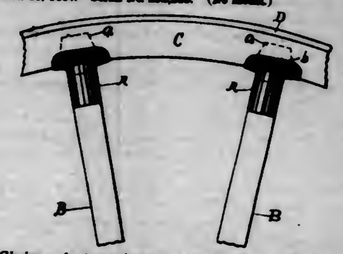
385,411.



wardly and upwardly from the bars a, the longitudinal bars $a^2\ a^2$, the inside bars, $a^3\ a^3$, and the companion bars $a^4\ a^4$, forming the hollow body of said rack and supporting the same in the required position, substantially as and for the purpose set forth.

3. A display-rack comprising the inclined cross-bars $a\ a\ a\ a$, the short connecting-bars $a'\ a'\ a'\ a'$, the longitudinal bars $a^2\ a^2$, the inside lengthwise bars, $a^3\ a^3$, the companion bars $a^4\ a^4$, arranged to provide the ledge b, and the lower longitudinal bars, $b'\ b'\ b^2\ b^2$, the latter two of which are provided with the ledges d, all constructed and arranged substantially as and for the purpose set forth.

385,412. SPOKE-SOCKET. JOHN T. GIBBLY, Troy, N. Y. Filed Oct. 12, 1887. Serial No. 252,295. (No model.)



Claim.—1. As an improved article of manufacture, a metallic spoke-socket consisting of an integral casting having on one end a spoke-receiving sleeve and on the other end a flanged rim-seat and longitudinal and transverse rim-tenons projecting about centrally from the seat, substantially as described, and for the purpose set forth.

2. The combination, with a wheel-rim, of a metallic tenon mortise-case inserted therein and a metallic spoke-socket having on one end a rim-seat and tenon and on the other end a spoke-sleeve, substantially as described.

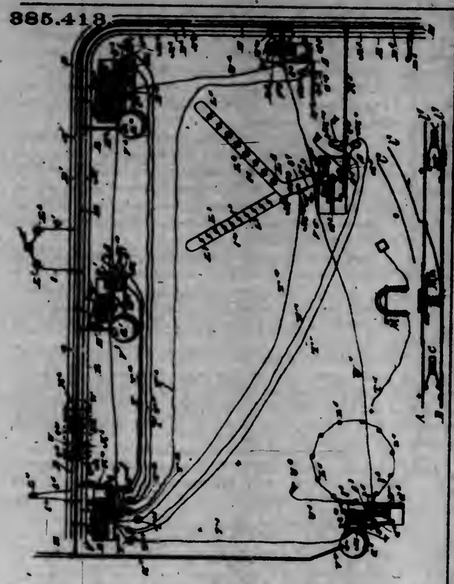
385,418. ELECTRIC RAILWAY, POWER, AND LIGHTING APPLIANCE. ISAAC W. ENTERLINE, Philadelphia, Pa. Filed Apr. 21, 1887. Serial No. 236,104. (No model.)

Claim.—1. In an electric supply service, a series of conducting-leads extended from a central station and divided into two or more longitudinally-insulated sections forming independent circuits, in combination with a series of independent generating-dynamos, each dynamo contiguous to and supplying one of said sections, and a series of driving-engines, each contiguous to and operating one of said dynamos, each of said driving-engines operated by a source of power independent of and not derived from said central station, together with a series of electric conducting-wires connecting each of said sub-circuits with said central station, substantially as and for the purpose described.

2. The longitudinally-insulated electric leads A B, A′ B′, A^2 B^2, A^3 B^3, l^9 l^9, l^{10} l^{10}, extended along the lines of an electric supply system to form a series of more and more distant sub-circuits, in combination with a parallel series of independent generating-dynamos, each adapted to supply electricity to one of said sub-circuits, and a series of fuel-gas engines, operated by the combustion of fuel-gas mixed with atmospheric air, each of said engines provided with a combustion-chamber and an incandescent igniter, S, adapted to cause said mixed gases to combine with heat and expansion and operate the piston of said engine, and each connected with and operating one of said dynamos, together with a line of closed fuel-gas-supply pipes extended along said supply system and provided with branch pipes supplying fuel-gas to each of said engines, substantially as described.

3. The compound fuel-gas and electric railway, consisting of a trackway and an electric supply-plant having a series of longitudinally-

385,418.



insulated conducting-leads extended along said trackway and adapted to supply electricity to an electric motor-car in contact therewith, in combination with a generating-dynamo contiguous to and supplying each of said sub-circuits, and a fuel-gas power-supplying service, parallel with said electric service, consisting of a line of fuel-gas mains extended along the lines of said conducting-leads, conveying a current of combustible gas with a pressure less than that required to operate said power-supplying device, said gas adapted to be mixed with atmospheric air to produce motive power by the combustion and expansion thereof, and a series of fuel-gas engines, each provided with a chamber for the combustible admixture of said fuel-gas, with a suitable proportion of atmospheric air supplied from the atmosphere at said station, and means for igniting said mixture in said engine, each coupled to and operating one of said dynamos, said engines supplied with said fuel-gas to furnish motive power for the same, substantially as described.

4. In combination with a central electric supply-service station having a generating-dynamo and a source of motive power to operate the same, and a series of longitudinally-insulated and independently-supplied electric conducting-leads extended therefrom to supply more and more distant parts, said insulated conducting-leads forming independent sub-circuits, a series of independent generating-dynamos contiguous to said sub-circuits and supplying electricity thereto, and a series of independent sources of motive power operating said dynamos, together with a series of electric conducting-wires independent of said insulated sub-circuits and extended from said sources of motive power along said lines of conducting-leads and operating through electro-magnets contiguous to said sources of power to set in operation or stop the motion of said generating-dynamo as a current of electricity is sent through said electric wires or the same are put out of circuit, substantially as described.

5. In an electric supply service, in combination with the central station, V, the sub-stations V' V^2 V^3 V^4 V^5, generating-dynamos D' D^2 D^3 D^4 D^5, and independent driving-engines d' d^2 d^3 d^4 d^5, located at said sub-stations, valves f' f^2 f^3 f^4 f^5, operated by electro-magnets M M^{10}, M′ M^{11}, M^2 M^{12}, &c., arranged in pairs on opposite sides of said valves, said magnets M M′ M^2, &c., operating to open said valves by acting upon armatures connected therewith, and said opposite magnets, M^{10} M^{11} M^{12}, &c., operating to close said valves by like means, the coils of said magnets charged through independent conducting-wires T T^{10}, T′ T^{11}, T^2 T^{12}, &c., or their equivalents, extended along said supply service and provided with terminal electric contacts to turn on an electric current or cut the same off from said electro-magnets and open or close the supply-valves of said engines, substantially as described.

6. In an electric supply service for railway purposes, having a continuous trackway and electric conducting-leads divided into a series of longitudinally-insulated sections, in combination with a generating-dynamo and a source of motive power contiguous to each of said sections, and a motor-car moving upon said trackway in electric contact with said leads, the independent electric conducting-wires extended from the said source of motive power in opposite directions along the lines of other sections not operated thereby, adapted to be put in circuit by terminal contacts operated by the passage of the motor-car along other sections of said railway, said wires connected with electro-magnets and an armature controlling the supply-valve of said source of power, the whole so constructed that said motor-car, advancing upon a different section and operated by electricity generated by a different dynamo and driving-engine, will make contact upon one of said wires and start the engine and dynamo upon a section in advance, and when said car has passed beyond said section will insert the opposite contact and send back a current through the opposite wire to reverse said valve and stop said engine and dynamo, and so on successively, substantially as described.

7. In combination with the generating-dynamos D' D^2 D^3 D^4 D^5, located at various distant parts of an electric supply service, one or more independent electric conducting-wires extended from a central station to each of said generating-dynamos, said wires provided with detachable contacts operated by a moving part of each of said dynamos and adapted to make or break the circuit in said wires at definite intervals relatively to the operation of said dynamos, together with a recording or sounding apparatus in the circuit of said wire or wires at said central station, the whole constructed to operate substantially as and for the purposes herein shown and described.

8. In combination with the generating-dynamos D' D^2 D^3 D^4 D^5, located at different distant points along the longitudinally-extended conducting-leads of an electric supply plant, the electric wires U U^2 U^3 U^4, having breaks f' f^2 f^3 f^4 f^5 at said dynamos held in detachable contact with each other normally, so that a current will traverse the whole line U U^4, each of said dynamos provided with a circuit-breaker adapted to break the circuit in the wire U U^5 in a manner peculiar to itself while said dynamo is in motion, the whole so constructed that at each revolution of the armature of each dynamo mechanism connected therewith will be operated, and at regular intervals proportioned to the speed of said dynamo a record will be sent along said wire U U^5 to a recording-instrument, t, in contact therewith, and a characteristic record will indicate the speed of each dynamo of the series, substantially as described.

9. In combination with the independent generating-dynamos D' D^2 D^3, &c., of an electric supply service, the electrically-charged wire U U^4, having detachable contacts at each dynamo of said service held in contact with a rotating part, D^{13}, connected with said dynamos by springs and adapted to be instantaneously separated and closed at short intervals by a suitable circuit-breaker, with a number of rapid interruptions of current of greater or less number or length peculiar to each dynamo of the series, and the recording apparatus t, provided with a marking-point to mark a strip of paper passing under the same, the whole so constructed that each break of the wire U U^4 will cause the said point to mark upon the said strip a permanent record of the operation of each of said generating-dynamos at alternating intervals, substantially as and for the purposes described.

10. In combination with the rotating part of a dynamo-electric generator, the gear D^{10} D^{11}, electrically-charged wire U', attached to spring-lever U^{14} U^{15}, and in electric contact with block U^{13} of wire U, the toothed projections U^{16} at one part of the circle D^{10}, having a definite size and spaces for each apparatus f' f^2 f^3, so constructed that the rotation of said dynamo will cause the gear D^{10} D^{11} to rotate at a relatively-adjusted speed, the teeth U^{16} to engage rapidly and successively at one part of the rotation of D^{11} with the free end of the lever U^{15} and break the circuit in the wire U U' once or oftener, in a characteristic manner, for each dynamo, substantially as and for the purposes described.

11. In an electric supply service, in combination with a central station, V, and one or more generating sub-stations, V^2, supplying smaller circuits, l^2 l^2 l^{10} l^{11}, for special distribution of electricity, said sub-stations at distant points along the lines of said electric service, the electric key T^{10} at said central station, and wire T^{13}, connected with the coils of an electro-magnet at said distant sub-circuit, together with a circuit-breaker, M^{17}, connected with the armature of said electro-magnet, operating to insert or cut out said smaller circuit or circuits as said key is operated, substantially as described.

12. A gas-main extended along the lines of an electric supply service supplying fuel-gas under pressure to a series of gas-engines located at various distant parts thereof, said engines coupled to and operating a similar series of generating-dynamos along the same, in combination with one or more gas-blowers operated thereby and connected with said gas-main, said blowers operating to force the said gas along the same under suitable pressure adapted to convey the said gas to and supply the next succeeding engine or engines of the series, substantially as and for the purposes described.

13. The fuel-gas supply-main E, branch pipes E' E^2 E^3, gas-reservoirs G' G^2 G^3, check-valves i' i^2, &c., and supply-pipes E^{11} E^{12} E^{13},

leading from said reservoirs and supplying combustible gas to the engines d^1 d^2 d^3, located at various points along the line of gas-supply, in combination with a series of said engines, d^1 d^2 d^3 d^4, operated by the combustion of a mixture of atmospheric air or other gases with the fuel-gas of said main B, said engines coupled to and driving the series of generating electric dynamos D' D^2 D^3 D^4, substantially as and for the purposes described.

14. In an electric railway having a central station, V, and a series of independent sub-stations, V' V^2 V^3, and the independent sub-circuits A' B', A^2 B^2, A^3 B^3, extended along the lines of said railway, the fuel-gas main E, parallel therewith and supplying combustible gas to a series of driving-engines, d^1 d^2 d^3, for operating the same, in combination with a series of generating-dynamos coupled to and operated by said engines, and each dynamo supplying electricity to one of said sub-circuits, together with a series of opposite electric wires extended from said sub-stations along said railway and provided with terminal contacts operated to make or break circuit in said wires, and electro-magnets and armatures connected therewith, operating to control the supply-valves of said engines as an electric current is sent through said wires and admit a supply of said gas to the combustion-chamber of said engines or cut off the same, substantially as described.

15. A supporting-structure for an electric railway, consisting of the track-way R R, extended along the same, having supports J^1 and a conduit, J, between said rails R R, and having longitudinal slot J^2 and electric conducting-leads A B within the same, supported by and insulated from said conduit, and the fuel-gas-conveying main E, extended along said railway, having lateral branch pipes E', extended laterally from said main E to fuel-gas engines supplied thereby at various points along said railway, said gas-engines coupled to and operating dynamo-electric generating-machines to supply electricity to said conducting-leads at various points along said railway, said leads supplying electro-motive energy to an electric motor-car traveling along said track-way, substantially as described.

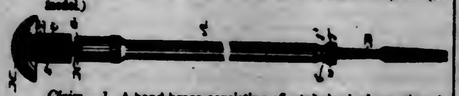
16. An electric-railway structure consisting of the track-way R R, supports J^3 E', electric conducting-leads A B, and gas-main E, extended along the same, the longitudinal trough J^7, surrounding said gas-main E, the interspaces J^8, filled with an insulating substance, J^9, and the electric conducting-wires T U J^6 l l' m m, contained within said trough, out of contact with said gas-main and insulated by said substance J^9, substantially as and for the purposes herein shown and described.

17. In combination with a generating electric dynamo and a fuel-gas engine contiguous to and operating the same, a fuel-gas main, E, extended from a relatively distant source of supply to said engine and supplying combustible gas to operate the same by its combustion, together with a valve controlling said supply of fuel-gas to said engine, said valve opened and closed by a pair of oppositely-placed electro-magnets attracting an armature attached to the same to and fro, each of said opposite electro-magnets provided with one or more electric wires extended from a relatively-distant point to said engine, said wires having terminal electric contacts adapted to insert or cut out the same, and through one or the other electro-magnet operate the said valve to start or stop the said engine and said dynamo, substantially as described.

18. In combination with a fuel-gas engine operated by the combustion of said gas, and a generating electric dynamo contiguous to and driven by said engine, one or more electrically-charged conducting-wires extended from said engine and dynamo to convey to a distant point intelligence of the operation of the same, and one or more electrically-charged conducting-wires extended from and operating the supply-valve of said engine by electric currents supplied through one or more terminal contacts, said wires extended to a distant point from said supply-station and controlling said engine therefrom, substantially as and for the purposes herein shown and described.

19. In combination with one or more fuel-gas engines and a fuel-gas-supply main conveying said gas from a distant source of supply to said engines, a trough surrounding said gas-main and containing one or more electric wires extended along the same, together with a mass of insulating material in said trough extended along said main, supporting and insulating said electric wires, substantially as and for the purposes described.

385,414. BRACE FOR SCREW-DRIVERS, BITS, &c. GEORGE W. HERR, Philadelphia, Pa. Filed Oct. 10, 1887. Serial No. 251,914. (No model.)



Claim.—1. A hand-brace consisting of a tubular body portion, A, with an angular opening in the upper part of its bore, a nut having an angular lower portion adapted to fit in said angular opening, and a rounded upper part adapted to slide in said bore, a handle with the screw C working in the said nut, and a washer with a spring bearing against the said nut, said parts combined substantially as described.

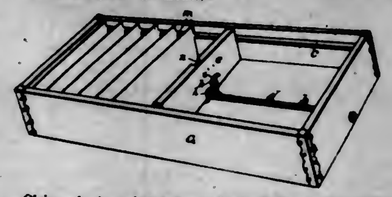
2. A hand-brace consisting of the tubular body portion A, with a portion of its bore of angular form, a nut having a lower portion adapted to fit in said angular opening in the bore, and its upper portion adapted to slide in said bore, a plug, G, with slot K, the screw C, with handle H, having the shoulder L, the said screw working in said nut, and a washer and spring bearing against said nut, said parts combined substantially as described.

3. In a hand-brace, the tubular body A, having a nut fitted therein and a screw working in said nut, the plug G, inserted in the upper end of said body A, and having a diametric groove or recess on its upper face, the handle H, with depending tubular guard S, and an inner central projection or shoulder, the latter adapted to fit in said diametric groove in said plug, said parts being combined, substantially as and for the purpose set forth.

4. A hand-brace consisting of a tubular body with a nut fitted therein, a screw working in said body, a handle secured to said screw and having a central shoulder and a tubular guard, a plug inserted in the end of said body, said having a diametrical recess adapted to receive said shoulder, said parts being combined substantially as and for the purpose set forth.

5. A hand-brace having a tool-holder with peripheral groove g, the slot g', and a groove, g^1, at right angles to said slot, and the wire spring w, secured at one end to the holder and adapted to fit in the groove g and across the slot g', and having a thumb-piece, the latter adapted to fit in said groove g^1, said parts being combined substantially as and for the purpose set forth.

385,415. BANK-CHECK FILE. FRANK A. JAGER, WILLIAM M. LEVEY, and LOUIS H. LEVEY, Indianapolis, Ind. Filed Jan. 28, 1888. Serial No. 261,805. (No model.)



Claim.—1. As an improvement in check-files, a series of movable partitions having projections at either end, said projections adapted to slide in longitudinal grooves in the sides of the case, a follower, and a locking device, constructed substantially as shown and described, for securing said partitions and follower in place, as set forth.

2. In a check-file, the combination, with the case, its partitions and follower, of a rod placed longitudinally in a groove in the bottom of the case, said follower being movable upon and supported by the rod, and a locking device consisting of a spring-actuated cam attached to and moving with the follower and engaging with the rod, substantially as and for the purpose specified.

385,416. BOMB-LANCE. FREDERICK W. LINDSEY and DAVID A. COREY, New Bedford, Mass., assignors to William Lewis, same place. Filed Feb. 8, 1888. Serial No. 263,401. (No model.)

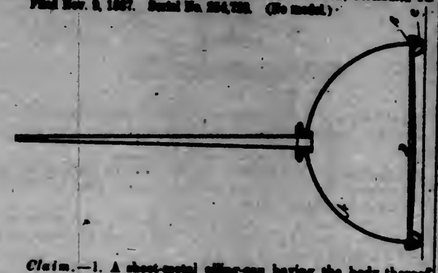


Claim.—1. The combination of the magazine with a front stopper and point-section, and fuse-tube secured in the said stopper and projecting forward toward the point-section and provided with a nipple at its forward end, with a hammer contained within a recess at the front of said stopper, and having a tubular shank surrounding the said nipple and a portion of the fuse-tube, and a spring by which the said hammer is normally retained at the forward end of said recess, but permitted to move backward with relation to the said nipple, substantially as and for the purpose described.

2. The combination of the magazine having a stopper in the forward end, with a fuse-tube fastened in and extending through the said stopper, provided with a nipple at its forward end and a lateral vent-passage in the part in advance of the stopper, a hammer having a tubular shank surrounding said nipple, and a portion of the fuse-tube provided with vent-passages from said recess that contains the said hammer and nipple, substantially as and for the purpose described.

3. The combination of a magazine of a bomb-lance closed at its forward end and provided with a point-section, and having a recess at the front of the magazine and a lateral vent-passage and sealing-plug therein, with a fuse-tube extending from the magazine into the recess in advance thereof and provided with a nipple, and a hammer having a tubular stem surrounding said nipple, substantially as described.

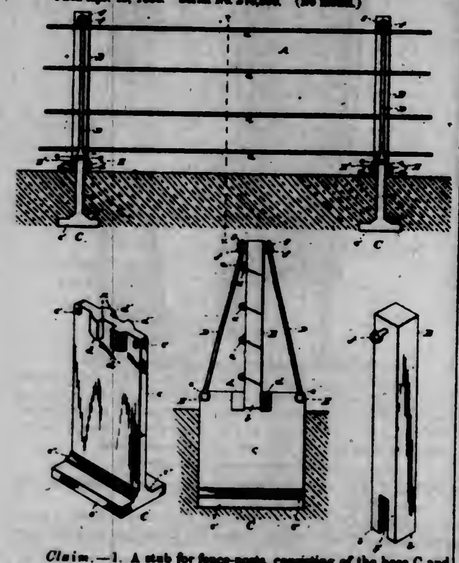
385,417. GELDER-GAS. JOHN W. MACDONALD, Pittsburg, Pa. Filed Nov. 9, 1887. Serial No. 254,722. (No model.)



Claim.—1. A sheet-metal ceiling-can having the body thereof extending down below the bottom of the can and having said body-extension crimped over in such shape against the outside of the bottom as to form an annular space, and a soldering or brazing material within the space.

2. A sheet-metal ceiling-can having a spring or flexible bottom, and having near its base a shoulder or bottom-support, against which the bottom is held by the metal of the body below said bottom turned inward and against the outside of said bottom, the said bottom and body being joined by soldering or brazing material placed within an annular space formed by the metal of the can-body below the bottom of the can.

385,418. STUB FENCE-POST. JAMES MARSH, Mansfield, Ohio. Filed Apr. 13, 1888. Serial No. 270,889. (No model.)



Claim.—1. A stub for fence-posts, consisting of the base C and post-support c, at right angles thereto, the latter at its upper edge on opposite sides having short lugs d d', forming a seat for the bifurcated fence-post B, substantially as specified.

2. The combination with the stub C c, having short lugs at its upper edge, of the fence-post B, slotted at its lower end and seated between said lugs, substantially as specified.

385,419. FIRE-ESCAPE LADDER. PETER B. MARTIN, Dubuque, Iowa. Filed Dec. 30, 1886. Serial No. 223,043. (No model.)



Claim.—1. In a lighting device, the combination, with a standard, of a gas-burner, match-chamber, bolt, and cap supported by said standard, an actuating device, a cylinder, valve, and operating-lever, substantially as described.

2. The combination, with a standard, of a gas-burner, match-chamber, bolt, and cap supported by said standard, said cap being provided with a spring, a cylinder, valve, and operating-lever, substantially as described.

3. The combination, with a standard, of a gas-burner, match-chamber, bolt, a cap supported by said standard having a spring secured to said standard and provided on its under face with a roughened surface, a cylinder, valve, and operating-lever, substantially as described.

4. The combination, with a standard, of a gas-burner, match-chamber, and cap provided with a recess and having a spring, a bolt secured within a chamber in the standard and provided with a rod which is connected to an operating-lever, said lever, a cylinder, and valve, substantially as described.

5. The combination, with a standard, of a gas-burner, a cap provided with a spring and bolt, a match-chamber, a plate having a spring for ejecting the matches after use and a clamp for holding them in place, a cylinder, valve, and operating-lever, substantially as described.

6. The combination, with a standard, of a match-chamber and a cap provided with a spring and formed with a recess, a bolt provided with a button and arranged to enter said recess, a rod secured to said bolt and provided with a spring, a cylinder, valve, and operating-lever, substantially as described.

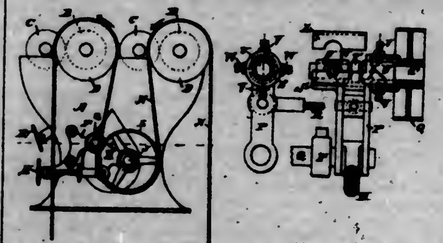
7. The combination, with a standard, cylinder, and operating-lever, said cylinder being provided with a valve, induction-pipe and eduction-pipe, of a connecting-rod secured at one end to the stem of said valve and at the other end to said operating-lever, a cap having a spring, gas-burner, match-chamber, and bolt, substantially as described.

8. The combination, with a standard, of a cap provided with a spring, gas-burner, match-chamber, bolt, cylinder, valve, and operating-lever, and a connecting-rod pivoted at one end to the valve-stem and secured at its other end to the said operating-lever by an open joint, substantially as described.

9. The combination of the operating-lever A, connecting-rod C, having the ring K, the headed rod J, secured at one end to said ring, the bell-crank lever I, with one arm fastened to said rod J, the rod m, fastened to the other end of said lever, the bolt M', connected to the rod m, the standard H, the cap P, and the spring actuating said cap, substantially as described.

10. The combination, with a standard, of a cap provided with a spring, gas-burner, match-chamber, bolt, cylinder, valve, and operating-lever, and a rod, C, connected at one end to the valve-stem and at its other end to the short arm of the lever A, said lever A being pivoted at a and having its long arm inclined upwardly, substantially as described.

385,420. ROLLER-MILL. JONATHAN D. MAWHOOD, Richmond, Ind., assignor to the Richmond City Mill Works, same place. Filed Apr. 4, 1887. Serial No. 233,571. (No model.)



Claim.—1. The combination of a transversely-movable counter-shaft, two pulleys thereon, two belts engaging said two pulleys, respectively, and driven pulleys engaging said belts, respectively, and so disposed with reference to the path of movement of the counter-shaft that the belt to be tightened by the movement of the counter-shaft will lead from the counter-shaft in a direction substantially parallel to the path of movement of the counter-shaft, and the other belt lead from the counter-shaft in a direction substantially at right angles to said path, substantially as and for the purpose set forth.

2. In a roller-mill, the combination of two belts, two driven shafts for each belt, rolls thereon, a pulley on one end of each of said shafts, a movable counter-shaft with a pulley on each of its ends, and a tightening-pulley, the one belt to be tightened by the movement of the counter-shaft leading from the counter-shaft in a direction substantially parallel to the path of movement of said shaft, and the other belt leading from said shaft in a direction substantially at right angles to said path, substantially as and for the purpose set forth.

3. The combination of a pair of contiguous bearings, a movable support for said bearings, devices, as set-screws V and W, connecting said bearings with said support, a shaft free to revolve in said bearings and projecting at one end outwardly therefrom, a tightening-pulley rigidly secured to said shaft projection, and a collar fast upon said shaft and engaging the end of one of said bearings, substantially as and for the purpose set forth.

4. The combination, with pulleys and a belt engaging the same, of shaft T, overhung pulley Q, tray S, bearings U, with their inner ends contiguous, and set-screws V W, in pairs at right angles to each other, engaging grooves Y in said bearings and serving to permit the bearings to automatically adjust themselves into a common axis, and as a means by which the plane of that axis can be adjusted, substantially as and for the purpose set forth.

385,421. **ANIMAL-TRAP.** GEORGE J. MCMILLAN, Treadwell's, N. C. Filed Apr. 9, 1888. Serial No. 270,103. (No model.)



Claim.—1. The combination, with the box provided with an opening in its bottom, of the pivoted lever, the platform carried thereby, the vertically-operating door, the link normally holding said door in an elevated position, and the vertical arm on said lever to operate said link, substantially as and for the purpose specified.

2. The combination, with the pivoted lever and the arm *f'*, carried thereby, of the vertically-operating door, the catch thereon, the link engaging said catch, and the gravity-arm above the door, all substantially as and for the purpose specified.

3. The combination, with the vertically-operating door and the catch carried thereby, of the pivoted lever, the vertical arm carried thereby, the link engaging said catch, the gravity-arm, and the piece *g* on said door at right angles to the height thereof, substantially as shown and described.

4. The combination, with the vertically-operating door and the piece *g* thereon, near the top thereof, and extending at right angles thereto, of the tilting lever I and the lug on said lever engaging said piece *g*, substantially as and for the purpose specified.

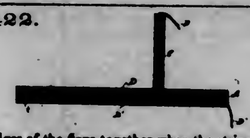
5. The combination, with the vertically-operating door, the arm *g* thereon, and the gravity-arm, of the tilting lever and the lug carried by the short arm thereof and arranged to engage the piece *g* on the door, substantially as and for the purpose specified.

6. The combination, with the vertically-operating door, the catch thereon, the link engaging said catch, the pivoted lever E, and the vertical arm carried by said lever, of the piece *g* on the upper end of said door, the gravity-arm, and the lever I, carrying lug adapted to engage said piece *g*, substantially as and for the purpose specified.

7. The cage provided with partition N, having opening *p*, combined with the tilting lever P, pivoted within said cage, and the strip *q*, carried by the end of said lever and serving to close said opening, substantially as and for the purpose specified.

385,422. **BLANKET-CASE.** WILLIAM G. HOEFNER, Minneapolis, Minn. Filed Dec. 10, 1887. Serial No. 257,457. (Model.)

Claim.—The combination, with a rectangular frame provided with a sack-cloth bottom, of an openable cloth cover having its edges turned down and its corners overlapped and adapted to fit over said frame when filled with blankets, fastening-strings attached to said frame at its corners, and draw fastening-strings passing through the overlapping corners of the cover at such points, so as to draw the side

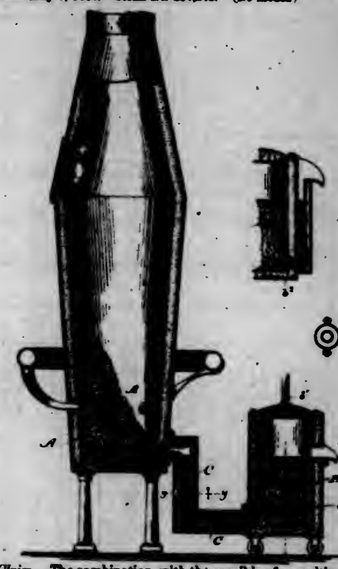


and end edges of the flaps together when the string is drawn taut and secured to the frame-strings, substantially as and for the purpose set forth.

385,423. **INSECTICIDE.** MICHAEL OSSENTE, Alameda, Cal., assignor of one-half to Bernard Steele, same place. Filed July 6, 1887. Serial No. 243,451. (No specimens.)

Claim.—The herein-described composition for use in exterminating insects, consisting of naphthaline, a fatty oil, and lime-water, mingled in suitable proportions, as specified.

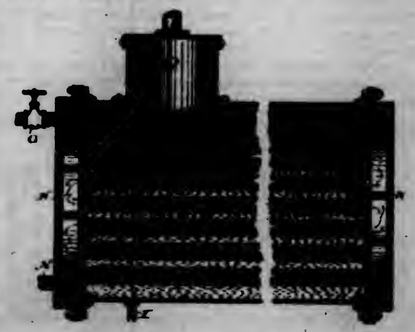
385,424. **SMELTING-FURNACE.** ORRIN B. PERK, Chicago, Ill. Filed May 5, 1887. Serial No. 237,272. (No model.)



Claim.—The combination, with the crucible of a smelting-furnace, of a receiver air-tight when its overflow is stopped, a connecting passage entering the receiver at or near its bottom, and means whereby the slag in the receiver may be forced or returned through the passage to the smelting-furnace, substantially as described.

385,425. **STEAM-GENERATOR.** ORRIN B. PERK, Chicago, Ill. Filed Sept. 26, 1887. Serial No. 250,672. (No model.)

Claim.—The process of generating steam which consists in bringing water and heated slag in contact in a steam-tight receptacle, substantially as described.



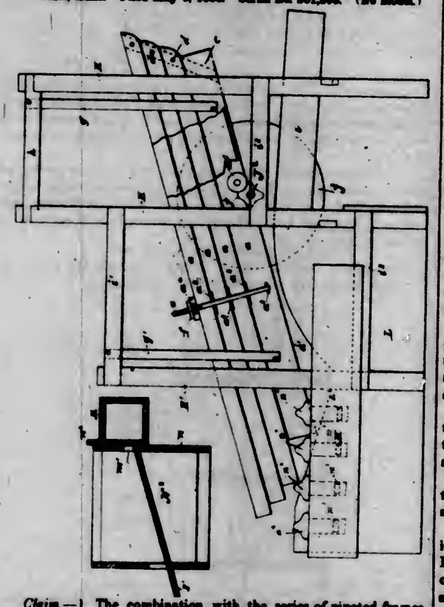
385,425.



385,426. **DYEING.** JOHN C. PENNINGTON, Paterson, N. J. Filed Sept. 22, 1887. Serial No. 250,483. (No specimens.)

Claim.—The process of dyeing silks, wools, and mixed fabrics with azoïne colors by impregnating them with a solution of the alkaloïdal bases of such colors in ether or other equivalent liquids, and afterward submitting them to the action of steam containing suitable acid to reconstitute the color and to volatilize the residual solvent.

385,427. **GRAIN SEPARATOR AND GRADER.** ELIJAH H. PUSH, Wilts, Kans. Filed May 6, 1886. Serial No. 201,269. (No model.)



Claim.—1. The combination, with the series of pivoted frames, each, excepting the lowermost, provided with a screen, of a pair of rods pivotally secured to the sides of the lowermost frame, the bar a^4, provided with the end slots, and the clamping-nuts adjustable on said rods, whereby said frames are bound together, substantially as described.

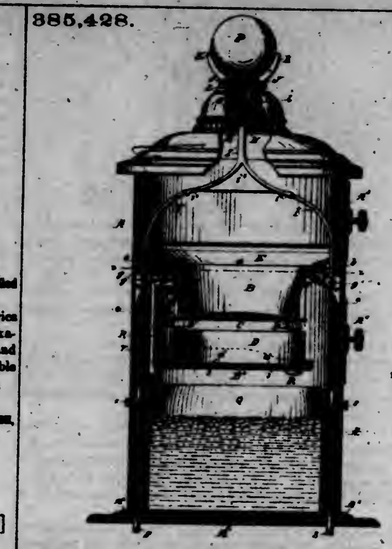
2. The combination, with the end pieces, *c*, the frames *a*, pivotally secured thereto, and the intermediate frames having the U-shaped lugs a^3 and the removable pivot-pins *d*, of the rods *c*, having screw-threaded portions *c'* and the clamping-nuts *f*, and the bar a^4, extending across the uppermost frame and having the slotted projecting ends, substantially as set forth.

385,428. **SAFETY CAR-STOVE.** JOHN S. RUSSELL, Bay City, Mich., assignor to Selwyn Eddy, John F. Eddy, and Stephen H. Rabbitt, all of same place. Filed Aug. 27, 1887. Serial No. 248,097. (No model.)

Claim.—1. The combination, with the fire-pot, grate and ash-pit detachably supported therein, the tank located at the bottom thereof, and the tripping mechanism, of a support located on the top of the stove and an adjustable rest and removable weight sustained by said support, whereby the weight may be discharged to release the fire-pot when the stove is tilted, substantially as specified.

2. The combination, with the triggers or movable supports which

385,428.



hold the fire-pot, of the vertical stem and the rods connecting the same with the said triggers, the cup-shaped disk mounted upon the upper end of said stem, the adjustable nut, also mounted on said stem and located in the cup, and the curved fingers pivoted to said nut and arranged to ride in said cup, whereby an adjustable seat is formed for the weight in order to discharge it at any angle of the stove and of a vertical line, substantially as specified.

3. The combination, with the casing of the stove and the fire-pot and ash-pit thereof, of the vertical guides on the inside of the casing, and the slotted lugs secured to the fire-pot section and arranged to slide on said guides to direct the detached fire-pot, grate, and ash-pit into the tank when released, substantially as specified.

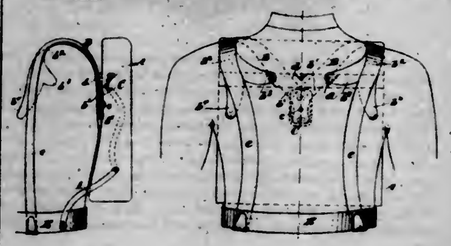
4. The combination, in a safety car-stove, of the movable supports for detachably suspending the fire-pot, the ash-pit, and the connecting-straps, the vertical guides on the inside of the stove-casing, and the slotted lugs secured to the straps and arranged to slide on said guides, substantially as specified.

5. In a safety car-stove, the combination, with the fire-pot B, of the pivoted catches G, rods I, pivoted to said catches and to stem I', the said stem I', weight P, and spring M, all constructed and arranged substantially as described.

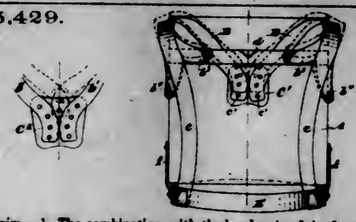
6. The combination, with the stem I', having threaded end *i*, of the disk L, ball P, nut J, having lugs *j*, and the fingers K, pivoted to said lugs to support the ball, substantially as specified.

7. The combination of the ball or weight P, the fingers K, holding said weight, the disk L, whereby the fingers are adjusted, the stem I', to which the fingers are pivoted, the arms I, pivoted to the branches of the stem I', the trigger G, pivoted to the arms I and to suitable supports, the fire-pot B, normally held by the triggers, the ash-pit D, and straps B', connecting it with the fire-pot, the lugs b^3, secured to the said straps, the guide-strips R, secured to the inner wall of the casing, and the tank Q, located below the ash-pit, the whole arranged to operate substantially as specified, and for the purpose set forth.

385,429. **FRAME FOR CARRYING KNAPSACKS, &c.** ADOLPHUS MÜLLER, Berlin, Germany. Filed June 27, 1887. Serial No. 242,692. (No model.)



385,429.



Claim.—1. The combination, with the burden A, of the frame for carrying said burden on the back, said frame comprising two hooks, B B, adapted to the form of the body and having holes in their longer arms, the perforated plate C, having a series of holes, and means, as the bolt C', engaging the holes in the hooks and plate for adjusting the former in height and width, said burden being secured to said plate by a bolt, substantially as specified.

2. In a burden-supporter, the hooks B, whose front arms, b^3, are forked, as at b^3 b^4, for the purpose set forth, in combination with the plate C, to which the rear ends of said hooks are secured, the bolt E, and flexible straps *e*, passing over the shoulders and connecting said bolt with said plate, substantially as specified.

3. In a burden-supporter, the transverse strap *d*, in combination with the burden A and with the hooks B B, adjustably secured thereto, the strap passing between said hooks and the wearer and adapted to hold the upper part of the burden reliably to the hooks, while allowing the latter to be adjusted as to height and width, substantially as specified.

4. In combination with the hooks B B, for carrying burdens, the stays *f f*, pivoted to the lower portion of the burden, the buttons *g*, adapted to hold the stays when out of use, and suitable provisions for engaging said stays with the waist-belt E, adapted to allow the burden to be partially borne by the haunches when required, as herein specified.

385,430. ADVERTISING-CLOCK. ANDREW V. STRAIT, Sidney, N. Y. Filed Feb. 20, 1888. Serial No. 265,703. (No model.)



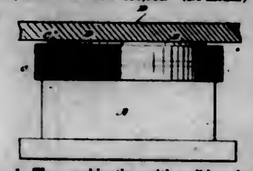
Claim.—1. The combination, with the clock and the upright and horizontally-revolving cylinders, one of which is provided at its upper end with radial spokes, of the intermediate lever, vertical holding-rods carried by said lever and operating between the spokes, and a rod connected to said lever and operated by mechanism on the post of the clock, substantially as and for the purpose specified.

2. The combination, with the clock and the revolving cylinders, one of which is provided with radial spokes at its upper end, of a holding and releasing mechanism operated by the clock-works, and consisting of a cam-wheel on the post of the clock, the intermediate pivoted lever, I, the rod H, actuated by said cam-wheel and connected with said lever, and the pins carried by said lever and extending down between said spokes, substantially as described.

3. The combination, with the clock and the revolving cylinders, one of which is provided near its upper end with radial spokes, of a holding and releasing mechanism operated by the clock-works, and consisting of a cam-wheel on the post of the clock, the pivoted lever G, the intermediate pivoted lever, I, the rod connecting said levers, and the downwardly-projecting pins carried by the intermediate lever and extending between the spokes, substantially as and for the purpose specified.

4. The combination, with the clock and the revolving cylinders, one of which is provided near its upper end with radial spokes, of a holding and releasing mechanism operated by the clock-works, said consisting of a cam-wheel on the post of the clock, the pivoted lever G, the intermediate pivoted lever, I, the rod connecting said levers, the downwardly-projecting pins carried by the intermediate lever and extending between the spokes, the bell, and the bell-hammer carried by said intermediate lever, substantially as described.

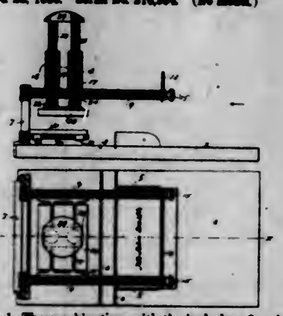
385,431. SLIDE-VALVE. WILLIAM J. TREMAIN, Evansville, Ind. Filed Jan. 9, 1888. Serial No. 260,011. (No model.)



Claim.—1. The combination, with a slide-valve, of a top plate having an annular groove in it, the inner wall of which groove is conical, as shown and described, and an expansive ring, E, tapered to fit the conical wall and of a size to stand above the upper edge thereof, as set forth.

2. The combination, with a slide-valve, of a top plate having an annular groove in it, the inner wall of which is conical, and an expansible ring, E, tapered to fit and stand above the face of the top plate and breaking joints both vertically and horizontally at its point of division, as set forth.

385,432. HAND-STAMP. JAMES S. TREMBLY, New York, N. Y. Filed Oct. 22, 1888. Serial No. 216,994. (No model.)



Claim.—1. The combination, with the bed-plate 2 and standard 7, of the two rods 9, extending horizontally from said standard, and each grooved longitudinally on its inner face, the slide 17, provided with the plunger carrying the platen 22 and fitting between said rods, and having its opposite edges entering and moving in the grooves formed in the inner face of said rods, substantially as and for the purpose described.

2. The combination, with the bed-plate 2, of the standard 7, the horizontal rods 9, projecting from the standard over said base, the slide carrying the plunger and movable along said rods, a plate, 13, fitting over the ends of said rods and connecting the same, and nuts 15 on the ends of said rods holding said plate in position and permitting the removal of said plate and the slide, substantially as described.

3. The combination, with the base-plate and the standard 7 rising therefrom, of the rods 32, projecting from said standard above said base-plate, and the pad 31, formed with holes for the passage of rods 32, substantially as and for the purpose set forth.

385,433. LETTER-COPYING BOOK. HENRY H. UNDERWOOD, Waukegan, Ill. Filed May 19, 1887. Serial No. 238,734. (No model.)

Claim.—1. A rocking platen for letter-copying presses, consisting of the rigid supplementary cover A, having a face adjacent to the closed book C slightly raised from a plane at or near its center, in combination with the letter-copying book C and a bed-plate having a plane face adjacent to the book C, substantially as shown and described, and for the purpose specified.

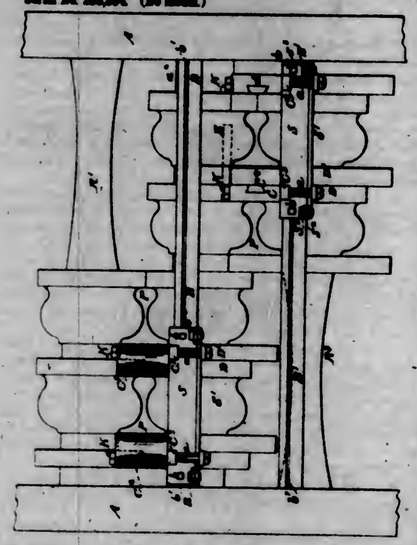
2. The rigid supplementary covers A and B, removably attached to the letter-copying book C, and having the faces of each adjacent to the closed book and fining toward its fellow cover slightly raised from a plane at or near its center, substantially as and for the purpose shown and described.

3. A letter-copying book provided with rigid supplementary covers, which covers adjacent to the closed book shall present faces slightly raised from a plane at or near their centers as being bent or curved outward, or as being convex or being slightly conical, for the purpose substantially as described and shown.

385,433.



385,434. ROLLING-MILL GUIDE. JAMES W. WALSH, Troy, N. Y., assignor to Mary Elizabeth Welsh, same place. Filed Nov. 18, 1887. Serial No. 255,934. (No model.)



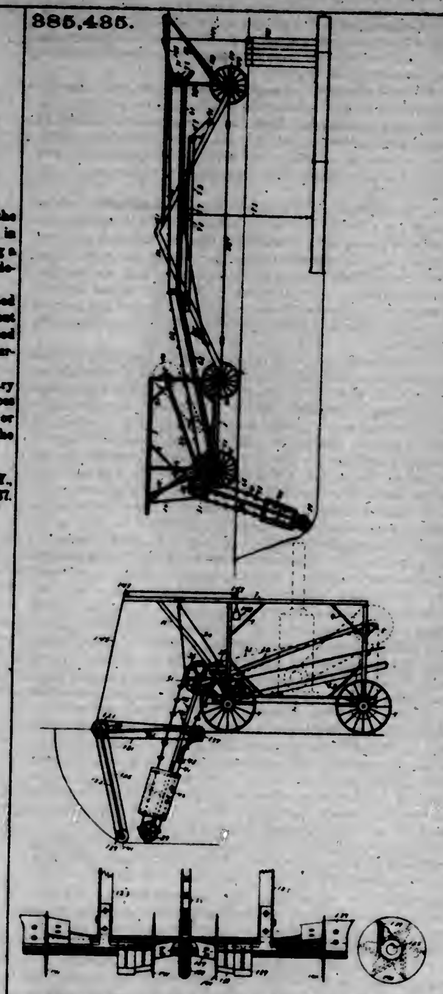
Claim.—1. A guide for rolling-mills, consisting of two sides bolted to a common sleeve adjustable longitudinally upon the crane-bar, substantially as described, and for the purposes set forth.

2. In a guide for rolling-mills, the combination, with a side plate, of a face-plate secured to the side plate and adjustable longitudinally thereon, substantially as described, and for the purposes set forth.

3. In a guide for rolling-mills, the combination, with a side plate, of a face-plate connected therewith by tongue and groove extending longitudinally of the plates, and a key fitting a vertical slot in said tongue and groove, substantially as described, and for the purposes set forth.

4. In a guide for rolling-mills, the combination, with a side plate, of a detachable face-plate beveled to present an inclined face, substantially as described, and for the purposes set forth.

385,435.



385,435. EXCAVATING AND PIPE-LAYING MACHINE. WILLIAM WARNER, Minneapolis, Minn., assignor to the National Steam Excavating Company, of Minnesota. Filed Dec. 21, 1887. Serial No. 258,963. (No model.)

Claim.—1. The combination, in a machine of the class described, of a suitable carriage, an excavating-elevator adapted to raise the material from the excavation, an independent frame connected with said carriage and extending from the rear thereof, a conveyer-trough extending from the opposite end of said carriage, supported upon said frame and adapted to receive material from said elevator, and a conveyer arranged to draw said material along in said trough and to dump it back into the excavation, substantially as described.

2. The combination, in a machine of the class described, of a suitable carriage, a sweep pivoted upon said carriage, an elevating-excavator pivotally supported upon said sweep and arranged at one end of said carriage and adapted to raise material, and a frame extending from the opposite end of said carriage, a conveyer-trough supported upon said frame and extending to a point beneath the upper end of said elevator, and a conveyer-belt arranged in said trough and adapted to convey material from said elevator to a point distant from the carriage, substantially as described.

3. The combination, in a machine of the class described, of a suitable carriage, a sweep pivoted upon said carriage, an excavating-elevator pivotally supported upon said sweep and arranged at one end of said carriage, a supporting-frame extending from the opposite end of said carriage, a conveyer extending from said carriage over said frame, and an apparatus for raising and lowering pipe arranged upon said frame between said carriage and the discharging end of said conveyer, substantially as described.

4. The combination, in a machine of the class described, of a suitable carriage, 2, the sweep 24, pivoted to standards 6 upon said car-

riage, the elevator-frame 37, pivoted upon the free end of said sweep, the elevator-belt 41, arranged upon said frame, and the hoisting-ropes 26 26, connected with said sweep and adapted to be wound upon windlasses, substantially as described.

5. The combination, in a machine of the class described, of a suitable carriage, the pivoted sweep 24, mounted upon said carriage, the excavating-elevator pivotally mounted upon the free end of said sweep, a hopper arranged beneath the upper end of said elevator and adapted to receive material therefrom, and a conveyer extending from said hopper to a point distant from said carriage, substantially as described.

6. The combination, in a machine of the class described, with the carriage 2 and the elevator mounted thereon, of the truss-frame connected with the opposite end of said carriage, the stationary conveyer-trough 61, supported upon said frame, the conveyer-trough 63, hinged to said trough 61 and adapted to receive material from said elevator, the conveyer-belt 67, arranged to run in said troughs, and the pipe raising and lowering apparatus arranged upon said truss-frame, between said carriage and the discharging end of said conveyer, substantially as described.

7. The combination, with the carriage 2, the excavating-elevator mounted thereon, and the driving mechanism arranged upon said carriage, of the truss-frame connected with the rear end of said carriage and consisting of the inclined bars 51, the horizontal bars 53, the conveyer extending from a point beneath the discharging end of said elevator to the rear end of said truss-frame, the trolley 87, supported upon said truss-frame and adapted to be moved longitudinally thereon, the windlass 85, and the rope or cable 83, connected with said windlass and passing over said trolley-frame, substantially as described.

8. The combination, with the carriage 2 and the excavating-elevator mounted thereon and arranged at one end of said carriage, of the truss-frame connected with the opposite end of said carriage and having its rear end supported on suitable wheels, 59, and provided with the standard 75, the shaft 73, mounted in bearings in said standards, the stationary conveyer-trough 61, supported upon said truss-frame and extending to the rear end thereof, the conveyer-trough 63 hinged to the forward end of the said trough 61, and having its forward end resting upon said carriage and adapted to receive material from the said elevator, the idler-pulleys 77 77, the pulleys 71 on the shaft 73, and the endless conveyer-belt 67, arranged in said trough and passing around said pulleys 71 and 77, for the purpose set forth.

9. The combination, with the carriage 2, of the excavating-elevator mounted thereon, driving mechanism mounted on said carriage, the shaft 8, mounted in bearings on standards fixed upon said carriage, a frame connected with said carriage and extending to the rear thereof, a driving-shaft at the rear end of said frame, a conveyer extending from said carriage to the shafts at the rear end of said frame, and driving-belts extending from said shaft 8 to the shaft at the rear of the frame and to said elevator, substantially as described.

10. The combination, with the carriage provided with the elevator, of the frame connected with the rear end of said carriage, the conveyer extending from said carriage to the rear end of said frame, the pipe hoisting and lowering apparatus mounted upon said frame, between said carriage and the discharging end of said conveyer, and the plank-hoisting apparatus mounted upon the rear end of said frame, substantially as described.

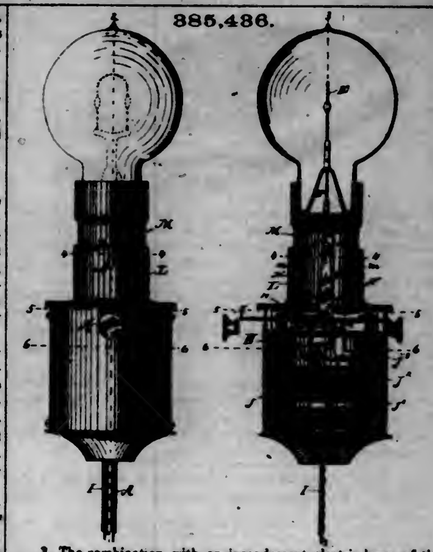
11. In a machine of the class described, the combination, with the excavator, of the swinging frame provided with the shaft 125, the series of cutters 139, arranged upon said shaft, and the disks 141, arranged upon said shaft, substantially as described.

385,436. ELECTRIC-LAMP SOCKET. JOHN S. ADAMS and ALBERT W. MORRELL, Indianapolis, Ind., assignors to the Jenney Electric Company, of Indiana. Filed Apr. 10, 1883. Serial No. 270,167. (No model.)

Claim.—1. The combination, in an incandescent electric lamp, of a socket having slots with notches at the lower ends, a sleeve inside said socket having corresponding slots, but no notches, the lamp-shank being formed to fit inside said sleeve, and provided with projections which extend out through said slots, and a reciprocating cut-out switch passing horizontally below said shank, socket, and sleeve, said sleeve being provided with a downwardly-projecting portion, which is bifurcated and extends over the bar of said switch, said switch-bar being provided with a notch which, when said switch is moved so as to cut out the lamp, is in such position that one of the prongs of the downwardly-extending portion on the sleeve may enter said notch, substantially as and for the purposes set forth.

2. The combination, in an incandescent electric lamp, of the shank thereof, having pins *m*, a socket, L, therefor having slots with notches therein, a sleeve interposed between said shank and said socket, having corresponding slots, but no notches, and a downwardly-projecting bifurcated part which passes astride the bar of the cut-out switch, and a notch in said switch-bar arranged to register with the edge of the downwardly-projecting part of the sleeve when the lamp is cut out, and then only, substantially as shown, and for the purposes set forth.

385,436.



3. The combination, with an incandescent electric lamp, of the shunt-magnet J, the spring J', secured to the frame thereof and extending forward to above its pole-piece, an armature, J^2, having a notched tongue which extends through a hole in the forward end of said spring, said spring being provided with a saddle-piece having contact-points, and contact-points upon the frame-work, with which the contact-points on the spring will come in contact when said spring is released after said magnet is energized and its armature then drawn out of engagement with said spring, substantially as set forth.

4. The combination, with an incandescent electric lamp, of the contact-points *b* and *b*, attached to the frame parts forming portions of the electrical path, a shunt-magnet connected to said frame parts by fine wires, an armature pivoted in front of the pole-piece of said magnet, and a spring carrying a saddle-piece which engages with and is normally held down by said armature, but when released (as said magnet is energized and the armature thereby drawn out of engagement with said spring) will come in contact with said contact-points, and thereby cut out the lamp, substantially as set forth.

5. The combination, in an incandescent electric lamp, of a shunt-magnet, an armature thereto, which forms also a catch for the spring, said spring having a saddle-piece which, when said spring is released, comes in contact with other portions, and thereby establishes a cut-out circuit, a positive cut-out switch, an opening through the plate forming part of the frame-work above said spring, and a corresponding opening through said cut-out switch, which, when the lamp is cut out thereby, registers with the opening in said plate, whereby an instrument may be inserted and the spring forced downwardly so as to re-engage with the armature of the magnet, substantially as shown and described.

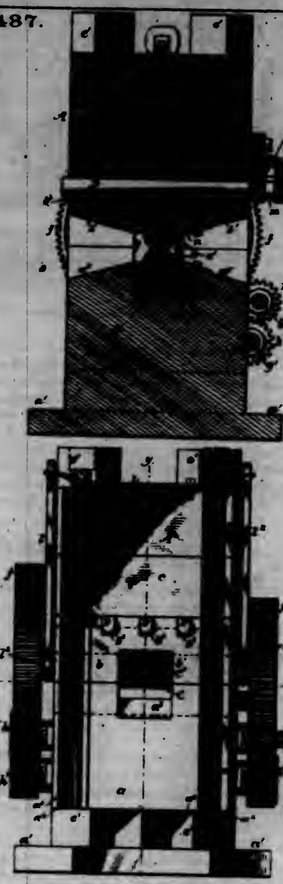
6. The combination, in an incandescent electric lamp, of the ordinary contact-springs and frame portions forming a part of the electrical path, a positive cut-out switch arranged to move transversely across the lamp structure, a shunt-circuit composed of projections on the frame-work, and a spring having a saddle-piece which is normally held in position by the armature of the shunt-magnet, said spring being inclosed by the frame-work, said frame-work being provided with an opening above said spring, which is covered by the switch except when in cut-out position, whereby it can only be re-engaged with said armature when the lamp is cut out by the positive cut-out switch, substantially as set forth.

385,437. METAL-WORKING ROLLING-MILL. STEPHEN W. BALDWIN, Yonkers, N. Y. Filed July 2, 1887. Serial No. 243,205. (No model.)

Claim.—1. The combination, substantially as hereinbefore described, of a strong unyielding housing, a pair of metal-working rolls, and unyielding bearings for both of said rolls located immediately opposite their working-faces, whereby when in service said rolls adjacent to the pass are rendered incapable of springing, bending, or yielding.

2. A housing for metal-working rolls, substantially as hereinbefore described, composed of piled horizontal metal sections bound together by vertical clamping rods or bolts and forming a practically-integral mass having central chambers for the reception of roll-boxes, and a transverse central pass-opening, whereby rolls mounted in said housing can be maintained in positively-fixed relations and the liability of derangement through springing of the housing reduced to a minimum.

385,437.



3. In a housing for metal-working rolls, the combination of a horizontal base-section, a top or bridge section having its bearing-surface inclined from the center toward each end, one or more intermediate sections, and a series of rods or bolts, by which said bridge-section is strained into general contact with the next underlying section, and all of said sections bound solidly together into a practically-integral mass containing interior grooves or chambers for the reception of boxes for the rolls, and a transverse central pass-opening.

4. The combination, substantially as hereinbefore described, of a pair of metal-working rolls, boxes or bearings which serve as supports for said rolls substantially throughout their length, a housing composed of a practically-integral mass of metal centrally chambered for the reception of the rolls and their boxes, and also having a central transverse pass-opening, and a series of adjustable sliding wedges interposed between the back of one of the roll-boxes and coincident surfaces within said housing.

5. The combination, substantially as hereinbefore described, of the pair of metal-working rolls, the boxes or bearings which support said rolls substantially throughout their length, a housing centrally chambered to receive said boxes, and having also a transverse central pass-opening, the springs for lifting the upper roll and its box, and a series of sliding wedges for forcing said roll downward and maintaining it in working position.

6. The combination, substantially as hereinbefore described, of a pair of metal-working rolls, each having a large driving-gear mounted directly thereon, a pair of parallel driving-shafts geared together, positively rotated, and geared to said roll-gears, whereby, however small the diameter of said rolls may be, they can be smoothly operated and heavy working-power applied thereto.

7. The combination of a pair of plain-surfaced metal-working rolls, boxes which afford bearings above and below the working-faces of said rolls, and clearers which engage with said working-faces for protecting the bearings against the entrance of abrasive matter, substantially as described, whereby the liability of defacing said working-faces in said bearings is reduced to a minimum.

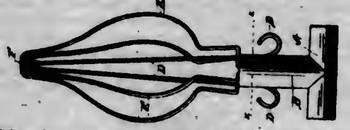
385,438. COVERED DEMIJOHN. GEORGE W. RAMER, Brooklyn, N. Y. Filed Jan. 26, 1888. Serial No. 261,889. (No model.)



Claim.—1. The combination, with a demijohn or other vessel, of a covering or casing of suitable material, the upper part of which conforms to and envelops the neck of the same, and is made close for a suitable distance, and the body portion having openings or slots formed circumferentially therein of sufficient size to permit the interior to be inspected, substantially as set forth.

2. The combination, with a demijohn or other vessel, of a covering or casing of suitable material, having an upper part which envelops and conforms to the neck of the same and a lower portion which extends upward for a suitable distance, said upper and lower portions being made close, as described, and connected by an intermediate part having openings or spaces arranged circumferentially therein, substantially as and for the purposes set forth.

385,439. LAMP-CHIMNEY CLEANER. ELI W. BIRWAY, Independence, Kans., assignor of one-half to Benjamin F. Masterman, same place. Filed Oct. 4, 1887. Serial No. 251,450. (No model.)



Claim.—In a chimney-cleaner such as described, the combination of the handle A, provided with a cylinder, B, flexible wires E E, the ends of the said wires resting in the said cylinder, the wooden plug G, driven into the end of the said cylinder and adapted to hold the said ends of the wires E resting therein, and pulling-wires D D, attached to the upper end of the said flexible wires and provided with hooks at the lower end near the said handle, substantially as and for the purpose described.

385,440. FILTER. CORNELIUS BERKEY, Hartford, Conn., assignor of one-half to Owen H. Jones, same place. Filed Feb. 2, 1883. Serial No. 262,771. (No model.)

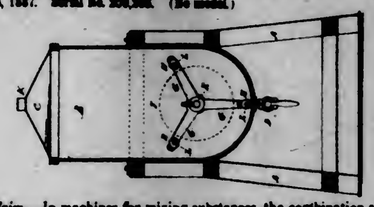


Claim.—1. As a new article of manufacture, a filter consisting of a body provided with an integral spiral web that forms a spiral channel, and a conduit that forms an opening from the outer end of the

spiral channel to the opening through the bottom of the body, and the cover-plate having an opening into the center of the body over the inner end of the spiral channel, and the filtering substance packed into said channel, substantially as described.

2. As a new article of manufacture, a filter consisting of a cast-metal body provided with an integral spiral web and an integral conduit, which forms an opening from the end of the spiral channel formed by the web to the opening through the body, the interiorly-threaded nut *a'*, attached to the body surrounding the hole *f*, the cover *b*, the interiorly-threaded nut *b'*, attached to the cover-plate surrounding the hole *f'*, the nozzle *g*, adapted to fit within either of said nuts, and the filtering substance, all substantially as described.

385,441. PAINT-MILL. JOHN BRAGG, Boston, Mass. Filed Dec. 28, 1887. Serial No. 259,202. (No model.)



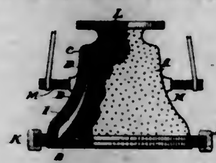
Claim.—In machines for mixing substances, the combination and arrangement of a containing-tank with the lower portion of its inner surface in the shape of an arc of a circle, or nearly so, and a vacant space forming the upper portion of the tank, the tank provided with an entrance-aperture above, with a rotating shaft passing from end to end of the tank parallel with its axis in the largest direction, the shaft carrying one or more rotating rollers whose bearings are permanently fixed at any certain distance from the center of the shaft, all constructed, arranged, and fitted for the purpose named, substantially as shown and described.

385,442. NUT-LOCK. ROBERT W. BURTON, New River, Va. Filed Feb. 24, 1888. Serial No. 265,112. (No model.)



Claim.—In a nut-lock, the combination, with the bolts, washers surrounding the bolts, and nuts screwed on the bolts and bearing on the washers, of the locking-plate comprising the arms K, arranged under the nuts and provided with slots G, embracing the said washers, the upturned ears E E at the outer ends of the said arms, having ratchet-teeth on their inner edges, and the spring D, connecting the adjacent ends of the arms and drawing them toward each other, whereby the ratchet-teeth on the said ears are normally held in engagement with the angles of the nuts, substantially as specified.

385,443. MOLD FOR CASTING BELLS. GARDINER CAMPBELL, Milwaukee, Wis. Filed Apr. 11, 1887. Serial No. 234,363. (No model.)



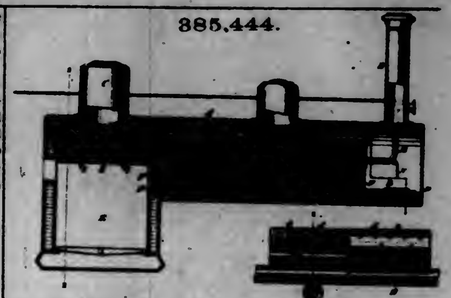
Claim.—1. A flask or frame for the mold, having a roughened surface for retaining sand, a coat of sand thereon, and thereon a coating of molding-loam shaped and formed for the reception of the molten metal, substantially as described.

2. An inner and an outer flask or frame and on the surface of both inner and outer flasks a lining of sand and thereon a coating of loam, said lining of sand and coating of loam being so molded and shaped and said inner and outer flasks so secured together as to form a matrix for the reception of the molten metal, substantially as described.

385,444. STEAM-BOILER FURNACE. JOHN F. CLARK, New York, N. Y. Filed Dec. 28, 1887. Serial No. 258,794. (No model.)

Claim.—1. In the fire-box of a boiler-furnace, the pipe supporting the air-distributers, combined with the pipes I, which open into the water-space and support the said pipe, and a pipe leading to the

385,444.

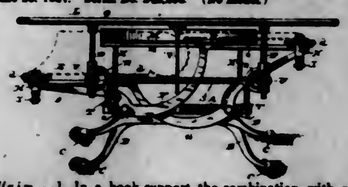


open air and being in connection with the air-distributers, substantially as set forth.

2. In a boiler-furnace, the air-distributers composed of hollow apertured sections *c*, having the downwardly-extending leg-extensions *h*, and being concave on their lower contact-surfaces, combined with the hollow supporting-pipes H, which open into the water-space around said fire-box, the flues L, and pipes M, substantially as and for the purposes set forth.

3. In a boiler-furnace, the supporting-pipes H, having threaded ends and composed of sections *a b*, and sleeve *d*, combined with the air-distributers supported by said pipes, and flues leading from the open air to said distributers, substantially as and for the purposes set forth.

385,445. BOOK-SUPPORT. JOHN B. CLEES, Jefferson, Iowa. Filed June 23, 1887. Serial No. 242,208. (No model.)



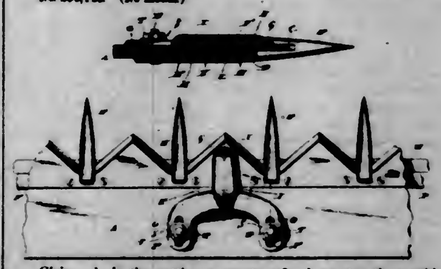
Claim.—1. In a book-support, the combination, with a book-holder composed of two oppositely-movable parts, of connecting-levers arranged one in front of the other, and each lever connected to both parts of the book-holder at respectively-opposite sides thereof, substantially as described.

2. In a book-support, the combination, with a book-holder composed of two oppositely-movable parts, of centrally-pivoted connecting-levers, each lever connected at the ends to both parts of the book-holder at respectively-opposite sides thereof, substantially as described.

3. In a book-support, the combination of the main frame, the two-part book-holder, and the levers pivoted to the main frame at opposite sides thereof, and each lever pivoted to both parts of the book-holder at their respectively-opposite sides, substantially as described.

4. In a book-support, the combination, with the book-holder, of a clamp consisting of a spring-actuated lever provided with a clamping-finger and an adjusting-screw, substantially as described.

385,446. ADJUSTABLE CUTTER-BAR KEEPER. JOHN CRISP and JONAH H. ALEXANDER, Browning, Mo. Filed Nov. 28, 1887. Serial No. 256,148. (No model.)



Claim.—1. In the cutting apparatus of a harvester, the combination of the finger-bar having the recess E in its front edge, the guard-fingers having the recesses D, the cutter-bar mounted to slide in the recesses in the guard-fingers, the block I, adapted to fit the recess E

in the finger-bar and having the forward and rearward projecting lips, I, M, bearing, respectively, under the cutter-bar and finger-bar, and having the forward-projecting finger N, overlying the upper side of cutter-bar, and the rearward-extending arms secured to and adjustable on the finger-bar, substantially as described.

2. In the cutting apparatus of a harvester, the combination of the finger-bar having the recess E in its front edge, the guard-fingers having the recesses D, the cutter-bar mounted to slide in the recesses in the guard-fingers, the guide-bar H, also in said recesses and bearing against the front side of the cutter-bar, the block I, adapted to fit the recess E in the finger-bar and having the forward and rearward projecting lips L M, bearing, respectively, under the cutter-bar and finger-bar, and having the forward-projecting finger N, overlying the upper side of the cutter-bar, and the rearward-extending arms secured to and adjustable on the finger-bar, substantially as described.

385,447. NOZZLE FOR OIL-CANS. BENJ A. DEVEBALL, Brooklyn, N. Y. Filed Dec. 8, 1887. Serial No. 256,988. (No model.)



Claim.—1. In a nozzle for oil-cans, the threaded flange C, having the base G and inwardly-extending flange H, combined with the packing J, the screw-cap D, applied within said flange C, the discharge-spout secured to the side of said cap, the valve F and stem *e*, the bottom of the cap D being open and the packing J serving as a seat for both the cap and said valve, substantially as and for the purposes set forth.

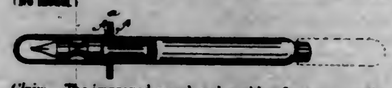
2. In a nozzle for cans, the detachable threaded screw-cap D, the threaded flange C, secured to the can and adapted to receive within its circle the threaded cap D and the packing J, the top of said cap consisting of a double thickness of metal inclosing the internally-threaded nut *d*, combined with the threaded stem *e*, engaging said nut, and the valve secured to the lower end of said stem and adapted when depressed to engage the packing J, substantially as and for the purposes set forth.

3. In a nozzle for cans, the threaded flange C and the packing J, encircling the mouth of the can, combined with the detachable threaded cap D, carrying the discharge-spout M on its side, the threaded stem *e* and the valve F, the upper end of the stem having a cap, N, and the valve consisting of two plates or disks inclosing the head on the lower end of the stem and having their outer edge depending downward to engage the packing J, substantially as and for the purposes set forth.

4. In a nozzle for cans, the threaded flange C and packing J, encircling the mouth of the can, combined with the threaded cap having the discharge-spout M, the threaded stem *e* and valve F, said valve consisting of plates *m n*, inclosing the head on the lower end of the stem *e* between them, and the plate *n* having at its outer edge a flange which turns upward upon but does not rigidly hold the outer edge of the plate *m*, substantially as set forth.

5. The can having the opening B, the encircling threaded flange C, and the packing J, combined with the threaded cap D, carrying the discharge-spout M and passing within the flange C, the vertical threaded stem *e*, passing downward through said cap, and the valve F, secured on the lower end of said stem, the outer edge of the valve being turned downward toward said packing, so as to engage the same by a single narrow edge, substantially as set forth.

385,448. PACKING AND GUARD FOR STYLOGRAPHIC PENS. ROBERT H. BURNEY, Newark, N. J. Filed Oct. 3, 1887. Serial No. 251,268. (No model.)



Claim.—The improved guard and packing for pens, pencils, and the like, consisting of a flat rubber plate which is angular at its periphery, having a projecting stiffening-ridge on its face, and perforated within said ridge and provided with a flange which lies in the plane of said plate, said parts being arranged and combined substantially as set forth.

385,449. TRACTION-TRUCK. GEORGE H. EDWARDS, Chicago, Ill. Filed May 31, 1887. Serial No. 239,321. (No model.)

Claim.—1. In a traction-truck traveling on an endless track supported by a braced chain, the combination of a frame, B B C, two or more axles, A, wheels D, and a braced chain having curved or angled slotted links *d* on the inner chord and cogs W on the outer chord of said brace-chain.

2. In a truck or wagon, the combination of a frame, B B C, two

385,449.



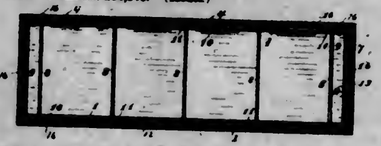
or more axles, A, wheels D, brace-links secured to the planks *a* and jointed together by the pins *c*, and chord-links secured to the brace-links by the pins *c*, one or more of the driving-wheels being provided with notches in its periphery, and the pins *c* having the cogs *w*, of such shape and so located that they will mesh with the notches of the driving wheel or wheels.

3. In a traction-truck traveling on an endless track supported by a braced chain, the combination of the wheels D, the curved or angled slotted links *d*, the diagonal braces *b*, and the planks *a*.

4. The combination of a frame, axles, or shafts, wheels, longitudinal and diagonal brace-links joined together at one end by the pins *c*, and chord-links joined to the brace-links at their other ends by the pins *c*, the chord-links having the diagonal or curved slots d^3, as described.

5. The combination of longitudinal and diagonal brace-links joined together by the pins *c*, slotted chord-links joined to the brace-links by the pins *c*, and the loose rollers *f*.

385,450. EGG-CARRIER. ADELBERT L. ELLIS, Pueblo Springs, assignor of one-half to Harvey W. Furman, Denver, Colo. Filed Dec. 12, 1887. Serial No. 257,573. (Model.)



Claim.—1. In an egg carrier or case, the combination of the cellular structure for containing the eggs, and a false or extra top therefor and a false or extra bottom therefor, both supported at points corresponding to the intersections of the cell-walls away from the outer walls of the carrier or case, substantially as set forth.

2. In an egg carrier or case, the combination of a cellular structure for containing the eggs, and a false or extra bottom and a false or extra top therefor, both provided with projections or supports at points corresponding to the intersections of the cell-walls maintaining them away from the walls of the carrier or case, substantially as set forth.

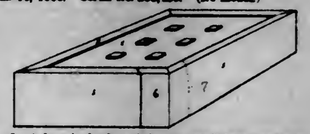
3. In an egg carrier or case, the combination of a folding or knockdown body, a folding or knockdown cover, a cellular structure for containing the eggs, and an extra top and an extra bottom for such structure, each provided with projections at points corresponding to the intersections of the cell-walls holding it away from the exterior walls of the carrier or case, substantially as set forth.

4. In an egg carrier or case, the combination of an inclosing-body and a cover therefor, a cellular structure for containing the eggs, having its cell-walls extended beyond the outer walls of the outer rows of cells, a false or extra top and a false or extra bottom for the cellular structure, and supports or projections at points corresponding to the intersections of the cell-walls holding such extra top and bottom away from the exterior walls of the case, whereby air-spaces are formed all around the cellular structure and the cells are removed from contact with the outer walls, substantially as set forth.

5. An egg-package for transportation and sale, consisting of an inclosing case or body, a cellular structure therein containing a single egg in each cell, top and bottom pieces having projections on their exterior faces arranged at points coinciding with the intersections of the cell-walls, and a sealing-strip pasted around the sides and ends and having its edges folded over upon the top and bottom, securing together the parts of the body or case and hermetically sealing the package, substantially as set forth.

6. A sealed package or box consisting of a box-body having side wings or flaps, a cover having side wings, 13, with extending flaps 7, and a sealing-strip pasted around the sides and ends of the box or package and having edges folded over upon and pasted upon the top and bottom, whereby the flaps 7 are held against the sides, the body and cover are secured together, and the package is hermetically sealed substantially as set forth.

385,451. KNOCKDOWN BOX OR PACKAGE. ADELBERT L. ELLIS, Pueblo Springs, assignor of one-half to Harvey W. Putnam, Denver, Colo. Filed Jan. 11, 1888. Serial No. 260,699. (No model.)

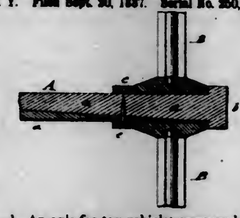


Claim.—1. A box in its knockdown condition, consisting of the following elements: sideless rectangular top and bottom pieces, each having projections, as described, upon one of its faces, and a strip for forming the sides and ends, having side wings or extensions creased and adapted to be folded over upon the top and bottom pieces, substantially as set forth.

2. The combination, in a knockdown box, of sideless top and bottom pieces having projections upon their exterior faces, and a strip forming the sides and ends, having wings or extensions folded over upon and secured to the top and bottom pieces, substantially as set forth.

3. The combination, in a knockdown box, of sideless top and bottom pieces, having projections upon their exterior faces, an interposed cellular structure, and a strip forming the sides and ends, having wings or extensions folded over upon and secured to the top and bottom pieces, substantially as set forth.

385,452. AXLE FOR TOY VEHICLES. LESTER FRANK, New York, N. Y. Filed Sept. 20, 1887. Serial No. 250,175. (No model.)



Claim.—1. An axle for toy vehicles composed of two diagonally-split sections having enlarged heads at the outer ends and fastening devices at their inner parts, substantially as set forth.

2. An axle for toy vehicles composed of diagonally-split sections having enlarged heads at their outer ends, fastening devices at their inner parts, and fixed bands or stops on the inner parts of the axle adjoining the wheel-hubs for retaining the wheels in position, substantially as set forth.

385,453. SHADE OR GLOBE HOLDER FOR LAMPS. ELLIOTT P. GLEASON and EMIL P. GEBHERT, Brooklyn, N. Y. Filed Dec. 2, 1887. Serial No. 256,736. (No model.)

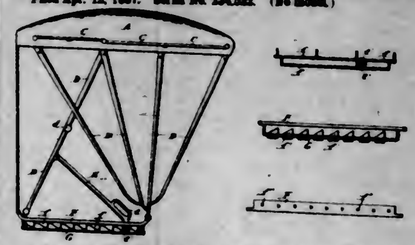


Claim.—1. In holders for lamps or shades, a shade-ring provided with suitable means for attaching a globe or shade and having curved elastic or flexible arms, as C C, extending inward, in combination with a separate center or band, as B, attached to the inner end of said arms, which band is of elastic or flexible nature, and provided with lugs, as *b b*, and set-screw, as *c*, arranged and constructed substantially in the manner and for the purpose set forth.

2. In holders for lamps, shades, or globes, a shade-ring provided with suitable means for attachment to a globe or shade and having two or more inwardly-extending curved arms, in combination with a separate band, as B, attached to the inner end of said arms, which band is severed and provided with means for adjustment to larger or smaller diameters, and so positioned with one of its ends close to one of the arms that the other end will include a long free portion of the said band extending past the other of the arms, in the manner shown, and for the purpose set forth.

3. In a globe or shade holder for lamps or lighting fixtures, a shade-ring provided with lugs, as *d d d*, and inwardly-extending integral arms, as C C, the inner ends of which are bent to extend circumferentially, in combination with a covered band, as B, which is firmly attached to the inner end of said arms C C, and which is provided with the lugs *b b* and set-screw *c*, adapting it for adjustment to the varying diameters of lamp sacks or collars, substantially as and for the purpose described.

385,454. CARRIAGE-TOP. EDWARD R. GOSLEY, Fort Worth, Tex. Filed Apr. 13, 1887. Serial No. 234,852. (No model.)



Claim.—1. The combination, with a vehicle-seat, a series of top-supporting bows pivoted thereto, and a jointed brace having its lower end pivoted to the seat and its upper end to one of the bows, of a rigid operating-lever having its upper end pivoted to said jointed brace and its lower end adjustably connected with the seat, whereby the position of the lower end of said lever may be varied and the brace and top secured in any desired position, substantially as and for the purpose set forth.

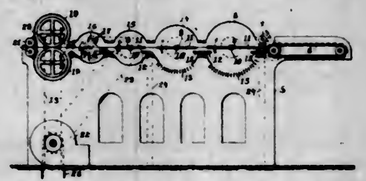
2. The combination with a carriage-seat, bows pivoted to the carriage, and a brace having its lower end pivoted to the seat or an attachment thereof and its upper end to one of the bows, of a ratchet-bar secured to the end of the seat, and an operating-lever having its rear end pivoted to said brace and its front end provided with means, substantially as shown and described, for connecting it at any desired point with said ratchet-bar, substantially as and for the purpose set forth.

3. The combination of the bows B and horizontal braces C, the oblique brace D, the double ratchet-bar having teeth *f*, and the hand-lever E, having its rear end pivoted to the oblique brace and its front end provided with a transverse pin adapted to engage the teeth of the ratchet-bars.

4. The combination of the bows B, the horizontal braces C, and oblique brace D, the double ratchet-bar having teeth *f*, the operating-lever E, having its rear end pivoted to the brace D and its front end provided with the pin *e*, adapted to engage the ratchet-bars, and the spring G, lying beneath the end of the operating-lever and adapted to prevent the accidental displacement thereof from the ratchet, substantially as shown and described, and for the purpose set forth.

385,455. COMBINED COTTON-WASTE PICKER AND LAPPER. WILLIAM H. GOLDSMITH, Fall River, Mass. Filed Nov. 8, 1886. Serial No. 218,342. (No model.)

Brief.—The object of the invention is to produce an improved machine for extracting the short-fiber cotton from cotton waste or ordinary spinning-machine refuse, and then forming the picked cotton into a lap.



Claim.—1. The combination, with one or more beater-cylinders having lateral openings therein and each provided with revolving beaters, of a catch-box communicating with said cylinder or cylinders and provided with one or more revolving thread-catching bars, all constructed substantially as described, whereby the cotton waste may be passed through the beater cylinder or cylinders, thence through the catch-box, and be picked, as described.

2. The combination, with one or beater-cylinders having lateral openings therein and each provided with internal fixed pins and a revolving beater, of a catch-box placed in communication with said cylinder or one of said cylinders and provided with one or more revolving thread-catching bars, all substantially as described, whereby the cotton waste may be passed in succession through the beaters and the catch-box and the short fiber and threads be separated therefrom, as described.

3. The combination, with a series of beater-cylinders placed in lateral communication and provided each with a revolving beater, of a catch-box communicating with said cylinders and provided with a set of revolving thread-catching bars, a set of fleece or cotton catching lapper-drums in free communication with the said catch-box, substantially as described, whereby the cotton waste may be passed in succession through the beater-cylinders and catch-box and the short fiber therein extracted and subsequently caught and lapped by the lapper-drums, as described.

4. The combination, with a series of beater-cylinders arranged in lateral communication and each provided with a revolving beater and internal fixed pins, and one or more of the cylinders formed with a sifting-grate in the bottom or bottoms thereof, of a catch-box opening laterally into the adjacent beater-cylinder and, provided with a set of revolving thread-catching bars, and a set of revolving cotton-catching gauze lapper-drums, all constructed and operated substantially as and for the purpose herein described.

5. The combination, with a series of intercommunicating beater-cylinders placed laterally together and each provided with internal fixed pins and with a revolving shaft having beater-arms and longitudinally-disposed stripping-grooves formed thereon, of a catch-box opening laterally into the adjacent or terminal beater-cylinder and provided with a set of revolving thread-catching bars, each formed with longitudinally-disposed stripping-grooves, a set of cotton-catching lapper-drums adjacent to and communicating with said catch-box, and exhaust-fans for said lapper-drums, all constructed and arranged substantially as and for the purpose herein described.

6. The combination, with a series of horizontal intercommunicating beater-cylinders placed laterally together and each provided with a revolving shaft having stripping-grooves thereon and radial beater-arms, and each cylinder provided with a set of fixed pins having their ends cleared by the passing beater-arms, of a catch-box adjacent to and opening into the terminal beater-cylinder and provided with a set of horizontal revolving thread-catching bars, each provided with one or more longitudinal stripping-grooves, a set of horizontal revolving gauze lapper-drums provided with exhaust-fans, and delivery prem-rolls, all arranged and constructed substantially as described, whereby the cotton waste may have the short-fiber cotton picked therefrom and formed into a lap, as described.

7. The combination, with a series of three horizontal beater-cylinders of decreasing sizes having lateral openings therein and placed together in communication, and each provided with a revolving shaft having stripping-grooves and fixed beater-arms and a set of fixed pins, the first and second of said cylinders formed with a sifting-grate in the bottoms thereof, of a catch-box provided with a set of horizontal revolving thread-catching bars formed with longitudinal stripping-grooves, said catch-box being in lateral communication with the third beater-cylinder, a set of cotton-catching lapper-drums and exhaust-fans and prem-rolls for said drums, the said lapper-drums formed of gauze and placed horizontally and in communication with said catch-box, and a set of feeding devices for the first beater-cylinder, all constructed and arranged substantially as and for the purpose herein described.

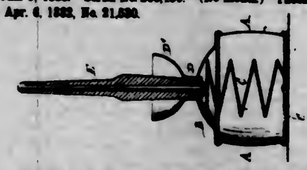
8. The catch-box consisting of a suitable casing and of a set of revolving thread-catching bars provided with one or more stripping-grooves, constructed substantially as described, for catching the threads from cotton waste or the like, as described.

9. The combination, with a series of communicating beater-cylinders provided with shafts 9, having the beater-arms 11 thereon, of the connected catch-box 16, provided with thread-catching bars 17, and of the set of gauze lapper-drums 20, provided with a suction-fan, all substantially as and for the purpose described.

10. The combination, with the communicating series of beater-cylinders 8, 14, and 15, provided with the shafts 9, having stripping-grooves 10 and beater-arms 11, and formed with the sifting-grates 13, of the communicating catch-box 16, provided with the thread-catching bars 17, formed with stripping-grooves 18, the casing 19, provided with the gauze lapper-drums 20 and prem-rolls 21, and the exhaust-fan 22, all constructed and operated substantially as described.

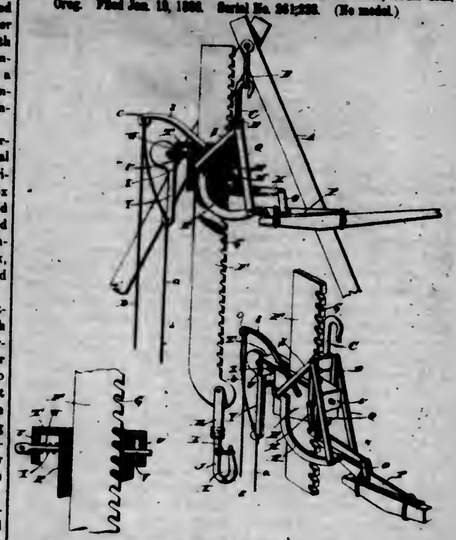
11. The catch-box 16, provided with the revolving thread-catching bars 17, formed with the stripping-grooves 18, substantially as and for the purpose described.

385,456. POWDER-DUSTER. LOUIS W. GRAESSER, Brooklyn, N. Y. Filed Jan. 9, 1888. Serial No. 260,159. (No model.) Patented in Germany Apr. 6, 1882, No. 21,580.



Claim.—An elastic bulb consisting of a cylindrical body of elastic material, top and bottom plates having circumferential flanges, ring-shaped washers introduced between the flanges of the top and bottom plates and the edges of the elastic body, so as to secure the latter to the top and bottom plates, a spiral spring interposed between the top and bottom plates and attached to one of said plates, and an outlet-tube applied to the top plate, substantially as set forth.

385,457. STUMP-EXTRACTOR. ALFRED C. HALL, Cedar Mill, Oreg. Filed Jan. 18, 1888. Serial No. 261,223. (No model.)



Claim.—1. The combination of the lifting-bar, the hollow block through which the lifting-bar works, the suspension-hook secured to the said block, the lever suspended from said hook and engaging the lifting-bar, and the locking-plate supported by the hollow block, substantially as set forth.

2. The combination of the lifting-bar, the hollow block on said bar, the suspension-hook, the bifurcated hanger depending from said hook and secured to the hollow block, the links depending from said block, and the lever fulcrumed in the said links and engaging the lifting-bar, as set forth.

3. The combination of the lifting-bar, the hollow block, the suspension-hook secured to said block, the links depending from said block, the braces depending from the hook and the hollow block, the lever fulcrumed between the links and engaging the lifting-bar, and the lever fulcrumed to said braces and connected to said first-mentioned lever, substantially as specified.

4. The combination of the lifting-bar, the hollow block, the suspension-hook secured to said block, the lever suspended from said hook and engaging the lifting-bar, the locking-plate mounted on the hollow block, and the cam-lever for throwing said locking-plate into and out of engagement with the lifting-bar, substantially as specified.

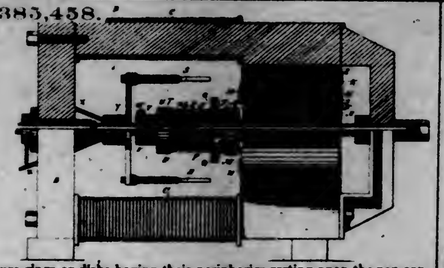
5. The combination of the hollow block, the lifting-bar, the suspension-hook secured to said block, the lever suspended from said hook and engaging the lifting-bar, the locking-plate mounted on the hollow block, the pin projecting from the hollow block and through the locking-plate, the spring coiled around said pin and acting on the locking-plate, and the cam-lever mounted at the outer end of said pin and bearing on the locking-plate in opposition to the spring, substantially as specified.

6. The combination of the hollow block, the lifting-bar, the suspension-hook secured to said block, the lever suspended from said hook and engaging the lifting-bar, the locking-plate mounted on the hollow block, the cam-lever for operating said locking-plate, the rod projecting from the hollow block and having an eye at its end, and the cords secured to said cam-lever, one depending from said lever and the other passing up to and through the eye in said projecting rod, substantially as specified.

385,458. DYNAMO-ELECTRIC MACHINE. AUGUST HARDING, Oakland, Cal. Filed June 11, 1887. Serial No. 241,076. (No model.)

Claim.—1. In a dynamo-electric machine, the spider formed of non-magnetic material having the radial arms of narrow cross-section in the direction of rotation, and having the expanded plates or segments at their outer ends with an exterior coating of insulating or non-conducting material, in combination with the independent arma-

385,458.



ture rings or disks having their peripheries resting upon the non-conducting material upon the exterior of the segments, and the insulating-wire wound around the disks, substantially as herein described.

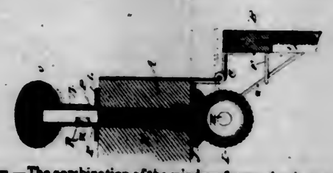
2. The spider composed of radial arms having outwardly-turned portions at one end and provided with the cylindrically-curved segments extending from one end to the other of the arms, with an insulating material upon the periphery of the segments, in combination with the independent rings or disks fitting outside the segments and separated therefrom by insulating material, the front end disk being provided with lugs which enter corresponding depressions at that end of the spider to prevent it from turning upon the same, and bolts extending through the rings and screwing into the upturned flanges at the rear end to hold them in place, substantially as described.

3. A commutator consisting of independent sectors surrounding a common center, having the ends or extensions R made thinner than the central portion, with which the brushes form contact, and slotted insulated rings supporting the ends, so that air-spaces are formed between them, substantially as described.

4. In a dynamo-electric machine, the commutator consisting of independent sectors having their ends reduced in the direction of the commutator circumference and supported in slotted insulated rings, with insulating material upon the outside of these ends, in combination with a fixed hollow cap having an inclined inner face, in which one end of the sectors are forced, and a movable cap having an inclined inner face for receiving the opposite ends of the sectors, substantially as herein described.

5. Commutator-sections having tapered ends reduced in the direction of the commutator circumference, a fixed and a movable cup-shaped cap having each an inclined face for receiving the tapering ends, and the slotted insulating-rings, in combination with a screw collar or sleeve bearing against the movable cap and locking and holding the sections in place, substantially as herein described.

385,459. SHUTTER-WORKER. WILLIAM H. HENDRICK, Ottawa, Kans. Filed Oct. 11, 1887. Serial No. 252,056. (No model.)



Claim.—The combination of the window-frame, the shutter hinged thereto, the eye F, secured to the rail of the shutter at a suitable height and between two adjacent slats, the vertical bracket G, secured to the frame, the bevel-gear journaled on the pintle H, in a recess on said bracket, the rod Q, entering the eye F, the shaft K, the gear-wheel J on the outer end of said shaft, the handle O, the sleeve N, sliding on the squared part of the shaft K, and having the angular pinion P, to enter the corresponding recess in the plate L, and the screw R, entering the recess M, all constructed and arranged substantially as and for the purpose specified.

385,460. HYDRAULIC STEP. FREDERICK G. HERR, Oakland, Cal. Filed Sept. 10, 1887. Serial No. 249,269. (No model.)

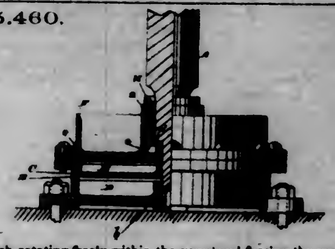
Brief.—A chambered vessel containing water encircling the foot of a shaft, a ribbed plate on the shaft rotating in the vessel, acting to force the water above it centrifugally, thereby creating pressure below the plate.

Claim.—1. A hydraulic step for shafts, comprising a vessel containing water, said vessel having communicating chambers and surrounding the foot of the shaft, a ribbed disk or plate secured to said shaft, and fixed ribs or flanges in the vessel beneath the disk or plate, said disk rotating freely within the vessel and forcing the water above it centrifugally, whereby the pressure of water in the lower compartment is equal to the maximum pressure in the one above it.

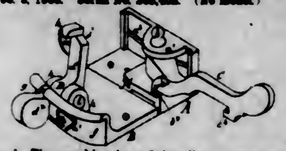
2. A hydraulic step for shafts, consisting of a vessel encircling the foot of the shaft and containing water, a plate or disk fast upon the shaft and rotating freely within the vessel, blades or flanges on the upper surface of said disk or plate, and fixed ribs or flanges in the vessel under the plate or disk, substantially as herein described.

3. A hydraulic step for shafts, consisting of a vessel encircling the foot of the shaft and containing water, a plate or disk on the shaft and rotating freely in the vessel, blades or flanges on the upper surface of the plate or disk, fixed ribs or flanges in the base of the vessel under the plate or disk, and an inclosing-vessel in which the disk or plates operate, substantially as herein described.

385,460.



385,461. SASH-FASTENER. ELIJAH A. HOLT, Hudson, N. H. Filed Feb. 8, 1883. Serial No. 269,462. (No model.)



Claim.—1. The combination of the elbow-lever D, pivoted to the plate B, having keeper *f*, with latch C, pivoted to plate A, substantially as described.

2. A sash-fastener comprising the plate B, having a keeper, *f*, and an elbow-lever, D, pivoted to ears of said plate and provided at the end of its long arm *d'* with an end stop, *k*, and side guard-plate, *m*, a plate, A, and a latch, C, pivoted to the plate A, substantially as and for the purpose described.

3. The combination, with the fastener-plate A, provided with the shoulder *a*, having the beveled surface *j'* and vertical side flange, *b*, and plate B, provided with keeper *f*, having slot *g* and ears A A, of elbow-lever D, formed with bevel surface *j*, stop *k*, plate *m*, and the latch C, formed with shoulders *b'* and *c*, substantially as and for the purpose described.

4. The described elbow-lever D, having its short arm *d*² weighted, in combination with the described fastener-plates A and B, and latch C, substantially as described.

385,462. SAFETY-RAZOR. FREDERICK KAMPE, RICHARD KAMPE, and OTTO KAMPE, Brooklyn, N. Y. Filed Mar. 12, 1886. Serial No. 194,940. (No model.)

Claim.—1. In a razor, the combination, with the frame or casing on which the blade can be held, of a swinging frame pivoted in the frame on which the blade is held, a spirally-grooved roller or worm mounted to turn in the swinging frame, and a screw connected with the swinging frame for the purpose of adjusting it, substantially as shown and described.

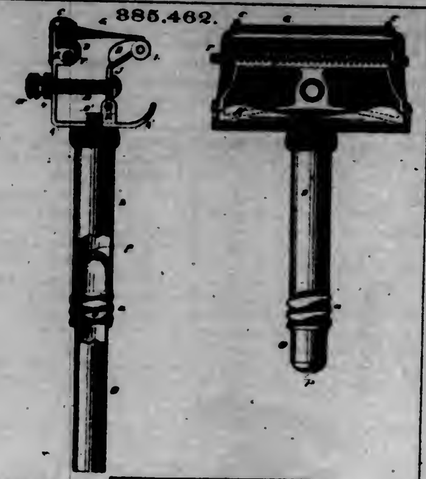
2. In a razor, the combination of the frame A, having the lugs K of the frame J pivoted in said lugs, the spirally-grooved roller or worm L, mounted to turn on the swinging end of the frame J, and the screw N, passed through the frames A and J for the purpose of adjusting the frame J, substantially as shown and described.

3. The combination, with the frame A, of the pivoted frame J, having the wings H, provided with upper rounded edges, the spirally-grooved roller or worm L, mounted to turn on its longitudinal axis in the wings H, and of mechanism for adjusting the frame J, substantially as shown and described.

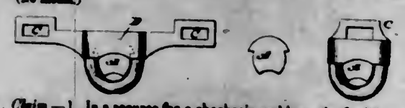
4. In a razor, the combination, with a frame having hooks, of an eccentrically-mounted clamping-roller below the casing for the purpose of pressing the blade against said hooks and thus holding it in place, substantially as shown and described.

5. In a razor, the combination, with a frame having lugs E and hooks C, of a roller, D, mounted eccentrically in said lugs and provided with a square pivot, F, substantially as shown and described.

385,462.



385,468. ATTACHMENT FOR CHECK-REIN LOOPS OR BARS. HARRY LOWE, Montpelier, Vt. Filed Apr. 6, 1887. Serial No. 233,942. (No model.)



Claim.—1. In a securer for a check-rein and loop, the flexible and compressible piece, as shown, with an enlarged part to fit the recess or hole D, whereby it can be securely held and quickly inserted and removed, substantially as described.

2. In combination with a check-rein-bar, the flexible securer having an enlarged part, for the purpose described.

385,464. WRENCH. RICHARD L. MASSEY, Doughton, Ala. Filed Nov. 15, 1887. Serial No. 255,276. (No model.)



Claim.—In a wrench, the combination of the bar A, having a lug, A', projected from its upper edge and provided with serrations on the face of said lug, the bar B, having pivot-studs projected from its sides, the bail-shaped pawl having its arms pivoted on the said studs and provided in one of said arms with a recess opening onto said stud, and having its cross-bar serrated to engage the serrated face of the bar A, and the spring secured to the pivot-stud and entering and bearing in the recess of the pawl-arm, substantially as set forth.

385,465. ROWING APPARATUS. ROBERT MASAY, Nashville, Tenn. Filed Nov. 10, 1887. Serial No. 254,736. (No model.)

Claim.—1. In a rowing apparatus, the combination, with a frame or support, of bearer-plates E E, pivoted thereto, ear-supports held to said plates, a sliding bar, G, fitted to the frame, links F F, connecting said parts E G, and means for locking the bar G in position, substantially as described, for the purposes set forth.

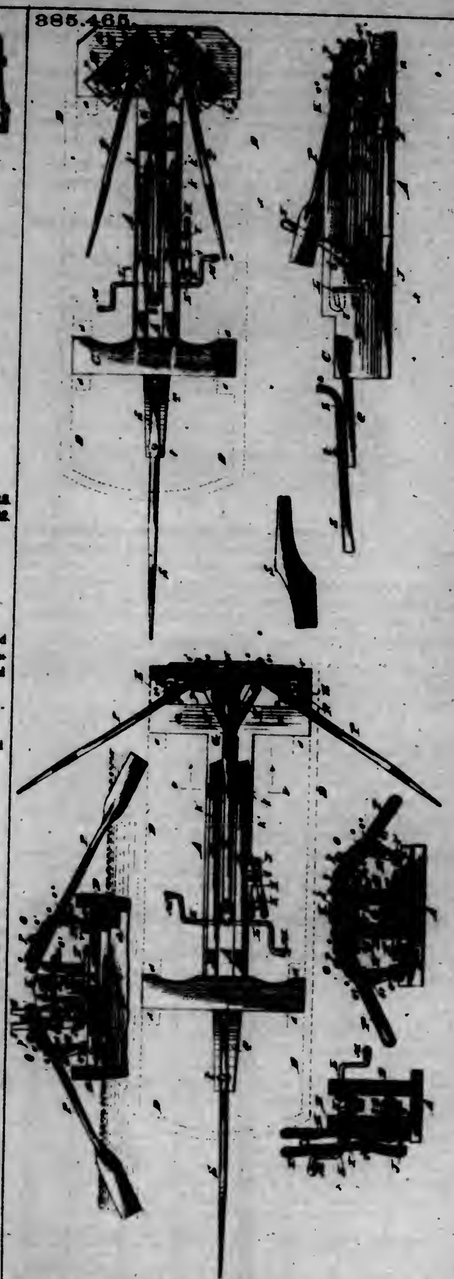
2. In a rowing apparatus, the combination, with a frame or support, of bearer-plates E E, pivoted thereto, ear-supports held to said plates, a sliding bar, G, fitted to the frame, links F and F, connecting said parts E G, a lever, H, fulcrumed on the frame, a pin, *g*, connecting the parts G H, and a latch-bar, I, held to the lever H and provided with a pin, J, adapted to lock into the frame, substantially as shown and described.

3. In a rowing apparatus, the combination, with a frame or support, of bearer-plates E E, pivoted thereto, ear-supports held to said plates, a sliding bar, G, fitted to the frame, links F, connecting said parts E G, a lever, K, fulcrumed in slots in the frame, means for reciprocating and rocking the lever, and connections from the lever to the oars, substantially as described, for the purposes set forth.

4. In a rowing apparatus, the combination, with a frame or support, of bearer-plates E E, pivoted thereto, ear-supports held to said plates, a sliding bar, G, fitted to the frame, links F, connecting said parts E G, a lever, K, fulcrumed in slots in the frame, a cranked shaft journaled in the frame and connected to the lever for operating it, and connections from the lever to the oars, substantially as shown and described.

5. In a rowing apparatus, the combination, with a frame or support, of bearer-plates E E, pivoted thereto, a sliding bar, G, fitted to the frame, links F F, connecting said parts E G, a lever, K, fulcrumed in slots in the frame, means for reciprocating and rocking the lever,

385,465.

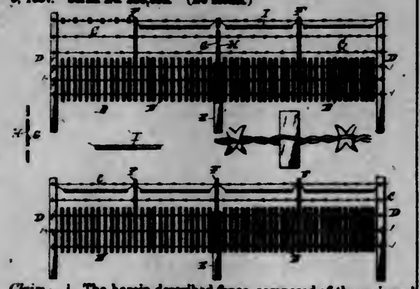


a link, N, held to the lever, rocking blocks R, held to the plates R, and clamps holding the ears P and connected to the link N, and blocks R, substantially as described, for the purposes set forth.

6. In a rowing apparatus, the ear-clamps O, made with end eyes, *o o*, adapted to encircle the oar, an eye, *o'*, adapted to receive a pin entering the oar to lock it against axial movement, an eye, *o²*, adapted to receive a pin entering a support for the oar, and an end or head, *o³*, adapted to hold the oar to an operating-lever, substantially as herein set forth.

7. The combination, with the rowing-apparatus frame having an extension, T, hold thereto, provided with a pin, *t*, of a rudder-oar, S, held to said pin, substantially as shown and described.

385,466. FENCE. DAVID R MATLOCK, San José, Cal. Filed Mar. 3, 1887. Serial No. 229,682. (No model.)

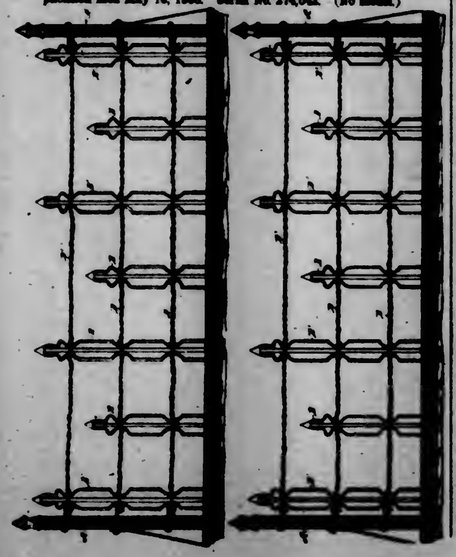


Claim.—1. The herein-described fence, composed of the main end posts, D, short intermediate post, E, a panel of pickets formed of short pickets B and long binding-pickets F, secured together and to the end posts by wires and to the short posts by one of the binding-pickets, and horizontally-arranged wires C above the short pickets and fixed to the end posts and the projecting parts of the long binding-pickets, substantially as described.

2. The combination, with a line of fencing composed of a lower line of pickets and an upper line of wires, of binding-pickets consisting of detachably-connected sections G, whereby the slack of the strands may be taken up, substantially as described.

3. The fence herein described, composed of the main posts D, short intermediate posts, E, a line of pickets shorter than the line of fencing secured together and to the posts by wires, long binding-pickets at intervals in the line of pickets, long pickets consisting of detachably-connected sections extending above the main line of pickets, and horizontally-arranged wires C above the pickets and fixed to the main posts, the long binding-pickets, and the sectional binding-pickets, substantially as described, and for the purpose stated.

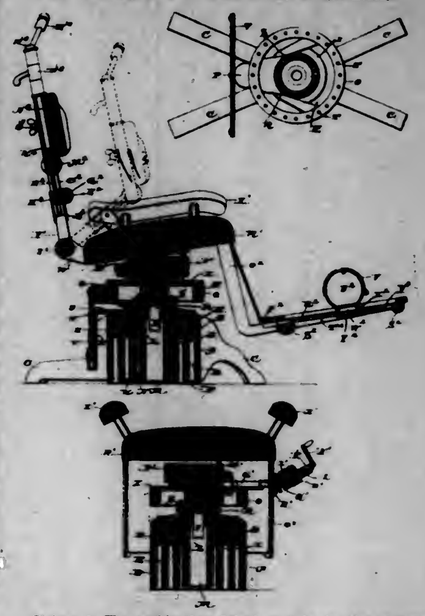
385,467. FENCE. DAVID R MATLOCK, San José, Cal. Original application filed Mar. 3, 1887, Serial No. 229,682. Divided and this application filed May 16, 1888. Serial No. 274,042. (No model.)



Claim.—1. A fence formed of long and short pickets held together by twisted wires, and the long pickets connected together above the short pickets by twisted wires.

2. A fence formed of long and short pickets held together by twisted wires, the long pickets being connected by twisted wires above the short pickets and all the wires reversely twisted between the long pickets.

385,468. DENTAL OPERATING-CHAIR. WILLIAM B. MATTHEWS, Fort Worth, Tex., assignor to W. F. Hayfield and I. T. Hayfield, same place. Filed Aug. 12, 1887. Serial No. 246,791. (No model.)



Claim.—1. The combination of the base A, having the telescopic nested elevating-screws, the support O, having the arm R swiveled to the upper end of the inner screw, the gear-wheel S, rigidly secured to the upper end of the said inner screw, the platform A', having the depending spindle Y swiveled in the upper end of the inner screw, the chair-seat supported on the platform, and the crank-shaft journaled to the platform and having the wheel D' meshing with the wheel S, and the extensible devices connecting the support O to the base, substantially as described.

2. The combination of the base A, having the vertically-slotted guide-plate attached thereto, the telescopic elevating-screws supported on the base, the support swiveled to the upper end of the elevating-screws, and the lazy-tongs connecting the base to the support, having the fulcrum-bolts engaging the slot in the guide-plate, substantially as described.

3. The combination, in a chair, of the elevating-screws, the support O, swiveled to the upper end thereof and having the series of openings T, and the chair-seat swiveled to the upper end of the screw and provided with a detent to engage the openings T, substantially as described.

4. The combination of the base A, having the telescopic elevating-screws, the support O, having the arm R swiveled to the upper end of the inner screw, the platform A', having the depending spindle Y swiveled in the said inner screw, whereby said platform is adapted to turn on said support, the crank-shaft journaled to the platform and geared to the elevating-screws, the detent T', secured to the platform, and the chair-seat hinged or pivoted to the platform, adapted to tilt or incline thereon, and provided with the arm U', adapted to be engaged by the detent, substantially as described.

5. The combination, in a chair, of the foot-board having the longitudinal slot, the rod arranged under the said slot, the foot-rest arranged on the foot-board, and the clip sliding on the rod and attached to the foot-rest, whereby the latter may be longitudinally adjusted on the foot-board, substantially as described.

6. The combination, in a chair, of the foot-board having the longitudinal slot, the rod arranged under the said slot and provided with ratchet-teeth on its upper side, the foot-rest arranged on the foot-board

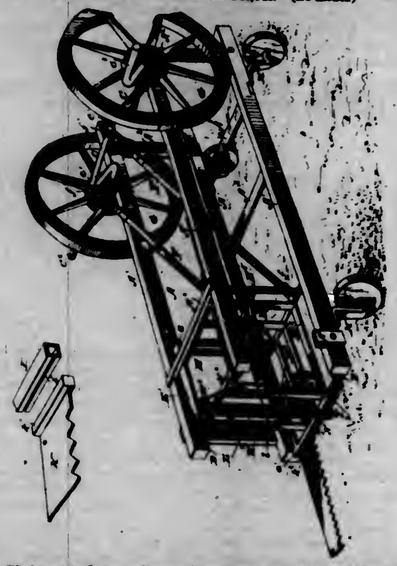
and having the depending ear extending through the slot, and provided with a point adapted to engage the teeth of the rod, and the clip sliding on the said rod, and to which the depending ear of the foot-rest is pivoted, substantially as described.

7. The combination of the chair-seat having the rearward-extending brackets W', the arms Y', pivoted to the said brackets and having the guide-flanges B², the arms C², having the slots D² and fitted against the inner sides of arms Y', and the rod E², extending through the slots D² and the arms Y', and having the clamping-nut and the back pivotally connected to the upper ends of the arms C², substantially as described.

8. The combination, with a pair of elevating-screws, the miter-wheel S, attached to the inner screw, the support swiveled to the elevating-screw, the chair-seat attached to the support and having the curved arm projecting from one side, the shaft-sections C' and E', journaled to the curved arms and arranged at an angle to each other therein, the shaft-section C', having the miter-wheel D' at its inner end to engage the wheel S, and the flexible coupling G', connecting the opposing ends of the shaft-sections, substantially as described.

9. The combination, in an operating-chair, of the rod A², attached to the back and vertically adjustable thereon, said rod having the ball at its upper end, the head-rest having the ball on its lower side, the sleeve having the sockets in its ends to receive the balls, the cam pivoted in the sleeve, and the clamps arranged in the sleeve between the cam and the balls, substantially as described.

385,469. SAWING-MACHINE. GEORGE MCGREGOR, Washington, D. C. Filed June 3, 1887. Serial No. 240,142. (No model.)



Claim.—1. In a sawing-machine for cutting both standing and fallen timber, the combination, with the rectangular supporting-frame, of the rectangular sliding frame provided at its forward end with a horizontal tubular saw-guide and with a vertical tubular saw-guide, a saw adapted to fit either of said guides, and a crank-shaft and pitman for reciprocating the sliding frame and saw, substantially as described.

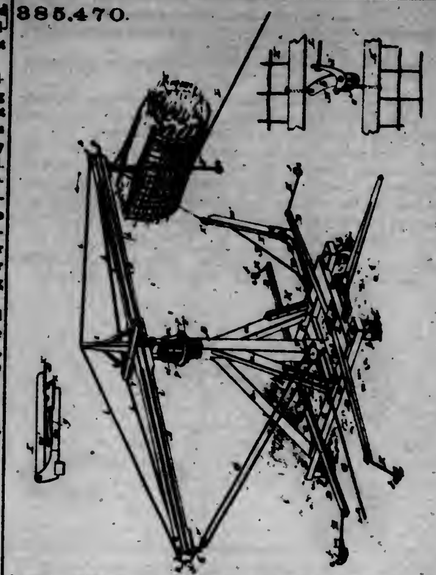
2. In a sawing-machine, in combination with the supporting-frame, the sliding frame having a horizontal tubular guide and a vertical tubular guide, the saw adapted to fit said guides, a cord attached to the saw, held in the horizontal guide, passing over pulleys on the sliding frame, and a weight supported to move upon the tubular guide, substantially as described.

385,470. GRAIN OR HAY STACKER. DONALD MCRAE, Umatilla County, Oreg. Filed Jan. 23, 1887. Serial No. 225,242. (No model.)

Claim.—1. The combination, with the base-frame of the stacker having the parallel cross-bars *d* and bands *g* attached to their inner sides, of the stay-bars D, having shoulders A, and the ropes and stakes, as specified, the said stay-bars being arranged horizontally opposite each other in pairs and projecting laterally across the longitudinal side bars of the base-frame, which the said shoulders abut, as shown and described.

2. The combination, with the post B, the base-frame, the pivoted

385,470.



lever A, and the hauling-rope G, attached at base of said post, of the abutment H, composed of a series of friction-rollers mounted on a rod or journal arranged in an inclined position relative to the post and projecting laterally to come in the path of the rope, as shown and described.

3. The combination, with the base-frame and pivoted lever supported on the latter, of the counterbalance-device I, consisting of two bars hinged end to end, a cord connecting them, and hooks for attaching with both frame and lever, as shown and described.

4. The combination, with the post B, having the conical step-block placed in its socket, as shown, of the lever and its vertical pivot having a conical seat, whereby it is adapted to be stepped on said block, as shown and described.

5. The combination, with the post and lever and the circle-plate fixed on the former, of the upper inverted saddle to which the lever is pivoted, the lower saddle, *n'*, bestriding the top of said post and having anti-friction rollers which run on said circle-plate, and the vertical pivot *m'*, attached to said saddle, as shown and described.

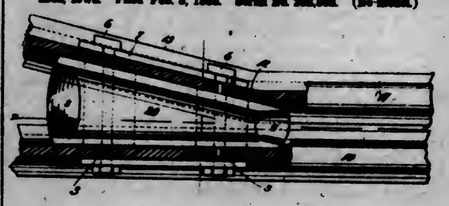
6. The combination, with the lever A, the upper inverted saddle, *n*, and the horizontal pivot *m*, of the loop-fastenings U, the cross-bar *l*, and metal plate *r*, and the diagonal braces M, all arranged as shown and described.

7. The combination of the diagonal braces M with the lever, the horizontal pivot *m*, the saddle *n*, the horizontal cross-bar *l*, and plate *r*, and bolts for securing said braces, bar, and plate together, as shown and described.

385,471. WATER-PROOF COMPOSITION FOR FLOORS, WALLS, &c. CHARLES V. MEYER, Brooklyn, N. Y. Filed Oct. 26, 1887. Serial No. 253,453. (No specimens.)

Claim.—The herein-described composition of matter to be used as a water-proof compound for the floors and walls of buildings and kindred purposes, consisting of cement, cream of tartar, pulverized ivory, quicksilver, isinglass, marble-dust, sand, and soft water, in substantially the proportions specified.

385,472. FASTENING-BLOCK FOR GUARD-RAILS, SWITCH-RAILS, OR FROGS. BENJAMIN J. MOORE and AARON R. PARLIN, Vinton, Iowa. Filed Feb. 3, 1888. Serial No. 262,962. (No model.)



385,472.



Claim.—1. A railroad-rail-guard fastening consisting, essentially, of a block formed with an inclined side face, a concave upper face, and elongated transverse slots, substantially as described.

2. The combination, with a main-line rail, of a guard-rail formed with an angular section, a block, 20, having a straight face next to the main-line rail, an inclined face next to the angular section of the guard-rail, formed with transverse slots 4, and bolts 6, which pass through apertures formed in the rail-webs and through the apertures of the block, substantially as described.

385,473. HARMONICA-HOLDER. WILLIAM E. MULHOLLAN, Portland, Oreg. Filed Jan. 16, 1888. Serial No. 260,966. (No model.)

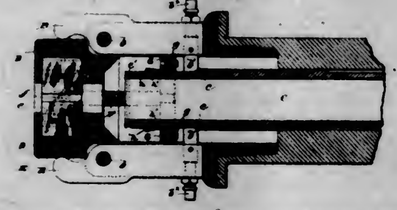


Claim.—1. In a mouth-instrument holder, the combination of a breast-plate, adapted to support a shank having a catch or clamp, and a collar connected to the breast-plate, substantially as described.

2. In a mouth-instrument holder, the combination of a flat or nearly flat plate, adapted to support a shank having a catch or clamp, and a stiff loop projecting from the edge of the plate, substantially as described.

3. In a mouth-instrument holder, the combination of a flat plate, having a cross-strip projecting from opposite edges thereof, and a transverse strap attached to the cross-strip, substantially as described.

385,474. LATHE-CHUCK. FREDERICK MÜLLER, Elizabeth, N. J. Filed Sept. 26, 1887. Serial No. 250,754. (No model.)



Claim.—1. In a chuck, the combination, with the jaws a and their operating-levers B, of the wedges D, interposed between the outer ends of the said levers and the said jaws, and a sliding bar or tube having a frictional connection with the said wedges, substantially as set forth.

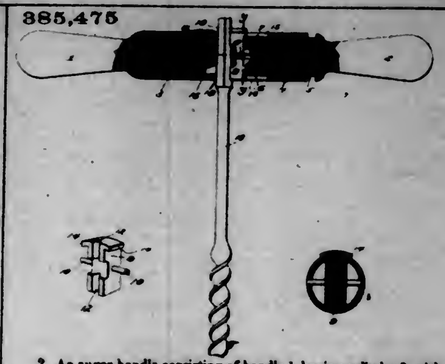
2. The combination, with the chuck-head having the jaws a, of the levers B, having the studs *b'*, the sliding-tube C, having the inclined shoulder *c*, the wedges D, the ring E, carrying the said wedges and having the inclined slots *e*, the sliding rods F, having studs working in said slots, and the ring G, frictionally connected with the said tube, substantially as set forth.

3. The combination, with the chuck-head having the jaws a, of the levers B, having the studs *b'*, the sliding tube C, having the inclined shoulder *c* and the annular groove *c'*, the wedges D, the ring E, carrying the said wedges and provided with the inclined slots *e*, the sliding rods F, having studs working in said slots, the ring G, and the hooked springs *h'*, substantially as set forth.

385,475. AUGER-HANDLE. HARRY HAYLOR, Oil City, Pa. Filed Oct. 5, 1887. Serial No. 251,512. (No model.)

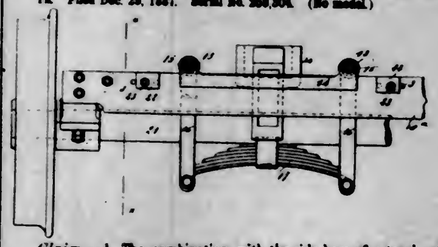
Claim.—1. An auger-handle formed with a cylinder having openings, in the lips of which project a fixed notched cross-piece and a rocker-clamp adapted to move lengthwise of the handle, and means, substantially as described, to force the rocker-clamp toward the cross-piece and clamp a bit, substantially as described.

385,475



2. An auger-handle consisting of handle 1, having cylinder 3, with central opening, 18, at top and bottom thereof, corresponding with each other, and a horizontal notched cross-piece, 16, extending across and at one side of the vertical line of said openings, a rocker-clamp, 9, having flanges 14, overlapping cylinder 3, and provided with an angular slot, 12, and pivot-pins 10, adapted to slide in slots 11 in cylinder 3, the ends of clamp 9 being also adapted to slide in slots 15 in cylinder 3, and said clamp having a projection, 7, and the screw-threaded handle 2, with cavity 6, fitting over projection 7, substantially as described.

385,476. LOCOMOTIVE-TRUCK. ALFRED C. PARKER, Pittsburg, Pa. Filed Dec. 29, 1887. Serial No. 260,304. (No model.)



Claim.—1. The combination, with the side bars of a truck, of bars or shafts placed at right angles thereto, rollers carried by the said bars or shafts and resting on the truck, side bars, hangers suspended from the roller-carrying bars, springs supported by the hangers, and a center plate supported by the springs, substantially as described.

2. The combination, with the side bars of a truck, of rollers resting thereon, shafts upon which the rollers are journaled, hangers loosely mounted upon the shafts, links connecting the shafts, springs carried by the hangers, and a center plate carried by the springs, substantially as described.

3. The combination, with the side bars of a truck, of rollers resting thereon, shafts upon which the rollers are mounted, links connecting the shafts, stops arranged at each end of the links, hangers loosely mounted on the shafts, springs supported by the hangers, and a center plate supported by the springs, substantially as described.

4. The combination, with the side bars of a truck, of adjustable stops connected thereto, rollers resting on the truck, side bars, shafts upon which the rollers are mounted, links connecting the shafts, hangers loosely mounted upon the shafts, springs supported by the hangers, and a center plate supported by the springs, substantially as described.

385,477. STRIKER FOR HAND FIRE-EXTINGUISHERS. ALBERT L. PITNEY, Washington, D. C. Filed Sept. 21, 1887. Serial No. 250,211. (No model.)



Claim.—1. The combination of the cylinder having a screw-threaded nozzle with the detachable piston, the removable screw-threaded piston-rod, the handle, and its washer, these being close to the cylinder-head when the rod is screwed into the nozzle, substantially as described.

2. The combination of the cylinder having a perforated head and a screw-threaded nozzle, with the removable piston-rod provided with a collar or stop and screw on its end, a washer between the collar and nozzle, a handle on the rod, and a washer between the handle and the cylinder-head, the handle and its washer being normally close to the cylinder-head when the rod is screwed into the nozzle, substantially as described.

3. The combination of the cylinder with the detachable piston provided with spring-teeth, the rod provided with a groove for engaging with the teeth, and also provided with a collar and screw-thread on its end, a washer between the collar and cylinder, a handle on the rod, and a washer between the handle and the cylinder-head, substantially as shown and described.

385,478. FOLDING PAPER BOX. DAVID J. REE, Pittsburg, Pa. Filed Apr. 16, 1888. Serial No. 270,912. (Model.)



Claim.—1. The folding paper box consisting of the blank of which the top end extension of the front side is formed integrally with an extension of an adjoining side, which top end extension and adjoining side extension are folded inwardly upon said front and adjoining sides, respectively, the top end extensions of the rear side and an adjoining side folding, one upon an inwardly-folding flap of the front side, while the other folds upon the first named of the latter extensions, and is inserted through a slit in the front side and tucks into a pocket between the front side and its inwardly-folding extension, substantially as specified.

2. The folding paper box made from a blank of which the portions forming the sides are provided with end extensions, the extensions of the front and rear sides having one a slit and the other a diagonally cut and notched edge, while at the opposite end the front side is provided with a semicircular cut or slit, providing the same with a flap, the top end extension of said front side being formed integrally with an extension of an adjoining side, and adapted to fold inwardly upon said front side, substantially as set forth.

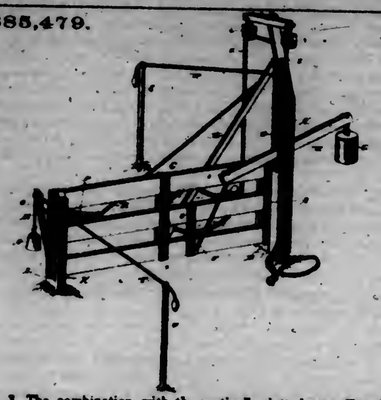
3. As a new article of manufacture, the folding paper box made from the blank of which the portions forming the sides are provided with end extensions and one with a side flap, the extensions of the front and rear sides having one a slit and the other a diagonally cut and notched edge, while at the opposite end the front side is provided with a semicircular cut or slit and the extension at its top end formed integrally with an extension of an adjoining side and adapted to fold inwardly, the top end extensions of the rear and an adjoining side being provided with flaps, substantially as set forth.

385,479. GATE. WILLIAM H. RISDEN, Van Buren, Ohio. Filed Feb. 18, 1888. Serial No. 264,625. (No model.)

Claim.—1. The combination, with the post A, having the slot B and the slotted vertical extension A', of the gate pivoted in the base of the slot B, the lever E, pivoted within the slotted extension A' and having a weight on its rear end, the link F, connecting the said lever to the gate, the bar H, secured to the gate and projecting upward therefrom, the cross-head secured to the upper end of the extension A', the pulleys depending from ends of said cross-head, and the ropes passing over said pulleys and having their ends secured to the upper end of the bar H, as set forth.

2. The combination, with the gate having a stud or projection on its free end, of the latch mounted on a suitable post and having its upper end weighted, the cord, wire, or chain secured to the post at one end and to the upper end of the latch at the other end, and the lever mounted on the gate and bearing at its free end on the said cord, wire, or chain, whereby when its rear end is raised the latch will be operated, substantially as specified, for the purpose set forth.

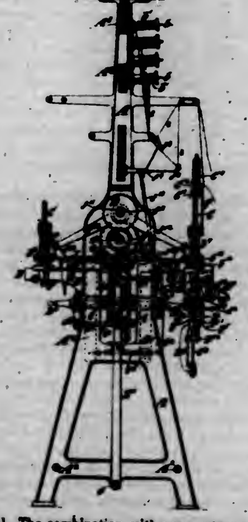
385,479.



3. The combination, with the vertically-slotted post K and the gate adapted to engage at its free end in the slot in the post, of the weighted latch adapted to engage a stud or projection on the gate, the cord, wire, or chain O, attached at its opposite ends, respectively, to the post and the upper end of the latch, the lever mounted on the gate and projecting at its free end beyond the end of the gate, and bearing on the cord, wire, or chain O when the gate is in its closed position, and the latch-cord attached to the rear end of the lever and passing through a suitable keeper or guide, whereby when the cord is pulled the rear end of the latch is raised, substantially as and for the purpose specified.

385,480. MACHINE FOR WINDING QUILLS AND BOBBINS. VERNON BOYLE, Paterson, N. J. Filed June 26, 1888. Serial No. 278,194. (No model.)

Brief.—The invention consists in improved means for feeding the spindle as successive layers of thread are wound upon the quill; in the construction and arrangement of the spindle and its associated parts; in improved means for stopping the flier upon the breaking of the thread; in improved means for traversing the quill and for driving the flier, and in an improved chuck for holding the quill on the spindle.



Claim.—1. The combination, with a non-rotary spindle to receive a quill or bobbin and a rotary flier for laying the thread upon the quill or bobbin, of a clutch wherein the spindle is held by frictional contact of substantially smooth and toothless surfaces, mechanism, substantially as described, for imparting to the clutch a definite length of traverse motion, and a stationary abutment supported independently of and concentric with the spindle, and against which the body of thread on the quill or bobbin will strike at the termination of each

traverse movement in one direction, and by which the spindle and quill or bobbin will be fed lengthwise, substantially as herein set forth.

2. The combination, with a tubular spindle to receive a quill or bobbin, of a clutch wherein the spindle is held by friction, mechanism, substantially as described, for traversing the clutch, a stationary rod within and projecting beyond the spindle, and an abutment supported by said rod and against which the body of thread on the quill or bobbin will strike at the termination of the traversing movement of the spindle in one direction, substantially as and for the purpose herein set forth.

3. The combination, with a bracket or frame portion constructed with a cylindric socket, of a slotted tube fixed therein, a spindle to receive a quill or bobbin arranged within the fixed tube, a rotary flier and its driving-whirl external to and concentric with the fixed tube, and a friction-clutch sliding on the exterior of the fixed tube and having jaws grasping the spindle through the slots in said tube, and mechanism, substantially as described, for traversing the clutch, substantially as herein set forth.

4. The combination, with a bracket or frame portion, B, constructed with a cylindric socket or hub, of a tube, b^3, fixed therein, a spindle to receive a quill or bobbin arranged within the fixed tube, the flier b^7, journaled on the fixed tube above the cylindric hub, and the whirl b^8, journaled on the hub and having a clutch-connection with the flier, and mechanism, substantially as described, for traversing the spindle within the fixed tube, substantially as herein set forth.

5. The combination, with a bracket or frame portion constructed with a cylindric socket and hub, of a tube fixed therein, a spindle concentric within the fixed tube and to receive a quill or bobbin, a flier journaled on the fixed tube beyond the cylindric hub, a whirl journaled on the hub and having a clutch-connection with the flier, a clutch wherein the spindle is held by friction, mechanism, substantially as described, for traversing the clutch, and an abutment against which the body of thread on the quill or bobbin will strike at the termination of the traverse movement in one direction, substantially as and for the purpose herein set forth.

6. The combination, with the clutch body or sleeve D, the jaws d^2, sliding transversely therein, the pivoted levers d^3, bearing on said jaws, and a spring connecting the levers, of a spindle held in the body or sleeve by the frictional contact of the said jaws with the spindle, substantially as herein described.

7. The combination, with the clutch body or sleeve D and its sliding jaws d^2, the levers d^3, provided each with a series of notches and bearing on said jaws, and a spring, d^4, connecting the levers and adjustable along their notched edges to vary the pressure of the jaws, of a spindle held in the body or sleeve by the frictional contact of said jaws with the spindle, substantially as herein described.

8. The combination, with a spindle and rotary flier and a whirl having a clutch-connection with the flier, of a movable shipper controlling the whirl, a pivoted lever, and a rod or link whereby the shipper will be sustained in position to make the whirl operative when the lever is set, a reciprocating knocker, and mechanism, substantially as described, for operating it, a shouldered rod connected with said lever, and a faller and faller-connection, through which said shouldered rod will be moved into the path of said reciprocating knocker on the breaking of a thread, substantially as and for the purpose herein set forth.

9. The combination, with a spindle and rotary flier, a whirl having a clutch-connection with the flier, and a movable shipper for controlling the whirl, of a pivoted stop-lever having an arm-and-rod connection, through which the shipper and whirl are held up when the point of connection of said arm and rod is made to pass the pivotal point of the lever by setting the lever, a reciprocating knocker, and mechanism, substantially as described, for operating it, a faller and faller-connection, and a shouldered rod connected with said stop-lever, and which, by the movement of the faller consequent on the breaking of a thread, will be moved into the path of said reciprocating knocker, substantially as herein set forth.

10. The combination, with a spindle, a rotary flier, a whirl having a clutch-connection with the flier, a shipper controlling the whirl, and a spring for moving the shipper to throw off the whirl, of the stop-lever F, fulcrumed at f and provided with the arms f^6 f^7, the rod f^8, connecting the arm f^6 and the shipper, the shouldered rod f^9, connected with the arm f^7, a faller and faller-connection for moving said rod f^9, and the reciprocating knocker G and mechanism, substantially as described, for operating it, substantially as and for the purpose herein set forth.

11. The combination, with a spindle and mechanism, substantially as described, for traversing it lengthwise and for imparting a feed thereto, and having a stop projection or shoulder, as A^{14}, of a rotary flier, a whirl having a clutch-connection with the flier, stop mechanism, substantially as described, for throwing off the whirl on the breaking of a thread, and having a stop-lever, as F, the shouldered rod F', depending from said stop-lever, and a stop-gage moving with the spindle and by which said rod is held out of the path of the stop projection or shouldered A^{14} until allowed to escape by the stop-gage clearing its lower end, substantially as herein set forth.

12. The combination, with a spindle to receive a quill or bobbin, a clutch wherein the spindle is held by friction, and which has a projection, A^{14}, mechanism, substantially as described, for traversing the clutch, and an abutment at the top of the spindle against which the body of thread on the quill or bobbin may strike to produce downward feed of the spindle, of a rotary flier and a whirl having a clutch-connection therewith, a shipper for controlling the whirl, and stop mechanism, substantially as described, for throwing off the whirl on the breaking of a thread, and having a pivoted stop-lever, as F, a shouldered rod depending from said lever F, and an adjustable stop-gage carried by the spindle and by which the said shouldered rod is held out of the path of the projection A^{14} until the gage clears the lower end of said shouldered rod, substantially as and for the purpose herein set forth.

13. The combination, with the bracket B and the tube b^3, fixed therein and carrying at its lower end the yoke and stop-gage guide D^3, the spindle C, sliding within said tube b^3, the rod C^3, concentric with the spindle and supported by said yoke D^3, the friction-clutch D, provided with the stop projection A^{14}, mechanism, substantially as described, for reciprocating said clutch, and an abutment for a quill or bobbin above the spindle, of a rotary flier and a whirl having a clutch-connection therewith, a shipper for controlling the whirl, and stop mechanism, substantially as described, for throwing off the whirl on the breaking of a thread, and having a pivoted stop-lever, as F, the shouldered rod F', depending from the stop-lever F, and the stop-gage F^9, carried by the spindle, substantially as and for the purpose herein set forth.

14. The combination, with a spindle and flier and mechanism, substantially as described, and including a clutch for rotating one relatively to the other and for reciprocating the spindle, of a shipper for the clutch, a lever, F, and rod-connections between it and the shipper, the shouldered stop-rod F', and the stop-gage F^9, having an arm, A^{11}, beveled at the back from its top downward, substantially as and for the purpose herein set forth.

15. The combination, with a spindle, its flier, and a flier-driving whirl, of stop mechanism, substantially as described, whereby the whirl is thrown of to stop the flier, and a faller pivoted between its ends and having on one side of its pivot a thread-eye and on the other side a faller-connection, f^{10}, through which the stop-motion is made operative to throw off the whirl, substantially as herein set forth.

16. The combination, with a spindle to receive a quill or bobbin, of a traverse-cam having a succession of long inclines and short inclines arranged alternately for producing slow and quick traverse, said long inclines being of different lengths relatively to each other, and said short inclines also being of different lengths relatively to each other, and traverse mechanism, substantially as described, through which said cam traverses the spindle, substantially as and for the purpose herein set forth.

17. The combination, with a spindle to receive a quill or bobbin, of a traverse-cam having a succession of long inclines and short inclines arranged alternately for producing slow and quick traverse, the said inclines having substantially uniform throw or projection, but terminating in different paths, and traversing mechanism, substantially as described, through which said cam traverses the spindle, substantially as and for the purpose herein described.

18. The combination, with a spindle to receive a quill or bobbin, of a rotary face-cam having a succession of long inclines and short inclines arranged alternately for producing slow and quick traverse, said long inclines being of different lengths relatively to each other, and said short inclines also being of different lengths relatively to each other, and traversing mechanism, substantially as described, through which said cam traverses the spindle, substantially as and for the purpose herein set forth.

19. The combination, with the two rows of spindles G on opposite sides of the machine and friction-clutches receiving the spindles through them, of the rock-shafts D', provided, respectively, with arms c^4 c^4, which extend in opposite directions, and with other arms, D^3, engaging said clutches, a single traverse-cam, E, and a lever, E', connected with the rock-shaft arms c^4 c^4, and on which said cam acts, substantially as herein described.

20. The combination, with spindles and whirls on opposite sides of a machine, of a central driving-pulley, H', and a single driving-band, I, for both whirls, substantially as and for the purpose herein described.

21. The combination, with a spindle, of a chuck-body thereon for receiving a quill, and a keeper, m, for engaging the groove in a quill, and having a screw-threaded shank or stem, m', whereby it is adjustably connected with the chuck-body, substantially as herein described.

385,481. KNIT FABRIC. LEVI R. SALISBURY, Providence, R. I. Filed Dec. 14, 1886. Renewed Dec. 7, 1887. Serial No. 257,214. (Specimens.)

385,481.



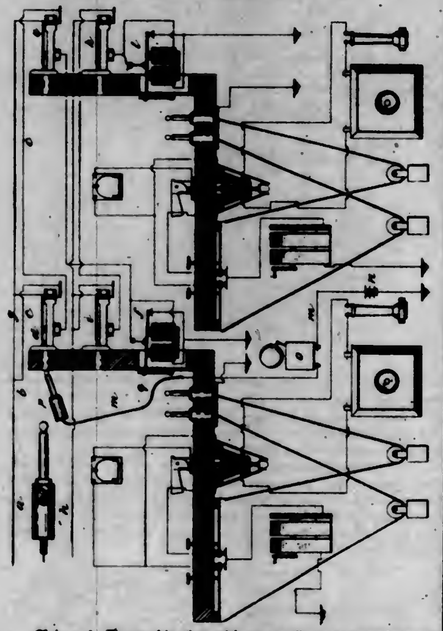
Claim.—1. The improved knitted fabric having filling or plush threads, each passing around the front and back, alternately, of wales formed by base-threads of a similar or of different material, and having the base-threads nearly or quite concealed on both sides of the fabric by the said filling-threads.

2. The improved knitted fabric hereinbefore described, consisting of wales formed by the base-threads 4 and the filling or plush threads 3, of similar or of different material, each passing around the front and back, alternately, of one or more of the said wales, and having the base-threads nearly or quite concealed on both sides by the filling-threads.

3. The improved knitted fabric B, hereinbefore described, consisting of base-threads forming the plain portion, and having tufted and corded filling or plush threads of similar or of different material, each passing around the front and back, alternately, of wales formed by the said base-threads and entirely concealing the latter on both sides of the fabric, substantially as shown and set forth

---

385,482. TEST-SIGNAL CIRCUIT. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Serial No. 222,703. (No model.)



Claim.—1. The combination, with a normally-open ground-circuit including a bell or signal device of low resistance, of a telephone-line provided with two branches, one branch connected through the switches of the line on two or more switch-boards and through a polarized annunciator to ground, the other branch being connected to the insulated frames or test-pieces of said switches, the armature of said polarized annunciator, and a ground contact-point, whereby on closing said ground-circuit to the frame or test-piece of one of the switches the coils of the polarized annunciator will be shunted out of circuit and the signal-instrument operated, substantially as described.

2. Two or more multiple switch-boards, in combination with telephone-lines connected therewith, each switch consisting of a spring or lever and its opposing contact-point and an insulated frame or test-piece, each line being connected in one branch through the spring and contact-point of its switch on each of the boards and through a polarized individual annunciator to ground, the other branch being permanently connected with the insulated frames or test-pieces of the switches of the line, a shunt-circuit to ground being provided which may be closed around the coils of each individual annunciator by the operation of the armature thereof, and at each of the boards a normally-open ground branch containing battery and bell of low resistance, whereby any line at either of the boards may be tested to determine whether the line is in use.

3. The combination, with two or more multiple switch-boards, of two or more lines connected with the different multiple switch-boards, polarized annunciators, one polarized annunciator in the circuit of each line, a contact-point upon the armature of each annunciator, a co-operating contact and wire, by which the coils of the annunciator may be shunted out of circuit when current of one polarity traverses the coils, test-contacts, one test-contact connected with each line on each board, a test-battery, and an electro-magnetic test-signal included in circuit with said test-battery, and a contact-piece connecting with the circuit of said test-battery, whereby, upon applying the contact-piece to one of the test-pieces, current from the test-battery may be closed through the polarized annunciator and its contact-points closed to operate said electro-magnetic test-signal.

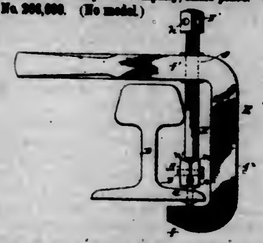
385,488. PHOTOGRAPHIC SHUTTER. FRANK. H. SPARLING, Kalamazoo, Mich. Filed Jan. 16, 1888. Serial No. 260,990. (No model.)



Claim.—1. In a lens-tube used in a photographic camera, the combination of the tube F, having the semi-globular-shaped end, the aperture a, and the wings c c, adapted to open and close said aperture, as shown and described.

2. In a lens-tube used in a photographic camera, the combination of the globular-shaped end of tube F, the aperture a, the wings c c, the spring-lever d, adapted to stop said wings, the L-shaped slots in the semi-globular-shaped wings, as described and shown.

385,484. DEVICE FOR SECURING WIRE TO RAILROAD-RAILS. FREDERICK STEEL and CHARLES WERNER, Louisville, Ky., assignors to the American Semaphore Company, same place. Filed Mar. 2, 1888. Serial No. 266,060. (No model.)



Claim.—1. In a device for holding wire the end of which is to be upset, the combination, with a yoke and a screw, of two clamping-blocks for holding the wire to be upset, substantially as set forth.

2. The combination, with a yoke, a screw passing through an arm of said yoke, and an arm of the yoke to form a bearing or support for the yoke, of two clamping-blocks having curved grooves for holding the wire in position, substantially as set forth.

3. The combination, with a yoke, a screw passing through one arm of same, and an arm of the yoke forming a support or bearing for the yoke, of two clamping-blocks having curved grooves for the reception of a wire to be held in position to be clamped, said grooves being provided with teeth or serrations, substantially as set forth.

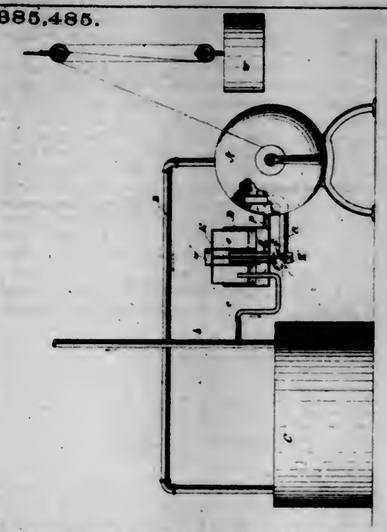
4. In a clamping device, the combination, with a yoke carrying a screw, of two clamping-blocks having curved serrated grooves for holding a wire in position to be clamped, substantially as set forth.

5. In a clamping device, the combination, with a yoke, a screw passing through an arm of the yoke, a pin secured in the end of said screw, and an arm of the yoke forming a support or bearing for the yoke, of two clamping-blocks having a recess for the reception of the pin in the end of the screw, said blocks being provided with serrated grooves for the reception of a wire, and a screw-bolt passing through these clamping-blocks to clamp the wire between them, substantially as set forth.

385,485. CARBURETOR. JOSEPH SYDENHAM, Cincinnati, Ohio, assignor to Andrew J. English and Pearl Crosley, both of same place. Filed Aug. 1, 1887. Serial No. 245,812. (No model.)

Claim.—1. In an automatic gas-machine, in combination with the air-pump, carburetor, and their connections, an open tank or vessel containing liquid, an inverted-cup float carried within the same, a

385,485.



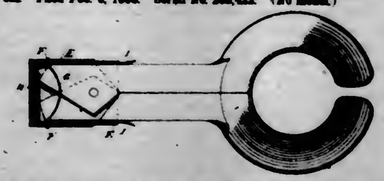
pipe-connection from the gas-delivery pipe of the carburetor to the open space within the float, a valve controlling the inlet-orifice of the pump, and suitable connections between said float and air-ingress valve, whereby the pressure of gas in the delivery-pipe acts through the float to directly control the quantity of air admitted to the pump, substantially as set forth.

2. In an automatic gas-machine, in combination with the air-pump, carburetor, and their connections, an open tank or vessel connected with the pump-chamber below the liquid-line and carrying liquid thereby at a corresponding level, an inverted-cup float carried within said tank or vessel, a valve controlling the inlet-orifice of the pump, and connections between said float and valve whereby variations in the back-pressure of gas from the delivery-pipe of the carburetor causes a rise of all of the float and actuates the air-inlet valve of the pump, substantially as set forth.

3. In an automatic gas-machine of the character described, in combination with the air-pump, carburetor, their connections, and a regulating-valve controlling the admission of air to said pump, an open tank or vessel connected with the liquid-chamber of the pump and carrying liquid at a corresponding level, an inverted-cup float arranged in said tank or vessel to rise and fall with variations in the height of the liquid or in the pressure of the confined gas, a pipe-connection between the interior air-space of the float and the burner delivery-pipe, and operating connections between said float and regulating-valve, substantially as set forth.

4. A regulator for gas-machines embodying an open tank or vessel partly filled with liquid and having a central tube opening through the bottom and extending above the liquid-line, an inverted-cup float provided with a central tube extending from the top downward to or below the plane of its lower edge and embracing loosely the open tube of the containing-tank, a rod or stem depending centrally from the bottom of the float within both tubes below through the bottom of the containing-tank and adapted to connect with and operate a controlling-valve of the inlet-pipe, and a pipe-connection from the ultimate gas-delivery pipe opening through the bottom of the containing vessel into the gas-space of the float above the liquid, constructed and arranged substantially as set forth.

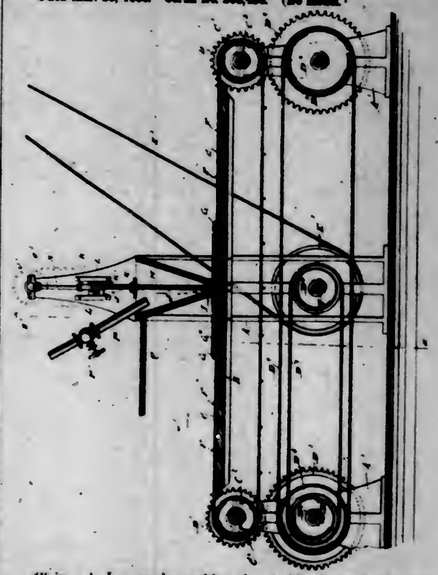
385,486. LAMP-BRACKET. ALFRED THURBER, San Francisco, Cal. Filed Feb. 8, 1888. Serial No. 263,422. (No model.)



Claim.—1. In a lamp-bracket, the hinged swinging arm having the horizontal table with the central vertical pin at its outer end, in combination with the rearward-extending arms of the lamp-holding jaws, said arms being halved together and fitting on the vertical pin, and having an inclosing compressing-spring by which the jaws are closed, substantially as herein described.

2. In a lamp-bracket the hinged swinging arm having the horizontal table and the vertical pin projecting from its center, in combination with the cup-shaped lamp-holding jaws having their rear arms halved together and fitting upon the pin, a flat spring bent to fit around the outside of these ends to keep the jaws pressed together, an inclosing box or cap fitting over the hinge and spring, and the bracket-table, together with a pin by which it is held in place, substantially as herein described.

385,487. CANDY-MACHINE. GEORGE THURBER, Brooklyn, N. Y. Filed Mar. 26, 1883. Serial No. 269,498. (No model.)



Claim.—1. In a candy-machine, the combination, with the main frame and a funnel having a series of apertures in its bottom, of a bar sliding in ways in the frame, the pieces J^3, adjustably secured in the said sliding bar, and the plungers J, detachably secured to the pieces J^3, substantially as herein shown and described.

2. In a candy-machine, the combination, with an endless apron, form-plates on the apron, and means for operating said apron, of a funnel having a series of apertures in its bottom, a bar sliding in ways in the frame, rods adjustably secured to said bar, plungers detachably secured to said rods, and means for operating the sliding bar, substantially as herein shown and described.

385,488. TREE-FELLING SAW. WILLIAM A. VAN BENTHUYSEN, New York, N. Y. Filed Aug. 1, 1887. Serial No. 246,304. (No model.)

Claim.—1. A sawing device, made substantially as described, consisting of the following elements operated in combination, namely: a reciprocating saw, a tree-spike, yielding arms extending from the spike, and flexible connections between the yielding arms and the extremities of the saw, as set forth.

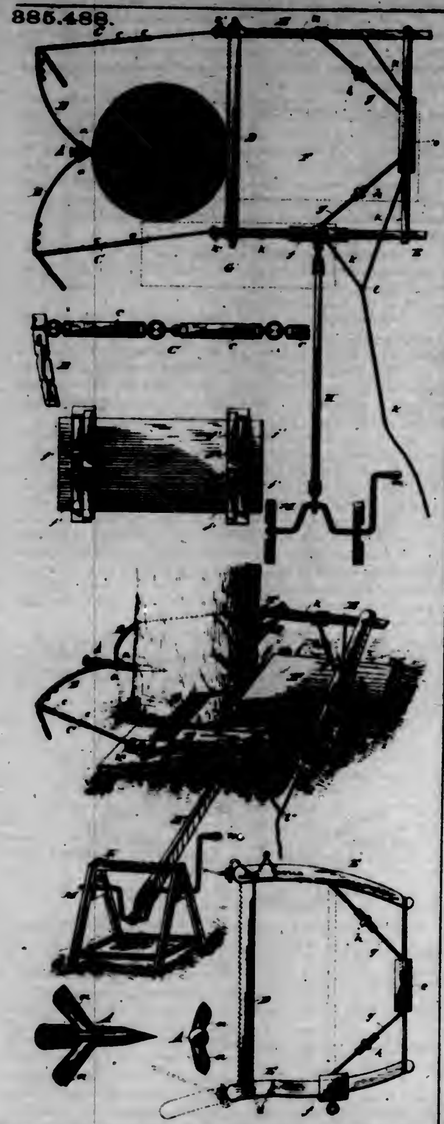
2. In a tree-sawing device, the rod or spike A, constructed with a central point and socketed side arms at each side, as shown and described.

3. In a tree-sawing device, the rod or spike A, constructed with a central spike or point and tubular arms on opposite sides, said tubes having open outer ends forming sockets for the spring-arms hereinbefore referred to, and the sockets being enlarged or extended longitudinally along their outer sides, as shown and described, and for the purpose set forth.

4. The combination, with a saw and its frame, a pitman, and operating-crank, of a bar or spike formed with sockets *a a*, adapted to receive spring-arms, said arms, and connections between the arms and the saw, substantially as described.

5. The combination, with a saw and its frame and a means for reciprocating the saw, of a bar or spike, spring-arms carried thereby, spring-releasing catches arranged at each end of the saw, connections

385,489.



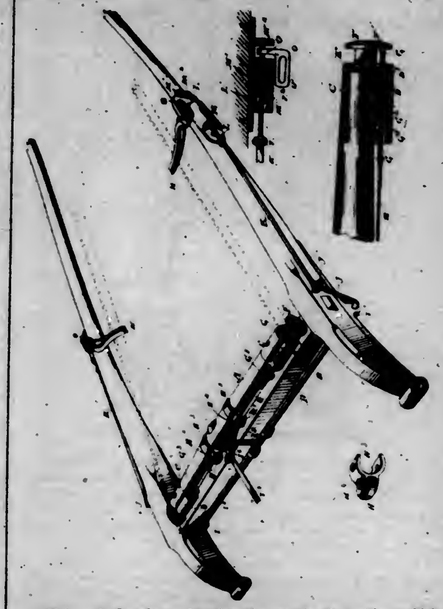
between the catches and the spring-arms, and an operating-cord arranged in connection with the catches, substantially as described.

6. The combination, with a bar or spike having sockets *a a*, adapted to receive spring-arms, said arms, and connections between the arms and the saw, and means for reciprocating the saw, of a buck-saw with its central bar removed, the saw-holding ends of its frame held apart by screw-threaded bracing-rods from the back of the frame and the central portion of the back of the frame, and a portion of one end of the frame carrying fixed metal or other sleeves of nearly rectangular shape, but having flat bottom sliding faces, in the manner and for the purpose described.

385,489. CHIMNEY-PROTECTOR. WASHINGTON VAN GAASBEEK, New York, N. Y. Filed Mar. 17, 1888. Serial No. 267,518. (No model.)

Claim.—The chimney top or protector consisting of a cap composed of strips bent to form a vertical flange having one end perforated for securing devices and the opposite end slitted, and its horizontal portion elevated above the plane of the main body to receive the perforated end of the adjacent strip, whereby the said strips may intersect each other for adjustment, and also having a vertical rectangular flange to embrace the chimney-corner, substantially as specified.

385,490. HORSE-DETACHER. WILLIAM R. WALKER, Hovada, Mo., assignor to himself and John R. Robinson, same place. Filed Feb. 21, 1888. Serial No. 264,926. (No model.)



Claim.—1. In a horse-detacher, the combination, with a vehicle-tongue and singletree, of spring-projected trace-bolts on the singletree, a strap or flexible line connecting the two bolts, guide-pulleys for the strap or line on either side of the middle of the singletree, a transverse rock-shaft on the tongue, a finger on the rock-shaft projecting upward behind the strap between the two guide-pulleys, and a draw shaft or line for swinging the finger rearward, substantially as described.

2. In a horse-detacher, the combination, with vehicle-shafts and a singletree, of retractible brace-bolts on the singletree, a strap or line connecting them, a transverse rock-shaft having a finger for drawing on said strap or line and retracting the trace-bolts simultaneously, a strap or line for swinging the rock-shaft, projecting arms on the rock-shaft outside the shafts, retractible breeching-strap bolts on either shaft, and a strap or draw-line connecting the breeching-strap bolt on each shaft with the respective arm of the rock-shaft, substantially as described.

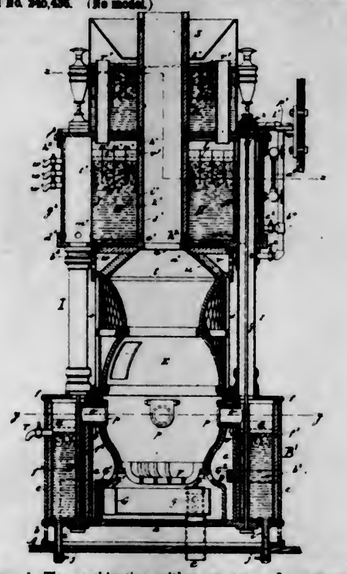
3. In a horse-detacher, the combination, with a vehicle-tongue and singletree, of spring-projected trace-bolts on the singletree, a strap or line connecting them, a transverse rock-shaft having a finger projecting upward back of the connecting strap or line, bent rearward to

retain the strap, and formed with an eye, and a draw strap or line connected with said eye, substantially as described.

4. In a horse-detacher, the socket C, formed on its side with the parallel tube D, neck E, projecting beyond the end of the socket and tube, the head F, parallel with the end of the socket to form a trace receiving space, and a spring-projected bolt, G, extending through the said tube across the trace-receiving space and above the neck E into the aperture F', substantially as set forth.

5. In a horse-detacher, the attaching-plate M', formed on its outer face with a longitudinally-extending socket, M, and an abutment, M^2, parallel with the front end of the socket and apertured in line therewith, the spring-projected bolt L, extending across the space between the end of the socket and the abutment into the aperture in the latter, and the L-shaped breech-strap coupling O, the arm or lug O^2 of which extends downward into said space and has an aperture to receive the bolt, the rearward longitudinally-extending arm of said coupling forming a flat loop, O^3, at right angles to the aperture in lug O^2, substantially as set forth.

385,491. CAR-STOVE. WILLIAM P. WHEELER, Louisville, Ky., assignor to himself and John S. Cain, same place. Filed July 27, 1887. Serial No. 245,436. (No model.)



Claim.—1. The combination, with a car-stove, of a water-reservoir arranged above the stove and one or more siphons connected with the water-reservoir and communicating with the fire-pot of the stove, the said siphon or siphons being arranged to remain normally inactive, but arranged to be charged and set in operation when the stove is unduly tipped, substantially as specified.

2. The combination, with a car-stove, of a water-reservoir arranged around the fire-pot of the stove, a water-reservoir arranged above the stove, and a series of siphons communicating with the upper reservoir, extending into the lower reservoir, and communicating with the fire-pot of the stove, substantially as specified.

3. The combination, with a car-stove, of a water-reservoir arranged around the fire-pot of the stove, a water-reservoir arranged above the stove, a series of siphons communicating with the upper reservoir, extending into the lower reservoir, and communicating with the fire-pot of the stove, and automatic valves arranged to close the communication between the siphons and the fire-pot, substantially as specified.

4. The combination, with a car-stove, of the reservoir H, siphons formed of the pipes I J, and the auxiliary reservoir K, provided with open pipes i', extending upward into the said reservoir and communicating with the reservoir H, substantially as specified.

5. The combination, with the auxiliary reservoir K, of the inset head S, provided with the perforated portion s', substantially as specified.

6. The combination, with the reservoir, of the wave-arrester therein, formed of a series of horizontal vertically-aligned apertured disks, f', and the concentric series of imperforate hoops u' between the disks of the series, substantially as set forth.

7. The combination, with the reservoir, of the wave-arrester therein, formed of horizontal vertically-aligned apertured disks f', a concentric series of hoops, u', placed edgewise between the disks, and the radial partitions v', dividing the spaces between said hoops and disks, substantially as set forth.

8. The combination, with the stove having a conical top, t, provided in its apex with an outlet for the products of combustion and with the insulating material, u, of the outer surrounding air-chamber having no communication with the interior of the stove, the ring b^2, forming the outer side wall of said chamber and having apertures w, the reservoir H, having a vertical central smoke-outlet and a bottom plate centrally apertured to register with the opening in the top t, and the insulating material in the upper part of the said air-chamber, substantially as set forth.

9. The combination, with a car-stove, of an outer reservoir composed of the outward-curved plates e, the inward-curved plates c, the bottom plate, a, and the top plate, f, with an inner water-tight reservoir, B, substantially as described.

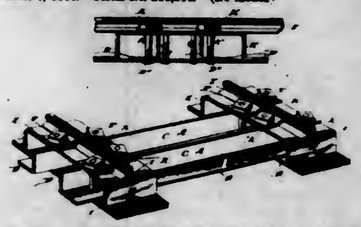
10. The combination, with the inner reservoir, B, and the rods j' and d, passing through the same, of open tubes i, secured water-tight to the bottom of the inner reservoir, B, substantially as described.

11. The combination of a car-stove and surrounding annular reservoir, and the intercommunicating pipes e, with the rings d' around the pipes e, which serve to hold rigidly all of the above-named parts in their proper relative position, substantially as described.

12. The combination, with the car-stove E, of the reservoir B, arranged around the fire-pot of the stove, the reservoir H, arranged above the stove, the pipe I, extending into the reservoir H, and provided with perforations l' at its upper end, the pipe J, inclosing the upper part of the pipe I and provided with perforations m' at its lower end, and the pipe b^4, provided with the valve c^3 and communicating between the reservoirs H K and pipe I, substantially as specified.

13. The combination, with the stove E, having a sectional combustion-chamber formed of upper and lower connected rings or sections having annular grooves, as shown, of the cylindrical screen fitting at its upper and lower ends in said grooves and forming part of the stove, substantially as set forth.

385,492. RAILWAY CROSS-TIE. DAVID Y. WILSON, Glen Tree, assignor of one-half to Robert L. McClellan and S. Park Rutherford, Coalranville, and John Rudy and Sebastian Cremleigh, Parkersburg, Pa. Filed Mar. 8, 1888. Serial No. 266,510. (No model.)



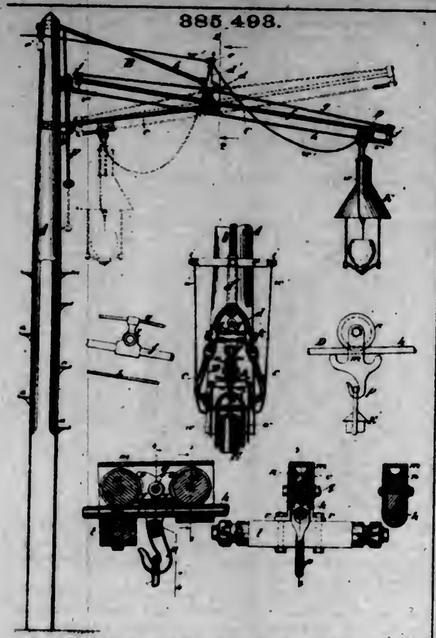
Claim.—1. The combination of the parallel angle-bars A, having the horizontal lower sides, B, and vertical inner sides, C, the base-plates arranged transversely under the ends of the angle-bars, the bridge-plates arranged transversely over the ends of the angle-bars, and having their ends bent downward and outward and bearing on the projecting ends of the base-plates, and the bolts F, extending through the base and bridge plates and through the lower sides of the bars, and securing said bars and base and bridge plates together, substantially as described.

2. The combination of the parallel bars A, arranged at a suitable distance apart, the base-plates arranged transversely under the ends of said bars, the bridge-plates arranged transversely over the ends of said bars and the bridge-plates, the bolts F, connecting the said base and bridge plates together and clamping the same to the bars A, the said bridge-plates being further provided with the openings G between the bolts, for the purpose set forth, substantially as described.

3. The combination of the parallel angle-bars A, arranged at a suitable distance apart, the base-plates arranged transversely under the ends of said bars, the bridge-plate arranged transversely over the ends of said bars, the bolts connecting the base and bridge plates together and bearing against the opposing sides of the vertical portions of the angle-bars, and the bolts connecting the base and bridge plates together bearing against the outer sides of the vertical portions of the angle-bars, and extending through the horizontal or base portions of said angle-bars, substantially as described.

385,493. SUSPENSION-ARM FOR ELECTRIC LAMPS. JAMES J. WOOD, Brooklyn, N. Y. Filed Feb. 13, 1883. Serial No. 263,800. (No model.)

385,493.



Claim.—1. The combination, with an electric lamp, of a carriage from which it is suspended, and a rocking arm bearing said carriage and along which it may travel, constructed to vibrate to opposite sides of the horizontal, the support to which said arm is pivoted, and the circuit-wires of said lamp fastened to said support and looped with sufficient slack to permit the movement of the lamp to either end of said arm.

2. The combination, with a supporting structure, of a rocking arm arranged with its inner end approaching said structure and its outer end extending away therefrom and constructed to vibrate to opposite sides of the horizontal, and a carriage adapted to travel along said arm and to carry an electric lamp hung beneath it, whereby on lowering the inner end of the arm said carriage will run inwardly toward said structure, and on raising it the carriage will run outwardly therefrom.

3. The combination with a supporting structure, of a bracket projecting outwardly therefrom, a rocking arm arranged with its inner end approaching said structure and its outer end extending away therefrom, fulcrumed to said bracket and constructed to vibrate to opposite sides of the horizontal, a carriage adapted to travel along said arm and to carry an electric lamp hung beneath it, and the circuit-wires attached to said bracket and to said carriage and looped between them with sufficient slack to permit the endwise movement of the carriage along said arm.

4. The combination, with a supporting structure, of a rocking arm arranged with its inner end approaching said structure and its outer end extending away therefrom and constructed to vibrate to opposite sides of the horizontal, a carriage adapted to roll along said arm and to carry an electric lamp hung beneath it, and a vertically-moving operating-rod jointed to the inner end of said rocking arm.

5. The combination, with a supporting structure, of a rocking arm arranged with its inner end approaching said structure and its outer end extending away therefrom, fulcrumed to vibrate to opposite sides of the horizontal, with its fulcrum nearer its inner end than its center of gravity, whereby its outer portion overweights its inner portion, and a carriage adapted to roll along said arm and to carry an electric lamp hung beneath it.

6. The combination, with a supporting structure, of a rocking arm arranged with its inner end approaching said structure, constructed to vibrate to opposite sides of the horizontal and fulcrumed on an axis between its middle and its inner end, whereby its outer portion beyond said fulcrum is longer than its inner portion, and a carriage adapted to roll along said arm and to carry an electric lamp hung beneath it.

7. The combination, with an electric lamp, of a carriage from which it is suspended, a rocking arm constructed to vibrate to opposite sides of the horizontal, bearing said carriage and along which the latter may roll, and elastic buffers at the opposite ends of said arm in position to receive the impact of the carriage.

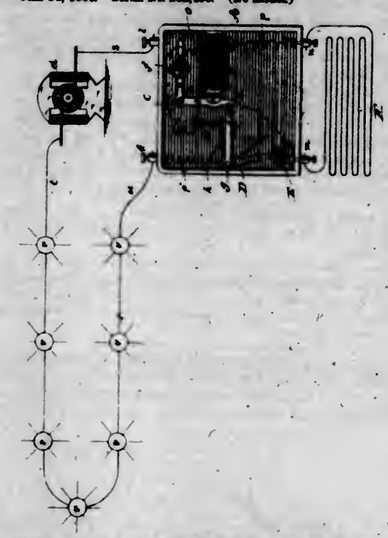
8. The combination, with an electric lamp, of a rocking arm constructed to vibrate to opposite sides of the horizontal, a carriage adapted to roll along said arm and from which said lamp is suspended, and an automatic brake applied to said carriage and constructed to check the movement thereof when the said arm is tilted to its extreme inclination.

9. The combination, with a rocking arm constructed to vibrate to opposite sides of the horizontal, of a carriage adapted to roll along said arm and constructed with two wheels, and a suspension-hook pivoted to said carriage between said wheels and formed with opposite projections, adapted, when the hook is tilted relatively to the carriage, to come against the peripheries of said wheels and act as a brake therefor

10. The combination, with an electric lamp and a traveling carriage from which it is suspended, of a rocking arm adapted to vibrate to opposite sides of the horizontal and constructed with a rigid longitudinal bar or strut, a trussed tie-rod above said strut, and a tie-rod below said strut strained taut and on which said carriage travels.

11. The combination, with a supporting structure and a rocking arm adapted to vibrate to opposite sides of the horizontal, of a bracket to which said arm is fulcrumed, consisting of an upper tie-rod, two lower struts arranged side by side and spread to admit the rocking arm between them, and a fork to which the outer ends of said tie-rod and truss are fastened, and between the legs of which the fulcrum-pivot passes.

385,494. CUT-OUT. CHARLES D. WESNER, Petersburg, Ill. Filed Jan. 31, 1888. Serial No. 262,460. (No model.)

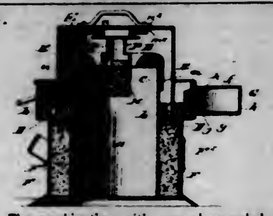


Claim.—1. In a cut-out for electric-light circuits, the combination of an electro-magnet arranged in the circuit, a pivoted and spring-actuated cut-out lever connected with the magnet and with one of the electric-light-circuit wires, a counterbalanced armature-lever engaging and holding the cut-out lever during the normal working of the circuit, a contact for the cut-out lever when disengaged by the armature-lever, and a resistance having one terminal connected with the main circuit and the other with the contact of the cut-out lever, substantially as described.

2. In a cut-out for electric-light circuits, the combination of the electro-magnet B, arranged in the circuit, the pivoted and spring-actuated cut-out lever D, the counterbalanced armature-lever C, provided with the catch d, with which the cut-out lever D engages, the wire q, connecting the cut-out lever D with the magnet, the wire p', connecting the said lever with one of the electric-light wires, the wires o p, the spring E, and the resistance F, having one terminal connected to wire p and its other to the spring E, substantially as described.

385,495. COMMODE. WILLIAM R. WYTHE, Santa Barbara, Cal., assignor to himself and J. D. Axtell, same place. Filed Oct. 18, 1887. Serial No. 252,656. (No model.)

385,495.



Claim.—1. The combination, with a vessel provided with a surrounding pan provided with an extended receptacle in communication therewith, of a flanged closing-cover adapted to rest on said pan, substantially as and for the purpose described.

2. The combination, with the vessel A, having exterior jacketed chamber provided with a filling of non-conducting material, and a surrounding water-pan, D, having an extended receptacle in communication therewith, of a removable seat-ring and flanged closing-cover adapted to rest on said pan, substantially as and for the purpose described.

3. The combination, with the vessel A, having an exterior jacketed chamber provided with a filling of non-conducting material and a surrounding water-pan, D, having an extended receptacle, G, of a flanged cover, E, adapted to rest on said pan, having removably attached to or suspending downwardly from its top a receptacle for containing disinfectant matter, substantially as and for the purpose described.

4. The combination, with the vessel A, having the surrounding water-pan D, having an extended receptacle, G, in communication therewith, a flanged cover, E, adapted to rest on said pan, and provided with sockets m m^2, of a receptacle, H, for containing disinfectant matter, having lugs n n^2, adapted to enter the sockets m m^2, substantially as and for the purpose specified.

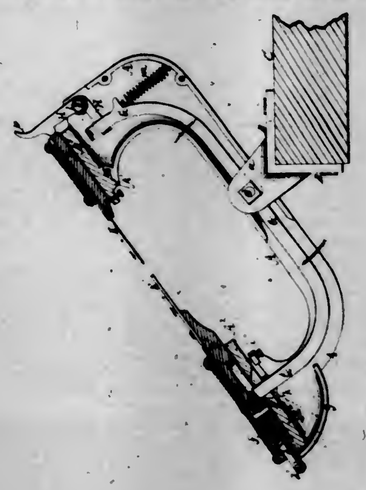
5. The combination, with the vessel A, having exterior jacketed chamber provided with a filling of non-conducting material and having a surrounding water-pan, D, provided with an extended receptacle, G, in communication therewith, of a removable seat-ring and flanged cover, E, adapted to rest on said pan, having attached to or suspended downwardly from its top a receptacle for containing disinfectant matter, all substantially as and for the purpose described.

385,496. COMPOSITION FOR ROADWAYS. LOUIS H. BRADENBURG, Hancock, Mich. Filed Nov. 22, 1887. Serial No. 256,908. (No specimens.)

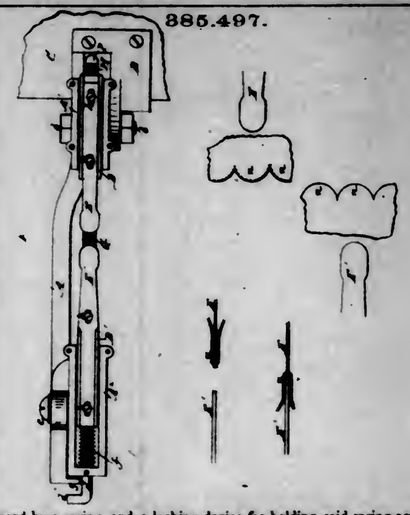
Claim.—The composition for facing roadways or road-beds, consisting of the following substances in the proportions specified, namely: black pitch, two barrels; coal-tar, one barrel; rosin, one-half barrel; copper molding, four quarts; stamp-sand, one quart; yellow sand, six quarts; ashes, two quarts.

385,497. LEATHER-TURNING MACHINE. QUINTIN W. ROOTS, Rochester, N. Y. Filed Sept. 8, 1887. Serial No. 249,107. (No model.)

Claim.—1. In a leather-turning machine, the combination of a supporting-frame, two turning-irons resting therein, one pressed forward by a spring, and a locking device for holding said spring-actuated iron in the retracted position, whereby the leather can be inserted upon one iron and then be clamped by operating the locking device to release the spring-actuated iron, as set forth.



385,497.



2. In a leather-turning machine, the combination of a supporting-frame, two turning-irons resting therein, each movable toward and from the other, one pressed forward by a spring, and a locking device extending from one iron to the other and holding the spring-actuated iron in the retracted position, whereby when the leather is inserted on one iron and pressure is applied thereto it releases the other iron, which then springs forward to clamp the leather, in the manner and for the purpose specified.

3. In a leather-turning machine, the combination of the supporting-frame, two turning-irons, each movable toward and from the other, slides to which the turning-irons are attached, one pressed forward by a spring, and a locking device extending from one iron to the other, and by which the spring-actuated slide is held in the retracted position, as herein shown and described.

4. In a leather-turning machine, the combination of two opposing turning-irons in the same plane, means for operating them, the frame in which they rest, and the pivot around which the frame turns, substantially as described.

5. In a leather-turning machine, the combination of two turning-irons, each movable toward and from the other, slides to which the turning-irons are attached, a pivoted arm which locks one of the slides in place, and a rock-lever with which the other end of the pivoted arm engages, as set forth.

6. In a leather-turning machine, the combination of the two turning-irons E E′, each movable toward and from the other, the slides D D′, to which the turning-irons are attached, the spring f on the slide D′, the pivoted arm G, engaging with slide D′, the spring m, connected with the arm, and the rock-lever H, connecting at one end with arm G and resting at the other end against slide D, as shown and described, and for the purpose specified.

7. In a leather-turning machine, the combination of a supporting-frame, a pair of opposing turning-irons resting therein, and a pivot, around which one of them may be turned to stand at an angle with the other, as shown and described, and for the purpose specified.

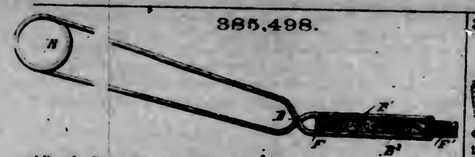
8. In a leather-turning machine, the combination, with the frame A, provided with the concentric flange g, of the head-block A^3, pivoted to the frame, the slide D^3, resting in the head-block, the said slide being provided with the stem d, having lug d', the spring f on the stem, and the turning-iron E′, attached to the slide, as set forth.

9. In a leather-turning machine, the combination of the fixed turning-iron E, the sliding turning-iron E′, provided with a spring that presses it forward, and means for locking and unlocking the same, as set forth.

385,498. CULINARY SPRING-TONGS. GEORGE BRITTON, Harrisburg, Pa. Filed Oct. 17, 1887. Serial No. 252,690. (No model.)

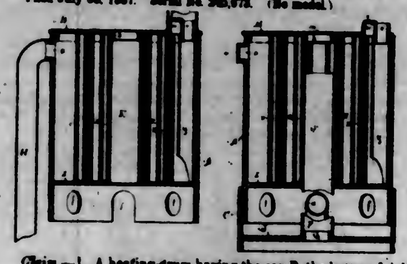
Claim.—As an improved article, the culinary spring-tongs shown and described, the same being formed of a continuous wire or rod coiled at its middle, having its limbs extended crossed, and having spoon-formed palms bearing on each other by spring-tension and bent

385,498.



obliquely directed to the middle line between said limbs, substantially as and for the purposes set forth.

385,499. HEATING-DRUM. WILLIAM H. BURNS, Mittenvale, Kans. Filed July 30, 1887. Serial No. 245,673. (No model.)



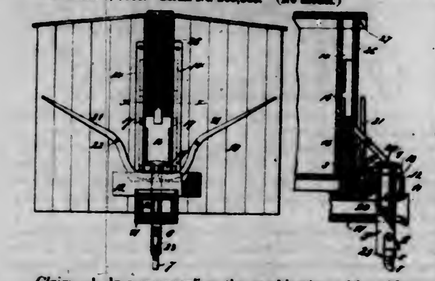
Claim.—1. A heating-drum having the cap B, the bottom I, inlets below the bottom, and the openings o k, in combination with the cap n, the lid m, and a suitable smoke-flue, as set forth.

2. The combination, with the heating-drum having internal vertical tubes and an air-chamber below the same, of the central vertically-sliding pipe or tube F and the smoke-flue y, arranged at one side and having an opening at its lower end for the admission of the smoke, as set forth.

3. The combination, with the heating-drum having the series of internal vertical heating-tubes, and an air-supply chamber below the same, of the smoke-flue y, arranged at one side of the drum, and having an opening at its lower end for the admission of the smoke, and provided at its upper end with the divisions w x, and the damper v, pivoted between said divisions, and adapted to close either of them, substantially as described.

4. The combination, with a heating-drum, of the cover J, having rim c and smoke-hole k, substantially as and for the purpose set forth.

385,500. CAR-COUPLING. SAMUEL BYERS, Brown's Valley, Cal. Filed Mar. 1, 1888. Serial No. 265,865. (No model.)



Claim.—1. In a car-coupling, the combination, with guideways on the end of a car, provided with recesses, of a slide provided with lugs fitting in the grooves of the said ways, and an outwardly-extending plate, 19, having a slot, 9, to receive the shank of a coupling-pin, and means for operating the said slide, substantially as herein shown and described.

2. In a car-coupling, the combination, with ways 14, formed with recesses 15, of a slide, 16, formed with upper projections, 17, having rounded corners, and lower projections, 18, adapted to enter the grooves 15, a plate carried by the slide, said plate being formed with a groove, 3, and a recess or slot, 9, levers pivotally connected to the car-end, and arranged so that their inner ends will enter the grooves 3, and a coupling-pin, the shank of which passes through the slot 9, substantially as described.

385,501. CLAMP FOR HOOPS OR BANDS. JAMES W. CALLAHAN, New Iberia, La. Filed Apr. 13, 1888. Serial No. 270,570. (No model.)

Claim.—1. The herein-described clamp for uniting the ends of hoops or bands, the same consisting of a pair of heads, A, having slots substantially parallel with the base thereof for the passage of the ends

385,501.

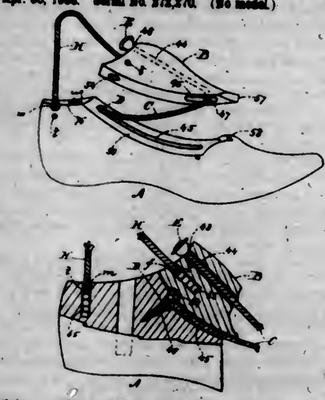


of a hoop or band, and holes for a bolt, a screw-threaded bolt adapted to the holes, and means co-operating with the bolt for drawing the heads together, substantially as described.

2. The herein-described clamp for uniting the ends of hoops or bands, the same consisting of a pair of heads, A, having slots substantially parallel with the base thereof for the passage of the ends of a hoop or band, projecting tongues 14, and holes for a bolt, a screw-threaded bolt adapted to the holes, and means co-operating with the bolt for drawing the heads together, substantially as described.

3. The combination of a pair of heads, A, each having a slot, 10, substantially parallel with the base thereof, a projecting tongue, 14, and a hole, 15, for a bolt, a hoop or band the meeting ends of which are passed through slots in the heads and turned back in the form of loops embracing the tongues, a screw-threaded bolt adapted to the holes, and means co-operating with the bolt for drawing the heads and the ends of the hoop or band together, substantially as described.

385,502. LAST FOR BOOTS OR SHOES. WILLIAM R. CRANE, Lynn, assignor to himself and Charles A. Shaw, Boston, Mass. Filed Apr. 30, 1888. Serial No. 272,270. (No model.)



Claim.—1. In a last for boots or shoes, a body, as A, provided with the hole or socket m in the upper edge or corner of its heel portion, a block, as B, provided with the hole or socket f in its rear end, the cord H, having its ends respectively inserted in said sockets, and the screws t, for securing the ends of the cord in said sockets, all being combined and arranged to operate substantially as described.

2. In a last for boots or shoes, a body, as A, provided with the hole or socket m in the upper edge or corner of its heel portion, a block, as B, provided with the hole or socket f in its rear end, the cord H, provided with the metallic clips or casings 65 and having its ends respectively inserted in said sockets, and the screws t, for securing the ends of the cord in said sockets, all being combined and arranged to operate substantially as set forth.

3. In a last for boots or shoes, a body, as A, provided with a hole or socket, m, in the upper edge or corner of its heel portion, a block, as B, provided with the hole or socket f in its rear end, the cord H, having its ends respectively inserted in said sockets, the screws t, for securing the ends of the cord in said sockets, and a lock for said block, all being combined and arranged to operate substantially as described.

4. In the last herein described, the combination of a body, a block, a cord, and a lock for the block, one end of said cord being attached to the block in such position as to lead from its rear end and the other secured to the body in such position as to lead from or approximately from the upper edge or corner of the heel portion of said body, substantially as set forth.

5. In a last for boots or shoes, the combination of the block B, having the hole 44 and socket 54, the body A, provided with the groove 45 and hole 49, and the cord C and screw D, said cord being inserted in the hole 44 and having its outer end provided with a knot or pull and its inner end secured to the hole 49 by said screw, substantially as described.

6. In a last for boots or shoes, the block B, provided with the hole f and socket 54, the body A, provided with the hole m, the screw D,

inserted in said body with its head projecting and adapted to register with the socket 54 when the block is seated, the cord H, provided with the clips 65 and having its ends respectively inserted in the holes *m f*, and the screws *t*, for securing said cord in said holes, substantially as set forth.

7. In a last for boots or shoes, the body A, provided with the groove 45, having its rear end terminating in the hole 49, in combination with the cord C, connected with the block of the last and having one of its ends inserted in said hole, and the screw D, for securing the end of the cord in said hole, substantially as described.

8. In a last for boots or shoes, the body A, provided with the groove 45, hole 49, and socket *m*, the block B, provided with the sockets 54 and *f* and the hole 44, the cord H, having its ends respectively inserted in the sockets *m* and *f*, the screws *t*, for securing said ends in said sockets, and the cord C, inserted in the hole 44 and having one of its ends secured in the hole 49 by the screw D and the other provided with a knot or pull, all being combined and arranged to operate substantially as described.

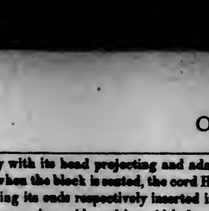
9. In the last herein described, the combination of a body, a block, a cord connecting said body and block, and a lock for said block, one end of said cord being secured to the block and the other secured to the body by the block-lock or a portion thereof, and said last provided with an opening in its interior, in which the main portion of said cord is disposed or housed when the block is seated, substantially as set forth.

10. In the last herein described, the combination of the following instrumentalities, to wit: a body, a block adapted to be seated on said body, a lock for said block, and a cord connecting said block and body, the body or main portion of said cord when the block is seated being disposed or housed partially in a hole extending lengthwise through said block and partially in a groove in the interior of the last, one end of said cord being secured to the rear portion of said body by the block-lock or a portion thereof and the other protruding through the rear or outer end of the hole in the block and provided with a knot or pull, substantially as described.

11. In a last for boots or shoes, the cord C, provided with the metallic pull E, in combination with the block B, provided with the hole 44, body A, provided with the hole 49 and groove 45, and a lock for the block, said cord being inserted in the hole 44 and having one of its ends secured in the hole 49 by the block-lock or a portion thereof, substantially as set forth.

12. In a last for boots or shoes having a longitudinal groove in its interior for the block-cord, the combination, with the last-body provided with a block-seat, and with a V-shaped socket at the lower end of said seat, of a block having a V-shaped end for fitting said socket and provided with a longitudinal cord-hole, a cord disposed in said hole and groove and connecting said block and body, and a block-lock, said cord being secured to said body by the block-lock or a portion thereof, substantially as described.

385,503. JOURNAL-BOX. WILLIAM K. CHRISTIE, Ionia, Mich. Filed Mar. 19, 1888. Serial No. 267,737. (No model.)



Claim.—1. In combination with a journal box or bearing having a recess, a cellar, and a wedge adapted to fit into the recess, and a screw carried by the collar and arranged to bear upon the wedge.

2. In combination with a journal box or bearing having a recess, a cellar, and a wedge fitting into said recess, and a screw carried by the cellar and adapted to bear upon the wedge, the screw being so arranged as to permit a slight movement of the cellar independently of the wedge when subjected to abnormal strains.

3. In combination with a box or bearing having a recess and a groove formed in one wall of said recess, a wedge, a cellar provided with a tongue to fit into the groove, and a screw carried by the cellar.

4. In combination with a box or bearing having a recess, one of the walls of which is inclined, a wedge, a cellar, and a screw carried by the cellar.

5. In combination with a box or bearing having a recess, one of the walls of which is inclined and one of which is provided with a groove, a wedge, a cellar provided with a rib or tongue to fit the groove, and a screw carried by the cellar.

6. In combination with a box or bearing having a recess, a cellar provided with a threaded lug, a screw passing through said lug, and a wedge provided with a seat for the head of the screw.

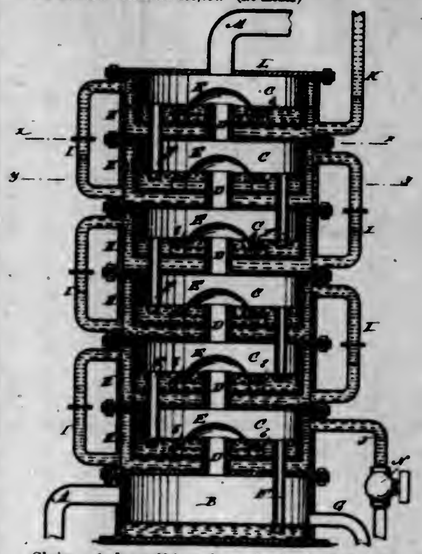
7. In combination with a box or bearing having a recess, a cellar provided with a threaded lug, a screw passing through the lug, and a wedge provided with a seat or socket for the head of the screw, the height of the socket being greater than the vertical measurement of the screw-head.

8. In combination with a box or bearing having a recess, a cellar provided with a threaded lug, a screw passing through said lug, and a wedge provided with a seat for the head of the screw and with a cross-bar cut away to receive the stem of the screw.

9. In combination with a box or bearing having a recess, a cellar provided with a threaded lug, a screw passing through said lug, and a wedge provided with a seat for the head of the screw and adapted to straddle the lug.

10. In combination with a box or bearing having a recess, a cellar provided with a lug, a screw passing through the lug, a wedge, and a jam-nut.

385,504. RECTIFYING-COLUMN FOR THE DISTILLATION OF LIQUIDS AND GASES. WALTER R. CALWELL, Cincinnati, Ohio. Filed Oct. 20, 1887. Serial No. 253,717. (No model.)



Claim.—1. In rectifying-columns for the distillation of liquids and gases, the combination, with a receiving-chamber, of a series of communicating condensing-chambers, C, having jackets surrounding the sides and bottom, and arranged one above the other, and the pipes I, extending from the upper part of each jacketed chamber to the lower part of the one next below, substantially as herein shown and described.

2. In rectifying-columns for the distillation of liquids and gases, the combination, with the receiving-chamber B, of the series of condensing-chambers C, having central ducts or passages, and provided with jackets surrounding the sides and bottom, the pipes I, extending from the upper part of each jacketed chamber to the lower part of the one next below, and the pipes F, leading from each condensing-chamber to the one below it, substantially as herein shown and described.

385,505. CAR-COUPLING. CONOVER R. COOK, Yorkville, Ill. Filed Jan. 14, 1888. Serial No. 260,774. (No model.)



385,505.



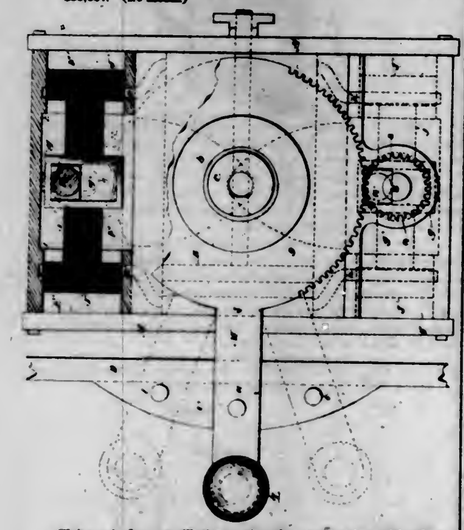
Claim.—1. In a car-coupling, the combination of the draw-head having the openings C C' in its upper and lower sides, the upper opening being corrugated, the pin engaging at its lower end in the upper opening when in its elevated position, and the link adapted to trip the pin when it enters the draw-head to cause it to fall, substantially as specified.

2. In a car-coupling, the combination of the draw-head having the elongated and roughened opening C in its upper side and the opening C' in its lower side, and the pin to engage in the said openings, substantially as specified.

3. In a car-coupling, the combination of the draw-head having the lateral apertured ears D, the removable pins engaged in the apertures, and the coupling-link adapted to be engaged by one of the said pins when not in use, substantially as and for the purpose specified.

4. In a car-coupling, the combination of the draw-head having the tapered or funnel-shaped recess B therein, and the aligned openings C C' in its upper and lower sides, the curved coupling-pin adapted when in the elevated position to be engaged in the upper opening, C, and project slightly below the upper side of the recess B, and the coupling-link having the tapered heads I I on its opposite ends, all constructed and arranged substantially as and for the purpose specified.

385,506. VALVE MECHANISM FOR OSCILLATING ENGINES. WILLIAM B. CONLEYER, Bristol, Conn. Filed Oct. 22, 1887. Serial No. 253,087. (No model.)



Claim.—1. In an oscillating engine, the combination, with a frame and a cylinder having trunnions, of a steam-chest, a sliding valve having two piston-heads, and a lever having a toothed edge, the latter adapted to engage a toothed wheel for moving the valve endwise when the cylinder is rocked, substantially as set forth.

2. In an oscillating steam-engine, the combination, with a steam-chest, and a valve provided with a cylindrical head on each of its ends, and a yoke or slotted connecting-body, of a sliding box, a crank-shaft that engages the box with its crank-pin, a toothed pinion, and a meshing gear-wheel adapted to partially rotate the pinion and move the valve longitudinally when the cylinder is rocked, substantially as set forth.

3. In an oscillating engine, the combination, with the frame, a toothed wheel, a handle or bar affixed to the wheel, and a means for securing the wheel to the frame in changed positions of adjustment, of a pinion, a crank-shaft that supports the pinion, and a sliding piston-valve placed in a steam-chest and connected loosely to the pin of the crank-shaft, substantially as set forth.

4. In an oscillating steam-engine, the combination, with a steam-chest and a piston-valve adapted to slide endwise and uncover a port in the chest, of a yoke formed in the body of the valve, a sliding box, a crank-shaft, and a perforated sleeve or box which gives support to the crank-shaft and is adapted to make a steam-tight joint with a shoulder formed thereon, substantially as set forth.

5. In an oscillating steam-engine, the combination, with a frame, a cylinder, two trunnions, and a piston with its rod, of two valve-chests, two piston-valves, steam and exhaust ports leading from the chests into the cylinder, and valve mechanism that will actuate the valves endwise and in opposite directions when the cylinder is rocked and its piston reciprocated, substantially as set forth.

6. In an oscillating steam-engine, the combination, with a frame, a cylinder, two hollow trunnions that are in connection with live-steam and exhaust passages formed in the cylinder, and a piston and rod, of two valve-chests affixed to the cylinder at opposite points and connected to the steam-exhaust passages of the cylinder, two piston-valves, and a means to move the valves in opposite directions when the cylinder is oscillated, substantially as set forth.

7. In an oscillating steam-engine, the combination, with a frame, a cylinder supported in bosses on the frame to oscillate thereon, a piston, two cylindrical valve-chests attached to the cylinder at opposite points, and passages formed in the cylinder and steam-chests, of two balanced piston-valves having cylindrical heads on their ends, a yoke formed in each valve-body, a sliding box for each yoke, a crank-shaft to engage each sliding box, a toothed pinion affixed to each crank-shaft, and an adjustable gear-wheel that moves the pinions when the cylinder oscillates to reverse the motion of the engine, substantially as set forth.

8. The combination, with two valve-chests attached to an oscillating cylinder, and a valve located in each chest, of pinions connected to the valves to actuate them, and a larger adjustably-secured gear-wheel supported concentric with the engine-trunnions and meshing with two pinions to move the valves when the cylinder is rocked, substantially as set forth.

9. The combination, with a cylinder supported upon trunnions, valve-chests attached to the cylinder, and valves located in these chests, of a pinion connected to each valve to communicate motion to it, an engine-frame, and a gear-wheel supported in this frame concentric with the engine-trunnions and meshing with the valve-pinions to rotate them and move the attached valves when the cylinder is rocked on its trunnions, substantially as set forth.

385,507. SURGEON'S SPLINT. WILLIAM H. DE CAMP, Grand Rapids, Mich. Filed Jan. 24, 1887. Serial No. 225,269. (No model.)



Claim.—1. In combination with surgeons' splints, and forming the sole connection between the same, a series of strips attached to one of said splints by loop-hinges and adjustably attached to the other of said splints, substantially as described.

2. In combination with surgeons' splints, flexible strips connecting said splints having hinge-joints and having separate longitudinal adjustment, substantially as described.

3. In combination with surgeons' splints having flexible strips connecting the same, loops through which said strips pass, and fixed pins engaging with holes in said strips, substantially as described.

4. In combination with surgeons' splints, and forming the sole connection between the same, a series of strips attached to one of said splints by loop-hinges, and to the other of said splints by loops encircling said strips, and pins engaging with holes in the same, substantially as described.

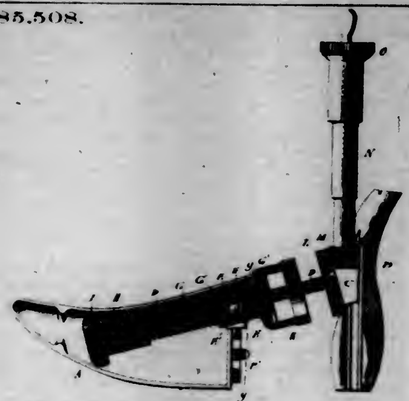
385,508. BOOT OR SHOE STRETCHER. JOHN DONOVAN, Boston, Mass. Filed Dec. 20, 1887. Serial No. 258,441. (No model.)

Claim.—1. In a boot or shoe stretcher, the combination of separable toe-pieces, a rocking bearing mounted in the toe-pieces, an adjusting-screw swiveled in the said bearing, with its inner end projecting between the toe-pieces, and a nut on the inner end of the screw and adapted to be moved back and forth thereon by turning the said screw, substantially as described.

2. In a boot or shoe stretcher, the combination of separable toe-pieces, a rocking bearing, a hollow toe-piece-adjusting screw swiveled in said bearing and internally screw-threaded at one end, a spreader on the end of the adjusting-screw, and a heel-piece-adjusting screw working in and engaging the internal screw-threads of the said toe-piece-adjusting screw, substantially as described.

3. In a boot or shoe stretcher, the combination of toe-pieces, a nut held thereon, an adjusting-screw working lengthwise in said nut, a step in which the adjusting-screw is journaled, a heel-piece carried by the step, a gear on the adjusting-screw, an upright spindle having its bearing in the step, a gear on the spindle engaging that on the adjusting-screw, and a hand-burr on the spindle, substantially as described.

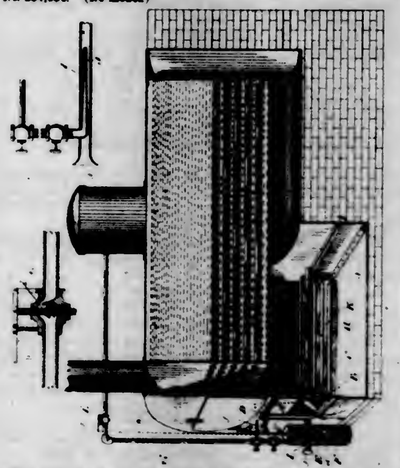
385,508.



4. In a boot or shoe stretcher, the combination, with a pair of detachable toe-pieces, of a hinge having one leaf secured permanently to one toe-piece, and holes in its other leaf, studs on the other toe-piece adapted to said holes, and a catch for holding the studs in the holes, substantially as described.

5. In a boot or shoe stretcher, the combination of a pair of toe-pieces, a hinge having one leaf attached to one toe-piece, and a catch on the other toe-piece for securing the other leaf detachably thereto, substantially as described.

385,509. FURNACE FOR STEAM-BOILERS. JOHN T. ELLIS and JAMES H. ELLIS, Toronto, Ontario, Canada. Filed Dec. 15, 1887. Serial No. 257,956. (No model.)



Claim.—1. A hollow vessel located within a tank containing water and having an aperture in or near its bottom provided with a suitable valve, through which water may enter the vessel but not escape, and a smaller aperture or hole through which the water may escape slowly from the vessel, in combination with a door arranged in connection with a doorway leading to the furnace and so weighted and connected to the hollow vessel that it will be held open when the vessel has been sunk by the admission of water into its interior and will close when the water has escaped from the said vessel, and the supplemental door arranged to close slowly after the furnace-door is closed, and a steam-valve connected to said vessel and working in conjunction with the supplemental door, substantially as and for the purpose specified.

2. A hollow vessel located within a tank containing water and having an aperture in or near its bottom provided with a suitable valve, through which water may enter the vessel but not escape, and a smaller aperture or hole through which the water may escape slowly from the vessel, in combination with a valve located in the steam-pipe leading to the furnace, and with a door arranged in connection with a doorway leading to the furnace, the door and valve being so connected to the hollow vessel that said door will be held open when the vessel has been sunk by the admission of water into its interior and will close when the water has escaped from the said vessel, substantially as and for the purpose specified.

3. A furnace-door, A, having an aperture in it protected by a supplemental door, B, and protected by a perforated plate, C, in combination with mechanism, as the tank F, the hollow vessel in said tank, and the cord connecting said vessel with the door B, by which the supplemental door B is held open for a limited period immediately after the closing of the furnace-door, substantially as and for the purpose specified.

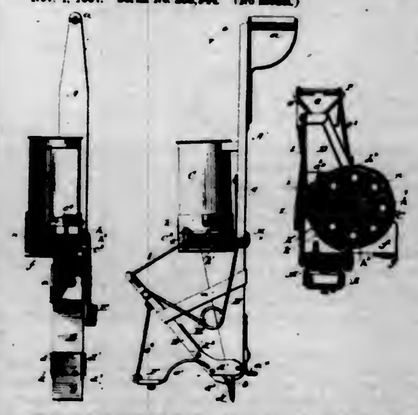
385,510. STEAM-BOILER. JOSEPH A. ROE, Newark, N. J. Filed Dec. 28, 1887. Serial No. 258,627. (No model.)



Claim.—1. The improved steam-generator herein described, combining therein a boiler having the water-leg *b*, forming a pocket at the sides of the fire-box, a mud-drum arranged at the side of said boiler, as shown, heating-pipes arranged within the said fire-box, pipes connecting said drum with the water-leg and with the said heating-pipes, and a pipe connecting said heating-pipes with the upper part of the boiler, substantially as set forth.

2. In combination with a vertical boiler having a water-leg, a mud-drum arranged on the outside thereof, a collection of heating or circulating pipes disposed within the fire-box at the upper part thereof, and pipes leading from the heating-pipes through the water-leg to the outside of said boiler and connecting with the mud-drum and pipes leading from said heating-pipes to the upper part of the boiler, substantially as and for the purpose set forth.

385,511. HAND-PLANTER. SETH HACKETT, Bronson, Mich. Filed Nov. 1, 1887. Serial No. 253,944. (No model.)



Claim.—1. In a hand-planter, the combination, with a handle and a spring-pressed jaw pivoted thereto and provided with a rest, of a hopper, a seed-dropping disk having teeth on its periphery, a sliding block on the hopper carrying a pawl engaging the teeth of the seed-disk, and a link connecting the block to the movable jaw, substantially as described.

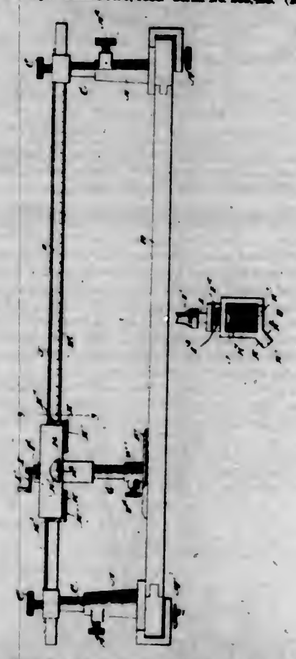
2. In a hand-planter, the combination, with a handle and a spring-pressed jaw, of a hopper provided with guideways on its outer surface, a seed-dropping disk having teeth on its periphery, a block sliding in said ways and carrying a pawl engaging the teeth of the seed-disk, a link connecting the block to the movable jaw, and a pawl for preventing backward movement of the said disk, substantially as herein shown and described.

3. In a hand-planter, the combination, with a handle and a spring-pressed jaw, of a hopper, a seed-disk having teeth on its periphery, a block sliding in ways on the hopper and carrying a pawl engaging the teeth of the said disk, a link connecting the block to the pivoted jaw, a pawl for engaging the teeth of the seed-disk to prevent backward movement of the same, and a cut-curve for limiting the movement of the cross-head, substantially as herein shown and described.

4. In a hand-planter, the combination, with a seed-hopper and a seed-disk having teeth on its periphery, of guideways formed as described, a grooved block sliding on said ways and carrying a pawl engaging the teeth of the said disk, and means for reciprocating the said block, substantially as described.

5. In a hand-planter, the combination, with a handle provided with a seed-spout and a spring-pressed and pivoted jaw, the said handle and jaw being provided with penetrating-points, of the plate d^3, having its lower portion provided with side flanges, d^4, and secured at its upper end to the pivoted jaw and forming an extension of the spout, substantially as described.

385,512. PARALLEL-RULER. BENJAMIN F. HARRAWAY, Fort D. A. Russell, Wyo. Filed Feb. 9, 1888. Serial No. 263,420. (No model.)



Claim.—1. In a drawing-instrument, clamping-posts adapted to be secured to a drawing-board and a horizontal graduated bar held adjustably on the said clamping-posts, in combination with a sleeve mounted to slide on the said bar and a ruler held to turn on the said sleeve, substantially as shown and described.

2. In a drawing-instrument, clamping-posts adapted to be secured to a drawing-board and a horizontal graduated bar held adjustably on the said clamping-posts, in combination with a sleeve adapted to slide on the said graduated bar, a rod extending from the said sleeve, and a ruler held adjustably on the said rod, substantially as shown and described.

3. In a drawing-instrument, clamping-posts adapted to be secured to a drawing-board and a horizontal graduated bar held adjustably on the said clamping-posts, in combination with a sleeve adapted to slide on the said graduated bar, a rod extending from the said sleeve, a ruler held adjustably on the said rod, and means, substantially as described, for moving the said sleeve forward and backward on the said arm, as set forth.

4. In a drawing-instrument, the combination, with a horizontal graduated bar provided with a rack, of a sleeve held to slide on the said graduated bar, a ruler carried by the said sleeve, and a worm meshing into the said rack and mounted to turn on the said sleeve, substantially as shown and described.

5. In a drawing-instrument, the combination, with a horizontal graduated bar provided with a rack, of a sleeve held to slide on the said graduated bar, a ruler carried by the said sleeve, a vertical shaft mounted to rotate on the said sleeve and provided with a crank-arm, a bevel gear-wheel secured on the said shaft, a second bevel gear-wheel meshing into the first-named bevel gear-wheel, a horizontal shaft carrying the said bevel gear-wheel and mounted to rotate on the said sleeve, and a worm formed on the said horizontal shaft and meshing into the said rack secured to the said graduated bar, substantially as shown and described.

385,513. FINDER FOR PHOTOGRAPHIC CAMERAS. WILLIAM HARRISON, Friskil, assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Dec. 10, 1887. Serial No. 257,532. (No model.)



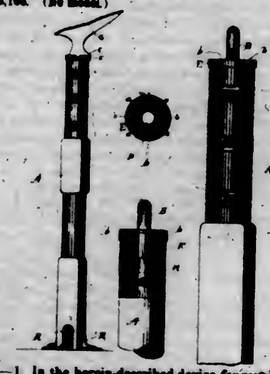
Claim.—1. A finder for photographic cameras, made of glass or like material and comprising a body portion, a lens at one end, and an inclined reflecting-surface at the other end, substantially as specified.

2. A finder for photographic cameras, composed of a single piece of glass or like material and comprising a body portion, a lens, and an inclined reflecting-surface, substantially as specified.

3. A finder for photographic cameras, composed of glass or like material which is rectangular in the cross-section, a lens of corresponding rectangular outline, and an inclined reflecting-surface, substantially as specified.

4. A finder for photographic cameras, composed of glass or like material and comprising a body portion, a lens at one end, an inclined reflecting-surface at the other end, and a ground surface above the reflecting-surface, substantially as specified.

385,514. LAST-STANDARD. BENJAMIN C. HASKELL, Boston, assignor to S. H. Tremain, Rockport, Mass. Filed Oct. 24, 1887. Serial No. 253,168. (No model.)

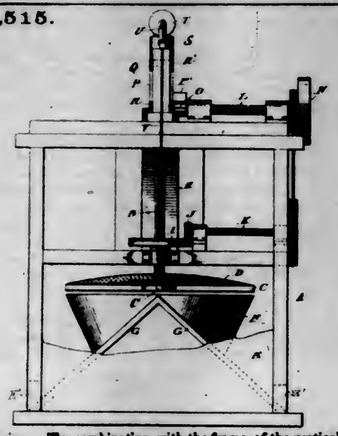


Claim.—1. In the herein-described device for repairing boots and shoes, the standard A, provided with the iron cap E, and pin B, extending through the cap into the standard, in combination with the slotted last G, substantially as and for the purpose hereinbefore set forth.

2. A device for manufacturing and repairing boots and shoes, consisting of the standard A, in combination with the iron cap E, provided with the slots *b b*, the raised flanges *a a*, the opening D, and the last G, provided with the slot D' and the protuberance C, substantially as herein shown and described, and for the purposes herein set forth.

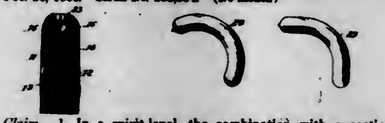
385,515. CAB-INDICATOR. WILLIAM H. HOUSEN and THOMAS C. SAYMAN, Lyon Mountain, N. Y. Filed June 11, 1887. Serial No. 241,089. (No model.)

385,515.



Claim.—The combination, with the frame, of the vertical rotary shaft journaled therein, the screen D, and the collars R R' S on the upper part of the shaft above the frame, the bracket Q, and the slide P, through which said shaft freely passes between its collars R R' within the bracket, the foot P' at one side of said slide, the shaft having a stepped cam engaging said foot, and the horizontal spring-bar U, having a collar, T, resting on the collar S, and means for adjusting its downward pressure on the shaft, substantially as set forth.

385,516. SPIRIT-LEVEL. JAMES C. HUTTON, Corvallis, Oreg., assignor of one-half to Patrick J. Mullivey, East Cambridge, Mass. Filed Feb. 28, 1883. Serial No. 266,564. (No model.)

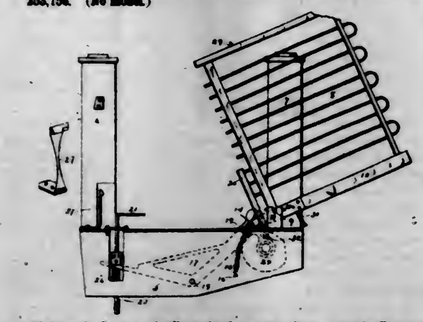


Claim.—1. In a spirit-level, the combination with a sectional frame having recesses in the contiguous faces and a cement bed laid in said recesses, of a vial-case provided with a vial cemented therein, held between the said frame-sections in contact with the cement bed, substantially as shown and described.

2. In a spirit-level, the combination with a sectional frame having recesses in the contiguous faces and a cement bed laid in said recesses, of a sectional vial-case having aligning depressed surfaces provided with a cement bed, a segmental vial held in said bed, and means for retaining the vial-case in contact with the cement bed of the frame-sections, substantially as shown and described.

3. In a spirit-level, the combination, with a sectional frame, of a vial-case, a segmental vial cemented in said case, and means, substantially as described, for cementing the vial-case between the frame-sections, as and for the purpose set forth.

385,517. GATE. HUGH A. KNOWLES, New York, N. Y., administrator of Lewis B. Knowles, deceased. Filed Oct. 22, 1887. Serial No. 253,156. (No model.)



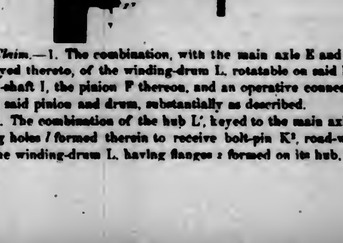
Claim.—1. In a vertically-swinging gate, a base, a vertically-moving foot-rest, a lever pivoted to the base and also to the rear rail of the gate, a weight and a spring co-operating with said lever, the front end of said lever also co-operating with the foot-rest, substantially as set forth.

2. In combination with the gate pivoted at its rear end, a pivoted lever provided with a weight and spring, and a vertically-moving foot-rest provided with a projection, 26, which co-operates with catch 27, secured to the base, substantially as set forth.

3. In combination with the gate pivoted at its rear end, a lever provided with a weight at one end and having a projecting free end, and a vertically-moving foot-rest provided with a roller, 24, with which the free end of said lever co-operates, substantially as set forth.

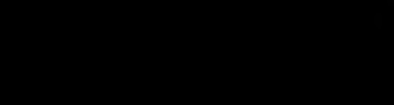
4. A vertically-swinging gate pivoted at its rear end upon axle 9, a platform, posts 6 and 7, supported upon said platform, a lever pivoted within the base and provided with a weight, a spring, 15, and a vertically-moving foot-rest co-operating with the free end of said lever, and a spring, 26, coacting with said foot-rest, the whole combined and operating substantially as set forth.

385,518. CONGRESS GAITER. LEWIS J. LOUD, Rockland, Mass. Filed Mar. 1, 1887. Serial No. 229,304. (No model.)



Claim.—In the herein-described boot or shoe, the combination, with the elastic front provided with the elastic lacing, of the elastic side gores, the two front pieces, 6 and 7, and the two heel-pieces 2 and 3, all substantially as and for the purpose described.

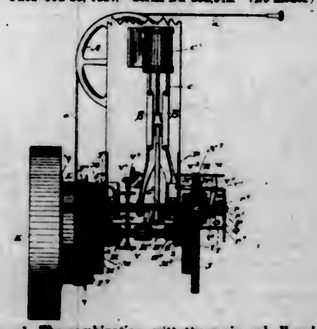
385,519. RELIEF-DIE AND PROCESS OF MAKING THE SAME. GEORGE F. MCINTOSH and JAMES W. MCINTOSH, Boston, Mass. Filed Jan. 31, 1887. Serial No. 226,032. (No model.)



Claim.—1. The process of making molds or dies, consisting in the electro-deposition upon a plastic mold or die having the design required formed thereon of a metal plate having the design or designs in relief and integral therewith; second, in filling or backing the hollow dies with metal by filling the cavities only thereof from the back of the plate; third, in depositing upon the back of the plate thus prepared another coat of metal, whereby the metal backing or filling is held or confined in the die spaces or recesses and the die or dies made solid, as and for the purposes described.

2. A multiple die-plate having a series of relief-dies integral with the plate, which are backed or filled with metal which is entirely inclosed by the said die-plate, substantially as described.

385,520. MACHINERY FOR OPERATING STEAM-PLOWS. GEO. W. MORRIS, Brantford, Ontario, Canada, assignor to Alfred Watts, same place. Filed Oct. 20, 1887. Serial No. 252,912. (No model.)



Claim.—1. The combination, with the main axle E and the hub L', keyed thereto, of the winding-drum L, rotatable on said hub, the crank-shaft I, the pinion F thereon, and an operative connection between said pinion and drum, substantially as described.

2. The combination of the hub L', keyed to the main axle E and having holes *l* formed therein to receive bolt-pin K^3, road-wheel K, and the winding-drum L, having flanges *z* formed on its hub, and the driving-gear-wheel L^2, driven by gearing actuated by the pinion-wheel F, keyed to the crank-axle I, substantially as specified.

3. The combination of the hub L', keyed to the main axle E, having bearings E', holes *l*, formed in hub L', bolt-pin K^3, road-wheel K, and the winding-drum L, the driving-gear-wheel L^2, the pinion-wheel M^2, formed on spur-wheel M, the divided counter-shaft H, the pinion-wheel F, and crank-axle I, substantially as described and specified.

4. The combination of the hub L', keyed to the main axle E, the winding-drum L, driving gear-wheel L^2, pinion-wheel M^2, formed on spur-wheel M, the divided counter-shaft H, and the pinion-wheel F, secured to the crank-axle I and adapted to be thrown into and out of gear with the spur-wheel M on divided counter-shaft by the shifting-lever F^2, substantially as specified.

5. The combination of the pinion-wheel N^2, adapted to be clutched so as to partake of the motion of the crank-axle I, the spur-wheel M^2 on the divided counter-shaft, the pinion I, driving gear-wheel J, road-wheel K^2 on the main axle E, and the pin K^3, passing through a hole in the hub of the driving gear-wheel J, substantially as specified.

6. The combination of the pinion-wheel N^2, the clutch N N', crank-axle I, the actuating-gear, the road-wheel K^2, pin K^3, main axle E, the drum L, keyed to the main axle and having holes *l*, and the pin K^3, which passes through the hub K' of the wheel K, substantially as specified.

7. The combination of the main bearing-piece C, formed on the head of the cylinder and rigidly attached to the fire-box, having guide-bars for the cross-head of piston-shaft and bearing for crank-axle I, formed thereon, the saddle-bracket D, affording bearings for the divided counter-shaft H, the gusset-piece G, and the bearing E', main axle E, and bracket E^2, substantially as specified.

8. The combination, with the female clutch-piece N and the pinion N^2, which actuates driving-gear for road-wheels, of the male clutch-piece N', pivotally attached to the lever V^4, which is pivoted on the standard R, suitably supported on machine, the pivoted nut W, screw-shaft V^3, adapted to be actuated by mitered gearing V' and V^2, and rod *v*, which is also adapted to revolve in suitable bearings formed in the fire-box, substantially as specified.

9. The combination, with the rod T, pivotally connected to the handle end, of positive-clutch lever Q, lock-bolts O, the collars p^3 and p^4 formed on said rod, the spring *s* and spring *s'*, having suitable bearings, and the hinged latch S, having half-collar s^4 formed thereon and adapted to engage with the collar p^3 formed on rod when the lock-bolts are disengaged from the female clutch-piece N, substantially as specified.

10. The combination, with the rod T, pivotally connected to the handle end, of the positive-clutch lever Q, lock-bolts O, clutch-piece N, with holes formed therein, and the spring *s*, having suitable bearings on the end of said rod and body of the machine, and adapted to throw the lock-bolts O into the holes *n*, formed in the base of the female clutch-piece N, when the hinged latch S is raised from the collar p^3, so as to release said spring *s* while the male clutch-piece N' is revolving on the crank-shaft I, to which it is rigidly attached, substantially as specified.

11. A steam-plow in which the winding-drum which operates the plow is adapted to revolve on a hub formed on the main axle for road-wheels and contiguous to one of said wheels and operated independently of said road-wheels by suitable gearing driven by the crank-axle, in combination with a grooved pulley placed near to and in front of the fire-box and immediately under the boiler of the engine, and over which grooved pulley the rope to the plow from the winding-drum passes, substantially as described, and for the purpose specified.

385,521. VALVE. HARVEY S. PAGE, Chicago, Ill. Filed Nov. 26, 1887. Serial No. 256,261. (No model.)



Claim.—1. The combination, in a valve, of a cylinder, a chamber in said cylinder, a solid piston traveling in said chamber and having a vent-passage, a normally-seated valve connected to said piston and controlling a discharge-port from the chamber, a chamber for the valve, a supply-port for the chamber between the valve and the piston, and a supply-passage for the chamber below the piston for canceling the piston and opening the valve by the pressure in the chamber, substantially as specified.

2. The combination, in a valve, of a cylinder, a chamber in said cylinder, a solid piston traveling in said chamber and having a vent-passage, a normally-seated valve connected to said piston and controlling a discharge-port from the chamber, a chamber for the valve, a supply-port for the chamber between the piston and valve, a passage leading from the supply to the chamber below the piston, and an auxiliary valve controlling said passage and electrically operated for admission of pressure below the piston to cancel the piston, substantially as specified.

3. The combination, in a valve, of a cylinder, a chamber in said cylinder, a solid piston traveling in said chamber and having a vent-passage, a normally-seated valve connected to said piston and controlling a discharge-port from the chamber, a supply-port for the chamber between the valve and piston, a supply-passage for the chamber below the piston, a valve normally closed for said passage, a moving armature connected to said valve, a stationary armature, and an electric coil inclosing both armatures for electrically controlling the valve for the passage below the piston, substantially as and for the purposes specified.

4. The cylinder A, having the chamber B, piston C, having the passage *d*, controlled by a valve, *d'*, and dividing the chamber into two compartments, the piston, stem D, and the valve E, controlling the port *g* from the chamber B, in combination with inlet ports or passages leading to the chamber B on opposite sides of the piston for canceling the piston to unseat the valve E, substantially as specified.

5. The cylinder A, having the chamber B, piston C, having the passage *d*, controlled by the valve *d'*, the stem D, the valve E, and the port *g*, leading from the chamber B, in combination with the inlet-port K, between the piston C and valve E, the passage *m*, the chamber M, the passage *n*, leading from the port K to the chamber M, the passage *s*, leading from the chamber M to the chamber B below the piston, and a valve for the passage *s*, electrically controlled for supplying pressure to the chamber B below the piston to cancel the piston, substantially as and for the purpose specified.

6. The cylinder A, having the chamber B, the piston C, having the passage *d* and valve *d'*, the stem D, the valve E, and the port *g*, in combination with the supply-port K, the chamber M, the passage *m*, leading from the port K to the chamber M, the core or stem N, having the longitudinal passage *o*, the chamber *r* at the inner end of the core, the ports *p*, leading from the passage *o* to the chamber *r*, the passage *s*, communicating with the chamber B below the piston C, and a valve, *n*, electrically controlled for admitting a pressure from the supply-port to the chamber below the piston, substantially as specified.

7. The chamber M and passage *m*, communicating with the supply-port K, in combination with a valve, *n*, controlling a passage, *s*, leading from the chamber M, a valve-stem, *n'*, a core, N, having a passage, *o*, a stationary armature, P, through which the stem of the valve N passes, a movable armature to which the stem of the valve *n* is attached, and a coil inclosing the armatures for electrically operating the valve *n*, substantially as and for the purpose specified.

8. The chamber M, having communication with the supply-port of a valve and with a chamber below a piston in said chamber, in combination with a valve, *n*, a valve-stem, *n'*, a core, N, having the longitudinal passage *o* for the valve-stem *n'*, ports *p* in the core, chamber *r*, communicating with the passage *o* by ports *p*, stationary armature P, movable armature P', having the stem *n'* connected thereto, and a coil around the armatures for supplying pressure to cancel the piston, substantially as specified.

9. The coil O, stationary armature P, and movable armature P', in combination with the core N, valve-stem *n'*, attached to the armature P', passage *o* in the core N, and valve *n*, for operating the valve to open and close communication with a supply, substantially as and for the purposes specified.

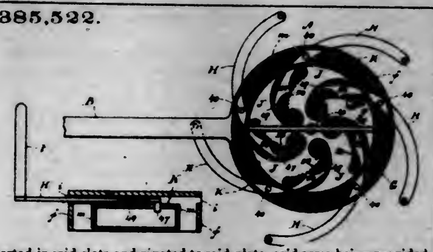
10. The coil O, stationary armature P, movable armature N, valve-stem *n'*, and valve *n*, in combination with the core M, passage *o*, passages *p*, and chambers *r* for controlling the supply to the chamber B, substantially as and for the purposes specified.

385,522. LAMP-HOLDER. BENJAMIN F. PIERCE, Boston, Mass., assignor to himself and FREEMAN W. FISK, Wilton, Me. Filed Apr. 19, 1882. Serial No. 371,233. (No model.)

Claim.—1. In a lamp-holder, the plate G, provided with the downwardly-projecting annular flange *f*, having the lateral slots *i*, the arms H, inserted in said slots and pivoted to said plate, said arms being provided at their outer ends with upwardly-projecting standards *t* and at their inner ends with studs 47 and teeth 54, and the plate K, pivoted to the plate G, and provided with the curved or evolute spokes J, having teeth 50 on their outwardly-curved edges, all being combined and arranged to operate substantially as set forth.

2. In a lamp-holder, the plate G, provided with the downwardly-projecting annular flange *f*, having the lateral slots *i*, the arms H, in-

385,522.



serted in said slots and pivoted to said plate, said arms being provided at their outer ends with upwardly-projecting standards *t* and at their inner ends with studs 47 and teeth 54, the plate K, pivoted to the plate G, and provided with the curved or evolute spokes J, having teeth 50 on their outwardly-curved edges, and the arm B, for supporting the plate G, all combined and arranged to operate substantially as described.

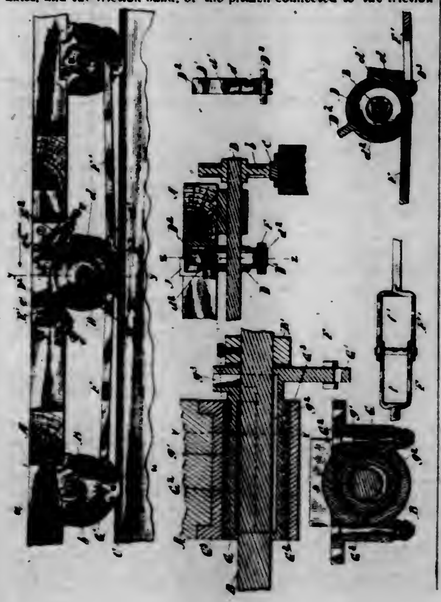
3. In a lamp-holder, the plate G, provided with the downwardly-projecting annular flange *f*, having the lateral slots *i*, the arms H, inserted in said slots and pivoted to said plate, said arms being provided at their outer ends with upwardly-projecting standards *t* and at their inner ends with studs 47 and teeth 54, the plate K, pivoted to the plate G, and provided with the curved or evolute spokes J, having teeth 50 on their outwardly-curved edges, and the arm B, for supporting the plate G, said arm being pivoted to the plate E, substantially as set forth.

4. In a lamp-holder of the character described, the arm B, pivoted to the plate E by the rod D and lugs *k*, the plate G, mounted on said arm and provided with the annular flange *f*, having the slots *i*, the arms H, inserted in said slots and pivoted to the plate G, said arms being provided with standards *t*, teeth 54, and studs 47, and the plate K, provided with the curved serrated spokes J, all being constructed, combined, and arranged to operate substantially as specified.

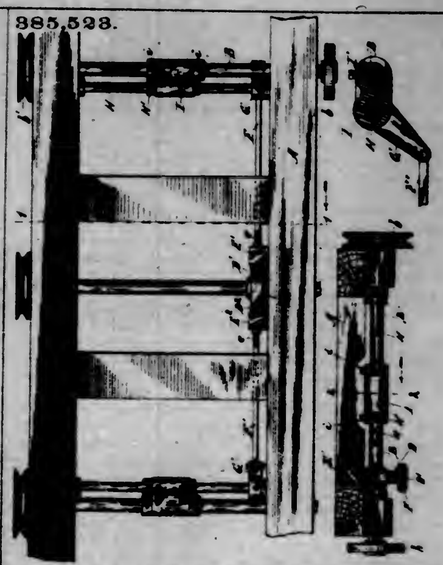
385,523. SAW-MILL CARRIAGE. DE WITT C. PRESCOTT, Marinette, Wis. Filed Aug. 2, 1886. Serial No. 209,780. (No model.)

Claim.—1. The combination, with the truck-axles, of a carriage arranged to move laterally on said axles, a screw or screws to cause the said lateral movement, a friction-wheel secured to one of the axles and provided with a friction-band connected to the said screws to actuate the same, and adjustable stops arranged to limit the motion of the friction-band in each direction, substantially as specified.

2. The combination, with the truck-axles, the laterally-movable carriage, the shifting-screws, the friction-wheel secured to one of the axles, and the friction-band, of the pitmen connected to the friction-



385,523.



band at one end and having their other ends adjustably connected to the crank-arms of the shifting-screws, substantially as specified.

3. The combination, with the truck-axles, the laterally-movable carriage, the shifting-screws, and the friction-wheel secured to one of the axles, of the friction-band connected to the screws and provided with a lug, D^3, and the rubber blocks d' d^3, mounted in the boxes E' E^3 and provided with adjusting-screws *e*, substantially as specified.

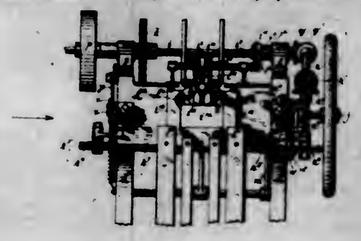
4. The combination, with the truck-axles, the laterally-movable carriage, and the shifting-screws, of the friction-wheel secured to one of the axles, the friction-band connected to the screws, and a holding device to prevent the rotation of the friction-band, substantially as specified.

5. The combination, with the truck-axles, the laterally-movable carriage, and the shifting-screws, of the friction-wheel secured to one of the axles, the friction-band provided with a projecting lug, and the pivoted dog J, capable of engagement with the said lug to prevent the movement of the band, substantially as and for the purposes set forth.

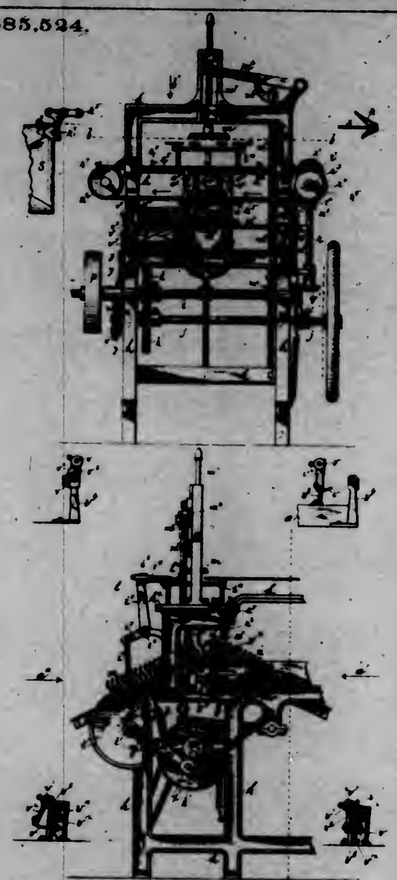
6. In a saw-mill carriage, the combination, with the laterally-movable carriage, of the axles B, the hollow screws G, mounted thereon and each provided with an oil-chamber, g^2, feed-passage g^3, and bearing-block g', the fixed nuts G^3, attached to the carriage and adapted to receive the said screws, and actuating mechanism connecting the screws and axles, substantially as and for the purposes specified.

385,524. ENVELOPE-MACHINE. ABRAM A. RENSTAM, Worcester, Mass., assignor to Wade H. Hill, same place. Filed May 11, 1887. Serial No. 237,393. (No model.)

Claim.—1. A device for stopping and holding the envelope-blanks in position under the plunger of an envelope-machine preparatory to forcing the same through the creasing-plate opening to be folded, consisting of the hinged shear-shaped arms *l l*, having the stops l^2 l^3 adjustably fastened to their inner ends and provided with a suitable spring for closing their outer ends, a wedge, l^5, adapted to enter between said outer ends to open the same, and means connected with said wedge for imparting horizontal reciprocating movements thereto, substantially as shown and specified, for the purpose stated.



385,524.



2. In an envelope-machine, the main bed A^2, hinged folding-bed *e*, and bearing e^{10}, adapted to receive and hold the shank or base end of the stationary adjustable forked arms e^9, in combination with said arms e^9, fitted in vertical openings in the folding-bed and provided with inclined or beveled ends upon which to receive the envelopes when they are carried down on said folding-bed, substantially as shown and specified.

3. In an envelope-machine, the combination of the main bed A^2 and hinged folding-bed *e* with the stationary-adjustable arms e^9, fitted in suitable openings in said folding-bed and provided with inclined or beveled ends upon which to receive the envelopes when they are carried down on the folding-bed, rocking arms e^9 e^{12}, arranged on shaft e^8 and extending respectively above and below the surface of said folding-bed and operated by the latter through a crank-arm and a suitable spring, substantially as and for the purposes set forth.

4. The combination of the driving sprocket-wheel r^4 and carrying-pulley r^5 with the drying-chain *n*, the endless chain r^6, arranged to travel horizontally and laterally through the machine just above said drying-chain, and having hooks r^7 projecting out therefrom at intervals around its length adapted to push the envelopes from the drying-chain onto a suitable receiver as the chain r^6 is moved forward, substantially as set forth.

5. The endless chain r^6, provided with the projecting hooks r^7 at intervals around its length and arranged to travel across the path traversed by the drying-chain just above said drying-chain, in combination with means for imparting an intermittent rotary motion to said chain r^6 and its hooks, consisting of the pulley r^5 and sprocket or toothed wheel r^4, over which said chain is fitted, shaft r^3, bevel-gears r^2 r', shaft *r*, having a locking and unlocking device at its upper end, combined with the hub of said gear r' and with cam f^5, as described, bevel-gears *q* q', shaft *i*, and means for supporting the various parts in position, substantially as and for the purposes set forth.

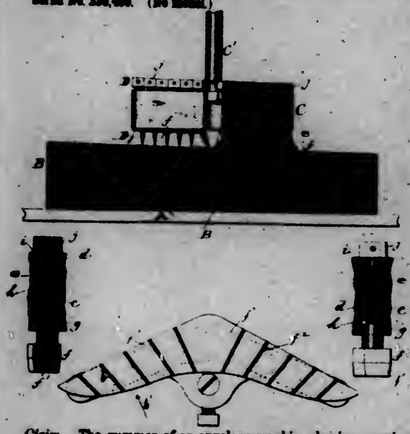
6. The combination, with the hub of gear r' and continuously-rotating shaft *r*, of spring-bolt *t* and cam f^5, said spring-bolt being fitted in a transverse opening in said shaft and having the friction-roll t' and key t^2 at the ends thereof, arranged, respectively, to act against said cam f^5 and to engage with the teeth t^3, formed on the hub of said gear r', substantially as and for the purpose set forth.

7. The swinging plate *v*, in combination with the stationary upright plate v^2 and endless chain r^6, said plate v^2 having a slot therein to admit of the passage of said plate *v* in its oscillating movements forward and back to receive and discharge the envelopes as they are delivered from said chain r^6, substantially as set forth.

8. The combination of the carriage v^7, provided with standard v^8 and stud v^9, with the crank-arm v^4, shaft v^5, turning in suitable stationary bearings, hangers v^6 v^6, plate *v*, its spring v^{10}, and stationary plate v^3, provided with a horizontal slot to receive plate *v*, substantially as and for the purpose set forth.

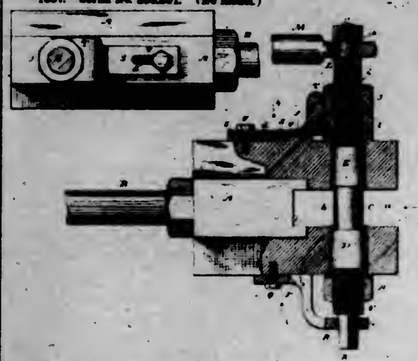
9. The combination of the carriage v^7, provided with standard v^8 and stud v^9, with the crank-arm v^4, shaft v^5, turning in suitable stationary bearings, hangers v^6 v^6, plate *v*, its spring v^{10}, stationary plate v^3, provided with a horizontal slot to receive plate *v*, and guide-plates v^{10} v^{11}, substantially as and for the purpose set forth.

385,525. ENVELOPE-MACHINE. ABRAM A. RENSTAM, Worcester, Mass., assignor to Wade H. Hill, same place. Filed May 26, 1887. Serial No. 239,469. (No model.)



Claim.—The gummer of an envelope-machine, having a series of yielding spring devices, constructed substantially as described and arranged side by side vertically therein, to produce a continuous flat yielding surface at the bottom adapted to bear upon the top of the pile of envelope-blanks and conform to any unevenness that may exist therein, substantially as set forth.

385,526. ADJUSTABLE TAPERED WRIST-PIN FOR CROSS HEADS. THEODORE L. RUSSELL, near Rolleston, Pa. Filed Dec. 30 1887. Serial No. 259,201. (No model.)



Claim.—1. A cross-head for locomotives and other engines having conical apertures extending laterally therethrough, and an adjustable wrist-pin shaft having conical sections which fit in said apertures

said shaft being extended on either side of the cross-head and screw-threaded, in combination with tightening and loosening nuts fitting on said shaft and seating against opposite sides of the cross-head, substantially as set forth.

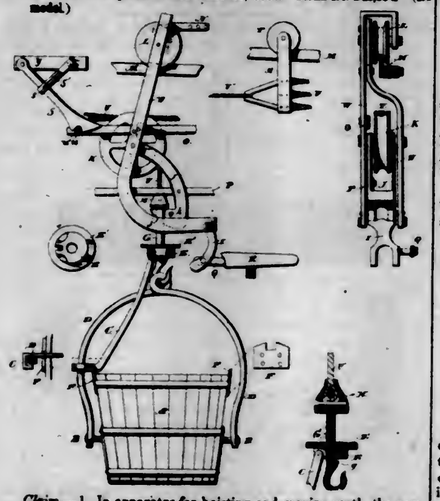
2. A cross-head for locomotives and other engines and an adjustable wrist-pin shaft mounted therein, having a polygonal end, in combination with a stay removably secured to the cross-head, having a polygonal aperture which fits over said polygonal end, substantially as set forth.

3. A cross-head for locomotives and other engines, an adjustable wrist-pin shaft mounted therein, and a tightening nut or nuts for said shaft, in combination with a nut-locking bar secured to said cross-head, which abuts against said nut or nuts, substantially as set forth.

4. A cross-head for locomotives and other engines, an adjustable wrist-pin shaft mounted therein, and a tightening nut or nuts for said shaft, in combination with a nut-locking bar having a recessed face which abuts against said nut or nuts, substantially as set forth.

385,527. APPARATUS FOR HOISTING AND MOVING EARTH.

JOHN RYAN, Toronto, Ontario, Canada, assignor of one-half to Maurice J. Sheehan, same place. Filed June 25, 1887. Serial No. 242,554. (No model.)



Claim.—1. In apparatus for hoisting and moving earth, the combination, with a suitable frame or trestle and a track therein, of carriers mounted on the track, each of said carriers having a pulley thereon and a drop-hook loosely mounted on the shaft or axle carrying the pulley and straddling the pulley, elevator-buckets, and ropes or cables strung over the pulleys, whereby the buckets attached thereto are elevated until automatically caught by the drop-hooks, substantially as set forth.

2. In apparatus for hoisting and moving earth, the combination, with a frame or trestle, an inclined track thereon, and a set of carriers mounted on the track, of elevator-buckets, ropes for elevating these buckets, said carriers being provided with hooks for automatically locking the buckets in an elevated position, triggers pivoted to the carriers in close proximity to the buckets, and a rod pivotally connecting these triggers to render their movement simultaneous in dumping the buckets, substantially as set forth.

3. In apparatus for raising and moving earth, the combination, with a frame or trestle and a track thereon, of a set of carriers, buckets adapted to be raised, lowered, or held on said carriers, the latter having pivoted triggers thereon, a rod connecting these triggers, and a stop pivoted in position to be abutted by the trigger-rod for dumping the buckets, substantially as set forth.

4. The combination, with a frame or trestle, a track mounted therein, carriers adapted to travel on the track, a set of buckets, ropes attached to the buckets and strung over pulleys in the carriers, and a suitable motor for elevating the buckets to the carriers, of bars for connecting the carriers, drop-hooks pivoted to the carriers and adapted to hold the buckets when elevated thereto, triggers pivoted to the carriers, a rod connecting these triggers, and a stop so located that when struck by the trigger-rod the triggers by their engagement with the buckets dump them, substantially as set forth.

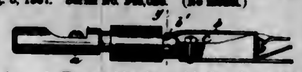
5. The combination, with a carrier, a rope or cable strung over a pulley therein, and a hook on one end of the rope, of a bucket suspended on the hook, said hook having a flanged collar loosely mounted thereon, a link pivoted to the collar and mounted on the bail of the bucket for locking the bail and bucket, a trigger adapted to elevate the collar and thereby dump the bucket, a rod pivotally connected to this trigger, and a pivoted stop in position to be impinged by the trigger-rod, whereby the latter is operated, substantially as set forth.

6. In a carrier, the combination, with a pair of plates secured together to form an overhanging bracket, and a flanged wheel mounted in this bracket, of a pulley mounted between the plates, and a drop-hook straddling the pulley, said hook having an inclining lower face, and a pin transversely located in its lower portion, this pin acting as a stop to prevent the hook from dropping too far beneath the part which it is designed to hold, substantially as set forth.

7. In a carrier, the combination, with a pair of plates secured together to form an overhanging bracket, and a flanged wheel mounted in this bracket, of a pulley mounted between the plates, and a drop-hook straddling the pulley and loosely mounted on the axle or shaft supporting the pulley, substantially as set forth.

385,528. SPRING-JACK SWITCH.

CHARLES R. SHEPHERD, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Aug. 3, 1887. Serial No. 246,026. (No model.)



Claim.—1. The combination, with the plug and its point, of a spring with its free end placed in the path of the plug and provided with a concave bent surface conforming to the shape of the tip of the plug, as described, whereby the tip of the plug on being inserted is guided over the concave surface, lifting the spring and being held thereby, substantially as and for the purpose specified.

2. In a spring-jack switch, a spring or lever with its free end provided with a concave and bent or crimped surface conforming to the shape of the plug-point inserted therein.

385,529. PLOW-POINT.

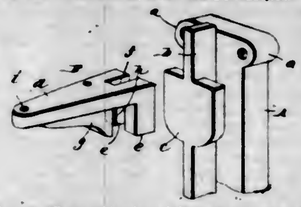
WILLIAM H. SEXTON, Canton, Ohio. Filed Apr. 26, 1888. Serial No. 271,803. (No model.)



Claim.—The combination of a plowshare provided with the recesses *a* and *b*, adapted to receive the projections *a'* and *b'* of the detachable point B, rounded upon one edge and having a continuation of the same curvature as that of the share A of the recess *c*, embracing a corresponding-shaped projection located upon the side of the share, and the clamping-bolt *d*, substantially as shown and described.

385,530. SUPPORT FOR SHELVES, &c.

JOSHUA SETSER, Concordia, Kans. Filed Feb. 21, 1888. Serial No. 264,726. (No model.)



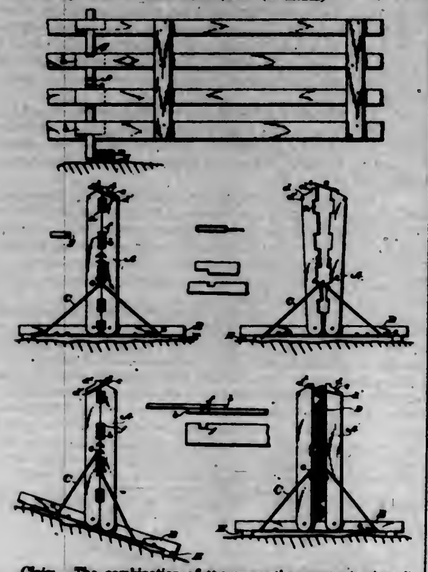
Claim.—1. The combination of the strip A, having the outstanding vertical rib *b* and the plates *c*, formed integral with said rib, and the bracket having its rear end slotted to engage said rib and provided with depending lugs to engage behind said plates, as set forth.

2. The combination of the strips A, having the vertical rib *b* and the plates *c*, formed integral with said rib, and the brackets having their rear ends slotted to engage the rib and provided with the depending lugs to engage behind the plates *c*, and having the rib *g* on their under sides adapted to bear against the front sides of the said plates, as set forth.

3. The combination of the strips A, having the vertical ribs *b* and the plates *c*, formed integral with said rib, and the brackets having the slots *f* at their rear ends to engage the ribs, the lugs *e e* on opposite sides of the slots to engage behind the plates, and the ribs *g* on their under sides having rear vertical ends terminating at the ends of the slots *f*, as specified.

385,531. PORTABLE FENCE.

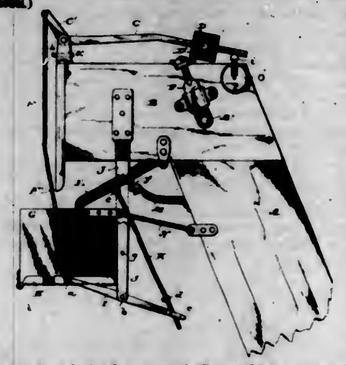
ADAM SHRADER, Junction, Ohio. Filed Apr. 6, 1888. Serial No. 269,727. (No model.)



Claim.—The combination of the supporting-posts A, pivotally attached to the sill B, and provided at their top or upper ends with the inclined shoulders *d*, notches *d'*, and projections *d²*, the link *c*, adapted to engage the notches *d'* and the projections *d²*, the wires C and notches *e*, and the key *g*, adapted to engage the notches *f*, substantially as and for the purpose specified.

385,532. MACHINE FOR WEIGHING GRAIN.

LOUIS H. BOLOW and JOHN HOLLAND, Mendota, Ill. Filed Mar. 6, 1888. Serial No. 266,397. (No model.)

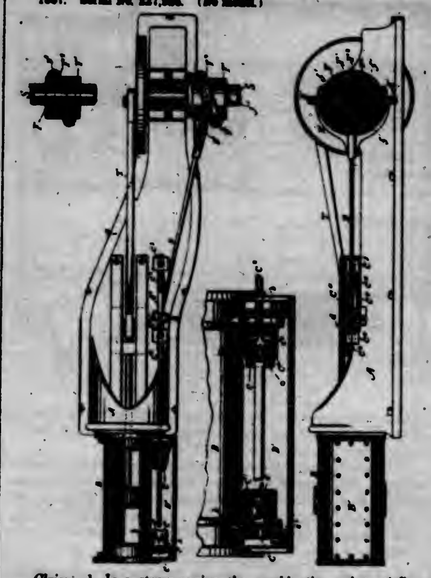


Claim.—1. In a device for automatically weighing or measuring grain, the combination of an elevator and measure with a cut-off and a rod directly pivoted thereto, and a bail pivoted on a fixed support and connecting said rod and the hinged bottom of the measure, whereby said cut-off is closed by the downward weight of the measure and opened by the weight of grain accumulating thereon while the measure is dumping.

2. In a device for automatically weighing or measuring grain, the combination of an elevator and a cut-off hinged to the head thereof, a weighted scale-beam pivoted to said head, a measure connected by links to the elevator and having a pivoted bottom attached by a bail to the said scale-beam and by another bail to straps depending from the elevator-head, said straps being connected by a cross-rod below the line of the said links, and a rod hinged to the bottom of the cut-off and having a nut or collar bearing upon the end of the last-named bail, all combined and adapted to operate as hereinbefore set forth.

385,533. VALVE AND VALVE-GEAR.

ELIJAH F. SPANGLER, Oil City, assignor of one-third to John K. Hallock, Erie, Pa. Filed Feb. 17, 1887. Serial No. 227,893. (No model.)



Claim.—1. In a steam-engine, the combination, substantially as set forth, of a valve having transverse and longitudinal ports *c* and *c²*, and a valve-gear which reciprocates and at the same time rocks the said valve.

2. In a steam-engine, the combination, substantially as set forth, of a piston-valve having longitudinal ports *c* and transverse ports *c²*, a valve seat or chamber having longitudinal ports *c'* and transverse ports *b*, and a valve-gear which reciprocates and at the same time rocks said valve.

3. In a steam-engine, the combination, substantially as set forth, of a valve having at each end a chamber with longitudinal ports *c* leading into it and transverse ports *c²* leading from it, a cylinder having thereon a valve seat or chamber at each end, having longitudinal ports *c'* leading from the steam-chest into said chamber, and transverse ports *b* leading from said chamber to the cylinder, said ports coinciding in form and position, respectively, with the ports *c* and *c²* in the valve, and a valve-gear for moving said valve which imparts to it both a reciprocating and a rocking movement.

4. In a steam-engine, the combination, with a reciprocating valve which turns upon its seat to effect a cut-off, of a valve-gear for imparting an invariable reciprocating movement to said valve, and also a rolling movement which is invariable in degree, but variable as to the point in the longitudinal traverse of the valve at which said rolling movement begins and ends, which gear consists of an invariable eccentric on the engine-shaft, a sleeve upon said eccentric which can be rolled thereon, an eccentric-strap holder or path which is invariably fixed upon said sleeve at an angle to the shaft, an eccentric-strap loose within said path, and an eccentric-rod connected at one end with said strap by trunnions and at the other end with the valve-rod or stem by a proper joint.

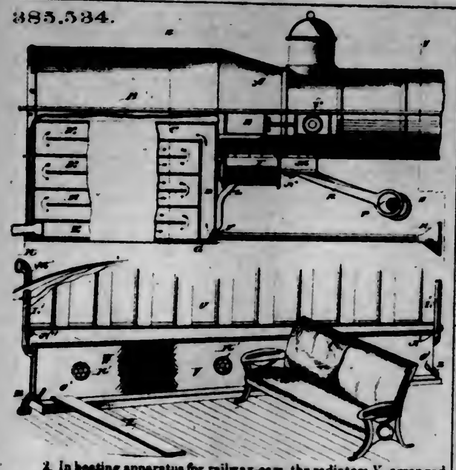
5. In a steam-engine valve-gear, the combination, substantially as set forth, of an invariable eccentric, a sleeve variable by rolling on said eccentric, a diagonal eccentric-strap path invariable upon said sleeve, an eccentric-strap loose within said path, and an eccentric-rod connected with said strap by trunnions in the manner shown, whereby the said eccentric-rod will have imparted to it an invariable reciprocating movement and a rocking movement which is invariable in degree, but variable as to the point in its longitudinal traverse at which said rocking movement begins and ends.

385,534. RAILWAY-CAR HEATER.

ALBERT R. THOMPSON, Stone Church, Pa. Filed July 7, 1887. Serial No. 243,682. (No model.)

Claim.—1. In a car-heater, the combination, with the heating-chambers and the conveying-pipes leading therefrom, of the radiators connected to the said conveying-pipes, the pipes Z, provided with the valves O', and the vertical pipes L', having valves N', and cones or funnels M', as set forth.

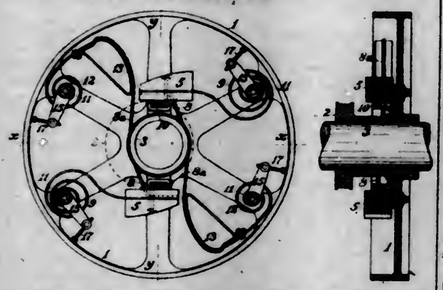
385,534.



2. In heating apparatus for railway-cars, the radiators V, arranged in the sides of the cars and having communicating horizontal arms X, extending under the seats, substantially as described.

3. In heating apparatus for railway-cars, the heating-chambers C, arranged in the locomotive-furnace and having the tortuous communicating flues or channels D E, and means to supply the same with air, in combination with the radiators arranged in the sides of the cars, coupled together in series and connected to and communicating with the heating-chambers, substantially as described.

385,535. GOVERNOR. JOSEPH W. TROSTRUP, Columbiana, assignor of one-half to the Buckeye Engine Company, Salem, Ohio. Filed Mar. 1, 1888. Serial No. 265,857. (No model.)



Claim.—1. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a spring connected to the case, and a weight secured to the spring and coupled by a flexible connection to the eccentric, substantially as set forth.

2. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a primary and a supplemental spring, each connected to the case and adapted to exert tension in the same direction, and a weight secured to the primary spring and coupled by a flexible connection to the eccentric and to the supplemental spring, substantially as set forth.

3. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a coiled spring secured to the case, a weight rigidly secured to a prolongation of said spring, and a flexible connection secured at one end to the weight and passing around the hub of the eccentric to a point at which it is rigidly secured thereto, substantially as set forth.

4. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a primary and a supplemental spring, each secured to the case and coiled in the same direction, and a flexible connection which encircles the hub of the eccentric, and is secured thereto at one point in its length, and is secured at one end to the weight and at the other to the supplemental spring, substantially as set forth.

5. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a pair of primary and a pair of supplemental springs secured to the case, the springs of each pair exerting tension in opposite directions, respectively, a pair of weights, each rigidly secured to one of the primary springs, and a pair of flexible connections, each of which is secured at one end to one of the weights and at the other to the supplemental spring, whose tension acts in the same direction as that of the primary spring to which the weight is secured, each of said flexible connections encircling and being secured to the hub of the movable eccentric and passing alternately through two adjacent circumferential guide-grooves formed therein, substantially as set forth.

6. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a spring fixed to the case, a weight connected to the spring and coupled by a flexible connection to the eccentric, and an adjusting device for varying the tension of the spring, substantially as set forth.

7. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a spring-stud fitted to be moved about its axis in a socket in the case, an adjusting-arm connected to the spring-stud, a nut pivoted to said arm, an adjusting-screw engaging said nut and bearing on the supporting-case, and a coiled spring connected to the spring-stud and to a weight which is coupled to the movable eccentric, substantially as set forth.

8. In a centrifugal governor, the combination of a supporting-case, a movable eccentric, a spring-stud fitted to be moved about its axis in a socket in the case and having a squared portion at one of its ends, an adjusting-arm which is similarly formed on both its sides and is provided with a squared hole the diagonal of which diverges at substantially one-quarter of a right angle from the center line of the arm and which is adapted to fit the squared portion of the spring-stud, a nut pivoted to the adjusting-arm, an adjusting-screw engaging said nut and bearing on the supporting-case, and a coiled spring connected to the spring-stud and to a weight which is coupled to the movable eccentric, substantially as and for the purpose set forth.

385,536. EASEL. WILLIAM H. VAN WART, Stonington, Conn. Filed Sept. 14, 1887. Serial No. 249,635. (No model.)



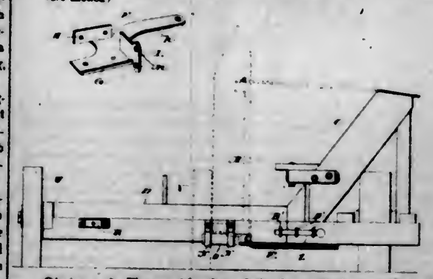
Claim.—1. The combination, with an easel, of a shelf adjustably secured to the several members between the same below the working-table, substantially as shown and described, whereby the said shelf serves as a brace uniting and spacing the members, as set forth.

2. The combination, with an easel, of a detachable shelf adjustably secured to the several members between the same below the working-table, whereby the said members are braced and united when the easel is in position of use, substantially as shown and described.

3. The combination, with an easel, of a detachable folding shelf attached thereto between the members, substantially as shown and described.

4. The combination, with an easel, of a detachable adjustable and folding shelf attached thereto between the members and below the table or support for the picture, substantially as shown and described.

385,537. FOLDING PLATFORM FOR HARVESTERS. SIMEON F. VOORHEES, Adrian, Mich. Filed Oct. 17, 1887. Serial No. 252,611. (No model.)

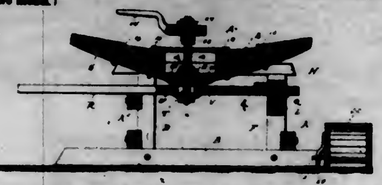


Claim.—1. The combination of the frame C, the arm E on the under rear side thereof and projecting from the grain side of said frame, the platform-frame D, having suitable keepers, N, on its rear side at the stubble corner of the platform, and the hinged swiveled rod O, journaled in the said keepers and pivoted at one end to the outer end of the arm E, whereby the platform-frame may be turned up backward to a vertical position on the hinge-arm O and then have its grain end swung forward, so that the bottom of the platform shall stand up to the grain side of the frame C, substantially as described.

2. The combination of the frame C, having the projecting arm E on its grain side and provided at its front grain corner with the plate F, having the flange-plate H and the horizontal arm K, and the platform-frame having the hinge swivel-rod O journaled to its rear side and pivoted at one end to the outer end of arm E, whereby the platform-frame may be turned up backward to a vertical position on the hinge-arm O and then have its grain end swung forward, so that the bottom of the platform shall stand up to the grain side of the frame C, the inner front corner of the said platform-frame being adapted to bear against the flange-plate H and upon the arm K, and means, substantially as set forth, to secure the said inner corner of the platform-frame to the said flange-plate and arm, substantially as described.

3. The combination of the frame C, having the projecting arm E on its rear grain corner and the projecting arm K at its front grain corner, the platform-frame having the hinge-rod O on its rear side near its inner end, the keepers N, securing said hinge-rod in place, the pivotal bolt connecting the inner ends of the said rod to the outer end of arm E, and the loop R on the rear side of the platform-frame, near the outer end thereof, the said loop R being adapted to receive the outer end of arm K when the platform-frame is swung to a vertical position on the grain side of frame C, substantially as described.

385,538. MACHINE FOR SETTING AND COOLING TIRES. JOHN H. WILLIAMS, Pleasant Hill, Ohio. Filed Sept. 17, 1887. Serial No. 249,942. (No model.)

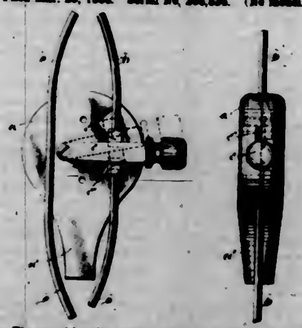


Claim.—1. The combination, with a trestle-frame provided with the rock-shaft having the central opening, of the removable lever provided with the transverse stop-bar and seated in said central opening, and provided also with the longitudinally-disposed slot intermediate of its ends, the wheel S, the sliding plate, and the securing bolt and nut, the headed rod, the threaded sleeve thereon, and the adjusting-pin, the bridge connecting said rod to the hub of the wheel S, and the wrench on said threaded sleeve, substantially as specified.

2. The combination, with the trestle and the rock-shaft having the central opening, of the wheel S, pivoted to the lever R, the lever R, having the cross-bar near its end, the bridge spanning the hub B and having the opening for the rod 12, the rod 12, having the adjustable sleeve thereon, and the wrench, substantially as specified.

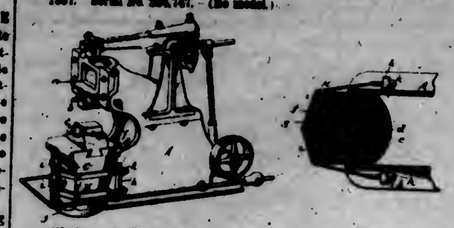
3. The combination, with the trestle provided with the rock-shaft having a central opening, of the removable slotted lever provided with a cross-bar, the dished wheel having the concentric rings, the bridge connecting the headed rod to the hub of the wheel, the headed rod, the sleeve on said rod, the wrench, and the trough provided with arms seated in staples of the trestle, substantially as specified.

385,539. ELECTRIC SWITCH. EDWARD F. BERGMAN, Frankfort, N. Y. Filed Mar. 29, 1888. Serial No. 268,836. (No model.)



Claim.—The combination, with the switch-block formed in two parts removably secured together, of the circuit-wires *b b*, one of which is broken within the block, and the pivoted switch-lever *c*, provided with lateral wings *c'*, substantially as and for the purpose set forth.

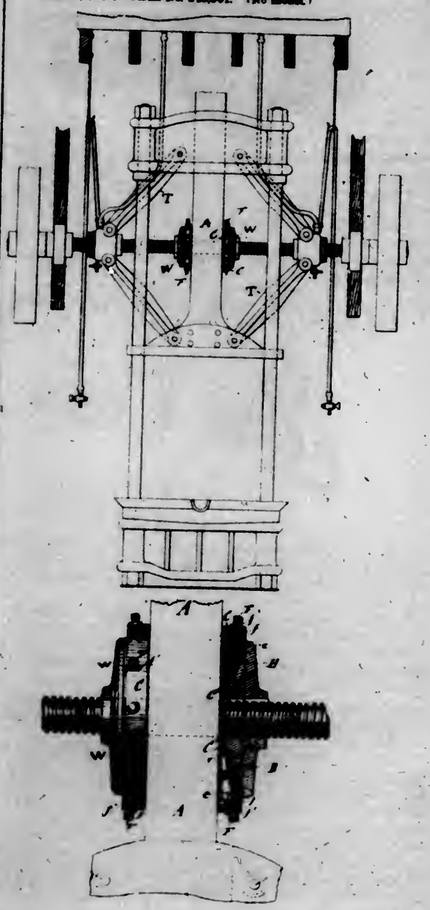
385,540. POWER-HAMMER. HERMAN J. BERNHART, Syracuse, N. Y., assignor to Christopher C. Bradley, same place. Filed Jan. 19, 1887. Serial No. 224,747. (No model.)



Claim.—1. The combination, with the hammer-frame provided with a cylindrical socket, *d*, of an anvil-block having a round back, *e*, fitted in said socket and having an angular front, and tie-rods H, provided with angular front portions, *i*, fitted against the front of the anvil-block and secured adjustably with their rear ends to the hammer-frame, substantially as set forth.

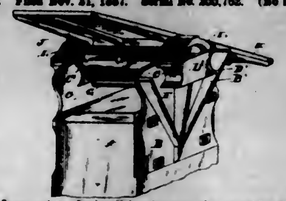
2. The combination, with the hammer-frame provided with a cylindrical socket, *d*, of an anvil-block provided with a round back fitted in said socket, an angular bearing-piece, *g*, fitted against the front side of the anvil-block, and tie-rods H, provided with angular front portions, *i*, substantially as set forth.

385,541. PRESS. GEORGE R. BOOKER, Mount Pleasant, N. Y. Filed June 7, 1887. Serial No. 240,801. (No model.)



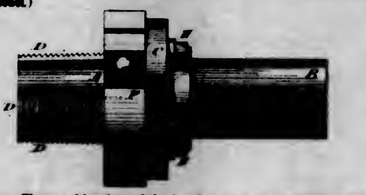
Claim.—In a knuckle-joint press, the combination, with the screw S, the guiding-standard A, and the washers W, of the frames C, provided with the conical rollers R, constructed and arranged so as to travel on the face of the standard, substantially as described, as and for the purposes set forth.

385,542. SADDLE FOR WALKING-BEAMS. DELOS H. DEMPSH, Knox, Pa. Filed Nov. 21, 1887. Serial No. 255,762. (No model.)



Claim.—In a saddle for walking-beams, the combination of the ribbed supporting-plates having the openings in their upper ends, the removable oil-trough having the rib on its lower side, and the ribbed flat saddle-plate having the hollow roller extending across its lower side, substantially as and for the purpose set forth.

385,543. TAP WITH DETACHABLE CUTTERS. ALBERT M. BURRITT, Waterbury, Conn. Filed Apr. 16, 1888. Serial No. 270,845. (No model.)



Claim.—The combination of the head A, constructed with longitudinal grooves in its surface and with the stationary annular collar C, the threaded cutter-bars D, arranged in said longitudinal grooves, the divided ring E F, threaded upon its inner surface corresponding to the thread of the said cutter-bars, the two parts of the ring secured together, and with bolts through said collar and the parts of said ring, substantially as described, and whereby the said ring is firmly held against said collar.

385,544. HALTER. CHARLES C. COOK, Baltimore, Md. Filed May 1, 1888. Serial No. 272,440. (No model.)



Claim.—1. A halter provided with a blind, C, adapted to be folded in a bundle or stretched across the animal's eyes, and having one end attached to a head-strap, and slip-loops on the strap to which the blind is attached for confining the folded blind, as set forth.

2. A halter provided with a blind, C, adapted to be folded in a bundle or stretched across the animal's eyes, and having one end attached to a jaw-strap, *e*, a slip-loop, *g*, on the said jaw-strap, and a fastening device, *f*, on the other jaw-strap to secure the free end of the blind, as set forth.

385,545. SURGEON'S COMBINED OPERATING-TABLE AND DESK. FRANK L. COWLES, Delavan, Wis. Filed Dec. 1, 1887. Serial No. 256,632. (No model.)

Claim.—1. The combined operating-table and desk consisting in the combination, with stand A, of adjustable table B, a ball-and-socket joint connecting the two, head-rest F, adjustable pivoted arm H, and a ball-and-socket joint connecting said head-rest and arm, said arm H being removably connected to the table, so that the same may be removed when the table is to be used for a desk, substantially as specified.

2. The combination, with stand A, of adjustable table B, a ball-and-socket joint between the two, a clamp-screw and crank, and a head-rest mounted upon an adjustable pivotal arm, H, substantially as specified.

385,545.

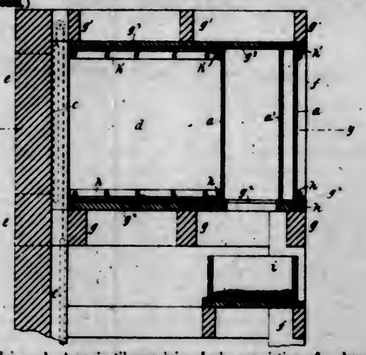


3. The combination, with stand A, of adjustable table B, a ball-and-socket joint between the two, an adjustable head-rest, F, an adjustable arm, H, pivoted to said table, and a ball-and-socket joint between said head-rest and arm, substantially as specified.

4. The combination, with an operating-table, of an adjustable head-rest mounted by a ball-and-socket joint upon an adjustable arm, H, pivoted to said table, adjustable pivotal brace-arm K, bracket K', having notch or recess k^2 and slot k^3, and pin k', substantially as specified.

5. The combination, with an operating-table, of an adjustable head-rest mounted by a ball-and-socket joint upon an adjustable arm, H, pivoted to said table, adjustable pivotal brace-arm K, bracket K', having notch or recess k^2, slot k^3, and pins k', said head-rest F, pivotal arm H, and brace-arm K being bodily removable from said table, substantially as specified.

385,546. PROJECTILE-RECEIVER FOR TARGETS. OLIVER H. DECKMAN, Newark, N. J. Filed May 2, 1888. Serial No. 272,561. (No model.)



Claim.—1. A projectile-receiving device consisting of a chamber the cross-section of which is a closed curve and the wall of which is provided with a longitudinal opening, and a deflecting-plate extending from the wall at the opening therein and inclined at an acute angle to the path of the projectiles, substantially as shown and described.

2. A projectile-receiving device consisting of a chamber the cross-section of which is a closed curve and the wall of which is provided with a longitudinal opening, an extension from the wall of the chamber overlapping said opening, and a deflecting-plate extending from the wall at the opening therein and inclined at an acute angle to the path of the projectiles, substantially as shown and described.

3. A projectile-receiving device consisting of a chamber the cross-section of which is a closed curve and the wall of which is provided with a longitudinal opening, a deflecting-plate extending from the wall at one side of the opening therein and inclined at an acute angle to the path of the projectiles, and a second deflecting-plate extending from the other side of the opening in the wall and also inclined at an acute angle to the path of the projectiles, substantially as shown and described.

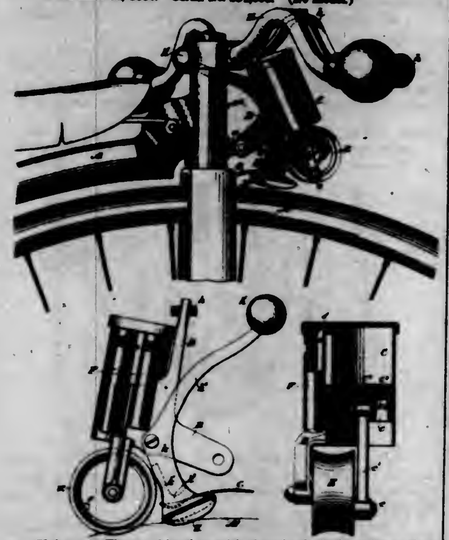
4. A projectile-receiving device consisting of a chamber the cross-section of which is a closed curve and the wall of which is provided with a longitudinal opening, an extension from the wall of the chamber overlapping said opening, a deflecting-plate extending from the wall at one side of the opening therein and inclined at an acute angle to the path of the projectiles, and a second deflecting-plate extending from the other side of the opening in the wall and also inclined at an acute angle to the path of the projectiles, substantially as shown and described.

5. A projectile-receiving device consisting of a chamber rectangular in vertical section and a closed curve in cross-section vertically

arranged and provided with a longitudinal opening in its wall, a deflecting-plate also vertically arranged extending from the wall at the opening therein and inclined at an acute angle to the path of the projectiles, and an opening in the bottom of the chamber for the discharge of the projectiles, substantially as shown and described.

6. The combination, with guarding devices having a rectangular opening therein and a target exposed by said opening, of the projectile-receiving device consisting of a chamber the cross-section of which is a closed curve and the wall of which is provided with a longitudinal opening, and a deflecting-plate extending from the wall at the opening therein, inclined at an acute angle to the path of the projectiles, and placed so as to receive upon its surface all projectiles that have passed through the target, substantially as shown and described.

385,547. ALARM FOR BICYCLES AND OTHER VEHICLES. FRANCIS H. DEMAREST, Brooklyn, assignor of three-fourths to Thomas Gerhart, Allen S. Gerrie, and E. F. J. Gayner, all of New York, N. Y. Filed Mar. 16, 1887. Serial No. 231,003. (No model.)



Claim.—1. The combination, with the wheel of a bicycle or other vehicle and its head, of a whistle carried thereby, a piston, a piston-cylinder opening near one end into the whistle and opening directly to the air at the other end, a friction-wheel applied to the said wheel, a piston-rod pivoted to said piston and leading loosely through the open end of the cylinder to said friction-wheel for forcing air directly through the whistle by the revolution of the friction-wheel.

2. The combination, with a revolving wheel and a frame supported thereby, of a support pivoted to said frame, a piston, a rigidly-mounted piston-cylinder upon said support, a pneumatic signaling device opening into said cylinder, a friction-wheel connected with said piston for driving the same within the cylinder, and means for applying the friction-wheel to the first-named wheel at will.

3. The combination, with a bicycle-wheel and its frame, of a support pivoted thereto, a pneumatic signaling device rigidly secured to said support, a friction-wheel for operating said device, means for applying the same to the bicycle-wheel at will, and a brake for the wheel, also carried upon said pivoted support.

4. The combination, with a bicycle, of a support pivoted to the frame thereof, a piston and cylinder carried upon said support, a whistle or equivalent device operated by the movement of the piston within the cylinder, a friction-wheel coupled with the piston, means for applying it to a wheel of the bicycle, a brake for the bicycle, pivoted to the support carrying the cylinder, a brake for the friction-wheel, and means for applying the first-named brake to the main wheel of the bicycle and simultaneously applying the other brake to the friction-wheel.

5. A signaling attachment for bicycles, tricycles, and similar vehicles, consisting of a piston, a piston-cylinder entirely open to the air at one end, a piston-rod extending freely through said open end, a friction-wheel with which said rod is coupled for operating said piston from a wheel of the bicycle, and a whistle attached to the side of the cylinder and opening directly into the cylinder.

6. A signaling attachment for vehicles, consisting of a whistle or other pneumatic device, a piston attached thereto for forcing air into the whistle, a brake carried by the support of the whistle for normally preventing the operation of said piston, a lever for operating said brake, a brake connected therewith for the vehicle, and a lever for applying the last-named brake to a wheel of the vehicle.

7. The combination, with a bicycle or other vehicle, of the pivoted support, the pneumatic device consisting of the cylinder and the piston driven to and fro therein, the signaling device operated thereby, the wheel E, attached to and driving the piston, a lever for placing the wheel E against a wheel of the vehicle, a brake, K, for the wheel, a lever for controlling the position of the brake K with reference to the wheel E, and means for retaining said brake in one or the other of two positions with reference to said wheel.

385,548. SASH-FASTENER. ASHER B. DICKINSON, Syracuse, N. Y. Filed Sept. 24, 1887. Serial No. 250,577. (No model.)

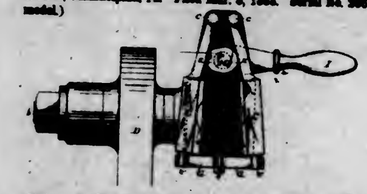


Claim.—1. The combination, with an inclined arm hinged to a plate on the lower sash to fold down transversely of the window and formed with a bearing-shoulder at one side of its hinge, but in line with its point, of an engaging-plate upon the side rail of the upper sash, formed with an open-sided recess to receive the point of the arm as it is turned up, substantially as and for the purpose set forth.

2. The combination, with a fastening-arm hinged at one side of its center line to fold sidewise upon the sash and formed with an abutting-shoulder to take the strain when fastened, of a look upon said arm for securing it in its operative position, substantially as and for the purpose set forth.

3. The combination, with a fastening-arm hinged to its support at one side of its center line, of a hook-catch for securing it in position and an engaging-plate upon the opposite sash, substantially as and for the purpose set forth.

385,549. DISCONNECTING DEVICE FOR VALVE-RODS. THOMAS C. DELL, Philadelphia, Pa. Filed Mar. 3, 1888. Serial No. 266,019. (No model.)



Claim.—1. The slotted eccentric-rod with a sleeve, B, and a key or keys adapted to lock the sleeve to the rod, and operating devices therefor, all substantially as set forth.

2. The combination of the slotted eccentric-rod, the sleeve B, secured to the valve-operating devices of a steam-engine, the pivoted keys C C, and a handled cam for operating upon these keys to force them out of the grooves in the eccentric-rod, all substantially as set forth.

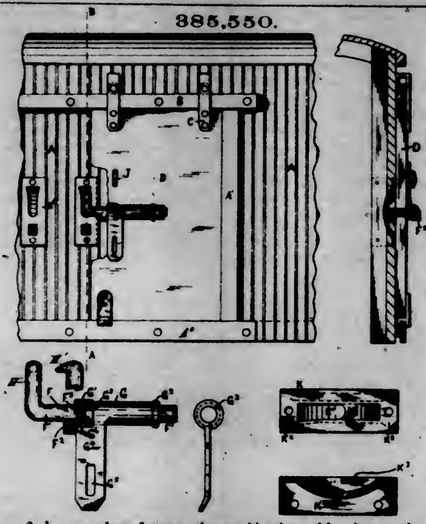
3. The combination of the eccentric-rod, the slots therein, the sleeve B, connected to the valve-operating mechanism, the pivoted keys C C, the handled eccentric H for forcing the keys apart, and a spring, G, tending to force the keys against the eccentric-rod, substantially as set forth.

4. The combination of the two-part eccentric-rod, the portion A, having a screw-threaded reduced portion, A', and an external screw-threaded portion, A^2, with a sleeve, *a'*, grooved to receive the keys of the locking device, substantially as set forth.

385,550. SLIDING-DOOR FASTENER. HENRY A. GUILEY, Reading, Pa., assignor of one-half to William F. Marks, same place. Filed Sept. 16, 1887. Serial No. 249,994. (No model.)

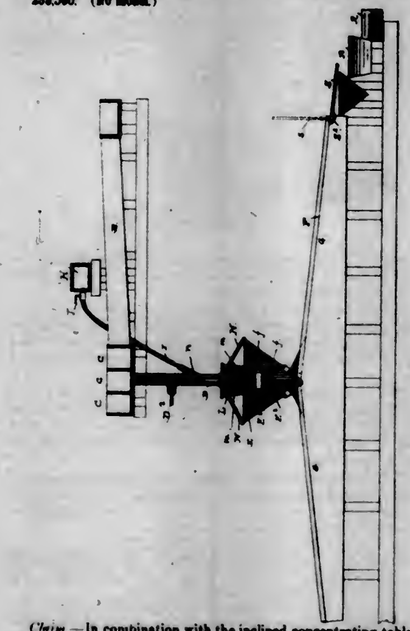
Claim.—1. The combination, with a locking-bar formed with a right-angled arm having a heel-piece, of a keeper-plate having a recess, K', of a greater width at the top than in the middle, with a cross-bar, K^2, and adapted to be engaged by said arm with heel-piece, substantially as set forth.

385,550.



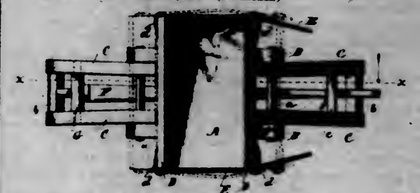
2. In a car-door fastener, the combination, with a keeper-plate formed with a recess, K', of a locking device composed of a locking-bar body having lugs F^2 and F^3 and a locking-arm, H, and adapted to be supported in bearings at F', and of a sleeve, G, adapted to turn on said locking-bar body between said bearings, having integral therewith a hasp, G^4, with staple-slot G^5, and formed with peripheral faces G^2 and G^3, adapted to operate said locking-bar by means of the lug F^3, substantially as set forth.

385,551. ORE-CONCENTRATING APPARATUS. GEORGE F. GOULD, Grass Valley, Cal., assignor of two-thirds to William H. M. Cobb and Daniel F. Norton, both of Dayton, Nev. Filed May 17, 1887. Serial No. 238,560. (No model.)



Claim.—In combination with the inclined concentrating tables or surfaces G, the distributing-trough E, having the shelves or ledges E' E^2, arranged one above another with outlets, the conductor D and water-supply pipe I, and the sluices B C, substantially as described.

385,552. BRICK-MOLD. JAMES GRAFF, Goshen, Ind. Filed Dec. 31, 1887. Serial No. 259,517. (No model.)



Claim.—1. The combination, with the mold having movable side plates and the levers for moving said plates, of the end plates attached at one end to one of said side plates and at the other slotted, as described, to engage projections on the other side plate, as set forth.

2. The combination, with the stationary top plate, the transverse bars secured to the top thereof, and the levers fulcrumed on said bars, of the side plates carried by said levers, the end plates secured at one end to one of said side plates and at their other ends bent inward and slotted, as described, and the wedges carried by the last-named side plate and engaging the slots of the end plates, as shown and set forth.

385,553. MACHINE FOR FORMING PAPER VESSELS. ALBERT J. GREENELL, Geneva, N. Y. Filed Sept. 1, 1887. Serial No. 248,446. (No model.)



Claim.—1. The combination, with the feed-spout C, of a perforated annular pulp-carrier, B, a coucher, I, bearing against the carrier B, and a forming-roller, J, running in contact with the coucher, substantially as set forth.

2. In a machine for forming paper vessels from pulp, a pulp-carrier composed of a circular frame provided with an annular series of supporting-bars, a perforated annular plate resting on said bars, and a wire-gauze covering resting on the perforated plate, substantially as set forth.

3. In a machine for forming vessels from pulp, a forming-roller, J, made in two sections, a a', between which the bottom of the vessel is arranged, substantially as set forth.

4. In a machine for forming vessels from pulp, the combination, with the pulp-carrier and coucher, of a forming-roller provided with a clamping device, whereby the bottom of the vessel to be formed is attached to the forming-roller preparatory to winding the pulp upon the same, substantially as set forth.

5. In a machine for forming vessels from pulp, the combination, with the annular pulp-carrier, the coucher, and the forming-roller, of a frame in which the forming-roller is journaled, arms projecting from said frame on opposite sides of the forming-roller, bearings and springs mounted on said arms, and pressure-rollers journaled in said bearings, substantially as set forth.

385,554. CARPET-FASTENER. THOMAS D. HAMBURG, Syracuse, N. Y., assignor of one-half to Ellen J. Keller, same place. Filed Apr. 4, 1888. Serial No. 269,563. (Model.)



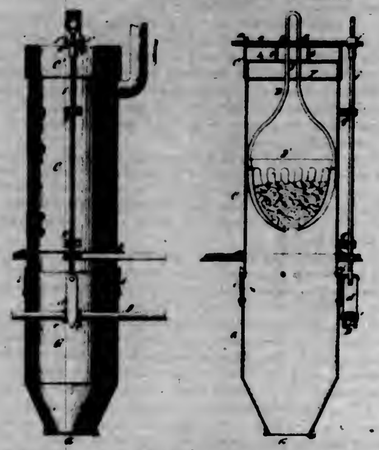
Claim.—1. The stair-carpet fastener composed of the pivoted plate *a* on the riser and formed with the wedging-slot *c*, and the jaws *b b'*, pivoted in the wide portion of said slot, substantially as described and shown.

2. The stair-carpet fastener composed of the plate *a*, pivoted to the riser, a stamp on said plate adapted to engage the edge of the carpet, and the tongue *f*, projecting from the plate and adapted to bear on the riser, substantially as and for the purpose set forth.

3. The stair-carpet fastener composed of the plate *a*, pivoted to the riser, a stamp on said plate adapted to engage the edge of the carpet, and the arm *d*, and tongue *f*, projecting radially from the arm in different directions, substantially as described and shown.

4. The improved stair-carpet fastener composed of the plate *a*, pivoted to the riser and formed with the wedging-slot *c*, the jaws *b b'*, pivoted in the wide portion of said slot, the arm *d*, extended radially from the plate and provided with the spur *e*, and the tongue *f*, projecting from the plate at right angles to the arm, substantially as described and shown.

385,555. CAR-STOVE. BENJAMIN F. KELLER, Mechanicsville, Iowa. Filed Oct. 4, 1887. Serial No. 251,203. (No model.)



Claim.—1. In a car-stove, the combination of a bottomless combustion-chamber mounted over a corresponding hole in the floor of the car, an ash-receptacle detachably connected with the bottom of the combustion-chamber, a fire-pot detachably connected to the combustion-chamber, and releasing mechanism, substantially as described, whereby said fire-pot is adapted to drop with its contents into said ash-receptacle and thence to the ground in case of collision, substantially as specified.

2. In a car-stove, the combination of a bottomless combustion-chamber mounted over a hole in the floor of the car, an ash-receptacle detachably connected with said combustion-chamber, a fire-pot detachably suspended from the top of the combustion-chamber, a disk above and connected with said fire-pot of practically the same diameter, and releasing mechanism, substantially as described, whereby the fire-pot is adapted to fall into the ash-receptacle in case of collision, the disk to close the top of said ash-receptacle, and the said receptacle to drop with its contents to the ground, substantially as described.

3. In combination with a bottomless car-stove having an ash-pit removably attached to the lower end and a fire-pot detachably suspended from the upper end thereof by a stirrup or bail, means, substantially as described, for holding the fire-pot in position normally, consisting of locking bars or rods *o o*, permanently held from spreading at one end and engaging with notches in the sides of the stirrup, and a fork, *f' f'*, adapted to retain the opposite ends of the bars *o o* and to release them as it slips off, substantially as set forth.

4. In combination with a car-stove, substantially as described, means for normally suspending the fire-pot in position inside the stove and for automatically releasing the same in case of collision, consisting of the notched stirrup D, transverse bars *o o*, resting on the top of the stove and engaging with the notches in the stirrup, said bars being held permanently at one end, a fork, *f' f'*, adapted to retain the opposite end of the bars *o o*, a vertical rod, *f*, extending from the top of the stove through the floor of the car, a toggle or lever, *d*, and a rod, B, extending the length of the car and engaging with said lever *d*, substantially as and for the purpose set forth.

5. In combination with a car-stove having a bottomless combustion-chamber and detachably-suspended fire-pot having the stirrup D and ash-pit, substantially as described, the locking-bars *o o*, engaging with notches in the stirrup D, the vertically-movable rod *f*, having the fork *f' f'* at its upper end and the toggle lever or arm *d* at the lower end, the rod B, having collars *e e*, and the spring-lock *e e'* engaging with notches in the sides of the rod B, whereby the rod is held normally in a fixed position, but in case of extraordinary shock is disengaged and thrown endwise, substantially as and for the purpose set forth.

6. In a car-stove, the combination of the fire-pot D', the combustion-chamber C, having the crown-piece C', and the stirrup D, detachably suspended from the crown-piece, substantially as and for the purpose set forth.

7. In a car-stove, the combination of the combustion-chamber C C', the ash-pit G, having the dogs *l l*, engaging with the open lower end of the combustion-chamber and below the floor of the car, the fire-pot D', having the stirrup D, detachably suspended from the top of the stove and supporting the fire-pot D', the disk F, adapted to disengage the dogs *l l* in its descent and to close the top of the ash-pit, and means, substantially as described, for automatically releasing the suspended fire-pot in case of extraordinary shock to the car.

385,556. MEDICATED ELECTRIC BELT. CYRUS U. HOKE, Reading, Pa. Filed Mar. 26, 1888. Serial No. 268,491. (No model.)



Claim.—1. A medicated voltaic belt consisting of a series of pockets containing alternately suitable medicinal substances, and voltaic batteries connected by a conductor, B, substantially as set forth.

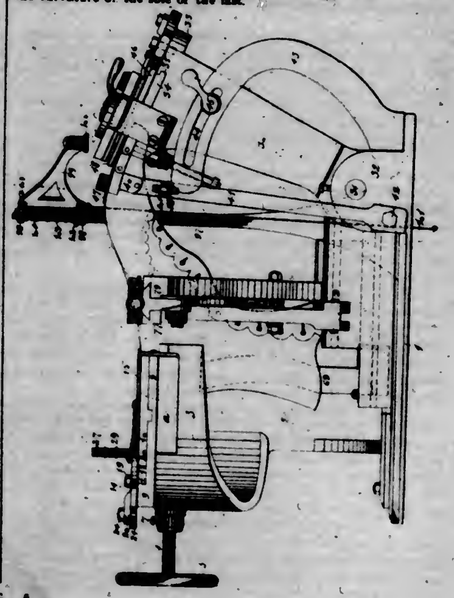
2. A medicated voltaic belt consisting of a series of voltaic batteries suitably connected by a conductor, B, and secured in a belt of porous material provided with pockets containing suitable medicinal substances adapted to come between said batteries, substantially as and for the purpose set forth.

385,557. LASTING-MACHINE. JOHN G. & A. HOUGHTON, Baltimore, Md. Filed July 30, 1887. Serial No. 245,069. (No model.)

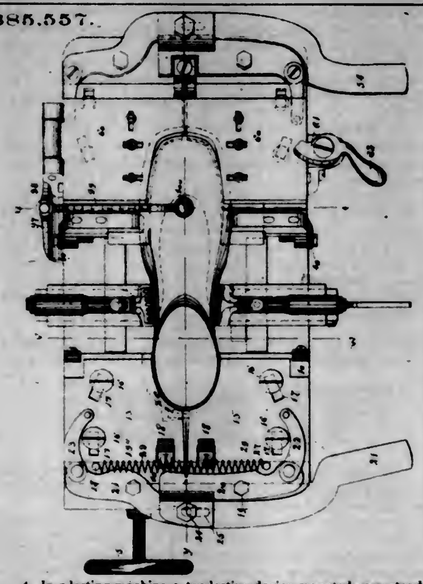
Claim.—1. In a lasting-machine, a form-plate, as 34, provided with a recess conforming in shape to the heel or toe of the last and vertically flexible to conform to the curvature of the sole of the last.

2. In a lasting-machine, a form-plate, as 34, provided with a recess conforming in shape to the heel or toe of the last and constructed in sections which are hinged together, whereby it is vertically flexible to conform to the curvature of the sole of the last.

3. In a lasting-machine, a toe-lasting device provided with the herein-described recessed form-plate vertically flexible, in combination with means for adjusting the vertical curvature of said form-plate to the curvature of the sole of the last.



385,557.



4. In a lasting-machine, a toe-lasting device mounted upon standards pivoted to the bed of the machine, said toe-lasting device provided with a vertically-flexible form-plate recessed to receive the toe of the last mounted upon said standards, in combination with means, substantially as described, for adjusting the vertical curvature of said form-plate to the curvature of the sole of a last.

5. In a lasting-machine, the combination of a toe-lasting device provided with a recessed form-plate fixed rigidly upon said toe-lasting device with a heel-lasting device provided with a recessed form-plate adjustable transversely of the machine upon said heel-lasting device and operated transversely by the heel of the last when the toe is forced into the recess of the rigid toe-form plate, substantially as described.

6. In a lasting-machine, a flexible wiper-plate provided with a support attached to each end thereof, in combination with means for adjusting said plate vertically and holding it positively in such adjusted position.

7. In a toe-lasting device of a shoe-lasting machine, the combination of a vertically-flexible form-plate, substantially such as described, with a vertically-flexible wiper-plate and means for adjusting said wiper-plate to conform to the curvature of said form-plate.

8. In a toe-lasting device of a shoe-lasting machine, the combination of a vertically-flexible form-plate, substantially such as described, with a vertically-flexible wiper-plate and means for adjusting said form-plate and wiper-plate vertically simultaneously to conform to the varying curvature of the soles of different lasts.

9. In a lasting-machine, a clamp consisting of two plates or jaws provided with a curved recess in each jaw and suitably located upon the heel or toe lasting device of a shoe-lasting machine in position to receive within its recess the heel or toe of a shoe and grasp the upper by its edge when laid in an opposite direction from that it is to occupy when turned over the last.

10. In a lasting-machine, a yielding clamp, substantially as described, constructed of two plates, each of which is provided with a curved recess, and one of which is provided with means to permit the clamp to yield to pressure applied to the upper to draw it from the clamp, and suitably located upon the heel or toe lasting devices in position to grasp the upper by its edge when laid in an opposite direction from that it is to occupy when turned over the last.

11. In a lasting-machine, a yielding clamp constructed of two plates, each of which is provided with a curved recess and one of which is provided with supplemental plates set into its interior surface to permit the clamp to yield to pressure applied to the upper to draw it from the clamp, and suitably located upon the heel or toe lasting devices in position to grasp the upper by its edge when laid in an opposite direction from that it is to occupy when turned over the last.

12. In a lasting-machine, a yielding clamp constructed of two plates, each of which is provided with a curved recess, and one of which is supplied with supplemental plates set into its interior surface in positions radial from the center of the recess to permit the clamp to yield to pressure applied to the upper to draw it from the clamp, and suitably located upon the heel or toe lasting devices in position to grasp the upper by its edge when laid in an opposite direction from that it is to occupy when turned over the last.

13. In a lasting-machine, a yielding clamp constructed of two plates, each of which is provided with a curved recess, and one of which is provided with supplemental plates set into its interior surface, which are provided with friction devices upon their faces to hold the upper and permit the clamp to yield to pressure applied to the upper to draw it from the clamp, and suitably located upon the heel or toe lasting devices in position to grasp the upper by its edge when laid in an opposite direction from that it is to occupy when turned over the last.

14. In a lasting-machine, a clamping device constructed of two plates, each of which is provided with a curved recess located at the toe of the apparatus to hold the upper by its edge, a stationary heel-post located at the heel and sufficiently distant to allow the upper to be inserted, and means for applying pressure upon the sole of the last near the toe, whereby the upper will be stretched around the toe of the last and be held between the heel of the last and the stationary heel-post, substantially as described.

15. In a lasting-machine, a yielding clamping device constructed of two plates, each of which is provided with a curved recess and means to permit the clamp to yield to pressure applied to the upper to draw it from the clamp, a stationary heel-post located at the heel and sufficiently distant to allow the upper to be inserted, and means for applying pressure upon the sole of the last near the toe, whereby the upper will be drawn from the yielding clamp and crimped at its edge, substantially as described.

16. In a toe-lasting device of a shoe-lasting machine, the combination, substantially as described, of a form-plate, wiper-plate, and a clamp-plate arranged together with the wiper-plate located between the form-plate and clamp-plate and all provided with coincident recesses, which conform in shape to the toe or heel of a shoe, substantially as described.

17. In a toe-lasting device of a shoe-lasting machine, a clamping device consisting of a segmental wiper-plate recessed as described and a similarly-recessed clamp-plate, said clamp-plate and wiper-plate forming the two jaws of the clamp, as and for the purpose specified.

18. In a toe-lasting device of a shoe-lasting machine, a clamping device consisting of a segmental wiper-plate recessed as described and similarly-recessed clamp-plate, said clamp-plate and wiper-plate forming the two jaws of the clamp, as and for the purpose specified, with a hold-down suitably located to apply pressure to the sole of the last.

19. In a toe-lasting device for a shoe-lasting machine, the combination of a form-plate, a wiper-plate, and a clamp-plate arranged together, the wiper-plate between the form-plate and clamp-plate, and all provided with coincident recesses which conform in shape to the toe or heel of a shoe, and a hold-down suitably located to apply pressure to the sole of the last.

20. In a toe-lasting device of a shoe-lasting machine, a yielding clamping device consisting of a segmental wiper-plate recessed as described and a similarly-recessed clamp-plate, said clamp-plate and wiper-plate forming the two jaws of the clamp, the clamp-plate provided with means to permit the clamp to yield to pressure applied to the upper to draw it from the clamp, and a hold-down suitably located to apply pressure to the sole of the last.

21. In a lasting-machine, a hold-down having a standard-rod and an arm working thereon, said standard being provided with a spiral groove in which works a stud set in the hold-down arm, and means for raising said arm automatically after it has been depressed, substantially as described.

22. In a toe-lasting device of a shoe-lasting machine, the combination of a recessed form-plate vertically flexible with two rods, one secured rigidly to one end of said plate and the other pivoted loosely to the other end, and each of said rods pivoted at its other end to a suitable part of the machine, substantially as described.

23. In a shoe-lasting machine, the combination of a non-extensible last-jack with a last disconnected therefrom, but adapted to rest upon said jack, said last provided with a pin or screw inserted in its top, as and for the purpose specified.

24. In a shank-lasting device of a shoe-lasting machine, the combination of one or more forks suitably mounted to engage the shank of the shoe, the levers 79 and 80, mounted upon pivots fixed upon a suitable part of the machine, and a pair of toggle-links, as 83 83, hinged to said levers at one end and pivoted together at the other, with means for operating said toggle-links.

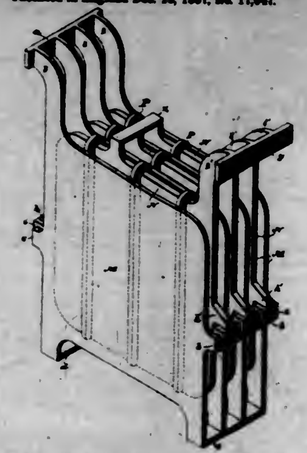
25. In a shank-lasting device of a shoe-lasting machine, the combination of one or more forks mounted upon carriages in position to engage and operate upon the edge of the upper on either side of its shank, and the levers 83 83, fulcrumed to the standard 73 and pivoted at one end to said carriages and at the other end loosely connected to the toggle-links, which are connected at one end to the levers 83 83 and to one another at the other end and loosely connected to said lever at one end and to the toggle-links 85 85 at the other, substantially as described, as and for the purpose specified.

26. In a shoe-lasting machine, a clamp for holding an upper upon the last in a stretched condition, which consists of the combination of a flexible sole and an instep-strap embracing both last and sole, and a yoke located within the strap and between it and the sole, said yoke being provided with means for applying pressure to the sole of the last to cause it to conform to the curvature of the sole of the last.

27. In a shank-lasting device for a shoe-lasting machine, a fork mounted upon a carriage in a ball-and-socket joint in such position as to engage and operate upon the edge of the upper, substantially as described.

28. In a shoe-lasting machine, a segmental form-plate, substantially such as described, in combination with a tongue, as 36, secured to one segment of said plate overlapping the space between that segment and the adjacent one and resting upon said adjacent segment.

385,558. SECONDARY BATTERY. FRANK KIDD, Feltham, County of Middlesex, England. Filed Apr. 4, 1888. Serial No. 269,693. (No model.) Patented in England Dec. 10, 1887, No. 17,047.



Claim.—1. In a secondary battery, an element consisting of two or more plates mechanically united at two or more points, combined with a second element consisting of plates interleaved or alternating with the plates of the first element, both elements being located in an inclosing-cell containing an electrolytic liquid.

2. In a secondary battery, the combination of two series of vertically-disposed plates forming the two elements, one series having feet or projections at the lower edge thereof to provide free circulation for the electrolyte, the second series of plates having projections resting upon the first series, but insulated therefrom, substantially as described.

3. In a secondary battery, two or more plates or elements having feet or projections at the lower corners thereof, combined with strips of conducting material uniting such projections and securing them at a uniform distance, substantially as described.

4. In a secondary battery, two or more plates or elements united at one or more points intermediate the upper and lower edges by bars or strips of conducting material, whereby they are united and secured at a uniform distance apart.

5. In a secondary battery, two or more plates mechanically secured together at two or more points below the upper edge thereof, whereby they are maintained at a uniform distance with respect to each other.

6. In a secondary battery, two or more plates mechanically and electrically united at two or more points upon or in proximity to the upper edge, in combination with two or more plates alternating therewith and electrically united at two or more points below the upper edge, substantially as described.

7. In a secondary battery, the combination of two series of plates forming the two elements of the battery interleaved or alternating with each other, one series being mechanically and electrically united at two or more points between the upper and lower edges, the other series being mechanically and electrically united at or about their upper edge and having projections resting upon the first-named series, whereby they are supported in a movable position, substantially as described.

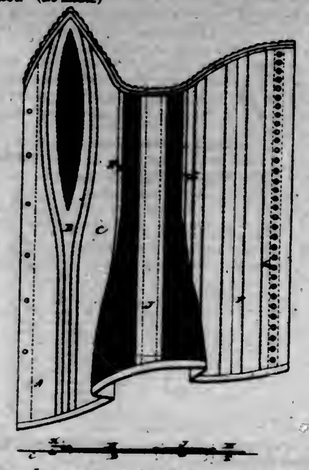
8. In a secondary battery, the combination of two series of plates alternating with each other and forming, respectively, the two elements, one series being mechanically and electrically united at two or more points below their upper edge, the other series being similarly united at two or more points above the points of union in the first plates and having projections resting upon the first plates, but insulated therefrom.

9. In a secondary battery, the combination of two series of vertically-disposed interleaved plates forming the two elements, one series being supported by the other, but insulated therefrom, substantially as described.

10. In a secondary battery, two or more plates or elements and one or more separators therefor, each consisting of a separate and independent pair of strips of insulating material, located, respectively, upon opposite sides of a plate and united at the upper ends, whereby said separator may be removed and replaced without disturbing the elements.

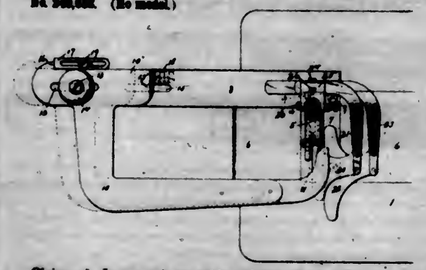
11. In a secondary battery, the combination of a plate or element and one or more separators therefor, each consisting of a separate and independent pair of strips of insulating material united at one end, and one or more notches or seats formed in said plates to receive said separators and prevent displacement thereof, substantially as described.

385,559. CORSET. JOSEPH HOYT, New Haven, Conn., assignor to Lewis Bahnle & Co., New York, N. Y. Filed Apr. 20, 1888. Serial No. 271,591. (No model.)



Claim.—In a corset substantially such as described, the inner thickness composed of several sections cut to shape and stitched together independent of the outer thickness, combined with an outer thickness composed of several sections cut to shape, the several sections of the outer thickness laid upon the stitched inner thickness, alternate sections of the outer thickness overlapping the adjacent edges of intermediate sections of the outer thickness, and the said sections of the outer thickness stitched together through and to the inner thickness, substantially as described.

385,560. TUCKING-GUIDE FOR SEWING-MACHINES. ALEXANDER LAWRENCE, Bridgeport, Conn., assignor to The Wheeler & Wilson Manufacturing Company, same place. Filed June 8, 1887. Serial No. 240,682. (No model.)



Claim.—1. In a sewing-machine plaiter, the combination, with the base-plate 8, having the slot 15, of the folding-gage 11, the shank 10, by which said gage is carried and which is provided with the part 10', sliding on said base-plate and having the guide-pin 13' and the slot 12, the guide-screw 13, passing through said slot 12, and provided with

a spring-washer and a set-nut, and stitching and spacing gages to co-operate with said folding-gage.

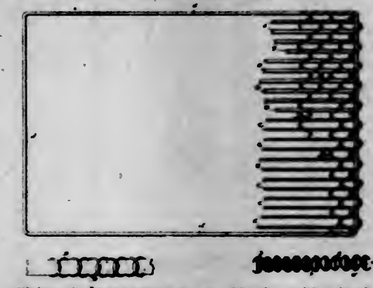
2. In a sewing-machine plaiter, the combination, with the base-plate 8, having the slot 15, of the folding-gage 11, the shank 10, by which said gage is carried and which is provided with the part 10', sliding on said base-plate and having the guide-pin 13', the slot 12, and the stopping-shoulder 16, the stop 17, adjustably secured to said base-plate in line with said shoulder, the guide-screw 13, passing through the said slot 12 and provided with a spring-washer and a set-nut, and stitching and spacing gages to co-operate with said folding-gage.

3. In a sewing-machine plaiter, the combination, with the base-plate 8, having the slot 15, of the folding-gage 11, the shank 10, by which said gage is carried and which is provided with the part 10', sliding on said base-plate and having the guide-pin 13' and slot 12, the guide-screw 13, passing through said slot 12 and having a spring-washer and set-nut, the block 25, having means for attachment to the presser foot or bar, and the stitching and spacing gages 21 and 23, secured to said block.

4. The combination, with the presser-foot 5, provided with the depression or recess 31, of the block 25, attached to the presser foot or bar, the stitching-gage 20, extending beneath the recess of said presser-foot and having a shank attached to said block, the adjustable spacing-gage 22, also having a shank attached to said block, a plaiter base-plate, as 8, and a sliding folding-gage supported by said base-plate to co-operate with the said stitching and spacing gages.

5. The combination, with block 25, having means for attachment to a sewing-machine presser-foot and the stitching and spacing gages carried thereby, of a plate, 8, having a graduated scale, 18, a sliding folding-gage carried by said plate, and a spring-washer bearing upon the surface of said gage.

385,561. DOOR-MAT. EDWARD R. LAUGHLIN, Cleveland, Ohio. Filed Feb. 4, 1887. Serial No. 226,516. (No model.)



Claim.—1. In door-mat, the combination, with a border and a wire fabric made up of a series of spirally-coiled interlocked wires secured to said border, of rigid filling-strips arranged at right angles to the coiled wires and adapted to hold them distended and support the coils against collapsing, substantially as set forth.

2. In a door-mat, the combination, with a wire fabric made up of a series of spirally-coiled interlocked wires and rigid filling-strips, substantially as indicated, of a binder arranged about the edges of the mat, the same being inserted in the two outer coils of the mat, and secured across the other sides by the ends of the respective coils, substantially as set forth.

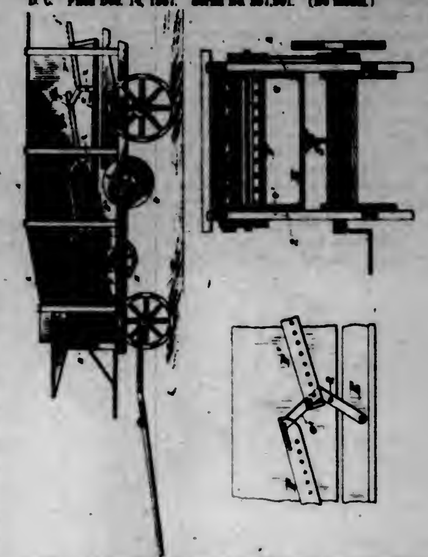
385,562. PYROTECHNIC SIGNAL. GEORGE A. MARVIN, Petersburg, Va. Filed May 10, 1888. Serial No. 273,402. (No model.)



Claim.—1. An article of fire-works comprising a hollow core having a small bore packed with a composition capable of emitting a large volume of smoke and flame with a loud and shrill whistling sound, an igniting-fuse in one end of said hollow core, a bomb or similar device at the other end of said hollow core, and a tube inclosing said core and bomb, substantially as described.

2. In an article of fire-works, the combination of a handle, 1, a tube, 2, attached to said handle, a hollow core, 6, inclosed in said tube and packed with a composition capable of emitting smoke and flame with a loud and shrill whistling sound, a fuse in one end of said core, and a bomb or explosive at the other end of said core, substantially as described

385,563. GRAIN-SEPARATOR. EDWIN C. MANSON, Washington, D. C. Filed Dec. 14, 1887. Serial No. 257,991. (No model.)



Claim.—1. In a straw-shaker, the combination of the main frame, the angle-levers pivoted thereto through their lower arms, a series of shaking frames or sections each supported pivotally at the apices of one pair of levers and connected pivotally to the upper ends of the upper arms of the succeeding pair of angle-levers, similarly pivoted to the sides of the casing, and a reciprocating pan connected pivotally to the angle-levers and serving as a counter-balance for the shaking frames, substantially as specified.

2. The combination, with the main frame, the shaking-frames, the pivoted angle-levers, each pair connected to the adjacent ends of two frames, as described, and the counterbalancing-pan pivoted to the lower arms of said angle-levers, of the crank-shaft, and rod connecting said crank-shaft to the counterbalancing-pan, substantially as described.

3. The combination, in a threshing-machine, of a series of inclined straw-shakers, a series of pairs of obtuse angular levers pivoted to the sides of the main frame, the upper arms of said levers pivoted to the highest ends of straw-shakers, with a pan, E, pivoted to the lower arms of the said levers, the fulcra of the said levers located below the pivotal points of the shakers, substantially as described.

385,564. VEHICLE-SHAFT. GEORGE F. MCGILL, Camden, N. J. Filed Mar. 1, 1888. Serial No. 265,815. (No model.)



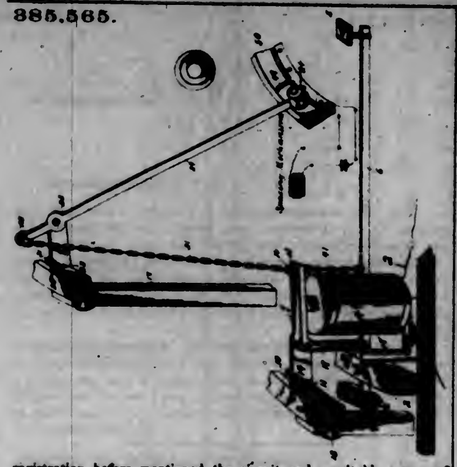
Claim.—1. The combination of the laterally-bent outer portion of a vehicle-shaft with the stiffening-plate secured thereto and having the same contour as the bent portion of the shaft, said plate being placed horizontally, whereby it opposes an edgewise resistance to the straightening of the shaft, all substantially as specified.

2. The combination of the shaft having a laterally-bent outer portion with horizontal slot therein, a stiffening-plate fitted to said slot, and bolts or like fastenings for securing said plate, all substantially as specified.

385,565. ELECTRO-MECHANICAL TYPE-WRITER. JAMES P MCLAUGHLIN, Philadelphia, Pa. Filed Mar. 30, 1887. Serial No. 233,046. (No model.)

Claim.—1. The combination, with the circuit-closing key-levers of intermediate mechanism connecting each key-lever with its respective type-lever, whereby the imprint of the said type-lever is mechanically effected by the depression of its respective key-lever, the electro-mechanical devices at a distant extremity of a line operated by each depression of the said key-levers for effecting an imprint of a corresponding type-lever at said distant extremity simultaneously with the

385,565.



registration before mentioned, the circuit, and a suitable source of electricity, the whole being arranged to operate in a manner and for the purpose set forth.

2. The combination, with the circuit-closing key-levers, of a suitable connection between said levers and the series of type-levers, the type-levers, the line-circuit, and a suitable source of electricity, the whole being arranged to close an electrical circuit simultaneously with the depression of a key-lever and the consequent imprint of a type-lever, as specified.

3. In combination, a series of electro-magnets, each provided with a pivoted armature connected with one of a series of type-levers, a series of pivoted type-levers carrying upon their free ends the insertible letter-type, the circuit-closing levers each attached by a suitable connection with one of the series of pivoted armatures, the line-circuit connecting each of said key-levers with a corresponding electro-magnet at a distant extremity of the said line, the second series of electro-magnets at said distant extremity respectively in circuit with their corresponding key-levers at the first-mentioned extremity, and a suitable source of electricity, all arranged to operate substantially as specified.

4. The combination of the current-conducting circuit-closing key levers pivotally secured at their inner ends to a pivot-rod, the retracting-springs, the insulated boxing supporting said pivot-rod and having the transverse recesses 36 36 for the ends of the key-levers, the circuit, and a suitable source of electricity.

5. The circuit-closing key-levers, the intermediate mechanism connecting the said key-levers with their respective pivoted type-levers and adapted to mechanically effect an imprint of a type-lever by the depression of any one key-lever, the series of pivoted type-levers provided each with a ball or weight at its forward free end for the purpose of closing a local circuit upon the descent of its respective type-lever, the spring contact-fingers and ring, and the local circuit, in combination with the primary circuit, as specified.

6. The combination, with the pivoted type-levers carrying the weight-balls provided with insertible adjustable letter-type, of the pivoted key-levers having removable letter-plates, as shown, and the link-connection between the said key and type levers, as set forth.

7. The pivoted type-levers provided each with removable insertible type and suitable perforated balls or weights at their free ends for the dual purpose of closing, by virtue of their weight, the local circuit and supporting the adjustable intertible type, and means for operating said pivoted type-levers and the local circuit, as set forth.

8. The combination of the series of pivoted type-levers provided with balls or weights on their free ends, the balls or weights having a perpendicular aperture therethrough, and the adjustable interchangeable letter-type, as set forth.

9. The combination of the weight-balls affixed to the free ends of the type-levers, the insertible adjustable letter-type having shoulders on their upper ends and screw-threaded at their lower extremities, and means for securing said letter-type in the weight-balls, as described.

10. The combination of the type-levers, consisting each of a straight metallic rod formed bifurcated at its upper end and provided at its lower extremity with a weight-ball having a perpendicular aperture therethrough, the whole being formed in one single piece, with the letter-type having the letter or character upon its face, the stem, and shoulder, also all cast in one single piece, and the securing-nut, as specified.

11. The combination, with the key-levers, of the pivoted type-levers carrying the weight-balls provided with insertible adjustable letter-type, and a suitable connection between said key and type levers, as shown.

12. As a new article of manufacture, a type-lever provided with weight-balls provided with insertible adjustable letter-type, substantially as specified.

13. The combination, with the type-levers, of the weight-balls provided with insertible adjustable letter-type, the key-levers having removable letter-plates, and a suitable connection between said key and type levers, as specified.

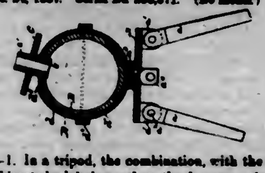
385,566. DOOR. ESTHER V. HERRESHAW, Syracuse, N. Y. Filed Aug. 27, 1887. Serial No. 248,093. (No model.)



Claim.—1. In a door, the combination of three separate wooden frames secured together side by side, the middle section being dovetailed together and made of narrower parts than the outer ones, to form a groove to receive the panels, substantially as shown and described.

2. In a door, the combination of three separate frames of the same outside dimensions, secured together side by side, the middle section being made of narrower parts than the outer ones, whereby a groove is formed to receive the panels, substantially as shown and described.

385,567. TRIPOD-HEAD. CHARLES D. GUTMAN, Brooklyn, N. Y. Filed Dec. 24, 1887. Serial No. 258,671. (No model.)



Claim.—1. In a tripod, the combination, with the standard, of a horizontally-bisected globular socket, the lower section of which is fixed on the standard and the upper section screw-jointed to and movable upon said fixed section, a ball adapted to fit within the socket and be clamped between the said sections thereof, and a disk rigidly connected to said ball and adapted to receive and sustain firmly an instrument of the character stated, as and for the purpose specified.

2. In a tripod, the combination, with the standard A, of the horizontally-bisected socket D, the lower section, *d'*, of which is fixed on the standard and is screw-threaded at its rim, and the upper section, *d*, of which is provided with the internally-threaded annular flange *d''*, and seated thereby upon the said fixed section, the ball B, adapted to fit within and be clamped between the sections of the socket, together with the disk C, provided with the connection *c*, extending through an aperture, as described, in the upper socket-section, to and fixed in said ball, and having upon its top a device, *c'*, for rigidly attaching thereto an instrument of the character stated, all constructed and arranged to operate substantially as and for the purpose specified.

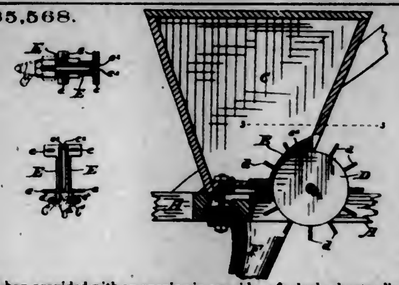
3. In a tripod, the combination, with the standard and the ball, to which is rigidly attached the disk, adapted for the mounting thereon of an instrument of the character stated, of a horizontally-bisected socket adapted to receive the ball, and the lower section of which is fixed to said standard, while the upper section is screw-jointed to said fixed section and adapted to clamp the contained ball between it and said lower section, as and for the purpose set forth.

385,568. PLASTER. DAVID M. PARRY, Indianapolis, Ind. Filed July 26, 1887. Serial No. 245,267. (No model.)

Claim.—1. In a plaster, the combination, with the frame-work, of a seed-box provided with an opening to receive the feed-wheel, said feed-wheel mounted with a portion of itself extending into said seed-box through said opening, and a shield or cover secured over the part of the feed-wheel within the hopper, and extending to the bottom of said hopper, and provided with a slot or opening through which the fingers of said feed-wheel extend, substantially as set forth.

2. In a plaster, the combination, with the frame thereof, of a

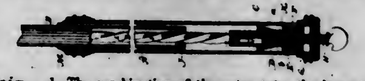
385,568.



seed-box provided with an opening in one side, a feed-wheel extending through said opening, and plates arranged to serve as a shield for said wheel, and secured to be adjusted toward or from each other, whereby the width of the slot through which the teeth of said wheel pass may be varied as desired, substantially as set forth.

3. The combination, in a planter, of the hopper, feed-wheel extending into said hopper, and the plates E, secured within said hopper to form a shield for said feed-wheel, and provided with slotted downwardly-projecting portions e^4, which support one end of the feeding devices, substantially as shown and specified.

385,569. LAMP-STANDARD. WILLIAM A. PENFIELD, Meriden, Conn., assignor to The Bradley & Hubbard Manufacturing Company, same place. Filed Oct. 17, 1887. Serial No. 252,583. (No model.)



Claim.—1. The combination of the outer tube, the inner tube longitudinally but not revolubly movable in said outer tube, and provided at its lower end with a fixed nut, a sleeve mounted revolubly between friction-bearings held by said outer tube, and a screw-spindle movable in said nut and having a collar at its lower end adapted to engage the said sleeve, and provided with a head to retain said collar within a limited distance from said sleeve, substantially as described.

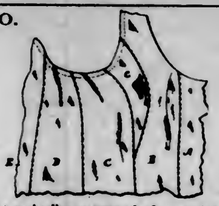
2. The combination of the outer tube, A, the inner tube, B, of other than cylindrical shape, adapted to engage a corresponding non-cylindrical surface in the outer tube, and provided with a nut, J, at its lower end, the screw-spindle I, movable in said nut and having the collar L at its lower end, the shoulder *a*, fixed within said tube A, tubular sleeve D, revolubly held against said shoulder, and the block E, adjustable toward the said shoulder *a*, for increasing the frictional resistance between the same and the sleeve D, the said spindle I being provided with a head to retain its collar within a limited distance from said sleeve, and the adjacent faces of said sleeve and collar being adapted to engage each other, substantially as described.

385,570. UNDERWAIST. REBECCA W. PHILBROOK, Boston, Mass. Filed Nov. 9, 1887. Serial No. 254,704. (Model.)

Claim.—1. A waist or bodice composed of a number of outside pieces or sections and corresponding inside pieces or sections, the second front or bust piece being continued over the shoulder to form a shoulder-strap, and being separate or detached from the corresponding inner piece at the upper part of the garment, substantially as described.



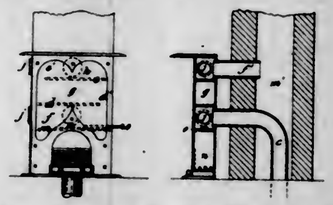
385,570.



2. A waist or bodice composed of a number of outer and inner sections, the outer bust-section being separate from the inner bust-section at the upper portion of the garment and continued over the shoulder, and being curved outward in both directions from the line of separation and provided with additional fullness under the arm-size, the inner bust-section being cut away on both sides above the line of separation and additional width given to the adjacent inner sections, substantially as described.

3. In a waist or bodice composed of a number of inner and outer sections, the combination, with the outer bust-section independent of the corresponding inner sections at the upper portion and having a shoulder-strap, of a curved gore inserted under the arm-size between the bust-section and the adjacent side or arm section, substantially as described.

385,571. APPARATUS FOR COLLECTING AND DIFFUSING HEAT. THOMAS PERRY, Burnley, County of Lancaster, England. Filed Nov. 2, 1887. Serial No. 254,103. (No model.) Patented in England Jan. 14, 1885, No. 513.



Claim.—1. The combination, with the drum-casing, of the alternating surface-plates *m*, *d*, and *e*, the bottom plate, *m*, having the draft-orifice *n'*, the damper *o*, for opening and closing the said orifice, and the fire-grate *n*, located in the drum-casing beneath said bottom plate, substantially as described.

2. The combination, with the drum-casing, the alternating surface-plates *m*, *d*, and *e*, the bottom plate, *m*, having the draft-orifice *n'*, the damper *o*, for opening and closing said orifice, the fire-grate *n*, located in the drum-casing below said bottom plate, the fire-place *b*, the gas-collecting chamber *a*, the passages *b'*, receiving the gases from the fire-place and leading such gases into the chamber and the gas-conducting flue *c*, leading from the chamber into the drum directly above the bottom plate therein, substantially as described.

3. The combination of a fire-place, *b*, a chamber, *a*, arranged adjacent thereto and receiving therefrom the gases arising from combustion, and a gas-conducting flue, *c*, leading from the gas-collecting chamber to an apartment to be heated, with a heat receiver and diffuser located in said apartment and connected with the gas-conducting flue, substantially as described.

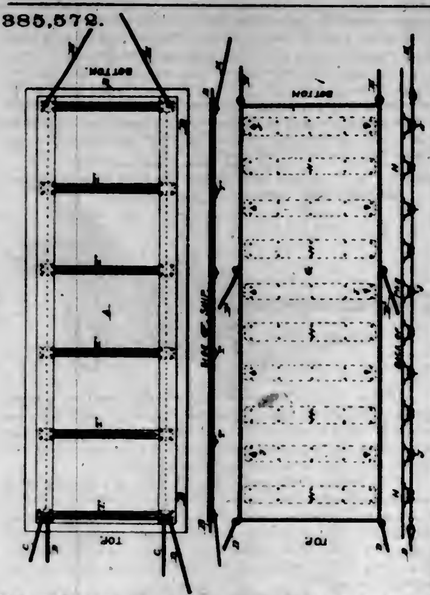
4. The combination of a fire-place, *b*, a gas-collecting chamber having its forward portion provided with vertical passages *b'*, for receiving the gases from the rear of the fire-place and leading them into the chamber, and a gas-conducting flue, *c*, leading from the chamber to an apartment to be heated with a heat receiver and diffuser located in said apartment and connected with the flue, substantially as described.

385,572. LEAK-STOPPER FOR SHIPS, &c. JOSEPH RICHARDSON, North Shields, County of Northumberland, England. Filed Oct. 10, 1887. Serial No. 251,984. (No model.) Patented in England Sept. 24, 1883, No. 4,949.

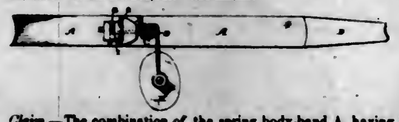
Claim.—1. In appliances for stopping leaks in ships or similar vessels, a sheet-pad of one or more plies of canvas or other strong and flexible material, with a border-piece of "moleskin" cloth or similar soft and durable material, with strengthening transverse bars, and furnished with ropes to guide the pad into position and secure it, substantially as set forth.

2. In combination with a sheet-pad, as above described, a protecting-shield of one or more plies of canvas or other woven material bound round sides and ends with rope, strengthened by transverse bars, and furnished with ropes to guide the shield over the back of pad and secure it, substantially as set forth.

385,572.

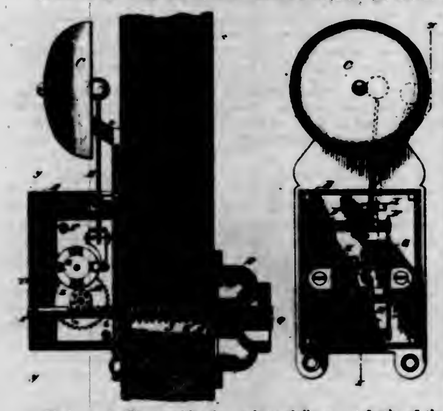


385,573. TRUSS. ORVILLE H. ROBINSON, Bath, N. Y. Filed Apr. 16, 1888. Serial No. 270,947. (No model.)



Claim.—The combination of the spring body-band A, having its end formed to receive the spring C upon it, and provided with the perforated projection, with the set-screw and the coiled spring C, having the pad or button secured to one end, and having its inner bent end extend into the recess in the projection, substantially as shown.

385,574. DOOR OR ALARM BELL. FREDERICK SANDERSON, Prospect Park, Ill. Filed Jan. 27, 1888. Serial No. 262,159. (No model.)



Claim.—1. The combination, substantially as set forth, of the bell, its hammer, the hammer-stem, a cam to vibrate the hammer and stem, and the leg I, against which the hammer-stem impinges just before the hammer strikes the bell.

2. The combination, substantially as set forth, of the bell, its hammer, the hammer-stem, and cam to vibrate the hammer and stem, and the legs I and J, between which the hammer-stem vibrates.

3. The combination, substantially as set forth, of the bell, its hammer, the hammer-stem, the disk-cam with a corrugated edge, and the arm H, pivoted to the hammer-stem and carrying the friction-rollers to embrace the cam-edge.

4. The round push-bar N, having round bearings to guide it, the rack-teeth on it to drive the train mechanism, the recesses *q* at each end of the toothed portion, and the flat head on one end of bar, in combination with the push-button and the rod R, the rod located between the button and the head on the push-bar, substantially as shown and described, and for the purpose set forth.

5. The combination, in a door-bell, of the push-button Q, hollow its entire length except the head, the rod R, loosely located in the hollow of the push-button, and the round push-bar N, having rack-teeth and flat head, the rod R, having bearings against the head of the push-bar and the inner surface of the head of the push-button, whereby friction is avoided and side draft prevented, substantially as shown and described.

385,575. VENDING APPARATUS. DANIEL W. SHIRK, Ottumwa, Iowa, assignor of one-half to John W. Rubel, same place. Filed Jan. 17, 1888. Serial No. 260,973. (No model.)



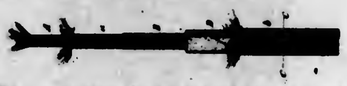
Claim.—1. The combination, with the slide having hinged portion forming a pawl or dog, the fixed rack-bar, and the pivoted lever on said rack-bar, of a slide independent of said lever, a laterally-projecting pin on the lever, and a plate on the slide having an inclined portion engaging said pin, substantially as and for the purpose specified.

2. The combination, with the case having coin-slit and the slide having coin-slit and hinged portion forming a pawl or dog, as described, of the fixed rack-bar, the lever pivoted thereto, a slide constructed to actuate said lever to release the dog or pawl, a coin-retaining spring carried by said slide, and a push-button for actuating the slide, as set forth.

3. The combination, with the case and the slide having an opening, as described, of the plate *n*, secured to the bottom of said slide, a strip, *o*, carried by said slide in a groove therein, and a spring, *p*, having a bent portion, *q*, and working through an opening in the plate *n*, substantially as and for the purpose specified.

4. The combination, with the case having coin-slit, the fixed rack-bar, and the slide F, having a hinged portion forming a pawl or dog engaging said rack-bar, of a bifurcated slide carrying a coin-retaining spring and provided with central longitudinal slot, and the push-button constructed to actuate said bifurcated slide, substantially as described.

385,576. INSULATED CONDUCTOR. CLARENCE G. SIBLEY, New York, N. Y., assignor to the Splitdorf Wire Company, same place. Filed Jan. 26, 1888. Serial No. 262,319. (No model.)

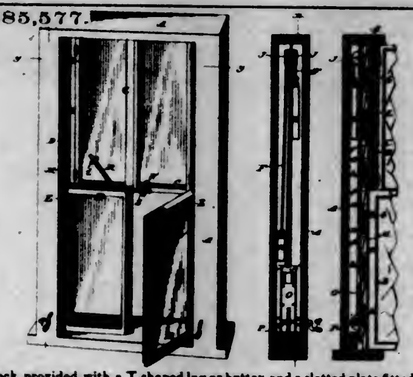


Claim.—A conductor for electrical and other purposes having a covering of threads, *c*, rubber B, asbestus fibers D, and threads *b*, all arranged substantially as herein specified.

385,577. HINGED WINDOW-SASH. WILLIAM L. SILBERBERG, Brooklyn, N. Y. Filed Aug. 3, 1887. Serial No. 246,012. (No model.)

Claim.—1. The combination, with a window-sash and its casing, a vertical rod secured in the casing, and upon which the window-sash is pivoted and left free both to swing and to slide longitudinally, and a counterbalancing sash weight and cord mounted in the casing, of a

385,577.



block provided with a T-shaped lug or button and a slotted plate fitted over a recess in the inner edge of the pivoted sash, through which the shank of the lug or button is free to play in a direction transversely to the pivot-rod as the sash turns thereon, substantially in the manner and for the purpose herein set forth.

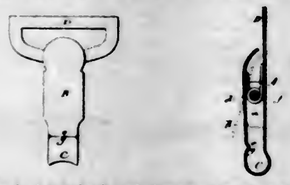
2. The combination, with the casing of a window and with a sash sliding and turning upon a vertical rod secured in said casing, of a strip fitted in a recess in the casing independently of the sash, to move laterally in and out against the proximate pivoted bar of the sash, a second strip moving longitudinally in said recess against the inner face of the outer strip, and a device, substantially as described, for moving said inner strip, the opposite faces of the two strips being formed with a series of contacting oppositely-inclined surfaces, whereby the longitudinal movement of the inner strip will produce a movement of the outer strip at right angles thereto, substantially in the manner and for the purpose herein set forth.

385,578. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed May 21, 1883. Serial No. 274,477. (No model.)



Claim.—The herein-described buckle, consisting of the frame or plate A, constructed with ears *a a* at its ends, the said ears turned inward to form trunnions *b b*, combined with the jaw-plate C, of substantially L shape in transverse section, the ends E E of the plate turned inward at substantially right angles to the plate, and the said ends constructed with elongated slots F, the inner edge of the said slots of cam shape, the said jaw-plate arranged upon the plate A, with the trunnions *b b* of the said plate extending into said elongated slots F in the ends of the jaw-plate, substantially as described, and whereby the said jaw-plate is permitted a vertical movement on said trunnions, the said cam-shaped sides of the slots F operating, in connection with said trunnions, to force the jaw toward the plate A, or permit it to swing therefrom, according to the movement of said plate on said trunnions.

385,579. SNAP-HOOK. EARL A. SMITH and DWIGHT L. SMITH, Waterbury, Conn. Filed May 7, 1888. Serial No. 273,053. (No model.)



Claim.—1. A snap-hook made from sheet metal, consisting of the body part A and the tongue part B, the body part constructed with wings *a a*, turned at right angles to the plane of the body, and the body terminating in a hook, G, at one end, the tongue constructed with wings *b b* upon its opposite edges corresponding to the wings *a a*, but the wings on the one part distant from each other upon their inner surface corresponding to the distance between the exterior surface of the wings on the other part, the tongue set upon the body, and so as to bring the wings of one part outside the wings of the other part, with a pintle, *d*, through the wings at their rear ends, combined with a spring around the pintle, the tendency of which is to force the tongue to the closed position, the said wings of the one part forming stops upon which the tongue will rest when in its closed position.

2. A snap-hook, substantially such as described, in which the tongue turns outward from the point of the hook in opening, the outer surface of both the hook and the tongue at their meeting ends turned inward, and so as to form a depression transversely across the outer surface at the junction of the tongue with the point of the hook, substantially as and for the purpose described.

385,580. STEAM BELL-RINGER. GEORGE B. SNOW, Buffalo, N. Y. Filed Sept. 1, 1884. Serial No. 141,887. (No model.)



Claim.—1. In a steam bell-ringer, the combination of a single-acting steam-cylinder having steam and exhaust ports, a piston having a central cavity, a valve having a perforation therethrough, transverse pins in said cavity and perforation, and a link loosely connecting the piston and valve, substantially as described.

2. In a steam bell-ringer, the combination of a connecting-rod consisting of a crank-box, a sleeve sliding upon a guide-pin and abutting against a shoulder on the guide-pin, a double-tapered opening through the lower end of the guide-pin, and a pin connecting said guide-pin with the piston, with a valve having a central perforation and a loose link-connection between said valve and the piston, substantially as described.

385,581. VENTILATING-GRATE FOR OPEN-AIR KILNS. CHARLES M. SNYDER, Mount Pleasant, Iowa. Filed Nov. 19, 1887. Serial No. 255,570. (No model.)



Claim.—1. The inclined grate mounted on rollers, for the purpose set forth, substantially as described.

2. The inclined grate having the brackets B at its outer side and the roller C journaled in said brackets, substantially as described.

3. The inclined grates arranged opposite each other and diverging upwardly, said grates having the supporting-rollers journaled in brackets on their outer sides, substantially as described.

4. The grate-sections comprising the horizontal longitudinal bars A, the incline grate-bars *c*, connecting said bars, the brackets B, secured to the outer sides of the bars A, and the rollers C, journaled in said brackets, substantially as and for the purpose set forth.

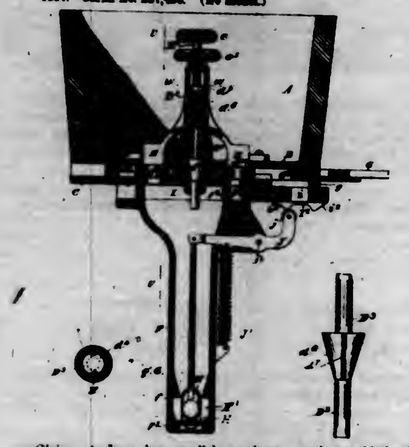
385,582. MILK-STRAINER. ALEXANDER THOMSON, Colstoun, Ontario, Canada, assignor of one-half to Joseph Northrup, Redwood, N. Y. Filed May 24, 1888. Serial No. 274,909. (No model.) Patented in Canada Feb. 13, 1888. No. 28,508.



Claim.—1. In a device for aerating milk, the combination of a funnel provided with strainers *h h*, attached over openings formed in the sides of a conical portion, a band, C, having a conical plate, D, with perforations *d* therein, a perforated band, E, and a supporting-band, F, with perforations *f*, the parts being organized substantially as shown, and for the purpose set forth.

2. The combination, in a strainer and cooler for the purpose set forth, of a flanged rim, A, having upwardly-projecting standards secured thereto, said standards supporting at their upper ends a band, C, of less diameter than the rim A, a conical plate, D, with perforations *d*, perforated bands E and F, projecting upwardly therefrom, and a funnel, G, having a strainer and depending portion, *g*, adapted to fit within the band, substantially as and for the purpose set forth.

385,588. PLANTER. BELL TYSON, Chicago, Ill. Filed Dec. 9, 1887. Serial No. 257,496. (No model.)



Claim.—1. In a dropper-disk, seed-cups, each provided with a movable wall, in combination with a cone or cam common to all, by which the blocks may be adjusted inwardly or outwardly, as specified.

2. In a dropper-disk, a seed-cup having one or more of its walls movable, in combination with means of adjustment extending to a point above or without the body of seed within the hopper, whereby the capacity of the cup may be varied without removing the grain from the hopper.

3. In a dropper-disk, seed-cups, each provided with a movable wall, in combination with means of adjustment extending to a point above or without the body of seed within the hopper, whereby the capacity of the cup may be varied without removing the grain from the hopper.

4. A dropper-disk having seed-cups, each provided with a movable block which forms the inner end wall thereof, in combination with means of adjustment extending to a point above or without the body of grain within the hopper, whereby the capacity of the cup may be varied without removing the grain therefrom, as specified.

5. A dropper-disk having seed-cups, each cup provided with a movable block which forms one of the walls thereof, and means for the retraction of the blocks toward a common center, in combination with a cone capable of longitudinal axial motion, whereby the blocks may be adjusted inwardly or outwardly, for the purpose specified.

6. In a dropper-disk having seed-cups, the movable blocks forming each respectively one of the walls of a cup, in combination with a cam about or within which the dropper-disk revolves, the cam being adapted to withdraw the block and enlarge the seed-cup, thereby freeing the grain therein, as specified.

7. A dropper-disk having enlarged seed-cups, each cup being provided with an adjustment-block, which forms the inner end wall thereof, each of the said blocks having downwardly-projecting lugs, in combination with a retracting-spring or other resilient element embracing all of the said lugs, whereby the adjustment-blocks are drawn toward the common center, substantially as shown.

8. A dropper-disk having the cups *d d*, a chamber, d^3, and the lowered division-wall d', and the cover-plate D^4, rigidly secured to the disk and provided with splineways, in combination with the adjusting-blocks D' D', having a downwardly-projecting lug, d^5, in which lies the retracting-spring D^5, all in combination, substantially as specified.

9. A dropper-disk having the seed-cups *d d*, the adjustment-blocks D' D', and the retracting-spring D^5, in combination with the cone d^3, whereby the blocks D' D' may be adjusted outwardly and inwardly, substantially as specified.

10. A dropper-disk having the seed-cups *d d d*, the adjustment-blocks D' D', the spring D^5, all substantially as described, in combination with the spindle D^3, carrying the cone d^3, the spring d^6, by which the cone is maintained in its highest position, and the adjusting-screw E', by which the position of the cone-spindle is regulated, and thereby the position of the adjustment-blocks in the seed-cups, substantially as specified.

11. A dropper-disk having seed-cups, each provided with an adjustment-block, which forms the inner wall thereof, the said blocks being retracted toward the common center against a cam, so that upon rotation of the dropper-disk about the cam the adjustment-blocks of the seed-cups which register with the dropping-ports are withdrawn, enlarging the said cup, and thereby freeing the grain therein, substantially as shown.

12. In a dropper-disk, the cups *d d d*, the adjustment-blocks D' D' D', the retracting-spring D^5, in combination with a conical cam, d^3, upon a spindle, D^3, having a longitudinal motion but non-rotary, whereby the adjustment-blocks D' D' D' may be accurately adjusted inwardly and outwardly, and thus the capacity of the seed-cups determined, and whereby the adjustment-blocks of the seed-cups registering with the dropping-port may be slightly withdrawn and the grain therein freed, substantially as described.

13. An intermittingly-rotating dropper-disk actuated by a pawl having the lugs D^5, with face of semi-cylindrical contour, to prevent slippage of the pawl, substantially as described.

14. An intermittingly-rotating dropper-disk actuated by a pawl and having the lugs D^5, with face of semi-cylindrical contour, to prevent slippage of the pawl, substantially as described, the opposite face of the lug being of similar semi-cylindrical contour, inclined, however, so that the pawl may ascend it upon the return reciprocation of the frame G', the contour of the lug being such that the pawl will maintain its proper path with accuracy and be guided into position for further action, substantially as specified.

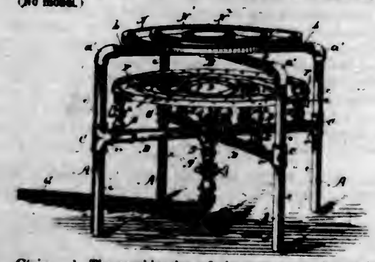
15. An intermittingly-rotating dropper-disk actuated by a pawl carried on a reciprocating frame or bar, which acts at every alternate stroke to produce a partial rotation of the disk D, the said disk being at rest during the return reciprocation of the frame, in combination with a cut-off valve, I, having an aperture, i^2, having a fixed surface, the return reciprocation of the frame acting to carry the cut-off valve I forward, and with it the charge of grain in the aperture I^2, off from the fixed bottom and drop it to the seed-tube below, substantially as specified.

16. An intermittingly-rotating dropper-disk actuated by a pawl carried on a reciprocating bar, which acts at every alternate stroke to produce a partial rotation of the disk, the said disk being at rest during the return reciprocation of the frame, the said frame having a downwardly-projecting lug, *g*, in combination with a cut-off valve, I, having an aperture, i^2, bottomed on a fixed surface, and a slot, *i*, in which the lug *g* engages, the slot *i* being of such length that the valve I does not come into operation until the close of the reciprocation of the frame G', when it is carried forward, and with it the charge of grain in the aperture i^2, and the grain upon being carried off from the fixed bottom drops to the bottom of the seed-tube, substantially as described.

17. A dropper-disk, D, an actuating-frame, G', a pawl, G^3, and a cut-off valve, I, carrying the cam I', and actuated by the reciprocating frame G' or bar G, in combination with the lever J, the drop-valve H, and the seed-tube F, provided with the valve-seat projections *f* and *f'* and the chamber F', all for the purpose and substantially as described.

18. In a corn-planter, the combination of suitable mechanism, which drops charges of grain at regular intervals into the seed-tube, with the valve H, operated at proper intervals, and the valve-seat projections *f* and *f'* and the chamber F', substantially as shown and described.

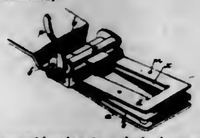
385,584. APPARATUS FOR HEATING WAGON-TIRES. JOHN F. WALKER, Greenfield, Ind. Filed May 7, 1888. Serial No. 273,012 (No model.)



Claim.—1. The combination of the supports and rests with the circles, the arms, the nipples, and the supply-pipe, as set forth.

2. The combination of the supports A, the rests *b*, the circles F F' F^3, having the holes *f*, the arms D, the nipples E, having the cocks *e*, and the supply G, having the cock *g*, as set forth.

385,585. CLAMP FOR BUTTON-HOLE SEWING-MACHINES. WASHINGTON WALLICK, Philadelphia, Pa. Filed Apr. 30, 1888. Serial No. 272,696. (No model.)



Claim.—1. The combination, in a cloth-clamp, of the slotted base-plate serving as a support for the cloth, the intermediate slotted clamping-plate confining the cloth to said base-plate, the upper flanged and slotted stretching-plate, and a depressor for forcing said upper and intermediate plates downward, all substantially as specified.

2. The combination of the base-plate, two upper plates secured thereto, a spring whereby said upper plates are forced away from the lower plate, and a device for forcing said upper plates into contact with the cloth against the action of said spring, all substantially as specified.

3. The combination of the lower plate, two upper plates, and the cam having faces which bear against both of said upper plates, whereby they may be separately brought into contact with the cloth, substantially as specified.

385,586. SURGEON'S SUTURE-CARRIER. JOSEPH T. WOODS, Toledo, Ohio. Filed Mar. 23, 1887. Serial No. 232,187. (No model.)



Claim.—1. The combination, in a suture appliance, of a handle provided with a covered chamber, a bobbin therein, a needle-stock hinged to said handle and adapted to receive a needle, and thread-guides on said handle and stock to lead the thread to the needle, substantially as set forth.

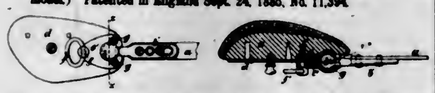
2. The combination, in a suture appliance, of a handle having openings on its sides, a bobbin within said handle having a milled end extending through the openings, and a needle-stock adapted to receive a needle, substantially as set forth.

3. The combination, in a suture appliance, of a handle having a longitudinal protecting-rib and a stock pivotally attached to the handle, substantially as set forth.

4. The combination, in a suture appliance, of a handle having a pivoted panel and securing means therefor, substantially as set forth.

5. The combination, in a suture appliance, of a handle having a pivoted panel and a bar on the under side of the same, substantially as set forth.

385,587. TRUSS. BENJAMIN F. ATKINSON, Hanover Square, County of Middlesex, England. Filed Aug. 29, 1887. Serial No. 248,191. (No model.) Patented in England Sept. 24, 1885, No. 11,394.



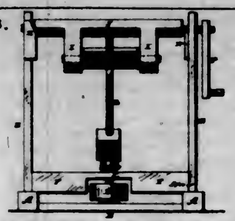
Claim.—The combination, with a truss having at one or both ends a ball, *b*, extending longitudinally therefrom, of a pad having a backing, *d*, an adjustable socket part on one side of the backing having a hemispherical concavity, a fixed socket part on the opposite side of the backing also having a hemispherical concavity, said socket parts having a flaring opening extending longitudinally from the socket formed by said hemispherical concavities in which the ball is received, said flaring opening permitting lateral movement of the stem of the ball, screws *g g*, connecting said socket parts together, and a power-screw, *f*, passing through said parts for securing the ball *b* tightly within said socket, substantially as and for the purpose set forth.

385,588. MOTOR. GEORGE W. BAILEY and GEORGE B. LEISENRING, Saegertown, Pa. Filed Feb. 24, 1888. Serial No. 265,121. (Model.)

Claim.—1. The combination of the driving-shaft provided with a weight or arm, a rocking bearing for the upper end of the shaft, a rocking support for the bearing, and a shaft provided with a pulley connected to and operated by the weighted shaft, substantially as shown.

2. The combination of a suitable frame-work provided with an incline at each end, the rocking support provided with hangers, the rocking bearing journaled therein, the shaft provided with a weight

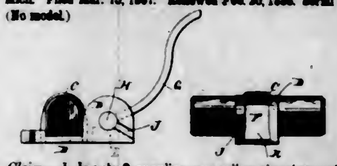
385,588.



or arm, and the driving-shaft provided with a pulley, substantially as set forth.

3. The combination of the shaft C, provided with a pulley, D, and having a socket in its upper end, the weighted shaft G, the rocking bearing H, through which the upper end of the weighted shaft passes, and a rocking bearing, J, provided with a crank, substantially as set forth.

385,589. THILL-COUPLING. GEORGE C. BOSWORTH, Three Oaks, Mich. Filed Mar. 10, 1887. Renewed Feb. 20, 1888. Serial No. 264,651. (No model.)

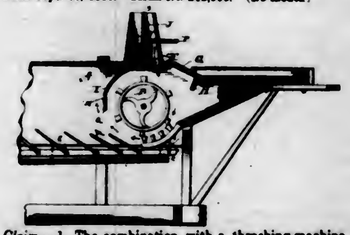


Claim.—1. In a shaft-coupling, a coupling-piece internally recessed, its recess having a greater width within than at its mouth, in combination with a cushion which, when pressure is applied, fills the back of the recess, and is then held securely in place.

2. In a shaft-coupling, a coupling-piece having an internal recess wider at the bottom than at the top, in combination with a cushion having beveled sides, so that the same is held when in the recess from upward motion.

3. In a coupling for shafts, a coupling-piece having an internal cushion-receiving recess, transverse aperture, and a downwardly-inclined slot therefrom through one side, with a shaft-iron having a transverse bolt, so that when the shaft is greatly depressed its iron can be introduced through the slot into the transverse aperture, so as to be hinged into position.

385,590. DUST-CONVEYER. NICHOLAS A. BROSKA, Bloom, Kans. Filed Sept. 20, 1886. Serial No. 213,909. (No model.)



Claim.—1. The combination, with a thrashing-machine, the casing of which has a hole in its top directly above the cylinder, of a flue secured at its lower end around the hole, a curved shield over and above the rear portion of the cylinder, the front edge of which extends to the middle of the hole, and a partition in the flue, the lower end of which is secured to the front edge of said shield.

2. The combination, with a thrashing-machine, the casing of which has a hole in its top directly above the cylinder, of a flue secured at its lower end around the hole, a curved shield over and above the rear portion of the cylinder, the front edge of which extends to the middle of the hole, a partition in the flue, and a damper in one portion of the flue.

3. The combination, with a thrashing-machine, the casing of which has a hole in its top directly above the cylinder, of a flue secured at its lower end around the hole, a curved shield over and above the rear portion of the cylinder, the front edge of which extends to the middle of the flue, a partition in the flue, and a deflector secured at its upper edge below the lower edge of the shield.

4. The combination, with a thrashing-machine, the casing of which has a hole in its top directly above the cylinder, of a flue secured at its lower end around the hole, a curved shield over and above the rear portion of the cylinder, a shaft below the lower edge of the shield, a crank at one end of said shaft, and a board secured to the shaft.

385,591. BUCKLE. JAMES CAIN, Spencer, Iowa. Filed Mar. 24, 1888. Serial No. 268,412. (No model.)

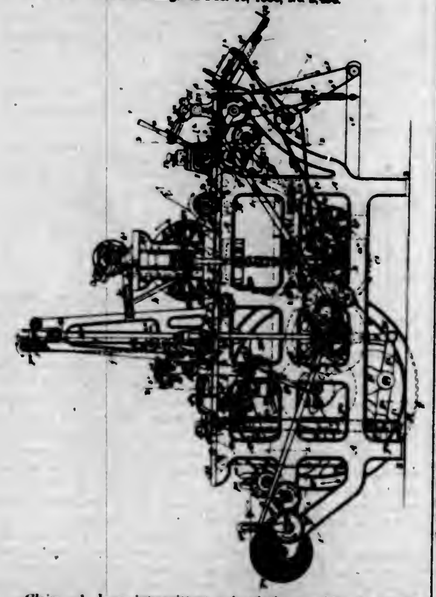


Claim.—1. In a trace-buckle, the combination herein described of the base-plate adapted to be arranged on one side of the trace and having a stud or pin to engage a perforation therein, and the movable plate bearing on the opposite side of the trace and having depending loops engaging a transverse bar on the base-plate, substantially as specified.

2. In a trace-buckle, the combination of the base-plate having the transverse bar D and provided with the stud or pin F, engaging a perforation in the trace, and a movable plate bearing on the opposite side of the trace and having the depending loops N N passing under the bar D and connected at their lower ends by the rounded guard-bar O, substantially as specified.

3. In a trace-buckle, the combination of the base having the front bar, D, the rear bar, C, and the intermediate bar, E, provided with a stud or pin, F, and the movable plate having the end bars, M M, the side bars, L L, provided with loops N N, mounted on the rear bar, C, and the guard O, connecting the loops and covering the inner side of the rear bar, all constructed, arranged, and operated substantially as and for the purpose specified.

385,592. PRINTING-MACHINE. DAVID CARLAW, Glasgow, County of Lanark, Scotland. Filed Mar. 28, 1887. Serial No. 232,175. (No model.) Patented in England Feb. 19, 1886, No. 2,433.



Claim.—1. In an intermittent web-printing machine for printing sheets or tickets in sequence, the printing-bowl E', for printing letter-press, the shaft C', and side rod, D, for raising and lowering the same, the frame E', carrying the inking-rollers, the driving-chain E', compensating motive eccentric, and spring take-up fitting, all substantially as and for the purpose set forth.

2. In a web-printing machine, the combination of two reciprocating frames, each carrying a series of numeral-printing chains and arranged one above and one below the web, with the reciprocating letter-press printing mechanism and the intermediate adjustable spindles registering the several impressions, substantially as described.

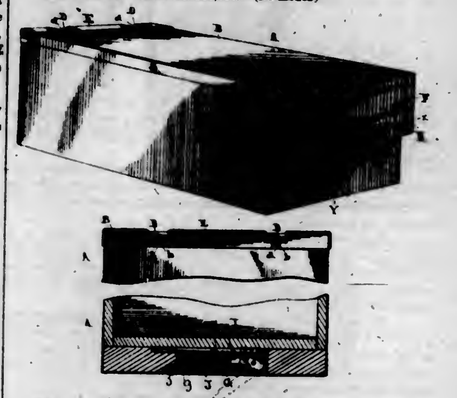
3. In a web-printing machine, the frames F, carrying numeral-printing chains and arranged one above and one below the web, and the letter-press printing mechanism, substantially as described, combined with the crank-shafts C' C', geared together, the pitmen D' D', and the lever S', substantially as described.

4. In a web-printing machine, the numeral-printing frames arranged above and below the web, and the letter-press printing mechanism, as described, reciprocated by crank-shafts, pitmen, and levers, as set forth, in combination with the intermittingly-rotated cutting-disks and perforating-wheels, and the cutting-knife, the crank-disk G, the pawl-and-ratchet feed geared to said disks and wheels, and the brake securing positive stop to the feed.

5. In a web-printing machine, the numeral-printing frames, the letter-press printing mechanism, as described, the cutting-disks, perforating-wheels, and transverse cutting-knife, all intermittingly operated, as set forth, in combination with the series of folding-frames mounted over the slotted table receiving the sheets, and the folding-blades working through the table.

6. In an intermittent web-printing machine for printing and cutting sheets or tickets, the endless driving-cord i^3, its grooved driving and guide pulley i^2 i^4, for actuating the feed-delivery rollers i i', the cross-cutting knife mechanism, and the compensating and tension-regulating spring mechanism i^5 i^6, substantially as and for the purpose set forth.

385,593. EGG-CASE FASTENER. WILLIAM M. CASTLIO, Mechanicsville, Md., assignor of three-fourths to Leo D. Stewart and Childs F. Stewart, same place, and Francis H. Kreusing, Jr., St. Louis, Mo. Filed Mar. 10, 1888. Serial No. 266,797. (No model.)



Claim.—1. The combination, with the box or crate and the cover having notches in its end, of the nails having heads, which heads are adapted to overlap the edges of the notches, substantially as and for the purpose described.

2. The combination, with the box or crate having nails extending therefrom, of the cover having notches and having the portion surrounding the notches reduced, and the metal strip secured to the end of the cover and depressed to fit the reduced portion of the cover around the notches to re-enforce the same, substantially as set forth.

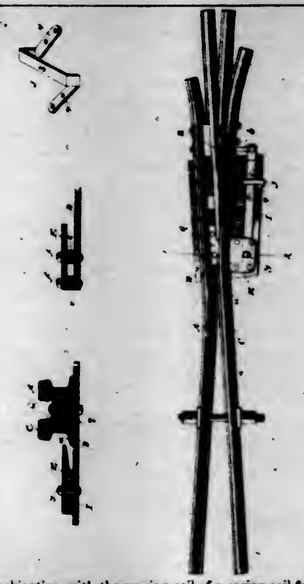
3. The combination, with the box or crate, the nails at one end of the box, the batten at the other end thereof, having a vertical opening and a horizontal mortise, the mortise being widened at one end, the catch pivoted at one end and having its other end flattened, and the spring, of the cover or lid having notches at one end to receive the nails, the batten at the other end of the cover, and the shank having a beveled and notched end depending from the said batten, substantially as and for the purpose specified.

385,594. SPRING-RAIL FROG. WILLIAM A. CHAPMAN, Hilburn, N. Y., assignor to the Ramapo Iron Works, same place. Filed Feb. 1, 1888. Serial No. 262,611. (No model.)

Claim.—1. The combination, with a frog-plate and the moving rail of a spring-rail frog, of a guard consisting of a separate plate secured to the frog-plate entirely outside of the moving rail, and having an overhanging flange adjacent to and arranged to receive beneath it the flange of the moving rail, substantially as described.

2. In a spring-rail frog, the combination, with the fixed wing-rail, the frog-point, the moving rail, and the frog-plate, of a separate guard-plate supported by the frog-plate entirely outside of and extending longitudinally of the moving rail toward and above the outer flange thereof, substantially as set forth.

385,594.



3. The combination, with the moving rail of a spring-rail frog, of a lever, l, pivoted at one end adjacent to the frog-point to a fixed support and connected at the other end to an arm projecting from the moving rail, substantially as set forth.

4. The combination of the moving rail of a spring-rail frog and a lever, l, pivoted to an arm thereof at one end and at the other to a stationary pivot, the two pivots at equal distances from the rail, substantially as described.

5. The combination, with the moving rail of a spring-rail frog, of a lever, l, pivoted at one end adjacent to the frog-point to a fixed support and connected at the other end to an arm projecting from the moving rail, and a bridge or yoke extending over the lever near said arm, substantially as set forth.

6. The combination, with the moving rail of a spring-rail frog and lever l, connected to the lever at one end and to a fixed support a, the other, of a bridge, J, consisting of a plate bent to form the overhanging portion 3, and feet 4 4, extending at an angle from each side of the overhanging portion, substantially as set forth.

385,595. PIPE-WRENCH. BENJAMIN F. CHAPPELL, South Windham, Conn. Filed Oct. 14, 1886. Serial No. 216,213. (Model.)



Claim.—1. The improved pipe-wrench herein described, consisting of a handle having two jaws formed on it, the upper jaw having a recess presenting a long curved bearing, *f*, and a throat, *g*, the serrated curved wedge *d*, grooved and fitted loosely in said recess, and the pin *e*, for the purpose described, in combination with the flat-faced jaw *c*, all constructed and adapted to operate substantially as described.

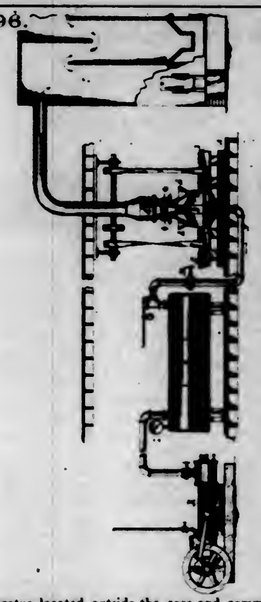
2. A pipe-wrench having a recessed upper jaw throated as described, in combination with a curved wedge portion having teeth pitched toward the handle and loosely held in the recess of said upper jaw.

3. The combination, with a bill-mouth wrench, of a slip-jaw having teeth backwardly pitched and grooved, as described, and a pin connecting this jaw to the upper integral bill of the wrench.

385,596. MACHINE FOR REDUCING ORES AND OTHER MATERIALS. GORDON COMLINE, Glens Falls, N. Y. Filed Feb. 23, 1888. Serial No. 264,960. (No model.)

Claim.—1. The combination, with the case B, having a feed-hopper, *d*, an air-inlet, *k*, and an outlet, *b*, and the rotary arms *f*, for setting on the ore and inducing an air-current through the inlet, of an air-conducting tube, N, opening into the case, and an independent air-

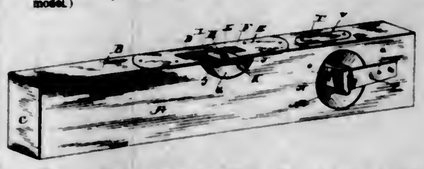
385,596.



forcing apparatus located outside the case and communicating with said tube for forcing air therethrough and through the case in addition to the induced current, substantially as described.

2. The combination, with the case B, having an outlet, *b*, the hopper *d*, and the rotating blades *f*, of an air-storing apparatus made to hold air under pressure and to communicate with said case, substantially as set forth.

385,597. REFLECTOR FOR SPIRIT-LEVELS. LEWIS CROSBY, Three Mile Bay, N. Y. Filed Sept. 9, 1887. Serial No. 249,214. (No model.)



Claim.—1. A reflector for spirit-levels, consisting of a flanged frame, the mirror secured in said frame, and the bent upper portion forming the clasp adapted to be clamped to the slotted edge plate of an ordinary spirit-level.

2. The combination, with the leveling-bar having the main spirit-level secured in its edge and having the centrally-slotted plate secured over the said spirit-level, of the reflector constructed with the flanged frame, the mirror secured in the said frame, and the bent upper portion forming the clasp, substantially as and for the purpose set forth.

3. The combination, with the leveling-bar having the transverse opening in one of its ends and the spirit-level secured in the recessed bottom part of the said opening, of the reflector consisting of the flanged frame having the two arms, and the mirror secured in the said frame, substantially as and for the purpose set forth.

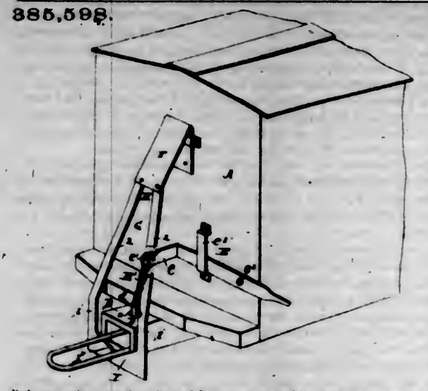
4. The combination, with the leveling-bar having the transverse opening in one of its ends, the recess or opening communicating with the bottom of the said opening, the spirit-level fitting in the said recess, and the end plate, arranged as described, of the reflector consisting of the flanged frame having the two arms and the mirror secured in the said frame, substantially as set forth.

385,598. CAR-COUPLING. SARAH E. DAVIDSON, Glasgow, Ky. Filed Mar. 30, 1888. Serial No. 268,972. (No model.)

Claim.—1. In a car-coupler, the combination, with the draw-head, the link, and the pin, of the reversed-U-shaped spring secured to the car end a suitable distance vertically above the draw-head, and the stirrup secured to the free arm of said spring and consisting of the yoke and the metallic seat-plate, substantially as specified.

2. In a car-coupler, the combination, with the draw-head, the

385,598.



link, the pin, and the pivoted lever connected by a chain to said pin, of the reversed-U-shaped spring and the stirrup secured to the end of the free arm of the spring, substantially as specified.

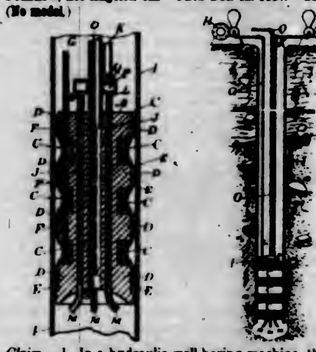
3. The herein-described car-coupling, consisting of the draw-head, the pin C, having the cap-piece D, the link J, the pivoted lever E, having the outstanding arm *e*, the chain F, connecting said arm and the cap-piece D, the reversed-U-shaped spring, and the stirrup G, consisting of the yoke H and the seat-plate I, substantially as specified.

385,599. DOOR-CHECK. WILLIAM D. DUNLAP, Selma, Ala. Filed Apr. 10, 1888. Serial No. 270,166. (No model.)



Claim.—The spring-actuated bolt having a stop end or nose applied or formed rigidly upon it, and also having a bowed spring-pawl attached to its shank, in combination with the case in which the bolt moves, and with the rack attached to one of the inner surfaces of the case for the spring-pawl to bear against and engage with, whereby by a force sufficient to bring the bolt to a vertical position the said bolt is automatically released and caused to rise out of engagement with the floor, substantially as described.

385,600. HYDRAULIC WELL-BORING MACHINE. GEORGE W. DURHOW, Los Angeles, Cal. Filed Dec. 12, 1887. Serial No. 257,660. (No model.)



Claim.—1. In a hydraulic well-boring machine, the combination of the plug for the casing-pipe, comprising the core A, provided with the induction and eduction passages therethrough, extending from end to end thereof, and with one or more annular chambers, B, having flexible outer walls, C, and means for producing expansive pressure within such chambers, whereby the flexible outer walls thereof may be caused to bulge out beyond the face of the plug, as and for the purpose set forth.

2. In a hydraulic well-boring machine, the combination of the casing of the well, the plug comprising the core A, provided with induction and discharge passages extending therethrough from end to end thereof, and with annular chambers B, having the flexible outer walls, C, a discharge-pipe extending from the discharge-passage in the core to the top of the well, induction-pipes connecting the induction-passages of the core with a machine for producing hydraulic pressure, a conduit connecting the chambers B with machinery for producing expansive pressure within the chambers, a machine for producing such pressure, and hydraulic machinery connected with the induction-passages of the core.

3. The combination of the casing-pipe of the well, the plug comprising the combination of the case C and the core A, provided with induction-passages J, discharge-passage N, one or more annular chambers, B, passages F, and pipes M, the pipe G, discharge-pipe O, induction-pipes K L, chamber P, hydraulic machinery connected with the pipe K, and machinery for producing expansive pressure connected with the pipe G, substantially as and for the purpose set forth.

4. The combination of the casing-pipe of the well, the plug comprising the combination of the case C and the core A, provided with induction-passages J, discharge-passage N, one or more annular chambers, B, passages F, and pipes M, the pipe G, discharge-pipe O, induction-pipes K L, chamber P, valve Q, hydraulic machinery connected with the pipe K, and machinery for producing expansive pressure connected with the pipe G, substantially as and for the purpose set forth.

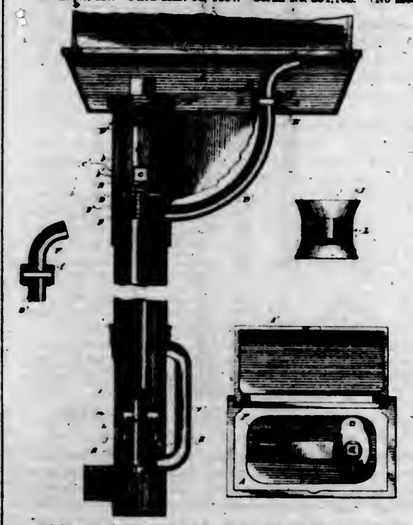
5. The combination of the casing-pipe of the well, the plug comprising the combination of the case C and the core A, provided with induction-passages J, discharge-passage N, one or more annular chambers, B, passages F, dome S, and pipes M, the pipe G, discharge-pipe O, induction-pipes K L, chamber P, hydraulic machinery connected with the pipe K, and machinery for producing expansive pressure connected with the pipe G, substantially as and for the purpose set forth.

385,601. MOP-WRINGER. HOMER L. RUMM, Sandusky, Ohio. Filed Dec. 27, 1887. Serial No. 259,094. (No model.)



Claim.—A mop-wringer consisting of a perforate or open cone and a holder attached to the apex or bottom of the cone and having upwardly-extending hooks for engaging the side of a vessel, as shown, and for the purpose specified.

385,602. NON-FREEZING STREET-WASHER. CHARLES G. RITE, St. Louis, Mo. Filed Mar. 16, 1887. Serial No. 231,102. (No model.)



Claim.—1. In a street-washer, the combination of a box having a cover with a swiveled hose-coupling and the upper end of the valve-stem, both extending up into the box and permanently located entirely within the box, where the swiveled hose-coupling is free to turn in any direction with the hose without liability of injury to hose or coupling, substantially as described.

2. In a street-washer, the combination of the upper portion of

the main valve-casing and the branch or arm forming a water-outlet, all cast in a single piece, said water-outlet being provided with a bent swiveled coupling, a perforated cap through which said curved swiveled coupling extends and which is secured to the main water-outlet, with a box entirely within which is located the swiveled coupling and the upper end of the valve-stem, substantially as and for the purpose specified.

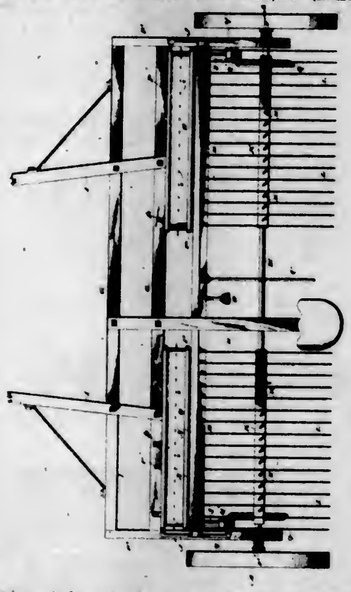
3. In a street-washer of the character described, the combination of the main valve-stem casing provided with an ordinary flat seat at its lower portion and side water-way in direct alignment with said valve-seat, with a T-washer which extends down into the main opening through the bottom of the valve-stem casing, and a waste-opening in the casing, and a second washer secured to the piston-rod above the T-washer, all constructed and combined to operate substantially as described, whereby all deposit in the valve-seat is avoided and the raising of the valve-rod and valves effectually closes the escape or waste opening in the lower portion of the casing before the water is allowed to escape from the main up through the water-way in the main casing, substantially as and for the purposes specified.

385,603. ACCELERATING-CARTRIDGE. JAMES S. EVERARD and ALFRED R. EVERDELL, New York, N. Y. Filed Sept. 3, 1887. Serial No. 248,709. (No model.)



Claim.—In an accelerating-cartridge, the combination of a central flash-tube, D, tapering in an outward direction, a wad, I, fitted into the cartridge-shell upon said tube, a charge, F, of slow-burning powder in front of said wad, and a charge, G, of quick-burning powder in rear of the wad, substantially as and for the purpose described.

385,604. HORSE HAY-RAKE. ALSON P. FAIRCHILD, Mechanicsville, Iowa. Filed Feb. 16, 1888. Serial No. 264,258. (No model.)



Claim.—1. In a horse hay-rake, the combination, substantially as set forth, of the draft-frame having a rotatable axle with ground-wheels thereon, the rake-head having gangs of rake-teeth with an intervening middle space between the same, the revoluble frames carrying spring-yielding rake-teeth secured to said axle, the conveying-aprons arranged at right angles to the line of draft and inclined downward toward the middle intervening space between the gangs of rake-teeth, to convey the hay thereto to form a windrow, and means for revolving said axle and aprons.

2. In a horse hay-rake, the combination, substantially as set forth, of the draft-frame carrying a rotatable axle with suitable ground-wheels on the ends thereof, the rake-head supported by suitable brackets above the draft-frame and having gangs of rake-teeth secured thereto and arranged with an intervening middle space between the same, the rake-frame secured to the axle in front of the aforesaid gangs of rake-teeth, carrying spring-yielding rake-teeth, the inwardly-projecting downwardly-inclined aprons adapted to deposit the hay to form a windrow in the middle space between the gangs of rake-teeth, the clearer wires or rods secured to the rear sides of the frames of the conveying-aprons and encircling the revolving rakes between their teeth, and means for revolving said axle and the aprons.

3. In a horse hay-rake, the combination, substantially as set forth, of the gangs of rake-teeth having an intervening middle space between them, revoluble rakes in front of said gangs, and conveying-aprons in front of the revoluble rakes arranged at right angles to the line of draft.

4. In a horse hay-rake, the combination, substantially as set forth, of the draft-frame, the rotatable axle carrying ground-wheels, the rake-head carrying gangs of rake-teeth with an intervening middle space between them and adapted to be raised and lowered by a lever adjacent to the driver's seat, the revolving rakes having spring-yielding teeth, conveying-aprons acting to deposit the hay in the middle space between the gangs of teeth, the clutches on the axle adapted to engage the ground-wheels, and a cord secured at its lower end to the said clutches passing over a sheath or pulley and secured at its upper end to the rake-head.

5. In a horse hay-rake, the combination, substantially as set forth, of the draft-frame, the gangs of rake-teeth with an intervening middle space between the same, the rotating axle, the revolving rakes mounted thereon, the bevel or miter gear mounted upon the said axle, a counter-shaft journaled in the draft-frame and carrying at its rear end a similar miter-gear meshing with the bevel or miter gear upon the axle and at its front end extending through the conveyer-frames and carrying a roller therein, the conveyer-frames arranged at right angles to the line of draft having rollers in their inner ends, the front shields for said frames, and the conveying-aprons traversing said frames.

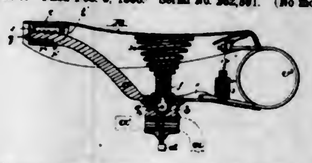
385,605. LUBRICATOR. WILLIAM H. FARRELL, South Bethlehem, Pa. Filed Mar. 19, 1888. Serial No. 267,742. (No model.)



Claim.—1. The combination of the lubricating vessel or cup having a discharge-stem at the bottom, a plunger pressing upon said lubricant, and a spring-actuated valve carried by said plunger and controlling the admission of air to the space beneath the plunger, all substantially as specified.

2. The combination of the lubricating vessel or cup having a discharge-stem at the bottom, the plunger having a hollow stem, the valve adapted to a seat upon the bottom of the plunger and having a stem contained within said plunger, a cap or button at the upper end of said stem, and a spring tending to raise the stem and close the valve, all substantially as specified.

385,606. SADDLE FOR VELOCIPEDES. WARREN I. FISH, Newark, N. J. Filed Feb. 3, 1888. Serial No. 262,891. (No model.)



Claim.—1. In combination with a stretcher-bar, *o*, spring and seat of a base having a segmental bearing, a casting having a corresponding bearing and lugs, *n*, and a bolt, substantially as and for the purposes set forth.

2. In a saddle, the spring having a base, coils, and ends e', which latter are bent toward one another, as at e^4, substantially as and for the purposes set forth.

3. In a saddle, the spring having a base, coils or spirals e^3, beads e^4, and threaded ends, substantially as and for the purposes set forth.

4. In a saddle, the combination, with a rear plate having perforated lugs, of a spring having threaded ends and nuts for holding and adjusting said ends with said lugs, substantially as and for the purposes set forth.

5. In combination with the front plate, *f*, plate or rods *o*, an interposed vertical spring, 20, having bearings on both of said plates, substantially as and for the purposes set forth.

6. In combination with a forward saddle-plate, *f*, and a stretcher-bar or rod, as *o*, a spring, *r*, allowing horizontal movement of the front plate, and a spring, 20, arranged under the rear edge or part of said forward plate, substantially as and for the purposes set forth.

7. The combination of the front plate, *f*, a suspension-saddle and a rear plate, *o*, and a flexible seat disposed upon said plates, a stretcher-bar, *o*, and a rear spring, *r*, and a spring, 20, arranged beneath the flexible seat A, substantially as set forth.

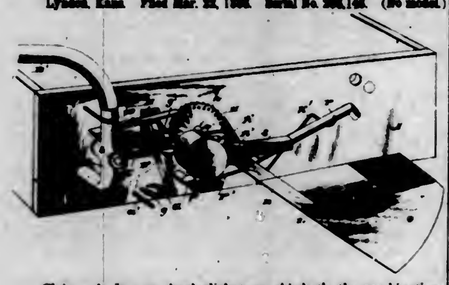
8. In combination, the flexible seat A, stretcher-bar *o*, having a lug, 22, and a forward plate, *f*, having a lug, 21, adapted to co-operate with the lug 22 to hold a vertical spring, 20, substantially as and for the purposes set forth.

9. The combination of the flexible saddle-seat had bar *o*, a forward plate joined to said flexible seat and supported by said bar *o*, and a vertical spiral, 20, arranged to support the rear end of said forward plate, substantially as and for the purposes set forth.

10. In combination, a rear plate for a flexible seat, and a suitable support, *o*, for the rear spring, and said rear spring having a base, coils or spirals e^3, and where it engages or near where it engages said rear plate having lateral bends or turns and terminating in forward projections adapted to pass directly through perforations or recesses in the lugs of said rear plate, substantially as and for the purposes set forth.

11. In combination with a stretcher-bar, *o*, rear spring, and seat A, a base adapted to be secured upon a suitable support of the vehicle-frame, a bolt, *f*, pivoted on said base, a casting, *j*, having segmental bearings adapted to engage co-operating bearings on the base and provided with a slot, *m*, adapted to allow the passage of the bolt *f* and the pivotal movement of the latter therein, and suitable nuts for fastening the said segmental casting in place on said base, substantially as set forth.

385,607. MECHANICAL PHOTOGRAPHIC BATH. HARRY FORD, Lyndon, Kans. Filed Mar. 22, 1886. Serial No. 296,146. (No model.)



Claim.—1. In a mechanical photographic bath, the combination, substantially as set forth, of a water-receptacle having a valved supply-pipe attached thereto, a tank pivoted to the water-receptacle having a weighted arm, and a slotted arm in connection with the valve of the supply-pipe and operated by the weighted arm of the pivoted tank to alternately open and close the supply-valve, substantially as described.

2. In combination with a receptacle or tank having inlet and discharge openings, the inlet-opening provided with a valve, a slotted arm attached to said valve, a counterpoise-tank having a weighted arm with a projection which engages with a slotted valve-operating arm, the discharge-pipe having a movable section, and means for automatically and successively supplying the receptacle and discharging the contents thereof.

3. In combination with a receptacle, an inlet-pipe provided with a turning-valve, the slotted arm for operating the same, the counterpoise-tank having a projection which engages with a valve-operating arm, the discharge-pipe connecting the receptacle to the tank, and means for holding the discharge-pipe elevated when the tank is depressed and the supply-pipe closed, substantially as described.

4. In a mechanical photographic bath, a receptacle for the prints provided with a valved inlet-pipe and a movable discharge-pipe, the tank pivotally attached to the receptacle and provided with a weighted arm which engages with the valve-operating mechanism, the parts being so organized that the valve is successively opened and closed and the water in the receptacle changed, for the purpose set forth.

5. The combination of a receptacle, A, having a tank with a discharge-opening, a discharge-pipe communicating with the receptacle and tank, and a weight with a projecting pin secured to said tank to engage with a slotted arm secured to the valve-stem, substantially as described.

6. The combination of the receptacle A, having the valved supply-pipe, an arm carried by the valve, a discharge-pipe having a flexible section, and a pivoted tank with a small discharge-opening having a projecting arm which carries an adjustable weighted arm, whereby the water is automatically let in and out of the receptacle and different levels maintained within the receptacle, substantially as described.

7. In combination with the receptacle A, a supply-pipe having a valve with a slotted operating-arm, a movable discharge-pipe, a pivoted tank having a weighted arm with a projecting pin which engages with the valve-operating bar, and a latch-bar, F, with a pawl, the parts being so organized that the latch-bar and pawl will hold the valve closed after the tank has been filled, substantially as described.

8. In combination with a receptacle, A, and valved inlet-pipe B, the valve thereof having a slotted arm, C, and a projecting pin upon which a pawl, D, is pivoted, a ratchet-disk, H, carrying a pawl, I, a sector, K, with ratchet-teeth with which the pawl I is adapted to engage, said sector having an arm, K', rigidly attached thereto, a discharge-pipe carried by said arm, and a pivoted tank, O, having a weight-carrying arm, said weight engaging with a slot in the arm C, whereby the valve is operated and the ratchet-disk advanced automatically by the counter-balance of the tank O, substantially as described.

9. In an apparatus for washing photographic prints, the combination of a valved supply-pipe having a slotted operating-arm and a pawl which is alternately advanced and retracted, the rotary disk carrying a gravity-pawl and an operating-pin, *i*, a sector with ratchet-teeth having a pipe-supporting bar, K', a weighted tank which automatically operates the valve, and a latch-bar with a pivoted pawl for holding the valve closed, with which said pin *i* engages, substantially as described.

10. The combination of the valved inlet-pipe B, the valve of which is provided with a slotted arm, a bar in rear of said slotted arm, rigidly attached thereto and to the opposite end of the valve-stem, a pivoted pawl, D, carried by the inwardly-projecting end of the bar C, a ratchet-disk, H, carrying a bolt, J, and projecting pin *i*, a sector having ratchet-teeth with which the pawl J engages, and the arm K', with an outwardly-projecting end forming a support for the discharge-pipe, a pivoted latch-bar having a pawl, G, notch *f*, and projecting catch f', the pivoted tank having a discharge-opening, and an arm with a socket for adjustably securing thereto a weighted bar, said weighted bar having a projecting pin for engagement with the slot of the arm C, the parts being organized substantially as described.

11. In combination with the pipe B, having a valve, *b*, with a slotted arm for operating said valve, pins *a* and *a'* for limiting the movement of said arm, a pivoted latch, F, having a swinging pawl, G, the downward movement of which is limited by a staple, *g*, and a notch or catch, *f*, with which the member C of the slotted arm engages to swing said latch-bar outwardly, substantially as and for the purpose set forth.

12. In a mechanical photographic bath, the combination, with a ratchet-disk, H, having a pawl, I, with limiting stop-pins *k*, of a pivoted sector having ratchet-teeth adapted to be engaged by said pawl, and having rigidly attached thereto a pipe-carrying arm which also engages with the upper edge of the pivoted water-tank, substantially as described.

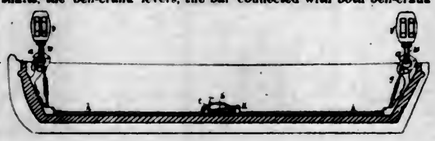
13. In a mechanical photographic bath, the combination, substantially as set forth, of a water-receptacle having a valved supply-pipe, a tank pivoted thereto having an adjustable counterpoise-weight, a slotted arm connected to the supply-valve and operated by the counterpoise-weight, the serrated sector operated by the pivoted tank, the ratchet-wheel having the pawl on its inner side, and the arm and stops for controlling the movement of said ratchet-wheel.

14. In a mechanical photographic bath, the combination, with a water-receptacle having a valved supply-pipe and a pivoted counterpoise-tank in connection with the supply-valve, of a serrated sector and a ratchet-wheel carrying a pawl and having suitable stops for limiting the movement thereof, substantially as described.

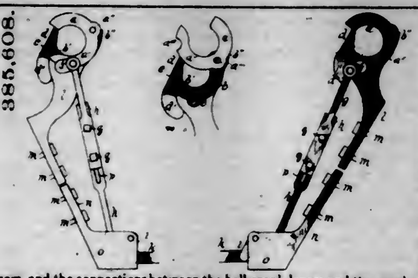
15. In a mechanical photographic bath, the combination, with a water-receptacle having a valved supply-pipe and a pivoted counterpoise-tank in connection with the supply-valve, of a ratchet-wheel operated by the movement of said counterpoise-tank and having a controlling-arm and stops, substantially as described.

385,608. BOAT-DETACHING APPARATUS. HEZEKIAH R. FOSTER, Decatur, Ill. Filed Nov. 7, 1887. Serial No. 254,482. (No model.)

Claim.—1. In boat appliance, in combination, the hook-brackets, the swinging hooks pivoted thereon and provided with the peripheral notches, the rock-shafts having the cut-away portions, the cranks on the shafts, the bell-crank levers, the bar connected with both bell-crank



385,608.



levers, and the connections between the bell-crank levers and the cranks of the rock-shafts, as and for the purpose set forth.

2. In boat appliance, in combination, the hook-brackets, the swinging hooks pivoted thereon and provided with the peripheral notches, the rock-shafts having the cut-away portions, the cranks on the shafts, the bell-crank levers, the bar connected with both bell-crank levers, and the longitudinally-adjustable connections between the bell-crank levers and the cranks of the rock-shafts, as and for the purpose set forth.

3. In boat appliance, in combination, the arc-formed permanent portions, the swinging hooks pivoted thereon and provided with peripheral notches, the rock-shafts in the permanent portions having the cut-away recesses, and the gravity-pawls pivoted to such portions and resting normally across the openings of the hooks, as and for the purpose set forth.

4. In boat appliance, in combination, the arc-formed permanent portions, the swinging hooks pivoted thereon and provided with peripheral notches, the rock-shafts in the permanent portions having the cut-away recesses, and the pawls pivoted to such portions and resting normally across the openings of the hooks, as and for the purpose set forth.

385,609. **HAND-BARROW.** JOHN P. FRIEND, Louisa, Ky., assignor of one-half to Benjamin F. Thomas, same place. Filed Mar. 24, 1888. Serial No. 268,388. (No model.)



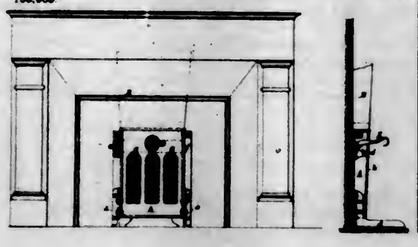
Claim.—1. In a hand-barrow, the combination of a pair of parallel bars and chains connecting said bars at corresponding points, said bars projecting beyond said chains to serve as handles, and each bar being independently revoluble on its own axis.

2. In a hand-barrow, the combination of a pair of parallel bars provided with spurs, and chains connecting said bars at corresponding points and adapted to grasp a barrel, box, or similar article, each bar being capable of independent axial rotation.

3. In a hand-barrow, the combination of a pair of parallel bars having casters in two ends thereof, and chains connecting said bars at corresponding points, each bar independently capable of complete axial rotation.

4. The combination of a pair of parallel bars provided with spurs projecting from their surfaces, said bars having casters in two ends thereof, and capable of a complete revolution independent of each other, and chains connecting said bars at corresponding points, all substantially as set forth.

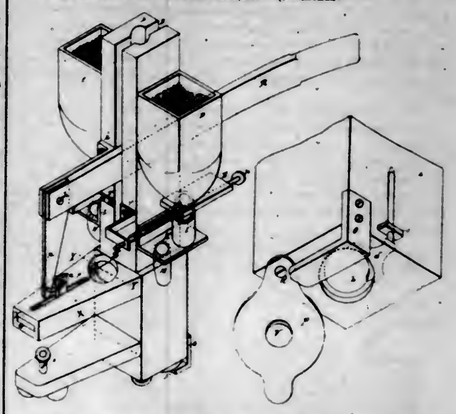
385,610. **APPARATUS FOR PREVENTING SMOKING IN FIRE-PLACES.** ARMAND GAMER, Châteaulin, France. Filed Feb. 21, 1888. Serial No. 264,867. (No model.) Patented in France Sept. 3, 1887, No. 186,608.



Claim.—1. An apparatus for improving the draft in fire-places and preventing smoking, said apparatus comprising a chamber or casing, an upper casing or chamber forming a prolongation of the first and adapted to extend into the flue of the chimney, the lower chamber or casing being provided with openings for the admission of gases from the fire-place and with a damper for regulating the draft therein, substantially as described.

2. The combination of the lower casing having a face or front inclined outward toward the top and openings therein for admission of part of the smoke and gases from the fire-place, and the upper casing forming a prolongation of the first and having its front similarly inclined, said casings filling part of the flue-space, whereby the smoke and gases passing through them and becoming heated assist in creating a draft in the portion of the flue outside of the same, substantially as described.

385,611. **CARTRIDGE-LOADER.** ALFRED S. GIBSON, Alma, Mich. Filed Jan. 20, 1888. Serial No. 261,346. (No model.)



Claim.—1. The combination of the body A, having a cartridge-receiving bore, the laterally-projecting bracket X, having the longitudinal slot *p* and wad-receiving orifice *g*, the slide *f'*, arranged within the bracket, and having the lug *e* projecting upward through the slot in the bracket, the rammer Q, and the lever R, having a pendent arm, *n*, pivotally connected with the lug on the slide, substantially as described.

2. The combination of the body A, having a cartridge-receiving bore, the lateral plates K and L, having orifices, the tubes M and N, leading from said orifices into the bore, the shot and powder vessels C and D, the horizontally-sliding plates E and F, located under the shot and powder vessels, and having orifices provided with pendent tubular chargers I and J, moving above the lateral plates, a wad-slide, *f'*, a rammer, Q, and the pivoted lever, R, having an arm, *n*, connected with the wad-slide, substantially as described.

3. The combination of the body A, having a cartridge-receiving bore and lateral powder and shot entrances T and U, the lateral plates K and L, having orifices, and tubes M and N, connecting their orifices with said powder and shot entrances, the shot and powder vessels C D on the body, the spring slide-plates E and F under said vessels, having chargers I J, movable above the lateral plates, the lateral bracket X, having the slot *p* and wad-receiving orifice *g*, the wad-slide *f'*, located within the bracket, and having the lug *e* projecting up through the slot, the rammer Q, and the pivoted lever R, having the arm *n*, to act on the lug of the wad-slide, substantially as described.

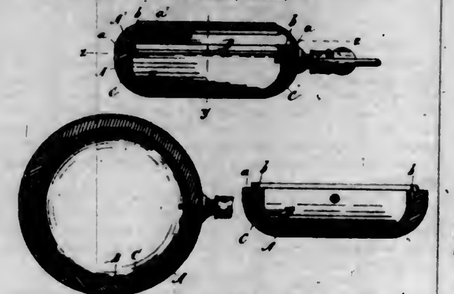
4. The combination, with the body A of a cartridge-loader, having a central bore and a cartridge-receiving chamber, W, at its lower end, of the swinging plate P, pivoted directly to the lower end of the said body at the lower end of the cartridge-chamber, and having the orifice V, and the angle-iron O, secured to the body A, and serving as a guide and brace to the swinging plate P, substantially as described.

5. The combination, with the body A of a cartridge-loader, having a bore and a cartridge-receiving chamber, W, at its lower end, of a cartridge-extractor, *d*, carried by the body and movable outward from the lower end thereof to remove the charged cartridge, substantially as described.

6. The combination, with the body A, having a central bore and lateral powder and shot inlet orifices, of the horizontal bracket X, containing the slot *g*, communicating with the bore of the body and provided in its top side with the slot *p* and wad-receiving orifice *g*, the wad-slide *f'*, located within the bracket, and having a lug, *e*, projecting outward through the top slot of the bracket, the rammer Q, and the pivoted lever R, having a pendent arm, *n*, acting upon the lug of the wad-slide, to advance the latter and move the wad into the central bore of the body, substantially as described.

7. The combination, with the body A of a cartridge-loader, having a bore and a cartridge-receiving chamber, W, at the lower end thereof, of the plate P, pivoted directly to the lower end of the body and having the orifice V, and the angle-iron O, secured to the body and extending under the same beneath the pivoted plate to sustain the latter, substantially as described.

385,612. **WATCH-CASE.** CHARLES K. GILES, Chicago, Ill. Filed Jan. 29, 1887. Serial No. 226,015. (Model.)



Claim.—1. In a watch-case, the combination, with the case proper, consisting of a back and center formed in a single piece, and provided with an integral flange projecting inward from its margin, of the internal strengthening-cup formed in a single piece, bearing against the back of the case, and having its continuous upper portion expanded to catch under the flange, substantially as and for the purposes specified.

2. In a watch-case, the combination, with the case proper, consisting of a center and back formed in a single piece, and provided with an integral inwardly-projecting flange on its margin, of the strengthening-cup having its continuous upper portion expanded to catch under the flange, and provided with a seat to receive the movement, substantially as and for the purposes specified.

3. In a watch-case, the combination, with the case proper, consisting of a center and back formed in a single piece, of the strengthening-cup secured within the same and a sectional filling occupying the space between the cup and case, substantially as and for the purposes specified.

4. In a watch-case, the combination, with the case proper, A, consisting of a back and center formed in a single piece, and provided with the integral inwardly-projecting flange *a*, of the internal strengthening-cup, B, bearing against the back of the case and having its upper portion expanded to catch under the flange, and the sectional filling C, occupying the space between the cup and the case, substantially as and for the purposes specified.

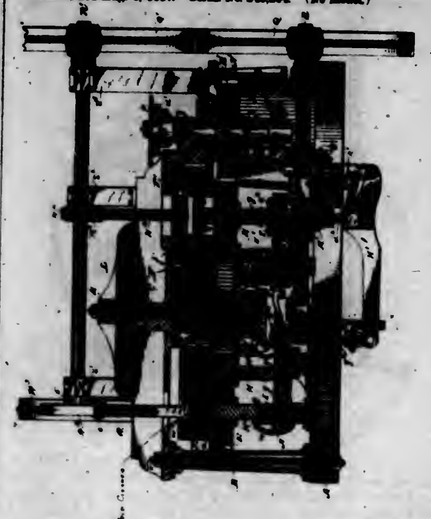
385,613. **BELTING.** TIMOTHY GINGRAS, Buffalo, N. Y. Filed Oct. 27, 1887. Serial No. 253,488. (No model.)



Claim.—1. The combination, with the body of the belt, composed of cotton or other textile fabric, of marginal strips extending along the longitudinal edges of the belt, and one or more longitudinal leather strips arranged between said marginal strips, substantially as set forth.

2. The combination, with the body of the belt, composed of cotton or other textile fabric, of a series of leather re-enforcing strips extending lengthwise of the belt, and filling-strips of cotton or other textile fabric arranged in the spaces between said re-enforcing strips, substantially as set forth.

385,614. **BRICK-MACHINE.** WILLIAM L. GIBBS, Philadelphia, Pa. Filed Aug. 6, 1887. Serial No. 246,594. (No model.)



Claim.—1. In a brick-machine, the combination of the series of upward-pressure followers and the intermediate upward and downward pressure followers, whereby successive upward pressures and an intermediate upward and downward pressure are given to the brick, substantially as described.

2. The combination, in a brick-machine, of an intermittently-revolving mold-table and mold-boxes, the downward-pressure followers, the bottom pressure-followers, the connected top and bottom shafting, and the cleaning device mounted on said top shafting, whereby clay in different sets of mold-boxes are pressed and one set of mold-boxes is cleaned at a simultaneous operation, substantially as described.

3. The combination, in a brick-machine, of the revolving mold-table and mold-boxes, the shafting carrying one set of followers, and the cleaning device W, operated by said shaft and provided with a yoke, W^1, stem 7, and the crank, crank-pin, and arched standard W^3, substantially as described.

4. The combination, in a brick-machine, with an intermittently-revolving mold-table and mold-boxes, the lower and upper shafts, R R', the connecting-gear Q Q', the top plunger, H^2, the eccentric and eccentric-strap, and the bottom pressure-followers carried by said mold-table, substantially as and for the purpose described.

5. In a brick-machine, in combination with the rotating table and molds, the top follower, the upper and lower shafts, and the connected gearing, the bottom follower, H, the pressure-lever H', crank *f''*, and pitman *g'*, whereby the simultaneous top and bottom pressure is effected, substantially as described.

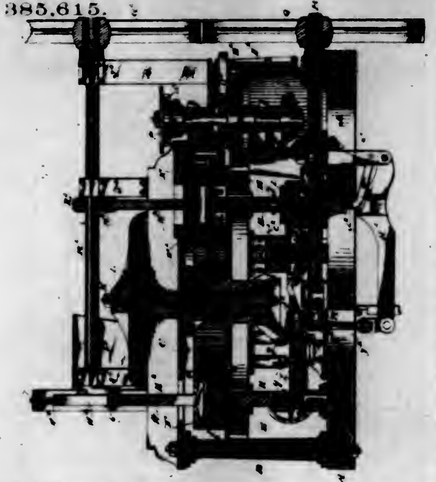
6. In a brick-machine, in combination with the rotating table and molds, the upper shaft and lower shafts, and the connecting-gearing, the swab secured to said upper shaft, the follower provided with a head, *c*, and the supporting-track, whereby said swab is pressed down against the head of said follower, substantially as described.

7. The combination, in a brick-machine, of the downward-pressure follower H^3, provided with a convex pressure-plate, as shown, and bottom pressure-followers provided with pressure-plates having flat upper surfaces, and a counter-pressure plate, whereby in giving the top and bottom pressure a thin upwardly-projecting fin of clay will be formed on the edges of the brick, which, upon the final upward pressure, will be compressed and form the solid sharp edge of the brick, substantially as described.

385,615. **PROCESS OF MANUFACTURING BRICK.** WILLIAM L. GIBBS, Philadelphia, Pa. Filed Apr. 9, 1888. Serial No. 270,044. (No model.)

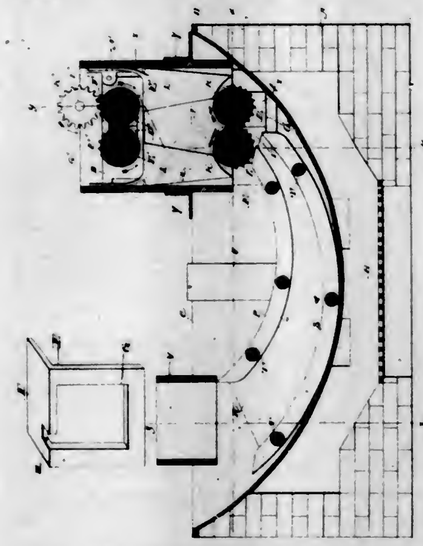
Claim.—1. The process of manufacturing brick, consisting, first, in supplying the clay to the mold; second, giving the clay a single plunger-pressure from one side of the mold, whereby the brick is developed; third, giving the clay a simultaneous double plunger-pressure from both sides of the mold, and, fourth, giving the clay a final single plunger-pressure to complete, solidify, and finish the brick, substantially as described.

385,615.



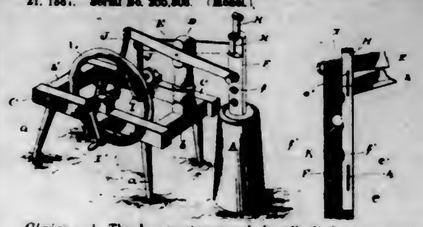
2. The mode of manufacturing brick, consisting, first, in supplying the clay to the mold; second, giving the clay an upward pressure, whereby the brick is developed and air and surplus clay expelled; third, giving the clay a simultaneous top and bottom pressure, and, fourth, giving the clay a final upward pressure to complete, solidify, and finish the brick, substantially as described.

385,616. APPARATUS FOR GALVANIZING METALS. ROBERT GEST, Struther's, Ohio. Filed June 23, 1887. Serial No. 242,367. (No model.)



Claim.—The combination, with the regularly-curved melting-pot, the flux-receptacle at one end of said pot V, open at top and bottom, and the grease-box at the opposite end of the melting-pot, provided with the rollers and operating mechanism whereby the plates are drawn out of the machine, of the regularly-curved guide-frame P within the melting-pot, composed of the regularly-curved upper and lower bars S, the side walls, R, and the transverse bolts T, the said frame P having its larger end under the receptacle V and its smaller end under the grease-box, the upper and lower bars S converging toward said box, substantially as specified.

385,617. CHURN. WILLIAM B. GRIMM, Enfield, Ohio. Filed Nov. 21, 1887. Serial No. 255,808. (Model.)



Claim.—1. The herein shown and described churn-operating mechanism, composed of the frame, the compound crank-shaft having a balance-wheel and provided with a crank, the standard, the operating-levers, the pitmen connecting one end of the levers with the crank-shaft, the lateral projections at the other ends of the said levers, the two dashers, each having a series of openings to receive the said projections and each having a kerf in its edge, and the locking-plates fitted in the said kerfs, substantially as and for the purpose described.

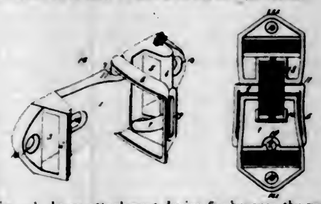
2. The combination, with the dasher-shaft having a series of openings, of the operating-lever having a projection extending laterally therefrom to fit in one of the said openings, and adapted to yield laterally to disengage the projection from the opening, substantially as and for the purpose described.

3. The combination, with the dasher-shaft having a series of openings and the operating-lever having a lateral projection provided with an annular groove, of the locking-plate, substantially as set forth.

4. The combination, with the dasher-shaft, having a series of openings and a kerf or groove in its edge, and the operating-lever having a lateral projection provided with an annular groove, of the locking-plate having slots and notches in its lower edge and the pins extending through the slots, substantially as and for the purpose described.

5. The combination, with the two operating-levers and the dasher-shafts having each a series of openings, of the locking-plates and the short rod or locking-pin having an annular groove near each end, substantially as and for the purpose specified.

385,618. DOUBLE-LOOP BUCKLE. JOHN C. HACKETT, Belleville, Ill. Filed Mar. 3, 1888. Serial No. 266,571. (No model.)



Claim.—1. In an attachment device for harness, the metal strap, a loop at each end of said strap, and the intermediate buckle between said loops, substantially as and for the purpose set forth.

2. In an attachment device for harness, the metal strap, a loop at each end of said strap, the swinging bail hinged between said loops, and the buckle-tongue on said bail, substantially as and for the purpose set forth.

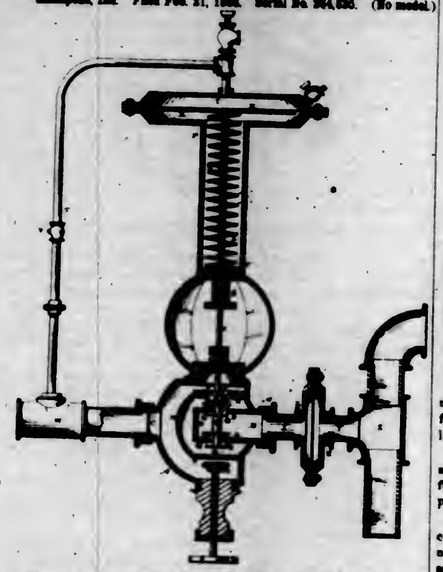
3. In an attachment device for harness, the combination of the metal double-loop strap, the hinged bail with its pivot-arm that is provided with its bearing in the corrugation of said strap between its loops, the buckle-tongue in the front arm of said bail, which engages in the perforated seat provided for it in said strap, and the retention-strap that holds said pivot-arm of the bail in its bearings in said corrugation of the strap, substantially as and for the purpose set forth.

4. In an attachment device for harness, the combination of the metal double-loop strap, the hinged bail with its pivot-arm, that has bearing in the corrugation between the loops of said strap, the buckle-tongue on the front arm of said hinged bail, the retention-strap that holds the pivot-arm in its bearing, the projected lugs that clinch down on and hold the retention-strap, and the flattened face of the pivot-arm that fits to the retention-strap when the buckle is closed, and so locks it in its operative position, substantially as and for the purpose set forth.

5. In an attachment device for harness, the combination of the double-loop metal strap, the buckle-bail hinged in its corrugated seat to said strap between said loops, the retention-strap that holds the pivot-arm of said bail in its seat, the flattened face of said pivot-arm that engages with the flat face of the retention-strap to lock the buckle,

the perforated side legs to said metal loop-strap, the rivets that pass through said legs and secure said metal strap to the harness, and the metal side loop integral with the metal strap for the attachment of the breeching when used in double harness, substantially as and for the purpose set forth.

385,619. REGULATING-VALVE. MELVILLE O. HALDEMAN, Indianapolis, Ind. Filed Feb. 21, 1888. Serial No. 264,636. (No model.)



Claim.—1. The combination of the shell, provided with the two separate partitions and the three valve-seats G J, and the two valves attached to a single stem, one of the said valves being made double-seated, a diaphragm, and a spring or weight, substantially as described.

2. The combination of the shell, provided with two partitions having the valve-seats G J Q, with the valves H, which are operated by a diaphragm, and the independent valve O, substantially as specified.

3. The combination of the shell, provided with the partition D, which extends inward from the inlet B, and is provided with two valve-seats, and a separate partition, N, which entirely inclosses the one D, and is provided with the valve-seat J, with the valve-rod, valves secured thereto, the spring, and diaphragm, there being a passage between the two partitions for the passage of the gas, substantially as specified.

385,620. VELOCIPEDE. HARRIE B. HART, Philadelphia, Pa., assignor to the Hart Cycle Company, same place. Filed Apr. 6, 1888. Serial No. 269,890. (No model.)

Claim.—1. The combination, in a velocipede, of a vertically-adjustable handle-bar, a saddle carried by a vertically-swinging support, and a pivotal connection between the saddle and its support, substantially as described.

2. The combination, in a velocipede, of a vertically-adjustable handle-bar, a saddle-support pivoted at its forward end, a saddle pivotally connected to said support at its opposite end, and means for adjusting the saddle lengthwise upon the support, substantially as described.

3. The combination, in a velocipede, of a vertically-adjustable handle-bar, a saddle-support pivoted at its forward end, a saddle pivotally connected to the free end of said support and adjustable lengthwise thereon, and means for locking the saddle-support in its adjusted position, substantially as described.

4. The combination, in a velocipede, of a saddle-support pivoted at its forward end to the backbone of the machine, a saddle carried thereby at its free end, and means for positively adjusting said support upon its pivot, substantially as described.

5. The combination, in a velocipede, of a saddle-support pivotally connected at one end to the backbone, a saddle carried by and adjustable on said support at its free end, the adjacent faces of said pivotal connection having interlocking notches or corrugations, and a bolt for clamping said faces together, substantially as described.

385,620.



6. The combination, in a velocipede, of a saddle-bar pivotally connected at one end to the backbone, a saddle carried by said bar at its free end, and a vertically-adjustable supplemental support for said bar in rear of its pivot-point, substantially as described.

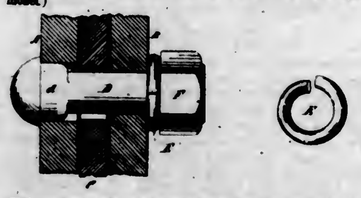
7. The combination, in a velocipede, of a saddle-bar pivotally connected at one end to the backbone, a saddle carried by said bar at its free end, and a screw having a bearing upon the backbone and supporting said bar in rear of its pivot-point, substantially as described.

8. The combination, in a velocipede, of a saddle-bar pivotally connected at one end to the backbone, the adjacent faces of said connection having interlocking notches or corrugations, a bolt for clamping said faces together, a saddle pivoted to and adjustable longitudinally upon said bar at its free end, and an adjustable support for said bar in rear of its pivot-point, substantially as described.

9. The combination, in a velocipede, of a front fork composed of substantially parallel side bars connected at their upper ends, and a yoke-shaped bracket adjustable upon said fork and carrying the handle-bar, substantially as described.

10. The combination, in a velocipede, of a front fork composed of substantially parallel side bars connected at their upper ends, of a yoke-shaped bracket carrying the handle-bar and fitted to said side bars, and clamps for securing the bracket adjustably to the fork, substantially as described.

385,621. WIDE-RANGE YIELDING WASHER. HAYWARD A. HARVEY, Orange, N. J. Filed Feb. 20, 1888. Serial No. 265,552. (No model.)



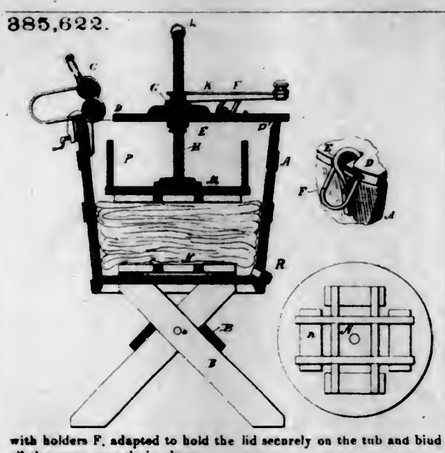
Claim.—1. A soft-metal unresilient washer having the form of a single convolution of a spiral, the pitch of which is approximately equal to the inside diameter of the spiral, as and for the purpose set forth.

2. An oval-necked bolt and the structure through which the said bolt is inserted, in combination with a nut and a soft-metal washer having the form of a single convolution of a spiral of coarse pitch, and adapted to embrace the bolt and to bear in one direction against the structure through which the bolt is inserted and in the other direction against the nut, as and for the purpose set forth.

385,622. WASHING-MACHINE. HENRY T. HENDERSON, Keokuk, Iowa. Filed Mar. 14, 1887. Serial No. 230,795. (No model.)

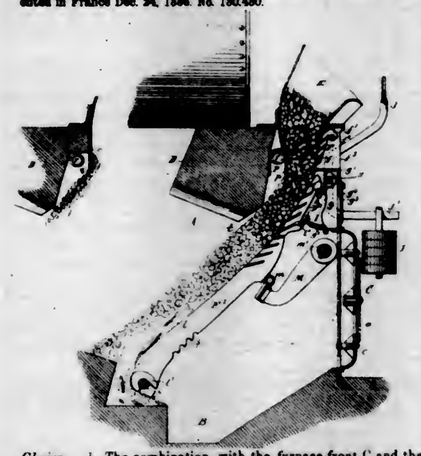
Claim.—The washing-machine having a tub, A, provided with ribs in its bottom and loop-ears E above, in combination with its lid D, provided with a rubbing apparatus mounted thereon having an operative crank and having slots in its edges to fit over loop-ears E, and

385,622.



with holders F, adapted to hold the lid securely on the tub and bind all the parts securely in place.

385,623. FURNACE. ROBERT HERRMANN and LOUIS P. COHEN, Paris, France. Filed Sept. 10, 1887. Serial No. 249,299. (No model.) Patented in France Dec. 24, 1886. No. 180,480.



Claim.—1. The combination, with the furnace-front C and the fuel-hopper E, mounted thereon, of the transverse plates g' g^2, secured to the front C, one above the other, the upper grate-section, F, arranged between the fuel-hopper and the plate g', the intermediate grate-section, F', arranged between the plates g' and g^2, the lower grate-section F^2, arranged below the plate g^2, the arch D, arranged opposite the intermediate grate-section, F', and the air-inlet P, arranged below the fuel-hopper and above the throat of the arch, substantially as set forth.

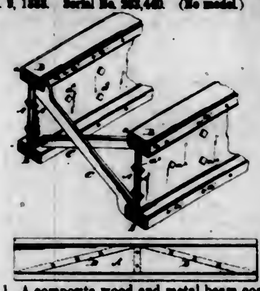
2. The combination, with the fuel-hopper E, the upper grate-section, F, and the lower grate-section, F^2, of the grate-section F', composed of bars *h*, and an open frame, I, a rock-shaft, *j*, supporting said frame, and a hand-lever, J, attached to said rock-shaft, substantially as set forth.

3. The combination, with the fuel-hopper E, the upper grate-section, F, and the grate-section F', of the lower grate-section, F^2, composed of bars *l*, a fixed cross-bar, l^2, supporting the lower ends of said bars, and a movable cross-bar, *m*, supporting the upper ends of said bars, substantially as set forth.

4. The combination, with the grate-sections F F' and the bars *l* of the lower grate-section, of the fixed cross-bar l^2, supporting the lower ends of said bars, the movable cross-bar *m*, supporting the upper ends of said bars, arms M, carrying the cross-bar *m*, a rock-shaft, *m'*, to which the arms M are secured, and gears whereby said rock-shaft can be turned, thereby changing the inclination of the grate-bars *l*, substantially as set forth.

5. The combination, with the furnace-front C, provided with a chamber, *g*, open at its front and rear sides, of the upper grate-section, F, the grate-section F', attached to a frame, I, in the chamber *g*, a curved plate, g^3, forming the bottom of said chamber and fitting against the lower side of the frame I, and the lower grate-section, F^2, arranged below the chamber *g*, substantially as set forth.

385,624. COMPOSITE BEAM. HENRY C. HOSKIN, Detroit, Mich. Filed Feb. 9, 1888. Serial No. 263,440. (No model.)



Claim.—1. A composite wood and metal beam consisting of two sheets of metal bent to form, when placed side by side, a web, and in connection therewith wood elements embraced between their edges, said metal sheets being united along their web portions by bolts or rivets passing therethrough and through intermediate metallic separating parts, substantially as and for the purposes described.

2. The combination, with a composite wood and metal beam, of diagonal braces upon or embodied between the web and bolted or riveted thereto, substantially as described.

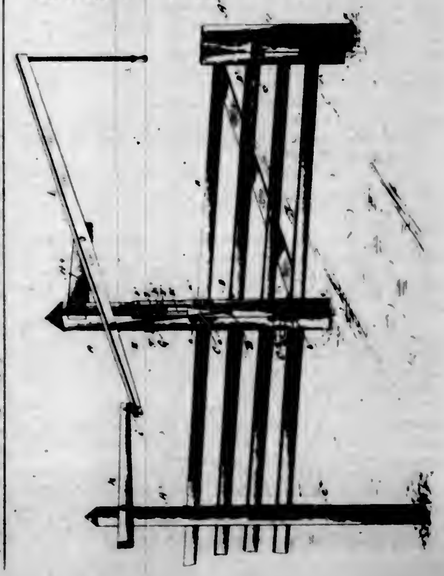
385,625. ALCOHOLIC DISTILLATION. WILLIAM L. HORSE, Marblehead, assignor to the Horse Vacuum Company, Hartford, Conn. Filed May 14, 1887. Serial No. 238,240. (No specimens.)

Claim.—1. The process of extracting alcohol from the fermented juices of fruits and obtaining valuable residual products, which consists in extracting the alcohol therefrom and then fermenting the residual liquor, substantially as described.

2. The process of obtaining alcoholic products from the fermented juices of fruits, which consists in extracting the alcohol therefrom and then subjecting the residual liquor to refermentation and like redistillation, substantially as described.

3. The process of obtaining alcoholic products from the fermented juices of fruits, which consists in extracting the alcohol therefrom and adding saccharine matter to the residual liquor, and then subjecting the same to fermentation and then to redistillation, substantially as described.

385,626. FARM-GATE. CHARLES P. HOWE, Chicago, Ill. Filed Feb. 6, 1888. Serial No. 263,102. (No model.)



Claim.—1. The combination, with a swinging gate adapted to be moved vertically, of a double inclined segmental cam-rail secured to a gate-post, and rollers applied to upper extensions of the gate-bar above and below said rail, substantially as described.

2. The combination, with a gate which is adapted to be swung horizontally and to be bodily moved vertically, of elongated hinges, a double inclined segmental track secured to the gate-post, the rollers F F', adapted to operate on opposite sides of this track, the levers I K, and a rod connecting the lever I to the vertical hinged bar of the gate, substantially as described.

3. The combination of a swinging gate which is adapted to be moved vertically and which is connected to a gate-post, A, by elongated hinges C C, and provided with a latch, *c*, the posts A' A^2, provided with catches and located with respect to the roadway as described, levers fulcrumed on said posts, linked together and connected to the gate by a rod, N, a double inclined segmental cam-rail secured to said gate-post A, and rollers journaled in extensions of the gate-bar D and receiving between them said cam-rail, substantially as described.

4. The combination, with the gate-posts A A' and the gate hinged to the former, so as to be movable vertically thereon, of the stationary segmental rail G, composed of the oppositely-inclined portions g' g^2, united by a ridge, g^3, the said rail being attached to the hinge-post A, and the rollers F F', journaled upon the inner post, D, of the gate and adapted to bear, respectively, above and below the said segmental rail G in the operation of opening and closing the gate, substantially as set forth.

385,627. COMBINED THRASHER AND STEAM-ENGINE. EPHRAIM HOWLAND, Pontiac, Mich. Filed Dec. 1, 1887. Serial No. 256,674. (No model.)

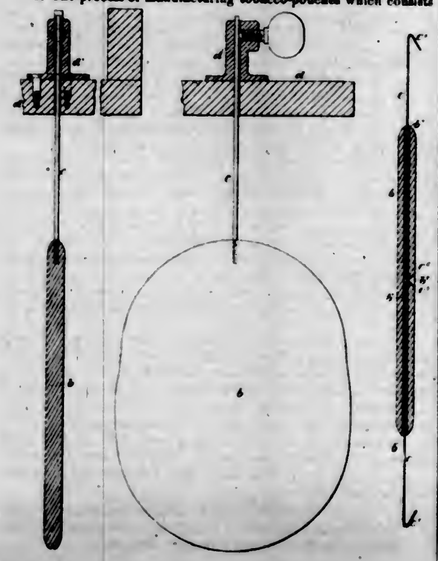


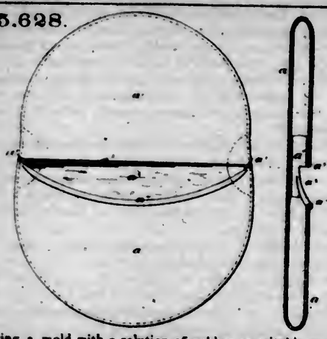
Claim.—The combination, with a movable thrashing-machine and two steam-engines, one upon each side of the thrashing-machine and geared with its driving mechanism, of a portable steam-boiler and a flexible steam hose or conduit connecting said boiler and engines, substantially as described.

385,628. MANUFACTURE OF TOBACCO-POUCHES. JAMES G. ISHAM, London, England. Filed Oct. 12, 1887. Serial No. 252,172. (No model.)

Claim.—1. The process of manufacturing tobacco-pouches which consists in dipping a mold into a solution of the pouch-forming material, forming the opening in said pouch, re-enforcing the corners of said opening, and subsequently removing the mold therefrom, as set forth.

2. The process of manufacturing tobacco-pouches which consists





in coating a mold with a solution of rubber or suitable composition, incorporating re-enforcing strips at desired locations during the process of coating the mold, and subsequently cutting the mouth of the pouch between said re-enforce and removing the mold therefrom, as set forth.
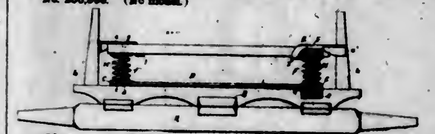
3. The process of manufacturing tobacco-pouches which consists in coating a mold of desired shape with a solution of rubber, incorporating re-enforcing strips therein at suitable locations, forming the mouth of the pouch between said re-enforcing strips, vulcanizing or curing the pouch thus formed, and subsequently removing the mold, as set forth.

385,629. NECKTIE-FASTENING. DAVID MARKOVITS, New York, N. Y. Filed May 18, 1888. Serial No. 274,234. (No model.)



Claim.—In neck ties and similar articles, the combination, with the part or end E of the band, of the cross-bar G, spiral springs H H, and hooks I I, all three being made of the same piece of wire, the cross-bar J and swinging link K, and the part or end D of the band, substantially as described.

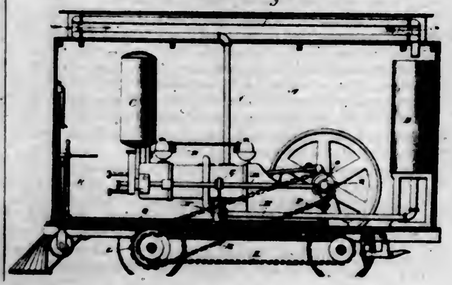
385,630. BOLSTER-SPRING FOR VEHICLES. GARRETT H. JAMESON and JOHN HARVEY, Cleveland, Ohio. Filed Sept. 21, 1887. Serial No. 250,266. (No model.)



Claim.—1. The combination, with a bolster, a yoke, cap, and springs yieldingly connecting the yoke and cap, said yoke and cap having slots therein, of tie-rods and bolts passing through the tie-rods and slots in the yoke and cap, whereby the latter are adjustable lengthwise of the bolster, substantially as set forth.

2. The combination, with cap and tie-bar adjustably secured to the cap, of strap I, for supporting such tie-bar, substantially as set forth.

385,631. STREET-CAR MOTOR. JACOB KARR, Cleveland, Ohio. Filed Apr. 30, 1888. Serial No. 272,382. (No model.)

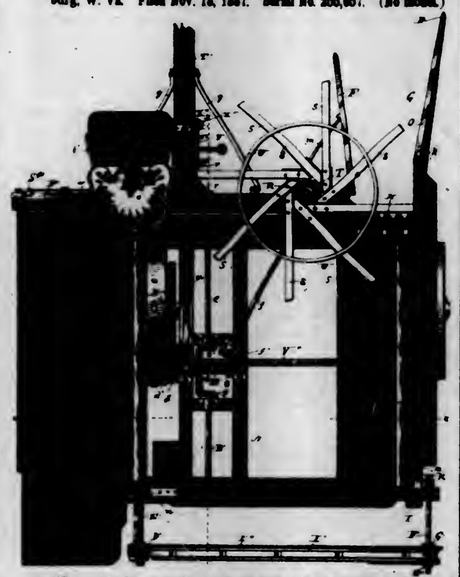


Claim.—1. The combination, with the car, of the motor B and fuel-reservoir C, the said motor being connected by suitable gearing to the axles of the car, the liquid-tank D, connected to the cylinder-jacket of the motor by a pipe, E, a pump, F, interposed in this pipe E and operated continuously by the said motor B, and the overhead cooling-coil J, also connected to the cylinder-jacket of the motor, the outlet end of this overhead coil emptying into the said tank D, substantially as described.

2. The combination, with a car, of the replacing device, consisting, essentially, of a vertically-movable vertical shaft, S, provided with a wheel, T, at its lower end, the said shaft being screw-threaded at its upper end, and a nut, V, supported in a bracket, W, bolted to the car, the said shaft S passing through the nut V, as described, whereby it may be raised or lowered.

3. The combination, with a car mounted upon suitable wheels and axles, one of the said axles being provided with an eccentric, G', of a pushing device consisting of a depending pivoted arm, B', provided with a forwardly-extending thumb, D', which impinges against the eccentric G' on the axle, and a rearwardly-extending weighted projection, E', a rearwardly-extending pawl, F', pivoted to the lower end of the said arm B', and means for suspending the arm B' and its attachments when not in use, all arranged as and for the purpose set forth.

385,632. **CORN-HARVESTER.** WILLIAM H. KARCHER, Martinsburg, W. Va. Filed Nov. 18, 1887. Serial No. 255,657. (No model.)



Claim.—1. In a corn-harvester, the combination of the frame of the machine suitably mounted, the cutter, the vertical reel-shaft, the hub upon this reel-shaft, and the reel-arms secured tangentially upon this hub, the said vertical reel-shaft being journaled in the frame of the machine at one end of the cutter and forward of the same a distance equal to the radius of the hub, whereby when the reel-shaft is revolved the reel-arms on the hub will assume a position parallel to to the cutter when over it, substantially as described.

2. In a corn-harvester, the combination of the frame suitably mounted, the cutter, the reel, the board I on the grainward side of the machine, the strips K and M, located one above the other vertically over the grainboard I and adjustably supported thereon, the guide G, comprising the horizontal timber H', extending forward from the front end of the grainward side of the frame, and the strips O, secured to the forward end of the timber H' and inclined upwardly and rearwardly therefrom, and connected, respectively, to the forward ends of the said strips K and M, substantially as described.

3. In a corn-harvester, the combination, with the frame suitably mounted, of the cutter, the reel, an upwardly-inclined elevating-apron to the rear of the reel, and the upwardly-inclined auxiliary belt I' to the rear of the elevating-apron and adapted to carry the heads of the cut corn, the lower end of this auxiliary belt being raised above the lower end of the elevating-apron, whereby the stubble is prevented from engaging the heads of the cut corn, substantially as described.

4. The combination, in a corn-harvester, of the frame suitably mounted, the cutter, the reel, the upwardly-inclined elevating-apron to the rear of the reel, and the upwardly-inclined auxiliary belt I', located to the rear of the elevating-apron and adapted to carry the heads of the cut corn, the said auxiliary belt being adjustable toward and from the rear edge of the elevating-apron, substantially as described.

5. In a corn-harvester, the combination of the frame, the cutter, the reel, the upwardly-inclined elevating-apron located to the rear of the reel, the shaft W and rod F', projecting from the rear end of the frame, the shaft W being approximately in line with the upper end of the elevating-apron, the pulleys D' and G' upon this shaft and rod, respectively, and the upwardly-inclined auxiliary belt I', traveling upon the pulleys G' and D', and the removable washers upon the shaft W, interposed between the pulley D' thereon and the end of the machine, whereby the auxiliary belt may be adjusted to or from the elevating-apron, substantially as described.

6. In a corn-harvester, the combination of the frame, the cutter, the board I, located on the grainward side of the machine, the vertical reel-shaft located at one end of the cutter and a distance forward of the same equal to the radius of the hub upon the reel-shaft, the hub upon the reel-shaft, the reel-arms secured tangentially upon this hub, whereby they assume a position parallel to the cutter when over it, and the arm M', secured upon the frame under the reel and extending rearwardly therefrom and curving toward the said board I, then away from it, and then abruptly downward toward the apron, and the elevating-apron, substantially as described.

7. In a corn-harvester, the combination of the frame, the inclined elevating-apron, an inclined receiver adjacent to the upper end of the apron, a gate, O', secured upon a rock-shaft journaled at the lower end of the receiver, a rigid arm, *s'*, upon the forward end of this rock-shaft, a pivoted lever, P', connected to arm *s'* by means of a link, whereby the cut corn may be released from the inclined receiver by throwing down the gate, a catch for holding the lever P' in its normal position, and a wind-guard at one side of the inclined receiver and over the free edge of the gate, substantially as described.

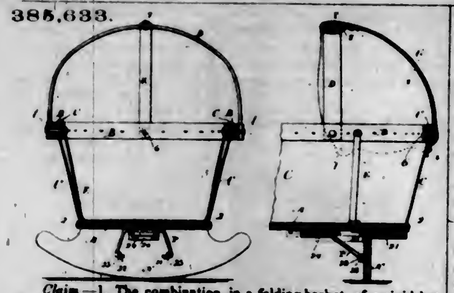
8. In a corn-harvester, the combination of the frame, the cutter, the vertical reel-shaft located at one end of the cutter, the hub secured upon the reel-shaft, the reel-arms secured tangentially upon the said hub, the arm M', secured to the frame beneath the reel and extending rearwardly therefrom and convex toward the grainward side of the machine and terminating with an abrupt downward extension, the grain-board I, the upwardly-inclined elevating-apron, the strips K and M, located one above the other vertically over the grain-board I and adjustably supported thereon, the guide G, comprising the timber H', projecting forward from the front end of the machine, the stripe O O, attached to the forward end of the timber H', extending upwardly and rearwardly therefrom and connected to the forward ends of the stripe K and M, the metallic strap P, connecting the forward ends of the timber H' and stripe O O, the arms of the said reel extending between the said stripe K and M, as and for the purpose described.

9. In a corn-harvester, the combination of the frame, the cutter, the reel adjacent thereto, the elevating-apron, the grain-board I, the strips K and M, located one above the other vertically over the grain-board I, vertical strips L, adjustably secured to board I, for adjustably supporting the strips K and M, the guide F and the guide G, comprising the timber H', projecting from the front end of the grainward side of the machine, the upwardly-inclined strips O O, connecting the forward end of the timber H' to the forward ends of the adjustable strips K and M, and the metallic strap P, connecting the forward ends of the timber H' and strips O O, substantially as described.

10. In a corn-harvester, the combination of the frame, the cutter, the reel adjacent thereto, the elevating-apron, the grain-board I, the strips K and M, located one above the other vertically over the grain-board and adjustably supported thereon, the guard-extension N, secured upon the upper edge of the strip M and inclined upwardly and outwardly toward the grainward side of the machine, and the forwardly-projecting guides F and G, the latter comprising the timber H', projecting from the grainward side of the front end of the machine, and the inclined strips O O, connecting the forward end of the timber H' with the forward ends of the strips K and M, substantially as described.

11. In a corn-harvester, the combination of the frame, the reel, the cutter, the apron-roller W', the upper apron-roller, W², the shaft W, extended out rearwardly from the frame, the inclined apron traveling upon the said rollers, the rod F', secured rigidly to the frame of the machine and extending rearwardly therefrom, the pulleys upon the extension of the shaft W and rod F', the auxiliary belt I', traveling upon the said pulleys and moving in unison with the apron, and the frame I'', supporting the auxiliary belt, this frame being loosely supported upon the extension of the shaft W and the rod F', substantially as described.

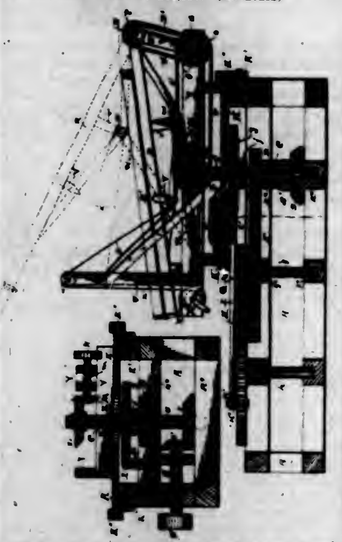
385,633. **FOLDING BASKET.** ALEXANDER C. KELLY and ADDISON M. FREEMAN, Hoboken, N. J., assignors to said Alexander C. Kelly. Filed Feb. 29, 1887. Serial No. 229,402. (No model.)



Claim.—1. The combination, in a folding basket, of a rigid bottom, sides of flexible material, swinging handles, and a brace connected at one end to the rim of the basket and having a hook at the other end to connect with a stud upon the handle for holding the same up vertically, substantially as set forth.

2. The combination, with the rigid wooden bottom, the flexible sides, rim, and handles in a folding basket, of a cover of flexible material having button holes or loops at the sides and ends for holding the same in place, the length of the cover being greater than the length of one of the handles, so that the cover may be used to close the basket, or it may be passed over one of the handles to form a hood for transforming the basket into a cradle or child's carriage-body, substantially as set forth.

385,634. **STRAW-STACKER.** ANDREW LARSENDER, South Bend, Ind. Filed Jan. 26, 1888. Serial No. 261,907. (No model.)



Claim.—1. In a straw-stacker, the combination of the main frame, a vertical shaft, and a loose gear-wheel on said shaft with the carrier mounted on said main frame, the arm secured to said gear-wheel provided with a detent adapted to adjustably engage with an annulus supporting said carrier, the pitman engaging said gear-wheel and adapted to impart alternate rotary movements thereto, and the gearing for actuating said pitman from said shaft, all constructed and arranged substantially in the manner and for the purpose described.

2. The combination of the main frame, its vertical shaft carrying a loose gear-wheel, and the carrier adjustably mounted on said frame with the toothed pitman-rod engaging said loose gear-wheel, the gear-wheel actuating said rod and driven by intermediate gearing from said shaft, and the mechanism, substantially as described, for driving the carrier-belts from said shaft, all constructed and arranged substantially in the manner and for the purpose described.

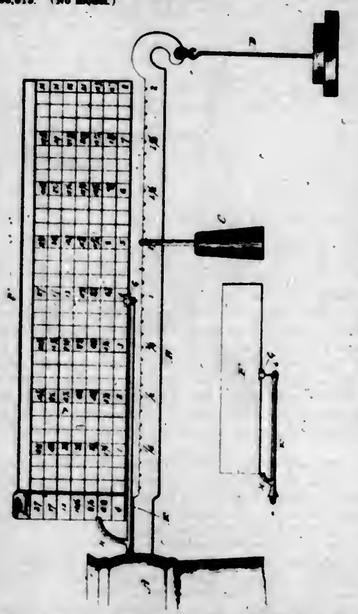
3. The main frame A, having vertical shaft C, the carrier-frame Y, having an annulus, K, and adjustably mounted in frame A, and the mechanism consisting of pitman I, driven from shaft C, driving-pinion J, and arm *z*, having detent *z'*, arranged substantially as described, for transmitting vibratory movements to frame Y from shaft C, in combination with the carrier-section R on frame Y, adjustably secured thereon by bars T and W, the ropes for elevating said section, and the mechanism, substantially as described, for driving the carrier-belts on said section from shaft C simultaneously with but independently of the movement of frame Y, substantially as described.

4. The combination of the main frame A, the vertical shaft C, loose gear J thereon, and gear-wheel H, driven by said intermediate gearing therefrom, with the carrier-frame Y, its annulus K, the arm *z*, fixed to gear J, provided with a detent adapted to be adjustably engaged with said annulus, and the toothed pitman driven by gear H and driving the gear J, all constructed and arranged substantially in the manner and for the purpose described.

5. The combination of the main frame A, shaft C, gears E and L, and loose gear J, having an arm, *z*, provided with a detent, *z'*, and the gears F G H, the supporting-shafts and pitman I, with the carrier-frame Y, having annulus K, provided with openings *k*, and the carrier-sections adjustably mounted on said frame Y, all constructed and arranged substantially in the manner and for the purpose described.

6. The combination of the frame A, its shafts *h*, *f*, and C, and the intermediate gearings on said shafts, the loose gear J on shaft C, driven by a pitman connected to a gear on shaft *h*, and having an arm, *z*, provided with a detent, *z'*, with the frame Y, having annulus K, mounted on rollers on frame A, the carrier-sections R R', bars T and W, hinging section R to frame Y, the uprights U, drum X, and rope *x*, all constructed and arranged substantially in the manner and for the purpose described.

385,635. **PRICE-INDICATOR FOR WEIGHING-SCALES.** CHARLES P. LANGASTER, Fairmount, Ind., assignor of two-thirds to Levi Scott and John H. Winslow, both of same place. Filed Mar. 3, 1888. Serial No. 266,619. (No model.)



Claim.—1. The combination, with the scale-standard, the scale-beam and its movable weight, of the supporting-rod E, attached to the standard and provided with the upwardly-extending arm H, bifurcated at its upper end, so as to embrace and steady the indicator-plate, the indicator-plate supported by the rod E, and means for holding the indicator-plate on the said rod E, substantially as described.

2. In a scale-beam indicator, the combination of the supporting rod E, provided with the upwardly-extending arm H, bifurcated at its upper end, so as to embrace the edge of the indicator-plate, an indicator-plate marked off and figured, and means for holding the indicator-plate on the said rod E, substantially as described.

385,636. **SAFETY-RAZOR.** HENRY B. LEACH, Boston, Mass. Filed Feb. 16, 1888. Serial No. 264,250. (Model.)

Claim.—1. In a safety-razor, the combination of the razor-blade its frame or holder, the clamping-screw K *k*, bearing directly on the

385,636.



back of the razor-blade, and the gage-screw H, through which the clamping-screw passes, said gage-screw being screwed through a portion of the holder or frame, as set forth.

2. The combination, with the razor-blade and its frame or holder of the adjustable screw-holders E E, whose heads or flanges bear on the outer face of the blade and press it to the holder, as described.

3. In a handle adapted to receive a safety-razor blade for honing, the combination of the blade-holding tube T^2 with the lip adapted to operate as a screw-driver, substantially as described, and for the purpose set forth.

4. In a safety-razor, the combination of a handle and a frame with the clamping-screw K *k*, bearing directly on the back of the blade, and the gage-screw H, through which the clamping-screw passes, together with holding devices bearing on the outer face of the blade and pressing it to its holder, substantially as described.

385,637. METHOD OF MAKING PATTERNS FOR GARMENTS. FRANCIS X. LEDOUX, New York, N. Y. Filed Oct. 7, 1887. Serial No. 251,747. (No model.)



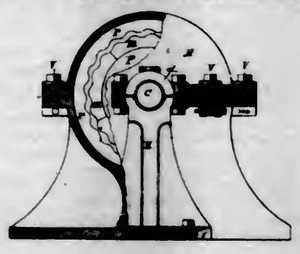
Claim.—1. The method of making patterns, which consists in fitting the form with an elastic material, stiffening said material, and indicating on said stiffened material the lines for the seams, from which the pattern may be made.

2. The method of making patterns, which consists in fitting the form with a single piece of elastic material, reducing the elasticity of such material while on the form, indicating by lines on said material the location of the seams, cutting said material in the places indicated, and forming a pattern from the cut pieces, substantially as set forth.

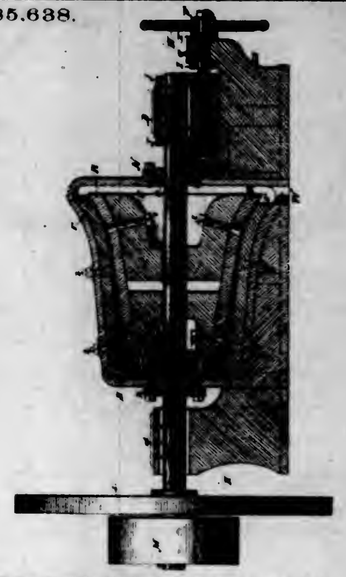
3. The method hereinbefore described of tailoring, which consists in fitting the elastic cloth to the person, then waxing said cloth to give it a permanent shape, and marking upon said cloth the lines the seams are to take, and, finally, in marking a pattern to conform to the waxed cloth after it has been removed.

385,638. STONE AND ORE CRUSHING AND PULVERIZING MACHINE. FRANK B. MERCH and ALFRED H. MERCH, Cleveland, Ohio. Filed Jan. 5, 1888. Serial No. 260,220. (No model.)

Claim.—In a stone and ore pulverizing machine, an outer shell provided with plates having corrugations throughout a portion of their

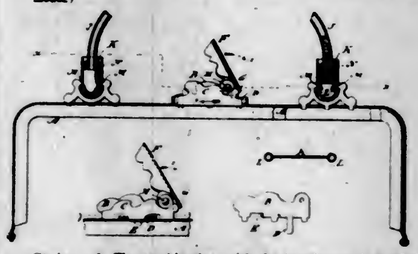


385,638.



length, the remaining portion being plain, an inner shell provided with like plates adapted to rotate in the outer shell, whereby one portion of the plates is utilized for crushing the material and the other portion for pulverizing, as set forth.

385,639. FRAME FOR POCKET-BOOKS, SATCHELS, &c. LOUIS MERRIS, New York, N. Y. Filed Apr. 5, 1888. Serial No. 269,703. (No model.)



Claim.—1. The combination, with the bag-frames A A, of the base B, stationary on one frame and provided with a locking-catch, and a base, C, stationary on the other frame, and having a shoulder with which the locking-catches engage by the inherent elasticity of the two frames, and from which shoulder the catch is released by bodily moving the base-pieces with the two bag-frames lengthwise in opposite directions, substantially as described.

2. The combination, with the bag-frames A A, movable lengthwise in opposite directions, of the base-piece B, stationary on one frame, and having a locking-catch, a base-piece, C, stationary on the other frame, and having a locking-shoulder, and means, substantially as described, for bodily moving the base-pieces, with the two bag-frames, lengthwise in opposite directions to release the catch from the shoulder, as set forth.

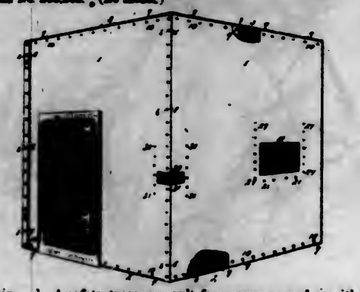
3. The combination, with the bag-frames A A, movable lengthwise in opposite directions, of the base-piece B, stationary on one frame, and having a locking-catch, a base-piece, C, stationary on the other frame, and having a locking-shoulder, and lever devices, substantially as described, for acting upon both base-pieces to bodily move them, with the two bag-frames, lengthwise in opposite directions to release the catch, substantially as described.

4. The combination, with the bag-frames A A, of the base-piece B on one frame, having the locking-shoulder E and laterally-projecting catch D, and the base-piece C on the other frame, having a similar locking-shoulder and lateral catch, the said catches respectively engaging the opposite locking-shoulders of the two base-pieces, substantially as described.

5. The combination, with a bag-frame having the lugs M M, of a handle, J, and an elastic thank, K, secured to the handle, and having two eyes, L, respectively engaging the lugs, substantially as described.

6. The combination, with a bag-frame having the lugs M M, of the handle J, the loop K, having eyes L, engaging the lugs, and the cap N, surrounding the loop, substantially as described.

385,640. TREASURE-VAULT FOR RAILWAY-CARS. JOSEPH CLOUGH and JULIUS W. STUART, Cotton Gin, Tex. Filed Jan. 9, 1888. Serial No. 260,502. (No model.)



Claim.—1. A safety treasure-vault for express-cars, &c., with the combination of the walls 1, floor 2, and roof 3 of the vault constructed of bullet-proof steel plate riveted together at their corners, and the angle-irons 9, to which the walls, floor, and roof are riveted, the bullet-proof steel-plate door 11, the parcel-delivery window 18, the combined desk-shelf and bullet-proof shutter 19, the said vault provided with a port-hole, 30, and the bullet-proof plug 31, that stops the port-hole, substantially as described, and for the purpose set forth.

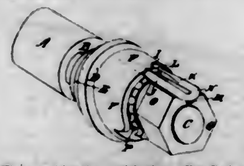
2. A safety treasure-vault for express-cars, &c., with the combination of the walls, floor, and roof of the vault constructed of bullet-proof steel plate, the flanged coupling-edges of the side plates provided with perforations in said flanged edges and the edges of adjoining plates and the rivets that connect said plates, perforated angle-irons and the bottom and top plates provided with corresponding perforated edges and rivets that secure said plates to the angle-irons, the vault provided with a port-hole and angle-plug that stops the port-hole, and the drop-bolt 34, that fastens the plug in its seat, and the catch-hook 42, that holds said bolt in suspension when inoperative, substantially as and for the purpose set forth.

3. A safety treasure-vault for express-cars, &c., with the combination of the bullet-proof steel-plate walls, floor, and roof of the vault, and means for attachment of said plates, the parcel-delivery window, the combined desk-shelf and bullet-proof shutter for fortifying the window, the brace-bracket 22, that supports the same when a desk, and the arched drop shutter-bar 24, that fortifies the shutter from the attack of train-robbers, substantially as and for the purpose set forth.

4. A safety treasure-vault for express-cars, &c., with the combination of the bullet-proof steel-plate walls, floor, and roof of the vault, with means for securing their sections together, the ventilator-flues 44, having oppositely-presented openings that communicate with the interior of the vault and the open air, and the damper 50, that regulates or closes the draft, substantially as and for the purpose set forth.

5. A safety treasure-vault for express-cars, &c., with the combination of the bullet-proof steel-plate walls, floor, and roof of the vault, the bullet-proof door secured by a combination-lock, the parcel-delivery window, combined shutter and desk-shelf in connection therewith, and the arched bar that works in the channel-grooves 25 and when dropped behind the shutter fortifies the same against the attack of train-robbers, and the catch-hook 29, that holds said bar, when inoperative, in suspension, substantially as and for the purpose set forth.

385,641. HUB-ATTACHING DEVICE. BENJAMIN PARTRIDGE, Birmingham, County of Warwick, England. Filed Feb. 27, 1888. Serial No. 265,269. (No model.)



Claim.—1. The combination, with the collet D, having the hood F, provided with the longitudinal orifice H and the recess I, having an enlarged inner end, of the notched nut Q and the staple comprising two substantially parallel legs, J K, of different length, the longer leg entering the longitudinal orifice, and the shorter leg having a bulb, L, engaging the recess of the hood, substantially as described.

2. The combination, with the axle A, having the smooth portion B and screw-thread C, of the collet D, having the cone E, and the hood F, provided with the longitudinal orifice H and the recess I, the notched nut Q, and the staple having two substantially parallel legs, J K, of different length, the longer leg entering the longitudinal orifice, and the shorter leg having the bulb L, engaging the recess, substantially as described.

3. The combination of the collet D, having the longitudinal orifice H and recess I, the notched nut Q, and the staple comprising a loop, N, provided with a lip, M, and two substantially parallel legs, J K, the longer leg entering the longitudinal orifice, and the shorter leg having a bulb, L, engaging the recess, substantially as described.

385,642. COMBINED MUSIC-CLIP AND BOW-GUIDE. WILLIAM H. PIKE, Liverpool, County of Lancaster, England. Filed Apr. 27, 1888. Serial No. 272,050. (No model.)



Claim.—1. The herein-described music-clip and bow-guide, consisting of two parts, F G, bent at right angles to each other and provided, respectively, with means for attachment to the finger-board and for holding the music.

2. The herein-described music-clip and bow-guide, consisting of two parts, F G, bent at right angles to each other and provided with a plurality of cuts to form a series of longitudinal strips, said strips being alternately turned at right angles and then bent upward to form spaces, substantially as and for the purposes hereinbefore set forth.

385,643. LADY'S HEAD-WEAR. ANNA SCHULTZ, Milwaukee, Wis. Filed Mar. 12, 1888. Serial No. 266,981. (No model.)



Claim.—The described article of ladies' head-wear, consisting of the crown A, in combination with the rear and side extensions, C D C, for protecting the neck, ears, and throat, and the front brow-protecting flap, B, extending triangularly from the crown, the ends of the side extensions being provided with fastening devices, as shown at *a b*, whereby they may be joined together either under the chin of the wearer or on top of the crown, and the brow-flap B being flexibly connected to the crown to enable it to be either extended forward therefrom or turned back thereover at will.

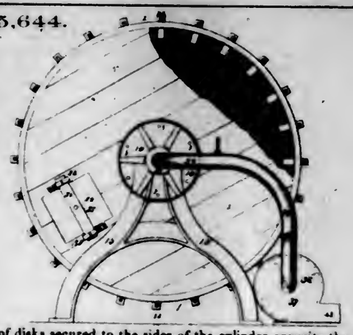
385,644. APPARATUS FOR THE MANUFACTURE OF LEATHER. WILLIAM SCHWINGHARDT, St. Louis, Mo. Filed Jan. 26, 1888. Serial No. 262,008. (No model.)

Claim.—1. The combination, with the supports and driving-belt, of a rotary cylinder provided with inwardly-projecting lugs, tubular trunnions on which said cylinder works, and a fan having communication with the interior of the cylinder through one of said trunnions, substantially as described.

2. The combination, with the supports, of a rotary cylinder, tubular trunnions on which the cylinder works, a hot-air chamber having a steam-coil located therein, and a fan, said hot-air chamber and fan having direct communication with the interior of the cylinder through the said tubular trunnions, substantially as described.

3. The combination, with a rotary cylinder and the tubular trun-

385,644.

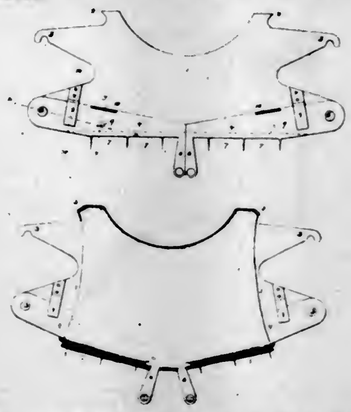


nions, of disks secured to the sides of the cylinder opposite the inner ends of the trunnions, said disks having perforations in their peripheries, substantially as described.

4. The combination, with the supports, of a rotary cylinder, the kneading-studs secured thereto, the tubular trunnions, the disks having perforations in their peripheries, the exhaust-pipe, the fan connected therewith, and the hot-air chamber having a steam-coil therein, substantially as described.

5. The combination of the rotating cylinder, the tubular trunnions on which it works, the hot-air chamber and its steam-heating coil, the thermometer 29, the perforated flanged disks, the kneading-studs, the suction exhaust-pipe, the thermometer 44, the rotary fan, and the driving-belt working on the periphery of the cylinder, whereby the said cylinder and fan are rotated, substantially as described.

385,645. DRESS-SHIELD FORMER. FRIEND W. SMITH, Jr., and SAMUEL S. WILLIAMSON, Bridgeport, Conn., assignors to the Canfield Rubber Company, same place. Filed Sept. 26, 1887. Serial No. 250,676. (No model.)



Claim.—1. A machine for making seamless dress-shields, consisting of a sheet-metal former crescent-shaped along its top and having grasping-points at the extremities of said crescent, in combination with a pair of levers pivoted each to opposite extremities of said former, said levers having fastening devices—such as pin-points—at their outer edges and adapted to have a throw greatest at their inner ends, whereby the fabric of the shield is stretched the greatest at the center of the crescent and the least at the extreme ends thereof, substantially as set forth.

2. The stationary former having a concave top edge, in combination with the stretching-levers pivoted to said former on each side of a line projected at right angles to a tangent to the curve of said concave, substantially as shown.

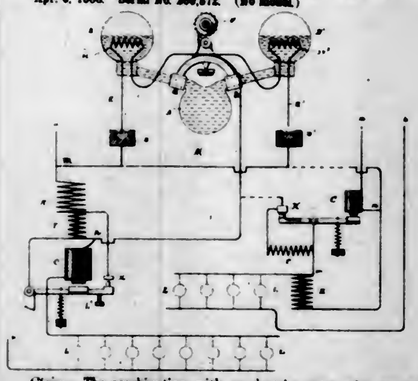
385,646. CULTIVATOR. WILLIAM S. TEMPLIN, Romeville, Kans. Filed Oct. 22, 1887. Serial No. 253,085. (No model.)

Claim.—The plows D E, having horizontal shares to run parallel with the surface of the ground, and the standards extended to form landsides rising above said shares and at right angles thereto, as shown, in combination with the beams and perforated braces, substantially as specified.

385,646.



385,647. ELECTRIC METER. ELIHU THOMSON, Lynn, Mass. Filed Apr. 6, 1888. Serial No. 269,872. (No model.)



Claim.—The combination, with an electric meter, of a current-controller governing the flow of current to the same and a controller-magnet or other electro-responsive device adjusted, as described, to permit an increase in the flow of current to the meter when the current to be measured falls below that to which the meter responds normally, as and for the purpose described.

385,648. BANK ACCOUNT-BOOK. WALTER THOMSON, Fargo, Dak. Filed Dec. 31, 1886. Serial No. 223,131. (No model.)

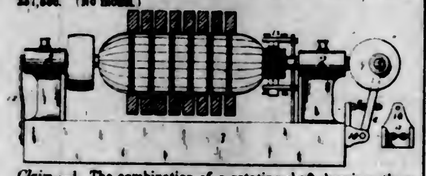


Claim.—1. The bank account-book A, having a suitable number

of full leaves, C, and alternate series of short leaves, B, each of said short leaves having margin *b* creased or perforated at *b'*, substantially as and for the purposes set forth.

2. The bank account-book herein described, composed of alternate long and series of short leaves, the several long leaves prepared to receive the depositors' names on the left-hand side, and both also prepared to receive the accounts for several successive days, the right-hand end of each of said short leaves having a margin to receive the last day's balance, which margin is adapted by folding to form the beginning of the next day's account on the next page.

385,649. DEVICE FOR IMPARTING END MOTION TO SHAFTS. STONEWALL TOMPKINS, Crozet, Va. Filed May 11, 1887. Serial No. 237,896. (No model.)



Claim.—1. The combination of a rotating shaft, bearings therefor, and an eccentric disk bearing against the end of the shaft, so as to impart an end motion thereto in rotating.

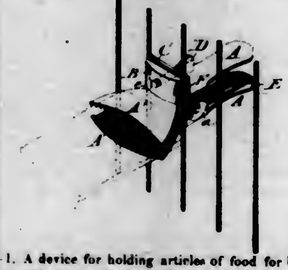
2. The combination of the rotary shaft, the bearings therefor, and a rotating eccentric disk rigidly supported, bearing against the end of the shaft and driven by frictional contact therewith.

3. The combination of the shaft, the bearings therefor, the eccentric disk bearing against the end of the shaft and driven thereby, and an adjustable arm supporting the disk.

4. The combination of the shaft, the bearings therefor, the eccentric disk bearing against the end of the shaft and rotated thereby, and the spring pressing against the other end of the shaft, so as to hold it in contact with the disk.

5. The combination of the shaft, the bearings therefor, the disk bearing against the end of the shaft, and the support therefor, the disk having an orifice eccentric with its periphery and fitted over a hub eccentric with the supporting-pivot, and a clamp for holding the disk in any position on the hub.

385,650. CUTTLE-BONE AND FOOD HOLDER FOR BIRD-CAGES. JOHN V. WEMPLE, Schenectady, N. Y., assignor of one-half to Henry B. Salisbury, same place. Filed Mar. 16, 1888. Serial No. 267,906. (No model.)



Claim.—1. A device for holding articles of food for birds, consisting in the combination, with the bird-cage, of the convexed interpivoted clamping-jaws having curved and serrated biting edges and means for attaching them to the cage, comprising plate B, secured to one of the jaws, loose plate C, and screw D, substantially as described.

2. In combination with a bird-cage, a cuttle-bone, and food-holding device, consisting of the interpivoted clamping-jaws, the spring arranged between said jaws, and means for attaching them to the cage, consisting of a plate, B, secured to one of the jaws, a loose plate, C, and a clamping-screw, D, all arranged to operate substantially in the manner and for the purpose described.

3. The combination of the jaws A A, having the curved and serrated biting-edges A' A', the spring E, arranged between said jaws, the part B, secured at right angles to one of the jaws and grooved at F, the plate C, and screw D, all arranged substantially as described.

385,651. BUCKLE. EDWARD H. WHEELER, Waterbury, Conn. Filed Apr. 7, 1888. Serial No. 269,947. (No model.)

Claim.—1. The combination, with the hook, of the sliding plates connected together, the end of one plate being bent approximately at right angles and the end of the other plate closing against the end of the hook, substantially as described.

2. The combination, with the hook, of the two sliding plates, the end of one plate closing the hook and the end of the other plate

385,651.



being bent substantially at right angles and adapted to fit in a recess or opening in the end of the hook, so as not to receive the wear, substantially as specified.

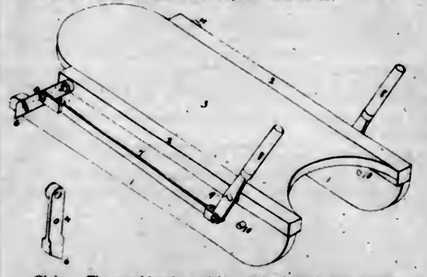
3. The combination, with the hook, of the two sliding plates and the link connecting the outer plate with the hook, substantially as described.

4. The combination, with the hook and the two sliding plates held separated by spring-pressure, of the link connecting one of the plates with the hook, substantially as specified.

5. The combination, with the hook and the sliding plate having its end bent substantially at right angles for the purpose described, of the link-connection between the said plate and the hook, substantially as specified.

6. The combination, with the hook and the sliding plate adapted to close against the end of the hook, of the connection interposed between the plate and the hook, whereby the said plate is reciprocated at the same time it is pressed toward the hook, substantially as described.

385,652. COASTING-SLED. JOHN D. WILSON, Jennings Station, Mo. Filed Feb. 3, 1888. Serial No. 263,394. (No model.)



Claim.—The combination, with a sled, of the independently-movable dogs 4, depending from the fulcrum-pins 5 on each side of the sled, rods 7, connecting the dogs directly with the independently-movable hand-levers 8, and stops limiting the forward movement of the dogs, substantially as shown and described.

385,653. NOZZLE. BENJAMIN WRIGHT, Los Gatos, Cal. Filed Nov. 3, 1887. Serial No. 254,175. (No model.)



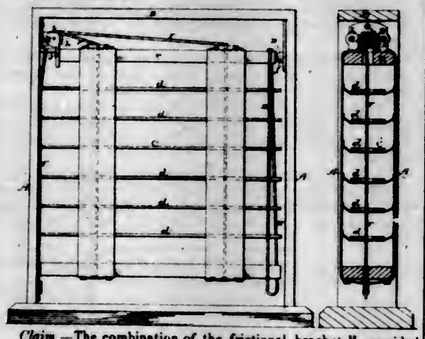
Claim.—1. The combination, with the nozzle-body provided with a longitudinal liquid-passage through it, the said passage at its exit end being flattened or formed straight on one side, as at *b*, of the turning plug intersecting the said passage near its exit end and provided with a transverse passage through it which registers with the passage through the nozzle-body, the exit end of this passage through the plug being flattened or formed straight on one side, as at *b'*, whereby the issuing liquid may be made to vary from a full stream to a thin broad fan-shaped spray by turning the plug and bringing the straight edges *b b'* adjacent to each other, substantially as described.

2. The combination, with the nozzle-body provided with the usual longitudinal liquid-passage through it, of the turning plug intersecting the said passage through the body near its exit end and provided with a transverse passage through it which registers with said body-passage, the said passage through the plug at its exit end being formed into a small channel or groove, as at *c*, whereby the issuing liquid may be made to vary from a full stream to a very small concentrated and far-reaching stream by turning the plug, substantially as herein set forth.

3. The combination of the nozzle-body provided with the usual longitudinal passage through it, this passage at its exit end being formed flat or straight, as at *b*, on one side and curved on the oppo-

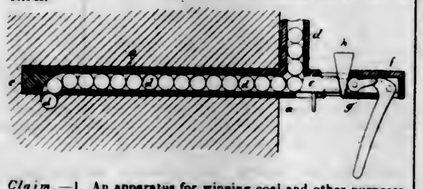
site side, as at *c*, and the turning plug intersecting the passage through the body of the nozzle and provided with a transverse passage which registers with the body-passage, the exit end of the said plug-passage on one side being provided with a straight flat edge, as at *b'*, and on the opposite side with a small channel or groove, as at *c*, whereby the issuing liquid may be made to assume a full stream or a small concentrated stream or a broad thin fan-shaped spray by turning the plug, substantially as described.

385,654. **HANGING AND OPERATING VENETIAN BLINDS.** FRANK W. WRIGHT, Burlington, Vt. Filed Oct. 24, 1887. Serial No. 253,239. (No model.)



Claim.—The combination of the frictional bracket E, provided with the supports *h*, and a suitable bearing for the gudgeon, and having its lower vertical surface roughened, with the double-grooved pulley journaled between the lateral supports, the upper slat, which has its end to bear against the roughened surface, and the gudgeon, substantially as described.

385,655. **APPARATUS FOR WINNING COAL, &c.** THOMAS ARCHER, Jr., Newcastle-upon-Tyne, England. Filed May 9, 1888. Serial No. 273,273. (No model.) Patented in England Oct. 3, 1887, No. 13,846.



Claim.—1. An apparatus for winning coal and other purposes, consisting of a tubular rod having on one side near its inner end an aperture, a series of balls, blocks, or rollers of approximately the inner diameter of said rod, and means for imparting pressure through the series of balls, blocks, or rollers from one to the other, so as to force them one by one through said aperture into the mass of the coal or other mineral, substantially as described.

2. The combination of the hollow rod having a lateral aperture near one end, the series of balls, blocks, or rollers therein, and means for applying pressure to said balls, blocks, or rollers, so as to force them one by one through said aperture, substantially as described.

385,656. **SHIP FOR SUBMARINE OBSERVATIONS.** ROBERT F. S. BELISLE, Philadelphia, Pa., assignor of one-half to Frederick Bourquin, Camden, N. J. Filed Feb. 27, 1888. Serial No. 265,353. (No model.)

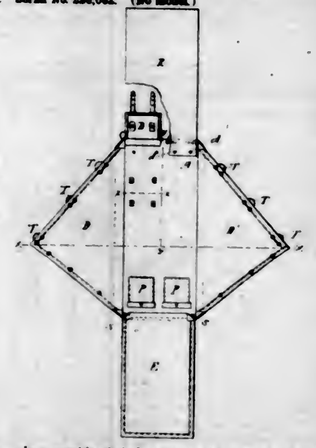


Claim.—A ship or vessel, substantially as described, having several decks and port-lights arranged in the sides of the hull thereof for the purpose of observation when the vessel is submerged to any desired depth, an inlet-valve near the bottom for the admission of water



to the lower hold of said vessel, and discharge mechanism for relieving the vessel of the same.

385,657. **KNAPSACK.** HORACE BLANCHARD, Boston, Mass., assignor of one-third to Edward H. Studley, same place. Filed Jan. 31, 1887. Serial No. 226,082. (No model.)



Claim.—In a combined shelter-tent and knapsack, the combination of a ground blanket, R, having attached to its end a roof-piece, A, provided at its side edges with side wall-pieces, D D, with the attached end piece, E, all adapted to be made into a tent or to be folded for a knapsack, substantially as described, and for the purpose set forth.

385,658. **CAR-COUPLING.** MILES W. BROWN, Gainesville, Ga. Filed Feb. 25, 1888. Serial No. 265,331. (No model.)

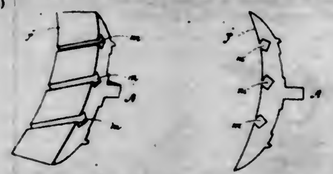


Claim.—1. In a car-coupling, as a means of suspending the pin,

the bracket E, the lever F, pivoted to the draw-head, and the spring *f*, substantially as shown and described.

2. In a car-coupling, the deflector C, the spring *c*, and the guide D, substantially as shown and described, and for the purpose specified.

385,659. **BRAKE-SHOE.** PATRICK BROWNLEY, St. John, New Brunswick, Canada. Filed Dec. 22, 1887. Serial No. 258,057. (No model.)



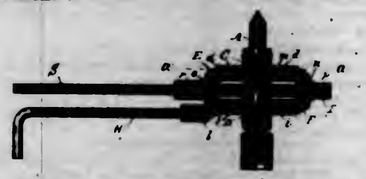
Claim.—1. A brake-shoe provided with a groove in its face, as *m*, the rear wall of said groove being inclined to the face of the shoe, substantially as and for the purpose described.

2. A brake-shoe having a groove or recess in its face, the bottom of said groove being lower than its outer edge to form a gutter, as *w*, for receiving the substances removed from the wheel, substantially as set forth.

3. A brake-shoe provided with a diagonally-arranged groove in its face, as *m*, said groove having rear walls, as *c d*, inclined to said face, substantially as described.

4. The brake-shoe A, provided with the groove *m*, having the walls *b d c z*, inclined to the face *f* of said shoe, substantially as set forth.

385,660. **RATCHET-DRILL STOCK.** WILLIAM COPPAGE, Terre Haute, Ind., assignor of one-half to William H. Larimer and Peter Crackenberger, both of same place. Filed Mar. 12, 1888. Serial No. 267,023. (No model.)



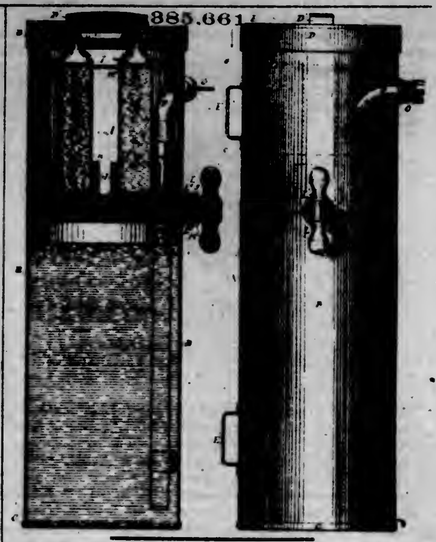
Claim.—In a ratchet-drill stock, the spindle, the flanged collars, each carrying a pawl pivoted thereto, and both rigidly secured to the spindle, the pair of bevel gear-wheels mounted so as to turn on the spindle against said collars, and each having a recess, *j*, and interior notches, *k*, arranged to receive and engage said pawls, the operating-lever secured to one of said bevel gear-wheels, the pinion-frame forming a bearing for the spindle, arranged between the bevel gear-wheels, and carrying one or more bevel-pinions, which intermesh with both of the bevel gear-wheels, and the handle secured to the pinion-frame, all combined and arranged to co-operate substantially as and for the purpose specified.

385,661. **CHEMICAL FIRE-EXTINGUISHER.** WILLIAM H. CUSHMAN, Charlton Depot, Mass. Filed Feb. 17, 1888. Serial No. 264,414. (No model.)

Claim.—1. In a chemical fire-extinguisher, the combination, with case B, for holding the liquid and chemicals, of turning spindle K, of less length than the diameter of case B, cups J, securely fastened to the upper side of spindle K, the latter being arranged in a horizontal position in the upper part of case B and supported at one end by an internal cup-bearing and at the other by a supplemental journal inserted through the side of case B, and plate I, provided with holes or openings H to receive and support the upper ends of the glass bottles of chemicals, while their lower ends rest in and are supported by cups J, said parts being arranged relatively, as shown and described, for supporting, breaking, and discharging the bottles of chemicals by a partial rotation of spindle K at the desired time, substantially as described and set forth.

2. The combination, with case B, provided with a cup-bearing on its inner side, and turning spindle K, of less length than the inner diameter of case B, and provided at its inner end with bearing K', to fit said cup-bearing, and with a central hole in its outer end, K^3, provided with a screw-thread, as set forth, of thumb-spindle L, provided with thumb-piece L' on its outer end, and a screw-thread on the inner end of its stem L^2, to fit the screw-thread in the hole in end K^3 of spindle K, said parts being constructed and relatively arranged for operation, substantially as and for the purposes set forth.

385,661.



385,662. **SHEARING AND PUNCHING MACHINE.** CHRISTOPHER C. BENGE, Granger, Tex. Filed Apr. 13, 1888. Serial No. 270,536. (No model.)



Claim.—1. The combination of the base-blocks, the standards B B, rising from opposite edges of one end thereof, the standard C, rising from the opposite end of said block, the blade resting in a groove in the upper side of the bed-block and having its outer end rendered vertically adjustable by means of long wedges inserted in the groove under the same, the head-block pivoted at one end between the legs of the standard C and with the other end between the standards B B, the spring secured at one end to the standard C and having its other end attached to the upper edge of the head-block by a link and staple, and the cam-disk pivoted between the standards B and provided with an arm socketed at its end for the attachment of an operating-lever, substantially as specified.

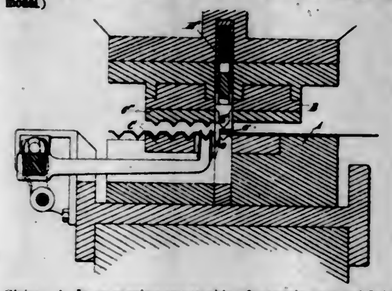
2. The combination, with the base-block A, the standards B B and C, the adjustable blade E, the head-block *f*, having the blade F attached, the spring G, lifting the head-block, and the cam-disk H, moving the head-block downward, of the resting-block I, secured to the base-block A, and the bar *i*, moved by mechanism, substantially as described, between guide-pieces attached to the standard for the purpose of clasping the metal plate to be operated on between itself and the resting-block, as specified.

3. The combination, with the pivoted head-block, the spring lifting the same, the cam-disk depressing said block, the blade attached to the bed-block, and the blade attached to the head-block, of the resting-block I, the bar *i*, having its ends turned up at right angles, the guide-pieces *i'*, secured to the standards, the curved cams J, having the flat edge portions j^2 and the arms *j'*, the bar j^3, connecting the ends of said arms, and the links *j*, connecting said curved cams and the bar *i*, substantially as specified.

4. The combination, with the bed-block having the groove D, and the opening *d* in said groove, and the standard C, rising from said block, of the guide-blocks K, having the guide-grooves *k*, the die-block L, having the guide-ribs *l* and stem or stud *l'*, for attachment of the die, the cam-disk M, provided with the arm *m*, socketed at its

end for the attachment of an operating-lever, the link-bar N, and the bed-block O, resting in the groove D and provided with the openings *e*, substantially as specified.

385,663. MACHINE FOR MAKING METALLIC LATHING. ANTON EBERSON, Detroit, Mich., assignor to Henry C. Hodges and Charles C. Hodges, same place. Filed Feb. 17, 1888. Serial No. 264,330. (No model.)

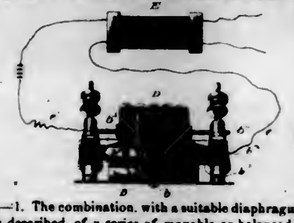


Claim.—1. In an opening-out machine for opening out and finishing metallic lathing, &c., the combination, with the folding-dies, of lining-fingers *e*, said fingers connected with a traveling platen and adapted upon its descent to enter between the last-folded strip and the strip next to be folded, and adjust and hold the sheet in proper position for the folding-dies, substantially as and for the purposes described.

2. In an opening-out machine for opening out and finishing metallic lathing, &c., the combination, with the folding-dies, of lining-fingers *e*, connected with the traveling platen, and in connection with said liners springs for projecting the liner beneath the platen and serving as cushions against which the liners may react as the dies come together, substantially as described.

3. In an opening-out machine for opening out metallic lathing, the combination, with the folding-dies, of a finger adapted to grasp and fix in exact particular position the metal for the dies, said fingers provided with a projecting ledge adapted to extend across the strip to be folded, thereby holding the same against displacement as the dies come together, substantially as described.

385,664. TELEPHONE-TRANSMITTER. JULIUS EBERLE, Jr., Washington, D. C. Filed Mar. 22, 1887. Serial No. 232,046. (No model.)



Claim.—1. The combination, with a suitable diaphragm-electrode arranged as described, of a series of movable or balanced electrodes mounted on the diaphragm, but insulated therefrom and swung on a rod having devices for adjusting the balanced electrodes laterally, for the purpose set forth.

2. The combination, with the diaphragm-electrode having the oblique face and movable or balanced electrodes mounted on the diaphragm, having pointed or reduced ends, of a rubber cushion, the pointed ends of said electrodes lying between the cushion and the oblique face of the diaphragm-electrode.

3. The combination, with a diaphragm-electrode and movable or balanced electrodes mounted on the diaphragm, but insulated therefrom and swung on a rod or bar having means for adjusting said movable electrodes laterally, of a rubber cushion against which lie or rest the lower ends of the movable electrodes, for the purpose set forth.

4. The combination, with the movable or balanced electrodes having reduced ends and swung on a rod or bar having means for moving said electrodes laterally, of the rubber cushion against which the reduced ends of the movable electrodes rest, said cushion having devices for adjusting the ends of the movable electrodes with relation to the cushion and diaphragm-electrode, for the purpose set forth.

5. The combination, with a diaphragm-electrode, of posts mounted upon the diaphragm, movable balanced electrodes mounted upon said posts, and an adjustable cushion, also mounted upon said posts, the cushion to regulate the adjustment of the balanced electrodes, substantially as and for the purpose set forth.

6. The combination, with a diaphragm-electrode, of posts mounted upon the diaphragm, said posts carrying an adjustable cushion, springs for increasing the distance between the cushion and diaphragm-electrode, and screws for depressing the spring and decreasing said distance, substantially as specified.

385,665. CASE-DELIVERY DEVICE. SIDELL B. FISH, Greenport, assignor of one-half to Eugene Pearl, New York, N. Y. Filed Apr. 16, 1888. Serial No. 270,726. (No model.)

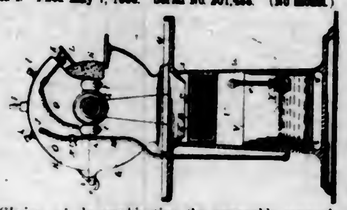


Claim.—1. The change-delivering device constructed, substantially as described, of an extended inclined chute having a cash-receiving opening at its upper end, in combination with a spring-actuated door closing its lower end, substantially in the manner and for the purpose herein set forth.

2. In a change-delivering device, the combination, substantially as set forth, of the inclined chute having a cash-receiving opening at its upper end, the spring-actuated door closing its lower end, and the actuating-cord extending from the door to a point at or near the receiving end of the chute.

3. The combination, in a portable change-delivery device, substantially as set forth, of the hopper A, the inclined chute B, projecting beyond its supports at its lower end, D, the door E, closing an opening in said lower end, the spring F, actuating the door to close it automatically, the hand-piece H, projecting from the door, and the tray G beneath the door.

385,666. GRINDING-MACHINE. GEORGE A. HADLEY, Providence, R. I. Filed May 7, 1886. Serial No. 201,453. (No model.)



Claim.—1. In combination, the removable reservoir-pan, the pump, and the filter pivoted to the suction-pipe of the pump and adapted to draw the water from the said reservoir-pan and to be turned upward upon its pivot in order to effect the desired removal of the said pan, substantially as described.

2. In combination, the lower section of the wheel-case provided with the slot, the groove, and the perforation extending from the groove, and the upper section of the wheel-case provided with the curved tongue or hook, and the downwardly-extending lip which enters the said groove, substantially as and for the purpose specified.

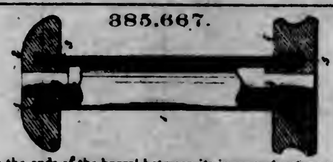
3. In combination, the rotary arbor, the grinding-wheel, the case provided with a circular rib, and the removable segment provided with a groove adapted to fit over the corresponding rib of the case, substantially as and for the purpose specified.

385,667. BOBBIN. CHARLES HARDY, Nashua, N. H. Filed Jan. 23, 1888. Serial No. 262,256. (No model.)

Brief.—The object of the invention is to provide a simple and inexpensive construction of bobbins, whereby the head and barrel may be united in such manner that exposure to wet or blows shall not remove the head or rupture the joint between it and the barrel.

Claim.—1. A bobbin consisting of the heads and barrel separately formed, and each of the former provided with an inwardly-expanding annular chamber extending partially through it, and a wedge arranged upon and supported by the base of each chamber and

385,667.



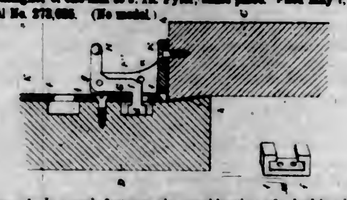
entering the ends of the barrel between its inner and outer surfaces to spread and wedge the said ends in the chambers of the heads, substantially as described.

2. A bobbin having in its head an annular recess expanding outwardly or radially and provided with an annular wedge integral with the head, the converging walls of said wedge being substantially parallel with the walls of the recess, substantially as described.

3. The combination, with a bobbin-head having a recess, 3, concentric with the neck 4, the width of said recess increasing toward the outer end of the head and provided with an annular integral wedge, 5, of the barrel 1, lying in said recess and receiving the wedge in an annular split, whereby the end is spread to fill the recess, substantially as described.

4. A bobbin having in its heads annular recesses cut from the inner or adjacent faces toward, but not to, the outer faces, and expanding in width as they enter the heads, annular wedges lying in said recesses and having an expansion corresponding with that of the recesses, and a barrel, the ends of which enter said recesses and are spread by said wedges, substantially as described.

385,668. SASH-FASTENER. FREDERICK A. HEMMINGER, Columbia, Mo., assignor of one-half to J. Th. Fyfer, same place. Filed May 7, 1888. Serial No. 273,026. (No model.)



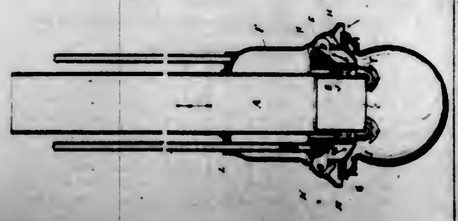
Claim.—1. In a sash-fastener, the combination of a locking-lever journaled in uprights secured to the meeting-rail of the lower sash and swinging in a vertical plane at right angles to the path of the sashes, and furnished with a T-shaped locking toe or end, with a keeper or catch having recesses *f f* extending above and below the entrance-opening, substantially as described.

2. In a sash-fastener, the combination of a locking-lever journaled in uprights secured to a sash-rail and swinging in a vertical plane at right angles to the path of the sashes, with locking-pin openings in the rear of the bend or elbow of said locking-lever and extending through said uprights, whereby the said lever may be securely held in a locked or unlocked position at will, substantially as and for the purpose described.

3. In a sash-fastener to be secured to the meeting-rail of a lower sash, the combination of the base-plate with a sheet of rubber secured directly underneath the same, with its free end extending against the upper sash to prevent rattling, all as and for the purpose described.

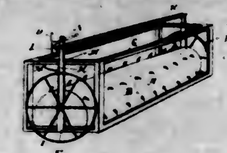
4. In a sash-fastener, the combination of a locking-lever journaled in uprights secured to the meeting-rail of the lower sash and swinging in a vertical plane at right angles to the path of the sash and furnished with the locking end or toe, as described, with a recessed catch or keeper bar with rectangular recesses beveled only on their lower sides to permit the upper sash to be pushed up and the lower sash pushed down without manipulating the lever, substantially as and for the purpose described.

385,669. GAS-BURNER. ERNST HENRY, Chicago, Ill., assignor to the United States Arc Gas Company, of New Jersey. Filed Dec. 8, 1887. Serial No. 257,348. (No model.)



Claim.—In a regenerative gas-burner, the combination, with the central draft-tube, the gas-supply pipe, and an annular chamber surrounding said tube and having connection with said gas-supply pipe at its top, and having a burner around its bottom, of an annular filling of a porous fibrous non-combustible substance in said chamber, and a perforated plate resting upon said substance and forming a supplemental chamber for the distribution of the gas before passing through the filling, essentially as shown and described.

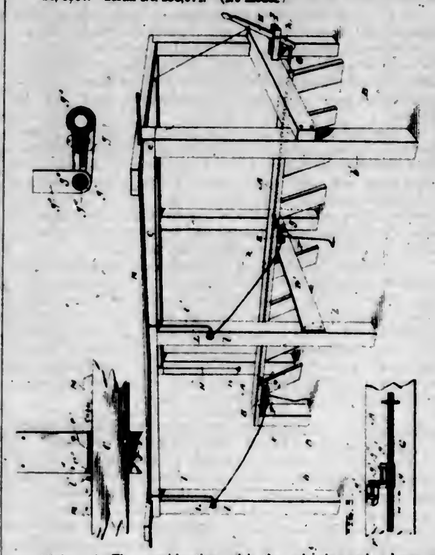
385,670. WHEAT AND CORN CULTIVATOR. WILLIAM H. HOSS, near Bellefontaine, Ohio. Filed July 17, 1886. Serial No. 172,571. (No model.)



Claim.—1. An implement for working young growing wheat and corn, composed of a frame, a tongue, and a roller, A, which has the curved double wedge-shaped teeth B, that enter the ground backward, as described, so as not to injure the young plants while loosening the ground, as and for the purpose set forth.

2. The combination, with the roller A, having the double wedge-shaped curved teeth B, which enter the ground backward, of wheels I and hoisting apparatus K M N O, as and for the purpose set forth.

385,671. ANIMAL-RELEASING DEVICE. WILLIAM H. HOWDEN, Lawrence, Kans., assignor of one-third to John McNaughton. Filed Dec. 21, 1887. Serial No. 258,611. (No model.)



Claim.—1. The combination, with the releasing-rod, a lever at one end of the stable to operate the rod, and a connection leading from the handle of the lever to the opposite end of the stable for operating the lever, of the hitching-rings, a cable permanently supported along a passage at the rear end of the stalls, the said cable terminating at each end of the stable in a free end and having a free longitudinal movement in either of two opposite directions, and connections leading from the cable to the several hitching-rings, whereby the animals may be released and led out from either end of the stable, substantially as set forth.

2. The combination, with the releasing-rod, a plate provided with a removable half-section, whereby it may be adjusted on the rod in any desired position, a bolt secured to the plate, a pin having its head loosely mounted on the bolt, and a spring on the bolt between the head of the pin and a portion of the plate, of a pair of perforated lugs secured in position to receive the pin, substantially as set forth.

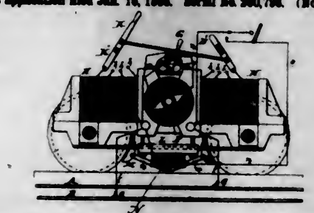
3. The combination, with the hitching-rings, means for releasing them, a cable permanently supported along a passage-way, and connections between the cable and the hitching-rings, of cable-bearings

provided with open slots along their under faces, whereby the connections are allowed a free passage as the cable is moved lengthwise, substantially as set forth.

4. The combination, with the hitching-rings, means for releasing them, a cable permanently supported along the passage-way, and connections between the cable and the hitching-rings, of cable-bearings provided with flaring-mouthed slots along their under faces for receiving and guiding the connections, substantially as set forth.

385,672. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place.

Original application filed Mar. 12, 1886, Serial No. 195,742. Divided and this application filed Jan. 16, 1888. Serial No. 260,798. (No model.)



Claim.—1. The method of braking an electrically-propelled vehicle, which consists in first slowing down the vehicle by increasing the counter electro-motive force of the motor until it increases above the initial electro-motive force of the source of electric supply, and simultaneously therewith establishing a closed circuit from the source of electric supply for the motor, energizing a friction-brake to quickly stop the vehicle at the desired position.

2. The method of braking an electrically-propelled vehicle, which consists in first increasing the strength of the field-magnets of the motor until the counter electro-motive force of the motor increases above the initial electro-motive force of the electric supply, and simultaneously therewith establishing a closed circuit from the source of electric supply for the motor, energizing a friction-brake to quickly stop the vehicle.

3. The method of braking an electrically-propelled vehicle, which consists in increasing the counter electro-motive force of the motor above the initial electro-motive force of the source of electric supply for the motor, and simultaneously therewith increasing the magnetism of an electro-magnetic friction-brake by means of the current from the same source as the motor until it is energized sufficiently to be automatically applied simultaneously with and in conjunction with the counter electro-motive force to quickly stop the train.

4. The method of braking an electrically-propelled vehicle, which consists in increasing the counter electro-motive force of the motor above the initial electro-motive force of the source of electric supply, and as the speed of the motor decreases increasing the strength of the field-magnets of the motor to maintain the counter electro-motive force above the initial electro-motive force of the source of electric supply, and simultaneously therewith establishing a closed circuit from the source of electric supply for the motor, energizing a friction-brake to quickly stop the vehicle at the desired position.

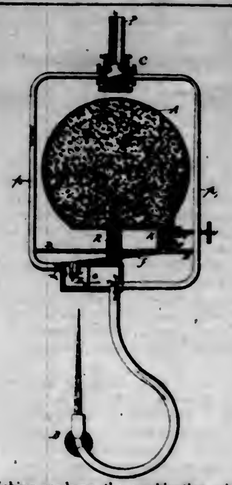
385,673. CARBURETING GAS-LAMP. ARTHUR KITSON, Philadelphia, Pa. Filed Nov. 22, 1887. Serial No. 255,878. (No model.)

Claim.—1. In an enriching gas-lamp for enriching gas or air with the vapors of solid hydrocarbons, the combination, with a gas-supply pipe, a hydrocarbon-reservoir, and a gas-burner placed beneath said reservoir, of a vaporizing and carbureting chamber communicating with the burner-pipe and situated immediately above the gas-burner and beneath the hydrocarbon-reservoir, and separate passage-ways connecting respectively said chamber to the bottom of the hydrocarbon-reservoir and gas-supply pipe, by which the gas and hydrocarbon are conveyed to the chamber independently, substantially as and for the purpose described.

2. In an enriching gas-lamp, the combination of a hydrocarbon-reservoir, a gas-burner placed beneath said vessel, a vaporizing and carbureting chamber placed between the gas-burner and hydrocarbon-reservoir, a passage-way leading from the bottom of the reservoir to the chamber, by which the hydrocarbon is conducted to the chamber in a liquid state, and a valve for controlling the flow of hydrocarbon into said chamber, with a gas-supply pipe and gas-burner pipe, both connected to said chamber, substantially as described.

3. In an enriching gas-lamp, the combination, with a hydrocarbon-reservoir, gas-burner, and supply-pipe, of a vaporizing and carbureting chamber connected with the lower part of the hydrocarbon-reservoir and with gas-burner pipe, and containing a porous partition placed diametrically across its bore to regulate the supply of hydrocarbon vapor to the burner, and a gas-inlet pipe connecting with such chamber, substantially as described.

385,673.



4. In an enriching gas-lamp, the combination, with a hydrocarbon-reservoir, a gas-burner and its supply-pipe, of a vaporizing and carbureting chamber placed immediately over the burner and beneath the hydrocarbon-reservoir, and containing a gauze partition placed sectionally across said chamber, and communicating with the bottom of the hydrocarbon-reservoir by a tube or passage-way, and a gas-inlet pipe connecting with the vaporizing-chamber, substantially as and for the purpose herein described.

5. In a carbureting gas-lamp for enriching gas with the vapors of a solid hydrocarbon, the combination, with a hydrocarbon-reservoir, a gas-burner and its supply-pipe, of a vaporizing and carbureting tube or chamber having a connected gas-inlet pipe and connecting with the reservoir by a hydrocarbon-supply tube, and an absorbent or porous substance placed in the vaporizing and carbureting tube or chamber, whereby pulsation or jumping of the gas-flame is prevented and a steady light is secured.

6. In an enriching gas-lamp, the combination, with a hydrocarbon-reservoir, a gas-burner placed below said reservoir, a vaporizing and carbureting chamber for volatilizing the hydrocarbon and mixing the gas with the vapor, a gas-supply pipe communicating with said chamber, a passage-way leading from the hydrocarbon-reservoir to the chamber, and a valve for controlling the admission of hydrocarbon from the reservoir to the chamber, of a metallic rod connecting the chamber with the reservoir for conducting the heat of the flames to the hydrocarbon in reservoir, and a disk-partition placed between the reservoir and chamber for dispersing the heated products of combustion, substantially as described.

7. In an enriching gas-lamp, the combination of a hydrocarbon-reservoir, a gas-burner placed beneath said reservoir, a vaporizing and carbureting chamber situated immediately over the burner and beneath the reservoir, a passage-way having a controlling-valve leading from said reservoir to the heating-chamber, with a gas-valve and suitable pipes connecting the said valve to the heating-chamber and burner-pipe, respectively, by which the supply of enriched and unenriched gas to the burner is proportioned and regulated, substantially as described.

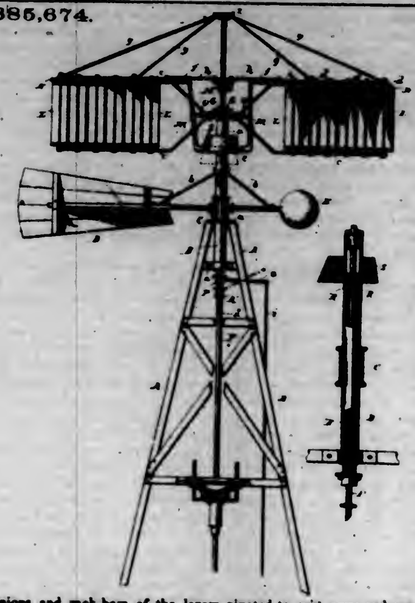
385,674. WIND-WHEEL. WILLIAM W. LOMWOOD, Freeport, assignor of one-half to Ferris O. Mott, Anthony, Kans. Filed Jan. 10, 1888. Serial No. 260,269. (No model.)

Claim.—1. The combination, with the arms and the sails pivoted therein, of pinions on the pintles of said sails and a rack movable on said arms and engaging said pinions, substantially as and for the purpose described.

2. The combination, with the main shaft, the arms, pivoted sails,

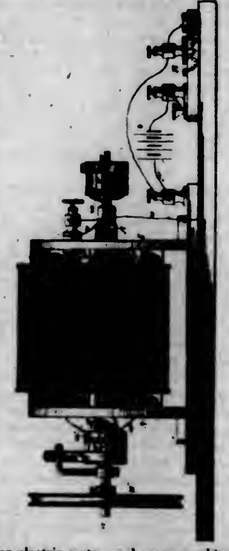


385,674.



pinions, and rack-bars, of the levers pivoted to said arms and connected with the rack-bars, the springs attached at one end to said shaft and at the other to the levers, the drum S, and means for vertically adjusting said drum, substantially as described.

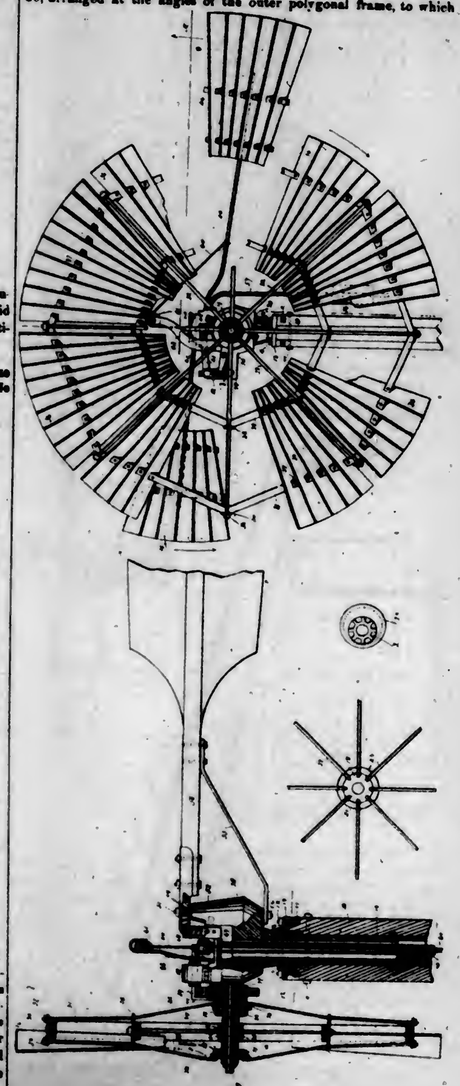
385,675. ELECTRIC MOTOR AND DYNAMO-MACHINE. CHARLES LOSH, New York, N. Y. Filed May 1, 1888. Serial No. 272,998. (No model.)



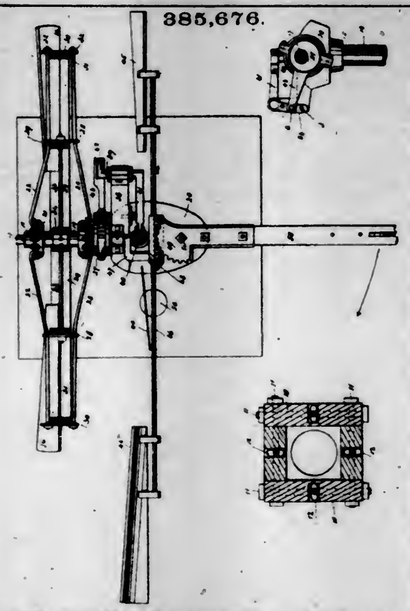
Claim.—In an electric motor or dynamo-machine, a series of stationary electro-magnets, a series of revolving electro-magnets, one having an uneven number and the other an even number, the two series being arranged concentrically and parallel with each other, a stationary commutator to the segments of which the coils of the fixed series are connected at one end, a common or multiple-arc connection for the other ends of the coils of said series, a revolving brush for said commutator, a revolving commutator to the segments of which the coils of the revolving series are connected at one end, a common connection for the other ends of the coils of said revolving series, and a stationary brush for said revolving commutator, whereby the current is directed through the coils of one stationary and one revolving electro-magnet and the said electro-magnets form a closed magnetic circuit, this action taking place in proper sequence, so that each stationary electro-magnet makes a close magnetic circuit with each revolving electro-magnet once during each revolution.

385,676. WINDMILL. JOSEPH S. MARSHALL, Clear Water, Kans., assignor of one-half to Cassar W. Loudon, same place. Filed Oct. 29, 1887. Serial No. 253,603. (No model.)

Claim.—In a windmill, the combination, with a central sectional hub, of inner and outer polygonal frames, brackets 28, mounted at the angles of the inner polygonal frame, a collar which overlaps the hub-sections, spokes passing through said collar and through the bracket 28, spokes 22 and 25, connected to the hub-sections and arranged to pass through apertures formed in the brackets 28, and outer brackets, 30, arranged at the angles of the outer polygonal frame, to which

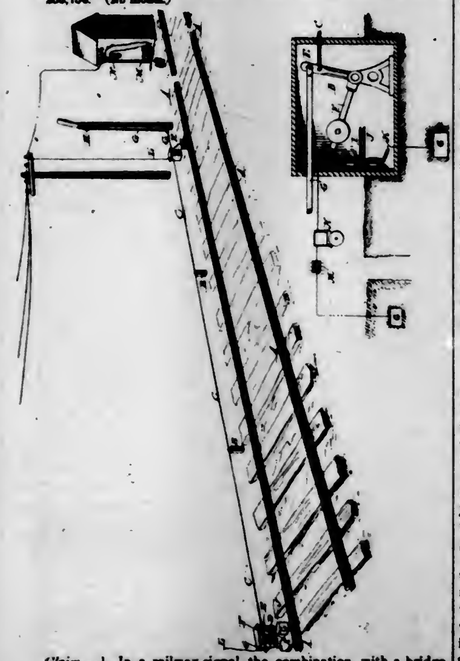


385,676.



brackets the spokes 22 and 25 are connected, as and for the purpose stated.

385,677. RAILWAY-SIGNAL. ADELARD F. MARTEL, Montreal, Quebec, Canada, assignor of three-fourths to Jean Baptiste Amede Mongenais, Rigaud, and Toussaint Brousseau and Marie M. Philomène Craig, both of Montreal, Quebec, Canada. Filed Oct. 29, 1887. Serial No. 253,756. (No model.)



Claim.—1. In a railway-signal, the combination, with a bridge, track, or like structure, of a combustible cord located in proximity thereto, a circuit-closer connected with the cord, an automatic mechanically-operated semaphoric signal, a non-electric connection between the circuit-closer and the semaphoric signal, a normally-open electric circuit, and an audible signal included in the circuit, all substantially as shown, whereby when the cord is severed the circuit-closer is caused to complete the circuit and sound an alarm, and at the same time cause or permit the semaphoric signal to be displayed.

2. In a railway-signal, the combination, with a track, bridge, or like structure, of a combustible cord or connection located in proximity thereto, an elbow-lever to which said cord is connected, an electric circuit, contact-arms in the path of the elbow-lever, a bell or signal included in the circuit, a semaphoric signal located on that side of the elbow-lever opposite the combustible cord, and a connection extending from the elbow-lever to the semaphoric signal, all substantially as shown.

3. In a railway-signal, the combination, with a bridge, track, or like structure, of a combustible cord located in proximity thereto, an elbow-lever connected with the combustible cord, a semaphoric signal, a connection between the semaphoric signal and the elbow-lever, an electric circuit, contacts in the path of the elbow-lever, and an alarm or signal included in the circuit, all substantially as shown, whereby when the cord is severed the elbow-lever will rock and complete the circuit and also cause or permit the semaphoric signal to be displayed.

4. In combination with a track, bridge, or like structure, a severable cord or connection, C, located in proximity thereto, a post or standard provided with a signal-arm, H, controlled by the cord or connection C, a locomotive provided with stopping mechanism, and an arm carried by the locomotive and adapted to actuate the stopping mechanism when struck by the signal-arm, all substantially as shown, whereby the said signal-arm H is adapted to serve the twofold purpose of a visual signal and as a means for stopping the train in case the said signal should not be observed in time by the engineer.

5. The herein-described railway-signal, consisting in the combination, with a track, bridge, or like structure, of a severable cord or connection, C, located in proximity thereto, an elbow-lever, D, provided with a weighted arm and connected with the cord C, a semaphoric signal provided with an arm, H, a connection, G, between the elbow-lever and the semaphoric signal, an electric circuit provided with an audible alarm, N, and contact-fingers I and J, arranged in the path of the elbow-lever, substantially as shown, to be brought into contact by the elbow-lever when the cord C is severed.

6. In combination with a bridge, a cord or connection, as C, mounted thereupon, an elbow-lever at each end of the cord or connection, pivoted to the piers or abutments of the bridge, an electric circuit containing an alarm, and contact-fingers, the contact-fingers being arranged in the path of the elbow-lever and thereby adapted to be brought into contact with each other by the elbow-lever when the cord or connection C is severed.

7. In combination with a track, bridge, or like structure, a fusible cord or connection located in proximity thereto and connected with a signaling device, and a board, as T, grooved on its lower edge to receive the cord or connections C, substantially as shown and described.

8. In combination with a railway-track, bridge, or like structure a visual signal, a normally-open electric circuit, an audible alarm included in the circuit, a circuit-closer, a connection between the circuit-closer and the semaphoric signal, and a combustible cord or connection located in proximity to the track, connected with the circuit closer, and adapted to prevent the completion of the circuit and the display of the semaphoric signal until the said cord is burned or severed.

385,678. STAVE SHAPING AND GAGING MACHINE. FREDERICK MYERS, Liverpool, County of Lancaster, England. Filed Jan. 26, 1885. Serial No. 154,070. (No model.)

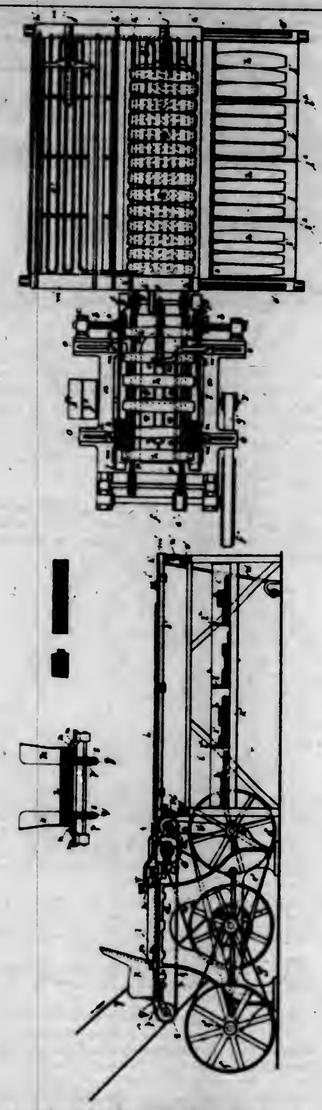
Claim.—1. The combination, in a stave trimming, chamfering, and crozing machine, of the laterally-adjustable hopper consisting of the inclined angle-plates *k*, adjustable angle-guides *l*, the endless feeders *p q*, and the duplicate trimming-saws *e*, chamfering-cutters *f*, and chine-cutters *g*, said saws and cutters being laterally adjustable on the mandrel *b*, substantially as described.

2. The combination of the spring-presser *t*, mounted over the middle of the guideway in advance of the cutters, and laterally adjustable on the supporting-arm *u*, with the trimming-saws *e*, chamfering-cutters *f*, chine-cutters *g*, endless feeders *p q*, hopper *k*, and angle-guides *l*, substantially as described.

3. The combination, with the chamfering and crozing cutters and the feeder of a stave chamfering and crozing machine, of a complement-gager consisting of a receiving-table and a stop-gage arranged with relation to the place of delivery of the staves from said machine, whereby said feeder delivers the staves from the chamfering and crozing machine onto said gager and along the same successively, substantially as described.

4. The combination, with the chamfering and crozing cutters and the feeder of a chamfering and crozing machine, of a complement-gager consisting of a receiving-table and stops arranged with relation to the place of delivery of the staves from said machine, whereby said feeder delivers the staves from the chamfering and crozing machine onto said gager and along the same successively, also a heating-coil located under the gage-table and having the usual pipe-connections with a boiler or other heater, for heating and shrinking the staves while being gaged, substantially as described.

385,678.

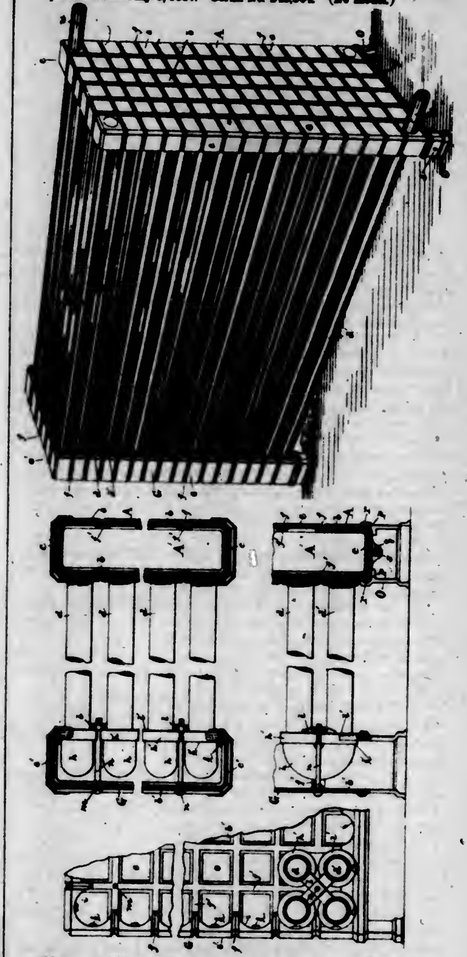


the feeder of a stave chamfering and crozing machine, of a complement-gager consisting of duplicate receiving-tables and stops arranged with relation to the place of delivery of the staves from said machine, whereby said feeder delivers the staves from the chamfering and crozing machine onto said gager and along one or the other of the said duplicate tables successively, which are transferable laterally to said place of delivery to receive on one while the completed complement is removed from the other, substantially as described.

5. The combination, with the chamfering and crozing cutters and the feeder of a chamfering and crozing machine, of a complement-gager consisting of a receiving-table and stops arranged with relation to the place of delivery of the staves from said machine, whereby said feeder delivers the staves from the chamfering and crozing machine onto said gager and along the same successively, also a bench having a series of divisions for assorted sizes of staves formed in and between part of the structure of the gage-table, substantially as described.

6. The combination, with the chamfering and crozing cutters and

385,679. HOT-WATER AND STEAM RADIATOR. CHARLES W. NEWTON, Baltimore, Md., assignor to Bartlett, Hayward & Co., same place. Filed July 5, 1887. Serial No. 243,304. (No model.)



Claim.—1. The combination, in a radiator, of the horizontal circulating-pipes *d d'*, the return-couplings *h*, uniting the ends of said pipes, the supporting case or shell inclosing the return-couplings, the cross-shaped spider having its ends fitted against and in contact with the couplings, and the bolt *n*, connecting the case-wall and spider, substantially as specified.

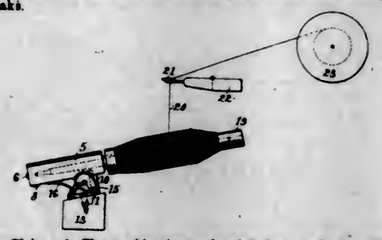
2. The combination, in a radiator, of the horizontal circulating-pipes *d d'*, the return-couplings having rim-flanges *h'* at their ends, the supporting case or shell having its wall provided with rounded notches *i*, each having an inner lug, *k*, a cross-shaped spider, *l*, having its ends fitted against the pipes and in contact with the return-couplings, and the bolt *n*, connecting the case-wall and spider, substantially as specified.

3. The combination, in a radiator, of a chest, A, formed of panel-sections *c*, and having a swell edge, *p*, on two opposite sides and bottom, and provided with a downward-projecting lug, *q*, having a suit-

able bolt-hole, a leg, O, provided at its top with a slide-groove, *r*, to engage the swell edges, and a bolt, *s*, passed through the leg and into the said downward-projecting lug, substantially as specified.

385,680. BOBBIN-SUPPORTING SPINDLE FOR SPOOLING-MACHINES, &c. JOHN F. EDDOWS, Fall River, Mass., assignor of one-half to John D. Warden, same place. Filed Oct. 12, 1887. Serial No. 252,127. (No model.)

Brief.—The objects of the invention are to provide an improved tension device for imparting the necessary tension to the yarn and an efficient and simple brake for stopping the spindle when the yarn breaks.



Claim.—1. The combination, as hereinbefore set forth, with the spindle and the pivoted tilting bearing therefor, of the brake-pin loosely mounted in the bearing and engaging the spindle, and a stop for checking the brake-pin and causing the pin to bind the spindle when the load on the spindle tilts the bearing downwardly, as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with the spindle and the pivoted tilting bearing therefor, provided with a perforation for the brake-pin, of the gravity brake-pin for binding upon the spindle, and the stop for checking and holding the brake-pin, so as to bind on the spindle and stop the same from rotating when the bearing is tilted downwardly, as and for the purpose herein described.

3. The combination, as hereinbefore set forth, with the spindle and the pivoted tilting bearing therefor disposed in the horizontal, or nearly so, of a spring for engaging the bearing and normally holding the bearing tilted downwardly, and acting in connection with a brake-pin mounted in the bearing and engaging the spindle to impart a tension to the yarn, as and for the purpose herein described.

4. The combination, as hereinbefore set forth, with the spindle and the spring-acted tilting bearing therefor, of the brake-pin loosely mounted in the bearing for binding upon the spindle, and the stop for checking the pin, as and for the purpose herein described.

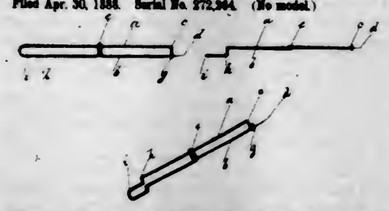
5. The combination, as hereinbefore set forth, with the spindle rail or beam and a stand adjustable along and about the rail or beam, of the spring-acted tilting bearing provided with the spindle, the brake-pin, and perforation for guiding the pin, and pivoted to the stand and tilting from approximately the horizontal into the inclined position, as and for the purpose herein described.

6. The combination, as hereinbefore set forth, with the spindle 4, of the tilting spring-acted bearing 5, formed with the oil-holes 7 and the small end 9, and provided with the removable step 6, as and for the purpose herein described.

7. The combination, as hereinbefore set forth, with the spindle 4, of the tilting bearing 5 and the stand 12, to which the bearing is pivoted, the bearing formed with the perforation 14 having the brake-pin 15 working therein, as and for the purpose herein described.

8. The combination, as hereinbefore set forth, with the spindle-rail 13 and the stand 12, mounted on the rail and capable of adjustment thereon, of the bearing 5, provided with the spindle 4, the brake-pin 15, and the perforation 14, and pivoted to and tilting on the stand and provided with the spring 16, substantially as and for the purpose herein described.

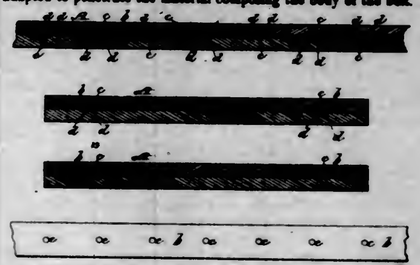
385,681. CUFF-SUPPORTER. MARTIN N. NIXON, Richmond, Ind. Filed Apr. 30, 1888. Serial No. 272,264. (No model.)



Claim.—The improved cuff-supporter described, composed of a single piece of material formed with offset loop *i*, catch *g*, point *d*, and loop *e* between the offset loop and the catch, and embracing the bar *a* of the supporter, substantially as and for the purpose specified.

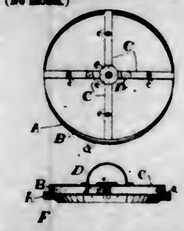
385,682. MACHINE-BELTING. GEORGE F. PAGE, Concord, N. H. Filed Nov. 14, 1887. Serial No. 256,177. (No model.)

Brief.—The metallic strips are provided with teeth or burrs adapted to penetrate the material composing the body of the belt.



Claim.—A driving-belt composed of one or more thicknesses of leather or other suitable material, combined with one or more strips of steel extending lengthwise of the belt, and provided with holes having burrs or ragged edges adapted to enter the leather or other material of which the belt is composed, whereby the steel strip is held securely in place, substantially as set forth.

385,683. PASTRY-PIE GUARD. LAMIRA PHELPS, (divorced, and now LAMIRA LUCAS,) Lowell, Mich.; said Lamira Lucas assignor of one-half to Hvander W. Dodge, same place. Filed Jan. 16, 1888. Serial No. 260,955. (No model.)

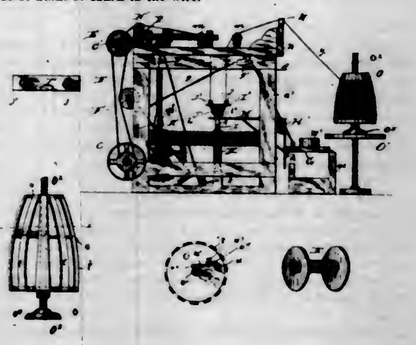


Claim.—1. A pastry-pie guard constructed with an annular rim, A B, provided with an offset, *a*, and with arms C, attached to the upper edges of the rim and extending across from side to side, a handle, D, attached to the center of the arms, a center piece, E, attached to the center of the arms, and a tube, *c'*, depending from the arm, substantially as and for the purpose set forth.

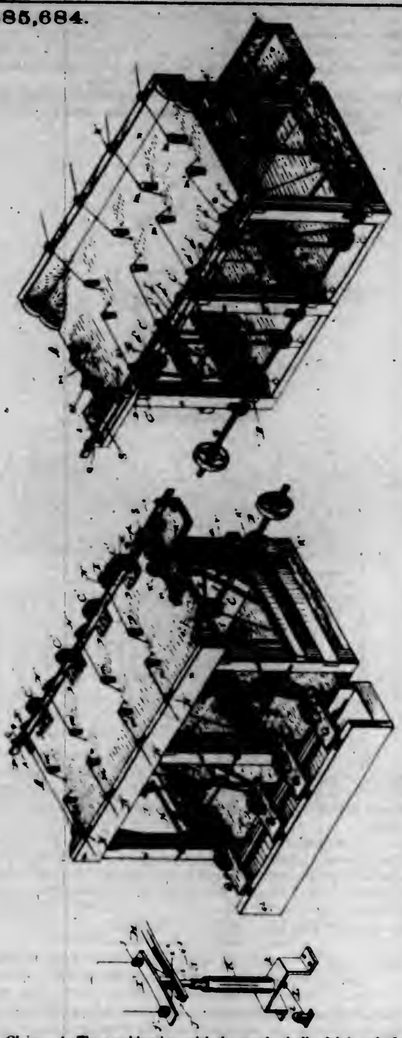
2. The combination, in a pie-guard, of the rim A B, connected by or provided with an offset, *a*, arms C, and tube or tubes *c'*, supported by the arms C, substantially as and for the purpose set forth.

385,684. MACHINE FOR SPOOLING WIRE. WILLIAM H. SAWYER, Providence, R. I. Filed Nov. 26, 1884. Serial No. 149,131. (No model.)

Brief.—The object of the invention is to produce an improved machine for winding wire from hanks or skeins onto spools. Provision is made for stopping the machine automatically upon the occurrence of kinks or snarls in the wire.



385,684.



Claim.—1. The combination, with the spool-spindle, driving-shaft, belt for transmitting motion from the driving-shaft to the spool-spindle, the delivery-reel, the traverse-bar provided with a wire-guide, and mechanism for operating said traverse-bar, of the belt-tightening pulley, the hinged arm, the platform G, the cord *g*, the pivoted angle-piece H, having on its depending arm a shoulder for supporting the platform G, the loop wire-guide connected with the horizontal arm of said angle-piece, and the guide-pulleys for directing the wire to and from the loop-guide, the whole being arranged for operation substantially in the manner as and for the purpose specified.

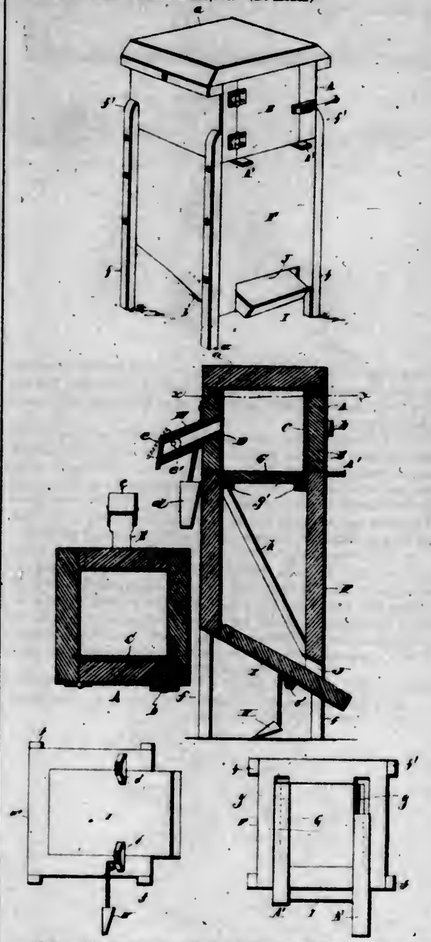
2. The rod I, a surrounding vertical tube, K, base *k*, a weighted cord connected with the lower end of said rod, a cross-head, I', mounted upon the upper end of said rod, having cups *j j'*, and a guide-pulley, J', in combination with the angle-piece H, having shoulder *h*, and the platform G, substantially as and for the purpose specified.

3. In a wire-spooling machine, the combination, with the frame and a movable loop-guide, of a bent lever having one end forked and its opposite end provided with a step, a weighted platform having a hinged connection at one end and its other end adapted to rest on said step, a swinging belt-tightening pulley, a flexible connection between said platform and pulley, and the shafts and belts for spooling the wire, substantially as described.

4. The combination, with supporting-rod O^2, of the reel O, formed of the disks *e* and slats *t*, and provided with an elastic bar arranged on one of said disks between the slats, which bears against said supporting-rod O^2, and a thumb-screw for adjusting the bar, substantially in the manner and for the purpose specified.

5. In a wire-spooling machine, the combination, with the spooling-spindle, driving-shaft pulley, and belt, of a belt-tightener having a weight attached thereto and a lever for retaining said weight in an elevated position, and having guides connected therewith through which the wire may pass, whereby it is adapted to release the weight on the occurrence of snarls or knots in the wire, substantially as described.

385,685. BEE-HIVE. ROBERT C. SMITH, Newburn, Tenn. Filed Mar. 24, 1888. Serial No. 268,276. (No model.)

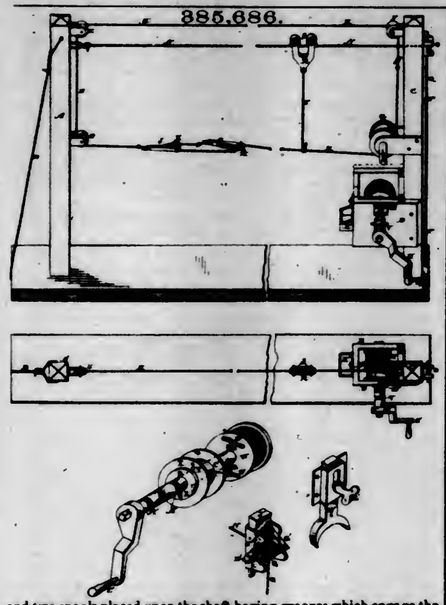


Claim.—The herein-described bee-hive, consisting of upper and lower separable sections, the upper section being provided with a removable hollow plug, E, having at its end a swinging cap, *e*, pivoted on the outer sides of the plug, the lower section having in its upper end a removable slotted partition and at its lower inclined end a pivoted bottom board, I, arranged between the sides of the section, the bottoms of said sides having buttons *i* and a wedge, by means of which buttons and wedge said bottom can be made to close the bee-entrance, as set forth.

385,686. CLOTHES-LINE. JOSIAH S. WARLEN, Florence, Kans. Filed Dec. 19, 1887. Serial No. 258,231. (Model.)

Claim.—1. The combination, with a clothes-line capable of being moved back and forth, of a box provided with a shaft having a pin,

385,686.

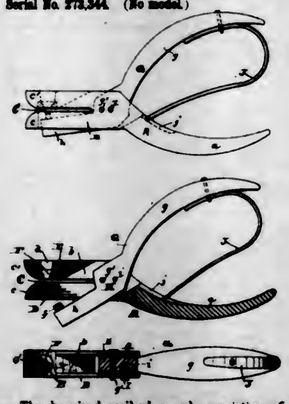


and two spools placed upon the shaft having grooves which engage the pin upon the shaft, the shaft having an endwise movement through the box and spools, whereby the pin is made to engage either spool, substantially as shown.

2. The combination, with a clothes-line capable of being moved back and forth, of a box provided with a shaft having two annular grooves and a pin, two spools placed upon the shaft inside of the box, and provided with grooves for engaging the pin upon the shaft, the shaft having an endwise movement through the box and spools, and a slide secured to the box for engaging the grooves in the shaft, and thereby locking it in either position, substantially as set forth.

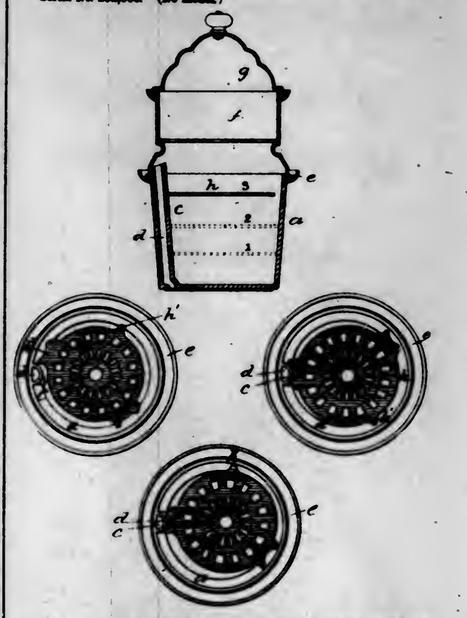
3. The combination, with a clothes-line capable of being moved back and forth, of a box having a shaft provided with a pin, two spools placed upon the shaft, and having grooves with which the pin engages, the ends of the line being secured, respectively, to the two spools, and one of the spools having springs to cause friction for the purpose described, and the shaft having an endwise movement through the box and spools for the purpose set forth, substantially as specified.

385,687. PUNCH. JOSEPH J. WALTON, Newark, N. J., assignor to the Walton Manufacturing Company, New York, N. Y. Filed May 8, 1888. Serial No. 273,344. (No model.)



Claim.—The herein-described punch, consisting of the piece A, having a slotted head, B, divided into two parts, *c c'*, and a handle, *a*, grooved at *j*, the part *c* having an opening, *d*, and an enlarged recess E, at the inner end of said opening, and the die-blocks seated in said recess, in combination with the piece G, having angular head H and handle *g*, recess *i*, stud I, die-punch *f*, pin *g'*, and spring J, all constructed and arranged substantially as and for the purpose described.

385,688. CULINARY UTENSIL. CHESTERFIELD P. WHITNEY, Newton, assignor to Hill, Whitney & Co., Boston, Mass. Filed Oct. 11, 1887. Serial No. 252,093. (No model.)



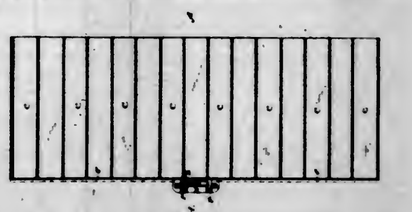
Claim.—1. In combination with the kettle *a*, having within it the upright projecting flange *c*, the adjustable disk A, having a plural number of peripheral projections with sockets of different depths adapted to rest against the inner edge of the flange *c*, all substantially as described.

2. In combination with the kettle *a*, or like cooking utensil, having the inward-projecting flange, an adjustable disk having a plural number of peripheral bearing-points and a peripheral socket adapted to receive the said flange that projects within it and forms one point of rest or support for the disk in one of its positions of vertical adjustment in the kettle, all substantially as described.

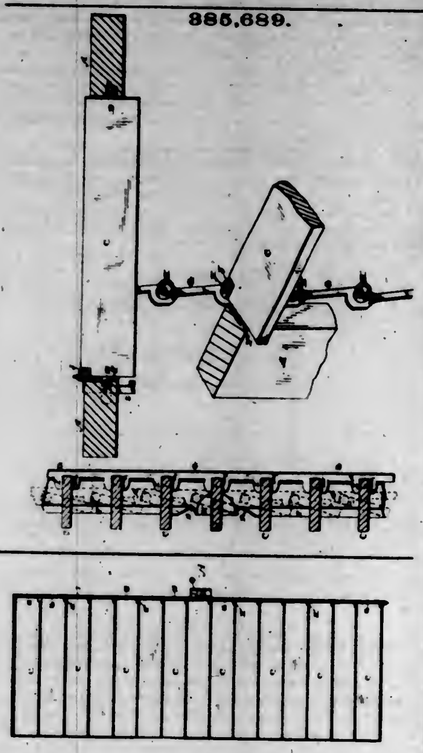
385,689. BLIND-SLAT AND OPERATING-ROD. FRANK W. WEBBY, Burlington, Vt. Filed Dec. 6, 1887. Serial No. 257,439. (No model.)

Claim.—1. The combination of the frame A, having the vertical flange F formed along one of its inside edges, the slats which are pivoted in the frame and provided with pivots B and the lugs J, the operating-rod which is connected to each of the slats by means of the lugs J, and which is placed between the ends of the slats and one side of the frame A, whereby when the blinds are closed the operating-rod is moved into the frame in the rear of the flange F, so as to be hidden from view from the inner side of the blind, substantially as described.

2. The combination of the frame, the slats provided with tenons upon each of their ends and with lugs upon one end, the operating-



385,689.





rod, and the eyelets which catch over the lugs and connect the slats to the rods, substantially as set forth.

3. The combination of the slats provided with both tenons and lugs, the eyelets which catch over the lugs, and the operating-rod which is slightly bent between the eyelets, so as to cause frictional contact against them, substantially as specified.

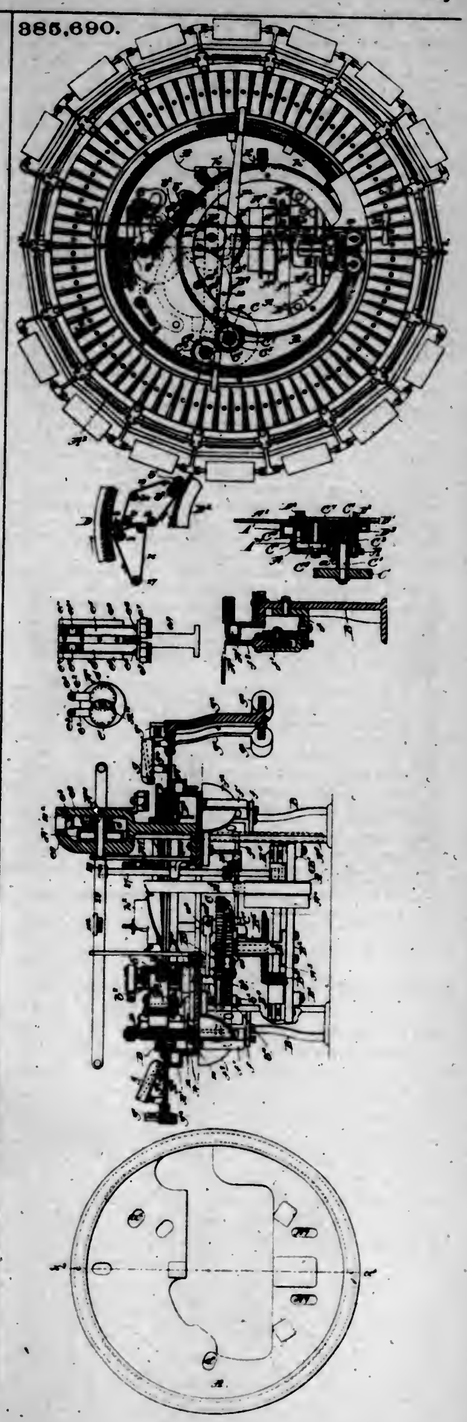
4. The combination of the frame A, provided with a recess, O, in one of its edges, the metallic frame N, placed in the recess and provided with recesses P at each end, the operating-lever L, the rod G, the eyelets, and the slats provided with both tenons and lugs, substantially as specified.

385,690. WOOL-COMBING MACHINE. HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Nov. 1, 1887. Serial No. 253,253. (No model.)

Brief.—The diameter of the noil-comb circle exceeds one-half that of the wool-comb circle, and the former is driven at a slower speed than the latter, so as to provide for drawing the wool from the two ends more nearly in radial lines. Each circle has co-operating with it a single pair of vertically-arranged drawing-off rolls. An opening is made through both circles and the bed-plate, the gearing of the machine being so located as to provide an uninterrupted passage for the driving-belt from above through the circles and bed-plate to the driving-pulley located below the machine.

Claim.—1. In a wool-combing machine, the following instrumentalities, viz: the bed-plate, the wool-comb circle, the noil-comb circle within it, of a diameter greater than one-half the diameter of the wool-comb circle, and having an opening through it suitable to receive a driving-belt from above to a pulley below the said noil-comb circle, a main shaft supported upon the frame-work below the said wool and noil comb circles, its driving-pulley located perpendicularly below the opening in the said noil-comb circle, a pair of vertically-arranged drawing-off rolls for each of the said comb-circles, gearing between the said main shaft and the said drawing-off rolls and comb-circles to rotate them, an endless revolving series of wool-boxes, and means to lift the boxes and feed the wool therefrom, the combination being and operating substantially as described.

385,690.



2. The wool-comb circle, the noil-comb circle within it, of a diameter greater than one-half of the diameter of the wool-comb circle, a pair of vertically-arranged drawing-off rolls for each of the comb-circles, the main shaft A^5, supported on the frame-work below the bed-plate and comb-circles, the vertical shaft C, gearing whereby said shaft C is driven by the main shaft, and spur-gearing from the vertical shaft to the combs and the two sets of drawing-off rolls, to operate substantially as described.

3. The wool-comb circle, the noil-comb circle within it, of a diameter greater than one-half of the diameter of the wool-comb circle, the endless series of wool-boxes moved in unison with the wool-comb circle, means to lift the said wool-boxes in succession to feed wool to the pins of the circles, a pair of vertically-arranged drawing-off rolls for each of the comb-circles, the main shaft A^5, supported on the frame-work below the bed-plate and comb-circles, the vertical shaft C, and gearing whereby the said shaft C is driven by the main shaft and spur-gearing intermediate the vertical shaft and the two sets of drawing-off rolls and the wool and noil comb circles, to operate substantially as described.

4. In a wool-combing machine, the following instrumentalities, viz: the bed-plate, the wool-comb circle, the noil-comb circle within it, having an opening through it suitable to receive a driving-belt from above to a pulley below the said noil-comb circle, a main shaft supported upon the frame-work below the said wool and noil comb circle, its driving-pulley located perpendicularly below the opening in the said noil-comb circle, a pair of vertically-arranged drawing-off rolls for each of the said comb-circles, gearing between the said main shaft and the said drawing-off rolls and comb-circles to rotate them, an endless revolving series of wool-boxes, means to lift the boxes and feed the wool therefrom, a shaft located above said main shaft, means to rotate it, a dabbing-brush, its carriage, and means between the shaft located above the main shaft and the said carriage to actuate the latter, substantially as described.

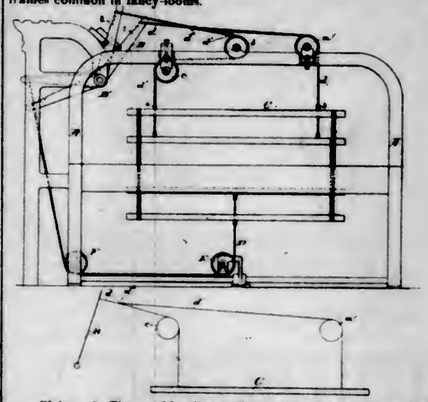
5. The wool-comb circle and the smaller noil-comb circle arranged within it, combined with the vertically-arranged drawing-off rolls for the wool-comb circle and the drawing-off rolls for the noil-comb circle, an endless revolving series of wool-boxes, and with means, substantially as described, to rotate the wool-comb circle and its wool-boxes and the inner noil-comb circle at different speeds, for the purpose set forth.

6. In a wool-combing machine, the open bed-plate A, the wool-comb circle, the noil-comb circle within it, of a diameter greater than one-half of the diameter of the wool-comb circle, the main shaft A^5, located below the said bed-plate, means for driving said comb-circles from said main shaft, a pulley fast on the said main shaft vertically below the opening in the noil-comb circle, the driving-belt A^3, extended from above the said bed-plate through it and the said noil-comb circle and about the said fast pulley, the endless revolving series of wool-boxes, means to lift them to feed the wool to the pins of the said circles, a dabbing-brush, its carriage, the shaft A^{10}, provided with means to operatively connect it with and to reciprocate the said carriage, pulleys A^6 and A^8 on the shafts referred to, and a belt, A^7, to connect the said pulleys, the pulleys A^6 and A^8 being of different diameters, whereby the shaft A^{10} is rotated at a faster speed than the shaft A^5, to operate substantially as described.

7. The wool-comb circle and the smaller single noil-comb circle arranged within it, combined with the vertically-arranged drawing-off rolls for the wool-comb circle and the drawing-off rolls for the noil-comb circle, and with gearing to rotate the said comb-circles at different speeds, as and for the purposes set forth.

385,691. **SHEDDING MECHANISM FOR LOOMS.** HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Feb. 2, 1883. Serial No. 362,805. (No model.)

Brief.—The arrangement of cording and sheaves shown is designed to obviate the unequal draft upon opposite ends of the heddle-frames common in fancy-looms.



Claim.—1. The combination, with a series of harness-levers having their fulcra at the top of the loom-frame above the harness-frames, and a series of harness-frames, of three sets of sheaves, as *a b c*, located at the top of the loom-frame, and of strap or cord connections *d d'*, extended, as described, over the said sheaves and joined to the opposite ends of the harness-frames at their upper sides, substantially as described.

2. The combination, with a series of harness-levers having their fulcra at the top of the loom-frame above the harness-frames, a series of harness-frames, cording D, and a set of sheaves around which the cording runs, of three sets of sheaves, as *a b c*, located at the top of the loom-frame, and strap or cord connections *d d'*, extended, as described, over the sheaves *a b c* and joined to the opposite ends of the harness-frames at their upper sides, substantially as described.

PHOTO-LITHO. NORRIS PETERS WASH. D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

JOYCE *v.* THE CHILLICOTHE FOUNDRY AND MACHINE WORKS COMPANY *et al.*

Decided May 14, 1883.

JOYCE—LIFTING-JACKS—INFRINGEMENT.—WHAT IS NOT.

The first claim in the patent in suit, being limited to a pawl moving by gravity alone in inclined slots, grooves, or guides formed in the frame, is not infringed by a pawl mounted upon an incline, with a spring to press the pawl down the incline, assisted by gravity, and having no slots, grooves, or guides formed in the frame.

APPEAL from the Circuit Court of the United States for the Southern District of Ohio.

Mr. E. E. Wood and *Mr. Edward Boyd* for the appellant.

Mr. JUSTICE BLATCHFORD delivered the opinion of the Court.

This is a suit in equity brought in the Circuit Court of the United States for the Southern District of Ohio by Jacob O. Joyce against the Chillicothe Foundry and Machine Works Company and F. M. De Weese to recover for the infringement of Letters Patent of the United States No. 154,989, granted to Jacob O. Joyce, September 15, 1874, for an improvement in lifting-jacks, on an application filed March 16, 1874.

The specification, claims, and drawings of the patent are as follows:

Be it known that I, JACOB O. JOYCE, of Carlisle Station, Warren county, Ohio, have invented certain Improvements in Lever-Jacks, of which the following is a specification:

My invention relates to the pawl of such jacks; and its objects are, first, to substitute the weight of the pawl, sliding in inclined slots, grooves, or guides, for the elastic spring usually employed to press it against the teeth of the ratchet-bar; and, second, to obtain greater strength by dividing the load among several teeth of the pawl and ratchet-bar, instead of supporting it all on one tooth, as is commonly done.

Figure 1 of the accompanying drawings is a vertical section of so much of a jack as is necessary to show my improvements; and Fig. 2 is a modification of the same, in which the pins and slots of Fig. 1 are exchanged for the tongue and groove in Fig. 2.

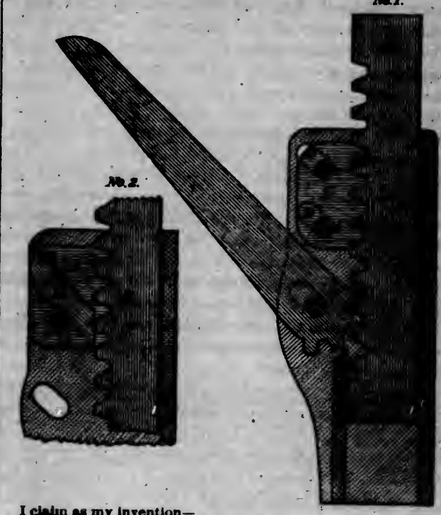
Referring to Fig. 1, A is the pawl, having teeth that engage with the teeth of the ratchet-bar B. D D' are slots in the frame of the jack, inclined to the axis of the ratchet-bar at the angle of about forty-five degrees, in which slots move the pins C C' of the pawl A.

The operation is seen at a glance. When the ratchet-bar is raised, its teeth crowd or slide the pawl up the inclined slots out of the way, so as to allow it to pass, until it has traveled the length of a tooth, when the weight of the pawl causes it to fall back into the next tooth below, ready to hold the ratchet-bar at the point gained, ready for another lift, and so on.

In Fig. 2, instead of slots D D', there is a tongue, D, on each side of the pawl, with corresponding grooves in the frame of the jack, in which the said tongues move; or the tongues may be on the frame, with the grooves in the pawl, the tongues and grooves performing the same office that the pins and slots do in the form of construction shown in Fig. 1.

Other modifications, involving the same principle of operation, may be possible; but I prefer the construction represented in Fig. 1, at the same time not limiting myself strictly to that, but claiming any equivalent arrangement by which the same objects are accomplished in substantially the same manner.

No. 1.



No. 2.

I claim as my invention—

1. A pawl for lever-jack with two or more teeth, and adapted to move in inclined slots, grooves, or guides formed in the frame, substantially as described.

2. The combination of the pawl A with its pins C C', slots D D', and ratchet-bar B, substantially as described.

Each defendant put in a separate answer, alleging want of novelty, and setting forth sundry prior patents in which, it was averred, the invention was contained, and also giving the names of sundry prior inventors. Each answer denied infringement. The answer of the company averred that it had made for its co-defendant parts of lifting-jacks in accordance with Letters Patent of the United States granted to Samuel Mosler, No. 168,663, dated October 11, 1875; No. 172,471, dated January 18, 1876, and No. 194,711, dated August 28, 1877. Issue was joined and proofs were taken on both sides, and the circuit court dismissed the bill, with costs. Its decision is reported in 15 Fed. Rep., 260.

In the opinion of the circuit court it is said:

The specification describes, and the drawings show, a frame with parallel sides, between which a pawl moves in parallel slots in the frame, forming guideways inclined toward the vertically-moving ratchet-bar. The pawl is provided with a series of teeth on the face adjacent to the ratchet-bar, and at opposite sides with projections or lugs engaging in the inclined slots of the frame. The guide-slots are inclined at an angle of forty-five degrees, or thereabout, and the pawl is actuated solely by gravity to move down the inclines and engage its teeth with those of the ratchet-

bar; and the patentee states in his specification, as one of the objects of the invention, his purpose to utilize the gravity of the pawl itself, thus arranged, as a substitute for a spring.

The clear statement of the specification in this respect is that the first object of the invention is—

to substitute the weight of the pawl, sliding in inclined slots, grooves, or guides, for the elastic spring usually employed to press it against the teeth of the ratchet-bar.

The specification also says that—

when the ratchet-bar is raised, its teeth crowd or slide the pawl up the inclined slots out of the way, so as to allow it to pass, until it has traveled the length of a tooth, when the weight of the pawl causes it to fall back into the next tooth below, ready to hold the ratchet-bar at the point gained, ready for another lift, and so on.

These are plain statements that the weight of the pawl, unaided by any spring, is to be used to cause the pawl to fall back into the next tooth below, after the ratchet-bar has traveled the length of a tooth, such weight of the pawl being employed to press it against the teeth of the ratchet-bar in place of the use of an elastic spring for that purpose. The inclined slots, grooves, or guides formed in the frame in which the pawl moves are the slots D D', made in the frame of the jack, and "inclined to the axis of the ratchet-bar at the angle of about forty-five degrees," in which slots the pins C C' of the pawl move. The specification states that, instead of such slots in the frame of the jack, there may be grooves in such frame, one on each side of the pawl, in which a tongue on each side of the pawl moves; or there may be tongues on the frame and grooves in the pawl, the tongues and grooves performing the same office that the pins and slots do in the first form of construction.

In the opinion of the circuit court the following statement is made as to the defendants' jack, which we deem to be correct:

The defendants manufacture a jack having a many-toothed pawl resting at its bottom upon a seat slightly inclined toward the rack-bar and actuated by a spring placed behind it within the frame. The inclination of the seat is not sufficient to actuate the pawl by gravity, nor are there any slots or other means of guiding the pawl in the sides of the frame, the function of the inclined seat being rather to assist the spring in preventing a backward slip of the pawl when under pressure than to facilitate the forward movement of the pawl, although to the latter result it may contribute in a slight degree.

The plaintiff claims that the defendants use their spring to start the movement of the pawl upon an incline having a less angle than that mentioned in the specification of the patent and employ an inclined seat for the pawl to effect the holding of the load, and that they thus infringe the first claim of the patent. But we are of opinion, upon the whole evidence, that in the defendants' jack the spring is used to press the pawl against the teeth of the ratchet-bar, within the meaning of the specification of the patent; that the jack made by the defendants would not be and is not, as constructed by them and put upon the market, a practically operative instrument without the use of the spring; that the pawl in it will not operate by gravity alone so as to make it an efficient or safe machine, and that there are no slots, grooves, or guides formed in the frame to guide the pawl in the sense of the first claim of the plaintiff's patent.

We concur with the court below in holding that the first claim of the patent must be limited to a pawl moving by gravity alone in inclined slots, grooves, or guides formed in the frame, and that therefore there has been no infringement of the first claim. It is not alleged that the second claim has been infringed.

The decree of the circuit court is affirmed.

U. S. Circuit Court—Eastern District of Pennsylvania.

GEIS *v.* KIMBER.

Decided May —, 1888.

1. GEIS—GRIST FOR BREWING PURPOSES.
   The claim of Letters Patent No. 249,382, to F. J. Geis, dated November 8, 1881, "for a new and improved mixture or grist for brewing purposes" *Held* to be for a "composition of matter," and not infringed by anything done in the process of brewing, and not infringed by defendant.
2. INFRINGEMENT.
   The claim being for a composition of matter or dry mixture, *Held* not infringed by the sale of one of the materials forming part of the mixture, the use of both materials forming the mixture being old in the art.
3. WANT OF INVENTION.
   It is difficult to find invention in mixing or putting together in a dry state two materials, it being old to mix the same materials during the process of manufacturing or brewing.

IN THE Circuit Court of the United States in and for the Eastern District of Pennsylvania.

Mr. George E. Buckley and *Mr. Edwin M. Hunt* for the complainant.

Mr. Rowland Cox for the defendant.

BUTLER, *J.*:

The suit is for infringment of Letters Patent No. 249,382, issued to Francis J. Geis for a new and improved mixture or grist for brewing purposes, dated November 8, 1881. The patent contains a single claim, which reads as follows:

A mixture or grist for brewing malt liquors, composed of malt and cereals or grain having the cellohuse or integument and germ or heart removed, the cereals or grain constituting from about twenty-five to fifty per centum, by weight, of the said mixture or grist, substantially as herein specified.

To determine the scope of this claim, it is necessary to understand and consider the circumstances under which the patent was granted.

The original application, presented in December, 1880, was for "new and useful improvements in the *process of brewing malt liquors*." The alleged invention and its advantages were described, substantially, in most respects, as are set forth in the specifications accompanying the patent. The claim sought to be secured read as follows:

The process of manufacturing malt liquors consisting in substituting for from twenty-five to fifty per centum of the weight of the malt usually employed, a corresponding weight of cereals or grain having the cellolose or integument and germ or heart removed, but containing gluten and albuminoids, substantially as and for the purpose specified.

After consideration by the examiner the application was rejected. Making slight amendment, the applicant renewed it. It was again considered and rejected in the following words:

The use of cereals deprived of hull, kernel, and all nitrogenous and unfermentable matters in conjunction with malt to form beer is shown in the English patents to Johnson, 2,033 of 1871, and Newton, 2,320 of 1868, and the use of corn deprived of hull and kernel for the same purpose is pointed out in the United States patent to Hartshorn, September 30, 1879, No. 220,083, and that to Furbish already cited.

After further amendment the application was again renewed, and was again rejected in the following terms:

It is old in the processes of manufacturing malt liquors to substitute for malt, in varying proportions, a corresponding weight of corn. (See, for instance, English Patent 94 of 1837, (mashing,) and Distillation, Brewing, and Malting, San Francisco, 1887, p. 30.) The purpose of Hartshorn's invention is to improve this old process by first removing from such grain the integument and germ. This seems to be the whole gist of applicant's invention, and, such being the case, it is deemed to be fully anticipated.

Further amending, the applicant again renewed and pressed his claim. It was again rejected in the following terms:

This application has been reconsidered as amended. The references of record show that it is old in the processes of manufacturing malt liquor to substitute, in varying proportions, cereals for the malt usually employed. It is also shown to be old to use for the same purpose cereals having the "cellulose, hearts and germs" removed. Instead of treating cereals thus prepared, in the way preferred by Hartshorn, applicant merely adopts the older method followed in treating ordinary grain. To treat the grain as prepared by Hartshorn, in the old way is not seen to require the exercise of invention. In other words, applicant has neither discovered that grain can be substituted for a portion of the malt in the ordinary brewing process nor that such grain with hulls and "heart" removed will better answer as such a substitute. The applicant is again and finally rejected.

These several decisions of the examiner were, we believe, clearly right, not only for the reasons stated by him, but for others as well deducible from the proofs in this case. A brief review of the state of the art will show this and afford additional aid in construing the claim. Cereals—rice, wheat, and corn—had been used in combination with malt in manufacturing malt liquors for many years. These grains contain qualities adapted to such use, and, being cheaper than malt, had long been thus used. The hulls and germs contain objectionable matter which render it important to exclude them. This was universally understood by the trade. "Commercial" rice is virtually, if not absolutely, free of them. Wheat and cornmeal are measurably so. The subject of using these grains and the importance of removing the hulls and germs are referred to in various publications, and also in numerous Letters Patent introduced into the case. The preparation of corn known as "hominy" contains less of these objectionable parts, probably, than any other preparation of that grain. It is not absolutely free. Necessarily a small part remains, even with the greatest care in preparation. Notwithstanding some reference is made to hominy in this connection in one or two publications, the importance of adopting it instead of cornmeal seems very generally to have been overlooked. There is evidence of its use, however, at St. Louis as early as 1876. The complainant, (a practical and experienced brewer,) believing "hominy" to be the cleanest and therefore the best preparation of corn for brewing purposes, commenced its use shortly before his application for a patent. He had discovered nothing new in the art of manufacturing malt liquors He admits this virtually in the following statement taken from his application:

I am aware that a grist composed of malt and grain in its natural state is not new, and I am also aware that it has been proposed to remove from corn the hulls and germs—

before applying it to this purpose. This statement, however, falls far short of the entire truth relating to the subject, as we have seen. He doubtless believed himself the first to discover the especial adaptability of "hominy" to brewing purposes. Others, however, knew as well as he that "hominy" is simply corn with the hulls and germs removed, and, knowing this, would necessarily as well understand its adaptability to this purpose. But he was mistaken even in the belief that he was the first to suggest and apply this preparation. As we have seen, it was previously suggested by others and previously applied at St. Louis. He was using it in certain proportions to the malt, as stated in his specifications; but this also was unimportant, first, because of indefiniteness in the statement, and secondly, because no invention was necessary to determine the proper proportions. The complainant ascertained them by experiment. He could do it in no other way. Any brewer could and would do it in the same way and as readily. Besides, the proportions depend on the quality of the malt, of the grain, and of the liquor desired. While the supposed discovery went no further, as the proofs show, than seeing and utilizing the special applicability of "hominy" to brewing purposes, the applicant claimed the use of *all grains* freed from hulls and germs.

The conclusions of the examiner, we repeat, were clearly right. After the final rejection by this officer, the complainant appealed to the Board of Examiners-in-Chief. They agreed with the examiner in rejecting the claim. They, however, made the important discovery that the applicant (an expert in the art to which his supposed invention relates) did not know what he had invented; that it was something quite different from what he supposed—not a "process of brewing malt liquors," as he claimed, but a "composition of matter." After thus classifying it they say:

Now, the applicant has conceived the idea of preparing a suitable wort-making stock, which will keep any length of time, and which may be sent to any distance, by compounding a dry mixture of unmaltable grain, decorticated and freed from the heart or germ, and of malt, in such proportions that the starch of the one and the diastase of the other will be relatively just sufficient, (twenty-five to fifty per cent. of the unmalted grain.) And he should, therefore, claim a mixture for purposes which should be named, consisting of malted and unmalted dry grain, describing the kind and naming the proportions.

It is difficult to find any justification for this conclusion. It is not difficult, however, to understand the reasons which led to it. The formation of a mixture of corn, (partially if not wholly cleansed,) and malt, in the mash-tub or otherwise, in the act or process of manufacturing liquor was old, and therefore the applicant's claim for a "process of manufacturing" could not be allowed. These terms ("process of manufacturing") embrace all the acts or steps involved in the manufacture, including of course that of preparing or mixing the ingredients. The complainant so understood them. For although he contemplated from the beginning (and subsequently bound himself to) the preparation of his mixture "before brewing," (another step simply of the process,) he called his invention a "process of manufacturing." The formation, however, of the mixture in a *dry* state, not in the act or process of manufacturing liquor, as an article of merchandise, suited to keeping and to transportation, was supposed to be a new article of commerce, and believing this to be what the complainant had actually invented, he was advised to alter his claim and specifications and take a patent for it. The applicant adopted the advice, altered his specifications and claim, and took letters accordingly.

While it may be difficult to see patentable invention in thus putting together in a dry condition the ingredients in common use for brewing purposes, instead of mixing them in the mash-tub, as was usually practiced in the process of manufacturing malt liquors, we need not concern ourselves with this question. In view of the facts stated, the claim must be construed as for a "composition of matter," a "wort-making stock" prepared "by compounding a dry mixture of grain, free from hulls and germs, and of malt," in the proportions stated. Thus construed, nothing done in the act or process of manufacturing liquor will in-

fringe the claim. The preparation of a "dry wort-making stock," compounded of the ingredients in the proportions claimed, alone will constitute such infringement. If it be said this is a narrow construction and that it will render the patent virtually useless, a sufficient answer may be found in the fact that the Patent Office contemplated this construction, and would not otherwise have granted the Letters Patent. A broader construction, such as the complainant now seeks, would give him precisely what the Office refused.

Has the respondent infringed? He sells an article called "Cerealine," prepared in the manner described by the evidence. We need not trouble ourselves with the question whether this preparation is similar to "hominy" or other cereals cleansed of hulls and germs. Granted that it is, the respondent may sell it to whom he will. Hominy, rice, corn, and wheat-flour are among the most common articles of merchandise, and are principally consumed as food. The complaint urged against the respondent, however, is that he sold this preparation to brewers, accompanied by a recommendation of its use for brewing purposes. He did so recommend it. He issued circulars calling attention to it as the "best known material, combined with malt, for manufacturing pale, pure beer," superior to "malt-meal," &c., and suggesting that it be used "in the mash-tub with malt" in the "proportions of twenty-five to thirty-three per centum of the mash." If he had recommended its use in the preparation of a "dry wort-making stock" for malt liquors, as an article of merchandize, the sale and recommendation would have rendered him responsible for the use subsequently made, if his advice was followed. He, however, did not so recommend. His language just quoted would seem to leave no doubt of this. It was to be mixed with the malt in the mash-tub in the act or process of manufacturing. As the proofs show, practical brewers would so understand the recommendation. It is difficult to see how it could be understood otherwise.

A decree may be prepared dismissing the bill, with costs.

U. S. Circuit Court—Western District of Pennsylvania.

CONSOLIDATED ELECTRIC LIGHT COMPANY *v.* THE MCKEESPORT LIGHT COMPANY.

Decided March 17, 1887.

1. SEVERAL ASSIGNMENTS BEFORE ISSUE.
Pending an application for Letters Patent, the invention was assigned to corporation A, by it to corporation B, and by the latter to the complainant, all the assignments being recorded in the Patent Office before the issuance of the patent. The patent issued to corporation A. *Held* on demurrer to bill setting out this title the patent was not void for want of interest of record in the patentee.

2. SAME—REVISED STATUTES 4895.
The purpose of section 4895 of the Revised Statutes is to permit a patent to issue to the person who has the record title to the invention, and is attained when the patent runs to the ultimate assignee, and therefore a patent may issue to the person who by the records of the Office is assignee of the invention, although not technically the assignee of the inventor. (*Selden v. Stockwell Gas Burner Co.*, 19 Blatchf., 544; S. C., 9 Fed. Rep., 390.)

3. SAME—LEGAL TITLE VESTS—WHEN.
The legal title to a patent vests at once on its issuance to the person who by the record is entitled to it; but it is not mandatory under the language of the statute that the patent run in form to such record owner. (*Gaylor v. Wilder*, 10 How., 477.)

4. SAME—TO WHAT ASSIGNEE ISSUED.
A patent is properly issued to any assignee whose assignment is duly recorded when it can be done without impairing the rights of any other person having a paramount title to the invention, and is therefore valid when issued to any such assignee of record. (*Consolidated Electric Light Company v. Edison Electric Light Company et al.*, 33 O. G., 1597.)

SUR demurrer to bill of complainant.

Messrs. Broadnax & Bull, Mr. W. Bakewell, and *Mr. T. B. Kerr* for the complainant.

Mr. John C. Tomlinson and *Mr. Magnus Pflanon* for the defendant.

ACHESON, *J.*:

The precise question here presented was raised in the case of *The Consolidated Electric Light Company v. Edison Electric Light Company*, (33 O. G., 1597; 25 Fed. Rep., 719,) and was decided favorably to the plaintiff. I have carefully read the opinion of Judge Wallace and perceive no reason for doubting the correctness of his conclusion. How can it be said the patent was issued without authority of law, and therefore is void, when in fact it was issued to the very person designated by section 4895 Revised Statutes—viz: "the assignee of the inventor?" There was, indeed, a literal compliance with the provisions of the statute; but as by operation of law the legal title to the patent upon the issuance thereof, *eo instanti*, vested in the plaintiff as the ultimate assignee, the substantial result was the same as if it had formally issued to the plaintiff. (*Gaylor* v. *Wilder*, 10 How., 477.) While this view saves the patent and subserves the justice of this case, it neither runs counter to sound public policy nor tends to any evil consequences, so far as I can see.

And now, March 17, 1888, the demurrer is overruled, with leave to the defendant to answer the bill within thirty days.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

VOL. 44—NO. 2. TUESDAY, JULY 10, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	111
FRAUDULENT PRACTICES BY ATTORNEYS	111
NOTICE	111
ISSUE OF JULY 10, 1888	111
DESIGNS	112
TRADE-MARKS	112
LABELS	112
PATENTS GRANTED	113
REISSUES	230
DECISIONS OF THE U. S. COURTS—	
Holland v. The Shipley-Tyrrell Manufacturing Company	231
Graham *et al. v.* Piano Manufacturing Company *et al.*	231
Huber *et al. v.* N. C. Nelson Manufacturing Company	234

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado.*

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of July 10, 1888.

Patents	411—No.	385,692 to No.	386,102, inclusive.
Designs	17—No.	18,440 to No.	18,456, inclusive.
Trade-Marks	15—No.	15,666 to No.	15,680, inclusive.
Labels	4—No.	5,648 to No.	5,651, inclusive.
Reissues	2—No.	10,942 to No.	10,943, inclusive.
Total issue	449		

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	4	
Arizona Territory			Nevada		
Arkansas			New Hampshire	2	
California		1	New Jersey	14	
Colorado	5		New Mexico Terri'ty		
Connecticut	16		New York	72	5
Dakota Territory	2		North Carolina	2	
Delaware	1		Ohio	21	2
District of Columbia	5		Oregon		
Florida	1		Pennsylvania	47	2
Georgia	6		Rhode Island	3	
Idaho Territory			South Carolina		
Illinois	36		Tennessee	4	
Indian Territory			Texas	4	
Indiana	5		Utah Territory		
Iowa	6	1	Vermont	2	
Kansas	8		Virginia	1	
Kentucky	4		Washington Terri'y	3	
Louisiana	1		West Virginia	1	
Maine		1	Wisconsin	6	
Maryland	12	1	Wyoming Territory		
Massachusetts	50	1	United States Army		
Michigan	14		United States Navy		
Minnesota	8				
Mississippi	1		Total to citizens of		
Missouri	18	1	the United States	404	15
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Germany	4	
Australia			Ireland	3	1
Austria-Hungary	2		Netherlands		
Belgium	1		New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	4		Russia		
Chili			Scotland	1	
Colombia, U. S. of			South Australia		
Cuba			Spain		
Denmark			Switzerland		
England	9	2			
Finland			Total to citizens of		
France		1	foreign countries	24	4

DESIGNS.

18,440.—RADIATOR ORNAMENTATION.—*John B. Dyar*, Detroit, Mich. Application filed March 27, 1888. Serial No. 268,677. Term of patent 3½ years.

18,441.—WATER-CLOSET BOWL AND STANDARD.—*William Ralph Emerson*, Boston, Mass., assignor to *The Meyer-Sniffen Company, (Limited,)* New York, N. Y. Application filed November 14, 1887. Serial No. 255,166. Term of patent 7 years.

18,442.—FONT OF COMBINATION TYPE ORNAMENTS.—*Charles E. Heyer*, Chicago, Ill., assignor to *Barnhart Bros. & Spindler*, same place. Application filed April 13, 1888. Serial No. 270,506. Term of patent 14 years.

18,443.—FRAME OR SUPPORT FOR FRICTION-CLUTCHES.—*Harry W. Hill*, Cleveland, Ohio. Application filed April 9, 1888. Serial No. 270,139. Term of patent 14 years.

18,444.—GLOVE, &c.—*Julius Kayser*, New York, N. Y. Application filed March 23, 1888. Serial No. 268,293. Term of patent 3½ years.

18,445.—COOKING-STOVE.—*William J. Keep* and *Charles Wipfler*, Detroit, Mich., assignors to *The Michigan Stove Company*, same place. Application filed April 19, 1888. Serial No. 271,257. Term of patent 7 years.

18,446 and 18,447.—SURFACE ORNAMENTATION OF WALLS.—*Frederick Koskul*, Williamsport, Pa. Applications filed March 17, 1888. Serial Nos. 267,569 and 267,578. Term of patents 14 years.

18,448.—CORNICE.—*Frederick Koskul*, Williamsport, Pa. Application filed March 17, 1888. Serial No. 267,583. Term of patent 14 years.

18,449.—SURFACE ORNAMENTATION OF WALLS.—*Frederick Koskul*, Williamsport, Pa. Application filed March 17, 1888. Serial No. 267,584. Term of patent 14 years.

18,450.—BUTTON.—*Rudolph Liebmann*, New York, N. Y. Application filed June 14, 1888. Serial No. 277,152. Term of patent 3½ years.

18,451 and 18,452.—OPEN-WORK PANEL.—*Frederick Mankey*, Williamsport, Pa. Applications filed February 28, 1887. Serial Nos. 229,266 and 229,267. Term of patents 7 years.

18,453.—SPOON.—*Henry A. Pistorius*, Newburyport, Mass., assignor to *The Towle Manufacturing Company*, same place. Application filed June 7, 1888. Serial No. 276,413. Term of patent 7 years.

18,454.—SCARF.—*Henry Rawak*, New York, N. Y. Application filed May 16, 1888. Serial No. 274,081. Term of patent 7 years.

18,455.—KNIFE AND FORK.—*Mary Richmond*, Lockport, N. Y. Application filed June 5, 1888. Serial No. 276,154. Term of patent 7 years.

18,456.—BADGE.—*Jean Steiner*, New York, N. Y. Application filed May 23, 1888. Serial No. 274,840. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,646.—POMADES FOR TOILET USE.—*John E. Brearey*, London, county of Middlesex, England. Application filed May 5, 1888. Used since January 1, 1887.

"A full-face portrait of the head of Diana of Poitiers, the words 'POMMADE DE DIANE DE POITIERS,' and the words 'MARIE DU BOYER.'"

15,647.—FLOUR.—*E. Nelson Gardner*, Baltimore, Md. Application filed June 1, 1881. Used since 1866.

"The words 'SNOW DROP.'"

15,648.—REMEDY FOR DYSPEPSIA.—*Geo. Groder & Co.*, Waterville, Me. Application filed June 1, 1888. Used since January 1, 1888.

"The representation of a beaver crouched upon a log above a waterfall building a dam, with herbs and flowers growing upon each shore, and inclosed by a circle."

15,649.—ROASTED COFFEE.—*Haysorth & Deuhurst, (Limited,)* Pittsburg, Pa. Application filed April 17, 1888. Used since 1882.

"The representation of a bird over a nest of eggs."

15,670.—VETERINARY OINTMENT.—*Samuel Heiser*, Sioux City, Iowa. Application filed May 21, 1888. Used since May 10, 1888.

"A representation of the corn-palace of 1887, erected at Sioux City, Iowa, with the words: 'DR. HEISER'S MAGIC VETERINARY HEALING OINTMENT.'"

15,671.—WASHING-POWDER.—*Hodyson & Co.*, Binghamton, N. Y. Application filed May 9, 1888. Used since March 15, 1888.

"The word 'HERBY.'"

15,672.—COMPOUNDS FOR CLEANSING, WASHING, AND SCOURING.—*The Keystone Chemical Company*, Philadelphia, Pa. Application filed February 10, 1888. Used since June, 1886.

"The word 'PHOSPHO.'"

15,673.—LIQUEURS OR CORDIALS.—*Rocher Frères*, La Côte St. André, Isère, France. Application filed April 9, 1888. Used since November, 1887.

"The representation of three rocks."

15,674.—PACKING CONSTRUCTED WHOLLY OF FLAX FIBER WITH A RED-CORD CENTER.—*William T. Y. Schenck*, San Francisco, Cal. Application filed March 24, 1888. Used since October 22, 1887.

"The words 'THE RED CORD.'"

15,675.—ENGRAVERS' PLATES, DIES, AND TOOLS.—*John Sellers & Sons*, New York, N. Y., and Sheffield, England. Application filed June 4, 1888. Used since 1838.

"The letter 'S' pierced vertically and centrally by a sword."

15,676.—KNIVES, RAZORS, SHEARS, AND SCISSORS.—*John Sellers & Sons*, New York, N. Y., and Sheffield, England. Application filed June 4, 1888. Used since 1838.

"The letter 'S' pierced vertically and centrally by a sword."

15,677.—BICYCLES AND TRICYCLES.—*St. George's Engineering Co.*, Birmingham, county of Warwick, England. Application filed March 26, 1888. Used since December 1, 1886.

"A representation or figure of Mercury treading on a wheel and carrying another wheel."

15,678.—LINEN AND HEMP GOODS OF ALL DESCRIPTIONS.—*Richard Thomas Webb*, Greenisland, Belfast, Ireland. Application filed May 25, 1888. Used since September, 1886.

"An outline map of Ireland."

15,679.—MEDICINAL TINCTURES AND FLUID EXTRACTS.—*Weeks & Potter*, Boston, Mass. Application filed March 8, 1888. Used since 1873.

"The representation of a phenix."

15,680.—CERTAIN PREPARATIONS OF MEDICINAL HERBS.—*George W. Wright*, Akron, Ohio. Application filed June 1, 1888. Used since May 29, 1888.

"The compound word 'ROOT-TEA-NA.'"

LABELS.

5,648.—Title: "COCA TOBACCO AND CIGARETTES."—*Gotthard Schwenzner*, New York, N. Y. Application filed June 16, 1888.

5,649.—Title: "ROCHESTER GAS BURNER."—*Charles Stanford Upton*, New York, N. Y. Application filed June 14, 1888.

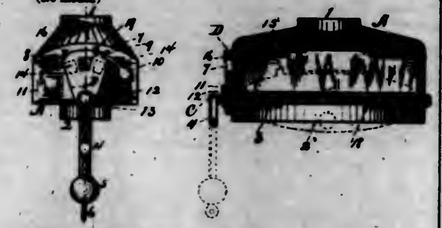
5,650.—Title: "ORANGE PHOSPHATE."—*Wolf-Wilson Drug Company*, St. Louis, Mo. Application filed April 5, 1888.

5,651.—Title: "ROOT-TEA-NA," (FOR A VEGETABLE MEDICAL COMPOUND.)—*George W. Wright*, Akron, Ohio. Application filed June 1, 1888. (Trade-Mark Registered.)

PATENTS

GRANTED JULY 10, 1888.

385,692. AUTOMATIC DAMPER. ROBERT H. ARNOLD and ELISHA S. STAPLIN, Seneca Falls, N. Y. Filed Mar. 26, 1888. Serial No. 268,473. (No model.)



Claim.—1. In a damper, a cold-air slide mounted upon a main-damper arbor and operated by the rotation of the arbor and in combination therewith, substantially as described.

2. A cold-air slide mounted upon the draft-shut-off arbor and operated by the rotation thereof, and provided with a weight on one side and in combination with said arbor, substantially as described.

3. The combination, with the damper-shell provided with openings in one end, of a cold-draft slide mounted upon the shut-off arbor, and stop-hooks upon the shell and stop-lugs upon the slide and a weight thereon, substantially as described.

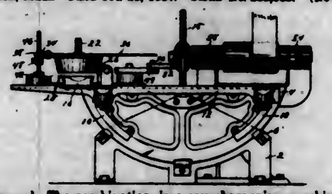
4. The combination, with the arbor C, provided with a stud, 13, of the slide D, mounted upon said arbor and provided with a stud, 11, substantially as described.

5. The combination, with the arbor C, provided with the weighted arm 4 and stud 13, of the slide D, upon said arbor and provided with a stud, 11, and side weight, 10, substantially as described.

6. The combination, with the damper-shell, of a rotating arbor mounted therein and provided with a weighted arm and stud 13, and a cut-off damper mounted thereon, and a slide mounted upon said arbor and provided with a stud, 11, substantially as described.

7. The combination, with a damper-shell, of a rotating arbor mounted therein and provided with a weighted arm, and a damper loosely mounted thereon, and a stud upon the arbor engaging with the damper, substantially as described.

385,693. SAW-SHARPENING MACHINE. ABEL BLACKNER, Minneapolis, Minn. Filed Oct. 26, 1887. Serial No. 253,503. (No model.)



Claim.—1. The combination, in a saw-sharpening machine, with a grinding-wheel whose arbor is mounted in stationary bearings, of a segmental bed-plate arranged to turn about an axis that is substantially coincident with the center of the grinding-wheel, and a movable saw-support carried by said bed-plate, substantially as described.

2. The combination, in a saw-sharpening machine, with a grinding-wheel whose arbor is mounted in stationary bearings, of a segmental bed-plate arranged to turn about an axis that is substantially coincident with the center of the grinding-wheel, a cross-head sliding at right angles to the axis of said bed-plate upon guides supported on said bed-plate, and a saw-support sliding upon said cross-head parallel with the axis of said bed-plate, substantially as described.

3. The combination, in a saw-sharpening machine, with a suitable grinding-wheel, of the bed-plate 4, arranged to turn about an axis that is substantially coincident with the center of the grinding-wheel, and a movable saw-support carried by said bed-plate and arranged to support a saw in a plane that intersects substantially the center of the grinding-wheel, substantially as and for the purpose set forth.

4. The combination, in a saw-sharpening machine, with the grinding-wheel 18, of the bed-plate 4, mounted in ways and turning upon an axis that is substantially coincident with the center of the grinding-wheel, the brackets 10, secured to said bed-plate and projecting at right angles therefrom, the guides 12 and 14, secured above said brackets at right angles to the axis of the bed-plate, the cross-head 16, mounted upon said guides and adapted to move thereon, and the saw-support 20, mounted upon said cross-head and adapted to slide thereon in a line parallel with the axis of said bed-plate.

5. The combination, in a saw-sharpening machine, with the grinding-wheel, of the transversely-movable cross-head 16, provided with the rod 24, the saw-support 20, mounted and adapted to slide longitudinally on said cross-head and provided with the collar 26, engaging said rod 24, a set-screw, 28, and the collar 30, provided with the set-screw 32, substantially as described.

6. The combination, in a saw-sharpening machine, with the grinding-wheel, of the transversely-movable cross-head 16, the adjustable arm 42, secured upon said cross-head; the rod 46, secured to said arm 42, the rod 24, pivotally supported upon the rod 46, the sliding saw-support 20, and the adjusting-lever 36, adjustably pivoted upon the said rod 34, substantially as described.

7. The combination, in a saw-sharpening machine, with a grinding-wheel, 18, of the transversely-movable cross-head 16, the longitudinally-sliding saw-support mounted upon said cross-head, the slotted arm 49, pivoted on said cross-head, and the arm 50, pivotally supported upon said arm 49 and provided with an adjustable rest, 52, substantially as described.

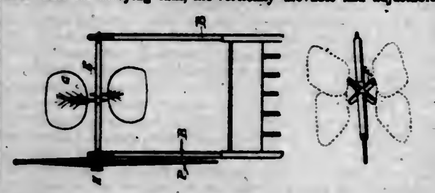
385,694. FIRE-PROOF COMPOSITION. JOHN BLAKEMAN, Cleveland, Ohio. Filed Apr. 23, 1887. Serial No. 236,240. (Specimens.)

Claim.—The herein-described composition of matter in a dried state, consisting of mineral wool, clay, salt, water-lime, and gum-arabic, in the proportions and for the purpose substantially as set forth.

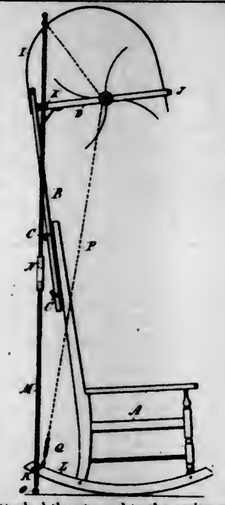
385,695. AUTOMATIC FAN FOR FURNITURE. HERMAN M. REIS, Vicksburg, Miss. Filed Dec. 16, 1887. Serial No. 258,123. (No model.)

Claim.—1. In combination with the rocker A, the uprights B, adjustably secured thereto, the wire I at their upper ends, and the arms D, forwardly projecting from said uprights, the fan-shaft E, journaled therein, the rod M, attached to the arms D and chair-rocker by eyes K, in which it is vertically movable, and having a caster, O, on its lower end, and the cord P, secured at its upper end to the rod M and at its lower end to the spring Q, attached to the rocker, substantially as set forth.

2. A portable knockdown frame for furniture attachment, consisting of two vertical uprights, each provided with clamps and having forwardly-projecting right-angled bars, in combination with a rotatable shaft for carrying fans, the vertically-movable and adjustable



385,695.



rod having cord attached thereto and to the spring connecting with the rocker and wrapped around said fan-shaft, substantially as herein set forth.

385,696. CHURN. JOHN C. COLE, Brents, Wash. Filed Sept. 21, 1887. Serial No. 250,230. (No model.)



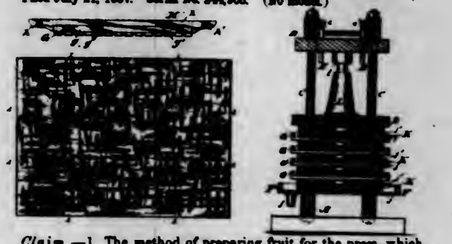
Claim.—1. In a churn, the combination, with the body A, having a lid, of the standard D, secured to the said lid, the rod E, secured in the said standard and having the independently-moving gear-wheels F and F' loosely mounted on the upper and lower ends thereof, respectively, the bevel gear-wheels *f* and *f'*, secured rigidly to the lower and upper sides of the gear-wheels F and F', respectively, shaft G, journaled in the side of the standard, and having the gear-wheel G' on its inner end engaging with the gear-wheels *f* and *f'* at opposite sides, the vertical shaft H, journaled at its upper end in the upper side of the standard and at its lower end in a bearing in the lid, and having a gear-wheel rigidly secured to its upper end, and meshing with the gear-wheel F and the dasher on its lower end, the sleeve supported by the churn-lid and surrounding the lower end of the said vertical shaft, and having a gear-wheel on its upper end meshing with the gear-wheel E', and a dasher connected to said sleeve and revolving around the dasher secured to the shaft H, all arranged and operated substantially as and for the purpose specified.

2. In a churn, the combination, with the body having a lid, C, of the vertical shaft H, having a gear-wheel on its upper end adapted to be operated in one direction, the sleeve J around the said shaft and journaled in a bearing in the said lid, the sleeve being provided at its upper end above the lid with a gear-wheel adapted to be operated in the opposite direction to the wheel on the shaft H, the loop *j* on the side of the sleeve J below the lid forming a groove communicating with the sleeve, the outer dasher, K, having its upper cross-bar provided at the center with a barrel, and a sleeve, L, to embrace the shaft H and pass within the sleeve J, the said sleeve L being provided on the side with a rib, *l*, to fit in the groove formed by the loop *j*, and the inner dasher, N, having a barrel fitted loosely in the barrel on the upper bar of the dasher K and connected to the shaft H, all constructed and arranged substantially as and for the purpose specified.

3. The combination, in a churn, of the vertical shaft H, having a gear-wheel on its upper end and squared at its lower end, the sleeve J, operating on the said shaft a short distance from the lower end, said sleeve having a gear-wheel on its upper end and grooved at its lower end, which groove communicates with the interior of the sleeve, the outer dasher, K, having a cross-bar, K', provided on its upper side with a vertical sleeve, L, adapted to surround the shaft H and pass within the sleeve J, and having the rib *l* on its side fitting in the groove in the sleeve J, the barrel M on the lower side of the cross-bar K' having an opening, *m*, in its side, the inner dasher, N, connected to the lower end of the shaft H, and having a cross-bar, N', provided on its upper side with a barrel, O, adapted to fit in the barrel M, the lower ends of the dashers being detachably pivoted together, substantially as and for the purpose specified.

4. In a churn, the combination of the outer dasher, K, comprising the upper cross-bar, K', provided on its upper side with a sleeve, L, adapted to be rotated by means substantially as described, and on its lower side with the barrel M, provided with an opening, *m*, in its side, the lower bar, K², having a socket in its upper side and a pintle on its lower side, the blades K³, attached to the said cross-bars, the shaft H, operating loosely in the sleeve L and having its lower end squared, the dasher N, comprising the upper cross-bar, N', provided at the center with a squared opening fitting on the lower squared end of the shaft H, and the barrel O, arranged around the said opening, embracing the shaft H and entering the barrel M, the lower cross-bar, N², having a pintle on its lower side operating in the socket in the cross-bar K², and the blades N³, connecting the ends of the cross-bars N' and N², all constructed and arranged substantially as and for the purpose specified.

385,697. FRUIT-PRESS. GUSTAVE L. CUDNER, Bronxville, N. Y. Filed July 21, 1887. Serial No. 244,903. (No model.)



Claim.—1. The method of preparing fruit for the press, which consists in crushing the same and then mixing it with straw and enveloping the mixture in a cloth, substantially as shown and described.

2. The method of preparing the fruit for the press, which consists in first crushing the same, then mixing the same with straw and enveloping it in a cloth with the use of a suitable mold, and arranging the envelopes and contents in tiers, substantially as set forth.

385,698. CHURN-DASHER. JOHN DAVIS, Allegheny, Pa. Filed Nov. 30, 1887. Serial No. 256,540. (No model.)



Claim.—A churn-dasher provided with a disk having numerous perforations and imperforate portions separating the perforations into groups, in combination with a series of angular blades covering each group of perforations and secured to the imperforate portions of the disk, whereby the cream is divided into numerous small streams, deflected from one blade against another, violently agitated, and the globules broken in passing through the perforations and striking against the blades, substantially as described.

385,699. REVOLVING ADJUSTABLE PAPER-FILE OR OTHER RACK. CHARLES H. DEXTER, Annapolis, Md. Filed Mar. 26, 1888. Serial No. 268,602. (No model.)

Claim.—1. The combination, with the central staff, A, having latching-notches *a*, of a revolving hub, B, comprising a collar, *b'*, disk *c*, vertical circular flange *d*, radial arm socket-plates *d'*, extending forward beyond the disk *c*, supporting-ring *e*, and detachable arms *b*, formed with notches *f*, substantially as and for the purpose described.

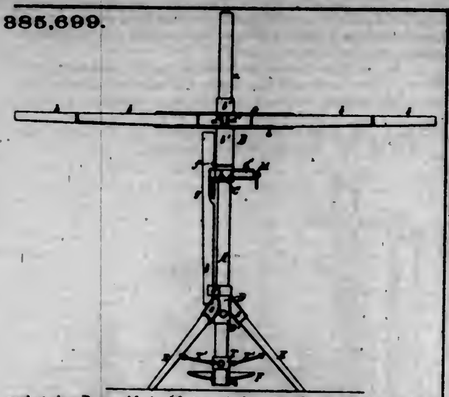
2. The detachable rack-arms *b*, formed with notches *f* and hooking-slots *g*, in combination with the hub B, and the latching-collar C, provided with the loop A, substantially as described.

3. The combination of the staff A, having notches *a*, the rack-arm hub B, and the latching-collar C, provided with a spring-latch, M, having a beveled nose, and arranged to slide and rotate, substantially as described.

4. The detachable rack-arms *b*, provided with the notches *f*, hole or holes *m m'*, slots m^2 m^3, and clamps G, in combination with hub B, latching-collar C, and staff A, substantially as and for the purpose described.

5. The combination, with the staff A, revolving hub B, having detachable arms *b*, and collar C, having supporting-loop A, of the

385,699.

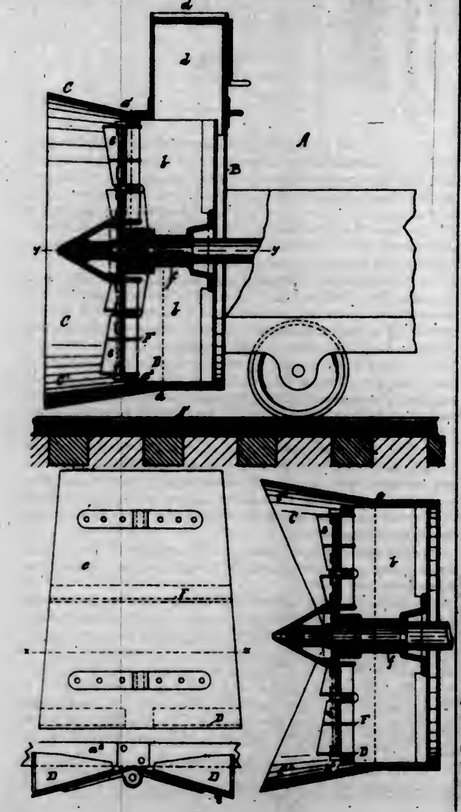


socket-ring D, provided with two circles of sockets, *s s'*, those of one set being in different vertical planes from those of the other set, substantially as and for the purpose described.

6. The combination, with the staff A, revolving hub B, and supporting-collar C, of the detachable arms *b*, formed with notches *f*, hole or holes *m m'*, and one or more stands, G' G², substantially as and for the purpose described.

7. The leg-socket ring formed with two circles of sockets, *s s'*, in combination with the staff A and legs E, substantially as and for the purpose described.

385,700. ROTARY SNOW-EXCAVATOR. SAMUEL H. DUNNING, Paterson, N. J. Filed May 21, 1888. Serial No. 274,393. (No model.)



Claim.—1. The combination, with the cylindrical casing B and hood C, of the lengthened sloping corners C' C², whereby less obstruction is offered to the passage of the snow into the hood to the knife, and the snow left by the knife caused to pass through under the rim of the knife-wheel to the fan, substantially as described.

2. The combination of the knife *e* with the flange-cutters D, whereby the snow is cut from the bottom and carried to the fan, substantially as described.

3. The combination, with the knife *e* and flange D, fixed to said knife, of one or more plates, F, secured to said knife, whereby the snow cut by the several portions of the knife is retained within its own circumference and carried to the fan to be expelled by the fan in common with that carried by the flange-cutter D, and fan for throwing the snow out of the spout, substantially as described.

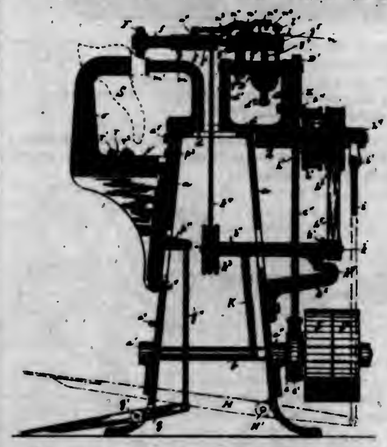
385,701. RAILWAY-RAIL. FREDERIC BOURNAT, San Francisco, Cal. Filed Apr. 20, 1888. Serial No. 271,298. (No model.)



Claim.—1. A railway-rail made in two or more parts or pieces and having a longitudinal conduit or tube extending its entire length, and a slot or passage through the inner portion of the rail connecting with said conduit or tube, substantially as described.

2. A railway-rail having its upper portion or tread made separate from the other portions of the rail and adapted to be secured upon or over a conduit or tube in the lower part of the rail, and having a horizontal slot or open passage leading from its inner face to and connecting with the conduit or slot, substantially as specified.

385,702. REEL-BURNISHING MACHINE. WARREN C. EVANS, Exeter, N. H., assignor to the Remington Machine Company, of New Hampshire. Filed Dec. 28, 1887. Serial No. 258,690. (No model.)



Claim.—1. In a burnishing-machine, the jacking mechanism, as described, consisting of the stationary arm *m* and its top-lift rest *m'*, combined with the vertically-adjustable jack-supporting bracket *p*, having guides *p' p'* for the reception of the base *o'* of the jack *o*, and the lever *r*, connected to the jack-plate or base *o'*, pivoted in one end to the guide *p'*, and having spring-pressed pawl r^4, adapted to lock in the ratchet-bar p^2 on the jack-support, as and for the purpose set forth.

2. In a burnishing-machine, the rotary burnisher-tool F, secured to the sleeve *f*, and adapted to rotate and reciprocate on the spindle *g*, as described, and the mechanism for imparting a rotary motion to said sleeve *f*, consisting of the friction-clutch pulleys *k' k''*, the tubular bearing k^5, adapted to swing on the fulcrum k^6, and having the tension-spring K, the spindle *k*, journaled in the bearing k^5, and having pulleys k^7 and k^8, secured to its ends, with belts or cords k^9 k^{10}, leading, respectively, from said pulleys to the friction-pulley *k'* and sleeve *f*, as and for the purpose set forth.

3. In a burnishing-machine, the mechanism for imparting an oscillating motion to the burnisher-tool, consisting of the rock-shaft or head D, journaled in the stationary bearings d' d'', and having pivoted to an extension or projection, g^3, the lever g', upon a spindle, g, of which is loosely journaled the burnisher-sleeve f, and the adjustable spring-pressure device d^5 g^4 for holding the burnisher-tool F in contact with the heel and to allow it to yield relative to the curvature of such heel, as and for the purpose set forth.

4. In a burnishing-machine, the automatic mechanism for reciprocating the burnisher-tool from top to bottom of the heel, consisting of the burnisher-tool sleeve f, journaled on the spindle g, and having one or more cam-grooves, f' f'', as described, combined with the lever or arm g', the adjustable block n, secured to said lever g', and having pivoted to it the spring-pressed lever n'', provided with a pin or projection, n^3, adapted to fit in any one of the cam-grooves on the sleeve f, and means for locking it in position to the said lever g', as and for the purpose set forth.

5. In a burnishing-machine, the rocking shaft or head D, and the lever g', pivoted to an arm or extension of said head, the spindle g, secured to or made in one piece with said lever g', the burnisher-sleeve f, mounted loosely on said spindle g, and having one or more cam-grooves, f' f'', combined with the block n, adjustable on the arm g', and having pivoted to it the spring-pressed lever n'', having a projection, n^3, adapted to enter any one of the cam-grooves f'', and means for locking said levers n'' g' together, as and for the purpose set forth.

6. In the herein-described burnishing-machine, the friction-clutch pulleys h' h'', loosely journaled on the stationary shaft or spindle h, and having spring h^3, interposed between them, and the inclined block h^4, secured to the shaft h, in combination with the treadle H, pivoted at H', and having connecting-rod i, with forked or slotted wedge part i', interposed between the inclined block h^4 and the pulley h'', as and for the purpose set forth.

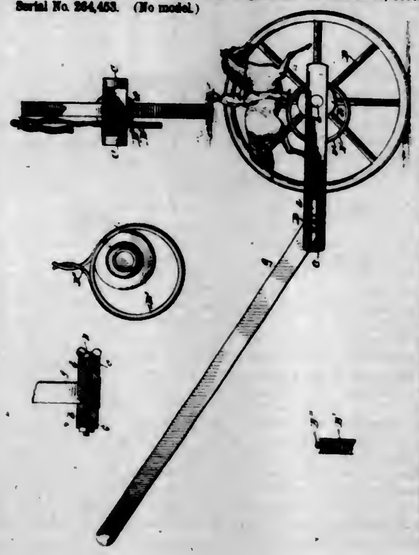
7. In a burnishing-machine, the rock-lever D, and the lever g', pivoted to an arm or extension, combined with the adjustable spring-pressure device d^4 g^4, interposed between the said levers, and the pin or bolt l, secured to one of said levers and provided with regulating stop-nuts or collars l', as and for the purpose set forth.

385,703. BELTING. JAMES B. FORSYTH, Boston, Mass. Filed Mar. 28, 1888. Serial No. 268,256. (No model.)



Claim.—The improved belting above described, in which there are two or more strips, a a', each coated with rubber or its equivalent and folded into a distinct belt with a vulcanizable coating, these distinct belts being united and vulcanized together and forming a multiply belt, substantially such as described.

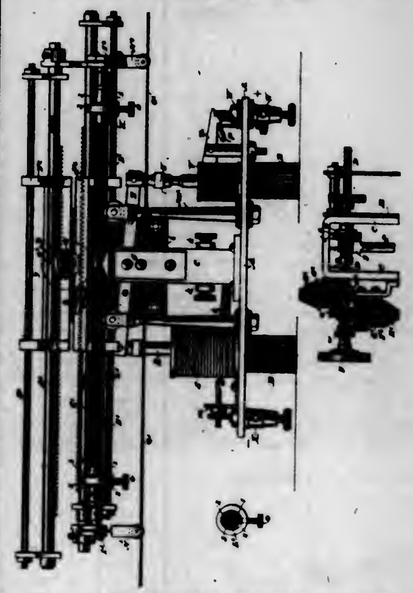
385,704. TOY HOOP. HENRY D. GARDY, Northeast, Md., assignor of one-half to Charles A. Cooper, Philadelphia, Pa. Filed Feb. 18, 1888. Serial No. 264,453. (No model.)



Claim.—1. In a toy hoop, the arms forming a platform for the figure and having a handle adjustably connected thereto, substantially as shown and described.

2. In a toy, the combination, with the platform-arms having slots therein, of the handle, and the netted bolt for adjustably securing said handle between said arms, substantially as shown and described.

385,705. ARC LAMP. JAMES B. GARTON, Fort Worth, Tex. Filed Sept. 14, 1887. Serial No. 249,619. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the carbon-carrier racks G' and G^2, supported in frames F' and F^2, suitably insulated from each other, hangers I' and I^2, depending therefrom, supporting carbon-holders by ball-and-socket joints, the horizontally-arranged carbons L' and L^2, guide-pulleys supporting the same near the arc to keep said carbons in alignment, a track suitably supported, and pulleys adapted for the same to support the carbons and carbon-carrier racks at their outer ends.

2. The combination, as hereinbefore set forth, of the carbon-carrier racks G' G^2, frames F' and F^2, carrying the same and suitably insulated from each other, hangers I' and I^2, carbons carried thereby horizontally arranged, guide and supporting pulleys for the same near the arc to keep the carbons in alignment, guide and supporting pulleys connected to the hangers remote from the arc and running on a suitably-supported wire or track, a shaft, D, with spur-wheels thereon, adapted to engage and move said carbon-carriers, a clock-train for positively actuating said shaft, and electro-magnets for modifying the rotation of said shaft to keep the arc practically constant.

3. The combination, as hereinbefore set forth, of a shaft adapted to effect the feeding of an arc lamp through the instrumentality of a suitable motor, main and derived circuit magnets, and a rocker-arm controlled thereby, with a cross-arm adapted to engage a toothed wheel on said shaft and modify the rotation of the same, so as to keep the arc practically constant.

4. The combination, with the wheel b, carried by the shaft D, also carrying pawl and ratchet therefor, of the spring-actuated tooth g, substantially as described.

5. The combination of the shaft D, adapted to feed the carbons by rack and pinion through the instrumentality of a clock-train, loosely-mounted wheel b thereon having ratchet integral therewith, a pawl rigidly mounted upon said shaft engaging said ratchet, and a tooth interposed by the action of the main and derived circuit magnets between the teeth of said wheel to arrest the feed of the carbon or to advance the same by being impelled against said wheel to separate the carbons, or to be freed from said wheel by the differential action of said magnets to allow the clock-train to feed, substantially as described.

6. The combination of the shaft D, adapted to feed the carbon by means of racks and pinions through the instrumentality of the clock-train, the wheel b and ratchet f integral therewith, loosely mounted upon said shaft, with pawl carried by the same engaging said ratchet, the main and derived circuits S V, and the rocker-arm Q, connecting the two together, with cross-arm P, having spring-actuated tooth g, for the purpose described.

7. The combination of the shaft D, adapted to feed the carbons of an arc lamp by means of racks and pinions through the instrumentality of a clock-train, wheel b, carried by said shaft and coupled thereto by pawl and ratchet, main and derived circuit magnets S and V, rocker Q, connecting the same, cross-arm P, with spring-actuated tooth g, adapted to co-operate with said wheel b, and tension-regulating spring and limiting-stops for the above.

8. The combination of a shaft, such as D, adapted to feed an arc lamp by means of a clock-train, a main and derived circuit magnet controlling the same through the agency of a rocker, Q, and tooth g engaging a pinion on said shaft, and the pivoted vibrating piece T, mounted on said rocker and coupling the yoke of either magnet thereto, whereby the cores of the magnet may move in a vertical line and rubbing against the interior side of said magnet be prevented, for the purpose set forth.

9. The combination, as hereinbefore set forth, with the rocker Q, of the pivoted vibrating piece T, held by a spring to the same, the cross-arm P and limiting-stops, the pin Y, depending from the yoke U, sustained by said vibrating piece, and an automatic cut-out operated, substantially as described, by said pin.

10. A clock-train adapted to impart motion to one or more carbon-carriers by means of a shaft, as D, a pawl and ratchet between the escapement of the clock-train and said shaft, so that the carbon-carriers may be retrograded without actuating the escapement, and a second pawl and ratchet, for holding said shaft in any desired position, operated at will.

11. A clock-train adapted to impart a positive motion to one or more carbon-carriers by means of a shaft, as D, to feed the carbons, a pawl and ratchet between the escapement of the clock-train and said shaft, so that the same may be freely retrograded, electro-magnets, and intermediate connections controlling the feed of said shaft by means of a loosely-mounted wheel coupled to the same by pawl and ratchet, so as to permit the aforesaid retrograde movement, substantially as described.

12. A clock-train adapted to impart positive motion to one or more carbon-carriers by means of a shaft, as D, to feed the carbons, a pawl and ratchet between the escapement of the clock-train and said shaft, electro-magnets controlling the action of said feed by means of a tooth engaging a loosely-mounted wheel coupled by a second pawl and ratchet to said shaft, whereby said shaft may be retrograded to separate the carbon-carriers and carbons, a milled head, y, for effecting such retrograde movement of said shaft, and a third pawl and ratchet brought into operation at will for holding said shaft in opposition to the clock-train.

13. The combination, with the two carbon-carrier racks G' and G^2, hangers I' and I^2 adjustable thereon, each carrying its own carbon, and carbon-holders supported by ball-and-socket joint in said hangers, between the same and the carbons, substantially as described, whereby the carbons may be adjusted in position and aligned, as set forth.

14. The combination of the carbon-carrier racks G' G^2, the hangers and carbon-carriers supported from the same, holding the carbons in position, the shaft D, having pinions d' and d^3, engaging said carbon-carrier racks, a clock-train adapted to rotate said shaft in one direction and feed the carbons, a toothed wheel, b, loosely mounted upon said shaft and coupled thereto by pawl and ratchet, rocker Q, pivoted to the frame of the lamp, with cross-arm P adapted to engage said toothed wheel, and main and derived circuit magnets S and V, substantially as described.

15. The combination of the carbon-carrier racks G' and G^2, carrying the carbons, supporting-pulleys for the same at and remote from the arc to keep them in alignment, a shaft, D, having pinions d' and d^3 of different diameter engaging said carbon-carrier racks, a clock-train adapted to rotate said shaft to feed the carbons, main and derived circuit magnets controlling a rocker, Q, and cross-arm P, adapted to control the rotation of the shaft, limiting-stops and tension-regulating devices for the latter mechanism, a spring-held vibrating piece pivoted to said rocker, and a pin, substantially as Y, and a cut-out operated by the same.

385,706. KNIFE-SHARPENER. WILLIAM H. GEE, Woodberry, Md., assignor of one-half to James G. Hoare, same place. Filed Mar. 9, 1883. Serial No. 266,662. (No model.)

Claim.—1. In a knife-sharpener, a base or stand provided with a knife-slot and a socket or receptacle for the stone, in combination with the centrally-arranged spring, operating substantially as described.

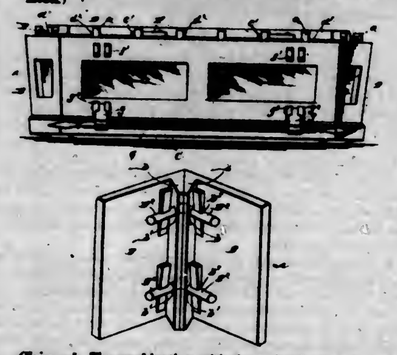
2. The knife-sharpener stand provided with the horizontal knife-slot and the socket for the stone located above said knife-slot, substantially as described.

3. The knife-sharpener stand provided with the socket for the stone, and the knife-slot crossing the lower end of said socket, in combination with the centrally-arranged spring for upholding the edge of the knife in contact with the stone, substantially as described.

4. The knife-sharpener stand provided with the knife-slot and the socket for the stone, in combination with the spring D, and means, substantially as described, for uniting said stand to a support, substantially as specified.

5. The combination, with the perforated base or stand A, having the knife-slot C c and the cylindrical socket a^3 a^2, of the stone E and the spring D, arranged and operating substantially as described.

385,707. GASKET. DUDLEY R. GOULD and PHILANDER BALDWIN, Chestertown, N. Y. Filed July 5, 1887. Serial No. 243,493. (No model.)



Claim.—1. The combination, with the gasket having the ears g', of the handles having the recessed blocks g engaging between the said ears, and the buttons securing said blocks between said ears, as set forth.

2. The combination, with the side sections and the end section of the gasket, of the angular flanges or projections b, extending inwardly therefrom at the meeting edges, the angular recessed dowel-pins B^3, passing through apertures in said projections, and the wedges adapted to be inserted through the recesses of said dowel-pins, substantially as described.

3. In a gasket, the combination of the sections having the inwardly-projecting flanges at their meeting edges, angular dowel-pins inserted through said meeting flanges, and means, substantially as described, for preventing the withdrawal of the dowel-pins, substantially as specified.

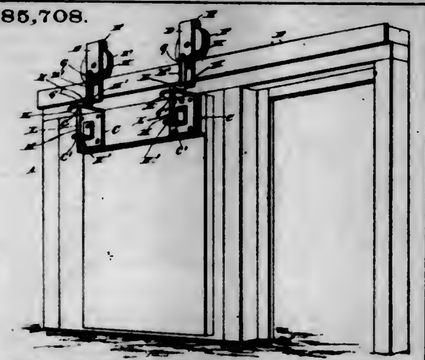
385,708. DOOR-HANGER. GEORGE F. GRAMES, Vernon Centre, Minn. Filed Jan. 7, 1888. Serial No. 260,661. (Model.)

Claim.—1. In a door-hanger, the combination, with a track, of the carrier to operate on the track, the bracket secured to the door, and the crank-rod mounted in bearings on the said carrier and bracket, substantially as specified.

2. In a door-hanger, the combination of the carrier having the yoke at its upper end and the bearings G G' on its outer side, the sheave mounted in the said yoke and running on a suitable track, the bracket adapted to be secured to the door and having bearings on its outer side, and the crank-rod having an offset at its center, the upper and lower arms thereof being mounted in the bearings on the carrier and the bracket and provided at their ends with nuts, substantially as and for the purpose specified.

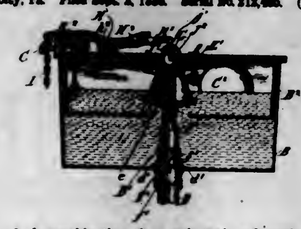
3. In a door-hanger, the combination, with the track having an upper and lower edge, of the carrier having a sheave operating on the

385,708.



upper edge of the track and the hook engaging the lower edge, the bracket secured to the door, and the crank-rod mounted in the bracket and the carrier, substantially as and for the purpose hereinbefore specified.

385,709. WATER-CLOSET TANK. ADOLPH HAARLANDER, Allegheny City, Pa. Filed Sept. 3, 1886. Serial No. 212,465. (No model.)



Claim.—1. In combination, the supply-tank and service-box, the former being wholly within the latter and fixedly stopped against the wall thereof on all sides, and a rigid stem carrying two valves seated in the bottoms of the tank and box, respectively, substantially as and for the purpose set forth.

2. In combination with the supply-tank, the valve controlling the flow of water therefrom, the tubular stem of said valve serving as an overflow-pipe to prevent the entrance of air into the pipe during overflow from the tank, the weighted lever which depresses said valve, the floating valve G, and the cage J, suspended from said lever about the valve F to retain it near the tubular stem, substantially as set forth.

3. In combination, substantially as set forth, the supply-tank, its overflow-pipe, and the floating valve G, suitably retained near the entrance of the overflow-pipe, the said pipe being contracted at its upper part to prevent the overflow-current seating the floating valve.

385,710. CORSET-CLASP. MAX W. HERTER, Bridgeport, Conn. Filed July 26, 1884. Serial No. 138,751. (No model.)

Claim.—1. The combination, with the steel, of the open-gated clasp-plate having a gate movable from the gateway of said plate, in a plane at right angles to the plane of the steel, substantially as described.

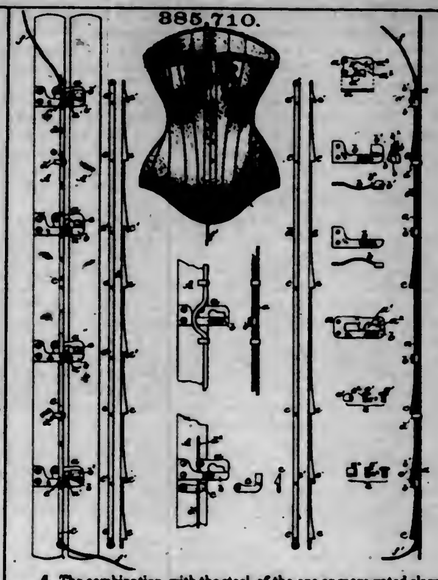
2. The combination, with the steel, of the open-gated clasp-plate having a spring-gate which is movable in opening and closing the gateway of said plate, in a plane at right angles to the plane of the steel, substantially as described.

3. The combination, with the steel, of the several open-gated clasp-plates and their gates movable in planes at right angles to said steel, and wedges or inclined planes coupled together for simultaneous movement in controlling said gates and causing or permitting them to open or close the gateways of their respective clasp-plates, substantially as described.

4. The combination, substantially as hereinbefore described, of the two steels, the gated clasp-plates, their gates, and their controlling wedges mounted, substantially as described, on one of said steels, and studs having heads which are flush with one side of their shanks, for enabling said gates to move in a plane parallel with the sides of said shanks, and thereby permitting the heads of the studs to pass beneath said gates and away from the clasp-plate.

5. The combination, with a gated clasp-plate, of a gate movable in a plane at right angles to the plane of the clasp and provided with a shoulder, by which a stud is locked within the retaining slot or eye of the clasp-plate, substantially as described.

385,710.

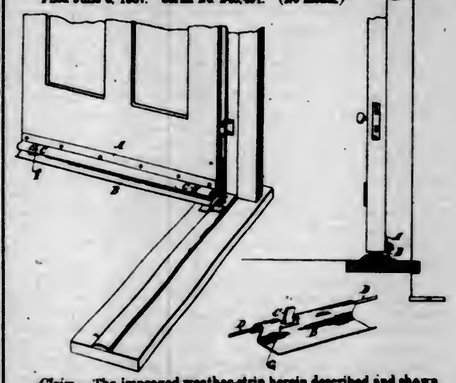


6. The combination, with the steel, of the one or more gated clasp-plates, the spring-gates for each clasp, and the sliding rod embodying a wedge for lifting each spring-gate, substantially as described.

7. The combination, with the steel, of the gated clasp-plate, its gate, and the sliding rod provided with an inclined surface which overrides the gate and confines it in position, substantially as described.

8. A clasp-plate having an open gateway for the outward passage of the shank of a stud from a retaining-slot, and a gate in said gateway movable at right angles to the plane of the plate, and adapted to permit the head of a stud to pass beneath said gate in its outward passage from the clasp-plate, substantially as described.

385,711. WEATHER-STRIP. THOMAS HUBBERT, Cochran, Ind. Filed June 6, 1887. Serial No. 240,491. (No model.)

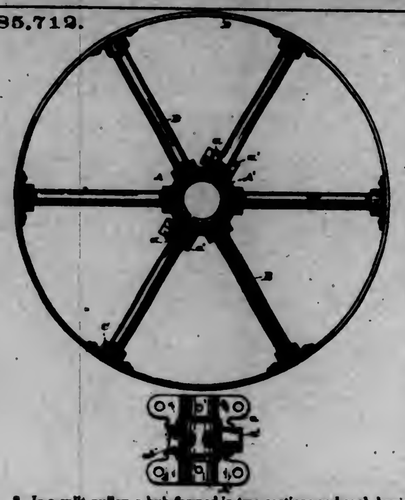


Claim.—The improved weather-strip herein described and shown, comprising the overhanging ledge A, permanently attached to a door and provided with openings F, the curved metal strip B, having its upper edge doubled on itself and provided with the notches G, the rod D, passing through said upper doubled edge of the strip B, and the loops C, fitted on the rod D and passed through the notches G and openings F, and having their upper ends bent over on the ledge A, substantially as specified.

385,712. SPLIT PULLEY. JOHN B. HUNT and FREDERICK C. BROCKBANK, Cleveland, Ohio. Filed Mar. 3, 1888. Serial No. 266,073. (No model.)

Claim.—1. In a split pulley, a hub divided into two separate sections in the line of its axis, and having arm-sockets on the line of division between said sections, substantially as set forth.

385,712.



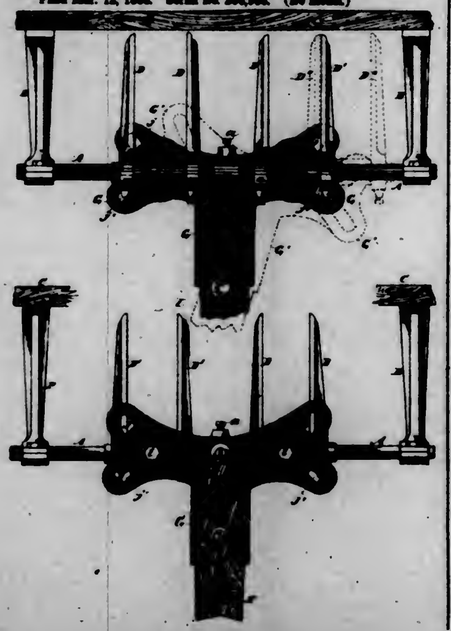
2. In a split pulley, a hub formed in two sections and each having an arm-socket on the line upon which the sections meet, and cavities at one edge to accommodate the said sockets, substantially as set forth.

3. In a split pulley, a hub split longitudinally in sections and provided with screw-threaded sockets on the line of the split, in combination with screw-threaded arms and a band, substantially as set forth.

4. In a split pulley, a hub formed in two equal sections split in the line of its axis and having arm-sockets on the line dividing the sections, formed wholly in one section, whereby each socket is made complete in itself, in combination with a metal band and right and left hand screw-threaded hollow arms uniting the band and hub, substantially as set forth.

5. In a split pulley, a hub formed in duplicate sections A A', having projecting sockets a^2 on the meeting faces of the sections and curved cavities a^3 in said meeting faces, in combination with metallic band D, T-shaped sockets C, and hollow arms B, screw-threaded and set in the sockets on the band and in the hub, for the purpose set forth.

385,713. BELT-SHIPPER. RUFUS H. HOLBERT, Sudbury, Mass. Filed Mar. 12, 1888. Serial No. 266,988. (No model.)



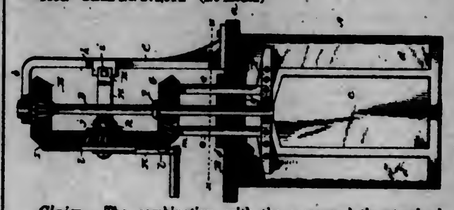
Claim.—1. The combination of independently-moving plates H H', provided with bars D D D' D', with the oscillating plate G, having double cam-grooves, one of which at each end of the plate is circumferential with the pivot about which said plate oscillates, arranged and to operate substantially as described.

2. The sliding plates H H', provided with studs *i i*, in combination with plate G, having cam-grooves *j j j j*, and movable about a pivot, F, whereby either of said plates H H' can be shifted independently of the other, substantially as set forth.

3. The bar A, sliding plates H H', provided with bars D D D' D', and studs *i i*, in combination with the plate G, pivoted at F, and having cam-grooves, as described, to receive the studs *i i*, as and for the purpose set forth.

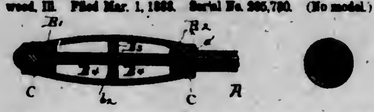
4. The bar A, sliding plates H H', provided with studs *i i*, in combination with the plate E, rigidly attached to bar A, and the oscillating plate G, pivoted to plate E at F, and having cam-grooves, as described, adapted to receive the studs, as set forth, whereby the plate H H' may be moved independently of each other, substantially as specified.

385,714. CHURN. JAMES ISBELLA, Alba, Mich. Filed Apr. 26, 1888. Serial No. 271,914. (No model.)



Claim.—The combination, with the cover and the standard thereon having the horizontal extension *b* at its upper end, of the shaft D, having the blade *c* at its lower end and the pinion E at its upper end, the cross-bar F, the beaters carried thereby, said cross-bar being perforated for the free passage of the shaft D, the rods rising from said cross-bar, the disks sleeved to and moving with said rods, one upon each side of the shaft, the pinion G, carried by said rods, and the pinion I, meshing with the pinion E and G and provided with a suitable operating-handle, substantially as described.

385,715. VELOCIPEDE-HANDLE. THOMAS R. JEFFERY, Ravenswood, Ill. Filed Mar. 1, 1888. Serial No. 265,780. (No model.)



Claim.—1. In a velocipede, an integral rubber handle having two interior cavities and a diaphragm separating them, substantially as set forth.

2. In a velocipede, an integral rubber handle having closed ends and its interior space subdivided by a diaphragm.

3. In a velocipede, an integral rubber handle swelled at the middle and tapering at both ends, and having near the middle a transverse diaphragm integral with the shell and dividing its interior space into two cavities, substantially as set forth.

4. In a velocipede, in combination with the handle-bar, an integral hollow rubber handle having an interior boss at each end and a transverse diaphragm near the middle, separating its interior space into two cavities, substantially as set forth.

5. In a velocipede, an integral rubber handle having three transverse walls and two interior cavities between them, and the handle-bar passing longitudinally through the handle and screwed into one of said transverse walls, substantially as set forth.

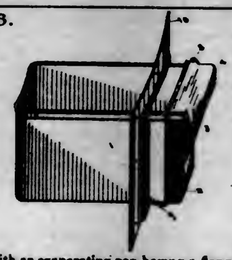
6. In a velocipede, in combination with the handle-bar, an integral handle having three transverse walls, which form bearings for the handle-bar, said handle-bar being screwed into one of them, substantially as set forth.

7. In a velocipede, in combination with the handle-bar, an integral rubber handle having three transverse walls and two interior cavities between them, said walls being each pierced longitudinally and affording a bearing for the handle-bar, the outer end wall having its aperture threaded to receive the threaded end of the handle-bar, substantially as set forth.

385,716. EVAPORATING-PAN FOR HOT-AIR FURNACES. FRANCIS KINNEAR, Jr., Utica, N. Y., assignor to Russel Wheeler, Son & Co., same place. Filed Nov. 17, 1886. Serial No. 219,131. (No model.)

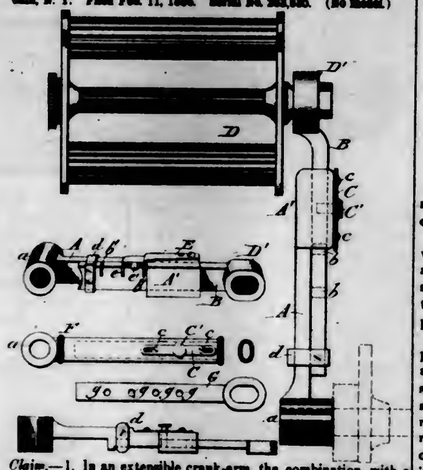
Claim.—In a hot-air furnace having a casing surrounding the same, forming a hot-air space between the casing and the furnace, in

885,716.



combination with an evaporating-pan having a flange surrounding the pan back from the front of same, the pan opening into the air-space and a portion extending outside of the casing, the inclined catches on the under side of the pan back of the flange, and the pivoted swinging door over the pan outside the casing, as described.

885,717. EXTENSIBLE CRANK-ARM. GERRIT KIEBE, Amsterdam, N. Y. Filed Feb. 11, 1888. Serial No. 263,630. (No model.)



Claim.—1. In an extensible crank-arm, the combination, with a rod having a hollow guide-box, of another rod moving within said guide-box and adjustable with relation to the first bar, and a spring-dog arranged upon said guide-box and having a part that enters notches or apertures in the second bar, substantially as described.

2. In an extensible crank-arm, the combination, with a tubular portion, of an apertured part adapted to enter said portion and be adjustable therein, and a spring clamping-dog arranged to enter the apertures in the rod, and thus hold the rod and tubular portion securely in any desired relative position, substantially as described.

3. The combination, with the rod A, having the hollow enlargement A', of the rod B, having the loop *d*, surrounding rod A, and provided with holes *b b*, and a spring clamping device consisting of the slotted plate C and the pin C', all arranged to operate substantially as described.

4. The combination of the rod A, having hollow enlargement A', the rod B, having apertures *b b*, the loop *d*, and the clamping device consisting of the pin C', the slotted plate C, and the screws *c c*, all arranged substantially as described.

885,718. OPERATIVE DENTISTRY. CHARLES H. LAIRD, Detroit, Mich. Filed Aug. 20, 1887. Serial No. 247,454. (No model.)

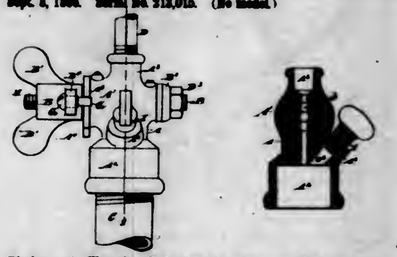


Claim.—1. The herein-described tooth-crown, consisting, essentially, of a metallic cover shaped to conform to the outline of the tooth to be crowned, a previously-prepared porcelain veneer fitted to said cover, and an intermediate stratum of porcelain paste, whereby the veneer may be fused to the said metallic cover, substantially as set forth.

2. The herein-described tooth-crown, consisting, essentially, of a metallic cover having a flange projection at its outer end, forming a depression to support the paste, the said cover shaped to conform to the outline of the tooth to be crowned, a previously-prepared porcelain veneer fitted to said cover, and an intermediate stratum of porcelain paste, whereby the veneer may be fused to the cover, substantially as set forth.

3. The herein-described tooth-crown, consisting, essentially, of a metallic cover shaped to conform to the outline of the tooth to be crowned, the said cover being provided with a flange projection at its outer end and with pins projecting from the said flange projection, a previously-prepared porcelain veneer fitted to the said cover, and an intermediate stratum of porcelain paste located between the veneer and the cover and in contact with the flange projection, whereby the veneer may be fused to the cover and be held firmly in position, substantially as set forth.

885,719. GAS-COCK. THOMAS MAGNER, Port Jervis, N. Y. Filed Sept. 8, 1888. Serial No. 313,915. (No model.)

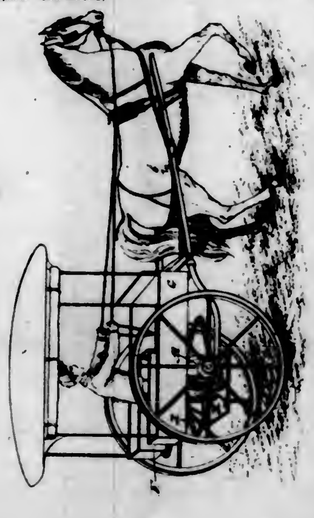


Claim.—1. The plug B, having the plug-arm B^4, carrying a removable screw, G, in combination therewith, and with a cock body or case, A, having projections A^4 A^5, arranged to serve as herein specified.

2. The cock-body A, having projections A^4 A^5, in combination with the plug B, having the internally-screw-threaded plug-arm B^4, and the screw G, carried by said plug-arm, the projecting portion of said screw which engages said projections A^4 A^5 being smaller than the threaded portion of said plug-arm and plain, as and for the purpose specified.

3. In a gas-cock, the cock-body A, having projections A^4 A^5, and provided with a longitudinal gas-passage, a tapering lateral aperture, and oil-ducts a' a^3, opening into said lateral passage on either side of said gas-passage, in combination with a tapering plug, B, fitting said aperture in the body and having a lateral gas-passage adapted to register with the gas-passage in said body, and annular grooves b' b^5, registering with said oil-ducts in the body, the washer B^3 and nut B^2 on said plug, and a plug-arm on said plug adapted to strike said projections A^4 A^5, as and for the purpose herein specified.

885,720. TWO-WHEELED VEHICLE. WILLIAM H. MORLOCK and RICHARD A. HASSELER, St. Joseph, Mo. Filed Jan. 23, 1888. Serial No. 261,660. (No model.)



Claim.—1. In a delivery-cart, the combination, with the body, consisting of a plain rectangular frame provided with a rearward opening extending vertically clear through it for the body of the driver, of a driving-platform suspended under the said opening for the driver to stand on.

2. In a delivery-cart, the combination, with the body, consisting of a plain rectangular frame provided with a rearward opening extending vertically clear through it to a point beyond the center of the wheels, of a platform for the driver suspended under the said opening, and an axle provided with a central cranked portion to clear the body of the driver.

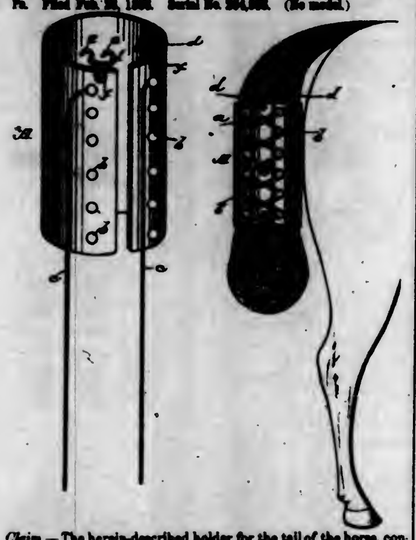
3. In a delivery cart, the combination, with the body provided with the rearward opening, of the axle provided with downwardly-bent cranks at each end and a forwardly-cranked portion in the center to clear the body of the driver.

4. In a delivery-cart, the combination, with the body provided with a rearward opening, of a vertically-adjustable platform for the driver suspended under the said opening.

5. In a delivery-cart, the combination, with the body, consisting of a plain rectangular frame provided with a rearward opening extending vertically clear through it, of a platform suspended under the said opening for the driver to stand on, and a movable seat pivoted to the body at the rear of the opening.

6. In a delivery-cart, the combination, with the body provided with a rearward opening, of the brackets secured under the body, the platform for the driver provided with arms sliding vertically in said brackets, and screws for securing the arms in the brackets after the height of the platform has been adjusted.

885,721. HORSE-TAIL HOLDER. OLIVER H. MERTZ, Greenville, Pa. Filed Feb. 23, 1888. Serial No. 264,988. (No model.)



Claim.—The herein-described holder for the tail of the horse, consisting of a flexible band, the two ends thereof having lacing studs and cords, and provided with retaining-hooks, all substantially as and for the purpose set forth.

885,722. ELEVATOR. ANDREW C. NEWTON, Crescent, N. Y. Filed Mar. 1, 1888. Serial No. 265,706. (No model.)



Claim.—1. In an elevator, the combination of a three-cornered frame-work, with an elevator-car mounted therein and having bearing in said frame-work at opposite diagonal corners of the car, substantially as specified.

2. In an elevator, the combination of a three-cornered or triangular frame-work, with a pair of elevator-cars mounted therein and taking bearing at diagonally-opposite corners, substantially as specified.

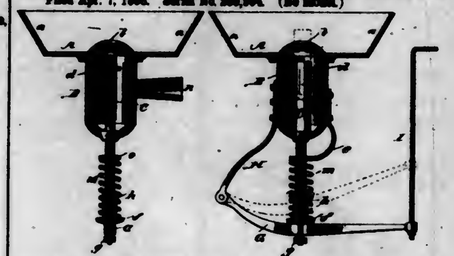
3. In an elevator, the combination, with the frame-work thereof, of a pair of elevator-cars mounted for movement therein, a cable connecting the cars and passing over a drum mounted on the frame-work, and an endless cable or chain passing over the drum, and a windlass for operating the same, substantially as specified.

4. In an elevator, the combination of the frame-work provided with two elevator-cars connected by a cable, a drum arranged upon the frame-work over which said cable passes, an endless belt or cable for operating the drum, and a windlass or pulley having an operating-crank for operating the cable, substantially as specified.

5. The combination, with the base 1, having the uprights 2, arranged in triangular form, arranged as described, and connected by the tie-bars 3, of the drum 22, pulleys 20, all mounted in the cross-pieces 19, the cable 23, the endless belt 29, for operating the drum, and the windlass 27, for operating the belt, substantially as specified.

6. In an elevator, the combination of the frame-work 26, the crank-shaft 36, having the drum 27, operating-cranks 23, ratchet-wheel 41, and pawl 42, mounted on the arm 43, and having the spring 44, with the connecting-rods 37 and 38, the former connected with the lever 38, having seat 39, and the latter connected with the pivoted treadle 40, substantially as specified.

885,723. TUYERE FOR FORGES. HANS T. HIBLER, Chicago, Ill. Filed Apr. 7, 1888. Serial No. 269,994. (No model.)



Claim.—1. The combination, with coal-box A, having wind-opening *b*, and with shell B, secured below such box, of plunger-bar C, guided to move vertically through such box and through the wind-opening *b*, and provided with conical collar *c*, and of suitable means for reciprocating such bar, substantially as and for the purpose set forth.

2. The combination, with coal-box A, having wind-opening *b*, with shell B secured below such box A, and having blast-pipe nozzle *n* and a conical bottom opening, of vertically-guided plunger-bar C, provided with conical collar *c*, lever G, and handle-bar I, all substantially as set forth, to operate as specified.

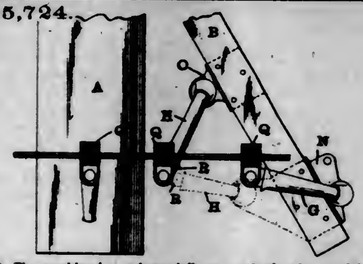
3 The combination, with coal-box A, having wind-opening *b*, with shell B, secured below such box A, and having blast-pipe nozzle *n* and a conical bottom opening, of vertically-guided plunger-bar C, provided with conical collar *c*, washer *f*, tube *h*, and spring *m*, and of lever G, with handle-bar I, all substantially as described, to operate as specified.

885,724. SEEDING-MACHINE. ALBERT H. NORRIS, Rushville, Ind., assignor to the Star Drill Company, same place. Filed Feb. 20, 1888. Serial No. 265,262. (No model.)

Claim.—1. The combination, substantially as set forth, of central frame-piece, A, side pieces, B, articulated thereto, skeleton lever K, pivoted to the under side of the rear of the central frame-piece and projecting downwardly at each side thereof and terminating in axle-studs, wheels J on said studs, hand-lever L, linked to said skeleton lever, and ratchet M, engaged by said hand-lever.

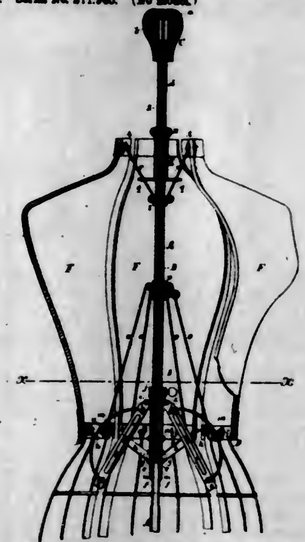


385,724.



2. The combination, substantially as set forth, of central frame-piece, A, central seed-hoe, E, at the rear thereof, expansible wing-pieces B, articulated to the frame-piece and provided with outside seed-hoes, P, in line with said central seed-hoe, shank-plates N, attached to said wing-pieces and projecting to both sides thereof, shank-plates O, projecting inwardly from said wing-pieces forward of the plates N pivoted seed-conductors H, adapted to engage alternately the plates N and O, and intermediate hoes adapted alternately for engagement at plates N and O.

385,725. DRESS-FORM. PATRICK QUINN, Cambridgeport, Mass., assignor of one-half to Frederick W. Brown, same place. Filed Apr. 26, 1888. Serial No. 271,965. (No model.)



Claim.—1. The combination, with the tubular standard and the skirt-frame and waist-form, made in sections connected together, as shown, said sections being sustained in position on the tubular standard, as described, of the tubular head *g*, having the rigid arms *h* and supported on the standard by the rod B, connected to the said head *g*, and arranged within the standard, and sustained in the handle C, which is adjustable in altitude on the standard by means of the screw connecting it therewith, the slotted arms *i*, connected to the rigid arms *h*, as shown, and jointed to the tubular head *j*, clamped to the standard, said arms having the curved rails or bearers *m* to operate the eye *n*, secured to the ring-sections D, in such manner that when the head *g* and its arms *h* are raised on the standard by revolving the dress-form in one direction the sections will be expanded and contracted on the form being revolved in the opposite direction, all substantially as described and represented.

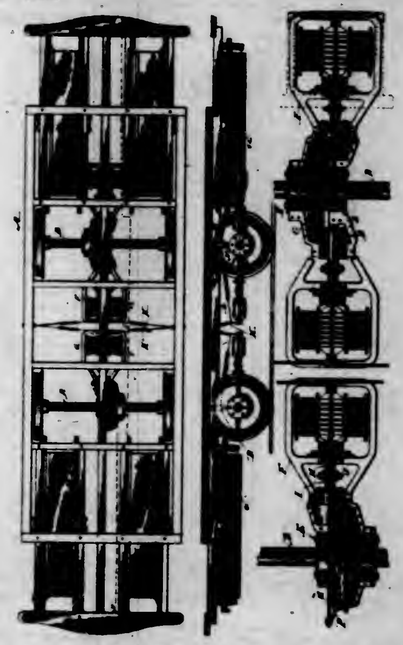
2. The combination of the tubular standard, screw-threaded at its upper part and provided with slots *f f*, as shown, the handle C, having a female screw to connect with the screw *d* of the standard, and provided with a bearing, *b*, the rod B, sustained in said bearing *b*, and having prongs extending through the slots *f f* and connecting it with the head *g*, provided with the rigid arms *h*, the slotted arms *i*, connected to the arms *h* and provided with the curved rails or bearers *m*, and pivoted to the head *j*, said head having means for clamping it to the standard, with the dress-form made in sections connected to the standard, as shown, and provided with eyes *n*, for connecting said sections to the bearers *m*, to admit of said sections being expanded or contracted by revolving the dress-form on its axis, all as described and represented.

385,726. TOBACCO-BOX. CHARLES A. REYNOLDS, Winston, N. C. Filed Feb. 24, 1888. Serial No. 265,162. (No model.)



Claim.—The improved combined wood and metal tobacco-box herein described and shown, comprising the wooden heads A B and the metallic sides C, constructed of a single continuous strip having notches in its opposite sides, thereby providing the integral side flanges, D, equal in length to the length of the sides of the heads, and folded over the heads, with the meeting ends of the flanges overlapping, and secured by fastenings passing through the overlaps to the heads, substantially as specified.

385,727. ELECTRIC MOTOR FOR STREET-CARS. WILBUR S. SALISBURY, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,131. (No model.)



Claim.—1. In a motor for street-cars, the car-frame and the box for containing the battery, in combination with a longitudinal support attached to said frame at one end thereof for removably suspending said box below the frame, and a sliding anti-friction connection between said box and support, substantially as described.

2. In a motor for street-cars, the car-frame, a track, and a pivot-connection between said track and frame about the center of length of said track, in combination with a box for containing the battery supported upon and removably suspended below the frame by said track, substantially as described.

3. In a motor for street-cars, the car-frame, a track, and a central pivot-connection between said track and the frame, in combination with a box for containing the battery supported upon and removably suspended below the frame by said track, guide-plates, and a pin-and-slot connection between said plates and the track intermediate the center and ends thereof, substantially as described.

4. In a motor for street-cars, the car-frame, a track, and a central pivot-connection between said track and the frame, in combination with a box for containing the battery, and an anti-friction connection between said box and track, whereby said box is supported upon and removably suspended below the car-frame by said track, substantially as described.

5. In a motor for street-cars, the car-frame, a track, and a central pivot-connection between said track and frame, in combination with a box for containing the battery, a detachable anti-friction connection between said box and the track, and a lock device for securing said box relative to the track, substantially as described.

6. In a motor for street-cars, the car-frame, a track, and a central pivot-connection between said track and frame, in combination with a box for containing the battery, a detachable anti-friction connection between said box and the track, and an adjustable lock device for securing said box relative to the tracks, substantially as described.

7. In a motor for street-cars, the car-frame, the axle, and a casing loosely journaled and supported upon said axle, in combination with one or more frames secured to said casing, motors mounted in said frames, a gear-connection between the motors and axles, a pulley secured to the car-frame, and a flexible or yielding guy-rod secured at its ends to said frames and working over said pulley, substantially as described.

8. In a motor for street-cars, the car-frame, the axle, and a casing loosely journaled and supported upon said axle, in combination with one or more frames secured to said casing, motors mounted in said frames, a gear-connection between said motors and axle, a pulley secured to the car-frame, a flexible or yielding guy secured at its ends to said frame and working over said pulley, and the laterally-yielding opposing guys secured at their end, respectively, to said frames and the sides of the car-frame, substantially as described.

9. In a motor for street-cars, the axle and one or more frames loosely journaled and supported upon said axle, in combination with one or more motors mounted on said frames, a gear-connection between said motors and the axle, a pulley secured to the car-frame, and a flexible or yielding guy-rod secured at its ends to said frames and working over said pulley, substantially as described.

385,728. BALL-CATCHER'S GLOVE. JOSEPH W. SAUER, Milwaukee, Wis. Filed Mar. 1, 1888. Serial No. 265,892. (No model.)

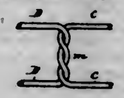


Claim.—1. In a ball-catcher's glove, the combination of the body of the glove C, having an opening, L, in the back of the hand thereof, interior padding, D, and retaining-cover E, one or more exterior layers of padding, F and G, and exterior covering, H, extending from the wrist to the fingers upon the inside of the hand of the glove, and secured thereto by a series of stitches, one or more exterior layers of finger-padding, I and J, and covering K, extending from the joints of the fingers upon the inside of the hand to and over the ends of the fingers, and stitched to the back of the fingers of the glove, all substantially as and for the purpose specified.

2. The combination of the body of the glove C, having opening L upon the back side thereof, and having side seams A around the fingers and side seams B around the hand, turned outward or formed upon the exterior of the glove, in combination with the interior padding, D, and covering E, located upon the inside of the hand of the glove, and exterior padding F and G and covering H, extending from the wrist to the hand of the glove, and exterior padding I and J and covering K, located upon the inside of the fingers of the glove, said finger padding and cover and said hand padding and covering respectively terminating and forming a flexible joint at the roots of the fingers of the glove, said padding I and J and covering K being secured around the inner surface and over the ends of the fingers of the glove, substantially as and for the purpose specified.

385,729. WIRE FENCE. BENJAMIN SPARKES, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed May 7, 1888. Serial No. 273,023. (No model.)

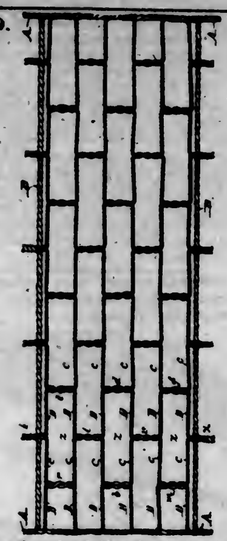
Claim.—1. In a fence of the character described, the filling-wires C D, connected with the selvage-wires A, and so joined as to form a series of rectangular openings, *s*, joints composed of said filling-wires



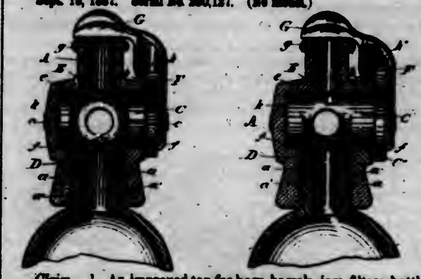
being disposed at the end and sides of each of said openings, substantially as shown and described.

2. In a fence of the character described, the filling-wires C D, selvage-wires A, and braces B, constructed, combined, and arranged substantially as described.

385,729.



385,730. TAP FOR KEGS, BOTTLES, &c. JAMES A. SUMNER and JOHN BRADLEY, Southport, County of Lancaster, England. Filed Sept. 19, 1887. Serial No. 250,127. (No model.)



Claim.—1. An improved tap for kegs, barrels, jars, filters, bottles, and other vessels, the body of which is provided with an internal screw and recess E, to receive a seating, *o*, in combination with a sleeve, D, and a plug, C, having a central elevation, the tube being recessed at each side of the elevation to receive the end of the tube or sleeve, substantially as described and shown.

2. The combination, in a tap, of a body, A, plug C, lever F, cap G, and side guard, L, substantially as and for the purposes set forth.

3. In combination with the neck of a bottle or spigot, a tap having a body provided with a turning-plug and an internally-threaded annular projection secured upon the neck, and a tubular elastic packing compressed between the neck and the internal thread and bearing at one end against the turning-plug.

385,731. CAR-COUPLING. JOHN SHULER, West Berne, N. Y. Filed Feb. 20, 1888. Serial No. 265,093. (No model.)

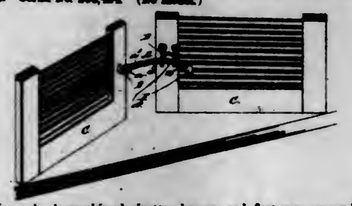


Claim.—1. In a car-coupler, the combination of a draw-head, a coupling-link, a coupling-pin, a hand-lever pivoted to a swivel-joint and flexibly connected to said coupling-pin, a catch-piece fitted to es-

gage with the outer end of said hand-lever when the latter is depressed, and a striker (attached to a conjoining car) which is fitted to strike directly against said hand-lever to dislodge it from said catch-piece, as and for the purpose herein specified.

2. In a car-coupler, the combination of a coupling-link, a hand-lever which is pivoted to the car to vibrate both vertically and sidewise, a draw-head provided with a coupling-pin which is flexibly connected to said hand-lever, so that the latter can raise said pin in said draw-head, a rock-shaft having at its outer end an offset pendent pin that is fitted to engage with said hand-lever and at its inner end an offset limb that is fitted to raise the coupling-link of an incoming car, a catch-piece fitted to engage with and retain the outer end of said hand-lever, and a striker (attached to a conjoining car) that is fitted to strike said hand-lever and dislodge it from said catch-piece and rock-shaft, as and for the purpose herein specified.

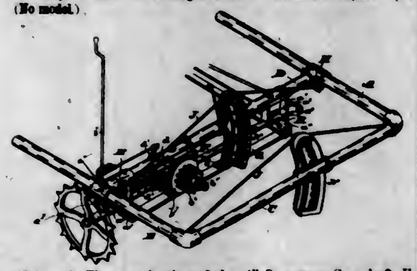
385,732. SHUTTER-BOWER. HENRY W. STEBBINS, Boston, Pa., assignor of one-half to Henry W. Merrill, same place. Filed Mar. 24, 1888. Serial No. 268,434. (No model.)



Claim.—1. A combined shutter bower and fastener, comprising a bar capable of being attached to one of a pair of shutters, and consisting of a single piece of wire bent in the middle to form a loop and twisted to form depressions or notches along its entire length, a cap adapted to fit over the end of the bar and prevent the wire from becoming untwisted, and a flexible wire catch designed to be attached to the other shutter and to receive the bar, substantially as described.

2. A shutter-bower comprising a bar adapted to be attached to one of a pair of shutters, and a catch adapted to be attached to the other shutter and engaging the bar, the said catch consisting of a flexible wire bent into a U shape, and having its ends secured to the shutter, as set forth.

385,733. HARVESTER-FRAME. BENJAMIN F. STEWART, New Philadelphia, Ohio. Filed Aug. 24, 1887. Serial No. 247,732. (No model.)



Claim.—1. The combination of the sill D, a truss, G, a shaft, F, a hanger, K, for supporting the front ends of the shaft F and truss G, a coupler, E, having a cylinder portion to embrace the sill B, a body portion, a', adapted to secure the end of the sill D, a downwardly-projected portion, a^3, journal-box a^4, and leg a^5, substantially as set forth.

2. The combination of the sill D, a truss, G, a shaft, F, a coupler, E, for supporting the rear ends of the shaft F and the truss G, and the hanger K, having a portion, a^7, semicircular in cross-section and located horizontally beneath and adapted to the surface of the sill D, arms a^8, projected downwardly from the portion a^7, a journal-box, a^9, supported by the arms and adapted to receive the shaft, and a leg, a^{10}, forming a support for one end of the truss G, substantially as set forth.

3. The combination, in a harvester-frame, of the sill D, sill B, coupler E, hanger K, and truss-chord G, substantially as set forth.

4. The combination, in a harvester-frame, of the sill D, sill B, coupler E, hanger K, truss-chord G, and spindle b^2, forming a support for a gear-pinion, and the spindle-support L, secured to the sill D and truss G, substantially as set forth.

5. In a harvester-frame, the combination of a spindle-support, L, having an upper portion conformed to the sill D and a lower portion conformed to the truss-chord G, a journal-box, b^3, an outwardly-projected spindle, b^2, and a shaft, F, mounted in the journal-box b^3, substantially as set forth.

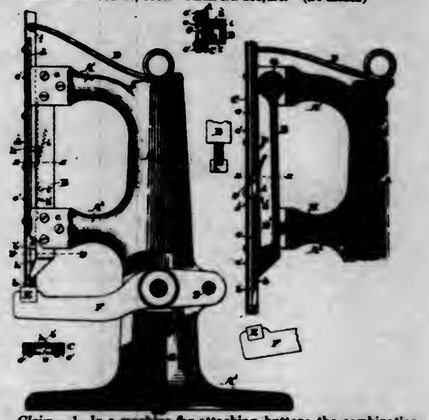
6. In a harvester-frame, the combination, with a sill, D, and the under truss-rod, G, over truss-rod, J, means for securing the end of the rod J to the sill, couplers for securing the truss G to the sill D at each end of the former, and a central support to the two trusses and the sill, substantially as set forth.

7. The combination, in a harvester-frame, of the sill D, under truss-rod, G, over truss-rod, J, means for securing the end of the rod J to the sill, coupler E, connecting the corresponding ends of the truss-chords and sill, hanger K, connecting the under truss-rod with the sill D, spindle-support L, connecting the truss-chord G with the sill D, spindle b^2, projected laterally from the spindle-support L, and the segment-frame N, forming a central support for the truss-chords G and J, substantially as set forth.

8. The combination, in a harvester, of the sill D, coupler E, spindle-support L, spindle b^2, projected laterally therefrom, pinion b^4, and bevel-wheel b^7, mounted on the spindle, journal-box b^3, shaft F, mounted therein, bevel-wheel d^3, and clutch d^4, mounted on the shaft, rod d, spring d^5, and gear-shipper d' in engagement with the clutch d^4, substantially as set forth.

9. The combination, with the sill D, coupler E, hanger K, and the shaft F, supported in the coupler E, and spindle-support L, of a spindle projected laterally therefrom, gear with clutch-teeth mounted on the shaft F, a gear-clutch mounted on the shaft F to engage the clutch-teeth of the gear on the shaft, a rod suspended between the coupler E and spindle-support L, a spring located on the rod, and a gear-clutch shipper in engagement with the clutch, whereby the shipper is pressed by the spring normally in a direction to keep the clutch on the shaft F in engagement with the gear on said shaft, substantially as set forth.

385,734. MACHINE FOR ATTACHING BUTTONS. BENJAMIN H. TAYLOR, Lynn, assignor to the American Shoe Tip Company, Boston, Mass. Filed Oct. 26, 1887. Serial No. 253,490. (No model.)



Claim.—1. In a machine for attaching buttons, the combination herein described of a movable anvil, a vertically-movable raceway-bar having a slot cut through its back near its lower end, and a pivoted driver-stock provided with a driver projecting obliquely therefrom and constructed and arranged to be vibrated about its pivot by the reciprocations of said raceway, whereby said driver is projected into and retracted from the path of descent of the button-fastener staples.

2. The combination herein described of a vertically-movable raceway, a pair of button-separating spring-stops secured to and movable with said raceway, a pivoted driver and stock provided with pins constructed and arranged to alternately operate said spring-stops, and an anvil mounted upon the free end of a pivoted lever constructed and arranged to be vibrated to force the work upon the button-fastener and clinch said fastener by moving the raceway upward.

3. The combination of the movable anvil E, the vertically-movable raceway C, the pivoted and laterally-movable driver B b, provided with the pins k and k', and the spring-stops i i^2, i' i^2, and m m, all constructed and adapted to operate substantially as and for the purpose described.

385,735. APPARATUS FOR THE MANUFACTURE OF SHEET-GLASS. ANDREW THOMSON, Pittsburg, Pa., assignor of one-half to Joseph L. Moore, same place. Filed Feb. 11, 1888. Serial No. 263,736. (No model.)

385,735.



Claim.—1. In apparatus for the manufacture of sheet-glass by gravity or flowing method, a slotted holder having a guide-lip which projects downwardly below the holder and is provided with a lining or covering of refractory material, substantially as and for the purpose specified.

2. In apparatus for the manufacture of sheet-glass, a slotted holder having a lining of refractory material and provided with a guide-lip which projects downwardly beyond the holder, substantially as and for the purpose specified.

3. In apparatus for manufacturing sheet-glass, the combination, with a slotted holder, of a free rotating or independent roller-gage adapted to be moved by the flowing glass, substantially as and for the purpose specified.

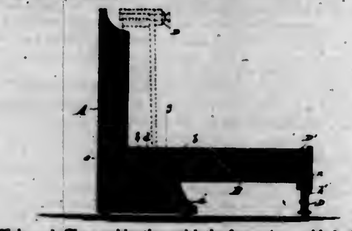
4. In apparatus for the manufacture of sheet-glass, the combination, with a slotted holder having a guide-lip which projects below the slot, of a journaled or movable roller slot-valve and gage, substantially as and for the purpose specified.

5. In apparatus for the manufacture of sheet-glass, the combination, with a slotted holder provided with a downwardly-projecting guide-lip having a surface of refractory material, of a free rotating or independent roller gage and slot-valve of refractory material, substantially as and for the purpose specified.

6. In apparatus for the manufacture of sheet-glass, the journaled slotted glass-holder, substantially as and for the purpose specified.

7. In apparatus for the manufacture of sheet-glass, the combination, with a journaled slotted holder for the molten glass, of an inclined cooling-table of refractory material, substantially as and for the purpose specified.

385,736. FOLDING BED. FRANCIS H. WALKER, Chicago, Ill., assignor to M. H. Walker, same place. Filed Sept. 10, 1888. Serial No. 285,209. (No model.)



Claim.—1. The combination, with the frame A, provided with pivot-journal bearings, and the swinging and folding bed-supporting frame B, provided with pivot-journals, of the spiral springs C, arranged diagonally beneath the bed-supporting frame B, and connected, respectively, to staples near the head end of said frame and to staples on the inner walls of the outer case, A, said springs standing inclined to a horizontal plane and oblique with respect to the front vertical side of the outer case when the bed-supporting frame is folded, and occupying a nearly-horizontal and diagonal position when the bed-supporting frame is lowered, substantially as and for the purpose described.

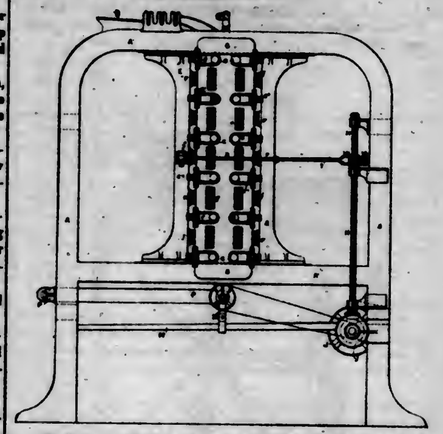
2. The combination, with the frame A, provided with pivot-journal bearings, and the swinging and folding bed-supporting frame B, provided with pivot-journals, of the spiral springs C, arranged beneath the bed-supporting frame B, and connected, respectively, to staples near the head end of said frame and to staples on the inner side walls of the outer case, A, said springs standing inclined to a horizontal plane and oblique with respect to the front wall of the case A when the bed-supporting frame is folded, and occupying a nearly horizontal position when said frame is lowered, substantially as and for the purpose described.

3. The folding bedstead having its respective bearings for the pivot-journals d d of its bed-supporting frame B formed of the wheels or rollers b b, pins c c, and capping-pieces c c and the side base portions of the frame A, substantially as and for the purpose described.

4. The combination, with frame A, of the bed-supporting frame B, pivoted to the frame A, and provided with sliding legs D, having dogs k' arranged diagonally in slots of the legs between stops, and pivoted by one of their ends to the legs, and acting to fold or adjust themselves within the legs and to adjust themselves partly outside the legs, accordingly as the bed-supporting frame is folded or unfolded, substantially as and for the purpose described.

385,737. APPARATUS FOR BREAKING, SCUTCHING, AND CLEANING FLAX, &c. JOHN G. WALLACE, Belfast, County of Antrim, Ireland. Filed Apr. 6, 1887. Serial No. 233,982. (No model.) Patented in England Jan. 6, 1887, No. 193; in France Apr. 26, 1887, No. 180,982; in Belgium Apr. 27, 1887, No. 77,986, and in New Zealand May 6, 1887, No. 2,262.

Brief.—The feeding and breaking rollers are simultaneously and intermittently actuated. Between each two sets of breaking-rollers are two horizontally-reciprocating tools carrying pins. Said pins are guided in a perforated plate having a portion extending over the pins to prevent trash from falling in among the pins.



Claim.—1. In an apparatus for treating flax, the combination, with a frame-work, of a series of rollers, D D, arranged in pairs, one pair above another, and each roller provided with a ratchet-wheel, a bar, M, provided with pawls to engage the ratchet-wheels, mechanism for imparting a reciprocating motion to the bar, tools F, provided with pins f, and located between the pairs of rollers, and a mechanism for imparting motion to the tools F, all substantially as shown, the rollers and tools alternating in their movements, as and for the purpose set forth.

2. In combination with a frame-work, a pair of rollers, D D, each provided with a ratchet-wheel, a vertically-reciprocating bar, M, provided with pawls to engage with and rotate the ratchet-wheels and the rollers, a main shaft, J, provided with an eccentric, a bar, N, connected at one end with the eccentric and at the other end with the frame and passing through the lower end of the reciprocating bar M, a set of tools, F, beneath the rollers, shafts H, provided with eccentrics and receiving motion from the main shaft, and pitmen I I, connecting the tools with the eccentrics, the eccentrics on the shafts H and J being so timed, respectively, as to cause the rollers and the tools to alternate in their movements.

3. In a machine for treating flax, the combination, with a suitable frame-work, of the crushing-rollers D D, the tools F F beneath the rollers, the feeding-rollers S S, a main shaft, and intermittently-acting connections, substantially as shown, between the main shaft and the rollers and between the main shaft and the tools, whereby the feeding-rollers and breaking-rollers are actuated positively before each inward movement of the tools.

4. In a machine for treating flax, the combination, with a suitable frame-work, of rollers D D, provided with ratchet-wheels, feeding-rollers S, also provided with ratchet-wheels, a reciprocating bar, M, provided with pawls to engage with the wheels on the rollers D D, means for reciprocating said bar M, a bar, M', provided with pawls to engage the wheels on rollers S, and a connection between the bars M and M'.

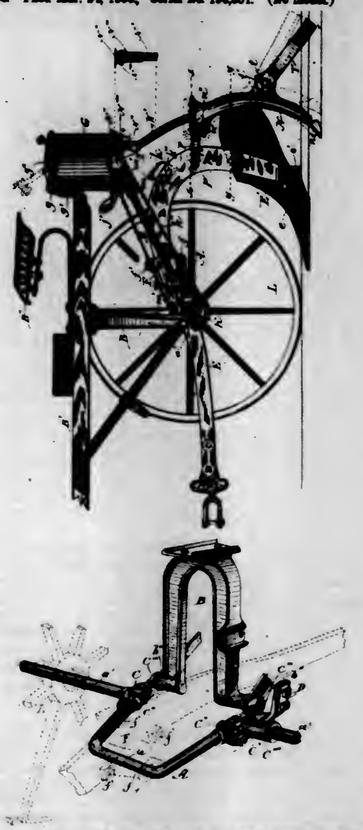
5. In a machine for treating flax, the combination, with a suitable frame-work and the uprights B, of a pair of rollers, D D, mounted therein and provided with ratchet-wheels, a series of rollers, S, arranged to one side of the rollers D and provided with ratchet-wheels, an upright reciprocating bar, M, provided with pawls to engage the ratchet-wheels upon the rollers D, means for reciprocating the bar and guiding it in its movement, an approximately-horizontal bar, M', provided with pawls to engage the ratchet-wheels of rollers S and guided in its movement by means of brackets m', and an elbow-lever, N', connecting the bars M and M'.

6. In a machine for treating flax, &c., the combination, with the frame-work, of the rollers D D, tools F F beneath the rollers, endless belt P beneath the tools, driving-shaft J, and connections, substantially such as shown, for imparting necessary motion to the several parts from the driving-shaft.

7. In a machine for treating flax, &c., the combination, with the reciprocating frames E, provided with a series of pins, *f*, of a perforated plate, G, provided with strengthening-strips, as *g*, between the rows of perforations.

8. In a machine for treating flax, &c., the combination, with the reciprocating frames E, provided with pins *f*, of a perforated plate, G, having the protecting-plate *g'*, all arranged for operation substantially in the manner shown.

385,738. SULKY LISTER-PLOW CORN-PLANTER. LEWIS R. WATERMAN, Moline, Ill., assignor to the Deere & Manster Company, same place. Filed Mar. 24, 1886. Serial No. 196,351. (No model.)



Claim.—1. In combination, an axle having a double-crank central part and horizontal end parts, wheels journaled on said end parts, a plow mounted on said crank part of the axles, plates bolted to the axle and extended forward of its horizontal end part, and an arch pivoted to and supported upon the forward ends of said plates and adapted to support the driver's seat and other parts, substantially as and for the purpose specified.

2. In combination, an axle having a double-crank central part and horizontal end parts, *d'*, wheels L, a plow mounted on said crank part of the axle, plates C C, bolted to the axle by staples C" and having extended forward ends, and an arch, B, journaled to and supported upon the extended forward ends of the plates C C, substantially as and for the purpose specified.

3. In combination, an axle having a double-crank central part and horizontal end parts, wheels journaled on said end parts, a plow mounted on said crank part of the axle, plates bolted to the axle and extended forward of its horizontal end parts, an arch pivoted to the extended ends of said plates, a hand-lever fixed to a horizontal end of the axle and provided with a locking-pawl, and a curved rack-bar concentric with the pivot of the arch to the extended plates, substantially as and for the purpose specified.

4. In combination, supporting-wheels, a swinging crank, a plow mounted on said crank, a curved rack-bar, a hand-lever adapted to operate the swinging crank, and a spring locking-pawl operated by a thumb-lever, having a projecting stop, D", adapted to come in contact with the rod *d'* to hold the pawl out of contact or engagement with the rack-bar, substantially as and for the purpose specified.

5. In combination, an axle having a double-crank central part and horizontal parts *d'*, supporting-wheels, an operating hand-lever, plow and beam, and plates F, constructed substantially as described, journaled on the axle, and bolted to the plow-beam, substantially as and for the purpose specified.

6. In combination, supporting-wheels, a swinging crank operated by a hand-lever, a lister-plow mounted on said crank, an arch and a guide-pole mounted thereon, and a seed-box mounted on said guide-pole and connected by a flexible tube with a furrow-opening tube fixed in rear of the lister-plow, substantially as and for the purpose specified.

7. In combination, supporting-wheels, a swinging crank operated by a hand-lever, a lister-plow mounted on said crank, an arch and a guide-pole mounted thereon, and a seed-box mounted on said guide-pole and connected by a flexible tube with a furrow-opening tube adjustably fixed in rear of the lister-plow, substantially as and for the purpose specified.

8. In a sulky lister planting-plow, in combination with a seed-box mounted on the guide-pole or frame and a lister-plow hinged to the swinging crank or axle, a pinion carried on a sliding shaft and gearing with the seed-cup wheel, a lever for sliding said pinion-shaft, adapted to be operated by a cam-plate on the plow-beam, substantially as and for the purpose described.

9. In a sulky lister planting-plow, a seed-box mounted on the frame or guide-pole, a sliding shaft carrying a pinion gearing with the seed-cup wheel, a cam-lever for operating said pinion and shaft, and a spring for moving the cam-lever in one direction, in combination with a cam-plate on the plow-beam, adapted to act on the cam-lever and throw the seeding devices out of gear when the plow is elevated, substantially as and for the purpose specified.

10. In combination, an axle with double-crank part and horizontal arms *d'*, arch B, journaled to the extended forward ends of plates fixed to the axle, wheels L, a lister-plow mounted on the crank part of the axle, a seed-box hinged to the guide-pole or sulky-frame, a sprocket connected with one of the wheels L to turn therewith and geared by a chain belt with a sprocket which drives the seed-wheel, and an arm, M, extending from the arm *d'* of the axle to the seed-box, substantially as and for the purpose specified.

11. In a sulky lister-plow planter, in combination with a sulky which carries the lister-plow, a seed-box hinged to the guide-pole or sulky-frame, substantially as and for the purpose specified.

12. In combination, an axle, a frame or guide-pole supported on an arch pivoted to forward extensions from the axle, a chain belt gearing a sprocket on the axle, with a drive-sprocket at the seed-box, and an arm secured at one end to the axle and at its other end to the seed-box and adapted to prevent slack in the drive-belt, substantially as and for the purpose specified.

13. In combination, a forwardly-tilting guide-pole mounted on an arch-supporter forward of the wheel-journals, a hinged seed-box, a belt gearing between a sprocket-wheel on the axle and a sprocket on the seed-box, and a belt-tightener bar connecting the axle and the seed-box, substantially as and for the purpose specified.

14. In combination, a forwardly-tilting guide-pole mounted on an arch-shaped supporter forward of the wheel-journals, a hinged seed-box, a belt gearing between a sprocket-wheel on the axle and a sprocket on the seed-box, and an adjustable belt-tightener bar connecting the axle and the seed-box, substantially as and for the purpose specified.

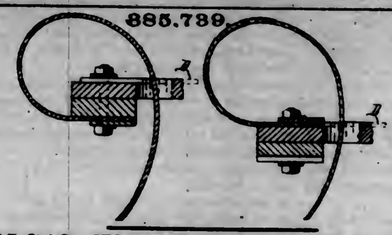
15. In a sulky lister planting-plow, in combination with a seed-box mounted on the frame or guide-pole and having a swinging cam-lever for throwing the seed-plate into and out of gear with its actuating mechanism, a cam adjustably fixed to the plow-beam and adapted to actuate said cam-lever when the plow is elevated, substantially as and for the purpose specified.

385,739. HARROW. LEWIS J. WEIDER, Wilkes-Barre, Pa. Filed Oct. 26, 1887. Serial No. 253,334. (No model.)

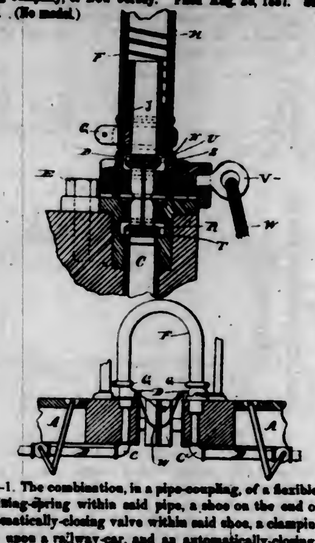
Claim.—1. A harrow-frame provided with a vertical series of tooth-seats, as set forth.

2. The combination, with a harrow-frame provided with a vertical series of tooth-seats, of a harrow-tooth adapted to be secured in any one of said tooth-seats, substantially as set forth.

3. In a harrow, the combination, with a frame provided with tooth-seats arranged in a vertical series, of a harrow-tooth and scraper-blade adapted to be secured in any one of said seats, substantially as set forth.



385,740. PIPE-COUPLING. FRANCIS M. WILSON, Binghamton, N. Y., assignor, by mesne assignments, to the Safety Car Heating and Lighting Company, of New Jersey. Filed Aug. 20, 1887. Serial No. 248,128. (No model.)



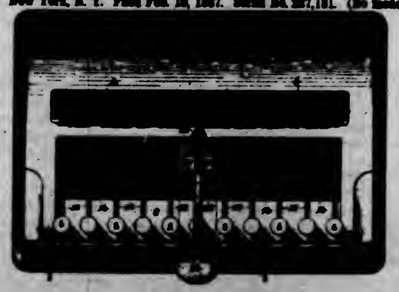
Claim.—1. The combination, in a pipe-coupling, of a flexible hose-pipe, a sustaining-spring within said pipe, a shoe on the end of said pipe, an automatically-closing valve within said shoe, a clamping-seat for said shoe upon a railway-car, and an automatically-closing valve within said seat, substantially as described.

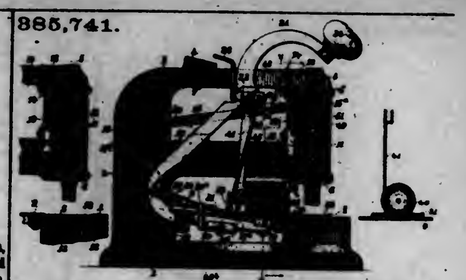
2. The combination, in a pipe-coupling, of a flexible hose-pipe, a sustaining-spring within said pipe, a device for attaching one end of said pipe rigidly to a railroad-car, a shoe on the opposite end of said pipe, and a clamping-seat for said shoe upon a railway-car, and from which said shoe is automatically separable, substantially as described.

3. The combination, in a pipe-coupling, of a flexible hose-pipe, a rigid connection for said pipe upon a railway-car, a shoe on the end of said pipe, a clamping-seat for said shoe upon a railway-car, and a rope connecting the fixed end of said coupling with the shoe, whereby the shoe is automatically separated from the clamping-seat when the said rope is subjected to any unusual strain, substantially as described.

4. In combination with two railway-cars, of a flexible pipe-coupling consisting of a single hose connected to one car, a shoe on the end of said hose, a clamping-seat for said shoe on the other car, and an automatically-closing valve in said shoe and in said clamping-seat, substantially as described.

385,741. CHECK-PUNCHING MACHINE. J. NEWTON WILLIAMS, New York, N. Y. Filed Feb. 14, 1887. Serial No. 227,181. (No model.)





Claim.—1. In combination with the bed-plate 1, having straight parallel guides 10, a table, 9, moving on said guides, an arm, 17, fixed to said table and projecting forward over it, a series of vertically-sliding punches, 5, mounted parallel with the movement of the table, a punch-operating lever, 15, mounted in the arm 17, and a hand-lever, 21, also mounted in said arm 17 and adapted to operate the punch-operating lever, substantially as set forth.

2. The combination of the bed-plate 1, having straight parallel guides 10, a table, 9, guided thereon, a spring holding-plate, 31, hinged to said table, a feed-roller, 35, supported on and projecting through a slot in said holding-plate and having ratchet-wheel 40, a punch-operating lever pivotally connected to said table, a pawl carried by said lever for operating said ratchet-wheel, means, substantially as described, for operating said lever, and series of dies and punches, substantially as set forth.

3. The combination of a series of punches mounted in fixed bearings, a fixed indicator-plate having characters corresponding in position with those on the punches, a movable table, a holding-plate pivoted thereto, and an index carried by said table, moving over said indicator-plate, and connected with said holding-plate, as and for the purposes set forth.

4. The combination of a series of punches, a lever for operating the same, a plate having projections for guiding said lever, and two anti-friction rollers on said lever to bear on said punches and projections, substantially as and for the purpose set forth.

5. The combination of a series of punches, a plate having a series of slots arranged parallel to said punches, and long pins of flexible metal carried by said punches and running in said slots, substantially as and for the purpose set forth.

6. The combination of a table, a clamp or holding plate thereon, and a roller carried by said holding-plate, said table being slotted under said roller in the direction of the feed, substantially as and for the purpose set forth.

7. The combination of a movable table, a holding-plate resting thereon, both table and plate being slotted transversely, a bent arm, 17, fixed under the table and projecting over it, a plate, 30, adjustable by a slot and set-screw on arm 17, and a stop, 30a, on said plate 30, passing through the slots in the table and holding-plate, substantially as and for the purpose set forth.

8. The combination of a series of punches and a table for receiving a check to be punched thereby, having a transverse bead or indentation, substantially as and for the purpose set forth.

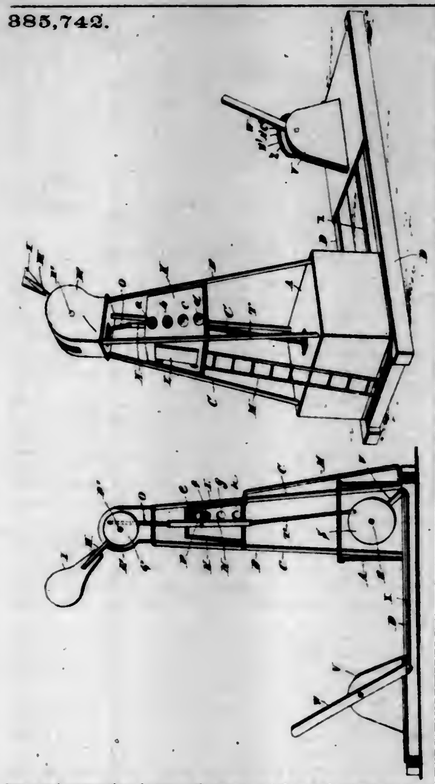
9. The combination of the series of punches, a table guided in a path parallel therewith, paper-holding plate and feed mechanism carried by said table, a single punch-operating lever mounted on said table, and hand-lever, also mounted on said table and adapted to operate table, punch-operating lever, and feed mechanism, as set forth.

385,742. RAILWAY-STATION SIGNAL. CHARLES J. WOODWARD, Oak Harbor, Ohio. Filed Mar. 5, 1888. Serial No. 266,267. (No model.)

Claim.—1. The combination of the tower having the lantern provided on opposite sides with the series of openings covered with differently-colored glass, the vertically-movable rod N, extending through the lantern and carrying a lamp or other source of light, the rock-shaft F, journaled in a case at the top of the tower, and having the signal-target and the crank-arm projecting radially therefrom, and the rod O, connecting the crank-arm with the rod N, substantially as described.

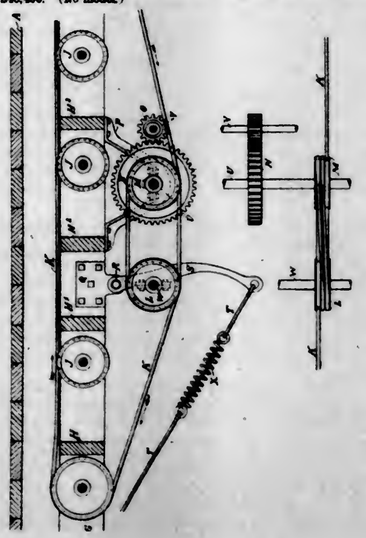
2. The combination of the tower having the lantern provided on opposite sides with its series of rigid openings covered with differently-colored glass, the vertically-movable rod N, extending through the lantern and carrying a lamp or other source of light, the rock-shaft F, journaled in a case at the top of the tower and having the signal-target and the crank-arm projecting radially therefrom, the rod O, connecting the crank-arm with rod N, the case at the base of the tower, the rock-shaft journaled in said case and having the crank-wheel, the rod T, connecting said crank-wheel to the rod N, and the

385,742.



lever and connections between the same and the crank-wheel, substantially as described.

385,743. CABLE SYSTEM FOR DRAW-BRIDGES. JOHN E. BODEEN and CHARLES A. TEPOORTEN, Chicago, Ill. Filed June 6, 1887. Serial No. 240,466. (No model.)

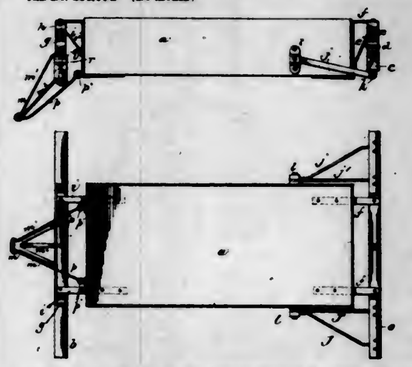


Claim.—1. In a draw or movable part of a draw-bridge, the combination, with the frame-work thereof, of the sheaves G and J, cable K, driving-sheave M, gears O and N, tension-sheave L, shafts U, V, and W, movable arm S, tension-rod T, and spring X.

2. In a draw or movable part of a bridge, an endless cable passing over sheaves at either end of said bridge, the entire cable being upon or within the structure of said bridge and being suitable for the propulsion of railway-cars across said bridge, in the manner specified, in combination with a railway-track upon said bridge, and a motor and gearing, also located upon or within the structure of said bridge, to propel the said cable, as specified.

3. In a draw or movable part of a bridge, having thereon a motor for the purpose of turning the draw, the combination of the bridge, motor, shaft V, and a cable, with gearing to propel said cable, all substantially as and for the purposes above set forth, shown, and described.

385,744. RUNNING-GEAR FOR VEHICLES. WILLIAM H. CRAPET and DEFOREST A. WILLCOX, Lebanon, N. Y. Filed Nov. 23, 1887. Serial No. 256,004. (No model.)



Claim.—1. The rear truck comprising rigidly-connected axle, spring, and head-block, and jacks to connect them to the vehicle-body, combined with angular braces jointed to the axle and to the body, substantially as described.

2. The rear truck comprising rigidly-connected axle, spring, and head-block, and jacks to connect them to the vehicle-body, combined with angular braces jointed to the axle and pivoted in squared sockets attached to the body to take off strain from an overburdened spring, substantially as described.

3. In a front truck, the axle, spring, and head-block, and the rigid jacks to connect them with the vehicle-body, combined with a king-bolt, a fifth-wheel, and braces for preventing undue lateral movement and preserve the parallelism and alignment of parts, substantially as described.

4. The front axle, spring, and head-block rigidly connected together, combined with a platform connected to the body by a sort of fifth-wheel and king-bolt, jacks rigidly connecting the head-block and platform, and couplings connecting the platform and axle, substantially as described.

5. The vehicle-body and rear truck composed of an axle, spring, head-block, and jacks, and pivoted braces connecting the body and axle, combined with the front truck, comprising an axle, spring, head-block, jacks, braces, and king-bolt, substantially as described.

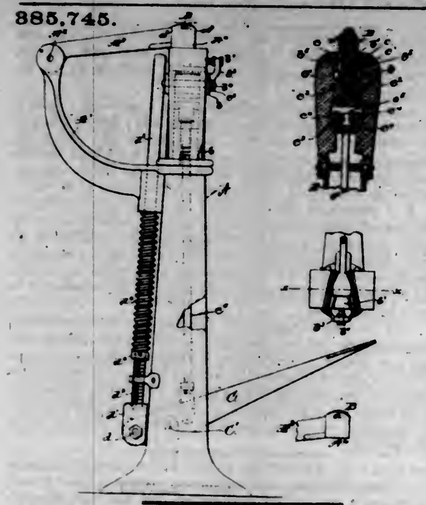
6. The three-fingered brace *m*, combined with the front truck, and braces *p*, substantially as described.

385,745. MECHANISM FOR FORMING COUNTER-STIFFENERS. PATRICK COX, Rochester, N. Y. Filed Oct. 7, 1887. Serial No. 251,713. (No model.)

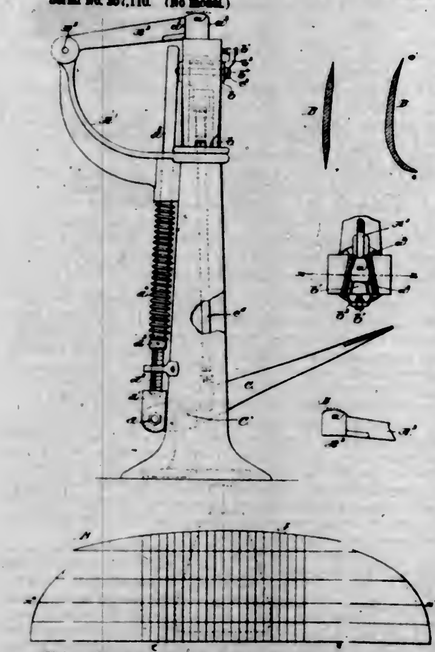
Claim.—1. In a machine for the manufacture of counter-stiffeners, a saddle to support a blank for a portion only of its width at or near its center between its ends, and clamps to grasp the ends of the blank, combined with means to change the relative positions of the saddle and clamps to pull and stretch the blank in its median line in the direction of its length and cause the edges of the blank while being pulled and stretched to conform to the shape of the saddle, substantially as described.

2. The saddle A^4, having a surface, as $a\ a^6\ a^7$, to support the central part of the counter-stiffener blank, and the block b', combined with the jaws $c'\ c'$, to co-operate with the said block b', and constitute clamps to grasp the ends of the said block, and with means, substantially as described, to operate the said jaws and saddle.

385,745.



385,746. MANUFACTURE OF COUNTER-STIFFENERS FOR BOOTS OR SHOES. PATRICK COX, Rochester, N. Y. Filed Dec. 6, 1887. Serial No. 257,110. (No model.)

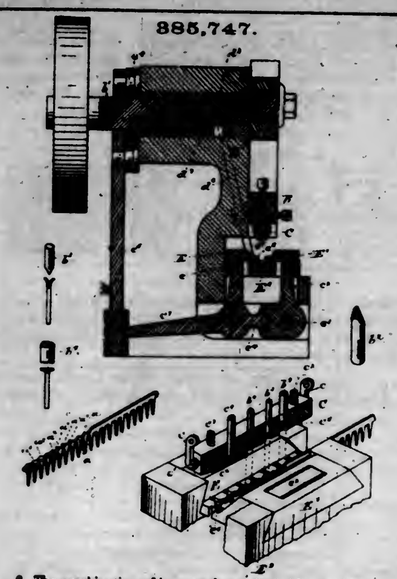


Claim.—The herein-described improvement in the art or method of manufacturing counter-stiffeners, which consists in pulling and stretching a leather blank in its median line in the direction of its length and causing one edge of the blank during and by such pulling and stretching operation to turn inward along its edge and form a flange, substantially as described.

385,747. MACHINE FOR HEADING TACK-STRIPS. JOSEPH R. CRAIG, Somerville, assignor to George W. Copeland, Malden, Mass. Filed Sept. 1, 1886. Serial No. 212,827. (No model.)

Claim.—1. In a machine for heading tack-strips, the combination of a clamp or holding-jaws with the reciprocating tools $b^3\ b^4\ b^5$, or either of them, all substantially as and for the purposes described.

385,747.



2. The combination of jaws or clamps for holding and supporting the tack-strip, the presser-block C, the reciprocating head B, and the tools $b^3\ b^4\ b^5$, or either of them, all substantially as and for the purposes described.

3. The combination of an intermittent feed, the jaws or clamps E E', the reciprocating head B, the presser-block C, and the tools $b^3\ b^4\ b^5$, or either of them, all substantially as and for the purposes described.

4. The combination of an intermittent feed with the jaws E E', all substantially as and for the purposes described.

5. The clamping-jaws E E', having the lifting projections e^4, as and for the purposes described.

6. The combination of the jaws E E', for supporting and holding the tack-strip, with the straightening block or presser C, all substantially as described.

7. The combination of the feedway D and the reciprocating feed pawl or pawls $d'\ d^2$, all substantially as and for the purposes described.

8. The combination of the feedway D and the reciprocating pawls $d'\ d^2$, all substantially as described.

9. The combination of the feedway D, the jaws or clamping device for lifting and holding the tack-strip, the presser, and the heading-tool, all substantially as described.

10. In a machine for heading tack-strips, the combination of the feedway D, the jaws E E', the presser having the groove c^5, and the tools $b^3\ b^4\ b^5$, or either of them, all substantially as described.

11. In a machine for heading tack-strips, the tack-strip-clamping device having fingers or projections to shut or close under the head-connecting portion of the tack-strip and support the same during the head-forming operation, all substantially as described.

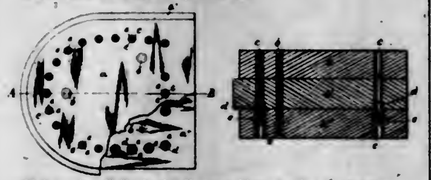
12. The process of making headed tack-strips, consisting of first forming from a metal plate a tack-strip having a head-connecting portion of uniform width and height; second, in displacing the upper portion of said head-connecting strip to form head-forming sections of the strip; third, in forming heads from said head-forming sections, either by first splitting the same and then heading or by upsetting alone, all substantially as and for the purposes described.

13. In a machine for heading tack-strips, the combination of a feedway, an intermittent feed, a tack-strip-holding device, and a reciprocating hammer or header.

14. In a machine for heading tack-strips, the combination of the feedway, an intermittent feeding device, and a tack-strip-clamping device having a bed or anvil on which the head-forming section of the strip is headed, all substantially as and for the purposes described.

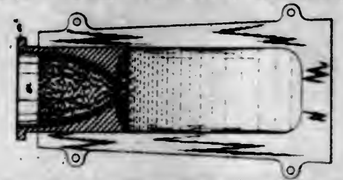
15. In a machine for heading tack-strips, the combination of a support for holding the tack-strip by its head-connecting portion and a clamping device adapted to be closed upon the head-connecting portion of the tack-strip, and which are adapted to automatically operate upon successive sections of the tack-strip in holding and clamping the same, with a reciprocating header, all substantially as and for the purposes described.

385,748. HEEL-NAILING MACHINE. EDWARD CROCKER and CHARLES W. SUMNER, Brockton, and CHARLES D. HASE, Whitman, Mass., administrators de bonis non of the estate of Edward Morrill, assignors to the American Heeling Machine Company, of Maine. Filed May 21, 1888. Serial No. 274,532. (No model.)



Claim.—A nail-die for heeling-machines, having perforations c c, and having the self-centering device consisting of the expansion metal prongs *c* or its equivalent arranged in connection with the perforations c c, as and for the purpose set forth.

385,749. PROCESS OF CASTING INGOTS. CYRUS C. CURRIER, Newark, N. J. Filed Jan. 14, 1888. Serial No. 260,717. (No model.)



Claim.—1. The process of casting steel ingots, which consists in arranging a heated feeder loosely in the mouth of a mold, pouring melted steel into and through said feeder into the mold, and continuing the pouring until the steel lifts the said feeder to a point which is determined by the quantity of metal in the crucible or ladle.

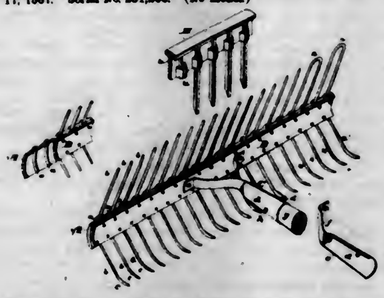
2. The process of casting steel ingots, which consists in pouring melted steel into and through a floating feeder into an ingot-mold.

3. The process of casting ingots, which consists in pouring molten metal through a floating feeder into an ingot-mold, continuing the pouring of said metal into and through said feeder until the same is caused to rise within the ingot-mold, retarding or stopping the upward movement of said feeder when the quantity of metal remaining in the reservoir of said feeder and the crucible is sufficient to fill up the spaces made by the shrinkage of the metal within the ingot-mold

385,750. ART OF TREATING CLAY. SAMUEL FRIEDE, Decatur, Ill., assignor of three-fourths to John K. Warren, Bradford K. Durfee, and Daniel H. Hedman, same place. Filed May 25, 1887. Serial No. 239,331. (No specimens.)

Claim.—The method of treating clay, consisting of pulverizing, heating intensely, and subjecting while hot to cold water applied directly and practically simultaneously to all the particles, as and for the purpose set forth.

385,751. LAWN-RAKE. LEWIS GIBBS, Canton, Ohio. Filed Mar. 17, 1887. Serial No. 231,286. (No model.)



Claim.—1. A rake-head formed of two metal plates concavo-convex in cross-section, the concave face of one piece having a series of grooves to receive the teeth, the convex back of the other piece adapted to rest against said teeth, and means for securing said plates in position to secure the teeth in the grooves, substantially as described, and for the purpose set forth.

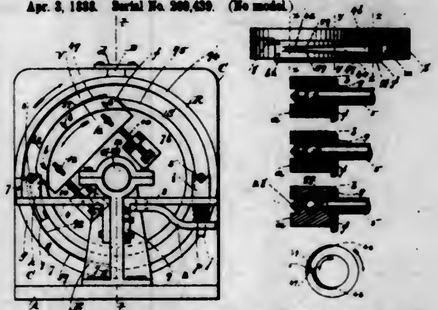
2. In a lawn-rake, the combination, with a rake-head, of a series of teeth sharp at both ends and inclined transversely from both sides of the head and adapted to form a rake or a hood upon both sides of the rake-head, substantially as shown and described, and for the purpose set forth.

3. In a lawn-rake, the combination, with a rake-head formed of two metal plates concavo-convex in cross-section, of a series of U-shaped teeth extending between the said concavo-convex head-sections, the prongs of said teeth extending on opposite sides of the head, being inclined transversely, and means for securing the head-sections together, and thereby securing the teeth in position, substantially as set forth.

4. A rake-handle socket formed of two duplicate parts made of thin plates of metal, each part having a tapered semicircular socket portion terminating in a shank diverging from the axial line of the socket, the free end of which is adapted for a rivet or bolt connection with the rake-head, and a through-bolt by which the socket portions may be clasped about the conical end of the handle, substantially as shown and described.

5. A rake-handle socket made in two parts, as shown, preferably of cast malleable iron, each part having a tapered socket portion semicircular in cross-section, terminating in a diverging shank, the free end of which is adapted for connection with the head, a rib extending from a point near the outer end of the socket to a point near the free end of the shank, and a through-bolt by which the socket portions may be clasped about the conical end of the handle, substantially as shown and described.

385,752. MACHINE FOR MAKING ROLLED FORGINGS. CHARLES R. GOULD, Leominster, Mass., assignor of five-sixths to Frank H. Cook, William S. Reed, and Charles R. Dresser, all of same place, George D. Burton, New Ipswich, N. H., and George W. Weeks, Clinton, Mass. Filed Apr. 3, 1888. Serial No. 269,639. (No model.)



Claim.—1. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, and means for causing one of the dies to move longitudinally past the other through the arc of a circle, their working-faces being adjacent as they pass, substantially as set forth.

2. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, and means for causing them to move longitudinally and simultaneously past each other in opposite directions through arcs of different circles, respectively, their working-faces being adjacent as they pass, substantially as described.

3. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, means for causing one of said dies to move longitudinally past the other through the arc of a circle, and a rest for the bar or ingot, the working-faces of the dies being adjacent as they pass, substantially as set forth.

4. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, means for causing the dies to move longitudinally and simultaneously past each other in opposite directions through arcs of different circles, respectively, and a rest for the rod or ingot, the working-faces of the dies being adjacent as they pass, substantially as described.

5. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides, and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, and means for rotating said disks simultaneously in opposite directions to carry the dies longitudinally past each other, said dies standing at right angles to the axis of the rotating disk, and being so arranged that their working-faces will be adjacent as they pass, substantially as set forth.

6. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, and means for rotating said disks simultaneously in opposite directions to carry the dies longitudinally past each other, said dies standing at right angles to the axis of the rotating disk, and being so arranged that their working-faces will be adjacent as they pass, substantially as described.

7. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, means for causing one of the dies to move longitudinally past the other through the arc of a circle, their working-faces being adjacent as they pass, and means for rotating the rod or ingot, substantially as set forth.

8. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, means for causing them to move longitudinally and simultaneously past each other in opposite directions through arcs of different circles respectively, their working-faces being adjacent as they pass, and means for rotating the rod or ingot, substantially as described.

9. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, means for causing one of said dies to move longitudinally past the other through the arc of a circle, the working-faces of the dies being adjacent as they pass, a rest for the rod or ingot, and means for rotating the rod or ingot, substantially as set forth.

10. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a die having a working-face which is convex in longitudinal section, a companion die having a working-face which is concave in longitudinal section, means for supporting said dies, means for causing the dies to move longitudinally and simultaneously past each other in opposite directions through arcs of different circles respectively, the working-faces of the dies being adjacent as they pass, a rest for the rod or ingot, and means for rotating the rod or ingot, substantially as described.

11. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides, and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, means for rotating one of said disks and carrying its die longitudinally past the companion die, said dies standing at right angles to the axis of the rotating disk and being so arranged that their working-faces will be adjacent as they pass, and a rest for the rod or ingot, substantially as set forth.

12. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, means for rotating one of said disks and carrying its die longitudinally past the companion die, said dies standing at right angles to the axis of the rotating disk and being so arranged that their working-faces will be adjacent as they pass, a rest for the rod or ingot, and means for rotating the rod or ingot, substantially as described.

13. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, means for rotating said disks simultaneously in opposite directions to carry the dies longitudinally past each other, said dies standing at right angles to the axis of the rotating disk and being so arranged that their working-faces will be adjacent as they pass, and a rest for the rod or ingot, substantially as set forth.

14. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, means for rotating said disks simultaneously in opposite directions to carry the dies longitudinally past each other, said dies standing at right angles to the axis of the rotating disk and being so arranged that their working-faces will be adjacent as they pass, and means for rotating the rod or ingot, substantially as described.

15. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, means for rotating said disks simultaneously in opposite directions to carry the dies longitudinally past each other, said dies standing at right angles to the axis of the rotating disk and being so arranged that their working-faces will be adjacent as they pass, and two rests for the rod or ingot, one of which rests is adapted to yield, substantially as set forth.

16. In a machine for making rolled forgings, the combination of the following instrumentalities, to wit: a disk having a chamber opening outward through one of its sides and provided within said chamber with an inwardly-facing die having a working-face which is concave in longitudinal section, a disk disposed within said chamber and provided with an outwardly-facing die having a working-face which is convex in longitudinal section, means for rotating said disks simultaneously in opposite directions to carry the dies longitudinally past each other, said dies standing at right angles to the axis of the rotating disk and being so arranged that their working-faces will be adjacent as they pass, means for rotating the rod or ingot, and two rests for the rod or ingot, one of which rests is adapted to yield, substantially as described.

17. In a machine for making rolled forgings, the chambered disk R, provided with a concave die, as *b*, and mounted on the sleeve P, the disk S, mounted on the shaft G, within said chamber, and provided with a convex die, as *a*, and means for actuating said sleeve and shaft to rotate said disks in opposite directions, substantially as set forth.

18. In a machine for making rolled forgings, the chambered disk R, provided with a concave die, as *b*, and mounted on the sleeve P, the disk S, mounted on the shaft G, within said chamber, and provided with a convex die, as *a*, means for actuating said sleeve and shaft to rotate said disks in opposite directions, and means for rotating the rod or ingot, substantially as described.

19. In a machine for making rolled forgings, the chambered disk R, provided with a concave die, as *b*, and mounted on the sleeve P, the disk S, mounted on the shaft G, within said chamber, and provided with a convex die, as *a*, means for actuating said sleeve and shaft to rotate said disks in opposite directions, means for rotating the rod or ingot, and a rest for the rod or ingot, substantially as set forth.

20. In a machine for making rolled forgings, the chambered disk R, provided with a concave die, as *b*, and mounted on the sleeve P, the disk S, mounted on the shaft G, within said chamber, and provided with a convex die, as *a*, means for actuating said sleeve and shaft to rotate said disks in opposite directions, means for rotating the rod or ingot, and two rests for the rod or ingot, one of said rests being adapted to yield, substantially as described.

21. In a machine for making rolled forgings, the chambered disk R, provided with a concave die, as *b*, and mounted on the sleeve P, the disk S, mounted on the shaft G, within said chamber, and provided with a convex die, as *a*, means for actuating said sleeve and shaft to rotate said disks in opposite directions, and means for adjusting the die on said disk S, substantially as set forth.

22. In a machine for making rolled forgings, a die, as *c*, having a working-face which is convex in longitudinal section and provided on said face with a longitudinally-arranged groove, as 44, said groove being wider and deeper at one end than at the other, substantially as described.

23. In a machine for making rolled forgings, a die, as *c*, having a working-face which is convex in longitudinal section, said die being provided on said face with a longitudinally-arranged groove which is wider and deeper at one end than at the other, as 44, and with cutting flanges or bosses at the sides of said groove, as 59, the flanges being higher at the wide end of the groove than at their opposite ends, substantially as set forth.

24. In a machine for making rolled forgings, a die, as *b*, having a working-face which is concave in longitudinal section, and provided on said face with a longitudinally-arranged groove, as 44, said groove being wider and deeper at one end than at the other, substantially as described.

25. In a machine for making rolled forgings, a die, as *b*, having a working-face which is concave in longitudinal section, said die being provided on said face with a longitudinally-arranged groove which is wider and deeper at one end than at the other, as 44, and with cutting flanges or bosses at the sides of said groove, as 59, the flanges being higher at the wide end of the groove than at their opposite ends, substantially as described.

26. In a machine for making rolled forgings, the die *a*, having a working-face which is convex in longitudinal section, and provided with the groove 44 and cutting-bosses 59, the die *b*, having a working-face which is concave in longitudinal section and provided with the groove 44 and cutting-bosses 59, and supporting and actuating mechanism for said dies, whereby one may be moved over or past the other longitudinally through the arc of a circle, their working-faces being adjacent as they pass, and their ends 42, respectively, in advance as they approach each other to pass, substantially as set forth.

27. In a machine for making rolled forgings, the block V, provided with a die on its curved edge, in combination with the disk S, mounted on the shaft G, and screws for adjusting and securing said block on said disk, substantially as described.

28. In a machine for making rolled forgings, the disk R, mounted on the sleeve P, and provided with a concave die, as *b*, means for adjustably securing said disk on said sleeve, the disk S, mounted on the shaft G and provided with a convex die, as *a*, means for adjustably securing said disk on said shaft, and actuating mechanism for the sleeve and shaft, whereby the disks may be revolved in opposite directions, substantially as set forth.

29. In a machine for making rolled forgings, a stop, as 8, in combination with the disk R, provided with a concave die, as *b*, and disk S, provided with a convex die, as *a*, substantially as and for the purpose set forth.

30. In a machine for making rolled forgings, the ingot-rest A, in combination with the die-carrying disks S R and actuating mechanism therefor, said rest being arranged substantially as described.

31. In a machine for making rolled forgings, the yielding rest *i*, in combination with the die-carrying disks S R and actuating mechanism therefor, said rest being arranged substantially as described.

32. In a machine for making rolled forgings, the rest A and yielding rest *i*, in combination with the die-carrying disks S R and actuating mechanism therefor, said rests being arranged at opposite sides of the axis of the disk S, substantially as described.

33. In a machine for making rolled forgings, the plate *f*, having a curved serrated edge, 62, in combination with the disk S, carrying a die, as *a*, substantially as set forth.

34. In a machine for making rolled forgings, the plate *f*, having a curved serrated edge, 62, and secured to the adjustable block V, in combination with the disk S, carrying a die, as *a*, substantially as described.

35. In a machine for making rolled forgings, the plate *g*, secured to the disk R, and provided with a curved serrated edge, 92, substantially as set forth.

36. In a machine for making rolled forgings, the disk S, provided with the plate *f*, having the curved serrated edge 62, in combination with the disk R, provided with the plate *g*, having the curved serrated edge 92, said plates being arranged substantially as described.

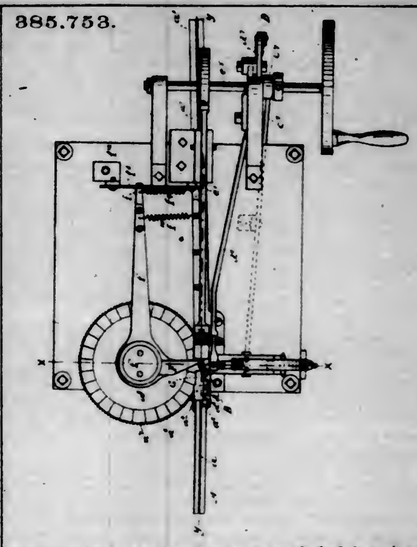
37. In a machine for making rolled forgings, the journaled shaft G, provided with the gear M and disk S, the sleeve P, disposed on said shaft and provided with the gear O and disk R, the journaled pinion N, intermeshing with the gear O, the journaled gear K, provided with the pinion L, said pinion intermeshing with the gear M and pinion N, the pulley H, provided with the pinion J, and loosely mounted on the shaft G, said pinion intermeshing with the gear K, the journals a *k*, and suitable supports for said journals and shaft, combined and arranged to operate substantially as set forth.

385,753. MACHINE FOR HEADING TACK-STRIPS. EDWARD F. GRANDY, Boston, and GEORGE W. COPELAND, Malden, Mass., assignors to the Mutual Lasting Machine Company, Portland, Me. Filed June 26, 1884. Serial No. 136,049. (No model.)

Claim.—1. In a machine for heading tack-strips, the combination of the feedway with the four-motion feed-finger B, whereby it is adapted to engage successively with the head-forming portions of the tack-strip and move it to the heading device, all substantially as and the purposes described.

2. The combination of a feedway, the finger F, the hammer E, and intermediate connecting mechanism, substantially as specified, all substantially as and for the purposes described.

3. In a machine for forming heads in succession upon tack and other strips, the finger F, arranged to project over the feedway of the



385,753.

machine and to be moved by the advance or feed of the tack-strip, in combination with the header or hammer, whereby the header or hammer is caused to operate when a head-forming section is in position to be headed, all substantially as and for the purposes described.

4. In a tack-strip-heading machine, the combination of the feedway, a support upon which the tack-strip is headed, and a clamping device for holding the tack-strip rigidly in a perpendicular position, the feed-finger B, and the hammer or header operating or tripping finger F, arranged in relation to each other as set forth, and adapted to operate in feeding the tack-strip, holding and clamping the same during the heading operation, and to cause the automatic movement of the heading device, all substantially as and for the purposes specified.

5. The combination, in a tack-strip-heading machine, of the hammer or header E, its arm e', pivoted at e^3, as described, the lifting-cam e^4, and the drawing-spring e^5, attached to the lever or arm e' between the fulcrum-point and the hammer, all substantially as and for the purposes described.

6. The combination, in a machine for heading tack-strips, of a clamp and support for the tack-strip, the header E, the lifting-cam e^4, the spring e^5, and the latch f^4, all substantially as and for the purposes described.

7. The combination of the finger F, the hammer E, reciprocated substantially as described, the latch f^4, and connecting devices, all substantially as and for the purposes described.

8. In a tack-strip-heading machine, the combination of a disk, having arms or supports for holding or supporting the head-connecting portion of a tack-strip and notches for receiving the shanks thereof, with a reciprocating jaw, C, adapted to be moved against the head-connecting portion of the tack-strip and to clamp the same against the side of the disk, all substantially as and for the purposes described.

9. The combination of the feed-way, one or more of the rolls a^3 a^4 a^4, the disk a^2, adapted to be revolved by the tack-strip, and the jaw C, all substantially as and for the purposes described.

10. The combination of the feedway of the machine, the roll a^3, notched disk a^2, and the jaw C, all substantially as and for the purposes described.

11. The combination of the feedway of the machine and one or more spacing and supporting rolls, a^3 a^4 a^4, substantially as and for the purposes described.

12. The combination of the feedway of the machine with the tack-strip support and the covering-plates G G, or either, all substantially as and for the purposes described.

13. As an anvil or support for the portion of the tack-strip submitted to the heading operation, the arms or fingers projecting from a movable section, a^3, and adapted to support the tack-strip and to form a rest for the head-connecting portion of the tack-strip, and spaces arranged between said arms or projections for the reception of the shank of the tack-strip, with a jaw, C, adapted to be moved against the tack-strip when so supported and to hold it firmly in position upon said fingers or rests, and in connection therewith and their support to form an anvil or bed upon which the tack is headed, all substantially as and for the purposes described.

14. The feed-finger B, arranged in relation to the feedway as specified, and provided with means, substantially as set forth, whereby it is brought in successive contact with the head-forming sections of the strip, and then moved forward to feed the same, all substantially as and for the purposes described.

15. The combination of the feedway of the machine, the supporting roll or rolls a^3 a^4 a^4, and the feed-finger B, all substantially as and for the purposes described.

16. The combination of the jaw C and the toggles c' c^3 c^4, all substantially as and for the purposes described.

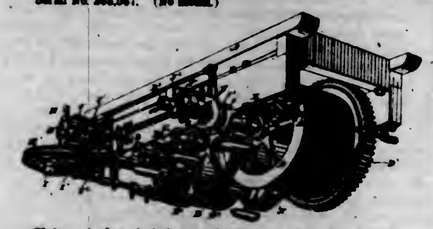
17. The combination of the finger B, its supporting-arm D, spring d^3, and the reciprocating connecting-rod d^4, all substantially as and for the purposes described.

18. The feedway bent beyond the bed or anvil in a direction to straighten the tack-strip after it has been submitted to the heading operation, all substantially as and for the purposes described.

19. In a tack-strip-heading machine, the combination of a support for the tack-strip, consisting of a disk having peripheral teeth to engage the shanks of the strip, a clamping-jaw, and a header.

20. In a nail-strip-heading machine, the bent guideway provided with a covering-plate to retain the strip in place.

385,754. SLACK-CABLE STOP. FRED R. GRAVES, Rochester, N. Y., assignor to L. S. Graves & Son, same place. Filed Mar. 26, 1888. Serial No. 268,567. (No model.)



Claim.—1. In a hoisting-machine, the combination of the starting and stopping mechanism, the winding-drum, the shaft for the same, having the portion extending beyond the bearing, the vibrating frame hung loosely thereon, having the clutch-teeth on one side and connected to the starting and stopping mechanism, the movable clutch-section mounted upon the drum-shaft, the bell-crank lever connected with said clutch-section, the shaft arranged parallel with the drum, the frame mounted on said shaft and held close to the drum, and the connecting-link between the frame-shaft and bell-crank, substantially as described.

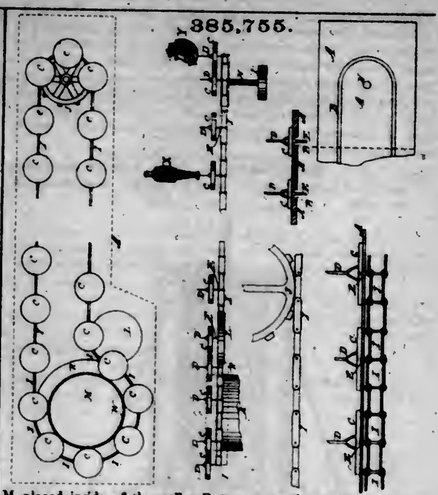
2. The combination of the starting and stopping mechanism, the winding-drum, the shaft for the same, having the threaded portion and extending beyond the bearing, the vibrating frame having a longitudinal slot and clutch-teeth hung loosely on said shaft, the stops secured on the shaft, the movable nut mounted on the threaded portion, arranged to travel between the stops and having a projection entering the slot in the vibrating frame, connections between the frame and the starting and stopping mechanism, a movable clutch-section on the drum-shaft, the bell-crank connected thereto, the shaft extending parallel with the drum, the frame mounted thereon, extending close to the periphery of the drum, and a connecting-rod between the bell-crank and the shaft, whereby a movement imparted to the end of the frame will throw the clutch into engagement, substantially as described.

3. The combination of the starting and stopping mechanism, the winding-drum, the shaft for the same, having the portion extending beyond the bearing, the vibrating frame hung loosely thereon, having the clutch-teeth on one side and connected to the starting and stopping mechanism, the movable clutch-section mounted on the drum-shaft, the bell-crank lever connecting with said clutch-section, the shaft arranged parallel with the drum, having the short arm, the rod connected to said arm and to the bell-crank, having the nut thereon, the projection from the frame and the spring interposed between the projection and nut, and the frame attached to said last-mentioned shaft and projecting in close proximity to the drum-surface, substantially as described.

385,755. TRAVELING DISPLAY-STAND. HERMON B. HAYNES, Chicago, Ill. Filed Nov. 22, 1887. Serial No. 255,841. (No model.)

Claim.—1. In traveling display-stands, the platform A, provided with the endless slot B, in combination with the endless chain I, sprocket-wheel J, and pulley R, and stands D, connected with the chain I by the pivots E, and the bases C, which slide on the platform A and hold the stands D upright, as specified.

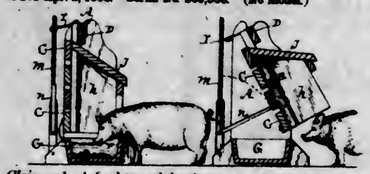
2. The combination of the platform A, provided with the endless slot B, and the circular bases C, bearing on the platform and supporting the stands and connected with the chain I by the pivots E, the sprocket-wheel J, and the loose pulley R, with the stationary drum



385,755.

M, placed inside of the pulley R, to engage the peripheries of the bases C and rotate them as they are carried around the pulley R, as and for the purpose specified.

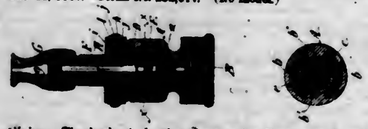
385,756. FEED-TROUGH. COLEMAN HOLLINGSWORTH, Wirt, Iowa. Filed Apr. 2, 1888. Serial No. 269,333. (No model.)



Claim.—1. A feed-trough having posts at its ends, a gate or panel having fixed partitions projecting at right angles, and a roof fixed on top of the partitions, a prop pivoted to the base of the trough and carrying a minor prop, and a fastening device fixed to the top of the panel to engage the top end of the pivoted post, arranged and combined to be adjusted in the manner set forth, for the purposes stated.

2. The gate or panel B C, having journals *f*, the trough G, the partitions *h*, and roof J, fixed to the panel, the props *m* and *n*, and the fastening device *r*, and fixed posts at the ends of the panel, constructed and combined substantially as shown and described, for the purposes stated.

385,757. HOPE-HOECLE. JOHN H. JOHNSON, Chicago, Ill. Filed Oct. 11, 1887. Serial No. 252,017. (No model.)



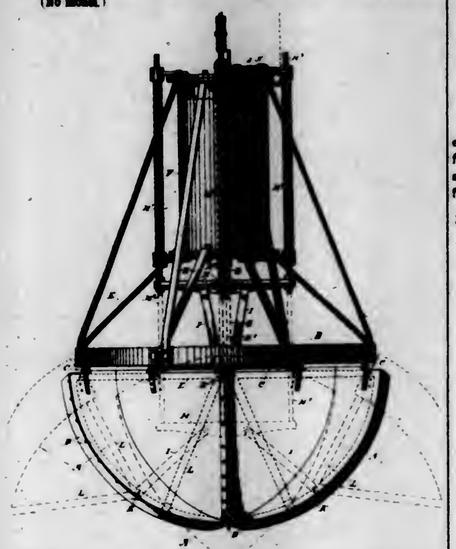
Claim.—The body A, having the opening B, passage C, and chamber D, provided with the passages *b* and cut-off walls *b'*, in combination with the cut-off or valve E, having the ports *c*, and chamber *d*, for supplying the water for a solid stream or a spray, substantially as specified.

385,758. METHOD OF FILING PAPERS. JOSEPH M. JUNKIN, Red Oak Junction, Iowa. Filed Oct. 3, 1887. Serial No. 251,382. (Model.)



Claim.—The method of filing a set of papers in an orderly sequence, which consists in providing them with a protective cover having across one end a series of parallel flexible tongues folded down upon the cover and attaching the tongues to the papers in pairs, one pair for each paper or sheet, the two tongues composing each pair being located, respectively, near the two longitudinal edges of the paper to which they are attached, substantially as described, and for the purpose set forth.

385,759. DREDGING-MACHINE. SAMUEL H. KNIGHT, Sutter Creek, and ISAAC P. LARNED, Ione, Cal. Filed Nov. 26, 1887. Serial No. 256,163. (No model.)



Claim.—1. The spherical sections having their bases hinged to a circular ring and their points presented downward, so as to close about the hinges and form a hollow hemispherical bucket, in combination with a pressure-cylinder supported vertically above the center of the ring by brace-rods therefrom, a piston and piston-rod operating within said cylinder, and links or rods connecting said piston with the bucket-sections, so that they may be opened and closed by the movement of the piston, substantially as herein described.

2. The circle or ring having the spherical segmental bucket-sections hinged to it, the central vertical cylinder supported above the ring by brace-rods therefrom, the piston-rod actuated by the piston within the cylinder and having a yoke at its lower end, and guides therefor, in combination with the hinged links or connecting-rods I, connecting said yoke with the bucket-sections, substantially as herein described.

3. The spherical segmental bucket-sections hinged to the ring or circle, the cylinder supported vertically above the center of said ring or circle and having the piston and piston-rod, in combination with the jointed links or rods connecting said piston-rod with the bucket-sections, and brace-rods L, extending from the upper part of the bucket to the joints K of the links, substantially as herein described.

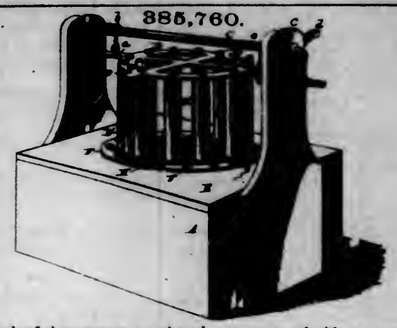
385,760. ELECTRIC BATTERY. WILLIAM P. KOOKOGEY, Brooklyn, N. Y., assignor to the Kookogey Electric Company. Filed June 7, 1887. Renewed June 9, 1888. Serial No. 276,570. (No model.)

Claim.—1. The herein-described battery, consisting of the box or receptacle A, uprights B, grooved on the inner faces, top or cover E, provided with segments F, connected one with another and carrying a carbon element, shaft C, mounted in the standards B, frame D, carrying the zinc element and provided with arms *a c*, and bands extending from the arms *a* to the shaft C and passing about the same, substantially as and for the purpose set forth.

2. In combination with the box or receptacle A, the carbon element *g*, a carrying-plate, F, therefor, composed of segments separated at their ends one from the other, but electrically connected, and frame or plate D, carrying the zinc element D', provided with arms to enter the spaces between the ends of the segments of plate F, substantially as and for the purpose set forth.

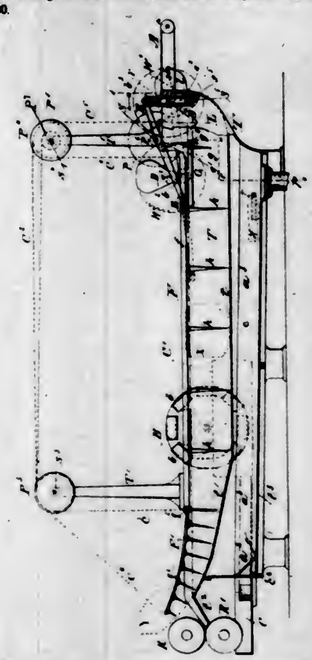
3. In combination with box A, cover E, the latter provided with segments F and connecting-pieces G, insulating-blocks between the

385,760.



ends of the segments, a carbon element connected with segments F, frame or plate D, carrying a zinc element and provided with arms *a* and *c*, to enter the spaces between the segments, substantially as set forth.

385,761. MACHINERY FOR SCOURING AND WASHING WOOL. JOHN MCNAUGHT and WILLIAM MCNAUGHT, Jr., Rochdale, County of Lancaster, England. Filed July 27, 1883. Serial No. 102,105. (No model.) Patented in England Oct. 3, 1881, No. 4,372, and Mar. 1, 1882, No. 963; in France Aug. 8, 1882, No. 150,598, and in Belgium Aug. 9, 1882, No. 58,730.



Claim.—1. In a wool-washing machine, the combination, substantially as described, with the washing-trough having the upper edge of its delivery end below the like edge of its feed end and side walls, of a delivery rake or harrow moving outwardly and upwardly along said delivery end of the trough and partly beyond the upper edge thereof, and inwardly, with the point of its teeth in a plane above said upper edge, for the purpose specified.

2. In a wool-washing machine, the combination, substantially as described, with the washing-trough having the upper edge of its delivery end below the like edge of its feed end and side walls, and squeeze-rolls located outside of and below the upper edge of said delivery end, of a delivery rake or harrow moving outwardly and upwardly along said delivery end of the trough and partly beyond the upper edge thereof, and inwardly, with the point of its teeth in a plane above said upper edge, for the purpose specified.

3. In a wool-washing machine, the combination, substantially as

described, with the washing-trough having the upper edge of its delivery end below the like edge of its feed end and side walls, of a delivery rake or harrow moving outwardly and upwardly along said delivery end of the trough and partly beyond the upper edge thereof, and inwardly, with the point of its teeth in a plane above said upper edge, and a propelling rake or harrow pivotally connected with and imparting motion to said delivery rake or harrow.

4. In a wool-washing machine, the combination, with the washing-trough, a toothed propelling-harrow, and an immerser rigidly connected with the propelling-harrow and partaking of the movements thereof, of a delivery-harrow pivotally connected with the propelling-harrow and operated by and receiving its forward and backward movements directly from said propelling-harrow, as described.

5. In a wool-washing machine, the combination, with the propelling-harrow, of an immersing-grid connected therewith and provided with the end wall, g^5, substantially as and for the purpose specified.

6. In a wool-washing machine, the combination, with the propelling-harrow, of an immersing toothed grid connected therewith and provided with an end wall, g^5, substantially as and for the purpose specified.

7. In a wool-washing machine, the combination, with the washing-trough and its perforated false bottom arranged to form a sediment-chamber below said false bottom, and passages or ducts in communication with said chamber, of injectors for injecting steam into said passages to induce a circulation of the liquid within said sediment-chamber.

8. In a wool-washing machine, the combination, with the washing-trough and a suspended harrow, of a counter-balance connected with said harrow for holding the same in suspension in the trough.

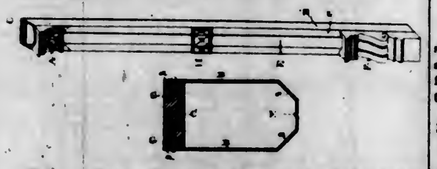
9. In a wool-washing machine, the combination, substantially as described, with the washing-trough and a harrow having its points of suspension above said trough, of a weighted lever connected with the suspensory devices of the harrow and operating to hold said harrow in suspension within or above the trough, for the purpose specified.

10. In a wool-washing machine, the combination, with the washing-trough and a harrow composed of a plurality of sections articulated together and having their points of suspension above said trough, of a weighted lever connected with the suspensory devices of the harrow and operating to hold said harrow in suspension within or above the trough.

11. The combination, with the washing-trough and the toothed frame or harrow, of mechanism for actuating the latter, consisting of the driving-shaft S, the shafts S' S^2, gearing for transmitting rotation of shaft S to said shafts S' S^2, the rock-shaft S^3, carrying slotted arms s^4 s^5, a crank-arm carried by shaft S' and provided with a bearing-block operating within the slot of arm s^4, a rod connected with the toothed frame or harrow and with the arm s^5, a lever pivoted to the trough and operated upon by a cam mounted on shaft S^3, and flexible connections between said lever and the harrow, said parts being constructed and arranged for co-operation as described, for the purpose specified.

12. The combination, with the washing-trough and the toothed frame or harrow, of mechanism for actuating the latter, consisting of the driving-shaft S, the shafts S' S^2, gearing for transmitting rotation of shaft S to said shafts S' S^2, the rock-shaft S^3, carrying slotted arms s^4 s^5, a crank-arm carried by shaft S' and provided with a bearing-block operating within the slot of arm s^4, a rod connected with the toothed frame or harrow and with the arm s^5, a lever pivoted to the trough and provided with a counterbalancing-weight, *l*, said lever being operated upon by a cam mounted on shaft S^3, and flexible connections between said lever and the harrow, said parts being constructed and arranged for co-operation as described, for the purpose specified.

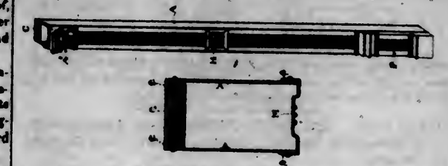
385,762. PLATE-METAL COLUMN. FRANK MERKER and HENRY F. EDWARDS, St. Louis, Mo. Filed Jan. 28, 1888. Serial No. 262,269. (No model.)



Claim.—1. The combination of the metallic sheet shaped to form the front and sides of the column with the wooden filling-piece and the angle-irons at the back of the column, substantially as described.

2. The combination of the metallic sheet shaped to form the front and sides of the column with the wooden filling-piece at the back of the column, substantially as described.

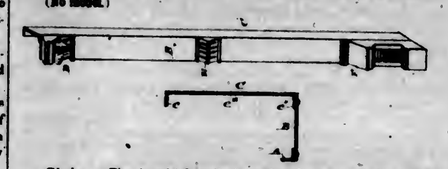
385,763. PLATE-METAL COLUMN. FRANK MERKER and HENRY F. EDWARDS, St. Louis, Mo. Filed Jan. 28, 1888. Serial No. 262,270. (No model.)



Claim.—1. The combination of the face having the described flanges formed in one piece therewith, the cheeks, the angle-irons, and the filling-piece, said face-flanges lapping upon the outer face of the cheeks, respectively, substantially as described.

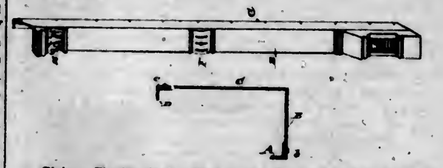
2. The combination of the face having the described flanges formed in one piece therewith, the cheeks, and the filling-piece, said face-flanges lapping upon the outer face of the cheeks, respectively, substantially as described.

385,764. PLATE-METAL COLUMN. FRANK MERKER and HENRY F. EDWARDS, St. Louis, Mo. Filed Jan. 28, 1888. Serial No. 262,271. (No model.)



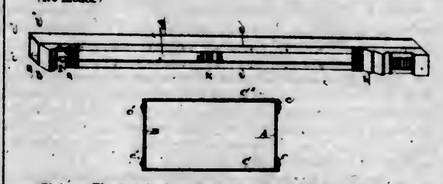
Claim.—The herein-described angle-column, consisting of the angle-iron, the face, and the cheek having a flange at each side edge, combined substantially as described.

385,765. PLATE-METAL COLUMN. FRANK MERKER and HENRY F. EDWARDS, St. Louis, Mo. Filed Jan. 28, 1888. Serial No. 262,272. (No model.)



Claim.—The herein-described angle-column, consisting of a sheet shaped to form the face and cheek of the column, and angle-irons attached, respectively, to the edges of the face and cheek, as described.

385,766. PLATE-METAL COLUMN. FRANK MERKER and HENRY F. EDWARDS, St. Louis, Mo. Filed Jan. 28, 1888. Serial No. 262,273. (No model.)



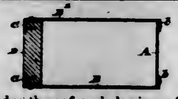
Claim.—The herein-described sheet-metal column, the same consisting of the face, the back, and the two cheeks, said cheeks being similarly provided with flanges, which lap upon the outer side of said face and back plates, respectively, at the front and the rear edge of the cheek, and the parts being combined substantially as described.

385,767. PLATE-METAL COLUMN. FRANK MERKER and HENRY F. EDWARDS, St. Louis, Mo. Filed Jan. 28, 1888. Serial No. 262,274. (No model.)

Claim.—The herein-described column, the same consisting of the face, the two cheeks, the two angle-irons, and the filling-piece, said

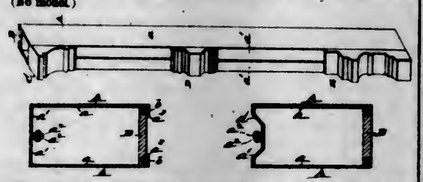


385,767.



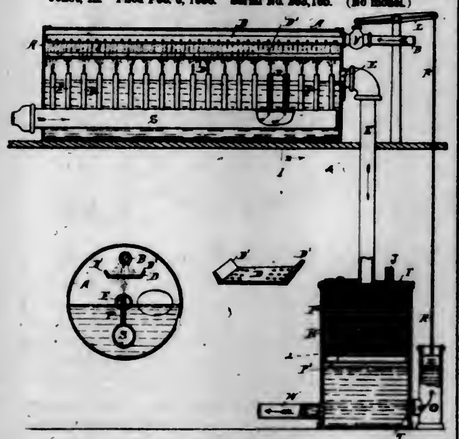
cheeks at the front edge thereof each having a flange riveted to the face, and said angle-irons being secured to the cheeks at the rear edge thereof and also to said filling-piece.

385,768. PLATE-METAL COLUMN. FRANK MERKER and HENRY F. EDWARDS, St. Louis, Mo. Filed Feb. 17, 1888. Serial No. 264,265. (No model.)



Claim.—The combination of the plates A A and B, said plates A A, respectively, being extended to a side and half of the front of the column and being riveted together, as described, and said wooden plate B being fastened between the plates A A at the rear of the column, substantially as described.

385,769. FEED-WATER HEATER AND PURIFIER. JAMES MILLER, Joliet, Ill. Filed Feb. 6, 1883. Serial No. 263,165. (No model.)



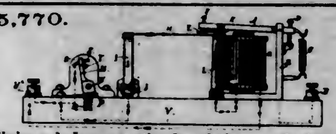
Claim.—1. In the feed-water heating and purifying apparatus described, the heater A, having arranged therein at or near its lower part a pipe connecting the exhaust of a steam-engine and a series of short vertical exhaust-pipes arranged in the upper part of said pipe, a plate arranged longitudinally above said vertical exhausts and perforated, as set forth, and a perforated cold-water-supply pipe arranged longitudinally above said plate in such manner as to discharge a water-spray upon said plate, whereby the steam exhausts against said plate, mingles with and heats the water, said condenses, in the manner substantially as and for the purpose specified.

2. The feed-water heater and purifier described, consisting of a horizontal body, A, having arranged therein the steam-exhausts S P, perforated plate D above said exhausts, and perforated feed-pipe B above said plate, in combination with a filter arranged below said body and connected therewith by means of a pipe and having a deposit of wood shavings through which the water filters, a receiving-reservoir, and a discharge-pipe, substantially as and for the purpose specified.

3. In combination with the heater A, the inlet steam-pipe S, having the vertically-arranged exhaust-pipes P, the perforated plate D, having the sides D', the perforated cold-water-inlet pipe B, the filter H, connected with and below said heater by means of a pipe, F, and having a receptacle for filtering material and for holding filtered water, and the mechanism shown and described for automatically regulating the cold-water supply, substantially as and for the purpose set forth.

385,770. PROTECTOR FOR ELECTRICAL INSTRUMENTS. GEO. W. MIDDLE and WILLIAM MIDDLE, Philadelphia, Pa. Filed Mar. 1, 1887. Serial No. 229,208. (No model.)

385,770.

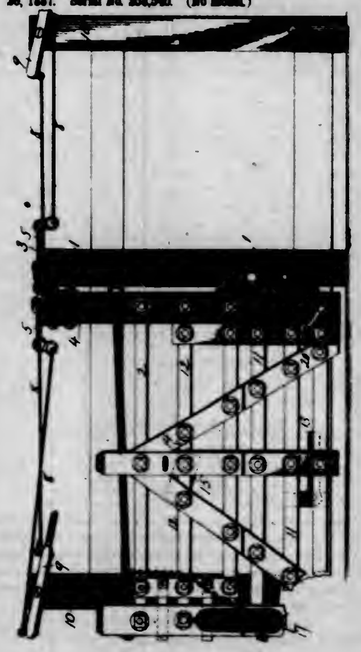


Claim.—1. In a protection for telephones and other electrical instruments, a ground-connection, in combination with an electro-magnet, its armature having a ground-connection and section of fusible wire with which said armature makes electrical contact when the attraction of the electro-magnet is abnormally increased by lightning or other electrical currents, said magnet and said wire being normally in the circuit, said electro-magnet being adapted to shunt itself from the circuit and evolve extra 1 2 current by actuating said ground-connection to make and break contact with said fusible wire, substantially as described, and for the purpose set forth.

2. In a protector for telephones and other electrical instruments, a lever or arm of dual function, said lever being actuated by a spring to a partly-rotative movement and being provided at its upper end with a binding-screw, which adapts it for electrical connection with aforesaid fusible wire, the primary function of said lever being to give tension to said fusible wire, said lever being in combination with fusible wire, insulated hook K, connecting-post L, electro-magnet, and ground-connected armature, said armature being suitably pivoted to a support and provided with a retractile spring and at its contact end with a spring-tongue vertically adjustable by means of a screw and making contact with the fusible wire, substantially as described and set forth.

3. In a protector for telephones and other electrical instruments, a safety-switch lever provided with lateral trunnions journaled in insulated bearings, said switch-lever being provided at its lower end with an angular formation and on one of its trunnions with an insulating-handle, for purposes set forth, said switch-lever being in combination with the electrodes or contact-points S and P and with the springs Q and R, said switch-lever being adapted to effect a secondary break in the circuit by being thrown from its contact with electrode S by impact of partly-rotating lever I in the discharge of its secondary function, the aforesaid elements being in combination with lever I, fusible wire, electro-magnet, and ground-connected armature, all the aforesaid elements being in combination and mounted on a base of wood or other insulating material, substantially as described, and for the purpose herein set forth.

385,771. GATE. MICHAEL NOLAN, Bloomington, Ill. Filed Dec. 20, 1887. Serial No. 258,540. (No model.)



Claim.—In a gate, the combination, with the plate 3, pivoted to post 1 and rigidly secured to the gate-post 4, arms 5 at right angles thereto, links secured to said arms, rods 8, connected with said links, levers pivoted to posts and connected with said rods for operating the gate, a hinged lower section, a gravity-pawl pivoted to said section, and a catch for locking the pawl and securing the section in elevated adjustment, and a hook, 19, and staple 20, for locking the section, substantially as shown and described.

385,772. METHOD OF HEMSTITCHING. CORNELIA H. OWEN, De Land, Fla. Filed Oct. 13, 1887. Serial No. 252,202. (No specimens.)



Claim.—The method of hemstitching herein described, which consists in first drawing out a greater or less number of threads from the fabric; secondly, folding the fabric on the line of the previously-drawn thread-space; thirdly, stitching through the said folded fabric close to the said fold-line, and, fourthly, opening the folded fabric, and thus drawing the stitches back over the fabric-threads, as set forth.

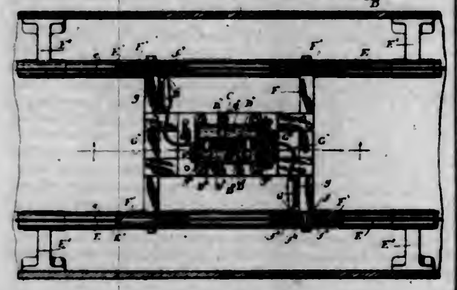
385,773. ATTACHMENT FOR PLOWS. MACDONALD PATE, Snow Hill, N. C. Filed Oct. 31, 1887. Serial No. 253,573. (No model.)



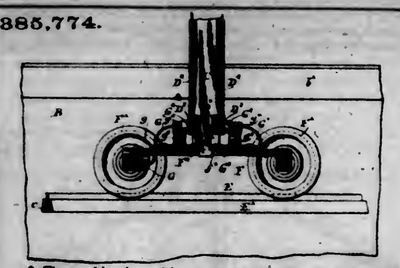
Claim.—An attachment for the landside of a plow, consisting of an elongated arm having a concaved outer face and a base to which said arm is secured, having an inclined front edge, said arm extending out at an acute angle from said base, substantially as described.

385,774. DEVICE FOR LIGHTING AND HEATING CARS BY ELECTRICITY. DE WITT C. ROGERS, Chicago, Ill., assignor of five-sixths to Charles T. Yerkes, same place. Filed Aug. 24, 1886. Serial No. 211,718. (No model.)

Claim.—1. The combination, with a car and slotted conduit, of two conducting-strips located within the said conduit, an arm or bar attached to the said car and extending into the conduit, insulated metallic wheels rolling upon the said conducting-strips within the conduit, a frame or axle detachably connected with the said bar and affording bearings for said wheels, insulated contact-surfaces upon the frame having electrical connection with the said wheels, contact-surfaces upon the said arm or bar and conductors leading from said contact-surfaces along the said arm or bar to the car, translating devices upon the car, and connections between the said translating devices and the conductors upon the arm or bar, substantially as described.



385,774.



2. The combination, with a car provided with a consumption-circuit including heating, lighting, or other translating devices, and a slotted conduit, of two conducting-strips located within the said conduit, an arm or bar attached to the said car and extending into the conduit, insulated wheels rolling upon the said conducting-strips within the conduit, a frame or axle having a vertically-yielding connection with the said bar and affording bearings for said wheels, insulated contact-surfaces upon the frame in electrical connection with the said wheels, contact-surfaces upon the said arm or bar, and conductors extending along the said arm or bar to the consumption-circuit on the car, substantially as described.

3. The combination, with a car provided with a consumption-circuit including heating, lighting, or similar translating devices, and a slotted conduit, of two metallic conducting-strips located within the conduit and arranged to form a continuous track, a frame or axle carrying insulated metallic contact-wheels traveling upon the track, spring-supported contact-surfaces upon the frame or axle, and an arm or bar adjustably secured to and extending downward from the car and provided with contact-surfaces adapted to engage the contact-surfaces upon the traveling contact and to be thereby detachably connected thereto, substantially as described.

4. The combination, with a car provided with a consumption-circuit including heating, lighting, or similar translating devices, and a slotted conduit, of two conducting-strips located within the conduit and arranged to form a continuous track, traveling contact devices comprising a supporting-frame and insulated grooved contact-wheels traveling upon the track, connections extending from the contact-wheels to contact-surfaces carried upon the frame, and an arm extending downward from the cars and provided with conductors extending upward into the car and with exposed contact-surfaces at its lower portion, the contact-surfaces of the arm being arranged to engage the contact-surfaces of the traveling contact device within the conduit and to propel the same while maintaining electrical connection between the cars and the conductors within the conduit, substantially as described.

385,775. CAR-DELIVERY DEVICE FOR SOLDERING-MACHINES. JOHN W. ROGERS, Cleveland, Ohio, assignor to Edwin Horton, Maywood, and Oliver W. Horton, Chicago, Ill. Filed Apr. 9, 1888. Serial No. 270,009. (No model.)



Claim.—1. The combination, in a soldering-machine, of the soldering-track along which the cans are rolled, a cooling-belt below the same, a delivery-tube, and a laterally-inclined curved track, said laterally-inclined track being twisted from the plane of said soldering-track to nearly vertical, substantially as specified.

2. The combination, with track B, of curved track H and delivery-tube G, substantially as specified.

3. The combination, with track B, of curved track H, having guard *h* and delivery-tube G, the curved portion of said track H extending around said tube, substantially as specified.

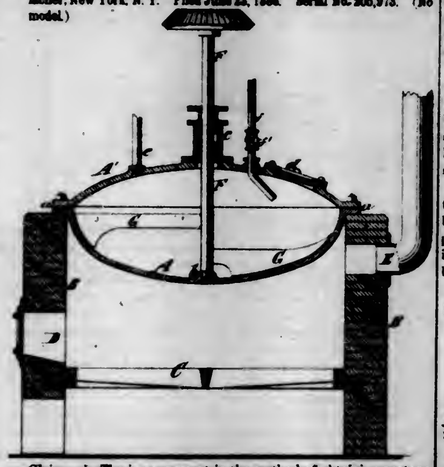
4. The combination, with twisted curved track H, of tube G, substantially as specified.

5. The combination, with laterally-inclined spiral track H, of tube G, substantially as specified.

385,776. MANUFACTURE OF PASTE FOR POLISHING AND PROTECTING METALS FROM RUST. SIGMUND ROSENFELD and JOHAN EHLERT, Gablonz, Bohemia, Austria-Hungary. Filed Aug. 1, 1887. Serial No. 245,861. (No specimens.)

Claim.—The herein-described composition of matter, consisting of tripoli, pulverized coaks, Vienna lime, refined petroleum, rape-oil, and mirbane or essence of nitro-benzole, in or about in the proportions specified.

385,777. MANUFACTURE OF ACETONE. GUSTAV REMPF, Frankfort-on-the-Main, Germany, assignor to Franz Rossler and Jacob Hasslacher, New York, N. Y. Filed June 22, 1886. Serial No. 205,973. (No model.)



Claim.—1. The improvement in the method of obtaining acetone from an acetate, consisting in subjecting the acetate in a closed vessel to slow destructive distillation at a low and approximately-uniform temperature, substantially as herein described.

2. The improvement in the method of obtaining acetone from an acetate, consisting in subjecting the acetate in a closed vessel to slow destructive distillation at a low and approximately-uniform temperature and stirring the same during such distillation, substantially as herein described.

3. The improvement in the method of obtaining acetone from an acetate by destructive distillation in a closed vessel, consisting in heating the vessel from the outside thereof and in subjecting the acetate to the action of steam in direct contact therewith during the distillation to prevent too high temperatures, substantially as herein described.

4. The improvement in the method of obtaining acetone from an acetate by destructive distillation in a closed vessel, consisting in heating the vessel from the outside thereof, in stirring the acetate, and in subjecting the acetate to steam in direct contact therewith to prevent too high temperatures and to maintain the temperature approximately uniform, substantially as herein described.

5. The improvement in the method of purifying acetone, consisting in treating the crude acetone in a state of dilution with lime to remove the higher ketones and other compounds, substantially as herein described.

6. The improvement in the method of purifying acetone, consisting in diluting the crude acetone with water to separate the oily matters, and treating with lime to remove the higher ketones and other compounds, and in then subjecting the dilute acetone to rectification until nearly anhydrous, substantially as herein described.

7. The improvement in the method of purifying acetone, consisting in diluting crude acetone with water to separate the oily matters, and treating with lime to remove the higher ketones and other compounds, and in afterward subjecting the dilute acetone to rectification in a column-still, substantially as herein described.

8. The improvement in obtaining acetone from an acetate, consisting in subjecting the acetate in a closed vessel to slow destructive distillation at a low and approximately-uniform temperature, in diluting the resulting crude acetone to separate oily matters and treating it with lime to remove higher ketones and other compounds, and in afterward subjecting the dilute acetone to rectification in a column-still, substantially as herein described.

385,778. MACHINE FOR BENDING HAMES, PIPES, OR RODS. CHARLES P. SPENCER, Salem, Mass. Filed Jan. 5, 1888. Serial No. 259,913. (No model.)

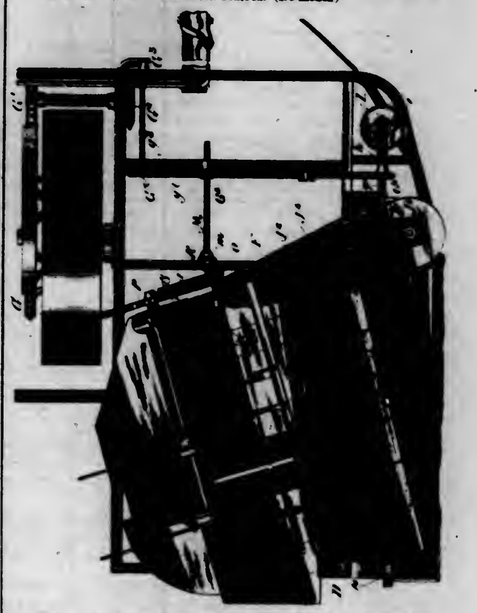


Claim.—1. In a machine for bending hames, pipes, rods, or other articles, two vertically-moving supporting-blocks to receive the article to be bent, guide-blocks, and a locking device, substantially as described, for securing the same in position, combined with a cam or eccentric arranged and located to act upon the article to be bent between the supporting-blocks, as set forth.

2. In a machine for bending hames, pipes, rods, or other articles, two vertically-moving supporting-blocks to receive the article to be bent, and horizontally-moving guide-blocks carrying the supporting-blocks and locking device, substantially as described, for securing the same in position, combined with a cam or eccentric arranged and located, as described, to act upon the article to be bent between the supporting-blocks, as set forth.

3. In a machine for bending hames, pipes, rods, or other articles, two adjustable sliding supporting-blocks to receive the article to be bent, and a cam or eccentric to act upon the article between the supports, combined with a flexible shield, *f*, attached to the stud 10, and interposed between the acting-face of the cam and the article to be bent, substantially as described.

385,779. HARVESTING-MACHINE. ANDREW STARK, Chicago, Ill. Filed Oct. 14, 1887. Serial No. 252,262. (No model.)



Claim.—1. In combination with the sidewise-delivering platform-conveyer and the obliquely-situated upward-sloping binder-deck, the binder-feeder J, having its shafts situated and its surface operating obliquely with respect to the conveyer, and of substantially the full width of the latter, and having its receiving side overhanging the conveyer and its delivery side overhanging the binder-deck, substantially as set forth.

2. In combination with the sidewise-delivering platform-conveyer and the obliquely-situated binder-deck, the packers operating in vertical planes oblique to the vertical plane of the conveyer's movement, and the binder-feeder J, situated obliquely with respect to the conveyer, and operating in vertical planes substantially parallel to those of the packer's movement, said binder-feeder being of substantially the full width of the conveyer, and having its receiving side overhanging the platform-conveyer at the rear and its delivery side overhanging the binder-deck, and having its grain-actuating surface sloping upward from its receiving to its delivery side, substantially as set forth.

3. In combination with the sidewise-delivering platform-conveyer and the obliquely-situated binder-deck, the packers operating from beneath the deck upward through the same in vertical planes oblique to the vertical planes of the conveyer's movement, and the binder-feeder J, having its grain-actuating surface sloping upward from its receiving to its delivery side, and operating in vertical planes substantially parallel to the packer's movement and overhanging the binder-deck, and extending stubbleward to a point beyond the grainward sweep of the packers, and overhanging their points of emergence through the deck, substantially as set forth.

4. In combination with the sidewise-delivering platform-conveyer and the obliquely-situated binder-deck, the packers operating from beneath the deck upward through the same in vertical planes oblique to the planes of the conveyer's movement, and the binder-feeder J, having its receiving side overhanging the conveyer at the rear and its delivery side overhanging the points of emergence of the packers through the deck, said binder-feeder having its rollers oblique to the conveyer-rollers and its grain-feeding surface moving in directions substantially parallel to the vertical planes of the packers, and inclined upward from its receiving to its delivery side, substantially as set forth.

5. In combination with the sidewise-delivery platform-conveyer, the clearing-roller at its delivery side, the binder-deck situated obliquely with respect to the conveyer and clearing-roller, the packers operating in vertical planes oblique to the conveyer's movement, and the binder-feeder J, consisting of an endless belt whose shafts are situated obliquely with respect to the conveyer and clearing-roller and operating in direction substantially parallel to the vertical planes of the packer's movement, overhanging at its receiving side substantially the whole length of the clearing-roller, and at its delivery side overhanging the binder-deck, substantially as set forth.

6. In combination with the sidewise-delivery platform-conveyer and the obliquely-situated binder-deck, the clearing-roller at the delivery side of the conveyer, the packers operating from beneath the binder-deck upward through the same in vertical planes oblique to the vertical planes of the conveyer's movement, and the binder-feeder J, operating in vertical planes substantially parallel to the packer's movement, overhanging at its receiving side substantially the entire length of the clearing-roller, and at its delivery side overhanging the points of emergence of the packers through the binder-deck, substantially as set forth.

7. In combination with the sidewise-delivering platform-conveyer and the deck or platform located stubbleward therefrom, the binder-feeder J, having its rollers oblique to the vertical plane of the conveyer-rollers and its grain-actuating surface inclined upward from its receiving to its delivery side, and having its receiving side overhanging substantially the entire width of the conveyer, substantially as set forth.

8. In combination with the sidewise-delivering platform-conveyer and the deck or platform toward which it moves the grain, the binder-feeder J, having its rollers oblique to the vertical plane of the conveyer-rollers, and pivoted about the axis of the roller at the discharge side, and having the receiving side free to oscillate up and down and overhanging substantially the entire width of the platform-conveyer, substantially as set forth.

9. In combination with the sidewise-delivering platform-conveyer and the binder-deck located obliquely thereto, the packers operating in vertical planes oblique to the movement of the conveyer, and the binder-feeder J, having the vertical plane of its movement substantially parallel to that of the packers, pivotally supported at its discharge side, and having its receiving side free to oscillate up and down and overhanging substantially the entire width of the platform-conveyer.

10. In combination with the sidewise-delivering platform-conveyer and the clearing-roller at its discharge side, the platform or deck toward which it discharges, and the binder-feeder J, having its rollers oblique to the clearing-roller and pivoted near its discharge side, and having its receiving side overhanging substantially the entire length of the clearing-roller and free to oscillate up and down, substantially as set forth.

11. In combination with the sidewise-delivering platform-conveyer and the clearing-roller at the discharge side thereof, the binder-deck located obliquely with respect to the conveyer, the packers operating in vertical planes oblique to the movement of the conveyer, and the binder-feeder J, the vertical plane of whose movement is substantially parallel to that of the packers, pivotally supported near its discharge side and free to oscillate up and down at its receiving side, which overhangs substantially the entire length of the clearing-roller, substantially as set forth.

12. In combination with the conveyer-platform and the clearing-roller at the delivery side thereof, the binder-feeder J, oblique to the conveyer and sloping upward from the receiving to the discharge side and overhanging substantially the whole width of the platform and the whole length of the clearing-roller, said clearing-roller having its upper surface higher than the carrying-surface of the conveyer, whereby the binder-feeder is enabled to hang close down to the roller without striking the platform-conveyer, notwithstanding its oblique position and its slope, substantially as set forth.

13. In combination with the binder-deck and the packers operating upward from beneath the same, the overhanging binder-feeder J, consisting of an endless belt carried upon parallel rollers extending substantially across the entire width of the deck and free to oscillate up and down at its receiving end, and the guide sheet or lip K, located at the discharge side of the binder-feeder and extending thence stubbleward under the breast-plate, said feeder and lip together overhanging the entire course of the packers, substantially as set forth.

14. In combination with binder-deck and underneath packers, the binder-feeder J, and the guide sheet or lip K at its discharge side, and the stripping-wires J', secured to the feeder-frame and passing around its receiving side and along its under face and lapping under the lip K at the discharge side of the feeder, substantially as set forth.

385,780. INSTRUMENT FOR PLOTTING CONTOURS OF GROUND. MATTHEW STEERS, Seattle, Wash. Filed Mar. 30, 1888. Serial No. 267,868. (No model.)



Claim.—1. The combination, with a semicircular protractor, A, provided with rests *x y z*, of a frame, B, having the indicator I and provided with slot S, the wire W, and the hollow pivot X, provided with cross-wires *w w*, substantially as and for the purposes herein described.

2. The combination, with the protractor A, of the slotted frame B, the wire W, and the cross-wired pivot X, substantially as herein shown.

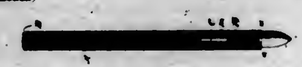
3. In instruments for plotting contours of ground, the frame B, provided with slot S and indicator I and the wire W, stretched longitudinally through the slot S and held as shown, and the hollow pivot X, provided with cross-wires *w w* and attached to the protractor A, substantially as described.

4. In instruments for plotting contours, the wire W in the slot of a protractor-frame, B, as shown, in combination with the cross-wires *w w* of the hollow pivot X on the protractor A, substantially as set forth.

5. In instruments for plotting contours, the hollow pivot X, attached to the protractor A and provided with cross-wires *w w*, and the slotted frame B and its parts, as shown, turning upon said pivot, substantially as herein described and set forth.

6. The frame B, in instruments for plotting contours, said frame provided with indicator I, and slot S, and projection *p*, and carrying the stretched wire W, and turning upon the protractor A around the pivot X, substantially as herein shown.

385,781. LEAD-PENCIL OR CRAYON HOLDER. OMAR A. WHITEHOUSE, Jersey City, N. J. Filed Mar. 26, 1888. Serial No. 268,531. (No model.)



Claim.—1. A pencil or crayon holder consisting of a metallic or elastic tube with a slotted wedge-shaped opening and a wedge-shaped slide, the sides of said wedge opening and slide interlocking into each other, substantially as described.

2. A pencil or crayon holder consisting of the tube A, with the slotted wedge-shaped opening C, having turned-down edges *m m*, and a wedge-shaped slide, E, with the turned-down edges *n n*, substantially as described.

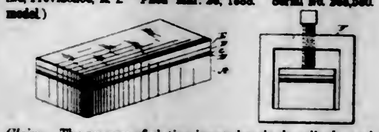
3. A pencil or crayon holder consisting of the tube A, with inclined or turned-in edges *a*, and with the slotted wedge-shaped opening C, having turned-down edges *m m*, and a wedge-shaped slide, E, with the turned-down edges *n n*, substantially as described.

385,782. ELECTRIC SWITCH. SCHUYLER S. WHEELER, New York, N. Y. Filed Mar. 3, 1887. Serial No. 229,561. (No model.)



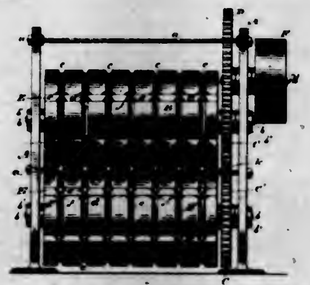
Claim.—In an electric switch, the combination of one or more fixed solid contacts and a moving switch-arm consisting of two plates pivoted at one end and embracing the solid contacts with their free ends, and bearing thereon with spring-pressure, whereby close and reliable electric connection is produced, substantially as described.

385,783. PROCESS OF PLATING INGOTS. WILLIAM F. WHITE, Providence, R. I. Filed Mar. 26, 1888. Serial No. 268,580. (No model.)



Claim.—The process of plating ingots herein described, consisting, in addition to the means heretofore employed, of the introduction of an asbestus or other non-inflammable material for equalizing the pressure, as and for the purposes specified.

385,784. MACHINE FOR ROLLING WIRE NAILS. ALEXANDER G. WILKIN, Meadville, Pa. Filed Jan. 18, 1888. Serial No. 261,140. (No model.)



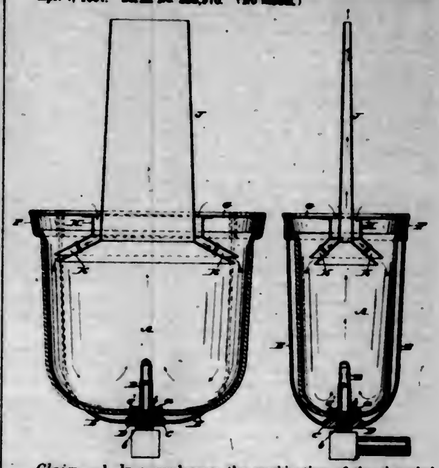
Claim.—1. In a nail-machine, the combination, with two rollers or disks, each having a series of continuous circumferential grooves and a series of longitudinal slots, of bars located in said slots, each bar having a series of excavations or depressions therein registering with the grooves and constituting point-forming dies, substantially as set forth.

2. In a nail-machine, the combination, with a pair of rolls supported to rotate toward each other, and grooved on their cylindrical surfaces and provided with radial notches to receive pointing-dies, of dies that register with each other in pairs, these dies having conical recesses in their faces adapted to point wire nails, the dies having cutting-edges which sever a nail after its head is compressed in heading-recesses formed in the grooves adjacent to the pointing-dies, substantially as set forth.

3. In a nail-machine, the combination, with a pair of rolls supported to revolve and a means of revolving the rolls toward each other, of grooves formed in the rolls, dies located in the rolls transversely of these grooves, so as to lie opposite each other in pairs, conical depressions formed in the dies and adapted to point wire nails, and heading-recesses made in the grooved surface of the rolls adjacent to the pointing-dies, so as to head a nail that has been previously pointed and drawn from wire thicker than the grooves in which the nail is made, substantially as set forth.

4. A nail-machine having in combination two revolving rolls that are in contact and rotate toward each other, these rolls having grooves in their surface which are adapted to compress wire fed thereto from a continuous coil to produce the body of a nail, and also provided with dies which extend lengthwise of the rolls, so as to register in pairs, the dies being excavated to form a conical point on a wire nail, and also act in conjunction with heading-recesses made in the grooves of the rolls, so as to cut off a nail from the wire coil after a head has been formed on it, substantially as set forth.

385,785. GAS-LAMP. JOHN W. BAKER, Philadelphia, Pa. Filed Apr. 7, 1887. Serial No. 233,970. (No model.)



Claim.—1. In a gas-burner, the combination of the threaded burner with the threaded collar D, the upwardly-projecting arms E, rising from said collar, the ring F, supported by said arms, the globe A, suspended from said ring, the annular plate G, resting on said ring, the pipe or deflector H, depending from said ring and having a flaring lower rim, and the flue J, passing through said annular plate, and with a flaring lower rim supported by the deflector H and forming the passage K, substantially as and for the purpose set forth.

2. In a gas-burner, the combination of the burner with a collar, the upwardly-extending arms connected with said collar, the ring supported by said arms, and a top closing plate sustained on said ring, the globe suspended from said ring and having in its base an opening of greater diameter than the burner, a washer closing said opening, a central depending deflector secured to said ring, and a flue passing through said deflector having a lower flaring portion, said flaring portion forming together a lateral passage, substantially as described.

385,786. CHAIN-PUMP. CHARLES A. BARTLETT, Memphis, Tenn. Filed Dec. 28, 1887. Serial No. 259,269. (No model.)



Claim.—1. The combination of the buckets, having the projecting loops D at their ends and the bent-over side flanges, and the links pivoted to said loops connecting the buckets together, and having the extensions G at their sides adapted to bear against the inner sides of the buckets, for the purpose set forth, substantially as described.

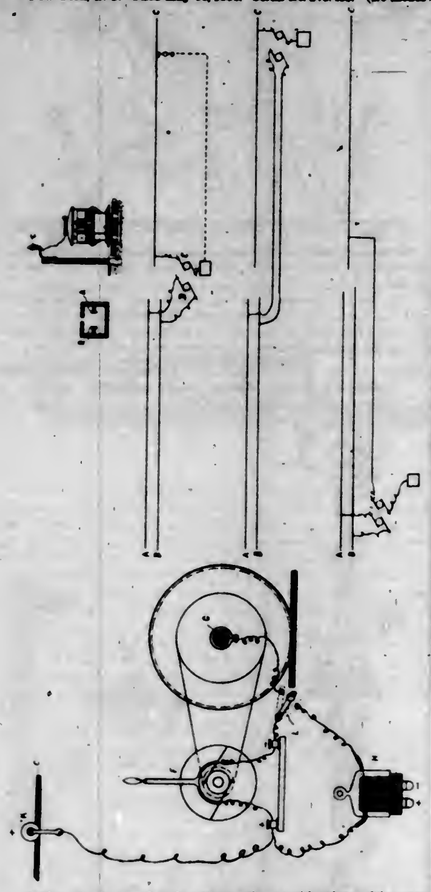
2. The combination of the buckets having the bent-over side flanges, the straps attached to the inner sides of the buckets and having the loops D projecting beyond the ends thereof, and the links having the cross-bars F engaged by the loops, and thereby connecting the buckets together, and being further provided with the extensions or arms G, adapted to bear against the inner sides of the buckets, for the purpose set forth, substantially as described.

3. In an endless-chain pump, the combination of the buckets having the flanges B on their inner sides, the straps C, having the loops D at their ends and engaged by the flanges B, so as to secure said straps to the inner sides of the buckets, and the links having the cross-bars F near their ends, and the projecting arms or extensions G, the said cross-bars F being engaged by the loops D, and the said arms or extensions being adapted to bear against the inner sides of the buckets, for the purpose set forth, substantially as described.

4. The combination, in an endless-chain pump, of the buckets having the loops at opposite ends on their inner sides and the connecting-links pivoted to the said loops, and having the extensions or arms G projecting beyond their pivotal points and adapted to come in contact with the inner sides of the buckets, for the purpose set forth, substantially as described.

5. The buckets having the flanges B on their inner sides, the straps C, forming the inner sides of the buckets, and having their ends doubled and bent to form loops D, the flanges B being bent over the edges of the straps, for the purpose set forth, and the links connecting the buckets and engaging the loops, substantially as described.

385,787. ELECTRIC-RAILWAY SYSTEM. EDWARD M. BENTLEY, New York, N. Y. Filed May 10, 1888. Serial No. 273,465. (No model.)

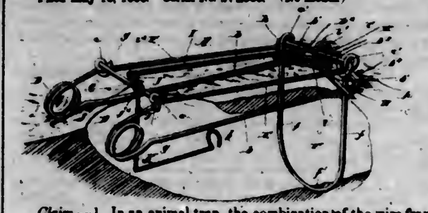


Claim.—1. In an electric railway, the combination, with a section having two insulated supply-conductors inclosed in a conduit, of a succeeding section having a single exposed supply-conductor with a ground-return, and a common central station for said sections having two independent generators, one with its terminals insulated from the ground, and connected, respectively, to the two inclosed conductors, and the other generator having one of its terminals permanently connected to the ground, the other connected to the single exposed supply-conductor.

2. In an electric railway, the combination, with a section having two insulated supply-conductors inclosed in a conduit, of a succeeding section having a single exposed supply-conductor with a ground-return, a common central station at the extremity of one section having two generators, one generator connected to the conductor or conductors on the adjacent section, and the other generator having an independent line extending along to connect with the conductor or conductors of the remote succeeding section.

3. In an electric railway, the combination, with a section having two insulated supply-conductors inclosed in a conduit, of a succeeding section having a single exposed supply-conductor with a ground-return, of two independent generators for said sections, respectively, a vehicle adapted to travel along both sections, and a propelling-motor for said vehicle having the following connections: first, two conductors leading to a contact device for the inclosed section; second, a conductor leading to the contact device for the overhead section, and, third, a ground-connection provided with a circuit-breaker for interrupting the ground-connection while the vehicle is on the conduit-section of the roadway.

385,788. ANIMAL-TRAP. LOUIS BEVERSDORF, Jr., Luling, Tex. Filed May 18, 1888. Serial No. 274,200. (No model.)



Claim.—1. In an animal-trap, the combination of the wire frame having the parallel base-arms *b*, the coiled springs D, the upwardly-extending arms E, and the downwardly-extending loop F, the loop or ring C on the bend and engaged portions b^2 of said wire, and the trigger-wire I, having the frontwardly-projecting point i', engaging said ring, substantially as specified.

2. In an animal-trap, the combination of the frame A, of a single wire, having the parallel base-arms *b*, with their inwardly-standing arms b', bent at b^2 upon themselves, to form the outwardly-standing end portions, b^3, the coiled-spring portions D, the arms E, provided with the bearing-loops *e e'*, and the long downwardly-standing loop F, the transverse wires G and H, having the hooked ends *g* and *h*, that respectively engage the bearing-loops *e* and *e'*, the rings C on the bends of wire b^2, and the trigger-wire I, provided with the loop *i*, surrounding the wire G, and having the frontwardly-standing point i', that engages the ring C, substantially as specified.

3. The combination of the wire frame A, having the base-arms *b*, the coiled-spring portions D, the upper arms, E, and the downwardly-extending loop F, the ring C, seated on the bends b^2 of said wire, the transverse wires G and H, connecting the arms F, the trigger-wire I, looped on the wire G, and having a point, i', to engage the ring C, and a rear end, i^2, bent transversely, and the wire J, looped on the wire H and provided with a transversely-bent front end to engage the rear end, i^2, of the trigger-wire, and having a circular foot, *k*, at the end of its downwardly-bent rear arm, K, substantially as specified.

385,789. CAR-COUPLING. ARCUS P. BREWSTER, Newnan, Ga. Filed Mar. 29, 1888. Serial No. 268,814. (No model.)



Claim.—1. In a car-coupler, the combination, with a movable draw-bar, of two side bars having their rear ends attached to the rear of the draw-bar and their forward ends connected to and extending above the draw-head, a pin secured to said bars above the draw-head and the lever, substantially as and for the purpose described.

2. In a car-coupler, the combination, with a movable draw-bar, of two side bars parallel therewith having U-shaped connections, the rear connection being permanently secured to the draw-bar and the front connection extended up above and over the draw-head, a link secured to the front connection, latches arranged at the sides of the said bars, and the lever, substantially as described.

3. In a car-coupler, the combination, with a movable draw-bar having a cushion-spring thereon, of two side bars having U-shaped connections, a pin secured to the front connection, supports and guides secured to the frame of the car, and extending down adjacent to said bars, latches mounted in said supports, a cross-bar having its ends secured to and extending beyond said side bars, and the lever, substantially as and for the purpose specified.

4. In a car-coupler, the combination, with the draw-bar, of side bars extending beyond the ends of the same and secured thereto, a link-adjusting bar pivoted to the frame-work, having an inclined plate on its upper end and an arm on its lower end, latches for holding the side bars in an elevated position, and the pin and lever, substantially as and for the purpose specified.

5. In a car-coupler, the combination, with the draw-bar, of a pivoted link-adjusting bar arranged beneath the same, having an inclined

plate on its upper outer end and a bearing-arm on its upper side, a downwardly-extending arm on its lower side, a catch-block secured to the frame, and the lever, substantially as described.

6. In a car-coupler, the combination, with the draw-bar, of a casing having an opening therein pivoted to the frame, a link-adjusting bar having a coiled spring on its outer end inserted in said casing, an inclined plate secured to the front of said adjusting-bar, arms extending from the upper and under side of said adjusting-bar, a catch-block secured to the frame, and the lever, substantially as and for the purpose specified.

7. The combination of the draw-bar B, the rod *b*, the spring B', the side bars, C, having end connections, C' C', the pin D, the supports F, the catches F', and the lever P, substantially as described.

8. The combination of the draw-bar B, the casing H, the link-adjusting bar *k*, having plate I,' thereon, the spring K, the bearing arm *m*, the catch-block R, and the lever P, substantially as described.

385,790. BRICK-MOLD-SANDING MACHINE. JAMES A. BUCK, Crescent, N. Y. Filed Oct. 15, 1887. Serial No. 252,435. (No model.)



Claim.—1. A sanding-cylinder having heads which are composed of substantially triangular sections connected at their inner apices, and longitudinal metallic ribs for connecting said heads, substantially as specified.

2. A sanding-cylinder having sectional heads which are polygonal, and having metallic longitudinal ribs connecting said head-sections and forming mold-receiving openings.

3. A sanding-cylinder the heads of which are composed of substantially triangular sections joined at their inner apices by a metal collar, in combination with longitudinal ribs for connecting the heads, said ribs embracing the corners formed by said sections and provided with stops for the molds, substantially as specified.

4. The cylinder C, the heads of which are formed of the angular sections C', joined at their apices by the flanged metal collar C², in combination with the metal ribs D, connecting said heads and formed with the angular portion D', the securing-rib D², apertured, as at D³, and the stops D⁴, substantially as specified.

385,791. COMBINED BIT, COUNTERSINK, AND SCREW-DRIVER. FREDERICK R. CARPENTER, Manistique, Mich. Filed Mar. 21, 1888. Serial No. 268,021. (No model.)



Claim.—1. In combination with the shank provided with the inclined curved channels and the socket-block pivoted thereon and carrying a bit and screw-driver, the detent-spring normally lying close to the shank and the detent near the end of the shank arranged to move in the curved channels and by means of their inclined bottoms to raise the spring until the incline is passed in the sidewise movement of the socket-block around its pivot.

2. In combination, the revolving block made hollow from end to end and provided with a lateral aperture for the introduction of a screw-threaded pivot and having a countersunk recess on the inside for the head of the pivot, said pivot, and the shank whereby the longitudinal opening is left free of obstruction and whereby the pivot may be readily tightened or removed.

3. In combination with the bent shank, the block made hollow from end to end, lying closely against the shank, and provided with inclined curved channels, the countersink, screw-threaded pivot, the spring, and detent, said spring normally lying close to the shank and projecting slightly beyond the end of the same, all substantially as set forth.

385,792. HOBBY-HORSE. WILLIAM R. CRANDALL, New York, N. Y. Filed Sept. 28, 1887. Serial No. 250,890. (No model.)

Claim.—1. The combination of the standards A A and hooks *b b*, secured thereto, with the detachable horse C, having hooks b^2 b^2, and with removable links B B, having perforations for connecting the

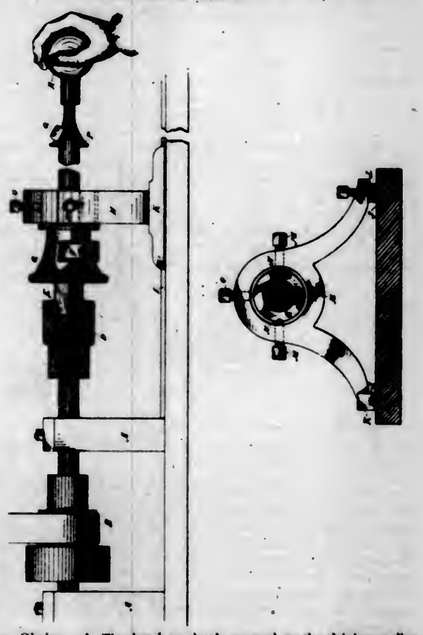
385,792.



hooks *b* and b^2, all arranged substantially as herein shown and described.

2. The hobby-horse C, having rollers *e* and hooks b^2, combined with the posts A, having hooks *b*, and detachable perforated links B, for connection with the hooks *b* b^2, all arranged substantially as herein shown and described.

385,793. LATHE-CHUCK AND ATTACHMENT FOR TURNING TREENAILS. PINDAY CUMMINS, San Francisco, Cal. Filed Sept. 6, 1887. Serial No. 248,961. (No model.)



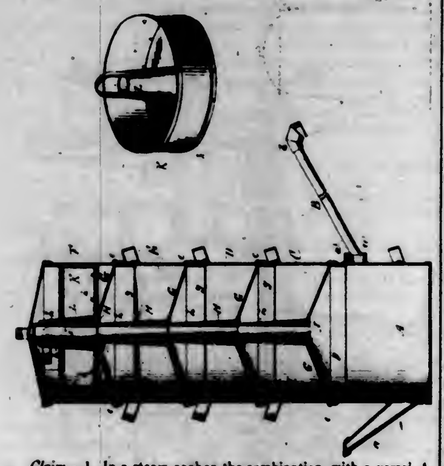
Claim.—1. The head or chuck secured to the driving-pulley spindle and having the screw-threaded conically-shaped socket for holding the end of the article to be turned, in combination with the sliding tail-stock and the bell-mouthed cutter-head mounted within the tail-stock, so as to adapt itself to the irregularities or curvatures of the article to be turned, substantially as herein described.

2. The sliding tail-stock having the front channeled guide running upon the raised track I, and the rear foot provided with the flat elastic block L, which travels upon the corresponding flat rail at the rear of the lathe, substantially as herein described.

3. The tail-stock having the sliding channeled guide in front and the elastic block traveling upon a flat rail at the rear, the raised track, and the bell-mouthed cutter-head with trunnions for an automatic adjustment within its support, in combination with the revolving head or holder having the conical screw-threaded socket to receive and

hold the end of the article to be turned, substantially as herein described.

385,794. STEAM-COOKER. JAMES W. DAVIS, El Dorado, Kansas. Filed July 14, 1887. Serial No. 244,332. (No model.)



Claim.—1. In a steam-cooker, the combination, with a vessel, A, of one or more steaming-vessels adapted to fit above the same, said vessels being provided with upwardly-inclined bottoms having permanent centrally-arranged conical tubes H, within which are rigidly secured central tubes, I, the conical tubes being perforated near their upper ends, substantially as shown, and for the purpose set forth.

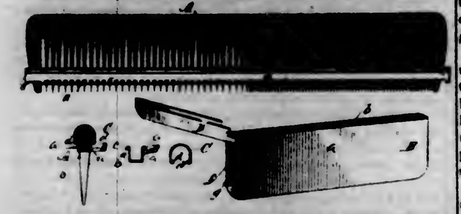
2. The combination, in a food-steamer, of a steam-generating vessel constructed substantially as shown, a steam cooking-vessel having an inclined bottom, an upwardly-projecting conical tube attached to said inclined bottom, and a tube located within said conical tube, a removable vessel, K, having a perforated bottom and an upwardly-projecting center portion to which a pivoted bail is attached, the parts being organized substantially as shown, and for the purpose set forth.

385,795. TRAY FOR TORPEDO-MACHINES. JACOB J. DETWILLER, Greenville, N. J., assignor to the Detwiller and Street Fire Works Manufacturing Company, New York, N. Y. Filed Feb. 24, 1888. Serial No. 265,184. (No model.)



Claim.—A tray for use in a torpedo-machine, made of soft rubber and provided with recesses or depressions for containing fulminate, said tray being of such thickness as to admit of a considerable thickness of rubber below the recesses or depressions, substantially as specified.

385,796. COMBINED COMB-CLEANER AND COMB. WALTER M. DIXON, St. Paul, Minn., assignor of one-half to Charles Venables Deane, same place. Filed May 10, 1887. Serial No. 237,736. (No model.)



Claim.—1. In combination with a comb, a comb-cleaner having slots and cross-bars for embracing the several teeth of the comb, and having sides for embracing both sides of the comb, substantially as and for the purpose herein specified.

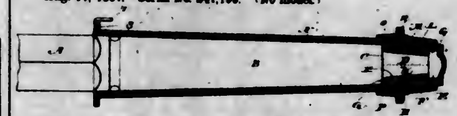
2. The combination of a comb, a comb-cleaner having slots and bars for embracing the teeth of the comb severally, and sides for embracing the sides of the comb, and a removable back surrounding the back of the comb and overlapping the back edges of the comb-cleaner, substantially as and for the purpose herein specified.

3. In combination with a comb, a comb-cleaner having slots and bars for embracing the several teeth of the comb, and formed to serve as a case in which the comb is inclosed and held when not in use, substantially as herein set forth.

385,797. PHOTOGRAPHIC FILM. EDGAR R. ELLIS, Rochester, N. Y., assignor of one-half to August L. Lohnberg, same place. Filed July 1, 1886. Serial No. 208,050. (No specimens.)

Claim.—As a new article of manufacture, a photographic film composed of gun-cotton dissolved in alcohol and ether, resinous gum, gum-camphor, and rubber dissolved in benzole, in proportions substantially as set forth.

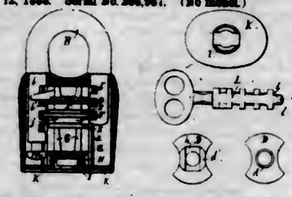
385,798. VEHICLE-AXLE. EDWIN FIRTH, Troy, N. Y. Filed Aug. 17, 1887. Serial No. 247,199. (No model.)



Claim.—1. In combination with the axle-spindle, the sleeve or thimble made in separable sections and swiveled on the outer end of the spindle, the axle-box fitted on the spindle and engaging the sleeve or thimble, and the cap-nut secured to the outer ends of the axle-box and also to the sleeve or thimble, substantially as described.

2. An axle having its spindle provided with a swiveled sleeve or thimble made of separable sections and provided with the annular peripheral groove, in combination with the clamping-ring adapted to fit in the said groove and bind the sections together, and the cap-nut R, engaging the sleeve or thimble, for the purpose set forth, substantially as described.

385,799. PADLOCK. MILLER W. FRAIN, Lancaster, Pa. Filed Mar. 12, 1888. Serial No. 266,967. (No model.)



Claim.—The combination, with the top stationary plate provided with a central opening, of the tumbler having a hub on its upper surface, which is received by said opening in the stationary plate, substantially as and for the purpose specified.

385,800. CAR-STARTER. RUDOLF O. GERCKE, Augusta, Ga. Filed Nov. 1, 1887. Serial No. 253,988. (No model.)

Claim.—1. The combination, with the car-starting lever, of the grippers, means for connecting said grippers to the lever, and the cross-head engaged by the grippers and adapted to receive the draft, substantially as set forth.

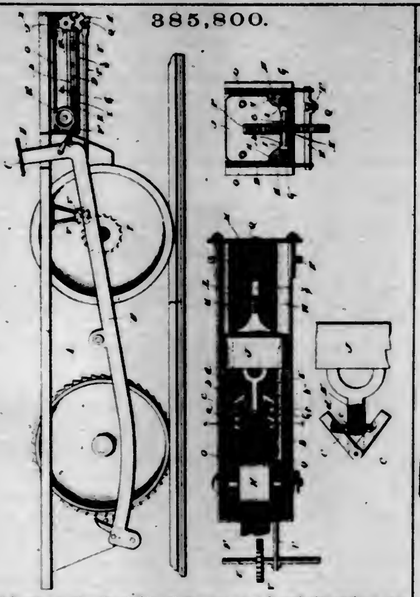
2. The combination, with the car and the car-starting lever, of the box secured to the car, the grippers sliding in ways in said box, means for connecting said grippers to the lever, and the cross-head, also sliding in said ways and engaged by the grippers, as set forth.

3. The combination of the car-starting lever, the band secured thereto, the pulley E, around which said band passes, the grippers secured to the free end of said band, and the cross-head engaged by said grippers and adapted to receive the draft, as set forth.

4. The combination of the car-starting lever, the grippers connected thereto, the cross-head engaged by said grippers and adapted to receive the draft, the springs connected to said cross-head and acting in opposition to the draft, the gear-wheels carried by the cross-head, and gear-wheels connected to the car-wheels and adapted to mesh with the wheels in the cross-head when it is drawn forward to prevent retrograde movement of the cross-head, substantially as described.

5. The combination of the car-starting lever, the grippers connected thereto and having the pivoted arms *b*, the cross-head having the offset K, the plates *c c*, pivoted to said offset and engaged by the gripper-arms *b*, the spring *d*, holding said plates normally apart, the

385,800.



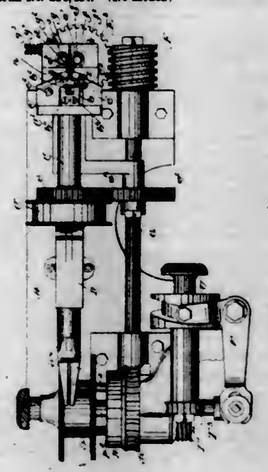
draft-hook on the front side of the cross-head, and the springs connected to the rear side of the cross-head and acting in opposition to the draft, substantially as specified.

6. In a car-starter, the combination, with the starting-lever, of the sliding cross-head connected thereto, whereby the draft on the cross-head operates the starting-lever, as set forth.

7. In a car-starter, the combination of the starting-lever, the sliding cross-head to which the draft is applied, connections between the cross-head and the starting-lever, and a spring to return the cross-head to its normal position when the draft is relieved, as set forth.

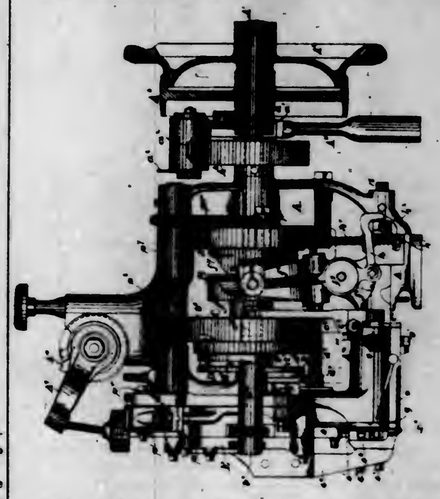
8. In a car-starter, the combination of the starting-lever, the sliding cross-head to which the draft is applied, the said cross-head being connected to the starting devices and being drawn forward by the draft on the car, a spring for returning the cross-head to its initial position when the draft is relieved, and gearing carried by the cross-head, and gearing connecting with the wheels of the car to mesh with the gearing carried by the cross-head when the latter is drawn forward by the draft.

385,801. MACHINE FOR SCREW-THREADING WIRE. Louis Goddu, Winchester, assignor to James W. Brooks, trustee, Cambridge, and Frank P. Stanley, associate trustee, Swampscott, Mass. Filed Nov. 29, 1887. Serial No. 256,407. (No model.)



Claim.—The feed-rolls, the wire-guide, and the clamping-rolls grooved to fit the thread cut into the wire, combined with the guide B, the rotating sleeve having a head and the two attached diagonally-set cutters arranged at opposite sides of the wire and diametrically opposite each other, to operate substantially as described.

385,802. BOOT AND SHOE NAILING MACHINE. Louis Goddu, Winchester, assignor to James W. Brooks, trustee, Cambridge, and Frank P. Stanley, associate trustee, Swampscott, Mass. Filed Apr. 24, 1886. Serial No. 271,673. (No model.)



Claim.—1. In a nailing-machine, the combination of the following instrumentalities, namely: a point-forming die, clamping-dies to grasp and hold the wire firmly between them, a header to cut into the wire resting in or against the point-forming die to form a head and point, and means to move the said clamping-dies, they clamping the wire with relation to the point-forming die and header, while the header holds the wire between itself and the point-forming die, the movement of the clamping-dies severing the wire at the junction of the head and point of the nail, substantially as described.

2. In a nailing-machine, a nose having a passage for a nail, a driver to drive the nail, a point-forming die, and the header to act upon the wire opposite the point-forming die to simultaneously shape the head and point of the nail, combined with a pair of jaws having reciprocating movements with relation to each other, as described, whereby the said jaws left open for the reception of the wire are clamped upon the wire while the header operates thereon, and are then moved bodily, yet clamping the wire to sever it completely from the main body of the wire and form a nail, the said jaws taking the nail so severed into position substantially in line with the path of movement of the driver and releasing the nail to permit the driver to descend between the jaws to drive the nail, the jaws being then retracted into position to again receive the end of the wire, substantially as described.

3. In a nailing-machine, a die, *f*, and its carrying-bar provided with rack-teeth, and a die, *g*, and its carrying-bar provided with a stud, combined with a lever to actuate the carrying-bar for the die *f*, and with a locking device carried by the said lever to engage the said stud, to operate substantially as described.

4. In a nailing-machine, a die, *f*, and its carrying-bar provided with rack-teeth, and a die, *g*, and its carrying-bar provided with a stud, combined with a lever to actuate the carrying-bar for the die *f*, and with a locking device carried by the said lever to engage the said stud, and with means to actuate the said lever and said locking device at the proper times, substantially as described.

5. In a nailing-machine, the combination, with the point-forming die, of the header, its attached rock-shaft provided with a toothed sector, and a lever, e^4, adjustable with relation to the said rock-shaft and sector, to operate substantially as described.

6. In a nailing-machine having devices for forming headed nails, the swinging head and its attached block e^1, provided with a throat for the passage of the nail, and with openings for guiding the awl and driver, combined with awl and driver bars and their attached awls and drivers, to operate substantially as described.

7. In a nailing-machine, the main shaft, the clutch or friction pulleys thereon, and a wedge to operate the said pulleys, combined with a cam on the main shaft to control the operation of the wedge, to operate substantially as described.

8. In a nailing-machine, the jaws *f g* and their carrying-bars, the one provided with a rack and the other with a stud, as b^3, and a lever, f^5, and locking device, combined with a controlling-rod and means to operate it, the said controlling-rod being provided with ball-and-socket-like portions to obviate any lost motion when the locking device is moved, substantially as described.

9. In a nailing-machine, the swinging head, the driver-bar therefor, its driver, and an awl-carrying bar provided at its edge with rack-teeth, and the cam C, combined with a rock-shaft having an arm which is actuated by the said cam, and an arm, *b'*, provided with a segmental series of teeth in engagement with the rack-teeth of the awl-bar, the center of motion of the rock-shaft being in the same plane as said center of motion of the swinging head, whereby the arm *b'* is enabled to actuate the awl-bar positively notwithstanding the swinging of the head, substantially as described.

10. In a nailing-machine, the combination, with the die *g*, having a shoulder, 3, and its carrying-bar, of the die *f* and its carrying-bar, the die *f* moving the die *g* with it in one direction by coming in contact with the shoulder portion 3 of the die *g*, substantially as described.

11. In a nailing-machine, the clamping-die *f* and its carriage and means to operate it, combined with the clamping-die *g*, its carrying-bar *g'*, and the stop 18, to arrest the motion of the carrying-bar *g* before arresting the movement of the die *f* in the same direction, for the purpose set forth.

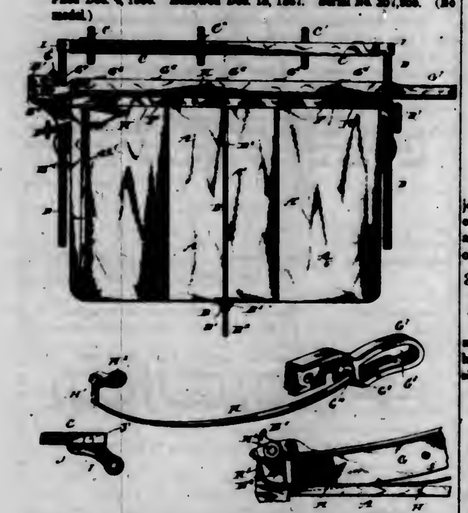
12. In a nailing-machine, the clamping-die *f* and its carriage and means to operate it, combined with the clamping-die *g*, its carrying-bar *g'*, and the stop 18, to arrest the motion of the carrying-bar *g'* before arresting the movement of the die *f* in the same direction, and with a friction-clamp to clamp the said bar *g'*, substantially as described.

13. In a nailing-machine, the point-forming die, the vibrating header *e*, and its shaft, combined with a series of radial fins or projections between the said rock-shaft and header, substantially as described.

14. In a nailing-machine, the point-forming die, combined with a circularly-moving oscillating plate forming both the cutter and header, substantially as described.

15. In a nailing-machine, the point-forming die, combined with a circularly-moving oscillating plate forming both the cutter and header and grooved at its periphery, substantially as described.

385,803. PAPER-CUTTER. William H. Goldsmith, Boston, Mass. Filed Dec. 4, 1886. Renewed Dec. 15, 1887. Serial No. 257,955. (No model.)



Claim.—1. In a paper-cutter, a bed-plate carrying a fixed knife and having a standard arranged substantially in line with the cutting-edge of said fixed knife, and provided with a lateral lug, in combination with a movable knife, and with a spring-compresser pivoted to said standard, substantially as specified.

2. In a paper-cutter, a bed-plate carrying a fixed knife and a standard provided with a lateral lug, in combination with a movable knife and a bracket pivoted to the standard, and with a spring-compresser secured to the pivoted bracket and having its free end loosely connected with the handle of the movable knife, substantially as specified.

3. The combination, with the movable blade of a paper-cutter, of a bracket loosely mounted on the pivot of the blade, and a spring attached to the free end of the bracket and loosely connected with the free end of the movable blade, substantially as specified.

4. In a paper-cutter, the combination, with a bed-plate carrying a fixed knife and having a standard arranged with the side thereof substantially in line with the cutting-edge of said fixed knife, of a movable blade secured to a handle or lever curved at its pivoted end to bear against the side of the standard, a bracket mounted on the pivot of the movable blade, and a spring secured to the bracket and extending parallel with the movable blade and along over the fixed blade, substantially as specified.

5. A movable blade having a slotted hand-grip and an opening communicating with the slot of the grip, in combination with a spring arranged parallel with the blade and with its free end arranged within the slot of the grip, substantially as specified.

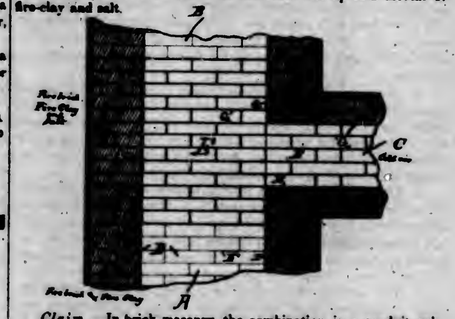
6. In a paper-cutter, a reversible rear gage consisting of a cylindrical rod having a lug, and of a casting provided with a rod-receiving bracket, and an intersecting screw-threaded lug and a set-screw mounted therein, substantially as specified.

7. The combination, with the grooved table, of the reversible rear gage and devices, substantially as described, for securing the same in an adjusted position, substantially as specified.

8. The combination of the front gage, C, having the inclined page C', with the rack-bars D, table A, and devices for securing the bars in an adjusted position, substantially as specified.

385,804. BRICK MASONRY. Frank W. Gordon, Philadelphia, Pa., assignor to Gordon, Strobel & Laureau, (Limited,) same place. Filed Feb. 27, 1888. Serial No. 265,666. (No model.)

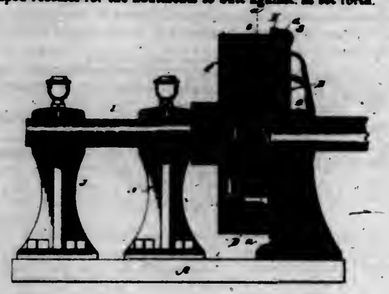
Brief.—The lower portion of the flue being subjected to a much higher degree of heat is built up of fire-brick set in fire-clay. The upper portion being exposed to the influence of a cold-air blast and a less degree of heat is formed of fire-brick laid up in a mortar of fire-clay and salt.



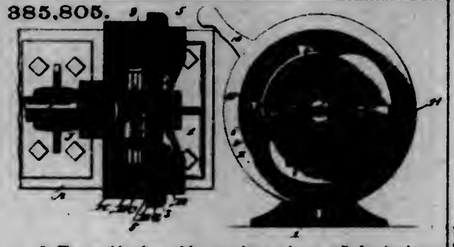
Claim.—In brick masonry, the combination, in a conduit subjected alternately to the action of heated matter and a cutting blast of cold air, of brick masonry formed of fire-brick laid up in fire-clay, and brick masonry formed of fire-brick laid up in a compound mortar of salt and fire-clay, substantially as and for the purpose set forth.

385,805. ROTARY ENGINE. John A. Greenmeyer and Alton G. Graham, Chicago, Ill. Filed Feb. 11, 1888. Serial No. 263,720. (No model.)

Claim.—1. An inner stationary cylinder provided with radially-movable abutments, in combination with a rotating outer cylinder and head journaled upon the inner cylinder and provided with crescent-shaped recesses for the abutments to butt against, as set forth.



385,805.



2. The combination, with a stationary inner cylinder having a flanged head and provided with radially-sliding abutments, of an exterior rotating cylinder and head journaled upon such inner cylinder and having steam-receiving chambers or recesses of unequal number to the number of abutments, as and for the purpose set forth.

3. The head B, having stationary inner cylinder, 2, formed integral therewith, and central steam-inlet, 4, with exhaust-ports 5, said inner cylinder, 2, being slotted, and the radially-sliding abutments C, guided in said slots, in combination with cylinder D, journaled upon such inner cylinder, 2, and having steam-receiving chambers or recesses 7, all substantially as set forth.

4. The head B, having stationary inner cylinder, 2, formed integral therewith and provided with central steam-inlet, 4, and with exhaust-ports 5, in combination with flanged wheel H, cylinder D, secured in wheel H, provided with steam-receiving chambers or recesses 7, and journaled upon cylinder 2, and with abutments C, radially guided in a groove of such cylinder 2 and pushed apart and in contact with cylinder D by a spring, 16, as set forth.

5. The combination, with rotating cylinder D, provided with chambers 7, of stationary cylinder 2, forming the journal for such cylinder D, having a central steam-inlet, 4, and exhaust-ports 5, and being radially slotted for guiding abutments C, pushed outward by spring 16, each such abutment being provided with a valve, 14, vibratable to be flush with either face of the abutment for automatically reversing the inlet of steam from one side of the abutment to the other by changing the position of the exhaust-ports, substantially as set forth.

6. The head B, with stationary inner cylinder, 2, with central steam-inlet, 4, with exhaust-ports 5, and with abutments C, guided in radial slots of cylinder 2 and pushed outward by spring 16, and each abutment C provided with a vibratable valve, 14, in combination with cylinder D, journaled upon cylinder 2 and provided with steam-receiving chambers 7, all substantially as set forth.

7. The combination, with head B, having stationary cylinder 2, slotted radially for guiding abutments C, of flanged wheel H and rotating cylinder D, secured in said wheel and having steam-inlet chambers 7, and provided with gibs inserted into slots of such cylinder to furnish the bearings upon such cylinder, and each gib held in contact with such inner cylinder by a spring, 9, all substantially as set forth.

8. The combination of head B, with inner cylinder, 2, slotted radially for abutments C, of disk F, secured against such abutment, and of cylinder D, journaled upon cylinder 2 between flange 3 and disk F, all substantially as set forth.

9. The combination of head B, with inner cylinder, 2, flange 3, central steam-inlet, 4, and exhaust-ports 5, and being provided with abutments C, having valves 14, of cylinder D, provided with steam-chambers 7 and journaled upon inner cylinder, 2, and reversing-plate E, provided with exhaust-openings 11 and with devices for swinging and locking such plate to opposite positions for changing the positions of the exhaust-openings from one side of the abutments to the other, and thereby reversing the motion of the engine, substantially as set forth.

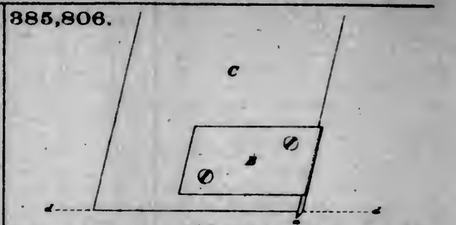
10. The combination of head B, with cylinder 2 and flange 3, of disk F, secured to head B, of cylinder D and reversing-plate E, both journaled upon cylinder 2, and of packing-ring G, inserted into an annular groove of flange 3, all substantially as set forth, for the purpose specified.

385,806. SHOE FOR LADDERS TO PREVENT ACCIDENTS FROM SLIPPING, &c. WILLIAM B. HARRIS, New York, N. Y. Filed Aug. 11, 1887. Serial No. 246,645. (No model.)

Claim.—A band or strip of metal to be secured to the foot of a ladder, with a side piece bent to conform with and to be fastened to the side of the ladder, and with a sharpened edge beveled to insure

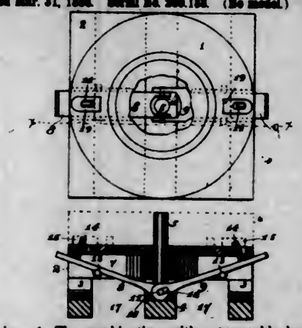


385,806.



penetration in case of the ladder slipping, designed to be adjusted with this sharpened edge protruding beyond the foot of the ladder a sufficient distance only to secure firm contact with the surface upon which the ladder may rest without seriously damaging such surface, substantially as above described.

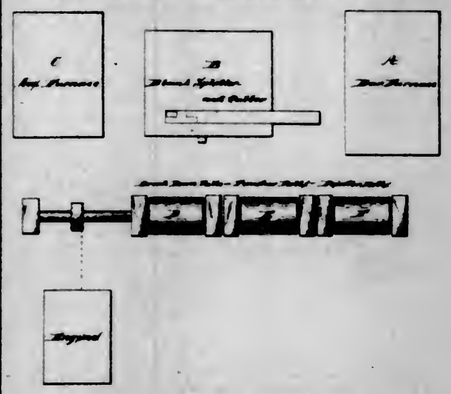
385,807. TURN-TABLE FOR TRAMWAYS OR STREET-RAILWAYS. HARRISON HINTON and ELWIN J. MARVIN, Idaho Springs, Colo. Filed Mar. 31, 1888. Serial No. 269,188. (No model.)



Claim.—1. The combination, with a turn-table having recesses or blots upon its under side, of two levers pivoted in a slot or recess in the base, each carrying a pin or lug passing through a slot in the track or way upon the base and adapted to take in the recesses in the table, and pivoted together at their inner ends, substantially as set forth.

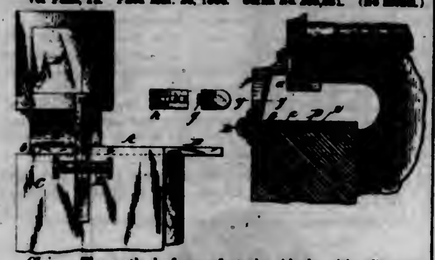
2. The combination of a turn-table having recesses upon its under side, a base carrying a pivot-pin and having a space formed beneath it, two levers pivoted to the base, each carrying a pin or lug adapted to take in the recesses in the table, the levers being overweighted and joined together at their inner ends and forked to pass around the central pivot-pin, substantially as set forth.

385,808. METHOD OF MAKING BLANKS FOR SHOVELS. JAMES J. JOHNSTON, Columbiana, Ohio, assignor to Henry M. Myers, Beaver Falls, Pa. Filed Mar. 24, 1888. Serial No. 268,347. (No model.)



Claim.—The method of manufacturing shovel-blanks herein described, which consists in heating a bar of metal, cutting incisions in the edge, and severing blanks with split tangs therefrom, then breaking down, reducing, and pointing the blanks, substantially as set forth.

385,809. METHOD OF MAKING BLANKS FOR SHOVELS, &c. JAMES J. JOHNSTON, Columbiana, Ohio, assignor to Henry M. Myers, Beaver Falls, Pa. Filed Mar. 26, 1888. Serial No. 268,951. (No model.)



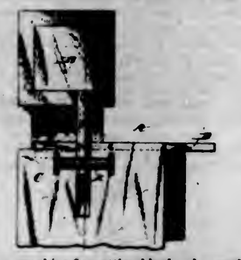
Claim.—The method of manufacturing blanks with split tangs, which consists in heating a bar of metal of a predetermined width and thickness, forming incisions in the edge of the bar, and severing sections from the bar in the form of blanks, substantially as shown and described.

385,810. BLANK FOR SHOVELS. JAMES J. JOHNSTON, Columbiana, Ohio, assignor to Henry M. Myers, Beaver Falls, Pa. Filed Mar. 26, 1888. Serial No. 268,952. (No model.)



Claim.—As a new article of manufacture, a shovel or other blank provided with a body portion and a tang, and having its tang split and a socket formed therein and the edge of the tang left uncut, or integral with the body of the blank, substantially as described.

385,811. MACHINE FOR CUTTING AND SPLITTING SHOVEL-BLANKS. JAMES J. JOHNSTON, Columbiana, Ohio, assignor to Henry M. Myers, Beaver Falls, Pa. Filed Mar. 26, 1888. Serial No. 268,953. (No model.)



Claim.—1. In a machine for cutting blanks, the combination of a movable head, a cutting-off knife, a projection secured to said head, and a knife operated by said projection for making an incision in the edge of a bar, substantially as described.

2. In a machine for cutting blanks, the combination of a movable head provided with a vertical arm or projection, a cutting-off knife secured to said head, and a knife for splitting the tang of the blank before it is cut off, operated by said head in unison with the cutting-off knife, substantially as described.

3. In a machine for cutting blanks, a reciprocating head, a projection on said head, and a vertical cutting-off knife secured to the head, in combination with an anvil provided with a groove constructed to receive and guide a bar, and a knife operated by the projection on the head for making an incision in the edge of the bar, substantially as described.

4. In a machine for cutting blanks, an anvil having a groove to support and guide a bar, a reciprocating head carrying a cutting-off knife, and a projecting wedge, in combination with a knife for making an incision in the edge of a bar and reciprocated by said wedge, substantially as described.

5. In a machine for cutting blanks, an anvil having a longitudinal and a transverse slot, a reciprocating head, and a cutting-off knife, in combination with a reciprocating knife for making an incision in a bar, and adapted to move in said transverse slot, a projecting wedge secured to said head, and connected to the latter knife by a sliding joint, substantially as described.

6. In a machine for cutting blanks, a reciprocating head, a knife, and a projecting wedge secured thereto, in combination with an anvil having a longitudinal slot for supporting a bar, a transverse slot, and a vertical angular slot, a horizontally-reciprocating knife operated by the wedge on said reciprocating head, and a roller for holding the wedge to its work, substantially as described.

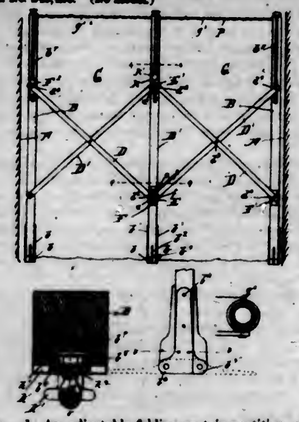
385,812. DENTAL ENGINE. WILLIAM A. KNOWLES, Alameda, Cal. Filed Aug. 13, 1887. Serial No. 247,304. (No model.)



Claim.—1. In combination with the crane-arm of a dental engine, the gear G, H, I, and K, by means of the sleeve P, slot T, spindle J and J', pin U, screw S, thumb-piece V, cone-bearings R and R', and the bracket N, jaws M, set-screw O, the sleeve-bearing Z, and the head-block L, for the purpose of reversing the gear and adjusting the same, constructed and operated substantially as and for the purposes set forth.

2. In combination with the head-block L, the jaws M, set-screw O, sleeve-bearing Z, and bracket N, for the purpose of adjusting the pinion K at any required point, constructed and operated substantially as and for the purposes set forth.

385,813. ADJUSTABLE FOLDING CURTAIN-PARTITION FOR HOUSES. CHARLES S. LANDWORTHY, Chicago, Ill. Filed Sept. 12, 1887. Serial No. 249,698. (No model.)



Claim.—1. An adjustable folding curtain-partition, consisting of upright posts provided with feet extending forward and back of the partition, connecting cross-bars having pivotal connections at one of their ends to said upright posts and sliding pivotal connections to said posts at their other ends, and a flexible curtain supported on said posts, substantially as specified.

2. In an adjustable folding curtain-partition, the combination, with upright posts B B', furnished with folding feet *b b*, of cross-bars D D', one pair of said cross-bars D D' being hinged to said post B', and a flexible curtain supported by said posts, substantially as specified.

3. The combination, with an adjustable folding curtain-partition, of the upright posts thereof, and folding feet *b b*, extending under the ends of said posts and pivoted on opposite sides thereof, substantially as specified.

4. The combination, in an adjustable folding curtain-partition, of the upright posts thereof furnished with hinge-plates projecting beyond the end of the post, and folding feet *b b*, extending under the end of the post and pivoted to said hinge-plates at opposite sides or edges of the post, said feet folding up lengthwise with the post, substantially as specified.

5. The combination, in an adjustable folding curtain-partition, of the upright posts thereof furnished with hinge-plates projecting below the end of the post, and folding feet *b b*, extending under the end of

the post and pivoted to said hinge-plates at opposite sides or edges of the post, said feet folding up lengthwise with the post, the middle hinge-plate being secured in a central slot in the end of the post and having two ears, *b'*, and the outer hinge-plates having each one ear, *b'*, said ears projecting in opposite directions, substantially as specified.

6. The combination, in an adjustable folding curtain-partition, of the upright posts B B' B, having feet *b b*, with pivoted cross-bars D D', curtain G, cord P, and weights P', said end posts B B, being made hollow or furnished with pockets for said weights, substantially as specified.

7. The combination, with upright posts B B' B, having feet, of cross-bars D D' D D', and hinges E E', having their pivot-pins or barrels pivotally connected to said post B' and furnished with leaves *e e*, to which the adjoining ends of said cross-bars D D' are pivoted, substantially as specified.

8. The combination, with upright posts B B' B, having feet, of cross-bars D D' D D', and hinges E E', having their pivot-pins or barrels pivotally connected to said post B', and furnished with leaves *e e*, to which the adjoining ends of said cross-bars D D' are pivoted, said hinge E' being connected to said post through or by means of a sliding block, K, substantially as specified.

9. The combination, with upright posts B B' B, having feet, of cross-bars D D' D D', and hinges E E', having their pivot-pins or barrels pivotally connected to said post B', and furnished with leaves *e e*, to which the adjoining ends of said cross-bars D D' are pivoted, said hinge E' being connected to said post through or by means of a sliding block, K, and said hinge E being connected to said post by a block, F, substantially as specified.

10. The combination, with upright posts B B' B, having feet, of cross-bars D D' D D', pivotally connected to said posts, the outer parallel pair of said cross-bars D D' having blocks F' F², through which they are connected to said outer posts, B B, and hinges E E', connected to blocks F K, and having leaves *e e*, secured in slots in the ends of the adjoining cross-bars D D', the slots in one pair of said cross-bars being made near their front and in the other pair near their back, substantially as specified.

11. In an adjustable folding curtain-partition, the upright posts B B' B, having feet *b b*, the feet of the middle post, B', being longer than those of the end posts, B B, substantially as specified.

12. In an adjustable folding curtain-partition, the combination of the posts B B' B, having feet, with pivotal cross-bars D D' D D', the upper ends of said cross-bars sliding longitudinally on said posts, said middle post, B', having a sliding block, K, to which the adjoining upper ends of said cross-bars D D' are pivotally connected, said sliding block being provided with a knob, K', for operating the same, substantially as specified.

13. In an adjustable folding curtain-partition, the combination of the posts B B' B, having feet, with pivotal cross-bars D D' D D', the upper ends of said cross-bars sliding longitudinally on said posts, said middle post, B', having a sliding block, K, to which the adjoining upper ends of said cross-bars D D' are pivotally connected, said sliding block being provided with a knob, K', for operating the same, and a guide-spring, *k'*, pivoted dog *k²*, furnished with handle *k³* and arm *k⁴*, substantially as specified.

14. In an adjustable folding curtain-partition, the combination with folding pivotal cross-bars D D', of upright posts B B' B, having feet and provided with slots *b⁵*, and front strips, *b⁴*, having slot *b⁶*, the slots in said posts B B being furnished with sheet-metal stripe *b* to form the weight-pockets, the pivots of said cross-bars D D', which reciprocate in the slots *b⁵* of the posts B B, being furnished with rolling washers *d⁵* smaller in diameter than the width of said slots, substantially as specified.

385,814. KNOB. ABRAHAM T. MATTHEWS, Worcester, Mass., assignor to the Worcester Ferrule Company, same place. Filed Jan. 27, 1888. Serial No. 262,144. (No model.)



Claim.—1. In combination with a case or shell, a nut carried thereby, a cap-plate, a spring bearing at opposite ends against the cap-plate and the nut, and a bolt or stem screwing into the nut, substantially as shown.

2. In a knob for dampers, &c., the combination, with the bolt or stem G, provided with an angular head or nut, C, of a case or shell, A, made angular in cross-section, all substantially as shown.

3. In combination with the slotted plate I, a damper, H, and a knob secured to the damper and provided with a rectangular projecting hub, E, to enter the slot in plate I.

4. In combination with the case or shell A, the perforated cap-plate B, provided with the rectangular projection E, a nut, C, placed within the case or shell, a spring, D, bearing at opposite ends against the nut and the cap-plate, and a headed bolt or its described equivalent screwing into the nut, all substantially as shown.

5. In a knob substantially such as shown, the combination, with a case or shell, of a bolt or stem, a spring, a nut, and a cap-plate inserted into the end of the case or shell and secured thereto, the edges of the latter being bent down upon the cap-plate.

6. In a knob for dampers, &c., the combination, with a shell or case, of a bolt or stem provided within the shell with a head or nut, and a spring located within the shell and bearing at opposite ends against the end of the shell and the nut or head of the bolt.

385,815. ELECTRICAL SWITCH. JAMES R. MAYO, North Manchester, Conn. Filed Apr. 27, 1888. Serial No. 272,013. (No model.)



Claim.—1. In combination with the switch-base, the reciprocating switch-block having a limited sliding play, the lug fixed on the switch-block, the lever pivotally connected to the stud rising from the base and having a short arm engaging the said lug, the springs connecting the opposite ends of the switch-block to the lever, and the several contact-pieces, all substantially as described.

2. In combination with the switch-base, the reciprocating switch-block having a limited sliding play, the lug fixed on the switch-block, the lever pivotally connected to the stud rising from the base, said lever having a short arm engaging the said lug, the springs connecting the opposite ends of the switch-block to the lever, the several contact-pieces borne on the base and on the sides of the switch-block, respectively, and the removable cap or cover having a slot for the passage of the lever, and the catch device, whereby the cover is fastened to the base of the block, all substantially as described.

3. In combination with the switch-base having the cap-bearings, with the several catches *n* having rounded heads, the switch-block having a limited movement on the switch-base, the lever pivotally connected to the base and adapted to operate the switch-block, the several contact-pieces borne on the switch-block and on the base, respectively, the inner cover slotted for the passage of the lever-handle, and the outer cover, the several covers having the catch-sockets adapted to engage the rounded heads of the catches when the covers are sprung over them, all substantially as described.

385,816. BASE-BALL CURVER. JOHN P. MCKENNA and ALFRED M. BAKER, St. Louis, Mo. Filed Jan. 9, 1888. Serial No. 260,201. (No model.)



Claim.—1. A base-ball curver of flexible material having one end flanged and adapted to press upon the ball, and having its opposite end provided with means for attachment to the hand of the player.

2. The curver A, having at one end the loop or ring by which it may be attached to the finger, and at its opposite end a flange or disk, said loop or ring and flange being united by a flexible body-piece, substantially as described.

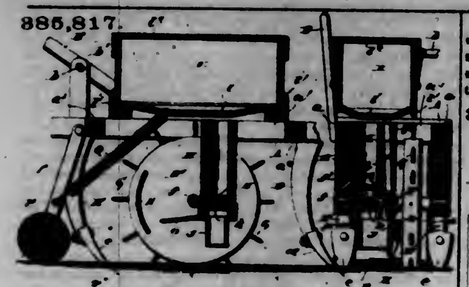
3. As an article of manufacture, a ball-curver formed of rubber having at one end a ring or loop by which it may be attached to the finger, and at the opposite end a flange or disk having a serrated or roughened edge or surface, substantially as described.

385,817. CORN-PLANTER. HIRAM S. MCMILLION, Falling Springs, W. Va., assignor of one-half to R. M. Harper, same place. Filed Feb. 29, 1888. Serial No. 265,650. (No model.)

Claim.—1. The combination of the main frame, the seed-tube having flanges on its side, the double-armed lever pivoted between said flanges, the slide-plate pivoted to the lower end of said lever, the carrying-wheel, and the cam-wires N O, secured to the inner face of said wheel and adapted to contact with the lever, as set forth.

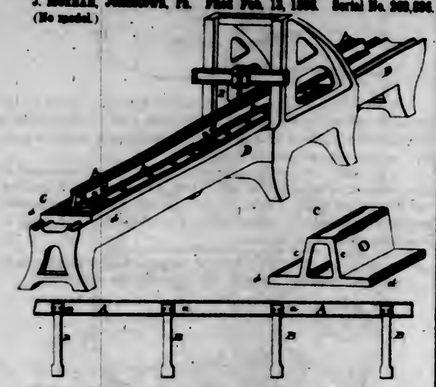
2. In a planter, the combination, with the conveyer-wheel and the cam-wires secured to the inner face thereof, of the dropping-tube, the notched plate at the end thereof, the double-armed lever pivoted

385,817.



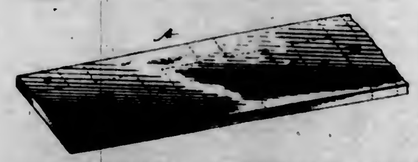
thereto, and the feeding slide-plate attached to the lower part of the said lever, substantially as specified.

385,818. PROCESS OF STRAIGHTENING SLOT-RAILS. ARTHUR J. MORRAH, Johnstown, Pa. Filed Feb. 13, 1888. Serial No. 263,896. (No model.)



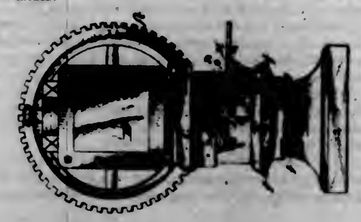
Claim.—The process of securing or providing the slot-rails of cable railways with a parallel or true-sided slot, consisting in clamping said rails upon the bed of a machine at the same points and at the same bevels or angles at which they are to be laid in track, and then cutting or planing said rails while so clamped to form the desired width of slot, substantially as and for the purposes set forth.

385,819. METHOD OF MAKING SHOVEL-BLANKS. HENRY M. MYERS, Beaver Falls, Pa. Filed Mar. 27, 1888. Serial No. 268,606. (No model.)



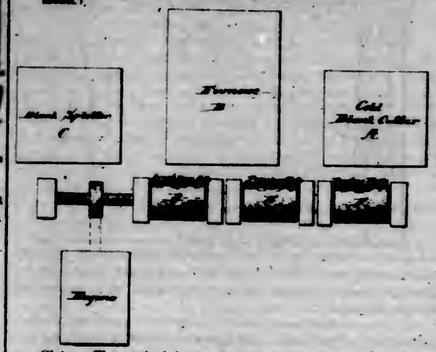
Claim.—The method of manufacturing shovel-blanks herein described, which consists in severing double blanks from a bar, each alternate blank being joined in the body of the blank, and the intermediate blanks joined in their tangs, then separating the double blanks and forming single blanks.

385,820. MACHINE FOR CUTTING SHOVEL-BLANKS. HENRY M. MYERS, Beaver Falls, Pa. Filed Apr. 3, 1888. Serial No. 268,417. (No model.)



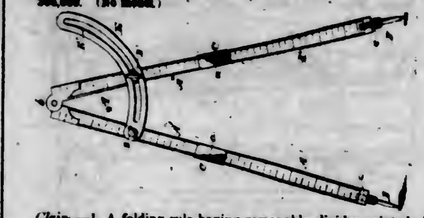
Claim.—A machine for cutting shovel or other blanks, provided with a reciprocating head, a detachable saddle secured to said head and provided with a cutting-die, in combination with a detachable saddle secured to the base of the machine and provided with an anvil, the die, and gages, substantially as described.

385,821. METHOD OF MAKING SHOVEL-BLANKS. HENRY M. MYERS, Beaver Falls, Pa. Filed Apr. 5, 1888. Serial No. 269,645. (No model.)



Claim.—The method herein described of manufacturing shovel-blanks to the shearing-point, which consists in cutting blanks from a cold bar of metal, heating the blank, splitting the tang, and forming the socket, then breaking down, finishing, and pointing the blank, substantially as described.

385,822. COMBINED SQUARE, RULE, CALIPERS, AND DIVIDERS. FREEMAN E. HUTCHIN, Florence, Mass. Filed Mar. 9, 1888. Serial No. 266,660. (No model.)



Claim.—1. A folding rule having removable divider-points in its ends and removable joint-clips, substantially as set forth.

2. A clip for a jointed rule, said clip consisting of a piece of metal having two parallel sides, one of which is transversely slotted, substantially as set forth.

3. The combination, with a folding rule, of adjustable points, joint-clips, and quadrant, substantially as set forth.

4. The combination, with a rule that is made of four pieces and jointed to fold at three points, of a quadrant, two set-screws, two joint-clips, and divider-points that are adapted to engage holes in the ends of the rule, substantially as set forth.

5. The combination, with a folding rule that is provided with metal clips that render two of its joints rigid, and two joint-clips, of a slotted quadrant, two set-screws, and divider-points which are adapted to engage tapped holes in the ends of the rule-pieces, substantially as set forth.

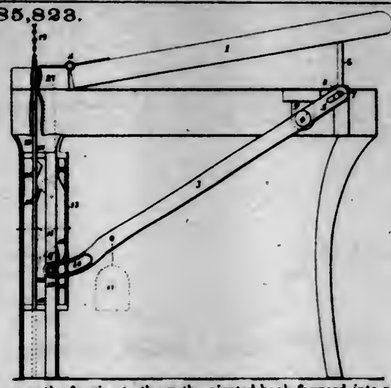
6. The combination, with a folding rule, a slotted quadrant, two set-screws, and two joint-clips that when in place render the rule-pieces rigid at two points, of two caliper-legs which are adapted to engage holes in the ends of the rule-limbs to convert a folding rule into a pair of calipers, substantially as set forth.

385,823. AUTOMATICALLY-OPERATING FLUSHING-TANK FOR CLOSETS. FRANK H. PARADISE, Denver, Colo. Filed Dec. 27, 1887. Serial No. 259,102. (No model.)

Claim.—1. The combination of a pivoted lever having its shorter end connected to an arm taking beneath the seat, a hook-carrier attached to the longer end thereof and carrying a pivoted hook, a slide connected to the pull cord or chain and carrying a fixed hook, and cam-faces, arranged as described, for throwing the pivoted and fixed hooks into and out of engagement, substantially as set forth.

2. The combination, in or with a suitable framing or support, of the slide carrying a fixed hook and a cam-face or projection above such hook, a sliding hook-carrier carrying a pivoted hook, a cam-

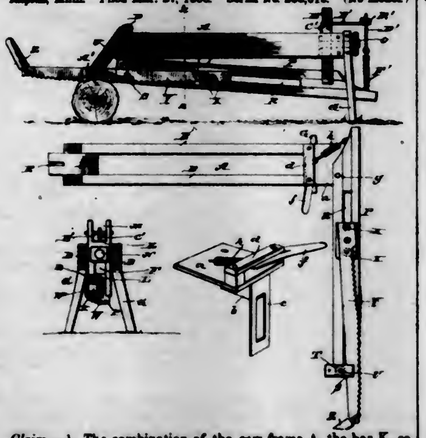
385,823.



face upon the framing to throw the pivoted hook forward into position for engagement with the fixed hook, and a lever having one end attached to the hook-carrier and the other attached to an arm beneath the seat, substantially as set forth.

3. The combination of a slide connected to the pull cord or chain and carrying a fixed hook, a hook-carrier connected to the end of a lever and carrying a hook, said hook being pivoted on or in its carrier, and provided with means for limiting its movement, and having its top portion beveled or curved on both front and back edges, camfaces, as described, for throwing the hooks into and out of engagement, and the lever connected to an arm taking beneath the seat, substantially as set forth.

385,824. SAWING-MACHINE. WILLIAM R. PATTERSON, Pelican Rapids, Minn. Filed Mar. 27, 1888. Serial No. 268,616. (No model.)



Claim.—1. The combination of the saw-frame A, the bar K, secured thereto at one end and vertically adjustable therein, the saw guide-arm having one end pivoted to the lower end of said bar, the cross-head or block working longitudinally in the saw-guide arm, and the saw having one end secured to said block or cross-head, substantially as described.

2. The combination of the saw-frame A, the standard F, pivoted to one end thereof, whereby said frame may be turned to any desired angle, the bar K, depending from the saw-frame at the pivotal end of the latter, the guide-arm pivoted at the lower end of said bar, the cross-head or block adapted to reciprocate in the said guide-arm, and the saw having its front end pivoted to said cross-head or block, substantially as described.

3. The combination of the supporting-frame, the saw-guide arm pivoted thereto and arranged on the under side thereof, the said saw-guide arm having the slot R, and the block S at the rear end of said slot, provided with the guiding kerf or slit T, the cross-head or block traveling in the slot R, and arranged on the saw-guide arm, and the saw-blade having its front end pivoted to said block or cross-head, having its rear end guided in the slit or kerf T, substantially as described.

4. The combination of the saw-frame A, the bar K, depending from one end thereof, the saw-guide arm having its front end pivoted to said depending bar, the cross-head or block provided in the said saw-guide arm and adapted to reciprocate thereon, the saw pivoted to the said block or cross-head, and the spring connected to the said guide-arm and adapted to force the saw downward in the kerf, substantially as described.

5. The combination of the saw-frame having the block D at one end, the standard F at the opposite extremity, the vertically-movable bar K, arranged at one end of the said saw-frame, the arm B', secured to the upper end of said bar, the saw-guide arm pivoted near one end to the lower end of bar K, the spring attached to the outer end of the saw-guide arm, the adjustable link connecting said spring to the bar B' for the purpose set forth, the block or cross-head guided in the guide-arm and adapted to reciprocate thereon, and the saw-blade having its front end pivoted to said block or cross-head and having its rear end engaged by the kerf T, substantially as described.

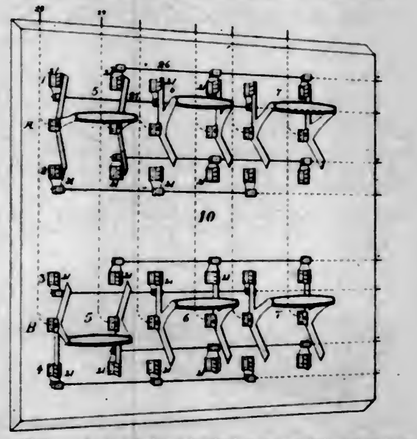
385,825. OVERFLOW-INDICATOR. MARIE L. RUSSELL, Chicago, Ill. Filed May 4, 1888. Serial No. 272,942. (No model.)



Claim.—1. In combination with an overflow-pipe, a pan, 5, supported at one end on a rock-shaft, B, provided with a crank-arm, 6, a hooked-end pitman-rod, C, and a roller, 8, attached to an alarm-hammer, as herein shown and set forth.

2. In combination with an overflow-pipe, a pan, 5, supported at one end on a rock-shaft, B, provided with a crank-arm, 6, a hooked-end pitman-rod, C, and a roller, 8, provided with a pendent adjustable weight, 12, the roller 8 being attached to an alarm mechanism, as herein set forth and described.

385,826. MULTIPLE SWITCH-BOARD. ALBERT SOMERBY, Greeley, Colo. Filed Apr. 25, 1887. Serial No. 236,048. (No model.)

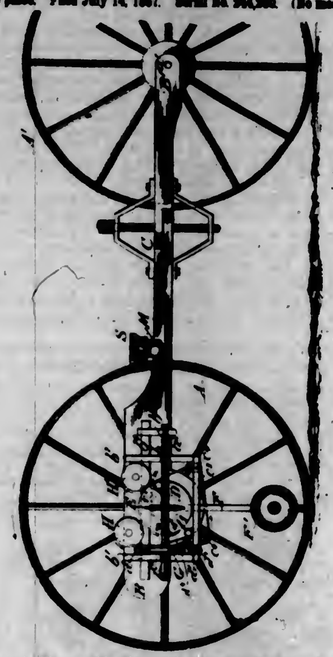


Claim.—1. A switch or circuit-changer consisting of two conducting-bars, two independent and separate standards, one for each bar, and in which each bar is centrally pivoted, the standards being placed parallel to each other and forming the terminals of an electric circuit, an insulating cross-bar or handle extending between and secured to the conducting-bars, and adapted to be grasped by the hands, and sets of contact-springs, one at the limit of motion in either direction of either conducting-bar, substantially as set forth.

2. A multiple switch-board having a row of switches, each suitably composed of parallel pivoted bars united by an insulating cross-bar or handle, the bars being connected in different branches of the same circuit, and sets of contact anvils or springs, one at each end of the bars, the sets being connected in the circuits of different sources of electricity, and connections between each switch of the row of switches electrically connecting all the corresponding parts of the switches in the row, substantially as set forth.

3. A multiple switch-board having two or more rows of switches, each switch composed of parallel pivoted bars united by an insulating cross-bar or handle, the bars being connected in different branches of the same electrical circuit, and sets of contact anvils or springs, one at each end of the bars, the sets being connected in the circuit of different sources of electricity, connections electrically connecting all the corresponding contacts from the sources of electricity in each row, and connections electrically connecting the corresponding parts of the corresponding switches in the different rows, substantially as set forth.

385,827. MACHINE FOR TAKING AND RECORDING TOPOGRAPHICAL MEASUREMENTS. JAMES W. SHAFF, Jasper, Texas, assignor of one-half to A. Lawrence Spears and William D. Spears, both of same place. Filed July 14, 1887. Serial No. 244,302. (No model.)



Claim.—1. The combination, with a topographometer-frame, of the revolving disk D, the reciprocating revolving shaft a^2, the rotative wheel E, mounted rigidly on the said shaft in position for the periphery of the wheel to bear against the face of the disk, the reciprocating rack-bar b^4, connected with the shaft, and the weighted pivoted lever F, provided with a spur-gear adapted to engage with the rack-bar and to cause the wheel to be automatically reciprocated by gravitation across the face of the disk, substantially as and for the purposes described.

2. In a topographometer, the revolving disk D and the wheel E rotated by frictional contact with and reciprocated across the face of the disk, in combination with a revolving recording-wheel provided with raised figures, an endless ink-ribbon adapted to be run across the face of the raised figures, a tape arranged to run against the face of the ink-ribbon, and the automatically-operating hammer, substantially as and for the purposes set forth.

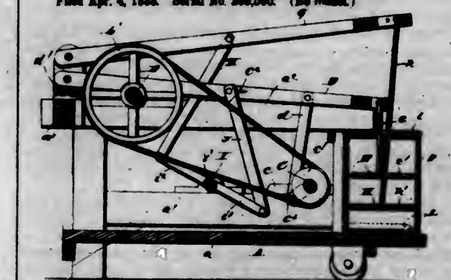
3. The combination of the section B of the carriage-frame, the axle a, having its bearings in the frame, the ground-wheel A, rigidly fixed on the axle, the disk D, mounted rigidly on an extended end of the axle and provided with one or more trip-pins, the revolving reciprocating shaft a^2, the wheel E, mounted rigidly on the said shaft in position for the peripheral surface of the wheel to bear against the face of the disk, the recording-wheel G, mounted loosely on and revolving with the shaft a^2 and provided with raised figures, the endless ink-ribbon d^3, arranged to run in front of the face of the raised figures, the tape c^3, adapted to be run against the face of the ink-ribbon, the stamping-hammer d^5, adapted to be automatically operated by the trip-pins, the reciprocating rack-bar b^4, provided with the bifurcated arm b^5, connecting with the reciprocating shaft a^2, and the weighted pivoted lever F, provided with spur-gearing adapted to engage with and reciprocate the rack-bar, and thus cause the wheel to be automatically reciprocated by gravitation across the face of the disk, substantially as and for the purposes described.

4. The combination, with a topographometer-frame in two sections, B B', pivotally connected with each other, of the revolving disk D', mounted on an axle having its bearings attached to the section B of the frame, the reciprocating revolving shaft a^2, mounted in bearings attached to said section B and pivotally connected at one end with the section B' of the frame, and the rotative wheel E', mounted on the said shaft in position for the periphery of the wheel to bear against the face of the disk, said devices being all constructed and arranged to enable the rotative wheel to be reciprocated automatically across the face of the disk by the horizontal changes in the direction of the movements of the machine, substantially as and for the purposes described.

5. The combination, with a topographometer-frame, in two sections, B B', pivotally coupled together, of the revolving disk D', provided with one or more trip-pins, the reciprocating revolving shaft a^2, pivotally connected with section B', of the frame, the wheel E', mounted rigidly on the said shaft in position for the periphery of the wheel to bear against the face of the disk, the recording-wheel G', mounted loosely on the shaft a^2 and provided with raised figures, an endless ink-ribbon arranged to run in front of the face of the raised figures, a tape arranged to run along the face of the ink-ribbon, and the hammer d^5, adapted to be operated automatically by the trip-pins, substantially as and for the purposes set forth.

6. In a topographometer, a revolving disk and a wheel rotated by the frictional contact of its peripheral surface with and reciprocated across the face of the disk, in combination with recording devices consisting of a revolving wheel provided with raised characters, a measuring-tape caused to travel across the raised characters on the recording-wheel, and an automatically-striking hammer, all the devices being constructed and arranged to automatically record the distances, elevations, depressions, and horizontal deflections of ground-surfaces traveled over by the machine, substantially as and for the purposes set forth.

385,828. CHURN. WILLIAM H. H. SPRAGUE, South Fork, Mo. Filed Apr. 4, 1888. Serial No. 269,590. (No model.)



Claim.—1. The combination of the horizontally-vibrating arms, the rock-shaft arranged below said arms and having independent connection therewith, the crank-shaft arranged below the said arms and to one side of the rock-shaft, the link connecting the crank-shaft with one of said arms, and mechanism for rotating the crank-shaft, as set forth.

2. The combination, in a churn, of the barrel, the dashers E H, having the rods e h, the oppositely-vibrating arms D G, the rock-shaft I, having the oppositely-extending arms i^2 i^3, the link-rod J, connecting the end of the arm i^2 with the arm D, and the link-rod K, connecting the end of the arm i^3 with the arm G, substantially as specified.

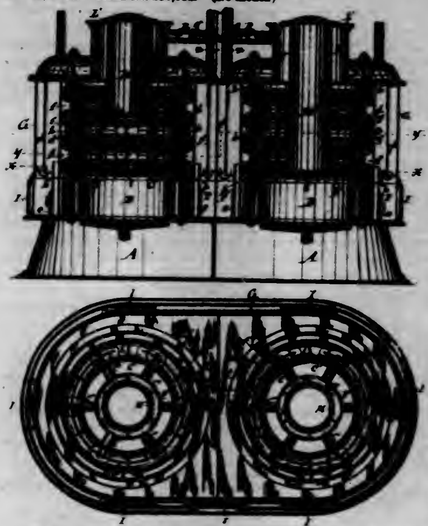
3. In a churn, the combination, with the barrel, the similar upper and lower dashers E H, having the rods e h, the oppositely-vibrating arms D G, the rock-shaft provided with the oppositely-extending arms i^2 i^3 and the link-rods J K, of the crank-shaft C, the pitman d, the pulleys c^2 b^2, the belt c^3, and the crank-handle b^3, substantially as specified.

385,829. CORD-HOLDER FOR HOLDING THE CORDS OF BLINDS, &c. BENJAMIN YOUNG, Birmingham, County of Warwick, England. Filed Jan. 11, 1887. Serial No. 224,057. (No model.) Patented in England Sept. 2, 1886, No. 11,182.



Claim.—A cord-holder for blinds and other purposes, consisting of a strip of metal bent to form a shoulder, d^2, and a projecting bow, d, having its upper side formed with a semicircular guiding-groove, e, and its lower portion formed with a tapering slot, the said shoulder having the orifice b, so that the cord can pass straight through the holder, substantially as described.

385,830. BOILER. CHESTER WEBAT, Geneva, N. Y. Filed Dec. 15, 1887. Serial No. 257,982. (No model.)

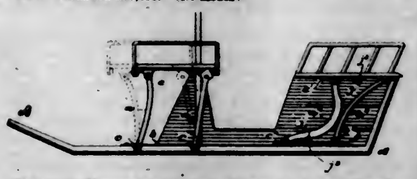


Claim.—1. In combination with the boiler and smoke-box surrounding the same, the baffle-plate P', suspended from the top of the smoke-box, baffle-plate P, of cylindrical form, rising from the base of the smoke-box and provided with ports *p p*, and a cylindrical damper, O, sliding on the latter baffle-plate and provided with ports *o o*, adapted to register with the ports *p p*, substantially as described and shown.

2. In a sectional boiler, the water-pipes C C, composed of segments closed at their ends and provided with ports communicating with the segments of the superposed pipe and subjacent pipe, substantially as set forth and shown.

3. In a sectional boiler, the pipes C C, arranged annularly one inside of the other, and each of said pipes composed of segments closed at their ends, and the outer segments provided with ports at the top and bottom communicating with the segments of the superposed pipe and subjacent pipe, and radial pipes C", connecting the outer with the inner segments, substantially as described and shown.

385,831. SHIFTING SEAT. CHARLES C. ADELSPERGER, Springfield, Ohio, assignor to Charles L. Bagle, same place. Filed Nov. 25, 1887. Serial No. 256,155. (No model.)



Claim.—1. The combination, in a shifting seat for vehicles, of pivoted rocker arms or legs adapted to support the seat in position for use and permit the same to be turned or folded when not in use, a locking device for holding said seat in its normal position, said locking device being provided with stops adapted to permit a limited movement of said seat and form a positive stop therefor in either direction, disengaging said locking device, substantially as set forth.

2. In a shifting seat for vehicles, the combination of rocker and seat plates having rocker arms or legs pivotally secured thereto at either end, a stop projection on one of said legs, and a locking device provided with stop-faces adapted to come against said stop projection when the seat is turned to a certain extent in either direction, said locking device being adapted to withdraw the stop projection from the line of said stop-faces to permit the seat to be folded in either direction, substantially as set forth.

3. The combination, with the front seat-plate having rocker-arms secured thereto, of a lug on said seat-plate, to which one of the said arms is attached, an elongated opening in said lug, through which a pivotal connection is adapted to pass, stop projection on said rocker-arm, and stop on said seat-plate, said stops being separated from each other by a space larger than the stop projection, which is adapted to come in contact with the respective stops, substantially as and for the purpose set forth.

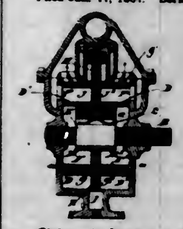
4. The combination, with the front seat-plate having a concave bearing, and the rocker arm or leg having an enlarged end adapted to fit in said concave bearing, of a stop projection adapted to project upwardly between the stop-faces on said seat-plate and adapted to come in contact with said stop-faces when turned to different positions of adjustment, the said arm or leg secured to the seat-plate by means which will permit the stop projection to be withdrawn from the line of said stop-faces, substantially as set forth.

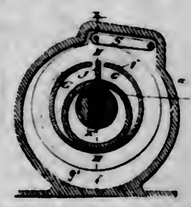
5. In a shifting seat for vehicles, the combination, with the front seat-plate and the rocker arms or legs pivotally secured thereto, of a concave bearing on said seat-plate, stop-faces above said concave bearing, and a connecting-lug provided with an elongated hole therein, one of the said rocker arms or legs being bifurcated at the upper end and provided with an enlarged portion adapted to fit in said concave bearing, and having a stop projection extending upwardly in a line with said stop-faces, a pin or rivet passing through said bifurcated arms or legs, and an elongated opening in said connecting-lug, substantially as and for the purpose set forth.

6. In a shifting seat for vehicles, the combination, with the rear seat, of rocker arms or legs pivoted at either end to said seat and to a rocker-plate at the bottom of said vehicle, respectively, one of said legs being curved to bear against said rocker-plate and seat-plate, respectively, when turned to a different position of adjustment, an adjustable screw provided with a concave bearing in said rocker-plate and seat-plate, respectively adapted to form a support for said rocker-arm when turned to either position of adjustment, substantially as set forth.

7. The combination of the rear seat, the seat-plate therefor, the rocker-plate under said seat, pivoted legs connected, respectively, to said rocker-plate and seat-plate, and a set-screw in said rocker-plate and seat-plate, respectively adapted to form a bearing for the rocker-arm when turned to either position of adjustment, said screw being provided with a cup-shaped opening adapted to be spread or expanded to prevent the same from turning, substantially as set forth.

385,832. ROTARY PUMP. WILLIAM R ALLYN, Boston, Mass. Filed Jan. 17, 1887. Serial No. 224,642. (No model.)





Claim.—1. In a pump, the combination, with a casing having the circumferential recess and inwardly-projecting flanges, of the piston having the peripheral flange arranged coincidently with and entering said recess, links connecting the flange with the casing, and abutments, substantially as set forth.

2. In a pump, the combination, with a casing having the circumferential recess and inwardly-projecting flanges, of the piston having the peripheral flange arranged coincidently with and entering said recess, links connecting the flange with the casing, and abutments disposed endwise and closely to the sides of said flange, substantially as set forth.

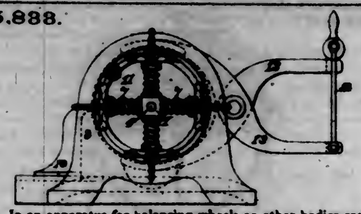
3. In a pump, the combination, with a casing having the circumferential recess and inwardly-projecting flanges, of the piston having the bearing or flanges and the peripheral flange, the abutments disposed endwise and closely to the sides of said peripheral flange of the piston, the shaft fitted with a spring-cushioned eccentric interposed between the shaft and the said bearing, and the links connecting the piston-flange with the casing, substantially as set forth.

385,838. MACHINE FOR DETERMINING AND ADJUSTING THE BALANCE OF WHEELS OR OTHER BODIES. RALPH BAGALEY, Pittsburg, Pa. Filed Aug. 13, 1887. Serial No. 246,818. (No model.)

Claim.—1. In an apparatus for balancing wheels or other bodies capable of being rotated, the combination of a shaft carrying the wheel or other body and one or more bearings therefor, fitted with a capacity of movement equal in all directions, substantially as set forth.

2. In an apparatus for balancing wheels or other bodies capable of being rotated, the combination of a shaft carrying the wheel or other body to be balanced, journal-boxes for said shaft, and one or more spiral springs supporting said journal-boxes, substantially as set forth.

385,833.



3. In an apparatus for balancing wheels or other bodies capable of being rotated, the combination of standards or housings having openings therein, journal boxes or bearings free to move equally in all directions in said openings, springs for supporting said boxes or bearings centrally or approximately so in said openings, and a shaft carrying the wheel or other body to be balanced mounted in the boxes or bearings, substantially as set forth.

4. In an apparatus for balancing wheels or other bodies capable of being rotated, the combination of a shaft carrying the wheel or body to be balanced, one or more bearings for said shaft having yielding support or supports, and a clamp for holding said wheel or body stationary, substantially as set forth.

5. In an apparatus for balancing wheels or other bodies capable of being rotated, the combination of a shaft carrying the wheel or body to be balanced, one or more bearings for said shaft having yielding support or supports, and a marker, substantially as set forth.

6. In an apparatus for balancing wheels or other bodies capable of being rotated, the combination of a shaft carrying the wheel or body to be balanced, one or more bearings for said shaft having yielding support or supports, and an adjustable marker, substantially as set forth.

7. In an apparatus for balancing wheels or other bodies capable of being rotated, the combination of a frame having a slotted base, a shaft carrying the wheel or other body, one or more yielding or resilient bearings for said shaft arranged in said frame, and a clamp for grasping the wheel and provided with a rib engaging the slot in the base of the frame, substantially as set forth.

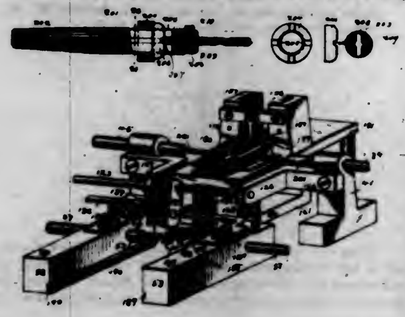
385,834. CORKSCREW. WILLIAM H. BARRETT, Meadville, Pa. Filed Oct. 6, 1888. Serial No. 218,463. (No model.)



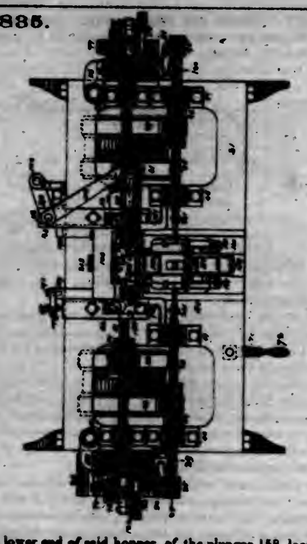
Claim.—In a corkscrew, the combination of a cylinder, B, having the slots *b* H, a traveling nut, G, having the side screw, *g*, the spiral screw F, provided with the end-flanged plunger D, carrying a loose ring, K, and the lever C, fulcrumed at *c* and carrying the bolt K in the slot H of cylinder, as shown and described.

385,835. AUTOMATIC WOOD PLANING AND DRILLING MACHINE. C. ELMER BOSTWICK, Winchendon, Mass. Filed Nov. 8, 1886. Serial No. 218,344. (No model.)

Claim.—1. The combination, with the hopper 155, having vertical ways 156 157, and springs 178, 179, and 180, projecting rearwardly



385,835.

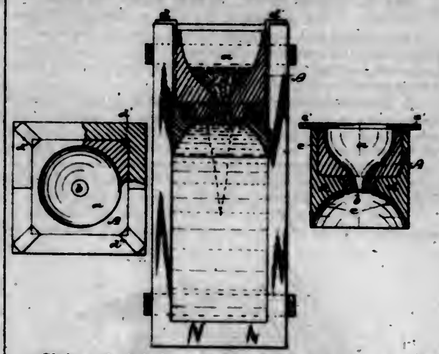


from the lower end of said hopper, of the plunger 158, located below the lower end of said ways and springs, the upper face-piece, 177, and mechanism for reciprocating it beneath said hopper and springs, substantially as described.

2. The adjustable positive stop drill-chuck 201, comprising the screw-threaded end 203, having transverse slot 208 and central bore, 209, the screw-threaded stop 204, provided with slots 205, and the key 206, filling said slots, substantially as described.

3. The supports 53 and 56, having horizontal grooves 189 190, in combination with the gage-cutter carriage 186, sliding in said grooves and provided with the recess 212, the adjustable positive stop 192 191, abutting against support 53 and limiting the inward movement of said carriage, and the lever 190, having spring 200, seated in said recess 212, said spring imparting a yielding inward motion to said carriage when said lever is operated, substantially as described.

385,836. FEEDER FOR INGOT-MOLDS. ERNEST H. BOSSERT, West Bergen, assignor to Cyrus C. Currier, Newark, N. J. Filed July 19, 1887. Serial No. 244,662. (No model.)

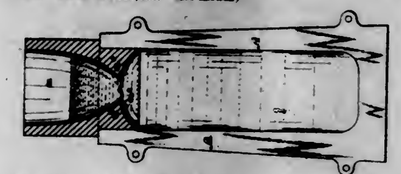


Claim.—1. A feeder for ingot-molds, having a reservoir for molten metal, a gate leading therefrom into the mold, and an inclined bottom sloping outwardly and downwardly from said gate, for the purposes set forth.

2. The combination, with an ingot-mold, of a feeder for said mold, having a reservoir for molten metal, a gate leading therefrom into the mold, and an inclined bottom sloping outwardly and downwardly from said gate, for the purposes set forth.

3. A feeder for ingot-molds, made of a refractory material and having a reservoir for molten metal, a gate leading therefrom into the mold, and an inclined bottom sloping outwardly and downwardly from said gate, for the purposes set forth.

385,837. FEEDER FOR INGOT-MOLDS. SIDNEY H. BOSHER, Jersey City, assignor to Cyrus C. Currier, Newark, N. J. Filed Jan. 12, 1888. Serial No. 260,492. (No model.)



Claim.—1. A feeder for ingot-molds, having a reservoir with an opening in its bottom, the opening having a thin edge arranged to oppose its upper and lower surfaces, respectively, to the metal in the reservoir and in the mold.

2. A feeder for ingot-molds, having a reservoir therein provided with an opening in the bottom thereof, the surrounding edge of which is thin, and a bottom inclining downward and outward away from said opening, for the purposes set forth.

3. A feeder for ingot-molds, having a reservoir therein provided with an opening in the bottom thereof, and a bottom inclining downward and outward away from said opening, the sides of said reservoir and the said bottom curving downward and upward, respectively, and meeting in a thin edge around the opening in the bottom of the reservoir, for the purposes set forth.

4. The combination, with an ingot-mold, of a feeder inserted in the top thereof and having a reservoir therein provided with an opening in the bottom thereof, the surrounding edge of which is thin and arranged to oppose its upper and lower surfaces, respectively, to the metal in the reservoir and in the mold, for the purposes set forth.

5. The combination, with an ingot-mold, of a feeder inserted in the top thereof and having a reservoir therein provided with an opening in the bottom thereof, the surrounding edge of which is thin, and a bottom inclining downward and outward from said opening, for the purposes set forth.

6. A feeder for ingot-molds, composed of a plastic refractory material and having a reservoir therein and an opening in the bottom thereof, the surrounding edge of which is thin and arranged to oppose its upper and lower surfaces, respectively, to the metal in the reservoir and in the mold, for the purpose set forth.

7. A feeder for ingot-molds, composed of a plastic refractory material and having a reservoir therein provided with an opening in the bottom thereof, the surrounding edge of which is thin, and a bottom inclining downwardly and outwardly away from said opening, for the purpose set forth.

385,838. PHOTOGRAPH-ALBUM. HYPPOLITE BOMMERAIRE, Lake View, Ill. Filed Feb. 21, 1888. Serial No. 264,960. (No model.)

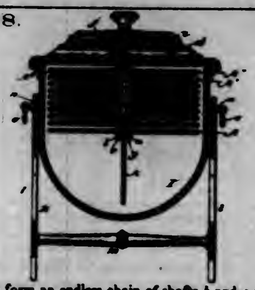
Claim.—1. The combination of a series of photograph-frames, A A' A², provided with hinge-strips *a* to one edge and connected by pivot-rods *b* to form an endless chain, and the ends of rods *b* projecting to form cogs engaging with the teeth of sprocket-wheels *c* of shafts *d* and *e*, substantially as set forth.

2. The combination, with a casing, I, having a semi-cylindrical bottom and a cover, *i*, and being pivotally suspended between standards *l* of base K on screws *n*, of bars *f* and *g*, inserted into grooves in the side of the casing, and providing the pivot-bearings for shafts *d* and *e*, carrying sprocket-wheels for an endless chain formed by hinge-strips *a*, secured to one edge of photograph-frames A A', &c., and by pivot-rods *b*, having projecting ends, all substantially as set forth.

3. The photograph-frames A A' A², &c., each provided with a hinge-strip, *a*, to one edge thereof and all detachably connected by

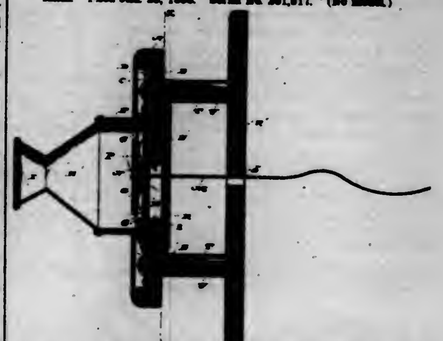


385,838.



pivot-rods *b* to form an endless chain of shafts *b* and *c*, provided with sprocket-wheels engaging with the projecting ends of the rods *b*, and of bars *f* and *g*, each having a series of pivot-holes for such shafts *d* and *e* to accommodate a longer or shorter chain of frames A, all substantially as set forth.

385,839. MECHANICAL TELEPHONE. SAMUEL D. BEZAR, Winona, Minn. Filed Jan. 26, 1888. Serial No. 261,617. (No model.)



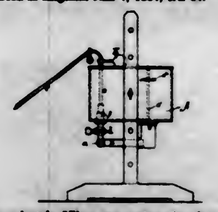
Claim.—1. In an acoustic telephone, the combination, with the diaphragm-tablet, of the wire annulus surrounding the central opening of the same and the drum having a series bearing-points at its rear pressing upon the diaphragm, whereby the same is stretched over the ring and confined at intervals to the face of the tablet, substantially as specified.

2. The combination, with the diaphragm-tablet, of the annulus secured around the opening at the rear thereof, the rear vibratory plate stretched and confined over said annulus or ring, the diaphragm and wire connections, the drum, and a connecting-wire, substantially as specified.

3. The combination, with the diaphragm-tablet and the annulus at the rear thereof, of the vibratory strands strung between said annulus and the tablet, the drum and a connecting-wire, and the diaphragm and wire connections, substantially as specified.

4. The combination, with the diaphragm-tablet, the condensing-drum, front ring, and diaphragm, of the rear ring and vibratory strands, the rear reverberating plate, and the conducting-wire, the whole arranged to operate substantially in the manner specified.

385,840. BOTTLING APPARATUS. STUART DOYLING, Dublin, County of Dublin, Ireland. Filed Dec. 6, 1887. Serial No. 257,130. (No model.) Patented in England Jan. 7, 1887, No. 57.



Claim.—1. In a bottle-filling apparatus, the cistern A, the supply-tube *a*, taps *d*, connected to said tube, and collars *f*, opening within said cistern, in combination with swinging siphons, the inner shorter arms, *e*, of which have ends adapted to form a joint with said collars

f, and weights E on said siphons, for keeping said joint normally closed, substantially as specified.

2. In a bottle-filling apparatus, the cistern A, having supply-valve *c*, the supply-tube *a*, branch *b*, connecting said tube with said supply-valve, taps *d*, connected to said tube, and collars *f*, opening within said cistern and having beveled upper ends, in combination with swinging siphons *e e'*, the inner shorter arms of which have beveled lower ends adapted to form a joint with said collars *f*, and weights E on said siphons, for keeping said joint normally closed, substantially as specified.

385,841. SIDE-GATE. BEN. L. BENJAMIN, Wahoo, Nebr. Filed Nov. 3, 1887. Serial No. 254,172. (No model.)



Claim.—1. An end-gate supported upon the wagon and having a lever mechanism pivoted to the wagon-body, whereby it may be tilted to dump or release a load or be moved to the top of the wagon-body to be out of the way and serve as a seat, substantially as described.

2. An end-gate pivoted at its lower edge to a wagon-body and connected with the latter at its upper end by means of a lever mechanism, whereby it may be closed or inclined outward at the end of the wagon-body, substantially as described.

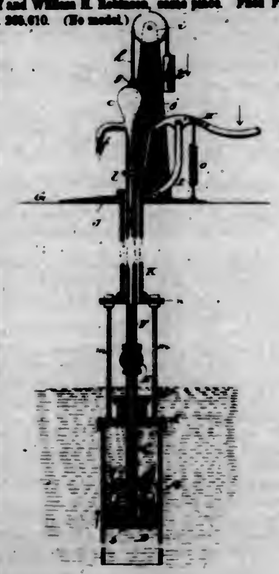
3. An end-gate connected by a removable hinge at its lower edge to a wagon-body and at its upper part to the wagon-body by means of a lever mechanism pivoted to the latter, substantially as described.

4. The combination, with a wagon-body, of an end-gate pivoted thereto, having extended side portions overlapping the wagon-body, and a lever mechanism pivoted to the wagon-body and connecting the gate therewith, whereby the gate is inclined outwardly or closed against the wagon-body, substantially as described.

5. The combination, with a wagon-body, 4, lever 10 and bar 15, connected therewith, of the end-gate 1, having extensions 2, the removable hinge-rod 5, and the sleeves 6, substantially as described.

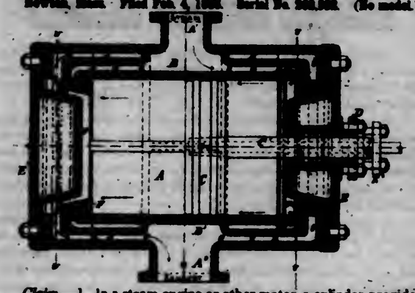
6. The combination, with the wagon-body 4, having cross-strip 20', of the end-gate 1, having sides 2, curved at 18 and removably hinged to the wagon-body, the lever 12, fulcrumed to the body, and the connecting-bar 15, substantially as shown and described.

385,842. PUMP. GEORGE H. CASSEDAY, Hoveda, Mo., assignor to himself and William H. Robinson, same place. Filed Feb. 20, 1888. Serial No. 265,610. (No model.)



Claim.—In a submerged pump, the combination of the following elements: the barrel A, having its bottom open, as shown, in contradistinction to pump-barrels which are provided with a foot-valve, the piston B, having the valve *c*, and constructed with open spaces above said valve, which permit water to pass into the space between the piston and head of the cylinder, the hollow piston-rod C and riser F, the check-valve E, arranged in the latter, and a counter-balance connected with said riser, as shown and described.

385,843. VALVE FOR STEAM-ENGINES. FRANKLIN D. GILES, Newton, Mass. Filed Feb. 4, 1888. Serial No. 263,082. (No model.)



Claim.—1. In a steam-engine or other motor, a cylinder provided with inlet and exhaust pipes, inlet and exhaust chambers communicating with said inlet and exhaust pipes, respectively, annular inlet-passages communicating with either end of said inlet-chamber, annular exhaust-passages communicating with either end of said exhaust-chamber, and inlet and exhaust ports communicating, respectively, with said inlet and exhaust-passages at either end of said cylinder and so constructed and arranged as to admit steam or other motive force to and exhaust it from said cylinder on all sides thereof, in combination with ring-valves at each end of said cylinder adapted to alternately open and close said inlet and exhaust ports, and having frusto-conical surfaces on the inside and a cylinder-head at each end of said cylinder, which is provided with an internally-projecting frusto-conical extension, the sides of which are parallel with the inner sides of said valves and are in contact therewith, or nearly so, when said valves have reached the extreme end of their movement toward the cylinder-heads.

2. In a steam-engine or other motor, a cylinder provided with inlet and exhaust ports at both ends thereof, and ring slide-valves in both ends thereof having seating-surfaces parallel to the axis of the cylinder and adapted to alternately open and close the said inlet and exhaust ports, and also provided with frusto-conical surfaces on the sides farthest from said ports, in combination with cylinder-heads provided with frusto-conical surfaces opposed to and parallel with the frusto-conical surfaces of the valves.

3. In a steam-engine or other motor, a pair of ring slide-valves arranged one in each end of the cylinder, and each having a circular seating-surface parallel to the axis of said cylinder, which valves are adapted to alternately open and close the ports of said cylinder, and are also provided with frusto-conical surfaces on the inside thereof, in combination with cylinder-heads provided with frusto-conical surfaces opposed to and parallel with the frusto-conical surfaces of the valves.

385,844. SAW-HANDLE. GEORGE H. CLEMENS, Middletown, N. Y., assignor to the Wheeler, Madden & Clemens Manufacturing Company, same place. Filed Feb. 13, 1888. Serial No. 263,782. (No model.)



Claim.—The combination, with the saw B, provided with a nick, *f*, in the back thereof, near one end, and a right-angled slot, *g*, extending inward lengthwise of the saw, then downward toward the cutting-edge of the saw, and a straight handle having a longitudinal slot adapted to receive the saw-blade, and provided with a transverse pin, *e*, and bolt *c*, for engaging the nick and slot of the saw, substantially as herein specified.

385,845. TOOL-POST RING. WILLIAM S. CORE, Philadelphia, Pa. Filed Apr. 26, 1888. Serial No. 271,787. (No model.)



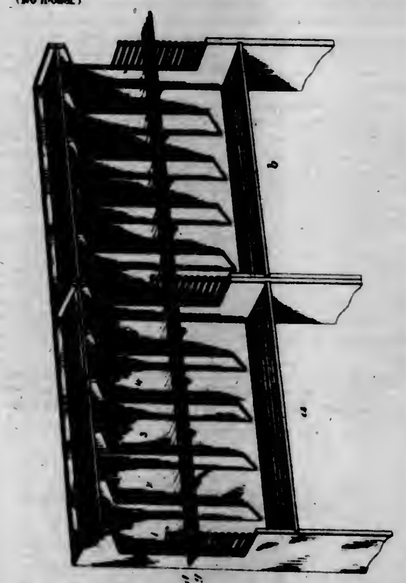
Claim.—1. A tool-rest attachment to lathes or shaping-machines, consisting of three apertured and inclined-face plates placed around the tool-post and resting on the tool-block and on each other, substantially as herein set forth.

2. A tool-rest attachment to lathes or shaping-machines, consisting of three apertured and inclined-face plates placed around the tool-post and resting on the tool-block and on each other, and said plates having holes which coincide when the plates are adjusted with a level tool-supporting face and adapted to receive a locking-pin, substantially as herein set forth.

3. A tool-rest attachment to lathes or shaping-machines, consisting of three apertured and inclined-face plates placed around the tool-post and resting on the tool-block and on each other, the upper and lower plates inclined or beveled at one side or face and the center plate inclined or beveled at both sides or faces, substantially as herein set forth.

4. The combination, with a tool-block, A, and its tool-post B, apertured at *b*, of a series of three beveled or inclined-face plates, E F G, placed around the tool-post and on the tool-block and on each other, and a set-screw, C, in the tool-post and adapted to clamp the tool to the upper plate however the series of plates may be relatively adjusted, substantially as shown and described.

385,846. WIRING SWITCH-BOARDS. JAMES A. COOK, Detroit, Mich., and FRANK R. COOK, Toledo, Ohio, assignors to the Western Electric Company, Chicago, Ill. Filed July 25, 1887. Serial No. 245,219. (No model.)



Claim.—1. The combination, with two or more multiple switch-boards having vertical divisions, of spring-jack switches and cables provided with wires connecting with said spring-jacks, said cables being run directly from one board to another at the rear and placed in horizontal layers, the cables in each layer corresponding to the number of said divisions of each switch-board and each cable being connected with a single strip or set of switches on each of the switch-boards.

2. In combination with the uprights of a switch-board and projecting from the rear thereof, the pins *i*, having the screw-cap *j*, the sleeve K, with the cables resting thereon, substantially as described.

3. The combination, with the strips of spring-jack switches arranged upon different multiple switch-boards in the same order, of telephone-lines, each connected with a different switch on each of the boards, the connections being made from the rear of the board, the wires for the connections being made up in cables extending horizontally from one board directly to another board, the cables being placed in layers, the different layers being adapted to be separated or crowded apart, whereby any cable may be removed with its attached strips of spring-jacks, substantially as described.

385,847. VELOCIPEDE. JAMES S. OSWLAND, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed Dec. 3, 1887. Serial No. 256,845. (No model.)



Claim.—1. In a velocipede-frame, the tubular pillar C, the tubular forks (C^2 C^2 and C^3 C^3, and the connecting-brackets c c' c^3, constructed and combined essentially as set forth.

2. In a velocipede-frame, a combined seat-supporting and handle-supporting bracket, E^3 *e*, constructed to hold a seat-rod and steering-post separately and adjacently.

3. In a velocipede-frame, a connecting-bracket, as *c'*, constructed to connect a fork and a reach and to afford a tubular seat for a handle-bar-supporting rod.

4. In a velocipede-frame, a connecting-bracket, as *c'*, constructed to connect a fork and reach, and a tubular pillar, and to afford a tubular seat for a handle-bar-supporting rod.

5. In a velocipede-frame having a longitudinal reach, as C, and a transverse reach, as D D, an arc-bracket, as C^3, constructed to operate essentially as set forth.

6. In a velocipede-frame, the combination, with a longitudinal reach, as C, of two transverse reaches, as D D, hinged as at K, and an arc-bracket, as C^4, having slots, as c^2 c^2, and bolts, as P P, essentially as set forth.

7. In a velocipede, the combination, with a longitudinal reach, as C, of two transverse reaches, as D D, hinged as at K, and an inclined arc-bracket, as C^4, and bolts, as P P, having a plurality of positions in the bracket, and inclined steering-spindles *d d*, essentially as set forth.

8. In a velocipede-frame, the combination of a longitudinal reach, as C, a transverse reach, as D D, an arc-bracket, as C^4, having arms, as c^4 c^4, and bolt-lugs, as c^5 c^5, and bolts, as P P, securing the bracket and transverse reaches together.

9. The combination, with a reach, as C, in a velocipede, of two wheels, as B B, and their axles, two dwarf heads, as B^2 B^2, and hinged transverse reach, as D D, arms, as c^4 c^4, having slots curved on circular arcs concentric with the hinge of the transverse reach, and devices for securing the longitudinal reach and the two arms of the transverse reach at different angles with each other.

10. The combination, with any suitable frame and driving and steering and seat, handle, and pedal mechanisms in a velocipede, of two parallel guiding-wheels and folding mechanism, substantially as described, constructed to be adjusted and operated with a less or greater width between the guiding-wheels.

11. The combination, with a single rear driving-wheel, as A, with its sprocket, as F^6, and chain, as F^6, and a suitable frame having parts for supporting seat and handle devices adjacent to the driving-wheel, and a forward reaching part, as C, of a driving-sprocket, as F^5, a bell-crank axle, and bearing mechanisms located forward of the seat and handle supports and connected with the forward reach and adjustable sprocket, as F^5, essentially as set forth.

12. The combination, in a velocipede, of a vertical central handle-bar supporting and steering post, as G^2, beneath the seat and forward of the seat-supporting rod and in rear of pedal-driving sprocket mechanism.

13. In the steering mechanism of a velocipede, the combination of a vertical steering-post, as G^2, seats for it, as *e e'*, and adjustable bearing-rings, as G^3 G^4, constructed and combined essentially as set forth.

14. In combination with a vertical steering-post, as G^2, and a longitudinal steering-rod, as G^5, an adjustable steering wrist and joint, as G^6, essentially as set forth.

15. In a velocipede steering mechanism, the combination, with a steering-post, as G^2, of a handle-bar lug, as g' g^2, and a steering wrist and joint, as G^4, adjustable relatively to each other about the axis of the post.

16. In a velocipede steering mechanism, the combination, with a steering-post, as G^2, of steering wrist and joint, adjustable both vertically and about the axis of the post.

17. In a velocipede steering mechanism, the combination, with a steering-post, as G^2, of a combined adjustable bearing-ring and a steering wrist and joint, as G^4 G^6, essentially as set forth.

18. The combination, in a velocipede, of a handle and bar, a vertical steering post and wrist, a guiding-wheel and lever-arm, and a horizontal steering-rod, as G^5, and its joints.

19. In a velocipede, the combination, with a vertical steering post and wrist and a longitudinal steering-rod, of a hinge-bolt, crank-lever, and transverse steering-rod, as G^9, on a lever-arm connected with the guiding-wheel.

20. In a velocipede having two guiding-wheels and a longitudinal steering-rod, two transverse steering-rods, as G^9 G^9, hinged together at their inner ends and each to an arm from one wheel at its outer end, and connected by lever-arms, as G^7 G^8, to operate with the longitudinal steering-rod.

21. In combination with a steering-handle of a velocipede and suitable connections operated by it, a bell-crank lever, as G^7 G^8, two transverse steering-rods, as G^9 G^9, arms, as G^{10} G^{10}, and the axis of two swivel guiding-wheels.

22. The combination, in a velocipede, of two guiding-wheels, a folding secondary frame, and a folding secondary steering mechanism, constructed and combined with a main frame, and a main steering mechanism, essentially as set forth, to permit and secure parallelism of the guiding-wheels in different positions, and at the same time an automatic adjustment of the steering devices to secure equal deflection of the wheels in guiding the machine.

23. The combination, in a velocipede, with a part of the main frame, as C, and a part of the main steering mechanism, as G^2, and with two guiding-wheels, as B B, and their suitable axles and swivel steering-heads, of adjustable hinged reaches, as D D' and D D^2, and securing devices, as d^4 c^4 c^5 P, and adjustable ring steering-rods, as G^5, lever-arms, as G^{10} G^{10} G^8 G^7, and their suitable connections, constructed to operate essentially as set forth.

24. In a velocipede, the combination of bolt K *k'*, lug c^6, nut K', cones k^2 k^2, and lugs *d' d'*, essentially as set forth.

25. In a velocipede, the combination of bolt K *k'*, lug c^6, nut K', cones k^2 k^2 k^2 k^2, nut k^2, and lugs *d' d'* g^6, essentially as set forth.

26. In a velocipede, the combination of bolt L, lever G^8, cones *l l'*, nut L', and rod ends g^6 g^6, essentially as set forth.

27. The combination, in a velocipede, of a brake-lever, as H, connecting-rod, as H^2, bell-crank lever, as H^3, adjustable connecting-rod, as H^4, and lever-brake, as H^5 H^6, constructed to operate from a handle-bar upon the periphery of a wheel.

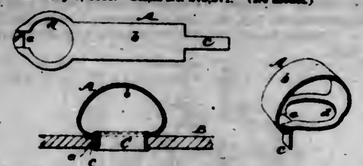
28. An improved velocipede consisting in a single driving-wheel and two guiding-wheels abreast and a suitable main frame, and seat, pedal, driving, and main steering mechanisms, and folding transverse secondary frame and steering devices, constructed to operate with the guiding-wheels at two or more different distances apart, essentially as set forth.

29. An improved velocipede consisting in any suitable driving wheel or wheels and driving mechanism, a main frame, seat, pedal, and handle, and main steering mechanisms, and two guiding-wheels abreast, and a secondary transverse frame and steering devices, constructed to operate both to incline and to deflect the guiding-wheels in parallel planes in steering, essentially as set forth.

30. An improved velocipede consisting in any suitable driving wheel or wheels and driving mechanism, a main frame, seat, pedal, handle, and main steering mechanisms, and two guiding-wheels abreast, a secondary transverse folding frame, and steering devices constructed to operate in two or more positions of breadth between the guiding-wheels, both to incline and to deflect the guiding-wheels in parallel planes in steering, essentially as set forth.

31. An improved velocipede combining in suitable driving and guiding wheels, frame, pedal, and guiding, seat, and handle mechanisms, constructed with an adjustable seat-supporting rod, and adjacent to it an adjustable handle-supporting steering-post, as G^2, located in rear of the crank-sprocket and beneath the seat, essentially as set forth.

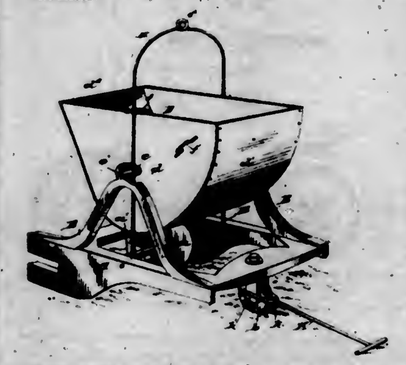
385,848. SHOE-FASTENING. GEORGE H. COUDON, Baltimore, Md. Filed May 9, 1888. Serial No. 273,271. (No model.)



Claim.—1. The within-described eye-like fastening for laced boots or shoes or other articles of wear, composed of a metal plate having a body, *b*, a tongue, *c*, at its one end, and an opposite approximately circular open end, *d*, formed with a recess, *e*, and depressed portion *f*, adapted to receive the tongue *c*, upon suitably bending the plate, within or through it, whereby the fastening is closed and capable of being secured by an independent eyelet to the material carrying it, as set forth.

2. The combination, with boots, shoes, or other articles of wear, of the fastening A, composed of a bent strip of sheet-metal having a tongue, *c*, at its one end and an apertured portion, *d*, at its other end, having a recess, *e*, and depression *f*, with which said tongue is made to engage, and the independent eyelet C, essentially as shown and described.

385,849. COMBINED FREIGHT BUCKET AND TRUCK. LOUIS A. DE MAYO, Jersey City, N. J. Filed Sept. 23, 1887. Serial No. 250,904. (No model.)



Claim.—1. The combination, with a truck, of a carrier pivotally mounted thereon and a bail secured to the truck and to the trunnions of the carrier, substantially as described.

2. The combination, with a truck, of a carrier pivotally mounted thereon and a bail having its end secured to the truck and provided with eyes through which the trunnions of the carrier pass, substantially as herein shown and described.

3. The combination, with a truck and vertical aligning standards at each side, of a carrier pivoted in said standards over the truck, a bail attached to the sides of the truck within the standards, encircling the trunnions of the carrier, and projecting over the carrier, having an eye formed integral with its highest point, and means, substantially as described, for tripping the carrier.

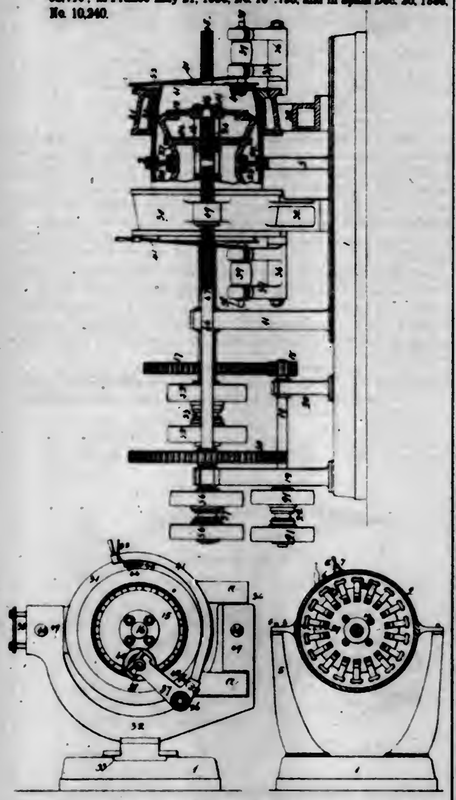
4. The combination, with a truck, A, mounted upon wheels *a* and *b*, and vertical standards B, secured to the truck at each side, of a carrier provided with trunnions *c'*, journaled in said standards, a bail, E, attached to the truck centrally inside the standards and projecting upward over the carrier, provided with aligning side eyes, *e*, adapted to encircle the trunnions, and an upper central eye, e^2, adapted for attachment to a hoist, and means, substantially as described, for retaining the carrier in a horizontal position.

5. The combination, with a truck, A, mounted upon wheels *a* and *b*, parallel vertical standards B, secured to the truck at each side, and a detachable handle, K, adapted for attachment to one forward wheel of the truck, of a carrier, D, provided with an inclined spout, d^3, handle *f*, and trunnions *c'*, journaled in the standards, a bail, E, attached to the sides of the truck centrally inside the standards and projecting

upward over the carrier, provided with aligning side eyes, *c*, adapted to encircle the trunnions *c'*, and an upper central eye, *c²*, adapted for attachment to a hoist, and a forked catch, *f*, hinged to the carrier, adapted to engage the bail E, substantially as and for the purpose herein set forth.

385,850. MACHINE FOR MAKING CASKS AND BARRELS

ALEXANDER DUNBAR, Guelph, Ontario, Canada. Filed Aug. 7, 1886. Serial No. 210,271. (No model.) Patented in England June 9, 1884, No. 8,760, and June 30, 1885, No. 7,983; in Germany Apr. 5, 1886, No. 32,716; in France May 21, 1886, No. 167,795, and in Spain Dec. 20, 1886, No. 10,240.



Claim.—1. In a barrel-making machine, the combination of two sliding trussing-heads with a removable guide-ring supported between said heads, substantially as and for the purpose set forth.

2. In a barrel-making machine, the combination of sliding trussing-heads with a removable guide-ring supported between said heads, a segment of said ring being hinged so as to open, substantially as described.

3. In a barrel-making machine, the combination of two trussing-heads sliding in guides, one of said heads being pivotally mounted on its supporting-standard so that it may be swung open to permit the barrel to be withdrawn, with means for advancing or retracting said heads toward and from one another, substantially as described.

4. In a barrel-making machine, a trussing-head having a bracket pivoted to its outer face and a tool-spindle mounted in said bracket, substantially as and for the purpose set forth.

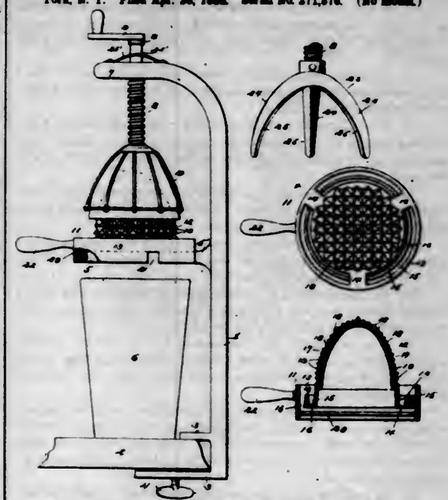
5. In a barrel-machine, the combination of a trussing-head having a bracket pivoted to its outer face and a tool-spindle mounted in said bracket, with means for adjusting and holding said bracket in position on its pivot, substantially as and for the purpose set forth.

6. In a barrel-making machine, the combination of a guide-ring, a series of spring-bearers supported within said ring for holding the staves in position, and means for moving said bearers in or out, substantially as described.

7. In a barrel-making machine, the combination of a central threaded shaft, 10, disks 25 and 26, engaged by said shaft, curved arms 27, passing through holes in said disks, and stave-bearers carried by said arms, substantially as and for the purpose set forth.

8. In a barrel-making machine, the combination of two trussing-heads sliding in suitable guides on the frame of the machine, a guiding-ring supported between said heads, and a revolving collapsible core within said ring, substantially as and for the purpose set forth.

385,851. LEMON-JUICE EXTRACTOR. JOHN L. EASLEY, New York, N. Y. Filed Apr. 26, 1888. Serial No. 271,878. (No model.)



Claim.—1. In a lemon-juice extractor, a clamp for holding a piece of lemon, consisting of a rotary frame having vertical curved arms or ribs, between which a lemon may be wedged, with openings between the arms by means of which the lemon-skin may be dislodged from the frame, substantially as shown and described.

2. In a lemon-juice extractor, a clamp for holding a piece of lemon, consisting of a rotary frame formed with inverted cup 27, with interior vertical ribs, 28, having points 26, and openings 29 between the ribs 28, substantially as shown and described.

3. In a lemon-juice extractor, a pulp-disintegrator and juice-extractor, consisting of an oval-shaped vertical projection having a solid surface with facets and a laterally-extending base portion with slots beneath the grooves formed by the facets, and a supporting-flange, substantially as described.

4. A lemon-juice extractor consisting of a standard having a bracket, a detachable frame mounted on the bracket, and formed with a vertical projection having an abrading-surface consisting of facets, and a laterally-extending base portion with vertical slots and a supporting-flange exterior thereto, and a rotary vertically-movable clamp located above the bracket, with mechanism in the standard for operating the same, substantially as described.

5. In a lemon-juice extractor, a rotary vertically-movable clamp for holding a piece of lemon, provided with an operating screw-rod having a smooth portion and cushioning-spring, thereby permitting the screw-rod to have a yielding vertical rotary movement when released from threaded engagement, substantially as described.

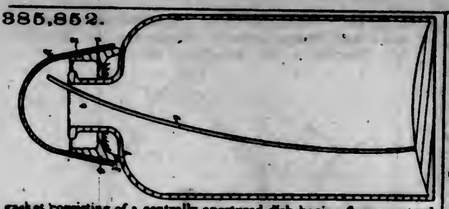
6. In a lemon-juice extractor, a detachable frame, 11, for disintegrating and retaining the pulp and seeds of a lemon and permitting the juice to flow freely, consisting of the oval vertical central portion, 12, having a surface formed with the diamond-shaped projections 18, and intersecting grooves 19, the concentric strips 13, with downwardly-tapering slots 15 adjacent to the base of vertical portion 12, and the supporting-flange 20 and handle 22, substantially as described.

7. A lemon-juice extractor consisting of standard 1, with ring 5 and arm 5', the detachable frame 11, with handle 22, supported on ring 5, and consisting of central vertical portion 12, with abrading-surface 17, and having grooves 19, and adjacent to its base concentric strips 13, and slots 15, and the wire lemon-holding frame 10, having vertical screw 8, mounted in standard 1, and handle 9, with cushioning-spring 25', substantially as described.

385,852. CLOSURE FOR BOTTLES. WILLIAM BROWNSON, Denver, Colo. Filed Nov. 14, 1887. Serial No. 255,136. (No model.)

Claim.—1. A flanged rubber gasket adapted to be seated upon the neck of a bottle and to receive upon its outer periphery a cap, such

385,852.



gasket consisting of a centrally-apertured disk having flanges extending from its periphery, substantially as set forth.

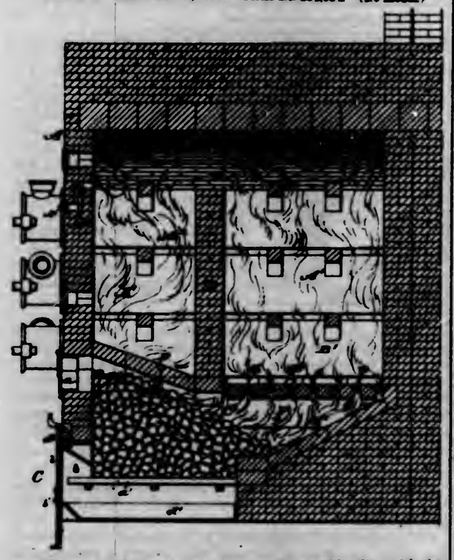
2. The combination of a flanged gasket having a centrally-apertured disk for taking upon the neck of a bottle, a flange for taking upon the shoulder of a bottle, a flange for receiving a cap, and a cap adapted to take and be seated upon the latter flange, substantially as set forth.

385,853. COMPOUND AIR-COMPRESSING PUMP. ERNEST C. EASLEY, Albany, N. Y., assignor of one-half to Ezra W. Smith, same place. Filed Apr. 9, 1888. Serial No. 270,063. (No model.)



Claim.—A compound air-compressing pump consisting of an inner stationary cylinder and an outer movable cylinder that is arranged concentrically to said stationary cylinder, the said stationary cylinder having a piston-head which fits the bore of the movable cylinder and is provided with valved inlet and outlet air-openings, and said movable cylinder being provided with a piston-head which is fitted to the bore of the stationary cylinder, as and for the purpose herein specified.

385,854. RETORT GAS-FURNACE. DESLEY D. FLEMMING, Jersey City, N. J. Filed Mar. 22, 1887. Serial No. 231,964. (No model.)

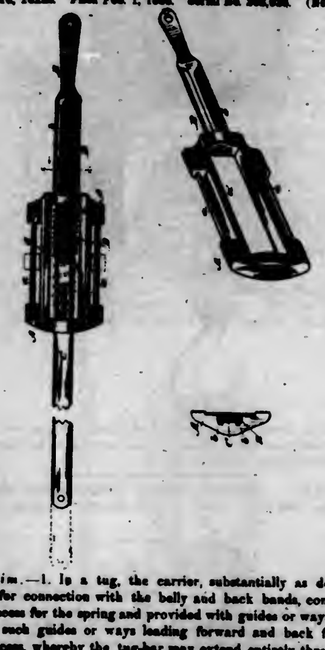


Claim.—1. In a gas-retort furnace, the combination, with the bench A, divided into a front and rear compartment by a vertical partition, of an arch dividing the front compartment from the fuel mass, substantially as shown and described, whereby a generating-chamber is formed and the first products of combustion compelled to pass around the rear of the retorts, as set forth.

2. In a gas-retort furnace, the combination, with the bench A, divided into a front and rear compartment, A' A², by a vertical partition, B, and an arch or horizontal partition, D, integral with said vertical partition and the front wall of the furnace, whereby a generating-chamber, C, is formed, of a series of channels or openings, G, in the upper rear end of said chamber and flues H H', adapted to supply air above said channels, substantially as shown and described, and for the purpose herein set forth.

3. In a gas-retort furnace, the combination, with the bench A, divided into a front and rear compartment, A' A², by a partition, B, an arch, D, uniting said partition and the forward wall of the furnace, whereby a generating-chamber, C, is formed, and supplemental air-ducts N² above the retorts, of a series of channels or openings, G, intervening the retorts at the rear, and the generating chamber and flues H H', adapted to supply air above said channels, substantially as shown and described, and for the purpose herein set forth.

385,855. TUG. STEPHEN H. FISHER and WILLIAM J. MALEBY, Baird, Texas. Filed Feb. 1, 1888. Serial No. 262,689. (No model.)



Claim.—1. In a tug, the carrier, substantially as described, adapted for connection with the belly and back bands, constructed with a recess for the spring and provided with guides or ways for the tug-bar, such guides or ways leading forward and back from the spring-recess, whereby the tug-bar may extend entirely through and beyond the opposite ends of the spring-receiving recess, combined with the tug-bar and the spring, substantially as and for the purposes specified.

2. As an improvement in tugs, the herein-described carrier, having a recess for the spring and keepers for the connection of the belly and back bands, and having the bar B extended forward from it and formed with guides *b* for the forward end of the tug-bar, all substantially as and for the purposes specified.

3. The improvement in tugs, substantially as herein described and shown, consisting of the carrier A, having keepers at its upper and lower edges and chambered at *a'*, forming a recess, the connecting-bar B, extended forward from the carrier A and formed with guides *b*, the tug-bar movable through the carrier and having its forward end arranged to be engaged by the guides *b*, and the spring located in recess *a'* and connected substantially as and for the purposes specified.

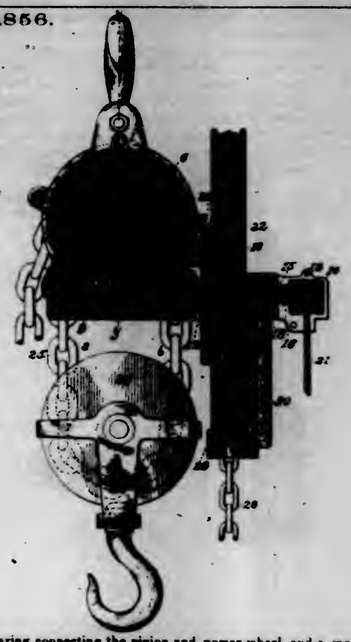
385,856. HOISTING-TACKLE. JAMES T. HANRAY, Pittsburg, Pa. Filed Aug. 13, 1887. Serial No. 246,827. (No model.)

Claim.—1. In a hoisting-tackle, the combination of the sprocket-wheel, a worm-and-gear mechanism for rotating said wheel, and a chain passing around the sprocket-wheel and having one end connected to the frame of the sprocket-wheel, said worm-and-gear mechanism serving not only to rotate the sprocket-wheel, but also as a stop for holding the load at any desired point, substantially as set forth.

2. In a portable hoisting-tackle, the combination of a sprocket-wheel, a worm-and-gear mechanism for rotating said wheel, a power-wheel mounted on the shaft of the worm and having a speed-connection to said shaft, and a power-connection thereto through interposed gearing, substantially as set forth.

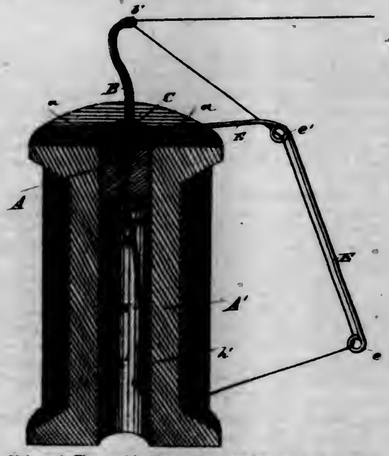
3. In a portable hoisting-tackle, the combination of the sprocket-wheel, a worm-and-gear mechanism for rotating said wheel, a power-wheel and a pinion loosely mounted on the shaft of the worm, suit-

385,856.



able gearing connecting the pinion and power-wheel, and a movable key for locking either the pinion or power-wheel to the shaft of the worm, substantially as set forth.

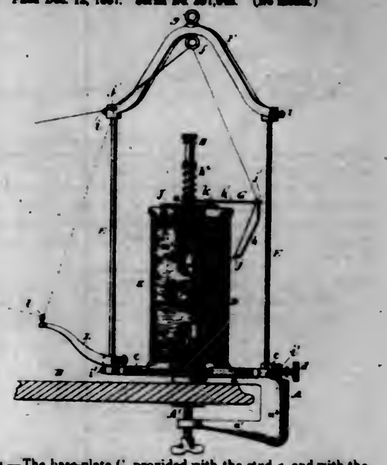
385,857. THREAD-UNWINDER. THOMAS HANDLEY, Willimantic, Conn. Filed Feb. 14, 1888. Serial No. 264,023. (No model.)



Claim.—1. The combination, with a spindle provided with a closed eye at one end and an open eye at the other end, a button held upon the spindle between the eyes, and an angular guide-arm projected from the spindle, of spring-arms detachably suspended from the lower end of the spindle, flexing in opposite directions, substantially as shown and described.

2. The combination, with a spindle provided with a closed eye at one end and an open eye at the other end, a button held upon said spindle, a stop above the button, and an angular outwardly-projecting guide-arm, of spring-arms detachably suspended from the lower end of the spindle, flexing in opposite directions, and sleeves mounted upon said arms, substantially as shown and described, and for the purpose specified.

385,858. THREAD-UNWINDER FOR SEWING-MACHINES. ALBERT J. HART, Brooklyn, assignor to Alexander King & Co., New York, N. Y. Filed Dec. 12, 1887. Serial No. 257,662. (No model.)

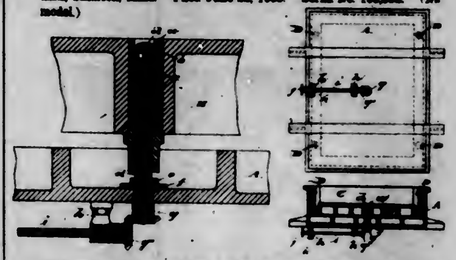


Claim.—The base-plate C, provided with the stud *c*, and with the uprights E and cross-piece F, in combination with the spool placed upon the stud *c*, the plate J, rod H, flier G, placed on said rod, and the ring K, placed upon the thread below the flier, substantially as described.

385,859. CEMENT. ISAAC C. HATCH, Santa Cruz, Cal. Filed Oct. 4, 1887. Serial No. 251,441. (No specimens.)

Claim.—The herein-described composition of matter constituting a cement, consisting of lime, sand, coralline, and sugar, combined substantially in the proportions specified.

385,860. LITHOGRAPHIC PRINTING-MACHINE. JOHN T. HAWKINS, Taunton, Mass. Filed June 22, 1886. Serial No. 205,392. (No model.)



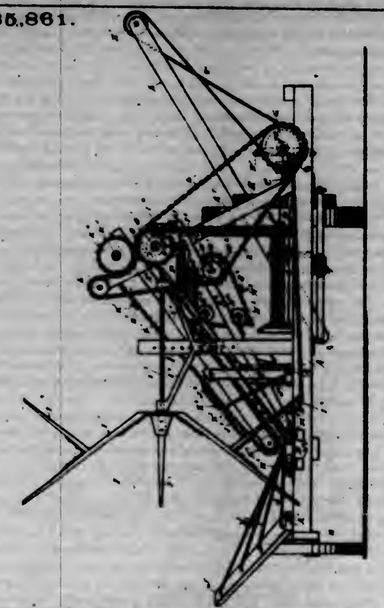
Claim.—In a lithographic printing-machine, in combination with a stone-plate and one or more supporting-bushes, marginal leveling-screws, as D, operated from the top to level said plate, and one or more bush-adjusting screws, as *d*, operated from the under side of the bed or box of said machine and passing up therethrough, whereby each of said bush-adjusting screws is adjusted to support the stone-plate and to prevent its springing under pressure and the consequent fracture of the stone, substantially as set forth.

385,861. CORN HARVESTING AND HUSKING MACHINE. JOHN A. HILBERT, Carroll, Iowa. Filed June 30, 1887. Serial No. 243,031. (No model.)

Claim.—1. In a corn-harvester, the combination, with the frame, the cutting mechanism at the front thereof, and the guide-arms at opposite ends of the cutter, of the vertical reel journaled at the front of the frame and having spokes or arms provided toward their outer ends with prongs or fingers forming, in connection with the ends of the spokes, angle-arms extending below and passing at opposite sides of the guide-arms and so as to remove the stalks therefrom, substantially as set forth.

2. In a corn-harvester, the combination, with the frame, the cutting mechanism, and the guide-bars at the front thereof, of the forwardly-inclined standard I^3, secured at its lower end to the front of the main frame, the vertically-adjustable bracket I^4 on said standard, the vertically-revolving reel journaled in said bracket and having inclined

385,861.



spokes or arms I', and the fingers or prongs I^2, secured to said spokes at right angles thereto, fingers or arms, and the ends of the spokes or arms extending below and outside of the said guides, substantially as set forth.

3. In a corn harvesting and husking mechanism, the combination, with the endless stalk-carrier K, of the toothed stem and husk severing wheel or disk under the same, a stationary plate adjacent to said wheel, a space for the ear being forced between the plate and wheel, and the endless chain having fingers for forcing the ears to the wheel and stationary plate and revolving at a greater speed than the stalk-carrier, substantially as set forth.

4. In a corn harvesting and husking machine, the combination, with a toothed wheel and a stationary toothed plate, of guide-plates leading to said toothed wheel, and endless chains carrying cross-arms provided with fingers passing between said plates, so as to force the ears along said plates to said toothed wheel and its toothed plate, substantially as shown and described.

5. In a corn harvesting and husking machine, the combination, with the carrier K, provided with the cross-bars K^3, having fingers K^4, of the beams K^1, extending in line with said carrier K and supporting the stalks conveyed upward by said carrier, the plates P^4, each provided with an inclined end extending in line with said carrier, and the endless chains N^2, provided with cross-beams N^4, having prongs or fingers N^3, for pushing the ears between said plates P^4, substantially as shown and described.

6. In a corn harvesting and husking machine, the endless chain K', the cross-bars K^3, held on said endless chains K', the fingers or prongs K^4, extending outward from said bars K^3, and the guide-rods J^2 and the beams K^1, both extending in line with the chain K', in combination with the plates P^4, extending horizontally and each having a downwardly-inclined receiving end extending in line with said chain, the inwardly-extending prongs P^5, secured to said plates P^4, for supporting the stalks while the ears are being removed, the endless chains N^2, the cross beams N^4, secured to said chains N^2, and the prongs or fingers N^3, for pushing the ears between said plates P^4 and along the same, substantially as shown and described.

7. The combination, with the brackets, the plates P^4 on the upper sides thereof, a parallel plate, P^3, secured to each bracket at one side thereof, and the rotary stem and husk severer at the rear end of said plates, of the ends of diverging spring-plates Q' under each plate P^3, their free ends lying adjacent to the rotary severer, substantially as set forth.

8. In a corn harvesting and husking machine, the combination, with the guide-plates and the horizontal toothed plate P^3, of the horizontally-rotating toothed wheel P', between which and the said plate the stems and adhering husks are acted upon, substantially as set forth.

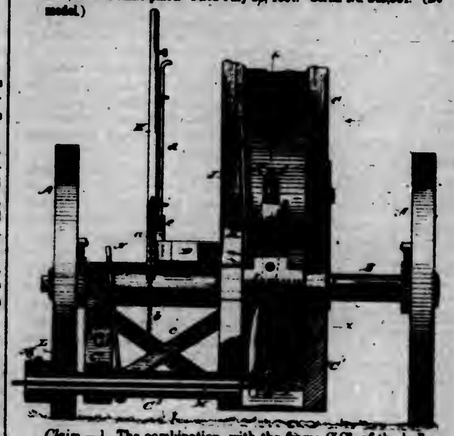
9. In a corn harvesting and husking machine, the stem and husk severing toothed wheel P' and the stationary toothed plate P^3, extending in line with the teeth of said wheel P' and having a downwardly-extending tooth reaching under said wheel P', and the spring-plates Q', each having on its outer end a hook, Q^2, for holding the husk while the latter and the stems are being severed from the ear by said wheel and said toothed plate P^3, substantially as shown and described.

10. In a corn harvesting and husking machine, the combination, with the reel I, having the inclined arms or spokes I', each provided with a prong, I^2, of the guide-arms H^3, diverging at their outer ends, having notches at their front ends, and the guide-arms A', extending from the main frame of the machine, and also provided with notches at their front ends, so as to prevent the stalks from sliding off after being cut, substantially as shown and described.

11. In a corn harvesting and husking machine, the combination, with the reel I and the guide-arms A' and H^3, each provided with notches near its pointed front end, of the inclined supporting-rods J, upon which the stalks are forced by said reel I, the guide-rods J^2, and the carrier K, for conveying the stalks upward at the under side of said carrier, said stalks being prevented from falling upon the carrier by said rods J^2, substantially as shown and described.

12. In a corn harvester and husker, the combination, with the frame, the stalk-cutting mechanism at the front thereof, the reel journaled above the cutter, the transverse supporting-rods J, inclined inward and downward from the side of the frame to a point in rear of the cutter and then upward and downward to the frame, and the supporting-rods J^2, extending upward beyond the lower ends of rods J and at about the same inclination, of the inclined stalk-carrier K over said bars J J^2, and extending at its lower ends to the bends in the former, substantially as set forth.

385,862. HOWER. ROBERT D. HOKE and ISAAC A. HARPER, Washington, Dak., assignors of one-half to Charles H. Curtiss and David T. Hire, both of same place. Filed July 30, 1887. Serial No. 245,281. (No model.)



Claim.—1. The combination, with the frame C C^2, of the hollow tube C^3, journaled loosely in said frame, the supporting-wheel L, loosely journaled on the tube, the knife-pitman extending through said tube, the oscillating lever attached to the pitman and bearing cam-groove, and the driving-disk with radial projections, substantially as shown and described.

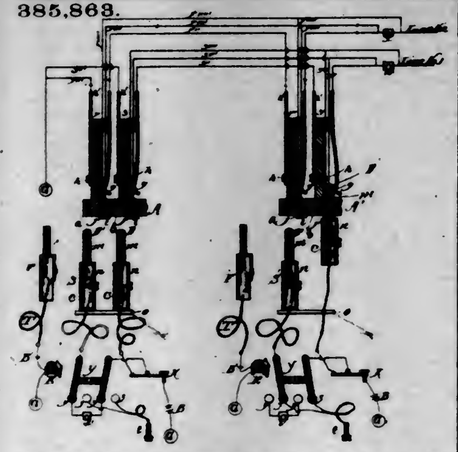
2. The combination of the frame C C^2, the hollow tube C^3, loosely journaled therein and having the rigidly-attached inner divider, M, adjusting-lever N, rigidly attached to the tube bearing said inner divider, the pitman extending through the hollow tube, the oscillating lever attached to said pitman and provided with cam-groove, and the driving-disk having radial projections playing in said cam-groove, substantially as and for the purpose described.

3. The combination, with the wheel F, with radial bolts and the lever G with cam-groove, of a housing consisting of lower section, C', having its front end curved as a runner, an upper section, C, hinged to C', the hollow rock-shaft C^3, one end of which is journaled loosely in the casing C and the other end in the wheel L and bar C^2, the pitman H, bar C^2, wheel L, and adjusting-lever N, to rock said shaft C^3, substantially as and for the purpose described.

385,863. MULTIPLE SWITCH-BOARD. MILO G. KELLOGG, Hyde Park, Ill. Filed Apr. 23, 1887. Serial No. 236,205. (No model.)

Claim.—1. In a telephone-exchange system, the combination of lines normally grounded at the central office with switches at the central office, one switch for each line, annunciators, one annunciator in each line placed in the central office between the line-switch and the

385,863.



subscriber's station, branch wires, one wire branching from each line between its annunciator and its subscriber's station to an insulated piece of its switch, a pair of switch-plugs with flexible cords, and a clearing-out annunciator, said clearing-out annunciator being in a circuit which connects the contact-points of the plugs and each of said plugs being adapted when inserted into a switch to disconnect the line which belongs to the switch from the ground and to connect its contact-point to the line both through the calling-annunciator and through the insulated contact-piece of the switch and its branch wire, whereby, by the insertion of the plugs into the switches of any two lines, the lines are disconnected from the ground and are connected together for conversation, their calling-annunciators being shunted or short-circuited by wires of small resistance, and the clearing-out annunciator being in the circuit of the lines so connected.

2. In a telephone-exchange system, two subscribers' lines temporarily disconnected from the ground at the central office and connected together for conversation, with their calling-annunciators shunted by wires of small resistance, in combination with a clearing-out annunciator in the circuit of said lines, substantially as and for the purpose set forth.

3. In a telephone-exchange system, two or more switch-boards at which the same lines are connected, switches, one for each line on each board, and branch wires, one wire branching from each line between its calling-annunciator and its subscriber's station to an insulated piece of its switch on each board, in combination with switch-plugs with flexible cords at each board, each of said plugs being adapted when inserted into a switch to connect its contact-point to the line both through the calling-annunciator and through the insulated contact-piece of the switch and its branch wire, whereby when a plug is inserted into the switch of any line at either board the line is connected to the flexible cord and its calling-annunciator is shunted or short-circuited by a wire of small resistance, substantially as and for the purpose set forth.

4. In a telephone-exchange system, a telephone-line grounded at the subscriber's station and normally grounded at the central office, and a switching device at the central office in the circuit of said line adapted to disconnect the line from the ground and connect it with another line for conversation, in combination with a test-bolt connected to said line between the subscriber's station and the switching device, (whether the line is switched or not,) a local test wire or circuit, said wire or circuit being grounded at one of its ends and connected at its other end to a switch-testing device adapted at the will of the operator to be brought into connection with said test-bolt, a test-receiving instrument and a battery, said instrument and said battery being connected in said test wire or circuit between its end which is grounded and its end which is connected to said switch-testing device, said battery being so small (or weak) that it will not operate said test-receiving instrument when, on the test being applied and the line being switched for conversation, there is a complete circuit through the test instrument and battery to the ground at the subscribers' stations only, but said battery being so strong as to operate said test-receiving instrument when, on the test being applied and the line being not switched for conversation, there is a complete circuit through the test instrument and battery both to the subscriber's ground and to the office ground of the line, substantially as and for the purpose set forth.

5. In a telephone-exchange system, telephone-lines grounded at the subscribers' stations and normally grounded at the central office, and two or more switch-boards for said lines, each board having a switching device for each line, each switching device being adapted to disconnect its line from the ground and to connect it with another line for conversation, in combination with test-bolts, one for each line on each board, each test-bolt being connected to its line between the subscriber's station and the switching devices of the line, local test wires or circuits, one for each board, each wire or circuit being grounded at one of its ends and connected at its other end to a switch-testing device adapted at the will of the operator to be brought into connection with any test-bolt at her board, a test-receiving instrument and battery for each test wire or circuit, the test instrument and battery being in said wire or circuit between its end which is grounded and the end which is connected to its switch-testing device, and the instrument being at the board to which the test-wire belongs, said battery being so small (or weak) that it will not operate said test-receiving instrument when, on the test being applied and the line being switched for conversation, there is a complete circuit through the test-receiving instrument and battery to the grounds at the subscribers' stations only, but said battery being so strong as to operate said test-receiving instrument when, on the test being applied and the line being not switched for conversation, there is a complete circuit through the test-receiving instrument and the battery both to the subscriber's ground and the office ground of the line, substantially as and for the purpose set forth.

6. In a telephone-exchange system, a telephone-line normally grounded at the central office by a ground-wire of small resistance, and a switching device in the circuit of said line adapted to disconnect the line from said ground-wire and connect it with another line for conversation, in combination with a test-bolt connected to said line between the subscriber's station and the switching device, a local test wire or circuit, said wire or circuit being grounded at one of its ends and connected at its other end to a switch-testing device adapted at the will of the operator to be brought into connection with said test-bolt, a test-receiving instrument, and a battery, said instrument and said battery being connected in said test wire or circuit between its end which is grounded and its end which is connected to said switch-testing device, said battery being so strong as to operate said test-receiving instrument when closed through the switching device and said ground-wire of small resistance, but so small (or weak) as not to operate said instrument when closed through a larger resistance, substantially as and for the purpose set forth.

7. In a telephone-exchange system, a telephone-line normally grounded at the central office by a ground-wire of small resistance, two or more switch-boards for the exchange, each board having a switching device for said line, each switching device being adapted to disconnect the line from said ground-wire and connect it with another line for conversation, in combination with test-bolts, one for said line on each board, each test-bolt being connected to the line between the subscriber's station and the switching devices of the line, local test wires or circuits, one for each board, each test wire or circuit being grounded at one of its ends and connected at its other end to a switch-testing device adapted at the will of the operator to be brought into connection with the test-bolt at her board, a test-receiving instrument and battery for each test wire or circuit, the test-receiving instrument and battery being in its test wire or circuit between its end which is grounded and its end which is connected to its switch-testing device, and each instrument being at the board to which its test wire or circuit belongs, said battery in each test wire or circuit being so strong as to operate its test-receiving instrument when closed through said switching devices and said ground-wire of small resistance, but so weak (or small) as not to operate said instrument when closed through a larger resistance, substantially as and for the purpose set forth.

8. In a telephone-exchange system, a telephone-line normally grounded at the central office, a switching device for said line adapted to disconnect the line from its office ground and connect it with another line for conversation, and a calling-annunciator in the circuit of the line between the subscriber's station and the switching device, in combination with a test-bolt connected to said line between said calling-annunciator and said switching device, said test-bolt being adapted to be connected at the will of the operator with a test wire or circuit grounded at its other end, in which wire or circuit is a test-receiving instrument and battery, substantially as and for the purpose set forth.

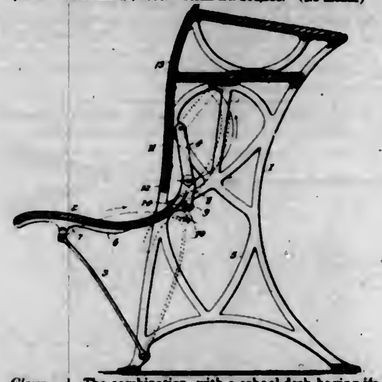
9. In a telephone-exchange system, two or more switch-boards at which the same lines are connected, switches, one on each board for each line, calling-annunciators, one for each line and connected in the circuit of its line between the subscriber's station and the switches of the line, test-bolts, one for each line on each board, each test-bolt being connected to its line between the line-switches and the calling-annunciator, each test-bolt being adapted to be connected at the will of an operator to a test wire or circuit at its board, in which is a test-receiving instrument and battery, and branch wires branching from each line between its subscriber's station and its calling-annunciator to an insulated piece of its switch on each board, in combination with switch-plugs with flexible cords at each board, each of said plugs being adapted, when inserted into a switch, to connect its contact-point to the line both through the calling and through the insulated contact-piece of the switch and its branch wire, all substantially as and for the purpose set forth.

10. In a telephone-exchange system, the combination of the subscribers' lines, the switch-boards, the switches, the annunciators, circuit-connections between the switches and the subscribers' lines through the annunciators, and separate circuit-connections between the subscribers' lines and the switches around or shunting the annunciators, substantially as set forth.

11. In a telephone-exchange system, the combination of a multiple switch-board, the subscribers' lines, the switches, one for each line in each board, their circuit-connections, the test-bolts, one for each switch, connected to the lines between the subscribers' stations and the switches, the test-circuits connected with the lines, but normally in open circuit therewith, a battery and signaling device in the test-circuit, and a test-plug adapted to close the test-circuit at the test-bolt of any line, substantially as set forth.

12. In a telephone-exchange system, the combination of a multiple switch-board, the subscribers' lines, the switches, one for each line in each board, their circuit-connections, the test-bolts, one for each switch, the test-circuit closed through the main line when the line is connected up, but closed through a local circuit when the line is free, said test-circuit including a signaling device and a battery of sufficient strength to operate the signal when a circuit is closed through the unopened switches, but too weak to operate the signal through a circuit including one or more subscribers' lines.

385,864. COMBINED SCHOOL SEAT AND DESK. ALBERT LABOON, Rutland, Vt., assignor to himself and Rockwood Barrett, same place. Filed Jan. 19, 1888. Serial No. 261,262. (No model.)



Claim.—1. The combination, with a school-desk having its front formed with a back for a seat, of a seat extensible in front of the desk and folding within the desk-frame, links for supporting the seat, pivoted at one end to its forward part and at the other end to the lower portion of the desk-frame, links located within the desk-frame, pivoted at their lower end to the rear of the seat and at their upper end to the desk-frame in the rear of the seat-back, and seat-supporting projections within the desk-frame, with which the rear of the seat engages in extended position, substantially as shown and described.

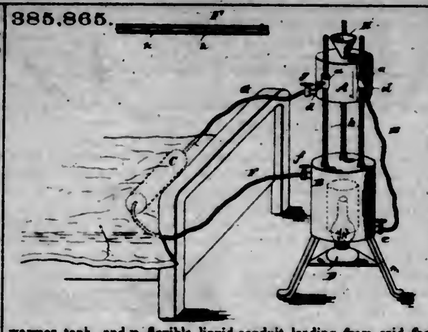
2. The combination, with desk-frame 5, having the supporting-pins 10 and back 11, of the seat 2, extensible in front of the desk-frame beneath back 11 and folding within the desk-frame 5, and having pivoted link-supports 3, connecting the forward part of the seat with the lower portion of the desk-frame, and pivoted links 4, located in the rear of the seat-back 11, within the desk-frame 5, and pivoted thereto at their upper end and at their lower end to curved extensions 8 on the rear of seat 2, and hooks 9 below the pivotal point of extensions 8, engaging supporting-pins 10, substantially as shown and described.

385,865. FOOT-WARMING APPARATUS FOR BEDS. JAMES A LEWIS, St. Clairsville, Ohio. Filed Oct. 31, 1887. Serial No. 253,896. (No model.)

Claim.—1. The combination, with a supply-tank and a heating-tank having a liquid-conduit between them, of an inclosed foot-warmer tank, and a liquid-conduit leading from said heater-tank to said foot-warmer tank, and a liquid-conduit leading from said foot-warmer tank to said supply-tank, substantially as and for the purpose described.

2. The combination, with a supply-tank and a heater-tank having a liquid-conduit between them, of an inclosed foot-warmer tank, and a flexible liquid-conduit leading from said heater-tank to said foot-warmer tank, and a flexible liquid-conduit leading from said foot-warmer tank to said supply-tank, substantially as and for the purpose described.

385,865.



3. The combination, with a supply-tank and a heater-tank having a liquid-conduit, E, between them, of an inclosed foot-warmer tank, and a flexible liquid-conduit, F, leading from said heater-tank to said foot-warmer tank, and a flexible liquid-conduit, G, leading from said foot-warmer tank to said supply-tank, one or more of said liquid-conduits being provided with a regulating-valve, substantially as and for the purpose described.

4. The combination, with a supply-tank and a heater-tank having a liquid-conduit, E, between them, of an inclosed foot-warmer tank and flexible liquid-conduits F G, provided with the rigid tubular sections *k*, leading from said heater to said warmer and from said warmer to said supply-tank, substantially as and for the purpose described.

5. The combination, with a heater-tank, B, having vertical supporting-rods *b*, and a supply-tank, A, having guide-clasps *c* and set-screws *d*, and a flexible liquid-conduit, E, between said tanks, of an inclosed foot-warmer tank, C, and liquid-conduits F G, leading from said heater to said warmer and from said warmer to said supply-tank, substantially as and for the purpose described.

6. The combination, with a supply-tank, A, and a heater-tank, B having a recessed bottom, B^2, and a liquid-conduit between said tanks, of an inclosed foot-warmer tank, C, and liquid-conduits F G, leading from said heater to said warmer and from said warmer to said supply-tank, substantially as and for the purpose described.

7. The combination, with a supply-tank, A, having a funnel-shaped inlet, H, the heater-tank B, and a liquid-conduit between said tanks, of an inclosed foot-warmer tank, C, and liquid-conduits F G, leading from said heater to said warmer and from said warmer to said supply-tank, substantially as and for the purpose described.

8. The combination, with a supply-tank, A, having a funnel-shaped inlet, H, and a spherical stopper, *h*, and the heater-tank, and a liquid-conduit between said tanks, of an inclosed foot-warmer tank, C, and liquid-conduits F G, leading from said heater to said warmer and from said warmer to said supply-tank, substantially as and for the purpose described.

9. The combination, with a supply-tank, A, a heater-tank, B, and a foot-warmer tank, C, a liquid-conduit between said supply-tank and heater-tank, a liquid-conduit between said heater and foot-warmer tanks, and a liquid-conduit between said warmer-tank and supply-tank, of a lamp located under said heater-tank, substantially as and for the purpose described.

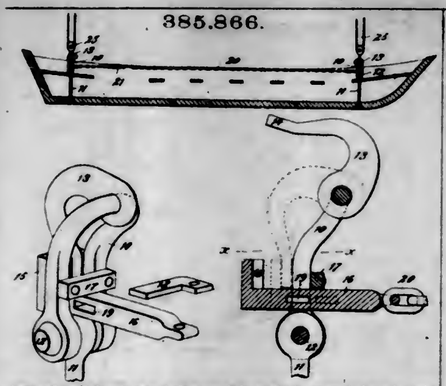
10. The combination, with a supply-tank, A, a heater-tank, B, a foot-warmer tank, C, and a liquid-conduit between said supply and heater tanks, a liquid-conduit between said heater and foot-warmer tanks, and a liquid-conduit between said foot-warmer and supply tanks, of a lamp provided with a non-transparent chimney located under said heater-tank, substantially as and for the purpose described.

11. The combination, with a heater-tank, B, having vertical supporting-rods *b*, a supply-tank, A, having guide-clasps *c*, and set-screws *d*, the funnel-shaped inlet H, and spherical stopper *h*, the foot-warmer tank C, and the flexible conduits E F G, respectively leading from said supply-tank to the heater-tank, from the heater-tank to the foot-warmer tank, and from the foot-warmer tank to the supply-tank, each conduit being provided with a valve, and the said conduits F and G provided with the rigid tubular sections *k k*, of a lamp located under said heater-tank, substantially as and for the purposes described.

385,866. BOAT-DETACHING APPARATUS. ALEXANDER MCCRACKIN, Fairfield, Iowa. Filed June 11, 1887. Serial No. 241,013. (No model.)

Claim.—1. In a boat-detaching apparatus, the combination, with the shackle or its stated equivalent, having a transverse cross-piece and a hook pivoting on upper part of the shackle or its stated equiv-

385,866.



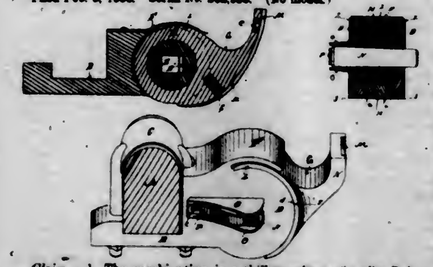
sient, of a sliding bar or bolt passed through the space below the said cross-bar, and having at one end an upward-projecting keeper to receive the free end of the hook when said end is swung down and the keeper moved toward the shackle, substantially as set forth.

2. In a boat-detaching apparatus, the combination, with the shackle 10, or its stated equivalent, having a transverse cross-piece and a hook, 13, pivoting on the upper part of the shackle, of the sliding bar or bolt 16, passed through the space under said cross-piece, and having an upward-extending open keeper, 15, on its end at the outer side of the shackle to receive the free end of the hook 13, and an aperture, 19, to receive the key 18 at the inner side of the shackle, substantially as set forth.

3. A boat-detaching apparatus comprising the two shackles 10, or the stated equivalents thereof, having transverse cross-pieces 17, and oppositely-facing hooks 13, pivoting on the upper parts of the shackles, the two bars or bolts 16, passing through the spaces below the cross-pieces, and having on their outer ends upwardly-projecting keepers 15, open on their sides next to the shackles to receive the free ends of the hooks when the bars or bolts are slid toward each other, and apertures 19, to receive keys 18 at the inner sides of the shackles, a chain connecting the inner ends of said bars or bolts and provided with a slip-hook, and a lanyard, 24, for securing the ring 22 of the slip-hook from longitudinal movement, substantially as set forth.

4. The combination, with the boat having the usual eye-bolts, 11, at its ends, of the shackles 10, or their stated equivalents, pivoted to the eyes of said bolts by transverse pivots, and having transverse cross-pieces 17 above the pivots, and the hooks 13 on the upper ends of the shackles and facing the ends of the boat, the sliding bars or bolts 16, extending through the spaces under the cross-pieces 17, and having keepers 15 on their outer ends open on their sides next to the shackles to slide over the free ends 14 of the hooks when the said bars or bolts are drawn toward each other, the locking-keys for the bolts at the inner sides of the shackles, and the connecting-chain having a slip-link, whereby the boat may be suspended by the swinging hooks or directly by the shackles 10, substantially as set forth.

385,867. THILL-COUPLING. MALCOLM F. McINTYRE, Girard, Pa. Filed Feb. 3, 1888. Serial No. 262,953. (No model.)



Claim.—1. The combination, in a thill-coupling, of a chp, B, having the overhanging lip F, and the ears D D thereon, with the thill-iron G, having the bearing H and the flanges J J thereon, and the eccentric bushing I in said bearing H, substantially as and for the purpose set forth.

2. The combination, in a thill-coupling, of the ears D D, having rounded ends *d*, and the square bolt-hole E therein, with the thill-iron G, having a bearing, H, adapted to fit between the ears D D, an eccentric bushing, I, in said bearing, and a tapering key, N, substantially as and for the purpose set forth.

3. A thill-iron consisting of a circular bearing, H, having an eccentrically-pierced bushing, I, therein, concave flanges J J on the front edge of the bearing H, and an arm, K, provided with a groove, M, and bolt-holes *e* and *f*, substantially as and for the purpose set forth.

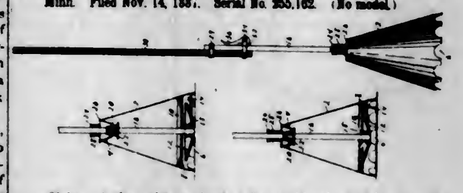
385,868. CAR-COUPLING. FRANCIS I. McNAB, Sturgeon Bay, Ontario, Canada. Filed Jan. 26, 1888. Serial No. 261,984. (No model.)



Claim.—1. The combination, with the coupling mechanism, of the vertically-rocking crank-shaft for raising the coupler, an operating lever or arm pivoted to the end of said shaft to swing at right angles thereto, and a support on which the said arm or lever may be swung to hold the coupler raised, substantially as set forth.

2. The combination, in a car-coupling, with the vertically-swinging arm M, to which the coupling-pin is pivoted, of the crank-shaft R, having levers S S pivoted to its opposite ends at the sides of the car, the supports T T for said levers, and the chain P, connecting the crank-shaft and arm M, substantially as set forth.

385,869. CISTERN-CLEANER. FRANK R. McNALL, Minneapolis, Minn. Filed Nov. 14, 1887. Serial No. 255,162. (No model.)



Claim.—1. In a cistern-cleaner, the combination, with a suitable handle, of a movable receiver arranged to slide vertically on said handle, a bottom plate secured to said handle and adapted to close the opening in the bottom of said receiver, and a collar also secured to the handle and arranged to close an opening in the top of the said receiver, substantially as described.

2. In a cistern-cleaner, the combination, with the handle 16, of the outer case, 2, the movable bottom plate, 12, the gasket 10, secured to the case, the projecting fingers or stops 14, secured to said bottom plate and resting against the inner surface of said case, and the collar 20, provided with the gasket 22, arranged to fit an aperture in the top of said case and operate with the said bottom plate, substantially as described.

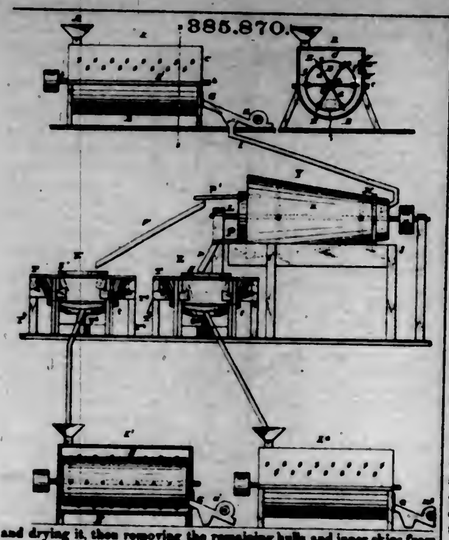
3. In a cistern-cleaner, the combination, with the case 2, open at the bottom and provided with an air-exit opening at the top, of the bottom plate, 12, and collar 20, and the operating-handle 16, secured thereto and arranged to open or close the openings in the said receiver, and the spring 28, secured to the handle and acting upon the top of said receiver to hold it in position, substantially as described.

4. In a cistern-cleaner, the combination, with the case or receiver 2, the plate 12, opening or closing the space at the bottom of said receiver, the collar 20, opening or closing the air-escape at the top of said receiver, of the handle, the lower section, 16, of which is attached to the plate 12 and collar 20, and the upper section arranged to slide on said lower section, and the eccentric 34, for clamping the two sections together, substantially as described.

385,870. PROCESS OF HULLING, CLEANING, AND SEPARATING GRAIN. FREDERICK MELKERSMAN, St. Charles, Mo. Filed July 16, 1887. Serial No. 244,352. (No model.)

Claim.—1. The hereinbefore-described process of hulling, cleaning, and separating grain, which consists in first removing a large proportion of the hulls from all the grain, then separating the disconnected hulls, then washing and moistening the grain, then straining

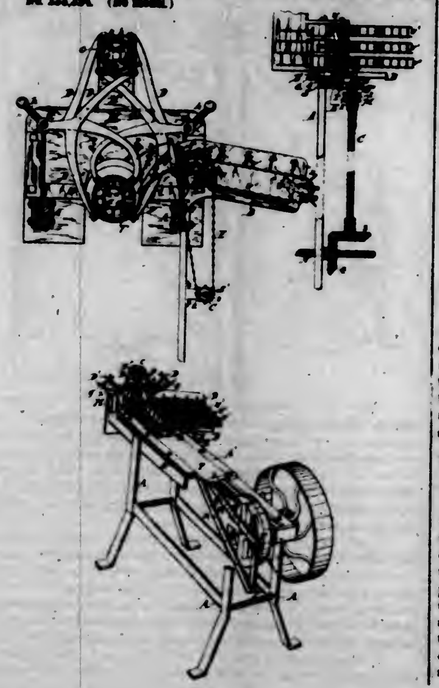
385,870.



and drying it, then removing the remaining hulls and inner skins from the grain, and finally separating the disconnected hulls and skins, substantially as herein set forth.

2. The herein-before-described process of hulling, cleaning, and separating grain, which consists in first removing a large proportion of the hulls from all the grain, then separating the disconnected hulls, then washing and moistening all the grain, then separating the good grain from the imperfect grain during the process of washing, and then drying the grain and removing and separating the remaining hulls therefrom, substantially as herein set forth.

385,871. MACHINE FOR CUTTING GREEN CORN FROM THE COB. G. LEWIS MERRELL, Syracuse, N. Y. Filed May 16, 1887. Serial No. 238,294. (No model.)



Claim.—1. In combination with the main supporting-frame and the two plungers P P, arranged one within the other, the crank-wheel V, arranged with its axis below the plane of the plungers, and having affixed to it the crank P and the crank-arm P', extended from said crank and both in approximately the same vertical plane with the two plungers, and pitmen connecting said crank and crank-arm directly with the plungers, substantially as described and shown.

2. In combination with the head H, the cutter-carrying arms D D D D, disconnected from each other to operate independently and by one and the same spring, and handles A A, attached to the arms which carry the lowermost cutters, substantially as described and shown.

3. In combination with the stationary head H, the cutter-carrying arms D D D D and scraper-carrying arms D' D' D' D', all extending upward from the cutters and scrapers and pivoted to the upper portion of the aforesaid head, substantially as described, whereby the said arms are held completely out of the passage of the corn and moisture in the process of cutting and scraping the same from the cob, as set forth.

4. In combination with the head H, the cutter-carrying arms D D D D, pivoted to said head and all actuated by one and the same spring, and each arm acting independently of the others, thereby adapting the cutters to operate with equal efficiency on crooked cobs and on cobs having corn only on one side as on straight and perfect ears of corn, substantially as set forth.

5. In combination with the head H, provided with the upper extension, H', and cutters *a a a a*, the cutter-carrying arms D D D D, extending upward from the cutters and pivoted to the upper part of said head, and terminating at points around a segmental coster on the extension H', lugs *b b*, projecting from said extension, set-screws *c c*, connected to said lugs and bearing on the aforesaid arms, and the elastic band *c*, connected with said ends of the arms to normally hold the same on the aforesaid set-screws, substantially as set forth.

6. In combination with the head H, arms D D, pivoted to the front of said head, and cutters connected to said arms, the bearings *l l*, projecting from the head H back of the arms D D, substantially as and for the purpose set forth.

7. In combination with the frame, cutters, feed-trough, plungers, and driving-shaft for operating said plungers, shafts arranged parallel with the feed-trough, chain-wheels on said shafts, endless feed-chains on said wheels, a movable gate between the feed-chains and feed-trough, a sprocket-wheel on one of the chain-wheel shafts, same on the sprocket-wheel adapted to engage and raise the gate, a counter-shaft, a sprocket-wheel on one end of said counter-shaft, a drive-chain connecting the two sprocket-wheels and engaging gears respectively on the opposite end of the counter-shaft and on the aforesaid driving-shaft, substantially as shown.

385,872. CISTERN. JAMES MILLER and CONRAD HEISSNER, Syracuse, N. Y. Filed Mar. 31, 1888. Serial No. 269,148. (No model.)

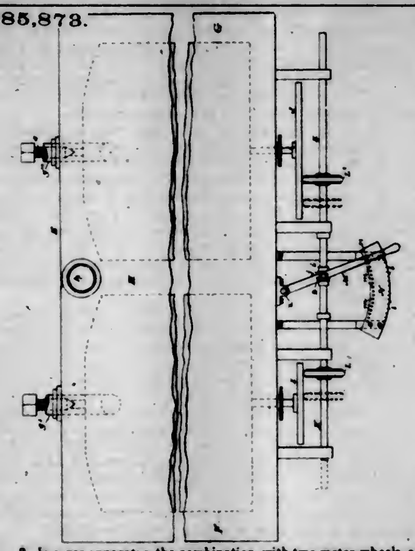


Claim.—The combination, with the cistern, of the inlet-pipe *a*, extended to the bottom of the cistern at one side thereof and terminating with horizontal branches *a' a'*, extending toward the corners of the opposite side of the cistern, and the overflow-pipe *b*, extending to the bottom of the cistern diametrically opposite inlet-pipe and terminating with horizontal branches *b' b'* across the bottom of the cistern, substantially as described and shown.

385,873. APPARATUS FOR MIXING ARRIFORM FLUIDS. THOS. F. MORRIS and WILLIAM F. OSBORNE, Jersey City, N. J. Filed Oct. 15, 1887. Serial No. 252,497. (No model.)

Claim.—1. In a gas apparatus, the combination of two meter-wheels, one of which is connected with the gas conduit or pipe from the generator and the other provided with an air-supply, of adjustable differential gearing connecting said meter-wheels, whereby their relative velocities may be changed at will, said gearing consisting of two plane-faced disks mounted, respectively, on the journals or shafts of the two meter-wheels, a shaft extending across the faces of said disks, and two friction-wheels on said shaft, with their peripheries in contact, respectively, with the faces of said disks, whereby the shifting of either or both of said wheels over the face of the disk will vary the relative velocities of the meter-wheels, as set forth.

385,873.



2. In a gas apparatus, the combination, with two meter-wheels, as F and G, in the mixer E, of the disks, as I and J, on the respective shafts of the said meter-wheels, the shaft, as K, extending diametrically across and in front of said disks, the friction-wheels, as L and L', on shaft K and in contact peripherally with the respective faces of the disks, and a shifter for shifting said gearing, substantially as set forth.

3. In a gas apparatus, the combination, with the two meter-wheels, of the mixer, the two disks on the respective shafts of said meter-wheels, the shaft K, and the friction-wheels on said shaft in contact peripherally with the faces of the respective disks, of the shifter whereby the gearing is shifted, and the holder whereby the shifter is held in the position set.

4. In a gas apparatus, the combination, with the two meter-wheels, of the mixing apparatus and the plane-faced disks on their respective journals, of a shaft, as K, a friction-wheel, as L, on said shaft and in peripheral contact with one of said disks, a friction-wheel, as L', on said shaft and in contact peripherally with the other disk, said wheel being movable in a plane parallel with its axis, and a shifter for said wheel, comprising a lever, M, the collar *u* on the boss of the wheel L', the rod *v*, connecting the said collar and lever, the slotted plate N, the clamp-screw *n'* in said lever and plate, and its nut, the said screw and nut forming a holder for the lever, as set forth.

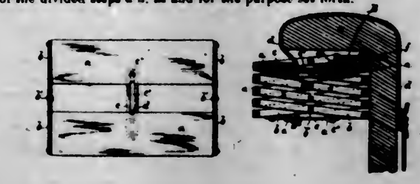
5. In a gas apparatus, the combination, with the two meter-wheels, of the mixing apparatus, the differential friction-gearing connecting said meter-wheels, and the shifting lever, as M, of the curved rack on said lever, the upright shaft *d'*, and the pinion *e'* on said shaft and meshing with said rack, as set forth.

385,874. FLEXIBLE EXTENSION-LADDER. DANA PARIS, Boston, Mass., assignor to the Land and Sea Safety Ladder Company, of Maine. Filed Nov. 5, 1887. Serial No. 254,379. (No model.)

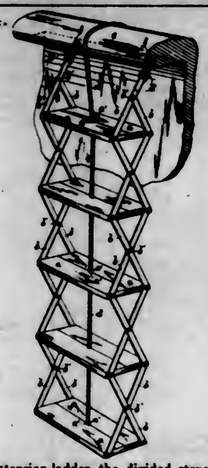
Claim.—1. The herein-described extension-ladder, consisting of the divided steps *a a a a*, connected together by means of the lazy-tong levers *b b*, as and for the purpose set forth.

2. The divided steps *a a a a* and the slotted guides *c c'*, as described, in combination with the lazy-tong levers *b b*, pivoted to the ends of the said divided steps *a a*, substantially as and for the purpose set forth.

3. In an extension-ladder, the divided steps *a a*, having recesses *a' a'* at their meeting edges, and the hoisting-rope *d*, passing through such recesses and secured to the lowest plate in the series or its connections, combined with the lazy-tong levers *b b*, pivoted to the ends of the divided steps *a a*, as and for the purpose set forth.

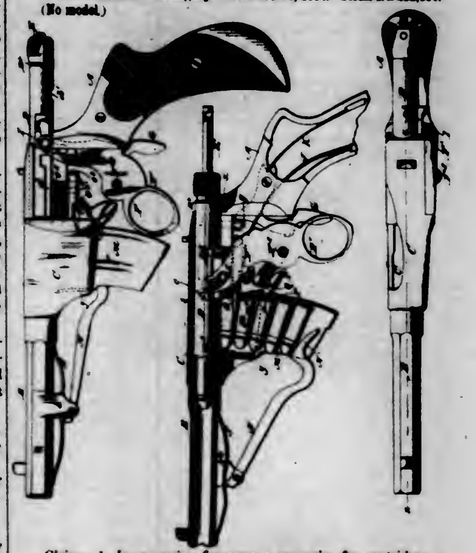


385,874.



4. In an extension-ladder, the divided steps *a a*, having recesses *a' a'* at their meeting edges, as described, and slotted guides *c c'*, in combination with the hoisting-rope *d*, arranged as described, and the lazy-tong levers *b b*, pivoted to the ends of the divided steps *a a*, as and for the purpose set forth.

385,875. MAGAZINE FIRE-ARM. FRANZ FAMBLER, Ottakring, near Vienna, Austria-Hungary. Filed Oct. 20, 1887. Serial No. 252,999. (No model.)



Claim.—1. In magazine fire-arms, a magazine for cartridges, a breech-bolt and a firing-pin reciprocating in the space above said magazine, a cartridge-bar arranged opposite an opening in the side of the magazine just below the upper cartridge, a spring arranged to move the end of said cartridge-bar through said opening to lift said cartridge, and a trigger connected with said breech-bolt and arranged to strike against said cartridge-bar for withdrawing the latter, substantially as set forth.

2. A breech-bolt having a pin and a shoulder on its side, a firing-pin within said breech-bolt, and a spring bearing at one end against the firing-pin and at the other against the breech-bolt, a trigger which has a curved slot in its upper extension engaging the pin on said breech-bolt, a sear-trigger having an attachment arranged to engage a lug or shoulder on the firing-pin, and the casing provided with a shoulder for engaging the shoulder on the breech-block, all substantially as set forth.

3. In magazine fire-arms, the combination of a casing having a magazine-chamber and an opening on one side above said chamber with a magazine fitting in said chamber, a cartridge-lifter, a cartridge-bar having reciprocation into the magazine beneath the upper cartridge, springs actuating said lifter and bar, a breech-bolt, and a trigger connected thereto and provided with a lug arranged to strike said cartridge-bar, substantially as set forth.

4. A longitudinally-slotted breech-bolt, a firing-pin within it, a spring in contact with said breech-bolt at one end and with said firing-pin at the other, a trigger having a pin-and-slot connection with said breech-bolt for reciprocating and turning it, a pin in contact with a shoulder on said firing-pin, and a sear-trigger connected with said pin that is contact, the sear-trigger being immediately behind the main trigger in order that the pressure on the latter may operate both triggers, substantially as set forth.

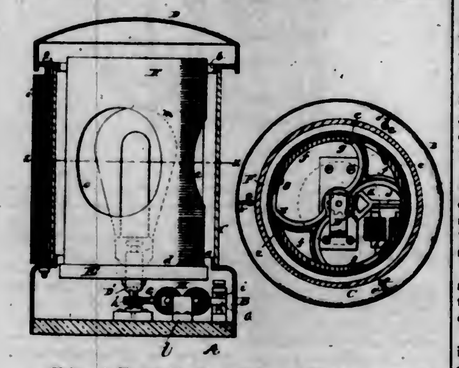
5. A cartridge-magazine having a shoulder presented downward, in combination with a magazine holder or catch having reciprocation below said shoulder, a spring arranged to move said magazine-holder into engagement with said shoulder, a handle for withdrawing it from such engagement, a cartridge-bar having reciprocation through an opening in the side of said magazine just below the upper cartridge, a spring arranged to force said cartridge-bar under said cartridge to lift the same, a breech-bolt and firing-pin reciprocating in the space above said magazine, and the casing having a chamber which receives said magazine, the cartridge-bar being provided with a lug or shoulder arranged to be struck by said magazine-holder for withdrawing said cartridge-bar, as set forth.

385,876. BUTTON. CHARLES A. PIERCE, Dover, N. J. Filed Feb 18, 1888. Serial No. 264,462. (No model.)



Claim.—The combination, with the back *d* and tubular shank *c*, of the head *b*, having a cylindrical extension adapted to enter the said shank, and the tie-receiving pin *e*, which is hinged directly to the outer side of the head, as shown and described.

385,877. RAILWAY SIGNAL-LANTERN. CHRISTIAN H. PFUNDS, Danville, Ill. Filed Feb. 25, 1888. Serial No. 265,602. (No model.)

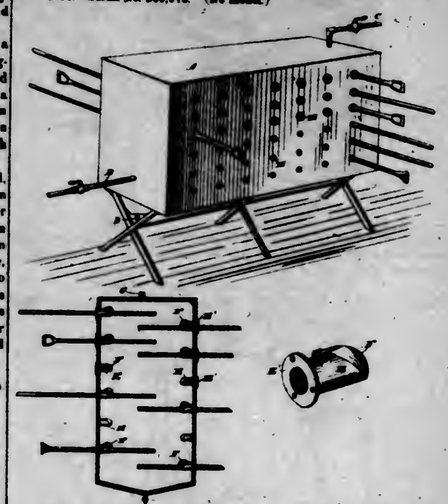


Claim.—1. The combination, with the signal-lamp carrying a gear-wheel, of a lever having a segment engaging said gear and an armature, an electro-magnet for throwing the lever, and means for returning the lever to its normal position.

2. The combination, with the bottom casing, B, a cylinder resting thereon, the cap D on top of the said cylinder, and the bolts connecting the cap and casing outside of the cylinder and provided with longitudinally-extending plates on their outer sides, of the rotary signal-lantern within the cylinder and an operating mechanism in the bottom casing, substantially as set forth.

3. In a railway-signal, the combination of the casing B, the glass cylinder C, the cap D, the wheel E, and hollow metallic cylinder F, provided with the windows *f*, the sector-wheel G, carrying the armature *j*, the retractile spring *k*, and the electro-magnet H, substantially as described.

385,878. APPARATUS FOR STEAMING WOOD TO BE AFTERWARD BENT. ROBERT T. PETTIGREW, Wyoming, Pa. Filed Apr. 7, 1888. Serial No. 269,976. (No model.)



Claim.—1. An apparatus for steaming handles, &c., consisting of a steam-chamber having an inlet and outlet for steam and provided with openings in its walls, through which the ends of the articles to be steamed may be thrust, substantially as described.

2. An apparatus for steaming handles, &c., consisting of a steam-chamber having openings in its walls for the introduction of the ends of the articles to be steamed, said openings being shaped to correspond to the contour of the article to be inserted, so as to prevent the escape of steam, substantially as described.

3. An apparatus for steaming handles, &c., consisting of a steam-chamber having openings in its walls for the introduction of the ends of the articles to be steamed, and valves for keeping said openings normally closed, substantially as described.

4. An apparatus for steaming handles, &c., consisting of a steam-chamber having openings in its walls for the introduction of the ends of the articles to be steamed, and automatically-closing valves for said openings, whereby upon the withdrawal of the articles from the openings, the latter will be closed, substantially as described.

5. An apparatus for steaming handles, consisting of a steam-chamber having openings in its walls for the introduction of the ends of the articles to be steamed, said openings being shaped to correspond to the contour of the articles to be introduced, and automatically-closing valves for said openings, substantially as described.

6. In the herein-described steaming apparatus, the combination with the steam-chamber, of the holders secured in the walls thereof, each of said walls consisting of a tubular portion through which the article to be steamed is introduced into the chamber, and an automatic valve closing said tubular portion upon the withdrawal of the article, substantially as described.

7. The holder consisting of the tubular portion through which the article to be steamed is passed, and an automatic valve for closing said tubular portion upon the withdrawal of said article, substantially as described.

8. The holder consisting of the tubular portion having the inclined inner end or valve-seat, and a gravitating valve for co-operating with said seat, substantially as described.

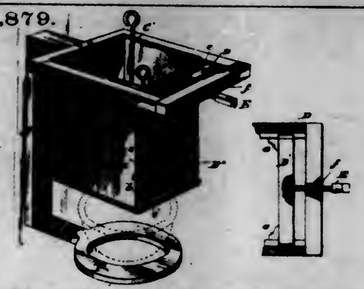
9. The holder having the tubular portion, the flange for securing it in position, and the automatic valve, substantially as described.

385,879. GRATER. FLORA POLLARD, Baltimore, Md. Filed Apr. 24, 1888. Serial No. 271,787. (No model.)

Claim.—1. In a grater, the combination, with the can or hopper containing the grater proper, of the frame holding said can or hopper and having depending therefrom a ring or circular frame supporting a bowl or vessel to receive the grated substance falling from the hopper or can, substantially as specified.

2. The combination of the can or hopper having an open lower end, the grater proper or cylinder, the cylinder-shaft supported in said can or hopper and provided with a handle or crank, and the can or hopper door provided with an eye, with the movable or sliding rod passing through said eye and eyes upon the can or hopper, the screw-

385,879.



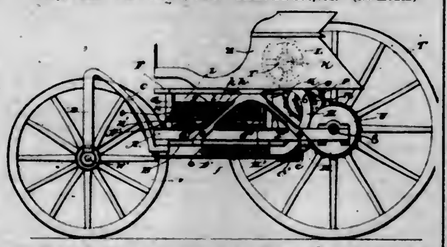
actuated follower provided with holding-cleats, the supporting-frame arm having the circular frame, and the semicircular follower or feeler provided with a rod or handle, substantially as set forth.

385,880. COFFEE-POT. WILLIAM RAGER, Harrison, Ark. Filed Jan. 16, 1888. Serial No. 260,879. (No model.)



Claim.—In a coffee-pot, the funnel B, having a supporting-flange at its upper end and a cylindrical lower end, *d*, having a strainer, *e*, forming its bottom, in combination with the bottomless cylinder C, of greater length than the cylinder *d*, fitting therein, and having perforations *g* in its top and side walls above the upper end of said cylinder, the inverted imperforate compressing-cone *f*, depending from the top of cylinder C, and the handle A on top of said cylinder, substantially as set forth.

385,881. SELF-PROPELLING CARRIAGE. JAMES P. SEWELL, Troy, Tenn. Filed Mar. 9, 1888. Serial No. 266,708. (No model.)

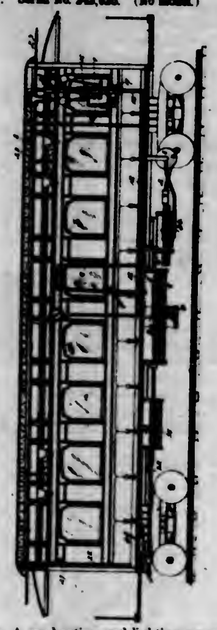


Claim.—1. The combination, in a self-propelling carriage, of the driving-shaft journaled to the rear end of the carriage and having the driving-wheels, the pilot-wheel journaled on a shaft adapted to be turned in a horizontal plane and supported in advance of the carriage, connections to direct the pilot-wheel in any direction, the shaft O, sprocket-wheels and sprocket-chain connecting the same to the driving-shaft, the shaft K, sprocket-wheels and sprocket-chain connecting the latter to the shaft O, said shaft K having the balance-wheels L and the spring-actuated mechanism connected to the shaft K to rotate the latter, substantially as described.

2. The combination, in a self-propelling carriage, of the driving-shaft journaled thereto and having the driving-wheels, the spring motor or mechanism and connections between the same and the driving-shaft to rotate the latter, the forward-extending arms C, having the standards D, the horizontal shaft or axle having one end swiveled to the lower end of one of said standards and provided at the opposite end with a curved arm or rod engaging the lower end of the other standard D, the pilot-wheel journaled loosely on said shaft or axle, the shaft A', the hand-wheel to rotate the same, and connections between said shaft and the axle on which the pilot-wheel is mounted, substantially as described.

3. The combination of the spring-shafts *g* F, having the loose spur-wheels and the pawls and ratchets connecting the said spur-wheels to their shafts, with the driving mechanism having the gears engaging the said spur-wheels, the sprocket-wheels loose on said shaft and connected thereto by pawls and ratchets and adapted to rotate in opposite directions independently of the shafts, the shaft *a*, having the wheel *c* and chain connecting the same to the sprocket-wheel on shaft F, the pinion *d*, rigid on shaft *a*, the gear *p*, meshing with pinion *d*, the wheel *r*, rigid with said gear, and the endless chain *e*, connecting the said wheel *r* and the sprocket-wheel on the shaft *g*, substantially as described.

385,882. SYSTEM AND APPARATUS FOR HEATING AND LIGHTING CARS. GEORGE SMITH, Rochester, N. Y., assignor of one-half to Max Brickner and Abraham Stettheimer, both of same place. Filed July 7, 1887. Serial No. 243,035. (No model.)



Claim.—1. A car heating and lighting apparatus comprising a compressed-air reservoir, a naphtha-tank connected therewith, a pipe leading from the said tank to the heater and lamp for supplying them with the carbureted air, and an automatic cut-off between the said naphtha-tank and the heater and lamp, substantially as set forth.

2. In a device for heating and lighting cars, a safety attachment comprising a tube having a spring-actuated stop-cock, a glass pipe fitting in said tube, a spring surrounding said glass adapted to engage the stem of the said stop-cock and hold the same in an open position, and spring-arms carrying weighted balls attached to said metal tubes, adapted to strike the glass pipe and break the same, substantially in the manner and for the purposes herein set forth.

3. In a device for heating and lighting cars, a safety attachment consisting of a metal tube carrying a spring-actuated stop-cock, a glass pipe fitted in said tube, a wire coil surrounding said pipe, provided with an eye adapted to engage the stem of the valve and hold the same in an open position, and an arm adapted to engage a cord passing through the car, substantially as shown and described, whereby, when said cord is pulled, the stop-cock will close, substantially as set forth.

4. In a car-heater, a safety device for automatically shutting off the gas, consisting of a metal tube, 16, provided with a spring-actuated stop-cock, 17, having a crank-arm, 19, spring-arms 25, attached to said tube, carrying weighty balls 26, a glass tube, 14, held in said metal tube, and a wire coil, 15, on said tube provided with an eye, 20, engaging the crank-arm 19 to hold the cock closed, and an integral

vertical operating-arm, 21, substantially as shown and described, whereby, when the balls come in contact with the glass, the said crank-arm will be released, and also when the vertical arm 21 is drawn upward, as herein set forth.

5. The combination, with the burners and pipe supplying them with fuel, of an interposed section of glass forming a continuation of said tube and spring-arms provided at their free ends with weights or balls to break the glass section, substantially as set forth.

6. The combination, with the burners and pipe supplying them with fuel, and provided with a glass section between the source of supply and burners, of an automatically-closing valve, connections between the same and the tube for holding the valve open, and spring-arms provided with balls at their free ends to break the glass and release the valve, substantially as set forth.

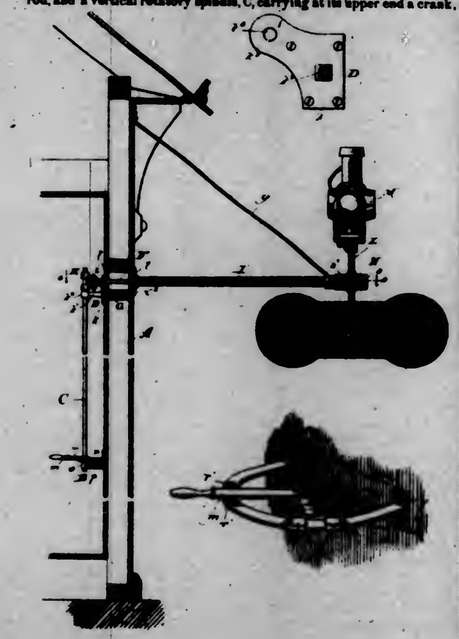
7. The combination, with a car provided with air-brake, compressed-air supply, heaters, and burners, of a pipe connecting said heaters and burners, a carburetor from which said pipe receives its air, a compressed-air reservoir connected with said carburetor, and an auxiliary reservoir connected with the first-named reservoir and with the pipe of the compressed-air-brake pipe, substantially as set forth.

385,883. TRAIN-ORDER SIGNAL. AXEL A. STRÖM, Austin, Ill. Filed Feb. 17, 1888. Serial No. 264,412. (No model.)

Claim.—1. In a train-order-signaling apparatus, the combination of a non-rotating rod, F, supported in horizontal position and longitudinally reciprocating, a signaling device connected with one end of the rod and turned from its normal position by actuating the rod in one direction, and a stationary bracket, D, having an extension, L^4, provided with an aperture, L^4, forming the bearing for the opposite end of the rod, substantially as described.

2. In a train-order-signaling apparatus, the combination of a vertically-supported rotatory spindle, L, carrying a signaling device to rotate with it, a yoke, G', on the said spindle, a horizontal reciprocating non-rotating rod, F, connected at one end with the said yoke and supported in rigid bearings, a yoke, G, connected with the opposite end of the rod, a crank, E, engaging with the yoke G, and a vertical rotatory spindle, C, carrying the crank E, whereby turning the spindle C moves the rod in a straight line and turns the signaling device, substantially as described.

3. In a train-order-signaling device, the combination of a non-rotating rod, F, supported in horizontal position and longitudinally reciprocating in rigid bearings, a vertical rotatory spindle, L, supported near one end of the rod and carrying a yoke, G', engaged by the rod, and a signaling device, a spring, K, compressed by moving the rod in one direction and operating by its resilience to return the rod to the position from which it is moved, a yoke, G, on the opposite end of the rod, and a vertical rotatory spindle, C, carrying at its upper end a crank,



E, engaging with the yoke G, and operating, when rotated in one direction, to move the rod F in a straight line against the resistance of the spring K, and thereby turn the signaling device, substantially as described.

4. In a train-order-signaling device, the combination of a non-rotating rod, F, supported in horizontal position and longitudinally reciprocating, a vertical rotatory spindle, L, supported near one end of the rod and carrying a yoke, G', engaged by the rod, and a signaling device, a spring, K, compressed by moving the rod in one direction and operating by its resilience to return the rod to the position from which it is moved, a yoke, G, adjustable on the opposite end of the rod, and a vertical rotatory spindle, C, carrying at its upper end a crank, E, engaging with the yoke G, and operating, when rotated in one direction, to move the rod F in a straight line against the resistance of the spring K, and thereby turn the signaling device, substantially as described.

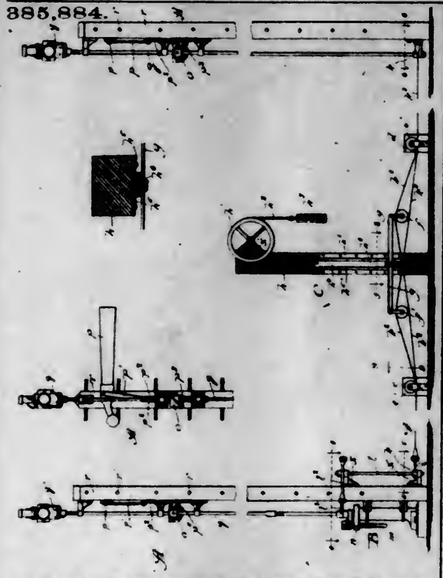
5. In a train-order-signaling apparatus, the combination of a vertically-supported rotatory spindle, L, carrying a signaling device to rotate with it, a yoke, G', on the said spindle, a housing, H, for the yoke, a horizontal non-rotating longitudinally-reciprocating rod, F, extending at one end into the housing H, and connected therein with the said yoke and supported in rigid bearings, a spring, K, upon the rod, a sleeve, I, inclosing the rod and spring, a yoke, G, connected with the opposite end of the rod, a crank, E, engaging with the yoke G, and a vertical rotatory spindle, C, carrying the crank E, whereby turning the spindle C moves the rod in a straight line to turn the signaling device and compresses the spring, the resilient force of which when released returns the said rod and signaling device to the positions from which they were moved, substantially as described.

6. A train-order-signaling apparatus comprising, in combination with a wall, A, having a hole, *l*, formed through it, a horizontal non-rotating rod, F, extending at opposite ends beyond the opposite sides of the wall through the hole *l*, a housing, H, supported from the wall A, and into which the outer end of the rod extends, and carrying a vertical rotatory spindle, L, having upon it to rotate with it a signaling device, a yoke, G', on the spindle L in the housing and engaging with the rod F, a spring, K, on the rod, a sleeve, I, inclosing the rod and spring between the housing and wall and containing rigid bearings *x* and *x'*, a bracket, D, having a bearing, L^4, for the rod near its inner end carrying a yoke, G, a vertical rotatory spindle, C, on the inner side of the wall, a bracket, B, supporting the said spindle, a crank, E, on the spindle C, engaging with the yoke G, and a pivotal lever, *m*, on the said spindle, substantially as described.

385,884. COMPENSATOR FOR SIGNAL-LINES. AXEL A. STRÖM, Austin, Ill. Filed Mar. 19, 1888. Serial No. 267,825. (No model.)

Claim.—1. The combination of a long-distance semaphore, A', having a double crank, F', on its rotatory spindle, a home operating

385,884.



device having a standard provided with a rotatory spindle, *l*, carrying a double crank, *k*, cables L^2 and L^3, connecting corresponding arms of the said double cranks, and a compensator, C, for the cables, located between the long-distance semaphore and home operating device, substantially as described.

2. The combination of a long-distance semaphore, A', provided on its rotatory spindle with a double crank, *K'*, having its arms bent toward each other away from the semaphore-post, a home operating device having a standard provided with a rotatory spindle, *l*, carrying a double crank, *k*, having its arms bent toward each other away from the standard, cables L^2 and L^3, connecting corresponding arms of the said double cranks, and a compensator, C, for the cables, located between the long-distance semaphore and home operating device, substantially as described.

3. The combination of a long-distance semaphore, A', having a double-crank, *K'*, on its rotatory spindle, a home operating device having a standard provided with a rotatory spindle, *l*, carrying a double crank, *k*, a peripherally-recessed table, *n*, and a drop-lever, *m*, connected with the spindle *l*, cables L^2 and L^3, connecting corresponding arms of the said double cranks, and a compensator, C, for the cables, located between the long-distance semaphore and home operating device, substantially as described.

4. The combination of a long-distance semaphore, A', having a double crank, *K'*, on its rotatory spindle, a home semaphore, A, having a rotatory spindle, *l*, carrying a double crank, *k*, and connected with the rotatory spindle of the semaphore A by a link, *P*, joining crank-arms *l'* and *P*, respectively on the spindle *l* and the spindle of the semaphore A, cables L^2 and L^3, connecting corresponding arms of the said double cranks, and a compensator, C, for the cables, located between the semaphores A and A', substantially as described.

5. In combination with a long-distance semaphore, A', and a home operating device, connected together by cables L^2 and L^3, a compensator, C, having a standard, *h*, and a cable, h^3, supported on the standard and carrying a weight at one end, and connected at its opposite end with suitable sheaves, over which the said cables pass, substantially as described.

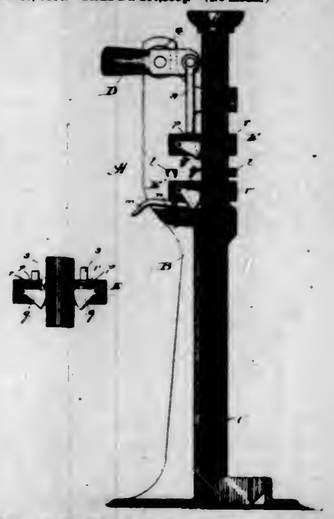
6. In combination with a long-distance semaphore, A', and a home operating device, connected together by cables L^2 and L^3, a compensator, C, having a standard, *h*, a reciprocating bar, h^4, on the standard, controlled by a weight, h^3, a pivotal equalizing-bar, *g*, on the lower end of the said reciprocating bar, and sheaves *f* and *f'* on the bar *g*, over which sheaves, respectively, the cables L^2 and L^3 pass, substantially as described.

7. In combination with a long-distance semaphore, A', and a home operating device, connected together by cables L^2 and L^3, a compensator, C, comprising a standard, *h*, a sheave, *h'*, on the standard, a reciprocating bar, h^4, guided on the standard, a cable, h^3, passing over the sheave *h'* and carrying at one end a weight, h^3, and connected at its opposite end with the bar h^4, and an equalizing-bar, *g*, pivoted toward the lower end of the said reciprocating bar and carrying at opposite sides toward the extremities sheaves *f* and *f'*, over which, respectively, the cables L^2 and L^3 pass, substantially as described.

8. In combination with a long-distance semaphore, A', and a home operating device, connected together by cables L^2 and L^3, an intermediate compensator, C, comprising a standard, *h*, a sheave, *h'*, on the standard, a reciprocating bar, h^4, guided on the standard, a cable, h^3, passing over the sheave *h'* and carrying at one end a weight, h^3, and connected at its opposite end with the bar h^4, and an equalizing-bar, *g*, pivoted toward the lower end of the said reciprocating bar and carrying at opposite sides, near the extremities, sheaves *f* and *f'*, over which, respectively, the cables L^2 and L^3 pass, and posts *e* and *d*, respectively adjacent to the sheaves *f* and *f'*, and provided each with tension-pulleys *e'* and *e²* for the said cables, substantially as described.

9. The combination of a long-distance semaphore, A', having a double crank, *K'*, on its rotatory spindle, a home semaphore, A, and a rotatory spindle, *l*, carrying a double crank, *k*, and connected with the rotatory spindle of the semaphore A by a link, *P*, joining crank-arms *l'* and *P*, respectively on the spindle *l* and the spindle of the semaphore A, cables L^2 and L^3, connecting corresponding arms of the said double cranks, a compensator, C, located between the semaphores, and comprising a standard, *h*, a sheave, *h'*, on the standard, a reciprocating bar, h^4, guided on the standard, a cable, h^3, passing over the sheave *h'* and carrying at one end a weight, h^3, and connected at its opposite end with the bar h^4, and an equalizing-bar, *g*, pivoted toward the lower end of the said reciprocating bar and carrying at opposite sides, near the extremities, sheaves *f* and *f'*, over which, respectively, the cables L^2 and L^3 pass, and posts *e* and *d*, respectively adjacent to the sheaves *f* and *f'*, and provided each with tension-pulleys *e'* and *e²* for the said cables, substantially as described.

385,885. LIFTING-JACK. AXEL A. STROM, Austin, Ill. Filed Mar. 16, 1888. Serial No. 267,360. (No model.)



Claim.—1. In a lifting-jack, the combination, with the lifting-bar, of a collar, *r*, a wedge, *q*, pivoted to one side of the collar and extending into contact with the lifting-bar and releasable by downward pressure upon the pivot from its wedging engagement with the lifting-bar, a lever, D, fulcrumed upon the standard and linked to the wedge between its pivot and end in contact with the bar, and a retaining-clutch on the lifting-bar and supported on the standard, substantially as described.

2. In a lifting-jack, the combination, with the lifting-bar and a lifting-clutch having an operating-lever connected with it, of a retaining-clutch, E', comprising a collar and a wedge pivoted to one side of the collar and extending into contact with the lifting-bar, and with a stationary support, substantially as described.

3. In a lifting-jack, the combination, with the lifting-bar, of a lifting-clutch, E, comprising a collar, and a wedge pivoted to one side of the collar and extending into contact with the lifting-bar, a lever, D, connected with the pivotal wedge toward its free end, and a retaining-clutch, E', comprising a collar and a wedge pivoted to one side of the collar and extending into contact with the lifting-bar and with a stationary support, substantially as described.

4. In a lifting-jack, the combination, with the lifting-bar, of a lifting-clutch, E, comprising a collar and a wedge pivoted to one side of the collar and extending into contact with the lifting-bar, a lever, D, connected with the pivotal wedge toward its free end, a retaining-clutch, E', comprising a collar and a wedge pivoted to one side of the collar and extending into contact with the lifting-bar and with the base of the expanded upper portion of the standard, and a releasing-lever, F, substantially as described.

5. A lifting-jack comprising, in combination, a standard, B, a lifting-bar, C, a lifting-clutch, E, comprising a collar and a wedge pivoted to one side of the collar and extending into contact with the lifting-bar, a lever, D, links *s*, connecting the lever with the pivotal wedge toward its free end, a retaining-clutch, E', comprising a collar and a wedge pivoted to one side of the collar and extending into contact with the lifting-bar and with the base of the expanded upper portion of the standard, and a lever, F, fulcrumed on the standard and extending into engagement with the collar of the retaining-clutch to permit the said collar to be raised when desired, substantially as described.

385,886. GRAPHOPHONE. CHARLES S. TAINTER, Washington, D. C. Filed Dec. 24, 1887. Serial No. 258,170. (No model.)

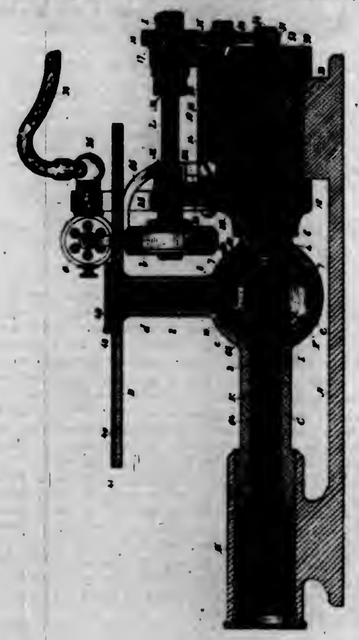
Claim.—1. In a graphophone, the combination, with the tablet-holder and means for rotating and advancing the same longitudinally, of the recorder and reproducer, each pivoted on suitable supports and adapted to be turned into and out of operative position, substantially as described.

2. The combination of the slide, the tablet-holder mounted on a shaft having bearings in said slide, means for rotating said shaft and advancing said slide, a recorder pivoted on one side of the tablet-holder, and a reproducer pivoted on the opposite side thereof, their relative positions being such that the recording and reproducing styles touch the tablet at the same point, substantially as described.

3. In a graphophone, the combination, with the rotatory tablet-holder, the friction-wheel for driving the same, and means for advancing said tablet-holder longitudinally, of a recorder pivoted to the frame and a reproducer also pivoted to the frame, said recorder and reproducer being so disposed that when either is in operative position its style will rest on the tablet just above said friction-wheel, substantially as described.

4. In a graphophone, the combination, with the rotatory tablet-holder, of the friction-wheel for driving the same, and a tilting-frame in which the arbor of said friction-wheel is journaled, substantially as and for the purpose described.

5. In a graphophone, the combination, with the tablet-holder and means for rotating the same, of the feed-nut, the feed-screw, and



means for disconnecting said nut from the driving-shaft and simultaneously connecting said screw therewith, substantially as described.

6. In a graphophone, the combination of the slide, the rotatory tablet-holder carried thereby, the feed-screw normally stationary, the feed-nut connected to be advanced lengthwise of said screw by the rotation of said holder, and means for disconnecting said tablet-holder from the driving-shaft and connecting the feed-screw therewith so as to reverse the movement of said nut, substantially as described.

7. The combination of the slide, the tablet-holder, the friction-wheel for rotating the same, the tilting frame in which the arbor of said friction-wheel is journaled, gearing for driving the latter from the main shaft, the feed-screw normally stationary, the feed-nut carried by said slide and connected by gearing with said tablet-holder, and gearing for connecting said feed-screw with said main shaft when said frame is moved to disengage the tablet-holder and friction-wheel, substantially as described.

8. In a graphophone, the combination of the slide, the tablet-holder carried thereby, the feed-nut and feed-screw, the driving mechanism, and stop-pins on said feed nut and screw, whereby the slide is automatically arrested at the limits of its travel, substantially as described.

9. The combination of the slide, the rotatory tablet-holder, the reproducer, the feed nut and screw, mechanism for reversing the movement of said slide, the tilting frame for operating said reversing mechanism, and an arm carried by said slide and adapted to lift the reproducer from the tablet when said frame is tilted, substantially as described.

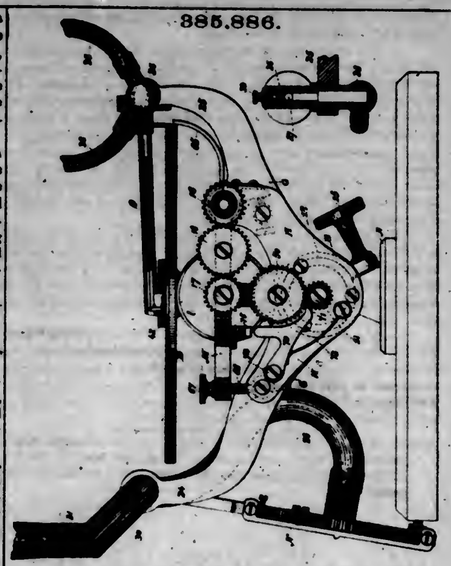
10. The combination of the slide, the tablet-holder, the feed-screw, the feed-nut connected by gearing with said tablet-holder, a pinion loosely mounted on said feed-screw, a spring-washer for effecting a frictional connection between said screw and pinion, and stop-pins on said nut and screw by engagement of which the screw and nut are connected together, substantially as described.

11. The combination of the slide, the tablet-holder, the feed-screw supported in bearings in the frame, the feed-nut connected by gearing with said tablet-holder, and the locking device for holding said feed-screw stationary, substantially as described.

12. The combination of the slide, the tablet-holder, the feed-screw supported in bearings, the feed-nut rotated from said tablet-holder, the locking device for holding said screw stationary, the tilting frame for disengaging said tablet-holder from the main shaft and connecting the feed-screw therewith, and an arm or projection adapted on the depression of said frame to disengage said locking device, substantially as described.

13. The combination of the rotatory tablet-holder, the feed screw and nut for moving said tablet-holder longitudinally, a tilting frame, a friction-wheel on an arbor having bearings in said frame for rotating said tablet-holder, and reversing-gears adapted to be connected with the main shaft by said frame, all constructed and arranged as set forth, so that the frame can be tilted to disconnect said friction-

385,886.



wheel and tablet-holder without connecting said reversing-gear and main shaft, substantially as described.

14. The combination of the tablet-holder, the feed-nut connected by gearing with said tablet-holder, the feed-screw normally stationary, the tilting frame, the friction-gear for rotating said tablet-holder, carried on an arbor having bearings in said frame, reversing-gears adapted to connect said screw and the main shaft when said frame is tilted, a button on said frame for tilting the same, and a second button on a shank passing loosely through said frame and having its end in close proximity to a fixed part of the apparatus, so that on pressing the latter button the frame will move only far enough to disengage the tablet-holder and friction-gear without connecting in the reversing mechanism, substantially as described.

15. The combination, with the frame and recorder, of the rigid sound-conveying tube having several bent or angular sections jointed together, constituting in effect a universal joint, whereby the position of a mouth-piece attached to said tube can be shifted vertically or laterally without disturbing the position of the style, substantially as described.

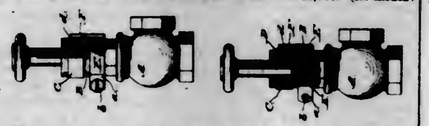
16. In a graphophone, the combination, with a supporting-frame, and the tablet-holder, recorder, and operative mechanism carried by said frame, of the base or bed plate to which said frame is pivotally connected, so that the entire apparatus can be tipped to any angle, and means, as specified, for holding the apparatus at the angle to which it may be adjusted, substantially as described.

385,887. GRAPHOPHONIC TABLET. CHARLES S. TAINTER, Washington, D. C. Original application filed Dec. 24, 1887, Serial No. 258,674. Divided and this application filed Apr. 3, 1888. Serial No. 269,495. (No model.)



Claim.—As an article of manufacture, a graphophonic tablet composed of a flat plate or disk of metal having a turned-up edge, and a layer of wax or a waxy composition thereon, substantially as described.

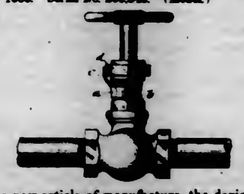
385,888. NUT-LOCK FOR VALVES. WILLIAM H. VAN WART, Stonington, Conn. Filed Oct. 21, 1887. Serial No. 252,906. (No model.)



Claim.—1. A device for locking the packing-nuts of valves, the same consisting of a strap or ring which is divided transversely, a screw for clamping the divided ends together, and a rigid lug which is permanently and rigidly attached to the body of said ring and extends therefrom at right angles to the plane of the latter, as shown and described, whereby the device is adapted to be clamped to the neck of a valve and adjusted around it to bring the rigid lug into parallelism with one of the lateral faces of the packing-nut, and thereby lock it, as specified.

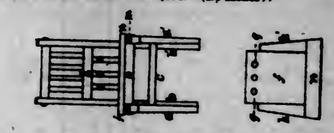
2. The improved device for the purpose specified, consisting of the ring E, formed of two hinged parts having parallel ends *a a*, one of which is provided with an open slot, *b*, and the screw-fastening *b*^{2}, pivoted to the other end, and the rigid lug F, permanently and rigidly attached to the body of the ring, as shown and described

385,889. NUT-LOCK. WILLIAM H. VAN WART, Stonington, Conn. Filed Mar. 5, 1888. Serial No. 266,548. (Model.)



Claim.—As a new article of manufacture, the device for locking valve-nuts, the same consisting of the spring band or ring *a*, divided transversely, as shown, and the rigid arm *c*, extending vertically, or nearly so, from one side of said band, substantially as specified.

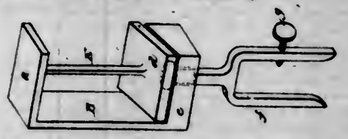
385,890. CHAIR. WILLIAM H. WALKER, Greenwich, Mass. Filed Apr. 28, 1888. Serial No. 271,662. (No model.)



Claim.—1. In combination with the chair-frame, the rung-rods *m m'*, bars *i i'*, rods *l l'*, loops *k k'*, and seat *f*, all arranged, connected, and operating as above pointed out and specified.

2. In combination with the chair-frame, the rung-rods *m m'*, folding bars *i i'*, joint-rods *l l'*, arms *k k'*, seat *f*, loops *k k'*, and foot-board *n*, all arranged, connected, and operating as above pointed out and specified.

385,891. REIN-HOLDER. CARL WESSELS, Omaha, Nebr. Filed Dec. 31, 1887. Serial No. 259,261. (No model.)

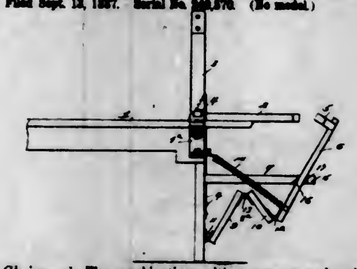


Claim.—1. The combination, with a frame having upper and lower projections, of a block having an elastic or spring connection with the upper projection and placed in proximity to the lower projection, substantially as described.

2. A rein-holder consisting of a frame having an upper projection, and a lower projection having an inclined upper face, a block having an inclined lower face, and a spring for normally holding said faces in proximity to each other, substantially as described.

3. A rein-holder consisting of a frame having an upper projection and an inclined lower projection, a spring secured to said upper projection and extending down, an inclined block secured on the lower end of said spring, and a pivoted clasp on the lower projection, substantially as described.

385,892. IRONING-TABLE. SAMUEL H. WEST, New Orleans, La. Filed Sept. 13, 1887. Serial No. 249,570. (No model.)

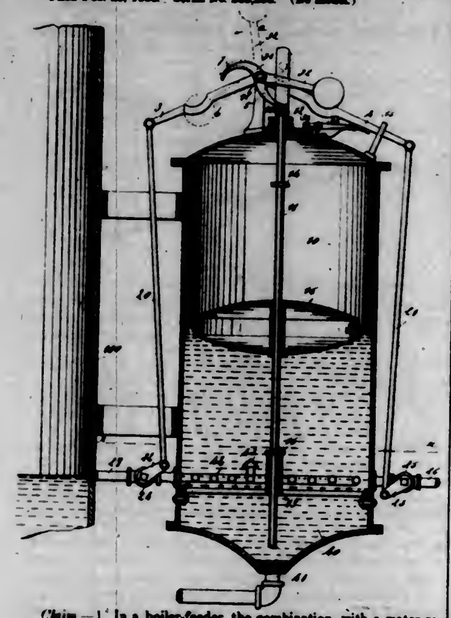


Claim.—1. The combination, with a support and an ironing-board projecting therefrom, of a swinging clamp for engaging the outer end of the ironing-board, a jointed brace hinged to the lower end of the clamp and to the support, and a spring for holding the brace in either a closed or open position, substantially as described.

2. The combination, with a support and an ironing-board projecting therefrom, of a lever pivoted to a bracket projecting from the support, a clamp on the upper end of the lever for engaging the end of the ironing-board, and a sectional and hinged brace having its ends hinged to the support and to the lower end of the clamp-carrying lever, substantially as herein shown and described.

3. An attachment for ironing-tables, consisting of the following parts in combination, viz: a rest or ironing-board, 2, secured to the table, a pivoted clamp, 3, at one end, held in locked position by a spring-catch, 4, a clamp, 5, mounted on the upright 6, pivoted to the projection 7, having a beveled cut-away portion, 16, and a projection, 15, the removable pin 17, the brace 8^b, consisting of the parts 9 and 10, hinged to the support 8 and upright 6, and support 8, and the spring 14, connected to the upright 6, to hold it in open or closed position, substantially as described.

385,893. BOILER-FEEDER. JOHN B. WHEELER, Cincinnati, Ohio. Filed Feb. 29, 1888. Serial No. 265,966. (No model.)



Claim.—1. In a boiler-feeder, the combination, with a water-receptacle, of a discharge-pipe leading therefrom and arranged for connection with the boiler, a coil-pipe arranged within the receptacle and connected to the discharge-pipe, and a housing or cap arranged above the inner end of the coil-pipe, substantially as described.

2. In a boiler-feeder, the combination, with a cylinder, of a supply-pipe connected thereto, a pipe leading from the cylinder to the boiler, said pipe entering the boiler at the required water-level, valves arranged in connection with the pipes, a rod mounted within the cylinder and provided with upper and lower collars, a float loosely mounted upon the rod between the collars, a double-armed lever mounted above the cylinder, rods connected to the lever and to crank-arms carried by the stems of the valves in the supply and delivery pipes, a weighted lever, an S-shaped arm rigidly connected thereto, and a stud carried by the rod, substantially as described.

3. In a boiler-feeder, the combination, with a cylinder, of a vent-plug, a spring-pressed lever by which the plug is carried, a valve-shifting lever mounted to bear upon the plug-lever, and spring-catches arranged in connection with the valve-shifting lever, as and for the purpose stated.

385,894. ELECTRICAL annunciator. MONTRAVILLE M. WOOD, Erie, Pa. Filed Mar. 1, 1888. Serial No. 265,888. (No model.)



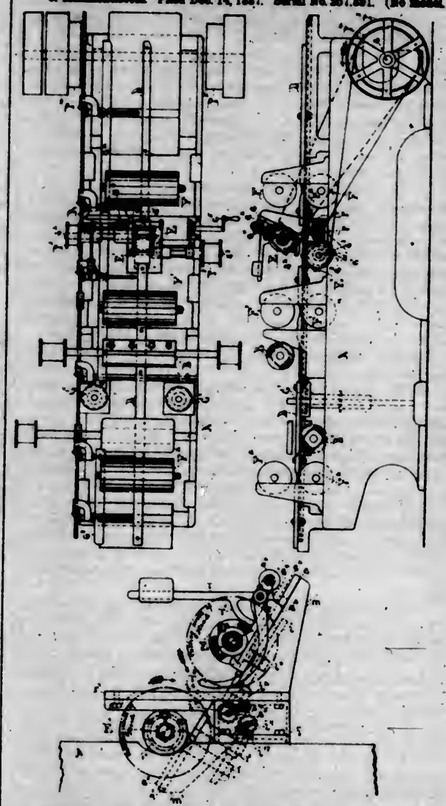
Claim.—1. The combination, in an electrical annunciator, of a magnet consisting of a soft-iron core having coils wound thereon, with an armature pivoted on its center, so that both of its arms will oscillate in close proximity to the poles of said magnet, substantially as and for the purpose set forth.

2. The combination, in an electrical annunciator, of a magnet consisting of a soft-iron core and coils of wire, with a centrally-pivoted armature oscillating on an axis at right angles to and passing through an opening in the magnet-core between the coils in a plane parallel to and in close proximity to the poles of the magnet, stops for limiting the movement of the armature, and an indicator secured to the axis of the armature, substantially as and for the purpose set forth.

3. The combination, in an electrical annunciator, of a magnet, A, consisting of a soft-iron core, B, poles C and D, at right angles thereto and to the coils E, wound on the core B, with an oscillating armature, H, mounted on an axis, I, passing through said core B at right angles therewith, and a hand or pointer, J, secured to said axis, substantially as and for the purpose set forth.

4. The combination, in an electrical annunciator, of a magnet consisting of a straight-bar core, B, poles C D, and coils of wire E E, wound around the bar B, with an armature, H, having an adjustable weight, *b*, thereon, and centrally mounted on a wire, I, rotating in the tube G, passing through the core B between the coils E E and at right angles therewith, a hand or pointer, J, secured to said wire I, and a stop, *f*, substantially as and for the purpose set forth.

385,895. PLANING-MACHINE. SOLOMON A. WOODS and JOHN B. THOMAS, Boston, Mass., assignors to the S. A. Woods Machine Company, of Massachusetts. Filed Dec. 14, 1887. Serial No. 257,891. (No model.)



Claim.—1. The combination, in a wood-planing machine, of the single long planing-cylinder B, the feed-rolls in advance thereof, the horizontal planer-bed, over which the lumber passes, the horizontal shafts x^2 x^3, placed transversely above and below said bed, having pulleys P^2 P^3 attached to their outer ends, respectively on opposite sides of the machine-frame, and having their inner ends lapping past each other over and under said bed, and the tonguing cutter-heads E E', attached to the inner ends of said shafts respectively opposite to each other, and in position to simultaneously form the opposite sides of the same tongue on the same board, substantially as described.

2. The combination, in a wood-planing machine, of the single long planing-cylinder B, feed-rolls, central guide, D, and the tonguing cutter-heads E E', mounted upon shafts held and projecting inward from opposite sides of the machine, and bearing against said guide-frame above and below the path of the lumber passing through the machine, and adapted to operate thereon one above the other, substantially as described.

3. The combination of the wood-planing-machine bed F, the central longitudinal guide, D, the tonguing cutter-heads E E', and presser plates or fingers r^2 r^2, formed and arranged to bear upon the lumber over said bed and upon opposite sides of the guide D, substantially as described.

4. The combination of the wood-planing-machine bed F, the tonguing cutter-heads E E', arranged to operate one above the other upon opposite sides of the lumber, and the presser finger or plate r^2, extending underneath the spindle of cutter-head E, and arranged and adapted to press the lumber upon the bed alongside the path of the knives of one cutter-head, and on the opposite side from the path of the knives of the other, and against the lifting action of both heads, substantially as described.

5. The combination of the wood-planing-machine bed F, the central longitudinal guide, D, the side guide, c^3, the side cutter-head, C, and the tonguing cutter-heads E E', mounted upon shafts projecting in opposite directions from the sides of the machine above and below the bed, and the presser plate or finger r^2, extending underneath cutter-head E, and arranged and adapted to press the lumber upon the bed between said guides and against the lifting action of both cutter-heads, substantially as described.

6. The combination, in a wood-planing machine, of the single long planing-cylinder B, feed-rolls upon the feed-in side thereof, the tonguing cutter-heads E E', mounted upon shafts respectively held and projecting inward from the side of the machine-frame on the feed-in side of said cylinder, supported and adjustable vertically upon inclined guideways c c, and provided with pulleys P^3 P^3, and the driving-pulleys P^4 P^4 of said shafts, mounted at the feed-in end of said machine-frame, substantially as described.

7. The combination of the planing-machine frame and its bed F, the tonguing cutter-heads E E', mounted upon shafts held and projecting inward from opposite sides of the machine-frame above and below said bed, the guideways c c, projecting upward and downward from said machine-bed, the slides c^3 c^3, mounted upon said guideways and supporting said cutter-head shafts, the screws i i', mounted upon the frame and adapted to adjust said slides, and the shafts s^4 s^3, extending across the machine beneath the surface of said bed to the same side thereof, and connected, respectively, at one end by gearing to said screws, and having the other end projecting beyond the same side of the machine, whereby said slides may be adjusted from that side, substantially as described.

8. The combination of the planing-machine frame and its bed F, the tonguing cutter-heads E E', mounted upon shafts held and projecting inward from opposite sides of the machine-frame above and below said bed, the guideways c c, projecting upward and downward from said machine-bed, the slides c^3 c^3, mounted upon said guideways and supporting said cutter-head shafts, the screws i i', mounted upon the frame-work and adapted to adjust said slides, and the shafts s^4 s^3, extending transversely across the machine beneath the surface of said bed, and connected together and to said screws respectively by gearing, and having the end of one of said shafts s^4 s^3 projecting beyond the side of the machine, whereby said slides may be simultaneously adjusted from that side by turning said projecting shaft, substantially as described.

9. The combination of the single long planing-cylinder B, the bed F, the tonguing cutter-heads E E', mounted upon shafts projecting from the side of the machine above and below the bed, the vertically-adjustable slides c^3 c^3, supporting said shafts, and the presser finger or fingers r^2 r^2, carried upon said slide c^3 and adjustable therewith, and adapted to press the lumber upon said bed adjacent to said cutter-heads, substantially as described.

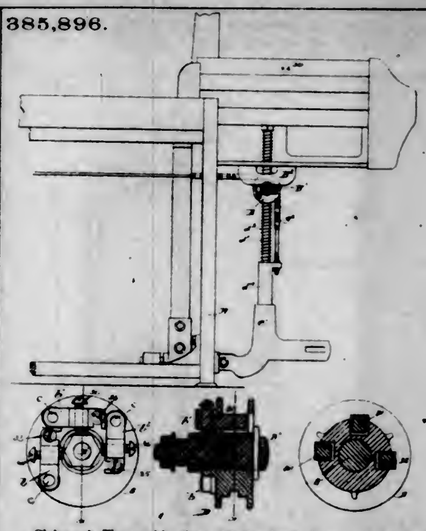
10. The combination of the single long planing-cylinder B, feed-rolls, the bed F, the tonguing cutter-heads E E', mounted upon shafts projecting from the side of the machine above and below the bed, the vertically-adjustable slides c^3 c^3, supporting said shafts, the horizontally-adjustable slide c^4, mounted upon slide c^3, and the presser finger or fingers r^2 r^2, carried upon said slide c^3 and adjustable therewith, and arranged and adapted to press the lumber upon the bed adjacent to said cutter-heads, substantially as described.

11. The combination of the single long planing-cylinder B, the feed-rolls, the bed F, the tonguing cutter-heads E E', mounted upon shafts s^3 s^3, projecting from the side of the machine, the slide c^3, carrying the shaft s^3, the rock-shaft R, mounted upon said slide and provided with the weighted arm r, and the adjustable presser-fingers r^2 r^2, attached to said rock-shaft, substantially as described.

385,896. EXPANDING PULLEY OF SHUTTLE-BOX MOTIONS FOR LOOMS. HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed July 5, 1887. Serial No. 243,400. (No model.)

Brief.—The pulley over which the box-motion chain passes to its connection with the box-rod is provided with pivoted arms rendered adjustable by set-screws, so that thereby the effective size of the pulley may be altered and the wear of the chain so taken up.

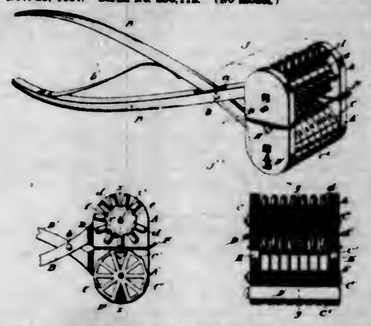
385,896.



Claim.—1. The combination, with the shuttle-boxes and the chain connected therewith, of the double-flanged slotted pulley, the blocks arranged and supported at the outer side of the said pulley and having arms extended through the slots across the face of the said pulley, and means to adjust the said blocks and arms to increase or decrease the effective diameter of the said pulley, substantially as described.

2. The combination, with a shuttle-box, its rod and sleeve, and shuttle-box chain or connector, of the double-flanged slotted pulley B, provided with blocks having arms adapted to enter the slots and cross the pulley, and with set and adjusting screws, substantially as described, to adjust the said blocks and arms toward or from the center of the pulley to adjust the said shuttle-box, substantially as described.

385,897. HAND-PUNCH. WILLIAM YATES, New York, N. Y. Filed Nov. 26, 1887. Serial No. 256,112. (No model.)

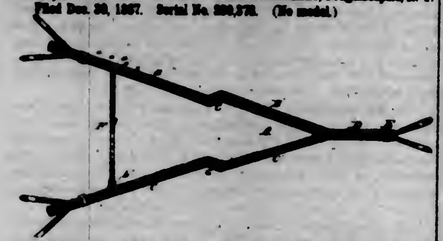


Claim.—1. A hand-punch consisting of two opposing pivoted members, transverse spindles in said members, the one carrying revoluble disks provided on their periphery with radial arms having male dies thereon, and the other carrying revoluble disks having series of triangular openings in their sides and female dies in their periphery, and pins entering said members and engaging said disks, substantially as shown and described.

2. A hand-punch consisting of two opposing pivoted members, partitions integral therewith intervening the sides of said members, spindles passing through said sides and partitions, series of disks revoluble on said spindles, having male and female dies, respectively, thereon, said series of disks being unequally divided by said partitions, and pins passing through the sides of said members and engaging said disks and partitions, substantially as shown and described.

3. In a hand-punch, the combination, with two opposing pivoted members, each having a partition intervening their sides and detachable spindles passing through said sides and partitions, of series of disks revoluble on said spindles, unequally divided by said partitions, and having male and female dies, respectively, on their periphery, and means for locking said disks upon their spindles, substantially as shown and described.

385,898. SUSPENDERS. FRANK I. ASHLEY, Poughkeepsie, N. Y. Filed Dec. 30, 1887. Serial No. 259,378. (No model.)



Claim.—A suspender or pair of suspenders having the shoulder-straps formed of webbing or any suitable material bisected diagonally over the shoulders and united edge to edge, substantially as and for the purpose described.

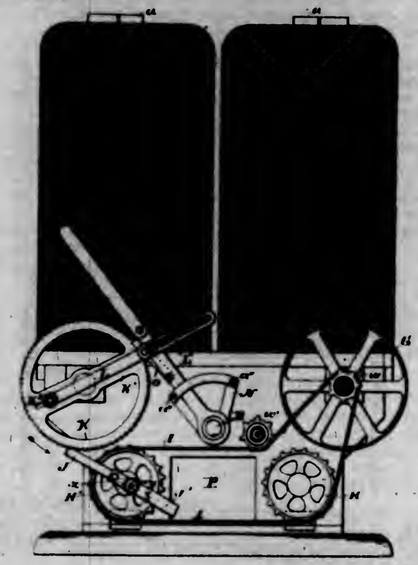
385,899. DUST-COLLECTING MACHINE. JAMES R. ALLFREE, Indianapolis, Ind., assignor of one-half to Robert Shriver and Harrison Swartzwelder, Cumberland, Md. Filed Sept. 1, 1887. Serial No. 248,554. (No model.)

Claim.—1. In a dust-collecting machine, the combination of two air-compartments, a series of screens for each, a lever or hammer pivotally supported at one end of each series of screens, slides working on the hammers, vibrating links alternately raising the slides, and cams operating upon the same, whereby the hammers are operated to alternately tap against their respective series of screen-frames, substantially as described.

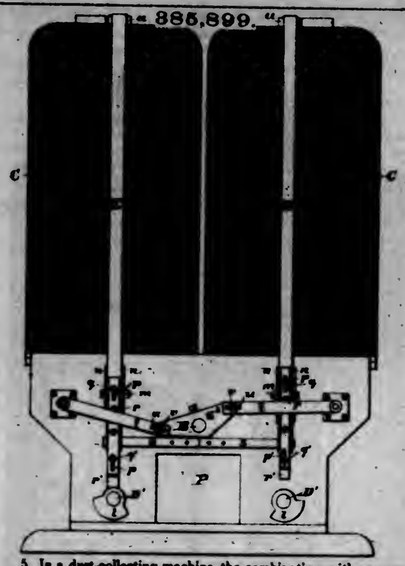
2. In a dust-collecting machine, the combination, with the casing of a series of transverse strips arranged across the top, grooved in their sides and having spaces between them, of the screens fitting said spaces between the strips, and the longitudinal notched strips resting upon and secured to the screens at the top, substantially as described.

3. In a dust-collecting machine, a screen constituted of a frame arched at the top and having a cloth envelope, the said cloth being secured in place by means of strips connecting the lower ends of the frame, substantially as described.

4. In a dust-collecting machine, the combination of the casing, the central longitudinal shaft having sector N, the lever working in said sector, the ratchet-wheel supported at the end of the casing, the connecting-rod L, having a slot in its end and forming a movable connection with the lever, and means for rotating the wheel, substantially as described.



385,899.



5. In a dust-collecting machine, the combination, with conveyor-shafts and the ratchet-wheel, of the sprocket-wheel H', carried by one of the conveyor-shafts, the pallet carried by said wheel eccentric to its axis and adjustable thereon, and means for rotating said wheel, substantially as described.

6. In a dust-collecting machine, the combination, with the ratchet-wheel, of the sprocket-wheel H', having a transverse slot in its hub, a pin fitting said slot having a set-screw, a pallet loosely supported by the pin eccentric to the axis of the sprocket-wheel, and means for operating the latter, substantially as described.

7. In a dust-collecting machine, the hammers or levers having their fulcra at one end of the machine, a vertically-moving slide for each hammer, means for simultaneously and oppositely operating said slides, and cams on the conveyor-shafts for rocking the levers on their fulcra, substantially as described.

8. In a dust-collecting machine, the hammers or levers having their fulcra at one end of the machine, a vertically-moving slide for each hammer, means for simultaneously and oppositely operating said slides, cams on the conveyor-shafts for rocking the levers on their fulcra, and springs tending to force the upper ends of said levers inwardly, substantially as described.

9. In a dust-collecting machine, the combination, with the shaft B, sector N, and lever M, of the ratchet-wheel having a slot, the arm L, slotted to form a movable connection with the lever and having its pivot in the slot of the wheel, and means for operating said wheel, substantially as described.

10. In a dust-collecting machine, the combination, with the two air-compartments, a separate valve and series of cloth screens for each compartment, the rock-shaft B, connected to the valves and bearing the sector N, the lever M, working in the sector, the arm L, the ratchet-wheel, and means for operating the latter, substantially as described.

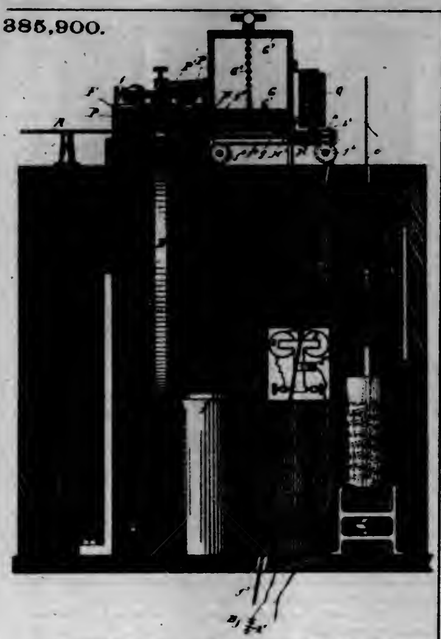
11. In a dust-collecting machine, the combination, with the hammers or levers, and the shaft B, bearing the arm G^2, of the slides o o, slotted and working on pins, the links l l, movably connected to the arms G^2 and engaging pins on the slides, the cams l on the conveyor-shafts, and means for rocking the shaft B, substantially as described.

385,900. AUTOMATIC WEIGHING AND RECORDING APPARATUS. EDWARD H. AMET, Chicago, Ill., assignor to Herbert A. Streeter, same place. Filed Oct. 13, 1887. Serial No. 252,155. (No model.)

Claim.—1. The combination, with a scale having a variable counterpoise and a printing-wheel connected with and operated by one of the beams or levers of the scale, of a card-holder adjacent to said printing-wheel and card-feed slide for feeding the cards one by one from said card-holder to said printing-wheel, substantially as specified.

2. The combination, in a weighing and recording scale, of its variable counterpoise, a printing-wheel and impression-block, with a card-holder adjacent to said printing-wheel, and a card-feed slide for feeding the cards one by one from said card-holder to and between said printing-wheel and impression-block, substantially as specified.

385,900.



3. The combination, in a weighing and recording scale, of its variable counterpoise, printing-wheel, and inker, with an impression-block having a receptacle to receive and hold a single card, a card-holder, and a card-feed slide for delivering the cards one by one from said card-holder into the impression-block, substantially as specified.

4. The combination, in a weighing and recording scale, of its platform, variable counterpoise, type-wheel, and impression-block, with a card-holder, a card-feed slide, and a movable step in front of the scale-platform for operating or retracting said card-feed slide, substantially as specified.

5. The combination, in a weighing and recording scale, of its platform, variable counterpoise, type-wheel, and impression-block, with a card-holder, a card-feed slide, and a movable step in front of the scale-platform for operating or retracting said card-feed slide, a weight, and a cord and pulleys, substantially as specified.

6. The combination of a recording and weighing scale with card-holder G, having slotted bottom *g* and opening g^3, card-feed slide H, having upwardly-projecting feed-lugs *h*, weight J, movable step J', and a cord and pulleys connecting said weight and movable step, substantially as specified.

7. The combination of a recording and weighing scale with card-holder G, having slotted bottom *g* and opening g^3, card-feed slide H, having upwardly-projecting feed-lugs *h*, weight J, movable step J', bent lever j, cord j^2, and pulleys j^3, substantially as specified.

8. The combination of a recording and weighing scale with card-holder G, having slotted bottom *g* and opening g^3, card-feed slide H, having upwardly-projecting feed-lugs *h*, weight J, movable step J', bent lever j, cord j^2, pulleys j^4, catch-lever *k'*, and catch projection h^3 on said slide H, substantially as specified.

9. The combination of a recording and weighing scale with card-holder G, having slotted bottom *g* and opening g^3, card-feed slide H, having upwardly-projecting feed-lugs *h*, weight J, movable step J', bent lever j, cord j^2, pulleys j^4, catch-lever *k'*, catch projection h^3 on said slide H, and an electro-magnet for closing said catch-lever *k'*, substantially as specified.

10. The combination, with a scale-platform, levers, and counterpoise, of a movable type or printing device connected with and operated by one of the scale-levers, an impression-block, a card-holder adjacent to said impression-block, and a device for feeding the cards one by one into position for printing between said movable type or printing device and said impression-block, substantially as specified.

11. The combination, with a recording and weighing scale having a variable counterpoise and printing-wheel, of a vibrating hammer to tap the shaft of the printing-wheel and prevent sticking, substantially as specified.

12. The combination, with a recording and weighing scale having a variable counterpoise and printing-wheel, of a vibrating hammer to tap the shaft of the printing-wheel and prevent sticking, and an electro-magnet for operating said hammer, substantially as specified.

13. The combination, with a recording and weighing scale having a variable counterpoise and a printing-wheel, of a vibrating hammer to tap the shaft of the printing-wheel and prevent sticking, and an electro-magnet for operating said hammer, said electro-magnet being included in a normally-open circuit having a movable contact-piece connected with and operated by the platform of the scale, substantially as specified.

14. The combination, with a recording and weighing scale, its variable counterpoise, a printing-wheel, an inker, and an impression block or lever, of a card-holder, a card-feed slide, a weight and step-lever for operating said feed-slide, a catch-lever for holding said feed-slide retracted, an electro-magnet, N, for operating the inker, an electro-magnet, P, for operating the printing-lever, and an electro-magnet, Q, for operating said catch-lever, substantially as specified.

15. The combination, with a recording and weighing scale, its variable counterpoise, a printing-wheel, an inker, and an impression block or lever, of a card-holder, a card-feed slide, a weight and step-lever for operating said feed-slide, a catch-lever for holding said feed-slide retracted, an electro-magnet, N, for operating the inker, an electro-magnet, P, for operating the printing-lever, and an electro-magnet, Q, for operating said catch-lever, a printing-wheel-shaft tapper, K, and an electro-magnet for operating the same, substantially as specified.

16. The combination, with a recording and weighing scale, its variable counterpoise, a printing-wheel, an inker, and an impression block or lever, of a card-holder, a card-feed slide, a weight and step-lever for operating said feed-slide, a catch-lever for holding said feed-slide retracted, an electro-magnet, N, for operating the inker, an electro-magnet, P, for operating the printing-lever, and an electro-magnet, Q, for operating said catch-lever, said electro-magnet N being included in a normally-open circuit having a movable contact connected with and operated by the scale-platform, substantially as specified.

17. The combination, in a recording and weighing scale, of its movable platform, with an electric circuit having an operating-magnet included therein, a fixed contact and movable contact connected with and operated by said platform for closing said circuit, a device for retarding the motion of said movable contact, and mechanism provided with a spring or yielding connection for communicating motion from said movable platform to said movable contact, substantially as specified.

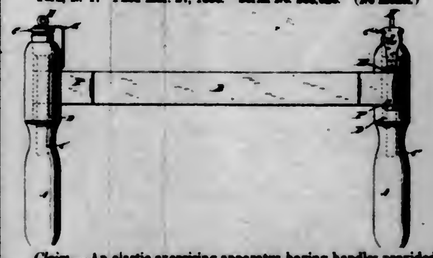
18. The combination, in a weighing and recording scale, of the scale-platform and printing mechanism, with a movable step or platform in front of the scale-platform for operating the printing mechanism of the scale by the weight of the person stepping onto the scale-platform to be weighed, substantially as specified.

19. The combination of scale-platform P, variable counterpoise C, printing-wheel D, inker E, printing-lever F, with an operating-magnet, N, its circuit *n*, contact n^2, movable contact *n'*, shaft n^3, escapement-wheel n^4, escapement n^5, pinion n^6, gear n^7, lever n^8, and spring n^9, substantially as specified.

20. The combination of scale-platform B, variable counterpoise C, printing-wheel D, inker E, printing-lever F, with an operating-magnet, N, its circuit *n*, contact n^2, movable contact *n'*, shaft n^3, escapement-wheel n^4, escapement n^5, pinion n^6, gear n^7, lever n^8, spring n^9, insulating-disk n^{11}, pawl n^{12}, and ratchet n^{13}, substantially as specified.

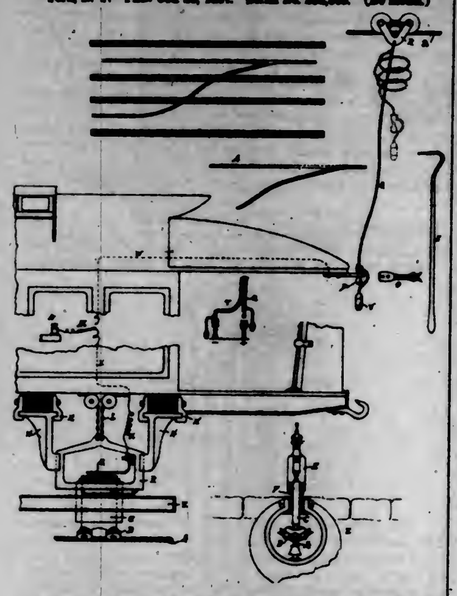
21. The combination, in a printing and recording scale, of the scale-levers, a variable counterpoise, a type-wheel connected with and operated by one of the scale-levers, an inking-roller, and a vibratory arm or lever swinging transversely across the periphery of said type-wheel, upon which said inking-roller is mounted, substantially as specified.

385,901. EXERCISING-MACHINE. SAMUEL M. BARNETT, New York, N. Y. Filed Mar. 27, 1888. Serial No. 268,624. (No model.)



Claim.—An elastic exercising apparatus having handles provided with cylindrical chambers D and fitted with pins C, in combination with band B and retaining spring-catches G, substantially as and for the purposes described.

385,902. ELECTRIC RAILWAY. EDWARD H. BENJAMIN, New York, N. Y. Filed Oct. 20, 1887. Serial No. 252,955. (No model.)



Claim.—1. In an electric railway, the combination of a section of elevated supply-conductor, a section of inclosed supply-conductor, an electrically-propelled vehicle, a permanent conductor on the vehicle leading to a contact device for the said elevated section, a corresponding conductor leading to a contact device for the said inclosed section, and the contact device for the elevated conductor having a spring-jack or similar detachable connection with the vehicle and with the corresponding permanent conductor.

2. In an electric railway, the combination of a section of elevated supply-conductor, a section of inclosed supply-conductor, an electrically-propelled vehicle, a permanent conductor on the vehicle leading to a contact device for the said elevated section, a corresponding conductor leading to a contact device for the said inclosed section, and the said contact device for the inclosed section having a detachable connection with the vehicle, and having a spring-jack or similar detachable connection with the said corresponding permanent conductor.

3. The combination, in an electric railway, with a supply-conductor, one section being inclosed in a slotted conduit and a second section elevated above the surface of the roadway, of a vehicle provided with a permanent conductor leading to a contact device for the elevated section, and also provided with a contact device leading into the conduit detachable from the vehicle at a point outside the conduit, and having a spring-jack or similar detachable connection with a permanent conductor on the vehicle.

4. In an electric railway having a section of inclosed and a section of elevated conductor, the combination, with an electric locomotive, of two conductors leading from the two contact devices, respectively, the said two contact devices, and a switch on the car for connecting the motor-terminals with the two conductors alternately.

5. In an electric railway having both an inclosed and an elevated section of conductor, the combination, with an electric locomotive, of a contact device for the conduit-section, removable so as not to impede the progress of the vehicle along the elevated section, and a holder adapted to receive the conductor of a detachable contact device for the elevated section.

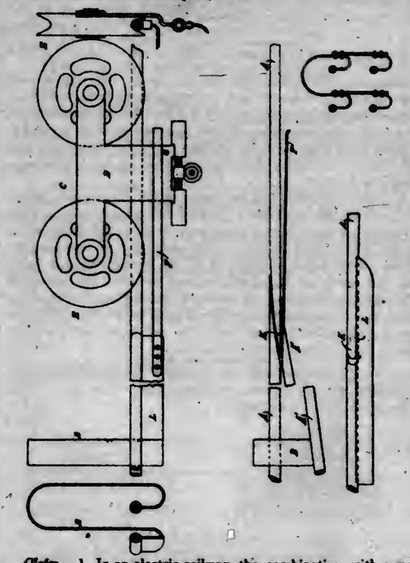
6. In a double-track electric railway, the combination of an electric supply-conductor, a conduit on each track inclosing a section of said conductor, an extension of said railway having a conductor elevated above the surface of the roadway, a cross-conduit joining the conduits of the two tracks at the end, an electrically-propelled vehicle, a removable contact device for connecting said vehicle with the inclosed conductor, with means for connecting it to the elevated conductor when that section is reached.

7. The combination, in an electric railway, with positive and negative supply-conductors, of an electrically-propelled vehicle and two pairs of contact devices, one pair of which is provided with connectors of different form for positive and negative wires, respectively, whereby only the right connection can be made.

8. The combination, with the contact-trolley, of a conductor provided with a take-up device and a ring or eye by which it may be reached from below and brought into an operative position.

9. In an electric railway, the combination, with an electrically-propelled vehicle, of a supply-conductor inclosed in a conduit, a contact device beneath the car connecting with the conductor, but detachable at a point outside the conduit both electrically and mechanically, and a common actuating device for the electrical and mechanical detachment.

385,903. SWITCH OR OVERHEAD LINES IN ELECTRIC RAILWAYS. EDWARD H. BENJAMIN, New York, N. Y. Filed Jan. 20, 1888. Serial No. 261,264. (No model.)



Claim.—1. In an electric railway, the combination, with a main conductor, of a branch conductor held in a definite position relative thereto, a contact device adapted to ride on either main or branch conductor, a projection from said contact device extending downward beside the conductor, a flexible guide for directing the contact device at the branch, the two conductors being held in such a relative position as to allow the passage of the said projections between them, and the main conductor having a frog at the meeting-point shaped to form a prolongation of the branch conductor, so as to permit the passage of the contact device from the branch to the main.

2. In an electric railway, the combination, with main and branch conductors, of a contact device connected to an electrically-propelled vehicle, the main and branch conductors being situated with an intervening space permitting the passage of the propelling device between them, a stationary flexible guide, and a projection from said contact device adapted to engage with said guide and thereby direct the contact device.

3. In an electric railway, the combination, with main and branch conductors, of a contact device having a propelling extension adapted to pass between main and branch conductors, and a stationary flexible guide for directing the contact device.

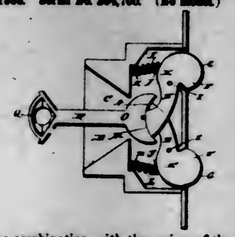
4. In an electric railway, the combination, with main and branch conductors, of a contact device adapted to both conductors and provided with a propelling extension, and a stationary flexible guide having its free end extending along the main conductor away from the point of junction and adapted to engage with a projection on the contact device for directing the same.

5. In an electric railway, the combination, with a main conductor, A, of a branch conductor, A', flexible guide F, a bracket, B, holding the two conductors in a fixed relative position, with an intervening space at the meeting-point, and a contact device adapted to pass through the bracket B, and provided with an extension adapted to pass through the said space between the conductors.

6. In an electric railway, the combination of a main conductor, A, and a branch conductor, A', the latter having guide F and the former having a frog at the branching point, forming, substantially, an

extension of the branch conductor, with a contact device having a grooved wheel to which the said frog is adapted.

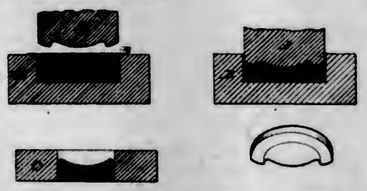
385,904. SASH-HOLDER. ROBERT C. BOEHLER, Mankato, Minn. Filed Feb. 20, 1888. Serial No. 264,760. (No model.)



Claim.—1. The combination, with the casing, of the dogs pivoted therein and having the cam-heads projecting through the casing and the arms extending from the cam-heads beyond the pivotal points and having their inner ends arranged near together, the lever pivoted in the casing and having a yoke on its inner end acting on the inner ends of the arms of the dogs, and the springs acting on the cam-heads of the dogs, as set forth.

2. The combination, with the casing, of the dogs pivoted therein and comprising the cam-heads projecting through the casing, and the arms extending from the said heads beyond the pivotal points of the dogs, the inner ends of said arms being close together and provided with the curved bearing-surfaces M N, the springs arranged in the casing and acting on the cam-heads, and the lever comprising the shaft pivoted in the casing and having a yoke bearing on the curved surfaces M N of the inner ends of the arms of the dogs, and a handle projecting from said shaft, the said yoke and handle being at right angles to the said shaft, as set forth.

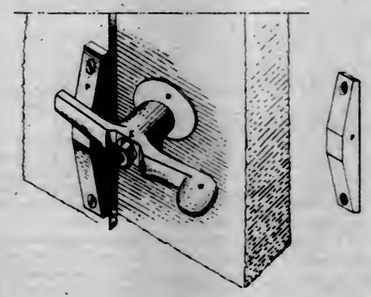
385,905. CUSHIONED DIE FOR SWAGING SHEET-METAL ARTICLES. FRED. C. CARSON, New Haven, Conn. Filed Apr. 16, 1888. Serial No. 270,811. (No model.)



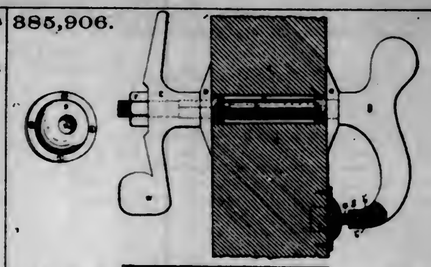
Claim.—In dies for swaging sheet metal, the combination of the die or follower A, having its face of a shape corresponding to the reverse side of the article to be swaged, and the other die, B, having a cavity corresponding to said follower, but of greater depth than the required entrance of the said follower into the said die, with an india-rubber cushion, C, in said cavity to yieldingly resist the entrance of the follower into the die, substantially as and for the purpose described.

385,906. DOOR-SECURER. ANDREW J. CHASE, Boston, Mass., assignor to Warren A. Chase, same place. Filed Apr. 16, 1887. Serial No. 235,167. (No model.)

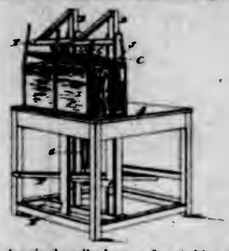
Claim.—A door-fastening consisting of the handle B, having a shank, *b*, the locking-bolt E, secured thereto, and the double-wedge-shaped bearing-plate P, substantially as set forth.



385,906.



385,907. FRUIT-PACKING PRESS. EDWARD A. CHATFIELD, New Haven, Conn. Filed Mar. 26, 1888. Serial No. 268,508. (No model.)



Claim.—The herein-described press for packing fruit, consisting of the combination of the frame with bed A thereon to support the box or case, vertical guides C, vertical slide B, arranged in said guides and free for vertical movement only, the said slide carrying two arms, E E, projecting from the slide over the bed and parallel therewith, a pedal, P, below the bed and in connection with said slide, the frame provided with a shoulder or notch, H, in the path of and adapted to engage said pedal when in the depressed position, and a counter-balance, G, in connection with said slide, and so as to yieldingly hold the slide with its arms in the raised position, substantially as described.

385,908. WATCH-MAINSPRING. DUANE H. CHURCH, Waltham, Mass. Filed June 17, 1884. Serial No. 135,127. (Model.)

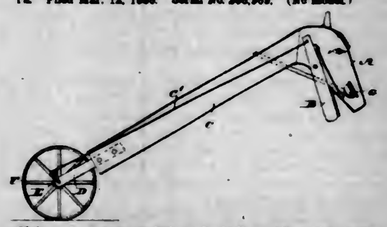


Claim.—The combination, with the barrel C, of the mainspring A and the supplemental spring B, secured to the outer end of spring A, and having its free end wound within the coils of the mainspring, substantially as described.

385,909. ALLOY OF COPPER, NICKEL, AND GOLD. DUANE H. CHURCH, Newton, Mass. Filed Sept. 23, 1887. Serial No. 250,980. (No specimens.)

Claim.—An alloy or compound metal composed of copper, nickel, and gold, in the proportions of fifty to seventy-five parts of copper, fifteen to forty parts of nickel, and ten to thirty-five parts of gold, as hereinbefore set forth.

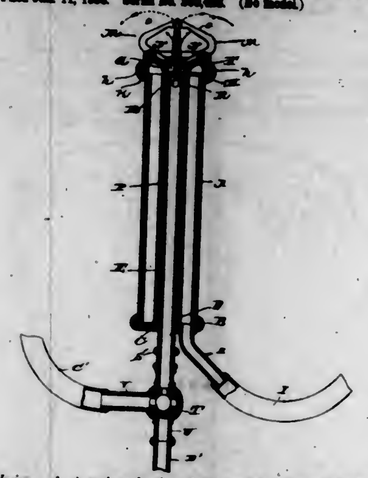
385,910. TOY RIDING-STICK. SAMUEL R. CLARK, Philadelphia, Pa. Filed Mar. 12, 1888. Serial No. 266,969. (No model.)



Claim.—1. A toy consisting of a hollow riding-stick having connected therewith the representation of the head of an animal, and provided with a pivoted lower jaw, a crank-axle with wheels thereon, arms connecting said hollow stick with said axle, and a rod within said hollow stick connecting the crank portion of said axle with the inner end of said lower jaw, said parts being combined substantially as described.

2. A toy consisting of a hollow riding-stick having connected therewith the representation of the head of an animal, and provided with a pivoted lower jaw, a crank-axle with wheels thereon, arms connecting said hollow stick with said axle, a rod within said hollow stick connecting the crank portion of said axle with the inner end of said lower jaw, a gong secured to the fixed portion of said jaw, and a hammer or striker secured to the pivoted jaw, said parts being combined substantially as described.

385,911. VAGINAL SYRINGE. JOHN M. COOPER, Hicksville, Ohio. Filed Jan. 11, 1888. Serial No. 260,422. (No model.)



Claim.—1. A syringe having the outer tube, A, provided with the perforated head or cap, and the central tube, P, extending through the said outer tube and through the cap or head, substantially as described.

2. The syringe having the head or cap provided with the concavo-convex radially-perforated diaphragm, substantially as described.

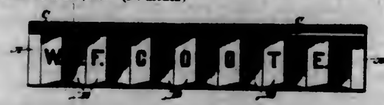
3. The combination, in a syringe, of the pivoted dilators having the outer arms, O, and inner arms, N, and the longitudinally-movable tube P, adapted to engage the arm N, for the purpose set forth, substantially as described.

4. The syringe having the head or cap and the interchangeable rings of different external diameters adapted to be secured to said head or cap, substantially as specified.

5. The combination of the outer tube, A, having the heads B and F at opposite ends, the latter being perforated, the tube E, arranged in the tube A and screwed to the heads, and the tube P, extending through the tube E and through the heads, substantially as described.

6. In a syringe, the combination of the cylinder, the dilators pivoted at one end thereof, the tube movable longitudinally through the cylinder and acting on the dilators to operate the same, and the adjustable nut on the outer end of said tube, as and for the purpose set forth.

385,912. SIGN. WILLIAM H. COOPER, Marion, assignor of one-half to John W. Guerrant, Crittenden County, Ark. Filed Oct. 3, 1887. Serial No. 251,363. (No model.)



Claim.—A sign provided with angular blocks B, attached to a base-board and arranged in alignment thereon, each block being inclined on two opposite vertical sides and upwardly inclined on the bottom face, whereby said blocks may be lettered, as and for the purpose described.

385,913. FISH-HOOK. JOSEPH H. HUNTER, Washington, D. C. Filed May 10, 1888. Serial No. 273,444. (No model.)

Claim.—1. A fish-hook having one or more short rigidly-secured inclined projections thereon for retaining the bait in its adjusted position relative to the point of the hook, substantially as described.

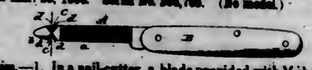


2. A fish-hook having one or more outwardly-projecting prongs rigidly secured to the shank thereof at a point on a plane with the point of the hook, substantially as described.

3. A fish-hook having a short downwardly-inclined projection thereon at a point in proximity to the point of the hook, for the purposes specified, substantially as described.

4. A fish-hook having a short rigid projection thereon in proximity to the point of the hook for preventing the bait from working up the shank of the hook, substantially as described.

385,914. NAIL-CUTTER. THEODORE F. CORLEY, Brooklyn, N. Y. Filed Mar. 20, 1888. Serial No. 268,705. (No model.)
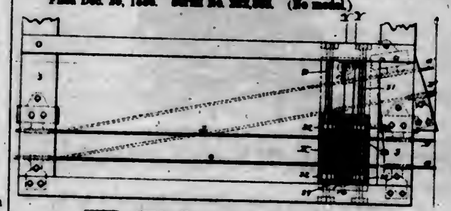


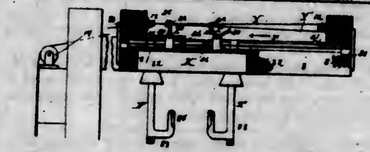
Claim.—1. In a nail-cutter, a blade provided with V-shaped transverse notches, with cutting-edges formed on the blade along opposite sides of the notches, substantially as specified.

2. In a nail-cutter, a blade, A, provided with a rounded burnishing end, *b*, and having cutting-notches *d* formed in the edges thereof, substantially as specified.

3. In a nail-cutter, a blade, A, provided with a file-cut surface, *a*, with a rounded burnishing end, *b*, having cutting-notches *d* formed in opposite edges thereof, substantially as specified.

385,915. ELECTRIC CONDUCTOR. LEO DAFT, Plainfield, N. J. Filed Dec. 20, 1886. Serial No. 282,883. (No model.)





Claim.—1. The combination, with the main and branch and switch rails, of a slide supporting the movable ends of the switch-rails, provided with catches for engaging with stationary shoulders, a slide-actuating device adjacent to the surface road, and connections between the latter and the catches, substantially as set forth.

2. The combination, with the slide carrying the movable switch-rails, of two catch-levers, stationary catches upon the overhead support adapted to engage with said levers, and a cord passing through openings in arms of the said levers and provided with stops, substantially as set forth.

3. The combination, with the main, branch, and switch rails of an overhead conductor, of a slide provided with pivoted hangers supporting the ends of the switch-rails, substantially as described.

4. The combination of the slide, switch-rails, and pivoted hangers, provided with arms having sockets for the reception of the switch-rails, substantially as set forth.

5. The combination of the slide supporting the switch-rails, locking devices, slide-actuating mechanism, and buffers, substantially as described.

385,916. BLACKING-BOX. WILLIAM K. DAVIS, Chicago, Ill. Filed Sept. 5, 1887. Serial No. 248,917. (No model.)



Claim.—1. In a blacking-box, the main body, in combination with a perforated diaphragm secured permanently to the body immediately above the blacking, the cover B, and a follower fitted into the bottom of the box, substantially as and for the purposes specified.

2. The blacking-box body A, in combination with the perforated diaphragm C, secured permanently within the body over the blacking, the follower E, fitted into the body at the bottom thereof, and the packing *e*, substantially as and for the purposes specified.

385,917. CAR-SPRING. MATHIAS H. DAVIS, Philadelphia, Pa. Filed Aug. 13, 1887. Serial No. 246,736. (No model.)



Claim.—1. A spring-plate constructed of sheet or wrought metal of convex form, as a new article of manufacture.

2. A car-spring consisting of spring-plates and a connecting-bolt, said plates being of convex form, substantially as described.

3. A car-spring, having spring-plates provided with removable dowels which project through said plates, substantially as described.

385,918. CAR-SPRING. THOMAS C. DAVIS, Philadelphia, Pa. Filed Aug. 4, 1887. Serial No. 246,113. (No model.)

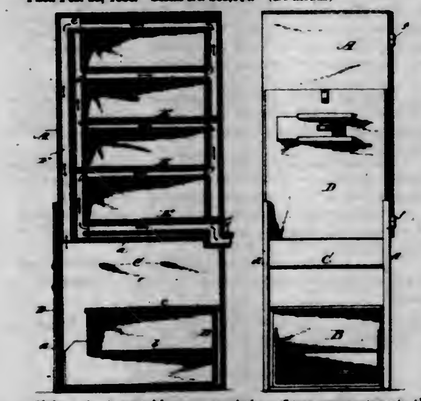


Claim.—1. The connecting device for the plates of a car-spring, consisting of a bar having a head at each end and a neck, and a link with a head at one end and a slotted cross-bar at the other end, substantially as described.

2. The plates A A, in combination with the bar D, having the head G and neck H, and the link E, having the head J at one end, and the slotted cross-bar K, with the opening *a* at the side, leading into said slot at the other, substantially as described.

3. A car-spring having its lower plate provided with a raised portion, in combination with a seat having a bolt therein, the head of which corresponds to and fits in said raised portion of the plate of the spring, substantially as and for the purpose set forth.

385,919. PORTABLE OVEN. ABRAHAM DAY, Moorefield, W. Va. Filed Feb. 20, 1888. Serial No. 265,010. (No model.)



Claim.—1. A portable oven consisting of two compartments, the lower one provided with a heater and with transverse slats C above said heater, and the upper one subdivided by hollow shelves communicating with the lower compartment and with each other, substantially as described.

2. In a portable oven, hollow shelves arranged within the same above the heater, communicating with each other, and a flue, F, between one end of the shelves and the outer wall of the oven, and affording communication between the heater-compartment and the uppermost of the shelves, substantially as shown and described.

3. The portable oven described, consisting of the shell or case, the partition *a*, dividing the same into an upper and lower compartment, a plurality of hollow shelves arranged within the upper compartment, the flue F upon one side of the upper compartment, and communicating with the lower compartment and with the space *e* at the top of the upper compartment, and the pipe G at the lower end of the upper compartment, the said shelves communicating with each other and with the flue F and pipe G, and having a space for hot air on all sides thereof, substantially as shown and described.

385,920. RAILWAY-SIGNAL. CONSTANT F. DE REDON, New York, N. Y. Filed Apr. 2, 1888. Serial No. 269,255. (No model.)



Claim.—1. The combination, with the railroad-rail and the plate B, bolted thereto, of the tube A, fastened permanently at one end to the plate B, and the other end of the tube being free to spring under the action of the passing wheels, the bar H within the tube A, and the block K, to which such bar H is permanently attached, the pivot P at the distant end of such bar H, the lever Q upon the pivot P, the short end of which lever is acted upon by the moving end of the tube A, and the contact-block M and circuit-wire L, connected to the same, and with which contact-block the long end of the lever Q comes in contact when the loose end of the tube A is depressed, substantially as set forth.

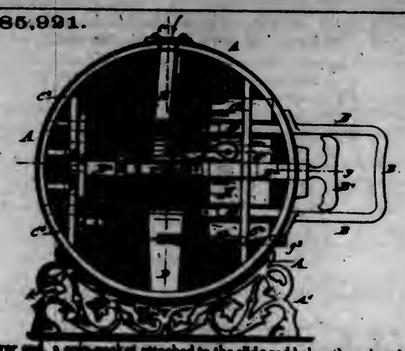
2. The spring-tube A, permanently connected at one end to the track-rail, and the shoe D at the other end, in combination with the stationary bar within the tube and the lever pivoted upon the bar, the short end of which lever receives its motion from the moving end of the tube, and the contact-plate adjacent to the long end of the lever, and circuit-connections whereby the electric circuit is closed by the movement of the tube and lever, substantially as set forth.

385,921. COIN-CONTROLLED STRENGTH-TESTING MACHINE. JOSEPH DEVAFFERY, Brooklyn, assignor to the Hand Power Test Machine Company, New York, N. Y. Filed Feb. 17, 1888. Serial No. 264,416. (No model.)

Claim.—1. The combination of a fixed handle, a movable handle, a spring-actuated slide-rod attached to said handle, a stop or abutment on said slide-rod, a pivoted latch engaging said abutment, an eccentrically pivoted and adjustable anti-friction roller on said latch, a coin-tube having an open end terminating near the roller, and a coin-pocket attached to the slide-rod and located below the coin-tube and the roller, substantially as set forth.

2. The combination of a fixed handle, a movable handle, a slide-rod applied to said movable handle, a cross-head at the inner end of the slide-rod, springs acting on said cross-head, a stop or abutment on the slide-rod, a pivoted latch engaging said abutment, an eccentrically-adjustable anti-friction roller on said latch, a coin-tube open at the

385,921.



lower end, a coin-pocket attached to the slide-rod below the coin-tube, and a conducting-chute below the coin-tube, substantially as set forth.

385,922. NECKSCARF. LOUIS BOSSERT, Philadelphia, Pa. Filed May 21, 1888. Serial No. 274,512. (No model.)



Claim.—A scarf, tie, or other article of neck-wear having a neck-band with a stiffener at the free end, and having said stiffener covered or inclosed by bringing the backing or lining material to the face, so as to permit the discontinuance of the facing-fabric some distance from the end of the band, all substantially as specified.

385,923. STOVE-PIPE DAMPER. JAMES B. FERGUS, Delphi, Ind. Ter., assignor of one-half to Henry G. Bliss, same place. Filed Feb. 17, 1888. Serial No. 264,494. (No model.)



Claim.—The combination, with the stove-pipe section A, of the plates *p p*, secured lengthwise and respectively at opposite sides of the interior of said pipe-section, disconnected from each other to leave a single passage in the pipe-section, a series of diaphragms *a a*, pivoted independently of each other to the said plates at intervals of their lengths, couplings *c c*, connecting the alternate diaphragms at one side of the axis thereof and connecting the intermediate diaphragm at the opposite side of the axis thereof, and the adjusting-rod A, attached to one of said diaphragms, substantially as described and shown.

385,924. BOX. JAMES B. GREENLEE, Brooklyn, N. Y., assignor to Robert H. Thompson and Henry B. Hurtt, both of same place. Filed Feb. 11, 1888. Serial No. 263,661. (No model.)



Claim.—1. The combination, with a rectangular box having an opening in one end thereof and at a corner, of a case or shell for containing said box, and through which the box may be moved sidewise, said case or shell operating to close said opening when the box is in position in the case or shell, substantially as specified.

2. The combination, with a rectangular box having an opening in each of the ends thereof and at the corners, of a case or shell for containing said box, and through which the box may be moved sidewise, said case or shell operating to close both said openings when the box is in position in the case or shell, substantially as specified.

385,925. FURNACE FOR HEATING WHEEL-TIRES. JAMES B. HANNAY, Glasgow, County of Lanark, Scotland. Filed Feb. 7, 1888. Serial No. 263,264. (No model.)



Claim.—In combination, as a furnace for heating tires and the like articles, a furnace-chamber made with a concave inner side or surface of fire-brick of a shape corresponding to that of the article to be heated, and an oil-spray burner worked with compressed air and placed to project the ignited spray-jet in a direction nearly tangential to the said concave surface, substantially as herein set forth.

385,926. METHOD OF ORNAMENTING LEATHER. PAIN HAMMA, Gloversville, N. Y. Filed Dec. 22, 1887. Serial No. 258,706. (Model.)



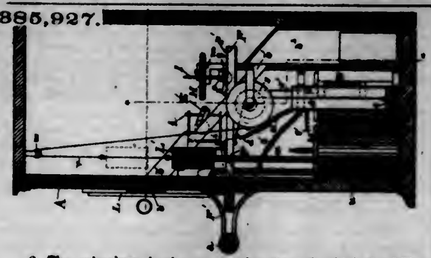
Claim.—1. The method of ornamenting leather and other materials which are changed in appearance by smoke, consisting in covering the article with a pattern of metal, paper, or other similar impervious material having the desired figure cut therein and exposing the same to the action of smoke, substantially as specified.

2. As an article of manufacture, the glove having its surface ornamented by the action of smoke, substantially as specified.

385,927. COIN-OPERATED INDUCTION-COIL. JAMES W. HASELL, Baltimore, Md. Filed Jan. 23, 1888. Serial No. 261,282. (No model.)

Claim.—1. The combination, substantially as described and shown, of a coin-chute provided with an opening through which the falling coin is exposed and a circuit-closing device located adjacent to said opening in position to be acted upon by the descending coin and free to move under the influence of the coin beyond the path of the latter, as described, whereby the coin is enabled to effect the closing of the circuit without having its movement arrested for that purpose.

385,927.



2. The coin-chute having an opening through which the falling coin is exposed, in combination with a circuit-closing lever, E, arranged, as described, to be acted upon and moved by the coin out of its path, and a magnet to hold the lever after being thus moved, whereby the coin is enabled without stopping to close the circuit and the circuit retained in closed condition by the magnet without assistance from the coin.

3. In an apparatus for administering electricity, an induction-coil, two electrodes connected with the secondary wire of the induction-coil, a battery and conductors connecting the same with the primary wire of the induction-coil, a normally-open circuit-closing device, E, in the battery-circuit, a coin-chute provided with an opening through which the falling coin may act upon said circuit-closing device without being arrested thereby, a second and normally-open circuit-closing device also mounted in the battery-circuit, and a manual device, F, adjacent to one of the electrodes, for operating the last-named circuit-closer, whereby the battery-circuit is closed at one point by the moving coin and thereafter completed at another point by the manual device.

4. In an apparatus for administering electricity, the induction-coil, the battery and conductors connecting the same with the primary wire of an induction-coil, the electrodes connecting with the secondary wire of the induction-coil, the lever E, for closing the battery-circuit at one point, the coin-chute provided with an opening through which the coin without stopping acts upon said lever, circuit-closing devices *i j*, also in the battery-circuit, the manual operating-bar F, for closing the circuit at *i j*, the trip I, actuated by the bar F and acting in turn upon the lever E, and the means for automatically retracting the bar F when released, whereby the coin is enabled to close the battery-circuit at one point and the manual bar enabled to complete said circuit at a different point and thereby bring the induction-coil into action, and, finally, the bar F caused to reopen the battery-circuit at both points when released.

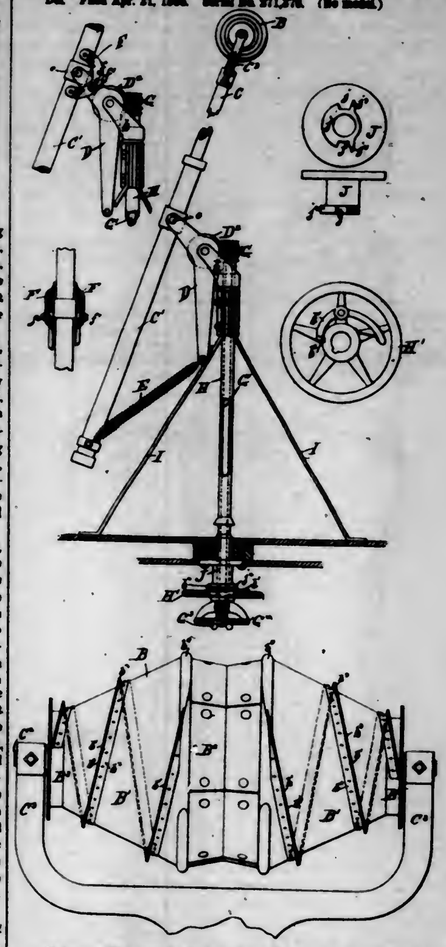
5. The induction-coil and its movable core *t*, the battery connected to the primary wire of said coil, the electrodes connected with the secondary wire of the coil, the transparent indicator-tube, the flexible tube connected thereto, the vertically-movable reservoir *b'*, connected with the flexible tube, and the fluid therein, in combination with the manual bar F and connections, substantially as shown, from said bar to the reservoir and the core *t*, respectively, whereby said bar is enabled in moving endwise to vary the intensity of the secondary current and to indicate said variation by raising and lowering the fluid in the indicator-tube.

6. The combination, in an apparatus for administering electric shocks, of an electric generator and circuit-wires therefrom, a circuit-closing bar, F, a circuit-closer, E, a coin-chute provided with an opening through which the moving coin may act upon the circuit-closer E, a magnet to hold the circuit-closer E, and a trip, I, actuated by the circuit-closing bar to release the circuit-closer E from the magnet.

7. The combination, substantially as described, of an electric generator, an induction-coil whose primary wire is connected with said generator, two stationary electrodes connected with the secondary wire of said coil, a normally-open circuit-closing device, E, controlling the generator-circuit, the coin-chute provided with an opening and located in suitable relation to the circuit-closer to admit of the falling coin moving the circuit-closer without being stopped thereby, a second and normally-open circuit-closer, F, also located in the generator-circuit, and a manual device for operating the last-named circuit-closer, located adjacent to one of the electrodes and movable independently thereof, whereby the coin pursuing an uninterrupted course to its receptacle is enabled to close the circuit at one point and the attendant enabled to close it at a second point without movement of the electrodes.

8. The combination, in an apparatus for administering electricity, of an electric generator, an induction-coil whose primary wire is in circuit with the battery, an endwise-moving bar, F, controlling said battery-circuit, a glass indicator-tube, a liquid-reservoir, a flexible tube connecting the glass tube and reservoir, and a cord, *d*, suspending said reservoir and connected with the movable bar, for the purpose set forth.

385,928. ELECTRIC RAILWAY. EDWIN W. ELLIS, Wilmington, Del. Filed Apr. 21, 1888. Serial No. 271,370. (No model.)



Claim.—1. The combination, with a trolley bearing upward against a conducting-wire and its supporting and carrying connection on top of the car, of a shifting or reversing operating mechanism therefor fitted within the car-roof, substantially as described.

2. The combination, with a trolley adapted to bear upward against a conducting-wire and its supporting and carrying connection on top of the car, of a sleeve to shift said connection from the inside of the car and fitted with an operating-handle and locking device, substantially as described.

3. The combination of the trolley-rod, its pivoted supporting-lever, a dipping-shaft, and gearing between said shaft and lever, whereby the trolley-rod may be dipped or inclined, as desired.

4. The combination of the trolley-rod, the bell-crank lever to which it is pivoted, the returning-spring between said rod and lever, a dipping-shaft geared with said lever, and a handle to operate said shaft, whereby the rotation of said rod to the conducting-wire may be determined by said dipping-shaft, while the spring maintains yielding contact.

5. The combination of the trolley-rod, its pivoted supporting-lever, the turning sleeve upon which said lever is pivoted so as to be adjusted thereon, the handle to turn said sleeve, a dipping-shaft passing through said sleeve, gearing between said shaft and said pivoted lever, and a handle for said shaft, whereby the trolley-rod may be dipped or inclined by the dipping-shaft and the apparatus reversed by the said turning sleeve, substantially as described.

6. The combination of the conducting-wire, the trolley, and the turning sleeve which supports and carries the trolley-rod and its connections, with a fixed notched locking-plate, and a locking device between said sleeve and plate, substantially as described.

7. The combination, with the supporting-lever and the trolley rod or standard pivoted thereon, of side guides fixed to said trolley-rod and preventing lateral motion of said rod upon said lever, substantially as described.

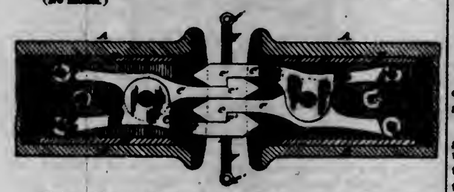
8. The trolley fitted with a spiral flange upon its cone end leading to the center of the trolley and with a portion thereof substantially parallel with the surface of the trolley to take the wear of the wire, substantially as described.

9. The trolley made up of three main sections, to wit: two cone end sections and a central section having a depression or groove for the wire, substantially as described.

10. The trolley having a central V-shaped or depressed section fitted with corresponding detachable wearing-plates, substantially as described.

11. The trolley having a depression or groove for the conducting-wire to run in, and at each side thereof a curved or rounded annular bead cut away to shed or shift a leaving wire, substantially as described.

385,929. CAR-COUPLING. JOHN HELM, Omaha, Neb., assignor to Louis Helm, St. Louis, Mo. Filed Feb. 6, 1888. Serial No. 263,117. (No model.)



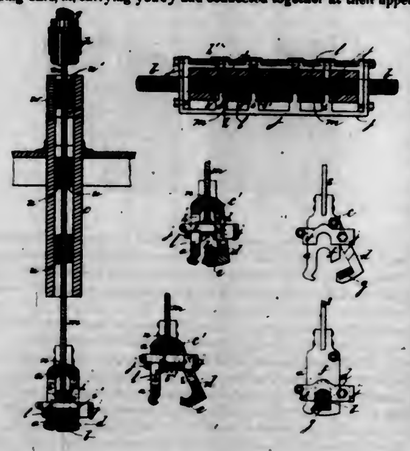
Claim.—The combination, in a car-coupler, of the pin F, gripping-jaws C C, and lever J^3, operating the same, in conjunction with the pin b^3, box B, and draw-head A, substantially as shown and described, and for the purpose specified.

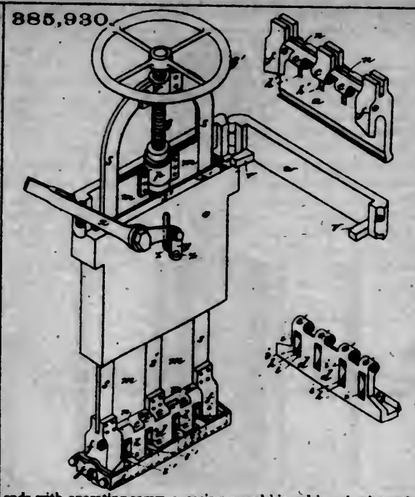
385,930. GRIP-GEAR FOR CABLE STREET-RAILROADS. JOHN HELM, Omaha, Neb., assignor to Louis Helm, St. Louis, Mo. Filed Mar. 15, 1888. Serial No. 267,214. (No model.)

Claim.—1. In a cable-road grip-gear, the combination of a fixed jaw, *c*, carried by grip-frame on car, swing-jaw *d*, hinged to fixed jaw *c*, slots *h h'*, formed through said jaws and having recesses *i*, yoke *j*, surrounding said jaws and formed with cross-bars *k*, having shoulders *i'*, with lower ends, *l*, of sliding bars *m*, and springs *b'*, substantially as shown, and for the purpose described.

2. The combination of vertical side bars, *s*, carrying fixed jaw *c* and connected together at their upper ends above the floor of car, and intermediate upright sliding bars, *m*, carrying yoke *j*, and connected together at their upper ends with operating-screw *q* and hinged jaw *d*, substantially as shown, and for the purpose described.

3. The combination of vertical side bars, *s*, carrying fixed jaw *c* and connected together at their upper ends, and intermediate upright sliding bars, *m*, carrying yoke *j* and connected together at their upper





ends with operating-screw *q*, casing *o*, and hinged jaw *d*, substantially as shown, and for the purpose described.

4. The combination of vertical side bars, *s*, carrying fixed jaw *c* and connected together at their upper ends by cross-bars *u u'*, central upright bar, *s'*, secured to said cross-bars and to fixed jaw *c*, and intermediate upright sliding bars, *m*, carrying yoke *j* and connected together at their upper ends with operating-screw *q*, hinged jaw *d*, lugs or brackets *v*, projecting from door *w* of casing *o*, lever *x*, links *y*, and bar *z*, secured to grip-frame, substantially as shown, and for the purpose described.

385,931. FISHING-REEL. ANDREW R. HEBERTZ, New Haven, Conn. Filed May 21, 1888. Serial No. 274,482. (No model.)



Claim.—1. A spool for fishing-reels, consisting of the axle A, constructed with the gudgeon at each end and so as to form a corresponding shoulder, *a*, at each end, combined with the heads B C, struck from sheet metal, each with an inwardly-projecting hub, D, and so as to form a concentric shoulder, *c*, upon the outside of the heads, the heads centrally pierced to set on over the gudgeon against the shoulder of the axle, with a collar, E, set onto the gudgeon outside the head and into the shoulder of the head, substantially as described.

2. The combination of the axle A, constructed with a gudgeon at each end to form shoulders *a*, the heads B C, made from sheet metal, constructed with a hub, D, upon their inner surface to set against the respective shoulders *a* of the axle, with a collar, E, set on over the gudgeon and against the outer face of the head and there secured, substantially as described.

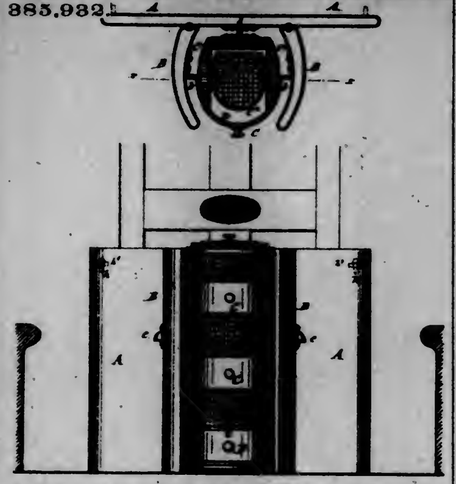
385,932. CAR-HEATER. EDUARD HEHN, Jersey City, N. J. Filed Apr. 6, 1887. Serial No. 233,962. (No model.)

Claim.—1. The combination, with the casing of a car-door, said casing having fixed eyes, of a panel extending across said door and having hooks for engaging said eyes and a heater supported by said panel, substantially as set forth.

2. The combination, with the casing of a car-door, said casing having fixed eyes, of a panel extending across said door and having



385,932.



hooks for engaging said eyes, hollow guard walls or wings attached to said panel, and a heater supported by said panel and guard-walls, substantially as set forth.

3. The combination of a hollow panel, hollow guard walls or wings attached to said panel, and a heater supported by brackets on said panel and guard-walls, substantially as set forth.

4. The combination of a hollow supporting-panel, hollow guard-walls attached to said panel, a heater supported on said panel and guard-walls and composed of a perforated exterior shell, an interior perforated fire-pot, and an ash-pan below said pot at the lower part of the shell, substantially as set forth.

5. The combination of a movable panel provided with hooks for suspending it from a fixed structure and a heater attached to said panel, substantially as described.

6. The combination of a movable panel provided with hooks for suspending it from a fixed structure, a heater attached to said panel, and guard-walls, also attached to said panel and extending outward therefrom on opposite sides of the heater, substantially as described.

7. The combination of a movable panel provided with hooks for suspending it from a fixed structure, a heater attached to said panel, and hollow guard-walls, also attached to said panel and extending outward therefrom on opposite sides of the heater, substantially as described.

385,933. JAPANNING-MACHINE. IRVIN G. HOOPES, Newark, N. J. Filed May 17, 1887. Serial No. 238,451. (No model.)

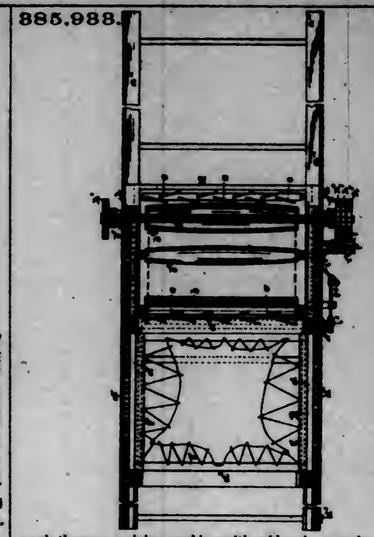
Claim.—1. The combination, with a leather-stretching frame and the stretched leather thereon, of a daub receptacle or tank, a traveling carriage constructed to hold said frame and to move reciprocally across said tank, a daub-conveying apron arranged in said tank and operating to transfer the daub from the tank to the under side of said stretched leather, and actuating devices for causing the movements of said carriage and apron, for the purposes set forth.

2. The combination, with a leather-stretching frame and the stretched leather thereon, of a daub receptacle or tank, a traveling carriage constructed to hold said frame and to move reciprocally across said tank, a daub-conveying apron arranged in said tank and operating to transfer the daub from the tank to the under side of the stretched leather, flexible or yielding scrapers arranged to distribute the daub over the surface of the leather, devices operating to cause the said apron to lift the daub from the tank to the leather, and means whereby said carriage and frame are moved reciprocally across the tank and scrapers, for the purposes set forth.

3. The combination of a leather-stretching frame, a daub receptacle or tank, a reciprocating carriage constructed to receive said frame and to move reciprocally across said tank, a daub-conveying apron arranged in said tank and operating to transfer the daub in the tank to the under side of the leather when in the stretching-frame, a daub agitator or mixer arranged and moving in said daub-tank, and actuating devices for operating said mixer, for the purposes set forth.

4. In a japanning-machine, the combination of a daub-holding tank of the form herein specified, rolls b b^1, arranged in said tank at different levels, a daub-conveying apron arranged around said rolls, ways extending on and in opposite directions from said tank, a frame-holding carriage arranged and moving on said ways and provided with

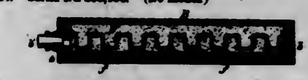
385,933.



a rack thereon, a pinion meshing with said rack or racks, and means for actuating said pinions, for the purposes set forth.

5. In a japanning-machine, the combination of a tank, A, rolls b b^1, journaled in said tank, said roll b^1 being provided with pulleys h^2, h^3, and h^4 thereon and a gear, h^5, as herein set forth, ways a^{10}, extending on and oppositely from said tank, a frame-holding carriage moving on said ways and provided with racks d' on the upper side thereof, a shaft, k', extending above said tank, having pinions k thereon, meshing with said racks d', and a gear meshing with the gear on the roll b^1, for the purposes set forth.

385,934. SATURATOR FOR THE PRODUCTION OF VAPOR BLOW-PIPE FLAMES. FERDINAND R. IVES, Philadelphia, Pa. Filed Oct. 24, 1887. Serial No. 253,150. (No model.)



Claim.—A saturator consisting of a tube having inlet and outlet near its opposite ends, and a porous filling with a zigzag or other circuitous channel along the upper portion of said porous filling, all substantially as set forth.

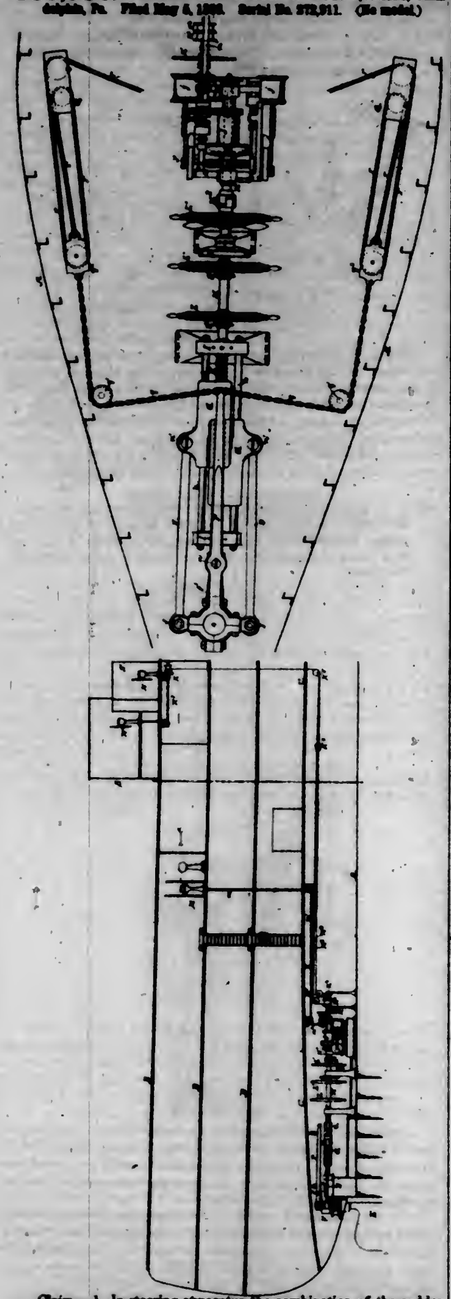
385,935. SASH-LOCK. JOHN JACKSON, Clinton, Iowa. Filed Apr. 9, 1888. Serial No. 270,103. (No model.)



Claim.—1. The combination, with the upper and lower meeting-rails of a sash, of a sash-lock mounted on the former, the same consisting of a lock-case having a pivoted swinging lock adapted to take over the lower meeting-rail and a projecting lug arranged to be struck thereby and formed with a shoulder at its opposite end, and a pawl adapted to take against the shoulder when the sash is closed and to be operated thereby when opened, substantially as specified.

2. The combination, with the meeting-rail 1, the casing 4, provided with the securing-flanges 4° and 5, the lock 6, mounted on the shaft 7 in said casing and formed with the locking-face 9, and shoulders 10, 12, and 16, and the pawl 13, mounted in rear of the lock and formed with the opposite shoulders, 15 and 17, of the recessed rail 2, having the trip 3, all combined and arranged to operate as specified.

385,936. STEERING APPARATUS. J. HENRY KNIGHT, Philadelphia, Pa. Filed May 4, 1888. Serial No. 272,911. (No model.)



Claim.—1. In steering apparatus, the combination of the rudder having a cross-head, and a screw-shaft having traveling nuts connected to the opposite ends of said cross-head, with a steering-engine the shaft of which is in line with and forms a continuation of said screw-shaft, substantially as described.

2. The combination of the rudder having a cross-head and arm, a screw-shaft having traveling nuts detachably connected to said cross-head, and a tiller detachably connected to the arm of the rudder, all substantially as specified.

3. In steering apparatus, the combination of the rudder and its cross-head, the screw-shaft, the traveling nuts thereon, detachably connected to the cross-head, a steering-engine for driving the screw, a tiller detachably secured to the rudder, and connections between the drum of the steering-engine and the tiller, substantially as described.

4. In steering apparatus, the combination of the rudder having a cross-head, a screw, and traveling nuts thereon, connected to said cross-head, with a steering-engine the shaft of which is detachably connected to the screw-shaft, and valve apparatus and their operating devices controlling the steering-engine and located at convenient points on the ship remote from the engine, all substantially as specified.

5. The combination of the rudder, its cross-head and tiller, the screw-shaft and its nuts detachably connected to the cross-head, a steam steering apparatus constructed to operate either the screw-shaft or the tiller, and steering-wheels for operating directly by hand either the screw-shaft or the tiller-drum of the steam steering apparatus, all substantially as specified.

385,937. PACKAGE OF SURGEONS' SILK OR CATGUT. J. ELLWOOD LEE, Conshohocken, Pa., assignor to the J. Ellwood Lee Company, same place. Filed Mar. 3, 1888. Serial No. 265,891. (No model.)



Claim.—1. The herein-described package of surgeons' silk or catgut, consisting of a bottle or other receptacle containing antiseptic fluid, a spool or spools of the thread, and a stopper for the bottle, through the body of which the end of the thread passes with a close fit, substantially as described.

2. The herein-described package of surgeons' silk or catgut, consisting of a bottle or other receptacle containing antiseptic fluid, bobbins of the thread, spindles for the bobbins, and a closing-stopper through which the ends of thread are passed with a close fit, substantially as described.

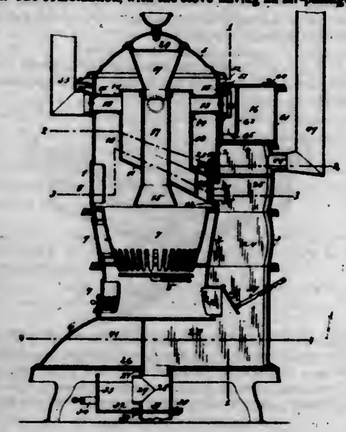
3. The herein-described package of surgeons' silk or catgut, comprising a bottle or other receptacle containing a wire frame having arms or spindles, and having a coating to resist the action of the antiseptic fluid, bobbins of the thread, and a stopper through which the threads are passed with a close fit, substantially as described.

4. The herein-described package of surgeons' silk or catgut, comprising a bottle or other receptacle containing antiseptic fluid, and the threads, a stopper through which the threads are passed with a close fit, and an inclosing-cap.

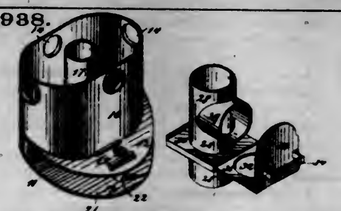
385,938. STOVE. HANS LIEBAS, Stoughton, Wis. Filed Oct. 20, 1888. Serial No. 217,576. (No model.)

Claim.—1. The combination, with a stove having an air-supplying passage, of a drum suspended within the stove below its top, and having a rear projection opening through the casing of the stove into the said passage, and provided with hot-air pipes leading outward through the stove-casing, whereby the entire surface of the drum and the pipes will be exposed to the heat, substantially as set forth.

2. The combination, with the stove having an air-passage, 24, and



385,938.



a smoke-outlet above and independent thereof, of a drum, 10, suspended within the stove, and having a rear projection, 12, opening into the said air-passage, hot-air pipes leading outward through the casing of the stove, vertical incased opening 22 through the projection 12 adjacent to the smoke-outlet, and a damper therefor, substantially as set forth.

3. The combination, with a stove having a drum suspended therein below the top, provided with an air-supply passage and hot-air pipes, of the fuel-magazine extending down through the drum, and a removable funnel or chute and cover therefor, whereby by removing the said funnel or chute the heating-surface of the drum will be increased, substantially as set forth.

4. The combination, with the stove having a drum suspended within its upper end, provided with outward-extending hot-air pipes, of an air-passage leading upward from the base of the stove, communicating at or near its lower end with the rear end of the ash pit or chamber and opening at its upper end into the said drum, and a damper for the air-passage at the ash-pit, whereby the air supplied the drum for heating purposes may be drawn through the ash-pit, substantially as set forth.

5. In a stove constructed as herein described, the combination, with the air-chamber 24, provided with a lower tubular inlet, 27, of the vertical air-pipe 28, provided with an attached horizontal pipe, 29, and a projecting carrier, 30, together with an apertured slide, 31, adapted to move in said carrier, having one end, 33, turned up at right angles thereto and provided with a handle, 34, substantially as shown and described, and for the purpose herein set forth.

6. The combination, with the stove having a heating-drum, of an air-supply passage leading from the base to the said drum, a cold-air pipe communicating with the lower end of said passage, and having also an outlet or branch opening into the room, and a damper constructed to close the cold-air pipe and open its said outlet or branch, or vice versa, according to the direction in which it is moved, substantially as set forth.

7. The combination, with the stove, its suspended heating-drum, and hot-air pipes, of an air-passage communicating with the drum, leading to the base and having a cold-air inlet, an outlet or branch opening into the room, an opening communicating with the ash-pit, and dampers for the three sources of air-supply, substantially as set forth.

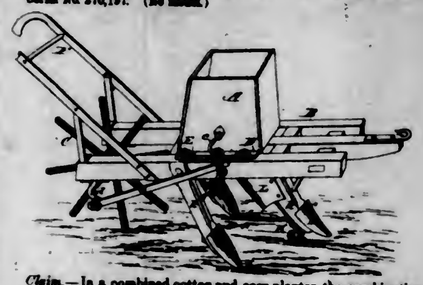
8. The combination, with the stove, the rear extension, flues connected at the base and separated at the upper end of the extension, an air-passage between said flues, openings leading into the stove from the upper ends of the flues, and a smoke-outlet between the flues, of the drum within the stove, having an extension opening into the air-passage, a vertical incased opening through said extension and connected dampers for the said incased opening, and the opening leading directly to the smoke-outlet and a damper for the indirect or return flue opening, substantially as set forth.

385,939. APPARATUS FOR EVAPORATING LIQUIDS. JOHN U. LLOYD, Cincinnati, Ohio. Filed Dec. 1, 1887. Serial No. 256,695. (No model.)



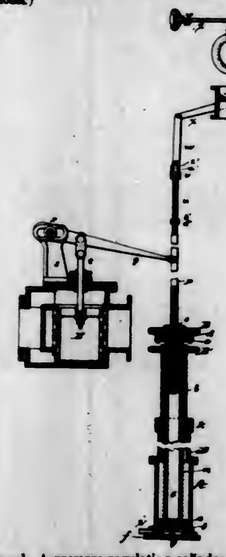
Claim.—In an apparatus for evaporating liquids or solutions, the combination of the shell A, the worm or helix closed at its bottom and open upon the top, supply-pipe C, outlet-pipe D, with removable cover E, having air-entrance F and air-outlet G, a steam-space, *a*, being provided beneath said worm or helix and supplied with suitable inlet and outlet pipes for the entrance and discharge of steam, substantially as and for the purpose specified.

385,940. CORN AND COTTON PLANTER COMBINED. JAMES C. MALLISON, Brenham, Tex. Filed July 19, 1886. Renewed Apr. 10, 1888. Serial No. 270,197. (No model.)



Claim.—In a combined cotton and corn planter, the combination, with a pair of interchangeable hoppers, one being larger at the base than at the top and one being larger at the top than at the base, of a plow-frame provided with a hopper-seat adapted to receive either of the hoppers at pleasure, a rotary distributer adapted to regulate the passage of seed through the bottom of the hopper, and a pitman connecting the wrist-pin of a crank on the end of the distributer-shaft with a crank on the end of the drive-wheel shaft, substantially as set forth.

385,941. SPEED AND PRESSURE REGULATOR FOR BLOWING-ENGINES. FELIX MCCARTHY, Pottstown, assignor of part to the Weimer Machine Works Company, Lebanon, and Edgar S. Cook and Isaac Fegley, Pottstown, Pa. Filed Jan. 12, 1883. Serial No. 260,566. (No model.)



Claim.—1. A pressure-regulating cylinder having a piston operated in both directions by a yielding pressure within the cylinder, in combination with an adjustable rod connected to said piston and to a relief-valve, and a throttle-valve for operating them positively in both directions, substantially as described.

2. The combination, with a pressure-regulating cylinder having a piston or fluid chamber on one side and a yielding medium on the opposite side of said piston and within the cylinder, of a throttle-valve and a relief-valve connected to said piston by a rod having an adjusting mechanism at both ends, substantially as described.

3. A pressure-regulating cylinder having a fluid-chamber, a piston, and a tubular piston-rod, in combination with a spring and an adjustable gland engaging with one end of said cylinder for compressing said spring, substantially as shown and described.

4. A pressure-regulating cylinder having a fluid-chamber, a piston, and a tubular piston-rod, in combination with a spring, an adjustable gland engaging with one end of said cylinder, and an adjustable rod connected to the piston, a throttle and a relief valve, substantially as described.

5. A pressure-regulating cylinder, in combination with a throttle-valve, a relief-valve, and a rod adjustably within the hollow rod of the piston of said cylinder, extending from and connecting said piston with said valves, substantially as described.

6. A pressure-regulating cylinder, in combination with a piston, a spring resting upon the piston, an adjusting-gland, a relief-valve, a throttle-valve, and a rod provided with an adjusting mechanism at both ends connecting the piston and the valves, substantially as described.

7. A pressure-regulating cylinder having a piston provided with a tubular rod extending through one end of said cylinder, and an operating-wheel secured thereto provided with a threaded aperture, in combination with a screw-threaded rod extending into said tubular piston-rod and connected to a throttle-valve, substantially as described.

8. A pressure-regulating cylinder having a piston provided with a tubular rod having an operating-wheel attached thereto, and a rod connected to said piston and to a valve or valves, in combination with an externally-threaded gland provided with an operating-wheel, and a spring between said piston and gland, substantially as described.

385,942. LOAD-INDICATOR FOR CARTRIDGE-MAGAZINES. WILLIAM R. MILLER, Baltimore, Md. Filed Mar. 27, 1888. Serial No. 268,702. (No model.)



Claim.—1. In a repeating-rifle, the wall of the magazine perforated and the head of the magazine-spring provided with a lateral indentation or cavity, combined with a bolt in the stock which may be operated from the outside of the magazine to bring its end into the said indentation or cavity, substantially as and for the purpose specified.

2. In combination with the magazine C, having the perforation *d*, and the head *b* of the magazine-spring having the indentation or cavity *c*, the spring-bolt E in the stock, the inner end of which is adapted to enter the said cavity, substantially as and for the purpose specified.

385,943. COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES. FRANK B. MITCHELL, Columbus, Ohio. Filed July 15, 1887. Serial No. 244,373. (No model.)



Claim.—1. In a commutator for electrical machines, the combination of the wooden core A, having segments removed therefrom, the conductors B, and the filling-strips F, the inner ring, D, the conducting-segments E upon said rings, and the insulating-segments having cavities *d* therein, substantially as and for the purpose described.

2. In a commutator, the combination, with the core A, having grooves *a* and the conducting and insulating plates, of the conducting-rods B, fitted within said grooves, and filling-strips F, adapted to cover said grooves and rods, substantially as described.

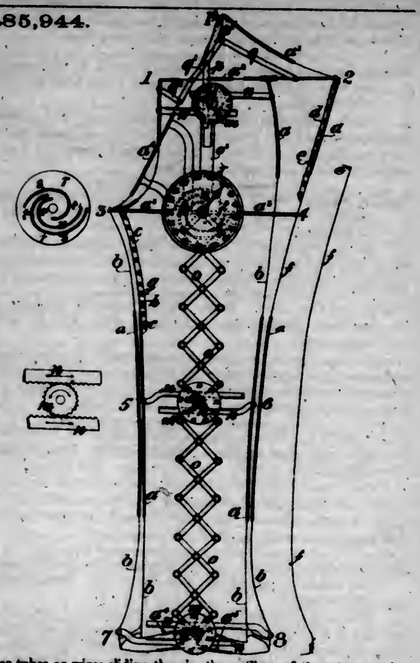
3. In a commutator, the combination, with the core A, grooved at *a*, of the conducting-rod B, having a clamping outer end and an elbow upon its inner end and a conducting-plate secured to said elbow, and a cylindrical insulating-jacket inclosing said elbow and rod, substantially as described, for the purpose specified.

385,944. APPARATUS FOR MARKING OUT PATTERNS FOR GARMENTS. FREDERICK C. HEAP, Manchester, County of Lancaster, England. Filed Dec. 12, 1887. Serial No. 257,703. (No model.) Patented in England Feb. 28, 1887, No. 2,932.

Claim.—1. The improved apparatus for facilitating the marking out of patterns for the manufacture of wearing-apparel, the said apparatus comprising an adjustable frame composed of tubes, and other tubes or wires sliding therein, the outlines of the tubes or wires forming the outlines for the garment, in combination with dials on the frame, and pointers for the dials having pinions and racks gearing into the pinions and connected to the adjustable parts of the frame, substantially as described.

2. The improved apparatus for facilitating the marking out of patterns for the manufacture of wearing-apparel, said apparatus comprising an adjustable frame composed of tubes, and other tubes or wires sliding therein, the outlines of the tubes or wires forming the outlines for the garment, in combination with dials on the frame, and pointers connected to and operated by adjustable parts of the frame, substantially as described.

385,944.



3. The improved apparatus for facilitating the marking out of patterns for the manufacture of wearing-apparel, said apparatus comprising an adjustable frame composed of tubes and other tubes or wires sliding therein, the outlines of the tubes or wires forming the outlines for the garment, in combination with an index carried by one wire and a scale by another, dials on the frame, and pointers connected to and controlled by adjustable parts of the frame, substantially as described.

4. The improved apparatus for facilitating the marking out of patterns for the manufacture of wearing-apparel, said apparatus comprising an adjustable frame composed of tubes and other tubes or wires sliding therein, in combination with two or more dials, lazy-tongs connecting the dials, and pointers therefor connected to adjustable parts of the frame, all substantially as set forth.

5. The improved apparatus for facilitating the marking out of patterns for making trousers, said apparatus comprising an inner and an outer adjustable frame for the front and back portions of the garment, the frames being connected to each other and composed of tubes and other tubes or wires sliding therein, in combination with scales and indexes carried by the tubes, dials and pointers connected to the movable parts of the frames, and lazy-tongs connecting the dials together, all substantially as described.

385,945. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1886. Serial No. 203,925. (No specimens.)

Claim.—An alloy or compound metal composed of gold, nickel, and platinum, in substantially the proportions herein stated.

385,946. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1886. Serial No. 203,926. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, copper, nickel, and gold, in substantially the following parts, viz.: from

seventy-five to ninety parts of platinum, twenty-four parts of copper, eight parts of nickel, and six parts of gold, as set forth.

385,947. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,927. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, copper, nickel, and gold, in substantially the following parts, viz: from thirty to fifty parts of platinum, thirty parts of copper, ten parts of nickel, and ten parts of gold, as set forth.

385,948. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,928. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, nickel, and copper, in about the proportions specified, namely: platinum, fifty to sixty parts; nickel, thirty parts, and copper, twenty parts

385,949. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,929. (No specimens.)

Claim.—An alloy or compound composed of platinum, copper, nickel, and gold, in substantially the following parts, viz: from sixty to seventy-five parts of platinum, twenty-four parts of copper, eight parts of nickel, and eight parts of gold, as set forth.

385,950. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,930. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, copper, nickel, and gold, in substantially the following parts, viz: sixty parts of platinum, twenty-four parts of copper, ten parts of nickel, and from five to twenty parts of gold, as set forth.

385,951. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,931. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, copper, nickel, and gold, in about the following proportions, viz: platinum, sixty-two parts; copper, twenty-four parts; nickel, eight parts, and gold, six parts, as set forth.

385,952. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,932. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, nickel, copper, and gold, in substantially the following parts, viz: fifty parts of platinum, twenty parts of nickel, from five to forty parts of copper, and ten parts of gold, as set forth.

385,953. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,933. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, copper, nickel, and gold, in substantially the following parts, viz: sixty parts of platinum, twenty-two parts of copper, from five to forty parts of nickel, and eight parts of gold.

385,954. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,934. (No specimens.)

Claim.—An alloy or compound metal composed of platinum, copper, nickel, and gold, in substantially the following parts, viz: seventy-five parts of platinum, ten parts of copper, ten parts of nickel, and from ten to forty parts of gold, as set forth.

385,955. ALLOY. DANIEL O'HARA, DANIEL W. ELDRIDGE, and JOHN LOGAN, Waltham, Mass. Filed Mar. 2, 1888. Serial No. 265,935. (No specimens.)

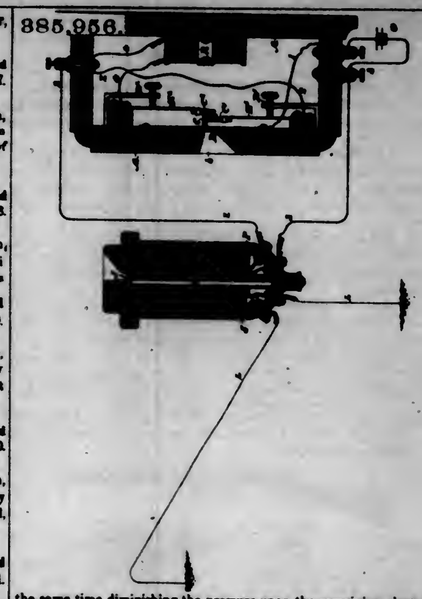
Claim.—An alloy or compound metal composed of silver, zinc, tin, lead, arsenic, and cadmium, in substantially the following proportions, viz: silver, sixty parts; zinc, from thirty-five to sixty parts; tin, four and one-half parts; lead, three and one-half parts; arsenic, one-half part, and cadmium, one and one-half part.

385,956. ELECTRIC TELEPHONE. NATHANIEL PARES, Dansville, N. Y. Filed Apr. 20, 1888. Serial No. 271,281. (No model.)

Claim.—1. In a telephonic transmitter, an electrode, two other electrodes applied to opposite sides of the same, means for increasing the pressure of the first-named electrode upon either one of the other electrodes and at the same time diminish the pressure upon the other, branch circuits leading from the two outer electrodes, and an artificial resistance contained in one of the branch conductors.

2. In a telephonic transmitter, an electrode, two contact-electrodes applied to opposite sides of the same, means for increasing the pressure of the first-named electrode upon either of the other electrodes and at

385,956.



the same time diminishing the pressure upon the remaining electrode, branch circuits leading from the two contact-electrodes, an artificial resistance contained in one of the branch conductors, and an inductorium having its primary coil included in the circuit with said branch conductors.

3. A telephonic transmitter consisting of an electrode, two contact-electrodes applied thereto, means for causing the pressure of the first-named electrode upon the other two to vary inversely, two branch circuits leading from the respective contact-electrodes, and an artificial resistance contained in one of the branch circuits.

4. The combination, with a movable diaphragm and an electrode carried or vibrated thereby, of two contact-electrodes applied thereto, the pressure against one electrode being increased as the pressure against the other is diminished, and vice versa, and an electric battery having one pole connected with the first-named electrode and the other pole with the two contact-electrodes, and an artificial resistance interposed between one of the contact-electrodes and said battery.

5. The combination, with a movable diaphragm and an electrode carried or vibrated thereby, of two contact-electrodes applied thereto, the pressure against one electrode being increased as the pressure against the other is diminished, and vice versa, an electric battery having one pole connected with the first-named electrode and the other pole with the two contact-electrodes, and an inductorium having a single primary coil connected in the circuit of said battery and in series with the respective contact-electrodes, substantially as described.

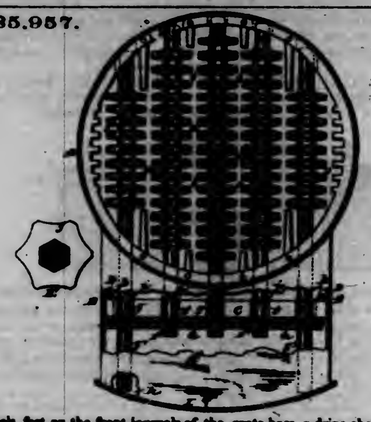
385,957. GRATE FOR FURNACES, &c. WILLIAM PHIPPS, Milwaukee, Wis. Filed Dec. 27, 1886. Serial No. 222,636. (No model.)

Claim.—1. A grate comprising a series of parallel bars and a front supporting-bar therefor, the latter having its ends provided with vertical slots, in combination with angular seats for said ends of the transverse bar having vertical upwardly-extended portions provided with horizontal slots, and pins having right-angular ends and arranged to engage the slots of said transverse bar and seats, substantially as and for the purpose set forth.

2. The combination, with a furnace ash-box having its sides interiorly provided with angular brackets, of a transverse bar having its ends detachably secured to the brackets, a series of parallel grate-bars journaled in a wall of the ash-box, and the transverse-bar, sprocket-



385,957.



wheels fast on the front journals of the grate-bars, a drive-chain arranged on the sprocket-wheels, and one, two, or more of said grate-bars extended outward and shaped to engage a crank, substantially as set forth.

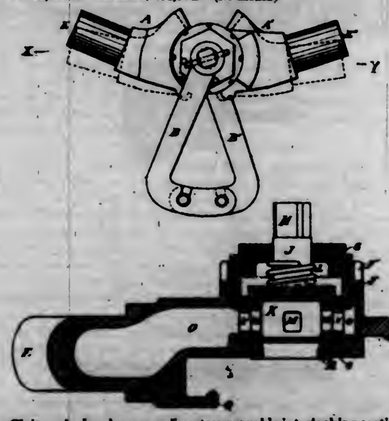
385,958. DOOR CHECK AND SPRING. SAMUEL PEARSON, WILLIAM PEARSON, and JOHN R. HOLDEN, Oldham, County of Lancaster, England; said Samuel Pearson and William Pearson assignors to James Rhodes and Francis Rhodes, both of same place. Filed Feb. 14, 1887. Serial No. 227,982. (No model.) Patented in England Dec. 1, 1886, No. 14,731.



Claim.—1. The combination of a door, a swinging air-cylinder, and a spring-piston therein with a cam connected to the door and having inclines and notches and spring catches or bolts, substantially as set forth.

2. The combination of a spring-piston and swinging air-cylinder with a cam provided with a projection and a fixed stop to limit the action or opening of the door, substantially as set forth.

385,959. SELF-LOCKING AUTOMATIC DEVICE FOR OPENING AND CLOSING VALVES TO AIR-BRAKE-HOSE COUPLINGS. JOHN H. PERRIN, Jackson, and EDGAR A. GRAVENBERG, Detroit, Mich. Filed Oct. 10, 1887. Serial No. 251,894. (No model.)



Claim.—1. In a hose-coupling, two movable interlocking sections, a ported valve within each section, and interlocking arms attached to the valves outside the valve-case for preventing rotation of the valves while the sections are being turned upon them to open or close the ports, all combined substantially as described.

2. In a hose-coupling, two movable interlocking sections each provided with a ported inclined valve-seat, a ported valve within each section, and interlocking arms attached to the valves outside the valve-case for preventing rotation of the valves while the sections are being turned to open or close the ports, all combined substantially as described.

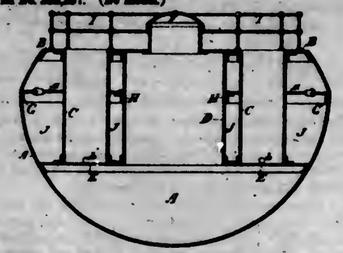
3. In a hose-coupling, two movable interlocking sections each provided with an inclined removable ported valve-seat, a ported valve within each section, and interlocking arms attached to the valves outside the valve-case for preventing rotation of the valves while the sections are being turned to open or close the ports, all combined substantially as described.

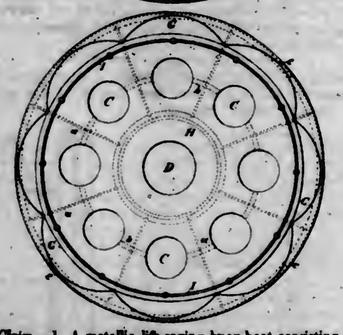
4. In a hose-coupling, two movable interlocking sections each provided with an inclined removable ported valve-seat, a ported valve within each section, and interlocking arms for preventing the rotation of the valves while the sections are being turned to open or close the ports, one end of each arm being secured to the stem of the valve and the other end bent at an acute angle and slotted and provided with a laterally-extending pin, all combined substantially as described.

385,960. SLUG FOR RIBBL-MAILING. FREDERIC P. RAYMOND, Jr., Newton, Mass. Filed Jan. 3, 1888. Serial No. 259,670. (No model.)

Claim.—As an improved article of manufacture, a shoe-slug having the long head *c*, the driving end *b*, of substantially the length of the head, and the wide beveled side or sides *d d*, substantially as described.

385,961. LIFE-SAVING BUOY-BOAT. JAMES SAMUEL, Newcastle-on-Tyne, County of Northumberland, assignee of one-half to Ralph Rhodes Evans Drake-Brockman, London, England. Filed Oct. 12, 1887. Serial No. 252,257. (No model.)



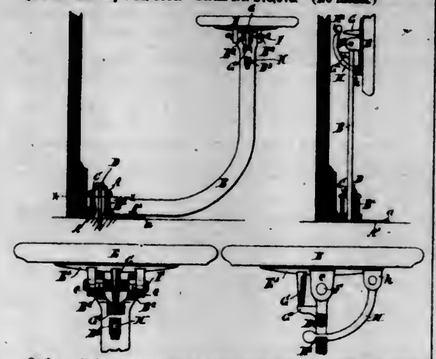


Claim.—1. A metallic life-saving buoy-boat consisting of an approximately semispherical hull, A, water-tight upper deck, B, having a series of circular openings, water-tight mean deck, E, having a central opening, a central cylindrical tube, D, secured water-tight to the edge of the opening of the mean deck E, provided with a cap and a water-tight cover, F, a series of smaller tubes, C, disposed circularly around the central tube and standing upon and secured water-tight to the mean deck, and open at the top and secured water-tight to the upper deck, a flanged ring, G, secured to the hull, a flanged ring, H, secured to the exterior of the cylinder D, stays *a*, connected to said flanged rings, and a railing, I, at the edge of the main deck, substantially as set forth.

2. The combination, in a metallic life-saving buoy-boat, of the hull A, main deck B, having circular openings for the reception of tubes, a mean deck, D, having a large circular opening, a central cylinder, D, secured at its lower edge water-tight to the edge of the opening in the mean deck and at its upper edge to the main deck, a series of tubes or cylinders, C, standing upon and secured water-tight to the mean deck E, and their upper edges secured water-tight to the edges of the openings in the upper deck, a flanged ring, G, secured internally to the hull, a flanged ring, H, secured externally to the central cylinder, D, stay-rods *a*, passing between the tubes or cylinders C, having their ends secured to the flanged rings G and H, and a railing, I, secured upon the upper deck, substantially as set forth.

3. In a metallic life-saving buoy-boat, the combination of a series of tubes or cylinders, C, open at the top and secured water-tight at their upper edge to the edges of openings in the upper deck, and their bottom secured water-tight to the mean deck, and the tubes *b*, connecting adjacent cylinders near their bottoms with one another, so as to form a communication, substantially as set forth.

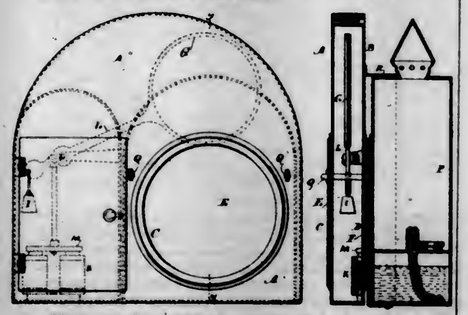
385,962. **STORE-COUNTER STOOL.** GEORGE SCOTT, Montreal, Quebec, Canada, assignor of one-half to Frederick Edward Phelan, same place. Filed Apr. 14, 1888. Serial No. 270,673. (No model.)



Claim.—1. In a store-counter stool, and in combination, the hollow hub and foot-plate attached to floor, the sleeve slipped on over hub and made in one, with horizontal and upwardly-curved bracket resting on foot-plate and carrying seat, the cap covering the hub and sleeve, and bolt passing down through cap and hub into floor, all as herein set forth, and for the purposes described.

2. In a store-counter stool, the combination, with the seat pivoted to the forked arm of a bracket-support, of a dog projecting down from under side of seat and resting on projection from one side of bracket, and a curved locking-bar pivoted to seat and with its free end passing through slot in bracket and locking seat in place by gravity, all substantially as herein described.

385,963. **RAILWAY-SIGNAL.** EDWARD A. SHARP, Rogers Park, Ill., assignor to William B. Sterrett, New York, N. Y. Filed Mar. 12, 1888. Serial No. 266,942. (No model.)



Claim.—1. The combination, with the closed signal-case having within it the swinging signal or banner, of a movable lamp that is independent of the case and hooks or connecting devices for supporting the lamp outside of the signal-case, substantially as set forth.

2. The combination, with the removable independent lamp and the connecting or suspending devices, of a signal-case having coinciding openings containing transparent material, a lever and banner or signal within the case, and counter-weight to the banner-lever, and an electro-magnet for moving such banner and lever, substantially as set forth.

385,964. **ELECTRIC SIGNAL FOR RAILWAYS.** EDWARD A. SHARP, Rogers Park, Ill., assignor to William B. Sterrett, New York, N. Y. Filed Mar. 26, 1888. Serial No. 268,902. (No model.)



Claim.—1. The combination, with the box B, fastened to the railway-ties of the plunger H, passing vertically through the box, and having a projecting stud, 6, at the upper end and a shank, 5, at the lower end, of the spring S, for raising the plunger, the pairs of circuit-closing springs 10 11 and 13 14, the conducting-bar O between the ends of the said springs, and an insulating-arm connecting the bar O with the plunger, substantially as set forth.

2. The box B, with bevel ends resting upon the cross-ties and the sheet-steel shoe G upon the surface of the same, in combination with the plunger H, passing vertically through the box and the shoe, and the conical socket C, attached below the box B, the nuts 9 and spring S, for raising the plunger, the circuit-closing springs 10 11 and 13 14 in pairs, and the conducting-bar O between the ends of such springs, and the arm connecting the same with the plunger, substantially as set forth.

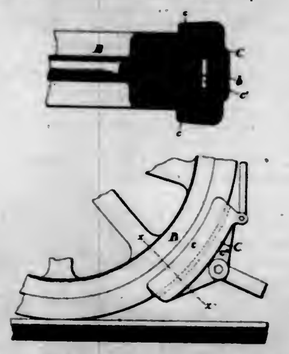
3. The combination, with the box B, plunger H, arm 18, and bar O, of the circuit-closing springs, in pairs and insulated, the bar O being between the moving ends of such springs, and the pipe 26 and thimble 28 passing through the bottom of the box B, and the jam-nuts for holding the thimble firmly to the box, and the conductors passing through such thimble and pipe, substantially as set forth.

385,965. **TAG-FASTENER.** CHARLES W. SHEPPARD, Milwaukee, Wis. Filed Apr. 3, 1888. Serial No. 269,416. (No model.)



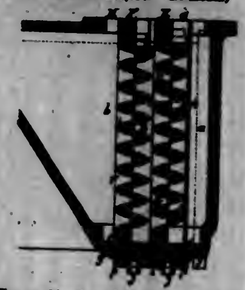
Claim.—As an improved article of manufacture, a tag-fastener that comprises a piece of sheet metal having one or more prongs stamped out therefrom and one edge thereof turned over, and the spring-wire hanger engaged by said turned-over edge and provided with overlapping ends, substantially as set forth.

385,966. **BRAKE-SHOE.** FRANK I. SHEPPARD, Altoona, Pa. Filed Aug. 24, 1887. Serial No. 247,725. (No model.)



Claim.—As a new article of manufacture, a brake-shoe for use with locomotive and car wheels, having a surface corresponding in outline with the face of the wheel, the center of said surface being recessed or cut away, and having a flange or flanges projecting inward along the edge of the wheel, the said shoe being formed of a single casting of mild steel, all substantially as and for the purpose specified.

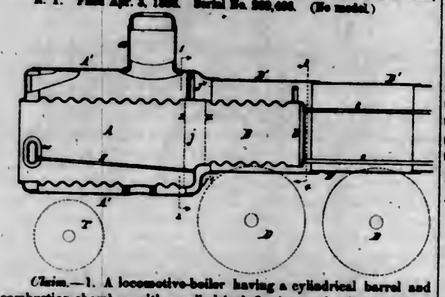
385,967. **ENGINE-VALVE.** GEORGE S. STRONG, New York, N. Y. Filed Jan. 26, 1888. Serial No. 261,698. (No model.)



Claim.—1. The combination of the casing of an engine-cylinder having a cylindrical orifice with a removable valve-seat having segmental or curved edges adapted to fit snugly to the sides of said orifice and extending throughout the length of the seat on both sides of a central plane through the orifice, and a slide-valve wholly within the seat.

2. The engine-cylinder having inlet and exhaust passages and an orifice with a conical or shouldered bottom, in combination with a corresponding valve-seat adapted to the orifice, plate and bolt securing the seat to the casing, and a slide-valve carried by said seat.

385,968. **LOCOMOTIVE-BOILER.** GEORGE S. STRONG, New York, N. Y. Filed Apr. 3, 1888. Serial No. 269,469. (No model.)



Claim.—1. A locomotive-boiler having a cylindrical barrel and combustion-chamber with a cylindrical fire-box and cylindrical fire-box shell of larger diameters than the combustion-chamber and barrel, respectively, and placed eccentrically to the latter, substantially as described.

2. A locomotive-boiler having a cylindrical barrel and combustion-chamber with a cylindrical fire-box and cylindrical fire-box shell of larger diameters than the combustion-chamber and barrel, respectively, and the top of the fire-box being on a level with the top of the combustion-chamber, substantially as described.

3. The combination of the combustion-chamber and barrel with the enlarged fire-box and shell, junction-pieces, a transverse water-box across the front of the fire-box, and tubular grate-bars extending from the water-box to the lower part of the inner junction-piece, substantially as set forth.

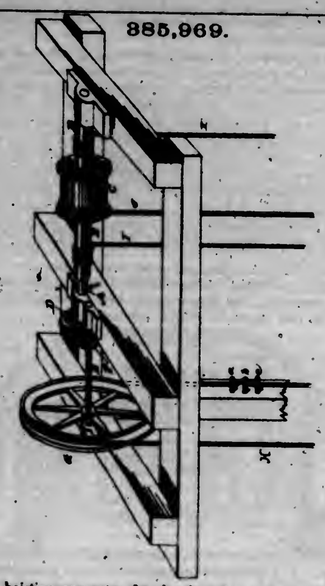
385,969. **SLAUGHTER-HOUSE HOIST.** JULES H. TARDY, Geneva, Ohio. Filed Dec. 16, 1887. Serial No. 257,942. (No model.)

Claim.—1. In a slaughter-house hoist, the combination, with the stationary frame-work, of a shaft journaled in said frame, three hoisting-drums on said shaft, a large and two smaller ones, a second shaft in gear with the drum-shaft, and a rope-wheel on said second shaft, substantially as shown and described.

2. In a slaughter-house hoist, the combination, with the main shaft, and with three hoisting-drums on said shaft, and a suspended hoisting-rope on each of said drums, the hoisting-rope of the larger drum being wound in the opposite direction to those of the smaller drums, of a second shaft in gear with the drum-shaft and a rope-wheel on the second shaft, substantially as shown and described.

3. A slaughter-house hoist comprising a suitable frame, a shaft, A, journaled therein, large hoisting-drum C on said shaft, and smaller hoisting-drums, B B, at the sides of drum C, hoisting-rope J on drum C, and hoisting-ropes I I on drums B, the said shaft having a gear-wheel, D, a second shaft, E, having a gear-wheel, F, in mesh with the gear-wheel D, and a rope-wheel, G, on shaft E, for operating the hoist, substantially as described.

385,969.



4. A hoisting apparatus for slaughter-houses, comprising the frame, the shaft A, journaled thereon, large hoisting-drum C thereon, its hoisting-cable J, smaller hoisting-drums, B B, also on shaft A, having their hoisting-cables I wound in the same direction, but opposite to that of the larger drum, and gearing connected with shaft A for rotating it independently of either of said drums, substantially as set forth.

385,970. **ROTARY FLUID-METER.** JAMES A. TILDEN, Hyde Park, Mass., assignor to the Harvey Motor Company, Portland, Me. Filed Jan. 26, 1887. Serial No. 225,490. (No model.)



Claim.—1. In a water-meter, the combination of a casing forming a piston-chamber and having projections extending into the chamber to form measuring spaces or recesses, each of which projections has a bearing-surface at its end, with a piston having a series of projections, each of which has a bearing-surface at its end and an angular bearing-surface upon one side, as and for the purposes described.

2. In a water-meter, the combination of a casing forming a piston-chamber and having projections extending into the chamber to form measuring spaces or recesses, each of which projections has an angular bearing-surface upon one side, with a piston having a series of projections, each of which has an angular bearing-surface upon one side, as and for the purposes described.

3. In a water-meter, the combination of a casing forming a piston-chamber and having projections extending into the chamber to form measuring spaces or recesses, each of which projections has an angular bearing-surface upon one side, with a piston having a series of projections, each of which has a bearing-surface at one end and upon one side, as and for the purposes described.

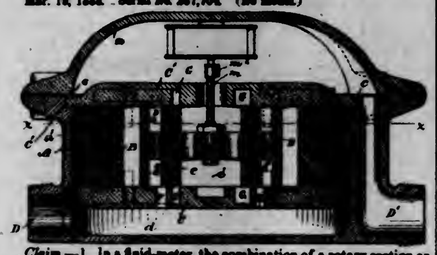
4. In a fluid-meter, a casing forming a piston-chamber having a series of projections extending into the chamber to provide measuring spaces or recesses, each of which has an angular bearing-surface upon one side, as and for the purposes described.

5. In a fluid-meter, a piston having a series of projections, each

of which has an angular bearing-surface upon one side, as and for the purposes described.

6. In a fluid-meter, in combination with suitable inlet and exhaust ports, a ring contained in the meter-case and having projections from its inner side, and forming, in connection with the port-plates, the piston-chamber, each of which projections has an end bearing-surface and a side bearing-surface, with a rotary piston contained in said chamber, having projections, each of which has an end bearing-surface and a side bearing-surface, and which piston and ring co-operate upon the rotation of the piston to divide the piston-chamber into receiving and discharging spaces by the contact at one point of the end bearing-surfaces of a piston and ring projection, and at another point of a sliding contact between the side bearing-surface of one ring projection and the side bearing-surface of a piston projection, substantially as described.

385,971. ROTARY FLUID-METER. JAMES A. TILDEN, Hyde Park, Mass., assignor to the Harvey Meter Company, Portland, Me. Filed Mar. 19, 1888. Serial No. 267,704. (No model.)



Claim.—1. In a fluid-meter, the combination of a rotary section or part having a chamber extending vertically through the same from end to end and of the same area at each end, connected by ports with a source of supply, and which rotary section may be either the ring or the piston of the meter, with said piston and said ring shaped, substantially as represented, to conjointly form fluid-measuring spaces, an upper port-plate and a lower port-plate, between which the piston and ring are held, and passages or ports in each port-plate having the same general curve or direction, and the openings to which are oppositely arranged, so that they act in pairs, each pair of which connects a measuring-chamber with the supply-chamber and with the delivery-chamber, and which by the movement of said movable part of the meter, whether it be the ring or the piston, are caused to alternately connect the supply-chamber with said measuring-chamber and the measuring-chamber with the delivery-chamber, as and for the purposes specified.

2. The combination, in a fluid-meter, of the ring B, having a piston-chamber, *b*, bounded by its inner surface, which is shaped substantially as specified, a piston, E, contained in said piston-chamber and shaped to conjointly form with the wall of the ring B the measuring-chambers H, the said measuring-chambers, the vertical chamber d^3, extending through the piston from end to end and of the same area at each end, the port-plate C, having the inlet-ports F always open to the chamber d^3, and also having the ports or passages G, connecting with the measuring-chambers, and the port-plate C', having the ports or passages G, also connecting with the measuring-chambers, and the inlets to which are opposite the corresponding ports in the port-plate C, the said port-plate also having a central opening or passage connected with the chamber d^3, and the said chamber d^3 in the piston extending vertically through the same from end to end and of the same area at both ends, the distributing or supplying chamber *d*, and the outlet d^2, substantially as described.

385,972. FOLDING SHIPPING-CRATE. SAMUEL G. TRAVIS, Leavenworth, Kans. Filed Jan. 31, 1888. Serial No. 262,543. (Model.)

Claim.—1. The combination, in a crate, of the slatted body, the removable top provided with cross-bars engaging keepers on the slats of the body, the keepers secured thereto, and the bottom hinged to said body, and the cross-bars secured to said bottom and engaging said keepers, substantially as described.

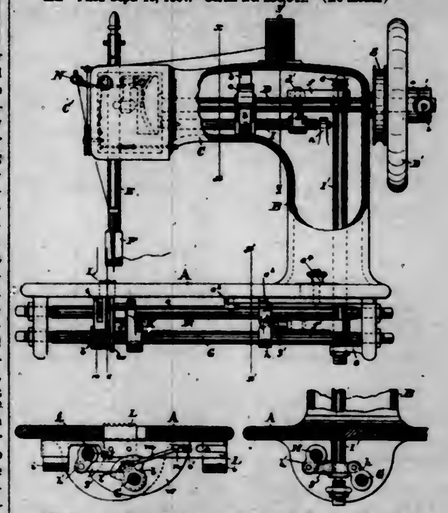
2. The combination, with the slatted body and the wire B, connecting the tops of the slats thereof, of the wire *i*, secured to the tops of the slats, the top provided with cross-bars resting on said wire and having a hinged door, and the clamp and keeper H, pivoted to one of said slats, substantially as described.

3. The folding shipping-crate described, consisting of the folding body A, the bottom hinged thereto, the removable central partition having cross-bars engaging keepers on the body, the removable top having cross-bars and a pivoted door, the wire *i*, secured to the tops of the slats of the body, and the clamp and keeper H, pivoted to one of the slats of the body and extended across the door of the top, all substantially as shown and described.

385,972.



385,973. SEWING-MACHINE. ROBERT H. THEBLER, Baltimore, Md. Filed Sept. 19, 1887. Serial No. 250,041. (No model.)



Claim.—1. In a sewing-machine, the hollow overhanging arm with driving-shaft D journaled therein and having cam *c* thereon, the horizontal oscillating shaft I, with forked arm *b*, the arm *d*, with friction-ball d', the vertical oscillating shaft I', with arm *f* at upper end and forked arm *f'* at lower end, the feed-lifting shaft H and shuttle-shaft G, arms A, and bar f', the latter having friction-ball g', said parts being combined substantially as shown and described.

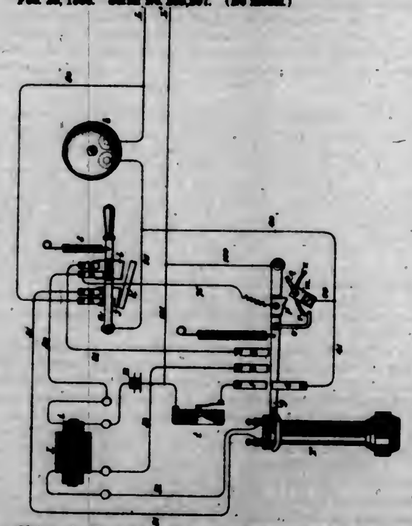
2. In a sewing-machine, the bed-plate A, with guide *i*, the feed-bar L, with slot *n*, the shuttle-shaft G, the arm *l*, with segmental slot *l'*, and the link *m*, connecting said arm *l* and bar L, the lifting-bar H, with mechanism, substantially as described, connected to bars G and H, for imparting oscillating motion thereto, and the sliding bar *o*, with tapering end inserted in said slot *n*, and having a stud passing through the bed-plate for operating the same, substantially as and for the purpose set forth.

385,974. TELEPHONE CENTRAL-STATION APPARATUS. THEODORE N. VAIL, Boston, Mass., and JOHN A. SIDNEY, New York, N. Y. Filed Apr. 20, 1888. Serial No. 271,202. (No model.)

Claim.—1. The combination of a central station, a series of sub-stations, a series of metallic circuits, one for each sub-station, connected in parallel at said central station, a telephone-instrument for each circuit at the sub-station, a receiving-telephone at the central station in a local circuit having fixed electrical contacts, two separable contacts for each metallic circuit, and a suitable device for separately connecting and disconnecting the two terminals of each metallic circuit with the terminals of the local circuit.

2. The combination of a series of sub-stations, a central station, a series of metallic circuits, one for each sub-station, a telephone-instrument for each circuit at the sub-station, a receiving-telephone at the central station, a local circuit having fixed electrical contacts in which the receiving-telephone is permanently located, a flexible cord forming the terminal of each circuit, and a double-contact switch-plug for each cord having electrical contacts registering with the fixed contacts of the local circuit and normally resting thereon, whereby all circuits are connected in parallel with the receiving-telephone and any circuit may be connected and disconnected therewith independently.

385,975. TELEPHONE SUB-STATION APPARATUS. THEODORE N. VAIL, Boston, Mass., and JOHN A. SIDNEY, New York, N. Y. Filed Feb. 25, 1888. Serial No. 265,267. (No model.)



Claim.—1. The combination, at a telephone-station, of a switch or circuit-changer consisting of a pivoted arm connected with the main line, an electrical contact connected with a main-line branch containing a telephone, a second electrical contact connected with a main-line branch containing an electro-magnet for operating a call or signal, an electrical contact connected to a generator of electricity, an electrical contact connected to the main line, and means, substantially as described, for temporarily connecting the two last-named contacts upon movement of the arm in one direction only.

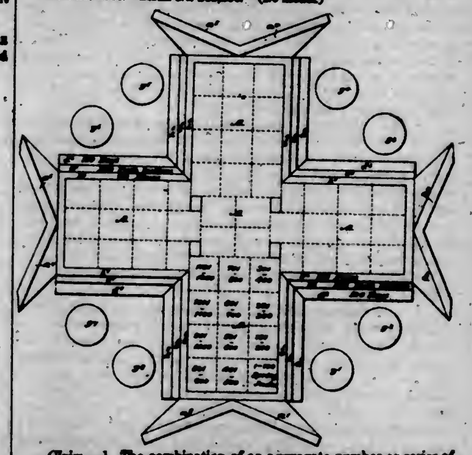
2. At a telephone-station, a switch or circuit-changer consisting of a pivoted arm forming a support for the telephone and capable of movement in two directions, a retractor for producing one movement, the gravity of the telephone when placed thereon producing the other movement, a main line connected to said arm, an electrical contact connected to a main-line branch containing a telephone, and a contact connected to a main-line branch containing an electro-magnetic signaling-instrument, in combination with two additional contacts, one of which is connected to the main line, the other to a generator of electricity, and a tumbler-lever temporarily forming an electrical connection between the last-named contacts upon a movement of the arm in one direction only.

3. At a telephone-station, a switch or circuit-changer having a contact with the main line, a contact with a telephone branch, and a contact with a bell branch, combined with a second switch or circuit-changer having two contacts, the first connected to a generator of electricity and the second to the main circuit, whereby, when the second switch is operated, the generator and main line are connected during the process of calling and preliminary to conversation.

4. The combination, at a telephone-station, of a main line, a contact-varying telephonic transmitter, a local battery for said transmitter, an electrical connection from one side of said battery to the main line, and a switch or circuit-changer having a fixed contact and a movable contact, and an electrical connection from one of said points to the battery and from the other contact to the line, all arranged substantially as described, whereby the operation of the switch includes the said battery in the line for the purpose of signaling.

5. The combination, at a telephone sub-station, of a main line, a branch line containing a bell or signaling-instrument, a second branch containing a contact-varying telephone-transmitter, a local circuit therefor, means for connecting either of said branches with the main line, a supplementary switch or circuit-changer embracing a pair of circuit-closing points in the local circuit, a pair of circuit-closing points in the transmitter branch, and a movable arm normally in position to close both said pairs of points, a battery-contact, and a main-line contact electrically united by the operation of said switch.

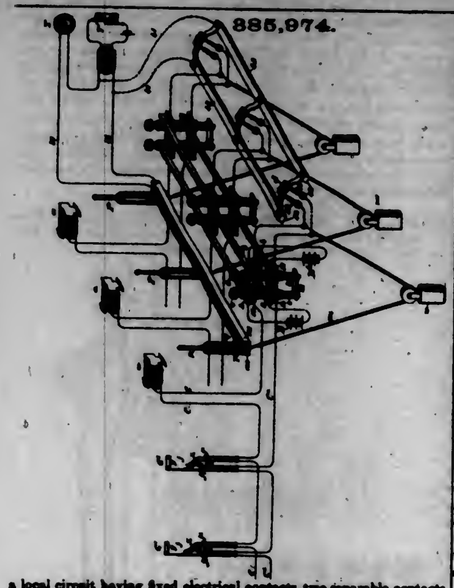
385,976. TELEPHONE CENTRAL-STATION APPARATUS. THEODORE N. VAIL, Boston, Mass., and JOHN A. SIDNEY, New York, N. Y. Filed Feb. 25, 1888. Serial No. 265,266. (No model.)



Claim.—1. The combination of an aggregate number or series of electrical circuits connecting a central station with a series of sub-stations, a telephone-instrument at each sub-station, at the central station a series of spring-jacks or circuit-changers — one for each circuit — located in close proximity on one board, two or more groups or subdivisions of said circuits separated from each other, located at said board, each having a second switch or circuit-changer co-operating with the switches or circuit-changers of the first-named series and located in close proximity thereto, whereby any circuit of the first-named series and any circuit of either subdivision may be connected together.

2. The combination of an aggregate number or series of electrical

385,974.



circuits connecting a central station with a series of sub-stations, telephonic instruments at each sub-station, at the central station a series of switches or circuit-changers, one for each circuit, two or more separated groups or subdivisions of said circuits, each having a switch or circuit-changer co-operating with the switches or circuit-changers of the first-named series, but located on the same board in proximity thereto, whereby any circuit of the first-named series and any circuit of either subdivision may be connected together, and a receiving-telephone common to the circuits of each group or subdivision to receive calls or communications therefrom.

3. The combination of an aggregate number or series of electrical circuits connecting a central station with a series of sub-stations, a telephonic instrument at each sub-station, at the central station a series of spring-jacks or circuit-changers, one for each circuit, fixed in close proximity, two or more groups or subdivisions of said circuits separated from each other, but at the same board, each circuit of a group terminating in a flexible conducting-cord, and a jack-plug co-operating with the spring-jacks of the first-named series and normally resting in close proximity thereto, whereby any circuit of the first-named series may be connected with any circuit of either group or subdivision.

4. At a telephone-station, a switch-board having the form or outline of a Greek cross, an aggregate number of electrical circuits, each circuit uniting a central station and one sub-station, a series of electrical connections—one for each circuit—located on said switch-board, means for connecting circuits in pairs, eight subdivisions or groups of said circuits, eight electro-magnetic receiving-instruments, one for each group, each instrument being common to all circuits of its group, and eight positions of support for eight operators, one for each group, said positions being so located that one group and the aggregate number of circuits are accessible to an operator therefrom.

5. The combination of two or more switch-boards each having the form or outline of a Greek cross, duplicate electrical connections with an aggregate number of circuits on said boards, means at each board for electrically connecting circuits together, eight different subdivisions or groups of said circuits at each board, and separate indicating devices for each group, the whole being so arranged that eight operators may be assigned to each board, one operator to a group, each operator being in a position of support accessible to one group and to one and the same series of connections with the aggregate number of circuits.

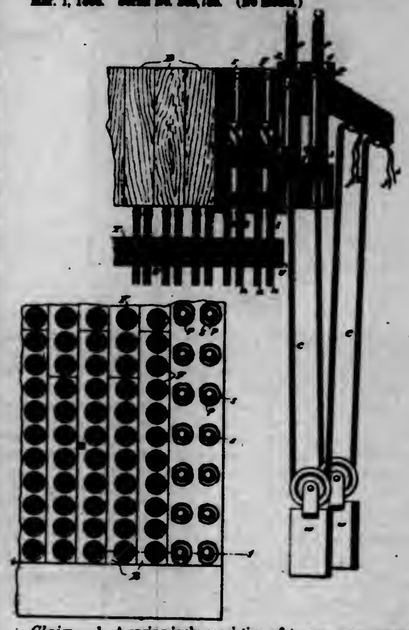
6. The combination of an aggregate number or series of electrical circuits connecting a central station with a series of sub-stations, a telephonic instrument at each sub-station, at the central station a series of duplicate switches or circuit-changers in each circuit of the aggregate number, one switch for each circuit, being located upon each of a series of boards or frames in close proximity, two or more groups or subdivisions of said circuits located upon each board or frame, each circuit of each group having a second switch or circuit-changer, said groups being separated from each other, but located in close proximity to the switches connected with the aggregate number of circuits, the number of boards or supports being equal to the aggregate number of circuits divided by the product of the number of groups at a board into the number of circuits in a group.

7. The combination of an aggregate number of series of electrical circuits connecting a central station with a series of sub-stations, a telephonic instrument at each substation, at the central station a series of spring-jacks or circuit-changers, one for each circuit, fixed in close proximity, two or more groups or subdivisions of said circuits separated from each other, but at the same board, each circuit of a group terminating in a flexible conducting-cord, and a jack-plug to co-operate with the spring-jacks of the first-named series and normally resting in close proximity thereto, a receiving-telephone common to each circuit of a group, and a ringing-off annunciator in each such circuit.

8. At a telephone-station, the combination of a metallic circuit consisting of two substantially parallel wires or conductors united at or near their terminals, a switch or circuit-changer located in said circuit intermediate said terminals, two pairs of fixed contacts and one pair of movable contacts equally divided between and normally forming part of the circuit of both wires, a third pair of fixed contacts and a second pair of movable contacts, a generator of electricity having its opposite poles connected to one pair of said contacts, and a base of insulating material upon which the two pairs of movable contacts are located, all said contacts being so located with respect to each other that a predetermined change in position of said insulating-base removes a fragment of the circuit and substitutes said generator therefor.

9. At a telephone-station, the combination of a metallic circuit consisting of two substantially parallel wires or conductors united at or near their terminals, two switches or circuit-changers located in said circuit intermediate said terminals, each switch consisting of two pairs of fixed contacts, one pair of movable contacts equally divided between and normally forming part of the circuit of both wires, a third pair of fixed contacts and a second pair of movable contacts, a generator of electricity having its opposite poles connected to one pair of contacts of each switch, and a base of insulating material for each switch, upon which the two pairs of movable contacts are located, the contacts composing the two switches occupying reversed positions, respectively, and the contacts of each switch being so located with respect to each other that a predetermined change in position of one of said insulating-bases divides the line and substitutes the generator for one half a section thereof, while a similar change in position of the second insulating-base divides the line and substitutes the generator for the other half or section.

885,977. TELEPHONE CENTRAL-STATION APPARATUS. THEODORE N. VAIL, Boston, Mass., and JOHN A. GREEN, New York, N. Y. Filed Mar. 1, 1888. Serial No. 265,722. (No model.)



Claim.—1. A spring-jack consisting of two or more severable contact-points, an opening or passage to such points for the insertion of a jack-plug, and a shield or dust-guard constructed of suitable material to shed or deflect falling dust or dirt, movably supported between the mouth of the opening or passage and the severable contact-points.

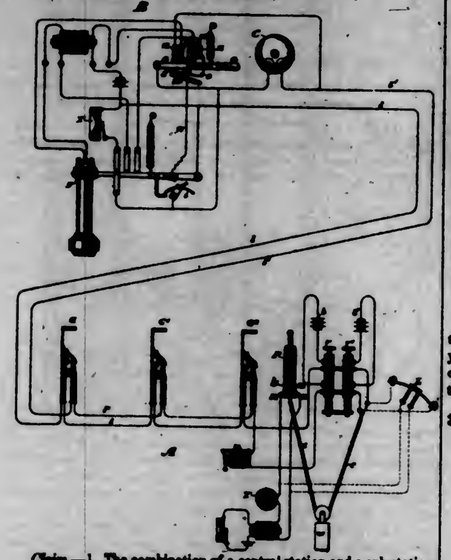
2. In a spring-jack, the combination of two or more severable contact-points, an opening or passage to such points forming a plug-socket, and a shield or dust-guard forming an electrical contact for the said plug, all arranged substantially as described.

3. A switch-board consisting of a frame or support, two series of blocks of insulating material fitting into said frame or support, located in two parallel planes, a series of electrical instruments composing the operative mechanism of a switch-board, such as spring-jacks, having free terminals located in one series of blocks, one or more in each block, a series of electrical contacts having free terminals located in the second series of blocks in position to register with the terminals of the first series, and a series of electrical conductors connected to the second series of contacts, one conductor for each contact.

4. The combination, in a switch-board, of two or more insulated electrical contacts located in a plug-socket having an eccentric geometrical outline or formation, a switch-plug of similar geometrical outline or formation, having one or more insulated electrical contacts in position to register with the first-named contacts when said plug is in its normal position, and means for automatically returning such plug to its normal position when free to move, substantially as described.

5. A switch-board composed of a frame or support, one or more electrical instruments located in said frame having two or more free terminals, one or more portable blocks or sections of insulating material fitting into said frame, two or more conducting-sections fixed in said blocks, their free terminals in position to register with the free terminals of the said electrical instruments, and wires or conductors connected to said conducting-sections, substantially as described.

885,978. TELEPHONE-EXCHANGE SIGNALING. THEODORE N. VAIL, Boston, Mass., and JOHN A. GREEN, New York, N. Y. Filed Mar. 1, 1888. Serial No. 265,724. (No model.)



Claim.—1. The combination of a central station and a sub-station united by an electrical conductor at the central station, a circuit-changing device consisting of a switch-plug normally forming part of said circuit at the sub-station, a gravity-switch, a telephone branch, a bell branch, a generator of electricity, and a switch for including said generator in the main circuit, consisting of a pivoted arm operating a line-contact, and a contact connected to said generator, whereby a change in the normal position of said switch at the sub-station and of said apparatus at the central station produces a signal irrespective of the position of the gravity-switch, substantially as described.

2. The combination of a central station and a sub-station, an electrical conductor uniting said stations, telephone-instruments in said circuit at both stations, a flexible conductor at the central station normally resting upon a section of conductor to complete said circuit, a generator of electricity at the sub-station, and a switch for including said generator in the circuit, all arranged substantially as described, whereby a change in the normal position of the flexible cord sounds a signal at the sub-station.

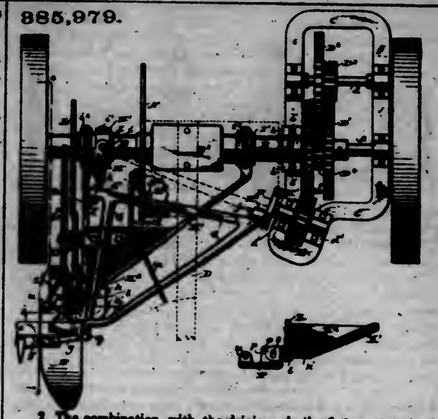
3. The combination of two telephone-stations, an electrical conductor uniting said stations, a fragment of said conductor containing an electro-magnetic indicating-instrument at each station, a device at one station—say the first—for connecting and disconnecting said fragment with respect to the main circuit, a generator of electricity, and a device for connecting and disconnecting said generator with respect to said conductor at the second station, all arranged and operating substantially as described, whereby a variation in connection of the line-fragment at the first station changes the circuit of the generator and sounds a signal at the second station.

885,979. MOWER. FRANCIS H. VERLEE, Green Bay, Wis. Filed Jan. 17, 1887. Serial No. 224,844. (No model.)

Claim.—1. The combination, in a mowing-machine, of an axle and a sleeve loosely fitted thereon, a frame carried by the axle and suitable gearing, a wrist-wheel driven by the axle through the gearing, a triangular lever wristed to said wheel at one corner, a bar and swiveled yoke connecting another corner of said lever with the sleeve, and a sickle connected to the third corner, substantially as described.

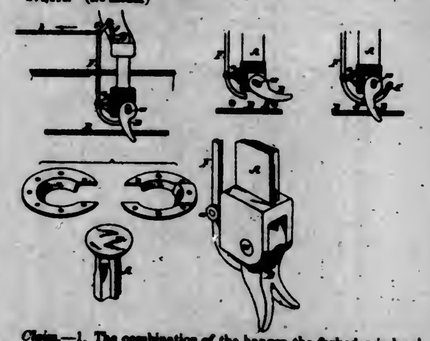


885,979.



2. The combination, with the driving-wheel, of the wrist-wheel, the sickle, a triangular lever connecting the sickle and wrist-wheel, a yoke swiveled to the triangular lever, the axle and its sleeve, and a collar to which the yoke is pivoted, said collar adapted to revolve on the sleeve, substantially as described.

885,980. GRIPPING MECHANISM FOR CABLE RAILWAYS. JAMES WALSH, Jr., Philadelphia, Pa. Filed May 17, 1886. Serial No. 274,113. (No model.)



Claim.—1. The combination of the hanger, the forked grip-head pivoted thereto and having a rigid bearing therein to resist forward movement, and a lever acting upon the grip-head to force the same backward and release it from the cable, all substantially as specified.

2. The combination of the hanger, the grip-head pivoted thereto and having a rigid bearing therein to resist forward movement, and a lever passing through the grip-head and having a portion acting upon the same to force it rearward, and a bearing in the rear of the grip-head acting upon the same to restore it to the operative position or prevent undue rearward movement, all substantially as specified.

3. The combination of a forked grip-head with a vertically-movable hanger to which said grip-head is hung, and a lever for swinging the grip-head on said hanger, all substantially as specified.

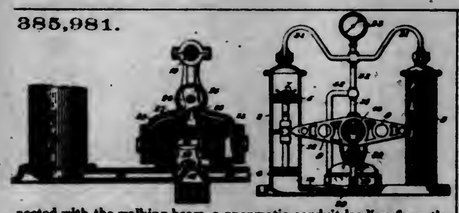
4. The combination of the hanger, the forked grip-head pivoted thereto and slotted to permit vertical movement, but having a rigid bearing in the hanger to resist forward movement, and a lever to operate said grip-head, all substantially as specified.

5. The combination of the grip-head, the hanger having a circular head, and the socket for said head, consisting of a pair of segmental rings applied in reverse positions to the hanger and secured to the frame of the car, all substantially as specified.

885,981. BEER-PUMP. BENNET WILLIAMS, Pittsburg, Pa., assignor of two-thirds to Duncan Ferguson and Joseph Wallace, both of same place. Filed Mar. 19, 1888. Serial No. 267,995. (No model.)

Claim.—1. As an improvement in beer-pumps, the combination of the hydraulic piston-heads and pneumatic piston-heads situate within suitable cylinders having intervening vents, so as to prevent water escaping from the hydraulic piston from passing the pneumatic piston-head, said piston-heads being connected with each other by piston-rods and a walking-beam, a water-conduit leading to the cylinders back of the hydraulic heads, a valve controlling the water and con-

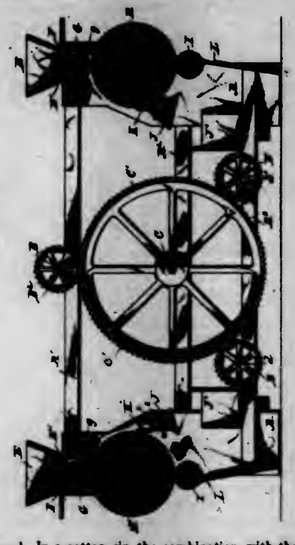
385,981.



nected with the walking-beam, a pneumatic conduit leading from the cylinders above the pneumatic piston-heads to a beer-reservoir, and a valve arranged to admit air above the pneumatic piston-heads on the back-stroke of the same, substantially as and for the purpose specified.

2. In a beer-pump, the combination, with the two cylinders, each containing hydraulic and air piston-heads connected by a rod, of a beam connecting the rods, a hydraulically-operated main valve, which controls the flow of water to the cylinders, and an auxiliary valve, which controls the flow of water to operate the main valve, said auxiliary valve being connected with and operated by the said beam, substantially as and for the purpose specified.

385,982. COTTON-GIN. PIERRE V. WHITFALL, Kalamazoo, Mich. Filed Oct. 15, 1887. Serial No. 252,462. (No model.)



Claim.—1. In a cotton-gin, the combination, with the carding-cylinder and hopper, of the toothed roller G, arranged between said hopper and cylinder, and an apron arranged in proximity to said cylinder on a lower plane than the seed-remover, substantially as described.

2. In a cotton-gin, the combination, with the hopper and carding-cylinder, of the toothed roller G, arranged between said hopper and cylinder, an inclined rest, J, and an apron, K, carried by said rest in proximity to said cylinder, as set forth.

3. In a cotton-gin, the combination, with the hopper and carding-cylinder, of the toothed roller G, arranged between said hopper and cylinder, an inclined rest, J, means for adjusting said rest, and an apron, K, carried by said rest in proximity to said cylinder, as set forth.

4. The combination, with the frame, the hoppers having slatted openings F, feed-rollers, carding-cylinders, and brushes, of the aprons K, the centrally-disposed gearing, and belt-connections between said gearing and the feed-rollers, cylinders, and brushes, substantially as described.

385,983. CLAMP. PARDON A. WHITNEY, Southington, Conn., assignor to the Peck, Stow & Wilcox Company, same place. Filed Mar. 8, 1888. Serial No. 266,543. (No model.)

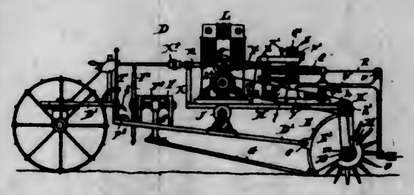
Claim.—The herein-described clamp, consisting of the body A, having the head *a*, through which the screw passes, provided with an internal screw-thread and an open socket at its inner end below the threaded portion, and the screw B, having the swivel plate or bushing

385,983.



c, of a size and form adapted to be received within the socket of the head *a*, substantially as described, and for the purpose specified.

385,984. APPARATUS FOR TILLING GROUND. EDWIN R. WHITNEY, St. Johnsbury, Vt., assignor to the Standard Electric Company of Vermont, same place. Filed Dec. 16, 1887. Serial No. 258,128. (No model.)



Claim.—1. In an electrical apparatus for tilling ground, and in combination, a dynamo-electric machine and an engine for running same, both mounted on a movable platform stationary during the operation, a movable carriage, an electro-magnetic motor mounted on same, tilling mechanism operated from shaft of electric motor, an electrical conductor conveying current from stationary dynamo-machine to moving electric motor, unwound when moving away from source of current and wound up when returning toward same, and a key or lever for closing or opening break in electrical circuit, all as set forth.

2. In an electrical apparatus for tilling ground, and in combination, a dynamo-electric machine and a hydrocarbon-engine for running same, both mounted on a movable platform stationary during the operation, a movable carriage drawn by any power, a rotary tilling-drum connected with same, an electro-magnetic motor mounted on such carriage and operating such tilling-drum, an electrical conductor from said stationary dynamo to said moving electric motor, a holdfast for regulating line of travel of such conductor, and a reel mounted on said carriage on which such electrical conductor is wound, as set forth.

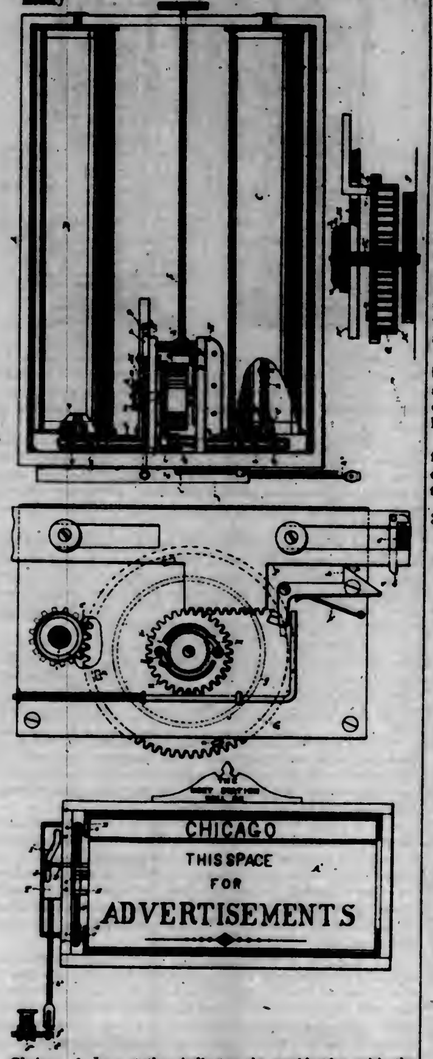
3. In an electrical apparatus for tilling ground, and in combination, a carriage drawn by any power, a rotary tilling-drum connected with such carriage, an electro-magnetic motor mounted on said carriage and operating the tilling-drum, an electrical conductor conveying an electric current from any suitable source to the motor, a reel capable of rotation mounted on said carriage, a lever and a frictional disk carried by it, and a friction-pulley on the motor-shaft, by which such frictional disk is operated to rotate the reel, so as to wind up upon it the conductor as the carriage is drawn toward the point from which it started, as set forth.

4. In an electrical apparatus for tilling ground, the combination, with the carriage drawn by any suitable power and an electro-magnetic motor connected with electric source and a table or carrier on which same is mounted, of a segment of a cylinder provided with spikes on its concave face, pivoted to main frame, and connected pivotally to end of said table or carrier, and a spiked rotary drum carried from ends of said segment and receiving motion from said electric motor, as set forth.

5. In an electrical tilling apparatus, the combination, with the main frame of the carriage drawn by any suitable power, of a segment of a cylinder pivoted thereto on its convex side at a point between its longitudinal edges, pivotally connected also at its upper edge with table or carrier on which electric motor is mounted, and carrying the rotary tilling-drum, a drag-plate pivoted to lower edge of such segment, and means under control of driver for moving said drag-plate forward or backward, so as to oscillate the segment, and thereby vary the vertical position of the tilling-drum, all as set forth.

6. In an electrical tilling-machine, and in combination, the main frame, the carriage supporting forward end of same, and the segment of cylinder pivoted to and supporting rear end of same, a flanged roller mounted on such main frame, and the table or carrier for the electric motor, carried at its forward end on said flanged roller and pivoted at its rear end to and supported by said segment, as shown and described.

385,985. STREET OR STATION INDICATOR. HARK ANTHONY, San Francisco, Cal. Filed July 14, 1887. Serial No. 244,541. (No model.)



Claim.—1. In a station-indicator, the combination, with the geared horizontal rolls and the indicator-ribbon, of the connecting and shifting rod F, having the intermediate gear, e, the intermittently-moving barrel-gear engaging the gear e, and automatic devices governing its movements, substantially as specified.

2. In a station-indicator, the combination, with the upper geared roll and the lower spring-connected roll, its geared shaft, and the indicator-ribbon, of the vertical geared connecting-rod F, engaging the gears *e d* and the barrel-gear, the intermittently-moving barrel-gear engaging the gear *e*, and automatic devices governing the movements thereof, substantially as specified.

3. In a station-indicator, the combination, with the geared horizontal rolls, the take-up spring, and the indicator-ribbon carried thereby, of the geared connecting-rod F, the barrel-gear in engagement therewith, and the winding-stem, an operating-spring in connection with said gear and winding-stem, the gearing and ratchet of the winding-stem, the steps of the barrel-gear, the reciprocating toothed bar P, engaging the pinion M of the barrel-gear, and the adjusted stop-pawl, substantially as specified.

4. In a station-indicator, the combination, with the horizontal geared rolls and the indicator-ribbon connected thereto, the geared connecting-rod, and step-governed intermittent winding and let-off mechanism, of a vertically-reciprocating thrust-bar, T, in the casing J, provided with the inclined slot I for actuating the toothed rack-bar, the horizontally-reciprocating thrust-bar J', seated in the bearing Q, and having the beveled end to engage in arm d^3 of the rock-shaft *d'*, and connecting devices, substantially as specified.

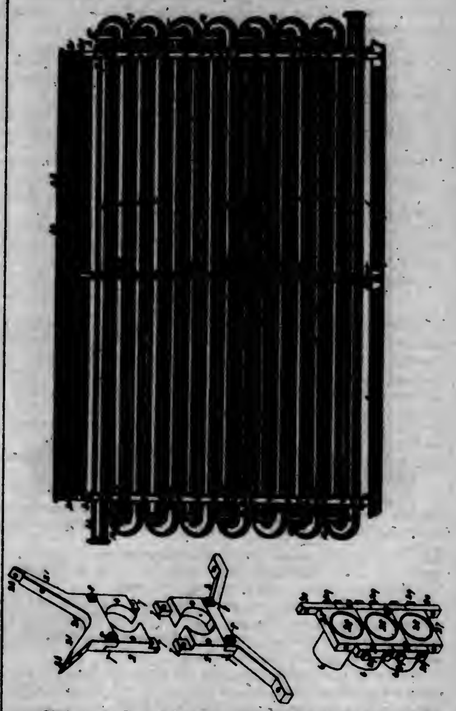
5. In a station-indicator, the combination, with the ribbon-carrying rolls, the indicator-ribbon, and the gear-connections, of the winding mechanism, consisting of the bar P, operating upon the gear M, the stem K, and the spring H in the barrel-gear, and the automatic stepping mechanism, consisting of the step-pawl *p*, pivoted to the frame-plate, and having the projection *v*, to bear upon the step-lugs *s* in the barrel G, substantially as specified.

6. In a station-indicator, the combination, with the ribbon-carrying rolls, the indicator-ribbon, and the gear-connections, of the main-spring and winding-gear, the reciprocating toothed bar engaging the gear M, thrust-bars T and J', the trip-arm V, extending through the bearing *v'*, and having the roller *z* at its lower end to engage a rack on the trackway, and the link-connection *t*, pivoted at its lower end to a crank on the roller-journal, and its upper end to the crank-arm *t'*, and the crank and other connections, substantially as specified.

7. In a station-indicator, the combination, with the ribbon-carrying rolls, the indicator-ribbon, and gear-connections, the mainspring, and winding-gear, of a reciprocating thrust-bar having a beveled operating-surface and extended to provide a straight bearing-surface, K', in the direction of motion, substantially as specified.

8. In a station-indicator, the combination, with the drum B, the free drum C, and the vertical geared rod F, of the shaft E, within the drum C and connected thereto by the spring D, designed to take up the ribbon slack, substantially as specified.

385,986. BEER-COOLER. ALOIS ANTHEUNIS, St. Louis, Mo. Filed Feb. 20, 1888. Serial No. 264,867. (No model.)



Claim.—1. In a cooler, the combination, with the pipes, of the joint-flanges 11, and divided blocks 4, embracing said pipes and alternating with and secured to said flanges, as set forth.

2. In a beer-cooler, the combination of the pipes, a joint-flange on the end of one pipe having recesses 19, blocks embracing another pipe having lugs 7 fitting said recesses, and bolts 8, passing through the lugs and the flanges, substantially as set forth.

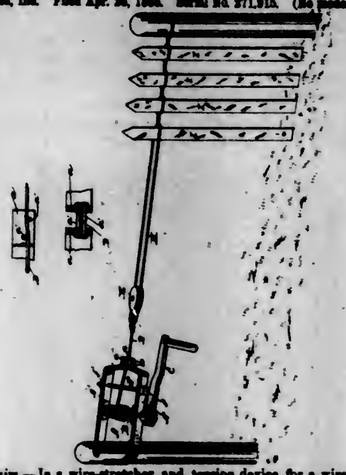
3. The combination of the pipes connected by an elbow having legs of different lengths connecting said pipes, joint-flanges on the pipes and elbow, blocks 4, embracing the pipe which is joined to the shorter leg of the elbow and having lugs 7, the joint-flanges on the other pipe having recesses 19, to receive the lugs 7, and bolts 8, passing through the lugs and both flanges of the joint between the pipe and elbow, substantially as set forth.

4. The combination, in a beer-cooler, of a vertical series of horizontal pipes extending alternately past each other at the ends in opposite directions, a standard at each end formed of the joint-flanges of the shorter ends of the pipes, and intervening blocks engaging the longer ends of the pipes, and elbows having legs of different lengths connected to the pipes with flange-joints.

5. In combination with the sectional end standards of a beer-cooler, the interior standard composed of blocks bearing upon each other, through which the pipes pass, and connecting-cleats attached to the blocks by screws, substantially as set forth.

6. The combination, in a beer-cooler, of the vertical series of horizontal pipes of equal length extending past each other alternately at the ends, connecting-elbows at the ends having legs of different lengths to adapt them to the pipes arranged as set forth, flange-joints between the pipes and elbows, and blocks embracing the extended ends of the pipes and in the plane and secured to the joint-flanges of the shorter ends of the pipes, substantially as and for the purpose set forth.

385,987. WIRE TENSION DEVICE. WILLIAM M. ANDERSON, South Bend, Ind. Filed Apr. 26, 1888. Serial No. 271,915. (No model.)

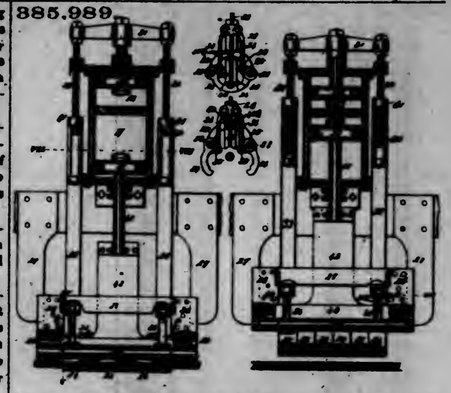


Claim.—In a wire-stretcher and tension device for a wire-fence machine, the combination of the yoke or frame A, having its ends bent together and forming lips or projections *a a*, the spool or windlass B, mounted in said yoke and carrying the stretching wire or rope D, passing between the lips *a a*, and provided with the equalizing-pulley E, around which the line-wire passes, and the clamping-bolt F and nut *f*, all constructed, arranged, and operating substantially as shown and described.

385,988. HAIR-DRESSING. MERVINA V. BABCOCK, Boston, Mass. Filed Oct. 11, 1887. Serial No. 252,031. (No specimens.)

Claim.—A preparation for a hair-dressing composed of the decoctions of the leaves of sweet fern and bayberry, cayenne-pepper, and castor-oil, mixed together in the proportions substantially as described.

385,989. PNEUMATIC GRIP. SAMUEL P. BAIRD, St. Louis, Mo. Filed Sept. 1, 1887. Serial No. 248,553. (No model.)



Claim.—1. In a cable-grip, the combination, with the lower jaw formed in two members fulcrumed on a vertically-movable plate, of a rod or rods connected to said members and adapted to open and close and raise and lower the same, as set forth.

2. In a grip, in combination with the upper jaw, the lower jaw, consisting of hinged bars provided with fingers, and means for opening and closing the fingers, substantially as set forth.

3. In a grip, in combination with the upper jaw, the lower jaw, composed of hinged bars and fingers formed upon the bars, and means for moving the upper jaw and for opening and closing the fingers of the lower jaw and for raising and lowering the latter, substantially as and for the purpose set forth.

4. In combination with the cylinders 11 and 12 and their pistons, the upper jaw of the grip connected to the piston of the cylinder 11, and the lower jaw of the grip connected to the piston of the cylinder 12, the parts being so arranged that either member may be operated independently of the other, substantially as and for the purpose set forth.

5. In a grip, in combination with the upper jaw, piston to which the jaw is secured, and cylinder in which said piston is located, the lower jaw provided with fingers, piston, cylinder in which said piston is located, and connection between the piston and the jaw, whereby the fingers may be opened and closed, substantially as and for the purpose set forth.

6. In a grip, in combination with the air-chamber, pump connected to the axle of the car for forcing air into the chamber, cylinders, pipes provided with valves, forming communication between the chamber and cylinders, upper and lower grip-jaws, pistons located in the cylinders, and connection between the respective jaws and pistons, substantially as and for the purpose set forth.

7. In a pneumatic grip, the combination, with the jaws of the grip and cylinders having pistons connected to the jaws, of an air-supply connected to the cylinders and controlled by suitable valve-levers, a main pump operated by the car-axle, and a supplemental pump operated by a hand-lever in convenient reach of the grip-man, as set forth.

8. In a grip, in combination with the cylinders and pistons and means for admitting and exhausting air therefrom, the upper vertically-movable grip-jaw connected to one of the pistons, and the lower vertically-movable grip-jaw connected to the other piston, substantially as and for the purpose set forth.

9. In a grip, in combination with the cylinders and means for admitting and exhausting air therefrom, the upper grip-jaw connected to the piston in one of the cylinders, lower grip-jaw connected to the piston in the other cylinder, plates provided with prongs to which the lower jaw is pivoted, guides upon which said plates work, and shoulders 50 on said plates, against which the upper jaw impinges when both of the jaws are to be raised from the cable, substantially as and for the purpose set forth.

10. In a grip, in combination with the cylinders and means for supplying and exhausting air therefrom, the piston 30, cross-head 31, rods 32, having head 60, slotted plates 33, links 34, bars 23, having fingers 24, plates 26, having prongs 25, to which said bars are pivoted, jaw 40, guide-plates 40½, shoulders 50 on the plates 26, and plates 43, connecting the jaw 40 to the piston of the cylinder 11, substantially as and for the purpose set forth.

11. A grip consisting of an upper vertically-movable jaw and a lower jaw formed of two meeting or overlapping members adapted to close beneath and pick the cable and then grip it, in connection with the upper jaw, as set forth.

12. In a grip operated by compressed air, the combination, with an air-supply for the grip-operating mechanism, of a main compressing mechanism operated by the car-axle and a supplementary compressing mechanism adapted to be operated by independent means, whereby sufficient air may be compressed to operate the grip before the car starts, as set forth.

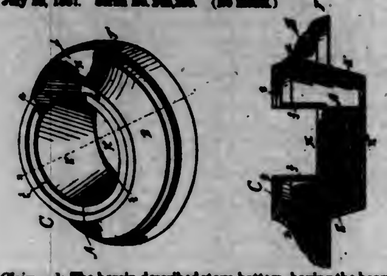
385,990. FERTILIZER-DISTRIBUTER. ANDREW J. BAKER, Jonesborough, Ga. Filed Dec. 10, 1887. Serial No. 256,416. (No model.)

Claim.—In a fertilizer-distributer, the combination of the hopper A, having a semicircular bottom, *a*, and a discharge-opening, the spiked roller F, the slide H, the spiked roller I, and the grating J, substantially as shown and described, and for the purpose specified.

385,990.



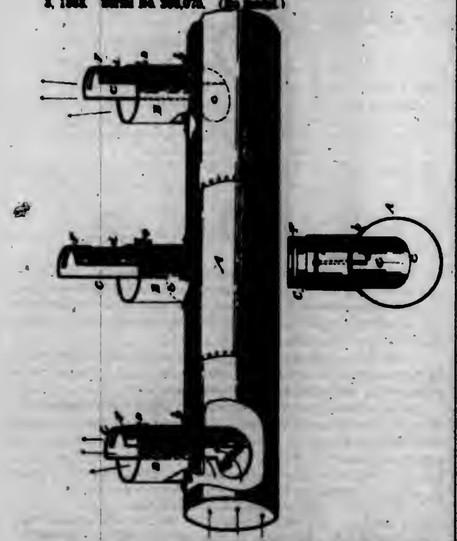
385,991. STOVE. FIELD B. BENEDICT, Dowagiac, Mich. Filed July 28, 1887. Serial No. 245,284. (No model.)



Claim.—1. The herein-described stove-bottom, having the hearth-opening in one side thereof, the horizontal overhanging open flange C, the ribs *f f*, attached thereto at *a a* and projecting inward flush with said open flange C, the ash-pan formed integral with and onto the under face of the bottom B, the diameter of the ash-pan being greater than the inner diameter, *i*, of the open flange C, as and for the purposes specified.

2. In combination with the herein-described stove-bottom, having open flange C, the hearth-opening, the ash-pan formed integral with and joining the under face of the bottom at about midway of the bottom's width, the vertical flanges *f f*, forming side walls to the hearth-opening H, said flanges *f f* extending into the ash-pan flush with the inner edge of the flange C, joining the flange C to the ash-pan, the whole formed integral, as and for the purposes specified.

385,992. HOT-AIR REGULATOR. ALBERT T. BEEH, Louisville, Ky., assignor to himself and Robert Hiatt, Jr., same place. Filed Mar. 3, 1888. Serial No. 266,075. (No model.)



Claim.—1. The combination, with the air-duct and necks B, of the slides C, each consisting of a vertical portion working in said neck and provided with a bottom to close the opening in the bottom of the necks when the slide is raised to its highest position, substantially as described.

2. The combination, with the air-duct A, having openings in its upper side, of the necks B, having flanges *b* secured to said duct about said openings, the slides C, one in each neck, and formed with a vertical portion curved to correspond with the shape of the neck and having a vertical slot, the thumb-bolt, and the bottom *c* to the slide fitting the opening in the bottom of the neck, substantially as and for the purpose specified.

385,993. REFRIGERATING-CAN. VIRGIL W. BLANCHARD, New York, N. Y. Filed Aug. 18, 1887. Serial No. 247,268. (No model.)

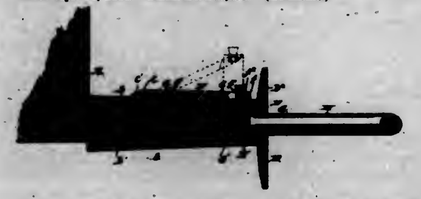


Claim.—1. The herein-described refrigerating-can, composed of walls B C, inclined bottom G, and cover C', and the transverse metallic partition E, secured to the inner wall of the can, the inclined bottom F at one side of the partition, the cover S, resting on the partition and a support on the inner wall of the can, and the draw-off faucets and sight-tube, all constructed and arranged substantially as and for the purpose described.

2. The herein-described refrigerating-can having double outer walls and inclined bottom G, valved cover C', said drain-faucet H, with a metallic partition, E, secured vertically and transversely within the can to the inner wall thereof, the ledge S' on the inner wall of the can at one side of partition E, valved cover S, resting on the ledge and partition, bottom F, and faucet *a*, all constructed and arranged substantially as and for the purpose described.

3. A refrigerating-can comprising double walls B C, inclined bottom G, valved cover C', and faucet H, and the vertical metallic partition E in said can, the ledge S' on the inner wall of the can, valved cover S, resting on the partition and ledge, inclined bottom F, faucet *a*, and rack K, all constructed and arranged substantially in the manner as and for the purpose described.

385,994. CAR-COUPLING. CATHERINE A. BOND, Sussex, N. Y. Filed Apr. 30, 1888. Serial No. 272,258. (No model.)



Claim.—The improved car-coupling comprising the draw-head having the longitudinal slots C C in its upper and lower sides, and the boss *c'* on its upper side at the rear end of the slot C, the said boss having its front side beveled downwardly and outwardly, the lever-arm having its rear end pivoted in said boss and similarly beveled, and having its front end bifurcated and provided with the slots *f''* in the arms of the bifurcations, the coupling-pin arranged in the slots C C and having its upper end projecting through the bifurcation of the lever-arm, the pivot-pin *f'*, inserted through the slots *f''* and the coupling-pin, and the arm G, journaled in the boss *c'*, and having the crank-arm *g*, secured to the lever-arm in advance of its pivot, substantially as specified.

385,995. NAPKIN-RING. ERNEST C. BOWLING, Ypsilanti, Mich. Filed Dec. 10, 1887. Serial No. 257,512. (No model.)

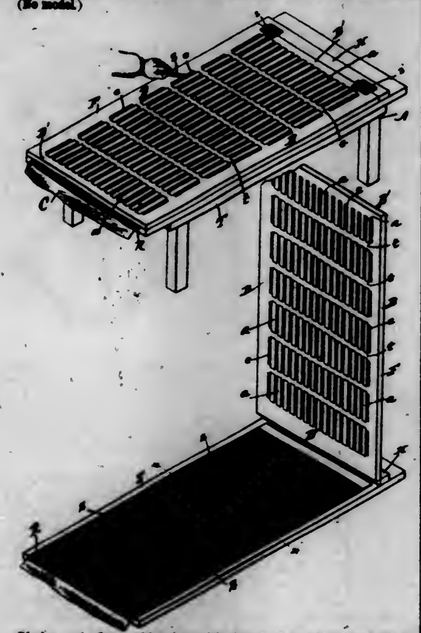
Claim.—The herein-described napkin-ring, comprising a metallic

385,995.



band covered with textile fabric, the ends lapped and secured by eyelets, and a ribbon or cord passed through said eyelets and tied on the outer face of said ring, as and for the purposes specified.

385,996. APPARATUS FOR MAKING GARMENT-STAYS. BROOM C. BOWLING, Ypsilanti, Mich. Filed Dec. 16, 1887. Serial No. 258,131. (No model.)

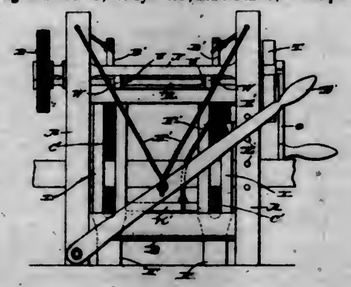


Claim.—1. In combination with the platform, the distributing-frame consisting of the side and end rails, the series of transverse bars *f*, the series of parallel strips *a*, said strips joining the bars *f* at right angles, and the open pockets *e*, extending through the distributing-frame formed within the angles of said bars, as and for the purposes specified.

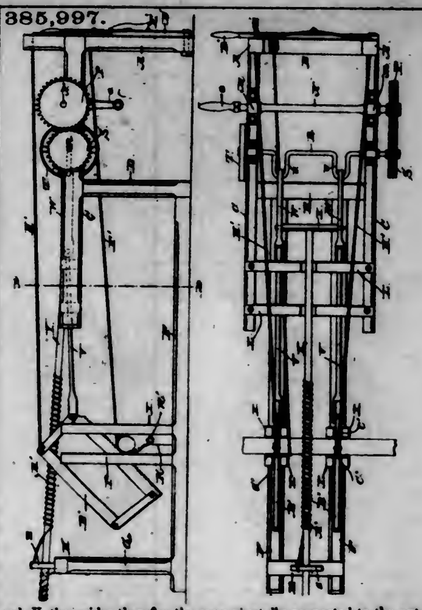
2. In combination with the platform or table, the frame hinged at one end thereto, said frame consisting of the side rails, B, the end rails, B', the transverse bars *f*, the interposed bars *a*, and the open pockets *e*, extending through the frame, as and for the purposes specified.

385,997. FIRE-WOOD DRAG-SAW. GEORGE H. BRAMER, Michigan City, Ind. Filed Mar. 5, 1888. Serial No. 266,165. (No model.)

Claim.—The combination of the frame having the saw-guides, with the shaft N, journaled in the frame and having the crank O and gear-wheel P, the shaft R, journaled in the frame and having the pinion S meshing with wheel P, the fly-wheel, and cranks U, the reciprocating

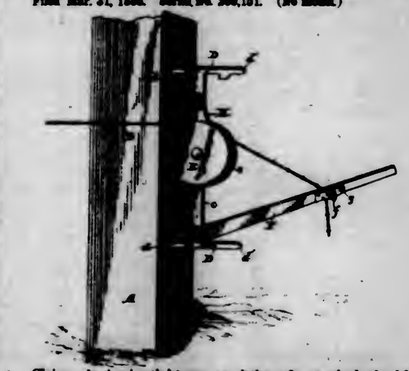


385,997.



rods V, the guides therefor, the saws pivotally connected to the outer ends of said rods and arranged in the saw-guides, the pitmen connecting rods V to cranks U, the cross-head X, connecting the pitmen, the rod Y, attached to the said cross-head, the guides for the said rod, and the springs bearing on the rod, for the purpose set forth, substantially as described.

385,998. WIRE-TIGHTENER. ELMER A. CHASE, Yankton, Dak. Filed Mar. 31, 1888. Serial No. 269,151. (No model.)



Claim.—1. A wire-tightener consisting of a toothed wheel having in its edge a double bevel formed by inclining the teeth from side to center, a frame to which said wheel is pivoted, a pawl to hold the wire in and upon said wheel, and a lever for drawing the wire taut, substantially as described.

2. In a wire-tightener, as described, the combination of the frame, the toothed wheel E, and the pawl H with the lever F, having notch *f* and pawl *g*, and pivoted to the frame of the tightener.

3. In a wire-tightener, the combination of the following elements, viz: a frame adapted to be secured, either side up, to the fence-post, provided with a stay or brace to hold it firm, and having a double-beveled toothed wheel pivoted to it, a pawl to engage upon said wheel, and a lever provided with means, as described, for holding it fast to the wire in process of tightening the same, substantially as described.

385,999. VALVE FOR BELLOWS. J. EDMUND CRAIG, Montreal, Quebec, Canada. Filed Aug. 19, 1868. Serial No. 69,751. (No model.)

Claim.—A valve for the bellows of a wind musical instrument,

385,999.



compound of a flexible strip secured at one edge, in combination with a flanger which covers said strip secured at one edge, and which is beveled outwardly on its outer or inner side, leaving an open space between it and said strip, substantially as and for the purpose specified.

386,000. SAFETY-PIN. ROBERT P. CLARK and HANNAH D. BURNHAM, Holyoke, Mass. Filed Apr. 2, 1888. Serial No. 269,512. (No model.)



Claim.—1. In a safety-pin, fixed prong *c* and movable prong *c*, having a sharp point, and having in the rear of said point a portion of slightly less diameter, whereby a transverse step is formed thereon, in combination with guard *d*, secured to said fixed prong *c*, said guard having slot *d'* therein, and having an inwardly-projecting engaging device at its open end and at one side of said slot for engaging the step on said prong *c*, substantially as and for the purpose described.

2. In a safety-pin, prong *c*, movable prong *c*, having a transverse depression therein near its point, guard *d*, having therein slot *d'* inclined at an acute angle to said prong *c*, said guard being provided with the inwardly-extending flanges *d*² at its open end, the distance between the adjacent edges of which is slightly greater than the diameter of prong *c* at the bottom of the depression therein and less than the diameter of said prong between said depression and its point, substantially as and for the purpose set forth.

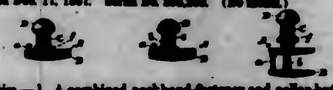
3. In a safety-pin, a fixed prong and a movable pointed prong which near its pointed end is of two diameters, of which the greater is nearest its point, and a guard secured to said fixed prong, said guard being constructed to receive within it the portion of said movable prong which is of greater diameter, and having in its end adjacent to said prongs an opening corresponding substantially in width with that portion of said movable prong which is of less diameter, combined and operating substantially as and for the purpose set forth.

386,001. APPARATUS FOR CUFF-HOLDER. JAMES H. CLARK, Toledo, Ohio, assignor to Orith Brady, Harry B. Wade, and A. L. Just, same place. Filed Feb. 3, 1887. Serial No. 226,494. (No model.)



Claim.—A cuff-holder formed of a single piece of wire bent upon itself, having a center portion corrugated to form adjustments, and the two contiguous ends of the wire bent at an acute angle and attached to a button by means of eyes, substantially as described and shown.

386,002. COLLAR-BUTTON. EDWIN T. BALLARDS, Beloit, Wis. Filed Dec. 17, 1887. Serial No. 258,260. (No model.)



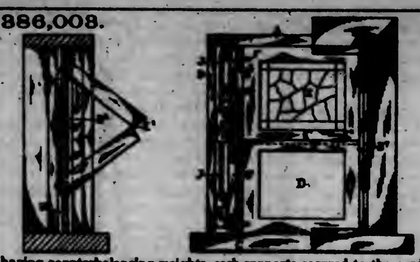
Claim.—1. A combined neck-band-fastener and collar-button consisting of two independent opposite grasping-plates adjustable to and from each other by means of an upright screw-threaded post, *b*, firmly attached to the lower plate rearward of its center, and a collar-button post, C, having an axial screw-threaded bore meshing with the screw-post on the lower plate, substantially as described.

2. A combined neck-band-fastener and collar-button consisting of opposite adjustable grasping-plates A B, screw-threaded post *b*, uprising from the lower plate and firmly attached thereto, collar-button post C, having upper head, D, and lower circumferential flange, *f*, and provided with screw-threaded axial bore of the same pitch as the post *b*, all in combination with stud-headed limiting-pin *a*, firmly attached to the plate B, substantially as described.

386,003. WINDOW. BENJAMIN F. BENTZ, Reading, Pa. Filed Aug. 26, 1887. Serial No. 247,594. (No model.)

Claim.—1. The combination, with a window-frame having guide-grooves, of sashes hinged together at their meeting-rails, sash-cords,

386,003.



having counterbalancing-weights, sash-supports secured to the cords, and having a pivotal connection with the upper end of the upper sash and the lower end of the lower sash, as set forth.

2. A top and bottom sash hinged together at the meeting-rails, and the outside corners of the combined sash provided with socket-pieces, in combination with a sash-casing having the top sash-pulley arranged adjacent to the head-piece of the sash-casing, and guide-grooves formed in the face of the pulley-piece, and with sash-cords having counterbalance weights or springs attached to one end and sash-supports to the other, said sash-supports having bearings adapted to fit said socket-pieces, and integral with said bearings a body adapted to be secured to said cords and to be guided in said guide-grooves, all substantially as shown, and for the purposes set forth.

3. The combination, in a window, of a sash-casing provided with counterbalancing-weights, cords J J', sash-supports G, sash-pulleys H, guideways B', and inside beads, B² B³ B⁴, with a combined sash, B E, hinged together and having the meeting-rails beveled, substantially as shown, and a locking device, as set forth.

386,004. REPAIR-CLAMP FOR SPECTACLES. EDWIN J. REDY, Portland, Mich. Filed Feb. 20, 1888. Serial No. 265,711. (No model.)



Claim.—1. In a clamp for holding spectacle-frames while being repaired, the combination, with the arms provided with the pins 9 at their outer ends and adjustably connected at their inner ends, of the clamping-blocks 7, provided with the screws 12 and loosely fitted upon said pins, substantially as described.

2. In a clamp for holding spectacle-frames while being repaired, the combination, with the slotted arms provided with the pins 9 at their outer ends and adjustably connected at their inner ends, of the clamping-blocks 7, provided with the screws 12 and loosely fitted upon said pins, substantially as described.

3. In a clamp for holding spectacle-frames while being repaired, the combination, with the arms provided with the pins 9 at their outer ends and formed with slots at their inner ends, of the clamping-blocks provided with the screws 12 and loosely fitted upon said pins, and a clamping or set screw, 4, for firmly holding together the slotted inner ends of said arms, substantially as described.

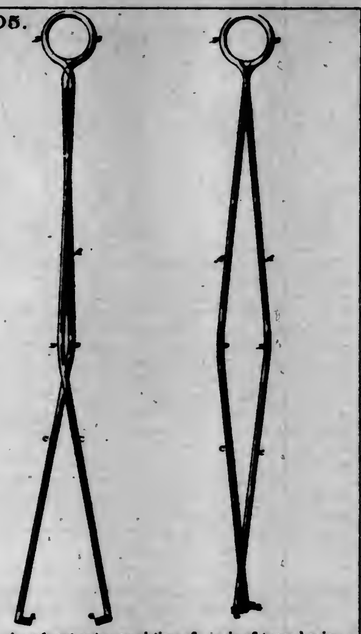
4. In a clamp for holding spectacle-frames while being repaired, the combination of an arm having a clamping-block at its outer end and a screw-threaded hole at its inner end, two other arms having clamping-blocks at their outer ends and longitudinal slots in their inner ends, and a clamping or set screw passed through said slots into said screw-threaded hole in the inner end of the arm first named, substantially as described.

5. In a clamp for holding spectacle-frames while being repaired, the combination of an arm having a pivoted clamping-block at its outer end and a screw-threaded hole at its inner end, a clamping-screw fitted in said screw-threaded hole, and two other arms having pivoted clamping-blocks at their outer ends and slots in their inner ends, which allow them to be longitudinally adjusted over said screw, substantially as described.

6. In a clamp for holding spectacle-frames, the combination of an arm having a pin projecting downwardly from its outer end, a clamping-screw in the inner end of said arm, two other arms having pins projecting downwardly from their outer ends and formed with longitudinal slots in their inner ends, which are movable over said screw, and clamping-blocks provided with perforations in their inner ends, in which are loosely fitted said pins, with lips at their outer ends, and with set-screws arranged with their inner ends opposite the sides of said pins, substantially as described.

386,005. CORK-EXTRACTOR. GEORGE W. REESE, Ashland, Pa. Filed Feb. 27, 1888. Serial No. 265,572. (No model.)

386,005.

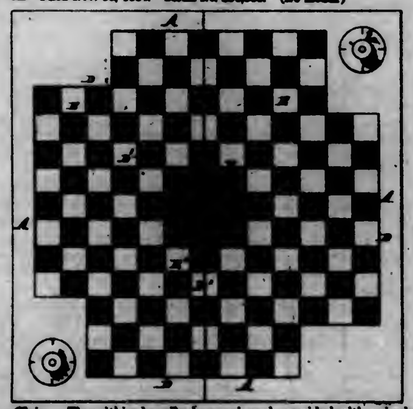


Claim.—A cork-extractor consisting of a pair of tongs having a spring at the center, the two arms of the tongs extending in parallel lines from the spring to the point D, at which point they cross and diverge from each other and terminate in inwardly-extending hooks, substantially as shown.

386,006. METHOD OF MANUFACTURING SUPPORTS FOR PHOTOGRAPHIC EMULSION. FRANCIS H. FREEMAN, Dublin, County of Dublin, Ireland. Filed Mar. 17, 1887. Serial No. 231,316. (No specimens.) Patented in England Aug. 20, 1886, No. 10,999.

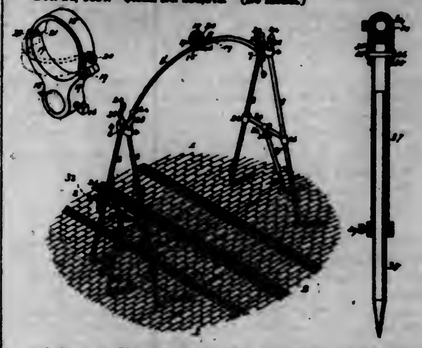
Claim.—The process herein described of preparing a base for photographic negatives, the same consisting in forming a sheet of insoluble bichromated gelatine and decolorizing said sheet by means of sulphurous acid, so as to transmit actinic light for the purpose of printing, substantially as specified.

386,007. GAME APPARATUS. FRANK F. GIBSON, Englewood, Ill. Filed Nov. 30, 1887. Serial No. 256,888. (No model.)



Claim.—The within-described game-board, provided with a single central goal, a series of squares, H F, of different colors immediately surrounding the goal, a series of squares, D' E', surrounding the said squares H and F, and four wings composed of different-colored squares, all of the said squares being arranged in rows at right angles to each other, as set forth.

386,008. HOSE-BRIDGE. CHARLES J. P. HUNT, St. Louis, Mo. Filed Dec. 24, 1887. Serial No. 258,572. (No model.)



Claim.—1. The combination, in a hose-bridge, of two pairs of legs or standards, each pair hinged together, and having extensions 22, adapted to hold the hose when the legs are erect, with side extensions, 24, adapted to hold the hose while the legs are prone, and a connection hinged at the ends to the pairs of legs, substantially as and for the purpose set forth.

2. The combination of the two pairs of legs or standards, jointed together near their upper ends and having above the joints branching parts adapted to support a hose, and a curved connection between the legs or standards having a fork adapted to support the hose.

3. The combination of two pairs of legs, with joints near the top of each pair, branching parts above the joints adapted to support a hose, and a connection between the pairs having a fork adapted to support the hose, and a strap adapted to hold the hose down in the fork.

4. The combination, in a hose-bridge, of two pairs of legs connected together, and each pair having a cross piece or bar, 20, pivoted to one of the legs, a fork on the other leg adapted to receive the free end of the cross-piece, and a set-screw adapted to fix the said end in the fork.

5. The combination, in a hose-bridge, of two pairs of legs or standards, the legs of each pair connected by a joint near the top and extending above the joint in parts, forming jaws adapted to embrace a hose, a connecting-bar, 8, between the pairs of legs, with a fork upon it for the support of the hose, a cross-bar between the legs of each pair, and a brace extending from said cross-bar to the ground, substantially as and for the purposes set forth.

6. The combination, in a hose-bridge, of two pairs of legs or standards connected by a bar to which they are jointed, branched parts or forks at the tops of the legs and on the connecting-bar adapted to support the hose, and a brace-leg, 37, connected to each pair of legs, to prevent endwise sway of the bridge.

7. The combination, in a hose-bridge, of two pairs of legs jointed to a connecting-bar, and each pair jointed together and having above the joint parts 23, moving with the legs and adapted to clasp the hose on the separation of the lower ends of the legs, and a cross-bar, 20, pivoted to one leg of the pair and having disconnectible attachment to the other leg of the pair, for the purpose set forth.

8. The combination, in a hose-bridge, of two pairs of legs jointed to a curved connecting-bar, 8, having a fork for support of the hose, the legs of each pair jointed together at 6, and branching parts 23, one fixed to each leg, so as to move therewith, substantially as and for the purpose set forth.

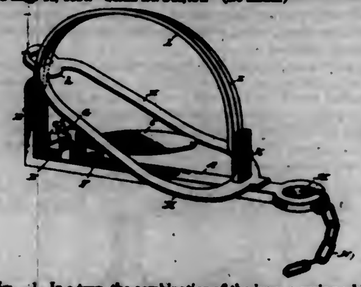
9. The legs for a hose-bridge connected in pairs by joints and the pairs connected by a bar to which they are jointed, and parts 23, with extensions 24, fixed to the legs above the joint, substantially as and for the purpose set forth.

10. The combination, in a hose-bridge, of two pairs of legs connected together by a curved bar, 8, by means of joints, a fork on the curved bar, with a strap connected to it by a double joint, parts 23, with extensions fixed to the legs above the joint, cross-bars 20, having pivotal connection to one leg of each pair and an adjustable attachment to the other leg, and a brace-leg, 37, connected to the cross-bar and having a pivot at 36, substantially as set forth.

11. The combination, in a hose-bridge, of the connecting-bar 8, and hose-supporting fork having horns 17, and a strap, 18, connected to one horn by a universal joint, 19 20, and connected to the other horn by a catch, all constructed substantially as and for the purpose set forth.

12. In a hose-bridge, the connecting-bolt 10, having a cross-bar, 11, pivoted to the bolt and capable of being turned in line with the bolt or crosswise thereto, in combination with a spring, 12, acting to keep the cross-bar 11 in contact with the object through which the bolt passes, substantially as set forth.

386,009. ANIMAL-TRAP. WILLIAM B. HERSLEY, Greenville, Ky. Filed Aug. 11, 1887. Serial No. 246,781. (No model.)

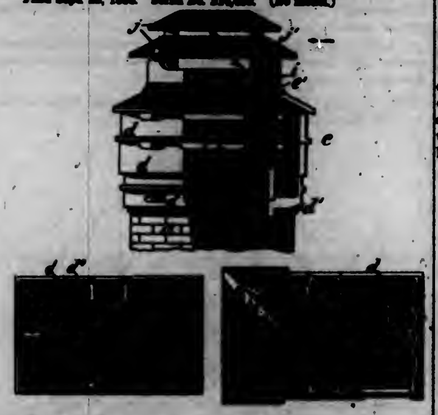


Claim.—1. In a trap, the combination of the jaws, a spring which controls the same, and a pan pivoted to the trap and provided with a catch above the line of the pivotal point of the pan, and a set-screw between the pivotal point of the pan and the outer end of the trap, substantially as and for the purposes specified.

2. In a trap, the jaws and main spring provided with a projection which projects in toward the pan of the trap, in combination with a pan which is pivotally secured to the trap, and which is provided on its inner end with a projection for engagement with the said projection on the spring of the trap, and a secondary spring located beneath the pan of the trap, substantially as and for the purposes specified.

3. In a trap of the character described, the pan pivotally secured to the trap and provided with a projection and a set-screw at one side of the pivotal point, and having a spring beneath the pan and at the opposite side of the pivotal point, in combination with a main spring for the jaws, and a projection on said main spring for engagement with the catch on the pan of the trap, all constructed and combined to operate substantially as described, and for the purposes specified.

386,010. CHIMNEY-TOP. ALBERTUS HENDRICKSON, Putnam, Conn. Filed Sept. 23, 1886. Serial No. 214,059. (No model.)



Claim.—1. The herein-described chimney-top, consisting, essentially, of metallic sections capable of being superposed one upon another, each section being formed in two or more parts, and spacing-clamps, the edges of which interlock with the edges of the part sections to bind the part sections together, whereby the section may be expanded to fit chimneys of different sizes, substantially as set forth.

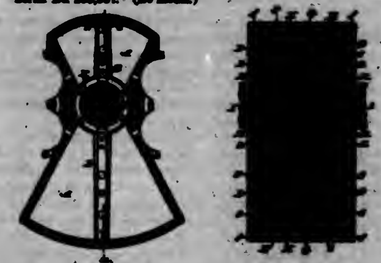
2. The herein-described chimney-top, consisting, essentially, of sections formed of cast metal capable of being superposed one upon another, each section being formed in two or more parts, and spacing-clamps to interlock with and bind together the edges of the part sections, substantially as set forth.

3. A chimney-top section formed in two or more parts, the edges of the parts being dovetailed, and spacing-clamps provided with dovetailed edges to engage the edges of the said parts, substantially as set forth.

4. The combination, with a chimney-top, *c*, of a storm-cap, *j*, having depending arms or legs *f*, provided with vertically-elongated slots, slotted lugs attached to the chimney-top in position to correspond with the legs *f*, and clamping-bolts to lock the legs *f* to the legs on the chimney-top, whereby the storm-cap is secured in the desired vertical adjustment, substantially as set forth.

5. In a chimney-top, the combination, with an interior flue composed of sections capable of being superposed one upon another, the sections each consisting of two or more parts united by spacing-sections, of an exterior flue formed by several sections capable of superposition one upon another, each section consisting of two or more parts united by spacing-sections, the sections of the exterior flue being provided with draft-openings and the sections of the interior flue being provided with draft-openings, substantially as set forth.

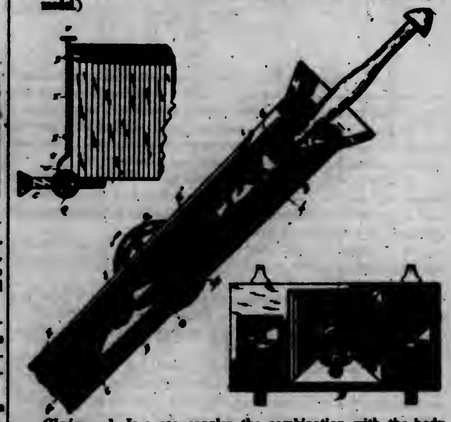
386,011. METALLIC PACKING. FRANK P. KELSEAUX, Brooklyn, N. Y., assignor to Alexander Craig, Newark, N. J. Filed Nov. 1, 1887. Serial No. 253,927. (No model.)



Claim.—1. The combination, in a packing for vibrating pistons, of divided end strips fitted in a longitudinal recess in each end of the piston, lateral strips fitted in longitudinal recesses in the side edges of the piston and jointed and pivoted to the end strips at the corners of the piston, packing-rings seated in the piston to encircle its trunnions and embraced within recesses at the inner ends of the inner sides of the lateral packing-strips, pistons made flat to the side strips to cover the inner faces of each packing-ring, a plate flat to the inner face of one division of each end strip to cover its joint with the proximate division, and a series of springs interposed between the several packing-strips and the piston, substantially in the manner and for the purpose herein set forth.

2. The combination, in a packing for vibrating pistons, having self-adjusting end strips, substantially as described, of lateral strips fitted each in a longitudinal recess in the side edge of the piston, packing-rings seated in the piston to encircle its trunnions, and which are severally embraced within recesses at the inner ends of the inner sides of the lateral packing-strips, and spring devices, substantially as described, for forcing the rings and strips outwardly against the wall of the piston-chamber, substantially in the manner and for the purpose herein set forth.

386,012. CAR-COUPLING. JOHN G. HOSSBARGER, Emporia, Kans. Filed Feb. 21, 1887. Renewed Mar. 24, 1888. Serial No. 268,482. (No model.)



Claim.—1. In a car-coupler, the combination, with the body thereof having a flaring mouth and formed with a recess for the head of the pin to rest in, of a distinct depressing-lever mounted in the body of the coupler and having a recess which incloses the upper por-

tion of the head of the pin, and means to free the pin when it is desired to uncouple the cars.

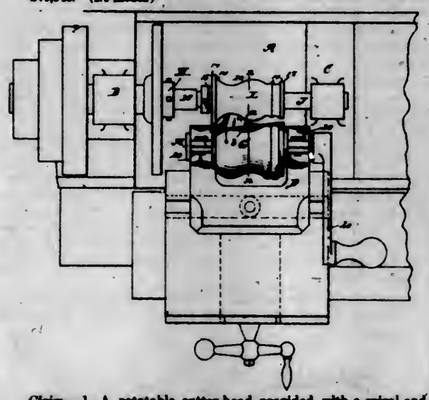
2. In a car-coupler, the combination, with the body thereof having a flaring mouth, an ejecting-lever for the head of the pin to rest in, pivoted in the bottom of the body of the coupler, and a distinct depressing-lever which incloses the upper portion of the head of the pin, pivoted in the upper portion of the body of the coupler, of an actuating-lever adapted to simultaneously operate the depressing-lever and the ejecting-lever and free the pin.

3. In a car-coupler, the combination, with the body thereof and the pivoted depressing and ejecting levers which hold the pin, of a distinct actuating-lever mounted upon a shaft intermediate the depressing and ejecting levers, provided with a longer and a shorter arm, the longer arm of which engages the depressing-lever, and the shorter arm of which engages the ejecting-lever, whereby when the shaft is turned the pin is ejected from its resting-place and the cars uncoupled.

4. In a car-coupler, the combination, with the body thereof and a distinct depressing-lever pivotally mounted therein and normally held down by a spring, so as to engage the head of the pin, of an actuating-lever mounted on a shaft situated immediately below the depressing-lever, and a hand-wheel on one end of said shaft, whereby when the wheel is turned the actuating-lever is thrown against the depressing-lever and the latter uplifted and the pin released.

5. In a car-coupler, the combination, with the body thereof and the pivotally-mounted depressing and ejecting levers which hold the pin, of a distinct actuating-lever mounted upon a shaft immediately below the depressing and ejecting levers, provided with a longer and a shorter arm, the longer arm of which engages the depressing-lever, and the shorter arm of which engages the ejecting-lever, and a hand-wheel mounted on the shaft of the actuating-lever, whereby when the wheel is turned the actuating-lever is thrown against the depressing-lever and the latter uplifted and the pin released.

386,018. TOOL FOR TURNING AND POLISHING METAL. ERWIN A. HOWE, Springfield, Mass. Filed Apr. 11, 1888. Serial No. 270,340. (No model.)



Claim.—1. A rotatable cutter-head provided with a spiral and shearing cutting-edge, *a*, and an eccentric burnishing-surface in the rear of said cutting-edge, for the purpose substantially as set forth.

2. A rotatable cutter-head provided with a spiral and shearing rough cutting-edge, *a*, and a secondary cutting-edge, *d*, at the rear thereof, substantially as and for the purpose described.

3. A rotatable cutter-head provided with a spiral and shearing rough cutting-edge, *a*, a secondary cutting-edge, *d*, at the rear thereof, and an eccentric burnishing-surface at the rear of the latter edge, substantially as and for the purpose described.

4. A rotatable cutter-head provided with a spiral and shearing cutting-edge, *a*, and one or more cutting-off projections, substantially as and for the purpose described.

5. A rotatable cutter-head provided with one or more spiral and shearing cutting-edges, an eccentric burnishing-surface at the rear of said cutting-edge, and one or more cutting-off projections, *g*, substantially as and for the purpose described.

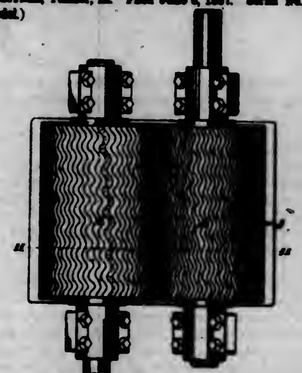
6. The combination, with a cutter-head provided with one or more cutting-edges and a burnishing-surface at the rear thereof, of a shaft provided with eccentric bearings *w w* and a supporting portion or portions, *v*, eccentric to said bearings, on which said cutter-head is mounted, substantially as and for the purpose described.

7. The combination, with a slide-rest of a lathe having bearings 10, of a cutter-head, and a shaft, to which said head is secured, mounted in said bearings and provided with a lever, 20, said cutter-head being provided with one or more spiral and shearing cutting-edges, substantially as and for the purpose described.

8. The combination, with a slide-rest of a lathe having bearings 10, of a cutter-head, and a shaft, to which said head is secured, mounted in said bearings and provided with a lever, 20, said cutter-head being provided with one or more spiral and shearing cutting-edges, and an eccentric burnishing-surface, substantially as and for the purpose described.

9. The combination, with the slide-rest of a lathe having bearings 10, of a cutter-head, and a shaft, to which said head is secured, mounted in said bearings and provided with a lever, 20, said cutter-head being provided with one or more spiral and shearing cutting-edges, an eccentric burnishing-surface at the rear of said cutting-edges, and one or more cutting-off projections, *g*, substantially as and for the purpose described.

386,014. GRINDING-ROLLS FOR FLOUR-MILLS. HENRY A. HEEFNER, Palmer, Ill. Filed June 6, 1887. Serial No. 240,444. (No model.)

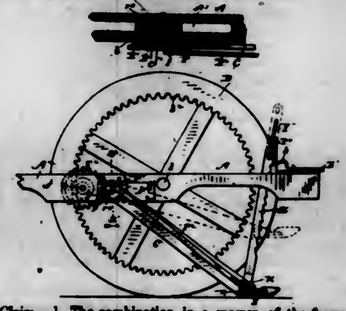


Claim.—1. As a new article of manufacture, a roll for flour-mills provided with curved serpentine corrugations, substantially as set forth.

2. As a new article of manufacture, a roll for flour-mills provided with serpentine corrugations arranged spirally upon the face of the roll, substantially as set forth.

3. The combination of two grinding-rolls, each provided with serpentine spiral corrugations, and one of said rolls having a finer drum than the other, as herein set forth.

386,015. MOWING-MACHINE. FRANK M. HUNT, Round Oak, Ga. Filed May 9, 1887. Serial No. 237,802. (No model.)



Claim.—1. The combination, in a mower, of the frame, the internally-toothed ground-wheel supporting the said frame, the spur-wheels *c'* and r^3, journaled in the frame, the spur-wheel r^2, engaging with the spur-wheel r^3, the spring-plate *t*, secured to the frame and provided with a bushing upon its face, through which the outer end of the shaft of the spur-wheel r^2 passes, the retaining-plate F', secured to the frame and provided with depending arms, the thrust-bar C, pivoted upon the bushing upon the spring-plate and having attached to it the finger-bar S, the upper end of this bar being clamped between the spring-plate *t* and the arms of the retaining-plate F', and the cutting apparatus connected to and operated by the shaft of the said spur-wheel r^2, substantially as described.

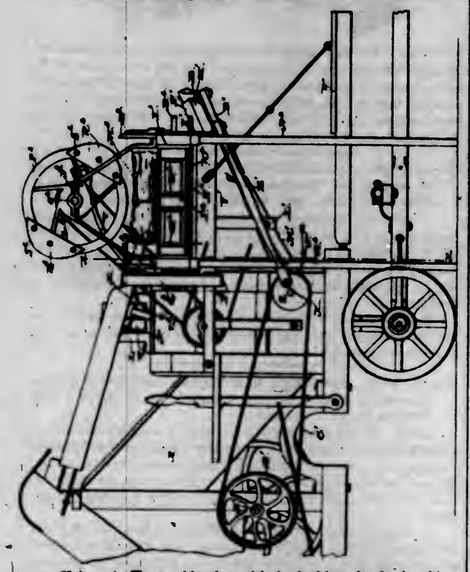
2. In a mower, the combination of the frame mounted upon an internally-toothed ground-wheel, the spur-wheel r^3, journaled in the frame, the spur-wheels r^2 and *c'*, the spring-plate *t*, bolted to the frame and perforated for the passage of the shaft of the spur-wheel r^2, and provided with a bushing through which the said shaft passes, the retaining-plate F', bolted to the frame and provided with depending arms, the vertically-vibrating thrust-bar C, pivoted upon the bushing of the spring-plate and clamped between the same and the arms of the retaining-plate, the finger-bar attached to the bar C and carrying the cutting apparatus, the pitman-rod and crank-disk for operating the cutting apparatus, the notched bar L, pivoted to the lower end of the said thrust-bar C, the lever Y, for adjusting the said bar L, the spring-actuated bolt *s*, for engaging the notches in the bar L, and the lever for disengaging the said bolt *s*.

386,016. CORN-PLANTER. JOHN M. JOHNSON, New Albany, Kans. Filed Apr. 14, 1888. Serial No. 270,888. (No model.)



Claim.—The combination of the wheels G, secured rigidly to the revolving shaft, which is mounted upon the front frame, the projections upon the inner sides of the wheels, the pivoted levers secured to the outer sides of the seed-boxes, the connecting-rod for connecting the levers together, a bearing or support, the lever O, mounted in this bearing, and the seed-slide, substantially as shown and described.

386,017. BAND-CUTTER AND FEEDER. EDGAR P. KELLOGG, Marion, Va. Filed Aug. 6, 1887. Serial No. 246,314. (No model.)



Claim.—1. The combination, with the feed-boards of a threshing-machine, of the rotating crank-shaft X, the levers oscillated thereby, and the feeder S', connected to said levers and arranged over the feed-board, whereby the said feeder will be oscillated in a vertical direction, substantially as described.

2. The combination of the feed-board, the rotating shaft X, having the crank Y, the wheel Z on said shaft, the levers M', the spring-arms N', secured to said levers and engaging the crank Y, the arms O', rigidly secured to the outer ends of said levers, the transverse bar R', secured on the upper ends of the arms O', the board S', adjustably secured on said bar and arranged transversely over the feed-board, the vibrating spreader fulcrumed on the feed-board, the bell-crank lever, the link H', and the pitman E' between the bell-crank lever and the wheel Z, substantially as set forth.

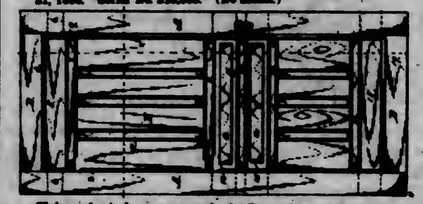
3. The combination of the feed-board, the crank-shaft X below the feed-board, the levers M', the spring-arms N', adapted to engage the crank-shaft, the arms O', and the feeder carried by said arms O' and arranged transversely over the feed-board, substantially as specified.

4. The combination of the feed-board, the levers M', the crank-shaft X, to actuate the same, the arms O', secured to said levers, the transverse bar R', secured to the upper ends of said arms, and the board S', adjustably mounted on said bar R', substantially as set forth.

5. The combination, with the feed-board, of the levers M', the arms O', secured to said levers, the crank-shaft X, to actuate said levers, the transverse bar R', secured to the upper ends of the arms O', the board S', of less length than the bar R' and having the longitudinal slots U', and the bolts T', passing through said slots and engaging the bar R', as set forth.

6. The combination of the endless carrier, the retaining wheel F', arranged transversely over the same, and the cutting-plates E', detachably secured to the said wheel, having the serrated cutting-edges projecting beyond the periphery of the wheel and an intervening plane edge between said serrated edges, substantially as described.

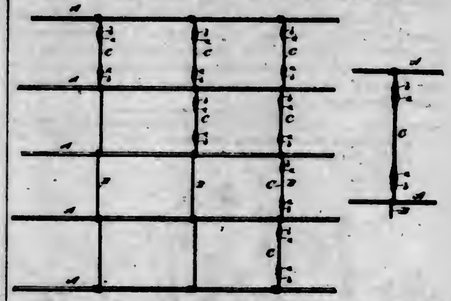
386,018. DOOR. JOHN H. LEUTHEN, Muscatine, Iowa. Filed Oct. 21, 1886. Serial No. 216,388. (No model.)



Claim.—1. A door composed of stiles and top and bottom cross-rails united together and formed with grooves in their inner edges, top, bottom, and central cross-panels of uniform thickness throughout their length, having their ends lodged in mortises through the stiles, thin vertical panels and frieze-pieces, as 7, 11, 12, 13, and 17, having grooves in their longitudinal edges to take and hold the edges of the cross-panels and the ends of the vertical panels, all substantially as described.

2. A door composed of the following elements: the stiles having mortises to receive the tenons of the top and bottom cross-rails, and grooves on their inner edges to receive the edges of the standing panels, top, middle, and bottom cross-panels 5, 14, 15, and 18 thinner than the stiles and cross-rails and having their ends of the same thickness as the panel and lodged in mortises through the stiles; frieze-pieces 7, 11, 12, 13, and 17, having grooves in their longitudinal edges to receive the cross-panels and the ends of the standing panels, the standing panels having their ends in the grooves of the frieze-pieces and their outer edges in the grooves of the stiles, and mortise F on the standing panels having their ends set in the grooves of the frieze-pieces, substantially as described.

386,019. WIRE-FENCE STAY. LAFAYETTE W. LINDLEY, Louisville, Ky. Filed Apr. 7, 1888. Serial No. 269,969. (No model.)



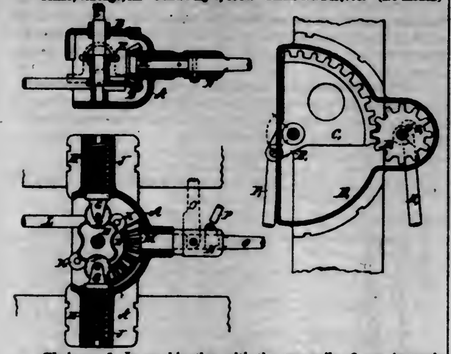
Claim.—1. The combination, with the horizontal wires of a wire fence, of a vertical wire-stay secured to the horizontal wires at the point of intersection with the same, and a loose independent link inserted in the said stay-wire between two of the said horizontal wires of the fence, substantially as described.

2. The combination, with the horizontal wires of a wire fence, of a vertical wire-stay secured to the horizontal wires of the fence at the point of intersection with the same, and a loose independent link, C, inserted in the said vertical stay-wire between two of the horizontal wires of the fence, the said link C having formed on its ends loops or eyes *a a*, which interlock with loops *b b*, formed on the adjacent ends of the stay-wire, substantially as described.

3. The combination, with the horizontal wires of the fence, of a vertical wire-stay secured to the said horizontal wires by wrapping the stay-wire around the same at the point of intersection, and a loose

independent link, C, inserted in the said stay-wire between two of the horizontal wires, substantially as described.

386,020. SWITCH-OPERATING MECHANISM. ALBERT K. MAINFIELD, Chicago, Ill. Filed July 7, 1887. Serial No. 243,703. (No model.)



Claim.—1. In combination with the two rails of a main track and the movable point-rail of a split switch, a movable guard-rail, which, when the switch-rail lies in action against its main rail, stands at suitable guarding distance from the other main rail, and when the switch-rail is out of action the guard-rail is beyond guarding distance from its main rail, together with connecting mechanism, substantially as set forth.

2. In combination, a movable split switch, a movable guard, the general direction of whose motion from one extreme position to the other is opposite to the direction of motion of the switch, but the first increment of whose motion is in the same direction as the motion of the switch, and connecting mechanism between switch and guard, substantially as described.

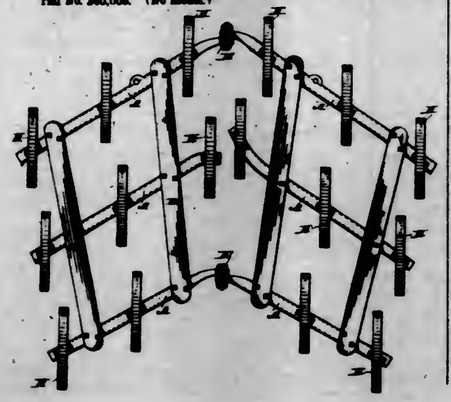
3. The combination of split switch S', guard J', switch-crank E', having a movement of less than half a circle, guard-crank G', having a movement of more than half a circle, and connecting parts, substantially as set forth.

4. In a switch-stand, the segmental gear D, carrying the crank K and the cam E and attached to the vertical revolving shaft C, in combination with horizontal lever-shaft O, spring H, and connecting parts, substantially as set forth.

5. In a switch-stand, the combination of a shaft making about one-fourth of a revolution with a shaft making about one-half a revolution, a hinged operating-lever on and arranged to be locked in line with the axis of the latter shaft, and connecting parts, substantially as set forth.

6. In combination, the vertical revolving shaft C, having its upper bearing in the box Q, the fixed inclined ladder X, supporting-box Q, the inclined tubular braces Y Y, extending from the foundation to a high point of the ladder, the switch-stand A, supporting the lower end of shaft C, the operating-lever O, the switch S, and connecting parts, substantially as set forth.

386,021. HARROW. DEWITT C. HARKMAN, Utica, N. Y., assignor to the Eureka Mower Company, same place. Filed Feb. 28, 1888. Serial No. 265,003. (No model.)



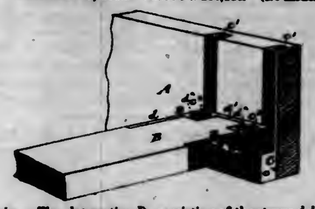
Claim.—1. In a harrow, the combination, with a channel draft-bar having its walls placed vertically, of a tooth mounted on the plain edges of said walls, and a clip to hold said tooth firmly in such position, substantially as described.

2. In a harrow, the combination of the channel draft-bar having its walls placed vertically, a tooth mounted on the plain edges of said walls, and a clip extending over said tooth and confined by the walls of said bar, substantially as described.

3. In combination with a harrow-tooth, the tooth-clip formed with the central span, *g*, shoulder *h*, and lugs *i*, and a channeled bar, the said central span, *g*, extending above the walls of said bar, so as to accommodate and hold the shank of the tooth placed on the said walls, and the said lugs extending between the walls of the bar, substantially as described.

4. In a harrow, the combination of the channel draft-bar, the tooth mounted on the plain edges of said bar, and the clip mounted on and spanning the tooth and held by said tooth above the bottom of the channel, whereby the said clip acts upon the said tooth above the channel-bar, substantially as and for the purpose described.

386,022. BEDSTEAD-SLAT LOCK. REARDEN D. MARVIN, Princeton, Ky. Filed Mar. 12, 1888. Serial No. 267,119. (No model.)



Claim.—The slat-casting D, consisting of the straps *d d*, connected at one end by the strap *d'*, and provided with the corner holes, d^2 d^3, in combination with the rail-casting C, having two parallel straps, *c c*, provided with right-angled flanges *c'*, and the bottom projections, c^2, carrying upwardly-projecting studs c^3, and the cross-strip c^4, having the middle bearing, c^5, as shown and described.

386,023. ENAMELED IRONWARE. HENRY C. MILLIMAN, Brooklyn, assignor to the Iron Clad Manufacturing Company, New York, N. Y. Filed Mar. 26, 1884. Serial No. 125,402. (No specimens.)

Claim.—1. A "glaze" adapted to be applied to and fused upon the surface of iron, composed of suitable ingredients to form a glaze, and having added thereto after it has been compounded an additional quantity of alkali or other equivalent agent sufficient to neutralize the acid or equivalent resulting from the first admixture, substantially as hereinbefore set forth.

2. As a new article of manufacture, thin uncolored enameled ironware of practically plain appearance and free from spots or mottles, as hereinbefore set forth.

386,024. CAR-BRAKE. ISAAC HUDELSON, San Francisco, assignor of one-half to Joseph B. Hudelson, Sierra City, Cal. Filed Feb. 3, 1888. Serial No. 262,982. (No model.)

Claim.—1. In a car-brake, the combination of a draw-bar, a loose sliding draw-head, levers D D^x, having their contrary arms or the members on opposite sides of the pivots connected together, the brake-beams connected to the levers, as described, and springs which are applied to hold the brake-beam normally in action against the wheels of the trucks.

2. In a car-brake, a draw-bar, a sliding cross-head, levers D D^x, and diagonal connections F, in combination with brake-beams, which are connected to the said levers, and springs so applied that they act upon the brakes to throw and hold them to the wheels when the pulling force or strain on the draw-bar becomes less than the force of the springs.

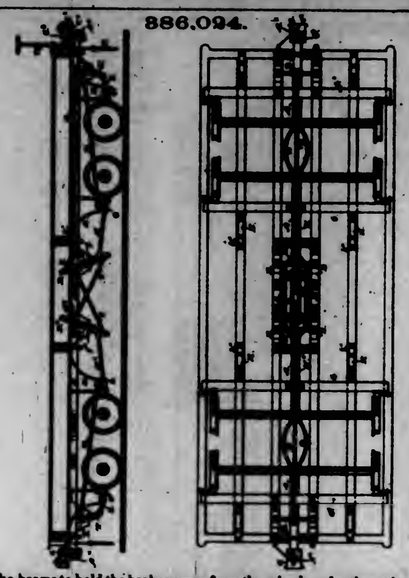
3. In a car-brake, a draw-bar extending from end to end of the car, having a loose sliding draw-head in each end, and stop or projection, in combination with levers set with relation to the draw-bar and these stops, as described, and connecting-rods which connect the levers together and to the brake-beams of both trucks, and springs applied to said beams or to the levers, as described, to hold the brakes to the wheels for operation, as set forth.

4. In a car-brake spring applied to throw and hold the brakes in action against the wheels, a draw-bar having a loosely-sliding draw-head on the end thereof, lever-connection between the draw-bar and the brake beam or lever, by which a pulling force or strain upon the draw-head acts upon or contrary to the spring force to hold back the brake, and means, substantially as described, for locking the draw-head to the draw-bar, for operation as set forth.

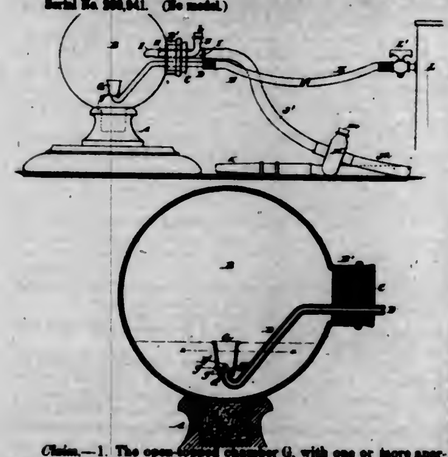
5. In a car-brake, a sliding draw-bar which is connected with the brake-beams to hold the brakes away from the wheels under the action of the pulling force sustained by the draw-bar, a spring applied to act contrary to such force and hold the brakes against the wheels, and a sliding draw-head and a locking-pin, in combination, as set forth.

6. The combination of the pivoted levers D D^x, diagonal connecting-rods F F', sliding bar A, having stops or projections, as A^2, to engage the ends of said levers upon the same side of the pivots, and rods H H, connecting the opposite ends or members of the levers with beams or parts, as G G, to be moved, whereby said parts are simultaneously moved in opposite directions from a rectilinear movement of the slide-bar in one direction, as hereinbefore set forth.

386,024.



386,025. COMBINED ATOMIZER AND INHALER. ADOLPHUS J. PALMER and GUSTAVE H. PALMER, Brooklyn, N. Y. Filed Apr. 7, 1886. Serial No. 293,941. (No model.)

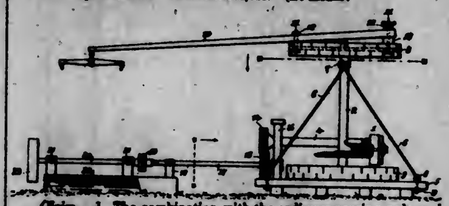


Claim.—1. The open-topped chamber G, with one or more apertures for the slow admission of the liquid, in combination with the globe or vessel B, air-induction pipe D, with its contracted aperture D', and inhaling-pipe I, arranged and adapted to serve substantially as herein specified.

2. In an atomizer and inhaler, the open-topped chamber G, with one or more apertures, *g*, the vessel B, plug C, pipe D, with its nozzle D', connected by the hose E to the air-reservoir L, and inhaling-pipe I, with its connected hose J', in combination with each other and with the provisions, as the screw-threads *d' g'*, for connecting and disconnecting the chamber G and the nozzle D' at will, to adapt the apparatus for different uses, substantially as herein specified.

3. In an atomizer and inhaler, the annular trap M, with its channeling-plug *m*, arranged, as shown, between two lengths of hose, J' J², in combination therewith and with the tip K, pipe I, plug C, and globe or vessel B, and with the air-reservoir L, cock L', hose E, pipe D, and nozzle D', for atomizing a liquid within the vessel B, all adapted to serve substantially as herein specified.

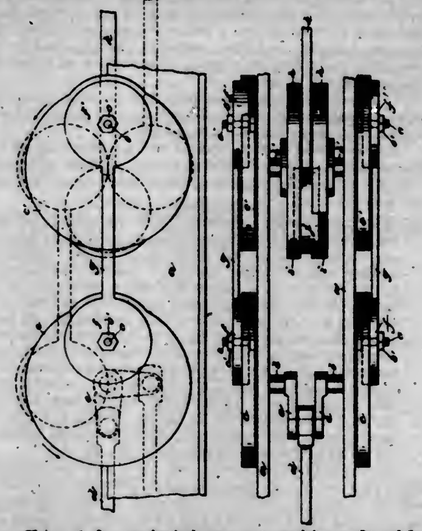
386,026. ROTARY-POWER. MARK B. PATTERSON, Queen City, Mo. Filed Apr. 18, 1888. Serial No. 271,022. (No model.)



Claim.—1. The combination, with the ordinary gearing, axle, and driving-wheels of a mowing-machine, of a lever secured to one of the driving-wheels of the mower, a rod having suitable connection with the gearing of the mower, and a line-shaft provided with a pulley having suitable connection with the rod, substantially as and for the purpose herein set forth.

2. The combination, with the ordinary gear, axle, and driving-wheels of a mower, and a platform on which it is supported on its side, of a collar surrounding the upper end of the axle-shell, and braces extending downwardly therefrom, connected by tightening-bolts with said platform, a lever to which a horse may be attached secured to the upper wheel, and suitable devices for conveying power to the machinery to be driven having gear-connection with the gearing of the mower, substantially as and for the purpose herein set forth.

386,027. MECHANICAL MOVEMENT. WILLIAM A. PITT, Glastonbury, Conn. Filed July 30, 1886. Serial No. 208,889. (No model.)

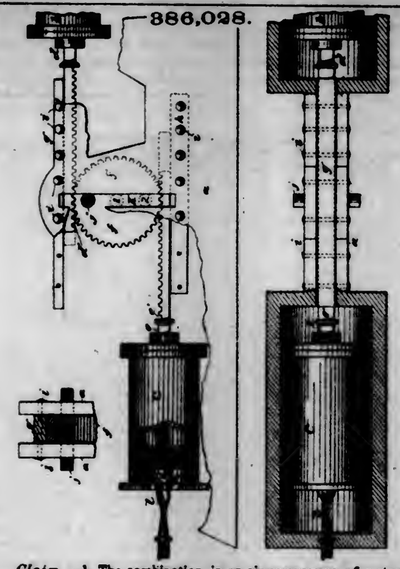


Claim.—1. In a mechanical movement, revolving cranks and fly-wheels having connecting-rods, each provided with disk-shaped ends fitted into recesses in said fly-wheels, in combination with intermediate fly-wheels, and a rod having a disk-shaped end seated in the opposite faces of said wheels, as and for the purpose set forth.

2. In a mechanical movement, the combination of the shafts *b* and *b'*, fly-wheels *c d*, each provided with a recess, rods *g g*, having disk-shaped ends fitted in said recesses, bolts *e*, nuts *e'*, and fly-wheels A A, with rod *k*, having disk-shaped ends *j*, all arranged and operating as set forth.

386,028. AIR-COMPRESSOR. WILLIAM A. PITT, Glastonbury, Conn. Filed June 30, 1887. Serial No. 243,043. (No model.)

386,028.



Claim.—1. The combination, in an air-compressor, of a steam-cylinder and air-cylinder with their piston-rods, each provided with a rack end, and a gear-wheel having a movable axis arranged to engage with said racks, substantially as set forth.

2. The combination, with the steam-cylinder, air-cylinder, and their piston-rods, each having a rack end, of a spur-wheel mounted on an axis located near the periphery of the wheel and arranged, substantially as described, to have a vertical movement in the frame of the engine during the revolution of the wheel, whereby it becomes a changeable fulcrum from the beginning to the finish of the stroke of the steam-piston, as set forth.

3. In combination, the steam-cylinder *b*, air-cylinder *c*, having an open end, nozzle *l*, piston-rods *d e*, with racks *d'* and *e'*, toothed wheel *f*, shaft *j*, and frame *a*, with slot *k*, as set forth.

4. The combination of the frame *a*, having guideways *g* and *h*, piston-rods *d* and *e*, racks *d'* and *e'*, spur-wheel *f*, adapted to engage said racks, and shaft *j*, arranged to move in a vertical slot in the frame *a*, as set forth.

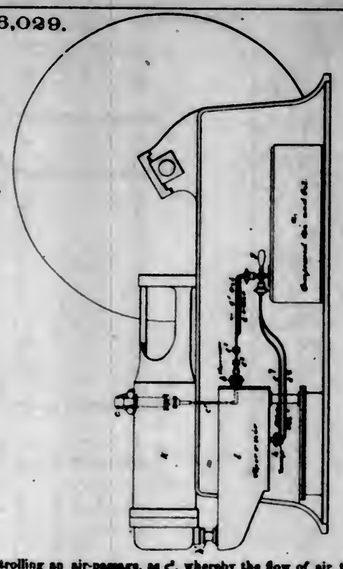
386,029. MOTOR-ENGINE OPERATED BY THE COMBUSTION OF LIQUID HYDROCARBON. WILLIAM D. PRIESTMAN and SAMUEL PRIESTMAN, Holderness Foundry, Hull, County of York, England. Filed July 20, 1887. Serial No. 244,902. (No model.) Patented in England Dec. 21, 1886, No. 16,779; in Germany June 8, 1887, No. 42,273; in France June 28, 1887, No. 184,426; in Belgium June 28, 1887, No. 67,233; in Norway July 2, 1887, No. 995; in Italy July 7, 1887, XLIV, 421, and May 28, 1888, XLV, 270; in Cape Colony July 13, 1887, No. 401; in Victoria July 18, 1887, No. 5,186; in Queensland July 23, 1887, No. 906; in New Zealand July 27, 1887, No. 2,449; in South Australia July 29, 1887, No. 845; in New South Wales Aug. 2, 1887, No. 37; in India Aug. 15, 1887, No. 1,073; in Spain Aug. 24, 1887, No. 7,127; in Brazil Aug. 30, 1887, No. 504; in Tasmania Sept. 22, 1887, No. 488/9; in Austria-Hungary Dec. 3, 1887, No. 34,061 and No. 56,741; in Argentine Republic Jan. 4, 1888, No. 694, and in Portugal Mar. 8, 1888, No. 1,228.

Claim.—1. A motor-engine operated by the combustion of hydrocarbon vapor, having valves, as *d* and d^6, controlling proportionately the supply of air and liquid hydrocarbon, a heater that heats the vapor, and a three-way valve, as *g*, which controls the supply of air and liquid hydrocarbon from the petroleum-reservoir, all arranged to operate substantially as described.

2. In a hydrocarbon-engine, the combination, with the vapor chamber, as *l*, the petroleum-reservoir, as *a*, a vapor-burner, as *h*, for heating the vapor in chamber *l*, and a mixer, as *b*, for preparing the vapor, of pipes, as *e* and *e'*, which supply air and liquid hydrocarbon to the mixer *b* from the reservoir *a*, pipes, as d^2 and e^2, which supply air and liquid hydrocarbon to the vapor-burner *h* from said reservoir, and a three-way cock, as *g*, controlling the passage of air and liquid hydrocarbon through said pipes, substantially as set forth.

3. In a hydrocarbon-engine, the combination, with a valve, as *d*, controlling an air-passage, as *e*, and a hydrocarbon-passage, as *e'*, of a valve, as d^3, connected with valve *d* and moving therewith, said valve

386,029.



d^3 controlling an air-passage, as e^3, whereby the flow of air through passage e^3 is regulated proportionately to the flow of air and liquid through passages *e* and *e'*, substantially as set forth.

4. In a valve mechanism for regulating the supply of air and liquid hydrocarbon to a hydrocarbon-vapor engine, the combination, with the two passages, as *e* and *e'*, for the aeriform fluid and liquid hydrocarbon, respectively, and each provided with a straining-chamber, as e^5, of the valve, as *d*, controlling said passages, substantially as set forth.

5. In a hydrocarbon-engine, the construction of vaporizer for mixing a liquid hydrocarbon with a gas capable of supporting combustion, and comprising two nozzle-tubes, one arranged within the other, the outer one being formed, as set forth, to cause the fluid conveyed thereby to be deflected inward against the stream of fluid issuing from the inner nozzle-tube and to measurably retard or obstruct the same, substantially as and for the purpose set forth.

6. In a hydrocarbon-engine, the combination, with the vessel for the liquid hydrocarbon, the heating-lamp, as *h*, and a vaporizer, as *b*, of the pipes for conveying air and liquid hydrocarbon to said lamp and vaporizer, and a three-way valve controlling said pipes, whereby the air and liquid hydrocarbon may be supplied to either the lamp or vaporizer at will, or be cut off from both, as set forth.

7. In combination with a vapor-chamber, such as *l*, to which a supplementary air-supply is admitted, the annular passage c^3, and perforated baffle-plate c^4, surrounding the vapor-inlet and serving to equally distribute the additional air among the vapor in the preparation of the working-charge.

8. In a valve mechanism for regulating the supply of air and hydrocarbon to a hydrocarbureted-air engine, the combination, with the two passages, as *e* and *e'*, for the air and hydrocarbon, respectively, of a valve, as *d*, provided with passages, whereof the extremities are formed with enlargements which vanish in a circumferential direction, substantially as and for the purposes set forth.

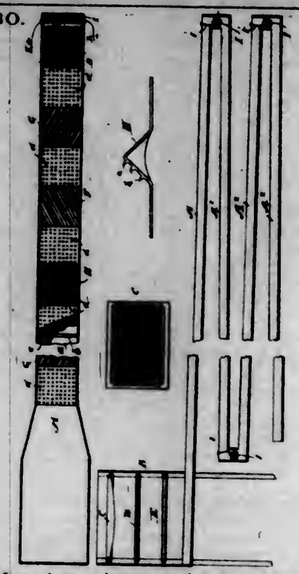
386,030. SLUICE-BOX. JULIO H. RAE, Boston, Mass. Filed Apr 3, 1888. Serial No. 267,704. (No model.)

Claim.—1. The riffle H, raised in the center and provided with projections *h* on one side of said raised center, in combination with a sluice-box, substantially as shown, and for the purposes described.

2. In combination, a sluice-box, a wheel, I, having buckets *i*, and bar J, having fingers *j*, and means for transmitting an electrical current



386,030.



to the water from a battery, dynamo, or other electrical source, substantially as and for the purposes described.

386,031. APPARATUS EMPLOYED IN SYSTEMS OF INDIRECT RADIATION. ABRAHAM RAMEIS, Pittsburg, Pa., assignor of one-half to Henry F. Dingee, same place. Filed Feb. 18, 1888. Serial No. 264,353. (Model.)

Claim.—In a casing for radiators, the combination, with the walls thereof having flanged edges and the flanged cleats applied thereto and interlocking with the flanged edges of the walls, of the corner-caps consisting of the three-sided box H, having the notched tongue *h* fitting under or interlocking with the flanges of the bottom wall or plate of the casing, substantially as described.

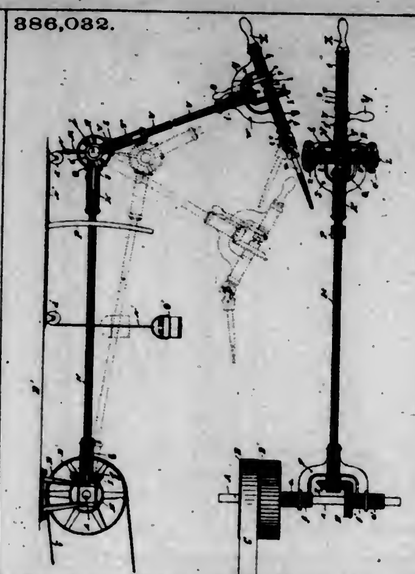
386,032. STAY-BOLT-HOLE DRILLING AND TAPPING MACHINE. THOMAS REESE, Jr., Erie, Pa. Filed May 2, 1888. Serial No. 272,613. (No model.)

Claim.—1. The combination, in a stay-bolt-hole drilling and tapping machine, of a shaft, H, swinging radially from and driven by a stationary shaft, and counterbalancing pulleys and weights for supporting the free end of said shaft, with a transverse shaft, L, journaled in a yoke, J, mounted on and adapted to be rotated around the free end of said swinging shaft H, a second swinging shaft, U, mounted in a yoke, S, swinging on said transverse shaft and gearing operatively connecting said shafts H L U together, whereby said second swinging shaft can be rotated radially around the first swinging shaft and also swung to and fro, as required, substantially as and for the purpose set forth.

2. The combination, in a stay-bolt-hole drilling and tapping machine, of a shaft swung from a counterbalanced overhead support, with a yoke mounted on the lower end of said swinging shaft and adapted to rotate about the axis of said shaft, and a cross-shaft mounted in bearings on said yoke, substantially as and for the purpose set forth.

3. The combination, in a stay-bolt-hole drilling and tapping machine, of a shaft, H, journaled in a yoke swinging radially upon a stationary driving-shaft and driven by miter or bevel gears on said shafts, and counterbalance-weights adapted to support the free end of said swinging shaft H and the mechanism connected therewith, with a transverse shaft, L, journaled in a yoke mounted on the free end of said

386,032.



swinging shaft and supporting a second yoke, S, having a shaft, U, journaled therein and swinging radially thereon, bevel or miter gears connecting said swinging and cross shafts, and a yoke, W, mounted on the free end of said second swinging shaft having a shaft, A, mounted therein transversely to said swinging shaft U, and bevel or miter gears connecting the same to said second swinging shaft, substantially as and for the purpose set forth.

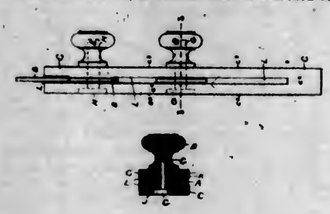
4. The combination, in a stay-bolt-hole drilling and tapping machine, of a shaft, H, swinging radially from a stationary driving-shaft, A, and counterbalance mechanism N N^9 d d' O, with a yoke, J, mounted on the free end of the shaft H, a transverse shaft, L, mounted in said yoke, a yoke, S, mounted on the shaft L, a shaft, U, journaled in said yoke S radially to the shaft L, and gears Q R V, substantially as and for the purpose set forth.

5. The combination, in a stay-bolt-hole drilling and tapping machine, of a shaft, U, swung in a yoke, S, radially to a shaft, L, mounted in a yoke, J, transversely to a swinging shaft, H, with a yoke, W, mounted on the free end of the shaft U, a cross-shaft, A, loose gear-wheel *k*, and clutch mechanism *i* O, and gear *j*, intermeshing with the gear *k*, substantially as and for the purpose set forth.

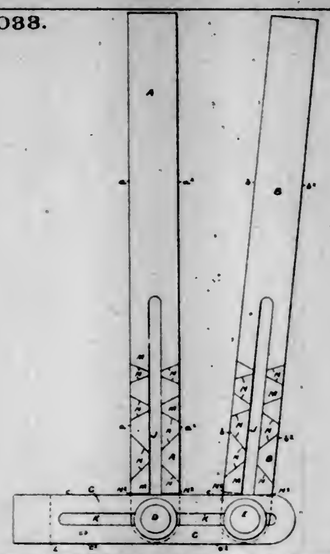
6. The combination, in a stay-bolt-hole drilling and tapping machine, of a yoke, W, mounted on and adapted to rotate about the free end of a swinging shaft, U, a transverse shaft, A, mounted in said yoke W, a gear-wheel, *k*, on said shaft A, adapted to intermesh with and be driven by a gear, *j*, on the shaft U, clutch mechanism *i* O for engaging the wheel *k* with shaft A, and a knuckle-joint, *t r*, on the end of the shaft A, substantially as and for the purpose set forth.

386,033. TRY-SQUARE AND BEVEL. CHARLES W. REEVES, Boston, Mass., assignor to Joseph Jacobs, same place. Filed Oct. 3, 1887. Serial No. 251,373. (No model.)

Claim.—A try-square and bevel composed of a crom-head, C, having opposite parallel straight edges, c c^2, and along its length slots K L, through its thickness and across its width, and of steel blades A B, each having opposite parallel straight edges, a a^2 b b^2, guide-setting lines N N^2 across their faces M, and a slot, J, and each entered into the slot L of crom-head C, in combination with headed screw-bolts

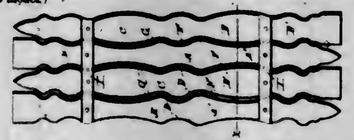


386,033.



G H and screw-nuts D E, fastening blades and cross-head together, as described, for the purposes specified.

386,034. PATTERN FOR PICKETS AND BALUSTERS. SAMUEL D. RIDDEL, Thomasville, Ga. Filed Oct. 1, 1887. Serial No. 251,205. (No model.)

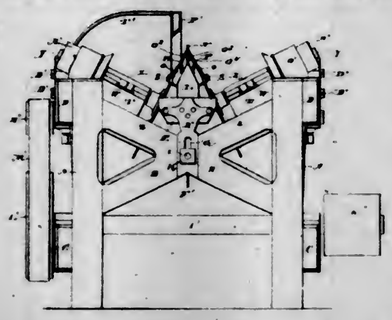


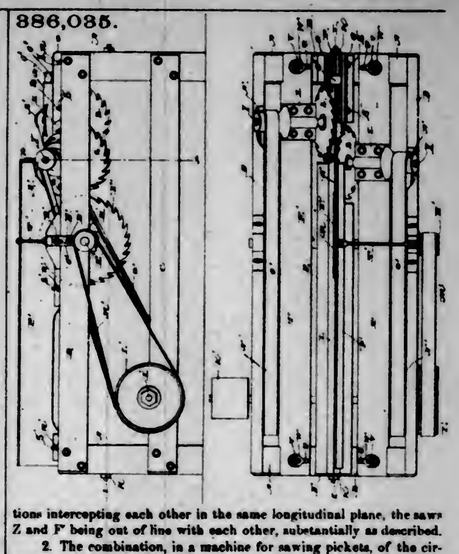
Claim.—1. The pattern comprising the forms A' D', arranged side by side, secured together, and having their edges formed by sinuous lines, the opposing curved edges of the forms being concentric and at a slight distance apart, and thereby forming sinuous kerfs or channels F between the said forms, as set forth.

2. The pattern comprising the forms A' D', arranged side by side and having their edges formed by sinuous lines, the opposing edges of the forms being concentric and at a slight distance apart, and thereby forming kerfs or channels F' between the said forms, and the cross-bars connecting said forms together and bridging the kerfs or channels, substantially as described.

386,035. MACHINE FOR SAWING FENCE-PICKETS. SAMUEL D. RIDDEL, Thomasville, Ga. Filed Oct. 12, 1887. Serial No. 252,167. (No model.)

Claim.—1. In a machine for sawing pickets, the combination of the saw F', and the saws Z on opposite sides of the saw F' and vertically inclined in opposite directions, and all having their cutting portions intercepting each other in the same longitudinal plane, the saws Z and F' being out of line with each other, substantially as described.





2. The combination, in a machine for sawing pickets, of the circular saw F', the guide-rail L, vertically adjustable with relation to the said saw and having the opening in its center through which the said saw extends, and the circular saws Z, arranged on opposite sides of the said guide-rail and inclined in opposite directions, the upper edges of the said saws Z extending over the upper edge of the guide-rail, said saws Z being further journaled in bearings which are adjustable toward and from the guide-rail, substantially as described.

3. The combination, in a machine for sawing pickets, of the guide-rail, a circular saw, F', having its upper edge extending through a central opening in the guide-rail, the flange-plate N, projecting from the upper edge of the guide-rail and extending longitudinally thereon in rear of and in line with the saw F', and the inclined circular saw Z, arranged on opposite sides of the guide-rail, and having their upper edges extending in notches or recesses in the upper edge of the flange-plate, substantially as described.

4. The combination, in a machine for sawing pickets, of the circular saw F', the flange-plate N, arranged longitudinally in line with the said saw in rear thereof, the oppositely-inclined circular saws Z on opposite sides of the saw F' and out of line therewith and with each other, and the guides O in rear of the saws Z, substantially as described.

5. The combination, in a machine for sawing pickets, of the guide-rail L, the circular saw F', having its upper edge extending through an opening in the said guide-rail, the bars T, having the transverse slots U at their ends, the inclined bars B, on which the ends of the said bars T are supported, the clamping-bolts extending through the slots U and securing the bars T to the bars B at any desired lateral adjustment toward or from the guide-rail, and the oppositely-inclined circular saws Z, having their arbors journaled in bearings on the bars T, substantially as described.

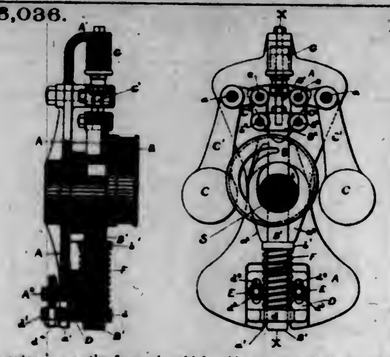
6. The combination, in a machine for sawing pickets, of the guide-rail E, a circular saw, F', having its upper edge extending through a central opening in the guide-rail and projecting above the same, the inclined circular saws Z on opposite sides of the guide-rail, and the guide-board P', arranged on one side of the guide-rail, substantially as described.

7. In a machine for sawing pickets, the combination of the saw F', for cutting the longitudinal kerf in the board, with the vertically-inclined saws Z, arranged on opposite sides and in rear of the saws F', said saws Z cutting inclined kerfs in the board, the cutting portions of the saws F' Z intercepting each other in the same longitudinal plane, substantially as described.

386,036. STEAM-ENGINE GOVERNOR. FREDERICK A. SCHEFFLER, Erie, Pa., and THEODORE SCHEFFLER, Paterson, N. J., assignors to the Erie City Iron Works, Erie, Pa. Filed Dec. 21, 1887. Serial No. 258,634. (No model.)

Claim.—1. In a steam-engine governor of the class herein named, the combination of the eccentric B, having an elongated shaft-opening, *b*, and a stem, B', extending therefrom in a plane passing through the greatest diameter of said opening *b*, the spring F, coiled on said stem and seated at one end on a collar on said stem and at the other

386,036.



on an extension on the frame, in which said stem is guided, the bell-crank weight-lever C', weights C on the long arms of said levers, and links C^2, connecting the short arms of said levers with the said eccentric on the opposite side from said stem.

2. In a steam-engine governor of the class herein named, the combination of the eccentric B, having an elongated shaft-opening, *b*, and a stem, B', extending therefrom in a plane passing through the greatest diameter of the said shaft-opening, the spring F, coiled on said stem and seated at one end on a collar on said stem and at the other on an adjustable seat, *d*, in which said stem is guided, the bell-crank weight-levers C', weights C on the long arm of said levers, and links C^2, connecting the short arms of said levers with the said eccentric on the opposite side from said stem.

3. In a steam-engine governor of the class herein named, the combination of the eccentric B, having an elongated shaft-opening, *b*, and a stem, B', extending therefrom in a plane which passes through the greatest diameter of said shaft-opening, the spring F, coiled on said stem and having a seat at one end on said stem and at the other end on the extension *d*, in which said stem is guided, one of which seats is adjustable, a cross-arm, B^2, extending from said eccentric on the side thereof opposite the said stem, links C^2, pivoted to said cross-arm and to the short arms of the weight-levers C', the said weight-levers C', and the weights C on said levers.

4. In a steam-engine governor of the class herein named, the combination, substantially as set forth, of the eccentric B, having an elongated shaft-opening, *b*, a stem, B', and cross-arm B^2, extending therefrom in opposite directions and in a line passing through the greatest diameter of said shaft-opening, a dash-pot piston-stem extending from said cross-arm B^2 in the said diametrical line, a dash-pot attached to the frame A to receive said piston-stem, an extension, *d*, connected with the frame of the governor, which receives and guides said stem B', a collar, *b'*, on said stem, a coiled spring on said stem B' between said collar and said extension *d*, weights C, bell-crank weight-levers C', and links C^2, connecting the short arms of said levers with said cross-arm B^2.

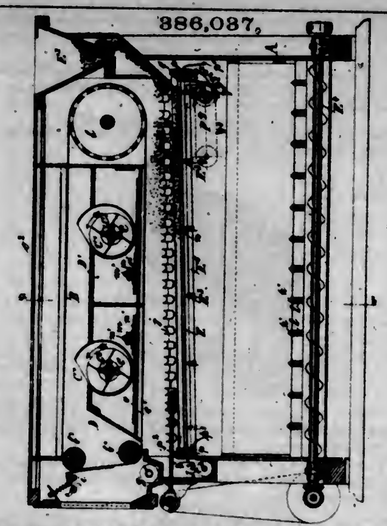
5. In a steam-engine governor of the class herein named, the combination, with an eccentric adapted, substantially as shown, to be shifted diametrically on the engine-shaft, of centrifugal weights for moving said eccentric, which are on the long arms of bell-crank levers, which have their short arms connected with the eccentric by links of such length, as shown, that said weights are held beyond their line of gravity when they are in their normal position, as set forth.

386,037. DUST-COLLECTOR. HERMANN SAXE, Dresden, Saxony, Germany, assignor of one-half to Henry Simon, Manchester, England. Filed May 22, 1886. Serial No. 203,067. (No model.)

Claim.—1. In a machine for separating light and heavy substances, the combination of an endless traveling filtering-cloth, a partition dividing the space inclosed by the cloth into separate compartments, and a fan located within said space and communicating with one of said compartments through its inlet and with the other compartment through its outlet, whereby air is sucked in through the cloth into one compartment and blown out through the cloth in the other compartment, substantially as described.

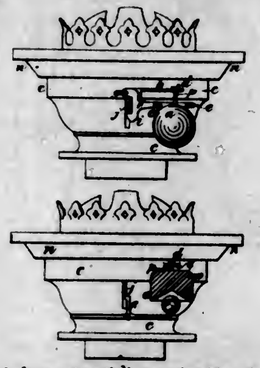
2. In a machine for separating light and heavy substances, the combination of an endless traveling filtering-cloth, a box or partition located in the space inclosed by said cloth, whereby one portion of the cloth-surface is exposed to the influence of a suction-blast and another portion is cut off from the influence of the suction-blast, but exposed to the action of a forcing-blast, a fan located within the space inclosed by said cloth to draw air through one portion of the filtering-cloth and force it through another portion, and a beater, located in contact with that portion of the cloth cut off from the influence of the

386,037.



suction-blast, but under the influence of the forcing-blast, substantially as described.

386,038. EXTINGUISHER MECHANISM FOR LAMPS. WILLIAM SHELMERDINE, North Dulwich, County of Surrey, assignor to James Hinks & Son, (Limited,) Birmingham, England. Filed Apr. 13, 1887. Serial No. 234,650. (No model.) Patented in England Mar. 5, 1887, No. 3,414; in Belgium Apr. 5, 1887, No. 77,005, and in France Apr. 7, 1887, No. 182,718.



Claim.—1. In an automatic lamp-extinguisher, the combination, with an extinguisher-lever and a spring for actuating it, of a pendent weight freely suspended from the outer side of the lamp and provided with a sloping surface, a two-armed catch-lever pivoted on the outer side of the lamp, one of the arms of said lever having a catch-tooth that normally holds the extinguisher-lever against the stress of its actuating-spring, the other arm of said lever having an abutment which, when the lamp is appreciably tilted, comes in forcible contact with the sloping part of the pendent weight to release the catch-tooth from the extinguisher-lever, and through the stress of its spring actuate the extinguisher to extinguish the lamp, substantially as set forth.

2. In an automatic lamp-extinguisher, the combination, with the shell *c*, the extinguisher-operating lever *j*, pivoted thereto, and the spring *l'*, of the pendent weight *a*, suspended from said shell, the double-armed catch-lever *f*, having a catch-tooth, *i*, on one arm and the ring *e* on the other arm, said parts being arranged for operation substantially as and for the purposes set forth.

386,039. COMPOSITION FOR ARTIFICIAL MARBLE. LEON VAN DEN STEEN, Laeken, Brussels, Belgium. Filed Sept. 16, 1887. Serial No. 249,833. (No specimens.) Patented in Belgium May 18, 1886; in Russia Oct. 11 and 23, 1886; in France Jan. 6, 1887; in Austria-Hungary Jan. 8, 1887, and in Italy Jan. 19, 1887.

Claim.—1. A composition forming artificial marble, consisting of plaster-of-paris or gypsum and a liquid compound of glue, rosin, turpentine, and water, substantially as set forth.

2. A composition forming artificial marble, consisting of plaster-of-paris or gypsum, glue, rosin, turpentine, a coloring-matter, and water, substantially as described.

386,040. HOE. EDWIN H. SUBLETT, St. Louis, Mo. Filed Jan. 3, 1888. Serial No. 259,583. (No model.)

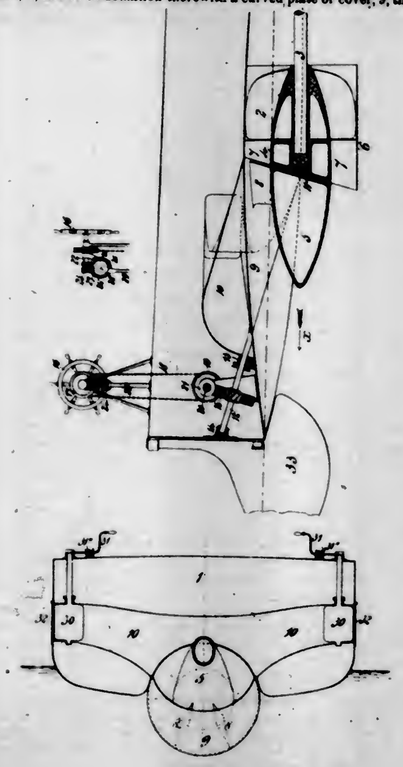


Claim.—1. As a new article of manufacture, a hoe having a shank provided with diagonal cross-cuts, substantially as and for the purpose set forth.

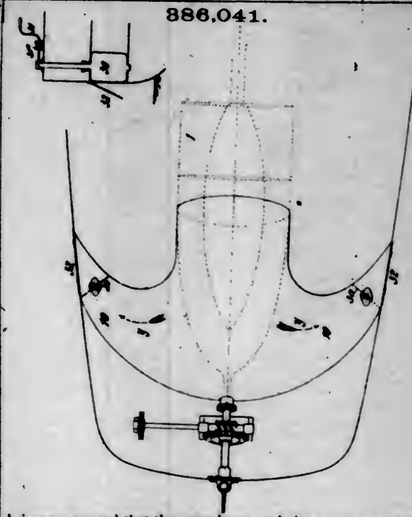
2. A hoe having a shank provided with diagonal cross-cuts and barbs projecting from the corners of the shank, substantially as and for the purpose set forth.

386,041. PROPELLING AND STEERING APPARATUS FOR SHIPS, &c. JOHN I. THORNYCROFT, Church Wharf, Chiswick, County of Middlesex, England. Filed May 27, 1886. Serial No. 203,396. (No model.) Patented in England Jan. 13, 1886, No. 578.

Claim.—1. Apparatus for propelling and steering a vessel, comprising a screw-propeller with a rearward body having a movable part, 5, and in combination therewith a curved plate or cover, 9, these



386,041.



being so arranged that they may be rotated about a common axis to open or close, as required, communication with passages (or a passage with lateral branch) formed in or through the vessel to its respective sides, substantially as herein described, for the purposes specified.

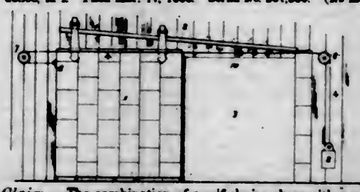
2. Apparatus for propelling and steering a vessel, comprising a screw-propeller with tube 6, a rearward body having a fixed part, 4, and a movable part, 5, with pivot 11, a curved plate or cover, 9, and shaft 12, means for rotating said part 5 and curved plate or cover 9, and passages 10, (or a passage with lateral branches,) formed in or through said vessel to its respective sides, substantially as herein described, for the purposes specified.

3. The combination, for propelling and steering a vessel, of a screw-propeller with tube 6, a rearward body having a fixed part, 4, and a movable part, 5, with pivot 11, a curved plate or cover, 9, with shaft 12, means for rotating said part 5 and curved plate or cover 9, passages (or a passage with lateral branches) formed in or through said vessel to its respective sides, and valves 30, all substantially as herein described, for the purposes specified.

4. In apparatus for propelling and steering a vessel, the combination, with the propeller, of a tube, 6, surrounding it, a rearward body having a fixed part, 4, and a movable part, 5, which, with a curved plate or cover, 9, is mounted to revolve upon the shaft 12, a hand-wheel, 16, mechanically connected with said shaft, an opening or space in the lower part of the hull of the vessel, adapted to be opened and closed by the said plate 9, and passages connecting with said space and formed in or through said vessel to its respective sides, substantially as described.

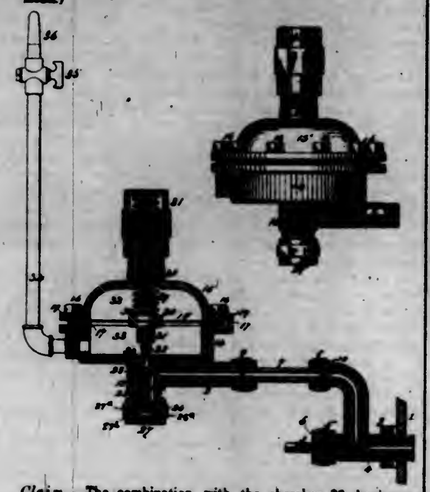
5. In apparatus for propelling and steering a vessel, the combination, with a propeller, of a tube surrounding it, a rearward body having a fixed portion, 4, and a movable part, 5, which, with a curved plate, 9, is mounted to revolve upon the shaft 12, a hand-wheel, 16, mechanically connected with said shaft to revolve the same, an opening or space in the lower part of the hull, adapted to be opened and closed by the said plate, passages connecting with said space and formed in or through the vessel to its respective sides, and valves 30, arranged in said passages to open and close the same, substantially as described.

386,042. SELF-CLOSING DOOR. MARSHALL TILLOTSON, Lawrence, Mass., assignor to the Providence Steam and Gas Pipe Company, Providence, R. I. Filed Mar. 17, 1888. Serial No. 267,586. (No model.)



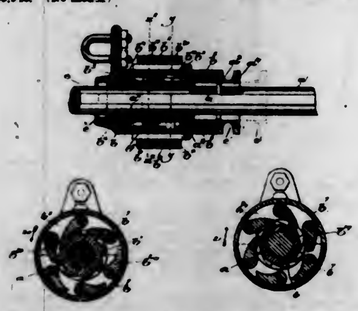
Claim.—The combination of a self-closing door with a counter-balancing-weight tending to hold the door open, a cord connecting the said weight and door and passing over a pulley and across the doorway, the said cord being joined opposite the doorway with a device capable of being severed by heat.

386,043. AUTOMATIC VALVE. DAVID J. TERLIN and GUSTO R. HENDERSON, Belleville, Ill. Filed Dec. 5, 1887. Serial No. 257,232. (No model.)



Claim.—The combination, with the chamber 33, having an eduction-port, the diaphragm 18, closing one side of said chamber, a screw-threaded socket on said diaphragm, the extension 13, having a chamber, 12, therein provided with an induction-port and with an eduction-port leading to the chamber 33, and the valve-seat 24, of a screw-threaded valve-stem screwed into said socket 21 and projecting into said chamber 12, a valve on said stem adapted to rest upon the seat 24, a guide-rod projecting from said valve, a removable socket, 26, in said chamber 12, for receiving the end of said guide-rod, a flange, 26', on said socket, packing arranged above and below said flange, and a cap screwed upon the end of the extension 13 over said packing, as shown, and for the purposes set forth.

386,044. REVERSIBLE RATCHET-CLUTCH MECHANISM. WILLIAM B. TURNER, New York, N. Y., assignor to the Turner-Beard Automatic Brake Company, same place. Filed Feb. 14, 1888. Serial No. 263,946. (No model.)

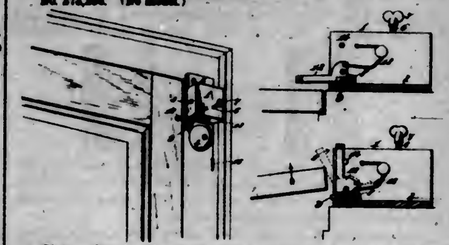


Claim.—1. In a reversible ratchet-clutch mechanism, a shaft, a shell, and a sleeve on the said shaft, combined with two sets of oppositely-inclined teeth and with pawls or latches to co-operate with the said teeth, substantially as described.

2. In a reversible ratchet-clutch mechanism, a shaft, a shell, and a sleeve on the said shaft, combined with two sets of oppositely-inclined teeth and with gravity pawls or latches to co-operate with the said teeth, substantially as described.

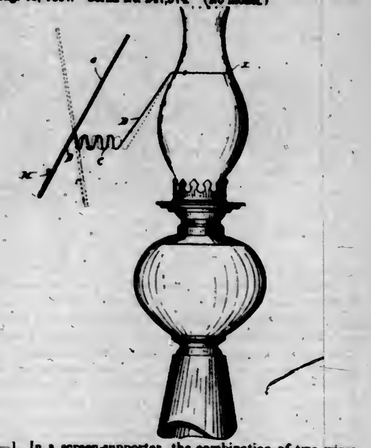
3. In a reversible ratchet-clutch mechanism, a shaft and a sleeve provided with oppositely-inclined teeth, as *b b'*, combined with a shell and a series of pawls pivoted to said shell to co-operate with the said inclined teeth, substantially as described.

386,045. BURGLAR-ALARM. RICHARD H. UEBERROTH, Toledo, Ohio, assignor to Lorey Coats, Chicago, Ill. Filed May 1, 1888. Serial No. 272,204. (No model.)



Claim.—In a burglar-alarm, the combination of a casing having a slot, a vibratory gong-hammer projecting through said slot, a gong to be struck by the hammer, and a swinging locking-plate pivoted outside the casing adjacent to the slot therein to partially cover said slot and hold the hammer from vibration while said locking-plate is turned to project into the path of an opening door or window, substantially as described.

386,046. LAMP-SHADE. GENEVIEVE WATSON, Seattle, Wash. Filed Aug. 19, 1887. Serial No. 247,374. (No model.)

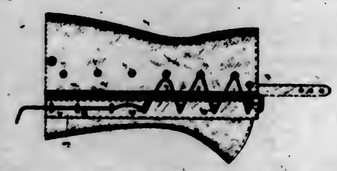


Claim.—1. In a screen-supporter, the combination of two wires united at their mid-length, having a screen-rest at one extremity and an adjustable loop at the other, formed by the wires adjustably secured one to the other, as set forth.

2. In a screen-supporter, the combination, with a screen-rest, of the wires A B, having their ends looped around each other, for the purpose described.

3. In a screen-supporter, the combination, with the loop and the rest, of an integral wire connecting said loop and rest, and said wire being bent in a zigzag shape, as shown, whereby the distance between the loop and rest may be varied, substantially as set forth.

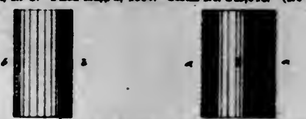
386,047. LEGGIN. WILLIAM H. WILEY, Hartford, Conn. Filed Feb. 27, 1888. Serial No. 265,473. (No model.)



Claim.—As an improved article of manufacture, the leggin consisting of the body having front and rear flaps, the front one of which is provided with a pocket, lacing-studs attached to the outside of the rear flap, a metallic stiffening-strip inclosed within said pocket, inward-projecting eyes attached to the under side of said strip, and the lacing-cord permanently strung through said eyes and adapted to engage the

said studs when the flaps are made to overlap one another, substantially as set forth.

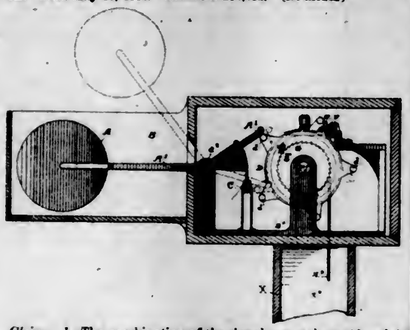
386,048. PACKING FOR CONDENSER-TUBES. WILLIAM H. VOSE, New York, N. Y. Filed Aug. 2, 1887. Serial No. 245,918. (No model.)



Claim.—1. A packing for the tubes of surface-condensers, consisting of a cylindrical tube composed of spirally-wound cord or stay-lacing, the coils of said cord or stay-lacing being united edge to edge by an adhesive cement, substantially as described.

2. A packing for the tubes of surface-condensers, consisting of an interior re-enforcing shell composed of a woven fabric, and an exterior layer composed of a spirally-wound cord or stay-lacing, the coils of which are united to the shell and to each other by a cement, substantially as described.

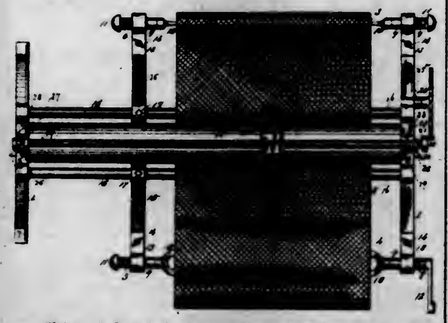
386,049. RAILWAY-SIGNAL. GEORGE H. WEBSTER, San Francisco, Cal. Filed May 10, 1887. Serial No. 237,732. (No model.)



Claim.—1. The combination of the signal arm or lever A', weight C, disk or plate D, with pins *d*, to engage said lever, winding barrel and weight F H, connected to said plate, and a stop mechanism composed of a secondary disk, 8^x, with stop-pins *s s*, an electro-magnet in an electric circuit, and an armature-lever adapted to control said disk, constructed and applied for operation, substantially as set forth.

2. In an electric signal for railways, the combination of the weighted arm or lever A', carrying a signal, the revolving setting disk or plate D, with stops or pins *d d*, means, substantially as described, for moving said plate, a stop mechanism comprising a secondary disk having stop-pins adapted to control the movement of the plate, an electro-magnet in an electric circuit and controlling said stop mechanism, and a circuit-closer, W, located in position to be acted on by a moving train, substantially as set forth.

386,050. CLOTH-MEASURING MACHINE. CHARLES H. YOUNG, Leadville, Colo., assignor of one-half to Roderick F. McLeod and Byron H. Townsend, both of same place. Filed Aug. 18, 1887. Serial No. 247,295. (No model.)



Claim.—1. In a cloth-measurer, the combination of a supporting-frame, 1, the rods 16, secured to the frame, the bar 15, adjustable on the rods, the shafts 5 and 6, mounted on the bar, the shafts 7 and 8, mounted on one end of the frame, the spools or boards supported on the shafts, a friction-roller, 18, journaled on the frame between the rods, having a crank, 22, on one end, provided with a pin, 23, a stud, 25^a, on the frame, and a graduated disk, 25, mounted on the stud, having cogs 24, engaged by the pin, substantially as described.

2. In a cloth-measurer, the combination of a supporting-frame, 1, the rods 16, secured to the frame, the bar 15, adjustable on the rods, the shafts 5 and 6, mounted on the bar, the shafts 7 and 8, mounted on one end of the frame, the spools or boards supported on the shafts, the standards 19, supported on the frame, having slots 20 and catches 26, and the friction-roller 18, between the rods, having journals 21, occupying the slots, substantially as described.

3. In a cloth-measurer, the combination of the supporting-frame 1, the rods 16, secured to the frame, the bar 15, adjustable on the rods, the shafts 5 and 6, mounted on the bar, the shafts 7 and 8, mounted on one end of the frame, the spools or boards supported on the shafts, the standards 19, supported on the frame, having slots 20 and catches 26, the friction-roller 18 between the rods, having journals 21, occupying the slots, a crank, 22, on one of the journals, provided with a pin, 23, a stud, 25^a, on the frame, and a graduated disk, 25, mounted on the stud, having cogs 24, engaged by the pin, substantially as described.

4. In a cloth-measurer, the combination, with a supporting-frame, of the bar, the shafts mounted on the frame and on the bar, the boards or spools supported on the shafts, standards on the frame, having slots, the shaft or rod occupying the slots, and the tape spool and guide mounted on the shaft or rod, substantially as described.

5. In a cloth-measurer, the combination, with a supporting-frame, of the shafts 5 6 7 8, spools or boards 3 4, standards 19, shaft or rod 27, spool 30, having graduated partly-separated tape 31, and the guide 33, by which the spool and tape are held in place, substantially as described.

6. In a cloth-measurer, the combination of the frame 1, shafts 5, 6, 7, and 8, boards 3 4, handle 12, rods 16, bar 15, clamps 13, friction-roller 18, crank 22, pin 23, disk 25, spool 30, and guide 33, substantially as described.

7. In a cloth-measurer, the combination of the frame 1, boards 3 4, shafts 5, 6, 7, and 8, handle 12, clamps 13, adjustable bar 15, friction-roller 18, crank 22, pin 23, disk 25, spool 30, measuring-tape 31, and guide 33, substantially as described, and for the purpose set forth.

386,051. LEATHER COIL FOR WASHERS. GEORGE H. AVERY, Easthampton, Mass. Filed Sept. 19, 1887. Serial No. 250,033. (No model.)



Claim.—The leather-washer coil or sleeve herein described, formed from a strip of leather of trapezoidal form in cross-section, substantially as set forth.

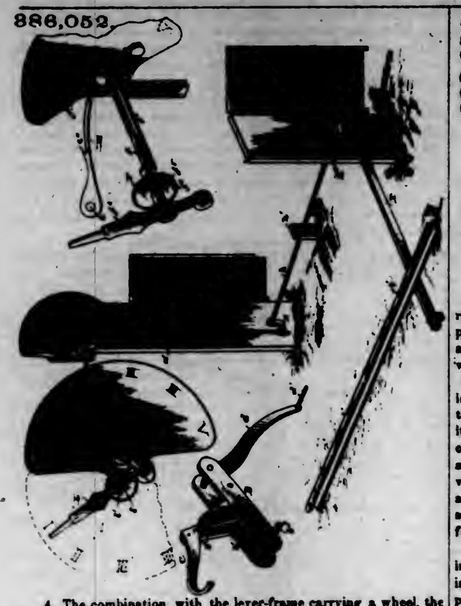
386,052. RAILWAY TIME-SIGNAL. CHARLES BARRY, Corning, N. Y., assignor of fifty-one one-hundredths to Austin Lathrop and George J. McGee, same place. Filed Feb. 1, 1888. Serial No. 262,637. (No model.)

Claim.—1. As an improvement in railroad-signals, the pivoted lever-frame carrying a wheel and having a curved or hooked arm, the index-shaft, the wheel secured thereon, the spring encompassing said shaft, and the vertical rod engaging said curved or hooked arm, substantially as shown and described.

2. The pivoted lever-frame having the curved arm *d*, provided with a projecting pin, in combination with the index-shaft wheel having a pin or stud and the spring-actuated arm, substantially as shown and described.

3. The combination, with the clock mechanism, of the lever-frame, the outer minute-wheel carried thereby, the index-shaft carrying the index-hands, the wheel having a segment of its teeth removed, the curved arm *d*, the spring-actuated arm, and the coil-spring connected to said lever-frame, substantially as shown and described.

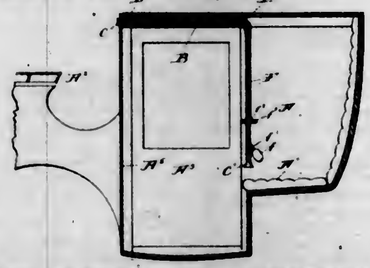
386,052.



4. The combination, with the lever-frame carrying a wheel, the curved or hooked arm C, secured to said frame, and the index-shaft wheel, of the vertical rod having a circular groove and the track-lever having connection with said rod, substantially as shown and described.

5. The combination, with the clock mechanism and the index-hand together with its shaft and wheel, of the vertical rod having a grooved portion in contact with said lever-frame, the bell-crank levers, the rod or pipe, the spring connected to one of said bell-crank levers, and the lever extending under the track, substantially as shown and described.

386,053. CARRIAGE SPEAKING-TUBE. GEORGE A. BEACH, Chicago, Ill., assignor of one-half to James F. Sumes, same place. Filed Mar. 15, 1887. Serial No. 230,988. (No model.)

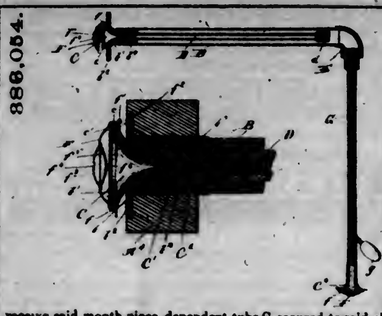


Claim.—The combination, with a rigid or non-folding closed carriage-body, of a telescoping or sliding speaking-tube, B D F, having mouth-pieces C C', the stationary tube or guide B, communicating with a hole or opening through the carriage-body, and the carriage-body being provided with a socket to receive and conceal said mouth-piece C, said tube D sliding or telescoping entirely within the carriage-body, substantially as specified.

386,054. CARRIAGE SPEAKING-TUBE. GEORGE A. BEACH, Chicago, Ill., assignor to himself and James F. Sumes, same place. Original application filed Mar. 15, 1887, Serial No. 230,988. Divided and this application filed Nov. 26, 1887. Serial No. 256,205. (No model.)

Claim.—1. The combination of a carriage-body, A, stationary tube B, having a thimble, *b'*, at its outer end, said tube B being secured at the top of the carriage under the upholstery and provided with an elbow, E, at its inner end, sliding tube D, provided with a mouth-piece, C, at its outer end, said carriage-body being provided with a socket to

386,054.



receive said mouth-piece, dependent tube C, secured to said elbow and provided with a mouth-piece, C^x, said mouth-piece being furnished with a hinged cap, F, provided with a double-disk whistle, one disk of said whistle being integral with said hinged cap, substantially as specified.

2. The combination of carriage-body A, stationary tube B, having thimble *b'* at its outer end, said tube B being secured at the top of the carriage under the upholstery and provided with an elbow, E, at its inner end, sliding tube D, provided with a mouth-piece, C, at its outer end, said carriage-body being provided with a socket to receive said mouth-piece, dependent tube G, secured to said elbow and provided with a mouth-piece, C^x, said mouth-piece being furnished with a hinged cap, F, provided with a double-disk whistle, and one disk of said whistle being integral with said hinged cap-disk, said tube G being furnished with flexible rubber bulb *g*, substantially as specified.

3. In a carriage speaking-tube, the combination, with a speaking-tube, of its mouth-piece or bell, a hinged perforated cap-disk having a flange fitting over the rim of said mouth-piece, and a second perforated disk inside said cap-disk and forming with said cap-disk a whistle, substantially as specified.

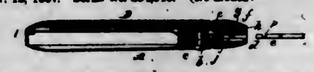
4. The combination, with a carriage and carriage speaking-tube, of a wire spring mouth-piece-holder clamp, H, having a pivot portion, *h'*, hinged to the carriage-frame, and arms A^2 A^3 and A^4 A^5 standing in planes about at right angles to each other and connected by spring-coils A^4 A^4, substantially as specified.

5. The combination, with a speaking-tube, of a wire spring-clamp, H, having hinge *h h'*, arms A^2 A^3, clamp-arms A^2 A^5, connected at an angle to said arms A^2 A^3 by spring-coils A^4 A^4, said clamp-arms A^5 A^5 having coiled or curved ends A^5 A^5, substantially as specified.

6. In a carriage speaking-tube, the combination, with a speaking-tube, of its mouth-piece or bell C, furnished with an inner sleeve, C', and an outer sleeve, C^2, said sleeves C' C^2 forming an annular chamber between them to fit and receive the end of the speaking-tube, substantially as specified.

7. In a carriage speaking-tube, the combination, with a speaking-tube, its mouth-piece or bell C, having a shoulder or rim, *c*, furnished with an inturned flange or rim, *c'*, and a hinged cover, F, having a flange, *f*, adapted to fit over said rim *c*, and provided with a central whistle-perforation, and a second perforated disk inside said cap-disk and forming with said cap-disk a whistle, substantially as specified.

386,055. COMBINATION POCKET-TOOL. WILLIAM R. BURRILL, Shelburne, Mass., assignor to George Thomas Drabble and Joseph Charles Perry, both of same place, and Edward Ritchie, Buckland, Mass. Filed Apr. 12, 1887. Serial No. 234,513. (No model.)



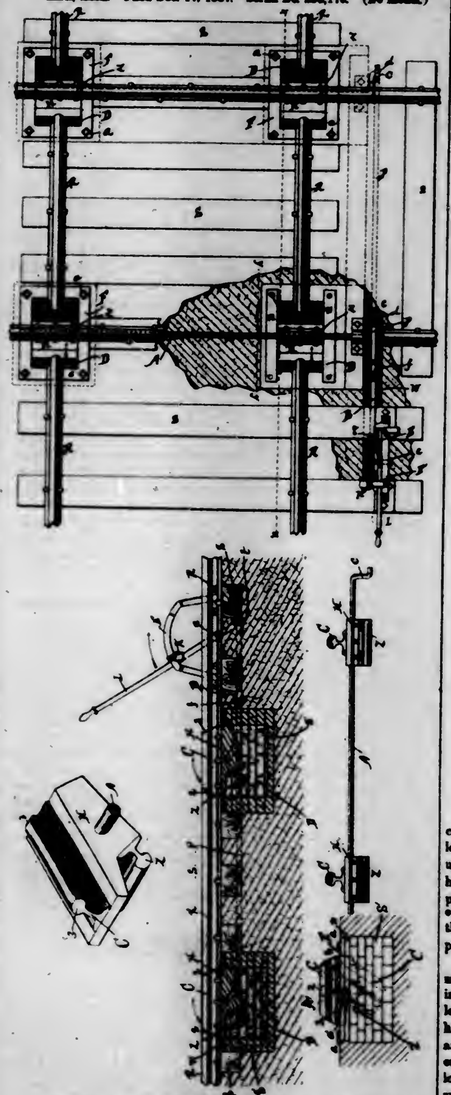
Claim.—1. A tool-handle consisting of a body portion provided with a socket for receiving a tool-shank and a cover pivoted to the upper surface of the body to turn in a plane parallel therewith and provided with a tongue or lug rigidly secured to its under surface and extending partially across the same for engaging a recess in a tool-shank and automatically locking the tool in position when the cover is turned parallel with the body, substantially as described.

2. A tool-handle consisting of a hollow body portion, A, having a socket, *d*, in one end for receiving a tool-shank, and with a grooved surface, *g*, and the cover D, pivoted to the upper surface of the body and provided with a tongue or lug on its under surface for engaging the tool-shank, and with a tongue, *h*, on the end for engaging the grooved surface *g*, substantially as herein shown and described.

3. As an improved article of manufacture, a tool-handle consisting of the body portion A, having the socket *d*, the groove *i*, the grooved surface *g*, and notch *k*, and the cover D, pivoted to the upper surface of the body portion and provided with the tongues *h j* and the nib *l*, as specified.

4. The handle B, consisting of the body portion A, having the socket *d* and groove *i*, and the pivoted cover D, having the tongue *j*, in combination with tools having transversely-grooved shanks, substantially as herein shown and described.

386,056. RAILWAY-CROSSING. EDWARD R. R. COWELL, Ypsilanti, Mich. Filed Dec. 17, 1887. Serial No. 258,176. (No model.)

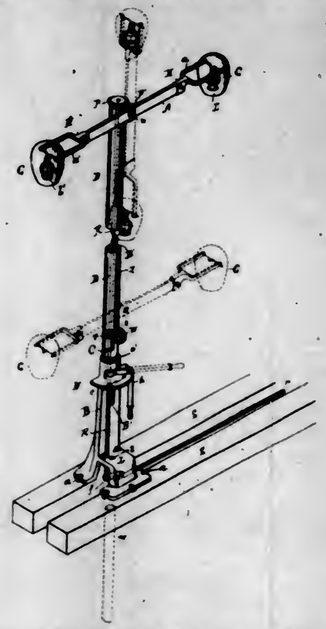


Claim.—1. In combination with the rails of a railway-crossing, the oscillating heads, each head having rail-sections mounted on opposite planes thereof and at an angle to each other, said oscillating heads being located in the four corners of the crossing on rock-shafts, each shaft having a crank at one end, a coupling-bar attached to said crank, said coupling-bar being attached to a suitable lever, whereby said oscillating heads may be simultaneously rotated, as and for the purposes set forth.

2. In combination with the rails of a railway-crossing, the pits formed in the four corners of said crossing, the oscillating heads located in said pits on the rock-shafts, said oscillating heads having rail-sections located thereon at right angles to each other, said rock-shafts coupled together and having a lever for moving simultaneously said oscillating heads, whereby the rail-sections mounted thereon are brought into position so as to register with the main rails of the crossing, substantially as set forth.

3. In a railway-crossing, the combination of the main rails, the pits located in the four corners of the crossing below the separated ends of the main rails, the oscillating heads mounted on the shafts A, said shafts journaled in the top plates, F n, of said pits, the rail-sections C Z, mounted on said oscillating heads, the cranks c, formed on the ends of the shafts A, the pitmen pivoted to said shaft, the bar B, pivoted to the pitman, the lever pivoted to said bar and to the upright frame E, and means for locking said lever to the upright frame, as and for the purposes specified.

386,057. SWITCH-SIGNAL. EDWARD R. R. COWELL, Ypsilanti, Mich. Filed Jan. 21, 1863. Serial No. 261,492. (No model.)



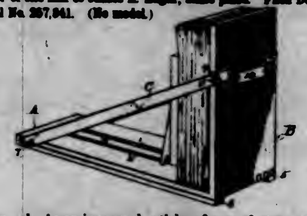
Claim.—1. In a signal device, the combination of the base, the column mounted thereon, having the longitudinal opening, the shaft located in said column, having on the lower end a crank and on its upper end a pinion, the toothed bar located in said column, having the horizontal arm, the pinion mounted on said arm, the supporting-arm pivoted on the sleeve of said pinion, the signal-lights mounted on the ends of said supporting-arm, the cog-wheel for raising and lowering the toothed bar, the lever A, and switch-operating rod n, as and for the purposes specified.

2. In a signal device, the combination of the base, the column mounted thereon, the longitudinal slot in said column, the shaft located in said column, the pinion mounted on the upper end of said shaft, the lever for rotating said shaft, the toothed bar located in said column, having the arm Y, the sleeved pinion mounted thereon, the supporting-arm pivoted on the sleeve of said pinion, signal-lights mounted on the ends of the supporting-arm, and the toothed wheel for raising and lowering said supporting-arm, substantially as and for the purposes specified.

3. In a device for the purposes specified, the combination of the base, the slotted column, the toothed bar located in said column, having the arm Y, the arm A, pivotally carried on said toothed bar and having on its ends the forked heads, the globes pivotally mounted on said forked heads at a point above the horizontal center of said globes, signal-lights supported within said globes, and the cog-wheel and crank for raising and lowering said signal-lights with the supporting-arm, as and for the purposes specified.

4. In combination with the base, the slotted column screw-threaded thereto, the toothed bar having the arm Y, the supporting-arm A, carried by the toothed bar, the globes and lanterns mounted on the ends of the supporting-arm, the cog-wheel and crank for operating the toothed bar, and the pipe m, located in the coil vertically below the toothed bar, so as to receive said toothed bar, as and for the purposes set forth.

386,058. FILE-BOX. HENRY A. GREER, Washington, D. C., assignor of one-half to James A. Edgar, same place. Filed Dec. 14, 1887. Serial No. 257,941. (No model.)



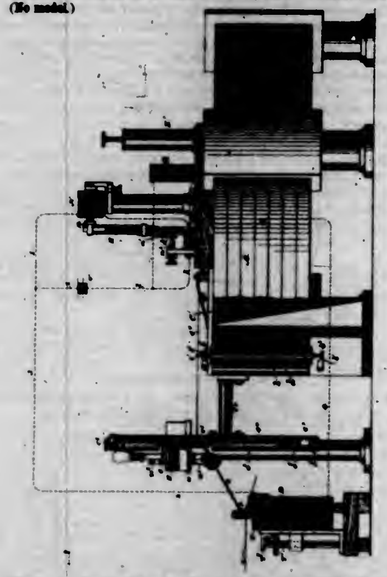
Claim.—1. As an improved article of manufacture, the file-box herein described, consisting of a bottom board, an end board, a sliding adjustable follower, and side pieces and handle formed from a single piece of metal, substantially as described.

2. The file-box herein described, consisting of an end board, the bottom board slotted longitudinally, a follower having a clamping-block rigidly secured thereto and extending below the lower end of the follower, and a loop fixed in the follower to surround the central piece of the bottom board between the slots therein, and a single strip of metal constituting the side pieces and handle of the box, substantially as described.

3. The combination, with a file-box having longitudinal slots in the bottom board and a central piece between said slots, of a T-shaped metal plate arranged with its stem on the face of said central piece and its head across the outer end of the bottom board, substantially as described and shown.

4. The improved file-box herein described, consisting of the bottom board, A, formed with a central piece having slots on each side thereof and strengthening-strips along the bottom sides, an end board, B, arranged as described, the metal strip constituting the side pieces and handle of the box, the T-shaped metal plate on the bottom of the box, and a sliding follower having a loop secured therein to slide on the central piece of the bottom board, all substantially as described.

386,059. TELEGRAPHIC RECORDING APPARATUS. CHARLES CUTTRISS, New York, N. Y. Filed Oct. 17, 1887. Serial No. 252,594. (No model.)



Claim.—1. In a siphon-recorder, a circular magnet having confronting poles, between which there is left a curved opening, one of said poles having a lateral opening, leaving a partially-detached portion, a coil of insulated wire supported upon an axis and turning in bearings, a block of magnetizable material carrying the same and fitting within said lateral opening, and a recording-stylus actuated by the movements of the coil.

2. In a telegraph-recorder, the combination of a movable coil or armature, an axis about which it turns, a recording-arm, a filament strained at an angle to the axis of support of the coil and tending to hold it in a given position, and a second filament secured to the recording arm, through which movements of the coil are communicated to the recording-arm.

3. In a telegraphic recorder, the combination of a movable coil or armature, an axis about which it turns, a recording-arm, a filament strained at an angle to the axis of support of the coil, but supported independently thereof, a connection between the coil and the filament, and connections between the coil and the recording-arm, substantially as described.

4. In a telegraphic recorder, the combination of a movable coil or armature, an axis about which it turns, a recording-arm, a filament strained at an angle to the axis of support of the coil and tending to hold it in a given position, said filament being supported independently of the coil, and a second filament secured to the recording-arm, through which movements of the coil are communicated to the recording-arm, substantially as described.

5. In a siphon-recorder, the combination, with the movable coil and the holder for the siphon, of the supporting-wire for the holder, a filament strained at an angle to the axis of support of the coil and tending to hold it in a given position, and a second filament secured to the holder, through which movements of the coil are communicated thereto.

6. In a siphon-recorder, the reservoir, the adjustable shell for carrying the same, and the parallel links upon which the shell is supported.

7. In a siphon-recorder, the combination, with the siphon and the actuating-coil, of a flexible filament or thread having a yielding support at one end and connected at the other with the siphon, and a second filament crossing the former at an angle and attached thereto, and fixed at one end and having a yielding support for the other, and connected with the coil at or near the other end.

8. In a siphon-recorder, the combination, with the marking-point of the recorder and the armature attached thereto or carried thereby, of an electro-magnet having its pole beneath the marking-point and an adjustable polar face for the magnet, substantially as described.

9. In a siphon-recorder, the combination, with the siphon and its armature, of an electro-magnet and means for rapidly changing the magnetization of the same, and an adjustable polar face for the magnet, whereby its plane may be changed with reference to the end of the marking-point, substantially as described.

10. In a siphon-recorder, an armature fixed to the siphon or its holder, in combination with an electro-magnet, said magnet having an adjustable polar face, an electric circuit including the magnet, a circuit-controller applied to said circuit for changing the magnetization of the magnet, and an adjusting device for the controller for adjusting the rate of change of magnetization to the natural rate of vibration of the siphon, substantially as described.

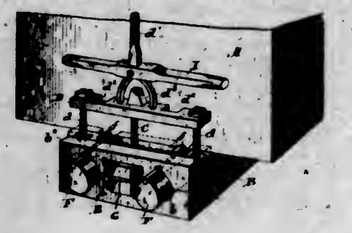
11. A rheotome consisting of a reservoir for holding mercury, a tube connected therewith, means for varying the height of the mercury in the tube, a circuit whose connections are controlled by the movement of the tube, and an electro-magnet connected in said circuit.

386,060. CAR-COUPLING. CYRENUS W. DUNBAUGH, Hutton, Kans., assignor of one-half to J. B. Gardner, same place. Filed Jan. 12, 1888. Serial No. 260,804. (No model.)

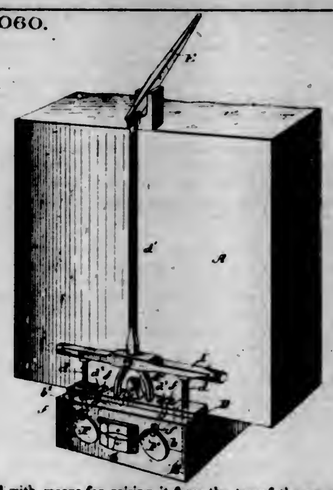
Claim.—1. A draw-head having in suitable socket spring-actuated bumpers at each side of the mouth provided with projections on their upper side, and a yoke carrying the coupling-pin adapted to hold up said pin when the car is to be shackled and to lock the yoke and to keep the pin down when the car is shackled, substantially as described.

2. In a draw-head, the combination of the spring-actuated bumpers with the yoke, coupling-pin, and lever, substantially as described.

3. The yoke D, having slots d^3 in each side at the rear and carrying the coupling-pin, combined with the bumpers having projec-



386,060.



tions and with means for raising it from the top of the car or from the ground.

4. The draw-head having slot *b'* and sockets *b* and upwardly-projecting front edge, b^2, the bumpers F, and having shoulders or projections, the springs f^3, the yoke D, slotted at d^3, and means, as described for raising the yoke.

386,061. DISINTEGRATOR AND STRAINER. WILSON P. DOBSON, Philadelphia, Pa., assignor of one-half to F. Howard Eldridge, same place. Filed Apr. 4, 1888. Serial No. 269,623. (No model.)



Claim.—1. In a disintegrator and strainer, the combination of a cup or receptacle having solid unperforated walls, and a perforated pressing-plate hinged to one side of the cup and adapted in its motion on its hinge to sweep three sides of the cup, substantially as specified.

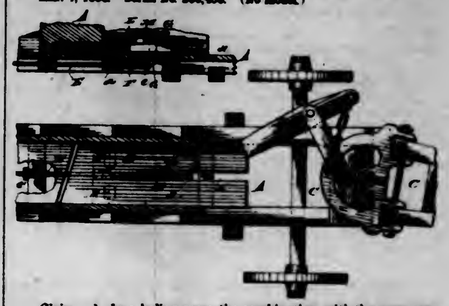
2. In a disintegrator and strainer, the combination of a cup or receptacle having solid unperforated walls, a handle fixed thereto, and a handle pivoted to the receptacle and carrying a perforated pressing-plate adapted to be vibrated therein or entirely withdrawn therefrom, substantially as specified.

386,062. PROCESS OF DRAWING ON MARBLE. REUBEN DURRIN, Clay Centre, Kans., assignor to himself and Harvey Durrin, same place. Filed Apr. 15, 1887. Serial No. 234,913. (No specimens.)

Claim.—1. The herein-described process of drawing on marble, which consists, essentially, in applying a black substance—such as ivory-black or crayon-sauce—over that portion of the surface of a marble slab or sheet where the picture is to be drawn, preserving as much as possible the high lights, and then grinding or cutting away the same until the shadows have the depth, shape, and grade to represent the desired design, substantially as set forth.

2. The herein-described process of drawing on marble, which consists in soaking the thin sheet or slab of marble in water, then applying a black substance—such as crayon-sauce or ivory-black—upon the dressed surface where the picture is to be drawn, preserving as much as possible the high lights, and then grinding or cutting the same away with pumice or other suitable material or article until the shadows have the depth, shape, and grade to represent the desired design, substantially as set forth.

386,063. BALING-PRESS. GEORGE ESTEL, Quincy, Ill. Filed Mar. 7, 1888. Serial No. 266,402. (No model.)



Claim.—1. In a baling-press, the combination, with the press-case and a plunger fitted therein, of a spring supported near the plunger, and a removable key or stud fitted to the plunger and causing tension or compression of said spring as the plunger moves forward on its effective stroke, and against which key or stud the expansive force of the spring is exerted to assist the retraction of the plunger, and allowing the auxiliary plunger-retracting spring to be rendered inoperative by removing the plunger key or stud, substantially as herein set forth.

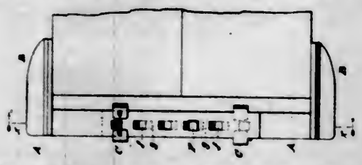
2. A baling-press constructed with a case, a plunger fitted therein, a spring supported near the plunger, a removable key or stud fitted to the plunger and causing a tension or compression of the spring as the plunger moves forward on its effective stroke, and against which key or stud the expansive force of the spring is exerted to assist the retraction of the plunger, and one or more anti-friction rollers supporting the plunger, substantially as shown and described, whereby when the plunger, key, or stud is removed and the auxiliary plunger-retracting spring is rendered inoperative the plunger will move back on the anti-friction rollers while medium-weight bales are being pressed, and when the key or stud is applied to the plunger the latter will be assisted in its backward movement on the rollers by the auxiliary retracting spring device while light bales are being pressed, as herein set forth.

3. A baling-press constructed with a case, a plunger fitted therein, a spring supported near the plunger, a removable key or stud fitted to the plunger and causing a tension or compression of the spring as the plunger moves forward on its effective stroke, and against which key or stud the expansive force of the spring is exerted to assist the retraction of the plunger, and one or more removable anti-friction rollers adapted to support the plunger to assist its free backward movement, substantially as shown and described, whereby when the plunger, key, or stud and the anti-friction roller or rollers are removed the plunger will rest on the press-case to be retracted by the expansive force of the pressed charges of material while heavy bales are being pressed, and when the rollers are placed beneath the plunger it will be retracted more easily on them while medium-weight bales are being pressed, and when the rollers and key or stud are applied to the plunger it will be fully retracted on the rollers by the operation of the auxiliary spring retracting device, as and for the purposes herein set forth.

386,064. MATERIAL FOR RAILWAY-RAILS, BUILDING-BLOCKS, PAVING-BLOCKS, &c. HENRY F. PERRIN, St. Louis, Mo., assignor to the Paperine Manufacturing Company, East St. Louis, Ill. Filed Feb. 16, 1888. Serial No. 264,267. (No specimens.)

Claim.—The material composed of paper-pulp, silicate soda, and barytes, mixed together in substantially the proportions named, and substantially in the manner specified.

386,065. EXTENSION-CLAMP. PETER S. GRAVES, Port Henry, N. Y. Filed Mar. 20, 1888. Serial No. 267,816. (No model.)

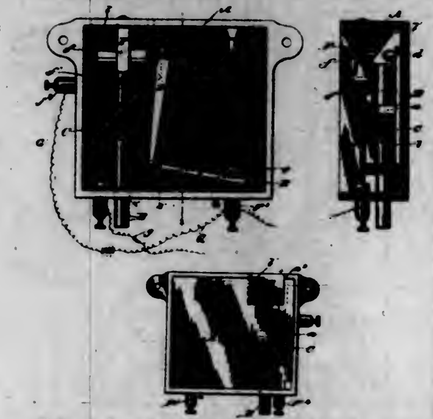


Claim.—1. In an extension-clamp, the two bars, each having an end turned outwardly, the short rack, and the recess provided with rack-teeth, substantially as specified.

2. The two clamp-bars, each having the outwardly-turned end, the keeper-straps, the recess, the rack-teeth, and the short rack, substantially as specified.

3. The two clamp-bars, each having an end turned outwardly at right angles, the recess provided with the rack-teeth, the short rack, the slot-openings, and the keeper-straps, substantially as specified.

386,066. ELECTRIC LOCK. FRANK J. GRIBLEY, Chicago, Ill., assignor to Frederick G. Wheeler, New York, N. Y. Filed Jan. 30, 1888. Serial No. 262,217. (No model.)



Claim.—1. In an electric lock, the combination, with an electro-magnet, of a bolt or detent under stress and an electrical switch, said switch being adapted to break an electrical connection with the electro-magnet and close the same with another circuit adapted to extend the said circuit by the operation of the bolt, substantially as specified.

2. In an electric lock, the combination, with an electrical switch, of a sliding spring-pressed bolt, an electro-magnet, and a separate insulated point distinct from said electro-magnet, for connecting a separate wire adapted to extend the electric circuit beyond said lock, said switch being connected with said bolt, substantially as shown and described, so that the vibrations thereof will operate said switch and alternately connect and disconnect the same with the coil of the electro-magnet and with said other insulated point, as specified.

3. In an electric lock, the combination, with an electrical switch, of a spring-bolt under stress, a lever and armature mechanism, substantially as shown and described, for holding and releasing said bolt, and an electro-magnet for operating said armature mechanism, said switch being connected with said bolt and the coil of the electro-magnet, substantially as shown and described, so that the vibration of the bolt in the direction required to unlock it will also throw the switch and sever the electrical connection with the electro-magnet, substantially as specified.

4. The combination, with an electric lock having a vibrating bolt under stress and connected with an electrical switch, so as to vibrate the same, and an electro-magnet in connection with mechanism, substantially as shown, for holding and releasing said bolt, of a battery and one set of wires, arranged, substantially as shown, with relation to said switch so as to form a short circuit over the coil of said electro-magnet when the switch is thrown in one direction, and another set of wires employed in connection with part of the first set, and arranged, substantially as shown, with relation to said switch so as to cut out said electro-magnet and form a long circuit extending beyond said lock when said switch is thrown in the other direction, substantially as specified.

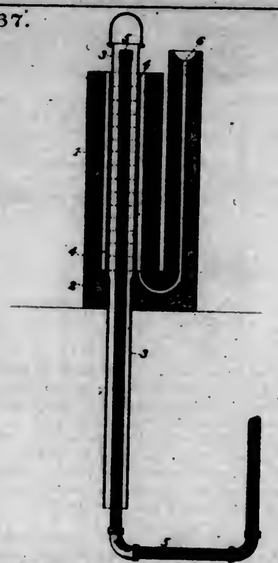
386,067. MOLD FOR HOLLOW ARTICLES. WILLIAM HAINSWORTH, Pittsburg, Pa., assignor to the Pittsburgh Steel Casting Company, same place. Filed May 22, 1888. Serial No. 274,737. (No model.)

Claim.—1. The combination of a mold, a hollow core-bar, and one or more bands or rings formed of molding material fitting loosely around said core-bar, substantially as set forth.

2. The combination of a mold, a hollow core-bar of a length a little more than twice the length of the mold, a portion thereof being reduced in diameter, and one or more bands or rings formed of molding material fitting loosely around said core-bar, substantially as set forth.

3. The combination of a mold, a hollow core, one or more bands or rings formed of molding material and fitting loosely around said core-bar, and means for applying a cooling medium to the interior of the core-bar, substantially as set forth.

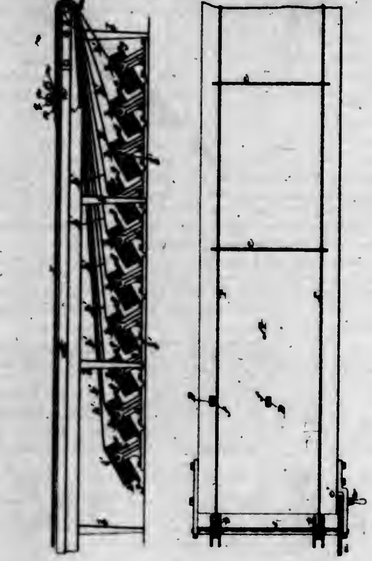
386,067.



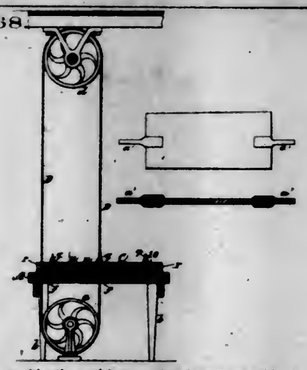
4. The combination of a mold, a hollow core-bar of a length a little more than twice the length of the mold, one or more bands or rings formed of molding material and fitting loosely around the core-bar, and a perforated pipe connected with a water-supply arranged within the core-bar, substantially as set forth.

386,068. MACHINE FOR UNWINDING, DRAWING OFF, AND CUTTING CLOTH. NATHAN HARRIS, Boston, Mass. Filed Sept. 24, 1887. Serial No. 250,632. (No model.)

Claim.—1. The combination, with a cutting board or table, A, provided at one end with a roller, *l*, and having the endless band knife or cutter D, passing through slots in said table, of a series of rests or supports for the webs or pieces of cloth, hinged clamping-jaws for grasping and holding the ends of the several pieces of cloth, and a drawing or winding device consisting of straps or ropes *r*, attached to the clamping device and to a winding shaft or winch; all operating substantially in the manner and for the purpose set forth.



386,068.



2. The combination, with a cutting board or table, A, and the cloth clamping and drawing mechanism, of the arms or brackets *i*, and the removable cloth-supporting boards *g*, placed between the said arms, substantially as and for the purpose set forth.

3. The combination, with the cutting board or table A and the cloth clamping and drawing mechanism, of the arms or brackets *i*, provided with open slots or sockets *b'*, and the removable gudgeons or journal-pieces *d'*, provided with jaws adapted to fit over the ends of the boards on which the webs or pieces of cloth are wound, substantially as set forth.

4. The combination, with a cutting board or table provided at one end with a roller, *l*, of a series of rests or supports for the webs or pieces of cloth, a clamping device comprising two jaws hinged together at one end and provided with screws and thumb-nuts, said jaws grasping the ends of the several pieces of cloth and holding them together at one point, and a drawing or winding drum attached to said clamping device, whereby the several folds or thicknesses of cloth are drawn forward simultaneously and laid one over the other upon the table at a single operation, ready for cutting, substantially as described.

386,069. BUTTON-BOOT. FRED J. HASTINGS, Haverhill, Mass., assignor of one-half to Joseph Goodrich, Jr., same place. Filed Feb. 13, 1888. Serial No. 263,789. (No model.)

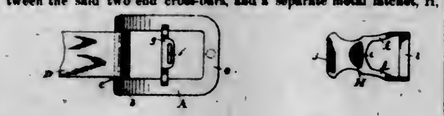


Claim.—1. The combination, with a gaiter, boot, or shoe, of the concealed elastic gore-piece secured at one edge to the lining of the instep-lap, and provided at its free edge with the buttons to engage loosely the button-holes of said lap, and with loops to engage fastenings on the short lip of the upper, substantially as specified.

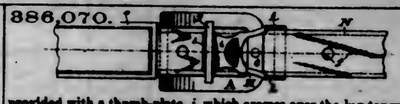
2. The combination, in a button boot or shoe, of the short lip A, provided with fastenings B, the gore-piece secured to the lining of the instep portion, the loops L, for engaging the fastenings B, and the buttons on said gore-piece for engaging button-holes of the instep-lap, substantially as specified.

386,070. HARNESS-BUCKLE. JOHN A. HOLLENBERGER, Wichita, Kans., assignor of one-half to John R. McKee, same place. Filed Nov. 15, 1887. Serial No. 255,191. (No model.)

Claim.—A harness-buckle having, in combination, a buckle-frame, A, provided at one end with a cross-bar, *e*, and at the other end with a cross-bar, *c*, having a lug-tongue, *f*, and a central cross-bar, *g*, between the said two end cross-bars, and a separate metal latchet, H,

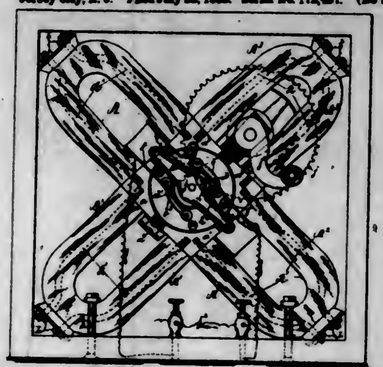


386,070.



provided with a thumb-plate, *i*, which crosses over the lug-tongue bar, and has on its end an upturned flange, *j*, to engage with the central cross-bar, and a loop to encircle the strap having a cross-bar, *l*, which is to take position on the side of the strap opposite that where the said lug-tongue bar is located.

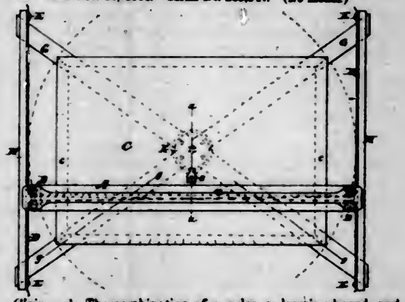
386,071. MAGNETO-ELECTRIC MACHINE. WILLIAM EDGAR, Cambridge, Mass., assignor to the American Magneto Electric Company, Jersey City, N. J. Filed July 30, 1888. Serial No. 173,427. (No model.)



Claim.—1. The double armature above described, composed of the two cores and the two coils, the cores being held together back to back, but magnetically insulated, substantially as shown.

2. In combination, the double armature B B' and its two coils, the magnets A A', &c., and the electrodes *d d'* and *f f'*, whereby the currents are sent in pairs over the line, as set forth.

386,072. DRAWING-BOARD. DANIEL D. HUTSELL, Waynesborough, Pa. Filed Feb. 27, 1888. Serial No. 265,347. (No model.)



Claim.—1. The combination of a ruler, a drawing-board, and a cord having its ends clamped or fixed and passing around pulleys secured to said ruler near its ends, substantially as and for the purpose described.

2. The combination of a drawing-board, a ruler having a pair of pulleys secured near each end, and a cord having fixed ends and passing lengthwise of said ruler, substantially as and for the purpose described.

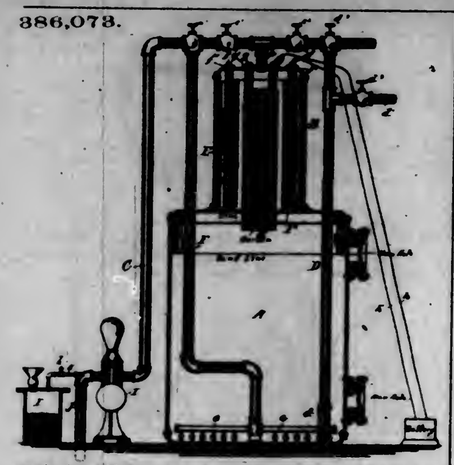
3. The combination of a frame carrying a ruler, and a cord, with a drawing-board pivotally connected to said frame, for the purpose described.

4. The combination of a frame, a drawing-board pivotally connected to said frame, a ruler carried thereby, and a cord connecting the ruler and frame, for the purpose described.

386,073. APPARATUS FOR PURIFYING WATER. OMAR H. JEWELL, Chicago, Ill., assignor to the Jewell Pure Water Company, same place. Filed Dec. 17, 1887. Serial No. 258,200. (No model.)

Claim.—1. In an apparatus for purifying water, the combination, with the filter-tank containing a suitable filtering medium and provided with a discharge or outlet pipe, of the dome mounted on said filtering-tank and communicating therewith, a supply or inlet pipe

386,073.



opening into said dome, and suitable electrodes arranged in said dome and connected to a battery or other source of electricity, substantially as and for the purposes specified.

2. In an apparatus for purifying water, the combination, with the filtering-tank A and dome B, of the hollow cylindrical electrode F, arranged in said dome and connected to one pole of the battery, and the cylindrical electrode G, arranged within the electrode F and connected to the other pole of the battery, substantially as and for the purposes specified.

3. In an apparatus for purifying water, the combination, with the filtering-tank and its discharge-pipe, of the electrodes arranged therein and connected to the battery or other source of electricity, a supply-pipe connected to said tank, and a reagent-receiver connected to the supply-pipe, substantially as and for the purposes specified.

4. In an apparatus for purifying water, the combination, with the filtering-tank and its supply and discharge pipes, of suitable electrodes arranged in said tank and connected to a battery or other source of electricity, a pump connected to the supply-pipe, and a suitable reagent receiver or generator connected to the suction-pipe of the pump, substantially as and for the purposes specified.

5. In an apparatus for purifying water, the combination, with the filtering-tank A, of suitable electrodes arranged therein and connected to a battery or other source of electricity, a supply-pipe for said tank, a receiver, M, connected to said supply-pipe, and a generator, I, connected to said receiver, substantially as and for the purposes specified.

386,074. PROCESS OF MANUFACTURING BOXES. FRANK A. JOHNS, New York, N. Y. Filed Jan. 6, 1886. Serial No. 288,062. (No model.)



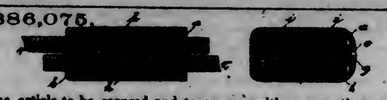
Claim.—The process of uniting the body and end of a box—namely, forming the body, placing it onto a glued portion of a sheet of suitable material supplied with glue on its upper side, inserting the end through the body, and pressing it against the glued sheet, as and for the purpose stated.

386,075. BUCKLE. CARL KNOEBERS, Werden, Prussia, Germany. Filed Apr. 26, 1888. Serial No. 271,773. (No model.)

Claim.—The lock or buckle for straps, traces, and other articles herein described, consisting of two sections, *a b*, adapted to engage

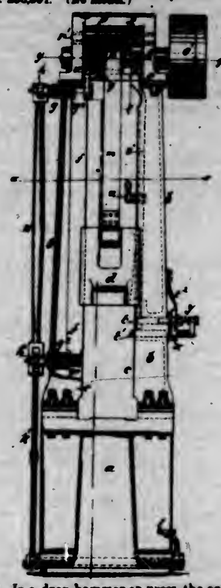


386,075.



the article to be secured and to engage with one another at their edges, said sections being provided with lugs *c*, and a case adapted to surround said sections and to be secured thereon by a spring, *f*, substantially as described.

386,076. DROP-HAMMER. FRANK M. LEAVITT, Brooklyn, N. Y., assignor to the E. W. Bliss Company, same place. Filed Sept. 22, 1887. Serial No. 250,391. (No model.)



Claim.—1. In a drop hammer or press, the combination, with the movable hammer-head and the fixed guides in which the same is movable, a hollow standard in which the guides are formed, and mechanisms, substantially as described, for raising the hammer-head, and tappets for tripping said head, of a clamping-bar located on one of the guides in said hollow standard and extending longitudinally or vertically thereupon, and operating devices, substantially as described, connecting with said bar to project or retract the same, and thus clamp or free the hammer-head at any point in the guides, substantially as set forth.

2. In a drop-hammer, the combination, with the hammer-head and the guides, of the longitudinal clamp-bar *f*, arranged in or parallel with the guides, clamp-screws *g g'*, connected to each end of the bar, cranks or levers *h h'*, connected to said screws, a bar connecting said levers, and an operating or manipulating device, substantially as described, connected thereto, whereby both screws can be partly revolved simultaneously and the clamp-bar projected against or retracted from the hammer-head, substantially as shown and described.

3. The combination, with the hammer-head and its guiding-frame, of the clamp-bar *f*, nuts g^2 g^3, screws *g g'*, crank-arms *h h'*, gravitating connector *k*, and a treadle, *l*, operatively connected with said parts, substantially as shown and described.

4. In a drop press or hammer, the combination with two separable friction-pulleys, a belt or band passing between the two, and a hammer-head attached to said belt, of a reciprocating wedge or separator, *s*, arranged to diverge or separate the pulleys and free the belt when thrust in one way, and to allow the pulleys to approach to grip the belt when moved in the opposite direction, and a gravitating rod carrying said wedge, with tappets in the path of the hammer-head operatively connected with said wedge, substantially as shown and described.

5. The combination, in a drop press or hammer, with a fixed driving-pulley and a separable driven pulley, of a pendulous or movable frame in which said pulley is mounted, a belt or band passing over said separable pulley and between the two pulleys, a hammer-head hung from said band, a vertically-reciprocating separator or wedge, *s*, ar-

ranged to separate one pulley from the other, a gravitating rod carrying said wedge, and projections or tappets arranged in the path of the hammer-head and connected with said separator, substantially as shown and described.

6. In a drop press or hammer, the combination, with the separable pulleys *o n*, a belt, *m*, passing between the same, and a hammer-head, *d*, hung to said belt, of a fixed frame to sustain said pulleys and hammer, with the reciprocating wedge *s*, a fixed protuberance, s^2, abutting against one side of said wedge, and a protuberance, s^3, abutting against the opposite side of said wedge and connected to the movable pulley, substantially as shown and described.

7. In a drop press or hammer, the combination, with fixed and separable friction-pulleys *o n*, a belt, *m*, passing between the two and over the friction-pulley, a hammer-head, *d*, hung from said belt and acting to press the separable pulley against the fixed pulley to grip the belt between them, and a reciprocating wedge, *s*, acting when raised to separate said pulleys to free the belt and let the hammer fall, and when lowered to allow the pulleys to approach to grip the belt and lift the hammer, of the gravitating rod *s'*, connected to said wedge, spring-bolt *t*, sustaining said rod, and tappet *t'*, connected to said bolt and arranged in the path of the falling hammer, substantially as shown and described.

8. In a drop press or hammer, the combination, with the separable friction-pilleys *o n*, the hammer-head *d*, and the belt *m*, connected with said head and passing over and between said pulleys, as described, of the reciprocating separator or wedge *s*, rod *s'*, connected to said wedge, tappets *u* and *t'*, and spring-bolt *t*, arranged and operating substantially as set forth.

9. In a drop press or hammer, the combination, with two separable friction-pulleys, *o n*, a belt or band passing between the two and over one of them, and a hammer-head hung from said belt, of the loose marginal rings *n'* on the pulley *n*, supporting the edges of the belt and holding it free from the pulley when the pulleys are separated, substantially as set forth.

10. In a drop press or hammer, the combination, with a rising and falling hammer-head, of a belt or band on which the same is hung, two separable friction-pulleys between which said belt passes, a vertically-reciprocating separating device for causing the separation and approach of said pulleys, a vertical laterally-movable clamp to clamp the hammer in its guides, a projection connected with the movable pulley, and a projection connected with the clamping device arranged to engage to prevent the action of the clamp when the pulleys are approached, and vice versa, substantially as herein set forth.

11. In a drop-press, the combination, with the hammer-head and a clamping device to hold the same in its guides at any point of its stroke, of the fixed and separable friction-pulleys *o n*, between which the hammer-lifting belt passes, with the movable or pendulous frame *r*, in which the separable pulley is mounted, and an engaging pawl-nose, *v*, on said frame, with the escapement or stop lever *w*, connected to the clamp mechanism and arranged to move across the path of said pawl-nose, substantially as and for the purpose herein set forth.

12. In a drop press or hammer, the combination, with a fixed and a movable pulley, a belt passing between the two and down over the movable pulley, and a hammer-head hung therefrom, of a movable or pendulous frame in which said pulley is mounted, with a clamp arranged to hold the hammer-head at any part of its stroke, a rotary screw-shaft operating said clamp, and a swinging escapement or stop-arm connected to said screw-shaft and arranged to engage said movable frame, substantially as and for the purpose herein set forth.

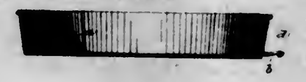
13. The combination of the pulleys *o n*, movable frame *r*, belt *m*, and hammer *d* with the clamp *f*, screws *g g'*, arms *h h'*, connection *k*, operating device *l*, connected therewith, and escapement-arm *w* on screw *g*, engaging frame *r*, substantially as and for the purpose set forth.

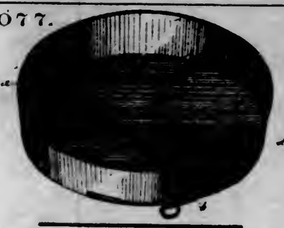
14. The combination, with the clamp-bar *f*, of the screws *g g'*, nuts g^2, arms *h h'*, screwed on ends of said screws, and nuts 3 4, with a reverse thread clamping said arms on opposite sides, substantially as shown and described.

15. The combination, with the tappet *t'* and bolt *t*, of the arm *s*, adjustable screw *y*, and spring t^3, arranged and operating substantially as shown and described.

386,077. CAKE OR PIE PAN. MARIA LITTLETON, Sandusky, Ohio. Filed Nov. 2, 1887. Serial No. 254,122. (No model.)

Claim.—A bake-pan consisting of a side having an inwardly-projecting flange, inward projections, and an opening above said flange, and a spring-arm whose loose end passes through said opening, in combination with a removable bottom.





386,078. CANE-UMBRELLA. JOHN MCCORMICK, Washington, D. C., assignor to the McCormick Cane Umbrella Company, same place. Filed Jan. 5, 1887. Serial No. 223,494. (No model.)



Claim.—1. The combination of the shaft A, the thimble B, the runner D, the ribs C, pivoted to the thimble, and the braces C, U-shaped in cross-section and pivoted to the runner with their open edges outward, each of said braces being provided at its outer end with ears which clasp the corresponding rib, C, and with the integrally-formed tongue *c*, and connected with the rib by means of the pivot P, passing through the ears and through the rib at a point approximately in its central line.

2. In an umbrella, the combination, with a suitable shaft, of a runner sliding thereon and having its inner surface longitudinally recessed, a latch pivoted in said recess and having one of its ends turned inward in a lug adapted to enter corresponding notches in the shaft and its opposite end turned outward to form a pin for operating it, and a spring interposed between the latch and the outer surface of the runner and pressing inward the inwardly-turned end of the latch, substantially as and for the purpose set forth.

386,079. PIANO-ACTION. JAMES MCDONALD, Brooklyn, N. Y.; Mary H. McDonald (administratrix of said James McDonald, deceased) assignor to Bunce & Benedict, same place. Filed Feb. 4, 1887. Serial No. 226,602. (No model.)



Claim.—1. In a piano-forte action, the combination of a key, a simple transmitter rigidly fixed with relation to the part to which it is attached, and a pivoted hammer having a hammer-butt made substantially circular or arc-like in outline.

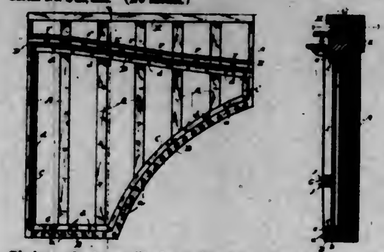
2. In a piano-forte action, the combination of a key, a pivoted hammer having a hammer-butt made substantially circular or arc-like in outline, and a transmitter upon which the circular edge of said hammer-butt rests, substantially as set forth.

3. A pivoted hammer having a hammer-butt made substantially circular or arc-like on one edge, in combination with a piano-key, the rear or transmitting end of which is directly in contact with the circular edge of said hammer-butt, substantially as set forth.

4. In an upright-piano-forte action, a pivoted hammer having a a hammer-butt with its lower edge substantially circular in outline, in combination with a key having a transmitting part in substantially a horizontal plane on its rear end, the curved edge of the hammer-butt resting directly upon said transmitting part in whichever position the key may be held at rest, substantially as set forth.

5. In a piano-forte action, the strings, the damper-rail, the damper-levers pivoted in said damper-rail, and having damper-pads adapted to said strings, in combination with the keys of the piano, the hammer-butt rail behind the rear ends of the keys, the hammers pivoted in said hammer-rail, having hammer-butts and hammer-heads, and being also provided with regulating-screws, carrying pads, which co-operate with said damper-levers, and said hammer-butts having one edge substantially circular in outline, said curved edge being acted upon by a plane transmitting-surface rigidly attached to the key, substantially as set forth.

386,080. PIANO-FORTE. JAMES MCDONALD, New York, N. Y.; Mary H. McDonald (administratrix of said James McDonald, deceased) assignor to Bunce & Benedict, Brooklyn, N. Y. Filed June 24, 1887. Serial No. 242,422. (No model.)



Claim.—1. A metallic frame for pianos, comprising in a single piece longitudinal parallel bars proportional in length to the length of the strings and in line with the strings, a marginal plate, hitch-pins on said marginal plate, a continuous flange for the support of the sounding-board, a hammer-bridge, a top plate above the hammer-bridge having an overhanging flange for the retention of the wrest-plank, said top plate being formed with said parallel bars, which extend above the hammer-bridge, and a down-bearing bar located above the hammer-bridge between it and said top plate, said down-bearing bar being connected to the bridge by intermediate brackets, substantially as set forth.

2. The metallic frame having a supporting-flange for the sounding-board, in combination with the sounding-board resting on said flange, wooden strips on the outer surface of the sounding-board, and attaching-screws extending through said flange and board and into said strips, as set forth.

3. The metallic frame having a marginal plate or rim, the hitch-pins thereon, and a supporting-flange for the sounding-board, in combination with the sounding-board resting on said flange, and strips on said sounding-board which project outward beyond said marginal plate, whereby the strings press upon said strips and hold said sounding-board in place, substantially as set forth.

4. The metallic frame having in one piece longitudinal bars, hammer-bridge, and top plate having an overhanging flange, said top plate being connected to said hammer-bridge by said bars, whereby a space is formed between said top plate and bridge and in front of said bars, which is wide at one end and gradually narrows to the other end, over which space said flange projects, in combination with the wrest-plank, which is inserted into said space and which rests in front of said bars against said hammer-bridge throughout its entire length, and which is held beneath said overhanging flange, substantially as set forth.

5. The metallic frame having hammer-bridge, top plate having overhanging flange, and connecting-bars, in combination with the wrest-plank between said hammer-bridge and top plate and resting on said bars beneath said overhanging flange, blocks inserted between said bars and glued to the wrest-plank, and a back piece behind the bars glued to said blocks, substantially as set forth.

6. In a metallic frame for a piano, comprising longitudinal bars proportioned in length to the length of the strings, a hammer-bridge, and a top plate above the hammer-bridge connected therewith by the longitudinal bars, so that a space is left between said bridge and top plate for the reception of the wrest-plank, said space being widest at the treble end of the frame and gradually narrowing to the bass end, substantially as set forth.

386,081. AUTOMATIC TWINE-HOLDER. DAVID A. MORRISON, Buffalo, N. Y. Filed Jan. 21, 1888. Serial No. 261,482. (No model.)



Claim.—In an automatic twine-holder, the combination of a case consisting of two parts hinged together at one side and provided with a spring-catch at the opposite side for releasing it to open it and securing it when closed, the lower half of the case carrying the ball of twine and the upper half having a perforation for the twine to pass through, a stationary axis secured at the top within the upper half of the case, a twine-holding-spool ring having a perforation through which the twine passes and winds around it, and an arched cross-piece by which it is suspended and turns on the stationary axis, a barrel at the top of the cross-piece surrounding the stationary axis and inclosing a coiled spring having one end fastened to the barrel and the other to the axis, a screw portion on the lower end of the stationary axis carrying a nut having a vertical perforation through it, and a pin rigidly secured to the spool-ring cross-piece and projecting down through the perforation in the nut, the whole combined for conjoint operation, substantially as described.

386,082. JOURNAL-BEARING FOR LAWN-MOWERS. CYRUS NEWHALL, Hinsdale, N. H., assignor of one-half to Lorenzo Stebbins, same place. Filed Mar. 17, 1888. Serial No. 267,583. (No model.)



Claim.—1. A journal or wear box consisting of a tubular plug having a tapering outer wall and a longitudinal scarf, *d*, combined with the strips *g* of compressible material, substantially as and for the purpose described.

2. A journal or wear box consisting of a tubular plug having a tapering outer wall and a longitudinal scarf, *d*, and the hole or enlargement *f* through the walls of the plug, substantially as described.

3. The combination, with the driving-shaft 3 and the frame provided with the hubs 4, having the tapering bores 5 and the oil-holes *a*, of the tubular plugs, each having a tapering outer wall provided with the longitudinal scarf *d*, ranged across one of said oil-holes *a*, and the strips *g*, of compressible material, in the ends of said scarf, substantially as and for the purpose described.

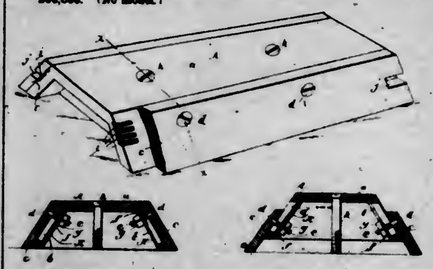
4. The combination, with the driving-shaft and the frame provided with the hubs 4, having the tapering bores 5 and the oil-holes *a*, of the tubular plugs, each having a tapering outer wall provided with the longitudinal scarf *d*, ranged across one of said oil-holes, and having the annular groove *h* and the strips *g*, of compressible material, in the ends of said scarf, substantially as shown and described.

386,083. FENCE OR GUARD. JOSEPH NORWOOD, Brooklyn, N. Y. Filed Apr. 5, 1888. Serial No. 269,736. (No model.)



Claim.—The combination, with the upright pickets or rods A, of the malleable-metal rails or string-pieces B, the said rails or string-pieces having companion lugs upon and formed integral with the same, and between which the upright pickets are adapted to be received and secured, substantially as set forth.

386,084. THRESHOLD OR DOOR-SILL. LEWIS M. PRATT and JAMES M. WALKER, Belleville, Kans. Filed Mar. 3, 1888. Serial No. 266,066. (No model.)



Claim.—1. The combination, in a door-sill, of the body A, having inclined sides, plates bearing on said sides, and devices for adjusting said plates, substantially as described.

2. The combination, in a door-sill, of the body A, having inclined sides provided with elongated slots, plates bearing on said sides, and bolts passing through said plates and slots, and clamp-nuts for said bolts, substantially as described.

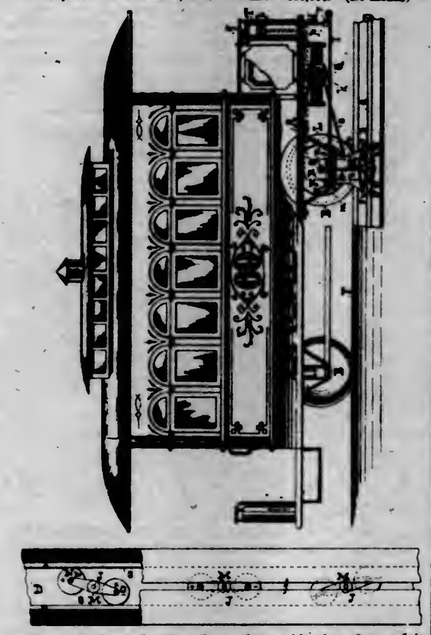
3. The combination, in a door-sill, of the body A, having its horizontal top face and inclined sides slotted, as described, plates *c*, beveled at their upper and lower edges, and bolts passing through said plates and slots and provided with clamp-nuts, substantially as described.

4. The combination, with the body A, having inclined sides slotted, as described, and provided on their under side with recesses intersecting said slots, plates bearing on said sides, and screw-bolts passing through said plates and slots, and clamp-nuts engaging said bolts and resting in said recesses, substantially as described.

5. The combination of the body A, having the inclined sides provided with the notches *i*, and the side plates having the slots *j* over said notches, as set forth.

386,085. ELECTRIC RAILWAY.

Elias R. Rihl, Baltimore, Md., assignor, by mesne assignments, to himself and Albert H. Henderson, same place. Filed Jan. 25, 1888. Serial No. 261,681. (No model.)



Claim.—1. In an electric railway, the combination of a conduit, a pair of insulated conducting-rails projecting from the inner sides of the conduit, a yoke supported by a bar within and susceptible of a movement longitudinally of the said conduit, means, substantially as described, applied to the said bar, whereby the yoke to which it is fastened is adapted to have a rocking motion in a practically horizontal plane, and a contact or current-collecting device attached to each end of the said yoke and insulated therefrom, substantially as and for the purpose specified.

2. In an electric railway, the combination of a conduit, a pair of insulated conducting-rails projecting from the inner sides of the conduit, a yoke supported by a bar within and susceptible of a movement longitudinally of the said conduit, means, substantially as described, applied to the said bar, whereby the said yoke to which it is fastened is adapted to have a rocking motion in a practically horizontal plane, an insulated contact-wheel or other current-collecting device attached to each end of the said yoke and insulated therefrom, a wheeled vehicle situated over and adapted to move longitudinally of the said conduit, carrying an electric motor arranged to propel the same, and wires to connect the current-collecting devices on the yoke with the said motor, substantially as specified.

3. The frame or guide-bracket carrying the pendent bar to which the contact devices are attached, and which passes through the longitudinally-extending slot in the conduit, having a downwardly-curved lower edge which is flanged to deflect water from the contact devices, substantially as specified.

4. In an electric railway, a yoke or lever movable horizontally about a central vertical axis and having insulated contact or current-collecting devices at each end thereof, substantially as and for the purpose set forth.

5. In an electric railway, parallel electrical conductors extending along the line of way, combined with contact devices carried by a yoke pivoted so as to rock laterally, and thereby bring each collector in contact with either conductor, as desired, the said yoke and its attachments being connected to adjusting devices on a moving electric motor or car, substantially as and for the purpose specified.

6. In an electric railway, a longitudinally-slotted conduit containing conducting-rails, combined with a pivoted yoke carrying at each end a contact-wheel, and a spring to hold the said wheels against the rails with a yielding pressure, substantially as specified.

7. The frame or guide-bracket entering the conduit-slot, said frame or bracket being provided with a central opening having bearings through which the pendent bar carrying the current-collecting devices extends and in which it is free to turn, said frame or bracket being also provided with an additional opening at the front and rear of the said central opening, through which the leading wires or conductors extend, substantially as and for the purpose set forth.

8. In an electric railway, the combination of a centrally-slotted conduit extending along the railway midway between the track-rails and having electrical conductors therein, a depending vertical bar or rod extending through the conduit-slot from a motor-car and carrying the contact or current-collecting devices at its lower end, the said bar or rod being capable of motion about a vertical axis, so as to bring its contact devices, respectively, into engagement with opposite conductors, or into disengagement therewith, the said bar or rod being supported from the motor-car directly below the center of one of its axles and at a point midway between the track-rails, substantially as and for the purpose set forth.

9. In an electric railway, a longitudinally-slotted conduit containing conducting-rails, combined with a pivoted yoke carrying contact-wheels, a handle on the platform of the car, connections between said handle and the yoke for operating the latter, and means for placing and retaining the contact-wheels in any of three different positions, according as it is desired to advance, stop, or back the car, substantially as set forth.

10. In an electric railway, the combination, with parallel line-conductors extending along the line of way, an electro-dynamic motor on a car or vehicle, line-conductors to supply current to same, and collecting devices to bring said motor into circuit with said conductors, of an operating-lever controlling said current-collecting devices and capable of rocking them into three different positions with respect to the line-conductors, and circuit-connections on said collecting devices, in order that the car may be driven forward, backward, or stopped at the will of the operator by the change in the direction of the current flowing from the line-conductors through the motor by way of the current-collecting devices, substantially as and for the purpose specified.

11. In an electric railway, a metallic conduit having interior projections or partitions adapted to hold in position bodies of asphalt or other non-conducting substance, in combination with conducting-rails partially embedded in the said asphalt or other non-conducting substance and extending beyond the face of the said projections or partitions, substantially as specified.

12. In an electric railway, a longitudinally-slotted metallic conduit having a portion of its interior occupied by bodies of asphalt, concrete, or other non-conducting and non-absorbing material in which the conducting-rails are embedded, and having its remaining exposed interior metallic surfaces coated with a covering of asphalt or similar non-conducting water-proof substance, substantially as set forth.

386,086. DRIVING MECHANISM FOR ELECTRIC-RAILWAY CARS.

Elias R. Rihl, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed Oct. 19, 1886. Serial No. 216,610. (No model.)

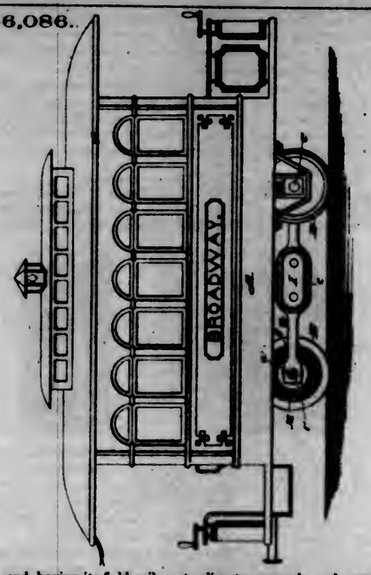
Claim.—1. The combination, in a railway-car, of parallel supporting bars or frames extending between and sustained by the driving-axles thereof, said bars being provided with openings provided with gaskets or rings for holding the electro-dynamic motor, substantially as set forth.

2. The combination, in a railway-car, of parallel supporting bars or frames extending between the driving-axles of said car, a gear-wheel on each driving-axle for revolving the same, and an electro-dynamic motor centrally mounted upon said supporting bars or frames, and having its armature-shaft provided with driving-pinions for engaging with said gears, the armature-shaft of said motor being in line with the diametrical center of both gear-wheels, substantially as and for the purpose set forth.

3. The combination, in a railway-car, of parallel supporting-bars extending between and sustained by the driving-axles of said car, said bars being provided with bearings for the motor, and a motor journaled in the bearings of said bars centrally between the driving-axles, substantially as specified.

4. In a railway-car, the combination, with an electric motor having its armature mounted centrally and longitudinally of the vehicle-

386,086.

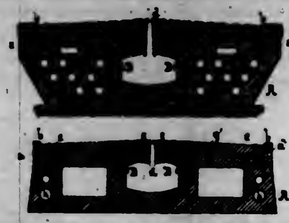


truck and having its field-coils extending transversely and centrally of said truck, of the armature-shaft of said motor geared to each axle and extending longitudinally and centrally between the sides of said truck, and a flexible supporting-frame for said motor.

5. In a traveling vehicle, the combination, with an electric motor, of supporting-bars therefor having enlarged flexible bearings for said motor.

386,087. COMBINED ELECTRIC RAILWAY AND WIRE-CONDUIT.

Elias R. Rihl, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed Nov. 30, 1886. Serial No. 219,661. (No model.)



Claim.—1. A road-bed formed of non-conducting concrete or other non-conducting material having a longitudinally-extending conduit with longitudinally-extending surface slot, and independent ducts arranged at the sides of the conduit, substantially as and for the purpose specified.

2. A road-bed formed of a series of blocks having therein a longitudinally-extending conduit, a longitudinally-extending surface slot, and independent ducts arranged exteriorly of the said conduit, substantially as and for the purpose specified.

3. A road-bed having a longitudinally-extending conduit with a longitudinally-extending surface slot, and independent ducts arranged exteriorly of the said conduit, the said road-bed having alcoves which extend transversely of the said road-bed from the side thereof to near the conduit and break the continuity of the said ducts, whereby access may be had to them, substantially as and for the purpose specified.

4. A road-bed formed of a series of blocks having ducts, as described, with certain of the said blocks provided with alcoves which extend from one or both sides of the said blocks transversely of the same to near the conduit-opening, whereby access may be had to the said ducts, substantially as and for the purpose specified.

5. A block forming a portion of a road-bed having therein ducts, as described, and provided with one or more alcoves which break the continuity of the said ducts, combined with one or more vaults or chambers in communication with the said alcoves, which give access to the same from the street, substantially as and for the purpose specified.

6. A block forming a portion of a road-bed having therein ducts, as described, and provided with one or more alcoves which break the continuity of the said ducts, combined with one or more vaults or working-chambers in communication with the said alcoves to give access to the same from the street, and suitable covering-plates for the said vaults or chambers, substantially as and for the purpose specified.

7. A road-bed having a longitudinally-extending conduit with a longitudinally-extending surface slot, and independent ducts arranged exteriorly of the said conduit, the said road-bed having an alcove which extends transversely of the said road-bed from the side thereof to near the conduit to break the continuity of the said ducts, whereby access may be had to them, and a vault in communication with the said alcove, which extends from the surface of the street to a point below or beneath the said conduit, substantially as and for the purpose specified.

8. A road-bed having a conduit which extends longitudinally thereof and ducts arranged at the side of the said conduit, as described, and an alcove at either side of the said conduit, which breaks the continuity of the said ducts and gives access to them, combined with a vault in communication with the said alcoves to give access to them from the street, and one or more tunnel-pipes to connect the two vaults at a point below the said block, substantially as and for the purpose specified.

9. A road-bed having a continuous concrete conduit for carrying the line-conductors of an electric railway, provided with alcoves, as described, and having in its upper surface depressions for the reception of stringers or other supports for the traction-rails of the said railway, substantially as and for the purpose specified.

10. A road-bed containing a longitudinally-slotted conduit formed of a series of non-conducting blocks or sections, metallic plates situated within the said longitudinal slot and separated to form the conduit-opening, and bolts or rods passing transversely through the material forming the conduit-blocks, designed and arranged to firmly hold the slot-plates in position, substantially as and for the purpose specified.

11. A road-bed containing a longitudinally-slotted conduit formed of a series of non-conducting conduit blocks or sections having depressions therein for the reception of the stringers which sustain the traction-rails, and provided with a longitudinally-extending slot, vertical or flanged plates situated within the said slot, and bolts or rods which pass transversely through the material forming the conduit and tie the slot-plates to the stringers, substantially as and for the purpose specified.

12. A road-bed containing a conduit having a longitudinally-extending slot therein and depressions in its upper surface for the reception of stringers to which the traction-rails are secured, combined with vertical separated plates situated in the said slot, having flanges with lips which rest with the said stringers in the depressions in the said blocks, substantially as and for the purpose specified.

13. A conduit for an electrical railway, formed in three sections, a lower and two upper ones, combined with electric conductors which are laid in the lower section of conduit and held in position by the upper sections which bear thereon, substantially as and for the purpose specified.

14. A conduit formed of a series of blocks or conduit-sections divided longitudinally into a lower and two upper portions, the said lower portion containing the conduit-opening and ducts, and serving as a support and foundation for the two upper portions, which latter are removably secured to the lower portion, substantially as and for the purpose specified.

386,088. METHOD OF WELDING BY ELECTRICITY.

Elias R. Rihl, Baltimore, Md., assignor of one-half to Albert H. Henderson, same place. Filed Mar. 14, 1888. Serial No. 267,173. (No model.)

Claim.—1. The method of effecting union between two metals in contact, consisting in the application of heating-currents of electricity to traverse the joint to be welded, and simultaneously subjecting said joint to the action of oxygen gas.

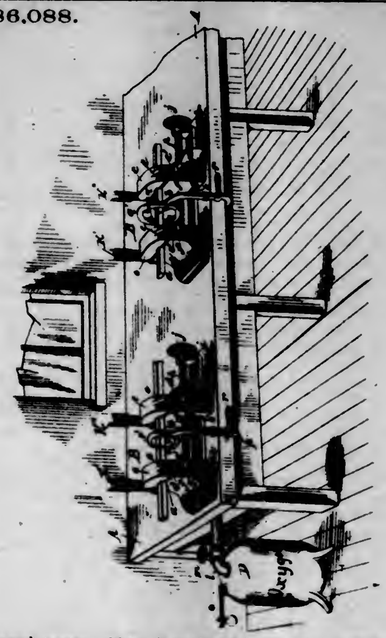
2. The method of welding, consisting in the application of heating-currents of electricity to the portions of the metals in contact, gradually increasing the current strength until the desired strength of current traverses the said portions of metal, and simultaneously subjecting the joint to the action of oxygen gas.

3. The method of welding, consisting in the application of heating-currents of electricity to the portions of the metals in contact, assisting the fusion of said portions of metal by subjecting the same to the action of oxygen gas, and treating said portions of metal with a substance for preventing the products of combustion from attacking the metals simultaneously with the administration of oxygen gas.

4. The method of effecting a weld or union between metals in contact, which consists, first, in the application of currents of electricity having a predetermined heating effect to traverse the joint or weld to be formed, and, second, in re-enforcing the heating effect of the said electric currents by subjecting the said joint to the action of oxygen gas.

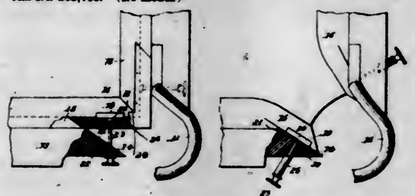
5. The method of welding together two metals of hardened or

386,088.



tempered structure without destroying their respective retempering properties at the point of union, which consists, first, in passing an electric current of a certain heating effect through the ends of the metals in contact, and gradually increasing the current strength until a certain temperature of the metals is obtained, and, second, in subjecting the said ends of the metals in contact to action of oxygen gas, and gradually increasing the flow of the said gas until the metals are fused and united.

386,089. COMBINATION POOL AND BILLIARD TABLE. RICHARD I. RINK, New York, N. Y., assignor of two-thirds to Mark H. Sandford and Henry Wagner, both of same place. Filed Feb. 29, 1888. Serial No. 265,709. (No model.)



Claim.—1. A combined pool and billiard table having the ends of its cushion pliable and abutting at about the center of the pocket-openings, and provided with means for retaining the said ends straight with the body of the cushion, or at an angle thereto, substantially as described.

2. In a combined pool and billiard table, the combination, with the cushion-rail, of cushions secured to the rail having pliable abutting ends extending across the pocket, and means, substantially as described, for retaining the pliable ends in engagement with each other to form a continuous cushion, or in engagement with the walls of the pocket-openings, as and for the purposes specified.

3. In a combined pool and billiard table, the combination, with the cushion-rails, of cushions secured to said rails having pliable abutting ends extending across the pockets, a clamp engaging the said projecting ends of the cushion, and a bolt passing through the table to an attachment with the said clamp, substantially as and for the purpose specified.

4. In a combined pool and billiard table, the combination, with cushions having pliable abutting ends projecting across the pockets, of a removable block engaging said pliable cushion ends, forming a temporary rail therefor, substantially as and for the purposes specified.

5. In a combined pool and billiard table, the combination, with a cushion extending across and divided opposite the pockets, of a removable block or rail section engaging and sustaining the cushions in front of the pockets, substantially as shown and described.

6. In a combined pool and billiard table, the combination, with a cushion extending across and divided opposite the pockets, of a removable block or rail section engaging and sustaining the cushions in front of the pockets, and means, substantially as described, for securing the block and cushion in engagement, substantially as and for the purposes specified.

386,090. ELECTRIC BATTERY. ISAIAH L. ROBERTS, Brooklyn, N. Y., assignor to the Roberts-Brevoort Electric Company, (Limited,) of New York. Filed June 7, 1888. Serial No. 204,315. (No model.)



Claim.—1. The combination, in an electric battery having the exciting material in the form of a paste, of a permanganate, bichromate of soda, and the salt of an alkali, substantially as described.

2. The combination, in an electric battery having the exciting material in the form of a paste, of permanganate of potash, bichromate of soda, and the salt of an alkali, substantially as described.

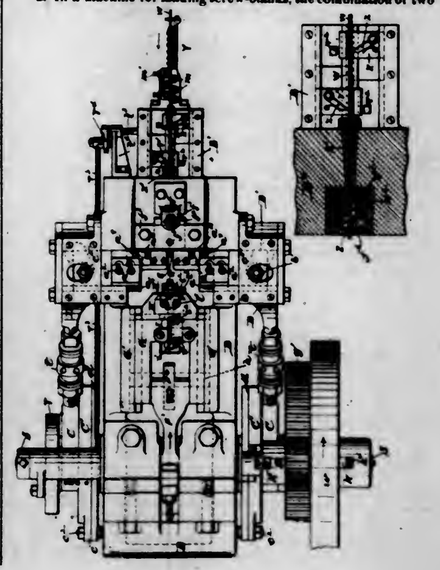
3. An electric battery composed of a containing-vessel and a pasty exciting-mass consisting of bichromate of soda, a permanganate, and the salt of an alkali, in combination with the negative and positive elements and a cover of asphalt, or asphalt and rosin, substantially as herein shown and described.

4. As a new article of manufacture, an exciting-mass for an electric battery, consisting of bichromate of soda, a salt of an alkali, and a permanganate combined, substantially as described.

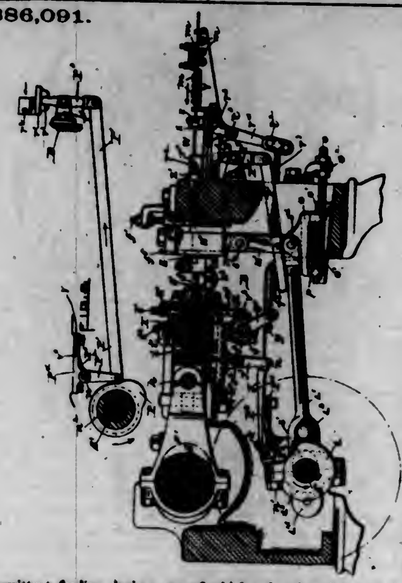
386,091. MACHINE FOR MAKING SCREW-BLANKS. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed July 7, 1887. Serial No. 243,657. (No model.)

Claim.—1. In a machine for making screw-blanks, a gripping-clamp with its cavity forming an extension of the cylindrical hole of the separate solid die, which is provided with a cavity in which heads are to be formed to grasp and hold the wire in the proper position in the solid die against the thrust of the heading-hammers in upsetting the metal to form a head, substantially as set forth and described.

2. In a machine for making screw-blanks, the combination of two



386,091.



intermittent feeding devices, one of which grips the wire near the entrance of the supporting-tube which leads to the gripping-clamp and solid die and by a short movement starts the wire in the solid die, and the other of which grips the wire at a sufficient distance from the end of the supporting-tube to feed forward the length of wire required for a screw-blank, substantially as set forth and described.

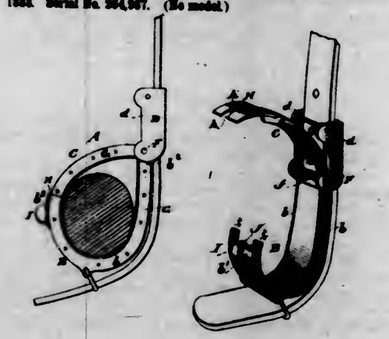
3. In a machine for making screw-blanks, a series of three or more heading-hammers mounted in a support which is provided with means for bringing each hammer in turn into line with a die in which the head of a blank is to be formed, and means for locking it in such position until it has been forced against the metal in the die, substantially as set forth and described.

386,092. WOOD-SCREW. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed July 7, 1887. Serial No. 243,673. (No model.)



Claim.—A wood-screw with a flat-faced head formed by forging in a solid die and having a slot across the face, with walls or sides vertical, or nearly so, and closed at the ends and so adapted to receive the blade of an ordinary screw-driver to force the screw into the wood.

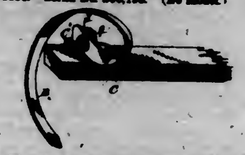
386,093. HARness SHAFT-LOOP. CARL C. SMITH, Hamilton, Ohio, assignor of one-half to C. F. Bittenmyer, same place. Filed Feb. 23, 1888. Serial No. 264,967. (No model.)



Claim.—1. A two-part shaft-loop, one of the parts provided with a swiveled spring-hold catch and the other with an open slot and shoulder, as shown and described.

2. The combination of the metallic hooks *b b*, connected by a cross-bar, *b'*, and filled intermediately with leather, the hinged metallic plates *G G*, intermediately filled with leather, the slotted and shouldered plate H, and the swiveled spring-hold catch I, all constructed and arranged substantially as shown and described.

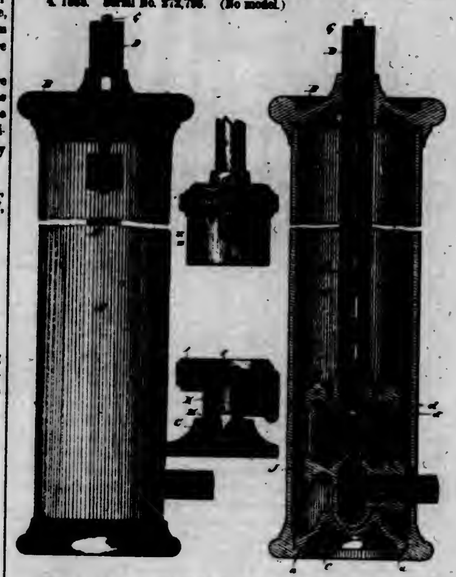
386,094. HARROW-TOOTH. GILMAN SWEET, Dansville, N. Y. Filed Jan. 9, 1888. Serial No. 260,193. (No model.)



Claim.—1. The combination of the standard having a vertical face on one side, the curved spring-metal twisted harrow-tooth having a vertical face at its upper end, adapted to rest against the vertical face of the standard, the serrations on the upper end of the harrow-tooth, the serrations on the standard, with which the serrations on the harrow-tooth engage, and the securing-bolt extending through holes in the standard and tooth for locking the tooth to the standard.

2. The combination of the standard, the boss formed thereon, the serrations on the standard on opposite sides of the boss, the twisted tooth having a bolt-hole in its upper end, and serrations formed in the arc of a circle on opposite sides of the bolt-hole, adapted to engage with the serrations on the standard, and a securing-bolt extending through the boss and through the harrow-tooth, substantially as set forth.

386,095. HYDRANT. AARON J. TYLER, Albion, N. Y. Filed May 4, 1888. Serial No. 272,788. (No model.)



Claim.—1. The combination, with the casing, the cap therefor having the depending stand-pipe attached to it, a valve-casing attached to the lower end of stand-pipe, bolts *b*, for drawing the parts together, and a base-plate in the bottom of the casing, of a flanged head, J, pivotally supported on this base-plate and provided with an elbow, K, substantially as described.

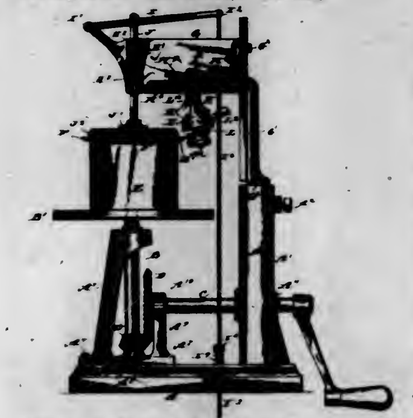
2. The combination, with the casing, base-plate inserted in the bottom of same and provided with a central depression, a cap placed over the upper end of the casing and provided with a depending stand-pipe, D', a valve-casing attached to lower end of stand-pipe, and tightening-bolts *b*, of a flanged head, J, for the reception of the lower end of the valve-casing, the said head being provided with an elbow and a central knob on its under side, the knob being adapted to rest in

the depression in the base-plate, and pivotally support the said head J, substantially as described.

3. The combination of a casing, a base-plate in the bottom of the same provided with a central depression, a head, J, provided with a knob on its lower side adapted to rest in the said depression in the base-plate, whereby the head is pivotally supported, a valve-casing and stand-pipe, and means for forcing the said stand-pipe and valve-casing down upon the said head J, substantially as described.

4. The combination of a casing provided with an internal flange, *c*, near its bottom, a base-plate, C, inserted in the casing and resting upon the flange *c*, this plate having a central depression in its upper face, a lower flanged head, J, provided with an elbow, K, and a knob, M, the latter resting in the depression in the base-plate and pivotally supporting said head J, an inlet-pipe, L, attached to elbow K, a valve-cylinder, H, inserted in the said flanged head J, a head, I, bolted to the cylinder H, a stand-pipe secured to the head I, a cap secured to the stand-pipe, and tightening-bolts, substantially as described.

386,096. CAN-MACHINE. EMILE F. VERDEL, Memphis, Tenn. Filed Aug. 27, 1887. Serial No. 248,071. (No model.)



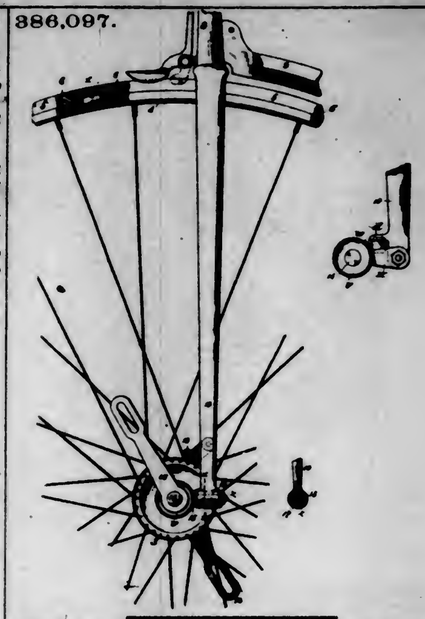
Claim.—1. In a machine of the class described, a standard having a socket, a head comprising a back plate terminating in a tenon and provided with longitudinal slots, a bracket having bolts passing through the slots to adjustably connect said head and bracket, a seaming-roller-supporting plate adjustably mounted in the bracket for longitudinal movement thereon, and a capping-plate connected with a lever pivoted to the bracket and connected with a treadle-rod, substantially as specified.

2. In a machine of the class described, a base provided with an integral standard, a head removably mounted thereon, and carrying an adjustable seaming-roller-supporting plate and a capping-plate, in combination with a table and its spindle mounted in a standard adjustable upon the base and provided with bearings for the spindle, and a crank-shaft passing through the rigid standard and taking bearing upon the movable standard of the base, substantially as specified.

3. The combination, with the standard A', having the socket, of the back plate, G', having the tenon G^{3x}, the bracket H, having the slots H^4, the roller-supporting plate K, having circular curved end, the roller M, having the spindle L, adapted to fit the end of the plate K, and the extensions L', adapted to embrace the same and pivoted, as at L'^x, to the plate K, substantially as specified.

4. In a machine of the class described, a seaming-roller journaled upon a stem having extensions L', in combination with a seaming-roller-supporting plate, K, having a curved end, substantially as specified.

386,097.



386,098. CUT-OFF TO PREVENT FREEZING IN WATER-PIPES. HIRAM K. WHITNEY, New York, N. Y., assignor to Henry H. White, trustee, same place. Filed Jan. 27, 1887. Serial No. 226,710. (No model.)



Claim.—1. The combination, with a water-service pipe, of a tube connected therewith, a contractible and expansible bar arranged in said tube, a cock provided with a port connected with said tube, a lever connected to said bar and arranged in the cock, and a valve connected to the lever, substantially as described, whereby variations of temperature in the water in the tube will cause said bar to operate the lever to open the port of the cock and cause a flow of water from the service-pipe or to cause the closing of said port and a stoppage of flow of the water.

2. The combination of a water-service pipe, a receptacle for water connected therewith, a contractible and expansible bar arranged in said receptacle, a cock provided with a port connected with said receptacle and arranged approximately in line therewith, a lever connected with said bar and arranged in the cock, and having a portion extending approximately parallel therewith and another portion at right angles thereto, a valve connected to the lever, and an approximately non-contractible and non-expansible abutment for said bar arranged in the receptacle and extending into the cock, substantially as specified.

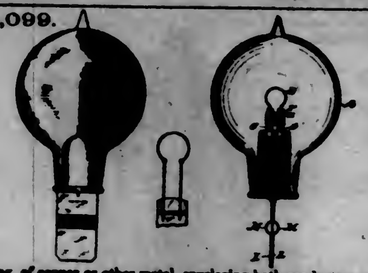
386,099. AUTOMATIC CUT-OUT FOR INCANDESCENT LAMPS. MIGUEL J. WIRSTEAD and HERMANN LEMP, Hartford, Conn. Filed Mar. 2, 1888. Serial No. 265,782. (No model.)

Claim.—1. An incandescent lamp having conductors within its globe connected to opposite ends of the lamp and placed in proper proximity to be fused into electric contact with one another by an electric arc formed across the space between them on rupture of the incandescent conductor.

2. An incandescent lamp having its entering conductors brought into proximity electrically, as described, and sufficiently near to be electrically united by fusion through the influence of an electric arc forming between them on rupture of the incandescent conductor.

3. The combination, with the conductors within the lamp, of a

386,099.



wrapping, of copper or other metal, enveloping both conductors, and an insulating material applied in proper manner to prevent said wrapping from forming a circuit while the lamp is operating normally.

4. In an incandescent electric lamp, an entering conductor formed at the point of sealing from a thin metal plate and having the glass compressed against its flat or plane surfaces, as and for the purpose described.

5. The herein-described improvement in methods of constructing incandescing lamps, consisting in forming a sheet-metal blank with two legs or bifurcations separated from one another, sealing the said bifurcated portion of the blank, and dividing the blank longitudinally on a line passing between the two legs or bifurcations to make the separate insulated supports for attachment to the ends of the incandescing conductor.

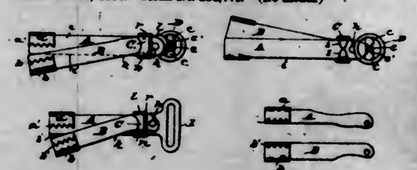
386,100. TYPE-WRITING MACHINE. GEORGE W. H. YOST, New York, N. Y., assignor, by mesne assignments, to the American Writing Machine Company, of New York. Filed Aug. 13, 1878.



Claim.—1. In a type-writing machine, the combination of a type-bar provided with lateral conical journals, a connecting-rod for actuating said type-bar, a bifurcated hanger having flexible arms provided with conical bearings for the journals of the type-bar, and an intermediate transverse connection uniting said flexible arms and adapted to adjust and set their free ends, whereby lateral movement of the journals of the type-bar may be prevented and the alignment of the printing be always preserved, substantially as set forth.

2. In a type-writing machine, the combination of a top plate or support, a type-bar provided with lateral conical journals, a connecting-rod for actuating said type-bar, a bifurcated hanger secured to the top plate or support and having flexible arms provided with conical bearings for the journals of the type-bar, one of said arms having a threaded perforation and the other a countersink perforation, and a transverse countersink-screw engaging said perforations and having its body portion between the arms of the hanger constructed for engagement by a suitable tool to effect its rotation, whereby any projection of the ends of the screw is avoided, (thus enabling the hangers to be set close together,) and whereby any screw of the series employed may be turned to adjust the arms without removing the hanger from its position upon the top plate or support, substantially as set forth.

386,101. CUFF-HOLDER. SHERMAN B. BACON, Waterbury, Conn. Filed Dec. 22, 1887. Serial No. 258,779. (No model.)



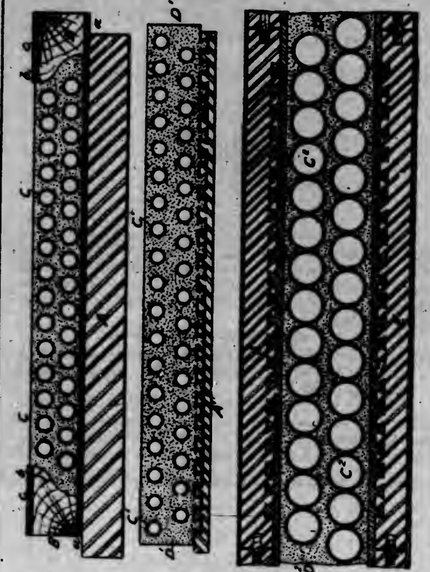
Claim.—1. The combination, in a cuff-holder or garment-supporter, of the two laterally-movable levers pivoted together, as shown, each of said levers provided with gripping-jaws, a slide to embrace both of said levers and having a free longitudinal movement thereon, one or both of said levers having their outer edges irregular or cam-shaped, or the equivalent, to engage with said movable slide, so that by such engagement the levers may be opened or closed, as described and set forth.

2. The combination, in a cuff-holder, of two laterally-movable levers connected together, and provided each with gripping-jaws to engage the fabric, one or both of said levers having their opposite edges irregular or cam-shaped, a longitudinally-movable slide to engage therewith, one of said levers having a button attached thereto to engage with the button-hole of the cuff, as set forth.

3. The combination of lever A, having jaw *a*, parallel edges *i i'*, lever B, having jaw *b*, cam projections *l* and *k*, rivet A, slide C, having taper ends *c*, and finger projection *c'*, with button D, having central bar, *e*, said bar engaging with and operating within the eye *f* of lever A, the outer edges, 1 and 2, of said bar engaging with the upper and lower walls, 3 and 4, of said eye, to maintain the button rigidly in an upright position, said bar also engaging with shoulder *g'* of the upright *g*, to support said button in a horizontal position, as described and set forth.

4. The laterally-movable levers A B, having jaws *a b*, said jaws bent or curved over the body of said levers, and a short distance above the same and parallel thereto, the extreme ends *a' b'* of the jaws curved upward to enable them to readily take a surface-grip on the fabric, as shown and described.

386,102. BOARD OF COMPOSITE MATERIAL. ADOLF MANZ, Ludwigsburg, Wurtemberg, Germany. Filed Nov. 28, 1887. Serial No. 256,628. (No model.) Patented in Belgium Dec. 31, 1886, No. 73,709, and Oct. 15, 1887, No. 79,995; in England Dec. 31, 1886; No. 17,130; in Austria-Hungary Apr. 12, 1887, No. 37; in Italy Feb. 4, 1888, No. 22,734, and May 1, 1888, No. 23,156, and in France Feb. 28, 1888, No. 187,247.



Claim.—1. A board for building and industrial purposes, consisting of plastic material and a number of small tubes (either specially made of paper or other suitable material or formed of vegetable stalks) embedded in the said material, substantially as described.

2. A board consisting of plastic material, of a number of small tubes (either specially made of paper or other suitable material or formed of vegetable stalks) embedded in the same material, and a wooden base, substantially as described.

3. A board consisting of plastic material and of a number of small tubes (either specially made of paper or other suitable material or formed of vegetable stalks) embedded in the said material, a wooden base, and a rectangular wooden frame, substantially as described.

4. A board consisting of a mixture of plastic mineral matter with wool, hair, or feathers, and tubes or vegetable stalks embedded in the said mixture, substantially as described.

5. A board consisting of a plastic mixture of burnt gypsum with hair, wool, or feathers, and tubes or vegetable stalks embedded in the said mixture, substantially as described.

6. A board consisting of a mixture of plastic mineral matter with finely-divided solid particles of organic origin, and tubes or vegetable stalks uniformly embedded in the said mixture, substantially as described.

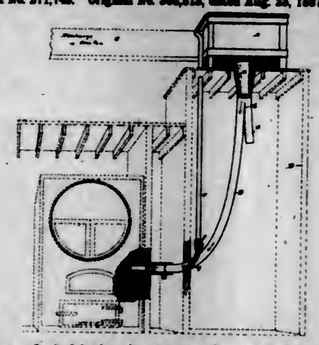
7. A board consisting of a mixture of plastic mineral matter with a liquid binding substance and finely-divided solid particles of organic origin, and tubes or vegetable stalks uniformly embedded in the said mixture, substantially as described.

8. A board consisting of a plastic mixture of burnt gypsum with a liquid binding substance, finely-divided solid particles of organic origin, and tubes or vegetable stalks embedded in the said mixture, substantially as described.

9. A board consisting of a plastic mixture principally composed of mineral matter, tubular cores uniformly distributed and embedded in the said mixture, and a wooden base rendered fire-proof by impregnation or coating, substantially as described.

REISSUES.

10,942. **FURNACE FUEL-FEEDER.** LOYAL Y. COGHAN, Allegheny City, Pa., and WILLIAM I. LIGGAT, Cleveland, Ohio. Filed Apr. 24, 1888. Serial No. 271,749. Original No. 366,813, dated Aug. 23, 1887.



Claim.—In fuel-feeders for furnaces, the combination, with the collector A, having discharge-pipe E, of conductor-pipe D, having branch H and regulating-valve I, and connecting the collector with the furnace, and with means for forcing air into the conductor for discharging the shavings into the furnace, substantially as and for the purpose specified.

10,943. **HYDRAULIC VALVE.** HUDSON R. KINSLER, McKee's Rocks, Pa. Filed May 24, 1888. Serial No. 275,261. Original No. 362,003, dated May 1, 1888.

Claim.—1. In a hydraulic valve, the combination, with the valve-casing having an enlarged chamber, 6, a pressure-port communicating therewith, a machine-port, 5, and a cylindrical bore between the port 5 and the chamber 6, of a valve-stem having a packing-disk which

10,948.



encircles the valve-stem and closes the space between the stem and the side of the said cylindrical bore, said packing-disk working with the valve-stem between the port 5 and the chamber 6 and into the chamber 6, substantially as and for the purpose set forth.

2. In a hydraulic valve, the combination, with the valve-casing having an enlarged chamber, 6, a pressure-port communicating therewith, a machine-port, 5, and a cylindrical bore between the port 5 and the chamber 6, of a valve-stem having a packing-disk which encircles the valve-stem and closes the space between the stem and the side of the said cylindrical bore, said packing-disk working with the valve-stem between the port 5 and the chamber 6 and into the chamber 6, said disk being cup-shaped and the concavity being on the side next the chamber, substantially as and for the purpose set forth.

3. In a hydraulic valve, the combination, with the valve-casing having a pressure-port, a machine-port, and an exhaust-port, of a valve-stem working within the casing and having a packing-disk which moves between the pressure-port and the machine-port, and a second packing-disk which moves over the exhaust-port, said disk being concave, the concavity being on that side of the disk which is foremost in the motion of the valve over the port when the disk is not under pressure, substantially as and for the purpose set forth.

NORRIS PETERS

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

HOLLAND *v.* THE SHIPLEY-TYRRELL MANUFACTURING COMPANY.

Decided May 14, 1888.

1. HOLLAND—LEAD-HOLDERS FOR PENCILS.
Letters Patent No. 292,313, granted January 22, 1884, to John Holland, for improvements in lead-holders for pencils, adjudged invalid for lack of patentable invention.

2. PATENTABLE INVENTION—WHAT IS NOT.
The specification disclosing that the slots, the screw-thread within, and the outer sleeve being all old, and the combination of two or more slots with the sleeve and a single slot with the screw-thread being also old, it required no invention to make two or more slots in a tube threaded inside.

APPEAL from the Circuit Court of the United States for the Southern District of Ohio.

Mr. G. J. Murray, *Mr. E. E. Wood*, and *Mr. Edward Boyd* for the appellee.

Mr. Justice GRAY delivered the opinion of the Court.

This is an appeal from a decree dismissing a bill in equity for the infringement of Letters Patent granted to the plaintiff January 22, 1884, for improvements in lead-holders for pencils, which (omitting the drawings and the explanation of them) fully shows the invention claimed, and the form of lead-holders or lead-tubes previously in use and known to the patentee, as follows:

The object of my present invention is to hold the lead or crayon in pencils from slipping back within the tube when pressed upon by the act of writing, without danger of breaking the lead.

Lead-tubes now in common use are usually slotted at the lower end to form elastic clamping-fingers, which fingers are closed upon the lead, near its point end by a sleeve or a tube which moves longitudinally over the fingers. These fingers are either smooth upon the inside, or terminate at their ends in sharp inward projections or claws. The first kind soon become so smooth that the lead slips back when borne upon in the act of writing, and the second frequently breaks the lead when the clamping-sleeve is tightened up, and when tightened up carefully the lead often breaks in use, when writing with the pencil inclined. I overcome both of these objections by making a fine screw-thread within the lower end of the tube before it is slotted to form the clamping-fingers.

* * * * * * *

The clamping-fingers may, instead of being screw-threaded upon the inside, be serrated or roughened to accomplish the same result; but the screw-thread is much better, because by this means a uniformly-even roughened surface can be made within the lower end of the tube at comparatively small expense; and, as these pencils are designed to take the place of the common lead-pencil, they must be made cheaply to insure their introduction into general use.

I am aware that it is old to provide a pencil-case for holding ordinary lead-pencils with a sliding ring, to which are secured spring-clamps having their holding-surfaces serrated, and having their shanks bent to approach each other, then jut outwardly and downwardly at their free ends, so that a ring-slide may be moved upon said shanks to cause the free ends of the clamps to grasp or release a pencil; and I am also aware that it is old to provide the lead-holding tube of a pencil with an interior thread and a single slot. I therefore do not claim either of these devices.

I claim as my invention—

1. As a new article of manufacture, a lead-tube for pencils consisting, substantially as before set forth, of a tube provided at one end with internal or female threads and two or more longitudinal slots to form threaded fingers.

2. The combination, with the lead-tube provided at one end with internal threads and two or more longitudinal slots, of a clamping-sleeve adapted to be adjusted upon the slotted end of the tube to press the threaded fingers upon a lead, substantially as described.

It thus appears upon the face of the plaintiff's specification that there were already in use lead-holding tubes for pencils with two or more slots at the lower end, so as to form elastic clamping-fingers, closing upon the lead by means of a sliding sleeve, as well as tubes with a single slot and an interior screw-thread. The slots, the screw-thread within, and the outer sleeve being all old, and the combination of two or more slots with the sleeve, or of a single slot with the screw-thread, being also old, it is too clear for discussion that to make two or more slots in a tube threaded inside and sleeved outside required no invention, and it is therefore unnecessary to consider the evidence upon the question whether the plaintiff was the first person who did this.

Decree affirmed.

U. S. Circuit Court—Northern District of Illinois.

GRAHAM *et al. v.* PLANO MANUFACTURING COMPANY *et al.*

Decided February 20, 1888.

1. GRAHAM—HARVESTER.
Letters Patent No. 74,342, granted February 11, 1868, to Alvaro B. Graham, for an improvement in harvesters, again sustained, and Graham *Held* to have been the first to employ in a practical working machine the device covered by his patent.

2. INFRINGEMENT.
The first and second claims, covering the device by which the finger-bar is made to rise and fall at either end and rock forward or backward independently of the gearing-carriage by maintaining its connection with it, *Held* to be infringed by the defendant.

Messrs. Banning & Banning for the complainants.
Messrs. Coburn & Thacher for the defendants.

BLODGETT, *J.*:

The bill in this case charges the defendants with the infringement of Letters Patent No. 74,342, granted February 11, 1868, to Alvaro B. Graham, for an improvement in harvesters.

Infringement is charged of the first and second claims of the patent, which describe and cover the de-

vice by which the finger-bar is made to rise and fall at either end and rock forward or backward independently of the gearing-carriage, while maintaining its connection with it. The first claim is for the device shown, whereby the finger-beam is enabled to rise and fall at either end and rock forward or backward independently of the gearing-carriage; and the second claim covers this device, together with a lever, by which the finger-beam may be rocked by the driver or operator of the machine, for the purpose of setting its guard-fingers at any desirable inclination to the horizontal line.

The defenses interposed are, first, want of patentable novelty; second, public use of the device for more than two years before the patent in question was applied for; third, that defendants do not infringe.

This patent has been twice before this court, first in the case of *Graham* v. *Gammon et al.*, in July, 1877, where the controversy was as to the validity of the claims now in question, (reported 7 Biss., 490,) and second in *Graham* v. *McCormick et al.*, (10 Biss., 39,) where the same claims were in controversy, and in the Eastern District of Wisconsin in the case of *Graham* v. *Geneva Lake Manufacturing Company*, decided by his honor Judge Dyer in October, 1880, involving a controversy over the same claims.

The defense in this case has made an exhaustive presentation in their proofs of the prior art covered by these two claims, and also several cases of alleged prior use of the devices for more than two years before the patent was applied for.

It seems to me, in view of the thorough and careful examination which this patent has heretofore received from this and other courts, that the only questions left open for consideration in this case are that of infringement and whether the defendants have shown by the proof any substantially different state of facts upon the question of novelty than was shown in the earlier litigation. It is true that a larger number of exhibits of former patents, illustrating the condition of the prior art, are introduced in this case than were introduced or considered in the former cases; but I see nothing in the additional exhibits, patents, models, and drawings offered in this case which is or can be treated as anything but mere cumulative evidence, and nothing which seems to me to any more nearly anticipate the devices here in question than were shown in the Dolph, Zug, Ball, Bartlett, and Bramer devices considered in the former cases. The Bramer patent having been considered by Judge Dyer in the *Geneva Lake Manufacturing Company* case, and it appearing in this case that while the Bramer patent is not alluded to in the opinion in *Graham* v. *McCormick*, yet it was brought to the attention of the court on a motion for rehearing and strenuously pressed as an anticipation of the complainant's device, and yet, notwithstanding this exhibition of the Bramer patent, the motion for rehearing was denied, a fact of much cogency to my mind in view of my knowledge of the exceedingly thorough and cautious methods of the late circuit judge of this circuit before whom *Graham* v. *McCormick* was heard.

In regard to all the testimony in this case, illustrating the state of the art in the field to which the complainant's invention belongs, both that which has been passed upon in the former cases and that which is brought forward for the first time in this case, it may be said that a review of this proof, in the light of what Graham did, shows that several inventors who preceded him in point of time groped about or approximated to his device, and it is now comparatively easy, with the Graham machine before us, to make a Graham machine out of several of these older efforts in that direction; but the fact seems to remain unshaken by the proof in this case, as it did in the former cases, that none of them accomplished the result obtained by his invention, or made a machine organized and intended to secure that result by the means which he adopted and described. In other words, Graham seems to me to have been the first to embody in a practical working machine the device covered by his patent. A mere mechanic with a Graham machine before him may, without invention now, so alter and improve some of the clumsy attempts at the same object in the older art as to make these machines do what Graham's machine does; but they need the instruction of the Graham device to make these old machines a success. Graham achieved success, while his predecessors in the field had failed.

In the former litigation no attempt was made to defeat the patent by showing prior use for the term of two years before the patent was applied for, except use by the patentee himself, and this use was held to be only experimental, and it becomes necessary for a moment to consider the cases of prior use which are shown in this record. There are three instances of such alleged prior use presented by the defendants and relied upon.

First, what is known as the Bradley machine, which is claimed to have been manufactured and sold by the firm of C. C. Bradley & Son, or the Bradley Manufacturing Company, at Syracuse, New York, in 1863 and 1864. In regard to this machine it is sufficient to say that the proof is not satisfactory to my mind that it was made and in use prior to the invention of Graham; second, that it does not, as illustrated by the model produced in evidence, show the free rocking movement which is provided for and obtained in the complainant's patent, and, thirdly, that whatever was contained in this Bradley machine was but an experiment, which was abandoned after a trial of a couple of seasons, and the experiments were never carried so far as to produce an acceptable and practical device like that covered by the complainant's patent. The proof in this case shows that C. C. Bradley & Sons were manufacturers of harvesting-machines at Syracuse, New York, under a license from Mr. M. G. Hubbard, the inventor and patentee of the main features of their machines; that in 1862 Hubbard invented the tilting and rocking device which the Bradleys claimed was embodied in the machine now urged as an anticipation of this patent, and yet the proofs show that neither Hubbard nor Bradley ever patented this device, and that after using it for two seasons it was abandoned and none thereafter made. With the knowledge that this court has acquired by long experience of the characteristics of inventors and manufacturers I can hardly deem it probable that if Hubbard had made the improvement shown in the Bradley model he would not have secured it by letters patent, as Bradley was at that time paying him a royalty on all machines manufactured, and this feature was certainly a new and useful improvement worthy of a patent at that time. The advantages of a floating finger-bar readily adjusting itself to the inequalities of the surface of the ground upon which the machine was to operate were so obvious and so manifestly a step in advance of the art as it existed at that time that it seems to me that an alert inventor like Hubbard, or an intelligent manufacturer like Bradley, who had devised or thought he had devised a practical device for such a finger-bar, would have made haste to cover it by a patent, and this improbability certainly goes far in my mind to raise doubt as to whether this machine, even if its use was fully established, could be held to be an anticipation of the complainant's device. A working machine constructed after this model might be said to contain a germ or suggestion of the Graham device, but so imperfect as to be no practical improvement, and I think I am fully supported by the proof in the conclusion that the Bradley machine should be considered as an abandoned experiment.

The next machine presented as an anticipation is what is described as the Preston machine, and the use of it is established by the testimony of Mr. King and H. C. Preston, who testifies that he made a machine in the summer of 1861, at Manlius, New York, embodying substantially the features covered by the patent now under consideration and sold it to a Mr. J. L. Pope, a farmer living at that time near Manlius. The machine itself is not produced, and we have only the unaided recollection of Mr. Preston and Mr. Pope as to how the machine embodied the features of the first two claims of the complainant's patent. Mr. Preston has put into the case with his deposition an illustrative model of the machine which he made and sold to Pope, which shows a machine very similar, as far as the features in question are concerned, to the Bradley machine as shown by the Bradley illustrative model. In fact, one might conclude that the Bradley machine was but an embodiment of the idea shown in this model. I attach but very little importance to the testimony of Mr. Pope, as he was a farmer not specially conversant with the construction of harvesters any further than any farmer who has used them and cannot be supposed to remember after the lapse of over twenty-five years what particular mechanical devices were used to secure a rocking and tilting finger-bar in his machine, if the machine contained any such characteristics. Mr. Preston does not, I must say, stand in the best light before the court as a witness, as the proof certainly tends to show that he attempted, at least, to dispose of his testimony to the highest bidder in this case; but even if it is all true, it only shows the production of a machine like the Bradley, in which it may possibly be said the embryo of the Graham invention may be found—that is, it is an attempt to secure a floating finger-bar, but by different devices from those adopted by complainants or by any of the later machines. From Preston's own testimony, given on cross-examination, I conclude that this single machine, which he says he made and sold to Pope, did not contain the devices in question, and the most satisfactory circumstance in support of that conclusion is the fact that Preston afterward took a patent for an improvement in harvesting-machines in which the device in question was entirely omitted, and I cannot believe that he would have failed to claim a patent for such device if he had invented and put it into use. I conclude, therefore, that this one machine made by him and sold to Pope, if it contained any attempt at an adjustable finger-bar, was so far a failure in that respect that he did not consider it worth his while to either follow the improvement further or cover it by a patent.

The last case of prior use cited by the defendant is by Frank Bramer. It is claimed on the part of the defendants that Bramer conceived the idea of a machine in the fall of 1863, embodying the adjustable finger-bar in substantially the same form in which it is now shown in the defendant's machine, defendant's machine being manufactured under what is known in the art as the Bramer patent, issued in 1865 to this same Frank Bramer. Bramer himself is dead, and his testimony is not obtainable in the case; but the proof in regard to his having made this machine at the early day now claimed is so contradictory that I cannot say that it is established so as to come even within the rule contended for by the defendant that Bramer, having obtained a patent at an earlier day than Graham, the burden of proof is shifted from the defendant to Graham to show that he (Graham) really was older in point of invention than Bramer. Taking the testimony as it now stands, I do not think it is established by the defendants that Bramer perfected his invention so far as the floating finger-bar is concerned until some time after Graham's device was perfected and he had made an operative machine. The conduct of Bramer himself in dealing with the owners of this patent after its validity had been sustained by the courts is such as to throw great doubt upon this picked-up testimony from persons who claim now to have had knowledge of the facts in reference to the time when Bramer made his completed machine. Bramer himself must certainly be presumed to have known better than these witnesses now produced when he made a machine with a floating finger-bar, such as is shown in his patent, and if he had in fact made such a machine as early as now stated by these witnesses it seems incredible to me that he would have settled, or consented to a settlement, with the owners of the Graham patent. It must, I think, be conceded that the testimony in regard to prior use has been industriously collected, and if it could all be accepted as true no doubt there is enough in this record to defeat this patent in the light of the late decision of the Supreme Court in *Andrews et al.* v. *Hovey*, (41 O. G. 1162.)

As to the issue of infringement, Graham secures the tilting and rocking motions of the finger-beam by means of the swivel-joint M', which attaches the vibratable link to the body of the machine, and the swivel-joint M', located in the draft-rod at the point where the draft-rod is attached to the shoe. Defendants insist that their machine does not contain these two swivel-joints. Defendants use in place of the swivel-joint M' a ball-and-socket joint, which is in all respects

the equivalent of and substitute for Graham's swivel-joint. In fact, this ball-and-socket joint, as shown in defendants' machine, is nothing but a swivel-joint, as it is limited to the rotary motion instead of being a universal joint, which is the characteristic of the ball-and-socket joint proper, so that defendants' ball-and-socket joint is in effect nothing but the Graham swivel-joint located at the same place and performing the same function as Graham's swivel-joint M'.

The defendants' machine is what is known as a "front-cut" machine—that is, the sickle-bar operates in front of the carrying-wheel instead of behind it, and the movement of the sickle-bar and vibratable link of the machine is accomplished by means of a push-bar or thrust-rod instead of Graham's drag-bar; but Graham provided in his specifications that the cutter-bar might be located in front of the wheels, and in that event his draft-rod would become a push-bar. This change in the location of parts involves some change, of course, in the adaptation of the elements of the device to produce the same result in a front-cut machine as in a rear-cut machine; but I find no difficulty in locating the Graham swivel-joint M' in the defendants' machine. Instead of locating this joint in the draft-bar where it connected with the shoe, as Graham does, the defendant has placed the swivel-joint in the shoe at the place where the shoe is attached to the vibratable link. This joint in the shoe, whereby the cutter-bar is attached to the vibratable link, in my opinion, corresponds in function, location, and every other characteristic with Graham's swivel-joint M'.

The defendants' push-rod is attached by a hinge-joint to the vibratable link, so that the link can rock, and thereby rock the cutter-bar, thus allowing the defendants' vibratable link the same motion allowed to the Graham link by his swivel-joint M', and, in my opinion, even if the proofs required that Graham should in the construction of his patent be limited to his special devices, I think the defendant has adopted those special devices.

I am therefore of opinion that no sufficient defense is made out in this case, and that the complainants are entitled to a decree for an accounting.

U. S. Circuit Court—Eastern District of Missouri, Eastern Division.

HUBER *et al. v.* N. C. NELSON MANUFACTURING COMPANY.

Decided April 9, 1888.

DEMURRER—PRACTICE.

After complainants had made out a *prima facie* case, it is too late for defendants to withdraw answer and file a demurrer.

Mr. Paul Bakewell for the complainants.
Mr. Benjamin F. Rex and *Messrs. Taylor & Pollard* for the defendant.

THAYER, *D. J.*, (orally:)

This is a proceeding in equity. After the issues had been made up and the complainants had made their *prima facie* case, the defendants appeared and asked leave to withdraw their answer and file a demurrer to the bill on the ground that Huber and Boyle were improperly joined as complainants.

I have looked at the bill, and it appears that Henry Huber and Boyle, the complainants, are each the owner of a patent for an improvement in different parts of the same machine or piece of mechanism. The bill shows that Huber is also a licensee under the Boyle patent, and, as such licensee, has the right to make, use, and sell the invention covered by the Boyle patent throughout the United States. It furthermore appears that he is engaged in the manufacture and sale of a machine or piece of mechanism that embodies both his own invention and that of Boyle, the two inventions being susceptible of conjoint use. The bill also shows that the defendant is engaged in selling a machine or piece of mechanism which is claimed to be an infringement upon the claims both of Huber and of Boyle under their respective patents. Now, on this state of facts I am of the opinion that the leave to withdraw the answer and file a demurrer because of a misjoinder of parties plaintiff should be denied for the following reasons: In the first place, the motion comes too late, after the issues have been made up and the complainants have made their *prima facie* case. In the second place, it does not appear to me that any harm will be done to the defendants in allowing both of the complainants (who are now complainants) to remain parties to the proceeding; and in the third place, it does not appear to me at all clear that a demurrer would be tenable upon the facts which I have stated, even if the answer was withdrawn and the demurrer was filed. It seems to me probable that both complainants may lawfully join in the bill. It appears to me there are some reasons shown by the bill why both of these complainants should remain parties to the proceeding.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 44—No. 3. TUESDAY, JULY 17, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	235
FRAUDULENT PRACTICES BY ATTORNEYS	235
PUBLISHERS' CATALOGUES	235
ISSUE OF JULY 17, 1888	235
DESIGNS	236
TRADE-MARKS	236
LABELS	236
PATENTS GRANTED	237
REISSUES	239
DECISIONS OF THE COMMISSIONER—	
Ex parte Atwood	341
Ex parte Trent	342
DECISIONS OF THE U. S. COURTS—	
The Rubber and Celluloid Harness Trimming Company *v.* The India Rubber Comb Company	343
Halstead *v.* Manning, Bowman & Company	344

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1886, it was published and bound in semi-annual volumes; since July 1, 1886, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1886,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1886,) full sheep, $2.75 per volume. No club rates. Payment in advance. All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 16, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No. 135 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Mehnde*.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and substantiated in the Scientific Library for convenient and ready reference.

Issue of July 17, 1888.

Patents	343	No. 386,108 to No. 386,444, inclusive.
Designs	18	No. 18,457 to No. 18,474, inclusive.
Trade-Marks	24	No. 15,681 to No. 15,704, inclusive.
Labels	7	No. 5,652 to No. 5,658, inclusive.
Reissues	3	No. 10,944 to No. 10,945, inclusive.
Total issue	395	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	5	
Arizona Territory			Nevada		
Arkansas	3		New Hampshire	5	
California	4		New Jersey	18	1
Colorado	2		New Mexico Terr'y		
Connecticut	14	1	New York	66	11
Dakota Territory			North Carolina	1	
Delaware			Ohio	14	1
District of Columbia	9		Oregon	2	
Florida	1	1	Pennsylvania	43	3
Georgia			Rhode Island	4	
Idaho Territory			South Carolina		
Illinois	38		Tennessee	3	
Indiana	6	1	Texas	4	1
Iowa	5	1	Utah Territory	1	
Kansas	5		Vermont	3	
Kentucky			Virginia	2	
Louisiana	2		Washington Terr'y		
Maine	1		West Virginia	1	
Maryland	4		Wisconsin	4	
Massachusetts	32	6	Wyoming Terr'y		
Michigan	17		U. S. Army		
Minnesota	3		U. S. Navy		
Mississippi					
Missouri	25		Total to citizens of the United States	336	27
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary			Germany	8	
Barbadoes			Holland		2
Belgium			Ireland	1	
Bermuda			Italy		
Brazil			Russia		
Canada	4		Scotland		
Central America			Sweden		
Columbia, U. S. of			Switzerland		
Cuba			Victoria		
Denmark			West Indies		
Ecuador					
England	8	2	Total to citizens of foreign countries	24	4
France	3				

DESIGNS.

18,457.—MUSTARD-CUP.—*Thomas B. Atterbury*, Pittsburg, Pa. Application filed May 26, 1888. Serial No. 275,348. Term of patent 7 years.

18,458.—HANDLE FOR SPOONS AND LIKE ARTICLES.—*John M. Culver*, Newburyport, Mass. Application filed April 5, 1888. Serial No. 269,761. Term of patent 7 years.

18,459.—ORNAMENTATION OF A SPOON, FORK, OR KNIFE HANDLE.—*Julius H. Davis*, Philadelphia, Pa. Application filed April 12, 1888. Serial No. 270,494. Term of patent 7 years.

18,460.—LADY'S BLOUSE.—*Henrietta F. Duke*, New York, N. Y., assignor to *The Butterick Publishing Company, (Limited,)* same place. Application filed June 15, 1888. Serial No. 277,268. Term of patent 3½ years.

18,461.—TOP FOR INCASED VESSELS.—*John A. Frey*, New York, N. Y., assignor to *C. Riessner and Company*, same place. Application filed May 19, 1888. Serial No. 274,401. Term of patent 14 years.

18,462.—HANDKERCHIEF.—*Francis M. Gideon* and *Daniel Rhodes*, Washington, D. C. Application filed June 14, 1888. Serial No. 277,156. Term of patent 3½ years.

18,463.—DRESS-MAKING TOOL.—*Lovett B. Hale*, Buffalo, N. Y. Application filed September 21, 1885. Serial No. 177,780. Term of patent 14 years.

18,464.—FRINGE.—*George S. Hensel*, *Louis D. Valetton*, and *Frank E. Cook*, Philadelphia, Pa., assignors to *The Hensel, Colladay Company*, same place. Application filed April 28, 1888. Serial No. 272,211. Term of patent 7 years.

18,465.—LAMP-SHADE.—*Louis Hinrichs*, New York, N. Y. Application filed April 19, 1888. Serial No. 271,227. Term of patent 7 years.

18,466.—PITCHER.—*Louis Hinrichs*, New York, N. Y. Application filed June 6, 1888. Serial No. 276,264. Term of patent 7 years.

18,467.—SURFACE ORNAMENTATION OF WALLS.—*Frederick Koskul*, Williamsport, Pa. Application filed March 17, 1888. Serial No. 267,580. Term of patent 14 years.

18,468.—BADGE.—*Edwin I. Nottingham*, Washington, D. C. Application filed June 16, 1888. Serial No. 277,377. Term of patent 3½ years.

18,469.—HANDKERCHIEF.—*Rufus H. Rose*, New York, N. Y. Application filed June 16, 1888. Serial No. 277,376. Term of patent 3½ years.

18,470.—ORNAMENTATION OF GAME-TABLETS.—*J. Walter Spalding*, New York, N. Y., assignor to *A. G. Spalding & Brothers*, Chicago, Ill. Application filed January 12, 1888. Serial No. 260,379. Term of patent 7 years.

18,471.—VASE FOR LAMPS, &c.—*Charles S. Upton*, New York, N. Y. Application filed April 23, 1888. Serial No. 271,646. Term of patent 7 years.

18,472.—RANGE OR COOKING-STOVE.—*George C. Bascom*, Lansingburg, assignor to *J. S. & M. Peckham*, Utica, N. Y. Application filed June 7, 1888. Serial No. 276,412. Term of patent 7 years.

18,473.—FRONT FOR MAIL-BOXES.—*Archibald Culbert* and *John L. Culbert*, New York, N. Y. Application filed May 25, 1888. Serial No. 275,081. Term of patent 7 years.

18,474.—HELMET.—*Julius Heimann*, New York, N. Y. Application filed June 14, 1888. Serial No. 277,153. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 6,191 and upward are registered under the act of March 3, 1881.]

15,681.—PERFUMES AND PERFUMED ARTICLES FOR THE TOILET.—*J. & E. Atkinson*, London, England. Application filed June 13, 1887. Used since April 19, 1887.

"A shield-shaped label having a groundwork composed of microscopic manuscript lettering."

15,682.—BOOTS AND SHOES.—*Belknap, Carpenter & Co.*, Columbus, Ohio. Application filed March 5, 1888. Used since July 1, 1887.

"The name 'BELKNAP, CARPENTER & CO.' and the words 'SUGAR GROVE KIP,' arranged on an elliptical green-colored label."

15,683.—RAILWAY STOCK-CARS.—*George D. Burton*, Boston, Mass. Application filed May 31, 1888. Used since 1886.

"The representation of a stock-car having the interior exposed by removing the end of the car and showing a number of cattle standing crosswise of the car, some quietly feeding or drinking from a trough, and devices on either side of the car for the comfort of the animals and for the convenience of the persons in charge of the car."

15,684.—BOOTS AND SHOES OF ALL DESCRIPTIONS.—*Alfred J. Cammeyer*, New York, N. Y. Application filed June 15, 1888. Used since June 1, 1888.

"The words 'CAMMEYER'S TRUE-FORM.'"

15,685.—CHEWING-GUM.—*William D. Chase*, New York, N. Y. Application filed June 8, 1888. Used since March, 1888.

"The word 'BASEBALL.'"

15,686.—CATARRH SPECIFIC.—*Drs. Filkins Bros.*, Albany and Rochester, N. Y. Application filed May 15, 1888. Used since August, 1883.

"The three pictures or portraits of the three members of the registrants' firm."

15,687.—COLLARS AND CUFFS.—*Joseph Fowler*, Glens Falls, N. Y. Application filed June 11, 1888. Used since April 2, 1888.

"The word 'GLEN.'"

15,688.—BAKING-POWDER.—*Gans & Miller*, Brooklyn, N. Y. Application filed June 1, 1888. Used since April 1, 1888.

"The word 'RIVAL.'"

15,689.—MEN'S AND BOYS' HATS.—*C. H. Garden & Co.*, Philadelphia, Pa. Application filed June 11, 1888. Used since April 15, 1887.

"The word 'ELK' and the representation of an elk."

15,690.—UMBRELLAS.—*Alvah Hall & Co.*, New York, N. Y. Application filed June 1, 1888. Used since May 23, 1888.

"The word 'REGENT.'"

15,691.—SHIRTS AND DRAWERS.—*Havens, Geddes & Co.*, Terre Haute, Ind. Application filed May 28, 1888. Used since November 1, 1886.

"The words 'WABASH MANUFACTURING COMPANY.'"

15,692.—GOAT AND SHEEP SKIN LEATHER.—*Julius Helburn*, New York, N. Y. Application filed June 6, 1888. Used since January 1, 1887.

"The representation of a child's head with wings extending therefrom and clouds about the head and wings."

15,693.—BOOTS AND SHOES.—*Hill & Greene*, Beverly, Mass. Application filed June 9, 1888. Used since March 1, 1886.

"The words 'LITTLE GIANT.'"

15,694.—PAINTS AND PIGMENTS.—*Thomas Hubbuck & Son*, London, England. Application filed June 7, 1888. Used since February, 1856.

"The representation of a lion and unicorn supporting a shield quartered surmounted by a crown."

15,695.—POCKET CUTLERY.—*The Humason & Beckley Manufacturing Company*, New Britain, Conn. Application filed June 18, 1888. Used since 1854.

"The letters and character 'H. & B.'"

15,696.—PANTALOONS.—*The Improved Newburgher Pantaloons Manufacturers*, Brooklyn, N. Y. Application filed May 14, 1888. Used since February 1, 1887.

"The representation of two lions facing each other, with their fore feet upon stumps of trees, in the act of attempting to tear a pair of pantaloons, each lion holding between its teeth one leg of the pantaloons."

15,697.—GIN.—*P. Loopuyt & Co.*, Schiedam, Holland. Application filed June 14, 1888. Used since January, 1840.

"The representation of an hour-glass."

15,698.—GIN.—*P. Loopuyt & Co.*, Schiedam, Holland. Application filed June 14, 1888. Used since January, 1840.

"The word 'HOUR-GLASS.'"

15,699.—PHOTOGRAPHIC FLASH-LIGHT MATERIAL.—*Thomas H. McCollin & Co.*, Philadelphia, Pa. Application filed June 6, 1888. Used since December 1, 1887.

"The word 'BLITZ.'"

15,700.—COLLARS AND CUFFS.—*Reversible Collar Company*, Boston and Cambridge, Mass. Application filed June 2, 1888. Used since July 1, 1878.

"The word 'LINENE.'"

15,701.—BEER-OIL.—*Joseph Stern*, New York, N. Y. Application filed May 23, 1888. Used since January 1, 1882.

"The representation of a woman and churn and the word 'PROGRESS.'"

15,702.—COFFEE.—*Humphrey P. Webster*, Boston, Mass. Application filed June 9, 1888. Used since May 1, 1888.

"The word 'MALT.'"

15,703.—LAUNDRY BLUE.—*Hiram W. Weeks*, Philadelphia, Pa. Application filed June 6, 1888. Used since April 12, 1888.

"The words 'SNOW FLAKE.'"

15,704.—CORSETS.—*Worcester Corset Company*, Worcester, Mass., and Chicago, Ill. Application filed June 16, 1888. Used since May 20, 1888.

"The words 'ROYAL WORCESTER.'"

LABELS.

5,652.—Title: "DR. J. H. BARBER'S LINIMENT."—*James E. Barber*, Davis City, Iowa. Application filed January 31, 1888.

5,653.—Title: "DOLE'S PERFECT HORSE & CATTLE INVIGORATOR." *Wm. H. Dole*, Melrose, Mass. Application filed June 25, 1888.

5,654.—Title: "WEST INDIA SKIN CREAM."—*I. W. Earnest*, San Antonio, Tex. Application filed April 3, 1888.

5,655.—Title: "DR. HOFFMANN'S SWEDISH HERBAL ELIXIR."—*Edward J. Liebetrut*, Buffalo, N. Y. Application filed June 26, 1888.

5,656.—Title: "PUCHTA'S INSTANTANEOUS FLASH-LIGHT-TABLETS." *Charles Puchta*, New York, N. Y. Application filed June 4, 1888.

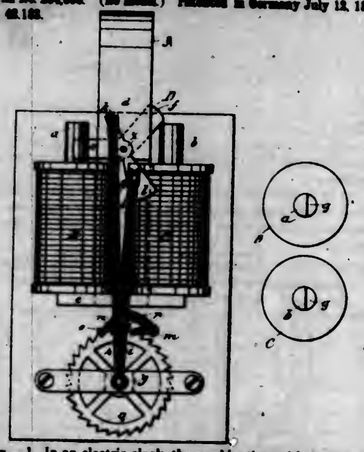
5,657.—Title: "HOT SPRINGS BLOOD PURIFIER." (FOR A MEDICINE.) *A. J. Saguin*, Jacksonville, Fla. Application filed June 19, 1888.

5,658.—Title: "STONAKER'S CHERRY."—*William Stonaker*, Cranbury, N. J. Application filed June 20, 1888.

PATENTS

GRANTED JULY 17, 1888.

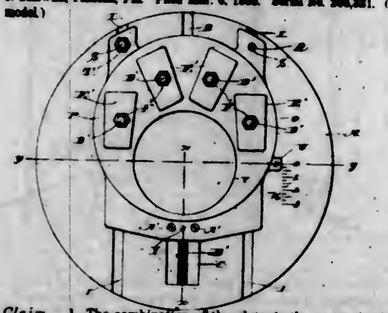
886,103. SECONDARY ELECTRIC-CLOCK MOVEMENT. CARL BORGSTEDE, Halle-on-the-Saale, Prussia, Germany. Filed Feb. 20, 1888. Serial No. 264,692. (No model.) Patented in Germany July 12, 1887, No. 42,183.



Claim.—1. In an electric clock, the combination, with magnet A, of cores *a b*, in connection with one pole of said magnet, a two-armed armature, D, in connection with the opposite pole of said magnet, coils B and C on said cores, levers *k l h i*, adapted to be operated by movement of said armature, as set forth, and pawls *n m* on said levers *h i*, respectively, together with ratchet-wheel *q*, adapted to be revolved by said pawls, for the purpose set forth.

2. The combination of magnet A, cores *a b*, having recesses *g*, coils B C thereon, armature D, having arms *e f*, levers *k l h i*, pawls *n m*, pins *o p*, and ratchet-wheel *q*, substantially as and for the purpose set forth.

886,104. LATHE-CHUCK FOR TURNING EXCENTRICS. WILLIAM T. BREWER, Palatka, Fla. Filed Mar. 6, 1888. Serial No. 266,321. (No model.)



Claim.—1. The combination of the plate A, the eccentric-plate secured thereto and adjustable thereon, for the purpose set forth, said eccentric-plate having the circular offset P and the eccentric-opening V, and means, substantially as specified, to clamp the eccentric to the eccentric-plate.

2. The combination of the face-plate having the slots I, the eccentric-plate, and the bolts S, having their heads secured in slots I and movable longitudinally therein, said bolts clamping the eccentric-plate to plate A, substantially as described.

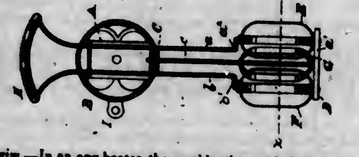
3. The combination of the plate A, having slot B, opening C, communicating therewith, and parallel slots I, the eccentric-plate fitted on the face-plate A and having the rib or flange C', engaging slot B, and the nut X, engaging opening C, and the adjusting-screw B', swiveled to plate A and engaging nut X, substantially as described.

4. The combination of the face-plate having the graduated scale K and the eccentric-plate secured to the face-plate, adjustable thereon, and having the ear or pointer U, sweeping over the scale, for the purpose set forth, said eccentric-plate being further provided with the circular offset P and the eccentric-opening V, substantially as described.

5. The combination of the face-plate, the eccentric-plate secured thereto and adjustable thereon, the bolts D', projecting from the said plate, clamps E' on said bolts, and the adjusting-nuts F', engaging the bolts, substantially as described.

6. The combination of the face-plate and the eccentric-plate secured thereto and adjustable laterally thereon, said eccentric-plate having the circular offset P, provided with eccentric-opening V, substantially as described.

886,105. EGG-BEATER. CHARLES A. BRYANT, Wakefield, Mass. Filed Apr. 26, 1887. Serial No. 236,066. (No model.)



Claim.—In an egg-beater, the combination, with the frame A and the driving gear-wheel B, supported thereby and provided with a crank or handle, L, of the foot *a'*, connected with the said frame, a shaft, *c*, having bearings in the said foot and frame and provided with a pinion, C, meshing with the said gear-wheel, and with a set of cutting beater-blades, G, fixed thereto, one or more sets of auxiliary beater-blades intermeshing with and thus adapted to be rotated by the positively-driven blades G, and one or more rods or wires on which the said auxiliary blades rotate, and which are connected to the said frame and foot at their ends, said rods having beads to prevent the said auxiliary blades from rising, substantially as set forth.

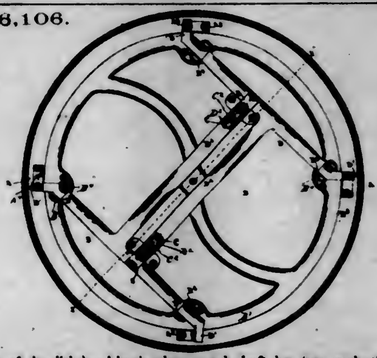
886,106. CLOSURE FOR CHURNS. ELISHA P. BRYDEN, Rockford, Ill. Filed May 1, 1888. Serial No. 273,023. (No model.)

Claim.—1. In combination, the disk-head, the ratches, the rock-shafts provided with outwardly-projecting cams adapted to engage with retaining-lugs projecting from the end of a churn, and inwardly-projecting detents arranged and adapted to engage endwise with the ratches, and suitable bearings for attaching and supporting the same in operative position and relation.

2. In combination, the ring-head adapted to be peripherally seated in the recess of a churn and provided with upwardly-projecting studs, the latter being furnished with retaining-lugs, a disk-head with the ratches and upper rock-shaft bearing mounted thereon, the peripheral

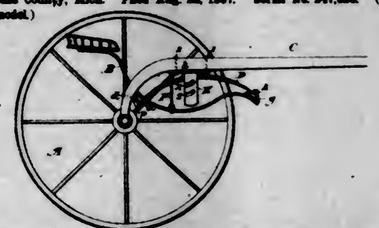


386,106.



casing of the disk-head having lower rock-shaft bearings projecting upward therefrom, and the rock-shafts provided with outwardly-projecting cams adapted to engage with said retaining-lugs, and inwardly-projecting detents arranged and adapted to engage with said ratches, substantially as described, and for the purpose set forth.

386,107. TWO-WHEELED VEHICLE. J. WESLEY BOYD, Milton, Cass County, Mich. Filed Aug. 23, 1887. Serial No. 247,628. (No model.)



Claim.—1. In a two-wheeled vehicle and attachments, a hanger with slots S to receive the check-pin X, acting as a fulcrum to spring D by being connected thereto with eyebolt *t*, as above described, and for the purpose specified.

2. In a two-wheeled-vehicle spring attachment, a slot in the spring, in combination with the hanger E, slot S, check-pin X, connection-rod *t*, link U, thill C, and seat-frame B, as described, and for the purpose specified.

3. In a two-wheeled-vehicle spring and attachments, the connecting-clamp *g*, with extending member or post passing through hole in the spring near the end and held by a nut, substantially as described, and for the purpose specified.

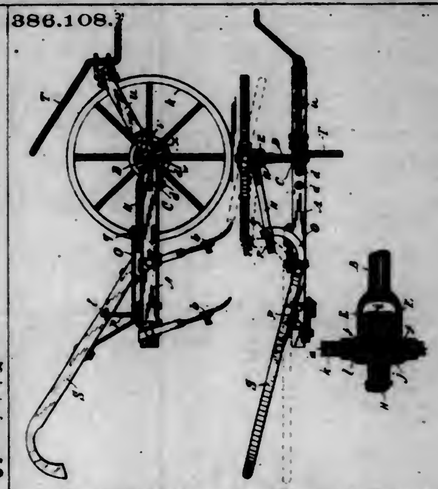
4. In a two-wheeled-vehicle spring and attachments, a link coupled to the spring and thill to allow the spring a forward and backward motion, in combination with the hanger E, spring D, connecting-clip *g*, connecting-rod *t*, and seat-frame B, as above described, and for the purpose specified.

386,108. WHEEL-CULTIVATOR. ROSS CONCOR, Crawfordsville, Ind. Filed Apr. 2, 1888. Serial No. 269,304. (No model.)

Claim.—1. In a cultivator, the combination of the following elements, namely: a plow-beam having a cultivator-plow attached thereto, an axle rigidly secured to the forward end of the plow-beam and projecting from one side thereof, a wheel-spindle pivoted to the outer end of the axle so as to swing in a horizontal plane, a carrying-wheel mounted on said spindle, a lever pivoted to the plow-beam and having the plow-handle secured thereto, and intermediate connecting mechanism connecting said lever and wheel-spindle, whereby the wheel-spindle is caused to swing in a horizontal plane by the swinging movement of the handle upon the plow-beam, substantially as and for the purpose specified.

2. In a cultivator, the combination of the arched draft-bar, the plow-beam having a cultivator-plow attached thereto, the forked axle rigidly secured to the plow-beam, the coupling-beam hinged at its rear end to said axle, so as to swing in a vertical plane thereon, and hinged at its forward end to the draft-bar to allow the latter to swing in a horizontal plane thereon, the wheel-spindle pivoted in the forked end of said axle, so as to swing in a horizontal plane, the carrying-wheel mounted on the spindle, the arm rigidly secured to the spindle and projecting backward therefrom, the lever pivoted to the plow-beam and connected with said arm, and the plow-handle secured to said

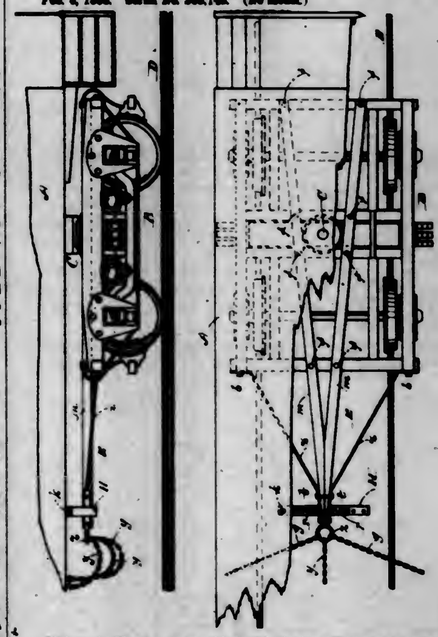
386,108.



lever, all arranged to co-operate substantially as and for the purpose specified.

3. In a cultivator, the combination of the axle B, having the forked arm E, wheel-spindle H, having recess *i*, pivot-bolts *f f*, and wheel-hub *j*, having recess *l*, all substantially as and for the purpose specified.

386,109. CAR-TRUCK. JAMES E. W. CURRIER, Ottawa, Ontario, Canada, assignor of one-half to John W. Currier, North Troy, Vt. Filed Feb. 6, 1888. Serial No. 263,149. (No model.)



Claim.—1. The car A, provided with the loop H, in combination with the truck B, provided with the tongue E, inserted in said loop, said truck being pivotally connected with said car by the king-bolt C, substantially as described.

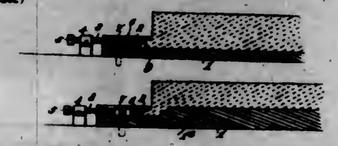
2. The car A, provided with the loop H, the truck B, provided with the tongue E and pivotally connected with said car by the king-bolt C, and a spring or springs for cushioning and centering the tongue, combined and arranged to operate substantially as set forth.

3. The combination, with a car-body, of a truck pivoted thereto and provided with a tongue at one end, and a loose chain connected to the car-body and tongue, substantially as described.

4. The combination, with a car-body provided with a loop attached to its bottom, of a truck pivoted to the car-body and provided with a tongue at one end which projects through said loop, and a loose chain connected to the car-body and tongue, substantially as described.

5. The truck B, provided with the tongue E, braces *x*, and ring *z*, the car A, provided with the loop H, the chains *y y*, connecting said ring and car, the springs *r*, for cushioning said tongue, and the king-bolt C, for connecting the truck and car, all constructed, combined, and arranged to operate substantially as set forth.

386,110. APPARATUS FOR SECURING BLOCKS OF PLASTIC MATERIAL WHILE PLANING THEM INTO SHEETS. FRANCIS CURTIS, Newburyport, Mass., assignor to the Arlington Manufacturing Company, of New Jersey. Filed Dec. 17, 1887. Serial No. 258,217. (No model.)



Claim.—1. The combination of the plate 1, the clamps 2, resting upon the top surface of the plate and provided with slots 6, the screws 7, extending through the slots in the clamps and through the plate to engage the bed-plate of a sheet-cutting machine, and horizontal screws 3, for sliding the clamps on a top surface of the plate, substantially as described.

2. As a means of holding a block of pyroxyline material or other plastic composition to be cut into sheets, a plate having a smooth upper surface, and clamps bearing upon and adjustable on a top surface of the plate and undercut at their inner edges, to overlap a lateral flange on the bottom of the composition block, substantially as described.

3. As means for holding a block of pyroxyline or other plastic composition to be cut into sheets, the plate 1, having a smooth upper surface, the clamps 2, bearing upon a top surface of the plate and having undercut edges to overlie a flange on the composition block, and screws 3, for sliding the clamps on an upper side of the plate, substantially as described.

4. A plate provided with a smooth even surface raised above the marginal portion, in combination with one or more clamps mounted upon the marginal portion or portions of said plate near the edge or edges of the raised portion, and means for operating said clamps, substantially as described.

5. The combination, with the plate having a raised portion, 1ª, provided with a smooth surface, of clamps 2, arranged upon one or more of the marginal portions surrounding the raised portion, set-screws passing through slots 6 in said clamp, and set-screws 3, bearing against the edges of the same, substantially as described.

6. The combination, with the plate having a smooth-surfaced raised portion, 1ª, the edges of which slope downward to the marginal parts of the plate, of the clamp or clamps 2, having correspondingly-beveled edges, the set-screws 7, passing through slots 6 in said clamp, and the set-screws 3, tapped through brackets 4 and bearing against the outer edge of the clamp, substantially as described.

386,111. ELECTRIC-WIRE INSULATOR. HENRY H. CUTLER, Newton, Mass. Filed Oct. 31, 1887. Serial No. 253,693. (No model.)



Claim.—In a supporting-insulator for electric wires, the combination, with the base A, provided with pins or studs *e e*, of a pair of blocks or rollers, B B, composed of glass, porcelain, or other suitable non-conducting material, and having circumferential grooves *g*, said rollers being made removable from the pins or studs, and being arranged close together, with the circumferential groove of one roller opposite to that of the other, whereby an aperture is formed between the peripheries of said rollers, through which the line-wire is free to slide, and by which it is retained in place between the rollers, substantially in the manner and for the purpose set forth.

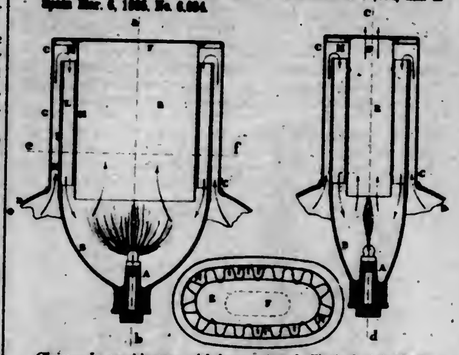
386,112. ICE-CREAM FREEZER. JOHN M. DAWLEY, Chillicothe, assignor of one-half to E. S. Evans, Columbus, Ohio. Filed May 11, 1887. Serial No. 237,594. (No model.)



Claim.—1. In an ice-cream freezer, the combination, with the can having projecting from the lid thereof the notched projections A, of the rotary paddle-carrying shaft pivoted within said can and having nut *i*, and cross-piece H, having square hole *k*, pivoted on said shaft, substantially as and for the purpose specified.

2. In an ice-cream freezer, the combination of the ice-tub having stop-arms *y*, the can having notched projections A, the cross-piece H, adapted to engage said stops and projections, and the rotary shaft C, carrying a number of inclined adjustable agitating-paddles adapted to scrape the cream from the inner surface of the can, substantially as and for the purpose specified.

386,113. GAS-BURNER. HENRI DELMAS-ARIMA, St. Gaudens, France. Filed Sept. 9, 1886. Serial No. 213,128. (No model.) Patented in France Oct. 3, 1882, No. 157,300, and May 30, 1885, No. 169,282; in Belgium Apr. 26, 1884, No. 64,967; in England May 3, 1884, No. 7,193; in Germany May 6, 1884, No. 32,681; in Italy Nov. 30, 1884, No. 17,654; in Austria-Hungary Mar. 1, 1885, No. 30,134 and No. 10,754, and in Spain Mar. 6, 1885, No. 6,654.



Claim.—In combination with burner A and elliptical globe B, the three vertical casings G H I, connected with but separated from one another to form the concentric chambers K and L, connected at their upper ends by a chamber, M, cover C, connecting the casings G H, and provided with a central discharge, F, and a plate, N, corrugated vertically and placed within the chamber L.

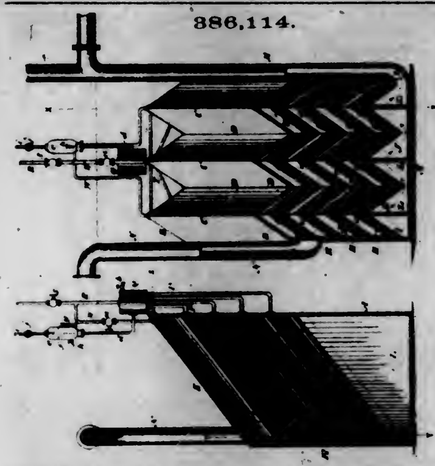
386,114. SEPARATING OIL FROM FEED-WATER. DANIEL DOBBINS, New York, N. Y. Filed May 24, 1888. Serial No. 274,866. (No model.)

Claim.—1. The apparatus herein described, having the inlet supply-pipe and the delivery-pipe, combined with the receptacle having the series of partitions with alternating elevations and depressions, and pipes leading from the elevations to a tank for collecting the oil.

2. The receptacle having the partitions provided with alternating elevations and depressions and forming spaces H between them, combined with the supply-pipe, alternating openings I between the said spaces, the delivery-pipe, and the series of pipes leading from the higher points of the spaces to a tank, substantially as set forth.

3. The receptacle having the partitions provided with alternating elevations and depressions and alternating openings I, combined with the supply-pipe, the delivery-pipe, the water-compartment J, plates L, and a series of pipes leading from the higher points of the spaces to a receiving-tank in communication with the air, substantially as set forth.

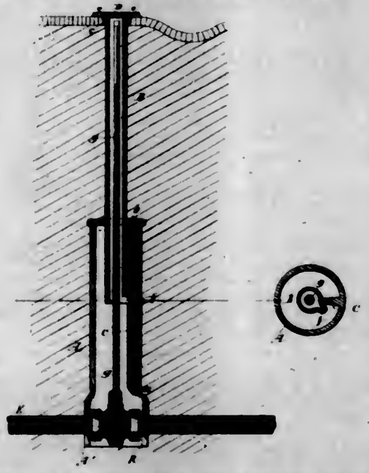
386,114.



4. The receptacle having the supply and delivery and subdivided by partitions whose surfaces have elevations and depressions, and openings I, combined with pipes leading from the said elevations to a receiver for oil containing a float and being in connection with the condenser, substantially as set forth.

5. The receptacle having the supply and delivery and subdivided by inclined partitions forming inclined spaces between them, alternating openings being provided in the partitions, combined with pipes leading from the higher points of said spaces to a tank for collecting the oil, said tank being in communication with the atmosphere, substantially as and for the purposes set forth.

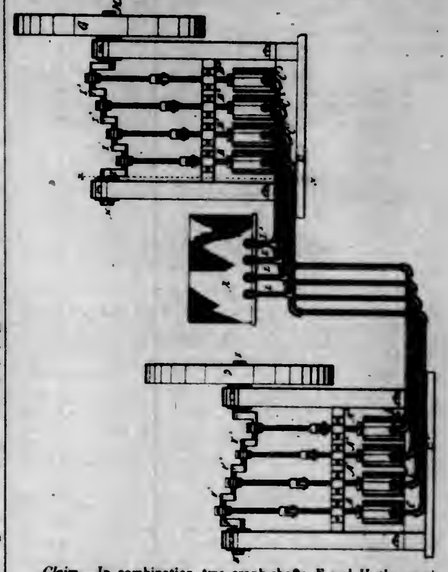
386,115. TELESCOPIC STOP-COCK FOR WATER-SERVICE. EDWARD DOUGLAS, Middletown, Conn., assignor to W. and E. Douglas, same place. Filed Mar. 16, 1888. Serial No. 267,392. (No model.)



Claim.—1. In a stop-cock box for water and gas pipes, the combination, with a lower section having a single longitudinal rib therein and provided at its upper end with an opening, of an upper smaller section adapted to slide within the lower section and provided at its lower end with a single projection adapted to engage either face of the rib, substantially as set forth.

2. In a stop-cock box for water and gas pipes, the combination, with a lower section having a longitudinal rib therein and provided at its upper end with a central opening, of the upper section, considerably smaller than the lower section, and fitting the opening in the top of said lower section, thereby forming a continuous flange or shoulder at the junction of the two sections, the said upper section being provided at its lower end with a lug or projection adapted to engage either face of the longitudinal rib of the lower section, and a screw-cap having a depending screw-threaded flange adapted to engage the upper screw-threaded end of the upper section, substantially as set forth.

386,116. APPARATUS FOR TRANSMITTING POWER. FREDERICK H. DU BOIS, New York, N. Y. Filed Mar. 29, 1886. Serial No. 197,073. (No model.)



Claim.—In combination, two crank-shafts, E and H, the cranks of each shaft being set at equal angles to one another, and those of one shaft oppositely arranged to those of the other, a set of pumps and a set of engines in series connected to the respective cranks, and a series of a similar number of pipes, C, each connecting a pump-cylinder of one series with an engine-cylinder of the other series, for communicating a continuous rotary movement from the driving to the driven shaft, substantially as set forth.

386,117. YARN-GUIDING MECHANISM FOR STRAIGHT-KNITTING MACHINES. WILLIAM BOTT, Laconia, N. H. Filed Sept. 10, 1887. Serial No. 249,236. (No model.)

Claim.—1. The combination, in a knitting-machine, of two straight and parallel rows of reciprocating needles, a reciprocating yarn-carrier having two yarn-guiding eyes and constructed and arranged to be semi-rotated or have its ends reversed, and thereby transfer each yarn carried thereby from one row of needles to the opposite row of needles at each end of its traverse, the reversing mechanism having provision for acting upon said yarn-carrier to reverse it, adjustable stops for controlling the operation of the said reversing mechanism, pattern-cams to control the position of the said stops to automatically effect the reversal of the yarn-carrier at predetermined times, and mechanism, substantially as described, connecting said adjustable stops and cams.

2. The two parallel rows of needles, means having provision for reciprocating said needles, a reciprocating yarn-carrier having two yarn-guiding eyes arranged upon opposite sides of its axis of revolution, and a rack and pinion for reversing said yarn-carrier, combined with a pair of movable stops, one at each end of the machine, to operate said rack, and pattern-cams to move the said stops into and out of the path of said rack, according as it may be desired to reverse said yarn-carrier to cross each yarn from one set of needles to the other or to deliver the same yarn to the same set of needles for two or more courses in succession.

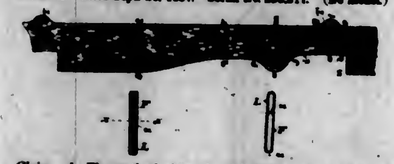
3. The two parallel rows of needles, means having provision for reciprocating said needles, a reciprocating and reversible yarn-carrier having two yarn-guiding eyes arranged upon opposite sides of its axis of revolution, a pinion, and two rack-bars engaging therewith upon opposite sides for reversing the said yarn-carrier, combined with two movable stops for operating said racks, and pattern-cams for moving said stops from the path of one rack-bar to the path of the other rack-bar, and vice versa, substantially as and for the purposes described.

4. The two parallel rows of needles, means having provision for reciprocating said needles, a reciprocating and reversible yarn-carrier having two yarn-guiding eyes arranged upon opposite sides of its axis of revolution, the yarn-carrier-reversing mechanism having provision for acting upon said yarn-carrier to reverse the same, and the locking mechanism having provision for retaining the said yarn-carrier in position at the conclusion of each semi-rotation thereof, combined with a pair of movable stops arranged one at each end of the traverse of said yarn-carrier, and pattern-cams for moving the said stops into position to operate said reversing mechanism or to prevent the operation of said reversing mechanism, according to the work to be done.

386,117.



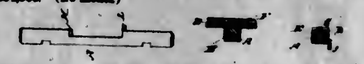
386,118. ART OF KNITTING STOCKINGS. WILLIAM BOTT, Laconia, N. H. Filed Sept. 20, 1887. Serial No. 250,217. (No model.)



Claim.—1. The method of forming full-fashioned stockings, which consists in taking up the full number of stitches required to form the top of the leg, knitting a few circular courses, dropping a portion of the stitches, knitting a few courses upon the remaining needles by feeding each yarn to the same row of needles in both directions throughout said courses, thereby forming two short sections of flat webs, then throwing out of action one-half of the remaining needles, knitting a toe-bulge by knitting a given number of courses back and forth and narrowing, and then a corresponding number of like courses and widening, at the same time uniting the widened portion to the narrowed portion, then throwing into action the needles last thrown out of action, then knitting a sufficient number of circular courses to form the greater portion of the foot, then widening for several courses to form a gusset or gore in the bottom of the foot, then knitting the heel-bulge in the same manner as the toe-bulge and upon the same side of the tube as the gusset or gore, then knitting a series of circular courses to form the ankle, then widening upon the same side of the tube as the heel-bulge till all the needles first thrown out of action are again in operation, then knitting a series of circular courses, using the whole number of needles to complete the desired length of the leg, then throwing out of action and dropping the stitches from the same needles that were first thrown out, (repeating the foregoing operations as many times as there are stockings required,) and then severing the sections and uniting by seaming the disconnected side of the toe-bulge to the foot portion.

2. The herein-described improvement in the art of knitting stockings in continuous web or connected series, whereby the top of the leg forming part of one stocking may be accurately severed from the toe-forming portion of the next stocking of the web with the minimum of waste, which consists in knitting several courses between the leg and toe portions of different stockings to form two short flat webs each having two selvage edges, to thereby designate the courses within which the web may be divided.

386,119. METALLIC RAILWAY-TIE. REMSEN W. FLOWER, Jr., and S. LLOYD WIEGAND, Philadelphia, Pa. Filed Oct. 6, 1887. Serial No. 251,668. (No model.)



Claim.—1. A tubular metallic railway-tie having projecting flanges, with portion of the metal of the bottom near the mid-length thereof cut and bent into shoulders adapted to engage in the compacted ballast of the central part of the road-bed, substantially as set forth.

2. A tubular metallic railway-tie having the lower parts of the sides thereof cut and bent outwardly at the mid-length thereof and adapted to be covered by and engage in the compacted ballast of the road-bed, substantially as set forth.

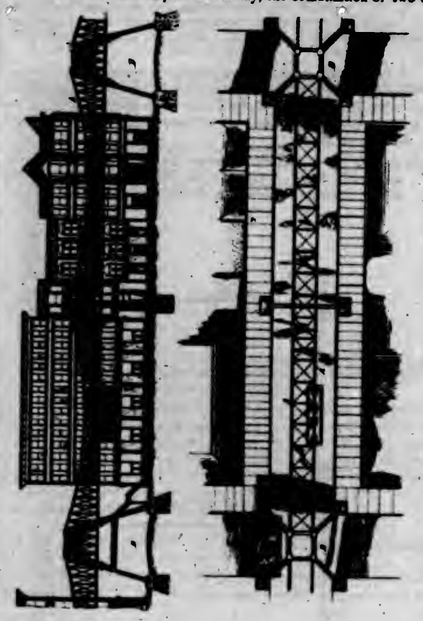
386,120. ELEVATED SUSPENSION-RAILROAD. E. CLARKE FORSYTH, Chicago, Ill. Filed Mar. 19, 1888. Serial No. 267,668. (No model.)

Claim.—1. In an elevated suspension-railway, two or more cables trussed together laterally, in combination with a road-girder suspended from the cables by suitable connections, and with track-rails mounted upon the said girders to afford a way for a car carried below, substantially as described.

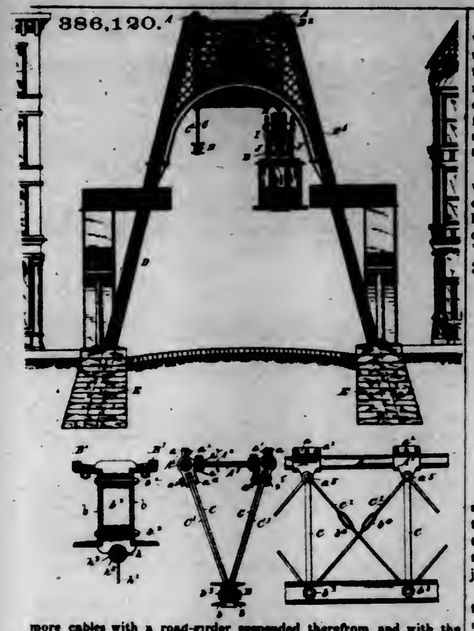
2. In an elevated suspension-railway, a series of piers, in combination with two or more cables trussed together laterally and suspended from and lying intermediate to the piers, a road girder or girders supported from the cables by suitable connections, and track-rails mounted upon the said girder, one upon each side of the top thereof, all as and for the purpose specified.

3. In a road-girder, the combination of two channel-beams, *b b*, arranged back to back, strut-castings *b'*, in the recesses of which the channel-beams rest, rivets or bolts b^3, which secure them together, and track-rails mounted one upon the top flange of each of the channel-beams and continuous with them, as and for the purpose specified.

4. In an elevated suspension-railway, the combination of two or



386,120.



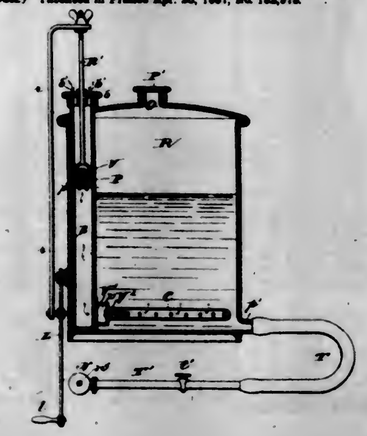
more cables with a road-girder suspended therefrom, and with the struts and ties connecting them, the lower ends of the said struts and ties being intermediate to the channel-beams forming the girder, and attached to them by bolts passing through the web of both the beams, thus permitting the tops and sides of the beams to be unobstructed to allow of the free passage of car-trucks, substantially as specified.

5. In an elevated railway, the combination of a road-girder formed of two channel-beams secured together back to back, rail B', struts C, ties C', and cables A A, trussed together laterally, substantially as specified.

6. In an elevated suspension-railway, the combination of cables A A, trussed together laterally, road-girder B, struts C, ties C', and castings A' A', secured at intervals upon the cables, substantially as specified.

7. In a double-track elevated railway, two cables, A A, approximately parallel, trussed together laterally, each cable having suspended from it by suitable struts and ties a road-girder adapted each to form a roadway upon which suspended cars may run, substantially as and for the purpose specified.

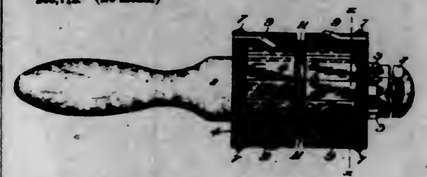
386,121. ATOMIZER. CLEMENT GAUTHIER, Marans, near Cavignac, Gironde, France. Filed Nov. 22, 1887. Serial No. 255,894. (No model.) Patented in France Apr. 23, 1887, No. 182,973.



Claim.—1. In an atomizer, the combination, with a fluid-reservoir, an atomizing-nozzle connected therewith, and a valve in the connection between the nozzle and reservoir, of an air-pump located within the reservoir, a perforated pipe arranged in the lower portion of the reservoir in proximity to the bottom thereof, and communicating at one end with the discharge-port of the pump, a back-pressure valve for closing the end of said perforated pipe, and a like valve for said discharge-port of the pump, all arranged for co-operation substantially as and for the purpose specified.

2. The herein-described atomizing-nozzle N, having a vertical wall or partition, n^4, interposed in its passage between its inlet and discharge ends to form a narrow opening, n^5, and the spherical enlargement n^6, formed in said passage between the wall n^4 and the discharge-orifice of the nozzle, as and for the purpose specified.

386,122. MANDREL FOR WELDING PIPE-COUPLING SLEEVES. ROBERT W. GORDON, McKeesport, Pa. Filed Apr. 5, 1888. Serial No. 269,712. (No model.)

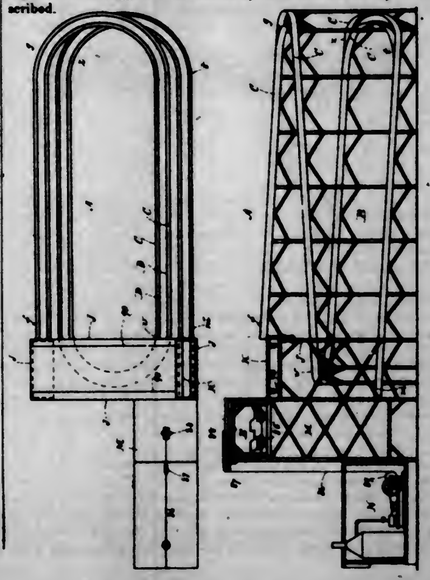


Claim.—1. In a mandrel for welding pipe-coupling sleeves, which sleeves have interior projections or recesses, the combination of a central core and outer sections, part of said sections having a smaller base than outer surface, and part having a larger base than outer surface, the sections being united with the core by engaging grooves and projections, substantially as and for the purposes described.

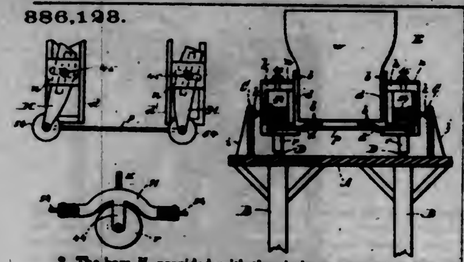
2. In a mandrel for welding pipe-coupling sleeves, the combination of a central core, outer sections, and recesses and projections for uniting the sections with the central core, and projections or grooves formed on the outer faces of the sections, substantially as and for the purposes described.

386,123. TOBOGGAN-SLIDE. CHARLES H. CRAFT, Haverhill, Mass., assignor to himself and Orlando Brown, same place. Filed Apr. 25, 1888. Serial No. 271,804. (No model.)

Claim.—1. In a toboggan-slide, the serpentine track A, provided with the guard-boards C and rails D, in combination with the toboggan E, supported on trucks r, resting on said rails, said trucks being journaled on bars H, provided with wheels 54, connected by cross-rods, as p, and adapted to swing laterally and engage said boards, whereby the trucks are kept in the line of the rails and prevented from cramping, and the toboggan is automatically steered, substantially as described.



386,128.

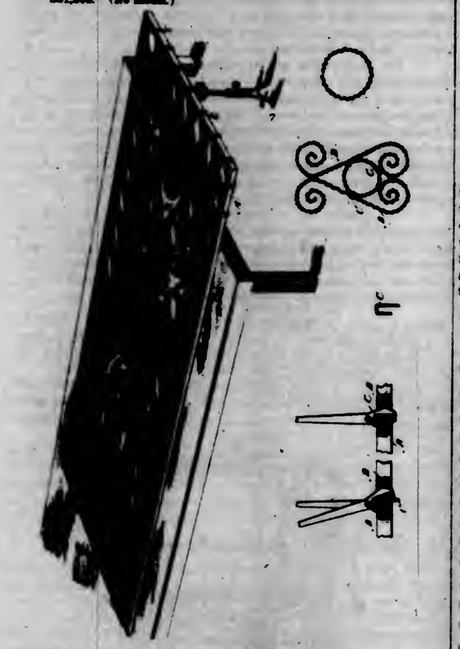


2. The bars H, provided with the pintles x, arms 44, and journaled trucks r, in combination with a toboggan-body, as w, each pair of said bars being connected by cross-rods p, substantially as set forth.

3. The toboggan-body w, provided with the brackets d, in combination with the horizontally-arranged bars H, provided with wheels 54, respectively journaled to swing laterally in said brackets, and provided with the journaled supporting-trucks r, and the track A, provided with the guard-boards C, substantially as described.

4. The bracket d, having the horizontal top n, provided with the hole j, in combination with the bar H, having the pintle x inserted in said hole and provided with the nut 45, the truck r, journaled in arms 44 on said bar, and the body w, substantially as set forth.

386,124. METHOD OF UNITING PIECES OF SCROLL-WORK. FREDERICK HARDWORTH, Chicago, Ill. Filed Mar. 14, 1887. Serial No. 231,302. (No model.)



Claim.—1. That improvement in the art of fastening together scroll-work which consists in placing the scrolls in position directly on a table, projecting the scroll-work over the end or side of the table, then passing an open-ended loop having one arm thereof longer than the other over the scrolls at the points to be joined or united, and then closing the open ends of the loop and tightly binding the scrolls by means of a suitable tool, all substantially as described.

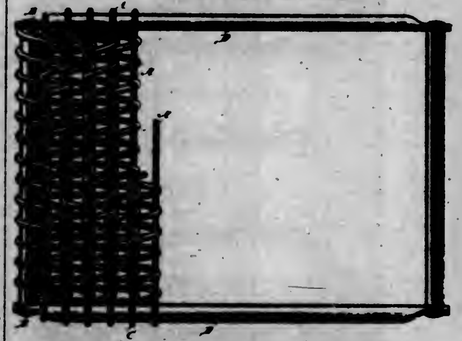
2. That improvement in the art of manufacturing scroll-work which consists in placing the scrolls in position, leaving open spaces around the points of contact of the scrolls, placing an open-ended loop, with one arm thereof longer than the other, around the points to be joined together, then closing the open arms over the scrolls, thus clamping the scrolls and firmly binding them together by means of a suitable tool.

386,125. METHOD OF MAKING SCROLL-WORK. FREDERICK HARDWORTH, Chicago, Ill. Filed June 11, 1887. Serial No. 241,021. (No model.)



Claim.—The method herein shown for uniting or joining together the different parts of scroll-work, which consists in placing in position the scrolls on a table with a part thereof projecting over the side of the table, then placing an open loop having one arm longer than the other in position on the scrolls where they are to be joined together from below or from the under side of the scroll-work, then adjusting a movable anvil under the loop, and then closing the longer arm over the scrolls, substantially as shown.

386,126. WIRE MAT. FREDERICK HARDWORTH, Chicago, Ill. Filed June 11, 1887. Serial No. 241,022. (No model.)

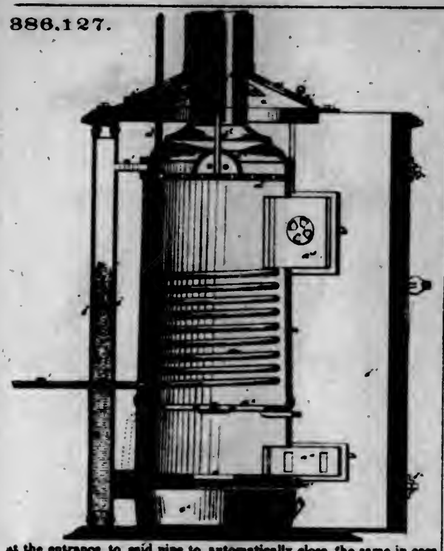


Claim.—As an article of manufacture, a mat made of coiled wire, one strand of which is coiled to the left and one strand coiled to the right, and the two coils joined together by a straight wire and provided with a border, on two sides of which the rods forming the border pass through the coils, and on the remainder of the sides the ends of the straight wires are wound around the rods forming the border, substantially as shown.

386,127. HEATER. ARENT W. HINZ, Chicago, Ill. Filed May 30, 1887. Serial No. 239,513. (No model.)

Claim.—1. In an apparatus for heating, the combination, with a heating cylinder or stove having a smoke-escape pipe, a valve located

386,127.

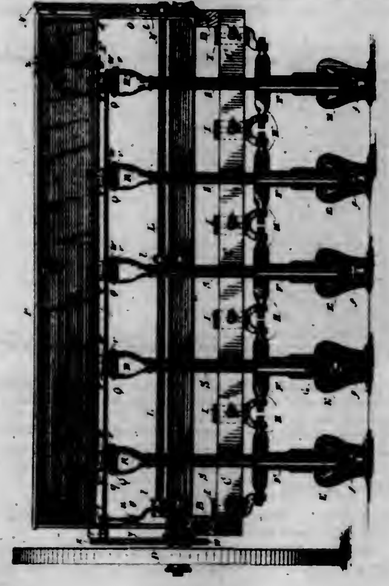


at the entrance to said pipe to automatically close the same in case the stove should become upset, of the double wall-casing surrounding the heater, and provided with a door and having a stationary and a rotating plate, each plate provided with openings, and a flap-valve having a stop-lug, substantially as and for the purpose specified.

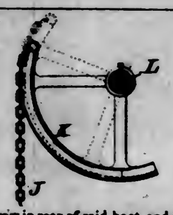
2. The combination, with a stove or heating-cylinder, of a protecting-casing surrounding the same, said casing provided with a stationary and a rotating plate, each plate provided with openings adapted to register one with the other, and a flap-valve having a stop-lug hinged beside each opening to automatically close said opening in case the stove should upset, substantially as specified.

386,128. GRAIN-DRILL. WILLIAM H. HOLLINGER, Hiawatha, and JOSEPH W. GILLETT, Woodbine, Kans. Filed Mar. 12, 1887. Serial No. 230,494. (No model.)

Claim.—1. The combination of the plow-carrying boot, the crimped wheel in rear of said boot, to pulverize the soil and cover the



386,128.



grain fed to the furrow in rear of said boot, and the loosely-hung link-connection between said boot and said crimped wheel, whereby the wheel is loosely suspended or connected and accommodates itself to the soil and furrow as the machine is drawn along, substantially as described.

2. The combination of the series of plow-carrying boots, the adjusting and supporting chains, and the supporting pulleys or surfaces for said chains adjustable independently, whereby the plows may be adjusted vertically independently, so as to work in the desired relation, as herein described.

3. The combination, substantially as hereinbefore set forth, of a series of plow-carrying boots, a series of independent adjusting devices and connections for said boots, whereby each may be independently set or hung vertically, as desired, and a lifting-lever common to said boots, whereby they may be all lifted or raised vertically simultaneously, as herein described.

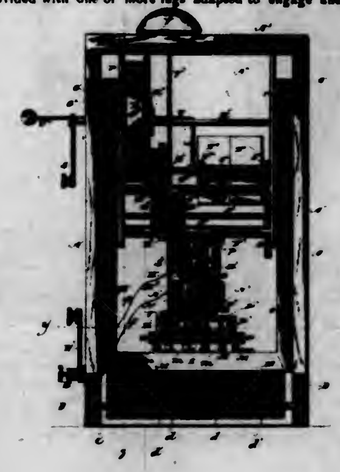
4. The combination of the series of plow-carrying boots, the series of independent adjusting devices carried by a rock shaft or rod, the connections between said boots and said independent adjusting devices, whereby each boot may be set or hung as desired, and a lifting-lever to rock said shaft or rod to raise or lower all of said boots together, as herein described.

5. The combination of the series of plow-carrying boots, the double-mold-board plows attached thereto, the drag-bars, respectively connected at one end to said boots and at the other end to vertically-adjustable plates on the front of the machine-frame, the series of independent adjusting devices carried by a rock shaft or rod, the connections between said boots and said independent adjusting devices, whereby each plow may be set or hung as desired, and a lifting-lever to rock said shaft or rod to raise or lower all of said plows together, substantially as herein described.

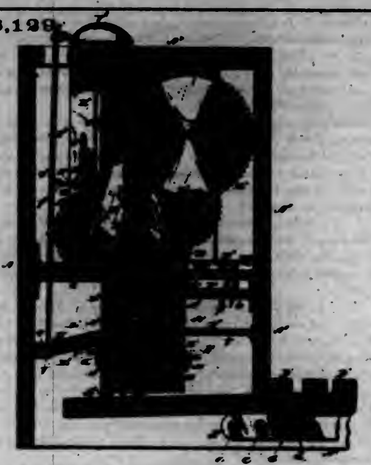
6. The combination, substantially as hereinbefore set forth, of the series of plow-carrying boots jointed to the frame of the machine by drag-bars, the series of independent adjusting devices for said boots, the supporting connections or chains between said independent adjusting devices and said boots, the rock shaft or rod carrying said adjusting devices, and the main lifting-lever to rock said shaft.

386,129. AUTOMATIC TELEGRAPH-TRANSMITTER. ERNST P. HOTCHKISS, Oak Park, Ill., assignor of one-half to William W. Dudley, Washington, D. C., and Carlos J. Ward, Oak Park, Ill. Filed Aug. 10, 1885. Renewed Oct. 21, 1887. Serial No. 253,013. (No model.)

Claim.—1. In a telegraphic transmitter, in combination with the series of movable strips, the series of key-levers below the same, each provided with one or more legs adapted to engage and lift one or



386,129.



more of the strips as the lever is operated, substantially as and for the purpose described.

2. In a telegraphic transmitter, the series of key-levers, each of which is provided on its upper edge with one or more projections corresponding in extent and relative arrangement with the telegraphic character or signal for a letter, sign, or number of a telegraphic code, and the series of movable strips above such levers and at right angles thereto, substantially as and for the purpose described.

3. In a telegraphic transmitter, in combination with the series of parallel movable strips, the series of key-levers below the same, each provided on its upper edge with an arrangement of dot and dash projections corresponding with the arrangement of dots and dashes constituting the telegraphic signal or character for the letter, sign, or number of the key-lever, each dot projection being adapted to engage one of the strips and the dash projection two or more, according to the length of the dash in the character, substantially as and for the purpose described.

4. In combination with the contact devices, the rotary wheel provided with movable pieces normally out of position to operate the contact devices as the wheel revolves, and means for moving and holding one or more of such pieces in position to operate the contact devices as the wheel revolves, substantially as and for the purpose described.

5. In combination with mechanism for making and breaking circuit, the rotary circuit-wheel provided with pivoted arms normally out of position to operate the make-and-break mechanism, and means for moving and holding one or more of such arms in position to operate such mechanism to close the circuit, substantially as and for the purpose described.

6. In combination with the transmitting-lever provided with a stud, the rotary circuit-wheel carrying a series of pivoted pieces normally in position, so as to avoid the stud on the lever as the wheel rotates, and means, substantially as described, for moving one or more of these arms into position to engage the stud on the transmitting-lever as the wheel revolves, substantially as and for the purpose described.

7. In combination with the circuit-wheel rotating in one direction, a key-lever, and suitable mechanism for rotating the wheel, means for starting the mechanism into action to rotate the wheel after the key-lever has been moved and released, and for stopping such mechanism as soon as the character or signal is finished independently of the complete rotation of the wheel, substantially as and for the purpose described.

8. In a telegraphic transmitter, in combination with the rotary circuit-wheel and mechanism tending to normally revolve it, means for releasing the mechanism and allowing the wheel to revolve and send a signal when a key has been depressed and released, and automatic means for stopping the driving mechanism and the wheel and striking an alarm when the character or signal is finished without reference to the completion of a rotation by the wheel, substantially as and for the purpose described.

9. In combination with the radial pivoted bars on the circuit-wheel, the series of movable strips below the wheel, each having an arm or leg adapted to engage and lift one of the bars when the strip is raised, substantially as and for the purpose described.

10. In combination with the pivoted radial bars on the rotary circuit-wheel, the movable strips below the wheel, each provided with an arm adapted to engage one of such bars when the strip is raised, and having a leg or shoulder adapted to engage the side of the bar and prevent its movement until the strip falls again, substantially as and for the purpose described.

11. The rotary circuit-wheel provided with the radial bars L L, pivoted thereto, each having on its upper side an upright arm turned in at its upper end toward the axis of the wheel, and the hook arms or pawls N^{5} N^{5}, pivoted so as to swing in radial planes, and at their lower hooked ends engaging the ends of the inturned portions of the arms or bars L L, when such bars are down in their normal horizontal position, substantially as and for the purpose described.

12. The circuit-wheel having the upper and lower heads, the radial bars pivoted to the lower head, provided with upright arms having their upper portions turned inward, and the upright bars pivoted to the upper head, having their lower ends hooked and adapted to engage the inner ends of the inturned portions of the arms on the radial bars, when such bars are in horizontal positions, substantially as and for the purpose described.

13. In combination with the series of hooked arms pivoted to a head or flange of the circuit-wheel, so that their lower hooked ends tend to normally swing outward, the series of radial bars pivoted to a second head or flange of the wheel, having inturned hooked projections adapted, when the bars are down in horizontal position, to engage the hooked ends of the pivoted hooked arms to hold them normally swung inward until the bars are raised, substantially as and for the purpose described.

14. In combination with the rotary circuit-wheel having the series of pivoted hook-arms having their lower ends hooked and so pivoted that they tend to swing such lower ends outward, and the pivoted radial bars having hooked uprights adapted to engage the hooks on the pivoted hook-arms and hold them swung inward while the radial bars are down, but to rise above such hooks when the radial bars are raised, so as to let the hook-arms swing outward, the transmitting-lever, and a stud situated inside of the circle of travel of the upper ends of the pivoted hook-arms when the lower hooked ends thereof are held in, substantially as and for the purpose described.

15. In combination with the rotary circuit-wheel having the series of pivoted hooked arms N^{5} N^{5} and the series of pivoted radial bars L L, provided with the hooked uprights normally engaging the ends of the hooks of the pivoted hooked arms, the transmitting-lever for operating the contact devices, having the stud so situated as to be engaged and thrown up by the upper ends of the pivoted hook-arms only when such ends have been swung inward from their normal position, substantially as and for the purpose described.

16. In combination with the pivoted radial bars of the rotary circuit-wheel and means for raising one or more of these bars as desired, the stopping and starting lever V, resting upon several of the bars, so as to be raised by the bars as they are raised, and the stop-lever adapted to be moved by the stopping and starting lever to release the circuit-wheel-driving mechanism when the latter lever is raised, substantially as and for the purpose described.

17. In combination with the pivoted radial bars of the circuit-wheel, the stopping and starting lever having a portion resting upon one or more of the bars, and the pivoted stop-arm resting upon the lever adapted to engage a portion of one of the bars when the bars and lever are down, substantially as and for the purpose described.

18. In combination with the pivoted bars L L of the circuit-wheel, the lever adapted to be raised as one or more of the bars are lifted, and a stop adapted to normally engage one of the bars and to be raised to release the bar when the lever is raised, substantially as and for the purpose described.

19. In combination with the circuit-wheel provided with the pivoted bars L L and means for rotating the wheel, the stopping and starting lever adapted to be raised by the swinging up of one or more of the bars, and means for stopping the driving mechanism when the lever is down and releasing it when the lever is up, substantially as and for the purpose described.

20. In combination with the rotary circuit-wheel and the pivoted bars L L thereof, spring mechanism for driving the wheel, an arm on the fly-shaft, a lever engaging one or more of the bars, adapted to be raised by the raising of one or more of such bars, the pivoted arm resting on such lever, and the rod connected therewith, having a pin or arm adapted to engage the arm on the fly-shaft when the pivoted arm resting on the lever is down, a bell, and a hammer on the rod adapted to strike the bell as the rod swings into position to stop the fly-shaft, substantially as and for the purpose described.

21. In combination with the rotary circuit-wheel and mechanism for rotating the same, the lever adapted to be raised by the raising of one or more of the pivoted radial bars of the circuit-wheel, the pivoted stop-arm resting on such lever, and when the lever is down adapted to engage an arm or projection on one of the bars of the wheel, the rod connected and swinging with such pivoted stop-arm, the bell, and the head or hammer on the rod adapted to strike the bell whenever the lever and stop-arm drop again into their lowest

positions after being raised, substantially as and for the purpose described.

22. In combination with the series of movable strips E E, having the upwardly-extending arms at their ends, the stationary guiding lugs or ears between the arms of contiguous strips, and the anti-friction rollers engaging the outer sides of the arms, substantially as and for the purpose described.

23. In combination with the pivoted hook arms or pawls of the circuit-wheel, and the transmitting-lever having a stud or lug so situated as to be engaged by the upper ends of such of the pawls as are swung to bring their upper ends inward, means, substantially as described, for swinging such pawls to move their upper ends outward again after they have engaged the stud on the lever, substantially as and for the purpose described.

24. In combination with the pivoted hook or pawl arms on the rotary circuit-wheel, the transmitting-lever having a lug adapted to be engaged by the upper ends of such of the hook arms or pawls as may be swung to bring their upper ends inward beyond the rest, and the trip-arm adapted to engage the lower portions of the pawls or arms and swing them inward after their upper ends have engaged the stud on the lever, substantially as and for the purpose described.

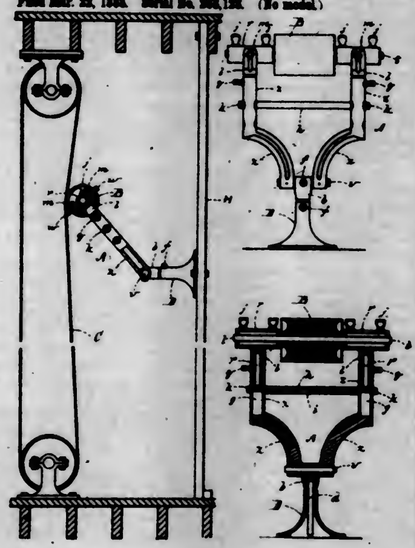
25. In combination with the rotary circuit-wheel and the pivoted radial bars provided with hooked arms, and the pivoted hooked arms or pawls carried by said wheel, the transmitting-lever having the lug adapted to be engaged by the upper end of any pawl which is swung to bring its upper end inward beyond the others, and the trip adapted to engage such pawl below its pivot to swing its lower end inward again on a line with the other pawls after its upper end has engaged the stud on the lever, substantially as and for the purpose described.

26. In a telegraphic transmitter, in combination with the transmitting devices and the driving mechanism therefor, the fly or fan shaft, and the means for increasing or diminishing the effective area of the fan, which consists in the plate engaging and rotating with the fan and adapted to be slid along the shaft, so as to leave more or less of the plate extending beyond the end of the fan, substantially as and the purpose described.

27. In a telegraphic transmitter, in combination with the transmitting devices and the driving mechanism therefor, the fly or regulating fan, and the plate engaging and rotating with the fan, pivotally supported on a sliding sleeve on the fly-shaft, substantially as and for the purpose described.

28. In a telegraphic transmitter, in combination with the mechanism for driving the transmitting devices, the fan-shaft and the fixed fan thereon, the sliding sleeve on the shaft, the rod connected with the sleeve, whereby said sleeve can be slid on the shaft toward or from the fan, and the plate connected with the sleeve so that it can rotate but must move with it along the shaft, all substantially as shown and described, so that the speed of the transmitting devices can be regulated at will by moving the rod connected with the sleeve.

386,130. BELT-TIGHTENER. SETH G. HUNTER, Watertown, N. Y. Filed Mar. 22, 1888. Serial No. 268,128. (No model.)



Claim.—1. In a belt-tightener, the combination of the following instrumentalities, to wit: a bracket, a rod adjustably secured in said bracket and provided with a pintle, a body journaled on said pintle, hangers adjustably secured to said body, bearings pivoted in said hangers, and a roll journaled in said pivoted bearings, all being arranged to operate substantially as set forth.

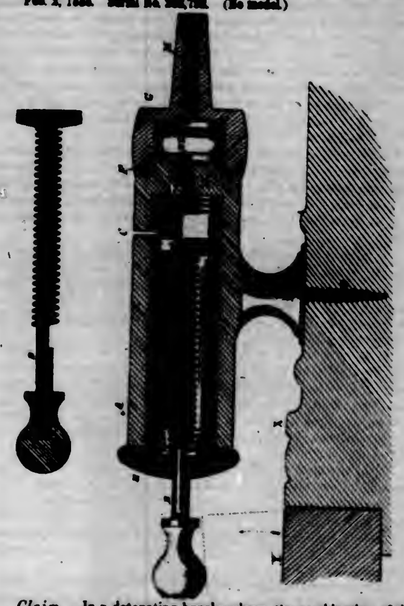
2. In a belt-tightener, the body A, having the hollow arms *x*, in combination with the rod *d*, having the head *b*, provided with the pintle *v*, the bracket D, provided with the adjusting-screw *f*, and the roll B, journaled in bearings secured in said arms in such a manner that said roll may be adjusted longitudinally with respect to the belt, substantially as described.

3. In a belt-tightener, the body A, having the hollow arms *x*, in combination with the bearings *r*, pivoted in adjustable hangers on said arms, and the roll B, journaled in said bearings, said body being adjustably secured in a bracket fastened to a post or wall, substantially as set forth.

4. In a belt-tightener, arms *x*, each having an inwardly-curved portion, *z*, the straight portions being provided with longitudinal holes in their outer ends, the sleeve *h*, rod *i*, and nuts *k*, for connecting and bracing said arms, a hanger, *l*, adjustably secured on each of said arms, said hangers being respectively provided with arms *m* and rods *p*, boxes or bearings *r*, pivoted in the arms, a roll, B, journaled on the rod *l* in said pivoted boxes or bearings, a bracket, D, and a rod, *d*, adjustably secured in said bracket and having the head *b*, provided with the pintle *v*, the curved portions *z* of the arms *x* being pivoted on said pintle, substantially as described.

5. In a belt-tightener, a bracket, a rod adjustably secured in said bracket, a body jointed to said rod and provided with arms having holes in their outer ends, hangers adjustably secured on said arms, boxes or bearings pivoted in said hangers, and a roll journaled in said pivoted bearings, all combined and arranged to operate substantially as set forth.

386,131. BURGLAR-ALARM. JOHN IRBAH, St. Louis, Mo. Filed Feb. 2, 1888. Serial No. 262,792. (No model.)



Claim.—In a detonating burglar-alarm, the combination of the hollow firing-cylinder A, screw-threaded at F, and the hollow cylindrical extension G for carrying a second explosive, screw-threaded and provided with the openings K and L, whereby the firing-cylinder can be elongated and caused to fire two explosives at will, substantially as set forth.

386,132. ALARM. JOHN IRBAH, St. Louis, Mo. Filed Feb. 2, 1888. Serial No. 262,793. (No model.)

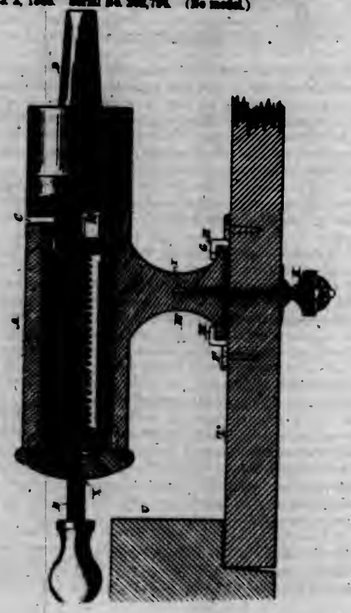
Claim.—1. The combination, with a clock alarm mechanism having a firing alarm mechanism connected to it, of the connecting supporting-rod C, the screw-cap C', working on the upper end of said rod to vary the length of the connection between the clock alarm mechanism and firing alarm mechanism, and the spring-plunger of the firing mechanism, substantially as set forth.

386,132.



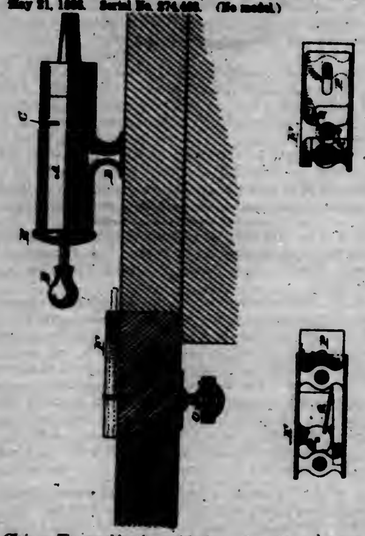
2. The combination, with the lamp and firing-cylinder, of an alarm mechanism, the horizontally-adjustable sliding match-holder F, provided with a base, G, and the clamps H, whereby the base G may slide in the recess I to adjust the match to different distances from the lamp, substantially as set forth.

386,133. BURGLAR-ALARM. JOHN IRBAH, St. Louis, Mo. Filed Feb. 2, 1888. Serial No. 262,794. (No model.)



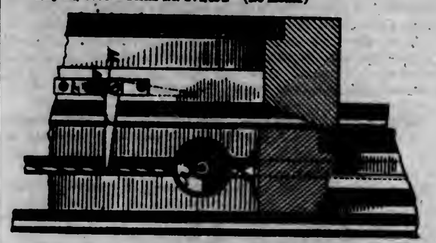
Claim.—In a detonating burglar-alarm, the combination of a firing-cylinder and its firing mechanism, a shank for the cylinder provided with a key-hole, a key to rotate the shank-cylinder and firing mechanism, a base-plate for the shank, and means for holding the base-plate to place upon the inside of a door, so that the key will operate from the outside, substantially as set forth.

386,134. BURGLAR-ALARM. JOHN IRBAH, St. Louis, Mo. Filed May 21, 1888. Serial No. 274,603. (No model.)



Claim.—The combination, with the spring-plunger of a detonating burglar-alarm, of a trip attachment, F, consisting of a slide, P, connected to a rotary part, R, adapted to be turned by a key, O, from the outside of a door to throw the slide P out of or into position to strike the spring-plunger and operate the alarm mechanism attached to the inside of a door, when the door is opened, substantially as set forth.

386,135. BURGLAR-ALARM. JOHN IRBAH, St. Louis, Mo. Filed May 21, 1888. Serial No. 274,604. (No model.)



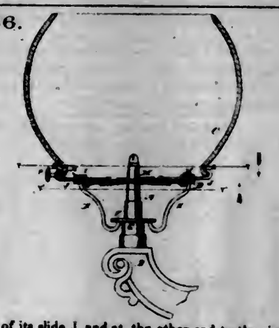
Claim.—The combination, with the spring-plunger of a detonating burglar-alarm, of a trip attachment for use upon a window-sash, consisting of the plate T, adapted to be screwed to the vertical part of a sash and provided with a shoulder, U, and the arm V, pivoted loosely to the plate and rounded at W, so as to turn a quarter of a revolution and be stopped by the shoulder U, the arm V also adapted to be set so as to project over the spring-plunger of the alarm mechanism and cause it to operate when a window is raised, substantially as set forth.

386,136. SUPPORT FOR GLOBES. ROBERT JAMES, New York, N. Y. Filed Nov. 30, 1887. Serial No. 256,493. (No model.)

Claim.—1. The ring D, sustaining-arms E, and disk F, combined with the slides J, having shoulders L, the guides for the slides, and the springs M, each of the slides being independent of the others, and each spring M being secured at one end to the inner end of its slide J and at the other end to the ring D on the opposite side of the burner, substantially as shown and described.

2. The ring D, sustained around the burner and having guides, combined with the slides J and springs M, each of the slides being independent of the others, and each spring M being secured at one end to

386,186.



the inner end of its slide J and at the other end to the ring D on the opposite side of the burner, substantially as shown and described.

386,137. SEPARATING AMMONIUM CHLORIDE. GUSTAV JÄRMAY, Northwich, County of Chester, England. Filed Oct. 15, 1887. Serial No. 252,477. (No specimens.) Patented in England Aug. 14, 1886, No. 10,419.

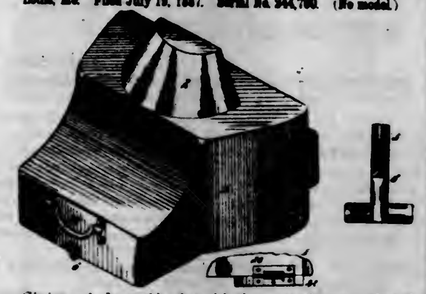
Claim.—The improvement in treating the residual or ammonium-chloride liquors obtained in the ammonia-soda process, which consists in adding at one operation to these liquors the requisite quantity of sodium chloride to replace the ammonium chloride, such amount being greater than what would saturate the original ammonium-chloride liquor, keeping the salt in suspension by constant agitation, and at the same time cooling, whereby the sodium chloride gradually replaces the ammonium chloride in the solution, and the latter salt separates out, and on the agitation ceasing falls to the bottom, whereby I obtain in one operation crystallized ammonium chloride and a mother-liquor applicable in the ammonia-soda process in the place of brine.

386,138. PROCESS OF DISTILLING PINE-WOOD FOR THE PRODUCTION OF CRUDE DRY TURPENTINE AND PINE-TAR. BERNHARD KOCH, New Orleans, La., assignor of one-half to Charles J. Allen, same place. Filed Mar. 1, 1887. Serial No. 229,229. (No specimens.)

Claim.—1. The process for the production of turpentine and pine-tar, consisting, essentially, in extracting the pine-oil by dry distillation, agitating the distillate with milk of lime, allowing the mixture to settle, separating the oil and lye or other impurities which have combined therewith, agitating the oil with dilute sulphuric acid, removing the last remaining traces of alkali, and finally distilling the oil.

2. The process for the production of turpentine and pine-tar, consisting, essentially, in extracting the pine-oil by dry distillation, mixing a solution of caustic soda with the crude dry distilled turpentine, allowing it to settle, drawing off the accumulated lye, redistilling the turpentine, then thoroughly intermixing an aqueous solution of caustic potash, separating the oil and lye, agitating the oil with concentrated sulphuric acid, washing it out with water and again with an aqueous solution of caustic potash, and finally redistilling the oil.

386,139. COVER FOR TYPE-WRITERS. GODFREY H. LASAR, St. Louis, Mo. Filed July 19, 1887. Serial No. 244,709. (No model.)

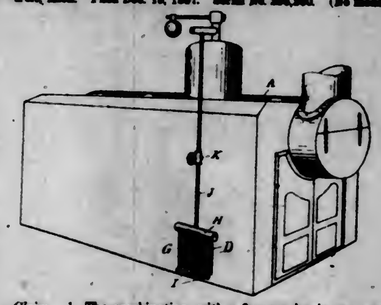


Claim.—1. In combination with the cover of a type-writer, the inwardly-bent and downwardly-extending plates 12, secured to the cover on the inside thereof near its lower edge, rock-shaft 4, secured to the base of the machine, lever 7, secured to the rock-shaft, and spring-bolts connected to the levers, substantially as and for the purpose set forth.

2. In combination with the cover of a type-writer, having wings 20, the pieces 21 and 22, the piece 22 being hinged to one of the wings, substantially as and for the purpose set forth.

3. In combination with the cover of a type-writer, having wings 20, the pieces 21 22, the piece 22 being hinged to one of the wings and provided with a pin fitting in a catch on the wing, substantially as and for the purpose set forth.

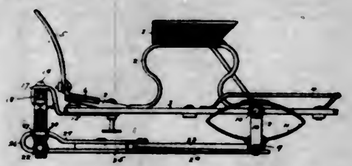
386,140. AIR-FEEDING DEVICE. FREDERICK LEADBEATER, Detroit, Mich. Filed Dec. 19, 1887. Serial No. 258,260. (No model.)



Claim.—1. The combination, with a furnace having an aperture with parallel sides leading into the ash-pit, of the plurality of vertical division-strips dividing said aperture into separated passage-ways, a corresponding series of vertical perforated tubes arranged outside said aperture, one opposite the space between each two strips, and a cross-head communicating with all of said tubes and connected with a suitable source of steam, substantially as described.

2. In a steam and air feeding device for smoke-consumers, the combination of the aperture D, formed in the side wall of the ash-pit, the partitions E, inlets F, perforated tubes G, drip-cocks I, one for each tube G, cross-head H, supply-pipe J, and valve K in such supply-pipe, the parts being arranged and constructed to operate substantially as and for the purpose described.

386,141. BUCKBOARD-WAGON. WILLIAM LEPPERT and WILLIAM I. GARDNER, Seymour, Ind. Filed Mar. 27, 1888. Serial No. 268,717. (No model.)



Claim.—1. In a buckboard-wagon, the combination of the slat bottom, the dropped or bent rear axle, the longitudinally-arranged elliptic springs supporting the rear end of said bottom, the transverse forward elliptic spring, the front axle pivoted beneath the same, the cross-bar secured to the upper side of the same, and the curved brackets supporting the forward end of said bottom in rear of said spring, substantially as described.

2. In a buckboard-wagon, the combination of the slat bottom, the dropped or bent axle, and the springs secured to the sides of said bottom and also to said axle, substantially as and for the purpose described.

3. In a buckboard-wagon, the combination of the slat bottom, the dropped or bent axle, and the transverse bar formed with ends which are bent upward and outward, with the elliptic springs secured to said dropped or bent portion of the axle and to the bent ends of said transverse bar, substantially as and for the purpose described.

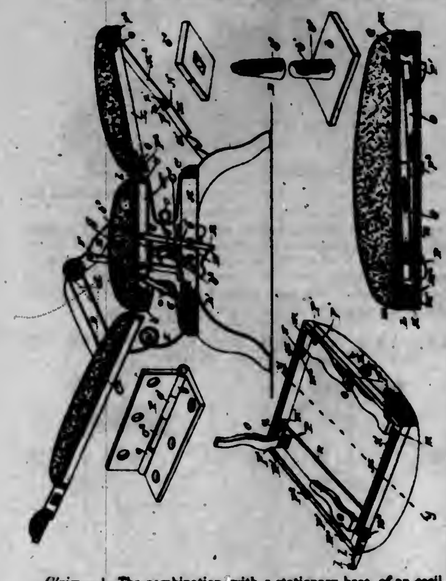
4. In a buckboard-wagon, the combination of the slat bottom, the forward axle, the transverse spring, the cross-bar secured to said spring, and the upwardly-curved brackets supporting said bottom and having rectangularly-hooked ends resting upon said cross-bar, substantially as and for the purpose described.

5. In a buckboard-wagon, the combination of the slat bottom, the transverse bar secured thereto near its rear end and formed with bent ends, and the upwardly-curved brackets at the forward end of said bottom, with the dropped or bent rear axle, the springs secured to its bent portion and to the bent ends of said transverse bar, the forward spring, the front axle, and the cross-bar, to which are secured said brackets, substantially as and for the purpose described.

6. The combination of the slat bottom 3, the cross-bar 18, and the forward elliptic spring, 20, with the upwardly-curved brackets 14, having their ends 17 bent forward and downward, and notted bolts 19, passing through said forwardly-bent portions of the bracket ends and through said cross-bar, substantially as and for the purpose described.

7. The combination, with the slat bottom 3, the upwardly-curved brackets 14, the forward cross-bar, 18, secured to said brackets and to the forward elliptic spring, 20, the bolster 21, also secured to said spring, and the front axle, 22, pivoted under said bolster, of the reach 23, the metallic bar 25 upon its under side, which is curved forward and over said front axle and secured by its cross-head 27 to the forward face of said bolster, and the bracket or brace 26, bolted to the upper side of said reach and secured by its cross-head 30 to the rear face of said bolster, substantially as and for the purpose described.

386,142. CONVERTIBLE CHAIR AND COT. FRANK C. LEWIS, Catskill, N. Y. Filed Mar. 21, 1887. Serial No. 231,743. (No model.)



Claim.—1. The combination, with a stationary base, of an oscillating seat mounted thereon and supported above the same, a back pivotally connected to the same, the arms pivoted to both the seat and the back, and also pivoted together, and the return-springs arranged on opposite sides of the seat and connected to the base and the arms, as and for the purpose described.

2. The combination of a base, an oscillating seat mounted thereon, the arms D and links E, an adjustable back pivoted to the free ends of the arms and the seat, and the return-springs pivotally connected to the base and the arms at an intermediate point of the same, as and for the purpose described.

3. In a reclining-chair, the combination, with an adjustable back and the arms, of the coupled clamping devices and the wedge-shaped braces pivoted to the arms and passing through the clamping devices, the braces being tapered from their point of connection with the arms toward their free ends, as and for the purpose set forth.

4. In a reclining-chair, the combination, with the adjustable back and the arms, of a pair of clamping devices and the longitudinally-tapered braces pivoted to the arms and passing through the clamping devices, as and for the purpose described.

5. In a reclining-chair, the combination, with the adjustable back and the arms, of the tapered braces pivoted to the arms and the clamping devices, each having the coupled rods provided with eyes for the passage of the braces, and the binding-wheels, as and for the purpose described.

6. In a reclining-chair, the combination, with an adjustable back and the arms connected to the back and the seat by intermediate links, of the tapered braces pivoted to the links, and clamping devices having the rods thereof coupled together, and each provided with the eye and the threaded extension, the slotted washers, and the binding wheels fitted on the threaded extension, as and for the purpose described.

7. In a chair of the class described, the combination, with the adjustable back and arms, of the braces, and the clamping devices for the braces, having the oppositely-threaded rods, and the threaded coupling-sleeve into which the rods are screwed, as and for the purpose set forth.

8. In combination with the base, the seat, the convertible foot-rest and ottoman detachably connected directly to the seat, and adjustable bars connecting the opposite end of the foot-rest to the base, and folding legs connected to the foot-rest, whereby when the foot-rest is to be used as an ottoman it can be detached from the seat and base, the adjustable bars folded within the frame of the foot-rest, and the hinged legs let down to support the ottoman, and when used as a foot-rest the legs are folded within the ottoman-frame, the adjustable bars are let down, and connection is made between the foot-rest frame and the base and seat, as set forth.

9. The herein-described combined ottoman and foot-rest, comprising a frame suitably covered or upholstered and provided with devices for detachably connecting the frame to a chair to form a foot-rest, a series of legs connected to the frame by hinges P, one leaf of which is secured to the frame and the other leaf is secured to the legs, one leaf of the hinge sliding on the other, so as to give both a sliding and a swinging movement to the legs, said legs being provided with shoulders to engage the frame of the foot-rest when the article is employed as an ottoman, and the folding bars, also connected to the foot-rest frame, said bars to connect with the chair when the article is to be used as a foot-rest, as set forth.

10. The foot-rest having the longitudinal recesses and the lateral openings *m'*, and the folding rack-bars pivoted at one end of the foot-rest, and connected by an intermediate tie-bar to fit in the lateral openings, as and for the purpose described.

11. A foot-rest having the folding legs O hinged thereto and provided with the shoulders *p'*, the hinges P, permitting the legs to have a lateral movement independently of their swinging movement, and the buttons Q and stops P', for locking the legs in a vertical position, substantially as described.

12. The foot-rest L, having the recessed legs O independently hinged inside thereof and adapted to slide on the hinge-pintles, to engage the frame of the foot-rest when the legs are supported in their vertical positions, each pair of legs being adapted to fold compactly within the body of the rest and overlap one another, and the locking device *p*, to hold the legs against movement when folded, as set forth.

13. The combination, with the foot-rest or ottoman L, the hinges P, adapted to have a sliding movement, having one leaf attached to the foot-rest, and the legs O, having the other leaf of the hinge connected thereto, whereby the said legs are independently hinged inside the foot-rest, the leaf of the hinge that is attached to the legs sliding on the pintle of the leaf that is secured to the foot-rest frame, whereby the legs are given both a sliding and a swinging movement, the shoulders on the legs engaging the frame of the foot-rest to lock the legs in position, as set forth.

14. The combination, with the foot-rest or ottoman L, the shouldered legs, and the hinges P, for independently hinging the legs inside the foot-rest; the said hinges having one leaf secured to the foot-rest and the other leaf secured to the legs, said hinge-leaves sliding upon the pintles, and also having a swinging movement, whereby the legs are given both a sliding and swinging movement, the shouldered portion of the legs engaging the foot-rest frame, and the stops for locking the legs in their vertical position, as set forth.

15. The combination, with a base and a seat, of the clamping devices and a tapering link pivoted to the seat and fitting in the clamping devices to be held thereby against movement, as and for the purpose specified.

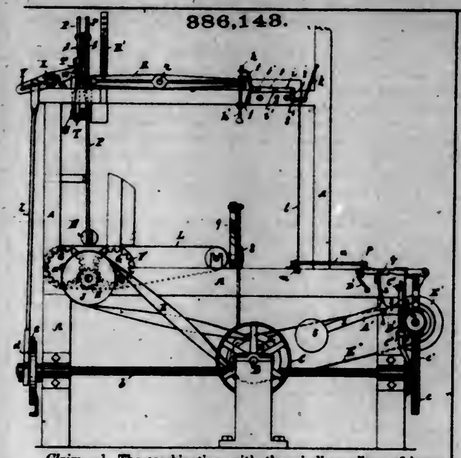
16. The combination, with a base and an oscillating seat, of a clamping device having an eyebolt passing through the base, a binding-wheel fitted on the bolt, and a tapering link pivoted to the seat and fitted in the eye of the bolt, as and for the purpose described.

17. In combination with the stationary base, an oscillating seat mounted thereon, a back pivotally connected to the seat, the return-springs I, connected to the base and acting on the back, and the foot-rest L, connected to the seat, whereby the occupant can rock the chair while in a reclining position by pressing the foot upon the outer end of the foot-rest, and thus throwing his weight into the back of the chair, causing the seat to rock in one direction, and when the pressure of the foot is relieved the return-springs are caused to react to bring the back and the seat to the former position, as set forth.

386,143. COTTON-BATTING MACHINE. WILLARD I. LEWIS, Walpole, Mass. Filed Feb. 14, 1887. Serial No. 227,503. (No model.)

Brief.—The batting is nipped between winding-rollers loosely mounted at the lower ends of levers pivoted at the upper ends to a tilting frame, which, when moved by the upward pressure of the levers caused by the completed bat, disturbs a dead-center, allowing a spring to actuate a train of devices to throw into gear a constantly-revolving worm and a cam-shaft, the cam on which actuates a system of cranks and levers to withdraw the winding-rollers from the batting. The descent of the pivoted levers and tilting frame again sets the dead-center and disengages the worm and gear on the cam-shaft.

386,143.



Claim.—1. The combination, with the winding-rollers, of levers having a laterally-swinging movement and provided at their lower ends with studs on which said rollers are loosely mounted, a vertically-moving frame on which said levers are pivoted, and means for swinging said levers toward and from each other, substantially as described.

2. The combination, with a moving support for the batting, of the winding-rollers N N, the levers P P, having studs on which said winding-rollers are loosely mounted, and a vertically-movable frame on which said levers are pivoted, substantially as described.

3. The combination, with the feed-rollers P P, means for actuating said rollers, and an apron, L, of the winding-rollers N N, the levers P P, provided with studs N' N', on which said winding-rollers are loosely mounted, so as to revolve freely with the progressive movement of the batting, and a vertically-movable frame on which said levers are pivoted, substantially as described.

4. The combination, with the winding-rollers N N, of the levers P P, provided with studs on which said rollers are loosely mounted, and a tilting frame, R, having a front bar to which said levers are fulcrumed, substantially as described.

5. The combination, with the winding-rollers N N, levers P P, and tilting frame R, of the bifurcated lever *f*, having set-screws *h h'*, the link *i*, bell-crank lever *j*, and spring *k*, substantially as described.

6. The combination of the winding-rollers N N, levers P P, tilting frame R, lever *f*, having set-screws *h h'*, link *i*, bell-crank lever *j*, spring *k*, rod *l*, rocking bar *n*, having arms *m p*, latch *q*, lever *w*, links *r v*, sliding box *t*, three-armed lever A', sliding bar B', having hook *b'*, cam-shaft *b*, having a gear, *c*, provided with pins *c'*, the worm *u*, and its driving devices, substantially as described.

7. The combination, with the winding-rollers N N, levers P P, tilting frame R, cam-shaft *b*, and devices for actuating said cam-shaft, of mechanism intermediate said tilting frame and cam-shaft, whereby the movement of the said frame occasioned by the upward pressure of the completed bat serves to throw the cam-shaft into action, substantially as described.

8. The combination, with the winding-rollers N N, levers P P, and tilting frame R, of the bifurcated lever *f*, link *i*, bell-crank *j*, spring *k*, rod *l*, rocking bar *n*, having arms *m p*, latch *q*, three-armed lever A', having pawl 2, lever *w*, links *v v*, and sliding box *t*, whereby the latch *q* is lifted and released from the pawl 2 and the sliding box *t* permitted to descend, substantially as described.

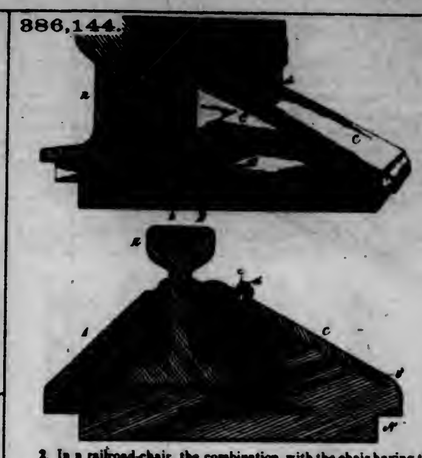
9. The combination of the cam-shaft *b*, having a worm-gear, *c*, provided with a pin, *c'*, the sliding bar B', provided with hook *b'*, the weighted three-armed lever A', having pawl 2, the latch *q*, the lever *w*, links *v v*, sliding box *t*, worm *u*, and the carrying-shaft of said worm, substantially as described.

10. The combination of the winding-rollers N N and the levers P P with the cam-shaft *b*, having cam *d*, the rod *z*, having pin *e*, the arm Y, shaft X, having arms W W, the connecting-rods V V, bell-cranks T T, and connecting-rods S S, substantially as described.

386,144. RAILROAD-CHAIR. GEORGE V. LIEBERGOLL, Coldwater, Mich. Filed Apr. 28, 1888. Serial No. 271,836. (No model.)

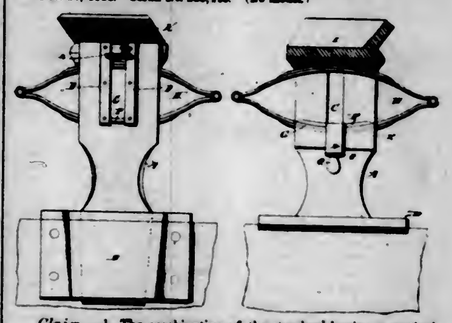
Claim.—1. In a railroad-chair, the combination, with the chair constructed as described, of the sliding block B, provided with the wedge and semi-wedge shaped projections or flanges b^2 b^3 b^4 and groove *d'*, arranged and operated substantially as and for the purpose set forth.

386,144.



2. In a railroad-chair, the combination, with the chair having the groove *c* and wedge-shaped and semi-wedge-shaped grooves *b' b^2* formed therein, as described, of the sliding block B, having the wedge and semi-wedge shaped projections b^2 b^3 b^4, and the cover C, having a slot in it near its upper end, through which the staple *c*, secured to the block B, projects, and a key, *d*, passed through the staple, whereby the several parts of the chair and rail-sections are locked together, substantially as and for the purpose specified.

386,145. WAGON-SEAT. GEORGE MAHL, Shippensville, Pa. Filed Feb. 27, 1888. Serial No. 265,446. (No model.)



Claim.—1. The combination of the standard having a vertical slot therein, the elliptical spring attached firmly at its lower side to the standard, and the seat secured to the upper side of the spring, and the arm K, projecting through the slot in the standard and provided with a T-head to engage the sides thereof, substantially as specified.

2. The combination of the standard having a slot, C, therein, the bracket secured to the standard and having a groove in its upper side, the elliptical spring mounted in the said groove, the seat secured to the spring, and the guide-arm operating in the slot, substantially as specified.

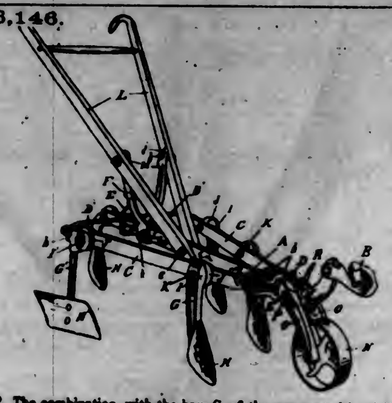
3. The combination, with the standard having a bracket or shoulder thereon, of the elliptical spring bearing on the bracket or shoulder, the clamp embracing the spring and the bracket, and the seat secured to the spring, substantially as and for the purpose specified.

4. The combination, with the standard having a bracket, E, of the elliptical spring mounted on the bracket and having the seat secured thereto, and the clamp embracing the bracket and the lower side of the spring and having the apertured arm O, the set-screw mounted in the aperture in the said arm, and the jaw P, bearing on the side of the spring, substantially as and for the purpose specified.

386,146. CULTIVATOR. JAMES G. MALLERY, Flint, Mich. Filed Dec. 2, 1887. Serial No. 256,774. (No model.)

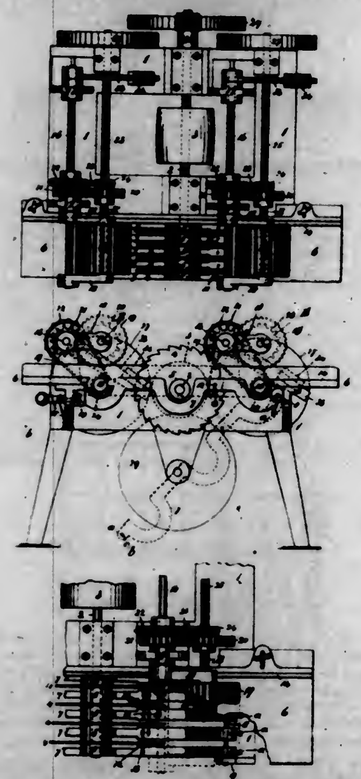
Claim.—1. The combination, with the central bar, A, and the head-plates D, secured to said central bar, and provided at their ends with lugs *a*, of the side bars, C, having their forward ends twisted and bent at right angles, as shown, and provided with holes to receive said lugs, substantially as shown and described.

386,146.



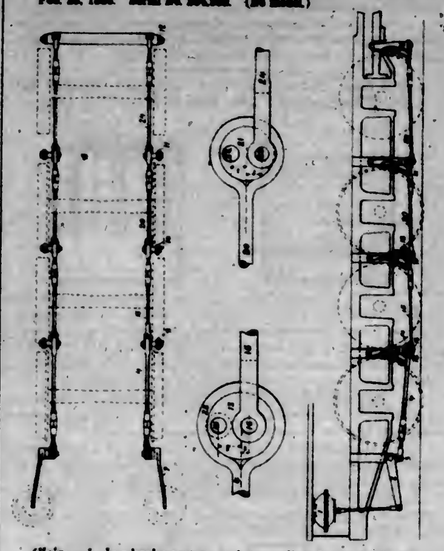
2. The combination, with the bars C, of the corrugated head I', having formed integral therewith the bolt *c*, the corrugated disk J', the standard G', passed through a hole in the head, and the set-screw A, all substantially as described, and for the purpose specified.

386,147. CIRCULAR GANG SAWING-MACHINE. THOMAS MASLEY, Prince Albert, Saskatchewan, Canada. Filed Feb. 6, 1888. Serial No. 263,167. (No model.)



Claim.—The combination, with the sawing-tables 6 6, of a series of laterally-adjustable guide-bars, 7, intervening the saws and pivoted to drop at one end and connecting the tables horizontally, and provided with adjustable pins 12 to prevent the saws wabbling and insure a straight cut, as set forth.

386,148. LOCOMOTIVE-BRAKE. ALBERT F. MASSEY, Watertown, N. Y., assignor to the Eames Vacuum Brake Company, same place. Filed Feb. 28, 1888. Serial No. 264,992. (No model.)

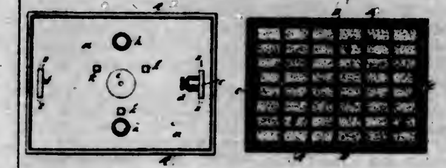


Claim.—1. In a brake system, an intermediate lever with its three centers of stress inclosed within a strap or jaw, combined with a pull-rod, substantially as set forth.

2. In a brake system, an eccentric inserted in the line of pull-rods, in combination with two separate bearings located within said eccentric on opposite sides of the center for the purpose of dividing the stress on the pull-rod between two or more brake-shoes, substantially as set forth.

3. In a brake system, a pair of intermediate levers revolving about the same center, wherein one lever is inclosed within the other and each forms the fulcrum for the other.

386,149. GALVANIC BATTERY. ABRAHAM V. MERRIOLS, New York, N. Y. Filed Oct. 26, 1887. Serial No. 253,081. (No model.)



Claim.—1. A depolarizing agent or material for galvanic batteries, containing hydrate and oxide of copper, substantially as described.

2. A depolarizing agent or material for galvanic batteries, consisting of a mixture of carbonate, hydrate, and oxide of copper, substantially as described.

3. A depolarizing agent or material for galvanic batteries, consisting of a mixture of carbonate, hydrate, and oxide of copper and granulated carbon, substantially as described.

4. A depolarizing agent or material for galvanic batteries, containing hydrate of copper, substantially as described.

5. The combination, with the positive and negative electrode of a galvanic battery, of the exciting chlorine solution and the depolarizing agent or material consisting of a mixture of carbonate, hydrate, and oxide of copper, substantially as described.

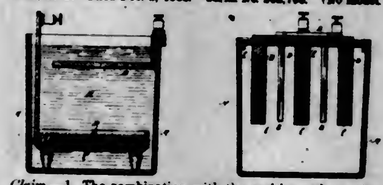
6. In a galvanic battery, the combination, with the positive and negative electrodes, and the exciting-fluid, of the porous pot or receptacle F, suspended near the top of the cell, for containing a supply of the exciting chemical, and arranged to allow said chemical to gradually pass into the upper portion of the fluid by dialysis, substantially as described.

7. In a galvanic battery, the combination, with the positive electrode and the exciting-fluid, of the horizontally-arranged negative electrode having cells for containing the depolarizer, and the plat-

form D, supporting said negative electrode a distance from the bottom of the cell, whereby a chamber is formed beneath said negative electrode, substantially as described.

8. In a galvanic battery, the combination, with the positive electrode, of the trough suspended beneath said electrode to receive the matter falling therefrom, substantially as described.

386,150. GALVANIC BATTERY. ABRAHAM V. MERRIOLE, New York, N. Y. Filed Feb. 2, 1888. Serial No. 262,706. (No model.)



Claim.—1. The combination, with the positive and negative electrodes, of an oxidizing-fluid containing an alkaline nitrate and a depolarizer containing an alkaline hydrate, substantially as described.

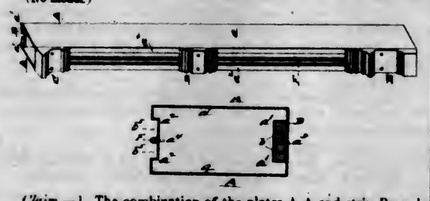
2. An exciting-fluid for galvanic batteries, consisting of an alkaline-chloride solution containing an alkaline nitrate, substantially as described.

3. The combination, with the negative and positive electrodes, of an alkaline-chloride exciting-fluid and a depolarizing agent or material containing hydrate of copper, substantially as described.

4. The combination, with a carbon electrode, of a depolarizing agent or material containing hydrate of copper, substantially as described.

5. The combination, with a carbon electrode and an alkaline-chloride exciting-fluid, of a depolarizing agent or material containing hydrate of copper, substantially as described.

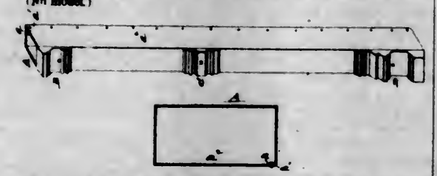
386,151. PLATE-METAL COLUMN. FRANK MOELLER and HENRY F. EDWARDS, St. Louis, Mo. Filed Feb. 17, 1888. Serial No. 264,366. (No model.)



Claim.—1. The combination of the plates A A and strip B, each of said plates forming a side and half of the back and half of the front of the column, and said plates at the rear of the column being shaped to form a recess in which said strip is secured, substantially as described.

2. The combination of the plates, shaped and united at the front of the column, as described, and the head-strip, substantially as described.

386,152. PLATE-METAL COLUMN. FRANK MOELLER and HENRY F. EDWARDS, St. Louis, Mo. Filed Feb. 17, 1888. Serial No. 264,367. (No model.)



Claim.—The herein-described plate-metal column, the same consisting of the single plate A, shaped to form a box-column, and at the rear of the column having a flange, *a*, fitted within and united to the rear edge of the column-side, substantially as described.

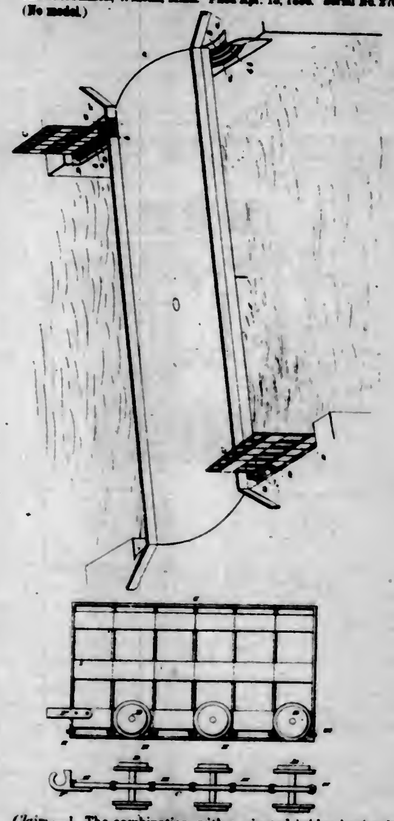
386,153. WAGON-CHUTE. FRITZ MOELLER, Davenport, Iowa, assignor of one-half to Joseph S. Watson, same place. Filed Mar. 31, 1888. Serial No. 269,191. (No model.)

Claim.—A removable chute or conductor for wagon-boxes, composed of textile or other pliable material, having the parts A, B, C, and D joined together, as described, and provided with button-holes, and adapted to be attached to the rear end of a wagon-box by means of the buttons *b*, substantially as set forth and described.

386,153.



386,154. BRIDGE-GATE. MATTHEWSON MYRE and CHESTLAD CHESTNUTWOOD, Winona, Minn. Filed Apr. 13, 1888. Serial No. 270,894. (No model.)



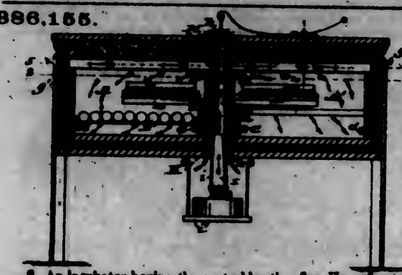
Claim.—1. The combination, with a pivoted bridge having legs, as described, of the flexible gates having hooks F and mounted on rollers, and having rollers at their lower sides, the tracks in the masonry, and the guide-flanges between the same, substantially as specified.

2. The flexible gates mounted on rollers and having friction-rollers at their lower sides, in combination with the tracks and the guide-flanges between the same, substantially as specified.

386,155. INCUBATOR. JAMES L. NIX, Carpenter, Ill. Filed Oct. 13, 1887. Serial No. 252,674. (No model.)

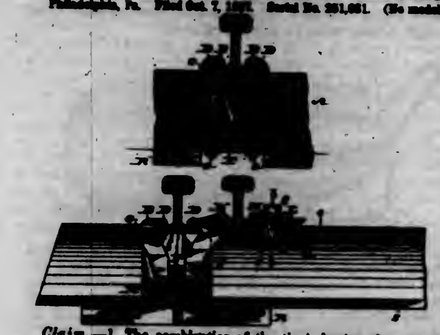
Claim.—1. An incubator, constructed as described, having a central flue open at top and bottom, partly surrounded by an air-flue and communicating with the egg-compartments, a chamber above the egg-compartments communicating with the central flue, and a damper controlling the said central flue, substantially as set forth.

386,155.



2. An incubator having the central heating-flue, H, perforated at *g* and partly surrounded by an air-flue, K, perforated at its upper end, and thus communicating with the egg-compartments, a heating-chamber, G, over the top of the egg-compartments A A', and having outlets *f*, and the outlets F' of the egg-compartments, substantially as set forth.

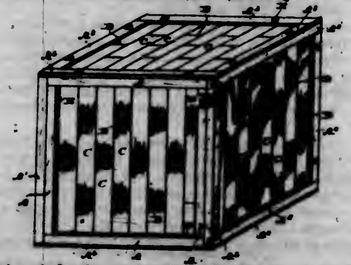
386,156. RAILROAD-TIE AND FASTENING. JAMES A. GREEN, Philadelphia, Pa. Filed Oct. 7, 1887. Serial No. 251,681. (No model.)



Claim.—1. The combination of the tie A, having the vertical opening C and the side openings, E, leading into said opening C, with a rail, the chock-pieces B, each having inwardly-bent upper lips, D, and outwardly-bent lower lips, G, and the key F, adapted to pass through said opening E and between said pieces B, firmly wedging the latter against the top and bottom walls of the tie, substantially as described.

2. A hollow tie with angular opening in the top thereof, in combination with a chock-piece having a depending tongue, a bolt having an angular portion corresponding to the angular opening in the tie, and provided with a head adapted to bear against the under side of the top wall of said tie, and a nut, the depending tongue of the chock-piece fitting into a rabbet, *d*, on the side of the bolt, substantially as and for the purpose set forth.

386,157. BOX OR CRATE. CHARLES E. PARRY, Watertown, Wis. Filed Apr. 23, 1888. Serial No. 271,502. (No model.)

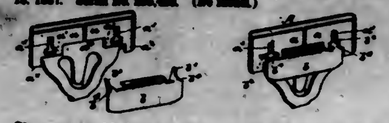


Claim.—1. In a box-section, the combination of a suitable frame, having wires or cords stretched across the same, with a flexible wooden filling woven in and out or over and under said wires or cords.

2. In a box-section, the combination of a suitable frame, having wires or cords stretched across the same, with a filling consisting of thin strips of wood woven alternately over and under said wires or cords and secured at their ends to said frame.

3. A box or crate consisting of a series of box-sections, each formed of a frame having wires or cords stretched across the same, and a filling of thin strips of wood woven over and under said wires or cords, and removable fastening devices for temporarily securing said sections together.

386,158. BUCKLE. THOMAS O. PORTER, Boston, Mass. Filed Nov. 16, 1887. Serial No. 254,603. (No model.)



Claim.—A buckle having a flattened tube provided with a jaw-holding recess, *c'*, and with inverted-T-shaped holes *c²*, and a jaw-plate having the jaw *b'*, and T-shaped ears *b²*, the ends of which are first bent to a right angle to the necks thereof, to permit them to be inserted through the longitudinal sections of the T-shaped holes in the flattened tube, and the necks to enter the wide sections of said holes, and are then turned to their original positions to span said holes and secure the jaw-plate to the flattened tube, substantially as described.

386,159. BOILER-SETTING. JOHN B. RAMEY, Oshkosh, Wis. Filed Mar. 16, 1888. Serial No. 267,493. (No model.)

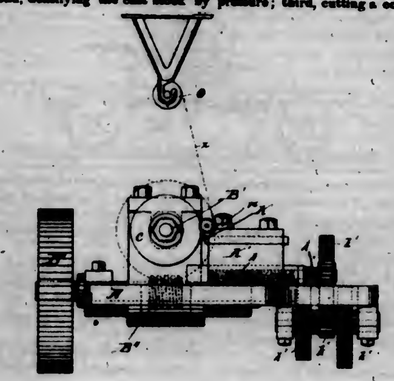


Claim.—1. In a boiler-setting, the combination of an outside wall surrounding the supporting-wall, with an unobstructed space between the two walls leading from the front to the rear, the doors G G G, regulating and governing the supply of air into said space, the wall *n* and the platform *i*, connected with the inside wall, L', so as to form the inclosed hot-air chamber *h*, with a setting in the inside wall leading into said chamber, being in open communication with the grate, and a damper at the rear of the grate.

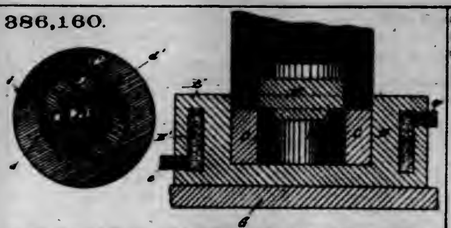
2. In a boiler-setting, the combination of an outside wall surrounding the main supporting-wall, inclosed at the top, forming an inclosed space between the two walls from front to rear upon all sides, the doors G G G, covering openings and controlling the supply of air into said space, an arch in the rear wall opening into an inclosed hot-air chamber extending from wall to wall back of the grate, and tubes K K, leading from the hot-air chamber and supplying air to the grate, with a perforated grate-support in front, and a damper closing the space from the boiler down to the platform *i*, operated by a lever from the front, substantially as shown, for the purposes specified.

386,160. MANUFACTURE OF SHEET METAL. JOHN ROEBLING, Brooklyn, N. Y. Filed Mar. 26, 1888. Serial No. 268,572. (No model.)

Claim.—1. The process or improvement in the art of manufacturing sheet metal, consisting in first casting the metal into a block; second, densifying the cast block by pressure; third, cutting a cen-



386,160.



tinuous strip of sheet metal therefrom, and, finally, rolling the cut strip between rolls to finish its surfaces, substantially as specified.

2. The process of manufacturing sheet metal, consisting in first casting the metal into a block; second, densifying the cast block by pressure, and, third, cutting a continuous strip or ribbon of sheet metal from the block, substantially as specified.

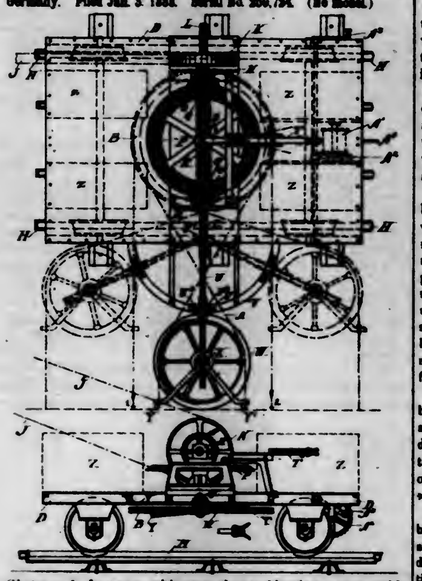
3. The process consisting in first casting a soft-metal block; second, densifying the cast block by pressure, and, finally, cutting a strip of sheet metal therefrom.

4. The process of manufacturing sheet metal, consisting in first casting the metal into a block, cutting a continuous strip of sheet metal therefrom, and finally rolling the cut strip to finish it, substantially as specified.

5. The process consisting in first properly tinning or preparing the surface of a hard-metal ring and then casting a soft-metal block upon and around the same, so that it will fuse or metallically unite therewith, and then compressing the soft-metal block to solidify it before it becomes fully set, substantially as specified.

6. The process of casting on a hard-metal ring properly tinned a circular block of solder in a metal mold encircled by water and compressing the block to solidify it before the solder is fully set, substantially as specified.

386,161. STEAM-CULTIVATOR. CHRISTIAN R. SAGE, Leipzic, Germany. Filed Jan. 3, 1888. Serial No. 259,734. (No model.)
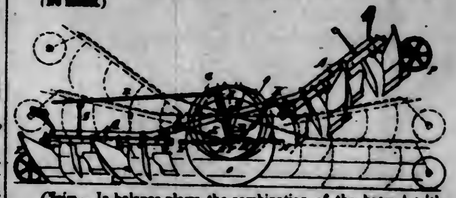


Claim.—1. In steam-cultivators, the combination, on a movable carriage, of a horizontal pulley, B, beveled wheel P on shaft of said pulley, shaft L, pulley K on said shaft, bevel-wheels O O', and clutch mechanism Q Q' R S T, together with pulley W and pivoted arm U, substantially as set forth.

2. In steam-cultivators, a movable engine, a carriage having pulley B adapted to be driven by power in either direction by said engine, and having pulley W and arm U, as set forth, and a windlass, A' A^3 A^4, on said carriage, in combination with carriage E, pulley C, and endless rope A, substantially as and for the purpose set forth.

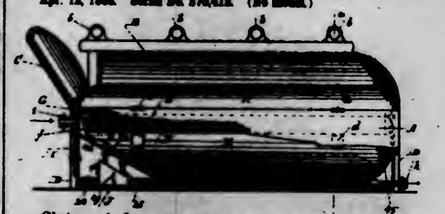
3. In steam-cultivators, the combination of a series of blocks, B', having sockets for the reception of wheels adapted to be revolubly supported in said sockets, a frame, E, adapted to run on said wheels, and pulley C on said frame, substantially as and for the purpose described.

386,162. PLOW-CARRIAGE FOR STEAM-CULTIVATORS. CHRISTIAN R. SAGE, Leipzic, Germany. Filed Jan. 3, 1888. Serial No. 259,735. (No model.)



Claim.—In balance-plows, the combination of the beam A with frame E, supported by wheels, screw-spindle D, journaled in said frame, and ball C, threaded for the passage of said spindle, together with cheek-bearings B B' on said beam, adapted to hold said ball C, as and for the purpose set forth.

386,163. LOUNGE. FREDERICK RYAN, Fitchburg, Mass. Filed Apr. 12, 1888. Serial No. 270,412. (No model.)



Claim.—1. In a convertible lounge of the character described, the combination of the following instrumentalities, to wit: a body provided with a water-tight lining and adapted to be used as a bathing-tub, a seat hinged to the upper portion of said body and provided on its under side with an upholstered bed-section adapted to enter the upper portion of said body when the seat is closed, a back secured to one side of said seat, a head-piece secured to one end of said seat, and an upholstered bed-section hinged to one side of the bed-section of the seat and provided with hinged legs adapted to engage the top of the body and support it in a horizontal position when the lounge is arranged as a bed, substantially as set forth.

2. In a convertible lounge of the character described, the combination of the following instrumentalities, to wit: a body provided with a water-tight lining and adapted to be used as a bathing-tub, a seat hinged to the upper portion of said body and provided on its under side with an upholstered bed-section adapted to enter the upper portion of said body when the seat is closed, a back secured to one side of said seat, a head-piece secured to one end of said seat, an upholstered bed-section hinged to one side of the bed-section of the seat and provided with hinged legs adapted to engage the top of the body and support it in a horizontal position when the lounge is arranged as a bed, said body being provided with inlet and outlet pipes for the water, substantially as set forth.

3. In a lounge of the character described, the combination of the body A, having the door H, the zinc lining, 45, disposed in said body and provided with the inclined portion *m* at one end adjacent to said door, the inlet-pipe *i*, opening into said body above the inclined portion *m*, and the guard or deflector *f*, disposed opposite the discharge-orifice of the inlet-pipe *i* over the inclined portion *m*, substantially as set forth.

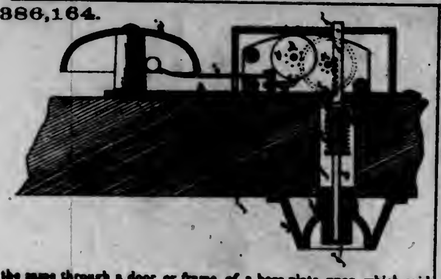
4. In a lounge of the character described, the combination of the body A, having the door H, the zinc lining, 45, disposed in said body and provided with the inclined portion *m* at one end adjacent to said door, the inlet-pipe *i*, opening into said body above the inclined portion *m*, the guard or deflector *f*, disposed opposite the discharge-orifice of the inlet-pipe *i* over the inclined portion *m*, and a lamp disposed in the chamber 46 beneath said inclined portion, substantially as specified.

386,164. DOOR-BELL. FREDERICK SAFFORDS, Prospect Park, Ill. Filed Apr. 6, 1887. Serial No. 233,902. (No model.)

Claim.—1. In an alarm or call bell, the combination, with the bell and its vibrating hammer having a forked end and a train of actuating-gearing, of a cam-wheel interposed between them formed of a single piece of sheet metal stamped or pressed to proper form, substantially as and for the purpose set forth.

2. In an alarm or call bell, the combination, with the bell-striking mechanism and an actuating rod or button for connection with

386,164.

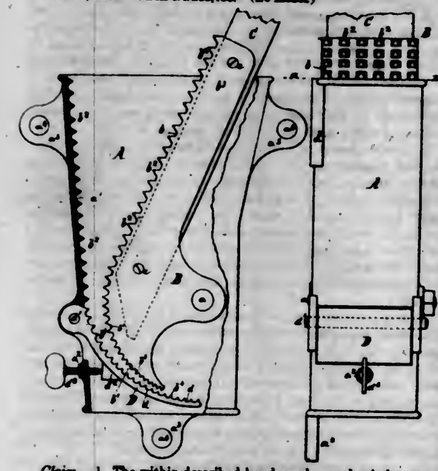


the same through a door or frame, of a base-plate upon which said bell mechanism is secured, provided with openings for the passage of the actuating-rod, and formed with a circular beveled projection or flange to aid in centering the opening in the plate with that in the door or frame through which the actuating-rod is passed, substantially as and for the purpose set forth.

3. In an alarm or call bell, the combination, with the bell mechanism adapted to be secured upon one side of a door or frame, and a connecting-rod for passing through said door or frame, of a push-button formed with a socket to receive said rod nearly to the forward side of the button, whereby side draft and friction are avoided when the pressure is applied, substantially as and for the purpose set forth.

4. The combination, with a bell mechanism secured upon one side of a door or frame, of a push-button for operating the bell, secured upon the opposite side of said door or frame, and connected through the same by a connecting-rod with the bell mechanism, said button having its frame *g* formed with a projecting beveled guide, *g'*, to aid in centering it with the opening in said door or frame, and prevent binding of the operative parts, substantially as shown, and for the purpose set forth.

386,165. COMBINED HAND CRUSHER AND GRINDER. WILLIAM R. SANFORD, Flemington, N. J., assignor of two-thirds to Frank R. Mallory, same place, and Gideon C. Sanford, Brooklyn, N. Y. Filed Feb. 11, 1888. Serial No. 263,765. (No model.)



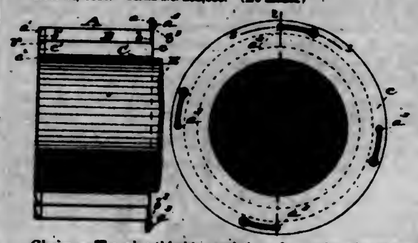
Claim.—1. The within-described hand crusher and grinder, comprising crusher-shell having portion A, with crushing-teeth b^3 on its inner straight surface, *a'*, curved grinding portion D, having gradually-diminishing teeth b^4 on its inner curved surface, *d*, and the pivoted crushing-jaw B, attached to lever-handle C and having crushing-teeth b^2 on its straight surface *b* and gradually-diminishing grinding-teeth b^4 on its curved surface *b'*, substantially as and for the purpose described.

2. The within-described hand crusher and grinder, comprising crushing shell and jaw, with the straight and uniformly-toothed surfaces *a'* and *b* and the curved surfaces *b'* and *d*, one of which is adjustable and both having teeth b^4, gradually diminishing in size toward the ends thereof, substantially as and for the purpose described.

3. The hand crusher and grinder comprising crusher-shell having hopper portion A, with crushing-teeth b^3, curved, pivoted, and adjustable grinding portion D, having grinding-teeth b^4, and the jaw B, having bifting-flanges, and the handle C, arranged behind the toothed surfaces and forming an upward extension of said jaw, substantially as described.

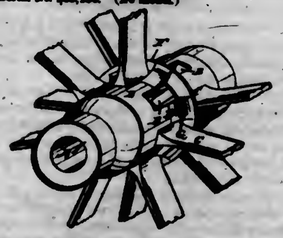
4. The combined hand crusher and grinder, comprising the toothed shell or hopper A, curved toothed jaw B, upwardly-extending hand-lever C, attached to said jaw, swinging curved toothed plate D, pivoted to the lower end of said hopper, having lug d^2, and adjusting-screw d^3, supported in boss a^2 of shell A, substantially as and for the purpose described.

386,166. PIPE-THIMBLE. JOHN J. SCHAAR, St. Louis, Mo. Filed Nov. 21, 1887. Serial No. 255,602. (No model.)



Claim.—The pipe-thimble consisting of a series of concentric thimbles one within the other, the outer thimble flanged inwardly at the inner end and outwardly at the outer end, and the remaining thimbles flanged inwardly and outwardly at the inner end and outwardly at the outer end, and all secured together by their outturned flanges at the outer end.

386,167. HUB. JOHN A. SHIMLER, Millville, Ohio. Filed Feb. 24, 1888. Serial No. 265,130. (No model.)



Claim.—1. A hub for wheels, consisting of a wooden hub, A, provided with two circumferential series of spoke-receiving mortises, B, metallic band D, compressively encircling said wooden hub and provided with mortises corresponding with the mortises in said hub, and flat metallic ring F, separable from said wooden hub and metallic band and compressively encircling said band between said two series of mortises, said band being clamped between the outer circumferential surfaces of said wooden hub and between the circumferential surfaces of said ring, combined substantially as and for the purpose set forth.

2. A hub for wheels, consisting of the wooden hub A, provided with two circumferential series of spoke-receiving mortises, metallic band D, compressively encircling said wooden hub and provided with mortises corresponding with the mortises in said hub, and flat metallic ring F, compressively encircling said band between said two series of mortises and provided with prongs G, reaching outwardly from its face in opposite directions between the spokes, said band being clamped between the circumferential outer surfaces of said wooden hub and the circumferential inner surfaces of said ring and prongs, combined substantially as and for the purpose set forth.

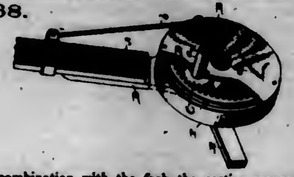
3. A hub for wheels, consisting of the wooden hub A, provided with two circumferential series of spoke-receiving mortises, flat metallic ring F, encircling said hub and acting compressively thereon, and provided with prongs G upon its opposite faces, reaching outwardly between said mortises and exerting compressive force inwardly upon said hub between said mortises, combined substantially as and for the purpose set forth.

386,168. SECTOR. WILBUR W. STRICKER and HORACE STRICKER, Piqua, Ohio. Filed Apr. 28, 1888. Serial No. 271,567. (No model.)

Claim.—1. The combination, with the wheel, of the casting and its contained mechanism and the fork secured to an extension of said casting and braced, substantially as described.

2. The combination, with the fork, of the casting secured to the fork, the clamp on the fork, and the stay-rod secured at one end to the clamp and its other end adjustably secured to the casting, substantially as described.

886,168.



3. The combination, with the fork, the casting secured thereto, and the spur-wheel on the spindle of the wheel, of the crown-wheel journaled in the casting, the crank secured to the spindle of the crown-wheel, and the removable cover, and the brace-rod *b*, connected at one end with the fork and its other end adjustably connected to said casting, all substantially as shown and described.

886,169. TRACTION-WHEEL. JOHN J. STRAUSS, Peoria, Ill. Filed Feb. 14, 1887. Renewed Feb. 16, 1888. Serial No. 264,186. (No model.)



Claim.—1. A traction-wheel provided with sliding radial arms projecting from the periphery of the wheel, rotating shafts provided with geared segments meshing with indentations in the sliding arms, and a cam for imparting motion to the segment.

2. A traction-wheel provided with sliding radial arms and with a tire having holes for the reception of the arms, each of said radial arms being provided with racks, segments meshing with the said racks, and an eccentric or cam connected with the segments and operating the sliding arms, whereby the sliding arms are caused to project and retreat, substantially as described.

3. A traction-wheel provided with sliding radial arms provided at their inner ends with racks, a tire for the reception of the arms, segments meshing with the racks, and a shifting eccentric or cam operating the segments, whereby the projection and retreat of the arms relative to the revolution of the wheel are regulated.

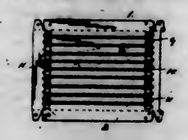
4. A traction-wheel consisting of the tire provided with holes, the sliding radial arms resting in the holes, the segments mounted on the shafts, provided with the arm having the bowls, and the plate H, provided with the groove A, arranged eccentrically, mounted relative to the wheel.

5. A traction-wheel consisting of the tire provided with the holes, the spokes, the hub made in parts, the sliding arms having their outer ends resting in the holes and their inner ends provided with racks, the segments gearing with the racks and mounted on the shafts F, the arm G, provided with the bowls, and the plate provided with the eccentric groove receiving the bowls, substantially as described.

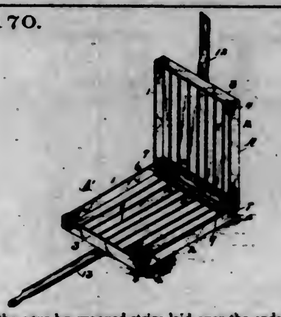
6. A traction-wheel comprising a tire provided with holes, sliding radial arms provided on their inner ends with racks, and the segmental racks connected with the eccentric groove in the plate H, and a circular rack and worm for shifting the plate and regulating the position at which the radial arms project and retreat relative to the revolution of the wheel.

886,170. TOASTING-PAN. WILLIAM T. VAN DUSEN, Lincoln, Nebr. Filed Jan. 14, 1888. Serial No. 260,797. (No model.)

Claim.—The toasting utensil herein described, consisting of the sheet-metal pans A A', pivoted together at the side ends and formed to close with their edges one within the other, and having the flanges at their hinged end lower than the other sides, to form supports when the utensil is opened, and provided with the wire rods S, held in the



886,170.



bottom of the pans by grooved strips laid over the ends of the wires and riveted to the pans, substantially as described.

886,171. BUNDLE-CARRIER. HENRY W. VIEHEVER, Columbus, Ohio, assignor of one-half to Matt. Leuthester, same place. Filed July 30, 1887. Serial No. 245,703. (No model.)

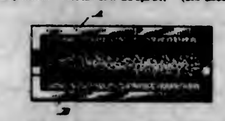


Claim.—1. In a sheaf-carrier, the hangers H, secured to the harvester-frame and having bearings B and B', respectively, in combination with a finger-supporting bar, A, and fingers T, pivoted in said bar A, having a crank, C, and shank R, attached to its rear end and pivoted at its rear inner corner in journal-bearing B, and a journal, F, attached to its forward and outer end and pivoted in journal-bearing B' in the front arm, H, the arrangement of said shank R and journal F serving the purpose of throwing the rear end of the finger-supporting bar A toward the harvester-frame when the bar is rocked to unload, all arranged substantially as and for the purpose described.

2. In a sheaf-carrier, the hangers H, secured to the harvester-frame, the finger-supporting bar A, journaled in the rear hanger at its inner corner and in the front hanger at its outer corner, in combination with fingers T, having their ends D bent at right angles and pivoted through the bar A upon axes inclined rearwardly, so that when the bar A is rocked to unload the grain the fingers in striking the ground draw backward, and when the bar is rocked to its receiving position the fingers T, by their own weight, assume a right angle with their supporting-bar, substantially as described, and for the purposes set forth.

3. In a sheaf-carrier, the combination of hangers H, secured to the harvester-frame and having journal-bearings B and B', with a finger-supporting bar, A, having crank C and shank R attached to its rear inner corner and pivot-journal F to its forward outer corner, the said crank C being pivoted in the rear journal-bearing, B, and journal F being pivoted in the front journal-bearing, B', and fingers T, having their inner ends D bent and pivoted through bar A upon axes inclined rearwardly, chain N, retaining-block K, and arch G, all arranged substantially as described, and for the purposes set forth.

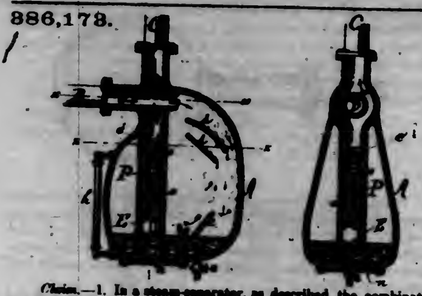
886,172. ANTI-FRICTION BEARING. ELIJAH WARNE, Boston, Pa., assignor of one-half to Marshall T. B. Davidson, New York, N. Y. Filed Sept. 20, 1887. Serial No. 250,247. (No model.)



Claim.—A molded or pressed anti-friction composition bearing consisting, essentially, of gluten and graphite, substantially as herein before set forth.

886,173. SEPARATOR. ERNST G. WHITE, New York, N. Y. Filed Jan. 13, 1888. Serial No. 260,893. (No model.)

886,173.

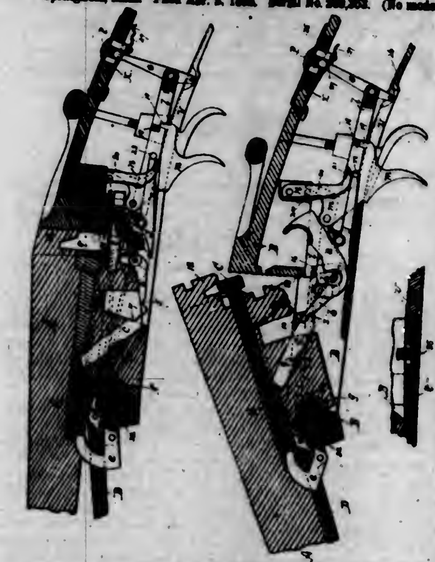


Claim.—1. In a steam-separator, as described, the combination, with the outlet-pipe C, provided with a valve-seat, *d*, of a floating ball, E, provided with suitable means, as P, for guiding the said ball against the said valve-seat.

2. A steam-separator consisting of a chamber, A, provided with suitable outlet and inlet pipes, baffle-plates, as *d d* and *c c*, and the perforated chamber P, as and for the purposes described.

3. A steam-separator placed intermediate the generator and the engine, consisting of a chamber, A, provided with suitable outlet and inlet pipes, the latter having a valve-seat and containing baffle-plates, as *d d* and *c c*, the perforated chamber P, and the floating ball E.

886,174. BREECH-LOADING FIRE-ARM. ANDREW H. WHITMORE, Springfield, Mass. Filed Apr. 8, 1882. Serial No. 252,252. (No model.)



Claim.—1. The combination, with the extractor, its operating-levers, the fore-end, and the connecting-pin movable in the extractor-stem, of the cocking-pin swinging with the barrel, having cam engagement with the connecting-pin and having endwise travel to engage the cocking-lever, substantially as and for the purposes stated.

2. In combination, the barrel, its locking-bolt, the spring-actuated trip-lever *h* on the hammer-pivot, adapted to engage said bolt to hold it inactive, and the barrel-lug 13, which by its cam-face engages and actuates said trip-lever to release said barrel-locking bolt, as herein specified.

3. In fire-arms wherein the breaking of the weapon serves to cock the hammer, the combination, with the hammer and the sear, of the extension-arm rocker which actuates said sear and the spring-impelled sear-guard operating to block the sear upon movement of the extension-arm rocker, substantially as described.

4. In fire-arms provided with a hammer cocked by the breaking of the weapon, the combination, with the hammer, its co-operating sear, the intermediate extension-arm rocker, and the spring-impelled sear-guard with its stud 24, of the trigger and its prong 20, which operates the sear-guard, substantially as herein set forth.

5. In fire-arms having an internal hammer cocked by the act of breaking the weapon, the hammer and the trigger, combined with the intermediate extension-arm rocker, the trigger-locking bolt movable endwise, its lug 13, and the cross-lever to which said locking-bolt is attached, as and for the purposes herein stated.

6. In combination with the hammer and its operating mechanism actuated by the breaking of the weapon, the intermediate extension-arm rocker actuated by said hammer, but not locking it, and engaging the sear, substantially as set forth.

7. In combination with a hammer cocked by the breaking of the weapon, the intermediate extension-arm rocker actuated by said hammer, but not locking it, and the trigger-locking bolt which contacts with said rocker, for purposes herein described.

8. In combination with the fore-end, barrel, and stock, a lever, *f*, pivoted in said fore-end, a lever, *e*, also pivoted in said fore-end and engaging the lever *f*, a connecting-pin, *d*, in contact with the lever *e*, an extractor, *C*, in contact with said connecting-stem, a cocking-pin, *c*, in contact with said connecting-pin, a cocking-lever, *b*, in engagement with said cocking-pin and having an arm, 3, a hammer cocked by said cocking-lever, an extension-arm rocker, *k*, actuated by said hammer, a trigger, and trigger-locking bolt and sear actuated by said rocker, substantially as set forth.

9. The hammer *a* and the sear *j*, engaging therewith, in combination with the extension-arm rocker *k*, provided with a shoulder which is arranged to be moved by said hammer and a shoulder which is arranged to move said sear, and the sear-guard *n*, which has a curved end engaging a stud on said sear, substantially as set forth.

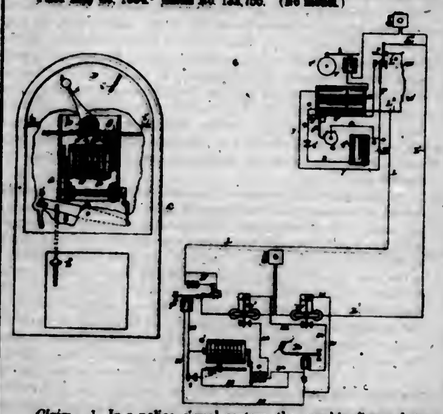
10. In combination with the frame B of a breech-loading fire-arm, the trigger-plate *v* and the lock-cap plate *t*, which overlaps said trigger-plate, both united by a single fastening-screw, substantially as stated.

11. In combination, the lug 29, secured beneath the barrel and with a bolt-notch in its front edge, the fore-end D, slotted to receive said lug, the compensator *r*, likewise in slot behind the lug, and the adjusting-screw *s*, which operates said compensator by the arm 30 upon the latter, for purposes herein specified.

12. In combination, the fore-end, the frame B, the joint-circle *g*, abutting thereagainst on an angle, with flat sides which fit the lug-cut, the barrel 32, which enters the end of the frame, and the fastening-pin 34 transversely of said circle and having its center coincident with that of the recess in said frame B containing the circle, substantially as and for purposes stated.

13. In combination with the frame and barrel, fore-end, and hammer, a cocking-lever attached to said frame and arranged to operate said hammer, and a cocking-pin attached to said fore-end and engaging said cocking-lever, said frame being provided with a stop, 10, arranged to be in contact with said cocking-pin and cocking-lever at their joint when the barrel is tilted, substantially as set forth.

886,175. POLICE SIGNAL APPARATUS. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portsmouth, N. H. Filed May 26, 1884. Serial No. 132,755. (No model.)



Claim.—1. In a police signal system, the combination, substantially as described, of a main station and sub-stations and main electric circuit connecting them, the said sub-stations each containing a local circuit and a multiple-signal-transmitting apparatus therein, comprising a series of signaling-surfaces adapted to change the condition of the current to transmit a determinate signal corresponding with the particular signaling-surface employed, and an induction apparatus the coils of which form part of the local circuit and also part of the main

circuit, and the said main station containing signal-receiving apparatus the operation of which is effected by the induced currents.

2. A multiple signaling device composed of a series of signaling-surfaces, combined with a contact-pen movable in a direction parallel with the axial centers of the signaling-surfaces and another contact-pen fixed in position to co-operate with one of the signaling-surfaces, a pointer or indicator co-operating with a stationary dial and operatively connected with the movable contact-pen, movement of which indicator moves the pen into position to co-operate with any desired one of the signaling-surfaces to transmit a signal indicated by the position of the pointer on the dial, whereby a determinate signal, with or without a variable signal, may be transmitted, substantially as described.

3. The main station containing relays adapted to respond to currents of different strength and controlling signal-receiving and signal-transmitting instruments, combined with the sub-station containing a local circuit and induction apparatus and independent devices for controlling the said circuit and for introducing resistance therein, and a main circuit connecting the said main and sub stations, transmitting impulses of different strength derived from the local circuit at the sub-station by induction, substantially as described.

4. In a signal-box, a series of signaling-surfaces and means, substantially as described, for revolving the same, combined with a single contact-spring arranged to travel longitudinally across said surfaces to co-operate with any particular one desired, a dial, indicator, and connecting mechanism uniting the indicator to said spring, whereby upon moving the indicator the spring is adjusted to any position desired with reference to the signaling-surfaces, substantially as described.

5. A multiple-signal-transmitting device composed of a series of signaling-surfaces, combined with a slide-bar and contact-pen carried by the slide-bar to bear against one or the other signaling-surfaces as the slide-bar is moved, and a rotatable shaft and pinion fixed to it for moving the slide-bar, substantially as described.

6. A multiple-signal-transmitting device composed of a series of signaling-surfaces, combined with a slide-bar and contact-pen carried by the slide-bar to bear against one or another signaling-surface as the slide-bar is moved, a rotatable shaft and pinion for moving the slide-bar, and a pointer secured to the rotatable shaft which co-operates with a suitable dial, the position of the pointer indicating which signaling-surface shall be employed, substantially as described.

7. A multiple-signal-transmitting device composed of a series of signaling-surfaces, as break-wheels, mounted upon a shaft, and a co-operating contact-pen for transmitting a determinate and also a variable signal, combined with a motor mechanism and starting-lever therefor, and two independent pulls connected with the said starting-lever, movement of one pull effecting the transmission of the determinate signal and movement of the other pull effecting the transmission of the variable signal, substantially as described.

8. In a police signal system, the combination, substantially as described, of the main and one or more sub stations, and a main electric circuit connecting them, and telephonic instruments located at the said main and sub stations to operate in the main circuit, the local circuit located at the sub-station, and a multiple signaling device therein, which includes as a co-operative part of it a series of signaling-surfaces for effecting the transmission of one or another of a series of signals at the will of the operator, and an induction apparatus also at the sub-station, the coils of which form part of both the local and main circuits, respectively, whereby impulses are transmitted from the local to the main circuit, and receiving-instruments at the main station, which respond to the induced currents transmitted from the sub-stations.

9. In a police signal system, the combination, substantially as described, of a main and sub station, and a main electric circuit connecting them, a signal-transmitting device located at the sub-station and constructed and arranged to transmit a signal over the main circuit by induction, a polarized relay located at the main station responsive to the said signals, a non-polarized receiving electro-magnet located at the sub-station, a circuit-controlling instrument, as *p*, located at the main station, and means for moving it to throw a battery-current upon the main circuit, and a signaling device, also located at the main station, to produce a series of interruptions in the main circuit to effect the operation of the non-polarized electro-magnet at the sub-station.

10. In a police signal system, the combination, substantially as described, of a main and one or more sub stations and a main electric circuit connecting them, signal-transmitting devices at the sub-stations, and signal-receiving devices at the main station, and an induction apparatus, one of the coils of which is included in the main circuit, whereby induced currents are employed for the signals, and telephonic instruments included in the main circuit and located at both the main and sub stations, as and for the purposes specified.

386,176. BOTTLE-STOPPER. WILLIAM WRIGHT, Boston, Mass., assignor to himself and Granville O. Avery, same place. Filed May 10, 1888. Serial No. 273,454. (No model.)

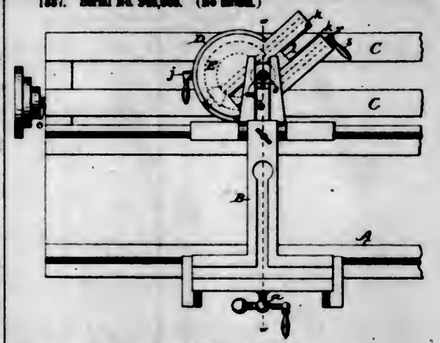
386,176.



Claim.—1. In a bottle-stopper, the stopper proper, *x*, the nozzle *t*, connected with the stopper *x*, and provided with the curved mouth A, and the curved cap C, provided with the pendent arms *k*, having the weights *z* at their lower ends, said arms being pivoted to the sides of the nozzle, all constructed, combined, and arranged to operate substantially as set forth.

2. In a bottle-stopper, the stopper proper, *x*, provided with the cap *m* and bushing *d*, the nozzle *t*, connected with the stopper *x*, and provided with the curved mouth A, and the curved cap C, provided with the stops *i* and arms *k*, having the weights *z*, said arms being pivoted to the nozzle, all constructed, combined, and arranged to operate substantially as set forth.

386,177. UNIVERSAL FEED ATTACHMENT FOR ENGINE-LATHES. EDWARD A. ALPRESS, New Britain, Conn. Filed Aug. 3, 1887. Serial No. 246,263. (No model.)



Claim.—1. The combination of a lathe-bed, the lathe-carriage fitted to slide longitudinally on said bed, and the feeding device herein described, the latter consisting, principally, of the ways *k k*, the sliding feed-block fitted to said ways and pivoted to a slide on the lathe-carriage, and a feed-screw set parallel to said ways *k k* for driving said block along said ways and thereby feeding the lathe-carriage, substantially as described, and for the purpose specified.

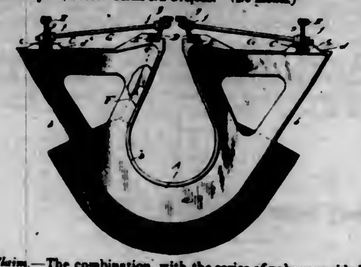
2. In a feed attachment for lathes, the combination of a lathe-bed, a lathe-carriage fitted to slide longitudinally on said bed, the slide *b*, fitted to slide with the upper part of the lathe-carriage in a line at right angles to the main ways of said lathe-bed, the bars or ways C C, the lower bed or block of the feed attachment mounted on said bars or ways C C and adapted to be adjusted and secured at the desired position thereon, the upper bed or block of the feed attachment pivotally mounted on said lower bed and provided with ways *k k*, and the sliding feed-block within the ways of said pivotally-mounted upper bed and pivoted to the slide *b* on the aforesaid lathe-carriage, substantially as described, and for the purpose specified.

3. In a feed attachment for lathes, the combination of the lower bed or block adapted to be adjusted and secured in a stationary position by one side of the lathe-bed, the beveled wheel *g*, mounted within said lower bed, the upper bed or block pivotally mounted on said lower bed and having ways *k k*, the feed-screw *p*, mounted within said upper bed and provided with pinion *q*, which engages the wheel *g*, the sliding block for traveling on said ways *k k*, the worm-gear *n*, carried by said sliding block, the stationary screw or rack *r*, and mechanism for driving the wheel *g*, substantially as described, and for the purpose specified.

4. In a feed attachment for lathes, the combination of the upper bed or block having ways *k k*, the feed-screw *p*, attached to said bed, the sliding block for traveling on said ways, the worm-gear *n*, mounted on said sliding block, and the stationary screw or rack *r*, having a threadless portion and adapted to be partially rotated to engage and disengage its threads from said worm-gear, substantially as described, and for the purpose specified.

5. In a lathe, the combination of adjustable ways *b k*, the sliding feed-block fitted to said ways, a slide to which the sliding feed-block *l* is pivoted and by which said slide is driven, the lower part of the lathe-carriage having guides for said slide, which also necessitate the simultaneous movement of the lower part of the carriage with said sliding block in the longitudinal direction of the lathe-bed, and the upper part of the lathe-carriage connected to said sliding feed-block through the slide to which said sliding feed-block is pivoted and necessarily moving with said block transversely to the lathe-bed, substantially as described, and for the purpose specified.

386,178. CABLE RAILWAY. FREDERICK F. BARR, St. Paul, Minn. Filed Apr. 9, 1888. Serial No. 270,022. (No model.)



Claim.—The combination, with the series of yokes provided with the flanges *b* and formed with seats for the slot-rails, of the concrete bottom, the slot-rails secured in said seats, and the lining-pieces between said concrete and slot-rails independent of said rails and supported by said flanges, substantially as described.

386,179. BOLDBACK FOR VEHICLES. THOMAS W. BARRY, Manitou, Mich. Filed Feb. 7, 1887. Serial No. 226,867. (No model.)



Claim.—1. The combination, with the slide having beveled edges and a series of openings or depressions in its length, of the thill-lock provided with a keeper embracing the edges of the slide, the pin adapted to move at right angles to the slide, and means for moving the pin, substantially as and for the purpose described.

2. The combination, with the slide and the thill-lock provided with a keeper placed on and adapted to be adjusted on the said slide, of the pin constructed to move at right angles to the slide, and the lever pivoted between its ends and having its forward end engaging with the said pin, substantially as described, for the purpose specified.

3. The combination, with the slide and thill-lock, of the pin having a slot in its side, and the lever having its inner end fitting in the slot and having its other end expanded to form a thumb-rest, and the spring, substantially as and for the purpose specified.

4. The combination, with the slide having undercut edges and having a stop formed at one end, as shown, of the thill-lock embracing the edges of the slide and limited in its movement by the said stop, substantially as set forth.

5. The herein-described device, composed of the slide having beveled edges and a stop at one end, the thill-lock embracing the edges of the slide and provided with a keeper, the slotted pin adapted to travel in a straight line, and the lever having one end fitting in the slot in the pin and the other end expanded to form a thumb-rest, substantially as and for the purpose described.

386,180. CHURN. JOSEPH R. BENJAMIN, Hubbell, Nebr. Filed May 10, 1888. Serial No. 273,472. (No model.)

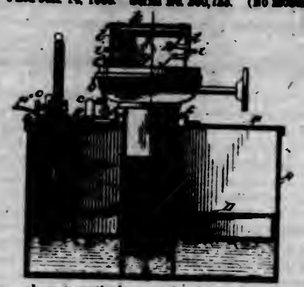


Claim.—1. In a churn, the combination, with the dasher, of the tube having its inner walls roughened, substantially as and for the purpose described.

2. In a churn, the combination, with the dasher, of the tapering tube having its inner walls roughened, substantially as and for the purpose specified.

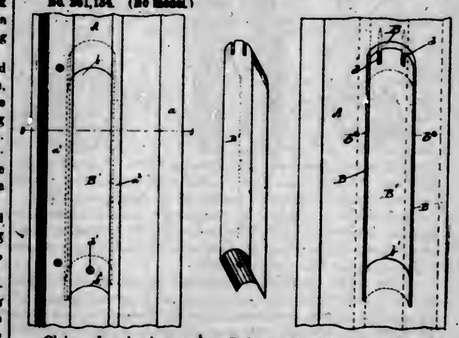
3. The combination, with the churn-body and the dasher fitting snugly within the churn-body, of the rod, the valves opening downward, the disk-block, and the tapering tube having its inner walls roughened, substantially as specified.

386,181. LAMP-EXTINGUISHER. MARCUS H. BLISS, Belle Plain, N. J. Filed Jan. 14, 1888. Serial No. 260,733. (No model.)



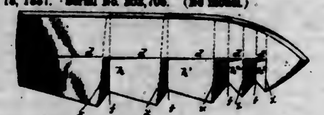
Claim.—In automatic lamp-extinguishers, the float D, concentrically encircling the wick-cylinder C, having a spindle or rod, F, rigidly affixed thereto, in combination with a plate, *p*, having arms *c c'*, the latter provided with a scale encircling the graduated rod F, the spring *t*, maintained between said plate *p* and the ring *q*, having a set-screw, *s*, the rod *o*, rigidly secured to the upper surface of the plate *p* at one end and terminating in a bent arm, *n*, at the other end, which oscillates in the slot *F'* of the curved extension *F'* of the hood *h*, having a bracket or back, *h*, and extinguishing-curtain *k'*, pivotally suspended from the front of said hood, whereby each vertical movement of the float D synchronously effects a like motion of the rods *F o*, thus oscillating the hood *k* in the arc of a circle, for the purpose and in the manner specified.

386,182. WINDOW-JAMB. JAMES BOOTH, Taunton, Mass., assignor of one-half to John H. Moore, same place. Filed Jan. 18, 1888. Serial No. 261,134. (No model.)



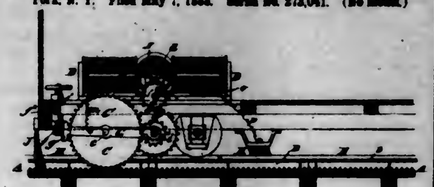
Claim.—In a jamb, a pocket, B, in combination with a cover, B', and fastenings *d d'*, the ends of the pocket and cover being formed by two inclined circular cross-kerfs, *b b'*, which are intersected by two side kerfs, *b²*, forming the sides of the pocket and cover, all substantially as and for the purpose set forth.

386,183. HAY-KNIFE. CHAPIN C. BROOKS, Hallowell, Me. Filed Oct. 18, 1887. Serial No. 252,708. (No model.)



Claim.—A blade for hay or analogous knives, having teeth, the plain or smooth side of the blade being ground to a straight bevel at or near the cutting-edge, as shown, in combination with angular grooves on the opposite side, arranged transversely to the length of the blade, forming two-edged teeth, the two angles of the cutting-edges of each being substantially of the same length, whereby as the blade is ground or sharpened on the straight beveled side only the identity of the teeth is preserved, substantially as and for the purpose specified.

386,184. ELECTRIC RAILWAY. ROBERT A. CHEESEBROUGH, New York, N. Y. Filed May 7, 1888. Serial No. 273,041. (No model.)



Claim.—1. The combination, with a railway-track, a car running thereon, and an electric motor on said car, of a stationary toothed rack adjacent to the track, and a toothed wheel carried by the car and gearing in said rack and geared with and driven by said motor, the said rack and toothed wheel forming portions of the conducting-circuit by which an electric current is transmitted to said motor for driving the car, substantially as herein described.

2. The combination, with a railway-track, a car running thereon, and an electric motor on said car, of a slotted channel or trough between the rails of the track, a stationary toothed rack in said channel, a toothed wheel carried by the car, geared with and driven by the said motor, passing through the slot of said channel or trough and gearing with the toothed rack therein, the said rack and toothed wheel forming portions of the conducting-circuit by which an electric current is transmitted to said motor for driving the car, substantially as herein described.

3. The combination of a railway-car, a toothed wheel, and an electric motor for driving the same, both on said car, a stationary toothed rack beneath the car, with which the said toothed wheel gears, and which, with the said toothed wheel, form portions of the electric conductor for conveying electricity to said motor, and a brush attached to said car for sweeping the said toothed rack, substantially as herein described.

386,185. DRILL-CHUCK. JOHN C. CRABB, Auburndale, Ohio. Filed Apr. 16, 1888. Serial No. 270,749. (No model.)



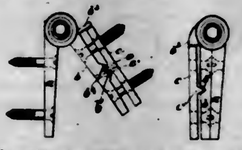
Claim.—1. In a drill, in combination with a bifurcated chuck-body, insertible drill-holders held within the chuck-body by the frictional engagement of the same, as and for the purpose set forth.

2. In a drill provided with a contractible chuck-body, the combination of interchangeable drill-holders formed with an irregular exterior in cross-section and a central aperture for holding a portion of drill, as and for the purpose set forth.

3. In a drill, a threaded chuck-body formed with tapered jaws having a circular exterior in cross-section and forming a central aperture of irregular form in cross-section, and a threaded ring embracing the chuck-body, adapted to compress the same, in combination with interchangeable drill-holders of corresponding exterior to the central aperture, as and for the purpose set forth.

4. In a drill, a chuck-body formed with a central aperture inclosed by yielding jaws contracted by the movement of a compression-ring, in combination with a drill-holder having a contractible end, as and for the purpose set forth.

386,186. HINGE. GEORGE DAHLMAN, Englewood, Ill. Filed Dec. 27, 1887. Serial No. 258,608. (No model.)



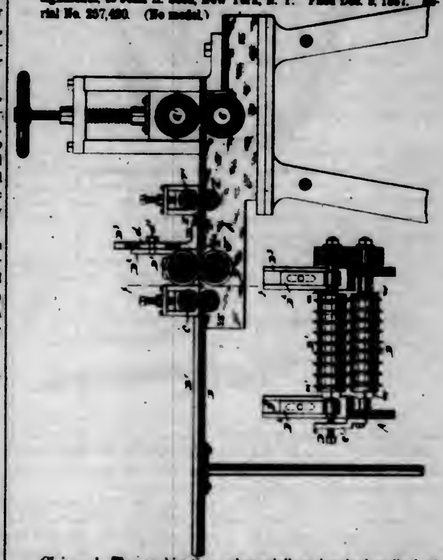
Claim.—1. In combination with a door-hinge, a plate upon the back of the wing and a ridge between said wing and plate, and longitudinal rows of screws on both sides of said ridge, substantially as specified.

2. In combination with a door-hinge and its screws, said hinge having a groove about midway between the longitudinal rows of screws, placed near its inner and outer edges, a rocking plate having a ridge or bearing fitting into said groove, and enlarged screw-holes registering with those of the hinge, substantially as specified.

3. In combination with a door-hinge having a guard, a plate placed upon the back of the wing, and a ridge between said wing and plate, and longitudinal rows of screws on both sides of said ridge, substantially as specified.

4. In combination with a door-hinge, a plate upon the back of the wing, united thereto by a rivet, and a ridge between said wing and plate, and longitudinal rows of screws on both sides of said ridge, substantially as specified.

386,187. MACHINE FOR MAKING LEATHER HOOPINGS, &c. JOHN J. DALEY and GEORGE J. DALEY, Brooklyn, assignors, by mesne assignments, to John H. Seed, New York, N. Y. Filed Dec. 9, 1887. Serial No. 257,620. (No model.)

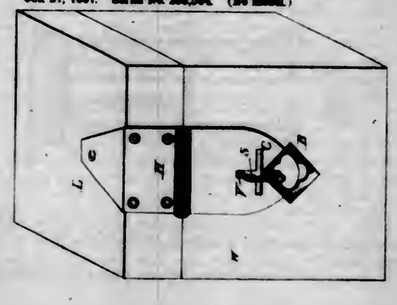


Claim.—1. The combination, substantially as herein described, of a pair of feed-rolls, a pair of cutter-rolls provided with circular cutting-knives, a series of folders, a second pair of feed-rolls, and a pair of creasing or ornamenting rolls.

2. The combination, substantially as herein described, with a feed-table, of a pair of feed-rolls, a pair of cutter-rolls, a series of folders arranged beyond said cutter-rolls, a second pair of feed-rolls beyond the folders, and a pair of creasing or ornamenting rolls.

3. In a machine for making leather edgings, the combination of the lower cutter-roll having circular cutting-knives, the upper cutter-roll having circular cutting-knives arranged in contact with the cutting-knives of the lower roll, vertically-adjustable bearings for said upper roll, slotted supporting-standards for adjusting said bearings, clamp-screws for said bearings, and a stationary set-screw bearing against the end of the upper cutter-roll for adjusting the knives of the same laterally toward the knives of the lower cutter roll, substantially as herein shown and described.

386,188. BOX-FASTENER. JOSEPH DAVY, Oakland, Cal. Filed Oct. 27, 1887. Serial No. 253,564. (No model.)

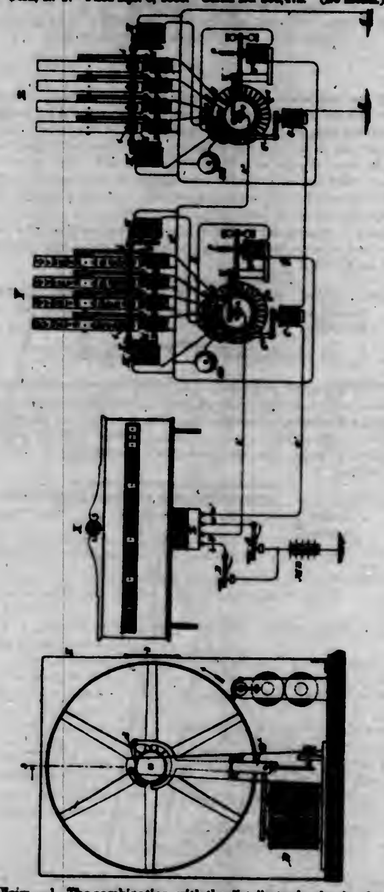


386,188.



Claim.—In a box-fastening, the combination, with a staple, S, secured to one portion of the box, and a bolt, B, having the central portion cut out and loosely pivoted on or held by said staple, of the loop H, attached to the other portion of said box and having therein the cuts or slots V and C, the former to engage the staple, and the latter adapted to pass over the bolt when said bolt is raised at right angles to said staple, substantially as described.

386,189. ELECTRICAL BULLETIN. PATRICK B. DELANY, New York, N. Y. Filed Apr. 3, 1888. Serial No. 269,672. (No model.)



Claim.—1. The combination, with the distributer having insulated segments and a step-by-step-actuated trailer which during its intervals of rest passes upon a segment, of the bulletin-wheels, their actuating-magnets included in the circuits of the segments, and a transmitter, a line and source of electric energy, from which intermittent currents may be transmitted through each distributing-segment and its bulletin-wheel magnet and the wheel thereby rotated to expose the desired character.

2. The combination of the bulletin-wheels, their actuating-magnets, the distributer-segments in circuit with which said magnets are connected, the step-by-step-actuated trailer which traverses said segments and during its intervals of rest passes upon a segment, the source of electric energy, line, and circuit-connections whereby the bulletin-wheels may be individually operated.

3. The combination of the bulletin-wheels, their magnets, the distributer-segments with which the magnets are connected, the intermittently-actuated trailer, which during its intervals of rest passes upon a segment, and the trailer-unison having its magnet connected with one of the distributer-segments and the main line or source of electric energy.

4. The combination of a line, a source of electric energy, an intermittently-operated trailer connected in the line, insulated segments traversed by the trailer, bulletin-wheel-actuating magnets connected with some of said segments, a magnet for throwing on a bulletin-wheel unison connected with one of said segments, a magnet for throwing off the bulletin-wheel unison connected with another of said segments, and circuit-connections, substantially such as described.

5. The combination of the transmitter, a line, a source of electricity, the distributer having insulated segments and a step-by-step-moving trailer which passes upon the segments, a gang of bulletin-wheels arranged side by side in parallel vertical planes, the actuating-magnets of the bulletin-wheels each included in the circuit of a segment, whereby each bulletin-wheel may be individually operated when the trailer is upon its segment, and a signaling device included in the circuit of one of the segments, substantially as and for the purpose set forth.

6. The combination, with a gang of bulletin-wheels arranged in parallel vertical planes and each carrying a unison-stop, of a gang of opposing stops, and a magnet and its circuit-connections for simultaneously removing the unison from all the bulletin-wheels.

7. The combination of a line, the opposing batteries MB MP, a switch or lever by means of which current from portions of said batteries of alternating polarity may be thrown upon the line, one or more polarized relays connected in the line and operated by such reverse currents, a trailer or circuit-completer in the line operated by each relay, a circle of segments traversed by each trailer, a branch circuit connected with each segment, electro-magnetic devices in each circuit adapted not to respond to each impulse, and keys or transmitting devices for transmitting currents of increased strength to operate said electro-magnetic devices.

8. The combination of a source of electric energy, a transmitter, a line extending to an intermittently-actuated trailer, a circle of segments traversed by said trailer, a branch line connected with each segment and with a common conductor leading to the next trailer and circle of segments in the line, a unison device for each trailer, and electro-magnetic devices in the branch lines of each circle of segments, corresponding electro-magnets being included in the circuits of corresponding segments, substantially as set forth.

9. In an electrical bulletin, the combination, substantially as set forth, of a source of electric energy, a transmitter, a line extending to an intermittently-actuated trailer, a circle of segments traversed by said trailer, the branch lines connected to the segments and to a common conductor leading to the next trailer and circle of segments in the line, a set of bulletin-wheels arranged in parallel vertical planes located at each circle of segments, bulletin-wheel-actuating magnets included in the branch circuits of the circles of segments, magnets of corresponding wheels being included in corresponding branch circuits at the different circles of segments, and unison-magnets for the bulletin-wheels, also included in branch circuits.

10. The combination of a line, a source of electric energy, a transmitter, polarized relays connected in the line, trailers, one for each relay, also in the line and operated by the relays, a circle of segments traversed by each trailer, a branch circuit connected with each segment and with a common conductor leading to the next relay and trailer, and independent bulletin-actuating magnets in the respective branch circuits at the different circles of segments, which magnets do not respond to the relay-actuating currents, but not when currents of increased strength are transmitted, corresponding magnets being included in the circuits of corresponding segments, substantially as and for the purpose set forth.

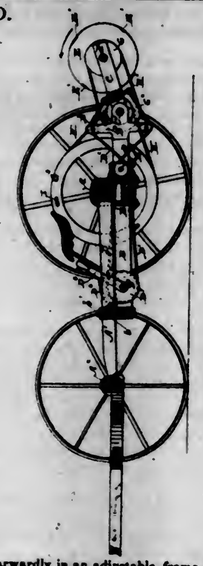
11. The combination, with a central station where current news or items of general interest are reported, of sub-stations for the visual display or communication of such news-items, where are located electrically-actuated bulletins, each having a series of wheels or rotating bodies upon which are placed the letters of the alphabet, of such size that they may be read from convenient distance, a source of electric energy, electrical conductors connecting the central and sub stations, a transmitter at the central station for sending currents to the sub-stations to actuate the bulletin-wheels to spell out and expose to view any desired communication, and bulletin-wheel-actuating devices located at each bulletin, by means of which the central-station operator may operate the bulletin-wheel at pleasure to display any desired item of news.

12. The combination, with a gang of bulletin-wheels arranged side by side in parallel vertical planes, of a corresponding gang of individually-adjustable unison-stops.

386,190. STALK-CHOPPER. ALEXANDER PERRIN, Terrell, Tex. Filed Apr. 14, 1888. Serial No. 270,614. (No model.)

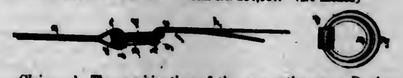
Claim.—In a stalk-chopper, the ordinary form of running-gear, A, in combination with the main frame B, secured thereto, as shown,

386,190.



terminating rearwardly in an adjustable frame, C, operated from the seat by a lever, D^4, and cords D D', passing over pulleys D^2 D^3 and head-wheel D^5, the reels E, pivotally mounted in said frame C on the shaft and carrying knives E', the shaft K, carrying the sprocket-wheel G^2, respectively communicating rearwardly with the wheel G by chain H' and forwardly with the wheel G^3 by chain H, whereby the rotation of the wheel G^3 is transmitted mediately to the reels E, for the purpose and in the manner set forth.

386,191. CLASP OR BUCKLE. SHERWOOD B. FERRIS, Lakewood, N. J. Filed Dec. 15, 1887. Serial No. 257,931. (No model.)



Claim.—1. The combination of the supporting-strap D, rings A B, having straight parts *a b*, and rigid loop *d*, said rings being held one upon the other by said loop, substantially as described.

2. The combination of the two rings A B and the single rigid loop *d*, for holding them together, with the strap F, said strap being looped over the ring B and passed thence through the ring A, all arranged for operation substantially as herein shown and described.

386,192. OBTAINING OXYAZOIC COLORING-MATTER FROM TETRAZO DIPHENYL AND DITOLYL. SYLVESTRE FOREL, Mulhouse, Alsace, Germany. Filed Nov. 29, 1887. Serial No. 256,494. (Specimens.) Patented in France Oct. 20, 1887, No. 186,490, and in England Nov. 11, 1887, No. 15,469.

Claim.—1. The process of manufacturing oxyazoic compounds from tetrazo-diphenyl and tetrazo-ditolyl by the action of tetrazo-ditolyl on phenol, or of tetrazo-diphenyl and tetrazo-ditolyl on phenol and orthocresylol in alkaline solution, substantially as herein described.

2. A coloring-matter having the properties of yielding on vegetable fiber bright yellow when applied on a bath containing alkali or soap, the shade of the fiber when leaving the dyeing-bath being orange, but after washing with water or diluted acid and drying turning up into yellow, the salts resulting by the combination thereof with the salts of the alkaline earths being hardly soluble in water.

386,193. EMBROIDERING ATTACHMENT FOR SEWING-MACHINES. JOHN W. FOSTER, Washington, D. C. Filed May 27, 1887. Serial No. 239,502. (Model.)

Claim.—1. In an embroidering attachment for sewing machines, the combination, with two co-operating thread-carrying arms or levers, one of which is provided with the bearing-surfaces l^2 l^3, of a lever operated from the needle-bar of the machine and alternately engaging said bearing-surfaces, the forward end of said lever in its normal position lying to one side of a line joining its fulcrum, and the fulcrum of the lever provided with said bearing-surfaces, and a spring for returning said actuating-lever into its normal position when moved out of it to either side, as and for the purpose specified.

2. In an embroidering attachment, the combination, with the base

386,193.



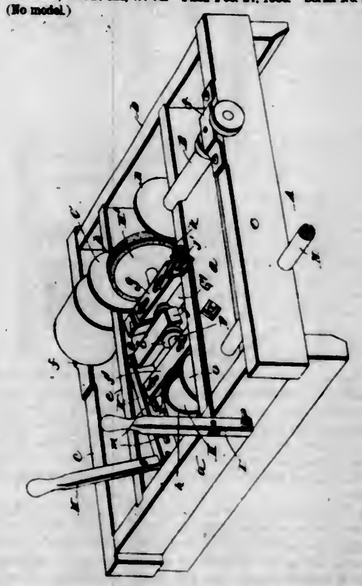
f of the attachment having the side wall, f^6, the levers L, pivoted to the base and provided with intermeshing teeth, one of said levers being provided with bearing-surfaces, as described, of the lever L', pivoted at one end to the base and projecting at its other end through a slot in the side wall, the lever L^2, pivoted at one end to the lever L' and its forward end lying in position to engage one of the bearing-surfaces, the levers L^3 L^4, pivoted to the side wall, one end of lever L^4 being forked or slotted and embracing the projecting end of lever L', and the lever L^3 being also forked or slotted at one end, and the needle-bar and its screw, the latter being embraced by the slotted end of lever L^3, as described.

386,194. SAFETY-PIN FOR BROOCHES. JOSEPH FRIEDGOESER, Landsberg-on-the-Loch, Bavaria, Germany. Filed Jan. 26, 1888. Serial No. 261,968. (No model.)



Claim.—In a safety-pin for brooches, the combination consisting of the main body of the brooch, provided with two depending guides, each having catches integral therewith, and the two pins provided with grooves engaging said catches and guides, the lower groove being less in length than the upper groove, substantially as shown and described.

386,195. FEED MECHANISM FOR SAW-MILLS. ALEXANDER P. GIBSON, Mount Ida, W. Va. Filed Feb. 27, 1888. Serial No. 265,630. (No model.)

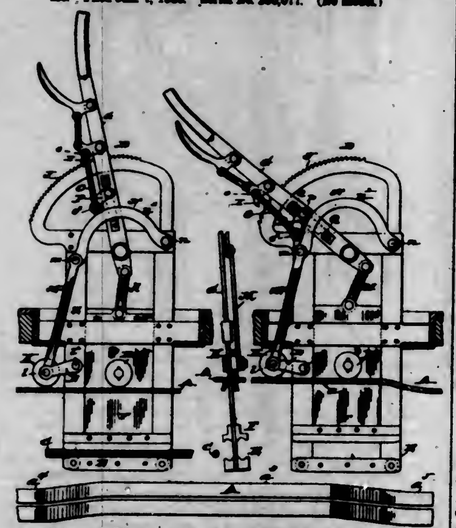


Claim.—1. The combination, with the feed-shaft provided with the disks C D, of the transversely-movable bearing-boxes, a shaft, F, journaled in said boxes and longitudinally movable therein, friction-wheels H H', of different diameters, secured on said shaft, a lever connected to said shaft F to move the same in its bearings, and a drive-disk contacting with the wheel H, substantially as specified.

2. The combination, with the feed-shaft provided with the disks C D, of the shaft F, bearing in bars and longitudinally movable therein, friction-wheels H H', of different diameters, secured on said shaft, a frame, K, slotted to play on guide-bolts and having a portion embracing said shaft F, and a lever for shifting said frame and shaft, substantially as specified.

3. The combination of the longitudinally-movable shaft F, having the friction-wheels H H', a drive-shaft having a disk contacting with the wheel H, a journal-box receiving the shaft F, a horizontal bell-crank lever arranged near one end of said journal-box, a link connecting said lever to the journal-box, and an operating-lever connected to the bell-crank lever, as set forth.

386,196. CABLE-GRIP DETACHER. HERMAN C. GRAWE, St. Louis, Mo. Filed Jan. 7, 1888. Serial No. 260,077. (No model.)



Claim.—1. The elevated and bent cable-tube slot, in combination with a vertically-movable part upon the car-grip, as and for the purpose described.

2. A cable-tube slot having an elevated and bent portion, as and for the purpose described.

3. The combination of a tube-slot elevated and bent, as described, with the movable jaw of the grip, said movable jaw having a roller or other projection for encountering said elevated and bent tube-slot, as and for the purpose described.

4. The combination of a tube-slot elevated and bent as described with a car-grip having two rollers or projections, said rollers or projections being adapted to encounter said elevated and bent tube-slot successively, and being respectively and either directly or indirectly connected with the grip-lever pawl, and the movable jaw of the grip, substantially as described.

5. The combination, in a car-grip, of the segment, the grip-lever and pawl, the curved and pivoted lever N, the rod O, and arm P, substantially as described.

6. The combination of the elevated tube-slot, the car-grip having the grip-lever and pawl, the roller K, the arm L, the arm M, the curved and pivoted lever N, the rod O, and the arm P, substantially as described.

7. The combination of the elevated and bent tube-slot, the car-grip having the movable jaw, the grip-lever and pawl, the rollers K R, the arm L, the rod M, the curved and pivoted lever N, the rod O, and the arm P, substantially as described.

8. The combination of the grip, the grip-lever, the keeper, the curved lever, the rod M, the arm L, and the roller K, substantially as described.

9. In a cable-grip, the bent lever N, pivoted to the frame-work of the grip and combined with the grip-lever, said lever N being shaped and arranged to occupy the arc of a circle whose center is the fulcrum of the grip-lever, substantially as described.

10. In a cable-grip, the bent lever N, pivoted at one end, to be moved as described, said lever being shaped and arranged to occupy the arc of a circle whose center is the fulcrum of the grip-lever, and being combined with and operated by a part leading downward therefrom to encounter an elevation in the tube-slot, substantially as described.

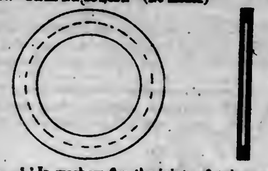
11. In a cable-grip, the bent lever N, pivoted to the frame-work of the grip, having a segment, and combined with and engaging on its convex surface the extension of the pawl, and having connected with it a part leading downward therefrom, operated by an elevation in the road-bed, whereby in operation the pawl is disconnected with the segment and the grip-lever is released, substantially as described.

386,197. HOB. GRANT HAIN, Dudley, Mich. Filed Mar. 10, 1888. Serial No. 266,883. (No model.)



Claim.—The herein-described hoe-blade comprising the wedge-shaped horizontal blade A, and the integral vertical blades D D at the ends of the horizontal blade and tapered toward their lower ends, substantially as specified.

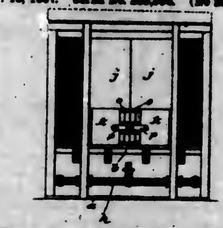
386,198. WASHER. THOMAS R. HALFORD, Bedford Park, and EDGAR W. EDMUNDSALE, Grove Park, County of Middlesex, England. Filed Nov. 1, 1887. Serial No. 254,251. (No model.)



Claim.—1. In washers for the joints of tubes and fittings, with a glass or other lining, a washer having a groove, *a*, round its internal edge, substantially as shown, and for the purposes specified.

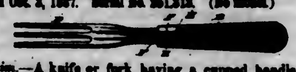
2. In washers for the joints of tubes and fittings, with a glass or other lining, the combination of two or more washers, recessed or plain, substantially as shown and described, for the purposes specified.

386,199. DEVICE FOR EXTINGUISHING FIRES IN THEATERS AND OTHER BUILDINGS. WILLIAM HASSELMAYER, Philadelphia, Pa. Filed Nov. 18, 1887. Serial No. 255,966. (No model.)



Claim.—The combination of the sliding doors, the safety-doors hinged thereto, and the springs secured to the outer faces of the sliding doors and the safety-doors, as set forth.

386,200. KNIFE OR FORK. HERBERT C. HART, Unionville, Conn. Filed Oct. 3, 1887. Serial No. 251,313. (No model.)

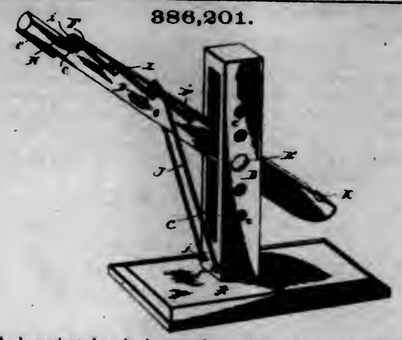


Claim.—A knife or fork having a cupped handle, the forward ends of the flange whereof are drawn down and over the opposite edges of the blade or tine shank, so as to firmly clasp such shank and hold the two parts together, substantially as set forth.

386,201. LIFTING-JACK. ARCHIBALD HINKHAM, Jefferson, Pa. Filed Apr. 13, 1888. Serial No. 270,895. (No model.)

Claim.—1. In a lifting-jack, the combination, with the base-block and the standard rising therefrom, of the lever pivoted in the slot of said standard and provided with the shoulders F, groove G, and slot

386,201.



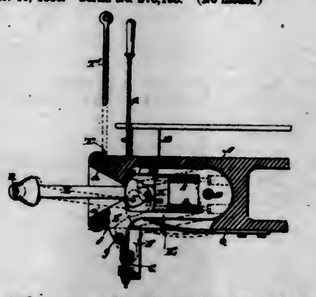
H, the loop pivoted at its lower end on said standard and with its front end passing over the lever, and the rod I, pivoted at its inner end in said groove below the upper end of the loop J, and provided with the rectangularly-bent portion *i* and the arm *i'* below the outer end of the lever, substantially as specified.

2. The combination of the base-block A, the standard B, rising therefrom and provided with the slot C and series of aligned openings *c*, the pivotal pin E, the lever provided with the shoulders F, groove G, and slot H, the rod I, provided with the arm *i'* and rectangularly-bent portion *i*, and the loop J, substantially as specified.

386,202. BLEACHING EDIBLE NUTS. FRANCIS M. INGERSOLL, Brooklyn, N. Y. Filed Dec. 24, 1887. Serial No. 258,911. (No specimens.)

Claim.—The process of bleaching and improving edible nuts, as described, consisting in subjecting the nuts to a bath of a mixture of tartaric and oxalic acids and then drying them, all substantially as described.

386,203. CAR-COUPLING. PIERRE A. JOUE, Napoleonville, La. Filed Apr. 10, 1888. Serial No. 270,195. (No model.)



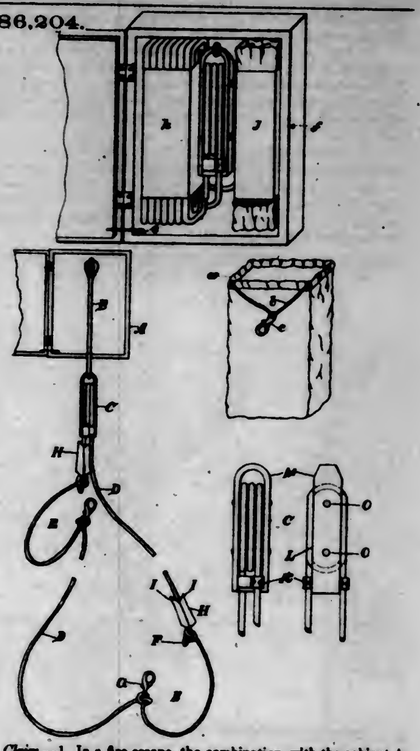
Claim.—1. In a car-coupling, the combination, with the draw-bar recessed on the under side and having the bell-mouth and the shoulder for engaging the link, of the movable jaw pivoted in said recess and having the forwardly-extending portion forming the other shoulder for engaging the link, the overhanging portion for disengaging the link when the movable jaw is depressed, and the spring for holding said jaw up in operative position, substantially as described.

2. In a car-coupling, the combination, with the draw-bar recessed on the under side and having the bell-mouth, as described, of the movable jaw pivoted in said recess and held up in operative position by spring-pressure, and having the forwardly-extending hook and the overhanging portion and the spring-pressed block moving in said head for keeping the link pressed forward, as and for the purpose set forth.

3. In a car-coupling, the combination, with the draw-bar recessed on the under side and having the bell-shaped mouth, of the movable jaw pivoted in said recess, consisting of the hook portion forming one of the inclines of the bell-mouth and having the shoulder or *stop f* thereon, the overhanging portion and spring-pressed sliding block between said hook and overhanging portion, and the lever for operating said movable jaw against the pressure of the spring which holds it in operative position, substantially as described.

4. The combination, with a car-coupling, substantially as described, of a link for co-operating therewith, having the enlarged ends and the anti-friction roller mounted thereon, as set forth.

386,204. FIRE-ESCAPE. GEORGE W. KEELER, Trenton, N. J. Filed Apr. 10, 1888. Serial No. 270,208. (No model.)



Claim.—1. In a fire-escape, the combination, with the cabinet A, having a hinged door, of the parts of the fire-escape, the fixed part thereof being fixedly secured in said cabinet and the moving or running parts thereof being folded in an orderly manner and secured in paper wrappers within said cabinet, as and for the purpose set forth.

2. The combination, with the cabinet A, having a hinged door, and said door being opened by the spring *e*, of the movable parts of the fire-escape, arranged and secured with paper wrappers in said cabinet, the friction-block C, secured to the cabinet by the rope B, the endless rope D, one or more bolts, E, ring F, and snap-hook G, and pad H, secured to the rope D and having two free ends, J, substantially in the manner and for the purpose shown and described.

3. The combination, in a fire-escape, with the cabinet A, having a hinged door, said door being opened by the spring *e*, of the movable parts of the fire-escape contained, arranged, and secured in said cabinet by paper wrappers, the friction-block C, secured to the cabinet by the rope B, the endless rope D, with one or more bolts, E, with ring F and snap-hook G, the pad H, secured to the rope D and having two free ends, J, friction-block C, having the band M secured to the oblong block L by the bolts O, and having the guide-tubes K at the lower end, the canvas bag with loose hem *a*, through which hem rope *b* is passed, adapted to drawing the mouth of the bag shut, and rope *b*, having the snap-hook *c*, substantially in the manner shown and described, and for the purpose set forth.

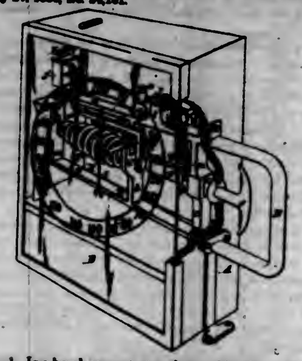
386,205. PIPE-CUTTER. ROBERT D. LOCKE, Titusville, Pa. Filed Mar. 15, 1888. Serial No. 267,262. (No model.)



Claim.—1. In a flue-cutter, the mandrel carrying the cutting-knife surrounded by a sleeve filling the space between the outside of the mandrel and the inside of the flue, the sleeve being eccentric and having a transverse slot through which the cutting-knife projects, the mandrel and sleeve being so arranged and connected that the cutting-edge of the knife is projected through and beyond the sleeve more or less, as desired, by the revolution of the mandrel within the sleeve, substantially as shown and described.

2. A flue-cutter consisting of the mandrel A, carrying the cutting-knife B and surrounded by the eccentric sleeve C, the motion of the sleeve on the mandrel being governed and controlled by the collar D, all the several parts working in combination and connected substantially as shown and described.

386,206. COIN-CONTROLLED HAND-POWER TESTER. ADELARD P. MARTIN, Montreal, Canada, assignor, by mesne assignments, to the Hand Power Test Machine Company, of New Jersey. Original application filed May 2, 1888, Serial No. 273,035. Divided and this application filed Apr. 3, 1888. Serial No. 270,038. (No model.) Patented in Canada May 27, 1886, No. 24,161.



Claim.—1. In a hand-power tester, the combination, with a frame, of a stationary handle secured thereto, a rod mounted in the frame and provided with a handle within the stationary handle, and a spring operated by said rod, substantially as shown.

2. In a hand-power tester, the combination, with a frame or box, of a stationary handle secured thereto, a rod mounted in the frame and provided with a handle, a spring secured to and operated by said rod, and a register operated by said rod at the latter is pulled outward, substantially as shown.

3. In a hand-power tester, the combination, with a frame, of a fixed handle secured thereto, a rod mounted in the frame and provided with a handle, a spring adapted to be operated by said rod, and an automatic locking device arranged, substantially as shown, to prevent said rod from being operated.

4. In a hand-power tester, the combination, with a frame, of a rod mounted therein and provided with a handle, a spring adapted to be operated by said rod, a registering device or index operated through the movement of said rod, substantially as shown, and an automatic locking device arranged to prevent said rod from being operated.

5. In a hand-power tester, the combination of a frame, a fixed handle, and a movable handle, arranged one within the other, the movable handle being provided with a registering device, constructed and arranged to operate substantially as and for the purpose set forth.

6. In a hand-power tester, the combination, with a frame, of a rod, F, provided with a spring, *g*, and a notch, *p*, pivoted lever J, provided at one end with a coin-receptacle, *m*, and at the other end with a dog, *n*, to engage with the notch, substantially as shown, whereby when a coin is placed in the receptacle the lever is rocked and raises the dog out of the notch and permits the rod to be operated.

7. In combination with box A, frame E, secured thereto, fixed handle B, rod F, provided with spring *g*, rack-bar G, and handle *f*, pinion H, meshing with the rack-bar, finger I, and dial-plate C, arranged and operating substantially as shown.

8. In combination with box A, frame E, handle B, and rod F, constructed and operating substantially as shown, lever J, provided with coin-receiver *m* and dog *n*.

9. In a hand-power tester, the combination, with a box, A, provided with coin-tube L, receiving-tube K, and drawer D, of a rod, F, provided with a spring, *g*, and a notch, *p*, and a pivoted lever, J, provided with a coin-receptacle, *m*, and a dog, *n*, all arranged to operate substantially as described, whereby when a coin is placed in the receptacle the lever is rocked to unlock the rod and to discharge the coin into the receiving-tube.

10. In combination with box A, having glass dial C, receptacle D, and fixed handle B, frame E, rod F, mounted in said frame and provided with notch *p*, spring *g*, and rack-bar G, shaft I, mounted in the frame and provided with pinion H, index-finger I, and pivoted lever J, provided with dog *n* and coin-receptacle *m*, all arranged to operate substantially as shown.

11. In a hand-power tester, the combination, with the reciprocating rod F and the pivoted lever J, having coin-receptacle *m*, arranged to operate substantially as explained, of the guard *j*, adapted to prevent the escape of coin from the receptacle and operated through the movement of the rod F, as described, whereby the guard is retained in place until the tipping of the lever to discharge the coin releases the rod.

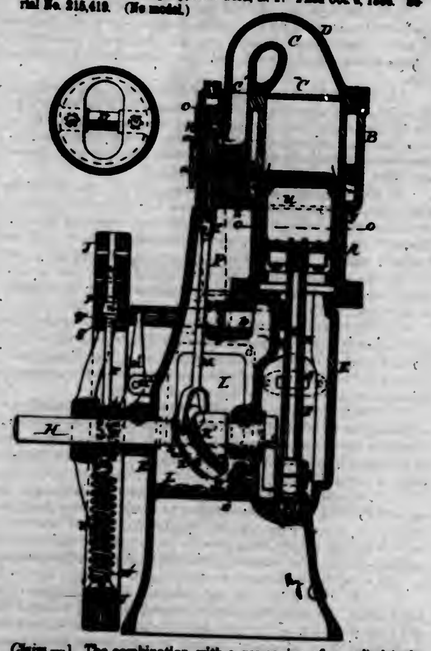
12. In a hand-power tester, the combination, with the rod F, having spring *g* and notch *p*, of the pivoted lever J, provided with a single coin-receptacle, *m*, and with a dog to engage with the notch *p*, and a weight, *c*, adjustable upon the lever, whereby the coin necessary to release the rod may be varied, as desired.

386,207. CORN-PLANTER. JOHN HOBAN, Adair, Mo. Filed Feb. 24, 1888. Serial No. 265,114. (No model.)



Claim.—The combination, with the main frame having the rear supporting and driving wheels, of the seed-dropping tubes having the extending guide-plates for the grain, the wheels F, journaled in suitable supports on the forward portion of the main frame and having the laterally-extended periphery provided with seed-dropping apertures, the hoppers arranged so as to have their discharge-apertures within the perforated periphery of the said wheels, the fixed pulleys, and endless guide-belt, connecting the seed-dropping wheels with the main driving-wheels, substantially as specified.

386,208. GAS-ENGINE. LEWIS H. HASH, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Oct. 6, 1886. Serial No. 215,612. (No model.)



Claim.—1. The combination, with a gas-engine, of a cylindrical plunger-valve, and a case having ports for operating the engine, and operating-connections for said valve, consisting of the oblique eccentric, the strap therefor, and a connecting-rod pivoted to said strap and having a universal-joint connection with said valve, substantially as herein set forth.

2. The combination of the power-cylinder of a gas-engine, having exhaust-ports placed in the middle of its length, and having its supply-passage entering at its back end, with a piston controlling the discharge of the waste gases, a sliding supply-valve controlling the flow into said cylinder, actuated by positive connecting mechanism, a compressor supplying a uniform combustible mixture for the engine, a supply-passage conveying the mixture to the engine-valve, and a throttle-valve for said supply-passage, actuated by a governor, substantially as described.

3. The combination, with the power-cylinder of a gas-engine, having ports opened by the piston on its forward stroke, and a compression-chamber, of a supply-passage leading from said chamber, a plunger-valve having provision for controlling the supply and igniting the charge, and an external lighter, substantially as herein set forth.

4. The combination, with a gas-engine, of a valve-chamber having a port entering the combustion-chamber, and a separate supply-port, a valve having bearing-faces operating said ports, an escape-passage, a cylinder having exhaust-ports uncovered by the piston on its forward stroke, and suitable valve-operating connections, substantially as herein set forth.

5. The combination, with the power-cylinder of a gas-engine, having exhaust-ports uncovered by the piston on its forward stroke, of a compression-chamber, a mixing-valve supplying a uniform mixture, a governor controlling the flow from said chamber, and a plunger-valve supplying the charge, substantially as herein set forth.

6. The combination, with the power-cylinder of a gas-engine, of a slide-valve, a valve-case having a cylinder-port, a separate supply-port, and an escape-port separating said ports, substantially as herein set forth.

7. The combination, with the power-cylinder of a gas-engine, of a slide-valve having divided bearing-surfaces, a valve-case having separate ports for the supply and for the combustion chamber, and an escape-port placed between them, substantially as described, for the purpose specified.

8. The combination, with the piston of a gas-engine, of a compression-chamber, a mixing supply-valve therefor, a supply plunger-valve, a fly-wheel governor, and a valve operated by the latter to control the flow from said compression-chamber to the supply-valve, substantially as described.

9. The combination, with the power-cylinder, the piston, and a supply slide-valve, of a plunger-chamber containing an elastic fluid and oil, and a supply-conduit leading from said chamber to the bearing-surfaces of said cylinder, piston, and valve, substantially as herein set forth.

10. The combination, with the power-cylinder, the piston, and the valve, of the compression-chamber containing oil, an elastic fluid, and the piston-operating connections, the chamber L, containing the valve-operating connections, and a conduit for oil leading from the compression-chamber to the bearing-surfaces of said cylinder, piston, and valve, substantially as herein set forth.

11. The combination, with the power-cylinder, the piston, the slide-valve, and the operating connections for the working parts, of the engine-frame having a compression-chamber containing an elastic fluid and oil, and inclosing the piston-operating connection, and also having a chamber inclosing the valve-operating connections, a conduit for the oil leading from the compression-chamber, and a valve-controlled communication between the said chambers, substantially as described, for the purpose specified.

12. The combination, with the power-cylinder having the inner wall-groove, *y*, and a supply slide-valve having a wall-passage, *z*, leading to said groove, of the compression-chamber F, containing an elastic fluid and oil, and a tube leading therefrom to the said wall-passage, substantially as described, for the purpose specified.

13. An engine-frame having the chambers F and L, the former containing an elastic fluid and oil, in combination with the power-cylinder, the piston, the supply-valve, the conduit *y z*, for supplying oil to the operating parts, the check-valve 22, and the cock 23, substantially as herein set forth.

14. The combination, with the power-cylinder, the piston, and the supply-valve, of a compression-chamber, of which the piston forms the compressor, having a mixing-valve supplying a uniform mixture, a valve-controlled supply-passage for the power-cylinder, and an automatically oil-supplying conduit for the cylinder, and valve N, controlled by said piston, substantially as herein set forth.

15. The combination, with the piston and other working parts of a gas-engine, of a plunger-chamber containing an elastic fluid and oil, and a supply-conduit for the oil leading from said chamber to the bearing-surfaces to be lubricated, whereby the oil is forced through said passage by the gas under the action of the piston, substantially as described.

16. The combination of the power-cylinder of a gas-engine, having exhaust-ports placed in the middle of its length, having its supply-passage entering at its back end, and a compression-chamber at its forward end forming a reservoir for the compressed charge, with a piston controlling the discharge of the waste gases and compressing the combustible mixture on its forward stroke, a supply-passage leading to the main valve, having a throttle-valve controlled by a governor, and a sliding supply-valve controlling the flow into said cylinder supply-passage, actuated by positive connecting mechanism, substantially as described.

17. In a gas-engine, a compression-chamber and a reservoir constantly in free communication therewith, combined with ports provided with a valve for controlling the supply of the mixture to the reservoir solely by the back expansion of the gases contained in said reservoir, substantially as described.

18. In a gas-engine, a compression-chamber, a reservoir constantly in free communication therewith, and an automatic governor combined with ports, and provided with a valve for automatically controlling the supply of mixture to the reservoir solely by the back expansion of the gases contained in said reservoir, substantially as described.

19. In a gas-engine, the combination of an entrance-passage of constant capacity, a compression-chamber in free communication with a reservoir, a combustion-chamber, and a conduit provided with a valve for controlling its capacity, leading from said compression-chamber to said combustion-chamber, substantially as described.

20. In a gas-engine, the combination of an entrance-passage of constant capacity controlled by a check-valve, a compression-chamber in free communication with the reservoir, a combustion-chamber, and a conduit provided with a valve for controlling its capacity, leading from said compression-chamber to said combustion-chamber, substantially as described.

21. In a gas-engine, a combustion-chamber having entrance and discharge ports at opposite ends of said chamber, both open at the same time, combined with a compression-chamber, and a reservoir in free communication therewith, a conduit connecting said combustion-chamber and said compression-chamber, provided with a valve for automatically closing said conduit, and a valve controlled by an automatic governor for controlling the capacity of said conduit, substantially as described.

22. In a gas-engine, a combustion-chamber having entrance and discharge ports at opposite ends of said chamber, both open at the same time, combined with a positively-moving supply-valve, a compression-chamber, and a conduit provided with an automatic governor for controlling its capacity, connecting said compression-chamber and said combustion-chamber, substantially as described.

23. In a gas-engine, a combustion-chamber having entrance and discharge ports at opposite ends of said chamber, both open at the same time, combined with a valve operating to stop the flow of gas during an interval of time between the reduction of the old charge within the said chamber to atmospheric pressure and an introduction therein of a fresh charge, for the purpose set forth.

24. In a gas-engine, a combustion-chamber having entrance and discharge ports at opposite ends of said chamber, both open at the same time, combined with a positively-moving supply-valve operating to cause an interval of time to elapse between the reduction of the old charge in said chamber to atmospheric pressure and the introduction therein of a fresh charge, for the purpose set forth.

25. In a gas-engine, a combustion-chamber having entrance and discharge ports at opposite ends of said chamber, both open at the same time, combined with a valve for controlling the supply-passage of said chamber, said valve being provided with an escape-passage, substantially as and for the purpose set forth.

26. In a gas-engine, the combination of a compression-chamber and a reservoir constantly in free communication therewith, gas and air supply ducts, and a valve, said gas and air supply ducts and said valve all being controlled by the back expansion of gas contained in said chamber, substantially as described.

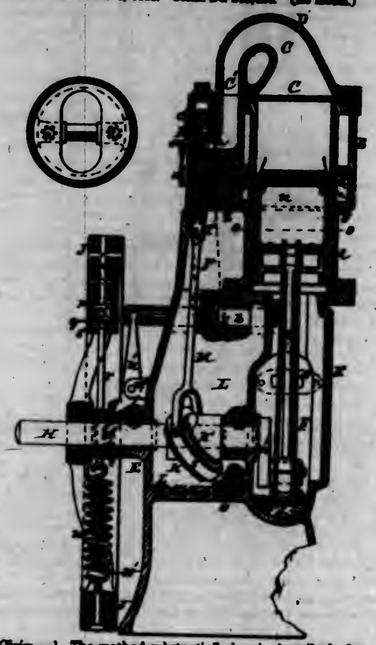
27. In a gas-engine, a compression-chamber and a reservoir constantly in free communication therewith, combined with ports provided with a valve for controlling both the density of the gas admitted to said chamber and also the volume thereof by means of the back expansion of gas contained therein, substantially as described.

28. The combination, with the piston and other working parts of a gas-engine, of a plunger-chamber containing an elastic fluid and oil, and a supply-conduit for the oil leading from said chamber to the bearing-surfaces to be lubricated, whereby oil is forced through said passage by the action of the piston, substantially as described.

29. The combination, with the piston and other working parts of a gas-engine, of a plunger-chamber containing an elastic fluid and oil, and a plurality of conduits for the oil leading from said chamber to the bearing-surfaces to be lubricated and back to said chamber, whereby oil is forced through said passage by the action of the piston, substantially as described.

30. The combination of the power-cylinder and piston of a gas-engine with a compression-pump, a reservoir into which each charge is compressed, having free communication with said compression-pump, and a governor controlling the quantity of the charge from said compression-pump, whereby the excess of the charge contained in the reservoir expands upon the back-stroke of the piston to properly limit the supply for said reservoir for supplying the engine.

386,209. METHOD OF OPERATING GAS-ENGINES. Lewis H. Nash, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Oct. 6, 1888. Serial No. 216,693. (No model.)



Claim.—1. The method substantially herein described of operating a gas-engine, which consists in admitting a combustible mixture to a compressor, compressing it into a reservoir having free communication with the compression-chamber, admitting some of the compressed charge to the power-chamber in quantities controlled by a valve, and regulating the supply to said compression-chamber solely by means of the back expansion of the gases contained therein.

2. The method substantially herein described of operating a gas-engine, which consists in compressing a combustible mixture, exhausting the waste gases at one end of the combustion-chamber, delaying the admission of fresh gases to the cylinder until a period of time after the shock of the exhaust is over and until the intense heat of the waste gases is reduced, and admitting the fresh charge at the other end of the cylinder to drive out the remaining gases.

3. The method substantially herein described of operating a gas-engine, which consists in drawing a combustible mixture in successive charges of uniform density into a compression-chamber during the back-stroke of the piston, compressing the mixture in said chamber during the forward stroke of the piston, controlling the flow from said compression-chamber to the supply-valve by a governor, admitting the charges to the combustion-chamber during a compound movement of the plunger-valve, compressing the charge during the back-stroke of the piston, and igniting the charge during a twisting movement of the valve.

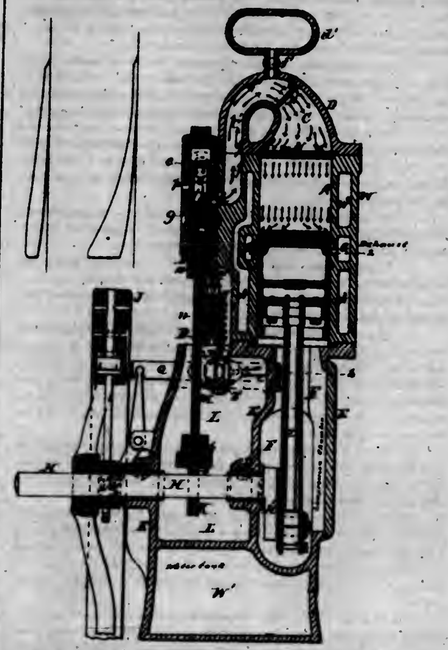
4. The method substantially herein described of operating a gas-engine, which consists in drawing into a compression-chamber successive charges of a combustible mixture by the back-stroke of the piston, compressing the charge in said chamber by the forward stroke of the piston, admitting the charge in the power-cylinder, closing communication between the combustion-chamber and the supply-chamber, closing their connecting-passages, opening between said chambers an escape-passage for the leakage, and igniting the charge upon the next forward stroke of the engine.

5. The method substantially herein described of operating a gas-engine, which consists of admitting to the compression-chamber of said engine, by means of an admission-valve controlled solely by the back expansion of gas contained in said chamber, a quantity of mixture of uniform density at each stroke of the piston equal to the quantity consumed in the engine by the preceding stroke of the piston.

6. The method substantially herein described of operating a gas-engine, which consists in compressing a combustible mixture within a compression-chamber at each stroke of the compressor, drawing from said compression-chamber a quantity of mixture at each stroke of the piston proportioned to the power developed, and regulating the supply to said chamber solely by means of the back expansion of said surplus mixture.

7. The method substantially herein described of operating a gas-engine, which consists of admitting to the compression-chamber of said engine, by means of an admission-valve controlled by the back expansion of gas contained in said chamber, a quantity of mixture of uniform density at each stroke of the piston equal to the quantity consumed in the engine by the preceding stroke of the piston.

386,210. GAS-ENGINE. Lewis H. Nash, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Dec. 30, 1886. Serial No. 223,003. (No model.)



Claim.—1. In a gas-engine, a power-chamber, A C, having ports at opposite ends of said chamber, both open at the same time, combined with a perforated plate extending entirely across said chamber proper, for the purpose of breaking up eddies in the inflowing charge and causing the charge to flow through the power-chamber in uniform volume without eddies, substantially as and for the purpose set forth.

2. The combination, in a gas-engine, of a piston and a power-cylinder having ports adapted to be uncovered by the piston on its forward stroke, with a charge-supplying passage and combustion-chamber having a curved-horn shape provided with a perforated partition placed across the junction of said passage, with the cylinder and one or more similar partitions placed across the supply-passage between the said junction-partition and the charge-supplying port, substantially as described, for the purpose specified.

3. In a gas-engine, a power-chamber, A C, having ports at opposite ends of said chamber, both open at the same time, combined with a perforated plate extending entirely across said chamber, the perforations in said plate flaring in the direction of the inflow of the charge, for the purpose of breaking up eddies in the inflowing charge and causing the charge to flow through the power-chamber in uniform volume without eddies, substantially as and for the purpose set forth.

4. In a gas-engine, a compression-reservoir, a power-chamber, A C, having ports at its opposite ends, both open at the same time, a duct provided with a positively-moving valve for controlling the communication between said compression-reservoir and power-chamber, combined with a perforated plate extending entirely across said power-chamber, for the purpose of breaking up eddies in the inflowing charge

and causing the charge to flow through the power-chamber without eddies, substantially as described.

5. The combination, with the piston and power-cylinder of a gas-engine, of one or more perforated plates placed in the charge-supplying passage of the combustion-chamber, and a reservoir, *d'*, having valved communication with said combustion-chamber, operating substantially as described.

6. The combination, in a gas-engine, of the power-cylinder, a piston operating as a charge-supplying compression-pump on its forward stroke, a reservoir for the combustible mixture, and a valve controlling the admission of the charge to the combustion-chamber, with a reservoir communicating with the combustion-chamber through a valve-controlled passage for relieving the pressure in said chamber in starting the engine, substantially as described, for the purpose specified.

7. The combination, in a gas-engine, of the piston and a power-cylinder having exhaust-ports adapted to be uncovered by the piston on its extreme forward stroke, with a crank-shaft and piston-connections, a cam secured to said shaft, a valve and valve-rod connection operated in one direction by said cam, and a spring holding the valve-connection against said cam, substantially as described.

8. The combination, with the piston and its crank-shaft connections of a gas-engine, of the cam K, the roller *i*, the rocker-arm 6, the valve-rod M, the spring 11, and a reciprocating plunger-valve for admitting the charge and igniting the same, substantially as described.

9. The combination, in a gas-engine, of the power-cylinder and the piston, with a reciprocating plunger-valve for admitting and igniting the charge, having the ports *d*, *g*, *h*, *r*, and *e*, with a valve-case having corresponding co-operating ports, substantially as described, for the purpose specified.

10. In a gas-engine, an ignition-chamber having a tangential supply, combined with an ignition-passage and an independent escape-passage, substantially as and for the purpose set forth.

11. In a gas-engine, a power-chamber, A C, combined with a plurality of perforated partitions arranged across said chamber at intervals to divide the same into a series of separate chambers, substantially as and for the purpose set forth.

12. The combination, with a valve and a valve-case, both having ports for supplying the charge and for igniting the same, and an external lighter-jet, with a supply-passage and combustion-chamber having a curved-horn shape, of one or more perforated partition-plates placed therein, a piston, and a power-cylinder having ports adapted to be uncovered by the piston on its forward stroke, substantially as and for the purpose described.

13. The combination, with a gas-engine having a fixed lighter-jet, of a lighter-jet chamber of circular form, having a tangential gas-supply port, a central end lighter-port, and a central end back port to discharge the waste gases from said chamber.

14. The combination, with a gas-engine having a permanent lighter-jet, of a slide-valve having a circular lighter-chamber, having a gas-supply port entering said chamber tangentially, a central end ignition-port of less area than the said chamber, and a back end discharge-port of less area than the said ignition-port, for the purpose stated.

15. In a gas-engine, the combination of an ignition-chamber, a device for causing a jet of combustible gas to whirl about within said chamber, a lighter-port, and a back passage opened before the ignition-passage to discharge the waste gases from such chamber, substantially as described.

16. In a gas-engine, the combination of an ignition-chamber, a device for causing a jet of combustible gas to whirl about within said chamber, a lighter-port, and a back passage to discharge the waste gases from said chamber, substantially as described.

17. In a gas-engine, a lighting device, an ignition-chamber, and a device for causing a jet of combustible gas to whirl about within said chamber, combined with a passage communicating with said lighter and an escape-passage, substantially as described.

18. In a gas-engine, a lighter device, an ignition-passage, and a device for causing a jet of combustible gas to pass through said passage with a spiral or whirling current, producing therein a reverse central current, along which the flame is transmitted, combined with an escape-port, substantially as set forth.

386,211. GAS-ENGINE. LEWIS H. HAHL, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Nov. 5, 1888. Renewed Oct. 5, 1888. Again renewed June 21, 1887. Serial No. 242,615. (No model.)

Claim.—1. The power-cylinder having the inlet and exhaust ports arranged to be operated by the piston, in combination with a combustion-chamber divided into separate passages and having a curved interior end wall, whereby the charge is directed into the chamber toward its curved wall and returned by the action of the latter, substantially as described.

2. The combination, in a gas-engine, of a power-cylinder having inlet and exhaust ports, and a piston adapted to uncover the said cylinder-ports at the end of its power stroke, with means, substantially such as described, whereby the waste gases are expelled by the incoming charge.

3. The combination, with the power-cylinder having its inlet and discharge ports formed in the walls thereof, of a piston adapted to operate said ports, having a face projection for dividing the combustion-chamber, substantially as described, for the purpose specified.

4. The combination, with the power-cylinder having its inlet and discharge ports formed in the walls thereof, of a piston adapted to operate said ports, having a face projection for dividing the combustion-chamber, and a perforated plate arranged to form an interior extension of the inlet-port, substantially as described, for the purpose specified.

5. The combination of the power-cylinder and a cap thereof forming the combustion-chamber, having its inner wall curved, with a piston having a central face projection co-operating with said curved wall to divide the combustion-chamber, substantially as described, for the purpose specified.

6. In combination, in a gas-engine, the power-cylinder having wall inlet and exhaust ports and a curved cap, the piston having a central face projection, the supply-passage *h*, a governor controlling the latter, the reservoir B, and the valves *i j*, constructed for operation substantially as described.

386,212. IGNITOR FOR GAS-ENGINES. LEWIS H. HAHL, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Jan. 20, 1888. Renewed June 21, 1887. Serial No. 242,604. (No model.)



Claim.—1. An igniter for gas-engines having an ignition-chamber provided with a jet-supply passage conveying the gases in a tangential whirl within said chamber, and having an ignition-port formed at one side of the ignition-chamber to direct the inflowing gases in a whirling movement within said chamber, substantially as described, for the purpose specified.

2. An igniter for gas-engines having an ignition-chamber, *c*, provided with a tangential supply-passage, *h*, an exterior ignition-port, *d*, and a tangential port, *g*, having the relation and operating substantially as described, for the purpose specified.

3. The combination, in an igniter for gas-engines, of the ignition-chamber *c*, having a tangential jet-passage, *h*, and an exterior ignition-port, *d*, with an annular passage, *e*, controlling said ignition-chamber, and a tangential port entering said annular passage in communication with the combustion-chamber of the engine.

4. An igniter device for gas-engines, consisting of a case having a port, *h*, communicating with the cylinder, a permanent external lighter, *i*, and a slide having an ignition-chamber, *c*, the tangential jet-passage *h*, and the tangential charge-ignition passage *g*, substantially as described.

5. The combination, in an igniter for gas-engines, of a case having the port *h* and the external lighter, *i*, with the slide *A*, having an interior chamber forming ring-bushing *c*, having the port *f*, and forming a cover for an annular passage surrounding said bushing, a tangential jet-passage, *h*, and a tangential supply-port, *g*, substantially as described, for the purpose specified.

6. An ignition-chamber for a gas-engine igniting device, having a tangential supply-port, *g*, and an ignition-chamber arranged with its axis parallel to the face containing the seating ports, substantially as described, for the purpose specified.

7. In an igniter for gas-engines, an igniter-slide, and an inclosing-case therefor constructed of metals having different rates of expansion, substantially as described, for the purpose specified.

8. The combination, in an igniter device for gas-engines, of an igniter slide or valve, with an inclosing-case therefor, having a greater rate of expansion than the slide or valve, for the purpose specified.

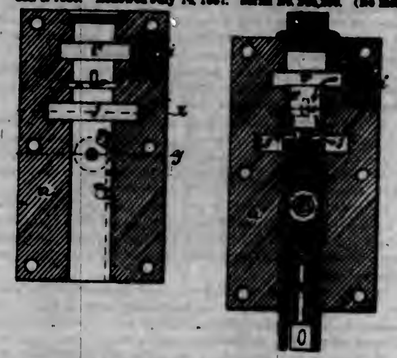
9. The combination, in an igniter device for gas-engines, of an igniter slide or valve and a bearing-piece for the latter, with an inclosing-case formed of metal having a greater rate of expansion than said slide or valve, and an adjustable connection between said bearing-piece and case, substantially as described, for the purpose specified.

10. In a gas-engine, the combination of an igniter-chamber, a power-chamber in valved communication therewith, and a device for causing a whirling jet of combustible mixture within said chamber supplied from said power-chamber, substantially as described.

11. In a gas-engine, the combination of a power-cylinder in valved communication with a lighter device, an igniter-chamber provided with a tangential passage through which communication for the passage of the flame is established with said power-cylinder, and means, substantially as described, for igniting the charge contained in said igniter-chamber.

12. In a gas-engine, the combination of an ignition-chamber, a device for causing a whirling jet of combustible mixture within said chamber, an igniter, a combustion-cylinder in valved communication with said chamber, said whirling jet of combustible mixture being augmented by the charge entering said chamber from the combustion-cylinder, substantially as described.

386,213. IGNITOR FOR GAS-ENGINES. LEWIS H. HAHL, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Oct. 6, 1888. Renewed July 14, 1887. Serial No. 244,302. (No model.)



Claim.—1. An igniting device for gas-engines, provided with an external lighter and a plunger-valve having a circular ignition-chamber, a tangential supply-port, *e*, a tangential ignition-port, *d*, a central ignition-port, *f*, and a lateral port, *g*, in combination with an inclosing-case having the ports *j*, *k*, and *m*, substantially as herein set forth.

2. An igniting device for gas-engines, consisting of an inclosing-case having the ports *j*, *k*, and *m*, a cylindrical plunger-valve having the ports *d*, *e*, *f*, and *g*, a circular ignition-chamber, *c*, means, substantially such as described, whereby said valve is caused to have a compound movement, and an external lighter.

3. An igniting device for gas-engines, consisting of a plunger-valve having a circular ignition-chamber provided with a central ignition-port, *f*, and one or more tangential ports for supplying the said chamber, and a case having a port leading to an external lighter and a port leading to the combustion-chamber, substantially as herein set forth.

4. The combination, with an igniting device for gas-engines, of a valve having a compound reciprocating and rotatory movement, and provided with alinable ports and with an ignition-chamber, substantially as described.

5. The valve-case having the annular supply-port *i* i^2 and the annular supply-port *j*, the ignition-port *k*, and an escape-port, 15, arranged between the said supply-ports, in combination with a plunger-valve of two parts, *b* b^2, having the circular ignition-chamber *c*, its tangential ports *d* and *e*, and a central port, *f*, and means for imparting to said valve a compound reciprocating and turning or twisting movement.

6. The combination, with a plunger-valve having two separate joint-forming faces, of a valve-case having a port, i^2, opening into the fuel-supply passage, a port, *j*, communicating with the combustion-chamber, and an escape-port, 15, opening to the air between the said ports i^2 and *j*, whereby when the latter are closed the division-space of the valve is open to the escape-port, for the purpose described.

7. The combination, with a gas-engine, of a plunger-valve and an inclosing-case therefor, having provision for supplying the charge, for igniting the same, and for preventing the back passage of the flame to the supply-port, substantially as described.

8. The plunger-valve having two joint-forming faces and an intermediate space, 16, the part b^2 of said valve having a central passage opening into the division-space, and the part *b* having a circular ignition-chamber, its tangential ports *d* and *e*, its central port, *f*, and a lateral port, *g*, and a central passage open to the air, in combination with a valve-case having the supply-ports *i*, i^2, and *j*, the ignition-port *k*, and the escape-port 15, and means, substantially such as described, for operating said valve with a compound reciprocating and turning movement, for the purpose stated.

9. The combination, with the power-cylinder of a gas-engine, of a cylindrical plunger-valve having a circular ignition-chamber having tangential ports, and a case having supply and ignition ports, and an external lighter, with mechanism for imparting a combined reciprocating and turning or twisting movement to said valve, substantially as herein described.

10. The combination, with a power-cylinder of a gas-engine, of a cylindrical plunger-valve provided with an ignition-chamber and a suitable device for causing a whirling jet of combustible mixture within said chamber, substantially as described.

386,214. METHOD OF IGNITING THE CHARGES IN GAS-ENGINES. LEWIS H. HAHL, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Oct. 5, 1888. Renewed July 14, 1887. Serial No. 244,303. (No model.)



Claim.—1. The method substantially herein described of igniting a charge of combustible gases, which consists in supplying a jet of gas to an ignition-chamber having a valved communication with an external lighter through a supply-passage, closing communication with said external lighter and effecting the ignition of the charge in the engine from the ignition-chamber through the said supply-passage.

2. The method substantially herein described of effecting the ignition of the charge in a gas-engine, which consists in supplying the ignition-chamber through a passage open to an external lighter to effect the ignition in said chamber, closing such igniting communication, and causing the flame to pass back and ignite the charge in the engine through the same supply-passage, as described.

3. In an igniting device for gas-engines, the method substantially herein described of effecting the ignition of the charge along a connecting-passage, which consists in causing the gases to flow through said passage in an unbroken spiral or whirling current to the igniter, thereby creating a reverse central current in said passage along which the flame is transmitted, for the purpose specified.

4. The method substantially herein described of igniting a combustible charge for a gas-engine, which consists in causing some of the gas to flow into a circular ignition-chamber with a tangential motion, igniting the gases through a valve-port by an external burner, closing said port, and igniting the charge in the engine from said ignition-chamber through a tangential supply-passage, for the purpose specified.

5. The method hereinbefore described of effecting the ignition of a combustible charge of gas in the engine, which consists in effecting the combustion of a portion thereof in an intermediate ignition-chamber having valved communication with an external lighter, effecting

the ignition of the charge through a passage entering said ignition-chamber tangentially and connecting it with the combustion-chamber of the power-cylinder.

6. The method of igniting the charge in a gas-engine, which consists in causing a portion of the charge to flow into an ignition-chamber with a spiral whirling jet to an external burner to effect the ignition in said chamber, closing communication with said chamber, closing communication with said external burner, and opening communication with the power-cylinder to effect the ignition of the charge.

7. The method herein described of igniting the charge in the combustion-chamber of a gas-engine from an intermediate ignition-chamber, which consists in causing a portion of the charge from the former to float into the latter with a whirling motion, igniting the gases therein by an external burner and effecting the transmission of the flame in a direction opposite to that of the flowing current by stopping the flow of the latter.

8. The method substantially herein described of effecting the ignition of the charge in the combustion-chamber of a gas-engine from an ignition-chamber, which consists in opening communication between them through a passage having a tangential relation to the ignition-chamber, whereby the entering gases are caused to circulate around said chamber in whirling currents, substantially as and for the purpose specified.

9. The method substantially herein described of igniting the charges in a gas-engine, which consists in causing gas to flow through an ignition-chamber with an unbroken spiral whirling jet to an igniter to effect the ignition in said chamber, closing communication with said igniter, and opening communication with the power-cylinder to effect the ignition of the charge.

10. The method substantially herein described of igniting the charge in the power-cylinder of a gas-engine, which consists of igniting a charge of combustible gases through a passage having an unbroken spiral or whirling current flowing toward a lighter, and a centrally-returning current leading to an igniter-chamber and igniting the charge in said power-cylinder from the flame in said ignition-chamber.

11. The method substantially herein described of igniting the charges of a gas-engine, which consists in causing gas to flow into an ignition-chamber with an unbroken spiral or whirling motion, igniting said whirling gas by applying a lighting device to the center of the whirling gas within said chamber and igniting the charge of the engine from said ignited gas.

12. The method substantially herein described of igniting the charges in the power-cylinder of a gas-engine, which consists in supplying the ignition-chamber with gas caused to impinge with a rotary flow upon its walls, and igniting such rotating body by a flame transmitted from an external light to the center of such whirling body.

13. The method herein substantially described of igniting the charge of a gas-engine, consisting of causing gas to enter and whirl about an igniter-chamber, igniting said whirling gases and opening communication between said chamber and the power-cylinder, and causing the back-pressure of the gases contained in said power-cylinder to enter and whirl about said igniter-chamber.

14. The method substantially herein described of igniting the charge of a gas-engine, consisting of supplying an igniter with a charge of gas, igniting said gas and opening communication between said chamber and the power-cylinder and causing the back-pressure of the gases contained therein to enter and whirl about said igniter-chamber.

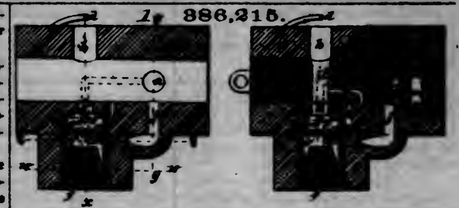
15. The method substantially herein described of igniting a charge of combustible gases, which consists in supplying a jet of gas to an ignition-chamber having a valved communication with a lighter through a supply-passage, so as to cause said gas to whirl about said chamber, closing communication with said lighter and effecting the ignition of the charge in the engine from the ignition-chamber through said supply-passage.

16. The method substantially herein described of igniting the charge of a gas-engine, consisting of supplying an igniter with a charge of gas, igniting said gas, opening communication between said chamber and the power-cylinder, and also between said chamber and an escape-passage, and causing the back-pressure of the gases contained in said cylinder to enter and whirl about said igniter-chamber.

386,215. IGNITOR FOR GAS-ENGINES. Lewis H. Nash, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Oct. 3, 1888. Renewed July 14, 1887. Serial No. 244,261. (No model.)

Claim.—1. The igniting-chamber arranged to receive its supply and ignite the charge through one and the same port, *i*, in combination with the valve B, the external lighter, *d*, and the combustion-chamber, substantially as described.

2. The combination, in an igniting device for a gas-engine, of a circular ignition-chamber, a supply-passage having valved connection with the combustion-chamber of the power-cylinder, entering said ignition-chamber tangentially, and a passage having valved communication with the external lighter, operating substantially as described, for the purpose specified.



3. The combination, in a gas-engine igniting device, of a circular ignition-chamber, one or more tangential supply-passages therefor having valved communication with the combustion-chamber of the power-cylinder, and an ignition-passage opening centrally into said ignition-chamber, having valved communication with an external ignition-burner, operating substantially as described, for the purpose specified.

4. The combination, in an igniting device for gas-engines, of a circular ignition-chamber having one or more tangential supply-passages communicating with the combustion-chamber of the power-cylinder, an ignition-passage having valved communication with an external lighter, and an escape-passage for the products of combustion from the ignition-chamber, controlled substantially as described.

5. In an igniting device, the combination of an ignition-chamber formed of joining communicating spaces c' c^2, escape-ports *g*, and ignition-ports having valved communication with an external lighter-jet and with the combustion-chamber of the power-cylinder, operating substantially as described.

6. In an igniting device for gas-engines, the combination, with an ignition-chamber, of a port having valved communication with an external lighter, a tangential supply-passage arranged to supply said chamber when the external lighter-port is open, and a tangential ignition-passage having valved communication with the combustion-chamber of the power-cylinder, operating substantially as described for the purpose specified.

7. In an igniter device for gas-engines, the combination, with the valve B, having the ports i^2 and *m*, with a valve-case having the ports *a b* and *j k*, and an ignition-chamber communicating with said case and valve ports, having a conical projection whereby to form an enlarging passage therein, substantially as described, for the purpose stated.

8. The combination, in an igniter device for gas-engines, of an external lighter-jet and a valve controlling its communication with the combustion-chamber of the power-cylinder, with an ignition-chamber of two spaces c' and c^2, having central communication with each other, a tangential communication with said combustion-chamber, and a central communication with said external lighter.

9. In an igniter device for gas-engines, a circular ignition-chamber divided into two communicating spaces, each having passages communicating with valve-ports, substantially as described.

10. The combination, in an igniting device, of an ignition-chamber formed with a bushing, *e*, having one or more tangential supply-passages, *i* and *k*, a central ignition-port having valved communication with an external lighter, and passage *j*, having valved communication with the combustion-chamber, for the purpose specified.

11. In an igniter device for gas-engines, the combination, with the valve B, having the ports i^2, *m*, *n*, and *p*, of a valve-case having the ports *a*, *b*, *b'*, *j*, and *k*, and a circular ignition-chamber communicating with said case and valve ports, substantially as described, and for the purpose stated.

12. In an igniter device for gas-engines, the combination, with a valve, B, having ports i^2 and *m*, of a case having ports *a j* and *b b'* and a passage, *k*, and a circular ignition-chamber communicating with said case-ports, substantially as described, and for the purpose specified.

13. In an igniter device for a gas-engine, the combination of a valve, B, having ports i^2, *m*, and *p*, with a case having ports *a*, *b*, *b'*, and *j*, and an ignition-chamber communicating with said case-ports and operating substantially as described.

14. In an igniter device for a gas-engine, the combination, with an ignition-chamber having valved communication with an external lighter and with the combustion-chamber, of relief-ports *g*, *k*, and *n*, for continuing the flow of the gas while the valve is closing communication with the external lighter and opening communication with the combustion-chamber, for the purpose specified.

15. In a gas-engine, the combination of an ignition-chamber, a lighting device, a suitable device for causing a current of combustible mixture to flow from the ignition-chamber toward said lighting device, and a suitable device for causing a current to flow simultaneously toward said igniting-chamber, along which the igniting-flame is transmitted, substantially as described.

16. An igniter device for gas-engines, consisting of an ignition-chamber provided with a passage leading to a lighting device and a passage leading to the power-chamber, combined with a suitable device for causing a current to flow toward said chamber along which the lighting-flame is transmitted, substantially as described.

17. The combination, in a gas-engine, of a power-cylinder, a lighter, an igniter-chamber, an intermediate chamber and communicating passage, with a suitable device for causing a current of gas to flow through said passage in one direction and suitable device for causing a central current to flow therethrough in opposite direction, substantially as described.

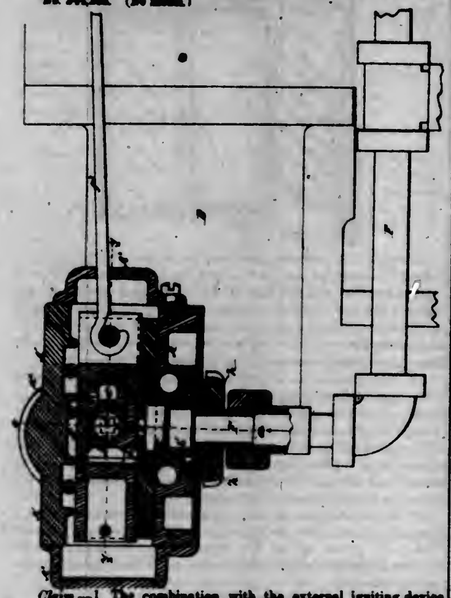
18. In an igniter device for a gas-engine, the combination of a retarding-passage and a device for causing a whirling jet of combustible mixture within said passage, substantially as described.

19. In combination with a power-cylinder of a gas-engine, an ignition-chamber, a lighting device, a communicating passage between said chamber and lighting device, and a device for causing a current of gas to flow through said passage in one direction and a device for causing a reverse current therein, along which the flame from the lighting device is transmitted, substantially as described.

20. The combination of an igniter-chamber in valved communication with a power-cylinder of a gas-engine, a charge-supply valve, an igniter, and an escape-passage in communication with said igniter-chamber, said power-cylinder and said igniter-chamber being intermittently in communication, and a device for causing a whirling jet of combustible mixture within said chamber, substantially as described.

21. In a gas-engine, the combination of an ignition-chamber, an external lighter, and a device for causing a current intermittently to flow from said lighter toward said chamber, along which the lighting-flame is transmitted, substantially as described.

386,216. IGNITOR AND SUPPLY-VALVE FOR GAS-ENGINES. Lewis H. Nash, Brooklyn, assignor to the National Motor Company, New York, N. Y. Filed Aug. 4, 1886. Renewed July 14, 1887. Serial No. 244,262. (No model.)



Claim.—1. The combination, with the external igniting device of a gas engine, of a valve having a circular lighter-jet chamber having a gas-supply port entering into said chamber tangentially, for the purpose of giving a whirling motion in a circular path to the lighting-jet within the lighter-chamber.

2. The combination, with a gas-engine having a permanent lighter device, of a lighter-jet chamber of circular form having a tangential gas-supply port and a central end lighter-port, for the purpose stated.

3. The combination, with a gas-engine having a permanent lighter-jet, of a slide-valve having a circular lighter-chamber having a gas-supply port entering said chamber tangentially, and a central end lighter-port of less area than the said chamber, for the purpose stated.

4. The combination, with a gas-engine having a fixed lighter-jet, of a slide-valve having three port-faces, a circular lighter-jet chamber, d', having a tangential gas-supply port, d^6 a central end lighter-port, d^5, a central back end port, d^3, discharge-ports d^4 d^3, operating in connection with said chamber, and a supply-port, a^2, operating in connection with the tangential supply-port.

5. The combination, with a gas-engine having a permanent igniting device, of a slide-valve having three port-operating faces, and a circular lighter-jet chamber having a tangential gas-supply port.

6. The combination, with a gas-engine having a permanent external igniting device, of a slide-valve having a lighter-chamber of circular form supplied by a tangential port placed between the supply and the discharge ports d^4 d^3, substantially as described.

7. The combination, with a gas-engine, of a slide-valve having three port-operating faces, and an igniting-chamber of circular form having a tangential supply-port, substantially as described.

8. The combination, with a slide-valve, of a seat therefor having grooves in its bearing-faces surrounding its case-ports, and the exhaust port or passage communicating therewith, whereby the leakage from said case-port is carried to the exhaust and the pressure between the bearing-faces of said seat and valve confined to a limited area of the valve-surface, and thereby reduce the force tending to separate their surfaces.

9. The combination, with the slide-valve B, of a movable seat-plate therefor having a port-forming-plunger projection, b^2, the flexible joint-closing diaphragm *h*, its binding-nut *h'*, and the passage-forming piece b^3, whereby said diaphragm is secured to the movable valve-seat plunger and to the fixed valve-case to seal the joining of these parts, substantially as described, for the purpose specified.

10. The combination, with a slide-valve having three port-operating faces, of movable seat-plates for two of said port-faces, each having a port-forming-plunger projection, joint-closing diaphragms for said plunger projections, and bearing-rolls for the two other faces of said valve, substantially as described, for the purpose specified.

11. The combination, with a slide-valve maintained upon its port bearing-seats by a counter-pressure, of one or more surface grooves or channels surrounding the ports in the bearing-surfaces, whereby to limit the extent of the valve bearing-surface upon which pressure can act to separate the bearing-surfaces, substantially as described, for the purpose specified.

12. The slide-valve herein described, having the ports and passages d^7 d^6 d^5 d^3 d^4, and the circular lighter-jet chamber d', having the central back port, d^5, in combination with the supply-cylinder and exhaust ports, and an external permanent lighter-jet, *z*, substantially as herein set forth.

13. The combination, with a gas-engine, of a slide-valve having ports in three faces, the ports in one face operating the cylinder-supply port, the ports in the other face operating the supply-port for the combustible mixture, and the third face having the discharge-port, substantially as described.

14. The combination, with a gas-engine having a permanent external burner, of a slide-valve having an internal jet-chamber placed between the exhaust-port and the supply-port in said valve, substantially as described.

15. The combination, with a slide-valve, of a movable seat-plate therefor having a port surrounded by an extended passage leading to said port and forming a joint-forming seal between the valve-case and the extension with which the said passage is formed, substantially as described.

16. An igniter device for gas-engines, consisting of a chamber having a central port leading to the external air, through which the gas is ignited, and a tangential supply-passage for the introduction of gases, substantially as described.

17. An igniting device consisting of an ignition-chamber having an orifice entering said chamber on one side for the introduction of gases, so as to produce a whirling flame in said chamber, substantially as described.

18. An igniter device consisting of a chamber having a central port communicating with a lighting device, combined with a device for causing a whirling jet of gases within said chamber, substantially as described.

19. In a gas-engine, a valve containing an igniting-chamber, and a device for causing a whirling jet of gases within said chamber, substantially as described.

20. In a gas-engine, the combination of a power-chamber in valved communication with a lighter device, an ignition-chamber provided with a tangential supply-passage establishing communication with said power-chamber, and a device for causing a whirling jet of gases within said chamber, substantially as described.

386,217. CUSPIDOR. James L. O'Connor, New York, N. Y., assignor to the New York In-Floor-Cuspidor Company, same place. Filed July 19, 1887. Serial No. 244,774. (No model.) Patented in England Oct. 18, 1887, No. 13,923.

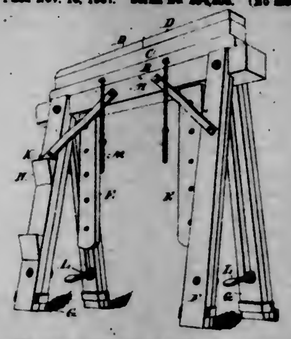


Claim.—1. The combination, with the fire-proof pan A, projecting below the floor and provided with an integral supporting-ring flush

with the floor, of the removable cuspidor-pan B, funnel G, and grating J, substantially as described.

2. The combination, with the fire-proof pan A, protruding below the floor and provided with an integral supporting-ring flush with the floor, of the removable cuspidor-pan B, substantially as described.

386,218. REVERSIBLE TRESTLE. WILLIAM H. PHILLIPS, Lincoln, Nebr. Filed Nov. 10, 1887. Serial No. 254,892. (No model.)



Claim.—The extension frame or trestle consisting of a cross-bar, two rectangular and perforated arms extending therefrom, and two pivoted arms adapted to fold upon the said cross-bar, in combination with a trestle having its cross-bar perforated, substantially as specified.

386,219. MOLD FOR CASTING METALLIC FORMS. JOHN R. PRICE, Wellesley Heights, Mass., assignor to The Electrical Accumulator Company, of New York. Filed May 2, 1888. Serial No. 272,847. (No model.)



Claim.—1. The combination, in a mold for casting perforated metallic plates or forms, of a series of cores, each in two divisions, located, respectively, upon two divisions of the mold, forming complementary parts of each other, and guide or contact surfaces upon the meeting sides of said divisions of the mold, arranged at an acute angle with the plane of the mold, whereby the two divisions when moved in contact with each other separate in a line forming an acute angle with the plane of the finished product.

2. The combination, in a mold for the described purpose, of a series of square cores separated by channels of uniform dimensions, each core composed of two divisions in the form of equal and similar right-angled triangular divisions having a side adjacent to the right angle of convex outline, said divisions being located, respectively, upon two divisions of the mold, forming complementary parts of each other, and means for moving said triangles with respect to each other in a line parallel to the hypotenuses of the said triangles.

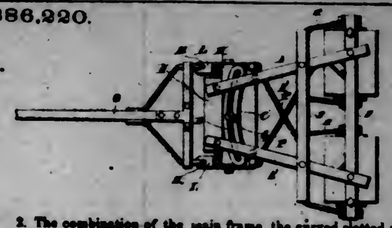
3. The combination, in apparatus for the described purpose, of a series of cores separated by channels of uniform dimensions, said cores being in two divisions, located, respectively, upon two divisions of the mold, forming complementary parts of each other, complementary guide or contact surfaces, located, respectively, upon opposite divisions, and a cam-wheel pivoted to one division and making contact with the other, whereby the series of cores are caused to divide and separate in a direction parallel with a line joining diagonally-opposite edges of the perforation.

4. The combination, in an apparatus for the described purpose, of a series of cores separated by channels or passages, said cores being in two divisions fixed at their bases to two divisions of the mold, respectively, forming complementary parts of each other, a cam-wheel pivoted to one division of the mold and making contact with the other, and registering guide or contact surfaces upon opposite divisions of the mold, whereby a sliding contact of the divisions of the mold is effected and one series of core-divisions is at once raised and moved, substantially as described.

386,220. LAND-ROLLER. JOHN RUSSELL, Troy, Ill. Filed Apr. 6, 1888. Serial No. 269,969. (No model.)

Claim.—1. The combination of the main frame, the curved slotted plate secured thereto, the roller arranged under the main frame, the frame surrounding the said roller, and the headed stud or pin on said frame engaging the slotted plate, as set forth.

386,220.

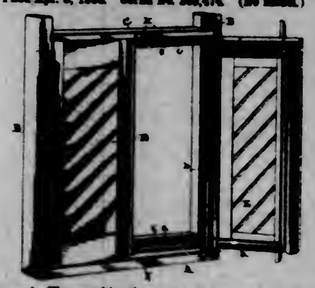


2. The combination of the main frame, the curved slotted plate secured thereto, the roller, the frame inclosing the said roller, the headed stud or pin thereon engaging the slotted plate, the tongue pivoted to said frame, and the draft-bars having their front ends pivoted to the said frame and their rear ends pivoted to the main frame, as set forth.

3. The combination of the main frame, the curved slotted plate secured thereto, the cross-bar having a stud engaging said plate, the hangers depending from said cross-bar and having journal-boxes at their lower ends, the roller having its axle journaled in said boxes, and the crossed draft-bars connected to the boxes and the main frame as set forth.

4. The combination of the main frame, one front roller carried thereby and adapted to be moved transversely of the same, and the crossed draft-bars between said roller and the frame, as set forth.

386,221. AIR-TIGHT DOOR. DAVID O. SUTTLEMIRE, Litchfield, Ill. Filed Apr. 3, 1888. Serial No. 269,674. (No model.)



Claim.—1. The combination, with the door-frame having upper and lower cross-strips, and having grooves or channels in the said strips and in the jambs, of the door having its upper and lower ends rabbeted and provided with grooves coinciding with the grooves in the cross-pieces, and having its free and its hinged edge grooved and the packing fitted in the said grooves and adapted to be compressed therein, substantially as and for the purpose described.

2. The combination, with the door-frame having upper and lower cross-strips and having grooves in the cross-strips and in the jambs, of the two doors having their meeting edges rabbeted and provided with corresponding grooves, and having their upper and lower ends rabbeted and provided with grooves coinciding with the grooves in the cross-strips, and having their rear or hinged edges grooved and the packing seated in the said grooves and adapted to be compressed therein between the opposing parts, substantially as described.

3. The combination, with the door-frame and the door having a groove formed between the opposing parts, of the tubular packing fitted in the groove and the strip located within the packing and secured to the bottom of the said groove, substantially as and for the purpose described.

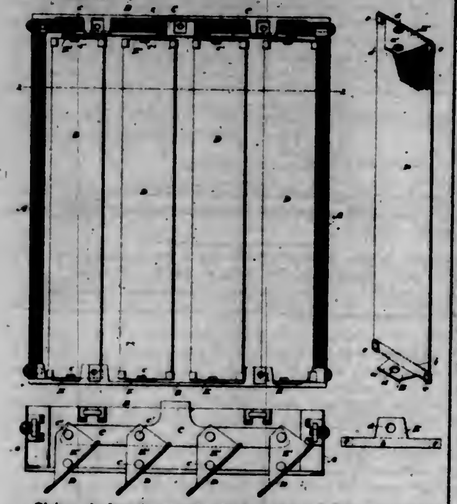
386,222. THILL-COUPLING. DAVID W. SMITH, Wabash, Ind. Filed Nov. 11, 1887. Serial No. 254,937. (No model.)



Claim.—1. The combination, with a clip and thill-iron having lugs, as described, of the shank in composed of the two parallel branches having their inner walls vertically grooved and the apertures at the base thereof for the reception of the thill-iron lugs, the said branches having the connection *f*, which serves the additional function of a stop for the anti-rattler, and also having a rear vertical aperture for the loop of the said anti-rattler, substantially as specified.

2. The combination of a shank in, substantially as described, having the connection *f* for the two parallel branches, and the vertical slot in rear thereof, and the anti-rattler, of the form shown, its lower end secured to the shank-clip and passing in loop form up through the said vertical slot, and having a forward bearing against the said connection, substantially as specified.

386,223. HOT-AIR AND VENTILATING REGISTER. FREDERICK H. STEVENS, Brooklyn, N. Y. Filed July 25, 1887. Serial No. 245,330. (No model.)



Claim.—1. In a fan or valve for hot-air or ventilating registers, the combination, with a sheet-metal blank, D, of proper dimensions for a fan, of the sheet-metal blanks E E', rigidly attached to the blank D at the ends thereof, said blanks E E' having the lips *a a'* turned up against the end edges of D, and having the holes *d d'* punched in the lips, all substantially as and for the purposes set forth.

2. In a fan for hot-air or ventilating registers, the combination, with a rectangular sheet-metal blank, D, of proper length and breadth for a fan, and thick, so as to be stiff without fluting or other alteration of form, of thin sheet-metal blanks E E', having the tips *e e*, bent over the side edges of the blank D, and having the lips *a a'*, said lips being punched with holes *d d'*, and being turned up against the end edges of blank D at or nearly at an angle of ninety degrees, all substantially as and for the purposes set forth.

3. In hot-air or ventilating registers, the combination, with a register-frame, suitable means for moving the fans, and pivots *e e'*, cast on the frame and connection, of the sheet-metal blank D, and rigidly attached to blank D, at the ends thereof, the sheet-metal blanks E E', having lips *a a'*, said lips being punched with holes *d d'*, and being turned up against the end edges of blank D at an obtuse angle to D, whereby when the fan is in position the lips *a a'* will spring outward, and pressing against the connection and the frame will move with frictional contact thereon, all substantially as and for the purposes set forth.

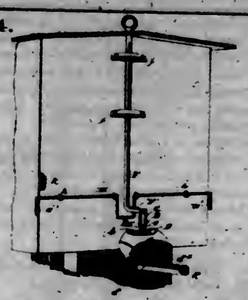
4. In hot-air or ventilating registers, the combination, with a register-frame, suitable means for moving the fans, and pivots *e e'*, of the rectangular sheet-metal blank D, of proper length and breadth for a fan, and thick, so as to be stiff without alteration of form, and the thin sheet-metal blanks E E', having tips *e e*, bent over the side edges of blank D, and having lips *a a'*, punched with holes *d d'*, said lips *a a'* being turned up against the end edges of blank D at an obtuse angle to D, whereby when the fan is in position the lips *a a'* will spring outward, and pressing against the connection and the frame will move with frictional contact thereon, all substantially as and for the purpose set forth.

386,224. CAR-COUPLING. MARCUS F. THE STOE, Paterson, N. J. Filed Nov. 14, 1887. Serial No. 255,117. (No model.)

Claim.—1. In a car-coupling, the combination of the draw-head, the vertically-movable pin engaging in openings therein, the uncoupling-rod F, mounted on the end of the car and connected to the pin, and the rockable bar H, mounted transversely on the end of the car and connected to the uncoupling-rod, substantially as and for the purpose hereinbefore specified.

2. In a car-coupling, the combination, with the draw-head A and

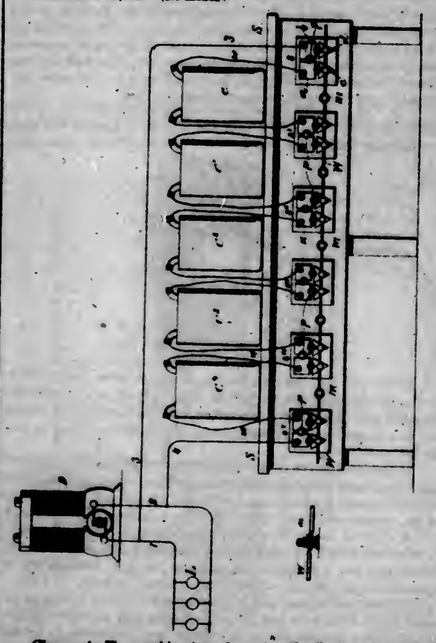
386,224.



the pin D, engaging in vertically-aligned openings therein, of uncoupling-rod F, having the horizontal arm F' connected at the extremity to the upper end of the coupling-pin, and the bar H, mounted in bearings on the end of the car and having the operating-arms H' H' on the ends, and the arm or loop I at the center to engage the arm F' and raise the same when the bar H is turned, substantially as specified.

3. In a car-coupling, the combination, with the draw-head A and the coupling-pin D, engaging in openings therein, of the uncoupling-rod F, connected to the said pin, the transverse bar H, having the arms or handles H' H' on its ends, and the arm or loop I at the center, adapted to engage the uncoupling-rod when the bar is turned, and the loop K, adapted to engage one of the arms or handles H' when the uncoupling-rod is in the raised position, substantially as and for the purpose specified.

386,225. ELECTRICAL DISTRIBUTION BY STORAGE-BATTERIES. GEORGE W. WALKER, Bethlehem, Pa. Filed Mar. 19, 1888. Serial No. 267,782. (No model.)



Claim.—1. The combination of a series of cells of secondary battery, a series of switches consisting of three or more contacts and means for uniting any two contacts, one switch between each pair of cells, electrical connections between two contacts of each switch and the adjacent terminals of its pair of cells, respectively, and electrical connections between the third contact of each switch and an electrical conductor.

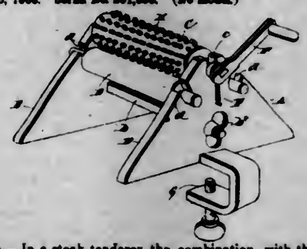
2. The combination of a series of cells of secondary battery, a series of switches consisting of three or more contacts and means for uniting any two contacts, one switch between each pair of cells, electrical connections between two contacts of each switch and the adjacent terminals of its pair of cells, respectively, electrical connections

between the third contact of each switch and an electrical conductor, and means for dividing said conductor between any pair of switches.

3. The combination of a series of battery-cells, an electric circuit containing translating devices to be fed by said cells, a series of switches or cut-outs for connecting or disconnecting individual cells with respect to said circuit, and a conductor uniting one contact on each of said series of switches, substantially as described.

4. The combination of a main circuit, a series of cells of secondary battery, and a series of switches or cut-outs, one cut-out being assigned to a pair of cells and consisting of three or more contacts, one of which contacts is connected to a terminal of one cell, the second contact connected to a terminal of the second cell, and the third contact connected to an electrical conductor common to one contact of the series of switches.

386,226. BEEF-TENDERER. LEE L. WELCH, Leggett, Tex. Filed Jan. 26, 1888. Serial No. 261,893. (No model.)



Claim.—In a steak-tenderer, the combination, with the triangular end plates, B, having the bearing-notches *c d d*, the detachable connecting-bar *b*, provided with the threaded ends and shoulders *b'*, the thumb-nuts *b²*, the smooth rollers D, and the coiled springs E, of the crank-handle F and the roller C, provided with the teeth H, having square flat faces and flat sides at right angles to said faces and arranged in aligned longitudinal series and spirally arranged circumferentially, the areas of the teeth being one-fourth of an inch and the distance between the series of teeth and the teeth in each series being one-fourth of an inch, substantially as specified.

386,227. STOVE-PIPE THIMBLE AND CAP. ARVILLA WILLIAMS, Saratoga, Kans. Filed Feb. 6, 1887. Serial No. 226,621. (No model.)



Claim.—1. In a cap or cover for stove-pipe holes, the combination, with a fixed thimble having the threaded portion, of a rotatable threaded tube adapted to be screwed into the thimble, and having the cone-shaped inner end and a fixed cap at its outer end, as and for the purpose set forth.

2. The combination, with a threaded thimble having the open inner end, of a second threaded tube provided with a cone-shaped inner end which is extended through the open end of the thimble, the outer end of the second tube being closed by a cap, substantially as described.

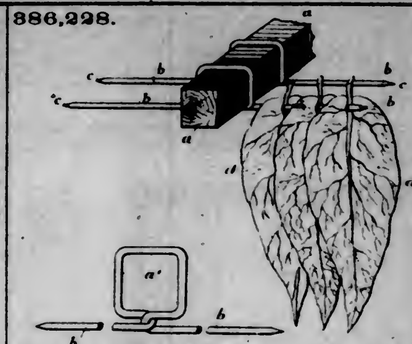
3. A cover or cap for stove-pipe holes, having a tube adapted to be fitted and held in the pipe-hole and provided with the inner cone-shaped end, and a depending drip-plate at the inner terminal end of the cone-shaped portion, as and for the purpose set forth.

4. The combination, with a fixed threaded thimble having an annular flange at its outer end and an open inner end, of a second rotatable threaded tube adapted to be screwed into the thimble, to be held in position thereby, and having its inner end so proportioned that it may extend into the smoke-space of a chimney, the outer end of the second tube being closed by a fixed cap, and the inner extended end of said tube having a depending drip-plate, as and for the purpose described.

386,228. TOBACCO-HANGER. THOMAS Y. ALLEN and LEE J. ALLEN, Shipwith, Va. Filed Jan. 3, 1888. Serial No. 259,703. (No model.)

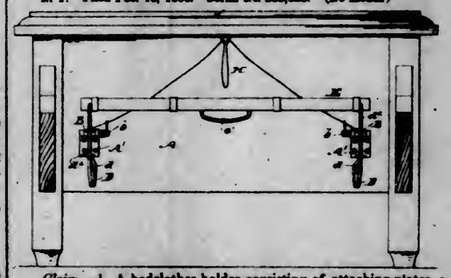
Claim.—The tobacco-hanger consisting of the wire formed about at its center, with a closed rectangular loop slipped upon a supporting-bar, which wire, after the formation of said loop, is twisted

386,228.



upon itself and extended in opposite directions, in a horizontal plane, into arms which are provided with pointed ends, substantially as set forth.

386,229. BEDCLOTHES-HOLDER. G. OSSCAR ANDREWS, New York, N. Y. Filed Feb. 10, 1888. Serial No. 263,633. (No model.)

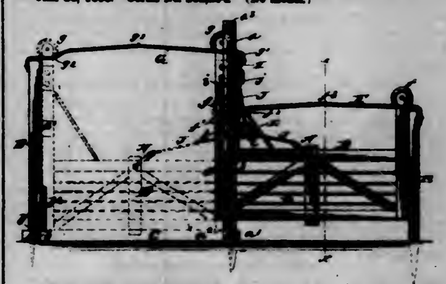


Claim.—1. A bedclothes-holder consisting of attaching-plates, a spring-actuated latch hinged upon said plates, U-springs having one member secured to the respective attaching-plates, a clamping-bar carried by the U-springs, and means, substantially as described, for elevating the latches, as and for the purpose specified.

2. In a bedclothes-holder, the combination, with attaching-plates and spring-actuated latches hinged thereto, of U-springs having one member secured to said plates, a clamping-bar attached to said springs, and a cord secured to said latches, substantially as and for the purpose specified.

3. In a bed-clothes holder, the combination, with attaching-plates and spring-actuated latches hinged thereto, of U-springs having one member secured to said plates, a clamping-bar attached to said springs, provided with a facing of corrugated rubber, and a cord secured to said latches, substantially as and for the purpose herein set forth.

386,230. GATE. HARRY L. BAKER, Wilton Junction, Iowa. Filed Jan. 28, 1888. Serial No. 262,204. (No model.)



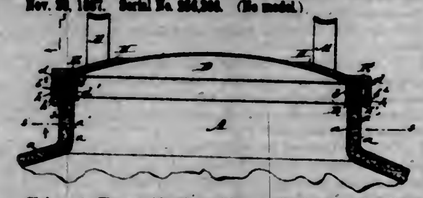
Claim.—1. The combination, with the posts A B E, of the tracks F G, secured to the posts A E and A B and provided with depressions f^a g^a, respectively, and the gate D, provided with rollers on the upper ends of its end uprights, substantially as described.

2. The combination of the posts A B E, the post E being of less height than the posts A B, double-inclined track F, secured to the posts A E and provided with the depression f^a, the double-inclined

track G, secured to the posts A B and provided with the depression g^a, the gate D, having its end uprights of unequal heights and provided with the rollers *f g* on the said uprights, the bar I, secured to the post A, the guide-pulleys *j k* L M, and the cords or ropes J K, attached to the gate and passing over the said pulleys, substantially as herein shown and described.

3. The combination, with the posts A B E, the post E being of less height than the posts A B, and the bar I, secured to post A, of the double-inclined track F, provided with the depression f^a and having its ends secured to the posts A E, the double-inclined track G, provided with the depression g^a and having its ends secured to the post E and to the bar I, the gate D, having its end posts, *d d'*, of unequal length and provided with the rollers *f g*, the guide-pulleys *j k* in the ends of the bar I, the pulleys L M in bearings on the post A, and the ropes J K, connected to the center of the gate and passing around the said pulleys, substantially as herein shown and described.

386,231. MILK-CAN. JOHN H. RAMBLER, Myerstown, Pa. Filed Nov. 28, 1887. Serial No. 256,266. (No model.)



Claim.—1. The combination, with a can having spaced walls, the outer wall being notched, of a binding-ring fitting in the space between the walls of the can and provided with lateral projections fitting in the notches of the outer wall of the can, a lid fitting on the binding-ring, and a detachable flanged capping-ring resting upon the lid and provided with inwardly-projecting lugs, substantially as described.

2. The combination, with a can having spaced walls, the outer wall being notched, of a binding-ring fitting in the space between the walls of the can and provided with a central rib on its upper surface, and laterally-projecting lugs having straight horizontal top and bottom faces, a lid provided with an elastic washer, a detachable capping-ring provided with downwardly-projecting flange having inwardly-projecting lugs, the top and bottom faces of which are straight, and stops for limiting the movement of the capping-ring, substantially as herein shown and described.

3. The combination, with a can having spaced walls and an intervening packing of non-heat-conducting material, a substantially U-shaped binding-ring between said walls at the top provided with an upper continuous rib, a series of spaced lugs on the outer surface of said binding-ring near the top having horizontal top and bottom surfaces, a lid fitted to said can having spaced side walls, and an elastic washer held between said walls, of a cap-ring fitting over the lid and projecting beyond the edge, a downwardly-extending flange integral with said ring, a series of spaced lugs integral with the inner side of the flange, and means, substantially as described, for limiting the movement of said ring, all as herein set forth.

386,232. AUTOMATIC FIRE-LIGHTER. FRANK J. BIRD, Dubuque, Iowa. Filed Oct. 19, 1887. Serial No. 252,515. (No model.)

Claim.—1. The combination, in an automatic fire-lighter, of a bed-plate or support, A, a rock-shaft, B, journaled thereto and carrying arms C K, a bar, D, adapted to carry a match, a spring, S, adapted to draw the parts D E forward for lighting the match on a friction-surface, and a catch adapted to retain the trip-arm to hold the device set ready for action, substantially as herein set forth.

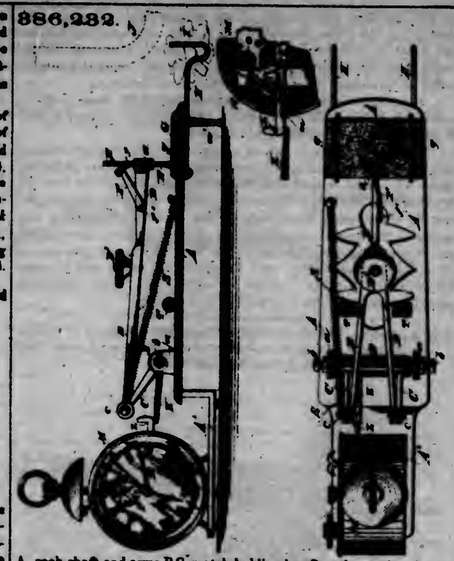
2. The combination, in an automatic fire-lighter, of a bed-plate or support, A, a rock-shaft, B, journaled thereto and carrying arms C K, a bar, D, adapted to carry a match, a spring, S, adapted to draw the parts D E forward for lighting the match on a friction-surface, and a catch-bar, L, adapted to retain the parts K C D S, and fitted for withdrawal by a clock mechanism, substantially as described, for the purposes set forth.

3. The combination, in an automatic fire-lighter, of a bed-plate, A, a rock-shaft, B, journaled thereto and carrying arms C K, a match-carrying bar, D, a spring, S, adapted to draw the parts D E forward for lighting the match on a friction-surface, hooks H, for holding a binding-wad adapted to be lighted by the match, and a catch-bar, L, adapted to retain the parts K C D S, and fitted for withdrawal by a clock mechanism, substantially as described, for the purposes set forth.

4. In an automatic fire-lighter, the match-holding bar or device formed with an eye, *d*, and provided with a pivoted hook, F, adapted to wedge the match in the eye, substantially as herein set forth.

5. In an automatic fire-lighter, the combination, with a bed-plate,

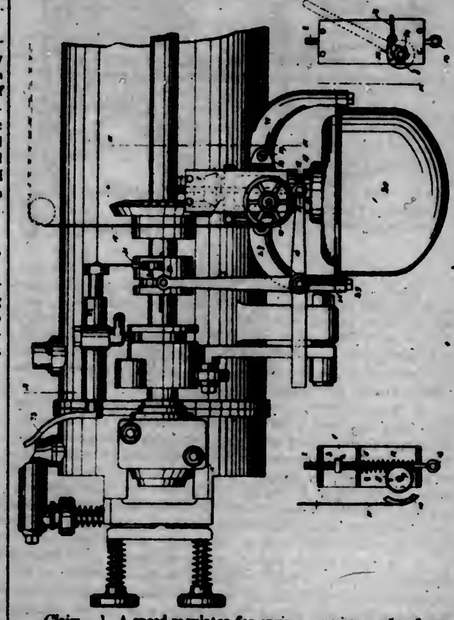
386,232.



A, rock-shaft and arms B C, match-holding bar D, and a spring device drawing the parts B C D forward for lighting the match, of buffers T, substantially as described, for the purposes set forth.

6. In an automatic fire-lighter, the combination, with the winding-mechanism shaft *o* of alarm-clock, of a cam disk or wheel, O, on said shaft, a lever, N, pivoted to the frame, and a catch-bar, L, connected to said lever, substantially as described, for the purposes set forth.

386,233. GAS-ENGINE SPEED-REGULATOR. JOHN BRADLEY, Philadelphia, Pa. Filed Oct. 20, 1887. Serial No. 252,692. (No model.)



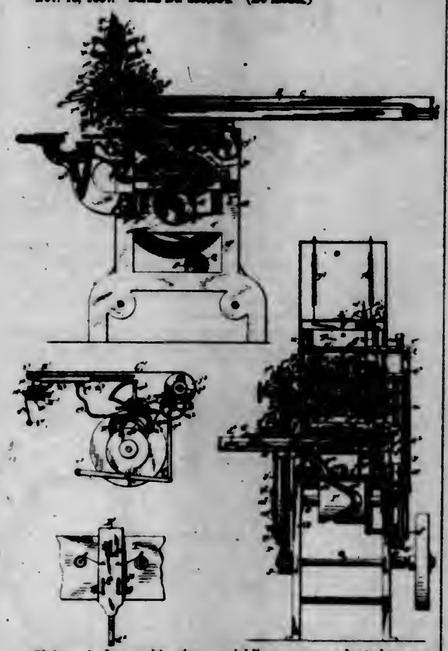
Claim.—1. A speed-regulator for engines, consisting of a frame attached to an engine, provided with a sliding rod with sleeved end, an adjustable stop, a sliding cross-bar having operating cords and pulleys and a retracting-spring, with a main operating-pulley on the shaft

of the operating-pulleys, and means, substantially as described, for controlling the same, the sleeved end of the sliding rod engaging a pin located in a grooved collar connected with the governors, said pin being connected with mechanism for opening and closing the supply-valve of the engine, substantially as shown and described.

2. A speed-regulator for engines, consisting of the frame 1, sliding rod 2, nut 4, spring 12, sliding bar 5, ribs 6, cords 7, pulleys 8, shaft 9, and wheel 10, substantially as described.

3. The combination, with an engine motive-force-supply-controlling mechanism consisting of crank-lever 16, having sleeve 15, sliding sleeve 21, having cam 30, and slot 21', engaging pin 17 on lever 16, double-crank connection 22, having arm 31, resting on cam 30, and arm 23, connected with the supply-valve, of a speed-regulator consisting of the frame 1, having sliding rod 2, with sleeve 13 engaging pin 14, projecting through sleeve 15 on lever 16, and engaging groove 18 in collar 19, connecting with the governors, nut 4, ribs 6, spring 12, sliding bar 5, cords 7, pulleys 8, shaft 9, wheel 10, and ratchet 24, pawl 25, and handle 26, substantially as described.

386,234. CIGAR-BUNCHING MACHINE. EDWARD A. BESSEY, Providence, R. I., assignor to Walter A. Peck, trustee, same place. Filed Nov. 16, 1887. Serial No. 255,254. (No model.)



Claim.—1. In combination, a yielding presser adapted to press upon the filler being measured, a friction-clutch, mechanism for feeding the fillers against said yielding presser by power transmitted through said friction-clutch, and a stop operatively connected with the said yielding presser, and adapted to engage with one member of the friction-clutch to stop the feed upon the proper movement of the yielding presser, substantially as described.

2. In combination, a yielding presser adapted to press upon the filler being measured, a friction-clutch, mechanism for feeding the fillers against said yielding presser by power transmitted through said friction-clutch, and a stop operatively connected with the said yielding presser and adapted to engage with one member of the friction-clutch to stop the feed upon the proper movement of the yielding presser, and also operatively connected with the driving mechanism to cause the release of the engaged member of the friction-clutch upon the continued movement of the machine, substantially as described.

3. In combination, a yielding presser adapted to press upon the filler being measured, a friction-clutch, mechanism for feeding the fillers against said yielding presser by power transmitted through said friction-clutch, a stop operatively connected with the said yielding presser and adapted to engage with one member of the friction-clutch to stop the feed upon the proper movement of the yielding presser, and means for adjusting the pressure of the yielding presser upon the filler, substantially as described.

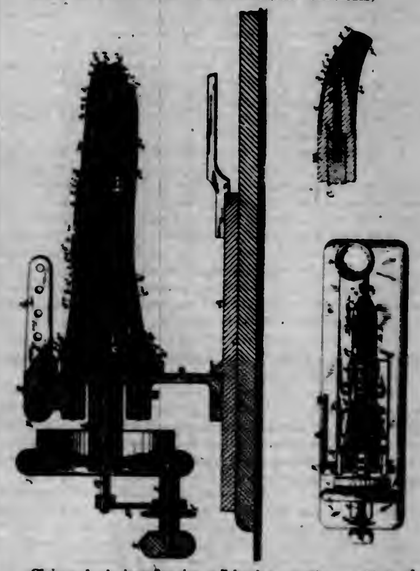
4. In combination, a yielding presser adapted to press upon the filler being measured, a friction-clutch, mechanism for feeding the fillers against the said yielding presser by power transmitted through said friction-clutch, a stop operatively connected with the said yielding presser and adapted to engage with one member of the friction-clutch to stop the feed upon the proper movement of the yielding presser, and means for adjusting the movement of the yielding presser, substantially as described.

5. In combination, the throat-passage and means for feeding tobacco through the same, the knife or gate, the measuring-chamber, the chamber-carrying slide, the supplementary slide attached thereto, the yielding back plate of the measuring-chamber, means for connecting the said back plate with the supplementary slide, the limiting-stop to the downward movement of the outer portion of the chamber-piece with the chamber-carrying slide, and mechanism for first operating the knife or gate to cut off the quantity of tobacco in the measuring-chamber, then conjointly moving the measuring-chamber and knife or gate toward the required point for depositing the filler, and also causing the required movement of the supplementary slide to expel the filler from the measuring-chamber, substantially as described.

6. In combination, the rolling belt attached at one end to the reciprocated bed, the oppositely-reciprocated bed and roller, and means for drawing upon the opposite end of the said belt to cause the contraction of the rolling pocket toward the completion of the bunch, substantially as described.

7. In combination, the rolling belt and means for operating the same, the sliding carrier provided with a spring-operated holding-plate, the mechanism for causing the backward movement of said plate against the action of the spring, the fixed tongue for preventing the bunch from passing through the carrier, means for reciprocating the carrier, and the forcer for pressing the completed bunch out of the carrier, substantially as described.

386,235. ROLL FOR CIGAR-WRAPPING MACHINES. EDWARD A. BESSEY, Providence, R. I., assignor to Walter A. Peck, trustee, same place. Filed Dec. 3, 1887. Serial No. 256,503. (No model.)



Claim.—1. A cigar-forming roll having a section provided with a comparatively rigid surface adapted to operate upon the body portion of the cigar, and an attached spiral wire coil, which forms a continuation of the surface of the roll, for operating upon the head portion of the cigar, and means for imparting a deflected form to the wire coil, substantially as described.

2. A cigar-forming roll having a roll-section provided with a conoidal end, a spiral wire coil operatively connected to the said roll-section, and having its forward end supported for revolution upon an axis at an angle with the axis of the said roll-section, substantially as described.

3. A cigar-forming roll having a fixed core provided at its outer end with a supplementary deflected core, a roll-section adapted to revolve upon the fixed core to form the body portion of the cigar, and having a conoidal end, and a spiral wire coil operatively connected to the said roll-section and supported for revolution upon the conoidal end of the roll-section and the deflected core, substantially as described.

4. A cigar-forming roll having a fixed core provided at its outer end with a supplementary deflected core, a roll-section adapted to revolve upon the fixed core to form the body portion of the cigar, and having a conoidal end, and a spiral wire coil operatively connected to the said roll-section and covering the conoidal end of the same, a revoluble thimble for supporting the forward end of the spiral wire coil upon the supplementary deflected core, and a head or collar at the end of the said core, substantially as described.

5. A cigar-forming roll having a fixed core provided with a loosely-revolving gear, a flexible hollow shaft, and a roll-section which is operatively connected to the said gear by means of the universal joints formed at the opposite ends of the flexible hollow shaft, the fixed collar located between the hollow shaft and the said roll-section, the supplementary deflected core, the spiral wire coil operatively connected to the said roll-section, the revoluble thimble for supporting the forward end of the spiral wire coil upon the deflected core, and the head or collar at the end of the said core, substantially as described.

6. A cigar-forming roll having a fixed core provided at its outer end with the supplementary deflected core, a roll-section adapted to revolve upon the fixed core to form the body portion of the cigar, and having a conoidal end provided with a recess adapted to receive the angle of the deflected core, the thimble recessed to fit at one side against the conoidal end of the roll, the deflected spiral coil operatively connected to the said roll-section and thimble, and the head or collar at the end of the supplementary deflected core, substantially as described.

7. The combination, with the cluster of conoctedly-driven hollow rolls having a centrally-enlarged section adapted for operation upon the tuck end of the bunch, of the supplementary connectedly-driven rolls having a rearwardly-tapered section to fit between the centrally-enlarged sections of the cluster-rolls, the stationary cores for supporting the said cluster-rolls, and the stationary yielding cores for the supplementary rolls, substantially as described.

386,236. BURGLAR-ALARM. THOMAS J. HARRIS, Baltimore, Md. Filed Apr. 16, 1888. Serial No. 270,926. (No model.)



Claim.—1. In an alarm substantially as described, the combination, with the shaft G, the gears D, for operating said shaft, and the crank $g\,g'$, secured to the shaft G, of the lever H, centrally pivoted to the frame F, provided with a forked arm, h, adapted to receive the crank projection g', an arm, h', and the bell-hammer J, connected to the arm h', substantially as shown.

2. In an alarm substantially as described, the combination, with the shaft G, the gears D, for operating said shaft, the crank-arm $g\,g'$, and the lever H, centrally pivoted to the frame F, said lever connected to the shaft G, as shown, of the bell-hammer J, pivoted at its rear end to the frame and provided with an elongated slot, J^3, adapted to receive the downwardly-projecting arm h' of the lever H, as and for the purposes described.

3. In an alarm substantially as described, the combination, with the spring-operated gears, the lever H, connected to said gears, and the hammer J, connected to the lever H and operated as described, of the spring-actuated trigger L, said trigger adapted when forced inward in the path of the movement of said hammer to stop the motion of the hammer, and when released from pressure to spring back out of such path, substantially as described.

4. In an alarm substantially as described, the combination, with the spring-operated gears, the lever H, connected to and reciprocated by said gears, said lever provided with a downwardly-projecting arm, h', and the hammer J, pivoted to the frame F at its rear end and operated by said arm h', of the rock-shaft N, provided with an arm, n^2, adapted to be turned in the path of the movement of said arm h', and means, substantially as shown, for operating said shaft, as and for the purpose described.

5. In an alarm substantially as described, the combination, with the bell, the spring-operated gears, the lever H, and the hammer J, said hammer and lever connected to and operated by said gears, the lever H having a downwardly-projecting arm, n', of the shaft N, having an arm, n^2, adapted to be turned in the path of said arm h', and provided with an extension, N' and N^3, substantially as and for the purposes set forth.

386,237. FIRE-ESCAPE. THOMAS R. BOND, Carthage, N. Y. Filed Aug. 25, 1887. Serial No. 247,888. (No model.)



Claim.—1. A fire-escape consisting of an open frame formed of side and end bars, and provided with a projecting hook on its lower end bar, and with a central bar having one end pivotally connected to the lower end bar of the frame, with its free end resting upon the upper end bar of the said frame, substantially as herein shown and described.

2. In a fire-escape, the open frame A, formed of the side bars, A^4, and end bars, A^2 A^3, and provided with the hook A' on its lower end bar, and with the bar C, pivoted to the lower end bar and having its free end resting upon the upper cross-bar, in combination with the rope B, coiled around the pivoted bar and passed through the said hook, substantially as herein shown and described.

386,238. MECHANICAL TELEPHONE. FRANCIS B. CLARKE, New York, N. Y., assignor of one-half, by direct and mesne assignments, to George B. Van Brunt, Charles A. Rase, and William J. Townsend. Filed Mar. 9, 1888. Serial No. 266,603. (No model.)



Claim.—1. In an acoustic or mechanical telephone, the combination of a box or casing divided by a diaphragm into two chambers, C and C', the chamber C', or receiving-chamber, having upon its interior surface a lining of felt with a diaphragm, substantially as and for the purposes described and shown.

2. In an acoustic or mechanical telephone, a diaphragm composed of two or more layers of pressed board with an interposed layer or layers of hair-cloth cemented by gelatine, in combination with a sounding-box and line, substantially as and for the purposes described and shown.

386,239. WASHING-MACHINE. LOUIS DUCHARME and GILBERT BRARD, Woonsocket, R. I. Filed Feb. 14, 1888. Serial No. 264,003. (No model.)

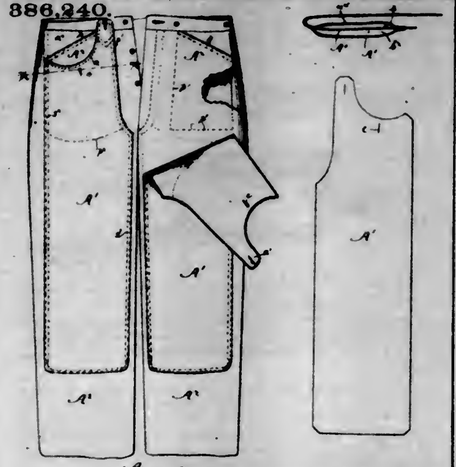


Claim.—1. The combination, with a boiler or suds-case, of a rotative cylinder therein, buckets arranged transversely on the periphery of the cylinder, and tubes connected with the opposite ends of the buckets alternately and leading to the interior of the cylinder, substantially as specified.

2. A rotative cylinder having spray-chambers in its side walls, divided partitions, and tubes leading from the respective compartments of the said chambers and connected with buckets secured to the periphery of the cylinder, substantially as specified.

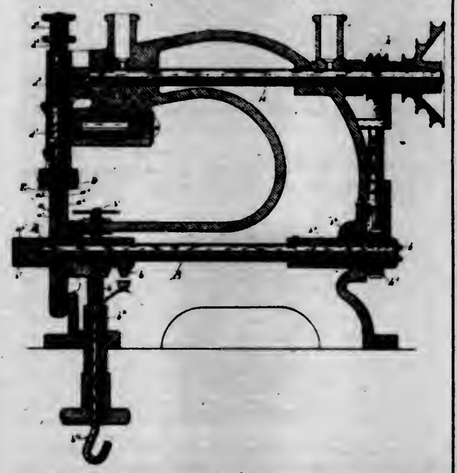
386,240. OVERALLS. CHARLES BELANGER, Baltimore, Md. Filed Apr. 14, 1888. Serial No. 270,616. (No model.)

386,240.



Claim.—A pair of overalls provided upon the front of each leg with a detachable re-enforce, A', covering the whole upper surface of each leg-piece A^2 from side to side, and reaching from the waistband down to, over, and beyond the knee portion thereof, said re-enforce at one side of its upper edge shaped to conform with the pocket-placket and composing the outer wall of an upper two-cell side pocket, and having at its side adjacent to the upper part of the fork-opening of the garment an upwardly-extending button-holed tab, a', integral with the fabric composing the re-enforce, said re-enforce sewed flatly upon said leg-front A^2 by vertical rows of stitching $a' a^3$, leaving the intermediate area of the re-enforce loosely overlying the leg-piece A^2, whereby said re-enforce is adapted to be detached without separation of any of the connections proper of the garment, substantially as described.

386,241. SEAM-RUBBING MACHINE. CHARLES S. PITFIELD, Revere, Mass. Filed Nov. 14, 1885. Serial No. 182,831. (No model.)



Claim.—1. In a seam-rubber, the support A, composed of the metal disks a a' a^3 and the rings a^3 a^4, of vulcanized rubber or like material, clamped in place, substantially as set forth.

2. In a seam-rubbing machine, the movable box b of the shaft B, carrying the support A, in combination with the adjustable spring b' and stop b^2, substantially as and for the purpose specified.

3. In a seam-rubber, the support A and presser E, mounted, substantially as described, to move sidewise relatively either to the other, to suit work in which pieces of different thicknesses are joined by a seam, substantially as described.

4. In a seam-rubbing machine, the spool-shaped presser E, in combination with the U-shaped rubbing-tool D, substantially as described.

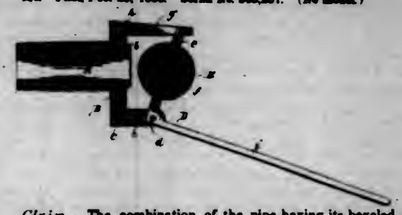
5. In a seam-rubbing machine, the seam-rubbing tool D, made U-shaped and having tang d projecting from one of its legs, substantially as described.

6. In a seam-rubber, the tool-holder d', in combination with the spring d^2 and the adjusting-screws d^3 d^4, substantially as and for the purpose specified.

7. In a seam-rubber, the guide-fingers G, with their lower edges, g, parallel with the periphery of the support A, substantially as and for the purpose specified.

8. In a seam-rubber, the combination of main shaft H and feed-shaft B by means of worms h h' and their gears h^2 h^3, one of the worms having a straight portion, h^4, as and for the purpose specified.

386,242. TANK FOR WATERING STOCK. GEORGE FEY, Memphis, Mo. Filed Feb. 20, 1888. Serial No. 265,257. (No model.)



Claim.—The combination of the pipe having its beveled end forming a valve-seat, the casting having its ring part fitted securely on the pipe just within its end, and having the integral arms C and A, the former having the open slot C and the latter having the longitudinal slot g, the angle-lever pivoted at its bend in the slot c and having its upstanding arm projecting in the slot g, the float on the outstanding arm of said lever, and the rubber ball-valve, of larger diameter than the pipe and rotatable on the upstanding arm of the lever, substantially as specified.

386,243. DOOR-KNOB. WILLIAM A. GAY, Newark, N. J. Filed Sept. 26, 1887. Serial No. 250,663. (No model.)



Claim.—1. In a knob, in combination, a core having a shank and a flange with notches or recesses at its periphery, a shell covering said core and impressed into said notches or recesses, and a front plate, substantially as set forth.

2. The improved knob herein described, combining therein a core having a shank and a notched flange, a shell covering said core and held thereto at its periphery, and a front casting having an ornamental front face and on the rear a lug, d', to engage said notched flange, a shoulder, d^3, and a turned edge overlapping the edge of the shell to conceal the same, and holding the front and back parts of the knob against withdrawal, the lug d', shoulder d^3, and turned edge being integral parts of the ornamental casting, substantially as set forth.

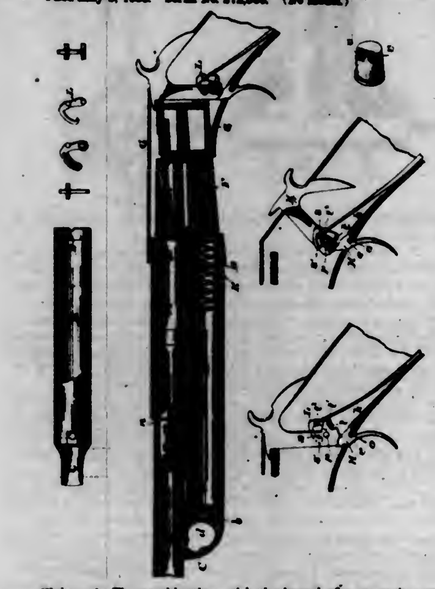
386,244. WATER-COOLER. SOLOMON GLICK, Temple, Tex. Filed Nov. 1, 1887. Serial No. 253,962. (No model.)



Claim.—1. In a water-cooler, the combination, with an outer casing, a central ice-receptacle having a perforated bottom, a water-reservoir surrounding the ice-receptacle, provided with a packing of filtering material in the bottom, of an auxiliary reservoir held beneath the ice-receptacle and main reservoir and connected with the latter by a series of tubes, and a tank in the bottom of the casing surrounding said auxiliary reservoir adapted to receive the drip from the ice, as set forth.

2. In a water-cooler, the combination, with an outer casing, a central ice-receptacle having an open top and perforated bottom, and a water-reservoir surrounding the ice-receptacle, provided with an interior packing of filtering material, of an auxiliary reservoir held beneath the ice-receptacle and main reservoir, a series of tubes provided with strainers at the upper end connecting the main and auxiliary reservoirs, a tank in the bottom of the casing surrounding the auxiliary reservoir, and faucets connected with said tank and reservoir, substantially as shown and described, whereby the water is cooled by contact with the ice-receptacle and contact of the reservoir with the drip, as set forth.

386,245. MAGAZINE-GUN. MYRON E. GREEN, Washington, D. C. Filed May 3, 1888. Serial No. 272,580. (No model.)



Claim.—1. The combination, with the barrel of a magazine-gun provided with a rib, angle, or lug, of the detachable magazine constructed as described, and having a sling-opening in its outer end of a form to span or inclose the barrel and its rib, thereby adapting the magazine when detached for use as a wrench for shipping and unshipping the barrel, substantially as described.

2. The combination, with the mainspring and hammer provided with the vertical slot or opening in its stem and the transverse post, of the elbow-shaped stirrup having its forward arm projecting through the slot in the hammer and provided with a hook adapting it to engage with said transverse post, substantially as and for the purpose described.

3. In combination with the shell or casing provided with a trigger-opening beneath, having its rear edge swaged and rounded to form a trigger-seat, the trigger provided on its rear side with the recess e, adapting it to fit and rest upon said seat at the rear edge of the opening, whereby it is wholly supported and operated independently of the casing at the front edge of said opening, substantially as and for the purpose described.

4. The combination, with the barrel and its breech-piece, provided, respectively, with the exterior and the interior screw-threads, of the inclined faces corresponding in direction with the screw-threads and the opposite right-angled shoulders, substantially as and for the purpose described.

5. In combination with the magazine constructed as described, the hollow cylindrical follower inclosing the outer end of the cartridge-spring and having the perforated annular recess at its end, substantially as and for the purpose described.

386,246. WEED-CUTTER. GERAVUS HAMMERLE, Topeka, Kans. Filed Nov. 3, 1887. Serial No. 254,333. (No model.)



Claim.—1. A weeding attachment, substantially as described, consisting of the stock or body A, the arms B B, extended from said body, one of said arms being longer than the other, and the scraper-blade extending between and secured to said arms, substantially as set forth.

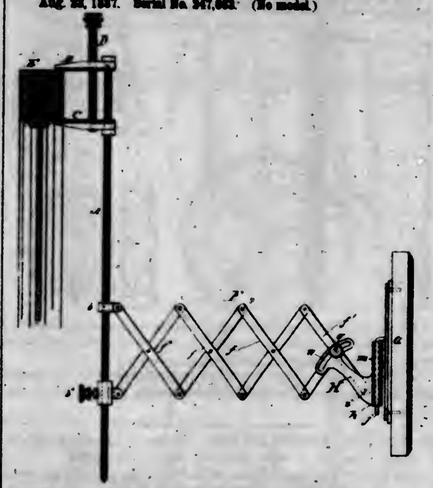
2. A weeding attachment consisting of the stock or body A, having a groove, a, in its rear side and provided with a bolt-opening, d, the forward end of which is enlarged and provides an angular socket for the head of the connecting-bolt, the arms extended from said stock or body part, and the blade extended between and secured to the free ends of said arms, all substantially as and for the purposes specified.

386,247. PROCESS OF DYEING. THOMAS HOLLIDAY, Huddersfield, County of York, England, assignor to Read Holliday & Sons, same place. Filed Jan. 17, 1887. Serial No. 224,868. (No specimens.)

Claim.—1. The dyeing of cotton or other vegetable fiber by the formation thereon of the colored products of the combination of the nitroso compounds of alpha or beta naphthol with metallic oxides, substantially as described.

2. Cotton or other vegetable fiber colored with the combination of the nitroso compounds of alpha or beta naphthol with metallic oxide.

386,248. BRACKET. HELEN M. HUMPHREY, Cayuga, N. Y. Filed Aug. 22, 1887. Serial No. 247,662. (No model.)



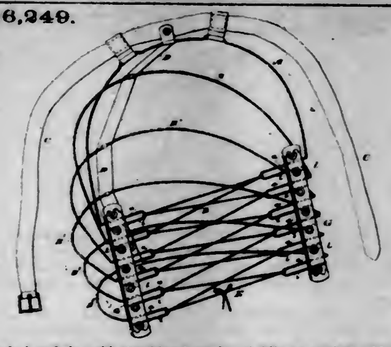
Claim.—1. The mirror G, having a fastening-rod, j, at its back, in combination with the lazy-tongs F, adjustable plate H, and set-screw n, the said plate being formed with a curved slot, o, to receive the screw n, and with a sleeve, m, to receive the rod j, substantially as described.

2. As a new article of manufacture, the rod A, provided with a clamping device at one end, the lazy-tongs F, attached to the rod A, and the mirror G, in combination with the adjustable plate H and set-screw o, the said plate being formed with a curved slot, n, and pivoted to one of the bars of the lazy-tongs, substantially as described.

386,249. BUSTLE. FRANK H. JEFFERY, Jersey City, N. J. Filed Aug. 10, 1887. Serial No. 246,576. (No model.)

Claim.—1. In a bustle, the combination, with the stiff uprights or side pieces, G G, of the bows made from spring-wire and having inwardly-turned loops bent on their ends, one side of each loop forming a torsional spring, e, and the other side forming an attaching

386,249.



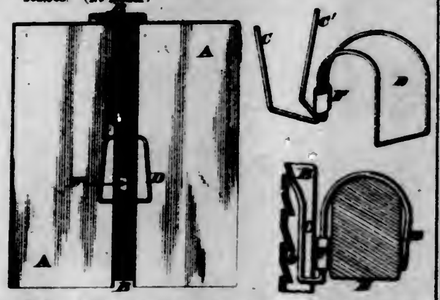
branch, *i*, and the said attaching branches rigidly secured to said side pieces, as set forth.

2. In a bustle, the combination, with the two stiff uprights G G, each formed of two strips, *k k*, of the several bows made from spring-wire, and having inwardly-turned loops bent on their respective ends, each loop forming a torsional spring, *e*, and an attaching branch, *i*, the said strips *k* embracing said loops, as shown, and clamping and secured rigidly to the said attaching branches *i*.

386,250. MEDICATED OR TONIC BEER. MOSES H. KLEIBER, Dodge City, Kans. Filed Dec. 3, 1887. Serial No. 257,236. (No specimens.)

Claim.—A beverage composed of malt, rye-flour, calamus, spearmint, hops, alcohol, lemon extract, yeast, lemon-peel, sugar, and water, in about the proportions above stated.

386,251. DETACHABLE SHADE FOR SEWING-MACHINES. WILLIAM H. LAWRENCE, Cincinnati, Ohio. Filed Jan. 31, 1888. Serial No. 262,505. (No model.)

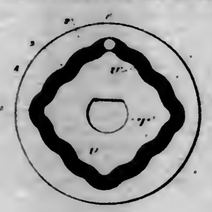


Claim.—1. The shade A, having a vertical groove, B, in combination with the detachable spring-clip D, having laterally-spreading prongs C C, for the purpose described.

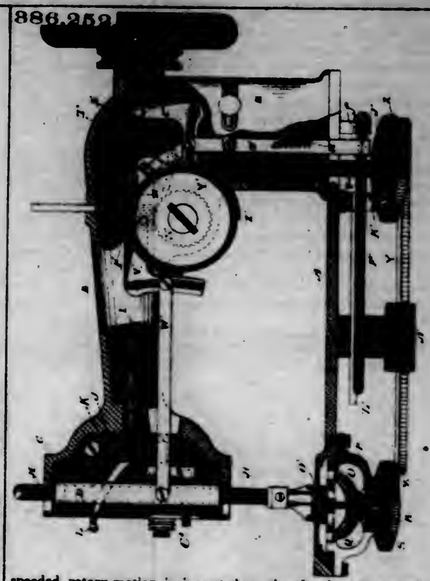
2. The shade A, having a notched vertical groove, B *b*, in combination with the detachable spring-clip D, having prongs C C, for the purpose described.

386,252. SEWING-MACHINE. FRANCIS T. LEILICH, Bridgeport, Conn. Filed Nov. 6, 1885. Serial No. 182,013. (No model.)

Claim.—1. The combination, with the needle-bar and the main shaft and its link-connection, whereby the needle-bar is reciprocated, of the horizontal rotary shuttle, the two-armed shuttle-driver whose plane of rotation is oblique to that of the shuttle and its race, the short shaft journaled in the bottom of the shuttle-race casting, the oblique connecting-shaft V and its gears, and the oscillating lever-pitman connecting the disks beneath the bed of the machine, whereby a variably-



386,252.



speeded rotary motion is imparted to the shuttle, substantially as specified.

2. The combination of the main shaft journaled in the arm, the needle-bar and the link-connection, the oblique connecting-shaft geared to the main shaft, the driver-shaft of the same obliquity as the connecting-shaft and journaled in the race-casting, the shuttle-race at right angles to the line of descent of the needle-bar, the shuttle, the two-armed shuttle-driver, and the oblique disks and their connecting oscillating lever-pitman, said disks and pitman being at a plane oblique to the plane of the bed and at right angles to the oblique plane of the driver and connecting shafts, substantially as described.

3. The combination, with the main shaft and the crank-disk mounted thereon, of the needle-bar, the link M, universally jointed at both ends, and the pin C^3, connecting the link and needle-bar, extending through the latter, and with its outer extremity projecting through a slot in the face of the head, substantially as set forth.

4. In a sewing-machine, the combination, with the main shaft, of the worm thereon, the short transverse shaft journaled in the arm and carrying a worm-wheel meshing with the worm, the sinuously-grooved pattern-disk removably secured upon the outer extremity of the transverse shaft, the bell-crank lever pivoted to the arm and actuated by the sinuous groove in the disk, the connecting-rod adjustably secured to the grooved arm of the bell-crank, and the gate carrying the needle-bar and pivotally hung within the head of the machine, all arranged as described, and for the purpose set forth.

5. In a sewing-machine, the combination of the stitch-forming mechanism, the feeding mechanism, the sinuously-grooved pattern-disk driven from the main shaft, and means whereby the latter imparts movement to the needle-bar gate, of a pattern-ring of varied diameter secured upon said disk and adapted to engage with and control the action of the feeding devices, substantially as set forth.

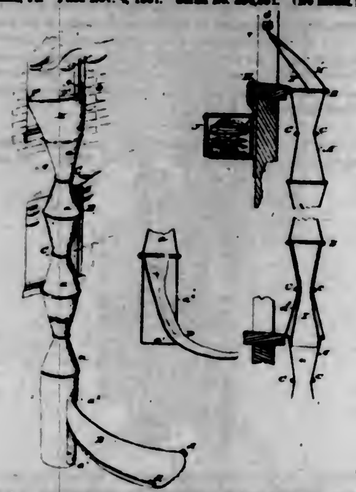
6. The combination, with the needle-bar and the main shaft, of the sinuously-grooved pattern-disk and the means whereby the latter is actuated, the bell-crank lever pivoted to the arm and engaging with the pattern-groove, the connecting-rod and the pivoted gate, the face-cam on the main shaft, the bell-crank lever of the feed, and a pattern-ring secured upon and revolving with the pattern-disk and adapted to engage and hold the said bell-crank out of engagement with its cam, substantially as specified.

7. The combination, with the main shaft, of the face-cam mounted thereon, the bell-crank lever pivoted within the arm and engaging with the cam, the vertical and spring-detained connecting-rod, the pivoted rock-shaft and its arms, the curved and pivoted lever actuated by the eccentric-groove in the disk, the bar L', the feed-bar and feed-dog, the adjustable and inclined bracket, and a pattern-ring of varying diameter actuated from the main shaft, and adapted by its engagement with the bell-crank lever of the feed to permit or prevent contact of the latter with its cam, substantially as described.

8. In a sewing-machine, the combination of the main shaft, the needle-bar hung in the pivoted gate, the transverse rotary shuttle, the

two-armed shuttle-driver, the driver-shaft and connecting-shaft oblique to the main shaft, the disks and oscillating lever-pitman oblique to the bed-plate, the worm, worm-wheel, and transverse shaft, the sinuously-grooved and removable pattern-disk, the bell-crank and the rod connecting the latter with the gate, the cam-actuated bell-crank lever, the feed mechanism, as shown and described, and the pattern-ring secured upon and revolving with the pattern-disk and adapted by its varying contour to alternately permit and prevent the actuation of the bell-crank by its cam, substantially as specified.

386,253. FIRE-ESCAPE. MOSES H. MASSEY and OTIS G. MOSES, Knox, Pa. Filed Nov. 4, 1887. Serial No. 254,931. (No model.)



Claim.—1. A fire-escape consisting of a flexible chute held extended by rings and surrounded by elastic bands or rings between said extension-rings, substantially as described.

2. A fire-escape consisting of a zigzag-shaped flexible chute formed of a series of sections and provided with rings at the joints for holding the same extended and with elastic bands or rings intermediate said extension-rings, substantially as described.

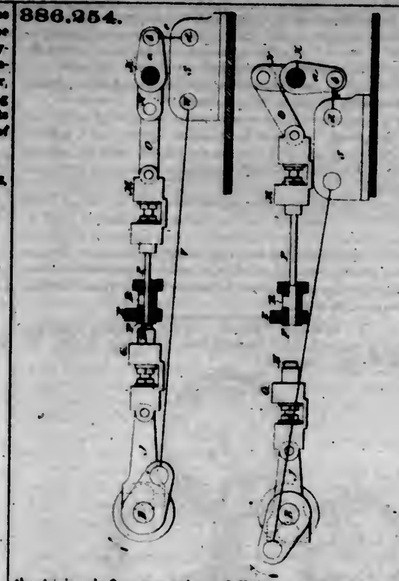
3. The combination, with a flexible chute having a closed lower end and provided with an opening near said closed end, of a blanket or sheet secured to the chute at the opening to receive the person emerging from the said opening, substantially as herein shown and described.

386,254. MACHINE FOR HEADING CARTRIDGE-SHELLS. WILLIAM MASON, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed May 26, 1888. Serial No. 275,276. (No model.)

Claim.—1. In a machine for heading cartridge-shells, which consists of a stationary die, a slide on one side of the heading-die carrying a follower-punch, a slide on the opposite side carrying a heading-punch, and a driving-shaft, with a connection therefrom to said heading-punch slide to impart a reciprocating movement to said heading-punch slide, the combination therewith of a shaft, K, parallel with said driving-shaft, having a crank, N, with a connecting-rod therefrom to the said heading-punch slide, a second crank, *a*, on said shaft K, but in the opposite direction to the crank N, a crank, T, on the driving-shaft, a connecting-rod, V, hung by one end to said crank T on the driving-shaft, a link, *c*, hung by one end to said crank *a*, and a movable guide between the other end of said link *c* and the other end of said connecting-rod V, and to which the corresponding ends of the said link *c* and the connecting-rod V are hung, substantially as described.

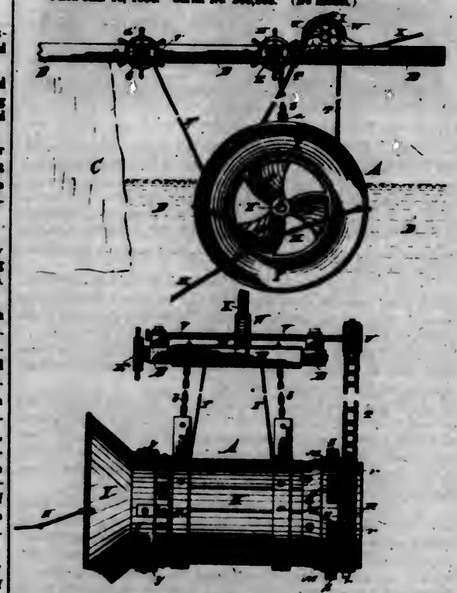
2. In a cartridge-shell-heading machine, consisting of a stationary die, a reciprocating slide carrying a heading-punch upon one side of said die, a reciprocating slide carrying the follower or holding punch upon the opposite side of the said die, and a driving-shaft with connection therefrom to the said heading-punch slide to impart reciprocating movement to said heading-punch slide, combined with a crank-shaft parallel with the driving-shaft, provided with a crank, N, and a connection therefrom to the follower-punch slide, the said shaft K also provided with a second crank, *a*, but in the opposite direction to the crank N, a slide, S, arranged in longitudinal bearings parallel with the path of movement of the said punch-carrying slides, the crank T on

386,254.



the driving-shaft, a connecting-rod, V, from said crank T to said slide S, and a link, *c*, hung by one end to said crank *a* and by the other end to said slide S, substantially as and for the purpose described.

386,255. CURRENT-MOTOR. MICHAEL MCCARTY, Montrose, Colo. Filed Jan. 16, 1886. Serial No. 208,882. (No model.)



Claim.—1. The combination, in a current-motor, of a frame fixed to the bank of a stream and projecting over the water, a current-wheel comprising a casing suspended from said frame and a bladed shaft fitted for rotation in said casing, and flexible connections between the frame and casing, substantially as shown and described, whereby the wheel may be adjusted bodily in a lateral curvilinear direction, as set forth.

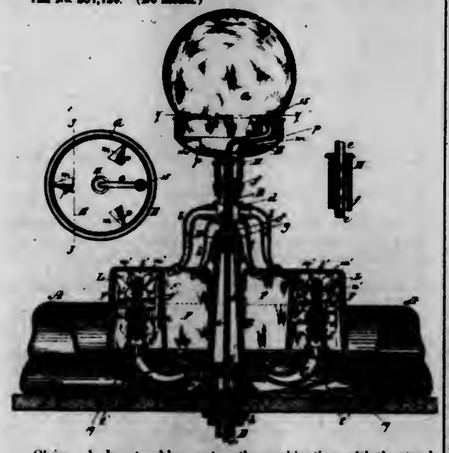
2. The combination, in a current-motor, of a frame fixed to the bank of a stream and projected over the water, a current-wheel com-

prising a casing suspended by a windlass from said frame and a bladed shaft fitted for rotation in said casing, cord or chain connections from the current-wheel to a windlass arranged on the frame behind the wheel-suspending windlass, a driving-shaft on the frame, and pulley-and-belt connections from the current-wheel to said driving-shaft, substantially as described, for the purposes set forth.

3. In a current-motor, the current-wheel constructed with a casing, K, a blade shaft, I J, fitted for rotation therein, and a skeleton head, N, and driving-wheel R fitted to the bladed shaft for rotation at opposite ends of the casing, substantially as described, for the purposes set forth.

4. In a current-motor, the combination, with the casing K and a bladed wheel, I J, fitted for rotation therein, of a skeleton head, N, on the upstream end of the wheel and working against the casing, a drive-wheel, R, fixed to the downstream end of the casing and adapted to receive a driving-belt, and anti-friction rollers S, fitted to the casing and forming bearings for the driving-wheel, substantially as described, for the purposes set forth.

386,256. TUMBLER-WASHER. JOHN F. MCGRAIRL, Somerville, assignor to James W. Tufts, Medford, Mass. Filed Dec. 12, 1887. Serial No. 257,720. (No model.)



Claim.—1. In a tumbler-washer, the combination, with the standard B, of the independent chamber *d*, closed at its bottom and having an inlet-opening at its top, whereby it is adapted to receive the waste water flowing back after its discharge from the jet-pipe *e*, and a series of jet-pipes, *l*, connected with the chamber *d* and adapted to discharge the waste water from the jet-pipe *e* upon the exterior of the inverted tumblers when placed upon their supports, substantially in the manner and for the purpose set forth.

2. In a tumbler-washer, the combination of the standard B, the independent chamber *d*, having the sleeve or pipe *f* extending up through the same, the jet-pipe *e*, passing up through the sleeve *f*, the stuffing-box H on the sleeve *f*, the receiver E, dome G, and jet-pipes *l*, connected with the chamber *d* and adapted to discharge the waste water from the jet-pipe *e* upon the exterior of the tumblers, substantially as and for the purpose set forth.

3. In a tumbler-washer, the combination, with the dome G and basin or receiver E, having the waste-water openings *m*, of the guards or shields *p*, placed over said openings, and having knife-edges at their tops forming rests for supporting the lower edge of the dome, whereby the maximum vibration of the latter when struck by the water is produced, substantially as described.

4. In a tumbler-washer, the combination, with the valve-casing and valve-spindle of the tumbler-washing device, of a relief-valve placed within said valve-casing and closing an outlet-aperture therein, through which the water may escape when said relief-valve is raised, whereby an additional outlet is afforded, through which the water is discharged against the interior of the tumbler, substantially as set forth.

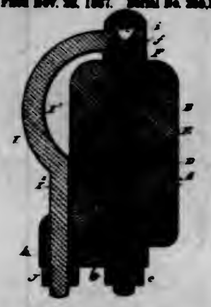
5. In a tumbler-washer, the combination, with the valve-casing I, having the valve-seats *w* and *b'*, of the tubular valve-spindle *u*, carrying the main valve *v* and relief-valve *a'* and having the aperture *g* above the valve *v*, communicating with its interior and provided on its exterior surface with grooves or channels *i'* for the passage of the water to the relief-valve, whereby an additional outlet is afforded for the water when the pressure of the same is increased, substantially as and for the purpose set forth.

6. In a tumbler-washer, the combination of the valve-casing I, tubular valve-spindle *u*, carrying the valve *v* and having an opening, *g'*, above said valve leading to its interior, the tube *d'*, with its jet-pipes *f'*, the spring *r'*, and a tumbler-supporting device rotating upon a pin or point at the top of the tube *d'*, all operating substantially in the manner and for the purpose set forth.

7. In a tumbler-washer, the combination, with the valve-casing I, tubular valve-spindle *u*, carrying the valve *v* and having an opening, *g'*, above said valve, and the tube *d'*, with its jet-pipes *f'*, of the tumbler-supporting water-wheel L, rotating upon a vertical pin or point projecting from the top of the tube *d'* and having the apertures *n'* in its top and the downwardly-projecting fans or buckets *n'* on its sides, all constructed and arranged to operate substantially as set forth.

8. In a tumbler-washer, the combination, with the standard B, branch pipes C, and the valves of the tumbler-washing devices connected with the said branch pipes, of an air-chamber common to all of said branch pipes, whereby the force required to open said valves is diminished, substantially as set forth.

386,257. WHIFFLETREE-COUPLING. LAFAYETTE A. MELSHER, Denver, Colo. Filed Nov. 22, 1887. Serial No. 255,957. (No model.)



Claim.—1. In a coupling substantially as described, the combination of the support, the whiffletree, the top plate having a conical hub, the central interlocking plates, the pivot-bolt, the lower plate, and the clip having its upper portion arched rearwardly and its upper forward end formed with a tapering opening fitted over the conical hub of the top plate, the lower portion of such clip being formed straight and non-circular and terminating in a threaded portion, and the nut for securing such clip and by which it may be tightened up, substantially as set forth.

2. In a coupling substantially as described, the combination of the support, the whiffletree, the pivot-bolt C, the plates between said whiffletree and support, the lower plate secured to the under side of the support and having an extension projected in rear of said support and provided with an opening for the shank of the clip, the top plate secured on the whiffletree and provided with a hub having an opening for the bolt C and its exterior made conical, forming a tapering bearing, the clip having its shank extended through the opening in the rear extension of the lower plate and threaded to receive the securing-nut, and provided at its upper end with a ring-like portion having its opening formed with a tapering portion fitted to the tapering hub of the top plate and with a portion fitted to the angular portion of bolt C, all being substantially as and for the purpose specified.

386,258. HYDROCARBON VAPORIZER AND BURNER. FRANK B. MEYERS, Fort Plains, N. Y. Filed Sept. 8, 1887. Serial No. 249,079. (No model.)

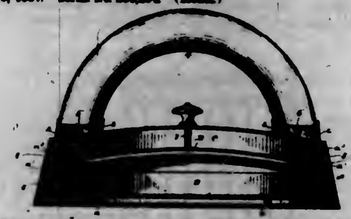
Claim.—In a hydrocarbon-burner, the combination, with the combustion-chamber, the burner, and the retort, consisting of the case or body C, of the vaporizing-tube D, having the spiral or scroll shaped wings D', and the rod E, provided with the spiral scroll E', substantially as and for the purpose set forth.



386,258.



386,259. SAD-IRON. ROSSER GAY, Wakefield, Mich. Filed Dec. 19, 1887. Serial No. 258,254. (Model.)



Claim.—1. In a sad-iron, the combination, with the box or receptacle and the copper disposed therein, provided with end recesses, of the removable lid or cover, the spring-plate located within said lid or cover and having hooks projecting through lower apertures of said lid or cover and designed to enter said end recesses and the knobbed rod secured to said spring-plate and projected through a central aperture in said lid or cover, substantially as shown and described.

2. The combination, with the box or receptacle having shoulders at its ends, of the removable lid or cover, the spring-plate located within said lid or cover and having its ends projecting through end apertures thereof and designed to engage with said shoulders, and the knobbed rod secured to said spring-plate and projected through a central aperture in said lid or cover, substantially as shown and described.

3. The combination, with the box or receptacle having the shoulders at its ends, of the copper provided with recesses, the lid or cover, the spring-plate having projecting ends and depending hooks, and the knobbed rod, substantially as shown and described.

386,260. UMBRELLA OR SUNSHADE. LEWIS H. PEARCE, Coalbournbrook, Stourbridge, County of Worcester, England. Filed Mar. 8, 1887. Serial No. 230,103. (No model.) Patented in England July 14, 1886, No. 9,169; in France Mar. 2, 1887, No. 181,913; in Belgium Mar. 2, 1887, No. 76,549; in Germany Mar. 2, 1887, No. 41,266; in Italy Mar. 31, 1887, XLII, 168, and in Austria-Hungary Aug. 3, 1887, No. 9,576 and No. 36,493.



Claim.—1. An umbrella or sunshade having its ribs formed each in two parts hinged together and arranged to fold in opposite directions, one part being of channel-steel receiving the other part when extended, substantially as described.

2. In combination with an umbrella or sunshade having the ribs jointed and arranged to fold toward the point of the stick, the ring *c*, attached by means of a cord passing through an eye on the sliding socket and fastened to the stick, so that the said ring may be easily applied from below to surround the body of the fabric near the top when the apparatus is closed, and is automatically carried up into the dome thereof when the same is opened.

386,261. RATCHET-DRILL STOCK. JOHANNES T. PEDERSEN, Brooklyn, N. Y. Filed Aug. 16, 1887. Serial No. 247,003. (No model.)



Claim.—1. The combination, with the tool-holder having ratchet-teeth thereon, of a stock surrounding the same, and pawls having cylindrical axes, from which the pawls project laterally in opposite directions, the cylindrical axis being parallel to the axis of the tool-holder and capable of movement endwise to bring the pawl into or out of action, substantially as set forth.

2. The combination, in a ratchet-drill, of a tool-holder having teeth thereon, two separate pawls, each having a cylindrical axis, from which the pawl projects laterally, a stock surrounding the tool-holder and having a separate hole for the reception of each pawl-axis and a space in which the pawl may be moved laterally and in the direction of its axis, and a bow-spring to press the oppositely-acting pawls toward the teeth, substantially as set forth.

3. The combination, with the tool-holder having teeth upon its surface, of a stock surrounding the tool-holder and having a cylindrical recess, and the pawls standing in opposite directions and having cylindrical axes received into holes in the stock, and an arched spring within the stock and acting against the pawls, and having the parallel edges 14 and projections 16, for the purposes and substantially as set forth.

386,262. TOOL-HOLDER AND TOOLS FOR THE SAME. JOHANNES T. PEDERSEN, Brooklyn, N. Y. Filed Aug. 16, 1887. Serial No. 247,004. (No model.)



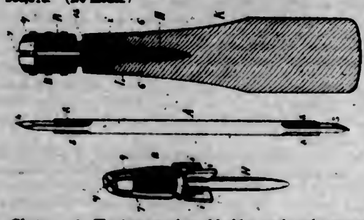
Claim.—1. The combination, with the tubular handle A and tubular screw B thereon and notched at the end, of the chuck E at the end of the screw B and divided longitudinally into four parts by slots that cross each other, and provided with projections at the rear to pass into the notches of the screw, and the tubular case C, surrounding the chuck and the screw B, substantially as set forth.

2. The combination, with the handle A and screw B, of the tubular case C, having an internal screw-thread and recessed at 6, and the chuck E, having a screw-thread around its base, substantially as set forth.

3. The tool and its shank formed of a straight metal bar that is a cross in its sectional shape throughout its length, except at the end, where the metal is removed more or less to form the operative portion of the tool, substantially as set forth.

4. A screw-driver formed of metal which is a cross in its sectional shape, with two of the arms of the cross notched at their end, as at 13, at the sides of the screw-driver end, substantially as set forth.

386,263. TOOL-HOLDER AND TOOLS FOR THE SAME. JOHANNES T. PEDERSEN, Brooklyn, N. Y. Filed Jan. 16, 1888. Serial No. 260,818. (No model.)



Claim.—1. The improved tool-holder and tool composed of a chuck-stock having an exterior screw-thread and a long mortise or incision, 7, through said stock to form spring-jaws, and short intermediate mortises or incisions, 9, through said stock, and a screw-sleeve surrounding such stock and tapering near the end to close the spring-jaws, in combination with a reversible tool having two end por-

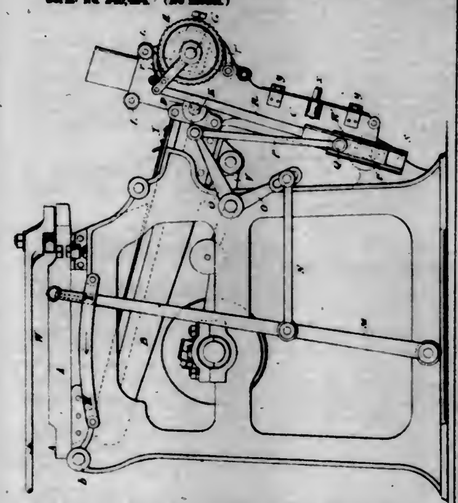
tions or blades flattened and of a thickness adapted to pass into the long mortise 7 of the stock, and having one or more ribs, 8, upon the flattened end portions adapted to pass into the incisions 9 of the stock, substantially as set forth.

2. The combination, with a stock, B, having a long mortise, 7, and a short mortise, 9, of a tool having flattened ends or blade portions of a thickness adapted to pass into the long mortise 7 of the stock, and the ribs on one side of the flattened blade portions and adapted to pass into the incision 9, substantially as set forth.

3. The combination, with a stock, B, having a long mortise, 7, and a short mortise, 9, of a tool having flattened ends or blade portions of a thickness adapted to pass into the long mortise 7 of the stock, and the ribs on one side of the flattened blade portions and adapted to pass into the incision 9, the length of the flattened end portions of the tool being less than the depth of the mortise 7, so that the pointed ends of the tool do not come into contact with the bottom of the mortise, substantially as set forth.

4. The combination, with the screw-sleeve and the handle slotted crosswise at one end, of the tool-holding chuck B, having a short solid tang, H, and the four projecting wings I, passing into the slots in the handle K, substantially as set forth.

386,264. MATCH-MAKING MACHINE. KARL PERNITZ, Durlach, Baden, Germany, assignor to the Badische Maschinen und Bisenginesserei, vormals G. Schmid and Schmid and Hoff, same place. Filed June 6, 1887. Serial No. 240,494. (No model.)



Claim.—1. In a match-making machine, the combination, with a shaking-frame, of a box-frame pivoted to the main frame and connected to the lower end of the said shaking-frame, and means for holding and lowering the filling-box in the said box-frame, substantially as described.

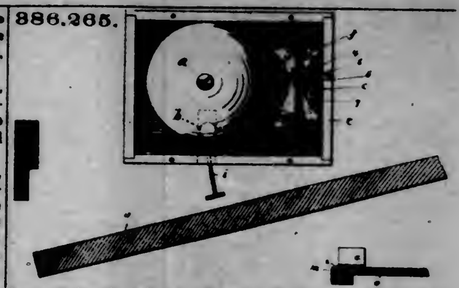
2. In a match-making machine, the combination, with a shaking-frame and a pivoted box-frame connected to said shaking-frame, of a shaft journaled in the box-frame and provided with wheels for engaging the filling-box, and means for imparting motion to the said shaft, substantially as herein shown and described.

3. The combination, with the filling-box K, of the ratchet-wheel H, rod R, slide-plate R', guide S, hand-lever M, and rods N O P, all substantially in the manner and for the purpose as described and shown.

4. In a match-making machine, the combination, with a shaking-frame and a box-frame connected to the lower end of the shaking-frame, of a hinged cover on the shaking-frame projecting into the box-frame and provided with downwardly-projecting tongues, substantially as described.

5. In a match-making machine, the combination, with the shaking-frame and box-frame on the lower end of the shaking-frame, of a hinged cover projecting into the box-frame and having its lower end slotted and provided with the pins *r*, and the plate U, secured on the said pins and provided with the tongues *s*, projecting through the slots in the said cover, substantially as herein shown and described.

386,265. BURGLAR-ALARM. CHARLES PHELPS, Salem, Mass. Filed Jan. 27, 1888. Serial No. 262,267. (No model.)



Claim.—1. In a burglar-alarm, the combination of the portable box or casing, the bell, the spring-motor having an arbor extending through one side of the box, said arbor having a handle at its outer end, the hammer arranged to be vibrated by said motor, and the arm *i*, attached directly to and vibrated with the hammer and projecting through an orifice in the box, the arrangement being such that said arm when vibrated by the hammer moves substantially at right angles with the side of the casing through which it projects, and when prevented from so moving by contact with an object outside of the box holds the hammer to which it is attached away from the bell, as set forth.

2. The combination of the casing, the alarm mechanism therein, consisting of the bell, the hammer, and the spring-motor having an arbor extending through one side of the box, a pivoted handle on said arbor outside of the box, the recess *g*, formed to hold said handle and the motor, and a hammer-controlling arm or detent projecting outwardly from the alarm, as set forth.

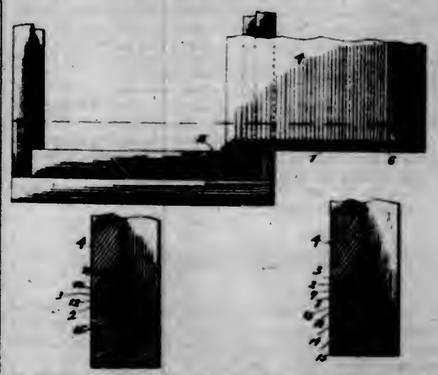
386,266. CALF-WEANER. WILLIAM H. PERSONS, Walworth, New. Filed Mar. 14, 1888. Serial No. 267,173. (No model.)



Claim.—1. As an improvement in calf-weaners, the plate provided with a series of rods or bars pivotally secured thereto by having their flattened ends passed through holes or apertures of said plate, substantially as shown and described.

2. The combination, with the plate having the rearwardly-projecting barbs, and the rods or bars pivotally secured thereto, of the curved arm pivoted to said plate at one end and removably secured thereto at its other end, substantially as shown and described.

386,267. WEATHER-STRIP. ROBERT C. REDMAN, Salem, Oreg. Filed Feb. 20, 1888. Serial No. 265,264. (No model.)

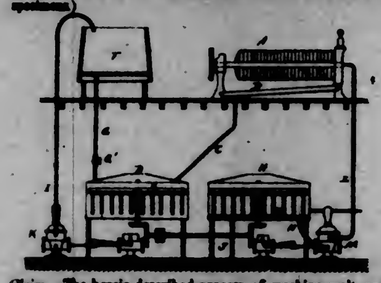


Claim.—1. A weather-strip consisting of an angular strip loosely pivoted in a recess in the bottom of a door and having a slot in the upper edge of one of its angular portions loosely engaging a depending spring in said recess, and its other angular portion projecting outward through a recess in the door and having a pin adapted to engage an inclined slot in a plate on the threshold, substantially as described.

2. A weather-strip comprising the following parts: an angular strip loosely pivoted on a support in the bottom of a door, with one of its angular portions projecting upward into a recess in the lower edge of the door and the other angular portion projecting outward through a recess in the lower edge of the door, a depending spring loosely engaging a slot in the first-named angular portion, and a plate on the threshold having an inclined slot with which a pin in the weather-strip engages, substantially as described.

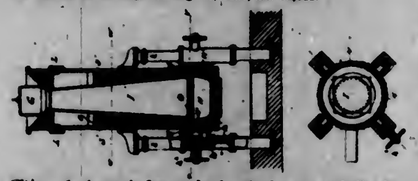
3. In a weather-strip, the combination, with threshold 15, having plate 14, with inclined slot 16, of door 4, having recess 3, strip 1, located in said recess, with portion 2, having slot 12, engaging spring 10, secured in block 11, and portion 5, projecting through recess 6 and having depending pin 13, and the recesses 9, engaging supporting-lugs 7, secured in recesses 8, substantially as described.

386,268. PROCESS OF PREPARING MASHES IN BEER-MAKING. GOMEAY SAHOLA and JAMES BARKER, Brooklyn, and WILLIAM H. DAVIS, Long Island City, N. Y. Filed Apr. 12, 1887. Serial No. 234,971. (No specimens.)



Claim.—The herein-described process of mashing malt and unmalted grain, consisting in mixing the ground malt with water at an ordinary temperature to obtain an infusion of malt, separating said infusion from the malt by filtering, mixing the residual malt with cornmeal and water and heating it nearly to the boiling temperature, mixing the infusion of malt with ryemeal at ordinary temperature, and adding the hot corn-mash to said ryemeal, and then allowing the mash obtained to cool for treatment, substantially as described.

386,269. CUPOLA-FURNACE. CARL SAHLIN, Cologne, Germany, assignor to Friedrich August Herberts, same place. Filed Sept. 6, 1887. Serial No. 248,774. (No model.) Patented in Germany Aug. 11, 1887, No. 42,888, and in England Aug. 26, 1887, No. 11,612.



Claim.—1. A cupola-furnace having the lower part built of masonry and its upper part of sheet metal, a sheet-metal casing around said upper part, forming an air-heating chamber, the masonry being provided with conduits extending from said air-heating chamber downwardly and opening vertically at the lower end of said masonry, a hearth below and concentric with the lower end of said masonry, and means for raising and lowering said hearth to open or close the lower end of said hot-air conduits to any desired extent, substantially as described.

2. A cupola-furnace having its lower part built of masonry and its upper part of sheet metal, a sheet-metal casing around said upper part, forming an air-heating chamber, the masonry being provided with conduits extending from said air-heating chamber downwardly and opening vertically at the lower end of said masonry, a hearth below and concentric with the lower end of said masonry, forming an annular opening extending from the exterior of the furnace into the fire-pot, adjustable segments covering said opening upon the exterior of the furnace for regulating the admission of cold air, and means for raising and lowering said hearth to open or close the lower end of said hot-air conduits to any desired extent, substantially as described.

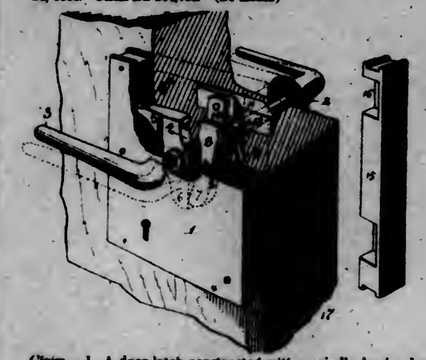
386,270. WIRE FENCING. CHARLES SHAW, Wolverhampton, County of Stafford, England. Filed Nov. 4, 1887. Serial No. 254,572. (No model.)



Claim.—1. A fence-bar having a slotted opening through which a fence-wire is passed, which opening communicates with a larger circular aperture in which the fence-wire is retained, in combination with a fastener having a hollow cylindrical part bent or formed to fit in and conform in shape with the walls of said circular aperture, said cylindrical part being greater in diameter than said slotted opening, and said cylindrical part extending around only a part of the periphery of said circular aperture, and said fastener also having side flanges of greater diameter than said slotted opening, which rest against the bar on opposite sides of said circular aperture when the fastener is applied to the bar, the flange on one side at least being constructed to be bent down against the bar, substantially as set forth.

2. A fence-bar having a slotted opening through which a fence-wire is passed, which opening communicates with a larger circular aperture in which the fence-wire is retained, in combination with a fastener which has a hollow cylindrical part of greater diameter than the width of said slotted opening, said cylindrical part fitting and turning within said circular aperture, and said cylindrical part having an open slot communicating with its central bore, said slot, when the cylindrical part is turned, coinciding with said slotted opening in the bar, and said fastener having on one end of said cylindrical part a fixed flange, which rests against said bar on one side of said aperture, and said fastener having on its opposite side a tongue, which is passed through said aperture, and which is bent down against the bar on the opposite side of said aperture, substantially as set forth.

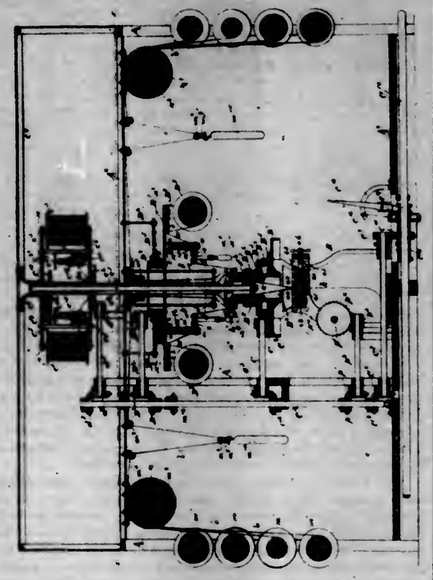
386,271. LATCH. LAUREN S. SUMAY, Steelton, Pa. Filed Feb. 21, 1888. Serial No. 264,703. (No model.)



Claim.—1. A door-latch constructed with a spindle having handles, a dog mounted on the spindle and having an angular projection at one end, a stop projecting from the side of the casing adapted to limit the movement of the dog, a lever pivoted to the side of the casing having a reacting-spring bearing against its lower end, which in turn bears against the lower end of the dog, a stop-pin secured to the casing, which limits the return movement of the lever, and a sliding latch-bolt pivotally connected to the upper end of the latter, substantially as described.

2. A door-latch consisting of the following parts: a spindle, 2, having handles 3 and dog 4, with angular projection 5 integral therewith, stop-pin 6, secured to the side of the casing 1, a lever, 8, having its lower end bearing against the lower end of the dog 4 and its upper end pivoted to the sliding latch-bolt 11, a stop-pin, 12, secured to the casing 1, and a reacting-spring, 9, bearing against the lower end of the lever 8, substantially as described.

386,272. KNITTING-MACHINE. Edwin R. Sibley, Chelsea, Mass. Filed June 13, 1887. Serial No. 241,726. (No model.)



Claim.—1. The combination, with a needle-cylinder, a cam-cylinder, suitable means to move the cam-cylinder, a series of reciprocating needles, and means, as feed-rolls, to positively feed the warp-threads from their source of supply on their way to the needles, of means, as weights, substantially as described, to produce uniform tension upon the individual warp-threads between the feeding-rolls and the needles, whereby the warp-threads introduced into the fabric being knitted by the needles are subjected to uniform tension, substantially as and for the purpose set forth.

2. The needle-cylinder, a series of needles therein, means to reciprocate the said needles, feeding-rolls to act upon and feed the knitting-threads to be supplied to the needles, guides for the weft-threads feeding-rolls to feed the weft-threads from their spools or bobbins preparatory to entering the said guides, and a tension device to act upon each weft-thread between the feeding-rolls and its guide to hold the said weft-thread under uniform tension, substantially as described.

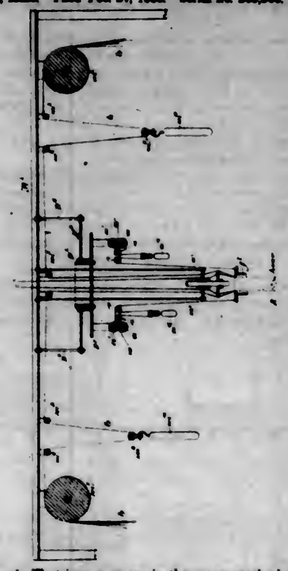
3. The needle-cylinder, a series of needles therein, means to reciprocate the said needles, feeding-rolls to feed the knitting-threads, guides for the weft-threads, means to feed the weft-threads forward to the fabric, and a tension mechanism, substantially as described, to act upon each weft-thread between its feeding-rolls and the said guides to subject the weft-threads to uniform tension, combined with a feeding mechanism, substantially as described, for the warp-threads, a contracting device to bring the warp-threads into a circle, a warp-spreading device, means to operate it, and a series of weights, one acting upon each individual warp-thread, to hold the same under like and uniform tension on their way to the fabric, substantially as described.

4. The needle-cylinder, a series of needles therein, means to reciprocate the said needles, a circle-contracting device to support a series of warp-threads on their way to the fabric, and a warp-spreader and means to operate it, combined with a comb, m^7, substantially as described, to receive the said warp-threads and guide them while being acted upon by the warp-spreader, as and for the purpose set forth.

5. The needle-cylinder, a series of needles therein, means to reciprocate the said needles, and a circle-contracting device to support a series of warp-threads on their way to the fabric, a warp-spreader, means to operate it, and a comb, m^7, to support the warp-threads on their way to the spreader, the said comb being provided with a thread guide or eye, 30, to control the knitting-thread and move it within the comb m^7, substantially as described.

6. The needle-cylinder, a series of needles therein, and means to actuate them, combined with two pairs of drawing-rolls to take the knitted fabric from the needle-cylinder, and with a presser-roll, as 43, to act simultaneously upon one roll of each pair of drawing-rolls and force them uniformly against the fabric passing between them and their opposed rolls, substantially as described.

386,273. ART OF KNITTING HOSE-PIPE. Edwin R. Sibley, Chelsea, Mass. Filed Feb. 27, 1888. Serial No. 265,366. (No model.)



Claim.—1. That improvement in the art or method of producing a uniformly-strong knitted hose pipe or fabric containing warp and weft threads which are incorporated with a knitting-thread, which consists in feeding the warp-threads positively from their source of supply, forming slack therein, and thereafter subjecting said slack threads independently to a uniform constant strain until united with the weft-thread in the fabric, thus always maintaining the warp-thread under the same tension throughout the fabric, substantially as set forth.

2. That improvement in the art or method of producing a uniformly-strong knitted hose pipe or fabric containing warp and weft threads which are incorporated with a knitting-thread, which consists in feeding both the warp and weft threads positively from their source of supply, thus forming slack therein, and thereafter subjecting said slack threads independently to a uniform constant strain until the warp-thread is united with the weft-thread in the fabric, thus always maintaining the warp and weft threads under the same tension throughout the fabric, substantially as set forth.

386,274. BEARING-LUBRICATOR. Frank S. Sohm, Lawrence, assignor to Dudley M. Holman, Boston, Mass. Filed Sept. 16, 1885. Renewed Oct. 6, 1887. Serial No. 251,662. (No model.)



Claim.—1. The combination, in a lubricator, of the cup having the discharge-nozzle, the cut-off sleeve for opening and closing the openings leading to the nozzle, and the regulating-valve for controlling the quantity of oil fed from the cup, substantially as described.

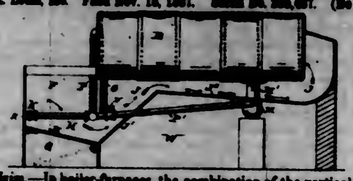
2. The combination, in a lubricator, of the cup, the tube C, having the openings F, and the discharge-nozzle forming a tapered valve-seat, with the cut-off sleeve N, for opening and closing the openings F, and the tapered valve O in the valve-seat, to regulate the quantity of oil fed from the cup, substantially as described.

3. The combination, in a lubricator, of the cup, the tube C, having the openings F, and the discharge-nozzle forming a tapered valve-seat, with the cut-off sleeve N, and the tapered valve O, having the stem extending through the sleeve, and air-passages to permit the flow of oil through the discharge-nozzle, substantially as described.

4. The combination of the oil-cup, the tube C, interiorly and exteriorly screw-threaded and having the openings F, and the discharge-nozzle forming a tapered seat, with the cut-off sleeve N, screwed on the outside of the tube, and the tapered valve O, having the stem O,

of less diameter than the bore of the sleeve and extending therethrough, and having the screw-thread at its lower end working in the tube C, and the air-passages O^2, for the purpose set forth, substantially as described.

386,275. STEAM-BOILER FURNACE. Charles E. Sautelle, St. Louis, Mo. Filed Nov. 18, 1887. Serial No. 255,627. (No model.)



Claim.—In boiler-furnaces, the combination of the vertical screen O, grates L, drop-door N, and rising steps J', constituting a combustion-chamber, all arranged substantially as shown and described.

386,276. THILL-COUPLING. Andrew J. Sykes, Portland, Oreg., assignor to himself, William J. Hazelett, and Edward A. King, all of same place. Filed Dec. 21, 1887. Serial No. 258,668. (No model.)



Claim.—1. The combination, with the clip B, provided with the tapering dovetailed groove *d*, of the coupler C, having the tapering dovetailed arm *c*, substantially as described.

2. The combination, with the clip B, having a dovetail groove, *d*, the coupler C, having a dovetail arm, *c*, adapted to enter the groove *d*, of the conically-pointed screw D, substantially as and for the purpose described.

3. The combination of the clip B, provided with the tapering dovetailed groove *d*, the coupler C, having the arm *c*, the conically-pointed screw D, furnished with the eye *g*, and the strap *h*, attached to the axle and extending through the eye *g* of the screw, substantially as described.

4. The combination, with the clip B, having a tapering dovetail groove, *d*, of the coupler C, said coupler consisting of the body portion having a tapering dovetail arm, *c*, adapted to be fitted in the groove *d*, and the forwardly-extending arms terminating in apertured ears K, substantially as and for the purpose described.

386,277. PACKAGE FOR BUTTER, &c. Lewis Seavers, Binghamton, N. Y., assignor of one-half to Benjamin F. Whitsell, same place. Filed Apr. 21, 1888. Serial No. 271,698. (No model.)

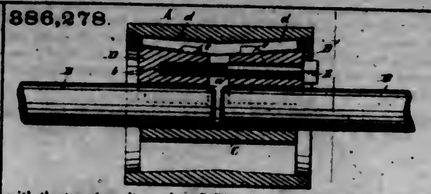


Claim.—1. The improved butter-package composed of the bottomless case A, hoops *b b*, secured to the upper and lower parts of the interior of said case, the tub B, seated upon said hoops, and the veneering *c c c*, placed removably on the interior of the tub, substantially as described and shown.

2. The combination of the bottomless case A, the non-metallic lining *a*, secured thereto by hoops *b b*, attached, respectively, to the exterior of the case and interior of the lining at the upper and lower ends thereof, the tub B, resting upon the upper and lower hoops on the interior of the aforesaid lining, and the veneering *c c c*, placed removably on the interior of the tub, substantially as described and shown.

386,278. SHAFT-COUPLING. Reuben J. Speare, New Hamburg, N. Y. Filed July 21, 1888. Renewed Mar. 3, 1888. Serial No. 266,104. (No model.)

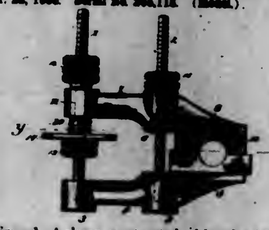
Claim.—1. The casing A, formed with the central bridge or seat, C, for the shafts and with the double-inclined ribs *d*, parallel with each other and projecting from the inner wall of the casing, in combination



with the two opposite wedges D D' and screw-bolts E, for drawing the wedges into the casing, substantially as described.

2. The wedges D, formed with the inclined ribs *c* and studs *e*, in combination with the bolts E and the casing A, formed with the seat C, and with the inclined ribs *d*, substantially as described.

386,279. CLAMP. Wendell P. Tassell, Bedford, N. Y. Filed Mar. 22, 1888. Serial No. 268,113. (Model.)



Claim.—1. A clamp constructed with a fixed jaw having an arm provided with screw-rods, and a movable jaw loosely mounted on one of the screw-rods, which is provided with a clamping-nut, and having an arm provided with a screw-threaded socket engaging a hollow screw loosely mounted on the other screw-rod having a thread different in pitch from the hollow screw through which the rod freely passes, a lever-bar loosely mounted on the latter adjacent to the hollow screw, and an adjusting and clamping thumb-nut also mounted on the same screw-rod adjacent to the lever-bar, substantially as described.

2. In a clamp constructed as herein described, a fixed jaw having an arm with detachable screw-rods, a movable jaw having an arm loosely mounted on one of the screw-rods, which is provided with a screw-threaded clamping-nut, a hollow screw loosely mounted on the other screw-rod and adjustable in the arm of the movable jaw, with a clamping-nut adjustable against the hollow screw, substantially as described.

3. A clamp consisting of the following parts, viz: a fixed jaw, 5, having an arm, 4, screw-threaded sockets 3 3, in which are located removable screw-rods 1 2, the movable jaw 8, having an arm, 7, provided with perforation 6, through which the screw-rod freely passes, a clamping-nut, 15, mounted on the rod 2, the adjustable hollow screw 10, mounted in the screw-threaded sockets 11 of arm 7 and loosely mounted on the screw-rod 1, the lever 14, loosely mounted on rod 1 beneath screw 10, and the clamping-nut 13, screw-threaded on rod 1 beneath lever 14, substantially as described.

386,280. WELL-DRILL. Silas W. Tyus and Cheston C. Clark, San Angelo, Tex. Filed Jan. 18, 1888. Serial No. 261,107. (No model.)



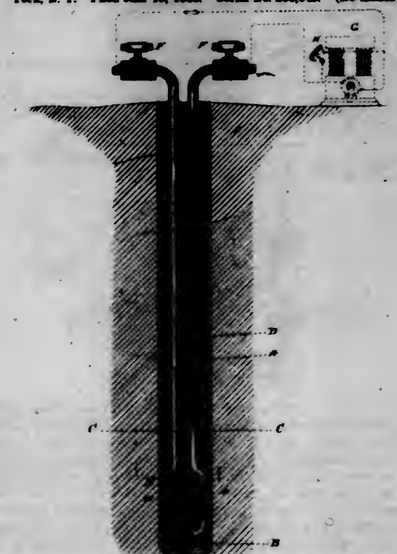
Claim.—1. The combination of the reamer R, provided with the longitudinal slot *a*, terminating with the dovetail *a'* at its inner end, and the club-bit C, having the shank C' formed with the dovetailed head *c* and inserted in the aforesaid slot and detachably secured therein, substantially as described and shown.

2. The combination of the reamer R, provided with the longitudinal slot *a*, the bit C, having the shank C' inserted in said slot, ribs *b b*, rigidly secured to the said shank and abutting against one side of the reamer, and the strip *d*, detachably connected to the shank C' and abutting against the opposite side of the reamer, substantially as described and shown.

3. The combination of the reamer R, provided with the slot *a*, terminating with the dovetail *a'*, the bit C, having the shank C' formed with the dovetailed head *c* and inserted in the aforesaid slot, the ribs

b b, rigidly secured to the shank C and abutting against one side of the reamer, the strip *d*, detachably connected to the said shank and abutting against the opposite side of the reamer, and the band *e*, embracing the reamer and bit-shank, substantially in the manner specified and shown.

386,281. METHOD OF BLASTING. HEPPENSTALL WARNELL, New York, N. Y. Filed Jan. 13, 1888. Serial No. 260,645. (No model.)



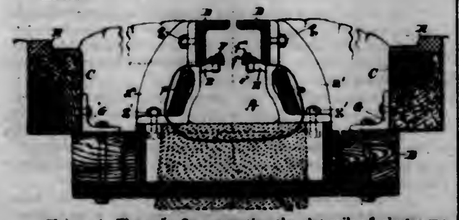
Claim.—1. The method of separating rock and like material, consisting in confining a non-explosive electrical conducting body within the mass of material to be acted upon, passing an electric current through said confined body, and thereby causing disruption of the material by the expansion of the confined body without exploding the same, substantially as set forth.

2. The method of separating rock and like material, which consists in boring a hole therein, placing in said hole an electrical conducting material, tamping the hole above said material, and passing an electric current through such material, so that the same is made to expand and to disrupt the rock by such expansion, substantially as set forth.

3. The method of separating rock and like material, which consists in boring a hole therein, placing in said hole an electrical conducting material of high resistance, tamping the hole above said material, and passing an electric current through such material, so that the same is made to expand and to disrupt the rock by such expansion, substantially as set forth.

4. The method of separating rock and like material, which consists in boring a hole therein, placing in said hole an electrical conducting material of high resistance, inserting in said material the ends of electrical conductors, filling the hole with tamping material, so as to separate said conductors, and passing an electric current through said conductors, substantially as set forth.

386,282. TUNNEL-CONSTRUCTION FOR ELECTRIC RAILWAYS. GRANVILLE T. WOODS, Cincinnati, Ohio, assignor to the Woods Electric Company, same place. Filed May 2, 1887. Serial No. 236,777. (No model.)



Claim.—1. The yoke for supporting the slot-rails of electro-motive-railway tunnels, consisting of a base-piece adapted to fit over and upon the sides and top, a cross-tie beneath the roadway-surface, and two removable jaw-pieces adapted to rest upon and be secured to said base and support angle-iron slot-rails, substantially as set forth.

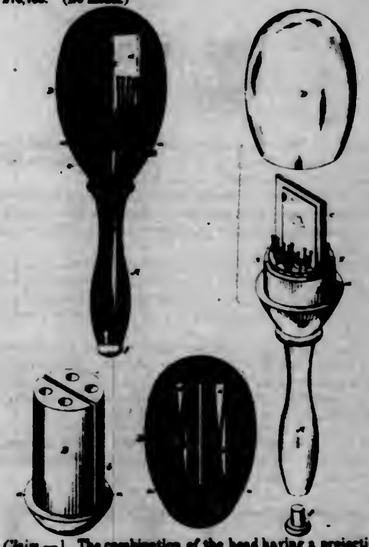
2. The improved yoke for electro-motive-railway tunnels, consisting of a base and two upwardly-projecting jaws, each provided with an inwardly-projecting bracket for maintaining the conductors, and a recessed face above the bracket for maintaining the angle-iron slot-rails, substantially as set forth.

3. In electro-motive railways of the character described, the combination, with suitable tunnel-supports, of two continuous conductors of the same polarity, with independent cross-connections, substantially as set forth.

4. In electro-motive railways of the character described, in combination with insulated tunnel-supports, a conductor embodying an angle-iron strip extending over successive supports and down at the inside of the same, and a copper strip or facing superimposed upon the upper face of the angle-iron, substantially as set forth.

5. The tunnel-construction for electro-motive railways, embodying, in combination, the yokes A, brackets E, insulated supports *f*, and conductors F F', arranged and operating substantially as set forth.

386,288. COMBINED NEEDLE-CASE AND BARBING IMPLEMENT. HERMAN G. ARNTZEN, Bay Shore, N. Y., assignor of one-half to Wilson Pratt, Philadelphia, Pa. Filed Apr. 16, 1888. Serial No. 270,780. (No model.)



Claim.—1. The combination of the head having a projecting portion with a transverse slot extending from side to side of the same and adapted to hold a paper of needles, with a cap or cover fitted to said projecting portion of the head and having a recess of such depth as to receive said paper of needles, all substantially as specified.

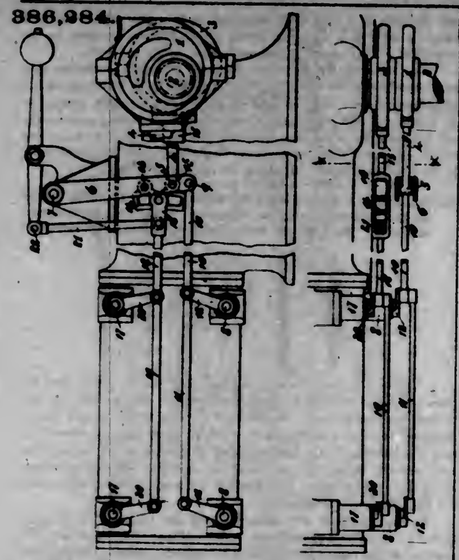
2. The combination of the head having a projecting portion with a transverse slot extending from side to side of the same and adapted to hold a paper of needles, and having openings formed therein at the sides of the slot, with the cap or cover fitted to said projecting portion of the head and having a recess of such depth as to receive the paper of needles, all substantially as specified.

386,284. VALVE-GEAR. ROBERT M. BAILY, Jr., Paddington, County of Middlesex, England. Filed Sept. 29, 1886. Serial No. 214,650. (No model.) Patented in England Nov. 17, 1886, No. 14,660, and in Canada Oct. 30, 1886, No. 28,266.

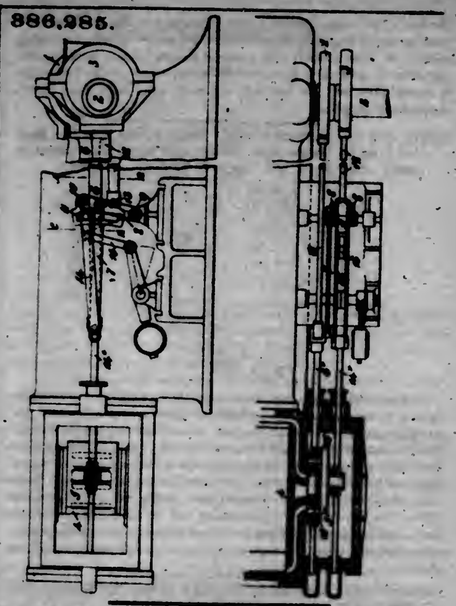
Claim.—1. In an engine having separate admission and exhaust valves, a pivoted lever, 6, connected at its free end to said exhaust-valves, means for imparting motion to said lever, a link connected near its full gear end to said lever intermediately of the ends of the latter, whereby that end of the link has a movement similar to that of the exhaust-valves, but less, the other end of said link being connected to an eccentric which imparts a motion opposite to that of the piston and equal to twice the linear advance of the admission-valves corresponding to the lead opening only.

2. In an engine having separate admission and exhaust valves, a link, 14, a block capable of sliding in said link, connection from said block to admission-valves, means for varying the position of the block

386,284.



386,285.



in said link, a pivoted arm or lever, 6, connected to said link, and means for imparting motion thereto, combined and arranged as shown, so that the part of said link attached to said arm or lever has a movement similar to that of the exhaust-valves, but of smaller amplitude, corresponding to latest cut-off, while the other end of said link has a movement opposite in direction to that of the piston and equal to twice the linear advance of the admission-valves corresponding to lead opening only, substantially as hereinbefore described, for the purpose specified.

3. In an engine having separate admission and exhaust valves, the combination, with said valves, of a link, 14, a block capable of sliding therein, connection from said block to the admission-valves, means for varying the position of the block in said link, a pivoted arm or lever, 6, connected to said link 14 at 13, and connected at 9 to rods 10 and 11 for actuating the exhaust-valves, an eccentric, 1, on the crank-shaft, connected to the said arm or lever 6, and means for imparting to that end of the link not connected to said arm or lever 6 movement opposite in direction to that of the piston and equal to twice the linear advance of the admission-valves, substantially as hereinbefore described, for the purpose set forth.

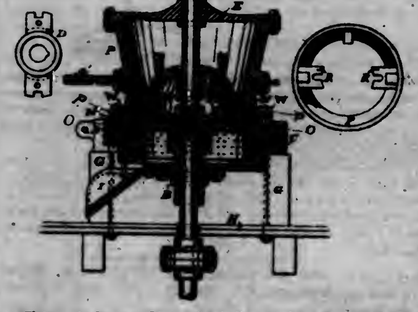
4. In an engine having separate admission and exhaust valves, the combination, with said valves and eccentrics 1 and 3 on the engine-shaft 2, of an arm or lever, 6, working on a pivot or joint, 7, rod 4, operated by eccentric 1 and connected at 5 to said arm or lever 6, a slot-link, 14, connected at 13 to said arm or lever, rods 18 and 19, connected to the admission-valves, lifting-rod 21, a rod, 15, worked by eccentric 3 and connected at 16 to link 14, and rod 10, connected at 9 to the arm or lever 6 and to the exhaust-valves, all substantially as described and shown, for the purpose specified.

386,285. VALVE-GEAR. ROBERT M. BAILY, Jr., Paddington, County of Middlesex, England. Filed Sept. 29, 1886. Serial No. 214,649. (No model.) Patented in England Nov. 17, 1886, No. 14,660, and in Canada Oct. 30, 1886, No. 28,266.

Claim.—1. In a steam or gas engine, in combination with a main valve, 4, and an expansion-valve, 5, a slot-link, 11, connected near its full-gear end to the main-valve rod 6 through a lever, 8, whereby such link has a movement similar in time to that of the main valve, but of greater amplitude, corresponding to the latest cut-off, and its other end connected to a part of the engine having a movement opposite to that of the piston corresponding to the earliest cut-off, all combined and arranged for joint operation substantially as herein specified.

2. In a steam or gas engine, a main slide-valve, 4, and an expansion-valve, 5, riding thereon, a slot-link, 11, a rod, 7, and lever 8, connecting one end of said slot-link with the main-valve rod 6, and a rod, 12, connecting the other end of said slot-link with an eccentric, 3, in combination with each other and with a block sliding in said slot-link and connected with the rod of the expansion-valve 5, and with means 16, for adjusting the position of said block, all substantially as herein specified.

386,286. CRUSHING AND GRINDING MACHINE. ALBERT BALL, Claremont, N. H., assignor to the Sullivan Machine Company, same place. Filed May 9, 1887. Serial No. 237,555. (No model.)



Claim.—1. In a crushing and grinding machine, the combination, with the grinding-cone and the internally-screw-threaded base-piece, of a shell composed of sections, the lower of which has an externally-screw-threaded flange engaging with said screw-threaded base-piece, the whole entirely surrounding and adjustable with relation to the grinding-cone, substantially as described, and for the purpose set forth.

2. In a crushing and grinding machine, the combination, with the shell and the grinding-cone rotating therein, of the half-arms R R, attached to said grinding-cone, and half-arms D D, keyed on the operating-shaft and locking said grinding-cone securely thereto, substantially as and for the purposes set forth.

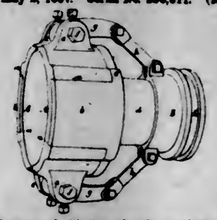
3. In a crushing and grinding machine, the combination, with the grinding-cone and internally-screw-threaded base-piece, of a shell adjustable on the same and made in sections, and provided with a flange engaging with the internally-screw-threaded base-piece, substantially as and for the purposes set forth.

4. In a grinding and crushing machine, the combination, with the screw-threaded base, and shell provided with the externally-screw-threaded flange L and with projections formed with the cavities *e* therein, for the purposes set forth, of a grinding-cone rotating within said shell, substantially as described.

5. In a grinding and crushing machine, a coarse-toothed shell, P, with external flanges *p* at the bottom, said flanges having bolt-holes

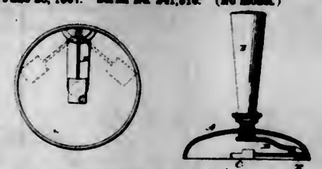
therein, a fine-toothed shell, N, also provided with external flanges O, with corresponding bolt-holes, an externally-screw-threaded elevating-section, M, also provided with external flanges L, with corresponding bolt-holes X, said parts P, N, and M being securely bolted together, in combination with an internally-screw-threaded base-piece, C, substantially as described.

386,287. FRICTION-CLUTCH. HENRY BARNES, Hyde Park, Mass.; ANN L. BARNES, Orange, Mass., administratrix of said Henry Barnes, deceased. Filed May 2, 1887. Serial No. 236,811. (No model.)



Claim.—The improved friction-clutch, consisting of the tubular shank *d*, having a head, *c*, provided with ears *b b*, extending in opposite direction to the shank, the two areal jaws A, grooved at their middles to receive the said ears, and having lugs *e* extending from them, (the said jaws,) as represented, near their ends, the two sets of right and left threaded screws *f*, fixed and arranged, as shown, in the lugs *e*, the internally-screw-threaded arms *g*, adapted to turn on the said screws, the sleeve B, encompassing and movable endwise on the shank, and the toggles *h*, jointed to the said sleeve and the internally-screw-threaded arms, all being arranged and to operate essentially as set forth.

386,288. HAND-BELL. WILLIAM H. BARTON, East Hampton, Conn. Filed June 20, 1887. Serial No. 241,816. (No model.)



Claim.—1. The combination of an open-mouth bell, a handle attached to the back of the bell in axial line therewith, and a hammer supported within the bell, said support extending from the center or axis of the bell, and the hammer arranged to move in a plane at right angles to the axis of the bell, substantially as described.

2. The combination of an open-mouth bell, a handle, B, secured to the back of the bell and extending in an axial line therefrom, a bracket fixed to the axis of said bell and extending radially therefrom, and a hammer hung to the outer end of the said bracket and adapted to swing in a plane at right angles to the plane of the bell, substantially as described.

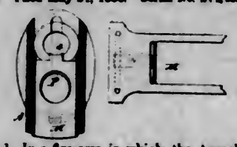
386,289. GONG AND SIGNAL CHAIR FOR HOTELS, &c. MIRIAM E. BELLAMIE, Washington, D. C. Filed Oct. 1, 1887. Serial No. 251,180. (No model.)



Claim.—1. A signal to be displayed on the backs of chairs and the like, consisting of a gong secured to the seat of a chair and within reach of the hand, and having a rod passing therethrough for sounding an alarm, the prolongation of said rod being pivotally attached to a lever fulcrumed on said seat, the opposite end of said lever being attached to a vertically-operating connecting-rod to actuate the same and through it a rock-shaft attached to the chair-back, and upon which is secured a signaling device which may be elevated or depressed at will by means of the mechanism herein set forth.

2. A signaling device of the character described, consisting of a gong attached to the seat of a chair and having its sounding-rod extended to connect with one arm of the lever *e*, pivotally secured to the bottom of said chair, and the vertically-reciprocating connecting-rod *d*, having its lower end attached to the outer end of said lever and its upper end attached to the rock-shaft *e f*, located on the back of the chair to actuate a signaling device secured thereto.

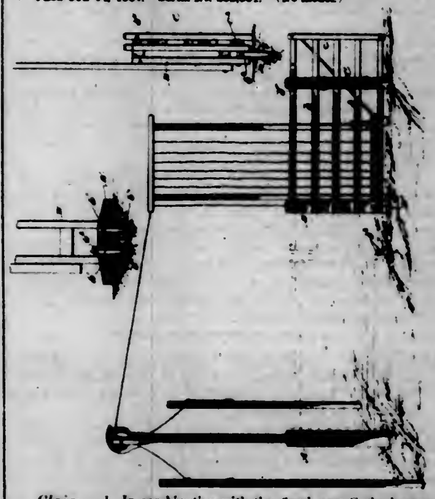
386,290. MAGAZINE FIRE-ARM. THOMAS G. BERGERY, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed May 21, 1886. Serial No. 274,492. (No model.)



Claim.—1. In a fire-arm in which the barrel opens into the receiver at the rear, and which is adapted to employ headless cartridges, the combination therewith of a spring-dog arranged for radial movement with relation to the cartridge-chamber, the nose of the said dog standing in the path of entering cartridges and adapted to automatically engage the groove of the cartridge when the cartridge in the cartridge-chamber is in position for firing, substantially as and for the purpose described.

2. In a magazine fire-arm in which the magazine is arranged beneath the barrel and both the barrel and magazine open into the receiver at the rear, and which arm is adapted to employ headless cartridges, the combination therewith of a vertically-sliding spring-dog, M, arranged in the forward end of the receiver, and so as to move in a plane parallel with the plane of the rear end of the barrel and magazine, the said dog constructed with an opening through it corresponding to the opening in the magazine, and with a nose, *d*, which normally stands within the area of the cartridge-chamber, substantially as described, and whereby said nose is adapted to engage the groove in the cartridge-shell.

386,291. GATE. CHARLES W. BIRDSOTHER, Grand Rapids, Ohio. Filed Oct. 14, 1887. Serial No. 252,231. (No model.)

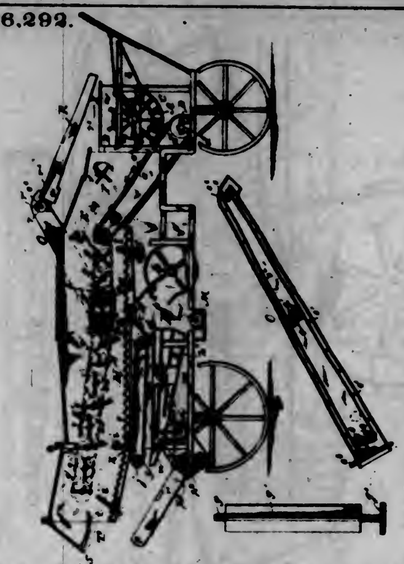


Claim.—1. In combination with the fixed post C, the horizontally-sliding fence-panel B, the stop b^2, to prevent the retreat of said panel, and the vertically-swinging gate pivoted to the sliding panel, as shown.

2. In combination with a pivoted vertically-swinging gate, a horizontally and longitudinally sliding frame having the gate attached to its forward end, and arranged to be sustained when open wholly thereby.

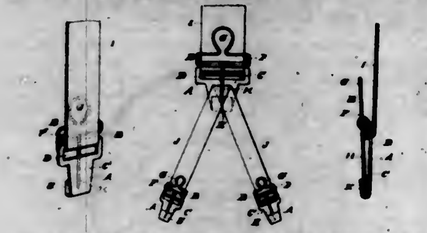
386,292. THRASHING-MACHINE. WASHBURN BRADSLEY, Pine Lake, assignor of one-half to Salmon Brown, Ellsworth City, Wis. Filed Mar. 15, 1884. Renewed Mar. 15, 1888. Serial No. 267,293. (No model.)

386,292.



Claim.—The combination of the carrier H, having an open portion, a series of beaters arranged above said open portion and having their blades set at right angles to each other, a shoe, K, an endless closed and slatted carrier above the same, and a fan adapted to deliver a current of air above and over said shoe and upward through the carrier H and create a vacuum beneath the shoe, substantially as set forth.

386,293. BUCKLE. GEORGE BRADSHAW, Mattoon, Ill. Filed Nov. 26, 1887. Serial No. 256,260. (No model.)



Claim.—1. The combination of the piece A, of sheet metal, provided at one end with a keeper-socket and at the other end with a a transverse loop, and the piece B, made of wire and provided with the transverse loop, the finger-hold, and the tongue adapted to engage the keeper, substantially as specified.

2. The combination of the piece A, consisting of the plate C, the loop D, and keeper-socket E, with the piece B, consisting of the loop F, the finger-hold G, and the tongue or pin H, substantially as specified.

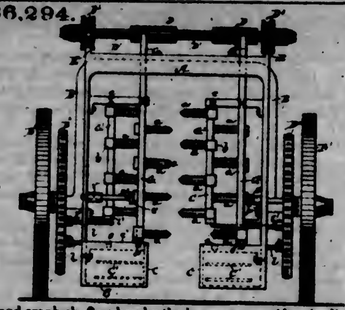
3. The combination of the device composed of the pieces A and B, the former having a transverse loop at one end and a keeper at the opposite end, and the piece B being provided with a transverse loop and a pin or tongue to engage the keeper on the part A, with the strap or web I engaging the pieces A and B, substantially as specified.

4. The combination of the metallic piece provided with a transverse loop and a keeper, the metallic piece B, having a transverse loop and a tongue or pin extending therefrom, and the web engaging said parts, substantially as specified.

386,294. COTTON-HARVESTER. OWEN T. BOSS and WILLIAM L. LASSLEY, Newark, N. J.; said Boss assignor to the United States Cotton Harvester Company, of New York. Filed Jan. 14, 1886. Serial No. 188,884. (No model.)

Claim.—1. In a cotton-harvester, the combination, with a vehicle arched to pass over the cotton-plants, of a stem-carrying bar sustained movably upon the vehicle at each side of the plants, a series of picker-stems journaled upon each bar, the gearing for rotating the stems in one direction to gather the cotton and in the opposite direction to discharge the same, the cams for moving the bar laterally to and from the cotton-plant, and the slotted levers, crank-pins, and crank-shafts, whereby the bars are moved longitudinally at a differential speed, substantially as specified.

386,294.



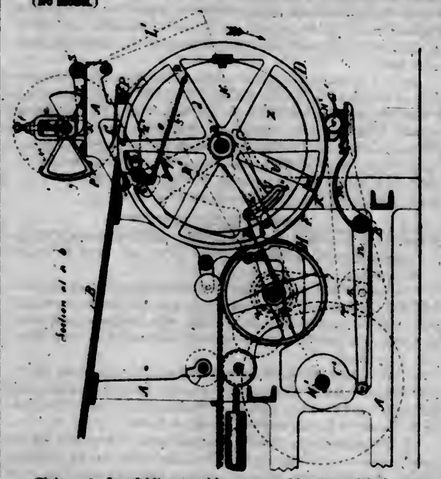
2. In a cotton-harvester, the combination, with a vehicle arched to pass over the cotton-plants, of a stem-carrying bar sustained movably upon the vehicle at each side of the plants, a series of picker-stems journaled upon such bar, the gearing for rotating the stems in one direction to gather the cotton and in the opposite direction to discharge the same, the cams for moving the bar laterally to and from the cotton-plant, and the slotted levers, crank-pins, and crank-shafts, whereby the bars are moved longitudinally at a differential speed, substantially as specified.

3. In a cotton-harvester, the combination, with the vehicle, of the shafts D D', arranged transversely upon the top of the same, frames suspended from the shafts and movable laterally thereon, picker-stems journaled upon said frames, means actuated by the wheels of the vehicle to reciprocate the shafts and frames lengthwise of the vehicle, and fixed cams and means connecting them with the frames, whereby they are adapted to move the frames laterally when thus reciprocated, substantially as set forth.

4. In a cotton-harvester, the combination, with the reciprocating frame carrying a series of picker-stems, of the cam provided with the outer and inner grooves, and inclined channels at each end, a switch at the end of the rear channel, and a pin upon the frame fitted to such cam, substantially as set forth.

5. In a cotton-harvester, the combination, with a stem-carrying bar having a series of picker-stems journaled therein, of sprocket-wheels upon the arbors of such stems, an endless chain in contact with the sprocket-wheels, and a guard carrying the chains adjacent to the wheels to retain the chain thereon, substantially as specified.

386,295. MACHINE FOR FOLDING AND PASTING SHEETS OF PAPER. CYRUS CHAMBERS, Jr., and WILLIAM MERRIAM, Philadelphia, Pa., assignors to said Chambers. Filed Sept. 30, 1882. Serial No. 73,143. (No model.)



Claim.—1. In a folding-machine, the combination, with the rotary main drum having mechanism for gripping and releasing the sheets of paper, substantially as described, of the rotary feed-segments mounted

in reciprocating bearings, and the blade, all arranged substantially as and for the purpose set forth.

2. The vertically-reciprocating rotary feed-segments and blade, the stop-gages, the cam Z', and the main drum provided with the transverse bar M, and the ostecting gripper-fingers G, and the crossing-blade E, all constructed, combined, and operating substantially as and for the purposes set forth.

3. The combination, with the rotary main drum having mechanism for gripping and releasing the sheets of paper and the cam, both substantially as described, of the adjustable supplemental cam, the rotary feed-segments mounted in the reciprocating bearing, and the adjustable folding-blade, as and for the purpose set forth.

4. The combination, with the main drum and its gripping mechanism, of the feed-segments formed with the blade and having the shaft mounted in movable boxes, and the lever L on rock-shaft S, actuated by mechanism substantially as described, as and for the purpose set forth.

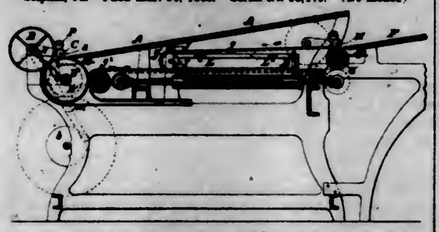
5. In combination with the main drum provided with the paste-blade F in the arc of a circle concentric with the drum, the paste-fountain provided with the roller H', substantially as shown and described.

6. In combination with the main drum provided with the paste-blades F and K, the vibrating fountain G', adapted to receive either a narrow-faced roller for applying paste to the blade F or a long-faced roller for applying paste to the blade K, substantially as set forth.

7. In combination with the drum and a pasting-blade thereon, the vibrating paste-fountain G', provided with a roller rotated at a surface speed equal to that of the said drum, substantially as stated.

8. The drum D, having the adjustable crossing-blade E and the grippers G, its shaft D', carrying the gears 1 and 1^a, the feed-segments, their shaft S, with gear 2, the nipper-roll, and its shaft C', having a gear which engages with the gear 1^a on shaft D', all combined, arranged, and operating substantially as and for the purpose described.

386,296. PAPER-FOLDING MACHINE. CYRUS CHAMBERS, Jr., Philadelphia, Pa. Filed Mar. 31, 1888. Serial No. 90,179. (No model.)



Claim.—1. In a folding-machine, the combination of mechanism, substantially as described, for folding the main sheet, the feed-table located at the rear end of the machine from which the supplemental sheets are fed, the tapes, the turn-over roll, the folding-blade, and the folding-rolls, also substantially as described, for feeding in the supplemental or inside sheets at the rear of the machine and conveying and turning them over and folding them with the folded main sheet, as set forth.

2. In a folding-machine, the combination of mechanism, substantially as described, for folding the main sheet and conveying the same toward the rear of the machine, a stop for arresting the folded sheet, the rolls B^s and knife L, arranged at right angles to the first pair of folding-rolls, the roll G and means, substantially as described, for feeding in the supplemental sheet, the turn-over roll I, and means, also substantially as described, for conveying the supplemental sheet into position to be folded in with the main sheet, as set forth.

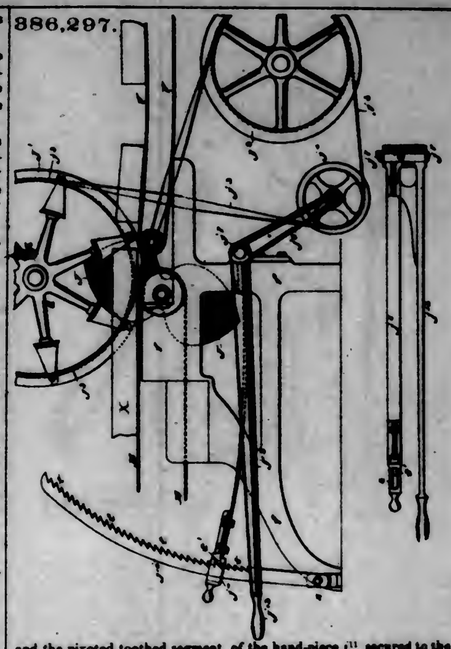
386,297. BELT-TIGHTENER FOR BRICK-MACHINES. CYRUS CHAMBERS, Jr., Philadelphia, Pa. Filed July 26, 1887. Serial No. 245,307. (No model.)

Claim.—1. The combination of the friction-pulley, the friction-belt, the tightener, the spring-regulating arm, the handle having the tooth, and the toothed segment, movable with relation to each other, all constructed and adapted to operate substantially as and for the purpose set forth.

2. The combination of the friction-pulley, the friction-belt, the pivoted tightener, the spring-regulating arm, the handle having the tooth, and the pivoted toothed segment, all constructed and adapted to operate substantially as and for the purpose set forth.

3. The combination of the friction-pulley, the friction-belt, the pivoted tightener, the spring-regulating arm, the handle having the tooth, and the pivoted toothed segment, together with the hand-lever j^{12}, all constructed and adapted to operate substantially as and for the purpose set forth.

4. The combination, with the pivoted tightener, the spring-arm, and the pivoted toothed segment, of the hand-piece j^{11}, secured to the end of said spring-arm and provided with the handle, slot e, and the tooth f, projecting into said slot, substantially as and for the purpose set forth.



386,298. GONG-BELL. JOHN P. CROSBIE, Kensington, Conn. Filed Apr. 23, 1888. Serial No. 271,512. (No model.)

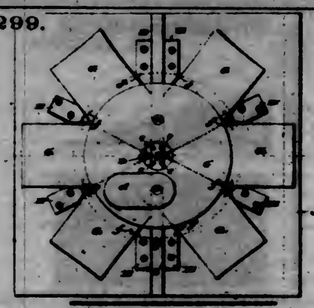


Claim.—In combination, the base-plate formed with a guide-slot, l, the pivoted lever h, the pivoted hammer d, carrying the catch f, the pawl j, pivoted on the lever h, and provided with a pin, k, to engage the guide-slot on the base-plate and draw the latch and pawl apart, and the springs pressing on the lever, hammer, and pawl, all substantially as described, and for the purpose specified.

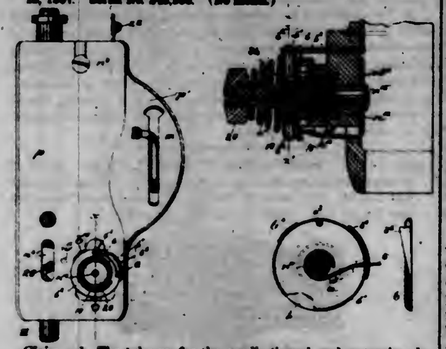
386,299. ANIMAL-TRAP. THOMAS W. CRESSE, Orangeville, Pa. Filed May 10, 1888. Serial No. 273,411. (No model.)

Claim.—The combination, in an animal-trap, of a board or support, A, having a central opening, B, blocks E E, having ends beveled, said beveled ends projecting within the circumference of the opening B, platforms G, having their inner ends tapered and provided at their parallel sides with pivot-pins f, a cross-bar, E', having a central recess, the platform C, with a central opening, and a pivoted lid to provide a bait-receptacle, located centrally and above the pivoted platforms, substantially as shown, and for the purpose set forth.

386,299.



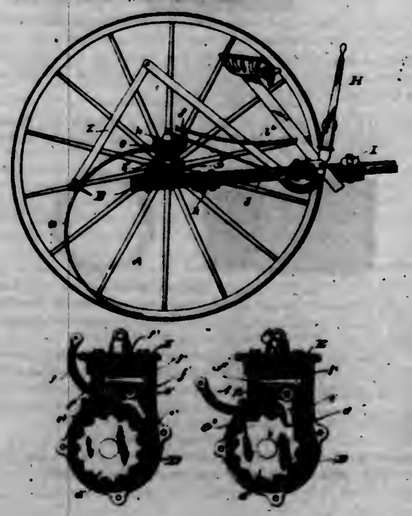
386,300. THREAD-CONTROLLING MECHANISM FOR SEWING-MACHINES. WILBUR F. BEAL, Bridgeport, Conn., assignor to The Wheeler & Wilson Manufacturing Company, same place. Filed Aug. 15, 1887. Serial No. 246,966. (No model.)



Claim.—1. The take-up for the needle-thread and a tension device, combined with a spring-actuated thread-controlling arm having an open eye, 6, between its ends, and at one end a lock and a stud engaged by the lock, to operate substantially as described.

2. The take up for the needle-thread, a tension device, and the lip applied to one member of the tension device, combined with the spring-actuated thread-controlling arm having an open eye, 6, between its ends and at one end a lock and a stud engaged by the lock, to operate substantially as described.

386,301. RAKE. ROBERT W. RUSH, Springfield, Ohio, assignor to the Springfield Manufacturing Company, same place. Filed June 4, 1887. Serial No. 240,261. (No model.)



Claim.—1. The combination of the rake-head and an axle made in two parts, the inner ends of said parts being journaled in a case secured to the rake-head midway of its length, each of said axle parts being provided at the outer end with a carrying-wheel and at the inner end with a ratchet-wheel, the said ratchet-wheels being inclosed in said case, pawls on said rake-head adapted to engage said ratchet-wheels, and a trip-lever secured to the rake-head and adapted to engage said pawls and withdraw them from their engagements with said ratchet-wheels, substantially as specified.

2. The combination, with the rake-head, a divided axle, and the carrying-wheels, of the case secured to the rake-head midway of its length, in which the inner ends of the respective parts are journaled, ratchet-wheels on said divided axle located in said case, pawls on said rake-head adapted to engage said ratchet-wheels, a trip-lever to engage and disengage said pawls, and a catch for holding the trip-lever in either position of adjustment, substantially as set forth.

3. The combination of the rake-head and the divided axle, the parts of which are provided with ratchets adapted, respectively, to engage pawls on the rake-head, a ratchet-case surrounding said ratchets, and a truss or support attached at either end to the rake-head and extending under and bearing against said ratchet-case, substantially as specified.

4. The combination, with the rake-head and an axle made in two parts, said parts being connected together by a case in which the respective parts are journaled, of the truss or support secured at either end to said rake-head and extending under and bearing against said case to form a truss or bridge therefor, substantially as set forth.

5. The combination, with the rake-head, the divided axle, and the carrying-wheels, of the ratchet-wheels on said divided axle, a case secured to the rake-head and having bearings on the inner ends of the parts of said axle, pawls attached to said rake-head adapted to engage with said ratchets, said pawls being each provided with a projecting leg adapted to come in contact with a trip-lever and thus hold said pawls out of engagement with said ratchets, substantially as set forth.

6. The combination, with the rake-head, the divided axle, and the carrying-wheels, of the ratchet-wheels on said divided axle, the ratchet-case about said ratchet-wheels, the pawl-case secured to the rake-head and provided with pawls adapted to engage said ratchets, a trip-lever pivoted in said pawl-case and adapted to come in contact with said pawls and hold them out of engagement with said ratchets, the catch-lever f^3, adapted to engage with said trip-lever in different positions, and a spring in the top of said pawl-case adapted to bear against said catch-lever, substantially as and for the purpose set forth.

7. The combination, with the divided axle and the ratchet-wheels thereon, of the pawls adapted to engage with the respective ratchet-wheels and provided with projecting legs c^2, the trip-lever provided with a toe, f^4, adapted to engage the said legs c^2, and provided with a projection, f^5, the catch-lever f^3, adapted to engage on either side of the projection f^5, and the spring f^6, substantially as set forth.

8. The combination of the rake-head, the divided axle, and the carrying-wheels, the ratchet-wheels on said divided axle, the case about said ratchets, on which the respective parts of the said axle are journaled, the pawl-case on the rake-head provided with the pawls and trip-lever therein, said pawls being adapted to engage said ratchets, or to be held out of engagement with said lever, and a truss or support passing under and bearing against said case and connected to said rake-head, substantially as set forth.

386,302. APPARATUS FOR BLOWING GLASS. RICHARD B. BOSWAU, FRANCIS HASLETT, and JAMES JOHNSTON, Dublin, County of Dublin, Ireland. Filed July 9, 1887. Serial No. 243,880. (No model.) Patented in England Mar. 3, 1887, No. 3,259.



Claim.—1. In apparatus for blowing glass, the combination of the chamber a, the pipe b, the piston d, and the piston-rod d', said chamber a being provided with the passage a^2 for allowing the free movement of air past the piston when it is fully depressed, as herein specified.

2. In apparatus for blowing glass, the combination of the chamber a, the pipe b, the hollow piston d, and the hollow piston-rod d', with the tubular cap f, for providing for the ingress and egress of air at will in any position of the piston and for the repetition of the stroke of the piston, in the manner substantially as herein specified and set forth.

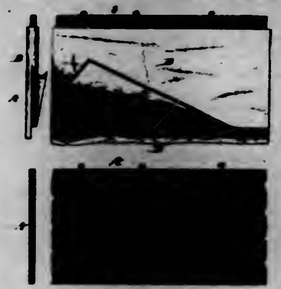
3. In an apparatus for blowing glass, the chamber a, provided with the passages a^2 at its lower end, and the pipe b, in combination with the hollow piston d, hollow piston-rod d', the tubular cap f, having side perforations, g, and sliding upon the upper end of said piston-

rod, whereby said perforations may be opened or closed, as and for the purpose specified.

4. The tubular piston-rod *d'* and lateral pin g^3, in combination with the tubular cap *f*, said cap comprising a body having a longitudinal slot, *h*, engaging said pin, and also having lateral openings *g*, so located as to be opened and closed by the sliding motion of the cap permitted by said slot and pin, and a closed top, *p*, substantially as specified.

5. In an apparatus for blowing glass, the chamber *a*, tube *b*, hollow piston *d*, and hollow piston-rod *d'*, in combination with the tubular cap *f*, fitting and sliding upon the upper end of said tubular piston-rod and provided with lateral openings, as described, the elastic material g^2 within said cap above the end of the piston-rod, the closed top *p*, and transverse pin *g'* for securing it in place, as and for the purpose specified.

386,303. BELTING. JAMES R. BRIDSON and THOMAS MIDGLEY, Beaver Falls, Pa. Filed Jan. 24, 1883. Serial No. 261,709. (No model.)

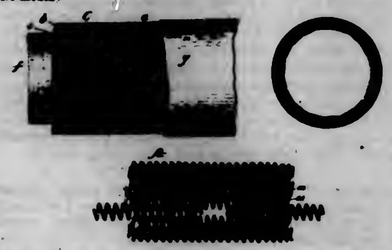


Claim.—1. As an improved article of manufacture, a belt composed of elongated wire links having the interstices between the links filled with rubber and forming a compound or metallic and rubber surface, substantially as described.

2. As an improved article of manufacture, a belt composed of elongated wire links having the interstices between the links filled with rubber and provided with metallic working-edges, substantially as described.

3. As an improved article of manufacture, a belt the surfaces of which are covered with canvas or rubber cloth and provided with metallic working-edges, substantially as described.

386,304. HOSE OR TUBING. JAMES R. BRIDSON and THOMAS MIDGLEY, Beaver Falls, Pa. Filed Feb. 13, 1883. Serial No. 263,902. (No model.)



Claim.—1. Flexible hose composed of a tubular metallic body formed of interwoven sections of coiled wire and a covering of rubber or its equivalent, substantially as described.

2. Flexible hose composed of a tubular metallic body formed of interwoven sections of coiled wire embedded in and covered with rubber or other flexible plastic material, substantially as described.

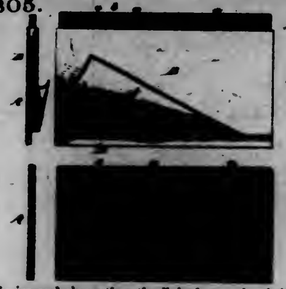
3. Flexible hose composed of a continuous tubular metallic body formed of interwoven elongated links, having the interstices between the links filled with rubber and its outer surface covered with the same, substantially as described.

4. Flexible hose composed of a tubular metallic body formed of interwoven elongated links, having the interstices filled with rubber and provided with a canvas lining and covering, substantially as described.

386,305. MANUFACTURE OF BELTING. JAMES R. BRIDSON and THOMAS MIDGLEY, Beaver Falls, Pa. Original application filed Jan. 24, 1883, Serial No. 261,709. Divided and this application filed Feb. 29, 1888. Serial No. 265,721. (No model.)

Claim.—1. The method of manufacturing belting herein described, which consists in forming a metallic body by intersecting coiled

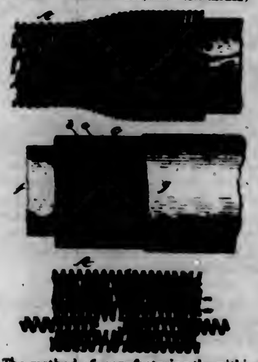
386,305.



sections of wire and elongating the links by passing it between rolls, then coating the surface of the body with rubber or its equivalent, and finally passing the whole between heated metallic bodies, forcing the rubber into the interstices of the body and forming a compound or metallic and plastic surface.

2. The method of manufacturing belting herein described, which consists in forming a metallic body by intersecting coiled sections of wire and elongating the links by passing it between rolls, then coating the surface of the body with rubber or its equivalent, then passing the coated body between heated metallic bodies under pressure, forcing the rubber into the interstices of the body, then applying canvas or rubber cloth to the surfaces of the filled body, and again subjecting the whole to heat and pressure.

386,306. MANUFACTURE OF HOSE OR TUBING. JAMES R. BRIDSON and THOMAS MIDGLEY, Beaver Falls, Pa. Original application filed Feb. 10, 1883, Serial No. 263,902. Divided and this application filed Feb. 29, 1888. Serial No. 265,722. (No model.)



Claim.—The method of manufacturing the within-described flexible hose, which consists in interweaving sections of coiled wire and forming a tube, expanding the tube and elongating the links, then covering the tube with rubber or its equivalent material, and subjecting the whole to heat, for the purpose set forth.

386,307. METALLIC HOSE. JAMES R. BRIDSON and THOMAS MIDGLEY, Beaver Falls, Pa. Filed Mar. 17, 1888. Serial No. 267,800. (No model.)



Claim.—1. Metallic hose or tubing consisting of an outer body or tube of interwoven sections of coiled wire, and a lining of rubber or its equivalent material incorporated with the body, substantially as described.

2. Metallic hose or tubing consisting of an outer body or tube of interwoven sections of coiled wire having the helices compressed in the direction of the length of the tube, and a lining of rubber or its equivalent material adhering to the metallic tube, substantially as described.

386,308. WATCH-CASE SPRING. HUBA J. FELIX, New York, N. Y. Filed Feb. 25, 1888. Serial No. 265,264. (No model.)

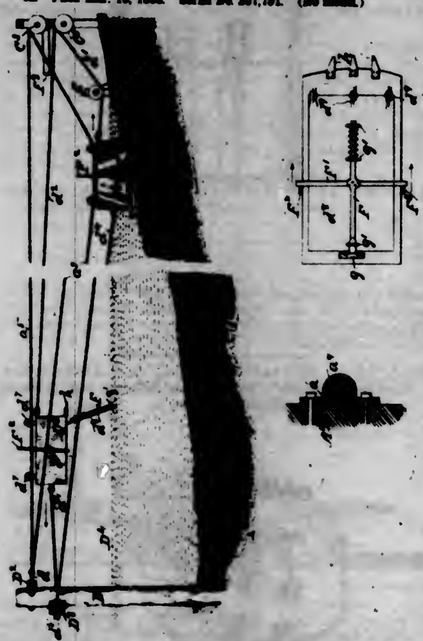
386,308.



Claim.—1. A watch-case spring consisting of an arc-shaped supporting-piece, a steel spring having a lip or catch at one end and a shank of greater height than the supporting-piece, said shank being extended over the entire length of the supporting-piece and attached thereto by suitable fastening devices, substantially as set forth.

2. The combination, with a watch-case center having an interior recess and an interior shoulder adjacent to said recess, of a spring formed of an arc-shaped supporting-piece fitting into said recess and a steel spring attached to said supporting-piece and being made of greater height and length than the same, the projecting edge of the spring resting against the above-mentioned shoulder, and said spring being provided at that end extending beyond the supporting-piece with a lip or catch, substantially as set forth.

386,309. DREDGING-MACHINE. MICHAEL GALLAGHER, Chicago, Ill. Filed Mar. 19, 1888. Serial No. 267,751. (No model.)



Claim.—1. In a dredging apparatus, the combination, with the shore framing-timbers, of the main driving-shaft B, provided with journal-bearings *a* in said shore structure, the friction driving-drums $B' B^2$, mounted on the respective ends of said driving-shaft, the counter-shafts B^3 B^4, located above the power-shaft B, the friction-drums $a' a^2$, mounted on the respective counter-shafts, the cable-drums C C' C^2 C^3, the carrying-cables a^3 a^4 a^5 a^6, having their shore ends secured to said cable-drums, the water end of the structure consisting of a number of piles and framing-timbers to which the outer ends of the carrying-cables are rigidly secured, and the dredging-buckets riding upon said cables, substantially as and for the purpose set forth.

2. In a dredging apparatus, the combination, with the shore framing-timbers, of the driving or power-shaft B, provided with journal-bearings *a*, of the counter-shafts B^3 B^4, journaled below said power-shaft, the friction-drums a^7 a^8, mounted on said counter-shafts, the cable-winding drums C^4 C^5, also mounted on said shafts, the pulling cables d' d^3, and the piles E E, the guide-sheaves d^2, the dredging-buckets, the cable d^5, and the pulleys d^3 d^4, one end of said cables being secured to their respective winding-drums, while the opposite end is attached to the inner or front end of the dredging-buckets, substantially as and for the purpose set forth.

3. In a dredging-machine, the combination, with the power-shaft B and the friction driving-drums $B' B^2$, of the several counter-shafts arranged above and below said shaft B, the friction-drums mounted on said counter-shafts, the cam-ring a^{10}, formed on the respective outer ends of said counter-shafts, the brake-blocks b b' b^2 b^3, and the lever or levers b^4, whereby the friction-drums on the counter-shaft may be thrown into and out of contact with the companion drums on the power-shaft and the operation of the same fully controlled, substantially as and for the purpose set forth.

4. The combination, with a dredging-bucket, of the hinged drop-bottom d^6, the locking-bolt F, the socket-catch g, the spring g', the cross-bar F', the vertical levers F^2 F^3, and the tripping-arms F^4, substantially as and for the purpose set forth.

386,310. BRACE. RICHARD D. GALLAGHER, Chicago, Ill., assignor to the Gallagher-Dickinson Broom Company, same place. Filed Jan. 3, 1887. Serial No. 223,212. (No model.)



Claim.—1. A retaining-plate, D, formed of sheet metal, having a socket, *e*, and flange *q*, substantially as and for the purpose set forth.

2. A retaining-plate, D, formed of sheet metal, having a collar, *e*, a flange, *q*, and ears *p*, substantially as and for the purpose set forth.

3. A retaining-plate, D, formed of two thicknesses of sheet metal, having a collar, *e*, and lateral flanges *q* and ears *p* on one edge, substantially as and for the purpose set forth.

4. In a broom having the broom-corn bent at its end across a suitable base, C, on the broom-handle, the combination, with the base and broom-corn, of a retaining-plate, D, formed of sheet metal and having a collar, *e*, fitting upon and secured to the end of the broom-handle, and provided with flanges *q* and ears *p* on one edge, held against the bent end of the broom-corn, substantially as and for the purpose set forth.

5. In a broom, the combination of the handle B, enlarged in diameter toward one end to form a shoulder, *f*, a grooved block, C, broom-corn, A, having its end bent crosswise upon the block C, and a retaining-plate, D, comprising two sheet-metal plates secured flatwise together and provided with a collar, *e*, closely fitting the end of the handle, flanges *q*, and ears *p*, and forced and secured into position against the bent end of the broom-corn, substantially as described.

386,311. TWO-WHEELED VEHICLE. FREDERICK W. GAY, Ottawa, Ill. Filed Feb. 28, 1888. Serial No. 265,966. (No model.)



Claim.—1. In a two-wheeled vehicle, the combination, with the thills and the axle, of the converging seat-arms secured to the thills, and the springs having the spiral portion, the flattened portion, and the downwardly and outwardly bent portion, substantially as specified.

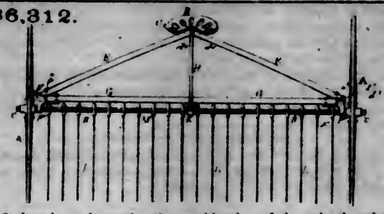
2. In a two-wheeled vehicle, the combination, with the thills and the axle, of the converging seat-arms, the spiral spring having the flattened portion secured to the arms, and the opposite downwardly and outwardly bent portions secured by clip-ties, the outer ends of said springs resting on the thills or cross-bar, substantially as specified.

3. In a two-wheeled vehicle, the combination of the thills A, the axle B, the cross-bar bolted to the thills, the iron brace-rods D, the converging arms E, bolted to the thills at *a*, forming a support for the seat, the curved bars G, the transverse slats, and the spiral springs I, having the portion J rigidly attached to the under side of the arms E, and the opposite end portions, *c*, passing through the space *d*, and having the downwardly and outwardly turned portions, the clips, and the clip-tie, substantially as specified.

386,312. HORSE HAY-RAKE. ISAAC H. GORDON, Bellefonte, Pa. Filed July 14, 1887. Serial No. 244,071. (No model.)

Claim.—1. In a horse hay-rake, the combination of the axle B, the triangular supporting-frame composed of the base-beam G and the inclined pieces E E, and the vertical struts H H, extending from the apex of the frame to the base-beam and axle, substantially as and for the purpose described.

386,312.



2. In a horse hay-rake, the combination of the axle, the wheels, the draft-frame having the cross-bar a^7, the triangular supporting-frame, and the brace V, extending from the said cross-bar to the apex of the frame, substantially as described.

3. In a horse hay-rake, the combination of the axle, the wheels, the draft-frame, the triangular supporting-frame composed of the base-beam G and the inclined pieces E E, the abutment-bearings F, upon which the lower ends of the pieces are seated and provided with the grooves J, and the braces T T, extending from the draft-frame into the grooves in the abutment-bearings, substantially as and for the purpose described.

4. In a horse hay-rake, the combination of the axle, the wheels, the draft-frame, the triangular supporting-frame, the abutment-bearings F, the braces T T, reaching from the point of attachment of the whiffletree to the draft-frame to points near the ends of the base-beam of the triangular supporting-frame and then secured thereto by bolts a^4, substantially as and for the purpose described.

5. In a horse hay-rake, the combination of the base-beam G, inclined pieces E E, abutment-bearings F F, the pieces seated at their lower ends on and secured to the latter and to the base-beam by the bolt a^4, the axle, the wheels, the rake-teeth, and means for raising and lowering said teeth, substantially as and for the purpose described.

6. The abutment-bearing F, formed with end and side flanges, in combination with the axle and supporting-wheels, rake-teeth, and triangular supporting-frame, substantially as and for the purpose described.

7. In combination with the axle, wheels, and rake-teeth and triangular supporting-frame and braces T, the bearings F, provided with V-shaped grooves J, and the end and side walls, whereby they afford substantial support for the triangular supporting-frame and can be used on either right or left hand end of base-beam G of said frame, substantially as and for the purpose described.

8. The shafts R, provided with bearings S, which are bolted to the base-beam G and straddled upon the axle B, in combination with the said axle and the rake-teeth thereof, substantially as and for the purpose described.

9. The rake-teeth L, curved into semi-encircling form at their upper ends, in combination with the axle having a recess or recesses in its periphery, the half-clasp bearing-plate M, having a groove for the curved part of the teeth, and the half-bearing N, with neck l', stop projection d, and clamp-bolts, substantially as and for the purpose described.

386,313. STONE-CHANNELING MACHINE. CYRIL W. GREEN, West Rutland, Vt., assignor of one-half to Duncan M. Sobell, same place. Filed Dec. 27, 1887. Serial No. 258,944. (No model.)

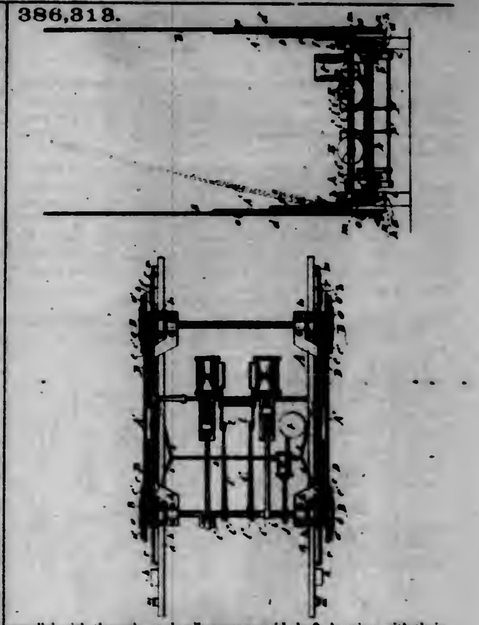
Claim.—1. A stone-channeling machine, composed of a stationary track, a carriage having carrying-axles, with wheels mounted on said track, cranks or eccentrics on one of said axles, the motor on the carriage, connected with the cranks or eccentrics, levers for reversing the valve-motion of the motor, and cutters sustained rigidly on the carriage, substantially as described and shown.

2. The combination of the track $a\ a$, carriage A, mounted on said track, the cutter-bars B B, supported movably longitudinally on the carriage and provided with racks $d\ d$, shafts $c\ c$, pivoted to the carriage, pinions $c'\ c'$ on one end of the shafts, engaging the racks $d\ d$, ratchet-wheels D D, connected to the opposite ends of the shafts, levers $f\ f$, pivoted to the carriage, pawls $g\ g$, connected to the levers and engaging the ratchet-wheels, and inclines $h\ h$ in the path of the carriage and in position to be encountered by the free ends of the levers $f\ f$, substantially as and for the purpose set forth.

3. The combination of the track $a\ a$, carriage A, provided with the driving-axle i, engines E E on the carriage and connected with the driving-axle, links $l\ l$, connected with the valve-gears of the engines, stops $m\ m$ in the path of the carriage, a lever for shifting said links, and a push-bar adapted to come in contact with the aforesaid stops in the travel of the carriage, and thereby actuate the said shifting-lever, substantially as set forth.

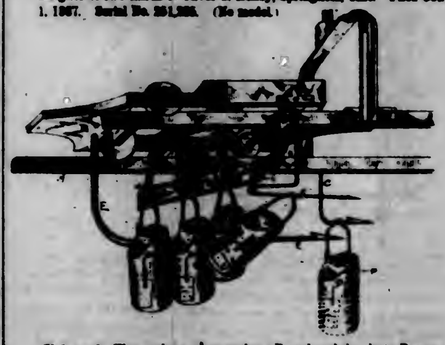
4. In combination with the track-rails $a\ a$, formed with the horizontal flanges $a'\ a'$, the carriage A, having carrying-axles, with wheels mounted on the aforesaid rails, the shaft K, journaled on the carriage

386,318.



parallel with the axle, and rollers $c\ c$ on said shaft, bearing with their peripheries on the under side of the aforesaid flanges of the track-rails, and the cutter-bars B B, secured to the carriage, substantially as described and shown.

386,314. CASH-CARRIER. Gustus F. Gunns, Kalamazoo, Mich., assignor of two-thirds to Oliver S. Kelley, Springfield, Ohio. Filed Oct. 1, 1887. Serial No. 251,333. (No model.)



Claim.—1. The cash-carrier carriage B and cash-bucket D, combined with the track A and station-hook F, permanently attached to said track and provided with the return-bend h in a horizontal plane, or thereabout.

2. The combination of the carriage B, provided with retaining stops or abutments for the balls of the cash-bucket, and with the supporting-hooks G, having the extended fingers k, with stationary projecting trip-fingers and receiving-hooks at the salesmen's stations, all substantially as described.

3. The combination of the carriage adapted for outward and returning trips, having thereon a single gathering-hook and a series of delivering-hooks, each situated and moving in a different line from the others, the cash-buckets, the receiving-hooks at the several stations situated correspondingly to the delivery-hooks, graduated trip-fingers, and a series of supporting-hooks, one at each station, in line with the single gathering-hook, all substantially as described.

386,315. ANTI-FRICTION BEARING. HENRY HARRIS, Boston, Mass. Filed Feb. 14, 1888. Serial No. 263,939. (No model.)

Claim.—1. An anti-friction journal-bearing consisting of two independent boxes, as a^3, each provided with a shaft or arbor, a^2, having

386,315.

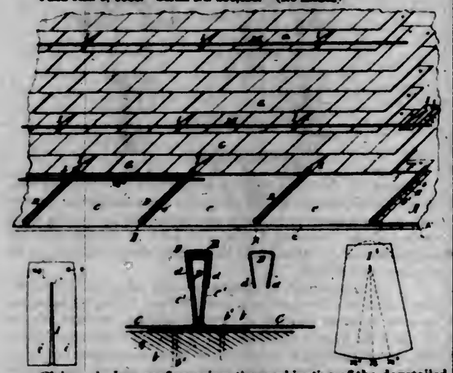


hubs or enlarged rollers, as a^6, at its opposite ends, adapted to run free in the said boxes and forming the bearings for the journal of a shaft or axle, combined with a bearing for the shaft or arbor a^2 between the said hubs or rollers, substantially as described.

2. An anti-friction journal-bearing consisting of two independent boxes, as a^3, each provided with a shaft or arbor, a^2, having hubs or enlarged rollers, as a^6, at its opposite ends, and forming the bearing for the journal of the shaft or axle, combined with rollers $c\ c'$, of different diameters, interposed between the said hubs and forming the bearing for the arbor a^2, substantially as described.

3. An anti-friction journal-bearing consisting of two independent boxes, as a^3, each provided with a shaft or arbor, a^2, having hubs or enlarged rollers, as a^6, at its opposite ends, and forming the bearings for the journal of the shaft or axle, and collars, as $b^3\ b^3$, mounted on the arbor a^2 between said hubs and each provided with a groove, combined with rollers $c\ c'$, of different diameters, having their journals supported in the said grooves and forming the bearing for the arbor a^2, substantially as described.

386,316. ROOFING. SAMUEL R. HAWKINSON, Middlebury, Vt. Filed Jan. 3, 1888. Serial No. 259,688. (No model.)



Claim.—1. In a roof-covering, the combination of the dovetailed ribs B, the roofing-plates C, having upward-turned edges C' fitted against said ribs, the cap-strips D, having edges $d\ d$ overhanging and locking the edges of said plates to the ribs, and the flashing-point I, covering the upper end thereof, substantially as set forth.

2. In a roof-covering, the combination of the rib B, having attaching-flanges b and the dovetailed upright portion, the roofing-plates C, having the upward-turned edges C' fitted against the sides of said rib, the cap D, having sides $d\ d$ overhanging and locking the edges of said plates to the rib, the flashing-point I, and the straining-strip H, inserted between the cap and top of the rib, for the purpose set forth.

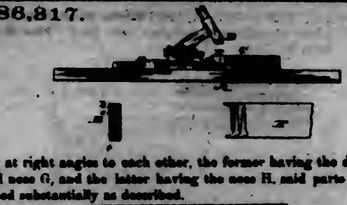
3. In a roof-covering, the combination of the folded metal flanged and dovetailed ribs B, the roofing-plates C, having the upward-turned edges that fit against the sides of said ribs, the cap-strips D, having overhanging edges that lock the edges of said plates to the sides of the ribs, and flashing-points I, substantially as and for the purpose set forth.

4. In a roof-covering, the combination of the ribs B, having attaching-flanges b and dovetailed upright portion, the plates C, having upward-turned side edges, C', and locking-folds at their upper and lower edges, the overhanging cap D, the fastening-strips F, the point-flashings I, and the slates, tiles, or shingles G, as shown and described.

386,317. CUT-NAIL MACHINE. BERNARD HEMANN, Belleville, Ill. Filed Aug. 2, 1887. Serial No. 246,267. (No model.)

Claim.—A cut-nail machine having a bed-plate with the bed-knife C secured thereto, the cutter B, with a cutting-edge having projection b and bevels c and c', the said bed-knife C having a cutting-edge corresponding to said edge of cutter B, and shaping-dies D and E, operat-

386,317.



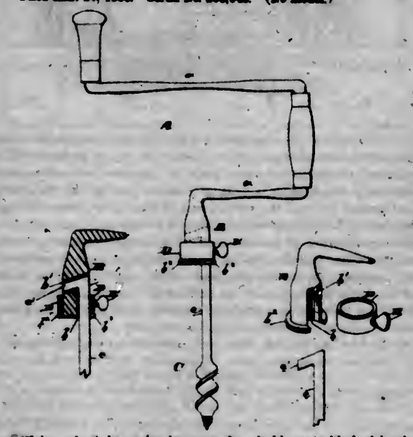
ing at right angles to each other, the former having the depression a and nose G, and the latter having the nose H, said parts being combined substantially as described.

386,318. MOWING AND REAPING MACHINE. WILLIAM H. H. HUTCHINS, Philadelphia, Pa. Filed Sept. 26, 1887. Serial No. 250,693. (No model.)



Claim.—The guard-finger B, with front projection, G, and having the shoulders L and S thereon, in combination with the finger-bar A, the rear end of said shoulder L projecting into a notch in the forward edge of said bar, the rocking ledger-plate F, having a grooved channel in its under face, and its rear end projecting above the plane of the finger-bar, and the cutter-bar E, with cutter C, the said cutter-bar abutting against the rear end of the rocking ledger-plate, substantially as and for the purpose set forth.

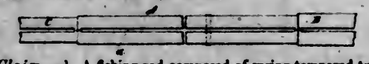
386,319. BRACE AND BIT. ISAAC HOLLIDAY, San Francisco, Cal. Filed Mar. 27, 1888. Serial No. 268,642. (No model.)



Claim.—1. A brace having a stock or holder provided with a longitudinal groove terminating in a cross socket or hole to receive the shank and bent end of a bit, in combination with a collar loosely fitted on the stock, and having a set-screw for holding it and binding on the bit-shank to secure it in its seat, substantially as herein described.

2. A brace having a stock or holder provided with a longitudinal groove terminating in a cross socket or hole, in combination with a bit having a shank for fitting in the longitudinal groove of the stock, and a bent end for fitting in the cross socket or hole thereof, and a collar loosely fitted on the stock, and having a set-screw for holding it and binding on the bit-shank to secure it in its seat, substantially as herein described.

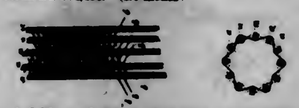
386,320. FISHING-ROD. EVERETT HOLCOMB, Bristol, Conn., assignor to the Horton Manufacturing Company, same place. Filed May 21, 1888. Serial No. 274,402. (No model.)



Claim.—1. A fishing-rod composed of spring-tempered tubular sections, the respective sections constructed with a longitudinal slot upon one side, the slot closed at distant points, so as to form a succession of bridges across the slot, substantially as described.

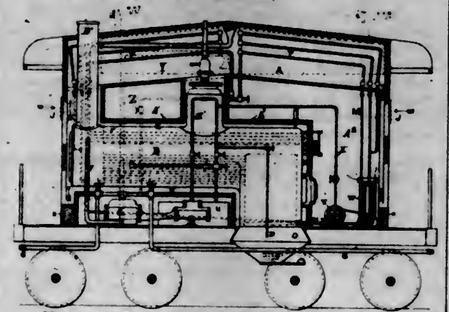
2. A fishing-rod consisting of several spring-tempered tubular sections, the said sections being of polygonal shape in transverse section, and the respective sections constructed with a longitudinal slot upon one of its sides, the said slots closed at distant points to form a succession of bridges across the slot, substantially as described.

386,321. FISHING-ROD. EVERETT HORTON, Bristol, Conn., assignor to the Horton Manufacturing Company, same place. Filed May 21, 1888. Serial No. 274,461. (No model.)



Claim.—A fishing-rod composed of one or more sections, the said one or more sections composed of several longitudinal elastic wires, *a*, arranged in a circle corresponding to the diameter of the rod required, combined with several strands of wire circumferentially around the said several longitudinal wires, but interlaced with the said longitudinal wires and with each other between the said longitudinal wires, substantially as described.

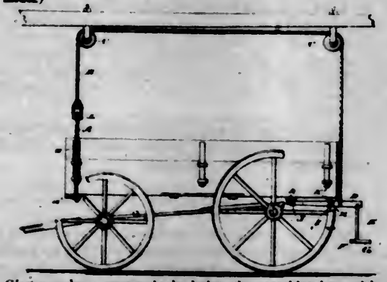
386,322. CAR-HEATING APPARATUS. THOMAS R. HOWE, Scranton, Pa., assignor of one-half to HARRY DE WITT, same place. Filed Mar. 4, 1887. Serial No. 280,732. (No model.)



Claim.—1. In combination with the main air-passage extending throughout the train, the chamber in communication with the external air, heating devices—such as steam-radiator coils—located therein, a steam-boiler, a passage communicating with the chamber and passing through the steam-space of the boiler above the water-line, an air-forcing apparatus located in said passage, and connections between the passage mentioned and the passage extending throughout the train, whereby when the air-forcing apparatus is operated the air is drawn into the chamber and is there heated, whence it passes through the steam-space of the boiler and is heated to a higher degree, and from thence it is supplied to the main air-pipe and distributed to the cars as desired, substantially as described.

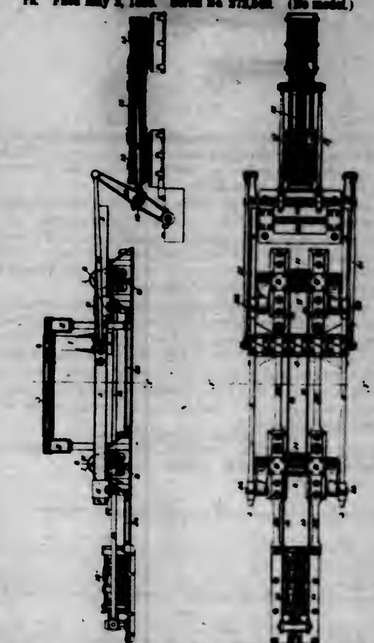
2. In a car-heating plant, the combination, with a fire-proof car divided into compartments, a steam-boiler, and steam-radiator coils communicating therewith located in one of said compartments, and a communication between said compartment and the external air, of an air-pipe leading from the top of said compartment through the steam-space of the boiler to an air-forcing apparatus located in another compartment, from whence the air is distributed throughout the train, substantially as described.

386,323. DEVICE FOR HOISTING WAGON-BEDS. JOHN M. KELSO, Mexico, Mo. Filed Jan. 30, 1888. Serial No. 261,623. (No model.)



Claim.—In a wagon-body hoist, the combination, with the overhead pulleys, the rope provided at one end with a sling and at the other end with a windlass-shaft adapted to fit in bearings secured to the wagon-body at one end, of a crank-arm secured by a transverse pivot to the outer end of said shaft and having a handle projecting at right angles from its outer end and a hook arranged at the opposite thereof to embrace the rope, whereby the shaft may be positively locked against rotation in either direction, substantially as described.

386,324. SHOT-MANIPULATOR. JULIAN KENNEDY, Pittsburg, Pa. Filed May 2, 1888. Serial No. 272,849. (No model.)



Claim.—1. An improvement in manipulators for rolling-mill feed-tables, which consists in a frame having the manipulator-arms mounted thereon, and stationary power-engines connected by intervening mechanism with the frame and operating to move it, together with the manipulator-arms, vertically and horizontally, substantially as and for the purposes described.

2. An improvement in manipulators for rolling-mill feed-tables, which consists in the combination, with a frame having the manipulator-arms mounted thereon, of vertically-movable boxes or supports by which the frame is supported and on which it is movable horizontally, and power-engines by which the boxes or supports are moved vertically and the frame is moved horizontally thereon, substantially as and for the purpose described.

3. An improvement in manipulators for rolling-mill feed-tables, which consists in the combination of a frame carrying manipulator-arms, and cranks which support the frame and which impart to it its vertical motions, said frame being horizontally movable on the cranks, and a power-engine which is connected with the frame and moves it horizontally, substantially as and for the purpose described.

4. In manipulators for rolling-mill feed-tables, the combination, with a horizontally-movable frame on which the manipulator-arms are carried, of a power-engine which moves said frame, and levers keyed to a common shaft and interposed in the connection between the engine and the frame, substantially as and for the purpose described.

5. In manipulators for rolling-mill feed-tables, the combination of a frame carrying manipulator-arms, cranks whereby the frame is moved vertically, and boxes or supports in which the frame is carried, said boxes or supports being pivotally connected with the cranks, substantially as and for the purpose described.

386,325. PROCESS OF MANUFACTURING METAL WHEELS. JAMES R. LITTLE, Quincy, Ill., assignor to the Quincy Metal Wheel Company, same place. Filed Nov. 2, 1887. Serial No. 254,116. (No model.)

Claim.—1. As an improvement in the construction of metal wheels, the method employed for securing a spoke within a hub, which consists in forming a mortise having an outwardly-increasing diameter and a threaded inner portion, and then placing within such mortise the end of a spoke, and by longitudinal compression (and lateral expansion) causing the same to fill said mortise, substantially as and for the purposes specified.

2. As an improvement in the construction of metal wheels, the method employed for securing a spoke within a hub, which consists in

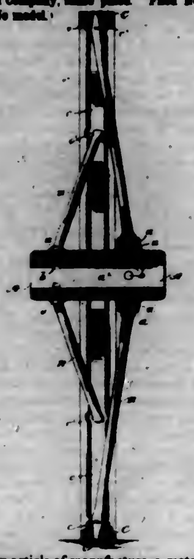
386,325.



forming a mortise that has an outwardly-increasing diameter and a threaded inner end, and then placing within such mortise the threaded end of a spoke, and by longitudinal compression (and lateral expansion) causing such end to closely fill said mortise, substantially as and for the purpose shown.

3. As an improvement in the construction of metal wheels, the method employed for securing a spoke within a hub, which consists in forming a mortise that has an outwardly-increasing diameter and a threaded inner end, and then placing within such mortise the end of a spoke, and by longitudinal compression (and lateral expansion) causing such end to closely fill said mortise and the body of said spoke outside of said hub to be enlarged, substantially as and for the purpose set forth.

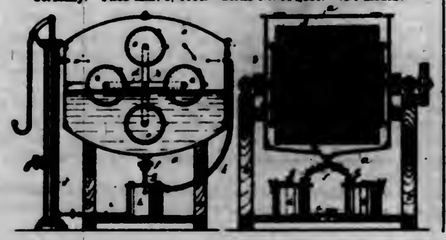
386,326. WHEEL. JAMES R. LITTLE, Quincy, Ill., assignor to the Quincy Metal Wheel Company, same place. Filed Nov. 2, 1887. Serial No. 254,117. (No model.)



Claim.—1. As a new article of manufacture, a metal wheel which is provided with tapering hub-mortises that are threaded at their inner ends, in combination with spokes that have their inner ends fitted into and caused to fill such mortises, substantially as and for the purpose specified.

2. As a new article of manufacture, a metal wheel which is provided with inwardly-tapering hub-mortises that are threaded at their inner ends, and a rim which has outwardly-tapering mortises and a centrally-located strengthening-rib that is expanded laterally at and around each mortise, in combination with spokes which are fitted into and by lateral expansion caused to fill said mortises, substantially as and for the purpose set forth.

386,327. WASHING-MACHINE. ERNST LOMMATZSCH, Plauen, Germany. Filed Mar. 6, 1886. Serial No. 194,693. (No model.)



Claim.—1. The cylinder C, formed with the top opening, E, and side openings, G, and the drop-section D, formed with the side piece, *d*, top cross-piece, *d'*, and knob d^3, in combination with the grapple K, cords for elevating the same passed along the top and end of the car, the pivoted and weighted bar L, and the cords for connecting the same to the cord for elevating the grapple, substantially as described.

2. The cylinder C, having side and top openings, and the drop-section formed with side piece, *d*, and top cross-piece, *d'*, and knob d^3, and an elevated grapple for elevating the drop-section, in combination with the pipe and elbow F F', pivoted to the top cross-piece, *d'*, and provided with the spiral flange *f*, fitted in the slot *f'*, formed in the top of the cylinder C, substantially as and for the purposes described.

Claim.—The combination of drum *a*, containing open rotating cylinders *c*, with the reservoirs *h*, cock *f*, tubes *g i*, and pump *j*, substantially as specified.

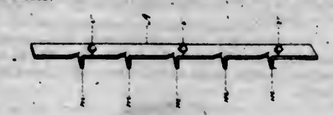
386,328. SCREW-ELEVATOR FOR CURTAINS. WILLIAM S. LOAN, St. Louis, Mo. Filed Aug. 30, 1887. Serial No. 248,193. (No model.)



Claim.—1. In an elevator for curtains, the combination of a rod having a screw-extension, gear-connection between said rod and the curtain-roller, brackets in which the rod is mounted, and an operating device consisting, essentially, of a hand-nut provided with a pendent extension, both of which are provided with a screw-threaded opening, and a hand-swivel fitting around the pendent extension, substantially as and for the purpose set forth.

2. In an elevator for curtains, the combination of a rod having a screw-extension, gear-connection between said rod and the curtain-roller, brackets in which the rod is mounted, a stud provided with a socket in which fits the end of the rod, a ratchet-rack extending around the top of the stud, a nut provided with a pendent extension, both of which are provided with a screw-threaded opening to fit the rod, a hand-swivel fitting around the pendent extension, and a projection on the latter adapted to engage said ratchet-rack, substantially as set forth.

386,329. CLAPBOARD-HOLDER. CHARLES J. LOCK and EUGENE K. BECKWITH, Niantic, Conn. Filed Apr. 10, 1888. Serial No. 270,941. (No model.)



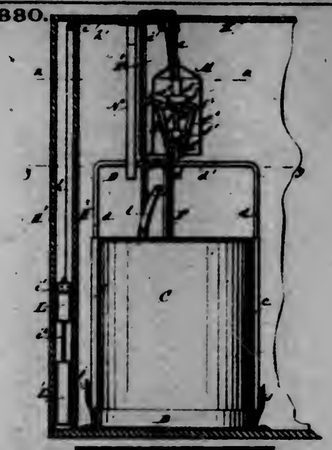
Claim.—A clapboard-holder consisting of a flat metallic strip provided with struck-up teeth on one side for attaching the holder to a building and with struck-up teeth at regular intervals on the opposite side for supporting the clapboards, substantially as described.

386,330. STOVE FOR HEATING RAILWAY-CARS. EDWIN W. LOCK, Bolivar, N. Y. Filed Mar. 21, 1887. Serial No. 231,690. (No model.)

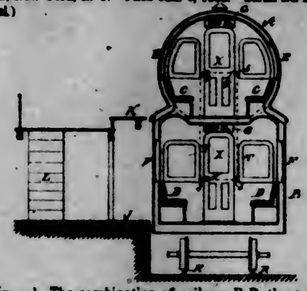
Claim.—1. The cylinder C, formed with the top opening, E, and side openings, G, and the drop-section D, formed with the side piece, *d*, top cross-piece, *d'*, and knob d^3, in combination with the grapple K, cords for elevating the same passed along the top and end of the car, the pivoted and weighted bar L, and the cords for connecting the same to the cord for elevating the grapple, substantially as described.

2. The cylinder C, having side and top openings, and the drop-section formed with side piece, *d*, and top cross-piece, *d'*, and knob d^3, and an elevated grapple for elevating the drop-section, in combination with the pipe and elbow F F', pivoted to the top cross-piece, *d'*, and provided with the spiral flange *f*, fitted in the slot *f'*, formed in the top of the cylinder C, substantially as and for the purposes described.

886,330.



886,331. PASSENGER CAR AND STATION. ALBERT K. MAHAFFIELD, New York, N. Y. Filed Jan. 7, 1888. Serial No. 260,168. (No model.)



Claim.—1. The combination of railway R R, the two-story passenger-car A B, and platforms J and K, arranged one above the other, substantially as and for the purpose set forth.

2. A compartment-car, A B, having compartments vertically above each other, one story apart, the upper story being completely inclosed with side and end walls and roof, and having independent end platforms, M and N, at each end for each story, the whole supported on wheels, substantially as set forth.

3. In a two-story car, the platform-gates O O, arranged one above the other, and connected together by a suitable connection, P, so as to be operated in unison, in combination with platforms M and N, substantially as described.

886,332. WHEEL. MALCOLM MCDOWELL, Pinna, assignor to the Quincy Metal Wheel Company, Quincy, Ill. Filed Feb. 28, 1884. Renewed Sept. 24, 1888. Again renewed June 6, 1887. Serial No. 240,441. (No model.)

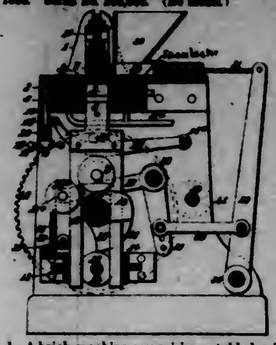


Claim.—1. A metal wheel in which the rim is provided with circumferential marginal ribs that are formed upon and integral with the same, substantially as and for the purpose specified.

2. A metal wheel in which the rim is provided with a circumferential central rib and two circumferential marginal ribs, substantially as and for the purpose shown.

3. A metal wheel in which the rim is provided with a central circumferential rib and two circumferential marginal ribs, and between each of the latter and said central rib has an inwardly-increasing thickness, substantially as and for the purpose shown and described.

886,333. BRICK-MACHINE. HENRY W. HEAD, Quincy, Ill. Filed Mar. 21, 1888. Serial No. 268,092. (No model.)



Claim.—1. A brick-machine comprising a table having a suitable mold or molds, an upper plunger carried by a yoke having friction-rolls at its lower part, a lower plunger supported by a frame having a fork within which is journaled a friction-roll, cams acting on the friction-rolls of the upper plunger to depress and hold the same, a central cam on the single cam-shaft raising the lower plunger and co-operating with the cams actuating and holding the upper plunger to lift and eject the molded brick, and a frame having elastic support at one end and pivotal support at the other end and supporting the lower plunger between its ends, substantially as described.

2. A brick-machine comprising a table having suitable molds, a lower plunger having a forked branch provided with a friction-roll, an actuating-shaft having a cam acting on said friction-roll, a yoke pivotally attached to the machine-frame at one end and within which the forked branch of the lower plunger is supported, a threaded rod which engages an aperture in the free end of the yoke, a nut turned on said rod, a spring between said rod and nut, an upper plunger, and means for operating the latter, substantially as described.

3. A brick-machine comprising a table having steam-heated molds, a lower plunger having a forked branch provided with a friction-roll, an actuating-shaft having a cam acting upon said roll, a bell-crank lever having a stirrup at one end provided with a vertically-guided roll, a feed-lever connected to the other arm of said bell-crank and carrying a feed-box over said table, and cams upon the actuating-shaft operating both the plunger above and the feed-lever, substantially as described.

4. A brick-machine comprising a table having molds supported therein, plungers operating above and below in said mold, a yoke pivotally mounted on the machine-frame and supporting the lower plunger, a screw-threaded stud with which the movable end of said yoke engages, a spring supporting said yoke, and a set-nut on the stud supporting the spring, substantially as described.

886,334. LAMP-SHADE. LOUIS MEHARG, Leavenworth, Kans. Filed Nov. 4, 1887. Serial No. 254,327. (No model.)



Claim.—1. A shade-holder having a portion fitted to embrace the burner, provided between its ends with a support for the shade, and having an extension projected outwardly beyond said support, substantially as set forth.

2. A shade-holder made of a length of twisted wire bent at 2 and 3, forming arms or branches one above the other, the twists in said arms being opened or spread at points in line with each other, forming loops one above another to embrace the burner, substantially as set forth.

3. A shade-holder comprising a main arm, an upper arm bent from said main arm, and a branch arm extended down from the upper arm to and twisted into connection with the main arm, such branch arm being extended to form the shade-support proper, substantially as set forth.

4. The improved shade-holder herein described, consisting of the main arm, the upper arm connected with and arranged above the main arm, both said arms having loops arranged one above the other, and the shade-support proper, substantially as set forth.

5. The combination of the shade C, having sockets c c, and the holder having a loop or loops whereby to embrace the burner, and provided with prongs b b, fitted to enter the sockets c c, substantially as and for the purposes specified.

6. The improved shade-holder herein described, formed of twisted wire, and consisting of the main arm, the upper arm bent from said main arm and having a portion carried down and secured to the main arm, and extended thence to form the shade-support B, the main arm being extended at D beyond the shade-support B, forming a handle portion, and the main arm and upper arm being provided with loops arranged in line with each other, substantially as and for the purposes specified.

886,335. WIRE BRAIDING. THOMAS HOWLEY, Beaver Falls, Pa., assignor of one-half to James H. Emerson, same place. Filed Feb. 13, 1888. Serial No. 263,991. (No model.)

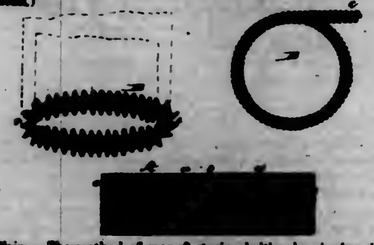


Claim.—1. Wire bobbing composed of interwoven transverse sections of wire presenting folded and unbroken edges, substantially as described.

2. Wire bobbing composed of two thicknesses or layers of interwoven sections of coiled bellows presenting folded and unbroken edges, substantially as described.

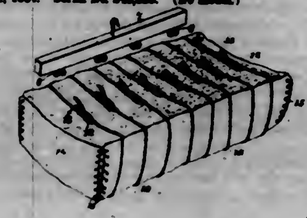
3. Wire bobbing composed of two thicknesses or layers of flattened interwoven sections of coiled wire presenting a continuous wearing-surface with folded and unbroken edges, substantially as described.

886,336. MANUFACTURE OF WIRE BRAIDING. THOMAS HOWLEY, Beaver Falls, Pa., assignor of one-half to James H. Emerson, same place. Original application filed Feb. 13, 1888, Serial No. 263,991. Divided and this application filed Mar. 1, 1888. Serial No. 265,894. (No model.)



Claim.—The method of manufacturing bobbing herein described, which consists in weaving sections of coiled wire into a tube, then compressing the tube and passing it between rolls, whereby a double thickness of bobbing is formed, and the bellows flattened and stretched into elongated links.

886,337. HAY-SLIDE. SAMUEL G. HELLER, Alvin, Tenn. Filed Sept. 1, 1887. Serial No. 248,555. (No model.)

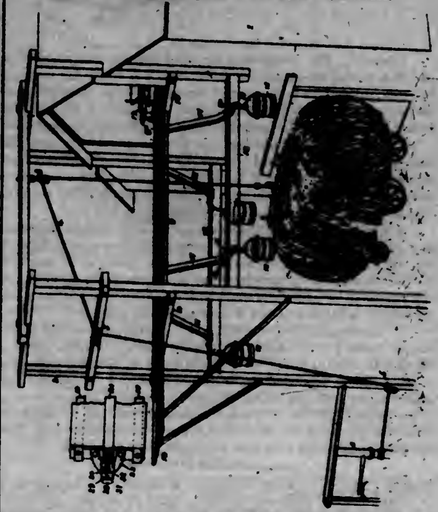


Claim.—1. The combination of beam 7, having a number of hooks, 6, and the ropes 9 and 10, adapted to be supported by the hooks of said beam, substantially as set forth.

2. The combination of the ropes 9 10, the latter adapted to be arranged longitudinally of the wagon-bed, and the former arranged transversely thereto and projecting beyond the same and carrying on their loose ends pulleys and rings, substantially as and for the purpose set forth.

3. The combination of the beam 7, having hooks, the ropes 9 and 10, arranged crosswise each other, and the convex supported by said ropes, substantially as set forth.

886,338. HAY-ELEVATING DEVICE. SAMUEL G. HELLER, Alvin, Tenn. Filed Jan. 14, 1888. Serial No. 261,113. (No model.)



Claim.—1. In combination with a hay-elevating device, an elevated track having an automatically-movable section, between the rails of which latter the hay-elevating device is situated, whereby the load when elevated is adapted to spread the rails, and a hay-carrier on the track, substantially as described.

2. In combination with a hay-elevating device, an elevated track and a combined automatic and gravitating movable section of such track, and a hay-carrier on the track, substantially as and for the purpose set forth.

3. In combination with a hay-elevating device, an elevated track, the track on the latter, the frame for supporting the elevator, and a laterally-movable section of track having its rails mounted on upwardly-extending arms pivoted to the frame considerably to one side of the rails, substantially as and for the purpose set forth.

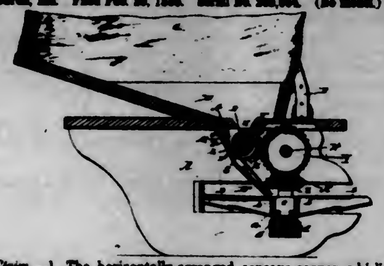
4. In combination with a hay-elevating device, an elevated track, the track mounted thereon, the frame by which the hay-elevating device is supported, an automatically-movable section of track, arms pivoted to the frame, to which the movable track is secured, and weights at the outer ends of said arms, substantially as and for the purpose set forth.

5. In combination with a hay-elevating device, an elevated track, the track mounted thereon, the frame for supporting the hay-elevator, a movable section of track, arms secured thereto extending downwardly and outwardly and pivoted to the frame, and hooks at the outer ends of the arms for supporting weights, substantially as and for the purpose set forth.

6. In combination with a hay-elevating device, a track having a tilting bed with upwardly-inclined sides, a longitudinal beam on which the tilting bed is turned, said beam having bearings in the frame of the track, a locking-rod, and upper and lower brackets, with which the locking-rod is adapted to engage, whereby the tilting bed is locked in its carrying position, substantially as set forth.

7. In combination with a hay-elevating device, a track having a tilting bed, a beam extending longitudinally of said tilting bed, said beam being provided with a perforation, an upper and a lower bracket extending out from the frame of the track and provided with perforations, and a rod received by the perforations in the beam and brackets, whereby the tilting bed is locked, and suitable means for dumping the bed, substantially as set forth.

386,839. BROADCAST SEED-SOWER. WILLIAM I. HELLER, Van Buren, Ind. Filed Feb. 20, 1888. Serial No. 265,004. (No model.)



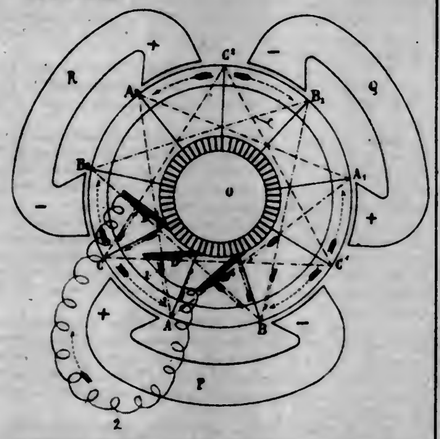
Claim.—1. The horizontally-arranged concavo-convex whirling seed-disk having the central cup or receptacle in which the seeds are fed and provided with openings in its sides, and the radial wings or blades projecting from said cup beyond the radius of the disk and having their lower edges upwardly inclined, substantially as described.

2. The horizontally-arranged concavo-convex whirling seed-disk having the central perforated cup, and the radial wings projecting from the cup beyond the radius of the disk and having their lower edges upwardly inclined, in combination with devices to feed the seeds to the said central cup, substantially as described.

3. The combination of the rotating shaft F, having the force-feed seed-wheel, the case inclosing said seed-wheel and secured to the bottom of the hopper, the horizontally-arranged seed-disk *a*, geared to the shaft F, and having the central cup and the radial wings or blades, and the spout to convey the seeds from the case as they fall from the seed-wheel to the cup of disk *a*, substantially as described.

4. The combination, in a broadcast seed-sowing machine, of the case or frame A, the hopper on the upper side of the same, plates or castings G, secured to the sides of the frame or base, the transverse shafts F and W, journaled in said castings and geared together, said shaft F having the seed-wheels arranged under the discharge-opening in the hopper, and the horizontally-arranged seed-disk *a*, adapted to whirl and geared to the shaft W, and the spout to convey seeds from the seed-wheel to the seed-disk, substantially as described.

386,840. DYNAMO-ELECTRIC MACHINERY. GRAMME MIOT, Paris, France. Filed Mar. 14, 1888. Serial No. 267,126. (No model.) Patented in France Dec. 5, 1887, No. 187,402, and in Belgium Sept. 3, 1887, No. 78,768.



Claim.—1. In a multipolar dynamo and in combination with the armature thereof, a series of field-magnets with simple magnetic poles arranged about the said armature with the several poles or enlarged polar extremities nearer to a pole or enlarged polar extremity of unlike sign of a neighboring magnet than to the other pole or enlarged polar extremity of its own magnet, substantially as described.

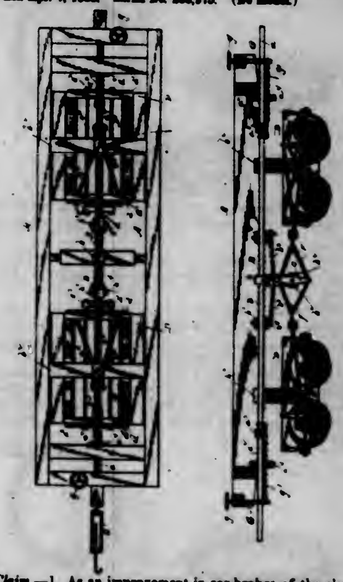
2. In combination with the cross-connected armature of a multipolar dynamo and the field-magnets arranged about said armature, with the several magnetic poles nearer to an unlike pole of a neighboring magnet than to the unlike pole of its own magnet, the commutator-brushes consisting of a brush arranged between the poles of neighboring magnets and two electrically-connected brushes arranged at different points between the poles of the same magnet or magnets, substantially as described.

386,841. MOP. JAMES MOORE, Chicago, Ill. Filed Nov. 12, 1887. Serial No. 255,022. (No model.)



Claim.—The hereinbefore-described mop, consisting of the twisted yarn-ropes tied together in bunches at their middle portion to form a mat of suitable width, each bunch being tied independent of the others, then folding said mat longitudinally or in the direction of its length to form a double layer, and the whole securely bound together by a cord passed around its middle, substantially as described.

386,842. CAR-BRAKE. GEORGE G. OLMSTED, Perrysburgh, N. Y. Filed Apr. 7, 1888. Serial No. 269,979. (No model.)



Claim.—1. As an improvement in car-brakes of the class herein described, the brake-rod having the springs encircling the same, the central vertically-disposed lever, the chains connected to the upper and lower ends thereof, and the brakes, to the cross-heads of which said chains are connected, substantially as shown and described.

2. As an improvement in car-brakes, the brake-rod having the central vertically-disposed coil-springs, the sleeves or thimbles, the chains connected thereto, the central lever, and the brakes having head-bars connected to said lever, substantially as shown and described.

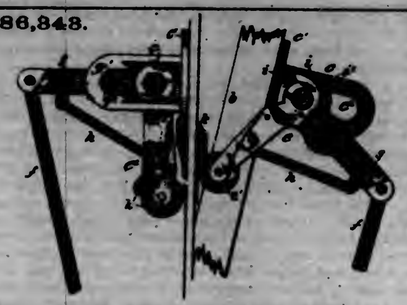
3. As an improvement in car-brakes of the class herein described, the vertical lever E, the rods or chains connected to the upper and lower ends thereof, the cross-heads, the brakes, and the brake-rod connected to said cross-heads, substantially as shown and described.

4. The combination, with the brake-rod and the central lever connected to sleeves or thimbles thereof, of the vertical lever, the rods or chains connected thereto, the cross-heads, the brakes, and the series of chains connecting said cross-heads to said central lever, substantially as shown and described.

386,843. TRANSOM-LIFTER. GERHARD S. PERKINS, Hartford, Conn. Filed May 11, 1888. Serial No. 273,803. (No model.)

Claim.—1. In a transom-lifter, in combination with the transom-bracket secured to the transom, the starting-lever pivoted to the transom-bracket, and with one end adapted to thrust against the frame in which the transom is hung when the said lever is moved in opening

386,843.



the transom, and the transom-rod pivoted to the outer end of the said lever, all substantially as described.

2. In combination with the transom-bracket secured to the transom and having a pivot-slot, the starting-lever pivoted to the transom-bracket, and with one end adapted to thrust against the frame in which the transom is hung when the said lever is moved in opening the transom, the lever-pivot, and the transom-rod pivoted to the outer end of said lever, all substantially as described.

3. In a transom-lifter, in combination with the transom-bracket, a carrier-block adjustably secured to the said bracket by the means substantially as described, the starting-lever pivoted to said block, the pivot-bolt connecting the above-described parts, and the transom-rod pivoted to the outer end of the starting-lever, all substantially as described.

4. In combination with the transom-bracket, the carrier-block adjustable thereon, the starting-lever pivoted to the carrier-block, the lever-lock that unites the carrier-block and the lever, and the transom, all substantially as described.

5. In combination with the transom-bracket *c*, having slot c^2, the carrier-block *i*, with the tenon i', fitting between the guideways in the bracket and whereby said block is held against rotation thereon, the starting-lever *e*, pivot-bolt *d*, holding said bracket-block and lever together, and the transom-rod attached to the outer end of the starting-lever, all substantially as described.

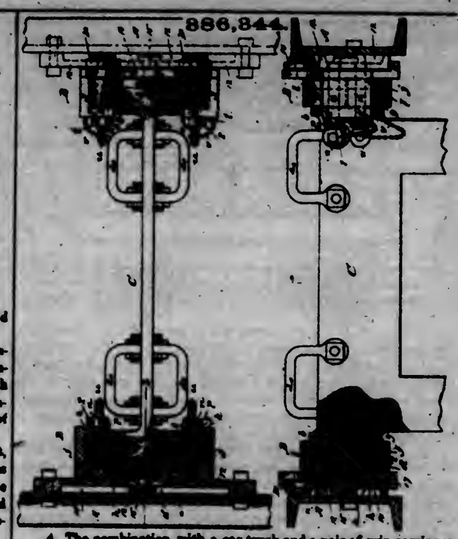
6. In combination with the transom-bracket *c*, the carrier-block *i*, attached thereto, as by means of a pivot-bolt and nut, as described, and provided with the stop and the bolt-socket, the starting-lever *e*, pivoted to said carrier-block, the look *g*, mounted on the starting-lever and having a bolt, g', that is adapted to engage the said bolt-socket in the carrier-block, and the transom-rod attached to the outer end of the starting-lever, all substantially as described.

7. In combination with the transom-bracket, a starting-lever pivoted to said bracket, the anti-friction roller borne on the inner end of the starting-lever, and the transom-rod attached to the said starting-lever, all substantially as described.

8. In combination with the transom-bracket *c*, a starting-lever, *e*, pivoted to the bracket, the anti-friction roller borne on the inner end of the lever, and the striking-block *k*, having the inclined or curved face, all substantially as described.

386,844. CABLE-GRIP BEAM AND SUPPORTING DEVICE THEREFOR. LOUIS PFEIFER, New York, N. Y., and GEORGE A. BIRD, Springfield, Mass. Filed Apr. 11, 1888. Serial No. 270,241. (No model.)

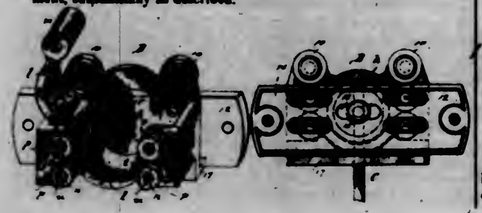
386,844.



Claim.—1. The combination, with a car-track, of a grip-carriage supported and laterally movable thereon, provided with a rolling bearing for a grip-beam, substantially as described.

2. The combination, with a car-track, of a grip-carriage laterally movable thereon, provided with a rolling bearing for a grip-beam, the walls of which bearing are separable, substantially as described.

3. The combination, with a car-truck and a pair of grip-carriages supported and laterally movable thereon, provided with rolling bearings for the grip-beam, of a grip-beam supported in said bearings and having a length less than the distance between the opposing outer walls of said grip-carriages, whereby it may have an endwise movement, substantially as described.



4. The combination, with a car-trunk and a pair of grip-carriages supported and laterally movable thereon, provided with rolling bearings for the grip-beam, of a grip-beam supported in said bearings and of a length less than the distance between the opposing outer walls of said grip-carriages, and springs between the ends of said grip-beam and said walls of the carriages, substantially as described.

5. The combination, with a car-truck cross-transom provided with a plate, 12, secured thereto and having a horizontal slot, 16, of a grip-carriage having a bearing and support for a grip-beam provided with rollers bearing on said plate 12, and having the stud 15 extending into said slot, substantially as described.

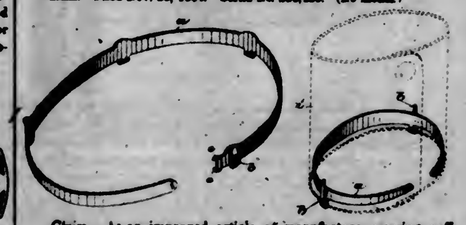
6. The combination, with a car-truck cross-transom provided with a recessed plate, 12, secured thereto, of a bearing and support for a grip-beam provided with rollers bearing on said plate 12, having the headed stud 15 extending into said slot, and the underlying flange 17, substantially as described.

7. A grip-carriage consisting of a wall, *h*, combined with a pair of arc-shaped bars, *l*, having at each end an eye, and pins passing through said eyes and said wall, one or both pins of each of said bars being removable, substantially as described.

8. A grip-carriage consisting in the combination, with a wall, *h*, having the extensions *j*, and lugs *h*, provided with the bosses *p*, of a pair of arc-shaped bars, *l*, having at each end an eye, the pins passing through said carriage lug and wall and said eyes, and the keys *t*, passing through said bosses and said pins, substantially as described.

9. The combination, with the cross-transoms A A of a car-truck, provided with the fixed recessed plates 12, having the horizontal slots 16, of the grip-carriages B B, each comprising the rear wall, *h*, extensions *j*, and lugs *h*, the headed stud 15, secured to said wall *h* and passing through the said slot 16, and provided with the rollers 10 10, the arc-shaped bars *l l*, having the eyes and the removable pins passing through said carriage lugs and wall and said eyes, and the grip-beam C, provided with the cylindrical and socketed heads, and the springs *d*, all substantially as and for the purpose described.

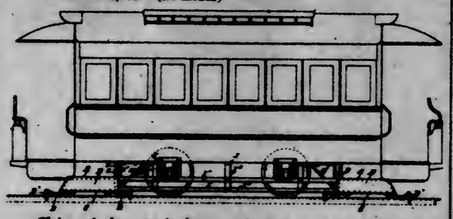
386,845. CUFF-HOLDER. REILE PFENNABY, Islington, assignor to George Frost, George H. Phelps, and George A. Frost, all of Newton, Mass. Filed Nov. 29, 1887. Serial No. 256,609. (No model.)



Claim.—As an improved article of manufacture, a spring cuff-holder consisting of a band or strip, *a*, having two or more spring-clips, *b*, extended substantially at a right angle to the length of the

said billd or strip and adapted to embrace the edge of the cuff, the said cuff-holder being frictionally retained, substantially as described.

386,346. WHEEL-GUARD AND TRACK-CLEARER FOR RAILWAY-CARS. PETER PORTEOUS, San Francisco, Cal. Filed Apr. 18, 1888. Serial No. 271,092. (No model.)

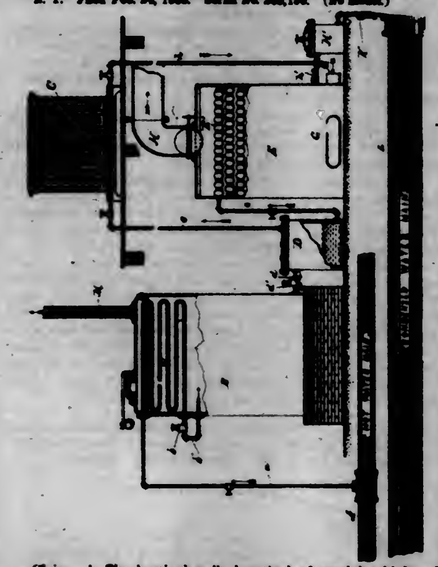


Claim.—1. In a track-clearer and wheel-guard for railway-cars, the combination, with a frame, A, and links or hooks for suspending it, said suspending means being attached to one end of the frame, of a vertical arm, H, forming an abutment for the lower edge of the frame, and curved pilots D, secured to each end of frame A and resting upon the surface of the track, and pivoted depending arms or bars standing and traveling in the gripper-slot, as set forth.

2. The combination, with a track-clearer for railway-cars, of links secured to one end thereof and connecting said end to the car-body, said links having a turn-buckle in them, of a vertical brace, as H, having a set-screw, G, in its lower end against which the lower portion of the frame of the clearer rests, and pilots having pivoted arms or bars for running in the gripper-slot, as set forth.

3. The combination, with a track-clearer and car-body, of links by which the clearer is suspended from said body, adjusting means, as described, for said links, and the thumb-screws operating in steadying-brackets against the lower inner corners of the track-clearer, as and for the purpose specified.

386,347. METHOD OF SUPPLYING STEAM AND HOT WATER FOR POWER AND HEATING PURPOSES. WILLIAM B. PEALL, Washington, D. C., assignor to the National Heating Company, New York, N. Y. Filed Feb. 24, 1888. Serial No. 265,192. (No model.)



Claim.—1. The herein-described method of supplying high and low pressure steam for power and heating purposes, which consists in supplying superheated water at high pressure, converting a portion thereof into high-pressure steam by allowing it to expand, and by converting a portion of the remainder into low-pressure steam by allowing it to expand, substantially as shown and described.

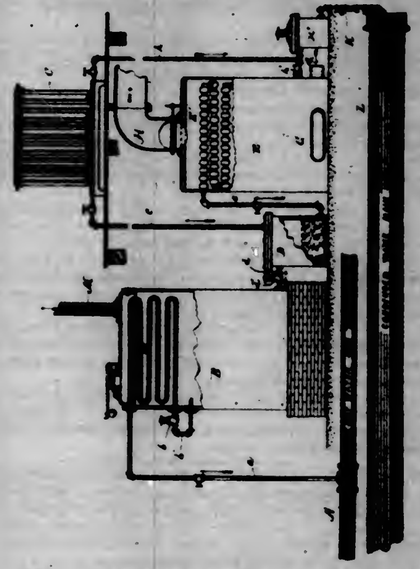
2. The herein-described method of supplying power and heat, which consists in supplying superheated water at high pressure, converting a portion thereof into steam at high pressure, which is supplied for power purposes, by allowing it to expand, converting a portion of the remainder into low-pressure steam, which is used for heating or other purposes, by allowing it to expand, and circulating the water not converted into steam for heating purposes, substantially as shown and described.

3. The herein-described method of supplying high and low pressure steam for power and heating purposes, which consists in supplying superheated water at high pressure, converting a portion thereof into high-pressure steam by allowing it to expand, superheating the steam thus formed, and converting a portion of the superheated water not formed into steam at the first expansion into steam at low pressure by allowing it to expand, substantially as shown and described.

4. The herein-described method of supplying power and heat, which consists in supplying superheated water at high pressure, converting a portion thereof into high-pressure steam for power purposes by allowing it to expand, superheating the steam thus formed, converting a portion of the superheated water not formed into steam at the first expansion into low-pressure steam for heating purposes by allowing it to expand, and circulating the remainder for heating purposes, substantially as shown and described.

5. The herein-described method of supplying steam and hot water for power and heating purposes, which consists in supplying superheated water at high pressure, converting a portion thereof into steam for power purposes by allowing it to expand, superheating the steam thus formed, and circulating the water not formed into steam for heating purposes, substantially as shown and described.

386,348. MEANS FOR SUPPLYING STEAM AND HOT WATER FOR POWER AND HEATING PURPOSES. WILLIAM B. PEALL, Washington, D. C., assignor to the National Heating Company, New York, N. Y. Filed Feb. 24, 1888. Serial No. 265,209. (No model.)



Claim.—1. The combination, in a system for supplying steam for power and heating purposes, of a superheated-water supply, a vessel provided with a pressure-reducing valve, the vessel and valve being in communication with the supply, and a second vessel communicating with the first at or near the bottom, each of said vessels being provided with steam-pipes, substantially as shown and described.

2. In a system for supplying power and heat, the combination of a superheated-water supply, a vessel provided with a differential pressure-reducing valve, the vessel and valve being in communication with the supply and the vessel being provided with a steam-pipe, a second vessel communicating with the first at or near the bottom, and a radiator in communication with the second vessel, substantially as shown and described.

3. In a system for supplying steam and hot water for power and heating purposes, the combination of a superheated-water supply, a vessel provided with a differential pressure-regulating valve, the vessel and valve being in communication with the supply, a second vessel communicating with the first at or near the bottom, a radiator in communication with this vessel by means of a steam-pipe, and a hot-water coil or radiator communicating with the last-named vessel at or near the bottom by means of a water-pipe, substantially as shown and described.

4. In a system for supplying power, the combination, with a superheated-water supply, of a vessel, as B, a coil in the top thereof in communication with said supply, and a pressure-reducing valve in communication with the coil and provided with means for discharging the superheated water into said vessel, substantially as shown and described.

5. In a system for supplying power and heat, the combination of a superheated-water supply, a vessel provided with an outlet for steam and having a coil therein in communication with said supply, said coil being provided with a pressure-reducing valve, a second vessel in communication with the first at or near the bottom, and a radiator or other means for utilizing heat in communication with the second vessel, substantially as shown and described.

6. In a system for supplying power and heat, the combination of a superheated-water supply, a vessel having an outlet for steam and provided with a coil therein in communication with said supply, a second vessel in communication with the first at or near the bottom, a radiator in communication with the top of said second vessel, and a water coil or radiator communicating with the bottom thereof, substantially as shown and described.

7. In a system for supplying steam for power and heating purposes, the combination of a superheated-water supply, a vessel, as B, in communication with the supply, in which a portion of the superheated water is converted into high-pressure steam by allowing it to expand, said vessel being provided with a steam-pipe for conveying the steam to a stationary engine or other means for utilizing the same, a second vessel, as D, in communication with the first at or near the bottom thereof, in which the superheated water not converted into steam at the first expansion is converted into low-pressure steam by allowing it to expand, a radiator or other means for utilizing the low-pressure steam thus formed, and means for returning the water of condensation to the heater, substantially as shown and described.

386,349. POTATO-PLANTER. JOHN H. PRESSLEY, Horton, Iowa, assignor of one-half to John L. Chapin, same place. Filed Mar. 6, 1888. Serial No. 266,373. (No model.)



Claim.—1. The combination, with the seeder, of a hinged coverer, a bar, J, loosely jointed to the middle of the coverer-frame, and having a marking-tooth, *i*, and a hook-and-eye connection with the box for sustaining the cover in elevated position, and supports arranged on the ends of the coverer-frame for sustaining the bar when turned down for use as a marker, substantially as shown and described.

2. The combination, with the seed-box having the downward projections I and the spouts G, of the coverer H, hinged to the projections, and composed of end bars, *a a*, longitudinal bar *b*, with shovels *c*, longitudinal bar *d*, and covering-bars *e e*, converging to the rear, substantially as and for the purpose described.

386,350. INK-FOUNTAIN FOR PRINTING-PRESSES. GEORGE W. PRESCOTT, Boston, Mass. Filed Nov. 7, 1887. Serial No. 254,492. (No model.)



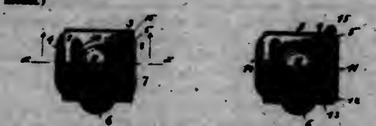
Claim.—1. An ink-fountain for printing-presses, composed of an inclined plate, two pivoted and movable end pieces, and an intermittently-revolubie roll having its bearings in said movable end pieces, and arranged to be revolved with its periphery in near proximity to the lower portion of the front face of the said inclined plate, and forming one side of the ink-receptacle.

2. The combination of the plate *b*, the movable end pieces, *c c*, the roll *f*, mounted in bearings in said end pieces, the adjusting-screws *k*, the nuts *l*, and the springs *m*, all constructed, arranged, and operating substantially as and for the purposes described.

3. The combination of the inclined and pivoted plate *b*, the end pieces *c c*, the roll *f*, the screw-bolt *k*, pivoted to the rear of said plate, the nut *i*, and the bar *d*, provided with the ears *d'' d''* and *k'*, all constructed, arranged, and adapted to operate substantially as described.

4. The combination of the pivoted inclined plate *b*, the pivoted and movable end pieces, *c c*, the roll *f*, mounted on said end pieces, the screws *k*, nuts *l*, and springs *m*, for adjusting the roll *f* relative to the plate *b*, and the screw *k* and nut *i*, for adjusting the roll *f* and plate *b* relative to the inking-rollers *e*, substantially as described.

386,351. NUT-LOCK. HIRAM P. PIERCE, Grand Haven, assignor of one-half to Sherman H. Boyce, Nelson B. Hewitt, and Stephen L. Moore, Ottawa County, Mich. Filed Dec. 14, 1887. Serial No. 257,945. (No model.)



Claim.—1. In a nut-lock as herein described, the combination, with a nut and bolt, of a washer having a projection engaging the nut, and a V-shaped key engaging the bolt and a projection on the washer, substantially as described.

2. In a nut-lock, the combination, with a nut and bolt, of a washer having a lip bent up and resting against the side of the nut, and a V-shaped key straddling the bolt and having a serrated edge engaging a spring projection on the washer, substantially as described.

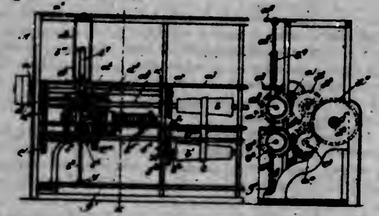
3. The combination, with bolt 2 and nut 3, of washer 12, having bent-up lip 14 and spring-arm 11, and the V-shaped key 6, having serrated edges 8 and 10 and beveled edge 9, substantially as described.

4. In a nut-lock as herein described, the combination, with a nut and bolt and a washer having a projection adapted to lie against the side of the nut and a projection adapted to engage a key, of a V-shaped key having an outer serrated edge to engage the washer and an inner beveled edge and a serrated edge to engage the bolt, substantially as described.

5. The V-shaped key 6, having serrated edge 8, beveled edge 9, and serrated edge 10, substantially as described.

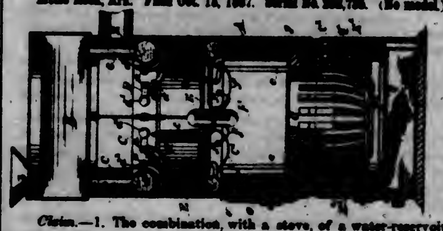
386,352. ROVING-MACHINE. ALONZO H. EDGARTON, Milford, Mass., assignor to the Hopedale Machine Company, Hopedale, Mass. Filed Aug. 23, 1887. Serial No. 247,962. (No model.)

Brief.—The object of the invention is to avoid the backlash and consequent stretching of the roving between the flier and bobbin upon starting the machine.



Claim.—The flier-driving shaft and bobbin-driving shaft of a roving-machine, combined with a friction device and with means to automatically actuate the different portions of the said friction device from the said shafts, whereby the rotation of the said shafts is stopped and started at the same instant of time, thus avoiding backlash.

386,353. STOVE FOR RAILWAY-CARS, &c. JOHN D. SHIELL, Little Rock, Ark. Filed Oct. 13, 1887. Serial No. 252,735. (No model.)



Claim.—1. The combination, with a stove, of a water-reservoir exterior of the stove, a series of water-reservoirs communicating with the interior of the stove, and pipes connecting the series of reservoirs with each other and with the exterior reservoir, substantially as specified.

2. The combination, with a stove and one or more water-reservoirs having openings communicating with the interior of the stove,

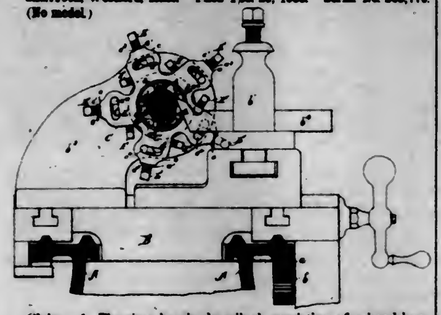
of a series of bent levers pivoted to said reservoir, overlapping plates attached to said levers, and valves attached to said levers to close the openings in the reservoir, substantially as specified.

3. The combination, with a stove and water-reservoir having openings communicating with the interior of said stove, of a series of bent levers pivoted to said reservoir, a series of overlapping plates attached to one of the ends of said levers and extending around the interior of the stove against the sides thereof, valves secured to said levers to close the openings in the reservoir, and weights or springs on the free ends of said levers, substantially as specified.

4. The combination, with a stove and a water-reservoir having tubes or conduits extending and opening into the interior of the stove, of a weight centrally suspended within said stove from the top thereof to have a free lateral swing, plugs normally closing communication from the reservoir into the stove, and chains or the like connecting the plugs and weight, whereby when the weight is swung laterally the plugs are forced from their seats and communication is opened from the reservoir into the stove, substantially as described.

5. The combination, with a stove and a basket-grate suspended within said shell, of a reservoir exterior of the stove, a reservoir within the stove in communication with the exterior reservoir and surrounding the grate, said interior reservoir being provided with openings into the interior of the stove, and valves or plugs normally closing said openings, and levers for opening communication, substantially as described.

386,354. ADJUSTABLE SIZER FOR SHAFTING. DAVID H. BRATTON, Westfield, Mass. Filed Feb. 29, 1888. Serial No. 265,770. (No model.)



Claim.—1. The sizer herein described, consisting of a head having an opening to admit a piece of shafting, and cutters secured in said head at equal angular distances from each other and projecting into said opening and adapted to be held from turning, and to be carried by the follower-rest, or by an arm projecting vertically from the lathe-carriage and to center itself automatically with said shafting, as and for the purpose specified.

2. The combination of the head provided with radial holes having screw-threaded outer portions, and with a central opening connecting with said holes, cutters arranged in said holes and extending into said opening, means, substantially as described, of holding said cutters, and adjusting-screws turning in the threaded portions of said holes and thrusting against the outer ends of said cutters, as and for the purpose specified.

386,355. GANG-PLANK FOR VESSELS. FRANK W. SEELY, Hampton, assignor of one-half to Thomas R. Cooke, Norfolk, Va. Filed Mar. 27, 1888. Serial No. 268,619. (No model.)

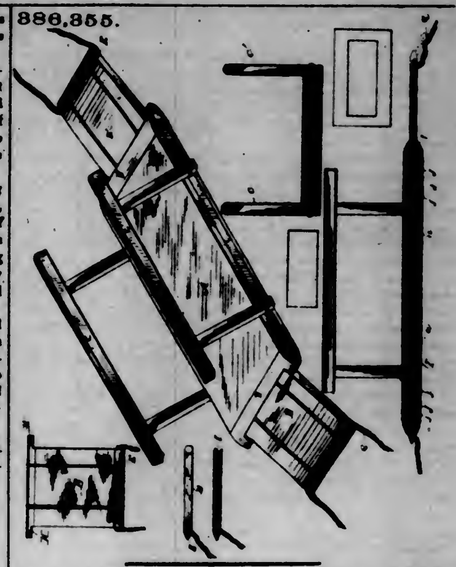
Claim.—1. The combination, in a gang-plank, of the main portion, with the sliding end pieces pivoted as described.

2. A gang-plank consisting of a body portion and end sliding pieces pivoted and hinged substantially as described, and provided with friction-rollers, as shown.

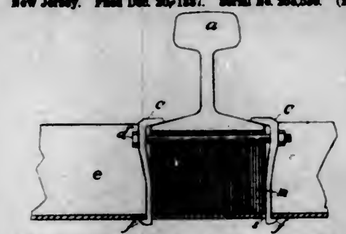
3. A gang-plank consisting of the main body portion provided with chambers between its flat sides, transverse supporting and stop pieces, and hinged metal protecting-pieces, substantially as described.

4. The combination, in a gang-plank, of the main body portion provided with end protecting-irons, which serve also for hinges, with pivoted end pieces having projections H H on their ends, said ends being also recessed to receive the edge of the protecting-irons, whereby the sections are secured together in the manner shown and described.

5. The combination, in a gang-plank, of the hollow main body portion provided with hinged irons, protecting-pieces, and anti-friction rollers, with the pivoted end sliding pieces having journal or pivoted projections, the said sliding pieces being adapted, to be telescopically adjusted, and stops for the said end pieces, substantially as set forth.



386,356. METAL RAILWAY-TIE. HENRY SPEISSER, Elizabeth, N. J., assignor to the Standard Metal Tie and Construction Company, of New Jersey. Filed Dec. 20, 1887. Serial No. 258,589. (No model.)

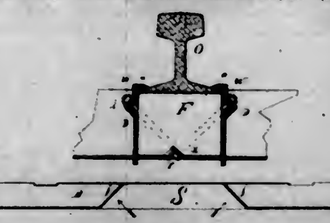


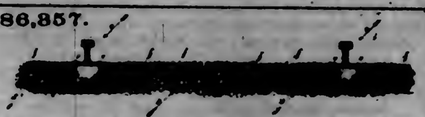
Claim.—1. The combination of a metal tie and the clamps *c*, constructed with hooks or clips, as *f f*, standing in a reverse direction to the jaws, packing-block *m*, and bolt *d*, as described and specified.

2. A packing-block, as *m*, constructed of wood with its grain running in a vertical direction, in combination with a metal tie and adjustable spring-clamps provided with the clips *f f*, standing in a reverse direction to the jaws, for holding the rail in position on the said block against its end grain, the said clamps so constructed as to exert a force against the sides of the block independent of the force applied to the rail-base, whereby the said block is completely bored and prevented from splitting or spreading under pressure.

3. In combination with a metal railway-tie, the clamp *c*, constructed with a jaw on its upper side adapted to engage with the rail-base, its body portion made thin and curved, so as to throw its upper portion outward, its lower portion being suitably engaged with the bottom of the tie, so that the clamp will have a fulcrum-foundation, as shown at m^2 and n^2, Fig. 6.

386,357. RAILWAY METAL TIE. HENRY SPEISSER, Elizabeth, N. J., assignor to the Standard Metal Tie and Construction Company, of New Jersey. Filed Feb. 21, 1888. Serial No. 264,753. (No model.)





Claim.—1. A railway metal tie constructed of channel-beam iron having resisting or anchor plates bent at angles opposed to the direction of the disturbing lateral force of a train up from the tie-bottom, to form within the tie sloping ends of an open pocket, of which the sides of the tie are the vertical sides, substantially as herein shown and described.

2. A railway metal tie constructed, substantially as herein shown and described, with an open pocket diminishing in area from the bottom upward and having two sides vertical and two sides sloping inward toward each other from the bottom, as and for the purpose described.

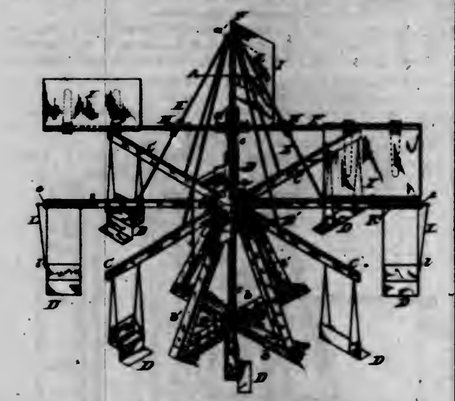
3. A railway metal tie constructed from a form, as shown in Fig. 4, the sides B B being bent upward on the longitudinal dotted lines *v v* at right angles to the bottom, and with resisting-plates *f f*, bent upward on the transverse dotted lines *q q*, substantially as shown and described, whereby when the tie is laid in position said resisting-plates will, when backed by the road-ballast, offer resistance to the lateral disturbing forces of the moving train, as set forth.

4. In a railway metal tie, the combination, with bolding-bolts passed diagonally through the clips, of burrs or washers struck from the tie-bottom and forming an integral part thereof, and bent upward at right angles to the direction of said bolts, substantially as shown and described.

5. In a railway metal tie constructed of channel-beam iron, as a means for holding a rail to the tie, a clip with jaw formed nearly at a right angle to its body, with beam or shoulder formed on its back at an angle to its vertical portion, and with straight fingers prolonged from its lower edge, substantially as and for the purposes set forth.

6. The combination, with a railway metal tie constructed substantially as herein shown and described, of blocks F, set in the channel of the tie, clip C, arranged on opposite sides of said blocks, and bolts D, provided with nuts, passed diagonally from opposite directions through the tie-bottom, the blocks, and the clips, substantially as and for the purpose set forth.

386,358. WIND-PROPELLED SWING. THOMAS J. SMITH, Worthington, Minn. Filed Apr. 13, 1887. Serial No. 234,720. (No model.)

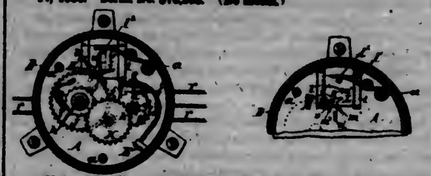


Claim.—1. The improved roundabout hereinbefore described, consisting of a series of radial arms mounted on a central mast, suitable seats carried by said arms, a horizontal wind-wheel mounted on said mast above said arms, and one or more levers pivoted to said arms and adapted to be engaged with the wind-wheel to regulate its speed, substantially as set forth.

2. The combination of the revolving mast A, the radial arms C, the shafts F, carrying wind-sails I, arranged at right angles with each other, as shown, and one or more levers, K, pivoted to the arms C and provided with the legs *k k'*, substantially as shown and described.

3. The combination of the frame-work *b b'*, supporting the step B and collar B', the mast A, mounted in said step and collar, the radial arms C, carrying swings D, the stay-rods E, bearings G H, shafts F, provided with wind-sails I, forked levers K, pivoted near the outer ends of the arms C, and the cords L, attached to said levers and to the swings D, substantially as shown and described.

386,359. BURGLAR-ALARM. HARRY W. SPELLER, Buffalo, N. Y., assignor of one-half to George H. Gaskamp, same place. Filed Apr. 17, 1888. Serial No. 270,933. (No model.)



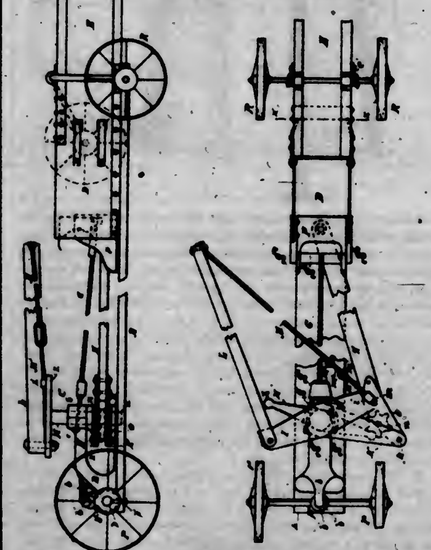
Claim.—1. The combination, with the supporting-plates of the alarm, the bell, and the vibrating hammer, of a hammer-actuating mechanism composed of a suitable clock-work, one of the wheels of which is provided with a stop-pin, a sliding plate provided with a projection adapted to engage with said stop-pin and with a lug projecting through a slot in the adjacent supporting-plate, and an actuating-lever pivoted to said supporting-plate and engaging against the lug of said shifting plate, substantially as set forth.

2. The combination, with the supporting-frame of the alarm, the bell, and the vibrating hammer, of a hammer-actuating mechanism consisting of a suitable clock-work, one of the wheels of which is provided with a pin or projection, a sliding plate, L, a star-wheel mounted on said sliding plate and provided with one or more long teeth and several short teeth, a stop, *n*, secured to the supporting-frame, against which the long teeth of the star-wheel engage, and an actuating-lever, whereby said sliding plate is shifted, substantially as set forth.

3. In a burglar-alarm, the combination, with the supporting-frame, the bell, and the vibrating hammer, of a clock-work whereby said hammer is operated, and having a wheel provided with a pin or projection, a sliding plate, L, provided with a projection, *q*, and spring *l*, a star-wheel, M, journaled upon said sliding plate, a stop, *n*, secured to the main frame, and an actuating-lever, P, engaging against the projection *q* of the sliding plate, substantially as set forth.

4. In a burglar-alarm, the combination, with the supporting-plates A A', the bell D, and hammer E, mounted on a spindle having pallets *f f'*, of a ratchet-wheel, G, actuating said pallets, a mainspring, H, secured to a winding-spindle, A, having a ratchet-wheel, *j*, a main gear-wheel, J, having a pin, *e*, and a pawl, *j'*, engaging with the ratchet-wheel *j*, gear-wheel K, and pinions *k k'*, connecting said main gear-wheel with the spindle of the ratchet-wheel G, the sliding plate L, carrying the star-wheel M, stop *n*, secured to the plate A, and actuating-lever P, whereby the sliding plate is shifted, substantially as set forth.

386,360. BALING-PRESS. BENJAMIN C. SEAY, Kansas City, Mo. Filed Aug. 6, 1887. Serial No. 246,004. (No model.)



Claim.—1. The combination, in a baling-press, with a carrying shaft and its crank, of a rebounding plunger, a pitman, guide-arms

loosely mounted on said shaft and pivotally connected to the said pitman, a gear-wheel on said pitman, and a crank on said shaft in the path of said gear-wheel, for the purpose specified.

2. The combination, in a baling-press, with the driving-shaft, of a yoke on said shaft and a draft-pole pivotally attached thereto and having a yielding support beyond the pivotal point of said pole on said yoke adapted to permit an accelerated speed of the shaft in passing a dead-center to relieve the tension on the draft-pole without shock, for the purpose specified.

3. The combination, in a baling-press, with the driving-shaft, of a yoke on said shaft and a draft-pole pivotally attached thereto, and a divided rod having one portion attached to said yoke and an opposite portion to said pole, and an intermediate yielding joint connected with said opposite portions of said rod, as described.

4. The combination, in a baling-press, with the driving-shaft, of a yoke on said shaft and a draft-pole pivotally attached at one end to one end of said yoke and provided with a lug on the opposite end of said yoke, a divided rod having one portion connected with said draft-pole and the opposite portion with said lug and loops on the said divided portion of the rod, and a link connected with said loops, for the purpose described.

5. The combination, with a baling-press having traction-wheels, of an axle having opposite parts bent in an upward direction and connected together, and a baling-press suspended therefrom, and a keeper, as and for the purpose described, on the side of said press, and a locking device on said keeper.

6. The combination, with a baling-press having traction-wheels, and journal-boxes upon the top of said press, of an axle for suspending said press extending from one of said wheels to the opposite wheel in the vertical and transverse direction described by the sides and top of said baling-press and continuous through said journal-boxes, a keeper on the lower side of said press, and a locking device on said keeper, for the purpose described.

386,361. CORN-SHOCK BINDER. MOSES SPAULDING, Orleans, Mich. Filed Feb. 9, 1888. Serial No. 263,511. (No model.)

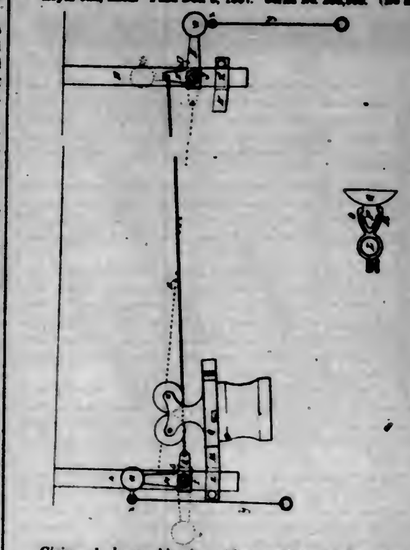


Claim.—1. The combination, with the supporting-bars A and the arms D, of the shaft B, pivotally connecting said bars and arms, and the bars G, connecting the outer ends of said arms, cylinder *c* on said shaft, the cords I, formed with hook and eye and secured at one end to said cylinder and the other ends adapted to engage the shocks, and the inclined bar F, pivoted at one end to the arms D and at its other end provided with a plurality of holes by which it is adjustably secured to the bars A by a pin, substantially as and for the purpose specified.

2. The combination, with the supporting-bars A, and arms D, pivotally connected thereto and carrying the compressing mechanism, the crank, and the bars G on the outer ends of the arms D, of the brace-bar F, pivotally connected at one end with the arms D and at the other end provided with a plurality of holes, *f*, and the pin *e*, connecting said brace-bar with the bars A and forming a support for the spool *g*, substantially as described.

3. The combination, with the supporting-bars A, the arms D, and the shaft B, pivotally connecting said bars and arms, provided with a crank, of the cylinder *c* on said shaft, the cross-bars G, connecting the outer ends of said arms, the pulleys H, journaled between said cross-bars, the cords I, secured at one end to said cylinder and the other ends passed over said pulleys, and the knife K on one of said arms, all substantially as and for the purpose specified.

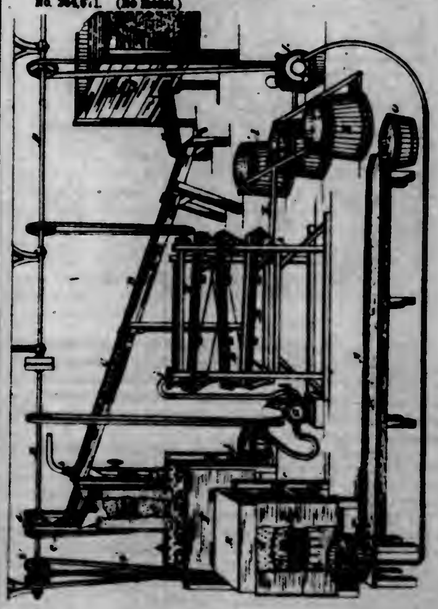
386,362. STORE-SERVICE APPARATUS. ERNEST H. STRINGHAM, Royal Oak, Mich. Filed Dec. 2, 1887. Serial No. 256,926. (No model.)



Claim.—1. In combination with two pivoted bell-crank levers, each having a weight on one of its arms, a single wire stretched between the other arms of said levers, and a wheeled carriage on said track, substantially as shown and described.

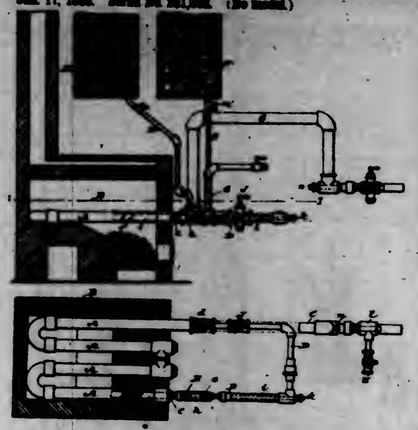
2. In combination with the pivoted bell-crank levers C D, each having the weight W on its long arm, the single wire R, connected with the short arms of said levers, the car Q, and a stationary catch supported below each lever, composed of two converging spring-arms so arranged that the car can be lifted vertically out of engagement therewith, substantially as described.

386,363. PLANT FOR THE MANUFACTURE OF STARCH FROM GRAIN. EDWARD STRONG, New York, N. Y., assignor to the Vienna Wheat Starch Company of West Virginia. Filed Feb. 20, 1888. Serial No. 264,671. (No model.)



Claim.—The plant for the manufacture of starch herein described, consisting of the saturating-receptacle A for the grain, the trough B, the conveyer therein, the crushing-rolls E, the separating apparatus F, having beaters *g*, the pump G, and series of sieves H, with the pipes K and settling-vats I, the force-pump L, the vat M, and trough N, all arranged in the manner and for the purpose herein shown and specified.

386,364. APPARATUS FOR THE MANUFACTURE OF VAPOROUS AND GASEOUS FUEL. CHARLES SELDEN, Truxton, N. J. Filed Jan. 17, 1888. Serial No. 261,082. (No model.)



Claim.—1. The circulating-pipe D, containing the pipe *h*, in combination with the fluid-supply pipe E, the escape-pipe C, and the retort A, containing the pipe *e*, substantially as shown and described.

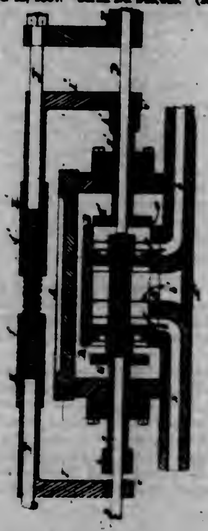
2. The circulating-pipe D, containing the pipe *h*, in combination with the fluid-supply pipe E, the pipe G, the escape-pipe C, and the retort A, containing the pipe *e*, substantially as shown and described.

3. The retort A, containing the pipe *e*, in combination with the escape-pipe C, containing the pipe *f*, the circulating-pipe D, containing the pipe *h*, and the pipe E, substantially as shown and described.

4. The retort A, containing the pipe *e*, in combination with the escape-pipe C, containing the pipe *f*, the circulating-pipe D, containing the pipe *h*, the pipe E, and the pipe G, substantially as shown and described.

5. The retort A, containing the pipe *e*, in combination with the pipe C and the pipe D, said pipe D being located in substantially the same plane as the retort and connecting the delivery end of the retort with the inlet-pipe, substantially as shown and described.

386,365. CUT-OFF VALVE. WILLIAM W. ST. JOHN, Brooklyn, N. Y. Filed Sept. 12, 1887. Serial No. 249,449. (No model.)



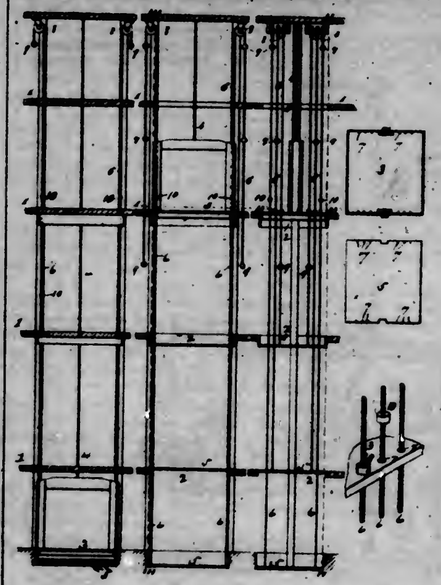
Claim.—1. A piston-valve having the bisected heads placed loosely on a valve-stem, having collars for limiting their motion toward each other, and operated as and for the purpose herein specified.

2. A piston-valve provided with heads C C, arranged in a casing, E, having steam and exhaust ports, and the cut-offs G and G', in combination with a solid stem, D, and hollow stems and tappets, as and for the purpose specified.

3. A piston-valve provided with heads C C, attached to a solid stem, D, and arranged in a casing, E, having steam and exhaust ports, in combination with the loose cut-offs G G', provided with hollow stems and operated by tappets, in the manner shown and set forth.

4. The combination of a piston-valve, arranged in a casing and provided with heads C C, attached to a solid stem passing through hollow stems of the cut-offs G G', operated by tappets, with the right and left hand screws and sleeve-nuts, all arranged as shown and specified.

386,366. SELF-CLOSING HATCHWAY. RICHARD D. TRAGESER, St. Louis, Mo., assignor to the Safety Hatch-Door Company, same place. Filed Oct. 26, 1887. Serial No. 253,493. (No model.)

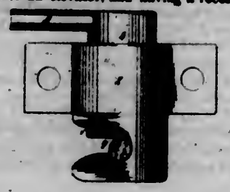


Claim.—1. In combination with an elevator-shaft, pulleys or sheaves at the top thereof, ropes passing over said pulleys, doors each attached to the lower end of independent ropes, blocks or projections on the ropes, and a cage adapted to contact with and lift the blocks successively as the cage rises, and with them the independent ropes and doors, substantially as and for the purpose set forth.

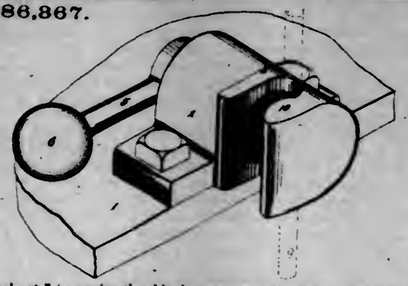
2. In combination with an elevator-shaft, pulleys or sheaves at the top thereof, ropes passing over said pulleys or sheaves and weighted at their upper ends, doors each attached to the lower ends of independent ropes, blocks or projections on the ropes, and a cage adapted to contact with and lift the blocks successively as the cage rises, and with them the independent ropes and doors, substantially as and for the purpose set forth.

386,367. SAFETY-LOCK FOR ELEVATORS. RICHARD D. TRAGESER, St. Louis, Mo., assignor to the Safety Hatch-Door Company, same place. Filed Oct. 26, 1887. Serial No. 253,492. (No model.)

Claim.—The combination, with bracing 2, secured to the lower part of the cage of an elevator, and having a recess opening trans-

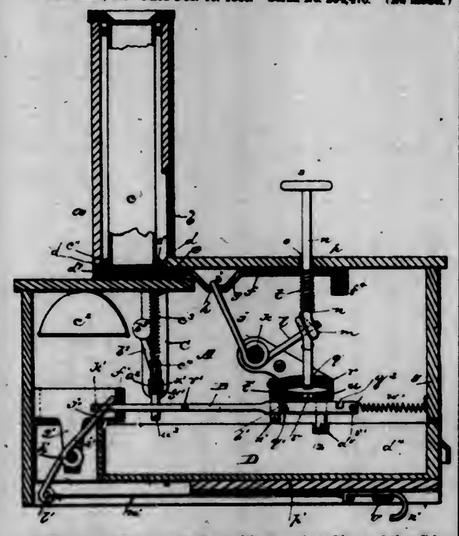


386,867.



versely at 7 to receive the shipping rope or cable, of screw 4, engaging in said housing, having a smooth end for bearing on the cable, and weighted lever or handle 5, rigid therewith, to be operated by the foot, substantially as described, to clamp the shipping-rope when the latter is passed through opening 7 into recess 8.

386,868. DEVICE FOR DELIVERING COIN. GEORGE WEBSTER, Christiana, Pa. Filed Feb. 18, 1888. Serial No. 264,470. (No model.)

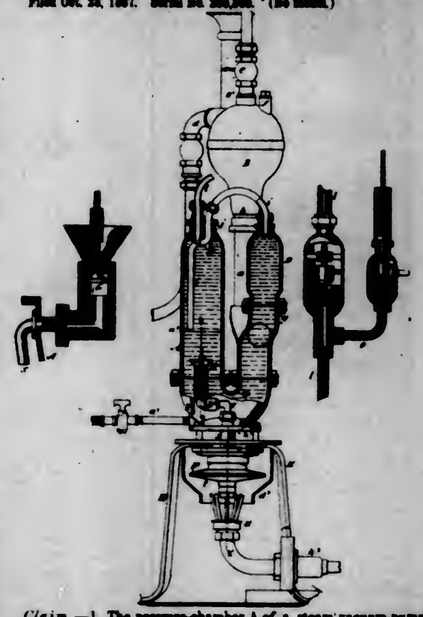


Claim.—1. The combination, with the coin-holders, of the slides formed with the central depression having the perforation through it, and the arms *j* and *l*, forming a continuous piece, provided with the intermediate coil encircling the transverse rod *k* and turning thereon, the vertical rods *n*, having the eye *m*, the spring *t*, for retracting said rod, and the fixed bar *r* and bar *u*, having perforations, whereby said rods are guided, as and for the purpose set forth.

2. The combination, with the vertically-movable rods having push-buttons, the slide, and operating-spring, of the fixed transverse bar, perforated as described, the sliding bar having the perforations, the teeth, angular thumb-piece, and downwardly-projecting arms *a' z*, the spring *c'*, for retracting this bar, said fixed bar having the slots d^3, and the movable bar having the bolts whereby they are loosely connected together, the fixed bar provided with the short bar *t'*, having the notches *a'*, the operating-rods B, having flattened end and notches q' q^3, and beveled pins *r'*, spring *w'*, connected to the end of said rods and to the frame, the pivoted and laterally-movable rack-bar having the hammer and beveled arms a^2, spring c^2, gong, and bar *f'*, pivoted on the rod *h'*, one end connected by its slot to the rod and the other end to the wire, and the thumb-slide and money-drawer, substantially as and for the purpose set forth.

3. The coin counter and deliverer herein described, consisting of the main frame provided with the casing and coin holders or cylinders, the plate therefor having the lugs on its upper face and slideways on its under face, the movable slides constructed with the depression having the perforation, the operating-arms having the intermediate coil and pivoted to the transverse rod, vertically-movable rods having the eye and push-button, the spring for operating these rods, the fixed transverse bar, perforated as described, and provided with the slots at each end, and the notched short bar, the sliding bar having perforations, teeth, and arms *a' z w*, spring *c'* for retracting said bar, the rods B, having flat ends provided with notches and beveled pin, the pivoted and laterally-sliding rack, constructed as described, having the spring c^2, the frame for the rods secured to the main frame, gong c^3, pivoted arm i^2, having at one end the slot j^2 and at the other end the eye *l'*, wire *m'*, thumb-slide *n'*, and the drawer having the notch in one side and the hook in the other side, the whole constructed, combined, and arranged as shown and described.

386,869. STEAM-PUMP. ANSON P. WESTON, New York, N. Y. Filed Oct. 26, 1887. Serial No. 253,203. (No model.)



Claim.—1. The pressure-chamber A of a steam vacuum-pump, combined with a condensing-chamber, D, by means of a pipe, *i*, passing from the upper part of the condensing-chamber into the interior of the working-chamber, said pipe *i* having the nipple i^3 near the top of the working-chamber A, substantially as herein shown and described.

2. In a steam vacuum-pump, the pressure-chamber A and condensing-chamber D, and the pipe *i*, connecting said chambers at their upper ends, said pipe having an opening in the pressure-chamber near the upper end and another at a distance therefrom, said chambers being also connected at their lower ends, combined with the boiler feed-pipe *x*, containing a valve, G, said pipe *x* entering the chamber A, the parts being so arranged that the pressure of steam from the boiler will press said valve to its seat to prevent an inflow of water to the boiler, and by which the pressure of water in the working-chamber will open said valve, when the steam-pressure upon said valve is reduced to admit water through the feed-pipe to the boiler, as set forth.

3. The combination, in a steam vacuum-pump, with a pressure-chamber, of a condensing-chamber, connected at their lower ends, and a pipe connecting said chambers at their upper ends, and having two openings within said pressure-chamber—one near the upper end of said chamber and the other at a distance therefrom—whereby all the steam may be exhausted from said pressure-chamber, substantially as described.

4. In a steam vacuum-pump, the combination of a pressure-chamber, A, a boiler, F, a steam-pipe, *l*, connecting the boiler to the chamber A, a valve, *m*, in the pipe *l*, and the pipe *x*, leading from the chamber A to the boiler and provided with the valve G, substantially as described.

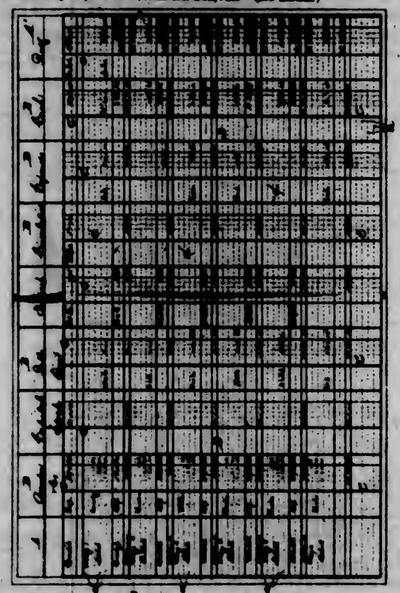
5. The combination of the working-chamber A, water-chamber B, separate condensing-chamber D, pipe *i*, leading from the condensing-chamber D into the working-chamber A, and having two openings in said chamber, generator F, pipe *l*, leading from the generator to the chamber A, and valve *m* in the pipe *l*, substantially as described.

6. The combination of the chambers A, B, and D, generator F, pipe *x*, connecting the generator with the chamber A, and valve G in the pipe *x*, all arranged for operation substantially as described.

7. The boiler F, its water-supply pipe *x*, and steam-discharge pipe *l*, combined with the pump-chambers A *a* B D and with the intervening air-space A, as specified.

8. In a steam-pump, the pressure-chamber A, combined with the steam-supply pipe *l* at its top, the steam-discharge pipe *i* near its lower end, the steam-discharge nipple i^3 near its upper end, and the water-discharge pipe *x* in its lower end, so as to utilize the pressure of steam and the weight of water in said chamber A, as set forth.

386,870. ACCOUNT-BOOK. ARTHUR A. WEBSTER, Kansas City, Mo. Filed May 20, 1886. Serial No. 202,762. (No model.)



Claim.—1. A combined cash-book, ledger, and balance-book having its pages provided with an up-and-down individual-account column, and credit, balance, and debit spaces, in said up-and-down column, one below another, the latter spaces provided at one side of the page with headings indicating credits, balances, and debits.

2. A combined cash-book, ledger, and balance-book having its pages ruled with up-and-down columns for individual accounts and with lines extending across the pages from side to side to form spaces for debits, credits, and balances in the same up-and-down column one below another, said cross-spaces being furnished with headings indicating credits, balances, and debits in their order.

3. A combined cash-book, ledger, and balance-book having its pages provided with a single up-and-down column for each account, and cross-spaces, one below another, in each column for entries in said up-and-down column of the debits, balances, and credits, the balance-space running between and separating the debit and credit spaces, substantially as set forth, and the cross-spaces being furnished with headings indicating credits, balances, and debits.

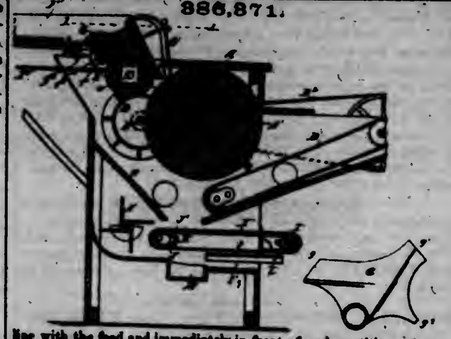
4. A combined cash-book, ledger, and balance-book having its pages furnished with a single up-and-down column for each account and an up-and-down column at the outer end of the page for footings, and a series of cross-spaces extending uniformly across the columns of the page, one below another, to receive the credits, balances, and debit entries, one below another in each column, and the footings of the balances at the side of the page, the cross-spaces being provided with headings indicating credits, balances, and debits.

386,871. CORN-SHELLER. HENRY A. ADAMS, Sandwich, Ill. Filed Jan. 3, 1888. Serial No. 259,722. (No model.)

Claim.—1. In a corn-sheller having two or more shelling-holes, the shelling devices, in combination with the feeding devices, the stationary partitions between the shelling-holes, a movable piece mounted in advance of the partitions, and mechanism for moving said piece back and forth in the line of the feed, substantially as and for the purposes specified.

2. In a corn-sheller having two or more shelling-holes, the shelling devices, in combination with the feeding devices, the stationary partitions between the shelling-holes, and a vibrating arm arranged in

386,871.



line with the feed and immediately in front of each partition, substantially as and for the purposes specified.

3. In a corn-sheller having two or more shelling-holes, the shelling devices, in combination with a force-feed beater arranged in advance of the shelling devices, a vibrating bridge-breaking arm arranged in advance of the beater, and feeding devices, substantially as and for the purposes specified.

4. In a corn-sheller having two or more shelling-holes, the shelling devices, in combination with the feed-trough arranged in a horizontal position, the feed-chains running in said trough, and a vibrating bridge-breaker arranged between the feeding devices and the shelling devices, substantially as and for the purposes specified.

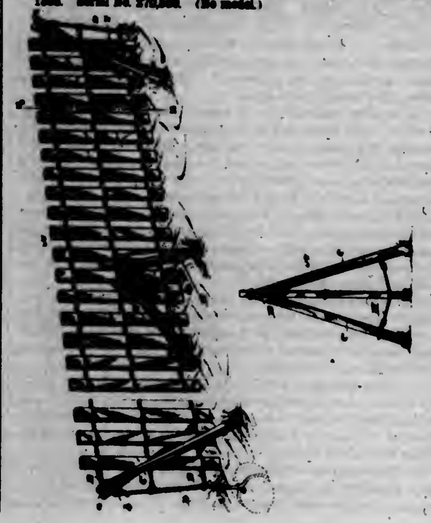
5. In a corn-sheller, the hopper and feed-chains F, in combination with the shaft *f*, provided with sprocket-wheels *f'* for the feed-chains, the vibrating arm G, mounted on said shaft *f*, and the beater E, provided with projections engaging with said arm to vibrate it, substantially as and for the purposes specified.

6. In a corn-sheller, the feed-trough and feed-chains running therein, in combination with a vibrating arm, G, mounted and arranged to vibrate in line with the feed, and a revolving shaft provided with projections arranged to engage said arm at suitable intervals and throw it outward contrary to the direction of the feed, substantially as and for the purposes specified.

7. In a corn-sheller, the feed-trough and feed-chains running therein, in combination with the vibrating arm G, and a shaft having projections for engaging said arm and turning it outward at suitable intervals, and a stop for arresting this outward movement of the arm, substantially as and for the purposes specified.

8. In a corn-sheller, the vibrating arm G, provided with the front and rear extensions *g* g^4, the revolving beater E, provided with lugs or projections e^4, and the stop g^4 on the feed-hopper, substantially as and for the purposes specified.

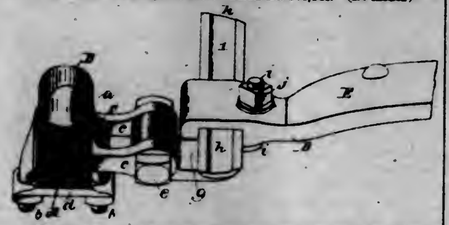
386,872. FENCE. RICHARD T. ALDEN, Lodi, Mich. Filed Apr. 12, 1888. Serial No. 270,602. (No model.)



Claim.—1. The combination, in a fence, substantially as described, of the main longitudinal wires, the end stakes inclined and crossed to receive the ends of the top main wire, the anchor-wires, also secured to the crossed ends of the inclined end stakes, the said top main wire having its ends secured to the anchor-wires, the lower loop-wires for the stake-post and the intermediate cross-stakes embracing one of the pickets and bound by a loop-wire at their crossed portions, a loop-wire securing their lower ends to the fence, and a binding-lever having its upper end in the loop of the wire uniting the said intermediate stakes, and the opposite ends of this binding-lever secured to the lower portion of the fence, substantially as specified.

2. The combination, with a fence, substantially as described, of longitudinal wires, end stakes crossed and inclined, anchor-wires secured to the upper crossed ends of the said stakes and also to the ends of the fence-wires, and the brace-wire connecting the lower ends of the said stakes with the lower portion of the fence, substantially as specified.

386,373. SHIFTING-POLE COUPLING. SAMUEL R. BAILEY, Amesbury, Mass. Filed Apr. 9, 1888. Serial No. 270,141. (No model.)



Claim.—1. A vehicle-shackle draft-eye having a bar formed thereon with its longitudinal line parallel with the axis of the pivot-bolt, substantially as specified.

2. The bar *h*, in combination with the draft-eye, and having its edges or planes 2 2 oblique to and at an acute angle to plane 1, substantially as specified.

3. The bar *h*, formed integrally with the draft-eye and raised above arm *g* to allow iron D to move over said arm, substantially as specified.

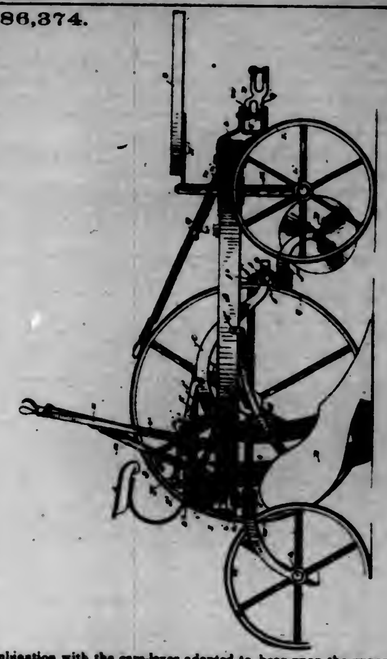
4. The combination, with the draft-eye of a vehicle-shackle having bar *h*, of extension-iron D, formed with a transverse groove or slot to receive said bar, substantially as specified.

5. In a shaft-shackle, the combination, with bar *h*, formed upon shaft-eye *f*, and extension-iron D, formed to engage said bar, of key-bolt *i*, formed and arranged to operate substantially as specified.

6. The stop *k*, formed upon bar *h*, as and for the purposes specified.

7. In a vehicle-shackle, the combination of draft-eye *f*, its bar *h*, extension-iron D, and key-bolt *i*, all adapted to coact substantially as specified.

386,374. PLOW. JOHN W. BARTLETT, Maine, Ill. Filed Apr. 16, 1887. Renewed Jan. 5, 1888. Serial No. 260,904. (No model.)



Claim.—1. The combination, with the parallel frame-bars, of the colter and plow-beam of an approximately goose-neck shape, the same being adapted to carry at its rear end a plow and at its forward end a colter, substantially as set forth.

2. The combination, with the parallel frame-bars and the plow and colter, of the beam curved upward, forward, and downward between the frame-bars and provided with a forward extension which receives an adjustable collar having a vertical sleeve provided with an adjusting-screw and receiving the colter-carrying-frame spindle, substantially as and for the purpose set forth.

3. The combination, with the approximately goose-neck-shaped beam carrying a plow, of the parallel bars receiving between them said beam and having a pendant or standard, to which the heel end of the plow is pivoted, and the manipulating-lever linked to said beam, substantially as shown and described.

4. The combination with the pivoted plow, with its curved beam guided between parallel bars, and the crank-axle-adjusting lever, with its retaining pawl or detent, of the pivoted rack engaged by said detent or pawl and connected to the beam-adjusting lever, substantially as and for the purpose specified.

5. The combination, with the parallel frame-bars having a clip at their forward ends, of the lever having a plate-like form at its pivotal point and its end curved beyond a clip form thereof, and the clevis secured in said end of the lever between a U-shaped piece, substantially as shown and described.

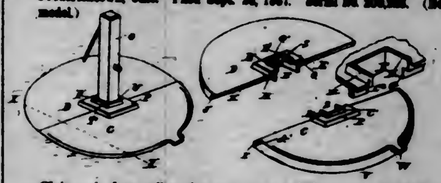
6. The rear caster-wheel with its carrying-frame spindle provided with a projection or lug and the sleeve applied to rear end of the frame-bars and provided in its lower edge with a notch or recess, in

386,374.

combination with the cam-lever adapted to bear upon the upper end of the caster-wheel-frame spindle and to raise and lower the spindle and wheel, substantially as and for the purpose specified.

7. The combination, with the plow-beam having an approximately goose-neck shape and carrying a plow, and the cranked axle carrying a wheel at its other end, of the frame consisting of the parallel longitudinal bars, which receive between them said beam, and the third bar having an end bar at a right angle thereto offset about at its mid-length and contracted toward its ends, the same being bolted to the parallel bars, substantially as and for the purpose described.

386,375. WELL OR CISTERN COVER. JAMES E. BLACKBURN, Fredericktown, Ohio. Filed Sept. 26, 1887. Serial No. 250,222. (No model.)



Claim.—1. In a well or cistern cover, two halves, each of which is provided with a central recess and a flange, one of the halves being further provided with the legs having seats or recesses between them, and the other half having the hooks adapted to engage with the sides of the legs, and the two blocks in the central recesses of the halves, substantially as and for the purpose shown and set forth.

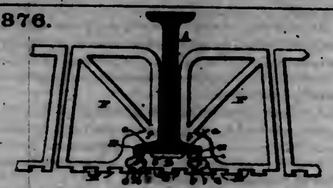
2. In a well or cistern cover, the combination, with two halves, each of which is provided with an upwardly-flanged recess at the middle of its inner or straight side, of the retainer-blocks for fitting within said recesses, each of which has a downwardly-extending flange around its outer edge adapted to fit over the upward flange around the recess of the cover, said blocks being further provided with a recess around which is formed an upwardly-projecting flange for securing and retaining the pump in position.

386,376. TILE CEILING. JAMES E. BENNET, St. Louis, Mo. Filed Feb. 25, 1888. Serial No. 265,247. (No model.)

Claim.—1. The herein-described tile B, having a longitudinal channel, *b*, in its upper surface and longitudinal grooves C C in its edges, substantially as and for the purpose described.

2. The combination of the double-flanged joint A and the tile B, having longitudinal channel *b* in its upper surface and grooves C C in its side edges, with the bent clips E E, engaging the flanges of the

386,376.



girder, and in the grooves of tile B, suspending the latter from the girder, and the shouldered skew-tiles holding said clips in position, all constructed and arranged substantially as and for the purpose described.

3. The combination of joint A, clip E, said tiles B, having grooves C in their side edges, with the skew-tiles F, having shoulders *f*, and grooves *f'*, coinciding with grooves C of the tiles B when in position, as and for the purpose specified.

386,377. TILE FOR CEILINGS. JAMES E. BENNET, St. Louis, Mo. Filed Feb. 25, 1888. Serial No. 265,248. (No model.)



Claim.—1. The combination of the tiles provided with shoulders at their adjoining edges with metal ties engaging said shoulders and locking the tiles together, substantially as described.

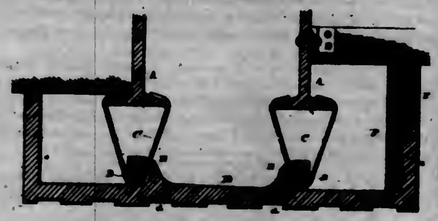
2. The combination of the tiles B C, formed with oppositely-inclined shoulders at their adjoining inner edges, with ties engaging said shoulders and securing the tiles together, substantially as described.

3. A column for buildings, composed of a central metal post, and inclosing-tiles having shoulders at their inner edges and arranged to leave an air-space between their inner faces and the post, and metal ties engaging the tile-shoulders and locking the tiles, substantially as and for the purpose described.

4. The herein-described concavo-convex tile formed with oppositely-inclined shoulders or projections at its side edges, substantially as and for the purpose described.

5. The combination of the semicircular tiles C and B, formed, respectively, with oppositely-inclined shoulders *b* and *b* at their adjoining edges, with the ties F engaging said shoulders and locking the tiles together, substantially in the manner and for the purpose described.

386,378. CEILING-TILE. JAMES E. BENNET, St. Louis, Mo. Filed Feb. 25, 1888. Serial No. 265,249. (No model.)



Claim.—1. The combination of the girders and the rods suspended therefrom by hangers with the tiles having curved flanges on their upper faces engaging said rods, the edges of said tiles extending beyond the rods, substantially as and for the purpose described.

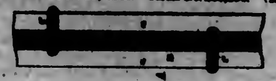
2. The herein-described tile D, having oppositely-curved flanges E E on its upper surface, the edges of the tiles extending beyond the flanges on each side, substantially as and for the purpose described.

3. The combination of the girders A and rods B suspended therefrom with the tiles D formed with oppositely-curved flanges E E on their upper faces, engaging rods B and suspending the tiles thereon, the side edges of the tile extending beyond the rods, substantially as and for the purpose described.

4. The tile D, provided with upstanding flanges *e e* at its edges, and intermediate oppositely-curved flanges E E on its upper surface, all constructed and arranged substantially in the manner and for the purpose described.

5. The combination of the flanged girder and rods B, suspended therefrom, with the tiles D, having curved flanges E E engaging on rods B, and upstanding flanges *e e* at their side edges, and the plain tile F, all constructed and arranged substantially in the manner and for the purpose described.

386,379. HANGER FOR CEILING-TILES. JAMES E. BENNET, St. Louis, Mo. Filed Feb. 25, 1888. Serial No. 265,250. (No model.)



Claim.—1. The combination of the flanged girders with the rods parallel with and below said girders and bent hangers supporting said rods and arranged alternately on opposite sides of the girders and rods, substantially as and for the purpose described.

2. The combination of the flanged girders with rods B and the hangers C, hung upon the flanges of the girders alternately on opposite sides thereof, and suspending the rods B therefrom, and the tiles suspended from said rods, substantially as and for the purpose described.

386,380. TELEPHONE-TRANSMITTER. CHARLES W. BROWN, Montreal, Quebec, Canada, assignor to the American Bell Telephone Company, Boston, Mass. Filed May 18, 1888. Serial No. 274,302. (No model.)



Claim.—1. In a telephone-transmitter employing granulated conducting material as the current-varying medium, the combination of a vibratory diaphragm having free edges with a vertically-mounted granulation-containing cell comprising a vertical metal back plate, a rigid non-conducting annular side wall, an elastic and yielding metal front plate acting as an auxiliary vibrating diaphragm, a mass of granulated conducting material inclosed between the said plates and thereby included in an electric circuit, a centrally-perforated metal gland clamping the same, and a rod attached to the center of the said front plate and passing through the central perforation of the gland to a mechanical connection with the outer diaphragm, whereby the vibrations of the outer diaphragm are transmitted to the front plate of the said cell and to the granulations, substantially as described.

2. The combination, substantially as hereinbefore described, of the compound granular carbon button comprising a mass of granulated carbon inclosed between a rigid metal plate and an elastic and centrally-vibrating metal plate, the said plates being separated electrically by a rigid non-conducting ring, with an external vibrating diaphragm, the said compound button being mounted vertically in proximity to the vibratory diaphragm, the center of the button being approximately opposite to the center of the said diaphragm, and the centers of the vibrating diaphragm and the elastic front plate of the button being mechanically united by a rod, whereby the vibrations of the former are transmitted to the latter, as described.

3. In a telephone-transmitter, the combination, with a vibratory diaphragm loosely supported in a ring-seat and adapted to receive sound-waves, of a hollow button supported opposite thereto, having an elastic metal front plate serving as an auxiliary diaphragm, a rigid metal back plate separated electrically therefrom by a ring of hard rubber and carbon granulations interposed in the chamber thus formed, and a rod attached to the center of the auxiliary diaphragm and in contact with the main diaphragm, so that the vibrations of the latter may be communicated to the former, both diaphragm and hollow button being vertically mounted, substantially as hereinbefore described.

4. In a granular carbon transmitter, the compound containing-cell and contents comprising an external cylinder, a rigid metal back plate closing one end of said cylinder, constituting one electrode of the said cell and centrally perforated for the introduction of the granulations, a rigid and non-elastic ring within the external cylinder and in contact with the said rear wall and forming the non-conducting side wall of said cell, an elastic metal front plate supported by said ring and clamped at its edges by a metal ring, and a screw-gland closing the other end of the external cylinder, whereby the said elastic plate is fixed opposite to the back plate, the central portion thereof being free to vibrate, granular carbon interposed between the said plates.

and a screw-plug closing the central aperture of the back plate for the purpose of retaining the carbon therein.

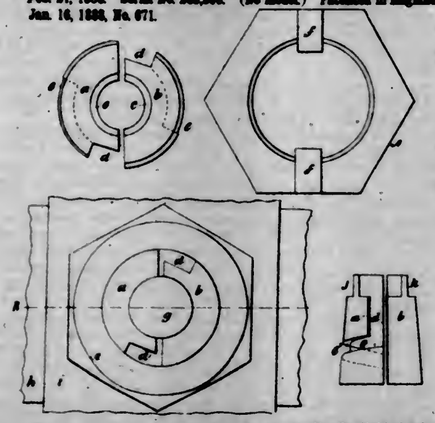
5. The combination of an ordinary Blake transmitter-case, diaphragm, and adjustment lever and screw with the hereinbefore-described granulation-containing cell, the granulations being contained between a rigid back plate and a centrally-elastic front plate, forming electrodes of an electric circuit, separated electrically at their edges by a rigid and non-conducting ring in such a manner as to form a shallow chamber for the reception of said granulations, the said cell being suitably mounted upon the central portion of the adjusting-lever opposite the central portion of the Blake diaphragm, and the front plate or auxiliary diaphragm thereof being provided with a light rod attached to its center and projecting outwardly therefrom to a delicate but permanent mechanical contact with the center of the main diaphragm, whereby the vibrations of the latter are communicated to the former, for the purpose specified.

6. The combination, with the vibratory diaphragm and adjusting-lever of a Blake transmitter, of a compound granular carbon button mounted upon the center of the said lever so that its center is in the same horizontal plane as the center of the said diaphragm, the said button comprising carbon granulations inclosed between a rigid back electrode and a vibratory elastic front electrode clamped at its edge and adapted to serve as an auxiliary diaphragm, the said electrodes being separated by a non-elastic and non-conducting ring, and means, as indicated, for producing in the auxiliary diaphragm the vibrations of the main diaphragm, substantially as described.

7. In combination with the vibratory diaphragm and adjusting lever and screw of an ordinary Blake transmitter, (so called,) the hereinbefore-described hollow button containing granular carbon and closed in front by a metal elastic vibrating plate constituting an auxiliary diaphragm, the said hollow button being mounted upon the central portion of the adjusting-lever in line with the center of the main diaphragm, the center of the auxiliary diaphragm having a mechanical connection with the center of the main diaphragm, so as to participate in its vibrations, and the hollow button being provided with suitable electrical connections whereby it is adapted for inclusion in an electric circuit, substantially as described.

8. In a telephone-transmitter, a shallow chamber containing granular current-varying material inclosed between two metal plates constituting the electrodes of an electric circuit and uniting the same electrically, one of the said plates being rigid and the other elastic, an adjustable lever supporting the said chamber vertically by means of the rigid plate thereof, a vibratory diaphragm loosely mounted to vibrate freely in a vertical plane, a rod extending outwardly from the elastic plate of the said chamber, an adjusting-screw controlling the said lever and adapted to adjust the same and to bring the free end of the rod into contact with the said vibratory diaphragm for the purpose of forming a mechanical connection between the said diaphragm and the front plate of the carbon-containing chamber, and electrical connections whereby the granulations and their inclosing-plates may be included in an electric circuit, substantially as described.

386,381. NUT-LOCK. RICHARD CLAY, London, England. Filed Feb. 27, 1888. Serial No. 265,399. (No model.) Patented in England Jan. 16, 1888, No. 671.



Claim.—1. A lock-nut consisting of a longitudinally-divided tube adapted to engage a screw, rod, or shaft, and provided with recesses *d d* and *e e*, and a ring or collar provided with studs adapted to engage said recesses to bind the tube on the screw, rod, or shaft, substantially as described.

2. The combination of the two gripping-pieces adapted to engage a screw, rod, or shaft, and provided with the longitudinal recesses *d d* and recesses *e e*, formed at an obtuse angle to said recesses, and a ring or collar provided with studs and adapted to engage said recesses *e e*, substantially as described.

3. A lock-nut consisting of a longitudinally-divided tube adapted to engage a screw, rod, or shaft, one portion of said tube provided with a recess, *d*, and a recess, *e*, and a ring or collar provided with a stud, *f*, adapted to engage said recess *e* to bind the tube on the screw, rod, or shaft, substantially as described.

4. The combination of the rod *l*, having a recess, *m*, the gripping-pieces *a b*, having the ribs *n n* and the recesses *d e*, and a locking ring or collar adapted to engage said recesses *e*, substantially as described.

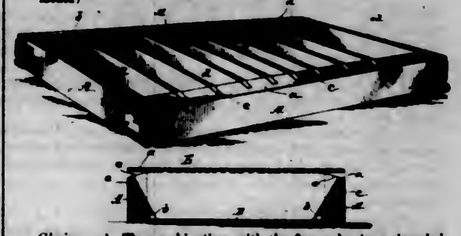
386,382. CUFF-HOLDER. GEORGE J. GLEIM, Goshen, Ind. Filed Sept. 29, 1887. Serial No. 251,024. (No model.)



Claim.—1. As an improved article of manufacture, a cuff-holder consisting of a spring-clamp and a rod having a hook on one end, and its opposite end forming the hinge-pintle for the jaws of the said clamp, substantially as specified.

2. As an improved article of manufacture, a cuff-holder consisting of a spring-clamp and a rod forming the pintle therefor, and having its opposite end turned in hook form with its terminal provided with the enlargement, substantially as specified.

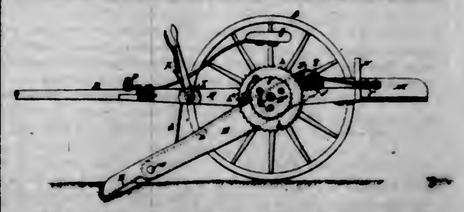
386,383. FEEDING PAN OR TRAY FOR FISH, &c. RALPH CORNABLE, Petoskey, Mich. Filed Nov. 30, 1887. Serial No. 256,803. (No model.)



Claim.—1. The combination, with the frame having a beveled upper edge and slanting notches in the inner face of the frame, of a set of partitions having beveled ends, said partitions adapted to rest in the notches and drop out of the same on the inversion of the frame, substantially as set forth.

2. The combination, with a frame, a metallic bottom secured thereto, and a removable metallic lid or cover, said frame having a beveled upper edge and slanting notches in its inner faces, of a set of removable partitions having beveled ends adapted to rest in the notches of the frame, the upper edges of these partitions being higher than the ends of the frame, for the purpose described and set forth.

386,384. POTATO DIGGER AND PICKER. WILLIAM F. CONWAY, Sheffield, Mass. Filed June 20, 1887. Serial No. 241,562. (No model.)



Claim.—1. A single pair of driving-wheels, the frames A and E, supported solely upon the axle of said driving-wheels in such manner as to vibrate thereon independently of each other, the frame A, having transverse shaft I, and the frame E, having a shovel at its front end, in combination with clutch and chains K *d*, substantially as set forth.

2. The frames A E, suspended solely upon the driving-axle F, so as to vibrate thereupon independently of each other, combined with the endless platform, shafts *e f*, the latter arranged in the rear of the driving-axle F and projecting at each end beyond the sides of frame E, and pinion *g*, cog-wheels A, and a pawl-and-ratchet mechanism, substantially as set forth.

3. The driving-axle F, wheels G, the inner surfaces of whose hubs are provided with ratchet-teeth, and the cog-wheels A, mounted on said driving-axle and provided upon their outer surfaces with spring-pressed pawls, in combination with the pinion *g*, shaft *f*, traveling platform, and frame E, substantially as set forth.

4. The frames A E and traveling platform L, in combination with the frame N, secured to the rear ends of the side bars of frame A, and the vibrating shaker supported by said frame N, substantially as set forth.

5. The frames A E, traveling platform L, and shaft *f*, in combination with gearing *g* A, shaker and supporting frame M N, crank *q*, and bell-crank lever and connecting-rod, substantially as set forth.

6. In combination, in a potato digger and picker, a shovel, a revolving platform, and a vibratory shaker provided with horizontally-projecting teeth or bars A, substantially as set forth.

386,385. SPARK-ARRESTER. GARY H. COOPER, Port Huron, Mich., assignor of one-half to Daniel Wood, East's Station, Ind. Filed Feb. 16, 1883. Serial No. 264,264. (No model.)



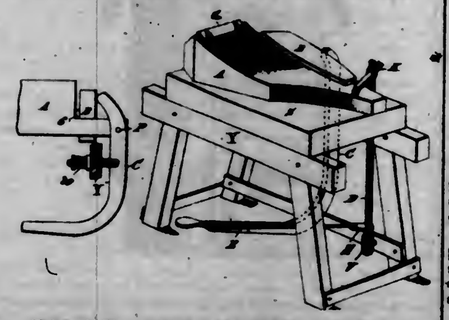
Claim.—1. The combination, with a locomotive-engine having an extension-front, B, and the blank plate I, extending under the smoke-stack, of the exhaust-pipes passing through the blank plate and having an opening below said plate for the escape of a part of the exhaust-steam into the extension-front beyond the blank plate, substantially as described.

2. In combination with the extension-front B of a locomotive-engine and the exhaust-pipes D K, the slotted tubes F H, connected with said exhaust-pipes, substantially as shown and described.

386,386. COMPOSITION FOR PRESERVING FOOD. WILLIAM H. DARBEE, Chicago, Ill. Filed June 2, 1888. Serial No. 275,203. (No specimens.)

Claim.—The hereinbefore-described antiseptic compound or composition adapted to be used for the preservation of perishable articles in the manner described, said compound or composition consisting of sulphur, sugar, cassafras, cinnamon, and nitrate of potassium, mixed in about the proportions set forth.

386,387. WELDING-BENCH FOR PLOWS. JERRY DION, North Bend, Nebr. Filed Aug. 1, 1887. Serial No. 245,993. (No model.)



Claim.—1. The combination of the bed-plate A, having jaws *a a* and curved on its upper face, with the clamp B, having tongue *b*, and foot-lever C, the top edge of which bears against the said clamp, whereby the said clamp is brought against the plate to hold the land-side while being welded, substantially as described.

2. The combination of the bed-plate A, curved on its upper face, with the clamp B, the lever C, moving said clamp, the upright shaft D, having bent lever K on its upper end, and the rod E, connecting said shaft to the lever C, substantially as and for the purposes described.

3. The combination of the curved bed-plate A, the gage G at one end of it, the clamp B, the lever C, and spring W, connecting therewith, the rod D, having lever K at its upper end and the short lever H at its lower, the rod E, and the spring X, acting on the clamp, substantially as described.

4. In a welding-bench, a plate fixed to the bed-block and adapted to hold the share, a clamp for holding the landside against said plate, and a spring adapted to operate on said plate, a lever for moving said clamp, and a spring for drawing said lever back, substantially as described.

5. The bed-plate A, having jaws *a* and spring X thereon, and the gage M, combined with the clamp B, having a flipped tongue, *b*, a lever operating said clamp, and a swinging lever to hold the share on the bed-plate, substantially as described.

386,388. TOE-WEIGHT FOR HORSESHOES. SAMUEL H. DODMAN, Newport, Vt. Filed Jan. 16, 1888. Serial No. 260,810. (No model.)



Claim.—1. A detachable toe-weight which is contained wholly within a recess in the upper side of a horseshoe, substantially as and for the purpose specified.

2. A horseshoe which is provided within its upper side with a recess, in combination with a toe-weight that fits into and is contained wholly within such recess and is adapted to be placed in and removed from position while the shoe is secured upon the hoof of a horse, substantially as and for the purpose shown.

3. The combination of a detachable toe-weight and a recessed horseshoe which is adapted to receive and contain said toe-weight and to wholly cover and protect its lower side, substantially as and for the purpose set forth.

4. A horseshoe which is provided within its upper side with a recess, in combination with a detachable toe-weight that fits into and is contained wholly within such recess, and with means for fastening said parts together, substantially as and for the purpose shown and described.

386,389. RAILROAD-TIE. ARTHUR DURAND, Washington, D. C., assignor to M. A. Ballinger, same place. Filed Oct. 22, 1887. Serial No. 252,697. (No model.)



Claim.—1. A railroad tie or sleeper formed of sheet metal or steel plate having an approximately inverted-U shape throughout its length and having an inclination at its end and central portions, as shown and described.

2. A railroad tie or sleeper formed of a sheet metal or steel plate provided with an approximately inverted-U shape throughout its entire length and slightly inclined on its upper surface, and having its sides flared, and open at its ends and throughout its length, as shown, and for the purpose stated.

3. A metallic railroad tie or sleeper of approximately inverted-U shape throughout its length and having central inclined connecting-neck and horizontal webs or flanges projecting therefrom, as shown and described.

4. A metallic railroad tie or sleeper having gutters or approximately inverted arches in its upper surface and running longitudinally

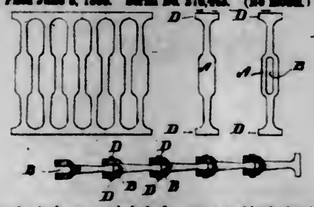
the length of the tie in the end portions thereof, substantially as shown, and for the purpose stated.

5. The combination, with a metallic tie or sleeper having V-shaped oppositely-disposed flanges or raised portions, of the fastening-bolts having threaded shanks and bottom heads provided with upper and lower shoulders, the former being designed to bear against the under side of said flanges and the latter in contact with the lowermost portion thereof, and the retaining-nuts, substantially as shown and described.

6. The herein-described railroad tie or sleeper, consisting of the metallic plate of approximately inverted-U shape having the downwardly-projecting sides flared and open at the ends, the longitudinal gutters or inverted arches formed in the end portions of said tie or sleeper, the upwardly-projecting V-shaped flanges having apertures, the connecting-neck, and the horizontal webs or flanges, all constructed and arranged substantially as shown and described.

7. A railroad tie or sleeper formed of a sheet metal or steel plate of approximately inverted-U shape having a corrugated or waved upper surface running longitudinally the length of the tie or sleeper, as and for the purpose stated.

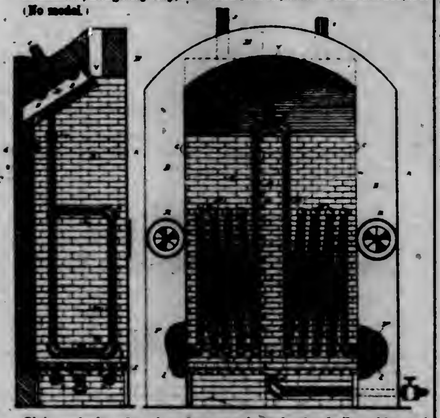
386,890. SHEET-METAL CHAIN. FREDERICK ROSE, Bridgeport, Conn., assignor to the Smith & Rose Manufacturing Company, same place. Filed June 8, 1888. Serial No. 276,463. (No model.)



Claim.—1. A sheet-metal chain formed from blanks having heads at each end and a slot in the middle, said blanks being folded to constitute links, the heads of each link being connected to the succeeding link through the slot in the latter, substantially as set forth.

2. In a sheet-metal chain formed from blanks having heads at each end and a slot in the middle, the links formed by folding the blanks so that the heads register, the heads of each link being inserted within and turned athwart the slot of the succeeding blank prior to the folding of the latter, substantially as shown and set forth.

386,891. NATURAL-GAS HEATER FOR FIRE-PLACES. JOHN M. ELLISON, Allegheny City, Pa. Filed Feb. 20, 1888. Serial No. 265,250. (No model.)

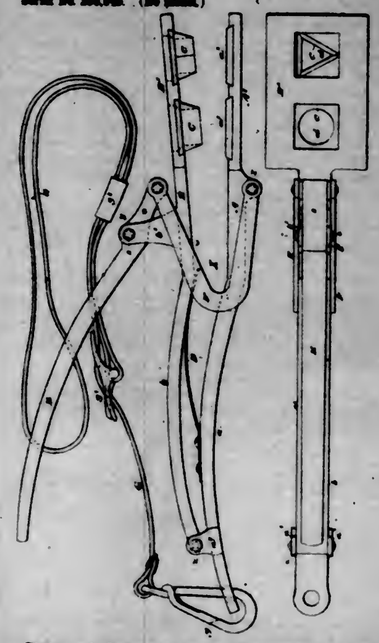


Claim.—1. In a fire-place for natural gas having hollow sides and top, a sectional pipe heater, L L, in said fire-place having lateral pipe-connections leading to said sides and upwardly-extending pipe-connections leading to said top, substantially as specified.

2. The combination, with a fire-place having natural-gas burners and hollow side walls, of the sloping hollow top and the pipe heaters connected by pipe-extensions to said sides and top, substantially as specified.

3. The natural-gas fire-place heating apparatus having hollow sides and top and registers R, in said sides, coil-pipe in said fire-place above the natural-gas burner, and extensions of said coil-pipe to the chambers in said side walls and to the chamber in said top, substantially as specified.

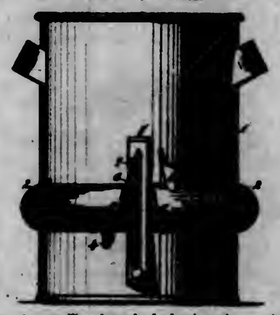
386,892. PUNCH. CHARLES J. HERMAN, Salt Lake City, Utah, assignor to William Grant Van Horne, same place. Filed May 18, 1887. Serial No. 238,068. (No model.)



Claim.—1. In a punch, the combination, with two jaws hinged together and a spring arranged between them, of an operating-lever with arms of unequal length fulcrumed on the upper one of said jaws, and two U-shaped connecting-links, F F, coupled at their ends, respectively, to the short arm of the operating-lever and to the lower jaw, as set forth.

2. In a punch for marking cattle, the combination, with the long jaw A, provided with a head, A', and a cutting-plate, *a'*, of the long jaw B, provided with a head, B', and cutters C, mounted on said head, said jaws being hinged together at *x*, the spring between the jaws, the operating-lever E, fulcrumed on the top of jaw B at *y*, and the U-shaped links F F, each coupled at one end to the short arm of lever E and at the other end to jaw A at *z*, whereby the room is provided for the ear of the animal, as set forth.

386,893. CHURN. JAMES M. FLACK, Shelby, N. C. Filed Feb. 7, 1888. Serial No. 263,220. (No model.)



Claim.—A metallic churn-body having the semicircular closed trough 2, provided with closed ends and extending horizontally around it and composed of a strip of metal bent transversely into semicircular form and soldered along its upper and lower horizontal edges to the vertical wall of the churn about midway between its top and bottom, said closed ends of the trough being arranged directly opposite each other and separated by an intervening channel containing a thermometer supported by the wall of the churn, one end portion of the trough carrying directly on its upper side an inlet and the opposite end portion carrying directly on its lower side an outlet, substantially as shown and described.

386,894. GRAIN-DRILL. CHARLES FOSTER, East Dubuque, Ill. Filed June 6, 1888. Serial No. 276,262. (No model.)



Claim.—1. In a seeder, a series of independent levers, B, pivoted on a transverse bar of the frame, each provided with a toothed segment and a pawl and connected severally to the runners by rods and springs, substantially as described.

2. In combination with the main lifting-bar A, a series of levers, B, pivoted thereon and connected severally to the runners, toothed segments on the bar A, to hold the pawls of the levers B, and a lever and pawl on the bar A, with toothed segment on the frame, whereby any of the runners may be moved separately or all together, substantially as described.

3. In combination with the runners or shoes of the seeder, the pressure-wheels and the spring-rods connecting the wheels and runners, all substantially as described.

4. In combination with the pressure-wheel and runner of a seeder, a spring connecting-rod, said spring-rod having its end connected adjustably to the runner or fluke, whereby the pressure may be regulated, all substantially as described.

5. In combination with the pressure-wheels and runners, the spring connecting-rod C, coiled about a stud, F, and having its end projecting beyond said stud and bearing on a fastening device, all substantially as described.

6. The combination, with the wheels and runners of the seeder, of the spring-rod C, one upon each side of the wheel, the rods having a spring-coil between the wheel and the runner, substantially as described.

7. The series of levers B, mounted upon the main adjusting-bar, and rods H, having spring *i*, and legs upon the fluke to receive the lower ends of the rod H, whereby the runners in whatever position are always under the same pressure, substantially as described.

386,895. APPARATUS FOR FIRING CHINA. ISAAC S. FRANCISCUS, Milwaukee, Wis. Filed Nov. 17, 1887. Serial No. 255,263. (No model.)

Claim.—1. An apparatus for firing china, comprising a kiln having an opening in its bottom, a gas-burner in register therewith provided with an outwardly-extended hollow arm, and a nipple provided with a screw-threaded tip that passes through the outer end of said arm and has a conically-reduced inner end, substantially as set forth.

2. In a china-firing apparatus, the combination of a supporting-stand, a suitable kiln provided at its bottom with an opening, a hearth



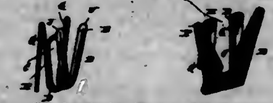
having a centrally-located circular bead, and a heat-generator arranged on the hearth within and in contact with the bead to register with the bottom opening in the kiln, substantially as set forth.

3. In a china-firing apparatus, the combination of a supporting-ring mounted on legs, a suitable kiln provided at its bottom with an opening, a hearth having a circular outer bead and a smaller inner bead, and a heat-generator arranged on the hearth within and in contact with said inner bead to register with the bottom opening in the kiln, and the said stand in contact with the said outer bead, substantially as set forth.

4. In a china-firing apparatus, the combination of a supporting-stand, a kiln having legs thereon that rest upon the stand, and a removable top, an inner receptacle, and a heat-generator for firing said kiln, substantially as set forth.

5. In a china-firing apparatus, a kiln comprising a china-containing receptacle, and a double-walled outer shell filled with sand or other analogous material, substantially as set forth.

386,896. HEDGE-FASTENER. LOUIS C. P. PIERRE, New York, N. Y. Filed Apr. 27, 1888. Serial No. 272,551. (No model.)



Claim.—The herein-described cockle-fastener, formed from a single thickness of wire or strip of sheet metal, having a central pear-shaped loop contracted at one end so as to form V-shaped or diverging prongs, which said prongs are bent approximately parallel to the loop, and having the downwardly-projecting prongs G G adapted to overlap the center piece of the tie and bear against the back part of the same, substantially as and for the purpose herein shown and described.

386,897. BARTH-AUGER. PAUL GARVENS, Troy, Ohio. Filed Feb. 23, 1888. Serial No. 265,265. (No model.)

Claim.—1. An auger having reversible blades or cutters.

2. An auger having reversible outwardly-curved blades or cutters provided with straight-cutting side edges.

3. An auger having reversible outwardly-curved blades having straight-cutting side edges and vertically-curved ends.

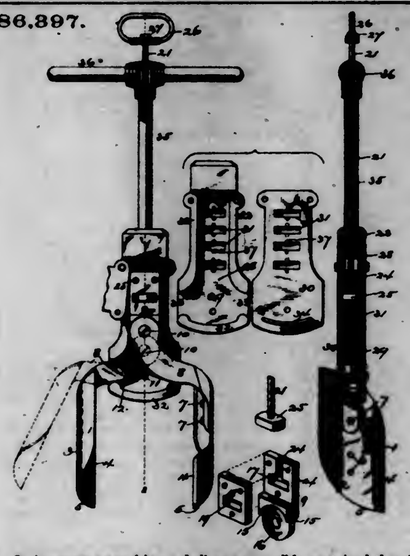
4. An auger having reversible blades having straight-cutting side edges and curved ends.

5. An auger having reversible blades or cutters, curved arms removably connected thereto and pivotally connected together, an inclosing case having side openings in its lower portion, a slide connected to said arms, and a rod adapted to reciprocate said slide within the case for the purpose of covering the expansion and contraction of said arms and the thereto-connected cutters, substantially as set forth.

6. An auger comprising a box or case, a slide having bearing therein, a rod adapted to reciprocate said slide, curved arms pivotally connected to said slide, reversible cutting-blades removably connected to said curved arms, and means for rotating the auger.

7. An auger comprising a shell or case having grooves or projections on its inner faces and side openings therein, means for rotating said shell or case, a slide contained within said case and having a transverse slot therein, a rod connected to and adapted to reciprocate said slide, a turnable button or eccentric secured to the lower end of said rod and adapted to engage the grooves or projections in the case or shell, curved arms pivotally connected to said slide, and cutting-blades secured to the lower ends of said curved arms.

886,397.



8. An auger comprising a shell or case, a slide contained therein, cutting-blades, arms pivotally connected together and to said slide and attached to said cutting-blades, a rod for rotating said auger, and a rod adapted to reciprocate said slide and expand and contract the cutting-blades and arms connected thereto and lock the same in position.

9. An auger comprising a shell or case having curved guideways in its lower end, an operating-rod connected to said case, a slide contained within said case, a plurality of curved arms pivotally connected together and to said slide at their upper ends, a plurality of reversible cutters removably connected to the lower ends of said curved arms, a rod connected to said slide for the purpose of reciprocating the same, a slide-lock adapted to be operated by the rod connected to the slide, and lock-engaging devices carried by said shell or case, substantially as set forth.

10. An auger having a plurality of boring or cutting blades, arms connected thereto and pivotally connected together, a slide connected to said arms and adapted to reciprocate the same and cause the expansion and contraction thereof and of the thereto-connected cutters, a shell or case inclosing said slide, and a lock adapted to hold said arms and cutters in their adjusted positions.

11. An auger comprising a box or shell having lock-engaging devices in its interior, a two-part slide contained within said box and having in the inner faces of its respective sections a vertical groove to receive the slide-reciprocating rod, a transverse slot extending through said sections and a bottom extension, a plurality of blades or cutters, arms connected at their lower ends to said blades and at their upper ends pivotally connected together and to the extension on the slide, a slide-operating rod connected with said slide and having at its lower end a slide-locking eccentric or button, and an auger-operating rod, all substantially as and for the purpose set forth.

12. In an auger, the combination, with a plurality of cutters, cutter-carrying arms, a slide to which said arms are pivotally connected, and a slide-operating rod, of a box or case adapted to receive said slide and arms and permit of their reciprocation therein, and consisting of a bottom portion having flanged sides and outwardly-extending ears or flanges, and a lid having similar ears or flanges, connecting-bolts or similar devices securing said eared portions of the box together, and an auger-operating rod, substantially as set forth.

886,398. WATCH-CASE. CHARLES K. GILBS, Chicago, Ill. Filed Apr. 27, 1888. Serial No. 169,660. (Model.)



Claim.—1. The circular shell and back cap, A, provided with an external horizontal flange, and an external thread extending from its front edge nearly to the flange, in combination with a front bezel or cap, B, internally threaded to fit the threaded portion of the shell, and an independent ring-center, C, also internally threaded and adapted to be turned upon the threaded shell and retained in position between the flange and the front bezel, substantially as and for the purpose specified.

2. The circular shell and back cap, A, provided with an external horizontal flange, and at its outer edge with an external thread, in combination with a front bezel or cap, B, internally threaded to fit the threaded shell, an independent ring-center, C, adapted to be applied to the shell and clasped between the flange on the latter and the front bezel, and a movement-ring hinged to the upper edge of the shell, substantially as and for the purpose specified.

3. The circular shell and back cap, A, provided with a horizontal external flange, A', in combination with the cup-shaped plate D, provided with an elastic grooved edge, *d*, adapted to fit over the back plate and to be sprung over the flange A', substantially as and for the purpose specified.

886,399. GLOBE. WILLIAM H. GOLDTHWAITE, Chicago, Ill. Filed Dec. 1, 1887. Serial No. 256,512. (No model.)



Claim.—1. The combination, with a globe, of a semicircular arm upon the opposite ends of which the axis of the globe is rotatively mounted, an upright hollow standard having inside bearings at the upper and lower extremities thereof, a rod or post, B, rotatively mounted in said bearings and having a head, *b*, to which the said semicircular arm is attached, resting normally upon the upper end of the standard, a groove, *c*, formed around the upper bearing-surface of the rod, and a set-screw, *d*, mounted in the standard opposite to and entering within the groove, substantially as and for the purpose herein specified.

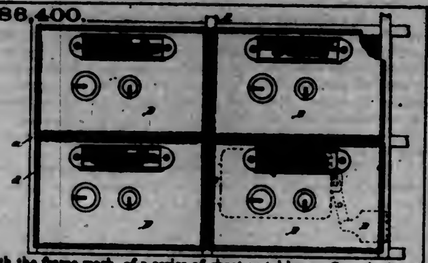
2. The combination, with a globe, of an upright hollow standard, an upright rod rotatively mounted in inside bearings at the top and bottom thereof, and having a head extending above and resting upon the upper end surface of the standard, a dovetail-shaped groove formed across the top of the head of the rod, and a semicircular arm between the opposite ends of which the axis of the globe is mounted, the outer semi-circumference of said arm forming a flange of dovetail shape to correspond with said groove, substantially as and for the purpose herein specified.

886,400. SAFETY-DEPOSIT BOX. HENRY GRAM, Chicago, Ill., assignor to the Chicago Safe and Lock Company, same place. Filed Sept. 27, 1887. Serial No. 250,262. (No model.)

Claim.—1. In a system of safety-deposit boxes, the combination,



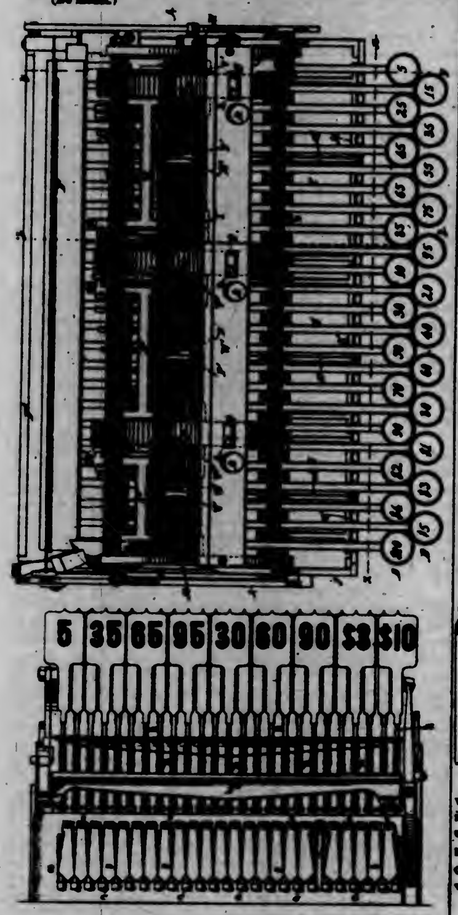
886,400.



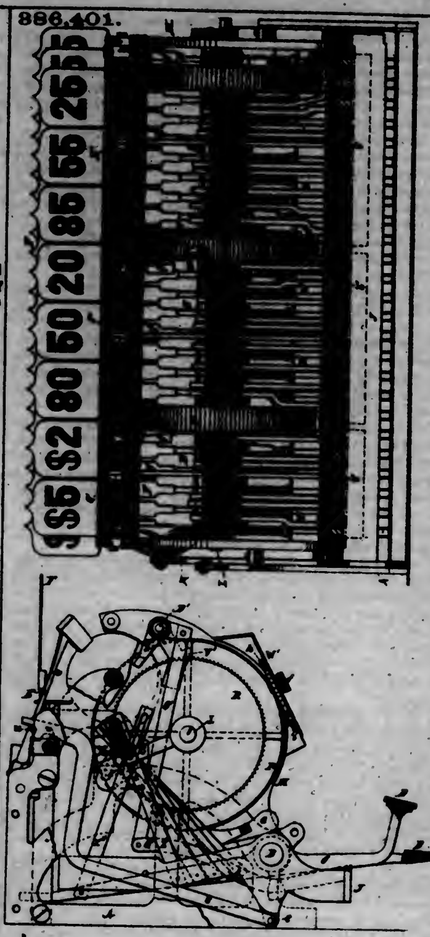
with the frame-work, of a series of sheet-metal boxes, C, each closed at its inner end and having permanently fixed to the outer end thereof a thick metal plate, D, having a shoulder or rabbet, *d*, substantially as described.

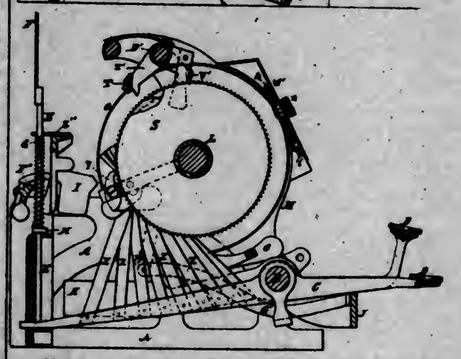
2. In a system of safety-deposit boxes, the combination, with the frame-work, of the series of sheet-metal deposit-boxes, each having permanently fixed to the outer end thereof a thick metal plate, D, having a shoulder or rabbet, *d*, and having fixed to said plate D a suitable lock provided with bolts B and B', each of said boxes being provided with openings to permit the passage of said bolts, substantially as described.

886,401. CASH INDICATOR AND REGISTER. JOHN F. KRAFT and JOHN H. PATTERSON, Dayton, Ohio, assignors to the National Cash Register Company, same place. Filed Nov. 14, 1887. Serial No. 255,312. (No model.)



886,401.





Claim.—1. In a cash register and indicator, the combination, with a registering-wheel and a dog for actuating said wheel, of a series of pivoted keys, a series of arms secured to said keys at points unequally distant from the fulcrum of said keys, and mechanism connecting all of said arms to said actuating-dog, whereby the operation of any one of said keys causes said dog to actuate the registering-wheel to register the value of each key, substantially as described.

2. In a cash register and indicator, the combination, with a reg-

istering-wheel and a series of operating-keys, of a vibrating dog-carrier provided with a dog for actuating said registering-wheel, and a series of arms secured at their lower ends to said keys and provided at their upper ends with slots which embrace said vibrating dog-carrier, whereby upon operating any one of said keys its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

3. In a cash register and indicator, the combination, with a registering-wheel and a series of pivoted operating-keys, of a vibrating dog-carrier provided with a dog for actuating said registering-wheel, and a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys and connecting said keys with the vibrating dog-carrier, whereby upon operating any one of said keys its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

4. In a cash register and indicator, the combination, with a registering-wheel and a series of pivoted operating-keys, of a vibrating dog-carrier provided with a dog for actuating said registering-wheel, and a series of arms pivoted at their lower ends to said keys at points unequally distant from the fulcrum of said keys and provided at their upper ends with slots which embrace said vibrating dog-carrier, whereby upon operating any one of said keys its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

5. In a cash register and indicator, the combination, with a registering-wheel and a series of pivoted operating-keys, of a vibrating dog-carrier pivoted concentric with the axis of the registering-wheel and provided with a dog for actuating said wheel, and a series of arms pivoted at their lower ends to said keys and engaging at their upper ends directly with said dog-carrier for communicating different degrees of movement thereto, accordingly as one or another of the keys is operated, substantially as described.

6. In a cash register and indicator, the combination, with a registering-wheel and a series of keys, of a vibrating dog-carrier hung concentric with said registering-wheel and provided with a dog for actuating said wheel, and a series of arms pivoted at their lower ends to said keys and provided at their upper ends with slots which embrace said vibrating dog-carrier, whereby upon operating any one of said keys its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

7. In a cash register and indicator, the combination, with a registering-wheel and a series of pivoted keys, of a vibrating dog-carrier hung concentric with said registering-wheel and provided with a dog for actuating said wheel, and a series of arms pivoted at their lower ends to said keys at points unequally distant from the fulcrum of said keys and connected at their upper ends with said vibrating dog-carrier, whereby upon operating any one of said keys its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

8. In a cash register and indicator, the combination, with a registering-wheel and a series of pivoted operating-keys, of a vibrating dog-carrier hung concentric with said registering-wheel and provided with a dog for actuating said wheel, and a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys and provided at their upper ends with slots engaging with said vibrating dog-carrier, whereby upon operating any one of said keys its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

9. In a cash register and indicator, the combination of a series of keys indicating odd multiples of five above the first power, a ten-cent-registering wheel actuated by each of said keys, a five-cent-registering wheel, and connecting mechanism between all of said keys and five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

10. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a dog for actuating said ten-cent wheel, of a series of operating-keys indicating odd multiples of five above the first power, connecting mechanism between all of said keys and actuating-dog, and connecting mechanism between all of said keys and the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

11. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating said ten-cent wheel, of a series of operating-keys indicating odd multiples of five above the first power, connecting mechanism between said keys and vibrating dog-carrier, and connecting mechanism between said keys and the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

12. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating said ten-cent wheel, of a series of operating-keys indicating odd multiples of five above the first power, a series of arms connecting said keys and vibrating dog-carrier, and connecting mechanism between said keys and the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

13. In a cash register and indicator, the combination, with a five-cent-registering wheel and a ten-cent-registering wheel, of a series of operating-keys indicating odd multiples of five above the first power, connecting mechanism between all of said keys and the ten-cent-registering wheel, and a five-cent bar actuated by all of said keys and arranged to actuate the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

14. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a dog for actuating the ten-cent wheel, of a series of operating-keys indicating odd multiples of five above the first power, connecting mechanism between all of said keys and actuating-dog, and a five-cent bar actuated by all of said keys and arranged to actuate the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

15. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a dog for actuating the ten-cent wheel, of a series of operating-keys indicating odd multiples of five above the first power, a series of arms secured to said keys, connecting mechanism between said arms and actuating-dog, and a five-cent bar actuated by said keys and arranged to actuate the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

16. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a dog for actuating the ten-cent wheel, of a series of pivoted operating-keys indicating odd multiples of five above the first power, a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys, connecting mechanism between said arms and actuating-dog, and a five-cent bar actuated by said keys and arranged to actuate the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

17. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of operating-keys indicating odd multiples of five above the first power, connecting mechanism between said keys and vibrating dog-carrier, and a five-cent bar actuated by said keys and arranged to actuate the five-cent wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

18. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of operating-keys indicating odd multiples of five above the first power, a series of arms connecting said keys and dog-carrier, and a five-cent bar actuated by said keys and arranged to actuate the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

19. In a cash register and indicator, the combination with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of pivoted operating-keys indicating odd multiples of five above the first power, a series of arms pivoted to the keys at points unequally distant from the fulcrum of the keys and connecting said keys with the vibrating dog-carrier, and a five-cent bar arranged to actuate the five-cent wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

20. In a cash register and indicator, the combination of a series of operating-keys indicating even multiples of five, another series of keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and connecting mechanism between said wheel and all of the keys of both series, a five-cent-registering wheel, and connecting mechanism between said wheel and all the keys of the odd-numbered series, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

21. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a dog for actuating said ten-cent wheel, of a series of operating-keys indicating both even and odd multiples of five above the first power, connecting mechanism between all of said keys and actuating-dog, and connecting mechanism between each of said odd-numbered keys and the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

22. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating said ten-cent wheel, of a series of operating-keys indicating both even and odd multiples of five above the first power, connecting mechanism between said keys and vibrating dog-carrier, and connecting mechanism between each of said odd-numbered keys and the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

23. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of operating-keys indicating both even and odd multiples of five above the first power, a series of arms connecting said keys with the vibrating dog-carrier, and connecting mechanism between each of the odd-numbered keys and the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

24. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of pivoted operating-keys indicating both even and odd multiples of five above the first power, a series of arms secured to said keys at points unequally distant from the fulcrum of said keys and connecting them with the vibrating dog-carrier, and connecting mechanism between each of the odd-numbered keys and the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on a ten-cent wheel and the five on the five-cent wheel, substantially as described.

25. In a cash register and indicator, the combination of a series of operating-keys indicating even multiples of five, another series of keys indicating odd multiples of five above the first power, a ten-cent-registering wheel, and connecting mechanism between said wheel and all the keys of both series, a five-cent-registering wheel, and a five-cent bar actuated by each of the odd-numbered keys and arranged to actuate the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

26. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a dog for actuating said ten-cent wheel, of a series of operating-keys indicating both even and odd multiples of five above the first power, connecting mechanism between all of said keys and actuating-dog, and a five-cent bar actuated by the keys indicating odd multiples of five and arranged to actuate the five-cent wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

27. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating said ten-cent wheel, of a series of operating-keys indicating both even and odd multiples of five above the first power, connecting mechanism between said keys and vibrating dog-carrier, and a five-cent bar actuated by the keys indicating odd multiples of five and arranged to actuate the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

28. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of operating-keys indicating both even and odd multiples of five above the first power, a series of arms connecting said keys with the vibrating dog-carrier, and a five-cent bar actuated by the keys indicating odd multiples of five and arranged to actuate the five-cent wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

29. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of pivoted operating-keys indicating both even and odd multiples of five above the first power, a series of arms secured to said keys at points unequally distant from the fulcrum of said keys and connecting said keys with the vibrating dog-carrier, and a five-cent bar actuated by the keys indicating odd multiples of five and arranged to actuate the five-cent wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

30. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of operating-keys indicating five and the odd multiples thereof, connecting mechanism between said vibrating dog-carrier and each of said keys excepting the five-cent key, and a five-cent bar actuated by said keys and provided with a dog engaging with the five-cent wheel, whereby upon operating the five-cent key its value is registered on the five-cent wheel, and upon operating any other one of the keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

31. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of operating-keys indicating five and the odd multiples thereof, a series of arms connecting said dog-carrier to all of the keys excepting the five-cent key, a five-cent bar actuated by each of the keys and provided with a dog engaging with the five-cent wheel, whereby upon operating the five-cent key its value is registered on the five-cent wheel, and upon operating any other one of the keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

32. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of operating-keys indicating five and the even and odd multiples thereof, a series of arms connecting said dog-carrier to all of the keys excepting the five-cent key, and a five-cent bar actuated by each of the odd-numbered keys and provided with a dog engaging with the five-cent wheel, whereby upon operating the five-cent key its value is registered on the five-cent wheel, and upon operating any other one of the keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

33. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a vibrating dog-carrier and dog for actuating the ten-cent wheel, of a series of pivoted operating-keys indicating five and the even and odd multiples thereof, a series of arms secured to all of said keys excepting the five-cent key at points unequally distant from the fulcrum of said keys and connecting said keys with the vibrating dog-carrier, and a five-cent bar actuated by each of the odd-numbered keys provided with a dog engaging with the five-cent wheel, whereby upon operating the five-cent key its value is registered on the five-cent wheel, and upon operating any other one of the odd-numbered keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, and whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, substantially as described.

34. In a cash register and indicator, the combination, with a series of registering-wheels and a series of vibrating dog-carriers and dogs for actuating said registering-wheels, and each of said dog-carriers being pivoted concentric with the axis of its registering-wheel, of a series of groups of pivoted operating-keys, one group for each registering-wheel, and a series of arms for each group pivoted at their lower ends to the keys of each group and engaging at their upper ends directly with the vibrating dog-carrier of each group for communicating different degrees of motion to said dog-carrier, whereby upon operating any key of a group its arm vibrates its dog-carrier to actuate its registering-wheel to register the value of such key, substantially as described.

35. In a cash register and indicator, the combination, with a series of registering-wheels and a series of vibrating dog-carriers and dogs for actuating said registering-wheels, of a series of groups of pivoted operating-keys, one group for each registering-wheel, and a series of arms pivoted to said keys at points unequally distant from the ful-

cum of said keys and connecting the keys of each group with the vibrating dog-carrier of each group, whereby upon operating any key of a group its arm vibrates its dog-carrier to actuate the registering-wheel to register the value of such key, substantially as described.

36. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, a dollar-registering wheel, and vibrating dog-carriers and dogs for actuating the ten-cent and dollar registering wheels, of a series of operating-keys indicating cents in even and odd multiples of five above the first power, a series of keys indicating dollars in multiples of one, connecting mechanism between the cent-keys and the vibrating dog-carrier of the ten-cent wheel, and connecting mechanism between the dollar-keys and the vibrating dog-carrier of the dollar-wheel, and a five-cent bar actuated by the cent-keys, indicating odd multiples of five and arranged to actuate the five-cent-registering wheel, whereby upon operating any odd-numbered cent-key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, whereby upon operating any even-numbered cent-key its value is registered on the ten-cent wheel, and whereby upon operating any dollar-key its value is registered on the dollar-wheel, substantially as described.

37. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, and a dollar-registering wheel, and vibrating dog-carriers and dogs for actuating the ten-cent and dollar registering wheels, of a series of operating-keys indicating cents in even and odd multiples of five above the first power, a series of keys indicating dollars in multiples of one, a series of arms connecting the cent-keys to the vibrating dog-carrier of the ten-cent wheel, and a series of arms connecting the dollar-keys to the vibrating dog-carrier of the dollar-wheel, and a five-cent bar actuated by the cent-keys indicating odd multiples of five and arranged to actuate the five-cent-registering wheel, substantially as and for the purpose set forth.

38. In a cash register and indicator, the combination, with a five cent-registering wheel, a ten-cent-registering wheel, a dollar-registering wheel, and vibrating dog-carriers and dogs for actuating the ten cent and dollar registering wheels, of a series of pivoted operating-keys indicating cents in even and odd multiples of five above the first power, a series of pivoted keys indicating dollars in multiples of one, a series of arms pivoted to the cent-keys at points unequally distant from the fulcrum of said keys and connecting said keys to the vibrating dog-carrier of the ten-cent wheel, a series of arms pivoted to the dollar-keys at points unequally distant from the fulcrum of said keys and connecting said keys to the vibrating dog-carrier of the dollar-wheel, and a five-cent bar actuated by the cent-keys indicating odd multiples of five and arranged to actuate the five-cent-registering wheel, substantially as and for the purpose set forth.

39. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a series of keys pivoted on a horizontal shaft at the front of the machine for actuating said wheel, and a vibrating bar pivoted on said shaft and actuated by the operation of any one of said keys, of a brake-dog arranged to engage with the teeth of said wheel, and connecting mechanism between said brake-dog and vibrating bar, whereby upon the operation of any one of said keys the brake-dog is actuated to engage with the teeth of the registering-wheel and form a positive stop therefor, substantially as described.

40. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a series of keys pivoted on a horizontal shaft at the front of the machine for actuating said wheel, and a vibrating bar pivoted on said shaft and actuated by the operation of any one of said keys, of a rock-shaft, a brake-dog secured thereto and arranged to engage with the teeth of said wheel, and connecting mechanism between said rock-shaft and vibrating bar, whereby upon the operation of any one of said keys the rock-shaft is oscillated to cause its brake-dog to engage with the teeth of said wheel, substantially as described.

41. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a series of keys for actuating said wheel, and a vibrating bar provided with a rearward extension and arranged to be actuated by the operation of any one of said keys, of a rock-shaft, a brake-dog secured to said rock-shaft and arranged to engage with the teeth of the registering-wheel, an arm secured to said rock-shaft, and a link connecting said arm and the rearward extension of the vibrating bar, whereby upon operating any one of said keys said rock-shaft is oscillated to cause its brake-dog to engage with the teeth of the registering-wheel, substantially as described.

42. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, and a series of arms secured to said keys and independently connecting each of them to said vibrating dog-carrier, of a brake-dog arranged to engage with the teeth of the registering-wheel, a vibrating bar actuated by the operation of any of said keys, and connecting mechanism between said vibrating bar and brake-dog, substantially as and for the purpose described.

43. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a vibrating dog-carrier and dog for actuating said wheel, a series of pivoted operating-keys, and a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys and connecting said keys with the vibrating dog-carrier, of a brake-dog arranged to engage with the teeth of the registering-wheel, a vibrating bar actuated by the operation of any one of said keys, and connecting mechanism between said vibrating bar and brake-dog, substantially as and for the purpose described.

44. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, and a series of arms connecting said keys and vibrating dog-carrier, of a rock-shaft, a brake-dog secured to the rock-shaft and arranged to engage with the teeth of the registering-wheel, an arm secured to said rock-shaft, a vibrating bar actuated by the operation of any one of said keys, and connecting mechanism between said vibrating bar and arm, substantially as and for the purpose described.

45. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a vibrating dog-carrier and dog for actuating said wheel, a series of pivoted operating-keys, and a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys and connecting the keys with the vibrating dog-carrier, of a rock-shaft, a brake-dog secured to said rock-shaft and arranged to engage with the teeth of the registering-wheel, an arm secured to said shaft, a vibrating bar actuated by the operation of any one of said keys, and connecting mechanism between said vibrating bar and arm, substantially as and for the purpose described.

46. In a cash register and indicator, the combination, with a series of registering-wheels provided with teeth, a vibrating dog-carrier and dog for each wheel, a series of groups of operating-keys, one group for each wheel, and a series of arms connecting the keys of each group with the vibrating dog-carrier of its registering-wheel, of a rock-shaft journaled in the frame of the machine and extending across all of the registering-wheels, a series of brake-dogs, one for each wheel, supported on said rock-shaft and each arranged to engage with the teeth of its registering-wheel, an arm secured to said rock-shaft, a vibrating bar actuated by the depression of any key, and connecting mechanism between said bar and the arm secured to the rock-shaft, substantially as and for the purpose described.

47. In a cash register and indicator, the combination, with a registering-wheel provided with teeth, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, and a series of arms connecting said keys and the vibrating dog-carrier, of a shaft, a sleeve loose upon said shaft, a brake-dog secured to said sleeve and arranged to engage with the teeth of the registering-wheel, an arm secured to said sleeve, a vibrating bar actuated by the operation of any of said keys, and connecting mechanism between the vibrating bar and the arm secured to the sleeve, substantially as and for the purpose described.

48. In a cash register and indicator, the combination, with a series of registering-wheels provided with teeth, a vibrating dog-carrier and dog for each wheel, a series of groups of operating-keys, one group for each wheel, and a series of arms connecting the keys of each group with the vibrating dog-carrier of its registering-wheel, of a shaft extending across said registering-wheels, a series of sleeves loose upon said shaft, one sleeve for each registering-wheel, a brake-dog secured to each sleeve and arranged to engage with the teeth of its registering-wheel, an arm secured to each sleeve, a vibrating bar for each group of keys and actuated by the operation of any key of its group, and connecting mechanism between the vibrating bar and the arm secured to its corresponding sleeve, substantially as and for the purpose described.

49. In a cash register and indicator, the combination of a registering-wheel bearing one or more series of numbers on its periphery, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, a series of arms connecting said keys and vibrating dog-carrier, a supplemental registering-disk arranged in a plane tangential to the periphery of the registering-wheel and adjacent thereto and bearing a series of numbers in multiples of the amount registered by each series of numbers on the registering-wheel, and a projection on said registering-wheel for each series of numbers, arranged to engage with said disk and turn it one number for each complete series of numbers on said wheel, substantially as described.

50. In a cash register and indicator, the combination of a registering-wheel bearing one or more series of numbers on its periphery and a reading-opening through which said numbers are exposed one at a time, a vibrating dog-carrier and dog for actuating said wheel, a series of pivoted operating-keys, a series of arms pivoted at their lower ends to said keys at points unequally distant from the fulcrum of said keys and connecting said keys with the vibrating dog-carrier, a supplemental registering-disk arranged in a plane tangential to the periphery of the registering-wheel and adjacent thereto and bearing a series of numbers in multiples of the amount registered by each series of numbers on the registering-wheel, said numbers being exposed through the reading-opening one at a time, and a projection on each registering-wheel for each series of numbers, arranged to engage with said disk and turn it one number for each complete series of numbers on said wheel, substantially as described.

51. In a cash register and indicator, the combination of a registering-wheel bearing one or more series of numbers on its periphery and a reading-opening through which said numbers are exposed one at a time, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, connecting mechanism between said keys and vibrating dog-carrier, a supplemental registering-disk arranged in a plane tangential to the periphery of the registering-wheel and adjacent thereto and bearing a series of numbers in multiples of the amount registered by each series of numbers on the registering-wheel, said numbers being exposed through the reading-opening one at a time, and a projection on the registering-wheel for each series of numbers, arranged to turn said disk one number for each series of numbers on said wheel, the numbers on the registering-wheel and disk being so arranged that the two numbers exposed through the reading-opening coincide to indicate at all times, without addition, the total amount registered on said wheel and disk, substantially as described.

52. In a cash register and indicator, the combination of a series of registering-wheels, each provided with one or more series of numbers on its periphery, a series of vibrating dog-carriers and dogs, one for each wheel, a series of operating-keys and connecting mechanism between said keys and vibrating dog-carriers, a plate extending across all of said registering-wheels and provided with a series of reading-openings, one for each wheel, through which opening the numbers on its corresponding wheel are exposed one at a time, a series of supplemental registering-disks on the under side of said plate, one for each registering-wheel and arranged adjacent thereto, each provided with a series of numbers in multiples of the amount registered by each series of numbers on its corresponding registering-wheel, said numbers being exposed through its reading-opening one at a time, and a projection on each registering-wheel for each series of numbers, arranged to engage with said disk and turn its corresponding disk one number for each complete series of numbers on said wheel, substantially as described.

53. In a cash register and indicator, the combination of a series of registering-wheels, each provided with one or more series of numbers on its periphery, a series of vibrating dog-carriers and dogs, one for each wheel, a series of operating-keys, a series of arms pivoted to said keys and connecting them with the vibrating dog-carriers, a plate extending across all of said registering-wheels and provided with a series of reading-openings, one for each wheel, through which opening the numbers on its corresponding wheel are exposed one at a time, a series of supplemental registering-disks on the under side of said plate, one for each registering-wheel and arranged adjacent thereto, each provided with a series of numbers in multiples of the amount registered by each series of numbers on its corresponding registering-wheel, said numbers being exposed through its reading-opening one at a time, and a projection on each registering-wheel for each series of numbers on said wheel, arranged to engage with and turn its corresponding disk one number for each complete series of numbers on said wheel, substantially as described.

54. In a cash register and indicator, the combination of a five-cent-registering wheel, a ten-cent-registering wheel, a dollar-registering wheel, vibrating dog-carriers and dogs for actuating the ten-cent and dollar wheels, a series of operating-keys indicating cents in even and odd multiples of five above the first power, a series of keys indicating dollars in multiples of one, connecting mechanism between the cent-keys and the vibrating dog-carrier of the ten-cent wheel, and connecting mechanism between the dollar-keys and the vibrating dog-carrier of the dollar-wheel, a five-cent bar actuated by the cent-keys, which indicate odd multiples of five and arranged to actuate the five-cent-registering wheel, a plate extending across all of said wheels and provided with a series of reading-openings, one for each wheel, through which openings the numbers on its corresponding wheel are exposed one at a time, a series of supplemental registering-disks on the under side of said plate, one for each registering-wheel and arranged adjacent thereto, each provided with a series of numbers in multiples of the amount registered by each series of numbers on its corresponding registering-wheel, said numbers being exposed through its reading-opening one at a time, and a projection on each registering-wheel for each series of numbers on said wheel, arranged to engage with and turn its corresponding registering-disk one number for each complete series of numbers on said wheel, substantially as described.

55. In a cash register and indicator, the combination, with a series of operating-keys, of a series of stops arranged to permit the operation of one key at a time and to prevent the operation of two or more keys simultaneously, substantially as described.

56. In a cash register and indicator, the combination, with a series of operating-keys, of a series of movable stops arranged to permit the operation of one key at a time and to engage with said keys to prevent the operation of two or more of them simultaneously, substantially as described.

57. In a cash register and indicator, the combination, with a series of operating-keys, of a series of pendent stops pivoted above said keys and arranged to engage therewith to prevent the operation of two or more of them simultaneously, substantially as described.

58. In a cash register and indicator, the combination, with a series of operating-keys, of a series of pendent wedge-shaped stops arranged to engage with said keys to prevent the operation of two or more of them simultaneously, substantially as described.

59. In a cash register and indicator, the combination, with a series of operating-keys, of a series of pendent wedge-shaped stops pivoted above said keys and arranged to engage therewith to prevent the operation of two or more of them simultaneously, substantially as described.

60. In a cash register and indicator, the combination, with a series of operating-keys, of a series of movable stops arranged to be displaced upon the operation of a single key to permit such operation, but locking two or more keys when the latter are attempted to be operated simultaneously, substantially as described.

61. In a cash register and indicator, the combination, with a registering-wheel and a series of keys for operating said wheel, of a series of stops arranged to permit the operation of one key at a time, but to at all times prevent the simultaneous operation of two or more keys substantially as described.

62. In a cash register and indicator, the combination, with a registering-wheel and a series of keys for operating said wheel, of a series of stops arranged to permit the operation of one key at a time, but by engaging them to at all times prevent the simultaneous operation of two or more keys, substantially as described.

63. In a cash register and indicator, the combination, with a registering-wheel and a series of keys for operating said wheel, of a series of movable stops arranged to permit the operation of one key at a time, but to at all times prevent the simultaneous operation of two or more keys, substantially as described.

64. In a cash register and indicator, the combination, with a registering-wheel and a series of keys for operating said wheel, of a series of pendent wedge-shaped stops arranged to engage with said keys to prevent the operation of two or more of them simultaneously, substantially as described.

65. In a cash register and indicator, the combination, with a registering-wheel and a series of keys for operating said wheel, of a series of pendent stops pivoted above said keys and arranged to engage therewith to prevent the operation of two or more of them simultaneously, substantially as described.

66. In a cash register and indicator, the combination, with a registering-wheel and a series of keys for operating said wheel, of a series of pendent wedge-shaped stops pivoted above said keys and arranged to engage therewith to prevent the operation of two or more of them simultaneously, substantially as described.

67. In a cash register and indicator, the combination, with a registering-wheel and a series of keys for operating said wheel, of a series of movable stops arranged to be displaced upon the operation of a single key to permit such operation, but locking two or more keys when the latter are attempted to be operated simultaneously, substantially as described.

68. In a cash register and indicator, the combination, with a registering-wheel, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, and connecting mechanism between said keys and vibrating dog-carrier, of a series of stops arranged to prevent the operation of two or more of said keys simultaneously, substantially as described.

69. In a cash register and indicator, the combination, with a registering-wheel, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, and a series of arms connecting said keys to the vibrating dog-carrier, of a series of stops arranged to engage with said keys to prevent the operation of two or more of them simultaneously, substantially as described.

70. In a cash register and indicator, the combination, with a series of registering-wheels and a series of groups of keys for operating said wheels, one group of keys for each wheel, of a series of sets of stops arranged to prevent the operation of two or more keys of a group simultaneously, but permitting the simultaneous operation of two or more keys of different groups, substantially as described.

71. In a cash register and indicator, the combination, with a series of registering-wheels and a series of groups of keys for operating said wheels, one group of keys for each wheel, of a series of sets of

steps arranged to engage with said keys to prevent the operation of two or more keys of a group simultaneously, but permitting the simultaneous operation of two or more keys of different groups, substantially as described.

72. In a cash register and indicator, the combination, with a series of registering-wheels and a series of groups of keys for operating said wheels, one group of keys for each wheel, of a series of sets of pendent wedge-shaped stops arranged to engage with said keys to prevent the operation of two or more keys of a group simultaneously, but permitting the simultaneous operation of two or more keys of different groups, substantially as described.

73. In a cash register and indicator, the combination, with a series of registering-wheels and a series of groups of keys for operating said wheels, one group of keys for each wheel, of a series of sets of pendent stops pivoted above said keys and arranged to engage therewith to prevent the operation of two or more keys of a group simultaneously, but permitting the simultaneous operation of two or more keys of different groups, substantially as described.

74. In a cash register and indicator, the combination, with a registering-wheel, a series of operating-keys, a series of tablet-rods and indicating-tablets, one for each key, a vibrating dog-carrier and dog for actuating said registering-wheel, and a series of arms pivoted at their lower ends directly to said keys and provided at their upper ends with slots embracing said vibrating dog-carrier, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

75. In a cash register and indicator, the combination of a registering-wheel, a dog for actuating said wheel, a series of pivoted keys, a series of tablet-rods and indicating-tablets actuated by said keys, a series of arms connected to said keys at points unequally distant from the fulcrum of said keys, and connecting mechanism between said arms and actuating-dog, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its value is registered on said registering-wheel, substantially as described.

76. In a cash register and indicator, the combination of a registering-wheel, a series of pivoted operating-keys, a series of tablet-rods and indicating-tablets, one for each key, a vibrating dog-carrier and dog for actuating said registering-wheel, and a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys and connecting them to the vibrating dog-carrier, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

77. In a cash register and indicator, the combination of a registering-wheel, a series of pivoted operating-keys, a series of tablet-rods and indicating-tablets, one for each key, a vibrating dog-carrier and dog for actuating said registering-wheel, and a series of arms connected at their lower ends to said keys at points unequally distant from the fulcrum of said keys and provided at their upper ends with slots embracing said vibrating dog-carrier, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

78. In a cash register and indicator, the combination of a registering-wheel, a series of operating-keys, a series of tablet-rods, and indicating-tablets actuated thereby, a vibrating dog-carrier hung concentric with said registering-wheel and provided with a dog for actuating said wheel, and a series of arms pivoted at their lower ends to said keys and engaging at their upper ends directly with said vibrating dog-carrier for communicating different degrees of motion thereto, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

79. In a cash register and indicator, the combination of a registering-wheel, a series of operating-keys, a series of tablet-rods and indicating-tablets actuated thereby, a vibrating dog-carrier hung concentric with said registering-wheel and provided with a dog for actuating said wheel, and a series of arms pivoted at their lower ends directly to said keys and provided at their upper ends with slots which embrace said vibrating dog-carrier, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

80. In a cash register and indicator, the combination of a registering-wheel, a series of pivoted operating-keys, a series of tablet-rods and indicating-tablets actuated thereby, a vibrating dog-carrier hung concentric with said registering-wheel and provided with a dog for actuating said wheel, and a series of arms connected at their lower ends to said keys at points unequally distant from the fulcrum of said keys and connected at their upper ends to said vibrating dog-carrier, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

81. In a cash register and indicator, the combination of a registering-wheel, a series of pivoted operating-keys, a series of tablet-rods and indicating-tablets actuated thereby, a vibrating dog-carrier hung concentric with said registering-wheel and provided with a dog for actuating said wheel, and a series of arms connected at their lower ends to said keys at points unequally distant from the fulcrum of said keys and provided at their upper ends with slots embracing said vibrating dog-carrier, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its arm vibrates the dog-carrier to cause its dog to actuate the registering-wheel to register the value of such key, substantially as described.

82. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, a ten-cent-registering wheel common to all the keys of said series and connecting mechanism between said keys and registering-wheel, a five-cent-registering wheel, and connecting mechanism between said wheel and all of the keys of said series, whereby upon operating any one of the keys of said series its indicating-tablet is exposed to view and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

83. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, a ten-cent-registering wheel common to all the keys of said series and connecting mechanism between said keys and registering-wheel, a five-cent-registering wheel, and a five-cent bar actuated by each of the keys of said series and arranged to actuate the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

84. In a cash register and indicator, the combination of a five-cent-registering wheel, a ten-cent-registering wheel, a vibrating dog-carrier and dog for actuating the ten-cent wheel, a series of operating-keys indicating odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, connecting mechanism between said keys and vibrating dog-carrier, and a five-cent bar arranged to be operated by said keys to actuate the five-cent-registering wheel, whereby upon operating any one of said keys its indicating-tablet is exposed to view and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

85. In a cash register and indicator, the combination of a five-cent-registering wheel, a ten-cent-registering wheel, a vibrating dog-carrier and dog for actuating the ten-cent wheel, a series of operating-keys indicating odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connecting said keys to the vibrating dog-carrier, and a five-cent bar arranged to be operated by said keys to actuate the five-cent-registering wheel, whereby upon operating any one of said keys its indicating-tablet is exposed to view, and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

86. In a cash register and indicator, the combination of a five-cent-registering wheel, a ten-cent-registering wheel, a vibrating dog-carrier and dog for actuating the ten-cent wheel, a series of pivoted operating-keys indicating odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connected at their lower ends to said keys at points unequally distant from the fulcrum of said keys and engaging at their upper ends with the vibrating dog-carrier, and a five-cent bar arranged to be operated by said keys to actuate the five-cent-registering wheel, whereby upon operating any one of said keys its indicating-tablet is exposed to view and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

87. In a cash register and indicator, the combination of a series of operating-keys indicating even multiples of five, another series of keys indicating odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, a ten-cent-registering wheel and connecting mechanism between said wheel and all the keys of both series, a five-cent-registering wheel, and connecting mechanism between said wheel and all the keys of the odd-numbered series, whereby upon operating an even-numbered key its indicating-tablet is exposed to view and its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key its indicating-tablet is exposed to view and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

88. In a cash register and indicator, the combination of a five-cent-registering wheel, a ten-cent-registering wheel, a dog for actuating the ten-cent wheel, a series of operating-keys indicating both even and odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, connecting mechanism between all of said keys and actuating-dog, and a five-cent bar arranged to be operated by each of said odd-numbered keys to actuate the five-cent-registering wheel, whereby upon operating an even-numbered key its indicating-tablet is exposed to view and its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key its indicating-tablet is exposed to view and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

89. In a cash register and indicator, the combination of a five-cent-registering wheel, a ten-cent-registering wheel, a vibrating dog-carrier and dog for actuating the ten-cent wheel, a series of operating-keys indicating both even and odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connecting said keys to the vibrating dog-carrier, and a five-cent bar arranged to be operated by the keys indicating odd multiples of five to actuate the five-cent-registering wheel, whereby upon operating an even-numbered key its indicating-tablet is exposed to view and its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key its indicating-tablet is exposed to view and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

90. In a cash register and indicator, the combination of a five-cent-registering wheel, a ten-cent-registering wheel, a vibrating dog-carrier and dog for actuating the ten-cent wheel, a series of pivoted operating-keys indicating both even and odd multiples of five above the first power, a series of tablet-rods and indicating-tablets, one for each key, a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys and connecting said keys to the vibrating dog-carrier, and a five-cent bar arranged to be operated by the keys indicating odd multiples of five to actuate the five-cent-registering wheel, whereby upon operating an even-numbered key its indicating-tablet is exposed to view and its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key its indicating-tablet is exposed to view and the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

91. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, a dollar-registering wheel, and vibrating dog-carriers and dogs for actuating the ten-cent and dollar registering wheels, of a series of operating-keys indicating coats in even and odd multiples of five above the first power, a series of keys indicating dollars in multiples of one, a series of tablet-rods and indicating-tablets actuated by said keys, connecting mechanism between the cent-keys and the vibrating dog-carrier of the ten-cent-wheel, and connecting mechanism between the dollar-keys and the vibrating dog-carrier of the dollar-wheel, and a five-cent bar actuated by the cent-keys indicating odd multiples of five and arranged to actuate the five-cent-registering wheel, substantially as and for the purpose described.

92. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, a dollar-registering wheel, and vibrating dog-carriers and dogs for actuating the ten-cent and dollar wheels, of a series of operating-keys indicating coats in even and odd multiples of five above the first power, a series of keys indicating dollars in multiples of one, a series of tablet-rods and indicating-tablets actuated by said keys, a series of arms connecting the cent-keys to the vibrating dog-carrier of the ten-cent wheel, a series of arms connecting the dollar-keys to the vibrating dog-carrier of the dollar-wheel, a five-cent bar actuated by the cent-keys indicating odd multiples of five, and provided with a dog engaging with the five-cent-registering wheel, substantially as and for the purpose described.

93. In a cash register and indicator, the combination, with a five-cent-registering wheel, a ten-cent-registering wheel, a dollar-registering wheel, and vibrating dog-carriers and dogs for actuating the ten-cent and dollar wheels, of a series of pivoted operating-keys indicating coats in even and odd multiples of five above the first power, a series of keys indicating dollars in multiples of one, a series of tablet-rods and indicating-tablets actuated by said keys, a series of arms pivoted to said keys at points unequally distant from the fulcrum of said keys, the arms of the cent-keys being connected to the vibrating dog-carrier of the ten-cent wheel and the arms of the dollar-keys to the vibrating dog-carrier of the dollar-wheel, and a five-cent bar actuated by the cent-keys indicating odd multiples of five, and provided with a dog engaging with the five-cent-registering wheel, substantially as and for the purpose described.

94. In a cash register and indicator, the combination of a registering-wheel provided with a ratchet, a series of keys for actuating said wheel, a series of tablet-rods and indicating-tablets actuated by said keys, a brake-dog arranged to engage with the ratchet of said wheel, but normally out of contact therewith, and mechanism connecting the brake-dog with the keys, whereby upon operating any one of the keys its indicating-tablet is exposed to view and the brake-dog is positively actuated to engage with the teeth of the registering-wheel and form a positive stop therefor, substantially as described.

95. In a cash register and indicator, the combination of a registering-wheel provided with a ratchet, a series of keys for actuating said wheel, a series of tablet-rods and indicating-tablets actuated by said keys, a vibrating bar actuated by the operation of any one of said keys, a brake-dog arranged to engage with the ratchet of said wheel, and connecting mechanism between said brake-dog and vibrating bar, whereby upon the operation of any one of said keys its indicating-tablet is exposed to view and the brake-dog is actuated to engage with the ratchet of the registering-wheel and form a positive stop therefor, substantially as described.

96. In a cash register and indicator, the combination of a registering-wheel provided with a ratchet, a series of keys for actuating said wheel, a series of tablet-rods and indicating-tablets actuated by said keys, a vibrating bar actuated by the operation of any one of said keys, a rock-shaft, a brake-dog secured thereto and arranged to engage with the ratchet of said wheel, and connecting mechanism between said rock-shaft and vibrating bar, whereby upon operating any one of said keys its indicating-tablet is exposed to view and the rock-shaft is oscillated to cause its brake-dog to engage with the teeth of said wheel, substantially as described.

97. In a cash register and indicator, the combination of a registering-wheel provided with teeth, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connecting said keys with the vibrating dog-carrier, a brake-dog arranged to engage with the teeth of the registering-wheel, a vibrating bar actuated by the operation of any of said keys, and connecting mechanism between said vibrating bar and brake-dog, substantially as and for the purpose described.

98. In a cash register and indicator, the combination of a registering-wheel, a series of keys for operating said wheel, a series of tablet-rods and indicating-tablets actuated by said keys, and a series of stops arranged to permit the operation of any one key, but to at all times prevent the simultaneous operation of two or more keys, substantially as described.

99. In a cash register and indicator, the combination of a registering-wheel, a series of keys for operating said wheel, a series of tablet-rods and indicating-tablets actuated by said keys, and a series of pendent stops pivoted above said keys and arranged to engage therewith to prevent the operation of two or more of them simultaneously, substantially as described.

100. In a cash register and indicator, the combination of a registering-wheel, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, a series of tablet-rods and indicating-tablets actuated by said keys, connecting mechanism between said keys and vibrating dog-carrier, and a series of stops arranged to prevent the operation of two or more keys simultaneously, substantially as described.

101. In a cash register and indicator, the combination of a registering-wheel, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connecting said keys with the vibrating dog-carrier, and a series of stops arranged to engage with said keys to prevent the operation of two or more of them simultaneously, substantially as described.

102. In a cash register and indicator, the combination of a registering-wheel, a vibrating dog-carrier and dog for actuating said wheel, a series of pivoted operating-keys, a series of tablet-rods and indicating-tablets, one for each key, a series of arms pivoted to said keys at points unequally distant from said keys and connecting said keys with the vibrating dog-carrier, and a series of pendent stops arranged to engage with the rear ends of said keys to prevent the operation of two or more of them simultaneously, substantially as described.

103. In a cash register and indicator, the combination of a series of registering-wheels, a series of groups of keys for operating said wheels, one group of keys for each wheel, a series of tablet-rods and indicating-tablets actuated by said keys, and a series of sets of stops arranged to prevent the operation of two or more keys of a group simultaneously, but permitting the simultaneous operation of two or more keys of different groups, substantially as described.

104. In a cash register and indicator, the combination of a series of registering-wheels, a series of vibrating dog-carriers and dogs for actuating said wheels, a series of groups of operating-keys, one group of keys for each wheel, a series of tablet-rods and indicating-tablets actuated by said keys, connecting mechanism between each group of keys and its corresponding dog-carrier, and a series of sets of stops arranged to prevent the operation of two or more keys of a group simultaneously, but permitting the simultaneous operation of two or more keys of different groups, substantially as described.

105. In a cash register and indicator, the combination of a series of registering-wheels, a series of vibrating dog-carriers and dogs for actuating said wheels, a series of groups of pivoted operating-keys, one group of keys for each wheel, a series of tablet-rods and indicating-tablets actuated by said keys, a series of arms connecting the keys of each group with its corresponding dog-carrier, and a series of sets of pendent stops arranged to engage with the rear ends of the keys of each group to prevent the operation of two or more keys of a group simultaneously, but permitting the simultaneous operation of two or more keys of different groups, substantially as described.

106. In a cash register and indicator, the combination of a registering-wheel, a vibrating dog-carrier and dog for actuating said wheel, a series of operating-keys, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connecting said keys with the vibrating dog-carrier, a brake-dog arranged to engage with the teeth of the registering-wheel, a vibrating bar actuated by the operation of any one of said keys, connecting mechanism between said vibrating bar and brake-dog, and a series of stops arranged to engage with said keys to prevent the operation of two or more of them simultaneously, substantially as described.

107. In a cash register and indicator, the combination of a five cent-registering wheel, a ten-cent-registering wheel, a dollar-registering wheel, vibrating dog-carriers and dogs for actuating the ten-cent and dollar wheels, a series of operating-keys indicating cents in even and odd multiples of five above the first power, a series of keys indicating dollars in multiples of one, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connecting the cent-keys with the vibrating dog-carrier of the ten-cent wheel, and a series of arms connecting the dollar-keys with the vibrating dog-carrier of the dollar-wheel, a five-cent bar engaging with the cent-keys which indicate odd multiples of five and provided with a dog engaging with the five-cent wheel, a series of brake-dogs, one for each registering-wheel and arranged to engage with the teeth thereof, a vibrating bar actuated by the operation of the keys, connecting mechanism between said vibrating bar and brake-dogs, and two sets of stops, those of one set being arranged to engage with the dollar-keys and those of the other set with the cent-keys, substantially as and for the purpose described.

108. In a cash register and indicator, the combination of a series of registering-wheels provided with teeth, a series of vibrating dog-carriers and dogs for actuating said registering-wheels, a series of groups of operating-keys, one group for each registering-wheel, a series of tablet-rods and indicating-tablets, one for each key, a series of arms connecting the keys of each group with the vibrating dog-carrier of that group, a series of brake-dogs, one for each registering-wheel and arranged to engage with the teeth thereof, a series of vibrating bars, one for each group of keys, arranged to be actuated by the operation of any key of its group, connecting mechanism between each vibrating bar and the brake-dog of the corresponding registering-wheel, two sets of stops, those of one set arranged to engage with the dollar-keys and those of the other set with the cent-keys, a plate extending across the peripheries of all the registering-wheels and provided with a series of reading-openings, one for each wheel, and a series of supplemental registering-disks pivoted to the under side of said plate adjacent to the reading-openings, one for each registering-wheel and arranged to be turned one notch at each revolution of the registering-wheel, substantially as and for the purpose described.

109. The combination, with the gong-hammer *v*, provided with a laterally-projecting pin, *u*, of the trip-bar *s*, normally engaging with said pin and pivoted to the vibrating frame J, and the block *w*, engaging with the incline upon the trip-bar to disengage the same from the pin *u*, substantially as and for the purpose described.

110. The combination, with the vibrating frame J and the drawer *p*, provided with a pin, *q*, of the pivoted locking-bars, arranged to engage with the vibrating frame when the drawer is open, to prevent the operation of the machine and to be thrown out of the way of the vibrating frame by the pin *q* when the drawer is closed, substantially as described.

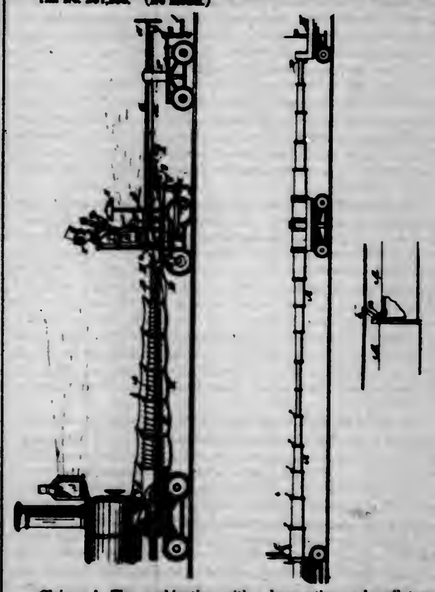
386,402. SEPARATING GREASE FROM WATER. JAMES HOGHES, New York, N. Y., assignor of one-half to Cornelius H. De Lamater, same place. Filed June 8, 1888. Serial No. 276,695. (No model.)

Claim.—1. An apparatus for extracting grease from water, consisting of a tank having inlet and outlet openings near its bottom and a grease-discharge pipe proceeding from its upper part, a valve applied to said outlet-opening, a float attached to said valve for controlling the opening of the same, and a hand-rod connected with said float and valve and projecting through an opening in the upper part of the tank for closing the said valve, substantially as herein described and set forth.

2. An apparatus for extracting grease from water, consisting of a tank having inlet and outlet openings near its bottom and a grease-discharge pipe proceeding from its upper part, and a partition across it, opposite the inlet-opening, for disturbing the entering stream of liquid and directing it upward, a regulating-valve applied to said outlet-opening, and a float attached to said valve for controlling the opening of the same, and a hand-rod connected with said float and valve and projecting through an opening in the upper part of the tank for closing the said valve, substantially as herein described and set forth.

3. An apparatus for extracting grease from water, consisting of a tank having inlet and outlet openings near its bottom and a grease-discharge pipe proceeding from its upper part, and a partition across it for distributing the entering stream of liquid and directing it upward, and a perforated or reticulated diaphragm on the inlet side of said partition for causing a steady and uniform flow of said stream, a regulating-valve applied to said outlet-opening, a float attached to said valve for controlling the opening of the same, and a hand-rod connected with said float and valve and projecting through an opening in the upper part of the tank for closing the said valve, substantially as herein described.

386,403. APPARATUS FOR PREVENTING COLLISIONS OF RAILWAY-TRAINS. JACK W. JAMES, Cuba, Tenn. Filed Mar. 15, 1888. Serial No. 267,263. (No model.)

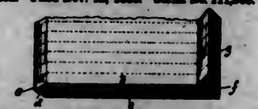


Claim.—1. The combination, with a locomotive and a pilot-car, of a series of telescopic tubes forming a connection between said locomotive and pilot-car, and an electrical circuit between the pilot-car and locomotive to apply the brakes and reverse the engine when the pilot-car is in collision or thrown from the track, substantially as described.

2. The combination of a locomotive, a pilot-car, a telescopic connection extensible by compressed air and connecting said locomotive and pilot-car, a longitudinally-movable pole projecting in front of the pilot-car, a trunk connected with the forward end of said pole, and an electrical connection or circuit between the locomotive and pilot device, substantially as described.

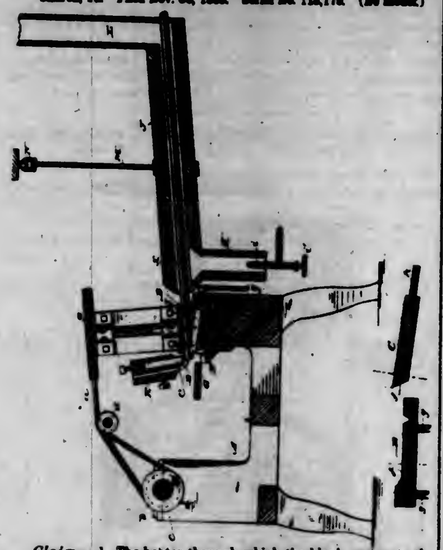
3. The combination, with a locomotive, of the telescopic tubes A, extensible by compressed air and projecting from the forward end of the locomotive, the flat car E, connected to the forward telescopic tube, the longitudinally-movable pole G, carried by the flat car E, the trunk F, connected to the forward end of said pole, the spring H on the pole, the electric wires J K *g*, the spring O, and cord M, substantially as described.

386,404. BLANK FOR RAILWAY-SPIKES. JOHN T. JONES, Iron Mountain, Mich. Filed Nov. 12, 1888. Serial No. 111,569. (No model.)



Claim.—A blank for railway-spikes having parallel sides, said sides being beveled off at one edge of the blank and having a ridge formed on one side of the opposite edge of the blank, said ridge being beveled off on both sides, substantially as shown and described.

386,405. MACHINE FOR MAKING NAILS AND SPIKES. JOHN T. JONES, Iron Mountain, Mich., assignor of one-half to Peter L. Kimberly, Sharon, Pa. Filed Nov. 30, 1888. Serial No. 113,178. (No model.)

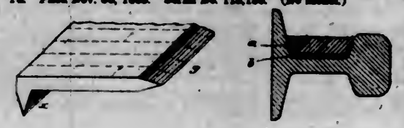


Claim.—1. The heater through which the blank passes to the knives, and in which it is heated to the extent needed to maintain it at the required heat at the cutting-point, in combination with the knives and the feed-rolls arranged and operating to grip between them the longitudinal edges of the heated blank, the combination being and acting substantially as hereinbefore set forth.

2. In nail or spike making apparatus, the combination, with the cutting-knives, of a heater movable to and from said knives and provided with a passage along through which the blank is fed to the knives, substantially as and for the purposes hereinbefore set forth.

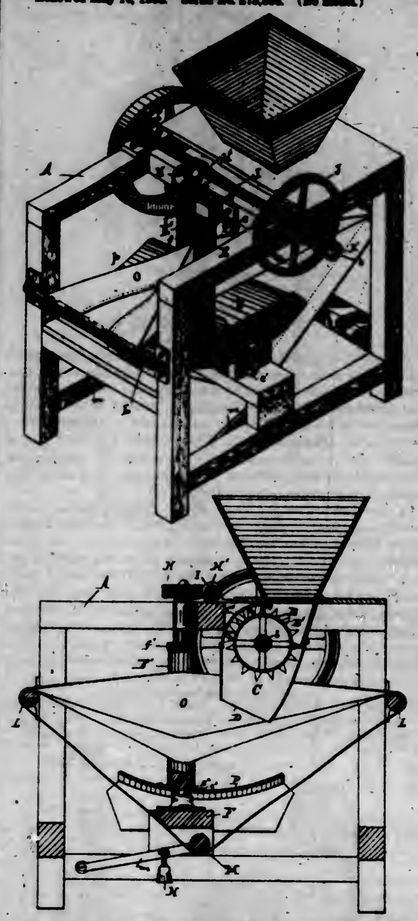
3. The combination, with the cutting-knives, of the swinging heater provided with a passage for the blank and adapted to be turned into and out of line with the knives, substantially as and for the purposes hereinbefore set forth.

386,406. MANUFACTURE OF RAILWAY-SPIKES. JOHN T. JONES, Iron Mountain, Mich., assignor of one-half to Peter L. Kimberly, Sharon, Pa. Filed Nov. 30, 1888. Serial No. 113,180. (No model.)



Claim.—The improvement in the art of making railway-spikes, consisting in incorporating or uniting with the web of a steel rail a steel filling-strip of the requisite cross-section, then bringing this prepared rail, by successive passes between rolls, to the form of a plate or blank having a cross-section corresponding in shape and dimensions to the outline of the spike, and finally cutting up said blank into spikes and forming side ears or flanges upon the heads of said spikes, substantially as hereinbefore set forth.

386,407. GRIST-MILL. MARK B. KAYLOR, Philadelphia, Pa., assignor of one-half to John J. Clyde, Jr., same place. Filed June 6, 1887. Renewed May 14, 1888. Serial No. 273,866. (No model.)

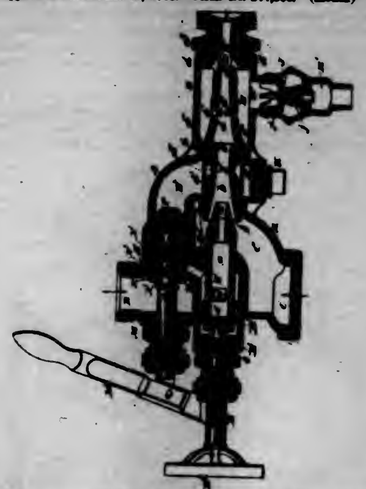


Claim.—1. In combination with the grinding-cylinder B, the apron O, the carrying-rolls L L, the vertical press-rolls E E', having concave depressions e^3 at the lower ends, the guard-plate e^4, and the receptacle P, substantially as described.

2. In combination with the grinding-cylinder B, the apron O, the carrying-rolls L L, the vertical press-rolls E E', adjustable with reference to each other at their upper ends and having concave depressions e^3 at their lower ends, the guard-plate e^4, and the receptacle P, substantially as described and shown.

3. The combination of the horizontal grinding-cylinder B, carrying the pinion K on its shaft *b*, the shaft I, carrying at one end the cog-wheel J, meshing with the pinion K and a worm, H', the vertical press-roll E', carrying at the upper end the worm-wheel H, gearing with the worm H', the adjustable press-roll E, mounted in movable bearings, the gear-wheels *f f*, carried by the press-rolls and meshing together, the endless apron O, and the carrying-rolls L L, all constructed and arranged substantially as shown and described.

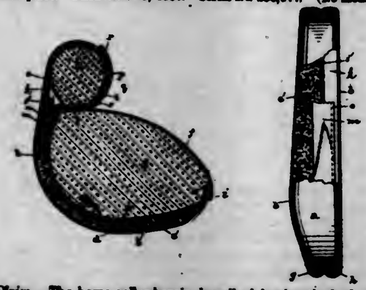
386,408. INJECTOR. JOHN B. LETHER, Haddonfield, N. J. Original application filed Sept. 3, 1886, Serial No. 212,689. Divided and this application filed June 16, 1888. Serial No. 277,266. (Model.)



Claim.—1. An injector having a lifter and a forcer arranged in axial line with each other, in which the discharge end of the lifter combining-tube penetrates into a prolongation of the mouth of the forcer combining-tube, thereby forming an annular forcer steam-jet passage, and in which the forcer combining-tube is provided with a waste-opening between its mouth and its throat, where the area in cross-section of its bore is equal to or greater than the area in cross-section of the smallest portion of the forcer steam-jet passage, substantially as and for the purpose specified.

2. An injector having a lifter and a forcer arranged in an axial line with each other, in which the discharge end of the lifter combining-tube penetrates into a prolongation of the mouth of the forcer combining-tube, thereby forming an annular forcer steam-jet passage, and in which the forcer combining-tube is provided with a waste-opening between its mouth and its throat at a point where the area in cross-section of its bore is about equal to or greater than the area in cross-section of the smallest portion of the annular steam-jet passage, and also provided with a valve, whereby the efflux of fluid to the atmosphere from the waste-opening is permitted and the influx of air prevented, substantially as and for the purpose shown.

386,409. HORSE-COLLAR. HENRY B. HALDEN, Baltimore, Md., assignor to Isaac Bergman, Mayer Bergman, and Michael Bergman, all of same place. Filed Nov. 26, 1887. Serial No. 256,077. (No model.)



Claim.—The horse-collar herein described, having the body *g* and roll *h*, with the interposed filling-strip *m*, beveled toward its ends, substantially as and for the purpose specified.

386,410. GAS-HOLDER GUIDE-WHEEL CARRIAGE. J. FREDERICK MAYER, Baltimore, Md., assignor of one-half to Bartlett, Hayward & Co., same place. Filed Jan. 13, 1888. Serial No. 261,257. (No model.)

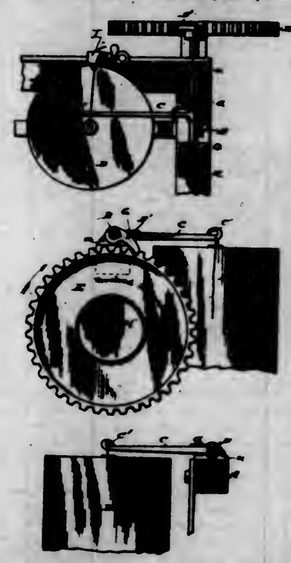
Claim.—1. A telescopic gas-holder having, in combination with the annular cups comprising the hydraulic seal, consisting of the top plate, *l*, and tank-section N', two plates, I, placed with their broad sides in an upright position, and having one edge in contact with the



top plate, *l*, a plate, J, connecting the said two plates, a vertically-reinforcing plate secured to the side of the gas-holder section, and having its end secured to the said connecting-plate J, and two angle-plates, O, having a horizontal portion, *p*, in contact with the top plate, *l*, of the cup, and one end, *p'*, extended at a right angle with said top plate, to fit *d* of the cup, to which said top plate is secured, and the other end, *p''*, also extended at a right angle, but in an opposite direction, and secured to the said connecting-plate, as set forth.

2. A telescopic gas-holder having, in combination with the annular cups comprising the hydraulic seal, two plates, I, placed with their broad sides in an upright position and secured to the said cup, and each having a horizontal slot, *t*, and provided on the outer side with a laterally-projecting arm, *u*, a roller, G, mounted on a shaft, *t'*, which rests in the said horizontal slots, two screw-threaded rods, *v'*, each having an eye attached to an end of the roller-shaft, and each rod provided with nuts and resting in the slotted arm, as set forth.

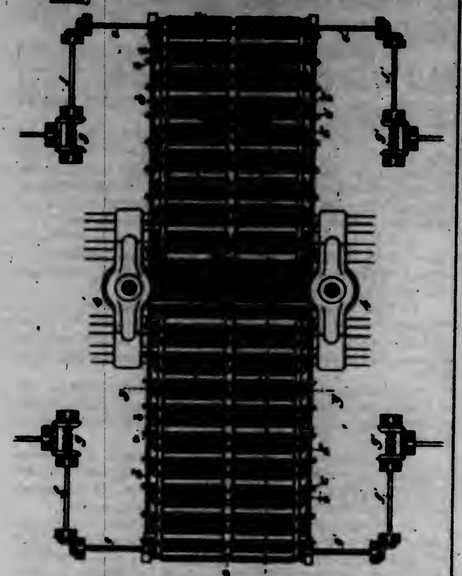
386,411. TWINE-LOOSENER. HARRY L. HUBBELL, New York, N. Y. Filed Feb. 1, 1888. Serial No. 262,893. (No model.)



Claim.—1. The combination, with the rock-shaft, of the twine-loosening arm mounted thereon and having an eye formed therein, through which the twine passes from the twine-box to the tension and take-up devices, and an intermittently-operated wheel, whereby a shaking or vibrating motion is imparted to the arm during the binding action to loosen the twine in the box, as set forth.

2. The combination, with the rock-shaft, of the twine-loosening arm mounted thereon, and having an eye formed therein, through which the twine passes from the twine-box to the tension and take-up devices, and an intermittently-operated wheel located in the binder mechanism train of gears, substantially as described, whereby a shaking or vibrating motion is imparted to the arm during the binding action to loosen the twine in the box, as set forth.

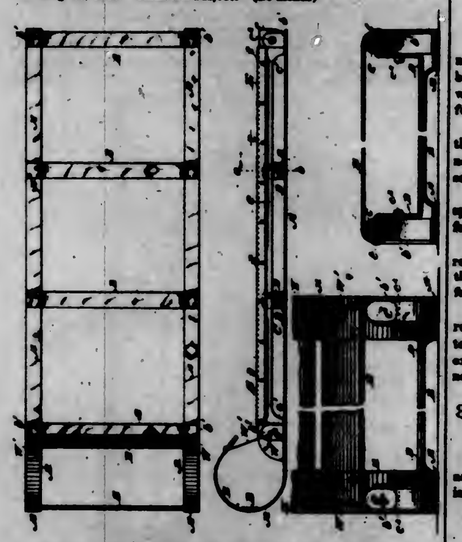
386,412. FEED-GAGE FOR ROLLING-MILLS. HAYES B. SAYER, Allegheny City, Pa. Filed May 17, 1888. Serial No. 274,253. (No model.)



Claim.—1. A rolling-mill feed-table composed of two independently-driven sets of feed-rollers, substantially as and for the purposes described.

2. A rolling-mill feed-table composed of two independently-driven reversible sets of feed-rollers, substantially as and for the purposes described.

386,413. TOBOGGAN. JOSHUA PERRY, Philadelphia, Pa. Filed Aug. 11, 1887. Serial No. 246,622. (No model.)



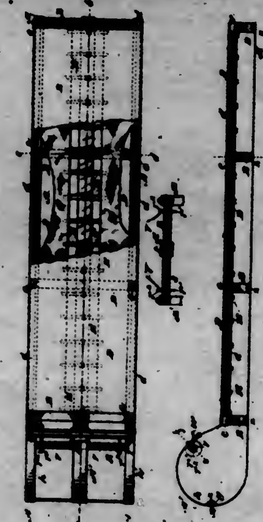
Claim.—1. The herein-described skeleton toboggan, consisting of a frame-work composed of elastic runners formed of strips of steel or other suitable metal, and the flexible elastic cross bars or strips secured thereto.

2. The combination, with a skeleton toboggan constructed of elastic runners and flexible elastic cross bars or strips secured thereto, of a yielding seat having a frame provided with elastic side rails which rest directly on the runners, substantially as described.

3. The combination of the skeleton toboggan consisting of the steel or iron runners and cross-bars secured thereto, the side rails, the angle-bars resting upon said cross-bars, and the flexible fabric secured to said side rails and suspended between the same, substantially as and for the purpose described.

4. As a new article of manufacture, a seat for toboggans composed of the flexible side rails, transverse connecting-bars provided with angular ends, the said angular ends being attached to the side bars, and the sheet of flexible fibrous materials secured to the tops of said side rails, substantially as described.

386,414. TOBOGGAN. JOSHUA PERRY, Philadelphia, Pa. Filed Oct. 4, 1887. Serial No. 251,207. (No model.)



Claim.—1. In a toboggan, the combination, with the elastic runners, of the arched elastic cross-strips having their ends upturned and bent around to form eyes for the reception of the side rails together with the flexible seat suspended from said rails, substantially as and for the purpose set forth.

2. In a toboggan, the combination of the two lateral runners and the middle runner, the arched elastic cross-strips secured to said runners, the side rails connected to said cross-strips, and the flexible seat secured to said side rails, substantially as and for the purpose set forth.

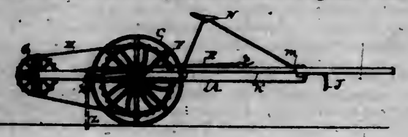
3. The combination, with a toboggan or coasting-vehicle, of the spring-controlled roller and cord attached thereto, substantially as and for the purpose set forth.

4. In combination with a toboggan, the wide spring-controlled roller and the cord having its ends secured to the said roller at or near the ends thereof respectively, substantially as and for the purpose set forth.

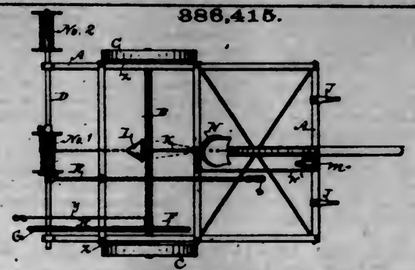
5. The combination, with a toboggan consisting of three or more runners connected by elastic cross-bars, of hand-rails rigidly connected to the cross-bars, and a seat composed of a fibrous flexible material extending over and around said rails, and having its free ends connected by a non-elastic connection, substantially as described.

386,415. MACHINE FOR WINDING AND UNWINDING WIRE. JOHN W. BROWN and ROBERT J. HAYDEN, Dubuque, Iowa. Filed Jan. 3, 1888. Serial No. 259,602. (No model.)

Claim.—A two-wheeled truck or carriage having a rotating shaft and spool-carrier in rear of and parallel with the carriage-axis, driving mechanism for transmitting motion from the carriage-axle to said

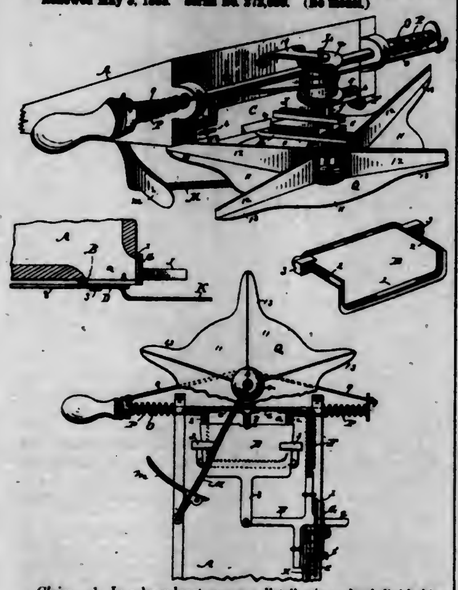


386,415.



rotating shaft, and the guide *l*, treadle *m*, lever *k*, and rod *k'*, arranged and combined substantially as shown and described, to operate in the manner set forth, for the purposes stated.

386,416. BROADCAST SOWER. ISAAC H. SWAIN, Dayton, Ohio, assignor to Silas B. Ritzenhouse, Liberty Mills, Ind. Filed Mar. 18, 1886. Renewed May 3, 1888. Serial No. 272,689. (No model.)



Claim.—1. In a broadcast sower, a distributing-wheel divided by ribs into a series of receiving-chambers and having channels connecting said chambers, substantially as set forth.

2. A distributing-wheel having a cast-metal hub and a sheet-metal body, the latter being provided with ribs dividing it into chambers, and the hub being formed hollow and having openings communicating with the chambers of the body, whereby to form channels between said chambers, substantially as set forth.

3. In a broadcast sower, a distributing-wheel having a sheet-metal body formed with ribs bent up from said body and formed of double thickness and approximately at right angles to the body, whereby the wheel may be operatively revolved in both directions, substantially as set forth.

4. In a broadcast sower, a distributing-wheel having its body formed of sheet metal and in sections, the adjoining edges of said sections being bent to form flanges constituting halves of the rib, the free edge of one flange being bent over that of the other to form a crown for the rib, substantially as set forth.

5. In a broadcast sower, the combination of the framing, the riddles, supports connecting the riddles to the framing, whereby they may be independently oscillated, and devices whereby to operate said riddles, substantially as set forth.

6. In a broadcast sower, the combination, with the framing and the riddle-plate, of a carrier pivoted thereto, and guides for directing the movement of said carrier longitudinally along the framing, whereby to preserve the location of the pivotal connection of the riddle therewith in line longitudinal to the framing, substantially as set forth.

7. In combination with the riddle and the carrier connected therewith, a ball-shaped guide, I, a detent constructed to engage the carrier, and having a hook or hooks engaged with ball I and movable along the same, and a clamp whereby to secure said detent in any desired adjustment.

8. The combination, in a broadcast sower, with a case or frame having a discharge-opening at the juncture of its front side and bottom, of a riddle-plate movable laterally on the front side of the case and a riddle-plate movable laterally and longitudinally along the rear side of the case, substantially as set forth.

9. In a broadcast sower, the combination of the frame or case provided with a discharge-opening at the juncture of its front side and bottom, the distributing-wheel, and a riddle-plate connected with the front side of the case and movable laterally, said plate being arranged and movable in a plane approximately parallel with the axis of the distributing-wheel, substantially as shown and described.

10. The combination, with the drive-shaft and the distributer-wheel, of the arm forming a brace and pivotal support for the drive-shaft, and having a guard-plate formed integrally with it, all arranged and operating substantially as set forth.

11. The combination of the lower riddle-plate, guides securing the same so it may be moved longitudinally and laterally, the carrier pivotally connected with said riddle-plate, and a detent constructed to secure said carrier in any desired adjustment, substantially as set forth.

12. The combination of the lower riddle-plate, a detent constructed to secure said carrier in any desired adjustment, and a spring for closing the riddle-plate when the detent is released, substantially as set forth.

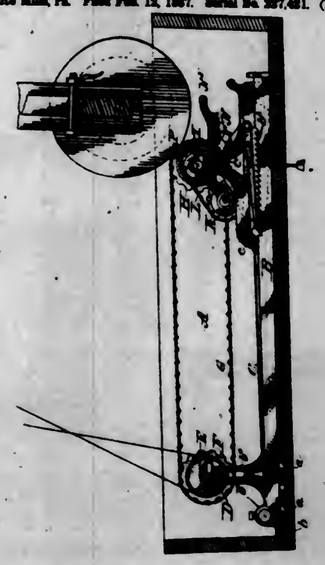
13. The combination, with the lower riddle-plate, of the detent constructed to secure said carrier in any desired adjustment, and adjustable, whereby it may be set at different points, and connections between said detent and riddle-plate, substantially as set forth.

14. The combination, with the metallic edge plate having right-angled sections and provided with guides for the base riddle-plate, of the riddle-plates, the drive-shaft having cranks connected with the riddle-plates, and the distributer, substantially as set forth.

15. The combination of the drive-shaft having cranks, the scatterer secured to said shaft, the edge plate having one wing forming a bearing for one riddle-plate and its other wing provided with guides for the other riddle-plate, and the riddle-plates provided with slotted arms engaging the cranks of the drive-shaft, substantially as set forth.

16. In a broadcast sower, substantially as herein described, the drive-shaft having cranks arranged on different radii, combined with the riddle-plates suitably supported, whereby to discharge the material being sown between them, and connections between said plates and the cranks of the drive-shaft, substantially as set forth.

386,417. FEED APPARATUS FOR GLASS-POLISHING MACHINES. RICHARD THIEME, Hoxendale, assignor to Louis J. Darlington, White Mills, Pa. Filed Feb. 13, 1887. Serial No. 227,481. (No model.)



Claim.—1. In a finishing apparatus for glass-polishing machines, the combination of a longitudinally-adjustable frame, as B, a pivoted vertically-adjustable inner frame, as C, and a traveling brush-carrier, substantially as described.

2. The combination, with the internal frame vertically adjustable at its forward end, of the weighted putty-box suspended thereto, so as to retain a horizontal position in any adjustment of the frame, and the brush arranged to dip therein and carry the material to the polishing-wheels, substantially as described.

3. The combination, with the swinging frame and the brush-carrier, of the putty-box, the lever for adjusting the frame, and a locking device, substantially as described.

386,418. MEASURING BOTTLE OR FLASK. JOHN R. WHITNEY and HERMAN H. ROTTAKER, Little Rock, Ark., assignors, by direct and mesne assignments, of one-half to Dean Adams, same place, and Henry Schumann, St. Louis, Mo. Filed Aug. 11, 1887. Serial No. 246,701. (No model.)



Claim.—1. A bottle or flask having a partition forming a measuring-chamber at the bottom, an inlet to said chamber at one side, and a discharge-pipe connected to the chamber at the opposite side, substantially as described.

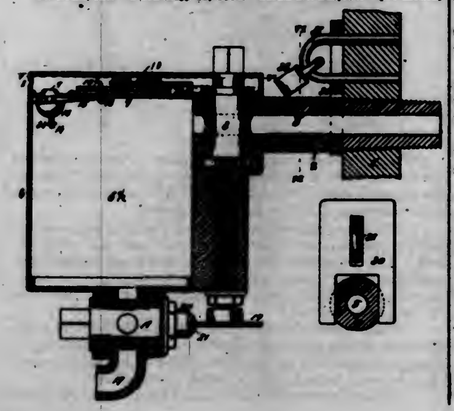
2. A bottle or flask having a partition forming a measuring-chamber, an inlet to said chamber at one side, an outlet to said chamber at the opposite side, a plug having a port, and a pipe connecting the outlet with the port, substantially as described.

3. A bottle or flask having a partition forming a measuring-chamber at the bottom, an inlet to said chamber at one side, an outlet to said chamber at the opposite side, a plug having a port, and a pipe connecting the outlet with the port, said pipe having bends, substantially as described.

4. A bottle or flask having a partition forming a measuring-chamber at the bottom, an inlet to said chamber at one side, an outlet to said chamber at the opposite side, a plug having a liquid-port and an air-port, and a pipe connecting the liquid-port with the outlet, substantially as described.

5. A bottle or flask having a partition forming a measuring-chamber at the bottom, an inlet to said chamber, and an extension at one side of the partition, and an outlet and a discharge pipe at the opposite side of the chamber, substantially as described.

386,419. REGISTERING-FAUCET. JOHN R. WHITNEY and HERMAN H. ROTTAKER, Little Rock, Ark., assignors, by direct and mesne assignments, of one-half to Dean Adams, same place, and Henry Schumann, St. Louis, Mo. Filed Aug. 11, 1887. Serial No. 246,707. (No model.)



Claim.—1. The combination, with the plugs 3 and 18 and a shell having a chamber located between the plugs, of a register with which one of the plugs is connected to indicate the number of times said plug is opened, and a locking device connecting the plugs, substantially as and for the purpose set forth.

2. The combination of the stem or spigot 2, plug 3, having stem 20, register connected with said plug, locking-disk on the lower end of said stem, having a notch, 23, plug 18, having a slot, 21, with which said disk engages, the shell 6, having a chamber, 6½, and valve 12, substantially as and for the purpose set forth.

3. The combination of the stem or spigot 2, having notches 31, loop 30, staple 32, lock 33, plug 3, register 10, to which said plug is connected, stem 20 on the plug, notched disk 19, plug 18, with which the disk engages, and the shell 6, having a chamber, 6½, substantially as and for the purpose set forth.

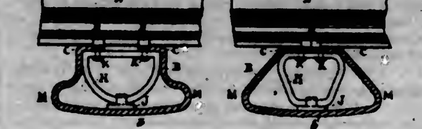
4. The combination of the stem or spigot 2, plug 3, plug 18, having a slot, 21, the locking-disk 19, having a notch, 23, by which the plugs are connected, the shell 6, having a chamber, 6½, and valve for allowing admission of air into the chamber, substantially as and for the purpose set forth.

5. The combination of the stem or spigot 2, plug 3, plug 18, to which the plug 3 is connected, the shell 6, having a chamber, 6½, valve 12, having elongated stem, and float 13, substantially as and for the purpose set forth.

6. The combination of the stem or spigot 2, plug 3, plug 18, locked to the plug 3, the shell 6, having a chamber, 6½, register 10, pawl 24 26, and a cam, 27, on the plug 3, substantially as and for the purpose set forth.

7. The combination of a plug having a disk, 19, formed with a notch, 23, a plug having a slot, 21, in which the disk rotates, and a shell having a chamber between the plugs, substantially as described.

386,420. METALLIC TIE OR SLEEPER FOR RAILROADS. REYNOLDS T. WHITE, Boston, Mass. Filed Nov. 21, 1887. Serial No. 255,702. (No model.)



Claim.—1. A metallic tie or sleeper made of sheet-steel formed with a slightly-rounded bottom, then turned on each bottom corner on a suitable radius inwardly, then straight or curved toward the center of the top of the tie, then over inwardly, as shown, to form flanges, as and for the purposes set forth.

2. A tie or sleeper made of sheet-steel formed as shown, with its upper surface narrower than its lower surface, thereby making it elastic its entire length, and having a spring-band secured to its flanges on its inside under the rails, as and for the purposes set forth.

3. In a metallic tie, B, made as shown, the combination of the stops D, G, and E, and key-bolt F and key *f*, to secure rails A to flanges C on tie B, substantially as shown and described.

4. A metallic tie, B, being slightly rounded at bottom *b*, and then turned inwardly on a suitable radius at the bottom corners, M, and then straight or curved on an inward incline to its top flanges, C, to make a bearing for rails A, substantially as shown and described.

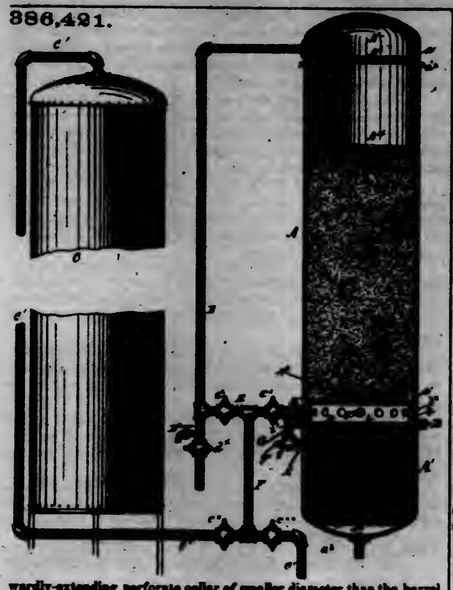
5. A metallic spring tie, B, having springs H, wearing-plates J, rivets or bolts K, stops D, G, and E, and keyed key-bolt F, in combination with rails A, as and for the purposes set forth.

6. A sheet of steel formed, as shown, to make a flexible railroad tie or sleeper its entire length, and having semicircular flexible bands secured to its flanges on its inside, and having a part of its flanges turned upward to form stops to prevent the rails from spreading, and suitable inside clips, stops, and bolts to hold the rails in position, all arranged substantially as shown and described, and for the purposes set forth.

386,421. FILTER. RAWSON ARMER, Oakland, Cal. Filed Sept. 12, 1887. Serial No. 249,895. (No model.)

Claim.—1. The combination, with a filter having a barrel and an auxiliary chamber, and provided with the imperforate head B and screen A^2, separating said parts, said head being provided with an up-

386,421.



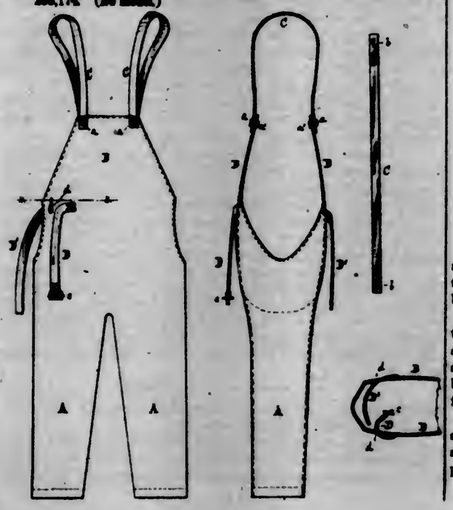
wardly-extending perforate collar of smaller diameter than the barrel of pipe-connection between the space outside the collar and the auxiliary chamber, and pipes connecting to a cold and a hot water supply.

2. The combination of a filter having the barrel A, screens A^{x} and A^{3}, and an auxiliary chamber, A', and an imperforate head between them, and a supply-pipe with the space between the head B and disk A^{3}, with the auxiliary chamber, and a warm-water pipe connected to the pipe E between the supply-pipe D and the filter, as set forth.

3. A filter having a screen or perforate disk near one end, an imperforate head secured upon the end of the filter, a collar of smaller size than the barrel of the filter extending up against said disk, a series of openings in said collar, a space around said collar, and a discharge-passage connected with said space.

4. A filter consisting of the two chambers A and A', having flanged meeting ends, a solid head between them, a perforate plate or screen held in chamber A' to produce or form a space above said head beneath the filtering material, and a space beneath the filtering or purifying material in said chamber A', as set forth.

386,422. REVERSIBLE OVERALLS. EDWARD W. BUSHEE, Jr., and JAMES G. GLADDEN, Bristol, R. I. Filed Nov. 14, 1887. Serial No. 255,174. (No model.)



Claim.—The reversible garment herein described, having legs A, flaps B, slits in front and rear, shoulder-straps C, buttoned to said flaps, straps D D' above the slit upon one side, and openings *d* in the flaps, substantially as specified.

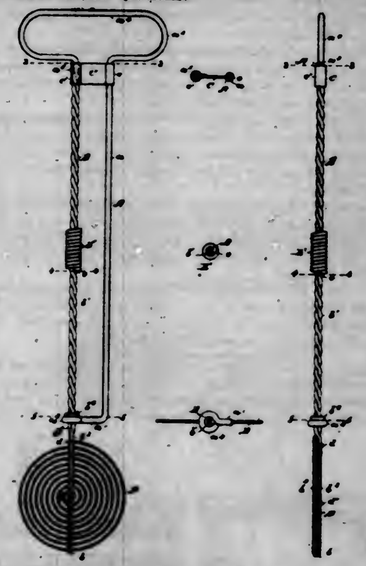
386,423. SHUTTER-FASTENER. JOHN M. GORSLINE, New York, N. Y. Filed Feb. 14, 1888. Serial No. 264,162. (No model.)



Claim.—1. The combination, with the hinged shutters S S', of the tube A and rod B, hinged to the respective shutters near their hinge-edges and movable in the same horizontal plane, and the gravitating fastening-hooks F, having step-toes *t* and hinged to the shutters near their free edges and movable vertically, said hooks embracing said tube when the shutters are closed, substantially as hereinbefore specified.

2. In combination with the shutters S S', tube A, and rod B, the hinges H H', said hinge H being composed of a nut, *n*, transfixed in a housing, H', with one end of the tube A screwed into the nut, substantially as hereinbefore specified.

386,424. EGG-BEATER. GEORGE D. DUDLEY, Lowell, Mass., assignor to Woods, Sherwood & Co., same place. Filed Feb. 20, 1888. Serial No. 264,993. (No model.)



Claim.—1. The combination of the frame, the spindle supported and rotating freely in said frame and extending below said frame, and the agitator consisting of a flat spiral of wire secured to said spindle below said frame, as and for the purpose specified.

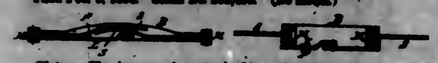
2. The combination of the frame, the spindle supported and rotating in said frame and extending below said frame, said spindle consisting of a wire doubled throughout its length and twisted within said frame, and an agitator consisting of a flat spiral of wire secured between the untwisted strands of said spindle below said frame, as and for the purpose specified.

3. The combination of the frame provided with a step, the socket secured to said frame, the spindle turning in said socket and step, and a ring or projection on said spindle to prevent said spindle from dropping out of said frame, as and for the purpose specified.

4. The combination of the wire frame, provided with a handle and

with a step at its lower end and with an intermediate vertical portion, a crank-piece attached to said vertical portion and provided with a cylindrical socket, the upper end of which receives the upper end of the frame-wire, a spindle turning in said socket and step, and above said step being formed of twisted wires or strands of wire and having a uniform diameter, as and for the purpose specified.

386,425. METHOD OF INSERTING SLEEVES IN SHIRTS. CHARLES S. BRAIN, Troy, N. Y., assignor to George B. Grant, Rec. & Co., same place. Filed Feb. 9, 1888. Serial No. 263,602. (No model.)



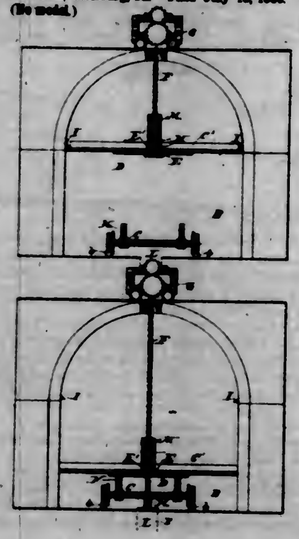
Claim.—The improved method of inserting shirt-sleeves in shirt-body fronts, consisting in, first, cutting out an opening in the shirt-body front to receive the shirt-bosom; second, folding the shirt-body front as cut out, and also the re-enforce pieces, in such a manner that the edge of the material surrounding the opening shall be capable of conforming to or of becoming substantially coincident with the several edges of the plies constituting the bosom when laid out flat and fully extended; third, plaiting the shirt-body front as folded between the back lining and the front lines of the bosom with its fine against the back of the back lining and its back against the face of the front ply or lines; fourth, applying a narrow strip of material to the outer raw edges of the plies consisting of the back lining, the shirt-body front, and the front lines, and securing all these parts together by stitches, so as to form a pocket, and, fifth, turning the pocket inside out, so that the binding-strip will cover the raw edges between the plies of the bosom, substantially as shown and described.

386,426. CUFF-HOLDER. ROBERT G. DUTTON, Penacook, N. H. Filed May 3, 1888. Serial No. 272,927. (No model.)



Claim.—In a cuff-holder, the combination of a pin-support having the ears B B and C C, the latter terminating in the hooks *c c*, a double-pointed pin, D, bent in the form of a staple, a spring-wire loop for attaching to a cuff-button, and an elastic band connecting said wire loop with the said pin between the ears B B, substantially for the purpose set forth.

386,427. PORTABLE-BOTTOM COKE-OVEN. DAVID EVANS and ALBERT W. ADAMS, Pittsburg, Pa. Filed July 16, 1888. Serial No. 280,130. (No model.)



Claim.—1. In a coke-oven having a pit below the level of its base or floor, the combination, with a movable bottom having a central opening, of a chain passing through said opening and through the eye of the oven, a portable crab above the oven mounted on rails, a spider or frame below the floor, and a car or truck mounted on tracks within said pit, substantially as described.

2. In a coke-oven, the combination, with a movable floor or bottom and a frame or spider to support the same while being raised and lowered, of a crab mounted on tracks above the oven, and a chain connecting said crab and spider through the eye of the oven, substantially as set forth.

3. The combination, with a coke-oven, of a vertically-movable floor, a portable crab or hoisting apparatus mounted upon tracks above the oven, and a chain passing from said crab through the eye of the oven and connected to said bottom, substantially as set forth.

386,428. HINGE-GAGE. HOLMES G. PERRY, Washington, D. C. Filed Feb. 24, 1888. Serial No. 265,311. (No model.)



Claim.—1. A hinge-gage consisting of an upper block, A, having slot *a*, and the lower block, B, having pins G, held adjustably together by a screw, C, and provided with the cutters D E F, arranged for operation as shown, and for the purpose set forth.

2. The combination of the upper and lower blocks, A and B, adjustably secured together by a screw, C, movable in a slot, *a*, the block A provided with recesses *b*, and the block B having the pins G, fitting into said recesses *b b*, and the cutters, all arranged as shown and specified.

3. The hinge-gage herein described, consisting of the block A, provided with cutters D F, slot *a*, and recesses *b*, and the block B, provided with cutter E, pins G, and slot *c*, in combination with the clamping-screw C, all constructed and arranged as shown, and for the purpose set forth.

4. In a hinge-gage, the combination of the upper and lower blocks sliding upon each other, the former provided with knives D and F and the latter with knife E, with the adjustable clamping-screw C, movable in slot *a* and arranged to set all knives at one operation, as and for the purpose specified.

386,429. RAILWAY-CROSSING. ALBERT M. GORDON, Montezuma, Ind. Filed Jan. 7, 1888. Serial No. 259,979. (No model.)



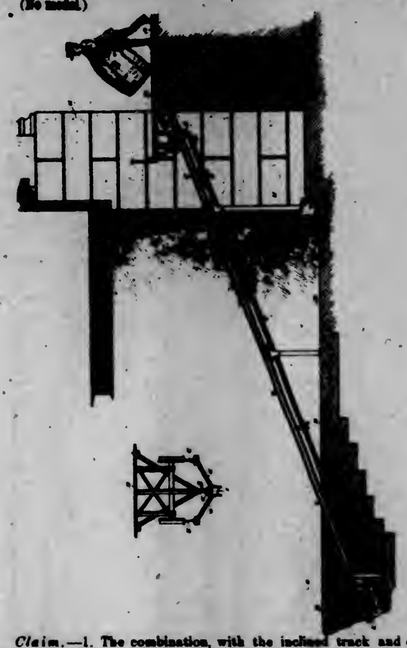
Claim.—1. In a railway-crossing, the combination of the main-

track rails, the side-track rails, the fixed frog at the junction of the main and side track rails, said having the flange D raised above the level of the main track, the frog-rail G, adapted to ride over the adjacent main-track rail, and the toggle-jointed frog-levers arranged on the inner side of the side track, pivoted near their outer ends, and connected directly to the frog-rail, said frog-rail and levers having the arms or extensions adapted to be operated by the flanges of the wheels of passing trains, substantially as described.

2. The combination, in a railway-crossing, of the main track, one of the rails of which is provided with a fixed frog, C, having the raised flange D, the side-track rail in line with the frog, the pivoted frog-rail G, having the arm K at its free end, said frog-rail being adapted to move over the top of the adjacent main rail and connect with flange D, the guard-rail on the inner side of the outer side-track rail, the toggle-jointed pivoted levers M N, having the extensions or arms at their outer ends, and connections between the jointed inner ends of said levers and the frog-rail, substantially as described.

3. The combination of the main and side tracks, the pivoted frog-rail G, having the arm K, the pivoted toggle-jointed levers M N, having the extensions or arms at their outer ends, for the purpose set forth, the bracket O, connected to the joint of said levers and having the ears P, the rod R, connected to frog-rail G, and having its outer end extended through ears P, the extensible spring bearing against one of the ears P, and the pin extending through rod R, bearing against the free end of the spring and adapted to strike the other ear P, substantially as described.

886,430. HOISTING AND CONVEYING APPARATUS. GEORGE F. HARRISON, Cleveland, Ohio. Filed Nov. 4, 1887. Serial No. 254,317. (No model.)



Claim.—1. The combination, with the inclined track and car adapted for traveling thereon, of a water-cylinder, the piston-rod of the latter being connected with the car, substantially as set forth.

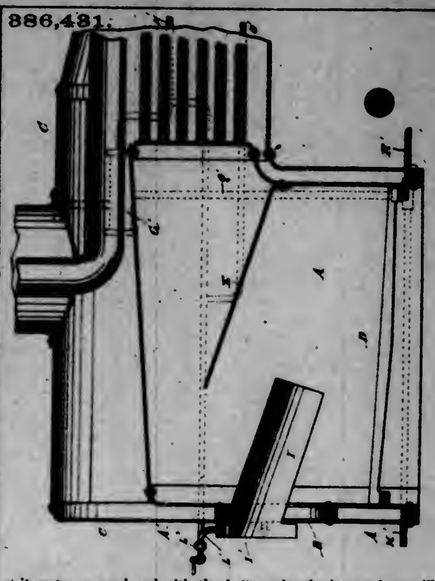
2. The combination, with inclined track, car, water-cylinder and piston-rod, substantially as indicated, of hangers supported from the track, said hangers carrying rollers for supporting the piston-rod, substantially as set forth.

3. The combination, with inclined track extending from the sidewalk to below the basement-floor and a car for operating on the track, of a water-cylinder having its axial line parallel with the line of the track, the piston of such water-cylinder connected with the car for actuating the latter, substantially as set forth.

886,431. LOCOMOTIVE FIRE-BOX. CHARLES W. HELLMER, Port Reading, N. J. Filed Feb. 15, 1888. Serial No. 264,107. (No model.)

Claim.—1. The combination, with the locomotive-boiler and fire-box provided with a fuel-opening, of the hollow baffler extending through the upper part of the fuel-opening and detachably connected

886,431.



at its outer exposed end with the boiler, whereby it may be readily removed without drawing the fire or emptying the boiler, substantially as set forth.

2. In a locomotive-engine, the combination, with the fire-box having a fuel-opening, B, and the boiler, of the arched hollow baffler extending through the upper end of the fuel-opening into the fire-box and detachably connected at its outer exposed end to the boiler by valved connections, and valved connections between the water-supply pipes and the outer exposed end of said baffler, whereby the valves in said connections may be closed and the baffler removed without interfering with or drawing the fire or emptying the boiler, substantially as set forth.

3. The combination, with the boiler, the fire-box having a fuel-opening, B, the water-supply; injector, and feed-water pipes H H', N N', and P, and the valved pipes Q Q', of the hollow baffler I, extending through the fuel-opening B, valved exterior attaching-connections J J' between the baffler and the boiler, valved pipes M M', leading from pipes N N' to the baffler, and valved pipes O O', leading from pipes M M' to feed-pipe P, substantially as set forth.

886,432. BOAT CONSTRUCTION. JOSEPH H. HIRT, West Troy, N. Y. Filed Feb. 3, 1888. Serial No. 262,879. (No model.)



Claim.—1. The herein-described hull of a boat or vessel, consisting of a keelson, stem and stern posts, bottom B, and sides C C, extending forward to the bridge, in combination with the vertical and chamfered timbers E, fitted between the stem-post and the ends of the side C, substantially as described.

2. The herein-described hull of a boat or vessel, consisting of keelson, stem and stern posts, bottom B, and sides C C, extending forward to the bow and stern bilge, in combination with the bow and stern formed of vertical timbers having chamfered edges fitted between the bow and stern-posts and the opposite ends of the sides C C, substantially as described.

886,433. WAGON-STANDARD. JAMES HUNT, Osceola, Mo. Filed Dec. 3, 1887. Serial No. 256,576. (No model.)

Claim.—The combination, with the recessed bolster A, of the cap-pieces B, seated within said bolster and secured near their inner ends by screws to the bolster, and standards C, pivotally and centrally or nearly centrally secured to the cap-pieces near their outer ends, and

886,433.



provided with one or more rings, E, said standards being adapted to turn upon the cap-pieces B, substantially as described.

886,434. MAT. ROBERT KERR, Philadelphia, Pa. Filed Nov. 22, 1887. Serial No. 255,570. (No model.)



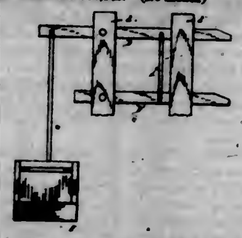
Claim.—A mat or similar article consisting of a textile cord wound with wire, said cord being folded on itself and having its lengths closely connected by the interlocking of the wire, substantially as set forth.

886,435. SHOE-NAIL. JOSEPH B. KENDALL, Milford, assignor to Henry S. Jenkins, trustee, Boston, Mass. Filed Apr. 3, 1886. Serial No. 161,160. (No model.)



Claim.—A metallic sole-fastener having two of its sides beveled, as at *c c*, to form the point of the nail, and having its sides opposite or at right angles to the beveled sides of substantially the same diameter as the body of the fastener, and chamfered off at the extremity of the point, as at *d d*, to enable the point of the nail to clinch without weakening the same, substantially as described.

886,436. FLOOD-GATE. JOSEPH HERVEY, Albany, Mo. Filed Mar. 14, 1888. Serial No. 267,148. (No model.)



Claim.—1. As an improvement in flood-gates, the latch-levers and the pocket or water-receptacle connected to said latch-levers, substantially as shown and described.

2. As an improvement in flood-gates, the latch-levers connected together, the pocket or water-receptacle, and the wire or rope connected to one of said latch-levers and to said pocket or receptacle, substantially as shown and described.

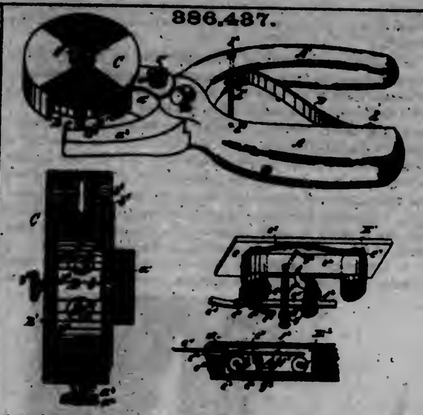
3. The combination, with the two posts or uprights and the gate pivotally secured between the same, of the two latching-posts disposed equal distances from said posts or uprights, the latch-levers designed to engage said latching-posts, and the pocket or receptacle connected to said latch-levers, substantially as shown and described.

4. The combination, with the gate and the latch-levers, of the pocket or receptacle open on one side and having a perforated bottom, substantially as shown and described.

886,437. TREMIE-FUNNEL. HENRY HYDE, Philadelphia, Pa. Filed Mar. 3, 1888. Serial No. 266,062. (No model.)

Claim.—1. In combination, a punch provided with two handles

886,437.



pivoted to each other, a hollow cylinder pivotally connected with the outer portion of one of said handles and provided with a series of dies, a recessed cap-plate mounted on said cylinder, and means, substantially as described, connected with said cap-plate and engaging with said cylinder to cause the same to be held in a fixed position, and an anvil-bar mounted in the outer portion of the opposite handle, substantially as and for the purposes set forth.

2. In combination, a punch provided with two handles pivoted to each other, a hollow cylinder pivotally connected with the outer portion of one of said handles and provided with a series of dies and a removable cover, means, substantially as described, in said cylinder whereby tampering with the device may be detected, a recessed cap-plate surrounding said cylinder with a portion of its surface cut away, and a spring secured to said plate and engaging in notches formed in the surface of said cylinder, substantially as and for the purposes set forth.

3. In combination, a punch provided with two handles pivoted to each other, a hollow cylinder pivotally connected with the outer portion of one of said handles and provided with a series of dies, and a removable cover with characters arranged around the surface thereof, means, substantially as described, in said cylinder whereby tampering with the device may be detected, a cap-plate with a portion of its surface cut away inclosing said cylinder, a spring for holding said cylinder in a fixed position, and an anvil-bar mounted in the outer portion of the opposite handle, substantially as and for the purposes set forth.

4. In combination, a punch provided with two handles pivoted to each other a hollow cylinder pivotally connected with the outer portion of one of said handles and provided with a series of dies and a removable cover, means in said cylinder whereby tampering with the same may be detected, a cap-plate with a portion of its surface cut away surrounding said cylinder, a spring attached to said plate and engaging in notches formed in the surface of said cylinder for holding the same in a fixed position, and means in said handles operating automatically to register the use and to indicate tampering with the device, substantially as and for the purposes set forth.

5. In combination, a punch provided with two handles pivoted to each other, a rod secured into one of the handles and extending through the body of the opposite handle and a collar mounted thereon, a spring secured to one of said handles and engaging with the opposite handle, a hollow cylinder secured to the outer portion of one of said handles and provided with a series of dies and a removable cover, means in said cylinder whereby tampering with the cylinder may be detected, an anvil-bar mounted in the outer portion of the opposite handle, and means, as described, in the handles, and actuated thereby, to register the use and to indicate tampering with the device, substantially as and for the purposes set forth.

886,438. DITCHING, DREDGING, OR EXCAVATING MACHINE. BRUCE G. BEAN, Chicago, Ill., assignor of one-half to Oliver B. Green, same place. Filed Jan. 19, 1888. Serial No. 260,893. (No model.)

Claim.—1. A ditching, dredging, or excavating machine having two shovel-carrying booms adapted to be alternately operated, substantially as described.

2. A ditching, dredging, or excavating machine having two booms with connected shovels, two guides extending in opposite directions, chains or ropes connected with the shovels for raising and overturning the same, and winding mechanism, whereby the booms are alternately operated in order to advance and return the shovels to and from the ditch or excavation, load the same, and discharge the ex-

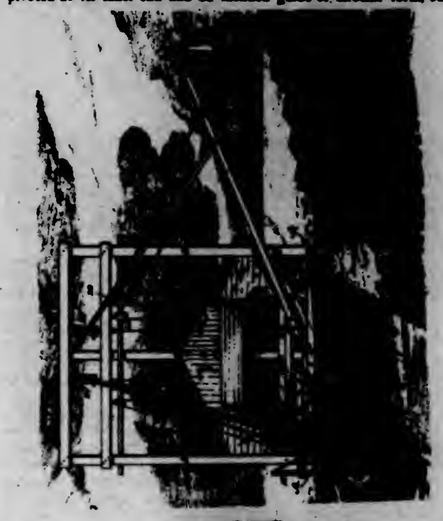
cavated material on opposite sides of the excavation, substantially as described.

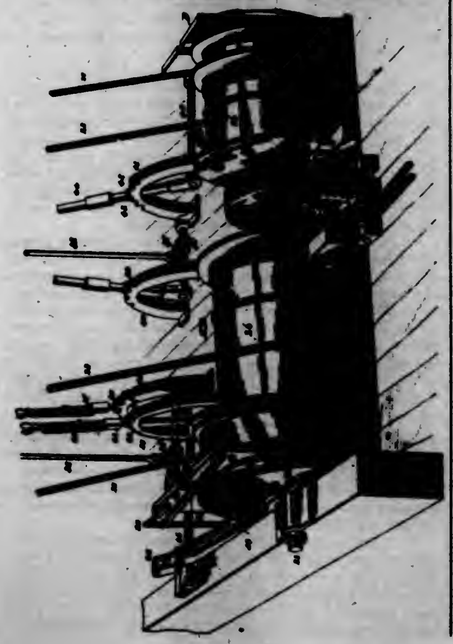
3. A ditching, dredging, or excavating machine having a boom, a pivotal connection for said boom, consisting of a box with gudgeons and a screw passing through said box, and an inclined guide, said parts being combined substantially as described.

4. A ditching, dredging, or excavating machine having a boom, a spar pivoted to said boom, a box through which the upper end of said spar passes, a gripping device attached to said box, and mechanism, substantially as described, for operating said gripping device, said parts being combined substantially as and for the purpose set forth.

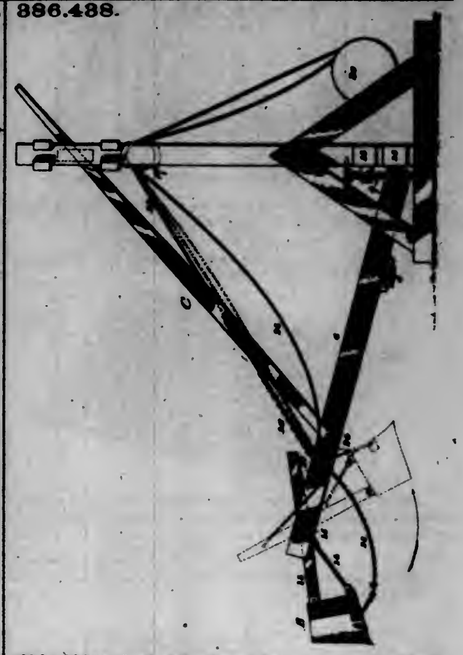
5. A ditching, dredging, or excavating machine having a pivotal boom whose axis is vertically adjustable for forming ditches or excavations of different depths, substantially as described.

6. A ditching, dredging, or excavating machine having a boom pivoted at its inner end and an inclined guide of circular form, on





386,438.



which said boom is adapted to bear, said parts being combined substantially as and for the purpose set forth.

7. A swinging boom pivoted to a box which is vertically adjusted by means of a screw, substantially as described.

8. In a ditching, dredging, or excavating machine, a swinging boom, in combination with the box 8, the screw 9, collars 10, and the nut 11, said box being freely fitted on said screw and connected therewith by said collars, substantially as described.

9. A ditching, dredging, or excavating machine having a boom pivoted at its inner end and having a roller on its under face and an inclined guide of segmental form, said parts being combined substantially as and for the purpose set forth.

10. In a ditching, dredging, and excavating machine, a boom pivoted to the frame of the machine and having a pulley thereon, a beam pivoted to the boom and having a shovel connected therewith, a pulley secured to the frame of the machine above and out of the vertical line of the pivoted lower end of the boom, a winding-drum, and a chain connected to said shovel and winding-drum and passing around said pulleys of the boom and frame, said parts being combined as described, whereby both a lateral and elevating movement is imparted to said boom.

11. In a ditching, dredging, and excavating machine, a winding-drum having a brake formed of linked sections and an operating device consisting of a lever pivoted at one end to one of the said sections and having a bar pivoted to the other section, the said bar being pivotally connected to said lever, said parts being combined substantially as and for the purpose set forth.

12. A fixed drum and a loose drum, in combination with a friction cone or clutch adapted to engage with said loose drum, in combination with chains or ropes connected with said drums and with opposite portions of the overturning shovel, substantially as described.

13. In a ditching, dredging, and excavating machine, a rising-and-falling boom pivoted at its lower end, a spar pivoted to said boom, and a guide in which the upper end of said spar has free play, said parts being combined substantially as and for the purpose set forth.

14. In a ditching, dredging, or excavating machine, a clamping or gripping device for the spar, consisting of a frame, a movable plate, a movable rod, and arms and links connected with said rod and plate, whereby the clamp or grip is operated, substantially as described.

15. In a ditching, dredging, and excavating machine, a rising-and-falling boom pivoted at its lower end and having rollers or pulleys thereon, a shovel having its beam pivoted to said boom, operating-chains connected, respectively, to said beam of shovel, a hoisting-drum, and a loose drum on the same shaft, said parts being combined substantially as and for the purpose set forth.

16. The rod 32 and the clamping or gripping device of the spar, in combination with the rock-shaft 36, mounted on the frame of the machine, a lever, 37, connected with said shaft, a toothed quadrant, and a pawl on said lever engaging with said quadrant, substantially as described.

17. In a ditching, dredging, or excavating machine, a rock-shaft and an operating-lever therefor, in combination with a crank connected with said shaft, and a rod connected with said crank and with a brake, the latter embracing a winding-drum, which is loosely mounted on the shaft and rotated by the same through the medium of a friction cone or clutch fixed to said shaft, substantially as described.

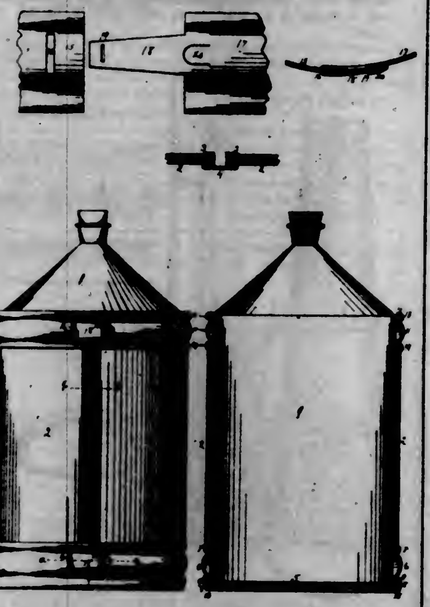
18. In a ditching, dredging, or excavating machine, a winding-drum loose on its shaft, and a clutch rigidly connected therewith, in combination with means for causing the engagement of said drum and clutch, consisting of a wedge, a bar carrying said wedge, a crank connected with said bar, and a rock-shaft carrying said crank, substantially as described.

19. In a ditching, dredging, or excavating machine, a rock-shaft, 45, carrying two cranks, 46 47, projecting in opposite directions, in combination with a brake and clutch mechanism, said brake and mechanism being alternately operated by said cranks, substantially as described.

20. A ditching, dredging, or excavating machine having a boom, an adjustable pivotal connection for inner end of said boom, and a guide of segmental form having an inclined upper face, said parts being combined substantially as and for the purpose set forth.

21. A ditching, dredging, or excavating machine having a boom with pivotal connection for inner end, consisting of a box, a vertical screw, collars adjustable on said screw, and beams secured to the frame of the machine and having eyes attached thereto and in which said screw is guided, said parts being combined substantially as and for the purpose set forth.

386,439. JACKETED CAN. FREDERICK J. SOTHMANN, Rockford, Ill., assignor to the Rockford Can Company, same place. Filed Feb. 2, 1888. Serial No. 262,894. (No model.)

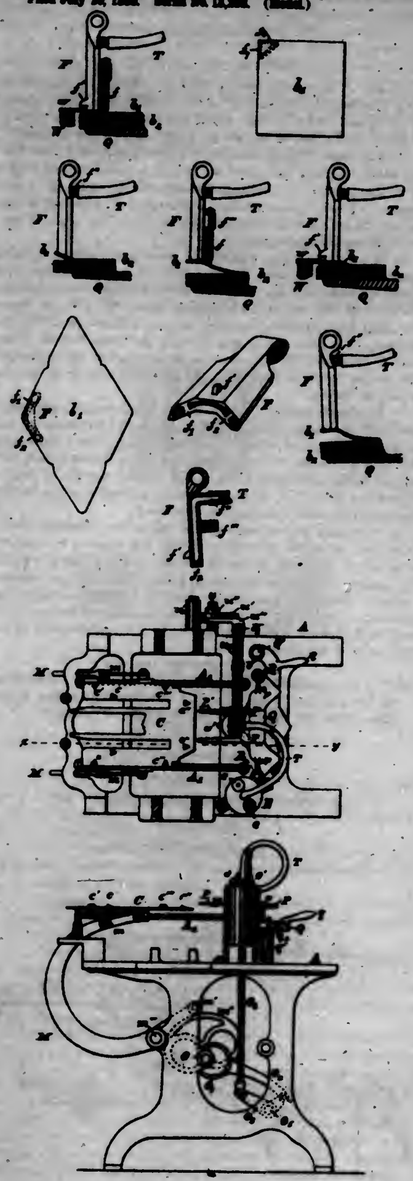


Claim.—1. A can having a body and bottom jacket held in place on the can by metallic feet and upper bands, the feet-band being turned under the outer edge of the bottom jacket and provided with a seat along its upper edge to receive the lower end of the body-jacket, and the upper band being bent over the seam edge of the can and having a seat along its lower edge for the upper end of the body-jacket, one of said bands having a detachable connection, substantially as set forth.

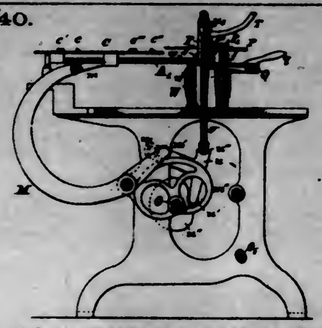
2. The herein-described band for holding jackets on a can, consisting, essentially, of a metallic strip provided along its opposite edges with seats for the edges of the jackets, one of the ends being provided with two tongues, one of the tongues being provided with a slot adapted to receive the other tongue and its opposite end provided with a slot adapted to receive the slotted tongue of the opposite end, substantially as set forth.

3. The herein-described band, consisting, essentially, of a strip of metal provided at one end with a projecting tongue and a second tongue at the base of the projecting tongue, the projecting tongue being provided with a slot adapted to receive the second tongue, and the opposite end of the strip being provided with a slot adapted to receive the said projecting tongue, substantially as set forth.

386,440. MACHINERY FOR FINISHING SEAMS OF PAPER. HENRY B. SWEET and B. WINSLOW SWEET, Worcester, Mass., assignors by mesne assignments, to the Whitcomb Envelope Company, same place. Filed July 10, 1888. Serial No. 12,382. (Model.)



386,440.



Claim.—1. In a paper-feeding machine, a lifter-tube from which the air is exhausted and which is moved to and from a pile of sheets, in combination with a presser which bears upon the upper sheet as it is raised off the pile, as and for the purpose shown and described.

2. In a paper-feeding machine, the combination of a lifter-tube from which the air is exhausted and which is moved to and from a pile of sheets, with an automatically-adjusted separator, W, and a presser, *f*, whereby the upper sheet as it is raised from the pile is bent concavely to the sheet beneath it in the vicinity of the place of contact of the separating devices.

3. In a paper-feeding machine, in combination with a suitable support for a pile of blanks, the pneumatic lifter moved to and from the pile of blanks over one corner thereof and adapted to engage and lift or turn up only one corner of the top sheet of the pile, and the reciprocating blank-receiving carriage moving transversely to the line of motion of the lifter and passing between the sheet or blank whose corner is lifted and the next sheet, so as to complete the separation of the former sheet or blank from the pile, substantially as and for the purpose shown.

4. In a paper-feeding machine, in combination with a pneumatic lifter to lift one corner of a blank from a pile, the reciprocating carrier for completing the separation of the partially-raised blank, provided with the hooks c^{7} c^{7}, made inclined on their forward sides with reference to the movement of the carrier toward the pile of blanks, and with the stops c^{8} c^{8}, for engaging the blank when on the carrier, substantially as and for the purpose described.

5. In a paper-feeding machine, the pneumatic lifter-tube moved to and from the corner of a pile of blanks and adapted to raise only one corner of the blank on top of the pile, in combination with the reciprocating carriage for conveying a blank from the pile, adapted to move in under the raised corner of the top blank and complete the separation of such blank from the pile, and having the hooks c^{7} c^{7} inclined on their forward sides, and the stops c^{8} c^{8}, substantially as and for the purpose specified.

386,441. APPARATUS FOR ELECTRIC WELDING. ELIHU THOMSON, Lynn, assignor to the Thomson Electric Welding Company, Boston, Mass. Filed July 30, 1887. Serial No. 245,502. (No model.)



Claim.—1. In an electric welding apparatus, a plurality of pairs of clamps arranged for holding a number of pieces to be welded in juxtaposition, substantially as specified.

2. In an electric welding apparatus, the combination, with a plurality of pairs of clamps for holding the pieces to be welded in juxtaposition, of means for applying the welding current in succession to each pair of clamps, as desired, substantially as specified.

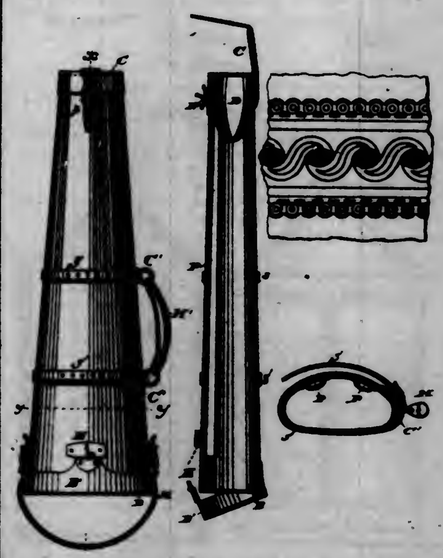
3. In electric welding apparatus, the combination, with a plurality of pairs of clamps, of a switching arm and lever, whereby the current may be distributed to any pair of clamps, substantially as specified.

4. In electric welding apparatus, the combination, with a pair of clamps, of a plurality of pairs of separate contact-pieces held in electrical contact with the sheets or plates to be welded, and means for passing the welding current between any pair of contact-pieces, as may be desired, substantially as specified.

5. In electric welding apparatus, the combination, with a pair of clamps, of a plurality of separate contact-pieces arranged in pairs and inserted between the pieces to be welded and said clamps, and means for passing an electric current between any pair of contact-pieces and through the pieces to be welded, substantially as specified.

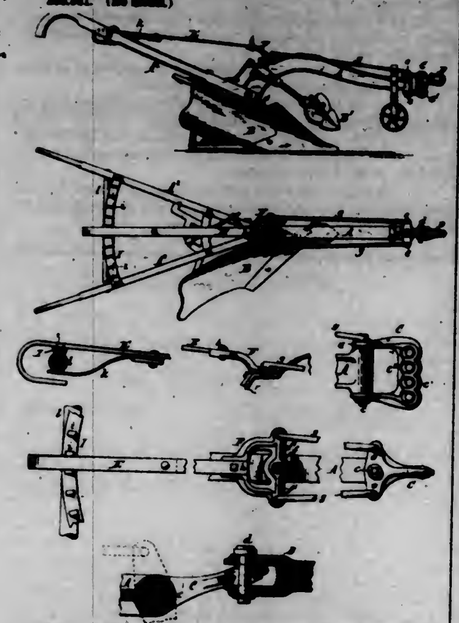
6. In an electric welding apparatus, the combination of a clamp, a plurality of pairs of separate contact-pieces held in electrical contact with the sheets or plates to be welded, means for passing a constant welding current through the sheets or plates to be welded, and means for passing a welding current of slightly higher potential between any pair of said contact-pieces, as may be desired, substantially as specified.

386,442. VIOLIN-CASE. ASA T. VAN WINKLE, Brooklyn, N. Y., assignor of two-thirds to John Mandlebaum and George D. Whittemore, both of Newark, N. J. Filed Apr. 14, 1887. Serial No. 234,883. (No model.)



Claim.—As an improved article of manufacture, a leather violin or viola case, combining therein a body flat at both ends and larger at one end than the other and of a uniform taper from end to end, provided with a receptacle for a violin or viola, two pockets arranged within said receptacle for the bows, a receptacle at the smaller end for resin, strings, &c., a lid at each end to admit of access to said receptacles and pockets, straps S, secured to the outside of said case, handles, as described, arranged at the larger end and at the side, respectively, said parts being arranged with relation to each other and adapted to operate substantially as and for the purpose set forth.

386,443. FLOW. GEORGE WILSON, Dalzell, N. Y., assignor to the Wheel Plow Company, same place. Filed Nov. 22, 1887. Serial No. 255,851. (No model.)



Claim.—1. The combination, with the beam, of the clevis pivoted thereto and provided with lateral arms *c c*, a shifting-lever, E, pivoted to the beam and provided with lateral arms *f' f'*, rods *g*, connecting the arms *c* and *f'*, and a locking device whereby the shifting-lever is held in position, substantially as set forth.

2. The combination, with the beam and the clevis pivoted thereto, and the rods *g*, of the locking-bar I, the shifting-lever E, provided with cross-head F, and having its rear portion bent around the locking-bar, and a spring secured to the shifting-lever and having its free end between the bent end of the shifting-lever and the locking-bar, whereby the deflection of the spring is limited, substantially as set forth.

386,444. LAWN-MOWER FOR TERRACES. WILLIAM L. WOOD, Towanda, Pa. Filed Sept. 30, 1887. Serial No. 251,093. (No model.)



Claim.—1. As an improvement in lawn-mowers, the combination, with the wheel-covering plates, of the arms attached to said plates, the draft-ropes attached to the arms, and the ring or rings slipped upon one of the draft-ropes and retained in position on the other rope by passing the latter through and around the ring, so as to form a loop, as set forth.

2. As an improvement in lawn-mowers, the combination, with the wheel-covering plates, of the arms pivoted to the plates eccentrically to the axis of the wheels, and securing-bolts upon which the arms may be turned to bring the outer ends wholly within the peripheries of the wheels, each of said arms having a greater length than the shortest distance from its pivoting-bolt to the wheel's periphery, but not longer than the greatest distance, the draft-ropes attached to the arms by snap-hooks, and the ring or rings slipped upon one of the draft-ropes and retained in position on the other rope by passing the latter through and around the ring, so as to form a loop, as set forth.

3. As an improvement in lawn-mowers for mowing terraces, the combination, with the wheel-covering plates, of the arms pivoted thereto, the draft-ropes, the snap-hooks attaching said ropes to the arms, and the ring or rings slipped upon one of the ropes and retained in position on the other rope by passing the latter through and around the ring, so as to form a loop, said rings acting as a support for the shank rope when the machine is in use, substantially as shown and described.

REISSUES.

10,944. ELECTRICAL CONDUCTOR. EDWARD WESTON, Newark, N. J. Filed May 9, 1883. Serial No. 273,362. Original No. 281,204, dated Apr. 17, 1883.



Claim.—1. A metallic electrical conductor the electrical resistance of which diminishes with increase of temperature.

2. An electrical conductor consisting of an alloy of copper or its equivalent, manganese, and nickel.

3. An electrical conductor composed of an alloy of sixty-five to seventy parts copper, twenty-five to thirty parts ferro-manganese, and two and a half to ten parts nickel.

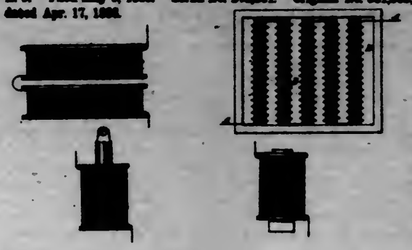
4. An electrical conductor consisting of two metallic portions, the joint electrical resistance of which remains substantially constant under all variations of temperature.

5. A conductor consisting of two metallic portions, one composed of a material the electrical resistance of which increases with an increase in its temperature, and the other composed of a material the electrical resistance of which decreases under similar conditions, as and for the purpose specified.

6. A conductor consisting of two metallic portions, one of which is composed of a material the electrical resistance of which increases with an increase in its temperature, and the other is composed of an alloy of copper or its equivalent, manganese, and nickel, as set forth.

7. A rheostat, resistance, or other electrical instrument of the kind described, the conductors of which consist of two portions, one composed of a metal or an alloy the electrical resistance of which increases with an increase in its temperature, the other of an alloy the resistance of which decreases under similar conditions, as set forth.

10,945. ELECTRICAL CONDUCTOR. EDWARD WESTON, Newark, N. J. Filed May 9, 1888. Serial No. 273,201. Original No. 361,269, dated Apr. 17, 1888.



Claim.—1. An electrical conductor consisting of a material the electrical resistance of which is substantially constant under varying temperatures.

2. An electrical conductor composed of an alloy containing manganese, the electrical resistance of which conductor is substantially constant under varying temperatures.

3. In an electrical apparatus, a conductor composed of an alloy containing manganese and copper or its equivalent.

4. A coil or conductor wound in convolutions composed of an alloy of manganese and copper or its equivalent.

5. A coil or conductor wound in convolutions composed of copper and ferro-manganese, in the proportions of seventy parts of copper and thirty parts of ferro-manganese.

6. A rheostat, resistance, or other electrical instrument of the kind herein described, the coils or conductors of which are composed of an alloy of manganese and copper or its equivalent.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE ATWOOD.

Decided July 12, 1888.

SUSPENSION OF ALLOWED APPLICATIONS—PROCESS AND APPARATUS.

There is no authority for the Office to withhold from issue an application which is allowable and against which neither reference, publication, public use, nor interference can be presented.

PROCESS AND APPARATUS.

The relation between process and apparatus is not that of genus and species, but of independent inventions. If the inventor of an apparatus is subject or tributary to a patent for process, it is due to the patent law, which forbids all persons to use the invention of another for which a valid patent has been issued. The fact that such relation exists is no reason for withholding from issue an allowable application for process till an interference between a companion application for apparatus and other applications for apparatus which show but not claim the process is disposed of.

ON petition.

PROCESS FOR RECOVERING SODA FROM THE SPENT SODA LIQUOR OF PAPER-PULP MILLS.

Application of Edward N. Atwood filed December 87, No. 256,853.

Mr. A. L. Hayes and *Mr. F. C. Somes* for the applicant.

L, Commissioner:

Applicant petitions the Commissioner to vacate the on of the examiner in suspending the issue of patupon this application until an interference in h another case of applicant's is involved shall be mined; also, that such interference be suspended the present petition shall be disposed of.

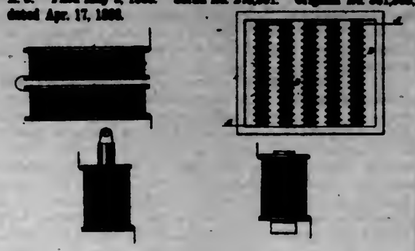
e facts are as follows: Applicant has pending the nt application for a process and a companion cation for the apparatus by which that process be carried out. This application for the process dy for allowance; but the application for the atus must be placed in interference with an apion of another party, and the examiner feels it his duty to hold this process application from until such interference is disposed of. The reason this is stated by the examiner as follows:

opposing party in the interference for the apparatus prove to be the prior inventor, and this application should meantime have been issued, the anomaly would be created prior inventor of the apparatus for carrying out and per-

the process claim in this application would not have any according to the patents issued by the Office, to use his us, the allowance of this application being *prima facie* e that the applicant was the first inventor of the process, refore entitled to dominate all apparatus invented subse-

The examiner also calls attention to the Rules of Practice as they have heretofore existed, citing Rule 51, edition of August, 1878, and Rule 94, edition of April 15, 1883. But the relation between process and apparatus is not that which exists between generic and specific claims for obvious reasons. Every species contains the genus, both being present. A new species may be invented without there being any invention of the genus, which was old and known to the inventor. Hence a patent for the genus must cover and include and therefore dominate the new species, for in so far as the characteristics of the species are those of the genus there is no new invention. The inventor of the new species has borrowed the generic features of the genus to build upon, and as to these the new invention and the old are identical. The patent for the specific is dominated and controlled by the patent for the generic, because the subject of the latter belongs to the latter patentee. In these particulars the inventions are the same. But this is not the case in the matter of process and apparatus. There is no such relationship. They are wholly separate and distinct inventions. If A is the first inventor of a given process, his patent will necessarily dominate and control every apparatus that may be invented to carry it out. But this is a domination which arises from the patent system, and is the same domination and exclusive right which exists inherently in every patent. It is simply the prohibition of the law which forbids all persons from using the subject of an invention for which a valid patent has issued to the original inventor thereof. The inventor of the apparatus may patent the same whether he invents the apparatus pending the application of another person for the process or years after the patent for the process has issued; but in neither case can he use his apparatus except by consent of the patentee of the process. Why? Simply because his invention is of such a character that it is incapable of operation independently of execution of the other person's process, and such process is patented. Bell has a patent for a method of transmitting articulate speech. Hundreds of patents have issued for the mechanical apparatus which may be employed in executing Bell's method; but no one of these patentees can put his patented mechanisms into use except by consent of Bell. In this particular they occupy the same relation as the general public, which is simply that they cannot use Bell's method with or without patents for the apparatus except subject to the domination of a patent previously issued. Why therefore should this application be held up and not go to issue?

10,945. ELECTRICAL CONDUCTOR. EDWARD WEBER, Newark, N. J. Filed May 9, 1888. Serial No. 273,201. Original No. 261,269, dated Apr. 17, 1883.



Claim.—1. An electrical conductor consisting of a material the electrical resistance of which is substantially constant under varying temperatures.

2. An electrical conductor composed of an alloy containing manganese, the electrical resistance of which conductor is substantially constant under varying temperatures.

3. In an electrical apparatus, a conductor composed of an alloy containing manganese and copper or its equivalent.

4. A coil or conductor wound in convolutions composed of an alloy of manganese and copper or its equivalent.

5. A coil or conductor wound in convolutions composed of copper and ferro-manganese, in the proportions of seventy parts of copper and thirty parts of ferro-manganese.

6. A rheostat, resistance, or other electrical instrument of the kind herein described, the coils or conductors of which are composed of an alloy of manganese and copper or its equivalent.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE ATWOOD.

Decided July 12, 1883.

SUSPENSION OF ALLOWED APPLICATIONS—PROCESS AND APPARATUS.

There is no authority for the Office to withhold from issue an application which is allowable and against which neither reference, publication, public use, nor interference can be presented.

PROCESS AND APPARATUS.

The relation between process and apparatus is not that of genus and species, but of independent inventions. If the inventor of an apparatus is subject or tributary to a patent for a process, it is due to the patent law, which forbids all persons to use the invention of another for which a valid patent has been issued. The fact that such relation exists is no reason for withholding from issue an allowable application for process until an interference between a companion application for apparatus and other applications for apparatus which show but not claim the process is disposed of.

ON petition.

PROCESS FOR RECOVERING SODA FROM THE SPENT SODA LIQUOR OF PAPER-PULP MILLS.

Application of Edward N. Atwood filed December 1887, No. 256,853.

Mr. A. L. Hayes and *Mr. F. C. Somes* for the applicant.

MILL, *Commissioner;*

Applicant petitions the Commissioner to vacate the action of the examiner in suspending the issue of patent upon this application until an interference in which another case of applicant's is involved shall be determined; also, that such interference be suspended until the present petition shall be disposed of.

The facts are as follows: Applicant has pending the present application for a process and a companion application for the apparatus by which that process may be carried out. This application for the process is ready for allowance; but the application for the apparatus must be placed in interference with an application of another party, and the examiner feels it to be his duty to hold this process application from issue until such interference is disposed of. The reason for this is stated by the examiner as follows:

> The opposing party in the interference for the apparatus may prove to be the prior inventor, and this application should in the meantime have been issued, the anomaly would be created that the prior inventor of the apparatus for carrying out and performing the process claim in this application would not have any right, according to the patents issued by the Office, to use his own apparatus, the allowance of this application being *prima facie* evidence that the applicant was the first inventor of the process, and therefore entitled to dominate all apparatus invented subse-

The examiner also calls attention to the Rules of Practice as they have heretofore existed, citing Rule 51, edition of August, 1878, and Rule 94, edition of April 15, 1883. But the relation between process and apparatus is not that which exists between generic and specific claims for obvious reasons. Every species contains the genus, both being present. A new species may be invented without there being any invention of the genus, which was old and known to the inventor. Hence a patent for the genus must cover and include and therefore dominate the new species, for in so far as the characteristics of the species are those of the genus there is no new invention. The inventor of the new species has borrowed the generic features of the genus to build upon, and as to these the new invention and the old are identical. The patent for the specific is dominated and controlled by the patent for the generic, because the subject of the latter belongs to the latter patentee. In these particulars the inventions are the same. But this is not the case in the matter of process and apparatus. There is no such relationship. They are wholly separate and distinct inventions. If A is the first inventor of a given process, his patent will necessarily dominate and control every apparatus that may be invented to carry it out. But this is a domination which arises from the patent system, and is the same domination and exclusive right which exists inherently in every patent. It is simply the prohibition of the law which forbids all persons from using the subject of an invention for which a valid patent has issued to the original inventor thereof. The inventor of the apparatus may patent the same whether he invents the apparatus pending the application of another person for the process or years after the patent for the process has issued; but in neither case can he use his apparatus except by consent of the patentee of the process. Why? Simply because his invention is of such a character that it is incapable of operation independently of execution of the other person's process, and such process is patented. Bell has a patent for a method of transmitting articulate speech. Hundreds of patents have issued for the mechanical apparatus which may be employed in executing Bell's method; but no one of these patentees can put his patented mechanisms into use except by consent of Bell. In this particular they occupy the same relation as the general public, which is simply that they cannot use Bell's method with or without patents for the apparatus except subject to the domination of a patent previously issued. Why therefore should this application be held up and not go to issue?

The apparatus application of the other party shows but does not claim the process. The rules forbid an interference between the present process application and that. The applicant in that case does not see proper to file an application for the process, and the presumption is that he is not the inventor of it. It does not follow at all because he shows and claims the same apparatus that he is the inventor of the process. It is of the very essence of a patentable process that it shall exist and be capable of conception and operation independently of the apparatus by which it may be carried out. Not only this, but in the present application I understand there is a cross-reference to the apparatus application, and I infer that there is a similar cross-reference in the latter. If there is not there should be, and it should still be introduced. This gives the other party to the interference notice of the existence of the present application for the process, and if he does not choose to promptly file his application for such process, (if he claims to be the inventor of it,) and thus bring himself into interference with it, he ought not to be allowed by indirection to do what he refuses to do directly—tie up the present application and delay its issuance upon an imaginary or suppositious interference not contemplated and not provided for in the rules.

There is no provision of law or rule of the Office for suspending the issue of a patent on an application which is declared to be allowable. It can be rejected, in which case the applicant must be notified and given the reasons, together with such information and references as may be useful, &c. An interference may be declared, or a public-use inquiry instituted, and the investigation conducted to an end; but where an applicant has properly filed his application and the examiner can neither reject nor find public use nor declare an interference, but acknowledges the application to be allowable, his right to suspend the issue does not exist. In such case the Commissioner himself has no discretion to withhold a patent. I conclude, therefore, that the examiner erred in suspending the allowance of this application, and his action in this respect is reversed.

This decision, as I am advised, obviates the necessity for a further order suspending the interference; but if such shall be held necessary it will be made.

EX PARTE TREAT.

Decided July 12, 1888.

CLAIMS VAGUE AND INDEFINITE.

When several old elements are brought into close propinquity, and joint operation is effected by means but for which there would be only aggregation and not a combination, such means are the essential invention, and on a claim for a combination with the old elements and such means the terms "power-actuated transfer mechanism" and "power-actuating mechanism" are indefinite and vague. Such means are not mere adjunctive devices, but become new elements in the alleged combination, and must be properly and clearly described.

ON petition.

ROLLING-MILLS.

Application of Francis H. Treat filed June 21, 1887, No. 242,081.

Messrs. Whitaker & Prevost for the applicant.

HALL, *Commissioner:*

The examiner has objected to seven claims in this application as being vague and indefinite. It is only necessary to quote one of them, which is as follows:

The combination, with a blooming-mill, a roughing-mill, a three-high finishing-mill, and power-actuated feeding devices for each mill, of a bloom-shear interposed between the blooming-mill and shear, a like mechanism between the shear and roughing-mill, and a power-actuated transfer mechanism between the roughing-mill and the finishing-mill, substantially as described.

Applicant claims a combination between the several "mills"—as the blooming-mill, the roughing-mill, the three-high finishing-mill, &c., which are old and in common use, as he concedes—and connects the mills into a so-called combination by "power-actuated feeding devices" for each mill, or "power-actuated transfer mechanism" between the blooming-mill and shear and a "like mechanism" between the shear and the roughing-mill, &c.

Applicant cites what was said by the Commissioner in *ex parte Herr* (41 O. G., 463) by way of illustration of a similar subject in reference to the four elements of a reaper, where the blade or cutter, the table, the reel, and the binder were mentioned, and insists that in the present combination the "power-actuated transfer mechanism" and the "power-actuating feeding devices" are mere adjunctive devices, and need not therefore be more particularly described. The examiner, however, holding with the concession statement of the applicant that the plants or "mills" are old and in common use, insists that there is a mere aggregation of old elements, and that if there is any invention or possible combination by which these old elements coact or co-operate so as to bring about a new and different result, the invention resides wholly in the "power-actuated feeding devices," the "power-actuated transfer mechanism," &c., and that these features are not mere adjunctive devices, but constitute the essentials of the invention. In this opinion I entirely concur. It will be seen that these power-actuated mechanisms are not mere devices which unite the various mills and by means of which the motion or power of one is communicated to the other, as is done by cranks, pulleys, gearing, &c. They are independent organisms which have their own separate and appropriate functions independently of the mill-plants which they unite or bring into close proximity. They must be described with the particularity required of every new invention. To refer again to the reaper with its four elements: If some one were to introduce a fifth element by means of which he claimed a new combination and a new result, the fifth element could not, in the nature of things, be a mere adjunctive device. If it were, it could not be a new element and would therefore require to be described.

In the present case the power-actuated mechanisms must be more particularly and distinctly described and set forth. When this has been done, the examiner will be able to determine whether there is presented a case of aggregation or combination, and act upon the merits of the application.

The action of the examiner is affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

THE RUBBER AND CELLULOID HARNESS TRIMMING COMPANY *v.* THE INDIA RUBBER COMB COMPANY.

Decided May 22, 1888:

1. ALLEGIGHT—HARNESS-TRIMMINGS.

Reissued Patents Nos. 5,155 and 5,156, each granted to Andrew Albright for improvements in the manufacture of rubber-coated harness-trimmings, declared invalid for want of patentable novelty.

2. COMITY OF COURTS.

Where a patent has been found to be valid by a circuit court at an earlier date upon the same evidence as now exhibited, and since that date the Supreme Court has defined more strictly the line between mere mechanical skill and the exercise of invention, it is no longer the duty of the last circuit court to follow and adopt the adjudication of the former court.

3. PATENTABLE INVENTION—WHAT IS NOT.

The state of the art showing that dies could be used to compress and finish articles of vulcanizable gum, and to compress plastic material surrounding a metal core or skeleton in making articles of harness-trimmings, it required no exercise of invention to use dies to compress and finish similar articles in which a vulcanizable gum was used to envelop a metal core.

Mr. J. C. Clayton for the complainant.

Messrs. Gifford & Brown for the defendant.

WALLACE, *J.:*

The two suits pending between the parties which have been heard together are brought to restrain infringement of reissued Letters Patent granted to Andrew Albright, No. 5,155, dated November 26, 1872, and No. 5,156, dated the same day, for improvement in the manufacture of rubber-coated harness-trimmings. These patents are a reissue in two divisions of the original Letters Patent to Albright, No. 123,603, dated February 13, 1872.

The original patent describes the invention to consist—

in making a pair of dies for pressing, polishing, and trimming the edges of rubber coating of harness-trimmings, so as to imitate stitching, and finish each article without hand-labor.

The dies are described as follows:

The dies are beveled off at *a* and *c*, so as to form sharp edges. These edges cut off the waste on the other side. *c* shows the indentations which produce an imitation of stitches. The dies touch each other at *x y z*, so that they cannot crush the article placed in them.

The method of using the dies is stated to consist in placing the article to be coated in one of the dies and pressing the die down upon it after the dies or the article itself has been moderately heated, so that the pressure will finish the article. The drawings show dies with recesses adapted to form a rib and the indentations *c* located in such recesses.

The claim was as follows:

The construction and operation of the dies A and B with cutting-edges *a* and *c*, substantially as described, for finishing rubber-coated harness-mountings.

Reissue No. 5,155 describes the invention to consist—

in making and using a pair of dies for pressing, finishing, polishing, and trimming the edges of the vulcanized coating of harness-trimmings, such as rings, buckles, terrets, hooks, and like articles.

The dies are described as provided with cutting-edges, for trimming off the superfluous coating, and the drawing is referred to as showing, in the dies, the indentations which produce an imitation of "stitching or other ornamentation." The specification contains this statement of new matter:

The form of the dies will vary with the form of the article to be pressed on them.

The claim is as follows:

The dies A and B, substantially as described.

Reissue No. 5,156 describes the invention to consist of—

an improved process for manufacturing rubber-coated harness-trimmings.

The process as described in this patent includes applying the gum coating to the metal, the vulcanization of the coating, and the compressing and finishing of the coating by the use of the dies described in Reissue No. 5,155.

The claim is as follows:

The herein-described combined process of manufacturing metallic harness-trimmings covered with rubber, gutta-percha, or other known vulcanizable gums.

The defendants insist that the patents are void for want of novelty of the invention claimed, and because the reissues are not for the same invention described in the original patent. These defenses, so far as they relate to Reissue No. 5,155, were considered in a suit determined by the Circuit Court for the District of New Jersey in 1877, in which the proofs respecting the prior state of the art were substantially the same as in the present record, and the patent was sustained.

Ordinarily it would be the duty of this court to follow and adopt the adjudication of another court of co-ordinate jurisdiction in a suit upon the same patent depending on the same evidence; but since the time when the former suit was decided the line of demarkation in patentable novelty between mere mechanical skill and the exercise of invention in the adaptation of old instrumentalities to a new use has been more strictly defined, and stricter rules of interpretation and construction are now applied to the claims of patents by the court of last resort. In the light of more recent decisions of the Supreme Court it seems that the patents must be held to be void for want of novelty.

The evidence respecting the prior state of the art demonstrates that the compressing and finishing of the metal-coated articles by the use of the dies instead of by hand was the new thing, and the only new thing originated by the patentee in the manufacture of harness-trimmings. It was old to cover metal articles with a coating of vulcanized rubber by applying heat and pressure, and old to cover metal articles of harness-trimmings with vulcanized rubber. This appears by the English patent to Poole of 1852, and by the United States patent to Dunham of 1866. Dies formed with recesses of every conceivable shape and having walls to cut off the surplus material were a well-known instrumentality for compressing, densifying, giving form to, and polishing plastic material. Dies having recesses to receive the overflow or waste material and cut to ornament the article pressed had been shown by the English patent of 1841 to Harris, and cut to stamp the article pressed in imitation of leather stitching had been shown in the English patent of 1857 to Green. It was old to use dies in making articles of harness-trimmings, such as rings, when made of vulcanized rubber, by molding the article to

nearly the desired form and compressing it under heat to give it excellent finish. This is shown by another English patent of 1852 to Poole. It was old to use dies to compress and finish other plastic material—such as horn suitably softened—into loops, hooks, and other articles of harness-trimmings, as is shown by the English patent to Deakin of 1842, and to use them in making articles of harness-trimmings in order to compress plastic material upon metal cores, as is shown in the United States patent of 1863 to Welling for a material made of a metal ring enveloped with factitious ivory.

From this exhibit it is obvious that no inventive faculty was involved in the conception that dies could be efficiently employed to mold, compress, and finish vulcanized gums into articles of harness-trimming, or that dies could be constructed with recesses adapted to give such articles any desired form and successfully used. But this patent was the first to use dies for pressing and finishing such articles in which the vulcanized coating was compacted upon metal cores. The novelty consisted in applying the old instrumentality to this new use.

It is to be observed that the original patent described dies having special characteristics. They were not only to have cutting-edges, but they were to be adapted to form a rib upon the article to be coated and impress imitation stitching upon the rib. The drawings show recesses and indentations cut to form such a rib and stitching, and the reference to the letters of the drawing in the claim incorporate this characteristic of the dies into the claim. But in the reissues the form of the dies is no longer essential. They are to be of any varying form desired. As of necessity the form must vary with the form of the article to be made, the interpolation has no significance unless it is intended to enlarge the claim of the reissue, so that dies formed to create a rib, or a rib with imitation stitching, are no longer necessarily the dies of the patent.

It is in evidence that before the introduction of the treatment of dies the articles of rubber-coated harness-trimmings were made by covering the metal core or skeleton with soft rubber by hand, vulcanizing the rubber, and then turning, polishing, and finishing the article by hand; and it is not open to doubt that by using the dies such articles can be finished more quickly and economically, and can possibly be given more perfect finish, than by hand. Nevertheless, after it was known, or should have been known, that such dies could be used to compress and finish articles made of vulcanizable gum, as shown in the patent to Poole; could be used to compress plastic material surrounding a metal core or skeleton in making articles of harness-trimmings, as shown in the patent to Welling, it would seem that nothing more was necessary to suggest the use of them to compress and finish similar articles in which the vulcanizable gum was to envelop a metal core. The dies do the same work whether they are used upon an object wholly composed of vulcanized rubber or upon the vulcanized coating of an iron core. In both instances their pressure is exerted upon a plastic material to give solidity and final shape and finish to the article. It is absurd to suggest that there was anything peculiar in the properties of the material to start a doubt whether it could be compressed by dies about a metal core.

The bill is dismissed.

U. S. Circuit Court—Southern District of New York.

HALSTEAD *v.* MANNING, BOWMAN & COMPANY.

Bill filed December 13, 1887. *Demurrer filed February* 3, 1888.

1. ACT OF MARCH 3, 1887, CONSTRUED.
Under the act of March 3, 1887, a defendant can no longer be sued outside of the district of which he is an inhabitant, unless he consents or waives his right to object, except where the jurisdiction of the circuit court is founded only on the fact that the action is between citizens of different States.

2. PRACTICE—PLEADING.
The facts showing want of jurisdiction appearing upon the face of the bill, and the defendant not appearing generally, but specially to demur, the demurrer must be sustained.

ON demurrer.

Mr. Frederick W. Crocker for the plaintiff.
Messrs. Hanley, Clarke & Smith for the defendant.

WALLACE, *J.*:

The defendant raises, by demurrer to the bill of complaint, the objection that this court has not jurisdiction over the person of the defendant. The bill alleges the infringement by the defendant of Letters Patent of the United States granted to the complainant for a new and useful improvement in stewing kettles or boilers, and also alleges that the defendant is a corporation organized under the laws of the State of Connecticut and doing business in the southern district of New York. Prior to the act of Congress of March 3, 1887, the defendant could have been sued here if "found" within the district; but that act has made a radical change in the former provisions of law respecting the jurisdiction of this court, and a defendant can no longer be sued outside the district of which he is an inhabitant unless he consents or waives his right to object, except where the jurisdiction of the circuit court is founded only on the fact that the action is between citizens of different States. The present action does not fall within that category, and as facts showing want of jurisdiction appear upon the face of the bill, and as the defendant has not appeared generally in the action, but specially in order to raise the objection by demurrer, the demurrer must be sustained.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 44—NO. 4. TUESDAY, JULY 24, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
PROPOSALS FOR PHOTOLITHOGRAPHING	345
ORDERS Nos. 485 and 486	345
PUBLISHERS' CATALOGUES	345
ISSUE OF JULY 24, 1888	345
DESIGNS	346
TRADE-MARKS	346
LABELS	346
PATENTS GRANTED	347
RENEWALS	448
DECISIONS OF THE COMMISSIONER—	
Ex parte Simonds	445, 449

Proposals for Photolithographing.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 21, 1888.

Sealed proposals will be received at the Office of the Commissioner of Patents until 12 M. of August 8, 1888, for the reproduction by photolithography, or otherwise, of the drawings of the weekly issues of patents, and for the illustrated portion of the OFFICIAL GAZETTE.

Specifications and specimens will be furnished upon application to the Commissioner.

BENTON J. HALL,
Commissioner of Patents.

Order No. 485.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 14, 1888.

The establishment of the following sub-class in Division II, Class 31, Dairy, is hereby directed:

Churns—
Drink-mixers.

BENTON J. HALL,
Commissioner.

Order No. 486.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 16, 1888.

Class 100, Presses, is hereby transferred from Division XII, Aughinbaugh, Examiner, to Division III, Blodgett, Examiner.

BENTON J. HALL,
Commissioner.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and substantiated in the Scientific Library for convenient and ready reference.

Issue of July 24, 1888.

Patents	349	No. 386,445 to No. 386,793, inclusive.
Designs	10	No. 18,475 to No. 18,484, inclusive.
Trade-Marks	21	No. 15,705 to No. 15,725, inclusive.
Labels	5	No. 5,859 to No. 5,863, inclusive.
Reissues	4	No. 10,946 to No. 10,949, inclusive.
Total issue	389	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	....	Nebraska	3	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	....	....	New Hampshire	....	....
California	13	1	New Jersey	9	....
Colorado	2	....	New Mexico Terri'y	1	....
Connecticut	9	....	New York	65	7
Dakota Territory	4	....	North Carolina	....	....
Delaware	....	....	Ohio	17	2
District of Columbia	8	1	Oregon	2	....
Florida	3	....	Pennsylvania	20	1
Georgia	4	....	Rhode Island	6	1
Idaho Territory	....	....	South Carolina	....	....
Illinois	27	6	Tennessee	3	....
Indian Territory	....	....	Texas	6	....
Indiana	11	....	Utah Territory	....	....
Iowa	12	....	Vermont	3	....
Kansas	10	....	Virginia	2	....
Kentucky	5	1	Washington Terri'y	1	....
Louisiana	1	....	West Virginia	1	....
Maine	4	1	Wisconsin	5	1
Maryland	5	....	Wyoming Territory	....	....
Massachusetts	28	....	United States Army	....	....
Michigan	11	....	United States Navy	....	....
Minnesota	6	....			
Mississippi	....	....	Total to citizens of the United States	333	22
Missouri	12	....			
Montana Territory	1	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Germany	6	....
Australia	....	....	Ireland	....	....
Austria-Hungary	1	....	Netherlands	....	....
Belgium	2	....	New South Wales	....	....
Bermuda	....	....	New Zealand	....	....
Brazil	....	....	Russia	....	....
Canada	3	....	Scotland	2	....
Chili	....	....	South Australia	1	....
Colombia, U. S. of	....	....	Spain	....	....
Cuba	....	....	Sweden	1	....
Denmark	1	....	Switzerland	1	....
England	5	4			
Finland	....	....	Total to citizens of foreign countries	26	4
France	3	....			

DESIGNS.

18,475.—PHOTOGRAPHIC VIGNETTE.—*James C. Atkins*, Milton, Iowa. Application filed May 2, 1888. Serial No. 272,604. Term of patent 7 years.

18,476.—CHAIR-BACK.—*Lemuel A. Chichester*, Phœnicia, assignor to *Heywood Bros. & Co.*, New York, N. Y. Application filed April 21, 1888. Serial No. 271,469. Term of patent 3½ years.

18,477.—PURSE OR BAG FRAME.—*Henry S. Crane*, Mount Vernon, assignor to *John Menahan & Co.*, New York, N. Y. Application filed May 25, 1888. Serial No. 275,083. Term of patent 7 years.

18,478.—SLEEVE—*Etta L. Jenkins*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed June 15, 1888. Serial No. 277,269. Term of patent 3½ years.

18,479.—SURFACE ORNAMENTATION OF WALLS.—*Frederick Koskul*, Williamsport, Pa. Application filed March 17, 1888. Serial No. 267,573. Term of patent 14 years.

18,480.—BRIDLE-FRONT.—*Francis M. Livingston*, Newark, N. J. Application filed February 10, 1887. Serial No. 227,217. Term of patent 3½ years.

18,481.—PATTERN-CARD.—*Benjamin C. Lockett*, New York, N. Y., assignor to *The York Manufacturing Company*, Saco, Me. Application filed May 25, 1888. Serial No. 275,082. Term of patent 7 years.

18,482.—PEN-HOLDER BARREL.—*George H. Shattuck*, New York, N. Y. Application filed May 3, 1888. Serial No. 272,719. Term of patent 14 years.

18,483.—GIRL'S DRESS.—*Catherine Sheils*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed June 15, 1888. Serial No. 277,272. Term of patent 3½ years.

18,484.—LADY'S WALKING-SKIRT.—*Catherine Swain*, New York, N. Y., assignor to *The Butterick Publishing Company*, (*Limited*,) same place. Application filed June 15, 1888. Serial No. 277,270. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,705.—HARVESTING-MACHINES AND PARTS THEREOF.—*Aultman, Miller & Company*, Akron, Ohio. Application filed June 5, 1888. Used since July 1, 1885.

"The representation of an eye and the letter 'B' thereon."

15,706.—INKS.—*Thaddeus Davids Company*, New York, N. Y. Application filed June 5, 1888. Used since June 1, 1888.

"The representation of a lightning-flash and the words 'ELECTRO CHEMICAL.'"

15,707.—CERTAIN NAMED TOILET PREPARATIONS.—*Hall & Ruckel*, New York, N. Y. Application filed June 2, 1888. Used since 1886.

"The words 'BUCKWHEAT BLOSSOM.'"

15,708.—MEDICATED FOODS FOR MEN AND ANIMALS, AND SIRUPS, BALSAMS, AND OINTMENTS.—*Alexander Horlick*, Racine, Wis. Application filed June 8, 1888. Used since April, 1888.

"The word 'FOODT.'"

15,709.—LAUNDRY AND TOILET SOAP.—*James S. Kirk & Co.*, Chicago, Ill. Application filed August 14, 1886. Used since January 15, 1885.

"The words 'WHITE CAP.'"

15,710.—TOILET AND HOUSEHOLD SOAP.—*James S. Kirk & Co.*, Chicago, Ill. Application filed August 16, 1886. Used since September 15, 1883.

"The word 'CRYSTOLA.'"

15,711.—ANNATTO-SEED.—*A. S. Lascelles & Co.*, New York, N. Y. Application filed May 18, 1888. Used since January, 1888.

"The word 'CHURN' and the representation of a vertical-dasher churn."

15,712.—CERTAIN NAMED TOILET PREPARATIONS AND ARTICLES.—*George F. Lewis*, Chicago, Ill. Application filed April 19, 1888. Used since March, 1887.

"The word 'PRIMROSE.'"

15,713.—REMEDY FOR GOUT AND RHEUMATISM.—*Percy Litchfield*, Wandsworth Common, county of Surrey, England. Application filed April 9, 1888. Used since August, 1882.

"The words 'REYNOLDS' GOUT STRENGTH' and the representation of a bottle having a human face, legs, and arms, and carrying in one hand a spear, and trampling on a scaly monster."

15,714.—PREPARATION USED AS AN EMMENAGOGUE.—*Nelson A. Lloyd* and *Curtis G. Lloyd*, Cincinnati, Ohio. Application filed May 19, 1888. Used since November, 1887.

"The word 'LEONTIN.'"

15,715.—GENUINE OR IMITATION DIAMONDS.—*Henry E. Oppenheimer & Co.*, New York, N. Y. Application filed June 9, 1888. Used since January 1, 1888.

"The representation of a diamond in the center of a diamond-shaped figure."

15,716.—BLACK TEAS.—*Ridgway & Co.*, London, England. Application filed April 6, 1888. Used since 1886.

"The autograph signature of 'RIDGWAY & Co.' associated with the words 'HER MAJESTY'S SPECIAL BLEND.'"

15,717.—HOT-AIR FURNACES.—*Russel Wheeler, Son & Co.*, Utica, N. Y. Application filed March 16, 1888. Used since 1884.

"The words 'PALACE QUEEN.'"

15,718.—TONIC MEDICINE COMPOSED OF IRON AND SARSAPARILLA.—*Clara H. Schmidt* and *Walter B. Starbird*, Stockton, Cal. Application filed February 13, 1888. Used since January 1, 1887.

"The word 'UNIVERSAL,' associated with a monogram of letters and character 'S & Co,' with the words 'IRON AND SARSAPARILLA' upon the 'S.'"

15,719.—OYSTER-CRACKERS.—*David F. Stauffer*, York, Pa. Application filed December 19, 1887. Used since June 6, 1888.

"The words 'SADDLE ROCK.'"

15,720.—TABLE, POCKET, AND TOILET CUTLERY, AND SHEARS AND SCISSORS.—*Union Cutlery Company*, Chicago, Ill. Application filed May 19, 1888. Used since January, 1887.

"The word 'UNION.'"

15,721.—RAZOR-STROPS.—*Union Cutlery Company*, Chicago, Ill. Application filed May 26, 1888. Used since April 15, 1888.

"The word 'DIAMOND.'"

15,722.—EDGE, AGRICULTURAL, AND MINING TOOLS AND HAMMERS.—*A. W. Wills & Son*, Birmingham, county of Warwick, England. Application filed May 22, 1888. Used since November 28, 1883.

"The representation of a rectangular cross combined with a circular band, so arranged that the center of the circle coincides with the point of junction of the arms of the cross, associated with the words 'LA CRUX COLORADA.'"

15,723.—EDGE, AGRICULTURAL, AND MINING TOOLS AND HAMMERS.—*A. W. Wills & Son*, Birmingham, county of Warwick, England. Application filed May 22, 1888. Used since March 15, 1853.

"The representation of a human hand, shown as far as the wrist, with the fingers and thumb fully extended and separated from one another."

15,724.—SALVE OR OINTMENT.—*Mirum Sulz-Bacher*, New York, N. Y. Application filed May 31, 1888. Used since May 24, 1888.

"The words 'LITTLE ANGEL.'"

15,725.—METAL-POLISHING PREPARATION.—*Savage Bros.*, Washington, D. C. Application filed June 12, 1888. Used since May 1, 1888.

"The letters 'S B' and the Greek word ''Αλφα.'"

LABELS.

5,659.—Title: "LINCOLN'S KING BALM," (FOR A MEDICINE.)—*William H. Haigh*, Woonsocket, R. I. Application filed June 21, 1888.

5,660.—Title: "CRYSTOLA," (FOR SOAP.)—*James S. Kirk & Co.*, Chicago, Ill. Application filed February 15, 1888. (Trade-Mark Registered.)

5,661.—Title: "THE U. S. CHECKER-DIAMOND PROBLEM." (FOR A GAME OR PUZZLE.)—*Lee Nance*, New York, N. Y. Application filed May 11, 1888.

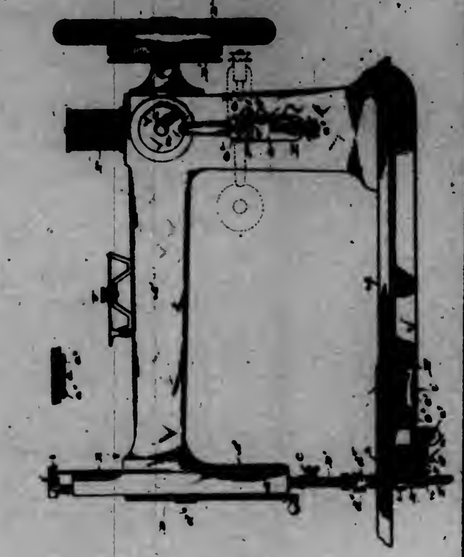
5,662.—Title: "ROGERS' INHALANT AN INHALING PREPARATION."—*M. J. Rogers & Co.*, Lewiston, Me. Application filed June 28, 1888.

5,663.—Title: "DR. R. W. WHITTINGTON'S BLOOD AND LIVER PILLS."—*R. W. Whittington*, Louisville, Ky. Application filed June 26, 1888.

PATENTS

GRANTED JULY 24, 1888.

386,445. SEWING-MACHINE. GEORGE A. ARMEY, Sabrevois's Corners, Ontario, Canada. Filed Apr. 9, 1887. Serial No. 234,233. (No model.)





Claim.—1. The combination, with a stitch-forming mechanism comprising a needle and a rotary shuttle and operating mechanism therefor, of a rotary take-up in the head of the sewing-machine and having a transversely elongated or slotted thread-eye to offset the proper timing of the take-up operation, and suitable thread guides or supports to co-operate with the said take-up.

2. The combination, with the needle-bar and its operating-link *b*, having the take-up extension B, provided with the elongated or slotted eye *r*, extending transversely of the machine, of the thread-guides *s* and *t*, the needle, and the rotary shuttle.

3. In a sewing-machine, the combination, with the bracket-arm of a sewing-machine having one or more openings for access to the interior mechanism, of a pivoted dust-cap to cover the said opening or openings, said dust-cap being provided with a bobbin-winder.

4. The combination, with a rotary sewing-machine shuttle, of main and auxiliary drivers for the said shuttle and means for rotating the said auxiliary driver at a speed different from that of the main driver.

5. The combination, with the shuttle-driving shaft B, the shuttle, and the main driver for the latter carried by the said shaft, of the auxiliary driver *a*, the sleeve by which the latter driver is carried, the inclined cylinder on which the said sleeve is mounted, and connections between the said main driver and the said sleeve.

6. In a sewing-machine, the combination, with the upper and lower shafts thereof, of the pitman-lever split at its upper end, and thus adapted to be sprung over the crank of the upper shaft, and provided with clamping-screws above and below said crank, and a washer between the split below the crank, the said pitman-lever having also a central opening to receive the fulcrum pin or block, adjusting-screws on opposite sides of said pin or block, and lugs in which the said screws are tapped.

7. The combination, with the lower rotary shaft, B, having the tapering cam *f* and the feed-lifting cam f^2, of the feed-bar consisting of the three rigidly-connected parts *f* f^2 f^3, the pivoted feed-rocker H, having arms to which the said feed-bar is hinged, the bar I, engaging the feed-bar, and having a device, as roller *i*, impinging against said tapering cam, the feed-regulating lever pivotally attached to the said bar I, and a retracting-spring for the said feed-bar.

8. The combination, with the shaft B and the feed-lifting cam thereon, of the feed-bar having the arm f^2, provided with the horizontally-adjustable shoe or plate impinging against said cam, whereby the position of the said plate relative to the said cam may be varied as the plate becomes worn, as set forth.

9. The combination, with a rotary sewing-machine shuttle having a central bobbin-supporting pin provided with a friction device, as a split ring, of a sleeve fitting over said pin and having a recess into which said friction device or ring can spring, and a tension device which is hinged to said sleeve and the body of which is outside of the said shuttle, so as to retain the bobbin in the shuttle when the parts are in operative position.

10. A skeleton sewing-machine shuttle consisting of a central bobbin-holding portion or body and a segmental rim separate from, but attached to, said body at two points only and adjustable at one of its points of attachment, with an open space between the said body and the rim.

11. A skeleton sewing-machine shuttle consisting of a bobbin-holding portion or body and a segmental rim separate from, but adjustably attached to, said body.

12. The combination, with the shuttle-body portion M, having the lugs m^3, of the segmental rim *m'* and the adjusting-screws m^5 m^5, having conical portions for expanding or contracting said rim.

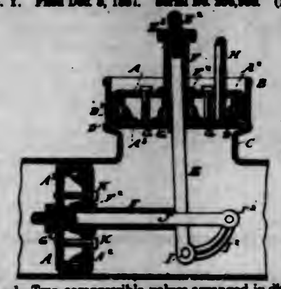
13. The combination, with the shuttle-body M, having the tapering lugs m^3, of the rim *m'*, attached to the said body and having the loop-seizing point m^4 and the inclined projections m^6 rearward of said point.

14. The combination, with the rotary shuttle having the central pin, of the hollow bobbin within said shuttle, an eccentric sleeve fitting over said pin and within said bobbin, and a tension device outside the shuttle, hinged to said sleeve and having a thread-slot slightly below the upper edge of the outer flange of the said bobbin.

15. The combination, with the shuttle, of the tension device consisting of the body portion *d'*, having the slot d^3, the thread-groove d^4, and the pin d^5, and the rib or projection 4, and the tension-spring d^7 and its regulating-screw d^8.

16. The combination, with the bracket-arm A', having at its forward end the depending portion A^2, provided with the groove a^3, of the shaft B, having at its forward end a crank-disk and crank-pin, the needle-bar C, having the collar c^7, provided with a pin, c^8, extending into said groove, and the link *b*, connecting the said pin with the said crank-pin, whereby as the needle-bar is reciprocated vertically the walls of the said groove will take the side-thrust on the said pin c^8, and thus steady the said needle-bar.

386,446. APPARATUS FOR DETECTING LEAKS IN SOIL AND OTHER PIPES. DANIEL A. B. BARLEY and NORMAN MCKELLIVANT, Potsdam, N. Y. Filed Dec. 5, 1887. Serial No. 256,902. (No model.)



Claim.—1. Two compressible valves arranged in different places, an independent stem for each of said valves, and a connection between said stems, combined with a valve-controlled filling-tube passing through one of said valves, a sleeve on the valve-stem above one of the valves, and an adjusting-nut on said stem above and bearing on said sleeve, substantially as described.

2. In a device for the purpose described, the combination, with two independent valve-stems arranged at an angle to each other and pivotally connected together at their adjacent ends, and two independent compressible valves, one on each stem, of a filling-tube in one of said valves, a sleeve on one of said stems bearing on one of said valves, and an adjusting-nut on said stem bearing on the sleeve, substantially as and for the purpose specified.

3. In a device for detecting leaks in mains, two separate compressible valves and a separate stem for each valve, combined with a pivoted connection between said stems, and a sleeve on said stem between the nut and valve, and a compression-nut on one of said stems and resting on said sleeve, as set forth.

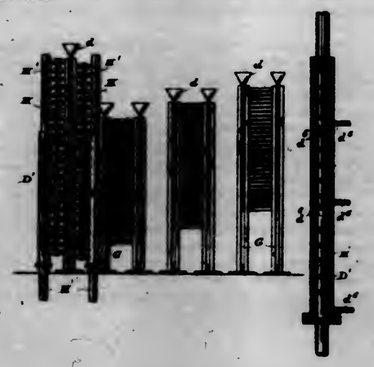
4. In a device for detecting leaks in mains, two valve-stems arranged substantially at right angles to each other, a compressible valve carried by each of said stems, and a filling-tube, combined with an adjusting-nut on one of said stems, a projection between the valve and nut, and a pivoted connection between the free ends of said stems, substantially as and for the purpose specified

5. In a device for detecting leaks in mains, the combination, with two valve-stems arranged at substantially right angles with each other, and two valves, one carried by each of said stems, of a pivotal connection between the adjacent ends of said stems, a sleeve on one of said stems, and an adjusting-nut on said stem above said sleeve, as and for the purpose set forth.

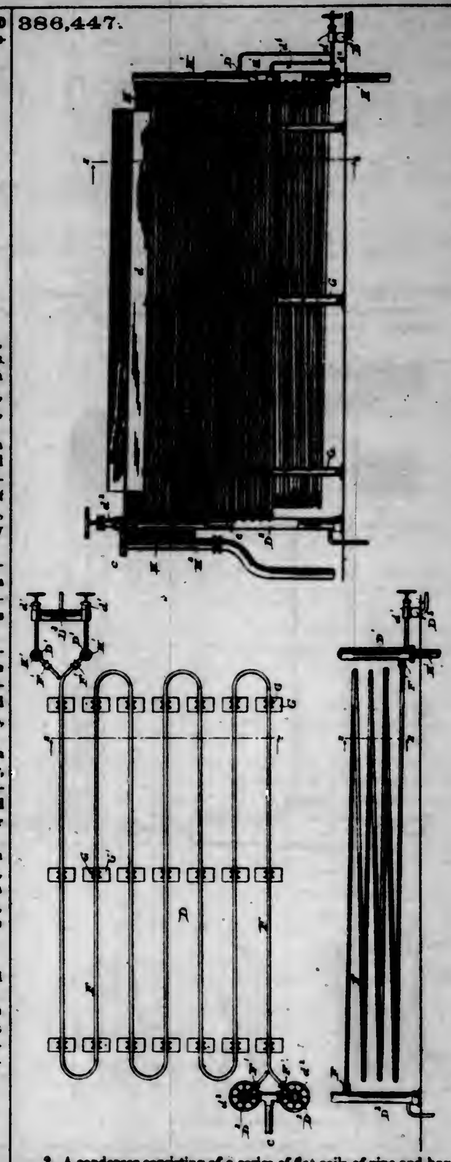
6. In a device for detecting leaks in mains, the combination, with two valve-stems arranged at substantially right angles with each other, and two valves, one carried by each of said stems, of a filling-tube, a pivoted connection between the adjacent ends of each of said stems, a sleeve on one of said stems, and an adjusting-nut on said stem above said sleeve, as and for the purpose set forth.

386,447. CONDENSER. VICTOR H. BECKER, Chicago, Ill. Filed Jan. 20, 1887. Serial No. 225,040. (No model.)

Claim.—1. A condenser tube or pipe forming a flat coil, the ends of which are bent at angles to the adjacent portion of the tube, but lie substantially in the plane of the coil, and provided at such diverging ends with unions or couplings, substantially as shown, and hereinbefore set forth.



386,447.



2. A condenser consisting of a series of flat coils of pipe and having duplicate headers or manifolds at each end, the ends of the pipe being bent at angles to the adjacent portions of the tube, but lying in the plane of the coils, and provided with couplings or unions, by which they are connected to the headers, each alternate pipe or coil being connected to the opposite header, substantially as and for the purpose hereinbefore set forth.

3. The combination of duplicate inlet-headers connected to a common supply-pipe and provided with independent valves and duplicate outlet-headers connected to a common exit-pipe, and also provided with independent valves, with a series of parallel coils of pipe having diverging ends, which connect alternately to one of each pair of headers, thus forming two distinct systems in a condenser, either of which may be shut off without disturbing the other, substantially as set forth.

4. The combination of a series of parallel and substantially flat coils of pipe lying in close proximity and having alternately-diverging ends to provide space for the unions, by which they are connected to the duplicate headers, as shown, with supports or standards at suitable intervals, consisting of bars which embrace the sides of the series of pipes and are united by bolts which pass between the pipes, substantially as hereinbefore set forth.

5. A condenser constructed of coils of pipe alternately united to duplicate headers at each end, as described and shown, and drip-troughs suspended above the several straight portions of the coils, in combination with a series of pipes for cold gas, arranged above the latter portions of the coils and below the last water-trough, said pipes for cold gas being alternately connected at one end to duplicate induction-pipes leading through the outlet-headers of the condensers and at the other end to a single eduction-pipe, substantially as and for the purpose hereinbefore set forth.

6. The combination of the liquid-refrigerant reservoir B, the expansion-coils *a*, the pump C, the condenser D, constructed as shown, the induction-pipe H' from the expansion-coils passing through the eduction-header of the condenser and connected to a series of cooling-pipes, H, above the latter end of the condenser-coils, and then connected to the pipe H², leading to the pump, the ejection-pipe *c* from the pump leading through the condenser to the liquid-refrigerant reservoir, and the drip-trough *d* above the cooling-pipes H, all substantially as and for the purpose set forth.

7. The combination of a series of coils connected at their ends to common inlet and outlet headers, the drip-water troughs suspended above the coils, the partitions which divide the outlet-headers into several compartments, and the fluid-pipes which connect the several compartments with the fluid receiver or trap, substantially as and for the purpose set forth.

386,448. FOUNTAIN-PEN. JOHN BLAIR, New York, N. Y. Filed Jan. 16, 1888. Serial No. 260,897. (No model.)

Claim.—1. The combination of ink-retainer *c* with nozzle *b*, and with the feed-bar *f* and key *g*, substantially as specified.

2. The combination of hollow handle *a*, nozzle *b*, and ink-retainer *c* with the feed-tongue *f* and curved key *g*, substantially as specified.

3. The combination of fountain-pen *a*, having cap A, with the angular collar *i*, substantially as specified.

386,449. CAMERA-SHUTTER. EDWARD H. BLISS and JAMES P. MIDDLETON, Newark, N. J. Filed June 28, 1887. Serial No. 242,787. (No model.)



Claim.—1. A photographic-camera shutter consisting of two rotary disks having a common axis and provided with corresponding openings, one disk being fixed to the axis and the other being adjustable thereon.

2. A photographic-camera shutter consisting of two disks having a common axis and provided with openings or slots of the same dimensions and shape, one disk being fixed to the axis and the other being adjustable thereon.

3. A photographic-camera shutter consisting of two disks, one of which is rigidly mounted on the shaft and the other loosely mounted thereon, the said disks being provided with openings which may be adjusted to register with each other, in combination with mechanism, substantially as described, for adjusting the said disks and devices for locking them together as one piece.

4. A photographic-camera shutter consisting of two disks, one of which is rigidly mounted on a shaft and the other loosely mounted thereon, the said disks being provided with openings which may be adjusted to register with each other, in combination with mechanism, substantially as described, for adjusting the said disks to make the length of exposure required.

5. A camera-shutter consisting of a pair of disks having a common axis, one of the said disks being rigidly secured to the shaft and the other disk loosely mounted thereon, the rigid disk having a series of perforations and the loose disk a single perforation, in combination with a loose sleeve mounted on the shaft, provided with a pin or stud which is adapted to pass the perforation in the disks and lock them together as one piece, as set forth.

6. The combination of a pair of disks provided with holes with a shaft, loose sleeve, spring, and a set-nut, all arranged as described.

386,450. FOLDING TABLE. JOHN T. BIX, Syracuse, N. Y. Filed Mar. 27, 1888. Serial No. 268,651. (No model.)



Claim.—1. In a folding table, the combination, with the top provided with the apertured bracket upon its under side, and with the two sets of hinged legs formed near their upper ends with transverse recesses or sockets, and rotating rods journaled in said recesses or sockets, of braces rigidly secured at their outer ends to the said rods and formed at their opposite ends with longitudinal closed slots which register with the aperture of the bracket, a threaded bolt inserted through the slots of the braces and the aperture of the bracket, and a tightening-nut, all arranged to operate in the manner set forth.

2. In a folding table, the combination, with the top having the cross-pieces secured to its under side near its ends, legs hinged to the inner sides of these cross-pieces and provided near their upper ends with boards, the upper portions of which project above the ends of said legs and contact with the under side of the top of the table and with the outer sides of the cross-pieces, of rotating rods journaled in said legs, and braces rigidly secured to said rods at their outer ends and adjustably secured at their inner ends to the under side of the table-top, substantially as set forth.

386,451. FILING-RECEPTACLE. AARON L. BROWN, Chicago, Ill. Filed Nov. 12, 1888. Serial No. 219,269. (No model.)



Claim.—1. The combination, with a filing-receptacle, a series of index-sheets, and a rod or post engaged with the index-sheets, of means for securing the rod in the receptacle, consisting of a single metal plate forming both a bearing or support for the lower end of the rod and a spring-catch to engage the upper end of the said rod, substantially as described.

2. The combination, with a filing-receptacle, a series of index-sheets, and a rod or post engaged with the index-sheets, of means of securing the rod in the receptacle, consisting of a metal plate provided at its lower end with projecting parts c^2 c^3 c^4, constructed to form a support for the lower end of the rod, and having its upper end bent to form a spring-catch, c', substantially as described.

3. The combination, with a filing-receptacle, a series of index-sheets, and a rod or post engaged with the index-sheets, of holding devices for the post, consisting of a metal plate having projections at its lower end, forming a support for the lower end of the rod, and having at its upper end a rearwardly-bent part, C^3, provided with a slot, c^4, and a spring-catch, c', forming a continuation of the part C^3, substantially as described.

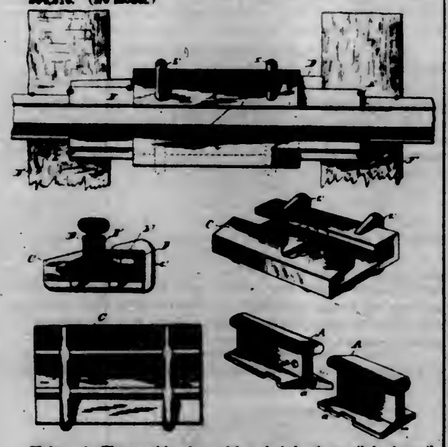
4. The combination, with a filing-receptacle provided with a groove or recess, A^5, in its back wall, a series of index-sheets, and a holding rod or post adapted for insertion in the said groove or recess, of holding devices for the rod, consisting of a plate provided with a vertical slot, C^3, and the projections c^2 c^3 c^4 at its lower end, forming a support for the lower end of the rod, and having at its upper end a spring-catch, c', formed of metal composing the plate, substantially as described.

5. The combination, with a filing-receptacle and a series of index-sheets and a post or rod provided with a projection, c, at its upper end, of a holding device for the said post or rod, consisting of a plate, C, having projections at its lower end, forming a support for the lower end of the rod, and having a spring-catch, c', formed of the metal composing the plate at the upper end of the latter, said spring-catch being provided with an aperture, c^4, adapted to receive the projection c, substantially as described.

6. The combination, with a filing-receptacle, a series of index-sheets, and a link-shaped rod split at one point for engagement with the sheets, of a holding device for the rod, consisting of a plate, C, secured to the receptacle and having projections at its lower end, forming a support for the lower end of the rod, and provided at its upper end with a spring-catch formed of the metal composing the said plate, substantially as described.

7. The combination, with a filing-receptacle, a series of index-sheets, and a rod or post, of a holding device for the post, consisting of means for engaging the lower end of the rod and a spring-catch constructed to engage the upper end of the rod, and a ledge, D, extending continuously along the rear upper edge of the receptacle over the said spring-catch, substantially as described.

886,452. RAIL-JOINT. PERRY BROWN, Louisville, Ky., assignor to Daniel R. Doherty, same place. Filed Feb. 16, 1888. Serial No. 264,316. (No model.)



Claim.—1. The combination, with a chair having a rib in the rail-seat extending across the seat, of a rail provided with a recess in its foot to receive said rib, substantially as described.

2. In a rail-joint, the combination, with the diagonally-cut rails A A, having recesses in their bottoms, of a chair, C, having a central ridge entering the recesses in both rails, substantially as described.

3. In a rail-joint, the combination, with a chair, C, and a fish-plate, B, having a recess embracing the chair at each end, of two rails fitting in the chair, a second fish-plate set on the opposite side of the rails, and a wedge for securely locking the rails and fish-plates together, substantially as described.

4. In a rail-joint, the combination, with a chair, C, and a fish-plate, B, one having a recess receiving a portion of the other and the fish-plate projections on its rail-side, of two rails having recesses, one part of which receives the projections on the fish-plate B and a second fish-plate, B', having projections to fit into other recesses on the rails, and a wedge for securely locking the whole together, substantially as described.

5. In a rail-joint, the combination of a chair having the inner top and bottom surfaces of one side parallel, with a fish-plate fitting the opposite side of the chair, rails fitting against said fish-plate, and a second fish-plate fitting against the rails, having a portion of its top and bottom parallel, and a wedge for locking the whole together, substantially as described.

6. In a rail-joint, and in combination with the ties and rails, fish-plates fastened to said rails and provided with notches in the parts at right angles to the length of the rails to receive the spikes for fastening them to the ties, substantially as described.

886,453. COIN ASSORTER AND DELIVERER. THOMAS CARNEY, Chicago, Ill., assignor to himself and Hiram Benninger, same place. Filed May 4, 1887. Serial No. 237,145. (No model.)



Claim.—1. In a coin-sorter, a number of coin-receptacles with openings g', for the delivery of the coins from the bottoms of the receptacles, in combination with a number of slides, as K i j' k l m', one for each receptacle, and hinged arms P, one for each slide, substantially as and for the purposes specified.

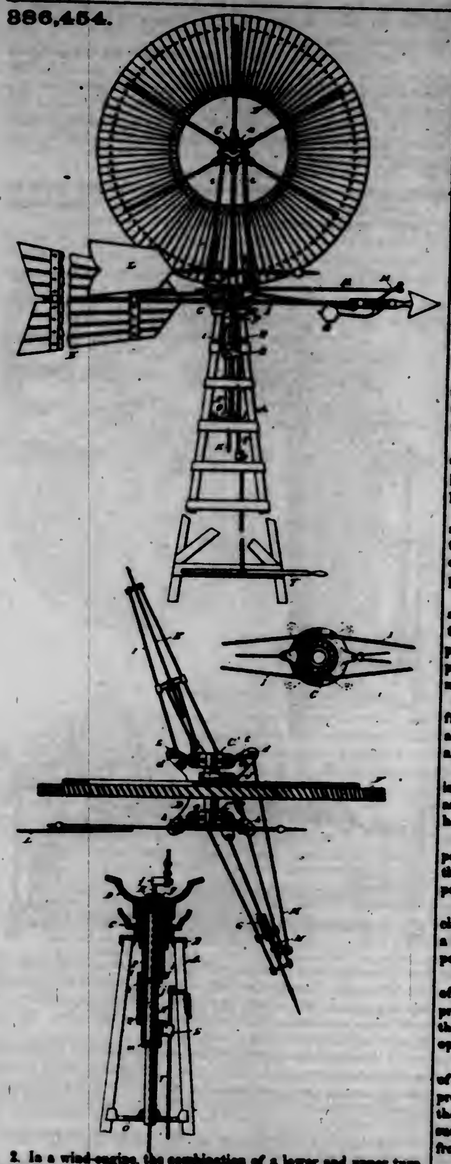
2. In a coin-sorter, a number of coin-receptacles, a slide for each receptacle, each slide being provided with a projection, p', at its rear end, and pivoted operating-arms P, one for each slide, and having handles n', in combination with a sliding bar, R, provided with hooks o', adapted to engage with a projection, p', in the slide, substantially as and for the purposes specified.

3. A coin-sorter having a number of coin-receptacles and channels leading thereto, and a rearwardly-inclined way curved around at its lower end for conveying the coins to said channels, all arranged and operating to sort the coins in the order of their values, substantially as described.

886,454. WIND-ENGINE. ARTHUR S. CLARK, Saline, Mich. Filed June 7, 1887. Serial No. 240,548. (No model.)

Claim.—1. In a wind-engine, the combination of a main wheel mounted on a revolving support forming an upper turn-table, a main vane secured to a revolving support forming a lower turn-table, an inner tube attached to the upper turn-table and forming its pivot of rotation, an outer tube of shorter length than the inner tube attached to the lower turn-table and forming its pivot of rotation, a sliding cam-sleeve on the inner tube, and two lugs or rollers secured to the outer and inner tubes, respectively, whereby the relative position of the tubes is changed by lifting the cam-sleeve, all substantially as described.

886,454.



2. In a wind-engine, the combination of a lower and upper turn-table forming independent supports for the main vane and wind-wheel and having different frictional resistance when rotated, an outer and inner tube respectively attached to said lower and upper turn-tables and forming the pivots of rotation thereof, two lugs or rollers secured to the outer and inner tubes, respectively, a cam-sleeve slidingly secured upon the inner tube and provided with a wedge-shaped cam having one face straight and the other spirally inclined, and a lifting device for the cam-sleeve, all arranged to operate substantially as described.

3. In a wind-engine, the combination, with the lower turn-table, C, carrying the main vane, of the upper turn-table, D, carrying the side vane and consisting of the bed-plate d, resting on anti-friction rollers or balls, arms d', formed integral with the upper turn-table, uprights e, boxes b, and shaft a, clamped therein and supporting the wind-wheel, said uprights connecting said boxes and arms and supporting the shaft a, all substantially as described.

886,455. PEN-HOLDER. WILLIAM G. GILLAM, Orange, N. J. Filed Sept. 7, 1886. Serial No. 212,933. (No model.)



Claim.—1. As a new article of manufacture, a paper-weight or equivalent structure provided with a pen-extracting device and an interior compartment beneath the same for the reception of discarded pens.

2. As a new article of manufacture, a paper-weight or equivalent structure provided with a pen-extracting device, an interior compartment for the reception of the discarded pens, and an interior compartment for holding the unused pens, as and for the purpose described.

3. As a new article of manufacture, a paper-weight or equivalent structure provided with a pen-extracting device and an interior compartment adapted to receive the discarded pens as they fall from the pen-extracting device, as and for the purpose described.

4. In a paper-weight or equivalent structure, the combination of a pen-extracting device, and an interior compartment located beneath the same and provided with an opening adapted to receive the discarded pens as they fall from the pen-extracting device, as and for the purpose described.

5. In a paper-weight or equivalent structure, the combination of a pen-extracting device, and an interior compartment located beneath the same and provided with an elongated opening in proximity to the pen-extracting device, whereby the pen and pen-holder may be readily presented to such device and the discarded pens fall into the compartment, as and for the purpose described.

6. A paper-weight provided with clamping-jaws to extract pens from their holders, and an interior compartment beneath the same, adapted to receive the pens as they fall from the clamping-jaws, as and for the purpose described.

7. A paper-weight or equivalent structure provided with clamping-jaws, an interior compartment beneath the same to receive the pens as they fall from the clamping-jaws, and an interior compartment to hold the unused pens, as and for the purpose described.

8. A paper-weight provided with clamping-jaws for extracting pens from their holders, one of the jaws being extended laterally over the bearings to furnish a hand-hold or finger-knob, as and for the purpose described.

9. As a new article of manufacture, a paper-weight provided with clamping-jaws mounted thereon, the moving jaw being provided with a hand-hold or finger-lever with an upturned end, as and for the purpose described.

10. In a paper-weight or equivalent structure, the combination of a pen-extracting device, an interior compartment beneath the same, provided with an opening adapted to receive pens as they fall from the extractor, and a shelf located in said compartment and beneath the opening of the same, as and for the purpose described.

11. In a paper-weight or equivalent structure, the combination of a pen-extracting device, an interior compartment beneath the same, provided with an opening adapted to receive pens as they fall from the extractor, and a spring-supported shelf located within or below such opening and adapted to be pressed down by a cam projection from the extractor, as and for the purpose described.

12. A paper-weight or equivalent structure provided with a pen-extracting device, an interior compartment provided with an opening contiguous to such pen-extractor, and a second compartment provided with an opening on the opposite face of the structure, as and for the purpose described.

13. A pen-extractor mounted upon a paper-weight or equivalent structure, consisting of a fixed and a movable jaw, the latter being arranged to move out of the path of the falling pen, whereby the discarded pens may fall into the compartment below, as and for the purpose described.

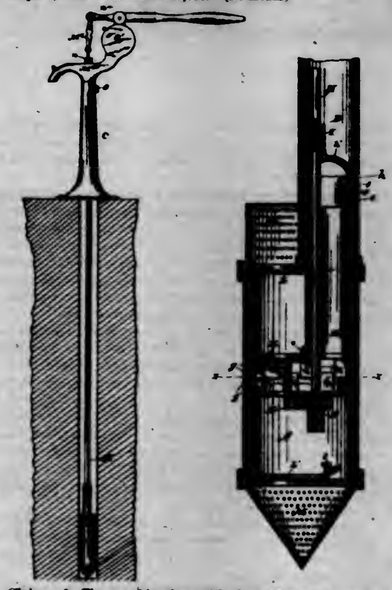
14. The combination, with a pen-extractor, of a box provided with three compartments, B, C, and M, the compartments B and C having swinging or movable lids, the bearings or hold devices of which are located in the compartment C, as and for the purpose described.

15. The combination, with a pen-extractor, of a box provided with three compartments, one of said compartments having a swing-

ing lid, the bearing of which is located in an adjacent compartment, as and for the purpose described.

16. As a new article of manufacture, a paper-weight or equivalent structure provided with an interior compartment, and a pen-extracting device consisting of a fixed and movable jaw, substantially as specified.

386,456. WELL-PUMP. OTIS R. DAVISSON, Huntsville, Texas, assignor of two-thirds to C. A. Black and W. W. Martin, same place. Filed Sept. 7, 1887. Serial No. 249,096. (No model.)



Claim.—1. The combination, with the cylinder of a pump, of a piston working therein having suitable packing-rings thereon, with a piston-rod for tightening said packing-rings connected thereto at a point to one side of its center, whereby the piston will be prevented from turning while the packing is being tightened, substantially as described.

2. The combination, with a pump-cylinder and a piston working therein composed of top and bottom sections, with intermediate packing-rings, of a piston-rod screwing into the lower section at a point to one side of its center and provided with a stop abutting against the upper section for preventing its passage therethrough, whereby when the rod is turned the piston will be held stationary and the two sections be brought together and the intermediate packing tightened, substantially as described.

3. The combination, with the pump-cylinder and the hollow piston having the short section of pipe through which the water passes connected thereto and extending into the passage leading from the top of the cylinder, of packing-rings on said piston and at the top of said short section of pipe, and a rod passing through said pipe and piston for tightening both packings simultaneously, substantially as described.

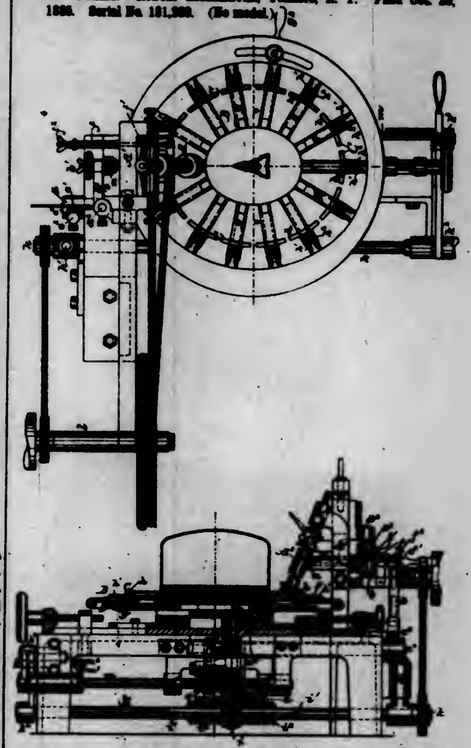
4. The combination, with the pump-cylinder having the up-passage for the water connected to its top at a point to one side of the center and the hollow piston having the short section of pipe through which the water passes connected thereto at a point corresponding to said up-passage, of packing-rings on said piston and a rod passing through said pipe and into the piston for tightening the said packing, substantially as described.

5. The combination, with the pump-cylinder, the valved hollow piston having packing-rings thereon, and the short pipe through which the water passes on its upward passage, with packing-rings thereon and a cap for holding them in position, of a rod abutting against said cap and screwing into the piston, whereby the said packing may be adjusted to take up wear, substantially as described.

6. The combination, with the pump-cylinder, the valved hollow piston having packing-rings thereon and the short pipe through which the water passes on its upward passage connected thereto at a point to one side of its center, substantially crescent-shaped valve-openings partially surrounding said pipe, and packing-rings on said pipe held in place by a suitable cap, of a rod abutting against said cap and screwing into the piston, whereby the said packings may be adjusted to take up wear, substantially as described.

7. The combination, with the pump-cylinder, the hollow valved piston therein composed of two sections, the lower one having the downwardly-projecting lug thereon, with packing-rings between said sections, of a rod abutting against the upper section and screwing into the lug on the lower section for adjusting the said packings, and a valve in said piston, provided with the arm surrounding said lug, substantially as described.

386,457. MACHINE FOR PLANING THE FOLDED EDGES OF HAT-BRIMS. RUDOLF ROSENSTAB, Yonkers, N. Y. Filed Oct. 29, 1888. Serial No. 151,269. (No model.)



Claim.—1. In a hat-brim-planing machine, the combination, substantially as hereinbefore described, of a rotary hat-bed, a brim-clamping ring thereon, and a rotary planing-tool mounted in a swinging pivoted frame and automatically vibrated in a vertical plane, and also toward and from the center of said bed.

2. In a hat-brim-planing machine, the combination, substantially as hereinbefore described, of the rotary hat-bed, the rotary planing-tool mounted in a movable frame, the rock-shaft, its cam and its spring, the sliding rod in contact with said planing-tool frame, and the series of levers and arms between said cam and sliding rod, whereby the latter is moved longitudinally, varying the position of the planing-tool toward and from the center of the hat-bed.

3. In a hat-brim-planing machine, the combination, with the planing-tool, its movable frame, and sliding rod, of a vibrating lever provided with an adjustable piece abutting against said rod, and a clamp-screw, substantially as described, whereby said frame may or may not be moved by said lever during its vibrations, as set forth.

4. In a hat-brim-planing machine, the combination of the planing-tool and its movable frame, a rock-shaft provided with an arm, and a complex lever and a sliding rod interposed between said arm and planing-tool frame for enabling said rock-shaft to move said frame, and the adjustable shoe interposed between said arm and lever, substantially as described, whereby, notwithstanding the uniform movements of the rock-shaft, the planing-tool and its frame may be variably moved to and fro.

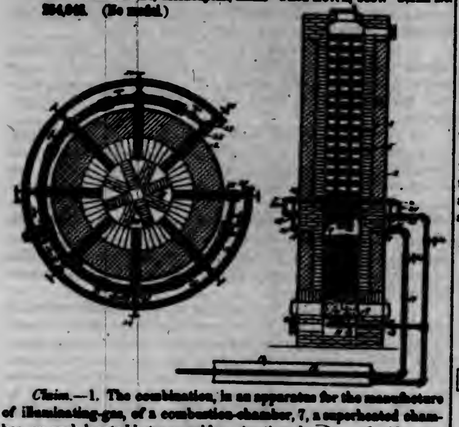
5. In a hat-brim-planing machine, the combination of a hat-bed mounted upon an oval shaft, a planing-tool mounted in a movable frame, and a cam detachably coupled to said planing-tool frame for moving said tool toward and from the center of the hat-bed, substantially as described, whereby a hat-brim may be presented to the planing-tool in a true oval line or in various other lines merging with an oval line.

6. In a hat-brim-planing machine, the combination, with a hat-bed and a series of radially-movable sliding blocks, of a brim-clamping ring composed of sections, each of which has a slotted tail-piece, and is attached to a sliding block by means of a single screw which serves as a pivot and a clamping device, substantially as described.

7. In a hat-brim-planing machine, the combination of the rotary planer, the rotating hat-bed, and the step-motion mechanism, substantially as described.

8. In a hat-brim-planing machine, the combination of the rapidly-driven rotary planing-tool, the slowly-rotating hat-bed, and a hat-bed step-motion containing a rotary controlling-cam which revolves but once during two revolutions of said bed, substantially as described.

386,458. APPARATUS FOR THE MANUFACTURE OF GAS. VINCENT L. RAGER, Minneapolis, Minn. Filed Nov. 2, 1887. Serial No. 254,063. (No model.)



Claim.—1. The combination, in an apparatus for the manufacture of illuminating-gas, of a combustion-chamber, 7, a superheated chamber, an arch located between said combustion-chamber and said superheater-chamber and provided with a series of legs forming separate passages leading from said combustion-chamber into said superheater-chamber, and a series of oil-pipes opening through the outer wall of the cupola into said separate passages between the combustion-chamber and the superheater, substantially as described.

2. The combination, in an apparatus for the manufacture of illuminating-gas, of a combustion-chamber, 7, a superheater-chamber, a series of passages connecting said combustion-chamber with said superheater-chamber, and a series of oil-pipes opening through the outer wall of the cupola into said passages, with a series of steam-pipes extending through said oil-pipes, substantially as described, whereby a vaporized crude oil or liquid hydrocarbon may be thrown into the passages and mingled with the gases after they leave the combustion-chamber and before they reach the superheater, for the purpose set forth.

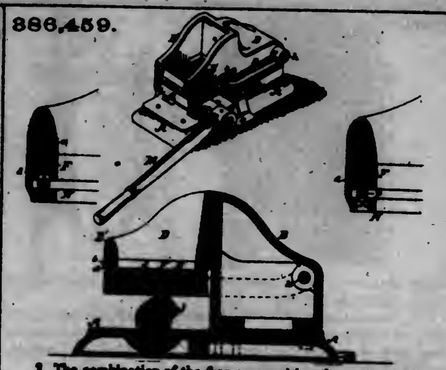
3. The combination, with the cupola 2, having the combustion-chamber 7, the superheater-chamber arranged above said combustion-chamber, and an arch located between said chambers, of an oil-pipe, 17, extending around said cupola and provided with a series of branch pipes, 25, opening through the wall of the cupola into the passages formed by the legs of said arch between said combustion-chamber and said superheater, substantially as described, and for the purpose set forth.

4. The combination, with the cupola 2, having the combustion-chamber 7, the superheater-chamber arranged above said combustion-chamber, and an arch located between said chambers, of an oil-pipe, 17, extending around said cupola and provided with a series of branch pipes, 25, opening through the wall of the cupola into the passages formed by the legs of said arch between said combustion-chamber and said superheater, and the series of steam-pipes 27, extending through said oil-pipes 25, all substantially as described.

386,459. CUTTING-FRAME. WILLIAM G. HUTCHISON, Philadelphia, Pa. Filed May 18, 1888. Serial No. 125,202. (No model.)

Claim.—1. The combination of the frame comprising the projecting base and rear standard having an overhanging portion with opening through the same, a knife secured to the under side of said overhanging portion around the opening in the same, a supporting-bed movable beneath said overhanging portion, and an operating device for said bed having its bearing on the base, all substantially as specified.

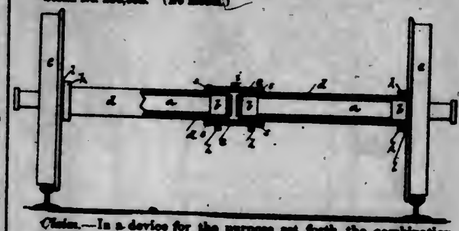
386,459.



2. The combination of the frame comprising the projecting base, rear standard, and elevated and overhanging front portion with knife on the under side, the supporting-bed located beneath said overhanging front portion of the frame and carried by arms pivoted to said rear standard, and an operating device for the bed having its bearing on the base below said bed, all substantially as specified.

3. The combination of the frame comprising the projecting base, rear standard, and elevated and overhanging front frame, the knife, the supporting-bed having arms pivoted to the frame, and a shaft adapted to bearings on the base and having an operating-handle and a cam for acting on the supporting-bed, all substantially as specified.

386,460. CAR-AXLE. SAMUEL CRESSON, Pittsburg, Pa., assignor of one-half to Samuel Wainwright, same place. Filed Dec. 3, 1887. Serial No. 256,502. (No model.)



Claim.—In a device for the purpose set forth, the combination consisting of the divided axle *c*, having formed in each of its inner ends a groove, *f*, in which an open washer, *g*, may be placed for the purpose of locking the parts together, the sleeve or coupling *e*, for attaching the two sections of tubing *d* together, the set-screws *h*, entering the coupling *e*, and an opening in the said coupling for the purpose of introducing a proper lubricant to the bearings, substantially as and for the purpose described.

386,461. OVAL ANGULAR VALVE. HENRY A. GILL, Chicago, Ill. Filed Mar. 20, 1887. Serial No. 232,091. (No model.)

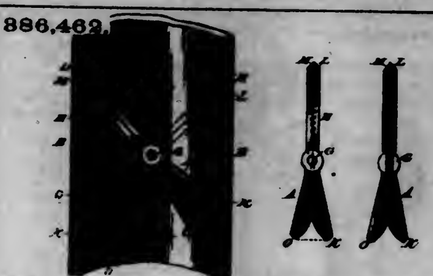


Claim.—For a circular cylinder pipe or passage, the swinging valve, the valve being oval angular, having an oval angular seat hung diametrical in said pipe on the bearing G, fitting said pipe or passage, and having the wings of unequal length, size, weight, and area, the passages controlled by the valve, substantially as described, and for the purpose as specified.

386,462. OVAL ANGULAR VALVE. HENRY A. GILL, Chicago, Ill. Filed July 21, 1887. Serial No. 244,987. (No model.)

Claim.—1. The swinging double oval angular-seated valve, being oval, double angular, antomatic, hung diametrical in a circular cylinder-pipe, fitting the pipe, and having the wings H and A, of unequal

886,462.

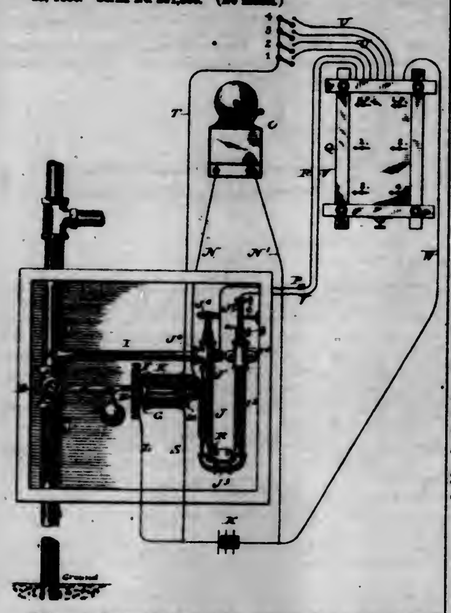


length, shape, size, weight, and arrangement, substantially as described, and for the purpose as specified.

2. The swinging double oval angular-seated valve having the bevel oval angular seats M G K and L G O, and the swinging and crossing bearings G of the two oval angular seats, substantially as described, and for the purpose as specified.

3. The combination of the swinging double oval angular-seated valve, constructed and arranged as herein described, with the circular cylinder part of pipe B, the set-screws R, and the passages controlled by the valve, substantially as described, and for the purpose set forth in the specification.

886,463. ELECTRIC VALVE-CONTROLLER. EDWARD GRAY, Toledo, Ohio, assignor of one-half to William Grah, Jr., same place. Filed Jan. 25, 1888. Serial No. 261,889. (No model.)



Claim.—1. In combination with a main or pipe, a valve located therein, an electro-magnet, an armature adapted to hold said valve open, a battery, a pressure-gage, and electric connections, arranged substantially as described, whereby, when the pressure exceeds or falls below a predetermined limit, the electro-magnet will be energized, its armature rocked, and the valve turned and the supply thereby cut off.

2. In combination with a main or pipe, a valve located therein, an armature adapted to hold said valve open, an electro-magnet controlling said armature, a pressure-gage communicating with the main or pipe and subject to the pressures therein, and an electric circuit, arranged substantially as shown, and including the magnet and pressure-gage.

3. In combination with a main or pipe, a valve located therein, an electric circuit, comprising a battery, an electro-magnet, and a pressure-gage, an armature for said magnet adapted to hold said valve normally open, an electric bell, and a second circuit, in which said bell is included, all arranged for operation substantially in the manner shown.

4. In combination with main or pipe A, having valve B, electro-magnet H, having an armature, F, to hold the valve open, a mercurial pressure-gage, J, provided with a metallic section, J^2, and with contact-points J^3 and J^4, a battery, K, wire S, extending from the battery to the magnet, wire R, connecting the metallic section J^2 of the gage with the magnet, and wires P and V, extending, respectively, from the points J^3 and J^4 to the battery.

5. In combination with a main or supply pipe, a valve located therein, an electro-magnet and armature adapted to control the valve, an annunciator, a pressure-gage, and an electric circuit, including the annunciator, gage, and electro-magnet, all substantially as shown.

6. In combination with a main or supply pipe, a valve located therein, an electro-magnet and armature adapted to control the valve, an annunciator, a pressure-gage, a bell, and an electric circuit, including the bell, magnet, annunciator, and gage, all substantially as shown.

7. In combination with a main or supply pipe, a valve located therein, an electro-magnet and armature adapted to control the valve and included in an electric circuit, a switch, and an annunciator, also included in the circuit, as and for the purpose set forth.

8. In combination with a main or supply pipe, a valve located therein, an electro-magnet and armature adapted to control the valve and included in an electric circuit, and a switch, annunciator, and a bell, also included in the circuit, substantially as and for the purpose set forth.

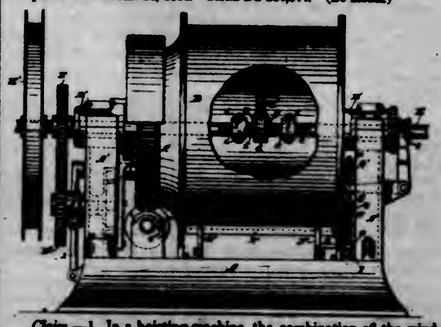
9. In combination with main or pipe A, having a valve, B, electro-magnet H, having an armature, F, adapted to hold the valve open, pressure-gage J, communicating with the main and provided with contact-points J^3 and J^4, battery K, wires S and R, connecting the magnet with the battery and gage, respectively, wires P and V, electrically connected with opposite ends of the gage or the contact-points J^3 and J^4, and in connection, also, with the battery, a wire, L, extending from the battery to the armature F, a bell, O, wire N, extending from the core of the magnet to the bell, and a wire, N', extending from the bell back to the battery.

10. In an apparatus for regulating or controlling the supply of natural gas or other fluids, the combination of the following elements, to wit: a supply-pipe, a valve located therein, an electro-magnet provided with an armature and adapted to hold the valve normally open, a pressure-gage communicating with the supply-pipe and included in the main circuit, an annunciator and a switch, one or more, also included in the circuit, a second circuit, and a bell included in said circuit.

11. In combination with a main or supply pipe, a valve located therein, a pressure-gage subject to the pressures within the main, conductors extending from opposite ends of the gage and forming a normally-open electric circuit, an electro-magnet having an armature to hold the valve open and included in the circuit, all substantially as shown, whereby, when the pressure exceeds or falls below a predetermined limit, the circuit will be completed and the valve caused to shut off the supply.

12. In combination with a main or supply pipe, a valve, B, located therein, and adapted to cut off the supply, an electro-magnet, H, included in a normally-open circuit, an armature adapted to hold the valve normally open, and a second circuit, including a bell and the armature of the electro-magnet.

886,464. SLACK-CABLE STOP-MOTION FOR ELEVATORS. LEMUEL S. GRAVES, Rochester, N. Y., assignor to L. S. Graves & Son, same place. Filed Mar. 21, 1888. Serial No. 267,977. (No model.)



Claim.—1. In a hoisting-machine, the combination of the winding-drum, the mechanism for rotating it, the shaft passing through the journals of the drum, to which the hand-rope wheel and the starting and stopping devices are connected, the clutch-section formed on the drum, the movable clutch-section mounted on the hand-rope shaft, the frame or bar arranged in close proximity to the surface of the drum, and connections between the movable clutch portion and the frame, whereby upon the movement of said frame away from the drum the clutch will be thrown into engagement, substantially as described.

2. In a hoisting-machine, the combination, with the winding-drum, mechanism for rotating it, a starting and stopping mechanism, the hand-wheel shaft connected to said last-mentioned mechanism extending through said drum, the clutch-section on the drum, the clutch-section on the hand-wheel shaft, and a bell-crank lever for moving it into connection with the section on the drum, of a bar or frame arranged in proximity to the surface of the drum, and connections between said frame and the movable section of the clutch, whereby when the former is moved away from the drum the clutch will be thrown into operation, substantially as described.

3. In a hoisting-machine, the combination of the hoisting-drum, mechanism for rotating it, and a shaft to which the starting and stopping mechanism is connected, a clutch interposed between said drum and shaft, a bar arranged in close proximity to the surface of the drum, a lever connected to the clutch for operating it, and a spring interposed between and forming a connection between the bar and the clutch-operating lever, substantially as described.

4. In a hoisting-machine, the combination, with the hoisting-drum, mechanism for rotating it, and a shaft to which the starting and stopping mechanism is connected, of a clutch interposed between said drum and shaft, a bar arranged in close proximity to the drum, a lever connected to the clutch for operating it, and a spring-connection between the lever and bar, whereby motion will be transmitted therefrom only through the interposed spring, and a spring supporting said bar and holding the clutch normally disengaged, substantially as described.

5. In a hoisting-machine, the combination, with the hoisting-drum, mechanism for rotating it, and a shaft to which the starting and stopping mechanism is connected, of a clutch interposed between said drum and shaft, the bell-crank lever having one of its arms connected to the movable clutch-section, a bar arranged in close proximity to the drum having an extension, the rod connected to the extension, two stops on the rod, the loop or stop through which the rod passes, a spring interposed between one of the stops on the rod and the loop, and the spring interposed between the other stop on the rod and the end of the bell-crank lever operating the clutch, substantially as described.

886,465. ROOF. JOHN HAMM, De Kalb, Ill. Filed Feb. 28, 1888. Serial No. 265,857. (No model.)



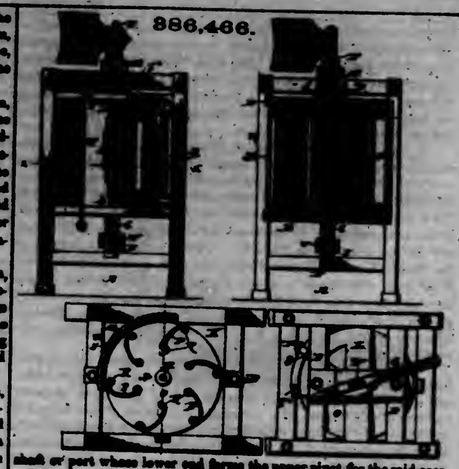
Claim.—1. The combination of the wall A, provided with the openings E therein, sheathing B, transverse strips C, and outer coating, D, and means, substantially as shown, for opening and closing said openings, for the purpose described.

2. The combination of the wall A, provided with the openings E therein, sheathing B, strips C, attached transversely at suitable intervals to the sheathing B, the shingles or outer coating, D, brace F, seated in openings E, screw-shaft G, seated in said brace, and plates H, adapted to be moved to and from each other in the rotation of the shaft G, substantially as shown, and for the purpose described.

886,466. WINDMILL. JORDAN HAMM, May, Tex. Filed Nov. 1, 1887. Serial No. 253,594. (No model.)

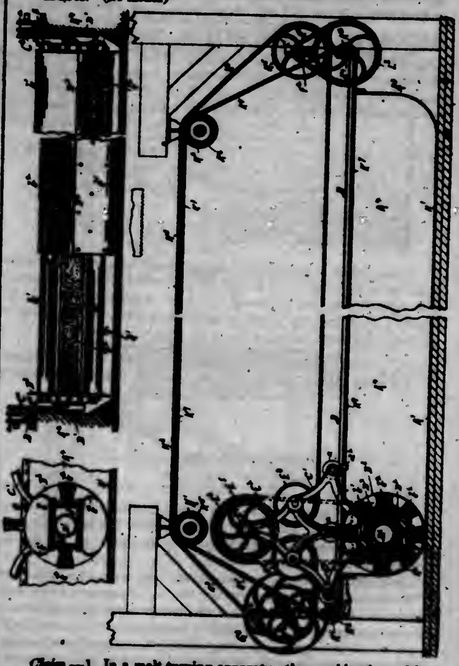
Claim.—The combination of the horizontal wind-wheel, the semi-cylindrical case partly inclosing the same and independently revolvable, the case having the notches T' in its upper side, the vane having the

886,466.



shaft or part whose lower end forms the upper pivot for the said cone, and the lever S, having its inner end fast to the vane shaft or part, and adapted to engage the said notches, and thereby cause the cone to expose any desired area of the wheel to the wind, substantially as described.

886,467. MALT-TURNING APPARATUS. FABIUS HAMMER, Sr., and HERMAN H. DOWNY, St. Paul, Minn. Filed Oct. 6, 1887. Serial No. 251,903. (No model.)



Claim.—1. In a malt-turning apparatus, the combination, with a malt-floor, of a transverse shaft provided with means for drawing it over the floor, from one end to the other, and with means for revolving it, rectangular box-sections secured upon said shaft, blades formed with flat central portions and with upturned and curved ends or edges and secured with said flat central portions to the wide sides of said box-sections, and brushes secured to the narrow sides of said box-sections, substantially as described.

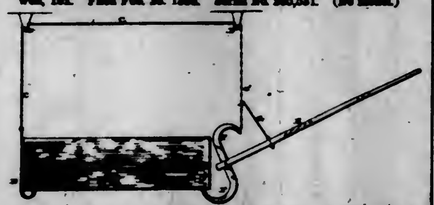
2. In a malt-turning apparatus, the combination, with a malt-floor, of a transverse shaft provided with means for drawing it over the floor,

from one end to the other, and with means for receiving it, rectangular box-sections secured upon said shaft in progressive positions, or with their faces in spiral lines around said shaft, blades formed with flat central portions and with upturned and curved ends or edges and secured with said flat central portions to the wide sides of said box-sections, and brushes secured to the narrow sides of said box-sections, substantially as described.

3. In a malt-turning apparatus, the combination, with a floor having tracks upon its sides, upright frames traveling upon said tracks and provided with means for drawing them from one end of the tracks to the other, and a turning roller journaled with the ends of its shaft in the lower portions of said frames, of transverse shafts F' F² at the ends of the floor, pulleys H' H² upon said shafts, guide-pulleys H' H² above said pulleys, a transverse shaft, E², journaled in the upper portions of the frames C', pulleys F² and E² upon said shaft, guide-pulleys or idlers E' F' upon the frames C', chains E², passed around pulleys E² and around pulleys upon the roller-shaft, and chains H², passed around the pulleys H' H², around the guide-pulleys H' H², around the idler-pulleys, and around the pulleys F² upon the shaft of the carriage, substantially as described.

4. In a malt-turning apparatus, the combination, with a floor having tracks upon its sides, upright frames traveling upon said tracks, and a turning roller journaled with the ends of its shaft in the lower portions of said frames, of a transverse drive-shaft, F', at one end of the floor, pulleys H' upon said shaft, a corresponding transverse shaft, F², at the other end of the floor, pulleys H² upon said shaft, pulleys L' upon said shaft, transverse shafts K' K² at the ends of the floor, pulleys K² and K' upon said shaft, pulleys L² upon said shaft K², chains L², passed around pulleys L² and L', guide-pulleys H' K² and H² K² above the floor, chains K², secured to the frames C and passed around the pulleys K² K² at the ends of the floor and over the guide-pulleys K² K', and chains H², passed around the drive-pulleys H', over the guide-pulleys H' H², around the pulleys H² and around pulleys in the frames, which pulleys drive the turning roller, substantially as described.

386,468. WAGON-BED ELEVATOR. William A. Holliday, Bagwell, Tex. Filed Feb. 20, 1888. Serial No. 265,531. (No model.)



Claim.—The combination of a hook which is to catch under the front end of the wagon-bed, a supporting-wire and chain which passes over suitable supports overhead, the lever E, provided with the S-shaped hook F, and the rod G, provided with a hook for catching in the links of a chain, substantially as shown and described.

386,469. MACHINIST'S MEASURING-TOOL. Henry Howard, Fitchburg, Mass. Filed Apr. 9, 1888. Serial No. 269,739. (No model.)



Claim.—1. A machinist's measuring-tool consisting of two wedge-shaped sections with their small or thin ends in the same direction, one of the sections being adjustable upon the other, as and for the purpose set forth.

2. A measuring-tool consisting of two wedge-shaped sections, one of the sections having a tongue, and the other a groove fitting over the tongue and adjustable thereon, the two sections being adjustably secured together, with their thin ends in the same direction, as set forth.

3. A measuring-tool consisting of two wedge-shaped sections, one adjustably secured upon the other, with their thin ends in the same direction, the lower or base section having a bearing-ear for an adjusting-screw at the wide end extending above the section, as and for the purpose set forth.

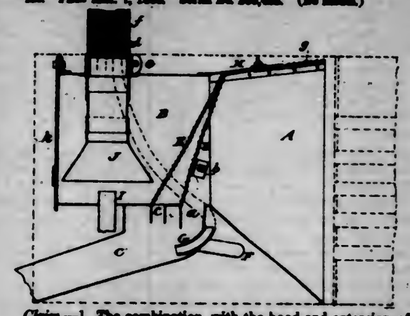
4. The combination, with a measuring-tool consisting of two wedge-shaped sections adjustably secured upon each other, with their thin ends in the same direction, of a nut in the upper section, containing a lug having a screw in the lower section at right angles with its upper inclined surface, and an adjusting-screw ear on the lower section at right angles with and extending above its upper inclined face, as set forth.

5. A measuring-tool consisting of two wedge-shaped sections, one secured upon the other, with their thin ends in the same direction, one of said sections having a series of graduated steps parallel to the plane of the base of the other section and being adjustable thereon, as set forth.

6. The combination, with a tool consisting of two wedge-shaped sections adjustably secured together, with their thin ends in the same direction, of a series of steps on the upper section, with an enlarged contracted groove on its under side containing a screw-threaded ring, and the lower or base section having at its wide end a bearing-ear at right angles to its upper face extending above the section for an adjusting-screw, as set forth.

7. The combination, with a measuring-tool consisting of two wedge-shaped sections, one section having a tongue and the other a groove, the two being adjustably secured together, with their thin ends in the same direction, of a series of graduated steps on one section parallel to the plane of the base of the other section, with an enlarged contracted groove on its under side, the other section having a clamping-screw and bearing-ear at right angles to its inclined surface, said ear having an adjusting-screw, as set forth.

386,470. SPARK-ARRESTER. Franklin H. Hemlin, Trenton, Mo. Filed Mar. 7, 1888. Serial No. 266,622. (No model.)



Claim.—1. The combination, with the hood and extension, of an outlet at the bottom of said extension, the discharge-tube communicating with said inlet, and the water-pipe connected with the boiler and emptying into the discharge-tube, substantially as described.

2. The combination, with the hood and the extension, the latter provided with an opening, *a*, at its bottom, of the discharge-tube and the water-pipe connected with the boiler and emptying into said tube, substantially as described.

3. The combination, with the hood and the extension, of the two screens in said extension, the latter provided in its bottom with the openings *a c*, and the discharge-tube communicating with said openings, substantially as described.

4. The combination, with the hood and the screens, arranged as described, of the nettings arranged at the inner end of the top of said hood, substantially as and for the purpose specified.

386,471. COMBINED WASH-BENCH, IRONING-TABLE, AND SETTEE. Oscar S. Jenkins, Danby, N. Y., assignor of one-half to John R. Boyd, same place. Filed Dec. 15, 1887. Serial No. 257,933. (No model.)



Claim.—In a household article or implement consisting of a wash-bench, ironing-table, and settee in one structure, the arms at each end of the settee provided with flanges along their tops and down their rear sides, in combination with an ironing-board having legs which engage with the flanges of the arms, whereby the said board is made interchangeable on the arms, and serves as a back to the settee and as an ironing-table, as set forth.

386,472. LAG FOR PATTERN-CHAINS OF LOOMS. Ernshaw Jowett, Bradford, England. Filed June 20, 1887. Serial No. 241,893. (No model.)



Claim.—In combination, the leg A, grooved and provided with countersunk holes, as described, headed pins D, adapted to fit these holes, and the metallic slide B, serving to cover the heads of the pins and to hold the pins in place, all substantially as and for the purpose shown and described.

386,473. GAS-STOVE. John Kellum, Brooklyn, N. Y. Filed June 16, 1884. Renewed Jan. 7, 1887. Serial No. 223,712. (No model.)



Claim.—1. In a gas-stove, the burner-plate A, having a series of perforations, N, surrounding the mouth of the mixing-chamber, flanges O, surrounding the series of perforations, whereby jets of air will be drawn into the burning gas and the perforations H become the burner proper when the stove is at work, the mixing-chamber C, and the cover J, having a series of slots, all as shown and described.

2. In a gas-stove, the burner-plate A, provided with a mixing-chamber open at both ends and formed with the interior shoulder, G, near its upper end, in combination with the wire-gauze H, resting on the shoulder G, and the cover J, having a series of curved slots, L, and a depending flange, K, supported by the shoulder G, and a gas-burner entering the lower end of the mixing-chamber, whereby the air and gas passing up through the chamber C and gauze H will be thoroughly mixed in the space between the gauze and the under side of plate J before issuing through the openings L, substantially as set forth.

3. In a gas-stove, the burner-plate A, provided with a circular depending mixing-chamber, C, open at both ends and provided with a circular shoulder, G, around its upper end, the raised flange O, the series of openings N in the plate A, between the flange and mouth of the chamber C, the cover-plate J, having a depending circular flange, K, resting on shoulder G, the wire-gauze H, resting on shoulder G below flange K, and a burner, D, held in the lower end of chamber C, as described, whereby the gas and air will be thoroughly mixed between the cover-plate and wire-gauze before ignition, and jets of air will mix through openings N with the flame to cause the complete combustion of the gas.

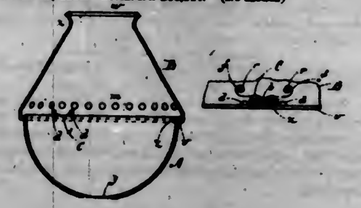
4. A gas-stove consisting, essentially, in a burner-plate, A, provided with circular flanges O I, the latter being in a lower plane than the former, a series of openings, N, between said flanges and independent of the chamber C, radial flanges M, a circular opening, in which is formed the downward-projecting mixing-chamber C, having a shoulder, G, around its upper portion, the cover-plate J, provided with a depending flange, K, and a circular series of slots, L, the top of the plate J being flush with the top of flange I, the wire-gauze H, resting on shoulder G below flange K, and the gas-burner, substantially as set forth.

386,474. GRATE OR ASH-PAN BAR. Christopher Knabe, Detroit, Mich. Filed Jan. 9, 1888. Serial No. 260,134. (No model.)



Claim.—As an improved article of manufacture, a bar provided with a depending lug having a recess, said recess having a horizontal portion extending to one side of said lug and a vertical portion extending above the horizontal portion and communicating with said horizontal portion, said vertical portion being made in the face of the lug adjoining the face to which the horizontal portion extends and corresponding with the end of the bar, substantially as described.

386,475. LAMP-SHADE. Sylvanus B. Kneeland, Boston, Mass. Filed Jan. 16, 1888. Serial No. 260,817. (No model.)



386,476. DENTAL ENGINE. William A. Knowles, Alameda, Cal. Filed Aug. 25, 1887. Serial No. 247,282. (No model.)

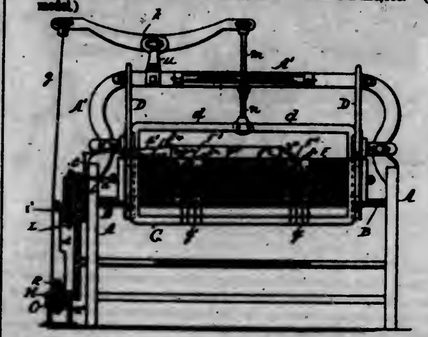


Claim.—1. The combination, in a dental engine, of the hinged bracket carrying a spring-actuated lever, a head-stock journaled thereon and having its journal-aperture grooved, the hinge-bolt having a spline to enter said groove, a shoulder on the said stock for the engagement of the spring-actuated lever, and a cam on the bolt to disengage the said lever from the head, substantially as specified.

2. The combination, in a dental engine, substantially as described, of the hinged bracket, the spring-pressed lever thereon, the head-stock journaled on the outer end of the bracket and having the groove in its journal-aperture, and a shoulder for the engagement of said lever, and the hinge-bolt having a spline to enter the said groove, substantially as specified.

3. The combination, with the main frame B, having the vertical aperture therein, as described, of the vertical plate having the conical enlargement, the hinged bracket and also the drive-pulley journaled on said spindle, the head-stock, the spring-actuated lever for engaging said stock and the hinge-bolt and cam thereon, and the cable-shaft having the vertical pulley, substantially as specified.

386,477. LOOM FOR CROSS-WEAVING. Charles A. Littlefield, Fall River, Mass., assignor to Miles A. Tuttle and James T. Miles, both of same place. Filed Feb. 10, 1887. Serial No. 226,169. (No model.)



Claim.—1. The combination, with the needles and needle-holding frame, of levers *b* and *c*, rods intermediate said levers and frame, cam K, ratchet-wheel K', lever T, pawl *r*, rod T, and the crank-shaft, substantially as described.

2. The combination, with the reed F and mechanism for imparting lateral movement thereto, of auxiliary reed-sections movable with said reed F, and mechanism for imparting an independent lateral movement to said reed-sections, substantially as described.

3. The combination, with the reed F, the pattern-chain, its actuating devices, and intermediate devices for imparting lateral movement to said reed F, of the auxiliary reed-sections F', movable with said reed F, said devices, substantially such as described, intermediate the pattern-chain and said auxiliary reed-sections for imparting an independent lateral movement to said reed-sections, substantially as described.

4. The combination, with reed F, the pattern-chain, its actuating devices, and intermediate devices for imparting lateral movement to said reed F, of an auxiliary reed-section, F', sleeve L', and devices,

substantially such as described, intermediate the pattern-chain and said sleeve and the latter and said reed-section for imparting independent lateral motion to said reed-section, substantially as and for the purpose set forth.

5. The needle *f*, having an open eye, x^5, and a tongue, f^5, forming an integral part of the needle-body, and having its tongue and the material adjacent to the said eye curved in opposite directions, substantially as described.

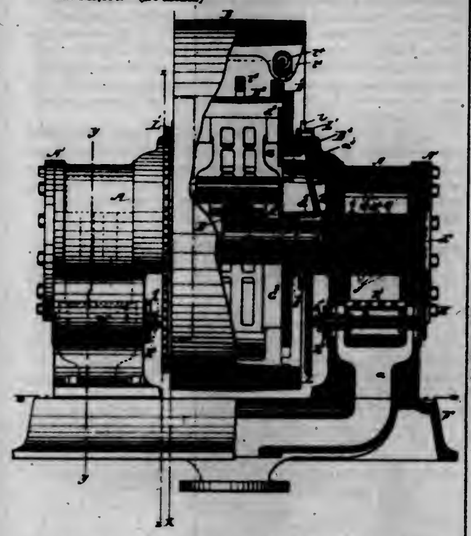
386,478. TUB-HOOP. KIMBERLY M. LOOMIS, Keokuk, Iowa. Filed Apr. 18, 1888. Serial No. 271,016. (No model.)



Claim.—1. The combination, in a tub-hoop, of a hoop-body provided with a head at one end, a screw and a nut thereafter at the other end, and the double lug described, comprising two end lugs joined by two side bars, all in one piece, one of the lugs being slotted in its back and provided with shelves at the sides of the slot, and the other lug having a longitudinal aperture in it, substantially as shown and described.

2. The double lug for hoops described, comprising the two end lugs, 6 and 7, joined by the side bars, 16, and the shelves 15, each of the end lugs having a longitudinal aperture, one of them having a slot at its back, substantially as shown and described.

386,479. ROTARY STEAM-ENGINE. FRED R. LOW, Chelsea, Mass., and FRANK M. CLARK, Tilton, N. H. Filed July 1, 1887. Serial No. 243,056. (No model.)



Claim.—1. A rotary steam-engine, in which are combined a steam-cylinder, three differentially-moving pistons mounted upon concentric axes, a fly-wheel mounted upon a center of revolution different from the center of revolution of the three steam-pistons, and a series of cranks, d d' d^2, of equal lengths and each longer than the distance separating the two centers of revolution, and connecting-rods g g' g^2, attached to said concentric shafts and to the interior of said fly-wheel, and a train of gearing, L L', revolving with and revolved by the revolution of the fly-wheel B, and a spring and weight-governor and linkage connecting the same with the gear L', which governor is attached to and revolves with the fly-wheel B, and a cut-off valve, A, substantially as described.

2. The fly-wheel B, consisting of a hollow hexagonal box, as described, within the rim of the said fly-wheel, which hexagonal box is adapted to contain the cranks and connecting-rods of the engine, substantially as described.

3. The fly-wheel formed, as described, with an oil-tight hollow web for containing the working parts and with a series of oil-chamber, d^3 d^3 d^3 d^3 d^3, leading from the interior of said hollow web to and along the axes of revolution of the pistons C C' C^2 and to the bearings of these axes, substantially as described.

4. The cylinder A, provided with the neck a^2, containing the internal hollow box, a^4, in combination with the fly-wheel B, provided with the web B' and its hub, substantially as and for the purposes described.

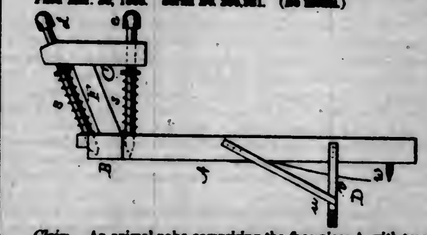
5. The combination of the continuously-revolved cylinder-valve A, with its gear-wheel L, the driving-gear L', mounted around the center of revolution of the fly-wheel B and revolved with said fly-wheel, the fly-wheel B, the governor mounted within said fly-wheel B and consisting of a weighted arm, P, actuated by the centrifugal force imparted to the weight by the revolution of the fly-wheel B, and a spring, P', which resists the outward throw of said weighted arm, a linkage between said governor and said gear L', whereby the outward or inward movement of the revolved weight is transmitted to said gear L' and moves it forward or back around its axis of revolution, substantially as described.

386,480. SIDE-CHECK-LOOP. HARRY LOWE, Montpelier, Vt. Filed Jan. 5, 1888. Serial No. 257,709. (No model.)



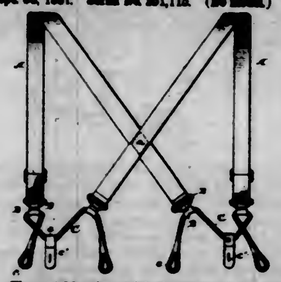
Claim.—A slide for a check-rein, consisting of a rectangular metallic band and flexible loop, the band having equal and parallel projections in the same direction from the edge at two points opposite each other and equally distant from similar corners as long as the band is wide, the ends of such projections connected together by a pin, a flexible loop encircling the pin, the sides of the loop of the width of the inside of the band, and the interior of the loop of sufficient size to receive the water-hook of a harness.

386,481. ANIMAL-POKE. WILLIAM MAST, Tippecanoe City, Ohio. Filed Mar. 30, 1888. Serial No. 268,981. (No model.)



Claim.—An animal-poke comprising the face-piece A, with transverse arms B, having slots for straps, the oblique part F, the supporting part C for the outer end of the lances, and said lances held in said face-piece and said supporting part, with spiral springs to hold the lances outwardly from the head of the animal, substantially as set forth.

386,482. SUSPENDERS. ALBERT A. HASKELL, Ryde Port, Mass. Filed Sept. 30, 1887. Serial No. 251,115. (No model.)

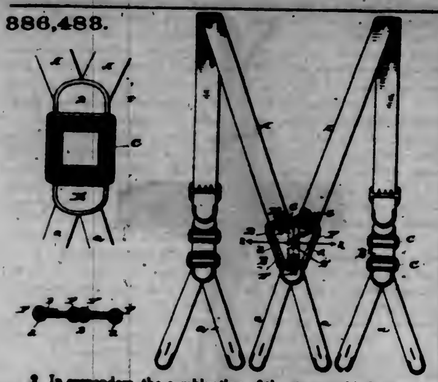


Claim.—The combination, with the straps A A, connected at the back and terminating in bearings B B for a sliding cord, of button-holes or eyes c c c', the latter provided with a cord-bearing, c, and an elastic cord passing through said bearings B B'c, and connected to the button-eyes c c', substantially as described.

386,483. SUSPENDERS. ALBERT A. HASKELL, Ryde Port, Mass. Filed Oct. 20, 1887. Serial No. 252,773. (No model.)

Claim.—1. Suspenders having a round elastic cord interposed between non-elastic straps thereof, and non-elastic binders carried by said non-elastic straps, provided with elongated cylindrical pockets wherein said round elastic cord is laid and retained for a corresponding portion of its length and bound at or near both ends, substantially as described.

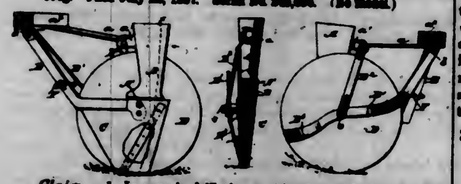
386,483.



2. In suspenders, the combination of the straps, a binder consisting of two thicknesses of more or less stiff material, having lines of stitching uniting them and forming elongated cylindrical pockets therein, and a rounded elastic cord secured to the straps and seated in the pockets in the binder, to which they are united by stitching passing through them, substantially as set forth.

3. In suspenders, the combination of the straps, a binder consisting of two thicknesses of material stitched to form elongated cylindrical pockets F F', round elastic cords uniting the shoulder-straps with the binder and the pantaloons-straps to the binder, and stitchings d, substantially midway between the top and bottom edges of the binder, passing through the same and through the elastic cords, substantially as set forth.

386,484. GRAIN-DRILL. ALEXANDER C. MCCLELLAND, Island City, Oreg. Filed July 30, 1887. Serial No. 245,696. (No model.)



Claim.—1. In a grain-drill, the combination, with the wheel or disk and the furrow-opener, of the plate-like bars and the adjusting-screw adapted to bring the wheel or disk toward or against the opener, substantially as set forth.

2. In a grain-drill, the combination, with the boot or tube having at its lower end a wedge-shaped projection depending from its under side, of the furrow-opener secured to one side of said projection and the wheel or disk, substantially as set forth.

3. In a grain-drill, the combination, with the boot having at its lower end a wedge-shaped projection depending from its under side, of the furrow-opener secured to one side of said projection, the plate-like bars, one being secured to the opposite side of said projection and the other bar receiving an adjusting-screw bearing in the aforesaid bar, and the disk or wheel borne by an axle projecting from said furrow-opener, and which axle is connected to one of said bars, substantially as set forth.

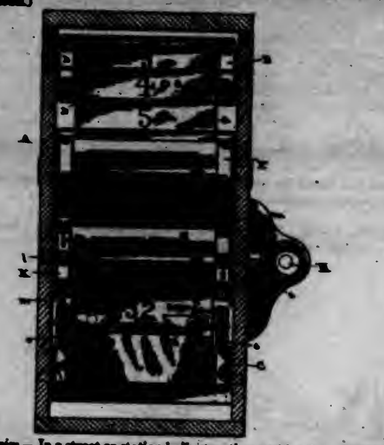
386,485. GAS-BURNER. JOHN MCELHINNY, Cincinnati, Ohio. Filed June 6, 1887. Serial No. 240,455. (No model.)



Claim.—1. In a gas-burner, the combination, with a hollow perforated cylinder, of a band adjustable along said cylinder, and a series of gas-outlets surrounding the same, substantially as and for the purpose specified.

2. The combination of a perforated cylinder capped at the top, a band adjustable along said cylinder, a series of gas-outlets surrounding the base thereof, and a perforated plate admitting air to the outside of the gas-outlets, substantially as and for the purpose specified.

386,486. STREET OR STATION INDICATOR FOR CARS. ISRAEL H. ELKINS, Quincy, Ill. Filed July 30, 1887. Serial No. 245,603. (No model.)



Claim.—In a street or station indicator, the combination, with the box or casing having apertures c and d, and a number of rolls supported between the sides thereof, of a belt traversing the rolls, having thereon two sets of names or numbers of the streets arranged reversely to each other, the operating-roll G, having the notched disks and provided with pins m, and beveled gear e, the gauge n n, and the V-shaped springs having shoppers extending into the gauge, the hand-shaft having cog meshing with cog e, and having its handle provided with the ratchet, the pawls pivoted to the casing and engaging the ratchet, and the spring bearing between the outer ends of said pawls, substantially as described.

386,487. COMBINED SQUARE, MITER, AND TRY-SQUARE. JOHN MURRAY, Conshohocken, Pa. Filed Aug. 2, 1887. Serial No. 245,913. (No model.)



Claim.—1. A combined miter, square, and try-square consisting of a piece of material having an inclined edge, C, the right-lined side F, and the projection B, with upper edge at right angles to the line F, and screws D, set in openings in said piece at right angles to said side F, substantially as described.

2. The implement A, with inclined side C, the side F, and screws D, the line of said screws and the side F being at a right angle to each other, substantially as and for the purpose set forth.

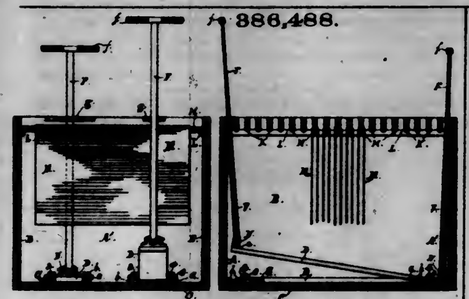
3. The implement A, with inclined side C, the right-lined side F, and having openings therein at right angles to the side F, with screws in said openings, substantially as and for the purpose set forth.

386,488. LIME-VAT AGITATOR. ABRAHAM A. MYERS, Lancaster, Pa. Filed Feb. 16, 1888. Serial No. 264,262. (No model.)

Claim.—1. The combination, with a vat, of the agitator herein described, hinged by one end to the bottom thereof, so that in operating the downward movement of said agitator may bring its entire under surface into contact with the bottom of the vat, and means for operating said agitator, substantially as and for the purpose specified.

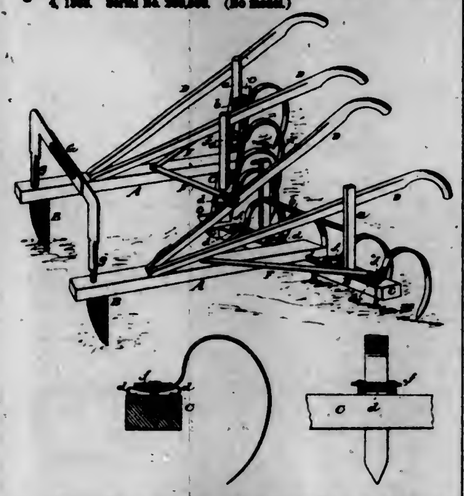
2. The combination, with a vat, of the agitator herein described, having one end hinged thereto, so that in operating the same the entire under surface may be brought in contact with the bottom of the vat, and devices for operating said agitator, substantially as and for the purpose specified.

3. The combination, with a vat, of the agitator herein described, hinged by one end in said vat, and provided with a series of perfora-



tions, and means for operating said agitator, substantially as and for the purpose specified.

386,489. CULTIVATOR. ASA J. CLEVY, Dush, Mich. Filed Apr. 4, 1888. Serial No. 269,869. (No model.)



Claim.—The combination, with the cross-beam, of the bearing-plate formed of spring metal doubled upon itself with the bent ends resting on the cross-beam and concaved upon its upper side, the tooth formed with curved shank seated in said concaved portion, and a clamp for holding said tooth and plate in position, substantially as described.

386,490. FIRE-SHUTTER FOR ELEVATOR-SHAFTS. ALBERT G. PAGE, San Francisco, Cal. Filed Sept. 20, 1887. Serial No. 250,198. (No model.)

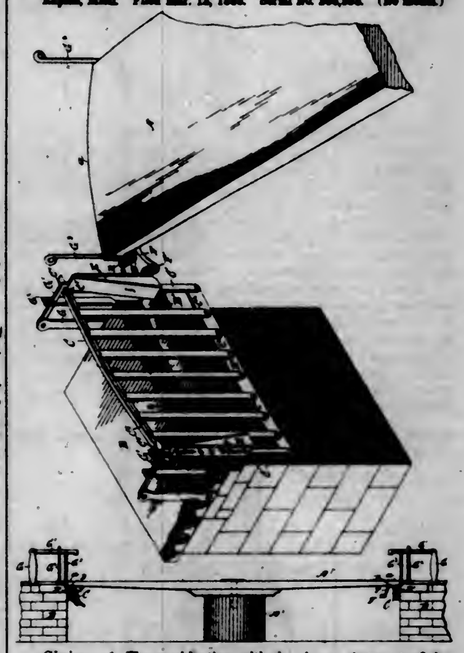
Claim.—In fire-shutters for elevators, in combination with an elevator-cage having the deflecting guide-pulley M', attached to the top of the cage, and the deflecting guide-wheel K', attached to the bottom or floor of the same, the double lever having the tripping-arm J and the short arm I, with slot M, the connecting-bar H, the lever G, the connecting-levers E and F, the lever K, the connecting-bar Q, and tripping-lever R, for the purpose of balancing and operating the shutters A and B, constructed, connected, and operated substantially as and for the purposes set forth.



386,490.



386,491. DRAW-BRIDGE GATE. ALBY LE GRAND PIERCE, Grand Rapids, Mich. Filed Mar. 12, 1888. Serial No. 266,982. (No model.)



Claim.—1. The combination, with the pier or abutment, of the latch-posts, the latches pivotally supported thereon, the slotted uprights, the folding gate pivotally secured to said pier or abutment, and a swinging draw span or bridge provided with posts at its corners for lifting said latches when the gate is to be opened, substantially as described.

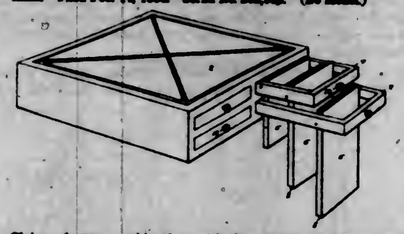
2. The combination of a pier or an abutment with a folding gate provided with vertical pivoted end bars, C, top rail, C', and friction-blocks E, secured to and projecting from said end bars, and a draw span or bridge, A, provided with arms and rollers, which are supported upon the corners thereof, for engaging with said friction-blocks and opening and closing said gate, substantially as described.

3. The combination of a pier or an abutment with a folding gate provided with vertical pivoted end bars, C, top rail, C', and friction-blocks E, secured to and projecting from said end bars, and provided on their inner faces with inclined friction-plates *f* and on their outer faces with adjustable friction-plates *e*, and a draw span or bridge, A, provided with arms and friction-rollers which are supported upon its corners and arranged to engage with said friction blocks and plates and to thus open and close said gate, substantially as described.

4. The combination of a pier or an abutment, a folding gate consisting of vertical bars and intermediate bars, which are pivoted at their upper and lower ends, a horizontal plate and a top rail having notches near its ends with pivoted latches, and a swinging draw span or bridge provided with vertical posts at its corners having rounded upper ends, substantially as and for the purpose described.

5. A folding gate for draw-bridges, comprising a horizontal stationary bottom plate, a movable top rail, and vertical bars pivoted at their ends to said bottom plate and top rail, in combination with latches for holding said gate in raised position and devices for raising and lowering the same, substantially as described.

386,492. DENTAL CABINET. JOSEPH W. FREDERICK, Minneapolis, Minn. Filed Feb. 14, 1888. Serial No. 263,963. (No model.)



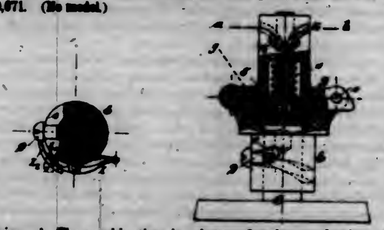
Claim.—1. The combination, with the cabinet, of a drawer consisting of a frame having sides and ends and an open bottom, and one or more receptacles pivoted in said drawer and adapted, as the drawer is drawn out of the cabinet, to drop into a substantially perpendicular position, substantially as described.

2. The combination, with the frame or cabinet 2, of a series of rectangular drawers, 4, arranged to slide in said cabinet, provided with open bottoms, plates or drops 5, pivoted to the said drawers and provided with the series of compartments 6, and the shoulders or stops 8 upon the lower plate or drop to limit its upward movement, substantially as described.

3. The combination, with the cabinet, of the drawer consisting of a frame having sides and ends and an open bottom, and a plate pivoted in said frame and having a series of compartments formed in it and adapted, as the drawer is drawn out of the cabinet, to drop into a substantially perpendicular position, substantially as described.

4. The combination, with the cabinet, of the slide arranged therein, and receptacles pivoted one above another in said slide, with the pivots of the lower receptacle nearer to the front of the slide than those of the upper receptacle, substantially as described.

386,493. BUTTON-MAKING MACHINE. CARL A. PFEIFFER, Barmen Rittershausen, Prussia, Germany. Filed Apr. 5, 1888. Serial No. 269,671. (No model.)



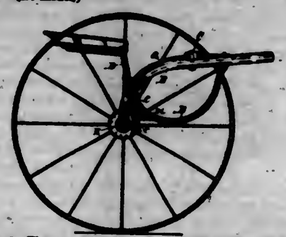
Claim.—1. The combination, in a button-forming mechanism, of a central suitably-mounted core surrounded by a sleeve capable of motion on said core, a cover mounted upon said sleeve and provided with central button-forming mechanism, the said mechanism being connected with an arm traversing a slot in the cover, which slot is provided at its upper end with a cavity, and then extends therefrom with a descending grade, and then with an ascending grade, substantially as described.

2. The combination, in a button-forming mechanism, of the core C, carrying pin D, the sleeve E, provided with slot *e*, and the adjustable limited stop *s s' s²*, substantially as described.

3. The combination, in a button-forming mechanism, of the sleeve E, provided with a slot, *e*, a pin, D, traveling in said slot, and a stop device for limiting the movement of the pin in the slot, substantially as described.

4. The combination, in a button-forming machine, of the cylindrical core, a sleeve containing a helical slot, a pin projecting through that slot, and a lever or stop for preventing the movement of the pin to the end of the slot, and capable of removal from the path of the pin to allow the pin to complete its movement in the slot, substantially as described.

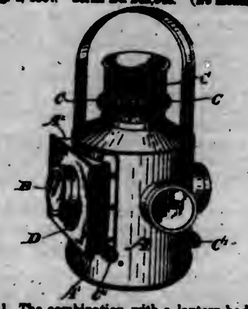
386,494. TWO-WHEELED VEHICLE. JOHN W. PHILLIPS and FRANK C. SEALEY, Kalamazoo, Mich. Filed Feb. 20, 1888. Serial No. 264,962. (No model.)



Claim.—1. The combination of the axle, spring, spring-bar, and a fulcrumed body having the rearwardly-extended brace-arms between which the ends of the spring-bar are attached, substantially as set forth.

2. The combination of the wheeled axle, the thills having the elegie cross-bar, the hanger-supports, which also form braces to the thills, said supports being attached to the cross-bar extending across the angle of the cross-bar and thills, thence down the bend of the thills and attached thereto, the fulcrumed body, spring, and the hangers jointedly attached to the lower end of said supports, substantially as set forth.

386,495. SIGNAL-LAMP. ADOLPH F. PRAHL, Indianapolis, Ind. Filed Aug. 1, 1887. Serial No. 245,943. (No model.)



Claim.—1. The combination, with a lantern-body, of ventilator-tubes arranged horizontally within said body, said tubes being open at their ends to the outer air and having perforated walls, substantially as set forth.

2. The combination, in a lantern, with the casing thereof, of ventilator-tubes arranged horizontally within said casing, a part of which cross the others, the ends of said tubes being open to the outer air and their walls being perforated, substantially as described, and for the purpose specified.

386,496. LACING-CORD FASTENER. CHARLES A. PERRIN, Cambridgeport, Mass. Filed Apr. 20, 1888. Serial No. 272,266. (No model.)

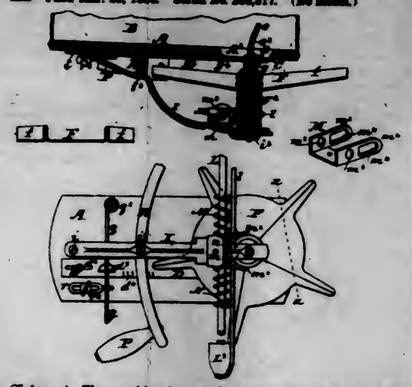


Claim.—1. The herein-described fastening for lacing-cords, consisting of the plate *c*, having the loop or eye *c²*, the elastic strap to

which the said plate is attached, and a lacing-cord, the said loop or eye being adapted to engage a lacing-hook, as described, and to hold thereon the said lacing-cord passed around it, substantially as described.

2. The herein-described fastening for lacing-cords, it consisting of the plate *c*, having the opening c^2 for the lacing-cord, and the loop or eye c^3 for the lacing-hook, around which the lacing-cord passes, substantially as and for the purposes set forth.

386,497. HAND-SEEDER. SILAS B. RITTENHOUSE, Liberty Mills, Ind. Filed Mar. 30, 1888. Serial No. 269,317. (No model.)



Claim.—1. The combination of the bottom board of a seeding-machine, having the opening A^3 therein, the bottom plate, C, having a semicircular opening, and the slide D, having its front edge, *d*, concave, with the distributer-wheel, its shaft passing through the plate C, and the stirrer *k* thereon, substantially as and for the purpose described.

2. The combination of the bottom board, A, having an opening therein, the bottom plate, C, and the seed-controlling slide, with the distributer-wheel and its shaft, having the stirrer *k* thereon, and its upper end bent to one side at c^2, substantially as and for the purpose described.

3. The combination of the bottom board, A, the bottom plate, C, the oil-cup *g* under said plate, the distributer-wheel and its shaft, and the bracket I, having an oil-cup therein for said shaft, substantially as and for the purpose described.

4. The distributer-wheel F, of sheet metal, having the ribs or ledges *f*, of two thicknesses, bent up and folded together therefrom and integral therewith, the angles formed by said ribs with the body being the same on both sides of said ribs, whereby the soldering of ribs upon the body of the wheel is dispensed with, and said wheel can be revolved alternately in opposite directions and identical results obtained from said ribs, substantially as described.

5. The combination of the distributer-wheel, its shaft and supporting-bracket, with the operating cord-guide slotted for the passage of said cord and secured to said bracket, substantially as and for the purpose described.

6. The combination of the distributer-wheel, its shaft and supporting-bracket, and its operating-rod L and cord *l*, with the rod and cord-guide M, pivotally secured to said bracket, substantially as and for the purpose described.

7. The combination of the distributer-wheel, its shaft and under bracket, and the operating-rod L and rod-guide, with the double coil-spring N upon said rod on the sides of said guide-rod, and a connecting-link, *n*, integral with both coils of said spring and passing under the bracket and rod-guide to unite said springs, substantially as described.

8. The combination of the distributer-wheel, the shield, and the bottom board of a hand-seeder, with a handle, P, secured to the shield of said seeder, substantially as and for the purpose described.

9. The combination of the bottom board, A, and handle P on one side thereof, the grain-controlling slide D, having lug d^3 integral therewith, and the rod *q*, pivoted to the board A, and passing through said lug and extending beyond the board A toward the handle P, with the adjustable stop-guide *r*, substantially as and for the purpose described.

386,498. SMOKE-CONSUMER. BENJAMIN ROSSMAN, Indianapolis, Ind. Filed Mar. 12, 1887. Serial No. 230,736. (No model.) Patented in England Feb. 14, 1887, No. 2,216.

Claim.—1. The combination, in a smoke-condenser, of a water-supply pipe, a chamber provided with numerous orifices and connected to said pipe, and a screw attached to said chamber and extending up into the portion of pipe which enters it, whereby said chamber will be given a rotary motion by the force of the water.

386,498.



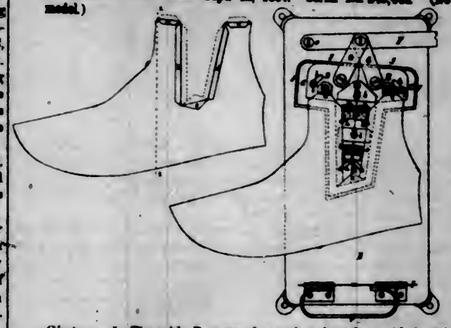
2. The combination, in a smoke-condenser, of a water-supply pipe leading to the interior of said condenser and a rotary hollow bulb or globe secured to its inner end and provided with orifices through which the water may discharge in the form of fine streams or spray.

386,499. FIRE-KINDLER. JAMES H. SIMPSON, Brooklyn, N. Y. Filed Nov. 4, 1887. Serial No. 254,203. (No model.)



Claim.—A fuel supply and firing package containing inconbustible absorbent material and having solid ends and a portion of the length of its casing formed with open-work and a portion thereof solid, said solid portion forming a reservoir for an additional supply of fuel, substantially as described.

386,500. MACHINE FOR CORING UPPERS. CHARLES W. SIMPSON, Milford, Mass. Filed Sept. 12, 1887. Serial No. 249,444. (No model.)



Claim.—1. The table B, secured to a bench and provided with an opening in its top to receive the chambered heater C, secured thereto and in said opening, and provided with pipes to convey steam from a steam boiler or generator into it to heat it, in combination with the folding and pressing plates D E, substantially as shown and described.

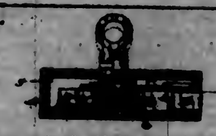
2. The table B, secured to a bench and provided with an opening in its top to receive a chambered heater, C, secured thereto and in said opening, and provided with pipes to convey steam from a steam boiler or generator into it to heat it, in combination with the folding and pressing plates D E, provided with inclined slots to receive studs projecting from the top of said heater to guide said plates in their movements, the folder and presser H, springs *k l*, screws *m*, gages *n*, connecting-rods G G, and lever F, pivoted to the table, all essentially as shown and set forth.

3. The table B, secured to a bench and provided with an opening in its top to receive the chambered heater C, secured thereto and in said opening, and provided with pipes to admit of its being heated, in combination with the folding and pressing plates D E, provided with inclined slots to receive studs or screws projecting from the top of said heater to guide said plates in their movements, the folder and presser H, the springs *k l*, and screws to vary the tension of said springs, gages *n*, connecting-rods G G, and lever F, pivoted to the table, the plate I, provided with the opening *v* and secured to the bars *q*, connected by a handle, *r*, said bars being pivoted to the table B, all as shown, and substantially as described.

386,501. LOCK. GEORGE G. SMITH, St. Albans, Vt. Filed Sept. 22, 1887. Renewed June 26, 1888. Serial No. 278,594. (No model.)

Claim.—1. The combination, in a lock, with a suitable external case, A, a key-barrel, D, fitted to rotate therein, and whose inner end is formed with a flat surface or surfaces parallel with its axis, a key

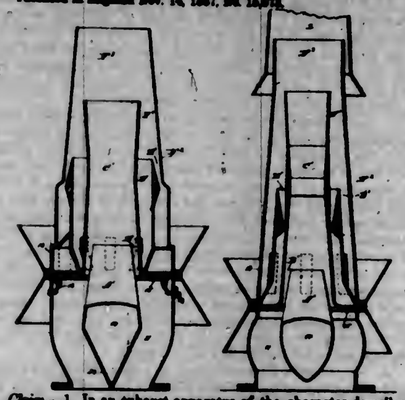
386,501.



adapted to be supported and guided by said barrel, and a bolt, B, to be actuated by said key, of a flat spring secured to the case, and whose free end, moving in a plane parallel with the axis of said barrel, springs into contact with the flat surface of the barrel to stop the retention thereof, and in position to be struck and depressed by the inner end of the key when in readiness to be turned to subdue the bolt, substantially in the manner and for the purpose herein set forth.

2. The combination, in a lock, of a bolt, a key for actuating the same, a rotating key-barrel to engage the key and turn with it and formed with an encircling groove or recess, a spring-plate whose free end engages the barrel to stop it, and is adapted to be carried by the key into register with the encircling groove of the barrel to permit its retention, and a lateral slotted guard-plate attached to the spring-plate and interposed between the barrel and the bolt, substantially in the manner and for the purpose herein set forth.

386,502. BLAST OR EXHAUST APPARATUS. JOHN Y. SMITH, Doylestown, Pa. Filed Jan. 11, 1888. Serial No. 260,484. (No model.) Patenied in England Nov. 14, 1887, No. 15,973.



Claim.—1. In an exhaust apparatus of the character described, the combination, with the inner ejector, of a second or outer ejector arranged with its steam-nozzle in advance of the steam-nozzle of the inner ejector, said ejectors receiving steam from a chamber or passage common to both and delivering into a common passage or flue through independent combing-flues, substantially as described.

2. In combination with the smoke-box and the chimney or smoke-stack, an exhaust apparatus, and an adjustable flue interposed between the delivery end of the exhaust apparatus and the passage or opening into the smoke-stack, and co-operating with the latter to close or open direct communication between the smoke-box and smoke-stack, substantially as described.

3. In combination with the smoke-stack and blast or exhaust apparatus, a movable flue interposed between the delivery end of the exhaust apparatus and the opening in the smoke-stack, said flue co-operating with the blast apparatus to form a supplemental ejector, and with the smoke-stack to act as a damper, substantially as described.

4. In combination with the smoke-box or uptake and the smoke-stack of a locomotive-boiler, a blast apparatus receiving steam from the cylinders and containing an inner and an outer ejector, and a vertically-movable flue surrounding the delivery end of the two ejectors and interposed between the latter and the opening into the smoke-stack, substantially as described.

5. In a locomotive-boiler, and in combination with the exhaust apparatus located within the smoke-box, a movable flue interposed between the delivery end of the exhaust apparatus and the opening into the smoke-stack, and co-operating with the latter to control the direct draft or passage from smoke-box into the smoke-stack, and adjusting devices convenient to the engineer for actuating said movable flue, substantially as described.

6. In an exhaust apparatus for locomotive and other similar boilers, located within the smoke-box and delivering into the smoke-stack, said exhaust apparatus comprising an inner ejector with an inlet opposite the lower series of flues, an outer ejector having its air-inlet above the inlet of the inner ejector, a supplemental combing-chamber into which both ejectors deliver, and an air-inlet to said chamber opening into the upper portion of the smoke-box, substantially as described.

7. In an apparatus such as described, the combination of an inner and an outer ejector, each provided with a separate combing-flue, said combing-flues opening into a flue or passage common to both ejectors, substantially as described.

8. In an apparatus such as described, the combination of an inner ejector provided with air and steam nozzles and a combing-flue, a second ejector surrounding the first-mentioned ejector and provided with an independent air-supply, steam-nozzle, and combing tube or passage, and a combing tube or flue common to both of said ejectors, substantially as described.

9. In an exhaust apparatus such as described, the combination, with an inner ejector communicating directly with the steam-supply passage, of a second or outer ejector detachably secured to said inner ejector and receiving steam therefrom, substantially as described.

10. In an ejector or blast apparatus, and in combination with the steam-nozzle thereof, a compression-chamber communicating with the steam-passage below or in rear of the nozzle, substantially as described.

11. In an ejector or blast apparatus wherein exhaust-steam from a cylinder or steam in successive blasts is projected into a passage leading to a nozzle or escape-orifice, and in combination with the latter, a closed compression-chamber communicating with the steam-supply passage, substantially as and for the purpose set forth.

12. In an exhaust apparatus such as described, and in combination with the inner and outer ejectors, their steam passages and nozzles, the compression-chamber communicating with both of said nozzles, substantially as described.

13. In an exhaust apparatus such as described, the combination, with an inner ejector communicating with the exhaust-steam passage, of an outer ejector receiving steam through ports in said inner ejector, a valve controlling said ports, and a compression-chamber connected to said outer ejector below or in rear of said steam-ports, substantially as described.

14. In combination with the cylinders of an engine, and the exhaust-steam passages leading therefrom, an exhaust or blast apparatus such as described, provided with two or more separate ejectors, a steam-passage common to all the ejectors, a hollow bridge or wall intermediate said steam-passage, and the exhaust-steam passages leading to the cylinders, substantially as described.

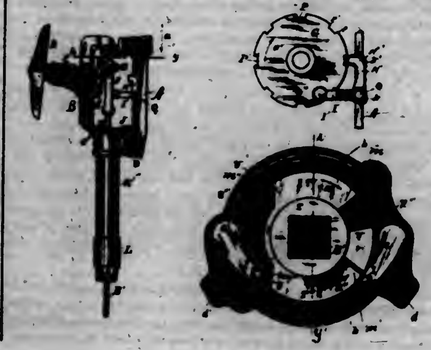
15. In combination with the two passages or chambers into which the exhaust-steam from the cylinders is delivered, an ejector whose lower or receiving end is divided by a hollow wall into two sections, each communicating with one of the steam-passages leading to the cylinders, and both opening into a common passage leading to the steam-nozzle, substantially as described.

16. In an exhaust apparatus such as described, the combination, with the annular steam-nozzle and central air-tube, of the cross-piece or bridge containing an air-passage communicating with the central air-tube, said cross-piece being provided with inclined upper edges and co-operating with the partition between the exhaust-chambers of the cylinders to convey the exhaust-steam from each cylinder directly to the nozzle, substantially as described.

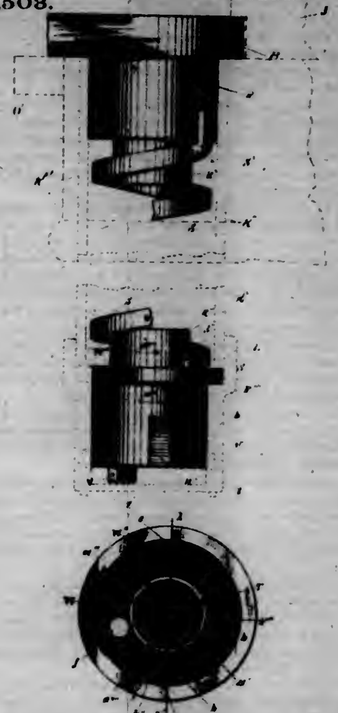
17. In an exhaust apparatus such as described, and in combination with the inner and outer ejectors and a compression-chamber, separate passages for receiving the exhaust-steam and delivering it directly to the nozzle, substantially as described.

386,503. WINDMILL. DANIEL C. SNYDER, Prospect, Ill. Filed June 15, 1888. Serial No. 103,672. (No model.)

Claim.—1. In a windmill, the combination of a vane and a wind-wheel-supporting casting, each pivoted on a vertical axis, a wind-wheel shaft journaled in said casting and normally parallel or approximately



886,503.



parallel to the vane, a stop or stops adapted to prevent the rotation of said casting from its normal position in one direction, but to permit such rotation in the opposite direction, a coiled spring connected at one end with one of said pivoted parts and having its free end in position to be connected with the other of said parts, means whereby the free end of said spring may be rotated in either direction and said spring thus coiled closer or uncoiled at will, and means whereby said free end, after such rotation in either direction, may be connected with said last-mentioned pivoted part, and said spring be thus made to assist or resist the rotation of the wind-wheel casting from its normal position in the direction permitted by said stop or stops.

2. In a windmill, the combination of a vane and a wind-wheel casting, each pivoted on a vertical axis, a wind-wheel shaft journaled in said casting and normally parallel or approximately parallel to the vane, suitable coacting stops attached to said vane and said wind-wheel casting, respectively, and adapted to permit the rotation of said wind-wheel casting from its normal position in one direction, but to prevent such rotation in the opposite direction, a coiled spring connected at one end with said wind-wheel casting and having its free end in position to be connected with said vane, means for rotating the free end of the spring in either direction, and thereby coiling or uncoiling the spring, and means whereby said spring, when coiled or uncoiled by such rotation of its free end, may be connected with said vane, and thus exert a force to resist or assist, as desired, the rotation of the wind-wheel casting from its normal position in the direction permitted by said stop or stops.

3. In a windmill, the combination of a vane-casting and a wind-wheel-supporting casting, each pivoted on a vertical axis, a coiled spring connected at one end with one of said pivoted castings, a pawl-and-ratchet mechanism, one of whose coacting parts is attached to the free end of said spring and the other part to the other of said pivoted castings, means for rotating the free end of said spring with reference to said pivoted castings, and means whereby, after such rotation, the parts of said pawl-and-ratchet mechanism may be brought into engagement and said spring be made to exert upon each of said pivoted castings a force tending to rotate it with reference to the other.

4. In a windmill, the combination of the vane-casting and the wind-wheel-supporting casting, each pivoted on a vertical axis, a coiled spring connected at one end with the wind-wheel-supporting casting and having its free end in position to be connected with the vane-casting, two oppositely-placed pawl-and-ratchet mechanisms, each adapted to connect the free end of said spring with said vane-casting, and means whereby the free end of the spring may be rotated in either direction, its rotation in one direction bringing one of said pawl-and-ratchet mechanisms into engagement and its rotation in the opposite direction bringing the other pawl-and-ratchet mechanism into engagement.

5. In a windmill, the combination of a vane-casting and a wind-wheel-supporting casting, each pivoted on a vertical axis, a coiled spring connected at one end with one of said pivoted castings, a pump-rod lying within said coiled spring and connected with the free end thereof by means whereby the rotation of the pump-rod rotates the free end of said spring, and means whereby the free end of said spring, when rotated by the rotation of the pump-rod into a given position with relation to said castings, shall be connected with the other of said pivoted castings, and said spring be thereby made to exert on each of said castings a force tending to rotate it with reference to the other.

6. In a windmill, the combination of a vane-casting and a wind-wheel-supporting casting, one of said castings having a vertical tubular base pivoted in the tower of the mill and the other a tubular base pivoted within the base of the first, a coiled spring attached at one end to the inner of said bases and having its axis coincident with the axis of said bases, a pump-rod passing through said spring and said pivoted bases, and connected with the free end of the spring by means whereby the rotation of the pump-rod in either direction rotates the free end of the spring, two oppositely-placed pawl-and-ratchet mechanisms, each adapted to connect the free end of the spring with said outer tubular base, and means whereby the rotation of the free end of the spring in one direction through a given angular space shall bring one of said pawl-and-ratchet mechanisms into engagement and a like rotation of said free end in the opposite direction shall bring the other pawl-and-ratchet mechanism into engagement.

7. In a windmill, the combination of a vane-casting and a wind-wheel-supporting casting, the base of one of said castings being pivoted in the windmill-tower and the base of the other being pivoted in the base of the first, a pump-rod passing through both of said bases and susceptible of rotation independent of both of them, a coiled spring surrounding said pump-rod and connected at one end with the inner of said pivoted bases, two oppositely-placed pawls attached to the outer of said bases, a notched sleeve or block attached to the free end of said spring and adapted to engage with one of said pawls when the free end of the spring is rotated through a given angular space in one direction from its normal position, and to engage with the other of said pawls when said free end is similarly rotated in the opposite direction, and means connecting said pump-rod with said notched sleeve, whereby the rotation of the pump-rod in either direction rotates said sleeve and the free end of said spring.

8. In a windmill, the combination of a vane-casting and a wind-wheel-supporting casting, the base of one of said castings being pivoted in a stationary vertical bearing and the base of the other being pivoted in the base of the first, a coiled spring connected at one end with the inner of said pivoted bases, and a notched sleeve attached to the free end of said spring, a pawl attached to the outer of said pivoted bases and adapted to engage with said notched sleeve when the free end of said spring is rotated through a given angular space from its normal position, a block journaled in said sleeve and having a limited rotation independent thereof, but adapted, when rotated beyond said limit, to rotate said sleeve, a pump-rod passing through said block, sleeve, spring, and pivoted bases, and adapted when rotated to rotate said block, and a wing or projection on said block adapted to disengage said pawl from the notch in said sleeve, whereby the rotation of said rod in one direction brings said pawl and notch into engagement and the reverse rotation thereof disengages said pawl and notch and disconnects the spring from said outer base.

9. The combination of the vane-casting having the vertical tubular base K L, pivoted in a suitable stationary bearing, the wind-wheel-supporting casting having the tubular base R, pivoted within the tubular base K, the spring S, lying within the tubular base K L and fastened at its upper end to the base R, the notched sleeve R", fastened to the lower end of the spring S and susceptible of rotation within the base K L, the pawl c', attached to the base K L and adapted to engage with the notch U' of the sleeve R" when the sleeve is rotated from its normal position through a given angular space in the direction requisite to coil the spring S closer, the pump-rod B', lying within said sleeve and spring, and means connecting said pump-rod with said sleeve and adapted to communicate rotary motion of the pump-rod to the sleeve.

10. The combination of the box L, the pawls c c', pivoted to the box, the sleeve R", journaled in the box and having notches U U', adapted to engage the pawls c c', respectively, the block T, journaled in the sleeve R" and having limited independent rotation therein, and the pump-rod B', passing through the block and adapted to rotate the same, substantially as shown and described, and for the purpose set forth.

11. The combination of the box L, provided with lug c, the sleeve R", journaled in the box and provided with the flange W, adapted to co-operate with the lug c and limit the rotation of the sleeve in the box, the block T, journaled in the sleeve and having wings T T', adapted to co-operate with a lug, V, on the sleeve, and thus limit the rotation of the block in the sleeve, and the oppositely-placed pawls c c', attached to the box L and adapted to engage, respectively, with corresponding notches, U U', in the sleeve R".

12. The combination, with the box L, having the lug c, of the sleeve R", journaled in said box and provided with the lug V, the notches U U', and the flange W, adapted to co-operate with the lug c and limit the rotation of the sleeve in the box, the pawls c c', pivoted to the box L and adapted to engage with the notches U U', respectively, the block T, journaled in the sleeve R" and provided with the wings T T', and the pump-rod B, passing through the block T and adapted to rotate the same, each of the wings T T' having one face adapted to strike the lug V and limit the rotation of the block in the sleeve, and having another face adapted to disengage one of the pawls c c' from the corresponding notch in the sleeve R".

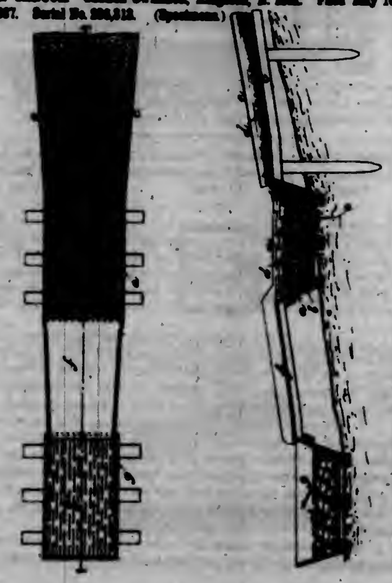
13. The combination, in a windmill, of a vane-casting and a wind-wheel-supporting casting, each pivoted on a vertical axis, a wind-wheel shaft journaled in said wheel-supporting casting, a notched plate or its equivalent mounted on the wind-wheel shaft, and a latch attached to the vane-casting and adapted to engage the notches of the plate when the wind-wheel swings out of the wind and to lock said plate and the wind-wheel shaft against rotation when in such engagement.

14. The combination, with the two main castings of a mill, each swinging about a vertical axis, of a wind-wheel shaft journaled in one of said castings and a vane attached to the other, a notched plate attached to and rotating with the wind-wheel shaft, and having a series of notches in its periphery, and a latch pivoted to the vane-casting and adapted to engage the notches in said plate when the wind-wheel swings out of the wind, the contact of each of said notches with said latch being approximately radial with reference to the axis of rotation of the plate, whereby the engagement of the latch and plate locks the shaft against rotation, substantially as and for the purpose set forth.

15. The combination of the wind-wheel shaft, the crank-plate G, mounted thereon and having in its periphery the notches P, formed substantially as set forth, and the latch H, pivoted to the vane-casting of the mill and adapted to engage the notches P as the wind-wheel swings out of the wind, substantially as shown and described, and for the purpose set forth.

16. The combination of the wind-wheel shaft, the crank-plate G, notched substantially as described, and the latch H, pivoted to the vane-casting of the mill and provided with the weighted arm I I', said latch being adapted to engage the notches of the plate G when the wind-wheel swings out of the wind and to lock the plate and the shaft against rotation when in engagement.

886,504. METHOD OF SEPARATING METALS FROM QUARTZ OR GANGUE. GEORGE SWEARER, Kingston, N. Mex. Filed May 16, 1887. Serial No. 238,312. (Specimens.)



Claim.—The herein-described method of separating metals from crushed quartz or gangue, which consists in discharging crushed quartz containing metal into a vessel containing water and a liquid insoluble in water and of greater density than water, but of less density than the quartz or gangue, whereby the crushed quartz will remain in and pass off with the water, whereas the metal will pass through the liquid (insoluble in water and of greater density than water) to the bottom of the vessel, substantially as described.

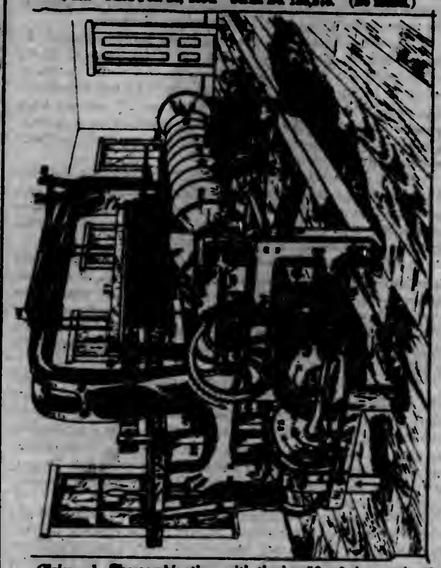
886,505. CAR-COUPLING. ANDREW DUNCAN, Gemmill, North-West Territory, Canada. Filed Mar. 19, 1888. Serial No. 268,017. (No model.)



Claim.—1. The combination, in a car-coupler, of the plate C, secured to the draw-head and having the lunk d', on which is formed the shoulder d, with the lever F, having the arm H, and engaging with the pin-lifter D, which is provided with the arm V, which carries the coupling-pin E, substantially as herein shown and described.

2. The combination of the plate C, having the inclined lunk d', and its shoulder d, with the inclined guide-plate I, secured to the car-crank, substantially as shown, and for the purpose herein set forth.

886,506. LOUIS ADRIEN J. THOMAS and WINFIELD S. THOMAS, Boston, Mass., assignors to the American Metallic Fabric Company, Portland, Me. Filed Feb. 28, 1888. Serial No. 265,572. (No model.)



Claim.—1. The combination, with the lay 50, of the toggle, the rest 57, the cam 46, its operating mechanism, and connections between the said cam and toggle, whereby the lay will be brought against said rest and there held during the flight of the shuttle, as set forth.

2. The combination, with the lay and the shuttle and their actuating mechanisms, of the rock-shaft 70, provided with an arm, 69, having a yielding connection with said shaft, and thus adapted to move independently thereof, and mechanism for rocking said shaft, whereby the weft will be prevented from kinking when it is slackened as the shuttle starts forward to pass through the shed, substantially as set forth.

3. The combination, with the loom-frame and the lay, of the rock-shaft 70, provided with yielding arm 69, torsional spring 72, pin 73, lever 74, pivoted to said frame and arranged to act on said pin, shaft 43, cam 76, and spring 77, for holding said lever in contact with said cam, substantially as set forth.

4. The combination, with the lay, of the vertically-movable raddle 79 80, means for operating the same, the pivoted raddle 83 84, having arm 85, the vertically-movable pin 86, connected to said arm, the lever

89, provided with an incline adapted to be engaged by said pin when the latter is depressed at the commencement of the forward movement of the lay, a shipper-lever for stopping and starting the loom, and connections between said shipper-lever and the lever 89, whereby when the weft is absent the loom will be stopped at the commencement of the forward movement of the lay, substantially as set forth.

5. The combination, with the lay, of the pivoted raddle 83 84, the pin 86, upheld thereby, the vertically-movable raddle 79 80, its operating-rod 78, having a projection; an collar 108, a lever operated by said collar, and connections between said lever and said pivoted raddle, whereby the latter will be tilted to lift the pin 86 when the vertically-movable raddle is lifted, substantially as set forth.

6. The combination, with the lay, of the vertical shaft 78, raddle 79 80, collar 108, secured to said shaft, lever 109, arranged to be engaged at one end by said collar, raddle 83 84, connected with said lever, pin 86, lever 105, the loom-frame to which said lever is pivoted, cam 104, spring 107, and shaft 43, whereby when said shaft 78 and raddle 79 80 are moved upward the raddle 83 84 will be tilted, substantially as set forth.

7. The combination, with the lay and the vertically-movable pin 86, supported thereby, and means for operating the said pin, of the lever 89, provided with an adjustable plate having an incline, 95, rod 93, connected with said lever, lever 93, slide 97, having an inclined projection, shipper-lever 20, and bracket 95, adapted to operate substantially as set forth.

8. The combination, with the movable slide 97, means for operating the same, the shipper-lever 20, and bracket 95, having a retaining-notch for said lever, of the longitudinally-movable rod 98, provided with torsional and retracting spring 99, and collar 101, having a projection, an arm or lever, 103, attached to said rod and adapted to engage said shipper-lever, whereby when said slide is moved the said shipper-lever will be disengaged from its retaining-notch and moved to effect the stopping of the loom, substantially as set forth.

9. The combination, with the loom-frame and driving-shaft 21, supported thereby, of the friction-clutch and driving-pulley 23 24, the clutch-lever 25, the arm or lever 26, the shipper-lever 20, the brake-lever 31, its spring 33, a sliding bar connected with said clutch-lever and provided with an incline, and a vertical bar, 37, whereby when the said shipper-lever is moved in the proper direction the parts forming the driving-clutch will be disconnected and the brake be simultaneously applied, substantially as set forth.

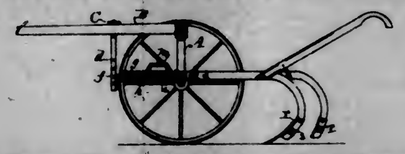
10. The combination, with a warp-roll provided with a longitudinal groove, of a grooved block or beam fitted in said groove, a clamping-bar adapted to be inserted in the groove of said block or beam, and attaching-devices, as screw-bolts 128, for securing said clamping-bar in place, substantially as set forth.

11. The combination, with the rolls 124 and 126, differentially geared, as described, and means for operating said rolls, of the intermediate pinion, 126, and the friction-rolls 127 and 128, whereby the woven fabric as it is taken up in the process of weaving is passed over and between said rolls and pressed and subjected to a uniform strain, thereby leveling and finishing the surface of the web, substantially as set forth.

12. The combination, with a pair of take-up rolls and their operating worm-gear wheel, of a shaft provided with a worm and a ratchet-wheel, a warp or let-off roll provided with worm-gear wheel, a second shaft carrying a worm, connections between said shafts, a pawl-carrier and pawl for operating said ratchet-wheel, the lay, and a device moving with the latter for imparting motion to said pawl-carrier, whereby said take-up and let-off rolls will be intermittingly and simultaneously operated from the lay, substantially as set forth.

13. The combination, with the take-up roll, of the shaft 132 and mechanism for rotating the same, connections for rotating said roll from said shaft, a gear-wheel, 140, on said shaft, a gear-wheel, 141, having a number of teeth different from the number of the wheel 140, a warp or let-off roll, and a train of gearing between the latter and the said gear-wheel 141, whereby the said take-up and let-off mechanisms may be simultaneously but differentially operated, substantially as set forth.

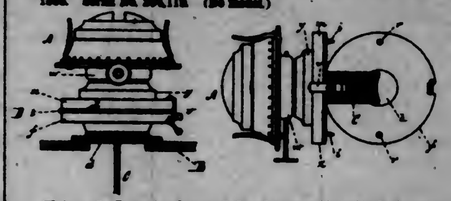
886,507. CULTIVATOR. HARVEY N. THEIS, Des Moines, Iowa. Filed Nov. 22, 1887. Serial No. 255,691. (No model.)



Claim.—1. The combination, with a cultivator-frame, of an evener, swinging hangers attached to the evener, frames having hooks for attachment to the axle or drag-bars, and buffer-springs working in said frames and adjustably attached to the swinging hangers, substantially as described.

2. The combination, with a cultivator-frame, of an evener, swinging hangers, and buffer-springs attached to the hangers and the drag-bars, frames for said springs, and a dynamometer or draft-registering device attached to the springs and frames, substantially as described.

886,508. LAMP. EDWARD TOBEY, Lowell, Mass. Filed Feb. 16, 1888. Serial No. 264,112. (No model.)

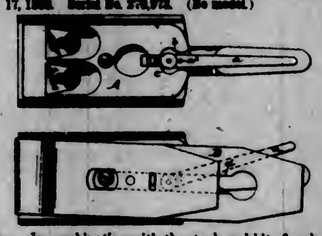


Claim.—1. In an incubator of the character described, the members *m* and *f*, composed of wood, mastic, rubber, or similar non-conducting material, the member *m* being provided with a screw-threaded socket-piece, as *y*, for connecting it with a burner, and the member *f* with a screw-threaded nipple, as *d*, for connecting it with the body of a lamp, said members being hinged together and provided with a catch for keeping them closed, substantially as described.

2. In an incubator of the character described, the members *m* and *f*, provided with the hinge *l*, catch *v*, and packing *z*, the member *m* having a screw-threaded socket-piece, as *y*, for connecting it with a burner, and the member *f* a screw-threaded nipple, as *d*, for connecting it with the body of the lamp, substantially as set forth.

3. In an incubator of the character described, the member *f*, provided with the holes *r*, and the member *m*, provided with the dowels *i*, adapted to enter said holes, said members being hinged together at *l* and provided with a catch, *v*, and packing *z*, and also with means for respectively connecting them with the body and burner of a lamp, substantially as described.

886,509. BENCH-PLANE. JOSEPH A. TRAFT, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Apr. 17, 1888. Serial No. 270,972. (No model.)



Claim.—In combination with the stock and bit of a plane, a lever for laterally adjusting said bit, and the rotary disk pivoted on the shorter arm of said lever and engaging the longitudinal slot of said bit, substantially as described, and for the purpose specified.

886,510. PADLOCK. WILLIAM P. TEGART, Lancaster, Pa., assignor of one-third to Samuel B. Slaymaker, same place. Filed Mar. 3, 1888. Serial No. 266,098. (No model.)



Claim.—1. The combination, with the case having slots to receive the journals of the tumblers and filling-plates to keep said journals in place, of the tumblers having journals at one end and springs bearing upon the inner faces of said tumblers to force the vibrating ends of the same apart, substantially as and for the purpose specified.

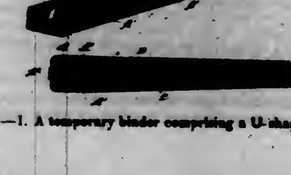
2. The combination, with the case having slots to receive the journals of the tumblers and filling-plates to keep said journals in place, of the tumblers journaled at one end in said slots and curved springs passing around the journaled bearing-lips of said tumblers and having their ends resting against the inner faces thereof to force the vibrating ends of the same apart, substantially as and for the purpose specified.

3. The tumblers journaled in the case at their inner ends and having inwardly-projecting arms interlocked at the other, with a space between said arms to receive the key to draw these ends of said tumblers together, and springs connected with said tumblers to force the vibrating ends of the same apart, substantially as and for the purpose specified.

4. The combination, with the case and shackle, of tumblers extending lengthwise between the top and bottom of the shell or case and each having projections on the outer sides or faces thereof to engage notches in the shackle, and means for throwing the tumblers into engagement with said shackle, the tumblers being constructed to be disengaged from the shackle by a key, for the purpose specified.

5. The combination, with the case and shackle, of tumblers C C, journaled in the top of the case, extending toward the bottom thereof and provided on their outer faces with projections *c*, adapted to engage notches *b'* in the arms of the shackle, a spring bent around arms D, projecting inwardly from the upper ends of the tumblers and bearing against the inner faces of said tumblers, and rectangular arms G, projecting inwardly from the lower ends of the tumblers and lapping each other, so as to form an opening to admit the key, all constructed and operating substantially as specified.

886,511. LOCK. CHARLES R. WILLIAMS, Peoria, Ill. Filed Dec. 21, 1887. Serial No. 258,027. (No model.)



Claim.—The combination, with the lock-case A A, of the sliding block C, similarly recessed upon two opposite faces, the stud E and spring I, adapted to be inserted in either of such recesses, and the slots F F' in each of the plates, all constructed, combined, and co-operating substantially as set forth.

886,512. RAILWAY-CAR. EDMUND VERDEMANN, Chicago, Ill. Filed Mar. 1, 1888. Serial No. 265,827. (No model.)

Claim.—1. The combination, with a railway-car, of two extended housed-in platforms, one at either end thereof, each platform being closed at the end and being provided with sliding side doors, substantially as described.

2. The combination, with an electric-railway car, of a box or casing for covering the motor, the box being located at one side of the car and extending about half-way across the same, a free passage being left between the box and the side of the car.

3. The combination, with an electric-railway car, of a box or casing for the motor located at one side of the car, the car being provided with a door in its side through which access may be had to the motor.

886,513. TEMPORARY BINDER. WILLIAM H. WEBB, New York, N. Y. Filed Jan. 24, 1888. Serial No. 261,722. (No model.)

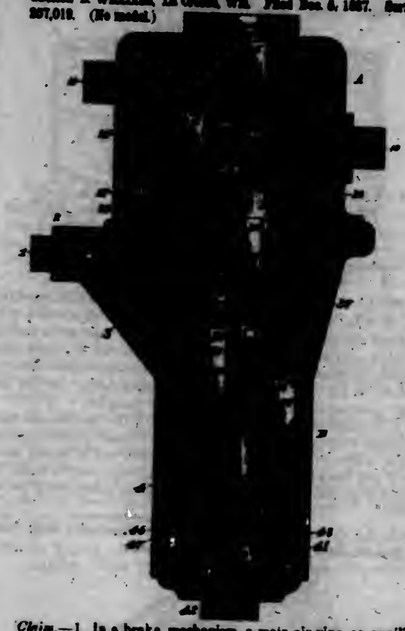
Claim.—1. A temporary binder comprising a U-shaped strip of metal having a spring-tongue formed therein near the edge thereof, substantially as specified.

2. A temporary binder consisting of a U-shaped strip of metal having opposite spring-tongues formed therein, substantially as specified.

3. The combination of a temporary binder, consisting of a U-shaped strip of metal having integral and oppositely-arranged spring-tongues with a cover for the same, and a tablet of paper inserted between said spring-tongues, substantially as specified.

4. The combination of the strip A, having the spring-tongues A' and clips A', with the cover B, secured to said binder by said clips, and the tablet C, mounted between said tongues, substantially as specified.

886,514. FLUID-PRESSURE AUTOMATIC-BRAKE MECHANISM. GEORGE B. WILLIAMS, La Crosse, Wis. Filed Dec. 6, 1887. Serial No. 257,012. (No model.)



Claim.—1. In a brake mechanism, a main air-pipe, an auxiliary reservoir, a brake-cylinder, and a triple valve, in combination with an auxiliary-valve device actuated by the piston of triple valve for admitting compressed air from the main air-pipe into the auxiliary reservoir through a secondary feed channel, pipe, or groove for the purpose of recharging the auxiliary reservoir by means of a gradual increase of pressure in the main air-pipe and without releasing the brakes, substantially as set forth.

2. In a brake mechanism, a main air-pipe, an auxiliary reservoir, a brake-cylinder, and a triple valve, in combination with an auxiliary-valve device actuated by the piston of triple valve in such manner that the preliminary upward traverse of said piston admits compressed air from the main air-pipe into the auxiliary reservoir through such auxiliary-valve device and a secondary feed channel, pipe, or groove for the purpose of recharging the auxiliary reservoir by means of a gradual increase of pressure in the main air-pipe and without releasing the brakes, and which piston, by a further upward traverse, admits air from the main air-pipe into the auxiliary reservoir through the ordinary feed-groove simultaneously with the release of the brakes, substantially as set forth.

3. In a brake mechanism, a main air-pipe, an auxiliary reservoir, a brake-cylinder, and a triple-valve, in combination with an auxiliary-valve device actuated by the piston of triple valve for admitting compressed air from the main air-pipe into the auxiliary reservoir through a secondary channel, pipe, or groove governed and controlled by such valve device, as well as through the ordinary feed-groove in piston-chamber round edge of piston, in order that the auxiliary reservoir may be recharged, when the brakes are applied, with or without the release of the brakes, as may be desired, substantially as set forth.

4. In a triple-valve device, a case or chest, a piston fixed upon a stem and working in a chamber therein, a valve moving with the piston-stem and governing-ports, and passages in the case leading to connections with an auxiliary reservoir, a brake-cylinder, and to the atmosphere, respectively, an auxiliary valve actuated by the piston-stem

and controlling communication between passages leading to connections with a main air-pipe and a brake-cylinder, respectively, in combination with a second auxiliary valve actuated by the piston of triple valve and controlling a secondary communication between the main air-pipe and the auxiliary reservoir for the purpose of recharging the auxiliary reservoir, when the brakes are applied, by means of a gradual increase of pressure in the main air-pipe and without releasing the brakes, substantially as set forth.

5. The valve 32, actuated by piston 12, having graduating-valve 33 and port 34, in combination with port 35, cavity 36, and channels 37, 38, and 10, substantially as set forth.

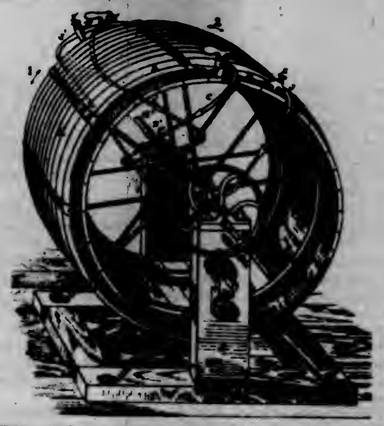
386,515. CIDER-PURIFIER. JOHN W. WILLIAMS, Dexter, Mich. Filed May 7, 1888. Serial No. 273,013. (No model.)



Claim.—1. In a cider-purifier, the combination of the receiver or tank, the filter removably supported on the bottom thereof and provided with inclined sides formed of fabric and with imperforate bottom and top, a pulpous filtering material covering the fabric, a lateral discharge-opening, and transverse quilting-partitions provided with vent-apertures on top and bottom apertures communicating with the discharge, substantially as and for the purposes specified.

2. In a cider-purifier, the combination, with the receiver, of a filter of inverted-V-shape form with inclined sides formed of porous fabric and the bottom and sides imperforate, the partitions D, having apertures F and vents G, the vent-pipe H, the faucet L, and the board K, supported on the filter, all arranged to operate substantially as described.

386,516. AIR-PUMP. FRANK J. WELLS, Winchester, Mass. Filed Mar. 12, 1887. Serial No. 230,594. (No model.)



Claim.—1. In a vacuum-pump, the combination of a curved pipe containing a body of mercury, and smaller tubes provided with suitable stop-cocks running from each end of the pipe to and through the ends of the axle of the machine, substantially as shown and described.

2. In a vacuum-pump, the combination of a pipe having a piston of mercury curved around a supporting-frame, tubes leading from each end of the pipe provided with suitable stop-cocks, and an axle made hollow at each end to allow the flow of air, one end of the axle being connected to a stationary pipe leading to the vessels to be exhausted, the other end similarly connected leading to the outer air or to auxiliary pumps, the whole system of pipes, tubes, and hollow axle being connected by air-tight joints, substantially as herein shown and described.

3. In a vacuum-pump, the combination of an axle made hollow at each end, either with or without an inclosed tube, a reservoir tube connected to one end of the axle and leading to the globes or other articles to be exhausted, (the connections to be all air-tight,) and the system of pipes, stop-cocks, and tubes, whereby the air is exhausted by the action of mercury flowing through a pipe, substantially as herein shown and described.

4. In a vacuum-pump, the combination of the curved pipe A', Fig. 6, containing a body of mercury, and the tubes K K' R R', provided with suitable stop-cocks, *x x' x x'*, with a supporting-frame, O, made to vibrate upon an axle, T, so that the mercury in the tube may by its own weight be made to pass by the motion of the frame from one end of the tube to the other and back again, substantially as described and shown.

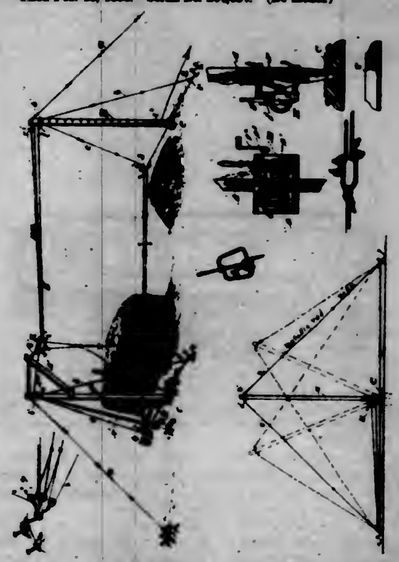
5. In a vacuum-pump, the combination of the curved pipe A', Fig. 6, containing a body of mercury, the pipes provided with suitable stop-cocks, *x x' x x'*, the supporting-frame and the axle having a hollow end, the tube, pipes, and axle forming a continuous air-tight passage from the mercury to and through one end of the axle to the stationary pipe leading to the globes to be exhausted, substantially as shown and described.

386,517. HOSE-REEL. LEANDER W. WEED, Fontanelle, Iowa. Filed Apr. 16, 1888. Serial No. 270,894. (No model.)



Claim.—A hose-ring for hogs, composed of a single piece of wire bent into a triangular shape, and provided with a barb that projects from one corner outwardly, substantially as shown and described, for the purposes stated.

386,518. HAY-STACKER. MELVIN A. TRAILEY, Lakeside, Ohio. Filed Feb. 16, 1888. Serial No. 264,057. (No model.)



Claim.—1. In a hay-stacker, a set of poles, a cable for the hay-carrier between the poles, and guys by which the poles may be inclined to either side of a vertical position, whereby the hay may be unloaded at different points on a stack, substantially as set forth.

2. In a hay-stacker, a set of poles and a carrying-cable between the poles, in combination with flexible guys at the sides of the poles to incline the poles laterally, and a windlass to which the guys are connected, substantially as set forth.

3. In a hay-stacker, a set of poles and guys at the sides of the poles, with pulleys at the points where the guys are staked to the ground, and a windlass to take up and let out the guys when the poles are inclined laterally, substantially as set forth.

4. In a hay-stacker, a set of poles and flexible guys at the sides of the poles, with pulleys over which said guys travel, and a windlass tapering from its ends toward its center, to which said guys are attached and by which they are tightened and operated, substantially as set forth.

5. In a hay-stacker, two posts, one at each end of the stacker, and an elastic cable stretched between the poles, in combination with elastic guys to support the posts laterally, and a windlass over which the guys are run and by which they are operated to incline the poles laterally, substantially as set forth.

6. In a hay-stacker, a pair of posts and a cable stretched between the posts, in combination with guys on the posts to stretch said cable, elastic guys supporting the posts laterally, pulleys at the corners, over which said guys run, and a single windlass on which the lateral guys are wound, whereby both posts may be simultaneously inclined to either side, substantially as set forth.

7. In a hay-stacker, an elastic carrier-cable, a block having a pulley arranged within the cable passes, and a link to hook on the pole, in combination with a cross-pin at the opposite extremity of the cable for engaging the carrier, substantially as set forth.

8. In a hay-stacker, an elastic cable and supports for the cable at its ends and connections for the cable with its supports consisting at one end of a pulley-block and at the other end of a yoke with a cross-piece for engaging and holding the carrier, substantially as set forth.

9. In a hay-stacker, a carrier provided with a substantially A-shaped recess in its bottom and an open slot with flaring projections at the end of the carrier near its top, in combination with a hay-hook link that enters the A-shaped recess, a yoke that enters the open slot, a disk to engage the yoke, and a pivoted lever to support the hay-hook link, substantially as set forth.

10. In a hay-stacker, a carrier provided with locking and releasing mechanism for the hay-hook-supporting link, and the yoke to hold the carrier on the cable, consisting of a bell-crank lever having a catch on its lower extremity to engage the hay-hook link, and a push-bar for the lever, with a notched disk for engaging the yoke which is locked by the upper arm of the lever, substantially as set forth.

11. In a hay-stacker, a carrier provided with a recess in its bottom, a bell-crank lever having a catch on its lower extremity and pivoted to swing the catch into the said recess, a push-bar attached to the upper arm of the lever and extending down to said recess, and a hay-hook link, substantially as set forth.

12. In a hay-stacker, a carrier having a recess with a flaring mouth leading thereto at an upper corner in the carrier, in combination with a rotating locking-disk set in said recess, a yoke for holding the carrier, and a catch for the disk to prevent its rotation, substantially as set forth.

13. In a hay-stacker, a carrier having an open recess in its side near the top, a rotating disk set in said recess to engage the yoke which holds the carrier, said disk having recesses on its periphery to engage the yoke and the pivoted lever, and a stop to limit the rotation of the disk, substantially as set forth.

14. In a hay-stacker, a carrier having a recess in its bottom and a recess at one side near its top, in combination with a bell-crank lever having a catch on its lower arm, a push-bar extending from the lower recess to the upper arm of said lever, and a notched disk set in the upper recess adapted to be locked by the upper arm of the lever, substantially as set forth.

15. In a hay-stacker, an elastic cable having a cross-pin fixed thereto to hold the carrier, in combination with a carrier having a recess at one side near its top with flaring projections, a rotating locking device having a catch to engage said cross-bar in said recess, and a pivoted catch to hold the locking device, substantially as set forth.

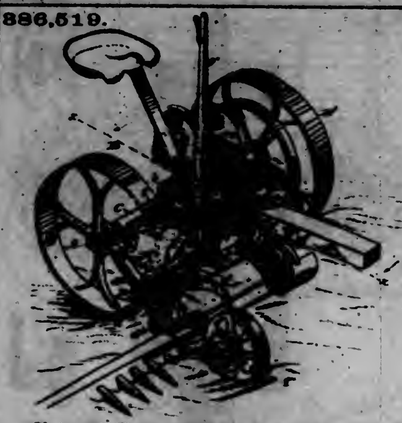
16. In a hay-stacker, a carrier having a draft-rope attached at one side and passing over a pulley at the other side, with a hay-hook suspended between the point of attachment and the pulley, in combination with a bell-crank lever pivoted in the carrier and having a catch to engage a link on the hay-hook, a push-bar on said lever, and a locking device for the lever to hold the catch thereon in engagement with the hay-hook link, substantially as set forth.

17. In a hay-stacker, a pair of posts, and an elastic cable stretched between said posts and forming a double track, the ends of said cable being connected to a cross-piece in a yoke at one post, and passing around a horizontal pulley at the other, all in combination, substantially as set forth.

18. In a hay-stacker, a carrier having a bell-crank lever, a disk in the upper part of the carrier, and a yoke engaged by the disk, in combination with a counter-weight and cord by which the carrier is returned to be loaded, substantially as set forth.

19. In a hay-stacker, a carrier having pulleys at each side, a double-track cable on which said pulleys run, and a pulley-block having shoulders adapted to rest against the end of the carrier and provided with links to attach the block to one of the posts of the stacker, substantially as set forth.

386,519. MOWING-MACHINE. HENRY BRADLEY, Havana, N. Y. Filed Feb. 13, 1888. Serial No. 263,886. (No model.)



Claim.—1. The combination, with the draft-frame and main frame, the latter having sleeves C and C', provided one with a pendent arm, c, and the other with the elastic coupling-arm C², of the thrust-bar and shoe D, having both a longitudinal and a transverse pivotal connection with said main frame, and provided with the stepped flange f, the gag-lever G, pivoted on said thrust-bar, the rack G', pivoted to said gag-lever and adapted to engage the draft-frame, as described, the arm or step H, pivoted on said draft-frame, said gag-lever and arm or step being both adapted to rest on the thrust-bar on the stable side of its longitudinal pivot, and the lifting-lever F, also pivoted on said draft-frame and connected with the thrust-bar and shoe at a point on the grain side of the longitudinal pivot of the latter, all substantially as and for the purpose specified.

2. The combination, with the draft-frame and the longitudinally-pivoted thrust-bar and shoe, of the gag-lever G, pivoted on said thrust-bar, the rack-bar G', pivoted to said gag-lever and provided on its upper end with ratchet-teeth g, adapted to engage a tooth, c', on the draft-frame, and the sliding block or shoe F' and spring F' on said draft-frame for holding said rack-bar normally out of engagement with said frame, substantially as described.

386,520. AUTOMATIC GAS-VALVE. MELVILLE C. BRAGDON, Newton, Mass. Filed Apr. 19, 1887. Serial No. 235,258. (No model.)



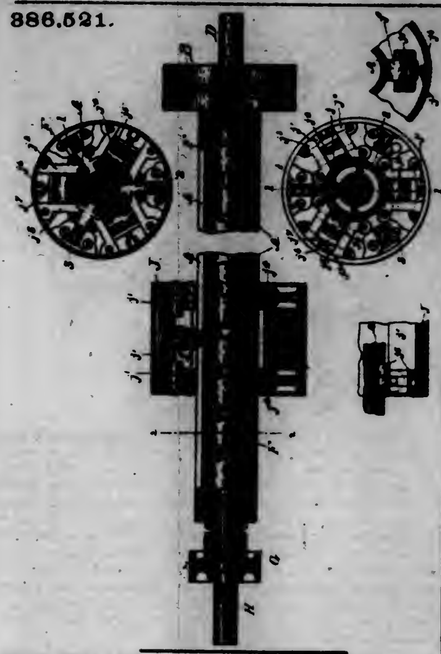
Claim.—1. The combination of the burner-tube provided with brackets *f f'* at each side of the tip, with a gas-valve having a controlling-arm, *d*, working in one of said brackets, and an expansive rod or bar, *e*, located in position to be exposed to the flame and extending from one to the other of said brackets and constituting a locking device for said valve-controlling arm, substantially as described.

2. The combination of the burner-tube provided with brackets at opposite sides of the tip, with a gas-valve having a controlling-arm working in a notch in one of said brackets, a rod connected with the other bracket, extending over the burner, and terminating opposite one side of said arm, and a co-operating adjustable clamping member secured in the bracket at the other side of said arm, substantially as described.

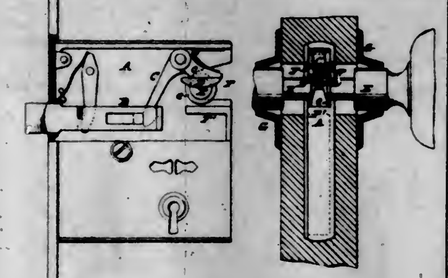
386,521. CARD-GRINDER. JAMES BUNN, Westbrook, Me., assignor to himself and Woodbury Kidder Bunn, same place. Filed June 9, 1887. Serial No. 240,603. (No model.)

Claim.—In a card-grinder, hollow shaft A, having a longitudinal slot, screw F, and drum J, provided with a dog, *j*, which engages screw F through the longitudinal slot in shaft A, in combination with rollers *f*, which are intermediate drum J and shaft A, and keep the drum out of contact with the shaft, substantially as and for the purpose set forth.

886,521.



886,522. LATCH-CASE. CHARLES W. BULLARD, Chicago, Ill. Filed Mar. 5, 1888. Serial No. 266,263. (No model.)

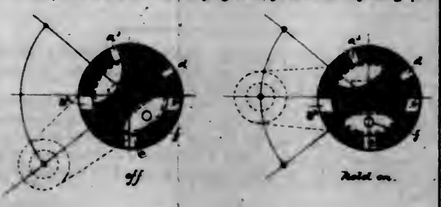


Claim.—In a door-latch, the combination of the latch-case A, having an opening, F, extending through its edge, the knob shank or spindle E, engaging the side of the latch-case through said opening and provided with lug or cam D, and the rose or escutcheon G, essentially as set forth.

886,523. AUTOMATIC COCK-VALVE. J. FAIRFIELD CARPENTER, Berlin, Germany. Filed Feb. 7, 1888. Serial No. 263,204. (No model.)

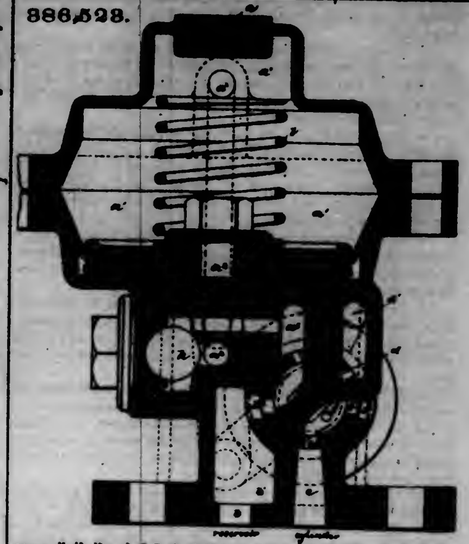
Claim.—1. An automatic cock apparatus comprising a plug-cock, *y*, having various passages a^5, b^5, *c*, *d*, *i*, and *f*, substantially as and for the purposes described, in combination with a diaphragm, *x*, used to turn said plug-cock *y* through different degrees of a circle by means of variations of pressure induced on opposite sides of said diaphragm.

2. In combination with a plug-cock, *y*, and the adjoining pas-



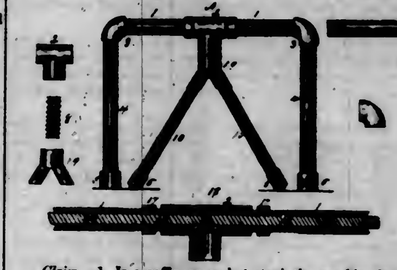
Off. *Acted on.*

886,528.



sages d' d^3 d^4 and *f f*, the balance-valve *s*, for the purpose of automatically regulating the exhaust of the main conduit *a* by means of the pressure then in the cylinder.

886,524. COFFIN OR CASKET STOOL. BENJAMIN G. CARLER, Cleveland, Ohio. Filed Jan. 19, 1888. Serial No. 261,511. (No model.)



Claim.—1. In a coffin or casket stool, the combination, with a bearer having standards, of an intermediate movable T provided with a standard or standards, and stops on the bearer to limit the movement of the T and straddle of the standards, substantially as and for the purpose specified.

2. In a coffin or casket stool, the combination, with a bearer having standards, of an intermediate movable T provided with a standard or standards, and adjustable stops on the bearer, substantially as and for the purpose specified.

3. In a coffin or casket stool, the combination, with a bearer, of an intermediate movable T adapted to turn on the threaded ends of the bearer-sections, and provided with a standard or standards, and jam-nuts on the bearers for limiting the movement of the T, substantially as and for the purpose specified.

4. In a coffin or casket stool, the combination, with a bearer having standards, of an intermediate movable T provided with a standard or standards, and a friction-clamp which binds the T on the bearer to produce friction between the parts, substantially as and for the purpose specified.

5. In a coffin or casket stool, the combination, with a bearer having standards, of a central pipe or rod, a movable T provided with a standard, and a set-screw which passes through the central rod of the bearer and binds on the T, substantially as and for the purpose specified.

6. In a coffin or casket stool, the combination, with a bearer provided with standards, of a movable T and a Y-fitting provided with standards, substantially as and for the purpose specified.

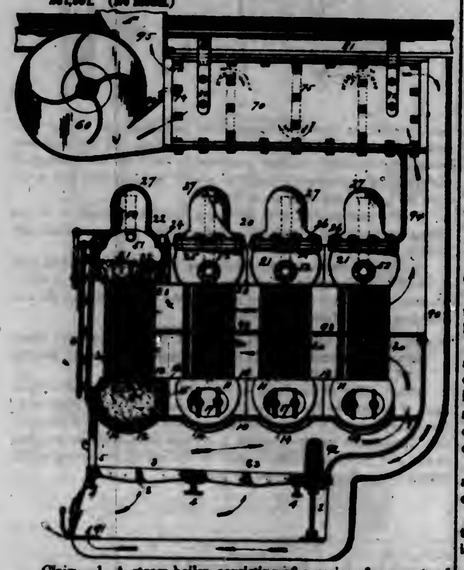
886,525. AXLE-BOX. LEMUEL B. CLARK, Stoughton, Wis. Filed Nov. 26, 1887. Serial No. 256,572. (No model.)

Claim.—An axle-box having at its inner end an outwardly-projecting flange integral therewith, which axle-box is inserted and secured in a hub provided with a recess at its inner end about the box, the box being so inserted in the hub as to form a channel or chamber about the axle-box between the flange and the bottom of the recess in the end of the hub, in combination with an axle having a shoulder thereon and integral therewith, which shoulder fits a chamber-flange of proper size to receive the flange of the box, and which flange integral with the axle projects around and beyond the flange on the axle-box nearly to the bottom of the recess in the inner end of the hub, which axle-flange is provided in its under side with a recess, K, beyond the flange on the box and only opposite to the chamber formed between the flange on the box and the bottom of the recess in the end of the hub, substantially as described.

886,525.



886,526. STEAM-BOILER. H. BRADY CLARK, Washington, D. C., and FRANK B. KING, Baltimore, Md. Filed Mar. 31, 1888. Serial No. 267,991. (No model.)



Claim.—1. A steam-boiler consisting of a series of segments of the character described placed side by side and secured together, abutting and having direct communication with each other, forming the lower member of a unit, a series of segments similarly placed and connected forming the upper member, and connecting-tubes between said members.

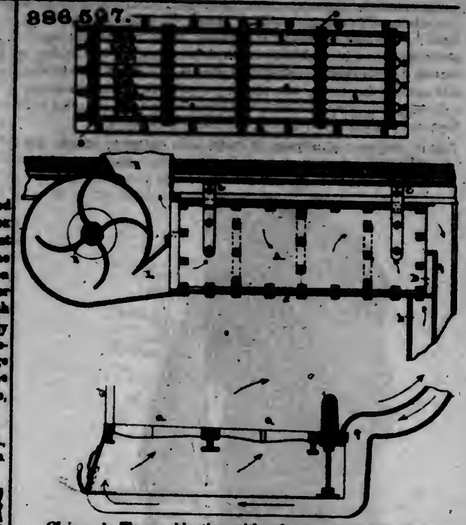
2. In a steam-boiler, the combination of a flat plate forming the tube-plate of a boiler member and a series of arched sections attached to said plate, forming therewith a series of segments arranged side by side and connected together, substantially as described.

3. The combination, in a steam-boiler, of a bottom member and a top member connected thereto by tubes, a bonnet on the top member, said bonnet provided with a steam-dome, and a steam-pipe leading from the dome through the top member to the outside of the boiler, as set forth.

4. In a steam-boiler, the combination, with a steam-section having a number of steam-domes, of separate pipes leading down from the top of the domes inside the steam-section to the outside of said section and thence to a drum common to all the domes, as set forth.

886,527. HOT-AIR FURNACE. NATHAN B. CLARK, Washington, D. C., and FRANK B. KING, Baltimore, Md. Original application filed Mar. 21, 1888, Serial No. 267,991. Divided and this application filed May 10 1888. Serial No. 272,469. (No model.)

886,527.



Claim.—1. The combination, with a furnace, of an interchanger consisting of a casing divided into narrow passages by thin plates, alternate passages communicating with and receiving air from the outer atmosphere and conveying it toward the furnace, and alternate passages receiving the products of combustion from the furnace and conveying them in reverse direction from that of the moving air-currents and in proximity thereto, all substantially as set forth.

2. The combination, with a furnace, of an interchanger consisting of a number of passages separated by thin plates, alternate passages communicating with an air-forcer, and alternate passages leading to the smoke-pipe, the inflow-passages leading toward and the outflow-passages away from said furnace, substantially as described.

3. The interchanger, substantially as described, consisting of a casing, and a number of thin metallic plates within the casing separated by suitable spacing-pieces, adjacent plates at the ends being turned toward each other and riveted, substantially as described, all in combination.

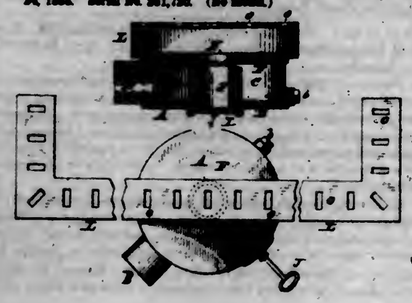
4. The interchanger described, consisting, essentially, of a casing, a number of thin plates dividing said casing into narrow passages from end to end, a number of spacing-pieces between the plates extending inward from the casing between the plates, arranged as described, so as to partially close the passages alternately at one side and at the other, and tie-rods for holding all in place, the combination being and operating substantially as described.

5. The interchanger described, consisting, essentially, of a casing and a number of thin vertical plates dividing the same into narrow channels, and a movable bottom piece to said casing, as set forth.

6. The combination, with the casing of the interchanger, of asbestus sheets inside the same, and thin partition-plates resting in grooves in said sheets, as set forth.

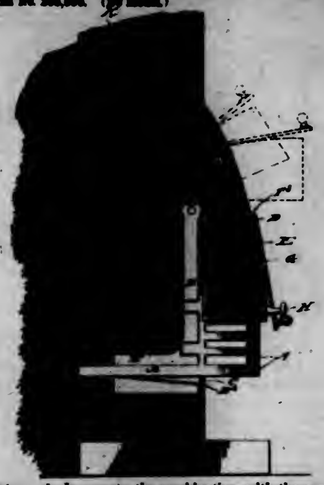
7. The combination, with a boiler-furnace, of an air-forcer, an air-interchanger of substantially the character described, and a double boiler-casing having an air-passage between the walls open to the air at one end and leading to said air-forcer at the other end, all substantially as described.

886,528. TUYERE. JAMES GUNNING, Dublin, N. Y. Filed Jan. 24, 1888. Serial No. 261,720. (No model.)



Claim.—The annular casing A, having the nozzle B and the upright tube D cast therewith, and having also a central opening, H, above said tube, in combination with an auxiliary conduit having a central opening, and a downwardly-extending flange, N, surrounding said opening and fitting into the said opening H, this auxiliary conduit being shaped to conform to the work required and provided with discharge-openings *o* in its top, substantially as set forth.

386,529. CONSUMED SMOKE AND CHIMNEY-DRAFT CONTROLLER. CHARLES H. CUMMER, Chicago, Ill. Filed Feb. 11, 1888. Serial No. 263,668. (No model.)



Claim.—1. In a grate, the combination, with the grate-bars, of standards removably secured thereto, and a blower pivoted to said standards, substantially as described.

2. In a grate having a flue leading out from its top, the combination of the sides of the grate and a blower pivoted thereto, said blower having a damper in its upper portion adapted to be swung below the said flue to regulate the draft, substantially as described.

3. In a grate, the combination, with the outer grate-bars, of a pair of standards having grooves in the sides of their lower ends, in which said bars are adapted to be fitted, a blower pivoted to said standards, and a damper formed in the upper part of said blower, substantially as described.

4. The combination, with a grate having a flue leading out from its top and vertical standards secured thereto, of a blower pivoted to said standards having a damper in its upper portion, said blower arranged to be swung on said standards, its upper end coming beneath said flue and its lower end projecting out from the top of the grate to act as a deflector, substantially as described.

5. In a grate, the combination, with the grate-bars, of a pair of standards having grooved feet, a key for securing the same in place, a blower pivoted to said standards, and a flexible catch secured to one of said standards, substantially as described.

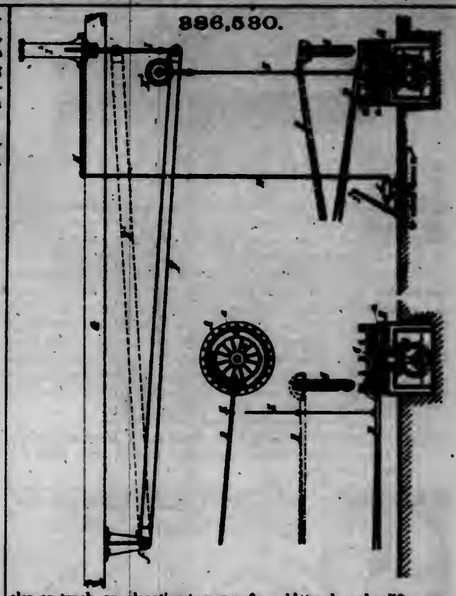
6. In a grate, the combination, with the grate-bars, of a pair of standards having inclined grooves in their outer lower portions and journal-bearings on their upper ends, a beveled key for securing the standards to the grate-bars, a blower having a damper in its upper portion and a pivoted lever for operating the same, and a spring-catch secured to one of the standards having ratchet-teeth on its side adjacent to the blower, substantially as described.

386,530. WIRE-ROD-REEL DISCHARGING MECHANISM. FRED H. DANIELS, Worcester, Mass. Filed Apr. 16, 1887. Serial No. 235,008. (No model.)

Claim.—1. The combination, with a reel having flanges to support the coiled rod above the bottom thereof, of a discharging implement fulcrumed in connection with a traveling supporter, and having at its forward end a hook or jaw adapted to be inserted between said flanges and passed under the side of the coil to remove it from the reel and transfer it to a place of deposit, substantially in the manner set forth.

2. The combination, with a reel having flanges that support the coiled rod above the bottom thereof, of a coil-discharging implement having at one end a hook adapted to be inserted between said flanges under the side of the coil, at its other end a handle or handles for manipulation thereof, and intermediate thereto a fulcrum on which said implement swings as a lever supported in connection with a traveling carrier or truck, an elevating-tramway for said truck, and a lifter connected with one end thereof, whereby said tramway can be raised and lowered to oppositely-inclined positions, to facilitate the running of said discharging-implement truck by gravity in either direction to or from the reel, substantially as set forth.

386,530.

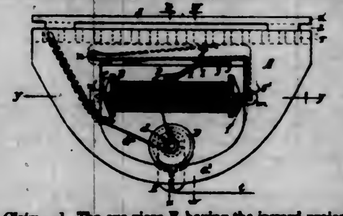


3. The combination, with elevating discharging-tongs, of a reel having flanges which support the coiled rod clear of the reel-plate and walls in the coiling mechanism.

4. The reel having its coil-supporting plate provided with flanges or ribs for containing the coil of wire rod, and an open center or space wherein said ribs are omitted to facilitate the introduction of the discharging-tongs, substantially as set forth.

386,531. LOOM-SHUTTLE. LEVI W. FISHER, Worcester, Mass., assignor of one-half to Albert H. Steele, same place. Filed Nov. 26, 1887. Serial No. 256,003. (No model.)

Brief.—The shuttle-body is provided with a detachable back piece of vulcanized fiber, forming a deep recess in rear of the rack. The rotary take-up is carried by the eye-piece in the bow of the shuttle. The spindle has provided for it rawhide seats, and has an offset at one end which is locked in place by the end of the spring which presses the tender-bar against the cop.



Claim.—1. The eye-piece E, having the inward projection *e*, and the rotating take-up D, mounted thereon, as described, in combination with the shuttle-frame having the bow portion *a'* and the spring G and spring-connection G', arranged as shown, for the purpose set forth.

2. The combination, with the shuttle-frame and spindle, of a spring provided with a movable end or bar that engages the end of the spindle and locks it in position within the shuttle-frame, for the purpose set forth.

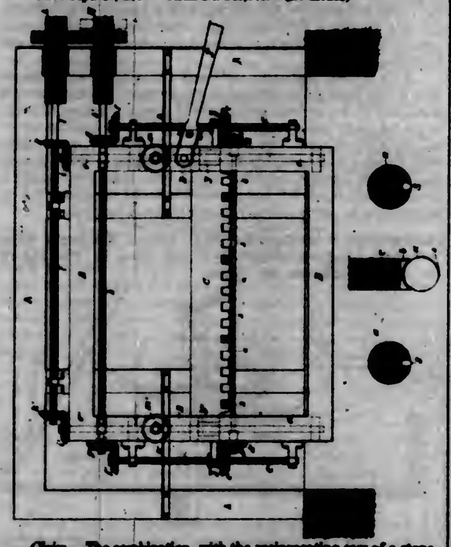
3. The combination of the shuttle-frame A, the spindle C, the spring F, provided with an extension or locking-arm, *f*, that normally extends over the spindle-rest *n*, and the friction-pad arm I, pivoted to said frame and adapted for forcing back said spring and retracting said locking-arm when the pad is pressed backward to the limit of action, substantially as and for the purpose set forth.

4. The shuttle-frame having the cylindrical rawhide spindle-bearings cast or set therein, and provided with a rest at the rear side thereof, as shown, and the auxiliary back plate, K, with the shoulder *l* and depending flange K', said back plate being attached to the upper rear part of the frame and presenting the deep upward groove L to rear of the rest-tooth, as shown and described.

6. The combination, with the shuttle-body A, having its back A' provided with a right-angular rabbet constituting the finished gear-rack T, of the detachable back plate, K, having the flanges S and K' and shoulders *l* and A, as shown, said back plate being detachably secured to the upper part of the shuttle-back in rear of the gear-rack, with the shoulder *l* above the median plane of the shuttle-body.

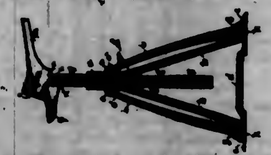
7. A loom-shuttle having a wood body furnished on its rear part with the notched rack, as shown, and provided with an auxiliary back plate of vulcanized fiber made wider than the thickness of the body, rabbeted on its front side to form a bearing-shoulder, and rigidly and detachably connected to the back of said body, with its top and bottom edges projecting above and below the same, in the manner shown and described.

386,532. STONE-SAWING MACHINE. WILLIAM PLYER, New York, N. Y., assignor of one-half to Thaddeus A. Jackson, same place. Filed Sept. 17, 1887. Serial No. 249,972. (No model.)



Claim.—The combination, with the reciprocating saw of a stone-sawing machine and bearing-plates, substantially as specified, fastened at convenient distances along the edge of said saw, of a cylindrical rod extending through the whole length of the edge of said saw, mounted in bearings on the back of said saw, running in bearings in said bearing-plates upon the edge of said saw, armed with diamond-bort and similarly hard material, revolving continuously in one direction around its own axis, moving lengthwise with said saw in its reciprocating motion, and, being guided by the said saw and the said bearing-plates in the edge thereof, forming the cutting-edge of said saw, substantially as and for the purpose set forth.

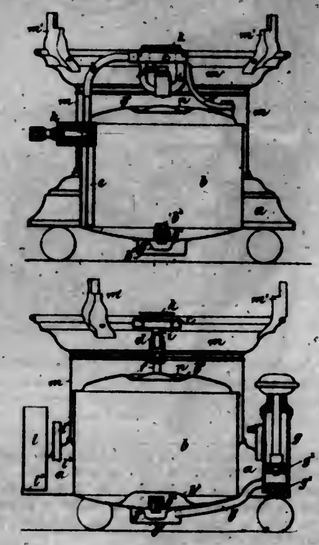
386,533. LIFTING-JACK. ELI FRANZ, Columbus, Ohio. Filed Apr. 30, 1888. Serial No. 272,329. (No model.)



Claim.—In a lifting-jack, the combination, with the frame, consisting of sleeve *a*, standards *b*, and base *d*, of the vertical elevating

toothed or notched bar F, adapted to be supported at different heights within said sleeve, pawls *i*, pivotally supported, as described, in said frame, said elevating-bar having step-lugs *f*, and the pivoted lever *m*, having head *l*, provided with shoulder *p*, substantially as and for the purpose specified.

386,534. VAPOR-BURNER. JAMES P. GOODMAN, Vining, Durand, engineer to Earl Cadogan, London, England. Filed Jan. 28, 1887. Serial No. 225,854. (No model.) Patented in Germany Nov. 14, 1886, No. 39,976; in Norway Jan. 25, 1884; in England Apr. 28, 1884, No. 6,288; in France May 6, 1884, No. 161,941; in Belgium May 31, 1884, No. 66,324, and in Austria-Hungary Oct. 2, 1884.



Claim.—1. The combination of a closed chamber, a reservoir for containing liquid hydrocarbon, a pump for forcing said liquid hydrocarbon from said reservoir into said closed chamber and thus compressing the air therein, a vaporizing-chamber and discharge-nozzle located above said closed chamber, and a pipe for conducting said liquid hydrocarbon from said closed chamber to said vaporizing-chamber, said chamber having a depression in its top beneath said vaporizing-chamber adapted to receive inflammable liquid for effecting the preliminary heating of said vaporizing-chamber, substantially as described.

2. In a vapor-burner, the combination, with the annular vaporizing-chamber *c*, the discharge-nozzle *d*, concentric therewith, and a pipe, *i*, connecting said chamber and nozzle, of a deflector, *k*, provided on its under side with a casing, *F*, fitting into said vaporizing-chamber, and having holes F^1 F^2, all substantially as and for the purpose set forth.

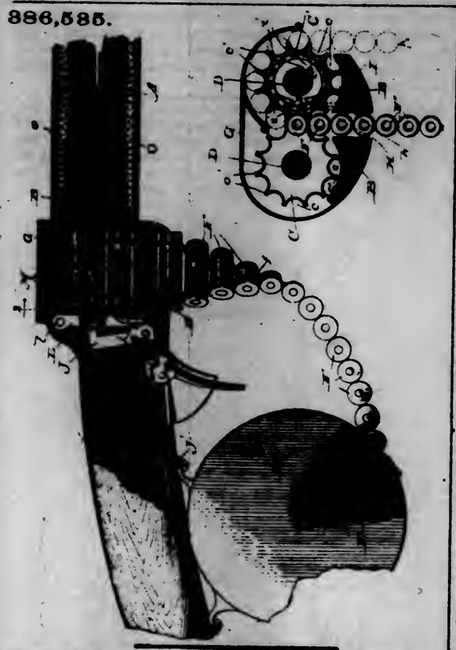
386,535. MAGAZINE FIRE-ARM. HENRY H. GRAHAM, Chicago, Ill. Filed June 9, 1887. Serial No. 240,703. (No model.)

Claim.—1. In a hand fire-arm, in combination with a barrel and suitable firing mechanism, two rotatable cylinders having grooved exteriors adapted to form, when the cylinders are rotated, a firing-chamber in line with the bore of the barrel, one of said cylinders provided on its rear end with a ratchet, and a pawl actuated by the hammer and adapted to engage the ratchet, whereby to rotate the cylinders, substantially as set forth.

2. In a hand fire-arm, in combination with a barrel and suitable firing mechanism, two exteriorly-grooved rotatable cylinders, one of which is provided on its rear end with a ratchet and one with holes to receive the end of a locking-pin, a pawl actuated by the hammer and adapted to engage the ratchet, whereby to rotate the cylinder, and a spring locking-pin actuated by the pawl and adapted to enter the holes of the cylinder, whereby to lock the latter, substantially as described.

3. In a hand fire-arm, in combination with the cartridge-cylinder and hammer, a recoil-lever pivoted at one end and depending between the cartridge and hammer, and its free end adapted to engage the latter, and carrying a firing-pin, substantially as described, whereby the shock of the explosion will be received by said pivoted recoil-lever and transmitted to the hammer, so as to cock the latter.

386,535.

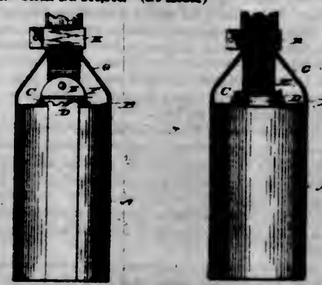


386,536. RUNNING-STITCH SEWING-MACHINE. SAMUEL HAHN, Berlin, Germany. Filed Apr. 30, 1887. Serial No. 236,514. (No model.) Patented in Belgium Apr. 30, 1887, No. 77,126; in England May 17, 1887, No. 5,880; in Germany June 24, 1887, No. 40,730; in Sweden Aug. 19, 1887, No. 1,001; in France Oct. 12, 1887, No. 183,616, and in Austria-Hungary Oct. 16, 1887, No. 18,008.



Claim.—In the running-stitch sewing-machine, a horizontal stationary needle having a straight part next to its point, another straight part at the other end of said needle in a higher plane than the first straight part, and an intervening undulating part, in combination with the grooved toothed wheels *a*, *c*, *d*, *b*, and *e*, the first three of which fit the curvatures of said undulating part, while the wheels *b e* are respectively above and below the point of the needle and the straight part next to said point, substantially as set forth.

386,537. MUD-BUCKET. JOHN R. HALL, Rover, Tenn. Filed Mar. 8, 1888. Serial No. 266,802. (No model.)



Claim.—As a new article of manufacture, the mud-bucket herein described, consisting of a cylinder, A, of equal radius throughout, suspended by the straps G, conically formed toward their junction with the binding-straps H, the said cylinder containing near its top a diaphragm, B, to which an upwardly-projecting flange, C, is secured, forming a valve-seat, D, for the flap-valve E, whereby the mud is drawn up and maintained in the cylinder by reason of an artificial vacuum above the column and atmospheric pressure beneath the same.

386,538. ROTARY CUTTER. H. TRAUGOTT HAEBERLE, Waltham, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Apr. 16, 1888. Serial No. 270,702. (No model.)

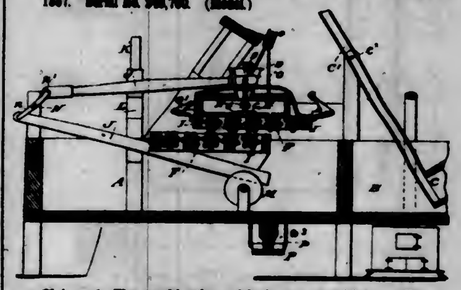


Claim.—1. In a rotary cutter, the combination of a central hub provided with a series of radial openings, a series of cutter-blades each provided with a transversely-grooved shank which is adapted to fit and project into the openings in said hub, and a plate revolvable about the axis of said cutter and provided with ribs which project into the grooves in said shanks to lock and secure said cutter-blades in position.

2. In a rotary cutter, the combination of a central hub provided with a series of radial openings, a series of cutter-blades each provided with a transversely-grooved shank which is adapted to fit and project into the openings in said hub, and a plate revolvable about the axis of said cutter and provided with ribs eccentric to said axis which project into said grooves in the shanks of the cutter-blades to hold them in position and at the same time move them toward or from the axis when desired.

3. In a rotary cutter, the combination of a block having flanged ends in which are radial openings, a hub mounted in a bearing in said block, and having as many radial pairs of arms as there are openings in the flanges of said block, with the walls of which openings the inner sides of said arms form a continuation, a series of cutter-blades each having a transversely-grooved shank adapted to fit and project through said openings and between said arms, and a plate revolvable about the axis of said hub and provided with ribs which project into said grooves in said shanks to hold said blades in position.

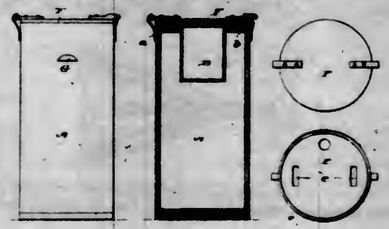
386,539. WASHING-MACHINE. EPHRAIM HERRINGTON, Mount Vernon, assignor of one-half to H. H. Bush, Texas, Ga. Filed Sept. 14, 1887. Serial No. 249,702. (Model.)



Claim.—1. The combination, with the upper and lower rollers on a washing-machine and the roller-frames, of the two clamps Q Q', one arranged upon each end of the upper roller-frame, whereby the clothes may be held between the rubbers, as described.

2. In a washing-machine, the combination, with the rollers, roller-frames, and superposed water-reservoir E, of the water-supply tank B and the lever carrying at one end the bucket C, as and for the purpose described.

386,540. MILK-CAN. CHARLES M. HOLMES, New Orleans, La. Filed Oct. 17, 1887. Serial No. 252,696. (No model.)



Claim.—1. The combination, with the can having the annular recess, as described, of the ice-chamber having the supporting-flange, the vent-tubes arranged in the said flange and the cover having grooves in its under side to receive the said tubes, substantially as specified.

2. The combination, with the can recessed as described, of the ice-chamber having the supporting-flange provided with the threaded aperture, the screw-plug for closing the same, the vent-tubes in the said flange, and the cover having the recesses to receive the said tubes, substantially as specified.

386,541. RAILWAY-SIGNAL-CIRCUIT BREAKER. EDWARD B. IVES, New York, N. Y. Filed Nov. 12, 1885. Renewed Oct. 24, 1887. Serial No. 253,264. (No model.)



Claim.—1. A key-block composed of a horseshoe-magnet, a piece of soft iron so pivoted as to swing one of its ends between the poles of said magnet, and to make contact with one or the other thereof as it may be swung in one or the other direction, and adapted to have its position changed by the passage near its end of the pole of a powerful magnet of similar polarity to that of the pole of the horseshoe-magnet with which the free end of said pole-piece is at that time in contact, a circuit-wire attached to said pole-piece, a contact-post, the other circuit-wire attached to said contact-post, which is so located that when said pole-piece is swung in one direction it makes contact therewith, and when swung in the other direction it breaks contact therewith, all constructed, arranged, and combined substantially as and for the purpose set forth.

2. The combination of magnet C, pole-piece A, pivoted as described, contact-posts c^2 c^3 c^4 c^5, arranged as described, whereby said pole-piece will make contact with one pair of them and the magnet, in whichever direction it is swung, and wires d d' e e', all as and for the purpose described.

3. A circuit-breaker composed of three magnets, C' C^2 C^3, two pole-pieces, A A', insulated from each other and pivoted to swing between the opposite poles of said magnets, as described, wires D D', connected to said pole-pieces, respectively, the block d', connected to C' and arranged to pass between and make contact with said pole-pieces when they are swung in one direction, and the blocks d^2 d^3, insulated from each other and connected, respectively, to magnets C^2 and C^3 in such position that they will pass between and make contact with A and A' when swung away from C', and of such a width that such contact will be made before contact with d' is broken and the wires E E' connected with C^2 and C^3, respectively, all combined as and for the purpose specified.

4. The combination, with a telegraph circuit-wire, of the described key-block connected therewith, a partial circuit-wire upon a telegraph-car, and magnets also upon said car, and arranged to pass opposite poles in close proximity to said key-block, whereby the telegraph-circuit will be broken and shunted through said car, as and for the purpose specified.

5. In a railway-telegraph system, two or more circuit-wires running along the railway-track and provided with key-blocks, as described, a partial telegraph-circuit upon a car upon said road, and a magnet upon said car provided with means for causing said magnet to operate the key-blocks of any one of said circuits, as and for the purpose specified.

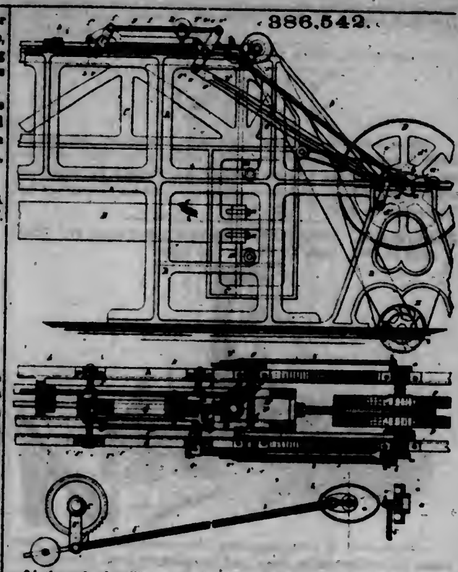
6. The combination, with a telegraph-circuit, of the described key-block in proximity to the rails of a railway, and magnets, arranged, as described, upon a car upon said rails, whereby the passage of said car over said rails will bring the magnets of opposite polarity upon said car in position to break or close the circuit with which said key-blocks are connected, as specified.

7. The combination, with a telegraph circuit-wire, of a key-block adapted to be operated to make and break said circuit by the passage near it of magnets of opposite polarity and located in close proximity to the rails of a railway, together with magnets of opposite polarity upon a car upon said rails, arranged as described, whereby the passage of said car over said rails will bring said magnets of opposite polarity in position to successively break and close the circuit with which said key-blocks are connected, for the purpose specified.

386,542. STONE-SAWING MACHINE. THADDEUS A. JARMAN, New York, N. Y. Filed Aug. 17, 1887. Serial No. 247,231. (No model.)

Claim.—1. The combination, with a wheel revolving upon a shaft and having an eccentric periphery, of an oscillating lever attached pivotally by one end to a proper support and having at the other end

386,542.



a friction-wheel rolling upon the face of the eccentric wheel, a connecting-rod communicating motion to a bell-crank, the said bell-crank, and means connected therewith, substantially as hereinbefore described, to lift the saw of a stone-sawing machine for its clearance, substantially as and for the purpose set forth.

2. The combination of the radial slot and the eccentric periphery hereinbefore described in one wheel, whereby the one wheel, by means of the mechanism hereinbefore described, is enabled to feed the saw, and also to lift the saw for its clearance, substantially as and for the purpose set forth.

3. In a stone-sawing machine, the wheel *a*, mounted upon a revolving shaft and having the radial slot *a'*, in combination with the wrist-bolt *b*, the connecting-rod *b'*, the ratchet-wheel *c*, the pawl *c'*, the lever b^3, the shaft *l* and its bearings, the bevel-wheels l' b^4, the shaft *k* and its bearings, the spur-wheel *h*, the spur-wheel *i* and its bearings, the shaft *i'* and its bearings, the bevel-wheels i^2 i^3, the screws *m* and their bearings, the nuts *n*, the saw B, and the reciprocating frame or sash C and its supports, substantially as and for the purpose set forth.

4. In a stone-sawing machine, the combination of the wheel *a*, mounted upon a revolving shaft and constructed with an eccentric periphery, with the lever *d* and its pivotal support, the friction-wheel d^2, the connecting-rod *e*, the lever *o*, the arm o', the shaft o^2 and its bearings, the connecting-rod *f*, the bell-crank f^2 *s*, the shaft *r* and its bearings, the bar *g*, the roller *h*, the rod *g'*, and the reciprocating frame or sash C, with its supports, substantially as and for the purpose set forth.

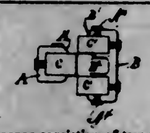
386,543. COMPOUND ELECTROMOTOR FOR ELECTRIC RAILWAYS. ALFRED J. JARMAN, London, England. Filed Nov. 24, 1886. Serial No. 219,264. (No model.) Patented in England Feb. 20, 1886, No. 2,703.



Claim.—The combination of levers K K', rods L L, rocking shafts N N', the tilting plates O O', and the brushes G G', with the electromotor and gearing for giving motion electrically to the car in a forward or backward direction by alternately lifting the said brushes or for electrically creating a braking action, substantially as set forth.

386,544. KNIFE-SHARPENER. HARRY L. JOHNSON and WALTER G. STEWART, Reading, Pa.; said Stewart assignor to said Johnson. Filed Jan. 30, 1888. Serial No. 262,302. (No model.)

386,544.



Claim.—A knife-sharpener consisting of two pivoted jaws, one of which is provided with two sharpening mediums, the other with one adapted to be moved between the first two, whereby the angle and crossing-point of said mediums may be varied, substantially as and for the purpose set forth.

386,545. FLOOR-CLAMP. GEORGE H. LEE, Panama, Fla. Filed July 21, 1887. Serial No. 244,912. (No model.)



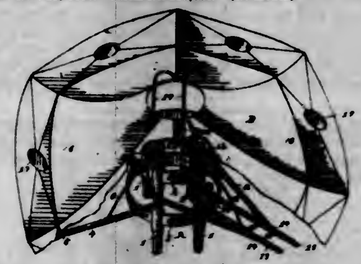
Claim.—1. In a flooring-clamp, the combination, with a fixed frame, the reciprocating head, and its operating-lever, of a rotatory clamping-hook, 20, pivoted in a vertically-arranged bearing in the frame and having its impaling end beyond the axial line of the pivot, and operative connections between said hook and lever to partially rotate the hook, substantially as set forth.

2. In a flooring-clamp, the combination of the frame, an operating-lever, a reciprocating plunger moved thereby, cranks mounted on the frame and rocked by said lever, and pivoted hooks connected with the cranks, substantially as described.

3. In a flooring-clamp, the combination of a pivoted operating-lever having a toothed segment at its end, a reciprocating plunger having a rack engaged by said segment, cranks carried by the lever, and pivoted clamping-hooks connected with the crank, whereby the hooks are rocked by the crank, substantially as described.

4. The combination of the frame, the operating-lever provided with a crank, 16, a pivoted hook mounted on the frame, a lever connected to said hook, and a rod connecting the lever and crank, whereby the movement of the crank is imparted to the hook, substantially as described.

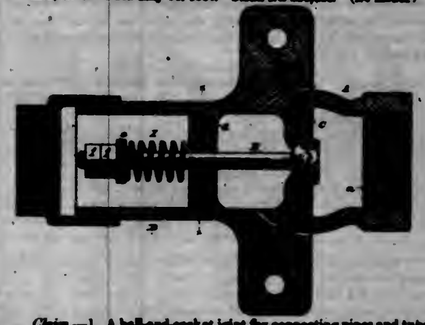
386,546. CURCULIO-CATCHER. HENRY LOTH, Youngstown, N. Y. Filed Nov. 26, 1887. Serial No. 256,116. (No model.)



Claim.—1. The combination of the central supporting-frame, composed of the upright standards and upper and lower connecting-hooks, the arms hinged to the standards, brace-rods having their outer ends hinged to the hinged arms and their inner ends arranged to slide through eyes in the standards, and a catching-cloth secured to the hinged arms and adapted to be arranged on the person at its center, substantially as described.

2. The combination of the central supporting-frame, composed of upright standards united by upper and lower hoops, 2 3, arms hinged to three of said standards and provided with brace-rods having their outer ends hinged to the arms and their inner ends arranged to slide in eyes in the standards, double arms hinged to a cross-piece on one of the upright standards and provided with hinged brace-rods arranged with their inner ends to slide in eyes in the supporting-standard, rods hinged to opposite standards and having their outer ends detachably connected to the double arms, and a catching-cloth secured to the outer ends of all the hinged arms and its central part adapted to be arranged about the person, substantially as described.

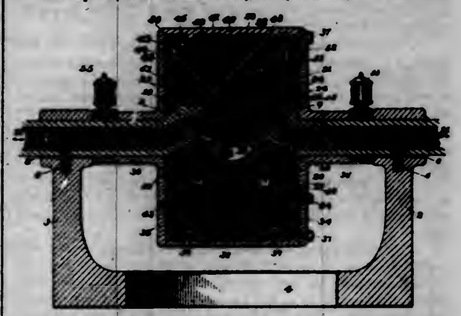
386,547. PIPE OR TUBE COUPLING. WILLIAM MATHER, Dunkirk, N. Y. Filed May 31, 1887. Serial No. 239,888. (No model.)



Claim.—1. A ball-and-socket joint for connecting pipes and tubes, the internal portions of which are provided with lugs or cross-bars, and the bolt connected with the internal lugs or cross-bars to permit the parts to have a universal and free movement relative to each other, substantially as set forth.

2. A ball-and-socket joint for connecting pipes and tubes, the internal portions of which are provided with lugs or cross-bars, and the bolt and spring mounted thereon connected with the internal lugs or cross-bars, all arranged and operating substantially as and for the purpose set forth.

386,548. STEAM-ENGINE. RICHARD H. MATHER, Windsor, Conn. Filed Apr. 19, 1886. Serial No. 199,203. (No model.)



Claim.—1. A tubular shaft having the form of a double crank and provided with an oblique internal diaphragm dividing the eccentric portion of said shaft into two overlapping compartments, which are respectively provided with a steam-port and with an exhaust-port which open through opposite sides of said shaft, in combination with a number of steam-cylinders which are radially disposed about the eccentric portion of said shaft and are mounted at a variable inclination toward each other upon a rotary sleeve which is immovably attached to one of said cylinders and is provided with a single steam and exhaust port for each of them, substantially as and for the purpose specified.

2. A tubular shaft consisting of a single piece of metal having the form of a double crank and provided with an oblique internal diaphragm dividing the eccentric portion of said shaft into two overlapping compartments, one of said compartments being provided with a steam-port which opens from the overlapping portion of such compartment through the side wall of said shaft, and the other of said compartments being provided with an exhaust-port which opens through the opposite wall of said shaft into the overlapping portion of such other compartment, in combination with a number of steam-cylinders which are radially disposed about said shaft at a variable distance from each other, and an intermediate rotary sleeve which is provided with one steam and exhaust port for each of said cylinders and is rigidly attached to one of said cylinders, substantially as and for the purpose specified.

3. In an engine of the kind described, a metallic pipe, bent as shown, mounted as a stationary crank upon suitable standards and

partly insulated therefrom by means of air-spaces formed by intermediate ribs, substantially as and for the purposes specified.

4. A steam-cylinder which is provided with two laterally-projecting curved feet and terminates, continuously with such feet, in a cylindrically-concave bottom surface which is perforated by a steam and exhaust port, substantially as and for the purpose specified.

5. A steam-cylinder whose base, being cylindrically concave, is perforated by a steam and exhaust port and is provided with two laterally-projecting curved feet, substantially as and for the purpose specified.

6. A tubular shaft having the form of a double crank, a rotary cylindrical drum which is mounted upon the concentric portion of said shaft, and a number of steam-cylinders which are provided with lateral curved feet and with pistons hinged immediately to said drum and are disposed radially about said shaft, in combination with two metallic rings passing over said feet, and a sleeve which is provided with steam and exhaust ports and is attached to one of said cylinders and surrounds said shaft, substantially as and for the purpose specified.

7. In combination with a rotating drum and inclosed therein, a stationary open oil-pipe whose ends are unequally distant from the axis of such drum, and whose mouth is turned in a direction opposed to the direction of rotation of such drum, substantially as and for the purpose specified.

8. A hollow crank, a sleeve surrounding the same, and one or more revolvable cylinders mounted upon said sleeve, in combination with a surrounding belt-wheel to which the piston of each such cylinder is hinged, substantially as and for the purpose specified.

9. In a steam-engine whose working parts are located in a rotary cylinder adapted to contain oil, a stationary oil-pipe having a mouth opening backward in the outer portion of said cylinder and a discharging-orifice directed toward the crank-shaft bearings, substantially as and for the purpose specified.

10. A tubular shaft having the form of a double crank, a sleeve surrounding the eccentric portion of said shaft, and one or more cylinders mounted upon said sleeve, in combination with a surrounding drum to which the piston of each such cylinder is hinged, substantially as and for the purpose specified.

11. As a means of holding upon a cylindrical crank one or more steam-cylinders and an intermediate sleeve, two feet projecting from each such cylinder in opposite directions, and two flanges upon such sleeve, in combination with two metallic rings fitted closely over such feet and flanges, substantially as and for the purpose specified.

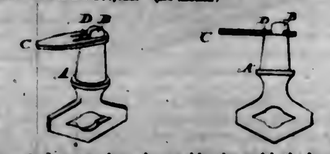
12. A metallic rod provided with a terminal nut and head or their equivalents, and having a neck adjacent to such head, a sleeve or steel tube surrounding the middle part of such rod, and a piston whose head is attached to such sleeve, in combination with an inclosing belt-wheel to which said rod and sleeve are attached by means of lugs or other suitable projections, substantially as and for the purpose specified.

13. A number of steam-cylinders provided with pistons which are hinged to a wheel or drum and are radially mounted by a sleeve upon the eccentric portion of a stationary tubular shaft having the form of a double crank, substantially as and for the purpose specified.

14. In combination, a number of steam-cylinders distributed about a common axis of rotation in radial positions relatively to that axis, and mounted upon a sleeve which is rigidly attached to one of said cylinders, substantially as and for the purpose specified.

15. In combination, a number of steam-cylinders which are distributed radially about a common axis of rotation and are mounted at a variable distance apart upon a sleeve which is rigidly attached to one of said cylinders, substantially as and for the purpose specified.

386,549. TURN-KEY. ANDREW T. MATTHEWS, Worcester, Mass., assignor to the Worcester Ferrule Company, same place. Filed Mar. 19, 1888. Serial No. 267,722. (No model.)



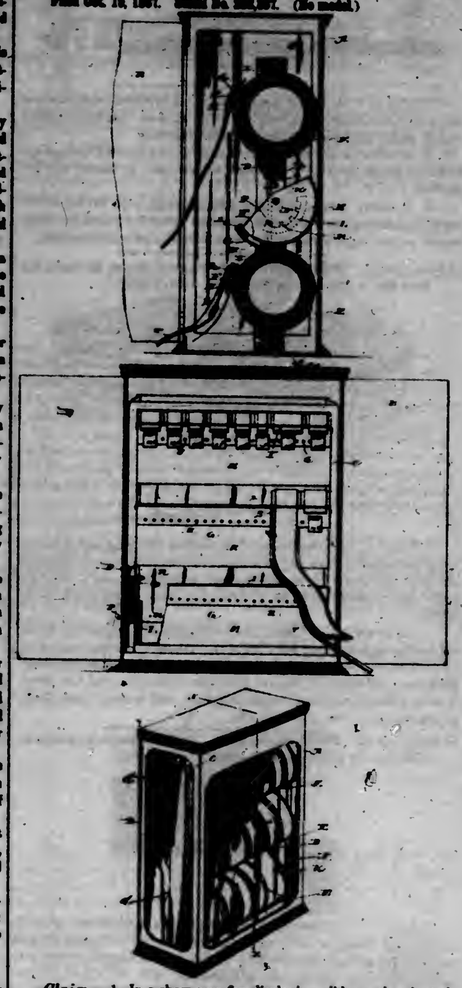
Claim.—1. In a turn-key, the combination, with the handle provided with a shank, of a button provided with a recess to receive and with a tongue to bear against the shank.

2. In a turn-key, the combination, with the handle provided with an undercut shank, of a button provided with a recess to receive and with a tongue to bear upon the shank.

3. In a turn-key, the combination, with the handle provided with an undercut shank, of a button adapted to fit upon the reduced neck of the shank, and provided with a tongue to bear against that face of the shank opposite its undercut face.

4. As an improved article of manufacture, the button herein shown, having a recess to receive and a tongue to bear against a handle-shank.

386,550. SHOW-CASE. ALEXANDER HOLLIS, Valley Mills, Tex. Filed Oct. 10, 1887. Serial No. 252,257. (No model.)



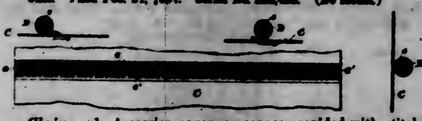
Claim.—1. In a show-case for displaying ribbons, the pivoted trays to contain the spools of ribbon, and provided near their rear edges with the longitudinal openings F, and the depending flange-plates G, covering said openings and dividing the ribbons from the paper strips, the paper strips of the spools passing through said openings and the ribbons passing over in the upper edges of the plates G, as set forth.

2. In a show-case for displaying ribbons, the pivoted trays adapted to be inclined in either direction, having the openings F on one side, the depending flanges G, arranged over the said openings, and the elastic straps I on the upper sides of the said flanges, substantially as described.

3. The combination of the pivoted trays having the openings F, the depending flange-plates G, covering said openings and having the longitudinal series of openings H, and the measure provided with a hook to engage the trays, as specified.

4. The combination, with a case having a glass front, of the series of semicircular pivoted trays within the case, and adapted when swung backward to receive the spools of ribbons and when swung forward to display the same through the glass front of the case, and the measuring-tape having a hook or catch to engage the rear side of the tray when the latter is swung backward, as set forth.

386,551. ENDLESS CARRIER-APRON. LEWIS MILLER, Akron, Ohio. Filed Feb. 21, 1887. Serial No. 228,626. (No model.)

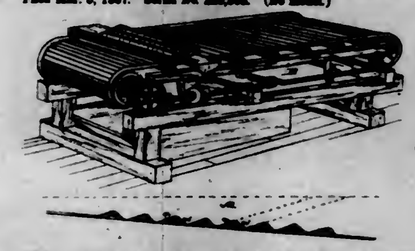


Claim.—1. A carrier apron or canvas provided with stitched loops, in combination with rods or strips incased throughout their length within said loops, substantially as described.

2. In a belt or canvas carrier, a strip or rod incased throughout its entire length directly by the cloth of said belt, as shown and described.

3. A canvas carrier provided with stitched loops having closed ends, in combination with rods or strips incased throughout their length in said loops, substantially as and for the purpose described.

386,552. ORE-CONCENTRATOR. FRANK H. MORSE, Murphy's, Cal. Filed Mar. 8, 1887. Serial No. 230,203. (No model.)



Claim.—1. In a concentrator, an endless traveling belt mounted at an inclination and having its working-surface composed of the series of short transverse upwardly-inclined vanning-surfaces *c*, and the downwardly-inclined surfaces *c'* connecting them, substantially as described.

2. In an ore-concentrator, the combination of a supporting-frame, an endless traveling belt mounted at an inclination therein and having its working-surface composed of the series of short transverse vanning-surfaces *c*, elevated or inclined from the horizontal, and the downwardly-inclined surfaces *c'* connecting them, and means, substantially as described, for vibrating said belt.

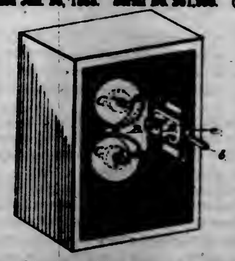
386,553. FLOOR-BOARD GAGE. FRANK H. MORSE, Savannah, Ga. Filed Jan. 18, 1888. Serial No. 261,004. (No model.)



Claim.—1. A floor-gage consisting of the strip A, the gage B, formed with recess *b* and projecting portion *c*, and the gage C upon the opposite side of said strip and formed with a tongue, *f*, and projecting portion *g*, substantially as described.

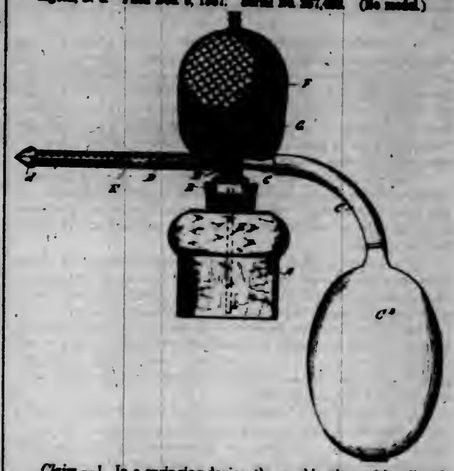
2. The floor-gage described, comprising the strip A and the interchangeable gages secured thereto upon opposite sides and opposite ends thereof and formed with projecting portions, as set forth.

386,554. LATCH. JOHN H. MORRIS and THOMAS D. MORRIS, Seward, Nebr. Filed Jan. 26, 1888. Serial No. 261,955. (No model.)



Claim.—The combination, with a door and a lock mechanism comprising a sliding bolt having a centrally-disposed leg, *c*, of a housing or plate contiguous to said bolt, a pivoted locking-lever within said housing, and a spring acting upon the lever, said lever being provided with a hook-shaped front end adapted to engage the centrally-disposed leg, and a rear extension or handle adapted to be operated from the rear to effect the releasing of the lever, substantially as described.

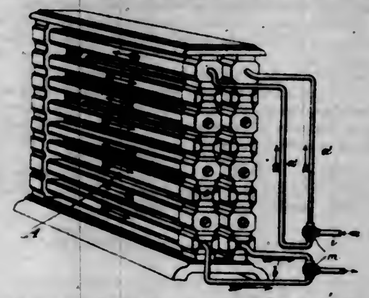
386,555. SYRINGING APPARATUS. THOMAS R. OSBAN, Washington, D. C. Filed Dec. 9, 1887. Serial No. 257,402. (No model.)



Claim.—1. In a syringing device, the combination, with a liquid-holding vessel, of an expansible air-storage bulb secured to and communicating directly with the interior of the vessel, and an air-supply tube connected to the vessel at a point adjacent to and independent of said bulb and communicating directly with the interior of the vessel and bulb, substantially as described.

2. In a syringing device, the combination, with a liquid-holding vessel, of a removable hollow cap situated thereon, an expansible air-storage bulb secured to said cap, and an air-supplying bulb secured to said cap at a point adjacent to said storage-bulb, said cap forming a direct communication for the storage-bulb with the air-supply and the interior of the vessel, substantially as described.

386,556. RADIATOR. WILLIAM R. PEALL, Washington, D. C., assignor, by mesne assignments, to the National Heating Company, New York, N. Y. Filed Oct. 7, 1887. Serial No. 251,779. (No model.)

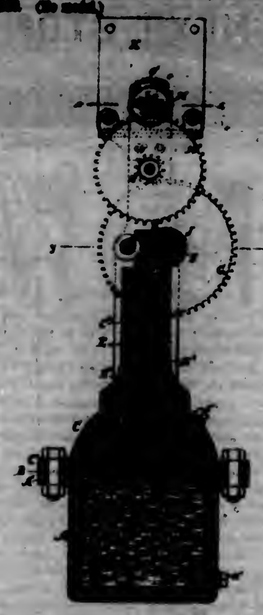


Claim.—1. The combination, with a radiator consisting of a number of hollow bars, the passages therein communicating at the alternate ends of the bars, as shown and described, of the air-pipe *x*, connected with the outer or top and bottom bars of the radiator, and provided with the air valve or vent *x'*, substantially as shown and described.

2. The combination, with a radiator cast in a single piece consisting of separate hollow bars, the passage therein communicating at the alternate ends of the bars, as shown and described, of the air-pipe *x*, connected with the outer or top and bottom bars of the radiator, and provided with the air valve or vent *x'*, substantially as shown and described.

3. The combination of a series of radiators and a supply and return pipe, each of said pipes being provided with a cock or valve having a series of passage-ways and a series of branch pipes, whereby the heating medium may be supplied to either or all of the radiators and excepted therefrom, substantially as shown and described.

386,557. REVERSIBLE WINDOW GLASS IN THE VARIATIONS OF TEMPERATURE. ISAAC L. ROBBINS, Brooklyn, N. Y., assignor of one-half to Richard Trenchy, Roxbury, Conn. Filed Mar. 30, 1886. Serial No. 197,033. (No model.)



Claim.—1. The combination of a hermetically-sealed vessel having a portion of its body formed of a yielding material and inclosing a liquid that completely fills such vessel, and a power-transmitter adapted to transmit the movement of said yielding material, whereby the variations of temperature to which the inclosed liquid is subjected will act thereon through said yielding material, substantially as described.

2. The combination of a hermetically-sealed vessel having a portion of its body formed of a yielding material and inclosing a liquid that completely fills such vessel, a power-transmitter adapted to transmit the movement of said yielding material, and an auxiliary receptacle filled with a liquid interposed between said yielding material and the power-transmitter, substantially as described.

3. The combination of a hermetically-sealed receptacle, a piston and cylinder connected therewith, a liquid completely filling said receptacle and adapted to act upon said piston, and two power-storing devices, both arranged to receive power from the piston, and serving the one to return the piston when the liquid contracts and the other to receive and transmit a portion of the power exerted by the piston, substantially as herein specified.

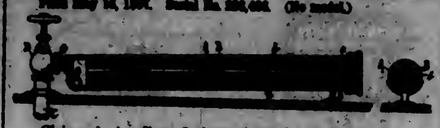
4. The combination of a hermetically-sealed receptacle, a piston and cylinder connected therewith, a liquid filling said receptacle and adapted to act upon said piston, a power-storing device serving to return the piston after it has been acted upon, a second power-storing device, suitable power-transmitting connections between the latter and the piston, and a mechanism or apparatus adapted to receive motion from said second power-storing device, substantially as described.

5. The combination of a receptacle, a cylinder, a piston, a liquid completely filling said receptacle, and an elastic impermeable thimble separating the space of the receptacle from the space of the cylinder, substantially as specified.

6. The combination of a main receptacle, a liquid filling said receptacle, a diaphragm, an auxiliary receptacle, a yielding but non-compressible substance filling said auxiliary receptacle, a cylinder connected with the auxiliary receptacle, and a piston moving in said cylinder, substantially as described.

7. The combination of a main receptacle, a diaphragm, an auxiliary receptacle, liquids filling both receptacles, a cylinder, a piston, and an elastic impermeable thimble separating the space of the auxiliary receptacle from the space of the cylinder, substantially as specified.

386,558. RADIATOR. CHARLES H. BENNETT, St. Paul, Minn. Filed May 16, 1887. Serial No. 238,026. (No model.)



Claim.—1. A radiator for imparting and retaining heat, consisting of an outer casing, in combination with an interior core or filling of wood within said casing, substantially as and for the purpose set forth.

2. A radiator for imparting and retaining heat, consisting of an outer casing and a trapping device therefor, in combination with an interior core or filling of wood within said casing, substantially as and for the purpose set forth.

386,559. BUTTON. BERARD B. BENNETT, Waterbury, Conn. Filed Sept. 1, 1887. Serial No. 248,899. (No model.)



Claim.—1. In a button such as described, the combination of a back provided with a longitudinal slot, C, a circular depression, E, depression F, and inclined planes G, and a shank provided with a shield adapted to rest against the said back, and having turned ends protruding through the said shield and adapted to rest in the said depressions E and F, substantially as described.

2. In a button such as described, the combination of a back provided with a longitudinal slot, C, the circular depression E, the depressions F, and the inclined planes G, and a shank, H, provided with a shield adapted to rest against the said back, and having turned ends protruding through the said shield and adapted to rest in the said depressions E and F, substantially as described.

3. In a button such as described, the combination of a back provided with a longitudinal slot, C, depressions D, circular depressions E, depressions F, and inclined planes G, and a shank, H, provided with a shield adapted to rest against the said back, and having turned ends protruding through the said shield and adapted to rest in the said depressions E and F, substantially as described.

386,560. FRUIT-JAR. GEORGE C. SAWYER, Groton, N. Y. Filed Feb. 21, 1882. Serial No. 204,732. (No model.)



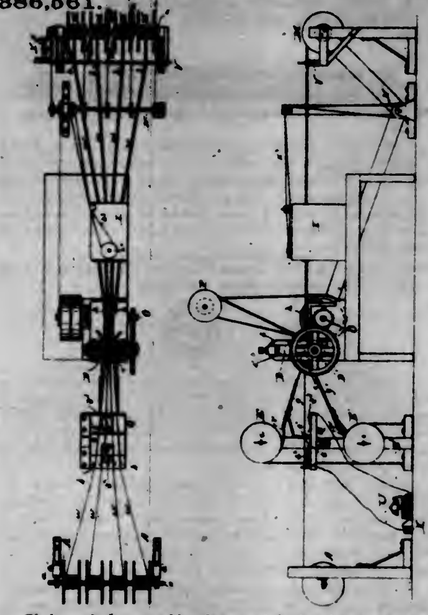
Claim.—1. The jar having a rounded peripheral bead, D, at its mouth and the interior overhanging lip or shoulder below the bead and provided with slots F, in combination with the cover arranged in the mouth of the jar and provided on its upper side with the swiveled locking-arm adapted to engage at its extremities under the said overhanging lip or shoulder, and the ball Z, mounted at its ends in suitable apertured ears on the upper side of the locking-arm and adapted to normally fold within and be protected by the bead D, substantially as and for the purpose specified.

2. The combination, with the jar having the lip or shoulder E, of the cover having the grooves K L and the recess M in its upper side, the fastener having the ring or flange O, fitting in the groove K, the transverse bar R, fitting in the groove L, and the socket S, fitting in the recess M, and having the webs or wings T T, and the locking-arm having a central spindle mounted in the socket S and adapted to engage at its ends under the lip or shoulder E, substantially as and for the purpose specified.

3. The jar having an interior overhanging lip or shoulder at its upper edge provided with slots F, in combination with the cover arranged in the mouth of the jar and provided with a double inclined ring or flange, O, the socket S, arranged in an aperture, M, at the center of the cover within the ring or flange O, and provided with wings or webs T, and the locking-arm bearing on the ring or flange and engaging under the overhanging lip or shoulder, and provided at its center with a depending spindle, V, mounted in the socket S and capable of a vertical motion, whereby the locking-arm moves vertically as it slides on the inclined ring or flange, substantially as specified.

386,561. MACHINE FOR COVERING WIRE. WILLIAM H. SAWYER, Providence, R. I. Filed Nov. 28, 1884. Serial No. 149,152. (No model.)

386,561.



Claim.—1. In a machine for covering wire, the combination, with the standards, of a pair of rolls mounted one above the other in said standards, the upper roll having a series of peripheral grooves therein, which are separated by conical ridges having sharpened edges, and the lower roll having a series of grooves therein which register with said other grooves, and which are separated by ridges having flattened edges, substantially as described.

2. In a machine for covering wire, the combination, with a traveling covered wire, of a powder-box having a series of apertures in its sides and a compartment for containing the powder, a compartment arranged by the side of said powder-compartment for the reception of wiping material and having a slatted bottom, and a receptacle arranged beneath said bottom, substantially as described.

3. In a machine for covering wire, the combination of a powder-box having a series of perforations in its sides, a powder-compartment arranged at one side in said box, and a wiping-compartment at the opposite side, said latter compartment having a slatted bottom, and a receptacle located beneath said compartments, having an inclined plate arranged directly beneath the said slatted bottom, substantially as described.

4. In a machine for covering wire, a powder-box having a powder and a wiping compartment arranged side by side, said powder-compartment being provided with a revolving stirrer, for preventing the caking of the powder, substantially as described.

5. In a machine for covering wire, the combination of a stationary platform, a movable plate mounted thereon, having slits through which the wire passes, a metal strip situated on said platform in the rear of said plate, and a bell having electrical connections with said plate and strip, substantially as described.

6. In a machine for covering wire, the combination of a non-conducting platform having a metallic clip secured thereto, a movable metallic plate on said platform and held in place by said clip, said plate having a vertical flange thereon with slits formed therein, through which the wire passes, a metallic strip secured to the platform in the rear of the plate, and an electric bell having a circuit-connection with said clip and strip, whereby the bell is caused to ring by the closing of said circuit caused by the occurrence of snarls in the wire forcing said plate in contact with said strip, substantially as described.

7. In a machine for covering wire, the combination, with the wire reels and covering-reels, of separate guides for the covering, standards having grooved rollers mounted thereon, one above the other, a horizontally-arranged plate having guide-openings therein, secured to said standards, a series of vertically-arranged knife-blade separators in the rear of said rolls, a powder-box having powder and wiping compartments located beyond the said blades, and the winding-reels, substantially as described.

8. In a machine for covering wire, the combination, with the covering-reels and the rollers, arranged, respectively, one above the other, of the reels F, for collecting the surplus covering, said reels located one above and the other below the said rolls, substantially as described.

386,562. STATION-INDICATOR. FRANK A. STARR, Manitowoc, N. Y. Filed Feb. 6, 1888. Serial No. 263,177. (No model.)



Claim.—1. In an indicator, the combination, with a case or frame provided with suitable rollers and with an inscribed band or web mounted on said rollers and adapted to be rolled or wound from one to the other, said case having an opening through which the inscriptions on the band are visible, of a movable board or strip adapted to hide or disclose words or inscriptions separate from the web or band, and which, in connection with the names or inscriptions on the band, as the same are successively brought opposite the opening in the case, convey definite information, substantially as set forth.

2. In a station-indicator, the combination with the case or frame provided with suitable rollers and with a suitably-inscribed web or band mounted on said rollers and adapted to be rolled or wound from one to the other, the case or frame having an opening through which the inscriptions are visible, of a strip or board hinged or journaled to the case and adapted to be turned to hide or expose words or inscriptions separate from the web or band, which words or inscriptions coact with the successive inscriptions on the web or band to indicate the present or the next succeeding station, substantially as shown and described.

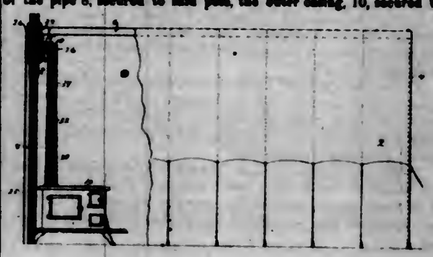
3. In a station-indicator having the usual rolls provided with a suitably-inscribed web or band mounted thereon, and an opening in the case through which the web or band is visible, a strip hinged or journaled to the case and having inscriptions on both of its sides, whereby the present or the next succeeding station may be indicated by turning the said strip, substantially as set forth.

4. In a station-indicator, the combination, with the case A, of the drums *a a'*, upon which the strip that carries the names of the streets or stations is wound, a board or strip, B, hinged or journaled to the case A and adapted to be turned up or down to cover and uncover words or signs used to convey information to the passengers, and a friction-spring, d^3, arranged, as shown and described, to bear upon the journals of the drums *a a'*, and of the board or strip B, to prevent the same from turning.

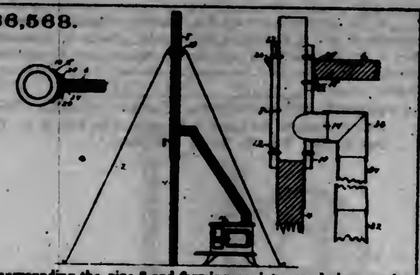
5. In a station-indicator, the combination, with the case A, of a board or strip, B, hinged or journaled to the case and adapted to be turned up or down to cover and uncover words or signs used to convey information to the passengers, a cam-lever, *c*, on the journal of said board or strip, and a spring bell-hammer arranged in the path of said cam-lever to be tripped by the same when the board is turned in one direction and to be pushed back when it is turned in the opposite direction.

386,563. TENT. JOHN A. STEELE, Minneapolis, Minn. Filed Dec. 7, 1887. Serial No. 257,262. (No model.)

Claim.—1. In a tent, the combination, with the upright pole 4, of the pipe 8, secured to said pole, the outer casing, 10, secured to



386,568.

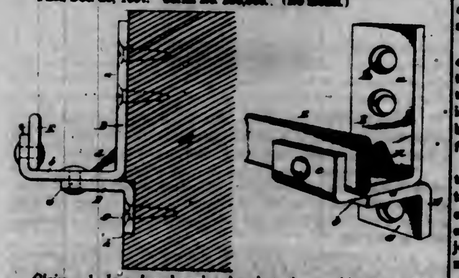


and surrounding the pipe 8 and forming an interposed air-space between said pipe and the canvas covering of the tent, substantially as described.

2. In a tent, the combination, with the upright pole 4, of the pipe 8, secured to the said pole, the outer casing, 10, secured to and surrounding the pipe 8 and forming an interposed air-space between said pipe and the canvas covering of the tent, and the ridge-pole 6, secured to said casing 10, substantially as described.

3. In a tent, the combination, with the pole 4 and the pipe 8, secured thereto, the outer casing, 10, surrounding said pipe, and the ridge-pole 6, secured to said casing 10, of the branch pipe 14, connected to the pipe 8, the elbow 35, and the sections of pipe secured thereto or arranged to be placed one inside the other, substantially as described.

386,564. TRACK-HANGER. LE GRAND TERRY, Havershands, N. Y. Filed Dec. 20, 1887. Serial No. 258,203. (No model.)



Claim.—1. In a door-hanging bracket, the combination, with a main L-shaped bracket consisting of vertical and horizontal pieces stiffened at their junction by a web, of an L-shaped re-enforcing bracket that has its depending leg projected beyond the line of the vertical limb of the main bracket, substantially as set forth.

2. In a door-hanging device, the combination, with an L-shaped main bracket having vertical and horizontal pieces which are integral with each other, and a stiffening diagonal corner-web formed at the junction of these two pieces of the main bracket, of an L-shaped re-enforcing bracket, one leg of which is secured to the under side of the horizontal piece of the main bracket and the other projected beyond the rear surface of the vertical limb of the main bracket, substantially as set forth.

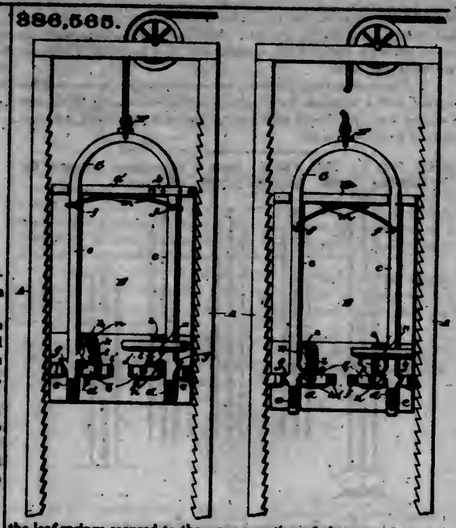
3. In a door-hanging bracket, the combination, with a main bracket consisting of vertical and horizontal sections and a re-enforcing bracket having its depending leg projected beyond the line of the vertical limb of the main bracket, of a rail attached to the outer free end of the horizontal section of the main bracket, substantially as set forth.

4. In a door-hanger, the combination, with a main L-shaped bracket, of a re-enforcing L-shaped bracket secured to the under side of the main bracket, the depending leg of the re-enforcing bracket projecting beyond the vertical limb of the main bracket.

386,565. SAFETY DEVICE FOR ELEVATORS. FREELAN TRAVER, Kinsley, Kans. Filed Oct. 3, 1887. Serial No. 251,945. (No model.)

Claim.—1. The combination, with the racks and the elevator-car, of the bolts located on the sides of the car and adapted to engage the racks, the vertically-movable frames mounted on the sides of the car and having offsets on their lower portions resting on the bolts to project the same, and levers acted upon by the frames to withdraw the bolts, substantially as set forth.

2. The combination, with the car and the racks, of the bolts located in the sides of the car to engage the racks, the vertically-movable frames having oppositely-inclined offsets on their lower portions to actuate the bolts and having the studs *f* on their upper portions, and



the leaf-springs secured to the upper portion of the car and bearing on the studs *f* to depress the frames on the release of the rope-tension, as set forth.

3. The combination, with the racks and the car, of the bolts located in the sides of the car to engage the racks, the projections *d* on the lower portion of the car, the guides *b* at the upper portion thereof, the inverted-U-shaped frames moving through the guides *b* and having slots *e* engaging the projections *d*, the said frames engaging the bolts, and springs at the upper portion of the car to depress the said frames upon the release of the tension of the rope, as set forth.

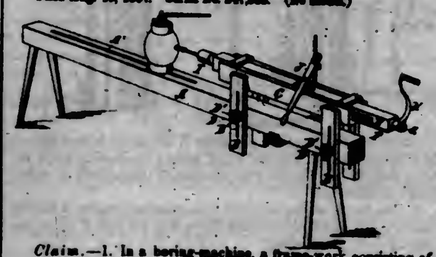
4. The combination, with the racks and the car having horizontal recesses in its sides, of the vertically-movable frames mounted on the sides of the car and connected to the suspending-rope and having oppositely-inclined offsets on their lower portions, and the bolts located in the recesses in the sides of the car, the said bolts being projected and withdrawn by the action of the offsets on the vertically-movable frames, substantially as set forth.

5. The combination, with the car and racks, of the inverted-U-shaped frames movable vertically on the sides of the car, the bolts located on the sides of the car and actuated by said frames to engage said racks and having recesses *p* in their inner portions, and the spring-levers having their upper ends secured to the sides of the car and their lower ends engaging the recesses *p*, substantially as set forth.

6. The combination, with the car and the racks, of the bolts located on the sides of the car to engage the racks, the vertically-movable frames mounted on the sides of the car and having inclined offsets *g* to actuate the bolts, and spring-levers having their upper ends secured to the sides of the car above the bolts and having their lower ends engaging the bolts, as set forth.

7. The combination, with the car and the racks, of the bolts located in the sides of the car and adapted to engage said racks, the vertically-movable frames mounted on the sides of the car and engaging the bolts, the spring-levers mounted on the sides of the car and engaging the bolts, and the levers *n*, mounted on the car between the spring-levers and the vertically-movable frames, substantially as and for the purposes specified.

386,566. BORING-MACHINE. WILLIAM B. TRIPP, Augusta, Kans. Filed Aug. 19, 1887. Serial No. 247,303. (No model.)

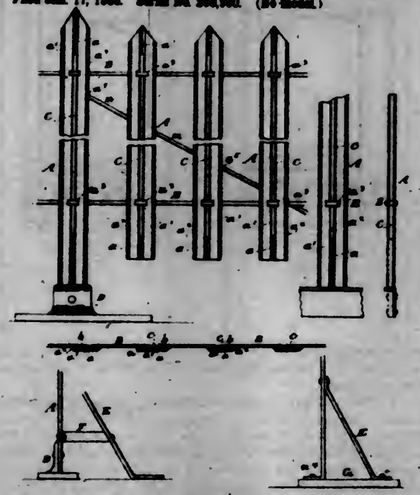


Claim.—1. In a boring-machine, a frame-work consisting of a

bench having retaining-bolts and a horizontal box carrying a bit-stock and having side cleats provided with wide slots, substantially as herein set forth, whereby the operator can bore holes at an angle to the line of the bench.

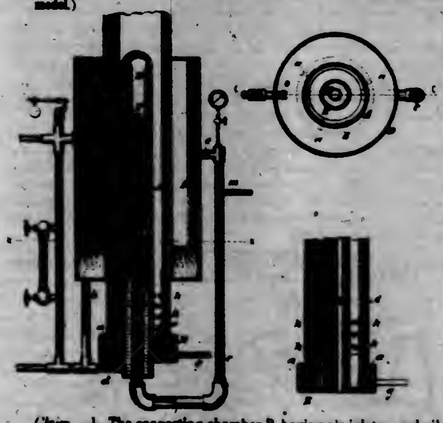
2. The combination of a bench having retaining-bolts on the sides thereof, with a bit-stock frame having vertical slotted side cleats, and a sliding bar with a lever attached for operating the same, substantially as herein set forth.

386,567. IRON FENCE. CHRIS G. VANDEMARK, Lexington, Ky. Filed Jan. 17, 1888. Serial No. 260,980. (No model.)



Claim.—In a fence, the metallic pales A, each of which is provided with a central groove, *a*, holes *a*², and the wings *a'*, which extend laterally in opposite directions ob the same plane from the said groove and have their outer edges bent to bear against the wire rails, as shown, in combination with the horizontal wires B, passed through the holes in pales A and in position bearing against the bent edges of the pales, and vertical rods C, which are inserted in the grooves *a* and within the wires B, all being constructed substantially as set forth and described.

386,568. BURNER FOR STEAM-BOILER HEATING APPARATUS. WILLIAM WALKER, Brooklyn, N. Y., assignor of one-half to Abraham G. Jennings, same place. Filed Apr. 14, 1887. Serial No. 234,772. (No model.)

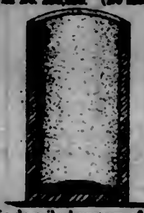


Claim.—1. The converting-chamber B, having air-inlets *a* and oil-inlet *g*, in combination with the flue A, having air-openings A, the air-inlets *a* being of less area than the air-inlets A, substantially as herein shown and described.

2. The flue A, having air-inlets *a*, and flashing-chamber B, having air-inlets *a* and oil-inlets *g*, in combination with the pipe E within flue A, substantially as described.

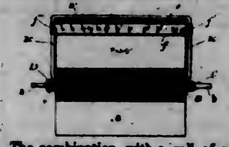
3. The combination of the flue A, having air-inlets A, converting-chamber B, having air-inlets *a* and oil-inlet *g*, boiler D, surrounding flue A, pipe E within flue A, and pipe F within the pipe E, and means, substantially as described, for supplying the boilers with water, as set forth.

386,569. PERIOD CUP FOR ELECTRIC BATTERIES. RANSFIELD J. WHEELOCK and JAMES W. WHEELOCK, New York, N. Y. Filed Sept. 19, 1887. Serial No. 249,889. (No model.)



Claim.—The herein-described process of treating porous cups so as to reduce to any desired extent their excess of porosity, which consists in first heating the cups to a degree sufficient to melt wax, then applying to the surfaces of the cups sufficient wax to reduce their porosity to a limited extent, and repeating these operations as many times as may be necessary to bring the cups to the desired degree of porosity.

386,570. TOILET-PAPER CUTTER. CHARLES R. WILLIAMSON, Topeka, Kans. Filed Feb. 27, 1888. Serial No. 265,627. (No model.)



Claim.—1. The combination, with a roll of paper, of an axis, a cutter-frame the ends of which are adjustable upon the said axis, and a cutter adjustable upon said frame, substantially as described.

2. The combination, with a spindle, a roll of paper loosely mounted on the spindle, and a cutter supported on arms loosely mounted on the spindle at the ends of the roll, of a clamping device to lock the arms, and hence the cutter, to the roll or to release it therefrom, substantially as set forth.

3. The combination, with a roll of paper, of a spindle-support to the roll, the spindle being provided with a shoulder and a threaded portion, a nut adapted to work on the threaded portion, and a cutter supported on arms embracing the spindle at the ends of the roll and between the shoulder and nut, substantially as set forth.

4. The combination, with the roll of paper, the spindle-support, the cutter-frame suspended therefrom, and means for clamping the cutter-frame to the roll, of the cutter secured to the cutter-frame in sliding adjustment toward and away from the surface of the roll, said cutter being held normally in position on the frame by a friction-grip, substantially as set forth.

5. As an article of manufacture, a roll of paper having a cutter secured thereto, one portion of the cutter-frame forming a carrier for the roll and another portion supporting the cutter, substantially as set forth.

386,571. PHOTOGRAPHIC BATH. ALEXANDER ANDERSON, Elgin, assignor of one-half to George Whyte, Northview, Scotland. Filed Aug. 11, 1887. Serial No. 246,674. (No model.) Patented in England Sept. 17, 1886, No. 11,692.

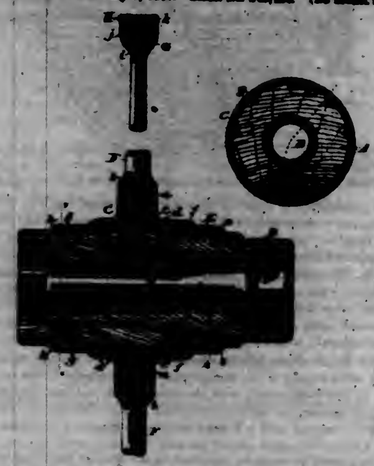


Claim.—1. The combination, with a photographic bath-dish, of a finger pivoted to the bath-dish and adapted to lift the plate out of the solution contained by the dish, substantially as specified.

2. As an improved article of manufacture, a rocking bath-dish consisting of the dish A, provided with the pivotal projections B, and the finger C, hinged to the side of the dish and adapted to lift one end of the plate out of the solution contained by the dish, substantially as specified.

3. The combination of a photographic bath-dish provided with a depression or recess at one end and an angular finger pivoted to the end of the dish, substantially as herein shown and described.

386,572. METALLIC WHEEL. WILLIAM P. BRUNNEMER, Davenport, Iowa. Filed July 5, 1887. Serial No. 243,402. (No model.)



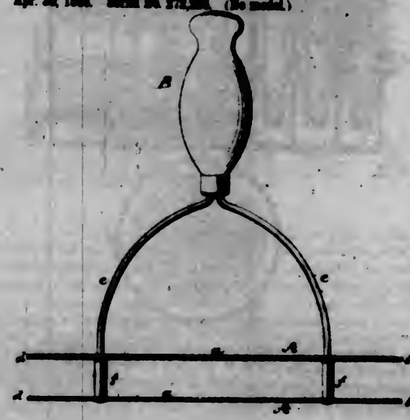
Claim.—1. In a metal wheel, the metallic hub-section C, provided with mortises extending therethrough, and with an internal shoulder, A, in combination with the metal spokes seated in said mortises and enlarged, as described, so that they are carried and sustained wholly by said section C, the wooden core seated in the section C, and removable therefrom without disturbance of the spokes, and the metal hub-section D, removably united to section C and resting solely to confine the wooden core in place.

2. In a metal wheel, the combination of the two metallic hub-sections C and D, one of which is provided with a spoke-receiving socket, and the nut E, lying between and connecting said sections, as described, whereby they may be contracted forcibly upon an internal core without affecting the sockets or the spokes.

3. A metallic hub consisting of two separable parts, C and D, the former provided with sockets or mortises extending through from the exterior to the interior, the metallic spokes seated in said mortises and secured by enlargements *b c*, and the removable wooden core having the axle-box seated therein, said members constructed and combined substantially as described.

4. The wooden core having the annular shoulders at the two ends, in combination with the metal hub-sections C and D, provided with corresponding internal shoulders, and the nut E, encircling the section D and engaging a shoulder thereon and threaded into the end of section C, as shown.

386,573. CURRY-COMB. GEORGE W. BATES, Ashland, Me. Filed Apr. 30, 1888. Serial No. 272,203. (No model.)





Claim.—1. As an improved article of manufacture, a curry-comb consisting of the handle B, wires *c c*, the two plates A at the outer ends of said wires, and the thimbles *f*, spacing the plates apart, each plate being serrated except at one end, *d*, convex on its upper edge, as at *e*, concave on its lower edge, as at *e*, and rounding at its serrated end, as shown at *h*, substantially as set forth.

3. As a new article of manufacture, the plates A, having a plain edge, *d*, at one end, a serrated rounding edge, *h*, at its opposite end, a serrated convex top edge, *e*, and a serrated concave lower edge, substantially as set forth.

386,574. SLATE-CLEANER. ALBERT G. BRADEN, Goshen, Ill., assignor of one-half to John S. Hatfield, same place. Filed Dec. 27, 1887. Serial No. 259,012. (No model.)



Claim.—A slate-cleaner consisting of the flexible hollow ellipsoidal case A, which is compressible laterally and provided with eye D, for attaching it to a slate, in combination with the sponge B, filling the case, and the prongs H H, projecting inwardly from the ends of the case to hold the sponge therein, as specified.

386,575. CHURN. WILLIS F. CHAMBERS, Indianapolis, Ind., assignor to David L. Whistler, same place. Filed Aug. 27, 1887. Serial No. 248,033. (No model.)



Claim.—1. The combination, in a churn, of a dasher consisting of two curved pieces secured together at the bottom by a clip, C^3, which they enter alongside of each other and at the top to a plate, d^3, formed on the end of a shaft, and the means, substantially as described, for driving said shaft, whereby said churn is operated, substantially as set forth.

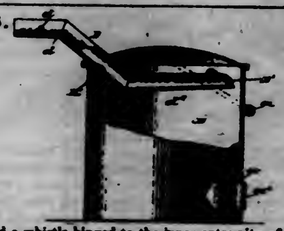
2. The combination, in a churn, of a dasher composed of two curved sides, and the clip C^3, for securing their lower ends together, formed to receive said lower ends when their tops are open and to clamp said lower ends when their tops are closed, substantially as set forth.

386,576. OIL-CAN. GEORGE H. COUSENS, Baltimore, Md. Filed May 31, 1888. Serial No. 275,800. (No model.)

Claim.—1. In an oil-can or similar vessel, the combination, with the body of the vessel, of an outlet-tube attached thereto extending within the vessel and provided with an inlet-aperture, and an alarm secured to the inner end of said tube, substantially as shown and described.

2. In an oil-can or similar vessel, the combination, with the body, of an outlet-tube attached thereto extending within the said vessel, provided with an aperture in one side smaller than the cross-section

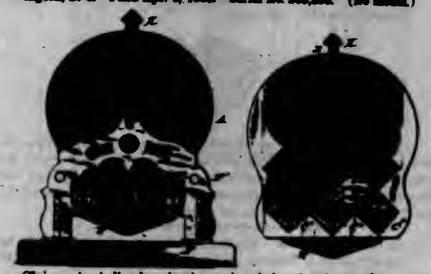
886,576.



of the tube, and a whistle hinged to the inner extremity of the tube, substantially as shown and described.

3. A spout for oil-cans or similar vessels, bent essentially as shown and described, provided with an aperture in one side smaller than the cross-section of the tube, and a whistle attached to its inner extremity, substantially as shown and described.

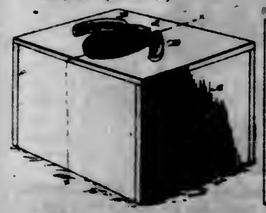
886,577. DIE AND DIE-BOX. REINHOLD F. DE GRAHL, Washington, D. C. Filed Apr. 6, 1888. Serial No. 269,886. (No model.)

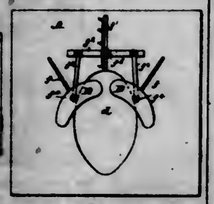


Claim.—1. A dice-box having a closed chamber just wide enough to receive the dice, with recesses or seats at one end for the dice, and openings in its side opposite these recesses or seats, and dice made to correspond in shape with said seats, and having numbers on their sides and constructed to tumble in said box or case without changing their places, substantially as and for the purpose described.

2. A revolving dice-box containing dice, and having openings in its sides to show the numbers, in combination with a supporting-frame, and a set of horizontal journals and bearings connecting the box to the frame for revolution in a vertical plane, substantially as and for the purpose described.

886,578. COMMODE, EARTH-CLOSET, OR SIMILAR APPLIANCE. CHARLES L. DULL, St. Joseph, Mo. Filed May 18, 1887. Serial No. 238,508. (No model.)





Claim.—1. In a commode, earth-closet, or similar appliance, the combination, with the body thereof, divided into two compartments, one for the urine and one for the feces, of a detachable metal shield inclined rearward and extending from side to side of the body beneath the seat-aperture, uniting the partitions of the two compartments, and guides formed each side of the seat-aperture, substantially as shown and described, and for the purpose herein set forth.

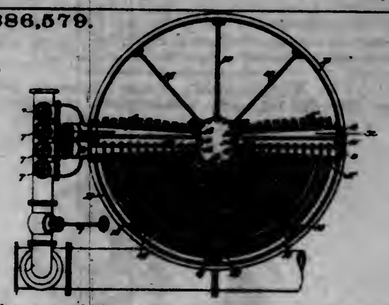
2. The combination, with the closet-seat having an opening, as specified, of the guides D D, which are arranged in rear of said opening and adjustable toward or from it, as shown and described.

3. The combination of the adjustable guides D D, rods f^3, and bar f^5 with the seat having opening d and slots $f\ f\ f'$, as shown and described.

886,579. VACUUM-PAN. GOTTFRIED BEGAS, Brooklyn, N. Y., assignor to Henry F. Bagel, same place. Filed Nov. 10, 1887. Serial No. 254,773. (No model.)

Claim.—1. The combination, with a vacuum-pan, of two or more independent segmental radiators mounted in the same horizontal plane, each connected separately with steam supply and discharge pipes and

886,579.



each constructed of a pair of separate radial steam-heads or extended boxes, and a series of curved connecting-tubes concentrically disposed and fitted to one side only of each steam-head, substantially in the manner and for the purpose herein set forth.

2. The combination, with a vacuum-pan, of a series of segmental radiators, each constructed of a series of concentrically-arranged segmental tubes fitted to a pair of radial steam-heads, to communicate therewith upon one side thereof only, vertical standards fitted and secured centrally within the pan, and sectional segmental brackets bolted to said standards, to furnish bearings for the inner end of each radial head, substantially in the manner and for the purpose herein set forth.

3. The combination, with the steam-heads A A' and the tubes 3 3, coupled thereto, of offsets 4 4, formed within the end of each tube, a bolt, 5, formed with a T-head adapted to engage said offsets, and a nut, 6, upon the outer end of the bolt, whereby, when the end of the bolt is passed through an aperture in the tubular head opposite the opening to which the end of the tube 3 is to be fitted, the end of this tube may be drawn up by the bolt against its seat encircling said opening to form a joint therewith, substantially in the manner and for the purpose herein set forth.

4. The combination of a tier, W, of curved concentric tubes 3 3 3, arranged in two horizontal sections and all connected at their opposite ends to single steam-heads A A', an interposed radial bar, 14, inserted between the two sections of tubes, opposite tie-plates 15 15, embracing two adjacent tubes in the sections on each side of the bar, and a transverse bolt, 16, coupling the two tie-plates, to draw and clamp the tubes upon the radial bar, substantially in the manner and for the purpose herein set forth.

5. The combination of a tier of curved pipes arranged in double sections, an interposed radial bar, 14, inserted between the two sections of tubes, opposite tie-plates 15 15, embracing two or more adjacent tubes, and a sleeve or separator, 18, interposed between the tie-plates, with a bolt, 16, by which the tie-plates are drawn together upon the separator, substantially in the manner and for the purpose herein set forth.

886,580. STORAGE-BATTERY. JOHN A. REES, Boston, assignor to William C. Cobb, Hobart B. Herbert Ingalls and Paul West, Brookline, and William B. Plummer, Newton, Mass. Filed Feb. 13, 1888. Serial No. 263,883. (No model.)





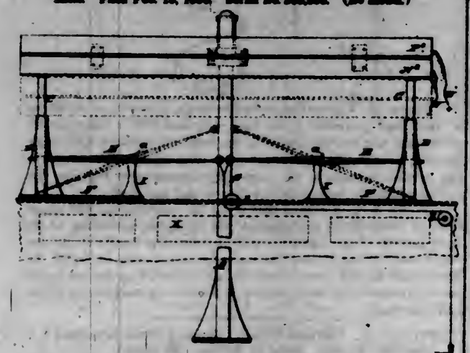
Claim.—1. The battery-case herein described, consisting of two semi-cylindrical sections, one of which is provided with longitudinal guide-flanges or supporting-ribs A^2 A^2, adapted to run upon ways, substantially as shown and described.

2. The combination, with the battery-case and a horizontal shaft arranged to rotate therein, of two spirally-wound metal ribbons forming the two elements, the said ribbons being insulated from each other and attached to the shaft, and radial arms for supporting the same, substantially as shown and described.

3. The combination, with the shaft B, having insulating-tube E, of the diagonally cut said insulated sleeves G D', the metal ribbons C D, attached thereto, and the radial arms F F', substantially as shown and described.

4. The combination of the battery-case, the shaft B, with insulating-tube E, the diagonally-cut sleeves G D', brushes J J', the ribbons C and D, the arms F F', and the insulating-blocks H, substantially as and for the purpose described.

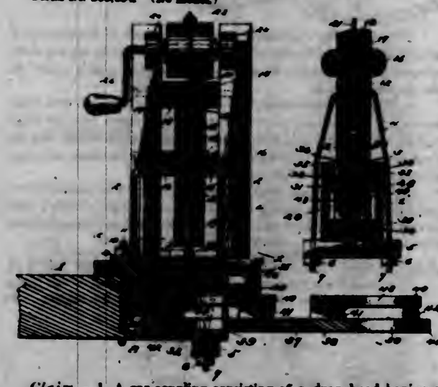
886,581. CURRENT-RECEIVER FOR ELECTRIC-RAILWAY CARS. JOHN A. REES, Boston, assignor to William C. Cobb, Hobart B. Herbert Ingalls and Paul West, Brookline, and William B. Plummer, Newton, Mass. Filed Feb. 13, 1888. Serial No. 263,882. (No model.)



Claim.—1. The combination, with a car, of two vertically-adjustable horizontal conductor-plates, P^2 P^2, extending along the roof of the car, and corresponding stationary brushes arranged along the line of travel, substantially as and for the purpose described.

2. The combination, with a car, of two horizontal conductor-plates P^2 P^2, the supporting-bar C C, slotted standards D D, levers E E, and a pull-cord connected thereto, and stationary posts provided with electrical brushes, substantially as and for the purpose described.

886,582. CAR-COUPLING. WILLIAM H. GRIFFITH, Bolivar, Tex., assignor to himself and C. C. Grundy, same place. Filed Apr. 6, 1888. Serial No. 269,654. (No model.)



Claim.—1. A car-coupling consisting of a draw-head having a spring-actuated sliding piece projecting into the draw-head, with a shouldered end therein, and a hole adapted to register with the coupling-holes in the draw-head, a coupling-link having yielding slotted pieces pivoted at its ends above slots in the ends of the link, and a coupling-pin with resting spring mounted in a frame having a winding-drum, and a rope connected with the coupling-pin, the latter projecting through and engaging the sliding piece and link, substantially as shown and described.

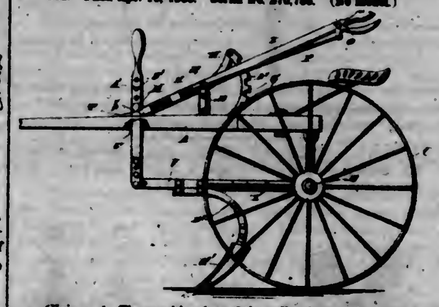
2. In a car-coupling, a draw-head having a sliding piece projecting into the draw-head with an inner shouldered end and a hole adapted to register with the coupling-pin holes in the draw-head, and normally held out of line therewith by retracting-springs, and a coupling-pin connected by a cord with a winding-drum mounted in a frame, and a spring pressing the coupling-pin against the sliding piece in the draw-head, substantially as shown and described.

3. The car-coupling link 37, consisting of a flat strip, 38, having oblong slots 39, and pieces, 40, with slots 43, pivoted in brackets 41, and resting on coiled springs 42, and the bowed strips 44, extending about the ends of strip 38, and connected thereto by oblong slots 45, at their ends engaging pins 46, substantially as shown and described.

4. A car-coupling link consisting of a flat strip having oblong slots at its ends, and spring-actuated pivoted pieces with oblong slots extending over the slotted ends of the link, substantially as shown and described.

5. A car-coupling consisting of draw-head 1, having sliding piece 26 extending into recess 29 of the draw-head, and having a shouldered end, 30, perforation 31, and retracting springs 34, and a frame consisting of posts 2, with drum 23, crank 25, and rope 21, and central casket-piece, 12, having coupling-pin 16, secured to rope 21, and a resting-spring, 19, in combination with coupling-link 37, having oblong slots 39 at its ends, and bowed elastic strips 44, with slots 45 at their ends engaging pins 46, and pieces 40 with slots 43, pivoted in brackets 41 and resting on springs 42, substantially as shown and described.

886,588. SULKY-CULTIVATOR. JAMES A. HARLEWOOD, Clifton, Tex. Filed Apr. 16, 1888. Serial No. 270,780. (No model.)



Claim.—1. The combination of the sulky-frame, the beam having the cross-bar at its rear end, and the rearward-diverging brace-arms connecting the beam to the ends of the cross-bar, the links hinged to the rear ends of the brace-arms and pivoted to the sulky-frame, the hand-lever fulcrumed on the frame, and the rod A', connecting the hand-lever to the front end of the beam, substantially as described.

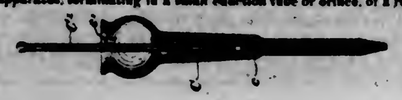
2. The combination of the sulky-frame having the tongue, the hand-lever fulcrumed on a suitable support on the tongue, the curved arm or segment plate F, having notches G, and riding from the tongue in rear of the fulcrum of the lever, the lug or ear S, rising from the tongue in advance of the fulcrum of the lever, the spring-actuated bolt on the lever adapted to engage both the notches of the segment-plate and the lug or ear S, the lever O, pivoted to the lever I, the link-rods connecting lever O to the spring-actuated bolt, whereby said bolt may be withdrawn simultaneously for the purpose set forth, the vertically-movable beam having the plow or shovel, and the rod connecting the front end of lever I and the front end of the beam, substantially as described.

3. The combination of the standard, the plow having the rearward-extending ears G', having openings I' and openings H' concentric therewith, and the pivotal bolt in openings I', connecting the plow to the standard, and the frangible pin extending through one of the openings H' and through the standard, substantially as described.

886,584. APPARATUS FOR SUPPLYING LIQUIDS IN GAS-GENERATORS. ARTHUR S. HOCKLEY, Indianapolis, Ind., assignor to the Jenney Electric Company, same place. Filed May 26, 1887. Serial No. 239,509. (No model.)

Claim.—1. The combination, with the receiver and generator of a gas-generating apparatus, of a supply-vessel for the acid, terminating in a minute orifice and provided with a rod terminating in a point, by which said orifice may be closed when desired, substantially as set forth.

2. The combination, with the supply-vessel of a gas-generating apparatus, terminating in a small ejection-tube or orifice, of a rod for

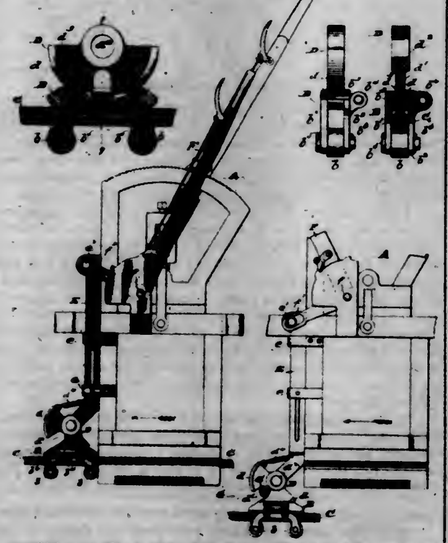


386,584.



closing said orifice upon occasion, provided with a hook by which it can be held up away from said orifice without being removed from the supply-vessel altogether, substantially as set forth.

386,585. CABLE-GRIP DEVICE. JOHN T. HOGGINS, St. Louis, Mo., assignor of one-third to Samuel G. Hodgins, same place. Filed May 9, 1888. Serial No. 273,308. (No model.)



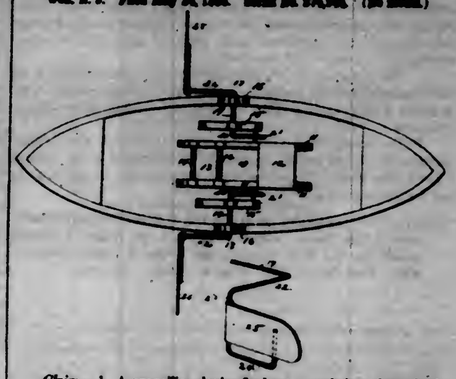
Claim.—1. The combination of the cable-holder B, the pivoted, notched, and flanged part D, the grip, and means for raising and lowering said holder B, substantially as described.

2. The combination of the holder B, having its sides hinged together and made to open, substantially as described, with the part D, said part D in turn, and by being journaled upon the bar E, being connected with a car, substantially as described.

3. The combination of the holder B, the part D, the bar E, and the spring d^3, substantially as described.

4. The combination of the grip A, the holder B, made to open as described, the part D, constructed and engaging with said holder as described, the spring d^3, and the means for raising and lowering said holder and part D, as described.

386,586. VIBRATING PROPELLER. ISRAEL G. HOWELL, Hopewell, N. J. Filed May 24, 1888. Serial No. 274,244. (No model.)



Claim.—1. A propelling device for boats, consisting of standards, a crank-shaft journaled in the same, provided with a body portion, an inboard arm at right angles to the body, an outboard right-angular arm, an upwardly-curved outer extremity, and a blade hinged to the pendent member of the outer right-angular arm engaging the curved extremity, substantially as shown and described.

2. In a device for propelling boats, the combination, with standards, of crank-shafts journaled in said standards, consisting of the body portion 19, the inboard arm 20 and attached handle 21, the outboard arms 22 and 23, and the upwardly-curved outer extremity, 24, and a blade hinged upon the arm 23 and supported at the rear by the curved extremity 24, all combined to operate substantially as shown and described.

386,587. VEHICLE-THILLS. GEORGE A. HYDE, Little Falls, N. Y. Filed Mar. 10, 1888. Serial No. 266,999. (No model.)



Claim.—1. The combination, with the runners, of the castings B, secured thereto and formed with arms *b*, and the shafts having shaft-irons detachably secured between said arms, substantially as and for the purpose specified.

2. The combination, with the runners, of the castings B, detachably secured to the forward portions thereof and formed with the longitudinal arms *b*, provided with a plurality of holes, as shown, and the shafts provided with shaft-irons detachably secured between said arms, substantially as and for the purpose specified.

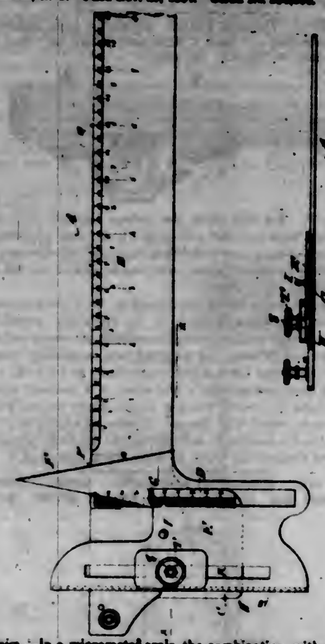
3. The combination, with the metal portions of the shafts, curved and having offsets, as shown, and formed with tubular forward ends, of the wooden forward portions of the shafts fitted and secured in said tubular portions, substantially as shown and described.

386,588. GAS-BURNER TIP. WALTER H. JAMESON, New York, N. Y., assignor to the Gas Consumers' Benefit Company of the United States, same place. Filed Apr. 14, 1887. Serial No. 234,522. (No model.)



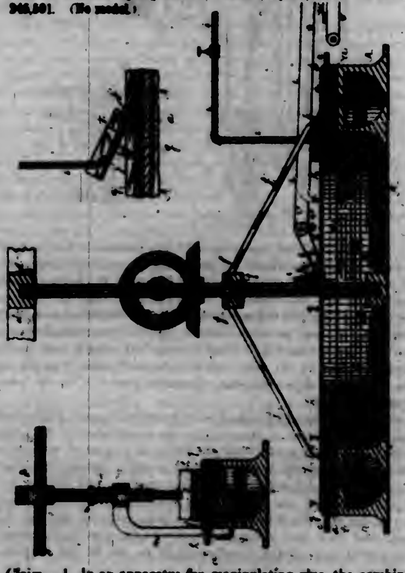
Claim.—As a new article of manufacture, a tip for gas-burners, consisting of a slightly-conical shank, having a perforated lower end and a flanged upper end, a ferrule having an outwardly-projecting flange adapted to rest in contact with the flange of the shank and an inwardly-projecting flange for deflecting the gas in its passage to the exit-slit in the head, and the rounded or curved head having a slot extending across the top and sides of the head, the end of the slot being in or approximately in a plane with the inwardly-projecting flange, substantially as set forth.

386,589. MICROMETER-SCALE. EDWARD JONES, Gold Spring Harbor, N. Y. Filed Nov. 28, 1887. Serial No. 256,698. (No model.)



Claim.—In a micrometer-scale, the combination, with a straight-edge having a longitudinal scale and a lateral extension having a transverse scale, of a gage mounted to work on the said extension on a transverse guide, and having an index adapted to register with the transverse scale, and an edge oblique to the said guide and adapted to register with the straight-edge, substantially as and for the purpose specified.

386,590. APPARATUS FOR SHEETING AND LAYING GLUE. CHARLES KELLER, Springdale, Pa. Filed July 23, 1887. Serial No. 245,501. (No model.)



Claim.—1. In an apparatus for manipulating glue, the combination of a continuously-moving mold, a supply-pipe for delivering glue to the same, and a reciprocating knife mounted on the supporting-frame across the pan for cutting the glue into strips, substantially as and for the purpose set forth.

2. In an apparatus for manipulating glue, the combination of an annular trough, means for supplying the same with water, and an annular congealing-pan supported within said trough, substantially as and for the purpose set forth.

3. In apparatus for manipulating glue or like substances, the combination of a continuously-moving congealing-pan, a knife mounted on the supporting-frame for cutting the congealed glue into strips in the pan, and a stripper in the rear of said knife for stripping said strips from the pan, substantially as and for the purpose set forth.

4. In apparatus for manipulating glue and like substances, the combination of a continuously-moving congealing-pan, a cooling-trough in which the same travels, a stripper for stripping the congealed glue from the pan, and a conveyer back of said stripper for conveying the strips away from the pan, substantially as and for the purpose set forth.

5. In apparatus for manipulating glue, the combination of a continuously-moving congealing pan or mold, a stripper for stripping the glue from the pan, a conveyer back of said stripper, and a continuously-moving table under the end of the conveyer for the support of the drying-frame, substantially as and for the purpose set forth.

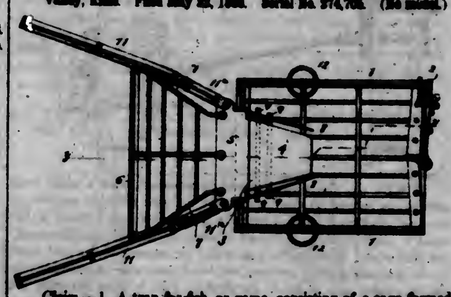
6. In apparatus for manipulating glue, the combination, with an annular trough, of means for supplying the same with a continuous current of water, with an annular rotating congealing-pan supported by a vertical shaft in said trough, substantially as and for the purpose set forth.

7. In apparatus for manipulating glue or like substances, the combination of a continuously-moving mold or pan, a cooling-trough in which the same travels, and a stripper for stripping the congealed glue from the pan and conveying it away, substantially as and for the purpose set forth.

8. In an apparatus for manipulating glue, the combination of the water-trough *a*, congealing-pan *g*, rotating in said trough, a stripper, *k*, held down against the surface of said pan, and a conveying-table, *l*, in the rear of said stripper for conveying the material away, substantially as and for the purpose set forth.

9. In the apparatus for manipulating glue, the combination of a water-trough, *a*, the congealing-pan *g*, rotating in said trough, a knife, *l*, supported by said trough, a stripper, *k*, held down against the surface of said pan in the rear of said knife, and a conveying-table, *l*, in the rear of said stripper for conveying away the material, substantially as and for the purpose set forth.

386,591. TRAP FOR FISH OR GAME. GEORGE H. KIRK, Round Valley, Kans. Filed May 23, 1888. Serial No. 274,703. (No model.)



Claim.—1. A trap for fish or game, consisting of a cage formed with an opening having an inwardly-tapering passage-way, a grating hinged to the lower side of the opening, and double folding guide-gratings hinged to the sides of the opening, substantially as described.

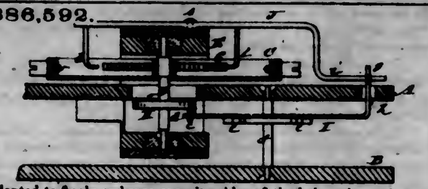
2. A trap for fish or game, consisting of a cage provided with an opening having an inwardly-tapering passage-way, the bottom of which is formed of a platform and its top and sides of pointed rods, and a grating hinged to the lower side of the opening, and double folding gratings hinged to the sides of the opening, substantially as described.

3. A trap for fish or game, consisting of cage 1, having opening 3, with an internal passage-way formed of platform 4 and converging pointed rods 6, and having the 'external shelf' 5, the grating 6, with outwardly-inclined sides 7, hinged to shelf 5, and the double folding guide-gratings 11, hinged at the sides of opening 3, substantially as described.

386,592. BALANCE-ESCAPEMENT FOR WATCHES. JAMES R. KNIGHTHORSE, Hollidaysburg, Pa. Filed Apr. 24, 1888. Serial No. 271,670. (No model.)

Claim.—1. In a watch-movement, the combination, with the hair-spring, balance-wheel, and roller-pin, of the forked pallet or escapement-lever and a vibrating governor actuated by said lever and

886,592.



adapted to freely embrace opposite sides of the hair-spring, substantially as specified.

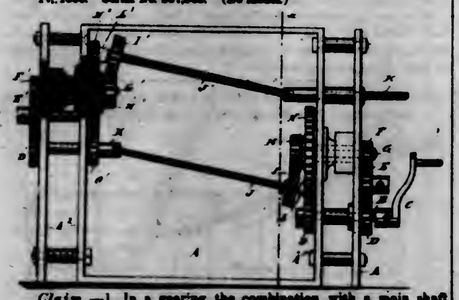
2. The vibrating governor J, with its attached curbs *l l*, working upon or from an independent pivot, *c*, in combination with the hair-spring G, the balance-wheel C, balance-staff D, the roller H, with its attached pin *c*, and the pallet or escapement-lever I, having a fork, *d*, at its one end and extended and constructed at its opposite end to establish a vibrating engagement with the governor J, essentially as shown and described.

886,593. WHEEL HAY-RAKE. HENRY W. KRAMER, Bowensville, Ind. Filed May 14, 1887. Serial No. 238,269. (No model.)



Claim.—The rake-head D, provided with the rake-teeth D', rear rods, *g*, attached to the rake-head, and the arms H, hinged to the rear ends of the rods *g*, in combination with the side spring-rods, K, levers J' and *j*, and the rods *g*', connecting the lever *j* with one of the arms H, substantially as described.

886,594. GEARING. OLE O. KRAVIK, St. Carl, Dak. Filed Mar. 17, 1888. Serial No. 267,923. (No model.)



Claim.—1. In a gearing, the combination, with a main shaft adapted to receive a rotary motion, of the gear-wheel D, secured on the said shaft and meshing into the intermediate gear-wheel, E, the shaft G, carrying the gear-wheel F, meshing into the said intermediate gear-wheel, E, the bevel gear-wheel H, secured on the said shaft G, the inclined shaft J, carrying the bevel gear-wheel I, meshing into the said bevel gear-wheel H, the shaft K, held in axial line with the said shaft G and on which one end of the said shaft J is pivotally connected, the gear-wheel N, mounted to rotate loosely on the said shaft G, and having a bearing on the other end of the said inclined shaft J, and the gear-wheel O, secured on the main shaft B and meshing into the said gear-wheel N, substantially as shown and described.

2. In a gearing, the combination, with two shafts, B and G, rotating in the same direction, of a bevel gear-wheel, H, secured to the said shaft G, an inclined shaft, J, carrying a bevel gear-wheel, I, meshing into the said bevel gear-wheel H, a large gear-wheel, N, mounted to rotate loosely on the said shaft G and forming the bearing for one end of the said shaft J, and the gear-wheel O, meshing into the said large gear-wheel N and being secured to the said shaft B, substantially as shown and described.

3. In a gearing, the combination, with two shafts, B and G, rotating in the same direction, of a bevel gear-wheel, H, secured to the said shaft G, an inclined shaft, J, carrying a bevel gear-wheel, I, meshing into the said bevel gear-wheel H, a large gear-wheel, N, mounted to rotate loosely on the said shaft G and forming the bearing for one end of the said shaft J, a gear-wheel, O, meshing into the said large gear-wheel N and being secured to the said shaft B, and the shaft K, mounted to rotate and placed in axial line with the said shaft G, said shaft K forming the bearing for the other end of the said shaft J, substantially as shown and described.

886,595. VEHICLE-BRAKE. ANDREW W. LAIR, Somerville, as signor to himself, and James L. McDermott, Milford, Ct. Filed Jan. 5, 1888. Serial No. 259,982. (No model.)

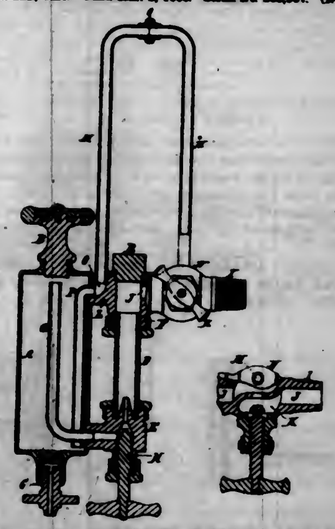


Claim.—1. In a brake-shoe, the ⅂-shape brackets 10 11, having their adjacent faces provided with spurs 17, and their oppositely-projecting attaching-arms provided with a transverse bolt-aperture and a slot, respectively, through which bolts may be passed into the brake-bar, substantially as set forth.

2. In a brake-shoe, the ⅂-shape brackets 10 11, the adjacent faces of which are provided with spurs 17, the oppositely-projecting attaching-arms of the brackets being transversely apertured and slotted, respectively, and formed with longitudinally-extending flanges 12 along their upper and lower edges, substantially as set forth.

3. The combination, with a brake-bar, of a recessed block, 20, brackets 10 and 11, one of which is longitudinally slotted, and both of which are provided with flanges 12, bolts by which the brackets are secured to the brake-bar, and a bolt arranged to pass through the brackets and through the block, substantially as described.

886,596. SIGHT-FEED LUBRICATOR. BERNARD LUBKEMEIER, Cincinnati, Ohio. Filed Mar. 2, 1888. Serial No. 265,997. (No model.)

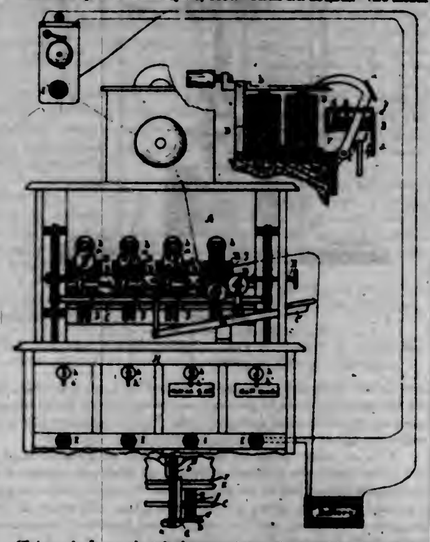


Claim.—1. In an ascending sight-feed lubricator having a single connection with the source of steam-supply, the combination of the oil-reservoir A, sight-feed glass D and its fitting E, oil-pipe G, connection I, provided with shank L, fitting F, and a single channel, J, for admitting steam and delivering oil, valve K, controlling said channel water-pipe P, and steam-condensing pipe M, communicating at one end with the channel J at a point between the valve K and the sight-feed glass, and at the other end with the water-pipe P on the opposite side of the sight-feed glass, substantially as and for the purpose described.

2. In an ascending sight-feed lubricator having a single connection with the source of steam-supply, the combination of the oil-reservoir A, sight-feed glass D and its fitting E, oil-pipe G, connection I, provided with shank L, fitting F, and a single channel, J, for admitting steam and delivering oil, valve K, controlling said channel, water-pipe P, secured to the shank L, and condensing-pipe M, communicating at one end with the channel J at a point between the valve K and sight-feed glass, and at the other end with the water-pipe P through the duct O in the shank L, substantially as and for the purpose described.

3. In an ascending sight-feed lubricator having a single connection with the source of steam-supply, the combination of the oil-reservoir A, sight-feed glass D and its fitting E, oil-pipe G, valve K, screw-plug R, connection I, provided with shank L, fitting F, and a single channel, J, for admitting steam and delivering oil, valve K, controlling said channel, water-pipe P, screwed into the shank L, and the condensing-pipe M, communicating at one end with the channel J at a point between the valve K and sight-feed glass, and at the other screwed into the shank L and communicating with the pipe P through the duct O, substantially as and for the purpose specified.

886,597. ELECTRICAL CALL SYSTEM. JAMES C. MCLAUGHLIN, Kansas City, Mo. Filed Apr. 9, 1887. Serial No. 234,262. (No model.)



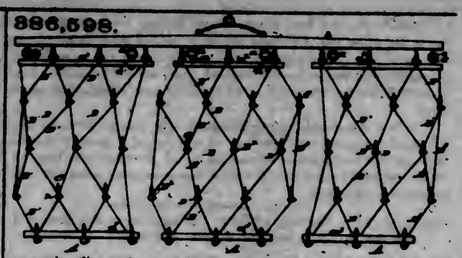
Claim.—1. In an electrical annunciator, the combination of the call-drops, a movable actuating-bar to return said drops to their normal position, and registers disconnected from said drops and actuating-bar, but arranged in the path of said drops, so as to be thrown from their normal position as the drops fall, substantially as shown and described.

2. The combination, substantially as specified, of an electrical annunciator provided with call-drops, a bell and a push-button in each room electrically connected with said annunciator, a system of registers separate from the call-drops, but arranged to be thrown from their normal position by said drops, a pull-rod to return the registers to their normal position, and push-buttons located in the office or other central station and in electrical connection with the bells, for sounding an alarm in any room from the office, as set forth.

3. The combination, substantially as specified, of the annunciator A, provided with call-drops *a a'*, electrical connections and appliances for releasing the same from the different rooms, and means for returning the said drops to their normal position, with the pivoted registers D, having pendants *d* arranged in the path of the drops *a a'* when in their normal position, the spring-latches *g*, to retain the said registers in their normal position, and the spring-pull E, pins *e*, and studs *e'*, to return the registers D to their normal position.

4. The combination, substantially as specified, of the electrical annunciator A, provided with the call-drop *a*, the pivoted registers D, having pendants *d*, and studs *e'*, arranged to be actuated by the call-drops, and the spring-pull E, having pins *e* for the purpose of returning the registers to their normal position.

886,598.



successive diagonal or angular arms or portions of which varies in the direction of their lengths and extends in opposite directions, which beams are connected together, with the shorter portions or arms of one beam bracing the longer arms or portions of the adjoining beam, substantially as set forth.

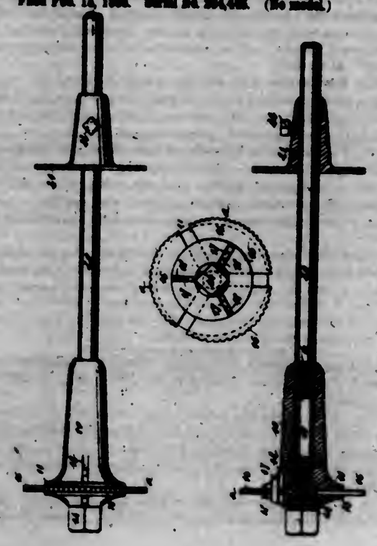
3. The harrow comprising the series of thin plate-like zigzag beams having apertured straight parallel portions intermediately of their angular or diagonal portions or arms, the angle of deflection of the successive diagonal or angular arms of which varies in the direction of their lengths and extends in opposite directions, which beams are connected together, with the shorter portions or arms of one beam bracing the longer arms or portions of the adjoining beam, and the teeth, the shanks of which are formed with an apertured web provided above and below the aperture with shoulders, substantially as set forth.

886,599. DEVICE FOR COOKING AND TURNING OMELETS. MARY D. REVELL, Wellsburg, Va. Filed June 15, 1887. Serial No. 241,362. (No model.)



Claim.—An omelet-pan made in two parts and constructed with a rim, *a*', said rim cut out or notched, as shown at *a*', to allow one side of the rim of the pan to enter within the other, the parts joined together by a hinge constructed approximately midway between the bottom of the pan and the top of the rim, in combination with the handles *a*', for turning one side of the pan over the other and for handling the pan, substantially as described.

886,600. FLUE-CLEANER. JAMES REVERE, New Ridge, Ala. Filed Feb. 13, 1888. Serial No. 264,462. (No model.)



886,598. HARROW. GEORGE HERZOG and REUBEN H. HARPER, Eugene City, Oreg. Filed Mar. 6, 1888. Serial No. 266,570. (No model.)

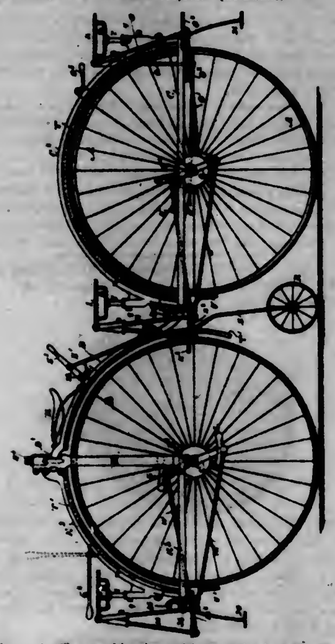
Claim.—1. The harrow comprising the series of zigzag beams, the angle of deflection of the successive diagonal or angular arms or portions of which varies in the direction of their lengths and extends in opposite directions, which beams are connected together, the shorter portions or arms of one beam bracing the longer arms or portions of the adjoining beam, substantially as set forth.

2. The harrow comprising the series of thin plate-like zigzag beams having apertured straight parallel portions intermediately of their angular or diagonal portions or arms, the angle of deflection of the

Claim.—1. In a flue-cleaner, a head having a transversely-apertured flat outer end, a circular series of flat scraping-plates having transverse bars projecting from their opposite faces, and an apertured clamping-plate between which the said plates are held with their bars projecting into the apertures in the head and plate, substantially as set forth.

2. In a flue-cleaner, the combination, with a head formed with a flat-faced flange and with apertures 12, of a clamping-plate, 15, formed with apertures 18, serrated-faced blades 16, provided with bars 17, which rest in the apertures 12 and 18, and a clamping-screw, 14, substantially as described.

386,601. TANDEM BICYCLE. THOMAS O'REILLY, New York, N. Y. Filed Oct. 24, 1887. Serial No. 253,173. (No model.)



Claim.—1. The combination, with the wheels A B, of a frame composed of the bow C and arch C^2 at the wheel A, the curved spine D, rising above the wheel B, the fork E, quadrant spine E^2, and half-yoke E^3, and the head D', pivoted to the top upper end of the fork E and the seats G, I, and K, and the standards for supporting the same substantially as set forth.

2. The combination, with the two wheels A B, and the frame connecting the same pivoted at D', of the seat H upon the spine D, the crank L', and treadles L, the seat G in front of the wheel B, the pendent links M, and connecting-rods M', substantially as set forth.

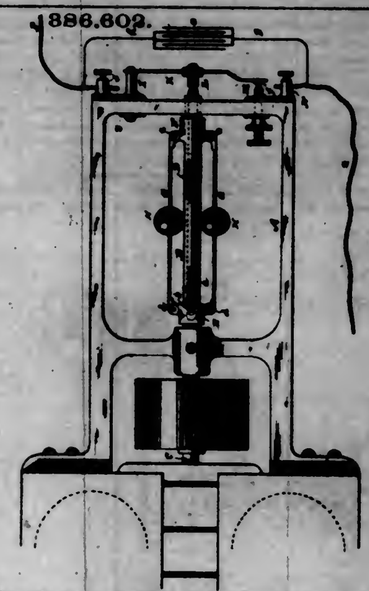
3. The combination, in a bicycle, of two wheels and the frame for connecting the same, the cranks, connecting-rods, pendent links, and treadles or foot-pieces, and three seats, one in front of the bicycle, one behind, and one between the two wheels, the pendent links being connected at their upper ends to the respective seats, substantially as set forth.

4. The combination, in a bicycle, of two wheels, the connecting-frames, the three seats, pendent links, treadles, and cranks, two steadying-wheels, a frame for supporting the same pivoted at its upper end to the spine D of the frame-work, links connected to the frame, and handles for swinging the steadying-wheels down into position and raising the same, substantially as set forth.

386,602. ELECTRIC GOVERNOR. HORACE W. PARSONS and JOHN HESSIT, Wamego, Kans. Filed Sept. 26, 1887. Serial No. 250,760. (No model.)

Claim.—1. In an electric governor, the combination of a tubular shaft, a rod in the shaft, a sleeve fitted to slide on the shaft and connected to the rod, springs pivoted to the shaft and sleeve, weights on the springs, and a circuit-interrupting spring operated by the said rod, substantially as described.

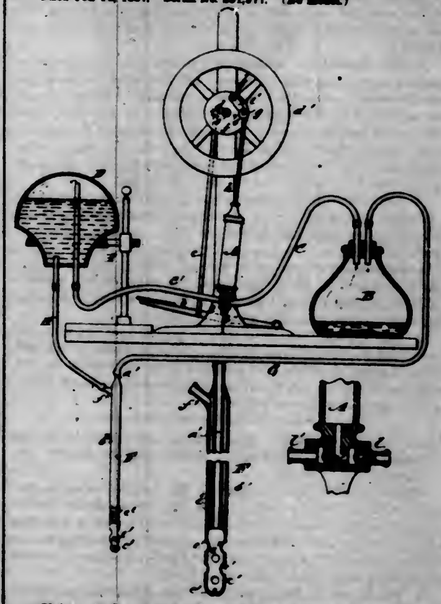
2. In an electric governor, the combination of a tubular shaft provided with a longitudinal slot, a rod in the shaft, a sleeve fitted to



slide on the shaft and connected to the rod by a pin projecting into the slot, springs pivoted to the shaft and sleeve, weights on the springs, and a circuit-interrupting spring provided with an insulated stop, with which the end of the rod engages, substantially as described.

3. In an electric governor, the combination of a tubular shaft, a rod in the shaft, a sleeve fitted to slide on the shaft and connected to the rod, springs pivoted to the shaft and sleeve, weights on the springs, a circuit-interrupting spring provided with a stop, with which the rod engages, a condenser, and the contacts and electrical connections, substantially as herein shown and described.

386,603. STORAGE-PUMP. HORACE W. PARSONS, Wamego, Kans. Filed Oct. 11, 1887. Serial No. 251,977. (No model.)



Claim.—1. In apparatus for washing out the stomach and other cavities or organs of the body, the combination of an air exhausting and forcing pump, a close receiver adapted to receive the washed-out contents of the cavity or organ and connected with the suction-inlet of the pump, a separate close receptacle or vessel adapted to contain the fluid used in washing out the said cavity or organ and connected with the forcing-outlet of the air-pump, ducts or tubes connected, respectively, the one with the upper portion of the close receiver and the other with the lower portion of the vessel containing the washing-out fluid and air under pressure, and a stomach or other like tube common to both of said last-named tubes, and adapted to both receive and pass the contents of the organ under treatment and to separately pass or eject the washing-out fluid, essentially as specified.

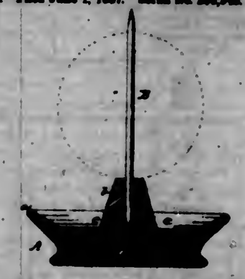
2. In apparatus for washing out the stomach and other cavities of the body, the double-current tube F, composed of an inner tube, *c'*, having an attached tube, perforated extension or nozzle, and an outer tube, *b'*, provided with discharge-perforations at or near its one end and an inlet at or near its other end, substantially as herein set forth.

3. The combination, with the double-current tube F, constructed for operation substantially as described, of the attached tubes G H and an exhaust vessel or receiver connected with the one tube, G, and a close fluid and air vessel connected with the other tube, H, essentially as specified.

4. The combination, with the pump of the driving face-plate *f*, having adjusting-apertures *s* in different positions relatively to the center of said plate, and the arm or plate *i*, pivoted to said plate on one side of its center and provided with a wrist or wrist-pin, *g*, adapted to engage with any one of said apertures in the face-plate, essentially as described.

5. The pump A, in combination with the spring *c*, by which it is carried, and which provides for the vibration or oscillation of the pump, substantially as specified.

386,604. FRUIT-HOLDING DEVICE. JOHN J. W. PLANK, San Mateo, Fla. Filed June 1, 1887. Serial No. 239,943. (No model.)



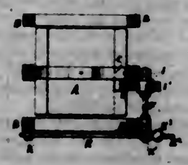
Claim.—In a device for use in removing the rind from oranges, a holder comprising the base A, formed with the raised portion *b*, the flange *a*, and the intermediate juice-receiving groove, *c*, and the spindle E, projecting up from said raised portion, substantially as set forth.

386,605. ELEVATOR-GATE. JAMES H. FRASER, Brooklyn, N. Y. Filed Apr. 26, 1888. Serial No. 271,811. (No model.)

Claim.—1. The combination, with the pivoted guard arm or gate, of the rock-shaft F, to which said guard arm or gate is connected, the segmental brush I upon said rock-shaft, and the brush D upon the side of the elevator-guideway, substantially as set forth.

2. The combination, with the pivoted guard arm or gate K, of the hub E' for the same, a threaded rod, F', and counter-weight F^2, the rock-shaft F, to which the hub E' is connected, bearings for the rock-shaft, a hub, I, and segmental brush I', and a brush, D, upon the side of the elevator-guideway C, substantially as set forth.

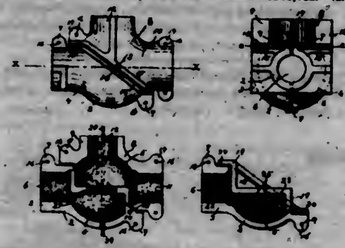
3. The combination, with the pivoted guard arm or gate K, of the hub E' for the same, a threaded rod, F', and counter-weight F^2, the rock-shaft F, to which the hub E' is connected, bearings for the rock-shaft, a hub, I, and segmental brush I', and a brush, D, upon the side of the elevator-guideway C, the bristles or wires of the brush I' being set in lines radiating from the rock-shaft F, and the bristles or wires of the brush D being set at an inclination upwardly, substantially as set forth.



386,605.



386,606. DEVICE FOR MOLDING CORES. ROBERT A. ROBERTS, Baltimore, Md. Filed May 12, 1888. Serial No. 273,712. (No model.)



Claim.—1. A core-box for globe-valve cores, consisting of a drag made in two sections and a cope made in two sections, the said cope and drag having matching inclined surfaces which pass obliquely through the axis and through the center of the matrix-cavity, the said cope and drag forming the exterior surfaces of the core, in combination with a subsidiary molding-plate, 18, provided with the molding-surface 21, having therein the recess 23, whereby the upper surface of the valve-seat and a part of the interior walls will be formed, and the molding-plate 19, provided with the molding-surface 25, whereby the lower surface of the valve-seat and part of the interior walls of the valve will be formed, for the purpose set forth.

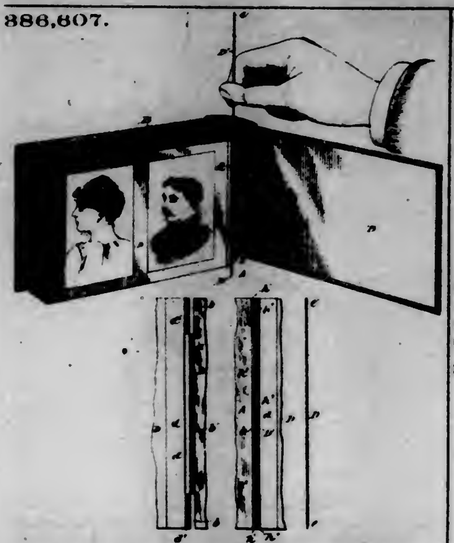
2. A core-box for globe-valve cores, consisting of a drag made in two sections and provided with an opening, 30, in the bottom thereof, and a cope made in two sections, the said cope and drag having matching inclined surfaces which pass obliquely through the axis and through the center of the matrix-cavity, the said cope and drag forming the exterior surfaces of the core, in combination with a subsidiary molding-plate, 18, provided with the molding-surface 21, having therein the recess 23, whereby the upper surface of the valve-seat and a part of the interior walls will be formed, the molding-plate 19, provided with the molding-surface 25, whereby the lower surface of the valve-seat and part of the interior walls of the valve will be formed, and the wire 29, by which the union of the two parts of the core is strengthened, for the purpose set forth.

386,607. ALBUM. FELIX REICHENBERGER, Brooklyn, N. Y. Filed Jan. 18, 1888. Serial No. 261,126. (No model.)

Claim.—1. The combination, with the album provided with a series of stubs having eyes, of the leaves forming mounts said having strips of textile or other non-metallic fabric pasted along their inner edges and forming eyes at the bends registering with the spaces between the stub-eyes, and the pintles passed through said eyes and removable therefrom, whereby any mount may be removed, passed through a burnisher, and then replaced, substantially as set forth.

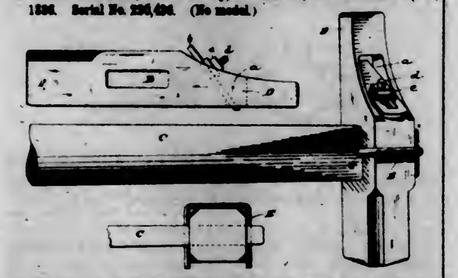
2. The combination, with the album provided with a series of stubs having eyes, of the series of mounts having flexible eyes of textile or other non-metallic fabric, and the removable pintles connecting

386,607.



said eyes, one pintle being exposed between its ends, whereby it may be grasped, pushed outward, and removed to serve as means for forcing the other pintles outward, substantially as set forth.

386,608. COMBINED SHINGLING HAMMER AND PLANE. WILLIAM S. ROSENBERG, New Germany, Nova Scotia, Canada. Filed Dec. 2, 1886. Serial No. 220,494. (No model.)



Claim.—1. A hammer having its peen formed at one side of a line running longitudinally and centrally through the hammer-head and perpendicularly to the hammer-face and having a plane-iron secured in the peen end, substantially as described.

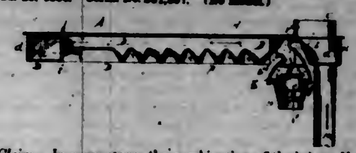
2. The combination, with a hammer-head having its peen formed at one side of a line running longitudinally and centrally through the hammer-head and perpendicularly to the hammer-face, of a plane-iron secured in the peen end and removable guides projecting beyond the plane-face of the hammer-head, substantially as described.

3. The combination, with a hammer-head having its peen formed at one side of a line running longitudinally and centrally through the hammer-head and perpendicularly to the hammer-face, and a handle secured in the said head, of a plane-iron secured in the peen end of the hammer-head and a staple inserted in holes in the handle on opposite sides of the head and projecting beyond the plane-face of the hammer-head, substantially as herein shown and described.

4. The combination, with the hammer-head A, provided with a peen, D, formed at one side of a line running longitudinally and centrally through the hammer-head and perpendicularly to the hammer-face and having a flaring transverse aperture, *a*, formed therein, of the plane-iron *b*, placed in the flaring aperture, the stud *d*, projecting through the plane-iron, and the nut *c*, for clamping the iron in the position of use, substantially as described.

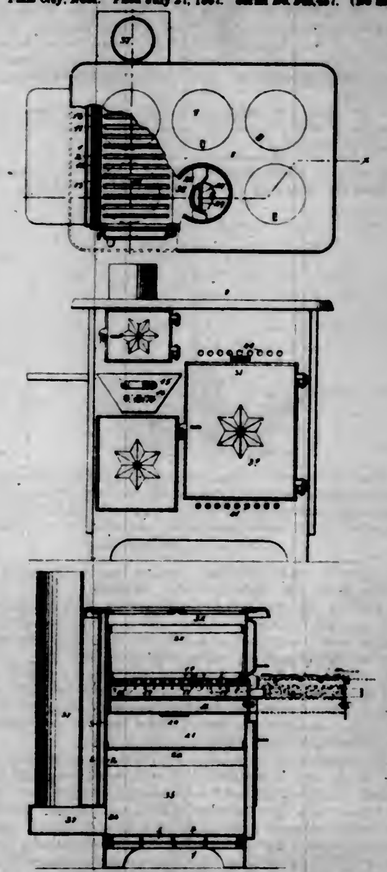
5. The combination, with the hammer-head A, provided with a peen, D, formed at one side of a line running longitudinally and centrally through the hammer-head and perpendicularly to the hammer-face and having a flaring transverse aperture, *a*, formed therein, of the plane-iron *b*, placed in the flaring aperture, the stud *d*, projecting through the plane-iron, the nut *c*, for clamping the iron in the position of use, the handle C, provided with apertures *c c'*, the staple F, fitted to the apertures *c c'* and arranged to project beyond the plane-face of the hammer-head, and the steel wedge having cutting-edges *f g*, substantially as described.

386,609. GAS-STOVE. J. J. HENRY BERLAM, Bennett, Pa. Filed Jan. 30, 1888. Serial No. 261,897. (No model.)



Claim.—In a gas-stove, the combination of the burner H, the air-burners E' E' and F' F' on either side of said burner H, the perforated corrugated plate D D, extending from the rear to the front of the fire-chamber, and the flues *a a a a*, encircling said chamber and communicating therewith by the ports *n n n*, the whole structure being suitably incased.

386,610. COOKING STOVE OR RANGE. ISAAC C. SHEVLER, Falls City, Nebr. Filed July 27, 1887. Serial No. 245,057. (No model.)



Claim.—1. A stove provided with a fire-pot consisting of a grate recessed at the top to receive the linings and an air-space intervening one side lining and the end of the stove and the opposite side lining and the oven, both of the side flues leading to the ash-pit and receiving air through apertures at their upper ends, substantially as shown and described, whereby the air in said space is heated and the linings protected from burning, as set forth.

2. A stove provided with an oven having a perforated top, a hot-air chamber above said oven, and a damper sliding in said hot-air chamber, perforated to register with the perforations in the oven-top,

and a flue leading from said chamber to the fire-pot, substantially as shown and described, whereby the air is allowed to pass from said oven into said chamber, as set forth.

3. A stove having a chamber beneath the fire-pot and separated therefrom by a partition, a combustion-flue passing around the oven and entering said chamber near the top, and an exit-flue near the bottom of said chamber, substantially as shown and described.

4. The combination, with a stove, of a detachable ash-receptacle provided with a detachable longitudinal partially-perforated plate held above the bottom in its forward end, substantially as shown and described, whereby hot coals may be placed upon the plate when the receptacle is drawn outward, and meats broiled thereon, the draft being through the coals and rearward under the grate, as set forth.

5. The combination, with a stove, of a detachable ash-receptacle provided with a detachable longitudinal partially-perforated plate held above the bottom, a draft-opening in the end of said receptacle below the plate, and a series of longitudinally-arranged apertures above the plate in each side, substantially as shown and described, whereby hot coals may be placed upon the perforations of the plate, meats broiled thereon, and the fumes carried up into the fire, as set forth.

6. The combination of a stove provided with a fire-pot at one end, an outer jacket, 1, covering said end, whereby an air-space, 6, is formed, a series of inlet-apertures, 7, in the base of said jacket, a passage, 11, intervening the inner wall, 2, of said space 6 and the lining 12 of the fire-box and leading to the fire-pot through the ash-pit, and a series of outlet-apertures, 13, connecting said space 6 and passage 11, substantially as shown and described, whereby the air is heated and passed up into the fire, as set forth.

7. The combination, with a stove provided with a fire-pot at one end and an outer jacket, 1, covering said end, whereby an air-space, 6, is formed, a series of inlet-apertures, 7, in the base of said jacket, a passage, 11, intervening the inner wall, 2, of said space 6 and the lining 12 of the fire-box, and a series of outlet-apertures, 13, connecting said space 6 and passage 11, of a trough-shaped partition, 22, supported below the fire-box and passage, whereby hot-air chamber 21 is formed, the hot-air chamber 20 below said partition, and the combustion-flue 32, leading from the fire-pot around the oven into said chamber 20 and through an exit therein, whereby the air in space 6 and chamber 21 will be heated by the products of combustion, substantially as shown and described, and for the purpose herein set forth.

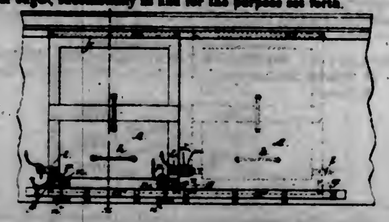
8. The combination, with a stove provided with an air-space, 6, air-inlet aperture 7, and air-outlet apertures 13, a passage, 11, intervening the inner wall of said air-space and the fire-box lining, a trough-shaped partition beneath the fire-box, whereby a chamber, 21, is formed, and a perforated ash-receptacle, 16, adapted to slide in said chamber 21, of an oven, 23, suspended at one side and below the fire-box, provided with an upper air-chamber, 30, a passage, 26, intervening the said chamber 30 and oven and the fire-box and leading into said chamber 21, series of apertures 29 in the oven-chamber 30, the combustion-flues 32 and 34, passing over the chamber 30 and around the oven, the off-take flue 36, and means for conducting the heat from the oven 23 into the chamber 30, all arranged to operate substantially in the manner and for the purpose herein set forth.

386,611. CAR-DOOR. JOHN W. SHOWALTER, Terre Haute, Ind. Filed Nov. 12, 1887. Serial No. 254,902. (No model.)

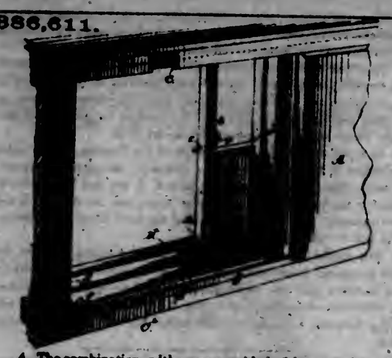
Claim.—1. The combination, with a car provided with grooved trackways and having its door-opening provided with lateral grooves *f* at the top and bottom, of a door having vertically-extending lug or lugs *g* at its upper and lower edges, substantially as and for the purpose described.

2. The combination, with a car provided with grooved trackways and having the top and bottom of its door-opening beveled and provided with lateral grooves *f*, of a door having its top and bottom edges beveled and provided with lugs *g*, substantially as and for the purpose set forth.

3. The combination, with a car provided with inside grooved trackways and lateral grooves at the top and bottom of its door-opening, of a grain-door having its lower portion closed and its upper portion of open-frame construction, and provided with lugs at its top and bottom edges, substantially as and for the purpose set forth.



386,611.



4. The combination, with a car provided with grooved trackways and having the top and bottom of its door-opening inclined in substantially parallel lines and provided with lateral grooves *f*, of a door having its upper and lower edges inclined in substantially parallel lines and having vertically-extending lugs *g* at its upper and lower edges, substantially as and for the purpose described.

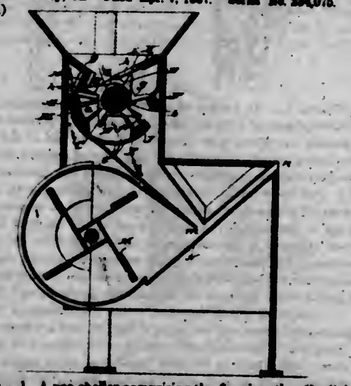
5. The combination, with a car having a door-opening provided with inwardly and outwardly extending grooves *f f* at its upper and lower edges and inner and outer longitudinal grooved trackways, C C' D D', of outer door, A, and inner apertured door, B, each of said doors being provided with vertically-extended lugs *g g* at its upper and lower edges, substantially as and for the purpose described.

6. The combination, with a car having its door-opening at the top and bottom inclined in substantially parallel lines and provided with inwardly and outwardly extending grooves *f f*, and having inner and outer longitudinal grooved trackways, C C' D D', of the outer door having its upper and lower edges inclined in substantially parallel lines, and an inner apertured door, B, each of said doors being provided with vertically-extending lugs *g g* at its upper and lower edges, substantially as and for the purpose described.

7. The combination, with a car having a door-opening provided with a lateral groove or grooves, *f*, in its upper and lower edges and longitudinal grooved trackways C C', and provided with staples *m* and bolt-socket *n*', of a door provided with vertically-extended lugs *g* at its upper and lower edges and having hasps *l* and sockets *n*, and the bolts *n' p*, substantially as and for the purpose described.

8. The combination, with a car having a door-opening provided with inner and outer caps and sills at its top and bottom, each of which has lateral grooves *f f*, and having socket-holes *r*' in the inner jambs, and inner and outer longitudinal grooved trackways, C C' D D', of an outer door, A, and inner open top door, B, each provided with vertically-extending lugs *g g* at its upper and lower edges, and said inner door having the hole *r* and the bolt *q*, substantially as and for the purpose described.

386,612. PEA SHELLER AND SEPARATOR. WILLIAM A. SLAPPEY, Fort Valley, Ga. Filed Apr. 7, 1887. Serial No. 234,075. (No model.)



Claim.—1. A pea-sheller comprising the framing, the ribs G, having the upwardly-arched central portion, the feed-board having its lower end formed with fingers *k*, terminating over the upwardly-arched central portion, the cylinder journaled below the arched portion of the ribs and having spikes which operate between such ribs

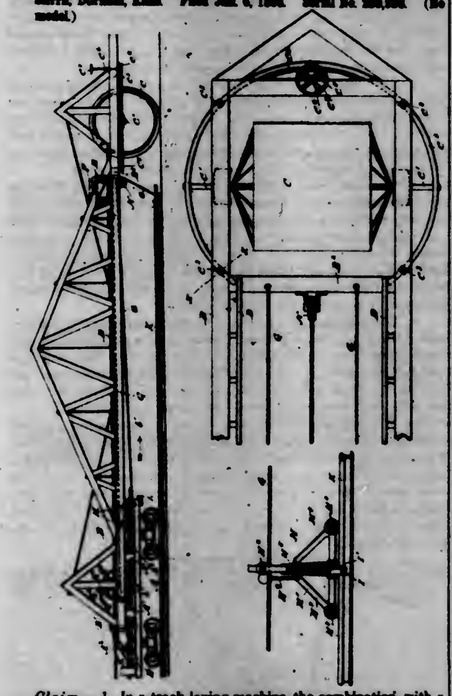
and between the fingers of the feed-board, and the spiked or toothed cocsove below the cylinder, substantially as set forth.

2. In a pea-sheller, the combination of the framing, the ribs G, having centrally arched and depressed end portions, the feed-board K, having its lower end arranged vertically over the center or crown of the arched portions of the ribs, and the toothed or spiked cylinder arranged below said ribs, substantially as set forth.

3. In a pea-sheller, the combination of the framing, the cylinder having spikes E, the bars E J, having spikes *e j*, the plate I, extended below said cylinder and between the bars E J, the bar F, the ribs G, arched over the cylinder and supported at one end on the bar E and at their opposite ends on the bar F, and the feed-board, all substantially as and for the purposes specified.

4. The combination, in a pea-sheller, of the framing, the ribs, the cylinder journaled below said ribs and having teeth or spikes which operate between said ribs, and the feed-board having at its lower end fingers which extend close to the ribs, the teeth of the cylinder also operating between said fingers, substantially as and for the purposes specified.

386,618. MACHINE FOR LAYING RAILROAD-TRACKS. MASON SMITH, Durham, Kans. Filed Jan. 6, 1888. Serial No. 259,998. (No model.)



Claim.—1. In a track-laying machine, the combination, with a flat railroad-car, of a truss-frame supported and pivoted at its rear end on said car, a ring held to turn on the front end of the said truss-frame, and a wheel mounted in the said ring to support the front end of the said truss-frame, substantially as shown and described.

2. In a track-laying machine, the combination, with a flat railroad-car, of a truss-frame supported and pivoted at its rear end on the said car, a ring held to turn on the front end of the said truss-frame, a wheel mounted in the said ring to support the front end of the said truss-frame, a segmental gear-wheel secured to the said ring, a pinion meshing into the said segmental gear-wheel, and a shaft carrying the said pinion and a hand-wheel, substantially as shown and described.

3. In a track-laying machine, a flat railroad-car, a truss-frame supported at its rear end on the said flat car, and a wheel supporting the front end of the said truss-frame, in combination with a rope passing over a pulley held on the said truss-frame, and a gaging and drawing device, P, held on each end of the said rope, substantially as shown and described.

4. In a track-laying machine, a flat railroad-car, a truss-frame supported and pivoted at its rear end on the said car, and a wheel supporting the front end of the said truss-frame, in combination with adjustable ropes held on the said truss-frame, and the gripping and supporting devices H, adapted to travel on the said ropes, substantially as shown and described.

5. In a track-laying machine, a flat railroad-car, a truss-frame supported and pivoted at its rear end on the said car, and a wheel supporting the front end of the said truss-frame, in combination with a rope passing over a pulley held on the said truss-frame, a gaging and drawing device, P, held on each end of the said rope, a set of adjustable ropes held on the said truss-frame, and the gripping and supporting devices H, adapted to travel on the said ropes, substantially as shown and described.

6. In a track-laying machine, a flat railroad-car and rollers mounted at each side of the said car to support the track-rails, in combination with a truss-frame supported at its rear end on the said car, a wheel supporting the front end of the said truss-frame, a pulley mounted on the under side of the said truss-frame, a rope passing over the said pulley, and the gaging and drawing devices P, secured to the ends of the said rope, one being adapted to be fastened to the track-rails on the said rollers and the other to the rails already laid, substantially as shown and described.

7. In a track-laying machine, a flat railroad-car, sets of rollers mounted in longitudinal lines on the sides of the said car and adapted to support the track-rails, and sets of pulleys mounted horizontally on top of the said flat car, in combination with a truss-frame supported and pivoted at its rear end on the said car, an adjustable wheel held on the front of the said truss-frame, a pulley mounted on the under side of the said truss-frame, a rope passing over the said pulley, and the gaging and drawing devices P, secured to the ends of the said rope, substantially as shown and described.

8. In a track-laying machine, a flat railroad-car, a truss-frame supported and pivoted at its rear end on the said car, and a wheel supporting the front end of the said truss-frame, in combination with a set of ropes, each secured by one end to the said truss-frame, and a drum mounted to rotate in the said truss-frame and carrying the other ends of the said ropes, substantially as shown and described.

9. In a track-laying machine, a rail gripping and supporting device consisting of a frame, means for raising and lowering it, two sets of jaws mounted upon said frame the distance of the gage of the track apart, an operating-lever mounted on said frame, and connections between said lever and the said jaws, whereby when the lever is thrown both pairs of jaws will be simultaneously opened or closed, substantially as set forth.

10. In a gripping and supporting device, the combination, with a frame mounted to travel on ropes, of two sets of jaws pivoted on the said frame, links pivotally connected with the said sets of jaws, a wheel to which the said links are pivoted, and a hand-lever for turning the said wheel so as to open and close the said sets of jaws simultaneously, substantially as shown and described.

11. In a gripping and supporting device, the combination, with a frame mounted to travel on ropes, of two sets of jaws pivoted on the said frame, links pivotally connected with the said sets of jaws, a wheel in which the said links are pivoted, a hand-lever for turning the said wheel so as to open and close the said sets of jaws simultaneously, and a pawl adapted to engage ratchet-teeth formed on the said wheel for locking the said jaws in a closed position, substantially as shown and described.

12. In a track-laying machine, a gaging and drawing device provided with two sets of rail guide-bars, and levers having prongs or pins for locking the rails in place in the sets of guide-bars, substantially as shown and described.

13. In a gaging and drawing device, the combination, with a frame provided on each end with two guide-bars, between which the rail is placed, a rod mounted to slide in the middle of the said frame, levers pivoted on the said frame and connected at their free ends with the said sliding rod, and pins or prongs formed on the said levers and adapted to engage the end apertures in the rails held in the said guide-bars, substantially as shown and described.

14. In a track-laying machine, a gripping and supporting device provided with two sets of jaws placed the distance of the gage of the track apart, and arms or supports at opposite sides of the jaws, having rollers journaled at right angles to the axes of the said jaws and adapted to rest upon the tread of a rail held by said jaw, substantially as set forth.

386,614. SAFETY-LOCK FOR MAGAZINE-GUNS. CHRISTOPHER M. SPENCER, Windsor, Conn. Filed Apr. 21, 1887. Serial No. 236,052. (No model.)



Claim.—The combination, in a repeating fire-arm, of the breech-block A, provided with the laterally-projecting shoulder *d*, and the pivoted lever or safety-lock B, provided with the shoulder *c*, in combination with the pin *d'*, affixed to the hammer-arm for imparting motion to the said safety-lock, and thereby carrying its end *f* into engagement with the said shoulder *d*, as and for the purposes set forth.

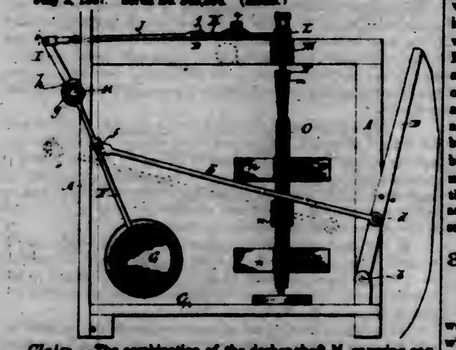
386,615. HAME. WILLIAM T. SIMMONS, Gettysburg, assignor of one-third to Richard H. West, Littlestown, Pa. Filed May 28, 1888. Serial No. 275,021. (No model.)



Claim.—1. The combination, with a hame, of a staple having notches or cents for the tug-eye, and a spring-actuated bar guided upon the legs of the staple and pressing outwardly toward said cents, substantially as shown and described.

2. The combination, with a hame, of a staple, B, having a series of notches or cents, b, the spring-actuated bar D, having openings at its end, through which the ends of the staples pass, and spiral springs E E wound upon the legs of the staple between the spring-bar D and the hame, substantially as shown and described.

386,616. SHUTTER. THOMAS S. HIBB, Carson City, Mich. Filed July 2, 1887. Serial No. 243,204. (Model.)



Claim.—The combination of the dasher-shaft M, carrying cog-wheel L, the gear K, meshing therewith, the pivoted hand-lever D, connecting-rod E, the pendulum-rod F, shaft H, upright I, and rod J, pivoted to the upright and gear, as set forth.

386,617. HAIR-TONIC. WILLIAM T. WALLACE, Troy, Tex. Filed Apr. 18, 1888. Serial No. 271,697. (No specimens.)

Claim.—The herein-described preparation for use as a hair-restorer, consisting of tincture of cantharides, oil of cocoa, castor-oil, ammonia solution, alcohol, bay-rum, borax, flowers of sulphur, oil of bergamot, olive-oil, and a perfuming substance, in or about the proportions specified.

386,618. TOILET OR WRAPPING PAPER. SETH WHEELER, Albany, N. Y. Filed Nov. 3, 1887. Serial No. 254,157. (No model.)



Claim.—A roll of toilet or wrapping paper containing lines of weakness, each of which is made up of perforations plainly indicating the position of the line, combined with fastenings to increase the weakness of the line and avoid litter, substantially as described.

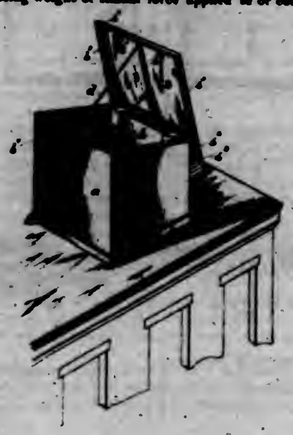
386,619. SLIDE-RULE. CHARLES WILLIS and JOHN S. PENNIE, Rockport, Mo. Filed Jan. 14, 1888. Serial No. 260,893. (No model.)



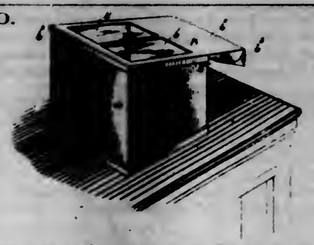
Claim.—The improved ellipsograph herein described and shown, comprising the transom A, having the intersecting ways C C, provided with the inwardly-projecting flanges D D, a socket, H, being formed in the base of one of the ways near the point of intersection of the ways, the slides E F, fitted in the ways and provided with the spindles F F, the slide E being further provided with a tapped aperture, G adapted to align with the socket H when the said slide is at the point of intersection of the ways, a set-screw mounted in said aperture and adapted to engage the socket H, the beam K, having a rigid post, I, at its inner end provided with a socket fitting on the spindle F, the beam being provided at its outer end with a pin, V, the extension-beam having a socket to fit over said pin V, the post N, adjustably mounted on the beam and having a socket in its lower end fitting over the spindle F, and the pencil-slide adjustably mounted on the beam and provided with a socket, S, for the pencil, and a lateral set-screw entering said socket to secure the pencil, substantially as specified.

386,620. SAFETY-COVER FOR ELEVATOR-WELLS, HATCH-WAYS, OR OTHER ROOF-OPENINGS. EDWARD H. ARMSBY, Lynn, Mass. Filed Mar. 19, 1888. Serial No. 267,697. (No model.)

Claim.—1. As a means of automatically providing an elevator-well or other hatchway or roof with an opening, a section forming when closed a cover hinged or connected to a support to be moved by an overbalancing-weight or similar force applied to or connected



386,620.



with the section, which section of the casing of the elevator-well, hatchway, or roof is held in normal position against the force of the overbalancing-weight by a holding device destructible by undue heat or flame, as and for the purposes described.

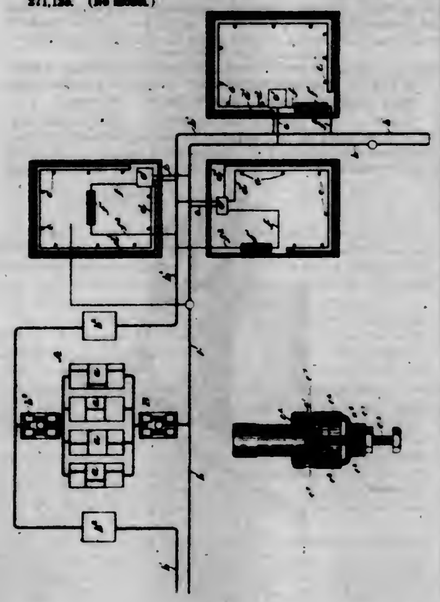
2. The combination of an elevator-well or hatchway with a covering-section hinged or connected thereto to be movable therefrom to expose an opening therein, an overbalancing-weight carried by said covering-section, and a holding device for holding the covering-section to close the opening, which holding device extends to the bottom, or very nearly to the bottom, of the elevator-well or hatchway, as and for the purposes described.

3. The combination of the casing of an elevator-well or hatchway, having the opening *a'* and the inclined upper edge, with the cover B, pivoted to the lower edge, its overbalancing-weight *b²*, and a holding device destructible by undue heat or fire for holding the cover upon the top of the casing, as and for the purposes described.

4. The combination of the casing of an elevator-well or hatchway, a covering-section therefor hinged or connected thereto, an overbalance for automatically opening the same, a holding device destructible by undue heat or flame for holding it in closed position, and a pipe for conducting water, steam, or other fire-extinguishing fluid or vapor, having an outlet in said elevator-well, as and for the purposes described.

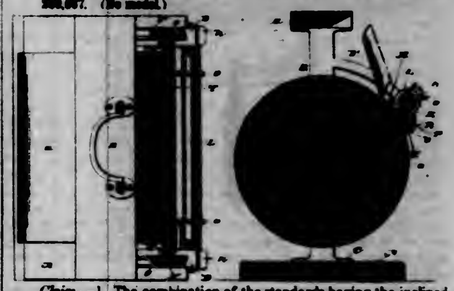
5. The combination of the casing of an elevator-well, hatchway, or building-opening, a cover adapted to automatically open upon the release of its holding device, said holding device for holding it in closed position, destructible by undue heat or flame, a pipe for conducting water, steam, or other fire-extinguishing fluid or vapor, having its outlet in said elevator-well, hatchway, or opening, and a valve connected with said cover or its holding device, whereby upon the destruction of the holding device the valve is caused to be opened, substantially as described.

386,621. STEAM SYSTEM FOR EXTINGUISHING FIRES. EDWARD H. AMMIDOWN, Lynn, Mass. Filed Apr. 19, 1888. Serial No. 271,123. (No model.)



Claim.—The improved system for extinguishment of fire by steam, comprising the employment of an apparatus at a central point for superheating water, a suitable main or mains for distributing the superheated water in the locality or section covered by the system, and for maintaining its circulation, a pump or other suitable means for forcing the superheated water through said main or mains, and for returning the exhausted water to the heating apparatus, a distributing pipe or pipes arranged or placed in the buildings protected by the system, connected with the distributing-main, and, if desired, with the return-main, provided with outlets or openings which are controlled by one or more valves, substantially as described.

386,622. STAND AND CUTTING-KNIFE FOR PAPER-ROLLS. JAMES M. BARNES, Springfield, Ill. Filed Apr. 4, 1888. Serial No. 269,667. (No model.)



Claim.—1. The combination of the standards having the inclined arms provided with the grooves E, said grooves being adapted to form the bearings for a roll of paper, and the shaft L, having its ends arranged in the grooves, the cutting-blade secured to the said shaft, and the roller under the said blade at a distance from the cutting-edge thereof, whereby the cutting-blade will be at all times maintained at a tangent to the roll of paper, substantially as described.

2. The combination of the stand having the inclined arms D, provided with grooves E, the roll of paper having its bearings journaled in the lower ends of the grooves, the shaft L, having its ends arranged in the grooves, the cutting-blade having the ears pivoted or hinged on shaft L, and the roller on the under side of said plate, at a distance from the cutting-edge thereof, for the purpose set forth, substantially as described.

3. The combination of the stand having the arms provided with the inclined grooves E, said grooves being adapted to form the bearings for a roll of paper, the shaft L, having its ends arranged in grooves E, the cutting-blade having the ears pivoted or journaled on shaft L, the roller arranged under the cutting-blade, at a distance from the cutting-edge thereof, and the disks or rollers U at the ends of the cutting-blade, substantially as described.

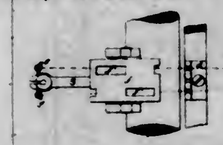
4. The stand having the inclined arms provided with the grooves or ways E, said grooves or ways being adapted to form the bearings for a roll of paper, the shaft L, having its ends arranged in said grooves or ways above the roll of paper, and the cutting-blade pivoted or hinged to the shaft, as set forth.

5. The stand having a roll of paper supported thereon, combined with the shaft L, arranged above the roll of paper, and the cutting-blade hinged or pivoted to said shaft and bearing on the paper-roll, whereby the blade will be maintained at all times at an angle to the paper-roll, as set forth.

6. The combination, with the journaled roll of paper, of the shaft L, movable laterally in guides toward and from the roll, and the cutting-blade hinged or pivoted on shaft L and arranged at a tangent to the roll, with its edge in contact with the latter, substantially as described.

386,623. FEED-ROLLERS FOR MAKING FANCY YARNS. THOS. A. BOYD, Glasgow, County of Lanark, Scotland. Filed Nov. 10, 1887. Serial No. 254,730. (No model.)

Brief.—The twisting together of component strands is varied at intervals, so that the yarn may vary in thickness or degree of twist, or so that each strand may alternately appear on the surface more than the others, the effect being produced by forming one or both feed-rollers of a pair with depressions in the surface.



Claim.—1. The herein-described feed-rollers for doubling or doubling and twisting machines, one or both of said rollers having interrupted feed-surfaces, the interruptions for the different yarns being out of coincidence.

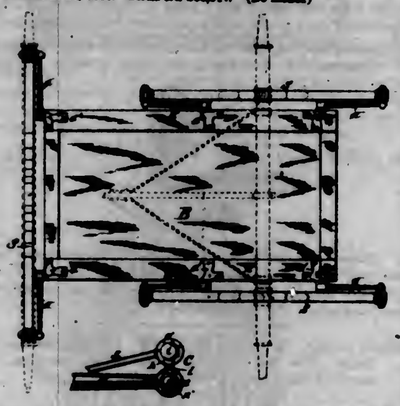
2. The herein-described feed-rollers for doubling or twisting and doubling machines, one or both of said rollers having two or more sets of depressions out of coincidence with each other for different yarns.

386,624. NUT-LOCK. JAMES T. CLARK, Denver, Colo. Filed Oct. 19, 1887. Serial No. 252,551. (No model.)



Claim.—The herein-described nut-lock, consisting of a bolt having a longitudinal groove in its threaded portion, and a screw-threaded nut fitting on said bolt, having a series of radial recesses in its outer face, in combination with a spring-key placed in the groove of the bolt under the nut, and having its outer end bent upward for engaging with one of the recesses of the nut and its inner end curved upward and backward upon itself, so that it will yield and pass under the threads of the nut when the key is being inserted, but will positively bite or engage against the inner face of one of the nut-threads and prevent its retraction, substantially in the manner and for the purpose described.

386,625. SPRING-VEHICLE. EDWARD CLEY, Rochester, N. Y. Filed Mar. 24, 1888. Serial No. 268,217. (No model.)



Claim.—1. In combination with the axle and body B, the spring S, mounted on the axle, the arms *a a*, projecting rigidly from the body in opposite directions, and swinging couplings *c c*, connecting the ends of said arms to the ends of the spring, substantially as described and shown.

2. In combination with the axle and body B, the spring S, mounted on said axle, the arms *a a*, extending rigidly from the body in opposite directions and each formed with the attaching-plate *d'* in one piece, and rigidly secured to the body and connected at their free ends to opposite ends of the aforesaid spring, substantially as described and shown.

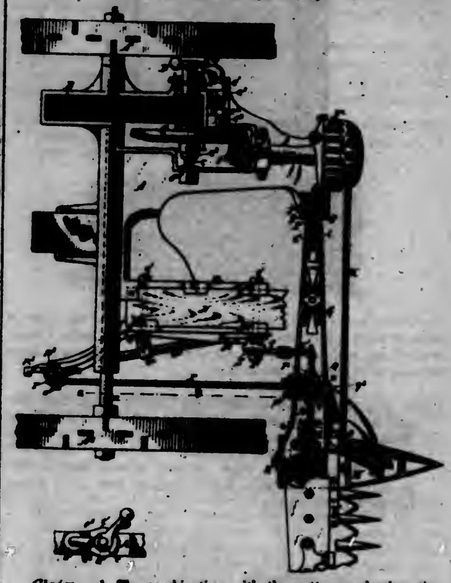
3. In combination with the body-supporting arm formed with the eye *e*, and the spring S, formed with the eye *d'*, the coupling-pins *b B'*, united end to end and arranged eccentrically in relation to each other, as set forth and shown.

4. The combination of the body-supporting arm formed with the eye *e* and recess *r*, and the spring S, formed with the eye *d'*, the collar *d*, seated in said recess, and the coupling-pins *b B'*, projecting from opposite sides of said collar eccentrically in relation to each other and formed in one piece with the said collar, substantially as described and shown.

386,626. WASH-BOILER. WILLIAM H. GUTHRIE, Langdon, Kans. Filed Oct. 29, 1887. Serial No. 253,262. (No model.)

Claim.—The combination, in a washing-machine of the class described, of the rectangular chamber A, having perforated walls, as described, the plate or diaphragm B, flange C, annulus D, arranged on either side of said chamber, and plate G, carrying nozzles E, which latter are arranged to discharge upwardly in said chamber, substantially as described.

386,627. SEWING-MACHINE. GEORGE G. CROWLEY, Little Falls, N. Y., assignor to the Wheeler Mower Company, same place. Filed Sept. 24, 1887. Serial No. 250,251. (No model.)



Claim.—1. The combination, with the cutter mechanism, the longitudinal shaft *f*, provided with the bevel-pinion *f'* and a crank-wheel, and the driving-shaft *a*, provided with a spur-gear, B, of an intermediate transverse arber made lengthwise movable, and a spur-pinion, *b*, and bevel-wheel C, secured together and turning loosely upon the arber, upon which they are held against longitudinal movement, substantially as set forth.

2. The combination, with the cutter mechanism, the longitudinal shaft *f*, provided with a bevel-pinion, *f'*, and a crank-wheel, and the driving-shaft *a*, provided with a spur-gear, B, of an intermediate transverse arber, *c*, a hand-lever, D, and cam-groove *d'*, secured to said arber, a tooth, *e*, secured to the frame and engaging with said cam-groove, and a spur-pinion, *b*, and bevel-wheel C, secured together and turning loosely upon the arber, upon which they are held against longitudinal movement, substantially as set forth.

3. The combination, with the main frame, the cutter mechanism, the longitudinal shaft *f*, provided with a bevel-pinion, *f'*, and a crank-wheel, and the driving-shaft *a*, provided with a spur-wheel, B, of an intermediate transverse arber, *c*, a hand-lever, D, and cam-groove *d'*, secured to said arber, a spur-pinion, *b*, and bevel-wheel C, secured together and turning loosely upon the arber, upon which they are held against longitudinal movement, and a tooth, *e*, engaging with said cam-groove and secured to the main frame, and made adjustable therein toward and from the longitudinal shaft *f*, substantially as set forth.

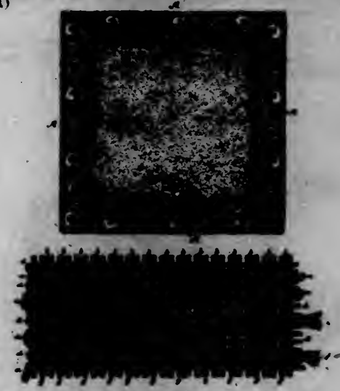
4. The combination, with the main frame A and pole N, of the cast auxiliary frame *o*, provided with a wrought brace, *o²*, which is cast into the frame *o* and connects the ends thereof, substantially as set forth.

5. The combination, with the main frame A and pole N, thrust-bar P, and lever *p²*, of the cast auxiliary frame *o*, provided with a wrought brace, *o²*, cast into the frame *o*, and having its rear end pro-

jecting laterally beyond the frame *o*, forming a pivot, *o'*, for the said thrust-bar and lever, substantially as set forth.

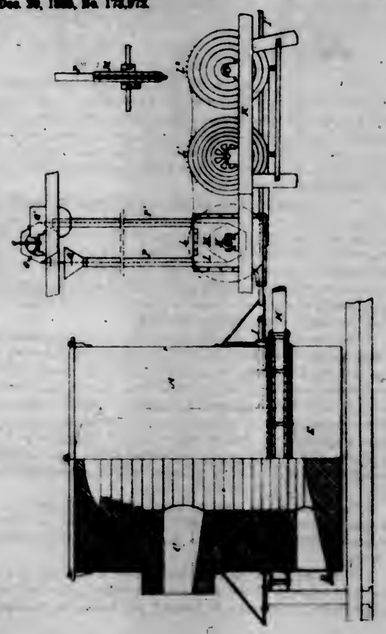
6. The combination, with the transverse connecting-bar G, having upwardly-projecting lugs *g' g'*, provided with upright slots *r*, and the shoe pivoted to the bar G, of the bearing-lever R, arranged lengthwise of the connecting-bar, with its upper arm in the slots *r* and pivoted to the connecting-bar, and means for operating said bearing-lever, substantially as set forth.

386,628. RUG OR MAT. JOHN BAVISHER, Philadelphia, Pa., assignor to Thomas H. Lynn, Mount Holly, N. J., and Charles C. Pettit, Philadelphia, Pa. Filed Apr. 9, 1888. Serial No. 270,042. (No specimens.)



Claim.—A rug or mat having a center portion with tufts of cocoa or other coarse fiber and a border with chenille wefts, a series of which are employed for each row of tufts in the central portion of the mat, all substantially as specified.

386,629. PROCESS OF SMELTING PYRITES. JOHN DIXON, Adelaide, South Australia, assignor of four-fifths to Frederick James Bladen, William Selby Douglas, David Carlick, and William Malcolm, same place. Filed Oct. 10, 1888. Serial No. 289,294. (No model.) Patented in England Sept. 8, 1885, No. 10,981; in South Australia Sept. 19, 1885, No. 601; in New South Wales Sept. 21, 1885, No. 2,066, and in France Dec. 30, 1885, No. 173,972.



Claim.—1. The process herein described of smelting pyrites in air-blast furnaces, said process consisting in introducing crushed raw ore without fuel into the body of the molten metal by an air-blast at a point below the surface-level, near the bottom of the molten charge, as and for the purpose set forth.

2. The process herein described of smelting pyrites in air-blast furnaces, said process consisting in feeding crushed raw ore without fuel into the blast-pipe at a regulated speed, blowing such ore without fuel into the body of the molten metal by the air-blast at a point below the surface-level and near the bottom of the molten charge, all substantially as set forth.

386,630. HORSE-BOOT. JOHN H. FISHER, Chicago, Ill. Filed Mar. 28, 1887. Serial No. 232,463. (No model.)



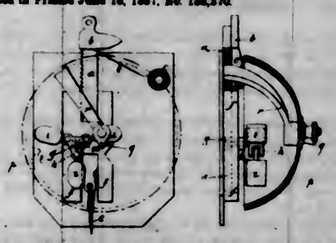
Claim.—A horse-boot consisting of two parts, A B, one overlapping the other and hinged together on opposite sides, in combination with a lining, C, stitched to the upper portion of the part A, but not to the lower end thereof, and a lining, D, stitched to the part B, all constructed and arranged substantially as and for the purpose specified.

386,631. CLAMP. DAVID GARRISON and GEORGE C. EISELMAYR, Philadelphia, Pa. Filed Feb. 2, 1888. Serial No. 262,774. (No model.)



Claim.—The combination, in a clamp, of a U-shaped piece having two parallel arms, and a plate, *m*, pivoted to the inner side of one of said arms, to swing thereon upon a longitudinal axis parallel to the overhanging arm, substantially as set forth.

386,632. CALL-BELL OR ALARM. VICTOR A. GERMAIN, Paris, France. Filed Feb. 15, 1888. Serial No. 264,098. (No model.) Patented in France June 16, 1887, No. 182,870.



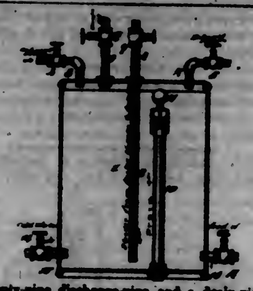
Claim.—The combination, with a call-bell or alarm provided with an internal lug, of the sliding rack *a*, pinion *g*, in gear therewith, internal guides *f f*, for the rack *a*, and of the head *h*, secured to the axis of the pinion *g*, and having radially-extending arms, and pivoted hammers *i*, carried by said radial arms and caused, by the rotation of the latter, to swing outward and successively strike the lug of the bell, substantially as specified.

386,633. STEAM-TRAP. LOUIS GRAFF, Memphis, Tenn. Filed May 7, 1887. Serial No. 237,462. (No model.)

Claim.—1. The combination of the cylinder 1, the exhaust-steam pipes 2 and 3, the escape-pipe 6, bleeder 8, drain-pipe 10, supply-pipe 14, and discharge-pipe 17, arranged as described, for the purpose set forth.

2. The combination of the cylinder 1, exhaust-steam pipes, escape-pipe, bleeder, supply-pipe, discharge-pipe, and a drain-pipe provided with a valve to regulate flow of water and prevent passage of steam therethrough, as set forth.

386,633.



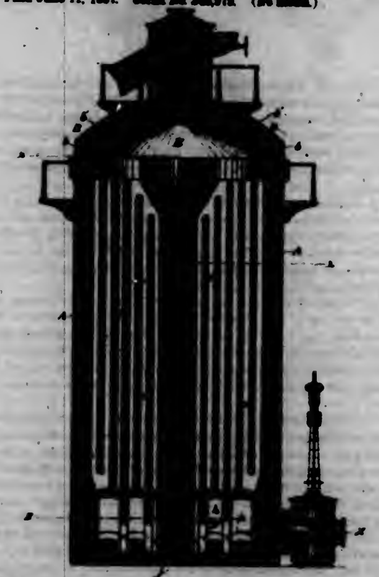
3. The combination of the cylinder 1, exhaust-steam pipes, escape-pipe, bleeder, supply-pipe, discharge-pipe, and a drain-pipe provided with the valve 11, for letting off a limited amount of water, as and for the purposes set forth.

386,634. SWEAT-BAND FOR HATS. WILLIAM P. GRIMES, Troy, N. Y. Filed Nov. 2, 1887. Serial No. 254,020. (No model.)



Claim.—The combination of the sweat-band B, consisting of a band with openings therein and plates of mica in said openings, with a hat, the said openings permitting a card to be located between said hat and said plates of mica, the said plates being uncovered on their inner surfaces, substantially as and for the purposes set forth.

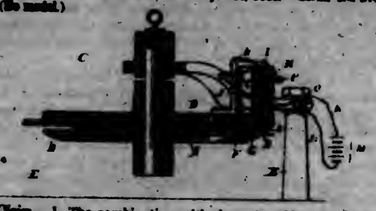
386,635. HOT-BLAST STOVE. JOSEPH L. HOFFAR, Pittsburg, Pa. Filed June 11, 1887. Serial No. 240,972. (No model.)



Claim.—1. In a hot-blast stove, a vertical dust-flue situate below the gas-inlet and having a flared mouth, substantially as and for the purpose specified.

2. In a hot-blast stove, a vertical dust-flue situate below the gas-inlet and having an opening at the base leading to the stack-flue and of about the same relative diameter as the heating-flues, substantially as and for the purpose specified.

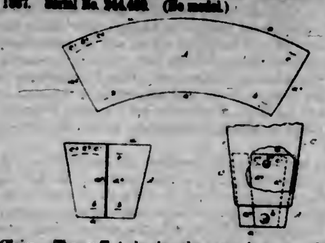
386,636. LATCH-SETTER FOR KNITTING-MACHINES. LOUIS JONES, Jr., Overbrook, Pa. Filed Apr. 14, 1883. Serial No. 272,712. (No model.)



Claim.—1. The combination, with the series of horizontal needles and the thread-guide, of a magnet arranged above the plane of rotation of the needle-latches and in advance of the thread-guide, substantially as and for the purpose set forth.

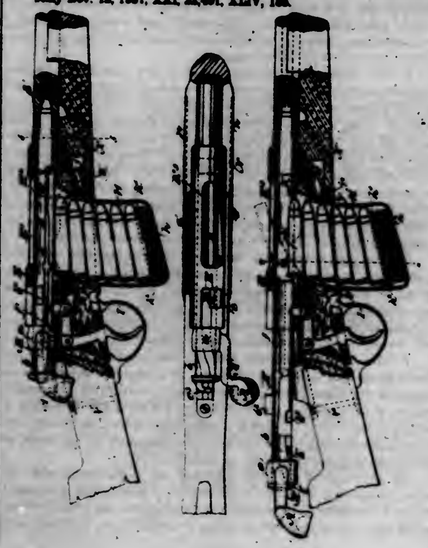
2. The combination, with the series of horizontal needles, the thread-guide, and the magnet arranged above the plane of rotation of the needle-latches and in advance of the thread-guide, of a guard-plate arranged at that side of the magnet toward which the needles approach.

386,637. APPAREL-GUFF. WILLIAM KAEMER, Drummond, Wis., assignor of one-half to Andrew Steinacher, Chicago, Ill. Filed July 16, 1887. Serial No. 244,402. (No model.)



Claim.—The cuff A, having the curved upper and lower edges *a a'* and radial ends *a²*, the button-holes *b* in the lower corners, the button-hole *c* in one of the upper corners, and a series of adjusting button-holes, *d d'*, &c., in the other corner, substantially as and for the purpose set forth.

386,638. MAGAZINE FIRE-ARM. SILVESTER KRNKA and KARL KRNKA, Ober-Hietzin, near Prague, Austria-Hungary. Filed Nov. 10, 1887. Serial No. 254,982. (No model.) Patented in England May 5, 1887, No. 6,930; in Austria-Hungary Aug. 21, 1887, No. 15,203 and No. 34,203, and Oct. 31, 1887, No. 37,556 and No. 49,856; in France Sept. 30, 1887, No. 186,121; in Belgium Sept. 30, 1887, No. 79,044, and in Italy Nov. 12, 1887, XXI, 32,491, XLIV, 168.



Claim.—1. In a gun of the class described, the combination, with the breech-frame and the bolt-cylinder having spiral bearing-finds at its rear end, of an operating handle or lever and a sleeve or nut connected therewith, having corresponding bearing-flanges and adapted to slide freely on the rear end of the bolt-cylinder, substantially as and for the purpose specified.

2. In a gun of the class described, the combination, with the breech-frame, the bolt-cylinder provided with a spiral slot at its rear end, and the bolt or firing-pin provided with a longitudinal recess at the rear end thereof, of a lever or handle provided with a sleeve-bearing mounted and sliding longitudinally on the rear end of the bolt-cylinder, and a pin projecting from said bearing through the spiral slot of said cylinder into the recess of the firing-pin, substantially as and for the purpose specified.

3. In a gun of the class described, the combination, with the breech-frame, the bolt-cylinder provided at its rear end with a spiral slot and a spring-abutment, the bolt or firing-pin provided at the corresponding end with a longitudinal recess, and an actuating-spring connected at the forward end with the bolt, of a lever or handle provided with a sleeve-bearing mounted and sliding longitudinally on the rear end of the cylinder, and a pin projecting through the spiral slot of said cylinder into the recess of the bolt, whereby the spring is compressed on moving the bolt rearward, substantially as and for the purpose specified.

4. In a gun of the class described, the combination, with the breech-frame, the bolt-cylinder provided at its rear end with a spiral slot and a spring-abutment, the bolt or firing-pin provided at the corresponding end with a longitudinal recess, and an actuating-spring connected at its forward end with the bolt, of a lever or handle provided with a sleeve-bearing mounted and sliding longitudinally on the rear end of said cylinder, a pin projecting through the spiral slot in the cylinder into the recess of the bolt, and a locking device to lock the spring against expansion, substantially as and for the purpose specified.

5. In a gun of the class described, the combination, with the breech-frame, the bolt-cylinder provided at its rear end with a spiral slot and a spring-abutment, the bolt or firing-pin provided at the corresponding end with a longitudinal recess, and an actuating-spring connected at its forward end with the bolt, of a lever or handle provided with a sleeve-bearing mounted and sliding longitudinally on the rear end of the cylinder, a pin projecting through the spiral slot of said cylinder into the recess of the bolt, and a stop operating on the sleeve-bearing to hold it against forward movement on the cylinder, whereby the spring is compressed on moving the bolt rearward and locked against expansion, substantially as and for the purpose specified.

6. The combination, substantially as hereinbefore described, with the breech-frame, the bolt-cylinder B, provided at its rear end with a spiral groove, *b'*, and an interior abutment, the shell-extractor fitted in a groove in the periphery of the cylinder, and having a spring-extension, *f'*, the bolt or firing-pin, recessed as at *d*, arranged within the cylinder, and an actuating-spring connected at its forward end with said bolt, of a lever or handle, a bearing-sleeve therefor adapted to slide longitudinally on the bolt-cylinder, and a pin, *d'*, projecting from said sleeve through the slot *b'* in the cylinder and into the recess *d* of the bolt, for the purposes specified.

7. The combination, substantially as herein described, with the breech-frame, the bolt-cylinder and its screw-plug C, both provided with a spiral groove, *b' c*, respectively, the latter groove having a lateral branch, c^3, a lug, *d'*, projecting into the opening at the rear end of the plug C, the bolt or firing-pin, recessed as at *d*, and provided at its rear end with an angular groove or slot, d^3, the actuating-spring secured at its forward end to the bolt, and abutting, when compressed, against the abutment in the cylinder, of the trigger and sear, the latter projecting into the receiver and adapted to engage the forward end of the spring, whereby the bolt may be locked against forward motion by a partial rotation of the screw-plug, for the purpose specified.

8. In a gun of the class described, the combination, with the breech-frame open below the receiver, and a magazine adapted to be applied to the frame below said receiver, and provided with a notched projection on its rear wall, of a trigger-guard having a yielding bearing adapted to engage the notch in the magazine projection to support the same at that end, substantially as described.

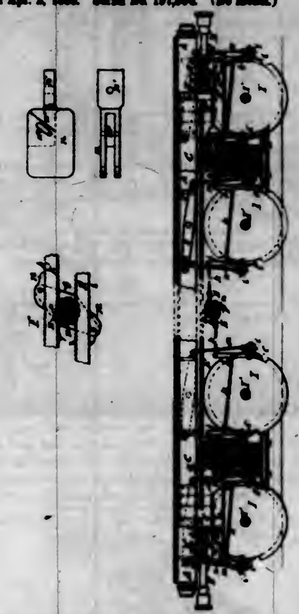
9. In a gun of the class described, the combination, with the breech-frame open below the receiver, and a magazine adapted to be applied to the frame below said receiver, and provided with a notched projection, of a trigger-guard and trigger-spring combined, and a bearing on said trigger-guard to engage the notched magazine projection, whereby said parts are held in engagement by the strain of the trigger-spring, substantially as described.

10. In a gun of the class described, the combination, with the breech-frame open below the receiver, for the attachment of a magazine, and the block K, for guiding the cartridges to the breech, of the spring-arm *j'*, provided with a spring, *j*, operating on the block, and two converging spring-plates operating to support the cartridges when the magazine is removed and the gun used as a single-loader, substantially as described.

11. The combination, with the breech-frame open below the receiver, the bolt-cylinder, and a magazine applied below said receiver, of an upwardly-extending stop, *k*, secured to one end of the spring-actuated follower, for feeding the cartridges to the mouth of the magazine, substantially as and for the purpose specified.

386,639. AIR-BRAKE. CHARLES W. LAWSON, Norwich, N. Y.

Filed Apr. 2, 1888. Serial No. 267,894. (No model.)



Claim.—1. The combination, with a car, of a continuous draw-bar consisting of two draw-heads, respectively at opposite ends of the car and movable longitudinally on the car, an intermediate push-bar arranged movably longitudinally on the car, spring-couplings between the ends of said push-bar and draw-heads, yokes on said spring-couplings to receive the pressure thereof, and torsion-rods connecting said yokes.

2. In combination with the longitudinal push-bar and draw-heads movably connected therewith, springs interposed between said parts and cup-shaped spring-seats having flanges surrounding the springs and of a depth to limit the compression of the springs by the free edges of said flanges brought to a bearing by the compression of the draw-heads, substantially as set forth.

3. The combination of the push-bar C, brackets *d d*, having longitudinal sockets d^2, the draw-heads H, having their stale-bolts H' in said sockets, cups *e e* on the stale-bolts in front of the brackets, springs *g g* in said cups, the yokes *f f*, connected loosely with the draw-heads at the outside of the spring-supporting cups, and tension-rods *h h*, connecting said yokes with each other, substantially as described and shown.

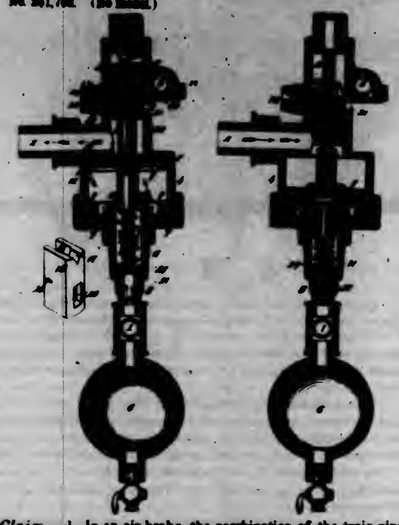
4. In combination with the car frame and trucks, a continuous draw-bar arranged movably longitudinally on said frame, springs for resisting the movement of said draw-bar toward either end of the car, levers pivoted on the car-frame, brake-bars arranged at diametrically opposite points of the wheel-trucks and suspended from the aforesaid levers at opposite sides of the fulcrums thereof, a system of co-operating brake-levers connected with the brake-bars, catches on the draw-bar, and the primary brake-levers adapted to engage the said catches, all combined to operate substantially as described and shown.

5. In combination with the brake-levers, rods connected at one end to said levers, and provided at their adjacent opposite ends with longitudinal racks on their adjacent sides and with ratchets on their outer sides, straps across opposite sides of said ends of the rods, a pinion interposed between the racks and pivoted on the straps, a spring for actuating the pinion in one direction, and pawls pivoted on the straps and engaging the ratchets, substantially as described and shown.

6. In combination with the continuous draw-bar arranged movably longitudinally on the car, brake-bars carrying brake-shoes and arranged movably vertically, a system of co-operating brake-levers connected with the brake-bars, shown *n n*, connected to the continuous draw-bar and provided with serrated inclined heads n^2, the gravitating pawls *w* in said shoes and provided with corresponding serrated inclined ends engaging the heads n^2, the primary brake-levers *l l*, having their upper ends sliding in the shoes *n n* and bearing on the pawls *w*, and the struts *u u*, provided with bearings for the levers *l l* in front and rear thereof, substantially as described and shown.

7. The combination, with the car-frame, continuous draw-bar, truck, brake-bars, and primary brake-lever *l*, of the push-bar *v*, attached to the upper end of said lever, the pearl *v'*, connected with the push-bar by a knuckle-joint, and the lug v^2, attached to the continuous draw-bar, substantially as described and shown.

386,640. AIR-BRAKE. FRANK LAWSON, St. Louis, Mo., assignor of one-half to THOMAS ingle, same place. Filed Jan. 26, 1888. Serial No. 261,782. (No model.)



Claim.—1. In an air-brake, the combination of the train-pipe, receiver-pipe, and brake-cylinder pipe, piston-valve located in a cylinder or housing, through which air passes from the train-pipe to the air-receiver pipe, and a sliding cut-off located on the stem of said valve and provided with a V-shaped notch extending from the top downward, whereby it coincides with said brake-pipe with its apex first, and opening 20, substantially as and for the purpose set forth.

2. In an air-brake, the combination of the train-pipe, air-receiver pipe, cylinder or housing forming a communication between the train-pipe and air-receiver pipe and having a hollow upward extension, valve located in said cylinder, stem extending upwardly from said valve, a cut-off valve on said stem, having a longitudinal and transverse opening and a notch in its upper end, a plug resting in said longitudinal opening, and a spring bearing upon said plug, substantially as and for the purpose set forth.

3. In an air-brake, the combination of the train-pipe, air-receiver pipe, and pipe leading to the brake-cylinder, chamber located between the train-pipe and receiver-pipe, piston-valve located in said chamber and having an upwardly-extending stem, cut-off valve located on said stem, provided with a longitudinal and a transverse opening and a notch extending from the top downward, a spring-plug for forcing the cut-off valve against the wall of the hollow extension, and a screw-cap for compressing said spring, substantially as and for the purpose set forth.

4. In an air-brake, the combination, with the train-pipe 1 and cylinder 4, having the ports 12 13 and the groove 9 in its bottom, of the hollow neck connected to said cylinder, and having ports 10 extending into said groove, a piston-valve in said cylinder, the hollow extension 14, extending from said cylinder axially with said neck and having the ports 21 20, a stem projecting in both directions from said piston into said extension and neck, the pipe 5, receiving said stem and forming communication between the pipe 1 and neck 11, a spring surrounding said stem and bearing upon said pipe, and a slide-valve on said stem in said extension, having the notch 19 and opening 20, substantially as set forth.

5. In an air-brake, the combination of the train-pipe, receiver-pipe, and brake-cylinder pipe, piston-valve located in the cylinder or housing, through which the air passes from the train-pipe to the air-receiver pipe, the hollow extension 14 and neck 11, projecting from said valve-cylinder, stems projecting from said piston-valve into said extension and neck, a spring surrounding one of said stems for holding said valve in one direction, and the pipe 5 in said neck, forming a guide for the stem therein, and also communication between the train-pipe and said neck, substantially as set forth.

386,641. COFFIN-FASTENER. JOHN P. LEES, New York, N. Y.

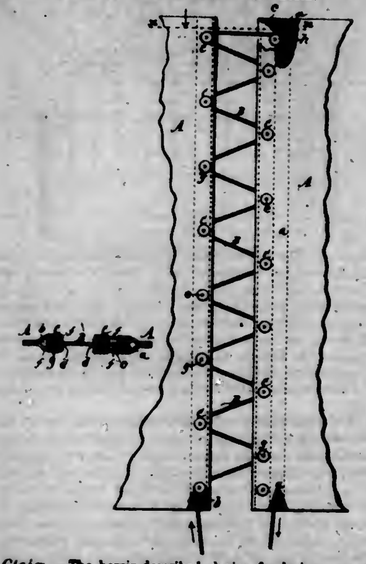
Filed Feb. 7, 1888. Serial No. 263,262. (No model.)



Claim.—The combination of the body and lid of a burial-case, with hooks hinged to the upper edge of the body within the outline of the case and each carrying a retaining-screw adapted to bear on the top of the rim of the lid.

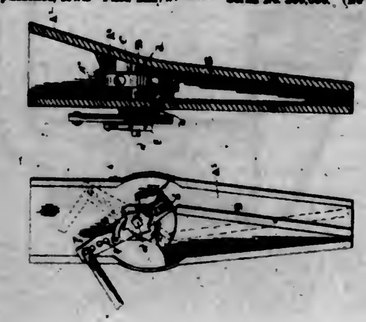
386,642. CORSET-LACING. ADAM S. MANN, Rochester, N. Y.

Filed July 13, 1888. Serial No. 279,598. (No model.)



Claim.—The herein-described device for lacing, comprising a garment having rollers *d* on its meeting edges, and a side channel, *a*, a separate roller, *h*, in a different vertical line from that of said rollers *d*, and in line with said side channel, and a cord passing over said rollers *d* and said separate roller *h* and down said channel, substantially as shown.

386,643. PUMPKIN-SEED PLANTER. DANIEL MCCARTY, Independence, Iowa. Filed Mar. 31 1888. Serial No. 269,093. (No model.)

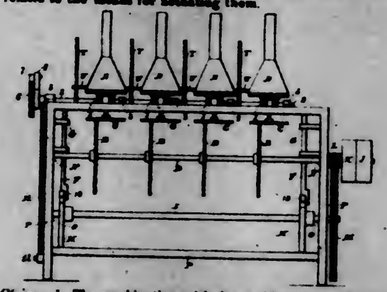


Claim.—1. The herein-described plaster attachment, composed of the hopper, having its sides A and A' extended and closed at their edges by the pieces A^2, the grain-wheel, the curved blocks having their upper edges beveled, the curved plates H, one being hinged and held closed by a turn-buckle or other catch, the cut-off or flirt-valve pivoted between its ends, and having an arm that extends through a curved slot in the side A, the ratchet-wheel keyed on a journal of the grain-wheel, the lever mounted on the said journal, and having its lower end extended and engaging with the said arm of the cut-off or flirt valve, and the pawl carried by the lever and adapted to engage with the ratchet-wheel, substantially as and for the purpose specified.

2. The combination, with the hopper, the grain-spout, and the grain-wheel, of the pivoted cut-off or flirt valve, having an arm, the ratchet-wheel keyed on the journal of the grain-wheel, the lever mounted loosely on the said journal, and having a series of openings at its upper end, and having its lower end extended and bifurcated to embrace the said arm, and the pawl carried by the said lever, substantially as described.

386,644. MACHINE FOR WINDING BOBBINS. JOHN MCCREARY, Cohoes, N. Y. Filed Nov. 1, 1886. Serial No. 217,720. (No model.)

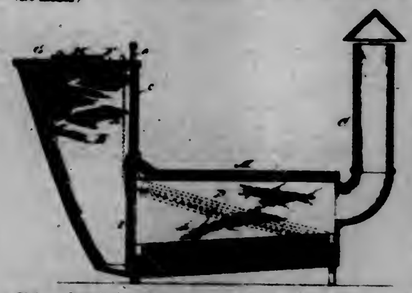
Brief.—The feed-screws are rotatable, and the invention particularly relates to the means for rotating them.



Claim.—1. The combination, with the machine-frame, of a hanger mounted thereon and adapted to move vertically relatively thereto, feed-screws on said hanger, and a longitudinal rod or shaft mounted upon and moving with said hanger, worms on said shaft adapted to engage worm-wheels on said feed-screws for imparting rotary motion thereto, thread carriers and guides for securing the proper delivery of the thread to the bobbins, the ratchet-wheel secured to said longitudinal worm-shaft, and the slotted angular pawl-lever for imparting rotary motion to said worm-shaft, substantially as and for the purpose described.

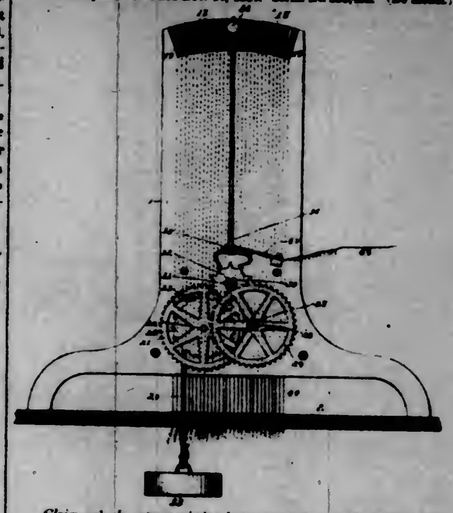
2. The combination, with the machine-frame, of the hanger mounted thereon and adapted to move vertically relatively thereto, the vertical guide-rods and the cam mounted on the driving-shaft for rotating said hanger, the longitudinal shaft on said hanger, the slotted and pivoted crank-arm and pawl and ratchet, whereby said shaft is arranged to be actuated by the upward movement of the hanger, the feed-screws, and mechanism interposed between said shaft and feed-screws for driving the latter, and the thread guides and carriers arranged to be acted upon by said feed-screws, all substantially as and for the purpose set forth.

386,645. HEATER FOR WATERING-TANKS. ALEXANDER MCGOWEN, Independence, Iowa. Filed Mar. 13, 1888. Serial No. 267,092. (No model.)



Claim.—In a heater for watering-tanks, the fire-box A, provided with shield B, and smoke-pipe C, extending up above the same, and the grate D, in combination with the removable cover F, having hole or opening G and the slide H, and the sliding door I, located between the fire-box and shield to close or open communication between the two, substantially as and for the purpose specified.

386,646. ELECTRICAL TYPE-WRITER. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Nov. 17, 1887. Serial No. 255,422. (No model.)



Claim.—1. In a transmitting-instrument, the combination, with a series of segments, each electrically connected with a circuit-controller, of a vibrating commutator electrically in contact with said segments and included in a line-circuit, the circuit, and a circuit-controlling switch for connecting and disconnecting said segments with the circuit.

2. In a transmitting-instrument, the combination, with a series of current-conducting segments, of mechanism for severally directing electric impulses through said segments, an electric circuit including said segments, a circuit-controlling switch for connecting and disconnecting said circuit with said segments, a commutator-arm vibrating electrically in contact with said segments, and a synchronal motor for vibrating said arm.

3. In a transmitting-instrument, the combination, with a series of segments electrically in circuit with a series of corresponding circuit-closers, suitable contacts for said circuit-closers in circuit with a source of electricity, a lever-switch for severally connecting the series of contacts with the series of segments, a vibrating arm electrically in contact with said segments and included in a line-circuit, and a line-circuit, substantially as described.

4. The combination of two instruments, respectively placed at separate stations in a line-circuit and each comprising a series of segments, circuit-closing mechanism for directing the current severally through said segments, a vibrating arm electrically in contact with said segments, a mechanical synchronal motor for vibrating said arm, and a circuit-changing switch for cutting the source of electricity in or out of circuit with a series of segments, substantially as described.

5. The combination, with a series of contacts in circuit with a source of electricity, of a series of segments and a lever-switch for severally electrically connecting and disconnecting said contacts with said segments, substantially as described.

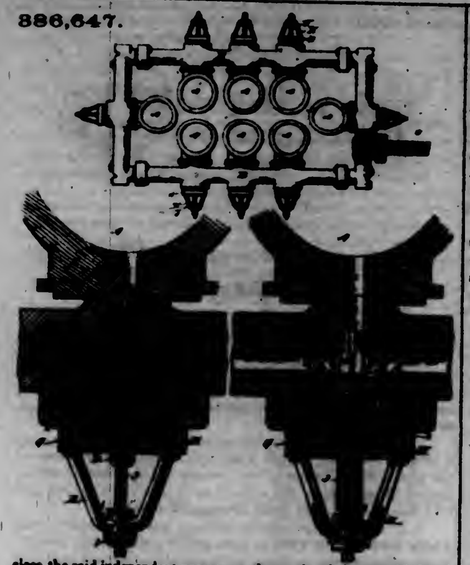
6. The combination of a series of current-conducting segments respectively in circuit with a series of pivoted contacts, a series of pivoted contacts operated in unison by a single movement of a lever, a shifting-lever for said pivoted contacts, and a series of stationary contacts adapted to be electrically connected with their respective pivoted contacts by the single movement of a lever, substantially as described.

7. The combination, with a series of insulated current-conducting segments charged from a suitable source of electricity, of a moving arm provided with a spiral-spring contact electrically in circuit with said series of segments, substantially as described.

386,647. VALVE FOR HYDRAULIC PRESSES. LEWIS MILLER, Philadelphia, Pa. Filed Apr. 12, 1888. Serial No. 270,672. (No model.)

Claim.—1. The combination of the vertical cylinders A, the conduit B, surrounding the cylinders and communicating therewith by means of horizontal independent passages *a*, the horizontal valves D, working in enlarged chambers *b* in the said conduit and adapted to

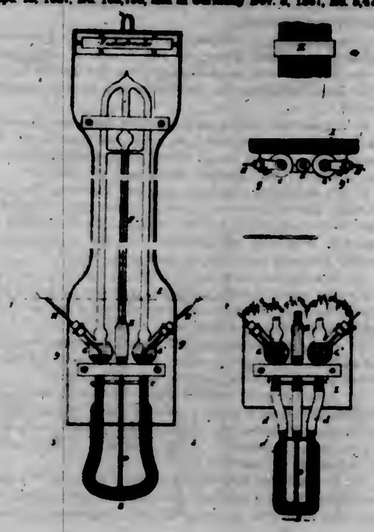
386,647.



close the said independent passages *a*, these valves being provided with radially-winged spiders *d*, which serve to guide them to their seats, a removable bushing inserted in a recess in the conduit, a packing-ring inserted in the bushing, and a gland bolted to the conduit, substantially as described.

2. The combination of a conduit provided with a lateral passage, *a*, this conduit being provided with an internally-shouldered recess opposite the said passage *a*, an internally and externally shouldered bushing, F, inserted in the shouldered recess in the conduit, this bushing being provided with a bevel-seat, *c*, in its inner end, a shouldered packing-ring, G, inserted in the bushing F, a valve, D, passing through the packing and bushing and working in an enlarged chamber, *b*, in the conduit, this valve being provided with a double-beveled head, E, adapted to alternately seat itself over the passage *a* and against the bevel-seat *c* in the bushing, a packing, I, and a gland, H, bolted to the conduit and adapted to press directly against the said packing I and packing-ring G, and means for operating the valve D, substantially as herein described.

386,648. INDUCTOMETER. GUSTAVE HEIM, Paris, France. Filed Mar. 7, 1888. Serial No. 266,620. (No model.) Patented in France Sept. 13, 1887, No. 185,793, and in Germany Nov. 8, 1887, No. 5,478.

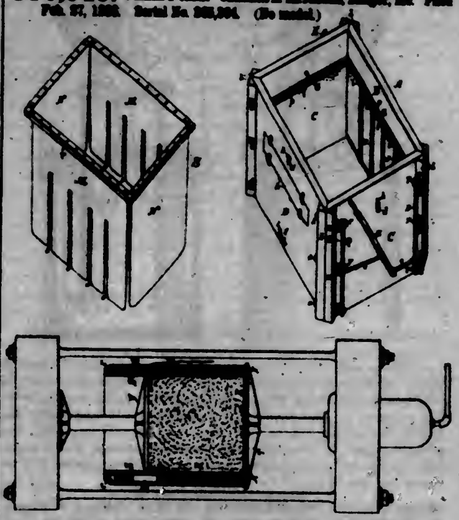


Claim.—1. The described apparatus for measuring the intensity of a magnetic field, said apparatus comprising a U-shaped tube, a capillary tube connected with the horizontal part thereof, and a graduated tube above the capillary tube, the U-shaped tube being filled with mercury and adapted for connection in an electric circuit, substantially as set forth.

2. In an inductometer, the combination of the U-shaped tube filled with mercury, and having branch tubes through which pass conductors for inducing the mercury in an exciting-circuit, a vertical capillary tube connected with the horizontal part of the former tube and surmounted by a bulb, and a graduated tube connected with said bulb, substantially as described.

3. An inductometer comprising the U-shaped tube, the capillary tube, and the bulbs, the lower portion of said tubes being connected with the upper part thereof by flexible coupling-tubes, substantially as and for the purpose set forth.

386,649. BALING-CRIB. CHARLES B. HOWARD, Bangor, Me. Filed Feb. 27, 1888. Serial No. 265,904. (No model.)



Claim.—1. An expansible baling-crib consisting of the sides B B and ends C C, connected by eyebolts running through their corners, the cam-shafts passing through the eyes of the corner-bolts, and means for releasing the cams; whereby the crib is equally opened or enlarged, substantially as shown and described.

2. The combination of a baling-crib with the bag-holders consisting of a metallic rod pivoted to the inside of the crib, having pointed spurs projecting from one side, and a handle from the opposite side extending through the crib, by which the holder is operated from the outside of the crib, substantially as shown and described.

3. The combination of a baling-crib with the bale-tie holders consisting of a metallic rod having right-angle hooks for holding the ties projecting from one side, and a handle by which the holder is operated projecting from the opposite side, substantially as shown and described.

4. An improved baling-crib having four sides, two of which are provided with vertical grooves and one having a pocket, said sides being connected at their corners by eyebolts passing therethrough, and cam-shafts pivoted in said bolts, and means by which the cams are released for expanding the crib, substantially as shown and described.

5. The locking device for expansible cribs, consisting of the shafts D, having cams *c* firmly secured thereto, the connecting-rods *c*, and the reciprocating lever E, for the purpose described, and substantially as shown.

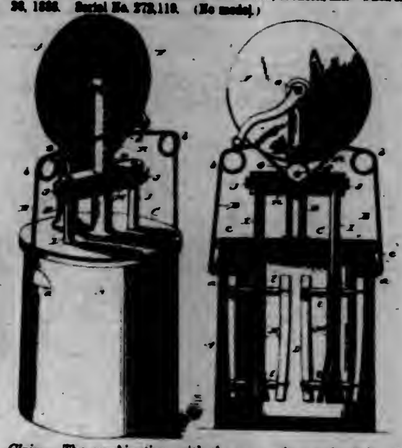
6. An improved expansible baling-crib consisting of the sides B B, having vertical grooves J, the bale-tie holders K, having the hooks *m* and operating-handle *l*, the bag-holders G, with spurs *i* and operating-handle *h*, and an aperture, L, the ends C C having also bag-holders G, with their holding-spurs *i* and handle *h*, the sides and ends provided with the vertical battens *k*, and connected at their corners by the eyebolts F, and the locking devices consisting of the vertical shafts D, having projecting cams *c*, the reciprocating levers E, and their connecting-rods *c*, substantially as shown, and for the purpose described.

7. An inside cage for baling fine substances, consisting of four metallic plates having their tops bent at right angles and secured to lon-

gitudinal bars at the top of the crib, and having two of the said plates provided with vertical slots extending from the bottom upward, substantially as shown, and for the purpose described.

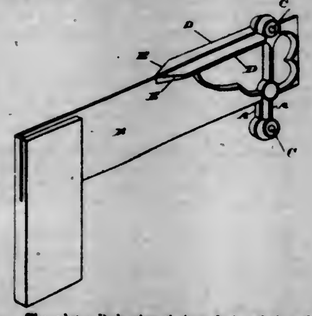
9. The combination of an expansible crib, having its sides connected at the corners by eyebolts containing vertical cam-shafts operated by reciprocating levers and connecting-rods, with a mast and an inside case consisting of metallic posts bent at right angles at their top and secured to have resting on the top of the crib, two of said plates provided with vertical slots extending from their lower edges upward, substantially as described, and for the purpose shown.

386,650. CHURN. GRAHAM G. NEWTON, Trenton, Mo. Filed Apr. 26, 1888. Serial No. 272,119. (No model.)



Claim.—The combination, with the cover, the standards D and E rising therefrom, and the horizontal shafts supported in said standards, of the main drive-pulley and the double-grooved pulley on said shafts, the cross-bar on said standard D and having bifurcated ends, the beater-shafts journaled at their upper ends in said cross-bar, the grooved pulleys on the beater-shafts in the bifurcations of said cross-bar, and the endless cord passed around said pulleys, substantially as shown and described, and for the purpose specified.

386,651. ATTACHMENT FOR SQUARES. CHARLES F. NIEMSEN, San Francisco, Cal. Filed Mar. 27, 1888. Serial No. 268,669. (No model.)

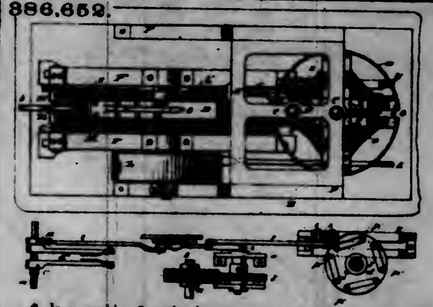


Claim.—The plates D, having their ends beveled, and bolts by which they are secured to the blade of the square, so that the surface is flush with its edge and in a plane transverse thereto, substantially as herein described.

386,652. LEATHER-CRIMPING MACHINE. JOHN F. E. O'CONNOR, Yonkers, assignor to the "Universal" Crimper Company, New York, N. Y. Filed Apr. 6, 1886. Serial No. 298,049. (No model.)

Claim.—1. In a machine for crimping uppers of foot-wear, a mold constructed with an entrance described on an arc of a circle substantially concentric with the path of travel of the plunger, and an outlet of substantially the shape of the profile of the bottom of the crimped upper for receiving the blank for the upper and open throughout its length next to the plunger, combined with the plunger adapted to be forced through the mold in an arc of a circle and carrying with it the blank to crimp it, substantially as described.

386,652.



2. In a machine for crimping uppers of foot-wear, a rotary mold-block having a series of vertical wings containing the molds *a*, the removable plates *p*, arranged in said molds and adjustably secured in place, as by screws, and the springs interposed between the plates and the rigid wings, combined with a plunger and means to rotate it and carry it through the mold from end to end in an arc of a circle, substantially as described.

3. In a machine for crimping uppers of foot-wear, a mold having a channel the outlet through which is of substantially the shape of the profile of the bottom of the crimped upper, combined with a plunger forced through such mold in an arc of a circle and carrying with it and crimping the upper, substantially as described.

4. In a machine for crimping uppers of foot-wear, a mold having a table the surface of which is composed of a plane incline abruptly ending in an upturned curvilinear portion extending outward and above the plane to give initially to the blank of the upper the profile of the crimped upper, combined with the rotary plunger, whose leading end has substantially the same conformation, so as to strike the initially-formed blank and force it at once throughout its length into the mold without injury to the leather, and, continuing to move in an arc of a circle, carry the said blank through and out of the mold, substantially as described.

5. In a machine for crimping uppers of foot-wear, a rotary plunger moving in an arc of a circle and having its leading end formed in substantially the shape desired for the profile of the top of the finished crimped upper, combined with a channel-mold the shape of whose mouth is the counterpart of the leading end of the plunger, having a table the surface of which is an inclined plane ending abruptly in an upturned receding portion elevated above the plane and also of substantially the conformation of the leading end of the plunger, and a press-plate whose shape is the counterpart of the table, substantially as described.

6. In a machine for crimping uppers of foot-wear, a rotary master-wheel, a drum thereon, and a series of plungers projecting from the periphery of such drum, combined with a mold separated from the master-wheel and arranged in the arc of travel of the plungers, substantially as described.

7. In a machine for crimping uppers of foot-wear, a master-wheel provided with a series of plungers and a series of cams, combined with the mold, press-plates co-operating with the mold and plungers, and the lever connecting the press-plates and cams, substantially as described.

8. In a machine for crimping uppers of foot-wear, the revolving mold-block, the channel-molds made lengthwise in said block, the corrugated plates arranged in the molds, and relieving-springs for said plates, combined with a plunger, substantially as described.

9. In a machine for crimping uppers of foot-wear, the revolving mold-block and its molds and the shaft for said block, combined with a plate on the mold-block shaft and spring-pawls in said plate, the reciprocating cross-head, and a ratchet-tooth and regulating-stop co-operating with said pawls, substantially as described.

10. In a machine for crimping uppers of foot-wear, the plungers and a rotary carrier therefor, combined with the molds and a carrier for them revolving at right angles with the axis of the carrier for the plungers, substantially as described.

11. In a machine for crimping uppers of foot-wear, the revolving mold-block and a plunger, combined with press-plates and the bar *b'*, attached to the press-plates, substantially as described.

12. In a machine for crimping uppers of foot-wear, the press-plates normally elevated by a spring, combined with a rotating cam, and a lever interposed between the cam and press-plates to bring and hold the press-plates in position for securing the work or blank of the upper, substantially as described.

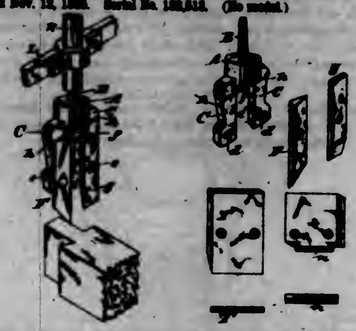
13. In a machine for crimping uppers of foot-wear, the combination of the mold-block and shaft, pawl-plate and spring-pawls, reciprocating cross-head with ratchet-tooth and regulating-stop, crank-connecting rod, and mold-moving geared wheel with a suitable source of power, substantially as described.

14. In a machine for crimping uppers of foot-wear, the combination of the press-plates, shaft, cutlet spring, lever and lever-spring, cam, and master-wheel, with operating mechanism, substantially as described.

15. In a machine for crimping uppers of foot-wear, the combination of the tilting delivery-fingers, their shaft, shaft-spring, crank-connecting rod, and bell-crank, with the crank of the mold-moving geared wheel and suitable driving mechanism, substantially as described.

16. In a machine for crimping uppers of foot-wear, the combination of the mold-block, plunger, drum, press-plates, and tilting delivery-fingers, with the driving mechanism, substantially as described.

386,653. TENSIONING-TOOL. LOUIS F. PAHDE, Cincinnati, Ohio. Filed Nov. 12, 1888. Serial No. 132,513. (No model.)

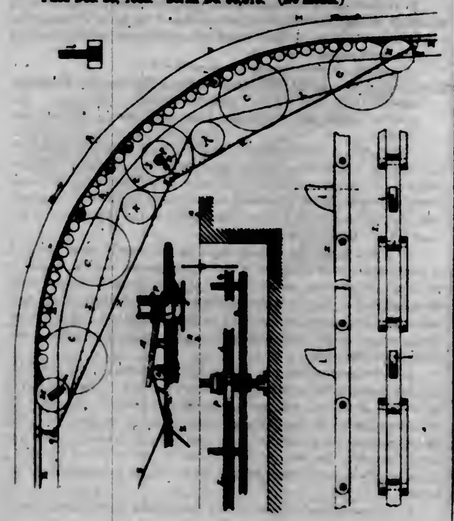


Claim.—1. A tensioning-tool consisting of a body, A, having a shank at one end and extensions C at the other, forming between them a central slot, *i*, for the tenon and adapted to receive bits, and formed with transverse slots *d* for lateral adjustment of the bits, substantially as set forth.

2. A tensioning-tool consisting in the combination of a solid body, A, capable of being connected to the stock of a suitable machine, having two wings, C, extending therefrom, adapted to hold adjustably the cutting-bits which bear against a rest, A, formed by an increase in the metal of the body near their upper ends, and a scale to gage the distance between the bits.

3. In a tensioning-tool provided with wings C, forming between them a central slot, *i*, and having plane surfaces parallel with the line of motion of said tool, and adapted to receive and hold bits the cutting-edge of which may be of different shapes, substantially as set forth.

386,654. APPARATUS FOR MOVING CARS AROUND CURVES OF CABLE RAILWAYS. WILLIAM A. PHILLIPS, San Francisco, Cal. Filed Dec. 30, 1882. Serial No. 80,619. (No model.)



Claim.—1. In a system of propelling cars by means of an endless rope or cable moving in an underground slotted tube or tunnel, the improvement in passing the rope around curves, consisting in the combination of the main cable B, carried around the curve on large horizontal pulleys C C regardless of its relation to the slot in the tube, with a supplemental endless chain or cable, I, having legs or arms *l*, the line of small pulleys G supporting one part of said chain or cable parallel with the slot through which the gripper-shank passes, and the driving mechanism connected to the opposite part of said chain or cable and automatically set in motion and thrown out of motion by the pressure of the gripper-shank against a lever, *q*, substantially as described.

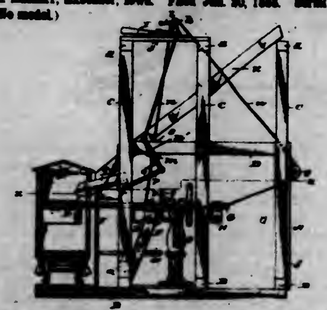
2. In an apparatus of the character described, the combination, with the main cable B, carried around the curve on large horizontal pulleys C C, of the supplemental endless chain or cable I, having legs or arms *l*, the line of small pulleys G, supporting one part of said chain or cable, the loose pulley J, supporting another part of said chain or cable, and the clutch-coupling *p*, mounted upon the same shaft with said pulley J and operated by the pressure of the gripper-shank against levers which are located at each end of the curve and have intermediate connections with said clutch-coupling, substantially as and for the purpose set forth.

3. In an apparatus of the character described, the combination, with the main cable B, carried around the curve on large horizontal pulleys C C, of the supplemental endless chain or cable I, having legs or arms *l*, the line of small pulleys G, supporting one part of said cable parallel with the slot through which the gripper-shank passes, the two pulleys H H, for supporting said chain or cable at the ends of the curve, the loose pulley J, combined with the clutch-coupling *p*, mounted on the shaft of one of the pulleys C for supporting the opposite side of the said chain or cable at a point about central between the two pulleys H H, the two pulleys K K, for pressing the said chain or cable against one side of the loose pulley J, and mechanism for throwing said loose pulley into and out of action by the pressure of the gripper-shank against levers connected with such mechanism, substantially as and for the purpose set forth.

4. In an apparatus of the character described, the combination, with the main cable B, carried around the curve on large horizontal pulleys C C, and the supplemental endless chain or cable I, supported by the line of small pulleys G, and the pulleys H H and K K, of the loose pulley J and the clutch-coupling *p*, mounted on the shaft of one of said large pulleys C, the engaging forked lever R, pivoted at the center, the wedge or inclined plane S, arranged to move under the outer end of said lever, and a rope or cord, Z, connected to this wedge and to levers *q* at each end of the curve, substantially as and for the purpose set forth.

5. In an apparatus of the character described, the line of pulleys G, for supporting the supplemental chain or cable I, all arranged in a continuous metallic box, E, provided with grooves *f*, combined with upper bearing-blocks, *a*, and caps *b*, and lower bearing-blocks, *a*, provided with cavities *c*, substantially as and for the purpose set forth.

386,655. COAL AND GRAIN DISTRIBUTING APPARATUS. OTTO H. RAIMAT, Ryenister, Iowa. Filed Jan. 20, 1888. Serial No. 261,303. (No model.)



Claim.—1. A coal-loading apparatus having a fixed inclined chute, in combination with a reciprocating chute arranged at the lower end of the main chute and adapted to extend the discharge of the latter, and a rock-shaft having at one end an angular distributer which is adapted to receive material from said chutes and conduct it in opposite directions, substantially as specified.

2. The combination in an apparatus such as described, of a main frame, an inclined chute fixed thereon, a movable chute at base of the fixed chute, a rock-shaft carrying at its outer end an angular distributer, and pivoted jaws M, for clutching the said rock-shaft, substantially as specified.

3. The herein-described loading and distributing apparatus, con-

sisting of the main frame provided with the main chute and the movable chute *g*, the latter being connected by the crank *n'* and rods *n p* to an operating-lever, *l*, the rope passing around the pulleys *g h* and having its ends connected to the rear portion of the said rock-shaft, and the said rope connected to the winding-drum *h*, by which means the rock-shaft and distributer are adjusted into and out of operative position, substantially as specified.

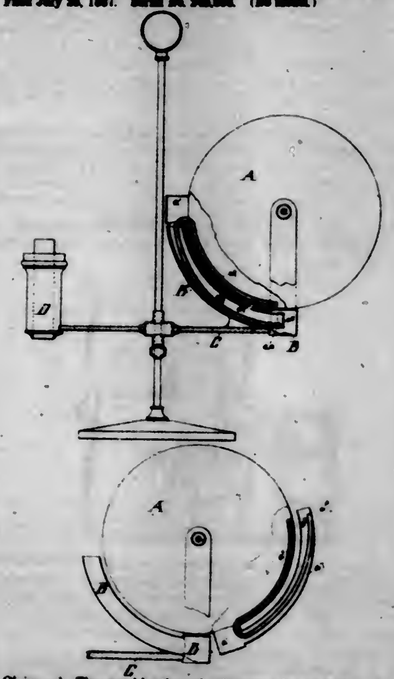
386,656. MANUFACTURE OF LOADED HEEL-BLANKS. FREDERICK P. RAYMOND, 24, Hoyton, Mass. Filed Jan. 19, 1888. Serial No. 261,282. (No model.)



Claim.—1. The improved method of making detached loaded heel-blanks for attachment by flesh nailing to the soles of a boot or shoe, consisting in pricking holes therein at a uniform distance from the edge of the top lift of the heel-blank and inserting in some of said holes nails of one length to serve as attaching-nails and the heads of which are left projecting from the tread-surface of the heel-blank, and the points of which do not extend through the heel-blank, and in other of said holes shorter nails or rings adapted for surface wearing and not for attaching, and interposed between the attaching-nails, as and for the purposes specified.

2. The method of making detached loaded heel-blanks for attachment by flesh nailing to the soles of a boot or a shoe, consisting in forming holes in the heel-blank varying in depth and inserting in said holes nails varying in length, the longer of which are used as attaching-nails, are set in the longer holes, and have their heads projecting from the tread-surface of the heel-blank and their points embedded in the substance of the heel, and the shorter of which are set in the shallower holes and are interposed between the attaching-nails and are driven to bring their heads flush with the tread-surface of the heel-blank before it is attached, as and for the purposes described.

386,657. BAROMETRIC RESERVOIR. FRANK RIDER, Morton, Conn., assignor of one-half to Edward Miller & Company, same place. Filed July 29, 1887. Serial No. 245,502. (No model.)



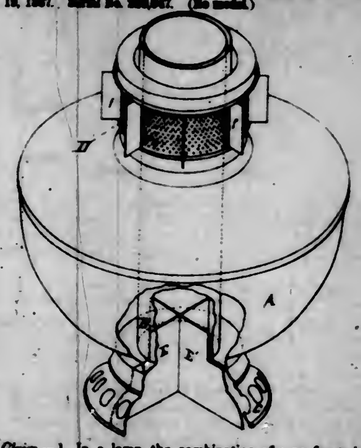
Claim.—1. The combination of a barometric reservoir, a frame or shell in which said reservoir is supported so as to be capable of axial revolution, an opening in said reservoir, and an exterior tube attached to said opening, bent to a curve substantially concentric with said reservoir and adapted to carry oil to or from said reservoir, substantially as described.

2. The combination of a barometric reservoir, a frame or shell in which said reservoir is supported so as to be capable of axial revolution, an opening in said reservoir, an exterior tube attached to said opening, bent to a curve substantially concentric with said reservoir and adapted to carry oil to or from said reservoir, and a guard-tube attached to said shell or frame and adapted to receive said tube, substantially as described.

3. The combination of a barometric reservoir, a frame or shell in which said reservoir is supported so as to be capable of axial revolution, an opening in said reservoir, an exterior tube attached to said opening, bent to a curve substantially concentric with said reservoir and adapted to carry oil to or from said reservoir, and a siphon-shaped tube partly within said reservoir and projecting through said opening, substantially as described.

4. The combination of a barometric reservoir, a frame or shell in which said reservoir is supported so as to be capable of axial revolution, an opening in said reservoir, an exterior tube attached to said opening, bent to a curve substantially concentric with said reservoir and adapted to carry oil to or from said reservoir, and a removable plug or cap at the free end of said tube, substantially as described.

386,658. CENTRAL-DRAFT LAMP. FRANK RIDER, Morton, Conn., assignor to Edward Miller & Company, same place. Filed Sept. 19, 1887. Serial No. 249,947. (No model.)



Claim.—1. In a lamp, the combination of a perforated portion, through which air is supplied to the exterior surface of the flame, and one or more wings or wind-guards extending outward from said perforated portion, substantially as described.

2. In combination with a lamp having a perforated portion through which air is supplied to the exterior surface of the flame, a detachable ring or hoop and one or more wings or wind-guards attached to said ring, substantially as described.

386,659. MAGAZINE-GUN. HERR G. H. SALOMON, Stockholm, Sweden. Filed Nov. 5, 1886. Serial No. 218,201. (No model.) Patented in England Mar. 1, 1886, No. 2,953, and in Norway Mar. 24, 1886, No. 62.

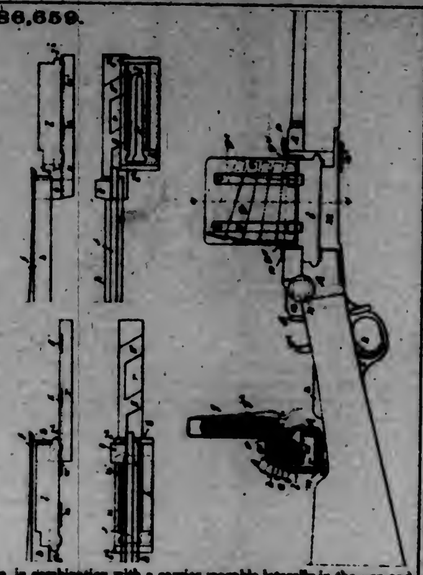
Claim.—1. A breech-loading gun having a barrel, breech-piece, and bolt, in combination with a cartridge-carrier in guides at right angles to the length of the gun and acted on by the bolt to be moved laterally outward from the casing as the bolt is withdrawn longitudinally and to be returned within the casing as the bolt is moved forward, all substantially as described.

2. A breech-loading gun having a barrel, breech-piece, and bolt, in combination with a carrier in horizontal guides at right angles to the length of the gun and having an oblique opening through it for the admission of the cartridge above and the discharge of the shell below, the said carrier being acted on by the bolt to be moved laterally in or out as the bolt is moved longitudinally in or out, all substantially as described.

3. A breech-loading gun having a barrel, breech-piece, and bolt, in combination with a carrier in horizontal guides at right angles to the length of the gun and having an oblique opening through it for the admission of the cartridge above and the discharge of the shell below, corresponding oblique steps, and grooves on the said bolt and carrier, whereby the latter is moved laterally into or out of the casing as the bolt is moved longitudinally in or out, all substantially as described.

4. A breech-loading gun having a magazine, barrel, and breech-

386,659.



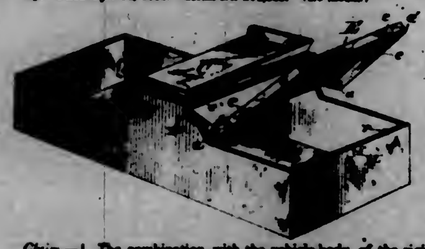
piece, in combination with a carrier movable laterally in the gun and having an opening through it for the cartridges from the magazine, and corresponding oblique steps, and grooves on the carrier and bolt, whereby the carrier is moved laterally in or out as the bolt is moved, substantially as set forth.

5. A breech-loading gun having a longitudinally-moving bolt and a cartridge-carrier provided with an opening through it for the admission of the cartridge above and the discharge of the shell below, the said carrier being moved into or out of the breech-casing by the bolt, substantially as described.

6. A breech-loading gun having a longitudinally-moving bolt and cartridge-carrier provided with an oblique opening entirely through it for the admission of the cartridge above and the discharge of the shell below, and with projecting edges at the upper sides of the opening for holding the cartridges, substantially as set forth.

7. A breech-loading gun having a magazine, breech-piece, barrel, and longitudinally-moving bolt, the latter having oblique grooves, in combination with a laterally-movable cartridge-carrier having oblique steps to engage with said oblique grooves, and having an oblique opening for the cartridges, and projecting edges adjacent to said opening on the upper side, all substantially as and for the purpose set forth.

386,660. SPORT-BOAT. FREDERICK SIEBERT, Mount Sterling, Ky. Filed Apr. 26, 1888. Serial No. 271,933. (No model.)



Claim.—1. The combination, with the vehicle-body, of the rigid metallic boot E, shaped to fit said body, pivoted thereto at its forward end, and provided with depending flanges, substantially as set forth.

2. The combination, with the vehicle-body, of the rigid metallic boot E, bent as described, so as to extend upward at its forward end, pivoted to said body at the latter point, and provided with a surrounding strengthening-frame formed from the material which constitutes the top plate of the boot, substantially as set forth.

3. The combination, with the vehicle-body, of the rigid metallic boot E, fitted thereto and hinged at its forward end, substantially as described.

4. The combination, with the portion D of the vehicle-body, of the rigid metallic boot E, hinged thereto at its forward end, the buffers *r*, situated upon the upper part of said portion, and the screws *r'*, passing through said buffers and having their heads below the top surface thereof, substantially as set forth.

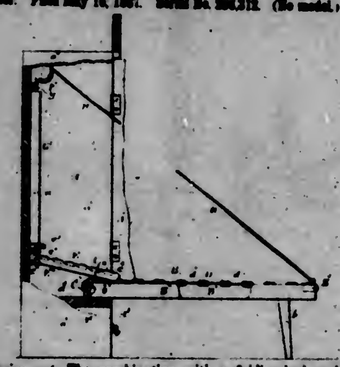
386,661. SECRET SAFETY-LAMP. THOMAS SHAW, Philadelphia, Pa. Filed Dec. 2, 1887. Serial No. 256,602. (No model.)



Claim.—1. The combination, with the burner and casing of a miner's lamp, of a chamber below the burner, an air-tube communicating therewith, and a flexible wall to said casing, substantially as described.

2. The combination of the lower casing containing a reservoir and air-chamber, an air-tube communicating with the chamber, a flexible wall to said chamber, passages from the air-chamber to the top of the casing, a burner, and surrounding transparent casing, substantially as described.

386,662. FOLDING BEDSTEAD. HOWE T. SMITH, Fremont, Nebr. Filed May 16, 1887. Serial No. 238,312. (No model.)



Claim.—1. The combination, with a folding-bed casing, of a swinging bed-frame, B, a horizontal stationary bar, C, attached to the casing, pivots attached to the ends of the bar and engaging the upper ends of the sides of the frame, and a bed-bottom consisting of a flexible fabric attached to the said stationary bar C and to the lower end of the frame, substantially as described.

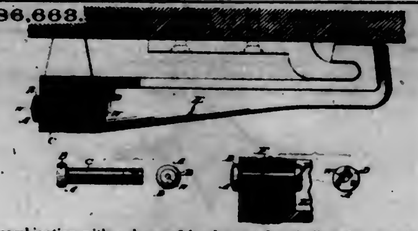
2. The combination, with a stationary folding-bed casing provided with a fixed horizontal partition, of a bed-frame, B, consisting of an end rail and two side rails and a stationary horizontal bar, C, attached to the said partition and provided at its ends with pivots engaging the ends of the side rails of the frame, and a flexible bed-bottom secured to the stationary bar C and to the lower end of the frame, whereby when the bed is lowered for use the bed-bottom is stretched, substantially as described.

386,663. SEAL FOR LOCKS &c. GEORGE G. SMITH, St. Albans, Vt. Filed Sept. 1, 1887. Serial No. 248,691. (No model.)

Claim.—1. The within-described detached sealing bolt or rivet for sealing and securing locks and other fastenings, the same consisting of a rod or pin of soft metal headed at one end and encircled by a reinforcing sleeve of harder metal extending over a portion of its length and united thereto, substantially in the manner and for the purpose herein set forth.

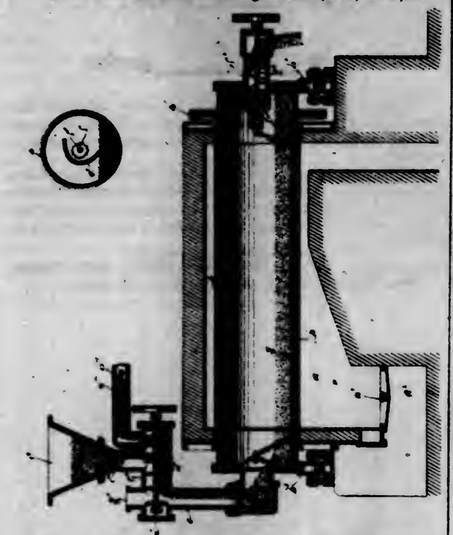
2. A seal for bolts and other fastenings, consisting of a longitudinally perforated or tubular pin or bolt of soft metal headed at one end,

386,663.



in combination with a sleeve of harder metal encircling the same for a portion of its length, substantially in the manner and for the purpose herein set forth.

386,664. APPARATUS FOR ROASTING SODIUM BICARBONATE. ERNEST SOLVAY, Brussels, Belgium, assignor to the Solvay Process Company, Syracuse, N. Y. Filed Mar. 28, 1888. Serial No. 268,886. (No model.) Patented in Belgium Aug. 11, 1887, No. 78,547; in France Aug. 11, 1887, No. 186,262, and in England Oct. 1, 1887, No. 13,282.



Claim.—1. The combination, with a revolving roasting-cylinder, and a furnace for heating the same, of a mixing-chamber connected to said cylinder and having an inlet for the bicarbonate and one for the carbonate, whereby a mixture is made and fed continuously to the cylinder, substantially as and for the purpose set forth.

2. The combination, with the revolving roasting-cylinder, of an outlet for the soda, provided with a conveyer-shaft having a corrugated roller on its end and a tangentially-curved lifter within the cylinder formed with a corrugated face, whereby the material is continuously discharged and all lumps crushed, substantially as and for the purpose set forth.

3. The combination, with the mixing-chamber of an apparatus for decomposing bicarbonate of soda, of a hopper thereon having a feeding-valve in its bottom, and a pipe connected thereto and provided with a conveyer stopping short of its connecting-point, whereby the material is induced to fill the openings and prevent the admission of air, substantially as and for the purpose set forth.

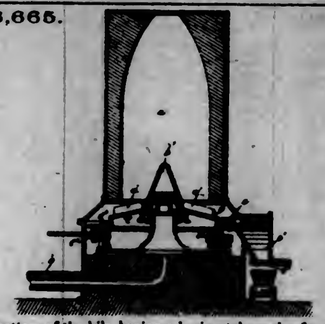
4. The combination, with the rotary roasting-cylinder, of a discharge-pipe and a conveyer therein made shorter than the pipe, substantially as and for the purpose set forth.

386,665. LIMEKILN. ERNEST SOLVAY, Brussels, Belgium, assignor to the Solvay Process Company, Syracuse, N. Y. Filed Mar. 28, 1888. Serial No. 268,887. (No model.) Patented in Belgium Aug. 26, 1887, No. 78,672; in France Aug. 26, 1887, No. 186,907, and in England Oct. 1, 1887, No. 13,282.

Claim.—1. The combination, with a limekiln, of a revolving disk placed in the bottom of the kiln and provided with means for forcing the lime gradually from the center to the outer edge of the disk, substantially as and for the purpose set forth.

2. The combination, with a limekiln, of a revolving conical disk

386,665.



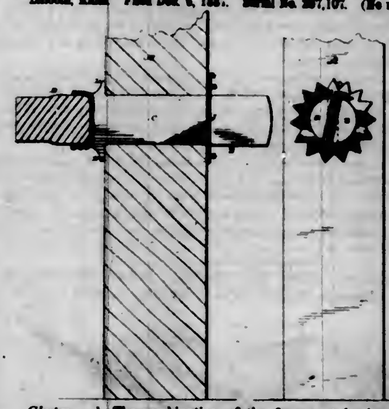
in the bottom of the kiln, having a horizontal annular flange, tangent wings for forcing the material out to and upon the annular flange, and a scraper to sweep the lime off said flange at the point of discharge, substantially as and for the purpose set forth.

3. The combination, with a limekiln having its inner sides made vertical at the lower end, of a revolving disk in the lower part of the kiln for automatically discharging the material, substantially as and for the purpose set forth.

4. The combination, with a limekiln having its lower end made air-tight, of an air-blast pipe introduced into the lower end of the kiln, and having a discharge nozzle or cone, *b'*, connected to the blast-pipe and extended up into the center of the charge under operation, substantially as shown and described.

5. The combination, with a limekiln, of a cone projecting into the lower center thereof and connected to an air-blast, and a revolving disk surrounding the cone and adapted to continuously work the lime outward to a discharge-point, substantially as and for the purpose set forth.

386,666. TIGHTENER FOR WIRE FENCES. GEORGE TIBBETT, Lincoln, Kans. Filed Dec. 6, 1887. Serial No. 257,107. (No model.)



Claim.—1. The combination of the fence-post having a hole through it, with the wire-tightener composed of a rod or shaft having an open-ended slot through the part which extends through the post, a locking-plate having apertures to receive the forked end *b'* of the shaft, and a fastening or locking device upon the fence-post, substantially as shown.

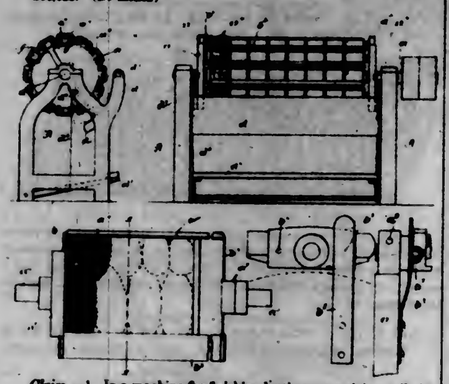
2. The combination of a fence-post having a hole through it, with a wire-tightener composed of a rod or shaft having an open-ended slot through that end which extends through the post, and provided with a beveled flange upon its head or outer end, and a locking-plate which is applied to the post to prevent the rod or shaft from revolving, substantially as described.

3. The combination of a perforated fence-post with a wire-stretching device composed of a rod or shaft having an open-ended slot through that part which extends through the post, a locking-plate provided with openings to receive the ends of the prongs of the tightening device, and a strip which catches between the prongs, and a locking device on the post to prevent the plate from revolving backward, substantially as set forth.

4. The combination of the tightening device provided with an open-ended slot and having the shoulders F in the inner sides of the

prongs, with the locking-plate provided with serrations in its edge, openings to receive the ends of the prongs of the tightener, and a strip which extends between the prongs, substantially as specified.

386,667. MACHINE FOR THE TREATMENT OF LEATHER. HENRY THOMAS, Skaneateles, N. Y. Filed Jan. 17, 1888. Serial No. 261,033. (No model.)



Claim.—1. In a machine for finishing leather, a revolving cylinder having a series of reversible dresser bars or slats to hold toasels, and a locking device for said bars or slats, combined with a bed or apron to support the leather to be acted upon by the said toasels, substantially as described.

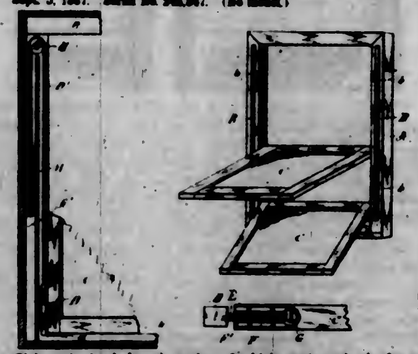
2. In a machine for finishing leather, a rotating cylinder provided with a series of pivoted dresser bars or slats, having one face provided with toasels and one with wire-cloth, the said dresser bars or slats being mounted in the said cylinder, in order that they may be reversed, as desired, to operate substantially as described.

3. In a machine for finishing leather, a rotating cylinder, its series of pivoted dresser bars or slats containing toasels, combined with a locking device to secure the dresser bars or slats in position, substantially as described.

4. In a machine for finishing leather, the combination, with a supporting-frame, of a reversible dresser bar or slat containing toasels, and a locking device to secure the said dresser bars or slats, substantially as described.

5. In a machine for finishing leather, a supporting-frame and a series of reversible dresser bars or slats containing toasels and wire cards and pivoted to said frame, combined with a locking device to secure the dresser bars or slats, substantially as described.

386,668. WINDOW. WILLIAM P. B. UREN, Newark, N. J. Filed Sept. 9, 1887. Serial No. 248,947. (No model.)

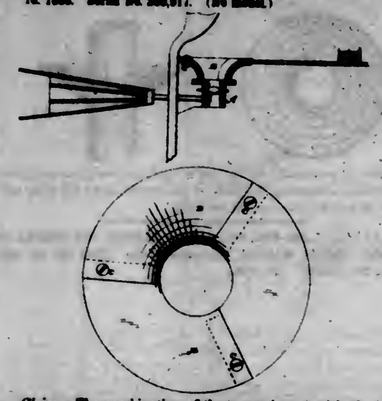


Claim.—1. A window the sashes of which are hung in the frame by attachments, the short arms of which engage in plates at the lower corners of the sashes, and the long arms of which are attached to the cords or straps supporting the weights in the frame, said sashes being adjustably secured at their lower corners at any point in the frame by means of cams acting against the short arms of the attachments, substantially as shown and described.

2. A window provided with swinging steps or cleats, and sashes hung from their lower corners by cords and attachments, said sashes being secured at any point in the frame by a cam acting against the short arms of the attachments, substantially as shown and described.

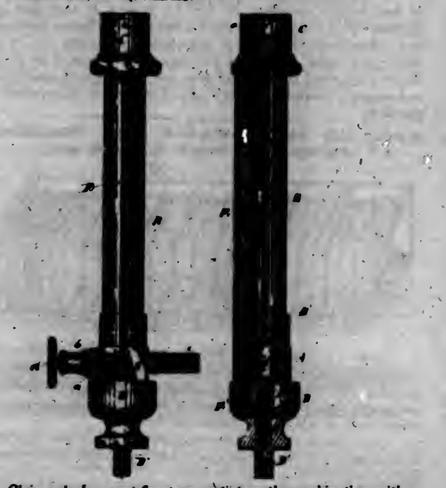
3. A window sash each sash of which is hung in the frame by cords and attachments, said attachments being crowded by a cam against the frame, forming fixed hinges upon which the sashes can be swung, substantially as shown and described.

386,669. TUYERE. ANDREW VANDERLIP, Goshen, Ind. Filed Jan. 16, 1888. Serial No. 260,917. (No model.)



Claim.—The combination of the tuyere-iron A with the iron cap B, placed thereon and composed of a number of overlapping sections which are bolted together, the cap having an opening through its center and forming the base upon which the fire is built, substantially as shown.

386,670. VENT-PLUG FOR STEAM-RADIATORS. EDWARD P. WARDEMAN, Syracuse, N. Y., assignor of one-half to the Pierce, Butler & Pierce Manufacturing Company, same place. Filed Nov. 30, 1887. Serial No. 256,902. (No model.)



Claim.—1. In a vent for steam-radiators, the combination, with a positive vent-plug formed with a vent escape-passage and an automatic vent-plug also provided with an escape-passage, of a drip-cup secured to the lower end of the device beneath the ends of both escape-passages, substantially as shown and described.

2. The combination, in a vent-plug for steam-radiators, of a positive vent-plug having passages for steam and air and an escape-passage opening through the side of the shell above the drip-cup, an automatic vent-plug mounted on the positive one, a drip-pipe connected to the automatic vent-plug on the exterior of the casing, and a drip-cup on the positive vent-plug to receive the drip from both of them, substantially as and for the purpose set forth.

3. A positive vent-plug provided with a depending screw-threaded hollow stem and an escape-passage opening through the shell at one side of said stem, in combination with a drip-cup secured to said stem, the stem being provided with openings some distance above the bottom of the cup leading through the hollow screw-threaded stem of

the positive vent-plug, and a corresponding passage through the base of the drip-cup, substantially as and for the purpose set forth.

386,671. PIPE-COLLAR. EDWARD P. WARDNER, Syracuse, N. Y., assignor of one-half to the Pierce, Butler & Pierce Manufacturing Company, same place. Filed Dec. 17, 1887. Serial No. 258,149. (No model.)



Claim.—A pipe-collar having studs inside its central opening and an elastic band connecting the studs for closely hugging the pipe, substantially as and for the purpose set forth.

386,672. DIE FOR THICKENING BLANKS FOR SPOONS OR FORKS. ROBERT WALLACE, Wallingford, Conn. Filed Apr. 30, 1888. Serial No. 272,969. (No model.)



Claim.—1. The herein-described die for thickening the blanks for spoon or fork handles, consisting of two parts, A B, the adjacent faces of each constructed with grooves *b b*, the said grooves corresponding in length and longitudinal shape to the portion of the blank when thickened, the sides of the said grooves diverging from the inside outward, the said inner sides or narrower portion of the grooves in width corresponding substantially to the thickness of the blank to be operated upon, substantially as described.

2. The herein-described die for thickening the blanks for spoon or fork handles, consisting of, the two parts A B, each part constructed with a longitudinal groove, *b*, upon their adjacent faces, each part constructed with a cheek, *d*, projecting from one side of the groove, the cheek of the one part being on the side of its groove opposite the cheek of the other part, and so as to form overlapping and opposing cheeks on opposite sides of the groove, substantially as described.

386,673. PAPER OR BILL FILE. ARTHUR J. WELLS, Syracuse, N. Y. Filed Sept. 9, 1887. Serial No. 249,192. (No model.)

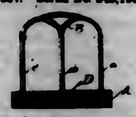


Claim.—1. In a paper or bill file, the combination, with a base formed with longitudinal grooves in its edges, of a series of partitions provided with tongues to engage said grooves, whereby the partitions are readily adjusted to form a series of compartments of various sizes, substantially as and for the purpose set forth.

2. In a paper or bill file, the combination, with a base, of a series of detachable partitions adjustable to and from each other, substantially as and for the purpose set forth.

3. The combination, with the longitudinally-grooved base A, of the metallic slides or partitions C, provided with tongues *c*, to enter the grooved edges of the base, substantially as shown and described.

386,674. PAPER OR BILL FILE. ARTHUR J. WELLS, Syracuse, N. Y. Filed Sept. 9, 1887. Serial No. 249,193. (No model.)

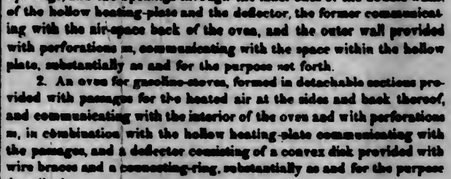


Claim.—1. The herein-described paper-file, consisting of a base adapted to lie upon a desk or table and formed with a series of perforations, and adjustable partitions provided with steps removably fitting into the perforated base, substantially as and for the purpose set forth.

2. The combination of the base A and perforated plate D, secured to its top, and the adjustable partitions B, having the steps *c c*, adapted to enter the perforations, substantially as and for the purpose set forth.

3. The base A, formed with a series of perforations, C, and the adjustable partitions B, having the spring-steps *c c*, substantially as specified.

386,675. PAPER OR BILL FILE. ARTHUR J. WELLS, Syracuse, N. Y. Filed Sept. 9, 1887. Serial No. 249,200. (No model.)



Claim.—The combination of the base A, having rabbets *a* extending lengthwise in the outer edges thereof, rods *b*, detachably secured to the base within the rabbets, and slides C, having depending feet *c* and eyes *d*, through which the rods *b* pass, substantially as and for the purpose set forth.

386,676. OVEN FOR GASOLINE-STOVES. WALTER WELLS, Oskaloosa, Iowa. Filed Feb. 28, 1888. Serial No. 265,916. (No model.)

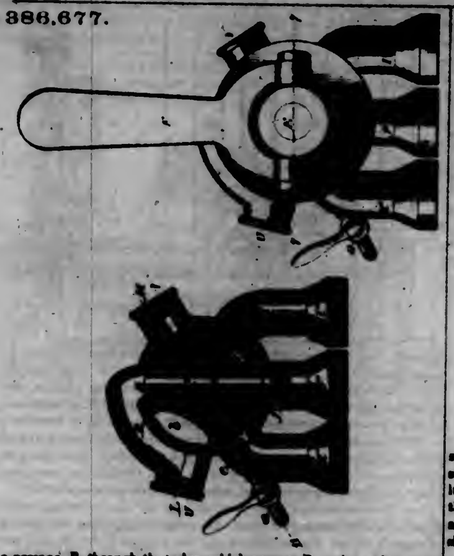
Claim.—In an oven for gasoline-stoves, the combination, with the double walls thereof at the back and sides, as shown, the escape openings, and the openings through the inner ones of the double walls, of the hollow heating-plate and the deflector, the former communicating with the air-space back of the oven, and the outer wall provided with perforations *m*, communicating with the space within the hollow plate, substantially as and for the purpose set forth.

2. An oven for gasoline-stoves, formed in detachable sections provided with passages for the heated air at the sides and back thereof, and communicating with the interior of the oven and with perforations *m*, in combination with the hollow heating-plate communicating with the passages, and a deflector consisting of a convex disk provided with wire braces and a connecting-ring, substantially as and for the purpose described.

386,677. VALVE FOR FILTERS. ABSHALOM J. WISE, Lake View, Ill. Filed Apr. 30, 1888. Serial No. 272,945. (No model.)

Claim.—1. A valve-chamber provided with an inlet and with outlets I J K upon one side, which communicate with short tubes I' J' K', an outlet, T, located below the outlet J, which outlet T communicates with a passage which leads to the tube J', an outlet, L, for the discharge of dirty water when the filter is washed, an outlet, M, for the discharge of filtered water, an outlet, S, and a passage, R, communicating at one end with the duct S and at the other end with the outlet U, in combination with a hollow valve provided with two openings, N O, either of which can be made to register with the outlet T,

386,677.



a passage, P, through the valve, which passage P can be made to register with outlets J and S or with outlets K and M, and a recess or passage, *b*, which communicates at one end with a pipe, K, and at the other end with the outlet L, substantially as and for the purpose specified.

2. A valve-chamber provided with an inlet and with outlets I J K upon one side, which communicate with short tubes I' J' K', an outlet, T, located below the outlet J, which outlet T communicates with a passage which leads to the tube J', an outlet, L, for the discharge of dirty water when the filter is washed, an outlet, M, for the discharge of filtered water, an outlet, S, and passage R, communicating at one end with the duct S and at the other end with the outlet U, and the passage *d* through the beam G, one end of which passage *d* communicates with duct *c* when it is brought to the proper position, and the other end communicates with the try-cock Q, in combination with a hollow valve provided with openings N, O, and *c*, the openings N O being so arranged that either one can be made to register with the outlet T, and the opening *c* being so arranged that it can be made to register with the passage *d*, and passage P through the valve, which passage P can be made to register with the two outlets J and S, or with the two outlets K and M, and a recess or passage, *b*, which communicates at one end with the pipe K and at the other end with the outlet L, substantially as and for the purpose specified.

3. A valve-chamber provided with an inlet and with outlets I J K upon one side, which communicate with short tubes I' J' K', an outlet, T, located below the outlet J, which outlet T communicates with a passage which leads to the tube J', an outlet, L, for the discharge of dirty water when the filter is washed, an outlet, M, for the discharge of filtered water, an outlet, S, a passage, R, communicating at one end with the duct S and at the other end with the outlet U, and the passage *d* through the beam G, one end of which passage *d* communicates with duct *c* when it is brought to the proper position, and the other end communicates with the try-cock Q, and passage *c* in the beam G, the upper end of which passage *c* communicates with the tube or passage K and the lower end with the passage *d*, in combination with a hollow valve provided with openings N, O, and *c*, the openings N O being so arranged that either one can be made to register with the outlet T, and the opening *c* being so arranged that it can be made to register with the passage *d* and passage P through the valve, which passage P can be made to register with the two outlets J and S, or with the two outlets K and M, and a recess or passage, *b*, which communicates at one end with the pipe K and at the other end with the outlet L, substantially as and for the purpose specified.

386,678. SASH-FASTENER. WILLIAM THLAAR, Jr., Brooklyn, N. Y. Filed Feb. 1, 1888. Serial No. 262,684. (No model.)

Claim.—1. In a sash attachment, the combination, substantially as before set forth, of a rod adapted to be attached at its upper end by a universal joint to the central top part of an upper sash, and a slotted clamping-block capable of a rocking movement, adapted to be secured to the central upper part of a lower sash, to which the lower free end of the said rod may be removably attached.

386,678.



2. In a sash attachment, the combination, substantially as before set forth, of a plate provided with an integral screw-threaded socket secured to the central top part of the upper sash, a rod attached at its upper end to said plate and forming a universal joint therewith, the slotted plate secured to the upper central part of the lower sash, and the slotted block capable of a rocking movement, mounted in said slotted plate and having a clamping-screw mounted therein.

3. In a sash attachment, the combination, with the upper sash, of a socketed plate attached to the upper part thereof, a rod having a ball at the upper end thereof pivotally mounted in a yoke and provided with a screw-shank adapted to have a movable bearing in the socketed plate to form a universal joint therewith, the lower sash, the slotted plate formed with ears centrally secured to the upper part of the lower sash, a slotted clamping-block pivotally mounted in the slotted plate, between the ears thereof, capable of having a rocking movement imparted thereto, and the slot thereof adapted to be engaged by the depending free end of the rod, the said block also having shoulders formed therewith to limit its movement, and a clamping-screw mounted in said block, substantially as described.

4. In a sash attachment, a rod having a ball at its upper end pivotally mounted in a yoke having a screw-threaded shank adapted to movably engage with a socketed plate centrally secured to the top of an upper sash, in combination with a self-adjusting rocking clamping-block secured to the top central part of a lower sash, substantially as described.

386,679. JOINT FOR RAILROAD T-RAILS. ISAAC G. ALBAUGH and JAMES G. GILLESPIE, Chattanooga, Kans. Filed Nov. 26, 1887. Serial No. 256,102. (No model.)

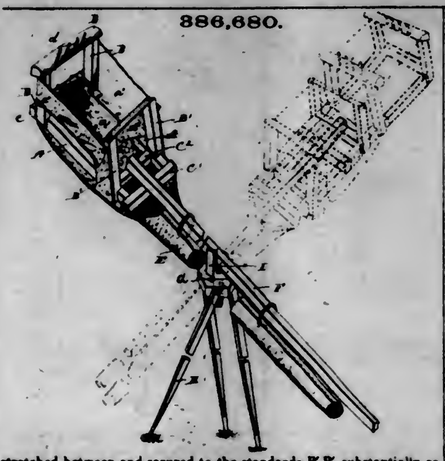


Claim.—The rails A and B, the fish-plate C, horizontally slotted at its ends, the notched locking-plate having also suitable perforations through it, the headed bolts F, each having a hole in its end, and each fitting into a slot in the fish-plate and passing through one of the perforations in the locking-plate, and the spring-catch G, and bolts and nuts for holding the fish-plate and rail together, all combined substantially as set forth.

386,680. FRUIT-GATHERER. JAMES ALEXANDER, Cherry Fork, Ohio. Filed Aug. 13, 1887. Serial No. 246,572. (No model.)

Claim.—The herein shown and described fruit-gatherer, composed of the frame consisting of the side bars, A, the upper and the lower end bars, C and C', the cross-bar C², the pole or handle secured to the bars C and C², the standards B B and B' B', projecting from the frame, the cross-bar D, uniting the upper ends of the standards B, and provided with teeth *d*, the cheats having the lower ends of its upper end extended over the said frame, the sides extended from the upper to the lower standards and secured thereto, and the end portion, *a*²,

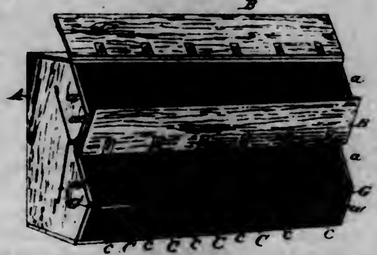
386,680.



stretched between and secured to the standards B' B', substantially as specified.

386,681. HAIL-CASE. WILLIAM G. BARBER, Amsterdam, N. Y.

Filed Apr. 30, 1888. Serial No. 272,827. (No model.)



Claim.—The combination of the box A, open on one side, the edges of which side are formed with inclines *a a* and *a' a'*, the horizontal partition D, and vertical partitions C C, for dividing the box into suitable compartments, the vertically-movable lids B B, arranged horizontally across the open side, and the removable drawers or receptacles E E, located within the compartments and having their front ends shaped to correspond to the inclinations of the inclines *a a*, all substantially as described.

386,682. HITCHING-STRAP FASTENER. SILAS R. BAUSER, Cleveland, Ohio. Filed Oct. 24, 1887. Serial No. 253,226. (No model.)



Claim.—1. The combination, with a hitching-strap fastener consisting of an open frame or disk, substantially as described, having notches at diametrically opposite points on its periphery, of an endless strap or band for attaching the fastener to the harness, substantially as set forth.

2. The herein-described hitching-strap fastener, consisting, essentially, of a pair of frames or disks having notches therein and openings suitable for receiving the hitching-strap, and an elastic band seated in these notches for holding the jaws yieldingly together, substantially as set forth.

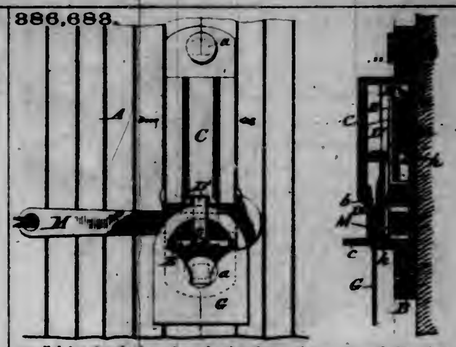
3. The combination, with holding frame or disk A, of rubber band B and rein C, substantially as set forth.

386,683. SEAL-LOCK. WILLIAM F. BRADLEY, Oxford, N. C. Filed Jan. 16, 1888. Serial No. 260,574. (Model.)

Claim.—1. In a seal-lock, the combination of the base-plate having a slotted staple and parallel interiorly-recessed castings, the cover securely fastened to the base, the sliding bolt having upper and lower ribs, and one or more dogs, all arranged for joint operations, as set forth.

2. In a seal-lock, the combination of a base-plate provided with

386,683.



parallel longitudinal castings, having internal recesses and slotted to communicate with the intervening passage, a dog or dogs pivoted within said castings and projecting into the intervening passage, and a sliding bolt having a notched rib that moves within said passage and is adapted to be engaged by the dog or dogs, substantially as described.

3. In a seal-lock, the combination of the plate B, having slotted staple E and parallel recessed castings H H, the cover C, and the bolt consisting of a flat plate, D, having an upper rib, D', slotted at *b*, and the lower rib, F, suitably notched, all arranged substantially as described.

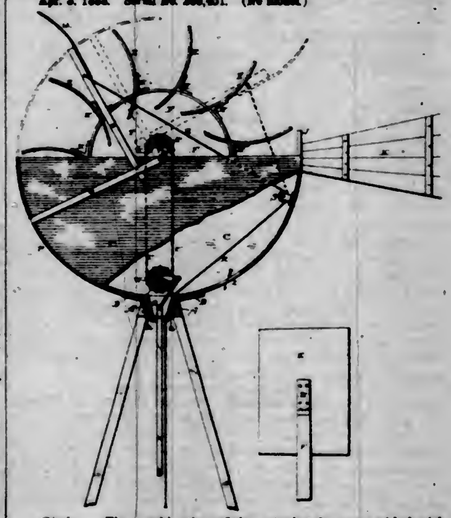
4. In a seal-lock, the combination, with the base B, having staple E, and recessed castings H H, of the spring-dogs located within said castings H H, the sliding bolt having the notched under rib and the slotted and broken upper rib, the cover C, and the seal G, substantially as described.

5. In a seal-lock, the sliding bolt consisting of a plate having a notched under rib and a slotted and broken upper rib, in combination with a lock-casing, a spring dog or dogs, and a seal, as G, substantially as described.

6. In a seal-lock, the combination of the base B, having the slotted staple E and the parallel longitudinal castings H H, recessed at H' and slotted at *h*, the dogs K, pivoted to the base within the recessed castings, having lateral projections *m*, and governed by springs *n*, a sliding bolt having a notched under rib adapted to engage the dog or dogs, and a slotted upper rib broken to receive a seal, substantially as shown and described.

7. In a seal-lock, the combination, with the base B, the parallel recessed castings H H on said base, having the projection *l*, and the spring-dogs, of a sliding bolt consisting of a flat plate having a notched under rib, and likewise a groove, *k*, which receives the projection *l*, and having also a slotted upper rib, substantially as described.

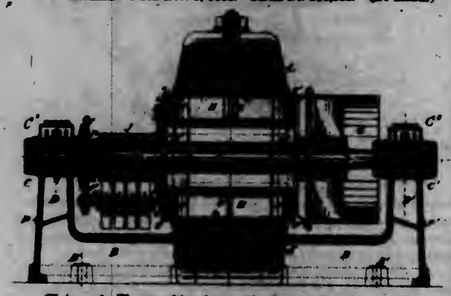
386,684. WINDMILL. ALFRED R. BOWEAR, La Due, Mo. Filed Apr. 3, 1888. Serial No. 269,451. (No model.)



Claim.—The combination of the swiveled frame provided with

an extension at its rear end and having an opening through its bottom, with the wind-wheel, which is mounted upon the frame and is partially inclosed thereby, substantially as shown.

386,685. DYNAMO AND MOTOR. CHARLES E. L. BROWN, Zurich, assignor to the Werkzeug und Maschinenfabrik Oerlikon, Oerlikon, Switzerland. Filed Nov. 2, 1885. Serial No. 215,268. (No model.)

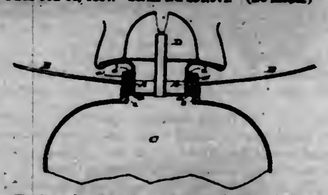


Claim.—1. The combination, with the brush-bridge E, comprising the two parts *c c'* and screws *d d'*, of the grooved bearing *n*, for said brush-bridge, and the insulated plate *e e'*, in the ends of which bear the spindles for the brush-holders and connectors for the current-conductors, substantially as set forth.

2. The herein-described armature, comprising the wheel N, the compressing-plates *g g'*, having ribs fitting grooves of said wheel, and the insulated rings *f*, held together by said wheel, substantially as set forth.

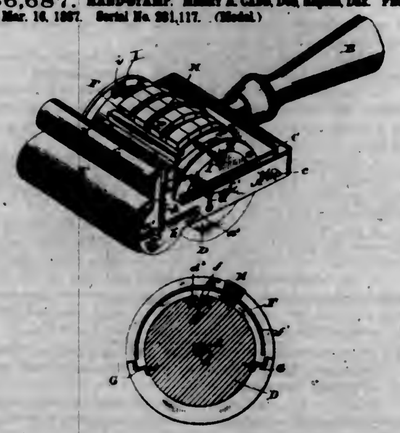
3. The combination, with the shaft F and the collector J, of the wheel N, the plates *g g'*, the insulated rings *f*, the horseshoe-shaped wires *k*, and the bands *i*, substantially as set forth.

386,686. LAMP-SHADE HOLDER. WILLIAM H. BROWN, San Francisco, Cal., assignor of one-half to Hothan, Dohrmann & Co., same place. Filed Oct. 10, 1887. Serial No. 251,971. (No model.)



Claim.—The lamp-bowl having an internally-threaded socket and the burner having an externally-threaded base, in combination with the annular hub or ring *h*, having an externally-threaded base screwed into the internally-threaded socket of the lamp-bowl, and an internally-threaded top for receiving the externally-threaded base of the burner, the ring or hub *b*, fitted around the ring or hub *h*, and the arms B, carried by the ring or hub *b*, substantially as herein described.

386,687. HAND-STAMP. HENRY A. CADE, Dell Rapids, Dak. Filed Mar. 16, 1887. Serial No. 231,117. (Model.)



Claim.—1. In a hand-stamp, the combination of the following elements, viz: the roller D, having the type secured on its face, as described, and pivoted in the frame C by its spring-actuated journal, the outer frame, A, in which frame C is pivoted, and the inking-rollers K K', journaled in slots in the end of frame A, and having springs attached to their journals, substantially as described.

2. The roller D, having the bands E at each end and the curved metallic strips F secured to said roller, as described, and each of said strips having curved ribs *f'* on its sides, as set forth, with the type H, grooved on each side at *h*, and the set-screws I, substantially as and for the purposes set forth.

3. The combination of the curved strips F, having curved ribs *f'* on the side, and the type H, with the roller D, having bands E, and the metal flanges G, secured upon the surface of the roller and over the ends of the pieces or strips F, whereby the type are firmly secured in position upon the roller.

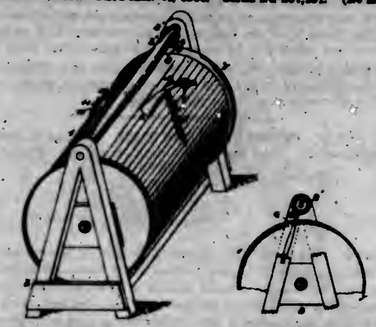
386,688. LOOM-PICKER. LEWIS A. CARVER, Saco, assignor to the Loom Picker Company, Biddeford, Me. Filed Jan. 4, 1888. Serial No. 259,782. (No model.)



Claim.—1. A loom-picker comprising a body or shank and a head, the shank being extended into the head and the head being provided with a head-cap and with folded fillings separate from the shank on opposite sides thereof, each filling comprising a plurality of layers integral one with another and folded one upon another, one layer extending along the shank of the picker beyond the rivets which secure the parts together, and another layer terminating inside said rivets.

2. A loom-picker comprising a body or shank and a head, the shank being extended into the head and the head comprising a looped head-piece and folded fillings separate from the shank on opposite sides thereof, each filling comprising integral layers folded one upon another, one layer extending along the shank beyond the rivets which secure the parts together and being integral with said looped head-piece, and another layer terminating inside said rivets, substantially as described.

386,689. OIL-CAN. WILLIAM H. CLARK and WILLIAM J. CLARK, Salem, Ohio. Filed Mar. 14, 1883. Serial No. 267,151. (No model.)



Claim.—1. The combination of A-frames S, having connecting-pieces at top and bottom, the top one of which, connecting the apexes of the A-frames, constitutes a bail or handle, and a revolving oil-can having trunnions journaled in the cross-pieces 2 of the A-frames, substantially as shown and described.

2. The combination of the A-frames S, connected together, the upper cross-piece, 3', constituting a bail or handle, the revolving oil-can 1, mounted in the cross-pieces 2 of the A-frames, the chine or flange 7 of the can, having a notch, 6, and a spring-catch, 8, terminating at one end in a loop, 8', which surrounds the bail, and the other end being fixed in one of the A-frames, the upper end of the spring bearing against the chine or flange of the can and adapted to enter the notch aforesaid, substantially as and for the purpose set forth.

386,690. ART OF SPLICING CABLES. JOHN COLLINS, San Francisco, Cal. Filed Dec. 22, 1887. Serial No. 258,770. (No model.)

Brief.—The object of the invention is to make a simple and effective inlaid splice without having to permanently remove the soft core of the cable.

Claim.—1. In the art of splicing cables, the method of treating and disposing of the strand ends or tucks, which consists in wrapping a division of each of the opposing strand ends or tucks after said

386,690.



divisions have been laid up to form the new strand occupying the vacant score, with the ends of a severed section of the soft core of the cable, cutting off even with the surface of the cable the other divisions of the strand ends or tucks, and then inlaying the wrapped divisions in the heart of the cable, whereby the ends of the core-section are returned to place and the tucked divisions disposed of, substantially as described.

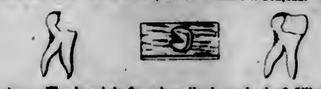
2. In the art of splicing cables, the method of treating and disposing of the strand ends or tucks, which consists in dividing them back to their union with the cable, cutting off even with the surface of the cable one of the divisions of each tuck, laying up the remaining divisions so as to form a splice-strand occupying the vacant score of the cable, severing the soft core of the cable at points beyond each end of the newly-formed splice-strand, and taking out from the cable the ends of the severed section of the core back to each end of the splice-strand, wrapping the ends of the divisions of the splice-strand with said core, and, finally, inlaying the core ends and the divisions about which they are wrapped into the heart of the cable, substantially as described.

386,691. COFFIN-FASTENER. CHARLES A. COMLEY, Aurora, Minn. Filed Dec. 10, 1887. Serial No. 257,593. (No model.)



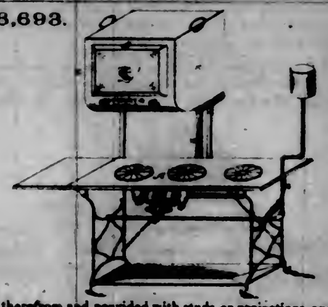
Claim.—A locking device for a coffin or box, consisting of a longitudinal recess in the top of the side of the coffin or box, a longitudinally-slotted plate secured over said recess and provided with a spring-catch extending part of the length of the slot in the plate and extending down into the recess, in combination with a pin secured to the under side of the lid of the coffin or box, and provided with notches or ratchet-teeth adapted to be engaged by the spring-catch when the lid is placed in position, and to be disengaged from said catch when moved longitudinally in the recess, all constructed, arranged, and operating substantially as shown and described.

386,692. PROCESS OF FILLING TEETH. WILLIAM A. DARBY, Milwaukee, Wis. Filed Feb. 3, 1888. Serial No. 262,982. (No model.)



Claim.—The hereinbefore-described method of filling decayed teeth, consisting in first filling the cavity of decay with a soft material, as wax, and restoring the original form of a tooth out of the same soft material, next taking an impression of this restored tooth in plaster-of-paris and casting a zinc die therefrom in shape like said tooth, then placing a piece of gold or other swageable metal plate on the side of the zinc tooth at a point corresponding to the location of the cavity in the natural tooth, and next placing a piece of soft metal—such as sheet-lead—over the last-named metallic plate and pounding it down onto the die, forming the gold or other plate into the shape of the tooth at that point, removing said plate and coating the inner side thereof with wax and pressing it against the natural tooth at the corresponding point, removing the surplus metal and wax and affixing a pin or pins to the said inside of said plate, next cleaning the cavity in the natural tooth of the first-named soft material and filling it with a suitable plastic material, like cement or gutta-percha, and pressing the pin or pins secured to the plate into said plastic material while the latter is still soft, and keeping the plate in position till said material hardens around said pin or pins.

386,693. VAPOR-STOVE. ESSELEN DAVIS, Cleveland, Ohio. Filed Mar. 3, 1887. Renewed Apr. 21, 1888. Serial No. 271,472. (No model.)



Claim.—1. The combination of a vapor-stove, standards or supports which rise therefrom and which have their upper ends formed into horizontal guides, from which extend studs or projections, and the horizontally-sliding oven placed on the guides and held in position by the studs or projections thereon, substantially as shown.

2. The combination of a vapor-stove, the standards or supports rising therefrom and provided with studs or projections, and the oven which is mounted upon the standards and provided with slots for the studs or projections to catch in, whereby the oven can be adjusted back and forth upon the standards, substantially as set forth.

3. The combination of a vapor-stove, the detachable standards connected thereto and provided with studs or projections upon their tops, and the oven provided with slots in its bottom for the studs or projections to catch in, and which oven is made adjustable back and forth upon the standards, substantially as specified.

386,694. LEMON-SQUEEZER. ALEXANDER ROSS, Butte City, Mont. Filed May 16, 1888. Serial No. 274,021. (Model.)



Claim.—1. The herein-described fruit-squeezer, composed of the bed and the two levers hinged to the ends of the bed, and provided with short arms which extend inward, the fruit being pressed between the bed and the said arms, substantially as set forth.

2. The herein-described fruit-squeezer, composed of the arch-shaped bed and the two levers having their ends expanded laterally, and curved or provided with short curved arms and hinged at the outer ends of the arms to the ends of the bed, whereby the fruit is adapted to be pressed between the bed and the said arms, substantially as specified.

3. The combination, with the two levers, of the yielding bed having its ends connected with the outer ends of the levers, substantially as specified.

4. The combination, with the two levers, of the arch-shaped bed of spring material connected to the outer ends of the levers, substantially as described, for the purpose specified.

5. The combination, with the two levers and the bed, of the supporting-plate, substantially as and for the purpose described.

6. The combination, with the two levers and the bed, of the supporting-plate having slots near each end and the pins passing through the said slots and securing the plate to the levers, substantially as and for the purpose described.

7. The combination, with the bed, of the two levers having their ends expanded, and having the inner ends of the expanded portion hinged together, and having the outer ends hinged to the said bed, substantially as and for the purpose described.

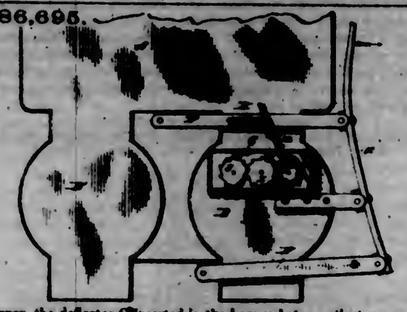
8. The combination, with the levers and the re-enforcing plates secured to the ends of the levers and hinged together, of the bed connected to the outer ends of the levers, substantially as described.

9. The herein-described fruit-squeezer, composed of two levers hinged together at their inner ends and having inward extensions to form stops and jaws, the bed hinged at its ends to the outer ends of the levers and the supporting-plate, substantially as specified.

386,695. GRAIN MEASURING AND REGISTERING DEVICE. FREDERIK H. EHLERS, Montevideo, Minn. Filed Apr. 4, 1888. Serial No. 269,880. (No model.)

Claim.—1. In a grain-measurer, the combination of the hopper, the two depending measuring-chambers communicating with the said

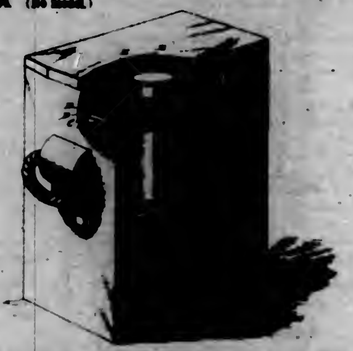
386,695.



hopper, the deflector C, inserted in the hopper between the two measuring-chamber openings, the reciprocating slides D D', for opening and closing the inlet and exit openings of the said measuring-chambers, the vibrating hand-lever, and the links connecting this hand-lever to the reciprocating slides D D', whereby these slides are operated with one movement of the lever simultaneously in opposite directions to alternately open and close the inlet and exit openings of the said measuring-chambers, substantially as described.

2. In a grain measurer and register, the combination, with the hopper and depending measuring-chambers, the slides for opening and closing the inlet and exit openings of these chambers, the vibrating hand-lever, and the links F, connecting the hand-lever to the said slides, of the pivoted vibrating lever L, engaging with one of the links F, the toothed registering-wheels engaging with each other, the springs for retaining these registering-wheels, the spring-actuated pawl M, for actuating the registering-wheels pivoted to the lever L near its lower end, the supplemental toothed wheel H', provided with a pin, R, projecting from its face, the stop S, for limiting the travel of this pin R, this pin being adapted to be struck by the lower end of the lever L in its movements, and the spring P, secured to the first registering-wheel and adapted to engage the notched periphery of the said supplemental wheel H', all arranged as and for the purpose herein set forth.

386,696. COMPOSITE TRANSOM FOR AMMUNITION-BOXES. HOWARD P. BOWELL, Washington, D. C., assignor to the Hotchkiss Ordnance Company, (Limited,) of England. Filed Apr. 21, 1888. Serial No. 271,694. (No model.)



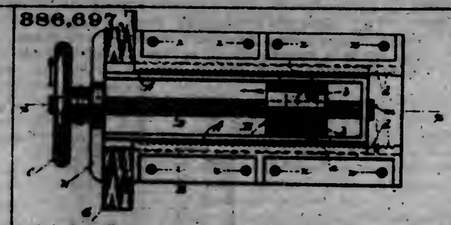
Claim.—1. The composite transom consisting of two rigid sections and an interposed section of flexible material, and having the concentric apertures, and the projecting rim of the flexible material for the purpose of forming a packing, substantially as described.

2. The combination, with a cartridge-box, of a composite transom having two external rigid sections, an interposed section of flexible material and concentric apertures, and the projecting rim of the flexible material for the purpose of forming a packing for the cartridges, substantially as and for the purpose set forth.

386,697. VISE. FREDERICK R. FARWELL, Fitchburg, Mass. Filed Apr. 9, 1888. Serial No. 270,131. (No model.)

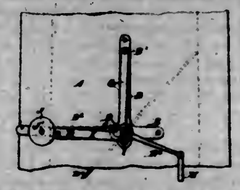
Claim.—In a vise, the combination of the movable body A, provided with the jaw H and having the lateral openings g, provided with the beveled edges r, the rod D, journaled longitudinally in said body and provided with the wheel C, the threaded nut E, disposed on said rod and provided with the chamber v, the pawls a, pivoted to said nut in said chamber and adapted to project through the openings g, the spring f, secured in said chamber in engagement with said pawls,

386,697.



and the body B, provided with the fixed jaw J, and having the ways A, provided with teeth d, with which the pawls engage, all being constructed, combined, and arranged to operate substantially as specified.

386,698. ANTI-FRICTION BEARING. THOMAS F. FLEMING, Brooklyn, N. Y. Filed Oct. 11, 1888. Serial No. 287,594. (No model.)

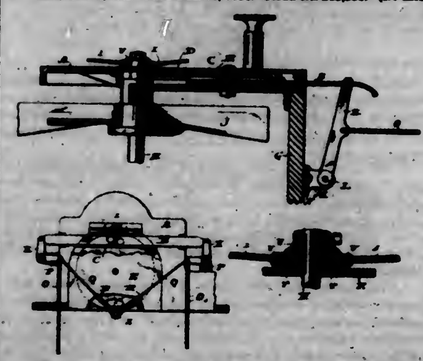


Claim.—1. In combination with a rocking shaft, D, the suspending-links G, having transverse slots g, and pivoted supports E', arranged to serve in supporting the weight of the damper and allowing it to turn with slight resistance by the shifting of the link, as herein specified.

2. The two sets of transversely-slotted links G and I, mounted in angular positions relatively to each other, in combination with supporting-pivots E' E² and with the rocking shaft D, arranged for joint operation in supporting the latter against displacement in any direction, as herein specified.

3. The racks G' in the transversely-slotted links G, in combination with the pivot E', rocking shaft D, and lever D², and rod M, for turning the latter, and with the pinion D', engaging said racks and insuring the correct position of the links relatively to the shaft, as herein specified.

386,699. SEED-SOWER. SEWERS FREEMAN and MORGAN FREEMAN, Benton, Wis. Filed Feb. 24, 1888. Serial No. 265,553. (No model.)



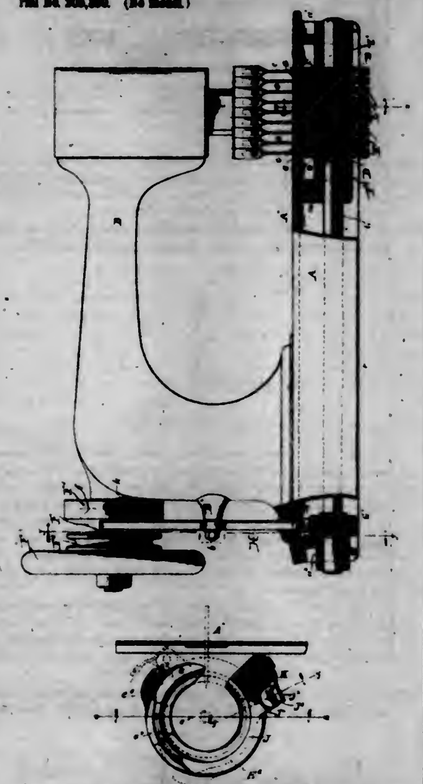
Claim.—1. In a sower, the combination of the sliding gage-plates, levers connected to said gage-plates, springs arranged to draw upon the levers, and pull-rods united at their rear ends to said levers, substantially as set forth.

2. In a sower, the combination of the distributer-shaft, a cap-piece arranged on the shaft, and stirring-pins secured to the cap-piece, substantially as set forth.

3. In a sower, the combination of the distributer-shaft, a cap-piece arranged on the shaft, stirring-pins secured to the cap-piece, and a lubricating substance confined between said shaft and cap-piece, substantially as set forth.

4. In a sower, the combination of the distributer-shaft, the top plate provided with a flange that surrounds the shaft, a cap-piece arranged on said shaft to cover the top-plate flange, stirring-pins secured to the cap-piece, and a lubricating substance inclosed by said flange and cap-piece, substantially as set forth.

386,700. GANG SEWING-MACHINE. MARSHALL GARDNER, Aurora, Ill., assignor to James Stone and Thomas H. Ball, both of same place, and Simon Fleischaker, Chicago, Ill. Filed June 22, 1886. Serial No. 205,880. (No model.)



Claim.—1. The combination, with a series of reciprocating needles, of a series of bobbins, a series of hooked bobbin-carriers rigidly connected with each other and constructed to oscillate about a common axis, and means giving an oscillatory motion to said bobbin-carriers, substantially as described.

2. The combination, with a series of reciprocating needles and a series of bobbins, of a series of oscillating hooked bobbin-carriers rigidly connected with each other and turning about a common axis, said several bobbin-carriers being provided with lateral openings for the bobbins, admitting the latter edgewise into the carriers, and holding devices for retaining the bobbins within the carriers, substantially as described.

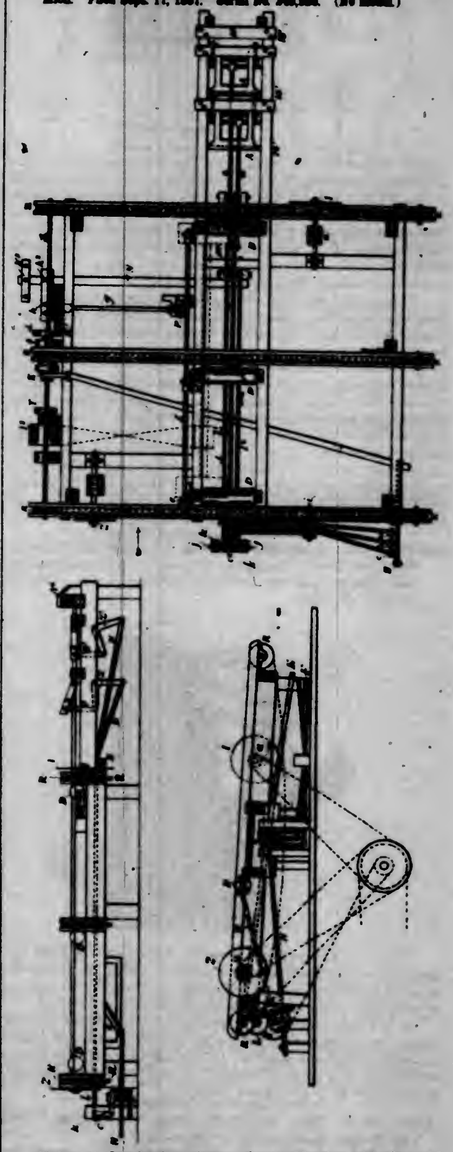
3. The combination, with a series of reciprocating needles and a series of bobbins, of a series of rigidly-connected hooked bobbin-carriers having lateral openings or spaces adapted for the insertion of the bobbins edgewise into the carriers, and provided with movable parts or gates closing said openings and holding the bobbins in place, substantially as described.

4. The combination, with a reciprocating needle and a bobbin, of an oscillating hooked bobbin-carrier having a lateral space or opening adapted for the insertion of the bobbin edgewise into the carrier, and provided with a movable section or gate pivoted to the carrier with its pivotal axis parallel with that of the bobbin, and a means for securing the gate when the latter is closed, substantially as described.

5. The combination, with a reciprocating needle and a bobbin, of a hooked bobbin-carrier having a lateral space or opening adapted for the insertion of the bobbin edgewise into the carrier, and provided with a movable section or gate pivoted to the carrier, with its pivotal axis parallel with the axis of the carrier, and a spring applied to hold the gate in its closed position, substantially as described.

6. The combination, with a reciprocating needle and a bobbin, of a hooked bobbin-carrier having a lateral space or opening adapted for the insertion of the bobbin edgewise into the carrier, and provided with a movable section or gate pivoted to the carrier with its pivotal axis parallel with the axis of the carrier, said gate being provided with a projection or tongue, *j*, engaging a notch or recess in the carrier, and means for holding the gate in its closed position, substantially as described.

386,701. LUMBER-TRIMMER. NEHEMIAH GARLAND, Bay City, Mich. Filed Sept. 17, 1887. Serial No. 249,886. (No model.)

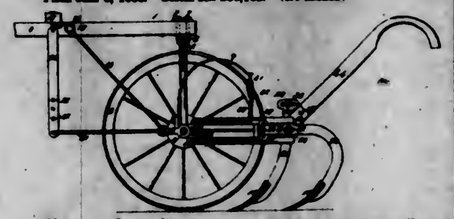


Claim.—1. In a lumber-trimmer, the combination, with the usual carrier device or mechanism for conveying the board sidewise to the trimming-saws, and with the usual stop or stops for gaging or predetermining the length of the trimmed board, of suitable feed-rolls, D, operating, as specified, to feed the board endwise toward and against the stop device, all substantially in the manner hereinbefore set forth.

2. In a lumber-trimmer, the combination, with the feed-rolls D, which operate to feed the board endwise, as specified, the usual carrier device or mechanism for feeding the board sidewise to the trimming-saws, the usual stop or stops for gaging or predetermining the length of the trimmed board, and the driving mechanism for rotating the feed-rolls D, of a shipper-bar for throwing said driving mechanism into and out of gear, and having its free end located or arranged within easy reach of one of the operatives who has to stand at the front of the machine to feed the lumber to the carrier device, the whole constructed and operating together substantially as and for the purposes set forth.

3. In a lumber-trimmer, the combination, with the series of stops and the feed-rolls D, which operate, as specified, to feed the board endwise toward and against the said stops, of mechanism, substantially such as described, which operates to throw the said feed-rolls and also the said stops into and out of operation at the pleasure of one of the operatives of the machine, all substantially in the manner hereinbefore set forth.

386,702. CULTIVATOR. HENRY H. GOSNEY, Jonesburg, Mo. Filed Jan. 9, 1888. Serial No. 260,105. (No model.)

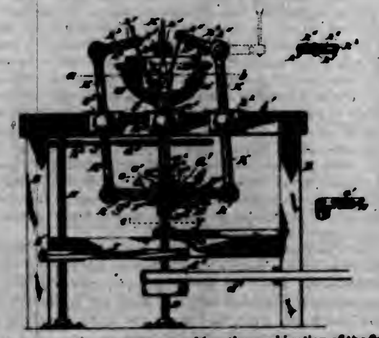


Claim.—1. In a cultivator, the combination of the upwardly and laterally swinging shovel-bearing frames S, consisting of four angle-bars, 23, journal-clips 11, loosely embracing the main axle of the cultivator and having rearwardly-projecting flanges, pivot-bolts 24, connecting the front ends of the angle-bars to said flanges, cross-tree-standard beams 27, pivot-bolts 26, connecting the rear ends of the angle-bars to said cross-trees, the eccentrically-placed slotted yokes 28, and diverse-shaped standards arranged to carry the shovels out of cross-line with each other, substantially as set forth.

2. In a cultivator, the combination of the journal-clips, the compound pivoted frame carried thereby and providing upward adjustment therefor, said frame having fixed pivoted angle-bars, the cross-tree-standard bearer to which their rear ends are pivoted, the eccentrically-placed slotted yokes, the screw-bolts 45, adapted in conjunction with the said yokes to set the adjustment of the diverse-shaped standards 30, the arched axle 2, the braces 5, that connect the tongue to the arch of the axle, and the braces 14, that connect said tongue to the lower sections of the axles, substantially as set forth.

3. In a cultivator, the combination of the upwardly and laterally adjustable shovel-bearing frames constructed with longitudinal angle-bars, the journal-clips to which the latter are pivoted at their front ends, said journal-clips having bearing on the axle, and the cross-tree-standard bearer carrying the rear ends of the angle-bars, the horizontally and vertically presented slotted yokes secured to said cross-trees, and the standards that carry the shovels, one of which on each frame is vertically pendent from the vertical yoke, and the other is carried back at first horizontally from said yoke to carry its shovel out of lateral cross-line with the other shovel, substantially as set forth.

386,703. TRITURATING-MACHINE. GEORGE GILL, Philadelphia, Pa. Filed Oct. 28, 1887. Serial No. 253,269. (No model.)



Claim.—1. In a triturating-machine, the combination of the frame, the mortar supported thereby, the shaft, as D, the cam adjustably connected therewith, the collar or block G, through which said cam passes, and the pestle-supporting arm or arms pivotally connected with said collar or block, together with means—such as the crank-arm, bolt, and nut—for adjustably connecting said cam with shaft D, substantially as described.

2. In a triturating-machine, the combination of the supporting-frame, the mortar, the shaft D, the slotted crank-arm thereon, the cam on said crank-arm, the collar or block through which said cam passes, the arms *k'*, pivoted to said block or collar, the pivoted arms or levers K, the arms *k*², pivoted to the latter, and the pestles secured in said arms *k*², together with the belt passing through said cam and crank-arm, and the rest, substantially as described.

3. The combination, in a triturating-machine, of the frame or table, the shaft *c*², pivoted thereto, the mortar supported by said shaft, the shaft D, the crank-arm thereon, the cam on said crank-arm, the collar or block G, in which said cam works, the pestle-supporting arm or arms pivotally connected with said collar or block, the laterally-adjustable disk C, which forms a step for the lower end of the shaft *c*², and means—such as the bolt G' and nut *g*²—for laterally adjusting said disk, substantially as described.

4. The combination, in a triturating-machine, of the frame or table, the mortar, the shaft supporting said mortar, provided with the pulley *c*², the shaft D, its pulley *d*¹, the crank-arm, the cam secured thereon, the block or collar G, the pestle-supporting arms pivotally connected with said collar, the shaft H, its pulleys *h*² *h*², and the belts I and J, connecting said pulleys *d*¹ and *h'* and *h*² and *c*², respectively, substantially as described.

5. In a triturating-machine, the combination of the frame or table, the mortar, the shaft *c*², pivoted in said frame or table and supporting said mortar, said shaft provided with the pulley *c*², the shaft D, its pulley *d*¹, the crank-arm on said shaft D, the cam on said crank-arm, the collar or block G, in which said cam works, the pestle-supporting arm or arms pivotally connected with said collar or block, the laterally-adjustable disk C, which forms a step for the lower end of the shaft *c*², means—such as the bolt G' and nut *g*²—for laterally adjusting said disk, the shaft H, its pulleys *h*² *h*², and the belts I and J, connecting said pulleys *d*¹ and *h'* and *h*² and *c*², respectively, substantially as described.

6. In a triturating-machine, the combination of the supporting-frame, the mortar, the pestles, the pivoted pestle-supporting arms, and the mechanism for actuating the same, the free ends of said arms being formed in two parts and provided with interlocking grooves or dovetails, substantially as described.

386,704. MANUFACTURE OF ALUMINIUM FLUORIDE. LUDWIG GRABAU, Hanover, Prussia, Germany. Filed June 20, 1887. Serial No. 242,722. (Specimens.) Patented in Belgium June 11, 1887, No. 77,730; in France June 11, 1887, No. 178,810; in England Oct. 21, 1887, No. 14,206, and in Austria-Hungary Dec. 2, 1887, No. 42,660 and No. 32,116.

Claim.—The process of producing aluminium fluoride which consists in treating a solution of aluminium sulphate such as described with sodium or potassium cryolite, evaporating the solution, heating the product to redness, and finally washing the same, substantially as described.

386,705. FISHING-REEL. WILLIAM A. GRAHAM, Carlisle, Pa. Filed May 10, 1888. Serial No. 273,420. (No model.)



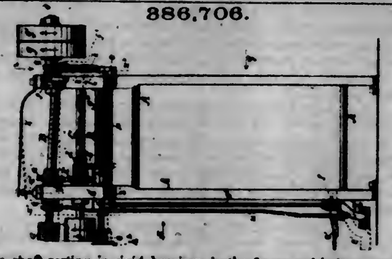
Claim.—1. The combination, with the cylindrical casing A, having one of its ends open and provided with a central tubular spindle, *a*, of a reel, B, journaled on the said spindle *a*, and completely filling the open end of the cylindrical casing, and the disks C C, provided, respectively, with a central screw-threaded shank, *i*, and a central screw, *i'*, all arranged substantially as herein set forth.

2. The combination, with the cylindrical casing A, having one of its ends open and provided with a central tubular spindle, *a*, of a reel, B, journaled on the said spindle *a*, and completely filling the open end of the cylindrical casing, and the disks C C, provided, respectively, with a central screw-threaded shank, *i*, a central screw, *i'*, the interposed anti-friction rollers *g*, and the spring-actuated click-pin D, inserted in a recess in the hub of the reel and engaging the inner serrated face of the said disk C, substantially as described.

386,706. HEMMING-MACHINE. ANDREW J. HAMM, Rochester, N. Y. Filed Aug. 17, 1887. Serial No. 247,268. (No model.)

Claim.—1. In combination with the frame of a neckband-trimmer, three parallel rotatory shafts, each carrying a roller at its end, the

386,706.



middle shaft resting in rigid bearings in the frame and having rotatory motion in either direction, the outer shafts resting in movable bearings in the frame, each having a rotatory motion in one direction and opposite to each other, said outer shafts being also held to swing toward or from said middle shaft, said outer shafts being each provided with a rigid gear, and said middle shaft having two gears to alternately engage said respective gears of the outer shafts.

2. In combination with the frame of a neck-band-ironer, a roller-shaft provided with a gear outside the frame, a stud rigid with the frame, an arm turning on said stud, a reversing-shaft provided with a rigid arm, a link-bar joining said arms, a driving-pinion on said stud, a gear held by said arm first mentioned, and a second gear held by said link-bar, said pinion and gears all being in the same plane, with means, substantially as shown and described, to turn said reversing-shaft, for the purpose set forth.

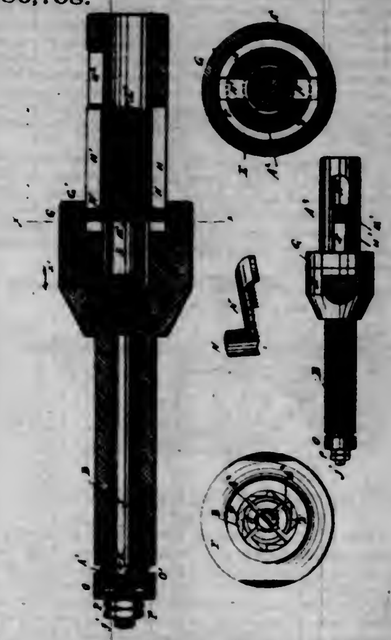
3. In combination with the frame of a neck-band-ironing machine, a main roller-shaft provided with a gear within and a gear without said frame, a secondary roller-shaft provided with a gear to co-operate with said gear within the frame of said main roller-shaft, a reversing-shaft provided with an arm and a reverse-lever, a rigid stud holding an arm and driving-pinion, a link-bar joining said arms, intermediate alternate gears for said driving-pinion and said outer gear of said main shaft, a treadle, and a treadle-rod connected with said secondary shaft and said reverse-lever, to operate both, substantially as shown and described.

386,707. SINGLETREE. WILLIAM S. HARRIS, Bardwell, Ky. Filed Apr. 19, 1888. Serial No. 271,102. (No model.)



Claim.—A single or double tree formed of two wires connected together, as described, one of said wires bent to form hooks at its extremities, and at or near its center bent to form a looped brace, substantially as and for the purpose set forth.

386,708. REAMER. JULIUS JEFFEL, Elizabeth, N. J. Filed May 28, 1888. Serial No. 274,668. (No model.)



Claim.—1. In an adjustable reamer, the combination, with the tubular stock A, having longitudinal slots throughout a part of its length, the exterior bevel, A', and the interior bevel, W, at said slotted end, the exterior beveled shoulder, C, and the interior beveled shoulder, U, near the inner ends of the slots, the screw-thread D, adjacent to the shoulder C, and the slots H H', of a spindle in the bore of the stock, which spindle is provided at one end with a bevel, K, and with a bevel, M, adjacent to the interior beveled shoulder, U, of the stock, the beveled sleeve E, screwed on the thread D, and angle-clips N in the slots H H' of the stock, which clips are connected with the spindle, the ring G on the sleeve E, and holding said clips against the sleeve, and the cap O, secured on the end of the spindle and having an interiorly-beveled flange, substantially as herein shown and described.

2. In an adjustable reamer, the combination, with the tubular stock A, having longitudinal slots throughout a part of its length, the exterior bevel, A', and the interior bevel, W, at said slotted end, the exterior beveled shoulder, C, and the interior beveled shoulder, U, near the inner ends of the slots, the screw-thread D, adjacent to the shoulder C, and the slots H H', of a spindle in the bore of the stock, which spindle is provided at one end with a bevel, K, and with a bevel, M, adjacent to the interior beveled shoulder, U, of the stock, the beveled sleeve E, screwed on the thread D, and angle-clips N in the slots H H' of the stock, which clips are connected with the spindle, the ring G on the sleeve E, and holding said clips against the sleeve, and the cap O, secured on the end of the spindle and having an interiorly-beveled flange, substantially as herein shown and described.

3. In an adjustable reamer, the combination, with a tubular stock, A, having longitudinal slots throughout part of its length, the exterior bevel, A', and the interior bevel, W, at the slotted end, the beveled exterior shoulder, C, the interior beveled shoulder, U, near the inner ends of the slots, and the exterior screw-thread, D, adjacent to the exterior beveled shoulder, C, of a spindle in the bore of the stock, which spindle is provided with the bevel K at the end, the bevel M, adjacent to the interior beveled shoulder, U, of the stock, the screw-thread M' on the inner end of the stock, the beveled sleeve E, screwed on the screw-thread D, the angle-clips N in longitudinal slots of the stock, which clips have one shank concaved transversely and provided with a screw-thread, a flange-ring for holding the legs of said clips against the sleeve on the stock, and the cap O, held on the outer end of the spindle and having an interiorly-beveled flange, substantially as herein shown and described.

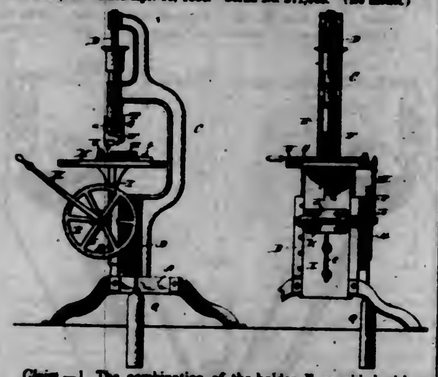
4. In an adjustable reamer, the combination, with a longitudinally-slotted tubular stock, A, having interior and exterior bevels, of a spindle having bevels, the beveled sleeve E, screwed on the stock, the angle-clips N, connected with said sleeve and the spindle, and a beveled cap on the end of said spindle and at the end of the stock, substantially as herein shown and described.

386,709. PRODUCTION OF COLORING SUBSTANCES BY THE REACTION OF AROMATIC HYDRAZIN SULPHONIC ACIDS ON KETONES. WILHELM KELLER, Gallenkirch, Baden, Germany, assignor to the Actien-Gesellschaft für Chemische Industrie, Rheinau, near Mannheim, Germany. Filed Apr. 5, 1888. Serial No. 269,797. (No specimens.)

Claim.—1. The process of manufacturing coloring substances by condensing aromatic hydrazin sulphonic acid with ketonchlorce.

2. The red coloring-matter produced by the condensation of an aromatic hydrazin sulphonic acid with ketonchlorce, and having the characteristics above described.

386,710. CARVING-MACHINE. STEPHEN Y. KYTTLE, Wilkes-Barre, Pa. Filed Apr. 18, 1888. Serial No. 271,003. (No model.)



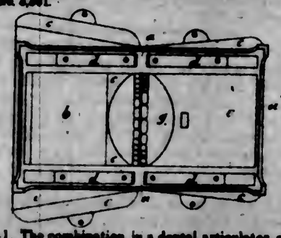
Claim.—1. The combination of the holder E, provided with an extension, E', the cutter F, provided with the vertical side extensions, *c c*, and the vertical slot *b*, the block or section G, and the securing-bolt *a*, passing through the said block G and slot *b* and into the extension E', the extensions *c c* extending up on opposite sides of the holder E and serving to prevent lateral vibration of the cutter, substantially as described.

2. The combination, with the standard B, provided with vertical ways or grooves and a stationary rack, M, of the table-standard and table, the former having bolted to its face a bearing, J, the horizontal shaft K, journaled in said bearing and provided with a pinion which engages with the said rack M, an operating-lever, and counterbalancing-weight and pulley, substantially as described.

3. The combination, with the standard and the transverse rod R, secured upon the standard, of the vertically-movable table-standard provided with a vertical groove, and the bolts S S, secured adjustably in the said groove and adapted to alternately contact with the said rod R, substantially as described.

4. The combination, with the table, of the adjustable abutting-plate provided with a V-shaped notch in its front side, the bearing-faces of the said notch being provided with beveled legs A, the adjustable plate V, secured to the table, and the lever pivoted to this plate, substantially as specified.

386,711. DENTAL ARTICULATOR. JOHN I. P. LEMAR, Surbiton, County of Surrey, assignor to FRANCIS LYNCH, Middlesex, England. Filed Apr. 3, 1888. Serial No. 269,492. (Model.) Patented in England Mar. 8, 1888, No. 3,901.



Claim.—1. The combination, in a dental articulator, of a supporting-base, horizontally-sliding frames movable thereupon to and from each other, and a plate movable on the base beneath the frames, substantially as described.

2. The combination, in a dental articulator, of a supporting-base, horizontally-sliding frames movable thereupon, and each having a recessed edge and locking-buttons for holding the plaster, and an adjustable plate located on the base beneath the frames, substantially as described.

386,712. SCOW. FREDERICK A. LOCKWOOD, Boston, Mass. Filed Apr. 20, 1888. Serial No. 272,042. (No model.)



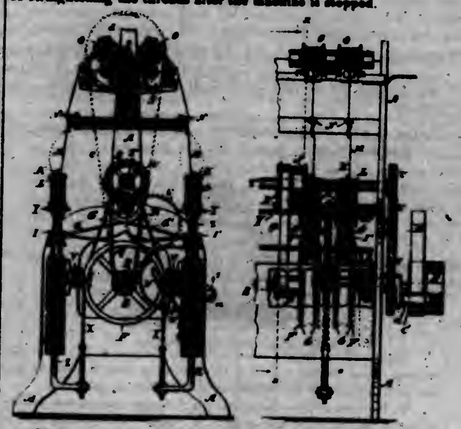
Claim.—1. The combination, with a scow or vessel having a hopper, of a discharge-pipe connected to said hopper and a rotating screw located in said discharge-pipe, substantially as described.

2. The combination, with a scow or vessel having a hopper, of a discharge-pipe connected to the said hopper, a rotating screw located in said discharge-pipe to force the material from the hopper through said discharge-pipe, an engine to drive said screw, and a boiler carried by the scow or vessel, substantially as described.

3. The combination, with a scow or vessel having a hopper, of a discharge-pipe connected to the said hopper, a rotating screw located in said discharge-pipe to force the material from the hopper through said discharge-pipe, an engine to drive said screw, a boiler, and a pump, all carried by the scow or vessel, substantially as described.

386,713. SILK-SPINNING MACHINE. THOMAS MEYER, Paterson, N. J. Filed Sept. 3, 1887. Serial No. 248,128. (No model.)

Brief.—The object of the invention is to prevent kinks in the thread by moving the unwinding-bobbins toward the winding-spools just before the machine is stopped, and then moving them away, and so straightening the threads after the machine is stopped.



Claim.—1. The combination, with the drawing mechanism or rollers O and the spindle K, adapted to receive a bobbin, of the driving-shaft B, having a fast pulley, P, the transmitting-shaft T, having a loose pulley, R, and fast pulley S, the belt Q, the shaft V, having a handle *a*, the gears U, chain X, arm Z, and rail Y, whereby the bobbin is moved toward and from the drawing mechanism, substantially as described.

2. The combination, with the drawing mechanism or rollers O and the spindle K, adapted to receive a bobbin, of the guide N, the movable rail Y, the arm Z, shaft V, connected to the arm Z, and means for imparting motion to said shaft to actuate said rail, substantially as described.
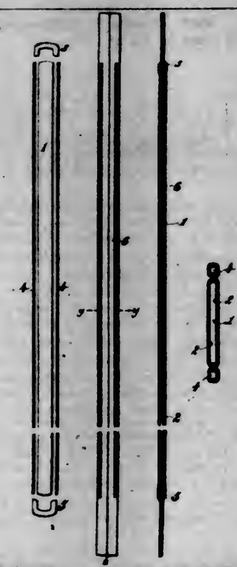
3. The combination, with the drawing mechanism or rollers O, the spindle K, adapted to receive a bobbin, and the rail Y, having arm Z, of the shaft V, having handle *a* and notches *b*, the chain X, for connecting the arm Z and shaft V, and the detent W, substantially as described.

4. The combination of the drawing mechanism or rollers O, the movable rail Y, having arm Z, the spindle K, adapted to receive a bobbin, the shaft B, the transmitting-shaft T, the shaft V, having handle *a*, the chain X, connecting the shaft V and arm Z, and mechanism for actuating the drawing-rollers, spindles, and transmitting-shaft from the shaft B, and for actuating the shaft V from the transmitting-shaft, substantially as described.

386,714. STAY FOR GARMENTS. BERNARD MOSENTHAL, New York, N. Y. Filed Oct. 28, 1886. Serial No. 217,622. (No model.)

Claim.—A garment-stay consisting of a paper-covered steel and metallic end caps entirely incased by a strip of textile material, both

386,714.



the paper and the tertile margins at the sides of the stay having internal cores, and each margin longitudinally grooved between its core and the edge of the steel, substantially as and for the purpose described.

386,715. SIGNAL-LANTERN. A. HENRY MULLINS, Chicago, Ill. Filed Oct. 24, 1887. Serial No. 253,182. (No model.)

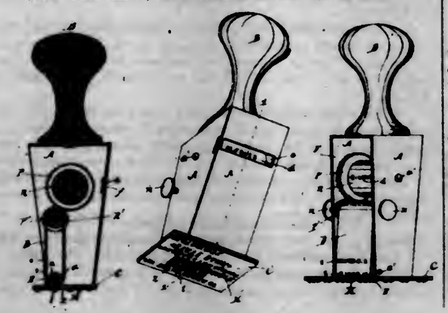


Claim.—1. In combination, a lantern oil-pot, A, having a permanent closed bottom, *m*, and a strengthening-plate, D, secured over the under surface of the bottom *m*, substantially as described.

2. In combination, a lantern oil-pot, A, having a permanent bottom, *m*, and a base-flange, *r*, and a plate, D, fitting within and secured to the base-flange, and extending to or substantially to the junction of the base-flange with the oil-pot, substantially as described.

3. In combination, a lantern oil-pot, A, having a permanent bottom, *m*, and a base-flange, *r*, and a plate, D, hollowed out on its under side, producing a peripheral flange which conforms to and fits within the base-flange *r*, and provided with perforated lugs at intervals, where the rivets are inserted to secure it to the base-flange, and with slots *s* to admit the springs E, substantially as described.

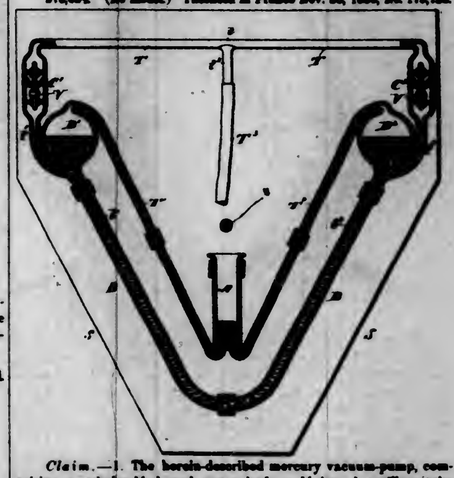
386,716. HAND-STAMP. HENRY H. NORRINGTON, West Bay City, Mich. Filed Jan. 17, 1887. Serial No. 224,644. (No model.)



Claim.—1. A hand-stamp having two rollers with a band passing around said rollers, said band having on its outer face printing-characters, in combination with an auxiliary roller geared to one of the former rollers, having on its periphery duplicate characters of those on the band, and a thumb-wheel for revolving said characters, as and for the purposes specified.

2. In combination with the case having the handle, the opening *c*, and base with opening *x*, the rollers B E', the pintons attached to said rollers, the roller E, the band having printing-characters mounted thereon, and a series of duplicate characters, *d*, mounted on the roller E, and the thumb-wheel for revolving said characters, as and for the purpose set forth.

386,717. OSCILLATING PUMP. LOUIS J. P. POITALLIÉ, St. Malo, France. Filed June 20, 1887. Renewed June 23, 1888. Serial No. 278,094. (No model.) Patented in France Nov. 30, 1886, No. 179,736.



Claim.—1. The herein-described mercury vacuum-pump, comprising a tubular V-shaped pump-body, a V-shaped capillary tube formed by two tubes, an exhaust-chamber to which the lower end of said tubes is connected and which chamber contains a sealing medium to seal the said tube ends, and an air-chamber interposed between the upper end of said tubes and the ends of the legs of the V-shaped pump-body, said legs and tubes being connected to the bottom and top of the air-chambers, respectively, in combination with a suction-tube connected with the air-chambers at the base thereof, substantially as and for the purpose specified.

2. The herein-described mercury vacuum-pump, comprising a tubular V-shaped pump-body, a V-shaped capillary tube formed by two tubes, an exhaust-chamber to which the lower end of said tubes is connected and which chamber contains a sealing medium to seal the said tube ends, and an air-chamber interposed between the upper end of said tubes and the ends of the legs of the V-shaped pump-body, said legs and tubes being connected to the bottom and top of the air-chambers, respectively, in combination with a suction-tube connected with the air-chambers at the base thereof, and a valve interposed in the suction-tube in proximity to the air-chambers, substantially as and for the purpose specified.

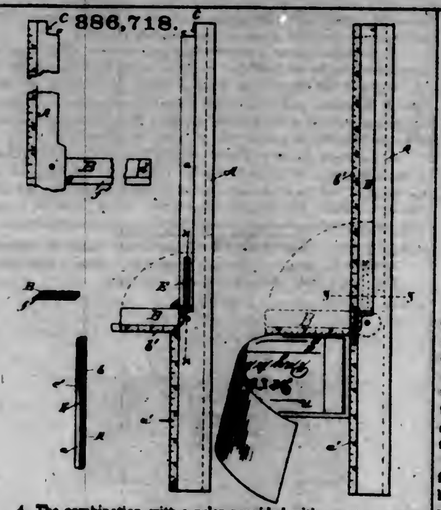
386,718. COMBINED DESK-RULER AND CHECK-CUTTER. HENRY B. READDY, Norfolk, Va., assignor of one-half to W. H. H. STEVENS, same place. Filed May 1, 1888. Serial No. 272,494. (No model.)

Claim.—1. The combination, with a ruler, of an arm one end of which is pivoted to the ruler between its ends to allow the free end of the arm to swing laterally, said arm being adapted to fold upon the ruler with its bottom surface flush with the bottom surface of the ruler, as set forth.

2. The combination, with a ruler provided with a seat or recess, of an arm pivoted at one end to the ruler at the inner end of said seat, whereby the free end of the arm can be swung outwardly, for the purpose set forth, or can be folded into said seat with its surface flush with the surface of the ruler, substantially as described.

3. The combination, with a ruler provided with a seat, and a ruling or cutting edge extending from said seat to one end of the ruler, of an arm pivoted to the ruler and adapted to swing to and away from said seat, and provided with a ruling or cutting edge adapted to form a continuation of said edge of the ruler in the same plane or at an angle to the plane of said edge, as set forth.

386,718.



4. The combination, with a ruler provided with a seat or recess, and a ruling or cutting edge extending from said seat to one end of the ruler, of an arm pivoted at one end to the ruler and provided upon its outer side with a ruling or cutting edge to lie flush with the paper or other surface and adapted to form a continuation of said edge of the ruler whether in the same plane or at an angle, said arm being adapted to fold into said seat or swing laterally, substantially as set forth.

5. The combination, with a ruler provided with a seat or recess in its upper face, and a ruling or cutting edge extending from said recess to one end of the ruler, of an arm pivoted at one end to the ruler at the inner end of said seat, whereby its free end can swing to and away from said seat, said arm being provided with a ruling or cutting edge forming a continuation of said edge of the ruler, and a spring-catch located in said seat and adapted to removably hold the arm extended at right angles to the ruler, substantially as described.

6. The combination, with a ruler provided with a seat or recess in its upper face, and a ruling or cutting edge extending from said seat to one end of the ruler, and a pin or lug extending laterally from the outer end of said seat, of an arm pivoted at one end to the ruler at the inner end of said seat, to allow its free end to swing laterally to and away from said seat, said arm being provided with a downwardly-extending edge to form a continuation of said edge of the ruler, and with a block or piece at its outer end to receive said pin or lug when the arm is folded in its seat, and a spring-catch to removably hold the arm in its position at right angles to the ruler, substantially as described.

386,719. FRICTION-PULLEY. BELA W. BENDY, Wheat, Pa. Filed Nov. 21, 1887. Serial No. 255,773. (No model.)

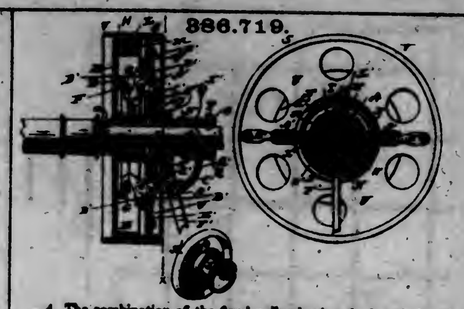
Claim.—1. The combination, with the fixed pulley having the beveled rim formed with the openings, of the spring-actuated friction-blocks and the movable belt-wheel formed with the beveled rim.

2. The combination of the fixed pulley having the beveled rim formed with the openings, the pairs of springs formed with the longitudinal slots in their bent ends, the wooden friction-blocks, and the movable pulley formed with the beveled rim, substantially as set forth.

3. In a friction-pulley, the combination of a fixed pulley having a projecting rim beveled on its outer side and formed with several openings, a movable pulley having a projecting rim beveled on its inner side, and friction-blocks having their ends pressed by springs out through the said rim-openings of the fixed wheel or pulley.



386,719.



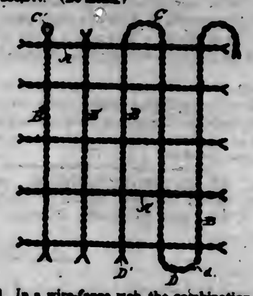
4. The combination of the fixed pulley having the long hub and the beveled rim formed with the openings, the spring-actuated friction-blocks, the sleeve mounted on the shaft, and the movable pulley formed with the long hub and the rim beveled on its inner side.

5. The combination of the fixed pulley having the long hub and formed with locking-ring on its inner side, and the beveled rim having the openings, the spring-actuated friction-blocks, the sleeve mounted on the shaft, the movable pulley formed with the long hub, slots, and the rim beveled on its inner side, and the clamping-hooks.

6. The combination of the fixed pulley having the long hub and formed with the locking-ring on its inner side, and the beveled rim having the openings, the spring-actuated friction-blocks, the sleeve mounted on the shaft, the movable pulley formed with the long hub, the slots, and bearings, and the rim beveled on its inner side, the grooved collar formed with the perforated flange, the screws arranged as described, and a shifting-lever, and the spring-actuated clamping-hooks, substantially as set forth.

7. The combination of the fixed pulley having the long hub and formed with the locking-ring on its inner side, and with the beveled rim having the openings, the spring-actuated friction-blocks, the sleeve mounted on the shaft and held in place by a ring, and having the aperture near its end and the oil-cup, the movable pulley formed with the long hub, the slots and bearings, and the rim beveled on its inner side, the grooved collar formed with the perforated flange, the screws arranged as described, the lever having the pins on the free ends of its arms, and the spring-actuated clamping-hooks, substantially as set forth.

386,720. WIRE-FENCE WEB. GARRET V. S. REMARIS, Vermont P. REMARIS, and HERMIAN GUTHS, Keokuk, Iowa. Filed Dec. 19, 1887. Serial No. 258,377. (No model.)



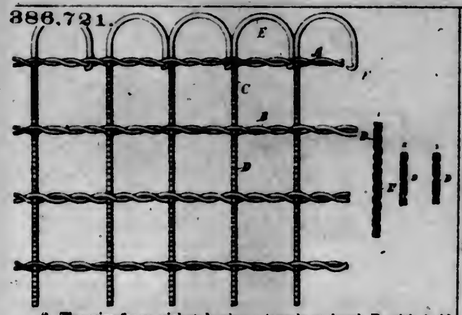
Claim.—1. In a wire-fence web, the combination of a number of strands each formed of wires twisted together continuously, with cross-pickets B, formed of wires twisted together continuously, having twist corrugations on their sides engaged and held by the wires of the strands, and having their tops turned over loopwise, each end of the loop being held by the web at separate points, whereby the pickets are held properly secure and in position.

2. In a wire-fence web, a picket having twist corrugations on its sides and a loop-head held on each side of the loop at separate points along the web.

386,721. WIRE-FENCE WEB. GARRET V. S. REMARIS, Vermont P. REMARIS, and HERMIAN GUTHS, Keokuk, Iowa. Filed May 19, 1888. Serial No. 274,377. (No model.)

Claim.—1. In a wire-fence web, the combination of twisted strands of wires with a picket formed of a single wire or rod having cross-indentations in its sides, whereby it is made less in section at the indentations than intermediately to engage with the inclosing-wires of the strands.

386,721.



2. The wire-fence picket having a loop-bent head, E, with hold F, to engage with holding-wires of the strand.

3. A wire-fence web composed of a number of strands, each formed of two wires twisted together, holding cross-pickets having indentations in their sides engaging the wires of the strands which inclose and hold them between their twists, said pickets having their tops bent over and hold by the upper strand at other places.

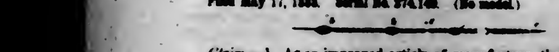
386,722. CONDIMENT-MILL. DANIEL C. RIPLEY, Pittsburg, Pa. Filed Dec. 30, 1886. Serial No. 223,007. (No model.)



Claim.—1. The combination of a condiment-bottle with a grinding-shell secured in its mouth, a perforated revoluble cap, and a runner secured to the cap and operating in conjunction with the grinding-shell, substantially as and for the purposes described.

2. The combination of a condiment-bottle with a grinding-shell removably secured in its mouth, a runner stepped in the shell, and a perforated revoluble cap to which the runner is secured, substantially as and for the purposes described.

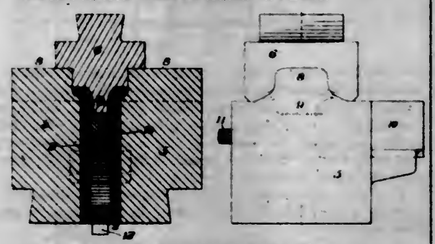
386,723. WAX-END NEEDLE. JOHN T. SMITH, Bellevue, Mich. Filed May 17, 1888. Serial No. 274,149. (No model.)



Claim.—1. As an improved article of manufacture, the metallic bristle, for the purpose set forth, made of a single piece of wire which is bent upon itself and twisted to form an eye at one end, the ends of the wire forming the point of the bristle being connected to each other by solder.

2. A metallic bristle made up of a single piece of wire which is bent upon itself and twisted, said bristle having two or more eyes formed in the body portion, the ends of the wire being secured to each other by solder or equivalent material and pointed, substantially as and for the purpose specified.

386,724. DIE FOR FORMING DRAW-BARS. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Co., (Limited,) same place. Filed Mar. 12, 1888. Serial No. 266,886. (No model.)



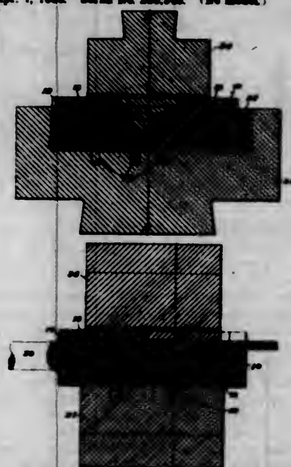
Claim.—1. An improvement in dies for forging draw-bars, which consists of a bed-die having a cavity for the reception of the shank of the draw-bar, and a lateral cavity communicating therewith, and a removable mandrel which is inserted in the said lateral cavity between the side bars of the shank, substantially as and for the purposes described.

2. An improvement in dies for forging draw-bars, which consists in the combination of a bed-die having a cavity for the reception of the shank of the draw-bar, and a mandrel which fits between the side bars of the shank and bears against shoulders on the inner faces of the side bars, substantially as and for the purposes described.

3. An improvement in dies for forging draw-bars, which consists in the combination of a bed-die having a cavity for the reception of the shank of the draw-bar, a mandrel which fits between the side bars of the shank, and a pin which is inserted through the die-block opposite to the end of the mandrel to afford means for removal of the same, substantially as and for the purposes described.

4. An improvement in dies for forging draw-bars, which consists in the combination of a bed-die having a cavity for the reception of the shank of the draw-bar, and a mandrel which fits between the side bars of the shank, said mandrel being secured to the die-block to prevent rise thereof, substantially as and for the purposes described.

386,725. MANUFACTURE OF COUPLERS. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Co., (Limited,) same place. Filed Apr. 7, 1888. Serial No. 269,945. (No model.)



Claim.—1. As an improvement in dies for the manufacture of coupler-heads, a bottom die having its cavity shaped to be the counterpart of the coupler-head, and a recess in the die for the reception of the strap of the coupler which is placed therein on the coupler-head, said recess extending to the outside of the die, substantially as and for the purposes described.

2. As an improvement in dies for the manufacture of coupler-heads, a bottom die having a cavity shaped to be the counterpart of the coupler-head, and a recess in the die adapted to form a box on the coupler-head, in combination with a moving die which operates upon the metal in the cavity of the lower die to forge it into shape, and which is provided with a tongue adapted to enter the box-recess, substantially as and for the purposes described.

3. As an improvement in dies, a bed-die having a cavity shaped to be the counterpart of the article to be forged therein, and a pin or pins arranged in the bottom of the die, with their heads bearing against the article and their ends projecting from the die, substantially as and for the purposes described.

4. As an improvement in dies for the manufacture of coupler-heads, a bottom die for shaping the coupler-head and welding the strap thereto and a movable holder or gage for the strap-blank, said holder or gage being movable and adjustable to and from the die, substantially as and for the purposes described.

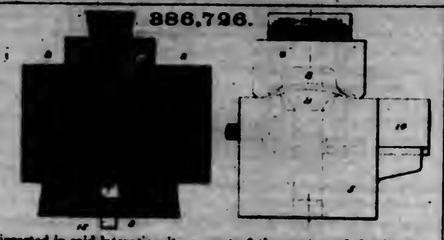
5. As an improvement in dies for the manufacture of coupler-heads, a bottom die for shaping the coupler-head and welding the strap thereto and a movable holder or gage for the strap-blank, having a pin which fits through a hole in the strap-blank, substantially as and for the purposes described.

386,726. DIE FOR THE MANUFACTURE OF DRAW-BARS. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Co., (Limited,) same place. Filed May 19, 1888. Serial No. 274,631. (No model.)

Claim.—1. An improvement in dies for forging draw-bars, which consists in a bed-die of proper surface form to shape the face-plate of the bar, having a cavity for reception of the draw-bar shank, said die having a removable section comprising a part of the face-plate shaping-surface, substantially as and for the purposes described.

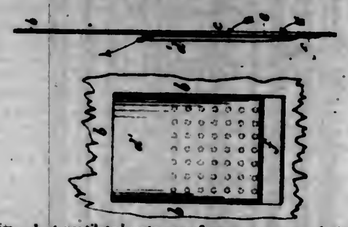
2. An improvement in dies for forging draw-bars, which consists in a bed-die of proper surface form, a cavity for reception of the draw-bar shank, and a lateral cavity, and a removable mandrel which is

386,726.



inserted in said lateral cavity, a part of the surface of the die being made integral with the mandrel, substantially as and for the purposes described.

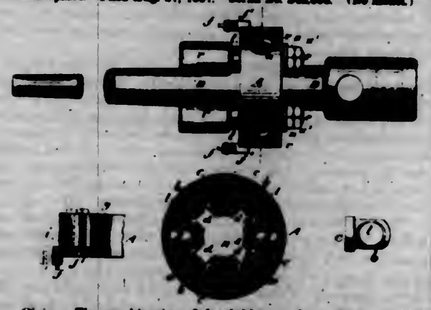
386,727. VENTILATED WATER-PROOF GARMENT. HAPHTALI EVANS, Burdett Road, County of Middlesex, assignor of one-half to Charles Ashford, London, England. Filed May 5, 1888. Serial No. 273,208. (No specimens.) Patented in England Mar. 6, 1888, No. 3,618.



Claim.—1. A ventilated water-proof garment composed of water-proofed material, *b*, having a non-water-proofed or porous portion, *c*, and an inner open-top pocket or lining of water-proofed material, *d d'*, secured to the inner side of the material, *b*, over its porous portion *c*, the outer part, *d*, of the lining being provided with perforations *e* in direct contact with the porous portion *c* of the outer material, *b*, and the inner part, *d'*, of the lining or pocket being unperforated, substantially as shown and described.

2. A ventilated water-proof garment composed of water-proofed material, *b*, having a porous portion, *c*, and the open-top water-proofed pocket or lining *d d'*, having perforations *e* in direct contact with the porous portion *c*, and provided at the lower end of the pocket with an extra thickness of water-proofing, *f*, substantially as shown and described.

386,728. TUBE-EXPANDER. WILLIAM H. THORAS and MARSHALL H. DE LONG, Syracuse, N. Y., assignors of one-fourth to Joseph F. Bonta, same place. Filed Aug. 27, 1887. Serial No. 248,098. (No model.)



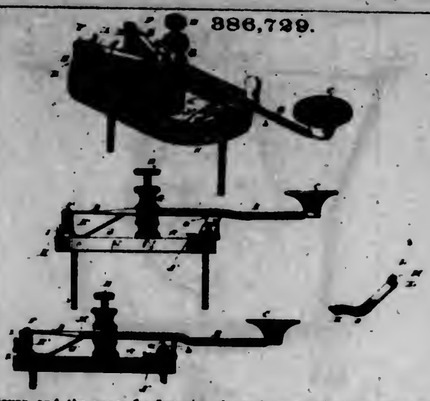
Claim.—The combination of the rigid expander-body A, provided in its face with the radial grooves *i i*, and having slots *g g* extending through it, the lugs *f f*, seated movably in the said grooves, and bolts passing through the slots and adjustably securing the lugs in their positions, substantially as described.

386,729. TELEGRAPH-KEY. LOUIS TOUSSAINT and JOHN H. ASTON, Evansville, Ind. Filed Mar. 15, 1888. Serial No. 267,200. (No model.)

Claim.—1. The combination of the bifurcated key-lever, the base-posts, and the spring bearing with its free end against the bifurcated end of the lever, substantially as and for the purpose shown and set forth.

2. The combination of the bifurcated key-lever, the base-posts, the spring, the lower end of which is slightly bent in a V shape to form a shoulder bearing with its free end against the bifurcated end of the

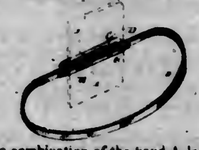
386,729.



lever, and the screw for fastening the spring upon the base, whereby the tension of said spring may be regulated, substantially as and for the purpose shown and set forth.

3. The combination, with the bifurcated key-lever, of the adjustable spring shouldered at its upper end and provided with a lip or projection between said shoulders, said lip bearing against the converging inner ends of the forked part of the lever, substantially as and for the purpose shown and set forth.

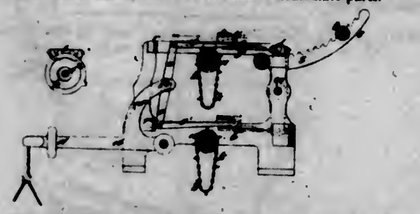
386,730. TICKET-HOLDER. WILLIAM J. WHARTON, Washington, D. C. Filed Apr. 17, 1888. Serial No. 270,978. (No model.)



Claim.—The combination of the band A, loop B, and tube or cylinder C, substantially as and for the purpose shown and set forth.

386,731. LOOM-DOBBY. WILLIAM WILLIAMSON, Pendleton, near Manchester, County of Lancaster, England. Filed June 21, 1887. Serial No. 242,019. (No model.) Patented in England Sept. 21, 1886, No. 11,189.

Brief.—By the use of the improved devices herein shown the hooked jacks are acted on directly by the pegs on the pattern-surface without the intervention of needles or other intermediate parts.



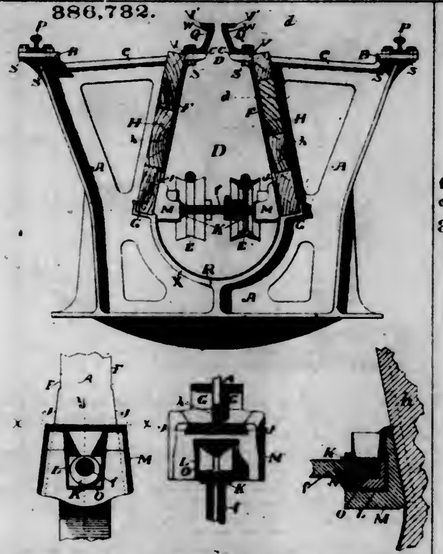
Claim.—1. The combination of pattern chains or barrels, reciprocating knives, and operating devices therefor, with hooks or griffs on which the pattern chains or barrels act directly, levers *o*, to which the hooks or griffs are pivoted, fixed stops *r r'* on the frame, and jacks, to which the levers are pivoted, all substantially as described.

2. The reciprocating knives, operating devices therefor, pattern chains or barrels having bevel-gears *i* on their shafts, and a shaft carrying wheels *k*, having spaced projections, in combination with hooks or griffs on which the pattern chains or barrels act directly, levers to which the hooks or griffs are pivoted, fixed stops *r r'* on the frame, and jacks, to which the levers *o* are pivoted, all substantially as described.

386,732. CONSTRUCTION OF RAILWAYS. FRED W. WEED and JOHN FOWLER, Los Angeles, Cal. Filed Mar. 12, 1886. Serial No. 267,098. (No model.)

Claim.—1. The combination of the yoke provided with the dovetailed and downwardly-broadened flanges J J, the hangers M M, channeled to fit upon the flanges J and provided with a seat for the boxing of the pulley-shaft, the pulley-shaft boxing, and the pulley-shaft.

386,782.



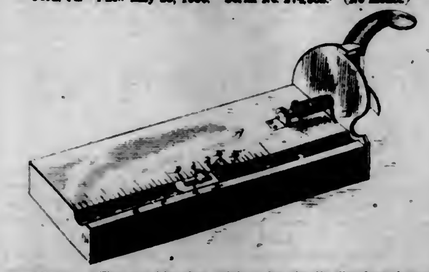
2. The combination of the yoke A, provided with the downwardly-broadened flanges J J, and the hanger M, chanceled to fit upon the flanges J J.

3. The improved cable roadway and tube comprising the yoke provided with the tube-opening D, the downwardly-diverging side arms A A, provided with the flanges F F and brackets G, the top arms, c c, having the track-rail seats B B and slot-rail seats C C, the planking H H, slot-rails Q Q, secured to the seats C, and the track-rails P, secured to the seats B.

4. The combination of the hangers M M, provided with the chamber L and the upwardly-projecting rib O at the bottom of such chamber, the box K, smaller than the chamber L and provided with the groove N, the pulley E, and its axle.

5. A slot-rail comprising the web of the rail, having at the top thereof a narrow flange projecting from one side of such web, and having a broad flange at the base of such web projecting from the same side of the web as the top flange, and at such an angle with the web that a vertical line drawn from the edge of the top flange will intersect the bottom flange approximately at the base of its junction with the web.

386,733. CIGAR-CUTTER. CHARLES P. YOUNG and JOHN H. THOMAS, York, Pa. Filed May 23, 1888. Serial No. 274,902. (No model.)



Claim.—The combination, with a longitudinally-slotted gage-plate, D, provided with a vertically-slotted extension, D', at its forward end, of a vertical plate, E, provided with a forwardly-extending lip, E', and a set-screw, d, for adjustably attaching the said vertical plate E to the face of the vertical extension D', the set-screw passing through the vertical slot in the extension and tapped into the plate E, substantially as described.

386,734. CAR-HEATER. JAMES ALLEN and GEORGE F. ALLEN, St. Augustine, Fla. Filed Jan. 26, 1888. Serial No. 261,960. (No model.)

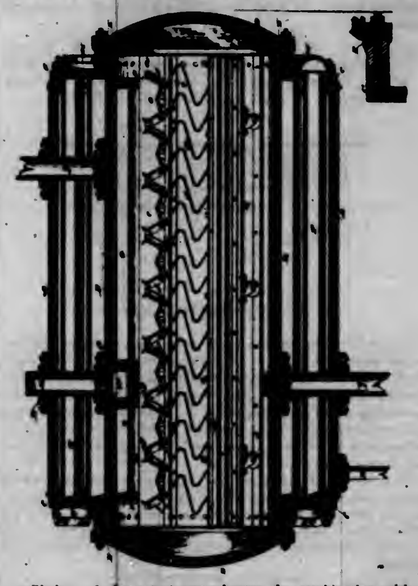
Claim.—The combination, with the case having a surrounding water-space, of a door to said case formed with a water-space, and a

386,734.



flexible pipe connecting the water-space of the door with that of the case, substantially as described.

386,735. FEED-WATER HEATER. WILLIAM C. ARMSTRONG, Springfield, Ohio. Filed Sept. 8, 1887. Serial No. 248,668. (No model.)



Claim.—1. In a feed-water heater, the combination, with an outer and an inner shell and heads which secure them together with a space between them, and which close their ends, of water-passages in said annular space, water-pipes which conduct water into the inner shell, sediment-collectors therein, and suitable steam and water inlet and outlet openings.

2. In a feed-water heater, the combination, with inner and outer shells and heads which secure them together with a space between them, and which close their ends, of a continuous water-passage traversing said annular space, a water-pipe which leads into the inner shell, pipe-connections between said pipe and the inlet end of the continuous passage, pipe-connections between the outlet of the said passage and said water-pipe, and cut-offs in said pipe-connections and said water-pipe, sediment-collectors located within the inner shell, and suitable steam-openings and a water-discharge opening.

3. In a feed-water heater, the following elements: an outer and an inner shell and suitable heads which connect them together with a space between them, and which close their ends, a series of pipes passing through said space, caps connecting their ends to form a continuous passage, a water-pipe leading into the inner shell, a water-distributer therein, pipe-connections between the inlet and discharge ends of the passage composed by said series of pipes and said water-pipe, cut-offs in said pipe-connections and said water-pipe, a series of water-troughs under the water-distributer and in the inner shell, sediment-collectors beneath said troughs, a basin beneath the said collectors, and steam inlets and outlets for said shells, and a water-outlet.

4. In a feed-water heater, the combination, with a shell and heads which close its ends, of water-pipes leading thereto and therefrom, a steam-opening, a water-distributer, a series of troughs into which the water is discharged, a series of sediment-collectors beneath the troughs, and a basin beneath the collectors.

5. In a feed-water heater, the combination, with an outer and an inner shell and heads which secure them together with a space between them, and which close their ends, of a series of pipes passing

lengthwise through said space, two of which connect with inlet and discharge pipes, and caps which connect each pipe at one end with a pipe on one side of it and at the other end with a pipe on the other side of it, substantially as described, to form a continuous water-passage.

6. In a feed-water heater, the combination, with a shell, of a water-pipe, a water-distributer within the shell connected with said pipe, and a series of transverse troughs within the shell and beneath the distributer, whereby the water is introduced into the shell and distributed into separate compartments, whereon it overflows.

7. In a feed-water heater, the combination, with a shell, of a horizontal series or succession of troughs, and a horizontal series of irregular-shaped sediment-collectors located beneath the succession of troughs, and a longitudinal basin located beneath the collectors and arranged to receive the water from them, substantially as described.

8. In a feed-water heater, the combination, with a shell and its head, one or both of which are removable, of tracks secured within the shell, supporting-plates sustained by wheels fitted upon the tracks, and a series of transverse water-troughs connected to said plates, the whole being removable from the shell.

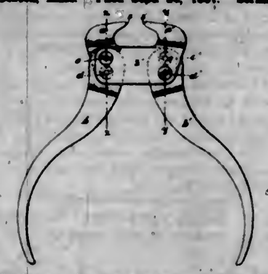
9. In a feed-water heater, the combination, with a shell and its heads, one or both of which are removable, of a basin removably supported within the shell.

10. In a feed-water heater, the combination, with a shell and its heads, one or both of which are removable, of tracks therein, one above the other, supporting-plates sustained by wheels on the upper tracks, a series of transverse water-troughs connected to said plates, a series of serpentine sediment-collectors suspended from said plates beneath said troughs, a basin supported by the wheels on the lower tracks, and having interior flanges and gutters, said plates and basin being removable from the shell.

11. In a feed-water heater, a water-trough having its bottom inclined downwardly from the middle and the upper edges of its sides inclined inwardly.

12. In a feed-water heater, the combination, with an outer shell and an inner shell, arranged with a space between the two shells, and heads which close the ends of said shells, of sediment-collectors mounted within the inner shells and steam and water inlet and outlet openings for said shells, whereby a steam-jacket is formed round the inner shell, water introduced into the interior of said shell and the impurities thereof separated therefrom, and the water also subjected to the heating action of the steam during the time of its confinement in the said inner shell.

386,736. CUTTING-NIPPERS. HERBERT S. BROWNELL, Boston, assignor of one-third to Charles F. Brown, Reading, and Arthur W. Crowley, Boston, Mass. Filed Sept. 30, 1887. Serial No. 251,082. (Model.)



Claim.—The improved cutting-nippers consisting of the jaws a a', having the oppositely-projecting arms 3 3', and the levers b b', fulcrumed, respectively, on the jaws a a', and having their shorter arms pivotally connected, respectively, to the arms 3 and 3', as set forth.

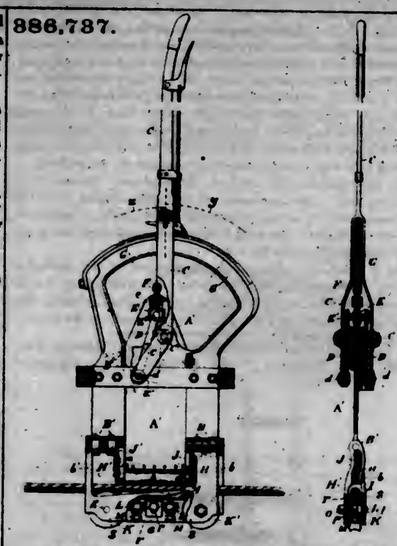
386,737. CABLE-RAILROAD GRIP. GEORGE F. CATER, San Francisco, Cal. Filed Nov. 16, 1887. Serial No. 255,803. (No model.)

Claim.—1. In a cable-railroad grip, a gripping-block the ends of which are furnished with a projecting pin or stud, in combination with the hinged frames H H', provided with cam-grooves on their inner edges, substantially as described.

2. In a cable-railroad grip, a vertically-sliding plate, in the upper end of which is an elongated hole, in which is fitted an adjustable block, the lower end of said plate being furnished with a gripping-block having a pin or stud projecting from each end, in combination with the hinged frames H H', provided with cam-grooves on their inner sides, in which the projecting pins slide to operate the hinged frames H H', substantially as described.

3. In a cable-railroad grip, the combination of the hinged side frames, H H', the inner edges of which are provided with cam-grooves, and a vertically-sliding plate, to the lower edge of which is attached

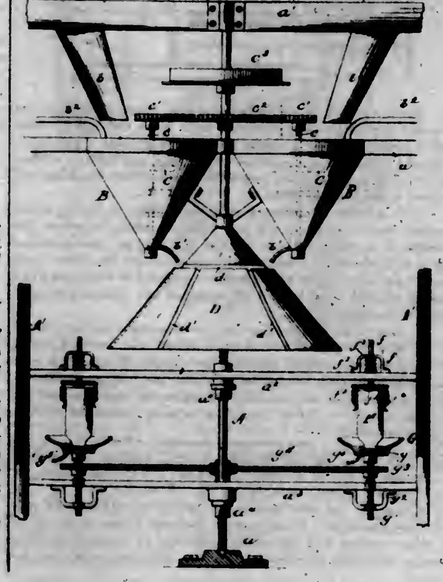
386,737.



a gripping-block provided with pins or studs projecting from its ends suitably located to slide in the cam-grooves on the inner edges of the hinged frames H H', substantially as described.

4. In a cable-railroad grip, the combination of the sliding plate A', having attached to its lower edge the block A, the ends of which are provided with pins or studs adapted to slide in the cam-grooves J J', the upper end of said plate having an elongated hole, C, and an adjustable block, E, and pin E', the hinged frames H H' and their extensions r r, carrying the adjustable gripping-block I and pulleys K K', and provided with holes k l, for the reception of the free ends of the adjusting-screw blocks L L and the roller-carrying pins, the rods b b', for supporting the free ends of r r, the bent operating-lever C, pivoted to the frame of the grip at C', having a suitable pawl for securing it in any desired position, the link D, and toothed segment G, all arranged and operating substantially as described.

386,738. GLASS-GRINDING MACHINE. JAMES J. CHESWIS, Riverside, N. J. Filed Feb. 22, 1887. Serial No. 228,228. (No model.)

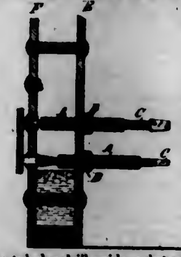


Claim.—1. In a glassware-grinding machine, the combination of a driving-shaft, stationary mixing-chambers B, cone D, having annular channel *d*, and longitudinal channels *d'* around said cone, a stationary frame located below said cone, and having spring-acting bars provided at their lower ends with a cushion and spring-fingers, a second stationary frame below the former, having shafts in alignment with said spring-acting bars, cups provided with grinding-dies secured to said shafts, and mechanism between the latter and the driving-shaft for rotating said cups and grinding-dies, substantially as set forth.

2. In combination with shaft A, the stationary frames a^3 a^4, spring-acting rods f', having cushion f^5 and spring-fingers f^6 on one of said frames, cups G, having grinding-dies *g* and shafts *g'*, and mechanisms between shafts *g'* and shaft A, for rotating said cups and grinding-dies, substantially as set forth.

3. In a grinding-machine, the combination of the stationary frames a^3 a^4, spring-acting bars f', having adjustable spring-fingers f^6, rotating cups G, having grinding-dies *g* with inclined grinding edge or surface g^1, and outlet g^3 from said die, substantially as set forth.

386,739. TUBULAR DRILL-GUIDE. JAMES T. CONNELLY, Huntington, W. Va. Filed Apr. 19, 1888. Serial No. 271,131. (No model.)
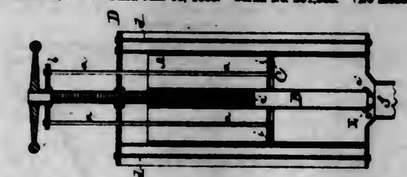


Claim.—1. The tubular drill-guide, substantially as described.

2. The combination of the tubular drill-guide, having its bore extending its entire length, with a drill having its stem passing therethrough, so as to work and be guided therein, substantially as described.

3. The combination of the tubular drill-guide, its jam-nut, and the drill passing through said guide, substantially as described.

386,740. APPARATUS FOR LETTERING SOAP. EDWIN T. EVANS, Buffalo, N. Y. Filed Jan. 16, 1888. Serial No. 261,022. (No model.)



Claim.—1. In a device for lettering soap, the combination of the cylinder A, having a contracted neck at its lower end and provided with a piston, C, having a central aperture, the cylinder B, concentric with said cylinder A and provided with a piston, and having a stationary die in its lower end, and means for simultaneously operating said pistons, substantially as specified.

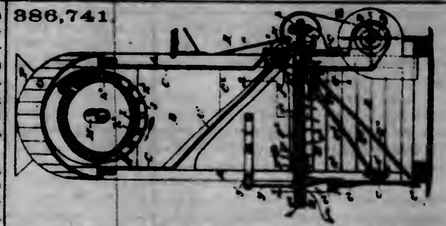
2. In a device for lettering soap, the cylinder A, having a contracted neck at its lower end and tube *f* extending therefrom, the cylinder B, concentric with the cylinder A, having an open stationary die at its lower end, the stationary cross-head D, and the piston C, surrounding cylinder B and having rods *a a* attached to cross-head *b* and passing through cross-head D, all combined and operating substantially as specified.

3. In a device for lettering soap, the combination of the cylinder A, having a contracted neck at its lower end and provided with a piston, C, having a central aperture, the cylinder B, concentric with said cylinder A and provided with a piston, and having a stationary die in its lower end, and means for simultaneously operating said piston, the tube *f*, and vertical plunger *g*, working therein, all substantially as specified.

386,741. ORE-SEPARATOR. ALVAN P. GRAHAM, Denver, Colo., assignor of one-half to Charles L. Ames and Abel E. Frost, Chicago, Ill. Filed Mar. 2, 1888. Serial No. 265,715. (No model.)

Claim.—1. The combination, in a pneumatic ore-separator, of a vibratory precipitator having corbed apertures, a plate supported at a distance above said precipitator, affording an air-space between them, a suction-fan in communication with said air-space through the

386,741



apertures of the precipitator, a feed-passage for the ore leading from the hopper-opening to the space between the precipitator and the superposed plate, and a feed-regulating roller preventing free passage of air while permitting the passage of the material being fed, substantially as described.

2. A vibratory precipitator having apertures provided with curbs which project above the upper surface of the board, and having a depression or depressions in its surface for the formation of a mineral bed thereon, substantially as described.

3. The combination of an apertured, inclined, and reciprocating precipitator having its angle of inclination adjustable about an axis at its head, a dressing-plate arranged over the precipitator and also adjustable as to its inclination about an axis which is near that of the precipitator, and a suction-fan in communication with the space between the precipitator and the dressing-plate through the apertures in the precipitator, substantially as described.

4. The combination, in a pneumatic ore-separator, of an inclined reciprocating precipitator provided with curbed apertures and a depression for the formation of a mineral bed, a dressing-plate supported above the precipitator, and a suction-fan communicating with the space between the precipitator and the superposed plate through the apertures in the precipitator, substantially as described.

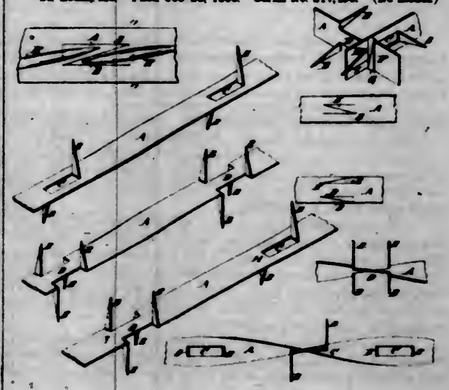
5. A precipitator for ore-separators provided with apertures having curbs which entirely surround said apertures and which converge at acute angles at their ends and have their greater length in the direction in which the material to be separated moves over the precipitator, substantially as described.

6. The combination, with a precipitator of an ore-separator, a superposed dressing-plate, and a transverse vertically-movable bar and flexible plate supporting the feet of the precipitator, of a lever connected with the transverse bar and having adjustable engagement with the dressing-plate, substantially as described.

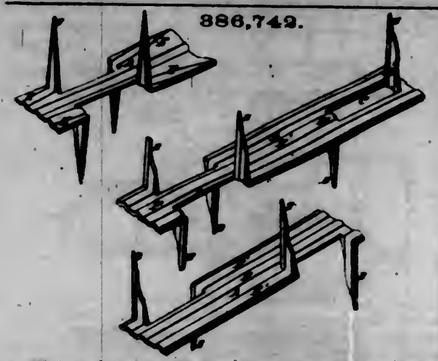
7. The combination, with a precipitator and the laterally-inclined inclined board beneath the precipitator having a discharge-passage at its lower margin, of a suction-fan and an upwardly and rearwardly inclined air-passage beneath said board provided with an outwardly-opening valve at its lower end and communicating at its upper end with the suction-fan, substantially as described.

8. The combination, with a frame, a supply-hopper, and a precipitator beneath the hopper, an open space being provided within the frame between the hopper and precipitator, of a transparent dressing-plate over the precipitator, and adjusting devices for the precipitator at said open side of the machine, whereby the effects of adjustment may be conveniently observed while such adjustment is being performed, substantially as described.

386,742. BARBED FENCE-STRIP. CHRISTOPHER J. GRELLER, St. Louis, Mo. Filed Oct. 29, 1886. Serial No. 217,660. (No model.)



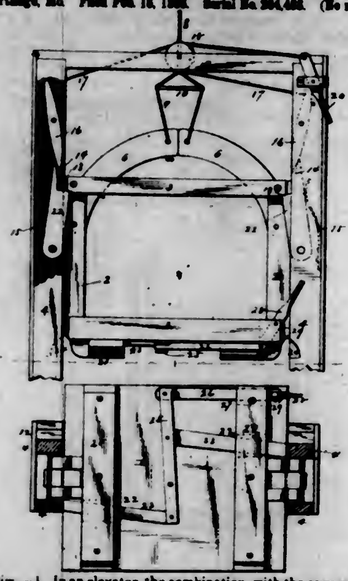
386,742.



Claim.—1. In a metallic fencing-strip provided with elongated slots having diagonally-divided twin barbs projecting from the uncut blank at each end of said slots, elongated necks alternate therewith, twin barbs cut from the metal body from each side of said necks, said twin barbs being diagonally divided from each other and projecting from opposite portions of the uncut blank contiguous to said necks, substantially as shown and described.

2. In a metallic barbed fencing-strip provided with an elongated slot, a fastening device consisting of an elongated neck, D, adapted to be inserted into said slot, and shouldered portion F, contiguous to the neck D, consisting of the uncut blank and the barbs contiguous to said neck D, against which blank the barbs are folded, said shouldered portion being adapted to engage one side of the strip on each side of the slot to fasten the strip to the supporting object, substantially as set forth.

386,743. AUTOMATIC STOP FOR ELEVATORS. GEORGE P. HINES, Carthage, Mo. Filed Feb. 16, 1888. Serial No. 264,462. (No model.)



Claim.—1. In an elevator, the combination, with the cage and the guide-bars, of pawls pivoted at the lower ends in casings at the sides of the shaft and having upwardly-facing beveled shoulders projecting out into the shaft, springs forcing the pawls outward, levers fulcrumed at their middles in the casings above the pawls and bearing with their lower ends against the upper ends of the pawls, cords attached to the upper ends of the levers and passing around a pulley at the middle of the top of the shaft, and a lever at the side of the shaft having the cords secured to its upper end, as shown, and for the purpose specified.

2. In an elevator, the combination, with the cage and the guide-bars having upwardly-facing notches in the facing sides at the landings, of bolts sliding under the floor of the cage and engaging the said notches, a lever fulcrumed under the floor of the cage and having the inner ends of the bolts pivoted to it, a rod pivoted to one end of this lever, and a hand-lever fulcrumed in a slot in the floor of the cage, and having the other end of the rod pivoted to its lower end, as shown, and for the purpose specified.

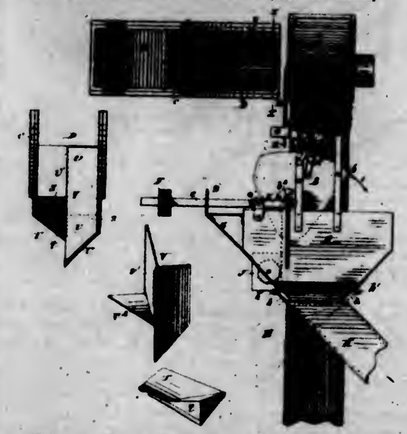
386,744. ISABELLA KATE HENDERSON, Shelbyville, Ind. Filed Mar. 23, 1887. Renewed June 20, 1888. Serial No. 276,979. (Model.)



Claim.—1. As a new article of manufacture, the herein-described bustle, made of plaited or braided vegetable material, and comprising an inclined back portion, B, the transversely-inclined inner folds integral therewith and having their upper ends secured to the folded edge of the strip that forms the back portion, B, and the folded outer sides, C C, the upper outer ends of which are secured to the folded edge of the said back strip, likewise integral with said strip, and forming, in connection therewith and the inner folds, the waist portion, all constructed and arranged substantially as described.

2. A bustle made of braided vegetable or other material, and consisting of the inclined back B, the transversely-inclined inner folds integral therewith and having their upper ends secured to the folded edge of the back portion, the folded outer sides, C C, the upper outer ends of which are secured to the folded edge of the said back portion, and a roll, D, located within the back portion, substantially as and for the purposes set forth.

386,745. AUTOMATIC GRAIN-METER. JOHN HENRY, Ardoch, Dak. Filed Oct. 28, 1887. Serial No. 253,413. (No model.)



Claim.—1. The combination, in an automatic grain-weigher, of a hopper, A, a weigh-beam, E, fulcrumed thereon, a grain-box, B, journaled on the weigh-beam at a point below and behind the center of gravity of the box, and a weighted arm, K, held to the grain-box or its shaft and operating to return the box to normal upright position after each tilting of it to discharge its contents, and a tally device connected with the shaft of the box, substantially as herein set forth.

2. The combination, in an automatic grain-weigher, of a hopper, A, a weigh-beam, E, fulcrumed thereon, a grain-box, B, journaled on the weigh-beam at a point below and behind the center of gravity of the box, a weighted arm, K, held to the grain-box or its shaft and operating to return the box to normal position after each tilting of it to discharge its contents, a latch-bar, O, held to a relatively-fixed support and notched at *o*, and an arm, P, on the grain-box, which is engaged by the latch-bar as the box resumes normal upright position.

and the support E on the elevator-spout below the free end of said latch-bar, substantially as herein set forth.

3. The combination, in an automatic grain-weigher, with a hopper, A, a weigh-beam, E, fulcrumed thereon, a bracket, G, fixed to the hopper and having forked upper end, *g*, forming a guide and rest for the arm *e* of said beam, a tilting grain-box, B, journaled on the weigh-beam, and a spout discharging grain or other material into the box, of a cut-off, L, fitted to the spout and provided with an arm, M, and an arm, N, on the grain-box, substantially as shown and described, whereby the cut-off will be operated to open the discharge-spout as the grain-box resumes normal upright position, and the spout will be closed as the grain-box tilts for discharge, as herein set forth.

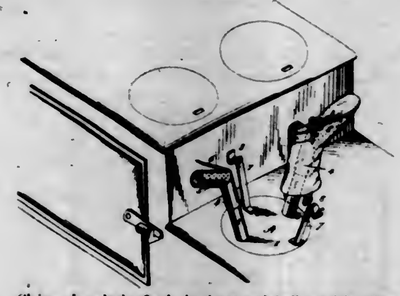
4. The combination, in an automatic grain-weigher, of a hopper, A, a weigh-beam E, fulcrumed thereon, a tilting grain-box, B, journaled on the weigh-beam, a weighted arm, K, held to the box and returning it to normal position, a spout discharging into the box, a latch-bar, O, held to a relatively-fixed support and notched at *o*, an arm, P, on the grain-box, adapted for engagement by the latch, a cut-off, L, fitted to the discharge-spout and provided with an arm, M, and an arm, N, on the grain-box, all arranged for operation substantially as described, for the purposes set forth.

5. In a grain-weighing apparatus, the combination, with the spout delivering into the weighing-box, of reversely-inclined plates T U and an angular partition, V, arranged to divide the flowing grain to discharge it evenly to the grain-box, substantially as herein set forth.

6. In a grain-weighing apparatus, the combination, with the spout D, of reversely-arranged inclined plates T U, a partition, V, and a filling-piece, as *t* or v^3, arranged at the angle or corner between the parts V T, substantially as herein set forth.

7. In a grain-weighing apparatus, the combination, with the weighing-box and the spout delivering into said box, of the inclined plate S, the inclined plate T at right angles thereto, the reversely-inclined plate U, and the angular partition V in the elevator-spout, substantially as and for the purpose specified.

386,746. BOOT-DRIER. GEORGE A. HALL, Maquoketa, Iowa. Filed Oct. 9, 1886. Serial No. 215,762. (No model.)



Claim.—In a device for drying boots and similar articles, the combination of a base, tubes secured thereto the upper ends of which are at an obtuse angle and perforated, and a strip secured to the upper ends of each of said tubes and projecting over its upper side.

386,747. VACUUM-DISTILLATION. WILLIAM L. HORNE, Meriden, assignor to the Horne Vacuum Company, Hartford, Conn. Filed Feb. 1, 1887. Renewed Mar. 20, 1888. Serial No. 268,845. (No model.)

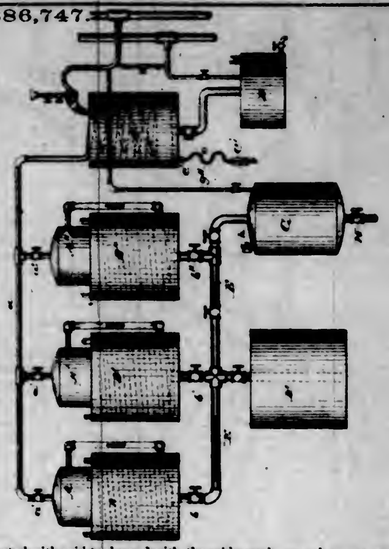
Claim.—1. The combination, with two or more distilling-vessels, a condenser, and an air-exhausting device, of a supply-tank, a tank for receiving the residual liquor, a pipe connected with both of said tanks and with each of said distilling-vessels, and cocks controlling the connections between the different parts, substantially as described.

2. The combination with two or more distilling-receptacles, a condenser, and a vacuum apparatus, of a supply-tank and a tank for receiving the residual liquor, said residual tank being connected with an air-exhausting apparatus, a pipe connected with the supply and residual tanks and with the distilling-vessels, and cocks controlling the connections with the different parts, substantially as described.

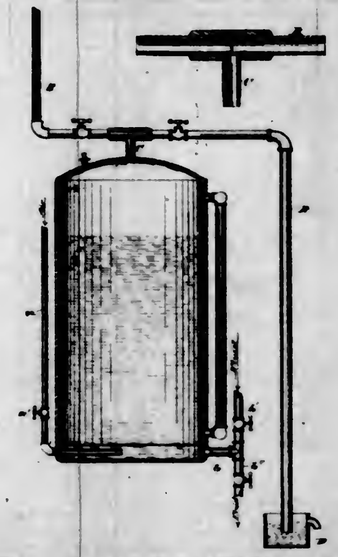
3. The combination, with two or more distilling-vessels, of a residual tank connected with said vessels, a condenser, also connected with said distilling-vessels, a distillate-tank connected with said condenser, an air-exhausting apparatus connected with the condenser and with the residual and distillate tanks, and cocks for controlling the connections with the different parts, substantially as described.

4. The combination, with two or more distilling-vessels, of a supply-tank, a tank for the reception of the residual liquor, a pipe connected with said tanks and with the said vessels, a condenser connected with the distilling-vessels, a distillate-tank connected with the condenser, an air-exhausting device connected with the condenser and distillate and residual tanks, and cocks controlling the connections with the different parts, substantially as described.

386,747.



386,748. PROCESS OF AGING LIQUORS. WILLIAM L. HORNE, Meriden, assignor to the Horne Vacuum Company, Hartford, Conn. Filed Aug. 24, 1886. Renewed Mar. 20, 1888. Serial No. 268,846. (No model.)



Claim.—1. The process of aging distilled liquors, which consists in passing currents of air through the same by placing the liquor in a closed receptacle, exhausting the air above the liquor, and admitting air beneath the same, then cutting off the air-supply and exhausting the air and volatile parts of the liquor, substantially as described.

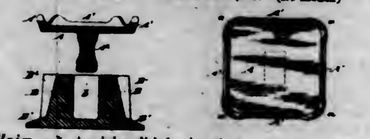
2. The process of aging distilled liquors, which consists in passing currents of air through the same by placing the liquor in a closed receptacle, exhausting the air above the liquor, and admitting air beneath the same, then cutting off the air-supply and exhausting the air and volatile parts of the liquor, forming a vacuum and maintaining said exhaust until ebullition nearly or quite ceases, substantially as described.

386,749. MEAT-HOOK. JOSEPH W. JOHNSON, Philadelphia, Pa., assignor to Thomas Devlin & Co., same place. Filed Apr. 13, 1888. Serial No. 271,268. (No model.)



Claim.—In a meat-hook, the combination, with a base-piece having an outward flange, a portion of which is cut away, said base being further provided with openings just within the flange, and a central aperture, of the supporting-hook, the plate of which is provided with two lugs, each of which is provided with a toe, and a central lug, and a locking-hook pivotally secured to the base-piece at the cut-away portion of the flange, the free end of which engages with one of the toed lugs of the plate of the supporting-hook when in position.

386,750. DENTAL MIXING-DISH. JOSEPH A. KIMBALL, New York, N. Y. Filed Nov. 7, 1887. Serial No. 254,426. (No model.)

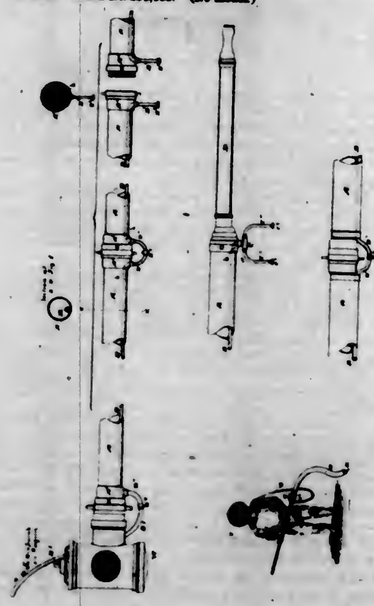


Claim.—1. A mixing-dish having the base A, rim A', and stem A^1, combined and adapted to serve as herein specified.

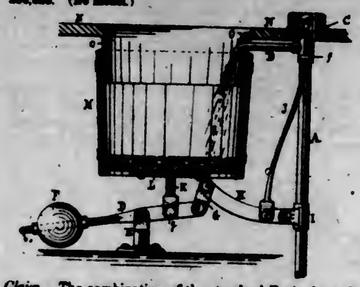
2. The dish described, having the base A, rim A', one or more spouts, *a*, and stem A^1, as herein specified.

3. The dish described, having the base A, rim A', and spout *a*, in combination with the stem or stems A^1, and support B *b*, adapted to hold the dish firmly, as herein specified.

386,751. DEVICE FOR SUPPLYING AIR TO FIREMEN IN BURNING BUILDINGS. SAMUEL L. LOOMIS, Wright's Station, Cal. Filed Oct. 31, 1887. Serial No. 253,985. (No model.)



386,752. AUTOMATIC VALVE FOR WATER-SERVICE PIPES. CHARLES MERRITT, Providence, R. I. Filed Nov. 28, 1887. Serial No. 256,622. (No model.)

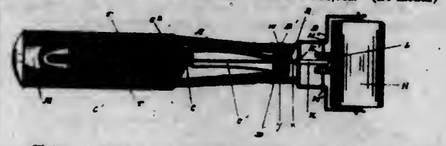


Claim.—The combination of the standard E, the lever D, having the screw-thread *b*, the counterpoise F, adjustable upon said screw-threaded lever D, the post K, the seat L, the basin M, the link G, the lever H, the rod J, the valve C, the pipes A B, the shelf N, the funnel O, the pivots *a c d e g*, and the bracket I, substantially as specified.

386,753. COMPOSITION OF MATTER APPLICABLE TO METAL-CUTTING TOOLS. STANLEY G. MENTAGUE, Gainesboro, Ala. Filed Mar. 26, 1888. Serial No. 268,228. (No specimens.)

Claim.—The herein-described composition of matter, to be applied and used as and for the purpose described.

386,754. ELECTRO-MEDICAL APPARATUS. JOHN S. MOTT, San Francisco, Cal. Filed Jan. 26, 1888. Serial No. 261,622. (No model.)



Claim.—1. In an instrument of the character described, the combination of the case or handle in which is mounted an induction-coil and a battery, and the frame B, adapted to carry a rolling electrode, and having a circuit-interrupter also mounted on it, the terminals of the induction-coil being brought out at the end of the handle and suitably exposed to make electrical connection with the circuit-interrupter and the electrode H, as hereinbefore described.

2. In an instrument of the character described, the combination, with the frame B, having a rolling electrode mounted in it for rotation, as described, of the detachable handle containing an induction-coil and a battery and having the terminals of the same brought out to the end where the handle sets into the frame, substantially as described.

3. In an instrument of the character described, the circuit-interrupter consisting of the wheel L and the contact-spring K, in electrical connection with the frame B and the primary coil, and driving mechanism, substantially as described, which connects the interrupter-wheel with the rolling electrode to operate the same from the motion of the electrode, as set forth.

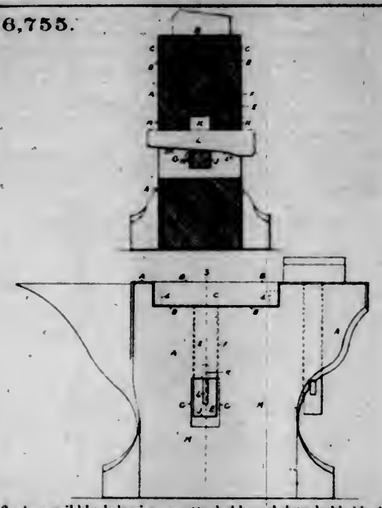
4. In an instrument of the character described, the combination of the handle or part carrying an induction-coil and a battery, and having a surface-electrode, and the frame or other part having a rolling electrode and a circuit-interrupter mounted on it, the said parts being separable, substantially as described.

5. The combination of the rolling electrode in circuit, as described, and the circuit-interrupter having driving wheels or surfaces which are adapted to run against the rolling electrode to be driven by the rotation thereof, substantially as described.

386,755. ANVIL. JOSEPH O'BRIEN, Boston, Mass. Filed Apr. 26, 1888. Serial No. 272,207. (No model.)

Claim.—1. An anvil-block having an attachable and detachable block, C, with a working-face, B, in combination with a recess, D, in the anvil to receive and means to secure said block C on the anvil, substantially as described, for the purpose specified.

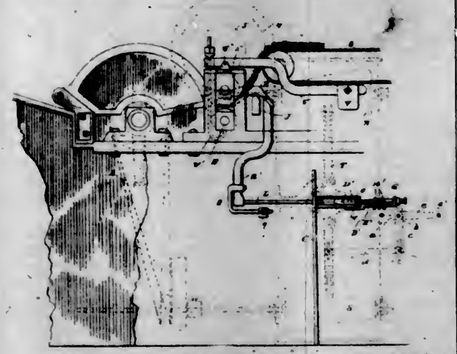
386,755.



2. An anvil-block having an attachable and detachable block, C, with a working-face, B, in combination with a recess, D, in the anvil to receive said block, and means consisting of a shank or stem, E, of said face-block C, a bore, F, of the anvil to receive and a slot, K, in said shank E, and a pin, L, entered in said slot and making bearings at its upper edge against the upper side of an opening, G, in the anvil, and at its under edge against the lower end of said slot, substantially as described, for the purpose specified.

386,756. EVENING MECHANISM FOR COTTON-OPENERS, &c. JAMES C. POTTER, Pawtucket, R. I. Filed Mar. 8, 1888. Serial No. 266,512. (No model.)

Brief.—The object of the invention is to prevent the crimping of the cotton between the evener-roll and the evener-plates.



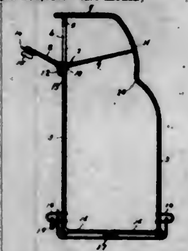
Claim.—1. The combination, with the evener-plates and the feed-roll, of a combined evener and feed-roll, arranged and adapted to co-operate both with said feed-roll and with said evener-plates, substantially as and for the purposes hereinbefore set forth.

2. The combination of the evener-roll, the feed-roll placed beneath the evener-roll, means for holding up said feed-roll against the same with yielding pressure, and the evener-plates placed above and obliquely to the plane of meeting of the two rolls, as described, the arrangement being such that the cotton passes first between the evener-plates and the evener-roll, and thence between the last-mentioned roll and the feed-roll, substantially as and for the purposes hereinbefore set forth.

3. The combination, with the beater, the evener-plates, the cone-drums, and belt-shipper therefor, and mechanism whereby the said belt-shipper is operated from the evener-plates, of the evener-roll and the feed-roll located between the beater and the evener-plates, and arranged and adapted to co-operate with each other and with the evener-plates, substantially in the manner and for the purposes hereinbefore set forth.

4. The combination, with the roll F, supported in fixed bearings and evening devices co-operating therewith, of the feed-roll E, supported in movable bearings below the roll F, and means whereby said feed-roll is held up against the said roll F with yielding pressure, substantially as and for the purposes hereinbefore set forth.

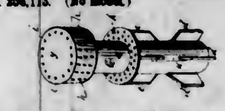
386,757. LETTER-BOX. ROBERT F. RAMSDEN, Baltimore, Md., assignor of one-third to Samuel W. Register, same place. Filed Mar. 9, 1888. Serial No. 266,686. (No model.)



Claim.—1. In a mail-parcel box, the combination of the casing 5, provided with an opening, 6, in one side and near the closed top thereof, a sealing device for protecting the opening 6, consisting of the leaves 8 and 9, which meet and are secured together at an angle one to the other, and hinged at their point of meeting in the bottom of the said opening 6 to the side of the casing, whereby the leaf 8 may be swung outward and downward, and when in the closed position will be flush with the side of the casing to which it is hinged, and the side of the casing which is directly opposite the said opening 6 being provided with a curved surface, 11, the center of which curvature is at the hinged point 10 of the sealing device, whereby the free end of the inner leaf, 9, will be in contact with the said curved surface at all parts thereof when moved thereover, substantially as shown, and for the purpose set forth.

2. In a letter-box, the combination of the casing 5, provided with an opening, 6, in the side thereof, and a sealing device consisting of the leaves 8 and 9, meeting and secured together at an angle one to the other and hinged at their line of meeting to the box at the lower edge of the opening 6, the leaf 8 being provided with a stop for insuring an inclined position of the said leaf 8, for the purpose set forth.

386,758. LAMP. HENRY R. SHAFFER, Rochester, N. Y., assignor to the Rochester Burner Company, same place. Filed Nov. 26, 1887. Serial No. 256,113. (No model.)



Claim.—1. The combination, with the center tube, B, of an Argand lamp, of the air-distributer G, set therein and provided at its top with an enlarged hollow head projecting laterally over the wick-tube, said head provided with vertical sides and perforated over its whole extent, the bottom forming a button to deflect the air beneath the head, as herein shown and described.

2. In an Argand lamp, the combination, with the center tube, B, of the air-distributer G, constructed with the enlarged perforated cylindrical head projecting over the wick-tube, and the annular perforated ring *k*, located around the distributer and within the center tube, as herein shown and described.

386,759. CAN-SOLDERING MACHINE. JOHN SOLTER, Baltimore, Md., assignor of one-half to George L. Kruhs, same place. Filed Apr. 11, 1888. Serial No. 270,302. (No model.)

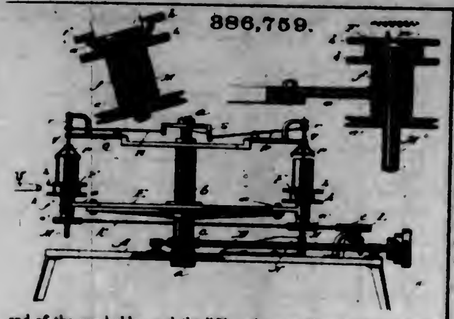
Claim.—1. In combination, a constantly-revolving table carrying a series of revolving can-holders, heaters for the can-holders, and lifting devices for raising the cans from the holders for the purpose of cooling them and allowing the cans to be removed, all substantially as described.

2. In combination with a constantly-revolving table, a series of can-holders mounted on spindles journaled in the table, pulleys on the lower ends of the spindles, and a band encircling the series of pulleys and connected with a main driving-pulley, substantially as described.

3. In combination with a revolving table, a solid can-holder, a heating apparatus arranged to heat the can-holder, said can-holder being provided with a recess on the upper face to receive the can, and with a lifter arranged to lift the can off the heater-seat, substantially as and for the purpose described.

4. In a solid can-holder fitted to turn in a sleeve, a recess in the upper face of the can-holder to receive the can, the pulley on the lower

386,759.



end of the can-holder, and the lifting-pin extending through the can-holder, with means for lifting said pin to raise the can, substantially as described.

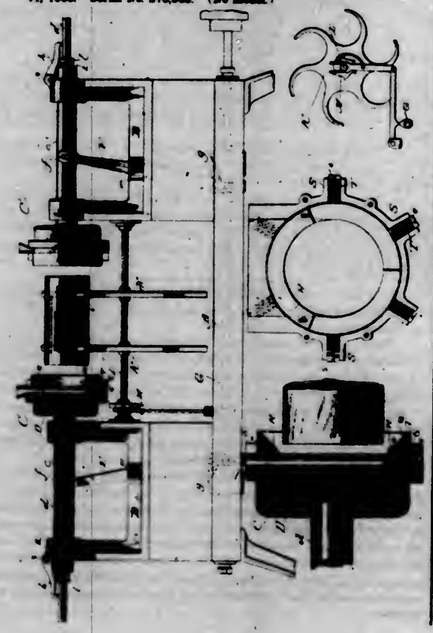
5. In combination, a main driving-shaft, a vertical sleeve carried therewith, a table on the sleeve carrying a series of revolving can-holders, a pulley on the spindle of each can-holder, and a band encircling the series of pulleys and driven by another pulley operated by the main shaft, substantially as described.

6. In combination with a series of can-holders mounted on a revolving table, pulleys on the ends of the spindles of the can-holders, and a band encircling them driven from the main shaft through a pulley, lifting-pins in each can-holder, and a cam-segment on the supporting-table for lifting the pins to raise the cans, substantially as described.

7. In combination with a series of can-holders mounted in a revolving table, pulleys on the ends of the spindles of the can-holders, a band encircling them driven from the main shaft, lifting-pins in each can-holder, a cam-segment for lifting the same, a holding-cap for the top of the cans, and a cam-segment for releasing the can from the said cap, substantially as described.

8. In combination with a constantly-revolving table, a series of can-holders mounted on spindles journaled in the table, pulleys on the ends of the spindles of the can-holders, a band encircling them driven from the main shaft, a heating apparatus for the said holder, and a recess in said holder for the can, having an annular channel of greater depth than the recess for outside soldering, substantially as described.

386,760. CAN-HEADING MACHINE. JOHN SOLTER, Baltimore, Md., assignor of one-half to George L. Kruhs, same place. Filed Apr. 11, 1888. Serial No. 270,303. (No model.)

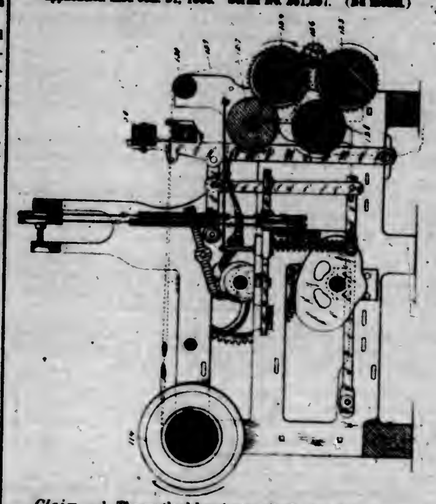


Claim.—1. In combination, in a can-heading machine, arms to move the can-body into line with the dies, a pair of reciprocating die-plungers in the die-cavities, and mechanism for holding the plungers forward while the dies retreat, substantially as described.

2. In a can-heading machine, a pair of dies with plungers in the die-cavities, the shanks of the plungers extending through the hollow die-shanks, levers for operating the dies forward and back, and a catch for holding the plungers in an advanced position when the dies are retracted, substantially as described.

3. In combination with the die, a segmental ring with springs for pressing the segments inward, said ring being located around the inner periphery of the die-cavity, the die having a space in the rear of the ring to receive the can-head, and a plunger for conveying the can-head onto the body and holding it thereon while the die is withdrawn from the headed can, substantially as described.

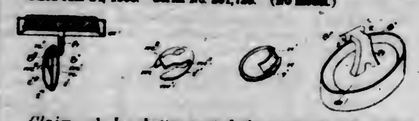
386,761. METHOD OF FINISHING WOVEN-WIRE FABRICS. SAMUEL T. THOMAS and WINFIELD S. THOMAS, Boston, Mass. Original application filed Feb. 20, 1884, Serial No. 122,276. Divided and this application filed Jan. 31, 1888. Serial No. 261,857. (No model.)



Claim.—1. The method herein described of straining or stretching woven-wire fabrics and of leveling and finishing their surfaces, said method consisting in pressing the said fabrics between two pairs of hard-surfaced rolls, the second pair of which rotates faster than the first pair, substantially as set forth.

2. The method herein described of straining or stretching woven-wire fabrics and of leveling and finishing their surfaces before they finally leave the looms, said method consisting in pressing the said fabrics between the take-up roll and another roll, both of which have hard surfaces, and then pressing the same between a second pair of hard-surfaced rolls, the surfaces of which move faster than the surface of the take-up roll, substantially as set forth.

386,762. BUTTON OR STUD. WILLIAM F. WHITING, Norwood, assignor to Hiram Howard and Stephen C. Howard, Providence, R. I. Filed Jan. 24, 1888. Serial No. 261,720. (No model.)



Claim.—1. In a button or stud, the post having the rocker b^3, combined with the shoe having within it one or more spring-arms, with which the rocker co-operates, and two yielding limiting-stops placed adjacent to but independent of each other, against one or the other of which the said rocker b^3 bears when the shoe is in its respective extreme positions, substantially as described.

2. In a button or stud, the post having the rocker b^3, combined with the shoe composed of the slotted under plate having the stop n', the spring-armed plate having the stop n^2, and the cap i^3, substantially as described.

3. The post bent laterally at its outer end and having the rocker b^3, combined with the shoe composed of a cap, i^3, a spring-plate, i',

and an under plate, *i*, the said under plate having a limiting-stop, as *n'*, near one edge thereof, to operate substantially as described.

4. The bent post having the rocker i^3, combined with the shoe composed of the under plate, *i*, having the stop *n'*, the plate i^2, having the spring-arms *m m'* and the tongue or stop m^3, the rocker i^3, working between the said arms *m m'* and the tongue when the shoe is in one position, and bearing on said arms and against the end of said tongue when in another position, substantially as described.

5. The bent post having the rocker, and the shoe comprising the cap i^3 and two spring-arms, the said rocker being placed between the said cap and spring-arms, and when moved pressing said spring-arms out of their normal position, combined with two limiting-stops placed adjacent to each other, and also adjacent to the cap of the shoe, but at opposite sides of the rocker, substantially as described.

386,763. BUTTON. WILLIAM F. WHITING, Providence, R. I., assignor to Hiram Howard and Stephen C. Howard, same place. Filed Feb. 2, 1888. Serial No. 262,783. (No model.)



Claim.—1. In a button or stud, the head, bent post, and rocker, combined with the shoe composed of the plate, slitted as at 2, and cut away as at *i*, to present the spring-arms *m m'*, and the stop m^3 and the cap i^3, substantially as described.

2. In a button or stud, the head, bent post, and rocker, combined with the shoe composed only of the spring-armed under plate, cut away as at *i*, and the cap, substantially as described.

3. In a button or stud, the head, bent post, and rocker, combined with the shoe composed of the spring-armed under plate, i^2, having the tongue m^3 and cut away at *i*, and the cap i^3, substantially as described.

4. In a button or stud, the head, post, and rocker, combined with the shoe composed only of the plate i^2, having the yielding tongue m^3, and the cap i^3, having the projection 3, substantially as described.

386,764. BUTTON OR STUD. WILLIAM F. WHITING, Providence, R. I., assignor to Hiram Howard and Stephen C. Howard, same place. Filed April 30, 1888. Serial No. 272,390. (No model.)



Claim.—1. In a button or stud, the combination, with the bent post and its rocker, of the shoe composed of the spring-armed plate *i'* and the stop or check plate i^3, the cap i^3, and the under plate, *i*, substantially as described.

2. In a button or stud, the combination, with the bent post having the rocker, of the shoe containing the spring-arms *m m'*, and the cap i^3, the rocker being placed between said spring-arms and the cap, and two or more rigid limiting-stops—one on the under plate of the shoe and another on the stop or check plate i^3—said stops terminating adjacent to the cap, and between which the rocker works, substantially as described.

3. In a button or stud, the bent post and its rocker, combined with the shoe containing the spring-armed plate having the projections *o*, the cap i^3, and the under plate, *i*, the rocker being placed between the spring-armed plate and the cap i^3, substantially as described.

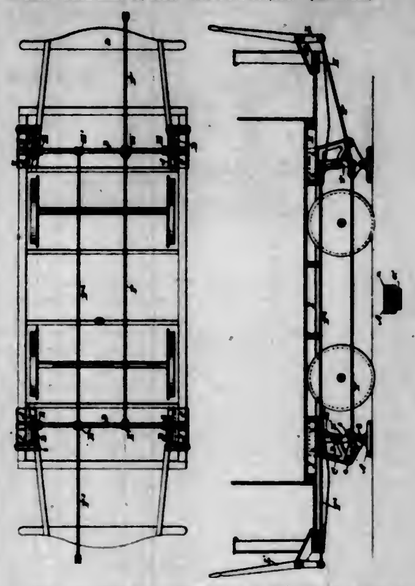
386,765. SHEET-METAL BOX. WILLIAM H. ATKINSON, Brooklyn, N. Y., assignor to D. M. Somers, J. L. Somers, G. A. Somers, W. H. Atkinson, and E. B. Somers, all of same place. Filed May 23, 1888. Serial No. 275,260. (No model.)



Claim.—1. A sheet-metal box having its sides provided with inwardly-extending flanges *b* and outwardly-extending locking-flanges *c*, and its bottom provided with inwardly-extending locking-flanges *f*, which interlock with the flanges *c* to form a seam, substantially as described.

2. A sheet-metal box having its sides provided with inwardly-extending flanges *b* and outwardly-extending locking-flanges *c*, and its bottom inset to form shoulders *d*, and provided with locking-flanges *f*, which interlock with the flanges *c* to form a seam, substantially as described.

886,766. BRAKE FOR CARS. HERMAN BOECKMAN, Cincinnati, Ohio. Filed Mar. 19, 1888. Serial No. 267,606. (No model.)



Claim.—1. In a car-brake, the combination, with the brake-shoes, of the arms or yokes to which they are pivotally connected, and pivotal connections between said arms or yokes and the car, and mechanism, substantially as described, for operating said arms or yokes, as set forth.

2. The combination with the brake-shoes, of the slotted arms or yokes and the rods for moving said levers, to which they are connected, and the vibrating lever having the pins or projections entering the slots of the arms or yokes, substantially as described.

3. The combination, with the brake-shoes, of the slotted arms or yokes to which said brake-shoes are hung, the vibratory arms having the pins or projections, the cross-shafts, and connections, substantially as described, for operating all the brake-shoes simultaneously.

4. The combination, with the brake-shoes, of the slotted arms or yokes, the vibratory levers having the pins or projections, the cross-shafts, the arms thereon, the connecting-rods, and the hand-levers at opposite ends of the car, all arranged and operating substantially as described.

5. The combination, with the brake-shoes A, of the arms or yokes B, brackets C, levers E, and shaft D, all constructed and arranged substantially as described.

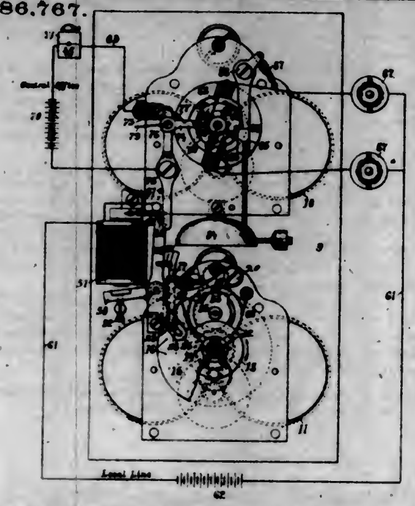
6. The combination, with the brake-shoes having the friction-faces and the elastic backings, of the slotted arms or yokes to which said brake-shoes are pivoted and the vibratory arms having the pins or projections entering said slots, and rods for moving said arms, substantially as described.

886,767. WATCHMAN'S ELECTRIC TIME-RECORDER. GEORGE P. BOLES, Brooklyn, N. Y. Filed Dec. 28, 1887. Serial No. 259,315. (No model.)

Claim.—1. The combination, with an alarm-circuit and a moving circuit-closing device for periodically acting on the alarm-circuit, of a time-recording mechanism and connections intermediate the circuit-closing device and the recording mechanism, whereby the operation of the recording mechanism may prevent the circuit-closing device from acting on the alarm-circuit and the non-operation of the recording mechanism may allow the alarm-circuit to be acted on, substantially as and for the purpose herein described.

2. The combination, with the alarm-circuit and the alarm device therein, and a traveling circuit-closing device periodically acting on the alarm-circuit and a warning-bell actuated by the circuit-closing device just before the latter is to act on the alarm-circuit, of a recording mechanism and connections intermediate the said mechanism and the circuit-closing device, whereby upon the operation of the recording mechanism the circuit-closing device may be rendered inoperative upon the alarm-circuit, substantially as and for the purpose herein described.

386,767.



3. The combination, with an alarm-circuit and the alarm device therein, the moving circuit-closing device periodically acting on the alarm-circuit, of time-recording mechanism and connections intermediate the said mechanism and the circuit-closing device, whereby the operation of the said mechanism may prevent the said circuit-closing device from acting on the alarm-circuit, an electro-magnet controlling the operations of the recording mechanism, and a local circuit provided with one or more circuit-closers, and including both the said electro-magnet and the said circuit-closing device of the alarm-circuit, substantially as and for the purpose herein described.

4. The combination, with an alarm-circuit having therein an alarm device, and a moving circuit-closing device for periodically acting on the alarm-circuit, of recording mechanism and connections intermediate the said mechanism and the circuit-closing device, whereby the operation of the former may prevent the latter from acting on the alarm-circuit, a hand device and an electro-magnet for independently operating the recording mechanism, and a local circuit provided with circuit-closers, and including the said circuit-closing device and the said magnet, substantially as and for the purpose herein described.

5. The combination, with the alarm-circuit and the alarm device therein, and the moving circuit-closing device periodically acting on the alarm-circuit, of recording mechanism and connections intermediate the said mechanism and the circuit-closing device, whereby the operation of the former may prevent the latter from acting on the said alarm-circuit, and a dial provided with a recording-hand, the said hand advanced by degrees over the dial by means of the said connections intermediate the recording mechanism and the circuit-closing apparatus, substantially as described.

6. The combination, with the alarm-circuit and the alarm device therein, and the circuit-closing device periodically acting on the alarm-circuit, of recording mechanism and connections intermediate the said mechanism and the circuit-closing device, whereby the operation of the former may prevent the latter from acting on the alarm-circuit, a record-dial provided with a hand which may be advanced by degrees over the dial, a hand device and an electro-magnet for independently operating the recording device and advancing the recording-hand, and a local circuit provided with circuit-closers, and including both the said electro-magnet and the circuit-closing device, substantially as and for the purpose herein described.

7. The combination, with the alarm-circuit and an alarm device therein, a moving circuit-closing device operated by a clock movement for periodically acting on the alarm-circuit, and a warning-bell actuated by the said circuit-closing device just before the device is to act on the alarm-circuit, of recording mechanism and connections intermediate the said mechanism and the circuit-closing device, an electro-magnet and a hand device for independently operating the recording mechanism, and a local circuit provided with circuit-closers, and including both the said magnet and the circuit-closing device, substantially as and for the purpose herein described.

8. The combination, with a clock-train and the record-disk mounted on the arbor of the hour-hand of the clock-train, of a pivoted perforating-arm for perforating the record-disk, and a rock-shaft provided with a rocker-arm having a stud engaging and actuating the said perforating-arm, the pawl-arm mounted on the rock-shaft, and the spring-acted pawl mounted thereon, the record-dial provided with a hand having an arbor provided with a ratchet-wheel, a retaining-pawl for said ratchet-wheel, the pawl on the pawl-arm for engaging the ratchet, a spring-acted pivoted rocker-lever provided with a pin engaging the pawl-arm, and the operating hand-lever provided with a spring-acted shaft having a stud engaging the foot of the rocker-lever, substantially as and for the purpose herein described.

9. The combination, with the clock-train having the hour-hand arbor thereof provided with the record-disk, of the pivoted spring-acted bracket and the pivoted spring-acted perforating-arm mounted thereon, the slotted perforating-table for the record-disk, and a cam mounted on one of the arbors of the clock-train and engaging the pivoted bracket for shifting the position of the perforating-arm so that the arm may perforate the record-disk in two concentric circles each twenty-four hours, substantially as and for the purpose herein described.

10. The combination, with the clock-train and the hour-hand arbor thereof, the contact-fingers, a circuit-closing wheel provided with a cog and mounted on the said arbor and acting to periodically make contact with the said contact-fingers, and the local circuit provided with circuit-closers and including the said contact-fingers, of a trip-disk provided with trip-studs and mounted on the said arbor and in electric communication with the said circuit-closing wheel, an alarm-circuit having an alarm device therein, a spring-acted trip-lever provided with a spring-acted pivoted trip-arm and included in the alarm-circuit, and a rock-shaft provided with a rocker-arm for actuating the trip-lever, whereby, when the trip-studs in turn trip the trip-arm and are thereby about to close the alarm-circuit, the operation of the said tilt-lever may act to prevent such closing, substantially as and for the purpose herein described.

11. The combination, with the clock-train provided with the rotating contact-making devices and the local circuit including such devices, of an alarm-circuit having an alarm device therein, the spring-acted trip-lever provided with the spring-acted trip-arm and both included in the alarm-circuit, the said trip-arm actuated by the said contact-making devices and acting to close the alarm-circuit, the rock-shaft provided with a rocker-arm engaging the trip-lever, an electro-magnet included in the said local circuit and having the armature thereof attached to the said rock-shaft, the pawl-arm mounted on the said rock-shaft and provided with a spring-acted pawl, the record-dial and the hand therefor provided with an arbor having a ratchet-wheel engaged by the said pawl, a retaining-pawl for the said ratchet, a hand-lever having a spring-acted shaft provided with a stud, a spring-acted rocker-lever engaging the said pawl-arm and engaged by the said stud on said shaft, a second clock-train and the record-disk mounted on the hour-hand arbor thereof, a pivoted spring-acted perforating-arm, and a slotted perforating-table for the disk to rest against, the said perforating-arm engaged by the said rock-arm, whereby the recording mechanism may be operated independently by the hand-lever and the electro-magnet, thereby perforating the said perforating-disk and advancing the said record-hand on its dial, substantially as and for the purpose herein described.

12. The combination, with the spring-acted pivoted bracket and the spring-acted perforating-arm mounted on the said bracket, of an arbor of a clock-train and a disk mounted thereon and provided with a tooth, a ratchet-wheel and a cam mounted on a shaft, and the ratchet-wheel engaged by the said tooth of the wheel, the said cam engaging the bracket and acting to shift the bracket at a predetermined time in order to shift the position of the perforating-arm, substantially as and for the purpose herein described.

13. The combination, with the clock-train 11, having the arbor 12 thereof provided with the carrying-plate 13, and the record-disk 15, mounted on such plate, of the slotted perforating-table 25, the spring-acted perforating-arm 17, provided with perforating-pin 23 and pivoted on the pivoted bracket 19, the rock-shaft 31, provided with the pawl-arm 32, the feed-pawl 48, and the arbor 45, provided with hand 44, and the ratchet-wheel 46, engaged by the pawl 48 and retained by pawl 47, the dial 43 for the hand 44, the hand-lever 38, and the spring-acted shaft 36 therefor, provided with the stud 41, and the spring-acted rocker-lever 33, having the stud 40 engaging said pawl-arm 32, substantially as and for the purpose herein described.

14. The combination, with the pivoted spring-acted bracket 19 and the pivoted spring-acted perforating-arm 17, mounted thereon, of the clock-train 11 and the rotating cam 53, driven by the train and engaging the bracket 19, for shifting the same, substantially as and for the purpose herein described.

15. The combination, with the recording mechanism driven by the clock-train 11, substantially as described, of the rock-shaft 31, provided with the rocker-arm 28, the electro-magnet 51, having the armature 50 mounted on the said shaft 31, the clock-train 10, and the rotating circuit-closing wheel 64, provided with cog 65 and driven by the said train, the contact-fingers 63, engaged by said cog, and the local circuit provided with push-buttons 76, and including said contact-fin-

gers, said magnet and said circuit-closing wheel, the alarm-circuit 69, provided with alarm apparatus 71, and having contact 75, the trip-lever 72 in the alarm-circuit, and the trip-arm and the contact-spring also in the alarm-circuit, and the trip-disk 80, provided with the trip-studs 78 and mounted on the arbor 66, substantially as and for the purpose herein described.

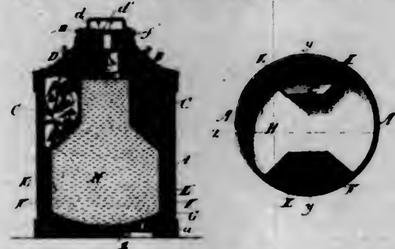
386,768. COVER FOR MAN-HOLES OR CATCH-BASINS. JOHN J. BURROWS, Washington, D. C., assignor of one-half to John T. Springman, Jr., same place. Filed Mar. 26, 1888. Serial No. 268,269. (No model.)



Claim.—1. The combination, with the bed-plate 4, formed with an opening, 5, and provided with the shoulder 9 and the lug 7, of the cover 6, provided with the lug 8 and formed with an opening, 17, the gravity-dog 12, provided with the handle perforated at 16 and mounted on the cover so as to swing freely, and the locking projection 15 for the dog to lock with, substantially as described.

2. The combination, with the bed-plate 4, formed with the opening 5 and provided with the shoulder 9 and the lug 7, of the cover 6, formed with the opening 17 and provided with the lug 8, the eyebolt 11, riveted to the cover, the gravity-dog 12, swinging on said eyebolt and provided with the locking-lip 14 and the perforation 16, and the locking projection 15 for the dog, substantially as described.

386,769. REFRIGERATOR-CAN. LOUIUS J. COSS, Chicago, Ill., assignor to himself, Samuel K. Dow, and Charles G. Cobb, all of same place. Filed Mar. 14, 1887. Serial No. 230,890. (No model.)



Claim.—1. A refrigerator-can comprising the outer shell, A, having the inner storage-chamber, H, provided with a refrigerating-chamber projecting laterally into its upper part, and a vertical plate, E, forming on one side an air-space between the shell and storage-chamber and on the other side a drip-space leading from the refrigerating-chamber, substantially as described.

2. A refrigerating-can, comprising the outer shell, A, the inner storage-chamber, H, with its bottom located above the bottom of the outer shell to form a water-space, and a refrigerating-chamber projecting laterally into the upper part of the storage-chamber, the can being provided with air and drip spaces, as described, and with the drip-valve *a*, as set forth.

3. The combination, with the outer shell, A, and inner storage-chamber, H, of the hollow cover B, having the perforated plates *c d*, strainer *d'*, and slide *d*², substantially as described.

386,770. STAY FOR WIRE FENCES. LEWIS W. COWELL, Joliet, Ill. Filed May 24, 1886. Serial No. 203,173. (Model.)



Claim.—1. A wire stay for wire fences provided with a number of compound closed and open loops, each of said loops consisting in an oblique bend or fold in the stay-wire, inclined in two directions or planes at an angle to each other, said inclined fold forming an open loop or hook adapted to hook over the fence-wire laterally when the stay is turned in one position, and a closed loop or eye when the stay is turned on its axis into a position at about right angles to said former position, substantially as specified.

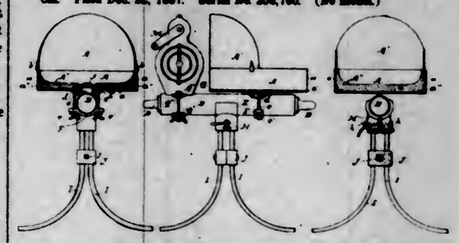
2. The wire stay for wire fences, consisting in a single stay-wire, D, provided with compound eyes and hooks *d*, consisting of bends or folds *d'* in the stay-wire, inclined in two directions, substantially as shown and described, in combination with the wires of a wire fence, said stay-wire having a coil, *d*², at its end around one of said fence-wires, substantially as described.

3. The combination, with wire stay D, having compound open and closed loops *d*, formed by bends or folds *d'* in said stay-wire, inclined in two directions, substantially as shown and described, of a locking-wire, E, inserted through said loops *d*, substantially as specified.

4. The stay-wire D, having double compound open and closed loops *d d*, formed by or consisting of the oblique bends or folds *d'* in said stay-wire, inclined in two directions, substantially as shown and described.

5. The stay-wire D, having oblique bends or folds *d'* therein, inclined in two directions, substantially as shown and described, forming an open loop or hook on said stay-wire, and at the same time a closed loop or eye, according to the position the stay-wire is turned on its axis, substantially as specified.

386,771. PORTABLE FORGE. GEORGE CUMMINS, San Francisco, Cal. Filed Dec. 22, 1887. Serial No. 258,760. (No model.)



Claim.—1. A portable forge consisting, essentially, of the hearth-pan, the hollow conduit for wind, the blower, and supporting-legs, the whole being secured together with suitable clamping devices, as herein described, and for the purpose set forth.

2. In a portable forge, the combination of a hearth-pan securely clamped upon a horizontal wind-pipe, a horizontal wind-pipe conveying the blast from the blower to the hearth, a suitable blower clamped upon said horizontal wind-pipe, and a suitable stand or frame to support the whole, arranged and operating substantially as and for the purpose described.

3. The portable stand herein described, consisting, essentially, of the bent legs inserted and held in the half-clamp, the half-clamp constructed and operating substantially as and for the purpose described.

4. As a means of fastening the legs in the clamp-hubs, the combination of the wedge-headed bolt and the rollers arranged and operating together to bind the legs in their sockets, substantially as and for the purposes described.

5. In a portable blowing apparatus, the combination of a horizontal hollow wind-conduit, a blower clamped thereto, and a portable stand, as herein described, consisting of the bent tubular legs and clamping-irons, substantially as shown and described.

6. A fan-blower, as herein described, consisting, essentially, of a shell inclosing the fan and having a removable cover in front to admit the fans, perforated to allow the air to enter, and with a boss in the middle to receive the fan-spindle, the said shell having a set of bearings secured to rear side to support one end of the spindles of the speed-gears; second, a suitable revolving fan inclosed within the shell; third, a cap or cover with internal space to inclose the speed-multiplying gears, fitted and fastened directly to the shell and provided with bearings for the outer ends of the gear-spindles, and, fourth, a set of speed-multiplying gears with spindles and an operating hand-lever, substantially as described.

386,772. ELECTRIC SIGNAL OR ALARM. EDWARD DAVIS, Cambridge, Mass., assignor of one-half to E. B. Welch, same place. Filed May 13, 1887. Serial No. 236,804. (No model.)

Claim.—1. In an electrical signaling apparatus, the combination, with the conducting-strip, the movable contact-arm, one or more projections adapted to be moved into position to cause changes in the relation of the contacts, a catch for holding the projections in position during the passage of the movable contact-arm over them, and a projection connected to the movable contact-arm, adapted to co-operate with and move the catch out of engagement with the projections when the contact-arm has passed by them, substantially as described.

386,772.



2. In an electrical signaling apparatus, the combination, with an electrical contact having a determinate signal indicated thereon, a traveling contact, and a motor for moving it over the first-mentioned contact, of one or more teeth or projections arranged to be projected in the path of the traveling contact, a catch for holding said teeth in projected position, and connections between said catch and motor, whereby the former will be operated by the latter and the teeth or any of them allowed to return to normal position after the signal has been transmitted, substantially as described.

3. In an electrical signaling apparatus, the combination, with a circuit-breaker arranged to transmit a determinate signal, and a motor for operating the same, of one or more teeth or projections arranged to co-operate with the circuit-breaker to vary the signal sent, a catch for holding said teeth in operative position, and connections between said teeth and the motor for releasing the latter when the former are placed in operative position, and other connections between said catch and motor for allowing the return of the teeth to normal position after the transmission of the signal, substantially as described.

4. In an electrical signaling device, the combination, with the circuit making and breaking contacts arranged for sending a determinate signal, of one or more teeth or blocks arranged to co-operate with the circuit making and breaking contacts to vary the signal sent, and a removable key having portions of its operating-surface arranged to operate one or more of said teeth, so as to vary the normal signal to correspond with the surface of the key employed, substantially as described.

5. In an electrical signaling apparatus, the combination, with the circuit making and breaking contacts, of a series of slide-bars provided with insulating-teeth *l*, severally adjustable within the path of movement of the contacts, so as to vary the normal operation of the same, and a key, *y*, for moving said bars to adjust the same, substantially as described.

6. In an electrical signaling apparatus, the combination, with a stationary contact and a movable contact arranged to transmit a determinate signal, of a series of slide-bars, *k*, provided with teeth *l*, adapted to be adjusted within the path of the movable contact, pedal-levers *w*, provided with pins or projections *w'*, and key *y*, substantially as described.

7. In an electrical signaling apparatus, the combination, with the stationary contact and the movable contact arranged to transmit a determinate signal, of a series of slide-bars, *k*, having notches *v*, and provided with teeth *l*, adapted to be adjusted within the path of the movable contact, the levers *s s'*, provided with pins *u*, pedal *w*, provided with pins or projections *w'*, and key *y*, substantially as described.

8. In a signaling apparatus, the combination, with the circuit-varying contacts arranged to transmit a predetermined signal, of one or more projections arranged to operate upon the contacts to cause them to vary the signal from the normal, and a removable key for co-operating with the said projections to place one or more of them in position to vary the signal in accordance with the particular key employed, substantially as described.

9. In a signaling apparatus, the combination, with the circuit-varying contacts arranged to transmit a predetermined signal, of one or more teeth or projections arranged to operate upon the contacts to cause them to vary the signal from the normal, a catch for holding said teeth in position to cause this variance, and a removable key for co-operating with said projections to place one or more of them in position to vary the signal in accordance with the particular key employed, substantially as described.

10. In a signaling apparatus, the combination, with the circuit-varying contacts arranged to transmit a predetermined signal and a motor, of one or more teeth or projections arranged to operate upon the contacts to cause them to vary the signal from the normal when projected, a catch for holding said teeth projected and a projection operated by the motor for releasing said catch when the signal has been sent, and a removable key for projecting one or more of the teeth and thus varying the signal in accordance with the particular key employed, substantially as described.

386,773. ADVERTISING NOVELTY. WILLIAM DEBUS, Philadelphia, Pa. Filed Nov. 22, 1887. Serial No. 256,871. (No model.)



Claim.—1. In a surprise-shield, a base-plate and a movable plate or cover loosely connected thereto, in which the covered face or faces of the said plates are formed with words or characters which it is desired to suddenly expose to the eye by causing the said movable plate, when the shield is open, to lie in a plane parallel to that of the base-plate, in combination with a lock or catch for holding the two parts one in front of the other.

2. In a surprise-shield, a base-plate and a movable plate or cover loosely connected thereto, and in which the covered face or faces of the said plates are formed with words or characters which it is desired to suddenly expose to the eye, in combination with a lock or catch for holding the two parts one in front of the other, and a string connecting with said lock or catch, whereby it may be operated from a distance.

3. In a surprise-shield, a base-plate and a movable plate or cover loosely connected thereto, in which the covered face or faces of the said plates are formed with words or characters which it is desired to suddenly expose to the eye, in combination with a lock or catch for holding the two parts one in front of the other, a string connecting with said lock or catch, whereby it may be operated from a distance, and a spring to forcibly separate said plates when the string is pulled.

4. The combination of the back plate, A, having means for attachment to the wearer, a front plate, B, hinged thereto at the bottom, a catch to hold said front plate up against the back plate, and striking words or characters upon the faces of one or both of said plates, which words or characters on the back plate are normally concealed by said front plate, but are exposed to view by causing said front plate to move to a plane parallel to that of the back plate.

5. The combination of the back plate, A, having means for attachment to the wearer located on its back, a front plate, B, hinged thereto at the bottom, a catch to hold said front plate up against the back plate, and striking words or characters upon the faces of one or both of said plates, a spring to force said plates apart, and a string connecting with said catch, whereby it may be operated from a distance.

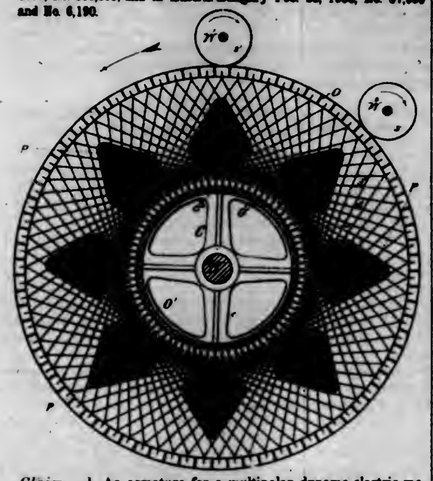
386,774. ROTARY ENGINE. CLARK W. DOTEN, Boston, Mass., assignor of three-fourths to Eugene H. Morse, Samuel P. Blackburn, and Calvin A. Austin, all of same place. Filed July 16, 1887. Serial No. 244,566. (No model.)



Claim.—A rotary engine consisting of a cylinder having a greater

area of steam-space provided in the exhaust portion than in the inlet portion, and provided with a hub having two pistons, and having the heads of the cylinder provided with packing, which forms joints with the opposite end faces thereof, as described.

386,775. DYNAMO-ELECTRIC MACHINE. WALDEMAR PETERSEN, Berlin, Germany. Filed Nov. 4, 1887. Serial No. 254,243. (No model.) Patented in Belgium Sept. 27, 1887, No. 79,008; in France Sept. 27, 1887, No. 186,008, and in Austria-Hungary Feb. 26, 1888, No. 37,980 and No. 6,190.



Claim.—1. An armature for a multipolar dynamo-electric machine having two series of contact-points arranged either parallel to or concentric with one another, a conductor connecting said contact-points, arranged to form a series of partial triangles having their apices at the said contact-points and imaginary bases, the conductor being continued progressively throughout the entire series of contact-points, so that at the termination of the winding said conductor returns upon itself at the point of starting, substantially as and for the purpose specified.

2. An armature for a multipolar dynamo-electric machine having two series of contact-points arranged either parallel to or concentric with one another, a continuous conductor connecting said contact-points, arranged to form a series of partial triangles having their apices at the said contact-points, and imaginary bases slightly greater than the angular distance between two like poles of the field-magnets, the conductor being continued progressively throughout the entire series of contact-points, so that at the termination of the winding said conductor returns upon itself at the point of starting, substantially as described.

3. An armature for a multipolar dynamo-electric machine having two series of contact-points arranged either parallel to or concentric with one another, a continuous conductor connecting said contact-points, arranged to form a series of partial triangles having their apices at the said contact-points, and imaginary bases slightly greater than the angular distance between two like poles of the field-magnets, the conductor being continued progressively throughout the entire series of contact-points, so that at the termination of the winding said conductor returns upon itself at the point of starting, and field-magnet poles substantially corresponding to the angles produced by the intersections or crossings of said conductor, substantially as described.

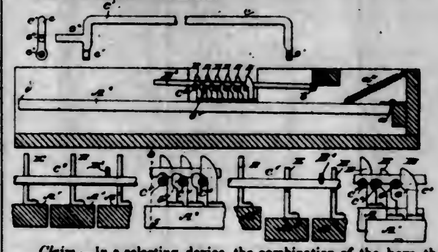
4. An armature for a multipolar dynamo-electric machine having two series of contact-points of uneven number, a conductor arranged to form a series of partial triangles or two sides of a triangle with apices at said contact-points in both series, the said conductor being carried continuously and progressively throughout the entire series of contacts until at its termination it returns upon itself at the point of starting, substantially as described.

5. In a disk-armature, a pair of concentric rings, each containing a series of contact-points, and a conductor extending from one to the other ring on lines approximately tangent to the inner ring to one of the contact-points on the other ring, and thence returning directly and substantially at a tangent to another contact-point on the first ring, and so proceeding progressively throughout the entire series of contact-points until it returns upon itself at the starting-point, in combination with a series of field-magnets having poles substantially corresponding to the angles produced by the intersections or crossings of said conductor, substantially as described.

6. The combination, with an armature having a series of peripheral contacts, of a plurality of current-collectors, each comprising two revoluble contacts, one in contact with the armature and the other with a conductive fluid, and a conductive connection between the two, substantially as described.

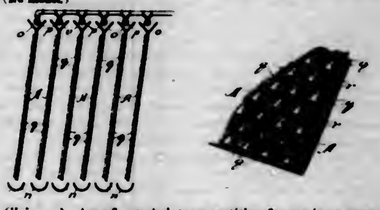
7. The combination, with an armature having a series of peripheral contacts, of a plurality of current-collectors, each comprising two revoluble conductors, one in contact with the armature and the other in contact with a conducting-fluid contained in a conductive casing provided with means for securing thereto the line-wires, and a conductive connection between said rolling conductors, substantially as and for the purpose specified.

386,776. DEVICE FOR OPERATING A SET OF LEVERS. HERVEY D. GARIS, Chicago, Ill. Filed June 24, 1886. Renewed Apr. 20, 1887. Serial No. 235,197. (No model.)



Claim.—In a selecting device, the combination of the keys, the tumblers, and the tumbler-supports, said tumblers having notches distributed therein, as described, so that there is in each tumbler a notch corresponding to every tumbler-support, and said tumbler-supports being movable to enable them to enter said notches, substantially as described.

386,777. APPARATUS FOR MOISTENING AND CLEANING AIR. WILLIAM GRIESSER, Chicago, Ill. Filed Oct. 14, 1887. Serial No. 252,360. (No model.)



Claim.—1. A perforated plate or partition for use in an apparatus for moistening and cleansing air, having its surface provided with raised portions forming guide-troughs between perforations, substantially as and for the purpose set forth.

2. In an apparatus for moistening and cleansing air, the combination, with the water-supply, of a perforated plate or partition having its surface provided with raised portions, forming guide-troughs between perforations, and supported in operative position at an acute angle, substantially as and for the purpose set forth.

3. A perforated plate or partition for use in an apparatus for moistening and cleansing air, having lugs *q* upon its surface between perforations, substantially as and for the purpose set forth.

4. A perforated plate or partition for use in an apparatus for moistening and cleansing air, having triangular lugs *q* between perforations and extending to the latter, substantially as and for the purpose set forth.

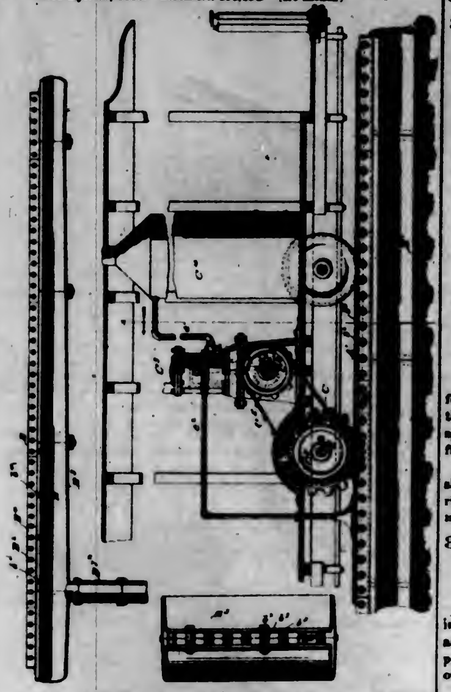
386,778. SOLE FOR BOOTS OR SHOES. ALEXANDER HARVEY, Steubenville, Ohio. Filed Oct. 29, 1887. Serial No. 253,371. (No model.)



Claim.—1. The combination of a metallic shank forming part of an outer sole, and a wooden shank forming part of an inner sole, with leather fore parts for both, together forming soles for boots and shoes, in the manner substantially as described.

2. The combination of a metallic shank provided with penetrating points, forming part of an outer sole, and a wooden shank forming part of an inner sole, with leather fore parts for both, together forming soles for boots and shoes, in the manner substantially as described.

386,779. RAILWAY TRACTION DEVICE. DEXTER B. HARDY, Lake View, assignor of one-fourth to Melville E. Dayton, Chicago, Ill. Filed Apr. 17, 1886. Serial No. 199,194. (No model.)



Claim.—1. The combination, with track-rails, an upwardly-open conduit, and an open rack, the spaces between the teeth of which communicate with the interior of the conduit, of a car provided with wheels fitted to the track, a motor mounted on the car, and a spur-wheel actuated by the motor and engaging the rack, substantially as described.

2. The combination, with track-rails, an open rack, and a subjacent conduit in communication with the spaces between the rack-teeth, of a car provided with opposite track-wheels mounted on an axle, a spur-wheel mounted loosely on the same axle and engaging the rack, and a motor actuating the spur-wheel, substantially as described.

3. In a traction-railway structure, the combination of an open rack and a subjacent conduit communicating with the spaces between the rack-teeth and provided with discharge-passages, substantially as described.

4. The combination, with an open rack, of a pipe below the rack having a longitudinal slot, which affords communication between the spaces between the rack-teeth and the interior of the pipe, substantially as described.

5. The combination, with an open rack set at or near the surface of a roadway, of a slotted pipe located beneath the surface of the roadway and supporting the rack, substantially as described.

6. The combination, with an embedded slotted pipe, of wrought-metal plates or bars secured in place at opposite sides of the slot of said pipe, and cross-bars connecting said wrought-metal plates and forming the teeth of the rack, substantially as described.

7. In an open rack for traction-railways, the combination, with the side plates or bars of said rack, of metal thimbles inserted between the side plates, and interior supports for said thimbles, substantially as described.

8. In a railway structure, the combination, with the separate side plates of an open rack, of metal thimbles inserted as studs between said plates, and bolts or rivets passing through said plates and thimbles, said bolts or rivets serving as ties, binding the opposite plates against the interposed thimbles, substantially as described.

9. The combination, with track-rails, of an upwardly-open conduit situated below the level of said rails, an open rack applied to the opening of the conduit and situated below the level of the rail-treads, a car fitted to the track and provided with a spur engaging said rack, and a motor rotating the spur mounted on the car, substantially as described.

386,780. SIGN, ADVERTISING-CARD, &c. THEODORE P. HEBERLEIN, Connersville, Ind., assignor of one-half to Francis T. Reese, same place. Filed Aug. 18, 1887. Serial No. 247,241. (No model.)



Claim.—1. The sign-blank hereinbefore described, having the folding lines *e*, and having the three characters or designs printed thereon, one on the spaces *f*, another on spaces *g*, and the third on spaces *h*, so that when the blank is folded the three will show, each from a different position, substantially as described.

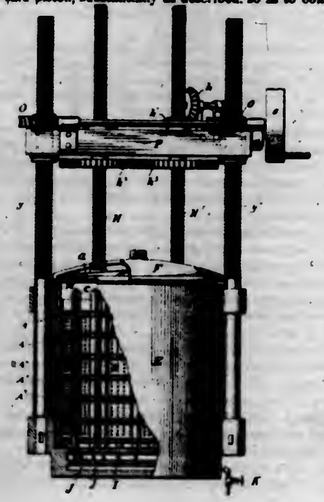
2. The improved sign hereinbefore described, consisting of the sheet B, folded to form the ribs *b*, and having the spaces between the ribs and the opposite sides of the ribs painted or ornamented in the manner set forth.

386,781. APPARATUS FOR DESICCATING MATERIALS. THOMAS R. HOUSEMAN and CHRISTIAN R. M. STROWLER, Philadelphia, Pa., assignors to the United States Food Fertilizer and Manufacturing Company, of Pennsylvania. Filed Sept. 23, 1887. Serial No. 250,462. (No model.)

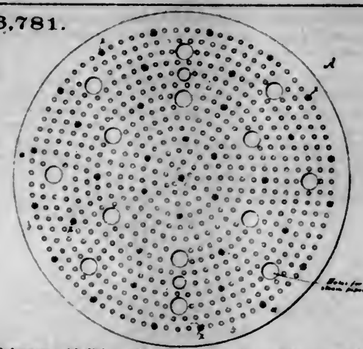
Claim.—1. In combination, perforated disks, a series of pipes passing through said disks, into which heat is carried, a piston, and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it, and means to carry off said liquid.

2. In combination, perforated disks, a series of pipes passing through said disks, in which heat is carried and radiated through the mass, a perforated cylinder surrounding said disks, a cylinder surrounding said perforated cylinder, provided with channels, a piston, and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it, substantially as and for the purpose specified.

3. In combination, double perforated disks having supports and divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a piston, and mechanism to operate said piston, substantially as described, so as to compress any



386,781.



material upon said disks and desiccate it, substantially as and for the purpose specified.

4. In combination, double perforated disks having supports and divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a perforated cylinder having one or more channels surrounding said disks, a cylinder surrounding said perforated cylinder, a piston, and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it, substantially as and for the purpose specified.

5. In combination, double perforated disks, supports and divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a series of pipes passing up through said disks in which heat is conveyed, a perforated cylinder surrounding said disks, a cylinder surrounding said perforated cylinder having one or more channels, a piston, and mechanism to operate said piston, substantially as described, so as to compress any material upon said receptacles.

6. In combination, perforated disks, a series of pipes, C, passing through said disks, a pipe, c, in each of said pipes, an inlet for steam into said pipes C, and an outlet from said pipes c for condensed steam, a piston, and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it.

7. In combination, perforated disks, a series of pipes passing through said perforated disks in which heat is carried, a piston, screws H H', bevel-gear *h h'*, spur-wheels h^2 h^3, whereby said piston compresses any material upon said disks and desiccates it.

8. In combination, perforated disks, a series of pipes passing through said disks through which heat is carried, a piston, screws H H', bevel-gear *h h'*, spur-wheels h^2 h^3, beam P, worm-gearing O O, internally threaded, hubs Z Z', and screws *y y'*, whereby said piston compresses any material upon said disks and desiccates it.

9. In combination, a piston, perforated disks, and guides upon which said disks are strung, said guides provided with orifices, whereby the disks may be locked to the guides below the lowermost disk and above the piston.

10. In combination, a piston, perforated disks, guides upon which said disks are strung, said guides provided with orifices, whereby the disks may be locked to the guides below the lowermost disk and above the piston, and mechanism, substantially as described, to elevate said piston, whereby the disks may be elevated.

11. In combination, double perforated disks having divisions between the upper and lower portions thereof, guides upon which said disks are strung, a series of pipes passing up through said disks in which heat is carried, a piston, screws H H', bevel-gear *h h'*, and spur-wheels h^2 h^3, whereby said piston compresses any material upon said disks and desiccates it.

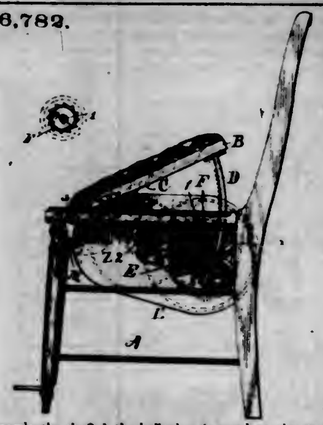
12. In combination, double perforated disks having divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a series of pipes passing up through said disks, a piston, screws H H', bevel-gear *h h'* and spur-wheels h^2 h^3, beam P, worm-gearing O O, internally threaded, hubs Z Z', and screws *y y'*, whereby said piston compresses any material upon said disks and desiccates it.

13. In combination, perforated disks, a series of pipes passing through said perforated disks in which heat is carried, a piston-beam, P, worm-gearing O O, internally threaded, hubs Z Z', and screws *y y'*.

386,782. SEWING-MACHINE MOTOR. THOMAS W. HUGHES, Atlanta, Ga., assignor of one-half to Wilton G. Fortson, same place. Filed Sept. 1, 1887. Serial No. 248,500. (No model.)

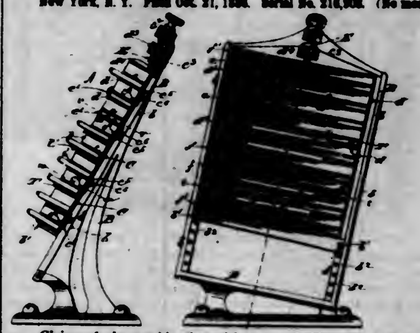
Claim.—In a sewing-machine motor, the combination of the hinged seat B, the spring C, the rack D, the pinion E, ratchets F and F', and

386,782.



their pawls, the shaft 1, the helical spring and gearing to transmit the power of said spring, and the casing 1, supporting the bearings of said gearing and shaft, substantially as set forth.

386,783. TYPE-LINE HOLDER. LOUIS K. JOHNSON and A. AUGUSTUS LOW, Brooklyn, assignors to The Alden Type Machine Company, New York, N. Y. Filed Oct. 21, 1886. Serial No. 216,903. (No model.)



Claim.—1. In combination with a type-holder, A, substantially such as described, a supporting-frame, B, formed with the inclined flanges or seats *b b*, for supporting the sides of the case A, and with means, substantially such as described, for adjusting the height of the case thereon, substantially in the manner and for the purpose described.

2. A type-holder substantially such as described formed of a shelf-frame provided with transverse shelves and of a base-plate provided with transverse shields, the two parts fitting together and being movable upon and with relation to each other, substantially in the manner and for the purpose described.

3. In a type-holder substantially such as designated, the combination, with the shelf-frame provided with transverse shelves, and with the base-plate formed with transverse shields, said parts being superposed substantially as described, of the adjusting-screw E, for effecting the adjustment of the frame D with relation to the base-plate C, substantially in the manner and for the purpose described.

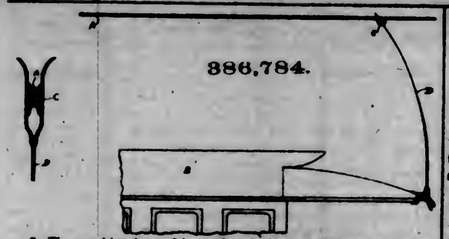
4. In a type-holder substantially such as described, the combination, with the series of inclined transverse type-channels *c'*, formed with the apertures *e* at their upper ends, of the secondary wall or partition *f*, arranged substantially in the manner and for the purpose described.

386,784. OVERHEAD WIRE-CONNECTION FOR ELECTRIC RAILWAYS. WALTER B. ENTZ, New York, N. Y. Filed May 10, 1886. Serial No. 202,094. (No model.)

Claim.—1. The combination, with an electrically-propelled vehicle, of an elevated supply-wire, a contact-wheel placed on a rod or suitable extension from the vehicle and provided with lateral guards forming an extension of the support and extending above the wire, preventing lateral displacement of the contact-wheel.

2. The combination, with an electrically-propelled vehicle, of a supply-wire, and a contact device adapted to travel along said wire and supported from a vehicle by a flexible resilient rod secured at one end, which presses the said contact device against the wire.

386,784.



3. The combination, with an electrically-propelled vehicle, of an elevated supply-wire, A, a contact-wheel, C, and a flexible resilient rod or whip, D, having a projecting guard extending beyond the bearing of wheel C and having an attachment with the vehicle.

4. The combination, with an electrically-propelled vehicle, of an elevated supply-wire, a flexible resilient rod extending from the vehicle, a contact on said rod adapted to bear against the wire, and a catch for holding said rod in an upright position.

5. The combination, with a car, B, of an elevated supply-wire, A, whip D, contact-wheel C, bearing against the under side of A, and having an extension of D, forming a guard, pivoted holder E, and catch G, for maintaining D in an upright position.

386,785. CHECK-PUNCH. JOHN C. LOWDEN, Kansas City, Mo. Filed Dec. 20, 1887. Serial No. 258,092. (No model.)



Claim.—1. In a paper-perforating machine, the combination of a number of punches, each connected to a lever, 12, and a hand-lever adapted to be moved over any one of the punch-levers, substantially as and for the purpose set forth.

2. In a paper-perforating machine, the combination of a number of punches, each connected to a lever, 12, and a hand-lever adapted to be moved over either one of the punch-levers, and having a horn engaging beneath the lever 12, to enable positive movement to be imparted by the hand-lever to the lever 12, both upward and downward, substantially as set forth.

386,786. METALLIC ROD-PACKING. JAMES MURRAY, Walla Walla Junction, Wash. Filed Jan. 16, 1888. Serial No. 260,992. (No model.)



Claim.—1. A metallic packing for valve and piston rods, consisting of the larger rings formed with corresponding interlocking flanges and grooves and provided on one of their sides with a pin or projection, in combination with a series of smaller split elastic rings fitting between and within said larger rings in such manner as that the pins of the larger rings will enter the spaces where they are cut, substantially as described.

2. In a metallic packing for valve and piston rods, the combination, with the studs and adjusting-nuts and the gland or follower K, having grooves *e f*, of the larger metallic rings formed with corresponding interlocking flanges and provided on one of their sides with a pin or projection, and the series of small split elastic rings having the spaces where they are cut entered by the pins of the larger rings, substantially as described.

3. In a metallic packing for valve and piston rods, the combination, with the studs and adjusting-nuts, and the gland or follower K, having grooves *e f*, of the larger metallic rings formed with corresponding interlocking flanges and provided on one of their sides with a pin or projection, and the series of small split elastic rings having the spaces where they are cut entered by the pins of the larger rings, one of the said larger rings being provided with an oil cup or receptacle, substantially as described.

386,787. PENCIL-HOLDER. LEWIS B. MYERS, Fremont, Ohio. Filed Oct. 31, 1887. Serial No. 253,893. (No model.)



Claim.—1. A pencil holder or clasp formed of a single piece of wire bent at one end to form a continuous loop or coil to pass around the pencil, and at the other end bent to form a clamping-arm, substantially as and for the purpose described.

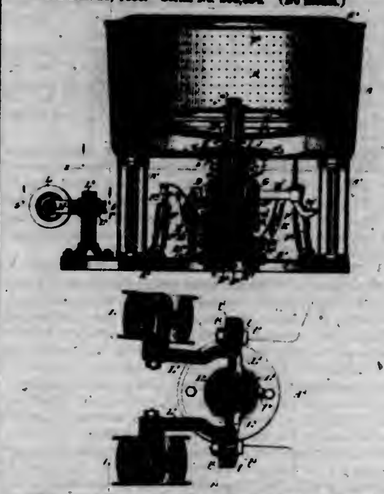
2. A pencil holder or clasp constructed of a single piece of wire bent to form two loops or part loops for passing around the pencil, and a clamping-arm for fastening the pencil to the garment, substantially as and for the purpose described.

3. A pencil holder or clasp constructed of a single piece of wire, one end of which is bent to form a loop or part loop, and at an intermediate point is bent to form another loop carrying a clamping-arm, substantially as and for the purpose described.

4. A pencil holder or clasp constructed of a single piece of wire, bent to form an inner and outer loop for passing around the pencil, the outer loop being provided at a suitable point with coils to form a spring for actuating the clamping-arm carried by the spring, substantially as and for the purpose described.

5. The herein-described pencil holder or clasp, constructed of a single piece of wire bent to form an inner and outer loop for passing around the pencil, a spring clamping-arm at right angles to the loops, and a guide for the clamping-arm, substantially as and for the purpose described.

386,788. CENTRIFUGAL MACHINE. GEORGE C. ROGERS, Chicago, Ill., assignor to the Troy Laundry Machinery Company, Troy, N. Y. Filed Mar. 26, 1888. Serial No. 268,254. (No model.)



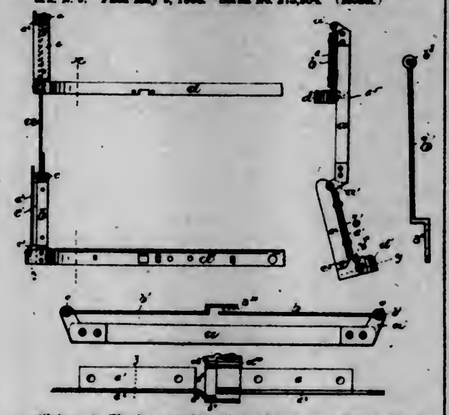
Claim.—1. The combination, with the perforated revolving cylinder of a centrifugal extractor, a shaft supporting the same, a bearing for the shaft constructed to allow the inclination of the shaft, and an exterior shell or receptacle provided with an aperture in its bottom larger than the shaft for the passage of the latter, of a ring mounted upon the shaft and adapted to rotate freely thereon and a stationary ring in position for engagement with the ring upon the shaft when said shaft is inclined, substantially as described.

2. The combination, with the perforated revolving cylinder of a centrifugal extractor, a shaft supporting the same, a bearing for the shaft constructed to allow the inclination of the shaft, and an exterior shell or receptacle provided in its bottom with an aperture larger than the shaft, of a ring mounted to rotate freely upon the shaft, said ring being provided with a peripheral cushion, and a stationary ring sustained in position to engage the ring upon the shaft when said shaft is inclined, substantially as described.

3. In a centrifugal extractor, the combination, with the revolving cylinder and shaft, of a drive-pulley upon the shaft, a frame provided with a cylindric standard, L^2, and a horizontal bar, L^3, fitted to slide upon the standard, arms L' L', attached to the said horizontal bar, and guide-pulleys L^5, mounted upon the outer ends of said arms, the joints between said arms and the horizontal bar being formed with concave

and convex surfaces having the form of spherical segments and affording universal angular adjustment of the said arms with relation to the bar, substantially as described.

386,789. BAG OR SATCHEL FRAME. WILLIAM ROEHRS, Newark, N. J. Filed May 9, 1888. Serial No. 273,204. (Model.)



Claim.—1. The improved bag-frame herein described, combining therein end braces, *a a*, having an upwardly-turned extension, *a'*, and inlays *b b'*, in line or approximately in line with the pivots upon said extensions, and longitudinal pieces *d d'*, connecting the free ends of said inlays, substantially as and for the purposes set forth.

2. The combination, with end braces, *a*, having upward extensions at the ends thereof, and longitudinal pieces *d d'*, of inlays *b b'* for the inner and outer jaws, of which those for the inner jaws are straight at their free extremities, and the others, where they overlie the first said inlays, are bent to form a recess, b^2, substantially as and for the purposes set forth.

3. The combination, in a bag-frame, with vertically-disposed strap-like bars *a*, of hinged pieces *a'*, secured thereon and projecting upward therefrom, strap-like inlays *b b'*, notched, as at b^2, and turned, as at b^3, to receive the hinge-pin *c*, and said hinge-pin, one of the said inlays being bent at its free extremity to allow for the opposite or underlying inlay and longitudinal bars, all said parts being arranged and combined substantially as and for the purposes set forth.

4. In a bag-frame, the combination, with end braces or bars, *a a*, of flanged end pieces, *c c'*, inlays *b b*, and longitudinal pieces *d d'*, connecting the end pieces at the opposite ends of the frame, the flange of one of which end pieces is bent as c^2, where it engages the longitudinal piece *c'*, the body portion of the flanges of the said end pieces of the opposite jaws lying longitudinally in line, the said parts being combined substantially as and for the purposes set forth.

5. The combination, with end braces, *a*, of longitudinal pieces *d d'*, inlays *b b'*, and flanged end pieces, *c c'*, the flange of the inner of said end pieces being beveled, as shown at c^3, said parts being arranged and combined substantially as and for the purposes set forth.

6. The combination, with end braces *a*, inlays *b b'*, and longitudinal pieces *d d'*, of flanged pieces *c c'*, the latter being cut away at their free ends to allow the longitudinal piece to be riveted to the inlay, and projecting, as at c^2, to engage the extremity of the said longitudinal piece and riveted thereto, said parts being arranged and combined substantially as and for the purposes set forth.

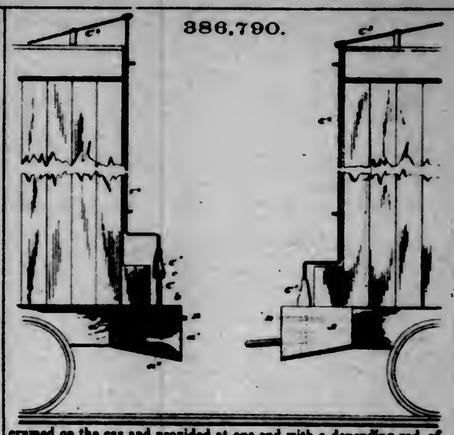
7. In a bag-frame, the combination, with end braces and longitudinal pieces, of hinge-pieces *a'*, secured upon said end braces at the opposite extremities thereof, and having upwardly-extending oppositely-inclined extensions adapted to receive or provide pivotal bearings for the jaws of the bag-frame, substantially as and for the purposes set forth.

8. In a bag-frame, in combination with vertically-disposed strap-like braces *a* and longitudinal pieces, hinge-pieces *a'*, riveted to said braces at the opposite ends thereof and provided with upward extensions, inlays *b b'*, pivoted upon said hinge-pieces, said inlays being provided with notches b^2 to receive the hinge-piece, and bent, as at b^3, to engage the hinge-pins, and said hinge-pins, said parts being arranged and combined substantially as and for the purposes set forth.

386,790. CAR-COUPLING. GEORGE STRADER, Olive Hill, Ky., assignor of one-half to Samuel V. Wilcox, same place. Filed Jan. 26, 1888. Serial No. 261,977. (No model.)

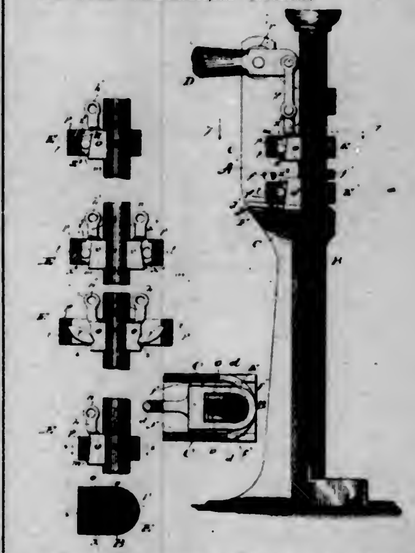
Claim.—1. The combination, with a draw-head having a perforated spring-pressed slide above the link-opening, and a lever fulcrumed on the car and provided at one end with a depending rod, of a block secured to the lower end of said rod, and having an open-sided inclined slot, a coupling-pin seated at its lower end in the pin-opening of the draw-head, and its head swivelingly seated at a point below the inclined inner wall of the socket-block, substantially as described.

386,790.



2. The combination, with a draw-head having a perforated spring-pressed slide above the link-opening, and a lever fulcrumed on the car and provided at one end with a depending rod having its lower end threaded, of a socket-block provided at top with a tapped opening to receive said threaded end of the rod, and with an open-sided inclined slot, a coupling-pin seated at its lower end in the pin-opening of the draw-head, and having its head swivelingly seated below the inclined inner wall of the slot or socket, substantially as described.

386,791. LIFTING-JACK. AXEL A. STRÖM, Austin, Ill. Filed Mar. 12, 1888. Serial No. 266,946. (No model.)



Claim.—1. In a lifting-jack, the combination of a clutch-box or collar on the lifting-bar, a wedge embraced between the lifting-bar and a side of the clutch-box or collar, which it supports and carries, and in which it is longitudinally movable, and a lever connected with the wedge and operating to move it lengthwise, substantially as described.

2. In a lifting-jack, the combination of a clutch-box or collar on the lifting-bar, a wedge embraced between the lifting-bar and a side of the clutch-box or collar, which it supports and carries, and in which it is longitudinally movable, and having a perpendicular surface against the lifting-bar and an opposite inclined surface, and a lever connected with the wedge and operating to move it lengthwise, substantially as described.

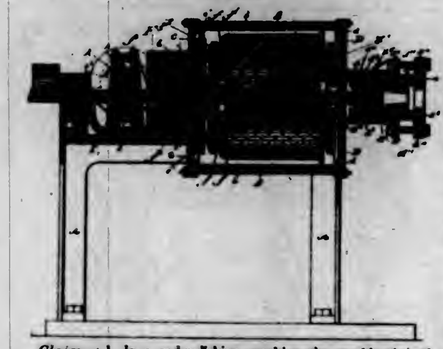
3. In a lifting-jack, the combination of a clutch-box or collar on the lifting-bar, a wedge longitudinally movable in and supporting and carrying the clutch-box or collar, and having a perpendicular surface against the lifting-bar and an opposite inclined surface, a roller confined between the inclined surface of the wedge and the adjacent side of the clutch-box or collar, and a lever connected with the wedge and operating to move it lengthwise, substantially as described.

4. In a lifting-jack, the combination of a clutch-box or collar, *p*, on the lifting-bar, and provided with a removable bearing, *k*, against one inner side, a wedge, *o*, longitudinally movable in and supporting and carrying the clutch-box or collar, and having a perpendicular surface against the lifting-bar and an opposite inclined surface, a roller, *l*, confined between the inclined surface of the wedge and operating to move it lengthwise, and a lever, D, connected with the wedge, substantially as described.

5. In a lifting-jack, the combination of a lifting-clutch, E, comprising a clutch-box or collar on the lifting-bar, and a wedge embraced between the lifting-bar and a side of the clutch-box or collar, in which it is longitudinally movable, a lever applied to the wedge, a stop for the lifting-clutch, a retaining-clutch comprising a clutch-box or collar on the lifting-bar, and a practically stationary wedge embraced between the lifting-bar and a side of the said clutch-box, and a lever, F, for the clutch-box or collar of the retaining-clutch on the stationary wedge to release the lifting-bar, substantially as described.

6. In a lifting-jack, the combination of a lifting-clutch, E, comprising a clutch-box or collar on the lifting-bar, a wedge longitudinally movable in the clutch-box or collar, and having a perpendicular surface against the lifting-bar and an opposite inclined surface, and a roller confined between the inclined surface of the wedge and the adjacent side of the clutch-box or collar, a lever, D, applied to the wedge and operating to move it lengthwise, a stop for the lifting-clutch, a retaining-clutch, E', comprising a clutch-box or collar on the lifting-bar, a practically stationary wedge in the said clutch-box or collar, and having a perpendicular surface against the lifting-bar and an opposite inclined surface, and a roller confined between the inclined surface of the said wedge and the adjacent side of the clutch-box or collar, and a lever, F, for moving the clutch-box or collar of the retaining-clutch on the stationary wedge to release the lifting-bar, substantially as described.

386,792. MACHINE FOR POLISHING RODS. LEROY SUTTERS, Chicago, Ill., assignor to Richard Sauer, Baltimore, Md. Filed Dec. 10, 1887. Serial No. 257,689. (No model.)



Claim.—1. In a rod-polishing machine, the combination of a revolving frame-work, a pair of belt-pulleys mounted in said frame-work, a slack belt running upon said pulleys, means for giving revolution to said frame-work, and means for revolving the pulleys, with a presser-pad secured to said frame and revolving with it and suitably located to press the rod against the belt, substantially as described.

2. In a rod-polishing machine, a revolving frame-work carrying a pair of belt-pulleys whose shafts are journaled in the frame-work and provided with pinions, as *c' c'*, on the ends of said shafts, in combination with a stationary spur-wheel, as E, meshing with the pinions on the ends of the shafts, and means attached to the frame-work for holding the rod against the belt, substantially as described.

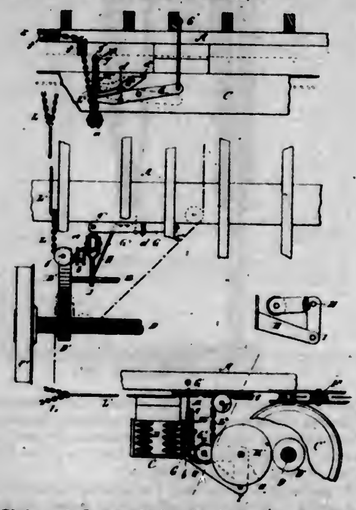
3. In a rod-polishing machine, a revolving polisher consisting of a frame suitably mounted and provided with a pair of rollers or pulleys upon which is secured a polishing-belt, with means of giving revolution to the polisher and traveling motion to the belt.

4. In a rod-polishing machine, the combination of a closed drum holding the polishing material with a revolving polisher which is provided with a traveling belt, and means for giving revolution to the polisher and traveling motion to said belt, substantially as described.

5. In a rod-polishing machine, the combination of a cylinder holding the polishing material with a revolving polisher constructed of a frame-work in which are mounted two rollers and upon them a belt, with means for revolving the polisher and of giving running motion to the belt, substantially as described.

6. In a rod-polishing machine, the combination of a cylinder holding the polishing material with a revolving polisher constructed of a frame-work in which are mounted two rollers upon which is based a slack belt, said polisher being also provided with a pressure-pad, substantially as described, to counterbalance the pressure of the belt, and a rod-wiper located outside of the drum and beyond it, substantially as described.

386,793. CAR-BRAKE. WILLIAM B. TURNER, New York, N. Y., assignor to the Turner-Smart Automatic Brake Company. Filed Sept. 21, 1887. Serial No. 249,986. (No model.)



Claim.—1. In a car-brake wherein the inward motion of the draw-bar is requisite for bringing the brake mechanism into operation, the combination, with brake-applying mechanism, substantially as herein shown and described, embracing a spring whose normal tension may be adjusted by hand for regulating or determining the power or pressure of the brake, of auxiliary mechanism consisting of lever G, pivoted on the car-truck, rod G', secured to the car-frame, and rocking block G^2, connecting with rod M, substantially as shown and described, connecting the car-body with said regulating-spring, for the purpose of automatically increasing the tension of the latter, and consequently increasing the brake-pressure in proportion to the increase in weight of the car-load, as set forth.

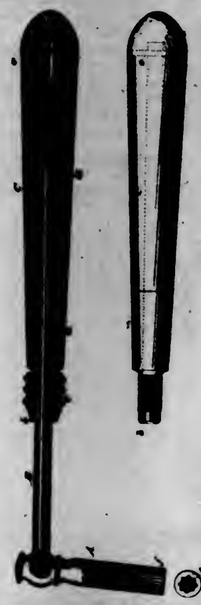
2. In an automatic car-brake, substantially as set forth, wherein an adjustable pressure-regulating spring is made operative to tighten or slacken the intermediate link between the draw-bar connections proper and the brake-applying mechanism proper, the combination, with said spring and intermediate link, of a device connected therewith and with the car-body, substantially as described, whereby said spring may be compressed and said intermediate link be tightened in proportion to the increase in the car-load by the consequent depression of the car-body, as set forth.

3. The combination, with the elbow-lever I, carrying the friction-wheel shaft, and the intermediate link, I, I', I^2, connecting said lever with the draw-bar connections proper, as set forth, and the pressure-regulating spring, rod, washer, and nut, M M' *g g'*, of rocking block G^2 and lever G, arranged on the car-truck, and the rod G', connecting the said lever G with the car-body, all arranged and operating substantially as and for the purpose set forth.

4. In a momentum car-brake, the combination, with the spring adapted and arranged to be operated or adjusted for regulating the normal pressure of the brake, of a suitable device connecting the said spring and the car-body, substantially as herein shown and described, whereby the former is compressed by the depression of the latter in consequence of and in proportion to the weight of its lading, as set forth.

REISSUES.

10,946. TUNING-HAMMER. FRANCIS W. HALE, Boston, Mass. Filed Mar. 5, 1866. Serial No. 295,302. Original No. 310,672, dated Jan. 13, 1869.



Claim.—1. The combination of the tubular handle C, the tubular ferrule *a* thereon, having its forward part elongated and reduced, split, and externally threaded, the round stem B, adapted to slide and swivel in said handle, the clamping-nut *c*, and the head A *e f* of the tuning-hammer, as and for the purpose set forth.

2. The combination, of the head A *e f* of a tuning-hammer, formed of steel, threaded at its lower part, and hardened thereat, and the tip *f*, also of steel soft at its threaded nipple and hardened at its lower end, whereby the threads of the tip bind in the head, which prevents the tip from unscrewing when the hammer is turned to let down a string, as set forth.

3. In a tuning-hammer, the combination, with the head A and stem B, united by screw-threaded nipple and socket, of the fork *d* upon the end of the stem, and the fixed pin in the interior of the handle for the purpose of screwing the stem into and unscrewing it from the head, as set forth.

10,947. FOLDING MUSIC-STAND. J. HENRY MAGEE, Jr., Baltimore, Md. Filed Apr. 10, 1868. Serial No. 270,284. Original No. 277,630, dated Feb. 7, 1868.

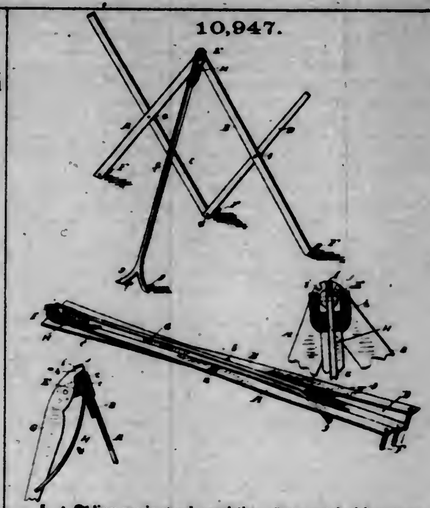
Claim.—1. A folding music-stand comprising a system of pivoted levers forming a support for the music and a leg connected at the junction of two of the levers, and forming with said levers a tripod to support the same, whereby the levers perform the double function of supporting the music and act as legs for the stand, substantially as described.

2. A folding music-stand comprising a system of pivoted levers, a pivoted leg connected to the top joint of the same and forming with said levers a tripod support, and a holder, as the spring H, for keeping the leg in the open position, substantially as described.

3. A folding music-stand consisting of the lazy-tongs, a leg pivoted near the top and forming with two members of said lazy-tongs a tripod support for holding the same in an inclined position, and the spring H, for forcing the leg rearward as the lazy-tongs are separated, as and for the purpose described.

4. A folding music-stand consisting of the lazy-tongs, a supporting-leg pivotally connected with the tongs at its top joint and forming with two members of said lazy-tongs a tripod support, and adapted to fold against said lazy-tongs and to be locked thereto, and a spring interposed between the leg and lazy-tongs for forcing the leg away from the tongs when the latter are separated to release the leg, as and for the purpose described.

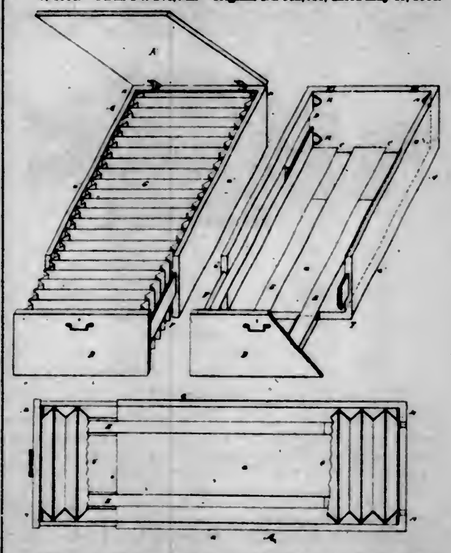
10,947.



5. A folding music-stand consisting of the notched lazy-tongs, a supporting-leg pivotally connected to the lazy-tongs, and having a nib or shoulder adapted to enter the notches of the lazy-tongs to prevent the same from spreading, and a spring for forcing the lower end of the leg away from the lazy-tongs, substantially as described.

6. A folding music-stand consisting of the pivoted links A B C D, a stud, E, connected to the meeting end of the links A B, a leg pivoted to the stud, and having a projecting nib, *k*, at its extreme upper end above the pivot-pin, adapted to enter one of a series of notches in the links A B, and a spring for forcing the lower end of the leg away from the tongs, as and for the purposes described.

10,948. BILL-FILE. EDWIN L. MATTHEWS, Ada, Minn. Filed June 9, 1868. Serial No. 276,743. Original No. 302,716, dated May 15, 1868.



Claim.—1. The combination, with a pair of telescoping parts, constituting an extensible bill-file case, of an expansible bill-file secured within said telescoping parts, substantially as described.

2. The combination, with an extensible bill-file case, consisting, essentially, of a pair of telescoping parts, of a removable bellows bill-file detachably connected at its opposite ends to the end walls of the telescoping parts of said case, substantially as described.

3. In combination, the box-like body A, having its front end removed and provided with the grooves C D, the end B, provided with the slides E and F, working in said grooves, and the bellows file G, attached at one end to the relatively fixed part A and at the other to the relatively movable part B, as and for the purpose set forth.

4. In combination with a bill-file case, a bellows bill-file adapted to fit the same and having end boards provided with projecting outer edges, and hook-shaped legs secured in the ends of said case in pairs, with their hook-shaped portions facing each other, and adapted to detachably secure the ends of the bellows file to the ends of the case, as and for the purpose set forth.

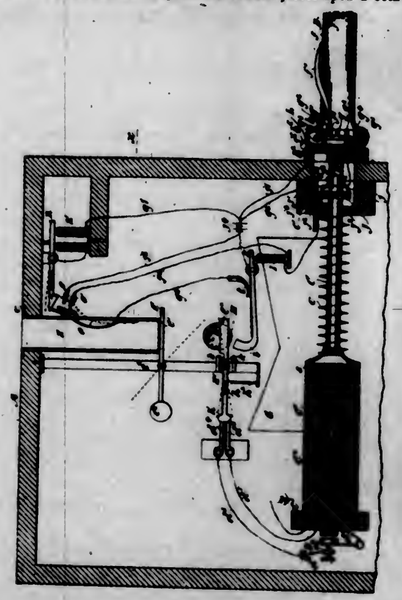
5. The extensible bill-file and expansible bill-file described, consisting of the box-like body A, having one end removed and provided with the grooves C and D, the movable end B, provided with the slides E and F, working in said grooves, the lid K, pivotally secured to the rear end of the body A, and the bellows file G, having its opposite ends secured by the legs H, one end to the relatively fixed part A and the other to the movable part B, substantially as and for the purpose set forth.

10,949. COIN-OPERATED INDUCTION-COIL. PERRY G. WILLIAMS and ALFRED W. BROWNE, Brooklyn, N. Y.; said Browne assignor to said Williams. Filed Jan. 28, 1868. Serial No. 261,627. Original No. 272,441, dated Nov. 1, 1867.

Claim.—1. The combination, with a case, of an induction-coil, an electric battery for energizing the same, contact-pieces, a normally-open electric circuit comprising the primary of the induction-coil, the battery, and said contact-pieces, a rocking lever adapted to be rocked into contact with said contact-pieces and close the said circuit upon a coin of desired weight and size lodging upon said lever until said coin is removed, a longitudinally-movable part in electrical contact with the secondary of the induction-coil, and two electrodes outside the case, one of said electrodes being longitudinally movable and rigidly connected with said longitudinally-movable part, substantially as specified.

2. The combination, with a case, of an induction-coil, an electric battery for energizing the same, contact-pieces, a normally-open electric circuit comprising the primary coil of the induction-coil, the battery, and said contact-pieces, and a rocking lever adapted to be rocked into contact with said contact-pieces and close the said circuit upon a coin of desired weight and size lodging upon said lever until said coin is removed, substantially as specified.

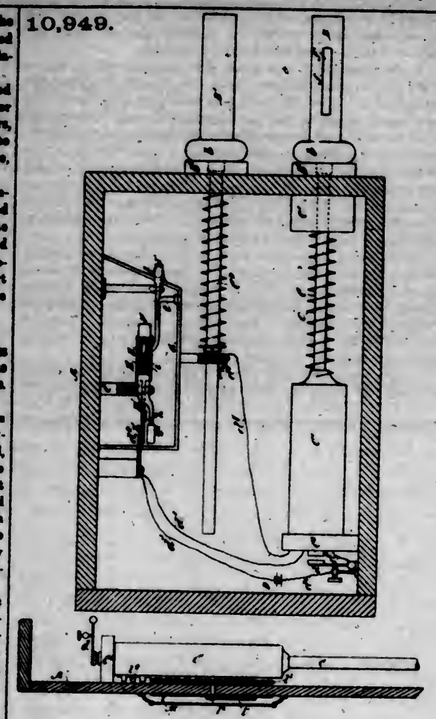
3. The combination, with a case, of an induction-coil, an electric battery for energizing the same, contact-pieces, a normally-open electric circuit comprising the primary coil of the induction-coil, the battery, and said contact-pieces, and a rocking lever adapted to be rocked into contact with said contact-pieces and close said circuit upon a coin of certain size and weight lodging upon said lever until said coin is removed, and to be moved past said contact-pieces upon a coin of greater weight than desired falling upon the lever, substantially as specified.

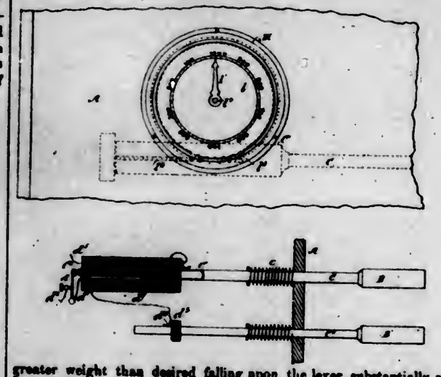


4. The combination, with a case, of an induction-coil, an electric battery for energizing the same, an electrical circuit, a lever adapted to be moved by a coin of certain weight to close said circuit and energize the induction-coil, an electro-magnet, an armature for the same, comprising a striker, a battery for energizing the electro-magnet, a circuit therefor, a movable part in contact with the secondary of the induction-coil, an electrode outside the case, and a connection between the electrode and said movable part, which when moved in one direction will cause the circuit on the electro-magnet to be closed, and thereby cause said striker to strike the coin, substantially as specified.

5. The combination, with a case, of an induction-coil, an electric battery for energizing the same, an electrical circuit comprising the primary coil of the induction-coil, a lever adapted to be moved by a coin of certain weight to close said circuit and energize the induction-coil, an electro-magnet, an armature for the same, comprising a striker, a battery for energizing the electro-magnet, a circuit therefor, an electrode outside the case, a press-piece connected with said elec-

10,949.





trode, and a switch adapted to be moved by said prem-piece to close said last-named circuit, energize the electro-magnet, and cause said striker to strike the coin, substantially as specified.

6. The combination, with a case, of an induction-coil, an electric battery for energizing the same, an electrical circuit comprising the primary coil of the induction-coil, a lever adapted to be moved by a coin of certain weight to close said circuit and energize the induction-coil, an electro-magnet, an armature for the same, comprising a striker, a battery for energizing the electro-magnet, a circuit therefor, a movable part in contact with the secondary of the induction-coil, an electrode outside the case, and a connection between the electrode and said movable part, which when moved in one direction will cause the circuit on the electro-magnet to be closed, a contact-piece adjacent to said armature, another electro-magnet, an armature therefor comprising a catch, a shaft down which a coin is to be dropped, and a spring extending into said shaft, adapted to be pressed outward by passing coin into a position where it will be secured by said catch, all being arranged and combined substantially as described, whereby when the first-named electro-magnet is energized and its armature attracted circuit will be closed on the second-named electro-magnet and said spring be released from the catch.

7. The combination, with a case, of an induction-coil, an electric battery for energizing the same, an electric circuit comprising the primary coil of the induction-coil, a lever adapted to be moved by a coin of certain weight to close said circuit and energize the induction-coil, an electro-magnet, an armature for the same comprising a striker, a battery for energizing the electro-magnet, a circuit therefor, an electrode outside the case, a prem-piece connected with said electrode and switch, adapted to be moved by said prem-piece to close said last-named circuit and energize the electro-magnet, a circuit therefor, a contact-piece adjacent to said armature, another electro-magnet, an armature therefor comprising a catch, a shaft down which a coin is to be dropped, and a spring extending into said shaft, adapted to be pressed outward by a passing coin into a position where it will be secured by said catch, all being arranged and combined substantially as described, whereby when the first-named electro-magnet is energized and its armature attracted circuit will be closed on the second-named electro-magnet and said spring be released from the catch.

8. The combination, with a case, of an indicator arranged upon the exterior thereof, and comprising a pointer, an arbor on which said pointer is mounted, a pinion on said arbor, an induction-coil, a longitudinally movable shell on said induction-coil, provided with a rack engaging said pinion, and a longitudinally-movable handle upon the outside of the case, directly connected with the shell and in line with the induction-coil, for moving said shell in one direction, substantially as specified.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE SIMONDS.

Decided July 10, 1888.

1. DIVISION OF APPLICATION.

The question of division, as decided in *ex parte Herr*, (41 O. G., 468,) re-examined, and that decision adhered to. The case of *Mosler Safe and Lock Co.* v. *Mosler, Bahmann & Co.* (43 O. G., 1115) considered.

2. PROCESS AND PRODUCT—PROCESS AND MACHINE.

When a process and product, or a process and machine, are so intimately connected that neither can exist without the other, the process is only the function of the machine, or the structure of the product or method of its construction, and when this relation does not exist the process and product and the process and machine are independent and distinct inventions, to be solicited in different applications. A process which is merely the function of a machine does not constitute patentable matter. Such a process may be an industrial fact or entity inherent in a machine, or such a process may be inherent in its product; but then it possesses no patentable novelty as a separate invention. (*Ex parte Blythe*, 30 O. G., 1294.)

On petition.

METHOD OF AND APPARATUS FOR KNURLING OR CORRUGATING THE SURFACE OF METAL ARTICLES.

Application of George F. Simonds filed November 2, 1887, No. 254,068.

Mr. Joseph P. Livermore for the applicant.

HALL, *Commissioner:*

In this application the examiner required an election of either the method or the apparatus as the sole subject of the application. He relied on the authority of *ex parte Herr*, (41 O. G., 468.) Applicant by petition asks the Commissioner to overrule these requirements.

The general conclusions of the Herr decision in so far as they affect the statutory subjects of invention as the subjects of separate patents and the specific patentable subjects in the premises—viz., the art and the machine—briefly stated are as follows:

It is impossible to consider the question of unitary inventions in one patent without having regard to the divisions of art to which they belong.

The word "art" is here used in the generic sense which it has in the constitutional provision which empowers Congress to promote the progress of science and the useful arts by securing to inventors the exclusive right to their inventions. Congress used the term in the same sense in Revised Statutes, section 4888:

Before any inventor or discoverer shall receive a patent for his invention or discovery, he shall * * * file in the Patent Office a written description of the same and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains or with which it is most nearly connected, to make, construct, compound, and use the same.

Herein a machine is impliedly asserted to be an invention appertaining to some useful art. The word "art" is the generic term which comprehends all inventions. By divisions of arts are meant the natural classes recognized by Congress in the statute which embraces every useful art—namely, the art, the machine, the manufacture, and the composition of matter. In Revised Statutes, section 4886, as is well understood, the word "art," being the definition of a class or division of inventions, has a limited and specific meaning.

The meaning of the above passage from the Herr decision is that in considering the question of unity or plurality of inventions it is necessary to have regard to the classification of inventions recognized by the statute.

41 OFFICIAL GAZETTE, page 468:

It is to be observed that Congress did not create the four general divisions specified in patent law. They exist in the nature of things, and while Congress had the power to disregard natural relations and divisions and establish artificial and arbitrary classifications, it has not seen proper to do so. * * *

Page 468:

Unlike the systems of England and other foreign countries, this one was founded upon the idea of requiring a careful, thorough, and complete examination of every application for a patent, for the purpose of determining the novelty and utility of the invention before it should receive the sanction of security by patent. Such a system could have no practical or successful operation, except by means of a proper and natural classification of the arts and the subjects of invention. * * *

Page 472:

I reaffirm the conclusion of *ex parte Blythe* in so far as it is held that Congress has recognized the natural classification of arts as existing in four great divisions, and that a single and distinct invention found clearly belonging in one ought not to be joined in the same patent with an invention belonging in another division. But I am not able to base this conclusion upon any statutory declaration or any ascertained intention of Congress to affirm or deny what may or may not be embraced in single Letters Patent, except as it may be determined from the system itself. The conclusion arises from the fact that Congress has required that each application for a patent shall be carefully examined by the Patent Office, to determine the novelty and usefulness of the invention, before Letters Patent can be secured; that it has recognized distinctly and clearly classification as a necessary part of the system; has vested the Commissioner with large discretion in the matter, and without such arrangement and classification it is impossible to carry out the express requirement of Congress as to examination. * * *

Page 473:

The definite and settled recognition of the natural and proper classification of patentable subjects will restore the practice in the Office to harmony with the system upon which it is organized, and will necessarily bring about a more definite, methodical, and systematic manner of conducting the examination of applications, and insure greater promptness, certainty, and reliability in the operations of the Office. If fairly recognized and carried out, it will remove the friction between the various divisions; and will avoid the unnecessary delays caused by the presentation of so many motions, petitions, and actions, which consume so much of the time and labor of the Office.

Under these general principles this application contains two inventions separately classified by nature and in the statute, and therefore it should be limited to include but one of these inventions.

The Herr decision treated an application having in

it, beside the question of one machine or two machines, the question raised by the application now under consideration—viz., whether a process (an art) and a machine or part of a machine can both be solicited in the same application.

The following remarks and conclusions of the Commissioner in the Herr decision apply to the case of attempted joint solicitation of a process and machine.

41 OFFICIAL GAZETTE, page 472:

Now, passing from these general considerations to their application to the present case, it will be seen that the application contains claims for a process and sub-process and claims for the mechanism or apparatus that executes these processes. The former fall within the class or division, an art; the latter within another class or division, a machine. I am aware of all that may be said in support of the idea that a process and an apparatus both conduce as means and mutually co-operate to produce a single result. But they are not one invention. They do not co-act and co-operate with each other so as to result in a third invention or combination. The process, to be patentable, must be wholly independent of the apparatus. The process is that which brings into existence the product or result. The apparatus is only the environment, the *vas everi* in or from which it operates, just as the beds of lakes and estuaries on the earth, with their tributary streams and surrounding forests, were the apparatus in which the great processes of nature were enabled in early geological periods to form coal for man in later ages.

An apparatus may combine that which is static with that which is dynamic, as in the case of apparatus for refrigeration by the use of volatile agents. The principle is the same. The apparatus furnishes the conditions, the forces of nature supply the result. So, too, in patentable methods which may be executed by machinery. The method is wholly and entirely separate and distinct from the machine. It is of the very essence and quality of such a method that it must be wholly independent of the machine and the machine of it. * * *

It is well known that the patent authorized by law is for the thing invented and not for the notion or idea existing in the mind or the mental operation which develops the invented thing. The statute does not authorize patents for invention in the latter sense. It is the actual embodied subject invented that may be secured by patent. The mental operation which may be termed "invention" or "inventing" is a subject of the metaphysics of the mind, but not of the patent law. The statute declares that—

"Any person who has invented or discovered any new and useful art, machine, manufacture, &c., may obtain a patent therefor."

It is the specific art, machine, or manufacture which may be patented—not the invention of that art, machine, &c. It is the *vendible* thing, not the *principle*. (Phillips on Patents, 107, 150; Godson on Law of Patents, 52.)

A process can be embodied in words and descriptios; it may exist and be defined for a period coextensive with human knowledge, capable of being exercised without being exercised, just as a machine may exist at rest without being operated; it may be patented, granted, and assigned, because it is a distinct and vendible property; it exists wholly distinct and independent of machine or apparatus, which is also a distinct and vendible property. It can make no difference that the mind of the inventor may have invented and discovered the apparatus and the process in the same mental conception or by the same train of mental operations. The process may be invented by one person and the machine or apparatus by another.

Page 465:

The necessary effects or operations of specific mechanism are not necessarily processes or methods within the meaning of the patent laws. The use of a machine in the manner and for the purpose for which it was constructed is the thing secured and enjoyed under Letters Patent; but it is the machine itself that is patented. A method or process, such as the law recognizes as patentable, must have an existence independent of the machine or apparatus by which it is carried out to its result. It must be a method or process that can be carried out by hand or by various kinds or forms of mechanism or apparatus. If the act or result is simply that of the mechanism itself, so related to it that it cannot exist independently, and it is the sole utterance of the machine, then the supposed method or process does not exist. The function of a machine can have no separate existence and is completely and sufficiently covered by a patent for the latter.

In support of these conclusions are cited *Rubber Co.* v. *Goodyear*, (9, Wall., 788;) *James* v. *Campbell*, (104 U. S., 356;) *Corning* v. *Burden*, (15 How., 252;) *Dederick* v. *Cassell*, (9 Fed. Rep., 306;) *New* v. *Warren*, (23 O. G., 587;) *McKay* v. *Jackman*, (20 Blatchf., 466;) *Hatch* v. *Moffatt*, (15 Fed. Rep., 252;) *Goss* v. *Cameron*, (14 Fed. Rep., 576;) *Gage* v. *Kellogg*, (23 Fed. Rep., 891;) *Cochrane* v. *Deener*, (94 U. S., 780;) *Eachus* v. *Broomall*, (115 Id., 429;) *Vermont Machine Co.* v. *Marble*, (19 Fed. Rep., 307; 20 Id., 117;) *Graham* v. *McCormack*, (11 Fed. Rep., 859;) *Graham* v. *Geneva Lake Manufacturing Co.*, (11 Id., 138;) *Cahn* v. *Wong Town On.*, (19 Id., 424;) *Callender* v. *Griffith*, (18 Blatchf., 110.)

The final conclusions are—

Page 472:

In the present case there are contained in the same application claims for the mechanism and claims for processes. Such inventions are found in separate classes and ought not to be comprehended in the same Letters Patent. I have no reason to believe that a patent covering both would be declared null and void in the courts, for reasons already fully set forth; but this fact furnishes no reason why the principles which underlie the system should be disregarded or the discretion of the Commissioner of Patents should not be exercised in accordance with those principles. Further justification for this conclusion is found in the fact that the apparatus or machine in or by which a method or process is carried out is a distinct and separate thing from the method or process. * * *

Page 473:

It must be regarded as settled by the very highest authority that an apparatus and a process are separate and distinct inventions. There is no requirement of law that they must or ought to be comprehended in a single patent, while there are many reasons why they ought not to be. A claim for a machine or apparatus and a claim for the process should be prosecuted in separate applications, and each, when allowed, should be comprehended in a single patent.

These considerations and conclusions require the separation in different applications of the art and the machine claimed together in this application. These methods or processes—meaning arts—are purely mechanical. The entire result effected by each of them is to change the form of a blank by forging it. They, and all like them, are as clearly as are all kinds of processes (assuming that they are due processes) necessarily to be divided from any machine which can execute them. The last paragraph of one of these passages above cited applies peculiarly to every application in hand:

So, too, in patentable methods which may be executed by machinery. The method is wholly and entirely separate and distinct from the machine. It is of the very essence and quality of such a method that it must be wholly independent of the machine and the machine of it.

See, also, *ex parte Blythe*, (30 O. G., 1324:)

It is argued that the process claim in this case demands of necessity certain apparatus, and that the person who invented the process necessarily and by the same mental act also conceived the apparatus; that the process is such that it is impossible to practice it without using this apparatus. If this is the case, then either the process or the apparatus is lacking in patentable novelty. If the process is such that the recital of it suggests the apparatus, then this apparatus requires no invention to produce it, and the invention is solely in the process. It is in such case but the obvious means of effecting the process, and need not be even described in the specification. (*Tilghman* v. *Proctor*, 19 O. G., 85.) If the process is merely the function or operation of the apparatus, then the process possesses no patentable novelty, but is a necessary consequence of the construction and arrangement of the machine. The courts have frequently held that a "process" which is merely the function of a machine does not constitute patentable subject-matter. (*Dederick* v. *Cassell*, 20 O. G., 1233.) Such a "process" may be an industrial fact or entity inherent in the machine, *or even in a product*, but it possesses no patentable novelty as a separate invention. It may be but a necessary consequence of the real invention.

If, as applicant says, it is entirely impracticable to practice the process without using the apparatus, it would seem unnecessary to patent the process at all, since it would seem that a patent for the apparatus would fully protect the invention. The very purpose of a process patent is so to cover the invention as to protect the practice of the process, even when carried out by different mechanism. This fact of itself establishes the independence of the process as an invention from the apparatus as such.

A basic principle as to process and machine is, if the process be no more than the function of the one machine, it is not patentable. As above cited, "the function of a machine can have no separate existence and is completely and sufficiently covered by a patent for the latter," (the machine.)

An analogous doctrine applicable to process and product is announced by the Supreme Court in *Mosler Safe and Lock Co.* v. *Mosler, Bahmann Co.*, (44 O. G., 1115.) Therein an applicant claiming an article filed another application for the process of making the article, the process being described in his first application and being the necessary method for making the article. The Court said:

In other words, claims 1 and 2 of No. 281,640 are each for an article produced by a described method or process, and the claim of No. 288,136 is for such method or process of producing such article. The method is a purely mechanical method. No. 281,640 was applied for more than eleven months before No. 288,136 was applied for, and was issued twenty-eight days before No. 288,136 was issued. There was no patentable invention in No. 288,136 *when it was applied for*, in view of *what was applied for* by claims 1 and 2 of No. 281,640.

The Court having asserted the principle as applicable to the two cases when in applications now applies it to them when in patents in the following language:

After a patent is granted for an article described as made by causing it to pass through a certain method of operation to produce it—as, in this case, cutting away the metal in a certain manner and then bending what is left in a certain manner—the inventor cannot afterward on an independent application secure a patent for the method or process of cutting away the metal and then bending it so as to produce the identical article covered by the previous patent, which article was described in that patent as produced by the method or process sought to be covered by taking out the second patent.

So, also, in regard to cases of process and product and process and machine, the product and the machine are the only patentable subjects wherever the process is no more than the necessary way of using the machine or the necessary functions of the machine, or is no more than the necessary or obvious manner of effecting the product. In such cases there is no patentable invention in the process in view of the machine or of the product.

This principle that a mechanical process or method is either the function of only one machine, and consequently not patentable, or an invention existing independently of any particular machine, and thus an invention in natural and statutory classification, essentially different from a machine, requires all processes and machines to be solicited in separate applications. Therefore it is unnecessary to consider the specific character and relation of any process and machine so solicited together. Their natures as process and machine require their separation.

As was said in *ex parte Herr:*

But the case is not now before me on its merits, and in pointing out the preceding distinctions I do not intend to determine or even intimate whether the applicant is or is not entitled to claim a process or method in this case, nor whether his process claims cover a process or method or are in fact mere claims for mechanism. The applicant having designated his process claims as such, has the right to prosecute them as such. For the purposes of the present question he is entitled to have them admitted to be such, and the validity and propriety of his claims must be left to the Primary Examiner, unaffected by what is said here.

[The claims herein are omitted, the first being for a die and the second for a process.]

Now, the use of a die is not patentable any more than the sale of it is patentable. Both are monopolies secured by the patent. The die itself is the patentable thing. It seems clear that, in order to sustain this claim, it would be necessary to construe it to be a claim for the pair of dies having the construction of claim 1. As a method, this claim seems to have no patentable substance. It is a mere use. Its substance is the dies. The same idea of the claim may be reached by a different course. In claim 2 the dies of the application have been introduced by their functions rather than by the construction by which they effect their functions. So that the applicant intends the claim to mean:

The method of knurling metal articles, which consists in using any dies which have the functions of my dies, in the manner in which my dies are used.

From this view of the specification and claim it appears that claim 2 is a claim for nothing more than the functions of the dies of this application. If, however, this process claim be anything more than a claim for the use of the dies of this application, or for the functions of those dies, then it is an improvement in an art, an essentially different invention, which cannot be prosecuted in the same application in which the dies are solicited.

For these reasons the examiner's decision must be affirmed.

So all the method claims herein are mechanical. They recite the functions of certain dies which change the shape of a metal blank which is rolled between them. There is certainly no relation between these methods and the dies that execute them which does not exist between any process and a mechanism which executes it.

There is one peculiar circumstance connected with this application which may be mentioned, although it will undoubtedly receive the attention of the examiner, because it throws much light on the series of applications. The applicant so long ago as June 9, 1885—more than two years before the filing of this the earliest of the series of applications in the premises—obtained a series of patents relating to the art of forging. They are No. 319,752, machine for forging car-axles and other metal articles; No. 319,754, die for forging metal articles circular in cross-section; No. 319,755, method of forging metal bars; No. 319,756, die for spherical articles.

The first noticeable thing is that the applicant has taken out separate patents for the machines, the tools, and the method of forging or pressing iron into various shapes. These will be the controlling and dominant patents in the series. The inventor wisely took separate patents for these. But now, seeking to patent the detailed and varied forms of dies, which may become unlimited in number, he united with each claim for a die a claim for its idiosyncrasy or function as a method.

Again, all the dies of this application are declared to be usable to effect all of their purposes in the machines of one of his patents. The improvements on the dies consist in the shapes of a portion of their surfaces, differing only in shape from the forming shapes of the dies of applicant's Patent No. 319,754. These dies are used in the same machine in which the dies of Patent No. 319,754 are used, and the only difference in the form produced in each application of this series is an article of a different shape from that made by the die of his patent. Indeed, he says that the projections of each set of dies in the new applications of which the case under consideration is one may be used on the die of his patent, and in each application he shows the dies of the patent with no change whatever except that the shaping-surfaces are changed in form according as the shape of the article which he desires to make varies in each application.

So it would appear that in each application this applicant has (over the subject of his patents) merely a new die used as the old die was used to forge articles, thus effecting a double use of its process or functions. This appears the more striking when the claim of his method patent is read. It is as follows:

The improved method herein described of forging or rolling metal articles, consisting in treating the bar ingot or fagot at two or more points simultaneously to change its form and spread the metal toward its ends.

Now, the "treating" of that claim is rolling the metal between dies moved in opposite directions horizontally, one over and the other under the ingot, to roll it between them, indent and shape it simultaneously at its top and its bottom, to spread the metal axially, and to continue the two indentations in shapings and the spreading around the rolling ingot until they meet, and to repeat that operation by the continuous rolling of the blank or ingot until it is sufficiently reduced and completely shaped. This is exactly the treatment of the ingot in the application before me. The only difference is that in each application the indenting or shaping surface of the die is specifically changed in shape. Cross-projections give the new shape in one set, to make knobs or knurls in the forging. Another shape is that which makes screw-threads, &c. Another shape is for fluted, toothed, or corrugated cylinders, or other circular articles.

The interesting question is, how can there be any new method over the patented method or the methods included in that method described in the specification of the patented method when there is no new operation of the machine or movement of the dies relatively to the blank, when there is nothing new except the shape of the dies used to execute the method? Doubtless the examiner will notice and treat this question. It is enough for the question before the Commissioner to determine that in this application there is a machine, or parts of a machine, which must be put into another machine to be operated, and an asserted method which is purely mechanical. This determination alone, without any further inquiry, requires a solicitation of the methods and machines of this series of applications severally in separate applications.

The foregoing conclusion has been reached on the assumption that the principles of the Herr decision so far as applicable to the application in hand are yet in unimpaired force.

The applicant has presented an argument against their validity. His contention is:

First. That they are rendered invalid by the decision of the Supreme Court in the Bell telephone cases, (43 O. G., 377.)

Second. That the discretion of the Commissioner ought to be exercised in favor of joinder of a machine and its process when they bear the relations which he says his inventions have toward each other.

In support of the first proposition the language of the Court is cited, as follows:

> It (the claim of Bell's patent) is to be read as a claim for—
> 1. The method of transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth.
> 2. The apparatus for transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, * * * substantially as set forth.

Again:

> Bell's patent is not alone for the particular apparatus he describes, but for the process that apparatus was designed to bring into use.

Applicant draws from this decision the conclusion that—

> It is not lawful to comprehend in a single original patent both a process and an apparatus for working the process. There is no room for doubt whether a patent containing claims for both process and apparatus is valid.

The answer is that there is just as much room to doubt the validity of a patent containing such claims as there was before the decision in the Bell telephone cases. No direct decision can be found upon the question before that decision was rendered, and that decision did not consider or determine the question. It is a case parallel with *Merrill* v. *Yeomans*, of which the Commissioner said in *ex parte Herr:*

> "It is fairly to be inferred from this statement that if all which is described as new in these specifications is really so the inventor has a right to patent for three inventions:
> "1. For a modification or improvement in the distilling apparatus.
> "2. For a new process or mode of distilling heavy hydrocarbons, oils, * * *
> "3. For the product of this new process of distillation." * * *
> But it is quite certain that in using this expression the Court did not have in mind and did not intend to determine any question relating to comprehending two or more inventions in a single patent. All that was meant was, that the inventor was entitled to protection under the patent law by having his three inventions properly patented. He had already secured the apparatus and the process in a single patent. No question was raised as to its validity on account of its covering two separate inventions. If there had been, the Court would no doubt have sustained the patent as having been granted within the Commissioner's discretion.
> It must be regarded as settled by the very highest authority that an apparatus and a process are separate and distinct inventions. There is no requirement of law that they must or ought to be comprehended in a single patent, while there are many reasons why they ought not to be. A claim for a machine or apparatus and a claim for the process should be prosecuted in separate applications, and each when allowed should be comprehended in a single patent.

The applicant contends that the discretion of the Commissioner ought to be exercised in favor of the joinder of apparatus and process, executed by the apparatus.

Every consideration which the applicant advances in support of the proposition received careful consideration at the hearing and decision of the Herr case. They are presented in the applicant's printed argument in paragraphs numbered from one to ten. They are designated as ten advantages which would result by uniting claims for processes and apparatuses in the same patent. They really recite the disadvantages which would be avoided by putting these different inventions into one patent. The fallacy of these points rests in this—that the disadvantages do not occur by reason of the inventions being process and product or being any other couple of inventions found in different natural divisions of art. The same disadvantages occur when two invention of such nature that one controls the other are separately patented. They occur whenever two arts, two machines, two manufactures, or two compositions are separately patented, which have the relation of a controlling and a controlled inventions. These disadvantages are inherent in the patent system. The only way to avoid them is to grant all inventions in one patent.

Every week the Patent Office issues patents subject to every disadvantage recited by the applicant. Every patentee takes his patent subject to them. For example, whoever obtains a patent for a telephone is subject to these disadvantages, because the Bell patent, a controlling patent, exists. These disadvantages must exist. And the Patent Office must grant patents for single inventions which are found to be new and useful, regardless of the conflicts and disadvantages which the applicant recites. The decision of questions arising from such complications of rights as he suggests, and which are inseparable from the patent system, must be left to courts and juries, not to the Patent Office.

The relation between process and apparatus is necessarily intimate, and this intimacy increases as the approach is made toward the mere function of an apparatus or machine until the process or method ceases to exist as an independent conception. This latter condition is well illustrated in the present case:

> The alleged process requires the mechanism. The mechanism has no use except to perform the operation which constitutes the so-called process. * * *
> The new treatment of the metal, the new way of making a screw, for instance, is a process which can only be performed by an instrument which was invented for carrying out the process and which is incapable of other use.
> The two are inseparable. If the mind is directed to the operation upon the metal, a new way of treating the metal is perceived, due to the peculiar character of the instrument by means of which the operation is performed. If the mind is directed to the instrument, it is seen that it is adapted to perform a new operation and that it has no other use.

Now, here are two things admitted by the applicant to be different and neither a part of the other—the one being a series of acts performed on metal, the other a mechanism by which those acts are effected in succession. They are separately classified in the statute. He claims the things separately, as they must be claimed. He then asserts for them such close relationship that neither can be exercised without exercising the other—that is to say, each of his processes is the function of its machine only. The inseparability of his processes and machines is proof of the non-patentability of the processes. So that it appears that the intimacy of relation between his inventions of different classes is that intimacy which renders one of them unpatentable, according to the settled doctrine of the Blythe and Herr decisions and of the court decisions cited in them. The doctrine of those decisions does not permit a process and apparatus to be claimed in one application in any case whatever.

There appears to be nothing in the positions taken by the applicant which affects the soundness of the Herr decision or removes his inventions from its authority.

The requirement for a division of this application is affirmed.

EX PARTE SIMONDS.

Decided July 10, 1888.

1. DIVISION—WHAT SHOULD BE ELIMINATED FROM THE SPECIFICATION, DRAWINGS, &c.

When an applicant is required to divide his application and eliminate from his specification so much thereof as relates to the invention which he elects to withdraw, the drawings of such invention should also be canceled, unless they are actually necessary to enable those skilled in the art to construct or operate the invention retained. It is not necessary that those skilled in the art should have made the exact subject of the invention, provided the general state of the art is such as to enable them to make it.

2. SAME—SAME.

In such case it is enough for the applicant to state in a general way the manner and means in which his invention can be constructed. The requirement in this particular is necessary to prevent duplication of printing drawings and specifications, to save expense in the examination and preparation for issue, and in the various forms of publication and reproduction of the same; also, to relieve the public of uncertainty as to the scope of the patent and its possible scope as a reissued patent, and to protect the public in other directions.

On petition.

PROJECTILES AND IMPLEMENTS FOR APPLYING A PATCH THERETO.

Application of George F. Simonds filed August 29, 1887, No. 248,159.

Mr. Joseph P. Livermore for the applicant.

HALL, *Commissioner:*

This application originally contained two independent inventions—a projectile having a patch of leather and a tool for applying the patch to the projectile. A division was required. The applicant elected to make the projectile the subject of this application. He expressed this selection by removing the tool from the title of the application, from the general statement of the invention, and from the claim. There remained and still remain in the application an illustration of the tool, being Fig. 6 of the drawings, and, in the specification on page 2, a brief description of Fig. 6, and from line 12 of page 3 to line 12 of page 4 a particular description of the same tool. The examiner required that—

> the description of Fig. 6 on page 2 and all matter descriptive of said figure should be eliminated from the specification. Fig. 6 of the drawing should also be canceled.

Applicant argued against the requirement, basing his argument on section 4888 Revised Statutes. His contention is, in effect, that this section requires every application to contain a written description of the invention and of the manner and process of making, constructing, compounding, and using it in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains or with which it is most nearly connected to make, construct, compound, and use the same.

The examiner replied that the statute does not—

> grant to an inventor the right to include in one application two separate and distinct inventions, as is done in this case, there being no unity of invention between the patched projectile and an implement by which it may be patched.

He then repeated his requirement, substantially as above stated.

The examiner considers this requirement to be a part of his former one, that the application should be brought to contain no more than one invention; that the applicant having begun to comply with this requirement by taking the tool from the title and the claim should complete his compliance by removing the illustration of the tool from the drawings and specification proper. It is true that the statute requires the applicant to describe the manner of making his patched projectile sufficiently to enable a person skilled in the art to which the invention most nearly relates to make the projectile, and he ought to be allowed and even to be required to do so. If persons skilled in the art of patching projectiles, or the broader art of covering rigid materials with elastic materials, would not be able to patch this projectile without knowledge of the construction and operation of the implement herein shown and described, and Fig. 6 were necessary to inform them, then its description should remain in this specification. If, on the contrary, skilled persons on reading the remainder of this specification and the explanatory drawings of their own knowledge could put together the patch and the projectile, then the statute does not require any illustration or description of any tool for applying a patch to a projectile, and all such showing and description should

be removed from this application. This tool holds a leather ring on the outside of stretchers. It stretches that ring radially, inserts the projectile inside of the stretcher-ring and stretchers, and then withdraws the stretchers, permitting the leather ring to contract on the projectile. Applicant states in his argument as follows:

If persons skilled in the art of making projectiles are acquainted with this means and method, or of (sic) any others, of applying leather patches to them, Mr. Simonds is not aware of the fact.

The argument seems to be that if no one ever put a leather-ring patch onto a projectile, when it was first done no one but the man who first did it would have common knowledge or skill enough to do the same thing, unless he was fully informed of the construction and operation of the tool by which the first man did it. Evidently this is a fallacy. There is no such necessity. If there are no workmen skilled in the art of putting leather patches on projectiles, yet there are plenty of workmen skilled in the art of putting elastic tubes on rigid things, for that is as old as the art of rubber-working. Moreover, this tool is used in the art of leather-working, so that rubber-workers or leather-workers, or common skilled mechanics, on reading the specification, would be able of their own common knowledge and skill to stretch this leather ring on this projectile. For example, the patch might be driven off from a stretcher over and around the stationary projectile and the stretcher withdrawn, permitting the patch to contract over the projectile. Applicant's tool would not be used to do this; but any of the tools used to put a rubber nut onto its bolt or to put a gasket onto a bottle-stopper, or, in fact, a common glove-stretcher, would obviously do all that applicant's tool does. The decision of this question rests upon a question of fact merely, whether the illustration and description in contention are necessary to enable a leather patch to be put onto a projectile. From the above considerations I conclude that they are not; that applicant might state in a general way that he stretches the ring by any suitable tool, and then either inserts the projectile within the stretcher and stretched ring or moves the ring so stretched over the projectile, then withdraws the stretcher, allowing the ring to shrink onto it, and that he may do this by any suitable tool. Such a statement would fully meet every requirement of the statute.

There is no more warrant for allowing this applicant to illustrate and describe this tool in the present application than there would be for allowing him to show and describe the machines referred to in his specification from line 23 of page 2 to line 5 of page 3. If he can have this tool shown and described here, then he can also have shown and described herein the roller-forging machines for forging the corrugations shown in the drawing, and which he says are the subjects of other applications. Applicant asserts that the position in this application of this alien matter would work no injury to the public. This matter, foreign to the subject of the application, is accompanied by a reservation of the implement as the subject of a future application. This Office has expressed its opinion of the effect of such practice in *ex parte Blair*, (43 O. G., 113.)

Applicant has, as he thinks, taken care of himself. It is for the Patent Office to care for the public. This duty it performs by requiring an applicant to confine his application in its claim, specification, and drawing to one invention and to no more than is necessary to disclose that one invention. By so doing it saves the public unnecessary expense in the examination and preparation for issue of the application and in the various forms of publication and reproduction from time to time of the specification and drawings of the patent; relieves the public of uncertainties in the scope of an original patent and in their rights under such a patent, and in its possible scope as a reissued patent, and protects the public from single patents for things which were not new and from duplicate patents for the same thing by keeping all patented things of the same kind separately in the same place.

If the Patent Office should generally allow applicants for articles to display in their drawings and specifications the tools and machines which are used in making them, the injury to the Office, to applicants, and to the general public would be unendurable. In such a case as this, where applicant has a reservation for a future application for the machine for making the article, the disadvantage to the Office and public is manifested and seems without any benefit to the applicant. In this application a general statement of the procedure in applying the patch, such as has been suggested, is all that is necessary. Yet, if applicant desires, a cross-reference to another application for the machine, as one by which the patch can be applied to the projectile, would be proper.

Applicant has based his contention on the necessity of the case to conform his specification to the statute. There being no such necessity, or any other apparent reason to the contrary, Rule 71 applies, and requires this decision of the examiner to be affirmed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 44—No. 5. TUESDAY, JULY 31, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
ORDERS Nos. 488 and 489	451
PROPOSALS FOR PHOTOLITHOGRAPHING	451
ISSUE OF JULY 31, 1888	451
DESIGNS	452
TRADE-MARKS	452
LABELS	452
PATENTS GRANTED	453
REISSUES	566
DECISIONS OF THE COMMISSIONER—	
Webster v. Sanford	567
Ex parte Carty	570

Order No. 488.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 24, 1888.

It is hereby directed that the following sub-classes be abolished in Class 2, Apparel, (Division XXIV:)

7. Fur goods.
12. Pants and drawers.
19. Shirts and bosoms.
21. Skirts and protectors.

The establishment of the following sub-classes in the same class is also directed:

34. Armpit-shields.
35. Combination garments.
36. Darning-lasts.
37. Garment-protectors.
38. Muffs and mufflers.
39. Needle-threaders.
40. Nether garments.
41. Shirts.
42. Skirts.
43. Supplemental bosoms.
44. Thread holders and cutters.
45. Work-holders.

BENTON J. HALL, *Commissioner.*

Order No. 489.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 26, 1888.

Hereafter all applications received by Examiners from the Application Room will (unless discovered to be incomplete) be marked "O. K.," which letters will also be entered on the file-wrapper, and will indicate that the petition, specification, and oath have been received and are present.

All subsequent papers relating to the case will be marked and entered by number on the file-wrapper in regular numerical order, with the entries of official actions, according to the present practice.

BENTON J. HALL,
Commissioner.

Proposals for Photolithographing.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 21, 1888.

Sealed proposals will be received at the Office of the Commissioner of Patents until 12 M. of August 6, 1888, for the reproduction by photolithography, or otherwise, of the drawings of the weekly issues of patents, and for the illustrated portion of the OFFICIAL GAZETTE.

Specifications and specimens will be furnished upon application to the Commissioner.

BENTON J. HALL,
Commissioner of Patents.

44 O G—5—1

Issue of July 31, 1888.

Patents	407—	No. 386,794 to No. 387,200, inclusive.
Designs	13—	No. 18,485 to No. 18,497, inclusive.
Trade-Marks	10—	No. 15,726 to No. 15,735, inclusive.
Labels	6—	No. 5,684 to No. 5,689, inclusive.
Reissues	2—	No. 10,950 to No. 10,951, inclusive.
Total issue	438	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	3	
Arizona Territory	1		Nevada		
Arkansas			New Hampshire	5	
California	8		New Jersey	16	1
Colorado	1	1	New Mexico Terri'y	1	
Connecticut	19		New York	70	3
Dakota Territory	3		North Carolina	2	
Delaware			Ohio	24	1
District of Columbia	4		Oregon		
Florida	1		Pennsylvania	44	1
Georgia	2		Rhode Island	10	1
Idaho Territory	1		South Carolina	1	1
Illinois	40	2	Tennessee	2	
Indiana	10		Texas	4	
Iowa	9	1	Utah Territory	1	
Kansas	5		Vermont	5	
Kentucky	3		Virginia		
Louisiana	1		Washington Terri'y		
Maine	2		West Virginia	2	
Maryland	3	1	Wisconsin	6	1
Massachusetts	30		Wyoming Terri'y		
Michigan	16		U. S. Army		
Minnesota	7		U. S. Navy		
Mississippi	3				
Missouri	7		Total to citizens of the United States	381	14
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1		Germany	16	
Barbadoes			Holland		
Belgium			Italy		
Bermuda			Mexico	1	
Brazil			Russia	2	
Canada	1		Scotland		
Central America			Sweden	3	
Columbia, U. S. of			Switzerland		
Cuba			Victoria		
Denmark			West Indies		
Ecuador					
England	13	2	Total to citizens of foreign countries	39	2
France	2				

DESIGNS.

18,485.—HORSE-BLANKET.—*G. Ralston Ayres*, Philadelphia, Pa., assignor to himself, *William Montgomery Ayres*, and *Louis H. Ayres*, all of same place. Application filed April 25, 1887. Serial No. 236,068. Term of patent 14 years.

18,486.—BADGE OR BANNER.—*James Edward Brophy* and *William E. Harvey*, Washington, D. C. Application filed July 3, 1888. Serial No. 278,967. Term of patent 3½ years.

18,487.—HANDKERCHIEF OR BANNER.—*James M. Bryce*, Philadelphia, Pa., assignor to *Edward A. Greene*, *Henry L. Greene*, *William R. Greene*, and *Edward A. Greene, Jr.*, Riverside, R. I. Application filed June 22, 1888. Serial No. 277,339. Term of patent 7 years.

18,488.—TIME-PIECE CHARACTERS.—*Rufus B. Carr*, Boston, Mass., assignor of one-half to *The E. Howard Watch and Clock Company*, same place. Application filed March 5, 1888. Serial No. 266,216. Term of patent 14 years.

18,489.—TOY.—*Daniel Cooke*, Camden, N. J. Application filed July 2, 1888. Serial No. 278,802. Term of patent 7 years.

18,490.—SPOON OR FORK HANDLE.—*Austin F. Jackson*, Taunton, Mass., assignor to *The Reed & Barton Corporation*, same place. Application filed June 15, 1888. Serial No. 277,271. Term of patent 7 years.

18,491.—PENCIL-CASE.—*James Jones*, Brooklyn, N. Y., assignor to *C. D. Jones*, same place. Application filed June 14, 1888. Serial No. 277,148. Term of patent 3½ years.

18,492.—LEAD-PENCIL.—*Samuel Kraus*, New York, N. Y., assignor to *The Eagle Pencil Company*, same place. Application filed June 23, 1888. Serial No. 277,923. Term of patent 3½ years.

18,493.—GONG FOR TABLE-BELLS.—*Adolf Mayer*, Gengenbach, Baden, Germany, assignor to *Alfred Siedle*, Freiberg, Germany. Application filed December 6, 1887. Serial No. 257,167. Term of patent 3½ years.

18,494.—HANDKERCHIEF.—*Mary R. Moore*, Washington, D. C. Application filed June 13, 1888. Serial No. 277,025. Term of patent 3½ years.

18,495.—BOTTLE.—*Benjamin I. Mott*, Brooklyn, N. Y. Application filed June 9, 1888. Serial No. 276,638. Term of patent 7 years.

18,496.—UNDERWEAR.—*George E. Nye*, Philadelphia, Pa., assignor of one-half to *Edward Tredick*, same place. Application filed April 30, 1888. Serial No. 272,396. Term of patent 3½ years.

18,497.—HANDKERCHIEF.—*Rufus H. Rose*, New York, N. Y. Application filed June 29, 1888. Serial No. 278,582. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,736.—BOOKS, PAPERS, AND ENVELOPES USED IN THE BUSINESS OF COLLECTING DEBTS.—*George W. Bristol*, Chicago, Ill. Application filed June 27, 1887. Used since May, 1887.

"The representation of a beet, a pointer dog, and a woodcock, associated with the words 'DEAD,' 'VIGILANCE,' and 'DISPATCH.'"

15,737.—GUNPOWDER.—*Charles W. Curtis*, London, England. Application filed June 6, 1888. Used since 1844.

"The representation of a bird standing amidst foliage and the lock portion of a gun."

15,738.—ROOFING FABRIC.—*Druid Felt Company*, Baltimore, Md. Application filed June 20, 1888. Used since September, 1887.

"The word 'DRUID.'"

15,739.—SOAP IN BARS.—*H. Finn & Sons*, Syracuse, N. Y. Application filed June 25, 1888. Used since March 3, 1888.

"The words 'SALT CITY.'"

15,740.—BITTERS OR TONIC.—*Mayer Bros. & Co.*, Cincinnati, Ohio. Application filed June 20, 1888. Used since April, 1887.

"The word 'MALABAR.'"

15,741.—NEEDLES.—*Henry Milward & Sons*, Redditch, England. Application filed June 20, 1888. Used since January 1, 1887.

"The words 'HENRY MILWARD & SONS CALYX EYED NEEDLES' and the representation of a threaded needle."

15,742.—MEDICAL COMPOUND OF A GRANULAR EFFERVESCING NATURE, BEING A BRAIN AND NERVE FOOD AND A SEDATIVE.—*Reed & Carnrick*, New York, N. Y. Application filed May 26, 1888. Used since March, 1888.

"The compound word 'PHOSPHO-CAFFEIN.'"

15,743.—FODDER-CUTTERS AND THEIR ATTACHMENTS.—*Smalley Manufacturing Company*, Manitowoc, Wis. Application filed April 30, 1888. Used since March 20, 1888.

"The representation of a cornstalk bent around to form a circle and the ears and leaves on the stalk extending horizontally across the circle."

15,734.—CERTAIN TOILET ARTICLES OR PREPARATIONS.—*Leo Sommer*, New York, N. Y. Application filed June 19, 1888. Used since November, 1882.

"The representation of a phenix with outspread wings and the word 'POMPADOUR.'"

15,735.—FEED-WATER PURIFIERS AND HEATERS.—*Warren Webster & Co.*, Philadelphia, Pa. Application filed June 6, 1888. Used since November 15, 1886.

"The word 'VACUUM.'"

LABELS.

5,664.—Title: "COLORADO STICKY FLY PAPER."—*John T. Billings*, Denver, Colo. Application filed July 3, 1888.

5,665.—Title: "ABSOLUTELY PURE CANADA SAP MAPLE SYRUP."—*Samuel Bliss*, Chicago, Ill. Application filed July 2, 1888.

5,666.—Title: "CLOSSON'S CELEBRATED PAIN RELIEF." (FOR A MEDICINE.)—*W. E. Closson*, Independence, Iowa. Application filed June 2, 1888.

5,667.—Title: "READY" (FOR FUEL BLOCKS AND FIRE KINDLERS.) *William R. Myers*, Haddonfield, N. J. Application filed July 3, 1888.

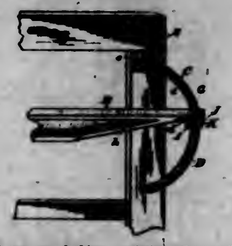
5,668.—Title: "NATIONAL REPUBLICAN BADGE 1888 PRESIDENTIAL CAMPAIGN."—*Reynold's Jewelry Co.*, Providence, R. I. Application filed July 9, 1888.

5,669.—Title: "DR. T. ERSKINE TODD'S STIMULATING BOUQUETS." *T. Erskine Todd*, Laurens, S. C. Application filed May 31, 1888.

PATENTS

GRANTED JULY 31, 1888.

386,794. TRANSOM-LIFTER. JOSEPH J. BALL and JAMES A. MCBURNEY, Syracuse, Ohio. Filed Feb. 16, 1888. Serial No. 264,444. (No model.)

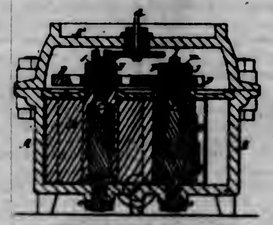


Claim.—1. A transom-holder consisting of curved arms, one of which is attached to the frame of the transom and the other to the sash of the window, the arm attached to the sash being adapted to slide upon the one attached to the frame, and a spring secured to the former for retaining the window in position, as set forth.

2. In a transom-holder, the combination of a pair of curved arms attached to the sash and frame of the window, with clasps connecting the same, and a spring secured to one of said arms to hold it in any desired adjusted position upon the other arm, as set forth.

3. In a transom-holder, the combination of a pair of curved arms adapted to be attached to a sash and frame of a window, a spring secured in a chamber formed in one of said arms, a series of serrations formed in a channel of the other arm, and clasps for retaining said arms in contact, as set forth.

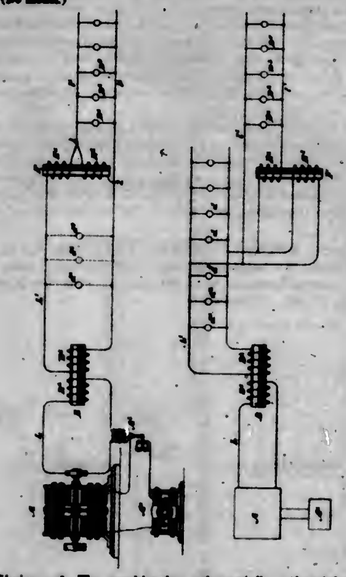
386,795. ROTARY WATER-METER. FREEMAN RAIL, Worcester, Mass. Filed June 14, 1887. Serial No. 241,282. (No model.)



Claim.—1. In a liquid-meter having the rotary piston B suspended upon upright stationary pintles and fitted to work closely between the top and bottom surfaces within the casing, the combination, with the rotary piston, its pintle, and inclosing-casing, of a removable cap-plate, in connection with the hub of the piston, carrying a bearing-piece provided with screw-threads for effecting adjustment of the piston up or down in relation to the inclosing-casing, and means, substantially as described, for cramping or binding said screw-threads to prevent derangement of the adjustment when the meter is in use, as hereinbefore set forth.

2. The combination of the meter-casing, the upright pintle, the rotating piston mounted thereon, with the top and bottom ends of said piston closely adjacent to the inner surfaces of the casing, the adjustable screw-threaded bearing-stud in connection with the top end of the piston, the cramping-plate fitting upon the screw-threads of said bearing-stud, and the binding-screw for giving pressure thereon, all substantially as shown and described.

386,796. AUTOMATIC REGULATOR FOR ELECTRIC LAMPS. REGINALD BELFIELD, Great Barrington, Mass., assignor to George Westinghouse, Jr., Pittsburg, Pa. Filed June 20, 1888. Serial No. 277,547. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a source of electricity, its circuit, translating devices operated by electric energy supplied from said source, means for introducing and withdrawing more or less of said devices from circuit, and an inductive regulator applied to said circuit consisting of a conductor and magnetizable material to which it is applied, portions of said conductor being included in different circuits, thereby rendering the inductive resistance dependent upon the number of translating devices in circuit.

2. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit for the same, a magnetizing-coil, a mass of soft iron acted upon by currents traversing said magnetizing-coil, translating devices included in a branch circuit around the magnetizing-coil, a second magnetizing-coil applied to the iron, and means for causing variable currents to traverse the same.

3. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied from said source, translating devices fed from said source, and an inductorium having its primary coil included in said circuit in series with the translating devices, and its secondary coil included in multiple arc with said translating devices.

4. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied from said source, two coils included in said circuit, magnetizable material acted upon by currents traversing said coils, a shunt for one of said coils, and translating devices included in said shunt.

5. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied therefrom, magnetizing-coils

soft iron acted upon thereby, a shunt-circuit around one of said coils, translating devices in said shunt, and an inductorium having its primary circuit included in circuit with said source, and its secondary in circuit with said magnetizing-coils.

6. The combination, substantially as hereinbefore set forth, with an electric generator and a circuit for the same, of an induction-coil having its primary coil in said circuit, a circuit including the secondary coil, means for varying the resistance of the secondary circuit, a soft-iron core and two coils acting upon said core, which coils are included in the secondary circuit.

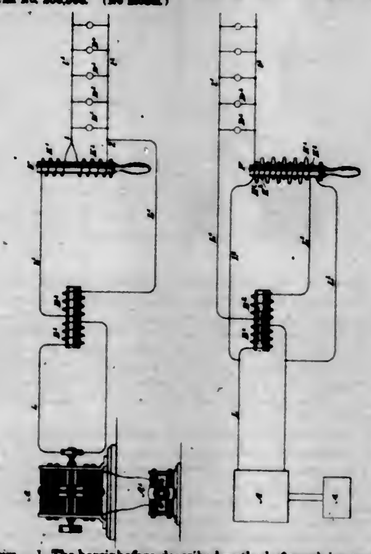
7. The combination of a source of electric currents, a circuit supplied therefrom, two coils included in said circuit, magnetizable material acted upon by currents traversing said coils, and a shunt for one of said coils, in which said translating devices and the remaining coil are included.

8. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied from said source, two coils included in said circuit, magnetizable material acted upon by currents traversing said coils, a shunt for one of said coils, translating devices included in said shunt, and translating devices connected in multiple arc across the poles of said source.

9. The combination of a source of electric currents, a circuit supplied therefrom, two coils included in said circuit, magnetizable material acted upon by currents traversing said coils, and a shunt for one of said coils, in which said translating devices and the remaining coil are included, and translating devices connected across the poles of said source.

10. The hereinbefore-described method of adjusting the brilliancy of incandescent electric lamps, which consists in opposing an inductive resistance to the currents supplied to the lamps, governing the difference of potential at the terminals of the lamps by said resistance, governing said resistance by another inductive resistance, and governing the latter by the difference of potential at the terminals of the lamps.

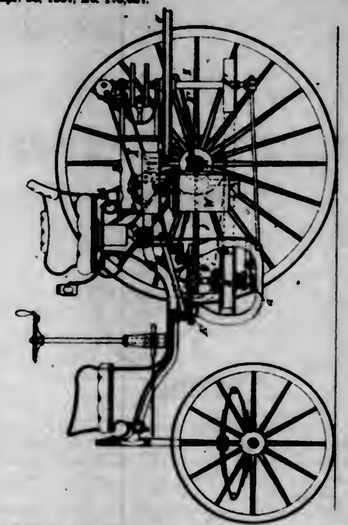
386,797. METHOD OF AUTOMATIC REGULATION FOR ELECTRIC CURRENTS. REGINALD BELFIELD, Great Barrington, Mass., assignor to George Westinghouse, Jr., Pittsburg, Pa. Filed June 30, 1886. Serial No. 206,563. (No model.)



Claim.—1. The hereinbefore-described method of supplying translating devices with alternating, intermittent, or pulsatory currents of any required potential, which consists, first, in establishing in a supply-circuit a constant counter electro-motive force equally distributed throughout a fixed length of said circuit; second, in utilizing the whole or any desired portion of said counter electro-motive force in the production of a composite current, and, lastly, in operating by such composite current translating devices placed in the work-circuit, substantially as described.

2. The hereinbefore-described method of supplying currents of any required potential to a work-circuit from a source of currents of a different potential, which consists in establishing in the supply-circuit a constant counter electro-motive force by the action of the impressed electro-motive force, and superposing the impressed electro-motive force upon the counter electro-motive force, and thereby producing and delivering to the work-circuit a resultant composite current having a different potential from that of the impressed electro-motive force, substantially as described.

386,798. DRIVING-GEAR FOR VELOCIPEDES. CARL BENZ, Mannheim, Baden, Germany. Filed Nov. 26, 1887. Serial No. 256,208. (No model.) Patented in England Apr. 28, 1886, No. 5,780, and in France Apr. 28, 1887, No. 176,667.



Claim.—1. In vehicles with driving-gear, the arrangement of the main driving-shaft V 32 and the axle of the vehicle in one horizontal plane, and in combination with one of these shafts connecting-rods S S on each side, for the purpose and in the manner substantially as described.

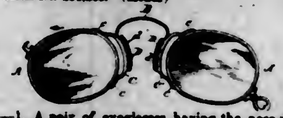
2. In vehicles with driving-gear, the main driving-shaft V, a movable frame, A, for said shaft, and the axle T, of the wheels arranged parallel to the main shaft, all substantially as described.

3. In vehicles with driving-gear, a pulley, R, spur-wheels *x x' x''*, arranged inside pulley R, and a wing, M, in connection with lever 3, operating substantially in the manner as described.

4. In vehicles with driving-gear, a starting-lever, 3, in combination with a coupling, K, and a braking contrivance, 5, and in combination with a second lever, 4, arranged and operating substantially in the manner as described.

5. In vehicles with driving-gear, a combined regulating and braking device for regulating the admission of the liquid into the gas-generator and of the gas to the motor, and for braking the vehicle accordingly, all substantially in the manner as described.

386,799. EYEGLASSES. JOHN BOWLES, Washington, D. C., assignor of one-fourth to Joseph R. Bines, same place. Filed May 14, 1887. Serial No. 238,203. (Model.)



Claim.—1. A pair of eyeglasses having the nose-plates thereof provided with strips or pieces of sponge on their opposing faces, substantially as described, for the purpose set forth.

2. As a new article of manufacture, a pair of eyeglasses having the nose-plates thereof provided with a series of lips or prongs and pieces or strips of sponge affixed to the opposing faces of the nose-plates by the lips or prongs thereof, substantially as described, for the purpose set forth.

3. As a new article of manufacture, a pair of eyeglasses having the nose-plates thereof provided with pieces or strips of compressed sponge, substantially as described, for the purpose set forth.

4. As a new article of manufacture, a pair of eyeglasses having the curved nose-plates thereof formed of a single piece of metal and provided with a series of lips or prongs at their side edges, and the pieces or strips of compressed sponge affixed to the opposing faces of the nose-plates, the prongs entering the strips from the side edges thereof, substantially as described, for the purpose set forth.

5. A pair of eyeglasses having frictional bearing-surfaces of sponge secured to that portion of the glasses which bears against the nose, as and for the purpose set forth.

6. As a new article of manufacture, a nose-plate for eyeglasses, provided with a sponge piece, substantially as shown and described.

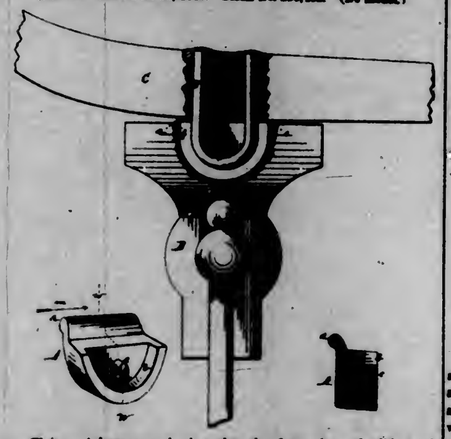
386,800. HINGE. DAVID H. BUTLER, Hendricks, Minn., assignor of one-half to Julius Edward Butler, same place. Filed Oct. 28, 1887. Serial No. 253,552. (No model.)



Claim.—1. A strap-hinge provided with outwardly-turned horizontal flanges lengthwise of their straps, the said flanges having each a series of holes at intervals along their length, substantially as and for the purpose herein set forth.

2. The combination of a door-hinge provided with outwardly-turned flanges on its straps lengthwise of the said straps, and with sets of holes in the said flanges and a brace or rod to hook into different holes in the said flanges, substantially as and for the purpose herein specified.

386,801. HARNESS-MAKER'S TOOL. WILLIAM G. BOWERS, Portage, Wis. Filed Dec. 30, 1887. Serial No. 259,452. (No model.)



Claim.—A harness-maker's tool made of one piece of solid metal provided with a shoulder on its rear side and a semicircular recess on its front side, with pin c therein for supporting a hame-staple in the jaws of a vise in the process of riveting the staple to the hame, as set forth.

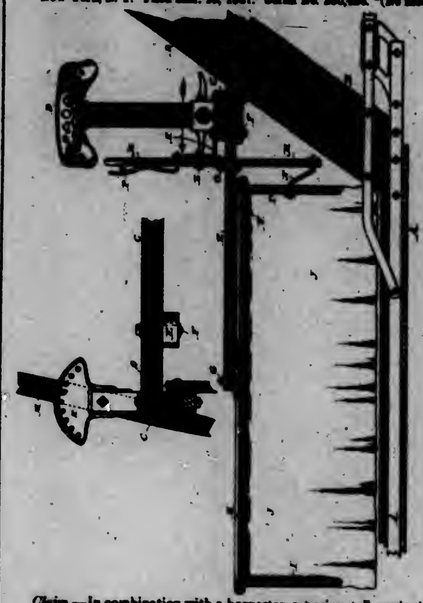
386,802. WATER-WHEEL. ROUSH M. CARHART, Providence, R. I. Filed May 16, 1887. Serial No. 238,203. (No model.)



Claim.—1. The combination of a water-wheel decreasing in diameter toward its lower end and provided externally with spirally-extending blades or buckets conforming to the contour of the body, a case or curb for the wheel conforming in shape upon its interior with the shape of the wheel, said case or curb being provided internally with spirally-extending grooves or recesses having spirally-extending end walls, *d'*, extending from the top nearly to the bottom of the case or curb, said grooves or recesses and their rear walls extending spirally in a reverse direction to that of the blades on the wheel and vanishing at their lower ends upon the surface of the curb, substantially as specified.

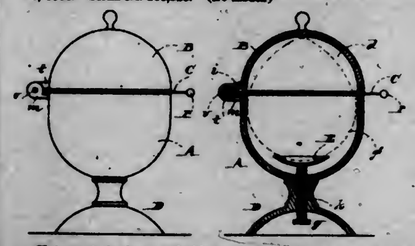
2. The combination, with a water-wheel, of a curb or case therefor, provided at its upper end with an external circumferential rabbet, a cap or cover provided with a downwardly-extending circumferential flange, whereby, when the cap or cover is in place, an annular chamber, as I, is formed, an inlet-pipe communicating with said chamber, and a passage or passages from said chamber to the interior of the curb or case, substantially as specified.

386,803. ADJUSTABLE WIND-BOARD FOR HARVESTERS. HENRY J. GARE, Auburn, assignor of one-half to the D. M. Osborne & Company, New York, N. Y. Filed Mar. 10, 1887. Serial No. 230,498. (No model.)



Claim.—In combination with a harvester, a horizontally-swinging arm overhanging the grain-platform, a wind-board connected to said arm by a vertical pivot, and a hand-lever mounted on a fixed support and connected by links to the wind-board and to the swinging arm, whereby said lever is enabled to move the board forward and backward, and also maintain its parallelism with the finger-bar.

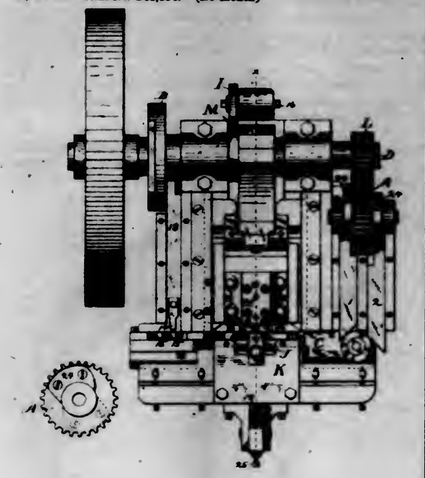
386,804. EGG-CUP. JAMES GARDY, Cambridge, Mass. Filed Mar. 6, 1888. Serial No. 266,226. (No model.)

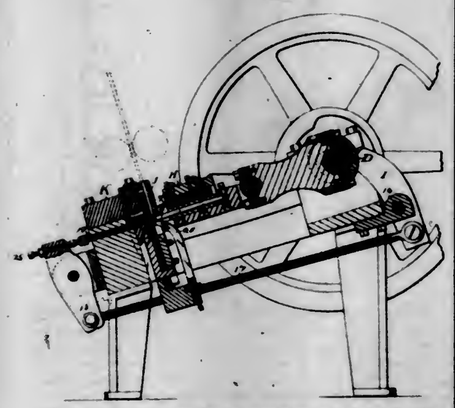


Claim.—A duplex egg-holder consisting of two cups hinged together, one of said cups constituting the body of the holder and the other the cover thereof when the parts are swung together, the lower

cup or body being provided with a supporting-base, and the upper cup or cover being recessed on its lower edge and provided with a horizontally-swinging knife pivoted to the leaf of the hinge of said cover and swinging in said recess, the cover being adapted to serve as a receptacle for the upper half of the egg when the holder is opened, and the knife serving to hold the upper half of the egg in the cover during the opening operation, substantially as described.

386,805. NUT-MACHINE. GEORGE H. DURHAM, Unionville, Conn., assignor to the Durham Nut Machine Company, same place. Filed June 13, 1887. Serial No. 241,156. (No model.)





Claim.—1. In a nut-machine, the combination of a carrier having two recesses serving as partial dies, a stationary shear-blade, and a blanking-out punch, substantially as described, and for the purpose specified.

2. The combination of a carrier having two recesses and a trimming punch and die, substantially as described, and for the purpose specified.

3. The combination of a carrier having two recesses and a blanking-out punch and trimming punch and die, substantially as described, and for the purpose specified.

4. The combination of a carrier having two recesses, a swaging-die, and knock-out pin, substantially as described, and for the purpose specified.

5. The combination of blanking and trimming dies, a carrier having two recesses for receiving the nut-blanks, and mechanism for locking the carrier during the action of the dies, substantially as described, and for the purpose specified.

6. The combination of a central blanking-out shear and two trimming-punches, arranged one on each side of said blanking-shear, substantially as described, and for the purpose specified.

7. The combination of a swage or crowning-die and two trimming-dies, arranged one on each side of said crowning-die, substantially as described, and for the purpose specified.

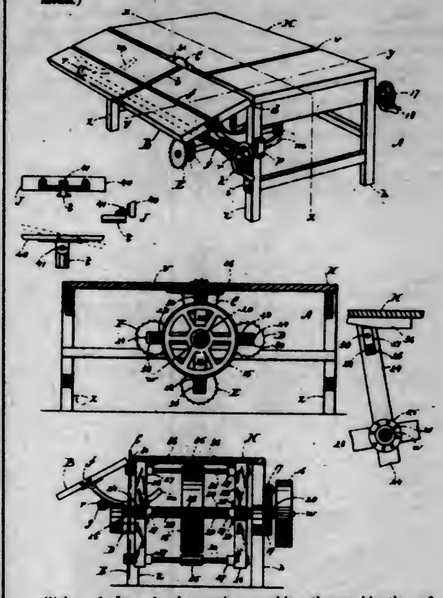
8. The combination of a swage and knock-out pin and two trimming-dies, one on each side of said swage, substantially as described, and for the purpose specified.

9. The combination of a punch and die for punching the central hole, a blanking-out shear and die, a swage and knock-out pin, two trimming punches and dies, said trimming punches and dies located one on each side of said blanking-out shear, substantially as described, and for the purpose specified.

10. The combination of the slide H, bearing punches, the stationary dies and shear, the carrier having two recesses which serve as partial dies, and operating mechanism for said slide and carrier, whereby the slide has two motions to one of the carrier, substantially as described, and for the purpose specified.

11. The combination of a crowning-die, a trimming-die, a blanking-punch, and a carrier moving transversely to the movement of said blanking-punch, and having a recess, which serves the double function of blanking-die in connection with said blanking-punch, and pocket for carrying the blank, substantially as described, and for the purpose specified.

386,806. CIRCULAR SAWING MACHINE. FREDERIC E. PARWELL, Fitchburg, Mass. Filed Apr. 26, 1888. Serial No. 272,370. (No model.)

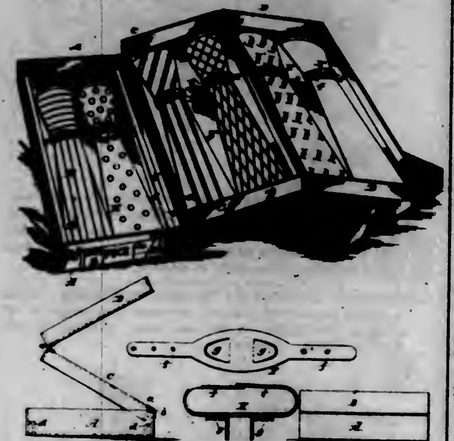


Claim.—1. In a circular sawing machine, the combination of a supporting-frame provided with a table proper, a main shaft journaled in said frame provided with a driving-pulley, a friction-wheel on said shaft, a sleeve also on said shaft, radial arms fixed to said sleeve provided with vertical slots in their outer ends, adjustable bearings in said slots, springs for forcing said bearings outward, saw-shafts journaled in said bearings, circular saws secured to said saw-shafts, friction-wheels on said saw-shafts, a fixed cam on said frame which is engaged by said bearings for forcing the friction-wheel of one of the saw-shafts into contact with the friction-wheel of the main shaft, and adjunctive mechanism for turning said sleeve to bring different saw-shafts into position for actuating their respective saws.

2. In a circular sawing machine, the combination of a supporting-frame provided with a table proper, a main shaft journaled in said frame provided with a driving-pulley, a friction-wheel on said shaft, a sleeve also on said shaft, radial arms fixed to said sleeve provided with vertical slots in their outer ends, adjustable bearings in said slots, springs for forcing said bearings outward, saw-shafts journaled in said bearings, circular saws secured to said saw-shafts, friction-wheels on said saw-shafts, a fixed cam on said frame, which is engaged by said bearings for forcing the friction-wheel of one of the saw-shafts into contact with the friction-wheel of the main shaft, a worm-gear on said sleeve, and a worm journaled on the frame and intermeshing with said worm-gear, substantially as described.

3. In a circular sawing machine, the combination of the frame-work A, the table proper, H, the shaft w, provided with a driving-pulley, 16, and friction-wheel 15, the sleeve 20, disposed on said shaft and provided with the worm-gear 19, the bars 23 and 24, mounted on said sleeve and provided with slots 26, the blocks 27 and springs 28, disposed in said arms, the shafts 30, journaled in said blocks and provided with the friction-wheels 35, the saws C D E F, mounted, respectively, on shafts 30, the worms 17 for rotating said sleeves, and the cams 36, adapted to engage the blocks 27 when said sleeve is rotated and thereby force one of the friction-wheels 35 into contact with the friction-wheel 15, whereby the saw is made to revolve when power is applied to the driving-pulley 16, substantially as set forth.

386,807. PACKING AND DISPLAY BOX FOR HOSE-WEAR. JAMES H. PARSONS, New York, N. Y. Filed Apr. 13, 1888. Serial No. 270,515. (No model.)



Claim.—1. The combination, with a box having a removable lid, of a series of trays connected together at their adjacent side edges, one of said trays being hinged at one side edge of the box, whereby the trays can be folded one upon another within the box, substantially as set forth.

2. The combination, with a box, a series of trays hinged together at their adjacent edges, so as to be folded one upon another, one of the end trays being hinged to the side of the box, of a retaining-clip attached to the bottom of each tray and to the bottom of the box, substantially as set forth.

3. The combination, with a rectangular box having shoulders therein and a series of trays hinged together at their adjacent side edges, one of the end trays being hinged to one side edge of the box, so that the trays can be folded one upon another within the box, of clips secured to the trays and box, substantially as set forth.

386,808. JOURNAL-BEARING. JOHN W. GARRATT, St. Louis, Mo. Filed Sept. 1, 1888. Serial No. 175,915. (No model.)

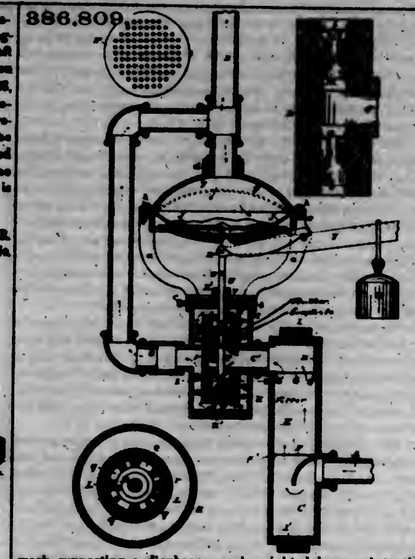


Claim.—In a journal-box, the combination, with the outer shell, A, having a plane curved under surface, of an inner shell, B, of brass fitted to the curved under surface of the outer shell and having undercuts, as described, and a lining of Babbitt or other journal-box metal molded in said journal-box and locked thereto between the undercuts of the shell B and the curved under surface of the shell A, as set forth.

386,809. GAS-GOVERNOR. GERHARD A. GUSTER, Fremont, Ohio. Filed Aug. 28, 1887. Serial No. 247,905. (No model.)

Claim.—1. In combination with the two valves N and O, connected by the shouldered rod P, the inner cylinder provided with the valve-seats *m*, *n*, and *o*, and the gas-ports *p p* and *q q*, tapered at their lower ends and arranged on different levels, as described, whereby they come into operation and go out of operation successively, substantially as set forth.

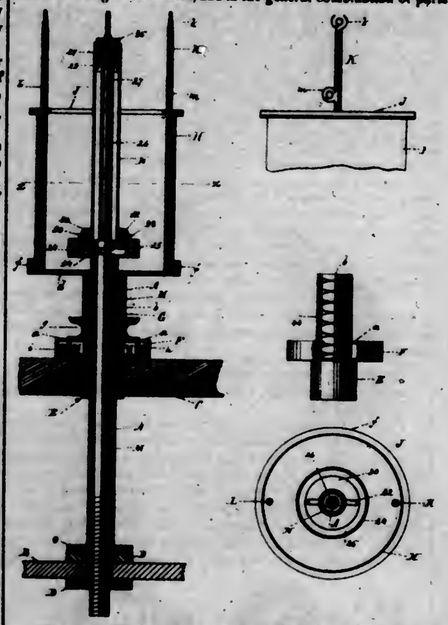
2. In combination with a gas-pressure regulator, a rotary frame-work supporting a diaphragm and weighted lever, substantially as and for the purpose set forth.



3. In an automatic gas-governor and cut-off mechanism, the combination of the cylinder L, valve-stem U, the weighted lever, the flexible diaphragm, and the rotary frame-work, substantially as set forth.

386,810. SPINNING-SPINDLE. RICHARD GILL, Methuen, and WILLIAM H. BUTLER and SAMUEL SMITH, Lawrence, Mass. Filed Apr. 26, 1888. Serial No. 271,981. (No model.)

Brief.—The invention consists in features of construction having particular relation to the lubrication of the spindle and to the regulation of the drag of the bobbin, and in the general combination of parts



Claim.—1. The combination of a spindle proper, having its upper portion reduced, a tube disposed on the lower portion or body of said

spindle, a bushing disposed on said tube and provided with an oil-cup, a sleeve disposed on said bushing and carrying a flier arm or arms, said sleeve being provided with a whirl and adapted to bear in said oil-cup, a bobbin-tube journaled at its upper end on the upper end of the spindle and provided at its lower end with a bearing or boss for supporting the bobbin, and means for securing the bobbin-tube on the spindle, substantially as set forth.

2. The combination of a spindle proper, having its upper portion reduced, a tube disposed on the lower portion or body of said spindle, a bushing disposed on said tube and provided with an oil-cup, a sleeve disposed on said bushing and carrying a flier arm or arms, said sleeve being provided with a whirl and adapted to bear in said oil-cup, a bobbin-tube journaled at its upper end on the upper end of the spindle and provided at its lower end with a bearing or boss for supporting the bobbin, means for securing the bobbin-tube on the spindle, and a guard surrounding the bobbin-tube and adapted to overcome or partially overcome the atmospheric resistance to laying the fibers of the yarn as the bobbin is revolved, substantially as described.

3. The combination of a spindle proper, having its upper portion reduced, a tube disposed on the lower portion of said spindle, said tube being provided at its upper end with a cup-shaped friction-ring, a bobbin-tube journaled at its upper end on the upper end of said spindle and provided at its lower end with a conical boss adapted to fit said cup-shaped ring, and means for raising said tube to increase the tension on said bobbin-tube, substantially as described.

4. The combination of a spindle proper, having its upper portion reduced, a tube disposed on the lower portion of said spindle and provided at its upper end with a flaring friction-ring, a bushing disposed on said tube and provided with an oil-cup, a sleeve disposed on said bushing and carrying a flier arm or arms, said sleeve being adapted to bear in said oil-cup and provided with a whirl above said cup, a bobbin-tube journaled at its upper end on the upper end of the spindle and provided at its lower end with a conical boss adapted to fit the flaring ring of said tube, means for raising said tube to increase the tension of the bobbin-tube, and means for securing the bobbin-tube on the spindle.

5. The combination of a spindle proper, a bushing provided with an oil-cup, and a sleeve surrounding said bushing and having its lower end resting on the bottom of said oil-cup, said sleeve being provided with a whirl and below said whirl with an annular flange depending from the outer lower edge of said whirl and terminating above the bottom of said oil-cup, substantially as described.

6. The spindle A, provided with the nut O, reduced portion 26, and shoulder 27, the tube M, disposed on said spindle and provided with the rest 24 and friction-ring 25, the bobbin-tube N, journaled on said spindle and having the boss or support 30, provided with the projection 32, the bushing E, provided with the oil-cup F, the sleeve G, provided with the whirl *g* and disk *d*, the guard H, flier-arms K L, ring J, and means for securing the bobbin-tube on the spindle, all being combined and arranged to operate substantially as described.

7. The fifteg-rail B and stationary rail C, the spindle A, secured in the rail B and provided with nuts O D, reduced portion 26, and shoulder 27, the tube M, provided with the rest 24 and friction-ring 25, the bushing E, mounted in the rail C and provided with the oil-cup F, having the flange *a*, the sleeve G, provided with the whirl *g*, disk *d*, and oil-chamber *i*, the guard H, mounted on the disk *d*, the ring J, mounted on the guard H, the flier-arms K L, inserted in the ring J and secured to the disk *d*, the bobbin-tube N, journaled on the spindle A and provided with the cap 29 and boss 30, and the pin 34, connected with said boss and inserted in a groove in said spindle, all combined and arranged to operate substantially as described.

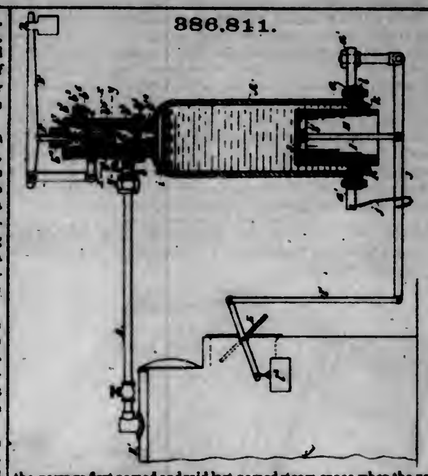
8. The spindle A, nuts O D, rails B C, bushing E, tube M, sleeve G, guard H, ring J, flier-arms K L, tube N, cap 29, boss 30, pin 34, and ring 25, all constructed, combined, and arranged to operate substantially as set forth.

386,811. DAMPER-REGULATOR FOR FURNACES. GEORGE A. GOODENOUGH, Green Point, N. Y. Filed Jan. 20, 1888. Serial No. 261,856. (No model.)

Claim.—The combination, with a steam-boiler and a flue for carrying off products of combustion from a furnace, of a damper arranged in said flue, a lever connected with said damper, a cylinder containing a column of water, a piston in said cylinder connected with said lever, a valve-chest connected with said cylinder above the column of water, a valve in said valve-chest, a steam-space at one end of said valve, a passage leading from said steam-space to the cylinder when the valve is moved in one direction, a steam-space communicating with an exhaust at the other end of the valve, a passage communicating with

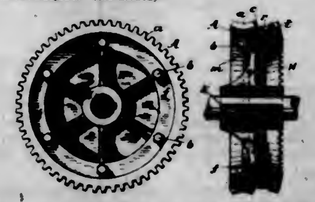


386,811.



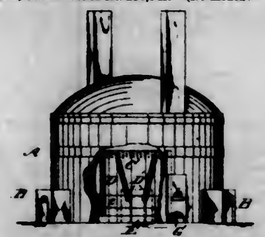
the passage first named and said last-named steam-space when the valve is moved to prevent admission of steam from the boiler to the cylinder, and two seats for the valve arranged at opposite ends of the latter, said valve being held with a yielding pressure against one of its seats by a weight or spring, substantially as specified.

386,812. DRIVING-GEAR FOR SHIPS' WINDLASSES. FRANCIS A. GRATER and EDWIN H. WHITNEY, Providence, R. I., assignors to the American Ship Windlass Company, same place. Filed July 20, 1887. Serial No. 244,817. (No model.)



Claim.—In a ship's windlass, a driving-gear, H, secured to the shaft between the wild-cats, having ratchets *r*, and an annular rim or shoulder, *c*, and an annular worm-gear rim, A, fitting the shoulder *c* and provided with an internal flange, *f*, and bolts *b*, passing through said flange into the driving-gear H, the inner diameter of the flange being somewhat greater than the extreme outer diameter of the wild-cat driving-head, substantially as and for the purpose set forth.

386,813. BRICK-KILN. JAMES B. GRAWCOCK, Churubusco, Ind. Filed Jan. 6, 1888. Serial No. 259,943. (No model.)



Claim.—1. A kiln having a main wall, fire-doors, and a fire-wall, and provided with a lateral flue between the walls on a level with the fire-doors, and communicating with narrow vertical flues extending to the top of the fire-wall, substantially as described.

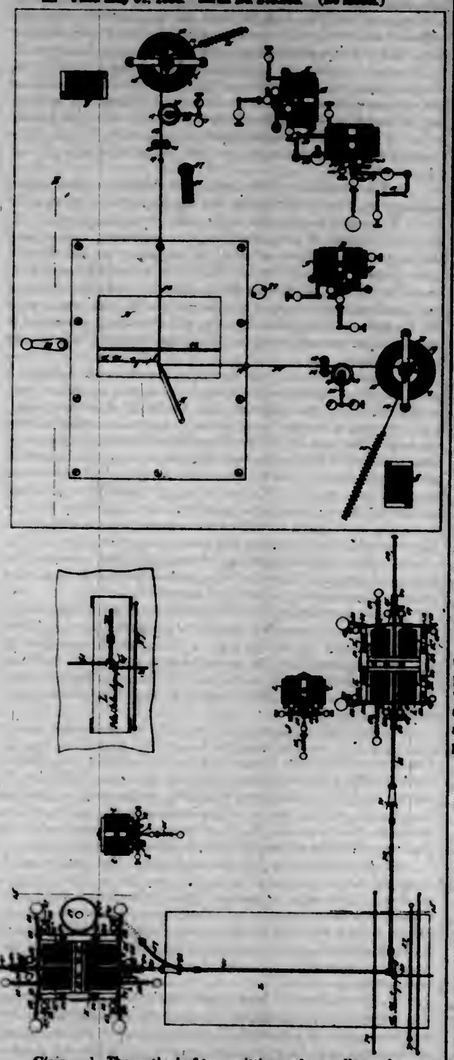
2. A kiln having a main wall provided with fire-doors, and a fire-wall beveled inwardly at its lower part, so as to form an annular space of greater area than that between the walls above the fire-doors, substantially as described.

3. A kiln having a main wall provided with fire-doors, a fire-wall beveled inwardly at its lower part, and partitions midway between the fire-doors, substantially as described.

4. A kiln having a main wall provided with fire-doors, a fire-wall beveled inwardly at its lower part, vertical partitions midway between the fire-doors, and deflecting-partitions running from the top of the fire-door toward the top of the fire-wall, substantially as described.

5. A kiln having a main wall provided with fire-doors and an air-space, and a fire-wall having its lower part inwardly inclined and its upper part perforated, substantially as described.

386,814. ART OF TELEGRAPHY. ELISHA GRAY, Highland Park, Ill. Filed May 31, 1888. Serial No. 275,292. (No model.)



Claim.—1. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen by transmuting the movements of said transmitting-pen into pulsations of substantially the same effective strength in an electric circuit varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, and transmuting said pulsations through the intervention of an electromotor into movements of the receiving-pen, substantially as set forth.

2. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen by transmuting the movements of said transmitting-pen in two directions crosswise of each other into two series of pulsations in two electric circuits, the pulsations of each series being of substantially the same effective strength and respectively varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, and transmuting said two series of pulsations into movements of the receiving-pen in directions crosswise of each other, substantially as set forth.

3. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen by transmuting the movements of said transmitting-pen in directions crosswise of each other into two series of pulsations, the pulsations of each series being of substantially the same effective strength and respectively varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, and thereby, through the intervention of an electromotor, causing movements of the receiving-pen, substantially as set forth.

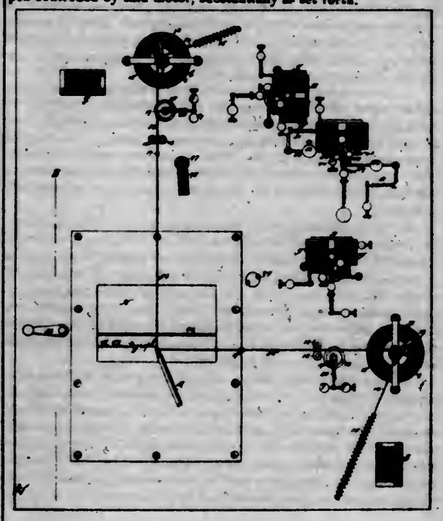
4. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen by producing in two electrical circuits through the movement of the transmitting-pen in two directions crosswise of each other two series of pulsations, the pulsations of each series being of substantially the same effective strength and respectively varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, and thereby, through the intervention of two electromotors, causing movements of the receiving-pen in two directions crosswise of each other, substantially as set forth.

5. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen by transmuting the movements of said transmitting-pen in directions opposite of each other into pulsations of substantially the same effective strength and of opposite polarity in an electric circuit, respectively varying in number with the linear extents of the movement of said pen in opposite directions and varying in speed of succession with the rapidity of the said movement, and transmuting the said pulsations of opposite polarity into movements in opposite directions of the receiving-pen, substantially as set forth.

6. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen in directions opposite of each other by producing in an electric circuit, through the movement of said transmitting-pen in said opposite directions, pulsations of substantially the same effective strength and of opposite polarity, respectively varying in number with the linear extents of the movements of said pen in opposite directions and varying in speed of succession with the rapidity of the said movements, and thereby, through the intervention of an electrometer, causing movements of the receiving-pen in opposite directions, substantially as set forth.

386,815. TELAUTOGRAPH. ELISHA GRAY, Highland Park, Ill. Filed June 13, 1888. Serial No. 276,921. (No model.)

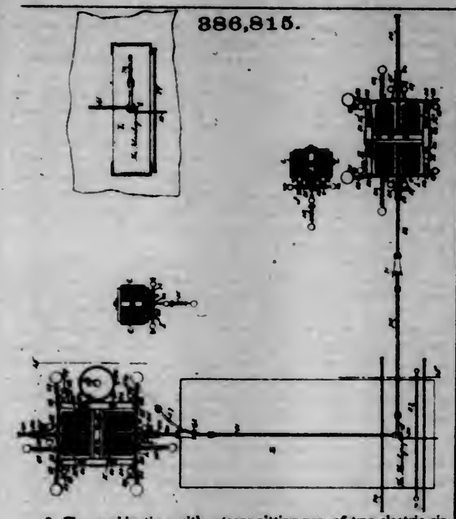
Claim.—1. The combination, with a transmitting-pen, of an electric circuit, an interrupter operated through said pen and producing pulsations of substantially the same effective strength in said circuit, varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, an electromotor operated through said pulsations, and a receiving-pen controlled by said motor, substantially as set forth.



Claim.—1. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen by transmuting the movements of said transmitting-pen into pulsations of substantially the same effective strength in an electric circuit varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, and transmuting said pulsations through the intervention of an electromotor into movements of the receiving-pen, substantially as set forth.

2. The method of transmitting and recording a character by the movements of a transmitting-pen and a receiving-pen by producing in an electric circuit through the movement of said transmitting-pen pulsations of substantially the same effective strength varying in number

386,815.



2. The combination, with a transmitting-pen, of two electric circuits, two interrupters operated, respectively, through the movement of said pen in two directions crosswise of each other and producing two series of electric pulsations in said circuits, the pulsations of each series being of substantially the same effective strength and varying, respectively, in number with the linear extent of the movement of said pen in said crosswise directions and in speed of succession with the rapidity of said movement, two electromotors included in the respective circuits and operated, respectively, through said two series of pulsations, and a receiving-pen controlled by said two motors in two directions crosswise of each other, substantially as set forth.

3. The combination, with a transmitting-pen, of an electric circuit, an interrupter operated through said pen and producing pulsations of substantially the same effective strength in said circuit, varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, an electromotor operated through said pulsations, a receiving-pen controlled by said motor, and a stationary recording-surface over which said receiving-pen is moved, substantially as set forth.

4. The combination, with a transmitting-pen, of an electric circuit, an interrupter operated through said pen and producing pulsations of substantially the same effective strength in said circuit, varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, an electromotor operated through said pulsations, a stationary recording-surface over which said receiving-pen is moved, a circuit-controller and feeding mechanism for shifting the position of the said recording-surface when the reproduction of the characters is suspended, substantially as set forth.

5. The combination, with a transmitting-pen, of an electric circuit, an interrupter operated through said pen and producing pulsations of substantially the same effective strength in said circuit, varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, an electromotor operated through said pulsations, a receiving-pen controlled by said motor, and a pen-rest for lifting said receiving-pen, substantially as set forth.

6. The combination, with a transmitting-pen, of an electric circuit, an interrupter operated through said pen and producing pulsations of substantially the same effective strength in an electric circuit, varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, an electromotor operated through said pulsations, a receiving-pen controlled by said motor, and a circuit-changer for changing the condition of the current in said circuit when the movement of the transmitting-pen is reversed, substantially as set forth.

7. The combination, with a transmitting-pen, of an interrupter operated through said pen and producing pulsations in an electric circuit varying in number with the linear extent of the movement of said pen and varying in speed of succession with the rapidity of said movement, an electromotor operated through said pulsations, a receiving-pen controlled by said motor, and a pole-changer for changing the polarity of the current in said circuit when the movement of the transmitting-pen is reversed, substantially as set forth.

8. The combination, with an electric circuit including an interrupter and receiving-magnets, which are respectively energized by different conditions of the current over the circuit, of a transmitting-pen connected to operate said interrupter to interrupt the circuit, a circuit-changer for changing the condition of the current over the circuit whenever the movement of the pen is reversed, and a receiving-pen moved in two directions through the action of said receiving-magnets, substantially as set forth.

9. The combination, with two electric circuits, each including an interrupter producing pulsations of substantially the same effective strength, and receiving-magnets which are respectively energized by different conditions of the currents over the circuits, of a transmitting-pen connected to operate said respective interrupters by its movements in directions crosswise of each other, circuit-changers for changing the condition of the currents over the respective circuits whenever the movement of the pen in either direction is reversed, and a receiving-pen moved in two directions crosswise of each other through the action of the magnets of the respective circuits and in opposite directions by the respective magnets of each circuit, substantially as set forth.

10. The combination, with a main circuit, including a pole-changer, an interrupter, receiving-magnets, and a polarized relay arranged to direct the current through one or the other of the magnets, according to its polarity, of a transmitting-pen connected to operate said interrupter, a local circuit including the magnet of the pole-changer, and a circuit maker and breaker, which is also connected to and operated by the pen to change the condition of the local circuit, and thereby change the polarity of the current over the main circuit when the movement of the pen is reversed, and a receiving-pen moved in two directions through the action of the said magnets, substantially as set forth.

11. The combination, with two main circuits, each including a pole-changer, an interrupter, receiving-magnets, and a polarized relay arranged to direct the current through one or the other of the magnets, according to its polarity, of a transmitting-pen connected to operate said interrupters by its movements in two directions crosswise of each other, two local circuits each including the magnet of one of the pole-changers, and a circuit maker and breaker, which is also connected to and operated by the pen to change the condition of its local circuit, and thereby change the polarity of the current over the corresponding main circuit when the movement of the pen in either direction is reversed, and a receiving-pen moved in two directions crosswise of each other through the action of the magnets of the respective circuits and in opposite directions through the action of the respective magnets of each circuit, substantially as set forth.

12. The combination, with the receiving-pen and a main circuit, *b* or *c*, including a receiving-magnet for operating the pen, of the brush 12 and disk 13, also included in the circuit, the transmitting-pen, and connections with the transmitting-pen for moving the brush or disk, one with relation to the other, to interrupt the circuit repeatedly by the continued movement of the pen in one direction, substantially as set forth.

13. The combination, with the receiving-pen and a main circuit, *b* or *c*, including receiving-magnets for moving the pen in opposite directions, of the brush 12 and disk 13, also included in the circuit, the transmitting-pen, and connections with the transmitting-pen for moving the brush or disk, one with relation to the other, to interrupt the circuit repeatedly by the continued movement of the pen in one direction, and a retractile, 15, for effecting the same result when the pen is moved in the reverse direction, substantially as set forth.

14. The combination, with the receiving-pen and the circuits *b c*, including receiving-magnets for moving the pen in two directions crosswise of each other, of a brush, 12, and disk 13, included in each circuit, the transmitting-pen, and connections with the transmitting-pen for moving the brush or disk of each circuit, one with relation to the other, to interrupt the respective circuits repeatedly by the continued movement of the pen in two directions crosswise of each other, substantially as set forth.

15. The combination, with a main circuit, *b* or *c*, a transmitting-pen, and means for interrupting the circuit by the movement of the transmitting-pen, of a receiving-magnet included in the circuit and having a two-part armature, each part of which is pivoted to move in two directions, a rod acted on and moved with a step-by-step movement by the armature, and a receiving-pen connected to and moved by the rod, substantially as set forth.

16. The combination, with two receiving-magnets having two-part armatures, each part of which is pivoted to move in two directions, and means for interrupting the currents through the magnets by the movement of a transmitting-pen, of a rod arranged to be acted on and moved with step-by-step movement in opposite directions by the respective armatures, and a receiving-pen connected to and moved in opposite directions by said rod, substantially as set forth.

17. The combination, with two pairs of receiving-magnets, each having a two-part armature, each part of which is pivoted to move in two directions, and means for interrupting the currents through the magnets by the movement of a transmitting-pen, of two rods arranged to be acted on and moved with step-by-step movements in opposite directions by the respective armatures of the respective pairs of magnets, and a receiving-pen connected to and moved in two directions crosswise of each other by said rods, substantially as set forth.

18. The combination, with a pair of receiving-magnets having two-part armatures pivoted to move in two directions, and means for interrupting the currents through the magnets by the movement of a transmitting-pen, of a rod arranged to be gripped and moved in opposite directions by the respective armatures, friction-jaws acting upon the rod, and a receiving-pen connected to and moved in opposite directions by the rod, substantially as described.

19. The combination, with the receiving-pen G, having a fine or capillary bore located above the recording-surface, of the ink-well located at a lower level than the point of the pen, and a flexible tube connecting the pen and ink-well, substantially as set forth.

20. The combination, with the receiving-pen having a fine or capillary bore located above the recording-surface, of the ink-well having a fine or capillary discharge-tube and located at a lower level than the point of the pen, and a flexible tube connecting the pen and the discharge-tube of the ink-well, substantially as set forth.

21. The combination, with the transmitting and receiving pens, of a pen-rest for raising the pen from the paper, an electro-magnet controlling the position of the pen-rest, electrical connections having a circuit-controller at the transmitter for energizing and de-energizing said magnet, and a movable table beneath the transmitting-pen for operating said circuit-controller, substantially as set forth.

22. The combination, with the receiving-pen and the main circuits *b c*, through which it is operated, of an electro-magnet, *o*, for controlling the position of the pen, a local circuit including said magnet and reversely-acting circuit-closers, electro-magnets *l*, included in the respective main circuits and controlling said circuit-closers, reversely-acting temporary circuit-breakers located in the respective main circuits, a local circuit including an electro-magnet for operating said circuit-breakers, and a circuit-controller included in said last local circuit and controlled by the position of the transmitting-pen, substantially as set forth.

23. The combination, with the receiving-pen having a movement in two directions crosswise of each other, of a stationary recording-surface over which the pen moves to reproduce the message, a feeding mechanism for shifting the recording-surface at times when the writing is suspended, an electro-magnet for controlling said feeding mechanism, and electrical connections including said magnet, and a circuit maker and breaker at the transmitter, whereby the operator at the transmitter can control the shifting of the paper in the receiver, substantially as set forth.

24. The combination, with the receiving-pen having a movement in two directions crosswise of each other, of a stationary recording-surface over which the pen moves to reproduce the message, an escapement and escapement-lever for effecting the shifting of the recording-surface at times when the writing is suspended, an electro-magnet for operating said escapement-lever, and electrical connections including said magnet, and a circuit maker and breaker at the transmitter, whereby the operator at the transmitter can control the shifting of the paper in the receiver, substantially as set forth.

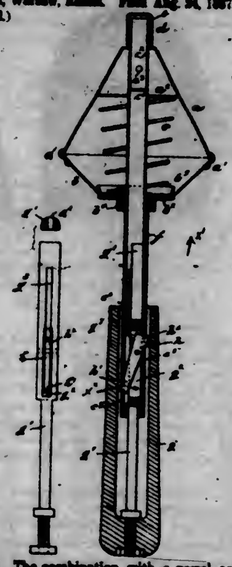
25. The combination, with the receiving-pen, the recording-surface upon which it acts, and a feeding mechanism for shifting said recording-surface when the writing is suspended, of an electro-magnet for controlling said feeding mechanism, a local circuit including said magnet, and circuit-closing devices for energizing and de-energizing said magnet to control the feeding mechanism, substantially as set forth.

26. The combination, with the receiving-pen and the main circuits *b c*, through which it is operated, of a recording-surface upon which the pen acts, and a feeding mechanism for shifting said recording-surface when the writing is suspended, an electro-magnet for controlling said feeding mechanism, a local circuit including said magnet and circuit-closing devices for energizing and de-energizing said magnet to control the feeding mechanism, electro-magnets included in the main circuits for controlling said circuit-closing devices, and circuit making and breaking devices included in the main circuits at the transmitter for energizing and de-energizing said magnets, substantially as set forth.

27. In a telautograph system, the combination, with a transmitter and a receiver located at one station and the electrical connections constituting the line to another station, of a switch for connecting either the transmitter or the receiver to the line, and a pen rack or receiver connected to the switch and operated by the placing of the pen therein to shift the switch and connect the receiver to the line, substantially as set forth.

28. In a telautograph system, the combination, with a transmitter and a receiver located at one station and the electrical connections constituting the line to another station, of a switch for connecting either the transmitter or the receiver to the line, and a pen rack or receiver connected to the switch and operated by the placing of the pen therein to shift the switch and connect the receiver to the line, and a retractile for automatically shifting the switch to connect the transmitter to the line when the pen is removed, substantially as set forth.

386,816. LOOM-SHUTTLE-THREADING DEVICE. FLORIAN GREBNEL, Warsaw, Russia. Filed Aug. 24, 1887. Serial No. 247,893. (No model.)



Claim.—1. The combination, with a vessel containing a spring and having a compressible bottom, of a tube passed centrally through said compressible vessel, a sliding tube mounted on the first-mentioned tube, a sliding handle on the first-mentioned tube, a latch for engaging said handle with the sliding tube, and a latch-disengaging mechanism, substantially as herein shown and described.

2. The combination, with a vessel, of a tube passed longitudinally through the same and fixed therein, a flexible disk secured over the open end of the vessel and to a plate sliding on the tube, and a tube fixed to said plate and mounted to slide on the outside of the first-mentioned tube that is secured in the vessel, a tubular handle into which the lower end of the tubes can pass, a stem fixed in said handle and passing longitudinally through the same, the upper end of said stem entering into the lower end of the tubes, a pivoted latch on the stem, and a spiral spring in the above-mentioned vessel, which spring can act on the flexible disk, and a latch-disengaging mechanism, substantially as shown and described.

3. The combination, with a conical vessel, *a*, of the tube *c*, passed through and secured in the same, the tip or nozzle *d* on the upper end of the tube *c*, the disk *b*, of leather, secured to the bottom edge of the tubular vessel *a*, the plate b^1, secured to the central part of the flexible disk *b*, which plate b^1 is mounted to slide on the tube *c*, the cap b^2, the ring b^4, the tube *f*, surrounding the tube *c* loosely and connected to the plate b^1, the tubular handle *g*, the stem g', passing from the bottom of the handle longitudinally through the handle, the latch *h*, pivoted in a slot of the stem, the spring g^2, secured to the stem and acting on the upper end of the latch, the projection c^2 on the inside of the tube *c*, and the spring *e* within the vessel *a*, and flexible disk *b*, substantially as shown and described.

4. The combination, with the vessel *a*, having the partition a^2, of the tube *c*, passed longitudinally through the vessel *a* and secured therein, which tube *c* is provided with the apertures c^3 and the partition c' near its upper end, the flexible tip or nozzle *d* on that end of the tube *c* projecting above the vessel *a*, the flexible disk *b*, secured at its edge to the bottom of the vessel *a*, the plate b^1, on which the center part of the flexible ring *b* is held, the cap b^2, the ring b^4, the tube *f*, sliding on the tube *c*, the tubular handle *g*, the stem g', projecting upward from the bottom of the handle through the bore of the same and into the lower ends of the tubes *f* and *g*, the latch *h*, pivoted in the stem, the spring g^2, secured to the stem and acting on the upper end of the latch *h*, the projection c^2 on the inside of the tube *c*, and the

spring *c*, surrounding the tube *c* within the vessel *a*, and flexible disk *b*, one end of said spring resting on cap b^2, placed upon the upper surface of the central part of the ring *b*, and also resting against the partition a^2 of the conical vessel *a*, substantially as shown and described.

386,817. COFFEE-POT. AUGUST HARRY, Los Angeles, Cal. Filed Nov. 5, 1886. Serial No. 218,114. (No model.)



Claim.—1. In a coffee-pot, the combination, as set forth, of the following elements: the can of the pot, a cross-partition dividing it into upper and lower compartments, and a tube opening into the upper compartment flush with the upper side of the partition and extending through the partition and opening into the lower compartment, whereby water forced from the lower compartment into the upper compartment by the pressure of steam when the water is sufficiently heated will afterward be allowed to flow back into the lower compartment.

2. A coffee-pot consisting of the following elements in combination, substantially as set forth: the can of the pot, a cross-partition dividing it into upper and lower compartments therein, a tube extending through such partition into the lower compartment, and the valve-closed vent opening into the lower compartment near the top thereof.

3. In a coffee-pot, the combination, substantially as set forth, of the following elements: the can A, partition D, dividing the can into upper and lower compartments, perforated bottom F, tube E, and chamber or passage M, opening into the lower compartment.

4. The combination of cover C, can A, partition D, tube E, perforated bottom F in upper compartment, B, inlet-passage M, valve I, seat J, spout X, and cap V.

5. In a coffee-pot the combination, as set forth, of the following elements: the can A, spout X, passage M, valve-seat L, shaped as a shallow funnel, and ball I, arranged substantially as set forth, whereby when the pot is perpendicular the valve will be closed by the ball, and when the pot is tipped forward to pour the coffee the valve will be opened, substantially as and for the purpose set forth.

386,818. CAR-COUPLING. JOHN T. HAMM, Bear Shores, Simcoe County, Ontario, Canada. Filed Dec. 24, 1887. Serial No. 258,894. (No model.)

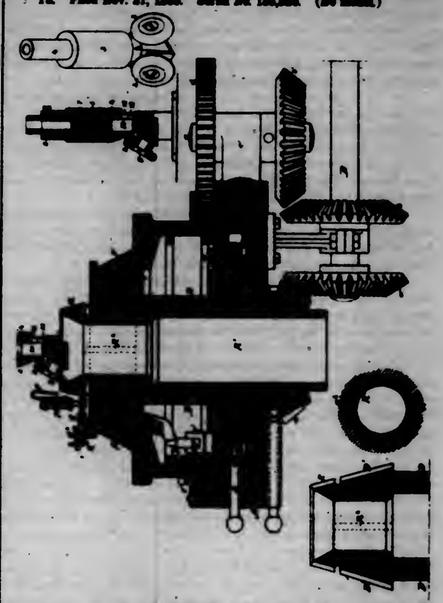


Claim.—1. A tongue, D, pivoted near the mouth of the draw-head B, and bent substantially as shown, so as to form a latch, as indicated, in combination with the vertically-operating frame E, carrying one end of said tongue and actuated by the spring F, substantially as and for the purpose specified.

2. A vertically-operating frame, E, having a cross-bar, *c*, formed in it, a spring, F, attached at one end to the under side of the draw-head and acting on said cross-bar, a tongue, D, pivoted at *b* near the mouth of the draw-head B, and bent substantially as shown, so as to extend over the pin *a* in the frame E, in combination with the link C, arranged substantially as and for the purpose specified.

3. A vertically-operating frame, E, having a cross-bar, *c*, formed in it and actuated by a spring, F, a tongue, D, pivoted at *b* near the mouth of the draw-head B, and bent substantially as shown, so as to extend over the pin *a* in the frame E, in combination with the link C and arm H, connected to the frame E and operated by the rod G, substantially as and for the purpose specified.

386,819. KNITTING-MACHINE. SAMUEL RIEMBALL, Philadelphia, Pa. Filed Nov. 21, 1885. Serial No. 183,333. (No model.)



Claim.—1. The combination of the fixed frame of the machine, the needle-cylinder, and cam-box, each capable of rotation, a cam-controlling rib guided in the fixed portion of the frame, means for expanding and contracting said rib, devices whereby the rib is caused to act upon the cams, and gearing whereby either the needle-cylinder or cam-box can be rotated, all substantially as specified.

2. The combination of the needle-cylinder and its needles, the cam-box and its needle elevating and drawing-down cams, a cam-controlling rib, and means for expanding and contracting the same, and devices, substantially as specified, whereby said rib is caused to act upon both the lifting and drawing-down cams, all substantially as set forth.

3. The combination of the rings *h h'*, the frame K, the shaft J, having pinions *n'* and right and left ratchet-wheels *n n'*, and the swinging frame M, having pawls adapted to said ratchet-wheels, and cams for acting upon said pawls to throw them out of gear, as specified.

4. The combination of the shaft J and its right and left ratchet-wheels, the frame K, retaining-pawls for the ratchet-wheels, the swinging frame M, having operating-pawls thereto, cams for acting upon the operating and retaining pawls, and gearing for operating said cams in unison, all substantially as specified.

5. The combination of the needle-carrier and cam-box of the machine, the shifting thread-guide, a slotted operating-lever connected to said thread-guide and engaging with the needle-carrier, a spring acting on said lever, and a pivot-pin adapted to the slot of the lever, all substantially as specified.

6. The combination of the needle-cylinder, the segmental guide-bar adjacent thereto, a thread-guide adjustable on said bar, a slotted lever connected to said guide and engaging with the needle-cylinder, a spring acting on said lever, and a pivot-pin adapted to the slot in the lever, all substantially as specified.

7. The combination of the needle-cylinder, the segmental guide-bar adjacent thereto, a thread-guide adjustable on said bar, a guide-operating lever comprising a pivoted plate and a bar engaging with the cylinder and having a slot for the reception of the pivot-pin, so that it is free to slide on the plate, and a spring acting on said bar, all substantially as specified.

8. The combination of a tapered needle-carrier with a head separate therefrom and with means for adjusting said head longitudinally on the carrier without turning it in respect thereto, all substantially as specified.

9. The combination of the tapered needle-cylinder, the head R, free to move vertically therein and having threaded end, a sleeve, R', threaded for adaptation to the head R, and means for confining said sleeve vertically to the cylinder and for preventing the head from turning in the cylinder, all substantially as specified.

10. The combination of the drawing-down cam, a spring connected thereto for elevating the cams, a depressing-lever acting on the spring, a rib for operating said lever, and means for adjusting the rib, all substantially as set forth.

11. The combination of the needle-carrier, needles, and thread-guide with the presser, consisting of two rollers, one in advance of the other, a presser-carrier hung to the frame, but free to swing thereon, and means for limiting the extent of movement of the carrier, all substantially as set forth.

12. The combination of the needle-carrier, needles, and thread-guide with a presser, consisting of two rollers, one in advance of the other, and an independent spring-support for each roller, as set forth.

13. The combination of the expanding rib and the rings *h h'*, carrying the cams and having studs *s'*, means for moving said rings, and a stop-pin, *s*, for the studs, as specified.

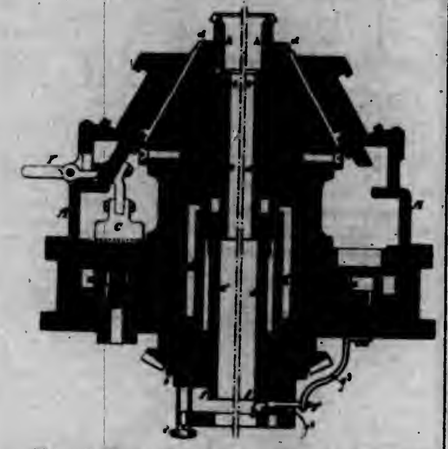
14. The combination of the tension-spring for the thread with the plate T, over which the thread passes, and a lever, the opposite arms of which form guides for the thread, one of said arms being adjacent to the plate T, all substantially as specified.

15. The combination of the driving-gear of the machine, the belt-shifter and the catch therefor, the screw-shaft and its operating mechanism, and a nut constructed to engage with or be released from said shaft and having a tripper, all substantially as set forth.

16. The combination of the driving-gear of the machine, the belt-shifter and the catch therefor, the screw-shaft arranged vertically at one side of the machine, operating mechanism for said screw-shaft, a nut carried by said shaft and having a tripper and a pointer, and a gage-bar carrying, in connection with the pointer, to regulate the adjustment of said nut, as set forth.

17. The combination of the tapered needle-cylinder, the cam-box fitted on the surface of said tapered cylinder, cams guided in said box and free to slide in an inclined plane parallel with the surface of the tapered cylinder, a cam-operating rib contained in a chamber beneath the cam-box, means whereby said rib is caused to act upon the cams, and mechanism for expanding and contracting the rib, all substantially as specified.

386,820. CIRCULAR-KNITTING MACHINE. SAMUEL RIEMBALL, Philadelphia, Pa. Filed June 3, 1887. Serial No. 240,162. (No model.)



Claim.—1. The combination of the needles and needle-operating cam of a knitting-machine, and the needle and cam cylinders, with an expansion-rib serving as a stop for the cam, and a hand-lever for moving the cam into operative position, all substantially as specified.

2. The combination of the needles and needle-operating cam of a knitting-machine, and the needle and cam cylinders, with a toe pivoted to the cam and free to swing thereon, an expansion-rib serving as a stop for said toe, and a hand-lever for moving the cam into operative position, all substantially as specified.

3. The combination of the needles of a knitting-machine, two needle-operating cams, and the needle and cam cylinders, with an expansion-rib serving as a stop for said cams, and a hand-lever for moving each cam into operative position, all substantially as specified.

4. The combination, in a knitting-machine, of a conical needle-cylinder and its needles with an expansion-ring acting upon the needles and free to move vertically on the cylinder below the upper end of the same, whereby the expansion of the needles may be effected without changing their draft, and means for vertically adjusting the position of the said ring, all substantially as specified.

5. The combination of the conical needle-cylinder and its needles, the conical expansion-ring, a carrier therefor, a threaded ring engaging with said carrier, and pawl-and-ratchet mechanism, whereby said threaded ring is moved on each rotation of the cylinder, all substantially as specified.

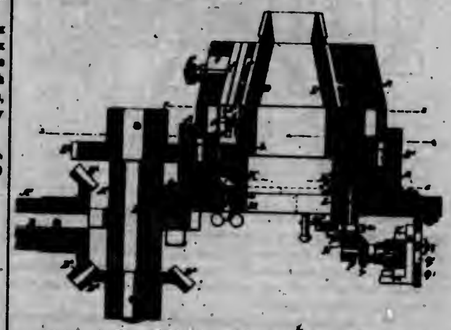
6. The combination of a series of take-up hooks with weights carried by said hooks, said weights being arranged in tiers, and the weights of one tier overlapping those of the tier below and resting thereupon when their hooks are free from the fabric, all substantially as specified.

7. The combination of the take-up frame having depending rods with weights guided on said rods and arranged in tiers one above another, so as to overlap, each weight having a take-up hook, all substantially as specified.

8. The combination of the cylinder having an adjustable top section for regulating the stitch, the threaded ring for operating said top section, and rack-and-pinion mechanism for operating said ring, all substantially as specified.

386,821. KNITTING-MACHINE. SAMUEL RIEMBALL, Philadelphia, Pa. Filed Oct. 7, 1884. Renewed Mar. 12, 1888. Again renewed Nov. 20, 1888. Again renewed Oct. 20, 1887. Serial No. 252,234. (No model.)

Brief.—The movable cams are supported in their elevated position by a rib formed of a number of sections, each carried on a movable ring. Devices are provided for moving said rings either by hand or automatically, whereby the rib can be expanded or contracted and widening or narrowing thereby effected.



Claim.—1. The combination of the frame, the needle-carrier and its needles, needle-actuating cams movable into or out of operative position, a supporting-rib for the cams, and means for contracting and expanding said rib, all substantially as and for the purpose set forth.

2. The combination of the frame, the needle-carrier and its needles, needle-actuating cams movable into or out of operative position, the pawls *g*, the supporting-rib, and means for expanding and contracting the latter, as set forth.

3. The combination of the frame, the needle-carrier and its needles, needle-actuating cams movable into or out of operative position, the pivoted arms *f*, having pawls *g*, the supporting-rib *w*, and means for expanding and contracting the latter, as specified.

4. The combination of the frame, the needle-carrier and its needles, needle-actuating cams movable into or out of operative position, a fixed lifting-cam, G, located between the movable cams, a supporting-rib, *w*, for said movable cams, and means for expanding and contracting said rib, as set forth.

5. The combination of the frame, the needle-carrier and its needles, needle-actuating cams movable into or out of operative position, the supporting-rib *w*, mechanism for expanding and contracting the same, and means for locking one or both of the movable cams in the elevated or operative position, as set forth.

6. The combination of the frame, the needle-carrier and its needles, needle-actuating cams movable into or out of operative position, the rib *w*, a series of rings, V and W, each carrying a section of the rib, and devices for moving the rings of one set in one direction and those of the other set in the opposite direction, as set forth.

7. The combination of the rings J and K, having racks J' K', the pinions J^3 K^3, the pinion-shaft L, the shaft P, having ratchets $P' P^3$, gearing connecting the shafts L and P, and adjustable pawls for engaging said ratchets, as set forth.

8. The combination of the rings J K, having racks J' K', the pinions J^3 K^3, the pinion-shaft L, the shaft P, having ratchets $P' P^3$, gearing connecting the shafts L and P, and the adjustable slides R R', having pawls $r' r^4$, as set forth.

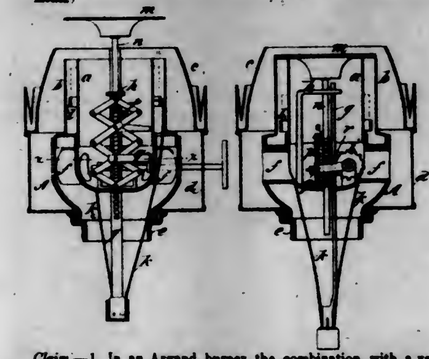
9. The combination of the frame, the needle-cylinder and its operating mechanism, the cams I I', the rings J K, having rib-sections and

racks, the shaft L and its pinions, pawl-and-ratchet mechanism for operating the shaft, notched disk m, the detent m', and cams m², as specified.

10. The combination of the frame and needle-cylinder, the cams I F, the rib w, and mechanism for expanding and contracting the rib, the said needle-cylinder being adjustable in respect to the portion of the frame carrying the rib and its operating mechanism, so as to widen and narrow on either or both sides of a tube, as set forth.

11. The combination of the frame, the conical needle-carrier and its needles, needle-actuating cams movable into or out of operative position, a supporting-rib for the movable cams, and devices for expanding and contracting the rib, said rib and its operating devices being located adjacent to the lower portion of the cylinder, where its diameter is greatest, as set forth.

386,822. LAMP-BURNER. Edwin H. Hibbs, New York, N. Y.; Mary H. Hibbs administratrix of said Edwin H. Hibbs, deceased. Filed July 16, 1884. Renewed Nov. 17, 1888. Serial No. 212,180. (No model.)



Claim.—1. In an Argand burner, the combination, with a vertically-movable deflector, a wick-adjusting rack, and a wheel for operating the said rack, of a spring for raising the deflector, and means connected with the shaft of said wheel and operated by the wick-adjusting mechanism for causing the descent of the deflector upon the wick, substantially as specified.

2. In an Argand burner, the combination, with a vertically-movable deflector, a wick-adjusting rack, and a wheel for operating the said rack, of a spring for raising the deflector, and a rocking or swinging arm connected with the shaft of said wheel and operated by the wick-adjusting mechanism, causing the descent of the deflector upon the wick, substantially as specified.

3. The combination, with an Argand burner having a central air passage or tube, and the wick-operating mechanism arranged in said tube, of an extinguisher, a vertically-sliding rod supporting the same, extending down into the central air passage or tube, and intermediate connections between the extinguisher-support and the wick-operating mechanism, whereby provision is made for controlling the sliding movement of the extinguisher-rod by the wick-raising mechanism, substantially as herein shown and described.

4. The combination, with an Argand burner having a central air-tube, of the rack *g*, arranged within the air-tube, the ratchet-wheel *i*, and the arms *k*, extending outside of the air-tube and provided with wick-engaging device on their ends, substantially as herein shown and described.

5. The combination, with a lamp-burner, of the rack *g*, placed within the air-tube, ratchet-wheel *i*, arms *k*, extending outside the air-tube, and the ring or holder *l*, substantially as described.

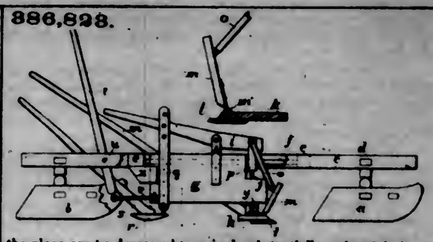
6. The combination, with an Argand burner having a central air-tube, of the toggles *p*, the spring for extending the same, the rod *n*, connected to the toggles, the deflector *n* on the rod, the rack *g*, and means for operating the rack and depressing the toggles by the downward movement of the rack, substantially as herein shown and described.

386,823. ROAD PLANER AND LEVELER. James L. Holmes, Oxford, Ala. Filed Apr. 16, 1888. Serial No. 271,091. (No model.)

Claim.—1. In a machine for repairing roads, the combination, with suitable sleds and frame mounted thereon, of adjustable sliding blocks *g*, supported on rods set in said frame, levers *t*, attached to the sides of said frame, and connecting-links *v*, all substantially as and for the purposes hereinbefore set forth.

2. In a road-machine, the combination, with adjustable sliding blocks, as set forth, of a plane or knife pivoted beneath said block and lever attached to the upper side thereof, whereby the edge of

386,828.



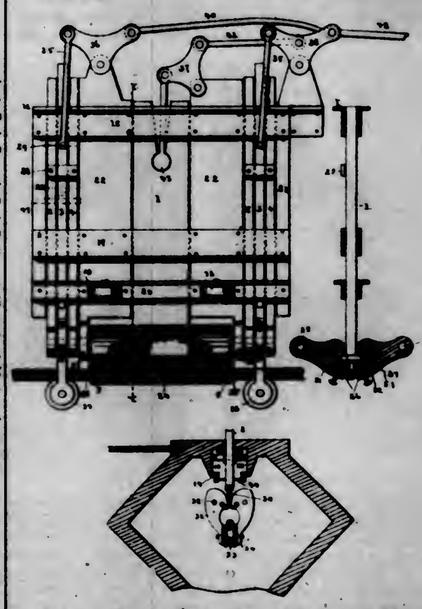
the plane can be depressed or raised, substantially as hereinbefore set forth.

3. In a road-machine, the combination, with adjustable sliding blocks, as set forth, of a plane or knife pivoted beneath said blocks, a lever attached to the upper face thereof, a leveler pivoted near the edge and on top of the plane, and a link connecting said leveler to the block or a standard on the block, all substantially as and for the purposes hereinbefore set forth.

4. In a road-machine, the combination, with adjustable sliding blocks, as set forth, of a lever attached to the top of the block, a rod connected to the end of the lever and passing down through the block, and a plane pivoted to the lower end of the rod, all substantially as and for the purposes hereinbefore set forth.

5. In a road-machine, the combination, with the adjustable sliding blocks *g*, arranged and operated as set forth, of a smoother, *r*, pivoted to the bottom of said block, all substantially as and for the purposes set forth.

386,824. CABLE GRIPPER AND PICK-UP. James B. Holmes and Lewis H. Charles, Washington, D. C., assignors of one-third to Benjamin B. Gibbs, same place. Filed July 20, 1887. Serial No. 245,056. (No model.)



Claim.—1. The combination of a conduit provided with flanges or cams, a picking-up device provided with a bearing to engage said cams, and a gripping device with pivoted jaws adapted to be closed by the forcing of the cable against the same, substantially as specified.

2. The combination of a conduit provided with cams or flanges, a picking-up device consisting of movable jaws or parts and provided with a bearing to engage the cams, a pivoted gripping device, supporting and operating parts of the picking-up device arranged with reference to the gripping device to lift the cable slightly above the latter, and the cable, substantially as set forth, whereby the cable may be automatically picked up and forced into the jaws of the gripper to close the same.

3. The combination of a conduit provided with cams or flanges,

a picking-up device consisting of movable parts or jaws carrying a cable-supporting wheel and provided with a bearing to engage the cams, pivoted gripping-jaws, supporting and operating parts of the picking-up device arranged with reference to the gripping device to lift the cable slightly above the latter, and the cable, substantially as set forth, whereby the picking-up device may be automatically operated to receive and sustain the cable upon a wheel and force it again against the jaws to close the same.

4. The combination of the conduit, a cable, the picking-up device, the gripping device embracing pivoted toggle-levers, their vertical bars supported to move in the slot of the conduit, an operating-lever connected to the vertical bar of the picking-up device to move the wheel of the pick-up above a plane tangential to the lower surface of that part of the cable which is adjacent to or in the grip, to lift the cable and close said grip, and operating devices, substantially as set forth, whereby the cable may be dropped by both picking-up and gripping devices, and the cable subsequently picked up and forced into the jaws of the gripping device to close the same.

5. The combination of the conduit provided with ways immediately below the lips of the slot, and the friction-wheel 13, journaled in the fixed bar 22 of the frame between bars 20 and arranged to engage on either side, according as the bar is inclined, to one side or the other, substantially as specified.

6. The combination of a curved conduit provided with ways immediately below the lips of the slot, the wheel 13, journaled in the fixed bar 22 of the frame between bars 20 and arranged to engage on either side, according as the bar is inclined, the cable, and guide-wheels, substantially as specified, whereby the cable may be kept from contact with the wall of the conduit at curves or elsewhere and the bar be kept in vertical position.

7. The arms of the gripping devices provided with removable jaws and with springs, and having openings in the jaw-holding arms for inserting a tool to remove the springs, substantially as specified.

8. The combination of the picking-up device and its cable-supporting wheel, the pivoted gripping levers or arms having jaws movable in their seats, springs located behind said jaws, and operating mechanism whereby a cable may be pressed by the wheel against yielding jaws, and finally receive an unyielding grip, substantially as specified.

9. A cable-gripping apparatus having gripping-levers, one of which is provided with a socket, and a removable gripping-jaw and removable plate in said socket, substantially as specified, whereby the wear of the jaws may be compensated for by the introduction of plates into the socket behind the jaw.

10. The combination of the pivoted arms 5, of the gripping device provided with notches or recesses 43, the operating-bar provided with the head 24 to engage in the recesses of the pivoted arms, and mechanism for raising and lowering the operating-bar to close or open the gripper, substantially as specified.

11. The combination of the arms of the picking-up device, pivoted as shown, the chains secured to said arms, and mechanism for raising and lowering the chains, substantially as set forth, whereby the arms may be opened and closed.

12. The combination of the operating-bar, of the picking-up device made in parts, the spring-catch, the frame, the pin to disengage the catch, the pivoted arms, and the operating mechanism, whereby a part of the operating-bar may be moved to open the picking-up arms while the other parts of said bar are locked, substantially as specified.

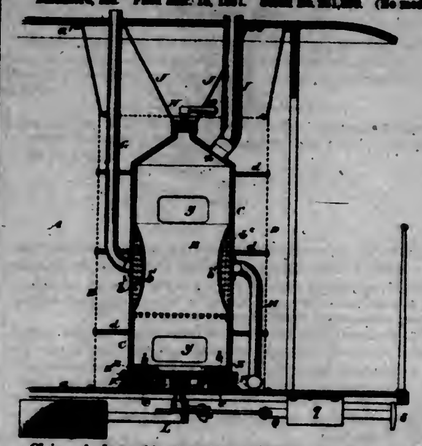
13. In a device for picking up a cable, a compound operating-bar, the parts of which are made separately movable, combined with an automatically-acting locking device adapted to lock one member of said compound bar to the frame, and said frame, said locking device having a flange substantially at right angles to the bar and a distinct releasing device, substantially as specified, whereby a positive locking together of the parts may be effected and independent movement provided for at times desired.

14. In a device for picking up a cable, the cable, a compound bar having an independently-movable part, a lever connected to said part, a stop secured to another part to limit the separate movement of said independently-movable part, pivoted arms, and a cable-supporting wheel having an axis secured in a bearing in one arm and free to enter or leave a bearing in the opposite arm, substantially as specified, whereby the gripping device may be vertically moved whether open or closed, and whereby the wheel and axis may be swung beneath the cable and the axis supported at each end when the cable is on the wheel.

15. The combination of the picking-up and gripping devices and their operating-bars, bell-crank levers, a rod connecting the levers, and rods connecting the levers and the operating-bars, the rod between the grip-bar and its corresponding lever being pivoted nearer its center of motion than the rod between the picking-up bar and its lever, whereby the operating-bars can be moved simultaneously but at different rates of speed, substantially as specified.

16. The combination of an operating-lever, bar l, a gripping device, the connecting-rod 43, provided with a head and cross-bars, as 24, substantially as specified, whereby the operating-lever and the grip-sustaining bar are connected for operation.

386,825. STOVE FOR RAILWAY-CARS. John T. Hoffman, Baltimore, Md. Filed Mar. 16, 1887. Serial No. 231,093. (No model.)



Claim.—1. In combination with a fixed base-plate supported from the floor of a car having a central hole therein, a stove having a pintle at its bottom which passes through the hole in the said base-plate, and another pintle at its upper end, and a fixed casing which surrounds the said stove fastened at its lower end to the said base-plate and at its upper end provided with a hole in which the upper pintle rests, the said stove and its pintles being adapted to turn independently of the said casing and the base-plate, substantially as and for the purpose specified.

2. In combination with the floor of a car, a plate supported from the said car-floor having a central hole therein, a revolvable stove on or over the said base-plate having a pintle which projects through the hole in the said base-plate and through the floor of the car, carrying an arm with a weight at its end, and a casing which surrounds the said stove, substantially as and for the purpose specified.

3. A stove contracted in the middle and a casing surrounding said stove, combined with a pipe for conveying cold air to the chamber formed by the casing and the contracted portion of the stove, and a pipe for conveying the heated air therefrom, substantially as described.

4. A stove having a pintle projecting through the floor of the car, said pintle having an arm attached thereto, and a casing surrounding said stove, combined with a bar, mounted in a box attached to the floor of the car, attached to said arm and adapted to revolve the stove in the event of the cars telescoping, substantially as described.

386,826. ROPE-CARRYING DEVICE. George C. Howard, Wallingford, Pa. Filed Aug. 15, 1887. Serial No. 247,087. (No model.)

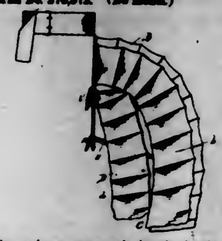


Claim.—1. In an anti-friction device for guiding a rope or cable in a curved line, the combination of an endless stationary track and an endless carrying-chain composed of blocks jointed together and provided with sustaining-rollers which travel upon the track, said blocks having their outer faces adapted to receive and loosely carry the rope.

2. An anti-friction guide or carrier for ropes and cables, consisting of an endless chain with blocks grooved in their outer faces to

receive and freely support the rope and provided with sustaining-rollers, in combination with a stationary curved track, whereon the rollers freely travel, located within the chain and supporting the rollers opposite or beneath the rope-bearing surfaces.

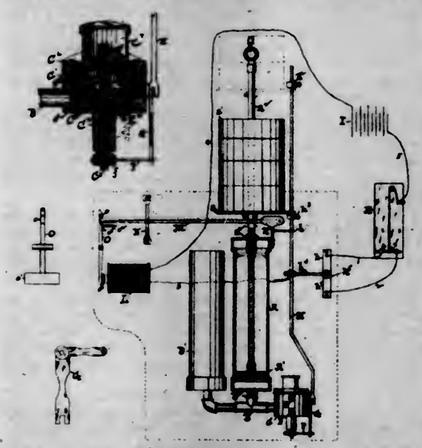
386,827. BUSTLE. ANNE H. JAMISON, Fremont, Ohio. Filed Apr 11, 1888. Serial No. 270,372. (No model.)



Claim.—1. As an improvement in bustles having a vertical frame and a series of outer downwardly-curved coil-springs, the separate coil-supporting springs disposed within a bag or covering and adjustably secured under said outer springs in an approximately vertical position, substantially as shown and described.

2. The herein-described improved bustle, comprising the vertical frame, the series of outer curved coil-springs connected thereto, the bag or covering therefor, the separate coil-supporting springs disposed in an approximately vertical position, together with their bag or covering, and the adjusting or holding tapes for securing said supporting-springs to said frame beneath said outer springs, substantially as shown and described.

386,828. TEMPERATURE-REGULATOR. CHARLES W. JOHNSON, Holyoke, Mass. Filed Dec. 27, 1887. Serial No. 259,128. (No model.)



Claim.—1. In an apparatus for regulating temperature, the combination of the following instrumentalities, viz: a cylinder containing a piston the stem of which is to be operatively connected with the draft-governing devices of a furnace, a valve operated by the movement of said piston governing the admission of fluid or liquid under pressure to and its exhaustion from said cylinder, a trip-lever and pawl for temporarily suspending the movement of the piston, an electric generator, a thermostat, an electro-magnet, and suitable conductors between said battery, thermostat, magnet, and pawl, whereby the latter will be operated to release the trip-lever by variations in the degree of temperature, substantially as set forth.

2. The apparatus for regulating temperature herein described, comprising, in combination with an electric battery, an electro-magnet, and a thermostat, a vertical cylinder containing a piston, a valve governing the admission of fluid or liquid under pressure to and its exhaustion from said cylinder, a rod operatively connected with the stem of said valve and extending upwardly in a plane parallel with the stem of said piston, steps located upon said rod adapted to be engaged by a contact device upon the piston-stem, a trip-lever located adjacent to the piston-stem and adapted to be engaged by steps upon the latter before the piston arrives at the end of its movement in either direction, a pivoted pawl having at one end an armature located within the field of the magnet and at its opposite end a notch to engage the end of said trip-lever, two contact-pieces located adjacent to the valve-operating rod, a circuit-breaking device secured to said rod and adapted to pass from one of said pieces to the other with the movement of said rod, a wire connecting each of said pieces with one of the contact-points of the thermostat, a wire connecting the battery with the rod of the thermostat, a wire connecting the battery with the magnet, and a wire connecting the magnet with the circuit-breaking device on the valve-operating rod, arranged and operating substantially as and for the purpose described.

3. In an apparatus for regulating temperature, the combination, with cylinder A, containing piston A', of valve C, consisting of shell C', having seats c c' and ducts c^2 c^3 d e, disks C^2 C^3, fitted to said seats and having ports c^4 c^5, respectively, pipe B, communicating with cylinder A and also with said valve by means of said ducts c^2 c^3, and pipes D E, communicating with said valve by means of ducts d e, respectively, substantially as and for the purpose set forth.

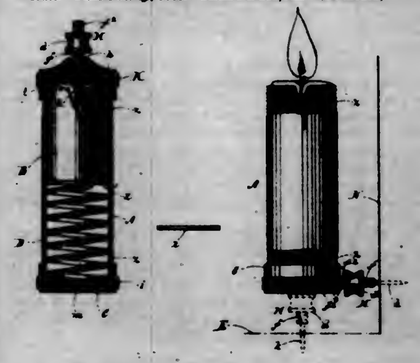
4. In an apparatus for regulating temperature, cylinder A, containing piston A', valve C, supply-pipe D, and exhaust-pipe E, communicating with said valve, air-chamber E', and pipe B, communicating at one end with said air-chamber, at its opposite end with said valve, and between its ends with cylinder A, combined and operating substantially as described.

5. In an apparatus for regulating temperature, a vertical cylinder containing a piston the stem of which is to be operatively connected with the draft-governing devices of a furnace, in combination with valve C, consisting of shell C', having seats c c', disk C^2, fitted to said seat c and having stem C^3, pins c^2, and port c^4, disk C^4, fitted to said seat c' and having port c^3 and orifice c^5, pipe E, communicating by means of duct e with the seat of disk C^2, pipe D, communicating by means of duct d with the valve-chamber above disk C^4, and pipe B, communicating by means of duct c^2 with said chamber between the disks and by means of branch duct c^3 with the seat of disk C^4, said pipe B also communicating with the cylinder, arranged and operating substantially in the manner described.

6. In an apparatus for regulating temperature, cylinder A, piston A', having stem A^2, provided with a contact device, a, valve C, having disks c^2 c^3, operated by stem C^3, pipes D E, communicating with said valve, pipe B, connecting said valve with the cylinder, arm F, secured to said stem C^3, lever G, engaging said arm at one end, and rod H, connected to the opposite end of said lever, said rod having adjustably secured thereon tappets h^2 h^3, lying within the plane of the movement of the contact device on the piston-stem, whereby the valve-disks are operated by said piston-stem, substantially as set forth.

7. As a means for electrically controlling the apparatus for regulating temperature herein described, the combination, with the cylinder, piston, valve, and tappet-rod for operating said valve, arranged and operating substantially as described, of trip-lever M, pivoted to bracket k' and loosely embracing the piston-stem between stops on the latter, pawl O, having notch o at its upper end and armature o' at its lower end, an electric battery, as I, a thermostat, as K, having the contact-points 6 7 thereon, an electro-magnet, as L, facing said armature o', contact-plates k k', arm k^2, secured to the tappet-rod and having mounted thereon roll k^3, bearing upon said plates alternately as the tappet-rod is raised or lowered, wires connecting each of said plates with one of the points 6 7 of the thermostat, a wire connecting the apparatus with the magnet, and wires connecting the battery with the magnet and also with the rod of the thermostat, substantially as and for the purpose set forth.

386,829. POCKET CANDLE-CASE. JAMES H. JOHNSON, Boston, Mass. Filed Feb. 13, 1888. Serial No. 263,843. (No model.)



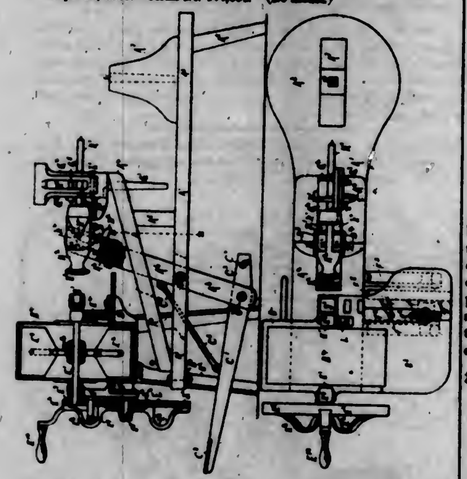
Claim.—1. In a device of the character described, the combination of the following instrumentalities, to wit: a hollow cylindrical body exteriorly screw-threaded at each end and adapted to receive a candle, a coiled spring disposed in said body and provided at its inner end with a plate or follower for supporting the candle, a screw-cap for closing one end of said body and compressing said spring, said cap being provided with a screw-threaded hole in its bottom and also in its side for receiving a supporting-bead, an interiorly-screw-threaded cover for said body, said cover being provided with a centrally-disposed screw-threaded hole for receiving said bead, and a supporting-bead provided with a rosette and with a head having two exteriorly-screw-threaded portions, one of said portions being adapted to fit the holes in said cap and the other the hole in said cover, substantially as set forth.

2. In a pocket candle-case, the combination of a cylindrical body adapted to receive a candle and provided with an inwardly-projecting flange at its upper end, a screw-cap fitted to the lower end of said body and provided with threaded holes in its bottom and side adapted to receive a screw-threaded supporting-bead, a screw-cover fitted to the upper end of said body and provided with a centrally-disposed screw-threaded hole for said bead, and a screw-threaded supporting-bead inserted in the hole in said cover, substantially as set forth.

386,830. PROCESS OF OBTAINING ROTENE. WILHELM KELBE, Gerbrode, Baden, assignor to the Actien-Gesellschaft für Chemische Industrie, Rheinau, near Mannheim, Germany. Filed Apr. 4, 1888. Serial No. 269,891. (No specimens.) Patented in Luxemburg Sept. 30, 1887, No. 693; in France Oct. 3, 1887, No. 183,693, and in Belgium Oct. 3, 1887, No. 78,978.

Claim.—A process of manufacturing rotene ($C_{30}H_{50}$) from rosin-oil by heating the latter in the presence of sulphur in a vessel until the formation of sulphide of hydrogen is entirely finished, the raw rotene being then obtained from the residues either by distillation or by extraction by means of suitable solvents—such as alcohol, benzine, petroleum-ether, and the like—and finally purified by means of repeated crystallizations, substantially as set forth.

386,831. WORK-BENCH. JAMES KELLY, Carver, Minn. Filed Sept. 21, 1885. Serial No. 177,051. (No model.)



Claim.—1. The combination, with a work-bench having a work-plank thereon, of a lathe mandrel or chuck mounted on a frame secured to the bench, a tail-stock mounted on the plank removable and reversible in position, a lever pivoted to the bench and adapted to move the tail-center to the work, and a treadle for operating the said lever, all arranged in relation to one another substantially as herein set forth.

2. The combination, with a work-bench having a work-plank thereon provided with a socket, of a lathe tail-stock fitted in the said plank-socket removable and reversible therein and provided with clamp-jaws, and a lathe tail-center sliding in one of the jaws of the clamp, substantially as herein set forth.

3. The combination, with a work-bench having a work-plank thereon provided with a socket, of a lathe tail-stock fitted in the said plank-socket, a lathe tail-center sliding in the said tail-stock, and a leather-splitting knife inserted in an anvil on the tail-stock, the said tail-center being adapted to act as a guide to the leather split by the said knife, substantially as and for the purpose herein set forth.

386,832. INSOLE. CHARLES W. KING, West Newton, Mass., assignor to Charles A. King, New York, N. Y. Filed Sept. 22, 1887. Serial No. 250,502. (No model.)

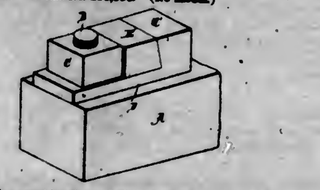
Claim.—An insole for boots and shoes, consisting of layers of woven fabric saturated or filled and secured together with gum-shellac dissolved in borax-water or its described equivalent, substantially as set forth.

386,833. BOOT OR SHOE. CHARLES W. KING, West Newton, Mass., assignor to Charles A. King, New York, N. Y. Filed Nov. 14, 1887. Serial No. 255,099. (No model.)



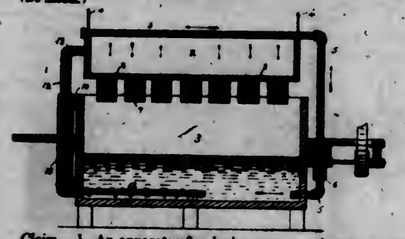
Claim.—The combination, in a boot or shoe, with the outer and inner soles, of fasteners provided with oppositely-projecting prongs placed between the said outer and inner soles inside of the line of the channel of the outer sole, whereby the said outer sole is temporarily secured in place preparatory to its permanent attachment, substantially as set forth.

386,834. NUT-LOCK. MIDDLETON H. KOONTZ, Zoin, W. Va. Filed Mar. 26, 1888. Serial No. 268,534. (No model.)



Claim.—The combination of the nut C, the elongated washer D, having a pin, d, standing from its inner surface near one end opposite that adjacent to the bolt-hole, and having a flange, d', with its inner edge beveled inwardly away from the nut, the locking-block E, beveled on its outer edge, fitting closely between the nut and flange d', and provided with a tapped recess, f, and the screw F, passing through a suitable opening in the flange d and engaging in the recess f, the nut, the flange, and the locking-block having their outer surfaces flush with each other, substantially as specified.

386,835. APPARATUS FOR DYEING. FRANK W. LEE and JOHN G. BRADSHAW, Lawrence, Mass. Filed Apr. 14, 1888. Serial No. 270,575. (No model.)

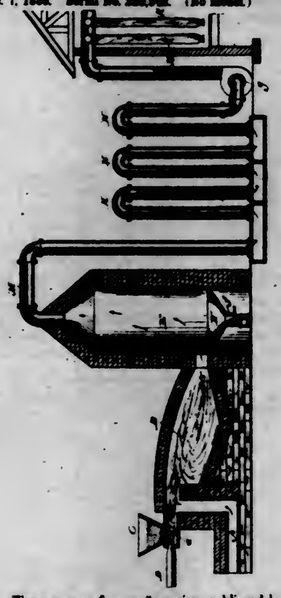


Claim.—1. An apparatus for dyeing yarn or other fibrous material, consisting of two open vats separate one from the other, each vat so uncovered and with the upper vat having depending vessels with a perforated top and bottom located in the upper exteriorly thereof, and liquid-forcing apparatus, as specified, by which the coloring-mixture supplied from the lower vat is permitted by gravity to permeate the material in process, substantially as herein set forth.

2. In apparatus for dyeing yarn or other fibrous material, the open mixing-vat 3, the open dyeing-vat 2, dispersed above and adjustable with respect thereto, combined with the vessels 7, communicating with the mixing-vat and the supply-pipe 5, and forcing apparatus 6, substantially as herein described.

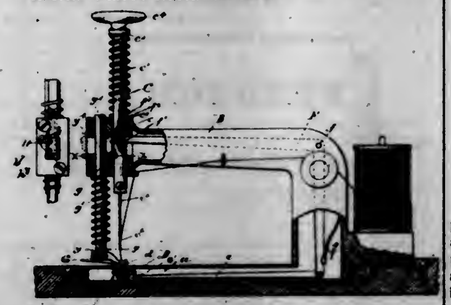
3. The combination, with a fixed mixing-vat, 3, the supply-pipe 10, steam-pipe 12, delivery-pipe 5, and forcing apparatus 6, of the open dyeing-vat 2, vertically adjustable, its overflow 13, and the removable vessels 7, perforated at the top and bottom, located exteriorly of the dyeing-vat, and communicating with the mixing-vat, substantially as stated.

386,836. PROCESS OF MANUFACTURING SUBLIMED LEAD PIGMENT FROM GALENA ORE. GEORGE P. LEWIS, Philadelphia, Pa. Filed Dec. 7, 1886. Serial No. 220,982. (No model.)



Claim.—The process of manufacturing sublimed lead pigment from finely-divided galena, which consists in forming a compound current of intimately-admixed gas, air, and finely-divided galena before entering the combustion-chamber, inflaming said current at the point of entrance into said chamber, maintaining the resultant salts in suspension by the air-blast while being forced through said chamber, cooling the material obtained by the combustion of the gas and galena, and finally depositing the lead salts by forcing them into receptacles of textile fabric, substantially as set forth.

386,837. SEWING-MACHINE. ISAAC W. LITCHFIELD, Warwick, assignor of one-half to Philip H. Dumaresq, New York, N. Y. Filed Sept. 23, 1886. Serial No. 178,365. (No model.)



Claim.—1. The combination of the driver-bar C, operated as described, having the recess f^3, provided with the shoulder f^4, the lever F, pivoted at f, the end of which enters the said recess f^3, the connecting-rod e, and looper B, and spring f^5, all substantially as described.

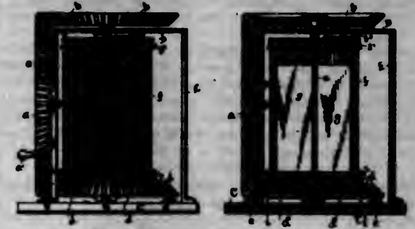
2. The needle-bar supported in a bracket, as described, so as to reciprocate vertically, the bell-crank lever F, pivoted in the frame and having engagement with a shoulder on the needle-bar, the looper-bar e, connected to said lever, and the looper connected to said bar, all in combination, substantially as described.

3. The bracket, the needle-bar reciprocating vertically therein, the presser-foot rod practically parallel with the needle-bar and supported in bearings so as to turn on its own center, a cam-groove in the needle-bar, of the character described, and a spring-pin in the presser-foot rod extending into said groove and guided therein, all combined in a sewing-machine, in the manner and for the purpose described.

4. The combination of the bracket, the needle-bar supported therein and having a spring-lifting device, the presser-foot and its bar parallel with the needle-bar and connected thereto by slot-and-pin connection, and a presser-spring of less strength than the needle-bar spring, all substantially as described.

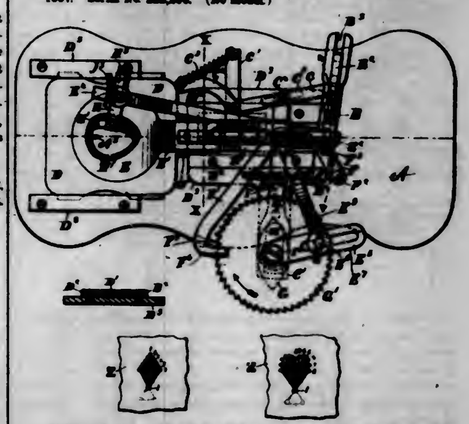
5. The combination of the needle-bar, the presser-foot bar, and a slot-and-pin connection between the two, the bracket, and a movable stop on the bracket in position to engage the pin of the presser-rod and keep it from rising, as set forth.

386,838. CHURN. SHADRAH J. LOVEJOY, near Mount Sterling, Ohio. Filed Mar. 29, 1888. Serial No. 268,193. (No model.)



Claim.—The combination, with the bottom plate, C, provided with anti-friction wheels c, of the frame-work B D E, secured to the bottom plate, the miter-wheels a and b, pivoted to the frame-work, the miter-wheel d, pivoted to the bottom plate, the can f, detachably supported on the miter-wheel d, and the dasher-shaft e, substantially as described.

386,839. FLOSSING-MACHINE. JOHN MCDERMOTT, Troy, N. Y., assignor of one-half to Theodore F. Barnum, same place. Filed Jan. 24, 1887. Serial No. 225,206. (No model.)



Claim.—1. In a sewing-machine, a vibratory cloth-plate and plate-actuating lever connected by a link one end of which is movably secured in a slideway extending longitudinally of said lever, and means for operating said lever, in combination with a cam-operated arm pivoted to said link for the purpose of regulating the position of its movable end in said slideway, and means, substantially as described, for actuating said cam, as and for the purposes set forth.

2. In a sewing-machine, a vibratory cloth-plate, a plate-actuating lever, means for actuating the same, a link connected with the said lever, the point of connection being longitudinally adjustable on the lever, a cam and suitable connections for varying the position of the said point of connection, means for connecting the link to the vibratory cloth-plate, in combination with a secondary cloth-plate rotatory on the first-mentioned cloth-plate, an arm connected thereto, a crank, a suitable connection between the arm and the crank, and means for rotating the crank, all substantially as described, and for the purposes set forth.

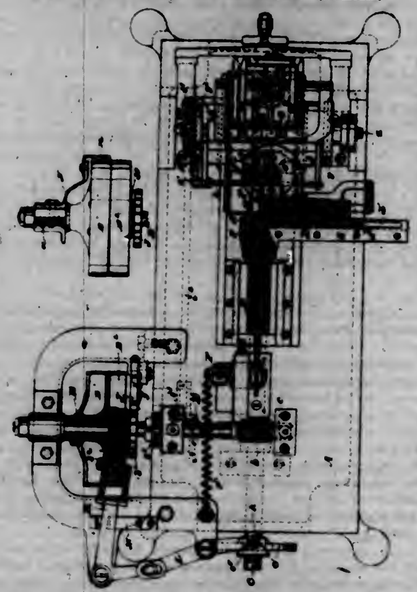
386,840. SHOE OR SLIPPER. LEVI A. HAMMOND, Stockton, Me. Filed Nov. 30, 1887. Serial No. 256,494. (No model.)



Claim.—1. The improved cut or pattern for shoes or slippers, consisting of the sole A, the quarters C C, extending round the same, ending in the interesting rounded parts d d, the extending sides B B, cut to meet over the instep and extend down the front almost to the toe, and the rounded toe portion i i, turning up around the toe, all cut integral, substantially as described.

2. The combination of the sole A, cut integral with the quarters C C, extending round the same, uniting at the heel, the extending sides B B, meeting over the instep and forming the front of the shoe, and the rounded toe turning up around the same, with the short center-shaped tip F, connecting the parts i i and e e, substantially as described.

386,841. NEEDLE-GROOVING MACHINE. LEMUEL B. MILLER, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed Jan. 24, 1888. Serial No. 261,782. (No model.)



Claim.—1. In a needle-grooving machine, the combination, with the needle-grooving and needle-feeding appliances and a cam-shaft having cams to operate the latter, of a driving-shaft for the said cam-shaft, fast and loose pulleys on the said driving-shaft, gears and a ratchet-wheel and pawl to connect the said loose pulley with the said driving-shaft, a belt-shipper mechanism to shift the driving-belt onto the fast and loose pulleys alternately, and a friction-pad to bear on the said fast pulley and prevent the said driving-shaft from overrunning when the speed thereof is changed from fast to slow, substantially as set forth.

2. In a needle-grooving machine, the combination, with the needle-carriages and the cam-shaft from which they are operated, of a driving-shaft for the said cam-shaft, a needle-removing mechanism operated from the said driving-shaft, needle-grooving cutters operated independently of the said driving-shaft, fast and loose pulleys on the said driving-shaft, a train of reducing-gears to indirectly connect the said loose pulley with its shaft, and a belt-shipper to shift the belt onto the said fast and loose pulleys alternately, whereby the grooving-cutters can be operated at a uniform speed and the other mechanisms of the machine at alternate fast and slow speeds, substantially as set forth.

6. The combination, with the driving-shaft B, the fast and loose pulleys B' and B², a belt-shipping mechanism, a train of gears, a ratchet-wheel, b', loose on said shaft and having a rigid connection with one of said gears, and the pawl J, having the friction-spring j, bearing against the side of the said wheel, to operate substantially as set forth.

7. The combination, with the driving-shaft B, the cam-shaft C, and the needle feeding, grooving, and removing devices, of the fast and loose pulleys B' and B², the planetary gears 28 and 30, carried by the said loose pulley, the fast and loose gears 36 and 34 on the said driving-shaft, the ratchet-wheel b', loose on the said shaft, but rigidly connected with the said loose gear 34, the pawl J, the belt-shipper K, the lever L, and the disk d', having cam blocks or dogs for operating said lever, substantially as set forth.

386,842. SCREW-CUTTING DIE AND STOCK. RASMUSSEN OLSEN, New York, N. Y., assignor to the Adjustable Die and Stock Company, same place. Filed Nov. 2, 1887. Serial No. 254,603. (No model.)



Claim.—1. The forked handle A, combined with the disks B B, having a series of corresponding dies, c, on their rims, each disk B being carried on an arm of said forked handle, substantially as described.

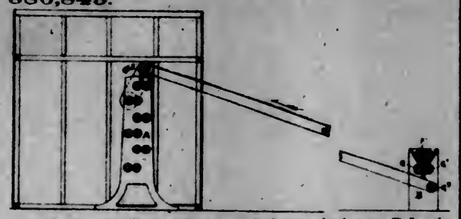
2. The forked handle A, having spring-arms a, combined with the disks B B, having corresponding dies c, substantially as herein shown and described.

3. The handle A, having spring-arms a and screw i, connecting said arms a, combined with the pivoted disks B B, having corresponding dies c, and means for securing the disks in position, substantially as described.

386,843. AUTOMATIC FEED AND DELIVERY APPARATUS FOR GUNPOWDER-MILLS. PAUL A. OLIVER, Oliver's Mills, Pa. Filed June 14, 1887. Serial No. 241,268. (No model.)



386,843.

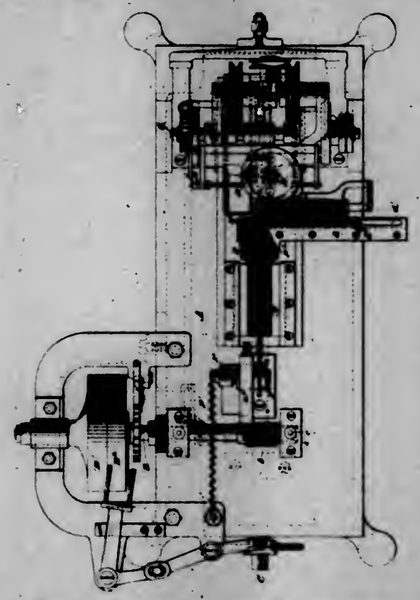


Claim.—1. The combination of the supply-hopper F for the unground explosive materials, the conveyer C, the gunpowder-grinding mill A, fed uniformly by the said conveyer, the conveyer D, driving-wheels connecting the said conveyers with the revolving mechanism of the mill, and the discharge-hopper E, the said mill being located at such distances from the supply and discharge hoppers that the explosion of the small quantity of material in the mill will not be communicated to the contents of the hoppers.

2. The combination of the supply-hopper F for the unground explosive materials, the distributer B, provided with revolving rolls, the conveyer C, driving-wheels connecting the conveyer with the revolving mechanism of the mill, the toothed wheels positively connecting the conveyer with the distributer-rolls, and the gunpowder-grinding mill A, fed uniformly by the said conveyer and located at such a distance from the supply-hopper that the explosion of the material in the mill will not be communicated to the contents of the hopper.

3. The combination, with a gunpowder-mill, of a traveling belt driven from the mill for conveying the inflammable material to the mill, a feed-hopper for the material, and a pair of revolving rolls journaled below the feed-hopper for distributing the material evenly upon the belt.

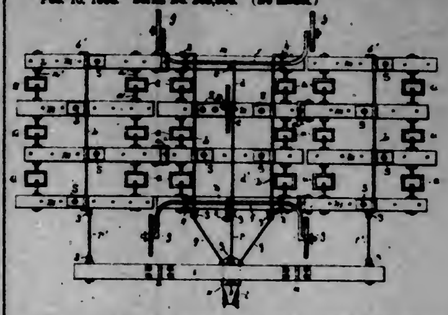
386,844. NEEDLE-GROOVING MACHINE. HENRY S. PARSONS, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed Jan. 24, 1888. Serial No. 261,790. (No model.)



Claim.—1. In a needle-grooving machine, the combination, with the needle-carriage D and the needle holder or magazine carried thereby, of a needle-feeding push-pin arranged to slide longitudinally in said carriage, and actuating mechanism for said pin, to operate substantially as set forth.

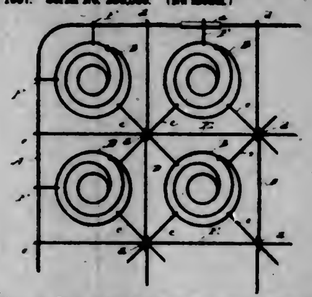
2. In a needle-grooving machine, the combination, with the needle-carriage D and the needle holder or magazine *d*, carried thereby, of the needle-feeding push-pin *p*, sliding longitudinally in said carriage, the shank or spindle p^2, by which the said pin is carried, the slide p^3, the lever P, the cam c^2, and the spring p^4, substantially as set forth.

386,845. HARROW. ROBERT G. PATTON, Kansas City, Mo. Filed Feb. 10, 1888. Serial No. 263,692. (No model.)



Claim.—A harrow composed of sections flexibly connected to each other by loop-like couplings a^4, and each composed of tooth-carrying bars *m*, connected to each other centrally by the cross-bar *b* and at their ends by the loop-like couplings *a*, the crosser-bar *t*, composed of as many sections as there are harrow-sections hinged to each other in line with the couplings a^4, and draft rods or links between each harrow-section and section of the crosser-bar, substantially as described.

386,846. SPRING BED-BOTTOM. DAVID J. POWERS, Chicago, Ill., assignor to the Union Wire Mattress Company, of Illinois. Filed Sept. 24, 1887. Serial No. 250,502. (No model.)



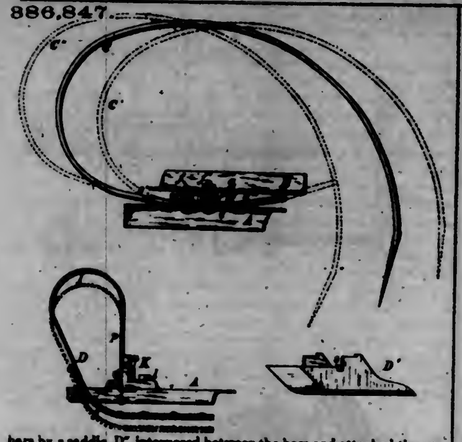
Claim.—1. In a spring bed-bottom, a series of longitudinal wires secured at their respective ends to opposite ends of the structure, a series of transverse wires also secured to the sides of the structure, corresponding to their direction, one series of which is provided with loops at intervals throughout their length, and the wires of the other series inserted through said loops, and a series of spiral springs located within the areas or squares outlined by the two series aforesaid, the outer rows of which are partly secured by wire loops direct to the marginal portions, and conjointly with the interior rows of springs are tied or stayed by wire hooks or links that pass through the loops of the transverse or longitudinal wires aforesaid, two of which tie-wires intersect or converge at said loops and serve to connect springs occupying positions diagonally adjacent to each other, substantially as set forth.

2. In a spring bed-bottom, a series of longitudinal wires secured at their respective ends to opposite ends of the structure, a series of transverse wires also secured to the sides of the structure, corresponding to their direction, one series of which is provided with loops at intervals throughout their length, and the wires of the other series inserted through said loops, and a series of spiral springs respectively located within the areas of squares outlined by the two series aforesaid, the outer rows of which are partly secured by wire loops direct to the marginal wires, and conjointly with the interior rows of springs are tied or stayed by wire hooks or rods that pass through the loops of the transverse or longitudinal wires aforesaid, two of which tie-wires intersect or converge at said loops and serve to connect springs occupying positions diagonally adjacent to each other, in combination with two or more principal marginal wires of quadrilateral form, substantially as described.

386,847. HARROW. HENRY C. PRATT, Canandaigua, N. Y. Filed Sept. 17, 1887. Serial No. 249,980. (No model.)

Claim.—1. The combination, with a cultivator or harrow frame composed of the angularly-arranged angle-iron bars A B, of the adjustable teeth C, secured to the horizontal flanges of one set of the

386,847.



bars by a saddle, D', interposed between the bars and attached thereto, substantially as and for the purposes set forth.

2. The combination, with the bar A of a harrow-frame having a plane upper surface, of the spring-tooth C, curved upward and backward over the bar, so that its point is located below and in rear thereof, and having the end by which it is attached to the bar bent upward and inward toward the curved portion, forming two or more flat plates, *c c'*, adapted to be secured to the upper surface of the bar by being clamped thereto by the saddle D, substantially as described.

3. In a harrow provided with a frame composed of intersecting bars, the combination, with the draw-bar A, cross-bar B, and spring-tooth C, of the saddle D, having a seat on its upper side for retaining the cross-bar and saddle in a fixed relation, and a seat on its lower side for the tooth, by which the tooth is clamped on the draw-bar, and means for securing the parts in place, substantially as and for the purposes set forth.

4. In a harrow provided with a frame composed of intersecting bars, the combination, with the draw-bar A and the cross-bar B, arranged in different planes and connected together by the saddle D, of the curved adjustable spring-tooth C, provided with two or more angularly-disposed flat plates, *c c'*, adapted to be secured to the flat surface of one of the bars, substantially as and for the purposes set forth.

5. The combination, with the angularly-arranged L-shaped bars A and B, of the saddle D', having thickened end *g*, whereby the bars are separated to permit the spring-tooth C to pass between them and the bolts *f f'*, substantially as described.

6. The combination, with the angularly-arranged L-shaped bars A and B, of the spring-tooth C, saddle D', having recess *h*, and bolts *f f'*, substantially as described.

7. The combination, with the angularly-arranged L-shaped bar A of a harrow-frame, of the shoe D', having notched side flanges, *r r*, substantially as described.

8. The combination, with the angularly-arranged L-shaped bar A of a harrow-frame, of the shoe D', having notched side flanges, *r r*, clip *t*, and bolts *u u'*, substantially as described.

9. The combination, with the angularly-arranged L-shaped bar A of a harrow-frame, of the shoe D', having notched side flanges, *r r*, and secured to the bar by a clamp which permits the adjustment of the shoe lengthwise of the bar, substantially as described.

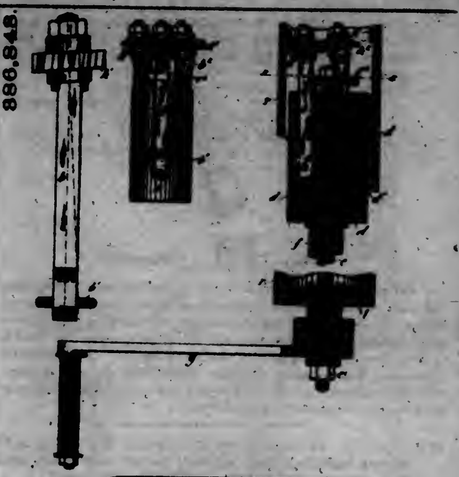
386,848. TUBE-CLEANER. ADOLF RAIT, Gumbring, near Vienna, Austria-Hungary. Filed Dec. 27, 1887. Serial No. 258,262. (No model.)

Claim.—1. The combination, with the head *a*, of the arms *b*, carrying a plain revolving cutter, b^2, and serrated revolving cutters b' b^3, being inclined or oblique with relation to the center of the rotatable head that carries them, all constructed and arranged as and for the purpose set forth.

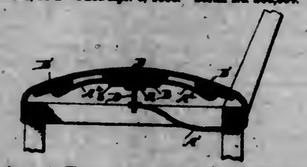
2. The combination, with the head *a*, of the arms *b*, carrying a plain revolving cutter, b^2, and serrated revolving cutters b' b^3, being inclined with relation to the center of the rotatable head that carries them, rod *e*, with nut *e'*, and disk e^2, all constructed and arranged as and for the purposes set forth.

3. The combination, with the head *a*, of the arms *b*, carrying a plain revolving cutter, b^2, and serrated revolving cutters b' b^3, being inclined with relation to the center of the rotatable head that carries them, sleeve *d*, rod *e*, with nut *e'* and disk e^2, tube *f*, and crank *g*, all constructed and arranged as and for the purposes set forth.

386,848.



386,849. SEAT OR COUCH SPRING. WILLIAM P. RUPPEL, Granton, R. I. Filed Apr. 6, 1888. Serial No. 269,804. (No model.)



Claim.—1. The spring A, post D, threaded at one end, hub *d*, and disk B, said disk being loosely pivoted upon said post and having free rocking movement thereon, all combined with each other and with the frame or slats of a seat, couch, or analogous article, as shown and described, and adapted to serve as specified.

2. The clamping-plate *b*, auxiliary springs A^2, and disks B' B' B', combined with a central disk, B, post *d*, and main spring, as A, to form a cluster spring for seats, couches, and analogous articles, said auxiliary springs radiating from said central disk, and said auxiliary disks B' having each independent free rocking movement pivotally upon upwardly-turned ends of said springs A^2.

3. A spring for seats, couches, and analogous articles, consisting of a main spring and central disk, as shown, combined with one or more springs radiating from said central disk in planes parallel with that of the main spring, and a disk loosely pivoted upon each of said radiating springs and having free rocking movement thereon yieldingly to pressure applied at any angle to its pivotal axis, all arranged, substantially as shown and described, for joint operation, and adapted to serve as specified.

4. In a seat, couch, or analogous article, the spring A, adapted to be secured at one end to the frame of the chair or couch, and a post, D, tapped into the other end of said spring, combined with each other and with a disk, B, carried on the free end of said post, all arranged and adapted to serve to raise or lower said disk to increase or lessen the tension of the seat or couch upholstery.

386,850. HOOK. RICHARD SAWYER, Providence, R. I. Filed Apr. 2, 1888. Serial No. 269,260. (No model.)



Claim.—1. The garment-hook herein described, comprising the brace portion *b'*, provided with the hook *c*, and on the opposite side thereof with the hook portion *b*, having an inturned end, *c'*, formed as described, as and for the purpose set forth.

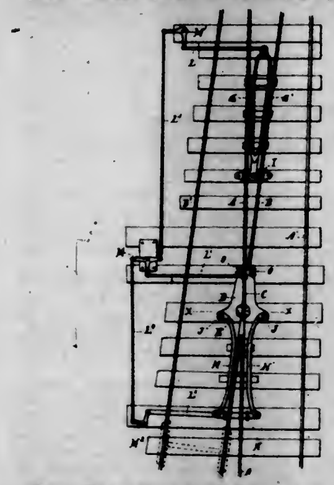
2. The hook A, herein described, comprising the brace portion *b'*, provided with the hook portions *b* and *c*, and further provided with the spring *a*, substantially as specified.

886,851. ART OF MANUFACTURING CARRIAGE-TOP IRONS. FRANK SCHMIDT, Mansfield, Ohio, assignor to the Schmidt & Miller Company, same place. Filed Nov. 14, 1887. Serial No. 255,626. (No model.)



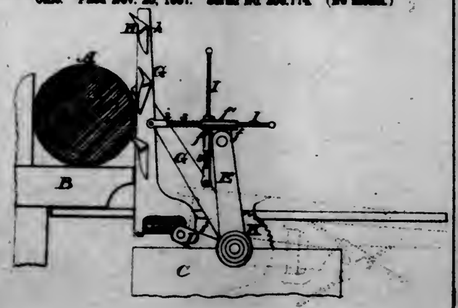
Claim.—The herein-described improvement in the art of forming the joints in carriage-top or similar irons, which consists in first upsetting the iron to form the knuckle; secondly, rolling the iron for giving the body thereof the required form; thirdly, sawing the knuckle to form the interlapping ears of the joint; fourthly, again upsetting to form the inner concave shoulder; fifthly, filing the convex outer ends of the knuckle or ears of the joint, and, lastly, drilling the rivet-holes therein, substantially as described.

886,852. SELF-ACTING CONTINUOUS-RAIL FROG. WILLIAM H. SHARROW, Birmingham, Mich., assignor of one-half to John Hanna, same place. Filed Mar. 27, 1883. Serial No. 268,815. (No model.)



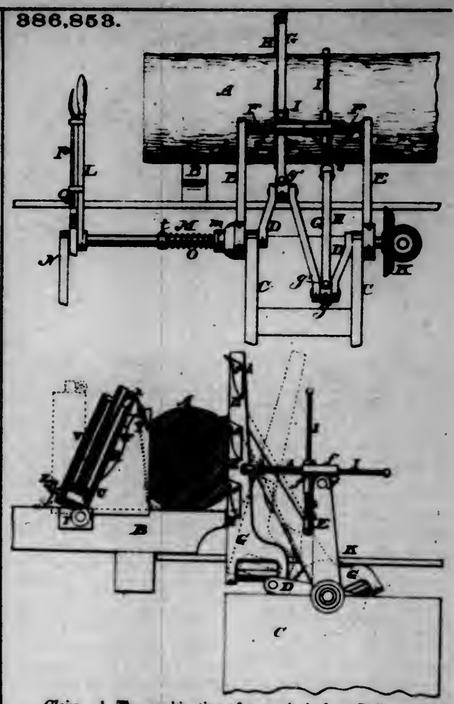
Claim.—The combination, with the inner main and siding rail, interrupted at the point of crossing, of the movable frog-rail C, adapted to register with either rail, the vibrating contact-bars G G' and H H', placed alongside these rails at the approaches to the frog-rail, connecting-bars L, L', L'', L''', and L'''', and the crank-levers M M' M'', the parts being constructed and arranged to operate substantially as described.

886,853. LOG-TURNER. WILLIAM P. SHERMAN, Wilson's Mills, Ohio. Filed Nov. 20, 1887. Serial No. 256,174. (No model.)



Claim.—The combination, with a draw-head mounted to have a lateral play to one side of the line of draft and cut away at its forward end upon one side to form a solid abutment and extended upon the other side to form a side support for the coupling-hook, a coupling-hook pivotally mounted in said side support and provided with a coupling-arm and a locking-arm, a recess in the side support to receive the locking-arm of the coupling-hook, a lateral offset on said locking-arm, a transverse aperture through the side support, into which the said offset is adapted to engage, a longitudinally-sliding locking-latch seated in the draw-head and provided with a gravity-dog to keep it normally projected, and uncoupling-levers pro-

886,853.



Claim.—1. The combination of a crank-shaft, as D, journaled to suitable supporting-frame, C C, levers G G, connected to and operated by said crank-shaft, and provided with self-adjusting dogs H H, the tilting frame E, journaled onto said crank-shaft, and having on its cross-bar F the sleeves *f f*, carrying the connecting-rods I I, connecting the levers G G with the tilting frame E, and provided with the springs *s s*, and the extension-shaft M, having collar *t* and spring O, journaled in bearing N, and provided with the hand-lever L, having latch mechanism P, all constructed and arranged to operate substantially as and for the purpose set forth.

2. The combination, with the carriage of a saw-mill, of the cylinder R, having cock Z, and journaled to the carriage-frame, and having piston U, provided with tubular rod V, playing through top of cylinder, and having the cord or chain W, playing over a pulley, X, and having the hook Y, for catching into the log, all arranged for lowering the log without concussion, substantially as described.

886,854. CAR-COUPLING. JOHN SERRIER, Flint, Mich., assignor of one-half to Orus Stone, same place. Filed Mar. 6, 1888. Serial No. 266,305. (No model.)



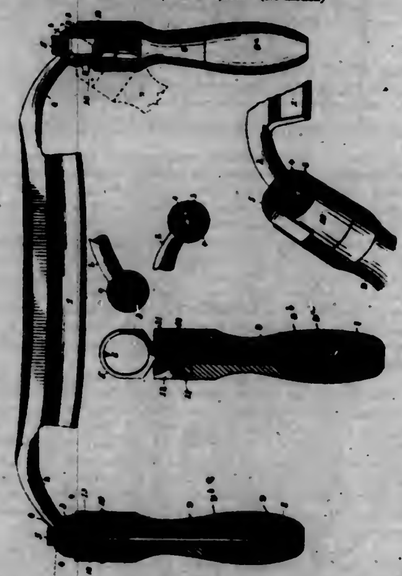
Claim.—1. In a car-coupling, the combination of a draw-head mounted to have a lateral play to one side of the line of draft and cut away at its forward end upon one side to form a solid abutment and extended upon the other side to form a side support for the coupling-hook, a coupling-hook pivotally mounted in said side support and provided with a coupling-arm and a locking-arm, a recess in the side support to receive the locking-arm of the coupling-hook, a lateral offset on said locking-arm, a transverse aperture through the side support, and a longitudinally-sliding locking-latch seated in the draw-head and provided with a gravity-dog to keep it normally projected, and uncoupling-levers pro-

jecting with their inner ends beneath the gravity-dog, substantially as described.

2. In a car-coupling, the combination of a coupling-hook pivotally secured to swing in a vertical plane and provided with a locking-arm extending rearwardly in the closed position of said hook, and a draw-head cut away at one side and extended forward to form a side support in which the coupling-hook is mounted, a recess in the inner face of the side support of the draw-head to receive the locking-arm of the coupling-hook, a horizontally-sliding latch seated in the center of the rear portion of the draw-head and adapted to project beyond the curved rear extension of the locking-arm of the coupling-hook to lock the same in position, a gravity-dog engaging into said latch to keep it normally projected, and an uncoupling-lever adapted to lift said gravity-dog, and thereby withdraw the latch, substantially as described.

3. In a car-coupling, the combination of the draw-head mounted to have a lateral play to one side of the line of draft, and provided at its forward end with a solid abutment on one side and a side support for the coupling-hook on the other side, the coupling-hook pivotally mounted in said side support, and provided with a laterally-extending coupling-arm and a rearwardly-extending locking-arm, the locking-latch of the coupling-hook, and a sliding guard backed by a buffer-spring and secured independently of the draw-head upon the coupling side thereof, substantially as described.

886,855. DRAW-SHAVE. WILLIAM B. SWAN, Seymour, Conn. Filed Feb. 20, 1888. Serial No. 264,982. (No model.)



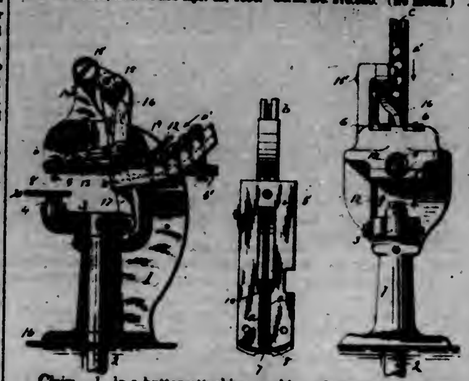
Claim.—1. In a tool-handle, the combination, with a blade having a ball at its outer end provided with holes or recesses, of a loop having a leg on its inner side, at the outer end, adapted to engage the holes or recesses, and a handle having a socket at its outer end which receives the ball when the loop is drawn inward, whereby the handle may be locked at any adjustment relatively to the blade.

2. The combination, with a blade having balls at its outer ends provided with holes or recesses, of loops having legs on their inner sides, at the outer ends, adapted to engage said holes or recesses, and shanks threaded at their lower ends, and handles formed in two parts, the upper parts being provided with sockets to receive the balls when the loops are drawn inward and the lower portions provided with nuts which are engaged by the threaded portions of the shanks of the loops, as and for the purpose set forth.

3. The combination, with a blade having balls at its opposite ends provided with holes or recesses, of loops having legs which engage said recesses, shanks threaded at their lower ends, and handles formed in two portions, the upper portions being provided with sockets to receive the balls and slots to receive the loops and the lower portions provided with nuts which are engaged by the threaded portions of the shanks, substantially as described.

4. The combination, with a blade having a ball provided with holes at the end of its shank, of a loop having a leg to engage said holes and a shank threaded at its lower end, and a two-part handle, the upper portion of which is provided with a recess to receive the ball and a slot to receive the loop and the lower portion provided with a nut which is engaged by the threaded portion of the shank, substantially as described.

886,856. BUTTON-ATTACHING MACHINE. JAMES F. TRAVIS, Providence, R. I. Filed Apr. 13, 1888. Serial No. 270,893. (No model.)



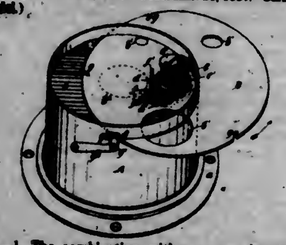
Claim.—1. In a button-attaching machine, a button and fastener holding jaw having a longitudinal slot therethrough, provided at or near the outer end with a ornament recess or concavity on its under side at right angles to the slot, and adapted to receive and retain the crown or arch of a staple-fastener in position for clinching, substantially as herein set forth.

2. In a button-attaching machine, the combination, with a slotted button-jaw, a feeding-finger, and mechanism, substantially as described, for actuating the same, of a slotted raceway communicating with the slot of said button-jaw, a spring-stop for limiting the free movement of the bottom in said raceway, and an adjustable guard, as 12, for limiting the rearward movement of the free end of the feeding-finger, substantially as herein specified.

3. In a button-attaching machine, the combination, with a vibrating feeding-finger and a slotted button and fastener holding jaw provided with a raceway having a slot coincident with the slot in said button-jaw, of an adjustable guard, as 12, located across and above the slot in said raceway in such a position as to limit the rearward movement of the free end of said feeding-finger, substantially as and for the purpose set forth.

4. In a button-attaching machine, the combination, substantially as herein described, of a slotted button-jaw provided with a crescent-recess to receive the crown or arch of a staple-fastener, a raceway attached to the button-jaw, having a longitudinal slot therethrough coincident with the slot in said button-jaw, a spring-stop for limiting the free movement of a column of buttons located across the slot in said raceway, a lifting-spring at one side of the slot in said button-jaw, a feeding-finger, and mechanism, substantially as described, for actuating the same, an adjustable guard over and across the slot in said raceway for limiting the rearward movement of the free end of the feeding-finger, and a clinching-die to clinch the prongs of a staple-fastener, combined and arranged for use substantially as and for the purpose set forth.

886,857. SNAP-SHUTTER FOR PHOTOGRAPHIC CAMERAS. JAMES T. TOWER, Waterbury, Conn., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Mar. 20, 1887. Serial No. 232,022. (No model.)

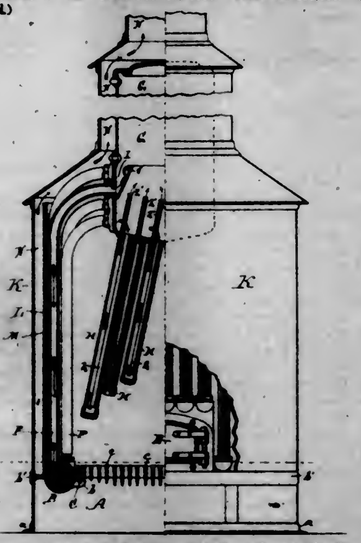


Claim.—1. The combination, with a camera lens-tube provided with a transverse partition having an aperture therein; of a revolving shutter adjacent to said partition and provided with an opening or

openings adapted to be brought opposite the opening in said partition, a post or stud secured in said partition about which said shutter rotates, said post or stud being eccentric to the axis of the lens-tube, a spring coiled about said post or stud for effecting the rotation of the shutter, and means, substantially such as described, whereby the shutter may be relieved from the action of said spring, substantially as specified.

2. The combination, with a camera lens-tube provided with a transverse partition having an aperture therein, of a revolving shutter adjacent to said partition and provided with an opening or openings adapted to be brought opposite the opening in said partition, a post or stud about which said shutter rotates, said post or stud being eccentric to the axis of the lens-tube, a spring coiled about said post or stud and secured at one end to the post or stud, a plate loosely surrounding said post or stud to which the other end of said spring is secured, a spring secured near one of its ends to said plate and near its other end bearing a pin or projection which extends through a hole in said plate, and a lever having a portion adapted to be moved beneath said last-mentioned spring to elevate the same and the pin, or to be moved out from under the same to allow the spring and pin to descend in order to engage the latter with a hole in the shutter, substantially as specified.

386,858. WATER-TUBE STEAM-BOILER. CHARLES WARD, Charleston, W. Va. Filed Dec. 17, 1887. Serial No. 258,196. (No model.)



Claim.—1. In vertical tubular steam-boilers, the combination of a horizontal base tube or chamber, as B, with vertical tubes, as F, a steam drum or chest, as G, and hanging tubes, as H, said hanging tubes having sub-tubes *h* and prolonged tubes *h'*, all substantially in the manner described, and for the purpose of facilitating the circulation of the water and the collection of steam.

2. In vertical tubular steam-boilers, a drum or chest, as G, when provided with a pocket, as I, in combination with a conduit, as *i*, substantially in the manner described, for the purpose of separating the purified and impure water in said drum or chest.

3. A vertical tubular concentric steam-boiler, consisting in the combination of an ash-pit, A, a base-tube or hollow ring, B, having blow-offs P, lugs *b b*, and a T-flange, *b'*, a seat-bar, C, having grate-bars *c c*, a hollow furnace arch or frame, D, a suitable furnace-door, E, tubes F, a drum, G, having a pocket, I, and conduit *i*, hanging tubes H, having sub-tubes *h* and prolonged tubes *h'*, a casing, K, and an escape-flue, N, in the manner and for the purposes described.

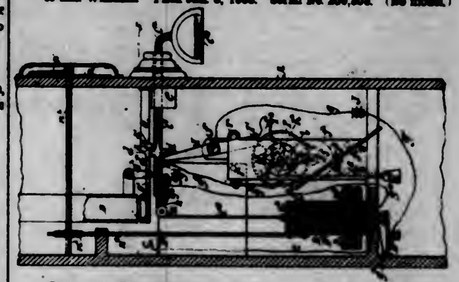
4. A vertical tubular concentric steam-boiler, consisting in the combination of an ash-pit, A, a base tube or hollow ring, B, having blow-offs P, lugs *b b*, and a T-flange, *b'*, a seat-bar, C, having grate-bars *c c*, a hollow furnace arch or frame, D, a suitable furnace-door, E, tubes F, a drum, G, having a pocket, I, and conduit *i*, hanging tubes H, having sub-tubes *h* and prolonged tubes *h'*, an outer casing, K, an inner casing, L, and an escape-flue, N, in the manner and for the purposes described.

5. A vertical tubular concentric steam-boiler, consisting in the combination of an ash-pit, A, a base tube or hollow ring, B, having blow-offs P, lugs *b b*, and a T-flange, *b'*, a seat-bar, C, having grate-bars *c c*, a hollow furnace arch or frame, D, a suitable furnace-door, E, tubes F, a drum, G, having a pocket, I, and conduit *i*, hanging tubes H, having sub-tubes *h* and prolonged tubes *h'*, an outer casing, K, an inner casing, L, having a non-heat-conducting lining, M, and an escape-flue, N, in the manner and for the purposes described.

386,859. POLYCHROMATIC-PRINTING BLOCK. WILLIAM G. WHITE, Anerley, County of Surrey, and ROBERT A. A. WHITE, Crayford, County of Kent, England. Filed Feb. 21, 1888. Serial No. 264,899. (No specimens.) Patented in England May 24, 1881, No. 2,374.

Claim.—A mixture for blocks to be used in polychromatic printing, consisting of an aniline dye, fat, beeswax, sperm-wax, paraffine, turpentine, poppy or moss oil, and boiled linseed-oil, substantially in the proportions described.

386,860. COIN-OPERATED INDUCTION-COIL. PERCY G. WILLIAMS and ALFRED W. ROOTHS, Brooklyn, N. Y.; said Rooths assignor to said Williams. Filed Jan. 5, 1888. Serial No. 259,956. (No model.)



Claim.—1. The combination, with a case, of an induction-coil, a primary circuit therefor, an electric battery, a secondary circuit comprising electrodes outside of said case, one of said electrodes being capable of being moved outwardly or downwardly, a longitudinally-movable part, as B', in electrical contact with the secondary of the induction-coil, a connection between said longitudinally-movable part and said movable electrode, a circuit breaker and closer in the primary circuit operated upon the movement of said electrode in one direction to close the circuit and upon the movement of said electrode in the contrary direction to open the circuit, time mechanism, and another circuit breaker and closer also in the primary circuit operated by the time mechanism to make and break said circuit, substantially as specified.

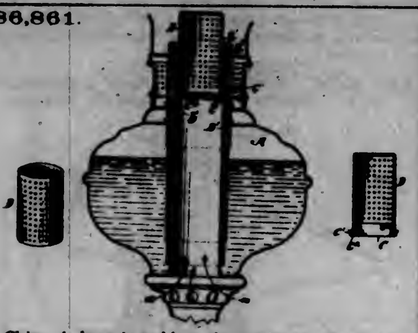
2. The combination, with a case, of an induction-coil, a primary circuit therefor, an electric battery, a secondary circuit comprising electrodes outside of said case, one of said electrodes being capable of being moved outwardly or downwardly, a longitudinally-movable part, as B', in electrical contact with the secondary of the induction-coil, a connection between said longitudinally-movable part and said movable electrode, and time mechanism for breaking circuit to de-energize the induction-coil, and pawl-and-ratchet mechanism, whereby said time mechanism is rewound by the said connection when moving in one direction, substantially as specified.

3. The combination, with a case, of an induction-coil, a primary circuit therefor, an electric battery, a secondary circuit comprising electrodes outside said case, one of said electrodes being capable of being moved outwardly or downwardly, a detent securing said electrode against movement in one direction, a swinging arm, a lever for operating the detent mounted upon said swinging arm, and a stop for limiting the swinging movement of the lever, substantially as specified.

4. The combination, with a case, of an induction-coil, a primary circuit therefor, an electric battery, a secondary circuit comprising electrodes outside said case, one of said electrodes being capable of being moved outwardly or downwardly, a longitudinally-movable rod to which said electrode is connected, a circuit breaker and closer in the primary circuit, a sliding contact-piece comprised in said circuit breaker and closer having a detachable connection with said rod, a projection on said rod, and time mechanism comprising a lever extending into the path of said projection, all being arranged and combined, substantially as described, whereby when the rod is moved in one direction the said projection will be moved away from the lever to permit the operation of the time mechanism and said sliding contact-piece will be moved to close circuit, said projection being moved sufficiently far before circuit is closed to admit of a complete movement of the said lever in one direction, substantially as specified.

386,861. LAMP. GEORGE W. WESTWARD, Brooklyn, assignor to the Ansonia Brass and Copper Company, New York, N. Y. Filed Oct. 31, 1887. Serial No. 253,851. (No model.)

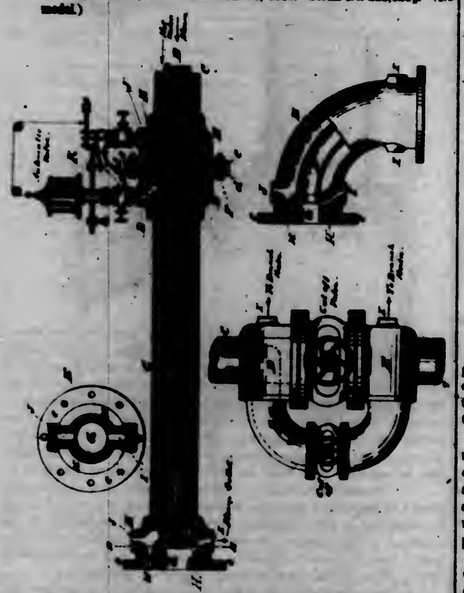
386,861.



Claim.—1. In an Argand lamp, the combination of a support fitting within the inner shell of the wick-tube and having a vertical portion fitting the inner shell of the wick-tube and a horizontal portion, and a thimble fitting said support so as to be centered in and sustained thereby, substantially as specified.

2. In an Argand lamp, the combination of a support consisting of a vertical portion fitting the inner shell of the wick-tube, a horizontal portion and an upright inner portion, and a thimble resting upon the horizontal portion of the support and centered by the upright portion thereof, substantially as specified.

386,862. PLANT FOR SUPPLYING HEAT AND POWER. ROBERT B. HILL, Newark, N. J. Filed Jan. 21, 1887. Serial No. 225,020. (No model.)



Claim.—1. The hereinbefore-described method of supplying dry steam to consumers from a central plant or station, said method consisting in, first, heating water to a high degree of heat under pressure; second, generating steam; third, conveying the steam within the body of the superheated water to distant points by means of a steam-pipe located within a hot-water pipe, and, fourth, introducing some of the hot water into the steam along the route of the pipe.

2. The process of conveying steam in a gaseous form or dry state from a central plant or station through pipes to distant points of service, which involves the following steps: first, heating water to a high degree of heat under pressure; second, generating steam; third, conveying a part of the hot water through pipes from the generator to distant points; fourth, conveying the steam within the body of hot water to distant points, and, fifth, introducing some of the hot water into the steam along the route of the pipe-mains.

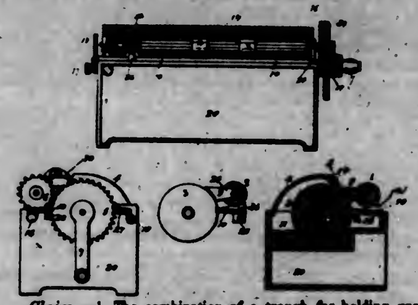
3. The combination, in a pipe-circuit for supplying steam from a central plant or station, of a steam-generator, a steam-pipe, a hot-water pipe surrounding said steam-pipe, automatic differential valves disposed along the pipe-circuit, and pipes connecting said valves with the steam-pipe and the hot-water pipe, substantially as and for the purpose set forth.

4. The coupling-boxes consisting each of two flanged parts or sections, provided with an interior chamber adapted to receive the ends of the steam-pipe, an annular chamber surrounding and concentric to said central chamber and adapted to receive the ends of the hot-water pipes, and ports or outlets communicating with the interior of the central chamber and adapted to be connected to branch pipes or service-pipes.

5. The coupling-boxes consisting each of two flanged parts or sections, provided with an interior chamber adapted to receive the ends of the steam-pipes, an annular chamber surrounding and concentric to said central chamber and adapted to receive the ends of the hot-water pipes, ports or outlets communicating with the interior of the central chamber and adapted to be connected to branch pipes or service-pipes, a port adapted to connect said central chamber with a pipe communicating with the annular hot-water chamber, the said connecting-pipe, and an automatic differential valve located on the same, substantially as and for the purpose set forth.

6. The combination, with the couplings comprising the following elements, viz: a central chamber open at both ends, an annular chamber surrounding said central chamber and open at both ends, ports adapted to connect said central chamber to outside service-pipes, ports adapted to connect said central chamber with its surrounding annular chamber, and a pipe or opening connecting the aforesaid ports, of an automatic differential regulating-valve, substantially as and for the purpose set forth.

386,863. MACHINE FOR GUMMING PAPER. JOHN J. ALLEN, Holbeck, County of York, England. Filed Feb. 14, 1887. Serial No. 227,649. (No model.) Patented in England Nov. 5, 1885, No. 13,303, and in Austria-Hungary May 12, 1886, No. 21,127.



Claim.—1. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, and a stationary guide-bar concaved on its side adjacent to the roller so close to but out of contact therewith and adapted to hold the paper to be gummed against the surface of said roller.

2. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a strickle for wiping off any excess of gum from said roller, a stationary guide-bar concaved on its side adjacent to the roller and adapted to hold the paper to be gummed against the surface thereof, a feed-plate in front of said gumming-roller, and an intake-roller above said feed-plate adapted to draw the paper in and direct it between the roller and said guide-bar.

3. The combination of a trough for holding gum, constructed with notches in its ends, a gumming-roller mounted to rotate therein, a strickle mounted with its ends in said notches closely adjacent to said roller, and adjusting-screws turning in the opposite ends of said strickle and engaging said notches for adjusting the strickle toward or from the roller in order to vary the thickness of the film of gum applied thereto.

4. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a stationary guide-bar having a concave surface adjacent to said roller and adapted to hold the paper to be gummed against the surface thereof, and a take-off finger adapted to project under the advancing edge of the paper as it emerges from said guide-bar and lift it off the surface of said roller.

5. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a feed-plate in front of said gumming-roller, an intake-roller above said feed-plate adapted to feed the paper to be gummed toward the periphery of said gumming-roller, and a concaved-surfaced guide-bar adapted to hold the paper against the surface of the gumming-roller.

6. The combination of a trough for holding gum, a gumming-

roller mounted to rotate therein, a strickle for wiping off any excess of gum from said roller, a feed-plate above said strickle, an intake-roller above said feed-plate, and a guide between said intake-roller and the gumming-roller adapted to hold the paper to be gummed against the surface of the gumming-roller.

7. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a feed-plate in front of said gumming-roller, an intake-roller above said feed-plate adapted to feed the paper to be gummed to the gumming-roller, and the bearings for said intake-roller insulated from the feed-plate at one end thereof in order to admit one edge of a sheet of paper thereunder, whereby the edge alone of the paper may be presented to the gumming-roller.

8. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a feed-plate in front of said gumming-roller and having an upwardly-projecting spur near one end, an intake-roller above said feed-plate and formed with a reduced portion, into which said spur projects, and the bearings for said intake-roller insulated from the feed-plate between the end thereof and said spur to admit one edge of a sheet of paper thereunder, whereby the edge alone of the sheet of paper may be presented to the gumming-roller and may be guided by said spur.

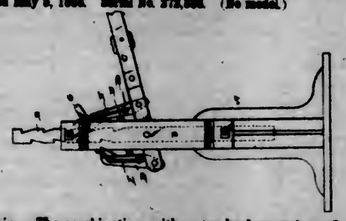
9. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a removable hood constructed to be set over said trough and to partially inclose said roller, and a take-off finger borne by said hood and adapted to project under the advancing edge of the paper after the latter has passed in contact with said roller and to lift it from the surface thereof.

10. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a removable hood constructed to be set over said trough, and locking-plates connected removably to the opposite ends of the trough and adapted when fastened in place to engage and hold down the journals of said roller and the ends of said hood.

11. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a removable feed-plate constructed to be set over said trough in front of said gumming-roller, an intake-roller mounted above and borne by said feed-plate, and locking-plates connected removably to the opposite ends of the trough and adapted when fastened in place to engage and hold down the journals of said gumming-roller and the ends of said feed-plate.

12. The combination of a trough for holding gum, a gumming-roller mounted to rotate therein, a removable feed-plate constructed to be set over said trough in front of said gumming-roller, an intake-roller mounted above and borne by said feed-plate, a guide adapted to hold the paper to be gummed against the surface of the gumming-roller fixed to and borne by said feed-plate, and fastening devices for confining the feed-plate to the trough, whereby it may be readily removable therefrom, and whereby the feed-plate, intake-roller, and the guide are simultaneously removable.

386,864. LIFTING-JACK. ANDREW W. ANDERSON, Goodhue, Minn. Filed May 5, 1888. Serial No. 272,888. (No model.)



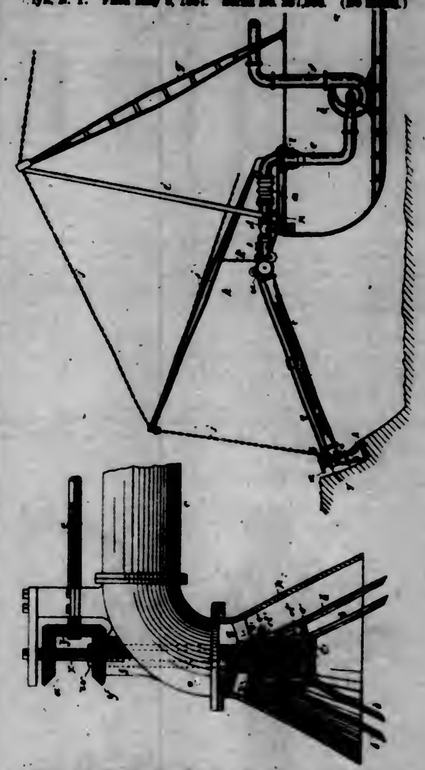
Claim.—The combination, with a standard or casing, of a vertically-movable double rack-bar, a hand-lever pivoted thereto, dogs pivoted to the said lever and yieldingly connected, a cam-lever adapted to engage the dogs to release them from the rack, and a spring-clutch adapted to engage the said cam, substantially as specified.

386,865. DEVICE FOR WATERING POULTRY. SILAS A. BAUSH, Dunkirk, Henry County, Ohio. Filed Dec. 14, 1887. Serial No. 258,022. (No model.)



Claim.—The case A, heating-pan C, and liquid-receptacle B, provided with a superimposed open-ended shield, substantially as shown and described.

386,866. DREDGING-MACHINE. HERMAN F. BRAMARD, Brooklyn, N. Y. Filed May 9, 1887. Serial No. 237,802. (No model.)



Claim.—1. The combination, in a dredging-machine, of a section-pipe jointed to the suction apparatus on the dredge-boat, and having a bend or elbow and a funnel-terminal projected directly in the line of the approach of the digger to the work, and a rotary digger in the axis thereof geared through the elbow of the suction-pipe with a driving-shaft carried in bearings on the upper side of the pipe and connected with the motor-gearing at the joint of said pipe with the suction apparatus, said digger adapted to approach the work unobstructedly by any other part of the apparatus, substantially as described.

2. The combination, in a dredging-machine, of a suction-pipe jointed to the suction apparatus on the dredge-boat, and having a bend or elbow and a funnel terminal projected directly in the line of the approach of the digger to the work, and two reversely-revolving diggers in the axis thereof adapted to approach the work unobstructedly by any other part of the apparatus, substantially as described.

3. The combination, in a dredging-machine, of a suction-pipe jointed to the suction apparatus on the dredge-boat, and having a bend or elbow and a funnel terminal projected directly in the line of the approach of the digger to the work, and two revolving diggers in the axis thereof mounted on shafts extending through the bearing-bem on the bent of the elbow and independently geared with the driving-shaft for rotation reversely to each other, substantially as described.

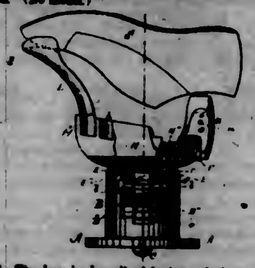
4. The improved rotary digger for dredging-machines, consisting of metallic prongs bolted on the sides of a hub attached to the driving-shaft and projecting in the direction of the approach of the digger to the work and divergently from the axis of the same, substantially as described.

5. The combination, with the funnel-mouth of the suction-pipe in a dredging-machine, of two rotary diggers in the axis of the funnel-mouth, consisting of the prongs bolted on the hubs and arranged divergently from the axis of the cutter-head, substantially as described.

6. The combination, with the funnel-mouth of the suction-pipe in a dredging-machine, of a rotary digger in the axis of the funnel-mouth,

consisting of prongs bolted on the hub and graduated in respect to their radial projection to cut in different planes and cleve, substantially as described.

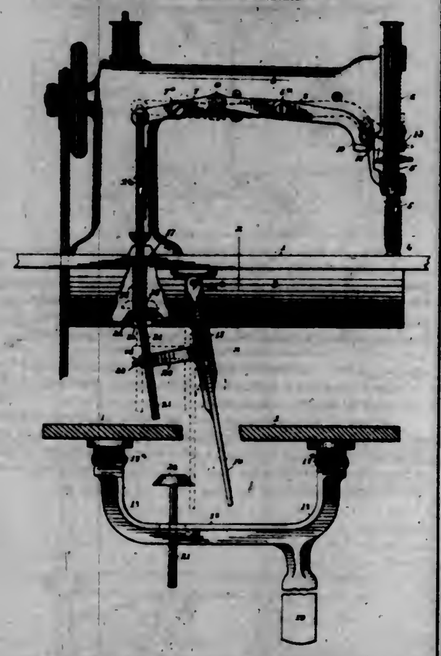
386,867. SHOE-JACK. WILLIAM C. BATES, Lynn, assignor of one-half to Edwin B. Bell, North Reading, Mass. Filed May 1, 1888. Serial No. 272,493. (No model.)



Claim.—1. The herein-described improved shoe-jack, consisting, essentially, of the following parts, viz: the stationary base A, box B, adapted to be rotated upon said base, plate E, pivotally secured to said box, whereby it may be swung up, as shown, and last-holder H, adapted to be rotated upon said plate, substantially as and for the purpose set forth.

2. The combination of the base A, the bolt C, gasket D, disk *d* and nuts, the box B, provided with the ears B', the bolt I, gasket J, disk K and nuts, the plate E, provided with the hinge E' and flange E'', and the holder H, provided with the heel-support N and toe-support L, substantially as and for the purpose described.

386,868. DEVICE FOR LIFTING SEWING-MACHINE PRESSER-FEET. GEORGE H. BURNS and ANDREW C. CAMPBELL, Bridgeport, Conn., assignors to The Wheeler & Wilson Manufacturing Company. Filed Feb. 20, 1888. Serial No. 264,804. (No model.)



Claim.—A lifting device for sewing-machine presser-foot, consisting, essentially, of two levers pivoted to the machine-arm and to each other, the forward end of the forward lever being adapted to engage the presser-foot bar and the rear end of the rear lever being provided with a rod extending through the bed-plate of the machine, and a spring under the bed-plate and bearing against the bed-plate and against a projection upon the rod, thus acting to draw said rod downward, so that the forward end of the forward lever is lowered, leaving the usual presser-foot spring free to act until said rod is raised, which lifts the presser-foot against the power of the presser-foot spring.

386,869. FLEXIBLE RULER. JAMES H. DOLBEAR and EDWARD T. BRADLEY, Swanton, Vt. Filed Apr. 16, 1887. Serial No. 235,120. (No model.)



Claim.—1. As an improved article of manufacture, a rule or scribing device consisting of a flexible face-strip having guides on its rear side, a flexible back strip movable in the said guides and set-screws, whereby the said strips may be fixed together in adjustably parallel curved positions, substantially as specified.

2. A rule having a flexible face-strip and guides fixed thereto, in combination with a flexible back adapted to be secured to the guides, substantially as specified.

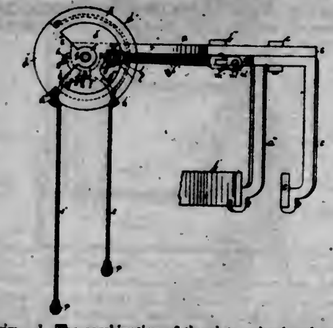
386,870. SPRAY-NOZZLE. DAVID T. ELLIS, Bridgeport, Conn., assignor of one-half to the Bellamy Manufacturing Company, same place. Filed Dec. 3, 1887. Serial No. 256,883. (No model.)



Claim.—1. A hose-nozzle consisting of a base, a cone, 3, depending within it, having an opening, 5, a barrel having a chamber, 9, a tube leading through said chamber, a cone at its lower end closely fitting cone 3, openings in said cone adapted to register with opening 5, and leading to said chamber and said tube, and a cap-plate engaging said tube, which closes said chamber with the exception of a narrow circular opening surrounding said cap-plate.

2. The base and outer cone having opening 5, in combination with the barrel having chamber 9, central tube, 15, cone 12, engaging within the outer cone and provided with openings 13 and 14, the latter being widened at its central portion for the purpose set forth, and a cap-plate nearly closing the outer end of said chamber, whereby partial rotation of the barrel will permit water either to pass out through the chamber, producing a circular ribbon-spray through the tube, producing a full stream or a central spray, or will effect a perfect cut-off.

386,871. SWITCH FOR OVERHANGING TRACKS. EDWARD S. ELLIS, Lake, Ill. Filed Jan. 7, 1888. Serial No. 260,110. (No model.)



Claim.—1. The combination of the plate *a*, having the elongated end *r*, lug *f*, holes *a'*, and slot *a''*, the hangers *a''* and *a'''*, and tracks *b* and *b'*, the hanger *c*, and bolt *d''*, with the connecting-rod *l'*, having the parts *m*, *m'*, *m''*, *n'*, and *l'*, the grooved wheel *d*, having the web portion *d'*, web *d''*, shoulders *d'''* and *d''''*, and pin *l*, the stud-bolt *f''*, the piece *g*, having the prongs *g'*, *g''*, *g'''*, and *g''''*, and fingers *h'* and *h''*, the set-screws *h*, and the cords *o* and *o'*, substantially as described, for purposes stated.

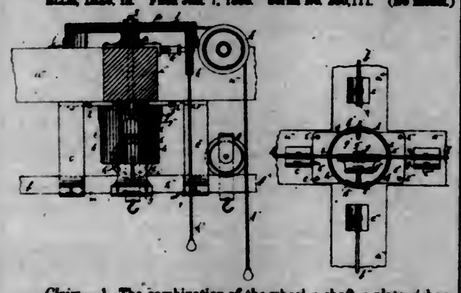
2. In a switch for hanging tracks, the combination of the track-hangers *a''* and *a'''* and the track-hanger *c* with the connecting-rod *l'*, universally jointed at both ends and connected with the hanger *c*, and the wheel *d*, having the fillet *d''*, for forming a stop with the pronged piece *g*, all substantially as set forth, for purposes stated.

3. The combination of the plate *a*, having the curved slot *a''*, holes *a'*, elongated end *r*, and lug *f'*, with the hangers *a''*, *a'''*, and *c*, the

wheel *d*, the connecting-rod *F*, and the piece *g*, substantially as described, for purposes stated.

4. The combination of the sliding hangers *c* and pieces *m'*, *m''*, and *n'*, the bar *F*, stud *l*, sleeve *l'*, and pins *m*, with the wheel *d*, having the web portion *d''*, and the piece *g*, having the prongs *g'*, *g''*, *g'''*, and *g''''*, substantially as described and shown, for purposes stated.

386,872. SWITCH FOR OVERHANGING TRACKS. EDWARD S. ELLIS, Lake, Ill. Filed Jan. 7, 1888. Serial No. 260,111. (No model.)



Claim.—1. The combination of the wheel *a*, shaft *g*, plate *g'*, having the shields *h'* and *h''*, hanger *g''*, and track *h'''*, with the tracks *b*, *b'*, *b''*, and *b'''*, the hangers *c*, *c'*, *c''*, and *c'''*, the cylinder *c*, having the four parts *h* and base-plate *c'*, the bolts *c''*, the beams *c'''*, plate *d'*, bolts *d''*, the shield *l*, angle-plates *l'*, the brackets *k*, grooved wheels *k'*, and cords *k''* and *k'''*, substantially as and for the purposes stated.

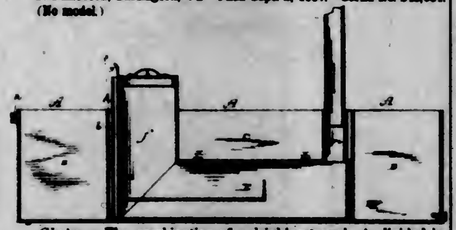
2. The combination of the plate *c'* and the cylinder *c*, having the four incisions *c'*, the four projecting parts *h*, and the base-plate *c''*, with the wheel *a*, shaft *g*, and the plate *g'*, having the hanger *g''* and shields *h'* and *h''*, substantially as set forth, for purposes stated.

3. In a switch for hanging tracks, the combination of the horizontal grooved wheel *a*, connected with the plate *g'*, having the shields *h'* and *h''* and hanger *g''*, by the shaft *g*, not solid with both wheel *a* and plate *g'* and pivoted in the plate *c'*, beams *c'''*, and cylinder *c*, and rotated within those parts by the cords *k''* and *k'''*, passing over the grooved wheels *k'*, supported upon the brackets *k*, substantially as and for the purposes stated.

4. The combination of the wheel *a*, shaft *g*, cylinder *c*, having the parts *h* and base-plate *c'*, the plate *g'*, hanger *g''*, shields *h'* and *h''*, the track *h'''*, the hangers *c'* and *c''*, and the hangers *c'* and *c''*, substantially as specified.

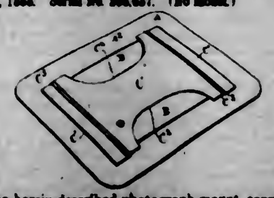
5. The combination of the plate *g'*, hanger *g''*, and shields *h'* and *h''* with the cylinder *c*, having the base-plate *c'* and parts *h*, substantially as shown and described, for purposes stated.

386,873. WATER-TROUGH WITH SUBMERGED HEATER. JAMES F. FERGUSON, Burlington, Vt. Filed Sept. 2, 1887. Serial No. 248,691. (No model.)



Claim.—The combination of a drinking-trough, A, divided by perforated partitions into the compartments B C D, with a heater which is placed in the central compartment, C, and submerged in water, and from which compartment the heated water flows into the compartment D, substantially as shown.

386,874. PHOTOGRAPH-MOUNT. IRVING R. FOLTZ, Rockford, Ill. Filed Mar. 5, 1883. Serial No. 266,637. (No model.)



Claim.—The herein-described photograph-mount, consisting of a front piece having an opening through the central portion thereof for displaying a photograph, and a back piece having the ends thereof gummed to the said front piece, as indicated, and also having the lateral portions of the same cut away, as shown at C^3, and the remaining lateral portions C^2 thereof extending beyond the sides of the photograph, substantially as described, and for the purpose specified.

386,875. MAGNESIUM LIGHT. WILLARD H. FOLLIS, Passaic, N. J., assignor to The Sewell Manufacturing Company, New York, N. Y. Filed Oct. 31, 1887. Serial No. 253,533. (No model.)



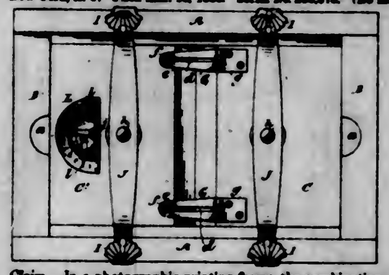
Claim.—1. The combination, with a case or shell, of gun-cotton and magnesium contained therein, and a coating of collodion or equivalent material outside the gun-cotton and magnesium, substantially as specified.

2. The combination, with a case or shell, of gun-cotton and magnesium contained therein, a coating of collodion or equivalent material outside the gun-cotton and magnesium, and a fuse, substantially as specified.

3. The combination, with a case or shell, of gun-cotton and magnesium contained therein, a coating of collodion or equivalent material entirely surrounding the gun-cotton and magnesium, and a fuse, substantially as specified.

4. The combination, with a case or shell weighted at the bottom, of gun-cotton and magnesium contained therein, a coating of collodion or equivalent material outside the gun-cotton and magnesium, and a fuse having a portion embedded in the mass of gun-cotton and magnesium and a portion extending above the surface thereof, substantially as specified.

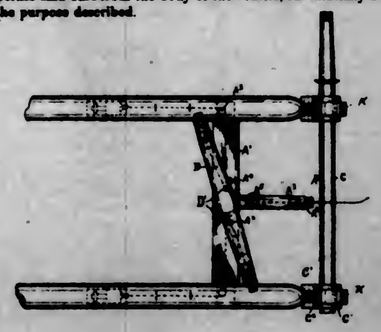
386,876. PHOTOGRAPHIC-PRINTING FRAME. WILLARD H. FOLLIS, Passaic, N. J., assignor to The Sewell Manufacturing Company, New York, N. Y. Filed Mar. 10, 1888. Serial No. 266,572. (No model.)



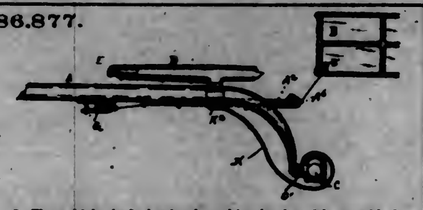
Claim.—In a photographic-printing frame, the combination, with a back composed of two portions hinged together, of a device for retaining said portions in an elevated position, consisting of a hinge having one leaf secured to one of said portions of the back, and a projection on the other portion with which the other leaf of the hinge is connected with a sliding connection, substantially as specified.

386,877. HORSE-DETACHER. PHILIP GETZ, Reading, Pa., assignor of one-half to Reinhard Ringer, same place. Filed Aug. 27, 1887. Serial No. 248,088. (No model.)

Claim.—1. In combination with the shafts, singletree, fore axle, and body of a vehicle, breeching-hooks G and singletree-hooks E, both provided with movable bars, and a series of cords and pulleys adapted to operate said bars from the body of the vehicle, substantially as and for the purpose described.



386,877.



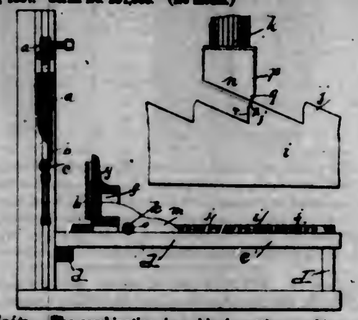
2. The vehicle-shafts having breeching-hooks with movable bars and an extension-arm, A^3, in combination with cords adapted to operate said bars, substantially as set forth.

3. A breeching-hook for a vehicle, consisting of a plate adapted to be attached to the shafts of the same and formed integral with a perforated bracket, G^2, and body G^1, a spring, H^2, bar H with cord-connection H^3, and detachable plate G^3, substantially as shown.

4. In combination with a singletree having ends recessed at D^2, a hook consisting of a body with groove E^2 and a perforated hooked end, a movable bar with cord-arm F', adapted to be guided in said groove, a spring, F^2, and stop-piece D^2, substantially as set forth.

5. A safety apparatus for vehicles, consisting of shafts provided with extension-arm A^3 and supported by a spring, K, breeching-hooks G with movable bars H, singletree with hooks E, provided with movable bars F, cords connecting said movable bars with the vehicle-body, pulleys A^6 and A^5, guideways A^4, connecting-ring A^5, and handle B' for guiding and operating said cord, all constructed and operated substantially as shown, and for the purposes set forth.

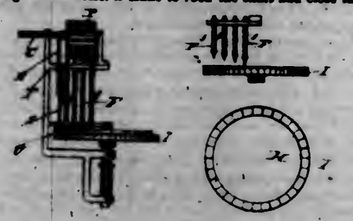
386,878. SHINGLE-CUTTING MACHINE. WILLIAM GOLDER, West Bay City, Mich., assignor to George A. Gage, Chicago, Ill. Filed Sept. 20, 1887. Serial No. 251,002. (No model.)



Claim.—The combination, in a shingle-cutting machine, of the reciprocating gate carrying a cutting-knife and a compression-roller, a carriage provided with devices for holding the shingle-block and having an intermittent movement toward the knife, and a frame supporting the carriage, with the racks *i i*, secured to the said supporting-frame and provided with the teeth *j*, having the short inclined side *s* and the perpendicular side *r*, and the pawl-pieces *k k*, having the ends *n* engaging with the teeth *j*, and provided with the inclined sides *q* and the perpendicular sides *p*, substantially as and for the purpose set forth.

386,879. APPARATUS FOR COUNTING AND RECORDING THE NUMBER OF PACKAGES. MATTHEW GOTTSDIEN, Chicago, Ill. Original application filed Aug. 1, 1884, Serial No. 139,208. Divided and this application filed Jan. 24, 1888. Serial No. 262,012. (No model.)

Claim.—1. The combination, with a way or chute for vessels or packages, of a rock-shaft carrying a series of coiled springs adapted to engage a series of contact-points, a series of contact-points, wires connected with a battery and forming a circuit, mechanism whereby the passage of the vessel is made to rock the shaft and close the circuit, and a suitable recording device, substantially as described, and for the purpose set forth.



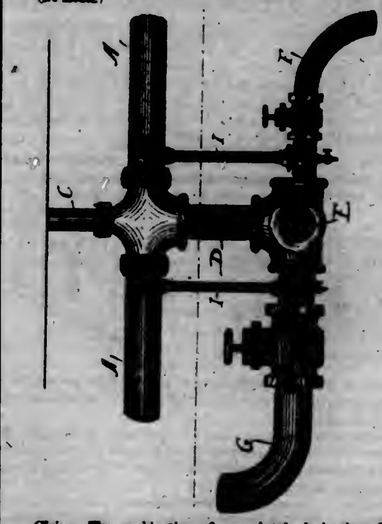
2. The combination, with a way or chute for vessels or packages, of arm D, rock-shaft C, spring or springs coiled about said rock-shaft, contact-points, wires connected with a battery and forming a circuit, and a recording device, substantially as described, and for the purpose set forth.

3. The combination, with a way or chute for vessels or packages, of a vibratory platform, a rock-shaft, levers adapted to rock said shaft, a recording device, and an electrical apparatus for operating the recording device and adapted to be operated by the passage of the vessel, substantially as described, and for the purpose set forth.

4. The combination, with a way or chute for vessels or packages, of vibratory platform M, rock-shaft C, lever N, adapted to have its long end depressed and its short end elevated, a recording device, and an intermediate link or links connecting the lever with the recording device, substantially as described.

5. The combination, with a way or chute for vessels or packages, of vibratory platform M, lever N, having one of its ends extended farther from the rock-shaft than the other, coiled spring O, for drawing down the long end and elevating the short end of said lever, and an intermediate link or links connecting said lever with a recording device, substantially as described.

386,880. WASHING-MACHINE. MATTHEW GOTTSDIEN, Chicago, Ill. Filed Apr. 17, 1886. Renewed Jan. 3, 1888. Serial No. 260,854. (No model.)



Claim.—The combination of a wash-tub, drain-pipes C, leading therefrom to a common pipe or receptacle, A, a main pipe, D, leading from such receptacle into a delivery-pipe, E, transparent pipe or pipes I, leading from the common pipe or receptacle A into pipes F G opening into the delivery-pipe E, and the delivery-pipe E, leading to the boiling-kettle, all arranged and operating substantially as described.

386,881. DETACHABLE PIPE-COUPLING. WILLIAM H. HARRIS and ALBERT B. SMITH, Mansfield, Ohio; said Smith assignor to said Harris. Filed Apr. 7, 1886. Serial No. 263,903. (No model.)

Claim.—The combination of the section 1, having the stem 10, binding-nut 12, and washer 19, with the section 2, having the head 16, recessed, as at 17^a, and having packing-rings 17, seated therein, and having the stem 20, screw-threaded, as at 22, and provided with the nut 23 and washer 18, and having recesses 17^a, in which are seated

386,881.



packing-rings 17, and with the section 3, having the bore 29, and T-head 24, bored, as at 25, to receive the stem 20, substantially as specified.

386,882. CLAMPING-COLLAR FOR ATTACHING HOSE. CHARLES HERZ, Midland, Mich., assignor of two-thirds to Henry Bartlett and James H. Whitmore, same place. Filed Mar. 20, 1888. Serial No. 267,864. (No model.)

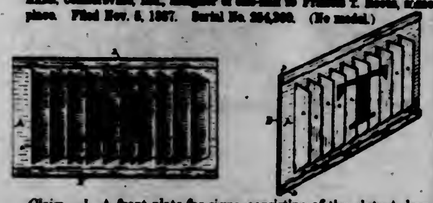


Claim.—1. In a hose-clamp, the combination, with the split spring-collar provided with overlapping ends and adapted to loosely fit the hose, of the abutment formed at one end thereof, and the connecting-links pivotally connected to the other end, the curved lever embracing the collar and fulcrumed to that link, and having the curved locking-arm and thumb-piece, substantially as described.

2. In a hose-clamp, the combination, with the split spring-collar provided with the overlapping ends and adapted to loosely fit the hose, of an abutment formed at one end thereof, the adjustable connecting-link pivotally connected to the other end, and the curved lever fulcrumed to that link, and having the curved locking-arm and thumb-piece, substantially as described.

3. In a hose-clamp, the combination, with the split spring-collar of a single piece, formed with the abutment, of the link C, pivotally secured at one end to said collar and formed of two parts, *c d*, screw-threaded and adjustably connected together, and the curved lever pivotally secured to one part of said link and formed with short arm *e*, long arm *f*, and thumb-piece *g*, and the spur A on the inner face of the collar, substantially as and for the purpose specified.

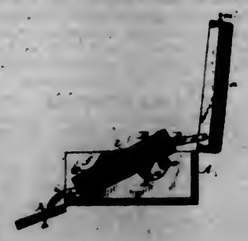
386,883. SIGN OR ADVERTISING-CARD. THEODORE P. HEDEMANN, Connersville, Ind., assignor of one-half to Francis 2. Beste, same place. Filed Nov. 6, 1887. Serial No. 254,209. (No model.)



Claim.—1. A front plate for signs, consisting of the plate A, having the slats *a* formed up from and integral with it, substantially as shown and described.

2. A sign consisting, substantially as hereinbefore set forth, of the front plate, A, having the integral slats *a* stamped out from it and turned at a right angle to it, and the back plate, B, said plates being secured together, as described.

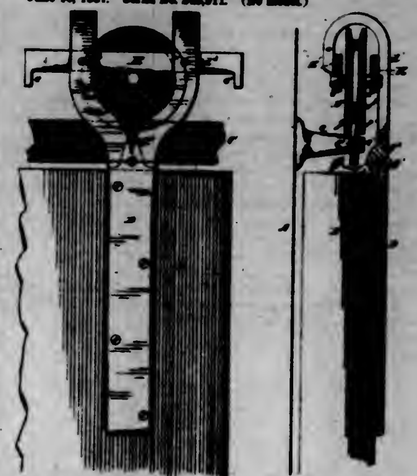
386,884. PICTURE-ALBUM. CHARLES HOOD, Turner's Falls, Mass. Filed Apr. 14, 1888. Serial No. 270,704. (No model.)



Claim.—1. The combination, with the box provided with a hinged lid or top and a hinged front, of segments, as described, pivoted to said box, a roller connecting said segments, a straight lever, *f*, centrally pivoted and connected by suitable arms to the box-top, the pivoted segment, and the hinged box-front, as and for the purpose set forth.

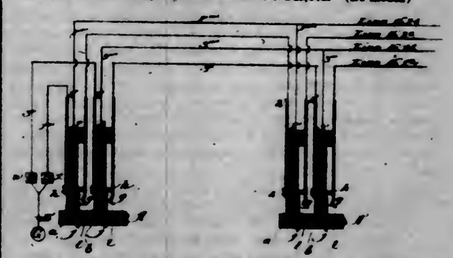
2. A box for exhibiting pictures, having a hinged top and a hinged apron, as described, a system of levers in two sets, each set pivoted at two points in the fixed portion of the box, substantially as described, and a roller connecting the two sets of levers, whereby, when the top of the box is lifted, the simultaneous lowering of the apron and raising of the said roller will be effected, as and for the purpose set forth.

386,885. DOOR-HANGER. ERNST J. HEIMER, Reese, Mich. Filed June 16, 1887. Serial No. 242,011. (No model.)



Claim.—In combination, the door-hanger bracket D, having bifurcated arms *d d'*, the track C, the roller F, and the guard G, having an upturned flange or point, *g*, extended in rear of the lower edge of the track, and a shoulder, *g'*, engaged between the bifurcated arms of the bracket, the guard G being secured to the bracket D by means of a screw, substantially as shown and described.

386,886. MULTIPLE SWITCH-BOARD. HIRAM G. KELLOGG, Hyde Park, Ill. Filed July 30, 1887. Serial No. 246,672. (No model.)



Claim.—1. In a telephone-exchange system, a metallic circuit subscriber's line normally disconnected from the ground at the subscriber's station, in combination with a calling-generator in the circuit of said line at the subscriber's station and a switch co-operating with the normally-open ground to close the same while the generator is being operated, substantially as set forth.

2. In a metallic circuit-exchange system, a subscriber's line normally disconnected from the ground at the subscriber's station and normally connected with a ground wire or connection at the central office, and a calling-annunciator in said ground wire or connection, in combination with a calling-generator at the subscriber's station in the circuit of said line, a ground wire or connection at the subscriber's station normally open to the line, switching devices or means at the central office to temporarily disconnect said line from said ground wire or connection at the central office and connect it with another line for conversation, and switching devices or means at the subscriber's station to temporarily connect said line with said ground wire or

connection at the subscriber's station while the generator is being operated, with the generator between the ground-connection and the calling-annunciator, substantially as and for the purpose set forth.

3. In a telephone-exchange system, a metallic circuit-line normally disconnected from the ground at the subscriber's station, one side or branch of which is normally connected to a ground wire or connection at the central office, the other side or branch of which is normally open at the central office, and a battery in said ground wire or connection, in combination with a switching device at the central office having a pair of contact-points to disconnect said line, at the will of the operator, from said ground wire or connection, a test-receiving instrument, and a switch-testing plug or device connected to one side of said test-receiving instrument, whereby the operator may at will connect said test-receiving instrument, grounded on one side, on its other side to said open end of said metallic circuit-line, substantially as set forth.

4. In a telephone-exchange system, a metallic circuit-line normally disconnected from the ground at the subscriber's station, a ground wire or connection at the central office, a battery in said ground wire or connection, and a switch at the central office having three contact-pieces, two of which are normally in contact with each other and are not in contact with the third piece, one of said pieces which are normally in contact being connected to said ground wire or connection with the battery between it and the ground, the other of said pieces being connected to one side or branch of said metallic circuit-line, and the other side or branch of said line being connected to said third contact-piece, in combination with a double switch-plug having two insulated contact-pieces adapted to be inserted into said switch, and when inserted to disconnect the contact-pieces of the switch which are normally in contact and connect the two contact-pieces which are connected to the two sides or branches of the line to the two insulated pieces of the plug, (one piece of the plug to one piece of the switch and the other piece of the plug to the other piece of the switch,) a test-receiving instrument at the central office, and switch-testing devices or means whereby an operator may at will connect said instrument, grounded on one side, on its other side to said third contact-piece connected to said open end of the line, substantially as and for the purpose set forth.

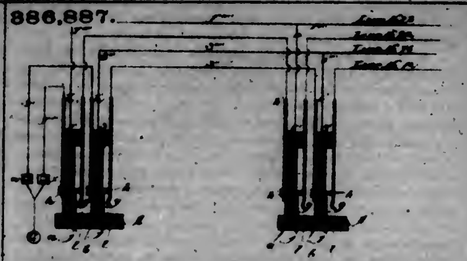
5. In a telephone-exchange system, a metallic circuit-line normally disconnected from the ground at the subscriber's station, one side or branch of which line is normally connected to a ground wire or connection at the central office and the other side or branch of which is open at the central office, and a battery and a calling-annunciator in said ground wire or connection, in combination with a calling-generator at the subscriber's station in said line, means for grounding said line at the subscriber's station when the generator is being operated with the generator between that ground-connection and the office ground, a test-receiving instrument, and switch-testing devices or means whereby an operator may at will connect said instrument, grounded on one side, on its other side to said open end of the line, substantially as and for the purpose set forth.

6. In a telephone-exchange system, two or more multiple switch-boards, metallic circuit-lines connected thereto, each of said lines being normally disconnected from the ground at the subscriber's station, one side or branch of each line being normally connected at the central office to a ground wire or connection, and the other side or branch being normally open at the central office, and a battery in said ground wire or connection, in combination with switching devices or means to temporarily disconnect the branch of said line from its ground wire or connection and to connect the two branches with the two branches of another line for conversation, test-receiving instruments, one at each board, and switch-testing devices or means at each board whereby an operator may at will connect her test-receiving instrument, grounded on one side, on its other side to the open end of any of said metallic circuit-lines, substantially as and for the purpose set forth.

7. In a telephone-exchange system, a metallic circuit-line normally disconnected from the ground at the subscriber's station, one side or branch of which is normally grounded at the central office, in combination with a test-receiving instrument at the central office grounded on one side, a switch-testing plug or device to connect said instrument on its other side to the other side or branch of the line, said side or branch being open to the ground, and thereby establish a test-circuit when the line is not switched from the ground of the instrument through the metallic circuit of the line to the normal ground of the line, a battery in said test-circuit, and a switching device containing a pair of contact-points in the circuit of said side or branch of the line which is normally grounded, whereby an operator may at will disconnect the line from its normal ground, substantially as set forth.

386,887. MULTIPLE SWITCH-BOARD. HIRAM G. KELLOGG, Hyde Park, Ill. Filed Aug. 26, 1887. Serial No. 247,041. (No model.)

Claim.—1. In a telephone-exchange system, a metallic-circuit telephone-line normally open at one end at the central office and normally grounded at the other end at the central office, and there only, in combination with a battery in the circuit of the line at the subscriber's station, a switching device containing a pair of contact-points or pieces in the circuit of the line at the central office, adapted to remove the ground from the line when it is switched with another line for conversation, a test-receiving instrument at the central office, and a switch-testing-plug or contact-piece connected to one side of the test-receiving instrument, and adapted, at the will of the operator, to connect the test-receiving instrument grounded on one side to the normally-open end of the line on the other side, and thereby determine whether the line is switched for conversation.



2. In a telephone-exchange system, two or more switch-boards at the central office, and metallic circuit-lines connected to them, each line being normally open at one end and connected at that end to each of the switch-boards and normally grounded at its other end at the central office, and there only, and each line having a battery in its circuit, in combination with switching devices, one for each line at each board, each containing a pair of contact-points or pieces in the circuit of the line, adapted to remove the ground from its line when the line is switched for conversation, test-receiving instruments, one at each board, and switch-testing plug or contact-pieces connected to one side of the test-receiving instrument at each board, whereby the operator at any board may connect her test-receiving instrument, grounded on one side, to the normally open end of any line on its other side, and determine whether the line is switched for conversation.

3. In a telephone-exchange system, a metallic-circuit telephone-line normally open at one end at the central office and normally grounded at the other end, and there only, and having a battery in its circuit, in combination with a generator in the circuit of the line at the subscriber's station, an annunciator in the ground wire or connection at the central office, a switching device adapted to ground said line at the subscriber's station between its normally-open end and the generator when the generator is being operated, a switching device containing a pair of contact points or pieces in the circuit of the line at the central office adapted to disconnect the line from the ground when it is switched for conversation, a test-receiving instrument at the central office, and a switch-testing plug or contact-piece connected to one side of the test-receiving instrument adapted, at the will of the operator, to connect the test-receiving instrument, grounded on one side, to the normally-open end of the line on the other side, substantially as and for the purpose set forth.

4. In a telephone-exchange system, a metallic-circuit telephone-line normally grounded at the central office and having a calling-annunciator in its ground wire or connection, and a switching device containing a pair of contact points or pieces in the circuit of the line at the central office adapted to remove said ground and to connect said line with another line in metallic circuit with a clearing-out annunciator in the circuit, in combination with a calling-generator at the subscriber's station, and a switching device having two pairs of contact-points, said switching device being operated in one direction by a spring, and in the other direction by the force which actuates the generator, one pair of said points switching the generator, when it is being operated, into circuit with the line, and the other pair then grounding the line with the generator between this ground and the office ground, the subscriber being thereby enabled to operate the calling-annunciator when it is connected to his line and the clearing-out annunciator when it is looped into the metallic circuit, substantially as set forth.

5. In a telephone-exchange system, a metallic-circuit telephone-line grounded on one of its sides or branches at the central office, and grounded there only, in combination with a battery in the circuit of the line at the subscriber's station, a switching device containing a pair of contact points or pieces in the circuit of the line at the central office adapted to disconnect said side or branch from the ground while the line is switched with another line for conversation, a test-receiving instrument and switch-testing plug or contact-piece connected to one side of the test-receiving instrument adapted, at the will of the operator, to connect said test-receiving instrument, grounded on one

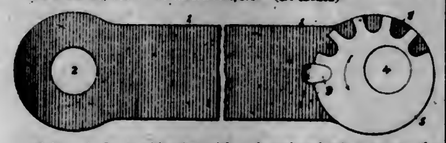
side, on its other side to the other branch of the line open to the ground, substantially as and for the purpose set forth.

6. In a telephone-exchange system, a metallic-circuit telephone-line grounded on one of its sides or branches at the central office and disconnected from the ground at the subscriber's station, in combination with a battery in the circuit of the line, a switching device containing a pair of contact points or pieces in the circuit of the line at the central office adapted to disconnect said side or branch from the ground while the line is switched with another line for conversation, a test-receiving instrument, and a switch-testing plug or contact-piece connected to one side of the test-receiving instrument adapted, at the will of the operator, to connect said test-receiving instrument, said instrument being grounded on its other side, and said switch-testing plug being adapted, at the will of the operator, to connect with the other branch of the line, which is disconnected from the earth, substantially as set forth.

7. In a telephone-exchange system, a metallic-circuit line normally disconnected from the ground at the subscriber's station and normally connected on one of its sides or branches with a ground wire or connection at the central office, a calling-annunciator in said ground wire or connection, and switching devices or means containing a pair of contact points or pieces in the said side or branch, and another contact point or piece connected to the other side or branch at the central office adapted to temporarily disconnect said line from said ground wire or connection and to connect it in metallic circuit with another line, in combination with a calling-generator at the subscriber's station in said line and switching devices or means containing a pair of contact-points normally open, one of which is connected with the ground and the other one to the line between the generator and the normally-open end of the line, whereby the subscriber, while operating said generator, grounds said line with the generator between the ground and said office ground wire or connection, substantially as and for the purpose set forth.

8. In a telephone-exchange system, a metallic-circuit telephone-line normally disconnected from the earth at the subscriber's station and normally grounded on one side only at the central office and a switching device containing a pair of contact-points in the circuit of the line at the central office, in combination with a generator in the circuit of the line at the subscriber's station while operated, a switching device at the subscriber's station containing a pair of contact-points normally open, and an annunciator in the circuit of the line at the central office, said normally-open contact-points being closed while the generator is operated, one of them being connected to the subscriber's ground and the other to the line with the generator and annunciator between it and the office ground, substantially as set forth.

386,888. LOCOMOTIVE DRAW-BAR. HORACE W. LOCKERBY, Corning, N. Y., assignor of one-half to Joseph F. Moore, same place. Filed Oct. 15, 1887. Serial No. 252,473. (No model.)



Claim.—1. In combination with a draw-bar having an eye, the latter having a notch at one side, a disk situated in said eye and having an eccentric eye and a peripherally-notched flange, and a pin adapted to occupy the notch at one side of the first-mentioned eye and one of the notches in said flange, substantially as and for the purpose set forth.

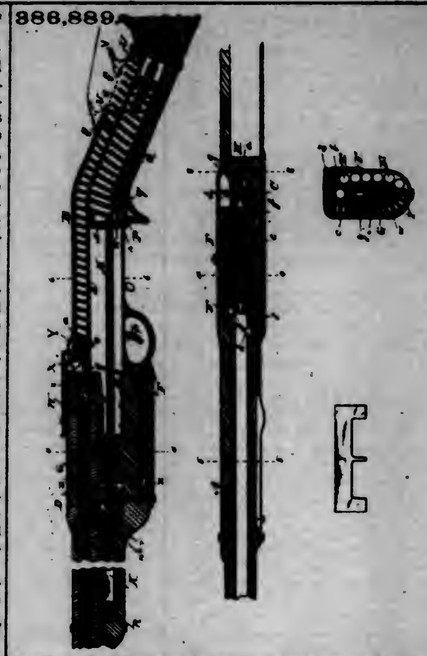
2. In combination with a draw-bar having an eye, the latter having a notch at one side, a disk having an eye, a peripherally-notched flange at one side of said disk and a tongue at the other, adapted to pass through said notch, and a pin adapted to occupy the latter and one of the notches in said flange, substantially as set forth.

3. The combination of the draw-bar having an enlarged eye at one end, a disk situated in said eye and having an eccentric eye and a flange, the latter having notches on its periphery, a headed pin adapted to occupy one of said notches and having a seat in the draw-bar, and a split key fitting in one end of said pin, substantially as shown and described.

4. The combination of a draw-bar having an enlarged eye, said eye having a notch at one side, a disk having a flange at one side and a tongue at the other, adapted to pass through said notch, substantially as and for the purpose set forth.

386,889. MAGAZINE FIRE-ARM. RAFAEL MALLEN, Mexico, Mexico. Filed Aug. 25, 1887. Serial No. 247,802. (No model.)

Claim.—1. In a repeating-rifle, a firing-chamber, a storage-chamber alongside said firing-chamber, and a stationary breech-block, in combination with a sliding carriage having sides which constitute the



opposite walls of the firing-chamber and which separate the firing and storage chambers, substantially as set forth.

2. In a repeating-rifle, a firing-chamber, a storage-chamber alongside the same, and a stationary breech-block, in combination with a sliding carriage composed of a breech-piece in the rear of the breech-block, side pieces connected to said breech-piece, which constitute the side walls of the firing-chamber, and a firing-pin carried by the breech-piece, substantially as set forth.

3. In a repeating-rifle, a firing-pin, a spring which impels said firing-pin forward to fire the charge, a cylinder alongside the bore of the rifle, and a passage connecting the bore of the rifle with the rear end of said cylinder, in combination with a piston within said cylinder, which is moved forward by the gases generated by the explosion of the charge, a piston-rod connected to said piston, a catch on said piston, which engages said firing-pin when the piston is moved forward, and a spring for retracting said piston and with it said firing-pin, substantially as set forth.

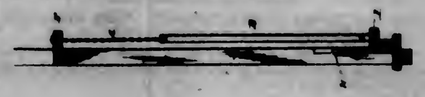
4. In a repeating-rifle, a spring-actuated firing-pin and a catch engaging therewith, in combination with a bell-crank lever connected with said catch, and a sliding trigger-plate which upon being moved comes in contact with said lever and rocks the same, substantially as set forth, whereby said catch is depressed and the firing-pin is released.

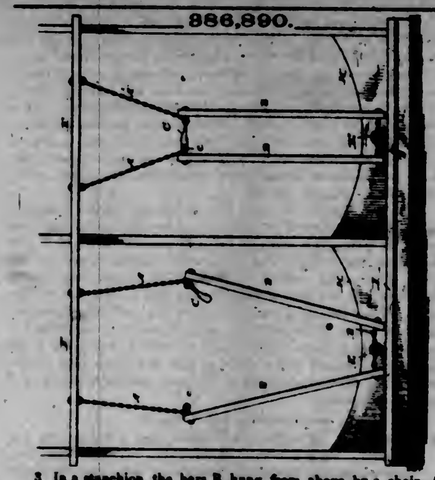
5. In a repeating-rifle, a firing-chamber, a storage-chamber, and a sliding carriage whose side pieces constitute the opposite side walls of the firing-chamber, one of which sides separates the firing and storage chambers, in combination with a sliding plunger which occupies the space left vacant by the side piece of the carriage opposite to the mouth of the storage-chamber when the carriage is moved backward, substantially as set forth.

386,890. STANCHION. THOMAS H. MCGRRARY, New Brighton, Pa. Filed Dec. 22, 1887. Serial No. 258,702. (No model.)

Claim.—1. In a stanchion, the bars B, hung at their upper ends from above by flexible connections and connected at their lower ends, and a detachable connection between the upper portions of the bars, substantially as described.

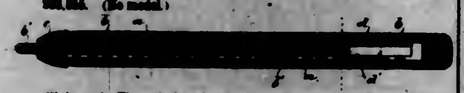
2. A stanchion consisting of two flexibly-suspended bars, B, flexibly joined at their lower ends by a connection passing through a guiding eye or ring, E, and a detachable connection between the upper portions of the bars, substantially as described.





3. In a stanchion, the bars B, hung from above by a chain, A, and connected together at their lower ends by a chain, D, and a detachable connection, C, between the upper portions of the bars, the distance between the upper ends of the chains A being greater than the length of chain D, substantially as and for the purpose set forth.

386,891. PENCIL. OSCAR HEINEMAN, Jr., New York, N. Y., assignor to Eberhard Faber, same place. Filed Feb. 18, 1888. Serial No. 263,855. (No model.)



Claim.—1. The tubular sleeve *d*, having an inwardly-projecting tooth, *d'*, in combination with the slotted tubular pencil-lead holder *b*, having teeth upon one edge of the metal at the slot, and over which holder the sleeve is slipped, so as to hold the lead at any point to which it may be moved by the teeth *d'* being brought into the notch between two teeth on the tubular holder, substantially as specified.

2. The combination, with the tubular body *a*, having a tapering end, of a tubular lead-holder passing freely into the tubular body, and a conical collar, *c*, on the tubular lead-holder, into which the tapering end of the tubular body passes, substantially as specified.

3. The combination, with the tubular body *a*, having a tapering end, of a tubular lead-holder passing freely into the tubular body, and a conical collar, *c*, on the tubular lead-holder, into which the tapering end of the tubular body passes, and a sleeve sliding on the slotted tubular lead-holder and having a tooth passing into the lead-holder at the end of the lead, substantially as specified.

386,892. PENCIL. OSCAR HEINEMAN, Jr., New York, N. Y., assignor to Eberhard Faber, same place. Filed Mar. 5, 1888. Serial No. 266,291. (No model.)



Claim.—1. The combination of the tubular body or sheath *a*, divided by a slot at one end, with a tubular metal end cap that is adapted to fit over the end of the divided portion of the tubular body and compress the same to cause a friction on the lead or stylus, substantially as specified.

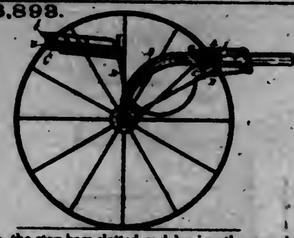
2. The combination, with the tubular body or sheath *a*, slotted at one end, of a tubular portion, *c*, adapted to fit over the end of the tubular body and to compress its divided end to cause a friction on the lead, and the tubular portion *c'*, sliding within the portion *c*, for moving the lead endwise, substantially as set forth.

386,893. TWO-WHEELED VEHICLE. JAMES A. ORELL, Kalamazoo, Mich. Filed Apr. 14, 1888. Serial No. 270,793. (No model.)

Claim.—1. The combination of the thills, wheeled axle, seat-bars or body hinged at the forward end, the spring sustaining said seat-bars from the ends of said spring, and the re-enforcing spring and adjustable bands, substantially as set forth.

2. The seat comprising the frame, the cross-bar, the standard having the loop at the end, the side bottom boards and lids hinged

386,893.

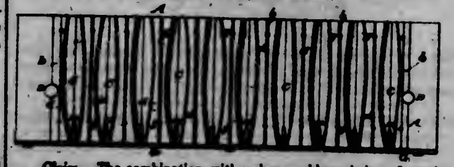


thereto, the stay-bars slotted and having the cross-bar of the frame loosely in said slots, and the two-part rail lapped and loosely passed through the loop of said seat-standard, substantially as set forth.

3. The combination of a vehicle-body with a seat having the sliding side parts to the bottom and lids hinged thereto, substantially as set forth.

4. The combination of the thills, seat-bars, the two springs separated at the end, and the bands thereon for re-enforcing the spring by adjusting them, the extensible seat having the side bottom boards adapted to slide, and the hinged lids, whereby the spring may be made stiffer when the seat is widened for two persons, substantially as set forth.

386,894. CIGAR-MOLD. HENRY C. FLEMMING, Davenport, Iowa. Filed Apr. 10, 1888. Serial No. 270,168. (Model.)



Claim.—The combination, with a cigar-mold consisting of a series of matrices and plungers, of the strip G, secured to the edge thereof adjacent to the ends of the matrices at which the heads of the cigars are formed, and a plurality of pins, *m*, secured to said strip and extended into said molds, substantially as and for the purpose specified.

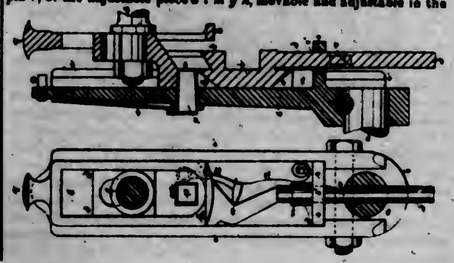
386,895. FIRE-KINDLER. TREAT T. PHIPPEN, Lakeside, Ill. Filed Aug. 16, 1887. Serial No. 247,070. (No model.)



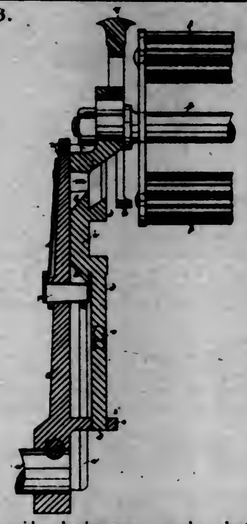
Claim.—The combination, in an oil-burning cylinder, of shell or case A, slits *a a*, arranged in series on said shell A, cup-shaped heads C, perforations *c' c'* in said heads, washer B, of less diameter than head C and extending from the center thereof over the cup-shaped portion a sufficient distance to be adapted to the placing of a stove-lifter cover or other like article thereunder for the lifting of said cylinder, and porous non-combustible material placed in said shell or case, substantially as described.

386,896. ADJUSTABLE CRANK FOR VELOCIPEDES. FRANZ L. RENK, Hinterberg, Saxony, Germany. Filed Dec. 27, 1887. Serial No. 258,682. (No model.) Patented in Germany Aug. 27, 1887, and in England Nov. 17, 1887, No. 15,982.

Claim.—The combination, with the shaft *a* and the arm *b*, mounted upon said shaft, having the guide *c*, having the socket *n*, the projection *o*, the hole *o'*, the pin *p*, the spring *o*, the pawl *t*, the spring *s*, and the pin *r*, of the adjustable piece *d i m g h*, movable and adjustable in the

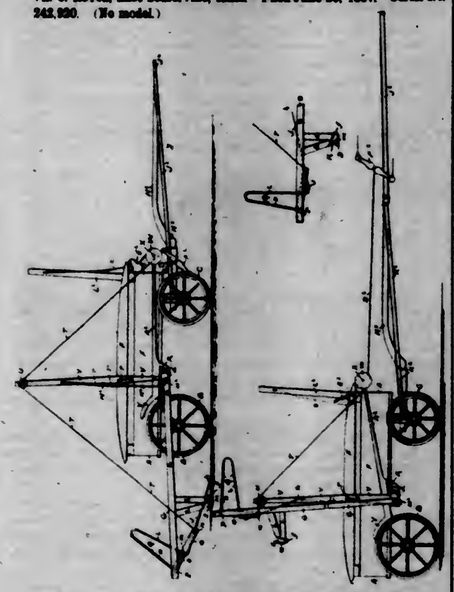


386,896.



hole *d*, and the guide *c*, having curves *a* and *c*, adapted to the pawl *f*, having inclined surfaces adapted to the pin *p* and supporting the shaft *l* of the pedal *f*, all substantially as and for the purpose set forth.

386,897. APPARATUS FOR RAKING AND LOADING HAY. MARVIN O. ROYCE, East Somerville, Mass. Filed June 29, 1887. Serial No. 242,920. (No model.)

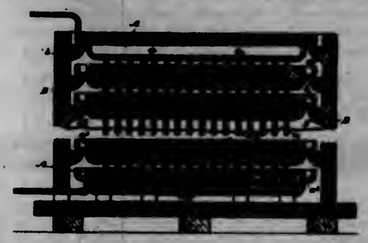


Claim.—1. A frame, G H, at one end portion pivotally attached to and projected from the rear of a wagon-body, and a hay-rake having its frame journaled and swinging on said frame G H and adapted to engage it and the two frames to swing as one on the wagon-body, in combination with brake-shoes for the wheels of the wagon, lever-arms carrying said shoes and fulcrumed in the wagon, a horizontal shaft, X, turning on said arms, means adapted to hold said shaft against turning and to release it to turn, a sliding wagon-pole, J^3, a stationary support and guide, K^3, for said pole, a movable whiffletree, F^3, to which said pole the horse is to be hitched, rope D^3, connecting the whiffletree and said shaft, and rope T, having suitable guides connecting said shaft and rake-frame, substantially as described, for the purpose specified.

2. A horizontal bar, D, detachably attached to a wagon-body, a frame, G H, at one end portion, pivotally attached to said bar and extended to the rear of the wagon, a hay-rake journaled on said frame G H and adapted to engage it and the two frames to swing as one on said bar, and means connected to said rake-frame and adapted to swing it and its supporting-frame into operative raking position and into a position over the wagon to dump the contents of the rake thereon, in combination with brake-shoes for the wheels of the wagon, pivoted to said bar, and having operating lever-arms connected to and operated by said means for swinging said rake-frame, substantially as described, for the purpose specified.

3. In combination, a frame, G H, at one end portion pivotally attached to and projected from the rear of a wagon-body, a hay-rake having its frame journaled and swinging on said frame G H and adapted to engage it and the two frames to swing as one on the wagon, a horizontal rotatory shaft, X, of the wagon-body, means adapted to hold said shaft against turning and to release it to turn, rope T, having suitable guides and connecting said rake-frame and shaft, a sliding wagon-pole, J^3, a stationary support and guide, K^3, for said pole, a movable whiffletree, F^3, to which and said pole J^3 the horse is to be hitched, and rope D^3, or such like, connecting whiffletree and said shaft, substantially as described, and for operation and purposes as specified.

386,898. SECONDARY BATTERY. JOHN S. SELLON, The Hall, Sydenham, County of Kent, England, assignor to The Electrical Accumulator Company, of New York. Filed Sept. 30, 1887. Serial No. 250,891. (No model.) Patented in England Nov. 10, 1886, No. 14,902.



Claim.—1. The combination, in a secondary battery, of a frame or support having shelves or projections arranged one above the other, and two or more elements in the form of a dish or tray adapted to hold the electrolyte, independently supported upon the said shelves or projections.

2. The combination, in a secondary battery, of two or more elements in the form of a tray or vessel adapted to contain the electrolyte, arranged one above the other and furnished with connecting-passages, whereby the overflow from one is conducted to another.

3. In a secondary battery, a couple in the form of a tray or vessel adapted to contain the active material of one element and the electrolyte and furnished with ribs or projections upon its under side, having holes or perforations in which the active material of the other element is placed.

4. In a secondary battery, a couple in the form of a tray or vessel adapted to contain the active material of one element and an electrolyte, and having perforated ribs or projections upon its under side, forming a support for the active material of the other element.

5. In a secondary battery, an element in the form of a tray or vessel adapted to contain the electrolyte, combined with a groove or gutter surrounding the element to catch the overflow.

6. In a secondary battery, an element in the form of a tray or vessel adapted to hold the electrolyte and having ribs or projections containing holes or perforations in which the active material is placed.

7. In a secondary battery, the combination of a series of couples, each in the form of a tray or vessel adapted to contain the active material of one element and an electrolyte and furnished with ribs or projections upon its under side, having holes or perforations in which the active material of the other element is placed, said couples being located one above the other, the perforated ribs of one element being immersed in the electrolyte of the adjacent element.

8. In a secondary battery, the combination of an element consisting of a support to which is applied an active material containing an oxide of lead and an element consisting of a support to which is applied an active material containing an oxide of manganese.

9. In a secondary battery, the combination of an element consisting of a support to which is applied an active material consisting of an oxide of lead mixed with a porous inert material and an element consisting of a support to which is applied an active material consisting of an oxide of manganese mixed with a porous inert material.

386,899. CAR-AXLE BOX. WILLIAM S. GRAFFIUS, Denver, Colo. Filed Sept. 26, 1887. Serial No. 251,015. (No model.)



Claim.—1. The combination, with the axle, the surrounding case formed with ends embracing the axle, and the long rolls therein around said axle, of a hardened-steel washer within said case between the ends of said case and the ends of the roll to take the end-thrust of the rolls, substantially as described.

2. The combination, with the axle and the endwise-movable case carrying the long rolls and surrounding the axle, of the casting likewise movable on said axle and designed to support the load, substantially as described.

3. The combination, with the axle, the surrounding case, and the long rolls, of the casting and the transverse rolls arranged between said case and casting, substantially as and for the purpose specified.

4. The combination, with the axle and wheels, of the casting designed to support the load, and provided with eyes surrounding the axle, and the balls arranged between said eyes and the inner faces of the wheels, substantially as and for the purpose specified.

5. The combination, with the axle, the surrounding case and the long rolls, of the casting designed to support the load, and springs arranged to keep said case in the center of the axle, substantially as described.

6. The combination, with the axle, the surrounding case, the long rolls, and the casting designed to support the load, of the springs arranged as described, and the transverse rolls between said case and casting, substantially as and for the purpose specified.

7. The combination, with the axle, the endwise-movable case, the long rolls, and the endwise-movable casting designed to support the load, of an elastic connection between said case and casting, transverse rolls between the case and casting, and the balls H, all substantially as and for the purpose specified.

386,900. SPINNING-MACHINE. GEORGE W. SWORMSTEDT, Dalton, Pa., assignor of two-thirds to Edward Miller, same place, and Alfred Harvey, Scranton, Pa. Filed Apr. 4, 1887. Serial No. 233,613. (No model.)

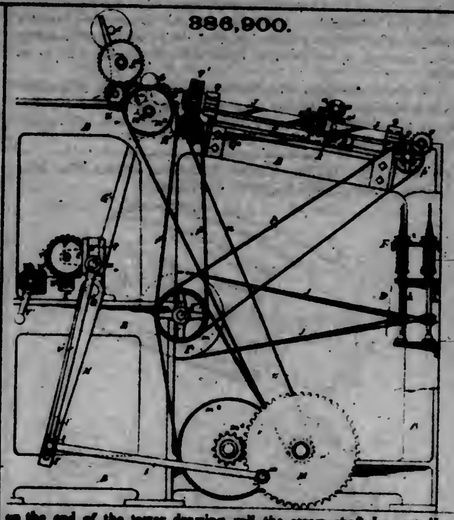
Brief.—The invention consists in certain improvements upon the machine described in Letters Patent No. 357,864, relating particularly to the mechanism for driving the drawing-rolls and for regulating the travel of the carriage.

Claim.—1. The combination of the frame of a spinning-machine, the feed-rolls thereon, a carriage adapted to suitable ways on the frame, drawing-rolls mounted on said carriage, mechanism for reciprocating the carriage toward and from the feed-rolls, a screw-shaft situated at one side of the carriage, a nut adapted thereto, and gearing connecting the nut with the drawing-rolls, substantially as specified.

2. The combination of the frame of a spinning-machine, the feed-rolls thereon, a carriage adapted to suitable ways on the frame, drawing-rolls mounted on said carriage, mechanism for reciprocating the carriage toward and from the feed-rolls, a screw-shaft situated at one side of the carriage, and having a nut adapted to travel with the carriage, and gearing connecting the nut with the drawing-rolls, substantially as specified.

3. The combination of the carriage A, mechanism for reciprocating the same, drawing-rolls mounted on said carriage, a bevel-wheel on the end of the lower drawing-roll, the screw-shaft J, a nut, K, thereon, and a bevel-wheel on the nut gearing into the bevel-wheel on the lower drawing-roll, the nut K mounted in bearings on the carriage A and adapted both to slide and to turn on the shaft J, through which motion is imparted to the drawing-rolls, substantially as described.

386,900.



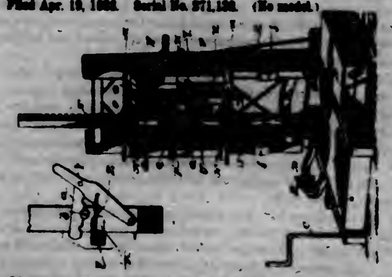
4. The combination of the carriage A, the feed-rolls thereon, mechanism for reciprocating the carriage, a screw-shaft, J, a nut, K, thereon, gearing connecting the nut and feed-rolls, a worm and worm-wheel, a detachable pulley, *r'*, the main shaft, and a belt adapted to pass around the pulley *r'* and around the pulley on the main shaft substantially in the manner and for the purpose set forth.

5. The combination of the carriage A, carrying the drawing-rolls, shaft G, arm G', connecting-rod G^2, and arm H, carried by said shaft, a block, *l*, on the arm H, and mechanism for moving the block *l* toward or from the fulcrum of the lever, and mechanism connected to the block by which the arm H is vibrated to reciprocate the carriage, substantially as described.

6. The combination of the shaft G, levers G' and H thereon, driving mechanism for vibrating the lever H, the feed-roll carriage, devices connecting the same to the lever G', block *l*, adapted to ways on the lever H and connected to the driving-rod for said lever, a block, U, and an arm, U', connected to the block *l*, a worm and worm-wheel, intervening gearing between the worm-wheel and the block U, and mechanism for turning the worm by which the block is raised or lowered and locked in position, substantially as described.

7. The combination of the shaft G, levers G' and H thereon, driving mechanism for vibrating the lever H, and a carriage connected to the lever G', through the medium of which the carriage is vibrated, block *l*, adapted to ways on the lever H and connected to the driving-rod therefor, a block, U, connected to the block *l*, and a handled shaft, V, and gearing through the medium of which the block U can be raised or lowered by turning the handled shaft V while the machine is in motion, substantially as set forth.

386,901. POST-HOLE AUGER. FRANK P. STANLEY, Spencer, Iowa. Filed Apr. 19, 1888. Serial No. 271,120. (No model.)

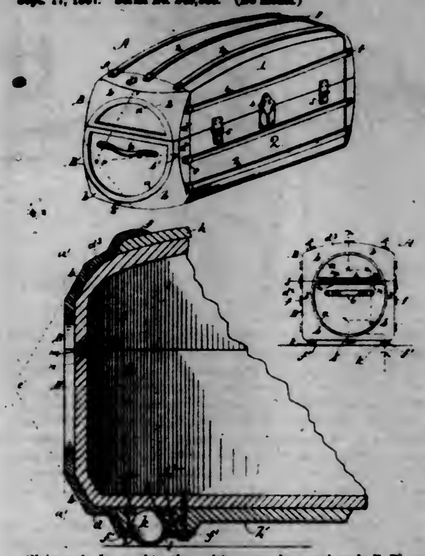


Claim.—1. The combination, with the base, of the drill-carrying frame mounted over the same and the bit-cleaning knives secured to the side of the base, as set forth.

2. The combination, with the base and the standard erected thereon, of the swinging frame hinged to the standard and the sliding frame mounted on the swinging frame and carrying the drill, as set forth.

3. The combination, with the frame having a slot, X, of the shaft passing through said slot, the lever pivoted below said slot and connected to said shaft, and the rack-bar pivoted to the lever and adapted to engage a stud on the frame, as set forth.

386,902. TRUNK. WILLIAM B. SULLIVAN, Madison, Wis. Filed Sept. 17, 1887. Serial No. 249,903. (No model.)



Claim.—1. In combination with a trunk, metal ends B B', provided with conoidal pyramidal surfaces *b*.

2. The combination, with a trunk provided with metal ends having side flanges to fit the body of the trunk and lugs to receive the ends of slats, of a loosely-fitting ring in a recess in the ends of said slats at the bottom of the trunk as a bearing-surface for a ball-caster, as set forth.

386,903. DRAW-SHAVE. JAMES SWAN, Seymour, Conn. Filed Feb. 20, 1888. Serial No. 264,617. (No model.)

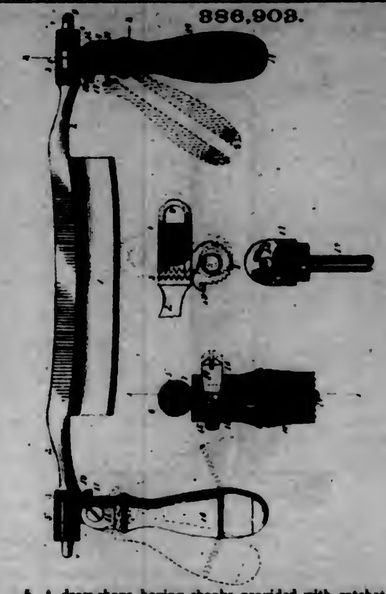
Claim.—1. In a draw-shave, the combination, with eye 6, having an inwardly-inclined opening and teeth upon its outer periphery, of a handle having at its upper end a slot adapted to receive the eye, a lug, 13, at the base of said slot, and a screw-pin in the handle, which passes through the eye and is provided with an incline which engages the inclined opening in the eye, forcing the latter inward when the pin is turned in, so that lug 13 engages the teeth upon the eye, thereby locking the handle at any desired adjustment toward or from the cutting-edge.

2. Eye 6, having inwardly-inclined opening 7 and teeth 8 upon its outer periphery, in combination with a handle, the head of which is provided with a slot to receive the eye, said slot having a lug, 13, at its base, and a screw-pin having an incline, 18, which engages the opening in the eye, drawing the latter inward relatively to the handle, whereby the lug and teeth are caused to engage to lock the handle at any desired position.

3. Eye 6, having an inwardly-inclined opening and teeth upon its outer periphery, and a handle having a head provided with a slot through it to receive the eye, a lug, 13, at the base of said slot, an opening, 16, on one side of the head, and a threaded opening, 15, on the other side, in combination with a screw-pin, the respective ends of which engage openings 15 and 16, and which is provided with an incline, 18, adapted to engage the inclined opening in the eye, as and for the purpose set forth.

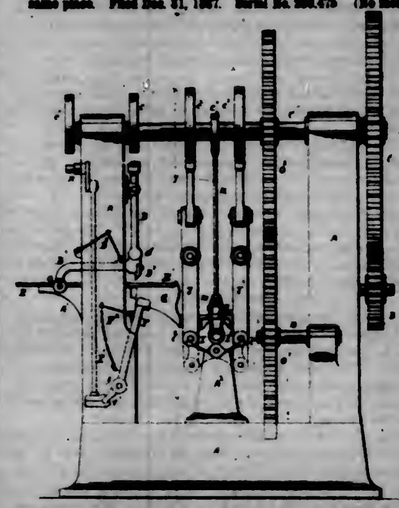
4. A draw-shave having a shank provided with ratchet-teeth 3, a collar on said shank, having ratchet-teeth engaging teeth 3, and a thumb-nut engaging the shank to lock the collar in any desired position, in combination with an eye, 6, made integral with or secured to the collar and provided with an inwardly-inclined opening, 7, and ratchet-teeth 8, a handle having a slot to receive the eye, and a lug 13, and a screw-pin in the handle having an incline engaging the opening in the eye, substantially as described.

386,903.



5. A draw-shave having shanks provided with ratchet-teeth 3 and threaded at their outer ends, and collars on said shanks, having teeth engaging teeth 3, in combination with eyes made integral with or secured to said collars, handles adjustably secured to said eyes, and thumb-nuts engaging the shanks, whereby the collars may be locked at any desired position.

386,904. MACHINE FOR MAKING HORSESHOES. Ansner M. SWINEY, Marquette, Mich., assignor of one-half to Arthur Uddenberg, same place. Filed Dec. 31, 1887. Serial No. 259,475. (No model.)



Claim.—1. In a machine for the manufacture of horseshoes, the combination with a supporting-bed and a pattern-head, of reciprocatory shaping-presses pivoted to a support stationary with respect to the pattern-head, and means for actuating the presses to form the body of the shoe, substantially as set forth.

2. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a pattern-head and reciprocatory shaping-presses pivotally secured to the bed, and means for actuating the presses to bend the metal of the shoe about said head, substantially as described.

3. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a removable pattern-head and reciprocatory shaping-presses pivotally secured to the bed, and means for actuating the presses to bend the metal of the shoe about said head, substantially as described.

4. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of reciprocatory shaping-presses pivotally secured to the bed and flanged upon their working-faces, and means for actuating the presses, substantially as and for the purpose described.

5. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of shaping-presses to form the body of the shoe, said presses pivotally engaged upon said bed and eccentrically operated, substantially as described.

6. In a machine for the manufacture of horseshoes, the combination, with the supporting-bed and frame provided with a driving-arbor, of shaping-presses to form the body of the shoe, said presses being pivotally secured to the supporting-bed and operated by an eccentric upon said arbor, substantially as set forth.

7. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a reciprocatory press, I, to bend the heel-calks, substantially as set forth.

8. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of an eccentrically-operated press to bend the heel-calks, substantially as described.

9. In a machine for the manufacture of horseshoes, the combination, with a supporting bed or frame, of a driving-arbor provided with an eccentric and a press to bend the heel-calks, said press operated by said eccentric and having a pivotal engagement upon said bed, substantially as set forth.

10. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a reciprocatory press, N, constructed to move in a right line toward and away from its work, substantially as and for the purpose set forth.

11. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a reciprocatory press, N, constructed to move, in a right line toward and away from its work and provided with a stamp, Q, substantially as and for the purpose set forth.

12. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a reciprocatory press, N, constructed to move in a right line toward and away from its work and provided with a stamp, Q, said stamp provided with a series of punches, substantially as and for the purpose set forth.

13. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a press, N, and a rotatable shaft, O, said press operated from said shaft, substantially as described.

14. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a rotatable shaft, O, and a press, N, provided with a sliding head engaged upon said bed, said head eccentrically operated from said shaft, substantially as described.

15. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of a reciprocatory press, N, constructed to move in a right line toward and away from its work, and a releasing device, substantially as described.

16. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of reciprocatory shaping-presses and a reciprocatory cutter independent of the shaping-press, substantially as described.

17. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of reciprocatory shaping-presses to form the body of the shoe and an auxiliary reciprocatory press to bend the heel-calks, substantially as set forth.

18. In a machine for the manufacture of horseshoes, the combination, with a supporting-bed, of reciprocatory shaping-presses to form the body of the shoe, an auxiliary reciprocatory press to bend the heel-calks, and a reciprocatory press, N, to perforate the shoe, substantially as set forth.

19. In a machine for the manufacture of horseshoes, the combination, with the supporting bed or frame, of shaping-presses pivotally secured at one end to a suitable frame and operated by eccentric connections connected with their opposite ends, substantially as set forth.

20. In a machine for the manufacture of horseshoes, the combination, with a supporting bed or frame, of a cutter-arm pivotally engaged at one end therewith, a driving-arbor provided with an eccentric, said arm operated by said eccentric, and a spring to retract said arm, substantially as described.

21. In a machine for the manufacture of horseshoes, the combination, with a supporting bed or frame, of the vibratory arm F, substantially as and for the purpose set forth.

22. In a machine for the manufacture of horseshoes, the combination, with a supporting bed or frame, of the vibratory arm F, pivotally engaged thereupon, and a driving-arbor eccentrically connected with said arm, substantially as described.

23. In a machine for the manufacture of horseshoes, the combination, with a supporting bed or frame, of reciprocatory shaping-presses to form the body of the shoe, a cutter, and means for feeding the metal to said presses, substantially as described.

24. In a machine for the manufacture of horseshoes, the combination, with a supporting bed or frame, of a driving-arbor, shaping-presses I, F, auxiliary press L, press N, and cutter, said presses and cutter driven from said arbor, substantially as described.

25. In a machine for the manufacture of horseshoes, the pattern-head and shaping-presses mounted upon a pedestal, A^1, and removably connected therewith, substantially as described.

386,905. GRAIN-BINDER. Andrew Winans, St. Paul, Minn. Filed Nov. 9, 1886. Serial No. 218,402. (No model.)



Claim.—1. In a grain-binder, the combination, with the needle-arm, of compressor-arms, a link, as F, connecting the arms to the shaft of the needle-arm, a depresser-arm pivoted to the frame at one end adjacent to the hub of the needle-arm, and connecting mechanism between the needle-arm and depresser-arm, whereby the latter is moved by the needle-arm to force the compressor-arms toward the needle-arm, substantially as described.

2. In a grain-binder, the combination, with the main frame carrying a fixed lug, of the needle-arm, a compressor-arm, a link on which the compressor-arm is loosely hung, an arm connected fixedly to the compressor-arm to cause them to move together, and carrying an offset arranged to bear against said fixed lug to lock the compressor-arm in its elevated position, and an intermediate arm bearing on the arm connected to the compressor, said parts being arranged substantially as described, whereby as the knot is being tied said intermediate arm bears upon and moves the arm connected to the compressor out of engagement with the fixed lug, and at the same time forces the compressor toward the gavel to produce a final compression.

3. In a grain-binder, the combination, with the main frame provided with a fixed lug adapted to carry an anti-friction roller, G, of the needle-arm, a compressor-arm, a pivoted link on which the compressor is loosely hung, arm E, connected to the compressor and carrying a projecting offset or rib, *c*, the end of which normally bears against the said roller, and thereby supports the compressor-arm in its elevated position, and a trip device which forces the end of the rib *c* out of engagement with roller G, which then rides upon the upper face thereof and permits the compressor to fall, substantially as described.

4. The combination, with the needle-arm having a lug, *b*, of a depresser-arm, I, having a projection, *i*, whereby the lug of the needle-bar engages with the projection upon the depresser-arm and forces the latter downward, substantially as described.

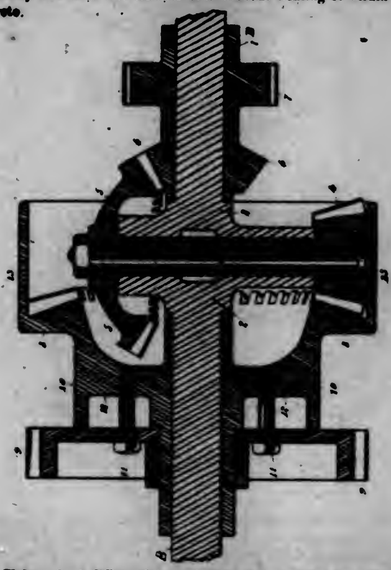
5. The combination, with the throw-off arm C, having a lug, *c*, on its hub, of the depresser-arm I, having a projection, *i*, engaging with the lug *c*, substantially as described.

6. The combination, with the compressor-arms D and the curved arm E, supporting the compressor-arms, of a depresser-arm, I, having projections *i i'*, the needle-arm having lug *b*, and the throw-off arm having lug *c*, the whole combined and operating substantially as described, to insure the release of the curved arm from its locking device, as set forth.

7. The combination of compressor-arms, a depressor-arm, the needle-arm and throw-off arms operating said depressor-arm, and a lug on the frame of the machine for locking the compressor-arms until released by the depressor-arm, substantially as described.

386,906. DIFFERENTIAL MOTION FOR SLUBBING AND ROVING FRAMES. SAMUEL TWEEDALE, Accrington, County of Lancaster, England. Filed Jan. 28, 1887. Serial No. 225,527. (No model.) Patented in England Nov. 20, 1884, No. 15,750; in France Mar. 27, 1885, No. 172,091, and in Austria-Hungary May 30, 1886, No. 5,717.

Brief.—The object of the invention is to provide an improved construction of jack or differential motion which shall avoid the centrifugal action inherent in the old constructions, and which shall consequently run with less friction and without heating or strain due thereto.



Claim.—1. A differential gearing consisting of the combination of a shaft formed with a transverse bearing-boss, a cross-shaft mounted to turn in said bearing, bevel-gears fixed to the opposite ends of said cross-shaft, and bevel-gears mounted to turn on an axis concentric with the axis of said shaft and gearing, respectively, with the gears on opposite ends of said cross-shaft.

2. A differential gearing consisting of the combination of a shaft formed with a transverse bearing-boss, a cross-shaft mounted to turn in said bearing, bevel-gears of different size fixed on the opposite ends of said cross-shaft, and bevel-gears mounted to turn on an axis concentric with the axis of said shaft and gearing, respectively, with the bevel-gears on opposite ends of said cross-shaft.

3. A differential gearing consisting of the combination of a shaft formed with a transverse bearing-boss, a cross-shaft mounted to turn in said bearing, bevel-gears of different size fixed on the opposite ends of said cross-shaft, the larger one of said gears arranged nearer the main axis of rotation than the other in order to compensate for the difference in their weight and thereby equalize, or partially so, their centrifugal tendency, and bevel-gears mounted to turn on an axis concentric with the axis of said main shaft and gearing, respectively, with the bevel-gears on opposite ends of said cross-shaft.

4. A differential gearing consisting of the combination of a shaft formed with a transverse bearing-boss, a cross-shaft mounted to turn in said bearing, bevel-gears fixed on the opposite ends of said cross-shaft, and two bevel-gears arranged on opposite sides of said transverse boss turning loosely on the main shaft and gearing, respectively, with the bevel-gears on opposite ends of said cross-shaft.

5. A differential gearing consisting of the combination of a shaft formed with a transverse bearing-boss, one arm of which is longer than the other, and the shorter arm of which is formed of greater thickness in order to counterbalance its weight against the weight of the longer arm, and thereby to equalize, or approximately so, the centrifugal force, a cross-shaft mounted to turn in said bearings, bevel-gears of different size fixed on the opposite ends of said cross-shaft, and bevel-gears mounted to turn on an axis concentric with the axis of said shaft and gearing, respectively, with the bevel-gears on opposite ends of said cross-shaft.

6. A differential gearing consisting of a shaft formed with a transverse bearing-boss, a cross-shaft mounted to turn in said bearing, bevel-gears fixed to the opposite ends of said cross-shaft, a variable-speed bevel-gear gearing with one of the gears on said cross-shaft, and a driven bevel-gear gearing with the other gear on said cross-shaft, in combination with speed-carrying coned pulleys, their driving-belt and belt-shipper, and gearing driven by the variable-speed pulley and driving said variable-speed bevel-gear.

7. The combination of a main shaft formed with a transverse bearing-boss, a cross-shaft mounted to turn in said bearing, bevel-gears fixed to the opposite ends of said cross-shaft, a coned pulley geared to said main shaft, a reversed coned pulley, a belt connecting said coned pulleys, a belt-shipper for moving said belt along said pulleys to impart a variable speed to the driven pulley, a bevel-gear turning loosely on said main shaft driven by said driven pulley and gearing with one of the gears on said cross-shaft, and a bevel-gear turning loosely on said main shaft and gearing with the other gear on said cross-shaft.

8. The combination of a main shaft formed with a transverse bearing-boss, a cross-shaft mounted to turn in said bearing, bevel-gears fixed on the opposite ends of said cross-shaft, fliers geared to and driven from said main shaft, a coned pulley geared to said main shaft, a reversed coned pulley, a belt connecting said coned pulleys, a belt-shipper for moving said belt along said pulleys to impart a variable speed to the driven pulley, a bevel-gear turning loosely on said main shaft driven by said driven pulley and gearing with one of the gears on said cross-shaft, a bevel-gear turning loosely on said main shaft and gearing with the other gear on said cross-shaft, and bobbins geared to and driven from said last-named bevel-gear.

386,907. PHOTOGRAPHIC-PLATE HOLDER. ABNER G. THRELL, Brooklyn, N. Y. Filed Aug. 20, 1887. Serial No. 247,422. (Model.)



Claim.—1. As a new article of manufacture, a photographic-plate holder having frame-sections each composed of three pieces of wood suitably attached, the grain of the central pieces running lengthwise of the sections and the grain of the exterior pieces running at right angles to the grain of the central pieces, the said frame being provided with a channel groove or grooves formed in the said exterior pieces transverse to the grain thereof, substantially as described.

2. In a photographic-plate holder provided with an exposing-shutter and grooves for the said shutter, the combination of the pieces D D D and the pieces E E E, and the grooves for the exposing-shutter, formed in the pieces E, transverse to the grain thereof, the grain of the several pieces composing the sections running substantially as described.

3. In a photographic-plate holder, the combination of the frame having grooves for the exposing-plate, a back, K, a spring which forces the plate upward, and a head-block lying close to the said back K and having its edge adjacent thereto beveled to the same, as at *b*, whereby the force of the spring is caused to press the plate close against the back, substantially as described.

386,908. APPARATUS FOR REELING METALLIC BANDS. JAS. H. WHITMAN, Fulton, N. Y. Filed Oct. 20, 1887. Serial No. 252,869. (No model.)

Claim.—1. In combination with a rolling-mill, an automatic gripping-reel having an annular series of grippers with tangential entrances for the hoop or rod between the grippers, as set forth.

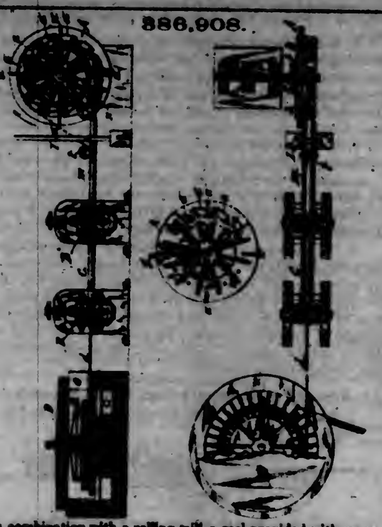
2. The improved reel herein described, consisting of a pivoted disk or spider, and an annular series of grippers pivoted on the face of said disk or spider to swing in a plane parallel with the same and contained adjustably in their positions, as set forth and shown.

3. In combination with a rolling-mill, an automatic gripping-reel having an annular series of grippers with tangential entrances for the hoop or rod between the grippers and a guide arranged tangentially to the reel and in range with the aforesaid entrances, as set forth and shown.

4. In combination with a rolling-mill, an automatic gripping-reel having an annular series of grippers with tangential entrances for the hoop or rod between the grippers, and an elastic guide arranged tangentially to the reel and in range with the aforesaid entrances and adapted to yield to the enlargement of the coil wound upon the reel, substantially as set forth.

5. In combination with a rolling-mill, a reel provided with an annular series of grippers with tangential entrances between them, and a guide arranged tangentially outside of the reel and in a uniform plane parallel with that of the reel, as described and shown.

386,908.



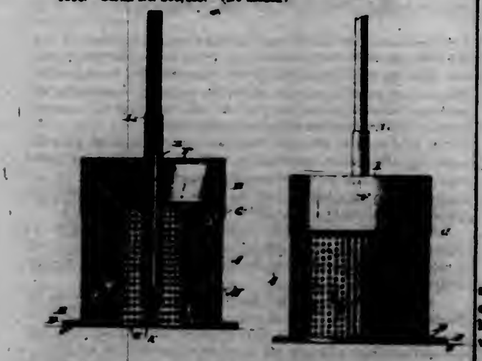
6. In combination with a rolling-mill, a reel provided with an annular series of grippers and with tangential entrances between said grippers, a guide in range with said entrances, and a guide arranged tangentially outside of the reel and in a uniform plane parallel with that of the reel, substantially as described and shown.

7. In combination with a rolling-mill, a reel revolving in a vertical plane and provided with an annular series of grippers and with tangential entrances between the grippers, a guide in range with said entrances at the base of the reel, a guide arranged vertically tangentially outside of the reel and in a uniform plane parallel with that of the reel, and a guide-roller on one of said guides, substantially as described and shown.

8. The improved automatic gripping-reel consisting of the disk A, the elongated gripping-blocks *a a*, each pivoted at one end on the face of said disk, the collar *c*, pivoted concentric with the disk or spider, and the rods *b b*, connecting said collar with the free ends of the gripping-blocks, substantially as described and shown.

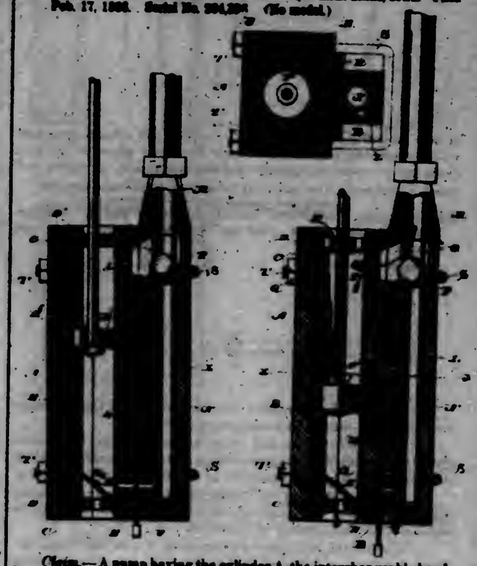
9. The reel A, provided with grippers *a a*, and slots *s* between said grippers, substantially as and for the purpose set forth.

386,909. FILTER. DAVID WISE, Ashland, Ohio. Filed Apr. 3, 1888. Serial No. 269,415. (No model.)



Claim.—The improved filter herein described and shown, comprising the outer porous cylinder, A, having a solid bottom, B, the said bottom having an integral outstanding flange, C, projecting beyond the cylinder, and the upstanding lip D, arranged concentrically with the cylinder, the inner porous cylinder arranged on the bottom concentric with the outer cylinder, its upper edge being flush with the upper edge of the outer cylinder, the filtering material placed between the said cylinders, the cap F, having an air-chamber, H, resting on the upper edges of the cylinders and provided with a depending flange, G, fitting around the upper edge of the outer cylinder, thereby securing the cap in place, the rigid imperforate tube passing vertically through the air-chamber in the cap but not communicating therewith and depending within the inner cylinder, the perforated tube K, arranged at the center of the bottom B and secured to the lower end of the rigid tube, and the flexible tube secured to the upper end of the rigid tube, substantially as specified.

386,910. PUMP. HENRY H. WYMAN, Grand Mound, Iowa. Filed Feb. 17, 1888. Serial No. 264,294. (No model.)



Claim.—A pump having the cylinder A, the interchangeable heads D and D', the former being provided with inwardly-opening valves and the latter being solid, the interchangeable plungers, one of which is solid and the other is provided with an upwardly-opening valve, the block L, having the bore N, communicating with the bore of the cylinder near the upper end lower ends thereof, the valve P, arranged in the bore N, and the slide U, adapted to establish or cut off communication between the lower end of the cylinder and the bore N, substantially as described.

386,911. RUNNER FOR GRAIN-DRILLS. JOHN L. ASHURST, Hawes, assignor to Lewis R. Ashurst, Kilburn, Ill. Filed June 15, 1887. Serial No. 241,260. (No model.)



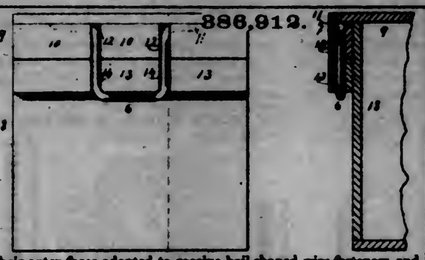
Claim.—As an improved article of manufacture, the runner described, formed of a single piece of metal wedge-shaped, as shown, and cut away at the heel, as at *b*, to form wings B B and C C upon different horizontal planes, and the rear upper corners of the wings B bent outwardly and over, as at *c*, substantially as and for the purpose specified.

386,912. BOX-FASTENER. WILLIAM H. BAIRD, Louisville, Ky. Filed Jan. 27, 1888. Serial No. 262,162. (No model.)

Claim.—1. The combination of a box-lid having cross-cleats grooved in their upper edges beneath the lid-top and grooved vertically across their outer faces, a box having cleats grooved vertically across their outer faces to register with the corresponding grooves in the said lid-cleats, and ball-shaped fasteners adapted to fit the said virtual grooves, and hung in the groove in the edge of the lid-cleats and secured therein by the lid being fastened upon the lid-cleats, substantially as shown and described.

2. In a box-fastener, the cleats grooved in their upper edges and

886,912.



in their outer faces adapted to receive ball-shaped wire fasteners, and a lid-top adapted to be secured upon the upper edges of the said cleats and to cover the grooves therein, substantially as shown and described, whereby wire bails may be secured in the said grooves.

886,913. COMBINED WASHING JACK AND TRUCK. WILLIAM BERKERT, Allegheny, Pa. Filed Apr. 14, 1888. Serial No. 270,698. (No model.)



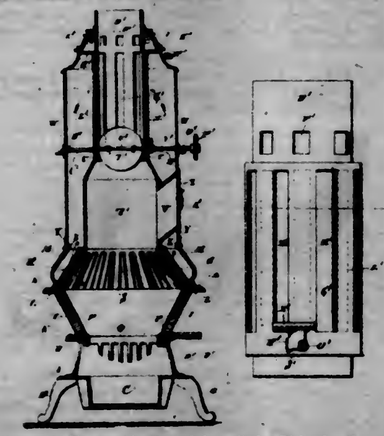
Claim.—1. In a combined jack and truck, a rolling telescopic frame provided with jacks, substantially as described.

2. In a combined jack and truck, two or more jacks connected together by extensible sliding bars arranged to slide one past the other in a telescopic manner, substantially as described.

3. In a combined jack and truck, two or more jacks connected together and made adjustable in relation to each other by means of telescopic rods, substantially as described.

4. A combined jack and truck consisting of a rolling frame composed of telescopic rods provided with locking-screws, and having lifting-jacks located at the corners of said frame, in the manner and for the purpose set forth.

886,914. STOVE. JAMES H. BROWN, Vernon, Ill. Filed Oct. 18, 1887. Serial No. 252,730. (No model.)



Claim.—1. The combination of the cylinder D', having the opening G', the cylinder L', mounted on the cylinder D' and having openings M', adapted to register with the openings G', the rack-teeth N' on the cylinder L' near its lower end, and the shaft O', journaled in the lower end of the cylinder D' and provided with a spurred segment, R', engaging the rack-teeth N', as set forth.

2. The combination of the cap H, having the horizontal partition H' and the openings F above said partition, the cylinder D', extending through the partition and above the cap and having the openings F', and the damper K', adapted to close the openings F, as set forth.

3. The combination of the drum T, the cylinder D', resting thereon and having vertical openings, and the cylinder L', surrounding the cylinder D' and rotating thereon, and provided with vertical openings adapted to register with the openings in the said cylinder D', as set forth.

4. In a stove, the cylinder D', arranged within the outer casing, extending through the top of the stove, and having the openings G', in combination with the outer cylinder, L', arranged on the cylinder D', adapted to turn thereon, and having the openings adapted to register with the openings G', and the damper T, arranged in the cylinder D' below the said openings, substantially as described.

5. In a stove, the cylinder D', arranged within the outer casing and having the openings G', in combination with the outer cylinder, L', arranged on the cylinder D', adapted to turn thereon, and having the openings adapted to register with the openings G', and the shaft U', geared to the cylinder L', and having the damper T arranged in the cylinder D', for the purpose set forth, substantially as described.

6. The stove having the upper grate or cap, R, arranged on the fire-pot and within the outer casing, the drum T, rising from the said cap or upper grate, the damper A', communicating with said drum, the cylinder D', extending from the drum and through which the products of combustion escape, said cylinder having the openings G', the cylinder L', having the openings adapted to open or close the openings G', and the damper T, arranged in the cylinder below the openings, substantially as described.

886,915. CAR-COUPLING. JOHN H. CORE, Ridgewood, and OLIVER C. PERRY, Chicago, Ill. Filed Feb. 11, 1888. Serial No. 263,702. (No model.)



Claim.—In a car-coupling, the combination of the draw-head having a beveled recess, E, in one side, provided with the shoulders K, and the detent or dog mounted in the front end of the mid recess and having a beveled front side and an abrupt rear side, the said detent or dog being adapted to swing rearward at its free end and having its forward movement limited by the said shoulders K, substantially as and for the purpose specified.

886,916. SURGICAL TABLE. BYRON H. BARNEY, Buffalo, N. Y. Filed Oct. 7, 1887. Serial No. 251,741. (No model.)



Claim.—1. In a table of the kind described, the combination, with the table-legs, of a shelf connected therewith and a platform adjustable from the shelf, the said platform when extended having its fulcrum of support at a point entirely within the space bounded by the table-legs, whereby the patient may step upon the platform in mounting the table without disturbing its equilibrium.

2. In a table of the kind described the combination, with the table-legs, of a frame located entirely within the space bounded by said legs and connected at its corners thereto, a shelf sustained by said frame and having a hollow interior, and a platform adjustable from the shelf, substantially as described.

3. In a table of the kind described, the combination, with the frame-work and top, of a universal joint connecting the two at one corner and props for retaining the top in tilted adjustment, substantially as set forth.

4. In a table of the kind described, the combination with the frame-work and top, of an end prop and a side prop intermediate between the said top and frame, and springs for throwing said props into operative position when the top is raised, substantially as set forth.

5. In a table of the kind described, the combination, with the frame-work and top, of a universal joint connecting the two at one corner and a stop-guide for limiting the movement of the top, substantially as set forth.

6. In a table of the kind described, the combination, with the frame-work, of the top containing sliding leaves and stirrups located side by side, with their edges in sliding contact, whereby the said leaves and stirrups may be drawn out together to form a broad support, or the stirrups alone drawn out, substantially as described.

7. In a table of the kind described, the combination, with the frame-work, of the top having an interior receptacle containing the oppositely-sliding leaves dovetailed with respect to each other, substantially as set forth.

8. In a table of the kind described, the combination, with the frame-work, of the top connected thereto by a universal joint, a drop-prop connected with the top, and an upwardly-swinging leaf connected with the frame, the said leaves being located in planes substantially parallel to the ends and sides of the frame-work, substantially as set forth.

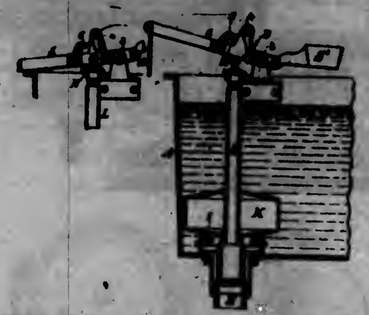
9. In a table of the kind described, a retaining-frame removably attachable to the top edges of the table, and consisting of a head-board, knee-guide, and ankle-rest, substantially as described.

10. In a table of the kind described, the combination, with the top, of an ankle-rest hinged at one corner of said top, the inner end of said ankle-rest when in operative position abutting against the end of the top, substantially as described.

11. In a table of the kind described, a retaining-frame removably attachable to the top edges of the table, and consisting of a head-board, a side board hinged to said head-board, and an ankle-rest hinged to the end of said side board, substantially as described.

12. In a table of the kind described, the removable retaining-frame consisting of a head-board, knee-guide, and ankle-rest hinged together, the head-board and knee-guide having retaining-catches and the ankle-rest having a locking-recess, in combination with the stirrup engaging within said locking-recess, substantially as set forth.

886,917. GUTTER FOR WATER-CLOSETS. JOHN BERARDY, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed Aug. 26, 1887. Serial No. 247,923. (No model.)



Claim.—1. The combination, with the water-closet cistern and a button-headed valve-stem, and a valve and float connected to the valve and sustaining the same when raised, of a lever pivoted upon the cistern and having a finger, 6, above the valve-stem; and a pivoted hanging hook upon the lever, the said hook being adapted to engage the button-headed valve-stem when the lever is depressed and to fall away from said button-head after the valve has been lifted, substantially as set forth.

2. The combination, with the water-closet cistern and a button-headed valve-stem, and a valve and float connected to the valve and sustaining the same when raised, of a weighted lever pivoted upon the cistern and having an elongated eye and a finger, 6, above the valve-stem, a hanging hook within the eye, and a pivot-pin connecting the hook to the lever and at one side of the valve-stem when raised, so that the hook will fall from the button-head upon the valve-stem after the valve has been lifted, substantially as set forth.

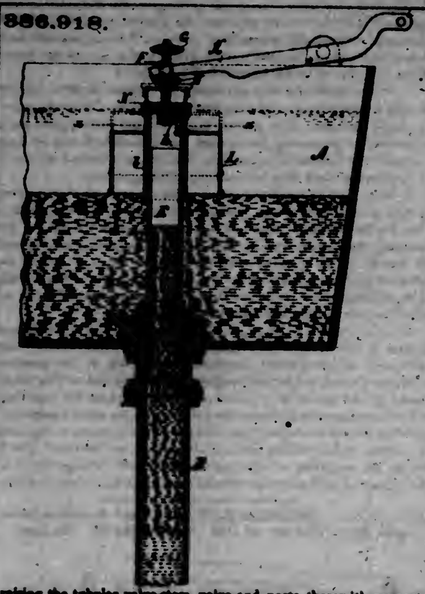
886,918. OVERFLOW-VALVE FOR WATER-CLOSET CISTERNS. JOHN BERARDY, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed Dec. 13, 1887. Serial No. 257,781. (No model.)

Claim.—1. The inverted or bell float having a central tube perforated above the top of the float, a cap screwed upon the top of the tube, and a valve below the cap for closing the upper end of the overflow-tube, for the purposes and substantially as specified.

2. The combination, with the closet-cistern, the flushing-pipe, and the valve and seat, of a tubular stem forming the overflow-pipe, the inverted bell-shaped float having a central tube around the overflow-pipe, with openings in the upper part above the float, a cap screwed on the said tube and a valve confined by the cap, a rod and lifter for

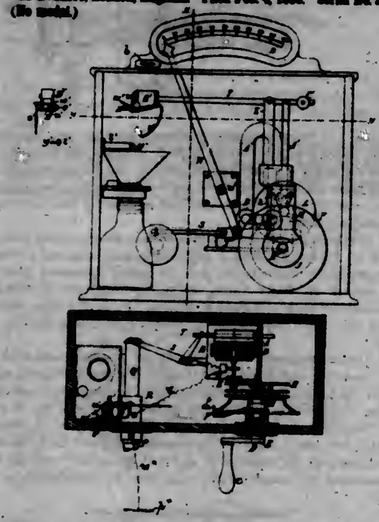


886,919.



raising the tubular valve-stem, valve and parts therewith connected, substantially as set forth.

886,919. GEN-OPERATED ELECTRICAL APPARATUS. PERCIVAL EVERITT, London, England. Filed Feb. 4, 1888. Serial No. 263,022. (No model.)



Claim.—1. In an electric machine adapted for giving an ache to the person and provided with magneto-electric devices, a handle connected with such devices and serving the double purpose of completing the circuit and also as a means for revolving the same to generate the electric current.

2. An electric machine adapted for giving shocks to the person and provided with magneto-electric devices, and having one handle serving for completing the circuit connected to said devices and serving as a means for revolving the same, and another handle and regulating devices connected therewith adapted for increasing or diminishing the current.

3. In an electric machine adapted for giving shocks and provided with magneto-electric devices, a coin-receiver, and a coin-operated unlocking device, a handle connected with and serving to operate the

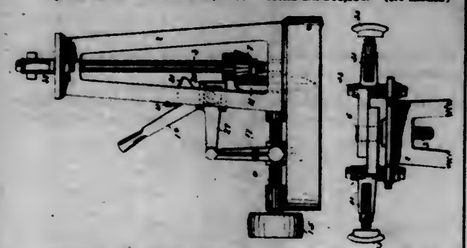
magneto-electric devices to generate the electric current, combined with means, substantially as described, serving to lock the machine and prevent its operation until the locking device acted upon by the introduction of a coin or its equivalent shall be released.

4. In an electric machine provided with magneto-electric devices and with a coin-receiver and coin-operated devices, the combination of a handle connected with and serving to operate the magneto-electric devices for generating the current, and a locking device serving to prevent such handle being operated until the introduction of a coin or its equivalent shall have released such locking device.

5. In an electric machine provided with magneto-electric devices and with a coin-receiver and coin-operated devices, the combination of one handle connected with and serving to operate the devices for generating the electric current, a locking device serving to prevent such handle being operated until the introduction of a coin or its equivalent shall have released the locking device, and another handle and regulating devices connected therewith adapted for increasing or diminishing the current and completing the circuit.

6. In an electric machine provided with magneto-electric devices and with a coin-receiver and coin-operated unlocking devices, the combination of two handles connected, respectively, to the positive and negative wires, one handle being connected with and serving when released by the agency of a coin to drive the machine for revolving the electro-magnets to generate the current, and the other handle and regulating devices connected therewith adapted to increase or diminish the current, and a locking device, substantially as described, which prevents the operation of the machine until said locking device is acted upon and set free by the introduction of a coin or its equivalent.

386,920. SURFACING-MACHINE. JAMES J. FITZGERALD, Minneapolis, Minn. Filed Mar. 26, 1888. Serial No. 268,864. (No model.)



Claim.—1. The combination, in a machine of the class described, with the frame 2, of the vertical shaft 3, mounted therein and provided at its upper end with the eccentric 5, the horizontal arm 31, mounted upon the vertical pivot 33 and provided at its outer end with the burnisher 35, and having its inner end engaged by the eccentric 5, substantially as described.

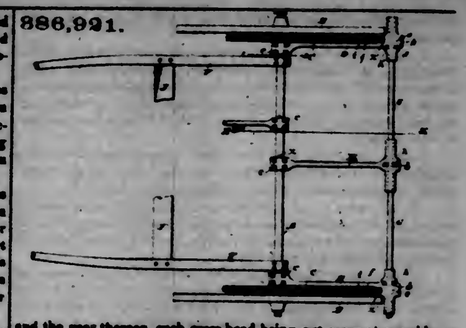
2. The combination, in a machine of the class described, with the frame 2, of the vertical shaft 3, mounted in said frame and provided at its upper end with the eccentric 5, the arms 31, mounted upon opposite sides of the frame 2 upon vertical pivots 33, and provided at their outer ends with a burnisher, 35, and having the inner ends of both of said arms engaged by the eccentric 5, substantially as described.

3. The combination, in a machine of the class described, with the frame 2 and the shaft 3, mounted therein and provided at its upper end with the eccentric 5, of the horizontal pivoted arm 31, provided with the burnishers 35 and engaged by said eccentric 5, the friction-gear 7, the sliding shaft 9, provided with the friction-gear 11, adapted to engage said gear 7, the lever 17, connected with said shaft, the shaft 13, provided with the eccentric 25 and the hand-lever 19, and the arm 27, connecting said eccentric with said lever 17, substantially as described.

386,921. TEDDER. LEANDER S. HEALD, Bath, Me. Filed Nov 26, 1888. Serial No. 319,979. (No model.)

Claim.—In a hay-tedder, the combination, with the axle, the wheels, the tedder-shaft, and the side gears for driving the shaft, of side arms, D, supporting said shaft, each side arm consisting of a straight bar rigidly attached at one end to the axle and provided with a side stud; *i*, as a bearing for one of the side gears, and with a divided hollow box or cross-head at the other end, adapted to receive the shaft

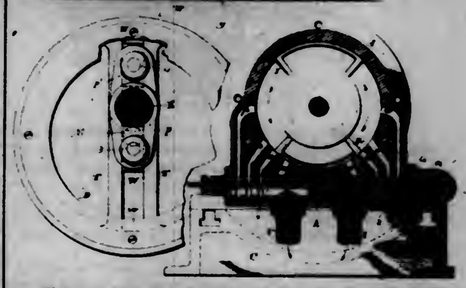




and the gear thereon, such cross-head being cut away at one side, as at *x'*, to expose the last said gear, substantially as set forth.

386,922. CONCENTRIC-PISTON STEAM-ENGINE. Gustavus W. BENHAM, Windsor, Vt. Filed Feb. 15, 1888. Serial No. 264,094. (No model.)





Claim.—1. In a concentric-piston steam-engine, the combination, with a cylinder and segmental pistons adapted to revolve therein, of a steam-chest having a series of live-steam and exhaust-steam passages leading thereto from the cylinder, a partition in the steam-chest between the live and exhaust steam passages, and a sliding valve adapted to open or close the live-steam passages, substantially as set forth.

2. In a concentric-piston steam-engine, the combination, with a cylinder and segmental pistons adapted to revolve therein, of a steam-chest having a series of live and exhaust steam passages leading therefrom to the cylinder, a partition in the steam-chest between the live and exhaust steam passages, pipes leading out of the two chambers of the steam-chest, and a sliding valve for opening or closing the live-steam passages, substantially as set forth.

3. In a concentric-piston steam-engine, the combination, with a cylinder and segmental pistons adapted to revolve therein, of a steam-chest having live and exhaust steam passages leading therefrom to the cylinder, a partition in the said chest between the live and exhaust steam passages, pipes leading out of the two chambers of the steam-chest, and a sliding valve for opening and closing the live-steam passages, said valve having a perforation therein to allow the steam to pass therein to equalize the pressure on the ends of the valve, substantially as set forth.

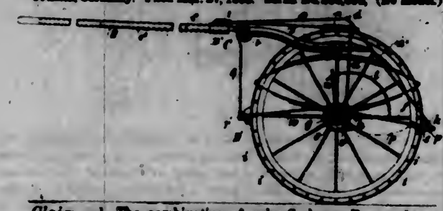
4. In a concentric-piston engine, the combination, with an annular cylinder, a steam-chest, a series of live-steam passages, and an equal number of exhaust-passages, of a central partition-wall located between the live-steam and exhaust-steam passages, a balanced sliding valve, and a valve-rod to move the valve endwise, so as to cover one or more live-steam passages, substantially as set forth.

5. In a concentric-piston engine, the combination, with a fly-wheel, a fly-wheel shaft, and a pedestal that rotatably supports the fly-wheel shaft, of an annular steam-cylinder, a pair of shafts, one within the other, said shafts having cranks on adjacent ends, those cranks having sliding connection with the fly-wheel, segmental pistons mounted on the shafts, adapted to move steam-tight in the cylinder, a steam-chest, live-steam passages leading from the chest into the cylinder, exhaust-passages connecting the steam-chest and cylinder, a valve, a partition in the steam-chest to separate the live-steam and exhaust passages, a hollow shaft, a shaft located in the hollow shaft, a bracket-stand that supports those shafts in a plane removed from the plane of the fly-wheel shaft, independent devices to connect the two concentric shafts to the pistons, and mechanism to connect the concentric shafts to the fly-wheel and cause the fly-wheel to rotate by the movements of the pistons, substantially as set forth.

6. In a concentric-piston steam-engine, the combination, with a cylinder, segmental pistons adapted to revolve therein, concentric shafts connected with the segments, and a fly-wheel, with which said shafts have a sliding connection, of steam-chest having a series of live-steam and exhaust-steam passages leading thereto from the cylinder, a partition in the steam-chest between the live and exhaust steam passages, and a sliding valve adapted to open or close the live-steam passages, substantially as set forth.

7. In a concentric-piston steam-engine, the combination, with a cylinder, segmental pistons adapted to rotate therein, a pair of concentric shafts having connection with those segmental pistons, said shafts having cranks on one end, and a fly-wheel mounted on a suitable shaft, said fly-wheel having a pair of guides therein, with which the cranks on the ends of the concentric shafts have a pivotal sliding connection, of a steam-chest having a series of live-steam and exhaust-steam passages leading thereto from the cylinder, and a sliding valve adapted to open or close the live-steam passages, substantially as set forth.

386,923. CAR STARTER AND BRAKE. ADOLF PERSIN, Bremen, Prussia, Germany. Filed Mar. 27, 1888. Serial No. 268,693. (No model.)



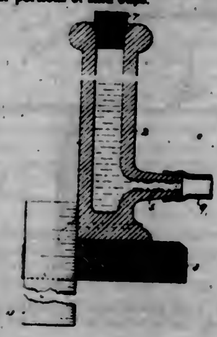
Claim.—1. The combination of poles C, sleeves B, cross-bar *c*, draft-bars *a*, *a'*, *f*, and *e*, hinged to each other, and hooks *k*, with bolts *i* projecting on each side of the felly of the wheels, chains *p*, and springs *o*, secured to the axis *g*, substantially as and for the purpose described.

2. The combination of cross-bar *c*, spring-bars *s*, levers *u*, brake-rod *w*, with spring-rods *q*, and brake-blocks D, as and for the purpose set forth.

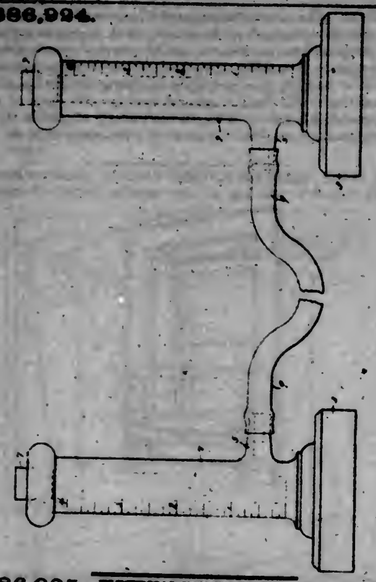
3. The combination of poles C, sleeves B, and cross-bar *c* with sleeve or head B', bolt *d'*, and loop *d''*, substantially as and for the purpose specified.

386,924. LEVELING-INSTRUMENT. ADAM KERR, Minneapolis, Minn. Filed Apr. 26, 1887. Serial No. 236,510. (No model.)

Claim.—The leveling-instrument herein described, comprising, in combination, the two cups each provided with a scale, and a flat base, 3, having a notch or opening, 11, formed therein, and a flexible tube connecting the lower portions of said cups.



386,924.

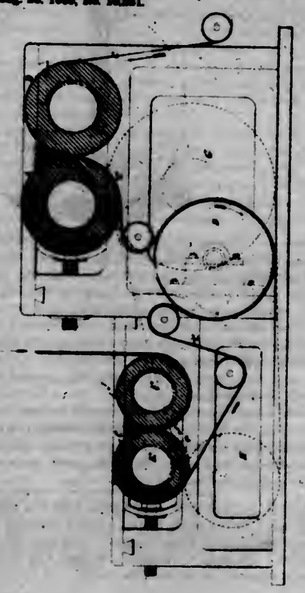


386,925. MATERIAL FOR CONDUCTORS. CHARLES T. LEE, Boston, and CHARLES H. WARD, Medford, assignors of one-half to the Gould & Watson Company, Boston, Mass. Filed Aug. 24, 1887. Serial No. 247,726. (No model.)



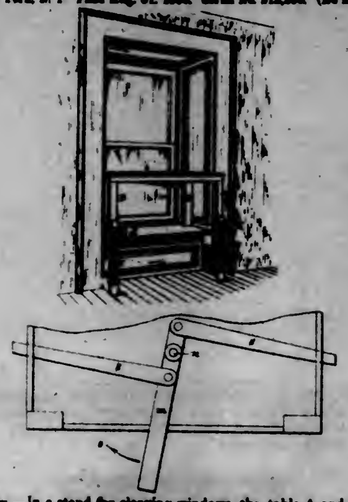
Claim.—A non-conductor consisting of a sheet or layer of textile fabric saturated or filled and covered with a compound composed of comminuted mica and an adhesive material, as glue, substantially as set forth.

386,926. PROCESS OF MANUFACTURING LINOLEUM FLOOR-CLOTH. CHARLES H. LEWIS, Staines, County of Middlesex, England. Filed June 11, 1887. Serial No. 240,992. (No model.) Patented in England Aug. 20, 1886, No. 10,951.



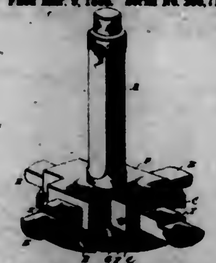
Claim.—The hereinbefore-described improvement in the process of manufacturing linoleum floor-cloth, which consists in applying heated linoleum material upon one face of a strip of canvas, spreading it thereon to form a film or layer of uniform thickness, uniting it therewith by pressure, then cooling and hardening this film and afterward applying heated linoleum material upon the other face of the canvas, spreading it thereon to form a film or layer of uniform thickness, and uniting it therewith by pressure, substantially as herein set forth.

386,927. STAND FOR CLEANING WINDOWS. FREDERICK HEYER, New York, N. Y. Filed Aug. 31, 1888. Serial No. 313,988. (No model.)



Claim.—In a stand for cleaning windows, the table A and fixed legs B thereof, in combination, with the legs C, adjustable on legs B, the lever *m*, fulcrumed underneath said table, and the bracing and steadying arms *s s*, connected with said lever and operating to brace the stand in a window-frame, substantially as and for the purpose specified.

386,928. APPARATUS FOR WALLING WELLS. JOHN HOSER, Perrysburg, Ohio. Filed Mar. 9, 1888. Serial No. 266,713. (No model.)

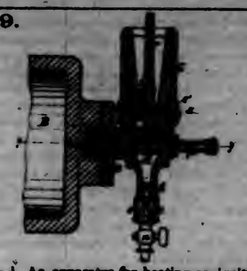


Claim.—1. The combination of the stem or rod, the plate or disk secured thereto to turn with it, and formed with the slots, and the table fitted loosely thereto to permit the stem and slotted plate to turn about it, and provided with the fingers to drop into the slot when brought opposite to each other, substantially as described.

2. The combination of the stem or rod formed with the angular part *a* and circular part *b*, the table fitted to said circular part and provided with the swinging fingers, and the plate or disk fitted to the angular part and formed with slots for the passage of the fingers, substantially as described.

3. The combination of the stem or rod, the plate or disk formed with the slots, the table formed with the sockets, and having pivoted therein the fingers adapted to drop into the slots when brought opposite to each other, and means for holding said parts on the stem or rod, substantially as described.

386,929. IGNITING APPARATUS FOR GAS-MOTOR ENGINES. NICOLAUS A. OTTO, Cologne, Prussia, assignor to the Gas Motoren Fabrik Deutz, Deutz-on-the-Rhine, Germany. Filed Sept. 26, 1887. Serial No. 250,730. (No model.) Patented in England Aug. 26, 1887, No. 11,444, and in Germany Oct. 16, 1887, No. 41,282.



Claim.—1. An apparatus for heating an igniting-tube for gas-motor engines, consisting of a gas-injector, A, casing D, ring C, igniting-tube *r*, and chimney B, with lateral openings, substantially as described.

2. In an igniting apparatus for gas-motor engines, the combination, with the casing D, having a passage, A, leading to the cylinder, of the tubular gas-chamber *r'*, forming a prolongation of the passage A, the vertical igniting-tube *r*, entering the passage A between the cylinder and the gas-chamber *r'*, and an injector fixed to the bottom of the casing D, substantially as described.

3. In igniting apparatus for gas-motor engines, the combination, with the igniting-tube *r*, and passage A leading to the cylinder, of the tubular gas-chamber *r'* to the rear of the opening of the igniting-tube, and means, substantially as described, for allowing the escape of the non-combustible gases under pressure from the said passages and tubes, substantially as described.

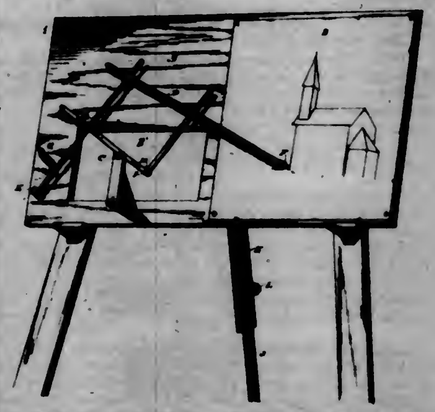
386,930. VENTILATOR FOR HATS. CHARLES POTTER, Stockport, County of Chester, England. Filed Nov. 5, 1888. Serial No. 313,988. (No model.) Patented in England Jan. 12, 1888, No. 472.



Claim.—1. In a ventilator for hats or other head-coverings, the fan *a*, capable of oscillating in or on a frame, *c*, in combination with a rigid pendulum, *b*, which is set going by reason of the constant movement of the head, and imparts an oscillating motion to the fan *a* through the medium of the diagonal spindle *d*, attached below its center of oscillation, all substantially as set forth.

2. In a ventilator for hats or other head-coverings, the combination of a fan, *a*, capable of vibrating on a frame, *c*, provided with a spring-pendulum, *b*, which imparts a vibrating motion to the fan *a* by reason of the constant movement of the head, all substantially as set forth.

386,931. ARTIST'S MECHANICAL SKETCHING APPARATUS. JOSEPH PULSIFER, Williams, Cal. Filed Aug. 26, 1887. Serial No. 247,979. (No model.)

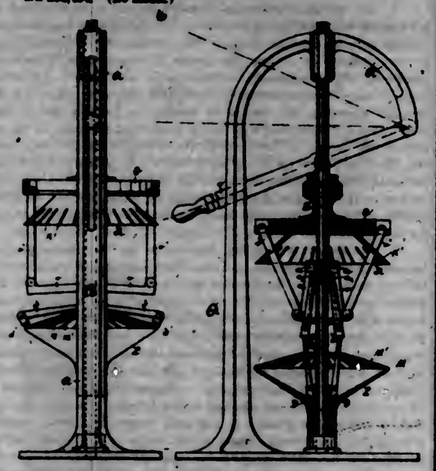


Claim.—1. A mechanical sketching device consisting of the frame or table upon one end of which the paper or surface to receive the sketch is secured, while the other is provided with an eyeglass supported in front of an opening therein, in combination with a jointed frame or pantograph, one end of which is pivoted to the frame or table and the other provided with a pencil or marking-point, while the intermediate joint has a hole or sight, substantially as herein described.

2. The frame or table upon one end of which the paper or drawing-surface is clamped and upon the other end a pantograph or jointed frame, pivoted so that the free end carrying a pencil approaches the paper-surface, a hole and sight-piece made through the intermediate joint of the frame, in combination with a fixed or stationary sight-opening, through which and the sight in the jointed frame the object to be drawn is observed, and by which it is transferred to the paper by following the outline or details by thereon sight-openings while the pencil is moved over the paper, substantially as herein described.

3. The frame or table supporting the drawing-surface at one end, having the other end perforated, with a fixed sight-piece in the front of the opening, in combination with a jointed frame or pantograph having a pencil or drawing-point attached to the end which moves over the paper, while the other end is pivoted to the opposite end of the frame or support, and has a spiral or other spring, G, connected with it, substantially as and for the purpose herein described.

386,932. WRAPPED-PLAITING MACHINE. HERM. SAMTMANN and LUDWIG J. F. HEDLAU, Bremen, Germany. Filed Dec. 28, 1887. Serial No. 259,454. (No model.)



Claim.—1. In a machine for making crossed or plaited paper wrappers, the combination, with a vertical spindle, of two hubs on the same, a set of blades hinged to each hub, the blades on said hub being adapted to pass in between the blades of the other, and links connecting the swinging ends of the blades with plates mounted on the spindle to move toward and from each other, substantially as shown and described.

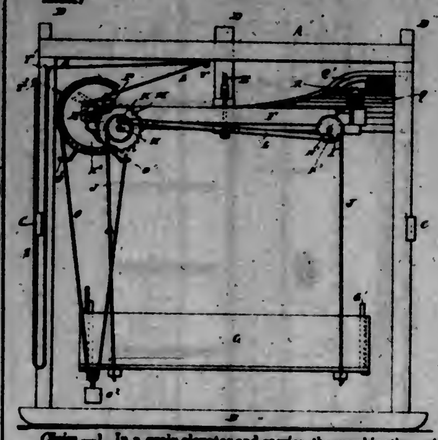
2. In a machine for making crossed or plaited paper wrappers, the combination, with a spindle, of two hubs on the same, a set of blades pivoted to each hub, the blades of one set being adapted to pass in between the blades of the other, two plates mounted to slide toward and from each other on the spindle, links connecting said plates and the free ends of the blades, and guides on said plates for guiding the links, substantially as shown and described.

3. In a machine for making crossed or plaited paper wrappers, the combination, with a vertical spindle, of plates C and L, mounted to slide toward and from each other, the blades *c* and *d*, pivoted on hubs on the spindle, the links *c'*, connecting the ends of the blades *c* with the rim of the plate C, the links *d'*, connecting the blades *d* with the center of the plate L, the inverted funnel-shaped plate K on the under side of the plate C, said plate being provided with slots K' for guiding the links *c'*, and the inverted funnel-shaped plate M on the plate L, and provided with slots M' for guiding the links *d'*, substantially as shown and described.

386,933. PROCESS OF PREPARING A SOLUTION OF INDIGO FOR DYEING PURPOSES. FRIEDRICH R. GRUNZWEIG, Pritzwalk, Prussia, Germany. Filed May 26, 1887. Serial No. 239,097. (No specimens.) Patented in England May 19, 1887, No. 7,326; in Belgium May 31, 1887, No. 77,476; in Luxemburg Sept. 9, 1887, No. 699; in Germany Oct. 11, 1887, No. 42,602, and in Sweden Nov. 18, 1887, No. 1,143.

Claim.—The method, substantially as herein described, of preparing a vessel-bath for dyeing with indigo, consisting in mixing guano salts with water, and then adding zinc-dust and indigo or other bodies having an affinity for oxygen, and then heating the mixture, the ingredients being mixed about in the proportions given.

386,934. GRAIN-SHIPPING DEVICE. JAMES P. BEVINS and JOHN H. BEVINS, Ogd. Ills. Filed Aug. 17, 1887. Serial No. 247,170. (No model.)



Claim.—1. In a grain-elevator and carrier, the combination, with the frame-work, of a horizontally-turning frame within said frame-work, a grain-elevator suspended from and below said frame, and a cam in the horizontal path of the frame to cause it to assume an inclined position, substantially as set forth.

2. In a grain-elevator, the combination of an upright frame-work, a horizontal frame supported thereby, pivoted to turn laterally and to tilt, a grain-box suspended from the pivotal frame, and an inclined cam-way in the path of the frame when turning, and on the frame when so turned to tilt the same together with the grain-box, substantially as described.

3. In a grain-elevator, the combination of a horizontal frame, shafts journaled transversely in both ends of the same, drums and cranks on both ends of each shaft, pitmen connecting corresponding cranks on the shafts, and ropes winding on the drums and supporting a grain-box, substantially as described.

4. In a grain-elevator, the combination of a horizontal frame pivoted to turn horizontally and vertically, a shaft journaled therein carrying winding-drums, grain-box-suspending ropes winding on the drums, a gear-wheel on the shaft, a pawl for dogging the gear-wheel and adapted to be disengaged therefrom, a pinion engaging the gear-wheel, a rope-wheel for turning the pinion, and a hand-rope running over the rope-wheel, substantially as described.

5. In a grain-elevator, the combination of a frame-work, a grain-box-supporting frame pivoted to turn laterally and to tilt automatically on the frame-work, guides on the frame-work, a rope passing through the guides and attached to the frame for turning the same laterally in one direction, and another attached rope passing through other guides for turning the frame in the opposite direction, substantially as described.

386,935. OPEN-HEARTH FURNACE. FRIEDRICH SIEMENS, Dresden, Saxony, Germany. Filed Sept. 29, 1883. Serial No. 314,764. (No model.) Patented in England June 1, 1883, No. 6,022.

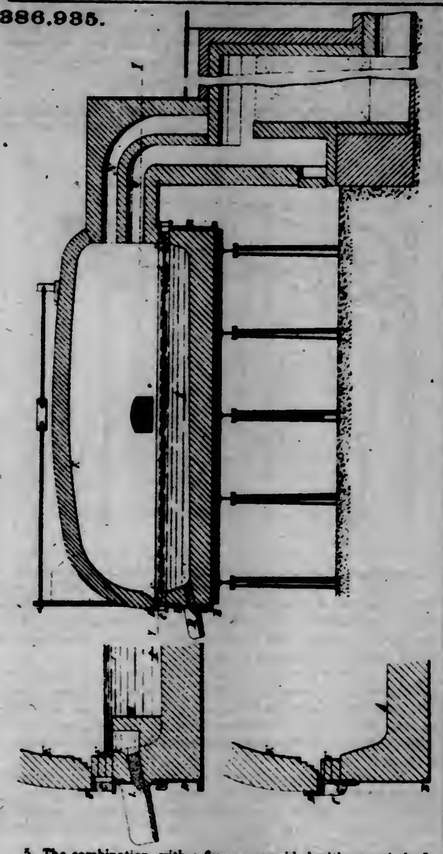
Claim.—1. In an open hearth or tank furnace, the combination, with a stationary furnace-bed, of a roof carried independently of the lining of the bed on supports so arranged as to give free access between them for removing and replacing the lining of the upper layer of the bed, as and for the purpose described.

2. The combination of the furnace-bed A, inclosed in a metal casing, B, the struts C, and the ring D, on which is built the furnace-roof E, as and for the purpose described.

3. The combination of the furnace-bed A, inclosed in a metal casing, B, the struts C, the ring D, on which is built the furnace-roof E, and the removable zone of bricks F, substantially as and for the purpose described.

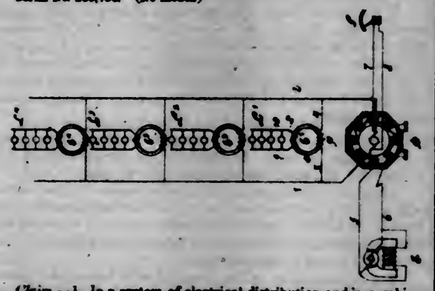
4. The combination of the furnace-bed A, inclosed in a metal casing, B, the struts C, the ring D, on which is built the furnace-roof E, the removable zone of bricks F, the brackets C', and the keys G, as and for the purpose described.

386,935.



5. The combination, with a furnace provided with a tap-hole, L, of the partition M, separating the tap-hole from the bed of the furnace, as and for the purpose described.

386,936. SYSTEM OF ELECTRICAL DISTRIBUTION. MARMADUKE M. M. STAFFORD, Fort Wayne, Ind., assignor of one-half to the Fort Wayne Electric Light Company, same place. Filed Apr. 8, 1886. Serial No. 198,730. (No model.)



Claim.—1. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters electrically connected with the main-line conductors in multiple arc and organized to transform the current in the main conductors into currents of less potential and greater quantity in the secondaries, each converter made with a primary coil containing such length of wire exposed to magneto-electric induction that when operated by the dynamo with which it is to be used with its secondary circuit open the electrical pressure and counter-pressure in its primary circuit shall be equal, with incandescent lamps or other translating devices in the secondary circuits substantially as and for the purposes set forth.

2. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters organized to transform the current in the main conductors into currents of less potential and greater quantity in the secondaries electrically connected with the main conductors in multiple arc, the dynamo and the converters of the system so adjusted to each other by mutual adaptation of their magnetic fields and the lengths of wire upon the armature of the dynamo and the primary coils of the converters, respectively, that when supplied with the full normal current of the dynamo, the secondary circuits of the converters being open, the electrical pressure and counter-pressure in their primary circuits shall be equal, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

3. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters organized to transform the current in the main-line conductors into currents of less potential and greater quantity in their secondaries and electrically connected with the main conductors in multiple arc, each converter containing in its primary coil a length of wire exposed to effective magnetic induction substantially equal to the electrical or circuit length of wire exposed to like effective magnetic induction upon the armature of the dynamo operating the system, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

4. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption, electrically connected with the main-line conductors in multiple arc and having their primary circuits constantly closed, each converter adapted to the dynamo operating the system by making its primary coil of such length that when supplied with its full proportionate share of the entire normal current of the machine, its secondary circuit being open, the electrical pressure and counter-pressure in its primary circuit shall be equal, with translating devices in the secondary circuits of the converters to be cut out of the circuit when not in use without the introduction of any resistance in the place of them, substantially as and for the purposes set forth.

5. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption, electrically connected with the main-line conductors in multiple arc and having their primary circuits constantly closed and their secondary circuits constantly open, except when and as closed through translating devices at work, each converter containing a soft-iron core weighing substantially two pounds for each ampère or current normally produced in its secondary circuit, and adapted to the dynamo operating the system by making its primary coil of such length that when supplied with its full proportionate share of the entire normal current of the machine, its secondary circuit being open, the electrical pressure and counter-pressure in its primary circuit shall be equal, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

6. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption, electrically connected with the main-line conductors in multiple arc and having their primary circuits constantly closed and their secondary circuits constantly open, except when and as closed through translating devices at work, each converter containing a soft-iron core weighing substantially two pounds for each ampère of current normally produced in its secondary circuit, and containing in its primary coil a length of wire exposed to effective magnetic induction substantially equal to the electrical or circuit length of wire exposed to like effective magnetic induction on the armature of the dynamo operating the system, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

386,937. CARRIAGE-SPRING. ELEAZER G. SMITH, New York, N. Y. Filed Jan. 3, 1888. Serial No. 259,697. (No model.)

Claim.—1. The combination, with the carriage-body and running-gear, of springs, each of which is composed of two parts or leaves occupying the same vertical plane, one end of one part being attached to the body and the other end of the other part being attached to the running-gear, lap upon the edges of the respective leaves near the ends that lap upon each other to preserve the springs in their proper relative positions laterally, and an adjustable clamp for holding the two lapping parts of the spring together, substantially as specified.

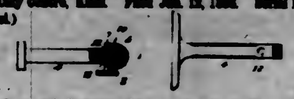
2. The combination, with the carriage-body and running-gear, of springs, each of which is composed of two parts or leaves occupying the same vertical plane, one end of one part being attached to the body and the other end of the other part being attached to the running-gear, a connection between the adjacent ends of the respective leaves, and a movable clamp for varying the stiffness of the two-part spring by varying the distance of the clamp from the adjacent ends of the spring, substantially as specified.

386,937.



3. The combination, with the body and running-gear, of a spring made of two parts, one of which is attached at its lower end to the running-gear and rises above the same and is convoluted, and the second part is attached at its upper end to the body and passes downwardly below the upper end of the lower part and is convoluted, and a connection between the two parts of the springs at or near their adjacent ends, substantially as set forth.

386,938. SASH-FASTENER. GEORGE E. SUTTON and CONSTANTINE P. PIERCE, Clay Center, Kans. Filed Jan. 19, 1888. Serial No. 260,945. (No model.)



Claim.—In a sash-fastener, the combination, with a rod, of the bracket 4, provided with the recess 5 and the opening 12, the pin 7, having the cut-away portion 9, and the block 10, substantially as described.

386,939. TOILET-RACK. MARY C. STERLING, Detroit, Mich. Filed Jan. 10, 1888. Serial No. 260,204. (No model.)



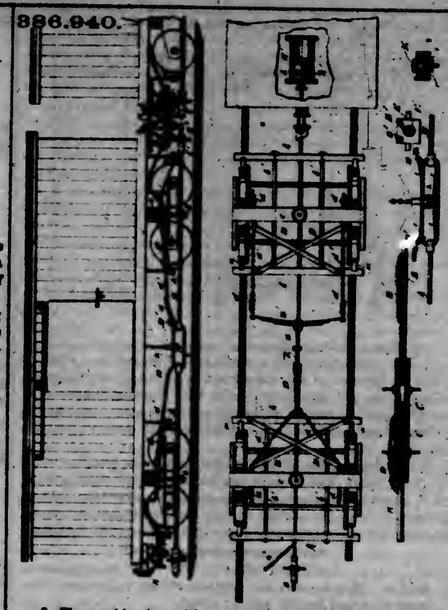
Claim.—The combination, with two brackets, of rods or stems B, spanning the space between them and provided with rings B² for the reception of towels, substantially as and for the purpose described.

386,940. CAR-BRAKE. PRESIDENT G. TAYLOR, Granton, R. I. Filed Sept. 22, 1887. Serial No. 250,693. (No model.)

Claim.—1. The combination, with a car, a brake-beam carrying shoes suspended from said car, and levers attached at one end to the brake-beam, adapted to cross each other, and having a spring-connection between the opposite end and the car-body, of a rod extending beneath the car from end to end provided with couplings at each extremity, a spring attached to the rod between each truck and connected with said levers, a cylinder provided with a steam inlet and exhaust, a piston working in said cylinder and connected with said rod, and adjustable fenders attached beneath the car projecting out beyond the draw-bars thereof, all arranged to operate substantially as shown and described.

2. The combination, with a car, of a bracket attached beneath the sill, and an aperture in said bracket to hold a screw provided with a fender and adjusting-block, the said fender being adapted to project beyond the draw-heads, substantially as shown and described, whereby opposing cars are retained at a given distance apart when coupled, as set forth.

386,940.



3. The combination, with a car and a brake-beam carrying shoes suspended from said car, and spring-actuated cross-levers attached at one end to the brake-beam, of a rod extending beneath the car from end to end provided with couplings at its extremities, springs attached to said rod beneath the center of the car, chain attached to said spring and to the respective sets of levers, a cylinder provided with a steam inlet and exhaust, and a piston working in said cylinder connected with said brake-rod, substantially as shown and described.

4. The combination, with a car and a brake-beam carrying shoes suspended from said car, and spring actuated cross-levers having one end attached to the brake-beam, of rods extending longitudinally beneath the car provided with couplings at their outer extremities, a link uniting the inner ends of the rod, a chain and pulley secured to the car-body engaging said link, a spring attached to said rods near the link and to the several cross-levers, a cylinder provided with a steam inlet and exhaust, and a piston working in said cylinder connected with the longitudinal brake-rods, substantially as shown and described.

386,941. PROCESS OF CASTING. SAMUEL R. THOMAS, Brooklyn, assignor to Fred. Ades & Co., New York, N. Y. Filed May 16, 1887. Serial No. 238,260. (No model.)

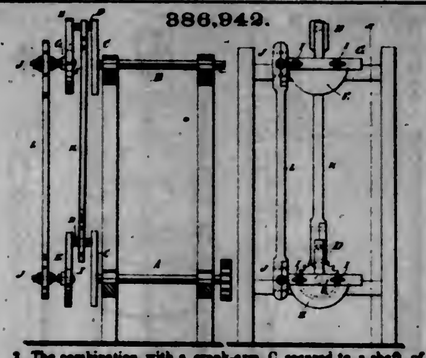


Claim.—The process herein shown and described of uniting the end of a wrought-lead pipe to cast metal, which process consists in first dipping the end of the lead pipe into molten tin and in then inserting the tinned end of the pipe in the mold in which the casting is to be made, the said pipe forming part of the wall of the mold-cavity, and in then casting the metal against the end of the lead pipe, as set forth.

386,942. ANTI-DEAD-CENTER CRANK. THOMAS C. THOMAS, Salt Lake City, Utah, assignor of one-half to George Stringfellow, same place. Filed Sept. 7, 1887. Serial No. 249,032. (No model.)

Claim.—1. The combination, with a crank-arm, C, carrying a crank-pin, of an arm, E, secured to the said crank-pin and extending parallel with the said crank-arm, a crank-plate held on the said arm, and the crank-pin secured to the said crank-plate, substantially as shown and described.

386,942.



2. The combination, with a crank-arm, C, secured to a shaft, of a crank-pin fastened on the said crank-arm, an arm, E, secured to the said crank-pin and extending parallel with the said crank-arm, a crank-plate held universally adjustable on the said arm E, and a crank-pin fastened on the said crank-plate, substantially as shown and described.

3. The combination, with two shafts, of a crank-arm, C, secured to the end of each shaft, a crank-pin fastened to each crank-arm, an arm, E, secured to each crank-pin, an adjustable crank-plate held on each arm, a crank-pin secured to each crank-plate, and pitmen for connecting the said crank-pins, substantially as shown and described.

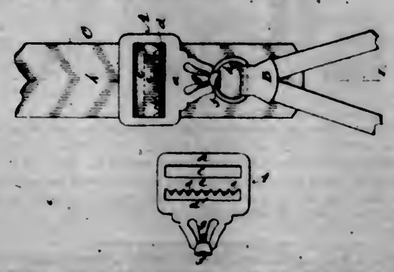
386,943. MANUFACTURE OF GLOVES. JOHN UNDERHILL, London, England. Filed Apr. 20, 1888. Serial No. 271,043. (No model.) Patented in England Dec. 20, 1887, No. 17,202.



Claim.—1. The hereinbefore-described process for the manufacture of gloves, consisting in first forming a warp fabric with alternate broad bands of ordinary warp fabric and narrow bands of thicker work, then cutting from such fabric glove-blanks with the tip ends of the fingers cut from the thickened band and the remainder from the broad band, and then finishing the gloves in the usual way.

2. The hereinbefore-described process for the manufacture of gloves, consisting in first forming a warp fabric with alternate broad bands of plain warp fabric and narrow bands of warp fabric, made thicker by the threads of which the fabric is composed, having a greater to-and-fro traverse given to them than in the work composing the broad bands, then cutting from such fabric glove pieces or blanks with the tip ends of the fingers cut from the thickened band and the remainder from the thinner band, and then finishing the gloves in the usual way.

386,944. BUCKLE. LUTHER C. VOORHEES, New York, N. Y. Filed Dec. 12, 1887. Serial No. 257,627. (No model.)



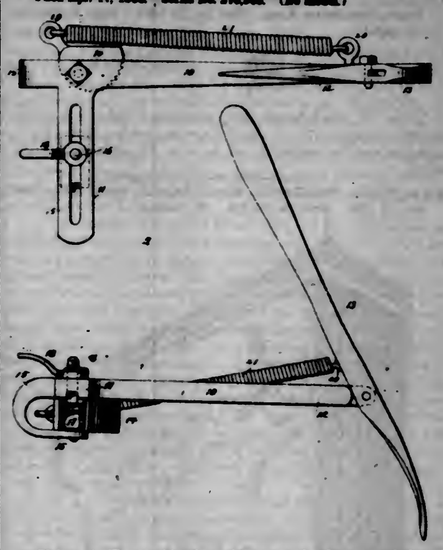
Claim.—A sheet-metal suspender or other like buckle, A, having upper and lower slots, *c d*, a bar or portion, *e*, separating said slots, integral with the frame or body of the buckle and of plain or disengaging construction on its upper margin, but serrated on its lower margin, forming teeth *e*, and a lever hook, *f*, and closing spring or tongue *g*, both also integral with the frame or body of the buckle, substantially as specified.

386,945. GUN-HOLDER. BENJAMIN F. WALKER, Weston, Pa. Filed Jan. 7, 1888. Serial No. 259,974. (No model.)



Claim.—In a combined spring-clamp and safety-pin gun-holder, the combination of the jaws A B, having dentated head or gripper end portions *f f*, arranged to project laterally from one side of the rear ends of the jaws, and the one jaw A, having a bent-over lip or push-ot *g* at its forward end, the pivot *c*, uniting the jaws intermediately of their length, the spring *d*, adapted to control the jaws, as set forth, and the single spring fastening-pin D, hinged, as at A, to the rear or clamping end of the jaw A and arranged to lie in the same longitudinal direction as the jaws A B and to cross their pivot *c*, substantially as shown and described.

386,946. DRAFT-LEVER. FREDERICK S. WESTON, Hudson, N. H. Filed Apr. 17, 1888. Serial No. 270,902. (No model.)



Claim.—1. The combination, with an angular frame consisting of a long and short member and a lever pivoted at the extremity of the longer member, of a cam pivoted beneath the frame at the angle thereof, a jaw sliding in the shorter member, and a spring connecting the said cam and lever, as and for the purpose specified.

2. The combination, with an angular frame consisting of a long and short member, the short member whereof is slotted, and a lever pivoted at one end of the longer member, of a cam pivoted beneath the frame at the angle thereof, provided with a roughened face, a jaw sliding in the slotted member, a spring connecting the lever and cam, and a means, substantially as shown and described, for securing the jaw in a fixed position, as and for the purpose specified.

3. The combination, with an angular frame consisting of a long and short member, the short member whereof is slotted, and a lever pivoted to one extremity of the longer member, of a segmental cam pivoted beneath the frame at the angle thereof, having its cylindrical face corrated, a jaw sliding in the short slotted member provided with a lock-nut, and a spring connecting the said cam and lever, as and for the purpose specified.

386,947. FRICTION-CLUTCH. JOSEPH D. WHITCOMB, Worcester, Mass., assignee of two-thirds to Arguilla Pease Butler, same place, and Elisha Young Butler, Boston, Mass. Filed May 12, 1887. Serial No. 237,933. (No model.)

Claim.—1. In a clutch, the combination of a shaft, a disk attached to said shaft and having a flange provided with teeth, a pulley running

386,947.



loosely around said shaft, a friction-strap provided with a tenon or spur, and an oblique mark acted on by said pulley to carry said tenon or spur into engagement with the teeth on said flange, substantially as described.

2. In a clutch, the combination, with frictional clutching devices, substantially as described, and a sliding cone, of the secondary lever J, as and for the purpose set forth.

3. In a clutch, the combination, with a shaft, and a pulley running loosely on said shaft, of a disk attached to said shaft, and having a friction-flange, a friction-strap surrounding said flange and having one end connected with said pulley, and a yoke integral with the opposite end of said strap, and by which it is connected with an operating-lever, and said operating-lever, substantially as described.

4. In a clutch, the combination, with a shaft, and a pulley running loosely around said shaft, and provided with a flange, E, of a disk attached to said shaft, and having a flange, E', a friction-strap, F, having parts F' F² F³ *e*, a spring, G, and connected operating-lever H, substantially as described.

5. In a clutch, the combination, with a shaft, and a pulley running loosely on said shaft, and frictional clutching devices by which said pulley and shaft are united, substantially as described, and a cone sliding on said shaft, of a secondary lever, J, with its shorter arm fulcrumed on said shaft and its longer arm having a roll, J', as and for the purpose set forth.

386,948. CLUTCH. JOSEPH D. WHITCOMB, Worcester, Mass., assignee of one-half to Arguilla P. Butler, same place. Filed Dec. 5, 1887. Serial No. 256,503. (No model.)



Claim.—1. In a clutch, the combination, with a shaft, and a friction-drum provided with notches and attached to said shaft, of a revolving pulley provided with a slotted flange and having a concentric motion around the axis of said shaft, a friction-strap having connected operative mechanism, substantially as described, by which it is compressed around the outer surface of said friction-drum, an elastic arm integrally attached at one end to said friction-strap, and having at its free end a tooth adapted to engage the notches on said friction-drum, and an oblique mark held in the slotted flange of said pulley, substantially as described.

2. In a clutch, the combination, with a shaft, of a drum attached to said shaft, a friction-strap capable of being compressed on said drum, an elastic strap with one end integrally attached to said friction-strap, and the other end connected with the revolving pulley, and a revolving pulley whose motion is imparted to said drum through said elastic strap and said friction-strap, substantially as described.

3. In a clutch, the combination, with a shaft, of a drum attached to said shaft, a friction-strap inclosing said drum and provided with overlapping ends and lugs presenting opposing surfaces, a bar inclosed in and held by said overlapping ends and lugs, a lever attached to said bar and placed at an angle therewith, and a sliding cone, all arranged and operating substantially as described.

4. In a clutch, the combination, with an elastic friction-strap having connected actuating mechanism, substantially as described, and embodying a lever extending over the shaft, of an eccentric rotated by the shaft and capable of sliding thereon, substantially as described.

5. In a clutch, the combination, with a lever extending over the shaft and having connected clutching devices, substantially as described, whereby the rotary motion of the pulley is imparted to the shaft, or vice versa, of an eccentric capable of sliding on the shaft but held from rotating thereon, by which said lever is raised radially from the shaft and the clutching devices operated thereby, substantially as described.

6. In a clutch, the combination, with clutching devices, substantially as described, whereby the rotation of a pulley is imparted to a shaft, or vice versa, of a lever extending over the shaft and operatively connected with said clutching devices, mechanism by which said lever is actuated through a sliding motion on the shaft, and a spring applied to said actuating mechanism, whereby it is moved along the shaft and beneath said lever, substantially as described.

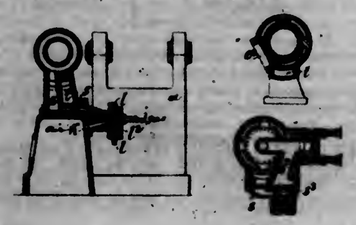
7. In a clutch, the combination, with mechanism by which a rotating pulley is made to engage its shaft, or vice versa, of an eccentric capable of sliding on the shaft but held from turning thereon, said eccentric having a beveled edge and connected devices, substantially as described, whereby it is moved on the shaft, substantially as described.

8. The combination, with a friction-strap and an operating-lever by which said strap is operated, of the eccentric L, provided with a beveled edge, L², spring M, collar M², and connected devices, substantially as described, by which said eccentric is moved against said spring, substantially as described.

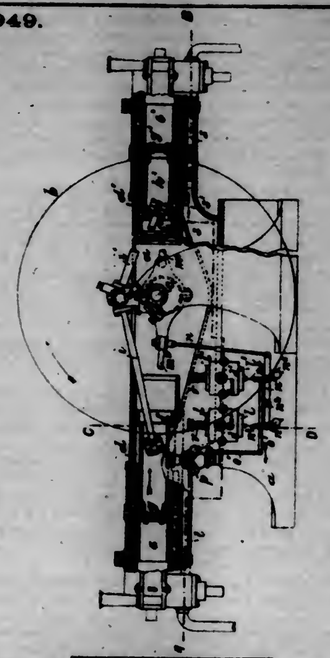
386,949. GAS-MOTOR ENGINE. HUGH WILLIAMS, Stockport County of Chester, England. Filed Jan. 26, 1888. Serial No. 261,883. (No model.)

Claim.—1. The charging-cylinders *d d'*, their pistons *f f'*, the power-cylinders *e e'* and their pistons *g g'*, the piston-connecting rods *i i'*, and crank-shaft *c*, in combination with the valves *l l'*, controlling-passages *s* and *t*, communicating at one end with the gas and air inlets and at the other end with their respective charging and power cylinders, said valves being operated by suitable connections from one of the connecting-rods of the two slide ignition-valves *m m'* and regulated by connections from the governor *p*, all substantially as and for the purposes herein described.

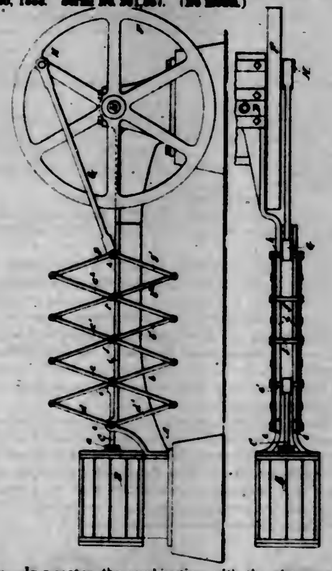
2. The combination, with the two compound cylinders *d e d' e'*, their respective pistons connected to the crank-shaft *c*, to which are also connected the slide ignition-valves *m m'*, of ports and passages leading from the gas and air inlets to the cylinder, and the valves *l l'*, the fingers *n⁶ n⁷*, operated by connections from the connecting-rod *m²*, the springs *r r'*, and the connections to the governor, all substantially as herein set forth, for the purposes specified.



386,949.



386,950. MOTOR. GEORGE W. WHITE, Summerville, Ga. Filed Jan. 26, 1888. Serial No. 261,857. (No model.)



Claim.—In a motor, the combination, with the piston-rod C, the crank H of the steam-engine, and the connecting-rod G, of the crossed levers $b\ c\ b'\ c'\ b^2\ c^2$, connected together by cross-bars $d\ f\ f'$, the links $d\ d'$, pivoted to the levers $b\ c$ and to a fixed support, the links $g\ g'$, pivoted to the levers $b^2\ c^2$ and to the connecting-rod G, and the guides i, substantially as herein shown and described.

386,951. ART OF PREPARING SAND MOLDS. S. JARVIS ADAMS, Pittsburg, Pa. Filed Mar. 27, 1888. Serial No. 268,698. (No model.)

Claim.—The improvement in the art of preparing sand molds, which consists in jarring the sand into position around the pattern

386,951.



until the lower part of the mold has attained a desired degree of density, and then compressing the sand through the upper part of the flask to complete the same, substantially as and for the purpose set forth.

386,952. FILE-CASE. WILLIAM F. ALSTATTER, Weatherford, Tex. Filed Feb. 13, 1888. Serial No. 263,771. (No model.)

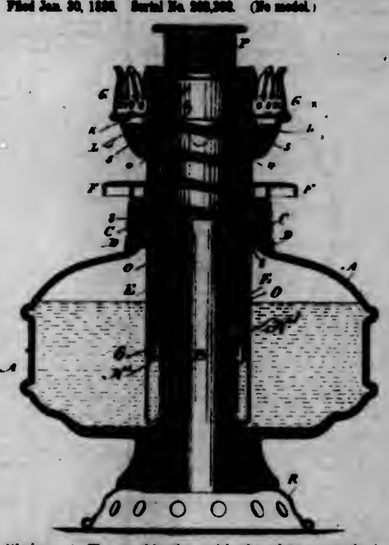


Claim.—1. The combination, with a case, of the pockets B, constructed in series of a single piece of material having partitions formed by long folds f, connected at the bottom by short folds f', substantially as and for the purpose described.

2. The pockets B, made in series of a single piece of material, having long folds f and short folds f' at the bottom, substantially as described.

3. The combination, with the folded pockets B, of the file-case having its sides constructed to overlap a part of the ends of the pockets, and an elastic follower, C, with thumb-pieces $o\ o$, arranged to bind with the sides of the case by straightening, as described.

386,958. ARGAND LAMP. LEWIS J. ATWOOD, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place. Filed Jan. 30, 1888. Serial No. 262,302. (No model.)

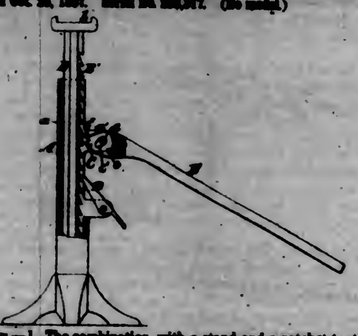


Claim.—1. The combination, with the glass reservoir A and central glass air-tube, B, in one piece, of the sheet-metal tube N, surrounding the glass tube B and parallel to and concentric therewith, and having a helical rib or corrugation, the said tube N being permanently attached to the glass tube B and forming an extension to the same, and the sleeve or nut N' around the said ribbed or corrugated tube N, and having a like rib or corrugation, and the wick-tube E, for operating the sleeve or nut N', substantially as set forth.

2. The glass reservoir and glass air-tube B in one piece, in combination with the collar D, having a cylindrical interior portion and secured to the exterior flange of the reservoir, the wick-tube E within the cylindrical portion of the collar D, the gallery F, attached to the

wick-tube E, and the sheet-metal air-tube N, having a helical rib herein and forming the wick-raiser, and surrounding the glass air-tube B, and plaster or other cement between the sheet-metal cylinder N and glass air-tube B, for permanently securing the former to the latter, substantially as set forth.

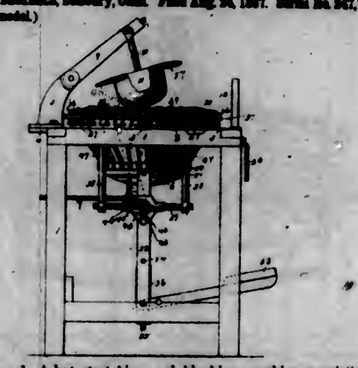
386,954. LIFTING-JACK. JAMES BROWN, New York, N. Y. Filed Oct. 25, 1887. Serial No. 253,317. (No model.)



Claim.—1. The combination, with a stand and a ratchet-toothed lifting-bar sliding therein, of a lever pivoted in the stand and a pawl pivoted to the lever in rear of the pivot on which the lever swings, and having a bearing on the lever-pivot when operated by the downward movement of said lever, and a stop-pawl pivoted in the stand independent of said lever and engaging said bar, substantially as herein described.

2. The combination, with the stand A and the toothed lifting-bar B, of the lever E, pivoted at e, the lifting-pawl C, slotted at c', to receive the lever-pivot through it and pivoted to the lever behind the lever-pivot, and the stop-pawl D, substantially as herein described.

386,955. HAT STRETCHING AND BLOCKING MACHINE. WILLIAM BERGHELS, Danbury, Conn. Filed Aug. 24, 1887. Serial No. 247,707. (No model.)



Claim.—1. A hat stretching and blocking machine, consisting, essentially, of a bed, a steam-box, a pivoted carrying-arm, a block for receiving a hat suspended from said arm, bands for clamping the hat upon the block, and radial slides by which the bands are carried and which act to compress them about the body of the hat.

2. The bed, the steam-box, standard 8, and carrying-arm 9, pivoted thereto, in combination with block 11, pivoted rod 10, by which it is suspended from the carrying-arm, rest 12 for limiting the downward movement of the carrying-arm, and semicircular bands 15, by which the hat-body is clamped upon the block.

3. The bed, the steam-box, the carrying-arm, and the block suspended therefrom, in combination with semicircular bands which clamp the hat upon the block when in the lowered position, radial slides by which said bands are carried and which are provided with pins 16 and ring 19, having diagonal slots to receive said pins whereby said slides are moved in or out when the ring is turned.

4. In a machine for blocking and stretching hats, the combination, with a block and semicircular bands for clamping a hat thereon, of radial slides by which said bands are carried, whereby the hat may be grasped or released as the slides are moved in or out.

5. The block, bands 15, and slides 13, by which said bands are carried and which are provided with pins 16, in combination with ring 19, having diagonal slots engaged by said pins, and a rack and pinion for turning said ring, whereby the slides are moved in or out to clamp or release the hat.

6. The bed having ways 14, slides 13, adapted to move in said ways, and bands 15, carried thereby, in combination with a carrying-arm and a hat-block suspended therefrom, substantially as and for the purpose set forth.

7. The bed having ways 14 and slots 17, slides 13, moving in said ways, and bands 15, carried by said slides, in combination with ring 19, having diagonal slots engaged by said pins, and a rack, 20, and a pinion engaging said rack, whereby the ring may be turned in either direction to move the slides in or out, as and for the purpose set forth.

8. The bed, steam-box, and slides having bands 15 and pins 16, in combination with ring 19, having diagonal slots engaged by said pins, a rack and pinion for imparting movement to said ring, and brackets 20, whereby said ring is held in operative position.

9. The bed having ways 26, a block and bands for clamping a hat thereon, in combination with slides 27, moving in said ways, and plates 28, carried by said slides for clamping the brim of the hat.

10. A block, bands for clamping a hat thereon, and slides 27, in combination with levers 30, carried by said slides, clamping-plates upon said levers, and means whereby said plates are caused to engage the hat-brim.

11. In a machine for stretching and blocking hats, a bed having ways 26, and radial slides 27, adapted to move in said ways, in combination with levers 30, pivoted to said slides, clamping-plates 32 at the inner ends of said levers, and a vertically-movable ring adapted to engage the outer ends of said levers, whereby the plates are clamped upon a hat-brim.

12. The bed, steam-box, and plates 32, secured to the bed, in combination with radial slides carrying pivoted levers, plates at the inner end of said levers, and a vertically-movable ring adapted to engage the outer ends of said levers, as and for the purpose set forth.

13. The block and bands 15, in combination with the bed, radial slides, and pivoted levers, carried by said slides and provided with clamping-plates.

14. In a machine for stretching and blocking hats, the combination, with the bed, of radial slides 27, having standards, levers pivoted in said standards and provided at their inner ends with clamping-plates and at their outer ends with rollers, and a vertically-movable ring adapted to engage said rollers to clamp said plates upon a hat-brim.

15. In a machine for stretching and blocking hats, a bed and radial slides adapted to move therein, said slides carrying pivoted levers having at their inner ends plates 32, carried by threaded rods, nuts for adjusting said plates vertically, and set-screws 36, whereby they may be tilted in either direction.

16. The combination, with the bed, block, and bands 15, of radial slides 27, carrying brim-clamps consisting of pivoted levers having at their inner ends adjustable plates 32.

17. The bed, block, and bands 15, in combination with radial slides 27, pivoted levers 30, carried thereby, plates at the inner ends of said levers, nuts for adjusting said plates, set-screws for tilting them in either direction, and a vertically-movable ring adapted to engage the outer ends of said levers, whereby said plates are clamped upon a hat-brim.

18. The combination, with a block to receive a hat, of a bed, radial slides 13, adapted to move therein and carrying bands which clamp the hat upon the block, and radial slides 27, moving in said block and carrying pivoted levers with plates adapted to clamp the brim.

19. The combination, with a block to receive a hat, of a bed, slides 13, carrying bands 15, to clamp the hat to the block, and having pins 16, ring 19, having diagonal slots engaged by said pins to operate said slides, slides 27, carrying levers with plates to clamp the brim, and a vertically-movable ring to operate said clamps.

20. The combination, with slides 27 and levers 30, pivoted thereto and carrying plates 32, of ring 37, rods carrying said ring, cross-pieces connecting said rods having plates with angle slots, and a shaft carrying cranks, and pins to engage said slots, whereby the ring is raised or lowered when said shaft is turned.

21. In a machine for stretching and blocking hats, radial slides 27, brim-clamps carried thereby, and pins on the under side of said slides, in combination with links 47, pivoted to said bands and to vertically-movable ring 50, whereby said slides are moved outward to stretch the brim.

22. The bed, radial slides 27, carrying levers 30, clamping-plates 32 upon said levers, in combination with vertically-movable ring 37, to operate said clamps, vertically-movable ring 50, and links 47, pivoted to the slides and to ring 50, whereby the slides are moved outward, as and for the purpose set forth.

23. The bed having ways 26 and slots 49, and slides 27, moving in said ways, and having pins 48 passing through said slots, in combination with vertically-movable ring 50, and links 47, pivoted to said ring and said pins.

24. Slides 27, having pins 49, ring 50, and links pivoted to said

ring and said pins, in combination with rods 52, treadle 53, whereby said ring is moved upward, and springs 56, acting to hold said ring at its normal position.

25. The combination, with a block to receive a hat, bands 15, to clamp the hat thereon, and radial slides 13, carrying said bands, of radial slides 27, clamps for the brim carried thereby, and mechanism, substantially as described, for operating said clamps.

26. The combination, with a block to receive a hat, bands 15, to clamp the hat thereon, and radial slides 13, carrying said bands, of radial slides 27, clamps for the brim carried thereby, a vertically-movable ring for operating said clamps, and mechanism, substantially as described, whereby slides 27 are caused to move outward to stretch the brim.

27. The block, the bed having ways 14 and 28, radial slides 13 and 27, and body-clamps and brim-clamps carried by said slides, in combination with diagonally-slotted ring 19, vertically-movable rings 37 and 50, and operating mechanism, substantially as described, whereby a hat is clamped upon the block and the brim clamped and then stretched.

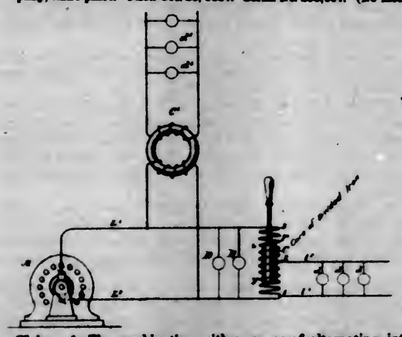
28. The block, steam-box, bed, and plates 22, in combination with slides 13, carrying bands 15, and slides 27, carrying levers 30, and clamping-plates 32.

29. In a machine for stretching and blocking hats, a block to receive the hat, radial slides carrying bands to clamp a hat thereon, and having pins 16, in combination with ring 19, having radial slots engaged by said pins, a rack, 23, and a pinion engaging therewith, whereby the ring is turned to operate the slides.

30. In a machine for stretching and blocking hats, the combination, with a block to receive a hat, and slides 27, having standards 29, levers 30, pivoted in said standards, and plates 32, to clamp the brim, of vertically-movable ring 37, for operating said clamps, rods by which it is carried, cross-pieces having plates with angle-slots, and shaft 40, having cranks with pins engaging said slots, whereby the ring is moved up or down.

31. In a machine for stretching and blocking hats, the combination, with a block to receive a hat, slides 27, carrying levers with plates to clamp the brim, vertically-movable ring 50, links pivoted to said slides and to said ring, and a treadle and rods for operating said ring, whereby the slides are moved outward to stretch the brim.

386,956. REGULATOR FOR ELECTRIC CIRCUITS. REGINALD BELFIELD, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 20, 1887. Serial No. 253,097. (No model.)



Claim.—1. The combination, with a source of alternating, intermittent, or pulsatory electric currents, of a single coil of insulated wire included in circuit with said source, translating devices, a circuit including the latter in series with a portion only of said coil, and a single core at all times entirely within the inductive influence of said coil, but movable therein with reference to the last-named circuit, whereby the brilliancy of the lights may be regulated.

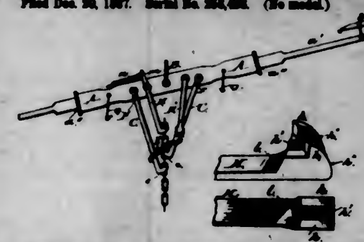
2. The combination of a source of alternating, intermittent, or pulsatory electric currents, a coil of insulated wire included in the circuit derived therefrom, a circuit including a portion of said coil, translating devices included in the last-named circuit, and a core movable with reference to said coil, whereby it may be placed within said portion of the coil or withdrawn therefrom to a greater or less extent into another portion of the same coil at will.

3. A regulator for electric circuits, consisting of a continuous coil of insulated wire and a core movable with reference thereto, whereby it may be caused to occupy different positions therein without being removed therefrom.

4. The combination of a source of electric currents, a coil of insulated wire included in its circuit, translating devices included in series with a portion of the coil and in multiple arc with another portion of the coil, and a core movable within said coil.

5. The combination of a source of electric currents, one more translating devices included in its circuit, a coil of wire one portion of which is in series with the translating devices and the other in direct shunt upon the translating devices, and a core movable in the coil.

386,957. STUMP-EXTRACTOR. HENRY C. HALL, Union City, Tenn. Filed Dec. 20, 1887. Serial No. 258,493. (No model.)

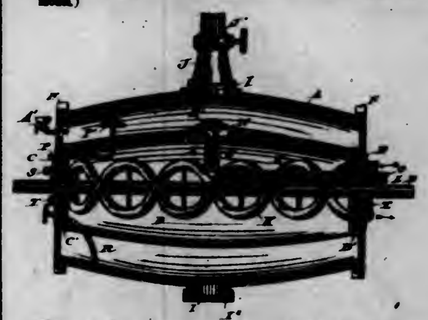


Claim.—1. The combination of a centrally-pivoted oscillating head or bar, oppositely-moving pawls H H', the latter having a downwardly-extending hook-shaped head or end at right angles to the head or end of the opposite pawl, a spring attached to said pawl H, and a chain or cable with which said pawls engage, substantially as described.

2. A stump-extractor comprising a centrally-pivoted head or bar, a pleral series of pawls connected therewith, so that one member of each series will move in a direction opposite to that of the remaining pawl of the same series, a chain or cable engaged by said pawls, springs for holding the pawls against said chain or cable, and hooks for holding the pawls of one series away from those of the other series, substantially as described.

3. The combination, with an oscillating head or bar, of oppositely-moving pawls having hook-shaped ends and curved faces, said pawls having also inclined projections upon which the curved faces ride, substantially as herein described.

386,958. VACUUM EVAPORATING APPARATUS. OTTO REINHARDT, Jersey City, N. J. Filed Sept. 30, 1887. Serial No. 251,128. (No model.)



Claim.—1. In an apparatus for the manufacture of sugar, a rotary vacuum-pan having relatively stationary heads closing its ends and upon which it rotates, substantially as set forth.

2. In an apparatus for the manufacture of sugar, a rotary vacuum-pan having a tapering shell of polygonal form in cross-section, in combination with a steam-coil held in a fixed position in the middle of said pan, substantially as shown and described.

3. In an apparatus for the manufacture of sugar, the combination, with fixed heads supported on a shaft or spindle, of a vacuum-pan adapted to rotate on said heads, a steam-coil supported in the middle of said pan by said spindle and one of the heads, and a fixed vacuum-pipe extending through one of said heads into said pan, substantially as shown and described.

4. In an apparatus for the manufacture of sugar, the combination, with fixed heads supported on a shaft or spindle, of a vacuum-pan adapted to rotate on said heads, a steam-coil supported in the middle of the said pan by said spindle and one of the heads, a fixed vacuum-pipe extending through one of said heads into said pan, and a cone-shaped hood formed at the inner perforated end of said vacuum-pipe, substantially as shown and described.

5. In an apparatus for the manufacture of sugar, the combination with fixed heads supported on a shaft or spindle, of a vacuum-pan adapted to rotate on said heads, a steam-coil supported in the middle of the said pan by said spindle and one of the heads, a fixed vacuum-pipe extending through one of said heads in the said pan, a cone-

shaped head formed at the inner perforated end of said vacuum-pipe, and a steam-pipe passing through one of said heads and exhausting under said head in the perforated end of said vacuum-pipe, as set forth.

6. In an apparatus for the manufacture of sugar, a vacuum-pan provided with inlet and outlet openings in its shell, heads on which said pan rotates, a vacuum-pipe extending through one of said fixed heads into said pan, and a hood held on the inner perforated end of said vacuum-pipe directly in line with said openings in the shell of the pan, substantially as shown and described.

7. In an apparatus for the manufacture of sugar, the combination, with a rotating vacuum-pan, of fixed heads on which said pan rotates, and caps fitting over the inside joint of said heads and the ends of the pan, substantially as shown and described.

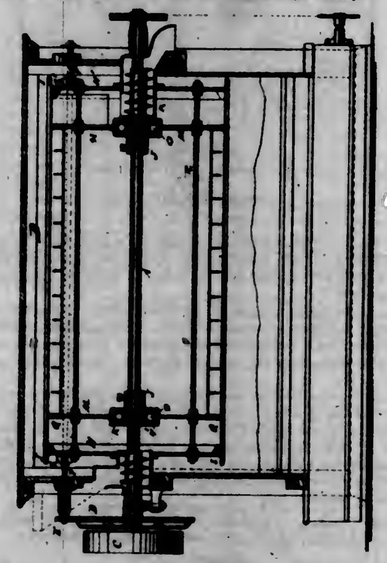
8. In the apparatus for the manufacture of sugar, the combination, with a vacuum-pan provided in its shell with inlet and outlet openings, of fixed heads on which said pan rotates, an inlet-pipe held in one of said heads for introducing the sugar solution, and an inlet-pipe provided with a valve and adapted to fit over one of the openings in the shell of the pan for introducing crystallized sugar, substantially as shown and described.

9. In an apparatus for the manufacture of sugar, a vacuum-pan formed of a longitudinally-divided shell and relatively-stationary heads closing the ends of the shell and forming bearings on which the pan rotates, substantially as set forth.

10. The combination, with a rotary vacuum-pan, of a vacuum-pipe extending into said pan and having perforations at its upper end, and a hood overhanging said perforations, substantially as set forth.

11. The combination, with a rotary vacuum-pan, of a vacuum-pipe entering the same and having perforations and an overhanging hood at its upper end, and a steam-pipe entering said pan and discharging under said hood, substantially as set forth.

386,959. FLOUR-BOLTING MACHINE. CARL BAUER, Cleveland, Ohio. Filed May 28, 1887. Serial No. 239,261. (No model.)



Claim.—1. In a four-bolting machine, the combination, with a revolving four-bolt, of cams for throwing the bolt forward suddenly in the direction of its rotation and springs for throwing the bolt in the direction opposite to that of its rotation, substantially as herein shown and described.

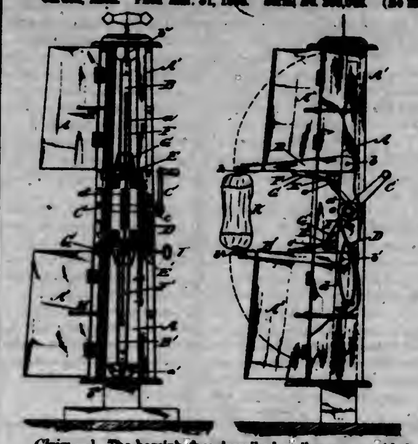
2. The combination, with a revolving bolt, of end frames mounted loosely upon hubs on a shaft, springs contained in the center parts of said end frames, which springs rest against the hubs and parts of the end frames, pins on the ends of the bolt, and rotating cams acting on said pins, substantially as herein shown and described.

3. In a four-bolting machine, the combination, with a shaft, of hubs on the same, end frames mounted loosely on the hubs and having enlargements, springs in said enlargements, which springs surround the hubs, said springs resting against projecting parts of the hubs and end frames, a bolt-frame formed on said end frames, and cams for throwing the bolt forward, substantially as herein shown and described.

4. In a four-bolting machine, the combination, with a shaft, of hubs on the same, lugs on the hubs, frames or plates mounted loosely on the hubs and provided at their openings with offsets, springs surrounding the hubs and resting against the lugs on the hubs and against the lugs in the offsets, a bolt-frame on said end frames, and cams for throwing the bolt forward, said bolt being mounted to rotate with the shaft carrying the hubs, substantially as herein shown and described.

5. In a four-bolting machine, the combination, with a shaft, of hubs mounted on the shaft and provided with offsets, end frames mounted loosely on the hubs and provided with offsets having lugs, springs surrounding the hubs within said offsets, the ends of the springs resting against the lugs of the offsets and the lugs of the hubs, pins on the end of the bolt, a cog-wheel on the above-mentioned shaft, a pinion engaging with said cog-wheel, a shaft on which the pinion is mounted, and cams on said shaft, which cams can act on the end pins of the bolt, substantially as herein shown and described.

386,960. MAIL-CRANE. HENRY BOYD and GASPARD CLEMENT, Garden, Mich. Filed Mar. 31, 1888. Serial No. 269,062. (No model.)



Claim.—1. The hereinbefore-described mail-crane, provided with two hinged arms and inclosed in a casing having doors arranged in the line of movement of said arms, and provided with means for closing them automatically when the arms are received within the casing, substantially as set forth.

2. The hereinbefore-described mail-crane, having two spring-actuated arms and inclosed within a casing provided with spring-actuated doors arranged in the line of movement of said arms, and adapted to be pushed open by the arms when they are swung outward and to close automatically when the arms are received within the casing, substantially as described.

3. A mail-crane having two hinged arms, springs for holding them normally in a vertical position, and mechanism for bringing them simultaneously to an approximately horizontal position against the tension of the springs, substantially as described.

4. The combination, with the post A, of the arms B B' hinged thereto, the springs G G', bearing against the arms, the shaft C, arranged between the hinged arms, and the cords F F', attached to the arms and to the shaft, substantially as described.

5. The combination, with the post A, of the arms B B' hinged thereto, the U-shaped springs G G', bearing against the arms, the shaft C, between the hinged arms and carrying the ratchet-wheel *e*, the spring-pawl D, engaging with the ratchet-wheel, the pulleys E E', and the cords F F', attached to the arms and to the shaft and running over the pulleys E E', and means for disengaging the pawl from the ratchet-wheel, substantially as described.

6. The combination, with the post A, having the recesses *a a'* and slot a^2, of the casing A', having the spring-actuated doors A^2 A^3, the arms B B', hinged in the recesses and provided with the pivoted fingers b^2 b^3, the shaft C, passing through post A and casing A' and across slot a^2, and provided with the ratchet-wheel *e*, the pawl D and its spring *d*, the crank C', outside the casing, the cords E E', attached to the arms B B' and to the shaft, the U-shaped springs G G' bearing against the arms B B' and the key I, substantially as described.

386,961. WINDOW-SHADE. GEORGE I. GARDNER, Memphis, Tenn. Filed Aug. 30, 1887. Serial No. 248,227. (No model.)

386,961.



Claim.—1. A window-shade formed in sections, of opaque material, suspended from one another and having their adjacent edges connected together by tapes or open-work material to form openings between them, and the uppermost section suspended by its upper edge from the top of the window, with a raising and lowering device for moving the entire shade at one operation, substantially as described.

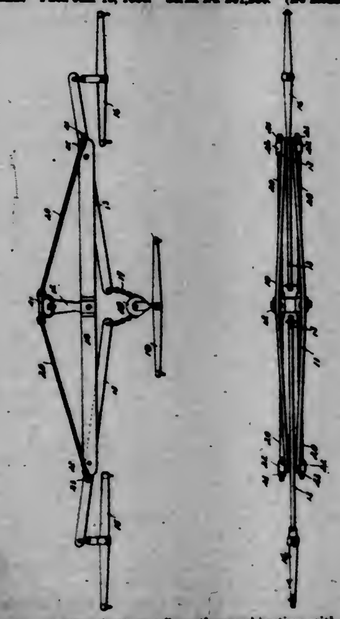
2. The combination, with a window-casing having slotted strips F, with adjustable hooks C, and the spring-roller b, of a window-shade consisting of sections E, having their adjacent edges connected by tapes f, and the upper edge of the lower section having a bar with projecting ends e adapted to engage hooks C, substantially as described.

3. A window-shade constructed in sections, of opaque material, having their adjacent edges connected together by tapes, and the upper section suspended from a spring-roller by means of tapes, substantially as described.

4. A window-shade constructed in sections connected together, substantially as described, by tapes or open-work material to form openings, and having a bar with projecting ends on the lower section or sections, in combination with open hooks or rests on the window-casing, whereby the lower section or sections are suspended independently of the upper section or sections, substantially as described.

5. A window-shade constructed in sections connected together by strips or tapes, the upper section mounted on a spring-roller and the lower section or sections having a bar with projecting ends, in combination with upwardly-opening hooks or rests on the window-casing, whereby the lower section or sections are suspended independently of the upper section or sections, substantially as described.

386,962. DRAFT-EQUALIZER. WILLIAM GAMER, Waverland, Kans. Filed Jan. 19, 1888. Serial No. 261,208. (No model.)

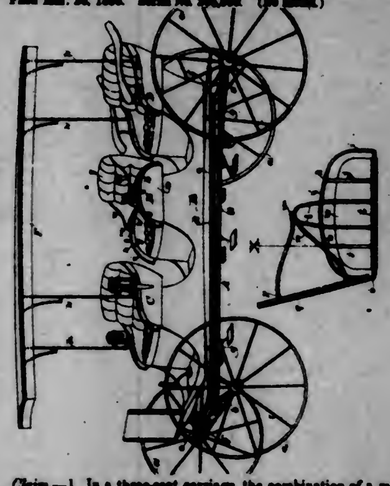


Claim.—1. In a draft-equalizer, the combination, with a support ing-frame, of doubletrees pivoted to the ends of the said frame at points about one-third of their length inward from the outer ends, singletrees connected to the outer ends of the doubletrees, a chain connected to the inner ends of the said doubletrees, and a central singletree provided with a sheave, around which passes the said chain, substantially as described.

2. In a draft-equalizer, the combination, with the spaced bars 10 and 11, of the doubletrees 13, pivoted between the ends of the said bars, the singletrees 16, connected to the outer ends of the doubletrees, the chain 17, connected to the inner ends of the said doubletrees, and the central singletree, 19, provided with the sheave 18, around which the chain 17 passes, substantially as herein shown and described.

3. In a draft-equalizer, the combination, with a frame consisting of upper and lower bars, as 10 and 11, and braces, as 20, of doubletrees 13, pivotally connected to said frame, singletrees connected to the outer ends of the doubletrees, a chain connected to the approaching ends of the doubletrees, a sheave, 18, about which the chain passes, and a singletree connected to the sheave, substantially as described.

386,963. CARRIAGE. JOSEPH T. GARDNER, Amesbury, Mass. Filed Mar. 26, 1888. Serial No. 268,668. (No model.)

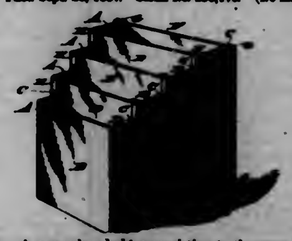


Claim.—1. In a three-seat carriage, the combination of a middle seat having a bottom and ends fixed in place and a reversible back, and a front and rear seat fixed in place in all said parts, substantially as specified.

2. In a three-seat carriage, the combination, with a middle seat having a fixed bottom and ends and a reversible back, and a front and rear seat fixed in position in all said parts, of a canopy-top supported by pillars rising from the front and rear seats, substantially as specified.

3. The combination, with bottom *t*, ends *u*, and back *g*, of arm-rail *i*, having standards *j*, with offsets *k*, standard *l*, and forked arm *n*, pivoted to said standard, rigidly secured to said back and formed to rest upon said offsets, all said parts being so constructed and arranged that when said arm rests upon either of said offsets the back *g* will be thereby supported at the proper angle to bottom *t*, substantially as specified.

386,964. PAPER-BAG HOLDER. JAMES GORMAN, Custer City, Dak. Filed Sept. 20, 1887. Serial No. 250,173. (No model.)



Claim.—A paper-bag holder consisting in the open end sections, A, of increasing size, each formed of a single plate, having sides B B,

flanges C at the outer edges thereof, and grooves D D at the opposite sides of the back and within the plane of the outer surface thereof, the flanges of one section entering the grooves C at its sides, receiving the flanges of the rear or inner section, substantially as set forth.

386,965. TELEPHONE-TRANSMITTER. WILLIAM R. GILE, Detroit, Mich., assignor to himself, FRANK G. SMITH, and GEORGE W. HOUSE, trustees, same place. Filed May 10, 1886. Serial No. 201,643. (No model.)



Claim.—In a microphone-transmitter, the following elements: a base having a central orifice, a diaphragm (having a flange-ring secured to its periphery and an electrode centrally secured to its rear face) hinged at its lower edge to the base by means of a bracket, a bar (carrying an electrode) hinged at its upper end, and an insulated set-screw, the parts being constructed, combined, and arranged relatively to each other substantially as set forth.

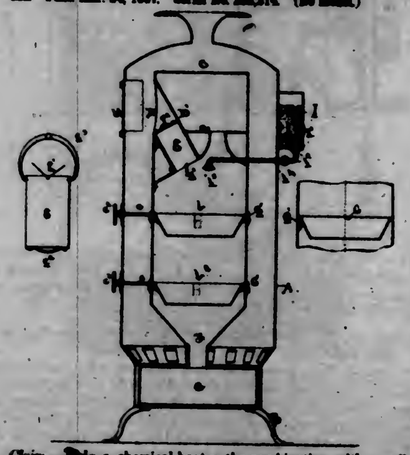
386,966. SCREW-PROPELLER. ALFRED GUELLE, Pittsburgh, N. Y., assignor to himself and Seaford Works, same place. Filed Nov. 21, 1887. Serial No. 255,703. (Model.)



Claim.—1. As a new article of manufacture, a screw-propeller having an elongated tapering hub axially bored throughout its length to fit a screw-shaft, and a single continuous perpendicular helical flange integral with said hub, said flange gradually increasing in diameter from the smaller to the larger end of said hub, substantially as shown and described.

2. The combination, with the screw-shaft of a steam-vessel, of a screw-propeller having an elongated tapering hub fitted by its axial bore upon said shaft, and a single continuous perpendicular helical flange integral with said hub, which flange gradually increases in diameter from the smaller to the larger end of said hub, substantially as shown and described.

386,967. CHEMICAL STOVE. WILLIAM H. GETWAY, Baltimore, Md. Filed Mar. 24, 1887. Serial No. 232,214. (No model.)



Claim.—Into a chemical heater, the combination, with a cylinder, of one or more pans arranged within it, a chemical fuel-charger and a water-tank, arranged above the said pans to deliver their respective charges into the same, substantially as described.

2. In a chemical heater, the combination, with a cylinder, of a reversible pan pivoted within it, a fuel-charger and a water-tank arranged above the said pan and adapted to discharge their respective contents, as and for the purpose specified.

3. In a chemical heater, the combination of a cylinder and one or more reversible pans suitably mounted within said cylinder with a chemical fuel-charger and water-tank which is divided into sections, substantially as shown, both said fuel-charger and water-tank being suitably located to deliver their charges in said pan or pans.

4. In a chemical heater, the combination, with a cylinder in which the heat-generating chemical is retained while being shaked, of a water-tank having a discharge-pipe whose nozzle is within the cylinder, and having a partition which is perforated and arranged as shown, whereby it divides the tank into communicating compartments, one of which is supplied from the other and has the required capacity for a charge of water for shaking the chemical charge, as shown and described.

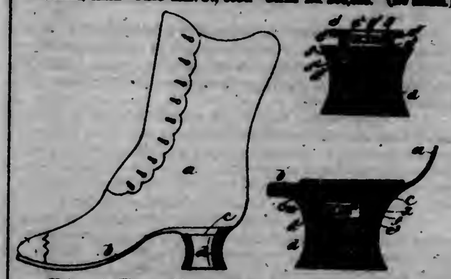
5. In a chemical heater, the fuel-charger open at one end and provided with a centrally-jointed lid, in combination with the stove-cylinder and pan for receiving the heat-generating chemical.

386,968. DEVICE FOR MOVING BEES. WILLIAM J. BARNES, Jeffersonville, Ky. Filed Oct. 28, 1887. Serial No. 253,422. (No model.)



Claim.—The standard A, provided with the series of holes *a a* at its lower end and provided with the loop B at its upper end, in combination with the sliding section C, box G, loop H, hinged extension or handle F, and supporting-pin *b*, substantially as and for the purpose set forth.

386,969. BEEL FOR BOOTS OR SHOES. SAMUEL B. BARNARD, Boston, Mass. Filed Mar. 27, 1888. Serial No. 268,693. (No model.)

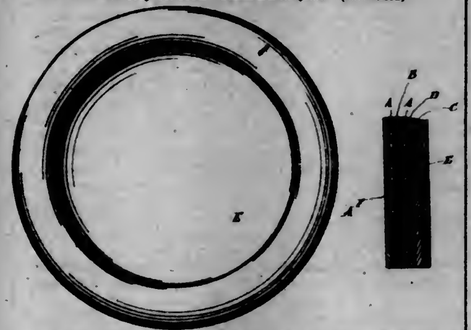


Claim.—1. The combination of the heel and heel-seat with a projection provided with a threaded ring loosely connected with said projection and a pawl or dog that prevents rotation of the said ring in one direction, and a correspondingly-threaded fastening on the heel co-operating with said threaded ring, substantially as described.

2. The combination of the heel-seat stationary with relation to the shoe and provided with such member of a rotating screw-fastening.

with the movable heel having the other member of said fastening connected with it, the said heel having its bottom lift that is in contact with the heel-cast concave, and having a beveled strip, *d*, between its lifts, substantially as described.

886,970. PLAQUE OR PANEL. EDWARD DE PLANTE, Rahwan, N. J. Filed May 16, 1888. Serial No. 274,093. (No model.)



Claim.—A plaque or panel formed of two sheets of canvas or duck united by a mixture of glue, whiting, and pulverized wood, and a sheet of paper fastened to one of the sheets of canvas or duck, the sheet of paper being provided with a coating of whiting and glue, substantially as shown and described.

886,971. NATURAL-GAS BURNER. GEORGE K. DETWILER, Toledo, Ohio. Filed Dec. 16, 1887. Serial No. 258,091. (No model.)



Claim.—1. A burner for natural gas having a chamber provided with a peripheral slot, a diaphragm dividing said chamber and extending into the slot, and supply-pipes communicating with the burner on each side of the diaphragm, as and for the purpose set forth.

2. In a burner for natural gas, an upper and lower section, a disk having corrugations around the edge interposed between the sections, a gas-supply pipe communicating with the upper section, and a like pipe communicating with the lower section, as and for the purpose set forth.

886,972. BOOK-STAPLING MACHINE. EDWARD P. DONNELL and SAMUEL MCAMLIFFE, Chicago, Ill., assignors to the E. P. Donnell Manufacturing Company, same place. Filed Dec. 30, 1886. Serial No. 223,005. (No model.)

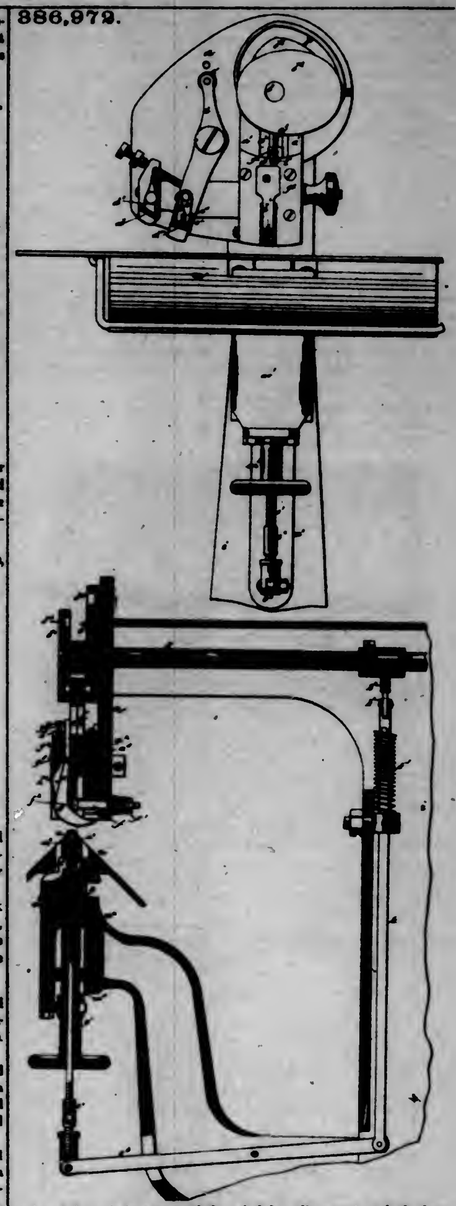
Claim.—1. In a book-stapling machine, a feeding-lever provided with a bearing or ledge to receive the wire, in combination with a slotted pawl-arm pivoted thereon, and provided with a roughened disk held in said slot to bear upon the wire ledge, substantially as and for the purpose set forth.

2. In a book-stapling machine, the combination, with the forked staple-former and the driver working in a groove in its face, of a spring-actuated toe or foot having an inclined upper edge lying normally between the legs of the former, a slide to which this toe is hinged, and a spring for supporting the slide and toe and lifting them after being depressed, substantially as and for the purpose set forth.

3. In a book-stapling machine, the combination, with the work-supporting table, adjustable to suit the work under operation, of a pair of clinching-dogs therein, an operating-rod for the same, shouldered to rest upon but free to slide through the table-frame, and made in two parts adjustable as to length, whereby the clinching devices are carried upon the adjustable table, yet are adjustable independently of the same, substantially as and for the purpose set forth.

4. The combination, with the main frame and its work-supporting table *m*, provided with a hollow screw, m^2, for adjusting it, and also with an anvil, m^4, of the dogs *n n*, pivoted in the anvil and formed with the notches *n'*, the slide n^2, connected to said dogs, the actuating-

886,972.

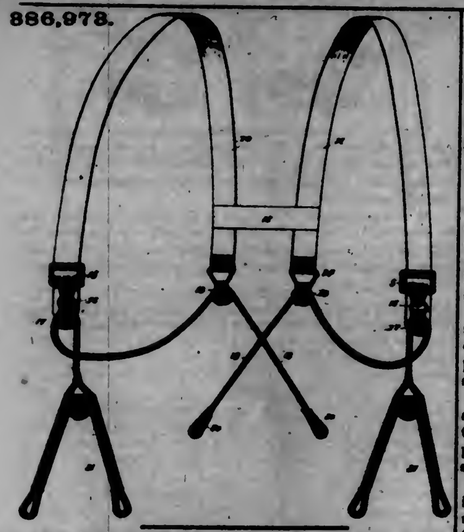


rod *o o' o²*, made in parts and threaded for adjustment, and the lever o^3, spring-actuated rod *k*, and cam L^2 on the main shaft, by which the dogs are actuated, all constructed and arranged for operation substantially as and for the purpose set forth.

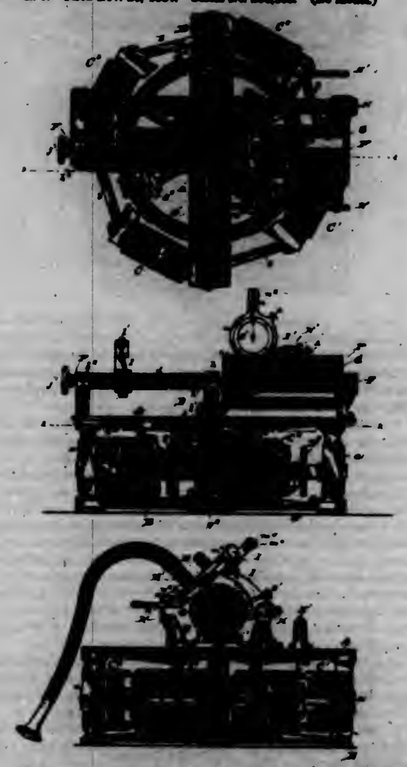
886,973. SUSPENDERS. VICTOR DUMESNIL, New York, N. Y. Filed May 1, 1888. Serial No. 272,661. (No model.)

Claim.—The improved suspenders, consisting of the shoulder-straps 10 and 11, connected at the rear near the ends by the short transverse strap 12, and each provided with a pulley, 13 and 17, at the rear and front ends, respectively, and the cords 18 and 19, passing over the said pulleys, and each provided with a loop, 20, at the rear and with the forked suspender-end 21 at the forward end, the rear ends of the cords being crossed when in use, substantially as herein shown and described.

886,973.



886,974. PHONOGRAPH. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Nov. 24, 1887. Serial No. 256,193. (No model.)



Claim.—1. In a phonograph, the combination, with the revolving phonogram-carrying shaft and phonogram-cylinder adapted to carry a removable phonogram-blank, of an electric motor having a heavy fly-wheel, armatures carried by such fly-wheel, electro-magnets attracting such armatures, and a commutator, substantially as set forth.

2. In a phonograph, the combination, with the horizontal shaft carrying the phonogram, of a vertical shaft, an electro-magnetic motor mounted upon such vertical shaft, and a beveled friction-gearing transmitting the motion from the vertical shaft to the horizontal shaft, substantially as set forth.

3. In a phonograph, the combination, with the vertical shaft carrying the balance-wheel, electro-magnetic motor, and stepped in a jewel-bearing, of the horizontal phonogram-carrying shaft, and the beveled friction-gearing having one wheel of soft material, substantially as set forth.

4. In a phonograph, the combination of the electro-magnetic motor, consisting of a heavy fly-wheel carrying armatures on its periphery, magnets attracting such armatures, and a commutator with a centrifugal governor controlling the electric circuit of the motor and maintaining a uniform speed of such motor, and a phonogram-carrying shaft connected with the motor by friction-gearing, substantially as set forth.

5. The combination, with the vertical motor-shaft, of the horizontal phonogram-shaft carrying a beveled friction-wheel, and a beveled friction-pinion of soft material mounted on the motor-shaft and pressed against the wheel on the phonogram-shaft by a spring, substantially as set forth.

6. In a phonograph, the combination, with a phonogram-cylinder and advancing screw-thread, of a swinging frame carrying together the separate recorder and reproducer and adapted to bring either into position for operation by the swinging of the frame, substantially as set forth.

7. In a phonograph, the combination, with the revolving recording-surface, of a swinging spectacle-frame carrying the recorder and reproducer and adapted to be swung so as to bring either into operative relation with the surface, substantially as set forth.

8. In a phonograph, the combination, with a revolving recording-surface, of a swinging frame carrying the recorder and reproducer, and a stationary plate carrying the single speaking or listening tube, the swinging of the frame bringing either the recorder or reproducer into operative relation with the surface and with the speaking or listening tube, substantially as set forth.

9. In a phonograph, the combination, with a revolving phonogram-cylinder, an arm having a movement parallel with the axis of said cylinder, and the reproducer carried by a frame mounted on such arm and adjustable laterally thereon, whereby the reproducer can be readily adjusted to the record, substantially as set forth.

10. In a phonograph, the reproducer carried by a pivoted frame swinging across the lines of record, and an adjusting-screw for determining the lateral position of the reproducer, substantially as set forth.

11. In a phonograph, the combination, with the revolving phonogram-cylinder, of the holding-arm mounted to swing toward and away from the surface of said cylinder, and the reproducer mounted on such arm and laterally adjustable thereon, substantially as set forth.

12. In a phonograph, the combination, with the revolving phonogram-cylinder, of the holding-arm mounted to swing toward and away from the surface of such cylinder, the reproducer mounted on such arm and laterally adjustable thereon, an adjusting-screw for determining the position of the holding-arm relative to the phonogram-cylinder, and an adjusting-screw for determining the lateral position of the reproducer, substantially as set forth.

13. In a phonograph, the combination, with the revolving phonogram-cylinder, of the advancing holding-arm carrying the recorder or reproducer, and a stationary guide-rest for supporting the holding-arm in proper relation with the phonogram-cylinder, substantially as set forth.

14. In a phonograph, the combination, with the revolving phonogram-cylinder, of the advancing holding-arm carrying the recorder or reproducer, a stationary guide-rest for supporting the holding-arm in proper relation with the phonogram-cylinder, and an adjusting-screw for adjusting the height of the holding-arm above the guide-rest, substantially as set forth.

15. In a phonograph, the combination, with the phonogram-cylinder and the lead-screw, an arm carrying the recorder or reproducer, a guide-arm connected with the carrying-arm, a yielding guide-block engaging with the lead-screw, a guide-rest, and an adjusting-screw for adjusting the height of the carrying-arm upon the guide-rest, substantially as set forth.

16. In a phonograph, the combination with the swinging arm and the recorder or reproducer carried thereby, of the springy back-rest upon which such carrying-arm is thrown, substantially as set forth.

17. In a phonograph, the combination, with the revolving phonogram-cylinder, of the advancing recorder or reproducer, and the scale for determining the position of the recording or reproducing point upon the phonogram or blank, substantially as set forth.

18. In a phonograph, the combination, with the revolving phono-

gram-cylinder, and recorder and reproducer mounted upon an advancing holding-arm and adjustable toward and away from the phonogram-cylinder, of a cutting-tool movable with such holding-arm and independently adjustable toward and away from the phonogram-cylinder, whereby the recorder and reproducer can be adjusted out of operative engagement with the phonogram-blank, and the cutting-tool can be adjusted forward into engagement with such blank, substantially as set forth.

19. In a phonograph, the combination, with the revolving phonogram-cylinder and the lead-screw, of the arm carrying the recorder or reproducer, a cutting-tool on such arm for reducing the surface of the phonogram or blank, and a guide-arm engaging the lead-screw and advancing the carrying-arm, substantially as set forth.

20. In a phonograph, the combination, with the revolving phonogram-cylinder, of the swinging arm carrying the recorder or reproducer, a cutting-tool also carried by said arm, a guide-rest, a screw for adjusting the position of the recorder or reproducer and said cutting-tool with relation to the phonogram or blank surface, and a yielding guide-block engaging with the lead-screw and advancing said carrying-arm, substantially as set forth.

21. In a phonograph, the combination, with the cylinder-shaft having a fine screw-thread, the phonogram-cylinder mounted on such shaft, a stationary guide-rod, a sleeve mounted on such guide-rod and capable of sliding and turning movements thereon, a guide-arm secured to said sleeve and having a screw-threaded guide-block engaging the screw-thread, and the holding-arm for the recorder or reproducer, also secured to said sleeve, substantially as set forth.

22. In a phonograph, the combination, with the cylinder-shaft having a fine screw-thread, the phonogram-cylinder mounted on such shaft, a stationary guide-rod, a sleeve mounted on such guide-rod and capable of sliding and turning movements thereon, a guide-arm secured to said sleeve and having a screw-threaded guide-block engaging the screw-thread, the holding-arm for the recorder or reproducer, also secured to said sleeve, and a guide-rest for determining the rotary position of the guide-sleeve, substantially as set forth.

23. In a phonograph, the combination, with the cylinder-shaft having a fine screw-thread, the phonogram-cylinder mounted on such shaft, a guide-rod and sleeve, a guide-arm secured to said sleeve and having a screw-threaded yielding guide-block engaging the screw-thread, the holding-arm for the recorder or reproducer, also secured to said sleeve, and a guide-rest for determining the rotary position of the guide-sleeve, substantially as set forth.

24. In a phonograph, the phonogram-cylinder tapering throughout its length, substantially as set forth.

25. In a phonograph, the combination, with the cylinder-shaft mounted in bearings and projecting at one end beyond such bearings, of a smooth-surface phonogram-cylinder tapering throughout its length and carried by the shaft outside of its bearings, substantially as set forth.

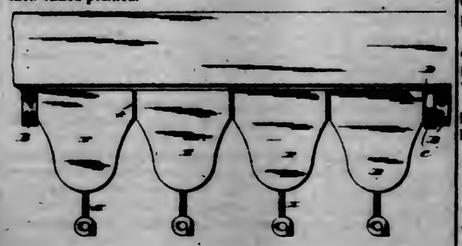
26. In a phonograph, the combination, with a tapering phonogram-cylinder, of two or more phonogram-blanks of different lengths having tapering bores adapted to fit said phonogram-cylinder and provided with cylindrical recording-surfaces, substantially as set forth.

27. In a phonograph, the combination, with a tapering phonogram-cylinder, of a phonogram having a tapering bore and a cylindrical outer surface held upon said cylinder by friction, substantially as set forth.

28. In a phonograph, the combination, with a holding-frame, of the recording and reproducing devices constructed each as a complete self-contained body removably attached to said holding-frame, substantially as set forth.

386,975. YARN-GUIDING DEVICE FOR SPINNING-MACHINES. JOHN F. PULLEN, Central Falls, R. I. Filed Dec. 7, 1887. Serial No. 257,269. (No model.)

Brief.—The object of the invention is to provide guide-plates which may be independently adjusted with rapidity and ease, and to mount the same on a rocking shaft in such way as to be simultaneously raised or lowered, and to provide a means for retaining them in their raised position.

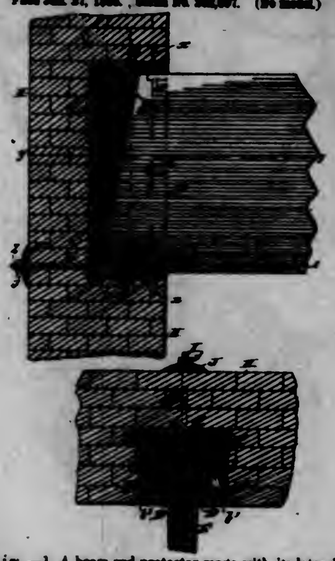




Claim.—1. A guide-plate provided with the clamp H, having the groove F, the shoulder E, the clamping-jaw S, provided with the extension U, adapted to impinge upon a shaft fitted in the groove F, and the screw T, passing through a perforation in the shoulder E, substantially as described.

2. The combination of the shaft A, the handle C, provided with the cam D and the bearing E, with the clamps H, engaging rigidly the said shaft, and the guide-plates E, pivotally connected to the said clamp and provided with the guide-rod I, extending out from the same, substantially as described.

386,976. BEAM-END PROTECTOR. HENRY A. GOSS, New Albany, Ind. Filed Jan. 27, 1888. Serial No. 262,697. (No model.)



Claim.—1. A beam-end protector made with its lateral side or sides dovetailed exteriorly in horizontal plane, whereby it is adapted to interlock with a wall into which it may be built, to prevent pulling of it from the wall, said protector also having an upwardly-extending lug at its bottom adapted to interlock with a notched beam end, substantially as herein set forth.

2. A beam-end protector made with a dovetailed exterior adapted to interlock with a wall into which it may be built, to prevent pulling of the protector from the wall, an upwardly-extending lug at its bottom adapted to interlock with a notched beam end, and interior plates, as D D, adapted to receive the beam end between them and provide an air-space at the end of the beam, substantially as herein set forth.

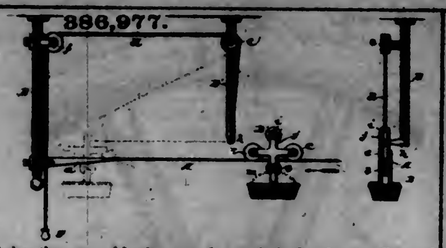
3. Beam-end protectors made with a lateral side or sides dovetailed exteriorly in horizontal plane, whereby they are adapted to interlock with opposite walls into which they are built, to prevent pulling of them from the walls, said said protectors also having upwardly-extending lugs at their bottoms, in combination with a beam set into two opposite protectors, and having notched ends interlocking with the bottom lugs of the protectors, substantially as described, for the purposes set forth.

4. A beam-end protector made with side walls, B, having double dovetailed form horizontally, or with reversely-inclined faces *b' b'*, to prevent pulling of the protector from the wall or pushing it into the wall into which it is built, substantially as herein set forth.

5. The combination, with a beam-end protector, of a bolt, I, fitted into the lower part of the protector and into a wall, substantially as herein set forth.

386,977. SHORE-SERVICE APPARATUS. JOHN H. GOODFELLOW, Troy, N. Y., assignor to the Lamson Store Service Company, Boston, Mass. Filed Feb. 8, 1888. Serial No. 263,578. (No model.)

Claim.—1. The combination, in a store-service apparatus, of a way, a carrier moving upon said way, provided with wheels above and



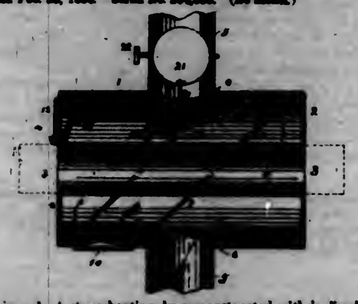
below the way and having a supplemental wheel, and a propeller-cord fixed at one end at a point adjacent to the way and arranged in the path of the supplemental wheel, substantially as set forth.

2. The combination, with the way, carrier traveling thereon, with wheels above and below the way and provided with a supplemental wheel, and retainer at the end of the way, of a propeller-cord supported by a fixed support at one end to extend across the path of said wheel and extending downward to the salesman's station, substantially as set forth.

3. The combination of the way, carrier traveling thereon, provided with a supplemental wheel, propeller-cord, and a lateral support, to which one end of said cord is attached, arranged adjacent to the way and to the path of the supplemental wheel, substantially as set forth.

4. The combination, with the way, of a carrier provided with a supplemental wheel, *i*, at one side of a support, a propeller-cord passing over a guide-roller, *c*, at a distance from the station, and supported at the end in position to contact with the said wheel *i*, substantially as set forth.

386,978. HEATING-DRUM. EDWARD C. GRAY, Jordan, Minn. Filed Feb. 20, 1888. Serial No. 264,933. (No model.)



Claim.—1. A stove heating-drum counterpoised with inclined partitions alternately extending across the drum from the bottom nearly to the top and from the top nearly to the bottom, and located between the bottom and top openings of the drum, and a discharge-opening with a door located in the lower portion of the drum between the said partitions, substantially as described.

2. A stove heating-drum constructed with inclined partitions extending alternately from the bottom and top of the drum nearly to its opposite side and located between the bottom and top openings thereof, and having a ventilating opening and valve connected by mechanism, substantially as described, with a damper located on the drum, the said mechanism operating to close the valve on closing the damper, substantially as described.

3. A stove heating-drum constructed with inclined partitions extending alternately from the bottom and top of the drum nearly to its opposite side, and located between the bottom and top openings thereof, and having a ventilating-opening, substantially as described.

4. A stove heating-drum, 1, constructed with open horizontal pipes, 4, thimbles 5 5 in its top and bottom, inclined partitions 7 8, opening 9, with slide 10, and opening 11, provided with the valve 15, connecting-rod 16, bell-crank lever 17, connecting-rod 20, and damper 21, all constructed and arranged substantially as described.

386,979. CEMENT-PIPE MOLD. LEE G. HAAKE, Oak Park, Ill. Filed Aug. 10, 1887. Serial No. 247,024. (No model.)

Claim.—1. In a mold for making cement pipe, the combination of a collapsible hollow core and a removable collapsible cover on the upper end of the core, substantially as and for the purpose set forth.

2. In a mold for making cement pipe, the combination of a collapsible core and a collapsible cover, G, having two semicircular disks, *g* and *g'*, hinged in opposite directions toward corresponding ends and hinged together, and a wedge, G', substantially as described.

3. In a mold for making cement pipe, a collapsible core and a collapsible cover, G, having two semicircular disks, *g* and *g'*, hinged in opposite directions toward corresponding ends and hinged together, and a wedge, G', hinged to the edge of one of the semicircular disks, substantially as described.

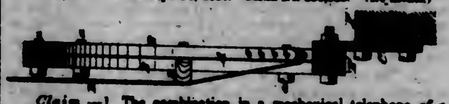
4. In a mold for making cement pipe, the combination of a collapsible cover, G, comprising two semicircular disks, *g* and *g'*, hinged in opposite directions toward corresponding ends and hinged together, a wedge, G', rounded on its under side and hinged to one of the semicircular disks, a guide-strap, *c*, and a tongue, *c'*, substantially as described.

5. In a mold for making cement pipe, a collapsible core, A, comprising a hollow cylinder or approximate cylinder split longitudinally, and having a thickened edge, *r*, and a thickened beveled edge, *r'*, a door, D, hinged to the edge *r* and beveled at its opposite edge, a yoke, E, pivoted at opposite ends, respectively, to the door and edge *r'*, and a suitable locking device, *o o'*, substantially as described.

6. In a mold for making cement pipe, a collapsible core, A, comprising a hollow cylinder or approximate cylinder split longitudinally, and having a thickened edge, *r*, and a thickened beveled egde, *r'*, a door, D, hinged to the edge *r* and beveled at its opposite edge, a yoke, E, pivoted at opposite ends, respectively, to the door and edge *r'*, a suitable locking device, *o o'*, a brace, *p*, and a cam-block, *p'*, substantially as described.

7. In a mold for making cement pipe, the combination of a collapsible jacket in the form, substantially, of a hollow cylinder split longitudinally, and provided with means for holding the separate edges together and for releasing them to collapse the jacket, and a collapsible core, A, within the jacket, and comprising a hollow cylinder or approximate cylinder split longitudinally, and having a thickened edge, *r*, and a thickened beveled edge, *r'*, a door, D, hinged to the edge *r* and beveled at its opposite edge, a yoke, E, pivoted at opposite ends, respectively, to the door and edge *r'*, a suitable locking device, *o o'*, a brace, *p*, and a cam-block, *p'*, substantially as described.

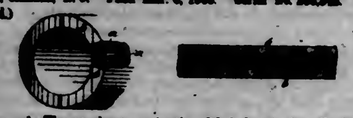
386,980. MECHANICAL TELEPHONE. A. WILFRED HALL, New York, N. Y. Filed Sept. 26, 1887. Serial No. 250,553. (No model.)



Claim.—1. The combination, in a mechanical telephone, of a diaphragm, a wire or string placed in front of and across the diaphragm, and a bearing or support for the said wire or string upon the diaphragm at or near the center of the latter, substantially as and for the purpose herein set forth.

2. The combination, with the diaphragm and the wire or string attached thereto at a point distant from the center thereof and the support for the wire or string at or near the center of the diaphragm, of means, substantially as herein described, of adjusting or varying the said point of attachment, for the purpose herein set forth.

386,981. NON-HEAT-CONDUCTING FABRIC. HIRAM M. HASTINGS, Canton, N. Y. Filed Mar. 6, 1888. Serial No. 266,542. (No model.)

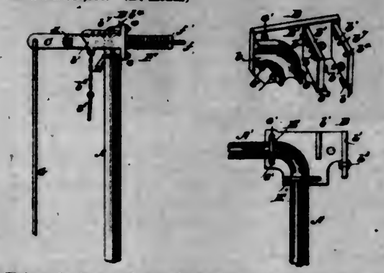


Claim.—1. The non-heat-conducting fabric herein described, consisting of tale-gram and a plastic mineral substance in which the spires

of the said grass are embedded and enveloped, and which fills the interstices between them and unites them, substantially as herein set forth.

2. The non-heat-conducting fabric herein described, consisting of a woven fabric of tale-grass and a plastic mineral substance in which said woven fabric is embedded and enveloped, substantially as herein set forth.

886,982. SPRING ATTACHMENT FOR AGRICULTURAL IMPLEMENTS. CHARLES B. HERTMAN, Vincennes, Ind. Filed Sept. 1, 1887. Serial No. 248,530. (No model.)



Claim.—1. An attachment for implements of the class specified, comprising the bracket B, having cheek-plates *b'*, a forked lifting-lever, C, supporting the shovels and pivoted at one end to the cheek-plates, link D, pivoted between the forked arms of said lifting-lever, and a spring-rod connected with the forward end of said link, to operate substantially as and for the purpose specified.

2. The combination, with an implement of the class specified, of the bracket B, having cheek-plates *b'* projecting therefrom, and having a step cheek or cheeks at the rear or outer end, a forked lifting-lever, C, supporting the shovels and pivoted at one end to the legs upon the cheek-plate, link D, pivoted between the forked arms of the said lifting-lever, and a spring-rod connected with said link, substantially as described, for the purpose described.

3. An implement of the class specified, comprising a bracket, B, having projecting cheek-plates, one of which is provided with an adjustable step-cheek, the lifting-lever C, pivoted thereto, a link, D, and an notching-spring, substantially as and for the purpose described.

4. The combination, with the implement of the class specified, of a bracket secured to the frame, having projecting cheek-plates, a forked lifting-lever pivoted to the said cheek-plates, a link, D, pivoted at one end to said lifting-lever intermediately of the length of such lever and connected with the notching-spring, the said connections being held substantially in line with each other when the shovels are at work, substantially as described, and for the purpose specified.

5. The combination, with the implement of the class specified, of a bracket, B, secured to the frame, having projecting cheek-plates *b'* and a cheek step or stops, *b²*, at the end thereof, a lifting-lever, C, link D, spring-actuated rod *f*, and shovel-gang suspension-rod G, combined to operate substantially as described, for the purpose specified.

6. The combination, with the implement of the class specified, of a bracket, B, secured to the frame, having projecting cheek-plates *b'* and cheek-holes *b³* at the ends of said plates, lifting-lever C, link D, spring-actuated rod *f*, shovel-gang suspension-rod G, and a cotter secured to the bracket and adapted to support the said lifting mechanism in their raised position, substantially as described.

7. The combination, with the implement of the class specified, of a bracket, B, secured to the frame, having projecting cheek-plates *b'* and cheek-holes *b³*, lifting-lever C, link D, spring-actuated rod *f*, shovel-gang suspension-rod G, and a cotter adapted to the cheek-holes *b³* to limit the movement of the plow-gang, substantially as described.

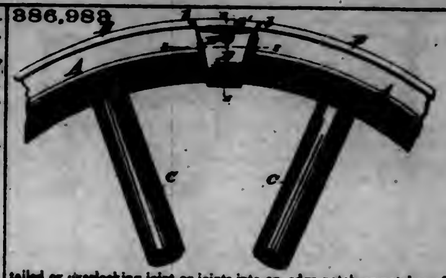
8. The combination, with the implement of the class specified, of a bracket, B, secured to the frame and having a check step or stops, *b²*, cheek-holes *b³*, cheek-holes *b³*, a cotter to fit said check-holes, a lever, C, link D, spring-actuated rod *f*, and gang-suspension rod G, substantially as and for the purposes described.

9. In an attachment substantially as described, a bracket having a main or front plate adapted for connection with the machine-frame, and the cheek-plates extended from the main plate and provided with bearings for the pivots of the lever and link and with a check step or stops, substantially as and for the purposes specified.

886,988. FELLY-CLIP. JAMES HUGHES and JOHN SULLIVAN, Grand Rapids, Mich. Filed Mar. 17, 1888. Serial No. 267,982. (No model.)

Claim.—1. A felly and tire clip fixed to the felly and entering an edge notch or notches of the wheel-tire, substantially as herein set forth.

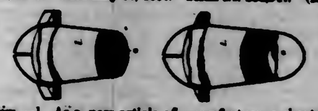
2. A felly and tire clip fixed to the felly and fitting by a dovetailed or overlocking joint or joints into an edge notch or notches of the wheel-tire, substantially as herein set forth.



3. A felly and tire clip consisting of a plate fitted around the inner edge and opposite faces of the felly and fixed thereto and entering opposite edge notches of the wheel-tire, substantially as herein set forth.

4. A felly and tire clip consisting of a plate fitted around the inner edge and opposite faces of the felly and fixed thereto, and having opposite dovetailed extremities which enter recesses in opposite edges of the wheel-tire and overlock the tire at said recesses, substantially as herein set forth.

886,984. TIP FOR GAS-BURNERS. WALTER M. JAMESON, New York, N. Y. Filed May 17, 1887. Serial No. 238,547. (No model.)



Claim.—1. As a new article of manufacture, a sheet-metal gas-burner tip, consisting, essentially, of a tapering body or shank, a head secured in the larger end of the shank, and a cup-shaped screen, the side edges of which are shaped to conform to the inner surface of the shank, substantially as set forth.

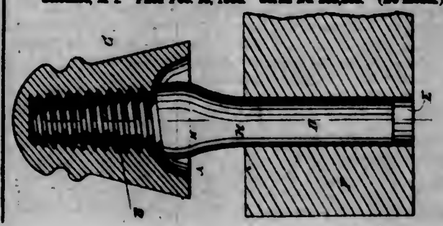
2. As a new article of manufacture, a sheet-metal gas-burner tip, consisting, essentially, of a tapering shank having its lower or smaller end perforated, a head secured to the larger end of said shank, and a cup-shaped screen located within the tip, the sides of said screen conforming in shape to the inner surface of the tip, substantially as set forth.

886,985. APPARATUS FOR DYEING. GUSTAV JAMESSON, Rydboholm, Sweden. Filed Oct. 20, 1887. Serial No. 252,570. (No model.) Patented in Germany Jan. 6, 1887, No. 42,688; in Sweden Feb. 4, 1887, No. 916, and in Italy Apr. 16, 1887, No. 21,331



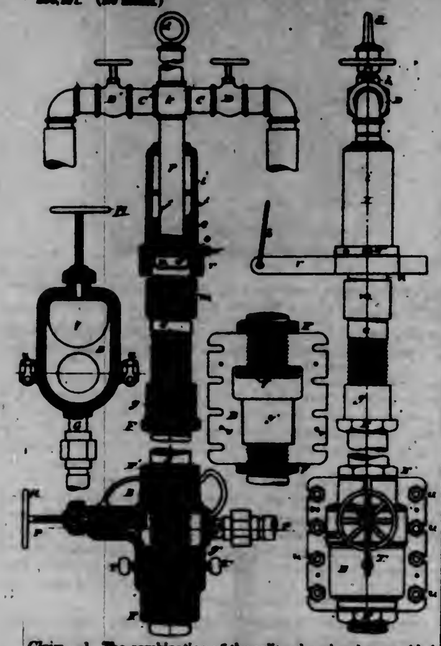
Claim.—In an apparatus for dyeing loose cotton or like material, the combination, with a vat, of a suction-pipe for drawing the liquid from the vat, a pump connected with said suction-pipe, a discharge-pipe connected with the pump and terminating in the vat, and a receptacle for receiving the concentrated dye-solution, located above the level of the dye-liquor in the vat and connected outside of the vat with the suction or discharge pipe, so that said solution is intimately mixed with the dye-liquor, substantially as herein shown and described.

886,986. ELECTRIC INSULATOR-PIN. WILLIAM B. JOSLIN, South Setauket, N. Y. Filed Feb. 13, 1888. Serial No. 263,833. (No model.)



Claim.—As an improved article of manufacture, a wooden insulator-pin, A, formed with a threaded head, B, the neck E, which is tapered downward, and the shank D, forming a smooth non-shouldered continuation of said neck, adapting it to be driven into a socket of cross-arm F, substantially as described, and for the purposes specified.

886,987. APPARATUS FOR THE FORMATION OF DEEP WELLS. CHARLES B. KNOX, New Orleans, La. Filed Sept. 16, 1887. Serial No. 250,161. (No model.)

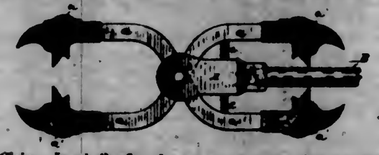


Claim.—1. The combination of the split-valve chamber provided with the induction-passage and having the internal screw-threads at its opposite ends to engage the adjacent threaded ends of the two pipes, its valve, and the clamping-bolts to secure in parts about the pipe ends with its threads fitting the threads on the pipe ends, substantially as and for the purpose set forth.

2. The combination of the split-valve chamber provided with the induction-passage and having the internal screw-threads at the opposite ends, the valve sliding grooves of the valve-chamber, the clamping-bolts, the threaded coupling within the valve-chamber, and the pipe-sections having threads for engaging the threads of the coupling and those at the ends of the valve-chamber, substantially as and for the purpose set forth.

3. The combination of the swivel apparatus provided with the pipe *p*, the induction-passage (or passages) connecting therewith, the threaded nipple or pipe *c*, having connection with the lower end of the pipe *p*, the coupling connected with the lower end of the nipple or pipe *c*, the pipe-section connected with the coupling, the split-valve chamber provided with the induction-passage and having the internal end threads for engaging the nipple or pipe *c* and pipe-section threads, the slide-valve, the induction-passage G, the means for clamping the sections of the valve-chamber together, and a set screw or screws engaging the valve-chamber with the coupling, substantially as and for the purpose set forth.

886,988. BOILER-TUBE CLEANER. GREGORY B. KENDALL, Buffalo, N. Y. Filed Apr. 30, 1887. Serial No. 236,033. (No model.)



Claim.—In a boiler-flue cleaner, arms *a a*, crossed at or near their center and pivoted there in or to a holder, A, the ends of said arms being provided with scraping-edges, and a suitable spring, *c*, working in connection with said arms, all substantially as and for the purpose specified.

886,989. NUT-LOCK. WILEY S. KNUE, Verona, Miss. Filed June 30, 1887. Serial No. 243,054. (No model.)



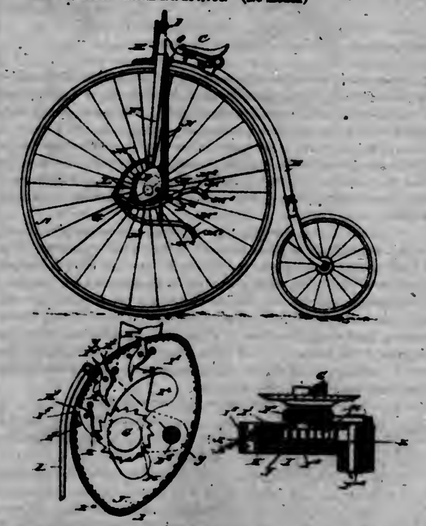
Claim.—1. A bolt having its threaded portion formed with a flat side or sides, the threads on such portion being continuous or intact at their bases, whereby a bearing face or faces will be provided for the locking-key without materially affecting or diminishing the strength of the threads, substantially as and for the purposes specified.

2. As an improved article of manufacture, the bolt herein described, having the head 1, the angular portion 2 next to said head, the unthreaded polygonal portion, and the threaded polygonal portion, the threads of the latter portion being intact and continuous at their bases, whereby a bearing is provided for the nut-locking key without diminishing the strength of the threads, substantially as and for the purposes specified.

3. A bolt consisting of a bar or body having one or more flat sides and provided with a spiral circumferential groove forming threads on the said flattened sides, such groove being unbroken from end to end, forming a continuous unbroken thread, substantially as and for the purposes specified.

4. The combination of a bolt having its threaded portion formed with a flat side or sides, the threads on such portion being continuous or intact at their bases, whereby a bearing face or faces will be provided for the locking-key without materially affecting or diminishing the strength of the threads, the nut turned on the said bolt and having a groove or keyway, *b*, and the key driven in said keyway and bearing on one of the flat sides of the bolt, substantially as and for the purposes specified.

886,990. VELOCIPEDE. GERRIT KNOX, Amsterdam, N. Y. Filed Dec. 12, 1887. Serial No. 257,731. (No model.)



Claim.—1. In a velocipede, the combination, with a drive-axle and its bearing, of a ratchet-wheel on the axle, a rocking cone pivoted to the frame eccentrically to the axle, a pawl carried thereby and arranged to engage the ratchet-wheel, a pedal-lever, and connections for operating the rocking cone thereby, substantially as described.

2. In a velocipede, the combination, with a drive-axle and its bearing, of a ratchet-wheel on the axle, a rocking cone pivoted to the frame eccentrically to the axle, a pivotal plate on the axle of and adapted to play within the cone, and tailed pawls pivoted to said plate, the cone having shoulders arranged to bear upon the tails of the pawls

and throw the same into engagement with the ratchet-wheel on the axle, substantially as described.

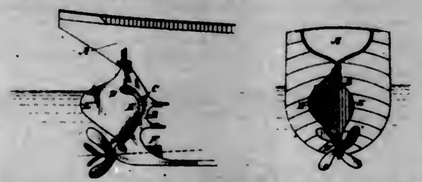
3. In a velocipede, the combination, with a drive-axle and its bearing, of a ratchet-wheel on the axle, a rocking case pivoted eccentrically to the axle, a series of pivotal pawls carried by the case and arranged in a segmental row having the pivot of the case as the center, a pedal-lever, and connections for operating the rocking case thereby, substantially as described.

4. The pedal-lever having a vertical curve or incline at its rear end and laterally-projecting pedals at both the head and the foot of said curve or incline at different distances from the pivotal point of the lever, as and for the purpose specified.

5. The combination, with the frame, the axle, the ratchets thereon, the transverse walking-beam O, the treadle-levers pivoted to the frame, and rods N N, pivoted to the ends of the said beam and to the treadle-levers, of the pins F^3, secured to the opposite sides of the frame in rear of the axle, the case I, mounted to rock on the said pins and having side slots, I^3, to receive the axle and peripheral slots I^2, the plates mounted on the pins F^3, to rock within the case I, and provided with segmental series of spring-pawls, having tails projecting into the slots I^2, and the links L, connecting the rocking cases with the treadle-levers, substantially as set forth.

6. In a velocipede, the combination, with the steering-head N, having a transverse groove, O', extending across the vertical face of its back, and two apertures extending through it at opposite sides of a central vertical line, of the clamp Q, having a groove on its inner face to register with groove O', and two integral bolts projecting from one edge and extending through the said apertures and provided with nuts, the opposite edge of the clamp resting against the back or face of said head, and the handle-bar held in place by said clamp, substantially as set forth.

386,991. PROPULSION AND STEERING OF STEAM-VESSELS. CARLOS B. LAMBERT, San Francisco, Cal. Filed Dec. 8, 1887. Serial No. 257,266. (No model.)



Claim.—1. A conoidally-shaped propeller secured to a shaft which passes through the stern-post below the rudder-pintles, in combination with a triangular-shaped rudder with curved outline, having the broadest portion near the top and tapering toward the point at the lower pintle, and a stern-post made concave in front of the pintle attachments of the rudder to admit the forward curved edge of the latter turning within the concavity, while the rear portion of the rudder and the propeller project entirely behind the stern-post, substantially as herein described.

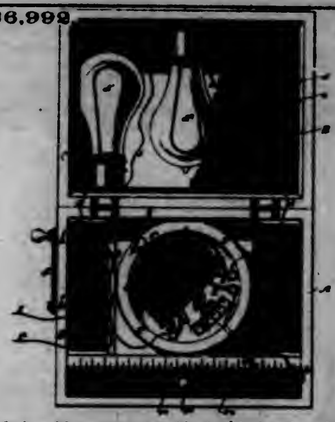
2. A vessel having the rear edge of the stern-post made concave, with pintle attachments above and below the concave portion, a rudder hung to said attachments and having its forward portion curved approximately to fit the concavity of the stern-post, and its rear portion increasing in horizontal diameter from the lower pintle upward toward the water-line, in combination with a propeller having blades extending backwardly from the hub and approximately following the rear edge of the rudder, and a shaft to which the hub of the propeller is fixed, extending from the stern-post below the lower pintle of the rudder, substantially as herein described.

386,992. GALVANOMETER. PHILIP LAMB, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct 29, 1887. Serial No. 253,722. (No model.)

Claim.—A portable electric meter consisting of the combination of a divided circuit, one branch containing carbon resistances and the other a metallic resistance, an indicating-needle operated by the current traversing the two branches, a containing-box having a lid in which the carbon-resistances are placed while the metallic resistance is in the other portion of the box, an adjustable resistance in series with said metallic resistance placed in the front of the box, consisting of a

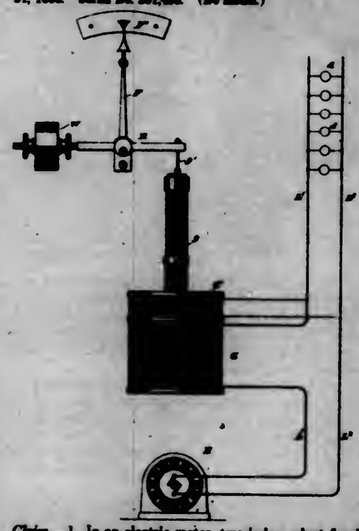


386,992



coil of wire with a contact movable along its length, and a guard-protection for the carbon resistances, substantially as described.

386,993. GALVANOMETER. PHILIP LAMB, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Jan. 21, 1888. Serial No. 261,602. (No model.)



Claim.—1. In an electric motor, two independent fixed energizing-coils, one adapted to be connected in series with the work-circuit and the other in shunt therefrom, and a core movable with reference to both coils, substantially as described.

2. The combination, in an electric motor, of a movable core, a solenoid for actuating the same, designed to be connected in series with the work-circuit, and a second solenoid applied to said core and designed to be connected in shunt upon the work-circuit, said second solenoid having a fixed position with reference to the series-coil.

3. In an electric motor, the combination, with a coil connected in series with the work-circuit and a core acted upon thereby and movable into and out of the coil, of a second solenoid connected in shunt upon the work-circuit and fixed upon the end of the first-named solenoid at which the core enters.

4. In an electric motor, two independent fixed solenoids acting in the same magnetic sense upon a core common to both and movable with reference thereto, one of which solenoids is traversed by a current dependent upon the consumption in the work-circuit, and the other by a current approximately constant under all conditions.

386,994. GAS-HEATER. ARMIN LANDAU, Chicago, Ill. Filed Feb. 13, 1888. Serial No. 263,894. (No model.)

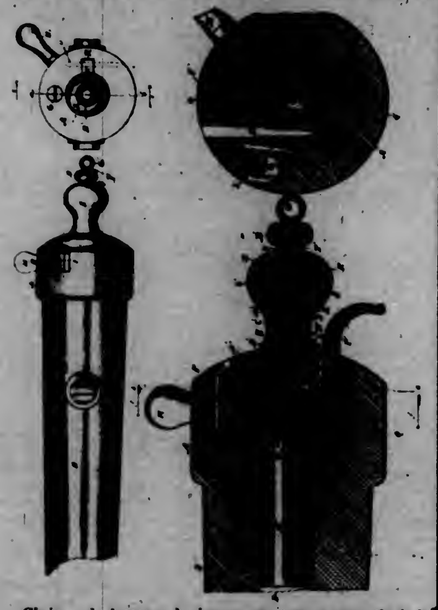
Claim.—1. In a gas-meter constructed as shown, the combination, with the cups *d* of the expansible chamber, of the inner cups, *e*, provided with a cover, *e'*, having an opening in the center provided with a neck, e^2, and flange e^3, as and for the purpose specified.

2. In a gas-meter of the construction shown, the cup *d* of the expansible chamber provided with a stud, d^7, in combination with the rods L and d^9, said rods being hinged to opposite ends of said stud, so as to be flexible through intervening pieces coincident with said stud, and weighted lever d^8, as and for the purpose specified.

3. In a gas-meter constructed as shown and described, the cups *d* of the expansible chamber provided with a rod, F, rigidly attached at *f* and extended in opposite direction from said point, in combination with an arm, *f'*, and the cover d^4 and its flange provided with openings in which said rod can move to guide the movement of the cups, as specified.

4. In a gas-meter constructed as shown and described, the cups *d* of the expansible chamber balanced by a weight-pressed rod connected in the center and guided by a single rod rigidly attached to the top plate and sliding in openings above and below its point of attachment to the cup, in combination with links L, bell-crank shown K, provided with arms *k k'*, links L', and cams *l* of the shafts I, as and for the purpose specified.

386,995. BREECH-LOADING ORDNANCE. JOSEPH P. LAVERTY, New Haven, Conn. Filed Jan. 30, 1888. Serial No. 262,260. (No model.)



Claim.—1. A cannon having an open transverse mortise in its breech and a breech-block fulcrumed therein on a pivot situated in the vertical line through the axis of the bore and thereby virtually balanced, substantially as set forth.

2. A cannon having an open transverse mortise in its breech, a breech-block located therein, and a pivot for such block located directly above the bore of the gun, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

3. A cannon having a transverse mortise in its breech, and an elongated breech-block located in such mortise and pivoted about midway between the ends of its longer axis and directly above the bore of the gun, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

4. A cannon having an open transverse mortise in its breech, and an elliptical breech-block located in such mortise and fulcrumed about midway between the ends of its longer axis, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

5. A cannon having an open transverse mortise in its breech, and an elliptical breech-block located in such mortise having its inner and outer edges respectively conformed to the curved wall of the mortise and the exterior curve of the breech, and fulcrumed about midway between its ends above the bore of the gun, whereby the block is balanced against lateral throw on discharging the gun, substantially as set forth.

6. A cannon having an open transverse mortise in its breech, and a breech-block pivoted about midway between its ends and provided in its outer edge and near one of its ends with an open curved slot arranged to be registered with the bore of the gun when the block is lifted, whereby lateral throw of the block is prevented on discharging the gun, substantially as set forth.

7. A cannon having a transverse mortise in its breech, a breech-block pivoted in such mortise, and a knob made independent of the block and carrying hammer mechanism for actuating the firing mechanism which is carried by the block, substantially as set forth.

8. A cannon having a transverse mortise formed in its breech, a breech-block pivoted in such mortise, and a knob pivoted to the breech at one side of the bore of the gun and carrying hammer mechanism actuating the firing mechanism carried by the said block, substantially as set forth.

9. A cannon having a transverse mortise in its breech, a breech-block located in such mortise, and a knob made movable independent of the block, by which it is locked in its normal or firing position, in which it closes the bore which extends through the breech, substantially as set forth.

10. A cannon having a transverse mortise in its breech, a breech-block located in such mortise and having a slot in its rear face, and a knob closing the rear end of the bore and having an arm pivoted in a slot in the breech, normally engaging with the rear face of the breech-block to lock the knob, which is movable only when the slot in the block is registered with its arm, substantially as set forth.

11. A cannon having a transverse mortise in its breech, a breech-block pivoted in such mortise and carrying a firing-pin, and an independent knob carrying a hammer and pull-pin located behind the block in position for the engagement of the hammer with the firing-pin when such block and knob are in closed position, substantially as set forth.

12. A cannon having a transverse mortise in its breech, a breech-block located in such mortise, carrying a firing-pin and having its rear face depressed around such pin, and an independent knob carrying a hammer and a pull-pin, the hammer being adapted to enter the depression in the block in striking the pin, substantially as set forth.

13. In the firing mechanism of a cannon, the combination, with a firing-knob, of a longitudinally-movable firing-hammer, a pull-pin located in such hammer, longitudinally movable therein and normally coupled therewith, and a trip carried by the knob for disengaging the hammer and pull-pin, substantially as set forth.

14. A cannon having a chambered firing-knob, a chambered firing-hammer located therein and provided with a longitudinal slot bridged at its forward end by a lug, a pull-pin located within the hammer and provided with an elastic finger having a lug and a beveled face, a trip carried by the knob and engaging such beveled face for disengaging the lug of the finger from that of the hammer, and a spring for throwing the hammer forward and taking its recoil.

15. A cannon having a chambered firing-knob, a longitudinally-movable chambered firing-hammer located therein and shouldered at its forward end, a pull-pin located in the said hammer, a washer interposed between the forward end of the spring, which is on one side of it, and the forward end wall of the knob-chamber and the shoulder of the hammer, which are on the other side of it, and an independent spring-recovered firing-pin, substantially as set forth.

386,996. PHOTOGRAPHIC CAMERA. WILLIAM H. LEWIS, Brooklyn, assignor to H. & H. T. Anthony & Company, New York, N. Y. Filed Jan. 6, 1888. Serial No. 259,980. (No model.)

Claim.—1. The combination, with a photographic camera, of a

386,996.



finder consisting of a concave lens and a reflecting-surface placed behind the lens and at an angle thereto, and apertures in the camera in front of the lens and above the reflecting-surface, the latter provided with a cover having a mirror on its under side, substantially as set forth.

2. The combination, with a photographic camera, of a finder consisting of a concave lens, a diaphragm covering a portion of the lens having a square aperture therein, and a reflecting-surface placed behind the lens and at an angle thereto, and apertures in the camera in front of the lens and above the reflecting-surface, substantially as set forth.

3. The combination, with a photographic camera, of a finder consisting of a concave lens, diaphragms applied over a portion of the lens, a reflecting-surface placed behind the lens and at an angle thereto, and apertures in the camera, one in front of the lens and another above the reflecting-surface, the latter being provided with a cover having a mirror on its under side, substantially as set forth.

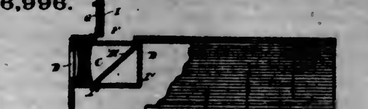
4. The combination, in a finder for photographic cameras, of a concave lens, a mirror placed behind the lens and at an angle thereto, and hair-lines or their equivalent to determine the center of the picture, substantially as set forth.

5. The combination, in a finder for photographic cameras, of a lens, a diaphragm covering portions of the lens, hair-lines or their equivalent which intersect at or near the center of the lens, a mirror placed behind the lens and at an angle thereto, an aperture in the camera in front of the lens and another over the mirror, and a cover for said last-named aperture provided with a mirror on its under side, substantially as and for the purpose set forth.

6. A finder for photographic cameras, comprising a finder-box complete in itself when separate from the camera, made substantially as described and shown, and having an opening at one end and another at the top provided with a cover, a concave lens, a reflecting-surface behind the lens set at an angle thereto, and another reflecting-surface arranged on the under side of the cover, substantially as set forth.

7. A finder for photographic cameras, comprising a finder-box complete in itself when separate from the camera, made substantially as shown and described, and having an opening at one end provided with a lens and another at the top, and two reflecting-surfaces, the first arranged to receive the image from the lens and the other to receive it from the first by reflection, substantially as set forth.

386,997. DRAIN FOR STALLS. MARTIN LOGAN, New York, N. Y. Filed May 22, 1888. Serial No. 274,691. (No model.)



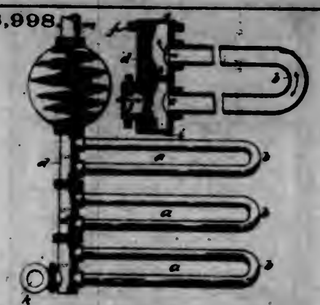
Claim.—1. A drain for stalls, consisting of a metal body having the projections *b'* on its under face, essentially U-shaped gutters and dovetail grooves produced alternately in its upper face, and lugs *b*, formed at the outer ends of said dovetail grooves, and slats of a softer material held in said dovetail grooves, substantially as shown and described.

2. In a drain for stalls, the combination, with a metal body having projections upon the under face and longitudinal essentially U-shaped gutters and dovetail grooves alternately produced in its upper face, of slats of a softer material detachably held in said dovetail grooves, substantially as and for the purpose specified.

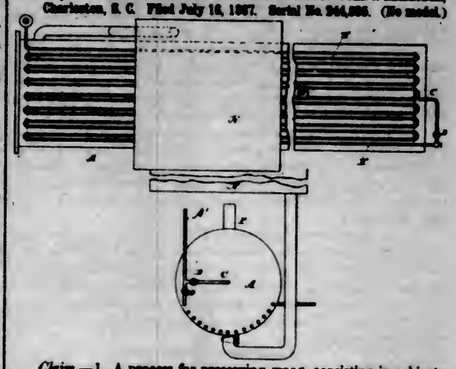
3. In a drain for stalls, the combination, with a metal body having projections on its under face, longitudinal essentially U-shaped gutters and dovetail grooves alternately produced in its upper face, and a flange at one extremity of said gutters, of slats of a softer material detachably held in said dovetail grooves, substantially as and for the purpose specified.

386,998. BOILER. WILLIAM B. MACK, Boston, Mass. Filed Aug. 20, 1887. Serial No. 247,492. (No model.)

Claim.—The combination, with a pair of return-tubes, of a connecting-section, *d*, to which said tubes are attached, said connecting-section being provided with a partition, *e*, at a central point, and on one end with a rib, *g*, and on the other end with a groove or depressed seat, *h*, as set forth.



386,999. PROCESS OF PRESERVING WOOD. JOHN C. MALLORY, Charleston, S. C. Filed July 16, 1887. Serial No. 244,186. (No model.)



Claim.—1. A process for preserving wood, consisting in subjecting the wood to the action of steam to open the cells of the wood, then drying the wood, and then filling a chamber containing the wood with the preservative liquid and expanding the latter by heat and forcing it into the cells of the wood, substantially as set forth.

2. In a process for preserving wood, consisting in first subjecting the wood to the direct action of steam to open and expand the cells, then drying the wood by the radiant heat of high-pressure steam, and then filling the chamber containing the wood with a liquid preservative and applying heat to the latter and expanding its mass and forcing a portion thereof into the cells of the wood, substantially as set forth.

387,000. REMOVABLE CALK FOR HORSESHOES. THOMAS R. MASON, Trenton, N. J. Filed Feb. 25, 1888. Serial No. 265,260. (No model.)



Claim.—1. A detachable calk for horseshoes, composed of a clamp to be attached to the shoe, consisting of rocking portions formed with suitable clips and connected together, and a removable calk having a wedge-shaped portion engaging corresponding recesses in the edges of the rocker portions, and a screw-threaded end engaging a nut located within the rocker portions, substantially as described.

2. A detachable calk for horseshoes, composed of a clamp consisting of rocker portions connected by straps and bolts, and formed with a hooked clip and a straight clip, and having beveled semicircular recesses in their edges, and an internal recess containing a nut, in combination with a removable calk having a tapered shoulder engaging the beveled semicircular recesses, and a screw-threaded end engaging the nut within the rocker portions, substantially as described.

3. The combination, with the toe-clamp, consisting of rocker portion 2, having straight clip 7, and rocker portions 1, having clips 6, of calks 8, having a tapering shoulder, 9, engaging the semicircular recesses 5 in the portions 2 and 1 1, and a screw-threaded end, 10, engaging a nut, 11, located in the recess 12 in the rocker portions 2 1 1, substantially as described.

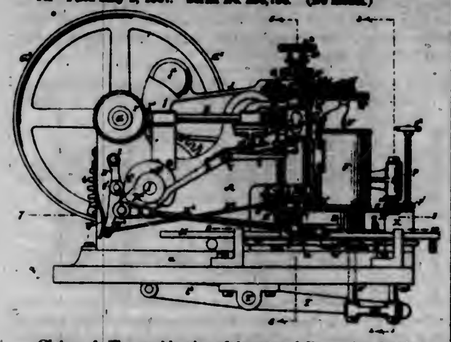
387,001. GRAIN-MEASURING SPOUT. JOHN B. HOFFMASTER, Battle Creek, Mich. Filed Apr. 2, 1888. Serial No. 269,358. (No model.)



Claim.—1. The spout A and its inner frame, B, having a curved open bottom, and a curved cut-off or valve controlling said opening, in combination with a lever for operating the cut-off, a cam carried by said cut-off, a second valve adjustably secured to the spout, and a pivoted adjustable rod between said valve and cut-off, whereby the cut-off and lower valve operate in unison, substantially as described.

2. The spout A, the inner frame, B, having an open bottom, the curved valve having side arms provided with short shafts, a pinion on one of said shafts and a cam on the other, a lever having a toothed segment for operating the pinion and valve, a pivoted rod, *g*, actuated by the cam, a second rod, *f*, adjustably attached to the rod *g*, and a valve adjustably attached to the spout, and having a crank-shaft attached to said rod *f*, whereby said valve is operated during the movement of the curved valve, substantially as described.

387,002. PILL-MACHINE. JOSEPH A. HOFFMAN, Philadelphia, Pa. Filed May 2, 1887. Serial No. 236,703. (No model.)



Claim.—1. The combination of the rotated die-carrier, the ejector, a platform therefor, and a pin for depressing the ejector, said pin and platform being geared together, so as to be adjusted simultaneously, but the pin having a vertical movement independent of the platform, substantially as described.

2. The combination of the rotated die-carrier, the ejector, a platform therefor carried by a rod, a depressing-pin, also carried by a rod, gearing for connecting said rods, and mechanism for reciprocating the rod of the depressing-pin, substantially as and for the purpose set forth.

3. The combination of the threaded rod *x*², carrying the ejector-platform and, provided with a toothed nut, X', the threaded rod *s*, carrying the depressing-pin and geared to the rod *x*², an operating-lever having a threaded block adapted to the rod *s*, and an operating-shaft having a pinion for operating the nuts of the two rods, so as to simultaneously adjust the platform and depressing-pin, all substantially as specified.

4. The combination of the frame of the machine, a rod, *s*, adapted to slide in said frame, a lever, T, connected to said rod and to operating mechanism, whereby the raising and lowering of the rod is effected, a head, S, on said rod, and a depressing-pin carried thereby, all substantially as and for the purpose specified.

5. The combination of the die-carrier with a rod guided in the frame of the machine, and having a head, S, with two arms, one carrying a depressing-pin and the other having a steady-pin, all substantially as specified.

6. The combination of the die-carrier of a pill-machine, provided with a series of dies, and a rotating brush having its cleaning-surface at right angles to the axis of rotation, whereby the end of the brush acts upon the face of the die, substantially as specified.

7. The combination of the hopper and a shaft carrying a retarding-flange and agitators near the bottom of the hopper, as and for the purpose specified.

8. The combination of the hopper, having an outlet at or near the bottom and an internal flange above the same, with a vertical shaft provided with agitators below said flange, all substantially as specified.

9. The combination of the rotated die-holder carrying ejectors, a lever having a lifter-arm, a guided block acted on by said arm, and an adjusting device for raising and lowering the block, all substantially as specified.

10. The combination of the upper die of a pill-machine with a revolving die-cleaner having its cleaning-surface at right angles to its axis of rotation, and carried by an arm movable into and out of the path of the die, and means for positively rotating said die-cleaner, substantially as and for the purpose specified.

11. The combination of the upper die of a pill-machine with a revolving die-cleaner having its cleaning-surface at right angles to its axis of rotation, and movable into and out of the path of the die, and free to move vertically, so as to press the cleaner against the face of the die, all substantially as specified.

12. The combination of the upper die of a pill-machine with an arm carried by a spindle having its bearings in the frame of the machine, a shaft, Q, carrying a driving-pulley, a cleaner-receptacle free to turn in the arm, and a belt, whereby the die-cleaner is rotated from the pulley on the shaft Q, all substantially as specified.

13. The combination of the upper die of the machine, and an arm carried by a spindle and provided at its outer end with a die-cleaner, with a lever and cam for raising the die-cleaner and pressing it against the face of the upper die while the latter is in the raised position, all substantially as specified.

14. The combination of the upper die of the machine, and an arm carried by a spindle and having at its end a die-cleaner, with a lever, cam, and connecting devices, whereby said arm is swung so as to carry the cleaner into and out of the path of the die, all substantially as specified.

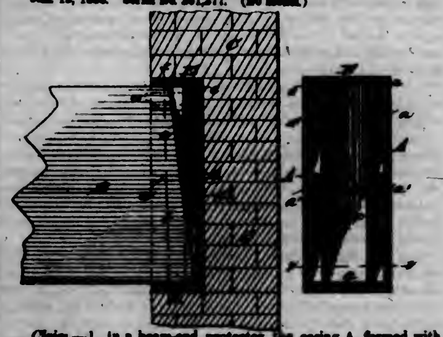
15. The combination of the upper die of the machine, the arm carried by a spindle and provided at its outer end with a die-cleaner, a lever for lifting the spindle, and means for adjusting the latter, so as to govern the pressure of the cleaner against the die, all substantially as specified.

387,003. PLOW. REUBEN HOFFMASTER, Hickory, N. C. Filed May 5, 1888. Serial No. 272,942. (No model.)



Claim.—The combination of the plow having the rearward-extending landside-plate D, provided with the longitudinal recess E and the transverse openings N, the share or point arranged on the bottom of the plow and having the longitudinal depending flange G and the openings H, the bolts engaging said openings and securing the share to the mold-board, the plate or block L, having the flange arranged in the recess E, said plate or block engaging the rear end of the flange G, and the bolt extending through the flange of said block and one of the openings N, for the purpose set forth, substantially as described.

387,004. BEAM-END PROTECTOR. MARSH. W. HITCHELL, New Albany, Ind., assignor of one-half to Henry A. Gentz, same place. Filed Jan. 19, 1888. Serial No. 261,277. (No model.)



Claim.—1. In a beam-end protector, the casing A, formed with interior side guides, *a a*, and provided with a floor-recess, *d*, forming a continuous air-space at the sides and bottom of the beam end, substantially as herein set forth.

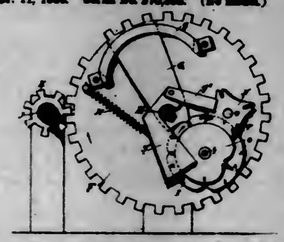
2. In a beam-end protector, the casing A, formed with interior

side guides, *a a*, which do not reach the back wall of the casing, and provide a continuous air-space at the sides and end of the beam, substantially as herein set forth.

3. In a beam-end protector, the casing A, formed with interior side guides, *a a*, which do not reach the back wall of the casing, and said casing formed, also, with a floor-recess, *d*, thereby providing an air-space entirely around the end of the beam, substantially as herein set forth.

387,005. CALENDAR-CLOCK. PETER F. HERBR, Phœnix, Ariz.

Filed Apr. 11, 1888. Serial No. 270,202. (No model.)



Claim.—1. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth movable and arranged to align beside one or more of the fixed teeth, whereby the number of acting teeth in the wheel may be varied, substantially as herein described.

2. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth movable and arranged to align beside one or more of the fixed teeth, whereby the number of acting teeth in the wheel may be varied, said wheel having a monthly period of revolution, in combination with a shaft on which the wheel is mounted and a hand carried by the shaft and moving over a dial to indicate the day of the month, substantially as herein described.

3. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth carried by a pivoted slide or arm occupying a radial plane on the side of the wheel, whereby one or more of its teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, substantially as herein described.

4. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth carried by a pivoted slide or arm on the side of the wheel, whereby one or more of its teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, in combination with a cam-disk acting on said slide or arm to regulate its movement to present the required number of acting teeth for each month, substantially as herein described.

5. In a calendar clock, a thirty-one-tooth wheel having a portion of its teeth carried by a pivoted slide or arm on the side of the wheel, whereby one or more of its teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, in combination with a cam-disk acting on said slide or arm to regulate its movement to present the required number of acting teeth for each month, and a spring secured to the slide or arm for moving it, substantially as herein described.

6. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth carried by a pivoted slide or arm on the side of the wheel, whereby one or more of its teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, in combination with the rotary cam-disk carried by the wheel and having its rim composed of a series of cam-surfaces successively acting against the butt of the slide or arm to regulate its movement to present the required number of acting teeth for each month, substantially as herein described.

7. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth carried by a pivoted slide or arm on the side of the wheel, whereby one or more of its teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, in combination with a rotary cam-disk carried by the wheel, and having its rim composed of a series of cam-surfaces successively acting against the butt of the slide or arm to regulate its movement to present the required number of acting teeth for each month, and a spring secured to the wheel and to the slide or arm, whereby said slide or arm is moved to position, substantially as herein described.

8. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth carried by a pivoted slide or arm on the side of the wheel, whereby one or more of its teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, in combination with the cam-disk I, carried by the wheel, and having its rim composed of a series of cam-surfaces successively acting against the slide or arm to regulate and control its movement, as described, and the mechanism for imparting to said cam-disk its rotary motion, consisting of the shaft on which it is mounted, the notched wheel on said shaft, and the fixed teeth engaging said wheel, substantially as herein described.

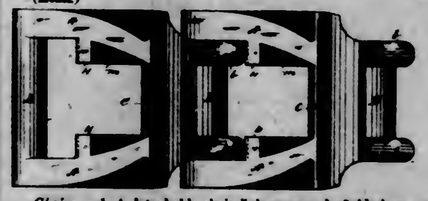
9. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth carried by spring-actuated pivoted slide or arm on the side of the wheel, whereby one or more of its teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, in combination with the rotary cam-disk carried by the wheel, and having its rim composed of a series of cam-surfaces for regulating and controlling the movement of the slide or arm, as described, the toothed flange on said cam-disk, the notched wheel engaging said flange and having a pin, and the lug on the slide or arm for coming in contact with the pin, whereby for February in leap-year the movement of the slide or arm is limited, substantially as herein described.

10. In a calendar-clock, a thirty-one-tooth wheel having a portion of its teeth carried by a spring-actuated pivoted slide or arm on the side of the wheel, whereby one or more of its teeth can be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, and the guide-bracket on the wheel in which the slide or arm works and by which its movement at each end is limited, in combination with the cam-disk acting on the butt of the slide or arm, as described, the shaft, notched wheel, and fixed teeth, whereby the cam-disk is rotated, the toothed flange on said disk, the notched wheel engaging said flange and having a pin, and the contact-lug on the slide or arm, all arranged and adapted to operate as described.

11. In a calendar-clock, the thirty-one-tooth wheel having the movable slide or arm with three teeth, whereby one or more of said teeth may be aligned beside one or more of the fixed teeth to vary the number of acting teeth in the wheel, in combination with the seven-tooth pinion of the week-day-indicating mechanism engaging said wheel, substantially as herein described.

387,006. DRIVE-CHAIN. BENJAMIN F. CREVE, Philadelphia, Pa.

Filed Apr. 16, 1887. Renewed June 30, 1888. Serial No. 278,703. (Model.)



Claim.—1. A detachable chain-link composed of side bars, end bars, and coupling-hook, all of substantially uniform size, the coupling-hook being centrally located upon one of the end bars and the side bars being provided with retaining-lugs located at a distance from the junction of the side bars and end bars equal to the thickness of the ribs on the coupling-hook.

2. A detachable chain-link composed of side bars, end bars, and coupling-hook, all of substantially uniform size, the coupling-hook being centrally located upon one of the end bars and having the outer periphery of its ribs formed on the circumference of a circle, the side bars being provided with retaining-lugs whose faces are correspondingly rounded.

3. A detachable chain-link composed of side bars, end bars, and coupling-hook, all of substantially uniform size, the coupling-hook being centrally located upon one of the end bars, the side bars being provided with retaining-lugs located at some distance from the junction of the side bars and end bars, and whose working-faces are perpendicular to said bars.

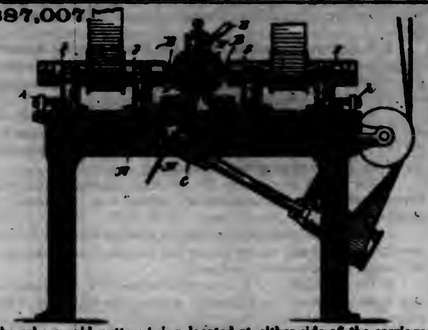
4. A detachable chain-link composed of side bars, end bars, and coupling-hook, all of substantially uniform size, the side bars being provided with retaining-lugs adapted to engage the outer periphery of the coupling-hook of a corresponding link, and internal strengthening-webs for said retaining-lugs, as and for the purpose described.

387,007. STEREOTYPE-PLATE-FINISHING MACHINE. CHARLES S. PALMERSON, Chicago, Ill., assignor to the A. N. Kellogg Newspaper Company, same place. Filed May 10, 1888. Serial No. 273,694. (No model.)

Claim.—1. The combination, in a stereotype-plate-finishing machine, of the carriage for carrying the plate, with disk-cutters having cup-shaped centers and peripheral teeth standing at right angles to



387,007

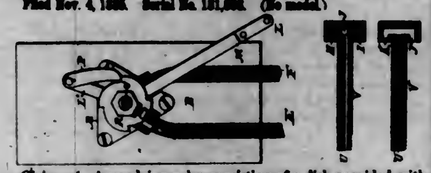


the arbors, said cutters being located at either side of the carriage-path and mounted upon independent arbors, substantially as specified.

2. The combination, with the carriage of a plate trimming or finishing machine, of one or more rotary cutters armed with shaving-teeth, substantially as set forth.

387,008. REVOLVING VALVE. THOMAS O. PERRY, Chicago, Ill.

Filed Nov. 4, 1886. Serial No. 181,892. (No model.)



Claim.—1. A revolving valve consisting of a disk provided with a hollow stem or opening at the center, and having an even number of holes arranged equidistantly in a circle concentric with the valve-axis, alternate holes communicating with the hollow stem or center, and alternate holes passing through the disk, in combination with a valve-seat having two apertures so placed that they may come opposite to and match any two consecutive holes in the valve, substantially as and for the purpose herein described and illustrated.

2. A revolving valve consisting of a disk provided with a hollow stem or opening at its center, and having an even number of holes arranged equidistantly in a circle concentric with the valve-axis, alternate holes communicating with the hollow stem or center, and alternate holes passing through the disk, in combination with a valve-seat having two apertures so placed that they may come opposite to and match any two consecutive holes in the valve, and a cap attached to the valve-seat so as to inclose the disk of the valve and form a convenient pipe terminal or receptacle for fluid flowing into the valve, substantially as herein set forth.

3. In combination with a revolving valve consisting of a disk provided with a hollow stem or opening at its center, and having an even number of holes arranged equidistantly in a circle concentric with the valve-axis, alternate holes communicating with the hollow stem or center and alternate holes passing through the disk, and a valve-seat having two apertures so placed that they may come opposite to and match any two consecutive holes in the valve, a ratchet-wheel having teeth corresponding in number with the holes in the face of the valve secured to the valve-stem, and a pawl pivoted to an oscillating arm so as to engage successively the teeth of the ratchet-wheel, and thus give to the valve a succession of partial revolutions, substantially as and for the purpose herein specified.

4. The combination of the revolving valve V, having ratchet-wheel R rigidly attached thereto or forming a part thereof, with the pawl P, lever L L′ L″, and stop M, for the purpose of rotating the valve always in the same direction about its axis and arresting each successive movement, substantially as herein specified.

5. The revolving valve V, having ratchet-wheel R rigidly attached thereto, in combination with the pawl P, weighted lever L L′ L″, stop M, and wheel Q, having spur or pin S, for the purpose of imparting to the valve at intervals limited partial revolutions always in the same direction about its axis, substantially as herein set forth.

6. The valve-seat A, provided with cap C, in combination with the valve V, having equidistant holes H I J K, and hollow stem U, the ratchet-wheel R, attached to or forming part of the hollow stem, the pawl P, and oscillating lever L L′ L″, substantially as and for the purpose specified.

7. The combination embracing the valve-seat A, cap C, valve V, ratchet-wheel R, pawl P, lever L L′ L″, and stop M, as and for the purpose herein set forth.

8. The combination embracing the valve-seat A, cap C, valve V, with stem U, ratchet-wheel R, pawl P, lever L L′ L″, spring D, nut N, support E, and stop M, as herein set forth.

9. The combination embracing the valve-seat A, valve V, ratchet-wheel R, pawl P, lever L L′ L″, with heavy or weighted arm L, stop M, and wheel Q, with spur or pin S, substantially as herein set forth.

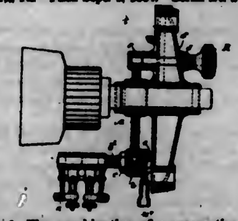
10. The combination embracing the valve-seat A, having cap C, valve V, having hollow stem U, ratchet-wheel R, pawl P, lever L L′ L″, with heavy or weighted arm L, support E, stop M, and wheel Q, having spur or pin S, substantially as herein set forth.

387,009. FASTENING FOR GLOVES OR CORSETS. ALBERT RAUTENSTRAUCH, Berlin, Germany. Filed Aug. 6, 1887. Serial No. 246,476. (No model.) Patented in England May 27, 1887, No. 7,760, and in Belgium June 28, 1887, No. 77,065.



Claim.—The improved construction of fastenings for gloves, trunks, corsets, and other like purposes, consisting of the part *a*, turning on the pin or axis *f*, with the hook *b* thereon, which, by means of the spring *i*, is kept closed across the forks *d d*, and catches and retains the stud *g*, all substantially in the manner and for the purposes hereinbefore described.

387,010. BRUSH-HOLDER FOR ELECTRIC MACHINES. ALBERT SCHMID, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,488. (No model.)



Claim.—1. The combination of a supporting-frame for commutator or collector brushes, an insulated bar carried thereby, two brush-clamps, a symmetrically-formed straight sleeve surrounding the rod upon which the clamps are carried and from either end of which they may be removed, a tension device for each clamp normally pressing the corresponding brush against its commutator, and detachable holding devices for permitting the removal of said sleeve from said bar for reversing its position thereon, thereby bringing the brushes upon the opposite sides of the commutator, substantially as described.

2. The combination of a supporting-frame for commutator or collector brushes, an insulated rod carried thereby, two brush-clamps, a sleeve carrying the same supported upon said rod, a tension device for each clamp normally pressing the corresponding brush against its commutator, and a spring pressing the brush toward or from the ring, accordingly as it is moved to one side or the other of the center of support of the brush.

3. A brush-holding clamp for electric machines, consisting of two movable boxes, an arm extending therefrom, a pivoted yielding rod, to which said arm is pivoted, permitting the turning of said rod upon one side or the other of the line joining the centers of the support of the clamp and of said pivoted rod, and a spring pressing said rod against said arm.

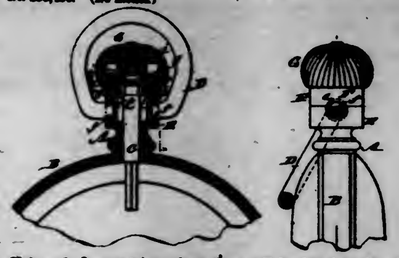
4. The combination of the clamps E′ and E″, the bush H, carrying the same, the rod *e′*, carried upon the bush and connected therewith, the pivoted bar *n′*, and the extension *K′*, coupled therewith, and the yielding spring *e″*, surrounding the bar *n′*, substantially as and for the purpose described.

5. The combination, with a brush-holder for electric machines, of a spring compressed between the clamp and its support and exerting its force in a direction oblique to the support of the clamp, and means for carrying the spring into a second position upon the opposite side of the support.

6. The combination, with an electric generator or motor and its revolving commutator or collector, of a movable brush-holder, and an eccentric-spring exerting stress upon the brush-holder in one direction or the opposite accordingly as the spring is moved from one side to the other of the center of support of the brush-holder.

7. In a brush-holder for electric machines, the combination of a brush-holding clamp, an axis upon which it is movable, an arm extending from the clamp, an arm extending from the axis, and a yielding knee-joint between the clamp and said arm, whereby the position of the clamp may be controlled.

387,011. WATCH-CASE PENDANT. FREDERIC W. SARGENT, Harvey, Idaho. Filed Sept. 20, 1886. Renewed Oct. 27, 1887. Serial No. 253,693. (No model.)



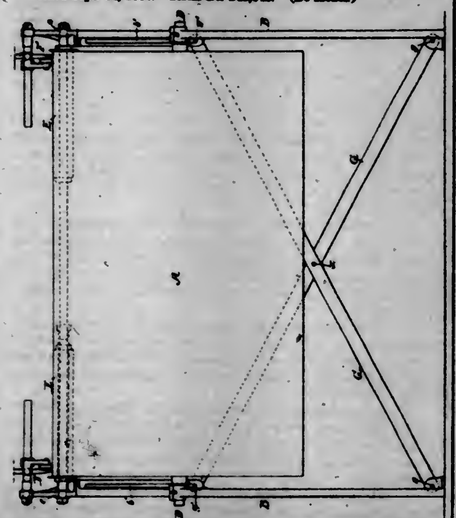
Claim.—1. In a watch-pendant, the cap F, having the collar *d*, a recess, *g*, and a washer, *j*, in the upper part of said recess, in combination with the push-pin C, extending through the collar, recess, and washer, and formed with an annular groove, *i*, and a beveled collar, *l*, and the split ring A, carried by the push-pin in the groove *i* and bearing against the under face of the washer when the push-pin is moved upward and against the base of the recess when moved downward, substantially as set forth.

2. The combination, with the pendant A, having an aperture, *a*, in one side, and a recess, *b*, in the opposite side, of the pendant-bow D, having flanged ends, the sleeve E, and the cap F, substantially as described.

3. The combination, with the pendant A, provided with the aperture *a* and recess *b*, of the pendant-bow D, having flanged and notched ends, the notched sleeve E, the notched cap F, provided with the recess *g*, the push-pin C, carrying the washer A, the bushing *j*, adapted to retain the washer *h* in the recess *g*, and the milled head G, substantially as described.

4. The combination, with the pendant A, provided with the aperture *a* and recess *b*, of the pendant-bow D, having flanged and notched ends, the notched sleeve E, the notched cap F, provided with the recess *g*, the push-pin C, carrying the washer A, the bushing *j*, adapted to retain the washer *h* in the recess *g*, the milled head G, and the pin *k*, for limiting the movement of the sleeve E, substantially as described.

387,012. RULING-MACHINE. JAMES SHERRARDEN, Camden, N. J. Filed Sept. 14, 1887. Serial No. 249,669. (No model.)



Claim.—1. A paper-ruling machine comprising marking-instruments, a spindle for the roll of paper, a roller for the paper to travel over, and side frames, the latter being adjustable toward and from each other for ruling different widths of paper, substantially as set forth.

2. A paper-ruling machine having side frames carrying the marking-instruments and adjustable toward and from each other, an extensible spindle for the roll of paper, and an extensible roller for the paper to travel over, all substantially as described.

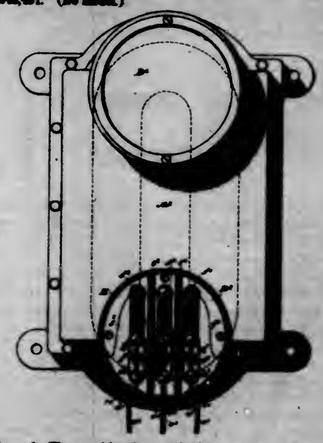
3. The combination of the extensible spindle and roller with the side frames carrying marking-instruments, diagonal braces connecting the side frames, and each brace having a bolt-and-slot connection with one of the frames, substantially as described.

4. The spindle for carrying the roll of paper, said spindle being provided with expanding mandrels at opposite ends, substantially as specified.

5. The spindle having at each end a wedge-collar, and a collar movable longitudinally on the spindle and carrying arms bearing on the wedge, all substantially as described.

6. The combination of a marking-instrument of a ruling-machine and a lever to press the instrument down on the paper with a centrifugal governor driven by some moving part of the machine and acting on the said lever, all substantially as set forth.

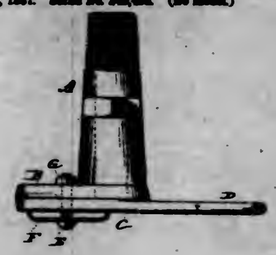
387,013. ELECTRIC CONVERTER. OLIVER B. SHALLENBERGER, Rochester, and ROBERT H. BULLERY, Pittsburg, assignors to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,431. (No model.)



Claim.—1. The combination, with a box for receiving an electric converter, of a compartment receiving the terminals of a coil thereof, a non-conducting plate within such compartment, three binding-posts for receiving conductors leading respectively from the terminals and an intermediate point in the length of a coil of the converter, binding-posts for receiving the terminals of the outside conductors, fusible strips and circuit-controlling devices applied thereto, and lugs of non-conducting material formed upon said plate, separating the different sets of binding-posts, substantially as described.

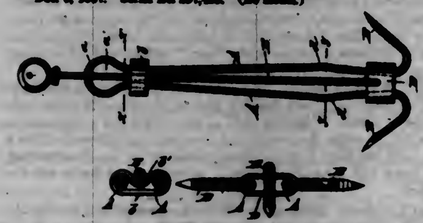
2. In a converter-box, a plate for receiving the terminals of the converter-coil, formed of vitreous material, three binding-posts carried thereby, fusible strips respectively connected at one end with said binding-posts, switch-plugs receiving the remaining ends, respectively, means for placing electric conductors in connection with said switch-plugs, and lugs upon the plate integral therewith intervening between the fusible strips and their respective binding-posts and switch-plugs, substantially as described.

387,014. FAUCET. CHARLES F. SMITH, New Britain, Conn. Filed Sept. 13, 1887. Serial No. 249,602. (No model.)



Claim.—The herein-described faucet, consisting of a tube having its discharge end open and constructed with a projection radially from the said open end, a lever forming a gate for the open end of the tube, the said lever terminating at one end in a handle, the other end extending over said projection on the faucet-tube, and a pivot for said lever midway between the outer end of said projection and the open end of the faucet-tube, combined with a clamp upon which said pivot bears, the said clamp extending to the right and left and so as to take a bearing upon the gate portion of the lever on one side of the pivot, and upon the extension of the lever upon the other side of the pivot, substantially as described.

387,015. FISH-HOOK. GEORGE SMITH, Brooklyn, N. Y. Filed Dec. 8, 1887. Serial No. 257,626. (No model.)



Claim.—In an expansible fish-hook, the combination, with the shanks A A, formed in one piece and having the eye *a*, bent at an angle to the general direction of the shanks, the collar *b*, inclosing said shanks, a rod, E, passing through the eye *a*, which, in connection with said collar *b*, forms a guide for said rod, and a collar, D, secured to the lower end of said rod and sliding on said shanks, substantially as described, and for the purposes set forth.

387,016. BREECH-LOADING ORDNANCE. LEVI Z. SNOW, New Haven, Conn. Filed Apr. 23, 1888. Serial No. 271,888. (No model.)



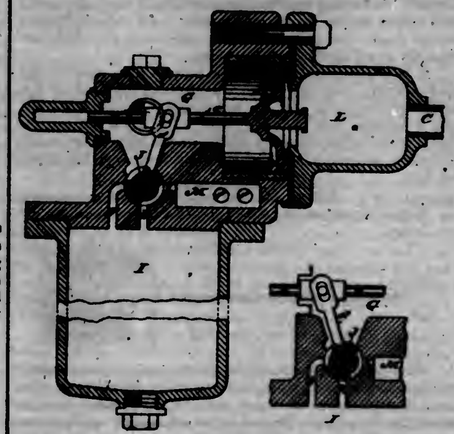
Claim.—1. The combination of the piece A, provided with a segmental recess for the reception of the breech-block B, and a longitudinal recess in the rear of that breech-block for the reception of the conchoi C, the breech-block B, adjusted to that segmental recess and provided with the opening G, and the conchoi C, adjusted to that longitudinal recess and provided with the firing-pin D, the point of which is adapted to penetrate through the opening G in the breech-block B and to be driven into the rear end of a cartridge forward of that breech-block, all substantially as described.

2. The combination of the conchoi C, and the rod I, provided with the angular groove J and resting on the stud K in a longitudinal recess in the piece A, all substantially as described.

387,017. PUTTY FOR MAKING ORNAMENTAL MOLDINGS. WILLIAM A. SNYDER, Chicago, Ill. Filed Jan. 9, 1888. Serial No. 260,240. (No specimens.)

Claim.—A putty for making ornamental moldings, consisting of dissolved glue, resin, and whiting, combined with paraffine-oil and spirits of turpentine, as specified.

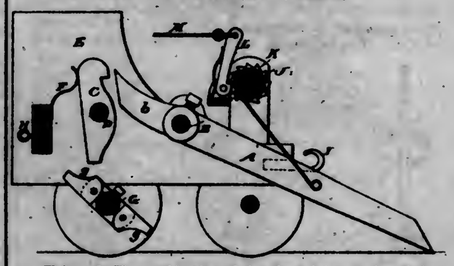
387,018. AUTOMATIC AIR-BRAKE. EDWARD SPAHN, Brooklyn, N. Y., assignor of two-thirds to John W. Howard and David B. Hoyt, both of same place. Filed Feb. 14, 1888. Serial No. 263,993. (No model.)



Claim.—1. In an automatic fluid-brake apparatus, wherein stored pressure is rendered active to offset the brake-stroke automatically by the reduction of train-pipe pressure, the combination, with the train-pipe, car, reservoir, and brake-cylinder, having pipe-connections and cylinder-valves adapted to operate as set forth, of the expanding-chamber and piston-actuated relief-valve located in the line of train-pipe proximate to but independent of the brake-cylinder valves, and adapted to open or close automatically by predominant reservoir or train-pipe pressure, respectively, on opposite sides of its actuating-piston, as and for the purposes specified.

2. The herein-described piston-actuated oscillating relief-valve, the piston whereof is exposed on the one side to pressure in the line of train-pipe and on its opposite side to the stored pressure from the car-reservoir, and the valve adapted to connect the train-pipe with an expanding-chamber in the one position or disconnect said chamber from the train-pipe and exhaust the same to the atmosphere in the reverse position, as set forth.

387,019. AUTOMATIC CAR-BRAKE. THOMAS TAIT, Dubois, Pa. Filed Dec. 13, 1887. Serial No. 257,816. (No model.)



Claim.—1. The combination of the pivoted bars A A and shaft B, having arm A, with a trigger and axle-arms, as set forth.

2. The combination, with the trigger, of axle-arms adapted by means of a joint to pull the trigger only when the loaded car takes a backward movement.

3. The combination of the pivoted bars A A, having spacer *a*, the rope or chain, the pinion, the ratchet, and the detent, as and for the purpose specified.

387,020. FLOOD-GATE. GEORGE R. THEARDEN, St. Paul's, Ohio. Filed May 4, 1888. Serial No. 272,769. (No model.)



Claim.—1. In a flood-gate, the combination, with the stakes provided with elongated guide-loops, of the horizontal bar having its ends inserted in and resting upon the bottom of the said loops and provided with pickets, and the flexible rope secured to said stakes and passing around the said bar, so that the gate is operated by the stream, substantially as and for the purpose set forth.

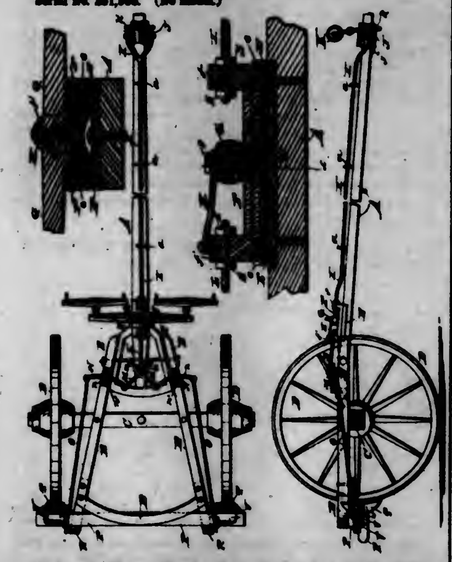
2. In a flood-gate, the combination, with the stakes provided with elongated guide-loops and with notches F, of the horizontal bar having its ends inserted in said loops and provided with pickets, and with pins E engaging with the said notches in the stakes, and the wire rope secured to the stakes and passing around the said bar, so that the gate is operated by the stream, substantially as and for the purpose set forth.

387,021. POKING-BAR FOR GAS-PRODUCERS, &c. JACOB R. THOMAS, Philadelphia, Pa. Filed Aug. 4, 1887. Serial No. 246,116. (No model.)



Claim.—A poker-bar having the handle portion open or divided, the flat working end A', having the shoulder E, said end being wider at the shoulder than at the shank, and the shield D, loosely mounted on said shank, said parts being combined substantially as and for the purpose described.

387,022. AUTOMATIC VEHICLE-BRAKE. LEONARD B. VAN ANTWERP and MORGAN L. ROBBINS, Susquehanna, Pa. Filed Oct. 11, 1887. Serial No. 251,993. (No model.)



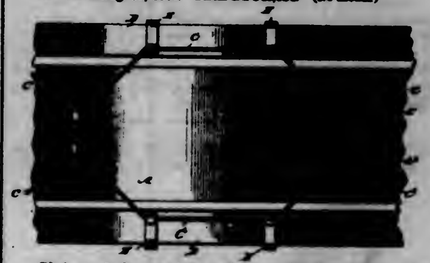
Claim.—1. The combination, in a vehicle-brake, with the running-gear, of the sliding brake-beam P, the stirrups U, pivotally connected with said beam, the brake-shoes T, supported by said stirrups, and the spring W, suitably supported and arranged to bear against and actuate the stirrups, all operating substantially as described, whereby the brake-shoes are forced against the wheels with a yielding pressure, as herein set forth.

2. The combination, in a vehicle-brake, of a plate, F, fitted to slide on the pole or shafts, a double or single tree or draft device held to the plate, a rod, I, connected to the plate and adapted to a hooking device of the harness, a rod, L, also connected to the plate F, toggle-levers M, connected to the rod L, levers N, fulcrumed on the running-gear and connected to the levers M, a brake-beam, P, carrying shoes adapted to the wheels and fitted to slide on the running-gear, and rods O, connecting the beam P and levers N, substantially as described, for the purposes set forth.

3. In a vehicle-brake, the combination, with the running-gear, of a plate, F, fitted to slide on the pole, a doubletree or draft device held to the plate, a rod, I, connected to the plate, a sleeve, J, on the pole and to which the rod I is attached, a hooking-lug, *j*, on the pole, a rod, L, connected to the plate F, toggle-levers M, connected to the rod L, levers N, fulcrumed on the running-gear and connected to the levers M, a brake-beam, P, brake-shoes T, held to the beam by yielding stirrups U, and rods O, connecting the beam P and levers N, all arranged for operation substantially as herein set forth.

4. In a vehicle-brake, the combination, with rods I L, leading to the holdback and brake-applying devices, of a plate, E, on the pole or shafts, a plate, F, fitted to slide on the plate E and provided with lugs *f f'*, to which the rods I L are connected, a draft-tree held by a pin, *g*, to the plate F, and a hammer-strap or tie-bar, H, connecting the pin *g* with a lug of the plate F, substantially as shown and described.

387,023. DRUM-HEAD STRAINER. GEORGE VAN HAGEN, Chicago, Ill. Filed Aug. 13, 1887. Serial No. 246,921. (No model.)



Claim.—1. In a strainer or tightener for drum-heads, a set of loops each comprising a pair of wires, C and C', and all connected in continuous series by intervening adjustable tension devices to which the terminals of said wires are secured, substantially as and for the purpose set forth.

2. In a strainer or tightener for drum-heads, an adjustable tension device consisting of a collar, *d'*, and a nut, *d''*, both applied upon a bolt, *d*, combined with two straining-wires, C, connected with one hoop and having their terminals permanently and rigidly attached to the collar, respectively, at opposite sides of the bolt, and two straining-wires, C', connected with the other hoop and having their terminals permanently and rigidly attached to the nut likewise at opposite sides of the bolt, substantially in the manner and for the purpose described.

3. In a strainer or tightener for drum-heads, a set of loops each comprising a pair of wires, C and C', and all connected in continuous series by intervening adjustable tension devices, combined with two sets of hangers engaging both the hoops and the wires, and arranged, substantially as described, with two hangers for each wire, for the purpose specified.

4. In a strainer or tightener for drum-heads, a set of wire loops connected in continuous series, combined with hangers R, attached to the hoops and permanently clamping the wires of the loops, substantially as described.

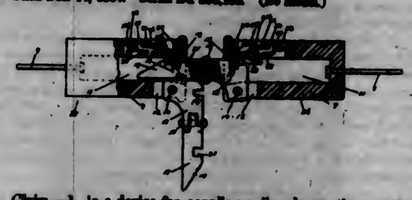
387,024. DRUM FOR CABLE RAILWAYS. JOHN WALKER, Cleveland, Ohio. Filed Apr. 4, 1888. Serial No. 269,611. (No model.)



Claim.—1. A grooved driving-drum for a cable railway having the first of the series of grooves formed in a stationary or fixed part of the drum and the remaining ones in rings adapted to turn on and independently of the said drum, combined with a second grooved drum, all the grooves of the two drums being of a practically common diameter, and a cable rove around so as to connect the said drums, substantially as and for the purpose specified.

2. A driving-drum having a series of grooved peripheral rings in contact with each other and adapted to turn on the surface of the drum, and a removably-covered flange, substantially as and for the purpose specified.

387,025. CAR-COUPLING. HENRY W. WARNER, Baltimore, Md. Filed Dec. 17, 1887. Serial No. 258,163. (No model.)



Claim.—1. In a device for coupling railroad-cars, the combination of a ball-nose, a tongue, 13, pivoted to the said ball-nose and provided with the slots 19 and 21 thereon, a lock-plate, 20, a lever, 22, and the shaft or pin 21½, for the purpose set forth.

2. In a device for coupling railroad-cars, the combination of a ball-nose, a tongue, 13, pivoted to the said ball-nose and provided with the slots 19 and 21 thereon, the said tongue 13, provided with the hinged joint 15, a lock-plate, 20, a lever, 22, a lever, 27, a shaft, 28, and the hand-lever 29, secured to the said shaft 28, for the purpose set forth.

3. In a device for coupling railroad-cars, the combination of a ball-nose, a tongue, 13, pivoted to the said ball-nose and provided with the slots 19 and 21 thereon, the said tongue provided with the hinged joint 15, a lock-plate, 20, a lever, 22, a forked lever, 27, a shaft, 28, the hand-lever 29, the stop-lever 30, and the stop-plate 31, for the purpose set forth.

4. In a device for coupling railroad-cars, the combination of a ball-nose, a tongue, 13, pivoted to the said ball-nose and provided with the slots 19 and 21 therein, the said tongue 13 provided with the hinged joint 15, a lock-plate, 20, a lever, 22, a fork-ed lever, 27, a shaft, 28, the hand-lever 29, the stop-lever 30, the stop-plate 31, the shaft 14, to which is fixed the tongue 13, extended and provided with the hand-lever 18½ thereon, substantially as shown, and for the purpose set forth.

387,026. TRAIN-SIGNALING APPARATUS. CHARLES F. WEBB, Concord, N. H. Filed Feb. 20, 1888. Serial No. 264,804. (No model.)



Claim.—1. In a gong-bell-sounding mechanism, a steam-actuated piston, a compressed-air-actuated valve for controlling its steam-supply, suitable pipes, and a valve or valves for conducting compressed air from a storage-reservoir located on the several cars of a train, substantially for the purpose set forth.

2. In an apparatus for ringing the signal-gong in a locomotive-engine, a cylinder, and piston, having its piston-rod in direct connection with a bell-crank which operates the bell-hammer, a valve for controlling the movement of said piston, and means for actuating said valve from the several cars of a train, comprising pipes having suitable couplings, as shown, and branch pipes connecting with the compressed-air reservoirs of the air-brake system, provided with valves, and operating-cords entering the several cars, all substantially for the purpose set forth.

3. The combination of a locomotive signal-gong, a steam-actuated piston for ringing the same; a valve for admitting steam to said piston, and means, comprising air-conducting pipes with suitable couplings and valves, for actuating said valve B from the interior of any of the several cars of a train by compressed air from the air-brake system, substantially in the manner and for the purpose set forth.

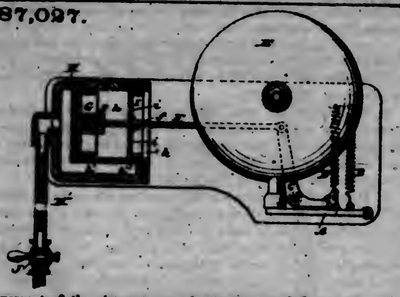
387,027. GONG-SOUNDING MECHANISM. CHARLES F. WEBB, Concord, N. H. Filed Mar. 22, 1888. Serial No. 268,251. (No model.)

Claim.—1. In a signal-sounding mechanism for railway-trains, the combination, with the signaling device, of the compressed-air cylinder, the piston therein, the piston-rod connected with the signaling device to operate the latter, an automatic relief-valve operated by the movement of the piston to permit the escape of the compressed air from the cylinder, and means, substantially as described, for forcing back and returning the piston when the pressure is relieved, the air-supply pipe, and a combined cut-off and relief cock in the latter, which co-operates with said relief-valve to permit the escape of air at each end of said pipe and allow of the rapid sounding of the signal, substantially as set forth.

2. In a signal-sounding mechanism for railway-trains, the combination, with the signaling device, of the compressed-air cylinder, the piston therein, the piston-rod connected with the signaling device to operate the latter, an automatic relief-valve mounted loosely on said piston-rod in advance of the piston, a relief-opening, *h*, in said cylinder at its forward or open end, an escape-duct extending from said opening to the rear or supply end of the cylinder, and means, substantially as described, for forcing back and returning the piston when the pressure is relieved, substantially as set forth.

3. In a signal-sounding mechanism for railway-trains, the combination, with the signaling device, of the compressed-air cylinder, the piston therein, the piston-rod connected with the signaling device to operate the latter, an automatic relief-valve mounted loosely on said piston-rod in advance of the piston and having an opening, *i*, a relief-opening, *h*, in said cylinder at its forward or open end, an escape-duct extending from said opening to the rear or supply end of the cylinder, and means, substantially as described, for forcing back and returning the piston when the pressure is relieved, substantially as set forth.

387,027.

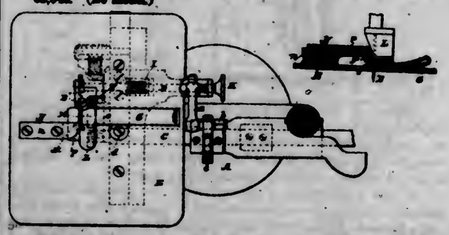


387,028. VEHICLE-AXLE. LA FAYETTE T. WEVER, Sophomy, Fla. Filed Sept. 12, 1887. Serial No. 249,474. (No model.)



Claim.—The combination, with an axle having an enlargement at its ends provided with an exterior thread, and a longitudinal aperture having a thread of coarser pitch than the exterior thread, of a spindle provided with an exteriorly-threaded extremity adapted to enter the aperture of the axle and a plain collar in front of said thread, and an interiorly-threaded flanged sleeve adapted to slide upon the spindle and engage the exteriorly-threaded surface of the axle and lock the spindle and axle, substantially as set forth.

387,029. TRIMMING ATTACHMENT FOR SEWING-MACHINES. CHARLES H. WILLCOX, New York, N. Y., assignor to the Wilcox & Gibbs Sewing Machine Company, same place. Filed June 2, 1888. Serial No. 275,045. (No model.)



Claim.—1. The combination, with the sewing-machine and trimming attachment, of the diverting-guide secured to the cloth-plate and having a finger projecting in front of the cutters close to the presser-foot, said finger being raised above the cloth-plate to permit the passage of one or more layers of fabric to said cutters, substantially as described.

2. The combination of a trimming attachment, a diverting-guide,

and a device for uncovering or fastening the margin to be trimmed off, substantially as described.

3. In a sewing-machine with trimmer attachment, the feed-surface divided transversely, to the direction of the feed movement and arranged to take hold of the fabric both in front and rear of the cutters, substantially as described.

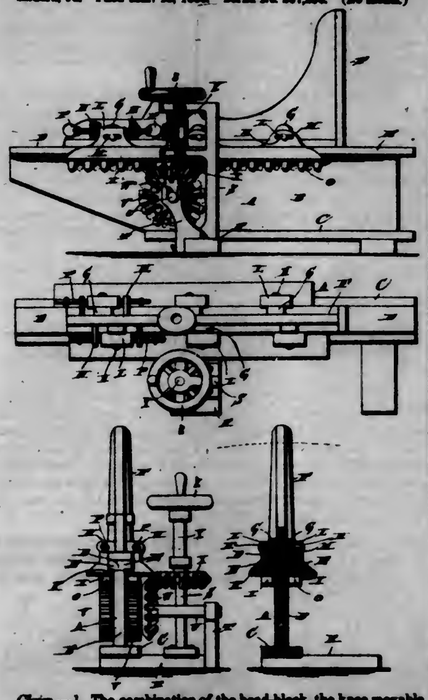
4. The combination, with a sewing-machine having a needle and presser-foot, of a stationary cutter bar or plate arranged to extend under the presser-foot past the needle, and an auxiliary cutter arranged alongside of the said presser-foot and forming with said cutter bar or plate a pair of shears, substantially as described.

5. The combination, with a sewing-machine, of a trimming attachment having the cutting portion arranged on the side of the needle away from the goose-neck, and a diverting-guide arranged on the same side of the needle in front of said cutting portion, and having a projecting finger raised above the cloth-plate to permit the passage of a layer or layers of fabric to the cutters, substantially as described.

6. The combination, in a sewing-machine with trimmer attachment, of the vibratory and stationary cutters, the diverting-guide, and the uncovering device arranged on the side of the needle opposite from the goose-neck of the machine, substantially as described.

7. The combination, with the stitch-forming mechanism and presser-foot of a sewing-machine, of a feed-bar having a divided feed-surface, and trimming devices located below said presser-foot and crossing said feed-bar, said trimming devices having means for operating them, substantially as described.

887,080. HEAD-BLOCK FOR SAW-MILLS. FRANKLIN P. SHELDEN, Abilene, Pa. Filed Mar. 15, 1888. Serial No. 267,262. (No model.)



Claim.—1. The combination of the head-block, the knee movable longitudinally thereon and having the rack-bars on opposite sides bearing against the sides of the head-block and forming guides for the knee, and the shaft U, having the pinions meshing with the rack-bar S, for the purpose set forth, substantially as described.

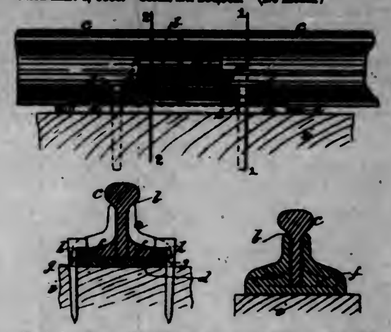
2. The combination of the head-block, the knee movable longitudinally thereon, the rack-bars secured to opposite sides of the knee and adjustable longitudinally thereon, said rack-bars bearing against opposite sides of the head-block and forming guides for the knee, and the shaft U, having the pinions V engaging the rack-bars, substantially as described.

3. The combination of the head-block, the knee, the rack-bars on opposite sides of the knee, having their teeth arranged out of line with each other, and the pinions on opposite sides of the head-block engaging the rack-bars, the teeth of said pinions being also out of line with each other, substantially as described.

4. The combination of the head-block, the knee, the rack-bars on opposite sides of the knee and head-block, having the longitudinal slots M, and the screws N, extending through said slots and entering threaded openings in the knee, said screws clamping the rack-bars to the knee at any desired adjustment, and the pinions meshing with the rack-bars, substantially as described.

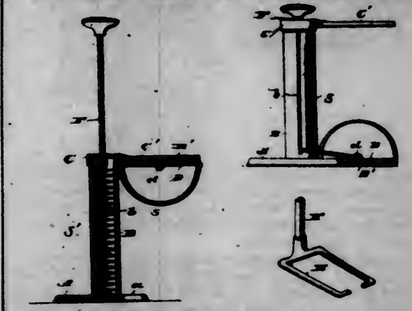
5. The combination of the head-block, pinions on opposite sides of the same, the knee movable longitudinally on the head-block and having the projecting lugs or brackets H, the rack-bars having the lugs L, provided with longitudinal slots M and bearing against opposite sides of the knee and head-block, the clamping-nuts extending through said slots and engaging the knee to secure the rack-bars to the latter, and the adjusting-screws P, engaging threaded openings in arms or brackets H and engaging the lugs or ears L of the rack-bars, for the purpose set forth, substantially as described.

887,081. RAILROAD FISH-JOINT. LEE ADAM, St. Louis, Mo. Filed Mar. 8, 1888. Serial No. 266,962. (No model.)



Claim.—In a railway-joint, the combination of the rails having portions of their bottom flanges cut away, and a slotted chair having a base extending beyond the ends of the slotted chair, said base having vertical flanges for the lateral support of the rail, substantially as and for the purposes specified.

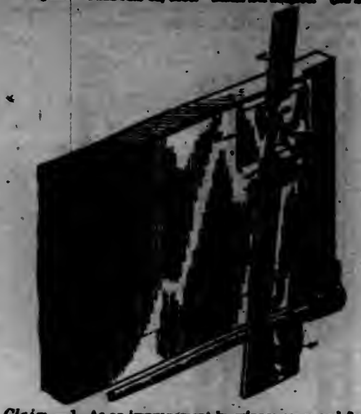
887,082. SELF-INKING HAND-STAMP. LEMUEL G. ARNOLD, Rock Island, Ill. Filed Dec. 22, 1887. Serial No. 258,256. (No model.)



Claim.—1. The combination, with a cylinder mounted upon a base, as set forth, and having a coiled spring mounted therein, of the plunger secured to a suitable yoke, whose inner ends pass through the slots formed in the cylinder, the type-plate adapted to revolve when the plunger is depressed, and stationarily mounted inking-pad integrally formed with the cap of said cylinder, substantially as described.

2. The combination of the base A, recessed as set forth, the cylinder mounted thereon having vertical slots, and a coiled spring, F, mounted therein, the stationarily-mounted inking-pad C, integrally formed with the cap C of the said cylinder, the hand-plunger, rectangular yoke, to which said hand-plunger is secured and which bears upon the top of the coiled spring F within the cylinder, the counterbalance yoke D, to which the outer ends of the rectangular yoke are secured, the type-plate carried by said counterbalance yoke, and the strap-spring S, secured at one end to the cylinder and at its opposite end to the outer side of the counterbalance yoke D, as set forth, substantially as described.

887,083. FEED-GAGE FOR PLAITING-MACHINES. FRANZ A. HAMEL, Cleveland, Ohio, assignor to himself and THOMAS HOLDEN, same place. Filed Jan. 11, 1888. Serial No. 260,304. (No model.)



Claim.—1. As an improvement in gripper-arms and feed-gages for plaiter-presses, the combination, with the gripper-arm, of the spring-actuated arm designed to enter a groove or recess of said gripper-arm substantially as shown and described.

2. The combination, with the gripper-arm provided with a groove or recess, of the spring-actuated arm and the curved or bent spring arm, substantially as shown and described, said arms being designed to enter said groove or recess when compressed, substantially as set forth.

3. As an improvement in gripper-arms and feed-gages, the gripper-arm having a groove or recess in its front face and a short arm or projection, in combination with a plate adjustable thereon and the arm having its spring-securing rod attached to the adjustable plate, substantially as shown and described.

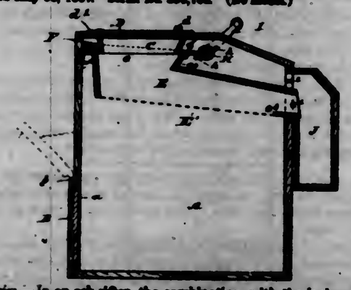
4. As an improvement in feed-gages for plaiter-presses, the spring-actuated arm having an outer flanged end, and the spring-arm secured thereto, substantially as shown and described.

5. As an improvement in feed-gages, the combination, with the gripping-arm, of the adjustable plate having a circular or rounded portion, the spring-rod passed therethrough, and the arm secured to one end of said spring-rod, substantially as shown and described.

6. The combination, with the gripper-arm having the arm or projection, of the adjustable plate secured to said arm or projection, the vented bolt, the spring-rod, and the rigid arm having a spring-arm secured thereto, substantially as shown and described.

7. The herein-described combined gripper-arm and feed-gage, comprising the gripper-arm provided with a rubber facing, the short arm or projection, the adjustable plate, the spring-rod, the arm having an outer flanged end, and the spring-arm, in combination with the metallic plate secured to the plaiter, substantially as shown and described.

887,084. ASH-SIFTER. CHARLES J. RAMEY, Grant Park, Ill. Filed May 21, 1887. Serial No. 238,703. (No model.)



Claim.—In an ash-sifter, the combination, with the inclosed case A, having opening *a'*, of the hopper C, provided with a cover, the inclined sifter E, beneath the same, pivoted at one end in the casing and provided with the lip G and with the retarding and impact sill *e*' at its rear end, resting in opening *a'*, the shaft H above the sifter and having fingers for engaging said lip, and the closed receptacle J upon the side of the case having an opening at the top of its inner side for receiving the discharge of the sifter, substantially as described.

887,085. STOCKINGS AND SOCKETTES. DAVID ISAAC, New York, N. Y. Filed Dec. 15, 1887. Serial No. 258,253. (No model.)



Claim.—1. The combination, with a stocking, of an inner sole placed loosely in the stocking and an outer sole secured to the stocking, substantially as set forth.

2. The combination, with a stocking having an inner sole placed therein, of a shoe-upper and an outer sole secured to one another and to the stocking, substantially as set forth.

887,086. PROCESS OF CLEANSING GOLD AND SILVER WHERE REFRACTORILY COATED BY ORES WITH REFRACTORY SUBSTANCES. CHARLES P. SELDEN, Gloversville, N. Y. Filed Aug. 27, 1887. Serial No. 248,072. (No specimens.)

Claim.—The process of cleansing refractory ores prior to the recovery of the precious metals therefrom, which consists in immersing said ores in a solution of a sodium chloride and cuamic soda, heating said solution, and at the same time subjecting the ores to the action of the electric current, whereby the ore is rendered free-milling, substantially as described.

887,087. ICE-CAGE FOR WATER-COOLERS. BROWN P. BENNETT, Philadelphia, Pa. Filed Aug. 20, 1887. Serial No. 247,402. (No model.)

Claim.—An ice-cage for water-coolers, consisting of an open-work body with inwardly-folding handles or bails connected with opposite sides thereof, and a link coupling said handles and retaining them above the top of the ice, substantially as described.

887,088. TRIANGULAR TUBULAR LAMP. CHARLES BRESSLER, Rochester, N. Y., assignor to the C. T. Hinz Manufacturing Company, same place. Filed Jan. 6, 1887. Serial No. 223,897. (No model.)

Claim.—1. In a tubular lantern, the combination, with a suitable burner, oil-reservoir, and air-chamber, of a dome having perforations open to the air, the air-space surrounding the said dome closed at the

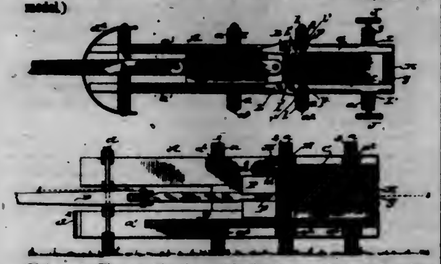
top and open to the air at the bottom, and having openings into the dome, and the air-tubes communicating at the base with the air-chamber and passing upward and communicating with the air-space at the dome, substantially as described.

2. The combination, in a lantern, with the casing thereof, of a top section having a dome which has perforations open to the air and extends downward within the casing, the air-space around the dome communicating therewith and open to the air at the bottom, the burner, the air-chamber, and the air-tubes communicating with the annular air-space and the chamber at the burner, substantially as described.

3. The combination, in a lantern, with the casing, of the perforated dome D, having openings *h h'* and extending downward within the casing, the annular air-space *g*, surrounding the dome and open at the bottom only, the burner and the air-chamber and the air-tubes *f f* communicating with the air-space at the openings *h* and with the air-chamber at the burner, substantially as described.

4. The combination, in a lantern, of the top section having the perforated dome, the openings *h h'*, the annular air-space surrounding the same, closed at the top and open at the bottom, the burner and air-chamber of the air-tubes communicating with the chamber at the burner and with the air-space opposite the openings *h h'*, substantially as described.

387,039. HAY-PRESS. JOSHUA R. BOHAN and ANDREW W. BOHAN, Terrell, Tex. Filed Mar. 27, 1888. Serial No. 268,704. (No model.)



Claim.—1. The combination, with the frame, of pivoted spring-actuated catches, constructed substantially as described, and provided with shoulders adapted to engage stop-pins for limiting the movement of said catches, and a spring-actuated board in the top of the frame, having a flanged free end projecting under one of the cross-beams of the frame for limiting the upward movement of said board, substantially as and for the purpose set forth.

2. The herein-described baling-press comprising the frame, a plunger located therein, a pivoted power-lever, a pitman connecting the latter and the plunger, the hinged side bars, the outer end pieces adapted to be secured between said bars by adjustable blocks, the inner end piece, spring-actuated side catches for retaining the same against backward movement and provided with shoulders, pins for limiting the movement of said catches, and the spring-actuated horizontally-disposed top-catch, substantially as and for the purpose set forth.

387,040. SEWING-MACHINE TABLE. MIMA G. BLAKE, Vicksburg, Miss. Filed Jan. 24, 1888. Serial No. 261,747. (No model.)



Claim.—In combination with a leaf adapted for application to the edge of a sewing-machine table, a clamp, C, having the prongs *a* and *b*, the former having its inner side in alignment with the top of the leaf, and its outer side beveled, as shown, and the latter provided with a thumb-screw, *c*, substantially as and for the purpose specified.

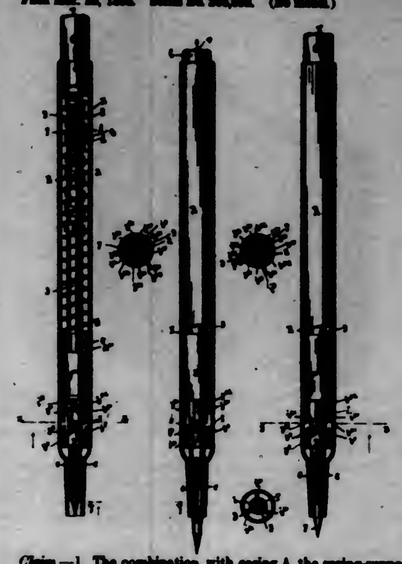
387,041. TOBACCO-PIPE BOWL. WALTER S. BLAKE, St. Louis, Mo., assignor to the Blake Pipe Company, same place. Filed Jan. 7, 1888. Serial No. 260,115. (No model.)



Claim.—1. A composition for the manufacture of pipe-bowls, consisting of ground corn-cob and silicate of soda, substantially as set forth.

2. A composition for the manufacture of pipe-bowls, consisting of ground corn-cob, earthy material, and silicate of soda, substantially as set forth.

387,042. PIPE OR LEAD HOLDER. WILLIAM BOHMER, Hoboken, N. J. Filed Mar. 10, 1888. Serial No. 266,922. (No model.)



Claim.—1. The combination, with casing A, the spring-supported head C, fitted into said casing, and the tube D, carrying a pen or lead, of a latch, I, actuated by the head C and constructed to lock the tube D in its forward and also in its retracted position, substantially as described, whereby the latch is thrown in its locking position by first depressing and then releasing the head C, and in its unlocking position allowing the tube D to recede by depressing and releasing the head a second time, as set forth.

2. The combination, in a pen or lead holder, of the tubular casing provided interiorly with upper and lower teeth, the spring-supported head, the pen or lead holding tube, and the latch mounted on the said tube and having a series of teeth and locked in a stationary position to hold the tube advanced by depressing and then releasing the head, and unlocked to permit the tube to recede by again depressing and then releasing said head, substantially as described.

3. The combination, in a pen or lead holder, of the casing A, having the lower fixed tube B', provided with teeth *b'*, the upper tube B'', provided with teeth *b''*, and slots *b'' b'' b''*, the spring-supported head C, the pen or lead holding tube D, and the revolving toothed latch I, mounted on said holding-tube and revolved by the teeth, substantially as and for the purposes described.

4. The combination of the casing A, the non-rotating pen or lead holding tube D, the spring-supported head C, loosely connected with the tube, the spiral G, connected with the head, the sheath E, arranged in the holding-tube and having a toe, *f*, projecting through the latter and engaging the spiral, a rotating toothed latch, I, mounted on the lead-holding tube, and upper and lower teeth in the casing for turning the latch, substantially as described.

5. The combination, with the casing A and the spring-supported head C, of the tube D, the spiral G, carried by the head and made to embrace the tube D, the lead-sheath E, fitted into the tube D, and the toe *f*, made to project from the sheath E through a slot in the tube D and engaging the spiral G, substantially as described.

387,043. FURNACE FOR SMELTING AND REDUCING ORES. ROBERT RUSSELL, St. Louis, Mo., assignor of one-half to August M. Reinke & Co., same place. Filed June 13, 1887. Serial No. 241,703. (No model.)

Claim.—1. In a furnace for smelting and reducing minerals, the combination of the fire-boxes, smelting-chamber, the refining-chamber, the division-wall dividing said refining and smelting chambers from top to bottom, the calcining-chamber, and the flues 18, connecting the calcining-chamber with the smelting and refining chambers at points remote from the fire-boxes, whereby the products of combustion will pass from either the smelting or refining, or both the smelting and refining chambers into said calcining-chamber after having traversed the former chambers, substantially as and for the purpose set forth.

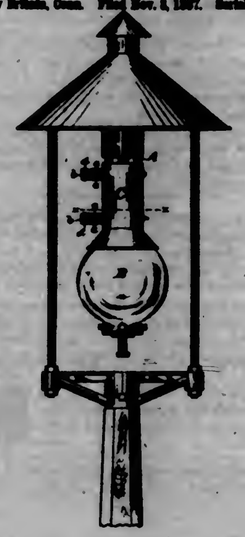
387,042.



2. In a furnace, substantially as described, the combination of two fire-boxes, a smelting-chamber communicating with one of said fire-boxes, and a refining-chamber arranged in a lower plane than the smelting-chamber and communicating with the other fire-box, a partition, 13, dividing said chambers from top to bottom and provided at its base with one or more leak-holes, a calcining-chamber, and a flue from each of the aforesaid chambers to said calcining-chamber.

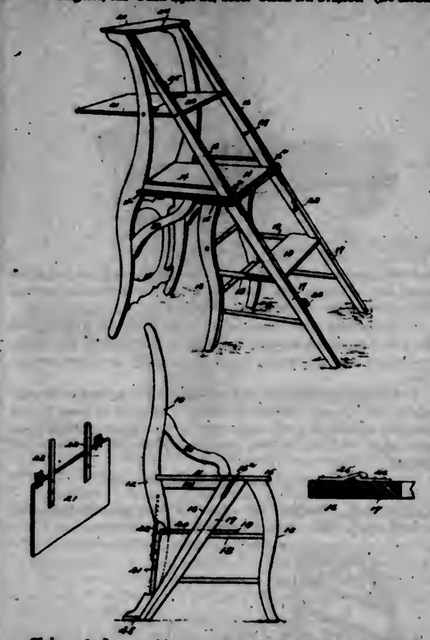
3. The combination, with two fire-boxes, of a smelting and refining chamber arranged between said fire-boxes and having a perforated partition-wall dividing said chamber from top to bottom, a calcining-chamber arranged in the vicinity of the aforesaid chambers, and flues 18, leading from both the smelting and refining chambers into said calcining-chamber and adapted to convey products of combustion from either or both of the fire-boxes into the calcining-chamber.

387,044. STORM-PROTECTOR FOR ELECTRIC LAMPS. THOMAS H. BRADY, New Britain, Conn. Filed Nov. 5, 1887. Serial No. 254,502. (No model.)



Claim.—In an electric lamp, the combination of a storm-protector having hinge-brackets, the frame A, inside the protector, the hinge-supporting brackets *b*, secured to said frame and extended outwardly from said frame to the hinge-plate on the outside of the protector, substantially as described, and for the purpose specified.

387,045. SUPPORTED SEEN-LADDER AND CHAIR. PHILIP BRAUN, Los Angeles, Cal. Filed Apr. 23, 1888. Serial No. 271,260. (No model.)



Claim.—1. In a combined step-ladder and chair, the combination, with the front and rear legs, a sectional and hinged seat secured to the said legs, and two pairs of standards secured to each section of the seat, of a step secured to one pair of standards and a platform hinged to the said step and provided with bars projecting from its hinged end and adapted to rest under the step and support the said platform in a horizontal position when used as a ladder, substantially as herein shown and described.

2. The combination, with the front and rear legs of a chair, a sectional seat secured to said front and rear legs, standards 16 and 17, attached to said seat at each side of the division and hinged together, and rounds connecting the standards 17 and the front legs, of a step or platform secured upon one of said rounds and attached to the standards 17, a second step or platform secured to the standard 16 and the rear legs, a shelf hinged to said platform or step 20, provided with stay-bars 23, and a recessed base-board secured to the under side of the rear legs, and the standard 16, adapted to serve alternately as an upper step for the ladder and a brace for the rear legs of a chair, substantially as and for the purpose specified.

387,046. PROCESS OF COATING IRON AND STEEL WITH RUST-LESS OXIDE. ADRIAN A. BRESNAN, Brooklyn, N. Y. Filed Jan. 10, 1888. Serial No. 260,502. (No specimens.)

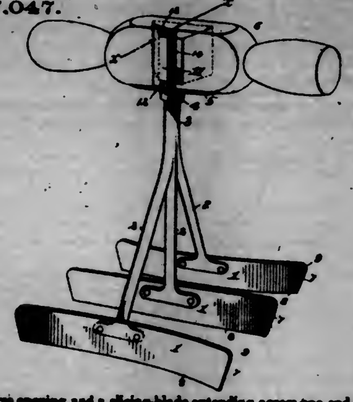
Claim.—1. The method, substantially as hereinbefore set forth, of producing a coating of magnetic oxide upon the surface of articles of iron for the purpose of rendering said articles non-corrodible, which consists in subjecting the uniformly-heated articles to the reducing action of a hydrocarbon and then to the oxidizing action of air.

2. The method, substantially as hereinbefore set forth, of producing a coating of magnetic oxide upon the surface of articles of iron for the purpose of rendering said articles non-corrodible, which consists in repeatedly subjecting the uniformly-heated articles to the alternate and successive action of a reducing agent to bring the surface to the state of metallic iron, and of an oxidizing agent to produce the final coating of magnetic oxide.

387,047. CHOPPING-KNIFE AND SLICER. HARVEY W. BRESNAN, Lyons, Kans. Filed Apr. 5, 1888. Serial No. 269,897. (No model.)

Claim.—1. A chopping-knife consisting of a handle having a

387,047.

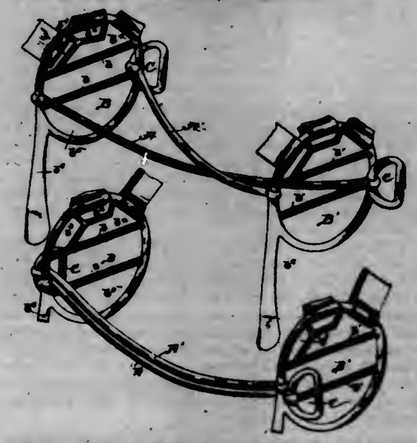


transverse opening and a sliding-blade extending across one end of the opening, and a shank with arms on which are mounted chopping-blades, substantially as shown and described.

2. A chopping-knife consisting of a handle having a shank with arms, and chopping-blades mounted thereon, the ends of the blades being formed with converging edges, substantially as shown and described.

3. A chopping-knife consisting of handle 6, having secured thereto shank 3, with arms 2, and curved blades 1, secured to arms 2, with converging taper ends 7, the outer ends of the adjacent blades being farther apart than the central portions, substantially as shown and described.

387,048. BRIDLE-BIT. HARRY W. GARDNER, Columbia, Del. Filed Apr. 2, 1888. Serial No. 269,202. (No model.)



Claim.—1. In a bridle-bit, the combination of the curved bars A and A', the bar A having the rings B and C, and the bar A' having the rings B' and C, the rings B and B' being formed with the cross-bars *b* and *b'* and the loop-holes *b²* *b²* *b²* *b²* and the guard or projection *b³*, the bars A and A' having their alternate ends protruding through the rings B and B', and the rings B, B', and C pivoted to the ends of said bars, all substantially as described and set forth.

2. In a bridle-bit, the combination of the curved bars A and A' the bar A having the rings B and C, and the bar A' having the rings B' and C, the rings B and B' having the cross-bars *b* and *b'* and the guard or projection *b³*, the bars A and A' having their alternate ends protruding through the rings B and B', and the rings B, B', and C pivoted to the ends of said bars, substantially as described and set forth.

3. The combination of the curved bars A and A', the bar A having the rings B C, and the bar A' having the rings B' C, the bars A and A' having their alternate ends protruding through the rings B and B', the rings B, B', and C pivoted to the ends of curved bars, substantially as described, and for the purpose set forth.

387,049. BATTERY-CUP. Reuben I. Gano and Parmen Benson, Fall River, Mass. Filed Dec. 22, 1887. Serial No. 258,503. (No model.)



Claim.—1. In a battery-cup, the combination of a body composed wholly or in part of an amalgam of zinc and mercury, and a cup composed of pure or approximately pure zinc, the cup and body being united by brazing or fusing, substantially as set forth.

2. In a battery-cup, the combination of a body composed wholly or in part of an amalgam of zinc and mercury, a cup composed of pure or approximately pure zinc, and a conducting-wire for said battery-cup, the cup and body being united by brazing or fusing, substantially as described.

3. In a battery-cup, the combination of a body composed wholly or in part of an amalgam of zinc and mercury, a cup composed of pure or approximately pure zinc, and a conducting-wire for said battery-cup, the cup and body being united by brazing or fusing, and the wire connected with the cup by fusing or brazing, substantially as set forth.

4. The cup B, having the cone *c*, and provided with the wire *x*, said cup being composed of pure or approximately pure zinc, and said wire cast into the cone and projecting beyond the ends thereof, substantially as set forth.

5. A battery-cup comprising the body A, having the socket *i*, the cup B, having the cone *c*, and the wire *x*, constructed, combined, and arranged to operate substantially as described.

6. In a battery-cup, the body A, composed wholly or in part of an amalgam of zinc and mercury, said body being provided with a socket for receiving a zinc cup, substantially as set forth.

387,050. CUTTER FOR MINING-MACHINES. EDWIN H. GARDNER, Knoxville, Allegheny County, assignor to John S. Scully, Pittsburg, Pa. Filed Apr. 24, 1888. Serial No. 271,668. (No model.)

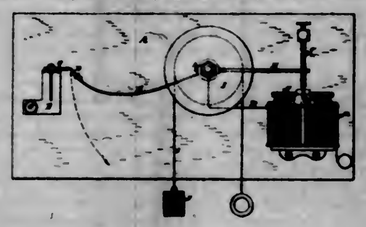


Claim.—1. A cutter having a cutting point or points for removing material at and adjoining its center and two lateral wings in a plane below said cutting-points, one of said wings being provided with transverse scoring-edges and the other with a longitudinal cutting-edge, substantially as set forth.

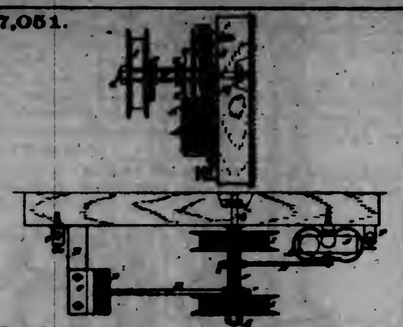
2. A cutter having a cutting point or points at or adjacent to its center and two lateral wings provided with cutting and scoring edges, respectively, each of said wings having a cutting-edge on its rear side, substantially as set forth.

387,051. LIGHTNING-ARRESTER FOR ELECTRIC CIRCUITS. FREDERICK A. GILMER, Elmira, N. Y. Filed May 15, 1888. Serial No. 273,788. (No model.)

Claim.—1. The combination, with the piston of a lightning-arrester, of a rotary device carrying one of said pistons, a catch or detent



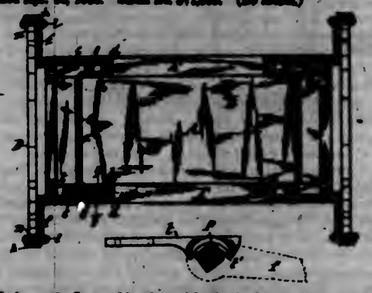
387,051.



normally in the path of the rotary device, so as to restrain it against movement, and an electro-magnet in the circuit including the piston and adapted when energized to withdraw the catch or detent out of the path of the rotary device, whereby the rotary device after being released by the action of the magnet will again encounter the said detent at the end of a complete revolution, as set forth.

2. In a lightning-arrester, the combination, with a stationary plate, of a movable plate, a sleeve or shaft capable of complete rotation, a motor for rotating the same, an arm extending from said sleeve and carrying the movable plate, a detent or catch normally in the path of movement of an arm secured to the rotary sleeve, and an electro-magnet in the circuit including the plates and adapted when energized to withdraw the detent or catch and set the sleeve in rotation, whereby the movable plate will be carried away from the stationary plate, as set forth.

387,052. STEAM-VEHICLE. EDWARD GAY, Rochester, N. Y. Filed Apr. 16, 1888. Serial No. 271,033. (No model.)



Claim.—1. In combination with the body and its supporting-spring, a rocking bar secured to the body and provided with a V-shaped bearing on the same, and a coupling-arm connecting said rocking bar with the aforesaid spring, as set forth.

2. In combination with the body, the torsion-spring C, formed of a square bar bent into a U-shaped loop, *b*, in a plane diagonal relative to the shape of the bar, the metal shoe *d*, interposed between said loop and body and secured to the latter, and the clip *c*, outside said loop and secured to the shoe, substantially as described and shown.

3. In combination with the loop *b* of the spring C, the shoe *d*, provided with the flange *d'*, and the clip *c*, provided with the stud-pin *c'*, projecting from the clip and passing through the shoe and riveted thereon, substantially as described and shown.

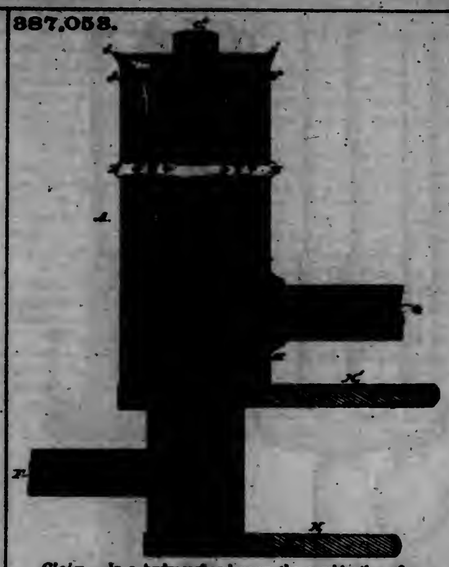
4. In combination with the body A, coupling-arm *f*, and the spring D, formed with the shackle-eye *n*, the coupling-bolt *l*, passing through said eye and through the end of the coupling-arm and formed with the circumferential groove *l'*, substantially as and for the purpose set forth.

5. In combination with the body A, the coupling-arm *f*, formed with the yoke *i* and eyes *i i*, the spring D, formed with the shackle-eye *n* inserted between the eyes *i i*, the coupling-bolt *l*, formed with the shoulder *o*, and the nut *l* on the end of said bolt, substantially as described and shown.

6. In combination with the body A and spring D, the torsion-spring C, provided with the V-shaped bearing *p*, and the arm *f*, rigidly attached to said torsion-spring and coupled to the spring D, substantially as described and shown.

387,053. HYDROCARBON-BURNER. CHARLES GILL and JOHN S. PARKINSON, Chicago, Ill. Filed Nov. 3, 1887. Serial No. 254,163. (No model.)

387,053.



Claim.—In a hydrocarbon-burner, the combination of a central air-tube, an intermediate tube, and an outer tube, the latter forming the casing of the burner, an oil-supply pipe secured to the said outer tube for the supply of oil, and the steam-supply pipe secured to the intermediate tube, each of said tubes provided at one end with an outwardly-extending flange, whereby the flame is spread outwardly around the outward flange, a steam-passage formed between the said air-tube and intermediate tube, an oil-passage between the outer tube and intermediate tube, and handles secured, respectively, to the air-tube and intermediate tube, by which these tubes are adjusted for the purpose of regulating or stopping the supply of oil and steam, substantially as described.

387,054. SUSPENDERS. Freeman C. Rowe, Burlington, assignor to the Willard Manufacturing Company, St. Albans, Vt. Filed June 23, 1887. Renewed May 16, 1888. Serial No. 273,553. (No model.)



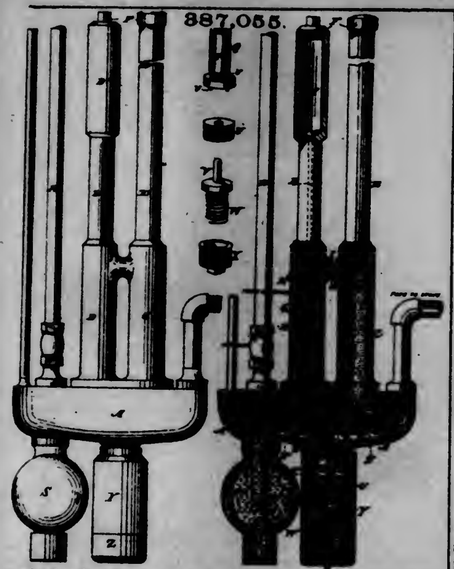
Claim.—1. In a pair of suspenders, a body and a back-band made of one seamless piece of webbing or like material combined with slotted plates, substantially as specified, whereby the length of the back-band may be adjusted, and buckles and seams are dispensed with.

2. A pair of suspenders having its body portion and an adjustable back-band all made in one seamless piece, the suspenders being also made double below the back-band and combined with plates and with button-loops, substantially as specified.

387,055. AUTOMATIC FEED-REGULATOR FOR LIQUID FUEL. WILLIAM H. RADEMAN, Boston, Mass., assignor to the Rademan Freight Car Heater Company, Portland, Me. Filed Mar. 14, 1887. Serial No. 230,958. (No model.)

Claim.—1. In an organized apparatus automatically regulating a flow of liquid fuel between the points of supply and combustion, the base A, provided with the chamber K and passage B², the chambers B and C, supported by said base A and provided with an intercom-

387,055.



municating duct, I, permitting alcohol to enter the contiguous chamber B and rest upon mercury therein contained, the mercury-tube D, thereto attached, provided with an expansion-chamber, D', and the alcohol-tube E, communicating with the chamber C, all arranged to coact with the residuum-chamber S, the tube E thereto communicating, the valve-casing Y, the valve P therein contained, provided with the conical opening Q, the diaphragms L and M, adapted to receive the pressure of the alcohol, thereby actuating said valve downward, and the spring W, compensating for the pressure of the diaphragm, substantially in the manner and for the purpose set forth.

2. In an automatic liquid-fuel regulator, the chambers B and C, the passage I, connecting said chambers, the base A, provided with the chamber K and passage R^2, the casing Y, pendantly attached to said base, the spring W therein contained, the receiving-nut X, upholding said spring, the follower V, thereby supported and actuated, and the gage-nut U, all adapted to operate in combination with a slide-valve, P, provided with an opening, Q, for the constant transmission of oil, the resisting diaphragm M, resting upon said valve, and the resilient diaphragm L, adapted to receive the pressure of the alcohol, whereby said valve is actuated to lessen or to increase the flow of oil to the stove, as in the manner set forth.

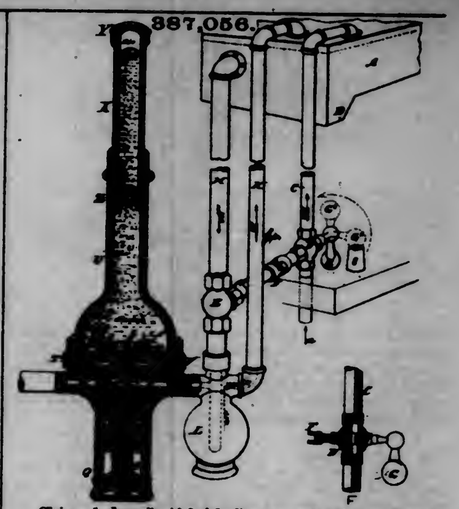
3. In an automatic liquid-fuel regulator, the combination, with the chambers B and C, provided with the duct I, and the tubes D and E, the diaphragms L and M, the base A, provided with the chamber K and oil-passage R^2, the casing Y, and the assembled devices V W X U therein contained, of a valve, P, provided with an adjusting-base having one or more projections, *v*, thereon to permit the discharge of sediment, and a transverse conical opening, Q, adjacent to its head to permit the passage of the liquid fuel, substantially as described.

4. In an automatic fuel-regulator, the combination, with the diaphragms L and M, the casing Y, the valve P, provided with the opening Q, and projections *v*, the adjusting-nut U, threaded within said casing Y, the follower V, spring W, and nut X, of the base A, provided with a chamber, K, having annular shoulders N N' to receive the peripheries of said diaphragms, a passage, R^2, for the transmission of oil, a drain-duct, *w*, permitting the escape of oil from said chamber K, a residuum-chamber, S, provided with a duct for the liberation of air, and the chambers B and C, having a duct, I, to establish communication, as herein described.

5. In an automatic liquid-fuel regulator, the base A, provided with the chamber K and passage R^2, the residuum-chamber S, the casing Y, the valve P, provided with the opening Q, the spring W, and the diaphragms L and M, all combined and adapted to co-operate with a duplex-chambered receptacle, B C, provided with an intercommunicating duct, I, and an inclined base contiguous to said diaphragms to facilitate the dislodgment of air from the chamber K, as in the manner and for the purpose specified.

387,056. LIQUID-FUEL-FEEDING APPARATUS. WILLIAM H. RANDAH, Boston, Mass., assignor to the Eastman Freight Car Heater Company, Portland, Me. Filed Apr. 13, 1887. Serial No. 234,594. (No model.)

387,056.

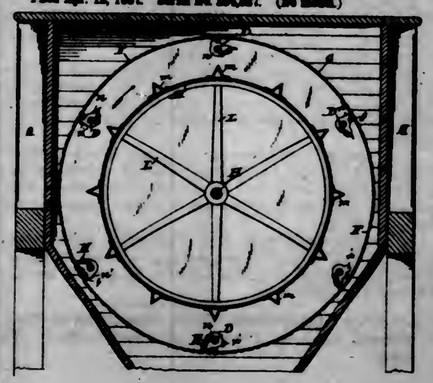


Claim.—1. In a liquid-fuel-feeding apparatus, the combination, with the receptacle U, provided with a foraminous base or bridge, W, and an expansive chamber, X, threaded into the top thereof, the bed-piece T, provided with oil-ducts J I, the diaphragms S R, the perforated valve M, underlying said diaphragms, and the follower O, of a hermetic tank, A, provided with a deposit-chamber, B, at the bottom of one end thereof, air-pipe C K, for admission of air above the contents of said tank, and outlet-pipe H, provided with the cut-off valve E, for transmitting oil to the burner, substantially as described.

2. In a liquid-fuel-feeding apparatus, the combination, with a bed-piece, T, provided with transverse oil-ducts J I, the diaphragms R S, seated within said bed-piece, the valve-case Q, thereto attached, provided with accessories embracing a nut, P, spring-follower O, and check-nut N, the valve M, thereby actuated, and provided with the oil-passage *c*, of a receptacle, U, for the reception of alcohol, provided with a foraminous concaved bridge, W, at its bottom and a screw-plug, Z, at its top, admitting to the interior, substantially as illustrated, and for the purpose described.

3. In a liquid-fuel-feeding apparatus, the expansion-chamber X, the receptacle U, thereto united, to contain alcohol, the diaphragms R and S, adapted to receive the pressure of said alcohol, the hermetic tank A, the accessory pipes C K, conveying air thereto, the oil-pipe H, leading therefrom, the cock D, provided with an operative lever-bar, G, the loose clutch F, and the cut-off valve E, constructed and adapted to operate in combination with a bed-piece, T, provided with oil-passages, and a residuum-chamber, L, the valve-case Q, thereto attached, the spring-follower O, therein contained, and the valve M, having a reciprocating motion to control the variable flow of liquid fuel to the burner, substantially in the manner and for the purpose set forth.

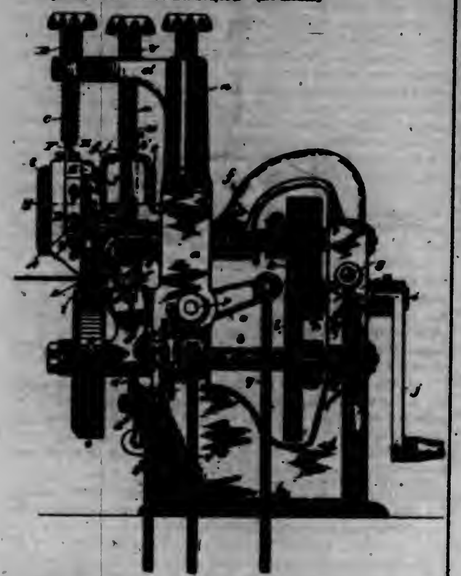
387,057. CENTRIFUGAL REEL. SILAS C. HARRIS, Jackson, Mich., assignor to the George T. Smith Middlings Purifier Company, same place. Filed Apr. 12, 1887. Serial No. 234,457. (No model.)



Claim.—1. The combination, with the inner drum provided with the longitudinal blades, of the bolting-reel and the sliding elevator, substantially as set forth.

2. In a flour-bolt, the combination of an outer relatively slow-moving bolting-reel provided with internal elevators, and an inner relatively fast-moving drum adapted to receive material carried up by the elevators and discharge the same against the bolting-cloth, substantially as set forth.

387,058. MACHINE FOR SHARPENING AND FEATHERING THE BOOT OR SHOE HEELS. ANDREW BYRNE, Jr., Boston, Mass. Filed Apr. 30, 1888. Serial No. 271,951. (No model.)



Claim.—1. The combination of the bed-rail, the feed-wheel, the vertically-movable yoke or frame *f*, supporting the feed-wheel and provided with a depressing-spring, a lever whereby said yoke may be raised to elevate the feed-wheel, the edge-beveling knife, the spring-depressed holder therefor, and means, substantially as described, for independently raising said knife, as set forth.

2. The combination of the bed-rail, the feed-wheel, the vertically-movable yoke or frame supporting the feed-wheel and provided with a depressing-spring, a lever whereby said yoke may be raised to elevate the feed-wheel, the channeling-knife and a spring-depressed holder therefor, arranged, as described, to be raised by the yoke *f*, and an adjustable stop to limit the downward movement of the channeling-knife, as set forth.

3. The combination of the bed-rail, the feed-wheel, the vertically-movable yoke or frame *f*, supporting the feed-wheel and provided with a depressing-spring, a lever whereby said yoke may be raised to elevate the feed-wheel, the edge-beveling knife, the spring-depressed holder therefor, a connection, substantially as described, between said holder and the yoke or frame *f*, whereby the holder and knife are raised by said frame, and means, substantially as described, for independently raising said knife and holder, as set forth.

4. The combination of the bed-rail, the feed-wheel, the spring-depressed vertically-movable frame supporting the shaft of the feed-wheel, means, substantially as described, for raising said frame, the edge-beveling knife, the vertically-movable holder for said knife engaged with said frame to be elevated thereby, and a vertically-adjustable stop which limits the downward movement of said holder, as set forth.

5. The combination of the bed-rail, the feed-wheel, the vertically-movable spring-depressed frame supporting the shaft of the feed-wheel, means for raising said frame, and the vertically-movable knife-holders a B, arranged to be raised by the yoke *f* and provided with depressing-springs, as set forth.

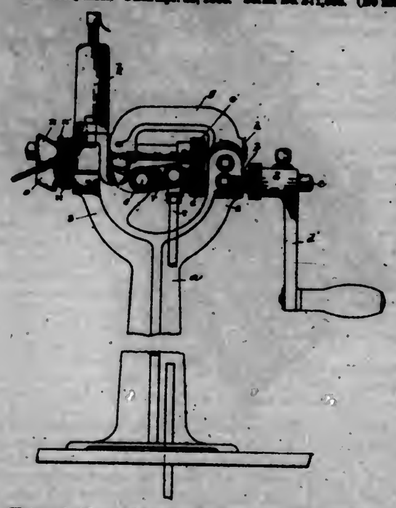
6. The combination of the supporting-frame, the bed-rail, its shaft, the yoke or frame pivoted to the fixed supporting-frame, the feed-wheel mounted on a shaft journaled in said yoke, the crank-shaft *i*, journaled in said yoke and connected, as described, by gearing with the shafts of the bed-rail and feed-wheel, whereby said rail and wheel are positively rotated in opposite directions, a spring whereby the pivoted yoke and feed-wheel are depressed, a lever whereby said yoke and feed-wheel may be raised, and vertically-movable holders a B, provided, respectively, with an edge-beveling knife and a channeling-knife and arranged to be raised by the yoke *f*, springs a C, whereby said holders are depressed, and adjustable stops whereby the depression of said holders is regulated, as set forth.

7. The combination of the supporting-frame, the bed-rail journaled therein, the yoke or frame *f*, pivoted to the supporting-frame, the feed-wheel mounted on a shaft which is journaled in said yoke, the lever *o*, pivoted to the supporting-frame and adapted to raise the yoke, the vertically-movable knife-holder *a*, having the edge-beveling knife *r*, the spring *u*, whereby said holder is depressed, and the pivoted lever *d'*, whereby said holder may be independently raised.

8. The combination, with the bed-rail, the feed-wheel, and the beveling and channeling knives, of the laterally-movable edge-guide, the pivoted lever supporting said guide, and adjustable stops for said lever, as set forth.

9. The combination, with the bed-rail, the feed-wheel, and the beveling and channeling knives, of the gages or feet *b' L*, arranged to bear on the upper surface of the sole at opposite sides of the feed-wheel and in advance of said knives, as set forth.

387,059. SOLE-EDGE-TRIMMING MACHINE. ANDREW BYRNE, Jr., Boston, Mass. Filed Apr. 30, 1888. Serial No. 271,952. (No model.)



Claim.—1. The combination of the supporting frame or standard, the longitudinally-adjustable shaft *e*, journaled therein, the vertically-movable shaft *f*, having a yielding movement, and the frusto-conical rolls *a c*, mounted on said shafts, the smaller end of one of said rolls having a flange which overlaps the larger end of the other roll, the said rolls being made adjustable by the longitudinal adjustability of the shaft *e* and by the yielding movement of the shaft *f*, as set forth.

2. The combination of the supporting frame or standard, the adjustable bearing *b* thereon, the shaft *e*, journaled in said bearing and adjustable therewith, the yoke *g*, pivoted to the supporting-frame and having a depressing-spring, the shaft *f*, journaled in said yoke, and the rolls *a c*, mounted, respectively, on the shafts *f e*, one of said rolls having a flange, *a'*, overlapping the larger end of the other roll, as set forth.

3. The combination, with the conical rolls *a c*, the former having a flange at its smaller end overlapping the larger end of the latter, and the guide *u*, formed to support the edge of a sole while it is being presented to said rolls, as set forth.

387,060. THILL-COUPLING. BENJAMIN A. FAHS, Galesburg, Ill. Filed Feb. 6, 1887. Serial No. 226,923. (No model.)

Claim.—1. In a thill-coupling, in combination, a case, C, having a cavity in its upper side, bearing-surfaces *d'*, and V-shaped grooves *d*, a thill-iron having trunnions *f'*, a rubber block, G, having groove *g*, plate D, having its forward side fitted to the V-shaped groove *d*, and binding-bolt B, substantially as and for the purpose specified.

2. In a thill-coupling, in combination, clip B, case C, having a cavity in its upper side, bearing-surfaces *d'*, side grooves, *d'*, hole *d'*, and V-shaped grooves *d*, thill-iron having trunnions *f'*, rubber block

387,060.



having grooves *g g' g'*, plate D, and bolt B, substantially as and for the purpose specified.

387,061. SUGAR-CANE HARVESTER. HENRY FATH, Middletown, Ind. Filed Apr. 18, 1887. Serial No. 235,272. (No model.)



Claim.—1. The combination, with the machine-frame, of the tongues secured to the forward portion thereof, the stalk-cutter consisting of the stationary circular cutter-plate formed with teeth at its forward edge and provided at its sides with upward-extending arms, the upper ends of which are formed with longitudinal slots, bolts, and nuts for securing the same to the tongues, and the circular revolving cutter-plate having knives on its periphery and means, substantially as set forth, for rotating it.

2. The combination, with the machine-frame, of the tongues secured to the forward portion thereof, the curved guide-rods secured to said tongues with one end and extending upward and rearward and secured at their other ends to the upper part of the machine-frame, a rotary stalk-cutter supported by arms depending from said tongues, a feed-belt at the top of the machine, provided with projections or teeth, the top cutters immediately in the rear of this feed-belt, and the intermeshing carrier-belts running along the top of the machine in the rear of the top-cutters, and gearing, substantially as described, for operating the several parts from the drive-wheels of the machine.

3. The combination, with the machine-frame having the parallel tongues, of the rotary stalk-cutter, the carrier-belts, and the stripper-frames mounted on the crank-shafts, and gearing, substantially as described, for operating the several parts from the machine drive-wheels.

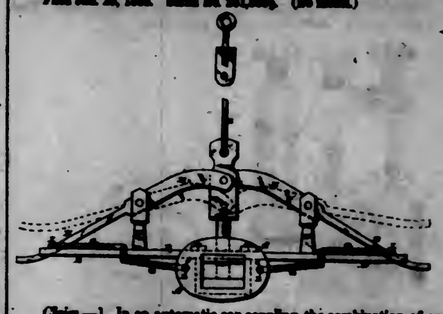
4. The combination, with the machine-frame, of the stalk-cutter, the feed-belt, the carrier-belts, and the stripper-frames mounted on the crank-shafts and pivotally connected to the centrally-pivoted walking-beam, and gearing, substantially as described, for operating the several parts from the machine drive-wheels.

5. The combination, with the machine-frame, of the stripper-frames mounted on the crank-shafts and pivotally connected to the centrally-pivoted walking-beam on the machine-frame and provided with the transverse bars formed with fingers or teeth, and means, substantially as described, for rotating the said crank-shafts.

6. The combination, with the machine-frame having parallel tongues, of the curved guides, the rotary stalk-cutter, the elevator, the feed-belt, the top-cutters, and the strippers mounted on the crank-shafts, and gearing, substantially as described, for operating the several parts from the machine drive-wheels.

7. The combination, with the machine-frame, of the rotary stalk-cutter, the elevator, the feed-belt, the top-cutters, the carrier-belts, the strippers mounted on crank-shafts, the rods, the rear platform, and the hooker, and gearing, substantially as set forth, for operating the several parts from the machine drive-wheels.

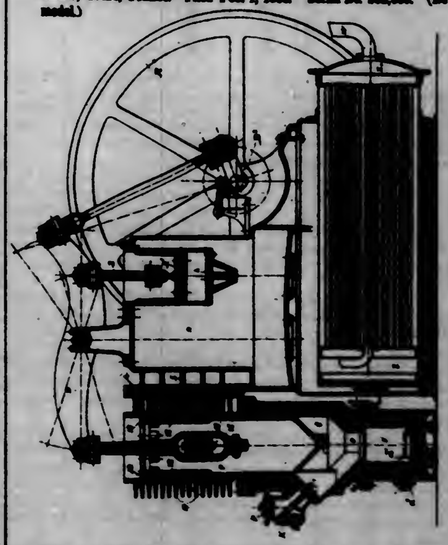
387,062. CAR-COUPLING. CHARLES E. FOX, Hendrix, Miss. Filed Jan. 28, 1888. Serial No. 261,895. (No model.)



Claim.—1. In an automatic car-coupling, the combination of one or more tripping-levers which extend horizontally across the end of the car, and which are bent at their centers so as to be pivoted upon a plate or the timbers of the car, and which have their ends turned in opposite directions with the pivoted operating-levers, the coupling-pin, and the draw-head, substantially as shown and described.

2. The combination of the plate which extends horizontally across the end of the car, the tripping-levers which extend in a line with the plate and which have their ends turned at right angles, the standards mounted upon the plate or the end of the car, the operating-levers, the coupling-pin, and the draw-head, the parts being combined and arranged to operate substantially as set forth.

387,063. HOT-AIR ENGINE OR AEROTHERMIC MOTOR. LOUIS GIFFY, Tours, France. Filed Feb. 1, 1888. Serial No. 262,660. (No model.)



Claim.—1. The improved hot-air engine or aerothermic motor composed of the compression-chamber provided with the shaft-bearings at one end, the working-cylinder, motor-piston, and expansion-chamber at the opposite end of said chamber, the feed-pump supported by flanges in said chamber and having its cylinder in communication therewith, the beam mounted on said chamber, the crank-shaft mounted in said bearings, and the connection-rods between the said beam and the motor-piston, the pump-piston, and the crank-shaft, respectively, in combination with the combustion-chamber placed under and communicating with the expansion-chamber, and the heater interposed between the compression and the combustion chambers and heated by the waste-gases from the expansion-chamber, substantially as described.

2. The combination, with the working-cylinder and motor-piston, the combustion and expansion chambers under said working-cylinder, the heater receiving the waste gases from the said chambers, and the feed-pump for compressing the air into said heater, of the admission-valve placed in the passage leading from the said heater into said combustion-chamber and automatically operated by connections with the mechanism driven by said motor-piston, substantially as described.

3. The combination, with the machine-frame, of a working-cylinder and an expansion-chamber fastened to said frame, so as to be supported thereby independently of the combustion-chamber, and a removable combustion-chamber arranged under and detachably connected with said expansion-chamber, substantially as described.

4. In combination with the working-cylinder, the motor-piston, and the expansion-chamber, the combustion-chamber arranged under the said expansion-chamber and provided at the top with a contracted throat, through which it is in direct communication with said expansion-chamber, said combustion-chamber being, moreover, provided with passages leading one to the lower part of said chamber and the other to its upper part below the contracted portion or throat, substantially as described.

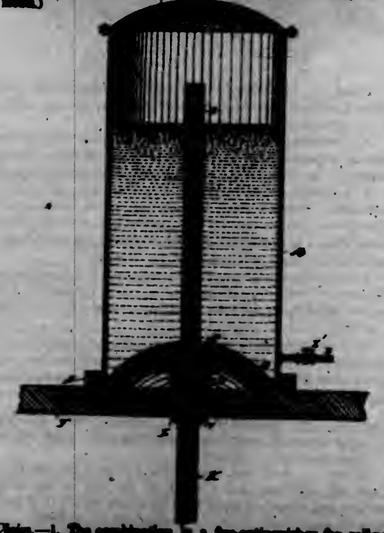
5. The combination, with the working-cylinder, the expansion-chamber, and the combustion-chamber, of the hollow motor-piston, the connection-rod, and the means inside said motor-piston for connecting the inner end of the said rod with the said motor-piston, said means consisting in a flexible blade or metal spring fastened at one end to the said rod and at the other to a cross-piece of said motor-piston, substantially as described.

6. The combination, with the combustion-chamber, the expansion-chamber, the working-cylinder, the motor-piston, the feed-pump, and the crank-shaft, of the beam and the connection-rods provided with double joints having axes at right angles to each other and to the length of the rods, substantially as described.

7. The working-cylinder provided externally with ribs or projections, in combination with a machine-frame provided with a plate to which said cylinder is bolted, said plate being connected with said frame by webs, substantially as described.

8. The combination, with the combustion-chamber, the expansion-chamber, the working-cylinder, the motor-piston, and mechanism operated by said piston, of the admission-valve, the elongated admission-cam or the crank-shaft having a helical incline for closing said valve, the lever for operating the valve from said cam, the centrifugal governor, and the regulating mechanism, whereby said governor shifts said lever lengthwise of said cam and causes it to be operated by different parts of the cam-surface, substantially as described.

387,064. FIRE-EXTINGUISHER FOR RAILWAY-CARS. GEORGE GUSS, Milwaukee, Wis. Filed Jan. 17, 1887. Serial No. 224,402. (No model.)



Claim.—1. The combination, in a fire-extinguisher for railway-cars, of the feed-tank, the hooking apparatus, and a pipe making air-connection between the hooking device and the tank, said pipe being

operable at or near the tank and having suitable valves in its two parts for closing the same and preventing exit of air, as herein set forth.

2. In a fire-extinguisher, the combination, with a pressure apparatus, an air-tube extending therefrom having a valve in its extremity, of a tank having a tube therein projecting beyond its outer surface, the end of the tank-tube being adapted to enter the air-tube and thereby depress its valve, whereby air-pressure is supplied to the tank.

3. In a fire-extinguisher, the combination, with the pressure apparatus and an air-tube extending therefrom and having a valve at its extremity, of a tank, a tube extending from said tank, the end of the tank-tube being adapted to enter the extremity of the air-tube and thereby depress its valve and allow flow of air into the tank, and a valve in the tank-tube closing outwardly by air-pressure in the tank, whereby the air is prevented from escaping when the tank is removed from the air-tube, as herein set forth and described.

4. The combination, with the auxiliary cylinder, a removable reservoir or tank, and a valve in said reservoir or tank having its opening toward the interior of the latter, of a valve in communication with the cylinder and adapted to communicate with the other valve and opening oppositely to the former valve, substantially as set forth.

5. The combination, with the cylinder X, of a valve in communication with said cylinder and held normally closed by the air therefrom, a portable reservoir, a protuberance in said reservoir adapted to communicate with and hold open said valve, and a valve in said reservoir adapted to close by gravity when the said protuberance and valve are disconnected.

6. The combination, with the cylinder X for operating the brakes, of a valve in communication therewith, a removable tank, a protuberance adapted to communicate with said valve and with the removable tank and to hold said valve open, and a gravity-valve in said protuberance, substantially as set forth.

7. The combination, with the cylinder for supplying compressed air and the portable reservoir, of two valves, detachably connected with each other, opening in opposite directions, and one being connected with the air-tank and the other with said reservoir, whereby one is held open and the other closed by the air from said tank, and a casing in which one of said valves is located and the end of which bears upon the opposite valve to force it open.

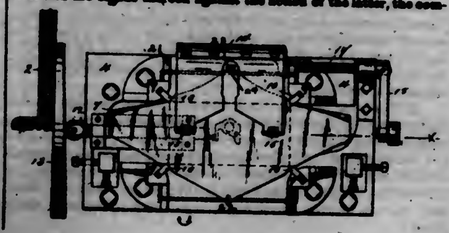
8. The combination, with the auxiliary air-cylinder, of a pipe, K, leading therefrom, a valve in said pipe opening toward the pressure of air, a tank for containing liquid, a pipe, C, on the interior of said liquid-tank protruding beyond its outer wall and adapted to communicate with pipe K and force the valve therein open, and a valve in said pipe C opening oppositely to the other valve.

9. The combination with the auxiliary air-cylinder and a portable tank, of a tube extending upward in said tank, a hollow truncated cone on the outer wall of said tank, and communicating with said tube, a valve in said cone opening toward the upper end of said tube, a bar across the lower end of said cone, a pipe leading from said air-cylinder, an enlargement on the terminus of said pipe, a conical cavity in said enlargement for the reception of said truncated cone, a valve in said enlargement adapted to be forced open by the bar on said cone, and a spring for holding it closed when said cone is removed.

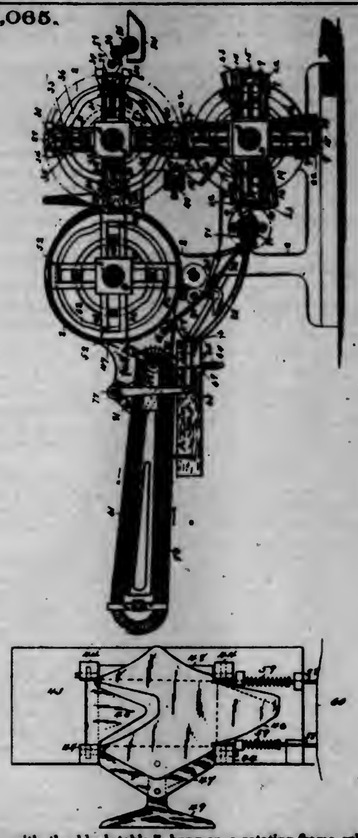
10. The combination, with the air-cylinder and air tube or passage leading therefrom having an inwardly-opening valve with a vertical stem in its extremity, of a portable tank having a tube extending out through its bottom and adapted to enter the air-tube, and a perforated fibrous disk or packing secured to the extremity of the tank-pipe, whereby the stem of the valve is depressed and a tight joint secured by pressing one pipe within the other.

387,065. ROTARY ENVELOPE-MACHINE. HENRY A. GRANT, Springfield, Mass. Filed May 24, 1888. Serial No. 275,028. (No model.) Patented in Canada Apr. 30, 1888, No. 23,254; in England Sept. 2, 1888, No. 11,339; in France Sept. 6, 1888, No. 179,488; in Germany Sept. 6, 1888, No. 50,714; in Belgium Sept. 13, 1888, No. 79,518, and in Austria-Hungary Aug. 6, 1887.

Claim.—1. In a rotary envelope-machine, as a means for feeding the blank-table outwardly toward the pickers and for holding said table and the blanks thereon against the action of the latter, the com-



387,065.



bination, with the blank-table 7, hung on a rotating frame, substantially as described, of a post, 8, connected by one end to said table and having its opposite end entering a socket in the frame 4, a spring-clamp, 11, fixed on the latter and surrounding said post, a sliding bar, 12, having an endwise movement on frame 4 against and from one side of said clamp, and a cam-strip on the frame of the machine, with which the outer end of said sliding bar engages, substantially as set forth.

2. As means for limiting the outward movement from frame 4 of the blank-table and the pile of blanks thereon, a blank-retainer, 14, and means, substantially as described, for swinging the latter over and off from the pile of blanks while the latter is being rotated opposite the picker devices, combined and operating substantially as set forth.

3. In combination, the blank-table 7, having, together with the blanks thereon, a free outward movement from frame 4, the crank-shaft 17, having arm 16 thereon, the blank-retainer 14, secured on the latter, and a suitable cam for the engagement therewith of the crank-arm on said shaft 17, whereby the blank-retainer is given a vibratory motion over the pile of blanks during the rotation of said frame, substantially as set forth.

4. In combination, the pickers 24, having a rotary motion with frame 5, opposite and in conjunction with the blank-table 7, a spring-arm, 23, secured at the edge of the latter and having a curved free end for engagement with said pickers, a spring-hook, 24, having its free end projecting through said arm, and the spring-hook 23, substantially as set forth.

5. The rotating frame 5, a picker-box located between suitable supporting-posts projecting from the side of said frame and having a partly-covered face and open ends, and having across one end thereof the curved strip 28, the vibratory arm 30, having the curved strip 29 thereon, and means, substantially as described, for swinging the end of said arm against and from the end of said box while the latter, with frame 4, is rotated, combined and operating substantially as set forth.

6. The combination, with the picker-box, of the pickers 24, bars on each side of the latter, the bars 26, to which said pickers are attached, the frame 5, having a cam-groove therein, with which the ends of said bars engage, whereby the pickers are given a reciprocating motion by the sides of said bar, substantially as set forth.

7. In combination, the picker-box, the pickers 24, and the lever 37, pivoted on the side of said box, and means, substantially as described, for imparting a vibratory motion to said lever while the frame 5 and the picker-box rotate, substantially as set forth.

8. In combination, the picker-box having the curved strip 28 across one end, the arm 30, having the curved strip 29 thereon, and the evener-shaft 40, having thereon the evener 41, to rotate in engagement with said strips 28 and 29, substantially as set forth.

9. In combination, the rotating frame 5 and 6, the picker-box, the vibratory arm 30, means, substantially as described, for swinging the latter away from the end of said box, and the folding-wing 45, swinging into the open end of the latter under the envelope-blank thereon and raising the blank, substantially as set forth.

10. In combination, the rotating frame 6, the plate 43, supported on the latter, the end-flap-folding wings 45 and 46, the back-flap-folding wing having the adjustable extension 49 thereon, the eccentric end-flap-folding shaft 48, rolling over the edge of said extension, and means, substantially as described, for imparting vibratory motions to said wings and a rocking motion to said shaft, substantially as set forth.

11. In combination, the rotating frame 6, the plate 43, the end-flap-folding wings 45 and 46, the back-flap-folding wing having the adjustable extension 49 thereon, the eccentric end-flap-folding shaft 48, rolling over the edge of said extension, the pins 50, extending over the shaft of one of the end-flap-folding wings, and means, substantially as described, for imparting a reciprocating endwise motion to said pins and vibratory motions to said wings and a rocking motion to said shaft, substantially as set forth.

12. In combination, the back-flap-folding wing 47, having the adjustable extension 49 thereon, and the eccentric end-flap-folding shaft 48, and means, substantially as described, for imparting a vibratory motion to said folding-wings and a rocking motion to said shaft, substantially as set forth.

13. In combination, in an envelope-machine, the rotary frame 4, the blank-table 7, (having convex surface,) secured to the frame, the posts 9, attached to the frame and extending opposite the edges of said table, and the spring-actuated guide-strip 10, secured in grooves in said posts, so as to bear against the edges of the table, substantially as described.

387,066. SPIKE. EDWARD GRIMM, Lake View, assignor to himself and Morris Sellers, Chicago, Ill. Filed Feb. 18, 1888. Serial No. 264,627. (No model.)



Claim.—1. In a spike-bar, the head 15, having beads 17 and 18, produced or developed along one edge of the bar exterior to the usual rib, 14, substantially as set forth.

2. A railway-rail spike having a driving-head and two claw-bar heads or projections, one on the side next the rail (when the spike is driven) and the other on the opposite side, substantially as set forth.

3. A railway-rail spike having a double head, the upper one of which has a claw-bar head or projection on the side next the rail (when driven) and another on the opposite side, and the lower head of which has a projection or lip, 4, for engaging the rail-flange, and a swell or enlargement, 6, substantially as set forth.

4. A railway-spike having a driving-head, 5, a claw-bar head or projection, 7, on the side of the head next the rail, another, 8, on the opposite side, a lip, 4, and a shank having a taper part, 9, substantially as set forth.

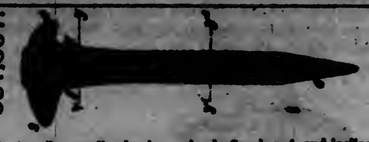
5. A railway-spike having a driving-head, 5, a claw-bar head or projection, 7, on the side of the head next the rail, another, 8, on the opposite side, a lip, 4, and a shank having a taper part, 10, substantially as set forth.

387,067. RAILWAY-SPIKE. EDWARD GRIMM, Lake View, assignor to himself and Morris Sellers, Chicago, Ill. Filed Feb. 18, 1888. Serial No. 264,628. (No model.)

Claim.—1. A railway-spike having a hook, 3, for engaging (when driven) the rail-flange, and a lug, 4, on the rear of the spike-head, arranged and shaped to stand at its outermost end clear of and a little above the upper face of the tie, substantially as set forth.

2. In a railway-spike, a hook-lug, 4, the lower face of which is in a plane higher than and parallel, or approximately so, to the plane of the lower face of the hook 3, substantially as set forth.

387,067.



2. A railway-spike having a hook, 3, a lug, 4, and inclines 5 7, substantially as set forth.

387,068. RAILWAY-SPIKE. EDWARD GRIMM, Lake View, assignor to himself and Morris Sellers, Chicago, Ill. Filed Apr. 2, 1888. Serial No. 269,247. (No model.)



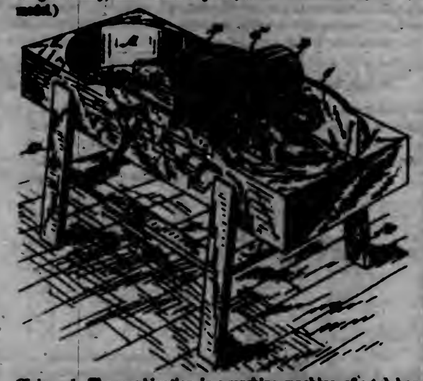
Claim.—1. A railway-spike having an L-shaped shank, upper head with beads 7 and 8, and a lower head with hook 4, substantially as set forth.

2. A railway-spike having an L-shaped shank, an upper head with beads 7 and 8, and a lower head with hook 4 and swell 6, substantially as set forth.

3. A railway-spike having an L-shaped shank, an upper head with beads 7 and 8, a lower head with hook 4, and an incline, 5, beneath the hook, substantially as set forth.

4. A railway-spike having an L-shaped shank, an upper head with beads 7 and 8, a lower head with hook 4, and inclines 9 and 10, substantially as set forth.

387,069. WASHING-MACHINE. HARVEY HARMAN, Judson, Hopper County, Ind. Filed Sept. 24, 1887. Serial No. 250,071. (No model.)



Claim.—1. The combination, in a washing-machine, of a tub having the rounded inner ends, two rotary rubbers mounted in said tub, one on each side thereof, and geared to revolve in opposite directions, and rubbing-boards mounted beneath said rotary rubbers, substantially as set forth.

2. In a washing-machine, the combination of a tub provided with a central partition, A^2, extending only a portion of its length, and spring-mounted rubbing-boards hinged at one end to the bottom of the tub arranged on each side of said partition, and rotary rubbers mounted on each side of said partition above said rubbing-boards and geared to run in opposite directions, substantially as set forth.

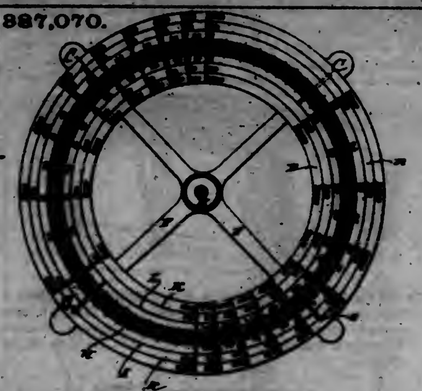
3. A washing-machine consisting of a tub, rubbing-boards, and rotary rubbers mounted above said rubbing-boards and geared to revolve in opposite directions, substantially as described, and for the purpose specified.

387,070. LOGARITHMIC SLIDING SCALE. WARREN HALE, East Orange, N. J. Filed Sept. 30, 1887. Serial No. 250,959. (No model.)

Claim.—1. In a slide-rule, the combination of two concentrically-connected and independently-movable disks arranged in the same plane, a circle on each disk being filled with a logarithmic auto-scale and one or more extensions thereof of regularly-increasing numerical value, the scales of the separate disks having the same relative divisional values, substantially as and for the purpose set forth.

2. In a slide-rule, the combination of two concentrically-connected and independently-movable disks arranged in the same plane, a circle on each disk being filled with a logarithmic auto-scale and one or more extensions thereof of regularly-increasing numerical values, and one or more circles arranged concentric to the circle of the auto-scale and its extension and distinctly divided and of proportionately-increasing values, the scales of the separate disks having the same relative divisional values, substantially as and for the purpose set forth.

387,070.



387,071. SHAVING-BRUSH. HENRY V. HAMM, Cleveland, Ohio. Filed Apr. 12, 1888. Serial No. 271,054. (No model.)



Claim.—1. A match-block constructed with a hook-strap having a vertical part formed with a slot in its lower end and a horizontal part formed with a swivel-eye, a hook at the outer end, and a link-depression, substantially as described.

2. A match-block having a hook-strap adapted to slide, formed with a slot for the center-pin, and a link, substantially as described.

3. A match-block having a hook-strap adapted to slide, a link, and a basket for guiding and retaining the strap on the rear check-plate, substantially as described.

4. A match-block comprising a frame having front and rear check-plates and a bottom plate, the hook-strap having center-pin and slot connection with the rear check-plate, a link, and the link-strap secured to the front check-plate, substantially as described.

5. The combination of the shell or frame having a bracket pulley or sheave having a center-pin, a link, the hook-strap having a slot for the center-pin, and the link-strap, substantially as described.

387,072. FENCE-PANEL. GRAHAM HOOPER, Geneva, Jennings County, Ind. Filed Sept. 9, 1887. Serial No. 248,936. (No model.)

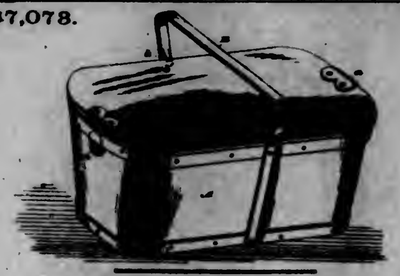


Claim.—The combination, with the posts, of the adjustable collar having the hinged eyes, and means, substantially as described, for securing the collars in their positions, and the fence-panel consisting of the bars having the series of pickets and provided with the hinged eyes, substantially as and for the purpose set forth.

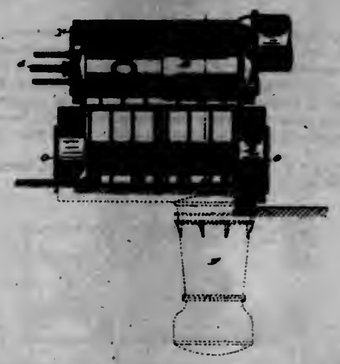
387,073. FISH-BASKET. WILLIAM A. HIRE, Putnam, N. Y. Filed Feb. 2, 1888. Serial No. 262,633. (No model.)

Claim.—The combination, with the basket and the cover therefor, of a handle constructed of strap or band metal secured to the basket and facing outwardly from the upper edge thereof, and having integral bars one and best inward from its center immediately above the edge of the basket to secure the cover, in the manner set forth.

387,073.

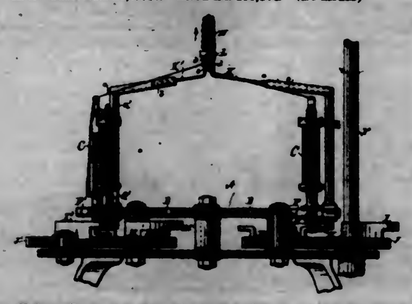


387,074. PUMP. Bowman S. Hixon, Brooklyn, N. Y.; Maria L. Hixon, executrix, and Cyrus G. Hixon, executor, of said Dauphin S. Hixon, deceased, assignors to William A. Perry, Bay Ridge, and Charles C. Worthington, Irvington, N. Y. Filed May 14, 1888. Serial No. 109,415. (No model.)



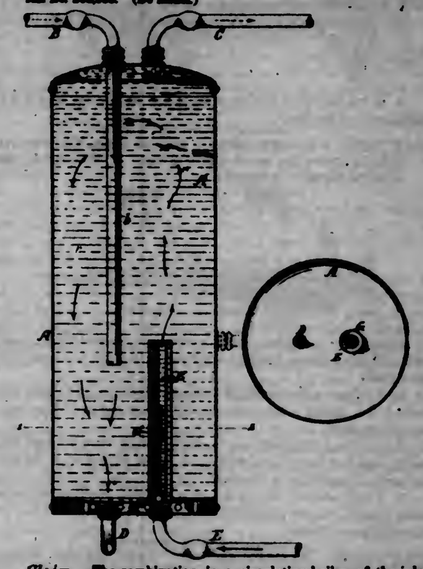
Claim.—The combination, in a duplex pump, of a horizontally-arranged suction-chamber, a horizontally-arranged force-chamber supported upon the top of the suction-chamber, two horizontal pump-cylinders arranged at the sides of and parallel with suction and force chambers, two vertical or substantially vertical partitions extending the length of each of said chambers and carrying suction and force valves, suction and discharge pipes communicating with said chambers between the partitions, passages H I J K, leading from the outsides of the partitions of the suction-chamber to the opposite ends of each cylinder, and similar passages, Q R S T, leading from the opposite ends of each cylinder to the outsides of the partitions of the force-chamber, substantially as described.

387,075. BRAIDING-MACHINE. Arnold S. Hoxe, Providence, R. I. Filed Dec. 27, 1887. Serial No. 259,174. (No model.)



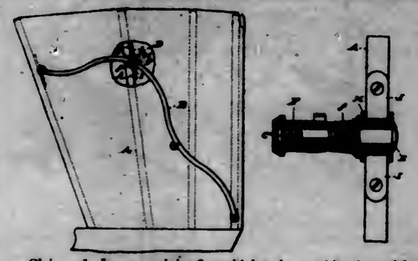
Claim.—In combination, the upper plate provided with the carrier-tracks and the slot crossing the carrier-track, means for moving the carriers continuously forward along the carrier-tracks, the sliding standard adapted to move within the slot to opposite sides of the carrier-track, the oppositely-acting cams for producing the said movement, and the loop-forming bar, which is loosely held upon the sliding standard, substantially as described.

387,076. BOILER. George B. Herron, Philadelphia, Pa., assignor to the Abram Cox Stove Company, same place. Filed Apr. 7, 1888. Serial No. 269,966. (No model.)



Claim.—The combination, in a circulating-boiler, of the inlet-pipe from the water-back or heating-coil extending into the boiler with an incasing-tube around said inlet-pipe, substantially as and for the purpose described.

387,077. CARRIAGE-TOP PROP. William R. James, Sulphur Springs, Tex. Filed Nov. 12, 1887. Serial No. 255,069. (No model.)



Claim.—1. In a prop-joint for vehicles, the combination, with the bow, of the prop-casting having circumferential flanges secured to the edge of the bow, substantially as specified.

2. In a prop-joint for vehicles, the combination of the bow, the prop-casting having the circumferential flanges lying against the opposite sides of the bow, and the opposite extension-plates lying against and secured by screws to the rear edges of the bow, substantially as specified.

3. In a prop-joint for vehicles, the combination of the bow A, the casting D, provided with the flanges G and extension-plates I, the bolt C, having the head E, the nut F, and the thimble *f*, all constructed and arranged substantially as and for the purpose specified.

387,078. WEATHER-STRIP. James Jamieson, Austin, Ill. Filed Oct. 31, 1887. Serial No. 253,693. (No model.)



Claim.—A weather-strip consisting of a central narrow piece, A, of elastic material, and metal binding-strips B B, firmly secured to and protecting the longitudinal edges of the elastic strip, whereby, by means of nails or screws passed through the metallic strips into a door or door-frame, the portion of the elastic unprotected by the metal strip may be made to bulge outward to a varying degree, substantially as shown and described.

387,079. SELF-OPERATING SIGNALING. Lewis B. Jones, Chicago, Ill., assignor of one-half to William B. Shaw, same place. Filed July 23, 1887. Serial No. 245,009. (No model.)



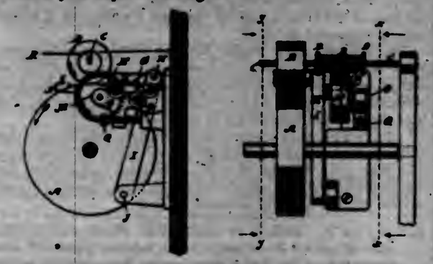
Claim.—1. In an automatic signaling apparatus, the combination, with the shaft carrying the gear-wheel, having the hammer-actuating devices thereon, and pinion, as described, of two gear-wheels engaging said pinion, one connected to the spring or motor, the other carrying a notched disk, a train of gearing for actuating the fly in gear with the wheel carrying the hammer-actuating devices, and two arms, one of which enters the notch in said disk and allows the other to engage the fly and arrest its motion, as set forth.

2. In an automatic signaling apparatus, the combination, with the shaft carrying the gear-wheel, having the hammer-actuating devices thereon, and pinion, as described, of two gear-wheels engaging said pinion, one connected to the spring or motor, the other carrying a notched disk, a train of gearing for actuating the fly in gear with the wheel carrying the hammer-actuating devices, two arms, one of which enters the notch in said disk and allows the other to engage the fly and arrest its motion, and a central pin for moving the same out of engagement with said fly and allowing its further rotation, as set forth.

3. In an automatic signaling device, the combination, with the spring, train of gearing, and fly, as described, of the shaft for said fly, having its ends enlarged to form the bearings and provided with the collars of greater diameter than said enlarged portions for preventing the longitudinal movement of the shaft, substantially as described.

387,080. MACHINE FOR WINDING BOBBINS. James Emerson, New York, N. Y. Filed Feb. 2, 1888. Serial No. 262,714. (No model.)

Brief.—The object of the invention is to produce an improved mechanism for winding bobbins, whereby the accumulation of a certain amount of yarn stops the winding.



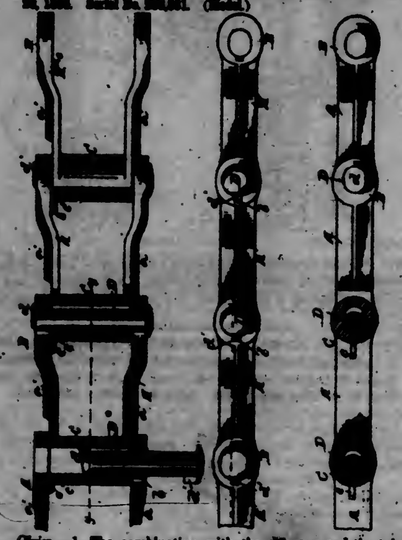
Claim.—1. The combination, with the spool-carrying shaft C, having the transmitter B, the actuator A, for revolving the transmitter, and a movable stop, E, of a rotary step-actuator, L, and connections between the latter and the stop, said step-actuator being adapted to be rotated by the material being wound for moving the stop between the actuator and the transmitter, substantially as described.

2. The combination of the spool-carrying shaft C, having the transmitter-disk B, the actuator-disk A, for revolving the latter, the pivoted swinging lever I, the stop E, pivotally connected with the upper portion of the lever, the rotary step-actuator L, adapted to be rotated by the material being wound, and the link K, connecting the step-actuator with the stop-carrying lever for moving the stop between the transmitter and the actuator, substantially as described.

3. The combination of the spool-carrying shaft C, having the transmitter-disk B, the actuator-disk A, the pivoted swinging lever I, carrying the stop E, the pivoted support O, and the weighted rotary step-actuator L, journaled on said support, and the link K, connecting the step-actuator with the stop-carrying lever to move the stop between the transmitter and the actuator disks, substantially as described.

4. The combination of the spool-carrying shaft C, having the transmitter B, the actuator A, the pivoted lever I, the stop E on the lever, the pivoted support O, the set-screw Q, for adjusting the support, the rotary step-actuator L, carried by the support, and the link K, connecting the step-actuator with the pivoted lever to move the stop between the transmitter and the actuator, substantially as described.

387,081. REVERSE. Benjamin A. Lees, Columbus, Ohio, assignor to the Jeffrey Manufacturing Company, same place. Filed Mar. 26, 1888. Serial No. 268,561. (Model.)



Claim.—1. The combination, with the side bar and the tubular end bars having plate-seats which are enlarged laterally and not transversely, of the plates, each having at one end a flange adapted to pass through the plate-seat when the links are in line with each other and to overlap the outer face of the adjacent side bar near one end when the links are in working position, and locking devices, substantially as described, adapted to prevent rotation of the plates relatively to the seats in which their ends are supported, substantially as set forth.

2. The combination, with the side bars and the tubular end bars, both having plate-seats which are laterally elongated in cross-section, of the plates having at their ends lateral projections adapted to pass through the plate-seats when the seats are in line with each other, and to overlap the faces of the adjacent side bars when the links are moved laterally one to the other, the links being provided with stops, substantially as described, projecting from the side bars and engaging with the adjacent links and with the recesses to receive the stops and permit movement of the seats into line with each other, substantially as set forth.

3. The combination, with the side bars and the plates having the laterally-projecting lips, of the spurs upon the inner faces of the side bars and the threads in the tubular end bars, substantially as set forth.

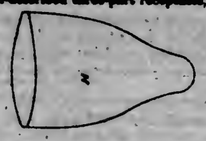
387,082. WRITING-DESK APPENDAGE. Howard Lemmert, Toledo, Ohio. Filed Apr. 20, 1888. Serial No. 272,262. (No model.)

Claim.—1. The herein-described appendage to a desk, consisting of two depending coils and one horizontal coil, in combination with a sponge-receptacle contained within one of the depending coils, as and for the purpose set forth.

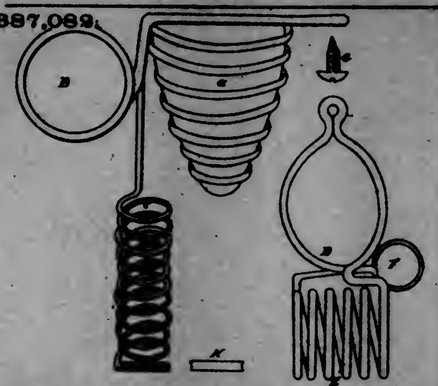
2. The herein-described appendage to a desk, comprising a vertical coil and a horizontal coil formed of one portion of a length of wire, with the remaining portion of wire formed into a depending coil having a closed end, as and for the purpose set forth.

3. In an appendage to a desk, a depending coil of wire adapted to be pivotally attached to the same, in combination with a sponge-receptacle fitted within the coil, as and for the purpose set forth.

4. The herein-described three-part receptacle, formed of a single



887,083.



piece of wire and comprising a loop for the reception of a pivot-screw, a depending coil provided with a receptacle, a horizontal coil, and a depending coil having a closed lower end, as and for the purpose set forth.

887,083. FRINGE-POST FOR SEWING-MACHINES. CHARLES F. LEMARDELEY, Bridgeport, Conn., assignor, by mesne assignments, to Charles H. Langdon, Elizabeth, N. J., and George C. Batcheller, New York, N. Y. Filed May 4, 1888. Serial No. 272,734. (No model.)



Claim.—1. A sewing-machine presser-foot having a tape-slot, a flat bottom, convex curves at the sides in front, a separator about midway between the sides extending from the top to the bottom, the lines in the vertical plane from the lower end of the separator to the upper ends of the convex curves and in the horizontal plane from the lower end of the separator to the lower ends of the convex curves being all concave curves.

2. A sewing-machine presser-foot having a tape-slot and a separator in front extending from top to bottom, the lines at the sides being convex curves from points 6 to points 7, the bottom lines being concave curves from points 6 to point 9, and the front lines being concave curves from point 9 to points 7, whereby the short ends of a seam are separated, opened out, and flattened down, and a covering-tape laid in position to be stitched.

887,084. RAIL FOR FENCE-POSTS. CHARLES S. LOSS, Hinsley, Ill. Filed Dec. 4, 1886. Serial No. 254,062. (No model.)

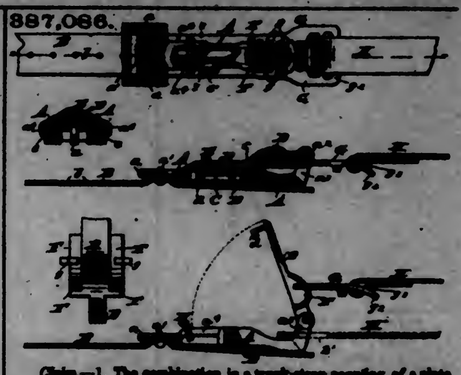
Claim.—A fence-post having a base of asphaltic concrete pressed thereon as a new manufacture.

887,085. FENCE-POST. CHARLES S. LOSS, Auburn, Ill. Filed May 27, 1887. Serial No. 239,288. (No model.)

Claim.—The method herein described of forming a base or support of asphaltic concrete on a metallic bar or rod, which consists in heating one end of said bar or rod and while the same is in a heated condition pressing thereon a body or base of heated asphaltic concrete, as set forth.

887,086. TRUNK-STRAP COUPLING. HENRY B. LOY, Red Bank, N. J. Filed Mar. 30, 1888. Serial No. 269,728. (No model.)

887,086.



Claim.—1. The combination, in a trunk-strap coupling, of a plate secured at one end to one end of the trunk-strap, a straining-lever pivoted on the said plate to swing against the same, a locking-bolt adapted to engage the free end of the lever when the latter is swung against the plate, and a detachable coupling-piece for establishing temporary connection between the opposite end of the strap and a point on the lever between its free end and pivot, substantially as described.

2. The combination, in a coupling for trunk-straps, of a plate formed with an integral buckle at one end for attachment of the plate to a strap, a straining-lever pivoted to the opposite end of the plate to be swung against the same, and a detachable coupling-piece for establishing connection between the lever and one end of the strap, substantially as described.

3. In a coupling for trunk-straps, the combination, with the plate having a recess in its under side, a slot or aperture in the top extending into the said recess, and a key-hole adjacent to the said recess, of a locking-bolt fitted in the recess, and a straining-lever pivoted to the said plate to be swung against the same to be engaged by the locking-bolt, and means, substantially as described, for attaching the coupling to a trunk-strap, substantially as set forth.

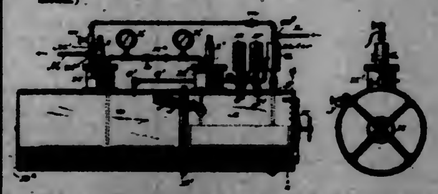
4. In a trunk-strap coupling, the combination, with the plate formed with a buckle, *c*, having a cross-bar provided with stud *c'*, of the straining-lever D, pivoted to be swung against the plate, and the detachable coupling-piece G for establishing connection between the said lever and an end of the trunk-strap, substantially as described.

5. The combination, with the plate A, formed with integral buckle *c*, of a bolt, C, straining-lever D, formed with hook *d* and pivoted on the plate to be swung against the same, and a sliding ring, E, substantially as shown and described.

6. In a trunk-strap coupling, the main plate adapted for connection with one end of a strap and formed with end lugs, a^2 a^2, provided with permanent inwardly-projecting opposing pins a^3 a^3, combined with a straining-lever having a hole, *d'*, into which the pins a^3 of the plate-lugs a^2 are entered, substantially as herein set forth.

7. In a trunk-strap coupling, the combination, with the main plate, of the lever constructed with flanges and pivoted to be swung against said plate, and a toothed adjustable catch-plate buckle whose teeth engage the flanged lever and whose opposite end is adapted to receive one end of the trunk-strap, as herein set forth.

887,087. METHOD OF GENERATING STEAM AND HEATING AIR. WILLIAM G. MACFARLANE, Dunlo, assignor, by direct and mesne assignments, to the MacLaughlin Chemical Motor and Heating Company, Everett, Mass. Filed Dec. 30, 1887. Serial No. 259,411. (No model.)



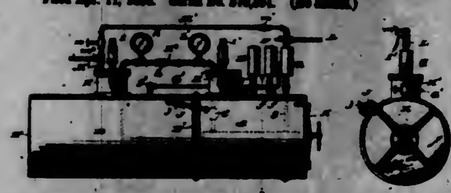
Claim.—1. The method herein described of generating and propelling steam, which consists in heating water to form steam in a heat-generating chamber by chemical action, conveying the steam thus formed to a regenerating-chamber and contacting it with a chemical, and causing the water of condensation in the said regenerating-chamber to fall on the chemical to form steam, which propels the regenerated steam continuously through the exhaust.

2. The method herein described of generating steam, which consists in expanding an inclosed volume of water in a chamber, placing a quantity of soda under said volume of water, dissolving said soda by water fed thereon, dissolving said soda and water by a charge of sulphuric acid, thereby generating heat which envelops the volume of water and vaporizes the same into steam, and independently exhausting the pressure from said chamber and the steam generated from the volume of water.

3. The herein-described method of generating steam and using the hot air or vapor of the initial generating medium as a regenerative and propulsive medium, which consists in forming steam by a chemical compound, contacting it upon a bed of dry soda in a separate compartment, allowing the heated air from the generating-chamber to flow into the said separate compartment apart from the steam, and causing the water of condensation in the latter compartment to continuously fall upon the bed of soda by vibratory motion, as set forth.

4. The herein-described method of generating and propelling steam, which consists in allowing water to slowly fall upon a bed of dry soda contained in a closed chamber and feeding heated air or vapor generated by a chemical compound in a separate chamber into said chamber containing the dry soda apart from the water, as set forth.

887,088. APPARATUS FOR ECONOMICALLY HEATING WATER TO PRODUCE STEAM. WILLIAM G. MACFARLANE, Dunlo, assignor to the MacLaughlin Chemical Motor and Heating Company, Everett, Mass. Filed Apr. 11, 1888. Serial No. 270,291. (No model.)



Claim.—1. In a steam and heat generating apparatus, the combination, substantially as before set forth, of a boiler divided into generating and regenerating chambers by a partition-head, the said chambers having closed ends, a series of boilers suspended within the generating-chamber, the feed-water tank connected to said boilers, the steam-domes, and the connecting-pipes.

2. In a steam and heat generating apparatus, the combination, substantially as before set forth, of a boiler divided into generating and regenerating chambers by a partitional head, and a series of boilers suspended within the generating-chamber.

3. In a steam and heat generating apparatus, the combination, substantially as before set forth, of the boiler divided into generating and regenerating chambers by a partitional head, a series of boilers suspended in the generating-chamber, and a steam-box in connection with said boilers and also with the generating-chamber.

4. The combination of the generating-chamber A, adapted to receive a chemical compound, the regenerating-chamber B, containing a bed of dry soda, the acid and water feeding tanks in connection with the generating-chamber A, the series of boilers suspended within said generating-chamber, the several receiving and conveying connections, and the inclined pipe J, connecting the chambers A and B, substantially as described.

5. The combination of the chambers A and B, the partition F, dividing the same, water-tanks E and G, the acid-tank F, the series of boilers D, D', and D'', suspended in the chamber A and connected to the water-tank G, the steam-box C, attached to the boilers D, D', and D'', the steam-dome H', receiving-dome H, the pipe H'', connecting said dome, exhaust or conveying pipe M, connecting-pipe M', running to the water-tank G from the dome H, and the pipe L, substantially as described.

6. The combination, with the chambers A and B, supplied with boilers and connections, as set forth, and having closed ends, of the divisional partition F and the inclined connecting-pipe J, substantially as described.

7. The combination, with the chambers A and B, having the dividing partition F, the boilers suspended within the chamber A, adapted to be filled with water and connected with a suitable steam-dome, the removable head K for the purpose of giving access to the chamber A, and the water-tank E and acid-tank F, both of which are connected to the chamber A, substantially as described.

8. The combination, with the chambers A and B, having a dividing partition, of the connecting-pipe J, the water-tank G, the feed-pipe G', running from said acid-tank G to the chamber B, and the exhaust-pipe from the latter chamber, substantially as described.

887,089. APPARATUS FOR ECONOMICALLY PRODUCING HEAT. WILLIAM G. MACFARLANE, Dunlo, assignor to the MacLaughlin Chemical Motor and Heating Company, Everett, Mass. Filed Apr. 11, 1888. Serial No. 270,293. (No model.)



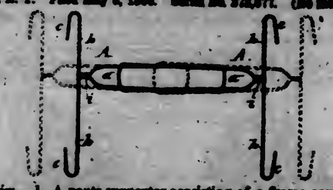
Claim.—1. In the apparatus set forth, the combination, substantially as hereinbefore described, of the cylinder B, the hopper A, having a head, J, mounted on and geared to said cylinder, the removable head D, having an enlarged centrally-situated aperture, and small apertures *d* adjacent thereto, the rod E', the lever F, the apertured valve-plug E on the lower end of the rod E', having apertures *e* therein adapted to register with the apertures *d* in the head D, the tank G, connected to the cylinder B and having a suitable cut-off plug, C', and its connecting-pipe, the exhaust-pipe G, and the drain-pipe H.

2. The combination, with the hopper A, having a closed head, the cylinder B, having a removable head-plate, D, with central apertures, the rod E', lever F, the valve-plug E, carried on the lower end of the rod E', having apertures *e* therein adapted to register with the apertures in the plate D adjacent thereto, a soda and water supply tank, and an exhaust-pipe, substantially as described.

3. The combination, with the hopper A, the cylinder B, head-plate D, having a central aperture with smaller apertures running therefrom at an incline, the lever F, the rod E', and the valve-plug E, carried on the lower end of the rod E', having apertures *e* therein registering with the apertures *d* in the plate D, substantially as described.

4. The combination, with the cylinder B and hopper A, of the apertured plate D between the same, the head J on top of the hopper A, having lugs *j* thereon, the lever F, moving between said lugs *j*, the rod E', and the apertured valve-plug E on the lower end of the rod E', and fitted in the enlarged central aperture in the plate D, having apertures *e* therein adapted to register with the apertures *d* in the said plate D, substantially as described.

887,090. PASTE-SUPPORTER. ANTHONY B. HAGEMAN, Binghamton, N. Y. Filed May 3, 1888. Serial No. 272,877. (No model.)

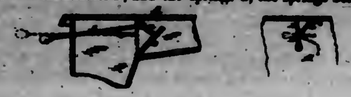


Claim.—1. A paste-supporter consisting of a frame composed of sections adjustably coupled together to permit extension and contraction of said frame, and arms extending in opposite directions from said sections, and terminating with catches adapted to engage the suspender-buttons of the pants, substantially as described and shown.

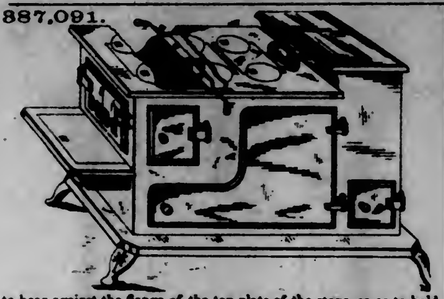
2. A paste-supporter consisting of a frame composed of two sections, A A, each formed of wire bent into the elongated loop *a*, terminating at one end with arms *b b*, and with hooks *c c* on the free ends of said arms, and the loops *a a* of the said two sections being interlocked with each other and adapted to slide longitudinally on each other, substantially as described and shown.

887,091. REGULATING-DAMPER FOR COOKING-STOVES, &c. JAMES HARROT, Sperry, Iowa. Filed July 23, 1888. Serial No. 280,762. (No model.)

Claim.—The combination, with a stove or range, of the vertical partition E, and the dampers D, placed upon opposite sides thereof and provided with handles F, and the springs G, the springs being made

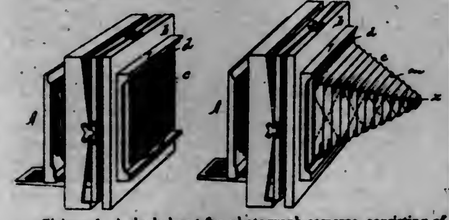


887,091.



to bear against the flange of the top plate of the stove, so as to hold the dampers in position, substantially as shown and described.

887,092. SHADING-HOOD FOR PHOTOGRAPHIC CAMERAS. THOMAS W. MANN, Holyoke, Mass. Filed Nov. 10, 1886. Serial No. 219,267. (No model.)

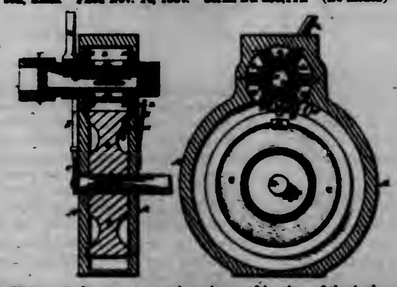


Claim.—1. A shade-hood for photograph-cameras, consisting of the flexible body *m*, attached by one end to the camera and having an opening in its free end, combined with the lazy-tong frame *n*, attached by one end to the camera and to said hood, substantially as set forth.

2. The combination, in a camera, of the frame *d*, having the cross-bar *v*, the collars *c*, and the spring *w* on said bar, the lazy-tongs *n*, having one end pivoted to said collars, and the flexible hood *m*, having its base attached to said frame and inclosing said lazy-tongs, substantially as set forth.

3. A shading-hood for photographic cameras made in pyramidal form of flexible material and having an opening through its apex opposite the ground glass of the camera, and having an internal frame-support which is collapsible together with said hood, whereby the said open end of the latter is permitted to be moved toward and from said glass, and the hood, when distended, is supported in substantially a horizontal position, or one at right angles to the side of said glass, substantially as set forth.

887,093. ROTARY STEAM-ENGINE. WILLIAM B. MAYS, McPherson, Kans. Filed Nov. 14, 1887. Serial No. 255,111. (No model.)



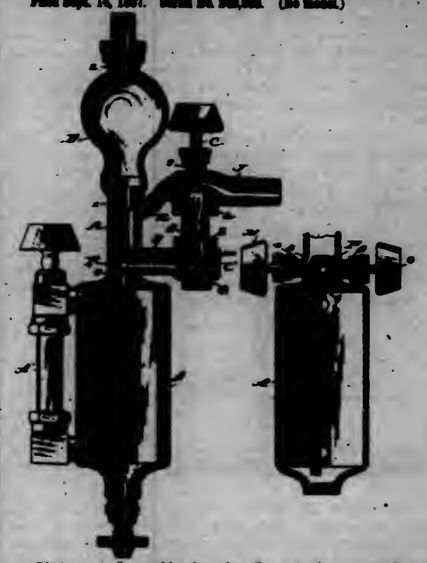
Claim.—1. In a rotary engine, the combination of the inclosing-frame, the driving-shaft, and the rotary piston with a rotating valve which is operated entirely by the piston, and the cylindrical cut-off which extends through the valve, substantially as shown.

2. The combination of the inclosing-frame, the driving-shaft, and the piston with cylindrical cut-off provided with the opening F, the rotating valve provided with spaces for the vane upon the piston to catch in, and the openings H, for the admission of steam, with a spring-catch which locks the valve in position, substantially as described.

3. The combination of the inclosing-frame, the operating-shaft, and piston with the rotating valve which is operated by the piston, the cylindrical cut-off which extends through the valve, the lever, the operating-rod connected thereto, and the cam or crank connected to the piston, substantially as described.

4. The combination of the inclosing-frame, the piston provided with a cam or projection, O, the spring-rod J, provided with studs L N, the valve E, provided with recesses in its end for the stud L to catch in, and the cylindrical cut-off F, which passes through the valve, substantially as specified.

887,094. LUBRICATOR. THOMAS B. HOFFMAN, Mansfield, Ohio. Filed Sept. 14, 1887. Serial No. 249,593. (No model.)



Claim.—1. In combination, the oil-cup A, the center piece, F, having the arms R S, forming a seat for the sight-feed tube, a condenser, B, supported on said center piece, F, a passage through said piece from the condenser to the cup, a passage through the arm S to the sight-feed tube for the oil, and an exit-passage through the nozzle J of the arm R to the steam-space, with suitable regulating-valves for said passages, substantially as described.

2. In combination with an oil-cup, the center piece, F, provided with arms R S and supporting the condenser B, the conduit-pipe *w*, and the sight-feed tube, substantially as described.

3. In combination, the cup A, the center piece, F, the supporting-arms R S for the sight-feed tube, a screw-plug, G, fitting an opening in the arm S and having a passage therethrough for lubricant, a nipple carried by said plug, a screw-collar fitting into the upper part of the opening in the arm S, and a washer between the parts *b* and G, substantially as described.

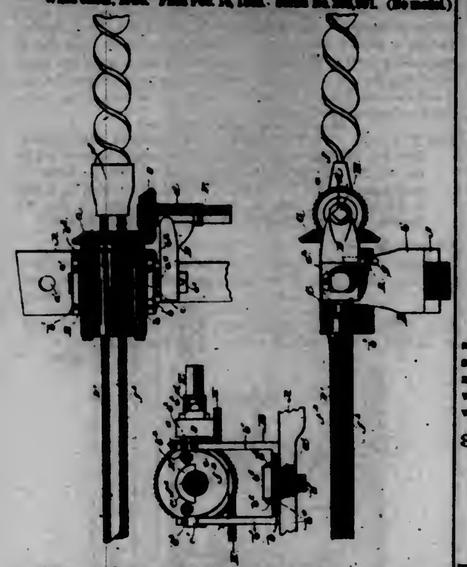
887,095. DEVICE FOR MOISTENING TOBACCO. JOHN MCPHERSON, Wellsville, N. Y. Filed Feb. 7, 1888. Serial No. 263,552. (No model.)



Claim.—The combination of a receptacle for tobacco and other material with a vessel made of suitable material, of such a shape that one of its sides is adapted to impinge against the inner side of the tobacco-receptacle, and having formed in that side apertures, ductile straps having their upper and lower ends bent to form hooks, the lower ones of which engage the apertures in the side of the vessel and the other ones engaging the upper edge of the tobacco-recep-

tacle, and hooks struck up from the body of the straps and extending downward toward the hooks at the lower ends thereof, substantially as set forth.

887,096. ROCK-DRILL. ZACHARIE HELLER and JOHN ROGERS, West Chester, Iowa. Filed Feb. 14, 1888. Serial No. 263,991. (No model.)



Claim.—1. In a rock-drill, the combination of the bracket having the bearing-notches, the feed-screw sleeve having the trunnions in said notches, and the arm D, detachably secured to the extended squared end of one of the trunnions having the sleeve for the drive-shaft, substantially as specified.

2. In a rock-drill, the combination of the grip-arm, the bracket pivoted thereon, the feed-screw sleeve having the trunnions journaled in the bracket, the arm detachably secured to one of the said trunnions and having the right-angled sleeve, the drive-shaft journaled in said sleeve, and the gear-wheel on said shaft, the feed-screw fastened on opposite sides, and the gear-wheel fitted on said screw and meshing with the gear-wheel on the drive-shaft, substantially as specified.

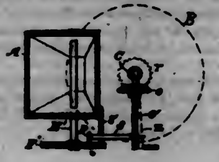
3. In a rock-drill, the combination of the bracket having a series of openings in the front edge of one side plate and a similar series in the rear edge of the opposite side plate, and the pins H, arranged to pass through corresponding openings in the two series, with the trunnioned feed-screw sleeve and the arm detachably connected to the trunnion, said sleeve and arm being engaged by the pins, substantially as specified.

887,097. DYEING COLORS BY THE SIMULTANEOUS OXIDATION OF MANGANESE AND ANILINE. FRANCOIS HOSSAN, Lyons, France. Filed Dec. 16, 1887. Serial No. 257,927. (No specimens.) Patented in France Dec. 17, 1886, No. 173,686; in Germany Jan. 24, 1886, and in England Apr. 19, 1887, No. 10,132.

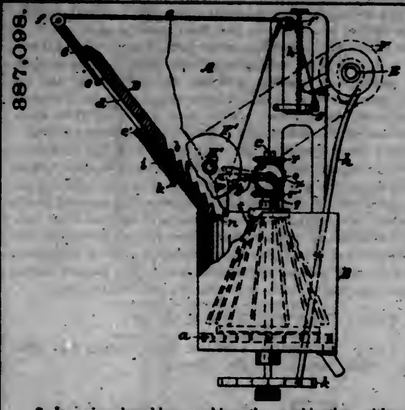
Claim.—The herein-described method of dyeing, which consists in producing colors or tints of the character described directly on the materials by the oxidation of a mixture of a salt of simple diamine and the salt of a simple monamine, substantially as set forth.

887,098. GRAIN-SUPPLYING MACHINE. JAMES H. MONTGOMERY, Kingston, N. Y. Filed June 9, 1888. Serial No. 276,561. (No model.)

Claim.—1. In a cigar-banding machine, the combination, with the hopper having a slot, *d*, and provided with pulleys *f f'*, of a pusher, D, provided with a retracting-spring, *i*, a bar or rod pivoted to the frame of the machine and connected by a cord with the pusher, and a rotary shaft provided with an arm, *m*, substantially as for the purposes described.



887,098.



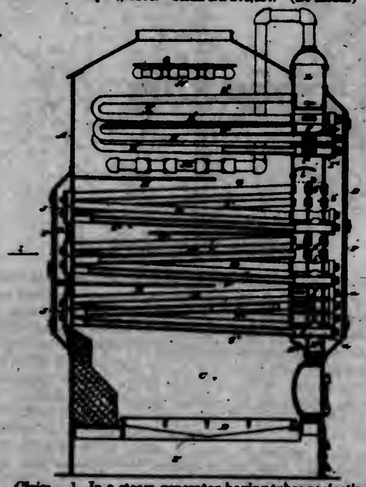
2. In a cigar-banding machine, the combination, with vertical shaft C, provided with beveled wheel *r*, and wheel *r'*, connected with stirring devices, of the shaft *s'*, with beveled wheel *s*, rod *s*, loosely connected with shaft *s'*, a fixed support for said rod, wheel F, provided with a pin, *p*, and a rotary shaft having connection with the shaft of wheel F, substantially as and for the purposes described.

887,099. INCANDESCENT GAS-BURNER. BENJAMIN MARRAS, Philadelphia, Pa. Filed Feb. 20, 1888. Serial No. 264,967. (No model.)



Claim.—An incandescent mantle formed of a single piece of sheet metal, perforated to present a practically uniform web, substantially as described.

887,100. STEAM-GENERATOR. THOMAS F. MORRIS, Jersey City, N. J. Filed Apr. 9, 1888. Serial No. 270,127. (No model.)



Claim.—1. In a steam-generator having tubes projecting into the combustion-chamber from a generator-chamber, the combination, with the said chamber, of a tubular holder, as I, mounted in the walls of said chamber and having apertures in it for the passage of water and steam, and a tube, as G, mounted in said holder and forming a prolongation of same, substantially as set forth.

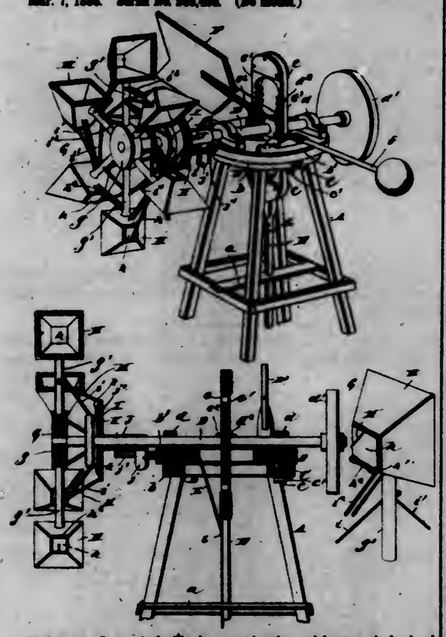
2. In a steam-generator, the combination, with generator-chamber, as B, divided by a partition into the water-chambers, as B' and B'', of a tubular holder, as I, extending across said chamber and secured in the walls of same, and a generator-tube, as G, secured in and forming an extension of said holder, the latter being provided with an aperture where it crosses the chamber B', substantially as and for the purposes set forth.

3. In a steam-generator, the combination, with a generator-chamber, as B, divided by a partition into two chambers, as B' and B², of a tubular holder, as I, extending across said generator-chamber and secured at its ends in the walls of same, said holder having an aperture or apertures in it where it crosses the chamber B', and the branched generator-tube, as G, the lower branch of which is secured in the inner end of said holder and the upper branch of which opens into the chamber B², substantially as and for the purposes set forth.

4. In a steam-generator, the combination, with the generator-chamber forming one wall of same, of the apertured tubular holders extending across the said chamber and mounted in the walls of same, the lower branches of the generator-tubes secured at one end in the inner ends of said holders and in headers, as J, at their other ends, the upper branches of said generating-tubes secured at one end also in said headers and opening into the generator-chamber at their other ends, and the said headers, said tubular holders and headers having removable caps, substantially as and for the purposes set forth.

387,101. WITHDRAWN.

387,102. WINDMILL. ALBERT G. HAHN, Furnas, Dak. Filed Mar. 7, 1888. Serial No. 266,493. (No model.)



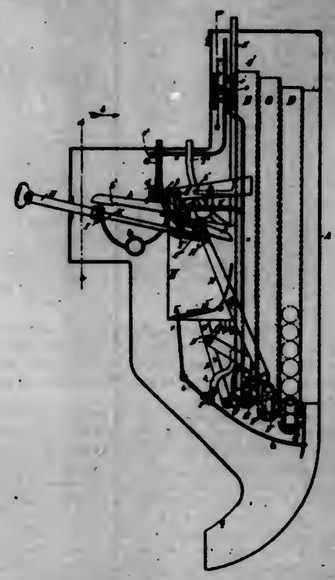
Claim.—1. In a windmill, the combination, with the wind-wheel composed of a central hub, the arms standing outward therefrom, and the bottomless pyramidal baskets secured to the ends of the arms, of the doors hinged by their inner edges over the smaller openings of the baskets, and the coiled spring surrounding the pintles of the hinges, and each having one end attached to a door and the other end to the corresponding basket, for the purpose of closing the door against the wind when the latter is not too strong, substantially as specified.

2. In a windmill, the combination, with the bottomless baskets or vanes, doors hinged over the rear openings of said baskets, and springs closing the doors against the wind, of means, substantially as described, whereby the doors can be opened simultaneously from the ground, substantially as specified.

3. In a windmill, the combination, with the bottomless pyramidal baskets, the doors hinged at their inner edges over the smaller rear openings in the baskets, and the coiled springs surrounding the pintles of the hinges and closing the doors against the wind, of the sleeve sliding on the shaft of the wind-wheel and having a disk attached to its outer end, the disk turning on the sleeve, and of larger diameter than the disk secured thereto, the rope or chains connecting the edge of the stationary disk with the doors near their outer edges, and the rope or chain secured to the inner end of the sleeve, passing thence through an opening in the rotating plate of the turn-table of the mill, and thence downward through a staple or sheave secured to the reciprocating drive-rod of said mill, substantially as specified.

4. In a windmill, the combination, with the wind-wheel composed of the central hub, the radial arms, and the bottomless pyramidal baskets attached to said arms, the doors A, hinged to the rear ends of said baskets, and the coiled springs B', surrounding the pintles B of the hinges, of the sliding sleeve J, having the depending guide-plate j and disk j', the arm j', secured to the ring b', and having a longitudinal guide-slot to receive said depending plate, the disk K, having the lips or joints k, the ropes M, connecting the doors A and disk K and passing through the staples m, secured to the arms of the wind-wheel, and the rope L, passing inward through an opening in the ring b' and downward through a staple or sheave, l, secured to the drive-rod B, substantially as specified.

387,103. GEAR-REPAIRER. PER C. GUSTAFSSON, Gefle, Sweden. Filed Dec. 28, 1886. Serial No. 182,512. (No model.) Patented in Sweden Apr. 30, 1886, No. 30; in Germany Aug. 16, 1886, No. 34,699; in France Aug. 30, 1886, No. 176,894; in England Sept. 1, 1886, No. 10,906; in Norway Dec. 31, 1886, No. 630; in Denmark Dec. 17, 1886, No. 360, and in Austria-Hungary Jan. 17, 1888, No. 34,554 and No. 64,978.



Claim.—1. An apparatus comprising the cigar-receptacle B O D, oscillating bottoms B F G, handle H, cross-bar I, push-bars K L M, levers N N' N², adapted to be moved by the respective push-bars on the intervention of a proper coin between them, and means, as connecting-rods O O' O², for connecting the levers and pivot-shafts of the oscillating bottoms, substantially as herein set forth.

2. The combination of a push-bar, as K, bearing a coin-platform, F, thereon, a coin-tube, as Q, and lever, as N, provided with a transverse grooved shoulder, as N², substantially as and for the purpose herein set forth.

3. The combination of a lever, as N, ratchet-bar *n*, rock-shaft O', having an arm, *l*, connecting-rod *m*, shouldered draw-bar *h*, and trip projection *h'*, handle H, and cross-bar I, substantially as and for the purpose herein set forth.

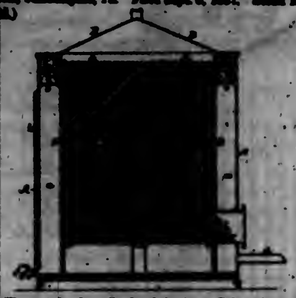
4. The combination of the handle H, cross-bar I, shouldered cross-bar *h*, rock-shaft O', provided with an arm, *o*, connecting-rod *f*, and cigar-supporting rods *k k*, substantially as herein set forth.

5. The combination of the handle H, push-bar, as L, lever, as N', coin-tube, as R, coin-receptacle S S', double spring A, vibrating lever Z, and means, as the connecting-rod *v'*, for connecting the said coin-discharging device and the said lever, substantially as herein set forth.

6. The combination of the handle H, push-bar, as M, lever, as N², provided with a swiveled bar, *c*², and two coin-tubes, T T, adapted to place coins between the swiveled bar and lever, substantially as herein specified.

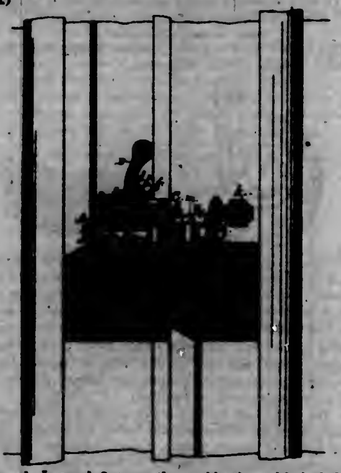
7. The combination of a cigar-receptacle bottom, as B, connecting wire or rod *n*, pawl *o*, ratchet-wheel *p*, numbered wheel *q*, coin-receiving tube, as Q, and detent *s*, provided with detent projections *s'* and *s²*, substantially as herein set forth.

387,104. PROCESS OF DRYING OFFAL AND GARBAGE. DAVID B. FAHNESTOCK, Philadelphia, Pa. Filed Sept. 8, 1887. Serial No. 248,894. (No model.)



Claim.—The mode described of drying offal and garbage, said mode consisting in subjecting the same to the action of heated air, and passing the vapors through sulphate of lime before permitting them to escape, all substantially as specified.

387,105. FASTENING FOR HINGED RAILS OF GATES. JAMES S. FRANCE, Lancaster, Pa. Filed Apr. 2, 1888. Serial No. 269,266. (No model.)



Claim.—1. In a nail-fastener, the combination, with the bolt-case having the slot in the top thereof, of the bolt, the spring bent of the bolt, and the lever inserted in the slot in the case and engaging with the bolt to force it backward, substantially as specified.

2. In a nail-fastener, the combination, with the sliding bolt having the groove P and mechanism for operating the same, of the horizontally-movable keeper provided with the cam-flange K, constructed and operating substantially as specified.

3. In a nail-fastener, the combination, with the sliding bolt having the groove P and mechanism for operating the same, of the recessed keeper-plate provided with the step *i* and the horizontally-movable keeper having the cam-flange K upon its upper surface and stud *p* on the lower, constructed and operating substantially as specified.

4. In a nail-fastener, the combination, with the open-bottomed bolt-case and base-plate and the bolt, of the bottom filling-plate H, substantially as and for the purpose specified.

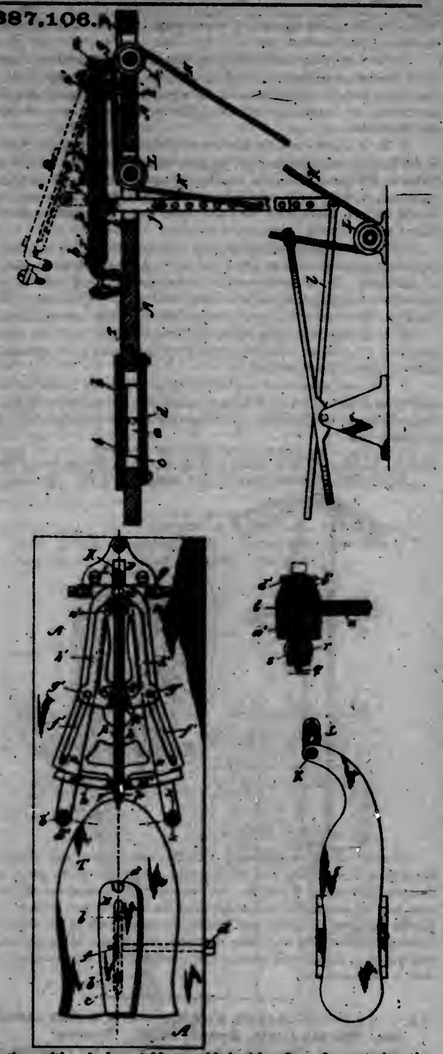
387,106. MACHINE FOR MARKING THE UPPERS OF BOOTS OR SHOES. JOHN R. FLEMING, Waterville, N. Y. Filed Dec. 16, 1887. Serial No. 258,057. (No model.)

Claim.—1. In a machine for marking uppers, the combination, with a bed or table provided with a form for centering the upper, of a sliding frame, as *b'*, movable toward and from the said form, a marking-tool carried by the said frame, a stationary support, as frame *A*, for the sliding marker-carrying frame, and means for moving the said sliding frame and marking-tool toward and from the said form on the said stationary support, substantially as set forth.

2. In a machine for marking uppers, the herein-described combination, with a bed or table provided with a form for centering the upper, of a sliding frame movable toward and from the form, a marking-tool carried by the said frame and arranged central relative to the said form to produce a central line or mark on the upper, a stationary frame or support for the said sliding frame, and two laterally-swinging side arms pivoted to the said stationary frame and having marking-tools to make transverse or toe-cap marks on the upper, substantially as set forth.

3. In a machine for marking uppers, the herein-described combination, with a bed or table provided with a form for centering the upper, of a sliding marker-carrying frame movable toward and from the said form, a stationary frame or support on which the said sliding frame is adapted to travel, said stationary frame being pivoted at its rear end to the said bed or table or to a device secured thereto, and being provided forward of its pivotal point with means by which it may be raised to lift the marking-tools when desired, substantially as set forth.

4. In a machine for marking uppers having one or more moving arms carrying marking-tools, the combination, with said arms and their actuating mechanism, of the form around which the upper is placed, the block *c*, provided with studs for securing the form in place and received in a slot in the bed, and means, as the set-screw *d*, by



which the block may be secured at any point in the slot, substantially as shown and described.

5. In an upper-marking machine, the combination, with the form B, of the arm *p*, carrying a marking-tool, the frame A, in which said arm slides, and the sliding frame *N*, to which said arm is secured, and mechanism for actuating said sliding frame, substantially as shown and described.

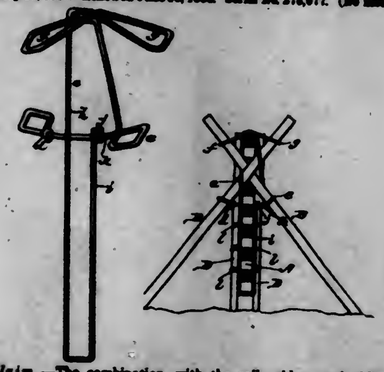
6. In an upper-marking machine provided with means, as block B, for holding the upper in position, the combination therewith of the frame *N*, the movable arm *n*, having divergent slots *f'*, and the sliding frame *N*, having studs *f* to coact with said slots, and means, as bolt K and its treadle, for actuating said frame *N*, substantially as shown and described.

7. In an upper-marking machine having one or more movable arms, the combination, with said arms and their operating mechanism, of the shank *r*, set in the free end of the arm and provided at its lower end with a marking-tool, said tool being held in yielding contact with the upper by means of spring *d*, substantially as shown and described.

8. In an upper-marking machine, the combination, with the movable arm *n*, of shank *r*, marking-roll *g*, spring *d*, and pin *b'*, substantially as shown and described.

9. The combination of the bed A, form B, pivoted frame A, pivoted arms *n*, sliding frame *N*, arm *p*, connecting-rod *j* and its operating-treadle, and bolt K and its operating-treadle, substantially as shown and described.

887,107. FENCE. OSCAR B. H. H. REESELEIN, Marion, Ind. Filed July 30, 1887. Renewed June 30, 1888. Serial No. 278,677. (No model.)



Claim.—The combination, with the rails, riders, and oblique brace-bars, of the tying and holding wire connected to the parts, as described, consisting of a single wire, one end tied to one of the oblique bars, carried across the rails and around the opposite bar, thence upwardly and over the riders and around the upper ends of the oblique bars and downwardly and under the lower rail, thence upwardly, and finally tied to the crossed portion and provided with the tie-loops, as shown and described.

887,108. WIRE-FENCE MACHINE. JOHN W. ROSSMAN, Clarinda, Iowa. Filed Mar. 1, 1888. Serial No. 265,895. (No model.)

Claim.—1. In a wire-and-picket-fence machine, the combination, with a rock-shaft, H, provided with projecting arms *h'*, bars *h*, pivoted thereto, spring *i*, and treadle H', of a rock-shaft, J, having horizontally-moving pusher-bars, a spring for holding said pusher-bars normally retracted, and a treadle for moving the rock-shaft, substantially as described.

2. The combination, in a wire-fence machine, of a rock-shaft, J, having horizontally-moving pusher-bars, a spring for holding said pusher-bars normally retracted, and a treadle for operating the same, substantially as shown, and for the purpose set forth.

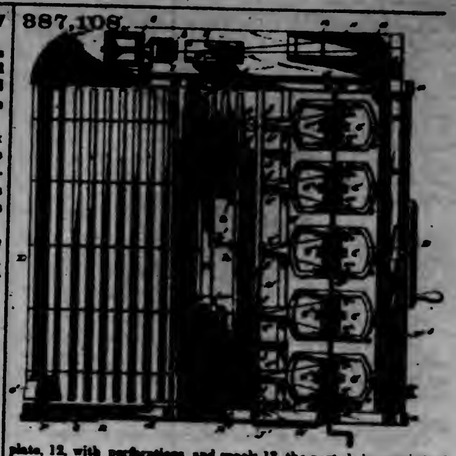
3. In a wire-fence machine, a roller, L, having a series of recesses, *l*, and slats pivotally secured so as to fold within said recesses, substantially as shown, and for the purpose set forth.

4. In combination with a removable roller, L, slats L', pivotally secured thereto, a cap, *c'*, with a squared recess, a ratchet-wheel mounted on a key-ended shaft, and operating means, substantially as shown, and for the purpose set forth.

5. In a device for untwisting and coiling wires, a shaft provided with gear-wheels connecting the different parts of the same, a spool-carrying frame, a cutting-disk, and spools for winding the wire after being separated, substantially as shown, and for the purpose set forth.

6. The shaft 15, with rotating means and gear-wheels 3, 4, and 5, a spool-carrying frame with a gear-wheel, 6, a disk, 10, transverse plate, 12, with perforations, and spools 13, the parts being organized so as to rotate and operate substantially as described.

887,108.



887,109. HOOK. ALBERT SAWYER, Oshkosh, Wis. Filed June 2, 1887. Serial No. 239,861. (No model.)



Claim.—1. The method of forming hooks herein described, consisting in producing a blank split open at the back of the hook portion proper, and then by pressure closing said split portion at or near the edges thereof to form a hollow hook, substantially as described.

2. The method of forming hooks herein described, consisting in producing a blank split open at the back of the hook portion proper, the edges of said split-open portion being extended in the form of flanges, and then by pressure bringing said flanges together to form a hollow hook, substantially as described.

3. The method of forming hooks herein described, consisting in producing the blank with a partially hollow eye and split open at the back of the hook portion proper, then by pressure closing said split portion at or near the edges thereof to form a hollow hook, substantially as described.

4. The method of forming hooks herein described, consisting in producing a blank with a partially hollow eye and split open at the back of the hook portion proper, the edges of said split-open portion being extended in the form of flanges, then by pressure bringing said flanges together to form a hollow hook, substantially as described.

5. As an improved article of manufacture, a hook formed with its body hollow throughout its entire length, and provided with the strengthening flange or rib at the back, substantially as described.

6. As an improved article of manufacture, a hook having the hollow body portion, and the eye for the attachment of the chain hollow throughout the portion adjacent to the body of the hook, substantially as described.

7. As an improved article of manufacture, a blank from which to form hollow hooks, the two sides of which are separated at the back on a line taken longitudinally through the hook, substantially as described.

887,110. COLD SHUT OR OPEN LINK. ALBERT SAWYER, Oshkosh, Wis. Filed Jan. 14, 1888. Serial No. 260,766. (No model.)



Claim.—1. In a link such as described, the combination of a hollow bow, a pin or cross-bar secured to one leg, and an eye formed on the other leg and adapted to receive the end of said pin, substantially as described.

2. In a link such as described, the combination, with the bow provided with an eye on one leg, of a cross-bar or hollow pin rigidly attached to the opposite leg and adapted to enter the eye and be secured therein, substantially as described.

3. The improved link herein described, consisting, essentially, of the bow recessed in the back or outer face with the sides of the recess brought together, one leg of said loop provided with an eye and the other with a pin or cross-bar adapted to enter said eye, substantially as described.

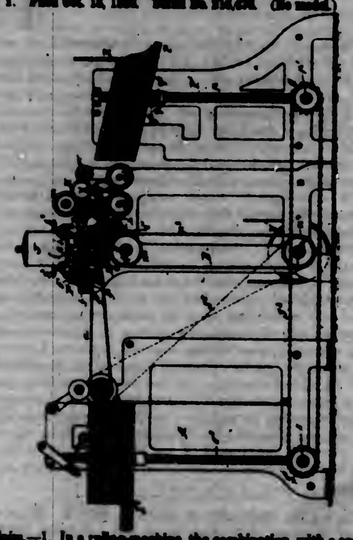
4. The improved link herein described, provided with a hollow bow and strengthening-rib formed by the meeting edges of its recessed back or outer face, and carrying on one leg an eye and on the other leg a hollow cross-bar or pin adapted to enter said eye, substantially as described.

5. In a link such as described, the combination of the hollow bow and its strengthening-rib, the hollow cross-bar or pin united to the solid end of one leg, and the solid eye formed on the opposite leg and in line with the end of said cross-bar or pin, substantially as described.

6. In a link such as described, the combination, with the bow provided with an eye on one leg, of the cross-bar or pin formed integral with the opposite leg and provided with a recess in its back or outer face, terminating at each end in inclined walls or shoulders, the edges of the sides of said recess abutting together to form a strengthening-rib, substantially as described.

7. The improved solid-shut link herein described, consisting, essentially, of a bow recessed on its outer face, the edges of the walls of the said recess abutting together to form a strengthening-rib, an eye formed on one leg of said bow, a cross-bar or pin united to the solid end of the opposite leg, said cross-piece being recessed on its outer face and provided with a strengthening-rib formed by the abutting edges of the recess, while the end of the cross-bar which is adapted to enter the eye is countersunk, as and for the purpose set forth.

887,111. RULING-MACHINE. ADAMS SAWYER, Poughkeepsie, assignor, by mesne assignments, to B. H. Burrell & Co., Little Falls, N. Y. Filed Oct. 12, 1888. Serial No. 287,631. (No model.)



Claim.—1. In a ruling-machine, the combination, with a supporting-shaft, of a hollow ruling-cylinder and supporting-collars adjustably secured to said shaft, substantially as set forth.

2. The combination, with a supporting-shaft, of collars secured to said shaft and provided with tapering ends, and a hollow ruling-cylinder provided with flaring ends which rest against the tapering ends of said collars, substantially as set forth.

3. The combination, with the ruling-cylinder, of an ink-fountain, a shaft journaled in said ink-fountain, and an ink-roller made lengthwise adjustable upon said shaft, substantially as set forth.

4. The combination, with a ruling-cylinder, of an ink-fountain provided with an ink-roller bearing against the ruling-cylinder, an ink-reservoir supplying ink to the fountain, an overflow-pipe attached to the fountain, and a receiver into which the excess of ink is discharged through the overflow-pipe, substantially as set forth.

5. The combination, with the ruling and supporting rollers and the drying-rollers, of combined feed-rollers and cutters arranged between the ruling-rollers and drying-rollers, substantially as set forth.

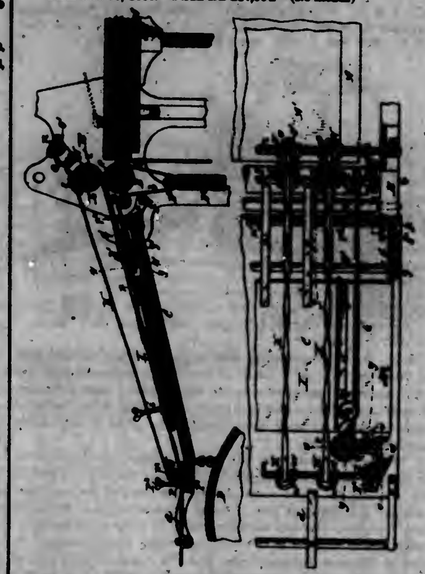
6. The combination, with the ruling and supporting cylinders and their shafts, of the lower beam, *b'*, in which the lower shafts are journaled, the upper beam, *b''*, in which the upper shafts are journaled, and the slotted vertical adjusting-bolts *b'''*, upon which the upper beam rest loosely, substantially as set forth.

7. The combination, with the delivery mechanism of a ruling-machine, of a receiving-table, feed-screws whereby the table is raised and lowered, a stationary frame in which the feed-screws are supported, screw-nuts in which the feed-screws work, and horizontal pivots on which said table can be tilted, substantially as set forth.

8. The combination, with a ruling-machine, of a feed-table from which the sheets are fed to the ruling-machine, actuating mechanism by which the feed-table is raised as the sheets are fed off, a receiving-table upon which the sheets are delivered from the ruling mechanism, actuating mechanism by which the receiving-table is lowered as the sheets are received, and a positive gear connecting the actuating mechanism of the feed-table with the actuating mechanism of the receiving-table and whereby the receiving-table is lowered as the feed-table is raised, substantially as set forth.

9. The combination, with a ruling-machine, of a vertically-movable feed-table, F', a vertically-movable receiving-table, F, shafts *g'* and *a*, provided, respectively, with sprocket-wheels S and S' and connected with the feed-table and receiving-table by screws, and a drive-chain, S'', running around the sprocket-wheels S S', whereby the feed and receiving tables are moved simultaneously in opposite directions, substantially as set forth.

887,112. PAPER-FEEDER. ADAMS SAWYER, Poughkeepsie, assignor, by mesne assignments, to B. H. Burrell & Co., Little Falls, N. Y. Filed Oct. 22, 1888. Serial No. 287,994. (No model.)



Claim.—1. The combination, with the feed-board and a side guide, of lower tapes, *b*, whereby the sheets are carried to the feed-board, and upper twisted tapes, K, whereby the sheets are moved over the feed-board, substantially as set forth.

2. The combination, with the feed-board I, of the lower tapes, *b*, and a front tape-roller, B', made adjustable toward and from the rear end of said feed-board, substantially as set forth.

3. The combination, with the feed-board I, of the lower feed-tapes, *b*, the lower delivery-roller, B, the front tape-roller, B', made adjustable toward and from the feed-board, the guide-roller B'', and the tightening-rollers B''', substantially as set forth.

4. The combination, with the feed-board, of a grooved revolving guide-wheel, whereby the edge of the sheet is propelled and guided, substantially as set forth.

5. The combination, with the feed-board and the stationary side guide, of a revolving guide-wheel, substantially as set forth.

6. The combination, with the feed-board, of a stationary side

guide, a revolving guide-wheel, and tapes traveling over the feed-board, substantially as set forth.

7. The combination, with the lower delivery-roller, B, and traveling tapes K, of the wheels L, arms N, in which said wheels are journaled, a rod, *n*, upon which the arms N are loosely hung, and springs O, secured to the rod *n* by collars O', substantially as set forth.

8. The combination with the upper feed-tapes, of the wheels L, provided with plain faces, arms N, in which said wheels are journaled, and tape-guides *l*, attached to the arms N, substantially as set forth.

9. The combination, with the lower delivery-roller, B, and the tapes K, of the wheels L, supporting-arms N, flexible shaft *f*, on which the wheels L are mounted, and gear-wheels *P P*, connecting the shaft of the lower roller, B, with the flexible shaft *f*, substantially as set forth.

10. The combination, with the upper feed-tapes, of the main feed-board C and the auxiliary feed-board I, arranged above the main feed-board and below the feed-tapes, and made adjustable at its delivery end toward and from the feed-tapes, substantially as set forth.

11. The combination, with the feed-board and the upper feed-tapes, K, of the front tape-rollers, M, a shaft, *m*, upon which said rollers are loosely mounted, clamps *m'*, attached to said shaft and embracing the rollers M, and bearings P, in which the shaft is supported substantially as set forth.

12. The combination, with the main feed-board and the adjustable auxiliary feed-board and the feed-tapes K, of the tape-rollers M the supporting-shaft *m*, and the hinged bearings P, provided with adjusting-screws P', substantially as set forth.

13. The combination, with the lower delivery-roller, B, and the feed-board I, of the feed-tapes K *b* and the intermediate guide-bars, *p*, extending from the roller B to the feed-board I, substantially as set forth.

387,113. RULING-MACHINE. ALONZO SHEWEY, Pennsborough, assignor, by mesne assignments, to D. H. Burrell & Co., Little Falls, N. Y. Filed Nov. 3, 1887. Serial No. 254,102. (No model.)



Claim.—1. The combination, with a ruling-cylinder provided with ruling disks or rings, of a series of traveling impression-bands arranged opposite the spaces between the ruling disks or rings and forming straight supporting-surfaces in front and in rear of the point of impression, said bands being unsupported at the point of impression, substantially as set forth.

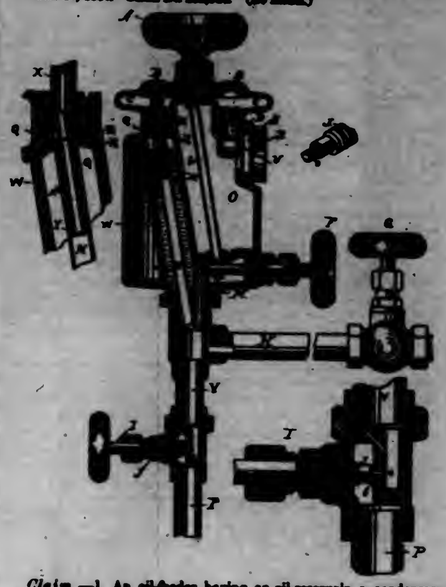
2. The combination, with two ruling-cylinders provided with ruling disks or rings and arranged one in rear of the other in the direction in which the paper moves through the machine and on opposite sides of the paper, of two series of impression-bands arranged opposite the spaces between the ruling rings or disks and two carrying-rollers which support said bands, one roller being arranged in advance of the front ruling-cylinder and the other roller in rear of the second ruling-cylinder, substantially as set forth.

3. The combination, with a ruling-cylinder provided with ruling disks or rings, of an intermediate roller running in contact with the ruling disks or rings and adjustable toward and from the same, and an ink-fountain provided with an ink-roller running in contact with the intermediate roller, said ink-fountain being adjustable toward and from the intermediate roller, substantially as set forth.

4. The combination, with a ruling-cylinder provided with ruling disks or rings and a roller running in contact with said disks or rings and supplying the same with ink, of friction-wheels mounted upon the shafts of said roller and of the ruling-cylinder and operating as revolving stops, whereby the approach of said roller to the ruling-disks is limited and the pressure between the said roller and the ruling disks or rings is relieved, substantially as set forth.

5. The combination, with a ruling-cylinder provided with ruling disks or rings, of an ink-fountain provided with an ink-roller, an intermediate roller running in contact with the ink-roller and the ruling disks or rings, and gear-wheels mounted upon the ruling-cylinder and the intermediate roller, whereby the latter is driven from the ruling-cylinder, substantially as set forth.

387,114. OIL-FEEDER. ROBERT GRIMSHAW, Holden, Mass. Filed Oct. 17, 1887. Serial No. 252,354. (No model.)



Claim.—1. An oil-feeder having an oil-reservoir, a condenser having a check-valve, and the pipe W, forming an integral part of the reservoir, in combination with a pipe of smaller diameter within the pipe W, thereby forming an annular space between said pipes, said internal pipe having openings near its top whereby it communicates with said space, a steam-pipe leading from the boiler and discharging near the bottom of the internal pipe, and the oil pipe or tube L, said reservoir being provided with the passage M, a valve controlling the communication between said tube and passage, the steam and oil tube V, and a regulating-valve therein contiguous to the oil-reservoir, said valve having its stem cut away on one side, whereby a uniform volume of steam and lubricant is permitted to flow down upon the valves and pistons of the engine, substantially as and for the purpose described.

2. As an improvement in oil-feeders, the combination of an oil-reservoir, a condensing-chamber, a steam-pipe, and an oil-discharge pipe, the combined steam and oil tube V, and the regulating-valve I in the said tube immediately below the steam-pipe and contiguous to the oil-reservoir, said valve having a projection, *c*, below its valve-seat, and having a flattened upper surface, whereby a uniform flow of oil and steam is permitted to the valves and pistons of the locomotive.

3. An oil-feeder having an oil-reservoir, a condenser communicating therewith, and the pipe W, in combination with the steam-pipe H, the pipe N, passing through the pipe W and having openings in its upper end, and a smaller pipe, N', within the pipe N, having openings at its upper end, said pipes W, N, and N' forming between themselves spaces for containing a non-heat-conducting substance, substantially as described.

387,115. RULING OR SHIFTING DEVICE. WILLIS S. SUMMAM, Hinckley, Wis. Filed Sept. 3, 1887. Serial No. 248,712. (No model.)

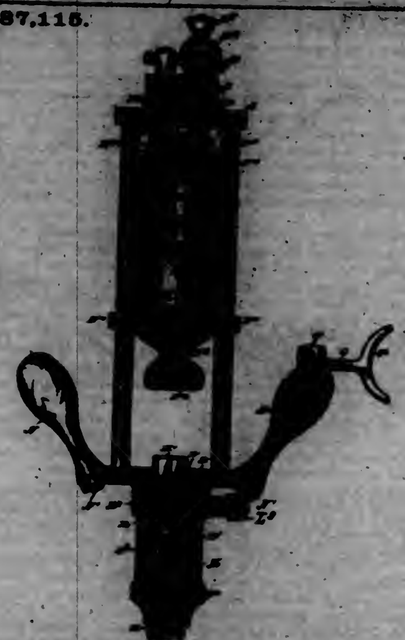
Claim.—1. In a drill of the class described, a movable cylinder carrying a hammer, in combination with an independent drill-rod, substantially as specified.

2. In a drill of the class described, a movable cylinder carrying a hammer, and having a piston provided with exhaust and supply valves, in combination with an independent drill-rod, substantially as specified.

3. In a drill of the class described, a movable cylinder carrying a hammer and having a piston provided with exhaust and supply valves, in combination with a drill-rod, and a spring to return the hammer, reverse drill, and remove the connection, substantially as specified.

4. In a drill of the class described, the combination, with a frame-

387,115.



work consisting of an upper and lower yoke connected by hollow guides, of a cylinder carrying a hammer mounted for movement in said guides, and of a stationary piston-head mounted in said cylinder, substantially as specified.

5. In a drill of the class described, the combination, with the frame-work thereof, of a drill-rod mounted therein and provided with a ratchet-wheel near its head, and of a spring-pawl adapted to take into said ratchet and turn the drill-rod, substantially as specified.

6. In a drill of the class described, the combination, with the frame-work thereof, of a supporting-bracket attached thereto and adapted to embrace the arm of the operator, substantially as shown and described.

7. The combination, with the yokes A and B, connected by the hollow guides C, of the cylinder F, having the guiding-lugs F', embracing said rods, substantially as specified.

8. The cylinder F, formed with the hammer F², having the reduced neck portion F³, in combination with the removable head F⁴, having the stuffing-boxes F⁵, and the glands F⁶ mounted on said hammer, and adjusting-screws F⁷, substantially as specified.

9. The combination of the lower yoke, B, of the frame-work, provided with the handles H, with the bracket O, secured to said handle, as at O', and bifurcated, as at O², to embrace the body of the operator, substantially as specified.

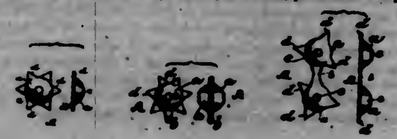
10. The yoke A, having the stuffing-boxes A' and glands A², in combination with the pipes D and E, flanged, as at D' E', respectively, and the piston-rods G G', entering said yoke, substantially as specified.

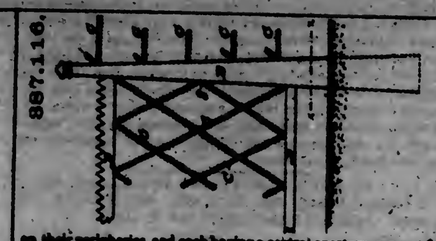
11. The cylinder F, constructed as described, in combination with the piston H, having the valve I, formed with the heads I', the ports F², and slot F³, substantially as specified.

12. The yoke B, having the opening B', flange B², thimble B³, and ferrule B⁴, in combination with the drill-rod K, having the ratchet L, secured thereto by means of the pin or link L', the interposed spring M, and the pawl L², substantially as specified.

387,116. FENCE. FERDINAND EDWARDS, Cobb, Sweden. Filed Apr. 18, 1888. Serial No. 270,622. (No model.)

Claim.—1. A barb for a fence-wire made from sheet metal and comprising two saucer-like parts or halves, *a a*, provided with spurs





on their peripheries, and each having a central aperture, *c*, as set forth, whereby they may be strung on a wire.

2. A barb for a fence-wire made from sheet metal and comprising two integral saucer-like parts or halves, *a a*, provided with spurs on their peripheries and each having a central aperture, *c*, said halves being united by a bent tie, as *b*, and arranged face to face, as set forth.

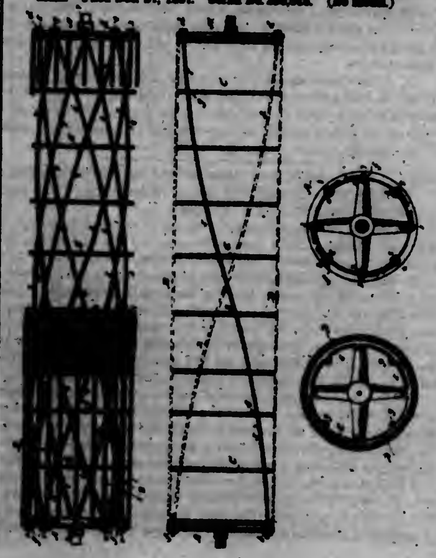
3. A barbed wire for fencing, consisting of a wire, *c*, and barbs A strung thereon, said barbs being of sheet metal, bulbous and hollow, and provided each with spurs *d d*, as set forth.

387,117. APPARATUS FOR ELECTRICAL CONVERSION AND DISTRIBUTION. WILLIAM STANLEY, Jr., Great Barrington, Mass., assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Feb. 29, 1887. Serial No. 229,117. (No model.) Patented in England July 13, 1887, No. 9,765; in France July 18, 1887, No. 184,726; in Belgium July 13, 1887, No. 78,160; in Italy July 13, 1887, XLIII, 369, and in Canada Nov. 12, 1887, No. 27,551.



Claim.—The hereinbefore described method of equalizing the distribution of potential upon two or more work-circuits, which consists, first, in creating a magnetic field common to all the work-circuits by establishing in the supply-circuit an electro-motive force; second, in inducing a counter electro-motive force in the supply-circuit, and, third, in supplying two or more work-circuits with composite currents formed by the impressed and counter electro-motive forces, whereby the excess of energy in one work-circuit is transferred to another by means of the magnetic field, substantially as described.

387,118. DAIRY-MILL. WILLIAMSON B. SWAYNE, Springfield, Minn. Filed Dec. 27, 1887. Serial No. 258,858. (No model.)



Claim.—A dandy-roll frame consisting of two heads, A A, a series of outer longitudinal rods extending between and secured to said heads, a series of rings, C, located within said rods, to the outer peripheries of which said rods are attached, a series of truss-rods each at one end headed and at its other screw-threaded extending in bifilial lines, substantially as described, from head to head, and passing therethrough, said truss-rods being in engagement with said rings, and nuts *f* engaging with the screw-threaded ends of said truss-rods against the one head, substantially as described.

387,119. BOOT OR SHOE. WILLIAM H. SEVERS, Leicester, County of Leicester, England. Filed Jan. 24, 1888. Serial No. 261,514. (No model.) Patented in England Sept. 30, 1885, No. 11,513.



Claim.—1. As an improved article of manufacture, the boot for foot-ball and other purposes, having ankle-protectors of a hard substance united or secured to the leg of the boot at a point to cover or protect the ankle-joint, as and for the purposes described.

2. The boot or shoe having a leg of flexible material, and two disk-shaped ankle-protectors fastened to said leg in a position to cover or shield the ankle, and having their cavities toward the inside of the boot or shoe, substantially as described.

3. The boot or shoe having the disk-shaped ankle-protector *c*, and a flexible or yielding padding upon the inner side thereof, as and for the purposes described.

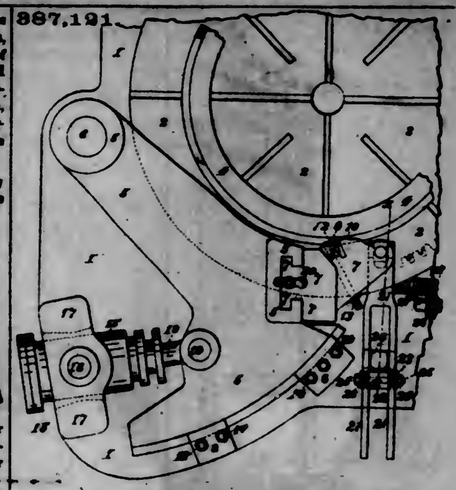
387,120. BOOT OR SHOE. WILLIAM H. SEVERS, Leicester, County of Leicester, England. Filed Jan. 24, 1888. Serial No. 261,515. (No model.) Patented in England Oct. 30, 1885, No. 13,093.



Claim.—1. A sole constructed of rubber compound, with a sheet, *a*, of strong canvas or wire-gauze or such like material in the interior thereof, and another sheet, *a'*, of similar material on the surface next to the upper, substantially as herein shown and described, and for the purpose stated.

2. A lawn-tennis or other boot or shoe having a sole of rubber compound, with a sheet, *a*, of strong canvas or wire-gauze or such like material in the interior thereof, and another sheet, *a'*, of similar material on the surface next to the upper united to the insole and edge of the upper by stitches, as and for the purposes described.

387,121. METHOD OF FEEDING THE SUPPORT OF A METAL-CUTTING TOOL. FREDERICK W. TAYLOR, Philadelphia, Pa. Filed Aug. 28, 1887. Serial No. 247,922. (No model.)



Claim.—1. The improvement in the art of feeding a tool-support in a single direction, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, and in locating the centers of pressure of said advancing and resisting pressures at different points upon the tool-support, so as to cause the last motion in the joints of the tool-support to be taken up and the tool-support to deflect in the same direction as the pressure of the work upon the tool causes the last motion to be taken up and the tool-support to deflect, substantially as set forth.

2. The improvement in the art of feeding a tool-support in a single direction, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, the advancing pressure tending in the same direction in which it is desired that the tool-support shall advance, while the resisting pressure varies inversely as the pressure of the work upon the tool—that is, becomes less as this pressure becomes greater, and greater as this pressure becomes less—and in locating the centers of pressure of the advancing pressure upon some portion of the tool-support, while the center of pressure of the resisting pressure is located upon one of the tool-supporting-members mounted thereon, substantially as set forth.

3. The improvement in the art of feeding in a single direction a tool-support having one or more tool-supporting members mounted thereon, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, and in locating the center of pressure of the advancing pressure upon some portion of the tool-support, while the center of pressure of the resisting pressure is located upon one of the tool-supporting members mounted thereon, substantially as set forth.

4. The improvement in the art of feeding in a single direction a tool-support having one or more tool-supporting members mounted thereon, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, the advancing pressure tending in the same direction in which it is desired that the tool-support shall advance, while the resisting pressure tends in the opposite direction to that in which it is desired that it shall advance, and in locating the center of pressure of the advancing pressure upon some portion of the tool-support, while the center of pressure of the resisting pressure is located upon one of the tool-supporting-members mounted thereon, substantially as set forth.

5. The improvement in the art of feeding a tool-support in a single direction, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, the advancing pressure being substantially uniform, while the resisting pressure varies inversely as the pressure of the work upon the tool—that is, becomes less as this pressure becomes greater, and greater as this pressure becomes less—and in locating the centers of pressure of said advancing and resisting pressures upon different parts of the tool-support, so as to cause the last motion in the joints of the tool-support to be taken up and the tool-support to deflect in the same direction as the pressure of the work upon the tool causes the last motion to be taken up and the tool-support to deflect, substantially as set forth.

6. The improvement in the art of feeding a tool-support in a single direction, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, the advancing pressure being substantially uniform and tending in the same direction in which it is desired that the tool-support shall advance, while the resisting pressure varies inversely as the pressure of the work upon the tool—that is, becomes less as this pressure becomes greater, and greater as this pressure becomes less—and tends in the opposite direction to that in which it is desired that it shall advance, and in locating the centers of pressure of said advancing and resisting pressures at different points upon the tool-support, so as to cause the last motion in the joints of the tool-support to be taken up and the tool-support to deflect in the same direction as the pressure of the work upon the tool causes the last motion to be taken up and the tool-support to deflect, substantially as set forth.

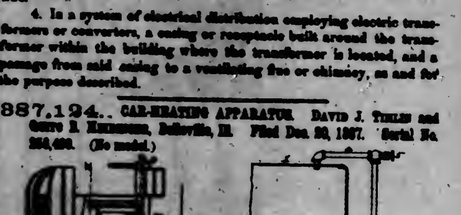
7. The improvement in the art of feeding in a single direction a tool-support having one or more tool-supporting members mounted thereon, which consists in advancing the tool-support by a pressure exerted upon it, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, the advancing pressure being practically uniform, while the resisting pressure varies inversely as the pressure of the work upon the tool—that is, becomes less as this pressure becomes greater, and greater as this pressure becomes less—and in locating the center of pressure of the advancing pressure upon some portion of the tool-support, while the center of pressure of the resisting pressure is located upon one of the tool-supporting-members mounted thereon, substantially as set forth.

8. The improvement in the art of feeding in a single direction a tool-support having one or more tool-supporting members mounted thereon, which consists in advancing the tool-support by a pressure exerted upon it, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing thereto a resisting pressure, the advancing pressure being practically uniform and tending in the same direction in which it is desired that the tool-support shall advance, while the resisting pressure varies inversely as the pressure of the work upon the tool—that is, becomes less as this pressure becomes greater, and greater as this pressure becomes less—and tends in the opposite direction to that in which it is desired that the tool-support shall advance, and in locating the center of pressure of the advancing pressure upon some portion of the tool-support, while the center of pressure of the resisting pressure is located upon one of the tool-supporting members mounted thereon, substantially as set forth.

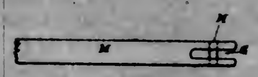
9. The improvement in the art of feeding in a single direction a tool-support having one or more tool-supporting members mounted thereon, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, and in locating the center of pressure of the advancing pressure upon some portion of the tool-support, while the center of pressure of the resisting pressure is located upon one of the tool-supporting members mounted thereon, and in exerting a pressure upon one of the tool-supporting members mounted upon the tool-support which is being fed, which tends in the direction in which this tool-supporting member is adapted to feed relatively to the tool-support upon which it is mounted, and at the same time in exerting pressure either upon this tool-supporting member or upon a tool-support mounted thereon, which prevents the tool-supporting member from feeding, so as to cause the last motion in the tool-support to be taken up and the tool-support to deflect in the same direction as the pressure of the work on the tool would cause this last motion to be taken up and the tool-support to deflect, substantially as set forth.

10. The improvement in the art of feeding in a single direction a tool-support having one or more supporting members mounted thereon, which consists in advancing the tool-support by a pressure exerted thereon, and simultaneously, during and as a part of the operation of regulating its rate of advance, in opposing a resisting pressure thereto, and in locating the center of pressure of the advancing pressure upon some portion of the tool-support, while the center of the resisting pressure is located upon one of the tool-supporting members mounted thereon, and in exerting a pressure upon one of the tool-supporting members upon which the tool-support which is being fed is mounted, which tends in the direction in which this tool-supporting member is adapted to feed relatively to the parts upon which it is mounted, and at the same time in exerting a pressure either upon the tool-support which is being fed or upon a tool-support mounted thereon, which prevents the tool-supporting member from feeding, so as to cause the last motion in the tool-support to be taken up and the tool-support to deflect in the same direction as the pressure of the work on the tool would cause this last motion to be taken up and the tool-support to deflect, substantially as set forth.

387,122. PLATE OR DISH LIFTER. JOHN W. TREMBLY, Lebanon, N. H., assignor, by direct and mesne assignments, to Henry A. Henderson, Boston, Mass. Filed June 23, 1888. Serial No. 278,023. (No model.)



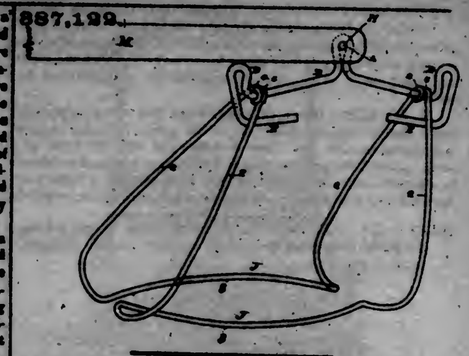
Claim.—A plate or dish lifter composed of the handle, the yoke connected at its center to the handle by a pivot and adapted to oscillate on said pivot independently of the handle, and the jaws pivoted to the yoke, the said yoke and jaws being adapted to be turned end for end to partially rotate the plate by the inclination and partial rotation of the handle, as set forth.



387,123. PLATE OR DISH LIFTER. JOHN W. TREMBLY, Lebanon, N. H., assignor, by direct and mesne assignments, to Henry A. Henderson, Boston, Mass. Filed June 23, 1888. Serial No. 278,024. (No model.)

Claim.—A plate or dish lifter composed of the handle, the yoke connected at its center to the handle by a pivot and adapted to oscillate on said pivot independently of the handle, and the jaws pivoted to the yoke, the said yoke and jaws being adapted to be turned end for end to partially rotate the plate by the inclination and partial rotation of the handle, as set forth.

387,122.



387,123.

387,128. PLUG FOR ELECTRIC TRANSFORMERS. ELIHU THOMSON, Lynn, Mass. Filed June 9, 1888. Serial No. 276,649. (No model.)



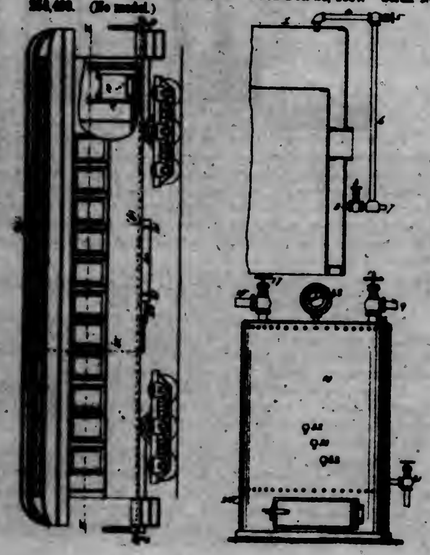
Claim.—1. The combination, with a transformer placed in a building, of a ventilating flue or pipe leading to the external atmosphere, and a casing surrounding the transformer and connected with said flue.

2. In a system of electrical distribution by alternating currents, an alternating-current transformer having a casing connected with a flue or passage through which any heated products of combustion may escape to the external atmosphere.

3. In a system of electrical distribution, a transformer provided with a casing connected with a flue, and openings at or near the bottom of said casing for inducing a ventilating and cooling current of air through the casing around the induction-coil and to the escape-flue.

4. In a system of electrical distribution employing electric transformers or converters, a casing or receptacle built around the transformer within the building where the transformer is located, and a passage from said casing to a ventilating flue or chimney, as and for the purpose described.

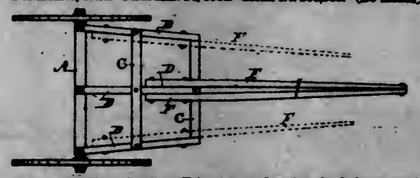
387,124. CAR-HEATING APPARATUS. DAVID J. THELEN and GEORGE B. HENDERSON, Belleville, Ill. Filed Dec. 30, 1887. Serial No. 259,493. (No model.)



Claim.—1. In a heating system, the combination, with a steam-generator and a vessel or boiler forming part of said system, of a pipe or pipes communicating with said vessel or boiler and with the water and steam spaces of the generator respectively, substantially as described.

2. In a heating system, the combination, with a steam-generator and a vessel or boiler forming part of said system, of a pipe or pipes communicating with said vessel or boiler and with the water and steam spaces of the generator respectively, and an independent heater in connection with said system, whereby the said vessel or boiler may act either as a steam-heater or a generator, substantially as described.

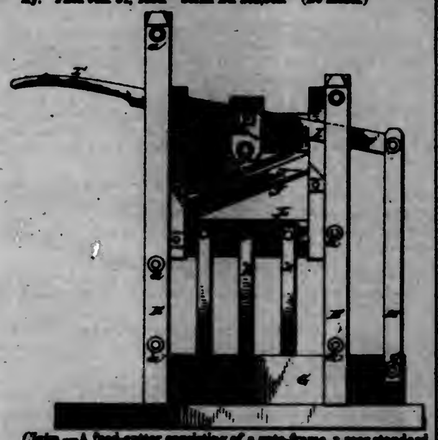
387,125. POLE AND SHAFTS FOR VEHICLES. HARVEY H. TIBBS, Des Moines, Iowa. Filed Mar. 24, 1888. Serial No. 268,268. (No model.)



Claim.—1. The pole-pieces F, having perforations in their rear ends adapting them for vertical and longitudinal adjustment, in combination with the central bar, D, in the manner set forth, for the purposes stated.

2. The pieces F, having perforations in their rear ends, and blocks or washers *g*, in combination with the side pieces, B, of the body-frame of a vehicle, for the purposes stated.

387,126. FEED-CUTTER. ERASTUS F. VERMILYEA, Elizabethtown, Ky. Filed Jan. 31, 1888. Serial No. 262,562. (No model.)



Claim.—A feed-cutter consisting of a gate-frame, a rear standard, a box secured to said frame and mounted on said standard, a vertical and horizontal guide at the mouth of the box, a gate carrying an inclined knife, a lever for operating said gate, guide-strips, bolts to secure said strips in place, coiled springs between the strips and gate-frame, a press-plate, and springs attached to the press plate and the feed cross-piece of the gate-frame, the parts being combined substantially as set forth.

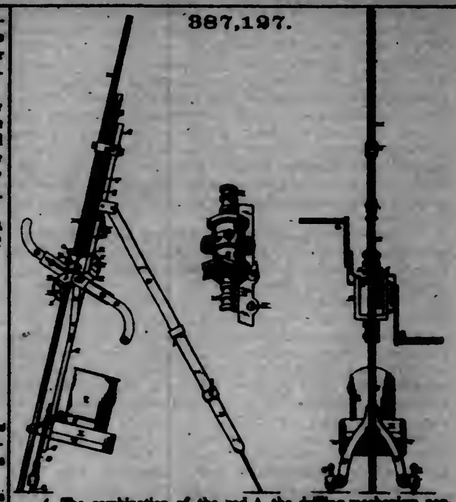
387,127. ROCK-DRILL. WILLIAM WEAVER, Fleetwood, Pa. Filed June 14, 1887. Serial No. 241,256. (No model.)

Claim.—1. The combination of the drill-rod with the ratchet-nut having the opening for the drill-rod made eccentrically through it, so that the teeth of the nut can be longer upon one side than the other and thus rotate the drill-bar irregularly, substantially as set forth.

2. The combination of the rod A, the plate or frame W, the weight X, and a reservoir of water, with the triangular-shaped plate B, provided with perforated projections A', and the guide C, provided with a lip, E', substantially as shown.

3. The combination of the rod A, the operating-shaft journaled in suitable bearings, the cam-arms, the ratchet-nut, the mandrel-plate, the mandrel, the spring which is placed around the mandrel, the guiding-clamp U, and the spring-catch Y, which catches under the mandrel-plate and holds the spring in a compressed position, so as to allow the drill to be removed, substantially as described.

387,197.



4. The combination of the rod A, the drilling mechanism connected thereto, the leg D, pivoted to the rod A, the triangular-shaped plate connected to the leg, an operating-shaft journaled in suitable bearings and provided with handles, a sprocket-wheel upon the shaft, a sprocket-chain, and a sprocket-wheel connected to the operating-shaft of the drilling mechanism, substantially as shown.

387,128. CHRONOMETER. GEORGE F. WILLIS, San Francisco, Cal. Filed Mar. 16, 1888. Serial No. 267,267. (No model.)



Claim.—1. The weight R, the cord C, the sheaves D D, the winding-drum E, the wheel F, ratchet-wheel F' and pawl G, the pinion H, the wheel I, the pinion J, the wheel K, with tappet-pins L, and the wheel M, in combination with the wheels N, N', and O, for the purpose of operating the music-rolls O' and P and carrying the music over the range T', constructed, arranged, and operated substantially as and for the purposes set forth.

2. The wheel K, with tappet-pins L, in combination with the lever R, pivoted at R' and operated in connection with the weight-ball T and friction brake-lever S, for the purpose of regulating and governing or controlling the time of the music, constructed and operated substantially as and for the purposes set forth.

3. The dial-plate K', with the words "Largo," "Andante," "Allegro," and "Presto," with indicating-pointer N' and lever-arm N'', in combination with the levers R and S, and the wheel K, connected by means of the cords O' and P', for the purpose of regulating the time of the music and stopping the instrument, constructed and operated substantially as and for the purposes set forth.

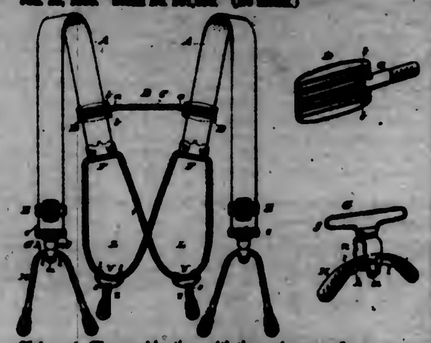
4. The keys A', B', C', D', E', F', and G', in combination with the front swell, A', connected by means of the levers D' and E', pivoted at E', and the pin E'', for the purpose of regulating the volume of sound from the higher notes, constructed and operated substantially as and for the purposes set forth.

5. The key J', lever B', and valve G', for the purpose of closing the air-opening E' and softening the tone, constructed and operated substantially as and for the purposes set forth.

6. The key F' and lever F', jointed at I', the lever B', and valve or door G', for the purpose of suppressing the volume of the low notes, constructed and operated substantially as and for the purposes set forth.

7. The cam H' upon the shaft J', in combination with the connecting-rod K', with spring V', the rock-shaft N', pivoted at N'', and the connecting-rods L' and M', levers O' and P', and the connecting-rods T' and T'', for the purpose of operating the bellows Q', constructed and operated substantially as and for the purposes set forth.

387,129. SUSPENDER. WARD E. WHITMAN, Burlington, assignor to the Willard Manufacturing Company, St. Albans, Vt. Filed Jan. 28, 1888. Serial No. 261,993. (No model.)



Claim.—1. The combination, with the main suspender-straps and the slide D, of the connecting-cord C, attached to clamps *a*, notched to engage the end bar of the slide, and having the lugs *b* to secure the clamps to the bars of the slide, substantially as specified.

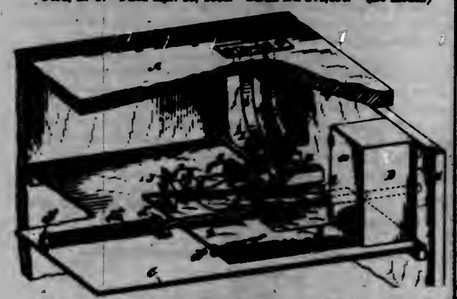
2. In a pair of suspenders, the center rocking clamp A, carrying the button-cord and pivoted to the branches of the dependent hanger *a*, and having the extended end portions, substantially as specified.

3. In a pair of suspenders, the combination, with the main straps and their rear clamps, of the cross-loops L L, respectively attached to both of the rear clamps of the main straps and carrying the rear button attachments of the suspenders, substantially as specified.

4. In a pair of suspenders, an arc-shaped bearing, V, secured to the rear suspender-loop and carrying the button-loop clamp *a*, having an eye, *a*, substantially as specified.

5. The combination, with the main suspender-straps A, of the adjustable back strap, C, the rear double loops, L L, the rocking clamps A, and the arc bearings V, substantially as specified.

387,130. COIN-OPERATED MACHINE. CHARLES F. WILLS, New York, N. Y. Filed Apr. 12, 1888. Serial No. 271,121. (No model.)



Claim.—In a coin-operated machine, the combination, with a box or case, of a receptacle for articles to be ejected from the box or case, a plate, a pull-piece for operating said plate, a lever, a chute, and a stop on said plate for preventing a movement of the plate in one direction until a coin of proper size has been deposited upon the lever, said stop being provided with an inclined surface, whereby when the lever has been rocked sufficiently far by the coin the said plate may be withdrawn and the stop will pass under the lever and rock it to cause the coin to fall off from the lever, substantially as specified.

387,131. ELECTRIC INDICATOR. WILLIAM A. ANTHONY, Manchester, Conn., assignor to the Hartford Electric Company, same place. Filed Mar. 26, 1888. Serial No. 268,602. (No model.)

Claim.—1. In an instrument for indicating or measuring current or potential, an electric conductor which is pivoted in a magnetic field, and a curved plate or lever which is attached to said pivoted conductor, in combination with a weight and a flexible connection whereby said weight is suspended from said curved lever, substantially as and for the purpose specified.

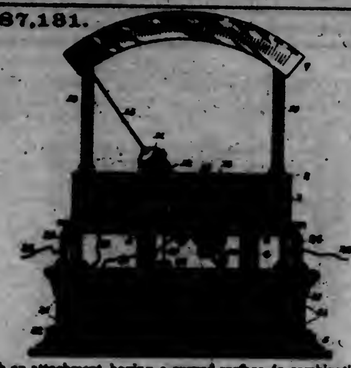
2. In an electric indicator, means for producing a magnetic field, and an oscillating conductor which is located in said field and is provided with an attachment having a curved surface, in combination with a cord running upon said curved surface and a weight which is suspended by said cord, substantially as and for the purpose specified.

3. A stationary helix, an oscillating helix, and a plate which has a peripheral curvature and is attached to said oscillating helix, in combination with a weight and a flexible connection by which said weight is suspended from said plate, substantially as and for the purpose specified.

4. A stationary helix and an oscillating helix which is pivoted thereto and is provided with a pointer, in combination with a graduated scale, a plate which has a peripheral curvature and is attached to said oscillating helix, a weight, and a thread by which said weight is suspended from said plate, substantially as and for the purpose specified.

5. A stationary helix and a movable helix of copper wire, and an artificial resistance of low or negative temperature coefficient, all connected in series, in combination with a plate which has a peripheral curvature and is attached to said oscillating helix, a weight, and a thread by which said weight is suspended from said plate, substantially as and for the purpose specified.

387,131.



387,132. TYPE-WRITING MACHINE. EDWARD H. ARNOUX, New York, N. Y., assignor of one-half to J. Walter Ewin, Philadelphia, Pa. Filed Mar. 12, 1888. Serial No. 266,966. (No model.)



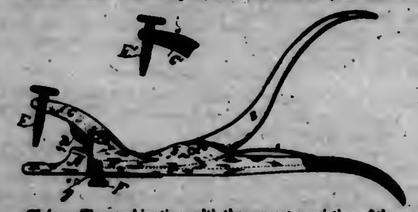
Claim.—1. In a type-writing machine, a carriage with a slip-holder secured thereto on the front thereof, and a pointer secured to the frame of the machine, said parts being combined substantially as described.

2. In a type-writing machine, a carriage with a metallic slip-holder attached thereto, said slip-holder having its upper edge notched, forming a scale, in combination with a pointer attached to the frame, all as described.

3. A slip-holder having a groove or trough in its lower part and end springs whereby a slip of paper may be secured therein, said holder being adapted to be connected to the carriage of a type-writing machine, all substantially as described.

4. A slip-holder for a type-writing machine having a notched or toothed portion forming a scale or guide, substantially as described.

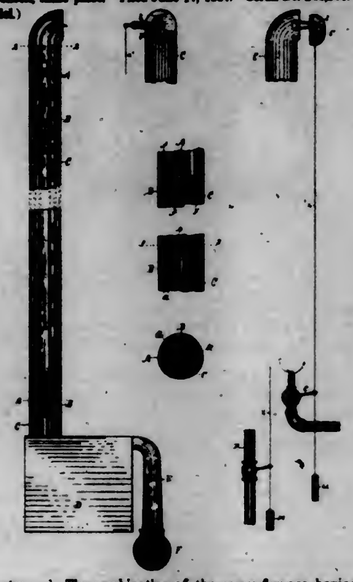
387,133. COMBINED SAW-SET AND PUNCH. WILLIAM G. AVERY, Cleveland, Ohio. Filed May 12, 1888. Serial No. 273,057. (No model.)



Claim.—The combination, with the saw-set consisting of the anvil-jaw A, with its chambered handle, having cam *d d* and spring *e*, lever-

handle B, and the movable gripping-jaw C, having die D, of the screw-threaded hollow punch E, substantially as set forth, and for the purpose specified.

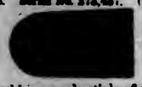
387,134. SEWER-VENTILATOR. LYMAN L. BENSON and WILLIAM T. SHUWELL, Kalamazoo, Mich.; said Benson assignor to Elizabeth I. Benson, same place. Filed June 17, 1887. Serial No. 241,573. (No model.)



Claim.—1. The combination of the sewer-furnace having the space between the flame and the upper inclosure, a sewer-pipe, an induction-pipe diminishing in size from its connection with the sewer to its connection with the end of the furnace at the top, and an eduction-pipe diminishing in size from its connection with the top of the furnace at the other end to the delivery end of said pipe, whereby the results and advantages are effected substantially as set forth.

2. An updraft-pipe of a sewer-furnace, elbowed at its delivery end, a fulcrumed receptacle in position to receive the escaping heated air from said pipe, a furnace-burner, a suitable connection between said receptacle and the throttle of the burner, and a counter-balance to the receptacle, combined to effect the results substantially as set forth.

387,135. TOBACCO-PIPE BOWL. WALTER S. BLAKE, St. Louis, Mo. Filed May 10, 1888. Serial No. 272,467. (No model.)



Claim.—1. As a new and improved article of manufacture, a pipe-bowl composed of comminuted corn-cob and cementitious matter, as set forth.

2. A corn-cob-pipe bowl having an outside coating of a mixture of kaolin and glue, substantially as described.

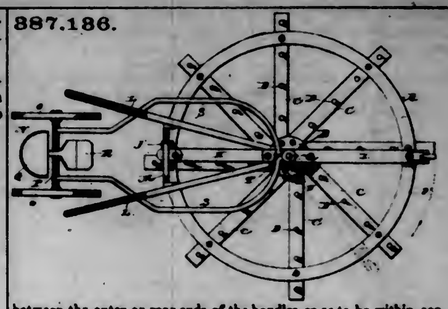
3. A pipe-bowl having an inside lining of a mixture of silicate of potash and calcined magnesia and an outside coating of a mixture of kaolin and white glue, substantially as described.

4. A pipe-bowl composed of disintegrated corn-cob pressed into shape, having an inside lining of a mixture of silicate of potash and calcined magnesia and an outside coating of kaolin and glue decorated, and the decorated surface varnished with silicate of potash, substantially as described.

387,136. ROTARY HARROW. MARLY D. BRESSLER, Ilion, N. Y., assignor of one-half to W. E. Jenner, same place. Filed Jan. 19, 1888. Serial No. 261,202. (No model.)

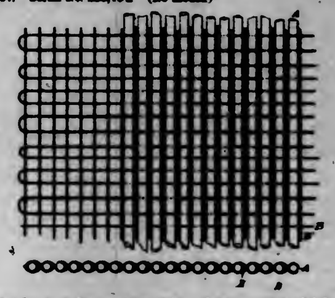
Claim.—In combination with the rotary harrow, the guide-beam H, the draft-beam I, the king-bolt G, on which the guide and draft beams are independently pivoted, the handles connected to the guide-beam, and the detachable sulky having its draft-bars fitted loosely over the king-bolt of the harrow and arranged on the outside of the handle so as to incline the same, the seat of the sulky being arranged

387,186.



between the outer or rear ends of the handles, so as to be within convenient reach of the same.

387,137. FIRE-PROOF MATERIAL FOR DROP-CURTAINS. ROBERT T. BROWN, Boston, Mass., and WILLIAM ORR, Trenton, N. J., assignors to the New Jersey Wire Cloth Company, Trenton, N. J. Filed Oct. 20, 1887. Serial No. 252,794. (No model.)



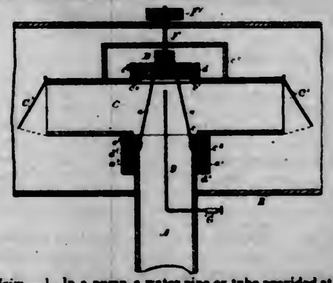
Claim.—1. A fire-proof curtain and scenery material for theaters and other places of amusement, consisting of interwoven strands of wire and fire-proof cord or fiber, substantially as described.

2. The combination, in the same fabric, of strands of wire and strands of fire-proof cord or fiber having the cord or fiber so woven in that the spaces between the wires are completely filled with the material, substantially as described, and for the purpose set forth.

3. The combination of fire-proofed cord or strand and wire woven together and forming a fire-proof fabric, the soft fibrous part of which can be pressed out and made to cover the wire and also form a flat surface upon which to paint the scenery, substantially as described.

4. The combination, in the same fabric, of strands of wire and of strands of fire-proofed material so woven together that the whole will form a fabric which will be opaque and which can be used for fire-proof curtains and scenery, substantially as described.

387,138. PUMP. JOSEPH H. BROWN, Elberton, Ga. Filed June 1, 1888. Serial No. 275,296. (No model.)



Claim.—1. In a pump, a water pipe or tube provided at its upper end with a part or arms having valved ends and flanged upper and lower central openings, and supported by and revolving on a cap which is supported upon the upper end of said pipe by rods which pass entirely through the revolving part, combined with an air-pump or exhaust, the whole surrounded by an air-tight case or tank, substantially as and for the purposes set forth.

2. The combination of the vertical pipe A, having a cap, A', sup-

ported above its upper end, the hollow and revolving part or arms C, having two central openings, *c* and *c'*, embracing, respectively, the upper end of said pipe and cap, and provided at its outer ends with the flap-valves C', the air-exhaust G, and the case B, substantially as described.

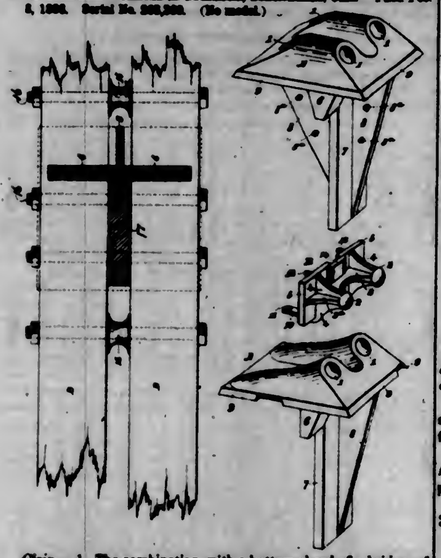
3. In a centrifugal pump, the revolving part C, having horizontal arms with valved outer ends, and having openings at its top and bottom between said arms, in combination with the pipe A, which enters the lower opening in the said revolving part, and the cap A', supported upon said pipe A and closing the upper opening in the revolving part, said part being supported upon said cap, substantially as described.

4. In a pump, the hollow and revolving part C, thickest from side to side at the middle and of uniform vertical height, its arms or ends curving in opposite directions and tapered or contracted and provided with valves, and having a supporting part on its upper side, combined with a spindle fixed to said supporting part, and a pulley and the pipe A and cap supported thereon above its end and in line therewith, upon which said spindle rests, an air-exhaust, and an air-tight case, substantially as described.

5. In a pump, the air-tight casing B, the pipe A, having at its upper end the cap A', supported by rods attached to said pipe, the hollow part C, placed directly over the upper end of pipe A and having valves at its ends and flanged central openings to fit it upon said pipe and cap and its connections, and means for revolving said hollow part, substantially as described.

6. In a centrifugal pump, the case B, having a safety-valve and provided with an air-exhaust and an air-compressor, the water-pipe A, having cap A', supported above its end, the hollow part C, revolving on the upper end of said pipe and having valved ends and flanged central openings, and the spindle F, fixed to the support or arch *d'* of said part C and resting on said cap and revolved as described, all substantially in the manner and for the purposes set forth.

387,139. CONNECTING FOR END POSTS AND BOTTOM CHORDS OF BRIDGES. RANSOM A. BURNHAM, Bellefontaine, Ohio. Filed Feb. 6, 1888. Serial No. 263,359. (No model.)



Claim.—1. The combination, with a bottom chord of a bridge, of a plate, A, having sockets 1 for the reception of the end of the bow, the said plate being provided with a downwardly-projecting flange adapted to be mortised into the said chord, as set forth.

2. The combination, with chord C, of plates A, for supporting the ends of the bows, said plates being provided with flanges 9 for excluding water, as set forth.

3. The combination, with the bottom chord, C, formed of two or more members, of plates A, secured thereto for securing the ends of the bows, the said plates having flanges 6 and tongues 7 mortised into the chord, and the brackets or supports 8 extending between the members, as set forth.

4. The combination, with the bottom chord formed of two or more members, of plates for securing the ends of the bows and packing-blocks interposed between the members, the said plates having downwardly-projecting ribs or flanges adapted to abut against said packing-blocks, as set forth.

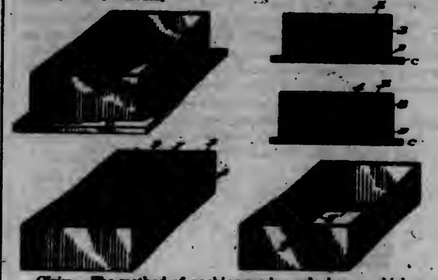
5. The combination, with a bow or truss of a bridge, of a plate secured to the end thereof for bearing against a seat on the chord, the said plate having the flanges 5, dowel 13, and projection 10, having screw-aperture 11, all set forth.

6. The combination of the plate A, having flanges and sockets, substantially as described, with the plate B, having projections 2, adapted to fit in said sockets, said plates being secured in place on the horizontal and inclined members of the bridge respectively, as set forth.

7. A bearing-plate for members of wooden bridges, consisting of the flanges 5, against which the ends of the pieces in said members bear, projections 2 on said flanges 5 for supporting the plate, and the strengthening webs or ribs 3, 3', and 4, said plates being secured to the members in the manner described.

8. The herein-described connecting-plate to be secured to the timbers of a bridge member, which consists of transverse bearing faces or flanges 5 for the ends of the said timbers in the member, projections 2, extending from said flanges 5, and strengthening-webs 14, substantially as set forth.

387,140. METHOD OF PACKING GRANULAR MATERIAL. FRANK R. BUSH, New York, N. Y. Filed Oct. 31, 1887. Serial No. 253,593. (No model.)



Claim.—The method of packing ready-made boxes, which consists in first properly placing the goods in a permanent frame whose outer dimensions correspond with the dimensions of the interior of the box to be packed, then fitting the box bottom side up over the frame so packed, then placing the box and frame open side up, and allowing the frame to retain its position surrounding the contents of the box, substantially as described.

387,141. MECHANICAL MUSICAL INSTRUMENT. HUGO DORNAS, Leipsic, Saxony, Germany. Filed Mar. 8, 1887. Serial No. 230,168. (No model.)



Claim.—1. In a mechanical musical instrument, the combination of the rod B with spring *a*, levers D E, and reed-valve F, arranged to operate in the manner and for the purpose described.

2. In combination with the reed-valve F, the spring *f*, closing said valve independent of its actuating mechanism, substantially as set forth.

3. In a musical instrument, in combination with the music-sheet A and driving-wheel K, the guiding pin or wheel *k*, guiding the outer periphery of the music-sheet, substantially as described.

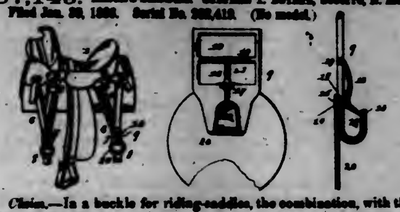
387,142. HAY-CARRIER-TRACK HANGER. WILLIAM H. BURNHAM and JOHN H. MILLER, Batavia, Ill., assignors to the United States Wind Engine and Pump Company, same place. Filed Mar. 26, 1888. Serial No. 268,482. (No model.)



Claim.—In hangers for tracks for hay-carriers, the bracket consisting of the central base, M, which terminates in the upwardly-pro-

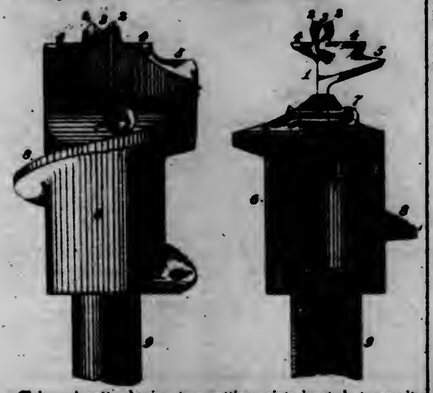
jecting supporting-wings N, and bar formed transversely in its top portion a semi-cylindrical rest, R, and a slot, K, formed through it parallel with the wings N N, in combination with the semi-cylindrical rest O, the screw-threaded hanger-rod P, adapted to pass through the rest and having a head on its lower end, and the track S, as specified.

387,143. RIDING-SADDLE. STEPHEN T. BUTLER, Seaford, N. Hav. Filed Jan. 30, 1888. Serial No. 262,413. (No model.)



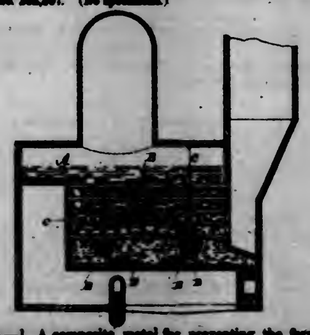
Claim.—In a buckle for riding-saddles, the combination, with the body portion 9, having two transverse strap-passages, 10 and 11, at the upper portion, and a hook portion, 12, at the lower end, an aperture, 14, below the lower strap-passage, and a cross-bar, 15, at its upper end, of the tongue 16, the middle of which is provided with a cross-piece, 17, and two lugs, 18 18, whereby the tongue may be secured to the cross-bar and kept from wabbling upon the same by means of the cross-piece 17, substantially as and for the purpose set forth.

387,144. CUTTER FOR MINING-MACHINES. EDWIN H. CARTER, Knoxville, Allegheny County, assignor to John S. Scully, Pittsburg, Pa. Filed Apr. 24, 1888. Serial No. 271,692. (No model.)



Claim.—A cutter having two cutting-points located at opposite sides of a central recess, a broad lateral cutting-lip located in a plane below each of said cutting-points, and a supplemental lateral cutting-lip located exterior to and in a plane below one of the cutting-lips first specified, substantially as set forth.

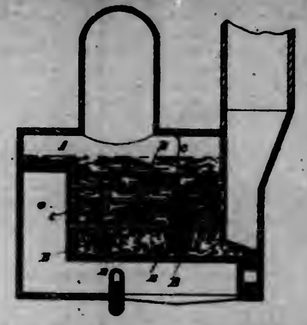
387,145. GALVANIC BOILER-CLEANING COMPOUND. FRANCIS J. CLARKE, Philadelphia, Pa., assignor of two-thirds to Charles Wolters and Joseph G. Hendrickson, both of same place. Filed Jan. 31, 1888. Serial No. 262,977. (No specimens.)



Claim.—1. A composite metal for preventing the formation of scale in and removing scale from steam boilers and generators, consisting of zinc and phosphorus, substantially as set forth.

2. A plate or mass of zinc and phosphorus, perforated, indented, or serrated, for use in water in and to be fed into steam boilers and generators, substantially as and for the purpose set forth.

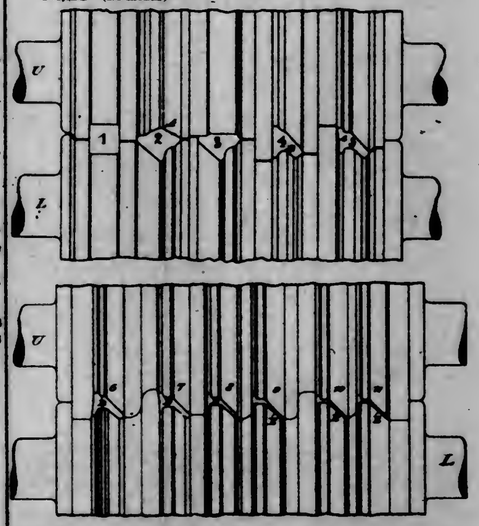
387,146. GALVANIC BOILER-CLEANING COMPOUND. FRANCIS J. CLARKE, Philadelphia, Pa., assignor of two-thirds to Charles Wolters and Joseph G. Hendrickson, both of same place. Filed Jan. 31, 1888. Serial No. 262,978. (No specimens.)



Claim.—1. A composite metal for preventing the formation of scale in and removing scale from steam boilers and generators, consisting of zinc, phosphorus, and copper.

2. A plate or mass of zinc, phosphorus, and copper, perforated, indented, or serrated for use in water in and to be fed into steam boilers and generators, as and for the purpose described.

387,147. ROLLS FOR ROLLING OVERHANGING SLOT-RAILS. FREDERICK GILLET, Johnstown, Pa., assignor to The Johnson Steel Street Rail Company, of Kentucky. Filed June 12, 1888. Serial No. 276,894. (No model.)

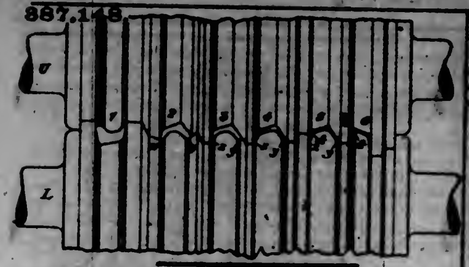


Claim.—A set of rolls for rolling overhanging slot-rails, having passes of the conformations indicated in the accompanying drawings by the numbers 1 to 11, inclusive, substantially as set forth.

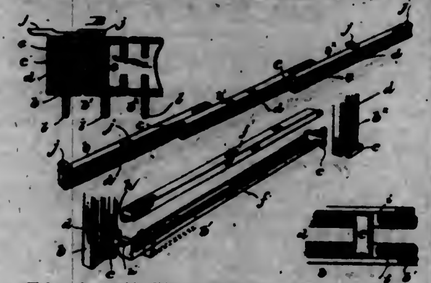
387,148. ROLLS FOR ROLLING ANGLE-SHAPED SLOT-RAILS. FREDERICK GILLET, Johnstown, Pa., assignor to The Johnson Steel Street Rail Company, of Kentucky. Filed June 12, 1888. Serial No. 276,895. (No model.)

Claim.—A set of rolls for rolling angle-shaped slot-rails, having passes of the conformations respectively illustrated and shown in the accompanying drawing by the numbers 1 to 6, inclusive, substantially as set forth.

387,148.



387,149. TABLE-SLIDE. WILLIAM S. GRAY, Springfield, Ohio. Filed Nov. 10, 1887. Serial No. 257,453. (No model.)



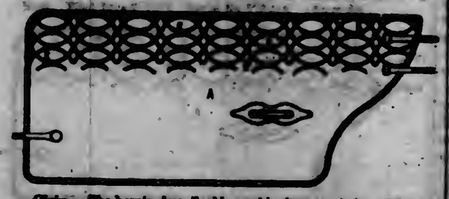
Claim.—1. A table-slide consisting of a series of sections, each provided with laterally-projecting T-shaped legs and longitudinal ways and grooves, with which the legs are adapted to engage, each alternate section being formed in two parts, as described, that the sections may be joined together by bringing said sections to an unusual position in relation to each other, substantially as set forth.

2. A table-slide, substantially as set forth, consisting of a series of single and double sections, each provided with T-shaped legs adapted to engage in longitudinal grooves in contact with guides or ways in the next succeeding section, stop projections for limiting the movement of the sections in relation to each other, and fastening lugs or cars on the upper portion of the end sections, adapted to form a bearing for said slide and furnish means for securing the same in position, substantially as set forth.

3. The combination, in a table-slide consisting of metal sections, as set forth, of end sections provided with metallic ears cast solid therewith and projected above the plane of the tops of the intervening sections for securing the same, substantially as set forth.

4. The combination, with the metallic sections having T-shaped legs extending laterally therefrom at the respective ends and provided with longitudinal grooves and ways therein, the said sections being arranged in series in such a manner that the T-shaped legs of the one shall engage with the slides or ways in the next succeeding one, each alternate section being formed of two parts, as described, stop projections in said sections for limiting the movement thereof in relation to each other, and longitudinal ribs or bosses at the bottom of said sections, substantially as set forth.

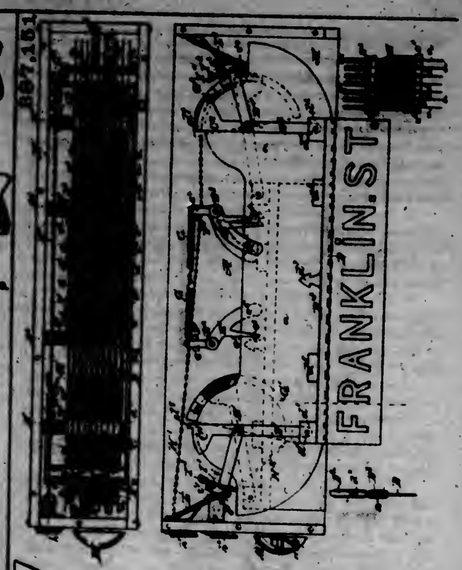
387,150. SIGNS-HANGER. ALFRED H. GROVER, Watertown, Mass. Filed June 7, 1888. Serial No. 276,445. (No model.)

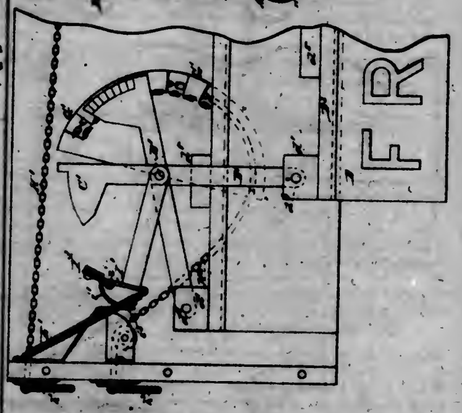


Claim.—The herein-described horse-blanket, consisting of the two burlap fabrics A, having an intervening padding, B, and provided with a series of ornamental cords, E, attached on the blanket, as described, as and for the purposes set forth.

387,151. GRANITE-RUBBING. WILLIAM L. GROW, New York, N. Y. Filed July 23, 1887. Serial No. 244,603. (No model.)

Claim.—1. A street or station indicator having a series of signs





with the names of the stations of any given road printed or painted thereon and stored within an inclosing case or housing, each of said signs coupled by pivot-pins at or near its ends, respectively, to the lower ends of a pair of swinging lifter-bars, which are mounted on and operated simultaneously by transverse axles journaled in the sides of the inclosing case or housing, the whole arranged so that when the lower ends of the said swinging bars are thrown down the attached sign is thrown down below the housings or case, so that its name or station is fully disclosed below the said case or housing, and all the other signs are raised up into the case or housing, substantially as described.

2. In a street or station indicator, a sign or tablet having a street or station name on its face pivoted to the lower ends of two swinging lifter-arms, by which both its ends are raised or lowered simultaneously, the lateral actuating-arms by which said lifter-arms are operated, and the hinged followers attached thereto, in combination with the actuating-centers and their operating chains and pulls, combined and arranged substantially as described and set forth.

3. In a street or station indicator, swinging or vertically-moving signs provided with upwardly-projecting central hooks on their upper edges arranged to engage with either one of two pivoted dependent and pendulous hooks placed above the sign and supported by its ends, engagement with the said dependent hook made by the simple act of raising the sign up by means of its lifting-bars, which are pivoted to its ends and manipulated or moved laterally toward either end of the case so as to raise the signs up, in which lifting the sign is, by its pendulous lifting-bars, thrown toward one or the other end of the case or

housing, as the case may be, so as to make it engage with one or the other of the supporting-hooks, substantially as described and set forth.

4. In a street or station indicator, downwardly-depending pivoted pendulous hooks attached to the case or housing and placed at equal distances from its longitudinal center and also from the sustaining-axles on which the swinging arms of the signs are mounted, provided with laterally and downwardly moving projecting arms, which permit the engagement therewith of lugs on the next adjacent sign when it is raised up, thereby actuating and releasing the sign next to the one which is raised up, substantially as and for the purpose set forth.

5. In a street or station indicator, the lateral actuating-arms by which the pendulous swinging sign-arms are successively operated or moved so as to throw the signs up, the hinged spring-followers attached to the front ends of the said actuating-arms, in combination with the operating-sectors, their chains, and pulls, substantially as described.

6. In a street or station indicator, the combination of the hinged followers for operating the pendulous sign-arms, the spring-cushions attached to the ends of the followers, and spring fender-pieces attached to the inclosing-case, so as to contact with the said cushions when they are thrown down, substantially as described.

7. In a street or station indicator, a case or housing in which the indicator mechanism is inclosed, subdivided by longitudinal partitions or diaphragms into longitudinal pockets, in combination with bifurcated levers E' E², pivoted in and to the case or housing over and straddling the said diaphragms, and vertically-adjustable indicator-signs or station-indicators, as described and set forth.

8. In a street or station indicator, longitudinal bars placed parallel with and above the sign-tablet, and attachable thereto by inwardly and upwardly projecting hooks or ledges adapted to catch to and hold up the sign-pieces, which, at their upper edges, are provided with horizontal ledges or ribs adapted to rest on the upper ends of said sustaining-hooks, the whole combined and arranged as described and set forth.

387,152. VEHICLE-REACH COUPLING. ELMER S. CORNHAM, Delhi Mills, Mich. Filed May 4, 1888. Serial No. 272,815. (No model.)



Claim.—1. The combination of the reach with the coupler C, having adjustable plate F and set-screw E, all constructed and arranged substantially as and in the manner and for the purpose described.

2. The combination of the reaches with the couplers C therefor, having a base, D, grooved side bars, a sliding plate, F, mounted between said bars, and the adjusting set-screw E, all constructed and arranged substantially in the manner and for the purpose described.

387,153. SPINNING-TOP. ELMER W. DOKERHAM, Westfield, Mass., assignor of one-half to George E. Whipple, same place. Filed Mar. 17, 1888. Serial No. 267,550. (No model.)



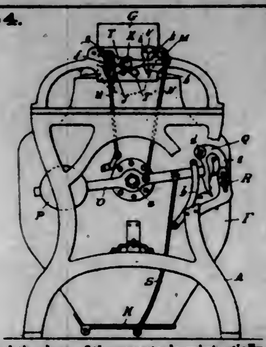
Claim.—A spinning-top having formed in the body thereof a vertical chamber, and the radial passages *b*, leading from the sides of the top thereto, and the flat block *b* in the bottom of the chamber to form a cap-rest, combined with the block *h*, loosely fitting and vertically movable in said chamber, and the stop-plug *d*, as described and shown, for the purpose set forth.

387,154. GRAIN, FLOUR, AND FEED SCALE. JOSEPH B. DUFFIE, Detroit, Mich. Filed Oct. 28, 1887. Serial No. 253,063. (No model.)

Claim.—1. The combination, with the weighing-receptacle of a grain-scale and the pivoted door H thereof, of a hopper independently supported from said receptacle and provided with an oscillating cut-off secured to and operated by a rock-shaft to close and disclose the discharge-opening from said hopper, and pivotal connections between the rock-shaft and the door H of the receptacle, substantially as described.

2. The combination, with the weighing-receptacle F of a grain-scale and the pivoted door thereof, of the independently-supported hopper G, the rock-shaft K, the segmental cylindrical cut-off to said hopper, the counter-weight L', the rock-arm T, secured to said shaft, the connecting-rod U, connected at one end with the receptacle and at the other to the rock-arm, and pivotal connections between said

387,154.



rock-shaft and the door of the receptacle, substantially as and for the purpose specified.

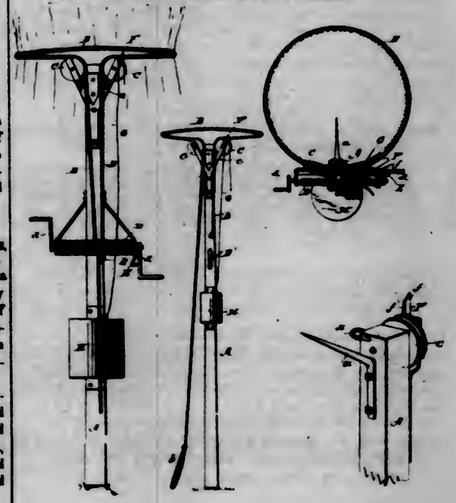
3. The combination, with the weighing-receptacle F of the grain-scale, of the independently-supported hopper G, the rock-shaft K, carrying the oscillating cut-off, the counter-weight L' on said rock-shaft, and a locking device consisting of the rock-arm T and the locking-lever V, with the hook *h*, and the link M, arranged to trip the lever V, all arranged to operate substantially as described.

4. The combination, with the weighing-receptacle F of the grain-scale, of the independently-supported hopper G, the rock-shaft K, the oscillating cut-off carried thereby, the counter-weight L, the rock-arm T, the connecting-rod U, the rock-arm T', the locking-lever V, provided with the hook *h* and the arm *h'*, and the link M, arranged to trip said locking-lever V, substantially as described.

5. The combination, with the weighing-receptacle, of the independently-supported hopper G, the rock-shaft K, carrying the cut-off I, the cut-off or door H, the lever O, carrying the counter-weight P, the connecting-rod S, the locking-lever Q, provided with a hook, *e*, an arm, *e*, the stop R, the connecting-rod U, provided with slot *f*, the rock-arms T and T', secured to the rock-shaft K, the counter-weight L, the locking-lever V, provided with the hook *h* and arm *h'*, the link M, and the connecting-rod N, the parts being constructed and arranged to operate substantially as described.

6. In a grain-scale of the kind described, the combination of the weighing-receptacle, the independently-supported hopper, the cut-off controlling the flow of grain from the hopper, the automatically-operating devices to open and close said cut-off, the hinged cut-off controlling the discharge of grain from the weighing-receptacle, the automatically-operating mechanism for opening and closing said cut-off in the weighing-receptacle, pivotal connections M, N, and S between the two cut-offs, and the locking-levers V and O and their tripping devices, substantially as described.

387,155. CORE-SHOCKER. EDWARD F. EVANS, Wamego, Kans. Filed Oct. 22, 1887. Serial No. 252,669. (No model.)



Claim.—1. The improvement in shock-compressors herein described, consisting of the main bar, the pointed prong projected laterally from the upper end of said bar, the guide-pulleys supported at the opposite sides of the upper end of said bar, and having a space between them, and the compressing-rope secured at one end to the main bar below the said separated guide-pulleys, substantially as set forth.

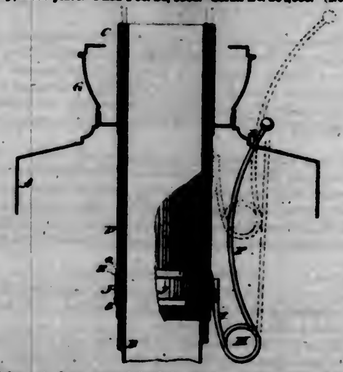
2. In a shock-compressor, the combination of a main bar, a prong projected laterally from the upper end thereof on the side next the shock, the compressing-rope secured at one end to the main bar, a guide-pulley for the compressing-rope arranged at the upper end of said bar on the side thereof away from the shock, and the blade F, secured adjacent to said guide-pulley, and having its edge next the shock blunted and its edge away from said shock sharpened, substantially as set forth.

3. In a shock-compressor, the combination of the main bar provided at its upper end with a guide for the compressing-rope, the compressing-rope secured to said bar and moveable over the guide, the blade secured to the bar near the upper end of the latter, and having its edge away from the shock sharpened and its edge next to the shock blunted and arranged adjacent to the guide for the compressing-rope, whereby to form a guide for the twine, and the twine-receptacle secured to the main bar below the blade, whereby the twine may be carried up behind the blade and be guided by the blunt edge of said blade next to the shock, substantially as set forth.

4. The combination, in a shock-compressor, of the main bar, the guide-pulleys supported at the opposite sides of the upper end of said bar, and having a space between them whereby the rope may be carried up between them over one pulley and brought back between them over the other pulley, the compressing-rope secured at one end to the main bar below the guide-pulleys, the blade secured to the bar adjacent to one of the guide-pulleys for the compressing-rope, and having its edge away from the shock sharpened and its edge next to the shock blunted or rounded, the prong projected laterally from the upper end of the main bar and pointed, whereby it may enter the shock, and the twine-receptacle secured to the main bar below the blade, substantially as described, and for the purposes specified.

5. The improved shock-compressor herein described, consisting of the main bar, the prong *a*, projecting laterally from the upper end thereof, the guide-pulleys arranged at the opposite sides of the upper end of said bar, the blade secured at the upper end of said bar adjacent to one of the guide-pulleys for the compressing-rope, and having its edge away from the shock sharpened and its edge next to the shock blunted or rounded, the windlass supported on the main bar below the guide-pulleys, the compressing-rope secured at one end to the windlass and suitably connected at its opposite end with the main bar, and the twine-receptacle, all substantially as and for the purposes specified.

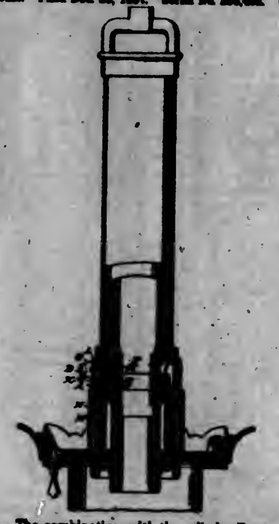
387,156. LAMP-WICK ADJUSTER. CHARLES A. EVANS, Meriden, Conn., assignor to The Bradley & Hubbard Manufacturing Company, same place. Filed Feb. 20, 1888. Serial No. 264,602. (No model.)



Claim.—1. In a central-draft lamp, the combination of the inner tube, B, surrounding wick-holder D, adapted to carry the wick between it and the central tube, the said wick-holder constructed with an annular groove near its lower end, with a wick-adjuster consisting of an elastic segment-shaped clamp corresponding to and adapted to detachably embrace the said wick-holder within the said groove, and a rod extending into the flame outside the burner, downwardly below the said clamp, and thence turned upward to form an arm, I, the upper end of said arm attached to the said clamp, substantially as described, and whereby up-and-down movement of said rod will, through the said clamp and groove in the wick-holder, impart a corresponding movement to said wick-holder and the wick carried by said holder.

2. In a central-draft lamp, the combination of the inner tube, B, a wick-holder, D, surrounding said central tube and adapted to carry the wick, the said tube D constructed with an annular groove, E, combined with a wick-adjuster composed of the outwardly-curved rod F, extending into the flame outside the burner and to a point below said groove in the wick-holder, constructed with a torsion-spring at its lower end and with an arm extending upward therefrom to said groove in the wick-holder, and a segment-shaped elastic clamp attached to the upper end of said arm and adapted to embrace said wick-holder within the said groove, substantially as described.

387,157. REGENERATIVE GAS-LAMP. JOHN FRANKLIN, Greenwood, Ohio. Filed Dec. 20, 1887. Serial No. 258,402. (No model.)



Claim.—The combination, with the cylinder F, external casing D, and flanged ring A, together forming the annular gas-chamber C, of the gas-tubes B, having their upper ends projecting up into said chamber, and the flanged annular deflector G, dividing said chamber into compartments and formed with notch-openings in its lower edge below the plane of the tops of the tubes B, substantially as set forth.

387,158. CLAY CRUSHER AND DRIER. ROBERT PFETZING, Rudelstadt, near Leipsic, Saxony, Germany. Filed June 27, 1887. Serial No. 242,603. (No model.) Patented in Germany Dec. 14, 1884, No. 32,633, and Aug. 22, 1885, No. 34,503, and in Austria-Hungary May 5, 1888, No. 4,347 and No. 32,732.



Claim.—1. A cylinder provided on its inside with longitudinal grates for comminuting the clay fed thereon, in combination with means for rotating said cylinder and grates, substantially as set forth.

2. In combination with a rotating cylinder and longitudinal grates, arranged as shown, a series of helical transporters D, arranged in the space between the grates and the wall of the cylinder, as shown, for the purpose set forth.

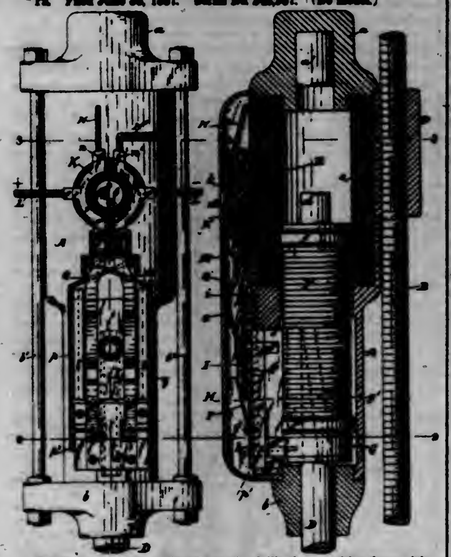
387,159. HYGIENIC BANDAGE. JONAS GROSSMANN, Berlin, Germany. Filed Feb. 4, 1888. Serial No. 263,068. (Model.)

Claim.—In a hygienic bandage, the combination of the ladies' open drawers having the front and rear patches *d* inserted between the legs and front and rear fastenings or hooks, *g g*, with the sustaining-bandage or holder *b*, detachably engaging said hooks, substantially as described.

887,159.



887,160. ELECTRIC ROCK-DRILL. GEORGE GOWN, White-Haven, Pa. Filed June 30, 1887. Serial No. 243,267. (No model.)



Claim.—1. In an electric rock-drill, the combination, with a solenoid-helix, of an armature provided with a coil, one of the said elements being stationary and having its current constant in one direction and the other element having its current reversible at each end of its stroke, a connection-piece at each end of the armature-coil, a metallic surface inside the solenoid-helix in constant contact with one of the said pieces, a strip of metal in constant contact with the other piece, and a commutator for reversing the current of the reciprocating element at each end of its stroke.

2. In an electric rock-drill, the combination, with a stationary solenoid-helix, of a reciprocating armature, a connection-piece at each end of the armature, a metallic surface inside the solenoid-helix in constant contact with one of the said pieces, a strip of metal in constant contact with the other said piece, and a commutator for reversing the direction of the current through the armature at each end of its stroke.

3. In an electric rock-drill, the combination of a single solenoid-helix, an armature provided with a coil working within the said helix for actuating the drill positively in both directions, insulated upper and lower rings connected to the ends of the said coil, a cylinder within the said helix and always in sliding contact with the upper ring, a metallic strip always in sliding contact with the lower ring, and a commutator for reversing the current through the armature-coil at each end of its stroke.

4. In an electric rock-drill, the combination of a single solenoid-helix, an armature provided with a coil working within the said helix for actuating the drill positively in both directions, the insulated rings *f* and *f'*, the cylinder *c* in contact with ring *f*, the metallic strip H in contact with ring *f'*, the projection *d*, connected to the armature, and a commutator reciprocating between electric contact-brushes and provided with lugs for the said projection to strike against, whereby the current through the armature-coil may be automatically reversed at each end of its stroke.

5. In an electric rock-drill, the combination of a solenoid-helix and an armature for reciprocating the drill, a switch connecting the terminals of the main wires with the actuating mechanism of the drill, and one or more casings wholly inclosing the said actuating mechanism and the switch, protecting them from wet, and provided with a small aperture, through which the said switch may be operated.

6. In an electric rock-drill, the combination of the solenoid-helix provided with wires N and N', consisting it continuously with the main-circuit wires, the armature provided with the coil and with the rings *f* and *f'* in contact with the ends of the coil, the cylinder *c* and the metallic strip H, always in contact with the rings *f* and *f'*, respectively, the contact-brushes P P' and Q Q', connected to the strip and to the cylinder, substantially as set forth, and the commutator connected to the main-circuit wires and reciprocated between the said brushes by the armature, whereby the current passing through the armature-coil may be automatically reversed at each end of its stroke.

7. In an electric rock-drill, the combination of the solenoid-helix provided with the wires N and N', connecting it continuously with the main-circuit wires, the armature provided with the coil and with the rings *f* and *f'* in contact with the ends of the coil, the cylinder *c*, and the metallic strip H, always in contact with the rings *f* and *f'*, respectively, the contact-brushes P P' and Q Q', connected to the strip and to the cylinder, substantially as set forth, the brushes O and O', connected with the main circuit, the commutator in constant sliding contact with the brushes O and O' and reciprocating between brushes P P' and Q Q', and a sliding bar provided with lugs and actuated by a projection on the armature-spindle for carrying the commutator, whereby the said commutator may be reciprocated and the current passing through the armature-coil reversed at each end of its stroke.

8. In an electric rock-drill, the combination of an indexing-cone provided with the cheating groove *g'*, a solenoid supported in the cone, a reciprocating armature provided with a spindle projecting from the cone for actuating the drill, an internal ratchet-wheel reciprocating with the armature and provided with a projection engaging with said groove *g'*, and a spring pawl pivoted to the spindle and engaging with the ratchet-wheel, whereby the drill will be revolved, substantially as set forth.

887,161. VALVE-LOCKING DEVICE. JOHN S. HALL, New York, N. Y. Filed Sept. 15, 1886. Serial No. 213,669. (No model.) Patented in France Jan. 6, 1887, No. 181,157; in Belgium Jan. 26, 1887, No. 74,026; in England Jan. 26, 1887, No. 1,291; in Austro-Hungary Feb. 24, 1887, and in Germany Mar. 5, 1887, No. 41,167.



Claim.—1. In a valve mechanism, the combination, with the valve-stem, of a threaded tube on the valve-chamber, through which said stem extends, a locking-key journaled loosely on said tube and adapted to reach to and detachably engage said stem, and a lock-nut working on said tube and serving to lock the key in any desired position relatively to said stem, substantially as and for the purpose specified.

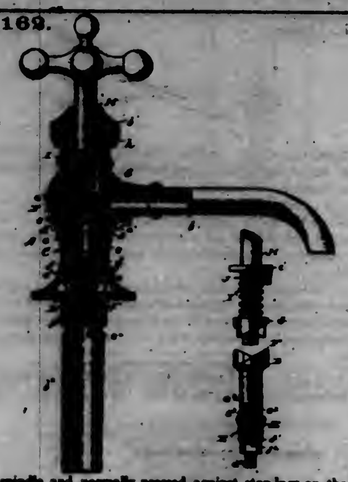
2. In a valve mechanism, the combination, with the valve-stem, of a threaded tube on the valve-chamber, through which said valve-stem extends, a leaf-spring locking-key journaled loosely on said tube and adapted to reach to and detachably engage said stem, and a lock-nut working on said tube and serving to lock the key in any desired position relatively to said stem, substantially as and for the purpose set forth.

887,162. FAUCET. THOMAS HAYDEN, Kansas City, Mo., assignor of one-half to Richard T. Crumbo, New York, N. Y. Filed Aug. 5, 1887. Serial No. 246,194. (No model.)

Claim.—1. In a faucet, the combination, with a valve-shell and an axially-turning valve-stem having a cam, of a reciprocating valve, also having a cam and connected to said shell, to be thereby limited to endwise movement therein and guided by the shell, so that the pressure of the water on the valve normally elevates the same and causes its cam to engage the cam of the spindle, and a torsional spring connected to the spindle to hold and return the same to a position in which the two cams interlock when the spindle is released, substantially as described.

2. In a faucet, the combination, with a valve-shell and an axially-turning spindle having a cam, of a reciprocating valve having a loose pin-and-slot connection with the valve-shell and a cam on its upper end, a torsional spring connected to the spindle, and a stop-pin fixed to the spindle and normally pressed against stop-lugs on the valve-shell by the tension of the spring, to thereby hold the spindle in such position as to cause the two cams to interlock when the valve is elevated by the pressure of the water thereon, substantially as described.

887,163.



3. In a faucet, the combination, with a fixed valve-shell, of a reciprocating valve having a loose pin-and-slot connection with the shell to guide the valve in a direct line and permit it to be elevated solely by the pressure of water thereon, said valve having a longitudinal passage which extends centrally through the cam on the upper extremity thereof, and with lateral inlet-ports which open into the lower end of said passage, an axially-turning spindle having a cam, a torsional spring connected to the spindle, and a pin fixed to the spindle to limit the axial movement of the cams, substantially as described.

4. In a faucet, the combination, with a valve-shell, of a hollow valve having a pin-and-slot connection with the shell, an axially-turning spindle, and a torsional spring connected to the spindle, the meeting ends of the valve and spindle having cams located in the horizontal plane of the outlet-spout of the faucet, whereby, when the cams are separated to depress the valve, the water flowing through the latter escapes through the spaces between the opposing edges of the cams, substantially as described.

887,168. STOVE OR FURNACE GRATE. CHARLES B. HOWARD, Syracuse, N. Y. Filed Jan. 19, 1888. Serial No. 261,313. (No model.)



Claim.—1. The combination, with the ash-pit of a stove or furnace, of a spherical grate consisting of two perforated concave-convex shells connected together and provided with trunnions, and having a circumferential slot for the removal of cinders, substantially as specified.

2. The combination, with the ash-pit of a stove or furnace and the ring *r*, adapted to rest in bearings formed in the upper edge of the ash-pit, of the spherical grate consisting of two perforated concave-convex shells connected together and having a circumferential slot for the removal of cinders, one of said shells provided with trunnions adapted to rest in bearings made in the ring *r*, substantially as specified.

887,164. STRAIGHT-WAY VALVE. ROGER HUNTER, Waterford, N. Y. Filed Apr. 2, 1888. Serial No. 269,462. (No model.)

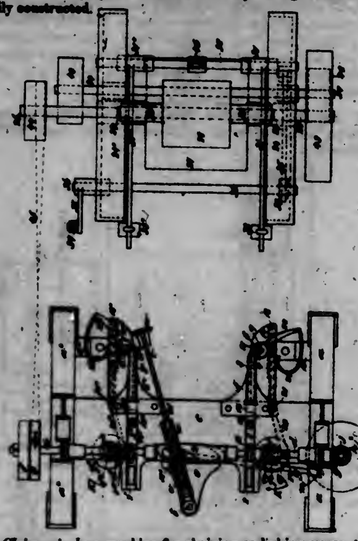
Claim.—The combination of the T-shaped valve-casing having the vertical plane guide and binding faces C at the inner ends of its lateral arms B, the plunger H, threaded internally and provided with the transverse opening I in line with the arms B, and the vertical slots K at right angles thereto, the disks T, provided on their inner faces with bosses that enter the opposite ends of the opening I, and with their outer faces adapted to close against the faces C, the cam-blocks M, with their stems resting in the slots K, with their ends bearing on the lower interior surfaces of the casing and their opposite inclined or beveled edges in the said slots, the pair of blocks F in the openings or slots K on each side of the inclined surfaces of the cam-blocks M, with their vertical edges resting against the inner surfaces of the disks T on the sides of the bosses thereof and their inclined edges against those of the cam-blocks, and the valve-stem F, with its threaded portion engaging within the plunger and moving the latter vertically, substantially as specified.

887,164.



887,165. MACHINE FOR LINKING WARPS. WILLIAM HOUGH, Rochdale, County of Lancaster, England. Filed Dec. 28, 1887. Serial No. 259,202. (No model.) Patented in England Oct. 24, 1888, No. 5,809.

Brief.—The invention consists in the improved mechanism for double-linking warps, the object being to secure high speed with great certainty and regularity, and at the same time to subject the yarn to less strain and injury than is usual in warp-linking machines as ordinarily constructed.

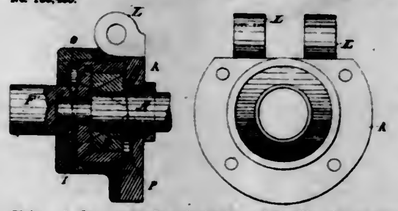


Claim.—1. In a machine for chaining or linking warps, the combination, with the stationary hollow hooks 2 2°, the hooks 4 4°, and means, substantially as described, for reciprocating said hooks, the hooks 23 23°, and means, substantially as described, for operating the same, of a warp-guiding trumpet, *w*, and means, substantially as described, for imparting the combined lateral and vertical motions to said trumpet, as set forth.

2. In a machine for chaining or linking warps, the combination, with the stationary hollow hooks 2 2°, the hooks 4 4°, and the longitudinally-sliding bars 3 3°, carrying the same, the cams 12 12°, and springs 16 16°, for actuating said bars, the hooks 23 23°, the racks 18 18°, and means, substantially as described, for operating said racks and pinions 17 17° for oscillating the said hooks, of the warp-guiding trumpet *w*, and means, substantially as herein described, for imparting the combined lateral and horizontal movements to said trumpet, as set forth.

3. In a machine for chaining or linking warps, the combination, with the stationary hollow hooks 2 2°, the hooks 4 4°, and means, substantially as described, for reciprocating said hooks, the hooks 23 23°, and means, substantially as described, for operating the same, of a warp-guiding trumpet, *w*, the arm *v*, carrying said trumpet, the arm *u*, to which arm *v* is jointed, the vertical shaft *t*, carrying the arm *v*, means, substantially as described, for vibrating the shaft *t*, the cam *z*, and means, substantially as described, for revolving the same, all substantially as herein set forth.

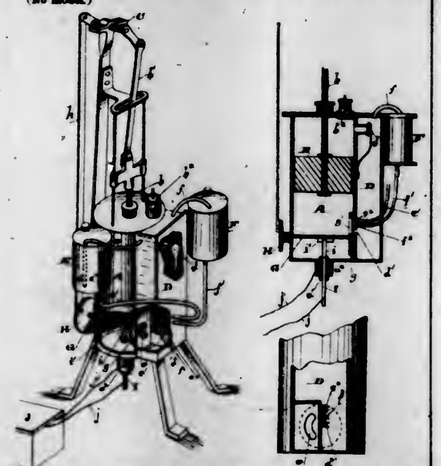
387,166. VELOCIPEDE. ALFRED JOHANSSON, Helsingfors, Finland, Russia. Filed Mar. 31, 1888. Serial No. 269,081. (No model.) Patented in Sweden Aug. 16, 1887. No. 1,150, and in France Mar. 30, 1888, No. 190,480.



Claim.—1. In a center for velocipedes and the like, the combination, with the wheel-shaft provided with a cylindrical collar having a helical spline-groove, and the crank-shaft provided with a socket embracing said collar, and said socket also provided with a spline-groove, of a pair of integral splines longer than said collar and occupying said spline-grooves, and two like stationary inclined cams arranged, as shown, with respect to the ends of said splines, whereby when the shafts are rotated said cams impart to said splines an alternating reciprocating movement in their respective grooves.

2. The combination, with the wheel-shaft, as A, provided with a cylindrical collar, B, having in its periphery a helical spline-groove, C, and the crank-shaft provided with a socket, F, which embraces the collar B, and which is also provided with a helical spline-groove, G, of the pair of integral helical splines D and E, occupying said spline-grooves, respectively, and the inclosing-box provided with cams, as described, for actuating said splines.

387,167. EXPLOSIVE ENGINE. LEOPOLD JULIG and EDWARD EWALD, San Francisco, Cal. Filed July 27, 1887. Serial No. 245,467. (No model.)



Claim.—In a motor, a valved cylinder, a piston reciprocating therein, and a crank-shaft with which the piston is connected, in combination with an air-chamber communicating with the cylinder in front of the piston, said communication being controlled by a valve and with the cylinder behind the piston, a vessel containing oil communicating with the air-chamber and the cylinder behind the piston, a vessel containing a lubricant communicating with the air-chamber and with the cylinder behind the piston, an exhaust from the cylinder behind the piston, a rotary ported valve within the cylinder controlling the communication of the air-chamber, the oil-vessel, and the lubricant-vessel with the cylinder, and also controlling the exhaust, a shaft by which the valve is rotated and a connection between the crank-shaft and said shaft, and an electrical sparking apparatus comprising a contact-spring within the cylinder, a rib or piece on the rotating valve-shaft coming in contact with the spring, and an electric circuit including said shaft and spring, all arranged and adapted to operate substantially as herein described.

387,168. ROTATING TROLLING DEVICE FOR SHIPS' LOGS. OSCAR KOSTEL, San Francisco, Cal. Filed Dec. 12, 1887. Serial No. 257,616. (No model.)

387,168.

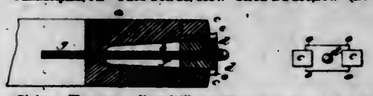


Claim.—1. A rotary trolling device for ships' logs, consisting of a twisted blade having ribs on opposite sides along its longitudinal margin, substantially as described.

2. A rotating trolling device for ships' logs, consisting of a plate twisted and having its longitudinal margins bent in reverse directions, forming curved flanges, and a wire secured on opposite sides of the plate along the longitudinal edges by said flanges, substantially as described.

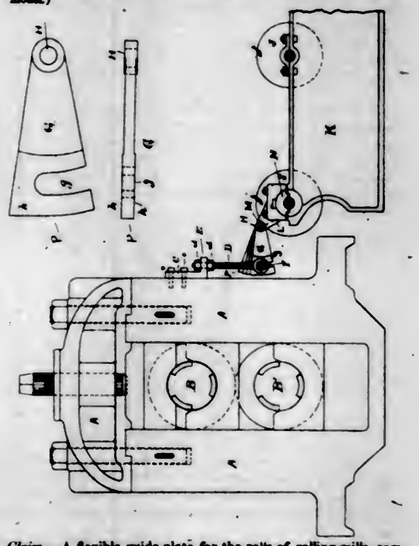
3. In a rotating trolling device for ships' logs, the twisted blade or rotator, bound on its longitudinal margins by a wire having its bend at and beyond the inner end of the blade, and provided with an eye or loop within said bent portion of the wire, essentially as shown and described.

387,169. EXPANSION DRILL OR REAMER. EDWARD A. LILLY, Philadelphia, Pa. Filed Dec. 26, 1887. Serial No. 259,267. (No model.)



Claim.—The expanding-drill *a*, with wedge-shaped opening *b*, in combination with wedge *d*, provided with flanges *c c c c*, and the operating-screw *f*, substantially as shown and described.

387,170. FLEXIBLE GUIDE FOR ROLLING-MILLS. CHARLES F. LLOYD, Johnstown, Pa., assignor to The Johnson Steel Street Rail Company, of Kentucky. Filed June 12, 1888. Serial No. 276,514. (No model.)

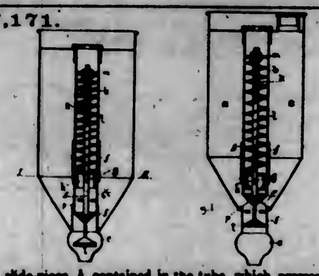


Claim.—A flexible guide-plate, for the rolls of rolling-mills, composed of bars or plates combined together so as to flex in different planes, whereby irregular shapes of metal are guided to enter irregular-shaped roll-passes, substantially as set forth.

387,171. CARTRIDGE-LOADER. ADOLPH LUTZ, Mannheim, Baden, Germany. Filed Nov. 12, 1886. Serial No. 218,726. (No model.) Patented in Germany Feb. 18, 1886, No. 36,686, and in France June 2, 1886, No. 169,768.

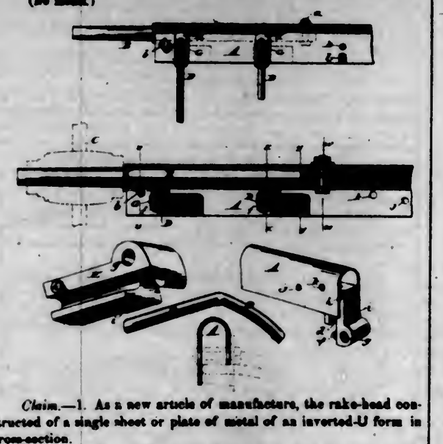
Claim.—An apparatus for filling powder into cartridge-shells, consisting in the combination of a vessel, *a*, with a tube, *b*, fastened in it and intended to hold a bolt, *k*, round which a spiral spring, *l*, winds, the said bolt being provided with a valve or locking-piston, *i*, and a shell, *f*, made to slide over the tube and provided with lateral apertures *c* and funnel *e*, for the purpose of measuring the quantity of gunpowder for the cartridge-shell about to be filled, and, further, in combination

387,171.



with a slide-piece, A, contained in the tube, which presses the spring together, all for the purpose of filling a cartridge-shell automatously by pressing said apparatus on the hole of the cartridge-shell, substantially as described.

387,172. HORSE HAY-RAKE. EDWARD P. LYMAN, Davenport, Iowa. Filed Oct. 1, 1884. Renewed Nov. 21, 1887. Serial No. 255,794. (No model.)



Claim.—1. As a new article of manufacture, the rake-head constructed of a single sheet or plate of metal of an inverted-U form in cross-section.

2. In a rake-head, the combination of the metal axle of an inverted-U form in cross-section with the journals secured to and extending beyond its ends, substantially as described, to receive the ground-wheels.

3. In combination with the rake-teeth attached thereto, substantially as described, the rake head or axle consisting of the body portion of an inverted-U form in cross-section, and journals B, seated at one end within the axle and confined in place by bolts *a* and *b*, substantially as described.

4. In a horse-rake, the combination of a ⊓-shaped axle, blocks secured within said axle, and rake-teeth having their forward ends seated in said blocks, substantially as described and shown.

5. The combination, with the ⊓-shaped axle, the tooth-retaining block E, provided with stud A, and the fastening-bolt inserted through the block and axle, substantially as described.

6. In combination with a series of rake-teeth attached thereto, substantially as described, the axle having its body portion of an inverted-U form in cross-section, journals B, seated at one end within the axle, and transverse bolts *b*, extended through the axle and acting to contract the same upon the journal.

7. The axle of an inverted-U form in cross-section, provided with holes *b* and vertical notches *l*, whereby it is adapted for use in a horse-rake, as described.

8. In combination with the hollow axle and the rake-tooth having its forward end bent at a right angle to form a journal or pivot, a grooved perforated block, E, seated within the axle and embracing the end of the tooth, and a bolt applied to confine the block in place, substantially as described.

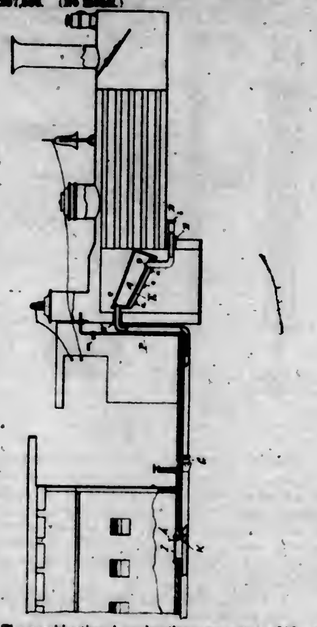
9. The axle of an inverted-U form in cross-section, in combination with the rake-tooth having a laterally-bent end or journal, and the grooved block embracing said journal.

10. The grooved block E, provided with the stud A and reduced in thickness at the end bearing said stud, as and for the purpose described.

11. In combination with the axle of an inverted-U form in cross-section, provided with recesses *j* and holes *b*, the tooth-retaining block E, provided with stud A, and the fastening-bolt G, applied as described and shown.

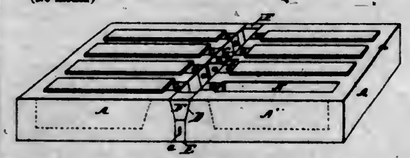
12. In combination with the hollow axle, the rake-teeth, and the tooth-retaining block within the axle, the vertical movable plate H, and the transverse bolt G, applied as described, for the double purpose of retaining the block in position and of covering the plate.

387,173. HEATING RAILWAY-CARS. WILLIAM A. LYON and SYLVESTER L. MORSE, Danbury, Conn., assignors of one-half to James S. Taylor and Abraham T. Glover, same place. Filed Dec. 10, 1887. Serial No. 257,866. (No model.)



Claim.—The combination, in a heating apparatus, of the metal chamber A, having underneath protective fire-brick, E, and resting upon lugs *a* on the inside of the fire-box, the cold-blast pipe B and distributing-pipe C, screwed into and through sleeves D D', said sleeves screwed into and through the shells of the outer legs of the boiler, and the steam-pipe P, leading from the dome and connecting with the distributing-pipe leading to the car, substantially as shown and described.

387,174. INGOT-MOLD. GEORGE F. MCCLEANE and WILLIAM M. FARRER, Jr., Pittsburg, Pa. Filed May 24, 1888. Serial No. 274,908. (No model.)



Claim.—1. In an ingot-mold having an open top and end, a removable end piece composed of fire-brick and provided with a gate or passage for molten metal, substantially as described.

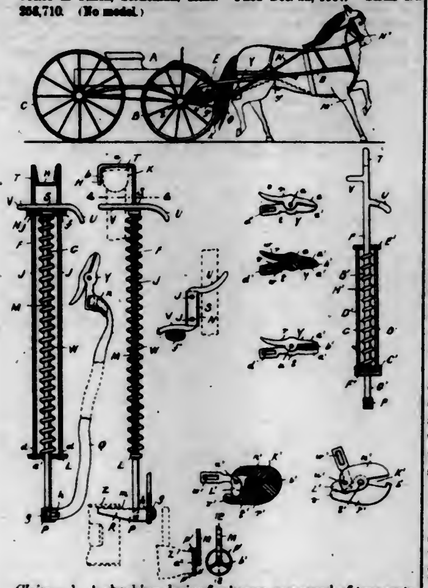
2. The combination, with an ingot-mold consisting of two separate frames, each frame containing two or more molds and having inclined faces, whereby said frames when placed together form a single sprue having inclined sides, of a removable bar and end bricks situated between the two frames, substantially as described.

3. The combination, with an ingot-mold consisting of independent frames having a single sprue between them, of a removable bottom and end pieces for said sprue, said bottom consisting of a rod or bar of iron, substantially as described.

4. An ingot-mold consisting of the frames A A', having inclined

faces D, the removable bar E, and bricks F F, all constructed and combined substantially as described.

387,175. HORSE-CHECKING DEVICE. DEXTER S. MUNSON and CYRUS R. PRICE, Stoneham, Mass. Filed Dec. 22, 1887. Serial No. 258,710. (No model.)



Claim.—1. A checking device for horses, composed of two parts, one an arm or rod having one end suitably constructed to be applied over the rim of a wheel and provided with two laterally oppositely-projecting arms, U V, and connected by sliding joints to the other part, which consists of a rod or arm adapted to be attached to the hub of the wheel, and provided with a strap or rein adapted to be attached to the driving-reins or the bit or bridle of the horse, for the purpose specified.

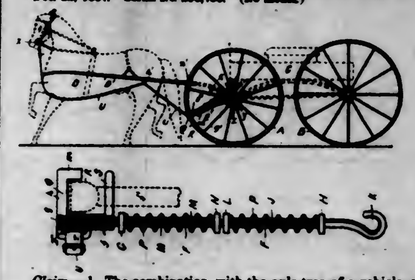
2. A checking device for horses, composed of two parts, one an arm or rod having one end suitably constructed to be applied over the rim of a wheel and provided with two laterally oppositely-projecting arms, U V, and connected by sliding joints to the other part, which consists of a rod or arm having a laterally-projecting arm, R, for attaching it to the hub of the wheel, and provided with a strap or rein adapted to be attached to the driving-reins or to the bit or bridle of the horse, for the purpose specified.

3. A device for checking horses, composed of two parts, one an arm or rod having one end suitably constructed to be applied over the rim or tire of a wheel, and provided with two laterally oppositely-projecting arms, U V, and connected by sliding joints controlled by a spring to the other part, which consists of a rod or arm having a laterally-projecting arm, R, for attachment to the hub of the wheel, and adapted to receive the end of a strap or rein having a clamp for its connection with the driving-reins or bit or bridle of the horse, for the purpose specified.

4. A device for checking horses, composed of two parts, F G, one a wire folded upon itself, and having a clamp end, T, for attachment over the rim of a wheel and carrying two laterally oppositely-projecting arms, U V, its two ends secured to a cross-bar, L, through which cross bar or rod or arm of the part G is adapted to move back and forth, one of its ends adapted to be secured to the hub of the wheel, and having a strap, &c., secured thereto, and its other end attached to a cross-bar, N, adapted to slide on the parallel portions of the part F, and having a spiral spring, W, substantially as and for the purpose specified.

5. A checking device for horses, composed of two parts, one an arm or rod having one end suitably constructed to be applied over the rim of a wheel, and provided with two laterally oppositely-projecting arms, U V, and connected by sliding joints to the other part, which consists of a rod or arm adapted to be attached to the hub of the wheel, and provided with a strap or rein having secured thereto a clamp, Y, formed of two parts, *r* and *l*, pivoted to each other and provided with a spring, *v*, for attachment to the driving-reins or bit or bridle of the horse, for the purpose specified.

387,176. HORSE-CHECKING DEVICE. DEXTER S. MUNSON, Stoneham, Mass., assignor of one-half to Cyrus R. Price, same place. Filed Dec. 22, 1887. Serial No. 258,720. (No model.)



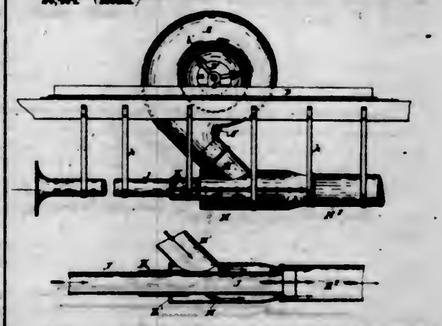
Claim.—1. The combination, with the axle-tree of a vehicle, of a check device formed of two parts adapted to slide from and toward each other on guiding-rods F F, and controlled by springs P, one part adapted to be secured to the axle-tree and the other part to be attached to the rim of the wheel, and provided with an arm, S, and a check-rein adapted to be secured to the bridle or bit of the horse or driving-reins, for the purpose specified.

2. The combination, with the axle-tree of the vehicle, of a check device formed of two parts adapted to slide from and toward each other on guiding-rods F F, and controlled by springs P, one part adapted to be secured to the axle-tree and the other part to be attached to the rim of the wheel, and provided with an arm, S, and a check-rein adapted to be secured to the middle portion of a short strap secured to the bridle or bit of the horse by its two ends.

3. A clasp or clip, Q, adapted to be attached and secured to a wheel made in one piece to partially surround the rim or tire of the wheel, and having a laterally-projecting arm, S, to engage with a spoke of the wheel, and connected to the axle-tree and to a check-rein adapted to be secured to the bridle or bit of the horse, for the purpose specified.

4. A fastening device adapted to be detachably secured to the axle-tree, consisting of the two parts A' B', one, A', provided with an offset-arm, *b'*, having an eye, *d'*, and adapted to slide within the other part, B', and connected and secured together by a screw-bolt, for the purpose specified.

387,177. COMBINED FAN-BLOWER AND INDUCTION APPARATUS. FRANCIS MURPHY, Chicago, Ill. Filed Feb. 18, 1881. Serial No. 26,464. (Model.)

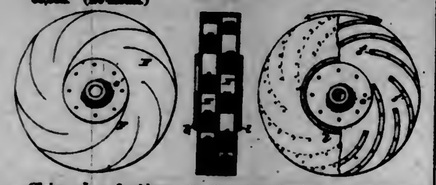


Claim.—1. An air-blast apparatus for conveying light materials by the force of the blast, consisting of the induction-tube J and discharge-tube H², which together provide a passage adapted for the direct and free conveyance of materials, such as set forth, and a rotary fan-blower connected with the passage of the discharge-tube by an air-blast passage having an annular outlet around the end of the induction-tube which opens into the discharge-tube, substantially as described.

2. In an air-blast apparatus for conveying light materials, such as set forth, the combination of the discharge-tube H H², closed at one end, the induction-tube J, entering the closed end of the discharge-tube, and the rotary fan-blower having a hollow arm, H', extended from its casing and connected with the rear portion, H, of the discharge-tube, substantially as described.

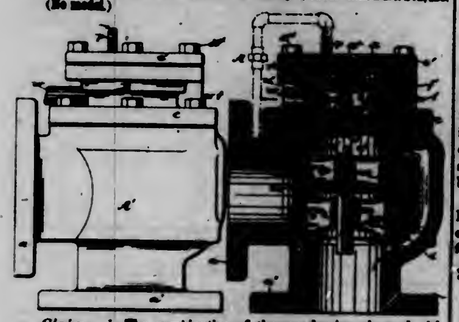
3. The combination, substantially as herein described, of a rotary fan-wheel blower having its casing capable of rotary adjustment about the axis of the fan-wheel, and a discharge-tube containing a portion of its length an induction-tube, said tubes being supported from the fan-wheel casing by a hollow arm, through which a blast from the blower is utilized as a means for forcing a current through the discharge-tube and inducing a current through the induction-tube, for the purpose set forth.

387,178. FAN-BLOWER AND INDUCTION APPARATUS. FRANCIS MURPHY, Chicago, Ill. Original application filed Feb. 7, 1881, Serial No. 26,464. Divided and this application filed Jan. 31, 1883. Serial No. 83,022. (No model.)



Claim.—In a fan-blower, the fan-wheel having an annular series of curved vanes subdivided into sub-sets of vanes, with the vane of each sub-set which stands first relatively to the direction of rotation of the wheel extended from a central opening of the wheel to the periphery of the latter, and the succeeding vanes of each of said sub-sets successively decreasing in length, so as to place their inner ends at points successively increasing in distance from the central opening of the fan-wheel, substantially in the manner and for the purpose described.

387,179. AUTOMATIC FIRE-EXTINGUISHING APPARATUS. ANDREW F. HAGLE, Chicago, Ill. Filed May 1, 1888. Serial No. 272,492. (No model.)



Claim.—1. The combination of the supply-pipe charged with water under pressure and the distributing-pipe charged with air under a less pressure, with a double-headed valve separating them normally, one head of the valve closing the supply-pipe and the other head closing a chamber communicating through a restricted by-pass with the supply-pipe, a waste-valve closing a waste-outlet from said chamber, and a diaphragm holding said waste-valve closed against the water-pressure, the said diaphragm being itself held by the light air-pressure, substantially as and for the purpose set forth.

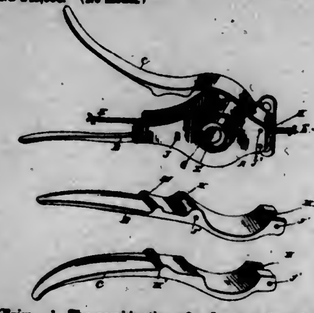
2. The combination of the supply-pipe charged with water under pressure and the distributing-pipe charged with air under a less pressure, with a differential valve separating them normally, the smaller head of the valve closing the supply-pipe and the other head closing a chamber communicating through a restricted by-pass with the supply-pipe, a waste-valve closing a waste-outlet from said chamber, and a diaphragm holding said waste-valve closed against the water-pressure, the said diaphragm being held by the light air-pressure, substantially as and for the purpose set forth.

3. The combination of the supply-pipe charged with water under pressure and the distributing-pipe charged with air under a less pressure, with a double-headed valve separating them normally, one head of the valve closing the supply-pipe and the other head closing a chamber communicating through a restricted by-pass with the supply-pipe, a waste-valve closing a waste-outlet from said chamber, and a diaphragm holding said waste-valve closed against the water-pressure, the said diaphragm being held by the light air-pressure, and an alarm mechanism connected with the waste-valve, substantially as and for the purpose set forth.

4. The combination of the supply and distributing pipes with the double main valve, the restricted by-pass around the said valve, whereby the water is allowed to act upon both faces of the valve, the diaphragm, exposed on one face to the light air-pressure of the distributing-pipe and on the other side to the atmospheric pressure, the waste-valve closing the waste-passage from one side of the main valve, the said waste-valve being normally held closed against the water-pressure by the diaphragm, and the said by-pass leading into the waste side of the valve-chamber just above the main valve, so as to be shut off by the said main valve during the first part of its movement.

5. The combination of the supply and distributing pipes with the double main valve, the restricted by-pass around the said valve, whereby the water is allowed to act upon both faces of the valve, the diaphragm exposed on one face to the light air-pressure of the distributing-pipe and on the other side to the atmospheric pressure, the waste-valve closing the waste-passage from one side of the main valve, the said waste-valve being normally held closed against the water-pressure by the diaphragm, and the said waste-valve being adapted to be held in its open position by the main valve when the latter is fully open.

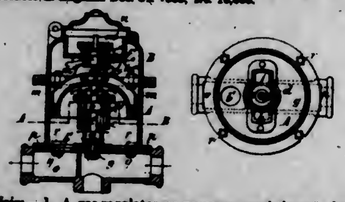
387,180. FIRE-ESCAPE. JOHN H. O'HEE, Poughkeepsie, N. Y., assignor to Dorsey Neville, same place. Filed July 22, 1887. Serial No. 245,093. (No model.)



Claim.—1. The combination of a frame, a fixed hollow cylinder in the middle of the frame and adapted to have the rope coil around it, and two handles pivoted to the frame on opposite sides of the cylinder and adapted to be pressed against the rope-coil on opposite sides of the cylinder when the handles of the levers are grasped in the hand and pressed toward each other, substantially as and for the purpose herein specified.

2. In combination with the frame A and cylinder G, the handles B C, provided with the grooves or notches H' H', adapted to guide the coiled rope in proper position around the cylinder, substantially as and for the purpose herein set forth.

387,181. GAS REGULATOR OR GOVERNOR. GEORGE FOSTER, London, England. Filed Oct. 14, 1887. Serial No. 252,252. (No model.) Patented in England Dec. 31, 1886, No. 16,668.



Claim.—1. A gas regulator or governor, consisting of a base having inlet and outlet pipes, an inner shell detachably secured to said base, containing one or more valves, and an outer shell consisting of two parts detachably secured together, the lower of which is provided with a dome-shaped partition, the whole of said outer shell being detachably secured to said base, substantially as described.

2. In a gas regulator or governor, the combination, with a base provided with inlet and outlet pipes, of an inner shell provided with two valve-seats and two guides secured to said base, an outer shell secured to said base, and a rod mounted in the guides in said inner shell and carrying two valves, substantially as described.

3. In a gas regulator or governor, the combination, with a base provided with inlet and outlet pipes, of an inner shell secured to said base and provided with two valve-seats and two or more valve-rod guides, an outer shell provided with a valve-seat and secured to said base, and a valve-rod mounted in the guides in said inner shell and having valves for engaging the valve-seat in the inner shell and a valve for engaging the valve-seat in the outer shell, substantially as described.

4. In a gas regulator or governor, the combination, with a base provided with inlet and outlet pipes, of an inner shell secured to said base and having valve-rod guides, an outer shell attached to said base and having a dome-shaped partition provided with a valve-seat, a portion of the said outer shell above said partition being removably se-

cured to the lower portion, a valve-rod mounted in the guides in the inner shell, and a diaphragm and valve attached to said rod above the partition of the outer shell, substantially as described.

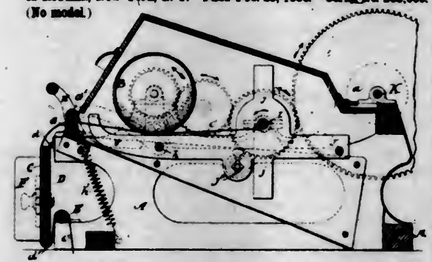
387,182. BAIL-EAR. THOMAS F. REILLY, New York, N. Y., assignor of one-half to Richard S. Reilley, same place. Filed Feb. 18, 1888. Serial No. 264,109. (No model.)



Claim.—1. The combination, with a vessel and a bail therefor, of ears, each of which is made in one integral piece, and comprising a base portion fitted to the side of said vessel and provided with rivet-holes, and an opening near its upper end, with a loop-piece extending vertically across the same, substantially as described.

2. A bucket-ear made in one integral piece, having a base portion to fit the side of a bucket, and an opening near its upper end, with a loop-piece extending vertically across the same, substantially as described.

387,183. MACHINE FOR MAKING PLASTER BANDAGES. JAMES R. RODMAN, New York, N. Y. Filed Feb. 23, 1888. Serial No. 265,009. (No model.)



Claim.—1. The combination, with the rotary perforated cylinder B, of the winding-up spindle I, the rolls G G' in front of the cylinder, and the guides J J, extending from the rolls to the spindle for guiding the ribbon or cloth, substantially as shown and described.

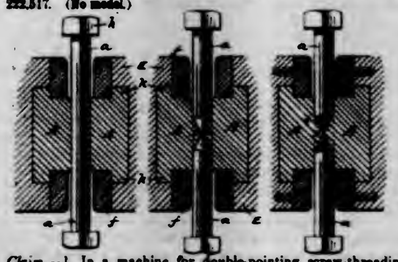
2. The combination, with the rotary perforated cylinder B, of the winding-up spindle I, the rolls G G', the guides J J, extending from the rolls to and beyond the spindle for guiding the cloth or ribbon, and means, substantially as described, for adjusting said guides toward and from each other, substantially as shown and described.

3. The combination, with the rotary perforated cylinder B, of the winding-up spindle I, the rolls G G', the roll E, and the smoothing-plate D between said rolls and engaging the cloth or ribbon, substantially as shown and described.

4. The combination, with the rotary perforated cylinder B, of the winding-up spindle I, the rolls G G', the roll E, the smoothing-plate D between said rolls, and the adjustable guides F F on said plate, substantially as shown and described.

5. The combination, with the rotary perforated cylinder B, of the winding-up spindle I, the rolls G G', the roll E, the hinged smoothing-plate D between said rolls, and the guides F F on said plate, substantially as shown and described.

387,184. DIE FOR FORMING AND THREADING THE POINTS OF SCREWS. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Dec. 24, 1886. Serial No. 222,517. (No model.)



Claim.—1. In a machine for double-pointing, screw-threading, and transversely dividing a rod of metal, the combination of a pair of oppositely-mounted dies, each having an ungrooved A-shaped rib projecting from its face, the same extending gradually and rearwardly from a point to a height substantially equal to one-half the diameter of the rod to be acted upon, and terminating in a grooved A-shaped portion having uniform angles and equal sides, adapted to simultaneously impress a screw-thread into the contiguous cone-shaped sections of the rod after the ungrooved portion of the ribs have completed their work, and mechanism for operating the dies, substantially as hereinbefore described.

2. The combination, with oppositely-arranged dies, each having a reducing portion, D, and a screw-thread-forming portion, D', secured to or formed thereon, of mechanism for reciprocating or operating said dies, and a frame in which the dies are mounted to travel, substantially as shown and hereinbefore described.

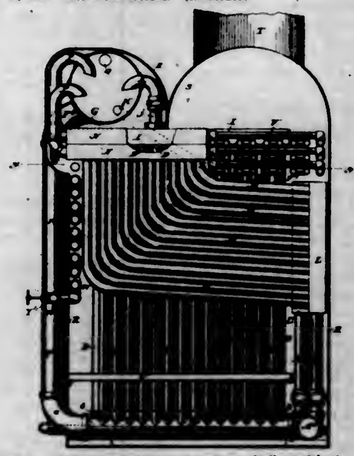
387,185. CHURN. ELI A. RUDASILL and NOAH R. LOVE, Shelby, N. C. Filed Jan. 20, 1888. Serial No. 261,573. (No model.)



Claim.—1. The combination, with an arched standard having a dasher therein and a vertical arm extending above the same, with a wheel-frame on the upper end of the arm, having stops on opposite sides of its front face, of a sector-rack meshing with a pinion on the dasher, having upwardly-extending arms united and pivoted to the wheel-frame, the arms of the sector-rack extending above their pivotal point and provided with a segment resting against the upper front face, and a curved rib on their inner side resting against the lower front face of the wheel-frame, the end of said segment and rib coming in contact with said stops at the same time, one above and the other below, as set forth.

2. The combination, with a standard having a dasher therein and a vertical arm on one side thereof extending above the same, with a wheel-frame on the upper end of the arm, having stops on opposite sides of its front face on the same plane with each other, of an adjustable guide-wheel secured to the standard resting against a rack-bar having upwardly-extending arms united and pivoted at the top of the vertical arm and in the center of the wheel-frame, said rack-bar arms extending above their pivotal point and diverging from each other to the periphery of the wheel-frame, and having their upper ends united by a segment resting against the upper front face, and a curved rib on their inner side resting against the lower front face of said frame, the end of said sector and rib coming in contact with said stops on the frame at the same time, one above and the other below, substantially as and for the purpose set forth.

387,186. STEAM-BOILER. CHARLES L. SEABURY, New York, N. Y., assignor to the Gas Engine and Power Company, same place. Filed Nov. 18, 1887. Serial No. 255,461. (No model.)



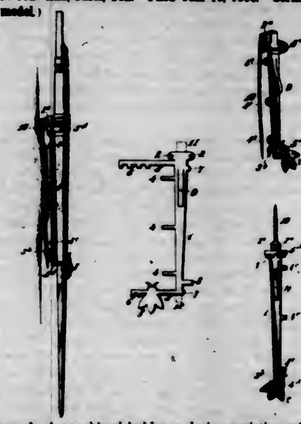
Claim.—1. The combination, in a steam-boiler, of the basal manifolds A A' A², connected and arranged to form a rectangle and inclose the furnace, lateral manifolds I I, placed, respectively, above the two lateral basal manifolds A A' and parallel therewith, interposed vertical

tubes D D, connecting said upper and lower lateral manifolds, a series of upright manifolds, L L, mounted vertically above the rear basal manifold, A², vertical tubes D' D', connecting the upright manifolds severally with the rear basal manifold, A², a series of horizontal manifolds, N N, placed between the two upper lateral manifolds, a series of bent tubes, M M, connecting each of said horizontal manifolds with one of the upright manifolds L, a steam drum or separator mounted transversely above the upper manifolds, coupling-pipes connecting separately each of the several upper manifolds with said drum, stand-pipes connected, respectively, with the front ends of the lateral basal manifolds A A' and with the bottom of the drum or separator, an outer casing inclosing the entire set of tubes and manifolds, a chimney connected with the upper part of said casing, and a water-supply pipe and steam-discharge pipe connected with the steam-drum, all substantially in the manner and for the purpose herein set forth.

2. The combination, in a steam-boiler, of a series of sections, each constructed of two manifolds, L and N, arranged in a vertical plane at a right angle to each other and connected by a series of bent tubes, M M, a steam-drum mounted transversely over the sections, a coupling-pipe connecting each horizontal manifold with said drum, a basal manifold, A², placed transversely beneath the sections, a coupling tube or tubes, D' D', connecting the lower end of each upright manifold L with said transverse basal manifold A², and pipes, substantially as described, connecting said basal manifold with the drum, to permit a circulation through each of said sections, substantially in the manner and for the purpose herein set forth.

3. The combination, with a stand-pipe, F, a drum, G, with which it communicates at its upper end, and a system of heating-pipes, substantially as described, connecting the lower end of said stand-pipe with said drum, of an injector, Y, fitted in said pipe, a steam-generating coil, W, to which said injector is connected and which is supplied from the drum G, and a pump, Z, interposed between and connected to the coil and drum to produce a pressure within the coil, all substantially in the manner and for the purpose herein set forth.

387,187. COMBINED PEN OR PENCIL HOLDER AND PIN. SAMUEL F. STEWART, Paris, Tex. Filed Jan. 18, 1888. Serial No. 261,262. (No model.)



Claim.—1. A combined holder and pin consisting of the bar 1, provided with pin 10, and having at each end adjustable bands 5⁴, adapted to receive a pen, pencil, or other article, substantially as described.

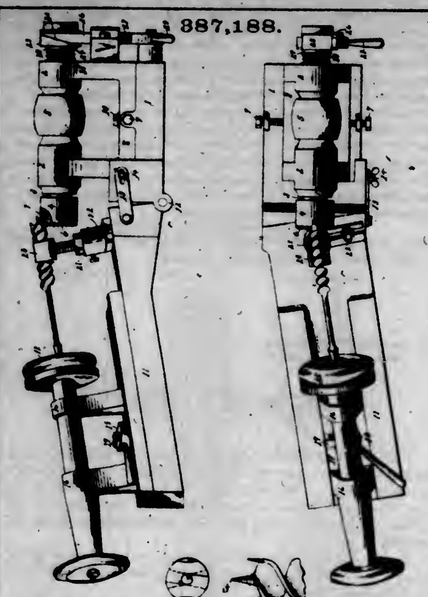
2. A combined holder and pin consisting of the bar 1, provided with pin 10, and having bands 5⁴, spring 9, and loops 4⁴, substantially as described.

3. A combined holder and pin consisting of the bar 1, provided with pin 10, and having catches 7 and adjustable bands 5⁴, provided with notches 6, to engage said catches, substantially as described.

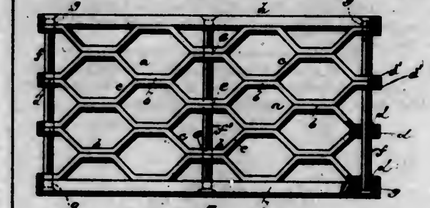
387,188. MACHINE FOR CUTTING FLOOR-LIPS AND SPURS ON AUGERS AND BITS. JAMES SWAN, Seymour, Conn. Filed May 14, 1888. Serial No. 272,760. (No model.)

Claim.—In a machine of the class described, the combination, with an adjustable plate carrying a cylindrical milling-tool with end and internal cutting-teeth, of an adjustable plate carrying a bit-chuck at an oblique angle to the milling-tool, said chuck and milling-tool being so located relatively to each other that in operation the end of one side of the bit passes within the milling-tool, causing the end teeth to cut the floor-lip and the internal teeth to cut a convex spur, substantially as described.

387,188.

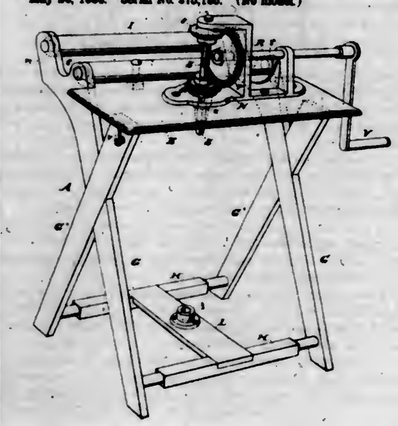


387,189. METALLIC DOOR-MAT. SIMON TOPPLER, New York, N. Y. Filed Feb. 9, 1888. Serial No. 263,494. (No model.)



Claim.—A metallic door-mat composed of the perforated parallel frame-bars *h h*, the end bolts, *f f*, the intermediate bolt, *f'*, and the angular bars *a*, having perforated end ears, the perforations *e*, the oblique portions *c*, and the parallel abutting webs *b*, as shown and described.

387,190. CHURN. ASTON THOMSON, Wapakoneta, Ohio. Filed May 26, 1888. Serial No. 275,183. (No model.)



Claim.—1. A churn-frame consisting of the cross-bars G G', halved together, the cross-bar G having offsets, the rear transverse handle-round I, secured to said offsets, the top board, E, carrying gear mechanism and centrally perforated, the rounds H H, the base-bar L, the ends of the bars G' being beveled, substantially as specified.

2. The combination, with the cross-leg frame A, having the base-bar L, carrying the socket-casting *f*, the pivoted top board, E, and transverse handle-round I above the level of the top board, the cast frame N upon said board, and operating-gear carried by said frame, of a rotary churn having a marginal gain, a rotary dasher, and a churn-cover having a bowed handle, F, and locking-bar *l*, adapted to engage said gain, substantially as specified.

387,191. CONICAL WHEEL. AARON TWYMAN, Pullman, Ill. Filed Oct. 7, 1887. Serial No. 251,773. (No model.)

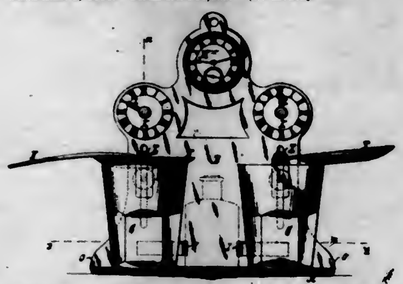


Claim.—1. A wheel having its circumference radically conical and provided at its center with a journal-bearing, the surface of which is concentric and parallel with the outer peripheral surface of the wheel, whereby to present a bearing-surface at right angles to the resultant of the pressure upon said wheel, substantially as shown and described.

2. The combination of a conical journal and a wheel or pulley having a central journal-bearing made conical and fitted to the journal, substantially as set forth.

3. The combination, with a pulley or wheel having a conical bearing, of a conical journal having a bearing-surface at right angles to the line of the resultant of the pressure upon said bearing and a detachable collar, the abutting surfaces of said collar and wheel being at right angles to the axis of the bearing and secured substantially as shown and described.

387,192. INDICATOR-STAND FOR MEDICINE-VESSELS. HENRY C. VELIE, Poughkeepsie, N. Y., assignor to Marion F. Velie, same place. Filed Mar. 3, 1888. Serial No. 266,095. (No model.)



Claim.—1. A vessel-stand consisting of the vessel-supporting base A, having a vertically-slotted back, B, the vertically-adjustable bracket C, having adjusting-screw D, and the swinging and vertically-moving vessel-closing cover F, pivoted to the bracket, substantially as described.

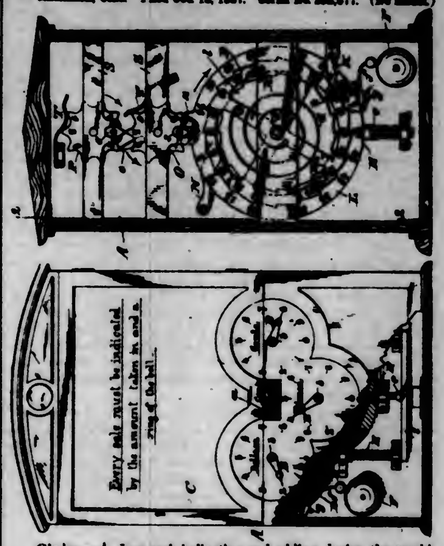
2. A vessel-stand consisting of a vessel-supporting base, A, having a vertical back, B, provided with a vessel-holding clamp, I, a vertically-adjustable bracket, C, on the back, and a vessel-closing cover, F, pivotally connected with the bracket, substantially as described.

3. A vessel-stand consisting of a vessel-supporting base, A, having a vertical back, B, provided with an adjustable time-index, a vertically-adjustable bracket, C, and a vessel-closing cover, F, pivotally connected with the bracket, substantially as described.

4. A vessel-stand consisting of a supporting-base, A, having a vertical back, B, provided with a time-piece, M, and an adjustable time-index, K L, and a swinging vessel-closing cover, F, pivotally connected with the back, substantially as described.

5. A vessel-stand consisting of a supporting-base, A, having a vertically-slotted back, B, provided with a time-piece, M, and an adjustable time-index, K L, a vertically-adjustable bracket, C, having adjusting-screw D, and a vessel-closing cover, F, pivoted to the bracket, substantially as described.

387,198. CASH INDICATOR AND REGISTER. JOSEPH H. VOSS, Cincinnati, Ohio. Filed Oct. 12, 1887. Serial No. 252,077. (No model.)

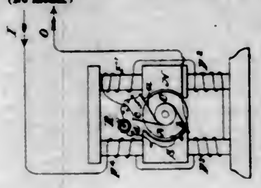


Claim.—1. In a cash indicating and adding device, the combination of an arbor, an indicator, B, and indicator-wheel D, secured thereto, a spiral spring which is wound when the indicator is turned, a registering-wheel, L, having two ratchet-wheels secured to it and revolving loose around the same arbor, a pawl, M, moving with the indicator-wheel, engaging with one of the ratchet-wheels on wheel L, a retaining-pawl, N, engaging the other ratchet-wheel on wheel L, a spring-catch, E, engaging in ratchet-teeth on indicator-wheel D, a stop, *k*, on the same wheel, and a stationary stop, K, all for the purpose described.

2. A cash indicating and adding device consisting in the combination of an accessible case, A, a display-opening, *a*, therein, an indicator, B, having a knob, a corresponding dial on the outside of the case, an indicator-wheel, D, being fast on the same arbor with indicator B, the two moving together, a spring-catch, E, to keep wheel D in a certain position, spring G, and stops K and *k*, to restore wheel D to its normal position, a bell, F, operated by the indicating mechanism, a registering-wheel, L, provided with two ratchets, *l* and *m*, sitting on same arbor with indicator B and wheel D, but loose therefrom, a spring-pawl, M, on wheel D, engaging in ratchet-wheel *l* of wheel L and revolving it in one direction every time the indicator is turned forward, a pawl, N, engaging the other ratchet-wheel, *m*, of wheel L and keeping it in the advanced position, a finger, *n*, on wheel L, engaging the first one of a series of adding-wheels, O P, turning it the space of one of its teeth to every revolution of wheel L, and a series of adding-wheels, O P, having fingers *o*, each indicating the number of revolutions of the one it is driven by, as and for the purpose described.

3. In a cash indicating and adding device with a series of adding and indicating wheels, of which the latter are so arranged that composed numbers of as many single figures as there are indicating-wheels may be shown in one opening in a case, all being held in such position in the opening by spring-catches, the combination of these wheels with a bar, to which all these spring-catches are secured, and which has a knob by which all the catches may be operated simultaneously for the release of the indicating-wheels, as explained.

387,194. REGULATOR FOR ELECTRIC MOTORS. ARTHUR G. WATERHOUSE, Hartford, Conn., assignor to The Waterhouse Electric and Manufacturing Company, same place. Filed May 26, 1887. Serial No. 239,363. (No model.)

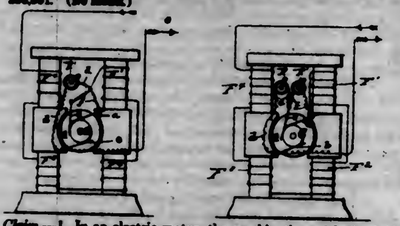


Claim.—1. The herein-described method of regulating the speed of an electric motor provided with a closed circuited armature, which consists in diverting a portion of the current transmitted to the motor through a locally-closed circuit including one or more of the armature-helices, and containing an adjustable resistance, substantially as and for the purpose set forth.

2. The herein-described method of regulating the speed of an electric motor provided with a closed circuited armature, which consists in diverting a portion of the current transmitted to the motor through a locally-closed circuit including one or more of the armature-helices and through a shunt-circuit around the armature containing a fixed or an adjustable resistance.

3. The herein-described method of regulating the speed of an electric motor provided with a closed circuited armature, which consists in diverting a portion of the current transmitted to the motor through a locally-closed circuit including one or more of the armature-helices and containing a fixed or adjustable resistance and through a shunt-circuit around the armature also containing a fixed or adjustable resistance.

387,195. REGULATION OF ELECTRIC MOTORS. ARTHUR G. WATERHOUSE, Hartford, Conn., assignor to The Waterhouse Electric and Manufacturing Company, same place. Filed Nov. 30, 1887. Serial No. 256,851. (No model.)

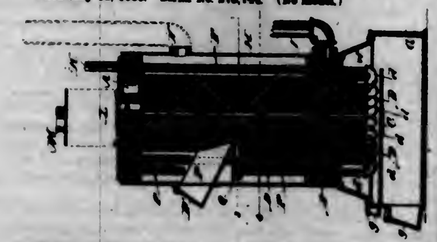


Claim.—1. In an electric motor, the combination, with the field-magnet coils located in the main circuit, of a pair of main collecting-brushes, an auxiliary collecting-brush placed near one of said main brushes, a conductor for connecting one of said main brushes directly to the auxiliary brush, and an adjustable resistance located in the said conductor, substantially as and for the purpose described.

2. In an electric motor, the combination, with the field-magnet coils located in the main circuit, of a pair of main collecting-brushes, an auxiliary collecting-brush, a conductor for connecting one of said main brushes to said auxiliary brush, a conductor for connecting said auxiliary brush to the opposite main brush and around the armature of said motor, and a fixed or adjustable resistance in said last-named conductor, substantially as and for the purpose set forth.

3. In an electric motor, the combination, with the field-magnet coils located in the main circuit, of a pair of main collecting-brushes, an auxiliary collecting-brush, a conductor for connecting one of the main brushes to said auxiliary brush, a fixed or adjustable resistance in said conductor and between said brushes, a conductor for connecting said auxiliary brush to the opposite main brush around the armature, and a fixed or adjustable resistance included in said conductor between said brushes, substantially as and for the purpose set forth.

387,196. WATER-HEATER. CHANCY A. WIBBER, Galesburg, Ill. Filed May 12, 1888. Serial No. 273,744. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with an upper and a lower water-chamber, of the series of tubes D, extending from the upper water-chamber downwardly to and below the lower water-chamber and thence upwardly to said lower water-chamber, for the purpose described.

2. The combination, substantially as hereinbefore set forth, with an upper water-chamber and the lower annular water-chamber, B, of the tubes D, extending from the upper water-chamber downwardly to and through the space surrounded by the lower annular water-chamber and thence up to said lower chamber, for the purpose described.

3. The combination, substantially as hereinbefore set forth, with an upper water-chamber and the lower water-chamber, B, of the grate C, arranged below the lower chamber, and the pipes D, extending from the upper water-chamber down to the grate, and at their lower ends provided with return-bends whereof the terminals are connected with the lower water-chamber.

4. The combination, with the upper annular water-chamber, A, and the lower annular water-chamber, B, of the annular series of tubes D, connected with the upper water-chamber and extending below the lower water-chamber, to which latter said tubes are connected by means of return-bends, substantially as set forth.

387,197. CAR-AXLE. ARTHUR H. WIENER, Chicago, Ill. Filed Feb. 14, 1888. Serial No. 264,091. (No model.)



Claim.—1. A car-axle comprising, in combination, the main part A and complement B thereof, supplementary part C, incasing the part B and having a journal, *c*, to enter the journal-box and extend beyond the bearing thereof, and means at the inner end of the part C for securing the parts together, while permitting their independent revolution, substantially as described.

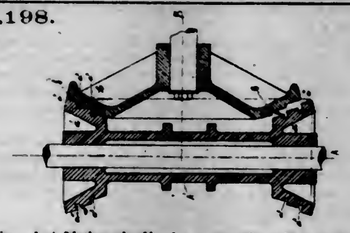
2. A car-axle for permitting independent revolution of the opposite wheels, comprising, in combination, the main part A and complement B thereof, provided with the flange *r*, supplementary part C, incasing the part B and having a journal, *c*, upon its outer end to enter the journal-box and extend beyond the bearing thereof, and the flange *r* upon its inner end, annular plate *q*, and bolts securing the plate *q* to the flange *r*, substantially as described.

3. A car-axle comprising, in combination, the main part A and complement B thereof, supplementary part C, incasing the part B and having a journal, *c*, to enter the journal-box and extend beyond the bearing thereof, and open at its outer end to admit into its interior caused oil from the front portion of the journal-box, and means for securing the parts together, while permitting their independent revolution, substantially as described.

4. A car-axle comprising, in combination, the main part A, complement B thereof, tapering for a portion of its length and cylindrical thenceforward to its outer end, supplementary part C, incasing the part B and having a journal, *c*, to enter the journal-box and extend beyond the bearing thereof, and means at the inner end of the part C for securing the parts together, while permitting their independent revolution, substantially as described.

387,198. FRICTION-GEAR. Otto Reuss, Schmalkalden, Germany. Filed Jan. 10, 1888. Serial No. 260,266. (No model.) Patented in Germany Apr. 2, 1887, No. 41,172.

387,198.



Claim.—1. A friction-wheel having a series of annular steps formed on its periphery with alternating annular grooves a^2, in combination with another friction-wheel provided with annular steps, which do not enter said grooves, but leave them open, substantially as set forth.

2. A friction-wheel having successive steps a^2 formed on its surface, with alternating grooves a^3, in combination with another friction-wheel arranged to engage therewith and having broader steps, b', these two wheels forming spaces alternating with the parts which are in contact, as described.

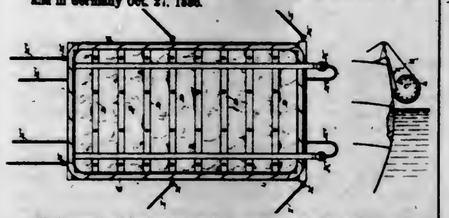
3. A sleeve with a friction-wheel on each end, each wheel being formed with a series of annular steps, a^2, and alternating grooves a^3, the said steps having faces of less inclination than the general surfaces of the friction-wheels, in combination with a wheel, b, arranged to be put into frictional contact with either one of said wheels a or a', at will, and having steps which are broader than the corresponding steps of the latter, whereby said wheels b and a or a' leave annular spaces between them, alternating with the parts in contact, substantially as set forth.

387,199. HYDRAULIC-CEMENT COMPOUND. GEORGE L. EAGAN, San Francisco, Cal., assignor of one-half to Richard P. Knox, same place; James C. Pennie administrator of George L. Eagan, deceased. Filed Sept. 1, 1887. Serial No. 248,543. (No specimens.)

Claim.—1. The herein-described cement, consisting in the combination of lime-rock, silex, mineral magnesite, and alumina, as specified.

2. The herein-described composition of matter to be used as a cement, consisting of lime-rock, silex, magnesite, alumina, and water, mixed and compounded in about the proportions specified and in the manner set forth.

387,200. LEAK-STOPPER FOR SHIPS, &c. CHARLES H. S. SCHULTZ, Stettin, Germany, assignor to the American Patent Rights Corporation, (Limited,) Philadelphia, Pa. Filed Nov. 12, 1886. Serial No. 218,677. (No model.) Patented in France Aug. 17, 1886; in Belgium Aug. 24, 1886; in Italy Aug. 31, 1886; in England Oct. 12, 1886, and in Germany Oct. 27, 1886.



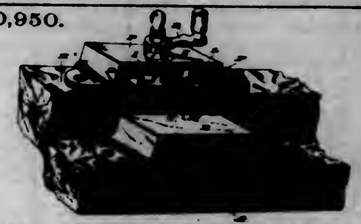
Claim.—1. A leak-stopper for vessels, consisting of a mattress water-proof on the outside face to prevent the entrance of water from without, and porous on the inside, so that when used it will be quickly soaked with water, and thus weighted assist in sinking, substantially as described.

2. A leak-stopper for vessels, consisting of a mattress water-proof on the outside face to prevent the entrance of water from without, and porous on the inside, so that when used it will be quickly soaked with water, and thus weighted assisted in sinking, the inside face being provided with a bead at its edges, substantially as and for the purpose set forth.

REISSUES.

10,950. FASTENER FOR THE MEETING-RAILS OF SASHES. THOMAS S. SMITH, Washington, D. C., assignor, by direct and mesne assignments, to H. R. Ives and F. P. Andrews, both of New Haven, Conn. Filed Feb. 6, 1888. Serial No. 263,162. Original No. 266,850, dated Oct. 16, 1882.

10,950.



Claim.—1. In a fastener for the meeting-rails of sashes, the combination, with a suitable casing, of the shaft Q, having disk S, provided with stud T, the latch-bolt having hook L, and provided with a slot, K, by which it is mounted upon shaft Q, a notch engaging the stud T, and a rounded guiding-surface to guide it in its swing about the shaft Q, and the stationary flange for engaging such guiding-surface, substantially as and for the purpose set forth.

2. In a fastener for the meeting-rails of sashes, the combination of the base-plate having a flange, the pivot-shaft, suitable casing or means for bearings and support of such shaft, the disk thereon provided with an eccentrically-arranged stud, the latch-bolt provided with the longitudinal slot through which the shaft passes, the notch M, engaged by the stud on the disk, and the rounded guiding-edge for engaging the flange on the base, substantially as and for the purpose described.

3. In a fastener for the meeting-rails of sashes, in combination with a suitable support or casing, the rotary shaft, the disk thereon provided with an eccentric-stud, the hooked latch-bolt provided with a longitudinal slot through which the shaft passes, and a notch, M, engaged by the disk-stud, and engaging guiding-surfaces on the latch-bolt and base to prevent the latch-bolt being drawn inward until it has been swung outward, substantially as and for the purpose described.

4. In a fastener for the meeting-rails of sashes, in combination with a suitable support, the pivot-shaft, the disk thereon provided with an eccentric-stud, the hooked latch-bolt provided with the rounded guiding-surface, the longitudinal slot, the notch M, and the locking-notch, the flange H, and the stud I, substantially as and for the purpose described.

5. In a fastener for the meeting-rails of sashes, the combination of the base-plate having a perforation, a stud, and a flange relatively disposed, as described, the latch-bolt having a longitudinal slot, a hook, and notches in its upper and under sides, as set forth, and provided with a shoulder on one side, the shaft having an operating-disk provided with a stud on its under side and a suitable casing, all constructed to operate in connection with a stud upon the meeting-rail of the lower sash, substantially as set forth.

10,951. GAS-ENGINE. EDOUARD DELAHAIE-DESCOUTEVILLE and LÉON P. C. MALANDIN, Fontaine-le-Bourg, Seine-Inférieure, France. Filed Oct. 21, 1887. Serial No. 253,043. Original No. 332,898, dated Jan. 5, 1886. Patented in France Feb. 12, 1884, No. 160,267; in Belgium Feb. 23, 1884, No. 64,353; in England Feb. 26, 1884, No. 3,986; in Germany Mar. 4, 1884, No. 33,915; in Italy Mar. 20, 1884, No. 76,607; in Russia Apr. 3, 1884; in Spain May 26, 1884, No. 5,579, and in Austria-Hungary Aug. 29, 1884, No. 8,731.



Claim.—1. The combination of the cylinder and piston of a gas-engine with the head C, having a chamber, O, and a slide, D, provided with a series of longitudinal air-openings, Q, transverse gas-passages P, and port O.

2. The combination of the cylinder and piston of a gas-engine with a gas-supply pipe, I, having a spring-valve, i, and a separate slide-valve, D, carrying the air and gas passages and adapted to come into contact with the said valve to open the same periodically, substantially as set forth.

3. A gas-engine provided with an electric igniting device and a slide having a small outlet from the igniting-chamber to the atmosphere when the said chamber is open to the cylinder, whereby the burned gas therein may be expelled by the compressed gases in the cylinder, substantially as described.

4. A gas-engine having an electrical igniting device, a regulating-slide, and an igniting-chamber forming the only communication between the electrical igniting device and the cylinder for the direct ignition by the electrical igniting device of the gases in the cylinder under the control of the slide, which has an outlet from the igniting-chamber for expelling the burned gases, all substantially as set forth.

H. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

WEBSTER *v.* SANFORD.

Decided July 25, 1888.

ABANDONED OR REJECTED APPLICATIONS AS REFERENCES.

Prior to December, 1875, abandoned and rejected applications were cited as references; but after *Broisn* v. *Gould* (6 O. G., 302) that practice ceased. Although such was the practice, yet a reference of that character was illegal, for the reason that by statute a patent can be barred only by public use, a publication, or prior knowledge or use by others of the completed invention. Webster filed an application in 1867 showing but not claiming the invention. It was rejected and the rejection acquiesced in. In May, 1875, Sanford filed an application claiming the invention, and in July the patent issued. June, 1876, Webster filed a second application claiming the invention, and was put into interference with Sanford's patent. Sanford conceived the invention in December, 1873, and diligently reduced it to practice as early as July, 1874. Webster did nothing toward a reduction to practice except filing his application of 1867. *Held* that the filing of the application in 1867 constituted conception but not reduction to practice, and that showing no diligence priority of invention must be awarded to Sanford. The filing of such an application in the Patent Office does not constitute "prior knowledge or use by others" within the meaning of the statute. It requires the invention to be reduced to practice in "its concrete and perfect form to make it capable of prior knowledge or use by others." Mere drawing and description not published will not bring the invention within the requirement. An invention may exist in a state of conception or experiment, or in a state of completion and reduction to practice. In its former state it may be abandoned; but whether abandoned or not the subject is not taken out of the field of invention so as to prevent other inventors pursuing the same invention. When, however, the completed invention, reduced to practice, subject of knowledge and use, is abandoned by the inventor, whether before or after patent, it is abandoned to the public and is no longer the subject of new or original invention.

APPEAL from the Examiners-in-Chief.

WIRE MOTIONS FOR WEAVING PILE FABRICS.

Application of William Webster filed June 14, 1876. Patent granted Stephen Sanford July 13, 1875, No. 165,428.

Mr. H. A. Seymour for Webster.

Messrs. Mason, Fenwick & Lawrence for Sanford.

HALL, *Commissioner:*

The issue in interference is as follows:

The combination of a slotted wire box, a withdrawing hook or latch, an inserting pusher, and a reciprocating driving-slide with a wire-supporting table having a groove in line with the point of withdrawal and a groove leading to the point of insertion, and a spring-switch arranged to bear upon the wire head and place the wire in possession for insertion in the shed.

Webster, being junior applicant, sets up the following dates in his preliminary statement: Conception in the winter of 1865-'66; drawings, model, and disclosure to others about the same time; filing of application embodying the invention in controversy on or about May 23, 1867.

Sanford's preliminary statement sets up the following dates: Conception on or about the 1st of December, 1873; drawings and disclosure to others at about the same time; embodiment of the invention in a full-sized practically-operating loom as early as July, 1874; filing of application for patent May 28, 1875.

The decision of the Examiner of Interferences awarding priority of invention to Webster was affirmed by the Examiners-in-Chief, from which decision Sanford appeals.

In 1867 Webster filed an application showing the combination now covered by the issue in interference. The several elements, including the slotted wire box, were then all old. Webster, while showing the combination now claimed, only claimed in this early application a combination between some of the other elements relating to the wire-supporting table having grooves, the withdrawing hook or latch, &c. The difference between a combination of these several elements with the ordinary wire box and with the slotted wire box is so slight that it is exceedingly doubtful whether any patentable improvement is presented, as will be noticed briefly hereinafter. Whether Webster's omission to claim in this early application the combination with the slotted wire box was due to his failure to recognize any invention in its addition to the combination, or because, recognizing the slight difference, he did not believe it presented invention, is not shown; but the fact remains that he did not claim or define such invention. His application was promptly rejected by the Office on British Patent No. 791 of 1857, known as the "Moxon" patent, and he acquiesced in that decision. The correctness of that action is satisfactorily shown by the drawings and specification of the British patent, and not only did Webster acquiesce in it, but he at once proceeded to purchase the Moxon patent, and in his deposition declares that he was fairly rejected. Webster gave the subject of this particular invention "no further thought." His answer when testifying to the question why he waited so long before filing his present application is:

I did not give it a thought until I found that Sanford had patented it, then I woke up—

that is, until after the issue of Sanford's patent, July 13, 1875, nearly nine years. In the meantime, in November, 1870, he had applied for United States patent on the Moxon specifications, but abandoned that, as he found that it would expire in about a year, at which time the English patent of Moxon would expire.

Sanford filed his application on May 28, 1875, and

his patent issued on July 13, 1875, No. 165,428. There is no doubt that he is an original inventor. He has introduced no evidence as to date of conception, but stands upon the date of his application. He shows, however, that he reduced the invention to practice in a full-sized machine, which was put into actual use and operation in his factory at Amsterdam, N. Y. The loom was in operation long before the patent issued. After Webster had seen Sanford's patent, and after he "woke up," as he says, he filed the present application. It was rejected for want of invention, the examiner holding that the introduction of the slotted wire box into the combination showed no invention over the combination in which the ordinary or common wire box was an element. On appeal, the Examiners-in-Chief, relying upon affidavit of Webster that the slotted wire box in this combination was in quite general use and its actual operation demonstrated greatly-increased speed and improvement in results, overruled the examiner and held the invention patentable. It was thus brought into interference with Sanford's patent. The evidence of Webster taken in the case shows that the statements of his affidavit were "hearsay," as he now says, and that the facts are wholly different. Such evidence as has been taken strongly shows that there is no patentable difference in construction or results, and that the present contest is over an issue presenting no patentable matter whatever. But the issue is presented, and the easiest and quickest way to dispose of it is to decide it.

It is conceded that Webster has never reduced his invention to practice. At one time he claims to have made a model, and in 1867 he filed an application showing but not claiming the invention.

When Sanford came into the Office in 1875, the long-abandoned application of Webster was no bar to his application. It is true that at that period and up to December, 1875, it was the practice of the Office under its rules to cite as references abandoned and rejected cases; but since that time it has been decided by the Supreme Court of the United States in *Brown* v. *Guild et al.* (6 O. G., 392) that applications for patents which stand rejected will not in such case avoid subsequent patents. This practice ceased, and from that time until the present such abandoned and rejected applications remain in the secret archives of the Office and are no longer cited. (See *Rouse* v. *Stoddard*, 7 O. G., 169, and *Casilear* v. *McIntire*, 8 O. G., 474.) Hence, although it was the practice at that period to have cited Webster's abandoned case as a reference to Sanford's application, it would have been an illegal reference, and if Sanford's application had been rejected upon it, by proper appeals he could have obviated such reference and compelled the Office to issue a patent to him, if the Office believed that the invention was a patentable one. The ground of these decisions is that an application for a patent can only be barred by public use, or a publication, or knowledge or use by others of the *completed* invention, and that the filing in the Patent Office of an application with a description and drawing is not such a publication as is contemplated by the statute.

Even though at the time Webster filed his application he may never have perceived the alleged patentable difference between the slotted wire box and the common box, or, if he had perceived it, had never regarded it as worthy of claim, or had afterward forgotten and abandoned it as an invention, it is certain that he had never given it to the public by any other method of disclosure so far as the evidence shows, but by filing his application in the Patent Office. It had not been published, reduced to practice, put into use, or explained to others; at least the evidence shows nothing in this direction. Webster had simply filed an application containing drawings showing the invention and lodged them in the secret archives of the Patent Office.

In the decision of the Examiners-in-Chief there is discussed to some extent the question of abandonment of the invention by Webster, and a conclusion is reached that there was not sufficient evidence of such abandonment. It is necessary that an inventor shall have made an invention in the legal sense before it can be said that he has abandoned it. So long as it rests in experiment only, has never been embodied or reduced to practice, he cannot be said to have made the invention so that it is capable of abandonment as an invention. He may abandon it in either relation—that is to say, he may abandon the experimental invention or the mental conception and experiments founded upon that conception. This of course must be done before the invention has been so far completed and reduced to practice as to have that existence which makes it capable of the knowledge and use by others contemplated by the statute. An inventor may also abandon an invention after it is complete and perfect and is in use. He may abandon it by allowing it to go into public use for two years before he makes an application for a patent. It may be abandoned in various ways, but quite as completely as by the two years' public use.

In this case there is no pretense that Webster ever abandoned the completed and perfected invention, because it does not appear that he ever got beyond the status of conception, and if he abandoned anything he abandoned the conception of the invention and any experimental efforts that may have been made, and, as he says, for years gave it no thought whatever. It is possible that it was to this status of the invention that the Examiners-in-Chief gave their consideration in respect to the question of abandonment; but whether or not Webster had abandoned the invention in its state of conception or experiment, it is well settled that by his negligence and delays he kept the matter secret and undisclosed, and the state of his invention and the manner in which he conducted the same did not and could not deter or prevent others from rightfully entering upon this field of invention, for it is well settled that a man who has conceived an invention and has conducted experiments looking toward its reduction to practice cannot, by keeping the matter secret, declining to disclose or develop it, and permitting years to pass without giving it a thought, by such neglect and delay stop the progress of the world and deprive others from entering upon the field of discovery and invention and completing and perfecting with diligence the invention which he omits to so complete and perfect. But it may be stated that if the original inventor had abandoned the invention itself, as contradistinguished from the application, he has abandoned it to the world, and that when this has occurred no other inventor can be allowed to secure any rights under the statute with reference to the invention, although such other person may be an original inventor. But, as said above, before the invention can be thus abandoned to the world it must exist as a completed invention—one which has been reduced to practice and has become the subject of knowledge and capable of use. So long as it remains a mere conception or in a state of experiment it has no existence, it cannot cut off others from entering the same field of invention, and cannot be abandoned to the world in the sense contemplated.

Section 4886 of the Revised Statutes is as follows:

> Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, and not in public use or on sale for more than two years prior to his application, unless the same is proved to have been abandoned, may * * * obtain a patent therefor.

With this section in view it is apparent that before the abandonment of an invention to the world by the inventor will have the effect of taking the subject of that invention out of the field of invention the world must obtain possession of it in such a way as that it can know how to enjoy it in all respects. The language of the statute is "not in public use or on sale for more than two years prior to the application," and, again, "not known or used by others in this country." If after abandonment to the world the world gets such possession of the invention that it comes into existence and is used but once, that would necessarily be a bar to any other inventor, because a single use of the completed machine or invention would cause it to be known or used by others in this country.

The decisions above referred to show conclusively that the filing of an application in the Patent Office is not such a publication as puts the world in possession of the invention so as to bar another application, and when this is said there is nothing left to determine how the world may obtain the knowledge and possession of an abandoned invention which cuts off the rights of future inventors of the same invention except the words "known or used by others in this country."

It may be said that Webster himself had prior knowledge of this invention, because he had filed an application in the Patent Office, in which it was shown, though not claimed. It may also be said that the officers of the Patent Office who examined the application and were cognizant of its contents had knowledge of the invention; but this is not such prior knowledge or use as is required by the statute to bar a subsequent invention.

The invention must exist in its concrete and complete form and be reduced to practice capable of actual use to be the subject of prior knowledge or use. (See *Walker on Patents*, 72, and cases cited.)

When an inventor abandons an invention to the public, it is abandoned to it for every purpose, which includes the purpose of reconceiving it and reducing it to practice, unless it be already known to others. To be "known to others"—even to be "known" to the first to conceive and to give it experimental use—it must have been reduced to practice. If it be thus "known or used," so that the world has acquired knowledge of it so as to be able to accept or use it, then it can no longer be the subject of new and original invention; but otherwise the abandonment is such that a new and original inventor may invent it anew, and neither the world nor the first inventor can claim the invention adversely.

The abandonment of an invention by an inventor under such circumstances means that he quits and surrenders the subject and leaves the field of invention as if he had never made such an invention. A new and original inventor may enter the field, and if he reinvents the same invention nothing can bar his right to a patent but "prior knowledge or use by others" when the same is not proved to have been abandoned. (See *Coffin* v. *Ogden et al.*, 7 Blatch., 61; *Perkins* v. *Nashua Card and Glazed Paper Co.*, 2 Fed. Rep., 451; *Campbell* v. *Mayor of New York*, 9 Fed. Rep., 500.) Consequently there is nothing in the status or history of Webster's invention which could have barred Sanford's application. It is insisted, however, that the filing of Webster's application in 1867 in itself constituted a reduction to practice of the invention. It is undoubtedly true that the filing of an application in the Patent Office and the disclosure of the invention by description and drawings are the foundation for a valid patent. At that stage in the progress of the invention and the application for a patent therefor the law does not require an applicant to assert or declare whether he has ever reduced the invention to practice or not. The statute requires only that he shall describe the invention and make an oath that he believes himself to be the first, original, and true inventor thereof, &c., but does not require that he shall make any statement as to reduction to practice. That he has reduced the invention to practice is implied in the statement that he has made the invention, and his patent is valid because he has made the statement and oath required by law; but when a controversy arises between two inventors, either in the Patent Office by way of interference or in the courts in litigation, the law requires the Office or the courts to ascertain who was in fact the first and original inventor, and as the patent law relates to the completed thing, adapted to its use and purpose, it is a settled principle that he who first reduces to practice or makes the invention in an embodied form, capable of use and adapted to the purposes for which the invention exists, is deemed to be the first inventor. The case then becomes a very simple one. Webster may be conceded to have been the first to conceive, although, judging by his long inaction and sleeping, there is much doubt of this; but, conceding it, he not only never reduced the invention to practice but he has shown great delay and neglect without any explanation whatever. His first application, in which he makes no claim to this invention, cannot be regarded as a reduction to practice to defeat a patent. At most, as just stated, it can only show conception. On the other hand, Sanford, though second to conceive, reduced the invention to practice at once, came into the Office promptly, and took his patent as soon as it was allowed. His conduct in all these particulars is in striking contrast to that of Webster.

I have not alluded to the character of proof necessary in a case of this kind to overcome the presumption in favor of a patentee. No such consideration is required.

The decision of the Examiners-in-Chief is reversed, and priority of invention is awarded to Sanford.

EX PARTE CARTY.

Decided July 9, 1888.

STATEMENT.

The examiner refused to receive a caveat for a Design, holding that there was no law authorizing the filing of caveats for Designs. Applicant petitions the Commissioner to direct that the filing fee be returned to him.

1. CAVEATS—CONSTRUCTION OF STATUTES.

Section 4902 of the Revised Statutes, providing for the filing of caveats for any new invention or discovery, does not apply to the subject of Designs, nor is there any statute authorizing the filing of caveats for this class of inventions.

2. SAME—DESIGNS.

A Design invention covers the form, contour, or ornamentation, and such Design cannot exist in an incomplete condition. A patent when issued covers all the dominant and controlling features, all the distinct and segregable parts. Petition granted and fee ordered to be returned to applicant.

IN THE matter of the request of Martin Carty for the return of the fee paid on the 30th of March, 1888, for filing caveat for Design for ladies' collars and cuffs.

HALL, *Commissioner:*

Martin Carty presented to the Office on the 30th of March, 1888, a caveat for a Design for ladies' collars and cuffs, paid the filing fee of ten dollars, and requested that his caveat should be filed in the confidential archives of the Office, in accordance with the rules and the statute. The examiner declined to file the caveat, or instrument called a "caveat," for the reason that, in his opinion, the subject of Design Patents, as provided by statute, was not comprehended in section 4902 of the Revised Statutes, which provides for the filing of caveats in the Patent Office. That section is as follows:

> Any citizen of the United States who makes any new invention or discovery, and desires further time to mature the same, may, on payment of the fees required by law, file in the Patent Office a caveat setting forth the design thereof, and of its distinguishing characteristics, and praying protection of his right until he shall have matured his invention. Such caveat shall be filed in the confidential archives of the office and preserved in secrecy, and shall be operative for the term of one year from the filing thereof; and if application is made within the year by any other person for a patent with which such caveat would in any manner interfere, the Commissioner shall deposit the description, specification, drawings and model of such application in like manner in the confidential archives of the office, and give notice thereof, by mail, to the person by whom the caveat was filed. If such person desires to avail himself of his caveat, he shall file his description, specifications, drawings, and model within three months from the time of placing the notice in the post-office in Washington, with the usual time required for transmitting it to the caveator added thereto; which time shall be indorsed on the notice. An alien shall have the privilege herein granted, if he has resided in the United States one year next preceding the filing of his caveat, and has made oath of his intention to become a citizen.

After receiving notice of the action of the examiner the caveator, being in doubt as to the correctness of the decision and desiring to file the caveat, if it could be done, and if not to have the filing fee returned to him, raised the question before the Commissioner by a petition setting forth the facts and requesting the return of such filing fee. In answer to this petition the examiner has renewed his statement that section 4902 does not apply to Design patents, and that there is no law authorizing the filing of caveats for such class of inventions. Briefly stated, his proposition is, that before a Design can have an existence for any purpose whatever it must be invented and completed, and that a Design which is incomplete can have no recognition under any of the statutes relating to the subject.

As is well understood, the subjects of Design patents are form or contour and surface ornamentation, and it is physically impossible for any entity of that character to exist in an incomplete condition. There can be no circle when a segment of it is absent. There can be no continuous line when it is broken. I concur fully in what the examiner has said upon this subject. At first I was disposed to think, in view of the decision announced in *ex parte Gérard*, (43 O. G., 1235,) that it would be proper to file a caveat for the predominant and controlling features of a Design, enabling the caveator within the period provided by law to fill out the details and subordinate parts, in much the same manner as a caveator of a mechanical device would be enabled to describe generally his invention in the caveat and reserve the period allowed by law within which to complete and put it in practical operation or reduce it to practice. But I am satisfied upon reflection that this is not the correct view, because if the Design has reached such a state of completion that it may be said to be perfect in its distinct and segregable parts, it is in a condition to be patented and there is no necessity for a caveat, and the caveat could serve no useful purpose.

As was stated in the case of Gérard, above cited, a patent which covers a completed Design covers all the distinct and segregable parts with the mere minor details omitted, so that it may be conceded that the immaterial and subordinate details of Designs are not regarded as a part of the patent: that so long as the dominant and controlling features, called the "distinct and segregable parts," occupying their proper place and relation to each other, exist the patent relates to and covers them, and, as just stated, when the Design has reached this state of perfection it may be said to be complete and capable of becoming the subject of a patent.

I therefore sustain the petition of the applicant for the return of the filing fee, and direct that it be returned to him.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 44—NO. 6. TUESDAY, AUGUST 7, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	571
PROPOSALS FOR PHOTOLITHOGRAPHING	571
FRAUDULENT PRACTICES BY ATTORNEYS	571
ISSUE OF AUGUST 7, 1888	571
DESIGNS	572
TRADE-MARKS	572
LABELS	572
PATENTS GRANTED	573
REISSUES	None
DECISIONS OF THE SECRETARY OF THE INTERIOR—	
Houston v. Barker v. Bannister v. Eastman	697
DECISIONS OF THE COMMISSIONER—	
Ex parte Donovan	698
Ex parte La Borde	700
Ex parte Manny	700

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of the publication,) to June 30, 1873, it was published and bound in semi-annual volumes; since July 1, 1873, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1886,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1886,) full sheep, $6.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Proposals for Photolithographing.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 21, 1888.

Sealed proposals will be received at the Office of the Commissioner of Patents until 12 M. of August 8, 1888, for the reproduction by photolithography, or otherwise, of the drawings of the weekly issues of patents, and for the illustrated portion of the OFFICIAL GAZETTE.

Specifications and specimens will be furnished upon application to the Commissioner.

BENTON J. HALL,
Commissioner of Patents.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No. 135 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Mellado*.

Issue of August 7, 1888.

Patents	415	No. 387,201 to No. 387,615, inclusive.
Designs	19	No. 18,498 to No. 18,516, inclusive.
Trade-Marks	25	No. 15,736 to No. 15,760, inclusive.
Labels	5	No. 5,670 to No. 5,674, inclusive.
Reissues	None.	
Total issue	464	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3	.....	Nebraska	3	.....
Arizona Territory	1	.....	Nevada	4	.....
Arkansas	2	.....	New Hampshire	3	.....
California	11	.....	New Jersey	21	.....
Colorado	4	.....	New Mexico Territ'y	.....	.....
Connecticut	10	2	New York	80	7
Dakota Territory	2	.....	North Carolina	.....	.....
Delaware	.....	.....	Ohio	29	5
District of Columbia	3	1	Oregon	2	.....
Florida	1	.....	Pennsylvania	26	2
Georgia	2	.....	Rhode Island	4	.....
Idaho Territory	1	.....	South Carolina	2	.....
Illinois	39	3	Tennessee	1	.....
Indian Territory	.....	.....	Texas	10	.....
Indiana	6	1	Utah Territory	.....	.....
Iowa	10	.....	Vermont	2	.....
Kansas	.....	.....	Virginia	3	.....
Kentucky	7	1	Washington Territ'y	1	.....
Louisiana	2	.....	West Virginia	.....	.....
Maine	2	.....	Wisconsin	8	.....
Maryland	10	1	Wyoming Territory	.....	.....
Massachusetts	53	2	United States Army	.....	.....
Michigan	11	1	United States Navy	1	.....
Minnesota	9	.....			
Mississippi	.....	.....	Total to citizens of		
Missouri	11	.....	the United States	411	26
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	1	.....
Australia	.....	.....	Hawaii	1	.....
Austria-Hungary	.....	.....	Netherlands	.....	.....
Belgium	.....	.....	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Russia	.....	.....
Canada	3	1	Scotland	.....	.....
Chili	.....	.....	South Australia	.....	.....
Colombia, U. S. of	.....	.....	Spain	.....	.....
Cuba	.....	3	Sweden	.....	.....
Denmark	1	.....	Switzerland	1	.....
England	15	.....			
Finland	.....	.....	Total to citizens of		
France	1	.....	foreign countries	23	4

DESIGNS.

18,498.—BOTTLE AND SPREADING TIP.—*William W. Beach*, New York, N. Y. Application filed May 14, 1888. Serial No. 273,918. Term of patent 14 years.

18,499.—FAN OR SIMILAR ARTICLE.—*James B. Beatty*, Brooklyn, N. Y. Application filed June 28, 1888. Serial No. 278,460. Term of patent 3½ years.

18,500.—FAN OR SIMILAR ARTICLE.—*James B. Beatty*, Brooklyn, N. Y. Application filed July 2, 1888. Serial No. 278,861. Term of patent 3½ years.

18,501.—PICTURE-FRAME.—*Elizabeth Edmonston*, Newburg, N. Y. Application filed June 25, 1888. Serial No. 278,133. Term of patent 7 years.

18,502.—BADGE.—*James Damant Fahnestock*, Cincinnati, Ohio. Application filed June 26, 1888. Serial No. 278,251. Term of patent 3½ years.

18,503.—HAT.—*Edward H. Hart*, New York, N. Y. Application filed July 2, 1888. Serial No. 278,860. Term of patent 3½ years.

18,504.—LAMP-SHADE.—*Louis Hinrichs*, New York, N. Y. Application filed April 30, 1888. Serial No. 272,395. Term of patent 7 years.

18,505.—BUTTON.—*Rudolph Liebmann*, New York, N. Y. Application filed June 16, 1888. Serial No. 277,381. Term of patent 3½ years.

18,506.—BUTTON.—*Rudolph Liebmann*, New York, N. Y. Application filed July 6, 1888. Serial No. 279,226. Term of patent 3½ years.

18,507.—SLIPPER.—*Hugo Nollner*, Jersey City, N. J., assignor to *Siegmund Baum* and *Jacob Tarlow*, New York, N. Y. Application filed June 9, 1888. Serial No. 276,639. Term of patent 3½ years.

18,508.—TYPE.—*William F. Capitain*, Chicago, Ill., assignor to *Marder, Luse & Co.*, same place. Application filed June 15, 1888. Serial No. 277,397. Term of patent 7 years.

18,509.—ADVERTISING-CARD.—*Charles H. Durphy*, Chicago, Ill. Application filed February 2, 1888. Serial No. 262,830. Term of patent 14 years.

18,510.—BEVELED GLASS.—*Obed Charles Hawkes*, Birmingham, county of Warwick, England. Application filed July 11, 1888. Serial No. 279,667. Term of patent 14 years.

18,511.—BADGE.—*Hiram Howard*, Providence, R. I. Application filed April 23, 1888. Serial No. 271,631. Term of patent 3½ years.

18,512.—BADGE.—*Stephen C. Howard*, Providence, R. I. Application filed April 21, 1888. Serial No. 271,468. Term of patent 3½ years.

18,513 and 18,514.—HANDKERCHIEF.—*Joseph M. Jones*, Paris, Ky. Applications filed July 13, 1888. Serial Nos. 279,871 and 279,872. Term of patents 3½ years.

18,515.—BUTTON.—*Rudolph Liebmann*, New York, N. Y. Application filed June 16, 1888. Serial No. 277,380. Term of patent 3½ years.

18,516.—TYPE.—*John West*, Chicago, Ill., assignor to *The Union Type Foundry*, same place. Application filed May 18, 1888. Serial No. 274,318. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,736.—CONDENSED MILK.—*John Babillion*, Detroit, Mich. Application filed May 28, 1888. Used since May 7, 1888.
"The word 'PORCELAIN.'"

15,737.—ANTISEPTICS FOR PRESERVING PERISHABLE ARTICLES OF FOOD.—*John H. Bani, William Maegerlein, and Alexander Bruce*, Chicago, Ill. Application filed June 20, 1888. Used since April 15, 1888.
"The word 'BANIANI.'"

15,738.—CHEMICAL FLUID MIXED WITH OIL-PAINTS USED ON FABRICS AND RENDERING THEM WASHABLE.—*Phillie Blackman*, New Haven, Conn. Application filed June 16, 1888. Used since June 6, 1888.
"The outline of an artist's palette and the words 'INDELIBLE PROCESS' on it."

15,739.—MEDICINE FOR RHEUMATISM AND KIDNEY DISEASES.—*Buckeye Medicine Co.*, Kent, Ohio. Application filed June 23, 1888. Used since May 15, 1888.
"The representation of a branch of a buckeye-tree."

15,740.—BLOOD-PURIFYING MEDICINE.—*Julia A. Callahan*, New York, N. Y. Application filed February 25, 1888. Used since February 1, 1888.
"The words 'ST. THOMAS' and the bust-picture of a man representing St. Thomas carrying a spear in his hand."

15,741.—BAKING-POWDER AND HOP YEAST.—*Churchill & Co.*, Toronto, Ontario, Canada. Application filed February 17, 1888. Used since September 9, 1887.
"The words 'BREAD MAKER'S.'"

15,742.—FARINACEOUS COMPOUND WITH FRUIT FLAVORINGS.—*Wm. Pitt Clotworthy*, Baltimore, Md. Application filed June 20, 1888. Used since June, 1888.
"The word 'PUDDINE.'"

15,743.—CIGARS.—*Gumersindo Garcia Cuervo*, Havana, Cuba. Application filed June 18, 1888. Used since July 1, 1887.
"The words 'MANUEL GARCIA ALONSO.'"

15,744.—CIGARS.—*Gumersindo Garcia Cuervo*, Havana, Cuba. Application filed June 18, 1888. Used since 1867.
"The words 'LA FUCHA DE FLORES' supported by a shield, flowers, plants, clouded background, and a marine view."

15,745.—CIGARS.—*Gumersindo Garcia Cuervo*, Havana, Cuba. Application filed June 18, 1888. Used since July 1, 1873.
"The words 'LA CREMA DE CUBA' supported by the portrait of a young lady, flowers and plants, clouded coloring, and a sea view."

15,746.—CIGARS.—*Diego Lopez Trujillo & Sons*, Key West, Fla., and New York, N. Y. Application filed June 27, 1888. Used since May 1, 1887.
"The representation of a sea-dragon."

15,747.—RAZORS.—*William H. Hambleton*, of Philadelphia, Pa., and *Robert Vom Cleff*, of New York, N. Y. Application filed February 20, 1888. Used since December 6, 1887.
"The word 'DIAMONDINE' and a fabulous figure having the head, neck, mane, shoulders, and fore legs of a horse and the body, tail, scales, and fins of a fish."

15,748.—CHEWING-GUM.—*Charles T. Heisel*, Cleveland, Ohio. Application filed June 26, 1888. Used since June 21, 1888.
"The words 'RED BANDANA' associated with a red bandana handkerchief."

15,749.—BARBERS' SHAVING-SOAP.—*Theodore A. Kochs*, Chicago, Ill. Application filed June 15, 1888. Used since March 1, 1888.
"The representation of a barber standing with straddled legs over the legs of a seated man whom he is in the act of shaving."

15,750.—LIQUID MEDICINE TO AID DIGESTION.—*Charles Ludlow & Co.*, Springfield, Ohio. Application filed July 5, 1888. Used since May, 1888.
"The word 'DYSPEPTICURE.'"

15,751.—WHISKY.—*John Holmes Magruder*, Washington, D. C. Application filed February 29, 1888. Used since October 1, 1887.
"The words 'JEFFERSON CLUB' in connection with the medallion picture of Jefferson, one of the Presidents of the United States."

15,752.—TONIC MEDICINE FOR THE BRAIN, NERVES, AND MUSCLES.—*Elias Edwin Matthews*, Indianapolis, Ind. Application filed June 15, 1888. Used since August, 1886.
"The words 'PERUVIAN CELERY.'"

15,753.—CURE FOR ERYSIPELAS.—*Henry Matthews*, Walden, N. Y. Application filed May 31, 1888. Used since March, 1888.
"The words 'GOOD-INTENT.'"

15,754.—VEGETABLE MEDICAL COMPOUNDS.—*Charles Mendenhall*, Wapakoneta, Ohio. Application filed July 12, 1888. Used since January 1, 1883.
"The word-symbol 'DR. MOH-GOH-YAH.'"

15,755.—SOAP.—*Procter & Gamble*, Cincinnati, Ohio. Application filed July 16, 1888. Used since August 6, 1877.
"A diagonal green bar or ribbon in connection with the words 'OLEINE OXIDE.'"

15,756.—SOAP IN BARS.—*Rutherford & Barnes*, Brooklyn, N. Y. Application filed May 29, 1888. Used since February 1, 1888.
"The words 'SABAO PROGRESSO.'"

15,757.—SOAP IN BARS.—*Rutherford & Barnes*, Brooklyn, N. Y. Application filed June 5, 1888. Used since December 1, 1887.
"The words 'SABAO IMPERIAL BRAZILEIRO' and the representation of the seal of Brazil."

15,758.—REFRIGERATORS AND WATER-COOLERS.—*John Wanamaker*, of Philadelphia, Pa. Application filed June 25, 1888. Used since April 1, 1888.
"The word 'PURITAN.'"

15,759.—POLISHING AND SCOURING SOAP.—*The Waters & Wrigley Manufacturing Company*, Chicago, Ill., and New York, N. Y. Application filed June 14, 1888. Used since March, 1888.
"The word 'TRIPOLIO.'"

15,760.—DISINFECTING-POWDER COMPOSED OF LIME, CARBOLIC ACID, AND BORAX.—*William La Rue Weller, Jr.*, Louisville, Ky. Application filed June 20, 1888. Used since May, 1885.
"The word 'PURINE.'"

LABELS.

5,670.—Title: "INDELIBLE." (FOR A CHEMICAL TO BE MINGLED WITH OIL PAINT.)—*Phillie Blackman*, New Haven, Conn. Application filed June 6, 1888.

5,671.—Title: "REV. J. M. COLEY'S REGULATOR." (FOR A MEDICAL COMPOUND.)—*George M. French*, Randolph, Mass. Application filed July 12, 1888.

5,672.—Title: "THE HIP-JOINTS' CORSET."—*Catharine A. Griswold*, New York, N. Y. Application filed July 16, 1888. (Trade-Mark Registered.)

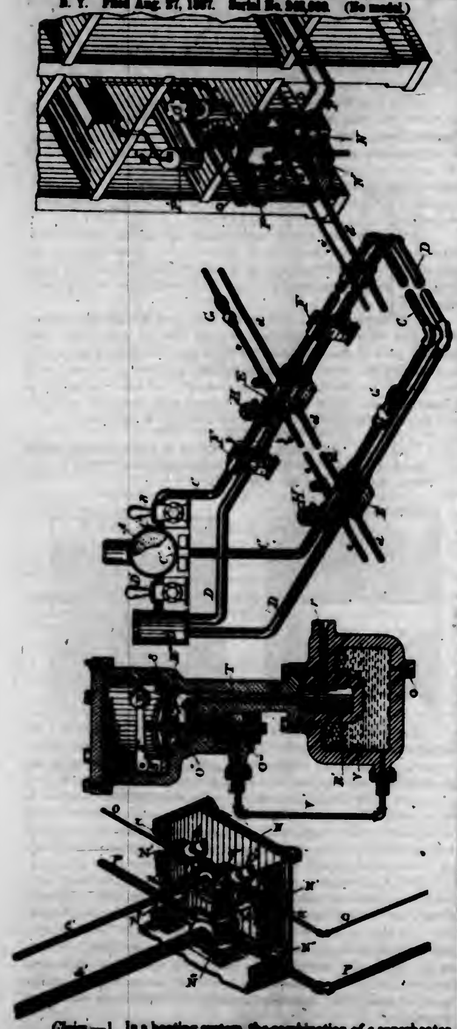
5,673.—Title: "LOTZ'S ADVERTISING CARDS." (FOR PLAYING CARDS.)—*Jacob G. Lotz*, Springfield, Mass. Application filed May 4, 1885.

5,674.—Title: "MANAHAN'S AIR-TIGHT SANITARY PARCHMENT SHEATHING."—*Margaret E. Manahan*, New York, N. Y. Application filed July 14, 1888.

PATENTS

GRANTED AUG. 7, 1888.

387,201. CENTRAL-STATION HEATING SYSTEM. ARTHUR V ABBOT, Chester, N. J., and FRANK C. P. KNAAK, New York, N. Y., assignors, by mesne assignments, to the National Heating Company, New York, N. Y. Filed Aug. 27, 1887. Serial No. 248,099. (No model.)



Claim.—1. In a heating system, the combination of a superheater, a supply-main, a force-pump, an expansion joint or coupling provided with a double-acting check-valve, and means for conducting water from the supply-main into a house or other building and utilizing the same for heating purposes.

2. In a heating system, the combination of a superheater, a supply-main, a force-pump, expansion joints or couplings, a supply-pipe, a housing, N, branch pipes leading from said supply-pipe to different houses, a converter and regulator with which the branch supply-pipes communicate, and a radiator connected with the converter, substantially as shown and described.

3. In a heating system, the combination of a heater, a supply-main, a force-pump, a supply-pipe leading from the supply-main, a movable coupling, *c'*, pipes leading from said coupling to a regulator and converter, a regulator and converter, and radiators, substantially as shown and described.

4. In a heating system, the combination of a superheater, a supply-main, a force-pump, a supply-pipe leading from said main, a box or housing, N, a movable coupler or T-head attached to said supply-pipe and located in said box or housing, and branch pipes leading from said coupler to the buildings to be heated, substantially as shown and described.

5. In a heating system, the combination of a superheater, a supply-main, a force-pump, a supply-pipe, a box or housing into which said supply-pipe extends, a coupler attached to said pipe within said housing, and a branch pipe or pipes leading from said coupler into the house or houses to be heated, substantially as shown and described.

6. In a heating system, the combination of a heater, a supply-main, a force-pump, a supply-pipe, a housing into which said supply-pipe extends, a coupler within said housing, a branch pipe or pipes attached to said coupler and extending out of said housing into a building or buildings to be heated, a regulator and converter, and a radiator or radiators, substantially as shown and described.

7. In a heating system, the combination, with a heater, supply-main, and a force-pump, of a box or housing located beneath the sidewalk, said box being provided with ways or bearings, and a plate, *n''*, resting thereon, a supply-pipe extending from the said main into said housing, a coupling attached to said supply-pipe and resting movably upon the plate *n''*, and branch supply-pipes communicating with said coupling and extending into the house or houses to be heated, substantially as shown and described.

8. In a hot-water heating system, the combination of a superheater, a supply main, a force-pump, a box or housing provided with side openings, N', as shown, a supply-pipe leading from the main into said housing, a coupler and branch supply-pipes leading from said coupler through said openings into the building to be heated, substantially as shown and described.

9. In a hot-water heating system, the combination of a heater, a supply-main, a force-pump, a box or housing provided with side openings, N', and ways or brackets *n'*, as shown, of a plate at *n''*, resting on said ways, a coupler resting on said plate, a supply-pipe connecting the main and coupler, and branch supply-pipes leading from said coupler into the building or buildings to be heated through the openings N', substantially as shown and described.

10. In a hot-water and steam heating system, the combination of a heater, a supply-main, a force-pump, a housing, N, provided with ways or brackets, *n'*, a plate, *n''*, having a longitudinally-convexed upper surface, a coupler, C', having a convexed lower surface resting on said plate, a supply-pipe connecting the main and coupler, and a branch pipe or pipes leading from the coupler to the building or buildings to be heated, substantially as shown and described.

11. In a hot-water circulating system, the combination of a superheater, a supply-main and force-pump, an automatic double-acting check-valve located in the supply-main, a return-main, a return water-tank, and a pump for forcing the water from the tank into the heater, substantially as shown and described.

12. In a central-station heating system, the combination of a heater, a supply and a return main, a bracket at M, having an upper

and lower opening, and a removable cap and revoluble supports in said openings, whereby the mains are permitted to move freely in the direction of their lengths, substantially as shown and described.

13. In a central-station heating system, the combination of a heater, a supply and a return main, a bracket at M, having upper and lower openings, a removable cap for the upper opening, and revoluble supports for the mains in said openings, said bracket being secured firmly to its support, whereby said mains are held in place and their free longitudinal movement provided for, substantially as shown and described.

14. In a hot-water circulating system, the combination of a superheater, a supply-main, a force-pump therefor, a return-main, a supply-pipe, a box or housing, a movable coupling within said box, a branch supply-pipe leading from said movable coupling to the house to be heated, a branch return-pipe leading from the house to the said box and provided with a movable coupling therein, and a return-pipe leading from said coupling to the return-main, substantially as shown and described.

15. In a hot-water circulating system, the combination of a superheater, supply and return mains, a force-pump, supply and return pipes, branch supply and return pipes, and a box or housing within which the supply and return pipes and branch supply and branch return pipes connect, substantially as shown and described.

16. In a hot-water circulating system, the combination of a heater, force-pump, supply and return pipes, a housing within which the supply and return pipes connect with branch supply and return pipes, regulator and converter, a radiator or radiators, a condense-water tank, and connecting-pipes, substantially as shown and described.

17. In a hot-water circulating system, the combination of a heater, supply and return mains provided with expansion-joints, force-pumps, supply and return pipes, movable couplings, a housing containing the couplings, branch supply and return pipes, a regulator and converter, and radiators and connecting-pipes, substantially as shown and described.

18. In a hot-water and steam-heating system, the combination, with the supply-main, of an automatic pressure-regulator provided with a steam or converting chamber, said chamber being surrounded by a hot-water chamber, the supply-main, hot-water chamber, the regulator, and steam or converting chamber being in communication with each other, substantially as shown and described.

19. In a hot-water heating system, an automatic pressure-regulator provided with a steam or converting chamber, said chamber being partially inclosed by a hot-water chamber, the hot-water chamber, regulator, and steam or converting chamber being in communication, substantially as shown and described.

20. An automatic differential fluid-pressure regulator, consisting of a casing provided with chambers R″ O″ O‴, a piston, R‴, provided with a valved stem, *s*′, and a weighted lever, S‴, in combination with a converter, R, provided with the chamber R′, and a pipe or passage communicating with the chamber O‴ of the regulator, as shown and described.

387,202. HARROW. James H. Bailey, Sedalia, Mo. Filed Dec. 12, 1887. Serial No. 257,602. (No model.)



Claim.—1. In a harrow, the combination, with metal tooth bars or rails forming the sections thereof having tooth-supports detachably connected with their lower portions, and perforations through the side of their upper portion which receive and support the upper ends of said teeth, of the harrow-teeth having their upper bent ends passing through said perforations, said teeth having integral self-retaining heads formed on the outer ends of their upper bent portion that projects through said bars or rails, whereby said teeth are held in their respective places, substantially as specified.

2. The combination of a metal harrow-tooth bar or rail having holes through the side of its upper portion and the harrow-teeth bent at their upper ends passing through said holes, said teeth having integral self-retaining heads formed on the outer end of their upper bent portion that project laterally through said bar or rail, and the lower supports for said teeth detachably connected with the lower portion of said bar or rail, to which the upper ends of said teeth are attached and supported at different angles, substantially as specified.

3. The combination, with a metal harrow-tooth bar or rail having perforations through the side of its upper portion and the harrow-teeth bent at their upper ends passing through said perforations, said teeth having self-retaining heads formed on the outer end of their upper bent portion that project laterally through said bar or rail, of an angle or L shaped detachably-connected base having perforations through its lower lateral projecting portion which receive and form the lower supports for said teeth, substantially as specified.

4. The combination, with a metal harrow-tooth bar or rail having perforations through the side of its upper portion and the harrow-teeth bent at their upper ends passing through said perforations, said teeth having self-retaining heads formed on the outer ends of the upper bent portion thereof, of an angle or L shaped base having its vertical flange detachably connected to the lower portion of said bar or rail that supports the upper ends of said teeth, and the lateral projecting flange of said L-shaped base, having oblong perforations adapted to support and limit the horizontal movement of the self-adjusting teeth to stand at different angles, substantially as specified.

5. The combination of a two-part metal harrow-tooth-supporting bar or rail detachably connected, each one with the other, having perforations A^4 in the side of its upper vertical part, A, forming supports for the upper ends of the harrow-teeth, and having corresponding perforations through the lower lateral projecting part, A′, of an angle or L shaped detachably-connected base forming the lower supports for said teeth, substantially as specified.

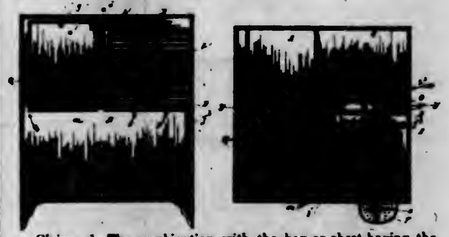
6. The combination of a two-part metal harrow-tooth-supporting bar or rail detachably connected, each one with the other, having perforations A^4 in the side of its upper part, A, and oblong perforations A^5 in the lower lateral projecting part, A′, of an angle or L shaped detachably-connected base, substantially as shown and described, and for the purpose specified.

7. The combination of a harrow-tooth and rail, said tooth having its upper end bent, with said bent end passing through a perforation formed through the side of the upper portion of said rail, said tooth having an integral self-retaining head, B^9, formed on the outer end of the upper bent portion, B′, thereof, said head adapted to catch or bear against the opposite side surface of said rail, to which the tooth is applied, and detachably supported at its lower portion, substantially as specified.

8. The combination of a harrow-tooth and rail, the lower tooth-supports detachably connected to said rail, the perforations in the side thereof, and the tooth having a hook-shaped self-retaining head formed on its upper end passing through said perforations, substantially as specified.

9. The combination of the harrow-teeth and rail, the perforations in the side thereof, and the harrow-teeth bent at their upper ends forming hook-shaped self-retaining heads pivotally supported in said perforations, the lower tooth-supports detachably connected with said rail, having longitudinal space between their shoulders adapted to support the teeth either vertically or inclined with respect to the direction in which the harrow is drawn, substantially as specified.

387,208. REFRIGERATOR. Chester M. Bates, Lebanon, Pa., assignor of one-half to Frederick H. Raggio, same place. Filed Feb. 11, 1888. Serial No. 263,734. (No model.)

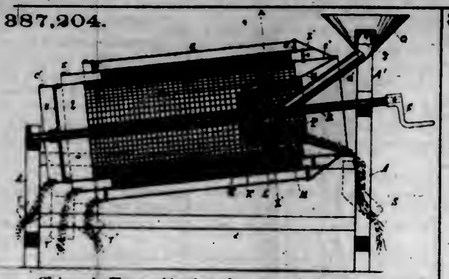


Claim.—1. The combination, with the box or chest having the large lower compartment, of the L-shaped compartment located in the upper part of said box or chest, and having one side wall and its top parallel with the adjoining side and top of said box or chest, forming a space, G, therebetween, and the ice-box located in the re-entering angle of the L-shaped compartment, with its walls adjacent to the walls forming said angle, whereby a space or passage-way is formed between the ice-box and the adjacent walls of said angle, substantially as shown and described.

2. The combination, with the box or chest having the large lower compartment, of the L-shaped compartment located in the upper part of said box or chest and having a continuous space, G, surrounding one side and the top thereof, the wire or screen walls of the re-entering angle of said L-shaped compartment, the ice-box provided with two slatted walls, also located in the said angle, said slatted walls being adjacent to and parallel with said wire or screen walls, forming a space or passage-way between the same, substantially as shown and described.

387,204. GRAIN-SEPARATOR. George C. Berman, Minneapolis, Minn. Filed Oct. 13, 1887. Serial No. 252,157. (No model.)

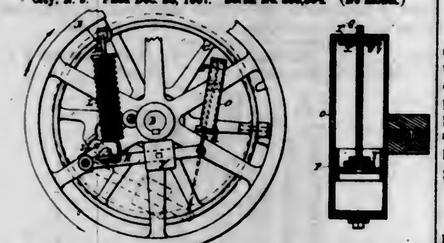
387,204.



Claim.—1. The combination of a rotary shaft, a series of cylindrical screens of different degrees of fineness mounted thereon, a coarser conical screen in the receiving end thereof closed at its small end and opened at its larger end, and a finer removable conical screen adapted to fit within the coarser conical screen, substantially as set forth.

2. The combination of a rotary shaft, a series of cylindrical screens of different degrees of fineness mounted thereon, a conical screen in the receiving end thereof, closed at its small end and open at its larger end, a finer removable conical screen adapted to fit within the coarser conical screen, and a detachable feed-hopper having a discharge-spout projecting into said conical screen, substantially as set forth.

387,205. STEAM-ENGINE GOVERNOR. Julius Bouteet, Jersey City, N. J. Filed Dec. 20, 1887. Serial No. 258,594. (No model.)



Claim.—1. In an engine-governor, an inertia-weight combined with an eccentric rigidly connected therewith, substantially as described.

2. In an engine-governor, an inertia-weight combined with an eccentric, said weight and eccentric both moving about a common center of oscillation not coincident with the axis of the driving-shaft, substantially as described.

3. In an engine-governor, an inertia-weight, an eccentric, and a fly-wheel, said inertia-weight and fly-wheel revolving about centers not coincident, substantially as described.

4. In an engine-governor, a weight pivoted to a revolving part of the engine and controlling an arm combined with an inertia-weight, to which said arm is connected, said inertia-weight revolving about an axis not coincident with axis of the driving-shaft, substantially as described.

5. In an engine-governor, a weight, a fly-wheel to which it is pivoted, and an arm controlled by said weight, combined with an inertia-weight, to which said arm is connected, said fly-wheel and inertia weight revolving about axes not coincident, substantially as described.

6. In an engine-governor, an inertia-weight supported at and free to revolve about a point outside of its center of gravity, combined with an eccentric, substantially as described.

7. In an engine-governor, the combination of an inertia-weight and a dash-pot connected thereto, substantially as described.

8. In an engine-governor, the combination of an inertia-weight, a centrifugal weight, and a dash-pot, substantially as described.

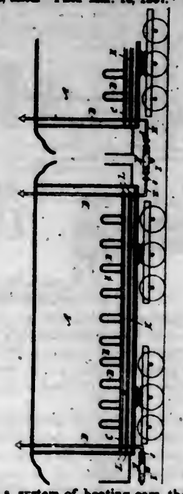
9. In an engine-governor, a dash-pot having a slotted cover to permit lateral motion of the piston-rod, and a plate fitted on the piston-rod adapted to slide on said slotted cover, substantially as described.

10. In an engine-governor, a flexible or elastic bearing consisting of metal bushing combined with an elastic packing, substantially as described.

11. In an engine-governor, the combination of an inertia-weight revolving about an axis not coincident with the axis of the driving-shaft, a centrifugal weight, and a rocker-arm to which the centrifugal weight is immediately attached, substantially as described.

12. In an engine-governor, the combination of an inertia-weight supported at a point outside of its center of gravity, and a centrifugal weight arranged to counterbalance each other under the influence of gravity, substantially as described.

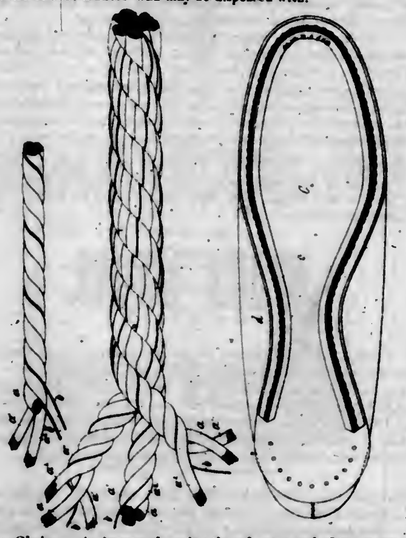
387,206. APPARATUS FOR HEATING CARS. Thomas H. Dortomley, Ogden, Mich. Filed Mar. 10, 1887. Serial No. 230,317. (No model.)



Claim.—In a system of heating cars, the combination of two stand-pipes supported at opposite ends of a car, projecting through the car-roof and open to the atmosphere, and provided at their lower ends with suitable couplings to connect between the cars, with a main pipe connecting the stand-pipes within the car, a radiating-circuit independent of the said main pipe and connecting the two stand-pipes, and two-way valves at the connection of the stand-pipes with the main pipe and radiating-circuit, substantially as described.

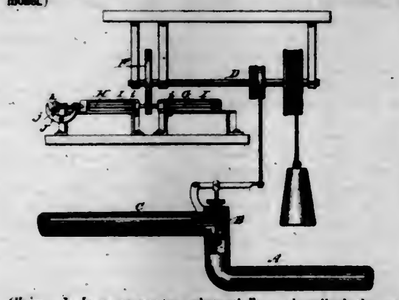
387,207. SEWING THREAD OR CORD. J. Henry Bilgen, Philadelphia, Pa., assignor to J. Walter Douglass, same place. Filed Oct. 12, 1887. Serial No. 252,143. (No specimens.)

Brief.—The invention is an improvement upon that covered by United States Letters Patent No. 346,577, dated August 3, 1886, the object being to produce an improved thread, particularly for sewing boots and shoes, which shall be inelastic and pliable, and by which the use of shoe-makers' wax may be dispensed with.



Claim.—An improved sewing-thread composed of two or more strands of filamentous material and a metallic wire or wires, the said filamentous strands and wire or wires being twisted together, as described, and the said wire or wires lying between and parallel with the filamentous strands, as shown and described.

387,208. AUTOMATIC TEMPERATURE-REGULATOR. James W. Brock, Lynchburg, Va. Filed Nov. 26, 1886. Serial No. 220,092. (No model.)



Claim.—1. In an apparatus substantially as described, the combination, with a friction-plate, of a longitudinally-contractible rod bearing at one end thereagainst and adapted to be contracted under the influence of cold, whereby said plate may be normally held by the said rod, but will be released on a considerable fall in temperature, substantially as set forth.

2. In an apparatus substantially as described, the combination, with a friction-plate, of a longitudinally-contractible detent-rod arranged to bear at one end against said plate, and a screw for adjusting said rod, substantially as set forth.

3. A friction-plate movably supported combined with a longitudinally-contractible detent-rod arranged to bear at one end against said plate and located at an angle to said plate, substantially as described, whereby to operate as a friction-pawl, as and for the purposes specified.

4. The combination, with a friction-plate, of rods arranged on opposite sides thereof and having their inner or adjacent ends set to bear against the friction-plate, substantially as set forth.

5. The combination of the friction-plate, the detent-rods, and the guide-frames I, having anti-friction bearings for said detent-rods, substantially as set forth.

6. The combination of the friction-plate, the rod bearing thereagainst, the set-screw, and a pointer, and scale whereby to determine at what degree the plate will be released, substantially as set forth.

7. In an automatic apparatus substantially as described, the combination, with a friction-plate having a flat side, of a longitudinally-contractible rod bearing at one end tightly against the flat side of said plate, all substantially as and for the purposes specified.

8. In an automatic apparatus substantially as described, the combination of a shaft, connections between said shaft and the device to be operated, a friction-plate fixed to said shaft, and a longitudinally-contractible rod bearing at one end tightly against said plate and adapted to be contracted under the influence of cold, whereby said plate and shaft may be normally held by the rod, but will be released on a considerable fall in temperature, substantially as set forth.

387,209. CAR-WHEEL. William H. Brown, Jersey City, N. J., assignor, by mesne assignments, to The Brown's Seamless Metal Company, of New Jersey. Filed Sept. 9, 1886. Serial No. 213,051. (No model.)

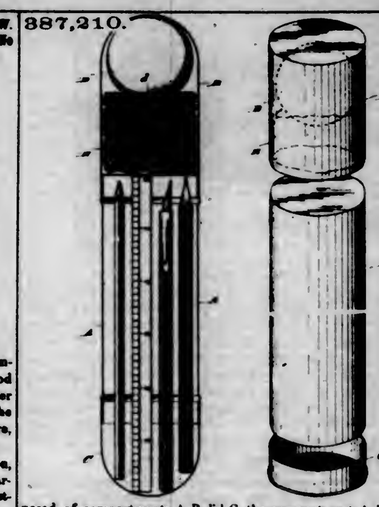


Claim.—The combination of the two principal wheel-sections *a b c d* and *e f*, the filling *i*, the bushing *g*, and the clamping-bolts *h*, one of the said sections consisting of a disk, *a*, tread *c*, flange *d*, and central tubular projection, *b*, and the other of a disk, *e*, having a central tubular projection, *g*, the said bushing fitting both of the said tubular projections and the clamping-bolts clamping the filling between the disks *a e*, all substantially as herein described.

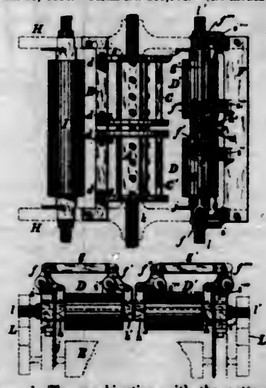
387,210. SCHOLAR'S COMPANION. Thomas G. Cookings and John J. McVaney, Jr., Riverside, Ohio; said Cookings assignor to Alvin Knop, same place. Filed May 11, 1886. Serial No. 273,618. (No model.)

Claim.—1. As a new article of manufacture, a scholar's companion composed of two detachable compartments, one containing the pencils and the other a ball filled with water and a sponge, substantially as set forth.

2. As a new article of manufacture, a scholar's companion composed of compartments A B, lid C, the compartment A being closed at one end, ball D, and sponge E, substantially as set forth.



387,211. PLANING-MACHINE. John Cornell, Rochester, N. Y. Filed Jan. 26, 1888. Serial No. 199,571. (No model.)



Claim.—1. The combination, with the cutter-head A, of the pressure-bar B, extending across the machine in rear of the cutter-head, and removably attached to the upper surfaces of the side frames at each of its ends, and the independently-movable chip-breakers C C', provided at their ends with the arms *c c*, extending over the cutter-head and pivoted at their rear ends to the pressure-bar, whereby provision is made for the simultaneous removal of the pressure-bar and the divided chip-breakers C C' from the machine, substantially as described.

2. The combination, with the cutter-head A, of the pressure-bar B, extending across the machine in rear of the cutter-head, the independently-movable chip-breakers C C', provided with an arm or arms *c*, extending over the cutter-head and pivoted at their rear ends to the pressure-bar, and the independently-movable feeding-rollers D D', substantially as described.

3. The combination, with the lower feed-roll, E, of the movable upper feed-roll, D, provided at each end with boxes *h h'*, and bell-cranks *f f'*, connected together by link *g*, extending parallel with the axis of the roll, whereby an equal pressure is secured at each end of the roll during the rising and falling movement, substantially as described.

4. The combination, with the lower feed-roll, E, of the independently-movable upper feed-rolls, D D', provided at their ends with the boxes *h h' h² h²*, and bell-cranks *f f' f² f²*, connected together by the links *g g'*, extending parallel with the axes of the rolls, whereby the upper rolls are permitted to rise and fall independently of each other, substantially as described.

5. The combination, with the upper movable feed-roll, D, provided at its ends with the boxes *h h'*, and bell-cranks *f f'*, connected together by the link *g*, of the cross-bar F, having arms *i i'*, extending over the rolls and supporting the pivots of the bell-cranks, substantially as described.

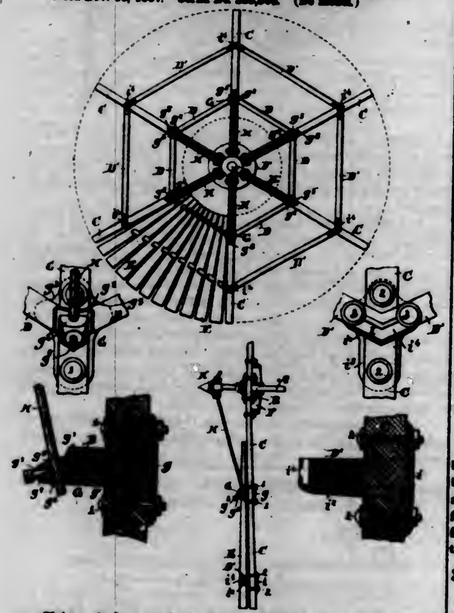
6. The combination, with the upper feed-roll, D, provided at each end with the boxes *h h'*, and bell-cranks *f f'*, connected together by link *g*, of the cross-bar F, having tongues *s* extending inward and forming a guide for the box *h'*, substantially as described.

7. The combination, with the movable feed-roll, of bearings at the ends thereof, supports for causing their movements in parallel lines, and a link or rod connecting said supports for causing their simultaneous movement in the same direction, substantially as described.

8. The combination, with the movable feed-roll, of bearings at the ends thereof, supports for causing their movements in parallel lines, a link or rod connecting said supports and causing their simultaneous movements in the same direction, and a weight applied to one of said bearings.

9. The combination, with the support for the material, of the pressure-roll, bearings for the same, and levers connected to said bearings for supporting them, and a link connecting said levers for equalizing their motion, substantially as described.

387,212. WINDMILL. Andrew J. Chrisman, Jersey City, N. J. Filed Nov. 10, 1887. Serial No. 255,203. (No model.)



Claim.—1. In a windmill, the combination, with the wheel-shaft, the radial arms, section-bars, and stay-rods, of a clip for securing said arms and section-bars together, provided with an adjustable holding device, substantially as described, for securing the ends of the stay-rods.

2. The clip G, for securing the section-bars to the radial arms, comprising a web, *g*, arms *g' g'*, cap g^2, lugs g^3 g^3, and vertical flanges g^4 g^4, the said clip adapted to be slipped over the radial arms and embrace the ends of the section-bars and fastened in place upon the radial arms by bolts, substantially as shown and described.

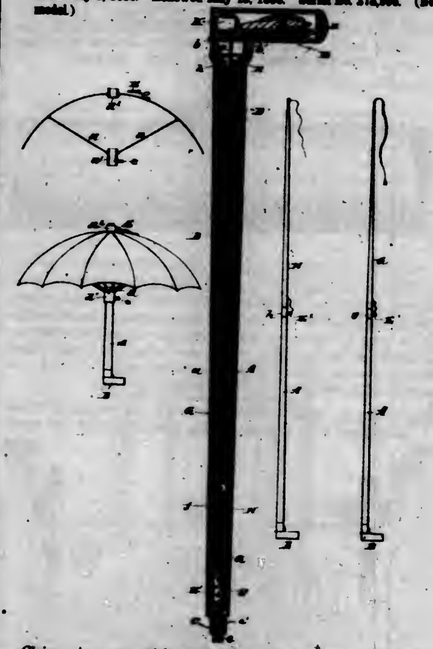
3. The clip G, for securing the section-bars to the radial arms, comprising a web, *g*, arms *g' g'*, cap g^2, lugs g^3 g^3, and vertical flanges g^4 g^4, and provided with a perforated lug for the reception of the stay-rod, and a set-screw for adjustably securing the stay-rod in place, substantially as shown and described.

4. The clip I, for securing together the radial arms and the section-bars, consisting of a web, *i*, a V-shaped flange, i^2, and a strut, i^4, the V-shaped flange i^2 being provided with an aperture for the reception of the radial arm, the whole being secured in place by means of bolts, substantially in the manner shown and described.

5. The clip I, for securing together the radial arms and the section-bars, consisting of a web, *i*, a V-shaped flange, i^2, side flanges, i^3, and a strut, i^4, the V-shaped flange i^2 being provided with an aperture for the reception of the radial arm, the whole being secured in place by means of bolts, substantially in the manner shown and described.

6. In a windmill, the combination, with the wheel-shaft A, the annular beam K, mounted on the outer end thereof, the radial arms C, secured to the shaft by means of the spider B, and braced by the annular collar F, bolted to said arms, the section-bars D, and the stay-rods H, secured at their inner ends to the annular beam K and adjustably secured at their outer ends to the radial arms C, all constructed and arranged substantially as shown and described.

387,213. COMBINATION-CANE. Daniel Crowley, Boston, Mass. Filed May 1, 1888. Renewed May 15, 1888. Serial No. 273,906. (No model.)



Claim.—As a new article of manufacture, a cane having a hollow body adapted to receive an umbrella-top, a whip-tip, or fishing-rod tip, and provided with a handle adapted to open and close the upper or larger end of the body, the said cane having at its smaller end a ferrule adapted to enter a socket in the umbrella-top, whip-tip, or fishing-rod tip, the said ferrule having a transverse opening therein for the entrance of a locking-pin, substantially as set forth.

387,214. BOG-BEATER. John J. Dull, Marysville, Ohio. Filed Oct. 26, 1887. Serial No. 253,253. (No model.)



Claim.—1. The beaters comprising end plates made in sections, beater-rods between the end plates, and a hook on one section of the end plate engaging a stud on the adjacent end plate, as set forth.

2. The combination of the body, the hollow shaft G, journaled in one end of the same and having an angular bore, H, on its inner end, the shaft L, inserted through the shaft G and having an angular bore, M, in its inner end, mechanism for rotating said shafts in opposite directions, the inner beater comprising the end plates and the beater-

rods between the same, one of said end plates having an angular socket, S², to receive the angular bow M, and the outer beater consisting of end plates and beater-rods, one of said end plates having an angular opening adapted to fit around the angular bow H, as set forth.

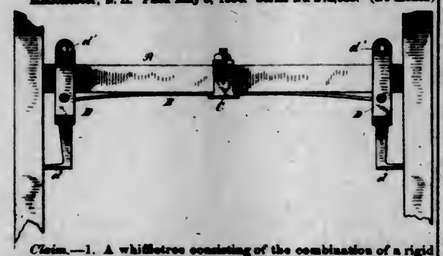
3. In an egg-beater or churn, the combination, with the body A, of the beater R, journaled therein and comprising the end plates R' and the beating-rods *r*, and the outer beater, T, surrounding the beater R and comprising the end plates T' T', formed in sections *t' t'*, the beating-rods *t t*, attached at the ends to the said sections, the links V V, attached at the ends to the beating-rods at adjacent edges of the sections, and the hooks W on the opposite edges of the sections, adapted to engage studs W on the other sections, substantially as and for the purpose specified.

387,215. LOCKING DEVICE FOR STOVE-PIPE DAMPERS. Valentine Doane, Jr., Harwich, Mass., assignor to Fred V. Dunne, same place. Filed Jan. 10, 1887. Serial No. 223,960. (No model.)



Claim.—In a locking device for dampers in stove-pipes, the combination of the stove-pipe provided with a locking-catch having tapered recesses or openings smallest at their open ends to prevent slipping, as described, with a damper whose diameter is less than that of the pipe, having a stationary handle for engagement within the recesses in the locking-catch, said damper being held at any desired angle to the line of the pipe by the locking-catch and by its own gravity, substantially as and for the purposes specified.

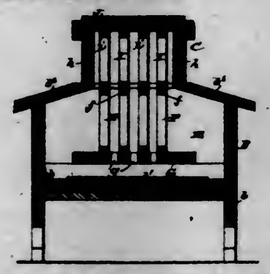
387,216. WHIFFLETREE. George B. H. Dow and John H. Willey, Manchester, N. H. Filed May 3, 1888. Serial No. 272,695. (No model.)



Claim.—1. A whiffletree consisting of the combination of a rigid bar, a spring secured to the front side of said bar, and yokes pivotally connected with the spring embracing the bar and having connecting-bolts, substantially as described.

2. A whiffletree consisting of the combination of a rigid bar, a spring secured to the front side of said bar, yokes pivotally connected with the spring embracing the bar, and supplemental cushions or springs attached to the yokes, substantially as described.

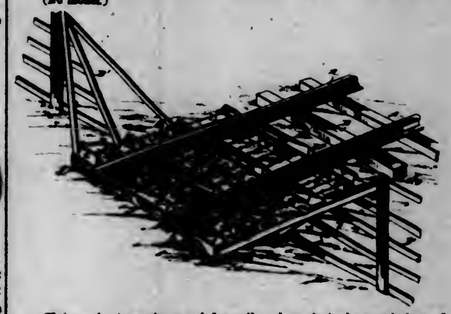
387,217. BEE-HIVE. Ira C. Doyal, Gumley, Ala. Filed Apr. 30, 1888. Serial No. 272,377. (No model.)



Claim.—1. In a bee-hive, the combination, with the brood-frames having the projections of the upper rails inserted in recesses in boards secured to the inner surfaces of the back and front walls of the lower or brood section, B, of the partial horizontal partition G, running from front to back in said section, touching and supporting the lower rails of each of said frames, and provided with the series of perforations *g* between each two of said frames, substantially as specified.

2. The herein-described bee-hive, comprising the lower section, B, the upper section, C, the inclined bottom forming a resting-place for the bees, which resting-place is in front of the hive and widest in front of the bee-entrance, the sliding gate D, having a notch in its lower side to form the bee-entrance, the partial partition G, running from front to back and provided with perforations arranged in series, and the frames F, with their lower rails resting on said partition between the series of perforations, substantially as specified.

387,218. CATTLE-GUARD FOR RAILROAD-TRACKS. Robert H. Elliott, Birmingham, Ala. Filed Feb. 24, 1888. Serial No. 265,095. (No model.)



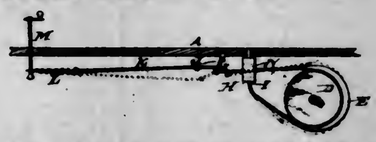
Claim.—1. A cattle-guard for railroad-track beds, consisting of the combination of metallic caps or covers of angular shape secured to the cross-ties and series of bars or strips of metal crossing the spaces between the ties, the same being corrugated, substantially as described.

2. A cattle-guard for railroad-track beds, consisting of the combination of metallic caps or covers of angular shape secured to the cross-ties between the rails, similar caps secured to the projecting ends of the ties, the ends of said caps contiguous to the rails being beveled or slanting, and series of bars or strips of metal crossing the spaces between the ties, the same being corrugated, substantially as described.

3. A cattle-guard for railroad-track beds, consisting of the combination of metallic caps or covers having the seating-flanges on their edges and of angular shape at the top, screws or bolts securing them to the ties, and series of bars or strips of metal crossing the spaces between the ties, the same being corrugated and secured to the ties by rivets or screws, substantially as described.

4. In a cattle-guard for railroads, the angular metallic cap attached to the cross-ties by the seating-flanges with which its edges are provided, substantially as described.

387,219. CAR-BRAKE. Charles B. Fythian, Camden, N. J. Filed Nov. 24, 1885. Serial No. 183,577. (No model.)



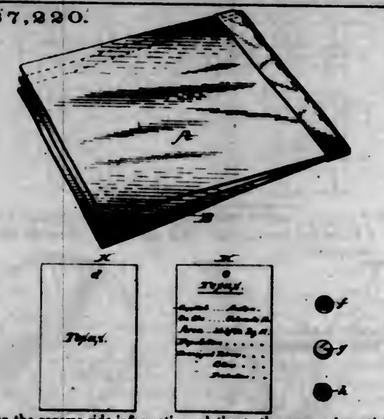
Claim.—1. A car-brake consisting of a grooved wheel, D, a curved substantially C-shaped spring-band, E, carrying a series of bearing-blocks fitted to said groove, said spring-band being secured at one end to a rigid support carried by the car, and at the other end to the brake-operating devices, the spring-band being arranged to positively throw the blocks out of engagement with the grooved wheel when released, substantially as described.

2. In a car-brake, the combination of a brake-wheel, an encircling friction-strap engaging therewith, a slotted support, H, carried below the car, to which one end of the brake-strap is secured, and the brake-rod connected to the free end of the brake-strap and supported to slide in the slot in the support H, substantially as described.

387,220. GAME. William Forker, Glenwood Springs, Colo. Filed Apr. 2, 1888. Serial No. 269,291. (No model.)

Claim.—1. A game-board consisting of a field appropriately printed or engraved thereon having tally-columns around its four sides, in combination with cards representing geographical divisions or subdivisions of said map, and bearing on one side the name of said division

387,220.



and on the reverse side information relative to the same, substantially as described.

2. A folding game-board having on one half thereof a complete geographical map and on the other half an outline-map of the same geographical division, in combination with a fly-leaf for covering the complete map while a game is being played, and a pack of cards representing geographical divisions or subdivisions of said map, and bearing on one side the name of said division and on the reverse side information relative to the same, substantially as described.

3. A game apparatus consisting of a board having on one half a complete geographical map and on the other half an outline-map of the same geographical division separated by a fly-leaf, in combination with a pack of cards representing geographical divisions or subdivisions of said map, and bearing on one side the name of said division and on the reverse side information relative to the same, and tally-columns around the margin of the board which bears the outline-map and counters, substantially as described.

387,221. COMPOSITION FOR BUILDING-STONE. Albert Fürst and Rudolph Schawbleiber, Denver, Colo. Filed Oct. 14, 1887. Serial No. 252,263. (No specimens.)

Claim.—The herein-described composition for building-stone, consisting of powdered clay and plaster-of-paris, as set forth.

387,222. POTATO-PLANTER. R. Darwin Gaines, Sterling, Ill. Filed Feb. 25, 1888. Serial No. 264,915. (No model.)



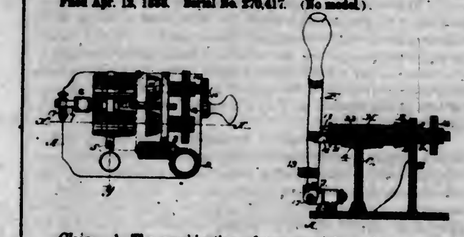
Claim.—1. The combination of the revolving chamber C, containing an interior circular shell, D, adapted to be rotated by the traction of said chamber, and the fixed shell G, having a closed outer end and open inner end adapted to be partially inserted within the shell D, and provided with slot J, substantially as shown, and for the purpose described.

2. The combination of the rotating shell D, provided with seed-openings E and radial seed-ducts F, and the fixed shell G, having a closed outer and open inner end adapted to be inserted within the shell D, and also provided with seed-entrance L and seed-exit J, substantially as shown, and for the purpose described.

3. The combination of the circular seed-chamber D, adapted to be rotated by traction, and provided with seed-openings E and seed-ducts F, the fixed shell G, having a closed outer end, and its inner end adapted to be projected partially within the fixed shell G, and provided with seed-exit J, and exterior guards, M and O, adapted to close the outer ends of the seed-ducts F during a portion of their orbital movement, substantially as shown, and for the purpose described.

4. The combination of the frame A, a revolving chamber, C, suitably pivoted therein, so as to be rotated by traction in the forward movement of said frame, and herein provided interiorly with the circular shell D, having seed-openings in its periphery, the shell G, provided with seed-exits J, and suitably attached to the frame A and projected partially within the shell D, so that the seed-openings in the latter will register at the opening J, and the exterior guards, M and O, substantially as shown, and for the purpose described.

387,223. CARTRIDGE-LOADER. Holly Gardner, Albany, N. Y. Filed Apr. 13, 1888. Serial No. 270,417. (No model.)



Claim.—1. The combination of two revolving crimpers, which are geared to rotate together, shell-guides whose center lines range with the centers of said crimpers, and a lever by which the shells are held in a non-rotative position, and are forced into said crimpers, the said lever being fitted to swing sidewise into correspondence with the centers of said crimpers, as and for the purpose herein specified.

2. A charging-cylinder having a trunnion arranged tangentially to the bore of said cylinder, so that the lower end of a cartridge-shell fixed in the latter will be swung directly to bear evenly on the level surface of a seat on which said cartridge-shell rests when said cylinder is in a vertical position, as and for the purpose herein specified.

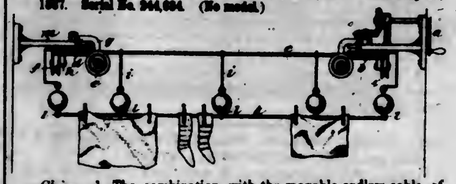
387,224. OPERATING ELEVATOR-GATES. James Gibbons, Springfield, Mass., assignor of one-half to Stephen H. Howland, same place. Filed July 22, 1887. Serial No. 245,088. (No model.)



Claim.—1. The combination, with an elevator, of a pressure-actuated motor that comprises the cylinders C C, pistons in said cylinders, an inlet-pipe and a waste-pipe connected to said cylinders and provided with a valve, A, having a spring, S, and part V, projecting in the path of said elevator, and a gate joined to and movable with said pistons, substantially as described.

2. The combination, with the elevator E and a motor that comprises cylinders C C, pistons in said cylinders, the inlet-pipe 2 and a waste-pipe 3, connecting to said cylinders and provided with a valve, A, having a spring, S, and a part, V, that projects in the path of said elevator, and a gate joined to and movable with said piston, the whole arranged and operating substantially as described.

387,225. CLOTHES-DRIER. Matthew Gerhovy, Chicago, Ill., assignor of one-half to Mathias Dapper, same place. Filed July 19, 1887. Serial No. 244,694. (No model.)



Claim.—1. The combination, with the movable endless cable, of weighted supports secured thereto at intervals, and the clothes-line suspended from said weighted supports, whereby the clothes-line is carried with the cable and held down in position out of the way of the cable, substantially as specified.

2. In a clothes-drier, the combination, with a bracket, of a horizontal pulley and two swinging arms, each carrying a separate pulley, the upper edges of the pulleys carried on the swinging arms being tangent to the horizontal pulley and adapted to support a cable, substantially as described.

3. The combination, with the clothes-line, of weighted supports provided with eyes through which the clothes-line is strung, of an endless cable to which the supports are attached, and pulley devices for supporting and guiding the cable, each pulley device consisting of a horizontal wheel and two wheels tangent thereto upon pivoted arms and adapted to run under and support the cable without coming into the path of the supports as they are carried around with the cable, substantially as specified.

4. The combination, with a horizontal pulley, of two pulleys slightly inclined inwardly from the perpendicular and suspended upon swinging arms, a cable passing around the horizontal pulley and over the said slightly-inclined pulleys, and the supports attached at intervals to the cable, whereby said slightly-inclined pulleys may be adjusted to support the cable running at different angles without coming into the path of the supports, substantially as described.

5. The combination, with pulley mechanism for carrying the endless cable which supports the clothes-line, of gear mechanism for turning one of the pulleys and thereby moving the endless cable in either direction, the weighted hangers suspended upon the cable at intervals, and the clothes-line *k*, run through eyes *l*, provided upon the weights, substantially as specified.

387,226. HOSE-COUPLING. PHILIP GLEICH and HORATIO S. KRAMER, St. Paul, Minn. Filed Oct. 13, 1886. Serial No. 216,154. (Model.)



Claim.—1. In a hose-coupling formed of male and female shells, the combination of the female shell A, adapted to receive the end of a hose-pipe inside of the same, having an inwardly-projecting flange, *a*, of equal interior diameter to that of the hose-pipe inserted therein, the said flange having a coved packing-seat retaining the packing-ring C therein, the said female shell also having in its overlapping part inwardly-springing catch-blocks *h h*, with their outer ends housed in projections of the shell, as set forth, the packing-ring C, and the male shell B, also adapted to receive the end of a hose-pipe inside of the same, and having an inwardly-projecting flange, *b*, of equal interior diameter to that of the hose-pipe, inserted therein, the said flange extending to the inner end of the shell and having a coved packing-seat at its inner end, adapted to fit against the packing-ring when the shells are coupled together, the said male shell also having a catch-flange, *g*, around the exterior periphery of its insertible portion, adapted to receive the said catch-blocks of the female shell, all as and for the purpose herein set forth.

2. The combination of the lift-pins *l l*, housings *t t*, having flared open sides *u u*, and the forked lifting-tongs D, adapted to enter the said open sides of the housings and to be guided thereby to the said lifting-pins, substantially as and for the purpose herein set forth.

387,227. HOG-CRATE. WILLIAM R. GREENE, Marlborough, N. Y. Filed Feb. 24, 1888. Serial No. 265,142. (No model.)

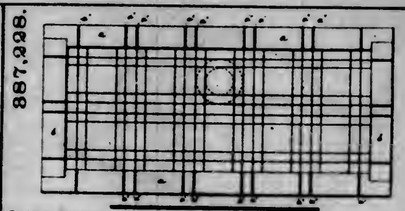


Claim.—1. The combination of frame *a* with two sets of crossing wires arranged beneath one another, the wires in each set forming alternate squares and rectangular figures, and with braces *g*, traversing the rectangular figures between the squares, substantially as specified

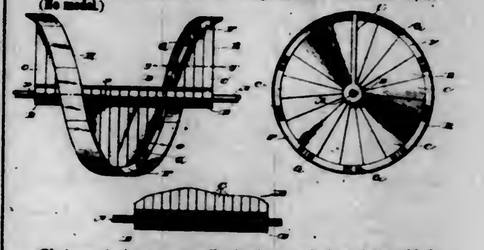
2. The combination of frame *a* with two sets of crossing wires *b c* and *d e*, and with the braces *g*, having shoulders *g'* and nuts *g*, substantially as specified.

387,228. HOG-CRATE. WILLIAM R. GREENE, Marlborough, N. Y. Filed Apr. 4, 1888. Serial No. 269,581. (No model.)

Claim.—The combination of an open frame composed of longitudinal rails *a* and transverse rails *b* notched at their upper and lower edges, with wires stretched across the frame and extending first through two opposite upper notches, then along the side of the rail, and then through two opposite lower notches, the whole constituting a frame with two sets of open squares, substantially as specified.



387,229. SCREW-PROPELLER. ALEXANDER D. HALL and GEORGE B. EGAN, San Francisco, Cal. Filed Apr. 2, 1888. Serial No. 269,642. (No model.)



Claim.—1. A screw-propeller having a spiral continuous blade with no openings therein, making one complete revolution, and provided at its outer edge with the spiral laterally-extending flange, for the purpose set forth, the said flange being disposed in a plane parallel with the axis of the propeller, the length of the said blade being in excess of the diameter of the propeller, substantially as described.

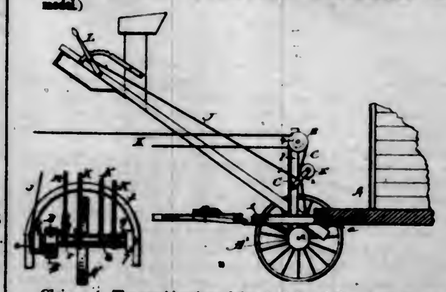
2. The propeller having the continuous spiral blade formed of separable sectors, the said sectors being separably keyed to the propeller-shaft, and having their opposing edges secured together, substantially as described.

3. The propeller having the continuous spiral blade forming one complete revolution, the said blade being made of separable sectors the said sectors having their opposing edges tongued and grooved, and thereby adapted to effect tight joints, substantially as described.

4. The combination, in a propeller, of the spiral blade and the flange E at the outer edge of said blade, said flange having the flanges F embracing the opposite sides of the spiral blade and bolted thereto, substantially as described.

5. The propeller having the continuous spiral blade, forming one complete revolution, and the flange E on the outer edge of the blade, the said flange being disposed in a plane parallel with the axis of the propeller and having its rear edge or projecting portion broader than its forward projecting portion, for the purpose set forth, substantially as described.

387,230. HORSE-CHECKING DEVICE FOR HARVESTERS. DANIEL COLLINS HALL, Stockton, Cal.; LIZZIE F. HALL administratrix of said Daniel Collins Hall, deceased. Filed Jan. 17, 1887. Serial No. 224,656. (No model.)

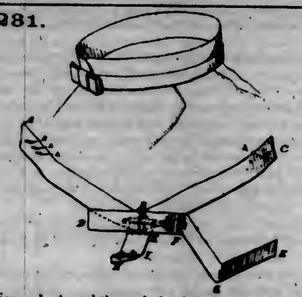


Claim.—1. The combination of the shaft 9 and the wheel A' with the sheaves and belt, the belt-tightener, and the lines J and K, as set forth.

2. The combination of the lines K, the shaft 9, the sheave B, the belt C, the wheel A', having the hub 2, the arm 4, pivoted to the standard 7, the sheave E, and the line J, as set forth.

387,231. HECKTIE. WILLIAM H. HARRISON, Jr., New York, N. Y. Filed Oct. 26, 1887. Serial No. 253,243. (No model.)

387,231.



Claim.—1. A necktie made by fastening together the strips A B C, D F G E, and H I K in the manner shown and described, the strip D F G E being folded at F and G and the tie being fastened to the collar-button at the front of the shirt by the button-hole *a*.

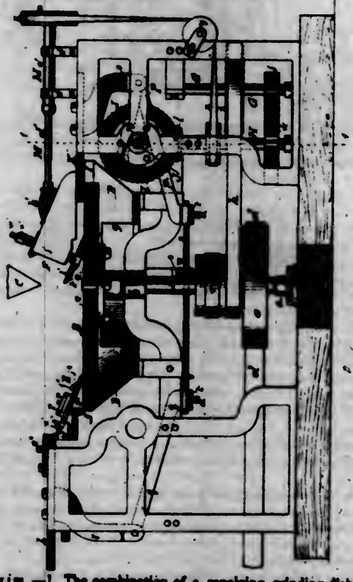
2. A necktie constructed in a bow-knot by fastening together the strips A B C, D F G E, and H I K in the manner shown and described, the strip D F G E being folded at F and G, and the necktie being fastened to the collar-button at the front of the shirt by the button-hole *c* and to the collar-button at the back by the button-holes *b* and *b*.

387,232. BOTTLE-STOPPER. WILLIAM RENDEN and JOHN M. ARMS, Alliance, Ohio. Filed Jan. 5, 1888. Serial No. 255,914. (No model.)



Claim.—In a bottle-stopper, the combination, with the ball and the cap, of an operating-lever forming a connection between the ball and the cap, the said lever being provided with two pairs of malleable-metal jaws extending in opposite directions from its head and closed around the ball, and a loop on the cap, respectively, substantially as set forth.

387,233. MACHINE FOR BEVELING THE EDGES OF GLASS PLATES. JOSEPH HOLLEY, Brooklyn, N. Y. Filed May 19, 1888. Serial No. 273,609. (No model.)



Claim.—1. The combination of a revolving grinding-disk and one or more glass-plate-holding clutches having a reciprocating movement radially over the face of the grinding-disk in adjustable positions, for the purpose herein specified.

2. The combination of a revolving grinding-disk and one or more glass-plate-holding clutches having a reciprocating movement radially over the face of the grinding-disk in adjustable positions, for the purpose herein specified.

3. The combination of a revolving grinding-disk and two glass-plate-holding clutches placed diametrically opposite to each other across the disk, and having a radial reciprocating movement over the disk, the movement of each clutch being outward, while that of the other is inward, for the purpose herein set forth.

4. The combination of a revolving grinding-disk, a circular-glass-plate-holding clutch having a reciprocating motion radially over the disk, and a rotating mandrel for imparting a rotary motion to the glass plates during the reciprocations of the clutch.

5. The combination of a revolving grinding-disk, a circular-glass-plate-holding clutch having a reciprocating motion radially over the disk, and a straight-edge glass-plate-holding clutch having a reciprocating motion over the disk imparted to it directly by the other clutch or its sliding carriage, substantially as and for the purpose herein specified.

6. The reciprocating circular-glass-plate-holding clutch provided with a revolving spindle or mandrel, and a revolving-mandrel driving-shaft constructed in two parts, one part sliding in and coupled to the other, substantially as and for the purpose herein specified.

7. A reciprocating circular-glass-plate clutch provided with a revolving spindle or mandrel, in combination with a longitudinally-movable driving-shaft geared to the mandrel, having its adjacent journal coupled in its bearing, and a holding and releasing catch, substantially as and for the purpose herein specified.

8. A circular-glass-plate clutch having two clamping-plates, one plate being smaller in diameter than the glass plate to be held, and the other plate being as large as or larger than the glass plates in diameter, for the purpose herein specified.

9. A circular-glass-plate clutch having two clamping-plates, one smaller and the other larger in diameter than the glass plates to be held between them, and the larger plate having a projecting rim or flange adapted to surround and hold in central position the said glass plates.

10. A circular-glass-plate clutch having two clamping-plates, one smaller and the other larger than or as large as the glass plates in diameter, and the surfaces of the two plates having a thickness of india-rubber or other elastic soft material upon them, substantially as and for the purpose herein specified.

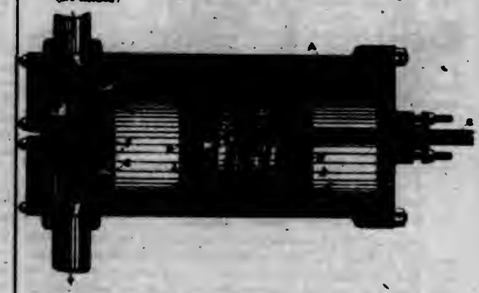
11. In a glass-plate beveling or grinding machine, a reciprocating straight-edged-glass-plate clutch pivoted to its slide-carrier, the bearings of the carrier having swinging caps to cover the removable journals of the clutches, substantially as and for the purpose herein specified.

12. The straight-edged-glass-plate clutch constructed with two clamp-plates hinged together at one edge and tightened by wedge-acting hooks projecting from one plate, and a swinging bar on the other plate catching into the hooks, substantially as herein specified.

13. A straight-edged-glass-plate clutch hinged at one edge to its slide-carrier, and provided with a series of attachable and removable weights for graduating the pressure of the glass plate on the grinding-disk, substantially as herein specified.

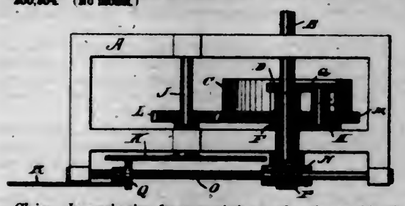
14. The combination of the movable part *d'* of the shaft M, and the handle *h'*, in which said shaft freely turns, substantially as and for the purpose herein specified.

387,234. COMPRESSION-PUMP FOR ICE-MACHINES. ARTHUR M. HUTCHINSON, Philadelphia, Pa. Filed Dec. 2, 1886. Serial No. 254,259. (No model.)



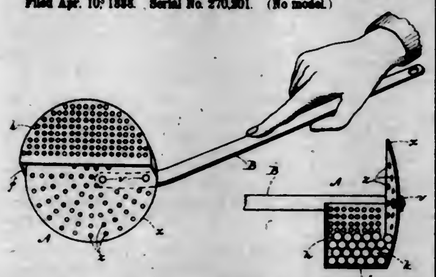
Claim.—The combination, with the cylinder A, of the hollow piston D D' E, the piston-rod G, guide-piece J, and spring L, arranged within said hollow piston and on each side of said guide-piece, the whole operating in the manner set forth.

387,235. TRANSMITTING MOTION. Willis C. Jones and Winfield S. Rogers, Cincinnati, Ohio. Filed Nov. 23, 1887. Serial No. 256,904. (No model.)



Claim.—In mechanism for transmitting motion, the combination, substantially as set forth, with mechanism employing planetary gearing and a loose center gear, of a friction-disk arranged to be rotated from such mechanism, a splined shaft, a bush-wheel splined to and adjustable along said shaft and engaging such friction-disk, and means, substantially as set forth, for transmitting motion from such splined shaft to said loose center gear.

387,236. SKIMMER. George K. Knowlton, Hamilton, Mass. Filed Apr. 10, 1888. Serial No. 270,201. (No model.)



Claim.—1. In a skimmer, the combination, of a handle, a perforated dish-shaped plate secured to said handle, a semicircular perforated strip of sheet metal secured vertically to the edge of said plate, and a semicircular perforated plate secured to the upper edge of said strip, substantially as set forth.

2. In a skimmer, the handle B, in combination with the dish-shaped perforated plate *x*, semicircular perforated strip *f*, and semicircular perforated plate A, said plates and strip being secured together to form a skimmer provided with a drain-cup, substantially as described.

3. As an improved article of manufacture, a foraminous dish-shaped skimmer having a handle and provided at one side with a foraminous drain-cup for receiving the vegetables from the skimmer and holding them while being drained, substantially as set forth.

387,237. WAGON. Henry G. Lane, Bucyrus, Ohio. Filed Mar. 19, 1888. Serial No. 267,755. (No model.)



Claim.—1. The herein-described running-gear for vehicles, composed of the front and rear axles formed from double-flanged bars, the axle-arms removably held between the ends of the angle-bars, the front hounds having their rear portion bent down, the guard-rail, the truss-braces secured to the horizontal flange of the hounds, the sand-board made of metal and having flanges at its edges, the rear hounds having their front ends converging and united by an upper and a lower plate, the reach, the angle-brackets for the reach on the rear axle, the bolsters of double-flanged angle metal, and the stakes having rear ribs constructed, arranged, and operating substantially as specified.

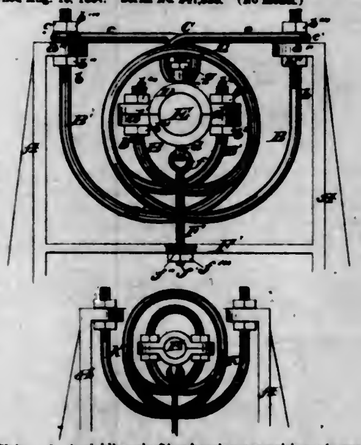
2. In a running-gear for vehicles, the combination of the front axle, the hounds having their rear portions bent down to about flush with the top of the axle, the sand-board resting on the hounds, the guard-rail J, located above the hounds and parallel therewith, the reach passing between the hounds and the said guard-rail J, the truss-braces C', the bolts *f'*, securing the hounds, the sand-board, the axle, and the truss-braces together, the bolts *j*, securing the front ends of the truss, the guard-rail, and the hounds together, and the bolts *j'*, holding the rear ends of the truss-braces, the hounds, and the said guard-rail J together, substantially as described.

3. The combination, with the axle composed of two bars and the frames arranged between and bolted to the bars, of the axle-arm held in the frames, substantially as specified.

4. The combination, with the axle composed of two double-flanged bars arranged with the flanged sides opposite to each other, and the frames placed between the bars and the flanges and secured to the said bars, of the axle-arm having a shank inserted in the frames and held therein by a shoulder at one end of the shank and a key at the other end of the shank, substantially as described.

5. The combination, with the axle composed of two double-flanged angle-bars, of the frames having lateral arms, which arms extend through the bars and are secured thereto, substantially as specified, for the purpose described.

387,238. SHAFTING-BEARING. Charles D. Magee, Chicago, Ill. Filed Aug. 18, 1887. Serial No. 247,333. (No model.)



Claim.—1. A yielding shafting-bearing comprising a journal-box and coiled springs encircling the shaft and secured to the journal-box, and whose outer ends are secured to a fixed support, substantially as and for the purpose set forth.

2. A yielding shafting-bearing comprising a journal-box and coiled springs encircling the shaft and secured to the journal-box, and whose outer ends are adjustably secured to a fixed support, substantially as and for the purpose set forth.

3. A yielding shafting-bearing comprising a journal-box and coiled springs encircling the shaft, secured at their inner ends to the journal-box and at their outer ends to a fixed support, substantially as and for the purpose set forth.

4. A yielding shafting-bearing comprising a journal-box and coiled springs encircling the shaft, secured at their inner ends to the journal-box and at their outer ends to a fixed support, the said securement at each end being adjustable, whereby the tension of the springs may be increased or diminished, substantially as and for the purpose set forth.

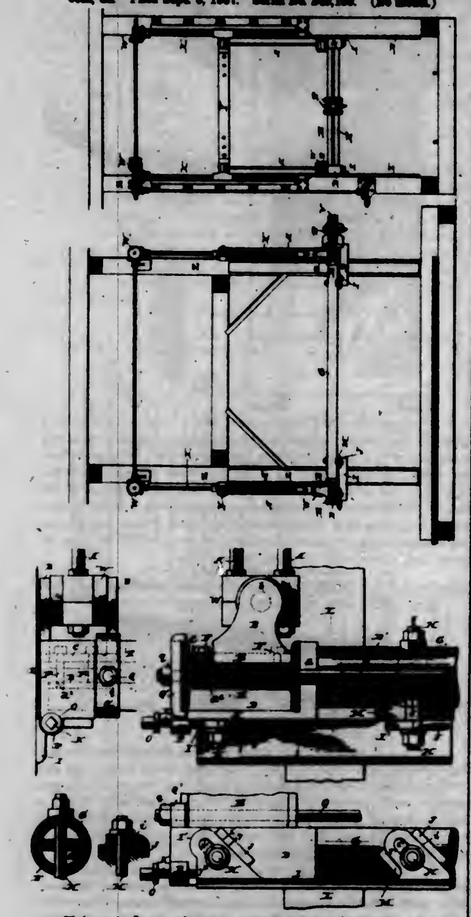
5. In a yielding shafting-bearing, the combination, with the journal-box and coiled springs encircling the shaft, of a spring, C, secured at its ends to a fixed support and at or near its middle point connected adjustably to the journal-box, substantially as and for the purpose set forth.

6. In a yielding shafting-bearing, the combination, with the journal-box, coiled springs encircling the shaft, and the cross-bar F', of the stay-bolt F, connected at one end to the journal-box and at the other end connected adjustably to the cross-bar F', substantially as and for the purpose set forth.

7. A yielding shafting-bearing comprising, in combination, a journal-box, coiled springs encircling the shaft, secured at their inner ends to the journal box and at their outer ends to a fixed support, the spring C, secured at its ends to the said fixed support and at or near its center connected adjustably to the journal-box, and the stay-bolt F, connected at one end to the journal-box on the side opposite the spring C and connected adjustably at the other end to the cross-bar F', substantially as and for the purpose set forth.

8. A yielding shafting-bearing comprising, in combination, a journal-box and two coiled springs, C, both formed of one piece, which encircles the shaft and is secured to the journal-box and at its outer ends to a fixed support, substantially as set forth.

387,239. GANG FOR SAWING STONE. James W. Maloy, Hartford, Ga. Filed Sept. 8, 1887. Serial No. 249,169. (No model.)



Claim.—1. In a reciprocating saw-carrying frame, the combination, with the tubular side bars and the end bars, E, of corner connecting-pieces secured to the end bars, and having hollow cylindrical portions D', provided with transverse strengthening-ribs d^6, adapted to extend into the ends of the tubular side pipes, and bolts passing through the side pieces and the hollow cylindrical portions D', thereby uniting them, substantially as described.

2. In a reciprocating saw-carrying frame, the combination, with the side bars and the end bars, of corner connecting-pieces secured to the side bars and having seat portions, in which rest the end bars, plates C, arranged above the seat portions of the corner-pieces and carrying journals for the suspension-links, and through-bolts uniting plate C, the end bars, and corner-pieces together, substantially as described.

3. In a reciprocating saw-carrying frame, the combination, with the side bars and the end bars, consisting at each end of two bars, E E, of corner connecting-pieces secured to the side bars and having seat portions D, which receive the end bars, which are separated by a web portion, d^3, of part D, a plate, C, carrying journals for the suspension-links resting upon the upper end bar, and through-bolts F, uniting plate C, the bars E, and part d^3 of the corner connecting-piece, substantially as described.

4. In a reciprocating saw-carrying frame, the combination, with the side bars, the end bars, and the connecting corner-pieces, of the brace-rods Q Q, extending longitudinally of the frame by the sides of the side bars and connected to the end bars independently of the corner-pieces, substantially as described.

5. In a stone-sawing machine, the combination, with the supporting-frame having cross-bars Y, and the swinging saw-frame, of journals and boxes carried by the saw-frame, and two suspension-links uniting each journal-box with bar Y, substantially as described.

6. In a stone-sawing machine, the combination, with the supporting-frame having cross-bars Y, and the swinging saw-frame carrying journals *b*, of boxes surrounding said journals, consisting of the separable parts W W and two suspension-links for each box, uniting it with one of the bars Y, and also uniting parts W of the boxes, substantially as described.

7. In a reciprocating saw-carrying frame, the combination, with the side bars and the end bars, of corner connecting-pieces having seat parts, in which rest the end bars, plates C, carrying connections for the suspension-links, bolts uniting said parts together, and bearing-plates I, secured below the corner connecting-pieces, substantially as described.

8. In combination with the swinging saw-carrying frame of a stone-sawing machine, a bearing-plate, I, adjustably secured thereto and having inclined edges *i*, and inclined projections carried by the frame, and against which the edges *i* of the bearing-plate rest, whereby it is maintained in line with the motion of the frame at different adjustments, substantially as described.

9. In combination with the swinging saw-carrying frame of a stone-sawing machine, a bearing-plate, I, adjustably secured thereto, inclined projections J, carried by the frame against which the bearing-plate rests, and an adjusting-screw, K, substantially as described.

10. In combination with the swinging saw-carrying frame of a stone-sawing machine, an adjustable bearing-plate, I, supports for the plate carried by the frame, inclined projections J, against which the plate rests, and interlocking projections between the plate and its supports, whereby the plate is held against projections J whatever its position of adjustment, substantially as described.

11. In combination with the swinging saw-carrying frame of a stone-sawing machine, having end channel-bars, E, brackets R, bolted to the webs of the channel-bars and having lugs *r* projecting beyond the flanges thereof, and pitman-pin T, bolted to the lugs of said brackets, substantially as described.

12. In combination with the swinging saw-carrying frame of a stone-sawing machine, a bearing-plate carried thereby, an adjusting-screw therefor, a lug carried by the swinging frame, in which said screw is mounted, and a collar carried by the screw, substantially as and for the purpose set forth.

387,240. ROOF-PAINT. German J. Mayer, New Buffalo, Mich., assignor of one-half to Merl D. Peters, Panama, N. Y. Filed May 2, 1888. Serial No. 272,003. (No specimens.)

Claim.—A liquid slate-paint compounded of common gum-shellac, water, and potash, in the quantities and manner described, in combination with linseed-oil, balsam of fir, white lead, and flour of emery, in quantities named, substantially as shown, and for the purpose set forth.

387,241. CONVEYER. George W. McCahlin, New York, N. Y. Filed Dec. 16, 1886. Serial No. 221,704. (No model.)

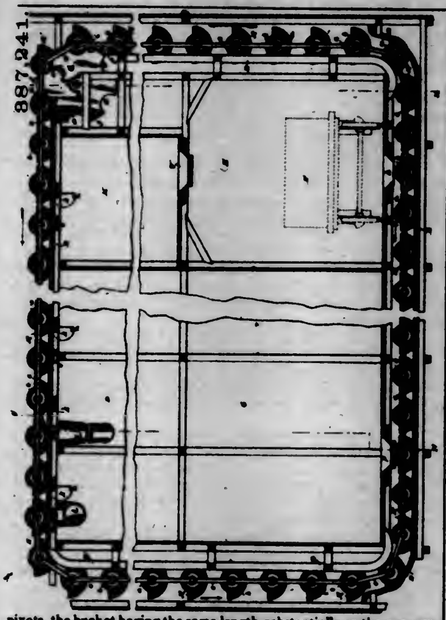
Claim.—1. The combination, to form a conveyer, of an endless series of pivotally-mounted gravity-buckets, A, the rigid links *e*, connecting and distancing said buckets and coupled at their ends to the pivots of said buckets, and the track-wheels on the pivots of said buckets and supporting the centers of the latter, substantially as set forth.

2. The combination, with the pivotally-mounted gravity-buckets A, provided with oval symmetrical cams *i* on their ends, the connecting-links *e*, and supporting-wheels, of the dumping-cam *k*, of symmetrical form, arranged along the track in the path of the cams on the buckets, said cams being relatively arranged, substantially as described, whereby the buckets are tilted on their pivots, for the purpose set forth.

3. The combination, with the buckets A, of semi-cylindrical form and provided with pivots at their axes, of the distancing-links connecting said buckets in series and coupled to the buckets at their



387,241.



pivots, the bucket having the same length substantially as the connecting-link, whereby the lips or adjacent margins of the buckets are brought together, for the purpose set forth.

4. An apparatus comprising an upper and lower chamber in a structure, adapted to receive and hold materials such as coal and the like, an endless and continuous conveyor having connected gravity-buckets which stand close together when receiving, and supporting track-wheels for said buckets, the driving sprocket-wheels, and a track on which said track-wheels run, said track comprising a lower portion below the said lower chamber, an upright portion for the ascending part of the conveyor, an upper portion over the said upper chamber, and an upright portion for the descending part of the conveyor, said track lying wholly in a vertical plane, as set forth.

5. An apparatus comprising the elevated chambers or receptacles, as D and H, with chutes *l* leading into the upper part thereof, and the lower chambers or receptacles, as E and C, with outlets, as *k* and *p*, in their floors, the horizontal track below the lower chambers, the horizontal track over the upper chambers, and the two vertical or upright tracks, all of said tracks being in the same vertical plane, the endless conveyor having supporting-wheels mounted on said tracks, the dumping-cams on said upper track, and the driving-wheels G of said conveyor, substantially as set forth.

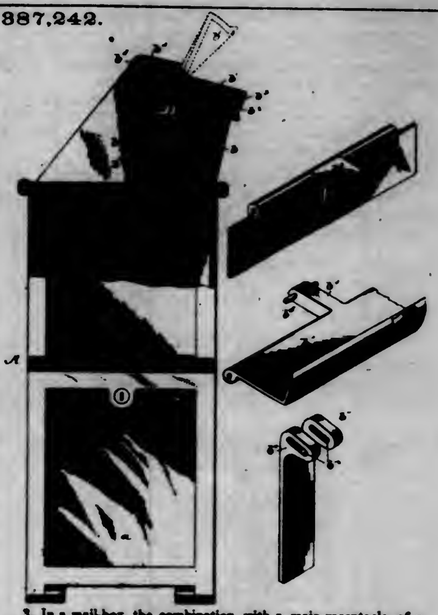
6. The combination, with the buckets of the conveyor and their cams *i*, of the dumping-cam *k*, pivoted at one side, and the locking-bolt *o*, adapted to engage and support the other side of said cam, substantially as and for the purpose set forth.

387,242. LETTER-BOX. Joseph H. McDonald, New York, N. Y. Filed Nov. 3, 1887. Serial No. 254,266. (No model.)

Claim.—1. In a mail-box, the combination, with a main compartment, of a second compartment, in which the matter is first deposited and through which it passes to the main compartment, said second compartment being provided with a cover at its upper end and a movable plate at or near its lower end actuated by movement of the cover, whereby said plate may be caused to act as a temporary bottom to said second compartment and close the opening to the main compartment, substantially as shown and described.

2. In a mail-box, the combination, with a main receptacle, of a second compartment, said second compartment being provided with a pivoted cover at its upper end and a pivoted plate at its lower end, a sliding plate having a lug or lugs at its upper end provided with slots, being engaged by a pin in said cover and its lower end engaging the pivoted plate, whereby upward movement of the cover will cause the pivoted plate to close the lower end of the smaller compartment, and reverse movement of the cover will release said pivoted plate and permit it to fall to its normal position, substantially as and for the purpose set forth.

387,242.



3. In a mail-box, the combination, with a main receptacle, of a second compartment provided with a pivoted cover, said cover having a lug extending from it carrying a pin; a vertically-sliding plate having slotted lugs extending from it, the slots being engaged by the pin carried by the cover, and a pivoted plate near the lower end of the smaller compartment, said plate being provided with a flange against which the sliding plate bears, whereby movement of the cover to open the compartment will cause said compartment to be closed at its opposite end, substantially as shown and described.

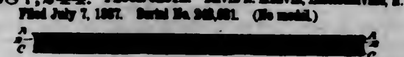
387,243. DRIER. Wallace McPherson, Texarkana, Tex. Filed Apr. 2, 1888. Serial No. 269,982. (No model.)



Claim.—1. In a drier, the combination of a furnace and flue having a closing wall at its rear end, an arch its whole length, and side walls having openings below the base of said arch, with spark-arresters opposite said openings, and consisting of a vertical plate, *d*², and a horizontal plate, D, bent lengthwise and having vertical partitions on each side of the plate *d*², with a passage on top of the latter, substantially as and for the purpose described.

2. The combination of a furnace and flue having an arch its whole length, and side walls having openings below the base of said arch, with spark-arresters, as described, opposite said openings, a grate at one end of the furnace, and a damper under the rear end of said grate, substantially as and for the purpose described.

387,244. FLOOR-CLOTH. David H. Elwin, Lansdowne, N. Y. Filed July 7, 1887. Serial No. 243,691. (No model.)



Claim.—As a new article of manufacture, a floor-covering consisting, essentially, of an upper or wearing layer, an under or cushion layer of granular elastic material, and an intermediate layer of woven fabric, the three layers being united by adhesive substances, substantially as set forth.

387,245. SPINDLE FOR CAP-SPINNING MACHINES. John R. Hilden, Newton, Mass. Filed Feb. 2, 1888. Serial No. 262,606. (No model.)

Brief.—The object of the invention is to facilitate lubrication of the spindle and improve its running.

Claim.—1. The combination of the following instrumentalities,

387,245.

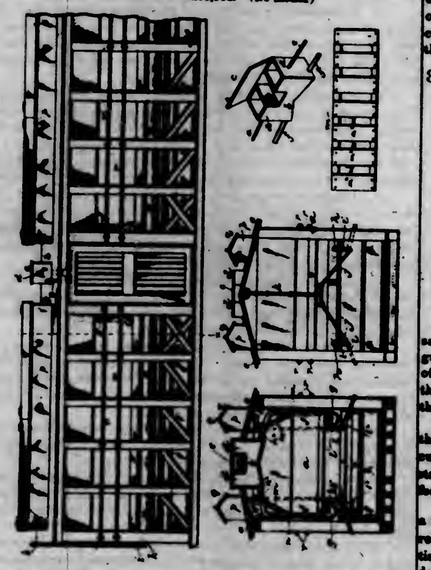


to wit: a bolster-rail, a spindle-step secured in said rail and provided with an oil-cup, a spindle secured in said step, a driving-sleeve mounted on said spindle above said rail and provided with a longitudinal groove or grooves and with a driving-pulley, a lifting-rail disposed above said bolster-rail, a bobbin-sleeve mounted on said driving-sleeve above the lifting-rail and provided with a plate for supporting the bobbin, means for coupling the bobbin and said plate, means for coupling the driving-sleeve and bobbin-sleeve, and a guide-sleeve secured to the upper portion of said spindle for preventing the bobbin-sleeve from vibrating, substantially as described.

2. The combination of the spindle A, the driving-sleeve E, mounted thereon and provided with the groove *r* and pulley F, the bobbin-sleeve G, mounted on the sleeve E and provided with the plate H, coupling-pin 26, and stud *v*, the guide-sleeve I, secured to the spindle A, the cap M, mounted on said spindle, the rails B C, and an oil-cup for supplying the spindle and sleeves with oil, substantially as set forth.

3. The improved device herein described, the same consisting, essentially, of the spindle proper, A, step D, sleeves E G I, pulley F, plate H, stud *v*, pin 26, cap J, guard M, felt K, absorbent ring *p*, and rails B C, constructed, combined, and arranged to operate substantially as set forth.

387,246. STOCK-CAR. James Montgomery, East Millstone, N. J. Filed Apr. 4, 1888. Serial No. 269,901. (No model.)



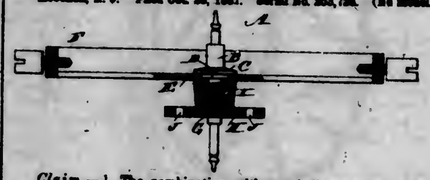
Claim.—1. A water-tank for use in stock-cars, consisting of a vessel having its bottom slanting in opposite directions from a median line or plane, discharge-pipes leading from the lower levels thereof, and inlet-columns adapted to straddle the ridge-pole of the car-roof, and overflow-pipes leading down from the said inlets, substantially as described.

2. Water appliances for application to ordinary stock-cars, comprising a tank or receiver straddling the ridge-pole and suspended within the car from its roof and over the doors, distributing-pipes leading from such tank each side of such car and terminating in spouts or outlets, and drinking-troughs, over which said spouts are arranged and into which they discharge the water, substantially as described.

3. The hay-rack *m* for cars, having fixed slats *m*², of about twice the width of the fixed openings *m'* between them, so as to impede the withdrawal and consequently prevent the waste of hay, and flexibly hinged at its lower end to the side of the car and adapted to fold up flat against the side of the car, and provided with a lip, *n'*, to engage stationary stops *n*², depending from the car-roof, to hold the rack in position for use, substantially as described.

4. The gutter composed of the vertical protection-boards *l*, slanting bottoms, and braces *P*, for connecting the protection-boards and bottoms and securing them to the sides of the car, in combination with the drinking-trough, arranged wholly within said gutter and having its journal projecting through the ends of the car, and provided with a crank, an operating-rod, and a link connecting the crank and rod, whereby the trough may be tilted within the gutter to discharge its contents and again be brought and held in position for use, substantially as described.

387,247. BALANCE-STAFF FOR WATCHES. Charles Mosley, Hoboken, N. J. Filed Oct. 20, 1887. Serial No. 253,728. (No model.)

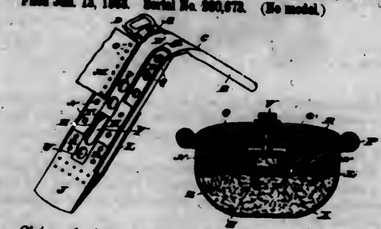


Claim.—1. The combination, with a spindle provided with a shoulder and having a part screw-threaded, of a roller screwing on the threaded part of said spindle and against the hub or cross-bar of the balance-wheel, substantially as shown and described.

2. A spindle for balance-wheels provided with a shoulder and a screw-threaded part on which screws a roller, substantially as shown and described.

3. The combination, with a balance-wheel and a roller, of a spindle provided with a fixed shoulder and having part screw-threaded, on which screw-threaded part said roller screws against the hub or cross-bar of the said balance-wheel held between the said shoulder on the spindle and the roller, substantially as shown as described.

387,248. HARNESS-SADDLE. Allen A. Moe, Canton, Ohio. Filed Jan. 13, 1888. Serial No. 260,572. (No model.)



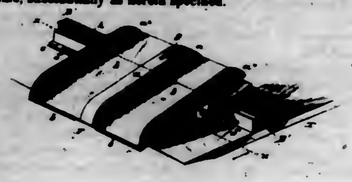
Claim.—1. As an improved article of manufacture, the harness-saddle having the upwardly-turned flanges B at its edges, longitudinal grooves D D', located in the upper side of the tree on opposite sides of the center, the longitudinal groove E, located on the under side of the tree between the grooves D D', and perforations in the bottoms of the grooves, substantially as set forth.

2. The combination, with a saddle-tree as herein described, of the flexible end piece, J, having straps K and H, bottom piece, L, secured to the tree by clinch-nails N, and the pad M, secured to the strap H and K, substantially as described, and for the purpose set forth.

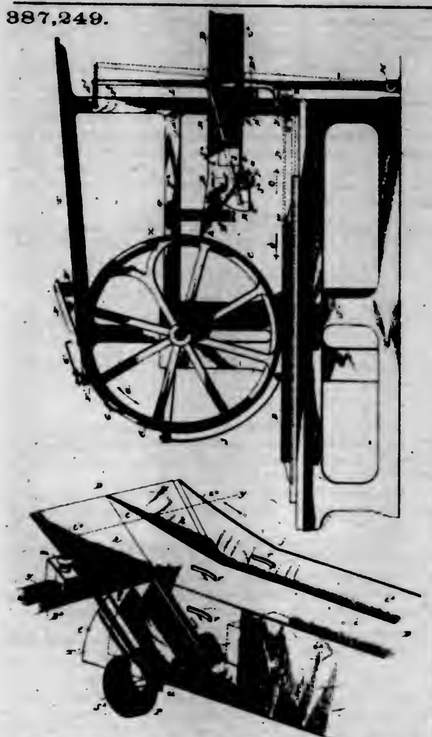
3. As an improved article of manufacture, a harness-saddle having a tree constructed and padded as herein shown and described, and a removably-secured trimming composed of a housing, P, skirt S, a continuous back strap, T, jockey R, and bolt V, constructed as shown and described, and for the purpose set forth.

387,249. CYLINDER PRINTING-MACHINE. Andrew O. Hass, Newark, N. J. Filed July 19, 1887. Serial No. 244,713. (No model.)

Claim.—1. In combination with the front gage of a cylinder printing-machine, a double feed-guide for each operator, whereby each operator is enabled to feed the machine with envelopes or the like two at a time, substantially as herein specified.



387,249.



2. In combination with a suitable front gage, a double feed-guide having a middle gage with parallel lateral guide-surfaces at right angles to the gage-surface of said front gage, substantially as herein specified, for the purpose set forth.

3. In combination with a suitable front gage, a double feed-guide having a middle gage with parallel lateral guide-surfaces, and side gages parallel with said middle gage, substantially as herein specified, for the purpose set forth.

4. In combination with a suitable front gage, a double feed-guide having a middle gage with parallel lateral guide-surfaces, and a pair of side gages movable toward and away from said middle gage, substantially as herein specified, for the purpose set forth.

5. The double feed-guide F, having parallel middle and side gages, and bottoms formed by overlapping flanges attached to the respective gages, substantially as herein specified.

6. The combination, substantially as herein specified, of the middle gage, a, and side gages, a^2, provided, respectively, with a swivel-bearing and screw-nuts attached thereto, and a right-and-left screw swiveled in said bearing and fitted to said nuts, for the purpose set forth.

7. The combination of the middle gage, a, and side gages, a^2, having overlapping flanges forming bottoms b, adjustable in width, and provided, respectively, beneath said bottoms with a swivel-bearing and screw-nuts, and a right-and-left screw swiveled in said bearing and fitted to said nuts, substantially as herein specified.

8. The combination, with an ordinary feed-table, of a superposed double feed-guide, and a bolster beneath the rear end of said guide, giving it a greater inclination than the table, substantially as herein specified.

9. The combination of a divided transverse bolster, one part of which is fixed and the other part movable lengthwise thereon, and a double feed-guide attached to said movable part, substantially as herein specified.

10. The combination of a horizontally-divided transverse bolster having a dovetail joint with a groove in the top of the lower part, a superposed double feed-guide, and a clamp which attaches the latter to the upper part of the bolster and acts within said groove to lock the whole upon said lower part, substantially as herein specified.

11. The combination of a transverse bolster, a superposed double feed-guide adjustable as to width, and independent means, substantially as described, for laterally adjusting said guide as a whole, for the purpose set forth.

12. The combination, with an ordinary cylinder printing-machine, of a double feed-guide for each operator attached to the ordinary feed-table, and an automatic delivery apparatus having an incline or inclines at its receiving end and substituted for the ordinary delivery apparatus, substantially as herein specified.

13. The combination, with an ordinary cylinder printing-machine, of a double feed-guide for each operator attached to the ordinary feed-table, and a double delivery-trough aligned with said guide and substituted for the ordinary delivery apparatus, substantially as herein specified.

14. The combination, in a cylinder printing-machine, of a double feed-guide having a thick middle gage, and a double delivery-trough having a thin central partition in line with said gage, and sides which flare at its receiving end, substantially as shown, for the purpose set forth.

15. The double delivery-trough D, having a central partition and substantially parallel sides provided with overlapping flanges, the latter forming bottoms for its respective compartments, which are adjustable in width, substantially as herein specified.

16. The double delivery-trough D, adjustable in width, in combination with the horizontally-divided bolsters B^3 B^4, and means, substantially as described, for fastening the respective sections of the trough independently of each other upon the lower parts of said bolsters, for the purpose set forth.

17. The combination, with the movable delivery-trough D, of bolsters B^3 B^4, provided, respectively, with devices, substantially as described, for adjusting said trough lengthwise, for the purpose set forth.

18. In combination with the movable delivery-trough D and the frame of the machine, the bolster B^3, bar B^4, saddle B^5, and screw B^6, substantially as specified, for the purpose set forth.

19. In combination with the movable delivery-trough D and the frame of the machine, the bolster B^3, provided at its ends with swiveled screw-nuts, the link-rods L^2, having swiveled and screw-threaded lower ends fitted to said nuts, and the pivotal rod R^2 at the upper ends of said link-rods, substantially as specified.

20. In combination with the receiving end of the movable delivery-trough D, and with the frame of the machine and connecting devices, substantially as described, the link-rods L^2, having swiveled and screw-threaded lower ends provided with wrench-squares, and hollow upper sections, rendering them telescopic, and provided with fastening devices, substantially as described, for the purposes set forth.

21. A delivery-trough having a receiving end constructed with inclined bottoms and with openings in said bottoms adjacent to the inner end of the inclines, in combination with oscillating turners pivoted at said inner end of the inclines and working through said openings, substantially as herein specified.

22. In combination with a delivery-trough having a receiving end constructed with inclined bottoms, the withie-described oscillating turners pivoted at the inner end of the inclines and having segmental outer ends, substantially as herein specified.

23. A delivery-trough adjustable in width, in combination with oscillating turners, two or more to each compartment, a pivotal shaft common to all extending transversely below the bottom of said trough, and means, substantially as described, for adjusting said turners laterally upon said shaft, for the purpose set forth.
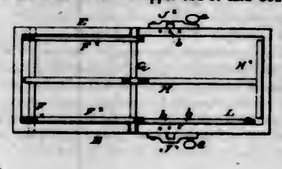
24. The combination of the delivery-trough D, oscillating turners T, pivotal shaft S^9, pulley P, rack R, lever L, and retracting-spring S^8, substantially as specified, for the purpose set forth.

25. The combination of the reciprocating bed B, provided with tappet w, and lever L, provided with cushion x, the rack R, pinion P, shaft S^9, and oscillating turners T, substantially as specified, for the purpose set forth.

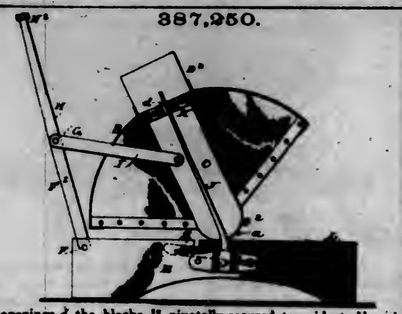
26. In combination with a reciprocating part provided with a tappet, w, the lever L, connected with the delivery apparatus and provided with a cushion, x, within a socket, y, and with a screw, z, which projects said cushion more or less, substantially as specified, for the purpose set forth.

387,250. WASHING-MACHINE. Stephen H. Neal, Durango, Tex. Filed Nov. 9, 1887. Serial No. 254,603. (No model.)

Claim.—The combination, with the supporting-stand and the suds-box, of the cleats K at the upper end of said box and formed

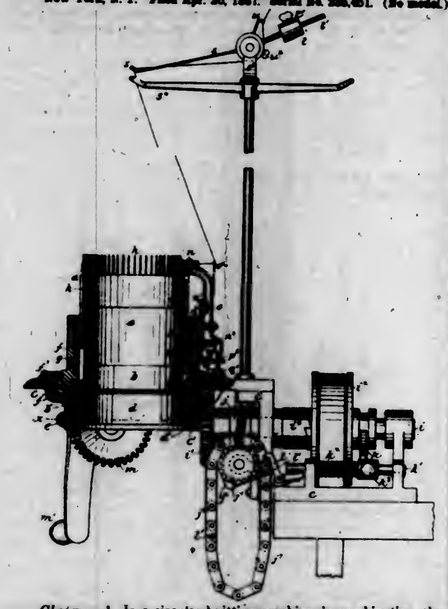


387,250.



with openings d, the blocks J^2, pivotally secured to said stand and provided at one end with the thumb-screw e, and the springs secured at their lower ends in said blocks and their upper ends working loosely in the openings d in the cleats, substantially as described.

387,251. CIRCULAR-KNITTING MACHINE. Jeremiah F. O'Neil, New York, N. Y. Filed Apr. 20, 1887. Serial No. 236,451. (No model.)



Claim.—1. In a circular-knitting machine, in combination, the main frame provided with a cylindrical opening, a base-ring fitted to slide longitudinally therein and provided with an internal screw-thread, a needle-cylinder attached to the base-ring, a hollow nut fitting into the screw-thread of the base-ring and having a flange provided with worm-teeth, and a worm fitted to rotate in bearings on the frame and meshing into the worm-teeth of the nut, substantially as and for the purpose set forth.

2. In a circular-knitting machine, the combination of a cam-cylinder provided with bevel-teeth, a driving-shaft provided with a pinion working therein, a worm on the driving-shaft, a shaft provided with a sprocket-wheel arranged in bearings at right angles to the driving-shaft, a worm-wheel secured to this shaft, a pattern-chain provided with projecting lugs carried by the sprocket-wheel, a driving-pulley and a clutch on the driving-shaft, a spring-actuated sliding shifter, and a bell-crank spring-actuated catch locking the shifter to hold the clutch and pulley in gear and actuated by the lugs on the pattern-chain to release the shifter, substantially as and for the purpose set forth.

3. In a circular-knitting machine, in combination, a cam-cylinder provided with bevel-teeth, two bevel-pinions arranged to act thereon, a crank-handle shaft carrying one of the bevel-pinions, a spring-actuated lever normally holding this pinion out of gear, a driving-shaft carrying the other bevel-pinion, which is always held in gear with the wheel, and means, substantially as described, for automatically stopping the driving-shaft.

4. In a circular-knitting machine, in combination, a cam-cylinder provided with bevel-teeth, a crank-handle and shaft provided with a bevel-pinion, a spring-actuated lever for holding the pinion away from the bevel-wheel, and a spring-catch acting on the lever to hold the pinion in gear with the bevel-wheel, substantially as set forth.

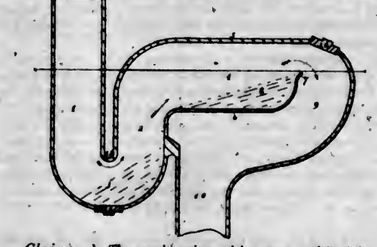
5. In a circular-knitting machine, in combination, a needle-cylinder, needles carried thereby, a cam-cylinder provided with a single V-shaped cam and surrounding the needle-cylinder, a guard having a long slot carried by the cam-cylinder, a yarn-guide pivoted behind the guard, a fixed frame in which the cam-cylinder is held, and a friction-shoe held in contact with the fixed frame and arranged to act on the lower end of the pivoted yarn-guide, so as to throw its upper end into position to lead the cam on the cam-cylinder, substantially as and for the purpose set forth.

6. In a circular-knitting machine, in combination, a rotating cam-cylinder, a single V-shaped cam in the interior thereof, a guard having a long slot and a pivoted yarn-guide carried by the cam-cylinder, a fixed frame in which the cam-cylinder is held, a friction-shoe resting on the fixed frame, a pin connecting the friction-shoe to the lower end of the yarn-guide, a plate fastened to the cam-cylinder and having a circular slot, and a spring between the shoe and the plate, substantially as set forth.

7. In a circular-knitting machine, in combination, a fixed frame, a cam-cylinder fitted to rotate therein, a pivoted yarn-guide carried by the cam-cylinder, having an eye at its upper end and a slot in its lower end, a friction-shoe having a pin engaging in the slot in the guide, a driving-plate having a circular slot and two adjustable stops, located above the shoe, a spring located between the driver and the shoe, and two pins projecting from the shoe through the slot in the driver, against which the adjustable stops on the driver act, substantially as set forth.

8. In a circular-knitting machine, in combination, the needle-cylinder a, the needles A, held therein, the cam-cylinder f, the cam-ring g, secured thereto, having the single V-shaped depression, the piece g^6, and the V-shaped part g', adjustably secured to the cam-cylinder by the screw g^6, passing through a slot in the cam-cylinder and fitted to slide down to open a straight path for the feet of the needles, whereby all the needles are held up in one plane, substantially as and for the purpose set forth.

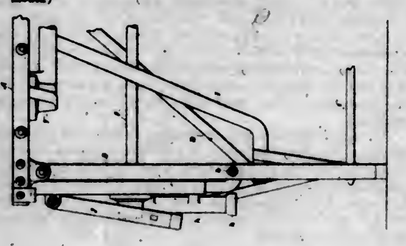
387,252. ANTI-SIPHONING TRAP. Frank H. Paradice, Denver, Colo. Filed Apr. 6, 1888. Serial No. 269,841. (No model.)



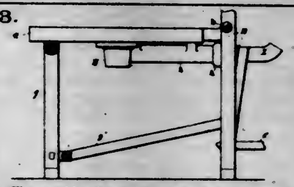
Claim.—1. The combination, with a trap and its inlet and discharge pipes, of a chamber interposed between the trap and the discharge-pipe and having an upturned end or flange at its union with the discharge-pipe, substantially as set forth.

2. The combination of the inlet-pipe 1, the trap 3, discharge-pipe 10, the chamber 4, interposed between the trap and the discharge pipe and longitudinally and transversely enlarged and having the upturned end or flange 7, substantially as set forth.

387,253. VAPOR-BURNER-STOVE ATTACHMENT. Charles A. Pope, Cleveland, Ohio. Filed Nov. 14, 1887. Serial No. 255,150. (No model.)

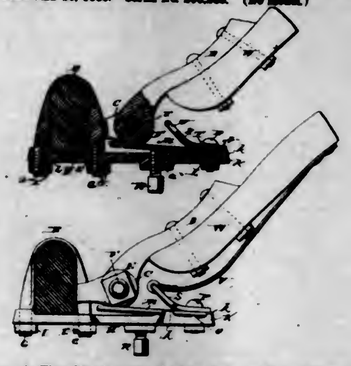


387,253.



Claim.—The combination, with vapor-burner stove, of folding shelf hinged or pivotally connected with the stove so as to be folded to an upright or approximately vertical position against the stove or extended to a horizontal position, said shelf bearing one or more burners, with suitable pipe-connection for supplying such auxiliary burners with fuel from the stove proper, substantially as set forth.

387,254. THILL-COUPLING. HENDERSON M. POWERS, Lancaster, Pa. Filed Jan. 10, 1888. Serial No. 260,228. (No model.)



Claim.—1. The clip-plate attached to the axle-clip and having a chair on its outer end, provided with vertical lugs forming shoulders, the spring mounted in the chair between the shoulders, and the set-screw to force the free end of the spring against the thill-box, substantially as specified.

2. The clip-plate attached to the axle and having a transverse rib, O, on its upper side, the spring bearing on the said rib, the bolt passing through the spring and the clip-plate, and the set-screw under the free end of the spring, substantially as and for the purpose specified.

3. The clip-plate attached to the axle-clip and having the chair on its front end, provided with an inclined surface and a central aperture, and the spring bearing on the inclined surface of the chair, and secured thereto by a bolt which passes through the spring and the aperture in the chair, whereby the rear end of the spring bears against the under side of the thill-bearing, substantially as and for the purpose specified.

4. In combination with the axle-clip having the thill mounted thereon, the clip-plate secured to the axle-clip, the spring secured to the clip-plate, the set-screw to operate the spring, and the bracket on the upper side of the spring, having an eye, U, to receive the end of the safety-strap, substantially as and for the purpose specified.

5. The clip-plate attached to the axle-clip and having the bracket S, provided with an eye, U, to receive the safety-strap, as set forth.

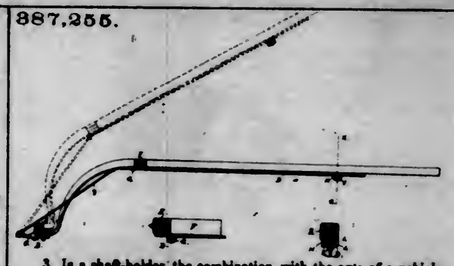
6. The clip-plate attached to an axle-clip and having a chair, K, on its outer end, and the spring M and bracket S, attached to the chair by the same bolt, the spring bearing under the thill-iron bearing, and the bracket O, receiving the safety-strap, as set forth

387,255. SHAFT-SUPPORTER. HENDERSON M. POWERS, Lancaster, Pa. Filed Feb. 15, 1888. Serial No. 264,126. (No model.)

Claim.—1. In a shaft-holder, the combination, with the axle of a vehicle, of a rod hinged to an arm extending rearwardly from said axle, the said rod projecting forward along the shaft through a staple at or near the cross-piece of the shafts, and a device for adjustably connecting the rod and shaft, substantially as and for the purpose specified.

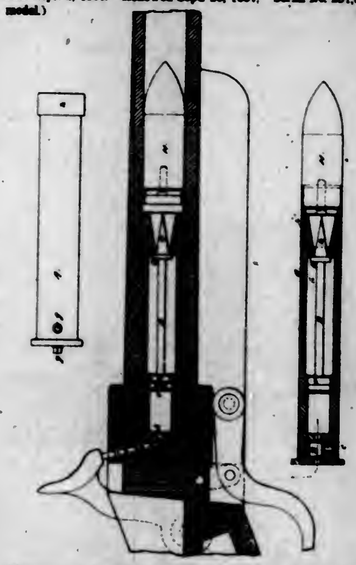
2. In a shaft-holder, the combination, with the axle of a vehicle, the rearwardly-projecting arm C, and a staple secured to the shaft at or near the cross-bar of the shafts, of a rod hinged to said arm C and extending forward along the shaft through the staple, and a clamp fastened to said shaft, the clamp being provided with means whereby it can be loosened about or closed upon the rod, substantially as and for the purpose specified.

387,255.



3. In a shaft-holder, the combination, with the axle of a vehicle, a rearwardly-extending arm, C, and a staple secured to the shaft at or near the cross-bar F, of a rod hinged to said arm C and extending forward along the shaft through a staple, and a clamp, H, fastened to said shaft, and the clamp H, composed of two plates, A, provided with the semicircular serrated cavities *i* upon their inner faces and operated by the set-screw I, all constructed and operating substantially as specified.

387,256. PNEUMATIC CARTRIDGE. NAT. W. PRATT, Brooklyn, assignor to the Pneumatic Dynamite Gun Company, New York, N. Y. Filed Apr. 2, 1886. Renewed Sept. 20, 1887. Serial No. 251,054. (No model.)



Claim.—1. A cartridge containing air or gas under compression, provided with a valve-seat and valve, said valve having a conical projection extending through the valve-seat to effect a gradually-increasing discharge of the contained air.

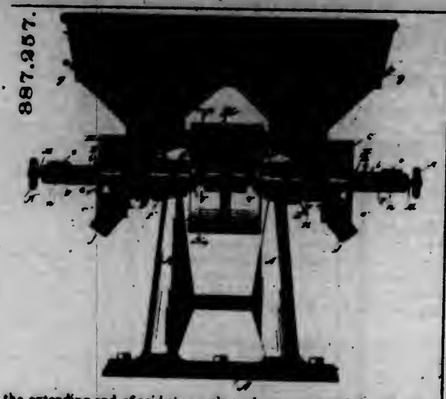
2. A cartridge containing air or gas under compression, provided with a discharge-valve, said valve being connected to a reciprocating piston which upon the exhaustion of air or gas from the chamber at its rear is retracted to operate said discharge-valve, as described.

3. A cartridge containing air or gas under compression, having interiorly a piston-valve adapted to be held seated by the contained air or gas, and a second valve which governs the air or gas passage leading to the chamber at the rear of said piston-valve, whereby the pressure of the air or gas is relieved upon one side of said piston-valve to move it from its seat, substantially as described.

387,257. GRINDING-MILL. GEORGE RAYMOND and ALBERT RAYMOND, Chicago, Ill., assignors to the Appleton Manufacturing Company, Appleton, Wis. Filed June 4, 1887. Serial No. 240,265. (No model.)

Claim.—1. In a grinding-mill in which the rotatable disk is mounted on a horizontal shaft, the combination, with a disk so mounted and having for support thereon a sleeve or tubular formation of such length as to extend beyond the end of the shaft, and screw mechanism adapted to operate against the end of said sleeve for adjusting the disk, of a spiral spring so interposed between the end of the shaft and

387,257.



the extending end of said sleeve that when pressure of the adjusting mechanism is retracted said spring will operate to withdraw the rotatable disk from the stationary disk.

2. In a double mill, the combination, with a shaft, *a*, sleeves *c* adjustable thereon, which latter support the rotatable grinding-disk, and mechanism exterior thereto for adjusting said disk, of springs R, bearing at one end, respectively, against the end of shaft *a*, and at the other end against the step P, secured to the sleeve by pin *i*, whereby the sleeve is forced outwardly when the adjusting mechanism is retracted to withdraw the disk *f*, substantially as set forth.

387,258. ARGAND LAMP. FRANK REED, Meriden, Conn., assignor of one-half to Charles S. Upton, New York, N. Y. Filed Dec. 15, 1887. Serial No. 257,949. (No model.)



Claim.—1. The combination, with the central tube of an Argand lamp, of a perforated cone, the base of which fits said tube, the top being open and formed into a tube, as D', said cone being provided with a removable hollow spreader and distributer, the top of which is closed and the bottom open, the side walls being perforated and the lower opening being so formed as to fit the tube D', which extends up within said spreader and distributer, substantially as shown and described.

2. The combination, with the central tube of an Argand lamp, of a perforated cone, D, the top thereof being open and formed into a tube, D', which is perforated, said cone being provided with a removable hollow spreader and distributer, the top of which is closed and the bottom open, the side walls being perforated and the lower opening being so formed as to fit the perforated tube D', which extends up within said spreader and distributer, substantially as shown and described.

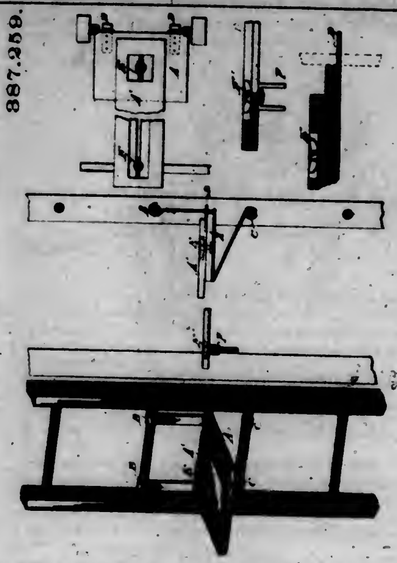
3. The combination, with the central tube of an Argand lamp, of a perforated cone, D, the base of which fits the inner wall of said tube, and an air distributer and spreader, E, said cone and distributer being provided one with an opening and the other with a tube which fits within said opening, and whereby the distributer is held in place on the top of said cone, substantially as shown and described.

387,259. COMBINED STEP AND ARM FOR PLATFORM ATTACHMENTS FOR LADDERS. WILLIAM D. ROSS, Adrian, Kans. Filed Jan. 28, 1888. Serial No. 262,022. (No model.)

Claim.—1. The combination, with the ladder, of the step and the hook-bars for connecting the step to the ladder, said hook-bars being pivotally jointed together, and hooks or guards to control the action of said pivotal joints and prevent the step from turning outward and downward, substantially as described.

2. The combination of the step and the hook-bars B and C, the said hook-bars being pivotally jointed together, substantially as described.

387,259.

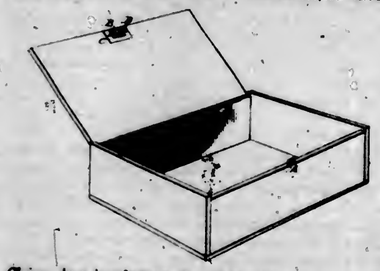


3. The combination of the step adapted to be secured to the rounds of a ladder, and of the arm attachment removably secured thereto, substantially as described, and for the purpose set forth.

4. The combination of the step, its removable arm attachment, and the clip F, substantially as described, and for the purpose set forth.

5. The combination of the ladder, the step A, hook-bars B and C, the hooks or guards D, arm attachment A', the clip F, and the thumb-screws, substantially as described, and for the purpose set forth.

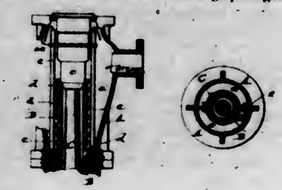
387,260. BOX-FASTENER. WILLIAM RUSH and JOHN RUSH, Shelburne Falls, Mass. Filed Mar. 16, 1888. Serial No. 267,261. (No model.)



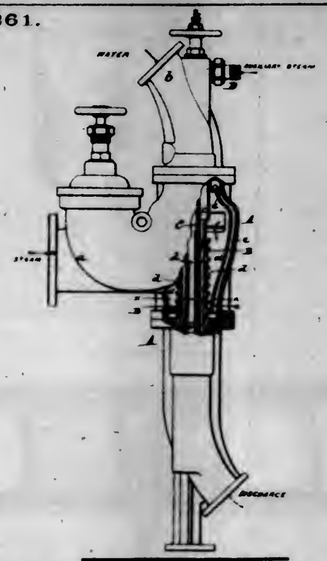
Claim.—In a box-fastener, the combination, with a box and its lid, of a loop or staple secured to one of said parts, and a plate provided with a tongue and secured to the other part over a recess therein, substantially as shown.

387,261. JET-CONDENSER. LOUIS SCHUTTE, Philadelphia, Pa. Filed Apr. 3, 1888. Serial No. 269,496. (No model.)

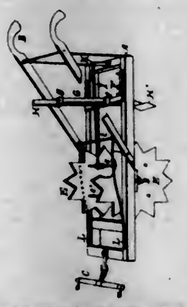
Claim.—In a condenser of the type herein described, an isolated passage or passages leading from the upper part of the condensing or steam-receiving chamber to the lower part of the combining tube or chamber at or near the mouth of the discharge-passage.



387,261.



387,262. COTTON-CHOPPER. Calvin H. Benson, Munford, Ala. Filed Mar. 24, 1886. Renewed Jan. 9, 1888. Serial No. 260,154. (No model.)



Claim.—1. The combination, in a cotton-chopper, of a vertical shank carrying the chopper at its lower end, a lever pivoted to said shank and hinged rearwardly to the cross-piece of the frame, driving-wheels connected by transverse tappet-bar, and a pair of springs and a cross-bar resting upon said lever, whereby a positive motion is imparted to the chopper, substantially as herein set forth.

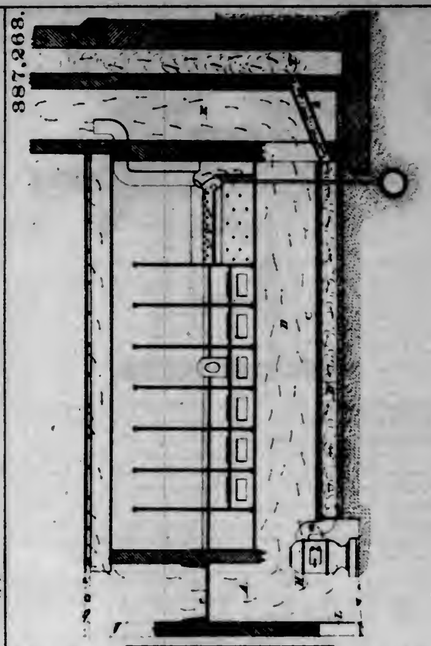
2. The combination of the frame A, the toothed wheels E, the transverse bars *c*, the rearwardly-projecting springs L, and cross-bar *l*, the lever R, vertical shank H, having horizontal openings therein, and chopper H' at its lower end, substantially as herein set forth and described.

387,263. DRY CLOSET. Isaac D. Snead, Toledo, Ohio. Filed Apr. 6, 1888. Serial No. 269,936. (No model.)

Claim.—1. The combination, in a dry closet, of a vault having a duct, D, connected to the vent-shaft E at one end for the passage of a current of air, and a separate duct, D', underneath the former and connected at one end to a smoke-flue, T, for the passage of smoke, with a heater located at or near the entrance or mouth of said vault and having its smoke-pipe connected to the lower duct, substantially as and for the purpose set forth.

2. The combination, in a dry closet, of a vault provided with the two horizontal ducts D and D', arranged one over the other and separated by a horizontal partition of absorbent material, the upper of said ducts being connected with a vent-shaft for the passage of air, and the lower of said ducts being connected with the smoke-flue T, and a heater, H, located at or near the mouth of said ducts and having its smoke-pipe connected to the lower duct, substantially as and for the purpose set forth.

387,268.

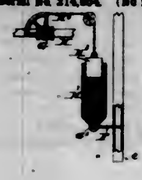


387,264. CENTRIFUGAL PUMP. Edgar L. Strean, New Orleans, La. Filed Mar. 31, 1888. Serial No. 269,193. (No model.)



Claim.—The combination, with the casing of a centrifugal pump and a screw-threaded pipe-section provided with a flange, *a*, connected to the side thereof around or over the opening in the casing by the bolts *b*, of a suction-elbow formed with flange *c*, the interiorly-threaded flange E, secured to the flange *c* and engaging the threads of the pipe-section, and the interiorly-threaded nut or ring C, independent of the flange E and adjustable on the pipe-section and adapted to be jammed against the back of the flange E, substantially as shown and described, and for the purpose specified.

387,265. ALARM. J. Franklin Stoudebt, Philadelphia, Pa. Filed Sept. 27, 1886. Serial No. 214,054. (No model.)



Claim.—1. A device of the character named, consisting of an electric circuit with fusible wires therein, an armature in said circuit, a vessel containing sand and with cock at its bottom with projecting stem sustained by said armature when circuit is open, and a weight resting on said sand and connected to and adapted to operate an alarm, substantially as described.

2. A device of the character named, consisting of the weight H³, connected to and adapted to operate an alarm when lowered, a vessel containing sand on which said weight normally rests, and provided with an opening having a cock therein, the said cock having a projecting stem sustained by an armature in an electric circuit, the latter having fusible wires, said parts being combined, substantially as described.

3. A device of the character named, consisting of a detachable weight, a tube, a vessel containing sand or equivalent material and provided with an opening having a cock, the latter having a stem projecting into said tube and across the path of said detachable weight, and a second weight normally resting on the material in said vessel and connected with an alarm, said parts being combined and operated substantially as described.

4. A weight connected to and adapted to operate an alarm, a vessel containing sand, on which said weight rests and provided with an outlet, a cock controlling said outlet, a stem connected to said cock and projecting into or across the path of a detachable weight, said parts being combined and operated substantially as and for the purpose set forth.

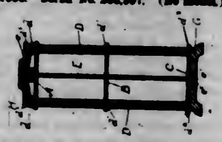
387,266. LOCOMOTIVE. William L. Steer, St. Mary's, Pa. Filed May 24, 1888. Serial No. 274,282. (No model.)



Claim.—1. The combination, in a locomotive, of the trucks, each of which has the axles provided with driving-wheels, the shafts F, arranged midway between the axles, the endless chains and sprocket-wheels connecting the said shafts F and axles, the counter-shafts arranged on the platform of the locomotive directly above the shafts F, the endless chains and sprocket-wheels connecting said counter-shafts and shafts F, connections between said counter-shafts, whereby they are caused to rotate in unison, and the engines connected to one of the counter-shafts, substantially as described.

2. In a locomotive, the combination of the platform or frame, the pivoted trucks under the same, each truck having the pair of wheeled axles, the shaft F, midway between the axles, and sprocket-wheels and chains connecting said shaft and axles, and the counter-shafts arranged directly above the shafts F and connected thereto, and means, substantially as set forth, to rotate the said counter-shafts, whereby all the axles of the trucks will be positively impelled, substantially as described.

387,267. BOOK-RACK. Sylvanus J. Talbot, Hilliard, N. H., assignor of one-half, by mesne assignments, to Edgar F. Talbot, same place. Filed Mar. 30, 1888. Serial No. 268,997. (No model.)



Claim.—1. A book-rack consisting of the combination of upper and lower shelves, A and C, having corner holes, one or more intermediate shelves, B, provided with end slots, *b*, corner-posts D, having doweled portions *d' d²* and reduced portions *d'*, screw-threaded end rods, E, and clamping-pieces G and H, substantially as and for the purposes described.

2. A book-rack consisting of the combination, with perforated shelves, of solid corner-posts D, having doweled ends *d²*, flush with the outer surface of one of the shelves, doweled ends *d'*, projecting beyond the outer surface of the other of said shelves, screw-threaded end rods, E, lower clamping-pieces, G, and upper clamping-pieces, H, provided with holes *d²*, substantially as and for the purposes described.

387,268. TARGET-TRAP. Benjamin Tripp, Covington, Ky., assignor to John L. Winston, same place, and Edwin H. Spear, Toledo, Ohio. Filed Sept. 30, 1887. Serial No. 250,694. (No model.)



Claim.—1. In a trap for throwing targets, the combination of arm E, arm D, pivoted to arm E, arm H, pivoted to arm D, and provided with raised handle H², and raised lip H³, for grasping the target, and tension-spring forcing arm H toward arm D, substantially as and for the purposes specified.

2. The combination of arm E, arm D, bolt D', rigidly attached to arm D and projecting through arm E, spiral spring *d*, surrounding bolt D', tension-nut F, arm H, provided with lip H³ and pivoted to arm D, bolt H', tension-spring *h*, and tension-nut *h'*, substantially as and for the purposes specified.

3. The combination of arm E, arm D, bolt D', rigidly attached to arm D and projecting through arm E, spiral spring *d*, surrounding bolt D', tension-nut F, arm H, provided with lip H³ and pivoted to arm D, bolt H', tension-spring *h*, and tension-nut *h'*, facing G, provided with lug *g*, and flange *g'*, and facing G', provided with lug *g²*, substantially as and for the purposes specified.

4. In a trap for throwing targets, the combination of arm E, arm D, bolt D', rigidly attached to arm D and projecting through arm E, spiral spring *d*, surrounding bolt D', and tension-nut F, to regulate spring *d*, substantially as and for the purposes specified.

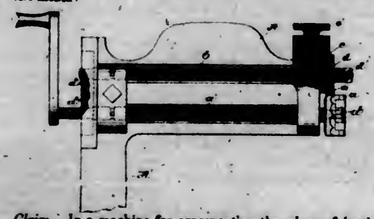
5. In a trap for throwing flying targets, the combination of the arm E, arm D, pivoted to arm E, arm H, pivoted to arm D, pin *h*, projecting from the under surface of arm H into a depression in arm D, and elastic means for pressing arm H to arm D, substantially as and for the purposes specified.

6. In a trap for throwing flying targets, the combination of the arm E, arm D, pivoted to arm E, arm H, pivoted to arm D and provided with handle H³, pin *h²*, projecting from the under surface of arm H into a depression in arm D, and elastic means for pressing arm H to arm D, substantially as and for the purposes specified.

7. In a trap for throwing flying targets, the combination of arm E, arm D, pivoted to arm E, arm H, provided with handle H³, pin *h²*, projecting from the under surface of arm H into a depression in arm D, bolt H', pivoting arm H to arm D, spring *h*, surrounding bolt H', adapted to force arm H toward arm D, and tension-nut *h'*, substantially as and for the purposes specified.

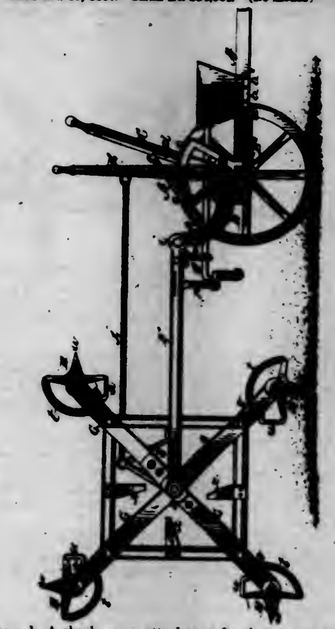
8. In a trap for throwing targets, the combination of arm E, arm D, pivoted to arm E, arm H, pivoted to arm D, elastic means for forcing arm H toward arm D, and elastic facings G G', attached to the arms D and H, and provided with a flange or flanges, as *g'*, substantially as and for the purposes specified.

387,269. MACHINE FOR ORNAMENTING LEATHER. Andrew J. Townsbury, Haverhill, Mass. Filed Dec. 27, 1887. Serial No. 259,083. (No model.)



Claim.—In a machine for ornamenting the edges of leather and other material, the revolving recessed metallic bed-roll *a*, over which the material passes, the said roll having its rear portion scalloped and its front portion perforated, combined with an oppositely-revolving ornamenting or pattern roll co-operating therewith, the curved gage *c*, embracing a portion of the roll *a*, the shafts *a' b* for the said rolls, the adjustable bearing-block *c* for one end of the shaft *b*, and gearing connected to the rear ends of the shafts to revolve them in opposite directions, as and for the purpose set forth.

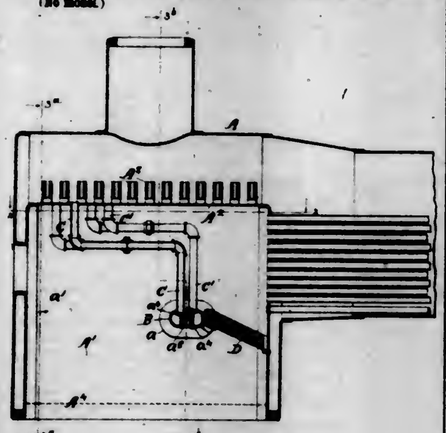
387,270. CHECK-ROWER. Alfred J. Thostrup, Fair Grange, Ill. Filed Oct. 10, 1887. Serial No. 251,901. (No model.)



Claim.—1. A check-rower attachment for planters, consisting of four projecting arms having end-pivoted feet provided with curved guide-rods surrounded by coiled springs, a frame joined to said arms and provided with inclined trip projections adapted to contact with the bent ends of operating-rods connected with seed-slides, in combination with side bars formed and pivoted to a metal frame, as shown, levers and connecting-rods for operating said bars and frame, substantially as shown and described.

2. A check-rower attachment for planters, consisting of revolving arms having pivoted feet, side bars journaled to the axle of said arms and carrying operating-rods connected with a bent rod that is in turn connected with the seed-slide of a seeder, cross-bars secured to said projecting arms and provided with trip projections adapted to contact with the bent ends of said operating-rods, substantially as shown and described.

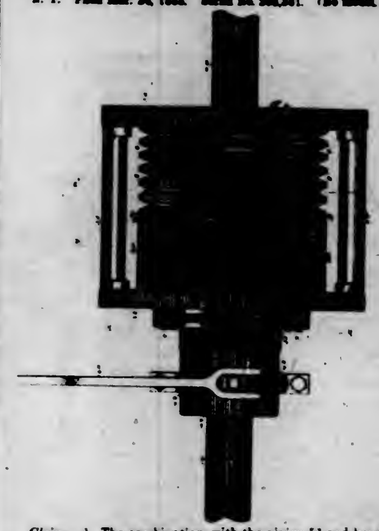
387,271. STEAM-GENERATING ATTACHMENT FOR BOILERS. George W. Tilton, Chicago, Ill. Filed Mar. 13, 1888. Serial No. 267,113. (No model.)



Claim.—1. In a locomotive-boiler, the combination, with the fire-box, of the horizontal transverse tube B, provided with annealing-flanges and rigidly secured to the inner inclining sides of the fire-box, and opening at both ends into the water-compartment of the boiler, a number of water-circulating and steam-generating pipes having the lower ends inserted in said water-tube and extending upwardly and outwardly in an angular path therefrom, and finally terminating in the crown-sheet and communicating with the water-space above the same and below the water-line, and the solid inclined plate or wall D, closing the space between said water-tube and the rear side of the fire-box, whereby a continuous circulation is maintained, as described, and the heat forced to pass upward in front of said water-tube and between the series of pipes inserted therein, substantially as and for the purpose set forth.

2. In a locomotive or other boiler, the combination, with a water-supply tube opening at both ends into the water-space of the boiler below a central line, of the series of circulating-pipes C, inserted in said tube and following an angular course upward therefrom, and finally ending in the crown-sheet and opening on a level with the interior surface of the same, and the second series of companion pipes, C', arranged in the same manner as the pipes C and just back of the same, and alternating, so that each of the pipes C comes opposite the space separating the companion series, whereby the heat passing between the first series has a full impact on the surface of the second series, substantially as set forth.

387,272. CLUTCH MECHANISM. William B. Tubbs, New York, N. Y. Filed Mar. 24, 1888. Serial No. 268,381. (No model.)



Claim.—1 The combination, with the pinion 51 and head 41, fast upon the parts to and from which motion is to be communicated, of a disk, 52, carried by one of said parts and free to turn thereon a pinion, 20, carried by said disk and turning freely in engagement with the pinion 51, and having an extension to engage frictionally with the head 41, substantially as described.

2. The combination, with the pinion 51 and head 41, fast upon the parts to and from which motion is to be communicated, of the disks 52, carried by said parts and free to turn thereon, the pinions 20, carried by and supported between said disks and turning freely in engagement with the pinion 51, and having extensions to engage frictionally with the head 41, substantially as described.

3. The combination, with the pinion 51 and head 41, fast upon the parts from and to which motion is to be communicated, of the eccentric shafts 30, mounted in the loose disks 52, and the sleeves 31, having the pinions 20, and having extensions which engage frictionally with the head 41, substantially as described.

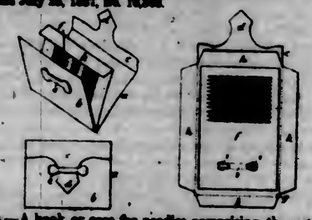
4. The combination, with the pinion 51 and head 41, having the circumferential grooves 9, said pinion and head being fast upon the parts from and to which motion is communicated, of the eccentric shafts 30, mounted in the loose disks 52, and the sleeves 31, having the pinions 20, engaging with the pinion 51, and having ribbed extensions which engage frictionally with the head 41, substantially as described.

5. The combination, with the pinion 51 and head 41, fast upon

the parts from and to which motion is to be communicated, of the eccentric shafts 30, mounted in the loose disks 52, and the sleeves 31, having the pinions 20, engaging with the pinion 51, and extensions which engage frictionally with the head 41, the gears 25 upon the shafts 30, and the pinions 24, engaging with the gears 25, substantially as described.

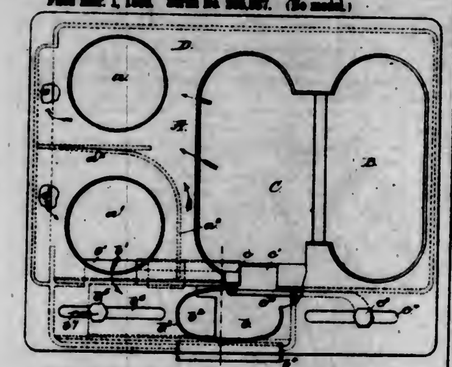
6. The combination, with the pinion 51 and head 41, fast upon the parts from and to which motion is to be communicated, of the disks 52, the eccentric shafts 30, carrying the sleeves 31, engaging frictionally with the head 41, and having the pinions 20, engaging with the pinion 51, the gears 25 upon the shafts 30, the pinions 24, engaging with the gears 25 and having the spiral rib and groove 10 12, and the sleeve 40, connected to said pinions 24, substantially as described.

387,273. BRIDLE-GAGE. Ernest L. Tuesey, London, England. Filed Feb. 27, 1888. Serial No. 265,697. (No model.) Patented in England July 30, 1887, No. 10,982.



Claim.—A hook or case for needles comprising the outer covering, *a*, having a tongue and loop for closing the case, the piece of fabric, *f*, for receiving the needles, and the intermediate piece of material, *g*, having the flaps A, for covering the edges of the piece of material *f*, all the said parts being united and held in position by means of prongs formed upon the said loop, all substantially as described.

387,274. COOK-STOVE. George W. Walker, Holden, Mass. Filed Mar. 1, 1888. Serial No. 265,857. (No model.)



Claim.—1. The stove-body, the flue *b*, flues *c c'*, the sliding draft-checking damper, the sliding kindling-damper, and their knobs or handles, combined with the top plate having guides for both the said knobs or handles, substantially as described.

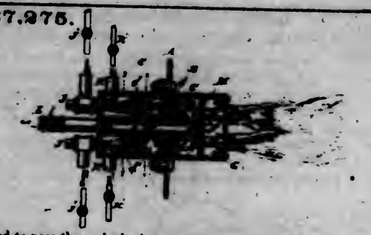
2. In a cook-stove, the body, flues *c c'*, having openings *b' c'* in one of its vertical plates, the flue *b*, into which enter the products of combustion passing through the said openings *b'* or *c'*, the oven, the top plate, and wall *a*², dividing the space between the top plate and the body of the stove on one side and the oven on the other side, combined with the draft-checking damper and the kindling-damper, both arranged to slide in the same direction, substantially as described.

3. The combination, with the stove-body, top plate, and flue *b*, of the sliding draft-checking damper and the sliding kindling-damper, both arranged at the same side of the stove and made movable in the same direction, substantially as described.

387,275. OIL-BURNER. Thomas B. White, Philadelphia, Pa. Filed Mar. 3, 1888. Serial No. 266,093. (No model.)

Claim.—1. In an oil-burner, the combination of a mixing-cylinder having a series of internally-unobstructed compartments formed by perforated dividing-plates between said compartments, oil and steam pipes opening into the first of said compartments for admitting oil and steam and mixing them, and which mixed oil and steam is more intimately mixed by passing through the perforated dividing-plates and

387,276.



caused to pass through the burner without rotary motion, and nozzles opening from the last of said compartments to allow the escape of the mixed steam and oil for combustion, and air-passages around each nozzle to supply air.

2. In an oil-burner, the combination of a mixing-cylinder having a series of compartments formed by perforated dividing-plates between said compartments, oil and steam pipes opening into the first of said compartments for admitting oil and steam and mixing them, and which mixed oil and steam is more intimately mixed by passing through the perforated dividing-plates, nozzles opening from the last of said compartments to allow the escape of the mixed steam and oil for combustion, and an air-blast passage within the cylinder and exterior to the mixing-compartments and terminating in openings surrounding the nozzles for the mixed oil and steam.

3. In an oil-burner, a cylinder having a central air-passage and surrounding mixing-compartments divided by perforated plates or walls, and a blast-chamber at the discharging end of the full diameter of the cylinder, communicating with the air-passage, and having blast-orifices through its end, pipes to admit steam and oil to the first compartment, and a blast-nozzle opening from the last compartment, extending through the blast-chamber, and arranged with its end between the blast-orifices, whereby the air is sucked through by the force of the central jet of oil and steam.

4. In an oil-burner, the combination of the cylinder having compartments E D D, separated by perforated dividing walls or partitions, and an air-blast compartment, F, at the end, an oil-pipe, K, and steam-pipe J, entering said compartment E at one end and arranged to spray the oil by a jet of steam, nozzles H, extending from the compartment D through the compartment F for the passage of the oil and steam vapor, and very small orifices A from the compartment F and close to and surrounding the nozzles H for air-supply to the flame.

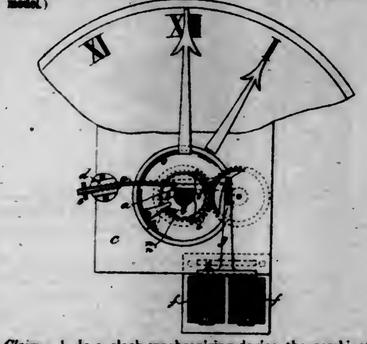
5. In an oil-burner, the combination of the cylinder having compartments E D D, separated by perforated dividing walls or partitions, and an air-blast compartment, F, at the end, an air-pipe leading through the burner and close to the hot mixing-chamber, so as to heat the air before becoming burned, an oil-pipe, K, and steam-pipe J, entering said compartment E at one end and arranged to spray the oil by a jet of steam, nozzles H, extending from the compartment D through the compartment F for the passage of the oil and steam vapor, and very small orifices A from the compartment F and close to and surrounding the nozzles H for air-supply to the flame.

6. In an oil-burner, a long annular mixing-chamber divided into separate compartments by transverse perforated walls, pipes to admit steam and oil to the first of said compartments, long removable nozzles opening out from the last of said compartments, a central blast-passage through the mixing-chamber having an enlarged end forming a chamber surrounding the nozzles, and openings for air from said last-mentioned air-chamber around and close to the orifices of the nozzles.

7. In an oil-burner, a mixing-cylinder having two or more mixing-compartments separated by perforated plates or walls and in which oil and steam are mixed, having a passage for air under pressure through its center and opening into a compartment, F, at the end of the cylinder formed by the wall M, in combination with tubular nozzles for oil vapor opening through the wall M and extending through but closed to the compartment F, a series of perforations in the end of the cylinder about the nozzles opening from the compartment F, oil and steam pipes entering said mixing-chamber, and an air-blast pipe entering said air-passage.

8. In an oil-burner, a mixing-cylinder for the mixture of oil and steam, divided into two longitudinal compartments by a horizontal wall, *e*, and into a series of smaller compartments within said longitudinal compartments by vertical perforated walls *d*, and having a compartment, F, at its end unconnected with said upper and lower compartments, and also having a passage-way, *f*, passing through it and opening into said compartment F, but unconnected with said other compartments, in combination with steam and oil pipes entering in close proximity the first of the mixing-compartments, and vapor-nozzles opening out of the last of the mixing-compartments, and blast-orifices from the blast-compartment F in close juxtaposition to the vapor-nozzles.

387,276. ELECTRIC CLOCK-SYNCHRONIZER. ARTHUR G. WISHAR, St. Louis, Mo. Filed Apr. 17, 1888. Serial No. 270,967. (No model.)

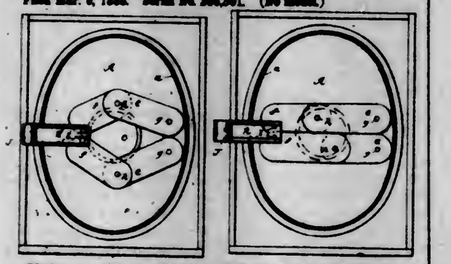


Claim.—1. In a clock-synchronizing device, the combination of the minute-hand toothed wheel *i*, having a conical surface, *j*, and boss or hub *k*, formed with one or more flats or depressions, *l*, (or *l'*,) and carrying toothed plate *m*, for engaging with toothed friction-disk *o*, actuating clock-work, spindle *b*, with spring arm or lever *a*, fulcrumed to clock, and spring *p*, substantially as shown, and for the purpose described.

2. In a clock-synchronizing device, the combination of the minute-hand toothed wheel *i*, having a conical surface, *j*, and boss or hub *k*, formed with one or more flats or depressions, *l*, (or *l'*,) and carrying toothed plate *m*, for engaging with toothed disk *o*, actuating clock-work spindle *b*, with spring arm or lever *a*, fulcrumed adjustably by set-screw *c* to clock, and spring *p*, substantially as shown, and for the purpose described.

3. In a clock-synchronizing device, the combination of the minute-hand toothed wheel *i*, having a conical surface, *j*, and boss or hub *k*, formed with one or more flats or depressions, *l*, (or *l'*,) and carrying toothed plate *m*, for engaging with toothed disk *o*, actuating clock-work spindle *b*, with spring arm or lever *a*, fulcrumed to clock and having bar or link *g*, carrying armature *h*, magnets *f*, and spring *p*, substantially as shown, and for the purpose described.

387,277. SHELF ATTACHMENT FOR STOVE-PIPES. WILLIS J. YOUNG, SHAFFER H. YOUNG, and ZACHARIAH U. KNOOP, Hebron, Nebr. Filed Mar. 6, 1888. Serial No. 266,901. (No model.)



Claim.—1. The combination, with a stove-pipe shelf having an opening in its bottom, of a damper to close said opening, composed of a series of pivotally-connected plates secured to the under side of the shelf and a sliding handle pivotally connected to said plates, as set forth.

2. The combination, with the shelf and the hood having aligned openings, of the damper composed of pivotally-connected plates and a sliding handle connected thereto having longitudinal guide-ribs and extending through a correspondingly-shaped opening in the hood, as set forth.

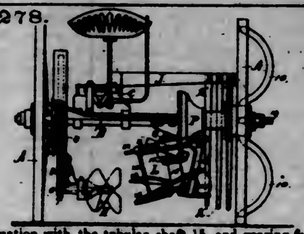
3. The combination, with a stove-pipe shelf having an opening, of a damper to close said opening, composed of a series of pivotally-connected plates and a handle connected to said plates, as set forth.

387,278. POTATO-DIGGER. LEWIS A. ASPINWALL, Three Rivers, Mich., assignor to the Aspinwall Manufacturing Company, same place. Filed Mar. 12, 1888. Serial No. 266,936. (No model.)

Claim.—1. The combination, with the plow F, of the screw H, and the gearing for revolving the same, the revolving spreader L, and the incline I, between the screw H and the said spreader, substantially as set forth.

2. The spreader L, having the arms 20, inclines 24, and rim 21,

387,278.



in combination with the tubular shaft 15, and gearing for revolving the same, substantially as set forth.

3. The spreader L, having the arms 20 and inclines or blades 24, and the rim 21, in combination with the gearing for revolving the same, and the screw H, which acts to deliver the earth and potatoes upon the spreader, substantially as set forth.

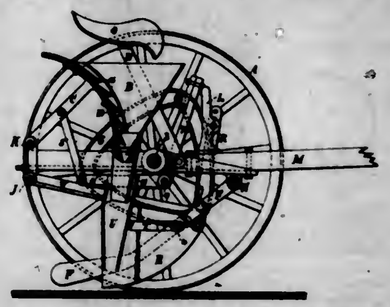
4. The plow F and fingers G, in combination with the incline I, the screw H, opposite to the incline I, and the spreader L, behind the incline and with the front portion thereof in line, or nearly so, with the axis of the screw, so that the earth and potatoes pass upon the front portion of the spreader and are thrown off, substantially as set forth.

5. The combination, with the spreader L and the gearing for revolving the same, of the open wheel A, having the curved spokes 10, substantially as and for the purposes set forth.

6. The combination, with the plow and the spreader, of the fingers K, curved downwardly and backwardly and adjacent to the wheel A, for preventing the potatoes being thrown by the spreader beneath the wheel A, substantially as set forth.

7. The combination, in a potato-digger, of the plow F, for raising the earth and potatoes, the fingers G at the rear edge of the said plow, the revolving screw H, behind the fingers, acting to separate the earth and potatoes and pass them to the rear and toward the separator, the incline I, up which the earth and potatoes are passed by the action of the screw, the revolving separator L, having arms or inclines, and the open wheel A, having curved spokes, substantially as set forth.

387,279. PLANTER FOR COTTON OR OTHER SEEDS. LEWIS A. ASPINWALL, Three Rivers, Mich. Filed Apr. 30, 1888. Serial No. 272,218. (No model.)



Claim.—1. The combination, with the wheels and axle and the hopper and plow, of a curved toothed segment within and at one side of the hopper, and means for reciprocating the segment so as to cause the teeth thereof to drop down and discharge the materials of the hopper progressively, substantially as set forth.

2. The combination, in a planter, of a hopper for containing the material to be planted, a plow for opening the furrow, a bar, V, pivoted at its rear end to the frame of the machine, a link and lever for raising or lowering the plow, coverers pivoted at their front ends to the frame of the machine, and a bolt connecting the coverers and passing through a slot in the plow, substantially as set forth.

3. The combination, with the hopper in a planter for cotton or other materials, of the toothed segment, an arm and pivot upon which the same are moved, and stationary teeth within the hopper and standing in opposite direction to the teeth of the segment for causing the delivery of the cotton-seed or other material from the teeth of the segment, substantially as set forth.

387,280. COMBINED INKSTAND AND PEN-RACK. EDWARD A. DEUEL and HUGH J. CAMPBELL, Yankton, Dak. Filed Oct. 13, 1886. Renewed Dec. 22, 1887. Serial No. 258,782. (No model.)

387,280.



Claim.—1. A pen-holder comprising a drip pan or tray and a receptacle elevated above and carried by the said pan, substantially as described, for the purpose set forth.

2. A pen-holder comprising a drip pan or tray and an inverted cone-shaped receptacle suspended above the tray and having an open lower end, substantially as described.

3. A pen-holder comprising a drip pan or tray, one or more cone-shaped receptacles arranged above the pan, and a bridge intermediate of the pan and the receptacle or receptacles, substantially as described, for the purpose set forth.

4. A pen-holder comprising a single drip pan or tray, a series of inverted conical receptacles grouped and connected together and having the open lower and upper ends, and a bridge intermediate of the drip-pan and the receptacles to elevate the lower ends of the latter above the pan, substantially as described.

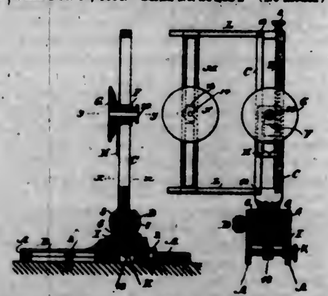
5. As a new article of manufacture, a combined inkstand and pen-holder comprising a base, the ink-wells arranged at one side thereof, the receptacles E, and the grouped tubes connected with a drip-pan removably fitted on the base, substantially as described.

387,281. THILL-COUPLING. WILLIAM DUNBAR, Lake Village, Ind. Filed Mar. 22, 1888. Serial No. 268,144. (No model.)



Claim.—In a thill-coupling, the combination, substantially as set forth, of a clip-iron having forwardly-projecting ears with front and rear bolt-apertures therein, a removable headed bolt mounted in the front aperture, an open box or cap coming hinged to the rear part of said projecting ears, consisting of two side pieces, E and E', connected by a top raised cross-piece or bridge, D', and a flat spring, F, secured at one end to the central part of the cross-piece or bridge D', and its free end extending over and loosely bearing upon that part of the clip-iron which surrounds the axle.

387,282. SIGHT FOR FIRE-ARMS. JAMES W. GARVER, Pawlet, Vt., Filed Feb. 17, 1888. Serial No. 264,204. (No model.)



Claim.—1. The base A, having a hole for the screw 2 and a longitudinal slot for the screw 3, in combination with the slide-cover B, passing into the slot above the screw for closing the slot, and the frame above the base, and the adjustable sight sliding vertically in the frame, substantially as set forth.

2. The combination, with the base A and the frame or leaf C, and vertically-adjustable sight G within the frame, of transverse slide I and the joint 5 and 6, for connecting the frame C to the slide, and the spring 7 upon the slide, acting to hold the joint-piece 6 and frame C in any position to which it may be turned upon the hinge, substantially as set forth.

3. The combination, with the vertical frame C, the sight G, and the adjustable block F, sliding in the frame and supporting the sight, of a separate removable tubular screw passing through the block and into the sight and forming the peep-hole of the sight, such screw being changeable to vary the size of the tubular peep-hole, substantially as set forth.

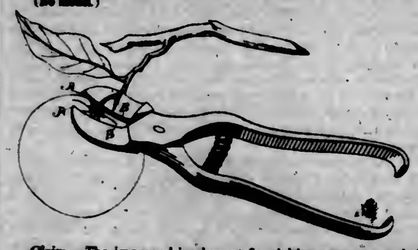
4. The combination, with the sight G, frame C, and base A, of the transverse slide I within ways or grooves across the base, and the hinge-pieces on the transverse slide for connecting it to said frame C, and the screw K across the base A, for adjusting the slide transversely of the base A, substantially as set forth.

5. The combination, with the sight and the frame for supporting the same, of lateral bars L, extending from the sight-frame, the vertical bars M, supported by the said bars L, and the shade or shield carried by such vertical bars M and vertically adjustable upon such bars M, substantially as set forth.

6. The vertically-adjustable peep-hole sight and the shield or shade to intervene between one eye and the object aimed at and shut off the vision, in combination with a frame and vertical bars for carrying the sight and the shield and in which the same can be adjusted vertically, substantially as set forth.

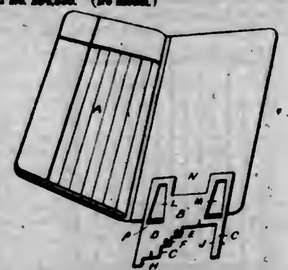
7. The base A, having a hole and a screw, 2, therein, and slotted longitudinally at one end, and a screw, 3, therein, in combination with the adjustable slide and frame above the base, and the adjustable sight sliding vertically in the frame, substantially as set forth.

387,283. INSTRUMENT FOR PICKING ORANGES. CHARLES DUCHESNE, Los Angeles, Cal. Filed Aug. 30, 1887. Serial No. 248,167. (No model.)



Claim.—The improved implement for picking oranges, consisting of a pair of clippers provided with blades having that part of each blade provided with the cutting-edge slightly curved from the point to the heel of the blade, the curve at the heel being less than that at the point, and having the under face of the blades sloped from the cutting-edges to the backs of the blades, the slope being less at the heels than at the points, making the under faces of said blades present when closed a surface convex both transversely and longitudinally, the convexity being more abrupt at the points of the blades than at the heels thereof.

387,284. DEVICE FOR MEASURING THE THICKNESS OF LUMBER. GEORGE H. DAVIS, Boston, Mass. Filed Nov. 7, 1887. Serial No. 254,536. (No model.)



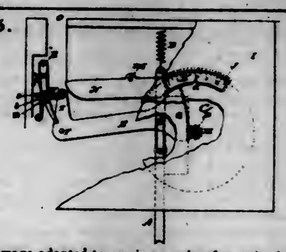
Claim.—1. A device for measuring the thickness of boards, lumber, or other material, having suitable measuring notches, spaces, or marks, and provided with a spring or springs for attaching it to the cover of a book or other article.

2. A device for measuring the thickness of boards, lumber, or other material, having suitable measuring notches, spaces, or marks, and provided with a spring or springs for attaching it to the cover of a book or other article, and all made of one piece of material.

387,285. INDICATOR FOR WEIGHING APPARATUS. HENRY FAIRBANKS, St. Johnsbury, Vt. Filed July 19, 1888. Serial No. 280,372. (No model.)

Claim.—1. The combination of a disk adapted to be rotated under the force or weight applied to the apparatus, an inclosing-case, its front having an opening through it to expose the graduations on

387,285.

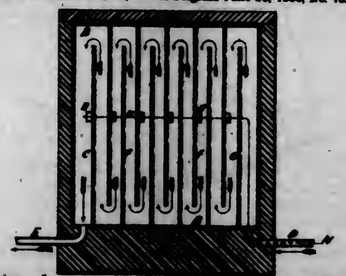


the disk, a passage adapted to receive a coin of certain size, a cover for said opening, and an obstruction in said passage in connection with said cover, substantially as described, and whereby the coin so introduced will strike the said obstruction, and by its weight remove the cover from said opening and expose the graduations on the disk.

2. The combination of the graduated disk C, a revolving shaft to which said disk is fixed, said shaft carrying a toothed pinion, H, a corresponding toothed rack, G, working into said pinion H and in connection with the weighing apparatus, a plate in front of said disk having an opening, J, adapted to expose the graduations of the disk, and a lever, one arm, L, of which extends between said disk and plate, so as to cover said opening, the other arm extending to the opposite side of the fulcrum, and the inclosing-case constructed with a coin-passage, through which a coin may be introduced, the said arm N of the lever extending into said coin-passage and in the path of a coin introduced therein, a lever, P, hung in the side of the coin-passage opposite the said arm N, and its inner surface of segment shape, of which the fulcrum of the said lever L N is the center, and mechanism, substantially such as described, to turn said lever P from said lever N, substantially as described.

3. The combination of the graduated disk C, arranged upon a shaft, D, carrying a toothed pinion, H, a plate in front of said disk constructed with an opening, J, adapted to expose the graduations on said disk, a lever, one arm of which extends between said plate and disk, and so as to serve as a cover for said opening, but adapted to be turned away from said opening to expose said disk, a coin-passage upon the side of the fulcrum opposite said opening to the disk, the other arm of said lever extending into said passage and in the path of a coin introduced, a lever, E, terminating at its free end in a toothed segment to work into the said pinion H and the said lever E, in connection with the weighing apparatus, a lever, P, hung in the side of the coin-passage opposite the end of the arm N therein, and a dog, U, hung upon said lever E and adapted to engage said lever P in the returning of the said lever E, substantially as and for the purpose described.

387,286. APPARATUS FOR TREATING NOXIOUS GASES WITH ELECTRICITY. Hartley Fevens, Buckingham, County of Bucks, England. Filed Dec. 3, 1886. Renewed July 11, 1888. Serial No. 279,634. (No model.) Patented in England May 26, 1886, No. 7,176; in France June 26, 1886, No. 177,047, and in Belgium June 26, 1886, No. 72,649.

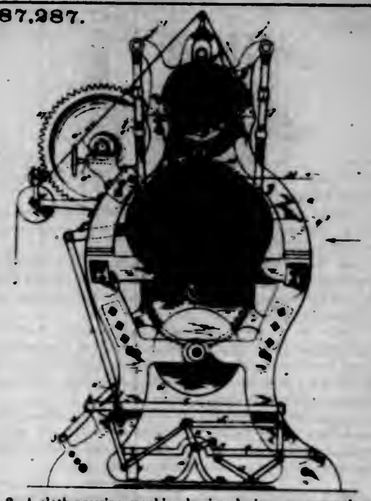


Claim.—In an apparatus for the treatment of sewer-gases, the combination of the box A, lined with glass, the glass partitions C, so arranged as to give the gas a zigzag course, the inlet-pipe D, and the outlet E, all combined as shown, and acted upon by an electric current, for the purpose set forth.

387,287. CLOTH-PRESSING MACHINE. David Greene, Worcester, Mass. Filed Sept. 4, 1886. Serial No. 212,762. (No model.)

Claim —1. In combination, a cylinder and a surface, whereby pressure is exerted upon the cloth against the cylinder provided with perforations, connected with a supply of moisture, whereby the cloth is treated with moisture while under pressure, substantially as described.

387,287.



2. A cloth-pressing machine having devices constructed to press the cloth at three points, the pressing-surfaces at the intermediate point being provided with means for depositing moisture on the cloth while under pressure, and the pressing-surfaces at the other two points being adapted to exert a comparatively dry pressure, substantially as described.

3. A machine for pressing cloth, having pressing devices constructed to press the cloth, a heated surface traveling in contact with the cloth after receiving a pressure, and a second pressing-surface, to press the cloth against said heated surface, provided with means, substantially as described, to permit moisture to be deposited on the cloth while the latter is traveling in contact with said heated surface and under pressure, substantially as described.

4. In combination, a cylinder and two bed-plates, and a pressing-surface provided with perforations interposed between the bed-plates, whereby, after receiving pressure, the cloth may be moistened while the pressure is retained, substantially as described.

5. In combination, a cylinder and two bed-plates, and a steamer or moistener provided with a pressing-surface attached to one bed-plate and extending nearly to the opposite bed-plate, whereby the cloth will be retained almost continuously under pressure, substantially as described.

6. In combination, a cylinder, a bed-plate, means for heating the bed-plate, and a steamer or moistener connected with the bed-plate, whereby the heat from the bed-plate will heat the steamer, so as to produce the proper conditions for the use of the steamer, substantially as described.

7. In combination, two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a pressing-surface arranged to press the cloth against the moistened jacket on the second cylinder, substantially as described.

8. In combination, two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a bed-plate arranged to press the cloth against the moistened jacket on the second cylinder, the said bed-plate being provided with means for heating the same, substantially as described.

9. In combination, two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a bed-plate arranged to press the cloth against the moistened jacket on the second cylinder, the said second cylinder being provided with means for heating the same, substantially as described.

10. In combination, the two cylinders, two bed-plates operating with the first cylinder, the steamer arranged to moisten the cloth in contact with the first cylinder, the moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a pressing-surface arranged to press the cloth against the moistened jacket on the second cylinder, substantially as described.

11. In combination, the two cylinders, a bed-plate operating with the first cylinder, a bed-plate operating with the second cylinder, a moisture-absorbing fabric interposed between the second cylinder and its bed-plate, and a moistener or steamer for moistening said fabric, whereby the cloth will be pressed with the moistened fabric against the second cylinder, substantially as described.

12. In combination, the two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing fabric operating with the second cylinder, a steamer or moistener for moistening the fabric, and mechanism whereby the moistened fabric and the cloth are pressed together against the second cylinder, substantially as described.

13. In combination, the two cylinders *a a'*, the bed-plates *b b' b''*, the three-armed lever connected with each of said bed-plates, and mechanism whereby said lever is reciprocated, substantially as described.

14. In combination, the two cylinders *a a'*, the bed-plates *b b' b''* the rods *j*, whereby two of the bed-plates are supported, the reciprocating bearings whereby the third bed-plate is supported, and the three-armed lever connected with each bed-plate, substantially as described, whereby the weight of the two bed-plates tends to counterbalance the weight of the third, substantially as described.

15. In combination with a bed-plate, a lever whereby it is reciprocated, and the jointed links 1 2, provided with the handle 4, whereby the lever is reciprocated, substantially as described.

16. A cloth-pressing machine having a cylinder and a bed-plate and a steamer, the steamer being arranged to deposit steam upon the cloth after receiving pressure by the bed-plate, and also being provided with a pressing-surface whereby the cloth is held against the cylinder while being moistened, substantially as described.

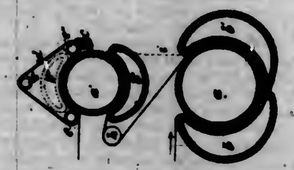
17. A cloth-pressing machine having a cylinder and a bed-plate and a pressing-surface, the said pressing-surface being provided with means for depositing moisture on the cloth as it is held against the cylinder, substantially as described.

18. In combination, the cylinder *a*, the bed-plates *b* and *b'*, and the swinging rods *j j*, by which the bed-plates are suspended from above, the points of suspension being a greater distance apart than the diameter of the cylinder, whereby the weight of the bed-plates assists in relieving the pressure, substantially as described.

19. In combination, the cylinder *a*, the bed-plates *b* and *b'*, the pendants *j j*, by which the bed-plates are suspended from above, an actuating-lever, and the rods *l l'*, by which the bed-plates are connected with said actuating-lever, substantially as described.

387,288. CLOTH-PRESSING MACHINE. David Greene, Worcester, Mass. Filed Dec. 27, 1887. Serial No. 258,903. (No model.)

Brief.—The cloth passes between a cylinder and two bed-plates, then over a stretching-roll, and between a second cylinder and a bed-plate and moistened apron.



Claim.—1. In a cloth-pressing machine, a dry pressing-surface provided with a heating-chamber, and an apron arranged successively along the path in which the cloth travels, means whereby the cloth is pressed against said pressing-surface and said apron, and means for moistening said apron, substantially as described.

2. In combination, the cylinder, a pressing-surface, an apron, means whereby the apron is pressed upon the cloth between it and the cylinder, and means whereby the apron is moistened, substantially as described.

3. In combination, a cylinder, a press-plate, a moisture-absorbing apron, a steamer for moistening said apron, and mechanism whereby said apron is pressed in contact with the cloth against the cylinder, whereby the cloth, after receiving pressure from the press-plate, is again pressed in contact with the moistened apron, substantially as described.

4. In combination, the cylinder and apron, means whereby the apron is pressed upon the cloth between it and the cylinder, and a steamer or moistener arranged to deposit moisture on the face of the apron which comes next the cloth, substantially as described.

5. In combination, a cylinder, an endless apron, the rollers *c d e*, supporting said apron, arms *f f' f''*, and a central shaft, *g*, substantially as described

6. In combination, two cylinders, one or more bed-plates arranged to press the cloth against one of said cylinders, and the endless apron arranged to press the cloth against the other of said cylinders, and means whereby the apron is pressed upon the cloth, and the steamer arranged to deposit moisture upon the said apron, substantially as described.

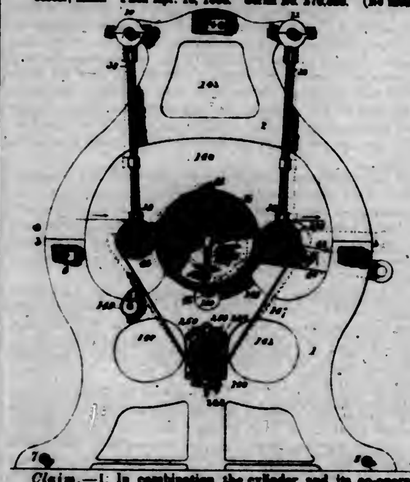
7. In combination, the cylinder *a*, one or more bed-plates operating therewith, the cylinder *c'*, the bed-plate *b''*, the endless apron *d*, and means for supporting said apron, substantially as described.

387,289. MACHINE FOR PRESSING CLOTH. David Greene, Worcester, Mass. Filed Dec. 27, 1887. Serial No. 258,188. (No model.)



Claim.—In combination with the cylinder and its attendant bed-plate or bed-plates, the apron and its supporting-rollers *c* and *e*, all arranged substantially as described, whereby the cloth, after being pressed by the bed-plate, is subjected to pressure upon the cylinder by the apron, substantially as described.

387,290. CLOTH-PRESSING MACHINE. David Greene, Worcester, Mass. Filed Apr. 16, 1888. Serial No. 270,883. (No model.)



Claim.—1. In combination, the cylinder and its co-operating pressing devices, pendants upon which the bearings of the pressing devices are located, and an end frame containing an opening, opposite which the bearing of the cylinder and pressing devices are located, and having upward extensions, upon which are hung or pivoted the said pendants.

2. In combination, the cylinder and its co-operating pressing devices, an end frame containing a fixed bearing for the cylinder and having an opening extending on both sides of said bearing, projections from the ends of the pressing devices extending through said opening, and mechanism for supporting and operating said pressing devices, connected, respectively, with said pressing devices and said projections therefrom inside and outside of said end frame.

3. The combination, with the bed-plate and its sheet-metal facing, of a hook arranged to engage the edge of the sheet metal at or near the middle thereof, whereby the sheet metal is held down in contact with the bed-plate, substantially as described.

4. In combination with the bed-plate and its sheet-metal facing, a clamp, 34, secured by the cam 35 and bolts to the end of the bed-plate, substantially as described.

5. In combination, a cylinder, a bed-plate, pendants whereby the bed-plate is supported, the journals whereby the bed-plate is connected with the pendants, and a stop whereby the rotation of the bed-plate upon the pendants is limited and the proper position of the bed-plate maintained, substantially as described.

6. In combination, a cylinder, two pressing devices connecting therewith, and suspending means for said pressing devices having screw-threaded rods, whereby the length thereof may be adjusted, substantially as described.

7. In combination, a cylinder, two bed-plates, each having end journals, the rings 30, the rods 31, the hangers 38, the rings 44, the rods 45 and 46, and the levers 40, all combined and arranged substantially as described.

8. In combination, a cylinder, and two pressing devices coacting therewith, a three-armed lever at each end of the cylinder, rods connecting the journals of each pressing device with an arm of each lever, and the rod 47, whereby said levers are coupled together, substantially as described.

9. In combination with the end frames of the machine, the cylinder, and its two co-operating pressing devices located between the frames, the said pressing devices having journals projecting outside of the frames, and a lever located outside of each frame and connected with one journal of each pressing device, whereby the pressing devices are moved to and from the cylinder, substantially as described.

10. In combination, the cylinder, pressing devices co-operating therewith, a lever at each end of the cylinder for operating the pressing devices, toggle-joints adjacent to said levers and connected therewith, one of the links of each of said toggle-joints being provided with a screw-threaded rod, substantially as described, whereby the pressure exerted by the toggle-joints may be equalized, and means for operating said toggle-joints.

11. In combination, the cylinder, the pressing devices co-operating therewith, a lever at each end of the cylinder for operating the pressing devices, and rods connecting each of said levers with the ends of the respective pressing devices, said rods being provided with screw-threads, whereby the pressing-surfaces of the pressing devices may be adjusted parallel with the cylinder, substantially as described.

12. In combination, the cylinder, the bed-plates co-operating therewith, the rods by which said bed-plates are suspended at each end, means for adjusting the length of each of said rods, the levers whereby said bed-plates are actuated, rods connecting said levers with the ends of said bed-plates, and means for adjusting the lengths of said last-mentioned rods, all arranged substantially as described, whereby the beds are leveled and brought parallel to the cylinder, as set forth.

13. In combination, the cylinder, the pressing devices co-operating therewith, a lever arranged at each end of said pressing devices for operating the same, rods connecting the arms of said levers with the pressing devices, toggle-joints adjacent to and connected with said levers, the screw-threaded rod 51, by which both of said toggle-joints are operated, and the forked bearings 52 for said rods, substantially as described.

14. In combination, two cylinders arranged one above the other, two bed-plates co-operating with the lower cylinder on opposite sides thereof, and a bed-plate co-operating with the upper cylinder below the same, and two levers and devices whereby the said levers are connected, respectively, with the opposite ends of all said bed-plates, substantially as described.

15. In combination, the two cylinders, two bed-plates co-operating with one of said cylinders, another bed-plate co-operating with the second cylinder, two levers arranged one at each end of the machine, devices embracing connecting-rods, whereby each of said levers is connected with the adjacent end of each bed-plate, and means whereby said rods are made adjustable lengthwise, substantially as described.

16. In a cloth-pressing machine, in combination, the bed-plate, an exhaust-pipe for the escape of water of condensation, the steamer, and a pipe leading from the bed-plate to the steamer and taking dry steam from the bed-plate at a point above the exhaust.

17. In a cloth-pressing machine, in combination with the bed-plate and the steamer, a pipe whereby the steamer is supplied with steam from the bed-plate, and a valve in said pipe, whereby the steam may be cut off from the steamer until the bed-plate has become heated, substantially as described.

18. In a cloth-pressing machine, in combination with the bed-plate, a steamer mounted upon the same in such manner as to receive heat from it, a pipe supplying steam to the steamer from the bed-plate, and a valve in said pipe, whereby the steam may be cut off from the steamer until the latter has become heated by the bed-plate, substantially as described.

19. In combination with the bed-plate, the steamer, and the pipe connecting the steamer and bed-plate, all mounted upon the bed-plate, substantially as described.

20. In combination with the pressing devices, a stretcher and a brush located successively along the path of the cloth, in which brush the bristles are arranged in rows diverging from the middle, substantially as described.

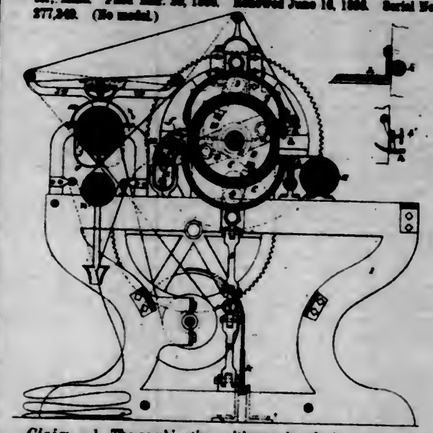
21. In combination, pressing devices and a stretcher, and a brush in the path of the cloth, the brush acting on the cloth after the latter has been stretched by the stretcher and before the cloth is pressed, substantially as described.

22. In a cloth-pressing machine, in combination, the two cylinders, the gear-wheel 135, the double-faced gear-wheel 137, and the gear-wheel 136, two of said gear-wheels being movable longitudinally of their shaft, substantially as described.

23. In a cloth-pressing machine, in combination with a cylinder and its co-operating pressing devices and a steamer arranged below the cylinder, an end frame having an opening opposite to the end of the steamer and adapted to permit the steamer to be inserted or removed endwise, substantially as described.

24. In combination with a cylinder, a bed-plate having its bearings arranged in guideways upon the frame, stirrups arranged upon vibrating arms, whereby said bed-plate is reciprocated, means of adjustment, whereby the length of said vibrating arms may be made adjustable, the levers 60, to which power is applied for moving the bed-plates, and rods connecting the said levers with the said vibrating arms, substantially as described.

387,291. CLOTH-PRESSING MACHINE. David Gessner, Worcester, Mass. Filed Mar. 20, 1888. Renewed June 16, 1888. Serial No. 277,269. (No model.)



Claim.—1. The combination, with pressing devices constructed to press the cloth at two or more points successively, of a steamer or moistening apparatus interposed between the successive pressing-points, and mechanism constructed to heat the pressing devices succeeding the steamer or moistening apparatus, whereby the cloth receives a steaming or moistening intermediate two pressings, the latter of which pressings is hot, substantially as described.

2. The combination, with pressing devices constructed to press the cloth at two or more points successively, of a steamer or moistening apparatus interposed between the successive pressing-points, whereby the cloth receives steaming or moistening intermediate the pressings, and a steamer or moistener arranged to deposit steam or moisture on the cloth before the first pressing, substantially as described.

3. The combination, with pressing devices constructed to press the cloth at two or more points successively, of a steamer or moistening apparatus interposed between the successive pressing-points, whereby the cloth receives steaming or moistening intermediate the pressings, and a steamer or moistener arranged to deposit steam or moisture on the cloth after the last pressing, substantially as described.

4. The combination, with pressing devices constructed to press the cloth at two or more points successively, of a steamer or moistening apparatus interposed between the successive pressing-points, whereby the cloth receives steaming or moistening intermediate the pressings, and a steamer or moistener arranged to deposit steam or moisture on the cloth before the first pressing, and a steamer or moistener arranged to deposit steam or moisture on the cloth after the last pressing, substantially as described.

5. The combination, with pressing devices constructed to press the cloth at two or more points successively, of a steamer or moistening apparatus interposed between the successive pressing-points and provided with mechanism for adjusting it to and from the cloth, whereby the cloth may or may not be steamed or moistened intermediate the pressings, substantially as described.

6. The combination, with a cylinder, of two or more bed-plates arranged around the same, and a steamer or moistener interposed between the bed-plates, whereby the cloth receives a steaming or moistening as it passes from one bed-plate to the next, substantially as described.

7. In a cloth-pressing machine, in combination with the apparatus for stopping the feed of the machine and a steamer or moistener for supplying moisture to the cloth, connections, substantially as described, interposed, whereby the act of stopping the feed intercepts the passage of the moisture onto the cloth, substantially as described.

8. In a cloth-pressing machine, in combination with the pressing-surfaces and a steamer arranged in the path of the cloth as it leaves the pressing-surfaces, a brush arranged in the path of the cloth as it leaves the steamer, whereby the moisture is diffused among the fibers on the face of the cloth, substantially as described.

9. In a cloth-pressing machine, in combination with the pressing-surfaces, a brush arranged in the path of the cloth after it leaves the pressing-surfaces and on the side of the cloth which was presented to the cylinder in pressing, substantially as described.

10. In a cloth-pressing machine, the combination, with the pressing-surfaces, of a brush arranged in the path of the cloth after leaving the pressing-surfaces, and three guides, whereby either surface of the cloth may be brought in contact with the brush, substantially as described.

11. In combination with a rotary brush, a flock-receptacle extending only partially round the lower semi-circumference of the brush and adapted to be shifted from one part of the lower semi-circumference to another, as botanically as described.

12. A machine for pressing cloth having pressing devices constructed to press the cloth, a heated surface arranged to be in contact with the cloth after it receives a pressing, a steamer or moistener movable independently of the pressing devices and arranged to deposit steam or moisture on the cloth after being pressed and as it is in contact with said heated surface, and mechanism for adjusting the steamer or moistener to and from the cloth, substantially as described.

13. In combination, the cylinder, the bed-plates mounted in reciprocating supports *v*, the sliding beam *v'*, and means for adjusting the same in said supports, whereby the bed-plates may be adjusted in their supports, substantially as described.

14. In combination, the cylinder and the bed-plate, whereby the cloth is pressed, and a stripper arranged with its edge close to the surface of the cylinder where the cloth is to leave the cylinder, and means, substantially as described, whereby the stripper is supported and rendered adjustable, as specified.

15. A machine for pressing cloth having pressing devices constructed to press the cloth, a heated surface traveling in contact with the cloth after receiving a pressing, and a steamer or moistener, whereby steam or moisture is deposited on the cloth while it is in contact with said heated surface, substantially as described.

16. A machine for pressing cloth having pressing devices constructed to press the cloth, a continuously-operating feed, a heated surface arranged to be in contact with the cloth after it receives a pressing, and a steamer or moistener, whereby steam or moisture is deposited on the cloth when it is in contact with said heated surface, substantially as described.

17. A machine for pressing cloth having pressing devices constructed to press the cloth at two or more points successively, a heated surface arranged to be in contact with the cloth between the successive pressing-points, and a steamer or moistener, whereby steam or moisture is deposited on the cloth while it is in contact with said heated surface, substantially as described.

18. A machine for pressing cloth having pressing devices constructed to press the cloth at two or more points successively, a continuously-operating feed, a heated surface arranged to be in contact with the cloth between said pressing-points, and a steamer or moistener, whereby steam or moisture is deposited on the cloth while it is in contact with said heated surface, substantially as described.

19. The combination of a cylinder and a bed-plate and devices constructed to hold the cloth in contact with the cylinder after it leaves the bed-plate, and a steamer or moistener, whereby the cloth receives steaming or moistening after pressing and while in contact with the cylinder, substantially as described.

387,292. MACHINE FOR PRESSING FABRICS. David Gessner, Worcester, Mass. Filed Jan. 6, 1888. Renewed June 16, 1888. Serial No. 277,268. (No model.)

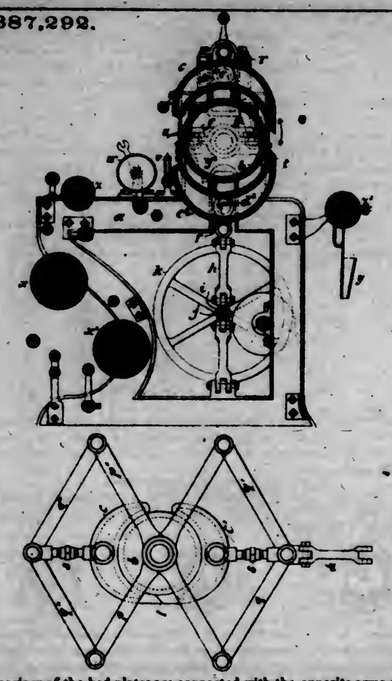
Claim.—1. In combination, a cylinder, two oppositely-arranged bed-plates, a lever pivoted concentric with the cylinder, and rods connecting the bed-plates with the opposite arms of said lever, substantially as described.

2. In combination, a cylinder, two bed-plates, one arranged above and the other below the cylinder, a lever or levers pivoted at each end of said cylinder, and rods connecting the bed-plates with the opposite arms of said lever or levers, whereby the weights of said bed-plates will counterbalance each other, substantially as described.

3. In a cloth-pressing machine, in combination, a frame having fixed bearings for the cylinder and guideways for the bearings of the bed-plates arranged on opposite sides of said cylinder-bearings, the cylinder, and the bed-plates arranged on opposite sides of the cylinder, and each bed-plate being provided with bearings arranged to slide in said guideways, whereby the bed-plates may reciprocate to and from the cylinder, substantially as described.

4. In combination, the cylinder, the two bed-plates, each provided at each end with a bearing, a lever or levers arranged between the end bearings of the opposite bed-plates, and rods, whereby the end

387,292.



bearings of the bed-plates are connected with the opposite arms of the lever or levers, substantially as described.

5. In combination, the cylinder having fixed bearings, the two bed-plates arranged, respectively, above and below the cylinder and provided with bearings at each end, a lever interposed between the opposite bed-plate bearings, rods connecting the bed-plate bearings with said lever, and a toggle-joint arranged below the lower bed-plate, whereby the said bed-plate is pressed against said cylinder, substantially as described.

6. In combination, a cylinder, two bed-plates arranged on opposite sides thereof, a lever or levers, and connections between the lever or levers and bed-plates, whereby the motions of one bed-plate are transmitted to the other, and the spring or springs interposed in the mechanism connecting said bed-plates, whereby the one bed-plate may be permitted to yield without affecting the position of the other, substantially as described.

7. In combination, a cylinder and two bed-plates having their adjacent ends or edges beveled, whereby a smooth passage of cloth from one to another is secured, substantially as described.

8. In combination, a heated cylinder, a bed-plate, and a stripper arranged at the point where the cloth leaves the heated cylinder, whereby the cloth at that point is stripped from the cylinder, substantially as described.

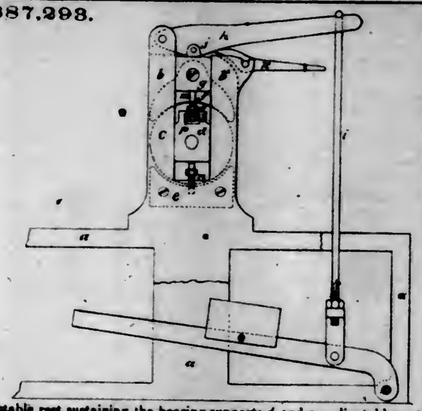
9. In combination, the cylinder, the frame upon which it is journaled, the two bed-plates, and the bed-plate-actuating mechanism provided with means of adjustment interposed between each bed-plate and the journal of the cylinder, substantially as described, whereby the bed-plates may be adjusted to and from the cylinder independently and the pressure of one bed-plate may be removed from the cloth without interfering with the operation of the other bed-plate and cylinder, substantially as described.

10. In combination, the feed-rollers, the cylinder having fixed bearings, the two bed-plates, mechanical means for exerting and relieving pressure on the bed-plates, and supports for the bearings of the bed-plates movable relatively to and independently of the bearings of the cylinder and feed-rollers, whereby the bed-plates may be moved back from the cylinder without disturbing the position or operation of the cylinder or feed-rollers, substantially as described.

387,293. CLOTH-PRESSING MACHINE. David Gessner, Worcester, Mass. Filed Mar. 20, 1888. Renewed June 16, 1888. Serial No. 277,261. (No model.)

Claim.—In a cloth-pressing machine, in combination, the cylinder *c*, two bed-plates, *e* and *f*, movable bearing-supports *g* and *d*, an ad-

387,293.



justable rest sustaining the bearing-supports *d*, and an adjustable rest interposed between the bearing-supports *d* and *g*, whereby the pressure can be relieved between the cylinder and either bed-plate, substantially as described.

387,294. ART OF FINISHING CLOTH. DAVID GESSNER, Worcester, Mass. Filed May 26, 1886. Renewed June 16, 1888. Serial No. 277,292. (No model.)



Claim.—1. The art or process of finishing cloth, consisting of subjecting the same to a hot-pressing and then to a steaming or moistening, and subsequently to another hot-pressing, substantially as described.

2. The art or process of finishing cloth, consisting of subjecting the same to a steaming or moistening and then to a hot-pressing, and then to steaming or moistening, and then to another hot-pressing, substantially as described.

3. The art or process of finishing cloth, consisting of subjecting the same to a steaming or moistening, then to a hot-pressing, then to a second steaming or moistening, then to a second hot-pressing, and then to a third steaming or moistening, substantially as described.

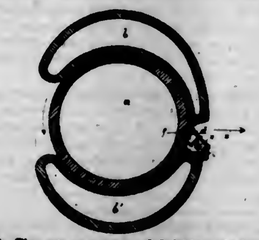
4. The art or process of finishing cloth, consisting of subjecting the same to a hot-pressing, then to a steaming or moistening, then to a second hot-pressing, and then to a second steaming or moistening, substantially as described.

5. The art or process of finishing cloth, which consists of subjecting the same to a steaming or moistening after it has received a pressing and while it is traveling in contact with a heated surface, substantially as described.

6. The art or process of finishing cloth, consisting of subjecting the same to a pressing and then to a steaming or moistening, and then to a hot-pressing, substantially as described.

387,295. ART OF FINISHING CLOTH. DAVID GESSNER, Worcester, Mass. Filed Sept. 4, 1886. Renewed June 16, 1888. Serial No. 277,293. (No model.)

Brief.—The invention consists in the introduction of vapor into the cloth after having received a pressure and while being held under pressure.



Claim.—1. The art or process of finishing cloth, which consists in pressing the cloth and then moistening or steaming it while it is held under pressure, substantially as described.

2. The art or process of finishing cloth, which consists in pressing the cloth and then moistening or steaming it while it is being pressed against a heated surface, substantially as described.

3. The art or process of finishing cloth, which consists in pressing the cloth and then moistening it by pressing the same in contact with a moistened apron or jacket between two heated surfaces, substantially as described.

4. The improvement in the art or process of finishing cloth, which consists in feeding the same continuously and without intermission between pressing-surfaces, whereby it receives pressure, and thence between other pressing-surfaces, the cloth being treated with moisture while under pressure between the latter pressing-surfaces, substantially as described.

387,296. CLOTH-PRESSING MACHINE. DAVID GESSNER, Worcester, Mass. Filed June 9, 1887. Renewed June 16, 1888. Serial No. 277,294. (No model.)

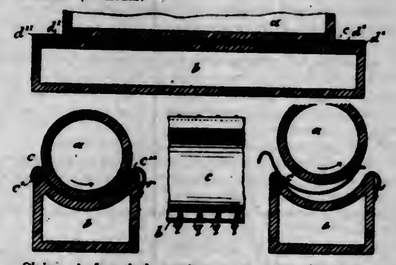


Claim.—1. The combination, with the cylinder *a* and its attendant bed-plates, of the apron *b*' and rollers supporting the same, substantially as described, whereby the cloth is pressed into contact with the apron before leaving the cylinder *a*, and a second cylinder, *a*', between which and the apron the cloth is pressed, substantially as described.

2. In combination, the cylinder *a* and its attendant bed-plate or bed-plates, the cylinder *a*', the apron *b*', and rollers supporting said apron, one of said rollers being interposed between said two cylinders, and the said apron being pressed between it and each of the cylinders, substantially as described.

3. The combination, with the cylinder *a* and its attendant bed-plates, of the apron *b*' and rollers supporting the same, substantially as described, whereby the cloth is pressed into contact with the apron before leaving the cylinder *a*, substantially as described.

387,297. CLOTH-PRESSING MACHINE. DAVID GESSNER, Worcester, Mass. Filed May 26, 1886. Renewed June 16, 1888. Serial No. 277,295. (No model.)

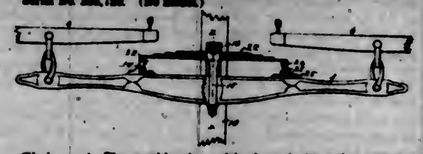


Claim.—1. In a cloth-pressing machine, the combination, with the bed-plate and the cylinder and the sheet-metal jacket, of means, substantially as described, whereby the ends of the sheet-metal jacket are secured to the bed-plate and the margins thereof are prevented from springing into contact with the cylinder, as set forth.

2. In combination with the cylinder and the bed-plate, a sheet-metal jacket secured at one edge to the bed-plate and extending between the bed-plate and the cylinder, and the clamp overlapping the opposite edge of the sheet-metal jacket and holding it in place, substantially as described.

3. In a cloth-pressing machine, in combination, the cylinder, the bed-plate having a concave face, and a sheet-metal jacket formed in conformity with the face of the bed-plate, terminating at one edge substantially on the face of the bed-plate, and at the other edge extending into a flange overlapping the side of the bed-plate on the side where the cloth enters, the jacket at the first-named edge being sufficiently thin to pass through the opening between the cylinder and bed-plate when the cylinder is raised, whereby the sheet-metal jacket may be removed from between the cylinder and bed-plate transversely, substantially as described.

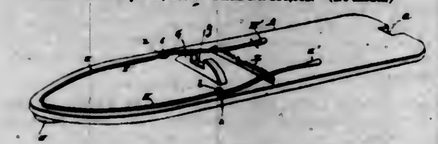
387,298. SPRING-DOUBLETREE. JAMES S. HARRIS, Minneapolis, Minn., assignor to Jacob Harris, same place. Filed Oct. 20, 1887. Serial No. 252,720. (No model.)



Claim.—1. The combination, with the pole 10 and the plate 8, secured to the pole and having the slot 14 to receive the hammer-strap bolt, of the strap 18, secured at the back end to the plate, the draft-pin 16, passing through the forward ends of said plate 8 and strap 18, the abutment 19, secured between the plate 8 and the strap 18, and the spring 20, attached to said abutment and to said doubletree in the manner and for the purpose substantially as described.

2. In a spring-doubletree, the combination, with the spring 20, secured to the pole, of the shoes 26, connected to the ends of the said spring by links 26, of the projection or stops 27 on the shoes 26, arranged to bear against the outer side of the links and limit the lateral movement of the doubletree, substantially as described.

387,299. IRONING-TABLE. BENJAMIN H. HARRISON, Lincoln, Nebr. Filed Sept. 24, 1887. Serial No. 250,502. (No model.)

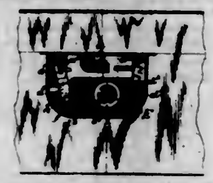


Claim.—1. The combination, with the ironing-table, of the screws *i i*, secured to the under side thereof near the opposite edges, the bent wire stretcher 1, having the arms K K, pivoted to the said screws, and the handles K' on the ends of the arms, adapted, when drawn together, to spread the arms K, substantially as and for the purpose specified.

2. The combination, with the ironing-table, of the screws *i i*, secured to the under side thereof, the bent wire stretcher passing around the outer edge of the board, and comprising the arms K K, provided with loops to engage around the screws *i*, the handles K' K', formed as extensions of the said arms and adapted to be drawn together to spread the said arms, and the toothed racks L L, adapted to engage the handles to hold the stretcher in the desired position, substantially as and for the purpose specified.

3. The combination, with the rigid stand composed of the standard C, having a notch in its side near its upper end, the crossed braces extending from said standard, the brace E, having a notch, *e*, in its upper end, and the brace E', having a foot, F, on its lower end, and the standard C' between the braces, of the ironing-board having the notch *e* in one end to engage the notch in the standard, and provided with a cross-bar having a notch, *g*, to engage the notch *e* in the brace E, as specified.

387,300. COMBINATION-LOCK. CAVAN HENDERSON, Boston, Mass., assignor of one-half to John W. Horne, same place. Filed Jan. 24, 1888. Serial No. 261,792. (No model.)



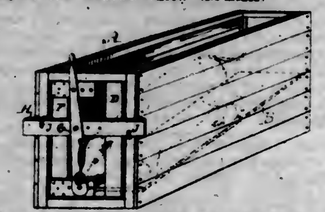
Claim.—1. The combination, in a combination-lock, of the slide-plate, having a bolt, *a*, and the locking-bar *f*, means for moving the slide-plate and bar, the tumbler-casing C, having the opening d^6, the annular tumblers B B' B^2, or two or more of them, having the openings *b*, and the projections or teeth, as specified, and the operating-spindle E, having the wing *e'*, which engages the projections of the tumblers, as and for the purposes described.

2. The combination, in a combination-lock, of the tumbler-case C, the annular tumblers B B' B^2, having the openings *b* and inward-extending projections, and the washers D, having the openings *d* and holding-extensions *d'*, substantially as described.

3. The combination of the slide-plate a^6, the bolt *a*, the locking-bar *f*, the stud a^4, lever a^5, connecting the stud with the said slide-plate, the tumbler-case C, having the opening d^6, the tumblers B B' B^2, having openings *b* and projections, as specified, the washers D, having the openings *d* and extensions *d'*, and the operating-spindle E, having the wing *e'*, substantially as described.

4. The combination, in a combination-lock, of the tumbler-case C, having the openings d^6 d^6, the tumblers B B' B^2, having the openings *b* and projections, as specified, the washers D, having the openings *d* and locking-extensions *d'*, the spindle E, having the wing *e'* and a square head, with the button *e*, having a square hole to receive the end of the spindle and permit it to be adjusted into other positions in relation thereto, substantially as described.

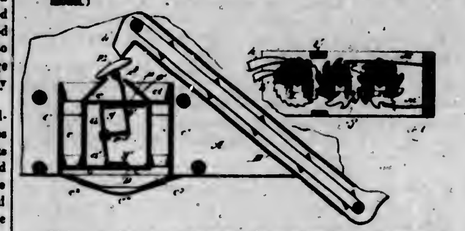
387,301. HOG-TRAP. JOHN HEPPENSTEIN, Fontanelle, Iowa. Filed May 21, 1888. Serial No. 274,617. (No model.)



Claim.—1. A trap for catching and holding hogs, comprising a box, frame, or chute having open ends, a floor or platform pivoted to the sides and central portion of said box, two hinged gates, a lever pivoted to the lower portion of one of the gates, a cross-bar pivoted to the lever, and hooks fixed to the ends of the sides of the box to engage the cross-bar, arranged and combined to operate in the manner set forth.

2. The box A, having a fixed cross-piece, C, the pivoted platform B, the gates D and F, the lever G, the cross-bar H, and the fixed hooks J, constructed and combined substantially as shown and described, for the purposes stated.

387,302. GRAIN MEASURE AND TALLY. JOHN H. HOLLAND, Thorp's Spring, Tex. Filed Mar. 21, 1888. Serial No. 267,954. (No model.)



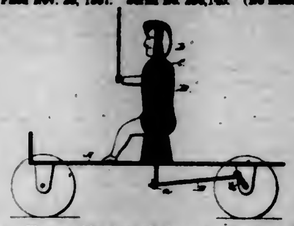
Claim.—1. In a grain-measurer, the combination of the pivoted oscillating chute, the two similar and equal measuring-compartments arranged on the sides of the chute, the slides above and below the compartments, arranged to cover alternately one the top and the other the bottom of the compartments, and moving in opposite directions, and mechanism, substantially as described, whereby said slides are operated, substantially as specified.

2. In a measuring device, the combination of the pivoted oscillating chute, the similar and equal measuring-compartments, the inclined planes leading from the chute to the mouths of said compartments, the upper and lower slides moving in opposite directions, and the mechanism, substantially as described, whereby the said slides are operated, substantially as specified.

3. The combination, with the oscillating chute, the grain-measuring compartments, and the upper and lower slides, of the shaft F, the arm *f* thereon, the arm e^4 on the shaft of the chute, the link-rod *f'*, the arms G G', and the link-rods *g g'*, substantially as specified.

4. In a grain-measuring device, the combination, with the oscillating chute, the similar and equal measuring-compartments, the upper and lower slides, and the mechanism, substantially as described, whereby the same are actuated, of the double-armed lever H, the pawls *h h'*, the wheel I, having twenty teeth, the pin *i'*, and pointer *i*, and connected with the unit-dial having twenty graduations, the wheel J, having the pointer *j* and pin *j'*, the wheel K, having the pointer *k'*, and the detents M M', the wheels J and K having ten teeth and the tens and hundreds dials each having ten graduations, substantially as specified.

387,303. MECHANICAL TOY. William F. Hopkins, Carbonate, Dak. Filed Nov. 26, 1887. Serial No. 256,145. (No model.)



Claim.—The combination of the carrying-wheels having the cranked axle a^2, the plate A, supported on said carrying-wheels, the image mounted on said plate, the stem C, passing vertically through the body of the image and carrying the head of the same, and provided at its lower end with a crank, *a*, at right angles to the crank of the axle a^2, the rod D, secured to and extending between said cranks, and a flag removably secured in the hand of the image, substantially as specified.

387,304. JAR-FASTENER. Thomas R. Howe, Scranton, Pa., assignor of two-thirds to G. A. Clearwater and H. A. Goodwin, same place. Filed Dec. 30, 1887. Serial No. 260,203. (No model.)

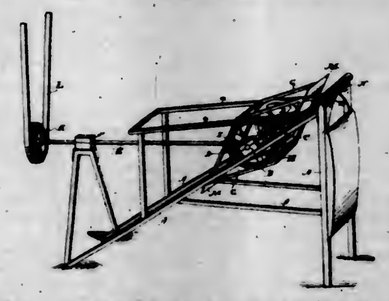


Claim.—1. In a jar-fastener, and in combination with the jar and its cover, a bail passing over said cover and a spring-wire locking-lever formed into eyes surrounding the bail and into large coils resting on the jar-cover at the bottom, said bail taking a bearing on the top of said coils, substantially as described.

2. In a jar-fastener, and in combination with the jar and its cover, a bail passing over said cover, and a spring-wire locking-lever doubled at the center to form the handle, then formed into the outwardly-circling coils resting on said cover and affording a bearing for the bail, the ends of said wire being formed into eyes surrounding the bail, substantially as described.

3. The combination, with a jar, a bail passing over its cover, and a wire locking-lever pivotally connected to the bail and formed with large coils resting on the cover, of a cote-piece passing through said coils, having enlarged ends for preventing the longitudinal expansion of said coils, and a handle for operating the lever, substantially as described.

387,305. MACHINE FOR STAKING LEATHER. James P. Isgraham, West Peabody, assignor of one-half to John P. Murphy, Boston, Mass. Filed Jan. 13, 1888. Serial No. 260,562. (No model.)



Claim.—1. In a machine for staking and stretching leather, the combination, as herein described, with the fixed bearing to which the hide is clamped, of an operating-blade mounted on a swinging arm and adapted to support the portion of the hide being operated upon, whereby the hide may be pressed against said blade at any desired point by the operator's hand, substantially as described.

2. In a machine for staking and stretching leather, the combination, as herein described, with the fixed bearing to which the hide is clamped, of an operating-blade moving continuously in one direction and adapted to support the portion of the hide being operated upon, whereby the hide may be pressed against said blade at any desired point by the operator's hand, substantially as described.

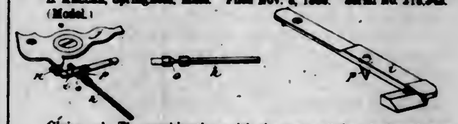
3. In a machine for staking and stretching leather, the combination, as herein described, with the fixed bearing to which the hide is clamped by one of the operator's hands, of a blade mounted on a rotary beam and adapted to support the portion of the hide being operated upon, whereby the hide may be pressed against said blade at any desired point by the operator's other hand, substantially as described.

4. In a machine substantially such as described for treating hides, the combination of the frame, the fixed bearing or hand-hold, the beam and the knives or blades carried thereby, and the driving-shaft, pinion, and gear-rim for rotating said beam, as set forth.

5. The combination, as herein described, with the frame of a leather staking and stretching machine adapted to serve as a table or support for the hide, of a swinging blade or knife moving above the level of said frame, whereby the hide is supported by said blade when the latter is swung above the frame, substantially as described.

6. The combination, as herein described, with the frame of a leather staking and stretching machine adapted to serve as the table or support for the hide, and a bearing at one end of said frame, to which the hide is clamped, of an operating-blade mounted on a rotary beam and adapted to swing above the level of said frame, as and for the purpose set forth.

387,306. STEM WINDING AND SETTING WATCH. Abraham L. Keller, Springfield, Mass. Filed Nov. 8, 1886. Serial No. 218,343. (Model.)



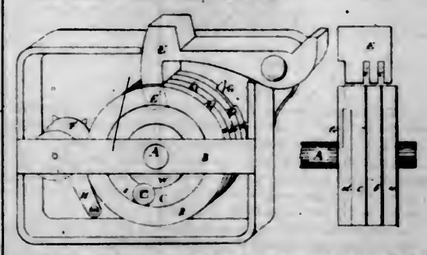
Claim.—1. The combination, with the gears of the winding-drum and dial hand-arbor, of the vibrating yoke provided with the intermediate gears, and the spring-plate *i*, having an inclined end for connection with the conical pin on the yoke and spring *m*, and the crown-stem having both a rotary and longitudinal movement, and intermediate mechanism whereby the watch may be either wound or the hands adjusted, as set forth.

2. The combination, with the winding and hand arbors, of the vibrating yoke pivoted concentric about the axis of gear *a* and provided with intermediate gears for engaging and disengaging with the gears upon said arbors, the spring-plate *i*, having an inclined surface, and the conical pin *n*, the spring *m*, and the crown-stem provided with the conical surface and operating-pinion, all substantially in the manner and for the purpose set forth.

3. The vibrating yoke *j*, provided with a conical pin, *n*, and operating in conjunction with the inclined end of the spring-plate *i*, whereby said yoke *j* is caused to vibrate for alternately winding and setting the watch, in the manner substantially as shown and described.

4. The combination, substantially as hereinbefore set forth, of the crown-stem *h*, spring-plate *i*, oscillating gear-plate *j*, gear-wheels *a*, *b*, *c*, *d*, *e*, and *f*, all arranged to operate in the manner and for the purpose set forth.

387,307. PERMUTATION-LOCK. William A. Lawrence, Sheridan, Ontario, Canada. Filed June 6, 1887. Serial No. 240,330. (Model.) Patented in Canada Jan. 24, 1887, No. 25,686.

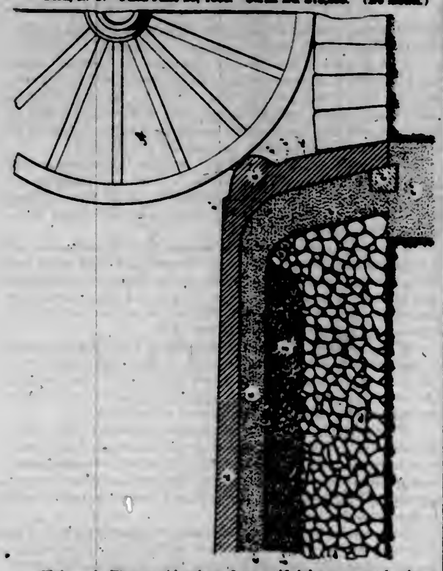


Claim.—1. In a permutation-lock constructed as described, the combination of the axle A, wheels *a b c* loose thereon, rings R, having

nuts *e*, eccentric-rivets C, adapted to secure said rings to the wheels, with the fastened wheel *d*, washers W upon said wheels, the arm G, journaled in the wheel *d*, the pivoted arm H, and cylinder P, substantially as and for the purpose set forth.

2. In a permutation-lock, the cylinder P, having cogs 1 2 3 4, and a short cog, D, upon its lower end, and having grooves in and partially round its periphery, in combination with the wheels *a b c*, having slits adapted to engage the solid portion of the periphery of the cylinder at the proper times, the fastened wheel *d*, having an arm, G, journaled thereon and adapted to engage the cogs 1 2 3 4, and also to engage cog D indirectly by means of the pivoted arm H, whereby the notches in the wheels may be brought into line in the opening of the lock or moved out of line in the closing of the lock, substantially as and for the purpose set forth.

387,308. ARTIFICIAL PAVEMENT. John W. MacKnight, New York, N. Y. Filed June 30, 1888. Serial No. 278,268. (No model.)



Claim.—1. The combination of an artificial pavement having a foundation and two upper layers, *c d*, that are bent down at the curb, with the laterally-extending foundation c^3 of layer *c*, and with the key c^4 within such foundation, substantially as specified.

2. The combination of an artificial pavement with a composite curbing, *d'*, having a bead, *e*, that projects forwardly beyond the line of the curbing, substantially as specified.

3. The combination of an artificial pavement having upper layer, *d*, with a composite curbing, *d'*, joined to the upper layer at an obtuse angle, and provided with forwardly-projecting bead *e* and with the groove e^2, substantially as specified.

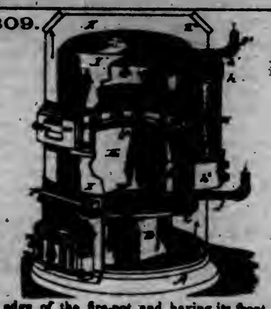
4. The combination of an artificial pavement, consisting of a series of layers, of which the upper layer is curved downward at the curb, with a bead, *e*, projecting forwardly from the upper corner of the curb, substantially as and for the purpose specified.

387,309. COMBINED HOT AIR AND WATER HEATER. Meshach Mabbett, Troy, N. Y. Filed Aug. 1, 1887. Serial No. 245,877. (No model.)

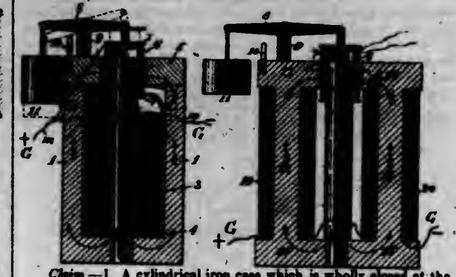
Claim.—1. In a combined hot air and water heater, the combination of a hollow tubular fire-pot extending down to the level of the grate, a series of pipes secured vertically to the upper end of said pot between its inner and outer edges and in communication with its interior, an annular superheater secured to the upper end of said pipes, a surrounding division-plate secured to the top of the fire-pot and having pendent deflecting-plates at the ends thereof, a drum inclosing said fire-pot and superheater, an uptake leading from the top and also from the bottom of said drum, and a jacket inclosing said drum, substantially as described.

2. The combination of the ash-pit and its top plate, a hollow tubular fire-pot, a series of pipes secured to the upper end of said pot, an annular superheater secured to the upper end of said pipes, a drum resting upon the top plate of the ash-pit, and a division-plate surrounding the upper edge of the fire-pot, and having its front edge extending down against the upper half of said fire-pot, substantially as and for the purpose described.

387,309.



387,310. ELECTRO-MECHANICAL MOVEMENT. Richard H. Mather, Winsted, Conn. Filed Jan. 9, 1888. Serial No. 260,172. (No model.)



Claim.—1. A cylindrical iron case which is wholly closed at the base, a close-fitting annular iron cap by which said case is partly closed at the top, and a magnetizable rod or core which is rigidly inserted in said base and extends axially through said case and through the middle of said cap, in combination with a helix of insulated wire which is inclosed in said case, and a movable spool-shaped solenoid which incloses a variable portion of the free end of said core and has a constant number of its individual helices within the annular space which is formed between said core and said annular cap, substantially as and for the purpose specified.

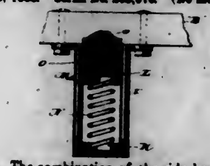
2. A cylindrical iron case which is solid at one end and hollow in the middle, an electro-magnetic core which is inserted axially in said case, and a helix of insulated wire which is placed upon a spool surrounding said core and surrounded by said case, and an annular iron cap which is fastened upon the other end of said case and is separated from a terminal portion of said core by an annular space, in combination with a movable solenoid surrounding said core and having helices within said annular space, substantially as and for the purpose specified.

3. A cylindrical iron case which is wholly closed at one end, a close-fitting annular cap by which said case is partly closed at the opposite end, and a magnetizable rod or core which extends axially through said core and cap, in combination with a helix of insulated wire which surrounds the body of said core and is contained in said case, and a movable solenoid surrounding a variable portion of the free end of said core, and having a constant number, less than all, of its constituent helices in the narrow space between said cap and core, substantially as and for the purpose specified.

4. A cylindrical iron case which is closed at one end, an annular cap by which said case is partly closed at the other end, and a magnetizable core which is inserted in the bottom of said case and extends axially through said case and cap, in combination with a helix of insulated wire which surrounds a portion of said core and is contained in said case, and a movable solenoid surrounding a terminal portion of said core, and constantly occupying the entire length of the annular space which separates said core and cap, substantially as and for the purpose specified.

5. A cylindrical iron case which is hollow in the middle, a magnetizable core which extends from end to end axially through said case, and an annular iron cap which is fastened upon one end of said case and surrounds the adjacent end of said core, in combination with a stationary helix which surrounds said core, and a movable solenoid which surrounds said core and is surrounded by said cap, substantially as and for the purpose specified.

387,311. ROAD-CART. Carrs A. Miller, Spring Valley, Ill. Filed Feb. 20, 1888. Serial No. 265,670. (No model.)

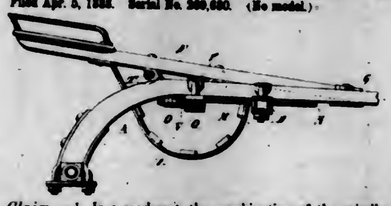


Claim.—1. The combination of the side bars mounted at their front ends on the thills, the depending loops I, embracing and guiding the said side bars, and the extensile springs N, mounted in the loops and bearing against the under sides of the side bars, substantially as specified.

2. The combination, with the thills and the cross-bar B, of the side bars mounted on or pivoted to the thills, the loops depending from the cross-bar and having sockets in their lower ends, the plates attached to the under sides of the side bars and having sockets therein, and the coiled springs seated at their ends, respectively, in the said sockets, substantially as specified.

3. The combination, with the thills and the cross-bar B, of the side bars mounted at their front ends in shackles depending from the thills, the loops I I, depending from the cross-bar and having sockets in their lower ends, the socket-plates attached to the under sides of the said bars, the springs mounted at their ends in the said sockets, and the elastic cushions on the under side of the cross-bar within the loops I, substantially as and for the purpose specified.

387,312. ROAD-CART. Carrs A. Miller, Spring Valley, Ill. Filed Apr. 5, 1888. Serial No. 269,680. (No model.)



Claim.—1. In a road-cart, the combination of the spindles attached to the thills and having studs on their inner ends, the seat-bars having sockets in their front ends to receive the spindles, and provided with grooves to receive the said studs, and the spring attached to the seat-bars, substantially as specified.

2. In a road-cart, the combination of the wear-plates attached to the thills and having spindles D, provided with lateral studs E E, the wear-plates attached to the seat-bars and having sockets H, provided with grooves I I, and the springs attached to the seat-bars, substantially as specified.

3. In a road-cart, the combination, with the seat-bars mounted on the thills, of the torsion-springs mounted on the thills and having the arms O, the depending bars on the under sides of seat-bars, and the links between the inner ends of the arms O and the lower ends of the said bars, substantially as specified.

4. In a road-cart, the combination of the torsion-springs attached to the thills and having the arms O, provided at their inner ends with bearings, the depending bars T T, attached to the under sides of the seat-bars and connected at their lower ends by the bolts *t*, and the double links U, comprising the arms *u u*, connected at their lower ends by the barrels V, which are mounted on the bolts *t*, and are connected at their upper ends by bolts which are mounted in the bearing on the arms O, substantially as and for the purpose specified.

5. In a road-cart, the thills having the cross-bar B, the seat-bars F, pivotally attached to the thills, and the torsion-springs mounted on the thills and having their front ends formed with loops N, which are connected to the cross-bar B, and their rear ends provided with inwardly-extending arms O, and the links connecting the arms O to the seat, as set forth.

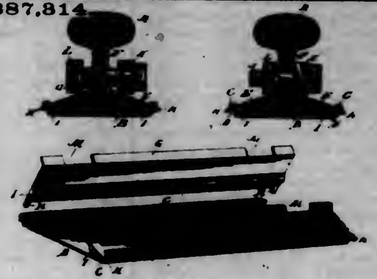
387,313. MEDICAL COMPOUND. Rafer Motta, Burton, assignor to William R. Gaylord, San Joaquin County, Cal. Filed Nov. 26, 1887. Serial No. 256,261. (No specimens.)

Claim.—The herein-described medical compound for the treatment of piles, consisting of gunpowder, salt, and vinegar, in the proportions specified.

387,314. RAIL-JOINT. Milton C. Hill, Chicago, Ill. Filed Dec 13, 1887. Serial No. 257,570. (No model.)

Claim.—1. In a rail-joint, the base-plate and the clamping-plates connected thereto, in combination with bolts passing through

387,314



the rail bearing upon but not otherwise engaging said clamping-plates, whereby they are held rigidly in position, substantially as described.

2. In a rail-joint, the rails, the base-plate, the clamping-plates, and a connection between said base and clamping plates, in combination with bolts working through the web of the rail, and nuts upon one side and washers upon the opposite side of the rails engaged by said bolts, said nuts and washers bearing upon and prevented from rotating by the clamping-plates, substantially as described.

3. In a rail-joint, the rail and the base-plate, in combination with clamping-plates, a hinge-like connection between said clamping and base plates, said clamping-plates being fulcrumed on the rail-flange and adapted to clamp the rail when the inner edges are forced downwardly, substantially as described.

4. In a rail-joint, the rail, the base-plate, the clamping-plates, and a hinge-like connection between said clamping and base plates, said clamping-plates being fulcrumed upon the rail-flange, in combination with screw-bolts passing through the rail-web, and non-rotatable nuts and washers on said bolts, actuated thereby to depress the inner side edges of said plates, substantially as described.

5. In a rail-joint, the rails, the base-plate, the clamping-plates, and a connection between the outside edges of said clamping and base plates, in combination with ribs on the under side of said clamping-plates near the outer edges thereof, and means for depressing the inner free side edges of said plates, substantially as described.

6. In a rail-joint, the rails, the base-plate, clamping-plates, and a connection between the outside edges of said clamping and base plates, in combination with ribs on the under side of said clamping-plates near the outer edges thereof, and bolts passing through the rail engaging and depressing the inner free side edges of said plates, substantially as described.

7. In a rail-joint, the rails, the base-plate, clamping-plates, and a connection between the outside edges of said clamping and base plates, in combination with ribs on the under side of said clamping-plates near the outer edges thereof, bolts passing through the rails, and nuts and washers upon said bolts engaging and prevented from rotating by the clamping-plates, substantially as described.

8. In a rail-joint, the rails, the base-plate, clamping-plates, and a connection between the outside edges of said clamping and base plates, in combination with ribs on the under side of said clamping-plates near the outer edges thereof, bolts passing through the rails, and nuts and washers upon said bolts upon each side of the rail engaging and depressing the free side edge of said clamping-plates when the bolt is screwed up, substantially as described.

9. In a rail-joint, the rails, the base-plate, clamping-plates, a detachable connection between said plates and the base-plate, and lugs or projections on one of said plates for preventing a longitudinal shifting of these plates relative to each other, in combination with bolts passing through the rails, bearing upon said clamping-plates and securing them in position, and notches or projections upon said plates engaging the bolts, substantially as described.

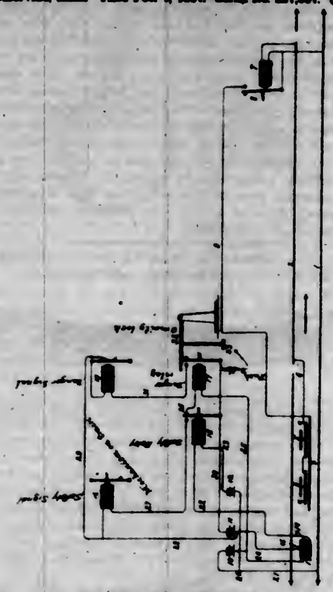
387,315. PIPE-WELDING BALL. John Hoffus and William P. Gilbert, McKeesport, Pa., assignor of one-third to Charles E. Manby, same place. Filed Feb. 16, 1888. Serial No. 264,214. (No model.)



Claim.—1. A pipe-welding ball made in segments arranged around a central core, one of said segments being integral with or secured to the core, said core being removable from the remaining sections or segments, substantially as and for the purpose specified.

2. The core 2, having ball-segments arranged around it, said core being movable longitudinally, so as to enable it to be withdrawn from the ball, and one or more sections, 7, fixed to the core and situate between two or more of the detachable segments or sections, substantially as and for the purpose specified.

387,316. RAILWAY SIGNALING SYSTEM. Edward L. Crosby, Somerville, Mass. Filed Feb. 7, 1887. Serial No. 227,027. (No model.)



Claim.—1. In an electric railway signaling system, the combination of an incomplete circuit partly composed of the rails of the track and including an electro-magnet, two incomplete circuits on the train, each operating signals, said circuits being controlled by said electro-magnet, and contact plates and brushes for completing such circuits, substantially as described.

2. In an electric railway signaling system, the combination of an incomplete circuit partly composed of the rails of the track and including an electro-magnet, an incomplete circuit operating a safety-signal and controlled by said magnet, contact plates and brushes for completing said track-circuit, another incomplete circuit controlling a danger-signal, and other contact plates and brushes for completing the last said circuit when the safety-signal circuit fails to operate, substantially as described.

3. In an electric railway signaling system, the combination of an incomplete track-circuit including an electro-magnet, a battery on the train for charging said circuit when completed, and a second circuit including another battery composed in part of the track and controlled by the track-magnet, with signaling devices on the train controlled by said circuit, substantially as described.

4. In an electric railway signaling system, the combination of the incomplete circuit composed partly of the rails, having an electro-magnet included therein, a second circuit parallel with the track controlled by said magnet, contact brushes and plates for completing the track-circuit, and an incomplete circuit controlling signaling devices on the train and controlled by the circuit under the control of the magnet, substantially as described.

5. In an electric railway signaling system, the combination of safety and danger signals mounted on the train, a battery for actuating either of them, with a magnet on the track, and circuit-connections, as described, for completing the circuit of the battery to either the safety or the danger signal, according to the condition of the road, substantially as described.

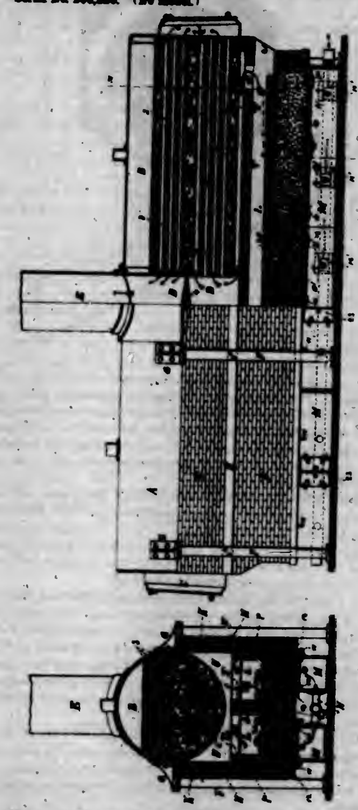
6. In an electric railway signaling system, the combination of a safety and a danger signal mounted on the train, a single battery for charging either of them, automatic switching mechanism for diverting the current of the battery through one or the other of the signals, with an electro-magnet on the road charged by a circuit composed partly of the track, another circuit parallel therewith controlled by said magnet, and contact brushes and plates for completing the circuits to the switching mechanism, substantially as described.

7. In an electric railway signaling system, the combination of two series of contact-plates located on the track, two contact-brushes carried by the train, separate signaling-circuits closed by said brushes and plates at one end, and an electro-magnet on the track for closing said circuits at the other end, substantially as described.

8. In an electric railway signaling system, the combination of a circuit composed partly of the rails and an electro-magnet therein, a contact-brush on the train, and a contact plate or plates on the track for closing said circuit, with a circuit parallel to the first closed at one end by contact brush and plate and controlled at the other by the magnet, relays on the train controlled by said parallel circuit, and separate safety and danger signals controlled by said relay, substantially as described.

9. In an electric railway signaling system, a single-stroke safety-bell and a trembler danger-bell, both charged by the same battery located on the train, with a relay for momentarily diverting the current of the battery into the single-stroke bell, a relay for permanently diverting the current of the battery into a trembler-bell, with a magnet charged through the rails and a circuit parallel with the track controlled by said magnet, and contact plates and brushes, substantially as described, for actuating the safety or danger signal according with the condition of the road, substantially as described.

387,317. FURNACE. Matthew L. Ritchie, New York, N. Y., assignor to the Eagle Tube Company, same place. Filed Mar. 8, 1888. Serial No. 266,269. (No model.)



Claim.—1. The combination, with the steam-boiler, and the walls K, inclosing the sides thereof and forming the flue U, of the fire-chambers extending from end to end of the boiler, the ash-pit inclosures M, grate-bars O, side walls, P, central wall, R, and partition S, and tiles T, also extending from end to end of the boiler, there being an opening at 16 in the tiles near the front of the boiler for passing products of combustion, and a front opening at 21, substantially as and for the purposes set forth.

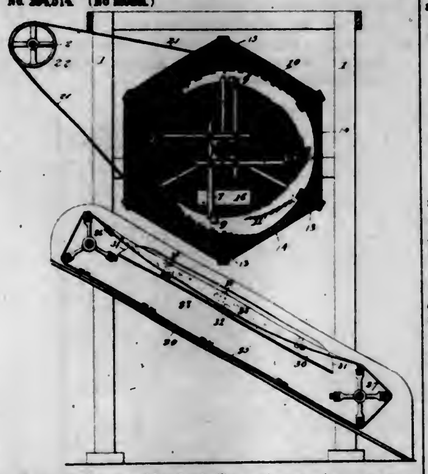
2. The combination, with the steam-boiler, inclosing-walls, and fire-chambers, of the ash-pit inclosures M, formed of cast-iron boxes

and having flanges along their upper edges, upon which the walls of the boiler rest, substantially as set forth.

3. The combination, with the steam-boiler, inclosing-walls, and fire-chambers, of the ash-pit inclosures M, formed of cast-iron boxes and having flanges along their upper edges, upon which the walls of the boiler rest, and the grates O, supported at one side by the hinges 10 within the ash-pit inclosures, and the pins 11, passing through the ash-pit inclosures and upon which the free end of the grate-bars rest, substantially as set forth.

4. The ash-pit inclosures M, formed of cast-iron boxes having flanges at their upper edges, in combination with the grates O, supported at one edge by hinges within the ash-pit inclosures, the outer walls, P, supported on the flanges of the ash-pit inclosures, the central wall, R, and partition S, the tiles T, forming a partition above the fire-chamber, the steam-boilers A and B and the supports for the same, and the damper 4 in the flue D between the said steam-boilers, substantially as set forth.

387,318. **MACHINE FOR HULLING AND SEPARATING GREEN PEAS.** Robert P. Scott, Baltimore, Md. Filed Nov. 7, 1887. Serial No. 254,514. (No model.)



Claim.—1. In a machine for hulling and separating green peas, the combination of an inclined endless separating-apron provided with transverse overlapping slats on its inner side, prismatic rollers for moving and agitating said apron, and side boards having inwardly-projecting inclined flanges for raising the upper edges of said apron, substantially as described.

2. In a machine for hulling and separating green peas, the combination of an inclined endless separating-apron provided with transverse overlapping slats on its inner side, two prismatic rollers for moving and agitating said apron, and side boards provided with guide-flanges at their lower edges for supporting the edges of the lower portion of said apron, substantially as described.

3. In a machine for hulling and separating green peas, the combination of an inclined endless separating-apron provided with overlapping transverse slats on its inner side, two prismatic rollers or reels for moving and vibrating said apron, inclined side boards provided with guide-flanges upon their lower edges for supporting the edges of the lower portion of said apron, and with inclined guide-flanges for raising the edges of the upper portion of said apron, substantially as described.

4. In a machine for hulling and separating green peas, an endless separating-apron provided with long cross-slats upon its inner side, which extend nearly to its edges, and with short slats overlapping the ends of said long slats and extending quite to its edges, substantially as described.

5. In a machine for hulling and separating green peas, an endless inclined separating-apron provided with transverse slats arranged on the inside thereof, in combination with the rollers and the vertical side boards arranged at the sides or edges of said apron and operating to keep the same straight upon said rollers, substantially as described.

6. In a machine for hulling and separating green peas, the combination of two prismatic rollers or reels journaled at different heights, an endless separating-apron provided with long cross-slats upon its inner side, which extend nearly to its edges, and with short slats overlapping the ends of the long slats and extending to the edges of said apron, and side boards provided with guide-flanges at their lower edges for supporting the edges of the lower portion of the apron, and with inwardly-extending inclined guide-flanges having rounded ends and serving to raise the short slats and edges of the upper portion of said apron, substantially as described.

7. In a machine for hulling green peas and separating the same from their hulls or pods, the combination of a revolving prismatic separating-cylinder provided with a covering for the greater portion of its length having round perforations of a sufficient size to allow hulled peas to drop therethrough, and with a covering for the remainder of its length having larger meshes of a sufficient size to allow the hulls or pods to drop therethrough, and hulling devices arranged within said separating-cylinder, with a vibrating raised-edge upwardly-traveling separating-apron arranged beneath and extending the entire length of said cylinder, whereby in the co-operation of said cylinder and apron the released peas and open pods are delivered out of the former at different points, fall upon the latter at different points, and are kept practically separate from each other while being agitated, and respectively delivered at the lower and upper portions of said aprons, substantially as described.

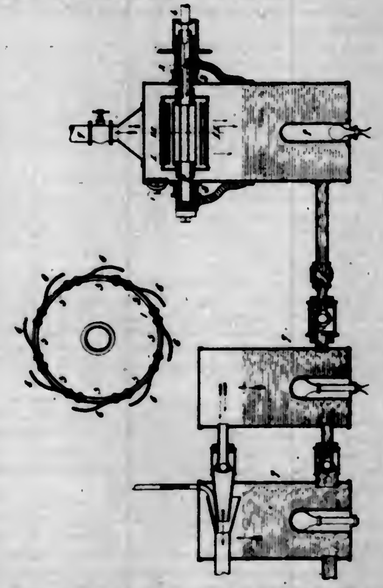
387,319. **LUBRICATOR.** Charles L. Scoville, Ashtabula, Ohio. Filed Oct. 24, 1887. Serial No. 253,252. (No model.)



Claim.—1. The combination of an oil-pipe, B, and a connecting-rod, A, having a passage from the outside thereof to the bearing-surface, with which passage the lower end of the oil-pipe connects with a hot-water pipe, C, surrounding said oil-pipe, secured to said connecting-rod, substantially as described, and for the purpose specified.

2. The combination of an oil-pipe, B, and a hot-water pipe, C, surrounding said oil-pipe and secured to the connecting-rod, with a connecting-rod having a passage connected with said oil-pipe and leading to the bearing-surface, and also passages extending therethrough and connected with said hot-water pipe, substantially as and for the purpose specified.

387,320. **FEED-WATER HEATER.** Daniel W. Smith, St. Louis, Mo., assignor of one-half to Joseph C. Addington, same place. Filed Nov. 26, 1887. Serial No. 256,344. (No model.)



Claim.—1. In a steam-generator, in combination with a tank, a cylinder provided with perforations or holes, wings secured to the periphery of the cylinder opposite the holes, and a hollow shaft or spindle upon which the cylinder is supported, substantially as set forth.

2. In combination with the tank provided with means for heating it, the cylinder 1, having openings 5, curved wings 6, secured to the cylinder opposite the openings, hollow shaft or spindle 2 on which the cylinder is supported, and escape-pipe 7, substantially as and for the purpose set forth.

387,321. **WATCH-CASE.** George C. Smith, New York, N. Y. Filed Nov. 27, 1888. Serial No. 194,071. (No model.)

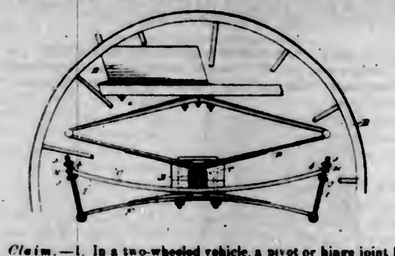


Claim.—1. A watch-case, in combination with a separate leaf secured to said case and a movement-ring or other like part permanently hinged to said leaf or other part, substantially as described.

2. A separate and independent leaf, in combination with a movement-ring or other like part hinged to said leaf, with a seat in the case-center for the reception of the leaf, substantially as described.

3. In a watch-case, a case-center and a ring or other attachment, in combination with a single hinged leaf detachably secured to one of said members and pivoted to the other member, substantially as described.

387,322. **TWO-WHEELED VEHICLE.** James A. Sieber, Marysville, Cal. Filed Nov. 10, 1887. Serial No. 254,993. (No model.)



Claim.—1. In a two-wheeled vehicle, a pivot or hinge joint between the axle and portion of the vehicle to be connected therewith, in combination with a limiting-spring under the axle, whereby the movement of the joint is controlled, and an adjustable connection with said spring, whereby it is regulated, substantially as described.

2. In a two-wheeled vehicle, a pivot or hinge joint between the axle and the portion of the vehicle to be secured thereto, in combination with the means for limiting and adjusting the joint, consisting of a spring passing under the axle, and bolts and nuts by which the ends of the spring are connected with parts above, substantially as described.

3. In a two-wheeled vehicle, the axle and the jacks G, rigidly secured thereto, in combination with the boxes carrying the body of the vehicle and pivoted on the axle, the limiting-spring secured to the boxes under the axle, and the stirrup-bolts connecting the ends of the springs with the ends of the jacks, and nuts for adjusting said bolts, substantially as described.

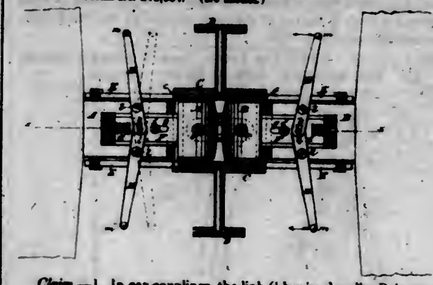
4. In a two-wheeled vehicle, the axle and the jacks G, rigidly secured thereto, in combination with boxes pivoted on the axle, the main springs clipped to the boxes, and the body or seat carried by the springs, the limiting-springs clipped under the boxes, and the adjustable bolts connecting the ends of the limiting-springs with the ends of the jacks, substantially as described.

5. In a two-wheeled vehicle, the axle, the shafts, and a pivot or hinge connection between them, in combination with the limiting-springs secured under the axle and adjustable bolts between each end of the springs and the shafts above, substantially as described.

6. In a two-wheeled vehicle, the axle, the shafts, the stirrups *k* on the shafts, and a hinge-connection between said stirrups and the axle, in combination with the limiting-springs under the axle and adjustable bolts connecting the ends of said springs with the stirrups, substantially as described.

7. The combination, in a two-wheeled vehicle, of the adjustable and limited hinge-connection of the body and the shafts with the axle, consisting of the jacks secured to the axle, the pivoted boxes on the axle, the limiting-springs F, secured to the boxes, and the bolts I, connecting said springs and jacks, the stirrups under the shafts, the limiting-springs L under the axle, and bolts *l*, connecting said springs with the stirrups, all arranged and adapted to operate substantially as described.

387,323. **CAR-COUPLING.** Hermann Sonnenfeld, Canton, assignor of one-half to Archie Brown, McPherson, Kans. Filed May 7, 1888. Serial No. 273,697. (No model.)



Claim.—1. In car-couplings, the link C, having handles D, in combination with the bumpers having recesses *a* and slot *a'*, and provided with sliding plates F, operated by pivoted levers H, in the manner shown and herein specified.

2. The combination of the bumpers A and B, provided with sliding plates F, actuated by springs G and levers H, with the links C, having cross-bars *c*, to engage with the recesses *a* and slots *a'*, all constructed and arranged as herein shown and set forth.

3. The combination of the bumpers A and B, provided with sliding plates F, actuated by springs G and pivoted levers H, with the links C, having cross-bars *c* and supported by springs E, and arranged to engage with the slots *a'* and recesses *a*, in the manner and for the purpose herein specified.

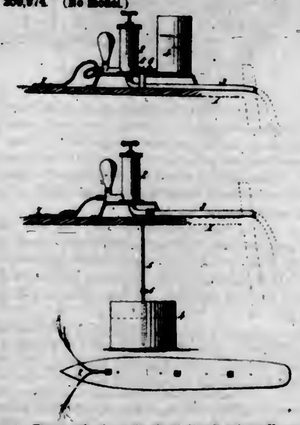
4. The link C, supported on adjustable springs E and provided with handles D, in combination with the bumpers A B, having recesses *a* and slots *a'*, and provided with sliding plates F, actuated by springs G and pivoted levers H, all operating as shown at set forth.

5. The car-coupling herein described, consisting of the bumpers A B, provided with sliding plates F, actuated by springs G and levers H, and having springs E, in combination with the link C, having cross-bars *c* and arranged to engage with the slot *a'* and recess *a*, all as shown and specified.

6. In car-couplings, the spring-actuated sliding plate F and levers H, arranged to secure the link C, having handles D, in the slotted groove *a* in the bumpers A B, provided with springs E, for supporting said link C, and all constructed and arranged as shown and specified.

7. In a car-coupling, the combination of a link, C, having handles D and cross-bars *c*, with bumpers having slotted grooves *a*, and arranged to engage by a movable sliding plate and pivoted levers attached thereto, in the manner and for the purpose herein described.

387,324. **METHOD OF DISTRIBUTING OIL DURING STORMS AT SEA.** Charles H. Stevens, New York, N. Y. Filed Jan. 6, 1888. Serial No. 259,974. (No model.)

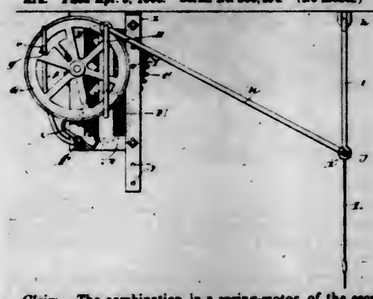


Claim.—1. The method set forth of distributing oil upon the surface of the ocean in storms, said method consisting in introducing

said oil into the cylinder of a pump and projecting it, together with the water driven by the pump, over the surface, substantially as described.

2. The method set forth of scattering oil upon the surface of the sea in storms, said method consisting in pumping water from a suitable source and forcing it through a flexibly-connected nozzle, oil being admitted in fixed quantities to the pump-cylinder at each stroke, substantially as described.

387,325. **MOTOR FOR FANS.** James G. Stephens, Sheridan, Ark. Filed Apr. 3, 1888. Serial No. 269,464. (No model.)



Claim.—The combination, in a spring-motor, of the escapement-pawl, the balance-wheel, and the arm extending from the escapement-shaft to the balance-wheel and engaging the same, as set forth.

387,326. **HARNESS FOR KICKING COWS.** Alonzo Sweet, Ferndale, Cal. Filed Sept. 24, 1887. Serial No. 250,631. (No model.)



Claim.—The harness for kicking cows, comprising the strap for encircling the body and the block secured to the strap for pressing on the flank directly in front of the hip-bone, substantially as herein described.

387,327. **WHEELBARROW.** Adolph Taigner, Greenstreet, Wis. Filed Mar. 26, 1888. Serial No. 268,515. (No model.)



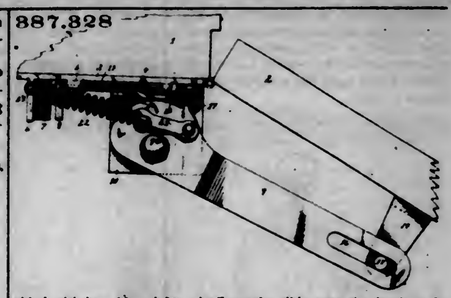
Claim.—1. In a barrow, the combination, with the side bars provided with wheel-pivot journals at their ends and pivoted plates for retaining the pivots in the journals, of the single runner curved upwardly at each end and provided with central pivots projecting laterally from its upper edge, brackets for carrying the runner-pivots, and a cross-piece substantially under the center of gravity of the load for the attachment of the said brackets.

2. In a barrow, the combination, with the side bars and the cross-piece secured to the side bars substantially under the center of gravity of the load, of the single runner curved upwardly at each end and provided with central pivots projecting laterally from its upper edge, and the brackets secured to the said cross-piece for carrying the runner-pivots.

3. The combination, with the frame-work of the barrow, of a single runner curved upwardly at each end and provided with laterally-projecting central pivots supported in the said frame-work substantially under the center of gravity of the load.

387,328. **DOOR-CHECK.** Peter W. Tobey, Waterbury, Conn., assignor to William F. Lewis, same place. Filed May 5, 1888. Serial No. 273,192. (Model.)

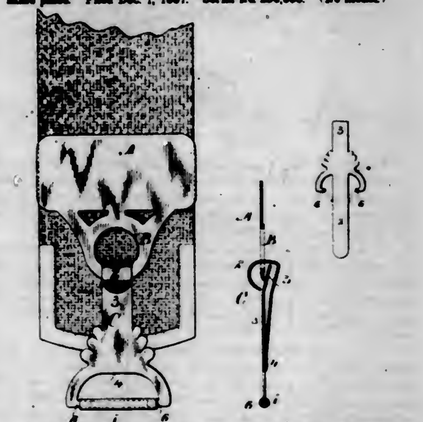
Claim.—1. A door-closer and buffer consisting, essentially, of a closing-arm pivoted to the jamb and connected to the door and provided with lugs 19 and 20, a buffer and a slide upon the jamb, and a pivoted dog upon the slide, whereby when the door is closed quickly lug 20 raises the dog which is engaged by lug 19, and the slide is carried against the buffer, which then recoils, allowing the dog to drop back of lug 20 and lug 19 to pass over it, so that the door is closed without slamming.



2. The base-plate having extension 10, the closing-lever pivoted thereto and having lugs 19 and 20, and a closing-spring, in combination with the buffer, a slide engaging said buffer and carrying a pivoted dog having an enlargement which engages the edge of the extension, and a head which is engaged by said lugs, as and for the purpose set forth.

3. The base-plate having ways 5, the buffer secured to the base-plate, and the slide moving in said ways and having a plate, 8, adapted to engage the buffer, in combination with the pivoted dog carried by the slide and having a head, 12, the closing-lever having lugs 19 and 20, and a closing-spring, substantially as described.

387,329. **SPRING-HOOK FOR SUSPENDER-BUCKLES.** Calvin Voorhis, New York, N. Y., assignor of one-half to Abraham Shenfield, same place. Filed Dec. 1, 1887. Serial No. 256,660. (No model.)



Claim.—1. The spring-hook for suspender-buckles, having a spring-tongue and a hook passing over the end of the tongue, with a nearly flat portion in close proximity to the end of the tongue, and the tongue closing against the point of the hook, said tongue being of sufficient length to prevent the buckle-ring from passing over the end and to the rear side thereof, substantially as described.

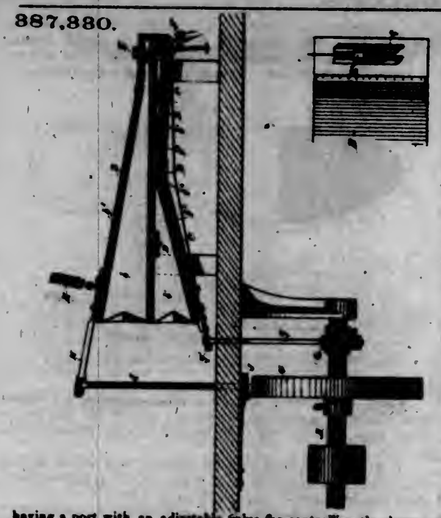
2. The spring-hook having the hook and the spring-tongue of one piece of sheet metal folded at 4, and the tongue within the hook, and the prongs 6, extending toward each other to receive the head of the suspender-ends, substantially as specified.

387,330. **SPEED-REGULATOR.** George F. Wells, San Francisco, assignor of one-half to Manley C. Lawton, Staten Island, Cal. Filed May 12, 1888. Serial No. 273,730. (No model.)

Claim.—1. The combination of a bellows-like frame operated by the engine or motor and having a port with an adjustable valve for controlling the degree of its expansion or contraction, and suitable connections, comprising a connecting-rod and a brake-shoe operated thereby, by which the speed of the motor is affected, substantially as herein described.

2. The bellows-like frame operated by the engine or motor and having a port with an adjustable valve for controlling the degree of its expansion or contraction, in combination with a brake acting upon the motor for checking it, and a connecting-rod between the frame and brake, whereby the latter is operated, substantially as herein described.

387,330. **SPEED-REGULATOR.** George F. Wells, San Francisco, assignor of one-half to Manley C. Lawton, Staten Island, Cal. Filed May 12, 1888. Serial No. 273,730. (No model.)



3. The combination of a bellows-like frame consisting of an expanding and contracting portion above and an expanding and contracting portion below and communicating with the portion above to expand or contract the portion above, said bellows having a port with an adjustable valve for regulating and controlling the degree of expansion or contraction of the portion above, and a brake and connections connected with said portion above for affecting the speed of the motor, substantially as herein described.

4. The combination of a bellows-like frame consisting of the upper valved chamber having a hinged lid or top wall, a lower valved chamber communicating therewith and having a hinged bottom wall, a connection between the motor and the hinged bottom wall, whereby the latter is operated to exhaust the upper chamber and draw down its top wall, said bellows having an entrance-port with an adjustable valve to the upper chamber for regulating the depression of the top wall, and a brake and connections with said top wall for controlling the speed of the motor, substantially as herein described.

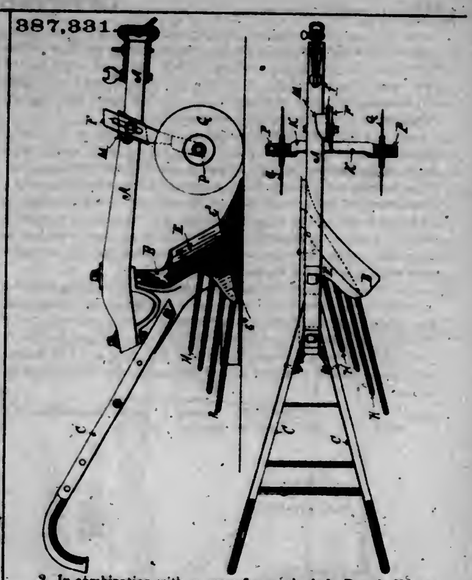
5. The combination of a bellows-like frame consisting of the upper chamber having a hinged top wall, the lower chambers having oppositely-working connected bottom walls, the valves D between the lower chambers and the upper chamber and the valves C in the bottom walls, a connection with the motor for operating the bottom walls to exhaust the upper chamber and depress its top wall, said bellows having an entrance-port with an adjustable valve to the upper chamber for controlling the degree of depression of said wall, a spring for holding it up, and a brake and connections with said top wall for controlling the speed of the motor, substantially as herein described.

6. The combination, with the shaft A, of the motor having wheel *a* and eccentric G, the bellows-like frame having communicating upper and lower chambers controlled by valves, said upper chamber having a hinged top wall and the lower chambers having hinged bottom walls, the eccentric-rod *g*, by which the bottom walls are operated to exhaust the upper chamber and depress its top wall, the spring for holding said wall up, said bellows having the entrance-port with sliding valve for controlling the depression of the top wall, and the brake acting on the wheel *a* and connected with the top wall, substantially as herein described.

7. The bellows-like frame operated by the motor, said bellows having a port for regulating the degree of its expansion or contraction, said port consisting of an elongated narrow slit, and a slide-valve controlling the port, in combination with a brake acting on the motor, and connecting-rods from the brake to the bellows-like frame, substantially as herein described.

387,331. **POTATO-DIGGER.** Samuel L. Allen, Chesaninsen, N. J. Filed Oct. 26, 1886. Serial No. 217,203. (No model.)

Claim.—1. In combination with a revolving wheel or disk, a gang frame or axle having attached to its end the bolt R, and a removable and stationary axle, N, substantially as described.



2. In combination with a gang-frame, the bolt R, axle N, provided with lugs, and the hub P, provided with sand-shields *p p'*, substantially as described.

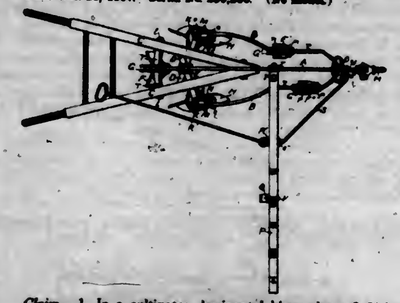
3. An adjustable mold-board provided at its lower edge with lugs and at its upper edge with an adjusting-bolt, substantially as described.

4. An adjustable mold-board consisting of the piece E, having at its lower edge pivots and at its upper edge an adjusting device, and provided with a supplementary skeleton, substantially as described.

5. The gang-frame arm F, having a longitudinal slot, *f'*, and a series of teeth, *f f*, in combination with the bolt R and plate M, provided with the guide-bars m' m^2 and lug m^3, all arranged substantially as described.

6. The gang-frame K, having an arm provided with a longitudinal slot, n^1, or a series of holes, n^1, and lug-notches, in combination with the axle N and bolt R, all arranged substantially as herein described.

387,332. **CULTIVATOR.** Samuel L. Allen, Chesaninsen, N. J. Filed Dec. 26, 1887. Serial No. 259,260. (No model.)



Claim.—1. In a cultivator, horizontal hinge-plates O O', having shoulders *a a'* and fastening-bolts *b*, whereby the central bar of a cultivator-frame is rigidly held in position and provided with separate pivotal studs C and side flanges, *d'*, whereby the hooked side bars of a cultivator-frame may be pivotally secured between said studs and flanges, substantially as described.

2. In a cultivator, the combination, with horizontal shouldered hinge-plates O O', provided with fastening-bolts *b*, separate pivotal studs C, and side flanges, *d'*, of the central bar, A, and the adjustable side bars, B, provided with hooks *d* and bent, whereby when opened to medium width the straight portions *r r* of the said side bars, to which the tooth-standards G' G^2 are attached, are parallel to the line of motion, substantially as and for the purposes described.

3. In a cultivator, the combination, with the side bars, B, of uni-

form thickness throughout, of the detachable bearing-box N, provided with the horizontal bolts *e*, whereby the box is secured to the face of said bar, vertical bolt-holes *m*, for the reception of the tooth-standard fastening-bolt, and having the seat *f* on the under side thereof, substantially as and for the purposes described.

4. In a cultivator, a detachable marker consisting of the combination of a graduated bar, P, hinged to the central bar of a cultivator-frame, and adjustable furrowing-blade Q, provided with the staple-bolt V, embracing said graduated bar, a bent diagonal brace, S, having a screw-threaded end passing through the said bar P, and provided at its forward end with a ring, S', whereby it is hinged to a horizontal pin, U, on the hinge-plate O, and a handle, R, pivotally attached to the nut R' on the said diagonal brace, all constructed and arranged substantially as and for the purposes described.

5. In a cultivator, bent adjustable side bars of uniform thickness throughout, provided with hooks *d*, in combination with detachable bearing-boxes N, provided with fastening-bolt holes and seats *f*, substantially as described, and horizontal shouldered hinge-plates O O', provided with fastening-bolts, separate pivotal studs, and side flanges, all constructed and arranged substantially as and for the purposes described.

387,333. CULTIVATOR. Samuel L. Allen, Cinnaminson, N. J. Filed Feb. 6, 1888. Serial No. 263,096. (No model.)



Claim.—1. In a cultivator, a frame having forwardly-projecting arms and a single tool-holding slot on each side of the frame in the same transverse line, each of said arms being provided with a vertical series of holes, whereby the depth of frame may be varied, substantially as described.

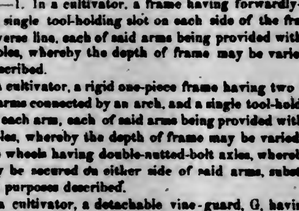
2. In a cultivator, a rigid one-piece frame having two forwardly-projecting arms connected by an arch, and a single tool-holding slot at the rear of each arm, each of said arms being provided with a vertical series of holes, whereby the depth of frame may be varied, in combination with wheels having double-nutted-bolt axles, whereby the said wheels may be secured on either side of said arms, substantially as and for the purposes described.

3. In a cultivator, a detachable vine-guard, G, having a shouldered seat, H', provided with a series of holes *n'*, whereby the said vine-guard is adjustable at different heights on either side of the perforated arm of the cultivator-frame, substantially as described.

4. The combination, in a cultivator, of a frame provided with forwardly-projecting perforated arms, adjustable vine-guards provided with perforated shouldered seats, and wheels having double-nutted-bolt axles, whereby the relative positions of said wheels, arms, and guards are interchangeable, thereby varying the width of track, substantially as described.

5. In a cultivator, a pair of adjustable curved tooth-rakes, each of which is provided with a single standard out of center, whereby the said rakes may be secured to a double-slotted cultivator-frame, substantially as and for the purposes herein set forth.

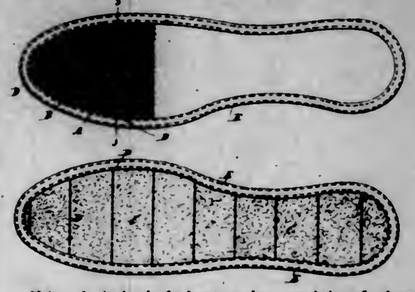
387,334. DUMPING-PLATFORM. Asahiah Baker, Bloomington, Ill. Filed Oct. 13, 1887. Serial No. 252,230. (No model.)



Claim.—1. In a dumping-platform, the combination, with a lever connected with shafts by means of suitable gearing, the said shafts being provided with tension-springs, sliding gates having rack-bars, gear-wheels meshing with said rack-bars, and a ratchet-wheel on one of said shafts, of a pawl adapted to engage the ratchet and a trigger for automatically releasing the ratchet and opening the gates, substantially as shown and described.

2. In a dumping-platform, the combination, with a lever connected with the shafts by means of suitable gearing, sliding gates and rack-bars secured thereto, cog-wheels on the shafts gearing with said rack-bars, and a ratchet-wheel on one of said shafts, of a pawl adapted to automatically engage the ratchet and lock the gates in closed adjustment, substantially as shown and described.

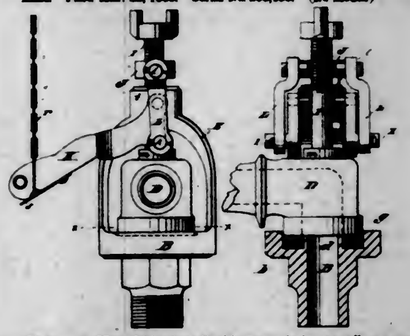
387,335. SOCK OR INSOLE FOR BOOTS OR SHOES. Thomas Barker, Todmorden, County of Lancaster, England. Filed May 31, 1887. Serial No. 239,949. (No model.) Patented in England June 11, 1886, No. 7,860.



Claim.—1. An insole for boots or shoes, consisting of a bottom layer of foraminous metal, an intermediate layer of hair, and a layer of soft fibrous material, the whole fastened together, substantially as set forth.

2. An insole for boots or shoes, consisting of a bottom layer of wire-netting, an intermediate layer of hair, and a layer of wool, the whole fastened together, substantially as set forth.

387,336. PIPE-COUPLING. Sidney H. Barrett, Springfield, Mass. Filed Mar. 22, 1883. Serial No. 269,133. (No model.)



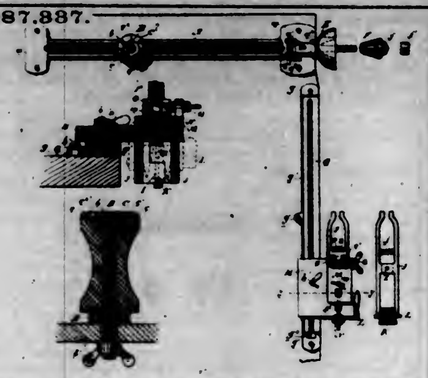
Claim.—1. The within-described improved pipe-coupling, consisting of one section, B, having an outside support thereupon forming a guide for a stem in line with its orifice, a stem provided with a thread and adapted to move longitudinally in said guide, a nut inclosing said stem to one side of said guide, a lever hinged to the guide-support, a link hinged to a crank-arm of said lever and to the nut upon the stem and operating to hold the nut from rotation, a stop combined with the lever-handle and guide-support for limiting the swing in one direction of said lever, means combined with the screw-stem for enabling it to be rotated, and a section, D, having a joint-face conforming to that of section B, and an outside surface-bearing interposed between the combined joint-faces of the two sections and the inner end of the stem, all combined and operating substantially as shown and described.

2. The within-described improved pipe-coupling, consisting of a section, B, provided with a support, E, extended above its joint-face, a guide, *i*, in line with its orifice and in support E, a threaded stem, I, observed in said guide and provided upon its outer end with means for rotating it, a nut, J, upon said stem, a forked lever, K, fulcrumed upon opposite sides of stem *i* and to support E, links L from shorter arms of the lever upon opposite sides thereof to opposite sides of nut J, and operating, as shown and described, to hold the nut from rotating, and a section, D, having a joint-face conforming to that of section B, and an outer bearing-surface in the path of stem I when moved centrifugally inward, substantially as shown and described.

387,337. SAW FILING AND SETTING MACHINE. William H. Beardsley and Reuben Perry, Eureka, Cal. Filed Nov. 10, 1887. Serial No. 254,932. (No model.)

Claim.—1. In a saw filing and setting machine, a support for the saw, in combination with the sliding adjustable clamp for gripping and holding the saw when being filed, said clamp consisting of hinged jaws embracing at their forward ends the edge of the saw-plate, and the rotary wedge-roll operating between the rear ends of the clamp,

387,337.



whereby their forward ends are set up on the saw-plate, substantially as herein described.

2. In a saw filing and setting machine, a support for the saw, in combination with a fixed frame forming ways or guides, an apron-plate sliding on said frame, and a clamp carried by said apron-plate for embracing the edge of the saw-plate to hold it on its support, said clamp consisting of hinged jaws, a spring for holding the forward end of the jaws normally open, and a rotary wedge-roll carried by the apron-plate and operating between the rear ends of the jaws for closing their forward ends on the saw-plate, substantially as herein described.

3. In a saw filing and setting machine, a support for the saw, in combination with a fixed slotted frame, the apron sliding on said frame, the bolt and handled nut by which the apron is held to the frame and adjusted in position, the clamp carried by the apron and consisting of hinged jaws, the spring for holding the jaws normally open, and the rotary wedge-roll for closing them upon the saw-plate and holding it while being filed, substantially as herein described.

4. In a saw filing and setting machine, a frame provided with guide-lugs or a notched bearing on its end, and a mandrel hinged to said frame and fitted between the guides, said mandrel having a bearing-plate, cone, and nut for holding the saw, in combination with a second frame at right angles to the first frame, a sliding adjustable apron on said second frame, a clamp consisting of hinged jaws carried by the apron, a spring for holding the jaws normally open, and a rotary wedge-roll operating between the rear ends of the jaws to close their forward ends on the saw-plate and hold it steady on its mandrel while being filed, substantially as herein described.

5. In a saw filing and setting machine, a support for the saw, in combination with a sliding adjustable file-holder for setting the file up against the saw-teeth, said file-holder being mounted in transverse grooves, and a thumb-screw for moving it laterally and adjusting it in place, substantially as herein described.

6. In a saw filing and setting machine, a support for the saw, in combination with a sliding adjustable plate, a file-holder consisting of a recessed piece and set-screws for binding on the file, said holder being carried by the sliding plate and mounted thereon, and a thumb-screw, whereby said file-holder may be moved laterally, substantially as herein described.

7. In a saw filing and setting machine, a support for the saw, in combination with a frame forming guides or ways, an adjustable sliding apron thereon, an adjustable sliding plate on the apron, a clamp carried by the apron, and a file-holder carried by the plate and having a lateral adjustment, substantially as herein described.

8. In a saw filing and setting machine, a fixed frame forming ways or guides, and a hinged mandrel at one end for receiving the saw, and a bearing-plate, cone, and nut for holding the saw on the mandrel, in combination with a sliding adjustable anvil on the ways or guides of the frame having a beveled rim on its top, whereby the saw-teeth may be set, substantially as herein described.

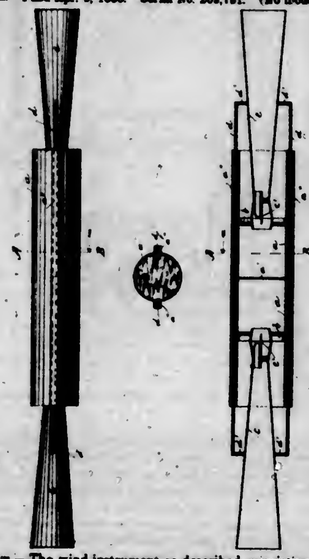
9. In a saw filing and setting machine, a frame forming ways or guides, a hinged mandrel at one end thereof, and a bearing-plate, cone, and nut on the mandrel for holding the saw, in combination with an adjustable sliding anvil on the ways or guides of the frame having a rotary disk in its top, with a downwardly-beveled outer edge or rim, whereby the teeth of the saw may be set, substantially as herein described.

10. In a saw filing and setting machine, a guide-frame, a hinged mandrel at one end thereof, and a bearing-plate, cone, and nut for holding the saw on the mandrel, in combination with an adjustable sliding anvil on the guide-frame, and a rotary disk with a beveled edge or rim on the top of the anvil, and a hole through the disk and anvil top, substantially as herein described.

11. In a saw filing and setting machine, a guide-frame, a hinged mandrel at one end thereof, and a bearing-plate, cone, and nut for holding the saw on the mandrel, in combination with a sliding adjustable anvil on the frame, a rotary top disk having beveled outer rim, and a countersink in said disk, substantially as herein described.

12. A saw filing and setting machine, comprising a guide-frame having at one end a hinged mandrel provided with bearing-plate, cone, and nut for holding the saw on the mandrel, a sliding adjustable anvil on said frame and having a rotary disk with a beveled rim for setting the teeth of the saw, a second guide-frame at right angles to the first and near its end, a sliding adjustable apron on said frame, and a clamp carried by the apron for embracing and holding the saw while being filed, said clamp consisting of hinged jaws, a spring for holding the jaws normally open, and a rotary hinged roll operating between their rear ends for closing their forward ends on the saw-plate, substantially as herein described.

387,338. WIND-INSTRUMENT. Mary F. Cabnet, Groveland, Mass. Filed Apr. 6, 1888. Serial No. 269,781. (No model.)



Claim.—The wind-instrument as described, consisting of the cylinder *a*, having the partition or diaphragm *a'*, and a pair of movable sounding-horns, *c c*, provided with pistons *b b* and connected together for operation, as and for the purpose set forth.

387,339. PROCESS OF PURIFYING HYPOSULPHITE SOLUTIONS USED IN LEACHING ORES. Roswell D. Clark, Cortez, Nev. Filed Dec. 19, 1887. Serial No. 258,402. (No specimens.)

Claim.—The improvement in leaching ores with hyposulphite solutions, consisting in regenerating and improving the leaching solution employed for this purpose by the addition of bicarbonate of soda, substantially as herein described.

387,340. CLOTHES-DRIER. George Crouch, Waterbury, Conn., assignor to the American Ring Company, same place. Filed Apr. 9, 1888. Serial No. 270,068. (No model.)



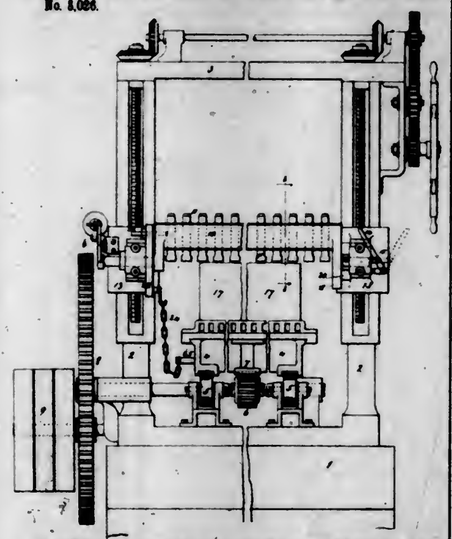
Claim.—1. The combination, with the back plate, A, and its lugs B, of a rod, D, the hubs E, and their sockets E', the movable rod-arms F, pivoted in the sockets E', and a spring adapted to bear frictionally against the hubs, as and for the purposes set forth.

2. The back plate, A, having lugs B, and slotted at 2, in combination with the rod D, the hubs E, and their sockets E', and the mov-

able rod-arms F, pivoted in the sockets E', said hubs having three sides flattened, and a spring adapted to bear against the flattened sides to hold the hubs in place, substantially as specified.

3. The combination, with the slotted back plate, A, having lugs B at right angles thereto, of the rod D, the hubs E upon said rod, the spring-plate C, adapted to bear frictionally against the hubs, the sockets E' upon one side of the hubs, which are shorter in length than the hubs E, and the movable rod-arms F, pivoted in the sockets E', and adapted to be held in place beneath the upper lug and the base of each socket, substantially as set forth.

387,341. MACHINERY FOR DRESSING AND PLANING STONE. James Coulter, Batley, County of York, England. Filed May 5, 1887. Serial No. 237,163. (No model.) Patented in England July 2, 1886 No. 8,026.



Claim.—1. In a stone-dressing machine, a reciprocating bed which carries the stone to be dressed, in combination with a laterally-adjustable tool-holder mounted above said reciprocating bed, which holder holds the cutting-tools in a stationary position while the same are operating upon the stone, and said holder having sliding journals which slide in their bearings, and means for moving said holder laterally when the cutting-tools are not operating upon the stone, substantially as set forth.

2. In a stone-dressing machine, a reciprocating bed which carries the stone to be dressed, in combination with an oscillating and laterally-adjustable tool-holder mounted crosswise of said reciprocating bed, the bearings for said tool-holder, said tool-holder having sliding journals which slide in said bearings, and an operating-lever pivotally connected to one of said journals and to said bearing, substantially as set forth.

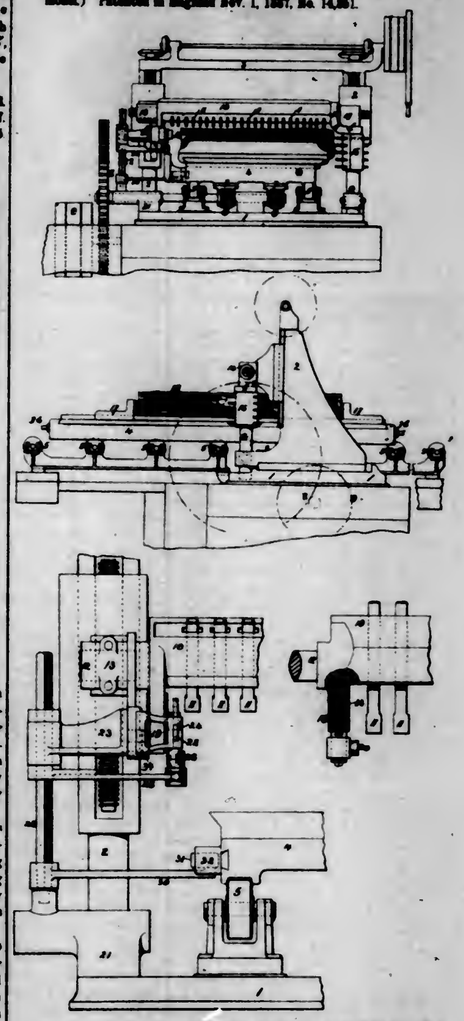
3. In a stone-dressing machine, a reciprocating bed which carries the stone to be dressed, in combination with an oscillating tool-holder mounted crosswise of said reciprocating bed, the axis on which said holder oscillates being in a plane nearer to the surface of the bed than the cutting-edges of the tools carried by the holder, substantially as set forth, whereby when the holder is oscillated the cutting-edges of the tools will be lifted from the surface of the stone.

4. In a stone-dressing machine, a reciprocating bed which carries the stone to be dressed and an oscillating tool-holder journaled crosswise of the bed, in combination with a chain attached at opposite ends to said bed and said holder, substantially as set forth.

5. In a stone-dressing machine, a reciprocating bed which carries the stone to be dressed and an oscillating tool-holder journaled crosswise of said bed, in combination with a lever, 22, carried by said tool-holder and extending in the direction of the bed, and a chain attached at opposite ends to said lever and to said bed, substantially as set forth.

6. In a stone-dressing machine, a reciprocating bed which carries the stone to be dressed and an oscillating tool-holder journaled crosswise of said bed, said holder carrying a single set of tools which dress the stone during both movements of the bed, in combination with a fixed stop, 20, having oppositely-inclined faces, and an arm, 18, on the tool-holder, which encounters said stop on one face, the holder itself encountering the other face of the stop, substantially as set forth, whereby the tools are presented to the stone at the proper angle during both movements of the bed.

387,342. STONE-DRESSING MACHINE. James Coulter, Batley, County of York, England. Filed Oct. 6, 1887. Serial No. 251,669. (No model.) Patented in England Nov. 1, 1887, No. 14,851.



Claim.—1. In a stone-dressing machine, a reciprocating table which carries the stone to be dressed, in combination with an oscillating tool-holder journaled crosswise of said table, a second oscillating tool-holder at right angles to the first holder and perpendicular to the plane of the surface of the table, both of said tool-holders remaining stationary and immovable while the cutting-tools fixed thereto are operating upon the stone, and gearing intermediate between said holders, substantially as set forth, whereby the oscillation of one effects also the oscillation of the other holder.

2. In a stone-dressing machine, a reciprocating table which carries the stone to be dressed, in combination with an oscillating tool-holder journaled crosswise of said table, a second oscillating tool-holder at right angles to the first holder and perpendicular to the plane of the surface of the table, both of said tool-holders remaining stationary and immovable while the cutting-tools fixed thereto are operating upon the stone, gearing intermediate between said holders, substantially as set forth, whereby the oscillation of one effects also the oscillation of the other holder, and means for automatically oscillating said tool-holders when the reciprocating table reaches its limit of travel in each direction.

3. In a stone-dressing machine, a reciprocating table which carries the stone to be dressed, and an oscillating tool-holder journaled crosswise of said table, in combination with the longitudinally-sliding bar 25, with which said holder is connected, the rock-shaft 22, levers connecting said shaft with said sliding bar, the lever-arm 30, carried by said shaft, and dogs or tappets 33 on said reciprocating table, which encounter said lever-arm, substantially as set forth.

4. In a stone-dressing machine, the oscillating tool-holder and the longitudinally-sliding bar 25, having a perpendicular slot therein, in combination with the arm 19, connected with said holder, said arm having a projection, 20, which enters said slot, substantially as set forth.

5. In a stone-dressing machine, the oscillating tool-holder having arm 19, and a spring-actuated sliding block in said arm, in combination with the fixed curved track or disk 34, against which said block bears, substantially as set forth, whereby vibrations of the holder are prevented.

6. In a stone-dressing machine, a reciprocating table having a laterally-movable bed-plate upon which the stone is placed, a rock-shaft journaled in said table beneath said bed-plate, racks carried on the under side of said bed-plate, and pinions on said shaft, which engage said racks, in combination with a tool-holder mounted crosswise of and above said reciprocating table, and a series of cutting-tools carried by said holder, which act simultaneously upon the stone on said bed-plate.

387,343. DYNAMO-ELECTRIC MACHINE AND ELECTRIC MOTOR. Rodney H. B. Croswell, London, England. Filed Feb. 23, 1887. Serial No. 228,517. (No model.) Patented in England Mar. 3, 1886, No. 4,262, and in Belgium Feb. 19, 1885, No. 67,989.



Claim.—1. In an armature for a dynamo-electric machine, the combination, with a removable axle, of radial bars *d* and wrought-iron disks held by such bars, substantially as and for the purpose set forth.

2. In an armature for a dynamo-electric machine, the combination, with iron disks having dovetailed notches, of radial bars having dovetailed edges to fit said notches, all substantially as set forth.

3. In an armature for a dynamo-electric machine, the combination of a detachable spindle with radial bars and iron disks arranged with spacing-pieces and radial ventilating-passages, substantially as set forth.

4. In an armature for a dynamo-electric machine, the winding consisting of loops or stirrups of copper strip arranged so as to lie flat on the outside of the armature and so as to be on edge on the inside, substantially as shown and described.

387,344. ARTIFICIAL STONE. Andrew G. Dederick, New York, N. Y. Filed June 13, 1888. Serial No. 276,869. (No specimens.)

Claim.—A composition of matter to form an artificial stone, consisting of cement, alkali in solution, silica, crushed stone or gravel, muriate of soda, caoutchouc or resin, and glue and gallic acid, substantially as set forth.

387,345. CLOTHES-DRIER. David A. Dodge, Duluth, Minn. Filed July 2, 1888. Renewed Dec. 16, 1887. Serial No. 258,142. (No model.)

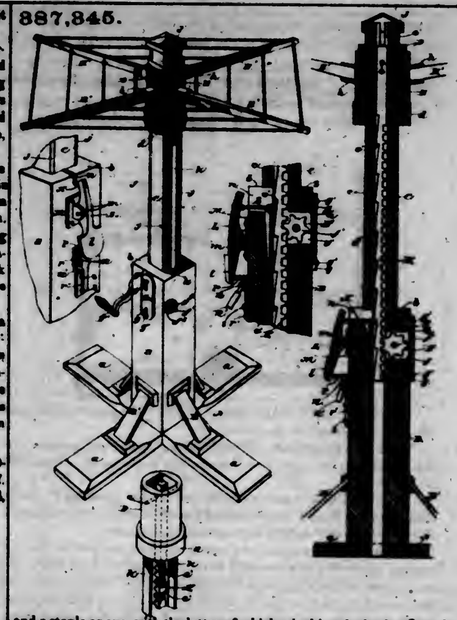
Claim.—1. In a clothes-drier, the combination of a hollow standard, a rack-bar working therein and having a series of notches on one side and carrying the radial arms at its upper end, a shaft carrying a pinion, a spring-controlled latch housed within a recess in the standard and normally projected toward the rack-bar, and a pivoted lever located on the outside of the standard and connected with the latch, as and for the purpose described.

2. In a clothes-drier, the combination of the standard, the rack-bar carrying a sleeve and the radial arm and inclosed within the standard, a spring-pressed latch normally projected into the path of the teeth on the rack-bar, a pivoted lever connected with the latch for withdrawing it from engagement with the bar, and a vertically-adjustable stop-plate adapted to be moved into the path of the free end of the pivoted lever, substantially as described, for the purpose set forth.

3. The combination of the standard, the rack-bar having the notches or teeth and carrying the sleeve and the radial arms, the spring-pressed latch adapted to enter one of the notches of the rack-bar, a pivoted lever connected with the latch, a plate in which the lever is pivoted, and a stop-plate having the extended flange or leg, and the longitudinal slots through which are passed the guide-pins and a staple or eye, with the latter of which a locking device is adapted to be connected to prevent retrograde movement of the stop-plate, substantially as described, for the purpose set forth.

4. In a clothes-drier, the combination of the main and auxiliary standards or uprights of different diameters with the intermediate shoulder or flange, and provided with the central channel and the slots *c'*, the wear-strips at the corners of the auxiliary upright, the cap surmounting the said auxiliary standard, the rack-bar inclosed within the standards and having the notches, the sleeve fitted over the auxiliary standard and connected with the rack-bar, the collar carrying the radial arms and loosely fitted on the sleeve, a pinion for moving the rack-bar vertically, a spring-pressed latch normally projected into the path of the teeth of the rack-bar, and a pivoted lever connected with the latch, substantially as described, for the purpose set forth.

387,845.



387,346. PAINTING-MACHINE. Hugh P. Dugan, Mound City, Kans. Filed Feb. 1, 1888. Serial No. 262,694. (No model.)

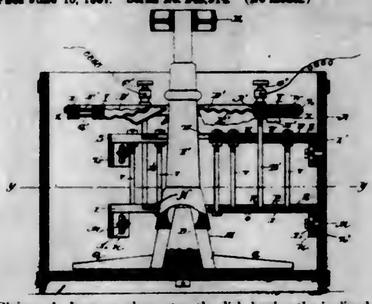


Claim.—1. The combination of the casing containing the paint well or chamber and having a vertically-extended back provided with slots C, the lower brushes having fixed bearings in the casing and arranged within the paint-well, the upper brushes having their journals extending through the slots C, and the vertically-adjustable bars mounted on the back of the casing and secured to the journals of the upper rollers, as set forth.

2. The painting-machine comprising the casing having a paint-well and an extended back having vertical slots C, and provided on its front side at its upper edge with an outwardly-curved longitudinal guard, *b*, the lower brushes arranged in the paint-well, the upper brushes having their journals extending through the slots C, and the

vertically-adjustable bars mounted on the back of the casing and having their upper ends secured to the journals of the upper brushes, as specified.

387,347. AMALGAMATOR. Adam H. Strahan, Dayton, Nev. Filed June 10, 1887. Serial No. 240,914. (No model.)



Claim.—1. In an amalgamator, the disk having the inclined paddles D, substantially as described.

2. In an amalgamator, the disk having the inclined paddles provided with series of transverse corrugations or plates E', substantially as described.

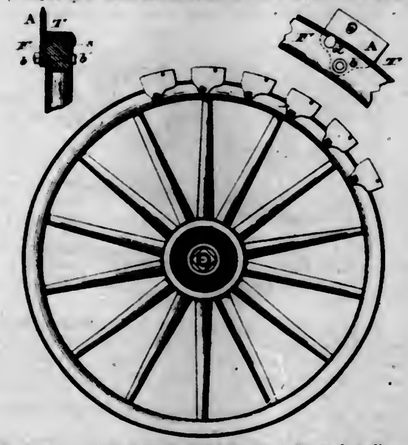
3. In an amalgamator, the disk having the openings F', the inclined paddles D, and the depending lips H', inclined in the opposite direction from the paddles, substantially as described.

4. In an amalgamator, the combination of the settler, the converging conducting-arms secured to and insulated from the settler, the conducting-disk having the paddles and supported upon the arms, and the battery or other source of electricity having one pole connected to the settler and the other pole connected to the disk, substantially as described.

5. The annular conducting-disk W, having the series of inclined paddles E' extending inward from the disk to the center thereof, all the paddles converging to a common center, in combination with the settler, in which the disk is arranged, and the battery or other source of electricity having one pole connected to the disk and the other pole connected to the settler, substantially as described.

6. In an amalgamator, the settler, the series of arms I, secured to, but insulated therefrom, the series of arms S above the arms I, and also insulated from the settler, and the conducting-disk W, supported by the arms I, but insulated therefrom, and the battery or other source of electricity having one pole connected to the settler and the opposite pole connected to the disk, substantially as specified.

387,348. ROAD-GRADING MACHINE. William Fleming, Fort Wayne, Ind. Filed June 21, 1888. Serial No. 205,816. (No model.)



Claim.—1. In combination with the wheel of a road-grading machine, a reversible flange-piece adapted to be set on as a projecting flange by means of a fixed stem and a bolt, both passing through the felly, and to be set in position to clear the ground by turning it on its stem and bolting it in that position, substantially as described and set forth.

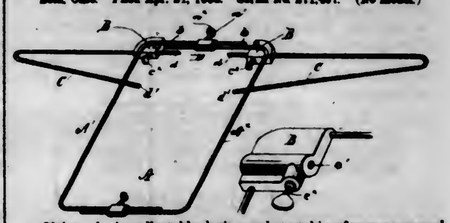
2. In combination with the wheel of a road-grading machine, a flange-piece turning by a stem passing through the felly and secured by a flattened head, and fastened by the same bolt in either of two positions at will—viz., as a projecting flange or turned inwardly to clear the ground.

3. In combination with the wheel of a road-grading machine, a flange-piece with a headed stem extending through the felly by a gain under the tire, and two bolt-holes, through one of which it may be bolted to the felly in position to stand as a projecting flange and lock the tire upon the felly, and through the other of which it may be bolted in position to clear the ground, substantially as described and set forth.

4. In combination with the wheel of a road-grading machine, the fixed stem *a* and flange-piece A, as described and set forth.

5. In combination with the wheel of a road-grading machine, the flange-piece A, the headed stem *a*, and the bolt-holes *b* and *c*, substantially as described and set forth.

387,349. GARMENT-STRETCHER. Harry S. Fuller, Springfield, Ohio. Filed Apr. 21, 1888. Serial No. 271,467. (No model.)



Claim.—1. An adjustable drying and stretching frame composed of two U-shaped pieces of resilient metal, connecting-couplers adapted to slip over the ends of the respective pieces, and a clamping-screw in each of said couplers for holding said pieces in different positions of adjustment, a V-shaped spring-arm connected to each of said U-shaped pieces, and means, substantially as described, for holding said arms in different positions of adjustment, substantially as set forth.

2. An adjustable drying and stretching frame provided with corner-pieces having longitudinal openings therein and adjustable spring-arms adapted to be inserted in said openings, substantially as specified.

3. The adjustable stretching-frame composed of the two U-shaped pieces, the free ends of which are connected together by couplings, as described, the corner-pieces having the longitudinal openings, a clamping-screw, and the independent spring-arms adapted to be secured to said corner-pieces and adjusted therein, substantially as specified.

4. The adjustable stretching and drying frame composed of the U-shaped pieces, the free ends of which are connected together by connecting-couplers, so as to be adjustable, as described, the corner-pieces grooved on one side to receive the said wire, which is secured therein, and provided on the other with an opening to receive one end of the V-shaped spring-arm, means for holding said spring-arms in different positions of adjustment in said corner-pieces, and a suspension-ring on said connecting-coupler, substantially as specified.

387,350. TWO-WHEELED VEHICLE. Peter Glaser, Redding, Cal. Filed Apr. 14, 1888. Serial No. 270,648. (No model.)

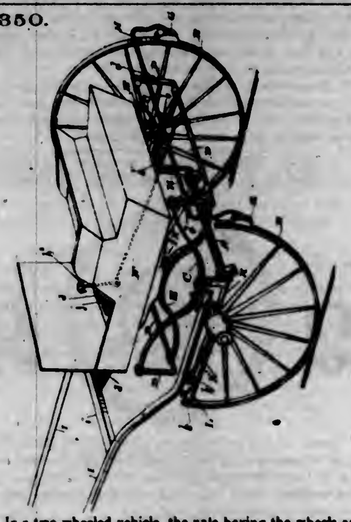
Claim.—1. In a two-wheeled vehicle, the axle and the body, in combination with the spring-connection between them, consisting of the springs clipped solidly to the axle and curving upwardly to each end, the springs supporting the body and curving upwardly to the center, and the pivoted hangers connecting the ends of the body-supporting springs with the ends of the axle-springs, substantially as herein described.

2. In a two-wheeled vehicle, the axle, the shafts rigidly clipped thereto, and the body, in combination with the half-springs clipped solidly to the axle and curving upwardly to each end, the half-springs supporting the body and curving upwardly to the center, and the depending hanger-frames connecting the ends of the body-springs with the ends of the axle-springs, substantially as herein described.

3. In a two-wheeled vehicle, the axle, the wheels, the body, and a swinging connection between the axle and body, whereby the body may have a movement forward and back, in combination with brakes operating against the rear of the wheels, whereby on a downgrade the weight on the horse's back may be relieved, substantially as herein described.

4. In a two-wheeled vehicle, the axle having the wheels and the body, in combination with the half-springs clipped to the axle, the half-springs supporting the body, and the pivoted hangers connecting the ends of the springs, whereby the body may have a movement forward and back, and the brakes operating against the rear of the wheels, whereby on a downgrade the weight on the horse's back may be relieved, substantially as herein described.

387,350.



5. In a two-wheeled vehicle, the axle having the wheels and the body, in combination with the half-springs clipped to the axle, the half-springs supporting the body, and the pivoted hangers connecting the ends of the springs, whereby the body may have a movement forward and back, the rock crank-shaft carried by the rear hangers, the brake-blocks carried by the shaft, and operating against the rear of the wheels, the operating-lever in the body, and the rod connecting it with the rock crank-shaft, whereby the brakes are actuated, substantially as and for the purpose herein described.

6. In a two-wheeled vehicle, the axle, the body, and a swinging connection between them, whereby the body may have a movement forward and back, and the shafts clipped to the axle, in combination with an adjustable connection between the body and the shafts, whereby said body may be pulled forward on an upgrade to impose the weight on the horse's back, substantially as herein described.

7. In a two-wheeled vehicle, the axle, the body, and a swinging connection between them, whereby the body may have a movement forward and back, and the shafts clipped to the axle and having a cross-bar, in combination with the adjustable strap connecting the body with the cross-bar of the shafts, whereby the body may be pulled forward on an upgrade to impose the weight on the horse's back, substantially as herein described.

8. In a two-wheeled vehicle, the axle, the shafts clipped thereto and having a cross-bar, and the body, in combination with the half-springs clipped to the axle, the half-springs supporting the body, and the pivoted hangers connecting the ends of the springs, whereby the body may have a movement forward and back, and the adjustable strap connecting the body with the cross-bar of the shafts, whereby said body may be pulled forward on an upgrade to impose the weight on the horse's back, substantially as herein described.

9. In a two-wheeled vehicle, the crank-axle and the shafts solidly clipped thereto, in combination with the rod or link journaled or pivoted on the crank portion of the axle and fitted through a socket on the shaft, and nuts for adjusting the rod or link as to length between connections, whereby the height of the shafts may be regulated to suit the horse, substantially as herein described.

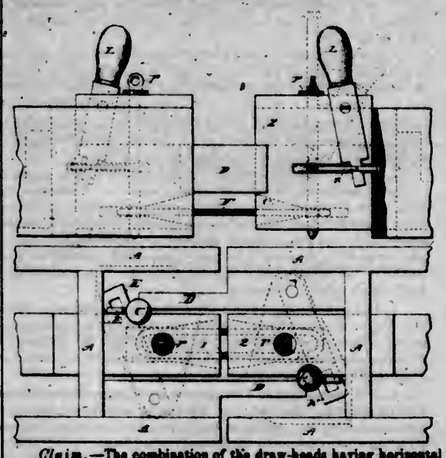
387,351. TROUSERS. Bernard Goodman, Cincinnati, Ohio. Filed Feb. 20, 1888. Serial No. 264,576. (No model.)



Claim.—1. A pair of pantaloons having side pieces extending rearward from the opening in front to a point in the rear of the hip-pockets and downward to the pocket-openings, and having extensions to serve as the inner walls of the pockets, substantially as for the purpose specified.

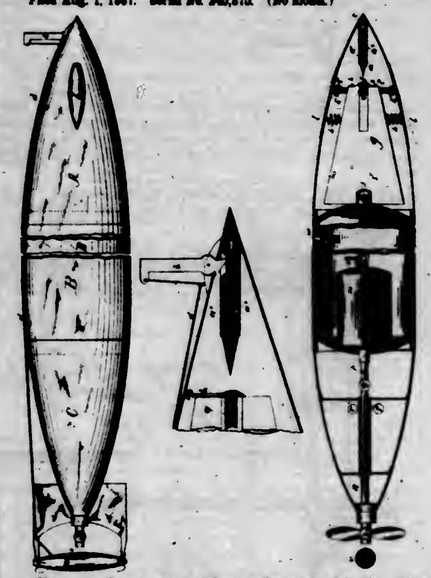
2. A pair of pantaloons comprising fore pieces, A, back pieces, B, and side pieces, C, forming the waistband and the body of the garment rearward from the opening in front and downward to the hip-pockets, and having extensions *c*, substantially as specified.

387,352. CAR-COUPLING. Freeman Hallmore, Mayfield, Ky. Filed Sept. 22, 1887. Serial No. 250,441. (No model.)



Claim.—The combination of the draw-heads having horizontal slots made through them, the extensions D, having their front ends projecting beyond the draw-heads, the pivoted supports extending through the slots in the draw-heads, the operating-levers pivoted on the draw-heads, the pins, and the link, substantially as shown and described.

387,353. AUTO-MOBILE TORPEDO. Martin H. Hall, U. S. Navy. Filed Aug. 1, 1887. Serial No. 245,575. (No model.)



Claim.—1. In an auto-mobile torpedo, the combination, with a shell, of a movable magazine located in said shell, a firing-pin in position to discharge this magazine, and a trigger located in position to liberate the firing-pin, substantially as set forth.

2. In an auto-mobile torpedo, the combination, with a shell and a movable magazine located in the shell or casing, of a set of pectoral fins connected with such shell, adapted to be outwardly extended by the movement of the magazine, substantially as set forth

3. In an auto-mobile torpedo, the combination, with a shell and a magazine yieldingly supported therein, of a set of pectoral fins connected with the shell and adapted to be outwardly extended by the lateral movement of the magazine, and mechanism for discharging the magazine.

4. The combination, with a shell or casing and a magazine yieldingly supported in said casing, said magazine having a primer located therein, of a spring-actuated firing-pin in position, when released, to discharge the primer, and a trigger for liberating this pin, substantially as set forth.

5. The combination, with a shell, a magazine yieldingly supported in said shell by springs and hangers, and a primer located in one end of the magazine, of a pair of pectoral fins connected with the shell and in position to be alternately outwardly extended by the lateral movement of the magazine, a spring-actuated firing-pin adapted to strike the primer when liberated, and a pivoted trigger for engaging or disengaging the firing-pin, substantially as set forth.
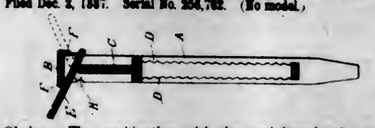
6. In an auto-mobile torpedo, a shell provided with a magazine yieldingly suspended therein and suitable means for discharging the same, an immersion-chamber having unobstructed holes in its bottom, and a separate compartment of the air-chamber containing a suitable number of removable weights, whereby a proportionately less or greater quantity of water in the air-chamber will produce an equilibrium of the torpedo and control its submersion to a less or greater depth, substantially as described.

7. In a torpedo, the combination, with a pivoted trigger, a magazine, and a firing-pin normally held by said trigger, of a buoyant grapnel and a line connecting this grapnel to the trigger for the purpose of discharging the magazine when the grapnel is caught or obstructed, substantially as set forth.

8. The combination of a torpedo having a trigger thereon and a buoyant grapnel connected by a tow-line or cable to the trigger of the magazine for the purpose of discharging the same when the grapnel is caught or obstructed, substantially as set forth.

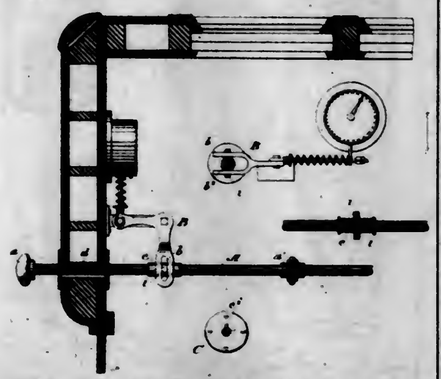
9. In a torpedo, the combination, with a shell, a magazine therein, and a firing device, of a buoyant grapnel connected to the firing device and adapted, when engaged, to discharge the magazine, substantially as set forth.

387,354. WASH-BOARD. Ephraim Hamboer, Detroit, Mich. Filed Dec. 3, 1887. Serial No. 256,762. (No model.)



Claim.—The combination, with the wash-board, of a spatter board or guard slidingly secured between the side rails of the wash-board, and the buttons F, pivoted to the top rail of the wash-board upon opposite sides thereof, substantially as and for the purpose specified.

387,355. DEVICE FOR RINGING FARE-REGISTERS. Jacob M. Hahn, Pittsburg, Pa. Filed Mar. 1, 1888. Serial No. 265,847. (No model.)



Claim.—1. In a device for ringing the register of a street-car, the combination, with a rod running lengthwise through the car, of a bell-crank having a slotted divided arm engaging the rod and connecting with the register, which it rings, by means of the other arm, substantially as and for the purposes set forth.

2. In a device for ringing the register of a street-car, the bell-crank B, having one arm connected with the register, which it rings, and the other arm divided into two parts, b' and b^2, each slotted to engage with pins above and below the rod A by which it is actuated, substantially as set forth and described.

3. In a device for ringing the register of a street-car, the rod A, having mounted thereon the sleeve e, provided with pins i, engaging corresponding slots in the arms of a bell-crank connected with the register, which it rings, substantially as specified.

387,356. ROLLER-BEARING. Reuben W. Hunt, San Francisco, Cal. Filed Apr. 16, 1887. Serial No. 235,040. (No model.)



Claim.—1. In a roller-bearing, a ring bearing at its periphery on journals of a series of rollers bearing directly on the shaft and casing and at its inner side on journals of a series of rollers bearing neither on the shaft nor casing, but on the rollers of the other series, all said parts combined substantially as set forth.

2. In a roller-bearing of the class herein described, the ring E, adapted to bear at its periphery on the journals B^2 of the bearing-rollers B, consisting each of a journal, B^2, and of two journals, B', bearing directly on the shaft A and casing D, and to bear at its inner side on the journals C^2 of the separating-rollers C, consisting each of a journal, C^2, and of two journals, C', bearing only on the journals B', all said parts combined substantially as shown and described, and for the purposes set forth.

3. In a roller-bearing, the combination of a series of rollers bearing directly on the shaft and casing and having journals adapted to rotate in contact with the periphery of a ring coaxial with the shaft, and a series of rollers bearing neither on the shaft nor casing, but on the rollers of the other series, and having journals adapted to rotate in contact with the inner side of said ring, all constructed and arranged substantially as set forth.

4. In a roller-bearing of the class herein described, the combination of the series of bearing-rollers B, each consisting of a journal, B^2, adapted to rotate in contact with the periphery of the ring E, coaxial with the shaft A, and of two journals, B', bearing directly on the shaft and casing, and the series of separating-rollers C, each consisting of a journal, C^2, adapted to rotate in contact with the inner side of said ring, and of two journals, C', bearing only on the journals B', all constructed and arranged substantially as shown and described, and for the purposes set forth.

5. In a roller-bearing, the combination, with a ring coaxial with the shaft, of a series of rollers bearing directly on the shaft and casing and having journals adapted to rotate in contact with the periphery of said ring, and a series of rollers bearing neither on the shaft nor casing, but on the rollers of the other series, keeping the latter separate from each other, and having journals adapted to rotate in contact with the inner side of said ring, all constructed and arranged substantially as and for the purposes set forth.

6. In a roller-bearing of the class herein described, the combination, with the ring E, coaxial with the shaft A, of the series of bearing-rollers B, consisting each of two journals, B', bearing directly on the shaft and casing, and of a journal, B^2, located between the journals B' and adapted to rotate in contact with the periphery of said ring, and the series of separating-rollers C, keeping the rollers B separate from each other, and consisting each of two journals, C', bearing only on the journals B', each journal C' on and between two journals B', and of a journal, C^2, located between the journals C' and adapted to rotate in contact with the inner side of said ring, all constructed and arranged substantially as shown and described, and for the purposes set forth.

7. In a roller-bearing, the combination, within the casing, of the shaft, a ring coaxial with the shaft, a series of rollers bearing directly on the shaft and casing and having journals adapted to rotate in contact with the periphery of said ring, and a series of rollers bearing neither on the shaft nor casing, but on the rollers of the other series, and keeping the latter separate from each other, and by such bearing kept from contact with the shaft, and having journals adapted to rotate in contact with the inner side of said ring, all constructed, arranged, and operating substantially as and for the purposes set forth

8. In a roller-bearing of the class herein described, the combination, within the casing D, of the shaft A, the series of bearing-rollers B, consisting each of two journals, B', bearing directly on the shaft and casing, and of a journal, B^2, located between the journals B' and adapted to rotate in contact with the periphery of the ring E, coaxial with the shaft, the series of separating-rollers C, keeping the rollers B separate from each other, and kept by their bearing on the latter from contact with the shaft, and consisting each of two journals, C', bearing only on the journals B', each journal C' on and between two journals B', and of a journal, C^2, located between the journals C' and adapted to rotate in contact with the inner side of said ring, and the said ring E adapted to bear at its periphery on the journals B^2 and at its inner side on the journals C^2, all constructed, arranged, and operating substantially as shown and described, and for the purposes set forth.

9. A roller-bearing comprising the shaft A, the casing D, the series of bearing-rollers B, consisting each of two journals, B', bearing directly on the shaft and casing, and of a journal, B^2, located between the journals B' and rotating in contact with the periphery of the ring E, coaxial with the shaft, the series of separating-rollers C, consisting each of two journals, C', bearing only on the journals B', each journal C' on and between two journals B', and of a journal, C^2, located between the journals C' and rotating in contact with the inner side of said ring, and the said ring bearing at its periphery on the journals B^2 and at its inner side on the journals C^2, all constructed, arranged, combined, and adapted to operate substantially as shown and described and for the purposes set forth.

387,357. ASPHALTUM COMPOUNDED AND PROCESS OF MAKING THE SAME. Moses S. Hoges, South Amboy, N. J., and Albert W. Duckemeyer, Brooklyn, N. Y. Filed Dec. 17, 1887. Serial No. 258,210. (Specimens.)

Claim.—1. The process herein described of refining asphaltum, which consists in adding it in small quantities from time to time to a bath of melted paraffine-wax and mineral oil and subjecting it to heat sufficient to melt it and to volatilize certain impurities therein contained, substantially as specified.

2. The process herein described of refining asphaltum, which consists in subjecting it to a bath of boiling paraffine-wax and mineral oil, and subjecting it to heat sufficient to melt it and to volatilize certain impurities therein contained, as specified.

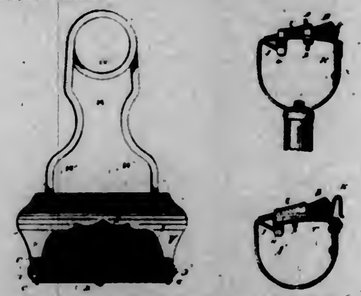
3. The compound of paraffine-wax, mineral oil, and asphaltum melted together and freed from volatile impurities, as specified.

387,358. BITUMEN COMPOUNDED AND PROCESS OF MAKING THE SAME. Moses S. Hoges, South Amboy, N. J., and Albert W. Duckemeyer, Brooklyn, N. Y. Filed Dec. 17, 1887. Serial No. 258,211. (Specimens.)

Claim.—1. The process herein described of hardening bitumen, consisting in melting it with paraffine-wax and subjecting the same to heat to remove the volatile impurities, as specified.

2. The compound consisting of bitumen and paraffine-wax from which the volatile impurities have been removed, as specified and set forth.

387,359. SAFETY-RAZOR. Friedrich Kampfe, Richard Kampfe, and Otto Kampfe, Brooklyn, N. Y. Filed Feb. 6, 1888. Serial No. 263,136. (Model.)



Claim.—1. A safety-razor having angular blade-retaining clips on the top of the holder at the end of said top, and screws in said clips, substantially as herein shown and described, and for the purpose of adjusting the blade in relation to the guard, as set forth.

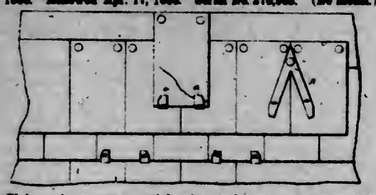
2. In a safety-razor, the combination, with a blade-holder, of movable angle-clips on said holder at the ends of the top of the holder, screws in said clips, and a spring pressing on the blade toward the guard, substantially as herein shown and described, and for the purpose of adjusting the blade in relation to the guard, as set forth.

3. In a safety-razor, the combination, with a blade-holder, of movable angle-clips at the ends of the top of the holder, which clips have flanges projecting over the top and bottom surfaces of the top of the holder, a screw in each flange of each clip, and a spring pressing the blade toward the guard, substantially as herein shown and described.

4. In a safety-razor, a guard composed of a rod and a series of U-shaped wire teeth secured in and projecting upward and outward from said rod, the closed ends of the U-shaped teeth being at the outside, substantially as shown and described.

5. In a safety-razor, the combination, with a holder having two apertures in its bottom, of the U-shaped spring-handle M, provided with the coil or loop M', the ends of the shanks of the handle being passed into the apertures in the bottom of the holder, substantially as herein shown and described.

387,360. DEVICE FOR SECURING ROOFING-SLATE. John H. Kemp, West Alexandria, assignor of two-thirds to William Clayton, New Lebanon, and Joseph Baumgardner, Dayton, Ohio. Filed July 17, 1886. Renewed Apr. 17, 1888. Serial No. 270,962. (No model.)

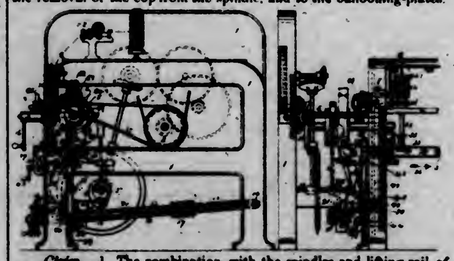


Claim.—1. As a new article of manufacture, an improved fastening device for roofing-slates formed of a single piece of sheet metal and comprising two arms arranged at an inclined position with relation to each other, one end of said arms being adapted to be bent over the lower edge of a shingle and the opposite ends of the arms meeting and joining each other and lying in the plane of the arms, and having a transverse opening therethrough for the passage of a securing nail or screw, substantially as set forth.

2. The combination, with the overlapping slates, of a V-shaped piece of metal whose angle portion is in the same plane as the arms thereof, secured upon the slates by a nail or similar device driven through its angular end and between the meeting edges of the under slates, the diverging arms of the piece of metal protruding below the edge of the upper slate and being bent round the same, substantially as set forth.

387,361. SPINNING-MACHINE. William Leach, Accrington, County of Lancaster, England. Filed Oct. 6, 1886. Serial No. 215,666. (No model.) Patented in England Apr. 9, 1884, No. 6,145.

Brief.—The invention relates to the copping-motion, to means for putting the drag on the spindle, to means for rotating the whirl-tube which rotates upon the spindle, to the flier, to means for facilitating the removal of the cop from the spindle, and to the ballooning-plates.



Claim.—1. The combination, with the spindles and lifting-rail, of a copping-motion consisting of a vibrating lifting-lever and mechanical connections between said lever and the lifting-rail for imparting reciprocating motion from the former to the latter, and including as part of said connections a chain, a chain take-up adapted to pay out a portion of said chain at each vibration of the lever, and an eccentric-pulley arranged relatively to said chain, substantially as described, so that as the chain is paid out at each reciprocation it will wind each time more on the eccentric-pulley, whereby a given reciprocation of the chain produces each time a decreased oscillation of the pulley, which, being communicated to the lifting-rail, results not only in lowering the latter at each reciprocation to a lower level, but also successively shortens its reciprocating movement, and thereby builds up the cop with chases which are successively more obtusely conical.

2. The combination, with the spindles and lifting-rail, of a copping-motion consisting of a lifting-shaft geared to the lifting-rail, an eccentric-pulley on said shaft, a chain connected to and adapted to

wind on said pulley, a vibrating lifting-lever to which said chain is connected, whereby on the vibration of said lever it alternately pulls and releases the chain, and thereby causes the oscillation of said pulley, and a chain take-up carried by said lever and adapted to pay out a portion of said chain at each vibration of the lever, substantially as set forth.

3. The combination, with the spindles and lifting-rail, of a copping-motion consisting of lifting-shaft 5, geared to the lifting-rail, an eccentric-pulley, 6, on said shaft, an arm, 7, fixed to said shaft, a chain, 11, connected to said arm and adapted to wind on said pulley, a lifting-lever, 13, to which the opposite end of said chain is connected, and a chain take-up carried by said lever and adapted to pay out a portion of said chain at each vibration of the lever, substantially as set forth.

4. The combination, with the lifting-rail and the spindles carried thereby, of tension-levers bearing against said spindles in order to apply a drag thereto, shifting weights applied to said levers and adapted by moving toward or from their fulcra to vary said drag, and a reciprocatory sliding bar arranged parallel with the series of levers and connected to said weights, whereby the reciprocation of said bar simultaneously shifts all of said weights and varies the drag equally on all the spindles.

5. The combination, with a spindle, of a tension-lever bearing against said spindle in order to apply a drag thereto, a shifting weight consisting of a weighted arm having a roller rolling on one arm of said lever, a reciprocatory bar to which said weighted arm is pivoted, and mechanism, substantially as set forth, for reciprocating said bar.

6. The combination, with a spindle, of a tension-lever bearing against said spindle to apply a drag thereto, a shifting weight bearing against one arm of said lever, a lifting-rail for lifting the spindles, a reciprocatory bar borne by said lifting-rail and rising and falling with it, and connected to said shifting weight and adapted to shift the same, and mechanism, substantially as set forth, for reciprocating said bar.

7. The combination, with a spindle, of a tension-lever, a shifting weight bearing against one arm of said lever, a lifting-rail for lifting the spindles, a reciprocatory bar borne by said lifting-rail, connected to said shifting weight to shift the same, a cam-shaft, mechanism driven from said shaft for lifting and lowering said lifting-rail, and mechanism, substantially as set forth, driven from the same shaft for reciprocating said bar.

8. The combination, with a spindle, of a tube inclosing it, the lifting-rail for raising and lowering the spindle, the stationary rail through which the spindle and tube pass, an oil-cup in said rail, a screw-bushing beneath said oil-cup and embracing said tube, and the whirl and its tube, with the latter projecting into the oil-cup, substantially as set forth.

9. The combination of the spindle, the mechanism for raising and lowering it, the rotary cage inclosing the spindle having an outwardly-projecting flange at its top, and eyelets for guiding the yarn and applying a tension thereto, and the whirl attached to said cage, substantially as set forth.

10. The combination of the spindle, the mechanism for raising and lowering it, a rotary cage arranged to inclose the spindle and cop, constructed of cylindrical form, with an outwardly-projecting flange, 54, at its top, and having eyelets 23 for guiding the yarn around the cage beneath said flange to apply a tension thereto, and eyelets 53 for guiding the yarn to the cop, and the whirl attached to said cage, substantially as set forth.

11. The combination of the spindle, mechanism for lowering it, a tube inclosing it, the rotary cage inclosing the spindle, and a loose washer at the top of said tube, whereby on lowering the spindle said washer is arrested by the bottom of the cage and holds the cop while the spindle is lowered within it to loosen the cop, substantially as set forth.

12. The combination, with the spindles, of the ballooning-plate, a vertically-moving frame by which said plate is carried, and a lifting-gear for raising said frame in order to lift the ballooning-plate sufficiently to facilitate doffing, substantially as set forth.

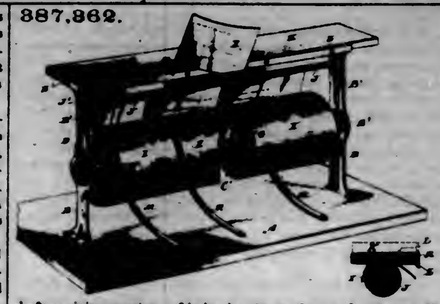
387,862. PAPER HOLDER AND CUTTER. SYLVANUS D. LOCKE, Hoosick Falls, N. Y. Filed Mar. 24, 1888. Serial No. 268,389. (No model.)

Claim.—1. A roll-holder having sectional standards provided with friction faces or bearings and with means for clamping the same, and a rigidly-secured bar connecting the ends of the sections, substantially as specified.

2. A roll-holder having sectional standards, one section of each of which is provided with a shaft-receiving socket, a friction-face, and a hub, and the other of which is provided with a friction-face and adapted to swing or pivot upon the hub, and means, substantially as described, for clamping the sections together, substantially as specified.

3. A roll-holder provided with sectional standards, one section of each standard having an inwardly-projecting socket provided with a

387,862.



shaft-receiving opening, a friction bearing or face, and an outwardly-projecting hub, a square aperture therethrough, and each of the other sections of the standards having friction bearings or faces, a cross-bar carrying a cutter, and means for clamping the sections of the standards together, substantially as specified.

4. In a roll-holder, the combination of a base, standards adapted to support a roll-shaft, a rigidly-mounted cross-bar, and a knife fixed to the cross-bar and extending from standard to standard, substantially as specified.

5. In a roll-holder, the combination of a base, sectional standards adapted to receive a roll-supporting shaft, a rigidly-mounted cross-bar, a knife rigidly secured to the cross-bar, and means for clamping the sections, substantially as specified.

6. In a roll holder and cutter, a base, standards adapted to receive a roll-supporting shaft, a cross-bar provided with a knife, and a guide, the surfaces of the guide and of the cross-bar being arranged to direct the leading end of the paper away from knife after each cut, substantially as specified.

7. In a roll-holder, a base, standards adapted to receive a roll-supporting shaft and to adjustably support a cross-bar, a knife fixed to the cross-bar, and a spring-pressed paper-guiding roller, substantially as specified.

8. In a roll-holder, a base, sectional standards adapted to receive a roll-supporting shaft, a rigidly-mounted cross-bar, a knife fixed to the cross-bar, and a paper-guide arranged adjacent to the cross-bar, substantially as specified.

9. In a roll-holder, a base, standards terminating at their upper ends in longitudinal slotted sockets, bearing-blocks and springs arranged in the sockets, and a guide-roller mounted in the bearing-blocks, substantially as specified.

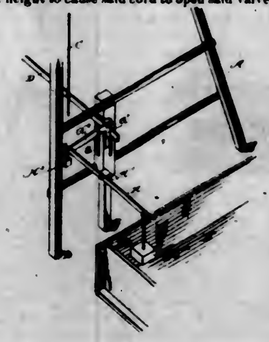
10. In a roll-holder, the combination of a recessed cross-bar and a spring-seated guide-roller, substantially as specified.

11. In a roll-holder, a base, standards provided with shaft-receiving sockets having openings, and a spring arranged to bear against the roll at a point substantially opposite the openings in the shaft-receiving sockets, substantially as specified.

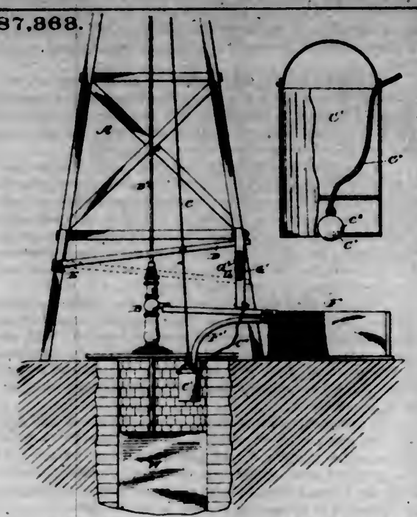
12. The section B, provided with a shaft-receiving socket, B^2, having the opening B^3, and the guiding-rib B^{11}, substantially as specified.

387,863. WINDMILL-REGULATOR. JOHN R. MILLER, Sterling, Ill. Filed Dec. 2, 1887. Serial No. 256,760. (No model.)

Claim.—1. The combination, with the windmill, of a bucket suspended from the wire or chain by which the mill may be drawn out of the wind, a passage for the delivery of overflow-water into said bucket, a valve in said bucket controlled by a cord secured to a support above at proper height to cause said cord to open said valve when the bucket



387,863.



has descended to its lower limit, an automatic locking device, substantially as described, for holding said bucket when it has reached its lowest limit, and a float for controlling said locking device, substantially as shown, and for the purposes specified.

2. The combination, with a windmill, of a wire, C, the drawing of which wire downwardly throws the wheel out of the wind, the bucket C', suspended from said wire, valve C^2, located in said bucket, cord C^3, arranged to open said valve when said bucket reaches its lower limit, bar D, secured to the wire C, bell-crank G, arranged to engage said bar when the latter has reached its lower limit, lever H, connected with said bell-crank, tank F, to receive water from the pump, the float H^2, suspended from the lever H into the tank F, and overflow-pipe F', leading to the bucket, substantially as shown, and for the purposes specified.

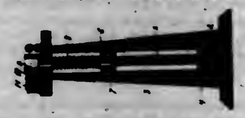
387,864. BOOK-CLIP. JOHN W. HOLAN, Chicago, Ill. Filed Jan. 26, 1888. Serial No. 261,914. (No model.)



Claim.—1. A book-clip consisting of a single wire bent so as to form a coil at each side of the book, a cross-rod and a cross-piece, U-shaped, which together clasp the cover of the book, and a cross-piece, U-shaped, which clamps the leaves of the book.

2. A book-clip consisting of a wire coil on each side of the book, with a cross-rod and two cross-pieces, U-shaped, of varying length, one of which clasps the outside of the back of the book, and the other with the rod engages the inside of the back of the book, as and for the purpose set forth.

387,865. ELECTRIC SWITCH-LOCK. EDWARD L. CROUTT, Somerville, Mass. Filed Feb. 9, 1887. Serial No. 227,041. (No model.)



Claim.—1. The combination, with a rail and a bar and a bolt for securing the same, of a lock for the bolt, a magnet for operating the lock to secure the bolt, a separate magnet to release the bolt, and a circuit-changer connected with and automatically operated by the lock, and a signal for the train controlled by the circuit-changer, substantially as described.

2. In a switch-lock, the combination, with the locking-bolt, of the releasing-magnet, the armature of which is provided with the locking-dog engaging the bolt, a locking-magnet the armature of which controls the locking-armature, a circuit-controller connected to the locking-armature, and a signal for the train controlled by the circuit-changer, substantially as described.

3. The combination, with the main conductors, of a series of locking devices in a single circuit, each of which is provided with a locking-magnet, a releasing-magnet, and a circuit-changer which switches the current past the lock after the same has operated, whereby the locks may be successively operated, substantially as described.

4. The combination, with the switch-rail, of a slide-bar, a sliding bolt, 5, which locks the slide-bar, a pivoted lever, 6, connected with the bolt 5 to move it, a lock securing the bolt, and electric means for controlling the lock from a distance, substantially as described.

5. The combination of a series of switches in a railroad-section, a lock for each switch, a locking-magnet for each lock, and a single circuit which operates all the locks in the section, substantially as described.

6. The combination of a series of switches in a railroad-section, a lock for each switch, a locking-magnet for each lock, a circuit which operates all the locks in the section, and a signal device operated by said current should any lock fail to operate, substantially as described.

7. The combination, with the conductors 12 and 13, one being broken at each switch, a switch-operating mechanism, a locking-magnet in a circuit including both said conductors on one side of the switch, and a locking-lever released by the locking-magnet and included in its circuit, and arranged, when moved, to break the circuit and to make electrical union of the parts of the conductor on opposite sides of the break at the switch, substantially as described.

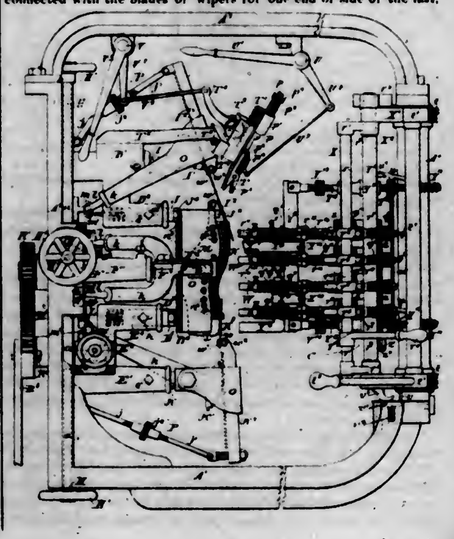
8. The combination, with the conductors 12 and 13, broken at a switch, and a switch-operating mechanism, of a switch-lock-locking magnet, a circuit uniting conductors 12 and 13 and including the locking-magnet, a circuit uniting the parts of conductor 13 on opposite sides of the break, passing around the locking-magnet, and a circuit-controller carried by the switch-lock for shifting the circuit past the break as the lock operates, substantially as described.

9. The combination, with the conductors 12 and 13, broken at the switch, and a switch-operating mechanism, of a lock carried by the armature of a releasing-magnet, an insulated conducting-extension, 17, carried by said section, a connection between said extension and conductor 13 on one side of the break, contacts 19 and 25, between which extension 17 works as the lock is worked, a connection including a locking-magnet between contact 19 and conductor 12, and another connection between contact 25 and conductor 13 beyond the break, substantially as described.

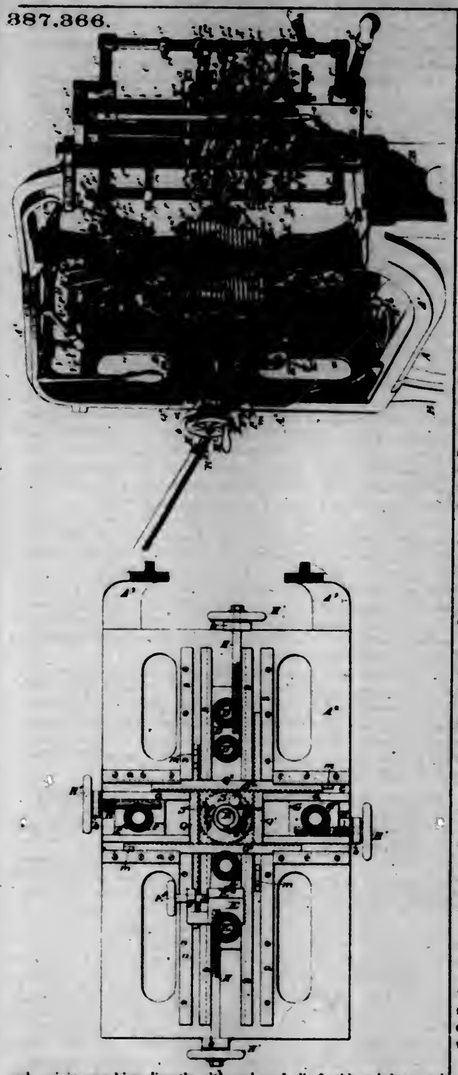
10. In an electric railway-signal system, the combination of a series of switches in a railroad-section, a lock for each switch, a locking-magnet for each lock, a circuit which operates all the locks in the section in succession, a circuit-controller carried by the switch-locks to shift the current past the switches when they are locked, and releasing-magnets operated successively as the train passes the switches, substantially as described.

387,866. LASTING-MACHINE. SETH W. PAINE, Rochester, N. Y., HIRAM A. GRAY, New Haven, Conn., and CHARLES E. PINTER, Ilion, N. Y., assignors to William S. King, Minneapolis, Minn. Filed Nov. 12, 1887. Serial No. 254,907. (No model.)

Claim.—1. In a lasting-machine, the combination of a last, heel, toe, and side folding-blades or wipers, independent rack-bars each connected with the blades or wipers for one end or side of the last,



387,366.



and a pinion meshing directly with each and all of said rack-bars and serving to move them simultaneously and equally.

2. In combination with a last, heel, toe, and side folding-blades or wipers, toothed rack-bars for advancing and receding said blades or wipers, a pinion meshing with the several racks, a shaft carrying said pinion and provided with a second independent pinion, a pivoted sector meshing with said second pinion, and a hand-lever adjustably secured to the sector, whereby it may be set to suit different operators.

3. In a lasting-machine, the combination, with plate A^3, having ribs n, of rack-bars Q, Q', Q^2, and Q^3, mounted in or between said ribs and adapted to move longitudinally, the bars Q^2 and Q^3 being placed in a different plane from bars Q Q', and thus adapted to move across the same, heel, toe, and side folding-blades or wipers actuated by said rack-bars, and a last to support the work while being operated upon by the blades or wipers.

4. In a lasting-machine, the combination, with a last and supports therefor, of side, heel, and toe wipers or folding-blades, independent rack-bars for actuating the wipers or blades, the rack-bars being in different planes, and a pinion divided at right angles to its axis into parts or sections corresponding to the planes of the rack-bars and capable of rotation one independently of another, whereby movement or adjustment of the bar or bars meshing with a given section, and consequently of the wipers or folders actuated thereby, is permitted.

5. In a lasting-machine, the combination, with rack-bars, as Q and Q^2, placed in different planes, of an actuating-pinion therefor composed of sections S' S, meshing, respectively, with said bars, and a locking pin or device, substantially such as shown, whereby the sections of the pinion may be locked together or disconnected at will.

6. In combination with last-supports and a last, side, heel, and toe wipers or folders movable toward and from said last, toothed rack-bars carrying said wipers or folders, toothed sectors meshing with and serving to actuate said bars, a second set of toothed rack-bars, a pinion meshing with the several bars of the second series, and telescopic rods connecting the racks of the second series and the toothed sectors, whereby a rotation of the pinion is caused to move the two series of racks and to advance or recede the wipers.

7. In combination with a last and its support, a folder or wiper, a rack-bar carrying said folder or wiper, a toothed sector meshing with said rack-bar and serving to advance and recede the same, and a cap or guard pivoted concentrically with the sector and extending over the outer face of the rack-bar, whereby it is adapted to hold the rack and sector in engagement and yet to permit a rocking or tipping motion of the rack.

8. In combination with side jaws provided with wipers or folding-blades, end wipers or blades extending beneath guides carried by the side jaws, a bar carrying the end wipers, and a joint connecting the end wipers with their carrying-bar, constructed substantially as described and shown, whereby the end wipers are enabled to accommodate themselves to the varying positions of the side jaws.

9. In a lasting-machine, the combination, with a work-holder, of a longitudinally-movable bar, wipers or folding-blades w, pivotally attached to said bar and of varying width between their pivoted and free ends, and guides or supports against which the outer faces of the blades bear as the bar moves forward or backward, whereby the blades are caused to approach each other at a variable rate as different portions of their edges come into contact with the guides or supports.

10. In a lasting-machine, folding blades or wipers having their inner edges formed with closely-adjoining notches or serrations, substantially as described and shown, whereby they are adapted to gather the leather of the upper and to distribute the fullness evenly.

11. In combination with a last, folding-blades or wipers movable inward over the face of the last and provided on their inner edges and their lower faces with serrations, whereby they are adapted to take firm hold upon the upper and to fold it over upon the last or upon an insole thereon.

12. The combination, in a lasting-machine, of side jaws provided with folding-blades or wipers and with guides, as n^{10}, heel and toe wipers or folding-blades w, extending into said guides and having their outer edges made of cam shape or out of parallel with their inner edges, and reciprocating bars carrying the heel, toe, and side wipers or folders, whereby the closing together of the side jaws and the approach of the heel and toe jaws are caused to act conjointly to close the end wipers together.

13. In a lasting-machine, the combination, with guides, as n^{10}, of folding-blades or wipers w, and a spring acting upon said blades and tending to spread them apart.

14. In combination with a work-support and a wiper or folder movable to and from the same, a bar carrying said wiper or folder, a sector serving to support and move said bar, and a link pivoted at one end to a fixed support and at its other end to the bar, whereby the wiper is sustained and caused to move in a prescribed path.

15. In combination with a work support or last, a wiper or folder movable toward and from the same, a bar carrying said folder, and a link, P, pivoted at one end to a fixed support and at the other end to the wiper-carrying bar, said link being made in two parts capable of adjustment one toward or from the other, whereby the link may be shortened or lengthened and the plane or line of travel of the bar and wiper varied.

16. In a lasting-machine, in combination with a rack-bar, a sector serving to support and reciprocate the same, a link pivoted at one end to a fixed support, a bolt pivotally connected at the other end of said link and having a shifting connection with the rack-bar, and a spring interposed between the shoulder of the bolt and the rack-bar, whereby the latter is permitted to yield independently of the link.

17. In a lasting-machine, in combination with a rack-bar and a sector serving to support and reciprocate the same, a link having one end pivoted to a fixed support and the other end attached to the rack-bar by a yielding connection.

18. In a lasting-machine, the combination of a supporting-frame provided with guides, blocks mounted and movable in said guides, a supplemental block mounted upon one of said main blocks and movable transversely across the same, and posts provided, respectively, with heel and toe supports for a last, one of said posts being carried by one of the main blocks and the other by the supplemental block mounted upon the other main block.

19. In a lasting-machine, the combination, with a stationary bed or frame, a last, and folders or stretchers movable toward and from said last, of a last-support movable transversely to the length of the last, a block carrying said support, and an adjusting-screw for moving said support, whereby the last may be brought into proper relation to the folders or stretchers.

20. In a lasting-machine, the combination of a last, folding or stretching devices movable toward and from the last, a downhold to bear upon the last or upon the insole carried thereby, and a yielding support for the last, consisting of a tubular post, a spring placed within said post, a rod or stem movable within said post and bearing at its inner end upon the spring, and a stop-pin or screw to limit the longitudinal movement of the rod or stem.

21. In a lasting-machine, the combination of a downhold and a last-support consisting of a post, a two-part rod or stem movable longitudinally in said post and one part longitudinally movable in relation to the other, a spring bearing against the inner end of the two-part stem, and a stop-pin or screw serving to limit the movement of the two-part stem.

22. In a lasting-machine, a last-support consisting of a tubular post, an internally-threaded sleeve movable within said support, a stop to limit the movement of said sleeve, a spring bearing against the inner end of the sleeve and tending to force the same outward, and a threaded stem screwed into the sleeve, substantially as described and shown, whereby the threaded stem may be screwed in or out to vary its projection without affecting the compression of the spring or the play of the sleeve.

23. In combination with a last and supports therefor adapted to hold the last with its sole in a vertical plane, a frame provided with stretching devices to act upon an upper carried by the last, said frame being arranged to swing in a horizontal plane into and out of alignment with the last.

24. In a lasting-machine, the combination of a last, a frame adapted to swing laterally in reference thereto, and a sash or sliding frame movable within the swinging frame and carrying pinchers or stretching devices to act upon an upper carried by the last.

25. In combination with a last or work support, a laterally-swinging frame in front thereof, a sash or frame mounted in said swinging frame and movable toward and from the last, a catch or locking bolt adapted to lock the swinging frame against lateral movement, and a toe or trip carried by the sliding sash and serving to force back the catch and unlock the swinging frame when the sash moves back to a prescribed point.

26. In a lasting-machine, the combination of a stem or stock, g^2, two lever-jaws, g g, independently pivoted thereto and each provided with a stud or pin, g^3, and double yoke or lever g^4, pivoted to stock g^2 and provided with slots g^5, the pins g^3 being extended into said slots.

27. In combination with a stock or stem and jaws independently pivoted thereto and provided with studs or pins, a yoke or lever pivoted to the stock and having slots on opposite sides of the pivot, the slots being concentric at their inner ends with the pivot of the lever or yoke and eccentric thereto elsewhere in their length, and the pins of the lever-jaws being extended into said slots, substantially as set forth.

28. In combination with a supporting block or sleeve, an internally-threaded pinchers-stock free to slide but held against rotation therein, a threaded stem passing through the rear end of the block or sleeve, screwed into the rear end of the pinchers-stock, and having a shoulder or enlargement bearing against a shoulder therein, a spring encircling the stem in rear of the sleeve or block, and a nut screwed upon the rod in rear of the spring.

29. In combination with sleeve g^{12}, a stock, g^2, arranged to slide longitudinally therein, shouldered rod g^9, extending through the sleeve, screwing into the stock g^2, and projecting through the rear end of the sleeve, spring g^{11}, encircling said rod, and nut g^{10}, applied to the rear end of the rod and adjustable thereon.

30. The combination, in a lasting-machine, of a series of pinchers provided with yokes or levers for opening and closing them, a bar or frame movable toward and from said pinchers, and connecting-rods extending from said bar or frame to the yokes or levers, whereby all the pinchers may be opened or closed in unison by a single movement of the bar or frame.

31. In a lasting-machine, the combination, with two groups of pinchers arranged at opposite sides of the last, each pincher being furnished with a yoke or lever for opening and closing its jaws, two swinging frames connected by toothed sectors or gearing and adapted to move in unison toward or from an intermediate point, and rods extending from each yoke or lever to the swinging frame at its side, whereby all the pinchers are simultaneously opened or closed by the application of force to one of said frames.

32. In combination with pinchers, as W, provided with yoke or lever g^4, rod or bar r, movable toward and from said pinchers, sleeve r^4, encircling said rod, a spring carried by the collar and bearing upon the rod, and a link or rod extending from collar r^5 to the lever g^4, the spring serving to hold the collar at any desired adjustment upon rod r.

33. In combination with pinchers W and their yoke or lever g^4, swinging frame X, provided with collar r^5, and rod r^6, extending from a pivoted block carried by the yoke or lever to the collar and adapted to be screwed into or out of either or both to shorten or lengthen the distance between the two.

34. In combination with a last or work support, a sliding sash or frame in front thereof, pinchers carried by said frame, a downhold-carrier mounted in said sash or frame and capable of motion toward and from the last independently of the sash, and a locking dog or catch adapted to engage with the downhold-carrier when it is advanced to bear upon the last or insole and to hold it against recession with the sash.

35. In combination with a last or work support, a sliding sash in front thereof provided with a series of pinchers and movable toward and from the last, a downhold-carrier mounted and arranged to slide a limited distance in and independently of the sash, adjustable stops to limit the independent movement of the downhold-carrier, and a dog or catch to hold said carrier in its forward position while the pinchers are receded.

36. In combination with a last or work support, sliding sash X^1, provided with toothed rack-bars, toothed sectors meshing with said bars and serving to advance and recede the sash, rods Y^4 and Y^5, carrying a downhold-bar and movable back and forth in the sash, nuts Y^{13} and Y^{14}, applied to said rods and serving to control their movements forward and backward, springs Y^{15}, applied to said rods and tending to recede the downhold-bar, and locking-dogs u, adapted to engage the nuts Y^{14} when the downhold is advanced and to hold the same forward against the force of the springs.

37. In combination with sliding sash X^1, provided with finger u^2, downhold-bar Y^3, and its carrying-rods Y^4 Y^5, movable within or relatively to said sash and provided with retracting-springs, pivoted dog u, adapted to engage against a rest or shoulder upon one of said rods, the finger u^2 and dog u being arranged to ride one beneath the other, substantially as explained, whereby the dog is automatically lifted and the springs permitted to retract the downhold when the sash is moved back a given distance.

38. In combination with a last or work support, a guide-bar in front thereof, a series of cross-arms movable in said guide-bar, pinchers carried by said cross-arms, a system of crossed levers connected at their points of crossing with the cross-arms and at their ends with each other, and a screw or equivalent device for drawing the free ends of one pair of levers together or moving them apart, whereby the entire series of levers may be caused to move in unison and to move the cross-arms and their pinchers toward or from each other.

39. In combination with slotted bar T' and cross-arms s, carrying pinchers, crossed levers Z, connected at their points of crossing with the shanks of the cross-arms s and pivotally connected at their ends, and screw rod or stem Z^9, extending from one lever to another and serving to draw them together or force them apart.

40. In a lasting-machine, a side jaw comprising a head, M, a slotted plate, M', a series of wipers or folders, N, each consisting of a shank, n', and a blade, n^2, adjusting-screws n^3, swiveled in the slots of plate M' and screwing into the shanks of the wipers, a yielding plate, M^3, overlying the shanks of the wipers, and screws n^4, bearing against the shanks of the outer wipers of the series.

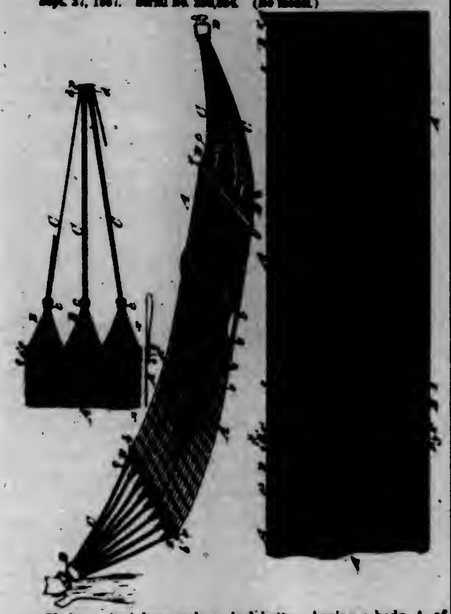
41. In a lasting-machine, a side jaw having a series of independently-adjustable wiper-blades or folders, and a flexible rod or wire passing through the shanks of the several wipers or folders, substantially as and for the purpose specified.

42. In combination with head M and slotted plate M', wipers or folding-blades N, resting with their backs against the face of head M, adjusting-screws n^3, swiveled in plate M and screwing into the shanks of the wipers or folders, plate M^3, extending over the front faces of the blade or wiper-shanks, bolts n^4, passing through said plate and the head M, and springs encircling the bolts and tending to hold the plate M^3 against the shanks of the wipers.

43. In a lasting-machine, the combination of a toothed rack carrying a wiper or folder, a toothed sector meshing with and serving to actuate said rack, a second rack for imparting motion to said sector, provided with a slotted lug, as m, and a bolt passing through said slot and into the lever-arm of the sector, whereby the sector and the rack which it operates may be adjusted without moving the actuating-rack.

44. In a lasting-machine, the combination of a last, heel and toe jaws or wipers, and side jaws or wipers, the side wipers being made up of independently-yielding blades or sections in immediate contact with each other, and the heel and toe jaws being extended across the side wipers, whereby an unbroken but yielding line of folders or wipers is formed entirely around the last.

387,367. HAMMOCK. Isaac B. Palmer, Middletown, Conn. Filed Sept. 27, 1887. Serial No. 250,254. (No model.)



Claim.—1. A hammock or bed bottom having a body, A, of woven fabric, a strip, A', unconnected to the body by weaving, but secured across the end of the body by sewing or the like, and warp-threads extending in the form of suspension-loops between the strip and body, substantially as specified.

2. The combination, with the hammock, of a back or seat support, as E, extending across the hammock about midway between its head and foot and secured thereto, substantially as herein described.

387,368. ASBESTOS-FACED FELT. James L. Reed, Brooklyn, assignor of five-sixths to De Long & French, New York, N. Y. Filed Feb. 21, 1888. Serial No. 264,748. (No specimens.)



Claim.—1. As a new article of manufacture, boiler-covering consisting of hair-felt having a face of asbestus pressed therein and forming a part thereof, substantially as shown and described.

2. Hair-felt having a face of asbestus pressed therein, the said asbestus face being corrugated, ribbed, or scored, substantially as shown and described.

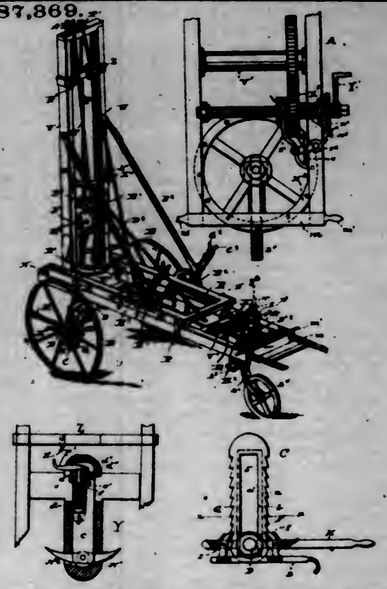
3. The combination, with hair-felt, of a fire-proof flexible face worked into the felt, and corrugated, ribbed, or scored, substantially as and for the uses and purpose shown and described.

387,369. POST-DRIVING MACHINE. Hiram F. Sharp, Mineral Point, Wis. Filed Mar. 1, 1888. Serial No. 265,966. (No model.)

Claim.—1. The combination, with the bolster, of the hangers secured thereto, consisting of the block slotted longitudinally, the longitudinal recess, and the detent-teeth on the opposite edges, the lever, the pawls, and the spindle having the rectangular head and the shouldered portion, substantially as specified.

2. The trip-head adapted to slide on the ways, having the slide bifurcated at its lower end, the levers pivoted therein and adapted to project laterally through slots, the short side *d*, pivoted to the offset *d'* and extending upwardly, the laterally-projecting slotted head *d'*, the pawl pivoted to the extended portion of the short side, the spring-controlled block, the transverse notches, and the pin, substantially as specified.

387,369.



3. The cross-head having the pawl R' pivoted near its heel therein, the said pawl having the rounded side and the point to engage the hook end of the pawl P', substantially as specified.

4. The combination, with the vertical pivoted frame having the projecting guideways, of the semicircular post-holder adapted to slide on said ways, the pivoted retaining-bar, the locking-pin, the extension *c'*, having lugs D', the depending bracket, the upright having the flanged edges, the braces securing said upright to the vertical frame, the counter-weight, the connecting-cord, and the pulley, substantially as specified.

5. The combination, with the rectangular frame A, of the windlass having the gear-wheel, the loose gear adapted to engage said gear-wheel, the gear-wheel shaft having the crank and the ratchet-wheel on its outer end, the arm having the collar-connection with the gear X', pivoted to the frame and having the curved projecting end, the pivoted hand-lever, and the spring bearing upon the gear X', substantially as specified.

6. The combination, with the frame A, of the wheel H^3, secured thereto, the wheel L^2, turning on the wheel H^3, the pivot-arm *y*, the standard fulcrumed on the pivot-arm, the integral bifurcated segment, the adjusting-pins, and the bearing-wheel, substantially as specified.

7. The combination, with the rectangular frame A and the bearing-wheel, of the pivot-arm *y*, the curved standard, the bifurcated segment thereon provided with adjusting-apertures, and the holding-pins, substantially as specified.

8. The combination of the hammer having the opposite longitudinal recesses and the diverging slotted arms secured to the upper end of said hammer, substantially as specified.

387,370. ATOMIZER. Augustus D. Shelmerdine, College Point, assignor to the India Rubber Comb Company, New York, N. Y. Filed Jan. 31, 1888. Serial No. 262,862. (Model.)

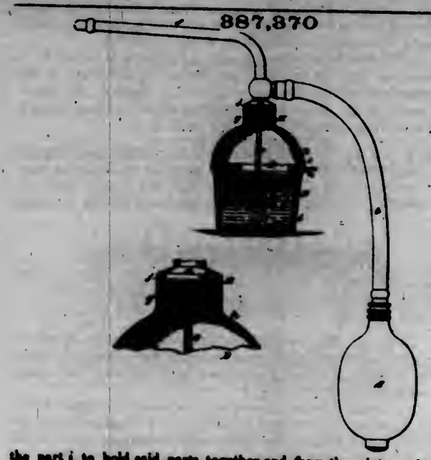
Claim.—1. The liquid-reservoir D, consisting of the expansible top *h*, having a single neck, *g*, for the ingress and egress of liquid to the reservoir, and the rigid base *i*, for containing the liquid, and to which the expansible top *h* is immovably secured, combined with the rigid ring E in said neck *g*, substantially as herein shown and described.

2. In an atomizer, the rigid base *i* and expansible top *h*, immovably secured thereto, said parts forming a liquid-reservoir, said expansible top *h* having a single neck, *g*, for the ingress and egress of liquid to the reservoir, and a rigid ring, E, in said neck *g*, combined with the pipe *f*, having the enlargement *d*, that fits the ring E securely, pipe *b*, and bulb A, all arranged substantially as herein shown and described.

3. The soft-rubber neck or pipe *g*, having inwardly-extending flange *j*, combined and intimately united into a substantially homogeneous mass with the hard-rubber socket E, substantially as described.

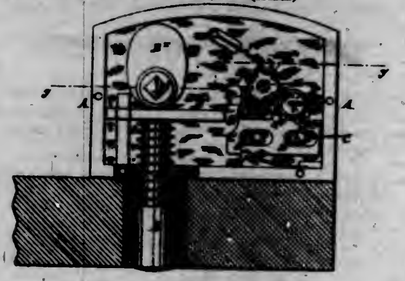
4. In an expansible liquid-reservoir, the rigid vessel *i*, combined with the expansive top *h* and hard-rubber ring *n*, that is shrunk upon

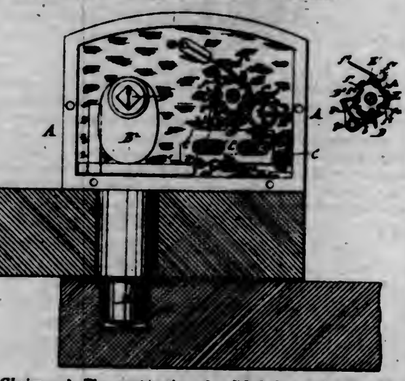
387,370



the part *i*, to hold said parts together and form them into a single vessel, substantially as herein shown and described.

387,371. LOCK FOR FREIGHT-CARS. Reuben C. Smith, New York, N. Y., assignor of one-fifth to Charles F. Frothingham, same place. Filed Feb. 3, 1888. Serial No. 262,878. (Model.)





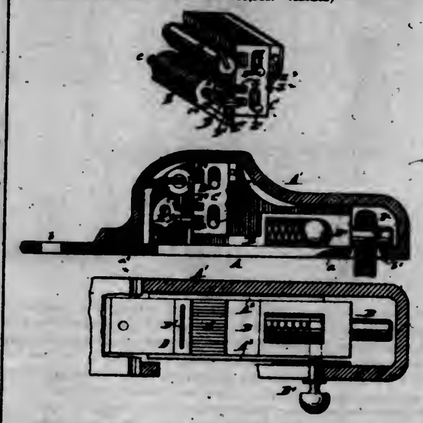
Claim.—1. The combination of a slide-bolt, a series of guided and spring-locked tumblers, a series of recessed and centrally-pivoted cams, a recessed and centrally-pivoted auxiliary cam, oscillating and spring-actuated locking-bars applied to a common spindle, a pivoted and longitudinally-recessed key-cylinder, and a key having projecting wards adapted to engage the tumblers and cams, substantially as set forth.

2. The combination of a series of guided and spring-locked tumblers having recesses and projections, a series of recessed and centrally-pivoted cams, a recessed auxiliary cam pivoted to the same spindle as the series of cams, spring-actuated locking-bars applied to a common spindle and adapted to engage the recesses of the cams, a pivoted and longitudinally-recessed key-cylinder, and a key having projecting wards adapted to engage the tumblers and cams for actuating some of the same, substantially as set forth.

3. The combination of a series of guided and spring-locked tumblers having projections, a series of centrally-pivoted cams having two sets of recesses, a centrally-pivoted auxiliary cam having recesses, and two oscillating and spring-actuated locking-bars applied to a common spindle, one of said locking-bars being adapted to engage the recesses of all the cams, while the second T-shaped locking-bar is adapted to engage the series of cams and the projections of the tumblers, substantially as set forth.

4. The combination of a series of recessed and centrally-pivoted cams, a recessed auxiliary cam applied to the pivot-pin of said cam, a spring-actuated locking-bar engaging the recesses of the auxiliary and other cams, and a second spring-actuated locking-bar engaging the recesses of the series of cams, substantially as set forth.

387,372. LOCK. Reuben C. Smith, New York, N. Y., assignor of one-fifth to C. F. Frothingham, same place. Filed July 6, 1887. Renewed Feb. 9, 1888. Serial No. 263,605. (Model.)



Claim.—1. The combination of a slide-bolt, a series of guided and spring-locked tumblers back of the same, a spring-actuated locking-bar engaging recesses of the tumblers, a series of pivoted cams for actuating the locking-bar, a pivoted and longitudinally-recessed key-cylinder, and a key having projecting wards, said wards being adapted to engage the tumblers and cams for actuating some of the same, substantially as set forth.

2. The combination of a slide-bolt, a series of guided and spring-locked tumblers back of the same, a spring-actuated locking-bar engaging recesses of said tumblers, a series of pivoted cams provided with projections and eccentric portions and concave portions, a pivoted and longitudinally-recessed key-cylinder, and a key having wards projecting from said key-cylinder and adapted to engage recesses of the tumblers, and the projections of the cams for moving some of the tumblers and setting the locking-bar into recesses of the same, substantially as set forth.

3. The combination of an inclosing-casing, a base-plate having side plates attached to said casing, a slide-bolt guided by said side plates, a series of guided and spring-locked tumblers at the inner end of the slide-bolt, a spring-actuated locking-plate engaging recesses of the tumblers, a series of pivoted cams having projections, eccentric portions, and concave portions, a pivoted and longitudinally-recessed key-cylinder, and a key having wards projecting beyond the key-cylinder and engaging recesses of the tumblers and the projections of the cams, substantially as set forth.

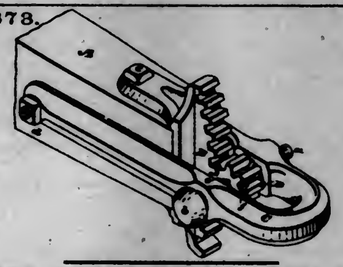
4. The combination of a slide-bolt, a series of guided and spring-locked tumblers, a spring-actuated locking-bar engaging recesses of said tumblers, and a series of cams having eccentric and concave portions, said cams moving the locking-bar into recesses of the tumblers, so as to lock the latter in position, substantially as set forth.

387,373. PLOW-CLEVIS. Henry M. Smith, Canton, Ohio. Filed Jan. 24, 1888. Serial No. 261,797. (No model.)

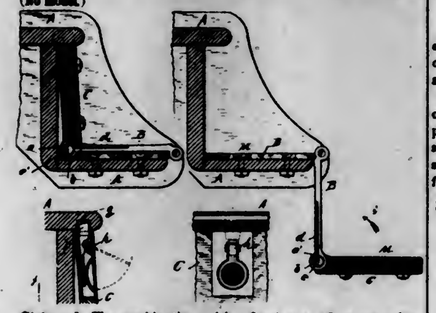
Claim.—1. The combination of the beam A, provided with the crown-head B, the draft-link C carrying the cross-bolt *a*, the pinions D and E, and the spring *c*, and means for locking said pinions, substantially as and for the purpose specified.

2. The beam A, provided with the crown-head B, the draft-link C, pivotally attached to said beam and carrying the cross-bolt *a*, and the pinions D and E, substantially as and for the purpose specified.

387,373.



387,374. EXTENSION-STEP FOR RAILWAY-CARS. Joseph Sellathow, Paterson, N. J. Filed May 26, 1888. Serial No. 275,315. (No model.)



Claim.—1. The combination, with a fixed step, of an extension-step, hinged straps applied to the fixed step and pivoted to the extension-step, and locking devices for retaining the extension-step at right angles to the hinged straps, substantially as set forth.

2. The combination, with a fixed step, of supporting-straps hinged to the fixed step, an extension-step in socket-bearings of the supporting-straps, so as to swing axially between said straps, and a locking device for retaining the extension-step when folded up against the riser of the fixed step, substantially as set forth.

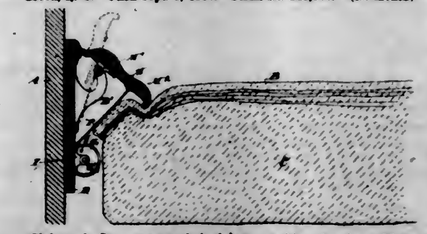
3. The combination, with a fixed step, of supporting-straps hinged to the fixed step, an extension-step pivoted in socket-bearings of said straps, and a slide-bolt applied to the extension-step and provided with an operating-lever having a handle, which handle also serves for taking hold of and swinging the extension-step into folded or lowered position, substantially as set forth.

4. The combination, with a fixed step, of an extension-step, hinged straps applied to the fixed step and pivoted to the extension-step, and locking-springs secured on the hinged straps and adapted to engage notches or recesses on the pivots of the extension-step, substantially as shown and described.

387,375. PRESERVING WOOD. George Speil, Dutch Kills, N. Y. Filed Apr. 14, 1883. Serial No. 270,602. (No specimens.)

Claim.—The herein-described process of preserving wood—that is to say, subjecting the same to a hot bath consisting of water, sulphur, and mercury, in about the proportions specified, and as set forth.

387,376. BEDCLOTHES-HOLDER. Hiram W. Stetson, Black Brook, N. Y. Filed Sept. 3, 1887. Serial No. 248,677. (No model.)



Claim.—1. In an automatic bedclothes-holder, the clamp M, turning on centers M' at the proper height above the bed, in combination with the band P, connected at one end to said clamp, and a spring, K, connected to the other end of said band and exerting a tension on one side or the other of the axis M', according as the clamp is elevated or depressed, so as to hold the clamp forcibly downward and also forcibly upward, as required, all substantially as herein specified.

2. In a bedclothes-holder, the clamp M, turning on centers M', in combination with the band P, pulley G, shaft G', and helical spring K, adapted to hold the clamp either elevated or depressed, and adjusting means, as the slots *d* and screws E, to adjust the clamp upward and downward, substantially as herein specified.

387,377. TOOTHED ROLLER FOR MACHINERY FOR OPENING, &c., FIBROUS SUBSTANCES. Ella Stubs and Eli Wilkinson, Huddersfield, County of York, England. Filed July 5, 1887. Serial No. 243,232. (No model.) Patented in England Sept. 28, 1886, No. 12,602.



Claim.—1. The combination of a roller having a grooved periphery with a series of serrated troughs entering said groove, and a strip of metal entering said troughs and fastened to the roller, substantially as set forth.

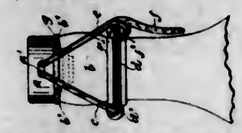
2. The combination of a roller having a grooved periphery, a strip of metal wound in the grooves thereof and projecting beyond the periphery of said roller, a serrated trough inserted between said metal strips, and a strip of metal placed within said trough and holding the same in position on the periphery of the roller, substantially as set forth.

387,378. PEN-HOLDER. William A. Taylor, Brooklyn, N. Y. Filed June 10, 1886. Renewed May 25, 1888. Serial No. 275,077. (No model.)



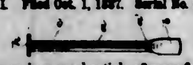
Claim.—In a pen-holder provided with a soft-rubber casing, a rigid core having at one end a socket, in combination with an elastic plug in said socket and adapted to form with said core a support for a pen, substantially described.

387,379. BOTTLE-STOPPER. Thomas Terrell, New Court Temple, County of Middlesex, England. Filed Oct. 22, 1887. Serial No. 252,867. (No model.)



Claim.—The combination of a bottle-neck having a recess or channel at one side thereof, a collar surrounding the neck, a stopper, a connecting-link hinged to said stopper and collar at its opposite ends, a loop hinged at its upper end to said stopper at a point opposite the hinge of the link, and a lever-arm hinged at one end to said collar and adapted to swing in said recess and engage said loop, said lever having a nook on its inner face when in its normal closed position, substantially as described.

387,380. FLAT-POINTED NAIL OR TACK. James F. Thayer, Providence, R. I. Filed Oct. 1, 1887. Serial No. 251,162. (No model.)



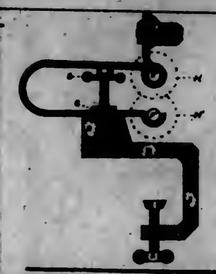
Claim.—1. As an improved article of manufacture, a nail or tack having a flattened point or entering end portion somewhat wider than the normal size of the shank portion of the nail, the same extending rearwardly up to its intersection with the shank and being substantially uniform in thickness and width.

2. A nail of the class hereinbefore described, the same consisting of a head, a roughened shank portion adjacent to the head, and a flattened point portion substantially of a uniform thickness and whose width exceeds that of the unflattened portion of the nail's shank, substantially as shown and set forth.

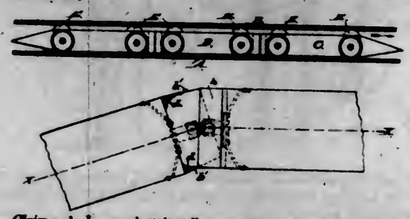
387,381. HEAT-TENDERER. Henry R. Vollmar, Oswego, assignor of one-half to James Hallowell Lynch, Wichita, Kans. Filed July 12, 1887. Serial No. 244,117. (No model.)

Claim.—The combination, in a rotary meat-tenderer, of the diamond-toothed rollers H H', base-plate B, spring A, adjusting and clamping screw D, nuts C and E, overhanging arm T, swinging front bearing, Y, and slotted plate P, substantially as set forth.

387,381.



387,382. ELECTRIC-RAILWAY SYSTEM. David G. Weems, Baltimore, Md., assignor to the Electro-Automatic Transit Company of Baltimore City, same place. Filed Mar. 28, 1888. Serial No. 267,902. (No model.)



Claim.—1. In an electric-railway system for mail or parcels, a series of cars having ends adapted to telescope with each other, whereby the train presents a practically unbroken surface.

2. In an electric-railway system for transporting mail and packages, an electric motor and a series of cars connected therewith, said cars having open ends adapted to enter or telescope with the adjacent ends of contiguous front cars.

3. In an electric-railway system, a motor and a series of succeeding cars adapted for mail and small packages, said cars having one or both ends provided with compressible end wings, whereby the meeting end of one car may enter or telescope with the ends of contiguous front cars.

4. In an electric-railway system for mail and parcels, a car of approximately uniform diameter throughout provided at its end with pivoted wings, whereby said end may be compressed to enter the end of a contiguous car, and cushions behind the wings resisting their inward movement.

5. In an electric-railway system for mail and parcels, a locomotive having a pointed front end filled with non-heat-conducting packing.

6. In an electric-railway system for mail and parcels, a locomotive having a pointed front end and open rear end, in combination with cars having compressible ends adapted to telescope with the open end of the locomotive and with each other.

7. In an electric-railway system for mail and parcels, a locomotive, and telescoping cars having coupling devices, in combination with wings or doors by which access may be had to said devices.

8. In an electric-railway system for mail and parcels having an upper guide-rail and lower bearing-rails, a locomotive and succeeding cars having guide-wheels, and suitable housings inclosing the front faces of said wheels.

387,383. ELECTRIC-RAILWAY SYSTEM. David G. Weems, Baltimore, Md., assignor to the Electro-Automatic Transit Company of Baltimore City, same place. Filed Apr. 30, 1888. Serial No. 271,269. (No model.)

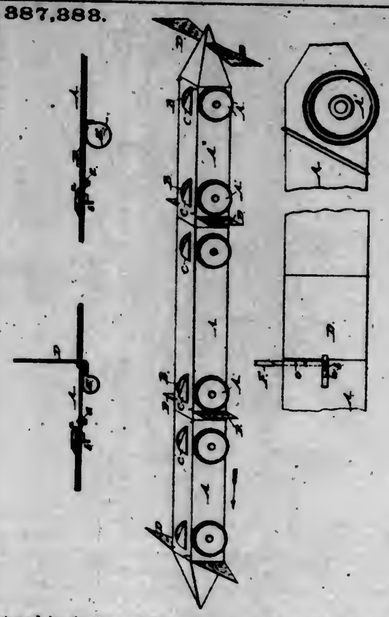
Claim.—1. In an electric-railway system for transporting mail, express-packages, &c., a train or series of cars provided with folding or collapsible wings adapted to be automatically thrown out laterally to resist the movement of the train.

2. In an electric-railway system, a series of cars provided with pivoted wings, automatic holding devices, and pivoted levers, in combination with fixed stops on the road adapted to engage said levers and release the holding devices, whereby the wings may be thrown outward by the action of the air.

3. In an electric-railway system, the combination, with fixed stops on the line of road, of one or more cars having pivoted wings and trip-levers, and plungers for automatically engaging the wings and holding them in a closed position.

4. In an electric-railway system, the combination, with fixed stops on the line of road, and a train of cars having wings adapted to be released by said stops and intermediate devices, and to be thrown

387,383.



outward by the force of the air, of a yielding cushion beneath the wings adapted to effect a preliminary outward movement of the wings.

5. The cars having the wings adapted to be automatically released and thrown outward, and a spring or device adapted to exert a pressure in opposition to the force of air and to automatically close the wings when the train lessens its speed.

6. An improved electric-railway system, comprising fixed stops on the line of road, cars having wings adapted to be thrown outward by said stops and intermediate levers and plungers, yielding cushions adapted to effect a preliminary movement of the wings, and springs for automatically closing the wings when the train lessens its speed.

387,384. WOOD-PLANING MACHINE. James F. Wilde, Brooklyn, N. Y., assignor to the Glen Cove Machine Company, (Limited,) same place. Filed Jan. 27, 1888. Serial No. 262,169. (No model.)

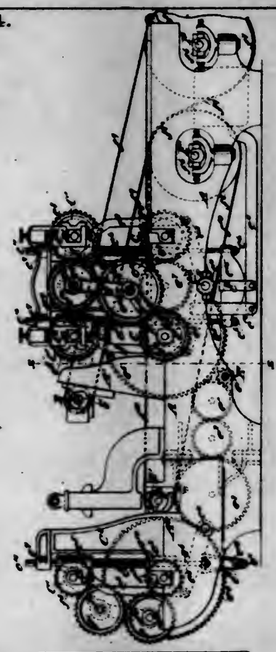
Claim.—1. The combination, in a wood-planing machine, of a main frame supporting the upper cutter-head and feed-rolls, a lower cutter-head, and a supplemental frame carrying the lower cutter-head and hinged to the main frame at one side thereof, so that it may be swung laterally to expose the lower cutter-head, substantially as herein described.

2. The combination, with a main frame supporting an upper cutter-head and feed-rolls, of a lower cutter-head, a supplemental frame carrying the lower cutter-head and hinged to the main frame at one side thereof, a pair of delivery-rolls carried by the supplemental frame, and gear-wheels whereby they are driven from a shaft upon the main frame, the hinges of the supplemental frame being concentric or in line with the pitch-line of two of such wheels which are in engagement, whereby such wheels are not disengaged, even when the supplemental frame is swung laterally aside, substantially as herein described.

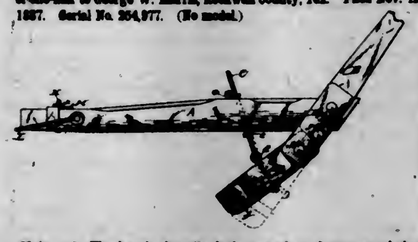
3. The combination, with a main frame supporting an upper cutter-head and feed-rolls, of a lower cutter-head, and a supplemental frame supporting the lower cutter-head and hinged to the main frame at one side thereof, so that it may be swung laterally to expose the lower cutter-head, a presser above the lower cutter-head, and a frame wherein the presser is adjustable vertically, and which is supported by the main frame, so that when the supplemental frame is swung laterally the lower cutter-head is carried from below its presser, substantially as herein described.

4. The combination, with a main frame and an upper cutter-head and feed-rolls supported thereby, of the supplemental frame A^2, hinged at *a'* to the main frame on one side thereof, and having a rest or support at A^3 upon the main frame on the other side thereof, and the lower cutter-head, B', supported in said supplemental frame, substantially as herein described.

387,384.



387,385. PLOW. GEORGE W. WHATLEY, Dallas County, assignor of one-half to George W. Morris, Rockwall County, Tex. Filed Nov. 12, 1887. Serial No. 254,977. (No model.)



Claim.—1. The herein-described plow stock or frame, consisting of the beam A, having an oblique perforation formed therein, the standard B, the brace-plates E E, secured to the beam, standard, and foot, the adjustable foot D, hinged to said brace-plates, the eyebolt *d*, secured to said foot, the brace-rod C, passing obliquely through the beam and having its lower end linked or hinged to eyebolt *d*, and means, substantially as described, for securing said rod in its adjusted position, substantially as and for the purposes set forth.

2. In combination with a clevis, the adjustable clevis-support adapted to be fitted to a plow-beam and consisting of the slotted saddle H, having stirrups *h' h'*, and bolt K and adjusting-nut *k*.

3. A detachable clevis-support consisting of a slotted saddle, H, provided with stirrups *h' h'*, adapted to be adjusted forward or backward upon a plow-beam and clamped in position by a bolt, K, and nut *k*, substantially as shown and described.

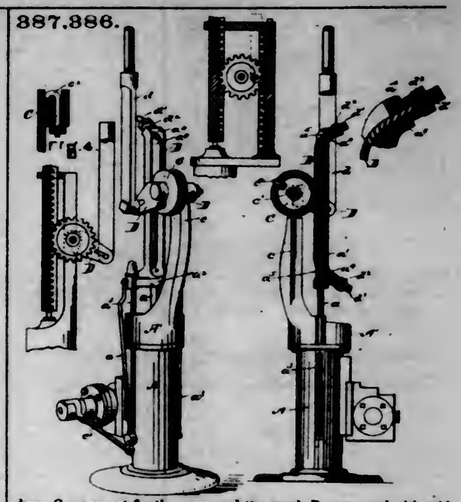
387,386. DEVICE FOR CONNECTING MOTORS TO ORGANS. FRANK R. WHITNEY, Melrose, Mass. Filed Sept. 6, 1887. Serial No. 249,099. (No model.)

Claim.—1. The combination, in an apparatus for operating organ-bellows, of a motor, a reciprocating head or bar operated by said motor, and a crank connected with said bar and operated thereby to travel from its lowest to its highest position and reverse coincidently with the upward and downward movements of the bar, and a rod or link connecting the crank to the device to be operated, substantially as described.

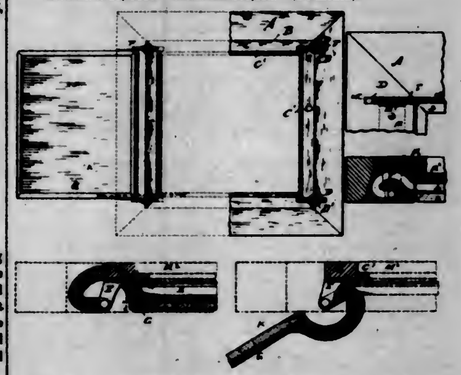
2. The combination, in devices for connecting motors to organs, of a water-motor, and a reciprocating bar attached to the water-motor to be reciprocated thereby, and having the rope or cord B, with the drum C, a support for the same, and the crank D, connected with said drum, and a link connecting said crank with the device to be operated, substantially as described.

3. The combination, in devices for connecting motors to organs, &c., of a bar, B, having a recess, *a*², and ends *a*', provided with holes *a*³, screw-threaded sleeves *d'*, to which the ends of the rope are secured, and the adjusting-nuts *d*², the drum C, crank D, and connecting rod or link *d*, substantially as described.

387,386.



387,387. FOLDING MIRROR. PETER WESSELMAN, Stapleton, N. Y. Filed Mar. 30, 1888. Serial No. 268,802. (No model.)



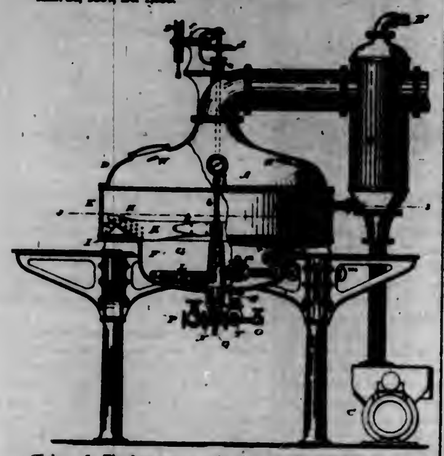
Claim.—1. In a triplicate mirror, the combination, with the central-mirror frame and the wing-mirror frames, of hinge-clips fastened on the central frame and curved hinge-clips secured to the inner ends of the wing-mirror frames and pivoted to the hinge-clips on the central-mirror frame, substantially as herein shown and described.

2. In a triplicate mirror, the combination, with a central frame, of cleats fastened to and forming part of the same, hinge-clips on said cleats, wing-mirror frames, and curved hinge-clips on said wing-mirror frames, which hinge-clips on the wing-mirror frames are pivoted to the hinge-clips on the cleats, substantially as herein shown and described.

3. In a triplicate mirror, the combination, with a central frame having rabbets, of cleats in said rabbets, hinge-clips fastened to said cleats, wing-mirror frames, and hinge-clips on said wing-mirror frames, the hinge-clips on the wing-mirror frames being pivoted to the hinge-clips on the cleats, substantially as herein shown and described.

4. In a triplicate mirror, the combination, with a central-mirror frame and two wing-mirror frames, of curved L-shaped hinge-clips secured to the wing-mirror frames, and detachable clips on the central-mirror frame, to which detachable clips the curved L-shaped hinge-clips are pivoted, substantially as herein shown and described.

387,388. PROCESS OF AND APPARATUS FOR CLEARING SACCHARINE LIQUIDS. ALEXANDER YOUNG, Honolulu, Hawaii. Filed Feb. 24, 1887. Serial No. 228,698. (No model.) Patented in Spain Mar. 30, 1887, No. 7,553.



Claim.—1. The improvement in the art of purifying saccharine liquids, which consists in boiling them in vacuum and simultaneously separating the resulting froth or scum.

2. The improvement in the art of purifying saccharine liquids, which consists in boiling them in vacuum and simultaneously separating the resulting froth or scum by skimming it from the surface of the liquid.

3. The improvement in the art of manufacturing sugar, which consists in purifying the saccharine liquid by boiling it in vacuum and simultaneously separating the resulting froth or scum, and subsequently concentrating the liquid.

4. The improved apparatus for purifying saccharine liquids, consisting of the closed vacuum pan or vessel, combined with the skimming device for removing the froth or scum from the surface of the liquid under treatment, substantially as described.

5. The improved apparatus for purifying saccharine liquids, consisting of the vacuum pan or vessel constructed with the heating device for boiling the liquid, and with the skimmings-receptacle, substantially as described.

6. The improved apparatus for purifying saccharine liquids, consisting of the vacuum pan or vessel, constructed with the receptacle for the liquid to be boiled, with the heating device for boiling the liquid therein, and with the skimmings-receptacle, in combination with the skimmer for removing the scum from the boiling liquid and transferring it to said skimmings-receptacle.

7. The improved apparatus for purifying saccharine liquids, consisting of a vacuum pan or vessel, constructed with a receptacle for the liquid to be boiled, with a heating device for boiling the liquid therein, with a skimmings-receptacle, and with an inclined surface extending up from said boiling-receptacle toward or over said skimmings-receptacle, whereby the scum rising from the boiling liquid is driven by the heat onto said inclined surface, in combination with a skimmer for removing the scum from said inclined surface and depositing it in said skimmings-receptacle.

8. The vacuum-pan, constructed with the central boiling-receptacle, and the annular skimmings-receptacle, substantially as described.

9. A vacuum-pan constructed with a central boiling-receptacle, with an annular skimmings-receptacle, and with an inclined rim extending outwardly from the margin of the boiling-receptacle.

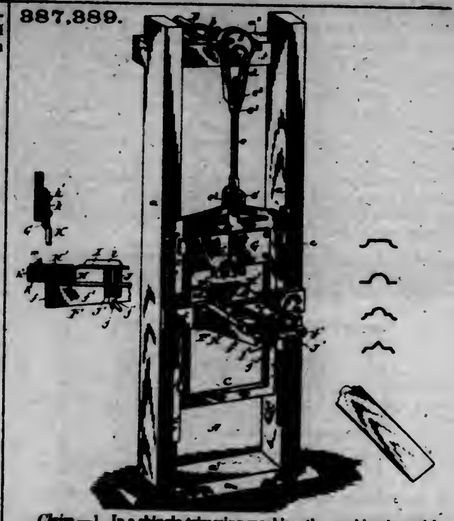
10. A vacuum-pan constructed with a central boiling-receptacle and an annular inclined rim, combined with a rotary skimmer moving over said rim.

11. A vacuum-pan constructed with a central boiling-receptacle and with an inclined annular rim, in combination with a central vertical shaft and with a skimmer mounted on said shaft and moving over said rim.

12. The improvement in the art of manufacturing sugar, which consists in defecating the saccharine liquid, then purifying it by boiling it in vacuum, and simultaneously separating the resulting froth or scum and subsequently concentrating the liquid.

387,389. SHINGLE-TRIMMING MACHINE. FRANK BATT, Tonawanda, N. Y. Filed Apr. 17, 1888. Serial No. 270,909. (No model.)

387,389.



Claim.—1. In a shingle-trimming machine, the combination, with the main frame, of a reciprocating frame, C, provided with a knife, K, a supporting-frame, F, secured to the main frame, a box, H, supported on the frame F and made adjustable thereon at right angles to the path of the knife, and the block H', seated in the box H, substantially as set forth.

2. The combination, with the main frame, of a reciprocating frame, C, provided with a knife, K, a supporting-frame, F, secured to the main frame and provided with forwardly-projecting arms *f f*, a box, H, provided with a forwardly-extending table, I, a block, H', seated in the box H, a supporting-bar, J, and a clamping-bar, J', applied to the upper and lower sides of the arms *f f* underneath the table I, and a bolt, *j*, passing through the table I and the bars J J', substantially as set forth.

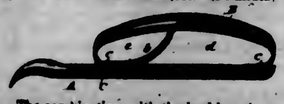
3. In a shingle-trimming machine, the combination, with the reciprocating knife-frame C, of a main knife, G, secured to the knife-frame, and an ornamenting-knife, K, removably secured to the main knife and projecting beyond the edge thereof, substantially as set forth.

4. In a shingle-trimming machine, the combination, with the main frame and the shingle-supporting frame secured thereto, of a reciprocating knife-frame provided with a main knife, an ornamenting-knife removably secured to the main knife and projecting beyond the edge thereof, a driving-shaft and eccentric, and a length-wise-adjustable rod connecting the eccentric with the knife-frame, substantially as set forth.

387,390. COMPOSITION FOR SIDEWALKS. LOUIS H. BRADSHER, Hancock, Mich. Filed Nov. 22, 1887. Serial No. 255,994. (No specimens.)

Claim.—The improved composition for sidewalks, consisting of the following ingredients in the proportions specified: coal-tar, eighteen gallons; black pitch, twenty pounds; resin, ten pounds; slab-tar, five gallons; pulverized limestone, fifteen pounds; copper-molding stampsand, four quarts; ashes, two quarts; yellow sand, six quarts.

387,391. CORN-HUSKER. HERBERT S. BLAIR, Bucyrus, Ohio. Filed Sept. 27, 1887. Serial No. 250,513. (No model.)



Claim.—The combination, with the husking pin or tool A, of the longitudinal loop-like strap B, having longitudinal incisions in the forward portion of its length arranged to form an inner flexing strip, *b*, essentially as shown and described, and for the purpose or purposes herein set forth.

387,392. CURTAIN-RING. WARREN L. BRADDOCK, Boston, Mass. Filed Aug. 20, 1887. Serial No. 247,488. (No model.)

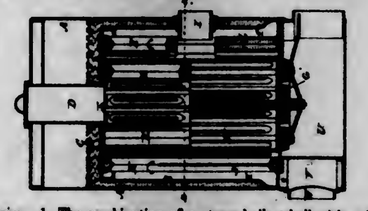
Claim.—1. The hollow ring A, having the tongue-pieces 2 3 integrally connected with the ring, combined with a single roller-shaft, *c*, supported in the ring and passing through said tongue-pieces, and two anti-friction rollers set into the ring and journaled on said shaft, as set forth.

387,392.



2. A curtain-ring provided with a curtain-attaching device consisting of a strip of metal bent around the ring and having its ends provided with eyes twisted to the extent of a quarter-turn and riveted together with an eyelet, as set forth.

387,393. STEAM-BOILER. THEODORE R. BUTTON, Waterford, N. Y., assignor of one-half to Charles R. Button, same place. Filed Mar. 9, 1888. Serial No. 266,742. (No model.)



Claim.—1. The combination of a steam-boiler shell with a fuel-magazine formed in part by a series of loops depending from the crown-sheet within the fire-box and having longitudinal flanges, substantially as set forth.

2. The combination of a double-wall steam-boiler shell with a fire-box formed by a series of vertical loops depending from the crown-sheet and extending to the grate, and having longitudinal flanges, substantially as specified.

3. The combination, in a steam-boiler, of the magazine formed in part of a series of loops dependent from the crown-sheet, and the fire-box formed by a series of loops surrounding the magazine and also depending from the crown-sheet, substantially as set forth.

4. The combination of the fire-box, formed by a series of loops, with the short loops K, depending from the crown-sheet, and the section L, connected therewith by means of pipes M, to form an opening opposite the door of the boiler, substantially as and for the purpose set forth.

5. The combination of the shell and crown-sheet of a steam-boiler, with the series of dependent loops forming the magazine and the pendent loops constituting the fire-box thereof, the said loops having longitudinal lapping-flanges, substantially as specified.

6. The combination of the shell and crown-sheet, with loops depending therefrom and forming a magazine, and the pendent loops constituting the fire-box, the loops having webs partly closing the spaces in said loops, and longitudinal lapping-flanges on the sides thereof, whereby the products of combustion are carried up and deflected in their passage from the fire-box, substantially as set forth.

387,394. GATE-LATCH. GEORGE W. CHARLEVILLE, McKinney, Tex. Filed Feb. 20, 1888. Serial No. 264,894. (No model.)

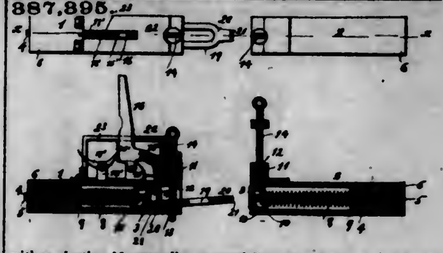


Claim.—1. In a latch, substantially as described, the combination of a case having an inwardly-projected ledge or flange, a loosely-suspended ring held and movable against said ledge or flange, and an operating-lever arranged above the said ledge and engaged with the ring, whereby to operate the same, substantially as set forth.

2. In a latch, the combination of a case having at its lower end a guide ledge or flange with its bearing-face arranged laterally in from the inner face of the side plate of the case, a loosely-suspended ring held and movable against the said ledge or flange, and means whereby the said ring may be operated, substantially as set forth.

387,395. CAR-COUPLING. JOHN M. CLARK, Hebron, N. Y. Filed Jan. 9, 1888. Serial No. 260,189. (No model.)

Claim.—1. In a car-coupling, the hollow draw-bar 1, formed



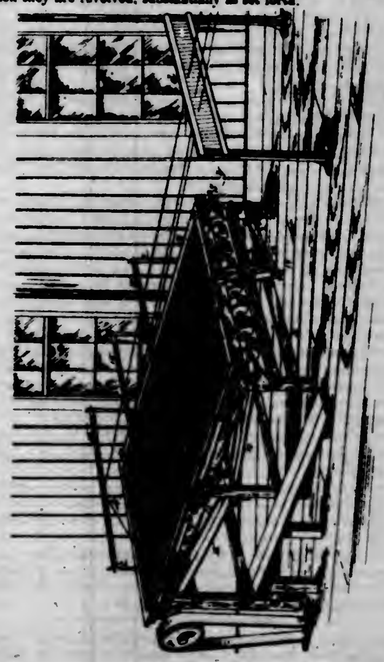
with projection 11, extending upward from its outer end and having hole 12 in line with hole 13 in casing 1, the slide 3, having friction-rollers 10 and guide-rod 4, and spring 8, located in said draw-bar, a bar, 17, adapted to move in slot 18 and connected by pivoted link 16' with lever 16, having teeth 15' and pivoted to bracket 15 on draw-bar 1, post 18', having pawl 17', engaging teeth 15', and the casing 22, having slot 23, through which projects lever 16, and hinged to draw-bar 1, substantially as described.

2. In a car-coupling, the combination of hollow draw-heads 1 2, with links 19, having projections 20 and coupling-pins 14, the draw-heads having upward projection 11, with hole 12 and coupling-pin hole 13, and containing slide 3, guide-rod 4, spring 8, and perforated end 6, containing the end of rod 4, and the draw-head 1, having slot 18 near its forward end, bar 17, adapted to slide in said slot, lever 16, pivoted to bracket 15 on draw-bar 1 and connected by link 16' with bar 17, and hinged casing 22, having slot 23, substantially as described.

387,396. MACHINE FOR WINDING YARNS FROM CHAINS UPON SPOOLS. ANDREW GARDNER, Fitchburg, Mass. Filed June 27, 1887. Serial No. 242,671. (No model.)

Brief.—The object of the invention is to provide apparatus for winding yarns directly from the chain upon spools.

Claim.—1. An organized mechanism for spooling thread directly from the chain, consisting of a rotatable chain-cup, a tension device, a suspended raddle, a splitting copper, and a frame supporting the spools and provided with a traversing board, with mechanism, substantially as described, for giving it a lateral reciprocating movement, and one or more endless belts, upon which the spools rest and by which they are revolved, substantially as set forth.



387,396.



2. The improved tension device hereinbefore shown and described, consisting of the bar B, having a series of pegs, the rolls 24 and 26, lying in substantially the same horizontal plane, the drum 45, resting upon said rolls and having its shaft journaled in vertical slots, and suitable means, substantially as shown and described, for applying pressure upon the periphery of said drum, substantially as set forth.

387,397. WAGON-POLE ATTACHMENT. GEORGE F. CRIST, Shelby, Iowa. Filed Mar. 7, 1888. Serial No. 266,491. (No model.)



Claim.—1. An attachment for wagon-poles for preventing the neck-yoke from coming off the pole, consisting of a longitudinally slotted and apertured tube, and a spring secured to said tube and provided at its free end with a pin engaging the aperture in the tube, substantially as described.

2. An attachment for wagon-poles for preventing the neck-yoke from coming off the pole, consisting of a longitudinally slotted and apertured tube provided with downwardly-projecting lugs at each end, and a spring secured to the tube and provided with a pin engaging the aperture of the tube, substantially as herein shown and described.

3. In an attachment for wagon-poles, the combination, with an apertured tube provided with a stop on its under side, of a spring secured to the tube and carrying at its free end a pin working in the aperture of the said tube, substantially as described.

4. In an attachment for wagon-poles, the combination, with a longitudinally slotted and apertured tube provided with lugs on its under side, of a spring secured to the tube, a plate secured to the spring and fitted to the end of the tube, and a pin on the under side of the plate, substantially as herein shown and described.

387,398. HOLDBACK. WILLIAM CHESEBRO, Copenhagen, N. Y. Filed Feb. 7, 1888. Serial No. 263,267. (No model.)



Claim.—1. As an improved article of manufacture, a holdback-iron comprising the attaching-plate provided with the housing E, open at both ends, and having a longitudinal slot, b^2, the tongue D, sliding freely in said housing, and formed with teeth d^2 at its inner end and with the projection d^3 at its outer end, and the screw d, passed through the housing-slot into the said tongue, substantially as set forth.

2. As an improved article of manufacture, the holdback-iron comprising the attaching-plate E, having a slotted housing, E', open at both ends, the inner surface of one wall of the housing being gradually inclined to contract the opening at its rear end, the angular tongue D, sliding in said housing and having the teeth d^2 on the inner face of its inner end, and the screw d, passed through the housing into the tongue, substantially as set forth.

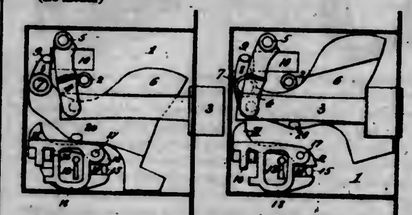
387,399. RAILROAD-CHAIR. ALPHEUS COOK, Galway, N. Y. Filed Oct. 7, 1887. Serial No. 251,714. (No model.)



Claim.—1. A chair made of resilient metal, having its bottom arched from end to end and its sides of substantially the same contour as the web and foot of a rail and extending upwardly to the under side of the head of the rail, substantially as described.

2. A chair made of resilient metal and having a concave-convex bottom arching from end to end.

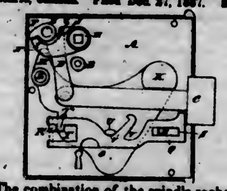
387,400. COMBINED LATCH AND LOCK. JOHN C. CRAIG, Perth Falls, Ontario, Canada. Filed Dec. 27, 1887. Serial No. 259,127. (No model.)



Claim.—1. The combination of the gravitating weight 6, pivoted to the lock-case and having an arm, 8, pendulum 4, pivoted to the lock-case, and bolt 3, pivoted to the pendulum, whereby the arm of the weight causes the pendulum to project the bolt after the latter has been retracted, substantially as set forth.

2. In a combined latch and lock, the combination, with the case 1, having stud 15, and post 16, of the slide 12, dog 11, bolt 3, pendulum 4, and gravitating weight 6, having an arm, 8, to engage the pendulum, as set forth.

387,401. COMBINED LATCH AND LOCK. JOHN C. CRAIG, Perth Falls, Ontario, Canada. Filed Dec. 27, 1887. Serial No. 259,172. (No model.)



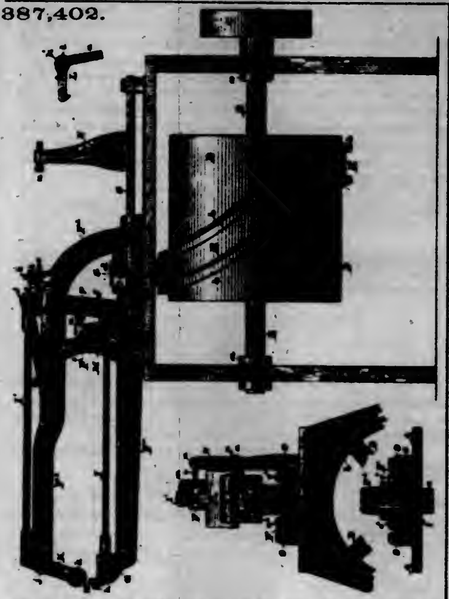
Claim.—1. The combination of the spindle-cock H, having an arm, I, and offset J, the pendulum D, having an arm, F, and offset G, and pivoted to the lock-case, gravitating weight K, having an arm, M, provided with a projection, N, and pivoted to the lock-case, and bolt C, pivoted to the pendulum, as set forth.

2. The combination, in a combined latch and lock, of the gravitating weight K, having post U, pendulum D, bolt C, and slide Q, having inclined notches V V', as set forth, for the purpose described.

387,402. MACHINE FOR STRETCHING HIDES. GEORGE R. DARFORTH, Lynn, Mass., assignor of one-half to Anton B. Hoffman, same place. Filed Apr. 21, 1888. Serial No. 271,261. (No model.)

Claim.—1. In the herein-described machine for rubbing and stretching hides or skins, the combination of a sliding frame, means having provision for reciprocating said frame toward and from the front of the machine, a knife or scraper holder pivoted to an arm of said sliding frame, a forked lever pivoted to another arm of said frame, a roller mounted in the forked end of said lever, a nearly-vertical

887,402.



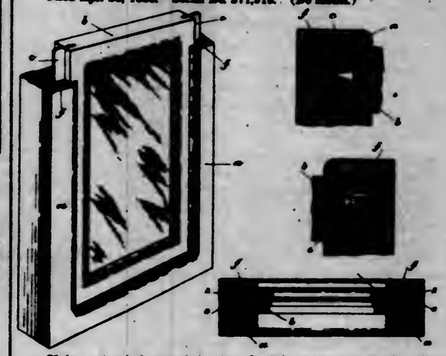
lever pivoted to said sliding frame near its rear end, rods connecting said vertical lever with said roller-holding lever and said knife or scraper holder, a spring-operated latch-lever for locking said vertical lever in its rearmost position while said sliding frame is traveling toward the rear of the machine, a spring for moving said vertical lever toward the front of the machine, a stop secured to the frame of the machine in the path of an arm of said latch-lever to unlock said vertical lever when said sliding frame is at or near its rearmost position and allow it to move toward the front of the machine, thereby forcing said knife-holder and roller away from each other, an arm projecting from said vertical lever, and a stop secured to the frame of the machine in the path of said arm, so as to engage therewith when said sliding frame is near the front of the machine and move said vertical lever to its rearmost position, so that it may again be locked by said latch-lever and retained in that position while the sliding frame is moving to the rear.

2. In a machine for rubbing and stretching hides or skins, the combination of a sliding frame, means having provision for reciprocating said frame toward or from the front of the machine, a knife or scraper holder pivoted to an arm of said sliding frame, a forked lever pivoted to another arm of said frame, a roller mounted in the forked end of said lever, a nearly-vertical lever pivoted to said frame near its rear end, rods connecting said lever with said forked lever and said knife or scraper holder, means having provision for locking said vertical lever in its rearmost position when said frame is at or near the front end of the machine, a spring for moving the end of said vertical lever toward the front of the machine, and means having provision for unlocking said lever when the said sliding frame is at or near the rear end of the machine.

3. In a machine for rubbing and stretching hides or skins, the combination of a sliding frame, means having provision for reciprocating said frame toward or from the front of the machine, a knife or scraper holder pivoted to an arm of said sliding frame, a forked lever pivoted to another arm of said frame, a roller mounted in the forked end of said lever, means having provision for locking said lever and knife-holder in position with the edge of said knife in close proximity with the periphery of said roller during the rearward movement of said reciprocating frame, means having provision for unlocking said lever and said knife-holder when said frame is at or near its rearmost point and moving said knife farther to the front and said roller farther to the rear, thus making a more convenient space or opening between said roller and knife for the admission or removal of the material being operated upon, and means having provision for locking said lever and knife-holder in their original positions when said frame is at or near the front end of the machine preparatory to again moving to the rear and operating upon the material seized between said roller and said knife or scraper.

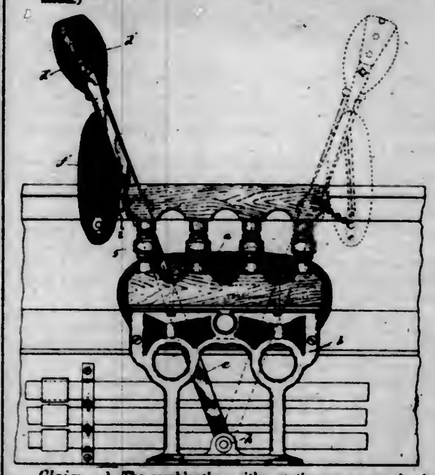
4. In a machine for rubbing and stretching hides or skins, the combination of a sliding frame, a knife-holder pivoted to an arm of said frame, a roller-holding lever pivoted to another arm of said frame, means having provision for locking said knife-holder and said roller-holding lever when said frame is at or near the front end of the machine, so that the edge of the knife will be in close proximity to the said roller during the rearward movement of said frame, means having provision for unlocking said lever and said knife-holder when said frame is near the rear end of the machine and moving said roller and knife away from each other, a truck or roll secured to said frame, and a cam-wheel so situated and constructed as to engage with said truck and reciprocate said frame toward and from the front of the machine.

887,408. CAR-WINDOW. William H. Dawes, Lowther, Minn. Filed Apr. 26, 1888. Serial No. 271,919. (No model.)



Claim.—A window-sash having flexible strips *e* projecting from its edges, combined with a casing having grooves of less depth than the width of the projecting portions of the strips and provided with narrow bottoms or seats 2 of the same width as the outer edges of the strips, and with inclined sides which converge from the outer ends or mouths of the grooves to the seats 2, said sides guiding the outer edges of the strips *e* to the seats 2 and keeping said edges in close contact with said seats, as set forth.

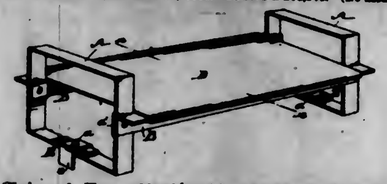
887,404. REVERSIBLE BACK FOR CAR-SEATS. James P. Doyle, Boston, Mass. Filed Feb. 15, 1888. Serial No. 264,130. (No model.)



Claim.—1. The combination, with a stationary car-seat having fixed arm-rests at the ends thereof, and the frame-pieces *b*, having centrally-apertured ears, of the levers pivotally secured at their lower ends to said ears and projected up between the said seat and arms, and having sockets 6 secured to their inner sides, the frame *d*, having the parallel arms secured to the upper ends of said levers and having their lower ends in said sockets, the lower frame, *f*, the hinges *g*, connecting said frames, and the chains *i i*, connected to said levers and lower frame, substantially as shown and described.

2. The combination, with the fixed seat and the fixed arm-rests at the ends thereof, of the levers *c c*, pivoted to fixed supports below the seat and arranged to swing between the ends of the seat and the fixed arm-rests, the upper back-section composed of an upholstered frame having downwardly-projecting side pieces, 2, rigidly attached to the upper ends of said levers, the lower back-section connected by hinges *g* to the upper back-section and adapted to swing backwardly in either direction, the covering-strips *h h*, whereby said hinges are concealed, and the chains *i*, connecting the levers and the lower back-section, whereby the backward movement of the same in each direction is limited, as set forth.

887,405. PALLET FOR DRYING BRICK. Charles T. Fish, Elizabeth, N. J. Filed Mar. 30, 1888. Serial No. 269,079. (No model.)



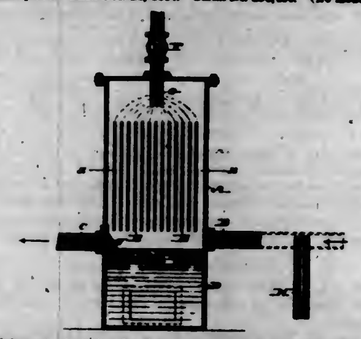
Claim.—1. The combination, with rectangular head pieces, of angular side pieces connecting said head pieces and a horizontal bench resting upon said side pieces and secured thereto, substantially as herein shown and described.

2. The combination, with rectangular head pieces, and side pieces connecting said head pieces formed as angle-irons, and a bench horizontally supported upon the horizontal members of the said angle-irons, the longitudinal edges of the bench being turned over the longitudinal edges of the horizontal members of the angle-irons, substantially as and for the purpose herein set forth.

3. The combination, with head pieces provided with central side depressions upon their outer face, of angle-irons connecting the said heads and attached in said recesses, a bench supported upon the horizontal member of said angle-irons between the heads, the longitudinal edges of the said bench being bent over the longitudinal edges of the horizontal members of the angle-irons, substantially as and for the purpose specified.

4. The combination, with head pieces each provided with a central recess or depression in its outer face, and angle-irons connecting said head pieces, of a bench supported horizontally upon the said angle-irons between the heads, the longitudinal edges of which bench are bent over the longitudinal edges of the angle-irons, and a locking-lip secured to the base of the head, adapted to project vertically downward outside of the said head pieces, as and for the purposes specified.

887,406. APPARATUS FOR PURIFYING WATER. Thomas Foley, Philadelphia, Pa., assignor, by mesne assignments, to Warren Webster, same place. Filed Dec. 20, 1887. Serial No. 258,469. (No model.)

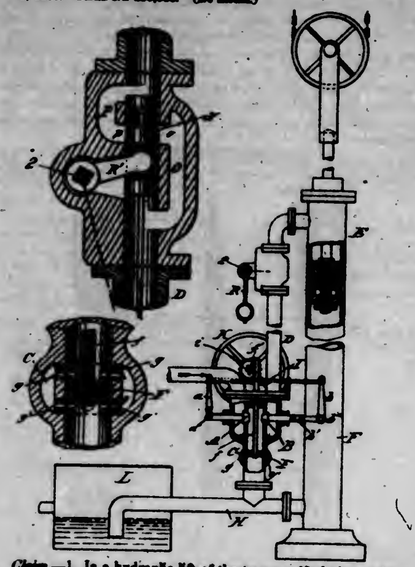


Claim.—1. A device for the purpose named, consisting of a tank having the steam-induction pipe B, the water-eduction pipe C, the water-inlet pipe F, with rose G, the vertical plates E, the shield J, and wall D, said parts being combined substantially as described.

2. The tank A, having the water-induction pipe B, the steam-eduction pipe C, the water-inlet pipe F, with rose G, the vertical plates E, connected to tank A, the shield J, between the lower end of said plates E and the pipe C, and the wall D in lower part of the tank A, below the said induction-pipe B and the eduction-pipe C, said parts being combined substantially as and for the purpose set forth.

3. A tank with a steam-induction pipe, a water-eduction pipe, a water-inlet pipe with a rose, a vertical series of plates secured within said tank and adapted to be heated by the said inlet-steam from said steam-induction pipe, a shield or hood covering the eduction water-pipe, and a water-pipe leading into said steam-pipe outside of said tank, said parts being combined substantially as and for the purpose set forth.

887,407. HYDRAULIC LIFT. Thomas P. Pugh, London, England, assignor to the American Elevator Company, same place. Filed Jan. 6, 1888. Serial No. 259,933. (No model.)

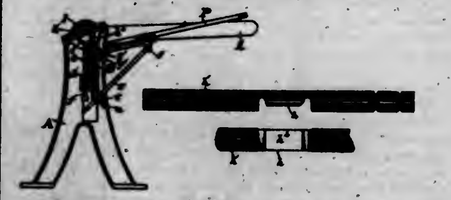


Claim.—1. In a hydraulic lift of the type specified, the combination, with water supply and circulation valves A B of the plug or sliding type, and the chamber C, connected with the main cylinder, as described, of a cup-leather piston-valve, F, controlling the passage from chamber C to the lower end of the main cylinder and acting in conjunction with the valves A B as a second seal to prevent leakage, both sets of valves being operated by the same gear, substantially as specified.

2. The combination, with the valves A, B, and F, of the rack-and-pinion gear and levers for operating such valves, and consisting of the piston rack-rod *f*, pinions *f'* and *i*, rack-rod I, and levers *a b*, connected to rack-rod I and to the stems of valves A B, substantially as shown and described.

3. In a hydraulic lift, a double-acting regulator for checking both the supply and circulation of the water, and consisting of a plunger-valve, N, working in a cylinder interposed in line axially of the column of water and provided with by-pass passages and ports O *o* P *p*, across which the valve works, said valve being combined with a weighted elbow-lever, R R', whereby the valve is held against the momentum of the water.

887,408. MACHINE FOR CUTTING THE METAL OF SHOW-CASE MOULDINGS. Frances X. Divine, Baltimore, Md. Filed Jan. 17, 1888. Serial No. 261,017. (No model.)



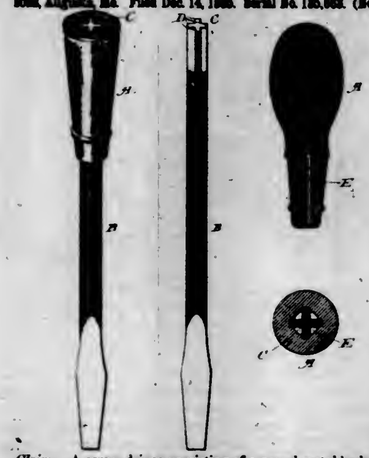
Claim.—1. A machine for cutting metal show-case moldings, comprising a cutter-plate, *c*, having an edge shaped to fit a design of molding, and a shaft, *N*, mounted in suitable bearings, and intermediate of its ends having a portion of its rounded side removed, whereon is a surface, *N'*, whose edge bisects the said rounded side and serves as a cutter, *A*, to coact with the said cutter-plate.

2. A machine for cutting metal show-case moldings, comprising a cutter-plate, *c*, having an edge shaped to fit a design of molding, a shaft, *K*, provided intermediate of its ends with a cutter, A, which is the counterpart of the cutter-plate edge and which does not project beyond the plane of the rounded side of the shaft, and a box-bearing for said shaft, said box-bearing covering the shaft along its length where the cutter is.

3. A machine for cutting metal show-case moldings, having in combination a cross-bar, B, provided with a recess, *d*, a cutter-plate, *c*, occupying the recess, a shaft, *K*, provided intermediate of its ends with a cutter, A, which is the counterpart of the edge of said cutter-plate, and a box-bearing covering the entire length of the cutter-shaft.

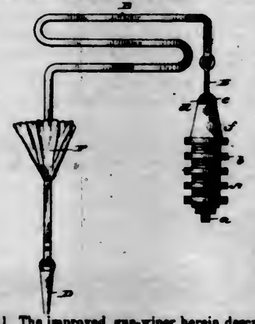
4. A machine for cutting metal show-case moldings, having in combination a stationary cutter-plate, *c*, a shaft, *K*, provided intermediate of its ends with a cutter, A, which is the counterpart of the edge on said cutter-plate, and a chute pivoted by one end adjacent to the cutter-plate.

387,409. SCREW-DRIVER. GEORGE R. GAY and JOHN H. PARSONS, Augusta, Me. Filed Dec. 14, 1888. Serial No. 135,663. (No model.)



Claim.—A screw-driver consisting of a round metal body, B, flattened at one end to adapt it to the neck of the screw, and having its other end reduced to a cross-shaped cross-section having the same external dimensions as the round body part, combined with and forcibly driven into a wooden handle, A, substantially as and for the purpose described.

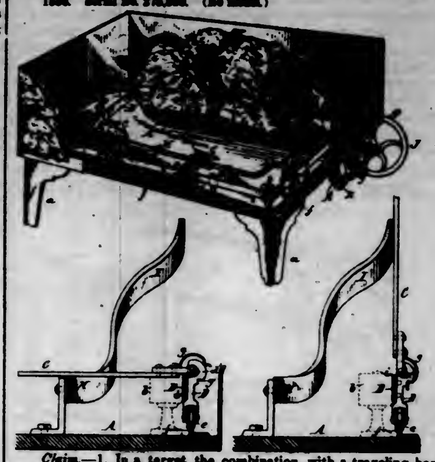
387,410. GUN-CLEANER. CYRUS F. GILLETTE, Sparta, Wis. Filed Jan. 21, 1888. Serial No. 261,430. (Model.)



Claim.—1. The improved gun-wiper herein described, consisting, essentially, of the rod having a head at one end and threads at its opposite end, the removable tip *f* on the headed end, the rubber disks all of an equal diameter and arranged on the rod, the washers for spacing the said disks, the draw-cord attached to the rod, and the weighted point on the free end of the cord, and the rag on the said cord, substantially as specified.

2. In a gun-wiper, substantially as described, the combination, with the rod headed at one end and threaded at its opposite end, the tip on the headed end, the rubber disks of equal diameter, and the washers for spacing the disks on the rod, substantially as specified.

387,411. TARGET. JOHN GUNN, Buffalo, N. Y. Filed May 31, 1888. Serial No. 276,092. (No model.)



Claim.—1. In a target, the combination, with a traveling band and a plate hinged thereto and representing an animal or other object, of a guide whereby said plate is automatically returned to its normal position when overthrown, substantially as set forth.

2. In a target, the combination, with an endless traveling band and a plate hinged to said band and representing an animal or other object, of a cam or inclined guide arranged on the inner side of said endless band, whereby the hinged plate is automatically returned to its normal position when overthrown, substantially as set forth.

3. In a target, the combination, with the endless band B, running around suitable pulleys, of a plate, C, hinged with its lower end to said band and representing an animal or other object, and a guide, H, arranged in rear of the front portion of said band and provided at one end with a cam or incline, I, substantially as set forth.

4. In a target, the combination, with the endless band running around suitable pulleys, of a support or standard, D, secured thereto, and a plate, C, hinged to said support and provided with a spring, *g*, engaging with its end in a notch or recess formed in said support, substantially as set forth.

5. In a target, the combination, with the endless band running around suitable pulleys, of a support or standard, D, secured thereto and provided at its lower end with a roller, and a plate, C, hinged to said support and provided with a spring, *g*, engaging with its end in a notch or recess formed in said support, substantially as set forth.

387,412. HARROW. HENRY F. GRAETZEL and FREDERICK H. POWELL, Fullerton, Md. Filed May 21, 1888. Serial No. 274,503. (No model.)



Claim.—In a harrow, the combination, with the side beams, A, having upwardly-turned ends *b* and angular bearings *j*, and the revolving shaft E, having a series of prongs, k, of the bars I, with teeth *k* and adjustably mounted in the bearings *j*, whereby the said teeth *k* are adapted to be placed in a horizontal position projecting between the prongs *k*, or in a vertical position in contact with the ground, as set forth.

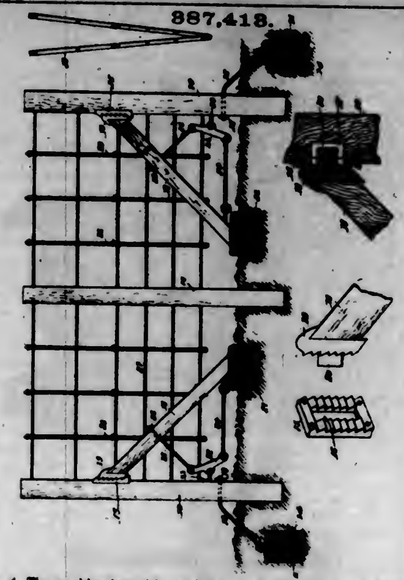
387,413. WIRE FENCE. THOMAS GRIFFIN and WILLIAM MITCHELL, Noblesville, Ind. Filed Apr. 20, 1888. Serial No. 271,268. (No model.)

Claim.—1. The combination, with a fence-post having a rack, of an inclined brace having a rack at its upper end engaging the rack on the post, substantially as set forth.

2. The combination, with the fence-post having a rack, of an inclined brace provided with a rack at its upper end, engaging the rack on the post, and adjustable connections between the post and brace below their racks, substantially as set forth.

3. The combination, with a fence-post provided with a recess in one face and a centrally-slotted rack-plate secured to the post adjacent to said recess, of an inclined brace provided with an engaging rack-plate, a lug integral with the brace-rack, adapted to enter the slot of the post-rack and the recess in said post, and a take-up device attached to said post and brace, as and for the purpose specified.

387,418.



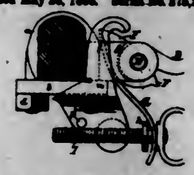
4. The combination, with a fence-post and a rack-plate, of a brace, a rack-plate attached to one end of said brace, adapted to engage the post-rack, a lever fulcrumed centrally upon the post, a link connecting the lower end of said lever to the lower end of said brace, and a threaded bar attached to the upper end of the lever and passing through the brace, and means for adjusting the said bar, substantially as and for the purpose specified.

5. The combination, with a fence-post provided with a recess in one face, and a rack-plate secured over said recess, provided with an aligning-slot, of a brace, a rack-plate attached to one end of said brace, adapted to engage the post-rack, a lug integral with the brace-rack, a lever fulcrumed centrally upon the post, a link connecting the lower end of said lever to the lower end of said brace, and a threaded bar attached to the upper end of the lever and passing through the brace, and a means for adjusting the said bar, substantially as and for the purpose specified.

6. The combination, with a post and a rack-plate provided with a central longitudinal slot, secured to said post, of a brace, a rack-plate secured to one end of said brace, adapted to engage the rack-plate, a lug integral with the brace-rack plate, adapted to enter the slot in the post-rack, and means, substantially as described, for adjusting the brace in relation to the post, as and for the purpose specified.

7. In a fence, a post and brace-rack consisting in the rack 15, having a longitudinal slot, 16, and the opposing rack 19, having a projection, 20, on its toothed face entering said slot, substantially as set forth.

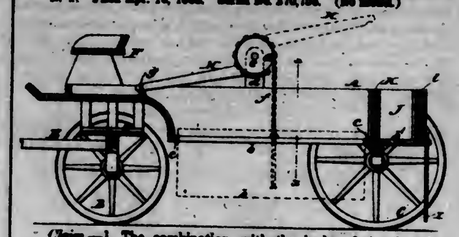
387,414. THILL-COUPLING. WILLIAM H. HASKELL, Philadelphia, Pa., assignor to himself, George W. Haskell, and Henry J. Haskell, all of same place. Filed May 26, 1888. Serial No. 275,262. (No model.)



Claim.—1. The combination of the clip and its ears, the thill-iron and its pivot-pin, the friction-block having a projecting arm, the locking-plates engaging with the pivot-pin and having a bearing on the axle, and a screw-stem and nut for acting on the plates and on the arm of the friction-block, all substantially as specified.

2. The combination of the axle-clip having projecting ears, the thill-iron and its pivot-pin, the friction-block and its spring-arm, locking-plates fulcrumed on the axle and engaging with the pivot-pin, and a screw-stem and nut for operating the friction-block and locking-plates, all substantially as specified.

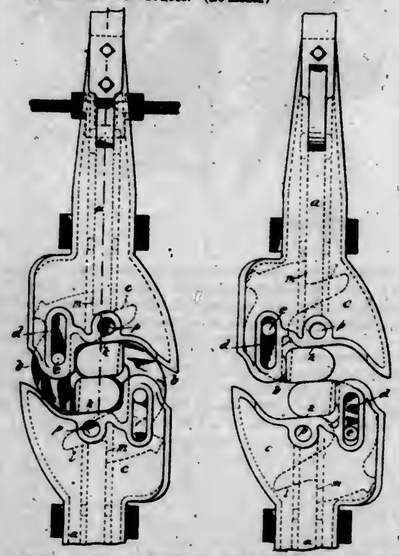
387,415. DUMPING-WAGON. WILLIAM H. HEWLETT, Merrick, N. Y. Filed Apr. 14, 1888. Serial No. 270,734. (No model.)



Claim.—1. The combination, with the body of the dumping-wagon, its front and rear wheels, and hinged centrally and longitudinally dumping bottom sections, of a scraper or leveler in rear of said body and adjustable up or down in relation thereto, substantially as and for the purpose specified.

2. In combination with the body A, having a tail-board, *l*, front and rear wheels, B C, and hinged centrally and longitudinally dumping bottom sections *b b*, the independent bottom section *b'* and the removable cross-board K, arranged in advance of the tail-board and at a suitable distance from it back of the bottom dumping sections *b b*, essentially as described.

387,416. CAR-COUPLING. OLIVER P. HIX, Rockland, Me., assignor to the HIX Automatic Car Coupler Company, same place. Filed Feb. 23, 1888. Serial No. 264,885. (No model.)



Claim.—1. In a car-coupler, a draw bar or head combined with a coupling hook or knuckle pivoted in a vertical plane to the head or bar, and having a limited sliding movement longitudinally of the same, the construction and arrangement of the hook and bar with respect to each other being such that the hook may be moved inward or rearward and bear or be seated against the end of the bar and become virtually one therewith, as set forth.

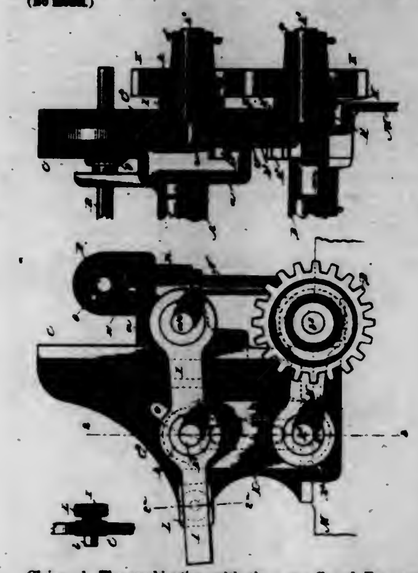
2. In a car-coupler, a draw bar or head, combined with a coupling hook or knuckle pivoted to the head and having a limited sliding movement longitudinally of the same, and a weighted bolt or bar for locking said hook against, and releasing it to permit of, action on its pivot, said weighted bolt being constructed and arranged to bear against the hook or knuckle and hold it normally pressed forward, as set forth.

3. In a car-coupler, a draw bar or head combined with a coupling hook or knuckle pivoted to the head and having a limited sliding movement longitudinally of the head, and a weighted bolt or bar having a movement vertically and longitudinally with respect to the head for locking said hook against, and releasing it to permit of, action on its pivot, substantially as set forth.

4. In a car-coupler, a draw bar or head combined with a coup-

ing hook or knuckle pivoted to the head and having a limited sliding movement longitudinally of the head, and a weighted locking bolt or bar having a movement vertically and longitudinally with respect to the head, said bolt or bar being arranged to bear against the coupling hook or knuckle, whereby when the latter is pressed rearwardly in the draw bar or head and left free the weighted locking-bolt will push it forward again to its normal position and turn it on its axial pin when uncoupled or released, substantially as set forth.

387,417. EXPANSION-GEARING FOR PLANING-MACHINES. Louis P. Hoyt, Aurora, Ill. Filed Jan. 31, 1888. Serial No. 262,813. (No model.)



Claim.—1. The combination, with the gears G and F, respectively mounted upon separate adjustable bearings, of the lever pivotally connected with said bearings and having a sliding connection with a fulcral support, substantially as and for the purpose described.

2. The combination, with the gears D and G, of the intermediate gears mounted upon a shifting bearing, and the link H and lever I, arranged for maintaining the axes of the intermediate gears at respectively determinate distances with relation to the axes of the gears D and G, said lever being connected with a fulcral support by a sliding connection, substantially as and for the purpose set forth.

3. The combination, as hereinbefore set forth, of the driving-gear, the driven gear, the intermediate gears mounted upon a shifting bearing, and the lever I, pivotally attached to bearings for the driven gear and one of the intermediate gears, and having a sliding connection with a pivoted fulcral support, L, substantially as described.

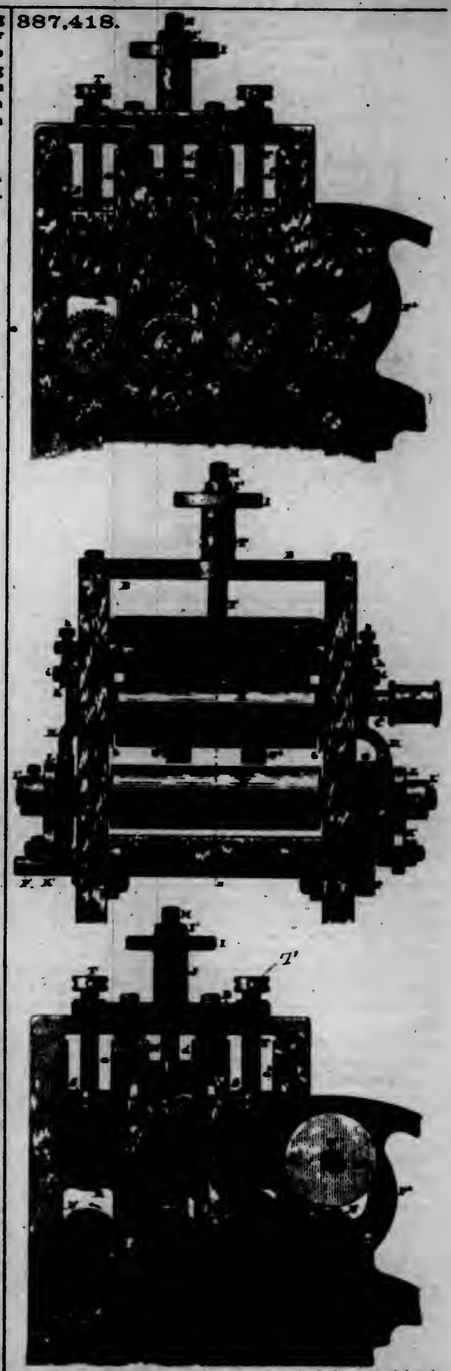
4. The combination, with the gears G and D, of the intermediate gears mounted upon a shifting plate, K, providing a bearing common to both intermediate gears, the link H, hung at one end upon the stationary bearing for the gear D and at its opposite end hung upon a boss, *k'*, in the shifting bearing, and the link I, hung upon an adjustable bearing for the gear G and having a pivotal connection with said shifting bearing formed by the boss *k*, substantially as described.

387,418. WOOD-WORKING MACHINE. John P. Jamison, Cambridgeport, Mass. Filed Mar. 17, 1888. Serial No. 267,645. (No model.)

Claim.—1. In a wood-working machine, the combination of a rotating cutter, a reciprocating frame for carrying said cutter, one or more rolls or trucks mounted upon said frame, one or more rotating cams engaging with said trucks and moving said cutter toward the bed upon which the material is fed beneath the cutter, a spring for moving said cutter in the opposite direction, means for feeding beneath said cutter the material to be operated upon, one or more rolls located above the material to be operated upon and in contact therewith, one or more vertically-reciprocating frames carrying said rolls, and mechanism interposed between said roll-carrying frames and the frame of the machine, by which the pressure upon the material may be regulated.

2. In a wood-working machine, the combination of a rotating cutter, a reciprocating frame for carrying said cutter, a feed-roll

887,418.



located beneath said cutter and adapted to feed the material to be operated upon between the said cutter and said feed-roll, one or more rolls or trucks mounted upon said frame, one or more rotating cams engaging with said trucks and adapted to move said frame in one direction, and a spring to move said frame and cutter in the opposite direction.

3. In a wood-working machine, the combination of a rotating cutter, a reciprocating frame for carrying said cutter, brackets adjustably secured to said frame, so that the distance of said frame from the bed of the machine, when the parts are in their normal positions, may be varied in order to vary the depth of the carving, means for feeding beneath the cutter the material to be acted upon, rolls or trucks mounted upon said brackets, rotating cam-wheels engaging with said trucks and moving said frame and cutter in one direction, and a spring for moving the same in the opposite direction.

4. In a wood-working machine, the combination of a rotating cutter, a reciprocating frame for carrying said cutter, feed-rolls for feeding beneath said cutter the material to be operated upon, one or more rolls or trucks mounted upon said frame, one or more rotating cams engaging with said trucks and moving said frame and cutter toward the feed-rolls as the trucks pass over the projections of said cam, a screw-shank rigidly secured to said frame and passing through an opening in a stationary plate forming part of the frame of the machine, a nut mounted upon the outer end of said shank, and a spring interposed between said nut and said plate and adapted to retain said trucks in engagement with said cams.

5. In a wood-working machine, the combination of a rotating cutter, a reciprocating frame for carrying said cutter, a feed-roll located beneath said cutter and adapted to feed the material to be acted upon between said cutter and said feed-roll, brackets adjustably secured to said frame, so that the distance of said frame from said feed-roll, when the parts are in their normal positions, may be varied in order to vary the depth of the carving, rolls mounted upon said brackets, rotating cam-wheels engaging with said trucks and moving said frame and cutter in one direction, and a spring for moving said cutter and frame in the opposite direction.

6. In a wood-working machine, the combination of a rotary cutter, a reciprocating frame for carrying said cutter, and which is provided with two downwardly-projecting arms, rolls or trucks mounted upon the lower ends of said arms, rotating cams located above said rolls and engaging with the same to move said frame toward the bed upon which the material is fed beneath said cutter, and a spring to move said frame in the opposite direction.

7. In a wood-working machine, the combination of a rotating cutter, a reciprocating frame for carrying said cutter, a feed-roll located beneath said cutter and adapted to feed the material to be operated upon between said cutter and said feed-roll, one or more rolls or trucks mounted upon said frame, one or more rotating cams engaging with said trucks and moving said cutter toward said feed-roll, and a spring for moving said frame and cutter away from said feed-roll.

8. In a wood-working machine, the combination of a rotating cutter, a reciprocating frame for carrying said cutter, a series of feed-rolls located beneath said cutter and adapted to feed the material beneath said cutter, one or more rolls or trucks mounted upon said frame, one or more rotating cams engaging with said trucks and moving said cutter toward said feed-rolls, a spring for moving said cutter in the opposite direction, one or more rolls located above the material to be operated upon and in contact therewith, one or more vertically-reciprocating frames carrying said rolls, and mechanism interposed between said roll-carrying frames and the frame of the machine, by which the pressure upon the material may be regulated.

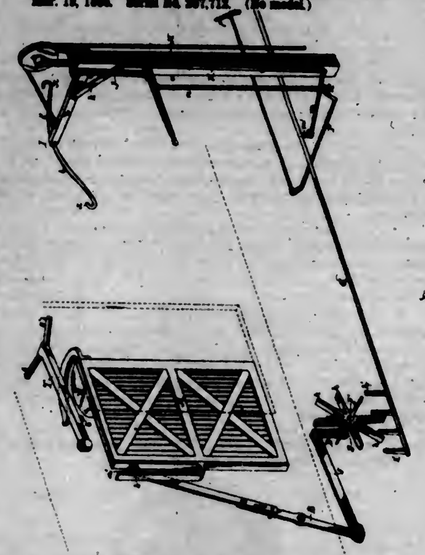
387,419. FURNACE-DOOR. Llewellyn H. Jordan, Buffalo, N. Y. Filed Nov. 3, 1887. Serial No. 254,147. (No model.)



Claim.—1. In a furnace-door, the combination, with the hollow frame E, having an open top and a closed bottom and forming a water-space, g^4, of hollow vertical end flanges, A, and a bottom flange, *k'*, projecting inwardly from the ends and bottom of the frame E and forming enlarged water-spaces at the ends and bottom of the central water-space, g^4, a lining of fire-brick secured to the inner wall of the frame E between the end flanges, A, and bottom flange, *k'*, and a water-pipe, *i*, entering the water-space g^4 through the open top of the frame E, substantially as set forth.

2. In a furnace-door, the combination, with the hollow frame E, having an open top and closed bottom and forming a hollow water-space, g^4, of hollow vertical end flanges, A, and a hollow bottom flange, *k'*, projecting inwardly from the ends and bottom of the frame E and forming enlarged water-spaces at the ends and bottom of the frame and continuations of the central water-space, g^4, vertical dovetail ribs *k K*, projecting inwardly from the inner wall of the frame E between the vertical flanges A, and a lining of fire-brick, F, having dovetailed grooves and secured to the inner wall of the frame E between the ribs *k K*, the edges and bottom of the lining being protected by the hollow flanges *k K*, substantially as set forth.

387,420. MAIL-BAG RECEIVING AND DELIVERY APPARATUS FOR RAILWAY-CARS. Edward Keenan, Philadelphia, Pa. Filed Mar. 19, 1888. Serial No. 267,712. (No model.)



Claim.—1. The combination of the sliding door of the car and the pivoted receiving and delivery arm with a cam, whereby said arm is projected and retracted as the door is opened and closed.

2. The combination of the pivoted receiving and delivery arm, the sliding door of the car, having an operating-cam for said arm, a lever connected to the door, a tappet-wheel hung to the car, means for transmitting the movement of said wheel to the lever, and tappets on the road-bed for actuating said tappet-wheel.

3. The combination of the pivoted receiving and delivery arm, the sliding door of the car, having an operating-cam for said arm, a lever connected to the door, a tappet-wheel hung to the car, means for transmitting the movement of said wheel to the door-operating lever, and tappets on the road-bed movable into and out of engagement with said tappet-wheel.

4. The combination of the car, having a pivoted bag receiving and delivery arm, a tappet-wheel hung to the car, mechanism whereby the movement of said tappet-wheel is transmitted to the bag receiving and delivery arm, a platform-post having a movable bag receiving and delivery arm, tappets for acting upon the tappet-wheel of the car, and means for connecting the said tappets to the arm of the platform-post, whereby the movement of the latter effects the movement of the tappets into and out of operative position, all substantially as described.

5. The combination of the platform-post and its bag receiving and delivery arm, a catch for retaining said arm, a car having a pivoted bag receiving and delivery arm, a projecting tappet-wheel hung to the car, mechanism whereby the movement of said tappet-wheel is transmitted to the pivoted arm on the car, tappets for operating the tappet-wheel, means for connecting said tappets to the arm of the platform-post, a tripper-arm connected to the catch-lever, and a projection on the car for operating said tripper, all substantially as described.

6. The combination of the platform-post with an arm having oppositely-projecting receiving and delivery fingers, one or both of which are bent downward and hooked at the outer end, as set forth.

7. The combination of the pivoted bag receiving and delivery arm, the door of the car having a cam for operating said arm, door-operating mechanism beneath the car, a lever made in two parts, one connected to the door and the other to the operating mechanism beneath the car, and means for locking together and unlocking the two parts of the lever.

387,421. SPRING-HINGE. Henry P. Kee, New York, N. Y. Filed Mar. 30, 1888. Serial No. 268,694. (No model.)



Claim.—1. In a spring butt-hinge, the combination, with the leaves and knuckles thereof, of a sectional tubular pintle, a spindle connecting said sections, and a spring surrounding the spindle within the sectional tubular pintle, substantially as herein shown and described.

2. In a spring butt-hinge, the combination, with the leaves provided with knuckles, of a sectional tubular pintle, a sectional and jointed spindle connecting the said sections, and a spring surrounding the spindle within the tubular pintle, substantially as herein shown and described.

3. In a butt-hinge, the combination, with the leaves and knuckles thereof, of a sectional tubular pin or pintle, a divided spindle having one section revolving upon the other, the outer ends of which spindle are held in the respective pintle-section, and a spring held upon said spindle and controlled thereby, substantially as shown and described.

4. In a spring butt-hinge, the combination, with the leaves and knuckles, of a sectional tubular pin or pintle, a divided spindle having one section revolving upon the other, the outer ends of which spindle are held in the respective pintle-sections, a spring held upon said spindle and controlled thereby, and means, substantially as shown and described, for retaining the spring in a contracted position, as and for the purpose specified.

387,422. GAME-COUNTER. Ferdinand King, New York, N. Y. Filed Jan. 26, 1888. Serial No. 261,961. (No model.)



Claim.—1. A game-keeper consisting of a disk divided into sections, provided with an annular projection or ring approximating the periphery, having a series of corresponding numbers produced thereon, one series for each section, and independent hands pivoted centrally upon the disk, to be below the outer face of the ring or projection, substantially as and for the purpose herein set forth.

2. In a game-keeper, the combination, with a disk divided into equal sections and provided with an annular recessed projection or ring approximating the periphery, having a series of corresponding numbers produced thereon, one series for each section, of independent hands pivoted centrally upon the disk, the faces whereof are below the outer face of the ring or projection, substantially as and for the purpose specified.

3. In a game-keeper, the combination, with a disk divided into equal sections and provided with an annular recessed projection or ring approximating the periphery, having a series of corresponding numbers produced thereon, one series for each section, of independent hands pivoted centrally upon the disk, the faces whereof are below the outer face of the ring or projection, guide-lines produced upon the disk opposite each number, and auxiliary lines intervening said guide-lines, substantially as and for the purpose specified.

387,423. TETHER. Lewis J. King, Fair Play, S. C. Filed June 21, 1888. Serial No. 277,300. (No model.)

Claim.—1. In a grazing device, the combination, with the vertical post or standard having its lower end reduced or sharpened, and its upper end provided with the detachable head, of the revolving bracket carrying the lever mounted upon the said post or standard, a sliding collar or sleeve provided with a set-screw and adapted to raise or lower a plate loosely mounted upon the post or standard, and the said plate connected with the adjacent end of the lever by means of a coiled spring, substantially as specified.

2. In a cattle-grazing device, the combination, with a vertical post or standard adapted to be driven into the ground, of a revolvable bracket mounted on the said post, a lever pivoted to the bracket, a sliding sleeve on the post, carrying an adjustable fastening device, a loose plate on the post, and a spiral spring connecting one end of the lever with said plate, substantially as specified.

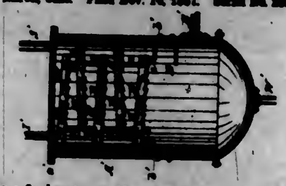
387,424. WINDMILL. Bernhard Kompff, Kearney, Nebr. Filed Mar. 19, 1888. Serial No. 267,657. (No model.)



Claim.—1. In a windmill, a casing inclosing the wind-wheel and composed of sides hold to swing and connected with each other by arms, in combination with two ropes connected at their ends with two of the said arms, a fixed arm carrying pulleys over which pass said ropes coming from opposite directions, and a lever fulcrumed in the said post and to which said ropes are connected at opposite ends, substantially as shown and described.

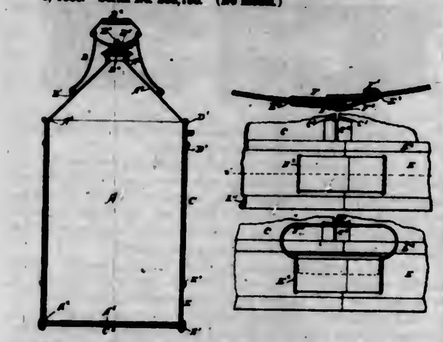
2. In a windmill, the combination, with a wind-wheel having angular wings, of a casing inclosing the wind-wheel and composed of sides hold to swing and connected with each other by arms, two ropes connected at their ends with two of the said arms, a fixed arm carrying pulleys over which pass the said ropes coming from opposite directions, and a lever fulcrumed in the said post and to which the said ropes are connected at opposite ends, substantially as shown and described.

387,425. FEED-WATER PURIFIER. J. Henry Kerns and Lewis A. Smith, Akron, Ohio. Filed Nov. 14, 1887. Serial No. 255,078. (No model.)



Claim.—In a feed-water purifier, the combination, with a closed vessel having pipes for the entrance of steam and feed-water and for the exit of purified water and sediment, of a series of troughs inclosed therein, each trough closed at one end and open at the other, and each having a cross-partition near the closed end lower than its sides, said troughs being placed one above another and each inclined from its closed end, the upper trough being arranged to receive the feed-water in its closed end above its cross-partition, and it and each succeeding trough, excepting the lowest, arranged to discharge the water into the closed end of the next lower trough above its cross-partition, substantially as and for the purpose hereinbefore set forth.

387,426. OIL-CAN. George W. Lane, Rockford, Ill. Filed Mar. 8, 1888. Serial No. 266,782. (No model.)



Claim.—1. In combination, the herein-described can-body provided with upper and lower outwardly-projecting annular retaining-flanges for retaining jacket-hoops on the can-body, the cylindrical can-jacket, and circular bottom, the upper jacket-hoop provided at the upper portion thereof with an annular groove of suitable size to admit and contain the upper retaining-flange of the can-body and furnished at the lower portion thereof with an outwardly-extending offset, open below, of proper dimensions to admit and securely retain therein an end of the can-jacket, and the lower jacket-hoop provided at the lower portion thereof with an annular groove of suitable size to admit and contain the lower retaining-flange of the can-body and peripheral portion of the jacket-bottom and furnished at the upper portion thereof with an outwardly-extending offset, open above, of proper dimensions to admit and securely retain therein an end of the can-jacket, substantially as described, and for the purpose specified.

2. In combination, the jacket-hoop having an annular groove, E', therein, and provided with an outwardly-extending offset, E², tie-slots E³, and hoop-tie F, consisting of a folded strip of metal having the hook F' in one of the slots E³ in said hoop, the long end F² of the tie arranged between the end portions of the hoop and in the remaining slot therein and the hoop-joint, the short end F³ of the hoop-tie being secured thereto by solder or other means, substantially as set forth.

387,427. SEA-GUIDING APPARATUS. Jens F. C. Larsen, Copenhagen, Denmark. Filed Sept. 20, 1887. Serial No. 250,155. (No model.)

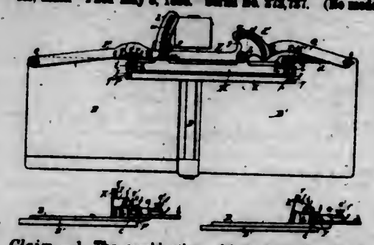
Claim.—1. A compressible oil-distributer comprising a flexible pervious bag open at both ends, a rigid apertured cover secured to said open ends and provided with devices for closing said apertures or openings, compressible oil-absorbent material filling the bag through-



out from side to side, and the suspending rope or cable, whereby interior cans and oil-vessels are dispensed with and a full compression of the bag by the force of the waves allowed to force the oil out through the apertures in the cover, substantially as hereinbefore shown and described.

2. An oil-distributer consisting in a bag, A, having covers C E secured to its opposite open ends provided with screw-caps D F, respectively, and opposite eyes, the compressible filling of oil-absorbent material B, and the rope or chains G, passing freely through the upper eyes and secured to the lower eyes, whereby the upper eyes may slide freely on said ropes or suspending devices during the longitudinal compression and expansion of the bag, substantially as set forth.

387,428. ADJUSTABLE GUIDE FOR RUNE-PLANERS AND OTHER WOOD-WORKING MACHINES. Benjamin C. Lovell, Worcester, Mass. Filed May 3, 1888. Serial No. 272,737. (No model.)



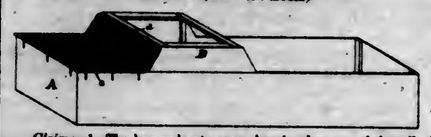
Claim.—1. The combination, with the lever F, pivoted to the table of a wood-working machine, of the lever G, pivoted to the lever F and having the lateral position of its outer end controlled in a guide, *d*, means for clamping the lever G to the lever F, the lever H, pivoted to the lever F and provided with the face-plate K, and means for clamping the lever H to the lever F, substantially as described.

2. The combination, with the lever F, pivoted to the table of a wood-working machine, of the lever G, pivoted to the lever F and having the lateral position of its outer end controlled by means of a guide, *d*, means for clamping the lever G to the lever F, the lever H, pivoted to the lever F, the opposite clamping-hooks I I, and the face-plate K, provided with locking-ribs, and means for tightening the hooks upon the locking-ribs to clamp the face-plate in various positions, substantially as described.

3. The combination, with the lever F, pivoted to the table of a wood-working machine, of the lever G, pivoted to the lever F and having the lateral position of its outer end controlled by means of a guide, *d*, means for clamping the lever G to the lever F, the lever H, pivoted to the lever F and provided with the perforated ears *h*, means for clamping the lever H to the lever F, the opposite clamping-hooks I I, provided with the perforations *s*, the face-plate K, and the pin *t*, for holding the face-plate K in a position at right angles to the surface of the table of the machine, substantially as described.

4. The combination, with the pivoted adjustable lever H, of the opposite clamping-hooks I I, the face-plate K, provided with locking-ribs, and means for tightening the clamp-hooks upon the locking-ribs to clamp the face-plate in various positions, substantially as described

387,429. BUGGY-BOOT. James A. Mansfield, Waverly, Md. Filed May 31, 1888. Serial No. 274,492. (No model.)

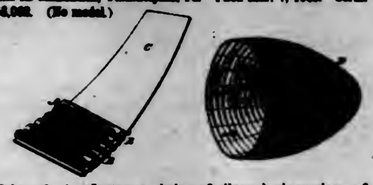


Claim.—1. The buggy-boot cover herein shown and described, consisting of flexible material *g*, having border edges *h*, made stiff by the insertion of suitable stiffening material, *h'*, which is omitted at or near the middle of each edge, thereby to form a folding break, *j*, whereby the cover may be folded, as set forth.

2. The combination of the carriage-body walls provided in the edge with sockets *b*, the base-bar back of the seat, provided with turn-buttons *c*, and a flexible boot-cover, F, having slits *d'*, to take over

the tern-buttons, and provided with pins *i*, attached by their heads to the cover, said pins being adapted to enter the sockets, as set forth.

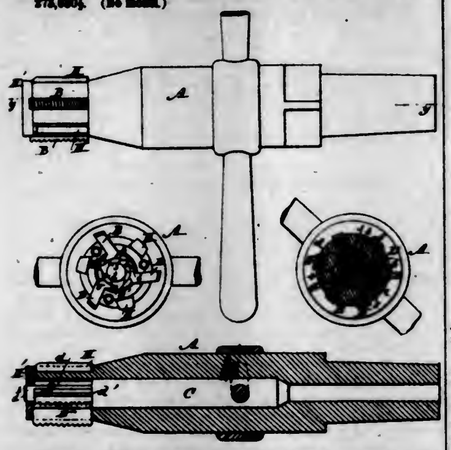
387,480. REFLECTOR AND REFLECTING-CHANDELIER. WILLIAM H. MARSHALL, Philadelphia, Pa. Filed Mar. 7, 1888. Serial No. 266,092. (No model.)



Claim.—1. A reflector consisting of silvered glass tubes, a foundation, and fastening-wires, all substantially as described.

2. A reflector consisting of the silvered glass tubes A, the foundation C, and the wires B, securing said tubes together and to the foundation, substantially as described.

387,481. EXPANSIBLE AND COLLAPSIBLE SCREW-TAP. WILLIAM MATHER, New York, N. Y. Filed May 12, 1888. Serial No. 273,603. (No model.)



Claim.—1. The combination, with the lipped cutting-dies, of a winged cam for adjusting the said cutting-dies inwardly and outwardly, substantially as shown and described.

2. The combination, with a mandrel and a spindle rotating in the same provided with a winged cam at one end, of lipped cutting-dies held in said spindle, said dies being carried outward and inward by said cam, substantially as shown and described.

3. The combination, with a mandrel, a spindle rotating in the same, a winged cam integral with one end of said spindle, and a sectional handle passing through the spindle and mandrel, of lipped cutting-dies held in the mandrel in engagement with the cam, substantially as shown and described.

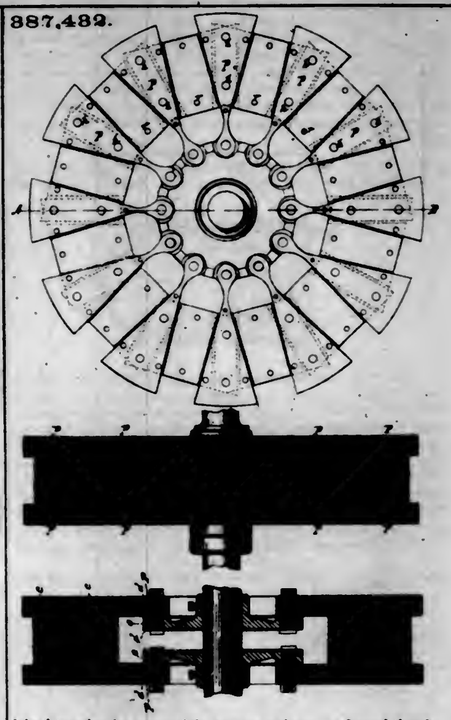
4. The combination, with a mandrel and a spindle held to rotate in the same provided with a series of longitudinal under-cuts in the cutting end forming the cam-shoulder 2, the re-entering inclined surface 3, the V-shaped recess 4, the inclined surface 5, and the wings *d*, of cutting-dies held in the mandrel provided with a longitudinal lip upon one side and having inclined and concaved inner edge, substantially as and for the purpose specified.

387,482. ARMATURE FOR DYNAMO-ELECTRIC MACHINES. ALEXANDER W. MEEBER, St. Louis, Mo. Filed Dec. 7, 1887. Serial No. 257,240. (No model.)

Claim.—1. A flat ring-armature composed of laminated sections, having one or more coils of wire wound on each section, any of such sections being detachable, said sections composed of alternate long and short plates fitting and joined together by means of the tongues and recesses formed thereby, substantially as and for the purposes specified.

2. A flat ring-armature composed of laminated sections, the laminæ thereof being insulated from each other, having one or more coils of wire wound on each section, any of such sections being detachable, said sections composed of alternate long and short plates, fitting and

887,482.



joined together by means of the tongues and recesses formed thereby, substantially as and for the purposes specified.

3. A flat ring-armature composed of laminated sections, having one or more coils of wire wound on each section, any of such sections being detachable, said sections fitting together by means of tongues and recesses, in combination with a spider and detachable magnetic pole-pieces, by means of which the armature-ring is mounted on the spider, substantially as and for the purposes specified.

4. A flat ring-armature composed of laminated sections, the laminæ thereof being insulated from each other, having one or more coils of wire wound on each section, any of such sections being detachable, said sections fitting and joined together by tongues and recesses, in combination with a spider and detachable magnetic pole-pieces, substantially as and for the purposes specified.

5. A flat ring-armature composed of laminated sections, having one or more coils of wire wound on each section, any of the such sections being detachable, said sections fitting and joined together by tongues and recesses, in combination with a spider and detachable magnetic pole-pieces, said pole-pieces being insulated from the spider, substantially as and for the purposes specified.

6. A flat ring-armature composed of laminated sections, the laminæ thereof being insulated from each other, having one or more coils of wire wound on each section, any of such sections being detachable, said sections fitting and joined together by tongues and recesses, in combination with a spider and detachable magnetic pole-pieces, said pole-pieces being insulated from the spider, substantially as and for the purposes specified.

7. A flat ring-armature composed of laminated detachable sections having flanged outer plates, and having one or more coils of wire wound thereon, said sections fitting and joined together by tongues and recesses, substantially as and for the purposes specified.

8. A flat ring-armature composed of laminated detachable sections, the laminæ thereof insulated from each other, provided with flanged outer plates, having one or more coils of wire wound thereon, said sections fitting and joined together by tongues and recesses, substantially as and for the purposes specified.

9. A flat ring-armature composed of laminated detachable sections, provided with flanged outer plates, and having one or more coils of wire wound thereon, said sections fitting and joined by tongues and recesses, in combination with a spider and detachable magnetic pole-pieces, by means of which the ring is mounted on the spider, substantially as and for the purposes specified.

10. A flat ring-armature composed of laminated detachable sections, the laminæ thereof insulated from each other and the outer plates flanged, said sections fitting and joined by tongues and recesses, and having one or more coils of wire wound thereon, in combination with a spider and detachable magnetic pole-pieces, by means of which the ring is mounted on the spider, substantially as and for the purposes specified.

11. A flat ring-armature composed of laminated detachable sections, fitting and joined together by tongues and recesses, having flanged outer plates, one or more coils of wire wound thereon, in combination with a spider and detachable magnetic pole-pieces, by means of which the ring is mounted on the spider, said pole-pieces being insulated from the spider, substantially as and for the purposes specified.

12. A flat ring-armature composed of laminated detachable sections, joined and fitted together by tongues and recesses, the laminæ thereof insulated from each other, the sections having flanged outer plates and having one or more coils of wire wound thereon, in combination with a spider and detachable magnetic pole-pieces, said pole-pieces being insulated from the spider, substantially as and for the purposes specified.

13. In a flat ring-armature, the combination of detachable laminated core-sections, a spider, and detachable laminated pole-pieces, by means of which the ring is mounted on the spider, substantially as and for the purposes specified.

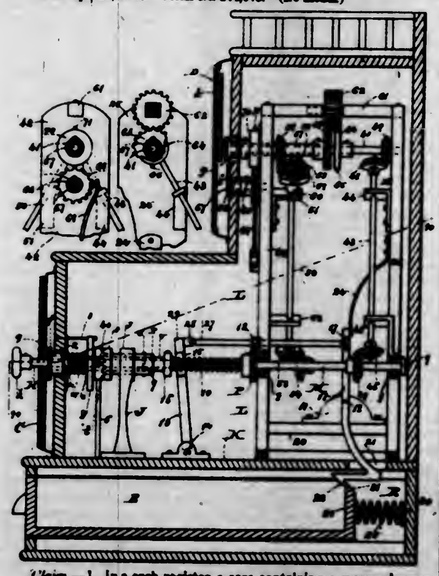
14. A dynamo-armature section composed of laminæ, the outer plates of the laminæ being flanged, said shield-plates which are arranged between the flanged plates and cover the edges of the laminæ, substantially as and for the purposes specified.

15. A dynamo-armature section composed of laminæ, having its outer plates flanged for the coil, and flanged shields to cover the edges of the laminæ and complete the coil-flanges, substantially as and for the purposes specified.

16. The combination, in an armature, of a laminated core, two independent or separate spiders, and two independent sets of pole-pieces which connect the respective spiders with opposite sides of the laminated core, substantially as and for the purposes specified.

17. The combination in an armature, of laminated core-sections, two independent or separate spiders, and two independent sets of laminated pole-pieces which connect the opposite sides of the core-sections with their respective spiders, substantially as and for the purposes specified.

387,483. CASH-REGISTER. HARRIS A. MILES, Boston, Mass. Filed Apr. 26, 1886. Serial No. 271,973. (No model.)



Claim.—1. In a cash-register, a case containing a money-drawer, a dial on said case for indicating the amount of the sale in cents, an index-finger, a knob for turning said finger, adjunctive mechanism for releasing and forcing out said drawer when said knob is pressed inward, and a spring acting torsionally for returning said finger to the 0 when said knob is pulled outward, all being combined substantially as set forth.

2. In a cash-register, a case containing a money-drawer, a dial for indicating the amount of a single sale in dollars, a dial for indicating the amount of a single sale in cents, an index-finger on each dial, a knob for turning each finger, adjunctive mechanism for releasing and forcing out the money-drawer when either of said knobs is pressed inward, and means for automatically returning said fingers to the 0 point when the corresponding knob is pulled out, all being combined substantially as described.

3. In a cash-register, a case containing a money-drawer, a dial for indicating the amount of a single sale in cents, a dial for indicating the amount of a single sale in dollars, an index-finger for each of said dials, knobs for turning said fingers, a dial provided with three hands for registering the gross amount in dollars and cents of the total sales, adjunctive mechanism for correspondingly moving said hands when said knobs are turned, means for releasing and forcing said drawer outward when either of said knobs is forced inward, and means for automatically returning said fingers to the 0 point when the corresponding knob is pulled out, all being combined substantially as set forth.

4. In a cash-register, a case, a dial, a rod passing through the center of said dial and provided with a knob on its outer end, a sleeve inclosing said rod and having an index-finger on its outer end and a crown-gear on its inner end, a sleeve secured to the inner end of said rod and fitted to slide in a containing-sleeve journaled in a standard in said case, a crown-gear on said containing-sleeve intermeshing with the corresponding gear on said inclosing-sleeve, a coiled spring disposed between the case and the gear on said inclosing-sleeve to keep said gears engaged, and a spring secured to the case and to the gear on said inclosing-sleeve, said spring being adapted to revolve said sleeve when said gears are separated by withdrawing said rod, and a stop for preventing the inclosing-sleeve from being rotated too far, all being combined substantially as described.

5. In a cash-register, a case provided with a cash-drawer, a vertically-arranged lever pivoted in standards in said case and provided with a hook on its lower end for detachably locking said drawer in said case, a spring for holding said hook in engagement with said drawer, a spring for forcing said drawer out of the case when released from said hook, and adjunctive mechanism for moving said lever to release the drawer when a sale is registered, all being combined substantially as set forth.

6. In a cash-register, a case containing a cash-drawer, a vertically-arranged lever pivoted in a frame-work in said case and provided with a hook on its lower end for locking said drawer in the case, a spring for holding said hook in engagement with said drawer, a spring for opening the drawer when released, a horizontally-arranged bar pivoted to pivoted standards for engaging the top of the lever and overcoming the lever-spring to release the drawer, and adjunctive mechanism for forcing said horizontal rod into engagement with said lever, all being combined substantially as described.

7. In a cash-register, a case provided with a cash-drawer and indicating-dial, a rod provided with a knob and passing through the center of said dial; said rod being journaled by means of sleeves in a standard within said case, a collet secured to the outer end of one of said sleeves, a pivoted vertically-arranged lever within said case provided with a hook for securing said drawer, a spring for holding said hook in engagement with said drawer, a horizontally-arranged bar pivoted to pivoted standards, said standards being adapted to be forced forward by the collet on said rod when pushed inward and cause said bar to engage said lever and release said drawer, a horizontally-arranged pivoted lever having an arm projecting into the path of said vertical lever and a pivoted arm projecting into the path of said collet to prevent said collet from engaging said standards excepting at specified times, adjunctive mechanism for throwing said pivoted arm out of the path of said collet, and a spring for opening said drawer when released from said vertical lever, all being combined substantially as set forth.

8. In a cash-register, a case provided with a dial for indicating the amount of a single sale and with a dial for registering the gross sales, a horizontal shaft passing through the center of said registering-dial and journaled in a frame within said case, a hand secured to the outer end of said shaft for registering the amount in cents of the gross sales, a vertically-arranged inclined shaft journaled in said frame and provided with a beveled gear engaging a gear on said shaft, a horizontal rod journaled in said frame and provided with a beveled gear intermeshing with a gear on the lower end of said inclined shaft, adjunctive mechanism for connecting said rod with a rod passing through the center of said indicating-dial, a finger for said indicating-dial, and a knob for rotating the rod which passes through said indicating-dial, all being combined substantially as described.

9. In a cash-register, a case provided with a dial for indicating the amount of a single sale and a dial for registering the gross sales, a horizontal shaft passing through the center of said registering-dial, a hand on the outer end of said shaft, a sleeve adapted to rotate on said shaft, a hand on the outer end of said sleeve for registering the

amount in dollars of the gross sales, a gear-wheel journaled within the case above said shaft and intermeshing with a gear on the inner end of said sleeve, a wheel on said shaft provided with a stud adapted to engage a tooth in the upper gear, adjunctive mechanism for rotating said shaft, said mechanism being actuated by a rod passing through said indicating-dial, whereby the hand on the outer end of said sleeve is moved one space at each complete revolution of said rod, all being combined and arranged to operate substantially as set forth.

10. In a cash-register, a case provided with a dial for indicating the amount of a single sale and a dial for registering the gross sales, a horizontal shaft passing through the center of said registering-dial, a sleeve adapted to rotate on said shaft, a hand on the outer end of said sleeve for registering the amount in dollars of the gross sales, a beveled gear on said sleeve intermeshing with a gear on an inclined shaft, adjunctive mechanism for rotating said shaft, said mechanism being actuated by a rod provided with an index-finger and passing through the center of said indicating-dial, whereby said hand is moved a distance corresponding with the distance said finger is advanced, all being constructed, combined, and arranged to operate substantially as set forth.

11. In a cash-register, a case provided with a dial for indicating the amount of a single sale, a dial for registering the gross sales, a horizontal shaft passing through the center of said registering-dial and provided with a hand for registering cents on said dial, a sleeve on said shaft provided with a hand for registering single dollars on said dial, a journaled stub-shaft passing through the center of a small circle on said registering-dial which records the amount by tens in dollars of the gross sales, a sleeve on said stub-shaft provided with a hand on its outer end for said small circle and a ratchet on its inner end, a spring-pawl engaging said ratchet to prevent it from turning in one direction, a wheel secured to the sleeve on said central shaft, said wheel being provided with a stud adapted to engage said ratchet and move it the distance of a tooth, and adjunctive mechanism for causing said sleeve to rotate, said mechanism being actuated by a rod passing through the center of said indicating-dial, all being combined and arranged to operate substantially as described.

12. In a cash-register, the case A, provided with the dial C, the rod H, provided with the knob *k*, the sleeve *m*, having the finger *f* and crown-gear *t*, the coiled spring *w*, disposed on said sleeve, the sleeve *r*, disposed in the standard J and provided with the gear *s*, intermeshing with the gear *t*, the sleeve *v*, pinned to said rod and fitted to slide in the sleeve *r*, and the spring *y*, secured to the gear *t*, and case A, whereby the sleeve *m* may be caused to rotate when the gears *t s* are disengaged by pulling outward on the knob, all being combined and arranged to operate substantially as set forth.

13. In a cash-register, the case A, having the drawer E, the sleeve *r*, disposed in the standard J, the sleeve *v*, fitted to slide in the sleeve *r* and provided with the slot 7, the rod H, secured in the sleeve *v* and provided with the knob *k*, the rod M, disposed in the sleeve *v* and secured to the sleeve *r*, the ratchet P, secured to the rod M, the pawl 12, engaging said ratchet, the spring 10, disposed on the rod M between the sleeve *v* and said ratchet, the vertical lever 17, pivoted in said case and provided with the hook 22 for locking said drawer, the spring 24 for keeping said hook in engagement with said drawer, adjunctive mechanism adapted to be actuated by the rod H when pressed inward for releasing the drawer from said hook, and the spring 26, for opening said drawer when released, all being combined to operate substantially as set forth.

14. In a cash-register, the case A, provided with the dials B C *b* and the drawer E, the frame-work L, disposed in said case, the lever 17, pivoted in said frame and having the hook 22, adapted to engage and lock said drawer, the spring 24, for holding said hook engaged with said drawer, the rod 27, pivoted to the bar 15, secured to pivoted standards 13, for disengaging the hook 22 from said drawer, rods passing through said dials B C and provided with collets adapted to engage the bar 15 and force the rod 27 against the lever 17 to release said drawer, and the spring 26, for opening the drawer when released, substantially as described.

15. In a cash-register, the case A, provided with the dials B C and drawer E, the frame-work L, the pivoted lever 17 and spring 24, for securing said drawer, the pivoted bar 27, adapted to be forced against said lever and release the drawer, a rod passing through said dials and provided with a collet adapted to force the bar 27 against said lever 17, the pivoted lever 32, having an arm, 35, projecting into the path of the lever 17, and a pivoted arm, 37, projecting into the path of said collet, adjunctive mechanism connected with said rod for throwing the arm 37 out of the path of said collet and the arm 35 into the path of the lever 17 when said rod is rotated, and the spring 26, for opening said drawer when released, all being combined and arranged to operate substantially as set forth.

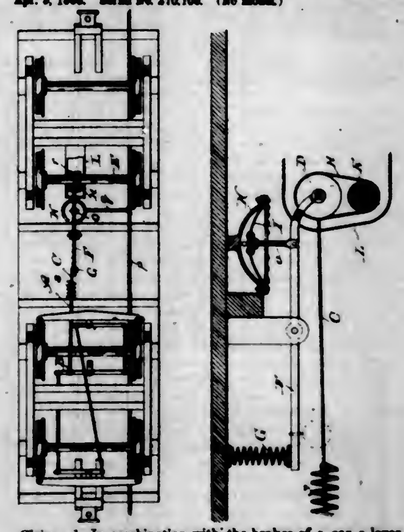
16. In a cash-register, the combination of the case A, provided with the dials C D, the frame L, disposed in said case, the shaft 41, journaled in said frame and provided with the hand *h* and gear 49, the inclined shaft 43, journaled in said frame and carrying the gears 48 and 46, the rod M, provided with the gear 47, the rod H, having the knob *k* and connecting mechanism for causing the rod M to rotate when the knob *k* is turned, whereby the hand *h* may be moved, substantially as described.

17. In a cash-register, the combination of the case A, having the dials C D, the frame L, the shaft 41, journaled in said frame and provided with the hand A, the sleeve 57, disposed on said shaft and provided with the hand *g*, the gear 62, journaled in said frame, the gear 63 on said sleeve, the wheel 64, provided with the stud 65, secured to said shaft, and adjunctive mechanism connecting said shaft and a rod passing through the dial C, whereby said shaft and sleeve may be rotated when said rod is turned, substantially as set forth.

18. In a cash-register, the combination of the case A, provided with the dials C D, the frame L, the shaft 41, journaled in said frame and provided with the hand A, the sleeve 57, disposed on said shaft and provided with the hand *g*, and wheel 70, having the stud 71, the shaft 66, the sleeve 67, disposed on said shaft and provided with the hand *i*, the ratchet-wheel 68, secured to said sleeve, the spring-pawl 69, engaging said ratchet-wheel, the inclined shaft 50, journaled in said frame and provided with the gear 55, intermeshing with the gear 56 on the sleeve 57, the rod M, provided with the gear 54, intermeshing with a gear on the shaft 50, the rod G, passing through the dial B, and connecting mechanism whereby the hands *g i* may be caused to turn when said rod G is rotated, substantially as described.

19. In a cash-register, the combination of the case A, having the dials C D, the frame L, the shaft 66, the sleeve 67, disposed on said shaft and provided with the hand *i* and ratchet 68, the pawl 69, the shaft 41, journaled in said frame and provided with the hand A, gear 49, and wheel 64, having the stud 65, the gear 62, journaled in said frame, the sleeve 57, disposed on the shaft 41 and provided with the hand *g*, and wheel 70, having the stud 71, the gear 63, disposed on the sleeve 57 and intermeshing with the gear 62, the rod H, passing through the dial C, and mechanism for connecting said rod and the gear 49, whereby the hands *g h i* may be caused to turn when said rod is rotated, substantially as set forth.

387,484. CAR-BRAKE. Mortimer B. Mills, Chicago, Ill. Filed Apr. 9, 1888. Serial No. 270,106. (No model.)

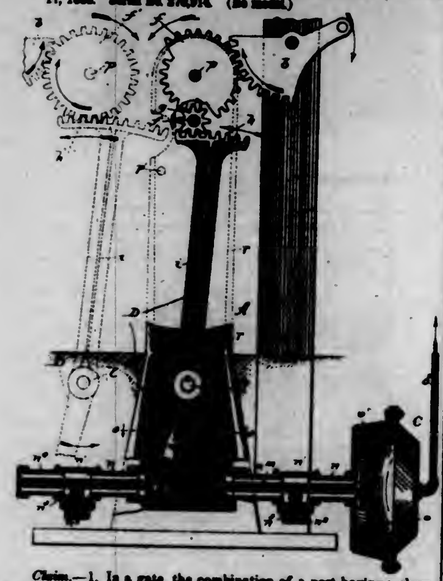


Claim.—1. In combination with the brake of a car, a lever, F, fulcrumed below the car, a rotatory drum, D, supported on the lever adjacent to and permanently out of contact with an axle of the rolling-gear, and connected by a cable or chain, C, with the brake-lever mechanism, a band or belt, H, surrounding the drum and axle, a spring, G, or weight on the lever near one end thereof, and a collapsible receiver supported on the car and having its movable portion connected with the lever near its opposite end and communicating with the air-pressure supply, substantially as described.

2. In combination with the brake of a car, a lever, F, fulcrumed below the car, a rotatory drum, D, having a grooved portion, *r*, supported on the lever adjacent to and permanently out of contact with an axle, E, of the rolling-gear, and connected by a cable or chain, C, with the brake-lever mechanism, a band or belt, H, surrounding the

drum and axle, a housing, L, for the band or belt, a spring, G, or weight on the lever near one end thereof, and a diaphragm device, I K, connected with the lever near its opposite end and communicating with the air-pressure supply, substantially as described.

387,485. GATE. Mortimer B. Mills, Chicago, Ill. Filed Apr. 17, 1888. Serial No. 270,914. (No model.)



Claim.—1. In a gate, the combination of a post having a chamber in its base embedded in the ground and supporting a swinging arm having a cog-wheel upon its shaft, a horizontally-reciprocating rod extending through the chamber and inclosed against the access to it of water, and a bell-crank having one arm within the chamber engaging with the rod and its other arm without the chamber, and provided at its extremity with a rack engaging with the cog-wheel, substantially as described.

2. In a gate, the combination of a post formed of two bars, *r* and *r'*, embedded at their bases in the ground, a water-tight chamber, *q*, on the bar *r*, a swinging arm supported between the said bars on a shaft carrying a cog-wheel, a horizontally-reciprocating rod, *m*, extending through the chamber *q* and inclosed beyond the chamber in a water-tight conduit containing rollers n^2, and a bell-crank having one arm within the chamber engaging with the rod and its other arm without the chamber, and provided at its extremity with a rack engaging with the cog-wheel, substantially as described.

3. In a gate, the combination of a post formed of two bars, *r* and *r'*, embedded at their bases in the ground, a water-tight chamber, *q*, on the bar *r*, a swinging arm supported between the said bars on a shaft carrying a cog-wheel, a horizontally-reciprocating rod, *m*, extending through the chamber *q* and inclosed beyond the chamber in a water-tight conduit formed in sections connected by T-joints *n'*, having plugs n^2 in their bases supporting rollers n^3, and a bell-crank having one arm within the chamber engaging with the rod and its other arm without the chamber, and provided at its extremity with a rack engaging with the cog-wheel, substantially as described.

4. In a gate having posts supporting vertically-swinging arms tied together overhead to ensure the rise or fall of one arm to raise or lower simultaneously the other, the combination of posts A and A', having chambers *q* in their bases embedded in the ground and supporting swinging arms B and B', cog-wheels *f* and *f'* on the axes of the arms, a pinion, *g*, engaging with the cog-wheel *f*, horizontally-reciprocating rods *m*, extending through the chambers in the posts and inclosed against the access to them of water, bell-cranks D and D', having arms *k* in the chambers, engaging with the rods *m*, and having their other arms without the chambers and provided at their extremities with racks *h* and *h'*, respectively engaging with the pinion *g* and cog-wheel *f'*, collapsible receivers C, connected with the rods *m* and communicating with a suitable air-pump, posts E and E', respectively adjacent to the gate-posts, and racks *b*, pivotally supported on the posts E and E' and respectively engaging with the cog-wheels *f* and *f'*, and connected overhead to cause the rise or fall of one gate-arm to raise or lower the other, substantially as described.

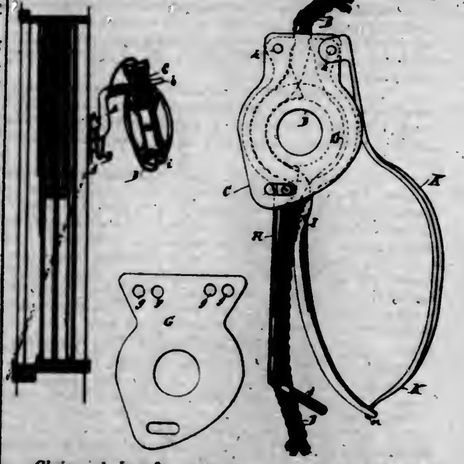
5. In a gate having posts supporting vertically-swinging arms tied together overhead to ensure the rise or fall of one arm to raise or lower simultaneously the other, the combination of posts A and A', having chambers *q* in their bases embedded in the ground, and supporting swinging arms B and B', a cog-wheel, *f'*, on the axis of the arm, a cog-wheel, *f*, reduced in diameter throughout a portion of its periphery on the axis of the other gate-arm, a pinion, *g*, engaging with the cog-wheel *f*, horizontally-reciprocating rods *m*, extending through the chambers in the posts and inclosed against the access to them of water, bell-cranks D and D', having arms *k* in the chambers, engaging with the rods *m*, and having their other arms without the chambers and provided at their extremities with racks *h* and *h'*, respectively engaging with the pinion *g* and cog-wheel *f'*, and collapsible receivers C, connected with the rods *m* and communicating with a suitable air-pump, substantially as described.

6. In a gate having vertically-swinging arms on posts, the combination, with the arms and posts, of cog-wheels on the axes of the arms, posts E and E', respectively adjacent to the gate-posts, and racks *b*, pivotally supported on the posts E and E', and respectively engaging with the said cog-wheels and connected overhead to cause the rise or fall of one gate-arm to raise or lower the other, substantially as described.

7. In a gate having vertically-swinging arms on posts, the combination, with the arms and posts, of cog-wheels on the axes of the arms, posts E and E', respectively adjacent to the gate-posts, racks *b*, pivotally supported on the posts E and E' and respectively engaging with the said cog-wheels, double bell-cranks F and F', pivoted on the posts E and E', near their upper ends, and having their arms *c'* connected with the racks *b*, and cables *d* and *d'*, crossing each other and connecting opposite arms *c* and *c'* of the bell-cranks, substantially as described.

8. A gate comprising, in combination, posts A and A', having chambers *q* in their bases, embedded in the ground and supporting swinging arms B and B', cog-wheels *f* and *f'* on the axes of the arms, a pinion, *g*, engaging with the cog-wheel *f*, horizontally-reciprocating rods *m*, extending through the chambers in the posts and inclosed against the access to them of water, bell-cranks D and D', having arms *k* in the chambers, engaging with the rods *m*, and having their other arms without the chambers and provided at their extremities with racks *h* and *h'*, respectively engaging with the pinion *g* and cog-wheel *f'*, collapsible receivers C, connected with the rods *m* and communicating with a suitable air-pump, posts E and E', respectively adjacent to the gate-posts, and racks *b*, pivotally supported on the posts E and E' and respectively engaging with the cog-wheels *f* and *f'*, and connected overhead to cause the rise or fall of one gate-arm to raise or lower the other, substantially as described.

387,486. FIRE-ESCAPE. John K. O'Hern, Poughkeepsie, N. Y., assignor to Barney Neville, same place. Filed Nov. 21, 1887. Serial No. 255,752. (No model.)



Claim.—1. In a fire-escape, a suspending-hook, A, provided with a horn or extension, *b*, extending outward in a nearly horizontal direction from the outer extremity of the hook proper and adapted to support the clamp and whole coil of rope when the fire-escape is not in use, substantially as herein specified.

2. A suspending-hook for fire-escapes, having a triangular form in section, one flat side being horizontal at the top, substantially as and for the purpose herein specified.

3. In a fire-escape, a friction-clamp, C, having pressure-handles H I and pivots for the same adjustable toward and from the rope, substantially as and for the purpose herein specified.

4. The stationary handle having a central longitudinal rib on its inner bearing-surface, for the purpose herein specified.

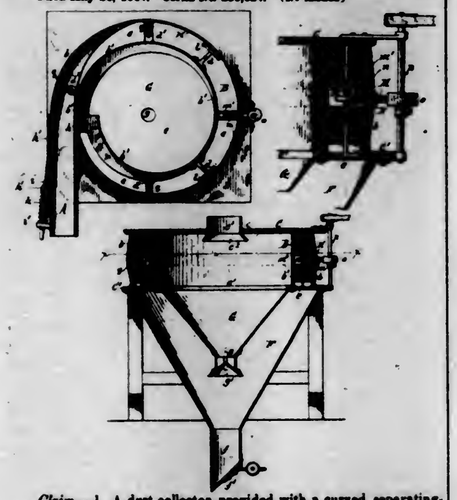
5. The swinging handle having two oblique ribs on its inner bearing-surface, substantially as and for the purpose herein specified.

6. In combination with a friction-clamp, a shield, K, to protect the grasping hand, substantially as and for the purpose herein specified.

7. In a fire-escape friction-clamp, the combination, with the swinging handle, of a hand-shield, K, attached to and swinging with the handle, for the purpose herein specified.

387,437. DUST-COLLECTOR. Barnum F. Orthman, Buffalo, N. Y.

Filed May 23, 1887. Serial No. 239,037. (No model.)



Claim.—1. A dust-collector provided with a curved separating-case having an inner tight wall, an outer wall constructed of filter-cloth, and an air-exit through which the residue of the purified air escapes without passing through the filter-cloth, substantially as set forth.

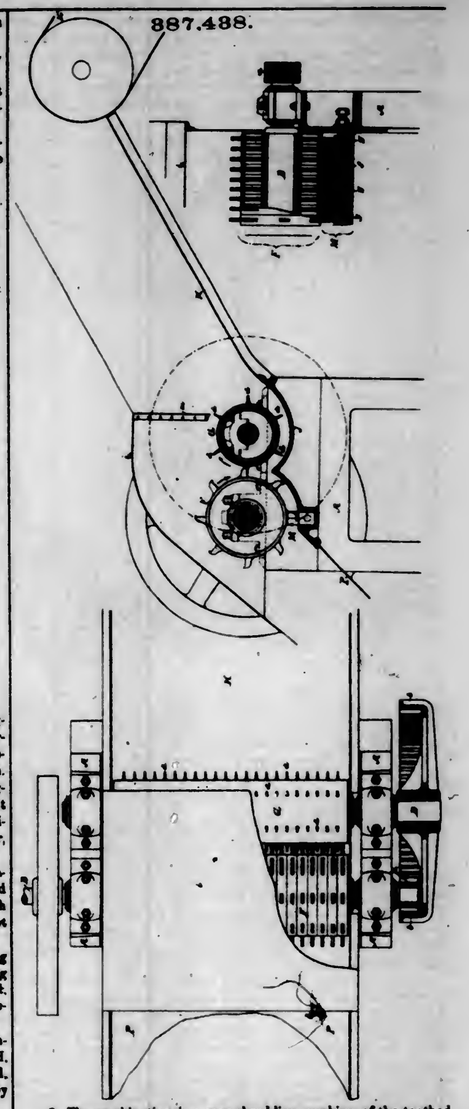
2. In a dust-collector, the combination, with a curved separating-case having an outer wall constructed of filter-cloth and an inner tight wall, of a chamber surrounded by said separating-case and communicating therewith, and an air-exit formed in the top of said chamber, substantially as set forth.

3. In a dust-collector, the combination, with the curved separating-case having an outer wall constructed of filter-cloth, of a band bearing against the filter-cloth and an adjusting device connected with said band, whereby the filter-cloth is stretched, substantially as set forth.

4. The combination, with the curved separating-case B, having its outer wall constructed of filter-cloth, of the band H, bearing against the cloth, a screw, *j*, connected with the band H, a spring, *k*, applied to said screw, and a fixed abutment, *i'*, and a screw-nut, *k'*, between which the spring is arranged, substantially as set forth.

5. The combination, with the curved separating-case B, constructed with an outer wall, *b*, of filter-cloth, of an elastic band, H, bearing against said cloth, a radial bolt, *m*, connected with said band, a cam, *o*, whereby said bolt is moved inwardly, and springs *q*, whereby the band is moved outwardly, substantially as set forth.

387,438. CANE-SHREDDING MACHINE. John Parker, Philadelphia, Pa. Filed Apr. 6, 1887. Serial No. 233,802. (No model.)



387,438.

Claim.—1. The combination, in a cane-shredding machine, of a toothed and rotating shredding-drum, a feed-cylinder having teeth overlapping those of the shredding-drum, means for rotating said cylinder so that its lower portion moves forward toward the drum, and a supply-chute directing the canes to the lower side of the toothed feed-cylinder and having a raised portion up which the canes must be carried by the teeth of the feed-cylinder before the teeth of the drum can act upon said canes, all substantially as specified.

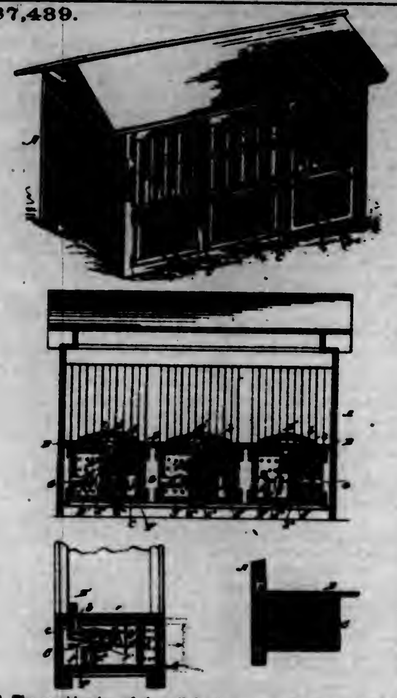
2. The combination, in a cane-shredding machine, of a toothed and rotating shredding-drum, a toothed shredder-bar, a feed-cylinder having pointed teeth projecting from the cylinder, point first, toward the canes, a feed-chute directing the canes to the under side of the feed-cylinder and forming a continuous support for the canes beneath said cylinder, and mechanism for so rotating the cylinder that the lower portion of the same moves forward toward the drum, all substantially as specified.

3. The combination, in a cane-shredding machine, of the toothed and rotating shredding-drum, the toothed shredder-bar, the toothed feed-cylinder, means for so rotating the latter that its lower portion moves forward toward the drum, and a feed-chute directing the canes to the under side of the feed-cylinder and having a raised portion up which the canes are carried before coming within range of the teeth of the shredder-drum, all substantially as specified.

387,439. CORN-CRIB RAT-TRAP. William R. Parker, Muddy Creek Forks, Pa. Filed Apr. 9, 1888. Serial No. 270,089. (No model.)

Claim.—1. The combination of the crib having a corn-chamber provided below the floor of said chamber with a way for the trap-box and having an opening leading from the corn-chamber and intersecting the way for the trap-box, such opening being adapted to permit the passage of the vermin, and the trap-box fitted to said way and movable therein into and out of position below the floor of the corn-chamber and having an inlet-opening movable into and out of register with the opening leading from the corn-chamber, substantially as and for the purposes specified.

387,439.



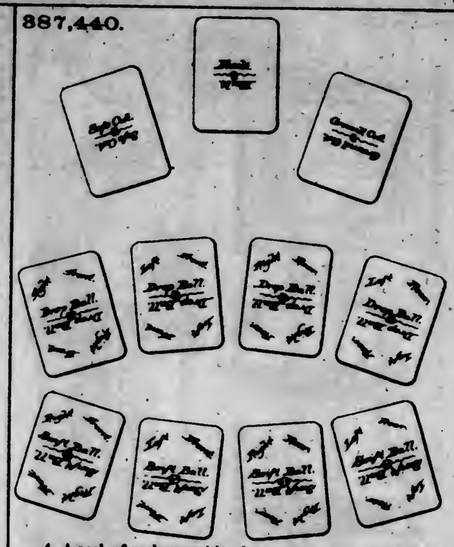
2. The combination of the crib having a corn-chamber provided below the same with a way for the trap-box and having an opening adapted to permit the passage of the vermin, such opening leading from the corn-chamber and intersecting the way for the trap-box, and the trap-box fitted to said way and movable into and out of position below the corn-chamber and provided with an inlet-opening movable into and out of register with the opening leading from the corn-chamber, and such trap-box also having a check-guarded inlet-opening leading into it from without the corn-chamber, substantially as and for the purposes set forth.

3. The combination of the corn-crib having a corn-chamber and provided below the same with a way for the trap-box, and having an opening leading from said corn-chamber and intersecting said way, and the trap-box movable in said way into and out of position below the corn-chamber and having in its top an inlet-opening which may be adjusted into register with the opening from the corn-chamber, and check-guarded inlet-openings being provided through the bottom and side of such box, substantially as set forth.

4. The combination of the crib having a corn-chamber provided with an opening leading from said chamber and having within said chamber a guard extended over the said opening, and the trap-box movable into and out of position below the corn-chamber and having an inlet-opening which may be adjusted into register with the opening leading from the corn-chamber, substantially as set forth.

5. The combination of the trap-box, the tube D, the pivoted drop-tube *d*, and the guard-plate E, arranged in front of the inner end of tube *d* and having stop projection *d'* on its side next the said tube *d* and a hook, *e*, on its opposite side, substantially as set forth.

387,440.

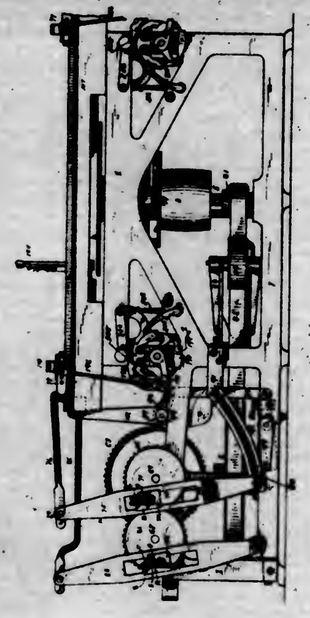


4. A pack of cards comprising five sets composed of four cards marked "Safe Cut," four marked "Ground Cut," eight marked "Fault," sixteen marked "Swift Ball," and sixteen marked "Drop Ball," and having each set of sixteen subdivided into four sets of four cards each, marked, respectively, "Right Front," "Left, Front," "Right Rear," and "Left Rear," substantially as and for the purpose set forth.

387,441. SHINGLE-SAWING MACHINE. Willis J. Pierce, Grand Rapids, Mich. Filed June 2, 1888. Serial No. 275,626. (No model.)

Claim.—1. In a shingle-sawing machine, the combination, with the saw-arbor, of a universally laterally-movable bearing near one end of said arbor and a universally rotarily-movable bearing near the other end of said arbor.

2. In a shingle-sawing machine, in combination with the saw-arbor,



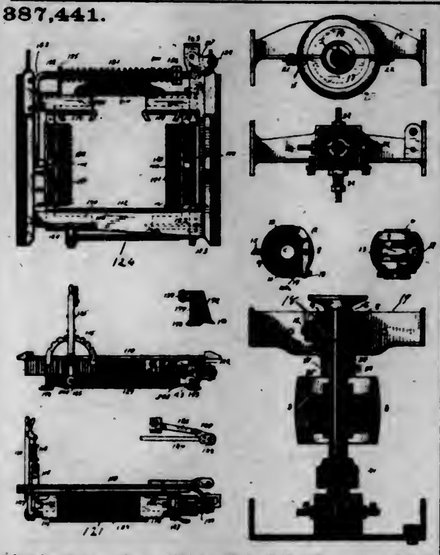
387,440. GAME. Raymond A. Patterson, Evanston, Ill. Filed Oct. 24, 1887. Serial No. 253,193. (No model.)

Claim.—1. A pack of cards comprising sets marked, respectively, "Safe Cut," "Ground Cut," "Fault," "Swift Ball," and "Drop Ball," substantially as and for the purpose set forth.

2. A pack of cards comprising sets marked, respectively, "Safe Cut," "Ground Cut," "Fault," "Swift Ball," and "Drop Ball," and having each of the "Swift-Ball" and "Drop-Ball" sets divided into sets provided with representations indicating the court into which they are played, substantially as and for the purpose set forth.

3. A pack of cards comprising five sets composed of four cards marked "Safe Cut," four marked "Ground Cut," eight marked "Fault," sixteen marked "Swift Ball," and sixteen marked "Drop Ball," substantially as and for the purpose set forth.

387,441.



a bearing at one end movable laterally in all directions and a ball-and-socket bearing near the other end of said arbor.

3. In combination with the arbor of a shingle-sawing machine, a bearing near one end adjustable laterally in all directions, a bearing near the other end, a divided spherical shell surrounding said bearing, and a spherical seat in the frame for said shell.

4. In combination with a saw-arbor having a cap laterally adjustable, a segment of a sphere forming the other bearing, a spherical segment outside the cap, and a bar lying in a recess in the segment and bearing on said cap.

5. In combination with a saw-arbor, a cap on said arbor, a spherical shell within which the cap is movable, a pivoted bar lying in a recess in said shell and bearing on the cap, and an adjusting-screw by which the position of the bar may be regulated.

6. In a sawing-machine, the combination, with the arbor horizontally adjustable in all directions at one end and adjustable in a ball at the other end, of a divided matrix on the frame of the machine to receive said ball.

7. The combination, with the tilt-table and the rolling bearing, said table being vertically adjustable relatively to said bearing, of the adjustable side supports for said table, substantially as described.

8. The tilt-table having inverted cups at its under surface to prevent the entrance of sawdust, combined with the butt-supports which enter and fit said cups, and the point-actuating risers which pass through the butt-supports and enter the cups, substantially as described.

9. In a shingle-sawing machine, the combination, with the frame having a pair of reciprocating carriages thereon, of two pairs of crank-arms at the outer sides of one end of the frame, each pair of arms being connected to one of the carriages, and cranks engaging said arms, as set forth.

10. In a shingle-sawing machine, the frame, the reciprocating carriage, the driving mechanism connected to said carriage, and a movable catch in position to engage or disengage the driving mechanism, whereby the driving mechanism may be permitted to move without moving the carriage, substantially as described.

11. In a shingle-sawing machine, the combination, with a sliding carriage, an oscillating crank-arm connected to the same, and the stop which serves as a fulcrum to said arm, of the lever-shifting mechanism in the line of movement of the carriage, by which the stop may be withdrawn.

12. In combination with the sliding carriage of a shingle-machine, its driving crank-arms, and connections from the arms to said carriage, a stop serving as fulcrums for said crank-arms, a rock-shaft by which said stop is operated, and a train of levers, substantially such as described, having a bearing which is shiftable into or out of the line of movement of the carriage, by which said stop may be withdrawn when the carriage completes its backward movement.

13. In a shingle-sawing machine, the sliding carriage, crank-arms and connections therefrom to the carriage, stops serving as fulcrums to said crank-arms, a rock-shaft by which said stops are operated, an arm and connections to said rock-shaft, and a lever by which said arm may be shifted into or out of the path of movement of the carriage, as set forth.

14. In a shingle-sawing machine, the combination, with the sliding carriage, its crank-arm, and the driving mechanism and connections, of a projection from one end of said crank-arms, a curved slot into which said projection enters, and a removable stop in said curved slot, which when in the slot serves as a fulcrum on which the crank-arm rocks.

15. In a shingle-sawing machine, the carriage-driving shaft having crank-pin, a slotted crank-arm, and an expansible slide-piece in the slot in said arm which the crank-pin enters.

16. In a shingle-sawing machine, the combination, with the sliding carriage, the slotted crank-arms and connections, and the driving crank-pins, of an expansible slide-piece in the slot of the crank-arms, which is the seat for said crank-pins, said slide-piece composed of a plurality of wedge-shaped sections and a screw which adjusts these sections relatively to each other.

17. A shingle-saw carriage consisting of a single rectangular casting having integral side guides, a flat top, and depending sides, which sides have integral guideways for the holding-dogs running in a direction crosswise of the machine-frame, substantially as described.

18. A shingle-saw carriage consisting of a single rectangular casting having integral side guides beveled on one face, a flat top, and depending sides having ribs running crosswise of the machine, in combination with the guideways on the frame, having inclined bearing-faces, said guideways being adjustable toward each other, substantially as described.

19. In combination with the saw-carriage, a metallic guard depending below the dogs, having a surface toward the saw of a width greater than the distance between saw-teeth.

20. In combination with the carriage and its holding-dog, a guard depending below the dog and teeth attached to the dog and extending in opposite directions from the holding-teeth.

21. The combination, with a shingle-bolt carriage, of a holding-dog, an arm attached to said dog and bent at a right angle to extend alongside the carriage, a spring on said arm by which the dog is actuated, and a nut engaging the arm and bearing on the spring to regulate the tension thereof, a bell-crank lever pivoted to the arm and to the carriage, and a bearing for said lever on the main frame, substantially as described.

22. The combination, with the pivoted tilt-table, of the oscillating beam having risers secured thereto at each side of the pivotal support of said table and adapted to support the table, substantially as described.

23. The combination of the tilt-table, the supports on the frame, and an intermediate movable piece bearing on said supports and table, by the movement of which the height of the table may be adjusted, substantially as described.

24. In combination with the carriage of a shingle-sawing machine, a sliding dog, a cross-shaft parallel with the dog and bearing against the same, rigid arms on the cross-shaft pivotally connected to the carriage, and a draw-rod and lever for actuating said shaft, substantially as described.

25. In a shingle-sawing machine, the combination, with a pivotal tilt-table, of a walking-beam, a riser at each side of the pivot of the walking-beam, the riser at the elevated end of the walking-beam serving as a support for the elevated end of the tilt-table, and an adjustable support on the frame at each side of the tilt-table, one of these supports sustaining the depressed end of the table, substantially as described.

26. In a shingle-sawing machine, a tilt-table having a rolling and vertically-sliding movement on a ball-bearing, in combination with the frame having a socket for said ball.

27. In a shingle-sawing machine, the combination of a tilt-table, its supporting-post secured to said table and extending below the bearing, a ball-bearing on said post, and an adjusting-screw operating laterally against the post below the bearing.

28. In combination with an overhanging tilt-table mounted on a yoke, one arm of which forms a post secured to the table and having a ball-bearing thereon, said arm extending below the bearing, an adjusting device operating against the side of the post opposite the overhang.

29. The combination, with the frame, of a tilt-table supported thereon in a universal bearing, and having a pendent part below the bearing by which the tilt may be effected, end supports for the table, and a sliding piece between the end supports and the table by which the height of the table may be regulated.

30. A saw-carriage, a spring-actuated dog at one end of said carriage, an adjustable dog at the opposite end of said carriage, said adjustable dog having side wings engaging with the carriage, and a shaft in rear of and parallel with said dog, the shaft having rigid arms pivotally connected to the frame of the carriage and being operatively connected at one end with a dog-moving lever, the parts being relatively arranged and combined substantially as stated.

31. The combination, with the tilt-table having an inclined under surface and a bearing-piece with upper inclined surface, and the table-supports, of an adjusting-screw whereby the position of the bearing-piece is regulated, substantially as described.

32. The combination, with the tilt-table and its containing-post extending below but balanced on ball-bearing, of an oscillating beam and risers therefrom which support the tilt-table.

33. The combination, with the tilt-table balanced on a ball-bearing, of an oscillating beam and adjustable risers therefrom, which bear against the under surface of the tilt-table, and separate risers on the frame independently adjustable, substantially as described.

34. In combination with the tilt-table contained on a universally-movable standard, an adjustable support at each side of said standard, and also a separate alternately rising and falling support at each side of the standard.

35. The tilt-table, its ball-and-socket support, and a post extending below said socket, an oscillating beam pivoted under the table, and risers from said oscillating beam which support the sides of the table, all combined substantially as described.

36. The tilt-table and its oscillating beam, the cam actuated from the carriage to move said beam, and a stop engaging said cam to overcome its momentum.

37. The combination of the tilt-table and its oscillating beam, the ratchet-cam engaging said beam, the pawl actuating the cam, and a pivoted catch engaging the cam when the pawl is stepped, but lifted by the pawl in its forward movement to free the cam, as set forth.

38. The tilt-table and its oscillating beam, the ratchet-cam engaging said beam and having depressions in its faces into which the bearing of the beam falls in addition to its cam-surfaces, the locking-catch engaging the cam, the pawl, and the connection from pawl to shingle-carriage, as set forth.

39. The combination, with the carriage-moving shaft of a shingle-sawing machine, of a bearing-box surmounting the same, and a lever pivotally connected to the frame bearing on the cap of said box.

40. The combination, with the carriage-moving shaft of a shingle-sawing machine, of a box surmounting said shaft, a lever pivotally connected to the frame bearing on said box, and a screw and set-nuts by which said lever may be held in adjusted position, as set forth.

41. The combination of the frame and carriage sliding thereon, the tilt-table, its oscillating beam, and a ratchet-and-cam mechanism engaging the oscillating beam, and a connecting-piece between the carriage and the ratchet mechanism, such piece being attached to the carriage and the ratchet mechanism in position to arrive at a perpendicular just before the completion of the backward movement of the carriage, substantially as stated.

42. The combination, with the tilt-table and supports beneath the same, of an interposed adjustable piece whereby the height of the table above its supports may be regulated, as set forth.

387,442. AUTOMATIC WATER-TRAP FOR CISTERNS AND OTHER RECEPTACLES. Charles H. Pierrend, Houston, Tex., assignor to himself and John H. B. Hoare, same place. Filed Dec. 3, 1887. Serial No. 256,982. (No model.)

Claim.—1. In a water-trap, the combination, with a bent main pipe connected at its upper end with the leader and connected at its lower end alternately with a waste-pipe and a cistern, of a vessel secured on the said main pipe and connected with the same, a pin held on the under side of the said vessel, and a fixed sleeve provided with a spiral groove engaging said pin, so that when the said vessel and the main pipe descend they are turned, substantially as shown and described.

2. In a water-trap, the combination, with a support, of a bent pipe fitted to turn and slide in the said support, a vessel secured to and communicating with the bent pipe, a counter-balance for the said vessel and pipe, and a cam-connection between the said vessel and support, substantially as described, whereby the pipe will be automatically lowered and turned when the weight of the pipe, the vessel, and the water contained therein overbalances the counter-balance, as set forth.

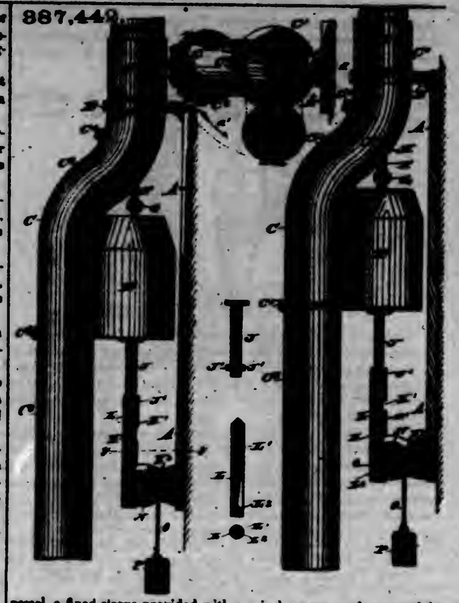
3. In a water-trap, the combination, with a bent pipe fitted to slide and turn in its support, of a vessel secured to the pipe, a pipe connecting the top of the vessel with the bent pipe, a ring having an inclined top edge held on the inside of the bent pipe and surrounding the opening, a screw on the top of the said inclined ring, and means for turning the vessel and bent pipe as they descend, substantially as herein shown and described.

4. In a water-trap, the combination, with a bent main pipe, of a vessel secured on the said main pipe and connected with the same, a pin held on the under side of the said vessel, a fixed sleeve provided with a spiral groove engaged by the said pin, and a counter-balance connected with the said pin, substantially as shown and described.

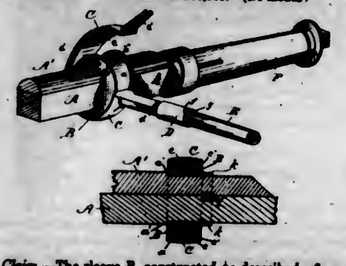
5. In a water-trap, the combination, with a bent main pipe, of a vessel secured on the said main pipe and connected at its top with the interior of the said main pipe, a pin held on the bottom of the said vessel, a fixed sleeve provided with a spiral groove and engaged by said pin, a grooved pin held in the said fixed sleeve and resting at its top end on the bottom of the said pin, a rope connected with the said grooved pin, and a weight held on the said rope to counterbalance the said main pipe and vessel, substantially as shown and described.

6. In a water-trap, a bent main pipe, a vessel secured on the said main pipe and connected at its top with the interior of the said main pipe, and a pin secured to the bottom of the said vessel and provided at its lower end with lugs or pins, in combination with a fixed sleeve provided with spiral grooves engaged by the said lugs on the pin, a grooved pin held in the said sleeve and resting at its top on the bottom of said pin, a rope connected with the said grooved pin, a pulley held to rotate in the said fixed sleeve and over which said rope passes, and a weight secured to the lower end of said rope, substantially as shown and described.

387,449.



387,443. THILL-COUPLING. Andrew Poulsen, St. Louis, Mo. Filed Mar. 6, 1888. Serial No. 266,266. (No model.)



Claim.—The sleeve B, constructed, as described, of one piece and and secured to the axle and cap by a washer and key, and having a recess in its periphery, in combination with the collar C, having the rabbets to cover the flanges of the sleeve, as set forth.

387,444. CONDUCTING-BOX. Andrew Poulsen, St. Louis, Mo. Filed Apr. 30, 1888. Serial No. 271,902. (No model.)



Claim.—The wrist or crank pin of a locomotive or other engine wheel, of square form transversely, in combination with a cylindrical collar covered with soft metal and a hinged coupling, constructed substantially as described.

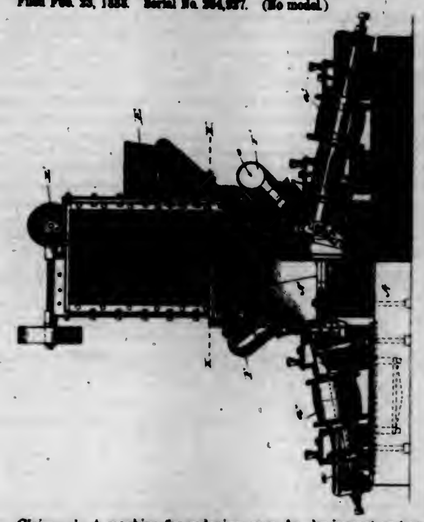
387,445. DEVICE FOR SECURING SHAFTS IN BEARINGS. GEORGE W. PROUTY, Boston, Mass. Filed Oct. 26, 1887. Serial No. 253,504. (No model.)



Claim.—1. A saddle or open-sided bearing, in combination with a securing device mounted permanently in an aperture in said saddle, and consisting of a piece of metal having one end bent at right angles to the bearing to bridge the opening in the saddle or bearing and its other end bent to form a curved spring adapted to retain the right-angled portion in position.

2. The saddle or open-sided bearing C, provided with a longitudinal aperture through the short arm of its fork, and with the detent-notch *b*, in combination with the securing device E, consisting of a wire provided with the right-angled arm *c* at one end and the curved portion *d* at the other end, constructed and arranged to engage with the detent-notch *b*, substantially as and for the purposes described.

387,446. MACHINE FOR REDUCING ORES, &c. GEORGE RAYMOND and ALBERT RAYMOND, Chicago, Ill., assignors to the Cyclone Pulverizer Company of the United States of America, New York, N. Y. Filed Feb. 23, 1888. Serial No. 264,927. (No model.)

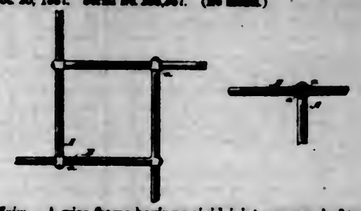


Claim.—1. A machine for reducing ores, &c., by impact and attrition between the fragments, comprising a reducing-chamber, two oppositely-rotatable heads or beaters mounted opposite each other within said chamber in planes having upwardly-receding inclinations with relation one to the other, and suitable means for rotating said heads, whereby the fragments are caused to move vortically, substantially as described.

2. In a machine for reducing ores, &c., by impact and attrition between the fragments, comprising a reducing-chamber, two oppositely-rotatable heads or beaters mounted opposite each other within said chamber in planes having upwardly-receding inclinations with relation one to the other, and having radial curved ribs, and suitable means for rotating said heads, whereby the fragments are caused to move vortically, substantially as described.

3. In a machine for reducing ores, &c., by impact and attrition between the fragments, comprising a reducing-chamber, two oppositely-rotatable heads or beaters having concave adjacent surfaces and curved radial ribs mounted opposite each other within said chamber in planes having upwardly-receding inclinations with relation one to the other, and suitable means for rotating said heads, whereby the fragments are caused to move vortically, substantially as described.

387,447. WIRE-JOINT. WILLIAM A. RINGOEN, Niles, Mich. Filed Oct. 20, 1887. Serial No. 252,267. (No model.)



Claim.—A wire frame having a rigid joint composed of two sections of wire, one having its end bisected longitudinally and the flat side thereof bent adjacent to and around the other section, and a connecting coat of molten metal applied over the whole, substantially as and for the purpose described.

387,448. AUGER. HARRY W. RICHARDS, Bunn, Fla. Filed Dec. 29, 1887. Serial No. 259,312. (No model.)

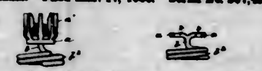


Claim.—1. An auger provided with one or more cutters extending from the edge of the spiral parallel with the axis of the auger and in the same vertical plane with the outer edge of the spiral, substantially as described.

2. An auger provided with one or more detachable cutters extending from the edge of the spiral parallel with the axis of the auger and in the same plane with the outer edge of the spiral, substantially as described.

3. An auger provided with one or more cutters extending from the edge of the spiral adjacent to the pod of the auger to the edge of the spiral next above, the cutter or cutters being parallel with the axis of the auger and in the same plane with the outer edge of the spiral, substantially as described.

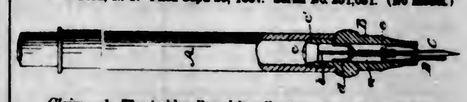
387,449. CROWN-SETTING FOR JEWELRY. NATHANIEL L. RIPLEY, Newton, assignor to the Ripley Rowland Manufacturing Company, Boston, Mass. Filed Mar. 17, 1888. Serial No. 267,402. (No model.)



Claim.—1. In an article of jewelry, a wire split at its end and bent to form a cross-bar integral with the wire, combined with a crown-setting attached to the said cross-bar, substantially as described.

2. The wire *b*, bent to form a spiral shank, *b*², and split at its end to form a cross-bar, 2 2, integral with the wire, substantially as described.

387,450. FOUNTAIN-PEN. FRED A. ROBINSON and AMY I. SMITH, New York, N. Y. Filed Sept. 28, 1887. Serial No. 251,031. (No model.)



Claim.—1. The holder B and handle A, and the feeder D, fitted in the holder, the nib-pen C, having rod *b* and valve *c*, in combination with the cross-piece *d* and spring *a*, the rod *b* free to move longitudinally by pressure upon the point of the pen, substantially as described.

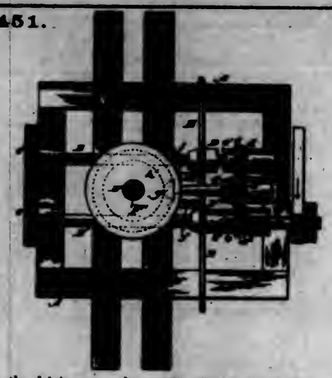
2. The nib-pen C, formed integral with a valve, *c*, and spring *a*, substantially as and for the purpose set forth.

387,451. GEAR-POWER FOR PRESSES. PETER D. ROSENBERGER, De Berry, Tex. Filed Feb. 6, 1888. Serial No. 263,182. (No model.)

Claim.—1. The driving-gear comprising shafts geared together at one end, and having loose pinions at or near the other ends, and an intermediate fixed pinion upon a third power-transmitting shaft, substantially as set forth.

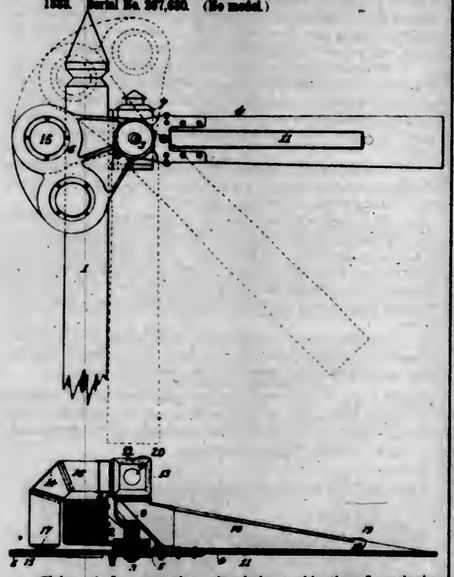
2. In a driving-gear, the combination of the shafts geared together at one end, and having at the other ends loose or sleeved pinions geared to a fixed pinion on an intermediate or third shaft carrying a second pinion, and clutch-sleeves sliding upon the first-named shafts and adapted to engage with the sleeves of the first-named pinions, substantially as set forth.

387,451.



3. In the driving-gear, the combination of the shafts geared together at one end, and having at the other ends sleeved or loose pinions geared to a fixed pinion upon a third shaft having a second pinion, and the sleeve or tap carrying a gear-wheel meshing with the said second pinion, together with the clutch-sleeves upon the first-named shafts and the clutch-sleeve-shipping mechanism, substantially as set forth.

387,452. SEMAPHORE-SIGNAL. JESSE G. SCHROYER, Pittsburg, Pa., assignor to George Westinghouse, Jr., same place. Filed Mar. 19, 1888. Serial No. 267,620. (No model.)



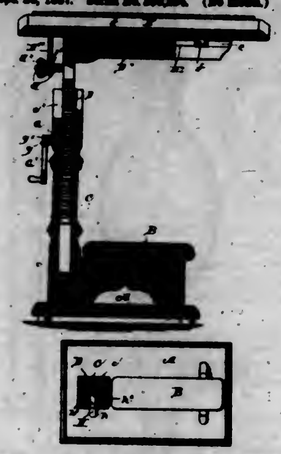
Claim.—1. In a semaphore-signal, the combination of a swinging blade, a spectacle or frame carrying a colored glass and attached to said blade, and a lamp for illuminating both the blade and the glass carried by the frame, substantially as set forth.

2. In a semaphore-signal, the combination of a swinging blade, a spectacle or frame carrying one or more colored glasses and operated by the blade, a lantern, and suitably-arranged reflectors for throwing the light from said lantern upon the blade and the glasses in the frame or spectacle, substantially as set forth.

3. In a semaphore-signal, the combination of a swinging blade, a spectacle or frame carrying one or more colored glasses and operated by the blade, a lantern, a tube leading from the lantern to a point adjacent to the plane of movement of the frame, and suitably-arranged reflectors for directing the light upon the blade and the colored glass or glasses in the frame, substantially as set forth.

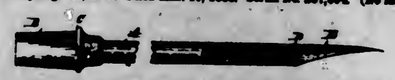
4. In a semaphore-signal, the combination of a swinging blade, a lamp for illuminating said blade, and illuminated indices on the rear sides of the blade and lantern, whereby the position of the blade may be determined, substantially as set forth.

387,453. TABLE. CHRISTIAN W. H. SCHNEIDER, Rock Island, Ill. Filed Sept. 30, 1887. Serial No. 250,934. (No model.)



Claim.—The herein-described table, comprising the base-rest A, the foot-rest B, the hollow standard C, rising from the base-rest adjacent to the foot-rest, provided with the central vertical slot, *c*, and having the oppositely-beveled resting-surfaces *c*² at its upper end on each side of said slot, the rack-bar D, having a laterally-extended arm, D', the rest-arm E, seated upon the arm D' and having its upper side beveled to continue the beveled surfaces *c*² when aligned therewith, the table F, connected by the hinge *f* to the rest-arm, the semi-circular slotted bracket F', the stud *d* in the slot thereof and engaged by the thumb-nut *d*', the cog-wheel G, mounted on the spindle *g*, which has its outer end squared to engage a crank-handle, and the spring-controlled pivoted catch H, to hold the rack-bar up, substantially as specified.

387,454. EMBALMING-INSTRUMENT. HARVEY H. SCHOONHALSE, Springfield, Ohio. Filed Mar. 19, 1888. Serial No. 267,694. (No model.)



Claim.—1. As an improved article of manufacture, a trocar consisting of a vulcanized rubber tube reduced in size at one end, and of a metallic tip having a sharp keen point at one end and composed of a sleeve at the other end of substantially the same length as the reduced end of the tube and fitted over said end.

2. As an improved article of manufacture, a trocar consisting of a vulcanized rubber tube having one end reduced and exteriorly screw-threaded, and of a metallic tip having one end reduced to a keen sharp point and the other composed of a sleeve of substantially the same length as the reduced end of the tube and screw-threaded to receive said end, whereby the interior of the sleeve is protected by the material of the tube.

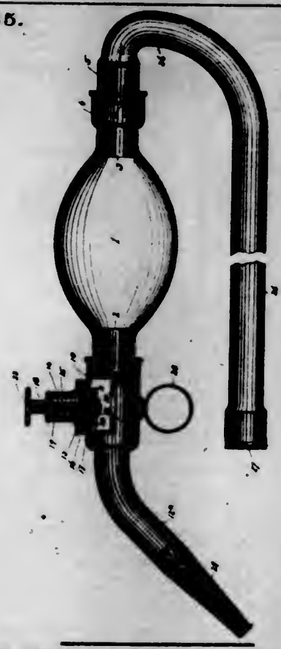
387,455. SIPHON. MICHAEL SCHROEDER, Louisville, Ky. Filed Oct. 6, 1887. Serial No. 251,631. (No model.)

Claim.—1. The combination, with the suction device, of two tubes having communication therewith, a valve in each of said tubes arranged with their openings in opposite directions, whereby one is constituted an outlet and the other an inlet, a cut-off in one of said tubes, and a spring for holding said cut-off normally in one position, and a strainer in one of said tubes, for the purpose described.

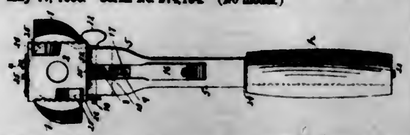
2. The combination, with the flexible bulb 1, of the tubes 2 3 in said bulb, the valves 6 9, for the purpose described, the spigot 12, secured to tube 2, a chamber, 11, in said spigot, having valve-seat 24 and opening 12, a cover, 13, having box 14, the valve-stem 16, having shoulder 18, the spiral spring 19, coiled in said box between the said shoulder and cover, and the finger-ring 26, substantially as shown and described.

3. The combination, with the bulb 1, of a spigot connected therewith, a valve in said spigot opening away from said bulb, a partition in said spigot forming a chamber, 11, and having an opening, 12, therein, a valve-seat surrounding said opening, the removable cover 13 in said chamber, a valve-stem projecting through said cover, a valve on said stem, and a spring for holding said valve normally open, substantially as set forth.

887,455.



887,456. WRENCH. Jonathan M. Silvis, Kittanning, Pa. Filed May 17, 1888. Serial No. 274,184. (No model.)



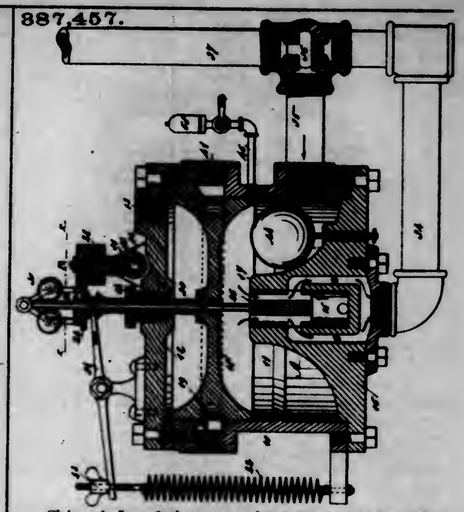
Claim.—1. In a ratchet-wrench, the shank 5, having its head formed with a chamber, 6, provided with slots 11 in its sides, the pawl 8, formed with alternating beveled sides 13 and notched sides 14 in said chamber, the rod 10, extending through slots 11 and having a handle, 12, and carrying said pawl, and the spring 9, mounted in chamber 6 and bearing on said pawl, in combination with the supports 2, having tubular shank 4 extending through chamber 6, the ratchet 7, with projections 15, alternating with ratchet-teeth and located in chamber 6 adjacent to pawl 8, and the spring-actuated sliding jaws 1 in said support 2, substantially as shown and described.

2. In a ratchet-wrench, the shank 5, having its head formed with a chamber, 6, provided with slots 11 in its sides, the pawl 8, formed with alternating beveled sides 13 and notched sides 14 in said chamber, the rod 10, extending through slots 11 and having a handle, 12, and carrying said pawl, and the spring 9, mounted in chamber 6 and bearing on said pawl, in combination with the supports 2, having tubular shank 4, extending through chamber 6, the ratchet 7, with projections 15, alternating with ratchet-teeth and located in chamber 6 adjacent to pawl 8, and the spring-actuated sliding jaw 1, having shanks 25, with teeth 34, located in sockets 26 in support 2, and springs 32, provided with pins 31 and having projections 35, the pins 31 engaging the teeth 34, substantially as described.

3. In a wrench, the combination, with the shank 5, provided with tubular openings 4 in its upper end, the supports 2, having tubular shanks 3, fitting in the openings 4, said supports having sockets 26, provided with stop-pins 27 and spring-actuated pins 31, of the adjustable sliding jaws 1, having shanks 25 adapted to slide in the sockets 26, said shanks provided with slots 28, engaging with the pins 27, whereby the outward movement of the jaws is limited, said shanks provided with teeth 34, engaged by the pins 31, and the spring 29, entered in the socket 26, and a socket, 30, formed in the end of the shank 25, all arranged substantially as and for the purposes described.

887,457. FEED-WATER REGULATOR. Frederick E. Smith, South Boston, Mass. Filed Dec. 6, 1887. Serial No. 257,102. (No model.)

887,457.



Claim.—1. In a feed-water regulator, the combination, with a cylinder, of a piston formed with a groove in its peripheral face, ports formed in the cylinder and communicating with said groove, a water-supply port arranged above the piston, a steam-chamber below the piston, and a steam-regulating valve, substantially as described.

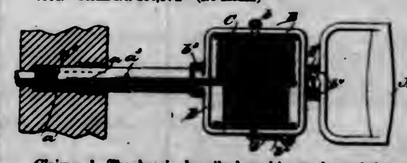
2. In a feed-water regulator, the combination, with a cylinder, of a piston, 18, formed with a groove, 19, a lever by which the piston is normally upheld, a spring arranged in connection with said lever, ports communicating with the passage 19, a steam-chamber formed below the piston, and a steam-regulating valve, substantially as described.

3. In a feed-water regulator, the combination, with a cylinder, of a piston arranged therein and a steam-whistle arranged in connection with the piston, substantially as described.

4. In a feed-water regulator, the combination, with a cylinder, of a piston mounted therein and formed with an annular groove, ports arranged in connection with said groove, a means for supplying water to the chamber above the piston, a means for supplying steam to the chamber below the piston, a steam-valve, 26, a governor, and connections between said governor and the engine, substantially as described.

5. In a feed-water regulator, the combination, with a cylinder formed with a steam-chamber, of a float-valve arranged in connection with said cylinder, substantially as described.

887,458. TOOL FOR PACKING STUFFING-BOXES. Peter J. Smith, Philadelphia, Pa., assignor to himself and Joseph R. C. Smith, same place, and William B. Smith, Washington, D. C. Filed Mar. 20, 1888. Serial No. 267,574. (No model.)



Claim.—1. The herein-described packing-tool, consisting, essentially, of a tubular packer-rod adapted to fit upon the part to be packed, and provided with a longitudinal guide-slot extending along the tubular portion of the rod for the reception and guidance of the packing-strand, whereby, when said rod is placed upon the part to be packed and revolved, said strand will be wound around such part, substantially as and for the purposes specified.

2. The herein-described packing-tool, consisting of a tubular packer-rod adapted to fit upon the part to be packed, and provided with a longitudinal slot extending along the tubular portion of the rod for the reception and guidance of the packing-strand, in combination with a revolvable carrier for the packing, substantially as and for the purposes specified.

3. The herein-described packing-tool, consisting of a tubular packer-rod adapted to fit upon the part to be packed, and provided with a longitudinal slot formed in the tubular portion thereof, said slot curving from right to left at the open end of the said tubular portion of the rod, substantially as and for the purposes specified.

4. The herein-described packing-tool, consisting of a tubular packer-rod adapted to fit upon the part to be packed, and provided with a longitudinal slot formed in the tubular portion thereof, one of the walls of said slot having its outer end formed into or provided with a cutting-lip, whereby the rod is made to perform the function of an auger when revolved in a given direction, substantially as and for the purposes specified.

5. The herein-described packing-tool, consisting of a tubular packer-rod provided with a guide-slot for the packing-strand, in combination with a revolvable packing-carrier and a friction-brake for said carrier, substantially as and for the purposes specified.

6. A tool of the class described, comprising a tubular packer-rod adapted to fit upon the part to be packed, and provided with a guide groove or slot for the reception and guidance of the packing, a handle for said rod, and a revolvable carrier for the packing, said parts being detachably connected together, substantially as and for the purposes specified.

7. The herein-described packing-tool, consisting of a tubular packer-rod, A, provided with a slot, *c*, and a cutting-lip, c^1, in combination with the spool B, and the spring-plate b^1, provided with the cone-pin b', that constitutes one of the journals for the spool and operates as a friction-brake, substantially as and for the purposes specified.

887,459. WHEEL-FASTENING DEVICE FOR CAR-AXLES. Andrew J. Speer, Portland, Oreg., assignor to himself and James R. Hamilton, same place. Filed Feb. 25, 1888. Serial No. 265,941. (No model.)



Claim.—1. The combination, with an axle having an annular groove in its spindle, of a wheel having an annular groove in the inner surface of its hub, registering with the groove in the axle, and a passage leading from the groove through the hub, and a metallic locking-key inserted in the registering groove and provided with a stem projecting into the passage-way and locking the key to the hub of the wheel, substantially as described.

2. The combination, with an axle having a groove, 2, in the peripheral face of one of its wheel-seats, of a wheel in the hub of which there is formed a groove arranged to register with the groove 2, a passage, 4, leading from said groove in the wheel-hub, and a metallic locking-key placed in the registering grooves and formed with a centrally-apertured neck extending within the passage 4, substantially as described.

887,460. THILL-COUPLING. William H. Speer, Wellsville, N. Y., assignor of one-half to William Bruce, same place. Filed Mar. 16, 1888. Serial No. 267,906. (No model.)



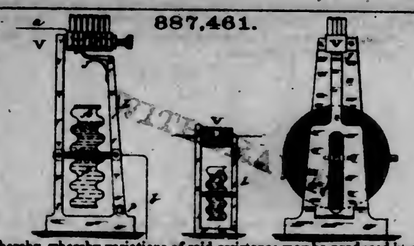
Claim.—1. The combination, with a clip provided with apertured ears, of a pin fitting in said apertured ears and provided with a stud, and a spring adapted to have one end secured to the axle and provided with an aperture in its free end to receive the stud of the pin, substantially as described.

2. The combination, with the clip A, provided with the apertured ears B, of the pin C, having the stud D, the spring E, provided with the eye *a*, adapted to receive the stud D, and the clip G, substantially as described.

887,461. THERMAL DEVICE FOR VARYING ELECTRIC RESISTANCES OR CURRENTS. Elihu Thomson, Lynn, Mass. Filed Dec. 31, 1887. Serial No. 259,447. (No model.)

Claim.—1. The combination, with a thermo-dynamic actuator responsive to and varying in accordance with the changes in the medium surrounding it, of a variable resistance actuated or controlled thereby, whereby variations of said resistance may be produced in accordance with variations in the temperature of a surrounding medium.

887,461.



2. The combination, with an electro-thermo-dynamic device, of a thermo-dynamic actuator or controller responsive to variations of temperature of the surrounding atmosphere and an electric regulator or controller adjustable thereby for governing the flow of current to the electro-thermo-dynamic device.

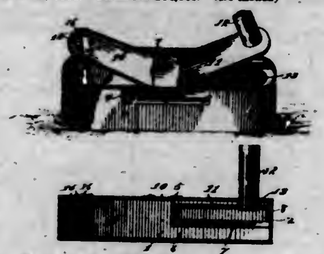
3. The combination, with an electro-thermo-dynamic device, of a variable or adjustable resistance for governing the flow of current to the same and a thermo-dynamic actuator or adjuster responsive to variations of external temperature and operating upon said variable resistance, as and for the purpose described.

4. The combination, with an electro-thermo responsive device, of a variable resistance connected to the circuit of the same and a thermo-dynamic actuator or adjuster for said variable resistance.

5. The combination, with an electro-thermic meter, of an adjustable current-regulator governing the flow of current to said meter and a thermo-dynamic actuator or adjuster for said regulator, as and for the purpose described.

6. The combination, with a chamber having a diaphragm or wall expansible or movable under the variations of internal pressure due to variations of temperature, of an adjustable or variable resistance governed by said wall or diaphragm.

887,462. TANK-HEATER. Andrew J. Upham, Sycamore, Ill. Filed Feb. 21, 1888. Serial No. 264,819. (No model.)



Claim.—The water or liquid heater, consisting of a chamber provided with a grate and a removable fire-pot resting thereon, said fire-pot being provided with an opening in its top, a hinged cover and a smoke-pipe attached thereto, said pipe being adapted to rest in the opening in the top of the fire-pot when the cover is in a closed position.

887,463. ELECTRIC REGULATOR. Joseph A. Vassart and Frank S. Anderson, Boston, Mass. Filed Sept. 6, 1887. Serial No. 248,853. (No model.)



Claim.—1. A current-regulator consisting of a receptacle containing a powdered substance having a certain degree of conductivity, a circuit-breaker inclosed in said receptacle, and a compressor for varying the pressure upon and the resulting density of said substance, as and for the purposes specified.

2. The improved regulator consisting of the large non-conducting cylinder 1, the circuit-breaker formed of the non-conducting cylinder 2, the electrical contact 5, an adjustable circuit-connector, 3, the powdered material 6, a piston for compressing the latter, and a rod for adjusting the piston, substantially as described.

3. In an electric regulator, the combination, with the conducting-wire C, divided, as specified, of the non-conducting cylinder 1, the metal rod 5, and the small non-conducting cylinder 2, the surrounding powdered composite material 6, the piston 7, the screw-threaded rod 3, working in a nut at the lower end of said cylinder and provided with a suitable head for use in turning it, as specified.

387,464. REGULATOR FOR ELECTRIC CURRENTS. JOSEPH A. VAILHANT and FRANK S. ANDERSON, Boston, Mass. Filed Jan. 31, 1888. Serial No. 261,477. (No model.)



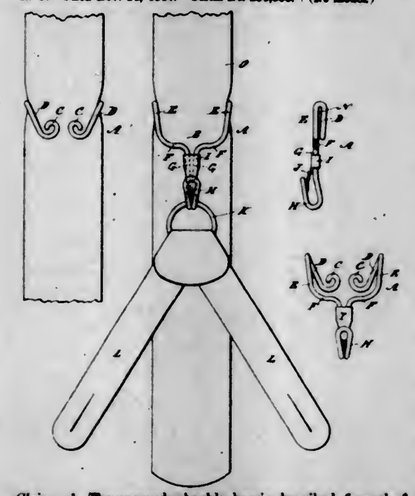
Claim.—1. The electrical-current regulator proper, consisting of a cell or receptacle, a powdered material which is composed of conductive and non-conductive substances, which are in the form of dry powders intimately mixed together and contained in said receptacle, a movable plunger by whose adjustment the said material may be compressed more or less for the purpose of securing the desired degree of conductivity, and metallic circuit-connections which are in contact with the powdered material, substantially as shown and described.

2. The electrical-current regulator proper, consisting of a cell or receptacle, a powdered material consisting of carbon and mineral wool and contained in such receptacle, a movable plunger by whose adjustment the said material may be compressed more or less for the purpose of securing the desired degree of conductivity, and metallic circuit-connections which are in contact with the powdered material, substantially as shown and described.

3. The multiple-cell regulator proper, consisting of a series of cells or receptacles filled with powdered carbon and mineral wool, a metal plate forming the top of the said cells, a movable plunger for each cell, and circuit-wires which connect with said plate and the powdered material, as shown and described.

4. The combination, with the regulator proper, consisting of a series of cells containing a powdered conductive and non-conductive material and a plunger for compressing it, of cells and the circuit-breaker formed of a series of metal fingers and a rotatable cylinder whose periphery is divided into conducting portions, and a series of insulated circuit-wires which connect the said cells and fingers, and a disconnected return-wire, all substantially as shown and described, whereby the rotary adjustment of the cylinder graduates the strength of the current in the circuit or cuts off the current altogether, as specified.

387,465. SUSPENDER-BUCKLE. CHARLES F. WALTERS, Prospect, N. Y. Filed Nov. 28, 1887. Serial No. 256,336. (No model.)



Claim.—1. The suspender-buckle herein described, formed of a single piece of wire bent upon itself, forming back and front members and having the ends forming the one member inclined toward each other and toward the other member, substantially as shown and described.

2. A suspender-buckle made of a single piece of wire having its ends outwardly inclined and doubled up to form a recess for the reception of the web of the suspenders, said doubled-up part extending inward and downward and forming at its lower end a loop for attaching the suspender-strap ring, in combination with a collar held on the said loop and provided with a spring-tongue engaging the front end of the said loop and serving to prevent a displacement of the suspender-strap ring, substantially as shown and described.

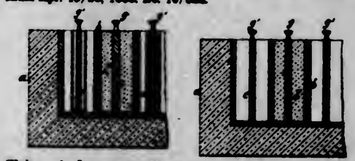
387,466. COMBINED ARTIFICIAL FLOWER AND PERFUME-RECEPTACLE. CHRISTOPHER WARNER, New York, N. Y. Filed Nov. 18, 1887. Serial No. 256,502. (No model.)



Claim.—1. As a new article of manufacture, the combined artificial flower and perfume-receptacle hereinbefore described, the same consisting of the bottle A, having a stopper, B, the petals *a*, glued to the body of said bottle, the wrapping *b*, secured around the lower portion of the latter, and the moss-like fiber *d*, applied over such wrapping, as shown and described.

2. The combination, with the bottle A, of the wire stem *c*, which is wrapped around it, as shown, the petals *a*, and the wrapping *b* and moss-like fiber *d*, secured around both the wire and petals, as and for the purpose specified.

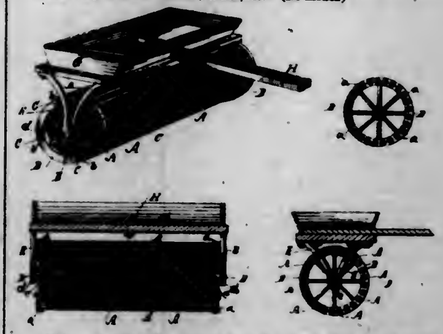
387,467. APPARATUS FOR PURIFYING WATER. WILLIAM WHEATER, Jr., Lee Park, Lee, County of Kent, England. Filed Dec. 28, 1887. Serial No. 258,726. (No model.) Patented in England Jan. 27, 1887, No. 1,338; in France Dec. 9, 1887, No. 187,496; in Cape of Good Hope Jan. 23, 1888, No. 436; in Natal Feb. 2, 1888; in New South Wales Feb. 10, 1888, No. 488; in Tasmania Feb. 12, 1888, No. 642/10, and in India Apr. 13/26, 1888, No. 16/262.



Claim.—1. In a water-filtering apparatus, a carbon filtering medium connected to the positive pole of an electric battery or other electrical generator whose negative pole is connected to the water in the filter, so that on the passage of the water through the filtering medium it is brought into intimate contact with nascent oxygen generated therein by the electric current, substantially as herein described.

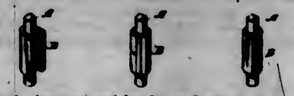
2. Electrolytic filtering apparatus in which a filtering medium through which the water is passed either itself constitutes the positive electrode or has a positive electrode embedded in it, while the negative electrode is either also embedded in a filtering medium or is otherwise in electrical contact with the water to be filtered, substantially as herein described, with reference to the accompanying drawings.

387,468. FIELD-ROLLER. JOHN S. WISEMAN, Canton, Ohio. Filed July 2, 1887. Serial No. 243,946. (No model.)



Claim.—A field-roller constructed of a series of pipes arranged in the general form of a cylinder, with spaces between one another, heads provided with depressions to receive the ends of the pipes, and rods passed longitudinally through some of the pipes, through the heads, and secured outside of the heads, substantially as and for the purpose herein specified.

387,469. ARBOR FOR CLOCKS, WATCHES, &c. WILLIAM H. WHEDON, New Bedford, Mass., assignor to the Weston Manufacturing Company, same place. Filed Aug. 13, 1887. Serial No. 247,203. (No model.)



Claim.—1. As a new article of manufacture, an arbor which is composed of a straight round core or center and a superimposed body made of sheet metal, substantially as and for the purpose specified.

2. As a new article of manufacture, an arbor which has its center and pivots formed by a straight round piece of metal and its body formed by a plate of sheet metal that is bent around and caused to closely embrace said center, substantially as and for the purpose shown.

387,470. MEANS FOR MAKING PINIONS FOR CLOCKS AND WATCHES. WILLIAM H. WHEDON, New Bedford, Mass., assignor to the Weston Manufacturing Company, same place. Filed Sept. 2, 1887. Serial No. 248,082. (No model.)

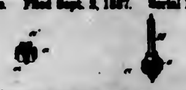


Claim.—1. As a means for forming pinions from sheet metal, a female drawing-die which is provided with a central opening that corresponds in shape to the toothed periphery of a pinion, in combination with a male die which corresponds to and is adapted to enter said opening, substantially as and for the purpose specified.

2. As a means for forming pinions from sheet metal, a male drawing-die and a female drawing-die which by their joint action are adapted to give to a cupped sheet-metal blank the external form of a toothed pinion, in combination with drawing-dies that are adapted to give a cupped form to a sheet-metal disk, substantially as and for the purpose shown.

3. As a means for forming pinions from blanks, the combination of drawing-dies which are adapted to give a cup form to a sheet-metal disk, drawing-dies that are adapted to give to the cup-shaped blank the external form of a toothed pinion, and punching-dies which are adapted to form within the closed end of said blank an opening for the reception of an arbor, substantially as and for the purpose set forth.

387,471. PINION FOR CLOCKS, WATCHES, &c. WILLIAM H. WHEDON, New Bedford, Mass., assignor to the Weston Manufacturing Company, same place. Filed Sept. 2, 1887. Serial No. 248,081. (No model.)



Claim.—1. As a new article of manufacture, a spur-pinion which is composed of a shell or corrugated metal that interiorly corresponds in shape to its exterior, substantially as and for the purpose specified.

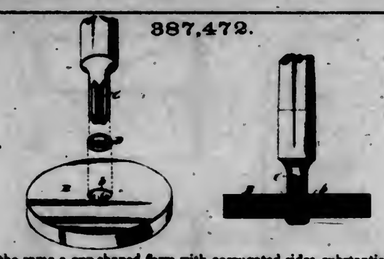
2. The combination of a shell-pinion with an arbor which passes axially through and is secured within the same, substantially as and for the purpose shown.

3. The combination of a shell-pinion with an arbor which passes axially through the same and fills the space between the points of the internal teeth, substantially as and for the purpose shown.

4. The described pinion, constructed from sheet metal and having one end open and its other end partly closed and provided with a central opening which is concentric with the periphery of said pinion, substantially as and for the purpose shown and described.

387,472. METHOD OF MAKING PINIONS FOR CLOCKS AND WATCHES. WILLIAM H. WHEDON, New Bedford, Mass., assignor to the Weston Manufacturing Company, same place. Original application filed Sept. 2, 1887, Serial No. 248,082. Divided and this application filed Feb. 28, 1888. Serial No. 265,949. (No model.)

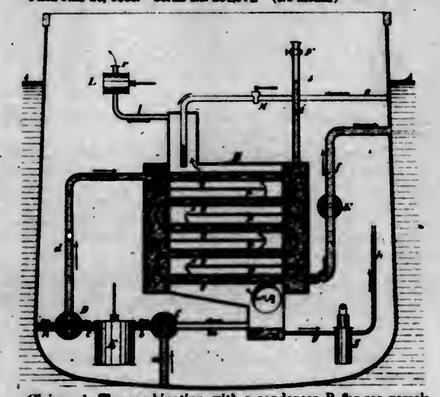
Claim.—1. The method employed in the forming of pinions, which consists in forcing a disk of sheet metal through dies and giving to the same a cup-shaped form with corrugated sides, substantially as and for the purpose shown and described.



2. The method employed in the forming of pinions, which consists in giving a cup shape to a disk of sheet metal and then passing such blank through drawing-dies until its sides are corrugated and it corresponds externally in size and shape to the exterior of a toothed pinion, substantially as and for the purpose specified.

3. The method employed in the forming of pinions, which consists, first, in cutting a round blank from a sheet of metal; next, in giving to such blank a cup shape; next, in corrugating the sides of said blank, and, lastly, in forming within the closed end an opening for the reception of an arbor, substantially as and for the purpose shown.

387,473. SURFACE-CONDENSER. FRANZ J. WEHR, Basle, Switzerland, assignor of three-tenths to August Burckhardt, same place. Filed Jan. 26, 1888. Serial No. 261,971. (No model.)



Claim.—1. The combination, with a condenser, B, for sea-vessels, of the cold-water pump K, the pipes *a b m*, connected, respectively, with the outside of the vessel, the pump, and the steam-space of the condenser, the three-way valve or cock C at the junction of said pipes, and the pipes *c d n*, containing the three-way cock or valve D, and connected, respectively, with the pump, the water-space of the condenser, and the outside of the vessel, substantially as described.

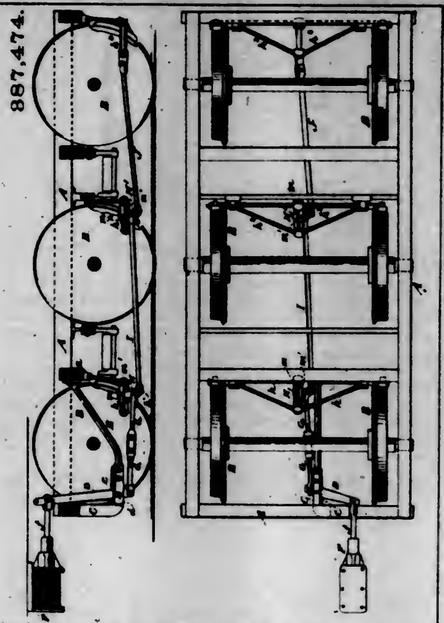
2. The combination, with a condenser, B, for sea-vessels, of the cold-water pump K, the pipes *a b m*, containing the three-way cock or valve C, and connected, respectively, with the outside of the vessel, the pump, and the steam-space of the condenser, the pipes *c d n*, containing the three-way cock or valve D, and connected, respectively, with the pump, the water-space of the condenser, and the outside of the vessel, and the fresh-sea-water pipe *e*, containing the cock or valve H and entering the top of the condenser, substantially as described.

3. In surface-condensers on sea-going vessels, the combination of the condenser B, the pump K, the system of pipes *a b m*, having the three-way cock or valve C, arranged between the condenser, the pump, and the outside board, the system of pipes *c n d*, having the three-way cock or valve D, arranged between the pump, the condenser, and the outside board, and the pipe *f*, having the cock or valve E, arranged between the condenser and outside board, the air-discharge cock or valve F, and the injection cock or valve H, arranged between condenser and outside board, substantially as and for the purpose specified.

387,474. CAR-BRAKE. JOHN WIRT, Burlington, Iowa. Filed Dec. 5, 1887. Serial No. 257,090. (No model.)

Claim.—1. A truck and the brake-beams thereof, a lever having a fixed fulcrum in the truck, and a series of rods and equalizers operated by said lever, each equalizer being pivoted in the strut of a brake-beam, combined with an air or steam cylinder and suitable

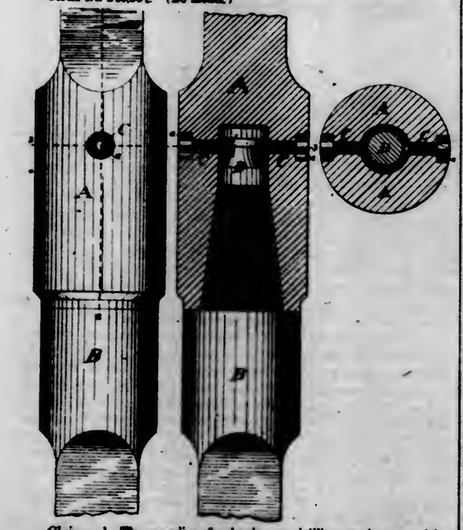
887,474.



connections between said cylinder and the operating-lever, substantially as set forth.

2. The wheels, brakes, and brake-beams of two or more trucks, the brake-beams of two or more pairs of wheels of each truck being connected by means of a single set of rods and equalizers, combined with the hand brake-wheels K, chains *k*, rods L, pulleys *l*, chains *l'*, and rod M, whereby the brakes may be applied to all the wheels of the several trucks with equal force, whichever hand brake-wheel is used, substantially as set forth.

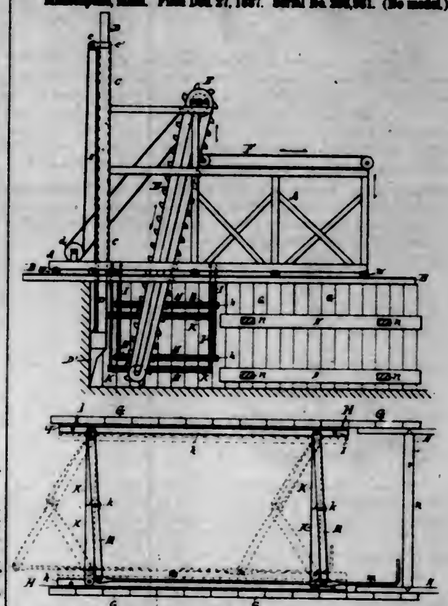
887,475. MODE OF SECURING THE FASTENINGS OF DRILLING-TOOLS. John H. Whaling, Kingman, Kans. Filed Aug. 9, 1887. Serial No. 246,551. (No model.)



Claim.—1. The coupling for boring or drilling tools, comprising the bevel ended or headed screw and the additional bevel-ended screws intersecting the bevel end or head of the aforesaid screw, substantially as set forth.

2. The coupling for boring or drilling tools, comprising the tool-connecting screw having a plain or unthreaded portion or extension provided with a beveled surface extending from the inner edge of the head of the screw, the rod or shaft receiving said screw with its plain or unthreaded portion, and the screws also inserted into said rod or shaft and having beveled ends engaging with the beveled surface of the tool-connecting screw, substantially as specified.

887,476. EXCAVATING APPARATUS. Joseph S. Wheeler, Minneapolis, Minn. Filed Dec. 27, 1887. Serial No. 258,961. (No model.)



Claim.—1. In excavating apparatus, the combination, with sheathing for supporting the sides of a trench, of horizontal supports for the sheathing and toggle devices for pressing the same to engagement, substantially as set forth.

2. The combination, with the frame of an excavating apparatus and sheathing for the sides of a trench, of supporting-bars for the sheathing suspended from said frame, toggles connected to the bars, and levers for operating the toggles, substantially as set forth.

3. The combination, with the sheathing-supports, of the toggle-bars pivoted thereto, the levers pivoted at one side and connected to the joints, and the operating-rods connected to said levers, substantially as set forth.

887,477. LOGGING-CAR. Manly Wilson, Seattle, Wash. Filed Apr. 19, 1888. Serial No. 271,156. (No model.)



Claim.—1. In combination with the beam A and serrated bar C, provided with adjustable sliding blocks, links pivoted to the beam and connected to each other to be operated simultaneously for elevating the serrated bar, and adjustable block carried thereby, substantially as shown, and for the purpose set forth.

2. In combination with the beam A, guide-strips B B B' B', vertical moving bars held by said guide-strips and provided with suitable sliding blocks, D D, links E, pivotally secured to the beam A and to connecting-bars F, and the trip-rods G, pivotally secured to the ends of the bars H, the parts being organized substantially as shown, and for the purpose set forth.

3. In combination with a beam, A, a vertically-movable serrated bar carrying sliding blocks D, links E, having the upper portions thereof bifurcated and one of the sides recessed, a connecting-bar pivotally secured to said links, and a trip-rod for operating the same, substantially as shown, and for the purpose set forth.

4. In combination with a compound trip-rod, G, for the purpose set forth, a wrench or lever for moving one of the sections thereof, having a bifurcated head, one member extending beyond the other and curved at its end to operate or depress a spring-catch employed for holding the trip-rod, substantially as shown, and for the purpose set forth.

887,478. STRAP OR BELT FASTENER. Charles H. Bell, Orange, Ohio. Filed Nov. 28, 1887. Serial No. 256,691. (No model.)



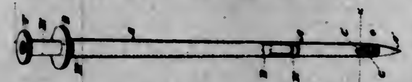
Claim.—The fastening device for blanking-straps herein described, consisting of a plate having a longitudinal slot the upper longitudinal edges of which are squared off to form right angles, and a tongue extended from one end of this slot along over the top of the same, having its free end curved outward, the lower side or edges of the tongue being flush with the plate and squared off to form right angles.

887,479. SEWING-MACHINE. Rufus H. Ackerman, Quincy, assignor of one-half to William H. Coffey, Cambridge, Mass. Filed June 16, 1887. Serial No. 241,735. (No model.)



Claim.—In combination with the cloth-plate of a sewing-machine and with the looper, a semicircular shield secured to the under side of said cloth-plate, having an interior diameter corresponding to the looper, arranged to cover the upper and front sides of the looper, and extending axially beyond the looper, the said shield being open on its rear and bottom, whereby the lint and ravelings are dislodged and the thread prevented from winding on the looper, substantially as described.

887,480. BLOATING-NEEDLE. Joseph J. Allshar, Union Springs, N. Y. Filed Aug. 26, 1886. Serial No. 211,867. (No model.)



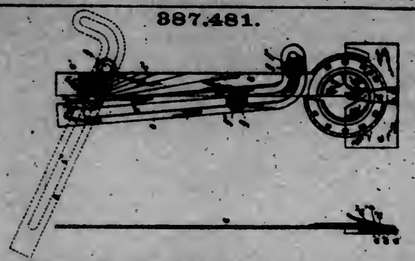
Claim.—1. In a bloating-needle, in combination with the hollow shank closed at its lower end provided with a puncturing-point and having an opening in its side, the tube within such shank having an opening adapted to be brought into and out of coincidence with the opening in the shank side by turning the tube, substantially as and for the purpose set forth.

2. In a bloating-needle, in combination with the tubular shank having the puncturing-point and the opening in its side, the tube within the shank having the opening in its side, and means, substantially as described, for limiting the rotation of the tube within the shank, substantially as and for the purpose described.

3. In combination with the tubular shank having the puncturing-point, the opening C, and the slot A, extending in a plane at right angles to the axis of the shank, the tube within the shank having the opening G, and the pin on the tube engaging the slot in the shank, so as to prevent longitudinal movement of the tube within the shank, as well as limit its rotation in the latter, substantially as and for the purpose specified.

887,481. PROTRACTOR. Gurdat Allshorn, Waltham, Mass., assignor of one-half to John Stark, same place. Filed May 4, 1888. Serial No. 272,897. (No model.)

887,481.

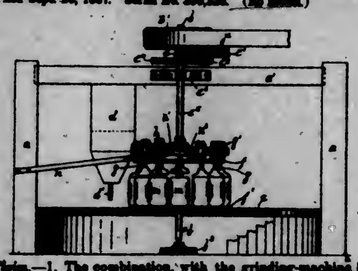


Claim.—1. The rectangular bed-plate *a*, having the semicircular recess *a'*, combined with the open graduated and beveled ring *b*, its rule *c*, and the spring locking device *d d'*, as and for the purpose set forth.

2. The graduated beveled ring *b* and the graduated rule *c c'*, secured to it, in combination with the detachable and adjustable slotted blade *e f f'* and its fastening bolts and nuts *f' f' f'*, as and for the purpose set forth.

3. The rectangular bed-plate *a*, having the semicircular recess *a'* and side recesses or depressions, *a'' a''*, combined with the open graduated and beveled ring *b*, its rule *c*, and spring locking device *d d'*, as and for the purpose set forth.

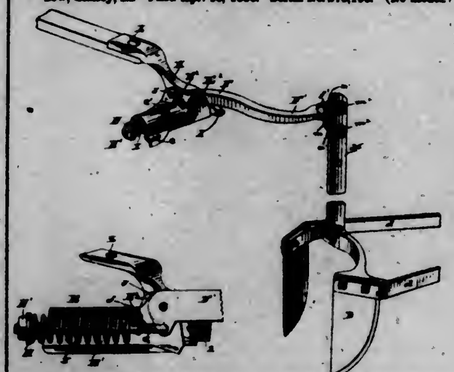
887,482. GRINDING-MACHINE. Rudolph B. Ball, Buffalo, N. Y. Filed Sept. 20, 1887. Serial No. 250,324. (No model.)



Claim.—1. The combination, with the grinding-machine having the revolving grinding-disk *c*, the revolving rack *f'* for the jars, and the revolving rack *f*, having seats *f''* and carrying the series of movable weights *h*, and holders *k*, of the rod *n*, having the long curved incline *n'* and the curved end *n²*, substantially as and for the purpose stated.

2. In a grinding-machine for glass jars, &c., the combination, with the inclines *n' n²*, of the rack *f*, on which are the seats *f''*, the weights *h*, and holders *k*, the weights *h* being provided with grooves *f'* to receive the ribs *f''* of the seats *f''*, substantially as and for the purpose stated.

887,488. COVERING-SHOVEL FOR PLANTERS. Joseph C. Barlow, Quincy, Ill. Filed Apr. 10, 1888. Serial No. 270,168. (No model.)



Claim.—1. The combination, with a planter and a cover-shovel, of a spring interposed in the connection between them, and a lever operating to raise the shovel against the tension of the spring, substantially as described.

2. In a planter, the combination, with a cover-shovel, of a spring operating to force the shovel toward the ground, and a lever operating as a stop to limit the motion of the shovel and arranged to be operated to raise the shovel against the spring, substantially as described.

3. In a planter, the combination, with the cover-shovel, of a supporting-link for the latter, a lever to which the link is connected, a spring operating upon said lever, a lever for acting upon the lever connected to the link and arranged to be operated to cause the lifting of the shovel against the spring, substantially as described.

4. In a planter, the combination, with the shovel, of a supporting-link for the same, a lever connected to the link, and a spring operating to depress the shovel, a stop to limit the downward movement, and a lever projecting beneath the lever connected to the link and arranged to be operated to cause the raising of the shovel against the spring, whereby the shovel can be raised independently of the last-mentioned lever or by means of it, substantially as described.

5. In a planter, the combination, with the cover-shovel, of a supporting-link, a lever, a spring operating upon the same, means for adjusting the tension of the spring, a stop, and a slotted loose connection between said link and lever, substantially as described.

6. In a planter, the combination, with the cover-shovel and a link connected therewith having an elongated eye thereon, of a lever for adjusting the link engaging said eye, substantially as described.

7. In a planter, the combination, with the cover-shovel, of a link connecting thereto, a lever, a spring operating upon said lever, a stop for the lever, and a slotted loose connection between said lever and link, substantially as described.

8. In a planter, the combination, with the cover-shovel, and a link connected therewith having the adjustable elongated staple or eye secured thereto, of a lever for operating upon the link engaging said eye, substantially as described.

9. In a planter, the combination, with the cover-shovel, of a supporting-link connected to the same, the pivoted bell-crank lever, one arm engaging the link and the other operated upon by the spring, said spring, and a stop for limiting the movement of the lever, arranged to hold the shovel with a yielding pressure, substantially as described.

10. In a planter, the combination, with the cover-shovel, of a link connected to the same, the pivoted bell-crank lever, one arm engaging the link and the other operated upon by the spring, said spring, and a pivoted lever engaging said bell-crank lever to raise the shovel, substantially as described.

11. In a planter, the combination, with the cover-shovel, of a link connected thereto, the base-casting, the bell-crank lever pivoted thereon, one arm connected with the shovel-link and the other with a draft-link having a projection thereon, a spring between the projection and the casting, and a lever arranged to operate upon the bell-crank to raise the shovel against the spring, substantially as described.

12. The improved attachment for planters for adjusting the cover-shovels, consisting of a base-casting having mounted upon it a spring-operated lever adapted to be connected to the shovel, and a lever independent of the first-mentioned one arranged to engage the same and operate it, substantially as described.

387,484. SULKY-PLOW. Jacob H. Barr, Mansfield, Ohio. Filed Jan. 13, 1888. Serial No. 260,652. (No model.)

Claim.—1. In a sulky-plow, the combination, with the axle, plow-beam, and standard, of the lever M, connecting-links E G, bell-crank F, nut H, and adjustable wheel shank or bar I, substantially as shown and described.

2. In a sulky-plow, the combination, with the beam A and tongue O, of the hinge-block J, plates T T, adjustable bar I, and nut H, as and for the purpose set forth.

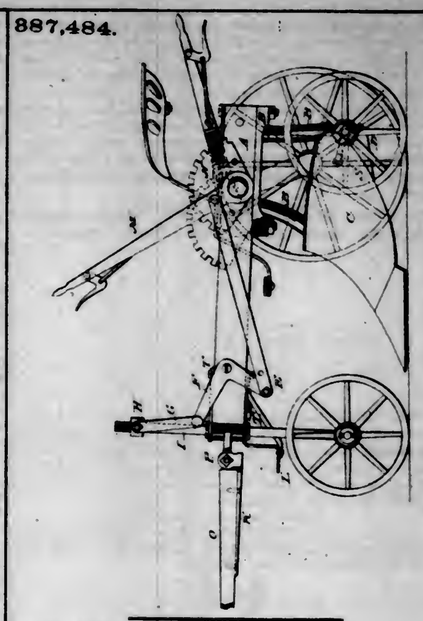
3. In a sulky-plow, the combination, with the beam A and tongue O, of the hinge-block J, plates T T, adjustable bar I, nut H, link G, crooked lever F, connecting-bar E, lever M, and segmental rack N, substantially as described.

4. In combination with the plow-beam and tongue, the double hinge-block J, having a square aperture, and the squared wheel shank or bar I, substantially as shown and described.

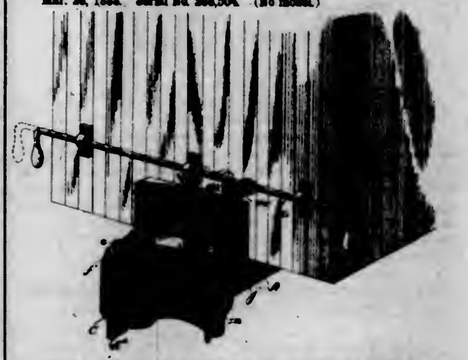
5. In a sulky-plow, the combination, with the beam A and tongue O, of the plate K, having lugs P P, hinge-block J, and plates T T, as and for the purpose set forth.



387,484.



387,485. CAR-COUPLING. Nicholas Barr, Cayuta, N. Y. Filed Mar. 26, 1888. Serial No. 268,504. (No model.)



Claim.—1. In a twin-jaw coupler, the combination of the coupling-head, a movable jaw provided with a heel pivoted in said head, said heel having a notch or projection on the front side of its rear end, and said coupling-head having a vertical passage through the same provided with a shoulder at its lower portion, a locking-pin confined in said passage and provided with a tongue longitudinally located on the same, said tongue being beveled on its lower edge and adapted to engage the notched end of the pivoted jaw and said shoulder, and an uncoupling-pin extending through said head and provided with a laterally-extending arm engaging the lower end of the locking-pin, as set forth.

2. In a twin-jaw car-coupler, the combination of the coupling-head provided with a downwardly-extending hollow or chambered portion, the movable jaw pivoted in said head, the vertically-operating locking-pin confined in a chamber or passage in the head and extending into said downwardly-extended portion when said jaw is locked, an uncoupling-pin operating vertically through the head and provided with a lateral arm located in said hollow extension and adapted to engage the lower end of the locking-pin, when the same is extended into said hollow extension below its passage.

3. The combination, with the coupling-head provided with a downwardly-extending chamber or hollow portion, of the pivoted jaw, locking-pin, uncoupling-pin, and mechanism for operating the uncoupling-pin, said hollow extension forming a guide and protecting the locking-pin, uncoupling-pin, and their attachments from injury, in the manner set forth.

4. In a twin-jaw car-coupling, the combination, with the coupling-head and the rigid jaw, of the movable jaw pivoted to the coupling-head, and a rod extending beneath said coupling-head and engaging the movable jaw; whereby, when said jaw is uncoupled, it can be thrown open or closed, substantially as described.

5. The combination, in a twin-jaw car-coupler, of the coupling-head provided with a substantially circular recess or chamber, a movable jaw provided with a laterally-extending heel pivoted in the head, a block located in said circular chamber and provided with an opening in which the end of said heel normally extends, and a locking-pin vertically operating in the head and extending through said circular chamber and forming the pivot upon which the block turns when operated by the end of the movable jaw, for the purpose and in the manner substantially as described.

6. The combination, with the coupling-head, the movable or coupling jaw, and a locking-pin, of a rotatory block operated by the movable jaw, and whereby the locking-pin is held suspended when the jaw is swung out, but when the jaw is swung inwardly it operates the block to automatically drop the locking-pin into position, locking said jaw, substantially as described.

7. In a twin car-coupler, the combination of the coupling-head provided on one side with the rigid jaw, the movable jaw pivoted in the opposite side of the head, a downwardly-extending lug on the under side of the movable jaw, a rod extending beneath the head and engaging said lug, whereby the movable jaw can be thrown open or closed when uncoupled, and a locking-pin to engage the rear end of the movable jaw and lock the same, substantially as described.

8. In a twin-jaw car-coupler, the combination of the coupling-head, the movable jaw provided with a heel pivoted in the coupling-head, a passage extending vertically through said head, a locking-pin loosely confined in said passage and engaging the end of said heel, a chambered or hollow extension at the lower side of the head and into which said vertical passage opens and the end of the locking-pin extends when the coupling-jaw is locked, a vertically-movable uncoupling-pin extending loosely through the head and provided with a lateral arm in the hollow extension and engaging the end of the locking-pin, and a transverse rock-shaft journaled at the end of the car and connected with the uncoupling-pin, whereby, when the shaft is turned, the uncoupling-pin is raised and its lateral arm lifts the locking-pin from engagement with the movable jaw, substantially as described.

9. In a twin-jaw car-coupling, the combination of the coupling-head provided with the rigid jaw and a movable jaw, the movable jaw being provided with a heel pivoted and normally resting in the coupling-head, a vertically-operating locking pin or key, a vertically-operating uncoupling-pin confined loosely in the coupling-head and provided with a laterally-extending arm engaging the lower end of the locking key, a longitudinally-movable rock-shaft journaled at the end of the car, an upwardly-inclined toe on the rock-shaft, and a chain or link loosely connecting the uncoupling-pin and said toe, substantially as described.

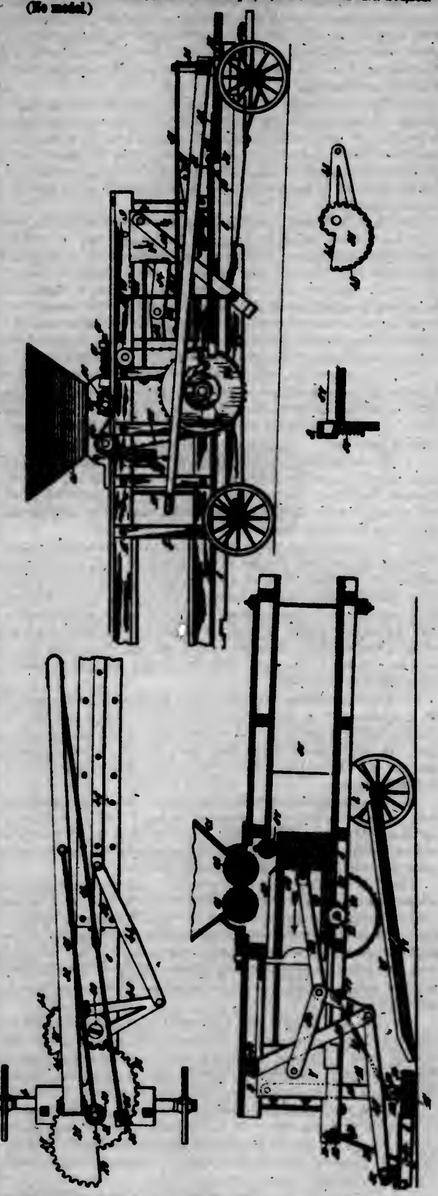
10. In a twin-jaw car-coupler, the combination of the draw-head, the coupling-jaw, the coupling-pin provided with a locking-tongue to engage the coupling-jaw heel and lock the jaw, said coupling-pin operating vertically and loosely confined in a passage extending through the head and projecting below the lower end of said passage when its locking-tongue is holding the coupling-jaw, an uncoupling-pin extending loosely through the head, and an arm secured to the lower end of said pin and extending laterally from the same beneath the lower end of said passage for the locking-pin, and upon which the end of said locking-pin rests when the jaw is coupled, and whereby the jaw is uncoupled by raising the lateral arm until the lower end of the locking-pin is withdrawn into its passage and its tongue lifted from engagement with said jaw.

11. The combination, in a twin-jaw car-coupler, of a movable jaw pivoted, as shown, and provided with a heel or lateral projection, a locking-pin, and a cylindrical rotary block having a flange arranged in such manner that said flange will hold the locking-pin in a suspended position when the car is uncoupled, substantially as described.

12. The combination, with the coupling-head provided with a socket or recess, a movable jaw provided with a heel pivoted in said recess, and a locking-pin, of the herein-described block pivoted in said head and provided with a recess into which the end of said heel is adapted to extend, whereby, when the jaw is uncoupled and the heel swung outwardly, it turns said pivoted block to allow the heel to pass out and to hold the locking-pin from dropping, and when the jaw is swung inwardly the block is turned to drop the locking-pin and close the opening into said socket or recess, in the manner and for the purpose as set forth.

13. In a twin-jaw car-coupler, the combination of the draw or coupling head, the movable or coupling jaw pivoted to the same, the locking-pin operating vertically in a passage extending through the draw-head and adapted to extend below the lower open end of the passage when in locked position, an uncoupling-pin operating vertically through the draw-head, and a lateral arm carried by the lower end of the uncoupling-pin and extending beneath the lower end of the locking-pin and adapted to engage the same and raise it from the locking position, for the purpose substantially as described.

387,486. BALING-PRESS. Henry P. Blank and Henry W. Shumaberger, Quincy, Ill. Filed Apr. 11, 1888. Serial No. 270,332. (No model.)



Claim.—1. The combination, in a press having a horizontally-movable plunger and the plunger-actuating levers, of a slide-bar supported in a horse-power sill and pivotally connected to the main plunger-lever, a vibratory toggle-arm pivoted to said slide-bar, a variable

scroll-gear pivoted to the horse-power sill and having a toggle-arm pivoted to the vibratory toggle-arm, an S-shaped variable gear also pivoted to the power-sill and meshing with the scroll-gear, and a sweep having a pull-rod connected with the S-shaped variable gear, substantially as described.

2. The combination, with a press-body supported on wheeled axles and having a horizontally-movable plunger, of a horse-power sill connected with the forward axle and adapted to be moved back beneath the press for transportation and to be disconnected from the press-frame and moved forward with the front axle in advance of the press, a horse-power mechanism mounted on said sill and connected with the plunger-levers, and a movable frame for supporting the forward end of the press-body when the front axle and horse-power are disconnected from the press and moved forward for operation, substantially as described.

3. The combination, in a press having a horizontally-movable plunger and the plunger-actuating levers, of a horse-power sill arranged in line with the press at its forward end, a frame attached to the press to support its forward end and form an abutment for the horse-power sill, and a bail suspended from the press-frame and extended beneath and on each side of the horse-power sill to brace the same, substantially as described.

4. The combination, with a press supported on wheeled axles and a horse-power mechanism for actuating the press-plunger, of a sill to support said horse-power mechanism, said horse-power sill being attached to the forward axle and capable of being moved in front of the press for operation and beneath the press for transportation, and an inclined plane hinged to the rear axle and extended forward beneath the press-frame to receive the horse-power sill, and a frame for supporting the forward end of the inclined plane when the power-sill is moved back beneath the press, substantially as described.

5. The combination, with the press-chamber of a press having a horizontally-movable plunger, of a yielding roller journaled above the entrance to the baling-chamber for the purpose of rolling the loose part of the material inward as it enters the baling-chamber, substantially as described.

6. The combination, with a baling-chamber, a feed-chamber, and a horizontally-movable plunger, of a hopper located above the feed-chamber, feed-rollers located in said hopper, and gearing for actuating said rollers from the plunger only while the plunger is being moved away from the baling-chamber, substantially as described.

7. The combination, with a baling-chamber, a feed-chamber, and a horizontally-movable plunger having a cogged rack, of a hopper located above the feed-chamber, a horizontally-yielding feed-roller and a non-yielding feed-roller journaled in said hopper, said feed-rollers being provided with sprocket-gears, a shaft having a pinion meshing with said rack, a ratchet-wheel secured to the pinion-shaft, a sprocket-wheel loosely mounted on the pinion-shaft and carrying a pawl to engage the ratchet-wheel, and a chain to connect the sprocket-gears, substantially as described.

8. The combination, with the baling-chamber 55, feed-chamber 59, and hopper 61, of the plunger 53, having a cogged rack, 69, the shaft 71, having a pinion, 70, and ratchet-wheel 72, the loose sprocket-wheel 74, having pawl 73, the feed-rollers 62 and 63, provided with sprocket-gears 64 and 65, the idler 76, and the chain 75, substantially as described.

9. The combination, with the horizontally-movable plunger 53, of the plunger-levers 48 and 52, connected by bars 51, the pivoted hangers 49 and 54, for suspending said levers, the slide-bar 45, pivotally connected with the lever 48, and a horse-power mechanism for actuating said slide-bar, substantially as described.

10. The combination, with a portable press-frame mounted on wheels and a horse-power sill, 6, attached to the forward axle and adapted to be moved from beneath the press-frame, of a swinging frame, 12, pivoted to the press-frame and having a cross-bar, 14, to support the rear end of the extended horse-power sill, said swinging frame being also adapted to support the forward end of the press when the front axle is moved forward to extend the horse-power sill, substantially as described.

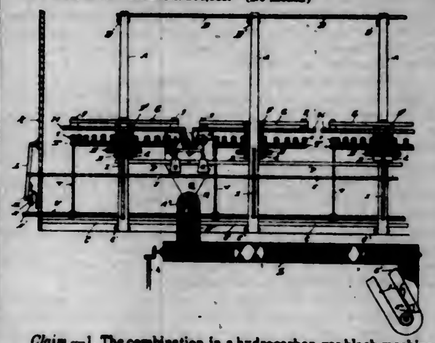
11. The combination, with a portable press-frame mounted on wheels and a horse-power sill, 6, attached to the forward axle, of the inclined plane 77, hinged to the rear axle and projecting forward beneath the press, the swinging frame 12, having a cross-bar, 14, and the brace-rods 16, substantially as described.

12. The combination, with the press-frame and the horse-power sill 6, of the swinging frame 12, having a cross-bar, 14, and braces 15 and 16, and the bail 21, attached to the bolster 22 of the press-frame and engaging legs or pins 24 on the sides of the power-sill, substantially as described.

13. The combination, with a portable press-frame adapted to be supported and transported on wheeled axles, of a horse-power sill attached to the forward axle, which is detachable from the press-frame, whereby said axle can be moved forward to extend the horse-power sill and be moved back to push the horse-power sill beneath the press-frame, a swinging frame attached to the forward end of the press to support said press when the horse-power is extended or moved forward, said swinging frame being also adapted to assist in supporting the horse-power, a horizontally-movable plunger mounted in the press-frame, and a horse-power mechanism mounted on the movable lower-sill to actuate said plunger, substantially as described.

387,487. APPARATUS FOR MANUFACTURE OF LAMP-BLACK.

ARTHUR B. BLOOD, WESTON, BRYANT H. BLOOD, Ludlow, and EMERSON B. BLOOD, Ludlow, administrator of HENRY B. BLOOD, deceased, late of Ludlow, Pa.; said BRYANT H. BLOOD assignor to said ARTHUR B. BLOOD. Filed Mar. 30, 1888. Serial No. 268,812. (No model.)



Claim.—1. The combination, in a hydrocarbon-gas black machine, of a horizontal rotating deposit-ring, with an annular row of gas-burners arranged centrally under said deposit-ring, and scrapers operating to automatically remove the black from the rotating deposit-ring, substantially as and for the purpose set forth.

2. The combination, in a hydrocarbon-gas black manufacturing and handling apparatus, of horizontal rotating deposit-rings, gas-burners and scrapers arranged under said deposit-rings, with boxes for receiving the black removed from the deposit-rings, and conveyors for conveying the black from the boxes to a conveyor outside of the building, substantially as and for the purpose set forth.

3. The combination, in a hydrocarbon-gas black machine, of a series of upright posts, A, supporting rotating deposit-rings H, and ratchet-wheels E secured thereto, with ratchet-arms I, horizontal reciprocating bars J, pivoted to the ratchet-arms I, levers L, and cam mechanism M N, substantially as and for the purpose set forth.

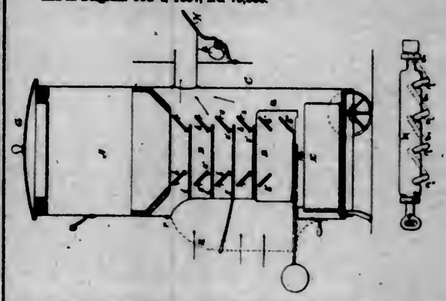
4. The combination, in a hydrocarbon-gas black machine, of a series of horizontal rotating deposit-rings, H, and gas-burners *t* under said deposit-rings, with black-receiving boxes O, scrapers *h*, and screw-conveyers R, for conveying the contents of the boxes O away, substantially as and for the purpose set forth.

387,488. PAINT-VEHICLE. HANS BOSSHARD, New York, N. Y.

Filed July 28, 1887. Serial No. 245,547. (No specimens.)

Claim.—A binding material for water-color, consisting of alkali, water, casein, and an oleaginous body, substantially in the proportions specified.

387,489. GRATE FOR STOVES OR OTHER HEATING APPARATUS. HENRY CARR, Paris, France. Filed Jan. 19, 1888. Serial No. 261,270. (No model.) Patented in France July 27, 1887, No. 185,098, and in Belgium Oct. 4, 1887, No. 79,060.



Claim.—1. The combination, with the side frames of the fire-box, of the grate-bars disposed in two vertical series and pivoted in the side frames of the fire-box, and the means for rocking said bars on their pivots, substantially as described.

2. The combination, with the grate-bars in the upper part of the fire-box, of the removable carriage constituting the lower part of the fire-box, said carriage being provided with grate-bars, forming continuations of the series in the upper part of the fire-box, substantially as described.

3. The fire-box provided with a movable carriage at the bottom and composed of removable bars between side walls, the latter being provided with grooves and the said carriage having a dumping-bottom, in combination with the separator and the hopper, substantially as described.

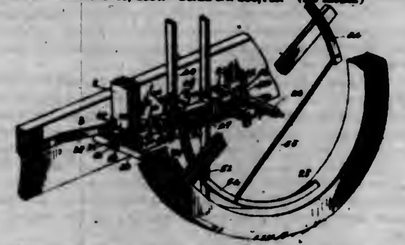
4. The combination, with the side walls of the fire-box, of the grate-bars arranged one above the other in two series, the side walls of the fire-box being provided with horizontal grooves between the several bars of each series, and the separator-plate adapted to be inserted in said grooves, substantially as described.

387,490. HELIOGRAPHIC ENGRAVING. GEORGE W. CAHLBAR, Washington, D. C. Filed Sept. 17, 1887. Serial No. 250,058. (No specimens.)

Claim.—1. The method of producing a heliographic-printing plate, which consists in covering the plate with an acid resist, cutting a series of lines or dots through said resist, then etching to this resist, as a substratum, a previously exposed and developed picture-bearing film, and finally etching the same, substantially as set forth.

2. The method of producing a heliographic-printing plate, which consists in covering the plate with an acid resist, cutting a series of lines or dots through said resist, flowing with a sensitive solution, and then, after drying, exposing under a positive and developing the same, submitting the plate to the action of the etching-acid, substantially as set forth.

387,491. HORSE-POWER. ORRIN A. CHAPMAN, Shawneetown Point, Iowa. Filed Oct. 20, 1887. Serial No. 252,762. (No model.)



Claim.—1. In a horse-power, the combination of the confining-box, the sides of which diverge toward the rear end, and an endless bridge.

2. In a horse-power, the combination, with the confining-box having an endless traveling bridge, of a band-wheel upon the side of the box, two curved arms pivotally secured upon diametrically-opposite spokes of the wheel, a rod connecting the short end of one of the arms with the long end of the other arm, a bell-crank upon one of the spokes of the wheel, a rod connecting the short end of the second curved arm with the bell-crank, a sleeve upon the hub of the wheel engaging with the other arm of the bell-crank, and a brake connected with the sleeve.

3. In a horse-power, the combination, with the confining-box having an endless traveling bridge, of a band-wheel upon the side of the box, a block secured to the side of the box near the periphery of the wheel, a flat bar adjustably attached to the block, the outer end of which is bent forwardly upon the outer side of the periphery of the wheel, and a movable brake attached to the block, the outer end of which is bent and adapted to be forced against the inner side of the periphery of the wheel.

4. In a horse-power, the combination, with the confining-box having an endless traveling bridge and a band-wheel upon the side of the box, of a slotted bar adjustably secured to the side of the box, the outer end of which is bent upon the outer side of the wheel, and a spring-actuated brake also secured to the side of the box, the outer end of which is bent and adapted to be forced against the inner side of the wheel.

5. In a horse-power, the combination, with the confining-box having an endless traveling bridge and a band-wheel upon the outer side of the box, of a brake-lever pivotally secured to the side of the box, a brake-shoe connected with the outer end of the lever, and an automatic regulating device adjustably connected with the other end of the lever.

6. In a horse-power, the combination, with the confining-box having an endless traveling bridge and a band-wheel upon the side of the box, of two arms or levers pivotally secured to the side of the box near the periphery of the wheel, a brake-shoe attached to the outer end of one of the levers, and a sleeve upon the hub of the wheel adapted to engage with the opposite end of the other lever, the inner ends of said levers being adjustably connected with each other.

7. In a horse-power, the combination, with the confining-box having an endless traveling bridge and a hand-wheel upon the side of the box, of two levers pivotally secured upon the side of the box, a brake-shoe secured to the outer end of one of the levers, and an adjusting-screw secured to the inner end of the same lever, a spring secured to the inner end of the other lever near its pivotal point, a handle upon the side of the box, and a rod near its lower end, the outer end of which engages with the spring.

8. In a horse-power, the combination, with the confining-box having an endless traveling bridge and a wheel upon the side of the box, of a sleeve upon the hub of the wheel, two levers pivotally secured to the side of the box, the inner end of one of which is bifurcated and engages with the sleeve, a lip upon the under side of the lever, a brake-shoe upon the outer end of the other lever, the inner end of said second lever engaging with the lip of the first-mentioned lever, a handle or lever upon the side of the box, and a hook pivotally secured to the handle and adapted to engage with the first-mentioned lever.

387,492. PROCESS OF EXTRACTING GOLD AND SILVER. RUSSELL D. CLARK, Cortez, Nev. Filed Dec. 19, 1887. Serial No. 258,494. (No specimens.)

Claim.—The improvement in chloridizing gold or gold and silver in ores, consisting in mixing protosulphide of iron or of copper, also known as "matte," with the ore and salt, and roasting the same together preparatory to the subsequent leaching and amalgamating processes, substantially as herein described.

387,493. CARTRIDGE. ALFRED W. CORNELIUS, Washington, D. C. Filed June 6, 1888. Serial No. 276,102. (No model.)



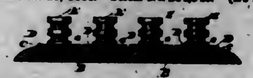
Claim.—1. As an improved article of manufacture, a cartridge-shell provided with an opening or slot in its wall near its mouth, said opening being adapted to receive and seat the periphery or edge of a wad and to hold said wad in place.

2. In combination with a shell provided with an opening or slot (one or more) in its wall, a wad provided with a projection on its periphery to fit the opening on the shell.

3. In combination with a shell, A, provided with angular openings B B in its walls, a wad, C, provided with tongues or projections D D, adapted to fit into the openings B B.

4. A cartridge-shell provided with an angular opening or slot in its wall near its mouth, said opening being adapted to receive and seat the periphery or edge of the wad and hold the latter in place.

387,494. VIOLIN TAIL-PIECE. JEAN B. DANDELIN, Fall River, Mass. Filed Feb. 20, 1888. Serial No. 264,542. (No model.)



Claim.—1. A tail-piece for violins, provided with a screw-actuated pressure-plate, substantially as described.

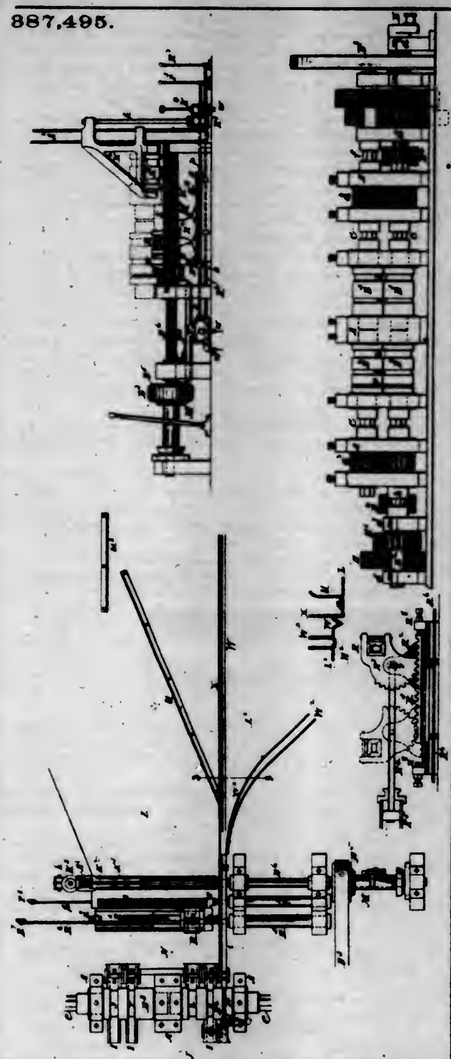
2. A tail-piece for violins, provided with a screw-threaded plate on the under side of the same and on its upper side with packing, pressure-plate, and screw, substantially as described.

387,495. ROLLING-MILL. FRED H. DANIELS, Worcester, Mass. Filed Jan. 31, 1887. Serial No. 226,026. (No model.)

Claim.—1. A rolling-mill having a plurality of sets of rolls, each set composed of two pairs of rolls, with driving mechanism for rotating the pairs in opposite direction, said sets of rolls being disposed with their passes in line for advancing the bar in either direction through the several sets in duplex or continuous order, substantially as described, whereby each introduction of the product backward or forward gives a plurality of passes for reduction.

2. A rolling-mill having a plurality of sets of two-high rolls arranged in double pairs with their reducing-passes in substantially the same horizontal plane, disposed one set in front of the other for operating in duplex order, and the respective pairs of rolls at the right and left in each set rotating in opposite directions for giving backward and forward passes of the bar, and means, substantially as described, for directing the bar across the space between the rolls, and mechanism for imparting motion to said rolls, substantially as set forth.

387,495.



herein described, for giving double backward and forward passes, the rolls combined with a system of guides for conducting the bar across the space between the sets of rolls, and a shifting device for carrying the bar laterally from the position of its exit to a position for its entrance into the roll-passes, substantially as set forth.

7. In a rolling-mill, the combination of a plurality of sets of rolls arranged in double pairs, end to end, rotating in opposite directions, with the bite of the rolls substantially in the same plane, the product to be carried through the duplex passes in one direction in one series of pairs of rolls and back through another series, and a laterally-movable oscillating carrier-guide for shifting and turning the end of the bar when reversing the feed thereof, substantially as set forth.

8. The combination, with the reducing-rolls, and the feeding-roll K, disposed in relation thereto as described, of the presser-roll K', having a groove for the reception of the bar and mounted on the overhanging vertically-reciprocating bracket K^3, substantially as and for the purpose set forth.

9. The combination, substantially as hereinbefore described, of the reducing-rolls disposed in oppositely-rotating pairs, the feed-roll K, with driving mechanism for rotating the same, the presser-roll K', the upwardly and downwardly movable bracket K^3, overhanging one end of said feed-roll and supporting the journals of said presser-roll, the guiding-standard A', the hydraulic cylinder K^4, piston-rod *k*, connected with said bracket, and the valve K^5, for the purposes set forth.

10. In a rolling-mill adapted for reducing bars by forward and backward end and end feeding, the combination, with the reducing-rolls, of the fenders U U', arranged substantially as set forth, and for the purposes specified.

11. In a rolling-mill arranged for the back and forth feeding of the bar, the combination, with the reducing-rolls, of a feed-roll over which the bar is projected, a presser-roll, and means for raising and depressing the same, and a diagonally-disposed fender for deflecting the advancing end of the bar, and a hydraulic carrier for shifting the rear end of the bar laterally from the pass of one pair of rolls to the pass of the other pair of rolls, substantially as set forth.

12. The combination, with the reducing-rolls, of an entering-guide and guide-carrier adapted for partial rotation for turning the bar, and means for rotating said guide-carrier and guide, substantially as and for the purpose set forth.

13. The combination, with the reducing-rolls and rolls for feeding the bar to the pass of said reducing-rolls, of an entering-guide and guide-carrier adapted for partial rotation for turning the bar, a rack for rotating said guide-carrier and guide, and means for effecting movement of said rack, substantially as and for the purpose set forth.

14. The combination, with the reducing-rolls in a rolling-mill, of a twisting-guide adapted for turning the bar before entering the reducing-pass of said rolls, and a feeding-in mechanism for advancing the bar through said guide, substantially as and for the purpose set forth.

15. The combination, with reducing-rolls, of the guide-carrier R', the reciprocating supporter R^2, the rack R^3, mounted to slide on said supporter and engaging with said guide-carrier, stops for engaging said rack, and means for imparting reciprocative action to said supporter and carrier, substantially as and for the purpose set forth.

16. In a rolling-mill for reducing bars by forward and backward end and end passage, the combination, with the reducing-rolls, of a reciprocating guide or carrier for shifting the bar laterally, an operating cylinder, piston, and connections, and means for automatically closing the cylinder-valve when said shifting-carrier has reached its desired limit of action, substantially as set forth.

17. The combination, with the oscillating guide-carrier R', its shifting supporter R^2, provided with an engaging-lug, of the operating-cylinder R^5 and connecting-rod, and the valve-controlling rod R^6, provided with collars or lugs, substantially as and for the purpose set forth.

18. The combination, in a rolling-mill, of a plurality of sets of reducing-rolls disposed in oppositely-rotating pairs, with the bite or passes of said rolls in substantially the same plane, driving mechanism imparting motion thereto, an intermediate platform, and guides between the sets of rolls, a receiving-platform upon which the bar is projected as it runs from the rolls, a feed-roll arranged across said platform, a presser-roll in front of the entering-pass, and means for operating the same for forcing the bar down upon said feed-roll, a movable carrier for shifting the end of the bar laterally of said platform, an actuating cylinder and piston connected with said carrier, and valve-operating mechanism to control the pressure in said cylinder, substantially as hereinbefore set forth.

19. The combination, in a rolling-mill, of a plurality of sets of reducing-rolls disposed in oppositely-rotating pairs, with the bite or passes of said rolls in substantially the same plane, driving mechanism for imparting motion thereto, a support for the bar between the rolls, a receiving-platform upon which the bar is projected as it runs from the rolls, a diagonally-disposed fender, and a reversing-fender fixed upon said platform, a laterally-movable carrier for shifting the end of the bar laterally of said platform, an actuating cylinder and piston connected with said carrier, and valve-operating mechanism to control said cylinder, substantially as hereinbefore set forth.

20. The combination, in a rolling-mill, of a plurality of sets of reducing-rolls disposed in oppositely-rotating pairs, with the bite or passes of said rolls in substantially the same plane, means, such as described, for operating said rolls, a support, and guides for directing the bar between the several sets, a receiving-platform upon which the bar is projected as it runs from the rolls, a feed-roll arranged across said platform, a presser-roll in front of the entering-pass, and means for operating the same to force the bar down upon said feed-roll, a diagonally-disposed fender, and a reversing-fender fixed upon said platform, an actuating cylinder and piston connected with said presser-roll, and valve-operating mechanism to control the pressure in said cylinder, substantially as hereinbefore set forth.

21. In a rolling-mill, the combination of a plurality of sets of reducing-rolls severally comprising a plurality of oppositely-rotating pairs of rolls, with intermediate guides disposed for operation upon the bar in duplex order, a pair of feed-rolls at either side of said mill, a driving-shaft, as D, provided with gearing F H, and pulleys D^4, auxiliary gear-shafts F^5 H^5, coupled with the respective roll-shafts, belts D^5, pulleys D, and clutch mechanism M, substantially as and for the purpose set forth.

22. The reciprocating carrier P, the cylinder P', and piston connecting-rod, the valve V, valve-rod *p*, provided with collars S, engaging-lug P^4, and actuating-lever P^5, in combination with the feed-rolls K K' and reducing-rolls in a rolling-mill, substantially as and for the purpose set forth.

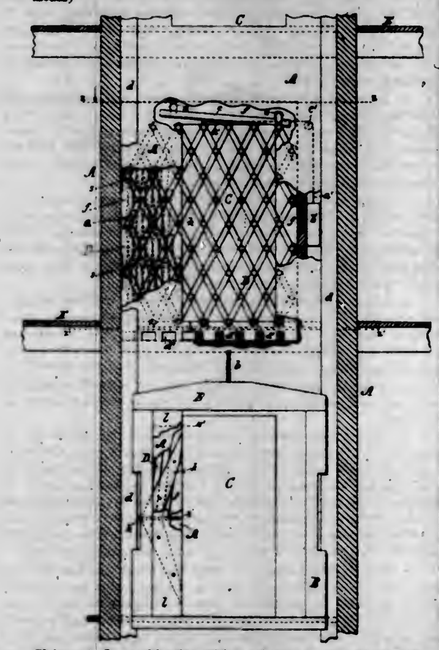
3. A rolling having a series of pairs of rolls, as B^7 B^8, for giving forward passes, and a series of pairs of oppositely-rotating rolls, as B^2 B^4, arranged end to end, with operating-gearing for the several pairs at the right and left, respectively, and a main driving-shaft, D, provided with gearing for simultaneously operating all of the respective pairs of rolls at the requisite speeds for reducing the bars in their back-and-forth passes, substantially as described.

4. A rolling-mill having a plurality of sets of rolls arranged one in front of the others to work in duplex or continuous order, in combination with a bar-supporting platform arranged parallel with the axial plane and extending across the space between the respective sets of rolls adjacent to the plane of their reduction-passes, substantially as and for the purpose set forth.

5. A rolling-mill having a plurality of sets of rolls, each set composed of two oppositely-rotating pairs of rolls disposed with the pairs of rolls in one set in front of correspondingly-rotating pairs in the other sets to work in continuous or duplex order, in combination with guides leading across the space between the sets in alignment with the passes of the rolls, and means for rotating said rolls for effecting backward and forward passage of the bar, substantially as set forth.

6. A rolling-mill the rolls in which are arranged, in the manner

387,496. DOOR-GUARD FOR ELEVATOR-WELLS. ORION L. DAVIS, Rochester, N. Y. Filed Dec. 5, 1887. Serial No. 257,003. (No model.)



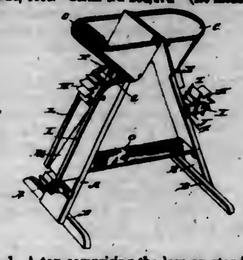
Claim.—1. In combination with an elevator-car provided with a vertical cam, a movable gate for a doorway of the well hinged or pivoted at one side of said doorway and provided with a projecting pin to be acted upon by said cam to move said gate toward one side, and a spring or springs bearing upon said gate, so as to move the latter in the opposite direction, substantially as shown and described.

2. A laterally-operating gate of the lazy-tongs form for an elevator-well, consisting of slats crossing each other and joined by pivot-pins at the points of intersection, said gate being provided with a projecting pin, in combination with a lever pivoted to the wall of the well in position to bear upon said pin, and an elevator-car provided with a cam to act upon said lever, said wall of the well being formed with a slit, *i*, and a rest for said pin, substantially as shown and described.

3. In combination with an elevator-car provided with a vertical cam, a laterally-expansible gate for a doorway of the well hinged or pivoted at one side of said doorway and provided with a projecting pin to be acted upon by said cam, an inclined track, and a supporting-roller for the gate resting upon said track, substantially as shown.

4. A gate for the doorway of an elevator-well, consisting of oppositely-inclined slats crossing each other and joined by pivot-pins at the points of intersection, said gate being held at one side of said doorway and provided with a projecting pin, in combination with a car having a vertical cam to act upon said projecting pin, and springs connecting said adjacent pivot-pins in vertical lines, so as to draw said connected pivot-pins toward each other to close the gate, substantially as described.

387,497. SAND-MILL. JAMES T. DEBARDT, Englewood, N. J. Filed Mar. 26, 1888. Serial No. 268,474. (No model.)

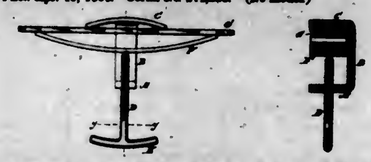


Claim.—1. A toy comprising the legs or standards hinged together at their upper ends and provided with transverse bars or feet at their lower ends, the hopper secured to the upper ends of the legs, and the wheels mounted thereon below the hoppers, as set forth.

2. The combination of the inclined standard, the hopper secured to the upper end of the same, the grooved guide-plate secured to the standard below and adjacent to the lower end of the hopper, the parallel plates secured to the standard below said guide-plate, the wheel journaled between the upper ends of said plates, the deflecting-plate secured between said parallel plates below the wheel, and the wheel mounted on the standard below and adjacent to the lower ends of the parallel plates and the deflecting-plate, substantially as specified.

3. A toy comprising the legs or standards hinged together at their upper ends and carrying the hoppers, and the wheels below the hoppers, and the feet at the lower ends of the legs, and the straps O, connecting the legs, as set forth.

387,498. BENDING-TOOL. DANIEL DEBLIEBRE, Brooklyn, N. Y. Filed Apr. 19, 1888. Serial No. 271,262. (No model.)



Claim.—1. The combination of the bar B, having the jaw C and arm A, the jaw F, of a length greater than the jaw on the bar, and an actuator, D, for advancing one jaw toward the other, substantially as described.

2. The combination of a frame open at one side and comprising a jaw, C, and actuator D, and a longitudinally-curved jaw, F, of greater length than the jaw on the frame, substantially as described.

3. The combination, with a frame open at one side and comprising a jaw, C, of an actuator, D, and a removable and replaceable concavo-convex jaw F, substantially as described.

4. The combination of a frame open at one side and comprising a jaw, C, and arm A, having a screw-threaded orifice, the screw D, engaging said orifice, and the jaw F, one of said jaws being of length greater than the other, substantially as described.

5. The combination of a frame having a jaw, C, an actuator, D, and a jaw, F, one of said jaws being of a length greater than the other jaw, to extend beyond the ends thereof, substantially as described.

6. The combination of a frame having a longitudinally-curved jaw, C, an actuator, D, and a longitudinally-curved jaw, F, one of said jaws being of a length greater than the other, to extend beyond the ends thereof, substantially as described.

7. The combination of the bar B, having a jaw, C, an actuator, D, and a reversible concavo-convex jaw, F, one of said jaws being of a length greater than the length of the other jaw, to extend beyond the ends thereof, substantially as described.

387,499. CORD-HOLDER FOR VENETIAN BLINDS, &c. JOHN R. HADDAW, Manchester, County of Lancaster, England. Filed July 20, 1887. Serial No. 244,813. (No model.) Patented in England Mar. 19, 1887, No. 4,171.

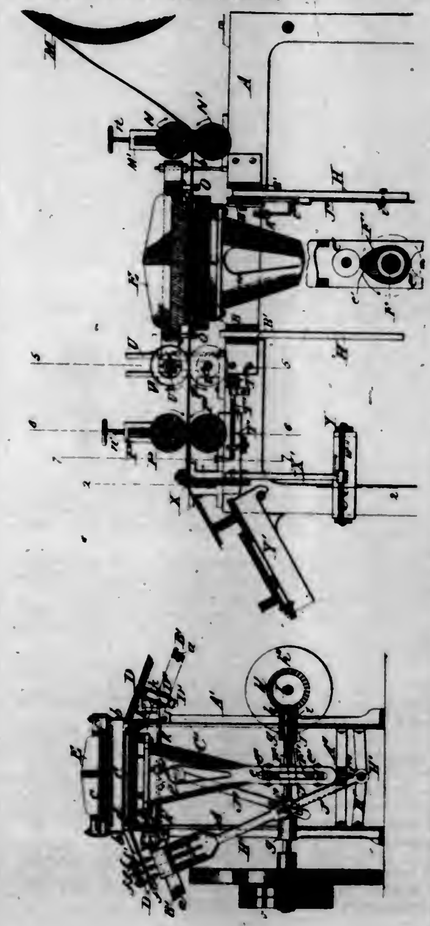


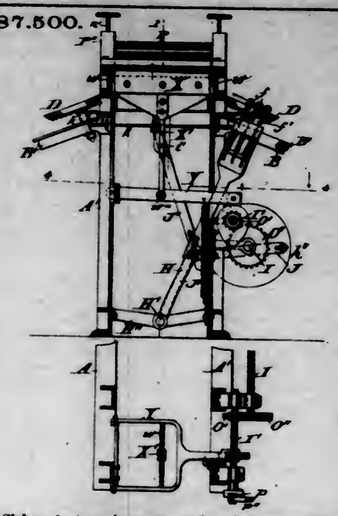
Claim.—1. A cord-holder having a socket constructed with upwardly-converging side walls and a correspondingly-tapering wedge which travels freely up and down within said socket, in combination with a pair of cords interposed between said wedge and the respective side walls, substantially as herein specified.

2. In a cord-holder, a socket constructed with upwardly-converging side walls and provided at its lower end with a stop and a pair of inclines, in combination with an upwardly-tapering wedge which travels freely up and down within said socket, and a pair of cords interposed between said wedge and the respective side walls, substantially as herein specified.

3. The combination, in a cord-holder, of a socket having upwardly-converging side walls and parallel front and back walls, an upwardly-tapering wedge which travels up and down within said socket, and an attaching-screw which passes through said front wall and beneath said wedge at the lower end of the socket, substantially as herein specified, for the purpose set forth.

387,500. PRINTING-MACHINE. DAVID I. ECKERSON, Worcester, N. Y., assignor of one-half to George B. Wright, same place. Filed June 30, 1887. Serial No. 243,003. (No model.)





Claim.—1. As an improvement in printing-machines, a horizontally-placed adjustable platen provided upon its under side at each end with the rollers O O, supporting the paper, and a yielding layer of material, *c*, covered by a cloth, *c'*, passing under said yielding material and secured to the sides of the platen by screws *a' a'*, to support the paper while it receives the impression from the upwardly-moving type-bed, as set forth.

2. As an improvement in printing-machines, the vertically-reciprocating type-bed C, provided with guides *d'*, and the secondary frame B, having guide slots or recesses *d''* to receive said guides, in combination with the cone-shaped slotted support *C'* for said bed and the cam and shaft, arranged substantially as shown and described, to produce the reciprocation of said type-bed, as set forth.

3. As an improvement in printing-machines, the transverse secondary frame B, in combination with vertically-reciprocating type-bed C, supported upon an inverted hollow cone-shaped standard, *C'*, said standard being diametrically slotted below the apex of the cone in two directions at right angles to each other for the reception of the cam-shaft, cam, and friction-wheels, as specified.

4. As an improvement in printing-machines, the vertically-reciprocating type-bed C, supported upon the downwardly-projecting cone-shaped standard *C'*, carrying the friction-wheels *c'* and provided at its lower end with guide-pin *C''*, moving in a guide-orifice in a cross-bar of the frame, in combination with the cam F' and its shaft F, revolving in one of the slots of said standard and adapted to impart a vertically-reciprocating movement to said standard and type-bed, as set forth.

5. As an improvement in printing-machines, the main frame A, carrying an adjustable platen, the secondary frame B, vertically-reciprocating type-bed, and its cone-shaped slotted supporting-standard, said type-bed and standard sustained in their vertical movements by suitable guides, in said secondary and main frames, in combination with the cam F', carried by shaft F and adapted to impart a vertical reciprocating movement to said type-bed by contact in their revolutions with the friction-rolls *c' c'* above and below said cam, as specified.

6. In a printing-machine, the main frame A of said machine and the transverse driving-shaft F, carrying the cam F', for giving motion to the type-bed, in combination with the longitudinal shaft I and bevel-gears *h h'*, arranged to give one revolution of the shaft I to two of the shaft F, the disk *h'*, provided with an adjustable crank-pin, *i*, connecting-rod I', and slotted swinging arm H, all operating, as shown and described, for imparting motion to the inking-rolls.

7. In a printing-machine, the combination, with the main frame A, of the inside transverse secondary frame, B, provided with inclined ends for the reception of the inclined inking-plates and guide-recesses to receive the guides of the vertically-reciprocating type-bed, as set forth.

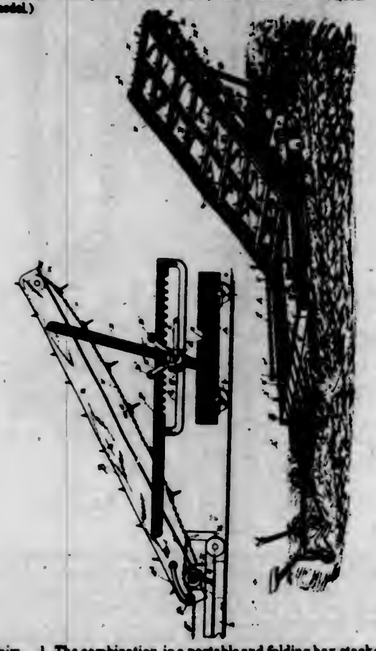
8. In an inking apparatus for printing-machines, the combination, with the swinging lever carrying the inking-rolls and a lever connected with said roll-carrying lever by an adjustable rod or connection, of the pawl-rod, pawl, and inking-disks, all arranged, as shown and described, to give a rotary motion to said disks, as specified.

9. As an improvement in means for imparting motion to a system of inking-rolls in printing-machines, the combination, with the main driving-shaft placed transversely to the main frame of the machine, of a crank-shaft placed at right angles to said driving-shaft and connected therewith by bevel-gears adapted to give one revolution of the crank-shaft to two of the driving-shaft, a pitman, and swinging lever carrying upon its free end the inking-rolls, all arranged and operated as set forth.

10. In a printing-machine, the combination, with the stationary rolls, of the adjustable feed-rolls P P', the rack-pinion and ratchet mechanism by which an intermittent and adjustable length of rotating movement is imparted thereto, the screws upon opposite sides of the frame, and their connecting shaft and gear for adjusting the position of the rolls P P' longitudinally of the frame, as set forth.

11. In printing-machines, the vertically-reciprocating and longitudinally-adjustable cutter X, in combination with the pitman X', cross-bar *w''*, bifurcated lever Y, and the shaft and cam arranged to give a swinging movement to said lever, as specified.

387,501. HAY OR STRAW STACKER. JOSEPH A. EDWARDS and EDWARD WALTON, Chariton, Iowa, assignors of one-third to David Wormley, same place. Filed Nov. 2, 1887. Serial No. 254,112. (No model.)



Claim.—1. The combination, in a portable and folding hay-stacker, of the truck A, the bars D, pivoted to said truck and to the carrier-frame B, the shaft C, having bearings on said bars and provided with the pinions *d* and crank-handles *e*, the carrier-frame B, pivotally supported at one end, the toothed or rack bars F, pivotally secured at one end to said carrier-frame and having the guards or guides G, the endless carrier, and means for operating the same, substantially as described.

2. The combination, in a portable and folding hay-stacker, of the truck A, the bars D, pivoted to said truck and to the carrier-frame B, the shaft C, having bearings on said bars and provided with pinions *d* and cranks *e*, the toothed bars F, pivoted to the carrier-frame B and having the guides or guards G, the carrier-frame B, the shafts H M, having bearings on said carrier-frame, the sprocket-wheels *m*, the endless carrier, the upright supports K, sprocket-wheels O, and means for operating the same, substantially as described.

3. The combination, in a hay-stacker, of the carrier-frame, the shafts H and M, journaled at its upper and lower ends, the sprocket-wheels secured on said shafts within the frame, the endless carrier running on said wheels, the hollow trunnions secured to said frame, the upright supports for said trunnions, the sprocket-wheels O, loosely mounted on said shaft H, the spring-clutch connection between said wheels and shaft, and means for operating said sprocket-wheels, substantially as described.

4. The combination, with a portable hay-stacker, of the carrier-frame B, pivotally and adjustably supported, the shaft H, the sprocket-wheels O, the spring having one end secured to said sprocket-wheels, the pawls loosely pivoted to said wheels, the ratchet-wheel rigidly secured to the shaft H, and the power-carriage carrying sprocket-chains, said chains engaging said sprocket-wheels and adapted to operate the endless carrier, substantially as described.

5. The combination, in a portable and folding hay-stacker, of the truck A, having the depressions *c*, the bars pivoted to said truck and to the carrier-frame, the shaft journaled on said bars and having the pinions *d*, the carrier-frame B, and the pivoted toothed or rack bars F, having guides or guards G, rigidly secured thereto, whereby said carrier-frame may be folded and its longitudinal movement on said truck prevented, substantially as described.

6. A power-carriage for hay-stackers, consisting of the longitudinal beams *d''*, having the uprights *r* and *r'* at opposite ends, the pins *t'*, the sprocket-chains *s'*, the cross-beams *s'*, the wheels *u*, and flanged wheels *u'*, in combination with the carrier-frame having the driving sprocket-wheels, substantially as described.

7. An endless carrier for hay-stackers, consisting of the side pieces *v* and bottom *v'*, shafts H M, the sprocket-wheels *m*, the sprocket-chains N, formed of the bridged links *w*, having side pieces *w'*, cross-pieces *w²* and hook *w³*, and the toothed slats *w⁴*, secured to said cross-pieces *w²*, substantially as described.

8. The hereinbefore-described hay-stacker, consisting of the truck A, the bars D, pivoted to said truck and the carrier-frame B, the shaft C, journaled on said bars and having the pinions *d* and cranks *e*, the toothed bars F, pivoted to the carrier-frame and having the guides or guards G, the carrier-frame B, the shaft H M, carrying the sprocket-wheels *m*, the endless carriers, the sprocket-chains N, the toothed bar R, the sprocket-wheels O, clutch hub or connection between the sprocket-wheels O and the shaft H, the hollow trunnions *d'*, uprights K, the power-carriage P, the track having inclined ends, and means for operating the power-carriage, substantially as described.

9. The combination, in a hay-stacker, with an adjustable frame carrying endless carriers, of a wheeled truck, bars pivoted to said truck and to the discharge end of the apron, a cross-shaft journaled to said bars and having pinions and cranks, and toothed or rack bars pivoted at one end to the carrier-frame and supported by the cross-shaft at their other end, substantially as described.

387,502. HORSE HAY-RAKE. JOSEPH A. EDWARDS and EDWARD WALTON, Chariton, Iowa, assignors of one-third to David Wormley, same place. Filed Nov. 2, 1887. Serial No. 254,112. (No model.)



Claim.—1. In a horse hay-rake, the combination of the axle, the shafts pivotally attached to said axle, the angle-irons having one end pivoted to the axle and the other rigidly attached to the shafts, the rake-teeth secured to said axle, the seat-supporting beam pivotally attached to the axle, the caster-wheel supporting said beam, and means for adjusting the inclination of the rake-teeth, substantially as described.

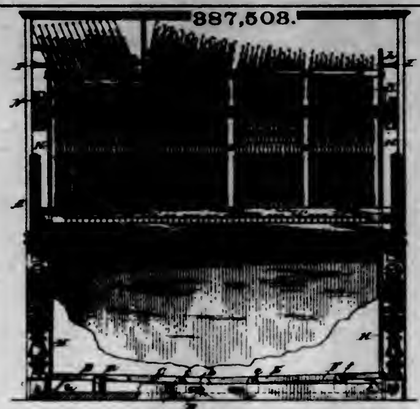
2. In a horse hay-rake, the combination of the axle A, shafts E, beam F, segmental ratchet H, secured to said beam, the lever K, pivoted to the beam, the link M, having one end pivoted to the lever K and the other to the elbow-lever N, the elbow-lever N, pivoted to the beam, the link O, pivoted at one end to the lever N and at its other to the cross-bar secured to the rear ends of the rake-teeth, and means for locking said levers in their adjusted position, substantially as described.

3. A horse hay-rake consisting of the axle A, the wheels B, the shafts E, the seat-supporting beams and braces loosely attached to said axle, the rake-teeth rigidly secured to the axle, the bar D, having the inclined teeth *b*, angle-irons *d*, rigidly secured at one end to the shafts and at the other loosely secured to the ends of the axle, caster-wheels G, the seat-bar *G'*, secured to the supporting-beams, the seat A, the lever K, pivoted to the beam and carrying thumb-lever L, the latter having the depending pin *m*, the segmental ratchet H on the beam, the link M, pivoted to the lever and to bell-crank N, the bell-crank N, pivoted to the beam and its lower arm pivoted to the link O, and the link O, pivoted to the cross-bar secured to the rear ends of the rake-teeth, substantially as described.

387,503. PIANOFORTE-PEDAL FOR PIANOS. FRANK FIELDS, Milwaukee, Wis. Filed Nov. 8, 1886. Serial No. 252,242. (No model.)

Claim.—In an upright piano, the combination, with a pedal having a vertical pin, *b*, of the lever C, adapted to engage said pin, levers

387,503.



D E, flexibly joined to the one C, and another lever, F, similarly joined to the one E, two vertical sliding rods united at their lower ends to said levers D F, brackets I, secured to the interior of the piano-casing and provided with pins passing through slots in the upper part of the rods, a horizontal bar, L, fastened at its ends to said rods, a continuous strip of felting or other suitable material, *i*, and a series of strips, *i'*, of similar material, pendently secured to said horizontal bar, and the springs G, arranged to come in contact with the outer ends of the lever system at or near their points of juncture with the vertical rods, all arranged to operate substantially as and for the purpose set forth.

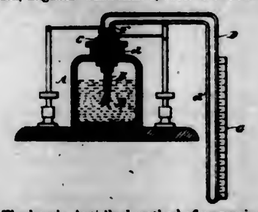
387,504. ATTACHMENT FOR PLOWS. William C. Perry, Fowler, Ind. Filed Feb. 7, 1888. Serial No. 263,243. (No model.)



Claim.—1. The combination, with the plow having the lower edge of its landside formed with a longitudinal recess, of the share attachment consisting of a vertical portion formed with a vertical open slot, and further formed with a horizontal triangular share portion, and bolts and tightening-nuts, substantially as set forth.

2. An attachment for plows, consisting of the vertical portion formed with the slot adapted to engage with a bolt and a tightening-nut in the side of the plow, and further formed with the triangular horizontal portion beveled upon its forward edge to form a cutting-surface, substantially as set forth.

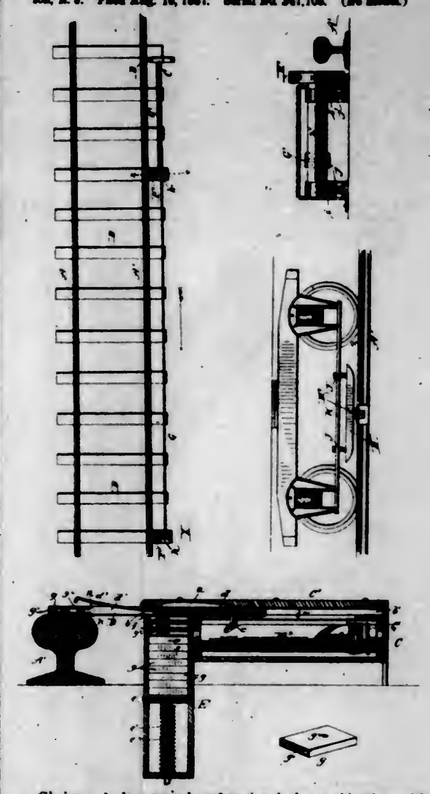
387,505. METHOD OF MEASURING ELECTRICITY. George Forbes, London, England. Filed Mar. 3, 1888. Serial No. 266,554. (No model.)



Claim.—1. The herein-described method of measuring electricity, consisting in passing the current to be measured through a conductor and thereby heating the same, evaporating a liquid by the aid of the heat so generated, and finally noting the amount of evaporation which has taken place as a measure of the quantity of electricity which has been passed through the conductor, substantially as described.

2. The herein-described method of measuring electricity, consisting in passing an electric current through a conductor arranged in proximity to a quantity of liquid, thereby heating said conductor and evaporating the liquid, then condensing said vaporized liquid in a second vessel, and finally measuring the amount of liquid so condensed, substantially as described.

387,506. DETONATING RAILROAD-SIGNAL. James Fox, Trenton, N. J. Filed Aug. 16, 1887. Serial No. 247,103. (No model.)



Claim.—1. In a torpedo safety-signal, the combination, with a torpedo placer and retractor applied to a railway-track, of the rollers F F', their connections with said device, as described, and a spring-yielding shoe on a truck-frame adapted to actuate said devices, substantially as described.

2. The combination, with a horizontal case, of a reciprocating torpedo placer and retractor, D, a spirally-grooved drum for moving said device, a vertical case for containing torpedoes in open-ended shells, and a spring-actuated follower for feeding the torpedoes to said device D, substantially as described.

3. The combination, with a suitable case, of a spirally-grooved drum, a sliding torpedo placer and retractor actuated by said drum, and having spring gripping-jaws, the lugs or rollers *p p*, for contracting said jaws, and a torpedo-feeder, substantially as described.

4. The combination of the case E and its spring-actuated follower, the case C, with its recessed cover, the spirally-grooved drum, the reciprocating device D, having spring gripping-jaws, and a hooked retracting-spring, d^3, between said jaws, substantially as described.

5. The combination, with a torpedo-button, of an open-ended shell, perforated as described.

6. The combination, with a suitable case having a vertical torpedo-cartridge chamber provided with a spring-actuated follower, of the reciprocating torpedo placer and retractor D, having spring-jaws, and a hooked retracting-tongue, d^3, adapted to engage with the shell *g*, and cover for the horizontal portion of said case, recessed at *a*, for the purpose described.

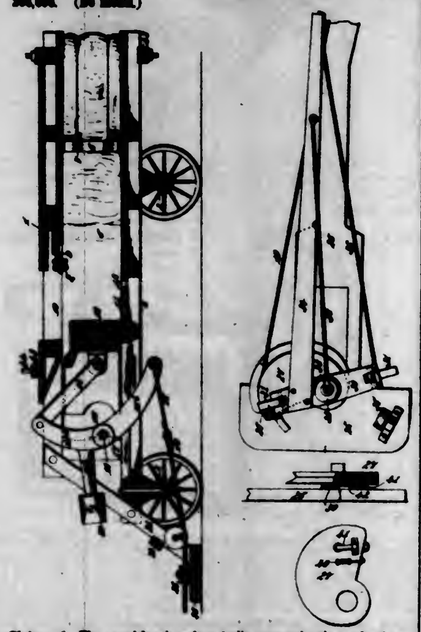
7. The combination, with a suitable case, of the reciprocating placer and retractor D, having spring-jaws, the closing projections *p p* therefor, and a hooked spring-tongue, d^3, substantially in the manner and for the purposes described.

387,507. KNITTING-MACHINE NEEDLE. Carl Pfenning, Milwaukee, Wis. Filed Jan. 16, 1888. Serial No. 260,894. (No model.)



Claim.—A knitting-machine needle constructed and adapted to reciprocate in the groove of a cylinder of a knitting-machine, such needle having a shank, G, a bit, H, and a spring, K, located above the bit and adapted to bear laterally against the side or sides of the groove of the cylinder in which the needle travels, said shank, bit, and spring being formed integrally of a single piece of metal, substantially as described.

387,508. BALING-PRESS. Franklin Pirt, Quincy, Ill., assignor, by mesne assignments, of two-thirds to John O. Hannaher and Charles H. Swain, both of same place. Filed Mar. 27, 1888. Serial No. 268,602. (No model.)



Claim.—1. The combination, in a baling-press having a horizontally-movable follower, of a three-armed lever fulcrumed back of said follower, a pitman for connecting the follower with the upper arm of said lever, a cable connecting the lower arm of the lever to a horse-power, and a weight on the rear arm of the lever, substantially as described.

2. The combination, in a baling-press having a horizontally-movable follower, of a horse-power located in a direct line with the press, a three-armed lever through which the follower is actuated, a pitman connecting one arm of the lever with the follower, a cable connecting another arm of the lever with the horse-power, and a weight on another arm of the lever to retract the follower when the horse-power cable is relieved, substantially as described.

3. The combination, in a baling-press having a horizontally-movable follower, of a horse-power comprising an eccentric pulley having a lug, a lever having a latch to engage said lug, a sweep to actuate said lever, a cable connecting the eccentric pulley to the follower-lever, and a cam to release the latch that engages the lug on the eccentric pulley, substantially as described.

4. The combination, in a baling-press having a horizontally-movable follower, of a lever connected with the follower, a horse-power comprising a cable attached to the follower, an eccentric pulley having a lug and connected with the cable, a lever having a latch to engage the lug on the pulley, a cam to release the latch, a sweep, and a brake mechanism to ease the recoil of the pulley, substantially as described.

5. The combination, with the horizontally-movable follower 13 and weighted lever 15, of the cable 19, the guide-pulleys 24 and 29, the eccentric pulley 27, having lug 28, the lever 30, having latches 31, the sweep 34, and the cam 38, substantially as described.

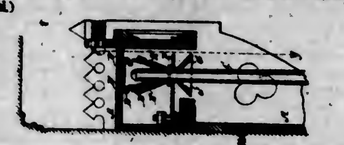
6. The combination, with the eccentric pulley 27, of the stop 39, spring-bolt 40, friction-way 42, and spring-brake 41, substantially as described.

387,509. SASH-HOLDER. William H. Fiehe and Wilbur H. Gessner, Dayton, Ohio. Filed Sept. 17, 1887. Serial No. 249,941. (No model.)



Claim.—The combination, with the sash moving up and down between retaining-strips secured to the jamb-posts, and the transversely-corrugated metal strip secured to the edge of said sash adjacent to the securing or holding devices, of the casing let into the jamb-posts on one side, the eccentric cams corrugated transversely on their outer surfaces, and provided, respectively, with the inwardly-standing fingers N N', pivoted within said casing, the actuating-springs *g g'*, and the hollow shaft K, provided with the arm L, and the opposite pins M M' on the end of said arm, substantially as specified.

387,510. HOLDER FOR CUES AND OTHER ARTICLES. Gustave W. Gray, Newark, N. J. Filed Sept. 1, 1887. Serial No. 248,883. (No model.)

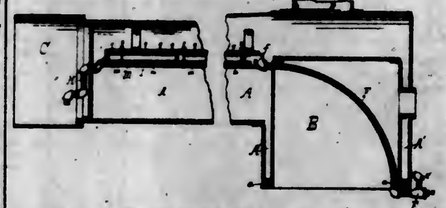


Claim.—1. A suspending device for cues and other articles, consisting of the base or support A, the movable jaws B, hinged at their upper ends to said base, and the spring F, secured to said base, and having free ends which surround said jaws and are adapted to press them together, substantially as described.

2. A suspending device for cues and other articles, consisting of the support A, the jaws B, hinged to said base and provided with lugs and notches forming guides E, and the spring F, surrounding said jaws and adapted to press them together, substantially as described.

3. The combination of the support A, having eyes D', the movable jaws B, provided at their upper ends with pivots D, engaging said eyes, and the spring F, surrounding the jaws, substantially as described.

387,511. STEAM-BOILER. Herbert Hackney, Topeka, Kans. Filed May 10, 1888. Serial No. 273,515. (No model.)



Claim.—1. The combination of the boiler with a submerged mud-drum isolated from the direct action of the fire, and an automatic circulation-pipe exposed to the direct action of the fire or the heated volatile products of combustion, and adapted to continuously circulate the water from the lower part of the boiler into the mud-drum and thence into the upper part of the boiler, substantially as described.

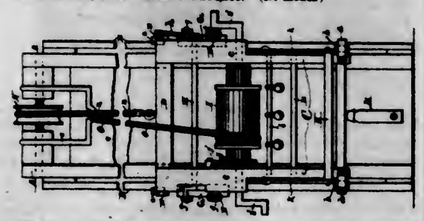
2. The combination of the boiler with a submerged mud-drum isolated from the direct action of the fire, and communicating along its upper edge with the water-space of the boiler, and the automatic circulation-pipe exposed to the direct action of the fire or the heated volatile products of combustion, and adapted to continuously circulate the water from the lower part of the boiler into the mud-drum and thence into the upper part of the boiler, substantially as described.

3. The combination of the boiler, the automatic circulation-pipe exposed to the direct action of the fire or the heated volatile products

of combustion, and the submerged and isolated mud-drum, divided into two compartments, M N, the former of which communicates with the circulation-pipe and the water-space and the latter with the discharge-pipe and the compartment M, substantially as described.

4. The combination of the boiler, the mud-drum and means for discharging the same, and the automatic circulation-pipe F, with the coupling E, provided with a removable cap to adapt the apparatus to the application of a hose for cleaning purposes, substantially as described.

387,512. PORTABLE ELEVATOR. Joseph T. Haines, Balbec, Ind. Filed Feb. 16, 1888. Serial No. 264,209. (No model.)

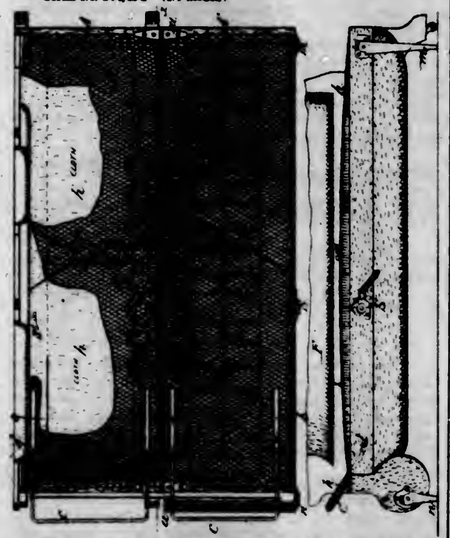


Claim.—1. The elevator comprising the vertical guide-rails, the carriage C, mounted on said rails and having a hinged platform, K, supporting-rods therefor, the rope, drum, and equipoising-weight on rope *n*, and pulley N, and the brake mechanism engaging the guide-rails and adapted to stop and hold the carriage, all constructed and arranged substantially in the manner and for the purpose described.

2. The combination of the guide-rails and the elevator-carriage with the cranked rod H, the arm A, the movable brake-blocks G G, and the links *g g*, respectively connecting said blocks with arm A and the cranked end of shaft H, all constructed and arranged substantially as and for the purpose described.

3. The herein-described elevator, comprising the guide track-rails, the carriage provided with friction-rollers, and clips mounted on said guides, the drum I, its cranked shaft, rope O, and the brake-blocks G G, cranked shaft H, arm A, and links *g g*, connecting blocks G respectively with the cranked end of shaft H and arm A, all constructed and arranged substantially in the manner and for the purpose described.

387,513. BED-LOUNGE. Frederick B. Hemingway, Clinton, Iowa, assignor to Hemingway & Kelly, same place. Filed May 19, 1888. Serial No. 274,494. (No model.)



Claim.—1. In a bed-lounge, the wire web B, provided with the elongated slots *b* and extended over the entire intermediate space between the outer sides and ends of the lounge-frames, and fastened in a tightly-stretched state to the lounge-frames, in combination with the two separate pillow-support frames *c*, having their legs inserted through the slots and pivotally connected with the lounge-frames below the wire web, substantially as and for the purposes described.

2. In a bed-lounge, the wire web B, provided with the elongated slots *b* and extended over the entire intermediate space between the outer sides and ends of the lounge-frames, and fastened in a tightly-stretched state to the frames, in combination with the two separate pillow-support frames *c*, having their legs inserted through the slots and pivotally connected with the frames below the wire web in position for their forward portions to extend beyond the lounge-frames, substantially as and for the purposes described.

387,514. STOP FOR THE CARRIAGES OF SCREW-CUTTING LATHES. Thomas Heslin, Watertown, N. Y. Filed Apr. 26, 1888. Serial No. 271,903. (No model.)



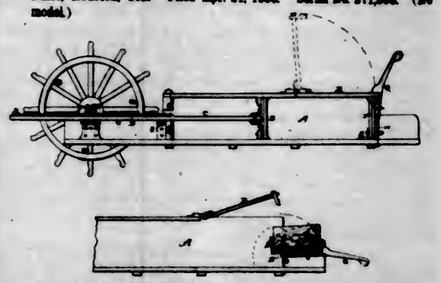
Claim.—On a screw-cutting lathe, the combination, with the lathe-bed, of a stop clamped rigidly thereon at a point to abut against that side of the tool-carriage from which the latter is to move in cutting the screw-threads, substantially as described and shown.

387,515. BUSTLE. John R. Emmett, Dayton, Ohio. Filed Apr. 19, 1888. Serial No. 271,167. (No model.)



Claim.—The combination, in a bustle, of the rectangular frame A, having a cross-wire, C, and eyes *a a'*, bails E and D, having central eyes, the ends of said bails being pivotally secured to the eyes *a a'*, longitudinal springs secured to the upper portion of the frame A and to the cross-wire C, and an adjusting strap or loop connected to the lower cross-wire of the frame and to the central longitudinal spring below the lower bail, and a covering for the springs and frame, substantially as shown, and for the purpose set forth.

387,516. BALING-PRESS. Frederick W. J. Hoge and Joseph Isaac, Houston, Tex. Filed Apr. 21, 1888. Serial No. 271,269. (No model.)

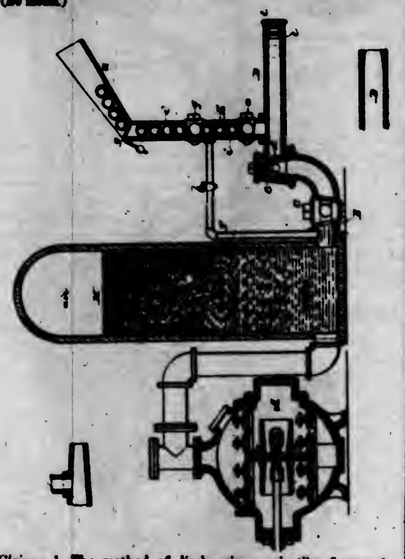


Claim.—1. The combination of the baling box or chamber with a tail-board provided with devices for catching under the bale and lifting it out of the box as the tail-board is turned backward, substantially as shown.

2. The combination of the baling box or chamber provided with a cover with the tail-board, which is hinged a suitable distance above the bottom of the baling-chamber, and which is provided with devices for catching under the bale and lifting it out of the chamber when the tail-board is turned back, substantially as described.

3. The combination of the baling box or chamber provided with a movable cover, the tail-board P, hinged above the bottom of the baling-chamber by means of the rod N, the angle-irons S, and the clamping-lever, substantially as set forth.

387,517. METHOD OF DISCHARGING PROJECTILES. Walter H. Jaques, New York, N. Y. Filed May 28, 1888. Serial No. 274,810. (No model.)



Claim.—1. The method of discharging projectiles from a hydraulic battery, consisting in dropping the projectiles into a jet of discharge-water under enormous pressure and forcing these projectiles through a choked orifice, substantially as set forth.

2. The method of discharging projectiles by forcing water against a column of air, permitting this water to pass out through a choked discharge-barrel, and dropping projectiles into said barrel, substantially as set forth.

3. The method of discharging projectiles by forcing water against a column of air, passing the water out through a choked discharge-barrel, and forcing projectiles from an ammunition-conduit into this discharge-barrel by means of water under equal pressure back of said projectiles, substantially as set forth.

387,518. PANTS-STRETCHER AND GARMENT-SUPPORTER. William H. Kauffman and William F. Hinson, Columbus, Ohio, assignors of one-third to Thomas W. Wright, same place. Filed Nov. 10, 1887. Serial No. 254,580. (No model.)



Claim.—1. The combination of the adjustable strap to surround the ankle or limb and having slides thereon, the metallic arms B, having loops formed therewith and carrying buckles at their lower ends, the elastic strip C, and the metallic strips D, carrying safety-pins at their lower ends, substantially as described.

2. The combination of the adjustable strap A, having a buckle and slides thereon, the arms B, the elastic strips C, the metallic strips D, carrying safety-pins at their lower ends, the semicircular band E, having a front central slide, and the depending arm F, substantially as described.

3. The combination, with the band A, having the attachments, as set forth, of the upwardly-projecting arm G, having a clasp, G', on the upper end thereof for engagement with and to support the stocking or drawers, substantially as described.

4. The combination of the adjustable strap A, having slides thereon, the arms B, secured to the slides on the strap A and having upper and lower loops and lower buckles, the elastic straps C, secured at one end to the buckles on the lower ends of the arms B and at their upper ends to the strap A, the metallic arms D, having safety-pins on their lower ends and loops at their upper ends, through which the elastic strap C passes, the semicircular band E, secured at its two ends to the upper loops of the arms B and provided with suitable adjusting-slides and a central vertical slide-plate, E', secured thereto, the depending arm F, supported and adjustable in the slide-plate E', and the upwardly-projecting stocking-supporting arm G, having a clasp on its upper end, secured to the band or strap A, substantially as described.

5. The combination, with the ankle-strap, of the two adjustable depending devices secured to each side thereof and adapted to be attached to the bottom of the pantaloons, the front semicircular band standing out from the ankle-strap, and the depending adjustable arm having a lower bend carried in the front central portion of the said band, substantially as described.

6. The combination, with the adjustable ankle-strap, of the two adjustable depending devices attached to the sides thereof and adapted to be secured at their lower ends to the bottom of the pantaloon, the front central support, and the stocking-supporter, substantially as described.

7. The ankle-strap carrying side and front pantaloons-adjusting devices, and the upwardly-projecting stocking-supporter, substantially as described.

8. The combination, with the ankle-strap, of the side devices supported directly thereagainst, and the front central depending arm supported some distance away from the said ankle-strap, substantially as described.

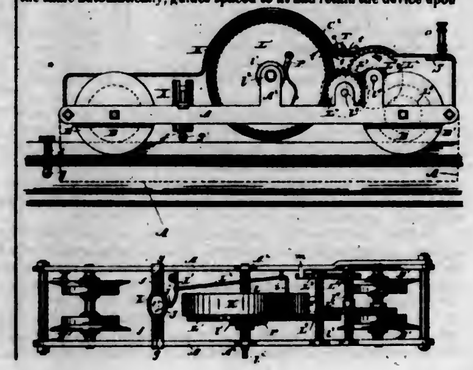
387,519. ARTIFICIAL STONE. James T. Key, Blackburn, Ia. Filed May 21, 1888. Serial No. 274,094. (No specimens.)

Claim.—An artificial stone composed of Portland cement, sand, plaster-of-paris, alum, table-salt, and rice, in or about in the proportions specified.

387,520. AUTOMATIC RAILWAY SIGNAL-CARRIER AND TOR-PEDO-PLACER. Hezekiah G. Kuhn and Frank Hanson, Greenville, S. C. Filed Sept. 10, 1887. Serial No. 249,266. (No model.)

Claim.—1. In a railway signaling device, the combination of the balanced frame, the supporting and driving wheels arranged for a single rail, a motor connected with the driving-wheels to rotate the same, guides spaced to fit the sides of a single rail and retain the device upon the same, and means for signaling, substantially as described.

2. The combination of the balanced frame, the supporting and driving wheels, a motor connected with the driving-wheels to rotate the same automatically, guides spaced to fit and retain the device upon



387,520.



a single rail, a signaling device carried with said frame, and a derailing-trip operating automatically at a predetermined time, substantially as set forth.

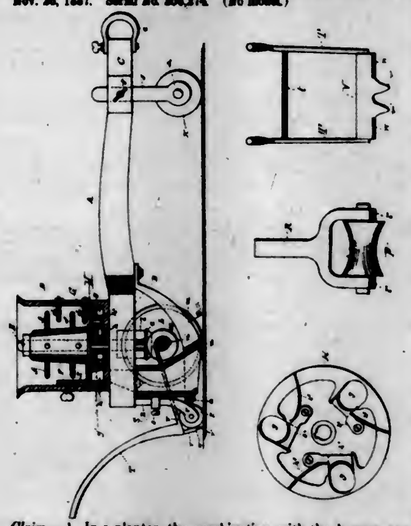
3. The combination of the balanced frame, four supporting and driving wheels flanged upon their outer margins, a motor carried with the frame and connected with the wheels to automatically rotate them, and a signaling device carried with the frame, said flanged wheels being spaced to fit and retain the machine upon a single rail, substantially as set forth.

4. The combination of the balanced frame, the supporting and driving wheels, a motor carried by the frame and connected with the wheels to automatically propel the machine, guides spaced to fit and retain the device upon a single rail, a torpedo-receptacle carried by the frame, and a torpedo-placer operated automatically by the motor, substantially as set forth.

5. The combination, with the frame, the motor, and the supporting and driving wheels, spaced as described, of a torpedo having an explosive portion of a width less than the space between the treads of the wheels and malleable lateral arms having downward bends at their extremities, substantially as set forth.

6 The torpedo having a central explosive portion, two lateral malleable arms, and weights carried by said arms, substantially as set forth.

387,521. WHEEL-PLANTER. Peter Klipe, Hayes, Tex. Filed Nov. 26, 1887. Serial No. 256,274. (No model.)



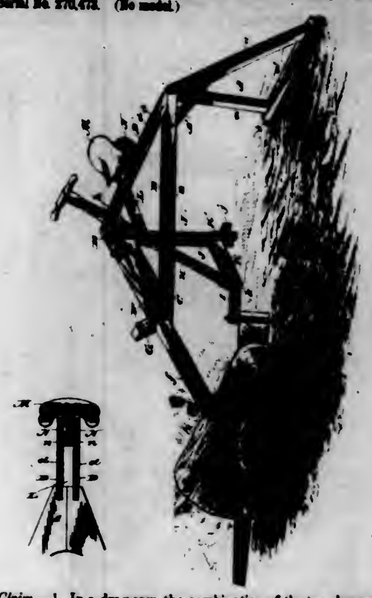
Claim.—1. In a planter, the combination, with the hopper provided with the stirrer-arms, the rotating shaft having the stirrer-arms, the disk H, having the discharge-openings, pivoted arms, and springs, the plate *g*, having the cam-pin and discharge-opening, and the shaft E, having the bevel-gear *e*, of the main axle adapted to engage the hooked ends of the handles and having the beveled gear M and the conveying-wheels thereon, substantially as specified.

2. The combination, with the main frame and main axle, of the handles provided with inwardly-extending arms having their inner ends hooked and engaged over the main axle, and the toothed harrow-plate secured across the junction of the handles with said arms, substantially as specified.

3. The combination, with the main frame, main axle, and covering-roller, of the handles having inwardly-extending arms hooked at the inner ends to engage over the main axle, and the bevel-edged scraper-plate secured across the junction of the handles and said arms, substantially as specified.

4. In a planter, the combination, with the main frame, main axle, and vertically-adjustable covering-roller, of the handles T, arms *v*, having their ends hooked to engage over the main axle, and the harrow and scraper-plate V, provided with the teeth *v'* and inwardly-beveled scraper-edges W, substantially as specified.

387,522. DRAG-SAW. John B. Lalonde, Portland, Oreg., assignor of one-half to Estevan G. Francis, same place. Filed Apr. 12, 1888. Serial No. 270,473. (No model.)



Claim.—1. In a drag-saw, the combination of the two downward rearwardly-inclined bars D, having tracks thereon and an intervening space between the same, a seat having rollers engaging with and moving on the tracks on said bars D, and an arm connected to and projecting forwardly from the under side thereof between said bars, and a hand-lever pivotally mounted in the frame, to which the forward end of the arm from the seat is attached, and having its lower end secured to levers connected to the rear end of the saw and to the frame of the machine, substantially as described.

2. In a drag-saw, the combination of the two downward rearwardly-inclined bars D, having tracks thereon and an intervening space between the same, a seat having rollers engaging with and moving on the tracks on said bars, and an arm connected to and projecting forwardly from the under side thereof between said bars, a hand-lever pivotally mounted in the frame to which the forward end of the arm from the seat is attached, the slotted block secured to the rear of the saw, to which the lower end of the hand-lever is secured link K, attached to the slotted block at its front end, and the swinging frame having foot-pieces, to which the rear end of the link K is attached, substantially as described.

3. In a drag-saw, the combination of a frame consisting of parallel bars B B and D D, having tracks thereon, beam C, and a rear support, A, the adjustable beam F, supporting the operating mechanism, consisting of a pivoted lever with a handle-bar, swinging bars J J, link K, the block I, connecting the same to the reciprocating saw, and a bar, L, pivoted to the main lever H, the rear end of said bar passing between beams D D, and being provided with a seat and with rollers bearing on the tracks on said beams D D, substantially as and for the purpose set forth.

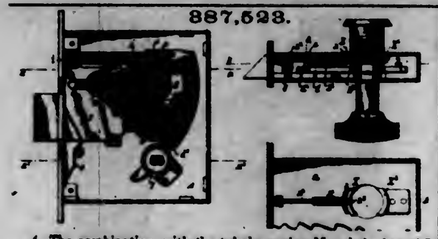
387,523. COMBINED LATCH AND LOCK. Joseph Loss, New York, N. Y. Filed Jan. 5, 1888. Serial No. 259,886. (Model.)

Claim.—1. The combination, with a bolt, of the pivoted tumbler D, a stop, H, thereon, and a movable detent, I, carried by the bolt and engaging with the stop, substantially as shown and described.

2. The combination, with a sliding bolt, of a pivoted tumbler, a stop, H, on the same, a detent, I, carried by the bolt and engaging with said stop, said detent containing a recess for the passage therethrough of the stop in the tumbler, and a yielding block or head, J', substantially as shown and described.

3. The combination, with the tubular casing M and the barrel L therein, of the lock N, connecting the casing and barrel, and the notched wards W, which, when formed, receive said lock and free the barrel, substantially as shown and described.

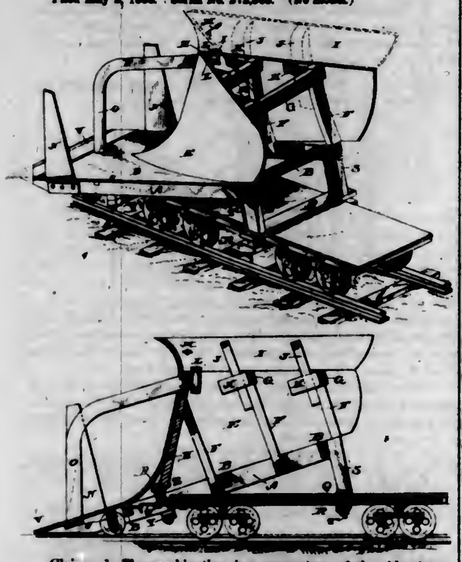
387,523.



4. The combination, with the tubular casing M and the barrel L therein, of the lock N, connecting the casing and barrel, the notched wards W, the head L' on the barrel, the stem *m*, extending through the barrel, and the stops 9 and 10 in the head for arresting the motion of the stem, substantially as shown and described.

5. The combination, with the tubular casing M, having a stop, *l*, and the barrel L therein, having a head containing stops 7 and 8, for engaging said stop *l*, of the notched wards W, the friction-plates W', engaging the barrel, the stem *m*, extending through the barrel, and stops 9 and 10 in the barrel-head, for arresting the motion of the stem, substantially as shown and described.

387,524. SNOW-PLOW. Joseph M. Mansfield, Manchester, Iowa. Filed May 2, 1883. Serial No. 272,803. (No model.)



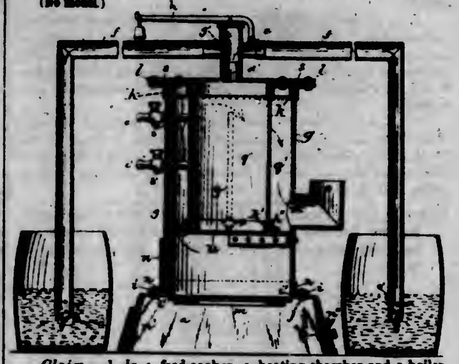
Claim.—1. The combination, in a snow-plow, of the side pieces, the cross-pieces, vertical ribs secured to the side pieces, cross-pieces at the tops of the ribs, an apron on the side pieces, and cross-pieces at the bottom, rearwardly-diverging furrow-boards secured to the ribs, braces secured to the tops of the ribs and to the inner surface of the furrow-boards, standards at the front ends of the furrow-boards projecting above their upper edges, and side-boards having downwardly-projecting curved standards, substantially as and for the purpose set forth.

2. The combination, in a snow-plow, of the side pieces, the cross-pieces, one of which is cut away upon its under side, a support at the rear end, and a keeper at the front end just below and to the rear of the cut-away cross-piece, and means for securing the front end of a flat car to the plow, substantially as and for the purpose set forth.

3. The combination, in a snow-plow, of the side pieces, supports at the rear end of the plow, a transverse bar secured to the lower end of the supports, two bolts secured to the side pieces and passing down through the transverse piece, and a second transverse piece having holes at its ends and adapted to be secured upon the ends of the bolts below a flat car, substantially as and for the purpose set forth.

4. The combination, with a snow-plow, of a pair of trucks at the front end, a clamp at the rear end, and a keeper between the trucks and the clamp, whereby the plow may be secured upon a flat car, substantially as and for the purpose set forth.

387,525. STEAM FEED-COOKER. James W. Marsh and Glass H. Ringolby, Manning, Iowa. Filed Jan. 26, 1888. Serial No. 261,937. (No model.)



Claim.—1. In a feed-cooker, a heating-chamber and a boiler therein having flanged ends provided with collars, in combination with a crown-plate and shelf attached to the boiler in such a manner as to form end plates and supports for the boiler, substantially as described.

2. In a feed-cooker, a boiler and a surrounding shell forming the heating-chamber, said boiler and shell being provided with flanges and flanged collars, in combination with a crown-plate to which said collars are attached, whereby said plate is made to close the upper end of the boiler and heating-chamber, for the purpose and in the manner substantially as described.

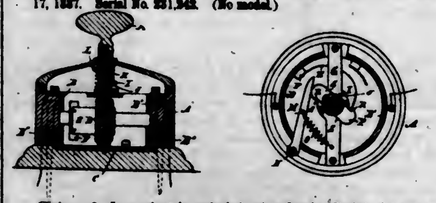
3. In a feed-cooker, a fire-chamber shell and boiler having the upper ends provided with flanges, in combination with a crown-plate having downwardly-extending flanges fitting within the ends of said shell and boiler, and collars provided with flanges, whereby the ends of the boiler and shell are closed, substantially as described.

4. In a feed-cooker, a boiler located in the upper part of the fire-chamber, and a shelf supporting said boiler, said shelf being arranged to form the bottom of the boiler, in combination with partitions located upon diametrically-opposite sides of the boiler, substantially as described.

5. In a feed-cooker, a boiler located in the top of the heating-chamber and having its upper end plate arranged to close the top of said chamber, in combination with partitions located upon diametrically-opposite sides of the boiler, and a bracket or shelf arranged to form the lower end plate of the boiler and to close the space behind the same, substantially as described.

6. In a feed-cooker, a boiler located above the fire-chamber, the upper end of said boiler being arranged to close the top of said chamber, in combination with partitions at the sides and a shelf or bracket at the lower part of the boiler, substantially as described.

387,526. ELECTRIC SWITCH. James F. McElroy, Lansing, Mich., assignor of one-half to Lewis C. Butler, same place. Filed Mar. 17, 1887. Serial No. 231,342. (No model.)



Claim.—1. In an electric switch having fixed cylindrical contacts and a movable contact carried by a spindle, an actuating key or handle secured to said spindle and having a loose connection therewith, a ratchet secured to the spindle and provided with cogs and flat faces, and a spring-click operating in connection therewith to impel the spindle through the medium of the ratchet, substantially as described.

2. In an electric switch, the combination, with the fixed cylindrical contacts, of a spindle, a spring carrying the movable contact, a key secured to the spindle and having a loose connection therewith, a ratchet having cogs and flat faces, and a spring-click operating in connection with said ratchet to form an impelling and locking device for said spindle, substantially as described.

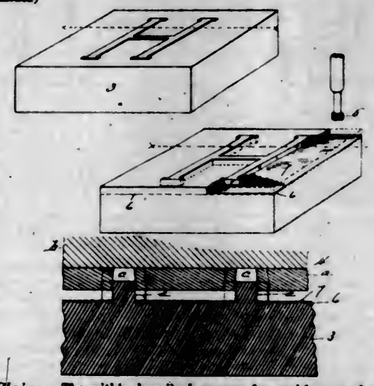
3. In an electric switch having fixed cylindrical contacts, a movable contact carried by a spindle, and a spring-actuated impelling device on said spindle, a key or handle secured to said spindle and hav-

ing a loose connection therewith, and a spring between said spindle and key arranged to take up such rotary play, substantially as described.

4. In an electric switch, the combination of the fixed cylindrical contacts B B' B'' B''', the spindle D, the movable contact F, carried by said spindle, the key or handle H, having a loose connection therewith, the ratchet P, secured to the spindle and having cogs R and flat faces S, and the spring-click M, all arranged to operate substantially as described.

5. In an electric switch, the combination of the fixed contacts B B' B'' B''', the spindle D, the movable spring-contact F, the key or handle H, having a loose connection therewith, the spring K, arranged to take up said play, the ratchet P, having cogs R and flat faces S, and the spring-click M, all substantially as described.

387,527. PROCESS OF MAKING WOOD TYPE. Mortimer G. Merritt, Springfield, Mass., assignor to Alfred E. Hobbs and George B. Hobbs, New Milford, Conn. Filed Apr. 25, 1887. Serial No. 236,014. (No model.)



Claim.—The within-described process for making wood type, which consists in first delineating a letter on a block by suitable lines, substantially as described, then removing the surface of the latter which surrounds said outlined letter, and finally subjecting said block to pressure under a die, whereby the surface of the block and of the letter thereon are suitably compressed and finished, substantially as set forth.

387,528. SLEIGH. Peter W. Meyer, Louisville, Ky. Filed Apr. 11, 1888. Serial No. 270,315. (No model.)



Claim.—1. The combination, in a sleigh, of a pair of runners and upright standards secured thereto, with vertically-adjustable braces mounted on and connecting said standards by means of adjustable T-joints, all substantially as and for the purpose described.

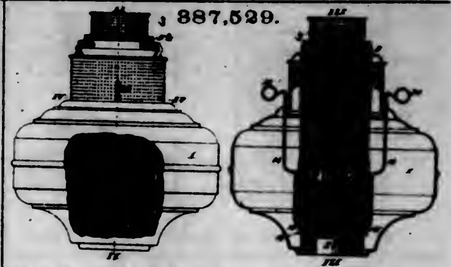
2. The combination of the runners and their standards, substantially as described, with the adjustable T-joints on said standards and the vertically-adjustable braces united to said joints, and each made in two parts united by a screw-coupling, substantially as described.

3. The combination of the continuous pipe-runners and their uprights with the vertically-adjustable sectional braces and the adjustable connections of said braces to the uprights, and the connecting bars or axles above said braces, all substantially as and for the purpose described.

4. The combination of the axles G with the continuous runners A A, their uprights C, and the vertically-adjustable braces D, composed of sections *d d*, screw-coupling F, and the sliding T-joint E on the ends of the braces, and their set-screws *e*, all constructed and arranged substantially as and for the purpose described.

387,529. WICK-RAISER. Ferdinand Meyer, St. Louis, Mo. Filed Aug. 12, 1887. Serial No. 246,788. (No model.)

Claim.—1. In combination with the reservoir having recessed openings in its top and air-tube, the wick-holder consisting of a cylinder, wires secured to the cylinder, and arms on the wires, the upper



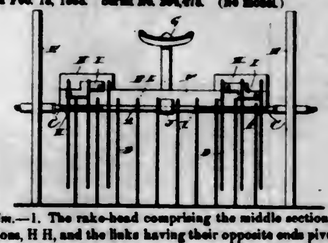
ends of the wires bearing in said recesses to hold the arms pressed against the wick, substantially as and for the purpose set forth.

2. The combination, with the reservoir having an opening for the reception of a burner, of a wick-holder consisting of tube 11, expansible at top, and wires 14, substantially as described, for holding the wick to the tube, said wires being confined between the mouth of the reservoir and upper expansible end of the tube, as explained.

3. In combination with the reservoir and air-tube, the wick-holder consisting of the flexible cylinder, hinged wires, and arms secured to the wires, the upper ends of the wires being adapted for prehension, substantially as and for the purpose set forth.

4. In combination with the reservoir and air-tube, the wick-holder consisting of a cylinder having a lap-joint, 12, connected by a rivet, 13, wires secured to the cylinder, and arms on the wires, substantially as and for the purpose set forth.

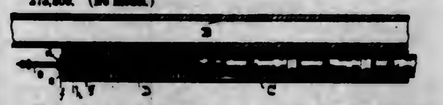
387,530. HORSE HAY-RAKE. Moses I. Milam, Caddo Mills, Tex. Filed Feb. 18, 1888. Serial No. 264,673. (No model.)



Claim.—1. The rake-head comprising the middle section, F, and end sections, H H, and the links having their opposite ends pivoted, respectively, to the front and rear side at the outer ends of the section F and the inner ends of the sections H H, as set forth.

2. The rake-head consisting of the middle section, F, the end sections, H H, and the Z-shaped links pivoted, respectively, to the front and rear side at the inner ends of the sections H H and the outer ends of the section F, as set forth.

387,531. CHARGE-INDICATOR FOR MAGAZINES OF GUNS. William R. Miller, Baltimore, Md. Filed May 14, 1883. Serial No. 273,909. (No model.)



Claim.—1. In a repeating fire-arm, the head or end of the magazine perforated and combined with an indicating-stem which enters the magazine through the said perforation, is parallel to the magazine and within it, and is in contact with the contained magazine-spring or an attachment operated thereby, whereby the length of the exposed portion of the stem indicates the number of cartridges contained in the magazine, substantially as specified.

2. In a repeating fire-arm, the magazine thereof provided with a projecting stem which has a plate at its inner end, combined with a spring situated between the said plate and the head of the magazine, substantially as and for the purpose specified.

387,532. PLOW. Hans P. Nelson, Moorhead, Minn. Filed May 14, 1888. Serial No. 273,891. (No model.)

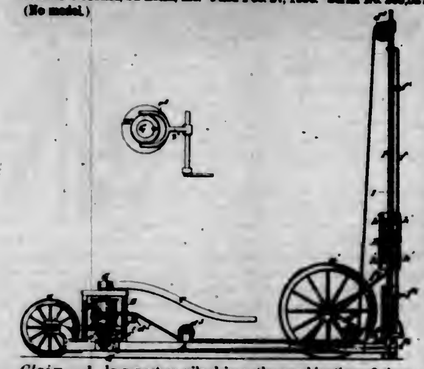
Claim.—The combination of the standard, the shovel-blade, a vertically-adjustable V-shaped shoe, one arm forming the horizontal rearwardly-extending heel and the other arm extending along the standard and having a longitudinal slot, a perforated projection extending rearwardly from the upper portion of the shoe, bolts passing through the shovel-blade, standard, and shoe, the cutting-wings hinged to the under side of said blade, and brace-rods pivoted to said wings

387,532.



and adjustably secured to said projection of the shoe, whereby the wings can be adjusted backward and forward, as set forth.

387,533. POST OR PILE DRIVER. George H. Oldham and William M. Rodgers, St. Louis, Mo. Filed Feb. 27, 1888. Serial No. 265,587. (No model.)



Claim.—1. In a post or pile driver, the combination of the uprights, the hammer, and the lifting-rope with the drum, the clutch engaging the same, and the crank-levers and connecting-rods for automatically releasing said clutch, all constructed and arranged substantially as and for the purpose described.

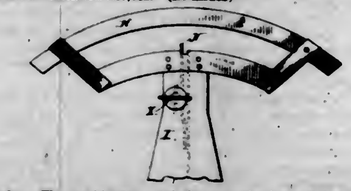
2. The combination of the uprights, the hammer, and the rope with the drum, the clutch engaging the same, the rod *f'*, the adjustable lug thereon, and the connections between said rod and clutch, all constructed and arranged substantially in the manner and for the purpose described.

3. The combination, in a post or pile driver, with the base and uprights, of the drum D, shaft G, clutch-ring E, and automatic stop, gearing together, operating the hammer H by means of the rope I, substantially as shown, and for the purposes specified.

4. The combination of the uprights, the hammer, rope, and drum, with the clutch engaging said drum, the vertical movable rod *f'*, its handle *f*⁵, adjustable lug *f*⁶, and the bell-crank levers and rods connecting rod *f''* with the clutch, all constructed and arranged substantially as and for the purpose described.

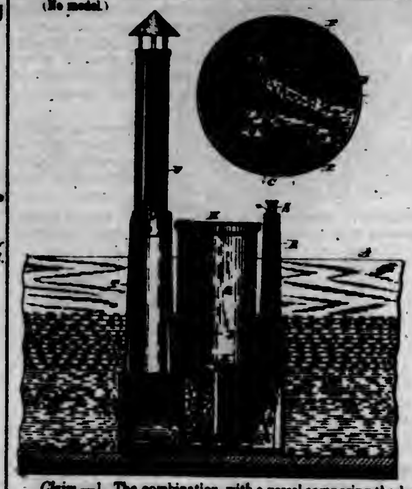
5. The combination of the carriage A, the hinged uprights thereon, the hammer, drum, and rope, with the clutch engaging said drum, the rod *f'*, and its lug *f*⁶, engaging the hammer, and the crank-levers and rods connecting the clutch with the rod *f'* and operating the same therefrom, all constructed and arranged substantially as and for the purpose described.

387,534. TYPE-WRITING MACHINE. Alvah P. Osborn, Trumansburg, N. Y., assignor to Fredric D. Barta, same place. Filed Nov. 23, 1886. Serial No. 219,612. (No model.)



Claim.—The combination, with the type-wheel, the dial-plate, and the operating-arm, of the indicator adjustable in a recess in the forward edge of the operating-arm, and the toothed rack M, engaged by the indicator, substantially as specified.

387,535. HEATER FOR ANIMAL DRINKING-TROUGHS. Allen M. Parmeter, Knoxville, Ill. Filed Feb. 16, 1888. Serial No. 263,686. (No model.)



Claim.—1. The combination, with a vessel composing the body of a heater, and a heating-chamber within it, with a dead-air space between the vessel and chamber, and having a suitable fire-crate within said chamber, of a draft-tube leading into said chamber, a smoke-pipe leading from said chamber, and a fuel-feeding cylinder also leading into said chamber.

2. The combination, with a vessel composing the body of the heater, a fuel-feeding cylinder, a draft-tube, and a smoke-stack leading upward therefrom, of a hood composed of two side walls and a bottom fitted within said vessel and inclosing the lower ends of said tube, pipe, and cylinder, and a removable fire-crate located within said hood.

3. The combination, with the vessel composing the body of the heater, of a hood fitted therein constituting in its interior a heating-chamber and forming between its exterior and the said vessel one or more dead-air spaces, and a suitable fire-crate within said chamber.

4. The combination, with a vessel composing the body of the heater and a fuel-feeding cylinder mounted upon and discharging into it, of a heating-chamber within the vessel, with a dead-air space between it and the vessel and a removable fire-crate within said chamber and beneath said cylinder.

5. In a heater for animal drinking-troughs, the following instrumentalities: a metallic vessel composing the heater proper, a heating-chamber within said vessel with a dead-air space between the vessel and chamber, a fire-crate removably fitted within said chamber, a double-walled feeding-cylinder extending upward from the vessel and opening into said chamber, a double-walled draft-tube, and a double-walled smoke-pipe also extending upward from the vessel and opening into said chamber, an auxiliary vessel within which the heater proper is placed, with a space between them for the purpose of holding a supply of water about the vessel to protect the same against injury from the fire, and suitable posts and strips engaging with the vessel and adapted to be fastened to a water-trough, for the purpose set forth.

387,536. BARREL-HOOP. George W. Parrish, Salem, Va. Filed Apr. 12, 1888. Serial No. 270,493. (No model.)



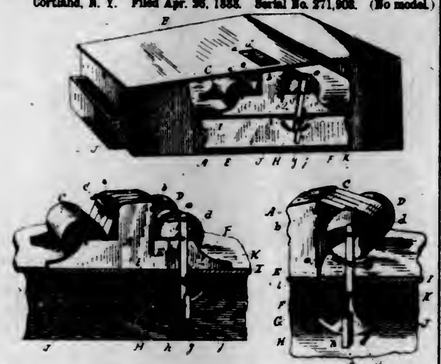
Claim.—1. A contractile hoop having at one end a curved rack-bar and at the other end a link capable of engaging the curved rack-bar, substantially as and for the purpose described.

2. A hoop having at one end a curved rack-bar and at the other end a link capable of engaging the curved rack-bar, and a hook secured to the end having the link, whereby the ends of the hoop may be drawn and held together, substantially as described.

3. A hoop having at one end a curved rack-bar and at the other end a link provided with another link, the former arranged to slide between the curved rack-bar and the hoop, and the latter capable of engaging the teeth of the curved rack-bar, and a hook secured to the end having the link, substantially as specified.

4. A hoop having at one end a curved rack-bar and at its other end a hook and a link having attached to it another link, and strips of metal passing over the head of the barrel and having hooked ends that engage the hoop, whereby the head is retained in place and the hoop may be contracted, substantially as specified.

387,537. **RECORDER FOR MONEY-DRAWERS.** Arthur R. Peck, Cortland, N. Y. Filed Apr. 26, 1888. Serial No. 271,908. (No model.)



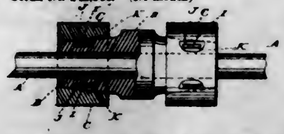
Claim.—1. The combination, with a lever having a pawl engaging with a reel-ratchet and a drawer having a projection thereon, of a trigger-bar adjustably pivoted to said lever and engaging with the drawer projection, as set forth.

2. The combination, with a lever having a pawl engaging with a reel-ratchet and a drawer provided with a projecting stud, of a vertically-adjustable trigger-bar connected to an eye in said lever and engaging with the projection on the drawer, as set forth.

3. The combination, with a lever having a pawl engaging with a ratchet on a reel and a guard-plate upon its lower end, and a drawer having a stud or projection, of a weighted trigger-bar having a pivoted and adjustable connection with said lever and engaging with the projection on said drawer, as set forth.

4. The combination, with a lever having a pawl engaging a ratchet on a reel, upon which is wound the paper or slip unwound from a roll and passing over an intermediate table, and a money-drawer having a stud or projection, of a weighted trigger-bar having a screw-threaded extension and fitted nuts, said extension passing through an eye-plate pivoted to said lever, said nuts being disposed one upon each side of said plate, said lever carrying at its extreme lower end a curved guide having a stop projection, and said weighted bar having engagement with the stud or projection on said money-drawer, as set forth.

387,538. **COMPRESSION-COUPLING.** John W. Ramsey, Beaver Falls, Pa., assignor of one-half to John Corbus, same place. Filed June 25, 1887. Serial No. 242,500. (No model.)

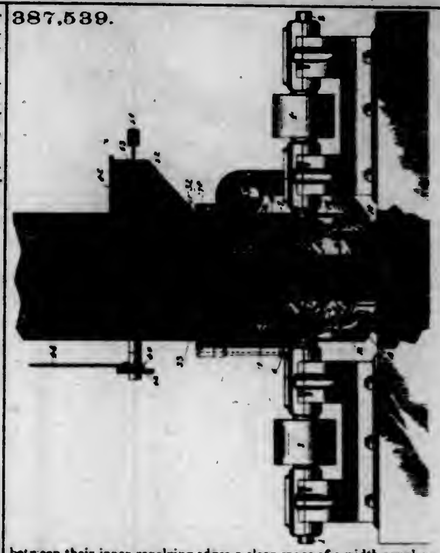


Claim.—The combination, with the aligned shafts, of the clamps having the slots J, the sleeves having the slots K, and the keys I I, as and for the purpose specified.

387,589. **REDUCING-MACHINE.** George Raymond and Albert Raymond, Chicago, Ill., assignors to the Cyclone Pulverizer Company of the United States of America, New York, N. Y. Filed Dec. 30, 1886. Serial No. 223,086. (No model.) Patented in England Jan. 26, 1887, No. 1,270.

Claim.—1. In a reducing-machine, the combination of a circular chamber, two sets of beaters placed one in each end of said chamber, and means for causing said beaters to revolve, the said beaters having

387,589.



between their inner revolving edges a clear space of a width equal approximately to one-third the length of the chamber, and the said chamber being provided with an upward discharge-opening substantially equal in length to the length of the chamber, substantially as described.

2. In a reducing-machine, the combination of a circular elongated pulverizing-chamber, two sets of beaters, one placed in each end, said beaters having a clear space between their revolving faces, means for causing said beaters to revolve, said chamber having an upward discharge-opening approximately equal in length to the chamber itself, and a separating-chamber forming an upward continuation of said discharge-opening, substantially as described.

3. In a reducing-machine, the combination of a circular elongated chamber, beaters placed therein, means for causing said beaters to revolve, said chamber being provided with an upward discharge-opening, a separating-chamber, a discharge-pipe therefrom, and a partial partition located in said separating-chamber between the said upward opening from the chamber containing the beaters and the entrance to the said discharge-pipe, substantially as described.

4. In a reducing-machine, the combination of a pulverizing-chamber, rotatable beaters mounted therein, a separating-chamber connected therewith and having a curved top and a discharge-pipe leading from a point below the top of said separating-chamber, and a partition located within the separating-chamber in front of the discharge-orifice and above the bottom of the separating-chamber, substantially as described.

5. In a reducing-machine, the combination of a circular chamber having a larger diameter at its center than at its ends, two sets of beaters arranged one in each end of said chamber, and means for causing said beaters to revolve, said circular chamber having an upward discharge-opening of approximately the length of the chamber itself and of a width approximately equal to two-thirds of its largest diameter, substantially as described.

6. In a reducing-machine, the combination of a circular chamber having a larger diameter at its center than at its ends and provided with an upward discharge-opening, two sets of oppositely-revolving beaters, one set placed in each end of said chamber, means for causing said beaters to revolve, and two air-pipes leading into said circular chamber at its base, one at each end thereof and on opposite sides of the axes of the shafts with respect to each other, substantially as described.

7. In a reducing-machine, the combination of a circular elongated pulverizing-chamber, two sets of beaters placed one in each end of said chamber, means for causing said beaters to revolve, and two air-pipes approaching the chamber from the same side and entering the chamber one at each end, with a downward turn and on opposite sides of the longitudinal axis thereof, substantially as described.

8. In a reducing-machine, the combination of a circular elongated chamber having a larger diameter at its center than at its ends, two sets of beaters, one placed in each end, means for causing said beaters to revolve, said circular chamber being provided with an upward discharge-opening substantially equal in length to the chamber itself, and guide-blocks attached one to each end wall of the said upward discharge-opening, extending upwardly and inclined outwardly, whereby partially-pulverized material, returning by gravity to the discharge-opening, is deflected toward the center of the same, substantially as described.

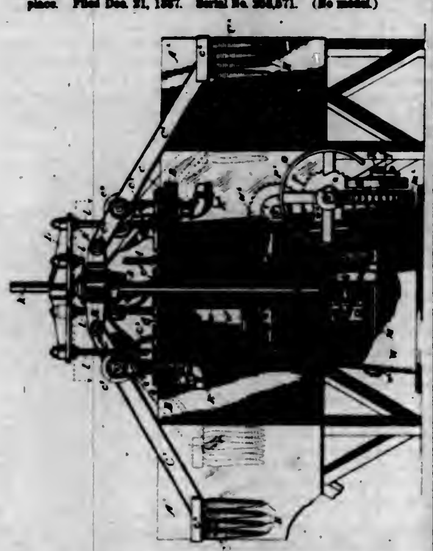
9. In a reducing-machine, the combination of an elongated circular chamber, 5, provided with central annular circumferential chamber, 34, removable grate-bars 25, placed between said chambers, and adjustable lining-plates 33 and 34, substantially as described.

10. In a reducing-machine, the combination of a pulverizing-chamber having a wide central upward discharge-opening and rotatable beaters mounted therein, with a separating-chamber placed over the discharge-opening and extending beyond the two lateral sides of the same, deflecting-plates extending each from one side of the discharge-opening to the corresponding side of the separating-chamber, and a discharge-pipe from the separating-chamber, substantially as described.

11. In a reducing-machine, the combination of a pulverizing-chamber having a central upward discharge-opening and rotatable beaters mounted therein, and a separating-chamber placed over the opening and extending beyond the two sides of the same, closed at its upper end by a curved top, with deflecting-plates extending from the lateral edges of the discharge-opening to the corresponding walls of the separating-chamber, a discharge-pipe communicating with one side of the separating-chamber, and a partition within the separating-chamber in front of the opening to the discharge-pipe, substantially as described.

12. In a reducing-machine, the combination of a pulverizing-chamber having a central upward discharge-opening, and a separating-chamber extending beyond the two sides of the opening, and rotatable beaters mounted therein placed upon the same, with a discharge-pipe extending from one side of the reducing-chamber, and a partition before the entrance of the discharge-pipe and to one side of the discharge-opening, leaving a free space above its upper edge for the passage of the reduced material to the discharge-pipe and a free space below its lower edge for the return of coarse particles to the discharge-opening, substantially as described.

387,540. **DYEING AND BLEACHING APPARATUS.** Howard Richmond, Providence, R. I., assignor to the Cop Dyeing Company, same place. Filed Dec. 21, 1887. Serial No. 258,571. (No model.)



Claim.—1. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier provided with cop-carrying arms adapted to be vibrated, oscillated, or rocked, a fixed carrier-body with reference to which the cop-carrier has movement, conduits in exterior communication with pumps, and the mouths of which are embodied in the carrier-body, and tanks circumferentially disposed with reference to the carrier-body, substantially as set forth.

2. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier provided with cop-carrying arms adapted to be vibrated, oscillated, or rocked, a fixed carrier-body with reference to which the cop-carrier has movement, and which is provided with a dead-face, conduits in exterior communication with pumps, and the mouths of which are embodied in the carrier-body, and tanks circumferentially disposed with reference to the carrier-body, substantially as set forth.

3. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier having perforations and hollow pivoted cop-carrying arms applied in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed carrier-body against the carrying-face of which the cop-carrier rotates, and which as to said face contains or embodies the mouths of conduits, with which mouths the perforations of the carrier are caused to register as the carrier rotates, and a series of tanks circumferentially disposed with reference to the carrier-body, substantially as set forth.

4. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier having perforations and hollow pivoted cop-carrying arms applied in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed carrier-body against the carrying-face of which the cop-carrier rotates, and which as to said face contains or embodies the mouths of conduits and a dead-face, with which mouths and with which dead-face the perforations of the carrier are caused to successively register as the carrier rotates, and a series of tanks circumferentially disposed with reference to the carrier-body, substantially as set forth.

5. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier having perforations and hollow cop-carrying arms applied in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed carrier-body against the carrying-face of which the cop-carrier rotates, charging-conduits in exterior communication each with a separate suction or pressure pump and the mouths of which are embodied in the carrier-body, liquid-exhausting conduits in exterior communication each with a suction or pressure pump and the mouths of which are likewise embodied in the carrier-body respectively beyond the respective mouths of the charging-conduits, gearing for rotating the cop-carrier and causing its perforations to register successively with the mouths of the respective conduits, and a series of tanks circumferentially disposed with reference to the carrier-body and the mouths of the charging-conduits, substantially as set forth.

6. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier having perforations and hollow cop-carrying arms applied in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed carrier-body against the carrying-face of which the cop-carrier rotates, charging-conduits in exterior communication each with a separate suction or pressure pump and the mouths of which are embodied in the carrier-body, liquid-exhausting conduits in exterior communication each with a suction or pressure pump and the mouths of which are likewise embodied in the carrier-body respectively beyond the respective mouths of the charging-conduits, gearing for rotating the cop-carrier and causing its perforations to register successively with the mouths of the respective conduits or with the dead-face, and a series of tanks circumferentially disposed with reference to the carrier-body and the mouths of the charging-conduits, substantially as set forth.

7. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier having perforations and hollow pivoted cop-carrying arms applied in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed carrier-body against the carrying-face of which the cop-carrier rotates, and which as to said face contains or embodies the mouths of conduits, with which mouths the perforations of the carrier are caused to register as the carrier rotates, a series of tanks circumferentially disposed with reference to the carrier-body, cop-carrier-rotating gearing, and carrier-arm-rocking gearing, substantially as set forth.

8. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier having perforations and hollow pivoted cop-carrying arms applied in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed carrier-body against the carrying-face of which the cop-carrier rotates, and which as to said carrying-face contains or embodies the mouths of conduits and a dead-face, with which mouths and with which dead-face the perforations of the carrier are caused to successively register as the carrier rotates, a series of tanks circumferentially disposed with reference to the carrier-body, cop-carrier-rotating gearing, and carrier-arm-rocking gearing, substantially as set forth.

9. In an apparatus of the class herein recited, the combination of a rotatable cop-carrier having perforations and a series of hollow pivoted cop-carrying arms applied in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed carrier-body against the carrying-face of which the cop-carrier rotates, which as to said face contains or embodies the alternately-disposed mouths of charging-conduits and of liquid-exhausting conduits, and which also contains or embodies a dead-face, with which mouths and with which

dead-face the perforations of the carrier are caused to successively register as the carrier rotates, a series of tanks circumferentially disposed with reference to the carrier-body and the mouths of the charging-conduits, intermittent cop-carrier-rotating gearing, and intermittent carrier-arm-rocking gearing, substantially as set forth.

10. In an apparatus of the class herein recited, the combination of a rotatable horizontally-disposed cop-carrier having a series of circumferentially-disposed equidistant perforations and a series of hollow radially-disposed pivoted cop-carrying arms applied as to their hollow interiors in communication with said perforations and adapted to be vibrated, oscillated, or rocked, a fixed horizontally-disposed carrier-body against the face of which the cop-carrier rotates, and which as to said face contains or embodies the equidistant circumferentially-disposed mouths of alternately-disposed charging-conduits and liquid-exhausting conduits, less, however, in aggregate number than the number of cop-carrying arms, and which also contains or embodies a dead-face, with which mouths and with which dead-face the perforations of the carrier are caused to successively register as the carrier rotates, a series of tanks circumferentially disposed with reference to the carrier-body and in such radial disposition with respect to the mouths of the charging-conduits as to present themselves to those cop-carrying arms the hollow interiors of which are, for the time being, in registry with the mouths of the charging-conduits, intermittent cop-carrier-rotating gearing, and intermittent carrier-arm-rocking gearing, substantially as set forth.

11. In a machine of the class above recited, a carrier-body the working-face of which is a plane containing or embodying, first, a series of separate mouths of charging-conduits each opening within a given radial compass from the center of said face; second, a corresponding series of mouths of liquid-exhausting conduits similarly opening within the same radial compass from said center, and which, considered with reference to circumferential distribution, alternate with the mouths of the charging-conduits, and, third, a dead-face intermediate between the mouth of the last liquid-exhausting conduit and that of the first charging-conduit of said respective series, substantially as set forth.

12. In a machine of the class above recited, a carrier-body the working-face of which is a plane containing or embodying, first, a series of separate mouths of charging-conduits; second, corresponding series of months of liquid-exhausting conduits, which, considered with reference to circumferential distribution, alternate with the mouths of the charging-conduits, and, third, a dead-face intermediate between the mouth of the last liquid-exhausting conduit and that of the first charging-conduit of said respective series, in combination with a cop-carrier the working-face of which is a plane corresponding with the face of the carrier-body, and which is provided with a series of perforations in excess of the number of conduit-mouths in said carrier-body, substantially as and for the purposes set forth.

13. In an apparatus of the class herein recited, the combination, to form a rotatable cop-carrier, of a carrier-disk having a series of equidistant radially and circumferentially disposed perforations, hollow tubular fulcra the hollow interiors of which register with the perforations aforesaid, and hollow cop-carrying arms applied to said fulcra and respectively as to their hollow interiors in communication with the hollow interiors of the fulcra aforesaid, substantially as and for the purposes set forth.

14. In a machine of the class herein recited, the combination of a rotatable flat or disk-like cop-carrier having perforations in communication with which are pivotally applied hollow cop-carrying arms adapted to be vibrated, oscillated, or rocked, a fixed correspondingly flat or disk-like carrier-body against the face of which the cop-carrier rotates, and which as to said face contains or embodies the mouths of fixed conduits and a dead-face, over which mouths and which dead-face the perforations of the carrier are caused to successively present as the carrier rotates, and a series of tanks circumferentially disposed with reference to the carrier-body and the mouths of the charging-conduits, substantially as and for the purposes set forth.

15. In an apparatus of the class herein recited, a series of tanks which partially circumscribe the carrier-body, a disk-like horizontally-disposed carrier-body erected within the partial circle formed by the circumscribing series of tanks, and embodying a sectoral face area constituting a dead-face and opposite an interspace between the tanks, conduits the mouths of which open independently of each other through the carrying-face of the carrier-body, and which are conveniently independent holes in said face, a disk-like cop-carrier provided with hollow radially-projecting cop-carrying arms adapted to be oscillated, vibrated, or rocked, having circumferentially-distributed perforations in communication with the hollow interiors of the cop-carrying arms, and adapted, in the rotation of the carrier, to register successively with the dead-face and with the conduit-mouths, cops applied to the outer extremities of the cop-carrying arms, and suitable means for both rotating the cop-carrier and raising and lowering the arms, substantially as set forth.

16. In a machine of the class above recited, in combination with a rotatable cop-carrier provided with arms adapted to be rocked, vibrated, or oscillated, a plunger-rod connected with the arms, a plunger-cam, and a cam-rocker, substantially as and for the purposes set forth.

17. In a machine of the class above recited, in combination with a rotatable cop-carrier provided with arms adapted to be rocked, vibrated, or oscillated, a plunger-rod connected with the arms, a plunger-cam and a cam-rocker, a worm-wheel connected with the cop-carrier, an intermittently-rotating counter-shaft provided with a worm engaging said worm-wheel, and gearing for intermittently operating said counter-shaft, substantially as and for the purposes set forth.

387,541. REEL FOR TAPE-MEASURES, FISHING-LINES, &c. James Rose, Patchogue, N. Y. Filed Mar. 14, 1888. Serial No. 267,178. (Model.)



Claim.—1. In a reel, the combination of the central part having two disks flanged and shouldered at their circumference and having hand-holds, with a circumferential part formed of two annular plates having spacing-rods, seated upon the shoulders and between the flanges of said disks, and forming the spool or reel adapted to be revolved upon said central flanged part, substantially as described.

2. In a reel, the combination of a circular central portion having perforations for the insertion of the fingers of one hand, and having flanges with annular plates revolving with their central apertures upon the central portion between the flanges, and having spacing posts or rods at the inner edges, substantially as described.

3. A reel consisting of a central part of separable disks flanged and shouldered at their circumference, and an annular circumferential reel part mounted upon the shoulders of the said disks between their flanges, the said central part having means for holding it in one hand, and the said circumferential part having means for revolving it between the said flanges, substantially as described.

4. In a reel, the combination, with a circular central separable portion having flanges and forming a receptacle, of an annular revolving reel portion upon the central portion between the flanges, substantially as described.

5. In a reel, the combination of two separable and equal-flanged circular disks having respectively a screw-threaded and a screw-bored stud at the center, with an annular reel portion fitted to revolve upon the disks between the circumferential flanges, as shown and described.

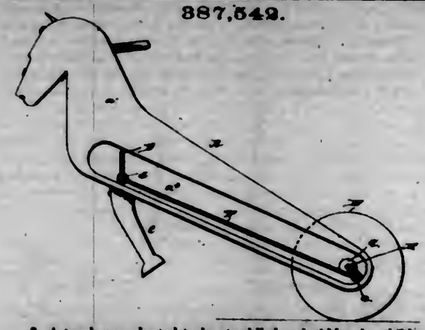
6. In a reel, the combination, with a central circular portion having end flanges, of two annular plates fitted to revolve upon the central portion between the flanges and having posts for spacing them near the inner edges, a hook secured to the inner side of one plate near the inner edge, and a handle mounted in the outer edge of one of said plates adapted to be set inward over the tape when wound, substantially as described.

7. In a reel, the combination of the circular disks having the flanges and the central studs, respectively formed with a screw-threaded end and with a female-threaded bore and formed with the registering-apertures, the annular apertured plates having the spacing posts or rods, the hook having its bent end secured in one plate near the inner end, and the handle having a sliding adjustment over the tape, as shown, and for the purpose specified.

387,542. TOY. Otto H. Rocker, Mooresville, Ind. Filed Jan. 26, 1888. Serial No. 261,817. (No model.)

Claim.—1. A toy horse adapted to be straddled and ridden by children, comprising two portions having in their meeting faces coincavities which form an interior chamber that receives and protects the operative mechanism, a crank-axle mounted at the rear of the chamber and provided with wheels, a crank-shaft mounted at the front of the chamber and provided with legs, and a rod connecting the two, the loop in said crank-shaft being longer than the loop of the crank-axle, whereby the crank-shaft is caused to oscillate, substantially as described.

387,542.



2. A toy horse adapted to be straddled and ridden by children, comprising two similar portions having in their meeting faces concavities which form an interior chamber to receive and protect the operative mechanism, a crank-axle mounted at the rear of the chamber and provided with wheels, a crank-shaft mounted at the front of the chamber and provided with legs, a rod connecting the two, and washers placed at each side of the loop of said crank-axle, whereby the connecting-rod is prevented from slipping and the device becoming inoperative, substantially as described.

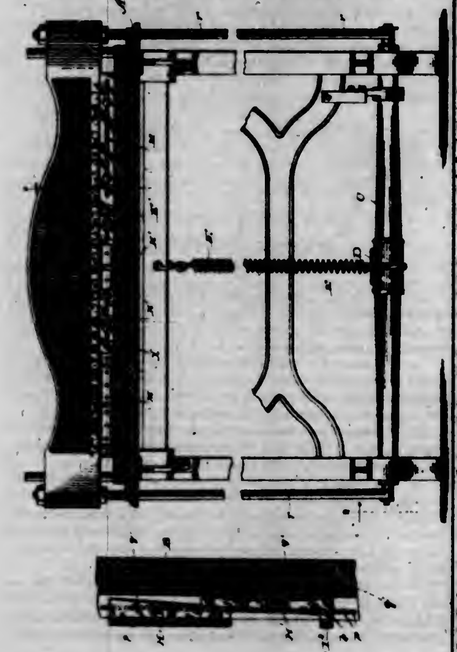
387,543. PERFORATING-MACHINE. Frederic P. Rossman, Chicago, Ill. Filed June 16, 1887. Serial No. 241,868. (No model.)

Claim.—1. In a perforating-machine, the combination, with the cross-head and punch-bar, of a sliding plate provided on its inner side with a flange confined over the line of punches, substantially as and for the purpose set forth.

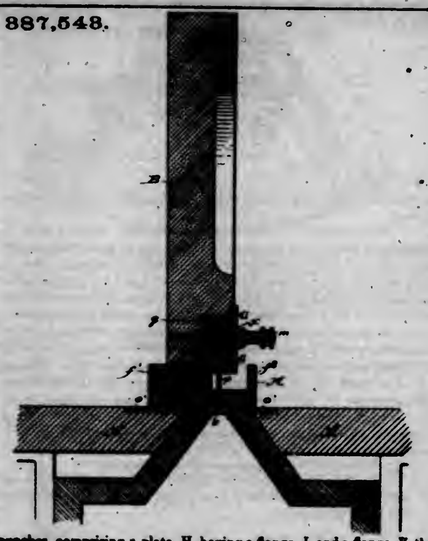
2. In a perforating-machine, the combination, with the cross-head and punch-bar, of longitudinally-extensible sliding flanges confined over the line of punches, substantially as and for the purpose set forth.

3. In a perforating-machine, the combination, with the cross-head and punch-bar, of two sliding flanges confined over the line of punches and inclined on their adjacent surfaces in opposite directions to afford an extensible bearing for the punches, substantially as and for the purpose set forth.

4. In a perforating-machine, the combination, with the cross-head and punch-bar, of a longitudinally-extensible sliding bearing for the



387,548.



punches, comprising a plate, H, having a flange, I, and a flange, I', the said flanges being confined over the line of punches and having their adjacent surfaces inclined longitudinally in opposite directions, substantially as and for the purpose set forth.

5. In a perforating-machine, the combination, with the cross-head and punch-bar, of a longitudinally-extensible sliding bearing for the punches, comprising a plate, H, having a flange, I, and a flange, I', hollowed out longitudinally on its rear side, the said flanges being confined over the line of punches and having their adjacent surfaces inclined longitudinally in opposite directions, substantially as and for the purpose set forth.

6. In a perforating-machine, the combination, with the cross-head and punch-bar, of a longitudinally-extensible sliding bearing for the punches, comprising a plate, H, having a flange, I, and a flange, I', hollowed out longitudinally on its rear side and provided with a plate, I', near one extremity, the said flanges being confined over the line of punches and having their adjacent surfaces inclined longitudinally in opposite directions, substantially as and for the purpose set forth.

7. In a perforating-machine, the combination, with the cross-head and punch-bar, of a longitudinally-slotted sliding plate, G, provided on its inner side with a flange, G', a set-screw, m, for confining the plate G in place with its flange over the line of punches, and a longitudinally-extensible sliding bearing for the punches, comprising a slotted plate, H, having a flange, I, a flange, I', the said flanges being confined over the line of punches and having their adjacent surfaces inclined longitudinally in opposite directions, and a set-screw, m, for the said extensible bearing, substantially as and for the purpose set forth.

8. In a perforating-machine, the combination, with the cross-head and punch-bar, of a sliding plate provided on its inner side with a flange confined over the line of punches, and a graduated scale, K, on the front face of the cross-head above the punch-bar, substantially as and for the purpose set forth.

9. In a perforating-machine, the combination, with the table A and cross-head, of an index-finger, L, substantially as and for the purpose set forth.

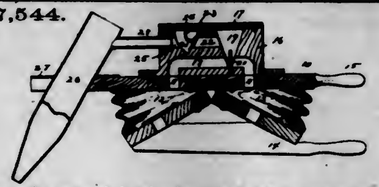
10. In a perforating-machine, the combination, with the table A and cross-head, of an adjustable index-finger, L, substantially as and for the purpose set forth.

11. In a perforating-machine, the combination, with the table A and cross-head B, of an index-finger, L, formed in adjustable sections, substantially as and for the purpose set forth.

387,544. FUMIGATOR. Abbe Spitler, Moscow, Idaho. Filed June 2, 1888. Serial No. 275,726. (No model.)

Claim.—1. In an animal-exterminator, the combination, with a table containing spaced ports, bellows attached beneath the ports, and a fire-chamber secured in the forward end of the table, of a block containing an essentially U-shaped port connecting with the ports of the table, a forward and rear recess, the latter connecting with the U-shaped port and a second port uniting said recesses, a valve closing the forward end of the latter port, and a tubular connection between

387,544.



the forward recess and fire-chamber, substantially as shown and described.

2. In an animal-exterminator, the combination, with the table 10, containing spaced ports 11, bellows 12 and 13, communicating with said ports, and a forwardly-inclined fire-cylinder, of a block, 16, provided with the ports 18 and 22 and recesses 19 and 21, a spring-actuated valve, 23, closing the port 22, and a tube, 28, connecting the recess 21 and the fire-cylinder, substantially as shown and described.

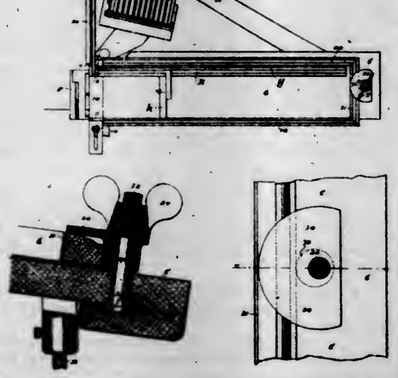
3. In an animal-exterminator, the combination, with the table 10, containing spaced ports 11, bellows 12 and 13, communicating with said ports, and a forwardly-inclined fire-cylinder having a tapering end, of a block, 16, provided with parallel ports 18 and 22, a rear vertical recess, 19, and a forward recess, 21, a spring-actuated valve, 23, closing the forward end of the port 22, a flexible valve, 20, located in the port 18 and recess 19, and a tube, 28, connecting the forward recess and cylinder, substantially as shown and described.

387,545. LINE-GUIDE FOR FISHING-RODS. James Strode and Ada M. Comstock, Waterbury, Conn. Filed Jan. 30, 1888. Serial No. 262,418. (No model.)



Claim.—The herein-described line-guide for fishing-rods, made from a single piece of sheet metal, the central portion punched to form eyes *a a*, and having shanks *d d* projecting therefrom, the said eye portions bent at an angle to said shanks, combined with bushings through the eyes closed down upon both sides and so as to form a rounded interior surface for the eyes, substantially as described.

387,546. JUSTIFYING APPARATUS. Joseph Thorne, Port Richmond, N. Y., assignor to the Thorne Machine Company, of New York. Filed June 4, 1885. Serial No. 167,600. (No model.)



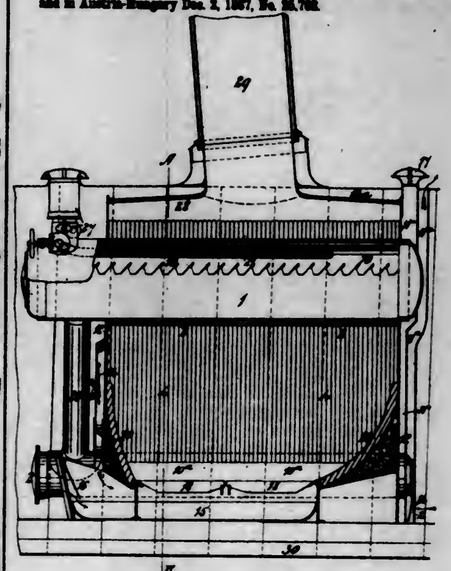
Claim.—1. The combination, with the table C, its head 10, and the galley G, of the combined end and top clamp, 30, substantially as described.

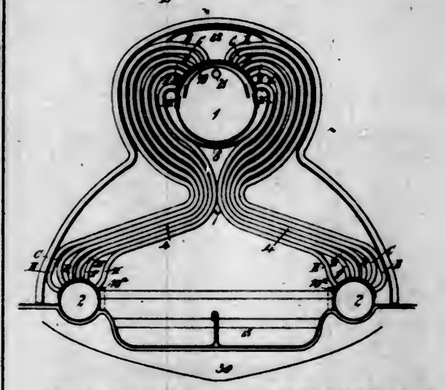
2. The combination, with the galley G and table C, having the head 10, of the block 12, fixed upon the head, and having the lip 6, the side-stick having the slot 5 to engage with said lip, and having a lateral support, *g*, at its lower end, and the movable gage 11, substantially as described.

3. The combination, with the setting-stick having one side removed at its delivery end, of a frictional bearing, as the rubber 9, substantially as described.

4. The combination, with the table C, its head 10, and the galley G, of the clamp 30 and cam 70, substantially as described.

387,547. STEAM-GENERATOR. John I. Thornycroft, Chiswick, County of Middlesex, England. Filed July 6, 1887. Serial No. 243,573. (No model.) Patented in England Jan. 31, 1885, No. 1,464; in France June 26, 1887, No. 184,894; in Italy June 30, 1887, XLIII, 378; in New South Wales Aug. 2, 1887, No. 86; in Spain Aug. 20, 1887, No. 11,367, and in Austria-Hungary Dec. 2, 1887, No. 35,702.





Claim.—1. In a steam-generator, a combined collector and separator comprising a vessel, 1, baffle-plate 19, and perforated steam-pipe 21, said baffle-plate being arranged above said steam-pipe and partially inclosing the same, substantially as herein described.

2. In a steam-generator, a combined collector and separator comprising a cylindrical vessel, 1, with curved baffle-plate 19, extending lengthwise thereof and formed with notched or serrated edges, substantially as herein described, for the purpose specified.

3. In a steam-generator, a combined collector and separator comprising a vessel, 1, baffle-plate 19, having notched or serrated edges, and perforated steam-pipe 21, substantially as described.

4. In a steam-generator, the combination of a combined collector and separator comprising a cylindrical vessel, a curved baffle-plate with notched or serrated edges, and a perforated steam-pipe arranged lengthwise and below said baffle-plate, water vessels or chambers 2, and pipes connecting said combined collector and separator with said water vessels or chambers, substantially as described.

5. In a steam-generator, the combination of a combined collector and separator, water vessels or chambers 2, pipes 4, connecting said collector and separator with said water vessels or chambers, and a return-pipe, some of said pipes 4 being arranged close together for the greater part of their length to form inner and tubulous close walls of flues, within which other pipes 4 are separately placed, the pipes forming said inner walls being bent near their lower ends to form inlet-passages 5, and the pipes forming said outer walls being bent near their upper ends to form outlet-passages 6, substantially as described, for the purposes specified.

6. In a steam-generator, the combination of a combined collector and separator, water vessels or chambers 2, pipes 4, connecting said collector and separator with said water vessels or chambers, and a return-pipe, some of said pipes 4 being arranged close together for the greater part of their length to form inner and outer longitudinal tubulous close walls of flues, within which other of said pipes are separately arranged and bent at other parts to form inlet and outlet passages 5 and 6 to and from said flues, and others of said pipes 4 being arranged to form a partial wall or division, 7, at each end of the combustion-chamber, substantially as herein described, for the purposes specified.

7. In a steam-generator, the combination of a combined collector and separator comprising a cylindrical vessel, 1, curved baffle-plate 19, having notched or serrated edges, and a perforated steam-pipe, 21, arranged below said baffle-plate, water vessels or chambers 2, pipes 4, connecting said collector and separator with said water vessels or chambers, and return-pipes 26, some of said pipes 4 being arranged to form the inner and outer close tubulous walls of flues with inlet and outlet passages 5 and 6, and within which flues other pipes 4 are arranged, while other pipes 4 are arranged to form partial walls or divisions 7 at the ends of the combustion-chamber, substantially as described, for the purposes set forth.

8. In a steam-generator, the combination of a combined collector and separator comprising a vessel, a baffle-plate, and a steam-pipe, water vessels or chambers 2, pipes 4, return-pipes 26, a combustion-chamber, an ash-pit with air-inlet valve 16, and an air-chamber provided with inlet-valve 14, for admission of air, said air-chamber being situate at, and adapted to cool one end of the combustion-chamber, substantially as described, for the purposes specified.

9. In a steam-generator, a combined collector and separator comprising a vessel, a baffle-plate, and a steam-pipe, water vessels or chambers 2, pipes 4, return-pipes 26, a combustion-chamber, an ash-pit with valve 16, and chambers 11 11°, with valves or doors 14 for admission of air, all substantially as described, for the purposes set forth.

10. In a steam-generator, a combined collector and separator comprising a vessel, a baffle-plate, and a steam-pipe, water vessels or chambers 2, pipes 4, return-pipes 26, a combustion-chamber, an ash-pit with valve 16, and chamber 11° in communication with the ash-pan and having an outlet closed by a loaded valve, 17, substantially as herein described, for the purposes specified.

11. In a steam-generator, a combined collector and separator, water vessels or chambers 2, pipes 4, return-pipes 26, a combustion-chamber, an ash-pit with valve 16, chamber 11 in communication with said ash-pit, chamber 11° in communication with the external atmosphere, valves 14 for admission of air to said chambers, and chamber 11°, with loaded valve 17, all substantially as herein described, for the purpose set forth.

12. In a steam-generator, a combined collector and separator, comprising a vessel, 1, a baffle-plate, and a steam-pipe, water vessels or chambers 2, pipes 4, return-pipes 26, blocks or plates 10 and 10°, of refractory material, fire-grate 3, ash-pan 15, with valve 16, chambers 11 11°, with valves 14 for admission of air, and chamber 11°, with loaded valve 17 for exit of steam, all substantially as herein described, for the purposes set forth.

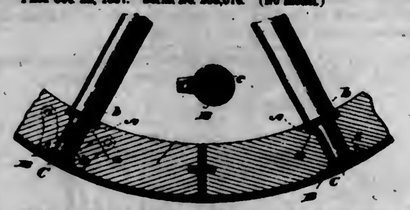
13. In a steam-boiler, a combined collector and separator comprising a vessel, 1, a baffle-plate, and a steam-pipe, water vessels or chambers 2, pipes 4, return-pipes 26, fire-grate 3, blocks or plates 10 and 10°, of refractory material, shield 8, of non-conducting material, ash-pan 15, with valves 16, chambers 11 and 11°, with valves 14 for admission of air, chamber 11°, with loaded valve 17 for exit of steam, flue 28, and uptake or chimney 29, all substantially as herein described, for the purposes specified.

387,548. METHOD OF MAKING ARBORS FOR CLOCKS AND WATCHES. William H. Wheeler, New Bedford, Mass., assignor to the Weeden Manufacturing Company, same place. Filed Aug. 18, 1887. Serial No. 247,297. (No model.)



Claim.—The method employed in manufacturing arbors, which consists in forming a core or center from a straight rod of metal, then forming thereon a body by bending a plate of sheet metal around the core, and, lastly, compressing the body closely upon said core by the action of a drawing-die, substantially as and for the purpose shown.

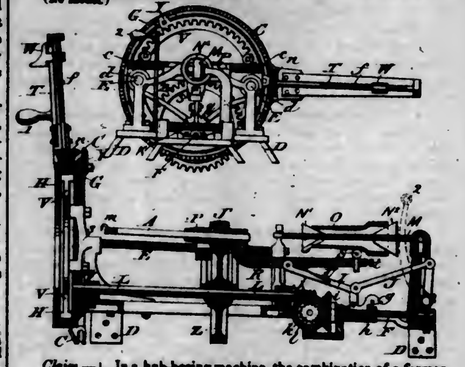
387,549. WHEEL. A. McIntosh Williamson, Philadelphia, Pa. Filed Oct. 22, 1887. Serial No. 253,076. (No model.)



Claim.—1. The combination, with the elastic cushion and the follies of a vehicle-wheel, of the corrugated plate, substantially as specified.

2. The combination, with the spokes and follies of a vehicle-wheel and the cushions C, of the clamping-plate interposed between the felly and tire, substantially as specified.

387,550. HUB-BORING MACHINE. Amos Wonser, Davenport, Iowa. Filed July 30, 1888. Renewed June 1, 1888. Serial No. 275,691. (No model.)



Claim.—1. In a hub-boring machine, the combination of a former having the shape of the exterior surface of an axle-box, a cutter-bar provided at one end with a cutter adapted to cut the bore in a hub and having the other end adapted to bear upon and be reciprocated over the former, the said cutter-bar being attached to a rocking cross-head mounted in reciprocating bearings, means to reciprocate the cutter-bar, and means to hold in place and revolve a hub in contact with the cutter, all of the said devices being constructed and arranged to cause the bore in the hub to be cut the size and shape of the axle-box, substantially as and for the purposes described.

2. In a hub-boring machine, the bar A, provided with a cutter, *m*, and rigidly attached to the cross-head P, pivotally mounted in movable bearings placed on fixed supports, guide-arm R, provided with friction-roller *s*, former O, adjustably secured on the shaft M, in combination with mechanism for holding and rotating the hub of a wheel in position to be bored by the cutter, and mechanism for reciprocating longitudinally the cross-head carrying the cutter-bar and guide-arm, substantially as set forth and described.

387,551. VEHICLE-WHEEL. Henry A. Arnold, Lake Geneva, Wis. Filed Apr. 3, 1888. Serial No. 269,462. (No model.)

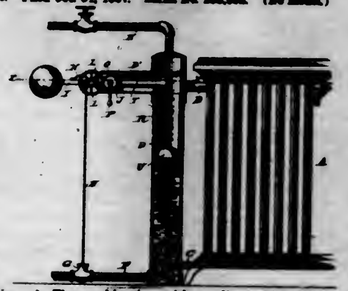


Claim.—1. The combination of the parallel beams, the inclined axle secured between the outer ends thereof, and the wheel mounted on said axle and having its upper portion passing between the parallel beams, as set forth.

2. The combination of the parallel beams, the upper one having a downwardly-turned end and the lower one having a beveled end, the inclined axle secured between said ends, and the wheel mounted on the axle, as set forth.

3. The combination of the parallel beams, the inclined axle mounted in the ends of the beams, the skein surrounding the axle between the ends of the beams, the thimble mounted on the skein, and the wheel secured to the thimble, as specified.

387,552. RADIATOR-REGULATOR. Peter W. Barry, Gunnison, Colo. Filed Oct. 31, 1887. Serial No. 253,982. (No model.)



Claim.—1. The combination, with a radiator, of a tank connected at top and bottom with the radiator and provided with an inlet and outlet pipe, a valve for opening and closing the outlet-pipe, a weighted lever connected to said valve, and a float in the tank and connected to the weighted lever, substantially as described.

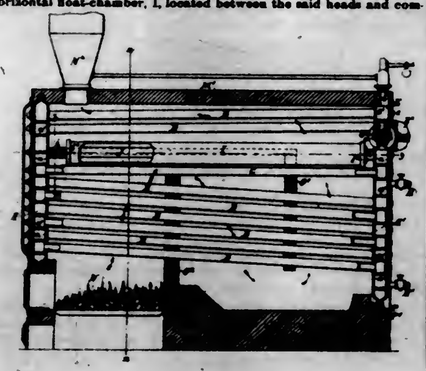
2. The combination, with a radiator, of a tank connected at top and bottom with the radiator and provided with an inlet and outlet pipe, a valve in the outlet-pipe, a weighted lever provided with an arm projecting into the tank, a pulley on the said arm, a float in the tank, a chain secured to the float and passing over the pulley, and a connection between the valve and weighted lever, substantially as described.

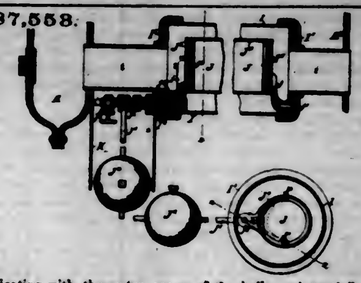
3. The combination, with a tank constructed to be connected to the radiator at top and bottom and provided with a lateral extension and an inlet and outlet pipe, and a valve in the outlet-pipe, of a shaft journaled in the lateral extension and provided with a drum and a pinion, a weighted lever mounted on the shaft and provided with a pinion meshing the pinion on the said shaft, and with an inwardly-projecting arm carrying a pulley, a chain on the drum, a float on the end of the chain, and a connection between the valve in the outlet-pipe and the weighted lever, substantially as described.

4. The combination, with a tank constructed to be connected to a radiator provided with a lateral extension and inlet and outlet pipes, and a valve in the outlet-pipe, of a shaft journaled in the lateral extension and provided with a drum and pinion, a sleeve on the shaft provided with an inwardly-projecting arm carrying a pulley and a weighted lever carrying a pinion meshing with the pinion on the said shaft, a pawl engaging the pinion on the weighted lever, a chain on the drum and having a float at its end, and a rod connecting the valve in the outlet-pipe with the weighted lever, substantially as described.

387,553. STEAM-BOILER FURNACE. Gilbert A. Colby, Chicago, Ill., assignor, by mesne assignments, to M. Cochran Armour, same place. Filed June 27, 1887. Serial No. 242,582. (No model.)

Claim.—1. The combination, with the vertical water-heads A A', a series of inclined water-tubes, B B B, connected at their opposite ends with the said water-heads, and a second series of horizontal water-tubes, C C C, also connected with the said water-heads, of a horizontal float-chamber, I, located between the said heads and communicating with the water-space of the boiler, substantially as described.





2. The combination, with a boiler comprising vertical water-heads A A', and water-tubes connected at their opposite ends with said heads, and a furnace-casing surrounding said boiler, of a float-chamber, I, connected at its opposite ends with the said heads and located at a point adjacent to the side wall of the boiler-casing, a float within said chamber, and a pivotal support for the float provided with an arm, J', extending outwardly through an opening in the boiler-casing, substantially as described.

3. The combination, with a boiler-casing and boiler comprising a float-chamber, I, of a float located within said chamber, a pivotal support for the float extending through the wall of the float-chamber and provided with an arm, J', and a shell, K, inserted in the boiler-casing and extending inwardly to and around the pivotal support of the float at the point where it emerges from the float-chamber, substantially as described.

4. The combination, with the float-chamber of a boiler, of a float provided with a steam opening at its upper part, a pivotal support for the float extending through the wall of the float-chamber and provided with an arm rigidly attached to the float, said pivotal support and arm being provided with a passage communicating with the interior of the float at the bottom part thereof and with the open air, and a hand-valve located in said passage exterior to the float-chamber, whereby the said passage may be kept normally closed to prevent escape of steam from the boiler and may be opened at desired times to allow the escape of water from the float, substantially as described.

5. The combination, with a horizontally-arranged float-chamber, of a cylindric horizontally-arranged float extending through the greater part of the length of the said float-chamber, and a pivoted supporting arm or arms for the said float, substantially as described.

6. The combination, with a horizontally-arranged float-chamber, of a float and supporting-arms for the float attached to opposite ends of the latter and having separate pivotal connection with opposite end walls of the float-chamber, substantially as described.

7. The combination, with a horizontally-arranged float-chamber, of a cylindric float consisting of a hollow cylinder and metal disks or end walls secured in the end of said cylinder and provided with supporting-arms cast integral therewith, substantially as described.

387,554. PROCESS OF TREATING IRON ORE. Gerrit Cornelius, Glens Falls, N. Y. Filed May 26, 1887. Serial No. 239,493. (No model.)

Claim.—1. The process of treating iron ore containing phosphorus or titanium, or both, which consists in first crushing the ore, then concentrating the same by specific gravity, then separating the particles of the concentrated ore according to their fineness, and, finally, exposing the fine particles resulting from this separation to the action of magnets, substantially as described.

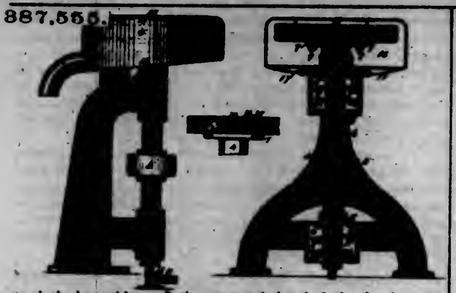
2. The process of treating iron ore containing phosphorus or titanium, or both, which consists in first crushing the ore, then concentrating the same by specific gravity, then passing the concentrated mass over a sieve or screen, then recrushing the particles which pass over the screen, and, finally, exposing the recrushed particles to the action of magnets.

387,555. MACHINE FOR GRINDING THE MOUTHS OF GLASS BOTTLES, JARS, &c. John K. Cornelius, St. Louis, Mo. Filed Feb. 20, 1888. Serial No. 264,846. (No model.)

Claim.—1. In a glass-grinding device, the vertical tubular rotary shaft, the band-wheel that drives it, suitable means for supplying water within said shaft, the rotary grinding-wheel carried by said shaft, and the circular ridges on the face of said wheel, arranged to provide grooves between them in which to grind and bevel the mouths of glass vessels, &c., circumferentially, to avoid a lateral grind and production of sharp cutting-edges, substantially as and for the purpose set forth.

2. In a glass-grinding device, the combination of the supporting-

387,555.



stand, the journal-boxes 2, the rotary tubular shaft that has bearings in said boxes, the band-wheel that drives it, the flanged bed-plate that surmounts said shaft, the grinding-wheel secured on said bed-plate and to the screw-head of the tubular shaft, and the circular ridges on the face of said wheel, that provide circumferential grooves between them to guide, grind, and form smooth bevel edges to the mouths of glass vessels, substantially as and for the purpose set forth.

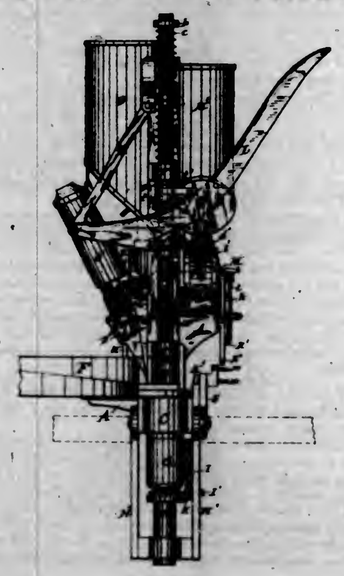
3. In a glass-grinding device, the combination of the stand, the rotary tubular shaft and band-wheel that drives it, the hydrant-pipe that ascends through said shaft, the bed-plate that surmounts it, the grinding-wheel secured on said bed-plate and to the screw-head of the tubular shaft, the circular ridges on the face of said wheel, that provide between them circumferential grooves to guide, grind, and bevel the mouths of glass vessels, &c., and the drip-chamber 16 and drainage-pipe 18, to receive and carry off the waste products from the wheel, substantially as and for the purpose set forth.

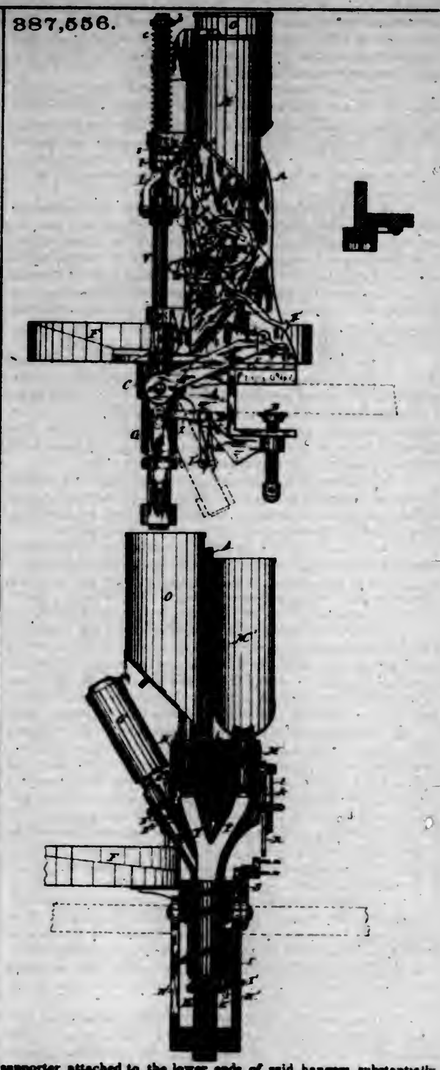
4. In a glass-grinding device, the combination of the stand, the rotary tubular shaft and the band-wheel that drives it, the water and sand conveyer within said rotary shaft, the grinding-wheel 8 and bed-plate 7, that surmount said shaft, and a drainage-tube, substantially as and for the purpose set forth.

5. In a glass-grinding device, the combination of the stand, the vertical tubular rotary shaft, the band-wheel that drives it, the hydrant-pipe within said shaft, the flat rotary grinding-wheel secured to the screw-head of the rotary shaft, the said hydrant-pipe arranged to throw a jet of water through and onto the grinding-wheel, and the drip-chamber 16 and its drainage-pipe that collect and discharge the overflow from the wheel, substantially as and for the purpose set forth.

387,556. CARTRIDGE-LOADER. Howard C. Dorchester, Geneva, N. Y. Filed Feb. 21, 1887. Serial No. 228,302. (Model.)

Claim.—1. In a cartridge-loader, the combination, with a stationary upright cartridge-receiver having its receiving end at the base, of hangers hinged to opposite sides of said receiver and a cartridge-





supporter attached to the lower ends of said hangers, substantially as described and shown.

2. In a cartridge-loader, the combination, with the stationary upright cartridge-receiver having its receiving end at the base and a cartridge-supporter arranged movably under the cartridge-receiver, of a cartridge-extractor sliding longitudinally on the said receiver, substantially as described and shown.

3. In a cartridge-loader, the combination of an upright cartridge-receiver having its receiving end at the base, a cartridge-extractor at said receiving end, a cartridge-supporter arranged removably under the receiver, and a lever for transmitting motion from the supporter to the extractor, as and for the purpose set forth.

4. The combination, with the upright cartridge-receiver having its receiving end at the base, of a cartridge-extractor sliding on said receiver, a cartridge-supporter suspended from the receiver and adapted to swing to and from the receiving end thereof, and a lever arranged to transmit motion from the supporter to the extractor, substantially as set forth.

5. The combination, with the upright cartridge-receiver having its receiving end at the base, of a cartridge-extractor sliding longitudinally on the receiver, a cartridge-supporter suspended from the receiver and adapted to swing to and from the receiving end thereof,

a bell-crank having one of its arms connected with the extractor and the other arm adapted to be encountered by the swinging cartridge-supporter, and a spring for sustaining the extractor in its normal position, substantially as and for the purpose set forth.

6. In combination with the cartridge-receiver having its receiving end at the base, an extractor sliding longitudinally on said receiver, a cartridge-supporter hinged on the receiver, a bell-crank having one of its arms connected with the extractor and the other arm adapted to be encountered by the swinging supporter, and a spring to partially lock said supporter at the extremes of its motion, substantially as described and shown.

7. In a cartridge-loader, the combination, with the cartridge-receiver, of a cartridge-supporter arranged movably to and from the receiving end of said receiver, a powder-duct leading to said receiver, a powder-charger arranged movably in and out of communication with said duct, a powder-receptacle communicating with the aforesaid charger, and levers transmitting motion from the cartridge-supporter to the powder-charger and throwing the latter in communication with the aforesaid duct simultaneously with the movement of the cartridge-supporter to the cartridge-receiver, substantially as set forth.

8. In a cartridge-loader, the combination, with the cartridge-receiver, of ducts leading to said receiver, a main powder-charger arranged movably in and out of communication with one of the ducts, a priming-charger arranged movably in and out of communication with the other duct, and a lever arranged to transmit motion from the main charger to the priming-charger and move the latter to its delivering position in advance of the former, as set forth.

9. In combination with the cartridge-receiver and ducts leading thereto, an oscillatory main powder-charger, a reciprocating priming-charger, and a lever arranged to transmit motion from the oscillatory charger to the reciprocating charger, as set forth and shown.

10. In combination with the cartridge-receiver and a duct leading thereto, a reciprocating charger having a diagonal ammunition-channel adapted to communicate at one end with the duct, and an ammunition-receptacle having a discharge-spout in the path of the opposite end of the channel of the charger, substantially as described and shown.

11. In combination with the cartridge-receiver and oscillatory ammunition-chargers communicating with said receiver, an oscillatory cartridge-supporter under the receiver, an arm projecting from the cartridge-supporter, a crank on the aforesaid charger, and an arm connected to the said crank and adapted to engage and release the arm of the cartridge-supporter, substantially as and for the purpose set forth.

12. In combination with the cartridge-receiver and oscillatory ammunition-chargers communicating with said receiver, an oscillatory cartridge-supporter under the receiver, an arm projecting from said supporter and provided with laterally-projecting pins at its free end, a crank attached to the chargers, an arm pivoted on said crank and provided at its pivoted end with a lateral extension and having its free end provided with a hook adapted to enter between the aforesaid pins of the cartridge-supporter arm, and a spring connecting the lateral extension of the pivoted arm with the axis of the chargers, substantially as described and shown.

13. In combination with the cartridge-receiver, ramrod, and oscillatory ammunition-charger, a hook hinged on the said charger, a guide parallel with the ramrod and guiding the free end of the aforesaid hook, and a cam hinged on the ramrod yielding upwardly, but restrained from yielding to downward pressure, and adapted to engage the aforesaid hook during the upward movement of the ramrod, substantially as described and shown.

14. In combination with the cartridge-receiver, ramrod, and oscillatory ammunition-charger, a hook hinged on said charger, a guide parallel with the ramrod and guiding the free end of the aforesaid hook and provided with a notch for the release of the hook, a spring pressing the hook toward the ramrod, and a cam hinged on the ramrod and restrained from yielding to downward pressure and adapted to engage the hook during the upward movement of the ramrod, substantially as described and shown.

15. In combination with the upright frame provided with the cartridge-receiver at its base and the ramrod sliding on said frame, the sleeve *a*, adapted to be clamped on the ramrod at different points in the length thereof, the toggle T, connected with the frame, and the lever L, pivoted on the aforesaid sleeve and connected with the toggle, substantially as described and shown.

16. The combination of the frame A, provided with the cartridge-receiver at its base and with guide-eyes above said receiver, the ramrod sliding in said eyes and provided with the collar *b*, the spring *c*, interposed between the said collar and one of the guide-eyes on the frame, a cushioned stop on the ramrod under the said guide-eye, the toggle T, connected to the frame, and the lever L, pivoted on the ramrod and connected with the toggle, substantially as described and shown.

17. In combination with the frame A, provided with the cartridge-receiver at its base and powder and shot ducts converging to said receiver, oscillatory powder and shot chargers arranged axially in line with each other and united to turn synchronously and having their delivering end in different positions in relation to each other, a reciprocating priming-charger communicating with the powder-duct, a lever pivoted at one end on the frame and connected intermediate its length with the priming-charger and slotted at its opposite end, and a stud-pin passing through the slotted end of said lever and secured to the end of the powder-charger eccentrically in relation to the axis of the latter, substantially as described and shown.

18. In combination with the annular charger-seat communicating with the ammunition-duct and the shot-receptacle communicating with said seat, the oscillatory shot-charger in the aforesaid seat and provided with the diametrical shot-chamber and with a groove extending from said shot-chamber part way around the periphery of the charger, and the lug *d*, projecting into said groove, substantially as and for the purpose set forth.

19. In combination with the annular charger-seat and communicating with the ammunition-duct and the shot-receptacle communicating with said seat, the oscillatory shot-charger in the aforesaid seat and provided with the diametrical shot-chamber and with a groove extending from said shot-chamber part way around the periphery of the charger, and the scraper *e*, projecting into the aforesaid groove, substantially as and for the purpose set forth.

20. In combination with the ammunition-charger having the chamber *f* extending through it, the gage *g*, seated movably in said chamber and provided with perforations at different points of its length, and the spring-plate A, secured to the end of the charger and having its free end adapted to enter the perforation of the gage, substantially as described and shown.

387,557. HUB. William H. Rehse, Berlin, Wis. Filed Apr. 5, 1888. Serial No. 269,710. (No model.)



Claim.—1. In a vehicle-hub, the combination, with the hollow shank A, having formed on a portion of its outer surface screw-threads, the stationary abutting disk B, formed integral with the said shank A and standing at right angles to the same, this disk B being provided upon its outer or bearing face with projections which enter the tenons of the spokes, the ring C, formed integral with the said shank and disk in the angle formed by the same, this ring being provided with longitudinal radial dovetail slots *c*, and the spokes provided with tapering or wedge-shaped tenons, each one of these tenons being provided on its extreme inner end with a smaller dovetail tenon, *c'*, which enter the dovetail slots *c* in the ring C, and the adjustable clamping-disk E, adapted to firmly clamp and hold the spokes in their proper place, as and for the purpose herein set forth.

2. The combination, with the hollow shank having formed integral with it the abutting disk B, the ring C, formed integral with the said shank and disk in the angle formed by them, the disk being of less width than the spoke-tenons and provided with radial dovetail slots *c*, and the spokes provided with dovetail tenons *c'*, which are adapted to enter the said slots *c* and serve to retain the spokes in the hub, of the clamping-disk, substantially as described.

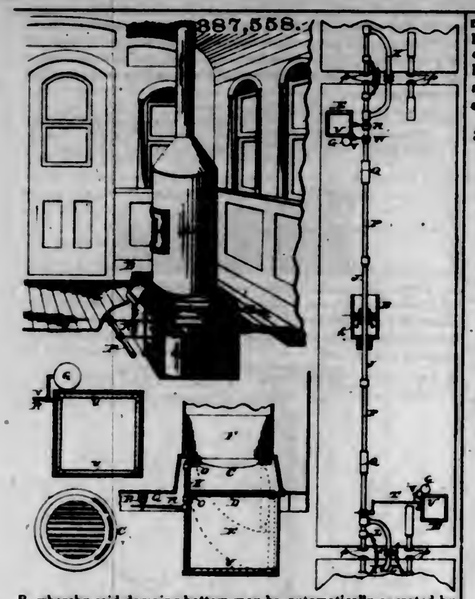
3. The combination of the hub provided on its inner end with a collar, *b*, and the axle provided with a spindle adapted to enter the said hub, of the clip G, consisting of the two parts *g g'*, clamped to the axle by means of the bolt H, these two parts forming when thus attached to the axle a complete cylinder, which embraces the said collar *b* upon the hub and permits the same to rotate freely, the interposed washers, and the sand-band extension I, formed upon the upper part of the clip and embracing the upper portion of the shank of the hub, the said bolt extending through the parts of the clip and axle, substantially as described.

387,558. Heater for Railway-Cars. Henry B. Perrine and Rodney J. McAnley, Cleveland, Ohio. Filed Mar. 7, 1887. Serial No. 229,664. (No model.)

Claim.—1. The combination, in a railroad-car stove or heater, of one or more downwardly opening or dumping bottoms, catches for holding the same raised or closed, and a cylinder and piston mechanism for releasing the catches, substantially as described.

2. In a railway stove or heater, the combination of a dumping-bottom, catches for holding the same raised or closed, a shaft, N, to which the said catches are connected, a lever, R, connected with said shaft, and a movable rod or pipe, P, connected directly with said lever

387,558.



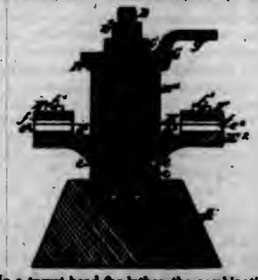
R, whereby said dumping-bottom may be automatically operated by the movement of said rod or pipe, substantially as described.

3. In stoves for railway-cars, the combination, with the fire-pot, of a base having a hinged grate, and a hinged trap-door in the bottom of said base, covering an opening through the car-floor, and a bottomless chamber beneath the said opening, the said grate and trap-door being held up by a latch mechanism, a coil of perforated pipe arranged in said bottomless chamber and connected with a chemical fire-extinguisher, substantially as described.

4. The combination, substantially as described, of a stove-base having a hinged grate, a hinged trap-door in the bottom of said base, covering an opening through the car-floor, a bottomless chamber beneath said opening, and a coil of perforated pipes in said bottomless chamber, connected with a chemical fire-extinguisher, and a latch and latch-operating mechanism for tripping the grate and trap-door, consisting of an air-cylinder secured to the under side of the car, provided with a piston having hollow piston-rods extending the full length of the car, and connected near each end with levers connected with and operating the latches of the grates and trap-doors, and the cocks of the extinguishers, all constructed and arranged to operate as and for the purposes specified.

5. The combination of the air-cylinder H, secured to the under side of the car and provided with a piston, I, having hollow piston-rods J J extending full length of the car, and provided with bumpers on each end, and hose with couplings K for connecting with adjacent cars, also connected, by cranks, levers R and W, and connecting-rod T, with the latches O O, and the valve V on extinguisher G, all constructed and operating substantially as and for the purpose specified.

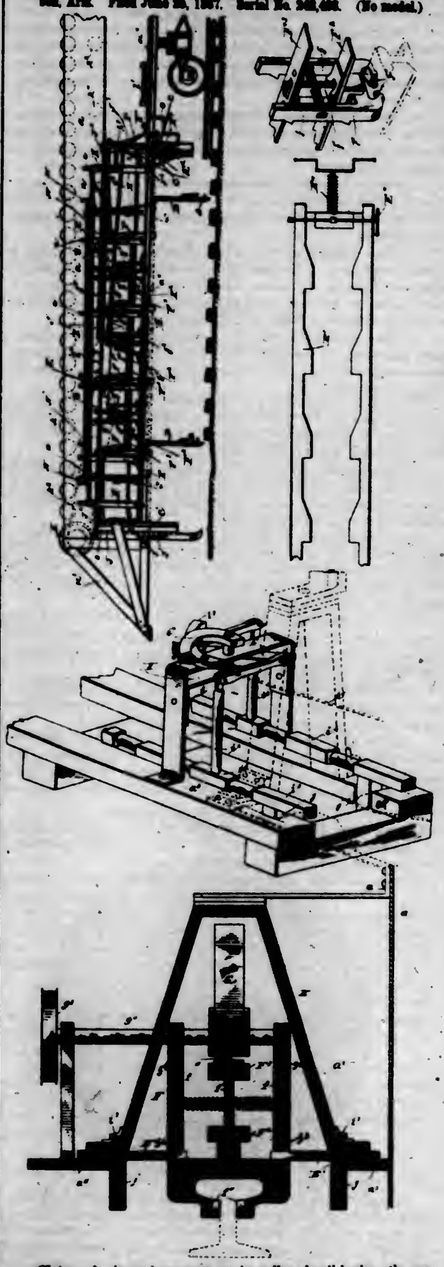
387,559. Turret-Head for Lathes. Orramel G. Orr, Lima, Ohio. Filed Oct. 27, 1887. Serial No. 253,514. (No model.)



Claim.—In a turret-head for lathes, the combination of the tool-post block A, a center post, B, a cylinder surrounding the same, and a flange formed upon the bottom thereof, a lower extension having a

room, a thumb-lever, D, pivoted thereto, a lug pivoted to the said lever and projecting through a hole in the said flange, a coil-spring, *d'*, surrounding the said lug, a turret, E, surrounding the cylinder C having recesses *e* in the lower edge thereof for receiving the said lug, and a nut, G, having a handle, *g*, screwed upon the cylinder C, for securing the turret in position, as and for the purpose described.

387,560. Constructing Railroads. Charles H. Hosser, Tucson, Ariz. Filed June 25, 1887. Serial No. 242,402. (No model.)



Claim.—1. As an improvement in railroad-rail laying, the combination herein described, comprising the car and its extensions, hav-

ing endless chain belts carrying the ties, the rail-car, the rollers secured in the sills of said cars, and the tie-car having inclined roller-frames and the mechanism for lowering said rails, all constructed and arranged and designed to operate substantially as shown and described.

2. The combination, with the car having the forward and rearward extensions, of the sprocket-wheels secured at the ends of said extensions, the grooved pulleys, the endless chain belts, and the driving mechanism, substantially as shown and described.

3. The combination, with the car having the forward extension provided with side platforms, of the series of clutches, the spring-held guide-plates, the U-shaped bars and the pinions or cog-wheels, the friction-brakes, and the operating mechanism, substantially as shown and described.

4. The combination, with the car having the forward extension, of the vertically-disposed guides D D, having lower pivoted ends, substantially as shown and described, whereby the rails are guided into position, as set forth.

5. The combination, with the clutches, of the plates F^1 F^2, carrying rollers 2 3 at their ends, and the upright guideway-plates C and E^2, wherein said rollers are designed to slide, substantially as shown and described.

6. The combination, with the clutches and their lowering and raising mechanism, of the bars having projecting arms, the uprights connected thereto, the connecting-links, the pivoted cross-bar, the curved arm, the connecting-rod, and the operating-lever connected to said connecting-bar, substantially as shown and described.

7. The combination, with the clutches having two sets of rearward projections or notches, of the spring-held sliding plates having abutments and the foot-lever, arranged substantially as shown, and for the purpose stated.

8. The herein-described clutches, consisting of the levers having projecting portions, the rollers secured at the lower ends of said levers, the vertical bars having projecting arms, and the springs on said arms bearing against said levers, substantially as described.

9. The combination, with the clutches and the vertical bars, of the guide-plates pivoted to said bars, the U-shaped bars having teeth in one portion thereof, the cog-wheels, and the operating mechanism, substantially as shown and described.

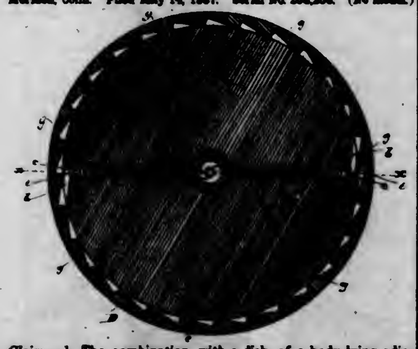
10. The combination, with the clutches and guide-plates carrying rollers at their ends, of the guideway upright plates, wherein the ends of said guide-plates project, the pivoted levers secured in one of said upright plates, the connecting-rod, and the operating-lever, substantially as shown, and for the purpose set forth.

11. The herein-described tie-car, comprising the inclined roller-frames secured at their upper rear ends to posts or standards and the platforms at the lower ends of said inclined frames, arranged substantially as shown and described.

12. The combination, with the cars, of the rollers secured in pivoted posts on the upper surfaces of the outer sill of the cars for passing the curved rails, substantially as shown and described.

13. The combination, with the car having the forward extension, of the L-shaped bars or brackets having the outwardly-projecting portion and the double pulleys sliding on said bar and carrying hooks at their lower ends, arranged substantially as shown, and for the purpose stated.

387,561. EXPLOSIVE MOTOR OR ENGINE. William L. Rogers, Meriden, Conn. Filed May 14, 1887. Serial No. 238,238. (No model.)



Claim.—1. The combination, with a disk, of a body lying adjacent or in close proximity to the edge of the same, the said disk and body being the one provided with inclined notches or buckets and the other with an explosive-chamber having a discharge-opening tangential to the edge of the disk, and one of said parts being revoluble, substantially as described.

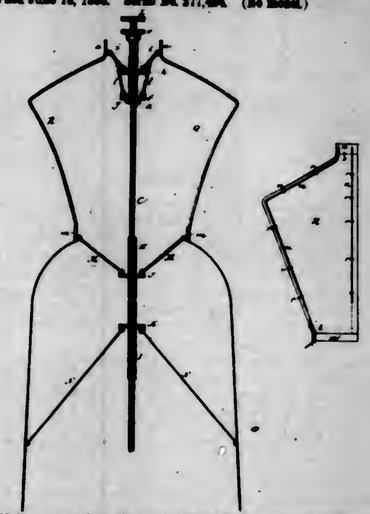
2. The combination, with a revolvable disk provided with an explosive-chamber in the periphery thereof having a tangential discharge, of a revolvable casing having a rim in close proximity to the periphery of the disk and provided with buckets, substantially as and for the purpose set forth.

387,562. PAPER-HANGER'S BRUSH AND ROLLER COMBINED. William H. Jaek, Grand Rapids, Mich., assignor to Orville H. Dunham, same place. Filed Dec. 16, 1887. Serial No. 258,126. (No model.)



Claim.—A combined paper-hanger's brush and roller comprising the handle having a rectangular slot or recess formed in one end, bristles secured along the longitudinal face of the handle, a screw-bolt, and the roller journaled thereon in the slot or recess of the handle, substantially as described.

387,563. DRESS-FORM. William H. Kraft, Brooklyn, N. Y. Filed June 18, 1888. Serial No. 277,494. (No model.)



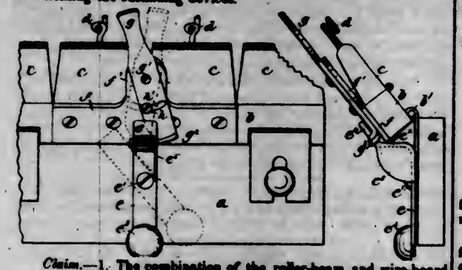
Claim.—1. A dress-form consisting of a central supporting-standard, B, a spindle, C, supported by said standard and so as to permit the free rotation of said spindle, the frame divided vertically into several sections and surrounding said spindle, the spindle provided with a screw-thread, H, near the waist-line, and also constructed with a screw-thread, I, below the said screw-thread H, the said two screw-threads being the one right hand and the other left hand, a corresponding screw-threaded collar, J, on said screw-thread H, braces M, hinged by their inner end to said collar J and extending obliquely upward therefrom, hinged to the frame at the waist-line, a corresponding screw-threaded collar, K, on the said thread I, braces N, hinged by their inner end to said collar K and extending therefrom obliquely downward, hinged by their outer end to the skirt portion of the form, the waist portion of the form extending above the waist-line and divided corresponding to the skirt portion, and mechanism, substantially such as described, to adjust the waist portion at the neck, the central spindle, C, extending above the said neck and terminating in a head by which the said spindle may be rotated, substantially as described.

2. In a dress-form, the combination of a standard, a vertical revolvable spindle, C, a frame divided vertically into several sections surrounding said spindle, the said spindle constructed with a screw-thread, H, near the waist-line and with a screw-thread, I, below said screw-thread H, the said screw-threads H and I being the one right hand and the other left hand, a corresponding screw-threaded collar, J, arranged upon the screw-thread H, and a collar, K, upon the screw-thread I, braces hinged by their inner ends to the respective collars, the said braces from the collars extending obliquely in opposite directions, those from one collar hinged to the frame at the waist-line and from the other collar to the skirt portion below, a screw-threaded sleeve, *h*, revolvable on said spindle C, but supported against vertical movement, braces *i*, hinged by their inner end to the said collar *h* and extending therefrom obliquely upward, hinged by their outer ends to the segments of the neck portion of the form, a collar, *f*, stationary on said sleeve as to vertical movement, struts *d*, hinged by their lower end to the said stationary collar *f* and by their upper end to the said braces *i* midway between their hinging-points, the said sleeve terminating above in a head, *e*, and the spindle terminating in a head, L, above said sleeve, substantially as described.

3. In a full-figure dress-form divided vertically into several sections made adjustable around a central spindle, metal segments *a* around the neck and similar metal segments, *m*, at the waist-line, the several sections of the waist made from molded material, with rods *s* made fast to the said segments and conforming to the interior vertical lines of the waist-sections, with clips *r* through said sections and upon said rods, substantially as described.

387,564. SUPPORT FOR WIRE-BOARDS OF SPINNING-FRAMES. Sherman Lyons, Lawrence, Mass. Filed May 14, 1888. Serial No. 273,881. (No model.)

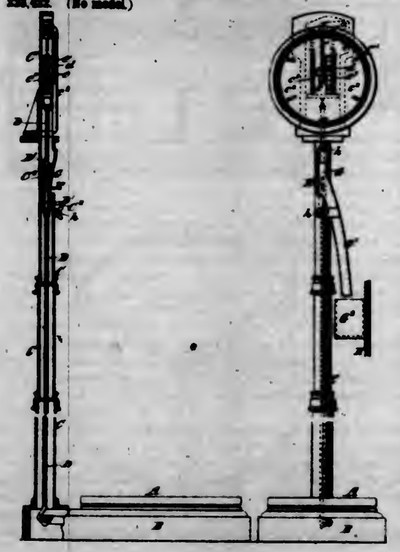
Brief.—The invention consists in the improved devices for sustaining the wire-board in its elevated position when raised for doffing and for releasing the sustaining devices.



Claim.—1. The combination of the roller-beam and wire-board of a spinning-frame with a wire-board-supporting lever pivoted on the front of said roller-beam and a handle co-operating with said lever, pivoted at the under side of the wire-board, substantially as described.

2. The wire-board-supporting lever pivoted on the front of the roller-beam below the wire-board, and provided at one end with a weight and at its other end with a wire-board-supporting seat and a projection beyond said seat, and a contact-plate, combined with a plate or bracket attached to the under side of the wire-board, and a handle pivoted on said bracket, with one end extending out between a pair of guide-wires and its other end co-operating with the projection and contact-plate of the weighted wire-board-supporting lever, substantially as described.

387,565. COIN-CONTROLLED WEIGHING-SCALE. Jonas Moss, Brooklyn, N. Y. Original application filed Sept. 26, 1886, Serial No. 214,747. Divided and this application filed Jan. 6, 1887. Serial No. 223,622. (No model.)

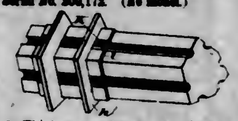


Claim.—1. The combination, with a scale-platform and indicator and a rod, D, connecting them, of the rest F, the swinging stop E, pivoted to said rod and overlying the rest, and the duct G, for guiding and confining a coin to make its weight available to move said stop, substantially as herein described.

2. The combination, with a scale-platform and a register and a connection through which the register is operated by weight on the platform, of a movable stop whereby the said connection is normally locked against weighing movement, a duct whereby a coin is guided and confined to make its weight available to move the stop and free the connection, and a keeper operated by the downward movement of the connection and which holds the coin in action upon the stop until the connection has moved to pass a locking position, substantially as herein described.

3. The combination, with a scale-platform and indicator and a rod connecting them, of the fixed rest F, the swinging stop E, pivoted to the rod and normally overlying the rest, the keeper J, whereby the coin is held upon the rest, a connection between said rod and keeper, whereby the keeper is retracted at the downward movement of the rod, the duct G, for conducting the coin to the swinging stop and rest, and the delivery-duct G', substantially as herein described.

387,566. GRATE. William J. Owens, Utica, N. Y. Filed Apr. 26, 1888. Serial No. 272,172. (No model.)

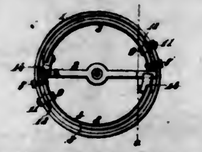


Claim.—1. The hexagonal bar *n*, formed with the longitudinal grooves or air-channels *d*, and suitable abutting stops, as *f*, in combination with tooth-rings, as *A*, for the purpose specified.

2. In a grate-bar, the hexagonal tooth-rings A, formed with the flanges *i* and air-spaces *k*, in combination with a rotatable bar, as *n*, formed with the air-channels *d*, the said air-spaces registering with each other, as set forth and specified.

3. In combination with the frame A, constructed as described, the hexagonal-shaped bars *n*, provided with the air-channels *d*, in combination with the hexagonal-shaped teeth containing air-spaces between them, as set forth, which register with the air-channels in the bars, the said bars *n* being provided with gear-wheels on their front ends, arranged to mesh with each other, whereby all the bars can be rotated simultaneously by the rotation of one of the bars *n*, as described.

387,567. COMPENSATION WATCH-BALANCE. Augustus F. Pressey, Atlanta, Ga. Filed Feb. 14, 1888. Serial No. 263,982. (No model.)



Claim.—1. The combination of the solid balance-wheel and the lengthwise-adjustable compensating bimetallic segments supported upon the inside of the wheel, substantially as described.

2. The combination, in a compensation-balance for time-pieces, of a slotted ring or wheel, slotted bimetallic segments, and adjustable pins or screws passing through the slots of the ring or wheel and the segments or sections, substantially as and for the purposes described.

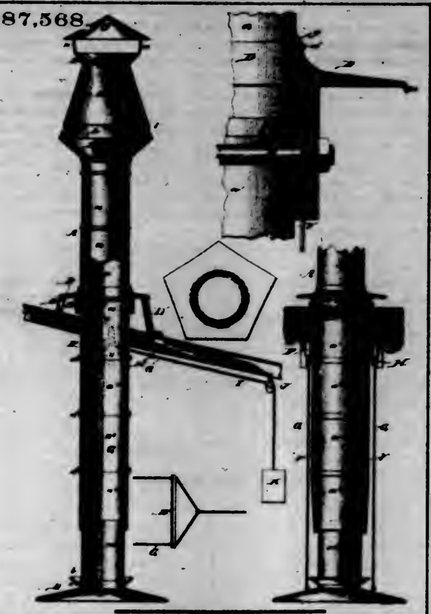
3. The combination of a slotted ring or wheel having a cross-bar, slotted bimetallic segments secured at one end and loosely engaging the cross-bar at the other end, and adjustable pins or screws passing through the slots in the ring or wheel and the segments or sections, substantially as and for the purposes described.

4. A compensation-balance for time-pieces, consisting of a guard ring or band, I, weighted bimetallic segments or sections protected externally by the ring or guard and each adjustable thereupon in the direction of its length, and a cross-bar for the center bearing or balance-staff, substantially as described.

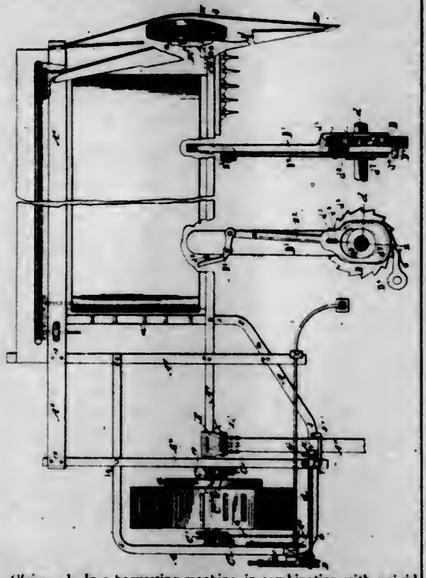
387,568. SMOKE-STACK. Charles S. Rue, Chicago, Ill. Filed Jan. 18, 1888. Serial No. 261,083. (No model.)

Claim.—In a smoke-stack, the combination of a roof-plate or collar, the fixed upper portion of the stack which rests thereon, and the swinging lower portion, which is pivoted to said roof-plate and is provided at the bottom with a telescopic drop-section, substantially as described.

387,568



387,569. GRAIN-HARVESTER. ANDREW STARK, Chicago, Ill. Filed Aug. 4, 1883. Serial No. 103,762. (No model.)



Claim.—1. In a harvesting-machine, in combination with a rigid main frame adapted to carry the driving, cutting, and conveying mechanisms, and supported at one end directly upon the main axle, mechanism for raising and lowering the stubble end of said frame on the axle, the finger-bar rigid with the main frame, the grain-wheel lever having its pivot at the end of the finger-bar in line therewith, the grain-wheel journaled to said lever, and a cable or chain loosely connected to the main axle, so as not to be wound with its revolution, and extending thence upward to and over a point on the frame and then downward to the stubble end of the finger-bar, and then along the same to the grain end and thence to the grain-wheel lever and attached thereto, and provided with suitable guides at all the said points where its direction changes, whereby the raising and lowering of the stubble end of the platform relatively to the main axle causes a like change of elevation of the grain end by a longitudinal strain in the line of the rigid finger-bar and by means of the fewest guide-pulleys, substantially as set forth.

2. In a harvesting-machine, the combination of the main axle, the main frame, the axle-guide, the finger-bar secured to the main frame in the vertical plane of the lower end of the axle-guide, the sector-guide E^3, attached rigidly to the finger-bar, the lever E, pivoted at the end of the finger-bar, the grain-wheel *b*, journaled to said lever, and the cable *c*, loosely connected to the main axle and running over suitable guide-pulleys and under the finger-bar to and actuating the free end of the lever E, substantially as and for the purpose set forth.

3. In a grain-harvester, for the purpose of raising and lowering the same on the driving-wheel, the windlass and cable, the ratchet-wheel D, hand-lever D', having the pawl-shoulder d^3, the detaining-pawl D^4, the pawl-trip d^5, and the bell-crank lever D^2, all combined and arranged to operate substantially as set forth.

4. In a grain-harvester, in combination with the rigid main frame, and a draft-pole connected thereto at two points of its length, a windlass and cable for raising and lowering the frame, the helical plate G, secured to said windlass, and the rack H, secured to the pole, substantially as and for the purpose set forth.

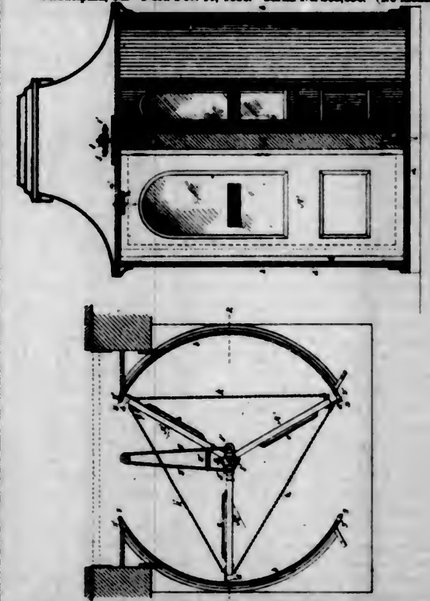
5. In a grain-harvester, the combination, with the rigid main frame, of a draft-pole rigidly connected to such frame at two points, mechanism for adjusting the height of said frame, and mechanism connected to such adjusting mechanism and to one of the draft-pole connections, whereby the angle of said draft-pole is automatically adjusted in the act of raising and lowering the frame.

387,570. POCKET-RULE. JESSE A. TRAFT, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Apr. 17, 1888. Serial No. 270,972. (No model.)



Claim.—A four-fold rule having one leaf of its main hinge formed with a curved inclined way terminating with a hole, *d*, as set forth, a companion hinge-leaf having a hole, *d'*, that may be brought into coincidence with said hole *d*, and a dowel-pin carried by the folding-rule section 5, adapted to engage said holes, substantially as and for the purpose specified.

387,571. STORM-DOOR STRUCTURE. THEOPHILUS VAN KANNEL, Philadelphia, Pa. Filed Feb. 10, 1888. Serial No. 263,690. (No model.)



Claim.—1. The combination, in a storm-door structure, of the fixed portion having opposite segmental sides, with the pivoted door compound of wings, each fitting snugly to the segmental sides of the fixed structure, the latter being of a width equal to or greater in extent than the distance between the outer ends of adjacent wings of the door, all substantially as specified.

2. The combination, in a storm-door structure, of the fixed portion having top, base, and opposite segmental sides, with the pivoted door composed of wings, each fitting snugly to the top, base, and segmental sides of the fixed structure, said segmental sides being of a width equal to or greater in extent than the distance between the outer ends of adjacent wings of the door, all substantially as specified.

3. The combination of the outer or inclosing casing, having opposite segmental sides, with a pivoted door-structure having radiating wings, one or more of which are hinged, in whole or in part, so as to be thrown back out of the way, all substantially as specified.

4. The combination of the pivoted door having radiating wings, some of which are hinged, with bracing-chains connecting the wings, one of said bracing-chains being detachable, all substantially as specified.

5. The combination of two of the wings of the door, one of which is hinged, with a bracing-chain connecting said wings and having a catch-plate, and an inclined bearing-rib on one of the wings for engagement with said catch-plate, all substantially as specified.

6. The combination of the fixed structure, having opposite segmental sides, with the door, the wings of which have projecting flexible strips provided with means of adjustment, whereby they are held taut, all substantially as specified.

7. The combination of the wing of the door and the grooved strip secured thereto with the outer flexible strip and the flexible carrier therefor, consisting of a strip or sheet secured to the outer strip and folded around a cord confined in the groove of the door-strip, all substantially as specified.

8. The combination of the door having radiating wings with the casing structure having opposite segmental sides with flexible jambs, all substantially as specified.

387,572. BALLOT-BOX. RICHARD G. WEBB, Cincinnati, Ohio. Filed Aug. 31, 1887. Serial No. 248,366. (No model.)



Claim.—1. In a ballot-box, the combination of the top and bottom, grooved to receive the sides, the top having an opening to receive a removable turret, the removable turret fitting said opening, the plates C C, secured, respectively, to the top and bottom, the bolts D and nuts *e*, for securing the box together, and one or more locks for securing the turret in place, substantially as shown and described.

2. The combination, substantially as specified, of a ballot-box secured together from the inside and having an opening for access to the interior, with a removable turret adapted to be secured in and to close said opening, and one or more locks to secure the turret against removal.

3. The combination of a ballot-box secured together from the inside and having a circular opening to receive a removable and rotary turret, the turret adapted to enter and close said opening, and having its side perforated to receive lock-bolts, the lock or locks secured to the under side of the top in a position to lock the turret in position to receive the ballots, or in the position shown after the ballots are cast to lock the ballot-opening, substantially as shown and described.

4. The combination, substantially as specified, of the grooved top and bottom, having in addition to the grooves depressions to receive the columns A, the glass sides B, the metal plates C C, bolts D and non-rotatable nuts *e*, for securing the box together, the removable turret, and the locks for securing the turret in the top opening.

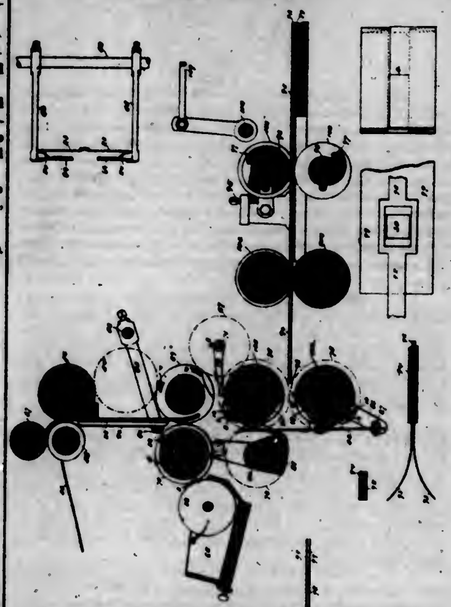
5. The combination of the top and bottom, grooved and recessed as shown, the glass sides and metal-bound columns, the plates C C, bolts D and nuts *e*, for securing the box together, the removable turret, and locks for securing the same in the opening, substantially as hereinbefore set forth.

6. The combination, substantially as specified, of the top and bottom, grooved, as set forth, to receive the sides, the plates C C, bolts D and nuts *e*, for securing the same together, the handles E, passing through the top, and plates C, and the nuts *e*, for securing the handles and assisting to secure the plates C to the top, with the removable turret and locks for securing it in place.

7. The combination of a ballot-box secured together from the inside and having a circular opening in the top, the turret F, having a flange, *f*, to rest upon the top of said box, and perforated rim below said flange to enter said opening, locks secured to the under side of said top in a position to have their bolts shot into said perforations, registering mechanism secured within said turret and having an actuating-shaft projecting through said turret and beyond the side of said box, and a cross-head secured upon said shaft, to rotate it when turned with the turret parallel with the side of the box, and to bear upon the top of the box and prevent rotation of the shaft when the turret is turned to bring said shaft diagonal to the box-top, and locks to hold the turret in either position, substantially as specified.

8. The combination of the ballot-box having a circular opening in the top, the turret F, fitted to turn in said opening, the plate M, secured to the under side of the box and projecting beyond the ballot-opening in the turret, to uncover or cover said opening as the turret is turned in one or the other position, and a lock or locks to hold the turret in either position, substantially as and for the purpose set forth.

387,573. BAG-MACHINE. DANIEL APPEL, Cleveland, Ohio, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Oct 15, 1887. Serial No. 252,621. (No model.)



Claim.—1. The combination, with the blade 9, for completing the severance of the tube, of the former having the openings 50, and the cutting-rolls 101 102, having adjustable portions 96, carrying co-operating blades 97, for making a preliminary central cut in the tube, both of said portions 96 being adjustable to secure the proper register between the preliminary and final cuts, substantially as described.

2. The combination, with the opening-rolls 105 106, having the flattened portions 21, of the presser-plates 88, substantially as described.

3. The combination, with the opening-rolls 105 106, having the flattened portions 21, of the presser-plates 88 and the creasing-blade 89, substantially as described.

4. The combination, with the opening-rolls having the flattened portions 21, of the presser-plates 88 and the rotating pressing-head 81, substantially as described.

5. The combination, with the opening-rolls having the flattened portions 21, of the presser-plates 88, the creasing-blade 89, and the rotating pressing-head 81, substantially as described.

6. The combination, with a cutting mechanism for making the short cuts *a* at the center of the tube, of the opening-rolls 105 106, provided with blades for completing the severance of the tube and with grippers for taking the sides of the tube, and the reciprocating spreader 93, for entering the sides of the tube beneath the grippers, substantially as described.

7. The combination, with the opening-rolls 105 106, set a distance apart, of the blade 9, carried by one of said rolls, and the parallel blades 8, carried by the other of said rolls, substantially as described.

8. The combination, with the opening-rolls having the flattened

portions 21, of the pruner-plates 88, the rotating pruning-head 81, and the creasing-rolls 69 70, substantially as described.

9. The combination, with the opening-rolls 105 106, having the flattened portions 21, of the pruner-plates 88, the rotating pruning-head 81, the creasing-rolls 69 70, provided with the ribs 22, for applying paste, and the folding and pruning rolls 56 58, substantially as described.

10. The combination, with the opening-rolls 105 106, having the flattened portions 21, of the pruner-plates 88, the pruning-head 81, the creasing and pasting rolls 69 70, the folding-blade 64, and the folding and pruning rolls 56 58, substantially as described.

387,574. DETONATING BALL. SAMUEL ARMSTRONG, Newark, N. J., assignor to Ezra J. Warner, same place. Filed Feb. 28, 1888. Serial No. 265,264. (No model.)



Claim.—1. The improved toy herein described, consisting, essentially, of a ball with a slotted plate attached thereto by screws or other suitable means, said plate having ribs on the under side, between which the spring is held, said ribs being provided with notches to receive the pivots of a hammer and a detent, and said plate also having a bar crossing the said slot and adapted to hold the spring in position, a hammer pivoted to said plate and provided with a shoulder for engagement with a detent, and a projection serving as a finger-piece, a spring to actuate said hammer and also hold the anvil in place, a detent to hold the hammer away from contact with the plate, and an anvil fitted into a recess in said plate and held in place by the spring, substantially as set forth.

2. In a detonating ball, the combination, with a ball having a portion removed, of a slotted plate adapted to fill said removed portion and secured to said ball by screws or other suitable means, a flat spring held in position on said plate, an anvil held in position on said plate by said spring, and a hammer working in the slot in said plate and held down in contact with the anvil by the action of the spring, all substantially as shown and described.

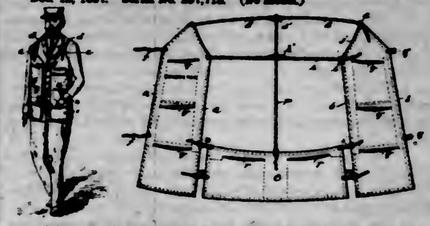
3. In a detonating ball, the combination, with a ball having a portion removed, of a slotted plate adapted to fill said removed portion and secured to said ball by screws or other suitable means, a spring held in position on said plate, an anvil held in position on said plate by said spring, a hammer working in the slot in said plate and in pivotal connection therewith, and held down in contact with the anvil by the action of a spring, and a finger-piece on the end of the hammer for raising said hammer from contact with the anvil, all substantially as shown and described.

4. In a detonating ball, the combination, with a ball having a portion removed, of a slotted plate adapted to fill said removed portion and secured to said ball by screws or other suitable means, a spring held in position on said plate, an anvil held in position on said plate by said spring, a hammer working in the slot in said plate and in pivotal connection therewith, and held down in contact with the anvil by the action of a spring, a finger-piece on the end of the hammer for raising said hammer from contact with the anvil, and a detent working in the slot in said plate and adapted to hold the spring in position, a hammer pivoted to said plate and provided with a shoulder for engagement with a detent, and a projection serving as a finger-piece, a spring to actuate said hammer and also hold the anvil in place, a detent to hold the hammer away from contact with the plate, and an anvil fitted into a recess in said plate and held in place by the spring, substantially as set forth.

5. In a detonating ball, the combination, with a ball having a portion removed, of a slotted plate adapted to fill said removed portion and secured to said ball by screws or other suitable means, a spring held in position on said plate, an anvil held in position on said plate by said spring, a hammer working in the slot in said plate and in pivotal connection therewith, and held down in contact with the anvil by the action of a spring, a finger-piece on the end of the hammer for raising said hammer from contact with the anvil, a detent working in the slot in said plate and pivotally connected therewith and adapted to hold said hammer in position away from contact with said anvil, and a cord or rope secured to said detent and adapted to release said detent from contact with said hammer, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

6. The detonating device herein described, consisting, essentially, of a slotted plate, ribs and cross-bar on the under side of said plate, a spring resting between said ribs and held in position by said cross-bar, a hammer working in said groove and pivotally connected with said plate, an anvil for holding said cap or wafer of fulminate, and a detent working in said slots and pivotally connected with said plate and adapted to hold said hammer away from contact with the anvil, said detent being also provided with a loop or means whereby a cord or rope could be attached thereto, and by drawing or pulling upon said cord the detent would be released from contact with the hammer and the hammer be thrown with great force upon the cap and explode, all as described, as and for the purposes set forth.

387,575. COAT-PROTECTOR. JOHN H. BROOKS, Chicago, Ill. Filed Dec. 12, 1887. Serial No. 257,718. (No model.)



Claim.—1. A coat-protector comprising the two strips or narrow parts *a* and *b*, having pockets arranged one above another, and an adjustable shoulder-strap for supporting said strips or parts at any elevation side by side in front of the body of the wearer, so that they shall occupy substantially vertical positions one upon each side of the middle of the wearer's breast, said strips or parts being separate from each other, so that between their inner or contiguous edges access to the coat-fastenings may be had, and terminating at their outer edges at the sides of the wearer, substantially in the manner and for the purpose set forth.

2. The coat-protector comprising, in combination, the narrow separate front strips, *a* and *b*, having pockets, a supporting shoulder-strap, and a strap for uniting the back edges of said strips *a* and *b* below the shoulder-strap, substantially as set forth.

3. The coat-protector comprising, in combination, narrow separate front strips having pockets, fastening devices for uniting the front edges of said strips, a supporting shoulder-strap, and a strap for uniting the back edges of said strips below the shoulder-strap, substantially as set forth.

4. A coat-protector comprising, in combination, the two front strips or narrow parts, *a* and *b*, having pockets, a shoulder-strap for supporting said strips or parts side by side in front of the body of the wearer, so that they shall occupy substantially vertical positions, one upon each side of the middle of the wearer's breast, and a transverse rear strip, *c*, connected to the lower portions of the front strips below the waist of the wearer, said front strips being separate from each other, so that between their inner or contiguous edges access to the coat-fastenings may be had, and terminating at their outer edges at the sides of the wearer, substantially in the manner and for the purpose set forth.

5. The combination of the separate front strips having pockets, a supporting shoulder-strap, and a separate detachable transverse rear strip extending between the rear or outer edges of the front strips and connected to the lower portions thereof, as set forth.

6. The coat-protector comprising, in combination, the following elements, to wit: the separate parts *a* and *b*, each having the desired number of pockets arranged one above another, the adjustable shoulder-strap for supporting said parts side by side in front of the body of the wearer, the back part, *c*, and the adjustable straps for connecting the said back part with the front parts and supporting it below the waist of the wearer, substantially as set forth.

7. The coat-protector comprising, in combination, the following elements, to wit: the separate parts *a* and *b*, having pockets, the shoulder-strap *d*, connected to the parts *a* and *b* and supporting them side by side in front of the body of the wearer, the fastenings for securing together the meeting edges of the said front parts, the strap A, extending behind the wearer and connecting the outer or rear edges of said parts, and the separate back part, *c*, connected to the front parts and supported below the waist of the wearer, substantially as set forth.

8. The coat-protector comprising, in combination, the following elements, to wit: the separate parts *a* and *b*, having pockets, the shoulder-strap *d*, connected to said parts and supporting them in front of the body of the wearer, the separate back part, *c*, connections between said back and front parts, and the strap *p*, connected with the back part, *c*, and with the shoulder-strap *d*, whereby the back part, *c*, is supported, substantially as set forth.

9. The coat-protector comprising, in combination, the following elements, to wit: the separate parts *a* and *b*, having pockets, the adjustable shoulder-strap *d*, connected to said front parts for the purpose of supporting them side by side in front of the body of the wearer, the separate back part, *c*, also connected with said front parts, and the adjustable strap *p*, connected with the back part, *c*, whereby the latter is supported, said strap *p* having sliding connection with the shoulder-strap *d*, substantially as and for the purpose set forth.

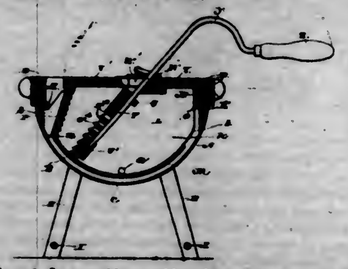
10. The coat-protector comprising, in combination, the following elements, to wit: the separate parts *a* and *b*, having pockets, the shoulder-straps connected to said parts *a* and *b* and supporting them side by side in front of the body of the wearer, the back part, *c*, situated below the waist of the wearer and connected at each end with one of the front parts near the lower end thereof, and a supporting-strap connected with the back part, *c*, at a point between its extremities for preventing it from sagging, substantially as and for the purpose set forth.

11. The coat-protector comprising, in combination, the following elements, to wit: the separate parts *a* and *b*, having pockets, the adjustable shoulder-strap *d*, connected to the said parts *a* and *b* for the purpose of supporting them side by side in front of the body of the wearer, the separate back part, *c*, situated below the waist of the wearer and connected to the front parts, *a* and *b*, the adjustable strap *p*, connected to the back part, *c*, and having sliding connection with the shoulder-strap *d*, and the strap *d'*, secured to said shoulder-strap, so as to form a loop for limiting the movement of the strap *p*, substantially as set forth.

12. The coat-protector comprising the following elements, to wit: the front parts, *a* and *b*, having pockets, the adjustable shoulder-strap *d*, the back part, *c*, connected with the front parts, *a* and *b*, the adjustable strap *p*, connected to the back part, *c*, and having sliding connection with the shoulder-strap *d*, the strap *d'*, secured to the said shoulder-strap, so as to form a loop for limiting the play of the strap *p*, the strap A, connected to the front parts, *a* and *b*, and the strap *h'*, secured to the strap *h* and forming a loop through which the strap *p* passes, substantially as set forth.

13. The coat-protector comprising, in combination, the following elements, to wit: the front parts, *a* and *b*, having pockets, and each having its upper rear corner cut away and curved inward, as at *j*, the adjustable shoulder-strap *d*, the adjustable fastenings *f*, for securing together the meeting edges of said parts *a* and *b*, the adjustable strap A, connecting the rear edges of the said parts *a* and *b* at top, the back part, *c*, having pockets, the adjustable connections between said back part and the front parts, *a* and *b*, and the adjustable strap *p*, connected to the back part, *c*, and shoulder-strap *d*, substantially as set forth.

387,576. WASHING-MACHINE. ROBERT CAMPBELL, South Haven, assignor of one-half to H. B. Spackman, Hamden, Mich. Filed Sept. 27, 1886. Serial No. 214,063. (No model.)



Claim.—1. In a washing-machine, the suds-box semicircular in form, combined with the removable box K, similar in form and fitted within the suds-box, and provided with shoulders S O, to bear against the sides of the suds-box and support the box K, the said box containing the clothes to be washed and comprising the end pieces, I, the bottom board M, the inclined wash-board P at one side, and the hinged cover for the suds-box, the dash-board pivoted within the box K on one side of the wash-board, and the operating-lever for the dash-board extending up through a slot of the cover, as set forth.

2. In a washing-machine, the combination of the suds-box, the hollow removable box K, containing the clothes and located in the suds-box, and having the end pieces, I, the bottom board M, and the inclined wash-board P at one side, and the dash-board pivoted within the box K on one side of wash-board P, substantially as set forth.

387,577. CHECK-HOOK. FRANCIS B. CLARK, Shokokville, N. Y., assignor of one-half to Frank E. Shaw, same place. Filed May 21, 1888. Serial No. 274,263. (No model.)

Claim.—A check-rein holder and stop consisting of a hook having the perforations or indentations *a* in the point of the hook, in combination with the open link B, detachably secured in said perforation at one end, while the other end rests upon the main body of the hook to form a stop for the rein, as set forth.

387,577.



387,578. CORSET. G. ALBERTUS GLEIM, Bridgeport, Conn., assignor to Charles H. Langdon, Elizabeth, N. J., and George C. Batcheller, New York, N. Y. Filed Dec. 16, 1887. Serial No. 257,997. (No model.)



Claim.—A corset having an opening or cut-away portion for the breast, a flap adapted to cover said opening, and a water-proof skirt secured to the lower portion of the flap, the upper edge of said skirt being curved to correspond with the curvature of the breast-opening, so that the material of the skirt cannot come in contact with the breast, but the portion of the corset under the breast-opening is covered and the clothing thereby protected from moisture.

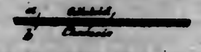
387,579. TREATING CRUDE ANIMAL-HAIR. NICHOLAS OSBORN, Lisbon, Ill. Filed Mar. 1, 1888. Serial No. 265,852. (No specimens.)

Claim.—The process hereinbefore described of cleansing, deodorizing, and rendering moth-proof crude animal-hair, more particularly crude hog-hair, which consists in washing said hair to remove the blood and extraneous dirt, &c., and cooking the hair in a compound or solution of water, quicklime, sal-soda, and sarphuric acid for the purpose of changing the cuticle and shreds of flesh, &c., into a gelatinous substance, and thereby rendering its separation from the hair the more easily effected, afterward rubbing, teasing, and washing the said hair to remove the gelatinous matter and complete the cleansing process, and again cooking the same in a compound or solution of water combined with a solution of sulphuric acid and black oxide of manganese for the purpose of further deodorizing and rendering it moth-proof, thus preparing it for dyeing, curling, and drying in one continuous expeditious and economical process, substantially as and for the purposes hereinbefore described.

387,580. MINERAL-CEMENT GRAVEL ROOFING. ARCHIBALD G. CRESSEY, Chicago, Ill. Filed June 14, 1888. Serial No. 277,448. (No specimens.)

Claim.—The herein-described composition of matter to be used for new felt or recoating old roofs, consisting of the coal-tar pitch, lead-plaster, Portland cement, plaster-of-paris, and sulphur, substantially in the proportion specified.

387,581. POLISHING-DISK FOR DENTISTS. LEVITT R. CRUVER, Dayton, Ohio, assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Mar. 6, 1888. Serial No. 266,936. (No model.)

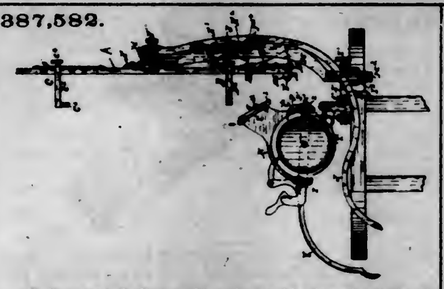


Claim.—A composite polishing-disk for dentists, consisting of a thin carrying-body and a soft working-surface thereon, such as chamois-leather, felt, &c., substantially as described.

387,582. PAPER-PERFORMING MACHINE. C. HOWLETT DAVIS, Washington, D. C. Filed Sept. 22, 1888. Serial No. 284,988. (No model.)

Claim.—1. In a paper-feeding machine, the combination of a feed-table mounted upon pivotal bearings and provided with mechanism for swinging the same, substantially as described, and a bar provided with screw-pins the points of which project from its face, the ends of the said bar being mounted in bearing-slots set at an angle to the line of movement of the said table, whereby when the said bar is impinged upon by the said table it moves up the face of the same, substantially as set forth.

387,582.



2. In a paper-feeding machine, the combination of a feed-table pivotally mounted upon a frame, paper-rests set in perforated projections, teeth mounted upon the ends of the said arms adapted to impinge upon the said paper, and a spring attached to the other end of the said arms and adapted to draw the same toward the table, substantially as set forth

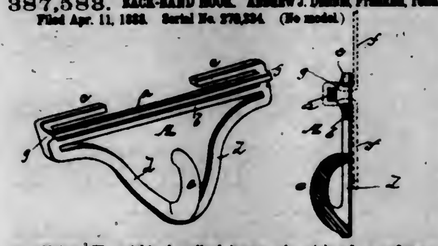
3. In a paper-feeding machine, the combination of a feed-table mounted upon pivotal bearings, substantially as described, paper-rests, substantially as described, secured to the said table, and a separating device placed in the line of movement of said table and adapted to move up the face of same when impinged upon, substantially as set forth.

4. In a paper-feeding machine, the combination of a feed-table mounted upon pivotal bearings, substantially as described, a lever attached rigidly to the said table and provided with a handle within convenient reach of the operator, and a regulating device consisting of a pivot working in a socket formed by clamps rigidly attached to one support of the feed-table, a rod loosely mounted in a perforation at the outer end of the said pivot, and a spiral spring infolding the said rod and secured to the end thereof and to the said pivot, substantially as and for the purpose set forth.

5. In a paper-feeding machine, a device for separating one sheet from a supply, consisting of a rod provided with a row of screw-pins and mounted in oblique slots at either end, said slots being set at an angle to the line of movement of the said feed-table, whereby when the said table impinges the said bar the latter is caused to move upward against the face of the said table, substantially as described.

6. In a paper-feeding machine, the combination of the carriage of a printing-machine, substantially as described, two arms mounted thereon and provided with slots set at an angle to the line of movement of a feed-table, a bar provided with screw-pins and mounted in the said slots in the said arms, and a feed-table adapted to move forward against the said bar, substantially as described.

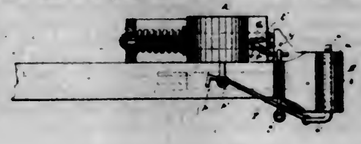
387,583. BACK-BAND HOOK. Andrew J. Dennis, Franklin, Tenn. Filed Apr. 11, 1888. Serial No. 270,334. (No model.)



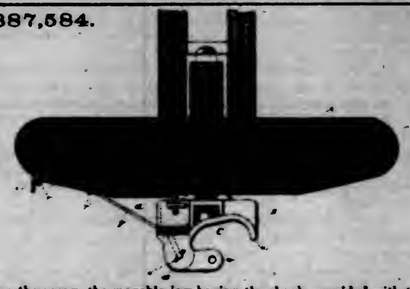
Claim.—The within-described improved article of manufacture, to wit: a back-band hook or trace-carrier consisting of the bars *b d*, fingers *c c*, arranged in the same plane, the bar *a* and hook *e*, said bar *a* connecting the bars *b d* and fingers *c c* by the intermediate offsets, *g g*, and said hook *e* arranged at the lower portion of the bars *d d*, the whole formed integral, as shown, and for the purpose specified.

387,584. CAR-COUPLING. Reuben H. Dowling, Newark, Ohio, assignor of two-thirds to Charles H. Follett and Charles Follett, both of same place. Filed Jan. 7, 1888. Serial No. 260,663. (No model.)

Claim.—1. In a coupling, the combination of the draw-head hav-



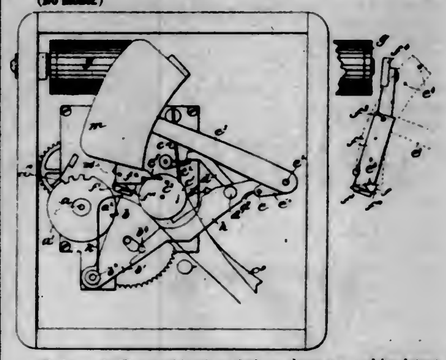
387,584.



ing the recess, the movable jaw having the shank provided with the projection *m*, the pin D, having the crank portion and the guard *n*, the flat locking-key having the inclined shoulder, the transverse slot, and the retaining-pin *x*, substantially as specified.

2. The combination of the draw-head having the bearing-lugs, the segmental shoulders thereon, and the shoulders *p*, the recesses *r r'*, the openings *s s'*, the key E, having the inclined shoulder and the step *x*, the movable jaw having the shank portion provided with the projection, and the bearing-block having the transverse shoulder, the locking-key having the shoulder and the transverse slot, the pin provided with a guard and crank portion, and the operating-levers, substantially as specified.

387,585. AUXILIARY FIRE-ALARM APPARATUS. Walter J. Dudley, Everett, Mass., assignor, by mesne assignments, to Walter J. Dudley, trustee, same place. Filed July 5, 1887. Serial No. 243,491. (No model.)



Claim.—1. The combination of the main motor and its detent with the secondary motor and detent therefor, said secondary motor when operated causing the detent for the main motor to release said main motor, and said detent for the main motor being provided with a stopping device for the secondary motor, substantially as described.

2. The combination of a motor and controlling-arm therefor, and an electro-magnet and its armature co-operating with said arm which has a progressive stop-by-stop movement when said armature vibrates, the said motor being provided with a restoring device which engages said controlling-arm and restores it to its normal position when said controlling-arm makes less than a predetermined number of stop movements, the said arm passing beyond the reach of said restoring device when it makes a greater number of stop movements, substantially as described.

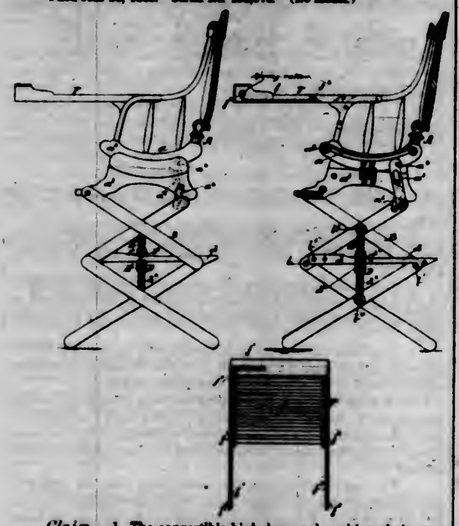
3. The combination of the main motor and its stopping device with the secondary motor co-operating with said stopping device, as described, the detent and controlling-arm for said secondary motor and the restoring device for the stopping device of the main motor operated by the said controlling-arm of the secondary motor, substantially as and for the purpose set forth.

4. The combination of the main motor and its detent with the secondary motor co-operating with said detent, as described, and the controlling-arm for said secondary motor, and electro-magnet and its armature co-operating with said arm which has a step-by-step movement when said armature vibrates, and a locking device for said controlling-arm operated by the main motor, substantially as described.

5. The combination of a motor and detent therefor, and a pivoted controlling-arm for said detent provided with an indicating device, and an electro-magnet and its armature co-operating with said arm which has a step-by-step movement as the said armature vibrates, the

said arm operating said detent to release the motor with different numbers of step movements, and indicating by its position the number of vibrations of said armature that occurred when the motor was released, substantially as and for the purpose set forth.

387,586. CHAIR. Reuben S. Pierce, Winchendon, assignor, by direct and mesne assignments, to Gilman Wallis, Templeton, Mass. Filed Jan. 28, 1888. Serial No. 262,972. (No model.)



Claim.—1. The convertible high, low, and rocking chair, comprising the seat and its frame of usual construction, rockers applied to the bottom thereof, a base on which said rockers are supported to permit the seat to be freely rocked thereon, and the extensible frames B, connected to the base, the pin a^4 on the chair-seat, and the catch a^5 on the frames, operated by the extension of the frames to engage said seat and hold it stationary when the chair is "high," and locking devices for the frames to hold them in elevated or high position and admit of their being collapsed to make a low rocking-chair, substantially as described.

2. The combination of the chair-seat, the base a^2, for supporting it, the extensible lever-frames B, upon the upper ends of which the said base is arranged, the rods d' d^3, connecting the frames, and the sleeve d^4, co-operating with said rods to hold them in alignment and release them, respectively, in expanding and contracting the frames, and the hooked frame or lock d, substantially as described.

3. The rods d' d^3 and sleeve d^4, in combination with the extensible lever-frames B, substantially as described.

4. The hooked frame d, rods d' d^3, sleeve d^4, and extensible lever-frames B, combined together as described.

5. The combination, with a child's chair, of a play-tray having its bottom made of flexible material and a roller upon which it is wound when not in use, substantially as described.

6. The tray having side pieces, f^3, of springy material, and provided with outwardly-extending projections f^4, combined with a chair-seat having arms provided with holes into which said projections are sprung to provide for the ready attachment and detachment of the tray, substantially as described.

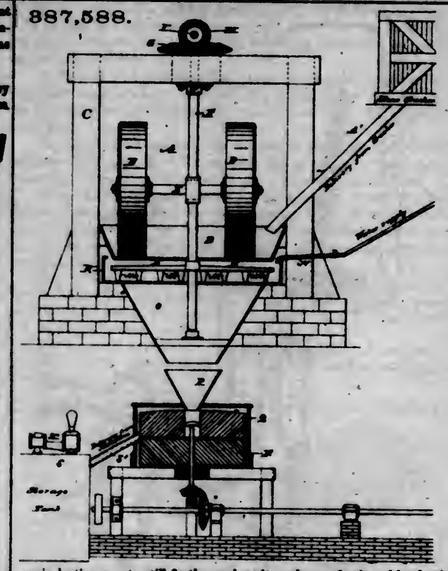
387,587. METHOD OF RESTORING OLD METAL CANS. James W. Gibson, Baltimore, Md., assignor of two-thirds to Harrison Hopper and John R. Wright, both of same place. Filed Dec. 30, 1887. Serial No. 259,493. (No specimens.)

Claim.—The method substantially herein described of restoring old used metal cans for repacking, which consists in removing the old tops, then cleansing the cans, then converting the bottom into a top by slicing or punching out the cap or filling-opening, and then placing a new bottom on the body of the can and soldering it from the inner side by access afforded through the died or punched-out cap-opening.

387,588. PROCESS OF MANUFACTURING HYDRAULIC CEMENT. Charles B. Cushing, Whitehall, Pa. Filed Nov. 3, 1887. Serial No. 254,092. (No model.)

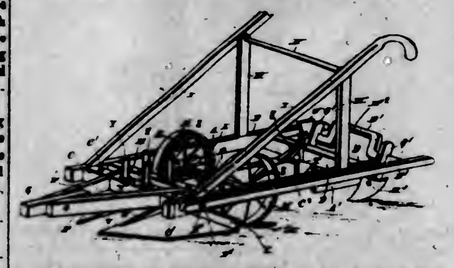
Claim.—An improvement in the art of manufacturing hydraulic cement, which consists in crushing and grinding the material of which the cement is composed, mixing the ground mass with water to reduce it to a plastic or semi-plastic condition, regrinding the plastic or

387,588.



semi-plastic mass to still further reduce it, and transferring this plastic body in mass into a suitable chamber to dry the same, after which it is burned and reduced to an impalpable powder, as set forth.

387,589. COTTON-CULTIVATOR. Theophilus Griffin, Sheridan, Ark., assignor of two-thirds to Joseph S. Williams and Henry Bales, same place. Filed Nov. 28, 1887. Serial No. 256,444. (No model.)



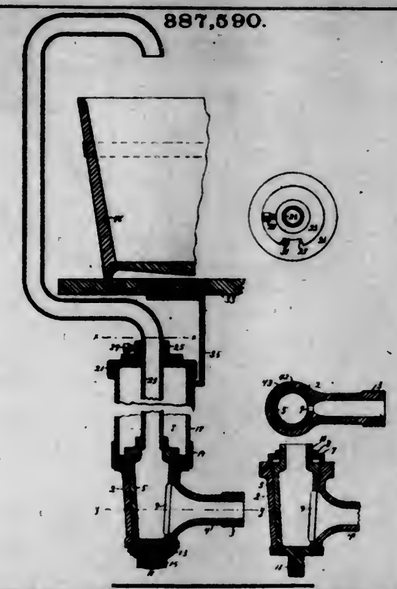
Claim.—1. The combination of the frame A and the horizontally-arranged shovels V, supported under the said frame and detachably and reversibly connected thereto, the said shovels having one side curved outward, as shown, and having the other side provided with the vertical plate W, the rear end of each shovel being turned upward to form the vertical plate X, connected to the rear end of plate W, substantially as described.

2. The combination, in a cotton chopper and cultivator, of the frame A, having the vertically-adjustable shovels or scrapers at its front end, the chopping mechanism provided at its rear end with the fenders A', and the frame B', having its front end pivoted to frame A and carrying at its rear end the cultivating-shovels arranged on the outer sides of the fenders, the said rear end of the cultivating-frame being vertically movable, for the purpose set forth, substantially as described.

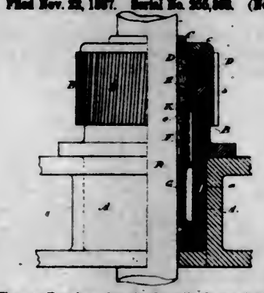
387,590. HYDRANT. Joseph B. Hawkins, Minneapolis, Minn., assignor to John S. Gregory and Guy Hawkins, both of same place. Filed May 13, 1887. Serial No. 238,036. (No model.)

Claim.—The combination, in a hydrant of the class described, of the hollow casing 2, provided with an external screw-thread on its upper end, the hollow plug 5, fitting into said casing, the discharge-pipe 23, secured to said valve, the tube 17, secured to said casing and forming a tight joint therewith, the cap 21, secured to the upper end of said tube 17 and forming a bearing for said pipe 23, the pin 31 in the said cap, and the collar 25, having the notch 27, secured to said pipe 23 by the set-screw 29, all substantially as described.

887,590.



887,591. METALLIC PACKING FOR STUFFING-BOXES. John W. Hayes, Portsmouth, N. H., assignor of two-thirds to Wm. B. Brooks, Erie, Pa. Filed Nov. 22, 1887. Serial No. 255,893. (No model.)

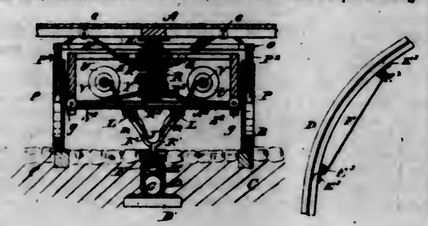


Claim.—The stuffing-box herein described, consisting of the detachable receptacle A, containing the sectional packing-rings D, the spiral encircling spring H, pressing said rings evenly against the rod on its perimeter, and the flanged guide-rings, in combination with the tension-springs, one or more, exerting a longitudinal pressure against said rings D, and the follower C, provided with the lead packing-ring *c*, all constructed and arranged as herein shown, and for the purpose set forth.

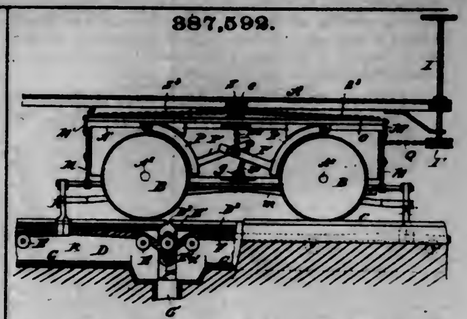
887,592. TRACTION-CABLE RAILWAY. John P. Hunt, Philadelphia, Pa. Filed Sept. 2, 1882. Serial No. 70,260. (No model.)

Claim.—1. In a cable railway, the combination, with a car, of a frame, brake-levers pivoted to the same, pivoted angle-levers, a clutch or grip connected to said levers, and means for raising and lowering the frame, substantially as set forth.

2. In a cable railway, the clutch or grip J, formed by the pivoted jaws K, attached to the arms K', connected with the pivoted angle-



887,592.



levers M, which are operated from the car, as and for the purpose set forth.

3. In a cable railway, the combination, with the clutch or grip jaws K, of anti-friction rollers *h*, mounted on the same, for the purpose set forth.

4. In a cable railway, the combination, with the clutch or grip J, of the arms K', rods L, the pivoted angle-levers M, and the frame O, carrying the brake-shoes P, substantially as and for the purpose set forth.

5. In a cable railway, the combination, with the frame O and the brake-shoes P, pivoted to said frame, of a cable clutching or gripping device pivoted to the same frame, substantially as set forth.

6. In a cable railway, the combination, with the frame O, of the brake-shoes P, the pivoted angle-levers M, the arms K', the clutch or grip J, the chains S' and S², and the shaft S, provided with the drums R' and R², and the chains P², substantially as herein shown and described.

7. In a cable-railway car, the combination, with the clutch or grip J, of the rods L, the chains Y, the rods V, the cylinders U, pistons U', and the springs W, substantially as and for the purpose set forth.

8. In a cable railway, the combination, with the curved channel D, of the cable F and the anti-friction rollers or pulleys E² and E³, substantially as and for the purpose set forth.

9. In a cable railway, the combination, with the trough-shaped channel D, having its top inclined from the center outward, and provided with a longitudinal slot, D², in the top, of the top plates, D², substantially as set forth.

10. In a cable railway, the two channel-sections D, one provided with a ball end, H', and the other with a socket end, H, combined with each other, substantially as set forth.

11. In a cable railway, the combination, with the channel D, of the rollers E E E' E², all constructed and arranged substantially as herein shown and described, whereby the cables are depressed at a crossing and one made to pass beneath the other, as set forth.

12. In a cable railway, a car having brake-shoes provided with toggle-jointed levers, a clutch or grip for the cable, and actuating mechanism for the toggle-jointed levers of the brake and for the clutch or grip, substantially as set forth.

13. In a cable railway, a car having a vertically-moving frame, O, brake-shoes P, secured to said frame, and having toggle-levers P', in combination with actuating mechanism for the brake-shoes and frame, substantially as set forth.

14. A cable-motor car having a grip and actuating mechanism therefor, and brake-shoes having toggle-jointed levers, frame O, and actuating mechanism, substantially as set forth.

15. In a cable-motor car, a windlass or drum, R, R', and R², or equivalent, secured to the car and having chain-connection with the brake-shoes and the grip or grips of the car, substantially as and for the purpose set forth.

16. In a cable railway, a depression roller or pulley, E, as and for the purpose set forth.

17. In a cable railway, a depression or deflecting roller or pulley, as and for the purpose set forth.

18. The combination, with crossing lines of a cable-motor-railway system, of a depression pulley or pulleys for one of the cables of the crossing lines, substantially as set forth.

19. The combination, with crossing lines of a cable-motor-railway system, of depression rollers or pulleys at the crossing lines for depressing one or more cables, as set forth.

20. In a cable railway, the combination of a line of car-tracks, a slotted conduit, D, located between the tracks and resting upon the sleepers D', and bent plate-clips, one end of each of which engages with the conduit and the other is bolted to sleepers D', for holding the conduit in position upon said sleepers, substantially as set forth.

21. In a cable-motor railway, a slotted conduit located between

the tracks and having at its top inside edge flanges or projections and detachable top plates upon said projections, which plates extend along the entire length of the conduit, substantially as set forth.

22. A cable-railway conduit having at its top inside edge flanges or projections and detachable top plates, substantially as and for the purpose set forth.

23. A cable-railway conduit having at its top inside edge flanges or projections and separate and detachable top plates, substantially as set forth.

24. In a cable-motor car, the combination of a clutch or grip, J, longitudinally-sliding rods L, connecting mechanism between the clutch-jaws and rods, and actuating mechanism for the rods, substantially as set forth.

25. In a cable-motor car, a pair of clutch or grip jaws, K K, pivoted to one another, and each jaw having connection with longitudinally-sliding rods L, and mechanism for actuating said rods, substantially as set forth.

26. In a cable-motor car, longitudinally-sliding rods L and two grip attachments in connection with and operated by said rods, substantially as set forth.

27. A cable-motor car having two grips operated to simultaneously act upon the cable, separate or independent arms or supporting-bars for each grip, and one grip being in advance of the other, as and for the purpose set forth.

28. The combination, with a conduit having a channel, D, of a cable-motor car having a grip, J, formed of two jaws, K K, pivoted to each other at their upper ends within the channel D, substantially as set forth.

29. The combination, with a conduit having a channel, D, of a cable-motor car having a grip, J, formed of two jaws, K K, pivoted to each other at their upper ends within the channel D and curved in the direction of the cable, substantially as set forth.

30. The combination, with a conduit having a channel, D, of a car having a grip, J, the jaws K K being pivoted to one another immediately above the cable and below the conduit-slot, substantially as set forth.

31. In a cable-motor railway, a car having a grip, J, comprising the jaws K K, pivoted at their upper ends, and the vertical arms K' K', so constructed as to permit its easy movement in the slot of a conduit one inch or less in width, substantially as set forth.

32. A cable-motor car having two separate grips operated to simultaneously act upon the cable, in combination with suitable mountings, whereby they may have a sliding movement in the direction of the length of the car when acting upon the cable, substantially as set forth.

33. In a cable railway, the combination, with longitudinally-sliding rods and grip-jaws secured to said rods, of cylinders and rods provided with pistons at their ends working in said cylinders and connected to said sliding rods, substantially as set forth.

34. The combination, in a cable-motor railway, of a slotted conduit, a car having a clutch or grip attachment with one or more cylinders closed at both ends, and one or more plungers or pistons for preventing the jolting or shocks incident to starting the car, substantially as set forth.

35. In a cable-motor car, the combination of a grip attachment with the horizontal rod V, having two pistons or plungers, U', and cylinders U, substantially as set forth.

36. In a cable railway, a car having two independent or separated grips, one in advance of the other, brake-shoes for the car-wheels, and actuating mechanism for applying the brakes when the grips are released or out of action and for releasing the brakes when the clutches are in action.

37. In a cable railway, the combination of a car having two grips separate from one another and a conduit having depression-rollers E E E', as and for the purpose set forth.

38. In a cable railway, a car having brake-shoes, a grip, actuating mechanism for said shoes and grip, and a cylinder with pistons connected to the grip-actuating mechanism, as and for the purpose set forth.

39. In a cable-motor railway, the combination of a slotted conduit, a smooth cable, supporting-pulleys for the cable journaled in said conduit, a car having a grip supported independently of the car-body, jaws on said grip having pivoted bearings or supports above the cable and below the conduit-slot, and actuating mechanism supported upon the car-body for positively regulating the degree of clamping-pressure of the jaws upon the cable and for releasing them therefrom, substantially as set forth.

40. In a cable-motor railway, the combination, with a smooth cable having supporting-pulleys journaled in a slotted conduit, a car having a grip supported independently of the car-body, one or more jaws for said grip hinged or pivoted together within the conduit, and actuating mechanism for said jaws located upon the car-body, substantially as set forth.

41. A cable-motor car having a clutch, J, formed of two jaws, K K, having pivoted bearings or supports above the cable and below the conduit-slot, and arms K' K', extending above the slot, substantially as set forth.

42. A cable-motor-railway car having its grip and brake-shoes supported independently of the car-body and actuating mechanism for the grip and brake-shoes supported upon the car-body, substantially as set forth.

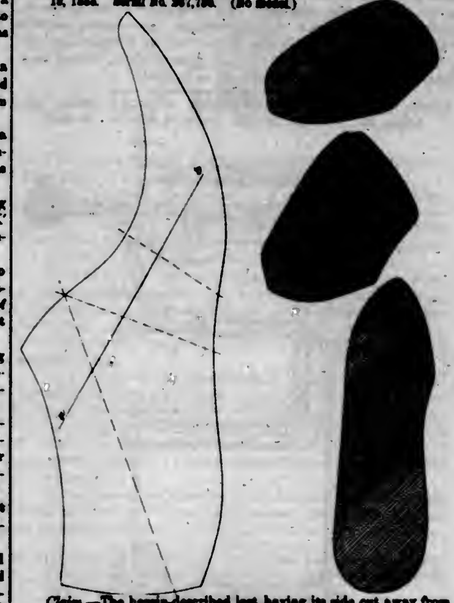
43. A cable-motor-railway car having its grip and brake-shoes supported independently of the car-body and its grip and brake-shoe operating rod supported upon said body, substantially as set forth.

44. A cable-motor car having a grip composed of curved jaws pivoted to one another and having extensions K' K' above said slot, supporting devices for the grip attached to the truck-frame of the car, and actuating devices for the grip located upon the car-body, substantially as set forth.

45. A cable-motor-railway car having a clutch or grip, J, the jaws K K of which are pivoted one upon the other above the cable and below the conduit-slot and having extensions K' K' above said slot, substantially as set forth.

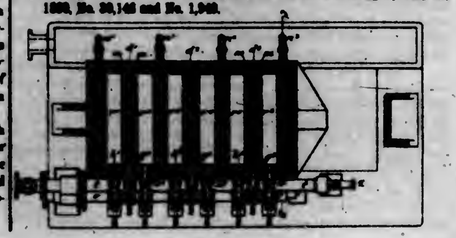
46. A slotted conduit for cable-railway cars having removable top plates the slot sides or edges of which are rounded, substantially as set forth.

887,593. LAST. Joseph L. Joyce, New Haven, Conn. Filed Mar. 19, 1883. Serial No. 267,796. (No model.)

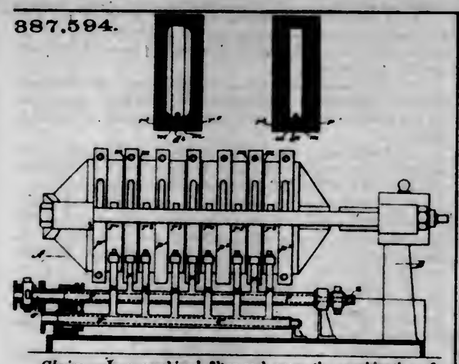


Claim.—The herein-described last, having its side cut away from a line, *a b*, running from the ankle to the ball, the concavity formed by such cut-away extending downward from said line to the bottom of the last at the shank and rearward dying outward at the heel, the said concavity being formed with abrupt turns in transverse section at said line *a b* and at the bottom of the last, substantially as described.

887,594. COMBINED FILTER AND CAKE PRESS. Johann Kress, Halle-on-the-Saale, Prussia, Germany. Filed Mar. 22, 1887. Serial No. 231,973. (No model.) Patented in Germany Nov. 6, 1879, No. 12,944; in England Dec. 5, 1879, No. 4,935, and in Austria-Hungary July 25, 1880, No. 33,145 and No. 1,903.

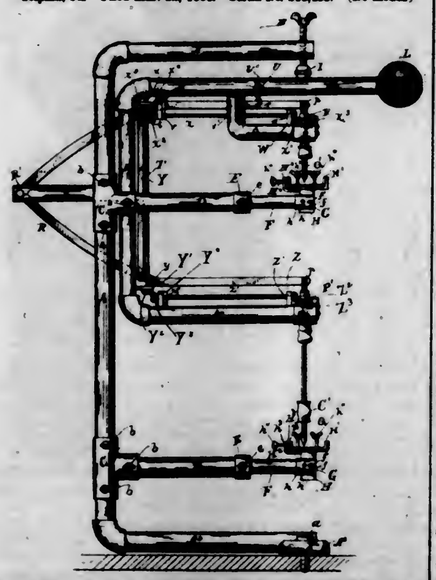


887,594.



Claim.—In a combined filter and press, the combination of a series of cake-forming frames, a pressing-plate between each pair of said frames, independent flexible diaphragms at the opposite sides of each pressing-plate, and having their edges clamped between the sides of the cake-forming frames and said pressing-plates and to rest directly against the cakes to be compressed, the pipe *v*, having branches connected with the cake-forming frames, and the fluid-pressure pipe *t*, having branches connected with the pressing-plates between their independent diaphragms, substantially as described.

887,595. ENGRAVING-MACHINE. WILLIAM B. MOORE, Philadelphia, Pa. Filed Mar. 22, 1888. Serial No. 268,155. (No model.)



Claim.—1. In an engraving-machine, the combination, with a vertical standard and an upper and lower outer horizontal arm, of the vertically-adjustable horizontal arms, horizontal adjustable telescopic extension-arms provided with bifurcations in their outer ends, which receive the downwardly-projecting stems of the plate or work holders, said plate or work holders being pivotally secured to the stems, whereby an angular adjustment is given them, substantially as described.

2. In an engraving-machine, the combination, with the vertical standard and the upper and lower outer horizontal arms, the upper and lower inner horizontal vertical adjustable arms, and the horizontal rearwardly and forwardly adjustable telescopic plate or work holding arms, of the metallic plates secured to the bifurcated outer ends of the telescopic arms and provided with the follower and adjusting thumb-screws, substantially as described.

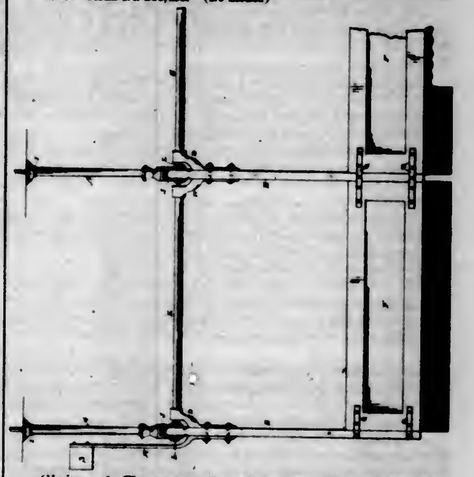
3. In an engraving-machine, the combination, with the vertical standard and its upper and lower outer horizontal arms, the upper and lower inner horizontal vertically-adjustable arms, and horizontal adjustable telescopic arms, of the T-shaped thimbles or sleeves supporting the vertically-adjustable arms and telescopic arms, substantially as described.

4. In an engraving-machine, the combination of the standard A, arms A′ A², D D, and F F, composing the main frame, of a pivotally-secured adjustable swinging auxiliary tool-carrying frame fulcrumed to the main frame by means of an adjusting-screw, and ball-and-socket joint, substantially as described.

5. In an engraving-machine, the combination, with the auxiliary frame, of the gearing and their respective shafts arranged as described, the stocks or tool-holders having socketed ends for the reception of their connecting stems and tools, whereby said stems and tools are retained or released from their respective places by means of the threaded nuts or thimbles, and set-screws bearing in the annular grooves in the lower ends of the stems, and a turn-button or hand-hold upon the tracer-tool, substantially as set forth.

6. In an engraving-machine, the combination, with the auxiliary frame, of the lugs secured thereto, through which are passed the respective shafts, having beveled pinions upon their ends meshing with beveled gear-wheels secured to the upper sides, and at the free ends of the angular arm and lower horizontal arm of the auxiliary frame, substantially as described, and for the purpose set forth.

887,596. PAN. JOHN A. MYERS, Louisville, Ky. Filed Apr. 2, 1888. Serial No. 269,455. (No model.)



Claim.—1. The combination of the hangers or supports, the levers which are pivoted in their lower ends, the fan which is connected to the lower ends of the levers, the castings secured to the upper ends of the levers, and the connecting-rods which extend from one casting to the other and connect the levers at their upper ends, substantially as shown.

2. The combination of the hangers, provided with ears at their lower ends, the levers which are pivoted in the hangers, the castings which are secured to the upper ends of the levers, the connecting-rods which connect the castings and the levers together, the fan, and the counter-weights which are secured to the upper ends of the levers, substantially as described.

3. The combination of the fans F, the plates Q, and the levers B, with supports for the levers, the castings D, secured to the upper ends of the levers, and the rods E, which connect the castings together and cause the levers to move simultaneously, substantially as set forth.

887,597. TANNING PROCESS. CHARLES H. PERRIN, Jefferson City, Mo. Filed Dec. 26, 1887. Serial No. 258,504. (Specimens.)

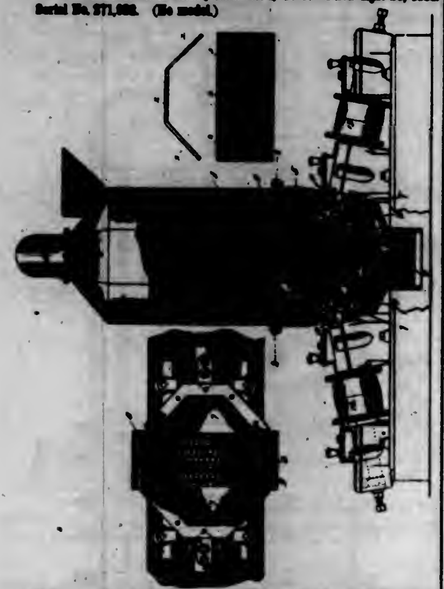
Claim.—1. The within-described process of tanning hides or skins, which consists in steeping the same in an infusion of black sage-brush, substantially as specified.

2. In the manufacture of leather, steeping the hides or skins, after depilating, in an infusion of black sage-brush, substantially as specified.

3. In tanning hides or skins, steeping the same, after depilation, in a heated aqueous infusion of black sage-brush, substantially as specified.

4. The within-described process of tanning hides or skins, which consists in first depilating the hides or skins, then steeping them in an infusion of black sage-brush in water first heated to a high temperature and afterward allowed to stand and partially cool, and subsequently, while in said infusion, turning or stirring them at intervals, and finally removing them from the infusion for subsequent dressing or finishing, as set forth.

887,598. REDUCING-MACHINE. GEORGE RATHBUN and ALBERT RATHBUN, Chicago, Ill., assignors to the Cyclone Pulverizer Company of the United States of America, New York, N. Y. Filed Apr. 26, 1888. Serial No. 271,982. (No model.)



Claim.—1. In a reducing-machine, in combination with the separating-chamber, disks or heads mounted therein and provided with beaters arranged to operate close to the walls of said chamber, and with pins or spikes projecting from said heads, substantially as described.

2. In a reducing-machine having an inclosed operating-chamber, two oppositely-rotating shafts projecting into said chamber and downwardly inclined with reference to each other outwardly from the chamber, heads secured to said shafts and provided with beaters arranged to operate close to the walls of said chamber, and pins or spikes projecting from said heads, substantially as described.

887,599. EJECTOR. ROBERT RIMBY, Mount Vernon, and LEOPOLD KAMAKEWE, New York, assignors to the Hudson Manufacturing Company, New York, N. Y. Filed June 13, 1888. Serial No. 276,915. (Model.)

Claim.—1. In an injector, the combination of a delivery-nozzle, perforated condensing-nozzle, and an annular forcing steam-nozzle with a jet-valve and a hollow cylindrical double-seated main valve provided with a perforated diaphragm-plate through which a cylindrical prolongation of the jet-valve protrudes, as and for the purpose set forth.

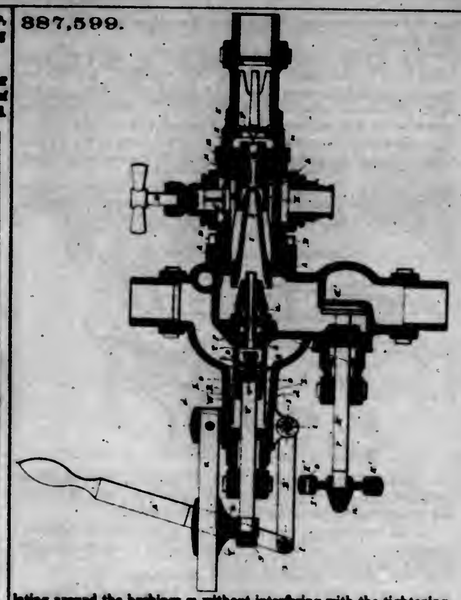
2. In an injector, the combination of a delivery-nozzle, perforated condensing-nozzle, annular forcing steam-nozzle, and central lifting steam-nozzle with a jet-valve and a hollow cylindrical main valve provided with a perforated diaphragm-plate through which a cylindrical prolongation of the jet-valve protrudes, as and for the purpose set forth.

3. In an injector, the combination of an annular forcing steam-nozzle, central lifting steam-nozzle, hollow cylindrical main valve, and diaphragm-plate with a jet-valve provided with a cylindrical stem or prolongation protruding through the diaphragm-plate of the main valve, and with nut T, determining the stroke of the jet-valve, as and for the purpose specified.

4. In an injector, the combination of an annular forcing steam-nozzle, central lifting steam-nozzle, hollow cylindrical main valve and perforated diaphragm, jet-valve R, with cylindrical prolongation protruding through the diaphragm of the main valve, with spindle U, and lock-nut W, the valves opening successively and none of them having rigid connection with the spindle, as and for the purpose set forth.

5. The friction-clamp consisting of ring G′, with nook D′ to receive the guide-rod Z′ and the slotted flange F′, pressed together by means of bolt A, bolt-head A′, and nut *l*, bushings m, interposed between flanges F′ and nut *l* and bolt-head A′, the two arms of the fulcrum-bar coiling around the bushings m without interfering with the tightening of the clamp, as and for the purpose set forth.

887,599.



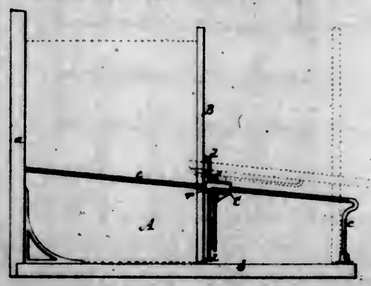
6. In an injector, the combination of an annular forcing steam-nozzle, central lifting steam-nozzle, hollow cylindrical main valve and perforated diaphragm, jet-valve R, with cylindrical prolongation protruding through the diaphragm of the main valve, spindle U, and lock-nut W, with the fulcrum-bar and friction-clamp, as specified.

7. In an injector, the combination of an annular forcing steam-nozzle, central lifting steam-nozzle, hollow cylindrical main valve and perforated diaphragm, jet-valve R, with cylindrical prolongation protruding through the diaphragm of the main valve, spindle U, and lock-nut W, with fulcrum-bar, guide-rod, and friction-clamp, as and for the purpose set forth.

8. In an injector, the combination of an annular forcing steam-nozzle, central lifting steam-nozzle, hollow cylindrical main valve and perforated diaphragm, jet-valve R, with cylindrical prolongation protruding through the diaphragm of the main valve, spindle U, lock-nut W, fulcrum-bar, guide-rod, and friction-clamp, with sliding sleeve Y and operating-lever A′, all constructed and operating as and for the purpose specified.

9. The star-wheel I′, consisting of four knobs, hub, and connecting-wings, one of the knobs being perforated and serving as an indicator for the position of the water-valve, as and for the purpose set forth.

887,600. PAPER-FILE. HENRY REES, Rochester, N. Y., assignor of one-half to Atkinson & Sykes, same place. Filed Jan. 6, 1888. Serial No. 257,774. (No model.)

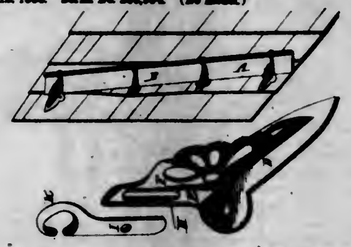


Claim.—1. In a paper-file, the combination, with the base *b* and back board, *a*, of the side rods, *c c*, forming ways, the slide C, movable forward and back on the same, the lugs *f f*, provided with holes attached to the slide and standing at an upward angle, and the follower B, provided with loops *d d*, passing through the holes of the

legs, the whole arranged to operate in the manner and for the purpose specified.

2. In a paper-file, the combination, with the base *b* and back board, *a*, of the side rods, *c c*, forming ways, the slide C, movable forward and back on the same, the legs *f f*, provided with holes attached to the slide and standing at an upward angle, the clamping-arms *p p*, pivoted to the slide and bearing against the side rods, and the follower E, provided with loops *d d*, passing through the holes of the legs, the whole arranged to operate in the manner and for the purpose specified.

387,601. EAVES-TROUGH BRACE. LEWIS J. SAWYER, Columbus, Wis., assignor of one-half to Nelson Sawyer, Jr., same place. Filed Mar. 12, 1888. Serial No. 266,994. (No model.)



Claim.—1. An eaves-trough brace for spouting, of the character described, consisting of an upright standard having a hook at one end and a base-plate at the other, substantially as set forth.

2. An eaves-trough brace for spouting, of the character described, consisting of a two-part upright standard having a bolt for adjustably securing them, substantially as described.

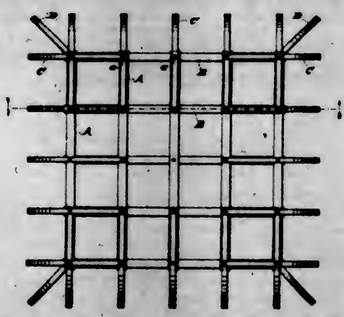
387,602. RAILROAD CROSS-TIE. PETER SIEMENS, Evansville, Ind., assignor to Pierre Siemens, Jr., same place. Filed Feb. 7, 1888. Serial No. 263,242. (No model.)



Claim.—1. A railroad-tie having the fixed clip *a'*, the removable clip B' with serrated face, the key B² with serrated face, and secondary key B³ between clip B' and key B², substantially as described.

2. A railroad-tie having the upset clip *a*, formed as shown, the clip B' with serrated face, the key B² with serrated face, and secondary key B³ between clip B' and key B², substantially as described.

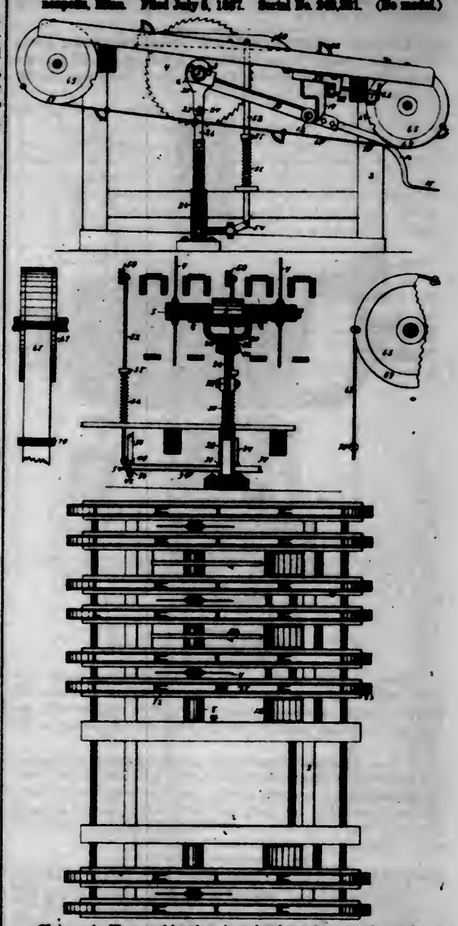
387,603. SHAM PILLOW. WILLIAM M. SIMONS, Greencastle, Ind., assignor of two-thirds to Ellis B. Dooley and Francis Shelton, both of same place. Filed Feb. 13, 1888. Serial No. 263,895. (No model.)



Claim.—1. In a sham pillow, the combination of the rectangular frames placed one above the other and composed of the slats A B, pivotally connected to each other and connected by the outwardly-curved pivoted springs C, and the corner-springs, substantially as specified.

2. In a sham pillow, the combination of the rectangular frames composed of the slats pivotally connected together and at right angles to each other, and the outwardly-curved springs joining said frames together, substantially as specified.

387,604. AUTOMATIC GANG-TRIMMER. JOHN B. ST. LOUIS, Minneapolis, Minn. Filed July 6, 1887. Serial No. 243,321. (No model.)



Claim.—1. The combination, in a lumber-trimmer, of an adjustable frame, a saw mounted therein, a steam-cylinder for adjusting said frame, a valve controlling the supply of steam to said cylinder, and a movable bar connected with said valve and arranged on the machine in the path of the moving lumber, substantially as and for the purpose set forth.

2. The combination, in a lumber-trimmer, of a series of adjustable frames, saws mounted in said frames, steam-cylinders, valves controlling the supply of steam to said cylinders, pistons in said cylinders connected with said frames, and movable bars 50, arranged on the frame of said machine in proximity to said saws and connected with said valves, as and for the purpose set forth.

3. The combination, in a lumber-trimmer, with the frame 2, of the pivoted frame 10, the saw mounted therein, the steam-cylinder the piston arranged in said cylinder and connected with said frame, the steam-valve, and the operating-bar 50, mounted on said frame 2 and connected with said valve, substantially as set forth.

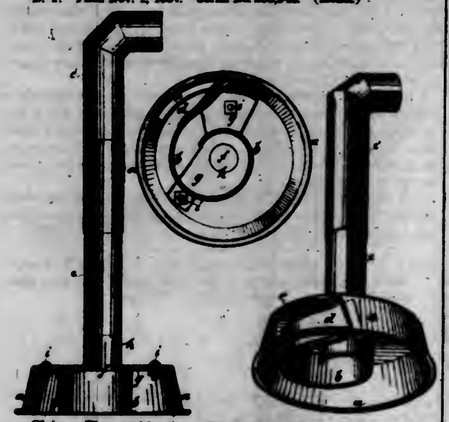
4. The combination, in a lumber-trimmer, with the frame 2, of the frame 10, mounted on a pivot, 12, means for adjusting said pivot, the saw mounted in said frame 10, the steam-cylinder, and the piston arranged in said cylinder and connected with said frame 10, substantially as set forth.

5. The combination, in a lumber-trimming machine, with the frame 2, of the pivoted frame 10, the yoke 20, secured thereto, the saw mounted in said yoke, the steam-cylinder, the piston connected with said yoke, the valve controlling the admission of steam to said cylinder, and the bar 50, mounted on the frame 2 and connected with said valve, for the purpose set forth.

6. The combination, in a lumber-trimmer, with the frame 2 and the saws 4, of the sprocket-wheels 66, having the notched flanges 69, the bands 67, having the bars 70 secured thereto and fitting the notches in said flanges, and the carriers 72, secured to said bars, substantially as described.

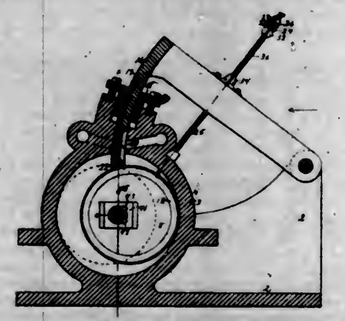
7. The lumber-carrier consisting of the flexible metallic bands 67, having the half-round bars 70 secured upon opposite sides thereof, substantially as described.

387,605. WASH-BOILER. CHARLES H. STODDART, New York, N. Y. Filed Nov. 1, 1887. Serial No. 253,943. (Model.)



Claim.—The combination, with the pan *a*, having inlet *c* and flap *d*, of the partition *b*, having plate *g* and nook A, with fastening-bolts *i i* and tube *e*, substantially as shown and described.

387,606. ROTARY ENGINE. EDWIN R. THOMAS, Minneapolis, Minn. Filed July 13, 1887. Serial No. 244,147. (No model.)



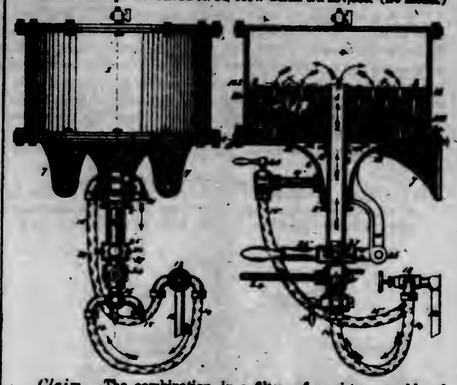
Claim.—1. In a rotary engine, the combination, with two oppositely-placed eccentric-pistons and the radially-sliding abutments provided with arms by which they are pivoted to the frame or bed-plate of the machine, of the equalizing-lever fulcrumed at a point equidistant between the said arms, and means for connecting the opposite ends of the said lever with the arms on the said abutments, substantially as described.

2. In a rotary engine, and in combination with the eccentric-pistons 8 and the radially-sliding abutments 16 of the equalizing-lever 24, attached to the said abutments, the fulcrum-bar 25, provided with the washer 26, and means for adjusting said washer upon said rod, substantially as described.

3. In a rotary engine, the combination, with the cylinder, of the eccentric-pistons, the packing-rings in the ends of the said pistons, and the recesses 14 within the inner circumference of the packing-ring, and the opening 15, connecting the recesses, in the manner and for the purpose substantially as described.

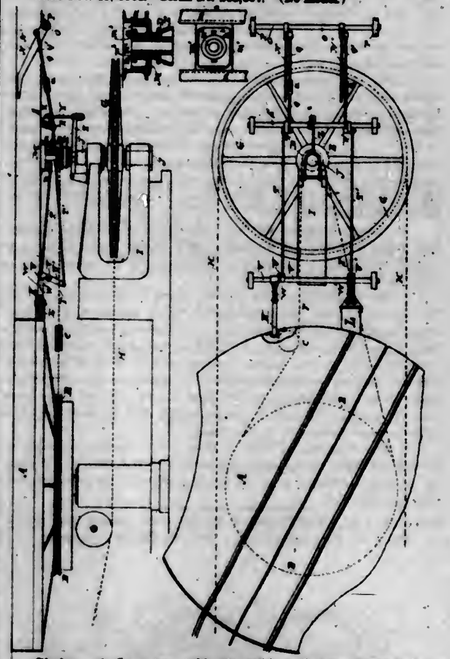
4. In a rotary engine, and in combination with the shaft 6 and the eccentric-piston 8, the rectangular block 41, held upon said shaft and upon which the said piston slides, and means for adjusting the said block in said recess, substantially as described.

387,607. SELF-CLEANSING FILTER. FRANK THOMAS, St. Louis, Mo., assignor of two-thirds to Rudolph Stecher and Clemens Fischer, both of same place. Filed Dec. 14, 1887. Serial No. 257,893. (No model.)



Claim.—The combination, in a filter, of a piston capable of rotary reciprocation, forming the top of the filtering-chamber, and armed with pins projecting into the filtering material, and the bottom of the filtering-chamber having pins projecting into the chamber, substantially as set forth.

387,608. TURN-TABLE FOR CABLE RAILWAYS. CHARLES VOGEL, San Francisco, Cal., assignor to William S. Phelps, same place. Filed Feb. 13, 1888. Serial No. 263,897. (No model.)

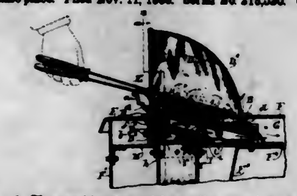


Claim.—1. In a turn-table for cable railways operated by a chain-band connection between two sheaves placed one upon the tail-sheave spindle and the other underneath and secured to the turn-table, the herein-described means of throwing the parts into and out of action, consisting, essentially, of a male half of a friction-clutch moving vertically upon and revolving with the tail-sheave spindle, a female half of a friction-clutch having the driving-chain sheave solidly connected therewith, a hanging frame fastened to the roof of the tail-sheave pit and adapted to hold suspended the upper female half of the clutch directly over the lower male half and permit the same to freely revolve when in engagement, and suitable mechanism for elevating

and depressing the lower male half of the clutch to bring it into engagement with the upper half, substantially as and for the purpose described.

2. In a turn-table for cable railways, the combination of a hand-lever vibrating on a suitable fulcrum-shaft, a suitable lock or latch applied to the table to hold it from moving, a suitable clutch and its parts to connect and disconnect the table from its moving mechanism, and a suitable set of rods and levers connecting between said hand-lever and the locking and clutching device and adapted to first open the lock to free the table and subsequently to throw the clutch into action by the raising of the hand-lever, the whole arranged and operating in the manner and for the purpose substantially as herein described.

387,609. BROILER. William Vogel, Chicago, Ill., assignor, by direct and mesne assignments, to the Vogel Petroleum Heating Company, same place. Filed Nov. 11, 1886. Serial No. 218,530. (No model.)



Claim.—1. The combination, with an oil-burner, of a broiler comprising a thin imperforate metal plate, a frame or casting supporting said plate and forming a closed chamber located over the burner, and a deflecting wall or walls located beneath the said plate and forming therewith a shallow passage beneath the said plate, said passage having an inlet-opening for the products of combustion at one side of the plate and an exit-opening at the other side of the said plate, whereby the heated products of combustion are confined adjacent to and caused to pass over the under surface of said plate in close contact therewith, substantially as described.

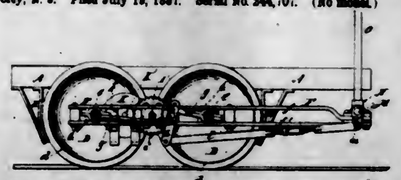
2. The combination, with a stove comprising a top plate, F, provided with a hole, *f*, for cooking utensils, and a burner comprising a horizontal plate, H, provided with an opening, *h*, forming the exit-passage of the burner, of a broiler comprising a centrally-apertured plate, B, fitted to rest at its edges upon the top plate, F, of the stove, and provided with depending flanges B' B², engaging the top surface of the said plate H, an inclined plate, A, located in the central opening of the said plate B, and a plate, C, sustained below the said plate A, substantially as described.

3. The combination, with the plate B, provided with the depending flanges B' B², and the inclined plate A, of the movable plates or flanges B³, adjustably attached to said flanges B' B², substantially as described.

4. The combination, with a stove having an opening, *f*, in its top for cooking utensils, and an oil-burner within the stove, of a broiler comprising a thin imperforate plate, A, a frame or casting surrounding and supporting said plate A, said frame or casting being provided with depending walls or flanges, forming, with the parts of the burner, a closed chamber receiving the products of combustion from the burner, and a hood, D, extending over the plate A, and provided at its lower rear side with an opening, *d*, communicating with the smoke-exit pipe of the stove, substantially as described.

5. The combination, with the plate A of a broiler and walls directing the flame from a burner against the lower surface of said plate, of an upturned flange, *a*, at the forward edge of the plate, substantially as described.

387,610. ELECTRICALLY-DRIVEN CAR. Joseph Weir, Jersey City, N. J. Filed July 19, 1887. Serial No. 244,707. (No model.)



Claim.—1. In an electrically-driven car, a motor-supporting frame mounted directly upon the axles of the car-wheels or driving-wheels and carrying a manually-operative lever system, in combination with car-wheels or driving-wheels having their axles journaled in laterally-movable boxes, for the purpose of enabling the said wheels to be moved by means of said manually-operative lever system into or out engagement with the spur-wheel or friction which transmits from the motor the power to rotate the said car-wheels or driving-wheels.

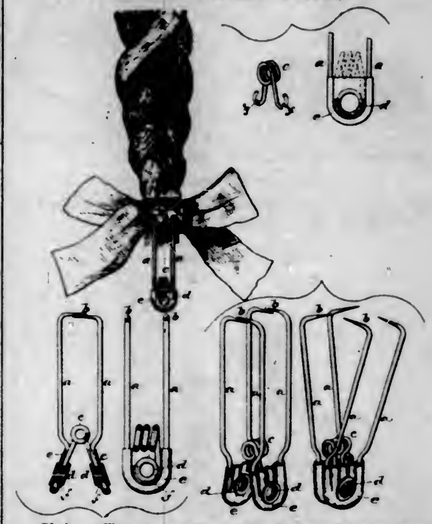
2. In an electrically-driven car, two pairs of driving-wheels having their axles journaled in laterally-movable boxes, and stationary brakes arranged in the vertical planes of the driving-wheels, as shown, in combination with a manually-operative lever system for moving the said pairs of driving-wheels away from or toward each other, and thereby forcing their faces into or out of contact with said stationary brakes.

3. In an electrically-driven car, two pairs of driving-wheels having their axles journaled in laterally-movable boxes, and an electrically-rotatable shaft carrying at or near its ends spur-wheels or friction-wheels, which are respectively interposed between the driving-wheels, in combination with stationary brakes arranged in the vertical planes of the driving-wheels, as shown, and a manually-operative lever system for moving the said pairs of driving-wheels away from or toward each other, as and for the purposes set forth.

4. A car-body carried by means of springs upon driving-wheel axles journaled in laterally-movable boxes, in combination with a motor-supporting frame independently mounted upon the driving-wheel axles, and having affixed upon it a manually-operative lever system for moving the driving-wheels toward or away from each other, as and for the purpose set forth.

5. The driving-wheel D, provided with the laterally-projecting angular flange *d*, in combination with the electrically-rotatable friction-wheels I, substantially as set forth.

387,611. SAFETY HAIR-BRAID PIN. Frederick G. Wiebe, Leavenworth, Kans., assignor of one-half to James Hunter, same place. Filed Dec. 22, 1887. Serial No. 258,695. (No model.)



Claim.—The spring-pin herein described, consisting of the pin parts, each having a bent shank and a right-angled pin-point, each shank end having an eyelet-seat, a spring, and the eyelets fastening the spring and the pin parts, in the manner shown and described.

387,612. ROAD-ENGINE. William S. Wootton, Scottsburg, Va. Filed Dec. 19, 1887. Serial No. 258,307. (No model.)

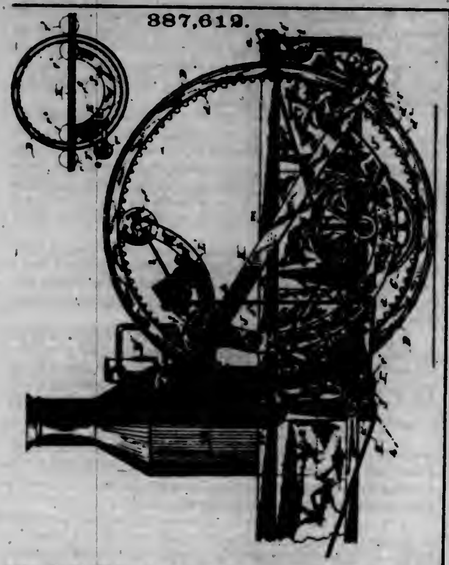
Claim.—1. In a road-engine, the combination, with the driving ground-wheels, of a divided driving-shaft, the separate parts of the shaft being connected, respectively, with the driving mechanism and with said wheels, and two or more springs arranged oppositely to and balancing each other about the shaft and connecting the separate portions thereof with each other, substantially as set forth.

2. The combination, with the divided driving-shaft and disks carried by the respective portions thereof, of a plurality of springs and corresponding links secured, respectively, to and connecting with each other the said disks, whereby a movement of the parts of said shaft out of line with each other may be permitted without interrupting their driving-connection.

3. The combination, with the divided driving-shaft and disks carried thereby, one of which is provided with seats or recesses, of a plurality of springs mounted in said recesses, and links pivoted to the springs and to the other disk, substantially as set forth.

4. The combination, with the divided driving-shaft and disks carried by the respective portions thereof, of a plurality of springs secured

387,612.



to one of said disks, and corresponding links pivoted to the said springs and situated at an angle thereto and pivoted at their other ends to the other disk.

5. The combination, with the centerless ground-wheel and its driving-pinion, of a frame connected with the body of the engine, and a roller mounted on said frame and bearing against the periphery of the wheel in the line of its horizontal diameter, for receiving the horizontal propelling force of said wheel.

6. The combination, with the centerless ground-wheel and its driving-pinion, of a frame connected with the body of the engine, and rollers mounted on said frame both within and without the wheel, and bearing upon both its inner and outer periphery for receiving its propelling force.

7. The combination, with the centerless ground-wheel and its driving-pinion, of a frame connected with the body of the engine, and a roller mounted on said frame and bearing against the periphery thereof opposite to and adapted to resist the radial pressure of said pinion.

8. The combination, with the centerless ground-wheel and its driving-pinion, of a frame adapted to hold and support said ground-wheel and having a bearing for the journal of said pinion, and a roller bearing upon the periphery of the ground-wheel, said roller and frame being pivoted to the body of the engine on the same axial line.

9. The combination, with the centerless ground-wheel and its driving-pinion, of a frame connected with the body of the engine, a roller mounted thereon and bearing against the periphery of the wheel, an equalising-frame pivoted to the first frame, and rollers carried by the equalising-frame on opposite sides of its pivot and bearing against the periphery of the ground-wheel.

10. The combination, with the centerless ground-wheel and its driving-pinion, of a frame carrying the pinion, rollers mounted on the frame and bearing against the periphery of the wheel, turning on said frame by which the latter is pivotally connected with the body of the engine, and a roller mounted on the frame opposite to said pinion for resisting its radial pressure.

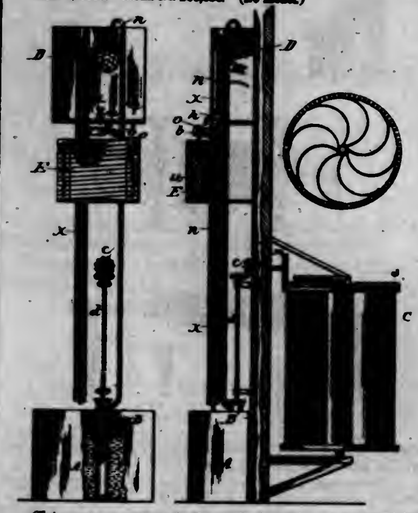
11. The combination, with the centerless wheel and the rollers bearing against its outer periphery, of the scraper *s*, engaging said outer face for clearing the track for said rollers.

12. The combination, with the centerless wheel and a supporting-frame therefor pivoted to the main frame of the engine, of a roller carried by the main frame and situated upon the opposite side of the wheel from said pivot, for limiting the relative movement of the main frame and said wheel about said pivot.

387,618. PROCESS OF TREATING NATIVE SODA. Laurence F. J. Wheeler, Virginia City, Nev. Filed Mar. 11, 1887. Serial No. 230,582. (Specimens.)

Claim.—In the within-described process of treating natural soda, first making a saturated or approximately saturated solution of the natural or crude soda in hot fresh water, then clearing the solution by allowing it to settle, then straining it while hot and allowing it to partially cool in a separate vessel or vessels and to crystallize therein, afterward running it off into another vessel or vessels and allowing it to further cool and again crystallize, and finally freeing the separated bicarbonate of soda from mother-liquor and drying it, essentially as herein described.

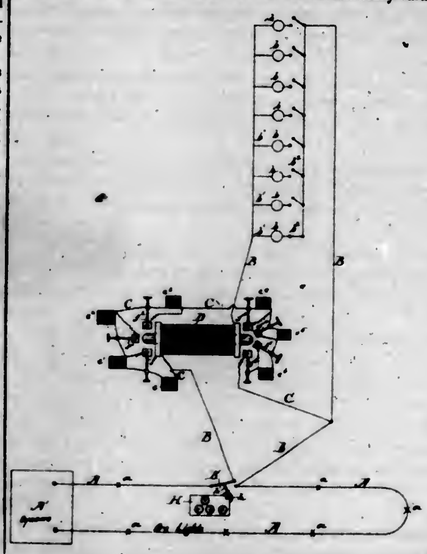
387,614. CLEPSYDRA. Joseph Cardella, Chicago, Ill. Filed Apr. 4, 1888. Serial No. 269,933. (No model.)



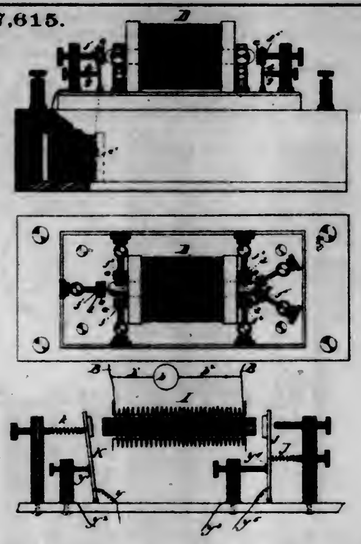
Claim.—As an automatic time-indicator, the combination of the revolving fan C, the pump B, the gear-wheels *m*, shaft *a*, bevel gear-wheels *c*, vertical shaft *d*, the vessel A, the tube *n*, reservoir D, the waste or overflow pipe *x*, the discharging-faucet A, receiving vessel or trough *b*, the gaged feeding-faucet *o*, the dial-box E, and siphon *u*, as and for the purpose above set forth.

387,615. SYSTEM OF COMBINED ARC AND INCANDESCENT ELECTRIC LIGHTS. Harold P. Brown, Chicago, Ill. Filed Sept. 20, 1884. Serial No. 144,192. (No model.)

Claim.—1. The combination of a main or high-tension circuit with a local or incandescent-lamp circuit in which two or more incandescent lamps or other translating devices are arranged in parallel group, and a shunt-circuit furnished with an automatically-variable



387,615.



resistance to compensate for such lamps in the parallel group as may not be in use, substantially as specified.

2. The combination of a main or high-tension current circuit with a local or incandescent-lamp circuit, two or more incandescent lamps or other translating devices arranged in parallel group in said local circuit, an electro-motive device in said local circuit, a circuit-controlling lever or device operated thereby, a shunt-circuit, and a series of graduated resistances having connections with said shunt-circuit operated by said circuit-controlling lever or device, substantially as specified.

3. The combination of main or high-tension current circuit A, local or incandescent-lamp circuit B, furnished with two or more incandescent lamps or other like translating devices arranged in parallel group, and shunt-circuit C, furnished with a series of graduated resistance-coils, and means for automatically making connection therewith to increase or diminish the resistance in the shunt-circuit as the resistance in the lamp-circuit diminishes or increases, substantially as specified.

4. The combination of main or high-tension current circuit A with local or incandescent-lamp circuit B, having two or more incandescent lamps in parallel group, each lamp being provided with a switch, and shunt-circuit C, furnished with an automatically-variable resistance to regulate the current through the lamps as the same are lighted or extinguished, substantially as specified.

5. The combination of main circuit A with local or incandescent-lamp circuit B, having two or more incandescent lamps in parallel group, and a shunt-circuit provided with a series of resistance-coils graduated to the number of lamps in the parallel group, and means operated or put in operation by the lamp-circuit current to put said resistance-coils successively in or out of the shunt-circuit according as a lamp in the parallel group is lighted or extinguished, substantially as specified.

6. The combination, with a group of incandescent lamps or other like translating devices in parallel, of a shunt-circuit provided with a variable resistance, an electro-motive device, and a circuit-controlling lever or device operated thereby for varying said resistance, substantially as specified.

7. The combination of the circuit having incandescent lamps or equivalent translating devices in parallel group, a magnet in said circuit provided with several armatures adjusted to require different degrees of force to move them, and several resistance-coils in a shunt-circuit having connections operated by said armatures, substantially as specified.

8. The combination of an incandescent-lamp circuit having two or more incandescent lamps in parallel group with a shunt-circuit furnished with a series of resistance-coils, and an electro-motive device actuated by the lamp-circuit current to make and break connection with said resistance-coils, substantially as specified.

9. A system for operating on one circuit arc lamps and multiple-arc groups of incandescent lamps, said system consisting in a suitable dynamo or electric-current generator, an external or working circuit energized by said generator, arc lamps located in series upon said circuit, and one or more multiple-arc groups of incandescent lamps connected in said circuit with a shunt connecting with said main or working circuit on each side of and around each group of incandescent lamps, and each shunt containing an automatically-variable resistance for determining and governing the current operating said incandescent lamps, substantially as specified.

10. The means of operating on one circuit arc lamps and multiple-arc groups of incandescent lamps, consisting in a shunt about each group of incandescent lamps having an automatically-variable resistance and an electro-motive device to vary the resistance, substantially as specified.

11. The combination, in an arc-light circuit, of a group of incandescent lamps or other translating devices in multiple arc, with a rheostat and an electro-motive device for varying the resistance of the rheostat, substantially as specified.

PHOTO LITH. NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE SECRETARY OF THE INTERIOR.

HOUSTON *v.* BARKER *v.* BANNISTER *v.* EASTMAN.

1. The duties to be performed by the Commissioner of Patents are divisible into two classes, viz: (1) duties imposed by Congressional legislation, and (2) duties imposed only by departmental rules and regulations emanating from or authorized by the Secretary of the Interior.

2. The Secretary of the Interior has no appellate jurisdiction over the Commissioner of Patents in cases involving the performance of judicial or quasi-judicial duties imposed by law upon the Commissioner of Patents.

3. The Secretary of the Interior has authority to direct the Commissioner of Patents to perform the duties, either judicial or ministerial, which the law enjoins upon him; but when these legally-enjoined duties are judicial or quasi-judicial he cannot control the Commissioner's discretion in the manner of their performance.

4. The appellate jurisdiction of the Secretary of the Interior over the actions of the Commissioner of Patents is limited to cases not involving duties directly imposed by Congress, but such only as are imposed by the rules and regulations prescribed by the Secretary for the government of the Commissioner and his subordinates.

5. The determination of questions concerning the admissibility of evidence in interference proceedings involves the exercise of judicial functions.

6. Authority to suppress incompetent evidence is conferred upon the Commissioner by the statutes and not by any departmental regulation.

APPEAL to the Secretary of the Interior.

Mr. A. J. Todd for the appellant.

Messrs. Church & Church for the appellees.

DEPARTMENT OF THE INTERIOR,
Washington, July 26, 1888.

The Commissioner of Patents:

SIR: In the matter of the appeal of E. B. Barker, by his attorney, Mr. Andrew J. Todd, from your action under date of May 5, 1888, whereby the depositions of certain witnesses in the interference case of *Houston* v. *Barker* v. *Bannister* v. *Eastman* were suppressed and ordered to be stricken from the record, I transmit herewith a copy of an opinion of the Assistant Attorney-General for the Interior Department, dated the 23d instant, bearing an indorsement of approval of the Assistant Secretary, who sat with the Assistant Attorney-General at an oral hearing of the case, to the effect that the question involved in the appeal is not within the jurisdiction conferred by law upon the Secretary of the Interior over the acts of the Commissioner of Patents, and recommending that the appeal be dismissed.

I concur in the conclusion reached in the opinion, and the appeal is accordingly hereby dismissed.

The papers belonging to the files of your Office are herewith returned.

Very respectfully,

WM. F. VILAS,
Secretary.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE ASSISTANT ATTORNEY-GENERAL,
Washington, D. C., July 23, 1888.

IN THE matter of the appeal of ERASTUS B. BARKER from the Commissioner of Patents.

To the Hon. Secretary of the Interior:

SIR: I have carefully considered the questions presented by the appeal in the above-named matter, and as the result of such consideration I beg leave to report as follows:

It appears that in the course of a trial (in the Patent Office) of an interference proceeding, in the case of *Houston* v. *Barker* v. *Bannister* v. *Eastman* a motion was made by counsel for Eastman and Bannister to suppress (or strike out) the deposition of one of Barker's witnesses, on the alleged ground that said witness while testifying had under the advice or instruction of Barker's counsel refused to answer certain questions propounded to him on cross-examination.

The Commissioner granted said motion, and it is from his action in so doing that Barker appeals to the Secretary.

Respondent first denies the appellate jurisdiction of the Secretary, and, second, maintains that the said ruling of the Commissioner was strictly legal and proper.

If the objection to the Secretary's appellate jurisdiction is well taken, it will of course be unnecessary to consider the legality of the Commissioner's said ruling.

Then, has the Secretary appellate jurisdiction in the premises?

The Commissioner of Patents has two classes of duties to perform, to wit: duties imposed by Congressional legislation and duties imposed only by departmental rules and regulations emanating from or authorized by the Secretary of the Interior as the head of the Department of which the Patent Office is a part.

When performing that class of judicial or quasi-judicial duties which by an act of Congress have been imposed upon the Commissioner of Patents it seems

to be well settled that no appeal lies from the Commissioner of Patents to the Secretary of the Interior.

Should the Commissioner refuse to perform the duties, either judicial or ministerial, which the law enjoins upon him (for example, should he refuse to hear and decide an application for a patent when properly before him, or should he neglect or refuse to issue a patent which, by a final adjudication, had been duly awarded to the claimant,) I am of the opinion that the Secretary might properly in the exercise of his supervisory power require the performance of such duty; but when these legally-enjoined duties are judicial or quasi-judicial in their character, although the Secretary may require the Commissioner to perform them, he cannot legally control his discretion in the *manner* of their performance.

This, as I understand it, is the doctrine laid down by the Supreme Court in *Butterworth* v. *Hoe*, (112 U. S., p. 50,) where the Court said:

To whatever else supervision and direction on the part of the head of the Department may extend in respect to matters purely administrative and executive, they do not extend to a review of the action of the Commissioner of Patents in those cases in which by law he is appointed to exercise his discretion judicially.

But where it is *not Congress*, but the Secretary of the Interior, who, in the exercise of his legitimate authority as the head of the Department, prescribes rules and regulations for the government of the Commissioner of Patents and his subordinates, I think there can be no question but that he has jurisdiction to review and reverse the action of said Commissioner whenever the latter disregards or violates any of the rules thus legally prescribed by the Secretary for his government.

This brings us to the question whether or not the alleged error of the Commissioner (if error it was) consisted in the violation of a duty imposed on him by *law*, or whether it consisted in the violation of a duty imposed by some rule or regulation prescribed by the Secretary.

Unquestionably every official ruling by the Commissioner of Patents upon the admissibility or the inadmissibility of evidence is the exercise of a judicial function. Hence when in the proceeding now under consideration the Commissioner decided to strike out or to reject as incompetent evidence the deposition referred to he was acting judicially, and that, too, by virtue of an authority conferred (not by any departmental regulation, but) by Congressional enactment, which imposes upon him the duty of trying and adjudicating according to law just such questions as he was then deciding.

I am therefore of the opinion that the Secretary has no jurisdiction to review on appeal the action of the Commissioner complained of, and I think that said appeal should be dismissed.

I return herewith the papers in the case.

Very respectfully,

Z. MONTGOMERY,
Assistant Attorney-General.

—

Having heard this case with the Assistant Attorney-General, I desire to state that I concur in the foregoing opinion.

D. L. HAWKINS,
Assistant Secretary.

COMMISSIONER'S DECISIONS.

EX PARTE DONOVAN.

Decided July 9, 1888.

1. RIGHT OF EXAMINER TO WAIVE OBJECTIONS.

The examiner has the right to waive his requirement that applicant file cross-references and to take such other steps as in his judgment and discretion are necessary to remove any conflict between subject-matter of two pending applications of the same applicant.

2. ANSWER OF EXAMINER SHOULD ADVISE COMMISSIONER.

When an amendment is presented in compliance with a supposed recommendation of the Examiners-in-Chief which the examiner refuses to accept, the Commissioner should be advised by the examiner in his answer to petition whether the proposed claim differs in scope or subject-matter from the claim already adjudicated.

3. RULES 66 AND 139.

Rules 66 and 139 provide that at all times in the investigation of an application and in the progress of appeals it is the duty of each tribunal to see to it that the inventor shall secure a patent for whatever patentable subject-matter may be shown in his application. The Office must put itself in the attitude of a friend and not of a litigant with the applicant.

4. DUTY OF EXAMINER.

It is the duty of the examiner when he is satisfied that an application contains a patentable invention which is not claimed, but which he has reason to believe the applicant is seeking to cover, to advise the applicant briefly and specifically in the premises, precisely as the Examiners-in-Chief and Commissioner are authorized to make suggestions and recommendations.

5. RIGHT TO AMEND AS A MATTER OF COURSE.

An applicant whose claims have been twice rejected and his case is in condition for appeal has no longer the right to amend, as a matter of course. If he has elected to prosecute his claims to a final rejection by the tribunals below, before being permitted to have his case reopened for further amendment he must present a satisfactory showing to the Office why the proposed claim was not originally or earlier introduced.

ON petition.

VAPOR-BURNERS.

Application of John E. Donovan filed October 4, 1886, No. 215,236.

Mr. George J. Murray for the applicant.

HALL, *Commissioner:*

Applicant appeals from the decision of the examiner upon the following grounds:

First, from the requirement to file cross-references in this application referring to subject-matter common to this and applicant's pending case, Serial No. 238,073.

Second, from the refusal of the examiner to consider the amendment filed April 30, 1888.

As to the first requirement, the examiner in his answer to the appeal has seen proper to waive the objection. He says:

After a further consideration of the cases and all the attending circumstances the examiner thinks it best to waive this requirement and use other means later on to remove the conflict between the two cases.

Applicant objects to a waiver of this character, and insists that the Commissioner shall decide the question, as otherwise further action in this direction on the part of the examiner may result in unnecessary delay.

I think the examiner has a right to waive an objection of this kind, and if, as he asserts, there is any conflict between the two applications, to take such steps as in his judgment and discretion are necessary to obviate such conflict; but I direct that he shall give this feature of the case prompt consideration, so as not to cause further or unnecessary delay.

The examiner rejected claim 1, and applicant appealed to the Examiners-in-Chief, who affirmed his decision. Applicant insists, however, that the Examiners-in-Chief in their decision suggested or recommended an amendment which he would be entitled to make, and that the amendment which he has tendered to the examiner is within the suggestion and recommendation of the Board. This is denied by the examiner, and I think myself that it is impossible to find in the decision of the Examiners-in-Chief any statement or recommendation such as the rule contemplates. In his answer to this petition the examiner says:

In regard to the second count, the examiner has to say that the amendment sought to be introduced presents a claim in substitution for claim 1 already adjudicated by the Examiners-in-Chief, who affirmed the Primary Examiner's decision finally rejecting the claim without answering to their decision any recommendation.

This statement is not as specific as it should have been. I think, in cases of this character, when an applicant tenders an amendment different in form and covering less than that covered by the original claim rejected, or a claim narrower and more limited than the original, the examiner ought to advise the Commissioner whether the proposed amendment differs in scope or subject-matter from the original claim rejected, in order that the Commissioner may have the benefit of the examiner's judgment in this essential particular.

It must be borne in mind that the right of an applicant whose claim has been rejected by the examiner to appeal to the Examiners-in-Chief and to the Commissioner, and thus secure the ultimate and final decision of the Office as to the patentability of his claim, is one expressly provided for and contemplated both by statute and rule. The applicant is not to be prejudiced in any manner by such appeals, nor does he forfeit any right whatever. The rules of the Office, particularly Rules 66 and 139, point out that at all times in the investigation of an application and in the progress of appeals it is the duty of each tribunal having jurisdiction of the case to see to it that the inventor shall secure a patent for whatever patentable matter may be shown in his application. As has been frequently stated by me in decisions, the Office must put itself in the attitude of a friend and not of a litigant with the applicant, and see that he secures every right that belongs to him. Not only is this true of the rules cited, but Congress has seen proper to take especial pains to provide that whenever an applicant, in consequence of any inadvertence or mistake in the framing of his specification or claim, has failed to secure that to which he was entitled, or his patent is inoperative or invalid either by reason of having claimed too much or too little, he may have the proper correction made by a reissue, which will secure him the precise invention to which he is entitled.

Now, unquestionably, if under Rules 66 and 139 it is the duty of the Examiners-in-Chief and the Commissioner to suggest and recommend in order that an applicant may receive Letters Patent for subject-matter not involved in the appeal, it must be the duty of the Primary Examiner in the examination of the case made by him to point out and recommend the same thing. I do not mean by this that it is the duty of the examiner to become an agent or an attorney for the applicant; but I think in all cases when he is satisfied or believes that the application contains patentable matter which is not claimed, but which he has reason to believe the applicant is seeking to cover, it is his duty to advise the applicant briefly and specifically, precisely as the Examiners-in-Chief and the Commissioner are authorized to do, as above stated. By acting upon this principle all of the tribunals of the Office become friendly to the applicant, and enable him to clearly see and understand the views of the Office as to the nature and patentability of the invention described. Such practice would undoubtedly tend to lessen the correspondence and conflicts which arise between applicants or their counsel and the Office.

Notwithstanding what is said above, however, it is apparent that the practice and rules of the Office are positive and distinct to the effect that when an applicant has been twice rejected and his case is in condition for appeal his right to amend is no longer a matter of course.

If amendments touching the merits of the application are presented after the case is in condition for appeal, or after appeal has been taken, they may be admitted upon a showing, duly verified, of good and sufficient reasons why they were not earlier presented. (Rule 66.)

Applying the rule to the present case, it will be seen that there has been shown no reason why the amendment proposed, which was refused admission into the case by the examiner, was not introduced at an earlier period. There is no showing why it should not have been originally presented as a part of the application when filed.

If, as understood, the claim rejected by the Primary Examiner and by the Examiners-in-Chief was a broad claim, there is no reason why a narrow and limited claim should not have been presented at the same time and the judgment of the Office thus obtained upon both at once. If, as applicant thinks, the Examiners-in-Chief were of opinion that the limited claim which he now seeks to introduce (if it be such) contained patentable subject-matter, the whole subject would have been adjudicated at once; but if a party is allowed to come into the Office with a broad claim, secure a careful and thorough examination thereof, appeal and take the judgment of the Office rejecting it, then present another more limited claim, as a matter of right, and pursue the same course of appeals, he could occupy the time of the Office unlimitedly, depending simply upon his skill and ingenuity in gradually reducing or limiting the character of his claim from the broadest to the narrowest scope of which the invention described was susceptible. It must be borne in mind that although the original examination of an application is supposed to be thorough and comprehensive, it is impossible for the examiner to retain the subject in his mind and be familiar with it weeks or months afterward, when he takes the case up for a second consideration upon a narrower claim. Hence it is that Rule 66 has been adopted, the purpose of which is to require applicants to present their applications with their claims fully set forth as broad as they see proper or as narrow, in order that the entire subject may receive early and thorough consideration. If applicants fail to observe this requirement and insist upon a single broad claim and take an appeal, their right to amend is restricted and limited. Some showing must then be made why the proposed claim ought to be introduced, and also why it was not earlier presented.

Of course, the subject of admitting amendments under these circumstances rests largely in the discretion of the examiner, and that discretion ought to be ex-

ercised carefully and with due regard to the interest of the applicant and the Office.

If it be apparent from the character of the application and from the manner in which it has been conducted that the applicant has been acting earnestly and in good faith; that his failure to earlier present his claim in the form tendered was the result of inadvertence, ignorance, or mistake, and the subject is brought to the examiner's knowledge in the manner indicated in the rule, the amendment should be recommended or allowed.

As stated above, the examiner in his answer to the appeal in this case has not put me in possession of his opinion in regard to the relation between the claim tendered and the claim rejected, and I do not feel disposed to pass upon that question at all. The action of the examiner is affirmed; but the case is remanded to him without prejudice to the right of the applicant to present a new showing in accordance with the rule, if he sees proper to do so, and the examiner will then act with reference to the subject in accordance with the principles announced in this decision.

EX PARTE LA BORDE.

Decided July 9, 1888.

1. An element forming part of a combination which has become the subject of general invention and manufacture, and which can be used in other relations, cannot be joined in the same application with claims covering the general combination.
2. An applicant has the right to state that while he prefers the form of jack illustrated in his application as an element of the combination, other clamping devices which would accomplish the same purpose could be employed.

ON petition.

MACHINE FOR SPLITTING SHOE-SOLES.

Application of James F. La Borde filed January 25, 1888, No. 261,902.

Messrs. Church & Church for the applicant.

HALL, *Commissioner:*

Applicant appeals to the Commissioner from requirements of the examiner in relation to claims 10, 11, and 12, which involve one of the elements of a combination exhibited in the application, the examiner holding that a division must be made, for the reason that these claims relate to an improved jack which has become the subject of general invention and manufacture, and cannot be joined in the same application with other claims covering the general combination in which it is found as an element.

I have examined the case with considerable care. The answer of the examiner not being quite specific and clear enough as to whether this particular device could be used in other relations, or whether it had any peculiarity of construction which enabled it to perform its function in the present combination alone but rendered it incapable of operation elsewhere, I have re-referred the subject to the examiner, who advises me that the generic features of the jack are old, that the device can readily be used in other machines in the same relation and with the same result, and that many of the patented jacks might well be employed as substitutes for the one used in the present combination. This being the case, under the decision in *ex parte Herr*, (41 O. G., 463,) I affirm the decision of the examiner as to this requirement and direct that division shall be insisted upon.

The examiner also objects to the following clause in the specification. After describing the clamping device to which attention has just been called, applicant proceeds:

> Other clamping devices that would accomplish the purpose could be employed; but it will be noted that by the present construction the motion of the levers on the pivots does not interfere with the operation of the screw, and this by reason of the loose nuts between the bifurcated ends.

The examiner required that this passage should be stricken out, or that applicant should fully and clearly describe and illustrate every part of his invention, meaning that if applicant designed to refer to any other jacks which might be used in this same relation he should describe them, so that such reference could be distinctly understood.

In view of what the examiner has stated to me, as above set forth, I see no reason why the applicant should not be permitted to employ the language objected to. He has the right to state that while he prefers the form of jack illustrated in his application as an element in the combination he does not limit himself to that, but any of the many jacks described by the examiner as having been patented can be used in that relation, and of course the invention, which consists of the combination, would be patentable. As to this objection, I think the examiner should be overruled.

EX PARTE MANNY.

Decided July 16, 1888.

RENEWAL OF APPLICATION FORFEITED FOR NON-PAYMENT OF FINAL FEE.

There is no statute or rule authorizing an applicant to forfeit an application which has been allowed, file a renewal application, and pay the application fee within the six months following such allowance.

ON reference.

LEMON-JUICE EXTRACTOR.

Application of John P. Manny filed October 7, 1887, No. 251,755.

Messrs. J. & A. O. Behel and *Mr. E. C. Seward* for the applicant.

HALL, *Commissioner:*

The original application in this case was filed October 7, 1887, and notice of allowance was issued June 22, 1888, so that the six months within which the final fee is required to be paid will expire on December 22, 1888. On July 9, 1888, applicant appeared before the Office, not having paid the final fee, and tendered fifteen dollars renewal fee, and asked to have the application renewed. The serial number has been changed, the title of the application entered as a renewal case, and it has been sent to the examiner, who refers the application to me for instruction.

An argument has been presented by counsel for applicant urging that he has the right to renew the application after it has been allowed and before it has become forfeited for want of the payment of the final fee.

The statutes provide for the filing of an original application, a renewal application in case of forfeiture for want of payment of the final fee, and a reissue application. The attorney for applicant contends that because the statutes and rules provide that a renewal may be applied for after the original application has been forfeited for want of tender of the final fee, it does not follow that the renewal prior to the forfeiture is prohibited; but this is not a proper view of the matter. It is not the question whether the statute prohibits the thing to be done, but whether it allows it to be done. The attorney points to no statute or rule which authorizes such a course to be pursued, and, although it is to the advantage of the Patent Office to receive as many applications and fees as possible, it is against public policy to encourage the forfeiture of cases and renewals. To permit such a renewal as this would not only be in the face of that policy, but would encourage it, which is a matter of more importance than the fees which could be derived from such a practice.

The examiner is instructed to return the application to the Issue Division as a case allowed, and the applicant will be advised accordingly.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 44—No. 7. TUESDAY, AUGUST 14, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
ORDER No. 490	701
FRAUDULENT PRACTICES BY ATTORNEYS	701
ISSUE OF AUGUST 14, 1888	701
DESIGNS	703
TRADE-MARKS	703
LABELS	705
PATENTS GRANTED	705
REISSUES	None
DECISIONS OF THE COMMISSIONER—	
Ex parte Gillette	819
Ex parte Gentry	822
DECISIONS OF STATE COURTS—	
Russia Cement Company *v.* Le Page	825

Order No. 490.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., August 6, 1888.

The title of Class No. 27, Coffins, is hereby changed to Undertaking.

The following transfers are ordered:

Sub-class Biers, Class 21, Carriages and Wagons, from Division X to Division XX.

Sub-class Burial apparatus, Class 87, Hoisting, from Division XII to Division XX.

Sub-class Hay-racks, from Class 21, Carriages and Wagons, in Division X, to Class 56, Harvesters, Division VII.

Sub-class Load-binders, from Class 21, Carriages and Wagons, in Division X, to Class 87, Hoisting, in Division XII.

Sub-classes Ox-yokes, Rein-holders, Whip-sockets, from Class 21, Carriages and Wagons, Division X, to Class 54, Harness, Division XI.

Sub-class Umbrella-supports, Class 21, Division X, to Class 135, Umbrellas and Canes, Division V.

Sub-class Stock-cars, from Class 105, Railway-Cars, Division X, to Class 119, Care of Live Stock, Division II.

Sub-class Mail-bag catchers, from Class 105, Railway-Cars, Division X, to Class 87, Hoisting, Sub-division Loading and unloading, Division XII.

Sub-class Bags, from Class 38, Paper-Manufactures, Division XVII, to Class 190, Packing and Storing Vessels, Division XIV.

Sub-class Box-nailing machines, from Class 12, Boots and Shoes, Division XI, to Class 20, Carpentry, Division XXIX.

BENTON J. HALL,
Commissioner.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGehee, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Mellado*.

Issue of August 14, 1888.

Patents	392	No. 387,616 to No. 388,007, inclusive.
Designs	22	No. 18,517 to No. 18,538, inclusive.
Trade-Marks	25	No. 15,761 to No. 15,785, inclusive.
Labels	5	No. 5,675 to No. 5,679, inclusive.
Reissues	—	None.
Total issue	444	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	3	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	4	....	New Hampshire	2	....
California	5	....	New Jersey	10	....
Colorado	2	....	New Mexico Terri'y	....	....
Connecticut	22	1	New York	80	4
Dakota Territory	3	....	North Carolina	....	....
Delaware	2	....	Ohio	31	2
District of Columbia	4	....	Oregon	1	....
Florida	....	....	Pennsylvania	50	....
Georgia	1	....	Rhode Island	4	....
Idaho Territory	....	....	South Carolina	1	2
Illinois	26	4	Tennessee	3	1
Indian Territory	1	....	Texas	9	....
Indiana	6	....	Utah Territory	1	....
Iowa	5	....	Vermont	1	1
Kansas	8	....	Virginia	1	....
Kentucky	5	....	Washington Terri'y	....	....
Louisiana	4	....	West Virginia	1	....
Maine	3	2	Wisconsin	14	4
Maryland	5	1	Wyoming Terri'y	....	....
Massachusetts	31	4	U. S. Army	....	....
Michigan	9	....	U. S. Navy	1	....
Minnesota	7	1			
Mississippi	1	....	Total to citizens of		
Missouri	14	1	the United States	363	28

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	....	....	Germany	7	1
Barbadoes	....	....	Holland	....	....
Belgium	....	....	Ireland	2	....
Bermuda	....	....	Mexico	....	....
Brazil	....	....	Russia	....	....
Canada	7	....	Scotland	3	....
Central America	....	....	South Australia	1	....
Colombia, U. S. of	....	....	Sweden	....	....
Cuba	....	....	Switzerland	1	1
Denmark	....	....	Victoria	1	....
Ecuador	....	....			
England	8	....	Total to citizens of		
France	2	....	foreign countries	32	2

DESIGNS.

18,517.—VETERAN'S-GRAVE DESIGNATOR.—*Fred. H. Arnold*, New Haven, Conn. Application filed May 22, 1888. Serial No. 274,701. Term of patent 14 years.

18,518.—COLLAR.—*John Byers*, Brooklyn, assignor to *Corliss Bros. & Co.*, Troy, N. Y. Application filed June 25, 1888. Serial No. 278,152. Term of patent 14 years.

18,519.—CARD OR LETTER RACK.—*Thomas Aldin Crabtree*, Bangor, Me., assignor to *J. P. Greeley*, same place, and *H. A. Alkon*, Boston, Mass. Application filed June 23, 1888. Serial No. 278,052. Term of patent 7 years.

18,520.—BOTTLE.—*William P. Crary*, New York, N. Y. Application filed June 21, 1888. Serial No. 277,883. Term of patent 7 years.

18,521.—CARPET.—*John Christie*, Halifax, England, assignor to *John Crossley & Sons*, New York, N. Y. Application filed April 27, 1888. Serial No. 272,061. Term of patent 3½ years.

18,522 to 18,524, inclusive.—CARPET.—*Henry Horan*, East Orange, N. J., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Applications filed June 20, 1888. Serial Nos. 277,646 to 277,648, inclusive. Term of patents 3½ years.

18,525 and 18,526.—ARM-REST FOR BARBERS' CHAIRS.—*Theodore A. Kochs*, Chicago, Ill. Application filed June 15, 1888. Serial Nos. 277,264 and 277,265. Term of patents 7 years.

18,527.—TRIMMING.—*William H. Maurer*, Philadelphia, Pa., assignor to *Francis W. Maurer* and *Joseph W. Maurer*, both of same place. Application filed June 5, 1888. Serial No. 276,155. Term of patent 7 years.

18,528.—HANDLE.—*Frank D. Mersereau*, Orange, N. J. Application filed June 8, 1888. Serial No. 276,515. Term of patent 3½ years.

18,529.—BADGE.—*William T. Mersereau*, South Orange, N. J. Application filed June 8, 1888. Serial No. 276,516. Term of patent 3½ years.

18,530 and 18,531.—HANDKERCHIEF OR BANNER.—*William Hanson Minnix*, Washington, D. C. Applications filed July 12, 1888. Serial Nos. 279,784 and 279,785. Term of patents 3½ years.

18,532 and 18,533.—WATCH-CASE OR LOCKET.—*Harlan S. Noyes*, Brooklyn, N. Y. Applications filed May 18, 1888. Serial Nos. 274,329 and 274,330. Term of patents 14 years.

18,534.—CARPET.—*Edward Poole*, New York, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Application filed June 20, 1888. Serial No. 277,645. Term of patent 3½ years.

18,535.—GAS-BURNER.—*Frank Rhind*, Meriden, Conn. Application filed June 11, 1888. Serial No. 276,779. Term of patent 14 years.

18,536.—PULLEY-FRAME.—*Edward C. Stearns*, Syracuse, N. Y. Application filed June 9, 1888. Serial No. 276,640. Term of patent 14 years.

18,537.—TABLE-COVER.—*Carl Wiesen*, Wüste Waltersdorf, Germany, assignor to *G. & J. Ballin*, New York, N. Y. Application filed June 1, 1888. Serial No. 275,762. Term of patent 7 years.

18,538.—PICTURE-HOOK.—*W. Alex. Williamson*, Newark, N. J. Application filed July 14, 1888. Serial No. 280,010. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,761.—COMMERCIAL FERTILIZERS.—*Bowker Fertilizer Company*, Boston, Mass. Application filed June 28, 1888. Used since June 21, 1888.
"The compound word 'SQUARE-BRAND.'"

15,762.—FRESH OYSTERS, LOBSTERS, AND FISH.—*James H. Brookmire & Co.*, St. Louis, Mo. Application filed June 28, 1888. Used since January 1, 1888.
"The representation of an eagle with closed wings sitting upon a cliff."

15,763.—FIRE-PROOF PAINTS.—*Samuel Cabot*, Boston, Mass. Application filed July 7, 1888. Used since January 1, 1888.
"The compound word 'ANTI-PYRE.'"

15,764.—CONDENSED MILK.—*Henry Y. Canfield*, New York, Brooklyn, Washington, and Unadilla, N. Y. Application filed May 18, 1888. Used since January 2, 1888.
"The word 'PANSY.'"

15,765.—STEAM-COOKED CEREALS.—*Edward Elsworth*, New York, N. Y. Application filed July 7, 1888. Used since August 1, 1887.
"The letters 'H—O.'"

15,766.—SPECTACLES AND EYEGLASSES.—*Ernest S. Fowler*, Chicago, Ill. Application filed June 25, 1888. Used since April, 1888.
"The representation of a forearm and closed hand, the hand grasping numerous bolts of lightning."

15,767.—LINOLEUM.—*The German Linoleum Manufacturing Company*, (*Limited*,) Bremen and Delmenhorst, Oldenburg, Germany. Application filed May 23, 1888. Used since March 1, 1888.
"Diamond-shaped borders, a link at the base of the borders, and a fanciful design within the inner border."

15,768.—CHEWING-GUM.—*Charles T. Heisel*, Cleveland, Ohio. Application filed June 30, 1888. Used since June 25, 1888.
"The word 'PARTY' associated with the picture of BEN. HARRISON."

15,769.—PROTECTOR TO PREVENT SOILING THE COLLAR, NECKTIE, AND UPPER PART OF THE COAT.—*Arthur F. Langdon*, Hartford, Conn. Application filed June 22, 1888. Used since June 1, 1888.
"The picture of the head and bust of a man accompanied by the words 'GOOD THING.'"

15,770.—EXTRACT OF BEEF.—*Liebig Extract of Beef Company*, Chicago, Ill. Application filed July 2, 1888. Used since May, 1888.
"The representation of two beeves standing muzzle to muzzle within a diamond-shaped border."

15,771.—CORNMEAL.—*L. K. Lovejoy & Co.*, Minneapolis, Minn. Application filed July 3, 1888. Used since June 1, 1886.
"The words 'OLD GOLD.'"

15,772.—EXTRACTS OF MEATS.—*Julius Maggi & Co.*, Kempttthal, Switzerland. Application filed April 28, 1888. Used since January 1, 1887.
"An Alpine landscape, consisting of mountains in the background, in the middle ground a Swiss chalet or cottage, and some cattle in the foreground, and a roadway leading from the foreground back to the chalet."

15,773.—RYE WHISKY.—*Martin & McAndrews*, Baltimore, Md. Application filed July 23, 1886. Used since May 10, 1886.
"The words 'CELTIC CLUB.'"

15,774.—HAIR DRESSINGS OR TONICS.—*Patrick H. McMahon*, Burlington, Vt. Application filed May 11, 1888. Used since January, 1888.
"The words 'MCMAHON'S IMPERIAL' and the autograph signature of P. H. MCMAHON."

15,775.—SOAP.—*Mexican Amole Soap Company*, Peoria, Ill. Application filed July 2, 1888. Used since the beginning of 1888.
"The representation of a mole and the Mexican word 'AMOLE.'"

15,776.—SOAPS.—*Mexican Amole Soap Company*, Peoria, Ill. Application filed July 9, 1887. Used since January 9, 1883.
"The representation in elevation of a Spanish bayonet-plant with the earth removed in front of the vertical plane passing through the plant's axis, exposing several unequal potato-like tubers of varying size attached by their ends to the plant's base."

15,777.—NUTRIENT BEVERAGES.—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed July 3, 1888. Used since March 30, 1888.
"The words 'MALT MEAD,' in blue color, with the two initial 'M's' in red."

15,778.—NUTRIENT BEVERAGES.—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed July 3, 1888. Used since March 30, 1888.
"A monogram consisting of the letter 'B' with the letter 'M' printed twice thereon, one 'M' being above the other."

15,779.—BROWN SOAP IN BARS.—*Procter & Gamble*, Hamilton County, Ohio. Application filed July 5, 1888. Used since August 1, 1877.
"A diagonal blue bar or ribbon and the word-symbol 'MOTTLED GERMAN.'"

15,780.—CERTAIN REMEDY FOR EXTERNAL AND INTERNAL USE AND FOR CERTAIN DISEASES.—*Charles H. Rogers*, New York, N. Y. Application filed June 14, 1888. Used since December 1, 1886.
"The words 'HAM'S OIL OF GLADNESS.'"

15,781.—STOUT.—*B. J. Semmes & Co.*, Memphis, Tenn. Application filed May 17, 1888. Used since October, 1887.
"The words 'CULBRACHER STOUT,' appearing between two diagonal lines extending from the lower left-hand corner to the upper right-hand corner of the label."

15,782.—FLATTING-VARNISHES.—*Lawson Valentine Company*, New York and Hunter's Point, N. Y. Application filed May 21, 1888. Used since March 15, 1888.
"The number 'SIXTY,' expressed by word or numerals."

15,783.—SHIRTINGS AND SHEETINGS.—*Wamsutta Mills*, New Bedford, Mass. Application filed June 2, 1888. Used since December 1, 1872.
"The words 'WAMSUTTA MILLS' and the representation of the registrant's factory at New Bedford."

15,784.—REMEDY FOR DYSPEPSIA.—*The Dr. J. G. Wannamaker Manufacturing Company*, Orangeburg, S. C. Application filed June 29, 1888. Used since February 1, 1888.
"The word 'VICTRINE.'"

15,785.—ANTI-MALARIAL COMPOUND.—*The Dr. J. G. Wannamaker Manufacturing Company*, Orangeburg, S. C. Application filed June 29, 1888. Used since February 1, 1888.
"The word 'EDISTOINE.'"

LABELS.

5,675.—TITLE: "MALT MEAD," (FOR A BEVERAGE.)—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed May 21, 1888. (Trade-Mark Registered.)

5,676.—Title: "MALT MEAD," (FOR A BEVERAGE.)—*Phillip Best Brewing Company*, Milwaukee, Wis. Application filed May 21, 1888. (Trade-Mark Registered.)

5,677.—Title: "GINGER WINE AND PEPSIN," (FOR A MEDICINAL PREPARATION.)—*Charles Cook*, *Edward S. Everett*, and *Henry B. Pennell*, Portland, Me. Application filed July 21, 1888.

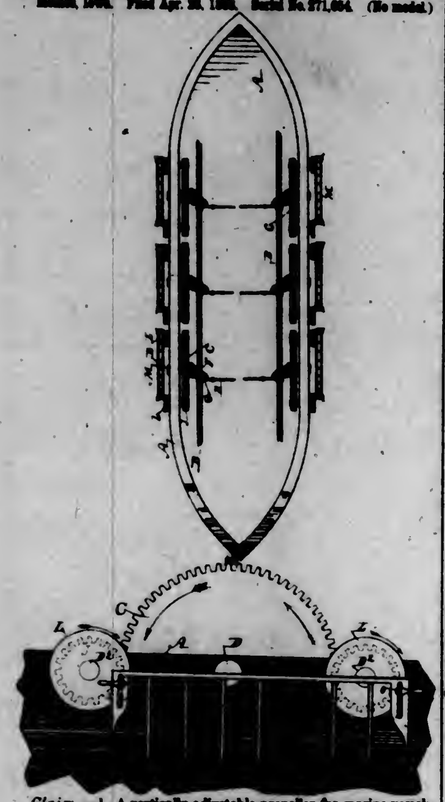
5,678.—Title: "F. E. JOHNSON'S ANODYNE LINIMENT."—*Frank E. Johnson*, Wiscasset, Me. Application filed June 14, 1888.

5,679.—Title: "IMPROVED LIQUID GLUE."—*The Le Page Glue and Cement Company*, Portland, Me., and Gloucester, Mass. Application filed July 23, 1888.

PATENTS

GRANTED AUG. 14, 1888.

887,616. PROPELLER FOR VESSELS. HOSS R. ALLBEE, Des Moines, Iowa. Filed Apr. 28, 1888. Serial No. 271,694. (No model.)

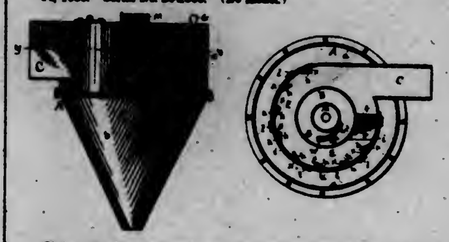


Claim.—1. A vertically-adjustable propeller for marine vessels, comprising an elongated frame or bar having slots in its ends, a series of paddles extending downward at right angles to the frame and parallel to each other, in combination with two crank-wheels connected by means of wrist-pins and nuts, or their equivalents, to said frame, and driving mechanism to operate in the manner set forth, and for the purposes stated.

2. The propeller-frame M, having fixed paddles 1 2 3 4, and vertical slots *s*, in combination with the wheels L, having fixed wrist-pins, and detachable nuts on the ends of said pins, to be vertically adjusted relative to said shafts, and mechanism for simultaneously rotating the said wheels or cranks L in the same direction, in the manner set forth, to accomplish the results stated.

3. In a propeller, a frame having fixed paddles, in combination with two parallel rotating shafts having cranks on their outer ends, mechanism for simultaneously rotating said shafts, and devices for raising and lowering said frame relative to said rotating shafts, for the purposes stated.

887,617. DUST-COLLECTOR. JOSEPH S. ASH, Canal Winchester, Ohio, assignor of one-half to Charles E. Cowan, same place. Filed Feb. 14, 1888. Serial No. 264,060. (No model.)



Claim.—1. In a dust-collector, the combination, with the case A, having a discharge-opening in its lower end and an opening, *d*, in its top plate, and inlet-spout C, of the internal pipe, B, and central internal pipe, M, having lateral opening N near its lower end, substantially as and for the purpose specified.

2. In a dust-collector, the combination, with the case A, having a discharge-opening in its lower end and an opening, *d*, in its top plate, and inlet-spout C, of the internal central pipe, M, having lateral opening N, and door *n*, having pin *n'*, arm n^2, connected with said pin, and operating-rod n^3, substantially as and for the purpose specified.

3. In a dust-collector, the combination, with the case A, composed of a cylindrical portion, *a*, and conical portion *b*, having an opening at its lower end, and top plate, D, having openings *d* and *d'*, of the chamber E, having slotted openings H and spout C, communicating with said chamber, and central air-pipes B and M, the latter being supported within the former and within the case A and having an opening, N, in its lower portion, substantially as and for the purpose specified.

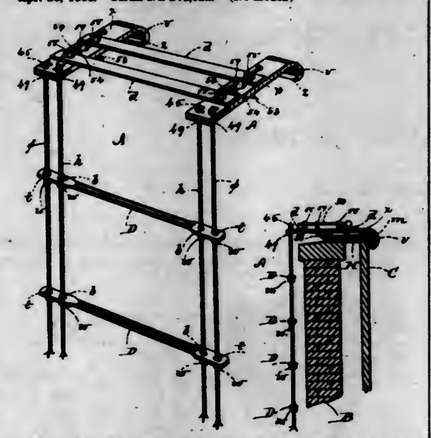
4. In a dust-collector, the combination, with the case A, composed of a cylindrical portion, *a*, and conical portion *b*, having its lower end open, and top plate, D, having openings $d\,d'\,d^2$, and slide *p*, of the chamber E, having slotted openings H, inlet-spout C, communicating with said chamber, sliding slotted damper having handle G, and central air-pipes, B and M, the latter supported vertically within the former and within the case A and having an opening, N, in its lower portion, substantially as and for the purpose specified.

887,618. DUMPING-CAR. CHARLES B. BARBER and TIMOTHY F. FURBAR, Waterloo, N. Y., assignors to Cornelius J. Ryan, Flushing, N. Y., and John B. McDonald, Baltimore, Md. Filed Dec. 17, 1887. Serial No. 258,194. (No model.)



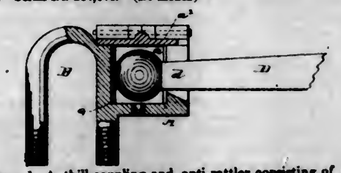
Claim.—The combination, in a tilting dumping-car having a swinging gate, of a truck having thereon a catch, E, a tilting box hinged to the said truck and having pivoted thereto a lever, C, and a gravitating lever-catch, E, the gate D, having thereon a bar or catch, F, the bars or posts G and H, the metallic disks I and I', having annular concentric ribs and grooves, and the bolts J J and their nuts, arranged for operation together substantially as and for the purposes specified.

387,619. FIRE-ESCAPE. Arthur F. Bedell, Lowell, Mass. Filed Apr. 26, 1888. Serial No. 271,922. (No model.)



Claim.—In a fire-escape of the character described, the bars *x x*, each provided with a central slot, 54, hook *v*, and holes 49, the braces *d* connecting the bars *x*, the slides 59, respectively fitted to work in the slots 54, and provided with jaws 53 and screws 50, two ropes, *h f*, provided with knots *w*, and secured by knots 45 in the outer end of each of said bars *x*, and the rungs D, provided with two holes, *b t*, in each end, said rungs being disposed on said ropes, all constructed combined, and arranged to operate substantially as specified.

387,620. THILL-COUPLING. Fred. S. Blackman, Port Allegheny, Pa., assignor of one-half to G. L. Blackman, same place. Filed Mar. 13, 1888. Serial No. 267,079. (No model.)



Claim.—1. A thill-coupling and anti-rattler consisting of a box having its interior formed into a cylindrical cavity and an opening in its front face communicating with the cylindrical cavity and provided with a hinged top, a shaft-iron having its end terminating in a ball, and a clip adapted to secure the box to an axle, substantially as described.

2. A thill-coupling and anti-rattler consisting of a box having an interiorly-arranged cylindrical cavity and an opening communicating with the cylindrical cavity and provided with a hinged top, a spring-catch secured to the side of the box and adapted to engage the hinged top, a shaft-iron terminating in a ball, and a clip capable of securing the device to an axle, substantially as set forth.

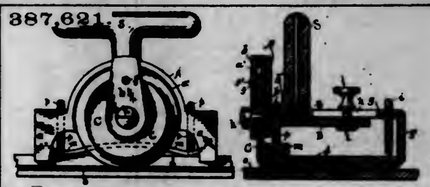
3. A thill-coupling and anti-rattler consisting of a box having formed integral therewith a clip capable of securing it to an axle and provided with a cylindrical cavity and an opening communicating therewith, and also provided with a hinged top, a spring-catch adapted to engage the hinged top, and a shaft-iron, substantially as and for the purpose set forth.

4. A thill-coupling and anti-rattler consisting of a box having formed integral therewith a clip and provided with a hinged top and a cylindrical cavity and an opening communicating with the cavity, said cylindrical cavity being lined with some suitable sound-deadening substance, a spring adapted to engage the hinged top, and a shaft-iron having its end terminating in a ball, substantially as set forth.

387,621. PAPER-CUTTER. George H. Clarke, Columbus, Ohio, assignor to James S. Patterson and Martin Hensel, same place. Filed Feb. 2, 1887. Serial No. 226,220. (No model.)

Claim.—1. In a paper-cutter, the combination of the plate B, having lugs *a*, depressed projecting portion A, and bearing-arm *b*, with the cutting-disk C, journaled in said arm *b* and portion A, disk-adjusting screw *f'*, slotted extension-arm *g* and its clamp *g'* and set-screw *l*, substantially as and for the purposes specified.

2. The combination of the plate B, having lugs *a*, depressed projecting portion A, and bearing-arm *b*, with the cutting-disk C, journaled in said arm and portion A, disk-adjusting screw *f'*, slotted extension-arm G and its clamp *g'* and set-screw *l*, and adjusting-screws *i* and *p p*, the latter being connected to the pressing-strip *m*, substantially as and for the purpose specified.



387,622. CUSPIDOR. Frank B. Clemis, Lockport, N. Y. Filed Sept. 10, 1887. Serial No. 249,778. (No model.)



Claim.—1. In a cuspidor or spittoon, the combination of the case A, removable saliva-holder B, consisting of a series of receptacles, *c c c c*, nested together therein, and bracket or holder C, all substantially as and for the purpose specified.

2. In combination with the case or shell of a spittoon or cuspidor, the removable saliva-holder B, consisting of a series of receptacles, *c c c c*, nested together therein and adapted to be removed singly when soiled or damaged, all substantially as and for the purpose specified.

3. In a cuspidor or spittoon, the combination of the case or shell A, removable holder B, consisting of a series of receptacles, *c c c c*, nested together therein, covering-piece *a a*, cover A', and bracket C *b*, all arranged and operating substantially as and for the purpose specified.

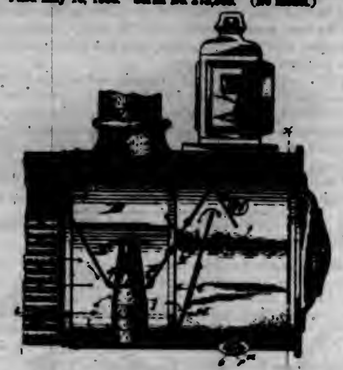
387,623. METHOD OF PROMOTING COMBUSTION AND EXTINGUISHING SPARKS. Robert H. Coleman, Cornwall, Pa. Filed May 10, 1888. Serial No. 273,384. (No model.)



Claim.—1. The method of effecting thorough combustion in furnaces, which consists in discharging the waste products of combustion from a furnace upon or into other like products between the furnace and the stack in motion, and forming eddies and reactionary currents backing up or retarding the heat and gases in the furnace and flues, then conducting the refuse matter to a suitable receptacle and separating the gases from the solids, substantially as described.

2. The method of effecting thorough combustion in furnaces, which consists in discharging the waste products of combustion from a furnace upon or into other like products between the furnace and the stack in motion, and forming eddies and reactionary currents backing up or retarding the heat and gases in the furnace and flues, disintegrating the solid matter, then conducting the waste to a suitable receptacle, and separating a portion of the gases from the solids in their passage, and finally depositing the solid matter and conducting the remaining gases to the atmosphere, substantially as described.

387,624. SPARK-ARRESTER. Robert H. Coleman, Cornwall, Pa. Filed May 10, 1888. Serial No. 273,383. (No model.)



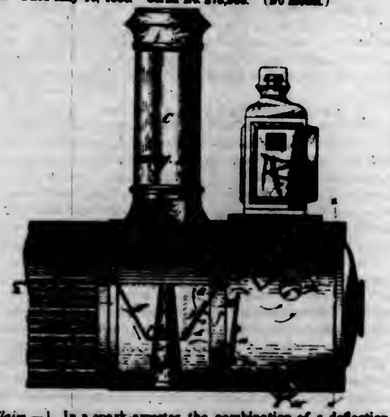
Claim.—1. In a spark-arrester, the combination of a deflection-plate between the tube-sheet and the exhaust-nozzle, a channel-plate, and a dead-plate on the opposite side of the nozzle, substantially as described.

2. In a spark-arrester, the combination of a deflection-plate between the tube-sheet and the exhaust-nozzle, a channel-plate, a nozzle-plate between the deflection-plate and the channel-plate, a dead-plate, a baffle-plate, and an extended passage formed by the channel-plate and the dead-plate, substantially as described.

3. In a spark-arrester, the combination of a deflection-plate, a channel-plate, a dead-plate, a baffle-plate, and a screen between the upper end of the channel-plate and the wall of the smoke-box, substantially as described.

4. In a spark-arrester, the combination of a deflection-plate, a channel-plate provided with a perforated section or wire screen, a dead-plate, a contracted passage between the channel-plate and the dead-plate, a baffle-plate, and a screen between the upper end of the channel-plate and the wall of the smoke-box, substantially as described.

387,625. SPARK-ARRESTER. Robert H. Coleman, Cornwall, Pa. Filed May 10, 1888. Serial No. 273,382. (No model.)

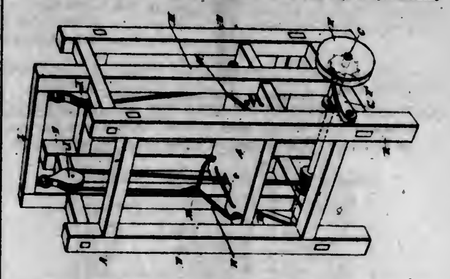


Claim.—1. In a spark-arrester, the combination of a deflection-plate between the flue-sheet and the nozzle, a channel-plate provided with a screen, and a valve or damper for covering said screen, a dead-plate in front of the exhaust-nozzle, and a baffle-plate projecting forward of the dead-plate, substantially as described.

2. In a spark-arrester, the combination of a deflection-plate between the flue-sheet and the exhaust-nozzle, a channel-plate provided with a draft-opening and a valve for controlling it, a dead-plate, an extended passage for the draft, a baffle-plate, and a screen between the baffle-plate and the wall of the smoke-box, substantially as described.

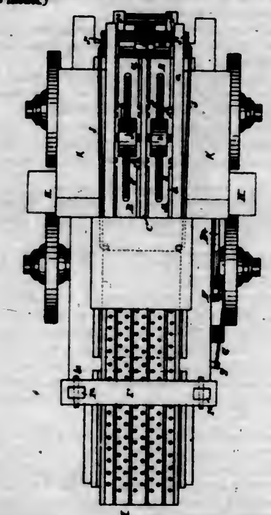
3. In a spark-arrester, the combination of a deflection-plate, a channel-plate provided with a section of wire-gauze and a draft-opening, valves for controlling said section and opening, and a baffle-plate projecting from its upper end, a dead-plate, and a wire-gauze section between the baffle-plate and the crown of the smoke-box, substantially as described.

387,626. MACHINE FOR HOISTING HEAVY WEIGHTS. Martin V. B. Davis, Harrison, Ark., assignor of one-half to Chandler Lovette Gibson, same place. Filed Apr. 12, 1888. Serial No. 270,267. (No model.)



Claim.—The improved machine herein described and shown, comprising the frame having the vertical posts H H at the centers of the sides, the cross-beam I, connecting the upper ends of said posts, the pulleys J J, depending from the under side of said beam, near the ends of the same, the platform having recesses in its side edges engaging the posts H, the hangers secured to the platform, the transverse shaft journaled in the frame below the platform, the windlasses and ratchet-wheel on said shaft, the band-pulley on one end thereof and the crank-arm on the other end thereof, the pawl pivoted to the frame and engaging the ratchet-wheel, and the cables secured to the hangers, passing thence over the pulleys J J, thence downward through the recesses in the side edges of the platform, and secured to the windlasses, substantially as specified.

387,627. THRASHING-MACHINE. Daniel J. Devane and John F. Devane, Quitman, Ga. Filed Apr. 11, 1887. Serial No. 234,410. (No model.)

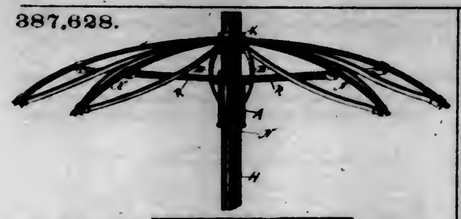


Claim.—The combination of the main frame, the shaft J³, the disks J', mounted on said shaft, the pitmen connected eccentrically with said disks and extending through the openings *j* of said frame, the separator hinged at its inner end to and supported by said pitmen, and the adjustable links supporting said separator at its outer end, substantially as described.

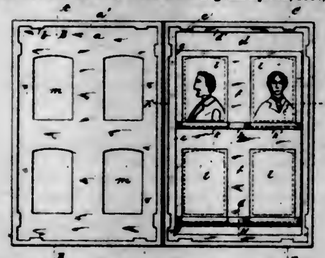
387,628. UMBRELLA. William B. Dunn, Philadelphia, Pa. Filed July 30, 1887. Serial No. 244,673. (Model.)

Claim.—In an umbrella or parasol, the combination, with the ordinary ribs and stretchers, of double auxiliary ribs, substantially as described and shown.

387,628.



387,629. PHOTOGRAPHIC ALBUM WITH SEPARABLE LEAVES. HENRIETTE A. M. DITTMAR, Berlin, Germany. Filed June 16, 1887. Serial No. 241,536. (Model.) Patented in England Apr. 23, 1887, No. 5,966.



Claim.—1. In a photograph-album, the leaves, each of which is formed in two parts, adapted to be fitted together and separated, for the purpose specified, and provided with a detachable or temporary fastening, as distinguished from permanently uniting said parts, whereby the photographs may be laid between and removed from the separated parts instead of being inserted edgewise.

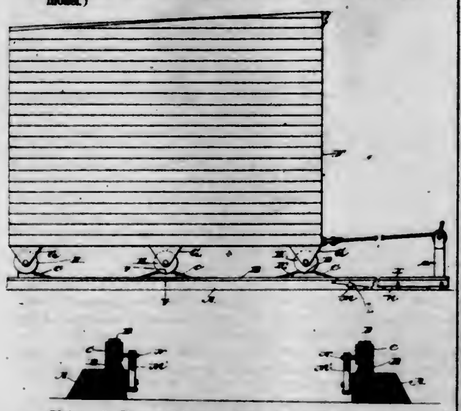
2. In a two-part separable album-leaf, the frames or ribs secured on the inner sides of the respective parts, which ribs fit exactly, one within the other, so that by pressing the two parts together they will be firmly united, substantially as described.

3. The two-part separable album-leaf having lugs or projections secured at alternating points upon the opposite parts and engaging with each other, substantially as described.

4. The combination, with the two-part separable album-leaf, of the frames or ribs having corresponding recesses and projections, which overhang or extend laterally, substantially as described.

5. The combination, with the two-part album-leaf, of the frames, each having a projecting rib and groove, which fit into and partly under one another when the parts are pressed together, substantially as described.

387,630. APPARATUS FOR MOVING HOUSES. FRANK B. DUFFEY, Mound Valley, Kans. Filed Apr. 4, 1888. Serial No. 269,569. (No model.)

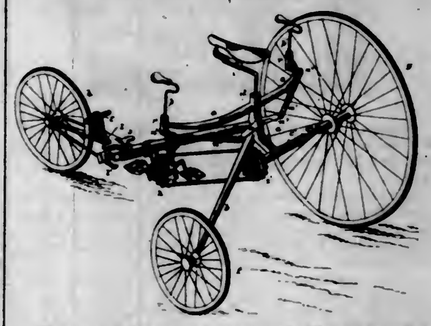


Claim.—1. The combination of the sleepers having the tracks B, the skids having the inclined sides supported on the said sleepers and in line with the tracks, and the building having the supporting wheels or rollers mounted on the skids, substantially as described.

2. The combination of the supporting-tracks B, the skids mounted thereon and having the laterally-projecting arms N, the building having the supporting wheels or rollers resting on the said skids, and the springs bearing upon the arms N of the skids and thereby adapted to throw the same from the track out of the way of the rear wheels or rollers when said wheels or rollers have descended the skids to the tracks, substantially as described.

3. The combination of the sleepers having the tracks B, the track-rails I, said track-rails and said sleepers having their meeting ends beveled or inclined and thereby adapted to effect lap-joints, said meeting ends being further provided with the transverse openings L, the keys M, to engage the said openings and couple the track-rails I to the sleepers, the skids arranged on the sleepers in line with track B and having the inclined sides, and the building having the supporting rollers or wheels resting on the skids, substantially as described.

387,631. VELOCIPEDE. CHARLES R. DUNTZ, Washington, D. C. Filed June 16, 1887. Serial No. 241,498. (No model.)



Claim.—1. A front-steering tricycle having the steering-rod continued backward and upward in a line from the forward point of contact with the ground to a point below and behind the saddle and over the main axle, where it is connected by suitable means with two vertically-revolving handles placed one each side of the rider's seat.

2. A front-steering tricycle having the steering-rod continued backward and upward in a line from the forward point of contact with the ground to a point below and behind the saddle and over the main axle, at which point a cross-bar is rigidly attached, of which each end is, by means of a connecting-rod and suitable joints, connected to a crank attached to the stem of a vertically-revolving handle in such a manner that a partial revolution of the handles upon their axes will produce a partial revolution of the steering-rod upon its axis.

3. In a front-steering tricycle, a three-part frame, of which one part extends downward and forward toward the points of contact between the forward wheel and the ground, terminating about level with the forward axle and carrying the pedal-bearing support and the steering-rod, the second part of which frame extends sidewise and downward toward the hub of a small side wheel, terminating at the axle thereof, the third part extending toward the other side of the machine at the same angle as the second part, and terminating in a tube which incases and supports the axle of the driving-wheel.

4. A front-steering tricycle having a three-part frame, of which one part extends downward and forward till level with the forward axle, and the two other parts extend downward and sidewise till in the line of their respective axles, all three parts being straight, and at their junction supporting arms which carry the steering-handles.

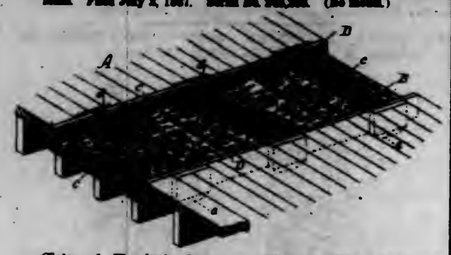
5. In combination with the frame of a tricycle, a support for crank-axle bearings consisting of two yokes of flat iron connected at their ends by U-shaped pieces of round iron on whose projecting ends bearing-boxes are fixed, said supports being attached to the frame of the tricycle by means of clips which pass through holes in the ends of the yokes.

6. In combination with a front-steering tricycle, a brake formed of flat metal of sufficient width to serve as a mud-guard attached at its rearward lower end to the forks by which the front wheel is carried, and having its upper forward end left free, so that it may be pressed against the tire with the toes while the heels rest upon the foot-rest, thus performing the offices of both brake and mud-guard.

7. In a velocipede, the wheels *f g h* and the legs *a b c*, in combination with the cross-bar *n*, the steering-rod *o*, and the fork *l*, said fork being provided with a coiled spring on the end of its lower part, substantially as described.

8. In a velocipede, the wheels *f g h* and the frame *a b c*, in combination with the fork *l*, the steering-rod *o*, cross-bar *n*, connecting-rods *n' n'*, and cranks n^2 n^2 on handles *p p*.

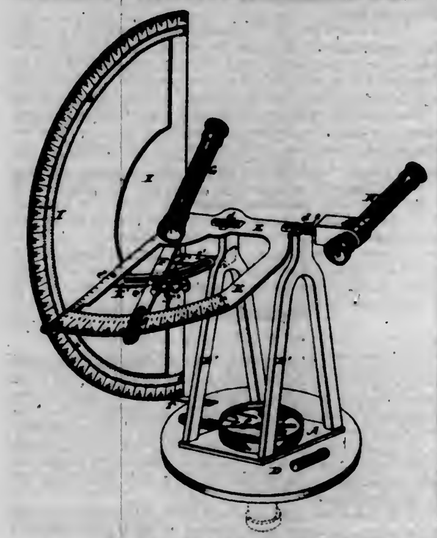
387,632. FLOOR FOR STABLES. JOHN R. DUNTZ, Lawrence, Mass. Filed July 2, 1887. Serial No. 243,202. (No model.)



Claim.—1. The device for moving within a building vehicles provided with runners composed of the continuous runway B, the guides D D, extending its entire length, the vertical slots *d d*, and the transverse pockets *a a*, cast integral therewith and semicircular in cross-section, substantially for purposes stated.

2. The combination, with the floor A, continuous metallic runway B, and the pockets *a a*, cast integral therewith, of a series of rolls, C C, contained partly within said pockets, but projecting above the surface of the runway, and the guides D D, adjacent to the ends of the rolls, and operating substantially as herein described.

387,633. DISTANCE-INSTRUMENT. JAMES B. FAGNETT, Little Rock, Ark. Filed July 9, 1887. Serial No. 243,985. (No model.)



Claim.—1. In a surveying-instrument, the combination of the horizontal base-plate and its magnetic needle and standards thereon, a quadrant-shaped graduated sector-limb secured at one of its radial sides to a horizontal axis supported in said standards and provided with arc and tangential divisions, a tangential sight affixed to said limb, and a radius-bar carrying sights pivoted to the horizontally-pivoted limb to move over the surface of said sector-limb, substantially as described.

2. In a surveying-instrument, the combination of the horizontal base-plate and standards thereon, the graduated sector-limb provided with arc and tangential divisions and pivoted horizontally upon the standards and located upon one side of its axial line, a tangential sight vertically movable with said sector-limb, a radius-bar carrying sights pivoted to the sector-limb, and a graduated vertical limb provided with arc and tangential divisions and secured to the standards upon which the vertically-swinging sector-limb may be adjusted, substantially as described.

3. In a surveying-instrument, the combination of the horizontal base-plate and standards thereon, a revolving horizontal sector-limb graduated with arc and tangential divisions and carried on said standards, a vertical limb located upon one side of its axial line, a tangent-sight secured to the revolving sector-limb, and a radius-bar carrying sights and pivoted to the sector-limb to swing with and move upon said limb, substantially as described.

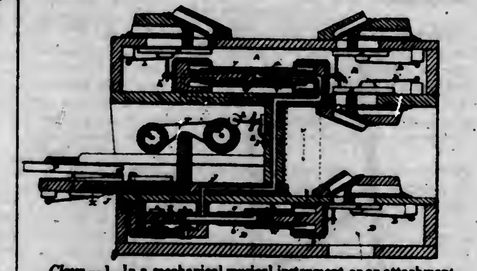
4. The combination, in a surveying-instrument, of a horizontal plate carrying a magnetic needle and standards adapted to revolve upon a vertical axis, and a graduated quadrant-shaped sector-limb provided with arc and tangential divisions and pivoted horizontally to swing upon one side of said standards and sights, one of which is located, mainly, upon the opposite side of said standards to counterbalance the said sector-limb, substantially as described.

387,634. LIQUID-MIXER. HARRIS H. FULTON and WILBER F. CONNELLEE, Indianapolis, Ind., assignors to David L. Whittier, same place. Filed Dec. 5, 1887. Serial No. 257,010. (No model.)



Claim.—In a liquid-mixer, the combination, with a reciprocating rod, of a glass-holder mounted on the top of said rod, a glass in said glass-holder, a cover to said glass, an agitating device secured in the top of said cover, a vertical rod mounted on the glass-holder and extending up alongside the glass, screw-threaded on its upper end, a clamp loosely mounted on said rod and provided with an arm arranged to bear upon the top of said cover, and a nut engaging the screw-threaded end of the vertical rod provided with a ring to engage a notch in said clamp, substantially as described.

387,635. MECHANICAL MUSICAL INSTRUMENT. MERRITT GAILY, New York, N. Y. Filed Apr. 17, 1883. Serial No. 270,960. (No model.)



Claim.—1. In a mechanical musical instrument or an attachment for performing upon musical instruments, the combination, with a series of sound-producing devices, of a board having pneumatic motors disposed on opposite sides thereof and alternately connecting with and to operate the series of sound-producing devices.

2. The pneumatic action composed of a board having pneumatic motors disposed on opposite sides thereof, and a series of levers alternately disposed and to be operated by the duplex series of pneumatic motors.

3. The combination, with the organ-action, of the pneumatic board having pneumatic motors disposed on opposite sides thereof and made removable, substantially as and for the purpose specified.

4. The combination, with the oblong pneumatic follower, as *c*, of the operating-lever having the angle-arm, as *v*, placed longitudinally with the follower.

5. The combination, with the oblong pneumatic follower, as *a*, of the operating angle-lever, as *v*, the lever having two bearings, as *t t'*, and two operating ends as *h h'*.

6. The valve, as *s*, having the projecting bearing for its spring *b*, arranged substantially as and for the purpose described.

7. The combination, in a mechanical musical instrument, of a winding or take-up roll and mechanism for driving the same, substantially as described, and a spring pressure-roll having its axis parallel with that of the take-up roll and its periphery in contact with the take-up roll until pressed away by the winding of the sheet on the rolls, all co-operating substantially as described.

8. The combination, with the take-up roller for the music-sheet, of the music-belt and the pressure device, the pressure device consist-

ing of the removable bar, as *g*, having spring-arms, as *f*, and roller, as L, substantially as specified.

9. The music-sheet for forming a continuous belt having openings in one end thereof to register with the notes of the other end thereof in lapping the ends to form an endless belt.

10. The combination, with the tracker-range for a mechanical music-sheet, of two organ-actions, one placed above and the other under the tracker-range.

387,636. MECHANICAL TELEPHONE. Marcus Gail, Canton, Ohio. Filed Oct. 24, 1887. Serial No. 253,243. (No model.)



Claim.—1. The combination, with the shell or casing, the cover, and the diaphragm, of the insulated rings *b b*, clamped between the shell and cover, the adjustable eye-bar G, the main wire E, the adjustable post D, and the set-screw *g*, substantially as described.

2. The combination, with the shell or casing and cover, of the post D, provided with the nut *c*, the non-metallic collars *d d*, and the spring *f*, the diaphragm C, and the main wire E, substantially as described.

3. The combination, with the receiver and its diaphragm, of the thimble L, the wire h', and the wires h^2 attached thereto and passing through the diaphragm across the face thereof and folded over the edges of said diaphragm, substantially as described.

4. The combination, with the shell or casing, the cover, and the diaphragm, of the post D, made in two sections screw-threaded together and provided with the nut *c*, collars *d d*, the collar *e*, and spring *f*, the adjustable screw-bar G, and the main wire E, substantially as described.

5. In a mechanical telephone, the combination, with the shell or casing, the cover, and the diaphragm, of the post D, made in two parts screw-threaded together, said post having a hole for the passage of the main wire and being provided with the spring F, substantially as described.

387,637. ROAD-CART. Joshua G. Gay, Ottawa, Ill. Filed May 28, 1888. Serial No. 275,269. (No model.)

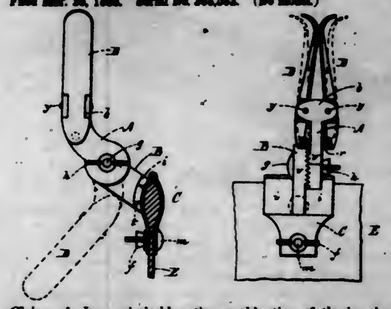


Claim.—1. The combination, with the axle and seat of a road-cart, of the springs F, having straight portions *f'* rigidly clipped to the axle, and lever portions *f'*, embodying a coil and joined to the seat-bars, substantially as set forth.

2. The combination, with the axle and seat, of the springs F, having their points f^3 secured to the axle by a single clip composed of a holder having a sunken recess, *g*, and a strap-bolt, substantially as set forth.

3. In a road-cart, the combination of the seat, the seat-bars, springs F, the shafts pivotally joined to the axle, and the spring *b* uniting the seat-bars and thills, substantially as set forth.

887,638. REIN-HOLDER. Charles W. Gilman, Biddeford, Me. Filed Mar. 26, 1888. Serial No. 268,582. (No model.)



Claim.—1. In a rein-holder, the combination of the bracket B, provided with serrations *v* at its outer end, the body A, pivoted to the bracket B by the bolt *g*, carrying the nut *h*, said body being provided with the cross-head *b* at its outer end and with serrations *v* at its inner end, the jaws D, centrally pivoted to the cross-head *b*, and provided with springs *r*, adapted to close said jaws, and the spring *k*, disposed on the bolt *g*, all being constructed and arranged to operate substantially as set forth.

2. In a rein-holder, the combination of the bracket B, provided with serrations *v* at its outer end, the body A, pivoted to the bracket B by the bolt *g*, carrying the nut *h*, said body being provided with the cross-head *b* at its outer end and with serrations *v* at its inner end, the jaws D, centrally pivoted to the cross-head *b*, and provided with springs *r*, adapted to close said jaws, the spring *k*, disposed on the bolt *g*, the clamp C, secured to the bracket B, the bolt *m*, and nut *f*, all being constructed and arranged to operate substantially as described.

887,639. PROVISION-BASKET. James Goldsmith, New York, N. Y. Filed June 28, 1883. Serial No. 278,194. (No model.)

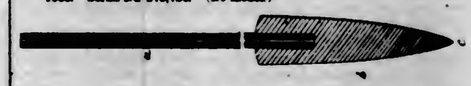


Claim.—1. A basket having longitudinally-running bars on the under side of the bottom, continuous strips placed over the bars on the inside of the bottom, cushioning material between the basket and the strips, and fasteners which pass through the bars and the bottom of the basket and the strips, substantially as and for the purposes set forth.

2. A basket having longitudinally-running bars on the under side of the bottom, a metallic plate covering the inside of the bottom, and fasteners passing through the bars and the bottom of the basket and the metallic plate, substantially as set forth.

3. A basket having longitudinally-running bars on the under side of the bottom, a metallic plate covering the inside of the bottom, a cushion between the bottom and the metallic plate, and fasteners passing through the bars and the bottom of the basket and the cushion and the plate, substantially as set forth.

887,640. POST-HOLE DIGGER. Warren Heaton, Neosho, Mo., assignor of one-half to John C. Alexander, same place. Filed June 1, 1888. Serial No. 275,726. (No model.)

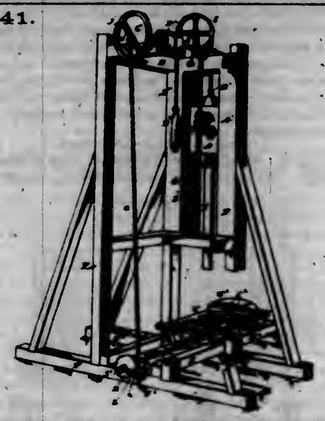


Claim.—The combination, substantially as hereinbefore set forth, of the gas-pipe handle, and the conical cast-iron head cast upon and around the end of the pipe and having its end or point chilled to render it hard and durable.

887,641. MACHINE FOR MAKING CEMENT PIPES. Valentine Hoff, Portland, Oreg. Filed Dec. 19, 1887. Serial No. 258,204. (No model.)

Claim.—1. In a pipe-machine, the combination, with suitable frame-work and a mold, of a sliding cross-head, a plunger, eccentric

887,641.



mechanism located inside the cross-head, and gearing for actuating said mechanism to impart a reciprocating motion to the plunger, substantially as set forth.

2. In a pipe-machine, the combination, with suitable frame-work and a mold, of a sliding cross-head counterbalanced by suitable means, a plunger, eccentric mechanism located inside the cross-head, and gearing for actuating said mechanism to impart a reciprocating motion to the plunger, substantially as set forth.

3. In a pipe-machine, the combination, with suitable frame-work, of a sliding cross-head, a mold, a plunger, eccentric mechanism located inside the cross-head, gearing for operating said mechanism to impart a reciprocating motion to the plunger, and mechanism, substantially as described, for revolving the mold, substantially as set forth.

4. In a pipe-machine, the combination, with suitable frame-work and a mold, of a suspended cross-head, a plunger, eccentric mechanism located inside the cross-head, gearing for actuating said mechanism, a rotary reciprocatory table for supporting the mold, gearing for imparting an intermittent rotary motion to said table, and devices to regulate the speed of such rotation, substantially as set forth.

5. In a pipe-machine, the combination, with suitable frame-work and a mold, of a cross-head, a shaft mounted in the cross-head and carrying an eccentric collar, a yoke within the cross-head, a plunger secured to the yoke, and mechanism for rotating the eccentric collar to impart a reciprocating movement to the plunger, substantially as set forth.

6. In a pipe-machine, the combination, with suitable frame-work, of a table, mechanism for rotating said table, a cross-head, a plunger suspended over the mold, and eccentric mechanism located inside the cross-head for reciprocating the plunger, substantially as set forth.

7. In a pipe-machine, the combination, with a pivoted mold-carrying table, of a cross-head having an interior chamber suspended and counterbalanced to move in vertical guides, a shaft journaled in the cross-head and provided with an eccentric collar, a square block loosely mounted on said collar, a rectangular yoke surrounding this block, a plunger attached to the yoke, and gearing for rotating the shaft to impart a reciprocating movement to the yoke within the cross-head, substantially as set forth.

8. In a pipe-machine, the combination, with suitable frame-work, of a revoluble table having a pinion upon the end of its trunnion, gearing for imparting motion to said pinion, a cross-head mounted in the frame and carrying a plunger, and eccentric mechanism located inside the cross-head for imparting a reciprocating motion to said plunger, substantially as set forth.

9. In a pipe-machine, the combination, with suitable frame-work, a reciprocating plunger, a cross-head, and eccentric mechanism located inside the cross-head for giving motion to the plunger, of a table carrying a shaft, a pinion at one end of the shaft, and a ratchet-wheel near its opposite end, a pivoted table carrying a pinion to mesh with the pinion on the shaft, and gearing for imparting an intermittent rotation to said pivoted table, substantially as set forth.

10. In a pipe-machine, the combination, with suitable frame-work, a reciprocating plunger, a cross-head, and eccentric mechanism located inside the cross-head for giving motion to the plunger, of a table carrying a horizontal shaft, a pinion at one end of said shaft, and a ratchet-wheel near its opposite end, an arm loosely mounted on the shaft and carrying a pawl to engage the ratchet-wheel, and gearing for imparting a reciprocating motion to said arm, as and for the purpose set forth.

11. In a pipe-machine, the combination, with suitable frame-work, a pivoted table, and gearing for rotating the same, of a suspended cross-head, a plunger, eccentric mechanism located inside the cross-head, a pinion secured to a shaft of said mechanism, a vertical shaft mounted in the frame-work parallel with the cross-head, a pinion mounted upon a bracket attached to the cross-head and adapted to encircle the vertical shaft to rotate therewith, and gearing for rotating said vertical shaft, substantially as set forth.

12. In a pipe-machine, the combination, with suitable frame-work and a mold-support, of a suspended cross-head, a plunger, eccentric mechanism located inside the cross-head, a pinion fixed to a shaft of said mechanism, a vertical shaft journaled in the frame-work, a pinion journaled in a bracket secured to the cross-head, said pinion being adapted to encircle the vertical shaft and rotate therewith to drive the first-mentioned pinion, a pinion at the upper end of the vertical shaft, and gearing for driving said shaft to impart a reciprocating motion to the plunger at any elevation of the cross-head, substantially as set forth.

13. In a pipe-machine, the combination, with a suitable frame-work, a suspended cross-head carrying a reciprocating plunger, and eccentric mechanism located inside the cross-head for operating said plunger, of a pivoted table beneath said plunger and mechanism for imparting a reciprocating motion to the plunger and an intermittent rotary movement to the table simultaneously, substantially as set forth.

14. In a pipe-machine, the combination, with suitable frame-work, a reciprocating plunger mounted therein, a cross-head, and eccentric mechanism located inside the cross-head for operating said plunger, of a pivoted table carrying a pinion, a shaft mounted beneath said table and carrying a pinion to mesh with the pinion of the shaft, a ratchet-wheel keyed to said shaft, an arm loosely mounted on the shaft, a pawl pivoted to this arm to engage the ratchet-wheel, a driving-shaft carrying a crank-wheel, and a rod connecting said crank-wheel with said arm, substantially as set forth.

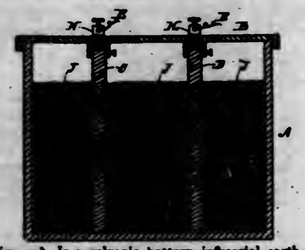
15. In a pipe-machine, the combination, with suitable frame-work and a reciprocating plunger, of a laterally-movable table, a revolving table mounted thereon and carrying a templet of any desired shape, a roller to engage said templet, and mechanism for actuating the laterally-movable table, substantially as set forth.

16. In a pipe machine, the combination, with suitable frame-work and a reciprocating plunger, of a laterally-movable table, a revoluble table mounted thereon, a templet secured to said revoluble table, a roller to engage the templet, devices for actuating the laterally-movable table, and mechanism whereby the revoluble table and plunger are operated simultaneously, substantially as set forth.

17. In a pipe-machine, the combination, with suitable frame-work, a reciprocating plunger, and gearing for actuating the same, of cross-timbers at the base of said frame, rollers mounted thereon, a laterally-movable table mounted on the rollers, a revoluble table mounted on the movable table and carrying a templet, a roller to engage the templet, gearing for rotating the revoluble table, and devices for moving the laterally-movable table, substantially as and for the purpose set forth.

18. In a pipe-machine, the combination, with suitable frame-work and a cross-head carrying a reciprocating plunger, of a laterally-movable table, a revoluble table mounted thereon and carrying a templet, a roller to engage said templet, gearing for rotating the revoluble table, a bracket secured to the frame-work and carrying a pulley, a rope secured at one end to the laterally-movable table and passed over said pulley, and a weight secured to the free end of said rope, substantially as set forth.

887,642. GALVANIC BATTERY. Henry M. Hewett, Boston, Mass., assignor to Hiram S. Parr, same place. Filed Nov. 17, 1887. Serial No. 256,379. (No model.)



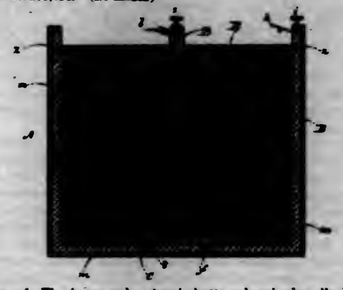
Claim.—1. In a galvanic battery, infusorial earth or a similar absorbent substance, sulphuric acid, water, and bisulphate of mercury, in combination with a jar, a zinc plate, and a carbon plate, substantially as set forth.

2. In a galvanic battery, infusorial earth or a similar absorbent substance, sulphuric acid, water, and bisulphate of mercury, in combination with a jar, a cover for said jar, a zinc plate, a carbon plate,

and conducting-wires connected with said plates, substantially as described.

3. As an improvement in galvanic elements, a paste composed of infusorial earth or similar absorbent substance, sulphuric acid, water, and bisulphate of mercury, substantially as set forth.

387,643. GALVANIC BATTERY. Reuben M. Hewett, Boston, Mass., assignor to Hiram G. Parr, same place. Filed Nov. 21, 1887. Serial No. 256,796. (No model.)



Claim.—1. The improved galvanic battery herein described, the same consisting of the carbon jar A, provided with the coating *m*, the dish C, disposed in said jar and containing the mercury *f*, the zinc plate B, resting in said dish, the paste D, composed of infusorial earth or similar substance, moistened or wet with a solution of sulphuric acid, water, and bisulphate of mercury, the cover E, and conducting-wires *l k*, combined and arranged to operate substantially as set forth.

2. In a galvanic battery, a coated carbon jar containing infusorial earth or similar substance, saturated with an acidulated solution, in combination with a zinc plate in contact with said earth, substantially as described.

3. In a galvanic battery, a coated carbon jar containing infusorial earth or similar substance, saturated with an acidulated solution, in combination with a zinc plate in contact with said earth, and an insulator interposed between said plate and jar, substantially as set forth.

4. In a galvanic battery, a coated carbon jar containing infusorial earth or similar substance, saturated with an acidulated solution, in combination with a zinc plate in contact with said earth, and a dish containing free mercury for amalgamating said plate, substantially as described.

5. In a galvanic battery, a carbon jar containing infusorial earth or similar substance, saturated with an acidulated solution, a coating for preventing the exudation of acid through said jar, a zinc plate in contact with said earth, a dish containing free mercury for amalgamating said plate, and a cover adapted to tightly close said jar, substantially as set forth.

6. In a galvanic battery, the carbon jar A, provided with the coating *m*, the zinc plate B, disposed in said jar, the paste D, composed of infusorial earth or similar substance, moistened or wet with a solution of acid, bisulphate of mercury, and water, said paste being in contact with said plate, and an insulator for said plate, all combined and arranged to operate substantially as described.

387,644. MOLD FOR CASTING THE TEETH OF DIAMOND SAWS. Thaddeus A. Jackson, New York, N. Y. Filed Mar. 26, 1888. Serial No. 268,577. (No model.)

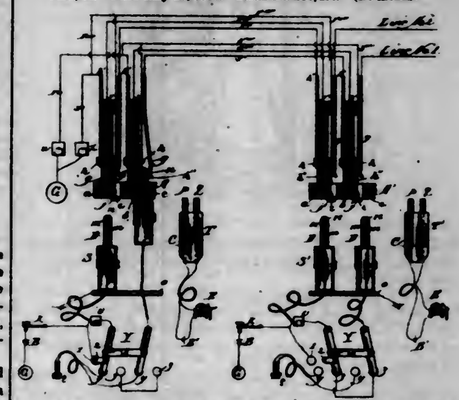


Claim.—1. The combination, with the upper section, A, of the mold hereinbefore described, comprising the parts C and E and F, held together by the pins *a* and the dowels *b*, and the parts *x*, *y*, and *z*, held together by the pins *c*, of the V-gages D, D′, D″, and D‴ within said mold, and the bars *g* and A, attached, respectively, to the gages D′ and D″ and projecting without said mold to afford facility for adjusting the positions of the said gages D′ and D″, substantially as and for the purpose set forth.

2. The combination, with the upper section, A, of the mold hereinbefore described, comprising the parts C, E, and F, held together by the pins *a* and the dowels *b*, and the lower section, B, of said mold, comprising the parts *x y z*, held together by the pins *c*, of the screws *d*, inserted within the walls of said mold, and the pins *d*′, detachably held by said screws, extending within said mold to afford facility for holding diamonds in said mold and to be cast therewith into a saw-tooth, all substantially as and for the purpose set forth.

3. The combination, with the lower section, B, of the mold hereinbefore described, comprising the parts *x y z*, held together by the pins *c* and attached to the upper section of said mold, as hereinbefore specified, of the screws *d*, inserted into the walls of said section of said mold, the pins *d*′, partly within said screws, having heads *d*‴, spring *d*″, and extending within said mold to afford facility for holding diamonds to be cast into the teeth of a saw, all substantially as and for the purpose set forth.

387,645. MULTIPLE SWITCH-BOARD. Milo G. Kellogg, Ryde Park, Ill. Filed May 26, 1887. Serial No. 238,627. (No model.)



Claim.—1. The combination, with a pair of flexible conducting-cords and their plugs for connecting two subscribers' lines, of an operator's telephone, a clearing-out annunciator, and a switch, said annunciator being in the circuit of said cords and said switch having contact-points to switch said telephone in and out of the circuit of the cords, and other contact-points to shunt said annunciator by a circuit of small resistance, of which the telephone is not a part, when said telephone is switched into the circuit of the cords, substantially as set forth.

2. The combination, with two telephone-lines connected together for conversation, of an operator's telephone, a clearing-out annunciator, and a switch, said annunciator being in the circuit of the lines and said switch having contact-points to switch said telephone in and out of the circuit of the lines, and other contact-points to shunt said annunciator by a circuit of small resistance, of which the telephone is not a part, when said telephone is switched into the circuit of the lines, substantially as set forth.

3. The combination, with telephone-lines radiating from the central office and a loop provided with means for connecting it at opposite ends with any two of said lines, of an operator's telephone, a signal-receiving device, and a switch, said signal-receiving device being in the circuit of said loop and said switch having contact-points to switch said telephone in and out of said loop, and other contact-points to shunt said signal-receiving device by a circuit of small resistance, of which the telephone is not a part, when said telephone is switched into the circuit of the loop, substantially as set forth.

4. The combination, with a telephone-line and a line-switch, of two test-bolts, one of which is connected by a branch connection to the circuit of the line on one side of the pair of switch-points and the other of which is normally insulated from the line and is adjacent to one of the switch-points and is crossed with said point by the plug on its insertion, said point being that point of the switch which is connected to the same side of the line as said branch connection is, substantially as set forth.

5. The combination, with a telephone-line, of two or more switches for said line, one on each of two or more switch-boards, and two or more pairs of test-bolts, one pair on each of said switch-boards, one bolt of each pair being connected by a branch connection to the circuit of the line outside of and to one side of the switches, and the other bolts being normally insulated from the line and connected together by a circuit-connection, each bolt being adjacent to one of the switch-points at its board and crossed with it by the plug on its insertion, said point being that point of the switch which is connected to the same side of the line as said branch connection is, substantially as set forth.

6. The combination, with a telephone-line and two or more switch-boards, at each of which said line may be switched for conversation, of two or more pairs of test-bolts for said line, one pair on each of said boards, one bolt of each pair being connected by a branch connection to the circuit of the line outside of and on one side of the switches, and the other bolts of the pairs being connected together and each adjacent to one of the switch-points at its board, said point being that point of the switch which is connected to the same side of the line as said branch connection is, substantially as set forth.

7. The combination, with a telephone-line, of two or more switches for said line, one on each of two or more boards, and two or more pairs of test-bolts for said line, one pair on each of said boards, one bolt of each pair being connected by a circuit-connection to the circuit of the line between its switches and the office ground, and the other bolt of each pair being connected with its corresponding bolts on the other boards adjacent to the contact-point of the line-switch at its board, which is connected with the office ground and crossed with said point by the plug on its insertion, substantially as set forth.

8. The combination, with telephone-lines and two or more switch-boards, at each of which said lines may be switched for conversation, of pairs of test-bolts for each of said lines, one pair on each of said boards, one bolt of each pair being connected to the circuit of the line between the switches and the office ground, the other bolt of each pair being connected with its corresponding bolts on the other boards adjacent to the ground contact-point of the line-switch at its board and crossed with said point by the switch-plug on its insertion, and sets of testing apparatus, one set at each board, each set consisting of a double testing plug or device, with a double flexible cord, the two contact-pieces of each plug being adapted to be brought into contact with any pair of test-bolts at its board, and a test-receiving instrument and a battery in a loop, which connects the two conductors of said flexible cord, substantially as set forth.

9. The combination, with telephone-lines and two or more switch-boards, at each of which said lines may be switched for conversation, of pairs of test-bolts for each of said lines, one pair on each of said boards, one bolt of each pair being connected to the circuit of the line outside of and on one side of its line-switches, the other bolt of each pair being connected with its corresponding bolts on the other boards adjacent to the point of the switch of its line at its board, connected to said first-mentioned bolt and crossed with said point by the switch-plug on its insertion, and sets of testing apparatus, one set at each board, each set consisting of a test-receiving instrument and a battery in a loop, and means for connecting the two sides of the loop to the two test-bolts of any pair of test-bolts at its board, substantially as set forth.

387,646. SAND-BAND AND CLIP FOR VEHICLE-AXLES. Nathaniel S. Keyser, Marshalltown, Iowa. Filed Apr. 12, 1888. Serial No. 270,422. (No model.)



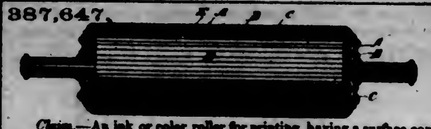
Claim.—1. In an unsplit, inexpansible, combined collar, sand-band, and clip made in one piece, as described, the wall d^3, in combination with the portions d d^5 and collar d^2, the said wall d^3 extending beyond the back of the collar and forming an abutment for the wooden stock, and also forming an elongated substantial upper bearing for the axle, substantially as described.

2. In the unsplit, inexpansible, combined sand-band, collar, and clip made in one piece, as described, the wall d^3, in combination with the portion d, formed with the unbroken upwardly-sloping surface d', for guiding away the sand, collar d^2, cut away to form the sand-escape f between the portion d and the hub, and the portion d^5, substantially as described.

3. The unsplit, inexpansible, combined sand-band, collar, and clip made in one piece, as described, having the portion d, sloped at d', wall d^3, extended back of the collar, the portion d^5, and the horizontally-extended brace-rod lugs E E, substantially as and for the purpose described.

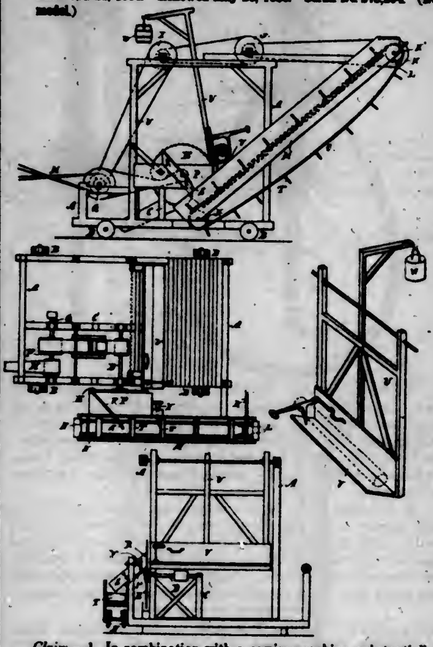
4. The within-described unsplit, inexpansible, combined sand-band, collar, and clip made in one piece, said combined device having the wall d^3, forming a bearing and an abutment, and provided with the cut-away collar d^2, forming space f between portion f and the hub, and also having the sloped surface d' and portions d^5, provided with laterally-extended horizontal brace-rod lugs E E, substantially as and for the purpose described.

387,647. PRINTER'S INK-ROLLER. Friedrich H. Lahs, Anger, near Leipsic, Saxony, Germany. Filed Sept. 26, 1887. Serial No. 250,703. (No model.)



Claim.—An ink or color roller for printing, having a surface composed of felt saturated with a mixture of beef-tallow, copal-lac, varnish, and turpentine-oil.

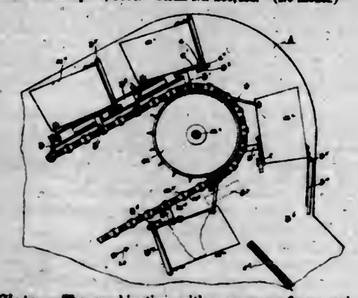
387,648. SAWING-MACHINE. Will P. Langley, Detroit, Mich. Filed Oct. 20, 1886. Renewed May 26, 1888. Serial No. 275,294. (No model.)



Claim.—1. In combination with a sawing-machine, substantially as described, provided with an elevating-carrier, an inclined table, F, located between such carrier and the saw, said table being provided with a guide, R, and gate S, pivoted to said guide, substantially as and for the purposes described.

2. In a machine for the purpose described, the combination of the portable frame A, carrying a saw, E, adapted to be operated from any suitable power, an oscillating table, U, an elevating-carrier, O, and an inclined table, F, provided with a guide, R, and gate S, pivoted to said guide, all combined and operating in the manner and for the purpose described.

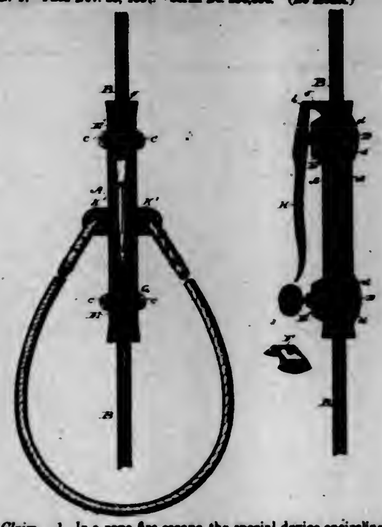
387,649. CONVEYER-BUCKET. Frederic A. Lockwood, Boston, Mass. Filed Apr. 3, 1888. Serial No. 269,483. (No model.)



Claim.—The combination, with a conveyer-frame and endless chain therein, of a bucket provided with a hinged bottom, a locking

device and link *b* and hanger *b'*, to attach said bucket to said chain, and means to operate said locking device, substantially as described.

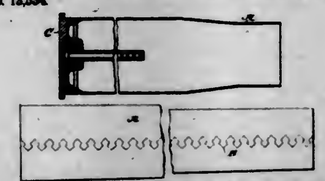
387,650. ROPE FIRE-ESCAPE. RUSSELL P. LOVEJOY, Carthage, N. Y. Filed Nov. 26, 1887. Serial No. 256,693. (No model.)



Claim.—1. In a rope fire-escape, the special device encircling the rope, wire, or cable, consisting of the hollow tubular device A A, with trumpet-shaped ends, the enlarged portions D D, with the frictional bearing-ridges *d d*, antagonized by the adjustable bearing-saddles F and I, the former being controlled by the thumb-screw G and the latter actuated by and under the control of the thumb-lever H, as shown and described.

2. A tubular device in two longitudinal sections, each having three pairs of flat perforated projections, one pair near each end, which shall serve for receiving retaining screws or rivets, binding the sections together, while the third and much larger pair are near the center and constitute, when the sections are together, a pair of stout rings for the attachment of a loop or swing-seat for the occupant of said escape.

387,651. METHOD OF MAKING CARTRIDGE-SHELLS. HIRAM S. MAXIM, London, England. Filed Oct. 11, 1887. Serial No. 252,079. (No model.) Patented in England Oct. 2, 1886, No. 12,561, and Oct. 22, 1886, No. 13,534.



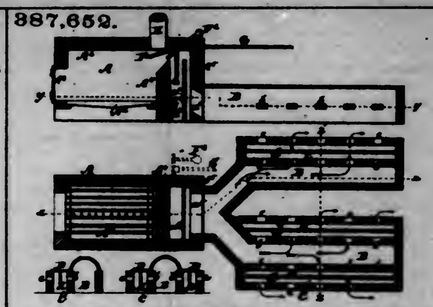
Claim.—1. The improvement in the method or process of manufacturing cartridge-cases, which consists in first forming from sheet metal a blank with serrated edges, then bending the same and interlocking the serrated edges to form a tube, and then shaping or finishing said tube by inserting it in a chamber of hard metal of the required shape or configuration and rolling it from the interior, as herein set forth.

2. The method or process of making cartridge-cases which consists in punching or stamping from sheet-steel or similar metal a blank with serrated edges, bending the blank into tubular shape and interlocking the serrations, and then welding the serrated edges together and uniting a head or base to the tube, as set forth.

387,652. DRIER. WALLACE MCPHERSON, Texarkana, Tex. Filed Apr. 2, 1888. Serial No. 269,393. (No model.)

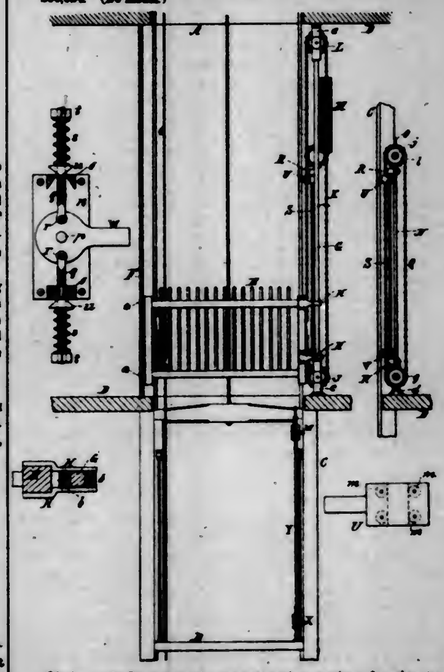
Claim.—1. In a drier, the combination of a furnace having a bridge-wall in front of its rear wall, a pendent plate, *a*, between said bridge-wall and rear wall, and a standing partition, a^2, between said pendent plates and rear walls, the latter having an opening, a^3, therein, and passages provided with lateral openings, substantially as and for the purpose described.

387,652.



2. In a drier, the combination of a furnace having a bridge-wall and an opening, a^3, in its rear wall, and passages B, having lateral openings *b* below their arch or cover, and flues C, having lateral openings, and a pendent plate, *d*, substantially as and for the purpose described.

387,653. ELEVATOR-HATCHWAY GATE. GEORGE S. BURKE and HELLER P. BURKE, Dayton, Ohio. Filed Mar. 3, 1888. Serial No. 266,094. (No model.)



Claim.—1. In automatic gate-operating devices for elevator-hatchways, the combination of a horizontal shaft secured near the side of the hatchway, two sprocket-wheels arranged one loose and the other tight upon said shaft and connected by an intermeshing pinion, two supporting-wheels arranged one vertically above each of said sprocket-wheels, two drive-chains, one connecting each of said sprocket-wheels with its corresponding supporting-wheel, two projecting lugs secured one on each of said chains and so arranged thereon that when one is elevated the other will be depressed, a vertically-sliding gate operated by said horizontal shaft, and an elevator provided with two catches arranged one in line with each of the lugs on the drive-chains, substantially as described, whereby the movement of the elevator automatically raises and lowers said gate.

2. In automatic gate-operating devices for elevator-hatchways, the combination of a horizontal shaft secured near the side of the hatchway, two sprocket-wheels arranged one loose and the other tight upon said shaft and connected by an intermeshing pinion, two supporting-wheels arranged one vertically above each of said sprocket-wheels, two drive-chains, one connecting each of said sprocket-wheels with its corresponding supporting-wheel, two projecting lugs secured one on each of said drive-chains and so arranged thereon that when one is elevated the other will be depressed, a third sprocket-wheel secured upon said horizontal shaft, a supporting-wheel arranged above the same, a drive-chain connecting said wheels, a vertically-sliding gate secured to said drive-chain, and an elevator provided with two catches arranged one in line with each of the lugs on the first-mentioned drive-chains, substantially as described, whereby the movement of the elevator automatically raises and lowers said gate.

3. In automatic gate-operating devices for elevator-hatchways, the combination of a horizontal shaft secured near the side of the hatchway, two sprocket-wheels arranged one loose and the other tight upon said shaft and connected by an intermeshing pinion, two supporting-wheels arranged one vertically above each of said sprocket-wheels, two drive-chains, one connecting each of said sprocket-wheels with its corresponding supporting-wheel, two projecting lugs secured one on each of said drive-chains and so arranged thereon that when one is elevated the other will be depressed, two additional sprocket-wheels secured to said horizontal shaft, one near each end, two additional supporting-wheels arranged one above each of said sprocket-wheels, two drive-chains, one connecting each of said sprocket-wheels with its corresponding supporting-wheel, two vertically-sliding gates, one secured to each of said drive-chains, and an elevator provided with two catches arranged one in line with each of the lugs on the first-mentioned drive-chains, substantially as described, whereby said gates are automatically and simultaneously raised and lowered by the movement of the elevator.

4. In automatic gate-operating devices for elevator-hatchways, the combination of a horizontal shaft secured near the side of the hatchway, two sprocket-wheels arranged one loose and the other tight upon said shaft and connected by an intermeshing pinion, two supporting-wheels arranged one vertically above each of said sprocket-wheels, two drive-chains, one connecting each of said sprocket-wheels with its corresponding supporting-wheel, two projecting lugs secured one on each of said drive-chains and so arranged thereon that when one is elevated the other will be depressed, two vertical guides, one for each of said lugs, a third sprocket-wheel secured upon said horizontal shaft, a supporting-wheel arranged above the same, a drive-chain connecting said wheels, a vertically-sliding gate secured to said drive-chain, and an elevator provided with two catches arranged one in line with each of the lugs on the first-mentioned drive-chains, substantially as described, whereby the movement of the elevator automatically raises and lowers said gate.

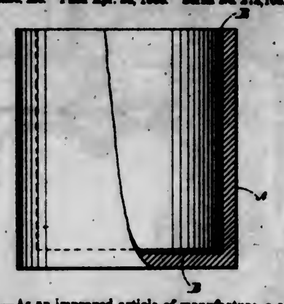
5. In automatic gate-operating devices for elevator-hatchways, the combination of a horizontal shaft secured near the side of the hatchway, two sprocket-wheels arranged one loose and the other tight upon said shaft and connected by an intermeshing pinion, two supporting-wheels arranged one vertically above each of said sprocket-wheels, two drive-chains, one connecting each of said sprocket-wheels with its corresponding supporting-wheel, two projecting lugs secured one on each of said drive-chains and so arranged thereon that when one is elevated the other will be depressed, a third sprocket-wheel secured upon said horizontal shaft, a supporting-wheel arranged above the same, a drive-chain connecting said wheels, a vertically-sliding gate secured to said drive-chain, and an elevator provided with two spring-catches arranged one near the top and one near the bottom of the elevator and one in line with each of the lugs on the first-mentioned drive-chains, whereby the movement of the elevator automatically raises and lowers said gates.

6. The combination of the shaft I, sprocket-wheels *f g*, the former tight and the latter loose upon said shaft, the gears *h h i*, connecting said sprocket-wheels, the supporting-wheels *k l*, drive-chains P Q, projecting lugs U V, the former secured to the chain Q and the latter to the chain P, sprocket-wheel J, secured to the shaft I, supporting-wheel L, drive-chain K, vertically-sliding gate E, secured to the chain K, and elevator B, provided with the spring-catches W X, substantially as and for the purpose specified.

7. The combination of the shaft I, sprocket-wheels *f g*, the former tight and the latter loose upon said shaft, the gears *h h i*, connecting said sprocket-wheels, the supporting-wheels *k l*, drive-chains P Q, projecting lugs U V, secured the former to the chain Q and the latter to the chain P, guide-rods S T for said lugs, brackets or stops R, sprocket-wheel J, secured to the shaft I, supporting-wheel L, drive-chain K, vertically-sliding gate E, secured to the chain K, and elevator B, provided with the spring-catches W X, substantially as and for the purpose specified.

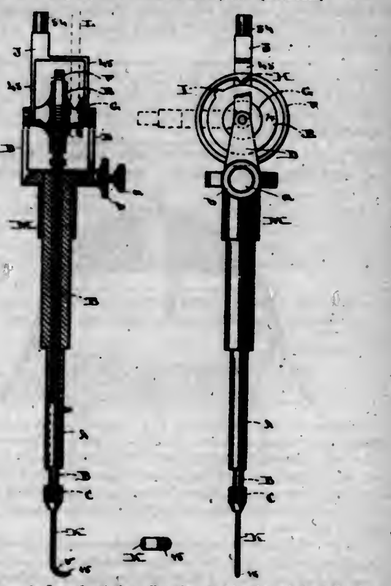
8. A spring-catch for elevators, composed of the pivoted catch-piece W, plate *n*, perforated lugs *o o*, rods *q q*, pivoted at one end to the catch-piece W, passing through said lugs *o o*, and provided with beveled washers *v v*, nuts *t t*, and springs *s s*, surrounding the rods and interposed between the nuts and washers, substantially as and for the purpose specified.

387,654. JAR FOR GALVANIC BATTERIES. BERNARD OVERLACH, Boston, Mass., assignor to the Overlach Electric Composition Company, East, Me. Filed Apr. 30, 1888. Serial No. 272,102. (No model.)



Claim.—As an improved article of manufacture, a containing-jar for galvanic batteries constructed of an acid-proof composition composed of white sand, resin, slaked lime, boiled linseed-oil, sulphuric acid, and oxboxide of copper, in the proportions and compounded substantially as specified.

387,655. DENTAL PLUGGER. DANIEL D. PEABODY, Stoneham, Mass. Filed May 22, 1888. Serial No. 274,063. (No model.)



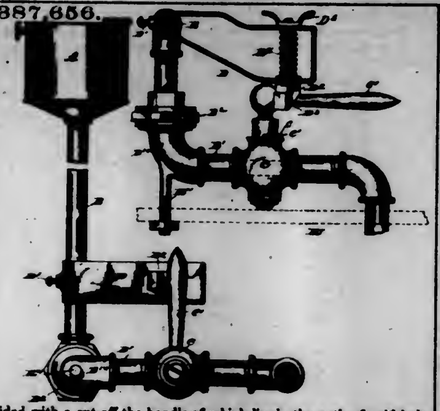
Claim.—1. In a dentist's mallet, the combination of the following instrumentalities, to wit: a body, a head for said body, a spindle fitted to work in said body, a head-piece secured to the upper end of said spindle and provided with a cam, a disk journaled on the head of said body and provided with a cam adapted to engage the cam on the head-piece of the spindle and move the spindle in the direction of said disk, a pulley for driving the disk journaled on said head, and a plugger-point secured to said spindle, the lower portion of said point being bent or curved at an angle to its body, substantially as set forth.

2. In a dentist's mallet, the piston B, provided with a head-piece, as F, having a cam, as H, in combination with the pulley G and disk E, having the cam I, said cams being adapted to engage when the disk is revolved by the pulley and throw the piston in the direction of said disk, and said disk and pulley journaled in a support on the body of the hammer, substantially as described.

387,656. CUT-OFF FOR GASOLINE-STOVES. P. ALPHONSE ERNST, Jamestown, Dak. Filed Aug. 4, 1887. Serial No. 246,155. (No model.)

Claim.—1. In a gasoline-stove, the combination, with a vertical supply-pipe carrying a bracket having a spring-bolt, of a horizontal branch pipe pivotally connected to said vertical supply-pipe, and pro-

387,656.



vided with a cut-off the handle of which lies in the path of said bolt, substantially as specified.

2. The combination of the reservoir A and pivotally-connected pipes B and B', the former having the bracket D, carrying a bolt, D^2, secured thereon, and the latter having the cut-off C mounted therein and provided with a handle, C', lying in the path of the bolt D^2, substantially as specified.

3. The bracket D, having the set-screw D', bolt D^2, chamfered, as at D^3, the coiled spring D^4, and button D^5, in combination with the pipe B, and the pipe B', having the cut-off C, provided with the handle C', arranged in front of and adapted to be operated by said bolt, substantially as specified.

387,657. PYROTECHNIC HELMET. Charles B. Rockwood, Keystone, Minn. Filed Apr. 4, 1888. Serial No. 269,692. (No model.)



Claim.—1. The combination, with a helmet having a lamp and a closed chamber separate from said lamp, of a filling of absorbent material in said chamber adapted to hold light hydrocarbon oils in suspension, an exit-tube from said chamber having its discharge end adjacent to the lamp-burner, and a blast-tube terminating within said chamber and extending to within reach of the helmet-wearer's mouth, substantially as described.

2. The combination, with a helmet having a lamp attached thereto and an inclosed receptacle in its dome divided into compartments by a vertical partition stopping short of its bottom, of an exit-tube from one of said compartments having its discharge end adjacent to the lamp-burner, a blast-tube terminating near the top of the other compartment and provided with an extension to within reach of the helmet-wearer's mouth, and a filling of absorbent material within said receptacle adapted to hold hydrocarbon oils or their gases in suspension, substantially as described.

3. The combination, with a helmet having a lamp and a closed chamber separate from said lamp, of a tubular chin-strap having an opening within reach of the helmet-wearer's mouth and provided with an extension terminating within said closed chamber, an exit-tube from said chamber having its outlet adjacent to the lamp-burner, and a filling of absorbent material within said chamber holding hydrocarbon oils in suspension, substantially as described.

4. The combination, with the helmet A, having a receptacle in its dome with two compartments formed by the horizontal diaphragm C and the vertical portion E E', stopping short of the bottom, of the lamp D, having its body within said receptacle and its burner D' projecting through the top of the helmet, the perforated exit-tube F, starting from the bottom of one compartment and terminating outside the helmet adjacent to the lamp-burner, the rigid blast-tube H within the other compartment terminating near the top of the helmet, the flexible tubular chin-strap H', attached to the lower end of the tube H and provided with the opening A, and the absorbent material G within said chamber adapted to hold hydrocarbon oils in suspension, substantially as described.

5. A helmet having an inclosed chamber in its dome adapted to contain oil, and an exit-tube projecting through the top of the helmet adapted to serve as a burner, substantially as described.

387,658. CRIMPING-TONGS. Lorenzo L. Sagendorph, Cincinnati, Ohio, assignor of one-half to Marion P. Lloyd, same place. Filed June 20, 1887. Serial No. 241,857. (No model.)



Claim.—1. The combination of the hinged jaws A A, arms D D, provided with helical projections F F and lever G, having head G', provided with helical projections *g*, substantially as and for the purposes specified.

2. The combination of hinged jaws A A, arms D D, provided with lugs E E, and helical projections F F, and lever G, having head G', provided with helical projections *g*, substantially as and for the purposes specified.

3. The combination of hinged jaws A A, arms D D, provided with lugs E E, and helical projections F F, spring H, and lever G, having head G', provided with helical projections *g*, substantially as and for the purposes specified.

387,659. PIPE-WELDING BALL. Andrew M. Sandberg, McKeesport, Pa. Filed Apr. 30, 1888. Serial No. 271,266. (No model.)



Claim.—1. A pipe-welding ball formed of two halves and provided with an axial socket for a rod, bolts uniting the two halves and serving as a means for adjusting the distance between them, and springs interposed between the halves and serving to separate the halves as far as the bolts will permit, combined substantially as and for the purpose set forth.

2. In a pipe-welding ball, the combination, substantially as set forth, of two ball-halves in shell form, a pair of internal bolts serving to unite the halves and adjust the distance between them, dowel-sockets in the contiguous faces of the halves, dowel-pins in such sockets, and springs interposed between the halves and serving to separate the halves as far as the attachment of the bolts will permit.

3. In a pipe-welding ball, the combination, substantially as set forth, of the ball-halves A, having arms B and sockets C, bolts E, located within the ball, bolts F, located outside the open end of the ball, and springs interposed between the two halves.

4. In a pipe-welding ball, the combination, substantially as set forth, of ball-halves provided with sockets C, bolts E, counterbored dowel-sockets H, dowel-pins J, and springs K.

387,660. POST FOR VERANDA-RAILINGS. John G. Smeltzer, Clay City, Ind. Filed Mar. 31, 1888. Serial No. 269,093. (No model.)

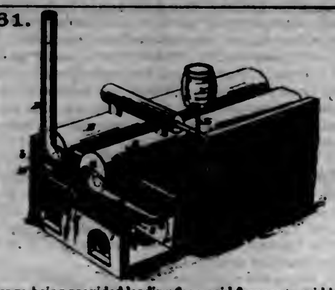


Claim.—In combination with a post, the base comprising the upper and lower plates affixed, respectively, to the bottom of the post and the floor, and provided with registering sockets having right and left internal screws, and the threaded stem or body mounted at its ends in the said sockets, substantially as specified.

387,661. SMOKE-CONSUMER. Robert H. P. Sewall, Birmingham, Ala. Filed June 23, 1887. Serial No. 242,294. (No model.)

Claim.—1. In a smoke-consumer, the combination of a furnace, a burner or burners separated from said furnace, and a superheater, a smoke-passage being provided leading from said furnace to said burner or burners through the superheater, substantially as set forth.

387,661.



2. A smoke-consumer, substantially as herein described, comprising the superheating-chamber, the smoke-passage communicating therewith, the oil-supply pipe leading into such chamber, and the perforated burner pipe or pipes, substantially as set forth.

3. In a smoke-consumer, a superheating-chamber, a smoke-flue leading therefrom, and a perforated burner pipe or pipes combined with an oil-supply pipe and a steam-pipe leading into the superheating-chamber, substantially as set forth.

4. A grate having hollow end portions and hollow tubes extended therebetween and forming a superheating-chamber, combined with a burner pipe or pipes, and a smoke-flue communicating with such superheating-chamber, substantially as set forth.

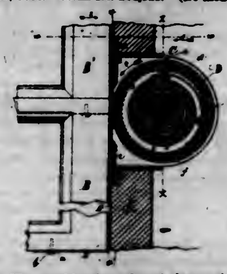
5. In a smoke-consumer, the combination, with a boiler and an oil tank or reservoir, of a superheating-chamber, a burner tube or tubes, the smoke-flue, the steam and oil pipes leading, respectively, from the boiler and the oil-tank to said superheating-chamber, and valves in said pipes for controlling the supply of steam and oil, substantially as set forth.

6. In a smoke-consumer, a hollow grate forming a superheating-chamber, in combination with a tube or main leading from said chamber, and a plurality of perforated burner-tubes connected with said tube or main, and a smoke-flue or passage communicating with said hollow grate, substantially as set forth.

7. In a smoke-consumer, the combination of the grate forming a superheating-chamber and having the end portions 1 2, and hollow tubular connections between said portions 1 and 2, the smoke-flue connected with portion 2, and the main or tube connected with portion 1 and provided with a burner or burners, substantially as and for the purposes specified.

8. The combination, with two boilers, of a furnace under one of said boilers, a burner or burners under the other boiler, a superheater, a pipe connecting such superheater with the burner or burners, and a pipe or flue for conducting the products of combustion into the superheater, all being substantially as described, whereby the products of combustion from the furnace are conducted through the superheater to the burner or burners, as and for the purposes specified.

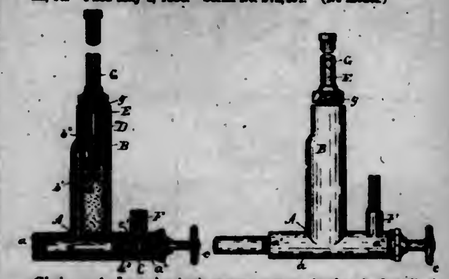
387,662. SASH-BALANCE. Jonas Rothrock, New York, N. Y. Filed Apr. 20, 1888. Serial No. 271,235. (No model.)



Claim.—1. The combination of a window-sash, a window-frame, A, having casing C, a drum or barrel mounted to revolve in the said casing, a band attached with one end to the rim of the said barrel and with the other end to the foot-rail of said sash, a spring coiled around the hub of the barrel and attached with one end to the said hub and with the other end to a fixed point in the barrel-casing, and a friction spring-stop fixed to the said casing and bearing against the inner circumference of the said rim, the said spring being set by lowering the sash, substantially as described.

2. The combination of a window-sash, a window-frame, A, having casing C, a drum or barrel mounted to revolve in the said casing, a band attached with one end to the rim of said barrel and with the other end to the foot-rail of said sash, a spring coiled around the hub of the barrel and attached with one end to the said hub and with the other end to a fixed point in the barrel-casing, and a friction spring-stop fixed to the said casing and bearing against the inner circumference of the said rim, said rim having interiorly corrugations, and the said friction-stop being adapted to engage such corrugations, and the said spring being set by lowering the sash, substantially as described

387,663. MERCURY PRESSURE-GAGE. Frank T. Sutley, Franklin, Pa. Filed May 1, 1888. Serial No. 272,491. (No model.)

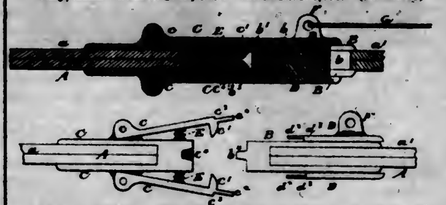


Claim.—1. In a plumber's mercury-gage, the herein-described casting, consisting of a pipe, *a*, having an internal valve-seat, and a projecting hollow stud, F, and an arm, B, containing a mercury-chamber and a duct leading therefrom to the pipe *a*, substantially as and for purpose specified.

2. The combination of the pipe *a*, chambered arm B, and a duct, *b'*, leading from the chamber thereof to said pipe, with a valve in one end of said pipe *a*, hollow stud connected with said pipe, and an indicator-tube secured tightly in the upper end of said chambered arm and extending into the chamber thereof, substantially as and for the purpose specified.

3. The combination of a pipe, *a*, and mechanism, substantially as described, for introducing and retaining air under pressure, with an arm, B, containing a mercury-chamber and a duct leading therefrom to the pipe *a*, an internal annular shoulder, b^3, in said arm B above the mercury-chamber, an indicator-tube, a rubber washer, and a nut for pressing said washer against said shoulder, substantially as and for the purpose specified.

387,664. HORSE-DETACHING DEVICE. Alonzo T. Trahlin, Roxbury, Mass. Filed Jan. 13, 1888. Serial No. 260,626. (No model.)



Claim.—1. A horse-detacher consisting of the two clasps B C, constructed and combined with two sections of a trace and a detaching-cord, substantially as shown and described.

2. The hinged arms *c c*, having the subjacent studs *c' c'*, and held apart by the spring E, in combination with the slide D, arranged to lock the clasps B C together, whereby the two parts of the trace may be fastened or unfastened, as set forth.

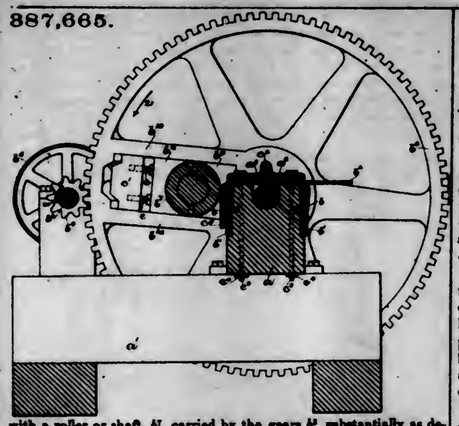
3. A trace made in two parts connected by two clasps, B C, provided at their meeting ends with the tenon and slot b^4 c^4, the stud $\bar{c}^5$, and the opening c^5, whereby the two parts of the trace cannot become vertically or horizontally displaced.

387,665. MACHINE FOR FLANGING METAL. James Tetlow, Boston, Mass. Filed Dec. 27, 1887. Serial No. 259,031. (No model.)

Claim.—1. In a machine for bending or flanging metal sheets, a bed, *a*, to support the metal sheet to be flanged, formers detachably connected to the sides of the said bed, and a clamp to secure the metal sheet on top of the said bed, with its sides projecting beyond the bed, combined with a roller, and mechanism constructed, substantially as described, to move the said roller over the said bed, and clamp to bend the sides of the sheet over the said formers to form flanges to the portion of the metal sheet held between the clamp and bed, substantially as described.

2. The bed *a*, having a groove, a^2, a shaft, a^3, having gears b^2, combined with a shaft, b^3, having pinions in mesh with said gears, and

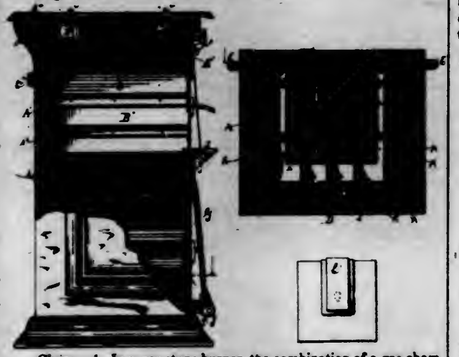
387,665.



with a roller or shaft, b^3, carried by the gears b^3, substantially as described.

3. In a machine for bending or flanging metal sheets, the combination, with a bed and formers secured on opposite sides thereof, of a clamp to secure the metal sheet on the said bed, a roller, and mechanism constructed, substantially as described, to move the roller over the said bed, and clamp to bend the sides of the sheet over the said formers, and adjustable bearings for the said roller to permit metal sheets of varying thicknesses to be bent, substantially as described, and for the purpose specified.

387,666. GAS-STOVE. Peter G. Van Wie, Cleveland, Ohio. Filed Aug. 6, 1887. Serial No. 246,287. (No model.)



Claim.—1. In a gas-stove burner, the combination of a gas-chamber provided on its outer side with corrugations, said corrugations provided with jet-orifices, and air-pipes alternating with the crests of said corrugations and provided with jet-orifices, substantially as set forth.

2. In a gas-stove burner, the combination, with a chamber provided on one of its outer sides with corrugations and having the crests of said corrugations provided with jet-orifices, of air-pipes located in the valleys between said crests, said air-pipes provided with jet-orifices, substantially as set forth.

3. In a gas-stove burner, the combination, with a gas-chamber having one of its outer sides provided with corrugations, the crests of said corrugations provided with jet-orifices, of air-pipes secured to said chamber and alternating with said crests and provided with jet-orifices, the series of orifices in one crest and its adjacent pipe converging toward each other, substantially as set forth.

4. In a gas-stove burner, the combination, with a gas-chamber having one of its outer sides provided with corrugations, the crests of said corrugations provided with jet-orifices, of air-pipes secured in the valleys between said crests, said pipes provided with jet-orifices, the outer ends of said air-pipes being substantially flush with the outer stove-wall and opening into the outer air, substantially as set forth.

5. In a gas-stove, the combination of rear and side stove-walls, an oven located within the same, a space intermediate of the rear and side walls, respectively, of said oven and stove, air-inlet openings connecting said intermediate space with the outer air, an inner oven located within said first oven, a space intermediate of the side and rear walls, respectively, of the two ovens, and an outlet-opening located centrally above the top of the inner oven and connected with the air-space between the two ovens, substantially as set forth.

6. In a gas-stove, the combination of a burner provided on its lower side with corrugations and having air-pipes alternating with the crests of said corrugations, said pipes and crests each provided with jet-orifices, an oven located above the same, and a flue passing around a portion of said oven and having its outlet centrally above said oven, substantially as set forth.

7. In a gas-stove, the combination of a burner having alternate gas and air orifices, a primary oven within which it is located, and a secondary oven located within the extended wall of the primary oven, flue-passage being formed intermediate of said wall and secondary oven, the wall of said primary oven being provided with air-inlet and air-outlet openings, respectively, on opposite sides of said secondary oven, substantially as set forth.

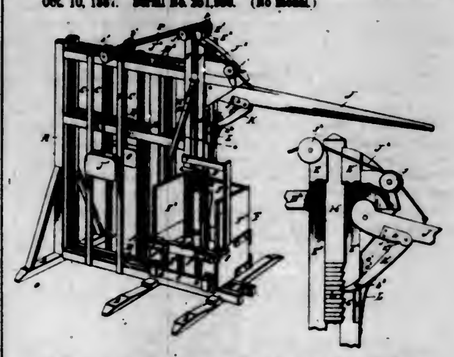
8. In a gas-stove, the combination of a primary oven extending from the bottom to near the top of the stove, an air-space intermediate of said oven and the rear wall and two side walls of the stove, a burner located substantially midway of the vertical height of said oven and provided with jet-orifices opening downwardly, a secondary oven located within said primary oven and directly above the burner, and an air-space intermediate of the side walls, respectively, of said two ovens, substantially as set forth.

9. In a gas-stove burner, the combination of a gas-inlet pipe, a gas-chamber provided with perforations, an air-pipe provided with perforations and lying contiguous to said gas-chamber, and a separator provided with perforations located intermediate of said gas-inlet pipe and said air-pipes, substantially as set forth.

10. In a gas-stove burner, the combination of a gas-chamber provided on its lower side with corrugations and having perforations in the crests of the same, air-pipes provided with perforations and alternating with said crests, a gas-inlet pipe opening into said chamber, and a separator provided with perforations located across the discharge opening of said gas-inlet pipe, substantially as set forth.

11. In a gas-stove, the combination, with a series of gas-pipes having one or more gas-discharge outlets, of an air-pipe located parallel with and in proximity to said gas-pipes and having one or more discharge-outlets, the air-inlet opening of said air-pipe being flush with the stove-wall, substantially as set forth.

387,667. HAY-PRESS. Asbell Wellsby, Somerset, Wis. Filed Oct. 10, 1887. Serial No. 251,909. (No model.)



Claim.—1. A hay-press comprising the foot-pieces D, the cross-beams B B' B^3, the standards A, stay-bars C, the posts E E' E^2 E^3, secured to the ends of the cross-beams B' and B^3, and forming a bearing, the rack-bar mounted in said bearing and adapted to work vertically therein, the detent-pawl, the releasing-lever N, the power-lever, the actuating-pawl K, the follower carried by the rack-bar, and the bale-box mounted on an extension of the cross-beam B, substantially as shown.

2. In a hay-press, the combination, with the rack-bar, the rack-bar bearing, and the detent-pawl pivotally supported between its ends, one end bearing on the rack-bar and the other end extending outward, of the lever pivoted at its upper end and adapted to bear upon said outward-extending end of the detent-pawl, substantially as described, for the purpose specified.

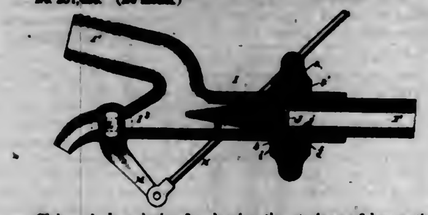
3. In a press, the combination, with the rack-bar and the rack-bar bearing, of the power-lever, and the actuating-pawl having lateral projections which bear and ride on said bearing to relieve the rack-bar of unnecessary lateral pressure, substantially as set forth, for the purpose described.

4. The combination, with the bearing composed of posts recessed, as at *e*, the rack-bar and the power-lever, of the actuating-pawl having lateral projections which are adapted to travel in said recesses.

5. The combination, with the bearing, the rack-bar, and the power-lever, of the actuating-pawl having lateral projections, the spring L, and the plates *c'*, having inclined ends, substantially as described.

6. The combination, with the bearing, the rack-bar, and the power-lever having a shoulder, *j*, of the actuating-pawl K, having a corresponding shoulder, the weight J', connected with the power-lever, and the spring L, substantially as described.

387,668. CLEANING STRAINERS OF LOCOMOTIVE FEED-PIPES. John M. Waller, near Greenstown, Md. Filed Dec. 10, 1887. Serial No. 257,462. (No model.)



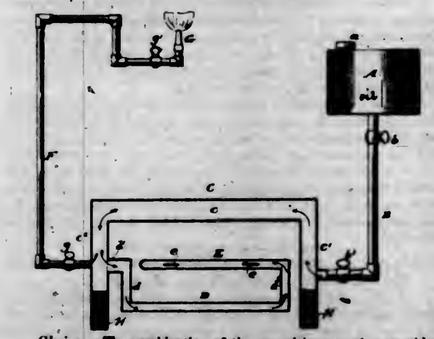
Claim.—1. In a device for cleaning the strainers of locomotive feed-pipes, substantially as specified, the combination, with the injector feed-pipe, of a screen arranged within and forming a partition across a substantially straight portion of said feed-pipe, with its axis in line therewith, an orifice controlled by a cock situated on the inlet side of the screen, and mechanism for actuating said cock from the locomotive-cab, all substantially as shown and described.

2. In a device for cleaning the strainers of locomotive feed-pipes, substantially as specified, the combination, with the injector feed-pipe, of a conical screen arranged within and forming a partition across a substantially straight portion of said feed-pipe, with its axis in line therewith, an orifice controlled by a cock and situated on the inlet side of the screen, and mechanism for actuating said cock from the locomotive-cab, all substantially as shown and described.

3. In a device for cleaning the strainers of locomotive feed-pipes, substantially as specified, the combination, with the injector feed-pipe, of a screen arranged within and forming a partition across a substantially straight portion of said feed-pipe, with its axis in line therewith, an orifice controlled by a cock situated on the inlet side of the screen and substantially in line with the straight portion of the feed-pipe containing the screen, and mechanism for actuating said cock from the locomotive-cab, all substantially as shown and described.

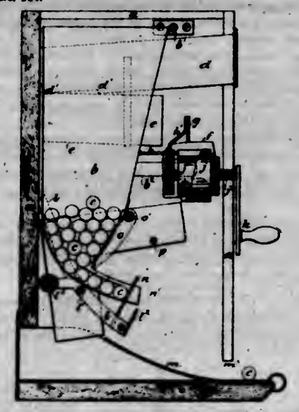
4. In a device for cleaning the strainers of locomotive feed-pipes, substantially as specified, the combination, with the injector feed-pipe, of a screen-box arranged at the bottom of said pipe and having a water-inlet opening in an arm extending from its top, a water-exit opening in another arm adapted to be attached to the feed-pipe, and a tubular orifice placed opposite to said exhaust-opening and at the bottom of the box, a cock situated in said tubular orifice, whereby it can be opened or closed at will, mechanism for actuating said cock from the cab of the engine, and a screen situated at the end of the exhaust-opening, with its axis substantially in line with the said opening, all substantially as and for the purpose specified.

387,669. APPARATUS FOR VAPORIZING AND BURNING OIL IN STOVES, &c. Charles A. Wiess, Rockville, Conn. Filed Nov. 18, 1887. Serial No. 255,592. (No model.)



Claim.—The combination of the vaporizing-chamber provided with downward-extending branches terminating in solid tapering lower ends, which are adapted to be inserted in apertures in the grate-bars, an oil-reservoir communicating with one of said branches, a vaporizing and heating burner communicating with the other branch, and an illuminating-burner communicating with the said latter branch.

387,670. VENDING APPARATUS. Richard Whittaker, 106 Hatton Garden, County of Middlesex, England. Filed Nov. 21, 1887. Serial No. 256,253. (No model.) Patented in England Aug. 31, 1886, No. 11,104; in France May 31, 1887, No. 183,907, and in India June 10, 1887, No. 117.



Claim.—1. The combination, substantially as hereinbefore set forth, of the case, the suspended hopper, its pivots, and the cut-off adapted to be automatically actuated by each movement of the hopper to deliver one of the articles contained therein.

2. The combination, substantially as hereinbefore set forth, of the case, the suspended hopper, its pivots, the rocking lever *l*, its pivots on the hopper, its counter-balance *P*, and its cut-off adapted to be automatically traversed across the mouth of the hopper by the movement of the latter to deliver one of the articles contained therein.

3. The combination, substantially as hereinbefore set forth, of the case, the suspended hopper, its pivots, the counterbalanced cut-off adapted to be automatically actuated by the movement of the hopper to discharge one of the articles contained therein, and the secondary stop *n*, which is adapted to be automatically interposed between the article being discharged by the cut-off and the succeeding articles by the same movement of the hopper.

4. The combination, substantially as hereinbefore set forth, of the case, the suspended hopper, its pivots, the cut-off adapted to be automatically actuated by each movement of the hopper, the stirrers pivoted on the hopper and working through slots therein, and the stop-bar, which actuates the stirrers on the return or forward stroke of the hopper after discharging one of the articles contained therein.

5. The combination, substantially as hereinbefore set forth, of the case, the suspended swinging hopper, the cut-off, the secondary stop, and the stirrers, the cut-off, secondary stop, and stirrers being all adapted to be automatically actuated by the swinging of the hopper, as set forth.

6. The combination, substantially as hereinbefore set forth, of the case, the swinging hopper, the cut-off adapted to be automatically actuated by the movement of the hopper, and the guideway traversed by the discharged article, which guideway delivers the article outside the case after its discharge from the hopper.

7. The combination, substantially as hereinbefore set forth, of the case, the suspended swinging hopper, its pivots, the automatic cut-off, its pivots on the hopper, and the actuating mechanism by which the hopper is moved from the outside of the case.

8. The combination, substantially as hereinbefore set forth, of the case, the hopper, its pivots, the automatic cut-off, the endwise-moving pin or push-rod, and the cam which actuates it to traverse the hopper.

9. The combination, substantially as hereinbefore set forth, of the case, the hopper, its pivots, the cut-off, actuating mechanism on the case, the rocking lever *g*, and the push-rod carried by said lever and interposed between the actuating mechanism and hopper when the latter is to be actuated.

10. The combination, substantially as hereinbefore set forth, of the case, the suspended swinging hopper, the cut-off, the actuating mechanism, the counterbalanced rocking lever, the coin-receiver mounted thereon, and the push-rod carried by said lever, and adapted to be automatically interposed between the actuating mechanism and hopper when the latter is to be actuated.

11. The combination, substantially as hereinbefore set forth, of the case, the hopper, the cut-off, the actuating mechanism, the case

having the coin slot and guide, the rocking lever, the coin-receiver on the rocking lever, and the push-rod, also carried by said lever and adapted to be automatically interposed by the action of the coin in the receiver between the actuating mechanism and hopper to actuate the latter.

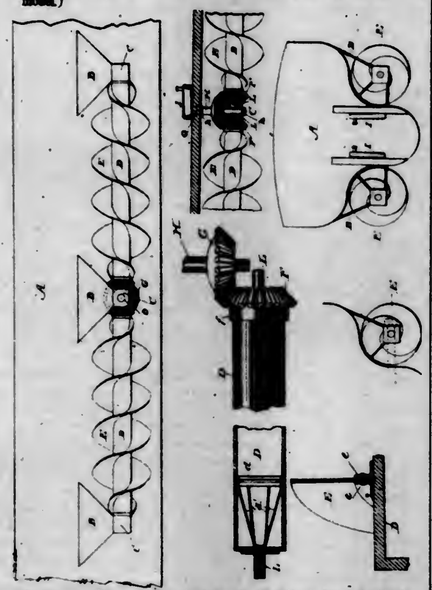
12. The combination, substantially as hereinbefore set forth, of the case having a coin-slot and guide, the suspended swinging hopper, the rocking lever, the coin-receiver carried thereby, and the coin-liberating arm or stop on the hopper adapted automatically to discharge the coin from the receiver as the hopper swings back after delivering the article.

13. The combination, substantially as hereinbefore set forth, of the case, the suspended swinging hopper, the coin-receiver, the coin-liberating arm, the coin-holder, its reciprocating fingers, and the connection with the hopper, whereby they are actuated to deliver the coin step by step to its final receptacle.

14. The combination, substantially as hereinbefore set forth, of the case, the suspended swinging hopper, the coin-holder, its reciprocating fingers, and the connections with the hopper, whereby they are intermittently actuated to deliver the coin step by step to its final receptacle.

15. The combination, substantially as hereinbefore set forth, of the case, the suspended swinging hopper, the coin-holder, its fixed inclines P, its opposing reciprocating inclines F', their actuating-bar H, and the actuating-pin G on the hopper.

387,671. SCREW-PROPELLER. Theodore T. Woodruff, Philadelphia, Pa., assignor to Elias M. Woodruff, John R. McManus, and Adam Wartham, same place. Filed Sept. 23, 1887. Serial No. 250,504. (No model.)



Claim.—1. The propeller-shaft herein described, formed of hollow metal, provided at one end with the strengthening internal annular flange and the inclined stay or brace rods, for the purpose described.

2. The propeller-shaft herein described, formed of hollow metal, provided with the internal flange and stay-rods at one end and with bevel gear-wheel at the opposite end, for the purpose described.

3. The propeller-shaft herein described, formed of hollow metal, having internal flange and stay-rods at one end, bevel gear-wheel on opposite end, and the flange on the outer surface secured to the shaft by means of angle-irons, substantially as described.

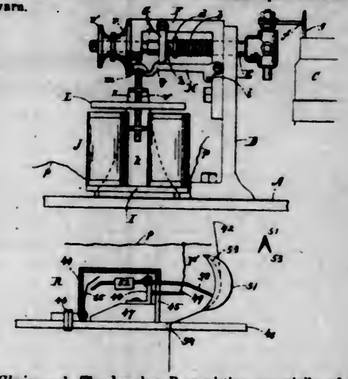
4. The combination, with the hull of a vessel having the bilges and coves, of hangers depending from the bilged sides at the ends and center of the hull, closed journal-boxes in the said hangers in which the outer ends of the shafts are carried, and a central journal-box in which the inner ends of the shafts and the driving-shaft are carried, substantially as described.

5. The combination, with the vessel having the hangers provided with closed journal-boxes depending therefrom, of the propeller-shafts carried at their outer ends in the said journal-boxes and at their inner ends carried in a box carried by the driving-shaft, whereby the driving-shaft forms a central support for the shafts, substantially as described.

6. The combination, with the hollow propeller-shafts having the bevel gear-wheels on their inner ends, of the driving gear-wheel meshing with said gear-wheels and having its shaft arranged at right angles to the propeller-shafts to form a support for the inner ends of said shafts, substantially as described.

387,672. STOP MECHANISM FOR KNITTING-MACHINES. Matthew C. Yarwood, Fall River, Mass. Filed Dec. 22, 1887. Serial No. 258,092. (No model.)

Brief.—The invention consists in the improved devices for completing the circuit of the electrical stop mechanism and for causing the removal of the presser from the needles upon the breaking of the yarn.



Claim.—1. The drop-box R, consisting, essentially, of the case 44, provided with the spring 65, the standard 48, mounted on the insulating-block 47 and provided with the arm 49, and the lever 50, provided with the weight 51, having a thread-groove, 53, and counter-balance 52, combined and arranged to operate substantially as set forth.

2. The sliding shaft E, mounted on the standard D, and provided with the presser *f* at one end and with adjusting-nuts at the other end, spring *b*, and collet *d*, the pivoted bar H, provided with the catch *g*, the pivoted bar G, adapted to engage said catch, the sliding rod *v*, carrying the arm *m*, and armature L, the magnet J, battery N, and electrical conductors for connecting said magnet and battery, substantially as described.

387,673. TYPE-WRITING MACHINE. Walter J. Barron, New York, N. Y., assignor of one-half to Ames Densmore, Meadville, Pa. Filed Apr. 20, 1887. Serial No. 235,512. (No model.)

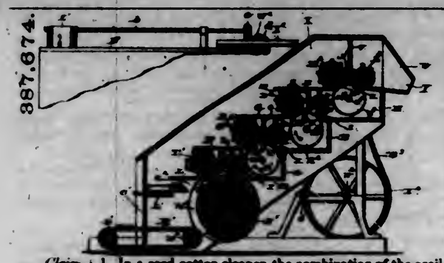


Claim.—1. In combination with a type-writer frame and its paper-carriage, guide-rod B, and letter-spacing mechanism, the paper-carriage having its hinge-rod in a vertical plane clearly in the rear of a vertical plane passing through the guide-rod B, whereby the carriage is retracted to its seat by gravity and independently of a spring, substantially as and for the purpose described.

2. The combination of the pawl of the letter-spacing mechanism of a type-writer, the rack-bars and yoke having lugs on top thereof, with the paper-carriage back rod, D, passing freely through said lugs, and the paper-carriage guide-rod B, located in a vertical plane inwardly of the rod D, whereby the carriage is free to be drawn forward to disengage the spacing racks from their pawl and allowed to be moved to the right or to the left and returned to its seat by gravity and independently of a spring, substantially as and for the purpose described.

387,674. SEED-COTTON CLEANER. Louis F. Carr, Helena, Ark. Filed Aug. 26, 1887. Serial No. 247,950. (No model.)

Brief.—An oscillating drum armed with segmental saws upon its side carries the seed-cotton upward, to be seized and acted upon by a series of revolving saws and brushes arranged in a series of ascending chambers. One series of brushes operates through screens which allow trash but not cotton to be carried through by said brushes. An endless carrier is provided for removing trash.



Claim.—1. In a seed-cotton cleaner, the combination of the oscillating drum having segmental saws, the screen arranged above the drum, and the brush arranged above the screen and rotating on the upper side of the drum, whereby the foreign substances will be swept or brushed from the cotton as the latter passes under the screen, substantially as described.

2. The combination, in a machine for cleaning seed-cotton, of the casing having the ascending series of communicating chambers, the rotating saws having their upper sides projecting through the communicating openings in the chambers, the screens arranged above the saws, and the rotating brushes arranged in the said chambers above the screens and saws, substantially as described.

3. The combination of the oscillating drum having the lever L^2, the dog pivoted to the said lever, and the endless conveyer having the ratchet-wheel engaged by the said dog, whereby the oscillating drum will be automatically fed, and means, substantially as specified, to operate the oscillating drum, substantially as described.

4. The combination, in a seed-cotton cleaner, of the casing having the chamber K^3, provided with the inclined bottom boards, E', the chamber L, having the screen V' on its lower side, the oscillating drum having the toothed segments on one side adapted to sweep through the front side of the chamber K^3, and the rotating brush T, arranged in the chamber L, substantially as described.

387,675. ANCHOR OR SUPPORT FOR DEEP-WELL PACKERS OR TUBING. Solomon R. Dresser, Bradford, Pa. Filed Aug. 14, 1887. Serial No. 247,203. (No model.)

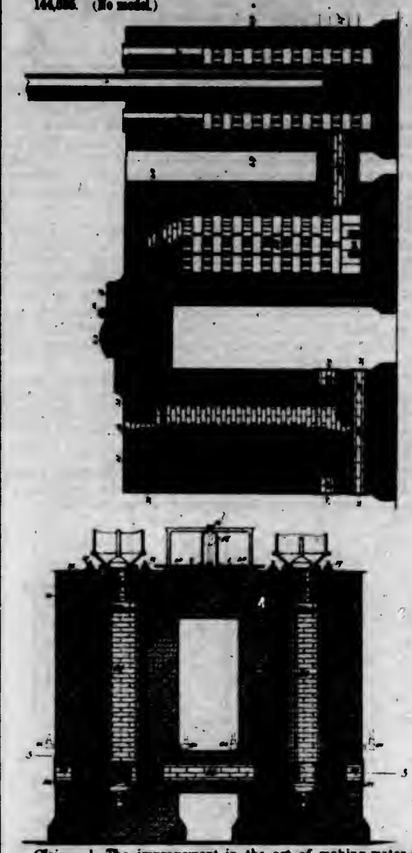
Claim.—1. In a tubing-supporter, the combination of a tapering piece of tubing or casting, slip-wedges in said tubing, and a removable retainer for holding the wedges at or near the apex of the tapering tube, for the purpose set forth.

2. The combination of tapering casting or tubing A with dovetailed slots E, slip-wedges B and B', with dovetailed lugs F, elastic cord or spring C, and catch-springs D and D', with wire G, substantially as shown and set forth.

3. The combination of tapering casting or tubing A, slip-wedges B and B', catch-springs D and D', and wire G, substantially as shown and set forth.

4. The combination of tapering casting or tubing A, slip-wedges B and B', elastic cord or spring C, with wires G, substantially as shown and set forth.

387,676. PROCESS OF MANUFACTURING GAS. George Strong Dwight, Rosenberg, Germany; Mary Torrey Dwight administratrix of said George Strong Dwight, deceased. Filed Oct. 2, 1884. Serial No. 144,553. (No model.)

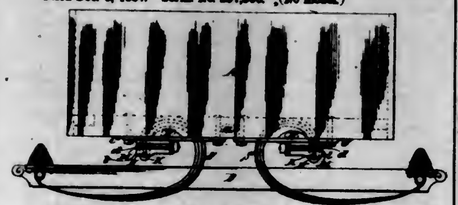


Claim.—1. The improvement in the art of making water-gas, which consists in passing the products of partial combustion given off from a mass of burning fuel through a second mass of fuel in order that said products or partial combustion may impart their sensible heat thereto, and then burning said products of partial combustion in a mass of refractory material in an air-heating chamber for the purpose of heating the same, and then passing a blast of air through said air-heating chamber and masses of fuel in the reverse direction, substantially as described.

2. The improvement in the art of making water-gas, which consists, first, in passing the products of partial combustion given off from a mass of burning fuel through a second mass of fuel in order that said products of partial combustion may impart their sensible heat thereto, then burning said products of partial combustion in a mass of refractory material for the purpose of heating the same; second, in passing the steam through said second mass of fuel in the reverse of the direction previously followed by said products of partial combustion, so that the temperature of the steam shall be gradually raised to the point of its decomposition with carbon by the direct action of and in the presence of carbon, and then passing the resulting gases through the first mass of fuel to recarbonize the carbonic acid, and, third, in passing a blast of air through said heated refractory material to heat it, and

thence through the two messes of fuel in the same course followed by the steam, substantially as described.

387,677. VEHICLE-SPRING. WILLIAM M. HOBLES, St. Louis, Mo. Filed Dec. 8, 1887. Serial No. 257,260. (No model.)

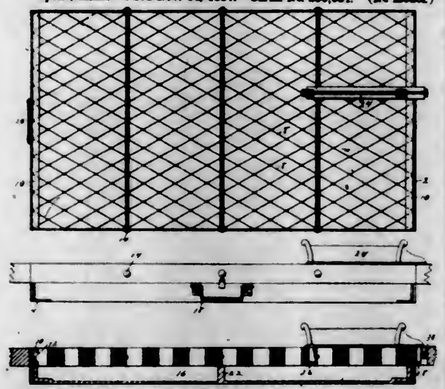


Claim.—1. In a vehicle, a spring composed of two or more leaves each shorter than its preceding one, whereby the spring increases in tension from its eye end toward its heel end, and bent from its heel end over its back toward its eye end in a gradually-receding curve for more than half a circle, and having the flexion of the heel end starting from about a perpendicular when the spring is attached to the body and running-gear, in combination with the body and rigid side bars of a vehicle, substantially as set forth.

2. In a vehicle-spring, a clamping device consisting of a plate of iron adapted to be securely fastened to a spring-bar or to the bottom of the body of a vehicle, and having on its sides two parallel lips embracing the end of the spring, and having a bearing against which the end of the spring rests, and having a clevis surrounding the end of the spring and the bearing and securely holding it between the lips and against the bearing, all operating to securely hold the heel end of the spring fast and permanently connect it to the spring-bar or to the bottom of the body.

3. In a vehicle-spring, a key inserted in the end of the spring through an ordinary loop formed therein and resting with its ends on the edges of the lips of the clamping device C, in combination with said clamping device, substantially as described, and operating to prevent the spring from working out of the clamping device.

387,678. DOOR-MAT. HENRY FISCHER and LEO EWALD, Minneapolis, Minn. Filed Nov. 14, 1887. Serial No. 255,081. (No model.)



Claim.—1. The combination, in a door-mat, with the frame or casing 2, provided with the end bars, 10, having the lips or flanges 12, forming the rectangular recesses 13, of the corrugated metal plates extending across said frame and having ends fitting the recesses 13, and the bolts 14, passing laterally through the frame and the plates 8, substantially as described.

2. The combination, in a door-mat, with the open frame or casing 2, of the corrugated metal plates 8, extending across said frame, with open spaces between them, the angle-irons 4, secured to the ends of the casing 2, with the flanges projecting inward, and the drawer or receptacle 16, arranged beneath said corrugated plates and resting upon said angle-irons, substantially as described.

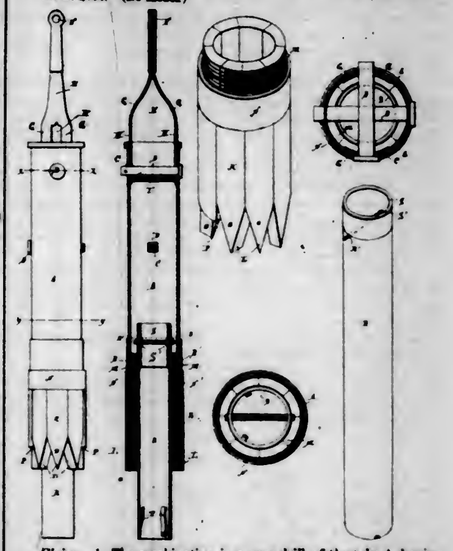
3. In a door-mat, the combination, with the frame, of the series of crimped or corrugated metallic plates 8, arranged upon their edges in said frame, the rod 14, for securing the plates together, the removable scraper 24, the lug 26, secured to said scraper and engaging said rod, and the lug 28, also secured to said scraper and provided with the set-screw 30, which bears upon the frame and holds the said scraper in place, substantially as described.

4. The combination, in a door-mat, with the open frame 2, of the corrugated plates 8, extending across said frame, with open spaces between them, and the drawer or receptacle 16, arranged to slide in said frame beneath said plates, and provided with the central partition, 22, forming a support for said plates 8, substantially as described.

387,679. ELECTROLYTE FOR GALVANIC BATTERIES. DENNIS H. PETER, Canonsville, N. Y. Filed Jan. 12, 1888. Serial No. 260,857. (No specimens.)

Claim.—Muriatic or chlorhydric acid in connection or combination with the solution for galvanic batteries, made by dissolving chloride of ammonium and chlorate of potassium or chlorate of sodium together in water.

387,680. CORE-DRILL. JOHN F. GOURLEY, THOMAS G. WIBBY, and JOHN F. HERSTEILER, Lawrence, Kans. Filed Feb. 21, 1888. Serial No. 264,707. (No model.)



Claim.—1. The combination, in a core-drill, of the tube A, having the hollow cylindrical drill-head at its lower end, and the tubular core-lifter R, vertically movable in the tube and in the drill-head extending through the bore of the latter, and having the retaining devices T at its lower end, substantially as described.

2. In a core-drill, the drill-head K, comprising the series of segmental separable cutters arranged in contact with each other to form a hollow cylinder, and having the lower cutting-edges, substantially as described.

3. The cutter-head for core-drills, comprising the series of segmental separable cutters L, arranged in contact with each other to form a hollow cylinder, in combination with the annular band or ring N, securing the said cutters together, substantially as described.

4. The combination, in a core-drill, of the tube A, the hollow cylindrical cutter-head K, secured to the lower end of tube A, and removable therefrom, and the tubular vertically-movable core-lifter R, arranged in the lower portion of tube A and extending through the bore of the drill-head, substantially as described.

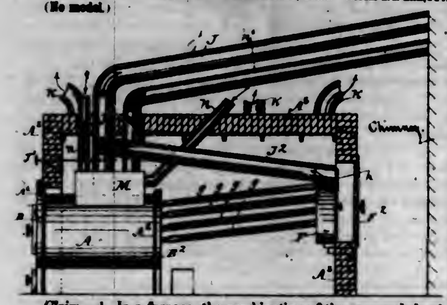
5. The combination, in a core-drill, of the tube A, having the hollow cylindrical drill-head at its lower end, the vertically-movable core-lifter R, arranged in the lower portion of the tube and extending through the bore of the drill-head, and the yoke E, attached to the upper end of tube A and vertically movable therein, substantially as described.

6. The combination, in a core-drill, of the tube A, having the hollow cylindrical drill-head at its lower end, the yoke E, having the slotted arm arranged in the upper end of the tube, and the pin D, extending transversely through the latter and through the slot in the yoke-arms, substantially as described.

7. The combination, in a drill-head for core-drills, of the segmental cutters L, arranged in contact with each other to form the hollow cylinder, some of the said cutters having the point beveled on opposite sides at O, and the remaining cutters on diametrically-opposite sides of the head having their lower ends truncated and provided with the concaves P, substantially as described.

8. The combination, in a core-drill, of the tube A, having the hollow cylindrical drill-head at its lower end and the vertically-movable core-lifter R, arranged in the lower end of the tube and extending through the bore of the drill-head, said core-lifter having the retaining-springs T on its inner side at its lower end, substantially as described.

387,681. HEATING AND VENTILATING BUILDINGS. WILLIAM H. HEATON, Des Moines, Iowa. Filed Dec. 20, 1886. Serial No. 222,117. (No model.)



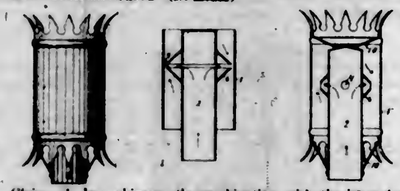
Claim.—1. In a furnace, the combination of the open-ended cylinder and wall A, having flanges A^3, the door-frame B, the end B^2, having tubular projections 1 2 3 4, the chamber F, having a door, A, and the tubes *g*, and flue J^2, substantially as shown and described, for the purposes stated.

2. The grate-bars having projections *d''* on their ends, in combination with the plates B and B^2, having inclined bearings *d'* and flanges *c* on their inside faces, substantially as shown and described, for the purposes stated.

3. The combination of the open-ended cylinder or wall A, having flanges A^3, the door-frame B, having a flange, *c*, and inclined bearings *d'*, the plate B^2, having a flange, *c*, bearings *d''*, and tubular extensions 1 2 3 4, the grate-bars having projections *d''*, the chamber F, having a door, A, the tubes *g*, and the flues J and J^2, constructed and combined within a wall, A^3, substantially as shown and described, for the purposes stated.

4. The ventilating device for buildings, consisting of an auxiliary chamber attached to the outside of the heater or furnace, and tube or tubes connected therewith and extending into a room or rooms to be ventilated, and a tube extending from the same chamber to an escape-flue, substantially as shown and described.

387,682. CHIMNEY-COWL. HENRY HAMES, Stillwater, Minn., assignor of one-half to Charles P. Gregory, same place. Filed July 18, 1887. Serial No. 244,574. (No model.)



Claim.—1. In a chimney, the combination, with the inner draft or smoke pipe closed at the upper end and open at the lower end and provided with a series of openings in its circumference, of an outer cylindrical case or shield surrounding said inner pipe and open for the free admission of air at both ends, and a cone-shaped hood with its base next to the side of the pipe surrounding said openings in the inner pipe and extending laterally and opening into the annular space formed between the outer case or shield and the inner pipe, substantially as and for the purposes described.

2. In a chimney-cowl, the combination of the draft-pipe closed at its upper ends and provided with a series of openings in its circumference, laterally-projecting conical hoods secured to said pipe over said openings, having bases next to the side of the pipe and larger than said openings, and having openings in their outer ends that are of substantially the same size as the openings in the wall of the pipe, and a single outer cylindrical case or shield surrounding said pipe and all of said hoods and open at its top and bottom for the admission of air, substantially as described.

387,683. JAR-FASTENER. THOMAS R. HOWE, Scranton, Pa., assignor of two-thirds to M. A. Goodwin and G. A. Clearwater, both of same place. Filed June 16, 1888. Serial No. 277,186. (No model.)

387,688.



Claim.—1. The combination, with the cover having the inclined surface and vent-hole, of the bail pivoted to the side of the jar and having the rubber roller thereon for closing the vent when in locked position, substantially as described.

2. The combination, with the cover having the inclined surface and the vent-hole, of the bail pivoted to the side of the jar, having its central portion bent up, forming shoulders, and the rubber roller on the bail between the shoulders, adapted to cover the vent when in locked position, substantially as described.

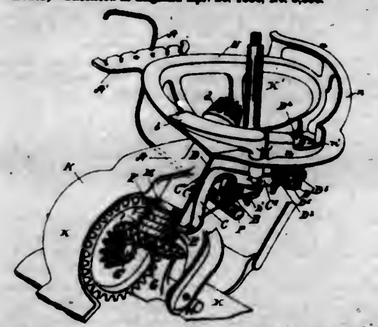
3. The combination, with the bail pivoted to the side of the jar and the cover having the inclined surface up which the bail rides to lock the cover, of the wire bridging the bail to secure the cover thereto fastened to the cover at the edge, but free at the center, substantially as described.

4. The combination, with the bail pivoted to the side of the jar and the cover having the inclined surface, up which the bail rides to lock the cover, of the wire bridging the bail to secure the cover thereto, fastened at the ends to the side of the cover at separate points, but free at the center, said central part being bent slightly inward to prevent the ready escape of the bail, as set forth.

5. The combination, with the cover having the inclined surface up which the bail rides to lock the same, of the bail formed into relatively large coils at the ends, surrounding and taking their bearings on trunnions at the side of the jar, substantially as described.

6. The combination, with the cover, of the bail for locking the same formed into the relatively large coils at the ends and trunnions at the sides of the jar, on which the said coils take the bearings, substantially as described.

387,684. REAPING-MACHINE. GEORGE H. HOWE, Rocket Falls, N. Y., assignor to the Walter A. Wood Mowing and Reaping Machine Company, same place. Filed Dec. 5, 1887. Serial No. 257,081. (No model.) Patented in England Apr. 20, 1886, No. 5,893.



Claim.—1. In a rake-controlling mechanism for sweep-rake reapers, the combination, with a cone formed with a spiral on its surface, of the sliding lever resting upon the spiral and raised by the revolution thereof, and a switch and a wing attached thereto, against which the lever is raised to operate the switch, substantially as and for the purpose described.

2. The combination, with the cone formed with a spiral on its surface, of a sliding and swinging lever resting upon the spiral and adapted to be raised by the revolution thereof, the spring-switch provided with a projecting wing against which the upper end of the lever bears, and a cam formed on the apex of the cone to swing the sliding lever after it has been raised by the spiral thereon against the projecting wing of the switch to close the switch, substantially as and for the purpose specified.

3. The combination, with the cone formed with a spiral on its surface, of the sliding and swinging lever resting upon the spiral, a cam at the apex of the spiral onto which the lever is raised by the revolution of the cone, the switch and its wing against which the lever is swung to open the switch, and an adjustable stop to regulate the distance to which the lever drops after leaving the cam, substantially as and for the purpose specified.

4. The combination, with the rakes, their cam-track and its switch, of a spring adapted to keep the switch open to compel the rakes to

act as beaters, a projecting wing attached to the switch, the conical spiral, the lever resting upon the spiral, the cam at the apex of the spiral, upon which the lever is raised by the revolution of the spiral, and by which the lever is swung against the projecting wing of the switch to close the same against the action of the spring, tending to keep it open, substantially as and for the purpose specified.

5. The combination, with the cone formed with a spiral on its face, of the lever resting on the spiral, the cam at the apex of the spiral, the switch and its wing against which the lever is swung by the cam to operate the switch, the forked plate upon which the lever falls after leaving the cam, and leverage-connections within reach of the driver's foot attached to the forked plate, whereby the driver at will may move the lever resting on the spiral free and clear therefrom.

6. The combination, with the cone formed with a spiral on its face, of a lever resting on the spiral, a cam at the apex of the cone, the index-plate, a lever taking into the index-plate, a forked stop-plate loosely mounted on the index-lever, and the abutting projections on the forked stop-plate and the index-lever, substantially as and for the purpose specified.

7. The combination, with the cone formed with a spiral on its face, of a lever resting upon the spiral, a cam at the apex of the cone, a switch, and a wing attached thereto, against which the lever raised by the spiral onto the cam is swung to operate the switch, the index-lever, the forked stop-plate loosely mounted on the index-lever, abutting projections on the forked stop-plate and index-lever, leverage-connections with the forked plate within reach of the driver, and a spring attached to such leverage-connections within reach of the driver acting to force the forked stop-plate backwardly against the projection on the index-lever, substantially as and for the purpose described.

387,685. VEHICLE-WHEEL. HENRY G. LANE, Bucyrus, Ohio. Filed Mar. 10, 1888. Serial No. 266,810. (No model.)



Claim.—The herein shown and described metal wheel, composed of the tubular hub having a pair of annular flanges at or near each end thereof, the spokes held between the annular flanges, the rim consisting of the two oppositely-flared rings embracing the outer ends of the spokes, the band bearing against the ends of the spokes and uniting the outer edges of the rings, and the tire, substantially as specified.

387,686. RESERVOIR PEN-HOLDER. ISAAS LEUTHER, Halle-on-the-Saale, Prussia, Germany. Filed May 10, 1886. Serial No. 201,712. (No model.) Patented in England Mar. 29, 1886, No. 4,363.



Claim.—1. In a reservoir pen-holder, the combination, with a cylinder or casing having an ink-reservoir therein, of a stopper closing the front end of said tube and having a longitudinal ink-conveying passage communicating with the ink-reservoir and an outwardly-extending tubular portion, and a pen-clamp adapted to fit within said tubular extension of said stopper, and having a longitudinal ink-conveying passage, and at its outer end a transverse ink-conveying passage, and a spring-tongue adapted to hold said pen-clamp in position within said stopper, substantially as set forth.

2. A reservoir pen-holder comprising an open-ended cylinder or casing, a stopper closing the rear end thereof and having a threaded longitudinal bore therein, a screw extending through said bore and having a recessed and collared inner end and at its outer end an operating-knob, a longitudinally-bored stopper closing the front end of said casing and having an annularly-recessed inner end and an outwardly extending outer end, an elastic reservoir connected at its respective ends with the inner ends of said screw and front stopper, a reservoir-compressing pin having a flanged inner end and extending transversely through an opening in the side of the casing, and a pen-clamp seated within the outwardly-extending tubular portion of the front closing-stopper and having a spring securing-tongue and longitudinal and angular ink-conveying channels, substantially as set forth.

3. The combination of the cylinder or casing *d* and flexible reservoir *f* with the knob *a*, screw *b*, nut *c*, stopper *h*, clamp *g*, and the pressure-pin D, substantially as and for the purpose described in the specification, and shown in the accompanying drawings.

387,687. HOISTING-MACHINE. NAPOLEON B. B. LOUD and PERRY A. ATCHLEY, Prairie City, Ind. Ter. Filed Apr. 30, 1888. Serial No. 271,277. (No model.)



Claim.—1. In a hoisting-machine, the combination of the shaft journaled in the standards rising from opposite ends of the base-block, a ratchet-wheel fixed thereon, and the lever I, provided with the arms *i i*, the longitudinal slots *i' i'*, through which the said shaft passes, and the shoulder i^2 at the junction of the arms and facing the teeth of the ratchet-wheel, substantially as specified.

2. In a hoisting-machine, the combination of the shaft D, journaled in the arms rising from opposite ends of the base-block, the ratchet-wheel E on one end thereof, the spring-controlled pawl engaging said wheel, the ratchet-wheel H on the opposite end of the shaft D and turning in the same direction as the wheel E, and the lever-handle I, provided with the arms *i i*, slots *i' i'*, arm i^3, and shoulder i^2, to engage the teeth of the ratchet-wheel H, substantially as specified.

3. In a hoisting-machine, the combination of the block A, pivoted on the block B by the bolt *a* and nut *d*, the standards C C, rising from said block A, the shaft D, the ratchet-wheels E and H, the spring-controlled pawl F, engaging the wheel E, the rope J, attached to the shaft D and having the hook *j* on its free end, and the lever-handle I, having the arms *i*, the slots *i'*, the arms i^3, and shoulder i^2, substantially as specified.

4. In a hoisting-machine, the combination, with the base-blocks, the standards, the shaft D, the ratchet-wheel E, and spring-controlled pawl F, of the ratchet-wheel H, the lever I, provided with the arms *i* and slots *i'*, and the removable key or spline i^4, holding the ratchet-wheel H in place on the shaft D, and extending on each side of the said wheel into the slots *i'*, substantially as and for the purpose specified.

387,688. EXTRACTION OF ZINC FROM ORES. ALBERT H. LOW, Denver, Colo. Filed Aug. 20, 1887. Serial No. 248,169. (No specimens.)

Claim.—1. The herein-described process of extracting zinc from ores containing precious metals, consisting in leaching the ore at a low temperature with an aqueous solution of sulphurous-acid gas, substantially as described.

2. The herein-described process of extracting zinc from ores containing precious metals, consisting in leaching the ore with an aqueous solution of sulphurous-acid gas to dissolve out the zinc, and then boiling the leached liquor to expel the sulphurous-acid gas and cause a precipitation of the zinc, substantially as described.

387,689. DRAFT-REGULATING DEVICE FOR PLOWS AND CULTIVATORS. ABEL LUSH, Spring Hill, Pa. Filed Nov. 22, 1887. Serial No. 256,913. (No model.)

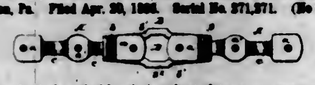


Claim.—1. In a draft-regulating device, the guide-piece B, draft-piece D, vertically adjustable in said guide-piece B, and adjusting-lever L, in combination with devices for securing said lever L at any point, the bars *c*, connected to and moving with the draft-piece D, and wheel R, substantially as described.

2. In a draft-regulating device, the guide-piece B, draft-piece D, one of said pieces having a T-slot and the other flanges to fit said slot, whereby vertical adjustment may be obtained, adjusting-lever L, devices for securing said lever at any point, in combination with the bars *c*, connected to and moving with the draft-piece D, and wheel R, substantially as described.

3. In a draft-regulating device, the guide-piece B, draft-piece D, one of said pieces having a T-slot and the other flanges to fit said slot, whereby vertical adjustment may be obtained, in combination with the adjusting-lever L, rack-bar P, look-bolt *l*, spring for returning the same, trigger *t*, and connecting-rod *w*, bars *c*, secured to and moving with the draft-piece D, and wheel R, carried by said bars, substantially as described.

387,690. DETACHABLE CHAIN. JAMES F. MCCREARY, New Brighton, Pa. Filed Apr. 20, 1888. Serial No. 271,371. (No model.)



Claim.—1. A detachable chain adapted to carry cross-slats, the links of which chain are coupled by means of flattened ends *a*, passed through openings D formed in the adjacent links, the portions of the links adjacent to each flattened end *a* being depressed, as at *c*, in which depressed portions lie the said end bars, wherein they are held by the cross-slats, substantially as described.

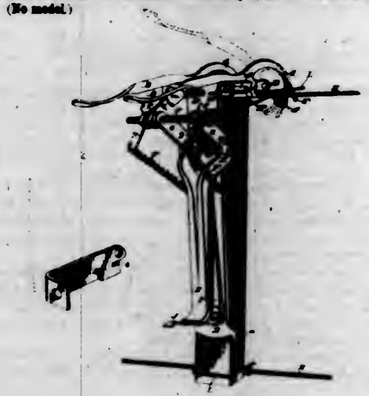
2. A detachable chain adapted to carry cross-slats, the links of which chain are coupled to each other by means of flattened ends passed through openings D formed in the adjacent links, which openings are bounded by the side bars, *b'*, and the end bars, *b*, the flattened ends being expanded to a width greater than the distance between the side bars, *b'*, at points adjacent to the end bars, upon which side bars the flattened ends *a* rest when the links are coupled, the links having depressed portions *c* adjacent to the ends *a*, in which depressed portions the end bars rest, and wherein they are held by the cross-slats, substantially as described.

3. A detachable chain formed of bar-links having flattened ends adapted to have cross-slats secured thereto, the bars being depressed between the ends to form open spaces below the slats, and of centrally-open links having end bars, *b*, adapted to lie in the open spaces adjacent to the ends of the bar-links, substantially as described.

4. A detachable chain formed of bar-links having flattened expanded ends *a*, adapted to have cross-slats secured thereto, and centrally-open links having end bars, *b*, and side bars, *b'*, situated at a distance apart less than the width of the expanded ends of the bar-links at points adjacent to the end bars, but bowed outward centrally at b^3 to permit the passage of the expanded ends *a* between them, substantially as described.

5. A detachable chain formed of bar-links having flattened end bearing-faces, *a*, and intermediate bearing-faces, *a'*, such bearing-faces being connected by depressed portions *c* of the links, and centrally-open links having the end bars, *b*, and the side bars centrally bowed outward, substantially as described.

387,691. WIRE-FENCE STAY-BINDER. ELI P. NEWBAKER and JOHN SHIVLAR, Beloit, Kans. Filed May 3, 1888. Serial No. 272,570. (No model.)



Claim.—1. The combination, with the plate having the standards B, of the levers D, pivoted to the standards and provided with the wire-coiling arms *d*, substantially as and for the purpose described.

2. The combination, with the plate having the standards B, which are provided with the wire-receiving notches *b*, of the levers D, pivoted to the standards and provided with the wire-coiling arms *d*, substantially as and for the purpose described.

3. The combination, with the plate, the standards B, and means for adjustably connecting the standards with the plate, of the levers D, pivoted to the standards and provided with the wire-coiling arms *d*, substantially as described.

4. The combination, with the plate having the standards B, of the levers pivoted to the standards and having the wire-coiling arms *d*, the ends of the arms being bifurcated to form the prongs *d'* and d^2, the prongs *d'* being the longer, substantially as set forth.

5. The combination, with the plate and the levers D, having the wire-coiling arms *d*, of the lever E and the hooks G, substantially as set forth.

6. The combination, with the plate and the levers D, having the wire-coiling arms, of the lever E, the cross-bar F, and the adjustable hooks G, substantially as and for the purpose described.

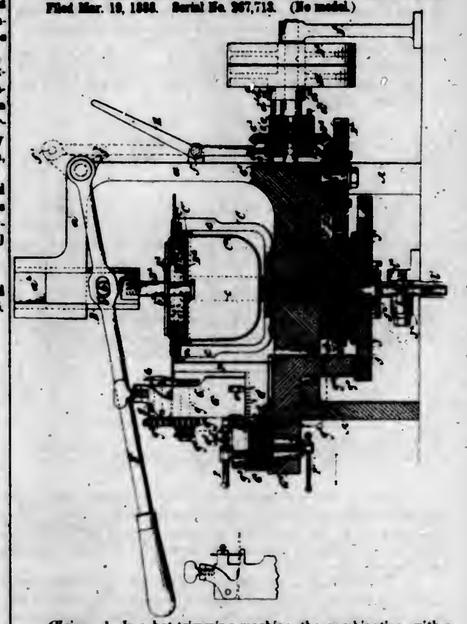
7. The combination, with the plate and the levers having wire-coiling arms, of the lever, the hooks G, connected with the front end of the lever, and the catch J, substantially as described.

8. The combination, with the plate and the levers having wire-coiling arms, of the lever E, the hooks having rear extensions, *g*, and the springs interposed between the extensions *g* and the plate, substantially as described.

9. The combination, with the plates A, the levers having the wire-coiling arms and the levers E, provided with the hooks G, of the plate M and means for adjustably connecting the end plate M with the plate A, substantially as and for the purpose described.

10. The herein shown and described wire-fence stay-binder, composed of the plate A, having the legs *a* and the cross-bar A', the standards having wire-receiving notches *b*, adjustably connected with the cross-bar A', the levers D, having the wire-coiling arms *d*, the adjustable plate M, the lever E, the cross-bar F, threaded at its ends, the nuts *f* and *f'*, the hooks G, having extensions *g*, the springs *g'*, the spring I, and the catch J, substantially as specified.

387,692. HAT-TRIMMING MACHINE. SAMUEL T. NEWMAN, Danbury, Conn., assignor of one-fourth to Charles H. Merritt, same place. Filed Mar. 19, 1888. Serial No. 267,713. (No model.)



Claim.—1. In a hat-trimming machine, the combination, with a rotary frame adapted to receive a hat-body, of an expansible and contractible cushion for securing the hat-body in the frame, and a longitudinally-movable device upon which said cushion is mounted adapted to compress the cushion, substantially as specified.

2. In a hat-trimming machine, the combination, with a rotary frame adapted to receive a hat-body, of an expansible and contractible cushion for securing the hat-body in the frame, a longitudinally-movable device upon which the said cushion is mounted for compressing the cushion, and a spider or like device for securing the brim of the hat and forced downwardly by said cushion, substantially as specified.

3. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of a knife for trimming the brim of the hat, a sliding piece in which said knife is mounted, an expansible and contractible pattern-cam for causing a reciprocating motion to be imparted to said knife, and a connection between said pattern-cam and said sliding piece, substantially as specified.

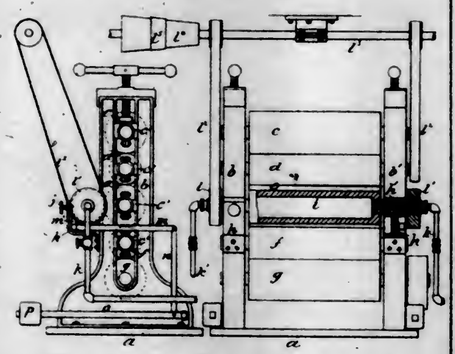
4. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of a knife for trimming the brim of the hat, a sliding piece in which said knife is mounted, a pattern-cam comprising two sections for causing a reciprocating motion to be imparted to said knife, a pattern-changing device extending between the two sections of the cam for causing an expansion of the cam, a spring or springs for causing a contraction of the cam, and a connection between the cam and said sliding piece, substantially as specified.

5. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of knives for trimming the brim of the hat, a pattern-cam comprising two sections for causing a reciprocating motion to be imparted to the knives, and an adjustable pattern device comprising a number of projections or spokes of different sizes, each of which is adapted to be inserted between the portions of the cam to cause an expansion of the cam and by which the degree of such expansion may be varied, substantially as specified.

6. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of knives for trimming the brim of the hat, a wheel imparting motion to said frame, a pattern-cam supported by and having a sliding connection with said wheel, and a sliding piece operated by the pattern-cam to cause a reciprocating motion to be imparted to the knives, substantially as specified.

7. In a hat-trimming machine, the combination, with a frame comprising a ring for supporting a hat-body, said ring being provided with a projection, of securing devices for retaining the hat-body in position in the frame, a sliding piece having a portion adapted to be moved into contact with the projection on the ring, a second sliding piece mounted upon the sliding piece first named and bearing knives, a gage on one of said sliding pieces and a pointer on the other, a third sliding piece supporting both the sliding pieces previously named, means for securing all said sliding pieces together, and a pattern-cam for causing the reciprocation of all the sliding pieces, substantially as specified.

387,693. PAPER-FINISHING ROLL. JAMES D. PINKLEY, Manchester, Conn., assignor of two-thirds to Peter Adams, Paterson, N. J., and James Symington, Lancaster, Pa. Filed Dec. 14, 1887. Serial No. 257,864. (No model.)



Claim.—1. The combination, with a stack of calender-rolls, of an adjustable polishing-roll supported in bearings with its surface in rubbing contact with paper borne on one of the intermediate rolls of the stack, the polishing-roll bearings, and means for yieldingly pressing said bearings, all substantially as described.

2. The combination, with the intermediate roll, *e*, of a stack of calender-rolls, the roll-supporting brackets *h*, secured to the frame of the stack, the polishing-roll *i*, supported on the brackets, the set-screws borne in the brackets and by means of which the outward movement of the roll is limited, and the system of levers and weight, by means of which the roll is held inward with a yielding pressure, all substantially as described.

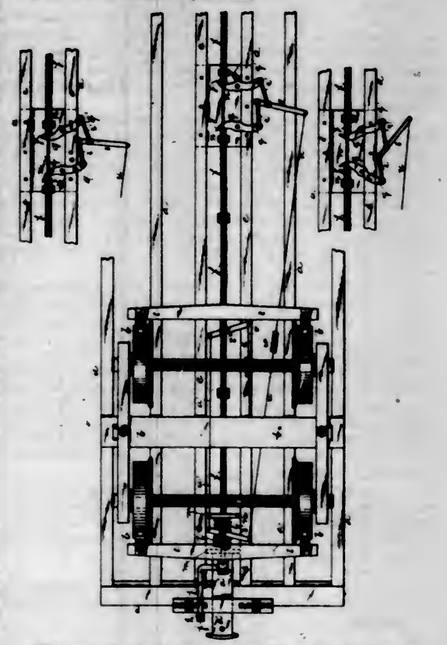
387,694. TOBACCO-BOX. JOHN G. PIERSON, New York, N. Y., assignor of one-half to David L. Prendit, same place. Filed Aug. 29, 1887. Serial No. 247,693. (No model.)



Claim.—1. The combination, with a case or shell provided upon its exterior with a flap, of a receptacle for matches outside said case or shell, adapted to be covered by said flap, and a receptacle for tobacco contained within the case or shell, but wholly independent thereof, substantially as specified.

2. The combination, with a case or shell comprising a flap, the whole being made in one integral piece, of a receptacle for matches upon the outside of the case or shell and adapted to be covered by said flap, and a receptacle for tobacco contained within the case or shell, but wholly independent thereof, substantially as specified.

387,695. CAR-BRAKE. ABRAM REESE, Pittsburg, Pa., assignor to the Reese Safety Brake Co., (Limited,) same place. Filed Dec. 5, 1887. Serial No. 257,054. (No model.)



Claim.—1. In a car-brake apparatus, the combination of a draw-head, a draw-bar, a movable recessed filling block or plate extending into the draw-head in front of the draw-bar, and suitable connections between said draw-bar and the brakes, substantially as and for the purpose set forth.

2. In a car-brake apparatus, the combination of a draw-head, a draw-bar, a movable recessed filling-block extending into the draw-head in front of said draw-bar, and lever mechanism for moving said filling-block, substantially as and for the purpose set forth.

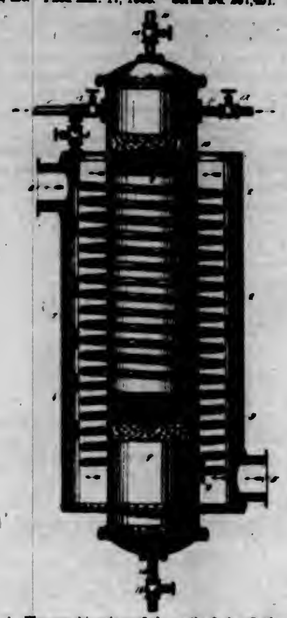
3. In a car-brake apparatus, the combination of the draw-heads and the draw-bars moving with the same with a lever pivoted in the rear of each draw-bar and having one end in the line of movement of the same and connected at their other end to a single brake-operating lever, substantially as and for the purpose set forth.

4. In a car-brake apparatus, the combination of the draw-heads and the draw-bars capable of movement with the same with a lever pivoted with one end in the line of movement of each draw-bar and connected by links at their other end to a brake-operating lever, substantially as and for the purpose set forth.

5. In a car-brake apparatus, the combination of the draw-heads *d*, draw-bars *f*, moving with the same, levers *q q'*, pivoted in the rear

of said draw-bars, and a brake-operating lever, *s*, connected by links *r r'* to said levers *q q'*, substantially as and for the purpose set forth.

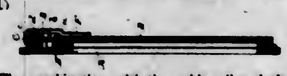
387,696. FEED-WATER HEATER AND FILTER. PHILIP ROMAN, St. Louis, Mo. Filed Mar. 17, 1888. Serial No. 267,461. (No model.)



Claim.—1. The combination of the coil of pipe 2, the cold-water feed-connection 1, the drum 4, having ports 5 6, for the purpose described, a second drum, 7, within the first-mentioned drum, connected with the coil 2 at the point 8, a filtering-chamber within said second drum, a settling-chamber beneath said filtering-chamber, having a blow-off and cock controlling said blow-off, a hot-water connection, 11, controlled by a cock, an upper chamber within said second drum, a surface blow-off, 15, connected to the same and controlled by a cock, an extension of the cold-water connection 1, piercing said upper chamber and controlled by a cock, 17, and a cock, 3, controlling the circulation within the coil, substantially as and for the purpose described.

2. The combination of a coil of pipe, a cold-water feed-connection, a drum surrounding the same, having ports permitting a circulation of exhaust-steam therein, a second drum within the first-mentioned drum, connected with said coil at its lower end, a hot-water or steam boiler connection controlled by a cock for said second drum, and a surface blow-off controlled by a cock connected with the upper part of said second drum.

387,697. DEVICE FOR HANGING DOORS. WILLIAM A. SCHUSSMANN, Calumet Harbor, Wis. Filed Apr. 9, 1888. Serial No. 270,134. (No model.)

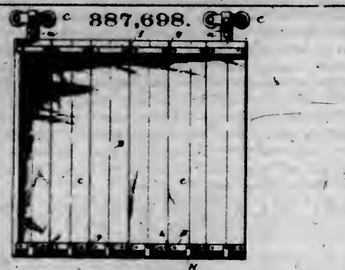


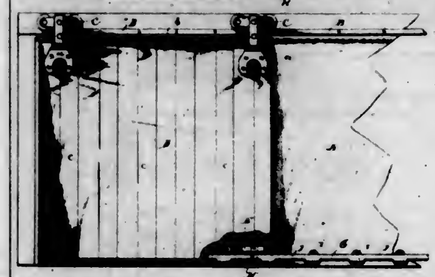
Claim.—The combination, with the guide-rail and the door, of the cap secured above the door-opening, the hangers secured to the door and carrying the rollers, and the pins *b*, projecting rearwardly from said hangers and working between said cap and guide-rail, substantially as and for the purpose specified.

387,698. DOOR. WILLIAM A. SCHUSSMANN, Calumet Harbor, Wis. Filed Apr. 9, 1888. Serial No. 270,135. (No model.)

Claim.—The combination, with the door-sections formed at their







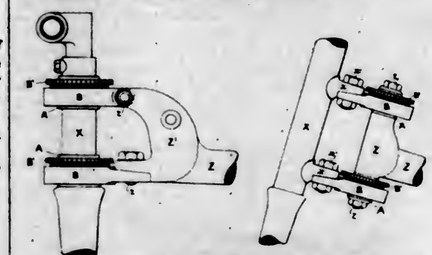
adjacent edges with sockets *d*, of the straps E, formed with lugs *e*, fitting in said sockets, and with tongues and grooves pivotally connected together by vertical pivots, substantially as shown and described.

387,699. ATTACHMENT FOR PLOWS. JAMES R. THOMSON, Mount Pleasant, Tex. Filed May 26, 1888. Serial No. 275,178. (No model.)



Claim.—The combination, with the rear of the landside of a turning-plow, of an attachment for dirting the plants, consisting of a shank having a rearwardly and upwardly extending blade diagonally attached thereto, having a sharp curved lower edge and a curved upper edge, said edges forming a point on the outer end of the blade, said blade having a concaved upper face, substantially as described.

387,700. VELOCIPEDE. HARRY THRESHER, London, County of Middlesex, England, assignor to Albert H. Overman, Boston, Mass. Filed May 17, 1887. Serial No. 238,457. (No model.)



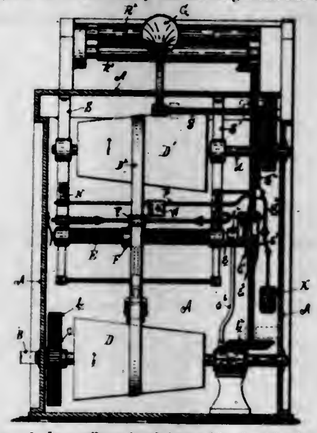
Claim.—1. In a cycle, the combination, with the frame thereof, of two horizontal ball-bearing casings attached one above the other to the forward end of the frame which is adapted thereto, an adjustable cap for each of the said casings, and a spindle connected with the

steering-wheel and passing through such casings and caps which confine anti-friction balls, substantially as set forth

2. In a cycle, the combination, with the frame thereof provided at its forward end with two arms, of two horizontal ball-bearing casings respectively attached to the said arms, which are located one above the other, an adjustable cap for each casing, a spindle or pillar connected with the steering-wheel and passing through the said casings and caps, two grooved sleeves secured to the spindle, so as to combine, respectively, with the upper casing and cap and the lower casing and cap, and balls located in the raceway formed by the casings, caps, and sleeves, substantially as set forth.

387,701. EVENER FOR RAILWAY-HEADS. Clarence A. Upton, Lowell, Mass. Filed Nov. 5, 1886. Serial No. 218,058. (No model.)

Brief.—The object of the invention is to produce improved devices for preventing excessive action of the evening mechanism, thereby making the sliver of more nearly uniform weight and size than heretofore.

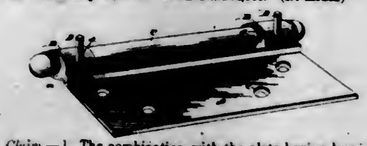


Claim.—1. In a railway-head, in combination, the drawing-rolls the opposing conical drums D D′, belt D^2, and gearing intermediate the drums and drawing-rolls to transmit power to said rolls, the cornet G, having a weighted rod, g^2, bearing a weight, K, and the connecting mechanism, substantially as described, whereby the belt is shifted upon said drums, the pivoted weight-bearing arm P, connected to the belt-shifting mechanism, and supplementary weight W, and means, substantially as described, for moving said weight along said arm as the belt is shifted upon said drums, substantially as set forth.

2. In a railway-head, in combination, the drawing-rolls to attenuate the sliver, the opposing conical drums D D′ and belt D^2 and intermediate gearing to transmit power to the said rolls, the cornet G, having a weighted rod bearing a fixed weight, K, and connecting mechanism, substantially as shown and described, whereby the said belt is shifted upon said drums and the speed of the said rolls thereby regulated, a weight-bearing arm pivoted at one end to the frame of the machine and connected through a portion of the said connecting mechanism to the said cornet in the manner described, a supplementary weight adapted to slide upon said arm, and means, substantially as described, for automatically moving said weight upon said arm as the speed of the drawing-rolls is altered, substantially as set forth.

3. In a railway-head, in combination, drawing-rolls to attenuate the sliver, the conical drums D D′, belt D^2, gearing intermediate the drums and the drawing-rolls, the cornet G, its arm g', and weighted rod g^2, the weight-bearing arm P, pivoted to the frame of the machine, connections between said rod g^2 and arm P, and the weight W and shipper F, and connections between said weight and shipper, whereby the weight upon the arm g^2 is increased or diminished as the said belt is shifted upon the said drums, substantially as and for the purposes set forth.

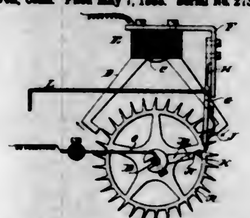
387,702. WAGON-FENDER. Charles R. Wagner, Holmesburg, Pa. Filed May 16, 1888. Serial No. 274,063. (No model.)



Claim.—1. The combination, with the plate having bearing-lugs, and having transverse openings through the lugs, of the roller journaled in the lugs and having annular grooves opposite the said openings, and the pins passing through the openings in the lugs and fitting in the grooves in the roller, substantially as described, for the purpose specified.

2. The herein-described fender, composed of the plate having bolt-openings, and having one edge provided with a flange, and with bearing-lugs at each end, the lugs having transverse openings, the roller of uniform diameter from end to end journaled in the lugs, and having annular grooves opposite the said openings, and the pins passing through the said openings and fitting in the grooves, substantially as and for the purpose set forth.

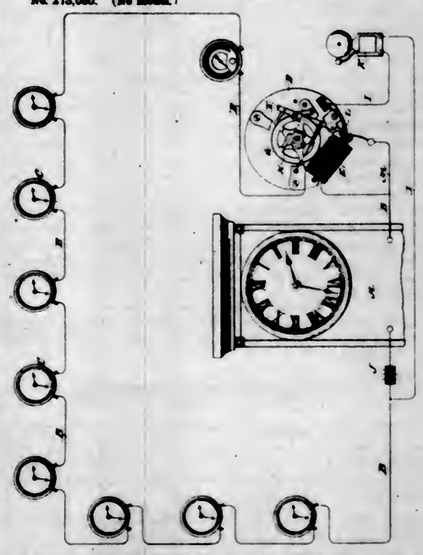
387,703. CIRCUIT-CLOSER FOR ELECTRIC CLOCKS. Charles D. Warner, Assignor to the Standard Electric Time Company, New Haven, Conn. Filed May 7, 1888. Serial No. 273,084. (No model.)



Claim.—1. In an electric clock, the combination, with the escapewheel and its anchor, the insulated arm F, mounted upon the anchor-arbor and carrying the contact-spring I, provided with the head J, and the contact M, mounted upon the escape-wheel arbor, substantially as described.

2. In combination with the escapement and escape-wheel, the arm F, the spring-arm G, carrying the contact-spring J K, the adjusting-screw L, and the contact N, all substantially as described.

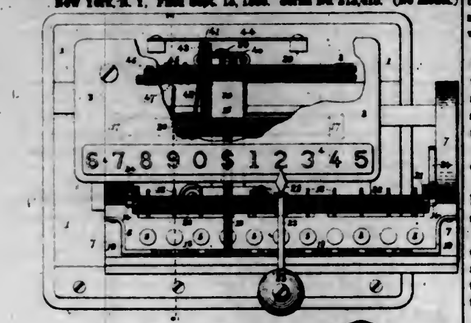
387,704. ELECTRIC-CLOCK SYSTEM. Charles D. Warner, Ansonia, and Arthur D. Bennett, New Haven, assignors to the Standard Electric Time Company, New Haven, Conn. Filed May 7, 1888. Serial No. 273,085. (No model.)

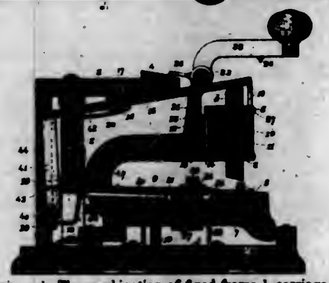


Claim.—1. In an electric-clock system, the combination of a secondary-clock circuit, a regulator for operating the same, and an alarm-circuit connected with said secondary circuit and rendered inoperative by the working thereof, whereby the alarm is prevented from sounding during the normal action of the secondary-clock circuit and sounded when their action becomes abnormal or ceases.

2. In an electric-clock system, the combination, with the regulator A, and the secondary-clock circuit B, the local clock D, and the alarm-circuit I K, connected with the working-circuit and the local clock, substantially as described, and for the purpose described.

387,705. CHECK-PUNCHING MACHINE. J. Newton Williams, New York, N. Y. Filed Sept. 13, 1886. Serial No. 213,415. (No model.)



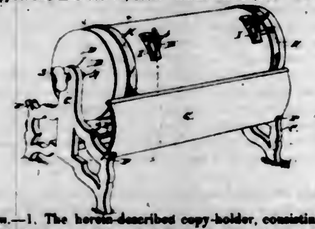


Claim.—1. The combination of fixed frame 1, carriage 7, guided thereon, spring-retracted punches 5 and corresponding dies, 6, in line on said carriage, shaft 38, carrying ratchet-wheel 40 and feed-roller 37, rock-shaft 16, mounted on the stationary frame, spring-retracted lever 15 on said shaft, carrying on one end feed-pawl 41 and projecting at the other over the punches, horizontal bar 22, having arms 21 pivoted on the carriage, and hand-lever 23 on said horizontal bar, substantially as set forth.

2. The combination of a stationary frame, a carriage mounted so as to slide thereon, a series of vertically-moving punches mounted in said carriage, a lever pivoted on the stationary frame and projecting over said punches, a spring for maintaining said lever in elevated position, a horizontal bar over said lever parallel with the series of punches and having arms at each end pivoted to the carriage, a finger-piece for operating said bar, and stops on the said carriage for limiting the motion of said arms and bar, substantially as set forth.

3. The combination of a stationary frame, a table supported thereon, a feed-roller mounted below and projecting through said table peripherally, a check-holding plate mounted above said table, a guide-roller, a spring whereon said guide-roller has bearings, and a pivot-screw for said spring fixed to said holding-plate in line with the feed, substantially as set forth.

387,706. COPY-HOLDER. Edward A. Bennett, Weston, W. Va. Original application filed Aug. 26, 1887, Serial No. 247,986. Divided and this application filed Oct. 19, 1887. Serial No. 252,849. (No model.)



Claim.—1. The herein-described copy-holder, consisting of a revolving cylinder mounted in suitable standards, and an independent guide-plate adapted to be mounted on either side of said cylinder, substantially as described.

2. In combination with the standard C, carrying the cylinder A and having the slots F, the guide-plate G, adapted to be mounted on opposite sides of the cylinder by having its lower ends received in the slots F, substantially as described.

3. In combination with the standards C, carrying the cylinder A and having the slots F and the brace E, the guide-plate G, adapted to be mounted on either side of the cylinder by being received in the slots F, and the arms *d*, having inner hooked ends adapted to engage with the brace E, substantially as described.

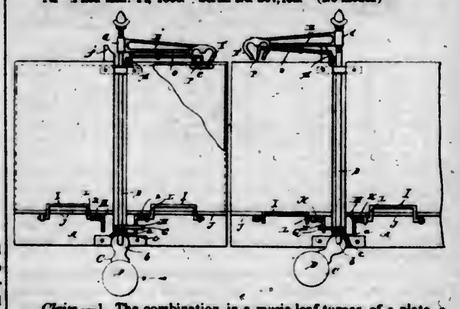
4. The combination of the standards C, having vertical top grooves, D, and a threaded aperture on one standard and a recess in the other, the cylinder A, the axle B, to which the cylinder is fixedly mounted, and having trunnions engaging with sockets in the standards, and the set-screw S, having a recess formed at its inner end to clamp the trunnions of the shaft, substantially as described.

5. In combination with the revolving cylinder A, the double clasps H, to hold the ends of the copy from either side, as set forth.

6. In combination with the revolving cylinder, the clasps H, to hold the ends of the copy to the cylinder, and the elastic bands *k*, as set forth.

7. In a copy-holder, the combination, with the standards C, the copy-cylinder A, having fixed trunnions journaled in the standards, and the friction-brake operated by hand to engage the trunnions, so that after the cylinder is turned it will cease its revolution as soon as the hand is taken therefrom, as set forth.

387,707. MUSIC-LEAF TURNER. Louis Bernhard, Bloomsburg, Pa. Filed Mar. 14, 1888. Serial No. 267,152. (No model.)



Claim.—1. The combination, in a music-leaf turner, of a plate, a shaft journaled thereon, a lever and gearing for turning said shaft in both directions, an arm rotating with and sliding upon said shaft, a lug on said plate to raise said arm, and engaging devices on said arm, and the music-leaves, substantially as described.

2. The combination, in a music-leaf turner, of a plate, a shaft journaled thereon, a weighted lever and gearing for turning said shaft, an arm rotating with and sliding upon said shaft, a lug on said plate for raising said arm, and engaging means on said arm and leaf, substantially as described.

3. The combination, in a music-leaf turner, of a shaft and operating means, an arm on said shaft rotating therewith and sliding thereon, a lug on said plate for raising said arm, a magnet on the arm, and an armature on the music-leaf, substantially as described.

4. The combination, in a music-leaf turner, of a shaft and operating means, a movable and sliding arm on said shaft, a lug on the plate, and armatures provided with spurs to adapt them for attachment to music-leaves, substantially as described.

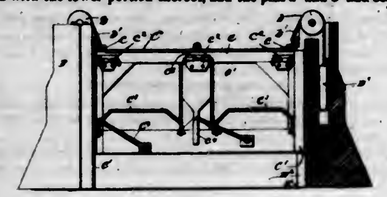
5. The combination of the rotating shaft and gearing therefor, the rock-shaft, and the arm on the rotating shaft to actuate the rock-shaft, as set forth.

6. The combination of the rotating shaft, the arm E, the plate M, and the rod O, pivoted on the arm E and actuated by the plate M, as set forth.

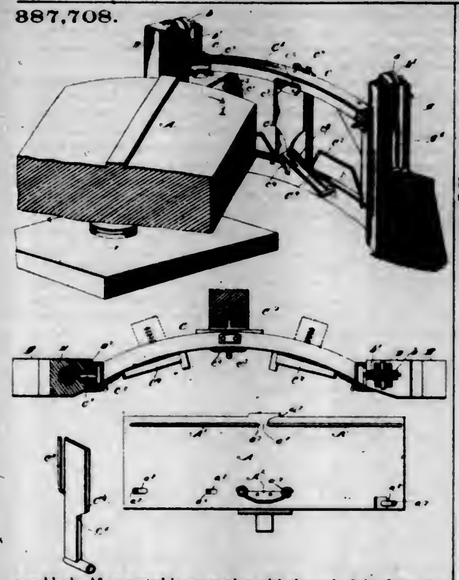
7. The combination of the plate A, the shaft B, the rock-shaft carving around the edge of the shelf, and the arm on the shaft B, to actuate the rock-shaft, as set forth.

387,708. DRAW-BRIDGE. William J. Benson, Fort Worth, Tex. Filed May 23, 1887. Serial No. 239,126. (No model.)

Claim.—1. The combination, with the gates adapted to ascend and descend in a vertical plane, of the levers O^4, mounted in connection with the lower portion thereof, and the pins a^3 and a^7 and central



387,708.



cam-block, A^3, mounted in connection with the end of the draw-platform, as herein set forth, whereby the said gate may be raised or lowered in whatever direction the draw-platform may be swung, substantially as described.

2. In combination with the gates having the levers C^4 in the lower portions thereof, the projecting wires or rods c^6 in the upper portions thereof, the projecting pins arranged at different elevations upon the end of the draw-platform, the central cam-block on the draw-platform, and the metallic strips A', having a space between their central ends, all arranged as and for the purposes herein set forth, substantially as described.

3. The combination, with the gates C, of the posts D, the guiding-connection between the said gate and posts, the levers C^4, mounted in the lower portion of said gates, the central projection c^5, and the pins and central cam-block arranged in connection with the ends of the draw-platform, substantially as described.

4. The combination, with the gate C, of the levers C^4, arranged in the lower portion thereof and steadied in their movements, as set forth, one of said levers being recessed, and the pins c^5 c^7 and the central cam-block, A^3, substantially as described.

5. The combination, with the lower central portion of the gate C, of the leverage-extension block D, and the levers C^4, and the draw having the contact-points to act on the levers, substantially as described.

6. The combination, with the upper portion of the gate, of the wire rods or pins c^6, and the strips A', secured to the end of the draw-platform, substantially as described.

7. In combination with the gates having the levers C^4, which are adapted to be reversed from side to side and to assume an inclined position, the contact-points on the draw to coact with the levers to reverse the same and bear thereupon, as set forth.

8. In combination with the gates having the levers C^4, which are adapted to be reversed from side to side and to assume an inclined position, the contact-points on the draw to coact with the levers, the strips A' on the draw, and the contact points or projections on the gates, against which projections the strips A' coact, as set forth.

9. The combination, with the gate posts or columns B B, of the gate having its ends guided in the posts or columns, and provided at its center with the vertical guide-iron C^3, having movement in the platform of the bridge, the rope or chain connected to the gate, the weight attached to the rope or chain and working in the posts or columns, and the draw acting on the gate to depress the same when the draw is closed, substantially as specified.

387,709. EYE-PROTECTOR. Alonzo P. Cole, Waltham, assignor to John W. Smith, Boston, Mass. Filed Dec. 24, 1887. Serial No. 258,576. (No model.)

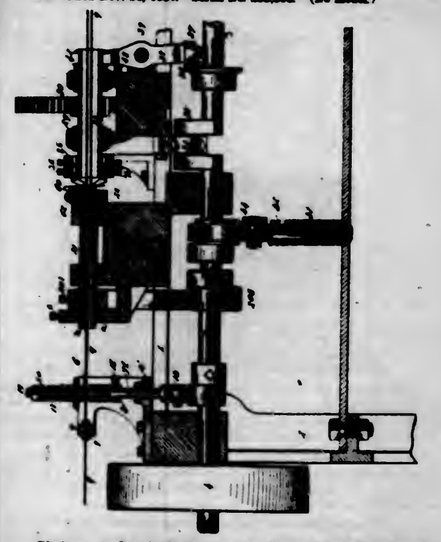
Claim.—The eye-protector *a*, having concave or cup-shaped portions *a' a'* on either side of its middle portion, a midway cut-away

387,709.



portion, *a''*, and a flexible gore-piece, *b*, secured to the edges of the said portion *a''*, substantially as and for the purpose set forth.

387,710. BARB-WIRE MACHINE. Louis J. Cressler, St. Louis, Mo. Filed Nov. 21, 1887. Serial No. 255,393. (No model.)



Claim.—1. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, mechanism for holding the wires on each side of the barb-forming mechanism, one of said holders consisting of a head, 5, having a projection, 6, movable head 10, a stem or rod on the movable head, a cam for operating the movable head, and springs 18, located above the projection 6, substantially as and for the purpose set forth.

2. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, mechanism for holding the wires on each side of the barb-forming mechanism, one of said holders consisting of pivoted levers 80, blocks or plates 82, secured to the upper ends of the levers, and means for opening and closing the upper ends of the levers, substantially as and for the purpose set forth.

3. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, mechanism for holding the wires on each side of the barb-forming mechanism, one of said holders consisting of pivoted levers 80, adjustable blocks 82 in the upper ends of said levers, and means for closing the upper ends of said levers, consisting of toggle-arms connected to the levers and cams for moving the arms, substantially as and for the purpose set forth.

4. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, holders on each side of the barb-forming mechanism, one of said holders consisting of pivoted levers 80, blocks secured to the upper ends of the levers, and means for closing the upper ends of the levers, consisting of toggle-arms and means for operating the arms, substantially as and for the purpose set forth.

5. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, mechanism on each side of the barb-former for holding the strand-wires, one of said holders consisting of pivoted levers 80, blocks on the upper ends of said levers, and means for closing the upper ends of the levers, consisting of toggle-arms, a sliding plate to which the toggle-arms are connected, a pin on the plate, and an eccentrically-grooved cam in which the pin fits, substantially as and for the purpose set forth.

6. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, mechanism for holding the

wires on each side of the barb-former, one of said holders consisting of pivoted levers 80, blocks 82 in the upper ends of the levers, springs 86, for opening the arms, toggle-arm 87, sliding plate 89, pin 88, and eccentrically-grooved cam 97, substantially as and for the purpose set forth.

7. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, a holding and feed device consisting of a sliding head, levers pivoted to and carried by the head, and means for opening and toggle-levers for closing the levers at the proper time, substantially as and for the purpose set forth.

8. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, mechanism for holding the strand-wires on one side of the barb-former and for feeding the strand-wires, said mechanism consisting of a sliding head, levers pivoted to the head, blocks in the upper ends of the levers, means for opening and closing the levers, and means for reciprocating the head, substantially as and for the purpose set forth.

9. In a barb-wire machine, in combination with mechanism for forming the barbs upon the strand-wires, mechanism for holding the strand-wires on one side of the formers, consisting of a sliding head, levers pivoted to the head, blocks in the upper ends of the levers, means for opening and closing the levers, consisting of a sliding head, an eccentrically-grooved cam, toggle-arms, a sliding plate, a pin on the plate entering the groove in the cam, and means for reciprocating the head, consisting of a pitman, disk, adjustable wrist-pin in the disk, shaft to which the disk is secured, and means for turning the shaft, substantially as and for the purpose set forth.

10. In a barb-wire machine, the combination of the mechanism for forming the barbs upon the strand-wires, hollow spindle 21, through which the strand-wires pass, means for feeding the barb-wire forward, and means for cutting off the barb-wire, consisting of a stationary knife, an arm secured to the said spindle and to which the movable knife is secured, a lever secured to the spindle, and a cam for operating the lever to turn the spindle and operate the movable knife, substantially as and for the purpose set forth.

11. In a barb-wire machine, in combination with mechanism for feeding the barb-wire forward, mechanism for forming the barbs upon the wire, consisting of a reciprocating longitudinally-movable spindle, fingers 24 on the spindle bent inwardly toward the path of the wire and provided with extensions 27, and means, substantially as described, for imparting to the spindle a longitudinal movement, as specified.

12. In a barb-wire machine, the combination of mechanism for forming the barbs upon the strand-wires, said mechanism consisting of fingers and a reciprocating longitudinally-movable spindle and cam 36, lever 38, and spring 43, whereby the spindle is moved backward and forward from its initial position, substantially as and for the purpose set forth.

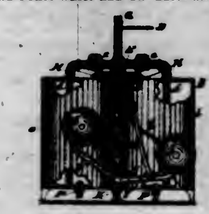
13. In a barb-wire machine, in combination with means for feeding the barb-wire forward, mechanism for forming the barbs upon the wire, and spring-holders for the barb-wire before it is wound around the strand-wires, substantially as set forth.

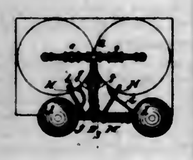
14. In a barb-wire machine, the combination of mechanism for feeding the barb-wire forward, mechanism for forming the barbs upon the strand-wires, and mechanism for holding the barb-wire after it is cut off and before it is formed upon the strand-wires, consisting of plates 60 61, free at their lower ends and formed as shown and described, substantially as and for the purpose set forth.

15. In a barb-wire machine, in combination with means for forming the barbs upon the strand-wires, mechanism for feeding the barb-wire forward, consisting of a pivoted bell-crank lever, a dog carried by the free end of the lever, and means for operating the lever, consisting of a yoke to which one end of the lever is secured, a cam fitting in the yoke, a stem on the yoke, a guide, 51, through which the stem passes, and spring 52, surrounding the stem, substantially as and for the purpose set forth.

387,711. PNEUMATIC WATER-ELEVATOR. James B. Erwin, Milwaukee, Wis. Filed Mar. 21, 1887. Serial No. 231,695. (No model.)

Claim.—1. In a pneumatic water-elevator, the combination, with two direct receiving water-chambers, each provided with direct inlet and outlet water and air ducts and passages and air and water con-





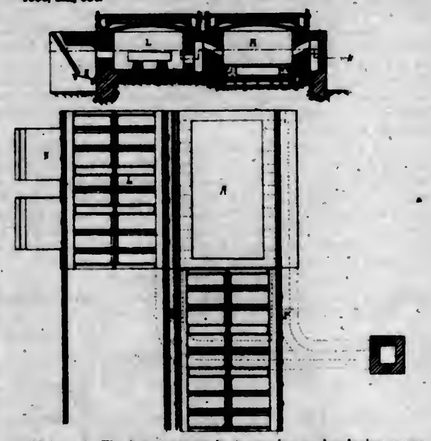
trolling valves, of two water-receiving valve-controlling floats respectively counterbalanced by each other upon a two-armed lever and connected with the respective water-chambers by flexible air and water tubes, through which tubes they are alternately filled with air and water from the respective chambers with which they are connected, whereby the gravity of the water in one float and the buoyancy of the air in the other float co-operate to move the valve mechanism, substantially as and for the purpose specified.

2. In a pneumatic water-elevator, the combination of two water-chambers, *a* and *b*, each alike provided with water and air inlet and outlet ducts, passages, and valves, two water-receiving floats, I I, counterbalanced by each other upon a two-armed lever, J, lever J, two flexible air or vent tubes, *h h*, and two flexible water-tubes, *g g*, said tubes *g g* and *h h* being adapted to permit the water to enter one of said water-receiving floats I as it is withdrawn from the other float I, substantially as and for the purpose specified.

3. In a pneumatic water-elevator, the combination of two water-chambers, *a* and *b*, of like construction, each provided with inward-opening check-valves F F, for the direct admission of the exterior surrounding water, two outlet branch water-pipes, *d d*, both communicating with the same single water-pipe G, single air-pipe D, communicating from the air-receiver through the two branch pipes H H, two valve-actuating water-receiving floats, I I, counterbalancing each other upon the respective ends of an oscillating lever, J, an air-controlling cock or valve, E, and connecting-link M, communicating motion from the oscillating floats I I to said air-controlling valve or cock, all substantially as and for the purpose specified.

4. In a pneumatic water-elevator, the combination of two direct-receiving water-chambers, *a* and *b*, each provided with inlet check-valves F F, inlet check-valves F F, through which the surrounding water enters into the respective chambers *a* and *b*, two outlet branch water-pipes, *d d*, and single water-pipe G, said branch pipes *d d* communicating between said chambers *a* and *b* and said single pipe G, outward-opening check-valves *c c*, located, respectively, in said branch water-pipes *d d*, single air-tube D, air-controlling cock E, and branch air-tubes H H, said single air-tube D, cock E, and branch tubes H H serving to control the admission of compressed air from the air-reservoir to and from the respective chambers *a* and *b*, centrally-pivoted two-armed lever J, water-receiving floats I I, supported, respectively, upon the respective arms of said lever J, flexible inlet-water tubes *g g* and air-tubes *h h*, communicating, respectively, between said floats I I and said water-chambers *a* and *b*, and connecting-bar M, communicating between said two-armed lever J and said air-controlling cock E, all substantially as and for the purpose specified.

387,712. HARDENING AND TEMPERING ARMOR-PLATES, &c. Alfred Evrard, Paris, France, assignor to the Compagnie Anonyme des Forges de Chatillon et Commentry. Filed Sept. 19, 1888. Serial No. 213,869. (No specimens.) Patented in France June 30, 1886, No. 177,113; in England Aug. 24, 1886, No. 10,888, and in Italy Sept. 10, 1886, XL, 393.



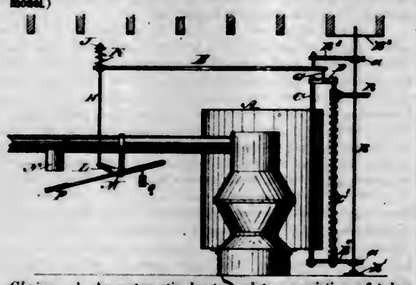
Claim.—1. The improvement in tempering or hardening armor-plates, cannon-tubes, and other large objects of that order, consisting in heating the object to or about a cherry-red or orange-yellow, forcing it while thus hot under a tempering-bath of molten metal having an initial temperature of about 400° centigrade, and being of a volume readily comparable with that of the object to be tempered, particularly a bath of molten lead of three or four times the weight

of said object, and keeping the said object submerged till it has attained the temperature of the molten-metal bath, so that the tempering or hardening is effected by a comparatively prolonged conduction from the surface of the armor-plate, cannon-tube, or other large object of that order to the molten metal in contact therewith, and also through the mass of the said object and of the molten metal, under a surface-pressure in excess of that attained by the old use of non-metallic liquids, substantially as described, the specified conditions of temperature and the like being variable more or less, according to the nature of the metal to be tempered, the degree of temper to be produced, and the special circumstances, as the skilled operator may determine, as hereinbefore set forth.

2. The new and improved apparatus for tempering or hardening armor-plates, cannon-tubes, and other large objects of that order in molten-metal baths, consisting of two furnaces, each provided with means for heating the contents, and one of them containing a molten-metal tempering-bath, and being also provided with means for forcing the large objects to be tempered under the molten metal of the bath and holding them there, and, in connection with said furnaces, of mechanical appliances—such as trucks and lifts—for transferring said large objects to the furnace containing the metal bath from the other of said furnaces, substantially as described.

387,713. HEAT-REGULATOR FOR STOVES OR FURNACES.

Lorenzo D. Farra, Philadelphia, Pa., assignor of one-half to Horace F. McCann, same place. Filed July 25, 1887. Serial No. 245,196. (No model.)



Claim.—1. An automatic heat-regulator, consisting of tubes, levers, a connecting-rod, and damper, substantially as described, in combination with a column having brackets vertically adjustable thereon and supporting said tubes and levers, substantially as described.

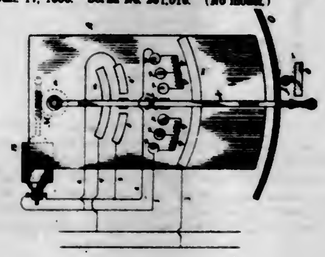
2. An automatic heat-regulator, consisting of tubes, levers, a connecting-rod, and damper, in combination with the column B, the brackets B^2 and B^4, vertically adjustable on said column, the bracket B^4, sustaining the tubes of said regulator, and the bracket B^3, sustaining the supporting-lever thereof, substantially as described.

3. An automatic heat-regulator, consisting of tubes, levers, a connecting-rod, and damper, in combination with the column B, having its foot in the step B' and loosely passing through opening in bracket B^3, the brackets B^2 and B^4 vertically adjustable on said column, the said bracket B^3 sustaining the supporting-lever, of said automatic heat-regulator, and the bracket B^4 supporting the tubes thereof, substantially as described.

4. A heat-regulator for a stove or furnace, consisting of two tubes secured to an arm or bracket, B^4, one of said tubes being within the casing of the stove or furnace, the lever D, connected with the upper ends of said tubes, the lever E, pivoted to an arm or bracket, B^3, above said casing, and having its shorter arm connected by a link to said lever D, the rod H, the nut J, and spring K, the pivoted lever L, the rock-shaft M, with damper P, the weight Q, and a pipe having inlet N, said parts being combined substantially as described.

387,714. ELECTRIC MOTOR. Bradley A. Fiske, U. S. Navy.

Filed Jan. 17, 1888. Serial No. 261,016. (No model.)



Claim.—1. The combination of a movable body, a rotary electric motor, gearing whereby the rotation of said motor moves said body, an arm movable independent of said body and adapted to be moved by hand, a circuit-controlling switch carried by said body and operated by said arm, and electrical connections between said switch and said motor, such that when said arm is moved said movable body is moved so long as the movement of the arm is continued, substantially as set forth.

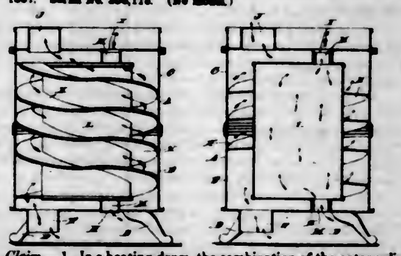
2. The combination of a movable body, a rotary electric motor, gearing whereby the rotation of said motor moves said body, an arm movable independent of said body and adapted to be moved by hand, contacts on said body and contacts controlled by said arm, and electrical connections to the motor, whereby variations in the relative position of said contacts due to movements of said arm relative to the movable body affect the motor so as to cause said movable body to follow the movements of said arm, substantially as set forth.

3. The combination of a movable body, an electric motor for moving the same, a switch carried by said movable body, an arm movable independent of said movable body for controlling said switch, connections to said motor, such that when said arm is moved in either direction the body is moved in the same direction, and means for returning said arm and the switch to their original position when said arm is released by the hand, substantially as set forth.

4. The combination of an electric motor, a body connected therewith so as to be moved thereby, an arm movable independently of said movable body, a switch for the motor-circuit controlled by said arm, having a central position at which the circuit is open, and closing the circuit in one direction or the other as said arm is moved in one or the other direction, whereby said body is caused to follow the movement of said arm, and means whereby said arm is returned to its central position when it is released by the hand, substantially as set forth.

5. The combination of a movable body, a rotary electric motor, gearing whereby the rotation of said motor moves said body, an arm movable independently of said movable body and adapted to be moved by hand, switch-contacts carried by said movable body, and switch-contacts controlled by said arm, and electrical connections from said switch to the motor, such that at the central position of the arm the motor-circuit is broken, and on its movement in either direction circuit is closed to the motor, so that it moves said body in the same direction, following the movements of the arm, and on a more rapid movement of the arm the speed of the motor is increased, substantially as set forth.

387,715. HEATING-DRUM. Isaac H. Fry, Tower City, Dak., assignor of one-half to Hiram J. Whittlesey, same place. Filed Dec. 16, 1887. Serial No. 258,113. (No model.)



Claim.—1. In a heating-drum, the combination of the outer cylinder composed of two sections detachably united, and the inner cylinder having an external spiral flange extending to the side of the outer cylinder, as set forth.

2. In a heating-drum, the combination of the outer cylinder, having inlet and discharge openings in its ends and composed of two sections having a screw-threaded connection, and the inner cylinder, having the pipes M at its ends and having an external spiral flange projecting to the side of the outer cylinder, as set forth.

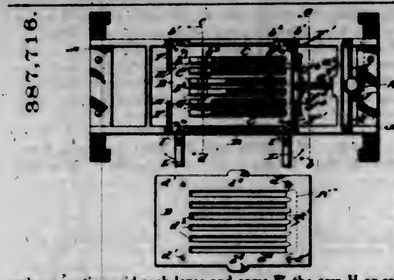
3. The improved heating-drum herein described and shown, comprising the outer cylinder, provided at its ends with the openings H I and the inlet and discharge pipes E J, and composed of two sections united by a screw-thread connection, and the inner cylinder, having the pipes M at its ends, engaging the openings H I, and provided with the external spiral flange projecting to the side of the outer cylinder, as specified.

387,716. MOLDING-MACHINE. Thomas B. Harkins, Bristol, Pa.

Filed Feb. 20, 1888. Serial No. 265,014. (No model.)

Claim.—1. In a machine of the class recited, the combination of the supporting-frame, the patterns secured thereon, the vertically-movable table provided with slots registering with said patterns, the shafts E, the cams F F' thereon, the shaft G, the rock-lever thereon, the rods connecting said rock-lever and cams F, and the arm H on said shaft G, substantially as and for the purpose set forth.

2. In a machine of the class recited, the combination of the supporting-frame, the slotted table D, the patterns C, the strips or bases c', working in the slots in said table, the plate B, the shafts E, the cams F F' thereon, the shaft G, the rock-lever thereon, the rods connecting said rock-lever and cams F, and the arm H on said shaft G, substantially as and for the purpose set forth.



rods connecting said rock-lever and cams F, the arm H on said shaft G, the pawl on said arm H, the toothed perforated segment, and the attachable and detachable stop-pin, substantially as and for the purpose set forth.

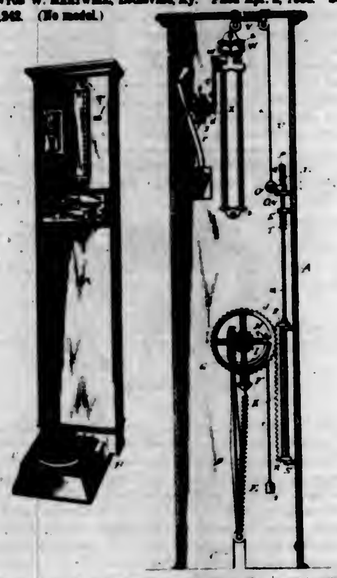
2. In a machine of the said class, the combination of the supporting-frame, the plate B thereon, the vertical guide-pins b^2 on said plate, the stop or set-screws b', working therein, the patterns secured on said plate, the vertically-movable table D, provided with bosses d', into which extend said guide-pins, and with slots which register with said patterns, the shafts E, the cams F F' thereon, the shaft G, the rock-lever thereon, the rods connecting said rock-lever and cams F, and the arm H on said shaft G, substantially as and for the purpose set forth.

3. In a machine of the said class, the combination of the supporting-frame, the plate B thereon, provided with the transverse slots b^3, the patterns, the thumb-screws connecting said patterns with said plate, the vertically-movable table provided with slots registering with said patterns, the shafts E, the cams F F' thereon, the shaft G, the rock-lever thereon, the rods connecting said rock-lever and cams F, and the arm H on said shaft G, substantially as and for the purpose set forth.

4. In a machine of the said class, the combination of the supporting-frame, the slotted table D, the patterns C, the strips or bases c', working in the slots in said table, the plate B, the shafts E, the cams F F' thereon, the shaft G, the rock-lever thereon, the rods connecting said rock-lever and cams F, and the arm H on said shaft G, substantially as and for the purpose set forth.

387,717. COIN-RELEASED WEIGHT-MEASURING MACHINE.

Newton W. Hartwell, Louisville, Ky. Filed Apr. 2, 1888. Serial No. 269,342. (No model.)



Claim.—1. In a measuring apparatus, the combination of an indicator, a ratchet-wheel, a gage supported by the ratchet-wheel, a locking-rod, as c', connected to the gage and resting on the ratchet-wheel, and means, as the anchor h and escape-wheel f, for releasing said ratchet-wheel, substantially as described.

2. In a measuring apparatus, the combination of an indicator and gage, a locking-rod connected thereto, and a tube adapted to receive a coin, with a ratchet-wheel, d, on which the locking-rod rests, an escape-wheel, f, connected to the ratchet-wheel, an anchor having pallets engaging with the escape-wheel, and an arm projecting in the path of the coin traveling in the tube, substantially as described.

3. In a measuring apparatus, the combination of a treadle, B, cross-head W, and intermediate mechanism, as the racks G K, pinion H, gear J, rod L, and cord U, with a locking-rod, c', and means, as the escapement h and wheels d f, for holding and liberating the same, substantially as described.

4. In a measuring-machine, the combination of an escapement, a gage held normally in fixed position by said escapement, and means, as the cord U, treadle C, and connections between them, for bringing the gage into operative connection with the escapement, substantially as described.

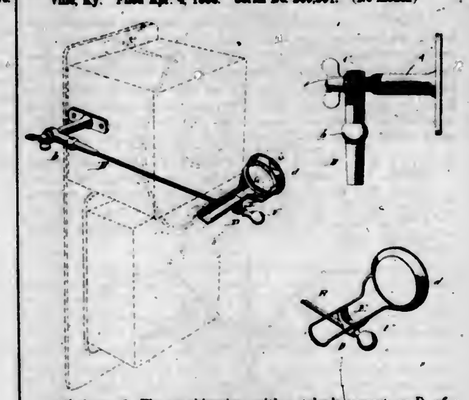
5. In a measuring-machine, the combination, with an escapement, of a gage normally held in a stationary position by the same, and an adjustable weight acting to partly counterbalance the weight of the gage, and also governing the pressure on said escapement, substantially as described.

6. The combination, with a measuring-machine, of a channel adapted to receive a coin, an escapement having an arm projecting into the coin-channel, a cross-head carrying a gage, a pointer, and a rod coacting with said escapement, a weight, O', a cord passing over suitable pulleys and connected at one end with the cross-head and at the other to said weight O', with a rod, L, loosely connected to said weight, a treadle, and intermediate connections between the treadle and the rod, substantially as described.

7. The combination, in a measuring-machine, of a channel adapted to receive a coin, an escapement having an arm projecting into the coin-channel, a cross-head, a gage, a pointer, and a rod attached to said cross-head, said rod coacting with said escapement, a weight, O', a cord passing over suitable pulleys and connected at its opposite ends to said cross-head and weight, with a rod, L, loosely connected to said weight and carrying at its lower end a rack, K, a gear meshing with said rack, a pinion connected with said gear, a rack meshing into said pinion, a treadle connected with said rack, and a spring or weight acting to raise the treadle, all substantially as shown and described.

8. The combination of a ratchet-wheel and an escapement with a rod, c', having a projection and pin, c'', acting on said ratchet-wheel, substantially as shown and described.

387,718. TELEPHONE-SUPPORT. Newton W. Hartwell, Louisville, Ky. Filed Apr. 4, 1888. Serial No. 269,891. (No model.)



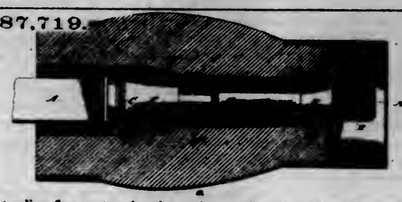
Claim.—1. The combination, with a telephone-rest, as D, of a flaring ring fixedly attached to said rest and performing the double function of holding the receiver on the rest and a sound-insulator, substantially as described.

2. A telephone-support comprising a standard, A, adapted to be attached to the telephone-case, a bar pivotally connected thereto, and a rest attached to said bar to hold the receiver and provided with a flaring ring, serving the double function of holding the receiver on the rest and a sound-insulator, substantially as and for the purpose specified.

387,719. AXLE-BEARING. Daniel E. Hull, Adrian, Mich. Filed Feb. 16, 1888. Serial No. 264,191. (No model.)

Claim.—1. The combination, with a spindle having a cone on its inner end and a movable or adjustable cone on its outer end, of the spring-washer bearing against the outer cone and the nut screwed on the outer threaded end of the spindle and having an annular inward-

387,719.

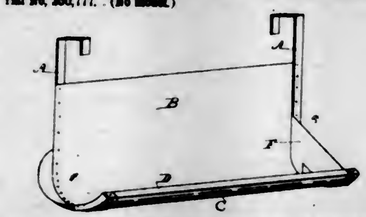


extending flange, O, embracing and concealing the said spring-washer, substantially as and for the purpose specified.

2. The combination, with a spindle having a reduced portion, D, the oil-groove M, and cones on the opposite ends of the spindle, of the box mounted on the spindle and bearing on the cones and the said reduced portion, and having oil-space U, surrounding the spindle at an intermediate point, substantially as specified.

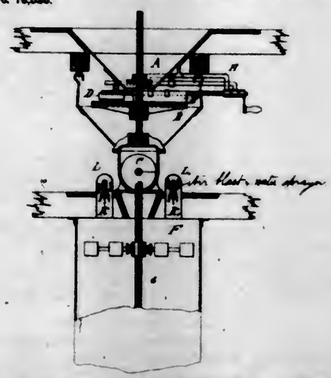
3. In a bearing, the combination of the spindle B, having the shoulder C at its inner end and a reduced portion, D, the longitudinally-movable cone F on the inner end of the spindle and held from rotary motion, substantially as specified, the longitudinally-movable cone K on the outer end of the spindle and held from rotary motion, the nut screwed on the end of the spindle and having the inward-extending flange O, the spring-washer inclosed within the said flange and bearing against the outer end of the cone K, and the box mounted on the spindle and cones and having an oil-space, U, formed therein around the spindle, substantially as and for the purpose specified.

387,720. CULTIVATOR ATTACHMENT FOR GATHERING POTATO-BUGS. JOSEPH HUNT, Ashley, Iowa. Filed Sept. 26, 1887. Serial No. 250,777. (No model.)



Claim.—In a straddle-row cultivator having an outwardly-projecting scoop-shaped trap device fixed direct to each one of the two parallel cultivator-beams, and a vibrating bar carrying brooms suspended upon supports fixed to the same parallel beams, said vibrating bar having a handle secured to one end and within the reach of the driver, for the purpose of operating the same at will, and arranged and combined to operate in the manner set forth, for the purpose of gathering bugs from the vines at the same time the vines are cultivated.

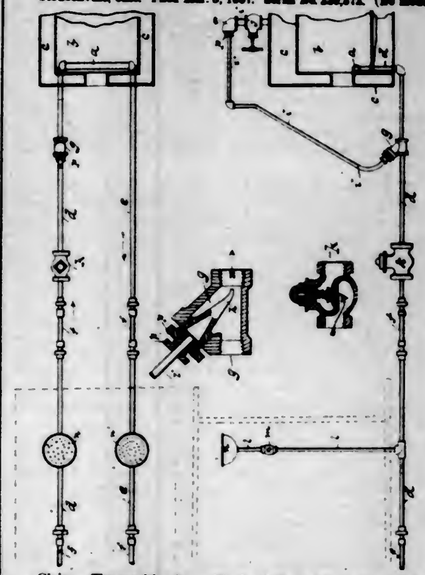
387,721. APPARATUS FOR MANUFACTURING ARTIFICIAL STONE. PAUL JOCHUM and THEODOR EBERHARDT, Ottweiler, Prussia, Germany. Filed May 13, 1887. Serial No. 238,100. (No model.) Patented in Germany Nov. 12, 1886, No. 40,546; in England Feb. 18, 1887, No. 2,573; in France Feb. 28, 1887, No. 181,860, and in Belgium Feb. 28, 1887, No. 76,523.



Claim.—1. The herein-described apparatus for the manufacture of artificial stone, said apparatus comprising a series of feed-hoppers, and rotary discharging-disks below the hoppers, in combination with a preparing-blade, D, over the disk, an adjustable scraper, E, and a mixer into which the materials are fed, substantially as set forth.

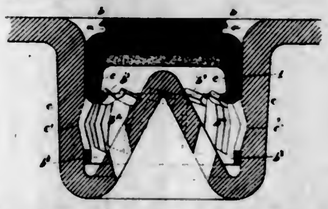
2. The herein-described apparatus for the manufacture of artificial stone, said apparatus comprising a mixing or pugging apparatus and a feeding-trough, in combination with air-blast pipes, and valved water-spraying nozzles over the mixing apparatus, substantially as set forth.

387,722. SYSTEM OF CAR-HEATING. CHARLES L. KLINE, Steubenville, Ohio. Filed Mar. 8, 1887. Serial No. 230,572. (No model.)



Claim.—The combination, with the boiler and fire-box of a locomotive, of a pipe within the latter, pipes *d* and *e* connected to the ends of the said pipe in the fire-box, a pipe, *i*, communicating with the steam-space of the boiler, provided with a regulating-valve, an injector connected to the said pipe *i*, and also to the pipe *d*, a stand-pipe provided with a globe, *n*, communicating with pipe *d*, a check-valve, *k*, applied to said pipe *d*, and a stand-pipe provided with a globe, *n'*, applied to pipe *e*, substantially as specified.

387,723. PERCUSSION-CAP FOR GUN-CARTRIDGES. WILHELM LORENZ, Carlsruhe, Baden, Germany. Filed June 24, 1887. Serial No. 242,342. (No model.)



Claim.—1. The cartridge-shell *c*, provided with an aperture for the cap, in combination with the herein-described cap provided with a flange, *b*, extending at right angles to the line of its longitudinal axis and forming an annular notch, *a*, the diameter of said flange being less than that of the body of the cap, as and for the purpose specified.

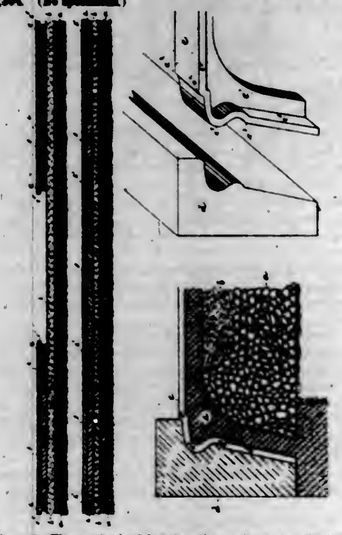
2. The cartridge-shell *c*, provided with an aperture for the cap, said aperture having depressions *c'* in its sides, in combination with the herein-described cap having elastic tongues bent outwardly and adapted to engage said depressions for holding the cap in place, substantially as specified.

3. The cartridge-shell *c*, provided with an aperture for the cap, said aperture having depressions *c'* in its sides, in combination with the herein-described cap, the same comprising a base, a cylindrical body, a ring, b^3, at the open end thereof, and longitudinal stripe b^2, connecting said body with said ring and forming slits in the side of the cap between them, said strips being bent outwardly and adapted to engage said depressions in the cartridge-shell, substantially as specified.

4. The cartridge-shell *c*, provided with an aperture for the cap, in combination with the cap *f*, outwardly-bent elastic tongues b^4 thereon, and inwardly-bent tongues b^5 thereon, and the fulminate *e*, the latter being retained in place by said inwardly-bent tongues, substantially as specified.

5. The cartridge-shell *c*, provided with an aperture for the cap, said aperture having depressions *c'* in its sides, in combination with the herein-described cap, the same comprising a base, *e*, an outwardly-projecting flange, *b*, on said base, said flange extending at right angles therefrom and forming an annular notch, *a*, the diameter of said flange being less than that of the base, and a cylindrical body the mouth whereof is oval, forming elastic sides adapted to engage the depression *c'* in the wall of the aperture in the cartridge-case, as and for the purpose specified.

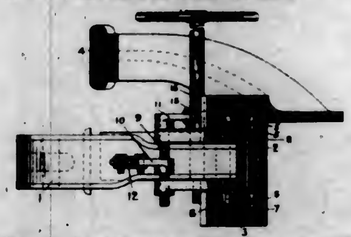
387,724. METHOD OF LAYING ARTIFICIAL PAVEMENTS. JOHN W. MACKENZIE, New York, N. Y. Filed June 20, 1888. Serial No. 278,304. (No specimens.)



Claim.—1. The method of forming the curb of an artificial pavement, which consists in spreading an even foundation forming a chamber by mold and joists around the curb, that is open at its back, and filling the top layer into the chamber and between the joists, so as to extend around the front and over the top of the foundation, substantially as specified.

2. The process of laying an artificial pavement, which consists in forming flanges *c'* upon alternate blocks, and then filling in the intermediate blocks with their top layers, *f*, resting upon said flanges, substantially as specified.

387,725. LOCOMOTIVE-COUPLER. ALBERT P. MASSEY, Watertown, N. Y., assignor to the Remsen Vacuum Brake Company, same place. Filed Feb. 2, 1888. Serial No. 262,770. (No model.)



Claim.—1. In a locomotive-coupler, a draw-hook attached to a shuttle which is free to move in a raceway in a transverse direction, but is firmly secured against a longitudinal strain, substantially as set forth.

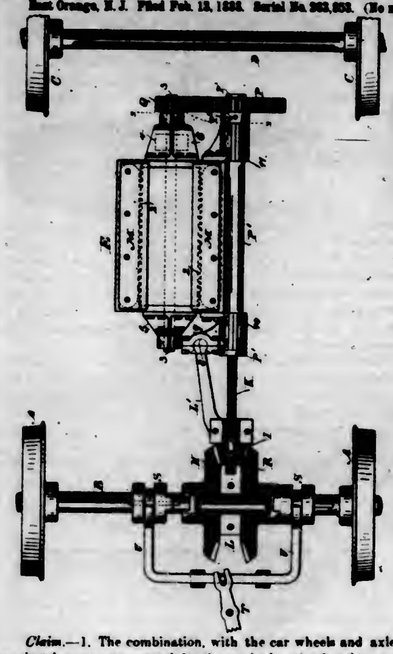
2. In a locomotive-coupler, a draw-hook combined with a shuttle moving in a raceway which is practically concentric with the centerpin of a standard passenger-car when said car is coupled to the locomotive, substantially as set forth.

3. In a locomotive-coupler, a buffer which is concave in the central portion, in combination with a draw-hook attached to a shuttle moving in a raceway which is practically concentric with the centerpin of a standard passenger-car when said car is coupled to the locomotive, substantially as set forth.

4. In a locomotive-coupler, the live rollers 5 5 and 6 6, in combination with a draw-hook attached to a shuttle moving in a raceway, substantially as set forth.

5. In a locomotive-coupler, the shaft 16, crank 15, links 14, cranks 11 and 10, links 12, and hook 1, for the purpose described, and substantially as set forth.

387,726. MOTOR FOR RAILWAY-CARS. WILLIAM M. MCDOUGALL, East Orange, N. J. Filed Feb. 13, 1888. Serial No. 263,853. (No model.)



Claim.—1. The combination, with the car wheels and axle and an electric motor supported by the car-body, of a bevel gear-wheel upon the car-axle, a pinion to drive the same, a frame supported at one end by a journal or bearing upon the car-axle and connected at the other end by a ball-and-socket joint to the frame of the electric motor, and a flexible shaft between the pinion and the electric motor, substantially as set forth.

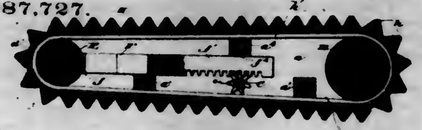
2. The combination, with the car axle and wheels, of an electric motor having flanges at the upper part of the frame, slides attached to the under side of the car-body for supporting the flanges and motor, the bevel-gearing and a flexible shaft for connecting the armature of the motor and the axle of the car, and a frame having a journal box or bearing at one end for the car-axle, and the ball-and-socket joint at the other end to connect the frame with the frame of the electric motor, substantially as set forth.

3. The combination, with an electric motor connected at the under side of a railway-car and the axle or wheels, of a bevel-wheel upon the axle, a pinion gearing with the same, a frame extending from the axle to the frame of the motor, and a connection that allows the parts to turn as the car rises and falls, a tubular shaft receiving motion from the revolution of the armature, and a flexible shaft passing into said tubular shaft and attached at one end to said pinion and at the other end to said tubular shaft, substantially as set forth.

387,727. ENDLESS CARRIER. ALBERT L. MIDDLETON, Portlie, Minn. Filed Apr. 3, 1888. Serial No. 269,669. (No model.)

Claim.—1. In a carrier, the combination of the apron H with the main frame A, the larger end roller, B, journaled in one end of the main frame, the transverse shaft C, having the pinion *c*, the ratchet

387,727.



D, and pawl *d*, the fork F, having the rack-bar *f'*, engaging the pinion *e*, and the parallel legs *f f*, sliding in guide-grooves in the inner surfaces of the sides of the main frame, and the smaller end roller, E, journaled in and between said legs, substantially as specified.

2. In a carrier, the combination of the apron H, the frame A, the fixed roller B, the adjustable roller E, and the means for adjusting said roller E, comprising the fork F, having the rack-bar *f'*, the pinion *e* on the shaft C, and the pawl and ratchet, as set forth.

387,728. **REVOLVING BRUSH FOR WASHING TUMBLERS, &c.** JAMES M. MUSGRAVE, Brooklyn, assignor to Silas A. Isley, New York, N. Y. Filed Dec. 16, 1887. Serial No. 258,060. (No model.)



Claim.—1. The hanging stand *c*, provided with a plate at the top to be fastened to the under side of the counter, and a bow, 6, in combination with the bevel gear-wheel *f*, and handle *g* upon a gudgeon at the side of the stand, the bevel-pinion *h* within the bow, the arbor *k* in bearings in the stand and connected to the bevel-pinion, and having a screw at the lower end, and the circular brush *m*, having a hole in the end of its handle *l*, into which the arbor passes and is screwed, substantially as set forth.

2. The combination, with the counter *a* and the water-vessel *b*, of a hanging stand screwed at its upper end to the under side of the counter and inclined forwardly, a bevel gear-wheel upon the side of the stand, and a handle for rotating the same, a bevel-pinion and arbor supported by the inclined stand with the arbor extending below the stand and terminating as a screw, and the circular brush having a handle perforated longitudinally for the reception of the arbor, substantially as set forth.

387,729. **PAPER-BAG HOLDER.** WILLIAM M. NIX, Mayfield, Ky. Filed June 7, 1888. Serial No. 276,330. (No model.)



Claim.—1. A paper-bag holder consisting of a base-plate, A, having a central perforation and a rod, in combination with a plurality of plates or leaves perforated, as described, and a top plate provided with a spring terminating in a hook or ring having a fastening device, and a tube, all arranged and operating substantially as and for the purposes set forth.

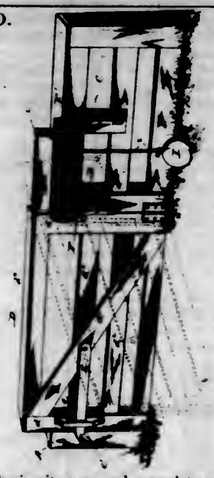
2. A paper-bag holder consisting of a base-plate having a central perforation, a rod, and uprights having guides or recesses adapted to receive a cross-piece, in combination with a plurality of leaves or plates perforated, as described, and a top plate provided with a spring terminating in a hook or ring, a fastening device, and tube, all arranged and operating substantially as and for the purposes set forth.

3. A paper-bag holder comprising the following elements: a base-plate provided with a perforation, a rod, and uprights having guides or recesses formed on their inside, a plurality of leaves or plates perforated, as described, a top plate having a spring secured thereto, a tube, a fastening device for said spring, and a cross-piece having legs, all arranged and operating substantially as and for the purposes set forth.

387,730. **GATE.** JAMES W. PARK and WILLIAM R. SANDERS, Sullivan, Ind. Filed Apr. 24, 1888. Serial No. 271,666. (No model.)

Claim.—1. The combination, with the hinged gate and the arm extending therefrom over the fence-panel adjoining and attached to the hinge-post, of the horizontal roller of large diameter journaled in brackets at the top of the panel, which are respectively secured to the hinge-post and to the middle portion of the panel extending from said post, the rope having its upper end secured to said arm near the end thereof, and the weight secured to the lower end of the rope and nearly touching the ground when the gate is closed, substantially as specified.

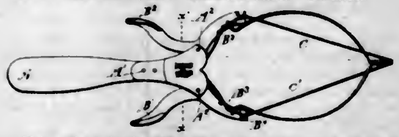
387,730.



2. The combination, with the hinged gate and the arm extending horizontally from the end bars thereof, adjoining the hinge-post and extending over the panel adjoining said post, of the rope attached to said arm near the end thereof, the long horizontal roller of large diameter journaled in brackets secured to the top of the panel adjoining the hinge-post, and the weight attached to the lower end of said rope, the weight and the leverage of the arm combined counterbalancing the gate and preventing the same from sagging, substantially as specified.

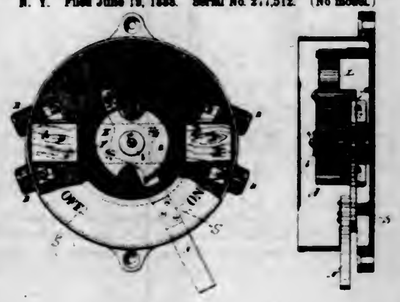
3. The combination of the latch-post A, the vertical bar A^2, secured thereto, the latch-hook *c'*, the gate composed of the pairs of end bars, *d d'*, and connecting-rails, the latch-bar pivoted to the gate, the hinge-post B, the panel C, extending from the hinge-post, the arm H, extending over said panel, the long horizontal roller G, journaled on the brackets F, secured to the top of the panel C, the rope *i*, and the weight I, all constructed and arranged substantially as and for the purpose specified.

387,731. **PIE-PLATE LIFTER.** AMOS L. POMEROY, Sand Lake, N. Y. Filed Mar. 26, 1888. Serial No. 268,549. (No model.)



Claim.—In a pie-plate lifter, the combination, with a pair of lifter-arms provided with coiled wire springs, of a supporting-frame provided with wire-receiving eyes and a pair of levers provided at one end with arm-supporting guides, at the opposite end with operating-handles, and intermediately with coil-supporting knbs, through which the levers are pivoted to the supporting-frame, substantially as described.

387,732. **ELECTRIC CUT-OUT.** JOSEPH A. POWERS, Lansingburg, N. Y. Filed June 19, 1888. Serial No. 277,512. (No model.)

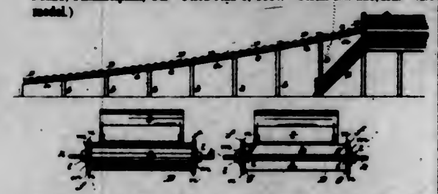


Claim.—1. The combination, with a box or can provided with a central stud, of insulating-supports and contact-terminals secured thereto, an insulating-block carrying contact-plates adapted to connect the terminals in pairs and pivoted on the stud, a handle for turning said block, and a brace-shaped spring adapted to be compressed by the movement of the handle in either direction and to force it into its extreme positions, as set forth.

2. The combination, with the cast-iron box formed with a stud, C, of the insulating-block D and four terminal springs secured thereto, the block E, carrying contacts on its periphery and turning on the stud C, a handle for shifting said box, and a bow-spring secured to the wall of the box, against which the extension or projecting end of the handle impinges, as and for the purpose set forth.

3. The combination, with the cast-iron box having insulated openings through its sides for the insertion of wires and a detachable cover, of an insulating-block secured within the box, spring-plates and terminals secured thereto, to which the wires are connected, a circular insulating-block mounted on a stud and provided with contact-plates on its periphery, a handle secured to said block and extending through a slot in the side of the box, and a bow-spring secured to the wall of the box and upon which the extended end of the handle impinges, as set forth.

387,733. **ARTIFICIAL TOBOGGAN OR COASTING HILL.** JOSHUA PUSEY, Philadelphia, Pa. Filed Jan. 5, 1887. Serial No. 223,622. (No model.)



Claim.—1. An artificial coasting-course or toboggan-slide consisting of the combination of the inclined longitudinal frames or stringers, the supporting-frame or trestle-work, and the series of rollers journaled in and between said stringers, adjacent to and out of contact with each other, substantially as and for the purpose set forth.

2. An artificial coasting device consisting of the combination of a toboggan and a series of wide rollers journaled in a suitable frame-work to form an inclined track way, whereby the weight of the toboggan will be distributed evenly across the peripheries of the rollers, together with means, substantially as described, for preventing the toboggan from running off laterally, substantially as and for the purpose set forth.

3. An artificial toboggan or coasting hill consisting of a series of hollow rollers journaled in a suitable frame-work to form an inclined track way, substantially as and for the purpose set forth.

4. A hollow roller for artificial toboggan or coasting hills of the class described, having the cylindrical portion thereof made of paper or similar light and strong material, substantially as and for the purpose set forth.

5. A roller adapted for use in artificial toboggan or coasting hills, consisting of the combination of a hollow cylindrical body, of paper or other suitable material, heads with flanges extending beyond the ends of said body, and shafts secured to the heads, substantially as and for the purpose set forth.

6. A roller for artificial toboggan-slides, consisting of the combination of the tube, of paper or similar material, the grooved heads and the shaft, with means, such as threaded nuts, for holding together the heads and tube, substantially as and for the purpose specified.

7. An artificial toboggan or coasting hill consisting of an inclined track way of hollow rollers whose width is greater than the toboggans or sleds adapted to run upon the same, and provided with end flanges adapted to prevent the toboggans or sleds from running off sidewise, substantially as and for the purpose described.

8. An artificial toboggan or coasting hill composed of a series of track ways ascending in opposite directions to substantially the same altitude, and provided with a continuous series of suitably-journaled rollers, excepting spaces at the ends of the track ways, alternately at and beyond the points where the natural loss of momentum of the toboggans or sleds acquired in descending the one incline of a series brings the toboggans, &c., to a stop, which spaces are covered with a suitable flooring, substantially as and for the purpose set forth.

387,734. **CRUMB OR DUST SCOOP.** JOSHUA PUSEY, Philadelphia, Pa. Filed June 14, 1887. Serial No. 241,240. (No model.)

Claim.—1. The scoop consisting of the curved box having its lower edge made thin and the longitudinally-extending handle, all constructed and adapted to operate substantially as and for the purpose recited.

387,734.



2. The scoop consisting of a box having a thin extension at the bottom adapted to be placed flat on a plane surface and having a sharp edge, in combination with a partition extending up from the bottom of the box and adjacent to said extension, substantially as described.

3. The scoop consisting of the combination of the curved box having the thin lower edge and the partition projecting up into said box from the bottom thereof adjacent to said thin edge, together with the longitudinally-extending handle for rotating the same, substantially as and for the purpose set forth.

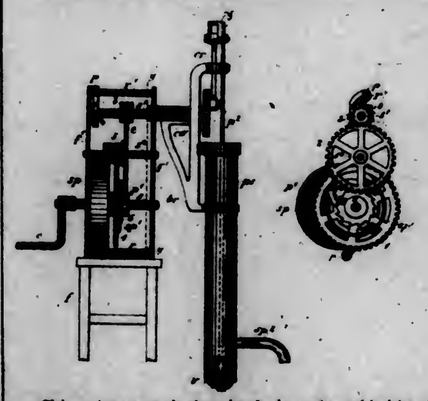
4. In combination with the scoop consisting of the curved box provided with the longitudinally-projecting handle, the brush secured to said box, substantially as and for the purpose set forth.

387,735. **WAGON-JACK.** ERWIN A. RIMMON, Eau Pleine, Wis. Filed Apr. 9, 1888. Serial No. 270,167. (No model.)



Claim.—A folding wagon-jack consisting of a base-piece having a block, B, two uprights, C C, pivoted to the block B and provided with racks O O, a hook, F, adapted to hold the uprights in perpendicular position, a lever-arm, G, pivoted in the top of the uprights C C, said lever-arm being provided with a shoulder, K, and a recess, L, the recess L being higher than the shoulder K, and a retaining-rod, M, pivoted to the lever-arm G and provided with cross-bar N, adapted to engage the racks O O, substantially as described.

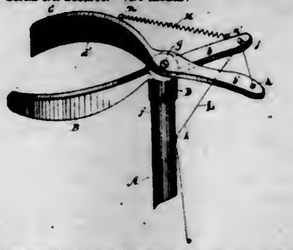
387,736. **SPRING-MOTOR FOR PUMPS.** CHARLES M. REED, near Greensville, and WILLIAM C. FRASER, near Clermont, Ind. Filed Nov. 28, 1888. Serial No. 212,707. (No model.)



Claim.—A pump mechanism wherein the suction-rod is driven by means of a pitman pivoted at one end to a yoke bolted to such suction-rod, at the other to a wrist-pin upon a crank-wheel mounted on the end of a shaft supported in bearings in a suitable frame, and in bearings connected with a bracket which is connected to the top of the pump-stock, the shaft connected with the crank-wheel carrying a

pinion which is operated by means of a gear mechanism driven by a spring coiled about the main shaft, all combined substantially as described.

387,737. PARCEL-CLASP. William S. Rock, Dayton, Ohio, assignor of one-half to William W. Kirkpatrick, same place. Filed Feb. 24, 1888. Serial No. 265,210. (No model.)



Claim.—The combination, with the handle A, the stationary jaw B, having the extension *b* and socket D, formed with said jaw, and said socket connected to the top of handle A, of the pivoted jaw C, having extension *b'*, the spring N, connecting said movable jaw and extension of the stationary jaw, and the wire or string connected to extensions *b b'* and handle A, as shown and described.

387,738. DOOR-CHECK. William D. Scarborough, Pennington, Tex. Filed Feb. 23, 1888. Serial No. 264,947. (No model.)



Claim.—1. In a door-check, the combination of a rail secured parallel to the upper edge of the door, a brace or arm pivoted to the lintel of the door-frame at one end, and a casing pivoted to the outer end of the brace or arm and sliding upon the rail and provided with means for engaging the said rail, as shown, and for the purpose specified.

2. In a door-check, the combination of a rail secured to the door parallel to the upper edge of the same and having notches in its under side, a bolt-casing sliding upon the rail and having a bolt engaging the notches of the same, and a brace or arm pivoted to the bolt-casing and to the lintel of the door-frame, as shown, and for the purpose specified.

3. In a door-check, the combination of a rail secured with its bent ends to the face of a door parallel to the upper edge of the same and above the same, and having notches in its under side, a bolt-casing having a transverse perforation at the upper end and sliding upon the rail with this perforation and formed with two laterally-projecting lips upon the upper end, a spring-bolt within the casing engaging the notches of the rail and having a chain for releasing it, and a brace or arm pivoted upon the lintel of the door-frame and between the lips of the bolt-casing, as shown, and for the purpose specified.

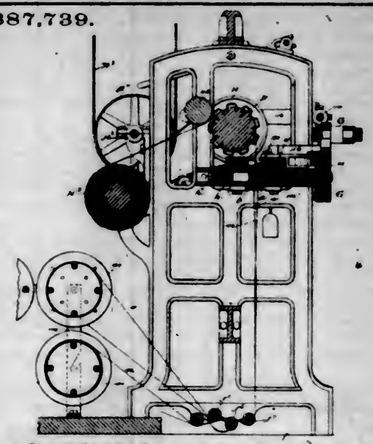
387,739. MACHINE FOR THE MANUFACTURE OF WIRE-NETTING. Benjamin Scarlin, Clinton, Mass., assignor of one-half to the Clinton Wire Cloth Company, same place. Filed Sept. 9, 1887. Serial No. 249,217. (No model.)

Claim.—1. In a machine for the manufacture of wire-netting, a series of twisting-segments and means to rotate them, substantially as described, in opposite directions during the formation of each transverse row of twists, combined with gripping mechanism, substantially as described, to hold the wires previously twisted in one direction while they are being twisted in the reverse direction, substantially as described.

2. In a machine for the manufacture of wire-netting, the combination, with twisting-segments to receive the wires to be twisted and means, substantially as described, for rotating the said segments in one and then in an opposite direction during the formation of each transverse row of twists, of a series of pins and means to support them, the said pins entering between the wires after the completion of the first portion of the twist in each line of meshes and holding the wires while the reverse twist is taking place, substantially as described.

3. In a machine for the manufacture of wire-netting, carriages D E, and cars C and C^{10}, attached, respectively, to them, and projections on said cars, combined with the shaft A^7, provided with two cams set opposite to each other to intermittingly but positively move the said carriages in opposite directions, substantially as described.

387,739.



4. In a machine for the manufacture of wire-netting, two reciprocating carriages, D E, combined with twisting-segments, some of which have two or more passages for auxiliary wires, whereby some of the longitudinally-twisted strands extended through the netting may contain two wires which are twisted with a third wire at the twisting-point, leaving the two wires carried by one segment parallel between the said twisting-points, substantially as described.

5. In a machine for the manufacture of wire-netting, the mesh roller, two or more carriages, D E, means to reciprocate them in opposite directions at the proper time, two series of twisting-segments carried by the said carriages, and means to rotate the said twisting-segments in one and then in the reverse direction during the formation of each transverse row of twists, combined with a tension-spring held or yielding arm, 120, which stands rigidly when the jaw 107 is being moved toward the jaw 108, the cam-bar at such time being moved longitudinally, the said arm yielding when the cam-bar is moved to regulate the tension upon the wires passing to the said segments, substantially as described.

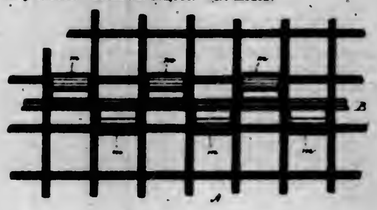
6. In a machine for the manufacture of wire-netting, the carriages D E, their twisting-segments, and means to rotate the said twisting-segments in one and then in a reverse direction during the formation of each transverse row of twists, combined with jaws 107 and a series of pins, 130, the latter to enter between the said wires after they have been twisted in one direction and to hold them while the wires are being twisted in the opposite direction, substantially as described.

7. In a machine for the manufacture of wire-netting, the carriages D E, the twisting-segments therein, and means to rotate them, combined with gripping mechanism having jaws corrugated longitudinally to crimp the twisted wire, substantially as described.

8. In a machine for the manufacture of wire-netting, the reciprocating carriages D E, the twisting-segments *a b* therein, and means to rotate them, and the jaws 107 and 108 of the gripping mechanism, combined with a cam-bar, 126, means to move it, and with the arm 120, free to yield in but one direction, and the spring 123 and stop, to operate substantially as described.

9. In a machine for the manufacture of wire-netting, the carriage D, the jaw 107, mounted thereon to slide transversely, and the swivel-studs 113, and means to move the said carriage longitudinally, combined with the rock-shaft 116, and intermediate connecting mechanism between it and the said studs, whereby the outward movement of the jaw may be effected at the proper time in different positions of the carriage D, substantially as described.

387,740. METALLIC LATHING. Benjamin Scarlin, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed May 1, 1888. Serial No. 272,500. (No model.)

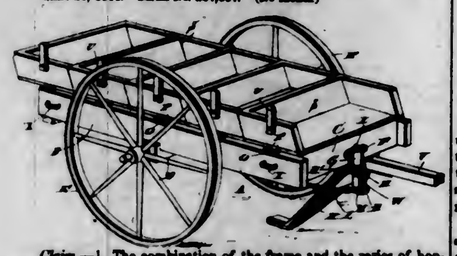


Claim.—1. As an improved article of manufacture, a metallic furring-strip provided at intervals at its edges or sides with flanges for attaching it to wire-cloth, the body of said strip being approximately U-shaped in cross-section and the flanges integral therewith, substantially as set forth.

2. As an improved article of manufacture, a metallic furring-strip having a body which is approximately U-shaped in cross-section and provided at its edges or sides with flanges for attaching it to wire-cloth, said flanges being integral with said body and arranged alternately or in such manner as not to stand opposite each other, substantially as and for the purpose set forth.

3. In a metallic lathing, the combination of the wire-cloth, A, and furring-strip B, provided with flanges *m*, the body of said strip being approximately U-shaped in cross-section and secured to the cloth by the flanges bent downward over the wires of the cloth, substantially as shown and described.

387,741. TRUCK. Edward F. Sheldon, Hepler, Kans. Filed Mar. 30, 1888. Serial No. 267,967. (No model.)



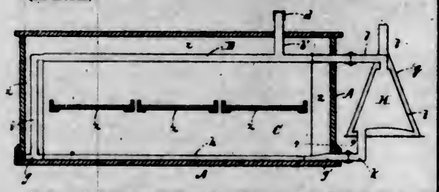
Claim.—1. The combination of the frame and the series of hoppers pivoted on the frame, the said hoppers having their front and rear sides inclined, the rear side of one hopper resting against and closing the front side of the next adjacent hopper, as set forth.

2. The truck having the supporting-wheels E mounted at a suitable distance near the center thereof and provided at its front end with a pivoted trailing supporting-arm, substantially as described.

3. The combination, in a truck, of the frame having the supporting-wheels E and provided at its front end with the pivoted trailing arm having the ear M, adapted to receive a whiffletree, and the tongue or shaft having the hook engaging the bracket or plate at the front end of the frame, substantially as described.

4. The combination, in a truck, of a frame having the bearings P in its sides and the hoppers having the trunnions engaging the said bearings, the said hoppers being provided with the standards or arm U, substantially as described.

387,742. INCUBATOR. William P. Shepard, Fall River, Mass., assignor of three-fourths to Matthew C. Yarwood, Parker Borden, and Roland G. Buffington, same place. Filed Dec. 30, 1887. Serial No. 259,266. (No model.)

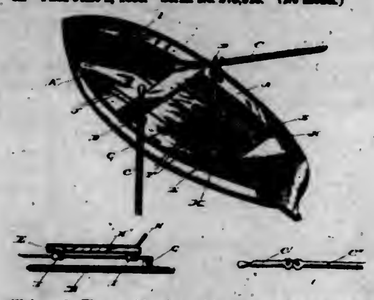


Claim.—1. In an incubator of the character described, the body A, having the door B, the case C, provided with the tank D, having the filling-pipe *d*, the pipes A, connected with said tank by the pipes *g* and *i*, the cone-shaped boiler H, the pipes *l k g'*, for connecting said boiler with the tank D and pipes A, the funnel-shaped jacket *q*, and lamp P, all being constructed, combined, and arranged to operate substantially as set forth.

2. In an incubator of the character described, the body A, case C, disposed within said body, and provided with the tank D, having the curved bottom *f* and filling-pipe *d*, the pipes A, disposed at the bottom of said body and connected with the tank D by the pipes *g* and *i*, the trays *x*, the conical boiler H, pipes *l k g'*, connecting said boiler with said tank and the pipes A, the funnel-shaped jacket *q*, lamp P, and bracket *p*, combined and arranged to operate substantially as described.

3. In an incubator of the character described, the body A, provided with the door B and chamber C, the trays *x*, disposed in said chamber, the tank D, provided with the filling-pipe *b* and having the concaved bottom *f*, the pipes *h*, connected with the tank D by the pipes *g* and *i*, the conical boiler H, connected with the tank D by the pipe *l*, and with the pipes *h* by the pipes *g'* and *k*, the conical jacket *q* for the boiler H, the lamp P, disposed beneath said boiler, and the bracket *p*, attached to the body A, all combined and arranged to operate substantially as described.

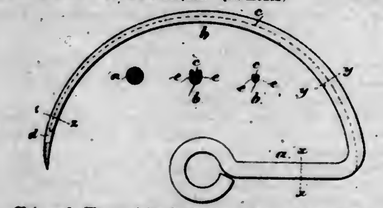
387,743. ROWING APPARATUS. Arthur C. Smith, Richwoods, Ill. Filed June 2, 1888. Serial No. 275,813. (No model.)



Claim.—1. The combination, with a boat and two oars fulcrumed upon its sides, respectively, of two foot-rests sliding upon bars fixed to the bottom of the boat in rear of the oars, two inclined pulleys fixed to the boat in front of the oars near the junction of the bottom and sides, and two cords passing around the pulleys, respectively, and connecting each foot-rest with the lever-arm of the corresponding oar.

2. The combination, with a boat and oars fulcrumed upon its sides, of sliding foot-rests secured to the bottom of the boat in the rear of the oars and each having a stop to receive the thrust of the foot and a rearwardly-narrowing recess for the back of the heel, two pulleys fixed to the boat in front of the oars, and two cords passing over the pulleys, respectively, and connecting each foot-rest with the lever-arm of the corresponding oar, substantially as and for the purpose set forth.

387,744. NEEDLE FOR BOOK-SEWING MACHINES. David M. Smyth, Northwood, N. H., and John R. Reynolds, Hartford, Conn., assignors to the Smyth Manufacturing Company, Hartford, Conn. Filed Feb. 16, 1888. Serial No. 264,146. (No model.)



Claim.—1. The semicircular book-sewing needle grooved at *c* in the periphery of the semicircle and throughout nearly its entire length, and the eye pierced at *d* and with the sides flattened at *c c*, substantially as and for the purposes set forth.

2. The semicircular book-sewing needle having a shank, *a*, a peripheral groove at *c* of nearly the length of the semicircle, flattened sides at *c c*, and tapered gradually from the shank to the point, substantially as set forth.

387,745. GEARING. Frank J. Sprague, New York, N. Y. Filed Apr. 18, 1887. Serial No. 235,149. (No model.)



Claim.—1. A split toothed wheel having an adjustable rim or periphery, substantially as set forth.

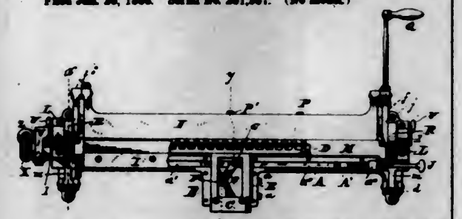
2. A gear-wheel having in combination an internal web composed of two parts united together, and a toothed rim or periphery, also made in two parts united together and adjustably secured upon said web, substantially as set forth.

3. The combination of a shaft provided with two pinions situated

at different points thereon, and a shaft provided with two toothed wheels engaging said pinions respectively, and one of said wheels being a split wheel provided with an adjustable rim or periphery, substantially as set forth.

4. The combination of a wheeled vehicle, an electric motor thereon, a pinion at or near each end of the armature-shaft of said motor, a split toothed wheel having an adjustable rim or periphery upon the driving-axle of said vehicle at one end thereof and engaging with one of said pinions, and a toothed wheel at the other end of said axle engaging with the other pinion, substantially as set forth.

387,746. SHEET-METAL FOLDER. Michael J. Spare, Buffalo, N. Y., assignor to Adam Hetne and George J. Munnshauer, same place. Filed Jan. 26, 1888. Serial No. 261,967. (No model.)



Claim.—1. In sheet-metal folders, the combination, with the bed-piece A, having the guide-piece B fitted with a gib and set-screws, of the slide C, having the link H, connecting the gage with the gage-screw, as described, whereby the lateral movement of the said gage-screw causes the movement of the slide in a direction at right angles to that of the said gage-screw, as and for the object specified.

2. In sheet-metal folders, a gage, D, operated by a gage-screw, J, having stud G, in combination with the link H and slide C having the stud F, as and for the purpose stated.

3. In sheet-metal folders, a bed having a forwardly-projecting guide, B, fitted with gib E and set-screws *a a*, in combination with an open slide, C, having the link as an intermediary between it and the gage-adjusting screw J, substantially as and for the object stated.

4. In sheet-metal folders, the combination, with the shoe S, of the adjusting mechanism consisting of the cam-shaped button U, whereby the clamping-bar M is adjusted, substantially as and for the purpose specified.

5. The combination, with the clamping-bar, of the shoe S and the buttons U, having notches of varying depth to raise and lower the clamping-bar by turning said buttons, as indicated.

6. In sheet-metal folders, the wing N, having the incline *g'*, in combination with the wedge-bar O, having the rack *h*, wing-bar K, and pinion *p*, as and for the purpose stated.

7. In sheet-metal folders, the combination, with the wing-bar K, having the pivot *l*, of the lever V, spiral spring X, and a tensioning device for the spring, as stated.

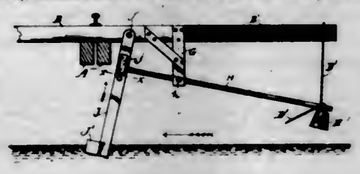
8. The combination, with the wing-bar K, having the pivot *l*, of the slotted lever V, stud *e*, spiral spring X, chain-links Y, and the foot-hook Z, as and for the purpose specified.

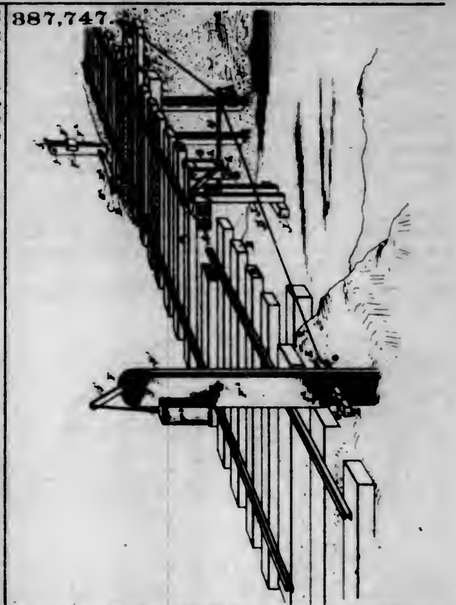
387,747. DANGER-SIGNAL FOR RAILWAY-BRIDGES. James W. Steele, Topeka, Kans., assignor of one-half to Andrew McNally, Chicago, Ill. Filed Sept. 16, 1887. Serial No. 249,834. (No model.)

Claim.—1. The combination, with a bridge and one or more signals or semaphores provided with means, as sliding blocks and springs, for maintaining them in a normal position, of a wire connecting said blocks, and a trigger (designed to be released by the abnormal action of the elements) for sustaining a weight above the wire and in operative connection therewith, substantially as shown and described.

2. The combination, with a signal or semaphore and its releasing mechanism, as the block *e*, of the weighted and pivoted bar H, the suspended frame or trigger J, and a wire in operative connection therewith and with said releasing-block, substantially as shown and described.

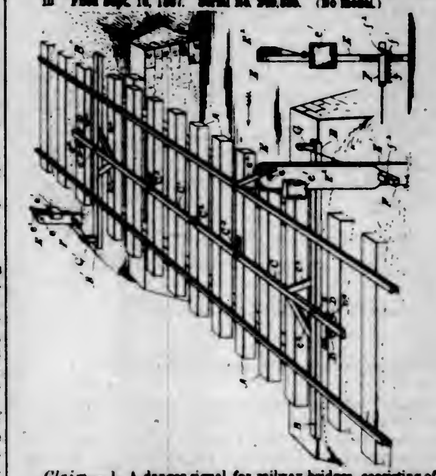
3. In a danger-signal for railway-bridges, a suspended trigger adapted to float and move in the direction of the current in the event of an abnormal rise of water, in combination with a semaphore and its releasing mechanism, as the block *e*, and means, as the pivoted bar





H, weight H', and wire D', for connecting the two, substantially as set forth.

387,748. RAILWAY-BRIDGE DANGER-SIGNAL. James W. Steele, Topeka, Kans., assignor of one-half to Andrew McNally, Chicago, Ill. Filed Sept. 16, 1887. Serial No. 249,835. (No model.)

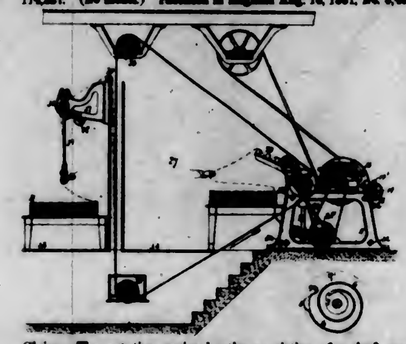


Claim.—1. A danger-signal for railway-bridges, consisting of a semaphore provided with a releasing device, as the block F, in combination with a tripping mechanism, as the bars B and C, attached to the bridge and in operative connection with the semaphore, whereby a displacement or destruction of the bridge may serve to automatically operate said semaphore, substantially as shown and described.

2. The combination, with a railway-bridge, of a semaphore or signal, means, as a sliding block and spring, for maintaining the same in a normal position, and a tripping mechanism, as the bars C B, attached to each other and to the bridge and in operative connection with the semaphore, substantially as shown and described.

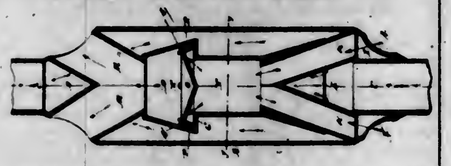
3. The combination, with a railway-bridge and a semaphore or signal, of the cross or trigger C B, attached to said bridge and in operative connection with said semaphore, substantially as shown and described.

387,749. MACHINE FOR REELING CLOTH. Duncan Stewart, Glasgow, County of Lanark, Scotland. Filed Dec. 11, 1888. Serial No. 114,327. (No model.) Patented in England Aug. 10, 1881, No. 3,402.



Claim.—The rotating spring-beetler consisting of a shaft carrying elastic metal bands bent into coiled or similar form, and disks or plates carrying steps for the outer ends of the bent bands, substantially as set forth.

387,750. HEATING-DRUM. Jeremiah J. Sullivan, Oswego, N. Y. Filed Mar. 3, 1888. Serial No. 265,982. (No model.)



Claim.—1. The combination of the drum having the pipes C C communicating with its upper and lower ends, the receiving-chamber located at the bottom of the drum around the lower pipe, C, the hot-air chamber located in the drum and communicating with the receiving-chamber through suitable pipes, K, and provided at an intermediate point with a shoulder or offset, forming an annular passage between its edges and the sides of the drum, and the outlet-flues M at the upper end of the hot-air chamber, substantially as and for the purpose specified.

2. The combination of the drum, the smoke-pipes, and the hot-air chamber located in the drum and comprising the upper conical compartment, E, communicating with the outside air through suitable outlet-tubes, and the lower compartment, F, communicating with the outside air through suitable inlet-tubes, and communicating with the upper compartment, E, through an annular opening, O, substantially as and for the purpose specified.

3. The combination, with the drum having smoke-pipes entering it at its upper and lower ends, respectively, of the hot-air chamber communicating at its opposite ends with the outside air and comprising the lower cylindrical compartment, F, and the upper conical compartment, E, having a shoulder, G, at its lower end, and the deflecting-disk arranged above the said shoulder and forming an annular opening between its edges and the sides of the compartment, substantially as specified.

4. The combination, with the drum and the smoke-pipes communicating with the same, of the hot-air chamber within the drum, comprising the lower compartment, F, and the upper compartment, E, having a shoulder, G, between them, the spring clips or supports mounted on the said shoulder and the deflecting-disk engaged at its edges by the said clips or supports, substantially as and for the purpose specified.

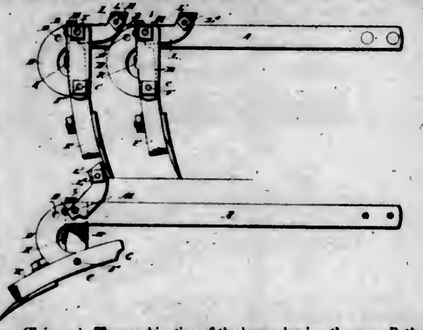
5. The combination of the drum, the conical caps B B on the upper and lower end thereof, the lower cap being provided with openings, the plate H at the lower end of the drum, between the same and the lower cap, B, the lower smoke-pipe passing through the lower conical cap and the said plate H, the upper smoke-pipe passing through the upper conical cap, the hot-air chamber located in the drum and out of communication therewith, the discharge-flues communicating with the upper end of the hot-air chamber and passing through the upper conical cap, and the conducting-flues K K, connecting the lower end of the hot-air chamber with the space within the lower conical cap, substantially as and for the purpose specified.

6. The combination, with the drum and the smoke-pipes, of the hot-air chamber isolated from the drum and having the discharge-flues communicating with its upper end, the conducting-flues passing from the lower end of the said chamber through the lower end of the drum on opposite sides of the lower smoke-pipe, and the conical deflector disposed over the upper end of the said lower smoke-pipe, substantially as and for the purpose specified.

7. The combination, with a drum provided with the smoke-pipes C C, communicating with its upper and lower ends, of the hot-air chamber communicating with the outside air through suitable inlet and outlet flues, K and M, respectively, and the conical deflector L, depending from the lower end of the hot-air chamber over the lower smoke-pipe, C, and surrounding the upper ends of the inlet-flues K, whereby the incoming heat from the said pipe is concentrated against the bottom of the hot-air chamber and the upper ends of the said flues, substantially as and for the purpose specified.

8. In combination with the drum A and the smoke-pipes entering the same at its upper and lower ends, respectively, of the hot-air chamber located in the interior of the drum, the conducting-flues communicating with the lower end of the said chamber and diverging at their lower ends, so as to pass through the lower end of the drum upon opposite sides of the lower smoke-pipe, the discharge-flues communicating with the upper end of the said chamber and diverging toward their upper ends, and the conical deflector depending from the lower end of the hot-air chamber over the upper end of the lower smoke-pipe and embracing the upper ends of the conducting-flues, substantially as and for the purpose specified.

387,751. CULTIVATOR. Columbus A. Swearingen, Lampasas, Tex. Filed Apr. 19, 1888. Serial No. 271,157. (No model.)



Claim.—1. The combination of the beams having the arms B, the standards pivoted to the lower ends of the said arms, the plates H, having their lower ends secured on the pivotal bolt of the standards and provided with the flanges or ears on the rear side, for the purpose set forth, and the triggers pivoted on the beams and adapted to be adjusted longitudinally thereon and to engage the upper ends of the standards, for the purpose set forth, the upper ends of the plate H being secured on the pivotal bolts of the triggers, substantially as described.

2. The combination of the beams having the arms B, provided with the openings C, the beams having openings D concentric with openings C, the standards, the bolts pivoting the latter to the arms and extending through the openings C, the plates having their lower ends secured on said pivotal bolts and adapted to engage the rear sides of the standards, the triggers, and the bolts to pivot the said triggers to the beams, said bolts being adapted to pass through either of the openings D, the upper ends of the plates H being secured on the said pivotal bolts, substantially as described.

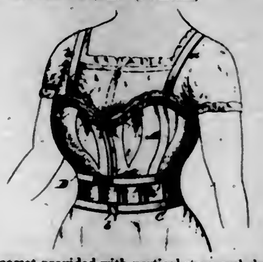
387,752. ATTACHMENT FOR TYPE-WRITING MACHINES. Charles W. Thayer, Collinsville, Conn., assignor of one-half to Frank H. Thayer, same place. Filed Sept. 30, 1887. Serial No. 251,011. (No model.)



Claim.—1. In combination with the carriage of a type-writing machine, a supplemental paper-guide composed of the clamps, in combination with the parallel bars supported by the clamps, and the clamp-screws whereby the clamps and the rods are held in position, all substantially as described.

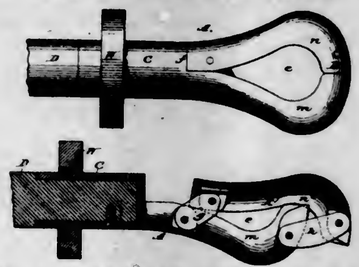
2. In combination with the paper-carriage, the key *g*, having a socket adapted to hold the upright of the paper-rack, the paper-rack, the clamps adjustably secured thereto, and the bars held by the clamps in position to support and guide the paper, all substantially as described.

387,753. **CORSET.** Idalia Webb, Leavenworth, Kans. Filed May 9, 1888. Serial No. 273,342. (No model.)



Claim.—A corset provided with vertical stays and shaped to the body of the wearer, and provided with an elastic band extending around its entire lower edge, in combination with an independent belt having flexible strips connecting the same to the said lower edge of the corset and means for clasping the belt in front, as set forth.

387,754. **VEHICLE-POLE TIP.** Frank A. Aldrich, Winchendon, Mass. Filed Jan. 12, 1888. Serial No. 260,564. (No model.)



Claim.—1. The tip for the thills or poles of vehicles, consisting of a hollow metallic shell or casting formed with a socket at one end to receive the thill or pole and enlarged at its opposite end to form an oblate rounded head, said head being divided longitudinally into two sections, the one hinged or pivoted upon the other, whereby the diameter of the head may be reduced when required, substantially in the manner and for the purpose herein set forth.

2. The combination, in a tip for the thills or poles of vehicles, of the socket-piece C, the fixed head-section *m*, united to said socket-piece, the movable head section *n*, fitting upon the section *m*, to form therewith an enlarged head, B, the pivoted links *g* and A, by which the movable section is hinged to the fixed section, and the spring K, bearing upon the inner link, *g*, all substantially in the manner and for the purpose herein set forth.

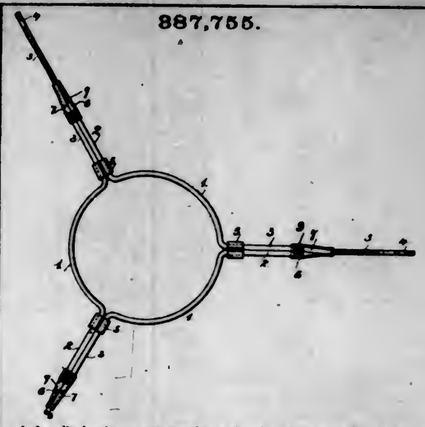
387,755. **SHADE-HOLDER.** Lewis J. Atwood, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place. Filed Jan. 3, 1888. Serial No. 259,603. (No model.)

Claim.—1. A shade-holder having projecting radial arms, each arm being composed of one long projecting wire and a short wire, in combination with a separate and independently-attached conical or tapering sheet-metal clip surrounding the two parts of the arm at the end of the short arm and confining the parts together, substantially as set forth.

2. A shade-holder having projecting radial arms, each arm being composed of one long projecting wire and a short wire, in combination with a tapering or conical sheet-metal clip applied to each arm at the junction of the two parts thereof, the short arm having a tapering end and the long arm being bent within the clip and both arms

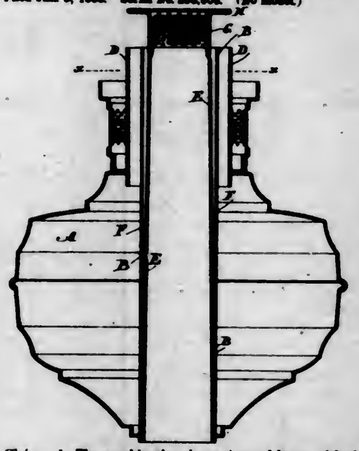


387,755.



and the clip having a corrugation or bend to prevent end motion, substantially as set forth.

387,756. **ARGAND LAMP.** Lewis J. Atwood, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place. Filed Jan. 3, 1888. Serial No. 259,604. (No model.)



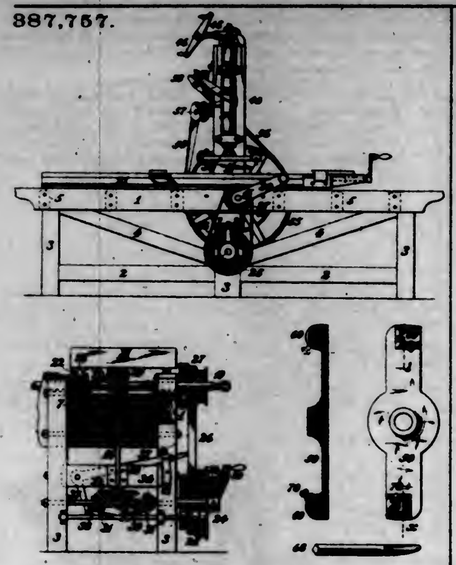
Claim.—1. The combination, in an Argand lamp, with the wick-tube D, of the air-tube B, extending through the fount and connected at its lower end to the same and perforated about midway of its length, and the supplemental air-tube E within the air-tube B, and rigidly fastened thereto at its lower end, said tube E being tapering and imperforate, its upper end being smaller than the air-tube B, so that an annular space is formed between the parts to catch overflowing oil and return it to the reservoir, substantially as specified.

2. The combination, in an Argand lamp, with the wick-tube D, of the air-tube B, extending through the fount and connected at its lower end to the same, and perforated about midway of its length, and the supplemental air-tube E within the air-tube B, and rigidly fastened thereto at its lower end, said tube E being tapering and imperforate, its upper end being smaller than the air-tube B, so that an annular space is formed between the parts to catch overflowing oil and return it to the reservoir, the extreme upper end of the tube E being formed with a ledge or offset which is adapted to support a foraminous skirt and deflector, substantially as set forth.

387,757. **WOOD-PLANING MACHINE.** John Baller, Salem, Ohio, assignor to Erwin Baller, same place. Filed Mar. 9, 1888. Serial No. 266,515. (No model.)

Claim.—1. The combination of a frame formed of separable longitudinal stringers and vertical posts, a bed-piece connecting said stringers and posts and forming the base of a cutter-head post or standard, and a cutter-shaft and cutters mounted in bearings on a standard fixed upon said bed-piece, substantially as set forth.

387,757.



2. The combination of a frame, a bed-piece connecting the stringers thereof, a driving-shaft mounted in a bearing in the bed-piece and carrying upon one end a driving-pulley and upon the other a cent or bearing for a hand-crank, a vertical standard fixed upon the bed-piece, and a cutter-shaft and cutters mounted in bearings in said standard, substantially as set forth.

3. The combination of a frame, a bed-piece connecting the stringers thereof, a driving-shaft mounted in a bearing in the bed-piece, a horizontal feed-shaft adapted to be rotated either by a belt from the driving-shaft or independently thereof, and a vertical feed-shaft gearing with said horizontal feed-shaft, said vertical shaft being journaled in a bearing in the bed-piece, and carrying a gear meshing with a rack on a table adapted to traverse on ways upon the frame-stringers, substantially as set forth.

4. The combination of a frame, a driving-shaft carrying a pulley and mounted in bearings transversely to the frame, a vertical post or standard located upon one side of the frame, a carrier adapted to travel vertically on said post, a cutter-shaft carrying a head and cutters and a long pulley and journaled in said carrier, and a pair of idlers or guide-pulleys journaled on the cutter-head standard, said idlers being arranged in approximately the same vertical plane and having their axes inclined one to the other and located on the same side of the cutter-shaft, substantially as set forth.

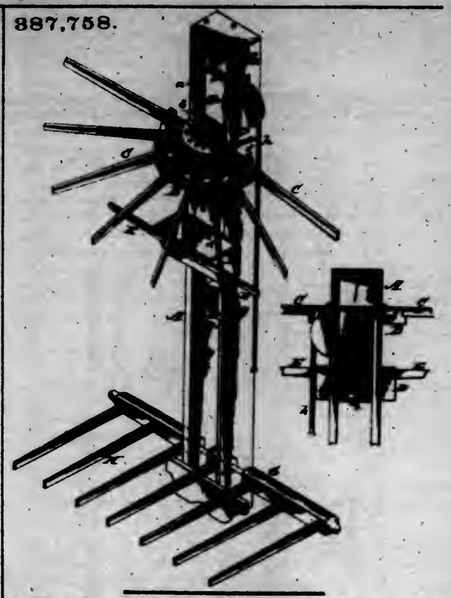
5. The combination of a frame formed of longitudinal stringers and vertical posts, a bed-piece connecting said stringers and posts and provided with a lateral extension, a vertical post or standard fixed upon said lateral extension, a carrier adapted to traverse vertically on said post, a cutter-shaft carrying a head and cutters and journaled in said carrier, a driving-shaft journaled in the bed-piece, and a pair of idlers or guide-pulleys journaled on the cutter-head standard and adapted to carry a belt from a pulley on the driving-shaft to a pulley on the cutter-shaft, substantially as set forth.

6. The combination of a cutter-shaft carrier having an upper and a lower guide-bearing, an oil-chamber secured to the top of said carrier, a step or bearing fitted in said chamber, a cutter-shaft passing through the guide-bearings and having a cutter-head and cutters on its lower end, a collar fixed upon the cutter-shaft and resting upon the step, and a set-screw engaging the cap of the oil-chamber and bearing against the upper end of the cutter-shaft, substantially as set forth.

387,758. **CLOTHES-RACK.** Daniel K. Bassmann, Gratz, Pa. Filed Apr. 5, 1887. Serial No. 233,704. (No model.)

Claim.—The combination, with the standard provided with grooves *a*, of the block guided in said grooves, the bracket B, carried by said block, the segmental radially-slotted rim *f* on the upper face of said bracket, the radial arms C, seated in the slots of said rim, the upwardly-extending pins *g* on said arms, and the cap-plate P, having holes receiving said pins, all substantially as shown and described, and for the purpose specified.

387,758.

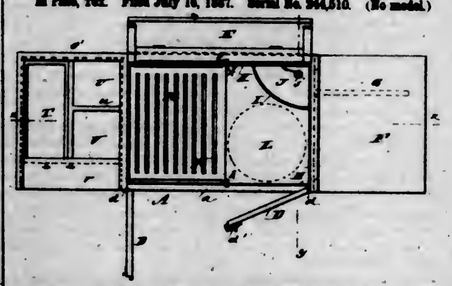


387,759. **WELL-CURB.** Henry L. Brack, Montrose, Pa. Filed Oct. 26, 1887. Serial No. 253,502. (No model.)



Claim.—The bucket B and pipe D, in combination with the valve E, trip E', the bent bail G, and the stop *a*, for controlling the upward movement of the bail and allowing the trip to open the valve, and the spout F, all constructed and arranged substantially as and for the purpose herein set forth.

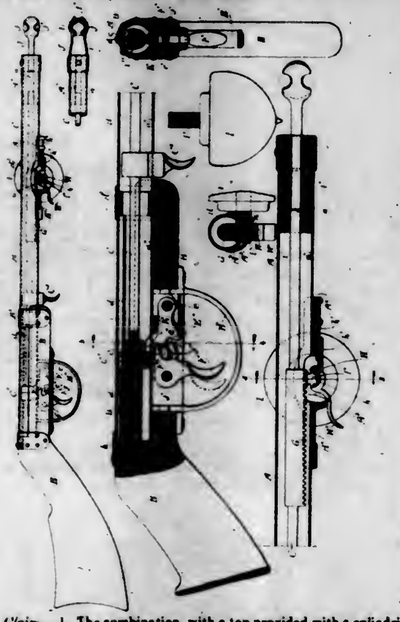
387,760. **KITCHEN TABLE AND CABINET.** Mary S. Brack, El Paso, Tex. Filed July 16, 1887. Serial No. 244,510. (No model.)



Claim.—A kitchen-table comprising the frame having a water-compartment, H, in its upper part, and having its front *e* cut away below the compartment, hinged front section, D, above the upper edge

of said compartment, a partition, I, forming a wash-basin, J, adapted to receive the overflow from said compartment, an outlet for said basin, and the cover E, hinged to the rear edge of the table, substantially as set forth.

387,761. TOP-SPINNING TOY SPRING-GUN. ORLANDO P. BESSON, Chicago, Ill., assignor to Charles H. Briggs, Lincoln, Nebr. Filed May 8, 1888. Serial No. 273,196. (No model.)



Claim.—1. The combination, with a top provided with a cylindric spindle, of a spinning apparatus comprising a longitudinally-movable rod, a spring for actuating the same, a detent and trigger for holding the spring compressed and releasing the same, and a yielding bar opposing said rod and adapted to hold the cylindric spindle of the top in engagement with the rod when the latter is moved endwise, substantially as described.

2. The combination, with a top provided with a cylindric toothed spindle, of a spinning device comprising a longitudinally-movable rod provided with a rack-bar, a spring for moving said rod, a detent and trigger for holding the spring compressed and releasing the same, and a recessed yielding bar opposing the rack-bar and adapted to hold the toothed spindle of the top in engagement therewith, substantially as described.

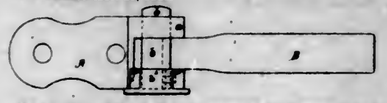
3. The herein-described toy having the form of a gun or pistol and provided with a barrel, a sliding rod within the barrel, a spring for actuating the rod, a detent and trigger for holding the spring compressed and releasing the same, and a yielding bar having a recess opposed to the said sliding rod and adapted to receive and hold in contact with the rod the cylindric spindle of a top, substantially as described.

4. The herein-described toy having the form of a gun or pistol, provided with a barrel and a longitudinally-movable rod therein, a spring for actuating the rod, a detent and trigger for holding the spring compressed and releasing the same, and spring-arms at the end of the barrel provided with holders at their free ends to receive and hold a ball or marble, substantially as described.

5. The herein-described toy having the form of a gun or pistol and provided with a barrel and a longitudinally-movable rod within the barrel, a spring for actuating the rod, a detent and trigger for holding the spring compressed and releasing the same, a spring-bar provided with a recess opposing an edge of the rod and adapted to hold in engagement with the rod the spindle of a top, and spring-arms attached to the end of the barrel and provided with holders adapted to sustain a marble or ball in front of and in alignment with said rod, substantially as described.

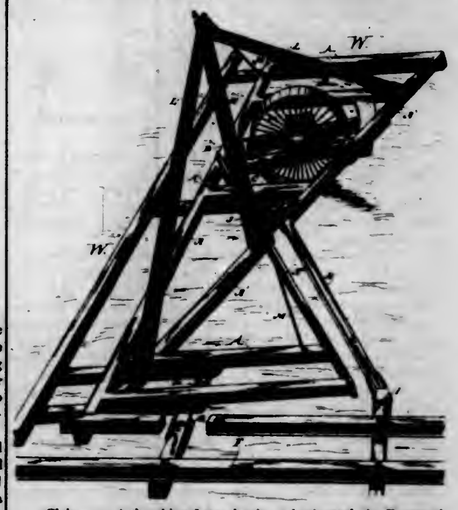
6. The herein-described toy having the form of a gun or pistol and provided with a slotted barrel, a longitudinally-movable rod within the barrel provided with an arm or handle extending through the slot of the same, a spring actuating said rod, a detent and a trigger for holding the spring compressed and releasing the same, and a spring-bar provided with a socket arranged in position opposed to the said rod and adapted to hold the cylindric spindle of a top in engagement with the said rod, substantially as described.

387,762. THILL-COUPLING. GEORGE BROWNLESS, Jr., Penola, South Australia. Filed Jan. 3, 1888. Serial No. 259,726. (No model.) Patented in South Australia Aug. 26, 1887, No. 865; in Victoria Sept. 12, 1887, No. 5,396; in New South Wales Sept. 13, 1887, No. 188; in England Nov. 15, 1887, No. 15,045; in Queensland Mar. 27, 1888, and in New Zealand Mar. 29, 1888.



Claim.—In a thill-coupling, the combination of the clip or shackle A, having the jaws or eyes *a*, one of which is provided with a hinged segment, *a'*, and the thill-iron B, having the T-head or trunnions *b*, provided with the disk or flange *b'*, and arc-shaped plate *b²*, substantially as herein described.

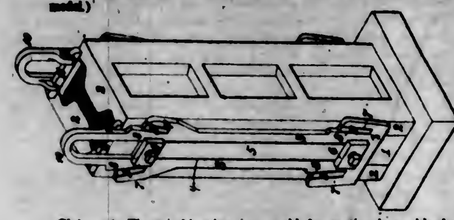
387,763. HEADER ATTACHMENT FOR HARVESTERS. HENRY RYAN, Modesto, Cal. Filed Dec. 1, 1887. Serial No. 256,721. (No model.)



Claim.—1. A thrashing-frame having a horizontal pin, E, extending outwardly from the front of the side adjacent to the header-frame, said pin being hinged to the thrashing-machine frame, so as to have a vertical movement on the hinge G, a header-frame pivoted upon this pin so as to have a rocking movement about it in the direction of the line of travel of the machine, and a wheel, B, by which the outer side of the header-frame is supported, the shaft of said wheel being journaled approximately in line with the pivot-pin E, in combination with the diagonal bar H, having one end hinged to the side of the thrashing-machine frame near the rear on a line with the hinge G, and the other end pivoted to the header-frame near the center and in line with the pin E, substantially as and for the purpose herein described.

2. In a combined header and thrasher, a header-frame consisting of the timbers A, secured together at right angles with each other, the diagonal timber A", and the bracing-timber A', extending diagonally across from the front of the side nearest the thrasher-frame to the rear of the outer side of the header-frame, the hinged pivot-pin E, by which the header-frame is connected with the side of the thrashing-machine frame, the wheel B, by which the outer side of the header-frame is supported, the diagonal brace-bar H, pivoted to the header-frame near its center and in line with the pivot-pin E, and hinged to the side of the thrashing-machine frame near the rear end and in line with the hinge G, in combination with the upright post K, the brace-timbers L, extending from the upper end of the post to the outer ends of the diagonal timber A', and the rods M, extending from the upper end of the post to the remaining two corners of the header-frame, substantially as and for the purpose described.

387,764. MOLD FOR CASTING BEAM-BLANKS. EDWARD M. BOAL, Allegheny, Pa. Filed Apr. 3, 1888. Serial No. 269,402. (No model.)



Claim.—1. The combination, in a mold for casting beam-blanks, of separable sections forming the walls of the mold and sliding clamps provided with inclined faces adapted to bear alternately against opposite faces of inclined projections on said sections in alternately-opposite movements of the clamps, substantially as set forth.

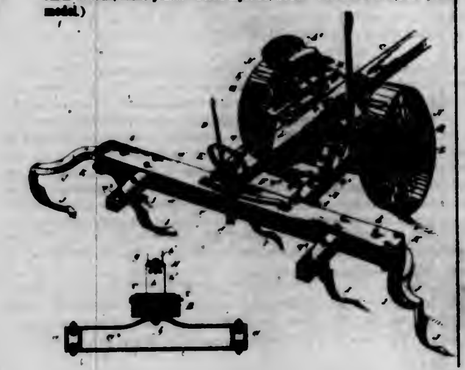
2. The combination, in a mold for casting beam-blanks, of a pair of mold-wall sections having their inner faces elevated at their central portions and depressed at and near their ends in conformity with the contour of the longer sides of a beam or other shape, one or more sections, each having its inner face corresponding with those of the flanges or projections constituting the shorter sides of a beam or other shape and interposed between the side-contour sections, projections having inclined bearing-faces fixed upon the longer side-contour sections adjacent to their ends, and a pair of clamps fitted to slide upon longitudinal guides on the shorter side-contour sections, and provided with inclined faces adapted to bear against said inclined bearing-faces, substantially as set forth.

3. The combination, in a mold for casting beam-blanks, of two pairs of opposite sections forming the walls of the mold and adapted to fit closely together at the angles thereof, inclined projections fixed upon the sides of one pair of said sections, longitudinal guides fixed upon the other pair of sections, and a pair of clamps fitted to slide freely upon said guides, and provided with wedging-faces adapted to bear against said inclined projections, substantially as set forth.

4. The combination, in a mold for casting beam-blanks, of two pairs of opposite sections forming the walls of the mold and adapted to fit closely together at the angles thereof, inclined projections fixed upon the sides of one pair of said sections and having inner and outer bearing-faces, and a pair of clamps fitted to slide freely upon the other pair of sections and provided with inner and outer inclined faces adapted to bear against the inner and outer faces, respectively, of said inclined projections in the movement of the clamps in one or the other direction, substantially as set forth.

5. The combination, in a mold for casting beam-blanks, of a pair of mold-wall sections having two or more inclined projections on two opposite sides, a pair of interposed mold-wall sections fitting between those first specified and provided with longitudinal guides on their outer faces, a pair of clamps fitted to slide longitudinally on said guides, shoulders or projections fixed to said guides for preventing displacement of the clamps, inner and outer inclined faces fixed upon said clamps and adapted to bear against corresponding faces on the inclined projections, and transverse keys or wedges bearing against the ends of the sections on which the guides are formed and against projections on the clamps, substantially as set forth.

387,765. ORCHARD AND VINEYARD CULTIVATOR. GUY W. CAMPBELL, San Jose, Cal., assignor of one-half to the San Jose Agricultural Works, same place. Filed Apr. 26, 1888. Serial No. 272,175. (No model.)



Claim.—1. In an orchard and vineyard cultivator, the combination of the frame and the supplementary teeth having bent standards extended to one side and adapted to be fitted into and detachably secured to the frame, whereby the width of the machine is varied, substantially as herein described.

2. In an orchard and vineyard cultivator, the frame having the fixed teeth, in combination with the independent or supplementary teeth having shanks adapted to be fitted into and detachably secured to the sides of the frame to vary the width of the machine, substantially as herein described.

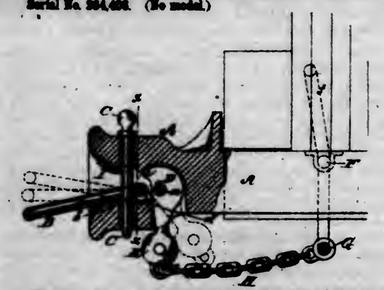
3. In an orchard and vineyard cultivator, the cross-plates of the frame having the grooved castings bolted between their ends, in combination with the supplementary attachable and detachable teeth having shanks fitted to the grooved castings, and the set-screws for holding said shanks, substantially as herein described.

4. In an orchard and vineyard cultivator, the main frame, consisting of the parallel longitudinal body-bars, the cross-plates, between which the rear ends of the body-bars are bolted, and the parallel back bars bolted to the cross-plates outside of the planes of the body-bars and within the planes of the ends of the cross-plates, substantially as herein described.

5. In an orchard and vineyard cultivator, the main frame consisting of the parallel longitudinal body-bars, the cross-plates connecting their forward ends, and cross-plates connecting their centers, the cross-plates, between which the rear ends of the body-bars are bolted, and the parallel back bars bolted to said cross-plates outside of the planes of the body-bars and within the planes of the ends of said cross-plates, substantially as herein described.

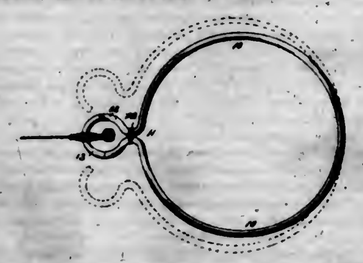
6. In an orchard and vineyard cultivator, the single casting serving as a hub or dust cap or cover for the wheel and as a support for the wheel-scraper, substantially as herein described.

387,766. CAR-COUPLING. WILLIAM R. CRADDOCK, Chicago, Ill., assignor to W. A. Ogden Hageman, New York, N. Y. Filed Feb. 17, 1888. Serial No. 264,402. (No model.)



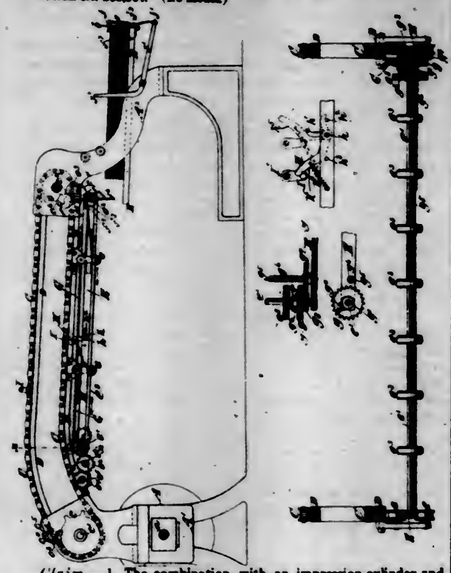
Claim.—In a car-coupler wherein the link-socket is provided with an elevated link-fulcruming surface and a depressed throat, the combination therewith of a pivoted weighted hook and connected transverse hand-operated shaft extending to the side of the car, and having a spring for holding said returning the same to its normal position, the spur of said hook projecting into the back of said socket over the throat-depression, and adapted by the described oscillation about the hook-pivot to engage the innermost end of the link or release the same and effect the latter's elevating or lowering movements, as set forth.

387,767. MAST-HOOP. THOMAS CLAPHAM, Roslyn, N. Y. Filed Mar. 26, 1888. Serial No. 268,932. (No model.)



Claim.—As an improved article of manufacture, a mast-hoop consisting of a spring-metal rod bent upon itself to form an approximately-open circle or hoop, and having its ends bent or curved outward from the open point and then inward upon themselves in opposite direction to form sister hooks, as set forth.

387,768. SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES. CALVERT B. COTTRELL, Stonington, Conn. Filed Jan. 12, 1888. Serial No. 260,807. (No model.)



Claim.—1. The combination, with an impression-cylinder and front delivery apparatus and a receiving-table at the farther end of the machine, of a reciprocating carriage provided at opposite ends with tape-rollers and endless tapes on which the printed sheet is deposited by the delivery apparatus, said tapes passing around and directly between said rollers, and being wholly supported and moved by the rollers, and having a progressive movement during the return movement of the carriage toward the cylinder, whereby their upper sheet-supporting portions are moved forward toward the table at the same speed that the carriage is moving toward the cylinder, substantially as herein described.

2. The combination, with an impression-cylinder and front delivery apparatus and a receiving-table at the farther end of the machine, of a reciprocating carriage provided at opposite ends with tape-rollers and endless tapes on which the printed sheet is deposited by the delivery apparatus passing around and directly between the tape-rollers, by which they are wholly supported and moved, said tapes having a progressive movement carrying their upper portions toward said table while receiving the sheet upon them and a corresponding movement while the carriage makes its return movement toward the cylinder, but being motionless on their rollers during the forward movement of the carriage toward said table, substantially as herein described.

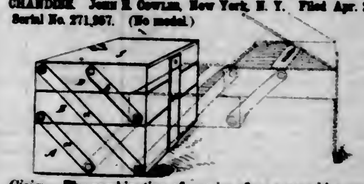
3. The combination, with an impression-cylinder, a receiving-table at the farther end of the machine, and a front delivery apparatus composed of endless chains or travelers having one or more sets of grippers between them, of a reciprocating carriage provided with tape-rollers and endless tapes, gearing whereby a progressive travel of the tapes to carry their upper portions toward the said table is produced while the carriage is at rest in its inner position, a tappet on the delivery chains or travelers for engaging said carriage and moving it forward after the delivery of the sheet upon its tapes, a stationary rack, and a wheel engaging said rack and imparting a progressive movement to the tapes during the return movement of said carriage, substantially as herein described.

4. The combination, with an impression-cylinder, A, the receiving-table B, and the delivery-chains and their grippers, of the tape-carriage E, having tape-rollers and endless tapes and guided below said chains, the lever H, pivoted to the carriage, and a spring for drawing it down out of reach of the delivery-grippers, and the tappet-arm I, carried by said chains for acting upon said lever to move the carriage forward, substantially as herein described.

5. The combination, with the cylinder A, the receiving-table B, and the delivery-chains C, with their grippers, of the reciprocating carriage E, provided with tape-rollers and endless tapes, the stationary rack G, parallel with the line of movement of said carriage, gears operated by the delivery-chains and through which a tape-roller and the tapes are operated when the carriage is at rest in its inner or rearward position, a spring on the carriage, and gears, one of which engages said rack and has a clutch-connection with a tape-roller shaft, whereby said gear will be rotated to put the spring under tension during the forward movement of the carriage and will be rotated by the spring to draw the carriage along the rack, and thus produce its backward movement and the simultaneous forward travel of the tapes, substantially as herein described.

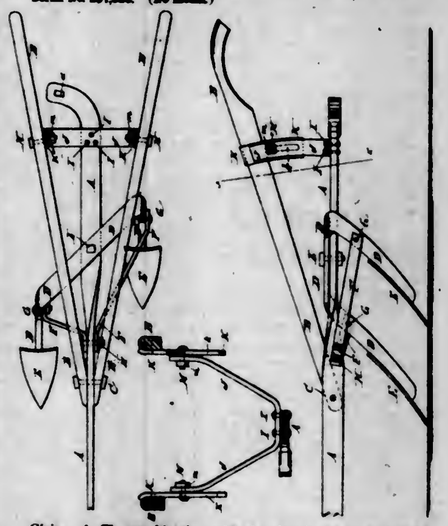
6. The combination, with a receiving-table and receiving-nippers at its front and a lever connected with said nippers for raising and lowering them, of a reciprocating tape-carriage having a cam for acting on said lever to raise the nippers during the forward movement of the carriage, substantially as herein described.

387,769. PACKAGE FOR CONTAINING AND DISPLAYING MERCHANDISE. JOHN R. GOWLAN, New York, N. Y. Filed Apr. 30, 1888. Serial No. 271,957. (No model.)



Claim.—The combination of a series of superposed boxes or trays with their corresponding sides in the same plane and each connected at its opposite ends to the next above it by a lever having its extremities pivoted to each, two levers pivoted to the rear ends of the lower box and the forward ends of the upper box of the series, and a supporting-bar rigidly secured to and in the plane of the rear face of the upper box and extending to the bottom of the lower box, substantially as described.

387,770. DOUBLE-SHOVEL PLOW. WILLIAM R. CRAIG, Columbia, Texas., assignor to Charles H. Shepard, same place. Filed May 6, 1887. Serial No. 237,220. (No model.)



Claim.—1. The combination, with the plow-beam A, the handles B, and the plows E, of the inclined cross-bar D, having its ends bent downward and forward to bring them into position to receive the said plows, and the braces F, substantially as herein shown and described, whereby said plows will be firmly supported and kept from becoming clogged, as set forth.

2. A double-shovel plow consisting of the beam A, having its end curved laterally, the inclined cross-bar D, secured to the beam and having its ends bent downward, the braces F, secured to the beam and to the cross-bar, the braces J, secured to the beam, and the handles B, secured to the beam and provided with the bars or hangers K, adjustably secured to the braces, substantially as herein shown and described.

387,771. GATE-HINGE. JAMES H. DAVIS, Danville, Ky. Filed Jan. 20, 1887. Serial No. 225,084. (No model.)

Claim.—1. The pivot-plate having a non-circular portion and provided with an opening arranged eccentrically to said portion, the hinge-section having a pin fitted to said eccentric opening, and the second section or strap fitted to said first section, all combined substantially as set forth.

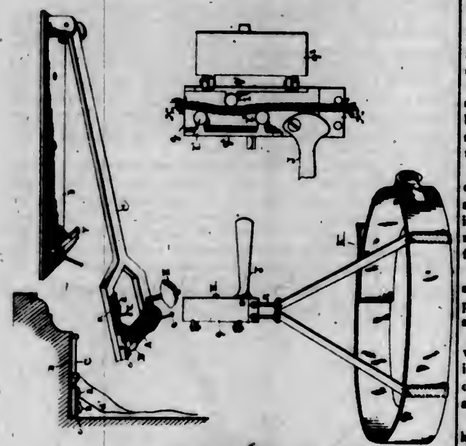
2. In a hinge, a pivot plate or section having a non-circular portion and provided with an opening arranged eccentrically to said non-circular portion, combined with a hinge-section adapted to receive or coact with another hinge-section and having a pin or stem fitted to enter said opening, all substantially as and for the purpose specified.

3. The improved hinge herein described, comprising the hinge-section 6, having main rounded bearing 7, and provided at the opposite sides thereof with ribs 8 8, and the hinge-section 5, having a socket or recess formed with a main portion, 13, and with depressions 14 14 at the opposite sides of such portion 13, substantially as and for the purposes specified.

387,771.



387,772. FIRE-ESCAPE. WILLIAM J. DIBBIN, Rochester, N. Y. Filed Apr. 26, 1888. Serial No. 271,702. (No model.)

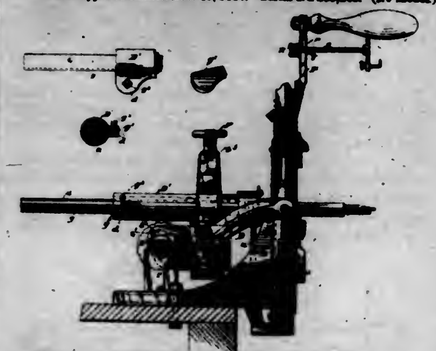


Claim.—1. The herein-described fire-escape, composed of the case having three sides and having projections extending up from the bottom and braced from the sides, the projections being set on opposite sides of the longitudinal center of the case, the cam-lever extending at right angles to the case and adapted to clamp the line between it and the side of the case, and the door hinged to one side of the case and adapted to be fastened at its free end to the other side of the case, substantially as described.

2. The herein shown and described friction fire-escape, composed of the case open at its ends and one side, and having projections integral with its bottom and sides and arranged with their opposing sides approaching close to the longitudinal center of the case, the cam-lever adapted to clamp the rope between it and the side of the case, the door hinged to one side of the case and provided with a pivoted latch, and the arm extending from the other side of the case, to be engaged by the said latch to fasten the door and hold the line in place between the projections and between the side of the case and the said cam-lever, substantially as described.

3. In a fire-escape, the combination of the strap D, the bracket C, hinged thereto at one end and having arms *e* at its other end, the reel journaled between the arms *e*, the line wound on the reel and having its end weighted, the gong-bell supported on the bracket, the hammer carried by the reel, the catches for supporting the weighted end of the line and holding the bracket folded, and the releasing-cord for operating the catches, substantially as described.

387,773. HUB-BORING MACHINE. FRANK R. DURBIN, Salem, Ohio. Original application filed Oct. 4, 1886, Serial No. 215,674. Divided and this application filed Nov. 15, 1887. Serial No. 255,305. (No model.)



Claim.—1. In a hub-boring machine, a yoke having a vertical hub, a bearing for the mandrel having a spindle set in the hub and adjustable therein, a mandrel, and a feed-nut fixed on the inner end of the bearing, substantially as set forth.

2. In a hub-boring machine, a vertically-adjustable yoke pivoted on the main frame, a bearing for the mandrel vertically adjustable in said yoke, and a spline to guide said mandrel, in combination with a feed-nut on the inner end of the bearing, substantially as set forth.

3. In a hub-boring machine, a sectional feed-nut, one section having studs on its meeting face and the other section having slots fitting about the studs, and a lock pivoted on one section and having a substantially L-shaped slot and a set-screw, substantially as set forth.

4. In a hub-boring machine, a sectional feed-nut having studs, and slots for the studs, and a dovetailed groove at one end to engage the bearing for the mandrel, in combination with a lock pivoted on one section and having a slot and a set-screw to hold it on the other section, substantially as set forth.

5. In hub-boring machines, a nut formed in two parts having a dovetail groove at one end to engage the bearing for the mandrel, studs on one part and slots on the other part, and a lock on the nut at its outer end, constructed to clamp the nut on the mandrel, in combination with the mandrel and the bearing therefor, substantially as set forth.

6. In hub-boring machines, a clamping device consisting of a screw-rod adjustable in the arm of the revolving head, a clamp-plate pivoted on said screw-rod, and a clamping-bolt adjustable in said plate, substantially as set forth.

7. In a hub-boring machine, a revolving head for carrying the wheel, having arms with holes through their extremities, nuts swiveled in said holes, and screw-rods in the nuts, with clamping-plates on the outer ends of the rods and clamping-bolts on the plates, substantially as set forth.

8. In a hub-boring machine and combined with the revolving head for holding the wheel to be bored, swivel-nuts set into the arms of the revolving head, rods adjustable in said nuts, and clamps for holding the wheel pivotally attached to the outer extremities of said rods, substantially as set forth.

387,774. ARTIFICIAL TOOTH-CROWN. CHARLES E. DUBEL, Pittsburg, Pa. Filed Feb. 1, 1888. Serial No. 262,653. (No model.)



Claim.—The improvement in the manufacture of tooth-crowns, which consists in first forming a pattern presenting the contour of the crown portion of a natural tooth, then depositing thereon a shell or casing of metal by the action of an electric current, and finally removing the pattern from the inclosing-shell, substantially as set forth.

387,775. WINDING OR DRIVING DRUM. SAMUEL DEECKER and JOHN J. MCGILL, Pittsburg, Pa. Filed Jan. 27, 1888. Serial No. 262,126. (No model.)

Claim.—1. A winding-drum formed in two parts, in combination with two or more rings, the two parts of the drum having a spring-bearing upon the rings, substantially as set forth.

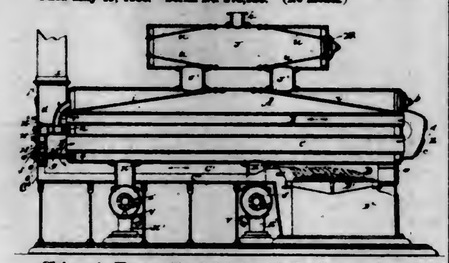
387,775.



2. A winding-drum formed in two parts, each part being provided with a flanged rim, in combination with two or more rings interposed between the flanges of the rim, and bolts having a spring-bearing for clamping the parts together, substantially as set forth.

3. A winding-drum formed of two parts, each part being provided with two or more sockets, in combination with two or more locking-blocks engaging said sockets, substantially as set forth.

387,776. STEAM-BOILER. PETER DONALD, New Orleans, La. Filed May 15, 1888. Serial No. 273,982. (No model.)



Claim.—1. The combination, with a boiler, a smoke-box, and a fire-chamber located beneath the boiler, of two or more sets of flues extending through the boiler, a deflector located in the smoke-box and in open communication with the boiler between the sets of flues, and pipes connecting the deflector with the lower portion of the boiler, substantially as set forth.

2. The combination, with a boiler, a smoke-box, and a fire-chamber located beneath the boiler, of two or more sets of flues opening into the smoke-box at one end, a chamber for affording a communication between the flues at the opposite end, and a deflector extending across the smoke-box and in open communication at one end with the boiler between the sets of flues, said deflector having pipes extending therefrom and opening into the boiler above and below the flues, substantially as set forth.

3. The combination, with a boiler, a casing about the same, a smoke-box in one end thereof, and a fire-chamber within the casing and beneath the boiler, of two sets of flues in the boiler, a deflector extending across the smoke-box and in open communication at one end with the boilers at a point between the two sets of flues, said deflector having pipes therein communicating with the boilers above and below the flues, and a steam-chest above the boilers and in communication therewith, substantially as set forth.

4. In a steam-boiler, the combination, with a boiler-shell and a smoke-box, of a double-walled angular deflector having a horizontal leg and a depending leg, the horizontal leg being in connection with the water-space of the boiler-shell, a set of upwardly-projected tubes which are bent to connect the top wall of the deflector with the flue-sheet of the boiler, and a set of tubes which are attached to the lower portion of the depending leg of the deflector and connect it with the lower part of the adjacent flue-sheet to afford free water-circulation through the deflector and adapt it to receive water from the boiler-shell and return it thereto, substantially as set forth.

387,777. LEVER FOR SULKY-PLOWS. EARL W. DRAKE, Poynette, Wis. Filed May 23, 1888. Serial No. 274,731. (No model.)

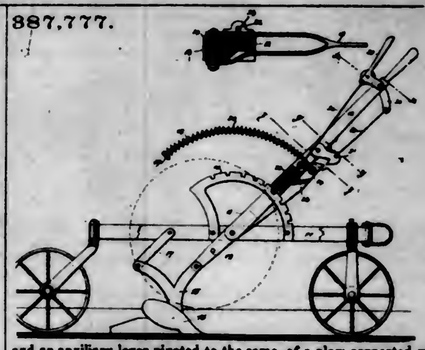
Claim.—1. In a sulky-plow, the combination, with the main or lifting lever, of a spring-actuated auxiliary lever pivoted to the main lever and adapted to carry the plow, substantially as and for the purpose specified.

2. In a sulky-plow, the combination, with the main or lifting lever, of a spring-actuated auxiliary lever pivoted to the main lever, and a plow connected with the auxiliary lever at or near the lower extremity, as and for the purpose specified.

3. In a sulky-plow, the combination, with the main or lifting lever, of a spring-actuated auxiliary lever pivoted to the main lever, a plow connected to the lower extremity of the said auxiliary lever, and a means, substantially as shown and described, for manipulating the auxiliary lever independent of the main lever, as and for the purpose specified.

4. In a sulky-plow, the combination, with the main or lifting lever

387,777.



and an auxiliary lever pivoted to the same, of a plow connected with the lower extremity of the said auxiliary lever, and means, substantially as shown and described, for jointly manipulating the main and auxiliary levers, as and for the purpose specified.

5. In a sulky-plow, the combination, with the main or lifting lever, an auxiliary lever pivoted to the main lever, and a plow connected with the lower extremity of the said auxiliary lever, of a yoke attached to the upper extremity of the auxiliary lever, extending over and beyond the main lever, a spring secured upon said yoke bearing upon the main lever, and means, substantially as shown and described, for locking the said main lever in a predetermined position, as and for the purpose specified.

6. In a sulky-plow, the combination, with the main or lifting lever, an auxiliary lever pivoted to the main lever, provided with a lug at the upper extremity engaging the main lever, and a plow connected with the lower extremity of the said auxiliary lever, of a yoke secured to the said lug extending over and beyond the main lever, a spring held upon said yoke and bearing upon the main lever, a spring-actuated latch pivoted upon the said main lever in advance of the yoke, and means, substantially as shown and described, for manipulating said latch, as and for the purpose specified.

7. In a sulky-plow, the combination, with a main lever, an auxiliary lever carrying the plow, provided with a lug engaging the main lever, and a rack, of the latch 21, engaging the auxiliary lever, the latch 23, engaging the rack, the elbow-lever 25, pivoted on the main lever and connected with the latch 23, the lever 26, pivoted on the same point with the lever 25 and connected with the latch 21, and the adjustable button 28, substantially as shown and described.

387,778. CULTIVATOR. SOLOMON DRAPER, Sullivan, Ind. Filed May 29, 1888. Serial No. 275,464. (No model.)

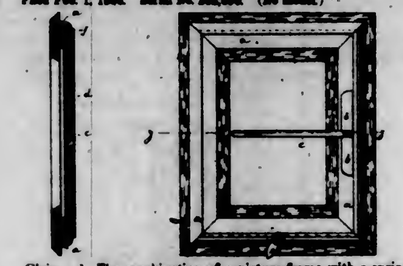


Claim.—1. The combination, in a wheel-cultivator, of the main frame, the arched bar B, having annular portions *a* formed on its lower ends, the brackets journaled on the said ends *a* and provided with spindles, the rearwardly-extending arms fixed to the brackets, and the

hand-bar pivoted to and connecting the ends of the said arms, substantially as specified.

2. The combination, in a cultivator, of the front and rear arched bars secured to the draft-beam, the axle-spindle journaled on the ends of rear arched bars, and having rearwardly-extending arms pivotally connected, the front arched bar terminating in horizontal branches, the rods connecting the said branches with the lower ends of the rear arched bar, the cultivator-frames journaled on the front arched bar, and the curved notch-bars for engaging the handles of the cultivators, substantially as specified.

387,779. PICTURE-FRAME. HENRY RUSSELL, New York, N. Y. Filed Feb. 1, 1888. Serial No. 262,893. (No model.)

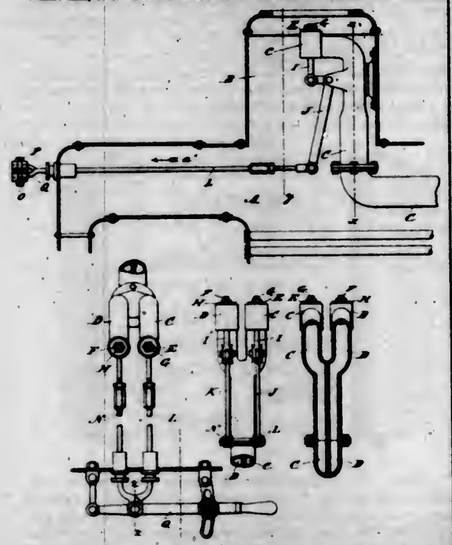


Claim.—1. The combination of a picture-frame with a spring, *c*, bulged toward the front and projecting across the frame, one end of the spring being secured to the frame, while the other end is disconnected therefrom, substantially as specified.

2. The combination of frame *a* with the block *b*, and with the spring *c*, secured to such block at one end, the other end of the spring being free, substantially as specified.

3. The combination of frame *a*, having flange *f*, with back *d*, having one grooved edge to engage said flange, and having the other edge flanged to overlap frame *a*, substantially as specified.

387,780. LOCOMOTIVE-BOILER. MIDDLETON G. FELLER, Tea Mile Hill, S. C. Filed Dec. 30, 1887. Serial No. 259,594. (No model.)



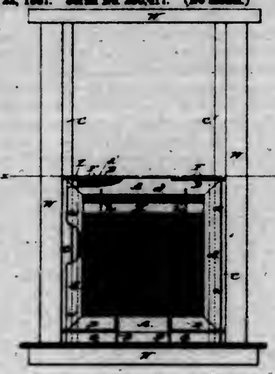
Claim.—1. The combination, with a locomotive-boiler provided with a live-steam pipe for each engine and a throttle-valve for each pipe, of a connecting-rod for each valve, and a single lever to which the said rods are detachably connected, substantially as shown and described.

2. The combination, with two dry-pipes leading to the two locomotive-engines, of valves held at the inner ends of said dry-pipes, bell-crank levers connected with the said valves, rods operating on the said bell-crank levers, and a throttle-valve lever, on which the said rods are pivoted at the same distance from the fulcrum-point of the said lever, substantially as shown and described.

3. The combination, with the locomotive-boiler, of the pipes C D, leading from the engines of the locomotive to the steam-dome, the valves E F in the said pipes, the bell-crank levers J K, the links I I', connecting the short arms of the bell-crank levers with the valves, the rods L N, connected to the long arms of the bell-crank levers, and the lever Q, to which the rods L N are detachably connected, substantially as herein shown and described.

4. The combination, with a throttle-valve lever and two bolts held one above the other on the said lever, of rods pivoted by the said bolts on the said valve-lever, a valve-lever, bell-crank levers pivotally connected with the said rods, links pivotally connected with the said bell-crank levers, throttle-valves held on the said links, and dry-pipes in which the said valves operate, said dry-pipes being connected with the two locomotive-engines, substantially as shown and described.

387,781. WINDOW-SCREEN. GEORGE H. GOULD, West Lebanon, assignor to himself, and Charles King Gould, Rockfield Depot, Me. Filed Sept. 22, 1887. Serial No. 250,417. (No model.)



Claim.—1. The combination, in a window-screen, of a frame provided with screen-cloth and fitted to guides on the window-frame, and clamp-plates fitted to the screen and provided with elastic facings having frictional contact with the guides, substantially as described, for the purpose set forth.

2. The combination, in a window-screen, of a frame, A, provided with screen-cloth, B, and clamp-plates D, provided with open-ended slots *d*, having elastic or yielding facings E, adapted to guides on the window-frame, and provided also with slots *d*, and screws or bolts F, passed through the clamp-slots *d* into the screen-frame, substantially as herein set forth.

3. The herein-described window-screen clamp, consisting of a plate, D, having an open-ended slot, *d*, provided with an elastic or yielding facing, E, and provided also with a slot, *d'*, adapted to receive fastenings to hold the clamp to the screen-frame, substantially as herein set forth.

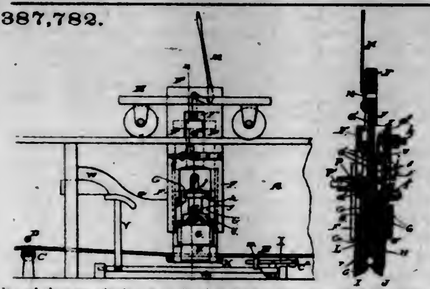
4. The combination, with a window-screen frame, of guides A, fitted to the top rail of the frame and projecting downward about parallel with the screen-cloth, and a bar or plate, H, fitted on the guides A and against the screen-cloth and made about the same thickness as the screen-frame, substantially as shown and described, whereby should the top bar of the screen-frame be too high to fit against the lower rail of the raised window-sash, the bar H may be adjusted within the screen-frame to fit against said sash-rail, as and for the purpose set forth.

387,782. CABLE-RAILROAD GRIP AND CROSSING. JOSEPH J. GRAFF, San Francisco, Cal. Filed Aug. 31, 1887. Serial No. 248,414. (No model.)

Claim.—1. A cable-railway grip consisting of the exterior stationary frame and guide, F, and the secondary frame G, having a vertical movement within the frame F, in combination with the rope-gripping jaws attached to the lower end of the frame G, the wedge-shaped slides between which these jaws are held in position, and a lever and connecting-slides, whereby one of the wedges may be operated to open or close the jaws for the purpose of releasing or gripping the cable, substantially as herein described.

2. In a cable-railway grip, the stationary frame F, fixed to the car or dummy, a supplemental frame, G, sliding vertically within the frame F, and having the jaw J hinged to its lower end, so as to open outwardly about its hinge, a wedge-shaped slide by which said jaw is closed and held in a vertical position, and the opposing jaw I, having guiding and holding pins upon which it moves to and from the jaw J, and a vertically-moving wedge-shaped slide connected with the operating-lever in the car for the purpose of compressing the cable between

387,782.



it and the opposite jaw or releasing the same, substantially as herein described.

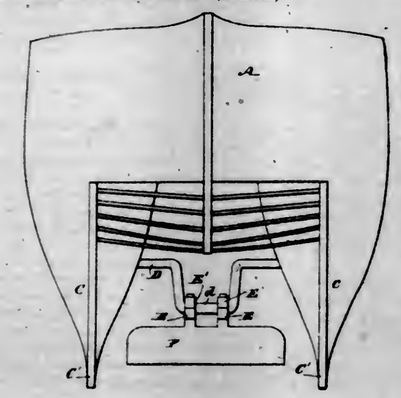
3. The stationary frame F, secured to the car or dummy, the supplemental frame G, sliding vertically within the same and carrying the gripping-jaws at its lower end, and a sliding frame, G', guided and moving upon the main stationary frame and having a spring-actuated lever and pin, in combination with the vertically-moving wedge shaped slide L, by which the jaws are operated to release or grip the cable, said slide having a hole which is engaged by the pin, so as to connect it with the operating-lever upon the dummy, substantially as herein described.

4. The stationary frame fixed to the dummy and having the supplemental vertically-sliding frame G, carrying the gripping-jaws at the lower end and movable within the main frame, the horizontally-moving jaw I, with the operating wedge-shaped slide L, connected with the lever in the car, and the opposing hinged jaw J, having a wedge-shaped slide, U, movable behind it and holding it in position, the roller *f*, projecting from the side of the sliding wedge U, and the stops *g* and *h*, to limit the upward movement of the wedge upon the frame G, in combination with the fixed incline T on the side of the rope-tube, whereby the frame G is automatically raised upon approaching the transverse crossing rope of another line, substantially as herein described.

5. The main frame of a cable-railway grip, fixed to the car or dummy, the supplemental vertically-sliding frame G, guided within the main frame, having the gripping-jaws, with their operating wedge-shaped slides upon opposite sides of the frame G, one being connected by a spring-actuated lever and pin with the operating-lever upon the car and the other provided with an anti-friction roller or lug, *f*, whereby it may be raised or depressed, in combination with fixed lugs or projections upon the side of the tube, which will disengage the spring-lever and pin, and the incline, whereby the movable frame is raised with its grip above the level of the obstruction to be passed, substantially as herein described.

6. The fixed and movable frames of the grip, the jaws with their actuating and holding wedge-shaped slides and operating-lever, and the connecting spring-actuated pin *i*, in combination with the fixed guide or channel W within the tube and the projections or lugs, whereby the holding-catches are disengaged and the grip thrown down again for the purpose of grasping the rope after passing the obstruction, substantially as herein described.

387,783. PROPELLER. LOUIS GEBERT, New York, N. Y. Filed Mar. 3, 1888. Serial No. 266,041. (No model.)



387,783.



Claim.—The body A of the vessel, constructed with the two hulls C C, the two shafts D D, cranks *d d* thereof, bars E, and blades F, attached to the said cranks, in combination with the two stern-shafts D' D', cranks *d'* *d'*, of greater length than the cranks *d d* of the front shafts, D D, the bars G, connected to the cranks *d'*, and the blades H, attached to the bars, substantially as described.

387,784. CALENDAR. HENRY S. HAGY, Taunton, Mass., assignor, by mesne assignments, to Emily F. Hagy, same place. Filed Dec. 12, 1881. Serial No. 47,615. (No model.)



Claim.—The improved double-roll calendar above described, consisting of the backing, the two spindles, each mounted in a pair of bearings, and the calendar-strip, the two pairs of bearings being supported solely by the backing and that part of the strip lying between the rolls being uncovered.

387,785. DEVICE FOR COOLING ALES AND SIMILAR LIQUIDS. WILLIAM B. HAWKINS, New York, N. Y. Filed Aug. 30, 1887. Serial No. 248,197. (No model.)

Claim.—1. In a device for cooling liquids, the reservoir A, having inlet and outlet apertures, and the spider-like metal jacket B, formed in two sections bolted together around the receptacle, and having pipes *b'* registering with the inlet and outlet apertures therein, substantially as set forth.

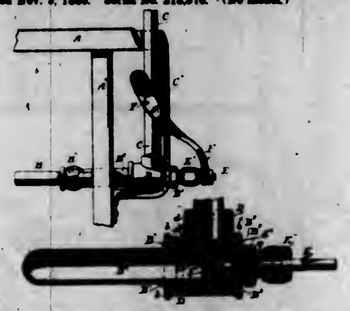
2. The combination, with the reservoir A, having inlet and outlet

387,785.



apertures provided with nipples *a*, of the two-part spider-like jacket B, bolted together around the reservoir and provided with integral sleeves *b*, receiving the nipples *a*, and having lengths of pipe *b'*, substantially as set forth.

387,786. VAPOR-STOVE. FREDERICK J. HUBBARD, Chicago, Ill., assignor to the Adams & Westlake Manufacturing Company, same place. Filed Nov. 9, 1886. Serial No. 218,376. (No model.)

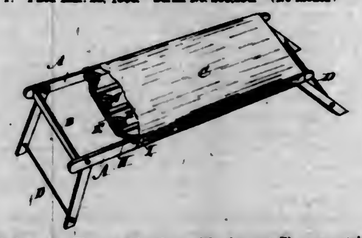


Claim.—1. The combination, with a non-rotating horizontal oil-pipe of a vapor-stove leading to the burner or burners, and a tank-pipe pivoted to the non-rotating pipe and leading from an elevated oil-supply tank, of a valve arranged in one of said pipes and having its movable part provided with a projection or lever arranged in position to be engaged for the closing of the valve in the swinging movement of the tank-pipe, substantially as described.

2. The combination of an oil-pipe leading to a burner or burners, a pipe pivoted thereon leading from an oil-supply tank, and a valve for cutting off the flow of oil from the tank toward the burner, the oil-pipe and the tank-pipe being severally provided in their joint with passages which coincide to form a continuous passage for the back-flow of oil from the oil-pipe to the tank-pipe when the latter is depressed, substantially as described.

3. The combination, with the tank-pipe C and pipe B^2, having passages *b'*, b^2, and b^3, of a coupling, D, rigid with the pipe C, but rotatably supported on the pipe B^2, and provided with passages d'' d''', a valve for closing passage *b'*, and a lever connected with said valve arranged in the path of the pipe C, substantially as and for the purpose set forth.

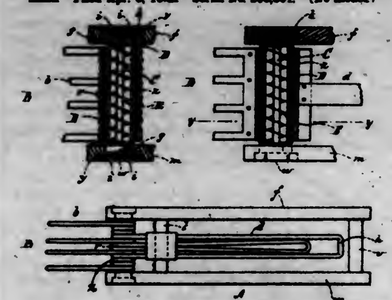
387,787. SPRING BED-BOTTOM. ANTHONY HEISER, New York, N. Y. Filed Mar. 23, 1888. Serial No. 268,282. (No model.)



Claim.—1. The combination, with the metallic cross-strips E, formed with integral hangers H, having outward and downward bent integral hooks I at their upper ends, of the longitudinal strips F, crossing the strips E and riveted thereto at their points of intersection, and the spiral springs secured at said points of intersection, whereby when said spring-supporting frame is in place on a set the side bars thereof will be braced against outward movement, substantially as set forth.

2. The combination, with the frame A, of the cross-strips E, bent upward at their ends to form integral hangers H, then outward and downward to form hooks I, overlapping the side bars of the frame, and suspending the said strips within the frame, and bracing the side bars thereof against outward movement, the longitudinal strips F, crossing the strips E and riveted thereto at their points of intersection, the springs G, secured at said points of crossing, and the fabric bottom extending across the frame over the springs, substantially as set forth.

387,788. WEFT-FORK FOR LOOMS. IRA JACKSON, Lawrence, Mass. Filed Apr. 6, 1888. Serial No. 269,861. (No model.)



Claim.—1. The combination of the following instrumentalities, to wit: a body, a fork proper provided with a centrally-disposed transversely-arranged tube, a sleeve disposed within said tube and secured thereto, a rod mounted in said body and having a fixed head at one end and a nut at the other, said rod extending longitudinally through said sleeve, a spring disposed around said rod within said sleeve and having one of its ends secured to said rod and the other to said sleeve, and a stop for said fork proper, substantially as set forth.

2. The fork proper, B, having the teeth *b*, tube *z*, and tail-piece *d*, provided with the dog *h*, the sleeve D, disposed in the tube *z* and secured thereto by the screw *r*, the body A, provided with the stop *t*, and rails *m* *f*, having the counterbored holes *g*, the screw-threaded rod C, provided with the flanged head *w* and flanged nut *k* said rod being inserted in said sleeve with its head resting in one of said holes and the nut in the opposite hole, and the coiled tension-spring K, disposed around said rod and having one of its ends secured thereto and the other secured to said sleeve, all being constructed, combined, and arranged to operate substantially as described.

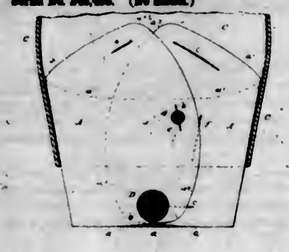
387,789. PERMUTATION-LOCK. CONRAD A. JOHANNSEN and SYBRO B. JOHANNSEN, Erie, Pa. Filed Oct. 27, 1887. Serial No. 253,489. (Model.)



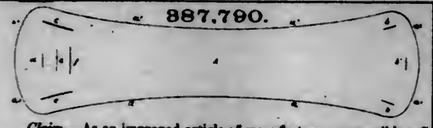
Claim.—1. In a permutation-lock, the combination, with two disks and tumblers arranged in connection therewith, of a spring-plate and ratchet arranged between the lock-case and the outer dial, and an inversely-arranged spring-pawl plate and ratchet arranged between the dials, substantially as described.

2. In a permutation-lock, the combination, with a lock-case formed with a central web and carrying a spring-ratchet plate, 15, of a dial formed with a sleeve, 19, which passes through an aperture in the web-case and is provided with a ratchet upon its inner face, an inner tumbler fixed to the sleeve of the dial, an inner dial connected to the shank, an operating-rod the shank of which passes through the sleeve 19, an outer tumbler secured to the said shank, a spring-ratchet plate carried by the first-named dial, and a ratchet formed upon the inner face of the last-named dial, substantially as described.

387,790. APPAREL-CUFF. WILLIAM KAHLER, Drummond, Wis., assignor of one-half to Isidore Swinehart, Chicago, Ill. Filed Aug. 8, 1887. Serial No. 246,493. (No model.)

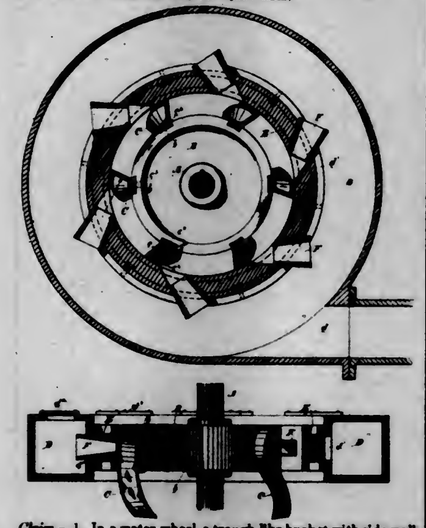


887,790.



Claim.—As an improved article of manufacture, a reversible cuff having the button-holes *b* at one end and the long button-holes *c* at the other end for adjusting the sides of the cuff, and the transverse button-holes *b'* at one end and *d*, *e*, and *f* at the other end intermediate the button holes *b* and the button-holes *c*, respectively, for adjusting the middle portion, substantially as set forth.

887,791. WATER-WHEEL. ISAAC P. LAUBER, Iona, Ont. Filed Oct. 14, 1887. Serial No. 252,302. (No model.)



Claim.—1. In a water-wheel, a trough-like bucket with side walls and a bottom deeper along its outer edge, said bucket curving inwardly and the depth of its outer edge diminishing in the direction of its length to its discharge end, substantially as described.

2. In a water-wheel, a bucket having a bottom and side walls, and curved inwardly in the direction of its length to its discharge end, said bottom being at an obtuse angle to the perimeter of the wheel, the angle diminishing gradually toward the discharge end, and the bottom then inclining inwardly, substantially as described.

3. In a water-wheel, and in combination with the disk and its buckets, the encircling hollow casing for the water, having on its inner surface the continuous slot, the adjustable ring secured to the inner surface of the hollow casing, and the nozzles carried by the ring, and communicating with the casing through its slot, substantially as described.

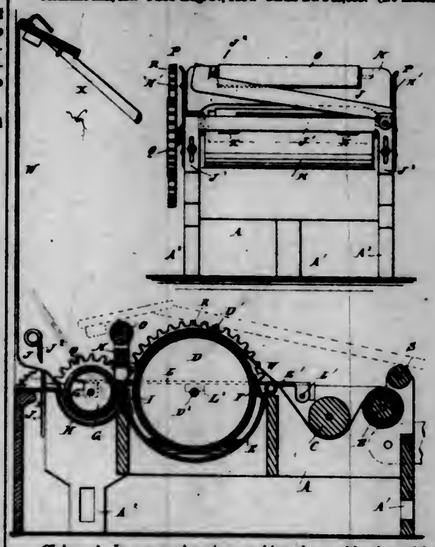
887,792. PAPER-HANGING CLAMP. JOHN F. MCAFEE, Pleasant Hill, Mo. Filed Aug. 27, 1887. Serial No. 248,034. (No model.)



Claim.—1. In a paper-hanging clamp, the combination, with a handle, a grooved plate on the end thereof, and a brush on the plate, of a spring-pressed bell-crank lever pivoted on the said plate, a bar carried by the crank-lever and engaging the groove of the board, and a rod for operating said crank-lever, substantially as herein shown and described.

2. In a paper-hanging clamp, the combination, with a handle, an inclined plate secured to the end of the handle and provided with a semi-circular groove in its upper surface, and a brush on the lower surface of the plate, of a bell-crank lever pivoted on the plate, a bar carried by said bell-crank lever, a spring for holding the bar in the groove of the plate, and a rod passing through bearings on the handle and provided with an offset for engaging the upper bearing to lock the clamp open, substantially as herein shown and described.

887,793. WALL-PAPER-HANGING MACHINE. JOHN F. MCAFEE, Pleasant Hill, Mo. Filed Aug. 27, 1887. Serial No. 248,033. (No model.)



Claim.—1. In a paper-hanging machine, the combination, with a paste-pan, of a roller supported to rotate in said paste-pan, and over which passes the back of the wall-paper, a scraper operating against said roller, a friction-roller geared with said paste-roller, and a drip-pan surrounding the lower half of said friction-roller, substantially as shown and described.

2. In a paper-hanging machine, the combination, with a paste-pan, and a paste-roller covered with fibrous material, and held to rotate in said paste-pan, of a friction-roller geared with said paste-roller, a drip-pan surrounding the lower half of said friction-roller, and a guide-roller under which the paper passes to said paste-roller, substantially as shown and described.

3. In a paper-hanging machine, the combination, with a paste-pan, and a paste-roller covered with fibrous material and held to rotate in said paste-pan, of a friction-roller geared with said paste-roller, a drip-pan surrounding the lower half of said friction-roller, a guide-roller under which the paper passes to said paste-roller, and a scraper pivoted on the paste-pan and acting against the fibrous covering of the paste-roller, substantially as shown and described.

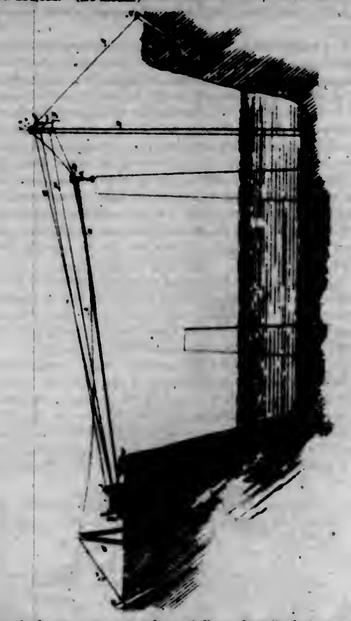
4. A paper-hanging machine comprising a paste-pan, a roller covered with fibrous material held to rotate in said pan, a scraper pivoted on the paste-pan and acting against the covering of the roller, a friction-roller geared with the paste-roller, a drip-pan surrounding the lower half of the said friction-roller, and a cutting mechanism held in front of said friction-roller, substantially as herein shown and described.

5. In a paper-hanging machine, the combination, with a frame, of arms held adjustably on the front end of said frame, a stationary knife part secured to said arms, a knife part pivoted to said stationary knife part, and lugs projecting from said stationary knife part and adapted to rest on the top of the mop-board, substantially as shown and described.

6. In a paper-hanging machine, the combination, with a main frame, of a roller carrying a paper roll and mounted on said main frame, a guide-roller mounted in said main frame, a paste-roller mounted in said main frame, a friction-roller in gear with said paste-roller, and side beams pivoted to the main frame and carrying said friction-roller, substantially as shown and described.

7. In a paper-hanging machine, the combination, with a main frame, of a roller carrying the paper roll and mounted on said main frame, a guide-roller mounted in said main frame, a paste-roll mounted in said main frame, a friction-roller in gear with said paste-roller, side beams pivoted to the main frame and carrying said friction-roller, and means, substantially as described, for locking said side beams in place on the main frame, as set forth.

887,794. APPARATUS FOR TRANSPORTING AND HOISTING STONE. RONALD MCDONALD, Louisville, Ky. Filed Dec. 21, 1887. Serial No. 258,622. (No model.)



Claim.—1. In an apparatus substantially as described, the combination, with a mast suitably supported, whereby it may be adjusted or moved laterally at its upper end, of the cable G, having its end portions disposed around guides on said mast and having such end portions extended from the mast in opposite directions and at approximately right angles to the direction of the main portion of the cable, substantially as set forth.

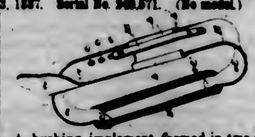
2. The combination of a hoisting device, 3, a mast, B, suitably supported, whereby it may be adjusted or moved laterally at its upper end, and having guides *g g'* at its upper end, and the cable G, passed around the drum of hoisting device 3, thence over the guides *g g'*, and having its ends extended laterally from the mast in opposite directions and anchored, substantially as set forth.

3. An apparatus, substantially as described, comprising a mast, a cable-track extended therefrom and anchored at its ends, a carrier on said track, a cable, G, engaging guides on and extended at its ends in opposite directions from said mast, and a hoisting device for operating said cable G, substantially as set forth.

4. The apparatus comprising the mast, the track-cable, the cable G, the cable F, the carrier, and the hoisting devices 2 and 3 for said cables F and G, substantially as and for the purposes specified.

5. The improved apparatus herein described, consisting of the mast B, having guides *g g'*, the tower C, the track-cable A, extended from said mast over the tower and anchored at its ends, the traveler or carrier on track A, the line E, connected therewith, the hoisting device 1 for operating said line E, the cable F, and hoisting device 2, the cable G, passed around the guides *g g'* and extended thence in opposite directions from the mast, and the hoisting device for operating said cable G, substantially as set forth.

887,795. CORN-HUSKER. THEODORE H. MEYERS, Niobrara, Nebr. Filed Sept. 13, 1887. Serial No. 249,571. (No model.)



Claim.—1. A husking implement formed in two sections, sliding one upon the other, one section having a series of apertures, a spring-catch secured to one section and engaging any of the apertures in the other section, and a husking-pin on one section, substantially as set forth.

2. A husking implement comprising the section A, having the curved guard *a*, the pin *a'*, series of apertures *c*, and inward-projecting lips *b b*, the section B sliding between the said lips and provided with a guard, *d*, and the spring-plate E, secured at its outer end to the section B, projecting beyond the inner end thereof, and having a pin or projection engaging an aperture in section A, substantially as set forth.

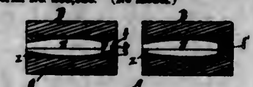
3. The combination, with the two sections of a corn-husker sliding one upon the other and provided with guards, of an elastic connection between said guards and drawing the sections toward each other, substantially as set forth.

4. The combination, with the two sections of a corn-husker sliding upon each other and formed with guards having hooks or heads at their extremities, of an endless elastic band engaging the said hooks or heads, substantially as set forth.

5. A corn-husker consisting in the section A, formed with curved guard *a*, terminating in a hook, *c'*, the spar *a'*, series of apertures *c*, and opposing inward-extending side lips, *b b*, the section B sliding between said lips, and formed with curved guard *d*, terminating in a head, *d'*, the spring-plate E, secured to the outer face of the section B, extending beyond the inner end thereof, and provided with a pin, *e*, engaging an aperture, *c*, in the section A, and the endless elastic band D, engaging the head and hook, substantially as set forth.

6. In a corn-husking implement, a continuous or unbroken thimble formed with teeth and an aperture or opening in one side wall between its ends and closed on all sides, substantially as set forth.

887,796. CIGAR-MOLD. CHRISTIAN F. T. MILLER, Detroit, Mich., assignor of two-thirds to Edward Martin, same place. Filed Feb. 13, 1886. Serial No. 202,033. (No model.)



Claim.—1. In an organized cigar-mold, the combination of the two body parts adapted to be locked together, each part having a portion of a cigar-bunch-forming cell located therein, the projecting cutting-blade located in the cigar-bunch-forming cell at the tip or head end, said blade being made fast to one of the body parts, the angle of its cutting-edge coinciding with the angle of the cell Z, substantially as and for the purposes specified.

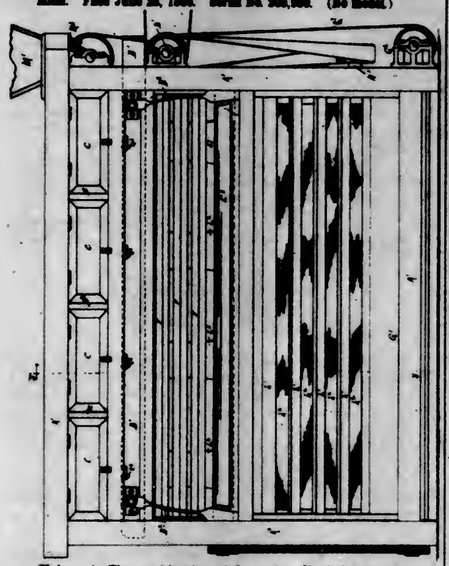
2. In a cigar-matrix, the combination of the parts A B, each part having cells formed therein, as set forth, the cutting-blades *f*, located in the tip or mouth end of the cells Z, said blades being made fast to the part B, substantially as and for the purposes set forth.

887,797. MANUFACTURE OF RAILROAD-RAILS. THEODORE A. METTENBERG, St. Louis, Mo., and GEORGE WESTERMEIR, Jeffersonville, Ill. Filed May 11, 1888. Serial No. 273,602. (No model.)



Claim.—In the manufacture of railroad-rails from old steel rail-road-rails, the herein-described double series of passes, the vertical dimensions of the passes forming one of said series being equal, or thereabout, to the horizontal dimensions of the passes forming the other of said series, said dimensions of said passes of both of said series being gradually and consecutively diminished in respectively corresponding order and degree, thereby maintaining throughout said series the respective equality of said dimensions of said passes, wherein, consecutively, the rail is compressed transversely, alternately vertically and horizontally, and its cross-sectional area reduced and the rail elongated, substantially as and for the purpose herein set forth.

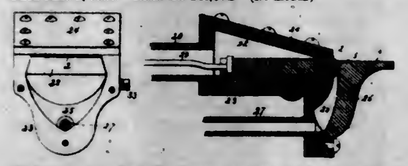
387,798. MIDDLINGS-PURIFIER. VICTOR MONNIER, Dundas, Minn. Filed June 22, 1888. Serial No. 278,020. (No model.)



Claim.—1. The combination of the casing divided into upper and lower compartments by a partition, the vibrating screen arranged lengthwise in and subdividing the upper compartment, the endless traveling belt moving transversely of the machine and equal in width to the length thereof, a series of separating-chutes arranged side by side beneath the delivery end of the belt, and a corresponding series of suction-flues communicating with said separating-chutes and with the air-space over the screen, substantially as specified.

2. The combination of the casing divided into upper and lower compartments by a partition, the vibrating screen arranged lengthwise in and subdividing the upper compartment, the endless traveling belt moving transversely of the machine and equal in width to the length thereof, gather-boards arranged to leave air-openings between each side of the screen and each end of the belt, a series of separating-chutes arranged side by side beneath the delivery end of the belt, and a corresponding series of suction-flues communicating with said separating-chutes and with the air-space over the screen, substantially as set forth.

387,799. HYDROCARBON-FURNACE. BENJAMIN A. MOODY, Boston, assignor of three-eighths to Charles C. Sanderson, Dedham, Mass. Filed June 3, 1887. Serial No. 240,174. (No model.)



Claim.—1. A hydrocarbon-burner consisting of a casing having oil and steam chambers with their discharge-passages converging into one elongated orifice, and a sliding valve situated partly in said orifice and forming two independent contracted outlets at an angle to each other, one of which orifices the valve controls, substantially as described.

2. A hydrocarbon-burner consisting of a casing having separate oil and steam chambers with their discharge-passages at an angle to each other, and a sliding valve situated in one of the said chambers and fitting a flat seat terminating at the oil-outlet, the said valve separating the oil and steam outlets and being adjustable, substantially as set forth.

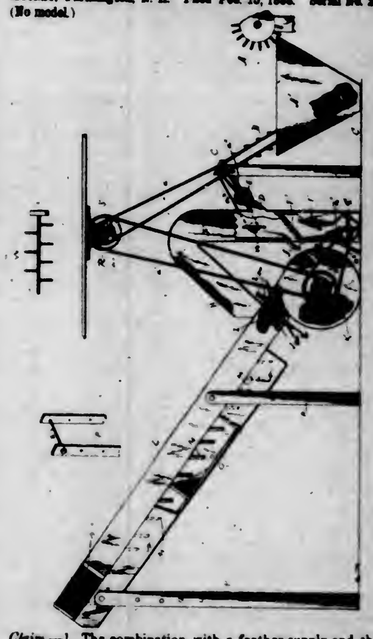
3. A hydrocarbon-burner having a casing provided with separate oil and steam chambers having outlets converging into one elongated orifice, a plate partially closing said orifice and forming separate steam and oil discharge outlets, and a flat horizontal spreading-plate adjacent to the oil-orifice, the steam-outlet being arranged to direct the steam upon the plate in front of the oil-outlet, substantially as described.

4. The combination, with a hydrocarbon-burner casing having steam and oil chambers, the outlet from the latter being entirely below the outlet from the former, of a flat extended plate situated at substantially right angles to and opposite the oil-orifice and below the steam-orifice, upon which plate the oil is adapted to flow and spread in a thin film before being met by the steam, and means for adjusting the said plate toward and from the oil-orifice, substantially as described.

5. A hydrocarbon-burner having a casing provided with a steam-chamber having an orifice leading therefrom, and an oil-chamber inclosed in part by the casing and in part by a plate attached to the casing, having a flat extended upper face in proximity to the orifice leading from the oil-chamber, substantially as described.

6. A hydrocarbon-burner provided with a steam-chamber, 22, contracted toward one end, and with a chamber, 25, inclosed in part by the burner and in part by a plate, 26, having a flat extended upper face, 4, and an adjustable sliding-valve plate, 26, lying in the contracted end of the steam-chamber, which it contracts to form a narrow orifice, 2, and having its end opposite the plate 26, thereby forming a contracted outlet from the chamber 25, substantially as described.

387,800. FEATHER RENOVATOR AND SORTER. HERMAN O. MOONEY, Farmington, N. H. Filed Feb. 15, 1888. Serial No. 264,092. (No model.)



Claim.—1. The combination, with a feather-supply and the long flue having a fan-blower, of an intermediate flue opening into the long flue in front of its blower, said intermediate flue having a fan-blower, a supply-chute, an opposite waste-chute, and a rising and falling screen for removing the coarser materials, as set forth.

2. The combination, with the inclined blast-flue L, the inclined feed-belt B, and feather-bin A', of the upright flue F, located between flue L and belt B, and having feed-chute D, feed-wheel E, fan-blower G, moving screen F' above said blower, waste-chute *f* opposite to feed-chute D, and stationary screen H above the point where flue F opens into flue L, as set forth.

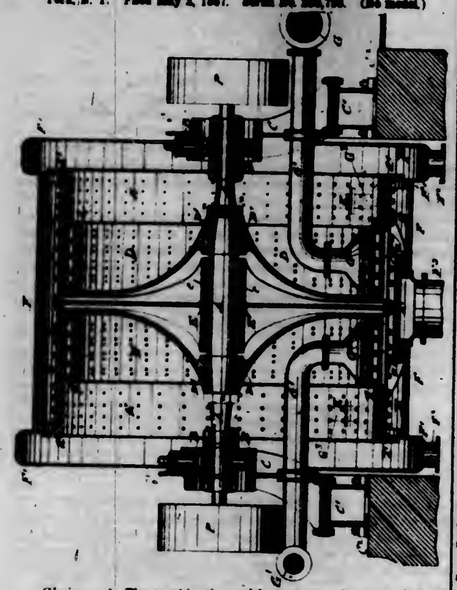
3. The combination, with the intermediate blast-flue, F, of the blast-flue L, the latter being provided below the exit of the former with a screen-chute, I, adjustable slant-boards *j* below said chute, and a fan-blower in the rear of said boards, whereby the feathers do not fall bodily into flue L and the blast may be directed toward chute I, as set forth.

4. The combination, with the blast-flue F, of blast-flue L, having at its outer end escape-screen H', and at the bottom a series of boards, M, inclined forward at an angle and opening into subjacent boxes N, whereby the blast is prevented from eddying into said boxes and removing the feathers deposited, as set forth.

5. The combination, with the shorter blast-flue having a waste-chute, of the rising and falling screen F' and the rotary clearer W above said screen, as set forth.

6. The combination, with the shorter flue, F, having feather-supply chute D and waste-chute *f*, of the fan-blower G, the damper T above the latter, for directing the main force of the blast toward chute D, the rising and falling screen F', and the rotary clearer W, as set forth.

387,801. CENTRIFUGAL MACHINE. THEO E. MILLER, New York, N. Y. Filed May 2, 1887. Serial No. 236,703. (No model.)



Claim.—1. The combination, with a rotary primary basket, of one or more secondary baskets placed loosely on the spindle of the primary basket, said secondary baskets being provided with buckets, so as to be driven by the power stored in the liquid discharged from the primary basket, substantially as set forth.

2. The combination of a spindle and elastic bearings for said spindle with a primary basket secured rigidly to said spindle and one or more secondary baskets placed loosely on the spindle of the primary basket and provided with buckets exterior to said primary basket, substantially as set forth.

3. In a centrifugal machine, a secondary basket composed of a section having interior buckets or other driving means and an independent draining-section sidewise of the same, substantially as set forth.

4. The combination of a rotary primary basket with a secondary basket placed loosely on the spindle of the primary basket and provided with buckets or other equivalent means for utilizing the power of the liquid discharged from the primary basket, and with an independent draining-surface, substantially as set forth.

5. The combination of a primary basket having a perforated surface with a secondary basket having driving-buckets and means for discharging the drained liquid from the secondary basket, substantially as set forth.

6. The combination of a rotary primary basket and a secondary basket placed loosely on the spindle of the primary basket and provided with buckets with an exterior casing having annular overflow-gutters, substantially as set forth.

7. The combination of a rotary primary basket with a secondary basket placed loosely on the spindle of the primary basket and concentric therewith, said secondary basket being wider than the primary basket and provided with buckets at that portion encircling the primary basket, substantially as set forth.

8. The combination of a rotary primary basket with a secondary basket of larger diameter supported loosely on the spindle of the primary basket, said secondary basket being provided with buckets at that part encircling the primary basket, and an exterior casing having annular overflow-gutters, substantially as set forth.

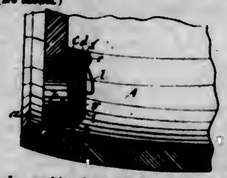
9. The combination, with a rotary primary basket, of a secondary basket placed loosely on the spindle of the primary basket, provided with buckets and driven by the liquid discharge from the primary basket, supply-pipes, and an exterior casing having overflow-gutters and discharge-pipes, substantially as set forth.

10. The combination of a horizontal spindle with a primary basket secured rigidly to said spindle, a secondary basket surrounding the primary basket and extending beyond the same, the secondary basket being provided with buckets at that part concentric with the primary baskets, supply-pipes, and an exterior casing having overflow gutters and pipes and a bottom discharge-pipe, substantially as set forth.

11. The combination of a horizontal spindle, two primary baskets secured rigidly to said spindle, a secondary basket surrounding the primary baskets and supported loosely on the spindle between the primary baskets, buckets at that part of the secondary basket surrounding the primary baskets, rims at the open ends of the primary and secondary baskets, with supply-pipes for said baskets, and a casing surrounding the secondary basket and provided with overflow-gutters and discharge-pipes, substantially as set forth.

12. The combination of a horizontal spindle, two primary baskets secured to said spindle, a secondary basket surrounding the primary basket and supported loosely on the spindle between the primary baskets, buckets on the secondary basket at that part surrounding the primary baskets, an exterior casing having overflow gutters and pipes, with supply-pipes having enlarged seams, a discharge-pipe at the bottom of the exterior casing, and V-shaped current-deflectors at both sides of said discharge-pipe, substantially as set forth.

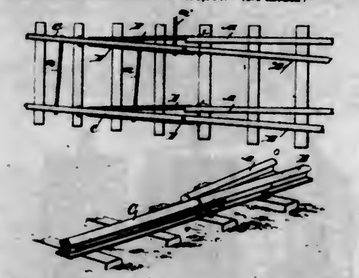
387,802. TAP-VALVE FOR BARRELS. PATRICK F. MURRAY and JERRY F. CORBETT, Syracuse, N. Y. Filed Apr. 21, 1888. Serial No. 271,462. (No model.)



Claim.—1. In combination with the hinged valve and its support on the barrel, a lever hinged to said support at the same side to which the valve is hinged and at a point some distance from the hinge of the valve outward and bearing with its free end on the valve, substantially as and for the purpose set forth.

2. The combination of the bushing *b*, formed with the collar *c* and ears *d' d'* and provided with the notch *n*, the valve *v*, hinged to said ears, the spring *e*, pressing the valve to its seat, and the lever *l*, pivoted to the bushing and having its free end lying in the aforesaid notch, substantially as described and shown.

387,803. GUIDE-BAR FOR STUB-SWITCHES. FRANK HERMANSEN, Appleton, assignor to himself and Fred. G. Pauli, West De Pere, Wis. Filed Oct. 28, 1887. Serial No. 253,207. (No model.)



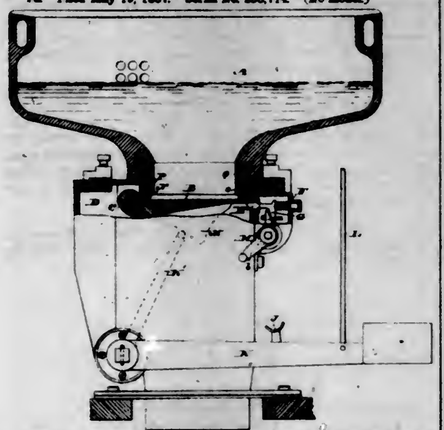
Claim.—1. The combination, with the main rails and the siding-rails of a track, of movable switch-rails adapted to operate in conjunction with said main and side rails and parallel guide-bars attached at one end to opposite sides of the switch-rails, extending longitudinally of the same, and at their other ends to the main and side tracks, respectively, as and for the purposes herein set forth.

2. The combination, with the main rails and siding-rails of a track, of movable switch-rails adapted to operate in conjunction with said main and side rails, and parallel guide-bars having a cylindrical body and flattened apertured ends, said bars attached at one end to opposite sides of the switch-rails and extending longitudinally of the same and at their other ends to the main and side tracks, respectively, substantially in the manner and for the purposes herein set forth.

3. The combination, with the main rails, the siding-rails, and switch-rails of a track, of horizontal guide-bars attached to the outer side of the switch-rails and the outer fixed rail and the inner surface of the switch-rails and the inner fixed rail, substantially as and for the purposes herein set forth.

4. The combination, with the main rails, the siding-rails, and the movable switch-rails of a track, of cylindrical guide-bars having flattened and apertured ends, attached, respectively, to the outer web-surface of the switch-rails and the outer web-surface of the outer fixed rail and to the inner web-surface of the switch and the equivalent web-surface of the inner fixed rails, substantially as and for the purposes herein set forth.

387,804. **WATER-CLOSET.** William F. North, Philadelphia, Pa. Filed May 19, 1887. Serial No. 238,714. (No model.)

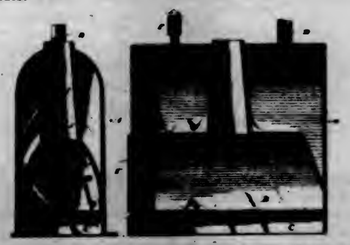


Claim.—1. In a water-closet, the combination of a basin, a swinging valve with segmental under face, a spring-bolt adapted to lock said valve, a rocking lever operating said bolt, and a lever having an arm to operate said rocking lever and an arm to close said valve, substantially as described.

2. In a water-closet, the combination of a basin with a swinging valve at outlet thereof, a spring-bolt adapted to lock said valve, a rocking lever adapted to withdraw said spring-bolt, and a lever with an arm adapted to operate said rocking lever, substantially as described.

3. The combination of the basin A with the swinging valve B, having horizontal shaft C and a segmental under face, the spring-bolt E, having the arm G, the rocking lever H, having the arms *a* and *b*, and the weighted pivoted lever K, with the arm K', adapted to close said valve B, and the arm J, adapted to operate said rocking lever H, so as to withdraw said bolt and thereby operate said valve, substantially as described.

387,805. **BOILER.** Elsa Oberwiler and Samuel R. Lascomb, Upper Sandusky, Ohio. Filed Apr. 7, 1888. Serial No. 269,996. (No model.)



Claim.—The portable steam-boiler herein described, consisting, essentially, of the outer case or shell, having its end walls carried down to form part of the fire-box, and also the ash-chamber, and the tapering smoke-flue passing through the boiler and having its lower portion expanded, as shown, and fixed to the top and side wall of the fire-box, the said fire-box having between it and the shell a water-chamber, and also having the front wall carried down on opposite sides of the door to form a chamber, I, whereby the front wall of the boiler may be protected, substantially as specified.

387,806. **HOE.** James H. Parker, Vineland, N. J. Filed Nov. 14, 1887. Serial No. 255,602. (No model.)



Claim.—1. The combination of the hoe-blade, consisting of a flat plate concaved both longitudinally and transversely from edge to edge, with the handle-socket secured at or about the center of the blade, all substantially as described.

2. The combination of the dished triangular blade having two sides plain and the other side serrated, so as to form flat teeth, and intervening V-shaped recesses with sharp angles, and the handle-socket secured to the blade at or about the center of the same, all substantially as specified.

387,807. **CAR-STARTER.** John H. Parmlee, Bridgeport, Conn. Filed Sept. 10, 1887. Serial No. 249,243. (No model.)



Claim.—1. The combination, with the axle and the ratchet-wheel secured thereon, of the backwardly spring-actuated draft-frame carrying a pawl and hung beneath the car, the L-shaped draw-head pivoted at its elbow and connected to the draft-frame, and the stop-lever adapted to engage and uphold the draw-head, substantially as set forth.

2. The combination of the draft-frame, the fulcrumed draw-head, and the stop-lever adapted to engage and uphold said draw-head, as described.

3. In a car-starter, the combination, with the car-axle, of a ratchet-wheel thereon, a draft frame and pawl adapted to engage the ratchet-wheel, and a fulcrumed draw-head whereby motion is imparted to the draft-frame, substantially as specified.

4. In a car-starter, the combination, with the whiffletree-bar, of an L-shaped draw-head adapted to receive said whiffletree-bar and pivotally connected to the car-platform, substantially as set forth.

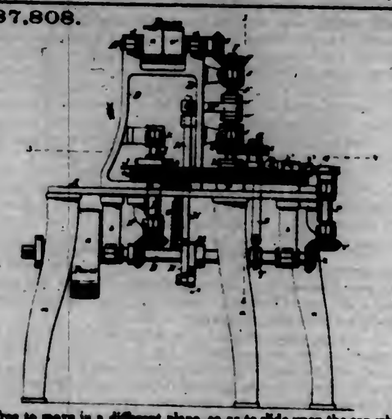
5. The combination, with the ratchet-wheel on the car-axle and the draft frame and pawl adapted to engage and turn said wheel and axle, of the fulcrumed draw-head, its connection to the draft-frame, and the whiffletree secured in one arm of said draw-head, whereby the upward swing of the whiffletree to the line of draft will impart initial movement to the axle, as shown and described.

387,808. **MACHINERY FOR SECURING LININGS TO JAR-CAPS.** Frank W. Perry, Philadelphia, Pa., assignor to the Hero Fruit Jar Company, same place. Filed May 12, 1888. Serial No. 273,242. (No model.)

Claim.—1. The combination, in a machine for lining sheet-metal caps, of the clamping-disks and means for rotating the same with a pressing-tool having a beveled seating face, said tool being movable from and toward the cap, but being also free to move in a different plane, whereby it slides upon the cap while pressing the same upon the beveled edge of the lining, all substantially as specified.

2. The combination, in a machine for lining sheet-metal caps, of the clamping-disks, a pressing-tool movable from and toward the cap,

387,808.



but free to move in a different plane, so as to slide upon the cap while pressing the same upon the lining, and gearing for rotating said clamping-disks and the pressing-tool, all substantially as specified.

3. The combination of the clamping-disks, a slide, H, made in two parts, the front being free to move across the face of the rear part, and a pressing-tool carried by said front part of the slide, with a cam for moving the slide toward the clamping-disks, all substantially as specified.

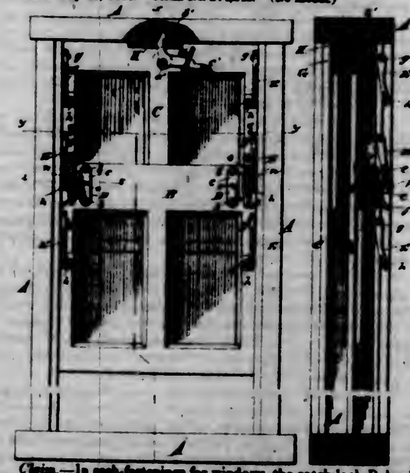
4. The combination, in a machine for lining sheet-metal caps, of the clamping-disks, a slide comprising two parts, one of which is free to move across the face of the other, a pressing-tool carried by one part of the slide, a pin carried by the other part thereof, a cam acting on said pin, and an elastic cushion interposed between said pin and a bearing on the slide, all substantially as specified.

5. The combination, in a machine for lining sheet-metal caps, of the clamping-disks, the two-part slide, the pressing-tool carried by one part of the same, a cam acting upon the other part of the slide to move the same toward the clamping-disks, and a cam acting upon the tool-carrying portion of the slide and moving the same in a different plane, all substantially as specified.

6. The combination of the carrying-table and guide-bar, the clamping-disks, and a feed-bar having a hook which engages with a cap on the forward movement of the bar, and a spring-pawl which yields on the backward movement of the bar, all substantially as specified.

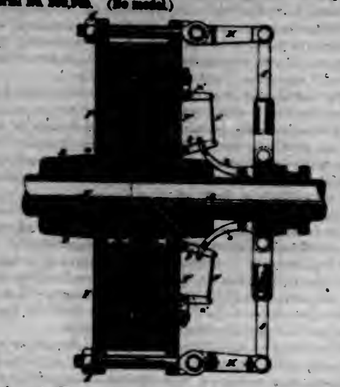
7. The combination of the lower supporting-disk, 6, of the cap-holder, with the upper clamping-disk having a projecting elastic pad secured to its under face, all substantially as specified.

387,809. **SASH-FASTENER.** Jesse F. Post, Mount Carmel, Ill. Filed May 18, 1888. Serial No. 274,262. (No model.)



Claim.—In sash-fastenings for windows, the catch-lock D, having a set-off or face-plate, c, projecting outward from its base and provided with a tooth-like catch, *c*, in combination with the suspension hook-catch E, having a lip, *h*, for operation in connection with the catch-lock, window-sash, and window-frame, substantially as specified.

387,810. **FRICTION-CLUTCH.** James G. Price, Berwyn, Pa., assignor of one-half to Joseph H. Coates, same place. Filed Apr. 7, 1888. Serial No. 269,945. (No model.)



Claim.—1. The combination of the two shafts with a clutching device comprising three disks and means for clamping the outer disks upon the intermediate disk, said intermediate disk being carried by one shaft and the outer disks by the other shaft, and the disk structure of one of the shafts being free to move longitudinally in respect thereto, all substantially as specified.

2. The combination of the two shafts, the three disks, one carried by one shaft and the others by the other shaft, bolts carried by the disks of one shaft, and cam-levers for effecting the forcing of the disks together, all substantially as specified.

3. The combination of the two shafts, the three disks, one carried by one shaft and the others by the other shaft, bolts carried by the latter disks, and two sets of cam-levers carried by said bolts, one set acting on one disk and the other on the other disk, all substantially as specified.

4. The combination of the sliding sleeve of a friction-clutch, a fixed collar on the shaft, slip-rings carried by said collar and sleeve, and toggle-arms connecting said slip-rings, all substantially as specified.

5. The combination of the operating-sleeve of a friction-clutch, a fixed collar on the shaft, toggle-arms connecting the collar and sleeve, and a stop-yoke for limiting the movement of said arms, as set forth.

6. The combination of the operating-sleeve of a friction-clutch, a bolt for positively locking the parts of the clutch together, a bell-crank lever connected to said bolt, an arm carried by the sleeve of the clutch, and an intermediate pivoted arm connected to said bell-crank lever and acted upon by the arm of the sleeve as the latter is moved, substantially as specified.

387,811. **DEVICE FOR BURNING CRUDE PETROLEUM AND OTHER OILS.** Jacob T. Raber, Clyde, Ohio. Filed Feb. 4, 1888. Serial No. 263,083. (No model.)



Claim.—1. A device for burning crude oils, consisting, essentially, of an outer casing of reticulated material, an oil-supply pipe located in the upper portion thereof, and a removable and reversible partition-wall or separator placed at an angle therein and forming an oil-vaporizing chamber in the outer casing beneath said partition-wall or separator, substantially as and for the purpose described.

2. In a device for burning oils, an outer casing of reticulated material, an oil-supply pipe at the upper portion thereof, and a removably-secured partition-wall or diaphragm placed at an angle within said casing, in combination with a drip-plate beneath the casing adapted to receive the heavier oil from the inclined diaphragm, and a packing in the outer casing beneath said diaphragm for receiving the lighter oil passing through the diaphragm, substantially as described.

3. In a device for burning oil, an outer casing of reticulated material and a foraminous diaphragm arranged at an angle therein, in combination with a drip-plate beneath the casing for receiving the heavier oil, and a packing in the outer casing beneath the diaphragm for receiving the lighter oils, substantially as herein described.

4. In a device for burning crude oils, an outer casing of foraminous material, in combination with an inclined foraminous diaphragm placed at an angle withie said casing and having a packing of mineral wool between its sides, and a discharge-pipe communicating with the source of supply and discharging upon said diaphragm, whereby a separation of the lighter and heavier oils is effected.

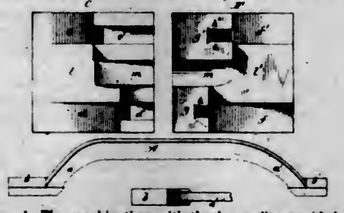
5. The combination of an exterior casing of foraminous material, an internal diaphragm of like material removably placed at an angle therein, a non-conducting packing between said diaphragm and the walls of the exterior casing, and an imperforate drip-plate beneath the lower wall of said casing receiving the oil which passes through said wall, and a pipe or tube discharging the crude oil upon the diaphragm, substantially as described.

6. A device for burning oils, consisting of an exterior casing of foraminous material, an interior removable diaphragm of like material having spaced walls, between which is placed a packing of mineral wool, an angular plate, C, between the diaphragm and casing, and a packing between said plate and diaphragm and walls of the casing, a pipe or tube discharging the oil upon the diaphragm, and an imperforate drip-plate beneath the outer casing upon which the heavier oil is discharged and burned, substantially as described.

7. The combination, with an outer casing of foraminous material having a non-heat-conducting packing at its sides and ends, of a removably-secured diaphragm of foraminous material placed at an angle within the outer casing and a pipe discharging the oil thereon, said diaphragm having perforate walls, between which a packing of mineral wool is placed, whereby a separation of the lighter from the heavier oils is effected, and an imperforate drip-plate beneath the lower wall of the casing upon which the heavier oil is discharged and burned.

8. An exterior casing and a removably-secured inclined diaphragm, said casing and diaphragm being formed of foraminous material, in combination with a pipe communicating with the source of supply, a fixed coupling, and a perforated discharge-pipe loosely connected therewith and extending over the diaphragm, whereby said pipe may be adjusted at an angle approximating the inclination of the diaphragm.

887,812. DIE FOR FORGING TRUCK-EQUALIZERS. James Reilley, Buffalo, N. Y., assignor of one-half to Thomas A. Bissell, same place. Filed May 31, 1888. Serial No. 275,543. (No model.)



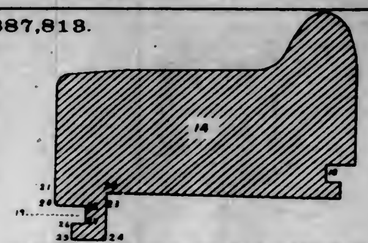
Claim.—1. The combination, with the lower die provided with a convex face and a rectangular recess or depression arranged at the base of said convex face, of a punch or upper die provided with a concave face corresponding to the convex face of the lower die and with a flat working-face arranged above said rectangular recess, substantially as set forth.

2. The combination, with the lower die, C, provided with short and long convex faces *d e*, short and long rectangular recesses or depressions *d' d''*, arranged at the lower ends of said convex faces, and with an anvil or flat face, *l*, arranged between said convex faces, of the punch or upper die, F, provided with short and long concave faces *f f'*, corresponding to the convex faces of the lower die, flat working-faces *g g'*, arranged at the base of said concave faces above the recesses of the lower die, a flat face, *l'*, arranged between said concave faces above the anvil *l* of the lower die, and a recess or opening, *m*, formed in the adjacent faces of the upper and lower dies in rear of the faces *l l'*, substantially as set forth.

887,813. CAR-WHEEL. William G. Richards, Brooklyn, N. Y. Filed May 23, 1888. Serial No. 274,692. (No model.)



887,813.



Claim.—1. In a car-wheel, a tire having an outwardly-facing annular groove of less diameter than the wheel-center upon which said tire is seated, located in an internal projection of the tire, said projection or a part thereof forming a shoulder which bears against the outer side of the wheel-center, substantially as described.

2. In a car-wheel composed of an independent center and a tire, 14, seated thereon, an outwardly-facing annular groove, 19, of less diameter than periphery of the wheel-center, located in an internal projection of the tire 14 at the outer side or side opposite the rail-flange, said internal projection, or a part thereof, forming a shoulder which bears against the outer side of the wheel-center, substantially as described.

3. In a car-wheel, a tire seated upon an independent wheel-center and provided with an outwardly-facing annular groove of less diameter than the wheel-center, located at the side of tire opposite the rail-flange, and an annular groove in inner or rail-flange side of tire, in combination with the aforesaid wheel-center, a retaining-ring at outer side of the tire, a retaining-ring or flanged retaining-disk at inner side of the tire, and a series of bolts passing through said retaining-rings and the wheel-center, substantially as described.

4. In a car-wheel, the combination of an independent wheel-center and a tire, 14, seated thereon, said tire 14 having at outer side, or side opposite the rail-flange, an outwardly-facing annular groove, 19, of less diameter than diameter of the wheel-center, located in an internal projection or shoulder of the tire, an annular groove, 18, in the rail-flange side of tire, an inner retaining ring or disk, 13, fitted to groove 18, an outer retaining-ring, 15, fitted to groove 19, and a series of bolts, 17, passing through said retaining-rings and the wheel-center, substantially as described.

5. In a car-wheel, a metallic flanged annulus inclosing a non-metallic wheel-body, the flange of annulus forming the periphery thereof, in combination with a tire seated thereon, said tire having an outwardly-facing annular groove of less diameter than the wheel-center, upon which the tire is seated, located in an internal projection of the tire at the side opposite the rail-flange, a retaining-ring fitted to said groove, an inner side plate or disk flanged at periphery to enter a groove in rail-flange side of the tire, a series of retaining-ring bolts, and a central hub, substantially as described.

6. In a car-wheel, a metallic flanged annulus, 12, in combination with a non-metallic wheel-body, 11, inclosed therein, hub 10, a tire, 14, having an outwardly-facing annular groove, 19, of less diameter than the periphery of wheel-center, located at side opposite the rail-flange in an internal projection of the tire, and a groove, 18, in rail-flange side of tire, an inner side plate or disk, 13, flanged at periphery to enter groove 18, a retaining-ring, 15, and bolts 17, which pass through retaining-ring 15, annulus 12, non-metallic wheel-body 11, and disk 13, substantially as described.

7. In a car-wheel, a wheel-center composed of a central hub, an integral flanged annulus, a non-metallic wheel-body inclosed therein, and an inner side plate or disk flanged at periphery, in combination with a tire having an outwardly-facing annular groove of less diameter than said wheel-center at the side opposite the rail-flange, a groove located in the rail-flange side, into which the flange of inner disk enters, a retaining-ring fitted to the groove at side opposite rail-flange, and a series of retaining-ring bolts passing through the non-metallic center, substantially as described.

8. In a car-wheel, a tire, 14, having retaining-grooves 18 and 19 in opposite sides, the groove 19 being of less diameter than the seat of tire, in combination with a wheel-center composed of a central hub, inner flanged disk, 13, non-metallic wheel-body 11, inclosed in flanged annulus 12, bolts 16, retaining-ring 15, and bolts 17, passing through non-metallic wheel-body 11, between axis of the wheel and the metallic tire-seat 12', substantially as described.

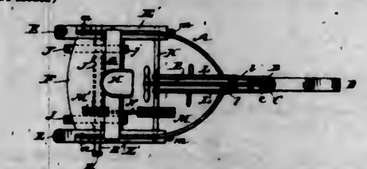
9. In a car-wheel, the combination of a central hub, inner flanged disk, 13, bolts 16, retaining-ring 15, a tire, 14, having a groove, 18, in inner side of greater diameter, and a groove, 19, near the outer side of less diameter, than the periphery of the wheel-center, bolts 17, and flanged annulus 12, the flange 12' of which passes between bolts 17 and the tire 14, which is seated thereon, substantially as described.

10. In a car-wheel, a tire made of less internal diameter at side opposite the rail-flange than the wheel-center upon which it is seated, thereby forming a shoulder which bears against side of wheel-center, a projection of angular cross-section extending from said shoulder inwardly toward axis of the wheel and then outwardly, thereby forming, in conjunction with the said shoulder, an annular groove facing outwardly and provided with a groove in the rail-flange side of tire, a wheel-center, retaining-rings fitted to the aforesaid grooves in tire, and a series of retaining-ring bolts, substantially as described.

11. In a car-wheel, the combination of a central hub, a non-metallic wheel-body, 11, flanged annulus 12, retaining-ring 15, inner flanged disk, 13, bolts 16, bolts 17, and tire 14, having an internally-projecting shoulder, 20 21 22 23, an internally-projecting angular rib, 23 24 25 26 27 28, which forms, in conjunction with shoulder 20 21 22 23, an outwardly-facing annular groove, 19, and in rail-flange side of tire a groove, 18, substantially as described.

12. The combination, in a car-wheel, of a non-metallic wheel-body, 11, integral flanged annulus 12, inner flanged retaining-disk, 13, hub 10, bolts 16, retaining-ring 15, a series of bolts, 17, and a tire, 14, having annular groove 18 in rail-flange side and at opposite side an internally-projecting shoulder, 20 21 22 23, bearing against outer side of the wheel-center, an internal angular projection, 23 24 25 26 27 28, which, in conjunction with shoulder 20 21 22 23, forms an outwardly-facing annular groove, 19, of less diameter than the periphery of the wheel-center, substantially as described, and for the purposes set forth.

887,814. ICE-VELOCIPEDE. George B. M. Riddle and Charles C. Spencer, Cortland, N. Y. Filed Nov. 12, 1887. Serial No. 254,975. (No model.)



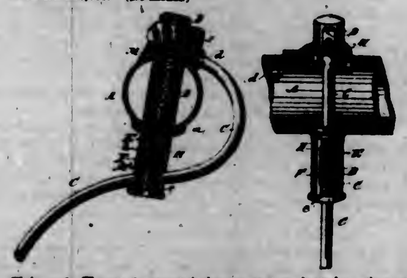
Claim.—1. In an ice-velocipede, the main frame A, pivoted to the raves of the rear runner and formed with a bearing, B, at its forward end, in combination with the front runner, D, and rear runners, E E, substantially as described.

2. The combination of shaft J' and wheels J with means for elevating the same, as described.

3. In an ice-velocipede, the rear runners, E, and main frame A, pivoted together, in combination with the springs m, connecting the upper ends of the runners to the main frame A, substantially as described.

4. The runners E, connected together and pivoted to the main frame A, the posts O, and ways *d'*, secured thereto, in combination with the blocks *d*, held in said ways, the shaft J', journaled in said blocks, the springs *g*, acting on the blocks, and the wheels J, secured upon the shaft, substantially as described.

887,815. RAKE-TOOTH. Albert R. Robbins, Norwalk, Ohio, assignor of one-half to Barnard Curtiss, same place. Filed Feb. 9, 1887. Serial No. 227,003. (No model.)



Claim.—1. The stationary tubular support projected up through the rake-head, with a shoulder beneath the rake-head to limit its upward movement, and a bolt and key at its top for holding it rigidly in place, said tubular support slotted at its lower end for the passage of the tooth and adapted to receive within its interior a plug through which the tooth passes, and a spiral spring to bear upon the plug, substantially as and for the purposes described.

2. The combination, with a rake-head and tooth, of a stationary tubular support projected up through the head, and having a lower extension provided with a slot through which the tooth is passed, a spring and plug within the tubular support bearing upon said tooth, said tubular support provided with a key and bolt at its top, and a shoulder beneath the rake-head and the clamp M, whereby the shank of the tooth is secured to the rake-head, substantially as described.

3. The combination, with a rake-head and a tooth having a right-angular shank at its top, of a clamp engaging said shank, so as to permit the latter to turn therein, and a stationary tubular support slotted at its lower end to receive the rake-tooth, and provided in its interior with a spring and a plug, through the latter of which the said tooth passes and has its bearing, said tubular support passed up through the rake-head and clamp, and provided with a shoulder, *c*, and a single bolt and key, whereby the tooth, its clamp, and the tubular support are all held rigidly in place, substantially as described.

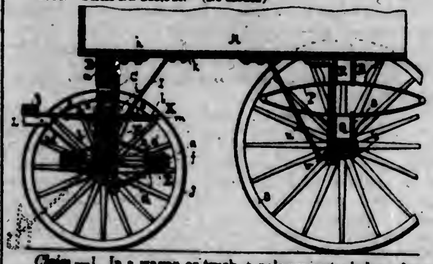
4. The combination, with a rake-head, of a hollow spindle passing transversely therethrough, provided with a key, J, to bear on the top of the rake-head, and shoulder *c*, abutting against the opposite side for its confinement to the rake-head, a yielding tooth-support within said spindle, and a rake-tooth confined at the upper side of the rake-head, and having a bearing intermediate of its length in said yielding support, substantially as described.

5. The combination, with a rake-head, of a rigidly-attached hollow spindle passing transversely therethrough, provided with a slot and key, J, a shoulder, *c*, to bear on the under side of the head, a slot, E, and an abutment, *c*, a clamp, M, between the key J and the upper side of the head, a plug, F, a spring, H, and a rake-tooth confined in said clamp and passing through said slot E, and having a bearing in said plug, substantially as described.

6. The combination, with a rake-head, of a hollow spindle passing transversely therethrough, provided with a key, J, to bear on the top of the head, and shoulder *c*, abutting against the opposite side for its confinement to the rake-head, a yielding tooth-support within said spindle, and a rake-tooth confined at the upper side of the rake-head, and having a bearing intermediate of its length in said yielding support, substantially as described.

7. The combination, with a rake-head, of a rigidly-attached hollow spindle passing transversely therethrough, provided with a slot and key, J, a shoulder, *c*, to bear on the under side of the head, a slot, E, and an abutment, *c*, a collar, M, between the key J and the upper side of the head, a plunger, F, a spring, H, and a rake-tooth confined in said collar and passing through said slot E, and having a bearing in said plunger, substantially as described.

887,816. WAGON. John A. Roth, Baltimore, Md. Filed Feb. 6, 1888. Serial No. 263,369. (No model.)



Claim.—1. In a wagon or truck, a pole-supporter independent of the fifth-wheel, which consists of a fixed and a movable annular plate, the lower fixed one being secured to the head-block, and the upper movable one provided with a socket for the pole, substantially as and for the purpose specified.

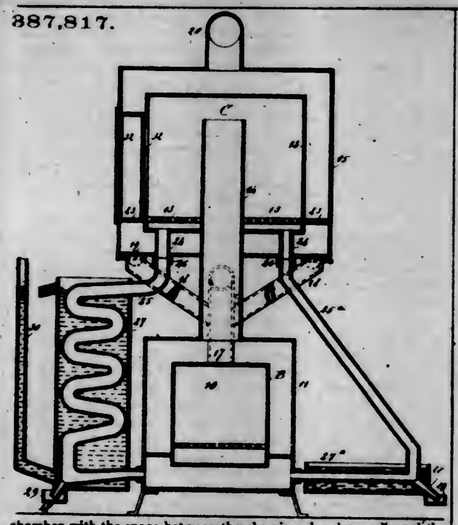
2. In a wagon or truck, the combination, with a pole-supporter which consists of a movable and a fixed plate and a pole-socket, of a cross-tree attached to the said socket and at its ends supported from the axle by means of pivoted braces, substantially as and for the purpose specified.

887,817. APPARATUS FOR THE MANUFACTURE OF CHARCOAL. Jacob Rosenstein, Winona, Minn. Filed Jan. 30, 1888. Serial No. 262,570. (No model.)

Claim.—1. In an apparatus for producing charcoal, the combination, with the fire-box and a jacket surrounding it and forming a hot-air chamber, of the charring-receptacle 1, receiving air from and returning it to the said hot-air chamber, a jacket surrounding said charring-receptacle and forming a chamber into which the products of combustion are led from the fire-box, and a smoke-outlet for said chamber, substantially as set forth.

2. In an apparatus for producing charcoal, the combination, with a fire-box surrounded by a chamber, B, of a charring-chamber, a jacket surrounding said chamber, a tube leading from the chamber B to a point within the charring-chamber, other tubes leading from the charring-chamber to the lower portion of the chamber B and discharging air therein to be reheated, and tubes connecting the outlet of the fire-

387,817.



chamber with the space between the charring-chamber walls and the jacket surrounding the same, substantially as described.

3. The combination, with the fire-chamber and a jacket surrounding the same, of a jacketed receptacle above the fire-chamber, a pipe leading from the hot-air space around the fire-chamber into the said receptacle, a smoke-outlet pipe connecting the fire-chamber with space between the receptacle and its jacket, and a pipe leading from the bottom of the receptacle into the jacketed space around the fire-chamber and provided with a water jacket or tank, and a discharge and sealing nozzle entering a pan or tank to discharge the products of distillation and be sealed therein, and thereby prevent the entrance of cold air, substantially as set forth.

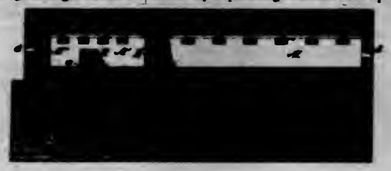
4. The combination, with the jacketed fire-box, of the receptacle above the same, a pipe entering the receptacle from said jacketed space, and a return-pipe leading from the bottom of the receptacle and discharging the air into the bottom of the jacketed space, and provided with a sealed discharge-nozzle for the products of distillation, substantially as described.

5. In an apparatus for producing charcoal, the combination, with a fire-chamber, of a charring-chamber, a jacket surrounding said charring-chamber, a space, however, being left between the walls of the charring-chamber and the walls of the jacket, tubes or pipes connecting the outlet of the fire-chamber with the space between the walls of the charring-chamber and its jacket, valves or dampers arranged in connection with said tubes, a smoke-pipe leading from said space between the charring-chamber and its jacket, and a branch smoke-pipe provided with a damper, which said branch smoke-pipe leads from the discharge-opening of the fire-chamber to the main smoke-pipe, substantially as described.

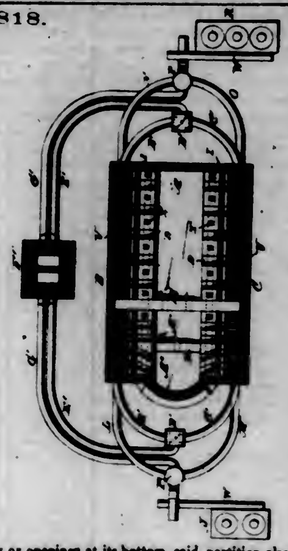
387,818. GLASS-MELTING FURNACE AND REGENERATOR. PHILIPP SIEMAMTER and FRITZ HEEPE, Streator, Ill. Filed Apr. 9, 1888. Serial No. 270,095. (No model.)

Claim.—1. The combination, in a glass-melting furnace provided with regenerators on each side, of two separate tanks, one of said tanks being provided with a partition, a partition-wall extending through said furnace entirely separating said tanks except by an opening or openings at its bottom, said partition also dividing the regenerators into two distinct portions, and separate gas-producers connected by flues and suitable valves to each of said portions, substantially as described.

2. The combination, in a glass-melting furnace provided with regenerators on each side, of two separate tanks, a partition-wall extending through said furnace entirely separating said tanks except by



387,818.



an opening or openings at its bottom, said partition also dividing the regenerators into two distinct portions, and separate gas-producers connected by flues and suitable valves to each of said portions, substantially as described.

387,819. ATTACHING DEVICE FOR CHECK-ROW MACHINES. LEVI SCOFIELD, Grand Haven, Mich. Filed Mar. 5, 1888. Serial No. 266,173. (No model.)



Claim.—1. In a planter, and in combination with the cross-bar or support of the actuating devices and the seed hopes or supports therefor, the brackets, each provided with a plate bolted to the seed-box and carrying a bar, *a*, connected thereto, and the two-part detachable and adjustable clips secured to the cross-bar and holding the bar *a* of the bracket between their members, substantially as described.

2. The improved connection or support for the actuating mechanism of a planter such as described, consisting, essentially, of the bracket provided with attaching-plate and notched bar *a* and the clips formed in two sections and provided with a partible bearing embracing the bar *a* of the bracket, a projection engaging the teeth on said bar, and a bolt for clamping said clip on the cross-bar and closing the partible bearing upon the bar *a*, the whole constructed and combined for operation, substantially as described.

3. The improved clip for connecting the actuating devices or check-row attachment to a planter, consisting, essentially, of the section *b*, having ribs b^2 and recess b^3, and the section b', provided with lug c^4, shoulder c^5, and cap c^6, the two sections being held together and clamped upon the supporting-bracket and cross-bar by a bolt, *d*, passing through or engaging the outer section, substantially as described.

4. In a planter such as described, the combination, with the cross-bar supporting the actuating devices and the clips secured thereto, of the reversible and interchangeable brackets, each provided with an attaching-plate, and a bar, *a*, to which the clip is adjustably applied, substantially as described.

5. The improved bracket for supporting the actuating devices or check-row attachment for a planter, consisting of the toothed bar *a*, two arms, a^4, extending from the ends of the bar, and plate a^5, with inclined face and suited to said arms, substantially as described.

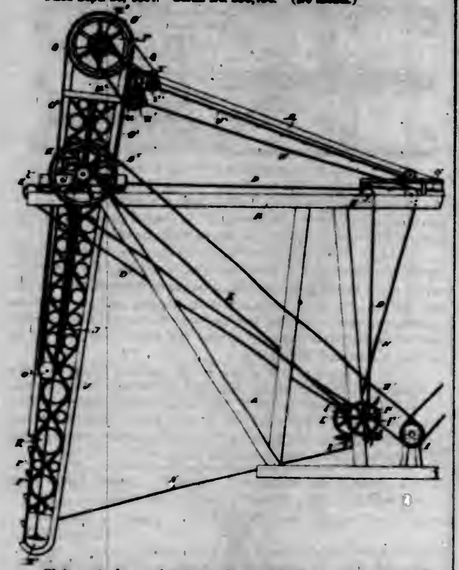
6. In combination with the bracket A, having the toothed bar *a* and secured to the seed-box or equivalent support, the sectional clip B, fastened to the cross-bar and provided with a clamping-bolt and retaining-tooth, substantially as described.

7. In combination with the bracket A, having notched bar *a* and

centrally supported by its plate a^5 upon the seed-box, a clip provided with a sectional socket or bearing for the reception of said bar *a* and a tooth engaging the latter, and a bolt engaging said clip to simultaneously fasten it to the cross-bar and close the section upon bar *a* of the bracket, substantially as described.

8. The hereinbefore described improved attaching device for planters, consisting, essentially, of the bracket A, with bar *a*, arms, and central plate, the clip B, constructed in two sections and provided with retaining-lugs engaging cross-bar E, a partible socket to receive the bar *a* and a tooth to enter notches in the latter, a lug on one section and recess in the other, and a bolt passing through both of said sections and the cross-bar E to clamp these parts together and in position upon the bar *a* of the bracket, substantially as described.

387,820. CONVEYER. JAMES F. SIMMONS, Manistique, Mich. Filed Sept. 26, 1887. Serial No. 250,736. (No model.)



Claim.—1. In an elevator and conveyor, the combination, with a carriage adapted to move forward and backward, of a shaft mounted transversely on said carriage and receiving a rotary motion, an elevator-frame having vertical slots through which said shaft passes, an elevator-belt and buckets mounted on the said frame, and an endless belt for imparting a rotary motion from said transverse shaft to the elevator-shaft, substantially as shown and described.

2. The combination, with the frame A, the horizontal track B, and the windlasses L F at the lower end of said frame, of the carriage C on the track, having a transverse shaft, G, the elevator-frame having slots into which the ends of the shaft pass, the idle-pulleys E E at the front and rear of the track, the rope D, leading from the windlass F over the said idlers to the opposite ends of the carriage, the rope N, leading from the windlass L to the opposite ends of the elevator-frame, a belt connecting the shaft G and the elevator-shaft, and the conveyer R, on which elevator-buckets deliver, substantially as set forth.

3. In an elevator and conveyor, the combination, with a carriage and a shaft mounted transversely on the same and receiving a rotary motion, of an elevator-frame having vertical slots through which said transverse shaft passes, an elevator-belt mounted on said elevator-frame and set in motion by said transverse shaft, a spout into which said elevator-belt discharges, and a conveyor connected with said spout and set in motion from the shaft of the elevator-belt, substantially as shown and described.

387,821. FEED-BUCKET. ALBERT H. SMITH, Westerly, R. I. Filed Dec. 23, 1887. Serial No. 258,511. (No model.)

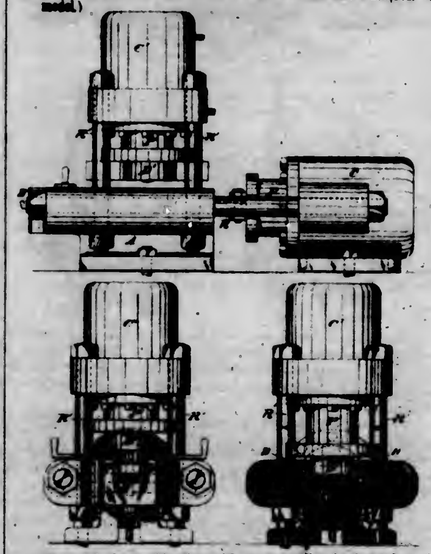
Claim.—1. In a feed-bucket, the combination, with a frame having inwardly-extending arms, a spring held in said frame, and a feed-receptacle resting upon said spring, of a detachable apertured partition held within the receptacle, substantially as and for the purpose herein set forth.

2. In a feed-bucket, the combination, with a frame having integral inwardly-extending perpendicular arms, a spring supported in said frame, and a feed-receptacle provided with a ventilated bottom resting upon said spring, of a detachable partition held within the receptacle provided with a central orifice and a series of peripheral slots, substantially as and for the purpose herein set forth.

3. In a feed-bucket, the combination, with a skeleton frame having the members thereof bent inward at the top and provided with lugs at their extremities, a coiled spring supported in said frame, and a feed-receptacle provided with a ventilated bottom resting upon said spring, of a flanged detachable partition held within said receptacle, provided with a central orifice, a series of peripheral slots, and apertures intervening said slots adapted to receive said lugs, substantially as and for the purpose herein set forth.



387,822. APPARATUS FOR UPSETTING EYE-BARS. FREDERICK H. SMITH, Baltimore, Md. Filed Dec. 3, 1887. Serial No. 256,803. (No model.)



Claim.—1. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with front and rear channels, a vertical compressing male die fitted to slide up and down within the shaping-chamber and the front and rear channels, respectively, of the female die, and a horizontal upsetting-ram fitted to slide endwise within the rear channel of the female die and under the male die.

2. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with front and rear channels, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front and rear channels, respectively, of the female die, a horizontal upsetting-ram fitted to slide endwise within the rear channel of the female die and under the male die, and a rear horizontal cylinder and piston fitted to actuate the horizontal upsetting-ram.

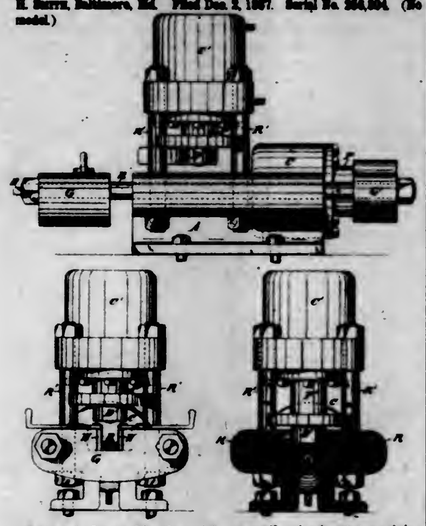
3. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with front and rear channels, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front and rear channels, respectively, of the

female die, a horizontal upsetting-ram fitted to slide endwise within the rear channel of the female die and under the male die, and an overhead vertical cylinder and piston fitted to actuate the vertical compressing male die.

4. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with front and rear channels, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front and rear channels, respectively, of the female die, a horizontal upsetting-ram fitted to slide endwise within the rear channel of the female die and under the male die, a rear horizontal cylinder and piston fitted to actuate the horizontal upsetting-ram, and an overhead vertical cylinder and piston fitted to actuate the vertical compressing male die.

5. The combination of the dies which form the shaping-chamber, provided with a bulbous protuberance projecting from the top or bottom into said shaping-chamber at or about its center, and mechanism for driving the heat-softened end of a stationary metal bar backward and upsetting it into said chamber, for the purpose set forth.

387,823. MACHINE FOR UPSETTING EYE-BARS. Frederick H. Smith, Baltimore, Md. Filed Dec. 2, 1887. Serial No. 256,894. (No model.)



Claim.—1. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with a front channel, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front channel of the female die, and a front gripping cross-head.

2. In combination, with an anvil, a horizontal receiving female die consisting of a shaping-chamber with a front channel, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front channel of the female die, a front gripping cross-head, and a rear cross-head connected therewith by rods.

3. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with a front channel, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front channel of the female die, a front gripping cross-head and rear cross-head connected therewith by rods, a rear horizontal cylinder, and piston fitted to actuate the rear cross-head and connecting-rods and front gripping cross-head.

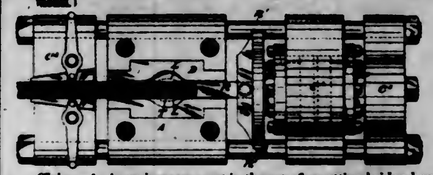
4. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with a front channel, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front channel of the female die, a front gripping cross-head, an overhead vertical cylinder, and piston fitted to actuate the vertical compressing male die.

5. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with a front channel, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front channel of the female die, a front gripping cross-head and a rear cross-head connected therewith by rods, an overhead vertical cylinder, and piston fitted to actuate the vertical compression male die.

6. In combination with an anvil, a horizontal receiving female die consisting of a shaping-chamber with a front channel, a vertical compressing male die fitted to slide down and up within the shaping-chamber and the front channel of the female die, a front gripping cross-head and a rear cross-head connected therewith by rods, a rear horizontal cylinder, and piston fitted to actuate the rear cross-head, an overhead vertical cylinder and piston fitted to actuate the vertical compressing male die, and an overhead vertical cylinder and piston fitted to actuate the vertical compressing male die.

7. In combination with mechanism for ramming endwise a metal bar, and thus upsetting its heat-softened end within a shaping-chamber, a bulbous protuberance in the center of the said shaping-chamber for the purpose of steadying said bar against lateral displacement during upsetting.

387,824. METHOD OF UPSETTING BRIDGE-BARS. Frederick H. Smith, Baltimore, Md. Filed Apr. 26, 1888. Serial No. 272,162. (No model.)

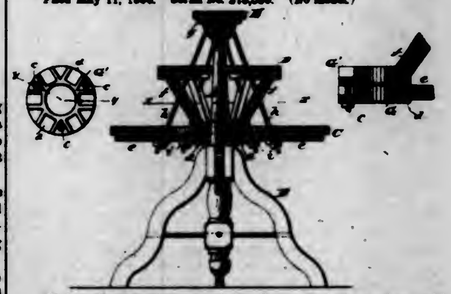


Claim.—1. As an improvement in the art of upsetting bridge-bars, the hereinbefore-described process, consisting of first heating a portion of a metal bar, inclosing the heated portion within a die of any desired shape, and driving both ends of the heated portion of the bar toward the center of the die, for the purposes described.

2. As an improvement in the art of upsetting bridge-bars, the hereinbefore-described process, consisting of inclosing the heated bar within a die, firmly fixing the heated bar at the point where the eye-seat will come, so as to prevent it from bending laterally when the upsetting-pressure is applied, and upsetting the heated portions adjacent to the said fixed point by driving the metal from opposite directions toward said fixed point.

3. As an improvement in the art of upsetting bridge-bars, the hereinbefore-described process, consisting of inclosing the heated bar within a die, penetrating one or both sides of the heated bar at the point where the eye-seat will come, so as to give an initial lateral expansive direction to the metal and driving the metal from opposite directions toward the said penetrated point.

387,825. FLOWER-STAND. Herbert L. Starr, Preston, Conn. Filed May 11, 1888. Serial No. 273,569. (No model.)



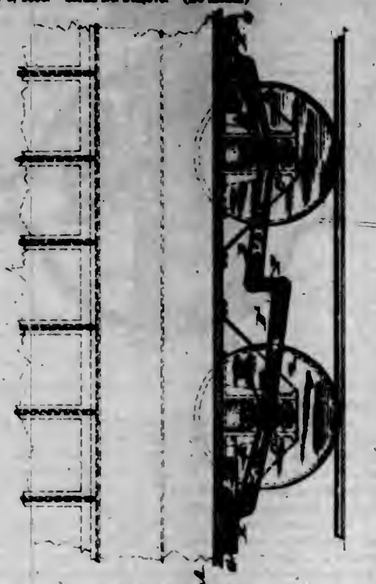
Claim.—In a revolving stand for flowers and plants, the combination, with the post A and socket-piece G G', of the rotating shelves C D and cap E, the diagonal braces *f*, supporting the shelf D, and the diagonal rods A, passing through said braces and connecting said cap and lower shelf, C, all as shown and described.

387,826. HINGED COVER FOR MOLASSES-CUPS. Alvin Taplin, Forestville, Conn. Filed Dec. 14, 1887. Serial No. 257,868. (No model.)



Claim.—The herein-described cover, hinge, and rim for molasses-cups, said hinge being provided with a middle portion secured to the cover, and side lugs, *c c*, which extend downward at a point outside of the cover and then inward through slots in the rim to the pintle *d* at a point within said rim, substantially as described, and for the purpose specified.

387,827. EQUALIZING DEVICE FOR CARS. Henry J. Tate, Philadelphia, Pa., assignor of one-half to Josiah H. Procter, same place. Filed May 3, 1888. Serial No. 272,979. (No model.)



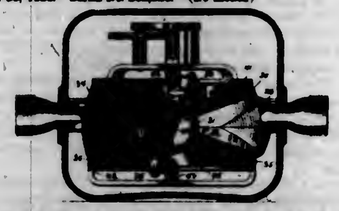
Claim.—1. A device for equalizing weight superimposed upon a car when superior at either end, consisting of radial arms freely connected with the ends of the car and with each other by means of rotatable sleeves and axles on which said sleeves are mounted, whereby both ends of the car are uniformly depressed, substantially as described.

2. The combination, with a car, of a series of radial arms which are connected with each other by means of sleeves mounted on the axles thereof, and with the ends of the floor of the car by means of slides which are fitted in guides connected with said floor, substantially as described.

3. In a car-equalizing device, substantially as described, the guides H, secured to the floor of the car, in combination with sides fitted in and connected with said guides and pivoted to the radial arms of the device, as stated.

4. A car-equalizing device consisting of sleeves mounted on suitable bearings, each sleeve having two arms, one of which projects inwardly, the other outwardly, guides adapted to be secured to the under side of the car, slides pivotally secured to the outwardly-projecting arms and adapted to work in said guides, and links pivotally connected to the ends of the inwardly-projecting arms, said parts being combined substantially as described.

387,828. WATER-METER. John Thomson, Brooklyn, N. Y. Filed Jan. 30, 1888. Serial No. 262,393. (No model.)



Claim.—1. The combination, in a water-meter capable of operation in either direction of flow, of the register driving-gear, as 15, screwed to the spindle, and an engaging-pawl, as 17, the arrangement of the screw and the pawl being such that the pawl will ride freely over the gear when the meter is properly operated, but when improperly operated the said pawl will engage the gear and cause it to unscrew from the spindle, substantially as described.

2. The combination of the internal gear-wheel, 19, fast to the stuffing-box spindle, the final pinion, 20, of the internal gear-train, the said gear being mounted in the upper cap and the said pinion being mounted upon the disk-chamber, and the steady-pin 23, inserted on the outside through the flanges of the cap and disk-chamber, all as shown and described, and for the purpose specified.

3. The combination, with the disk and disk-chamber, of the conical flanges, the central conical bearings, and the conical rollers mounted upon opposite ends of the disk-shaft and adapted to roll within the space formed between the said center bearings and the conical flanges, whereby the rollers act to receive the thrust of the disk to and from the cone-frusta, substantially as specified.

4. The combination, with the disk-chamber, disk, and disk-shaft, of the conical bearing-sleeve, conical roller, and external bearing upon which the said roller shall act, substantially as and for the purpose described.

5. The combination, with the disk-chamber, disk, disk-shaft, conical roller, and external bearing, of the conical bearing-sleeve capable of being adjusted back and forth upon the disk-shaft, for the purpose of determining the proper position of the said conical roller, substantially as specified.

6. The combination, with the conical roller and disk-shaft, of the conical bearing-sleeve having an upper and a lower flange, as 51 52, for the purpose of maintaining the said conical roller in proper relation with the said bearing-sleeve, substantially as specified.

387,829. CRANK-BEARING FOR OSCILLATING DISKS. John Thomson, Brooklyn, N. Y. Filed Feb. 1, 1888. Serial No. 262,602. (No model.)

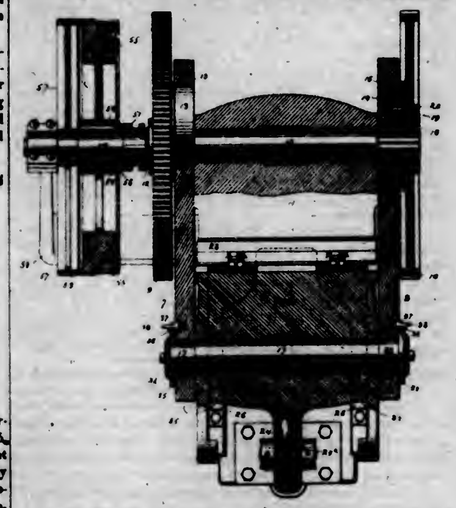


Claim.—1. In an oscillating disk-action, the combination of the disk-shaft, rotating crank-block, and outer and inner bearings, 14 16, the acting surfaces of said block and bearings being parallel with the said disk-shaft.

2. A rotating crank-block for oscillating disk-actions, having a bore for the disk-shaft and having bearings formed parallel to the bore at a right angle to the line of thrust of said disk-shaft.

3. The combination of the rotating crank-block having a bore for a shaft and bearing-faces parallel to the bore, the conical bearing 14 for the exterior faces of the block, and a conical bearing, 16, for the interior faces of the block.

387,830. STAMPING OR EMBOSSING PRESS. John Thomson, Brooklyn, N. Y. Filed Feb. 24, 1888. Serial No. 265,170. (No model.)



Claim.—1. In combination, the bed, platen, connecting-rods, and gear-wheels, the said rods located between the outside faces of the bed and the inside faces of the wheels, and the eccentrics projecting inward toward the press, substantially as described.

2. The combination, with the bed having its face inclined at an angle of about forty-five degrees from the perpendicular, of a rocking platen arranged to rock from a practically horizontal position to a position parallel to the bed and to move toward the bed in lines parallel therewith, and a cam for controlling the movement of the platen, substantially as described.

3. The gear-wheels, mounted upon a shaft, having eccentrics formed upon their inner sides and connecting-rods adapted thereto, the main-shaft bearings being within the compass of the eccentrics, whereby the faces of both the eccentrics and the connecting-rods bear directly against the sides of the bed.

4. The gear-wheels having the oil-chamber or recess 18, provided with a central inlet, 20, to the chamber, and outlet channel or channels 21 22, extending from the chamber to the bearing-surface, whereby the lubricant may be applied from the outside of the machine and be fed intermittently to the bearing-surface of the eccentrics at each rotation thereof.

5. The combination of the eccentrics, connecting-rods, platen, rockers, friction-roll, and controlling-cam, the form of the cam being such as to augment the motion of the platen by causing it to slip upon its bearings, substantially as described.

6. The combination of the eccentrics, connecting-rods, platen, rockers, friction-roll, and controlling-cam, the relation and form of the eccentrics, rockers, and cam being such that the lower edge of the platen is caused to travel upward in a line approximately parallel to the face of the bed, substantially as described.

7. The combination, with the platen, main connecting-rods, bed, and gear-wheels, of the eccentric adjusting-sleeves having a flange in which are formed circular recesses, and the semicircular locking-stud, substantially as described.

8. The lipped gage having a slot, as 36, in combination with the thumb-screw, steam-blank, and register-blank, for the purpose specified.

9. The combination, with the gear-wheels, pinions, and driving-shaft, of the belt, the driving-pulley keyed to the shaft, the fly-wheel loose on the shaft and having a clutch member fast thereto, a sliding-clutch member, a pivoted clutch-lever, and a cam mounted on the crank-wheel for actuating the clutch-lever, the arrangement and construction being such as to force the clutch into engagement when or after the rotative speeds of the two members of the clutch are equal, substantially as specified.

10. The combination of the fly-wheel having a driving-clutch, the sliding-clutch member having teeth corresponding to those of the fly-wheel, a cam mounted on the crank-wheel, and a pivoted clutch-lever one extremity of said lever being adapted to engage the sliding-clutch member and the other extremity of which is adapted to be engaged and actuated by the cam and having a yielding resistance between the said cam and clutch, for the purpose specified.

11. The combination, with the driving-shaft, clutch, and clutch mechanism substantially such as described, of the fly-wheel loose on the shaft, the pulley tight to the shaft, the belt, and the belt-shifter, the adjustment and operation of the latter being such as to shift the belt on and entirely off from the tight pulley, but never entirely off from the fly-wheel, substantially as described.

12. The combination, with the clutch-lever cam, the pivoted clutch-lever having a yielding resistance, and the sliding-clutch member, of the shoe fast to the crank-wheel, the belt-shifter having an arm adapted to be engaged by the shoe, the belt, the pulley tight to the shaft, and the fly-wheel loose on the shaft and provided with a driving-clutch member, the relative arrangement being such that the said cam first acts to disengage the clutch members, the belt being then drawn from the tight pulley entirely onto the fly-wheel, substantially as described.

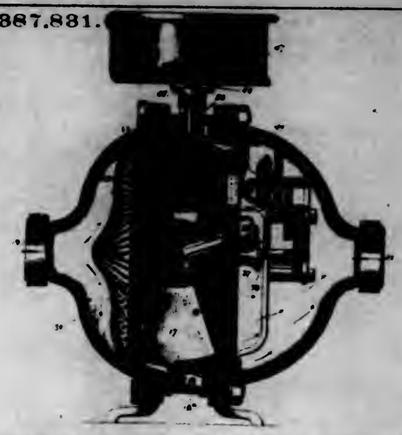
13. The combination of the belt-shifter, having suitable connections for manual or pedal operation, with the belt, tight pulley, fly wheel, clutch members, clutch-lever, and clutch-lever cam, the construction and relative arrangement being such that the belt is slid partially across the face of the fly-wheel onto the tight pulley, thereby starting the machine by belt-friction, the clutch-lever cam being thus put in motion by the primary action of the belt to throw the sliding member of the clutch into engagement, substantially as described.

387,831. DISK WATER-METER. JOHN THOMSON, Brooklyn, N. Y.

Filed Apr. 5, 1888. Serial No. 269,720. (No model.)

Claim.—1. In a water-meter, a separate disk-chamber composed of two sections secured together, provided with a disk, a diaphragm and an external cylindrical portion, 18, and having inlet and outlet ports formed equally in both sections of the chamber, and having two pressure-caps, forming separate compartments on either side of the disk-chamber, secured to the said external cylindrical portion, 18, substantially as described.

2. In a water-meter, the combination, with a disk-chamber having a fixed diaphragm and an oscillating disk therein, of inlet and outlet ports formed in said chamber, the area and the circumferential extent of the inlet-port being greater than that of the outlet-port, whereby



387,831.

the impact of the inflowing current upon the disk is decreased, substantially as set forth.

3. In a water-meter, the combination, with a disk-chamber having a diaphragm and an oscillating disk therein, of inlet and outlet ports, the diaphragm being set so as to divide the circumferential extent and area of the ports unequally, whereby the change in the displacement of the disk is carried around within the disk-chamber entirely away from the diaphragm, substantially as described.

4. In a water-meter, the combination, with a disk-chamber having a diaphragm and oscillating disk therein, of inlet and outlet ports divided in unequal extent and area by the diaphragm, the corners 27 28 of the outlet-port being higher than the corresponding corners of the inlet-port, substantially as described.

5. In a water-meter, the combination, with a disk-chamber, of a conical strainer arranged to envelop the inlet side of said disk-chamber, substantially as described.

6. The combination, with the disk-chamber and pressure-caps, of a strainer arranged between the inlet pressure-cap and the inlet side of the chamber, the said strainer being arranged to entirely envelop the inlet side of the disk-chamber, substantially as described.

7. In a water-meter, the combination, with a disk-chamber having a disk and diaphragm therein, and arranged to stand and operate in a vertical position, of a register arranged horizontally on the meter and connected to be operated by the disk at a right angle thereto, substantially as described.

8. In a water-meter, the combination, with a vertical disk-chamber and oscillating disk therein, of a horizontal register and register-operating mechanism, the register and operating mechanism being mounted upon the disk-chamber, substantially as described.

9. In a water-meter, the combination, with a vertical disk-chamber composed of two sections secured together, and an oscillating disk operating therein, of a horizontal register and register-operating mechanism, both the register and operating mechanism being mounted upon one of the sections of the disk-chamber, substantially as described.

10. In a water-meter, the combination, with a vertical disk-chamber and disk therein, of a horizontal register mounted on top of the disk-chamber, register-operating mechanism mounted on the side of the disk-chamber, and beveled-gear connections between the register and operating mechanism, substantially as described.

11. The combination, with a disk-chamber, oscillating disk, and fixed bearing-piece, of the disk-spindle secured to and controlling the normal action of the disk without tension, but capable of yielding elastically within the diameter of the ball upon the introduction of foreign material between the disk and disk-chamber, substantially as described.

12. In a water-meter, the combination, with a disk-chamber and oscillating disk therein, of the disk-spindle, a spherical roller on said disk-spindle, and a grooved bearing for said roller, substantially as described.

13. In a water-meter, the combination of a disk-chamber, an oscillating disk therein, a disk-spindle, a spherical roller mounted thereon, and a grooved bearing adjustable upon its support, substantially as described.

14. In a water-meter, the combination, with a disk-chamber, of a register mounted thereon and a stuffing-box connected to the disk-chamber, the disk-chamber being formed with a pocket, as 53, for the stuffing-box-spindle gear, substantially as described.

15. In a water-meter, the combination, with a disk-chamber and oscillating disk therein, of the pressure-caps having inlet and outlet spuds connected to the disk-chamber, the pressure-caps being of spherical contour, substantially as described.

16. In a water-meter, the combination, with a disk-chamber, of pressure-caps secured thereto, the caps being of sheet metal, and inlet and outlet spuds secured to the caps, substantially as described.

17. In a water-meter, the combination, with a disk-chamber and oscillating disk, of the diaphragm, the disk being provided with a friction-roller bearing upon the diaphragm, substantially as described.

387,832. COMBINATION-BRACKET WASH-STAND. GATEN D. TOLMAN and LEONARD B. BENSON, Rhoades, Wis. Filed Jan. 3, 1888. Serial No. 259,693. (No model.)



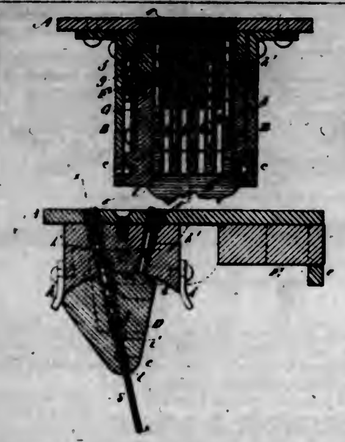
Claim.—1. In a bracket wash-stand, a folding wash-bowl support consisting of rod 7, bent to form a circle and secured to a sleeve, 8, with its ends 9 resting in eyes 10 on bracket 1, and the inclined brace-rod 11, substantially as described.

2. In a bracket wash-stand, a removable pitcher-shelf, 14, having hangers 15, formed with loops 16, engaging pins 19 on plate 13, having heads 18, substantially as described.

387,833. LOCK. HENRY VAN HOEVENBERGH, New York, N. Y.

Filed Jan. 17, 1888. Serial No. 261,048. (Model.)

Claim.—1. In a pin-tumbler lock, an oscillating or swinging tumbler-carrier provided with a series of ducts or perforations arranged in transverse relation with the axial center of motion of said tumbler-carrier, and each containing three or more independent pins or tumblers arranged one in advance of the other, and the several pins or tumblers in each duct being of different lengths, in combination with a stationary tumbler-receiver in working or close contact with the oscillating tumbler-carrier and having a corresponding or registering series of ducts or perforations adapted to receive a portion of said independent tumblers by the pushing action of a proper key, springs for operating said tumblers, and a locking-bolt, substantially as specified.



387,833.

2. A pin-tumbler lock provided with a movable tumbler-carrier having a series of ducts or perforations, each containing three or more pins or tumblers, and with a tumbler-receiver having two sets or rows of ducts or perforations, one of which rows or sets is adapted to receive and hold certain of the pins or tumblers from the movable tumbler-carrier, determined by the key of the lock, and the other row or set holding or being provided with separate locking pins or tumblers for the purpose of locking the movable tumbler-carrier when the key is removed, essentially as described.

3. A pin-tumbler lock in which a matrix approximately the shape of the steps of the key as produced by its bits is formed by the united action of the key of the lock, and pins or tumblers moving in ducts, said pins or tumblers in each duct being of different lengths, and suitable springs controlling said tumblers, the whole being organized so that the bolt of the lock cannot be withdrawn excepting said matrix is reproduced by the action of the same key or keys of similar construction as regards its steps, substantially as specified.

4. A lock having a movable pin-tumbler carrier organized to oscillate or rock, and provided with a key-hole intersecting its axis of oscillation, in combination with a bolt connected with said tumbler-carrier, whereby said bolt is shot or withdrawn by the oscillation or lever-like action of a key throughout its length in contradistinction to the whole or partial rotation of the key upon or about its longitudinal axis or center, substantially as specified.

5. In a pin-tumbler lock, the combination of a swinging or oscillating tumbler-carrier, a stationary tumbler-receiver, a key fitting said tumbler-carrier and adapted to be rocked or oscillated with it, and a bolt capable of being shot or withdrawn by such rocking or oscillating movement, essentially as described.

6. In a pin-tumbler lock provided with a swinging or oscillating tumbler-carrier having a series of ducts or perforations in transverse relation with the axial center of motion of said carrier, the combination, with such carrier, of a series of sectionally-constructed sliding pins or tumblers of varying lengths arranged within said ducts or perforations, essentially as herein set forth.

7. In a pin-tumbler lock, the combination of the swinging or oscillating tumbler-carrier having a series of ducts or perforations, sectionally-constructed sliding pins or tumblers arranged within said ducts or perforations, a bolt connected with said oscillating carrier, the stationary tumbler-receiver having two sets or rows of ducts or perforations arranged to register in the oscillation of the tumbler-carrier with the ducts in the latter, and a secondary set of pins or tumblers in the one set or row of ducts in the stationary tumbler-receiver, the whole being organized for operation substantially as specified.

8. In a pin-tumbler lock, the combination, with the swinging or oscillating tumbler-carrier having ducts or perforations in transverse relation with the axial center of motion of said carrier, of a series of sectionally-constructed tumblers arranged to move within said ducts, a stationary tumbler-receiver perforated to receive said tumblers par-

tially within it, and a series of keys differently stepped or having bits of different lengths, each adapted to control said tumblers to open and close the lock, essentially as herein set forth.

387,884. BLANKET-CLASP. Donald Walker, Caledonia, N. Y. Filed Jan. 13, 1888. Serial No. 260,869. (No model.)

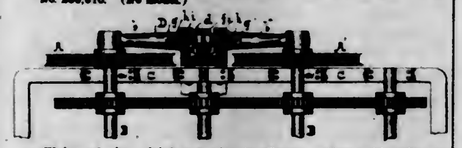


Claim.—1. As an improved article of manufacture, the safety pin or clasp for blankets herein described, having its members provided with aligning downwardly and inwardly extending essentially U-shaped arms, substantially as and for the purpose specified.

2. As an improved article of manufacture, the safety pin or clasp for blankets herein described, having its members provided with approaching outwardly, downwardly, and inwardly curved essentially U-shaped arms, substantially as and for purpose specified.

3. The combination, with a blanket and the strape of a harness, of the safety pin or clasp herein described, having its members provided with approaching downwardly, outwardly, and inwardly curved essentially U-shaped arms, substantially as and for the purpose set forth, whereby the blanket is pressed and held over and around a given strap or strape.

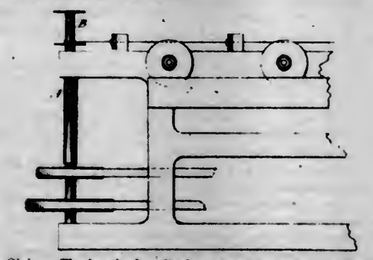
387,835. DRIVING MECHANISM FOR ENDLESS-CABLE RAILWAYS. John Walker, Cleveland, Ohio. Filed Apr. 4, 1888. Serial No. 269,610. (No model.)



Claim.—1. In a driving mechanism for an endless-cable railway, the combination of the driving-shafts and a strut in two sections or lengths, threaded at their inner ends and connected by a spindle, the whole being supported by means of a bracket, substantially as and for the purpose specified.

2. In a driving mechanism for an endless-cable railway, the combination of the driving-shafts and a strut in two sections or lengths, threaded at their inner ends and connected by a spindle, the interiorly-threaded parts of the connection being slit and provided with means whereby they may be contracted around the other threaded parts to lock the whole, and a supporting-bracket, substantially as and for the purpose specified.

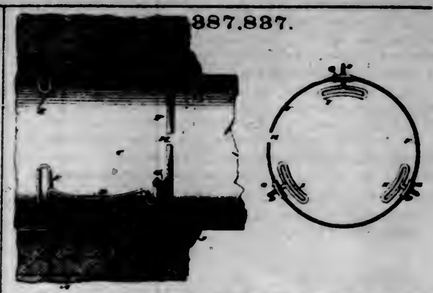
387,836. MODE OF PREPARING SPOOLS OF WIRE FOR THE MARKET. William Wallace, Ansonia, Conn. Filed May 28, 1888. Serial No. 275,274. (No model.)



Claim.—The herein-described mode of preparing spools of wire for the market, consisting in first drawing the wire directly upon a metal spool, then subjecting that same metal spool with the wire still thereon to the annealing operation and without rewinding the wire, substantially as described.

387,837. STOVE-PIPE HOLDER. William S. Webb, Springfield, Ohio, assignor of one-half to Joseph F. Kurtz, same place. Filed Dec. 3, 1887. Serial No. 256,043. (No model.)

387,837.

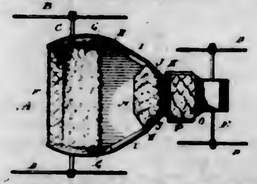


Claim.—1. A stove-pipe holder consisting of a detachable band or ring adapted to encircle a stove-pipe and clamp the outside thereof and a plurality of bars connected to such ring and extending radially from and back to the pipe, whereby said bars are adapted to engage the walls of a pipe-hole and to bear against the pipe when the latter is placed therein to secure the pipe to the hole.

2. A stove-pipe holder consisting of an open band or ring adapted to clamp round a stove-pipe, a plurality of clips secured to it, and a like number of curved spring-bars connected to the clips at one end and having segmental loops at the other end.

3. A stove-pipe holder consisting of a detachable band adapted to encircle a stove-pipe, and a plurality of yielding or spring bars connected to such band and extending radially from and back to the pipe, whereby said bars are adapted to engage the walls of the pipe-hole and bear against the pipe when the latter is placed in position with a constant pressure to secure the pipe in the hole.

387,838. VEHICLE. Wilbur H. Weston, Newburg, N. Y. Filed Apr. 3, 1888. Serial No. 269,413. (No model.)

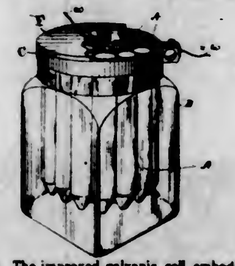


Claim.—1. In a vehicle of the class described, a carriage-body having the front parts of its sides provided with two inward inclines, a seat located inside the carriage between the inclines, and doors hinged to the rear ends of said inclines, substantially as described.

2. In a vehicle of the class described, a carriage-body having its front parts inclined inwardly, and doors hinged to the rear ends of said inclines, in combination with the rear and front wheels, the latter being of narrower gage than the former, substantially as described.

3. In a vehicle, a carriage-body having the front parts of its sides inclined toward the longitudinal axis of the carriage-body and doors fitted on the said inclined parts, in combination with the rear and front wheels supporting the said carriage-body, said front wheels being of narrower gage than said rear wheels, substantially as shown and described.

387,839. GALVANIC BATTERY. Granville T. Woods, Cincinnati, Ohio. Filed July 9, 1887. Serial No. 243,934. (No model.)



Claim.—1. The improved galvanic cell embodying the negative electrode arranged as an annulus concentrically around the positive electrode, and an intervening insulating-shield, in combination with the containing-vessel and exciting-liquid, substantially as described.

2. In a galvanic cell, the carbon sticks A, insulating-cylinder B, and clamp C, combined and arranged, as shown, to constitute a single structure removable from the containing-vessel, substantially as described.

3. A galvanic cell embodying a carbon or negative electrode, combined with an open insulating-annulus around which it is secured as one removable structure, and the zinc or positive electrode, combined with an insulated bridge which it is suspended upon and within the insulating-annulus, also as a removable structure, the whole combined with and arranged within and upon a containing-jar, substantially as set forth.

387,840. HEATING-ENGINE. Cornelius Arthurson, Loanhead, County of Mid-Lothian, Scotland. Filed Sept. 10, 1887. Serial No. 249,322. (No model.) Patented in England May 3, 1883, No. 5,261.



Claim.—1. The vat A and mid-feather A', in combination with the conical cutting-roll B, arranged transversely to said tank on one side of said mid-feather, and a set of knives arranged under said cutting-roll and parallel therewith, the knives being collectively broader at the end under the broad end of the cutting-roll, substantially as set forth.

2. A vat, A, mid-feather A', and conical cutting-roll, in combination with a knife-box arranged under it, and a set of long knives and a set of short knives in said box, the knives being arranged to give greater breadth of cutting-surface at the end of the box which is under the larger end of the conical roll, substantially as set forth.

387,841. PHOTOGRAPHIC-PRINT REGISTER. John W. Allbright, Waterbury, Conn. Filed Mar. 30, 1888. Serial No. 268,694. (No model.)



Claim.—1. A register comprising a central stud, an index-plate journaled thereon which denotes the number of prints required, a register-plate carried by the central stud, having ratchet-teeth at its edge and numbers which count the prints as made, and a spring engaging the ratchet-teeth to hold it against backward movement and by friction thereon to hold it against forward movement except when the central stud is rotated.

2. A register comprising a back plate having ears for attachment in place, a face-plate having a flange to inclose the operative parts which is attached to the back plate, openings 5 and 6 in the face-plate, a central stud journaled in the two plates, an index-plate journaled on the central stud and having numbers showing at the opening 6, for the purpose set forth, and a register-plate carried by the central stud and having numbers showing at the opening 5, as and for the purpose set forth.

3. A register comprising a face-plate having openings 5 and 6 and a curved slot, 7, a central stud, an index-plate having numbers showing at opening 6, a stud passing through the slot and a thumb-nut, whereby it is locked after adjustment, a register-plate carried by the central stud and having numbers showing through the opening 5, ratchet-teeth at its edge, a spring engaging said ratchet-teeth, and a knob on the central stud for operating the register-plate.

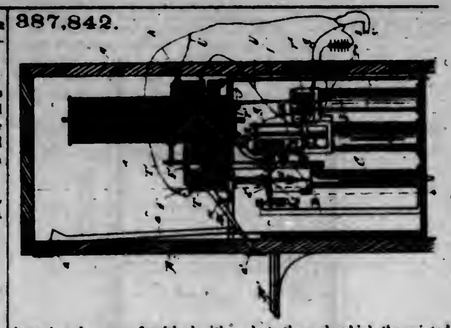
387,842. AUTOMATIC COIN-CONTROLLED TICKET-PRINTING WEIGHING-SCALE. Edward H. Amet, Chicago, Ill., assignor to himself and Herbert A. Streeter, same place. Filed Feb. 17, 1888. Serial No. 264,262. (No model.)

Claim.—1. The combination, with an automatic weighing and card-printing scale mechanism, of a case or box, A, inclosing the same, a coin-operated device for controlling the delivery of the printed card from said inclosing case or box, and a movable device whereby the printed card may be discharged inside said case or box if no coin is deposited, substantially as specified.

2. The combination of an automatic weighing and card-printing scale with a box, A, inclosing the same, having a chute, N, through which the printed card may issue, and a coin-operated card-delivery-controlling device or lever, P, having a tooth, p', said chute N having an opening, n', into which said tooth may project, substantially as specified.

3. The combination, with an automatic weighing and card-printing scale having a card-feed mechanism, a printing wheel or type adjusted or controlled by the scale, and a printing mechanism, of a box inclosing the same, furnished with a chute through which the printed card may issue after being delivered from the printing mechanism, and a coin-operated lever for controlling the delivery of the printed card from said box, and a pawl for holding said gate-lever open until the weighing, printing, and card-delivery operations are completed, substantially as specified.

387,842.



4. The combination, in an automatic weighing and printing scale, of the scale mechanism and the type-wheel adjusted or controlled by the scale mechanism, with an inking device and mechanism for moving the inking device out of contact with the type-wheel momentarily before the impression is taken, so that the type-wheel may reach its true balance unaffected by the friction of the inking device on the type-wheel, substantially as specified.

5. The combination, in an electrically-operated automatic weighing and printing scale, of the scale mechanism and a type-wheel adjusted or controlled by said scale mechanism, two or more electric circuits having magnets included therein, a single battery, a movable contact, and two or more stationary contact-pieces in different circuits closed in succession by the movement of said movable contact-piece, substantially as specified.

6. The combination, with the scale mechanism, of an automatic weighing and card-printing scale, its printing-wheel adjusted or controlled by said scale mechanism, an impression-block, and a card-feed slide, a pivoted chute, a link connecting said chute with the card-feed slide, and a coin-operated gate-lever for opening or closing the mouth of said chute, substantially as specified.

7. The combination, in an automatic electric weighing and printing scale, of the scale and its platform B, movable step J', cord j, card-feed slide H, weight J, movable contact R, stationary contacts R' R^2 R^3, electric circuits S, U, and T, having magnets included therein, and a catch-pin, r^4, operated by the magnet in said circuit S, substantially as specified.

8. The combination, in an automatic electric weighing and printing scale, of the scale and its platform B, movable step J', cord j, card-feed slide H, weight J, movable contact R, stationary contacts R' R^2 R^3, electric circuits S, U, and T, having magnets included therein, a catch-pin, r^4, operated by the magnet in said circuit S, and weight r and dash-pot R^4, for controlling the movement of said movable contact R, substantially as specified.

9. The combination, with a weighing and recording scale and its platform and printing mechanism, of a movable step or platform in front of the scale-platform for operating the printing mechanism of the scale by the weight of the person stepping thereon and therefrom onto the scale-platform to be weighed, and a movable pawl or pin, b', mounted on the stationary frame of the machine to hold said movable step in its normal position after the person steps on the scale-platform and until the weighing and printing operation is completed, substantially as specified.

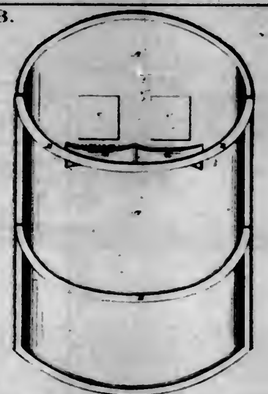
10. The combination of scale-platform B, movable step J', spring-pin b', and mechanism for holding said pin normally retracted, consisting of a cord and a weight, said weight being raised and the cord connecting with said pin slackened during the weighing operation, substantially as specified.

11. The combination of scale-platform B with movable step J', spring-pin b', weight J, cord j, branch cord b^2, and the weighing and printing mechanism of the scale, substantially as specified.

12. The combination, with a weighing and recording scale, of movable step J', weight J, pulleys and a cord connecting said step and weight, a dash-pot surrounding said weight, and a card-feed slide, H, connected with said cord, a branch cord, j^3, and a counter mechanism having an operating pawl-lever connected by said branch cord j^3 with said cord, substantially as specified.

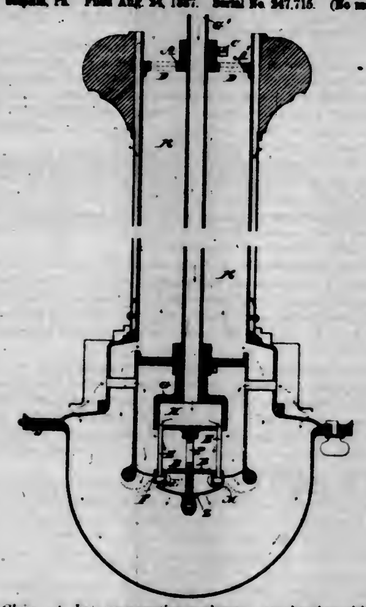
387,843. EYE, FACE, AND LUNG PROTECTOR. Peter Bagsley, Clyde, N. Y. Filed June 21, 1888. Serial No. 277,729. (No model.)

387,843.



Claim.—A protector provided with glasses through which the wearer sees and with rolls or protectors just under the glasses to prevent the breath from rising and condensing upon them, substantially as shown and described.

387,844. REGENERATIVE GAS-BURNER. JOHN W. BAKER, Philadelphia, Pa. Filed Aug. 24, 1887. Serial No. 247,715. (No model.)



Claim.—1. In a regenerative gas-lamp, a gas-chamber with tubes leading therefrom into an annular chamber, the latter having peripheral and base openings, and an adjustable perforated spreader-cup, said parts being combined substantially as and for the purpose set forth.

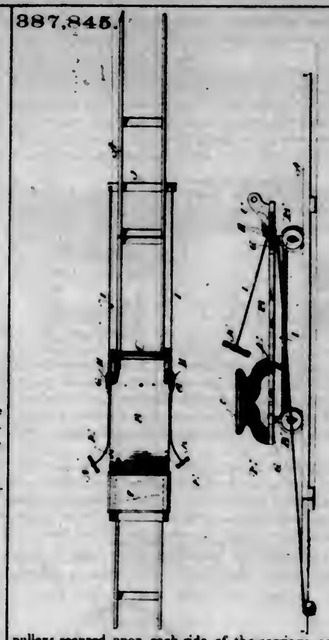
2. The gas-chamber H, the tubes E, leading therefrom, the chamber F, having base-openings M and peripheral openings F, the spreader-cup Z, the button B, and the adjusting-screw P, said parts being combined and arranged substantially as and for the purpose set forth.

387,845. EXERCISING-MACHINE. CARUS M. BARTHOLOMEW, Newark, Ohio. Filed Dec. 14, 1887. Serial No. 257,867. (No model.)

Claim.—1. The combination, with a track, of a carriage, and operating-cords secured to the track about midway of its length and adapted to engage with the carriage with their free ends, said cords being substantially one-half the length of the track, substantially as set forth.

2. The combination, with a horizontal track, of a tie secured thereto, the ends of which project beyond the sides of the track, two

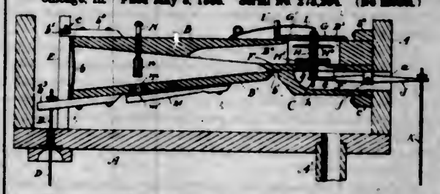
387,845.



pulleys secured upon each side of the carriage, one in front of the other, and an operating-cord secured to each end of the tie and passed between the pulleys upon the carriage, substantially as set forth.

3. The combination, with a track hinged at its middle, of a carriage, and operating-cords secured to the track near the hinged portion and adapted to engage with the carriage, substantially as set forth.

387,846. PNEUMATIC ACTION FOR ORGANS. IRA RAMSEY, Chicago, Ill. Filed May 3, 1888. Serial No. 272,264. (No model.)



Claim.—1. The combination, with the valve H^1, of the flexible diaphragm G and means, as the ring G', for removably securing the same in place, substantially as shown and described.

2. The combination, with the opening *f* and diaphragm G, of the double valves $H' H^2$, spring L, and slotted post L', substantially as shown and described.

3. In a pneumatic action for organs, the combination, with the chamber *c*, of the outlet *a*, the width of which is gradually decreased in a regular taper from the width of said chamber until the end of the outlet is reached, whereby the air may be noiselessly expelled, substantially as shown and described.

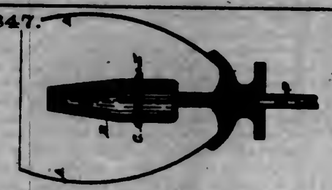
4. The combination, with a pneumatic bellows, of the opening *m*, valve *m'*, spring M, set-screw N, and block *n*, whereby the extent to which the bellows is permitted to collapse may be regulated and adjusted to meet the requirements of the valves in the main wind-chest and air may be admitted to the bellows to serve as an air-cushion until the valve *m'* is closed, substantially as shown and described.

5. The combination, with a series of pneumatic bellows, of the blocks b^4, attached rigidly to said bellows, notches b^5, bars E, and dogs *e*, substantially as shown and described.

387,847. PESTLE FOR MORTARS. JOHN D. BELFOY, New Orleans, La., assignor to George Alfred Lemaux, same place. Filed Feb. 14, 1888. Serial No. 263,904. (No model.)

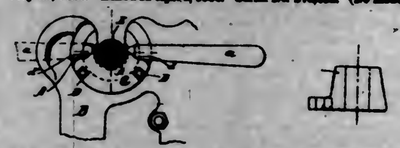
Claim.—The combination, with a pestle, of a ring encircling the

387,847.



pestle and adjustable along the length thereof, substantially as and for the purpose described.

387,848. TIRE-BENDER. JAMES F. BOWMAN, Columbia, Pa. Filed July 30, 1887. Renewed Apr. 6, 1888. Serial No. 270,022. (No model.)

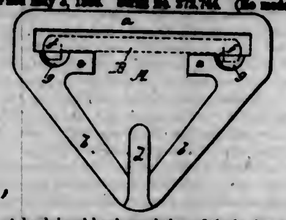


Claim.—1. In a tire-bending machine, the combination, with the central roller and the frame, of partially-rotating bearing-beams for the upper central-roller journals, said beams being actuated by suitable levers and adapted to fit sockets in said frame, and provided with openings corresponding with similar ones in said frame through which the roller-journals may be removed when so desired, substantially as shown.

2. In a tire-bending machine, the combination, with the frame, of a bearing-beam for the end roller, the same being bolted to the frame and adjustable, substantially as set forth.

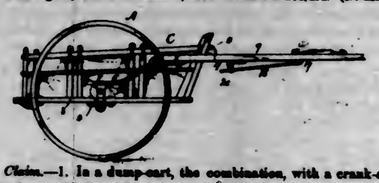
3. In combination with the frame, a bearing-beam for the driving-shaft bolted to the frame, and adjustable, substantially as shown and described.

387,849. BACK-BAND HOOK. ROBERT G. BARRETT, Franklin, Tenn. Filed May 3, 1888. Serial No. 272,744. (No model.)



Claim.—A back-band hook consisting of the horizontal bar *a*, inclined bars *b*, bars *c*, and hook *d*, with the recesses *g*, formed in the short bars *c*, in combination with the pin B, provided with the heads *f f* and the back-band *h*, the whole adapted to operate as and for the purpose set forth.

387,850. DUMP-CART. FREDERICK BIX and EDWARD F. HEUSER, Washington, D. C. Filed Mar. 7, 1888. Serial No. 266,402. (No model.)



Claim.—1. In a dump-cart, the combination, with a crank-axle, of a body provided with bearings arranged on the bail of the axle and to turn thereon, substantially as described.

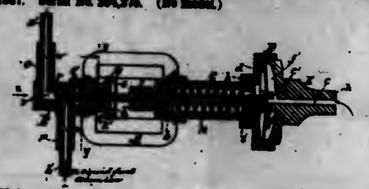
2. In a dump-cart, the combination, with a crank-axle, of a dumping-body having bearings secured to the under side of the side pieces of the body and mounted on the bail of the axle to turn thereon, substantially as described, and for the purposes set forth.

3. In a dump-cart, the combination of the crank-axle, the body mounted to turn on bearings on the bail of the axle, and shafts having their rear ends secured to the top or side of the crank of the axle, substantially as described, and for the purpose set forth.

4. The combination, with the crank-axle of a dump-cart, of shafts having their rear ends rigidly secured to the top or upper sides of the crank of the axle, substantially as described, and for the purpose set forth.

5. The combination, in a dump-cart, of a crank-axle and shafts having shaft-irons secured on their rear ends and to the upper part of the crank of the axle, said shaft-irons being secured on the upper faces of said cranks and formed to curve upward from said attachment, substantially as described, and for the purpose set forth.

387,851. DEVICE FOR CONTROLLING THE FLOW OF STEAM THROUGH PIPES. SAMUEL BRAGDEN, Rochester, N. Y. Filed Nov. 4, 1887. Serial No. 254,578. (No model.)



Claim.—1. A fluid-pressure regulator having a chamber connected with a generator, said chamber having a yielding side or wall, and a valve in said chamber held to move independently of other parts of the device, in combination with an actuator for said valve outside of said chamber operated by the pressure within said generator.

2. A device for controlling the flow of steam or other fluid, having a chamber connected with a pressure-generator, said chamber being formed with a yielding side, and a valve in said chamber not joined to any part of the device without said chamber, in combination with an actuator for said valve outside of said chamber, said valve and actuator therefor both being urged or operated by the pressure within said generator.

3. A device for controlling the flow of steam, having a steam-chamber connected by a passage for steam with a steam-generator and formed with a valve-seat and a yielding side or wall, and a valve in said steam-chamber in contact with said yielding side or wall, in combination with an adjustable actuator for said valve outside of said steam-chamber, and a flexible diaphragm to operate said actuator.

4. A device for controlling the flow of steam, having a steam-chamber connected by a passage for steam with a steam-generator and formed with a valve-seat and a yielding side or wall, and a valve in said steam-chamber in contact with said yielding side or wall, in combination with an adjustable actuator for said valve outside of said steam-chamber, a flexible diaphragm to operate said actuator, a spring to urge said actuator against said diaphragm, and an adjustable compresser for said spring.

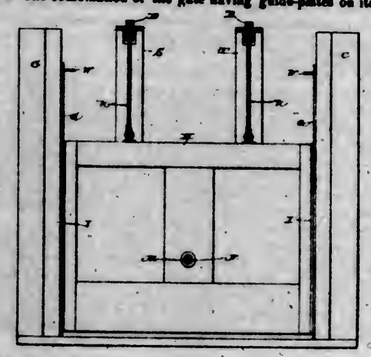
5. A device for controlling the flow of steam, having two separate steam or water chambers, each having a flexible side or wall, a valve-seat and a valve in one of said chambers, an actuator for said valve operated by the flexible wall of the other of said chambers to act upon the flexible wall of said chamber holding the valve.

387,852. DRAW-BRIDGE. WILLIAM J. BUSH, South Evanston, Ill. Filed Nov. 8, 1887. Serial No. 254,643. (No model.)

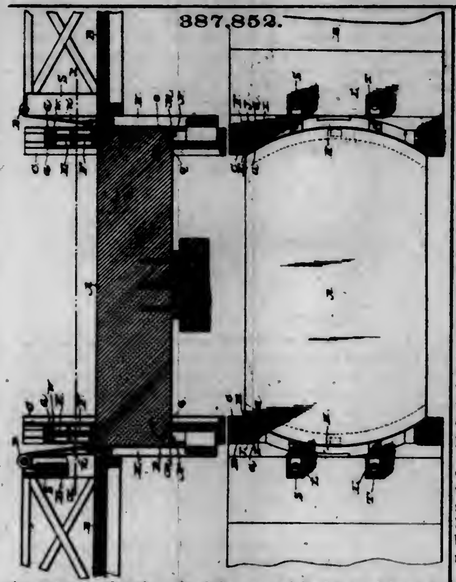
Claim.—1. The combination of the posts, the track-irons secured thereto, the gate having a forwardly-projecting pin at its center near its lower edge, the guide-plates secured to the gate and moving on the track-irons, and the draw having its lower portion cut away to provide a cam-shoulder adapted to contact with the pin at the lower portion of the gate to operate the same, substantially as specified.

2. The combination of the posts, the track-irons secured thereto having a longitudinal groove, the gate, and the guide-plates secured thereto and having a longitudinal rib engaging the groove in the track-iron, substantially as described.

3. The combination of the gate having guide-plates on its ends,

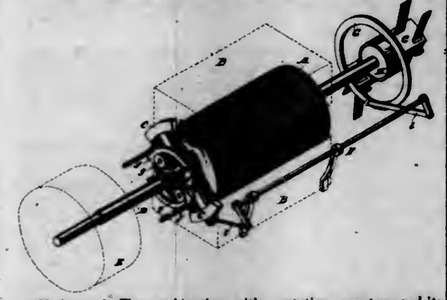


387,852.



the posts erected at the ends of the gate and having track-irons engaged by the guide-plates thereon, the posts erected at intermediate points of the length of the gate and having pulleys in their upper ends, and the weighted cables secured to the top rail of the gate and passing over said pulleys, substantially as specified.

387,853. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. Charles L. Buckingham, New York, N. Y., and Hermann Lemp, Hartford, Conn. Filed June 21, 1887. Serial No. 241,964. (No model.)



Claim.—1. The combination, with a rotating armature and its field-of-force magnets, of a magnetic body arranged adjacent thereto within the magnetic field of the armature and field-of-force magnets, and controlled by the resultant of the forces of the armature and field-magnets, and connections for shifting the commutator-brushes, through the instrumentality of said magnetic body, to correspond with the shifting of said resultant.

2. The combination, in an electric machine, with its rotating armature and field-of-force magnets, of a magnetic bar arranged adjacent thereto about the armature-shaft within the magnetic field of the armature and field-of-force magnets, and controlled by the resultant of the magnetic forces of the armature and field-magnets, connections for shifting the commutator-brushes, through the instrumentality of said bar, to correspond with the shifting of said resultant, and means for supporting said bar independently of the rotating armature-shaft, eliminating the friction between the two, so as to place said bar entirely under the influence of the magnetic resultant.

3. The combination, in an electrical machine, with its rotating armature and field-of-force magnets, of a magnetic bar arranged adjacent thereto, within the magnetic field of the armature and field-of-force magnets, and controlled by the resultant of the forces of the armature and field-magnets, and a rock-shaft and connecting-rods for connecting said magnetic bar with the commutator-brushes for shifting them, through the instrumentality of said bar, to correspond with the shifting of said resultant.

4. The combination, in an electrical machine, with its rotating armature and field-of-force magnets, of a magnetic bar arranged adjacent thereto and controlled by the resultant of the forces of the armature and field-magnets, devices for shifting the commutator-brushes, through the instrumentality of said bar, to correspond with the shifting of said resultant, and means for adjusting said bar to or from the armature and the pole-pieces of the field-of-force magnets.

5. The combination, in an electrical machine, with its rotating armature and field-of-force magnets, of a magnetic bar arranged adjacent thereto, within the magnetic field of the armature and field-of-force magnets, and controlled by the resultant of the forces of the armature and field-magnets, intermediate connections for shifting the commutator-brushes, through the instrumentality of said bar, to correspond with the shifting of said resultant, and a dash-pot or other means for steadying the movements of the aforesaid parts, as set forth.

6. The combination, in an electrical machine, with its rotating armature and field-of-force magnets, of a magnetic bar arranged adjacent thereto and controlled by the resultant of the forces of the armature and field-magnets, devices for shifting the commutator-brushes, through the instrumentality of said bar, to correspond with the shifting of said resultant, means for adjusting said bar to or from the armature and the pole-pieces of the field-of-force magnets, and a dash-pot or other means for steadying the movements of the aforesaid parts, as set forth.

7. An apparatus for controlling the commutator-brushes in an electrical machine to keep the same at the maximum point and to prevent sparking, consisting of a magnetic body arranged within the magnetic field of the armature, and field-of-force magnets to follow the polar line and intermediate devices between the said magnetic body and commutator-brushes for effecting the above purpose by the movements of said magnetic body.

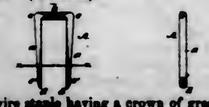
8. The method of regulating the position of the commutator-brushes to keep the same at the maximum point in an electrical machine, thereby securing efficiency and preventing sparking, consisting of causing a magnetic body to be governed by the varying resultant of the magnetism of the armature and field-magnets, and thereby controlling the position of the commutator-brushes.

9. In an electrical machine having an armature and field-of-force magnets therefor, the combination of a magnetic bar, as C, arranged adjacent to and within the magnetic field of said armature and the pole-pieces of said field-of-force magnets, and disposed about the armature-shaft, non-magnetic sectors, as *f f*, suitably supported, and guide-wheels, as *g g*, journaled upon extensions from said bar, for supporting said bar independently of the armature-shaft, and intermediate devices between the aforesaid bar and the commutator-brushes for shifting the same in accordance with the movements of the bar.

10. In an electrical machine having an armature and field-of-force magnets therefor, the combination of a magnetic bar, as C, arranged adjacent thereto, a rock-shaft, F, and connecting-links *l* intermediate of said bar and the commutator-brushes and connected therewith for shifting said brushes in accordance with the movements of the bar C.

11. In an electrical machine having an armature and field-of-force magnets therefor, the combination of a magnetic bar, as C, arranged adjacent thereto and upon a sleeve about the armature-shaft, sectors, as *f f*, suitably supported, and guide-wheels, as *g g*, journaled upon extensions from said bar for sustaining said bar independently of the armature-shaft, and connecting-rods, as *l l*, and a rock-shaft, as F, intermediate of said bar, and the commutator-brushes for shifting the same in accordance with the movements of said bar C to correspond with the shifting of the polar line.

387,854. STAPLE FOR BOOTS OR SHOES. Edward H. Buckley, Philadelphia, Pa., assignor to the Acme Staple and Machine Company, of New York. Filed Apr. 17, 1883. Renewed Mar. 3, 1888. Serial No. 266,103. (No model.)



Claim.—A wire staple having a crown of greater thickness than the legs, the latter being formed flat on their outer faces and round on their inner faces, the faces being of a double incline or bevel in the direction of their length, substantially as described.

387,855. CAR-WHEEL. Logan M. Bollett, St. Paul, Minn., assignor to the Bain Foundry and Manufacturing Company, Bain, Ill. Filed Jan. 18, 1888. Serial No. 261,350. (No model.)

Claim.—1. The combination, with a body of a car-wheel, of a hub formed separate therefrom, said hub consisting of a perforated annular bearing-plate, *b*², an annular chamber, G, for lubricant, the walls whereof are formed integral with said bearing-plate, said chamber surrounding

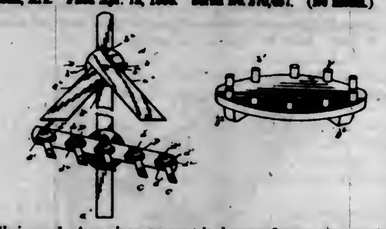
387,855.



said bearing-plate and being provided with the division-plates *g*, extending entirely across said chamber and having openings *g'* therein to form a receptacle, G', for cotton waste or like material, said division-plates being located at each side of the perforation through the annular bearing-plate, whereby the cotton waste may be securely retained separate from the lubricating-chamber and above the opening of the bearing-plate, substantially as described.

2. The combination, with a body of a car-wheel, of a hub formed separate therefrom and having its periphery provided with suitable flanges, and having formed integral with said flanges a perforated annular bearing-plate for the car-axle journal, a closed chamber for lubricant surrounding said bearing-plate and having its walls formed integral therewith, said closed chamber being provided with the division-plates *g*, having openings *g'*, to form a cotton-waste receptacle opposite the perforation of said bearing-plate, substantially as described.

387,856. CULTIVATOR AND HARROW. Henry G. Cary, Pine Bluff, Ark. Filed Apr. 12, 1888. Serial No. 270,457. (No model.)



Claim.—1. As an improvement in harrow-frames, the securing head or plate having a series of upwardly-projecting lugs and the ears or shoulders formed on the under side of said head or plate, substantially as shown and described.

2. As an improvement in harrows, the central bar having holes or apertures in its under side, the securing plate or head having a series of upwardly-projecting lugs, and the central vertical bolt, substantially as shown and described.

3. In a harrow-frame having draft and cross bars, the securing plate or head having on its under side ears or shoulders, between which are grooves or recesses, and the central bolt passed through coincident apertures in said bars and plate or head, substantially as shown and described.

4. The combination, with the draft and cross bars and the longitudinal bar, of the securing plate or head having a series of upwardly-projecting lugs and ears or shoulders formed on its lower surface, and the securing-bolt, substantially as shown and described.

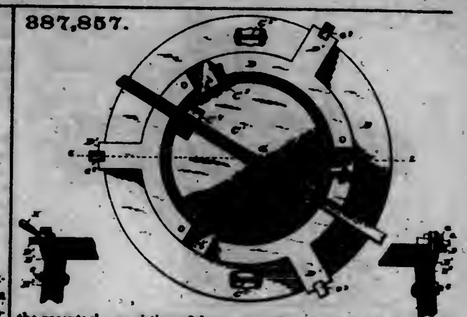
5. As an improvement in spring-tooth harrows, the heads having each divergent slots, and a slot or aperture through which the end of the spring-tooth projects, substantially as shown and described.

387,857. RECEPTACLE FOR USE IN OUTHOUSES AND LIKE PLACES. Thomas W. Carrere, San Antonio, Tex. Filed July 26, 1887. Serial No. 245,247. (No model.)

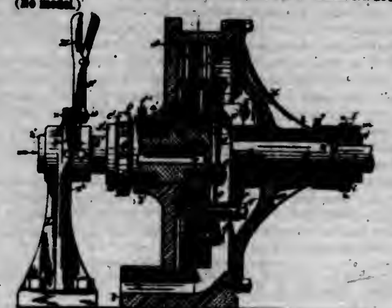
Claim.—1. The receptacle proper and its removable perforated head, and the cover for said perforation, having beveled flanges for engagement with flanges formed on a ring secured to the barrel-head, which ring is also formed with flanges extending out beyond the sides of the receptacle, and keys secured to the sides of the receptacle and engaging with the flanges of the ring, substantially as herein shown and described.

2. The receptacle and its removable perforated head, and a cover for said perforation having beveled flanges and formed with lugs having grooves, in combination with a ring secured to the barrel-head and having inwardly-extending flanges for engagement with the beveled flanges of the cover, and having also flanges extending out beyond the sides of the receptacle, and a handle situated within the grooves of the lugs on the cover, and means for securing the head to the receptacle, consisting of keys secured to the receptacle on the barrel-head, and a packing between the head and the receptacle, all arranged and combined to operate substantially as shown and described.

387,857.



387,858. REVERSING-VALVE FOR ROTARY ENGINES. Augustus L. Case, Jr., Bristol, R. I. Filed Oct. 7, 1887. Serial No. 251,772. (No model.)



Claim.—1. In a rotary engine, the combination, with the stationary valve having an inlet and exhaust port, of the rotary head provided with radially-directed piston-chambers and adapted to revolve upon the stationary valve, the reversing-valve arranged within the stationary valve and provided with the eccentric-pin, means for holding the reversing-valve and eccentric-pin in a set position, and connections from the eccentric-pin to the several pistons, substantially as described.

2. In a rotary engine, the combination, with the rotary head provided with radially-directed piston-chambers, of the pistons, the stationary valve having duplicate inlet-ports and a port which exhausts into the chamber of the case at the end of the valve, and an axially-arranged reversing-valve provided with the eccentric-pin operatively connected to the pistons, and the hand-lever for reversing the position of the eccentric-pin and the inlet-port of the reversing-valve, substantially as described.

3. In a rotary engine, the combination, with the outer case and the rotary head provided with radially-directed piston-chambers, of the reciprocating pistons, the stationary valve having an inlet-port, and also an exhaust-port leading into the chamber of the outer case, and a reversing-valve provided with the eccentric-pin and arranged within the stationary valve, substantially as described.

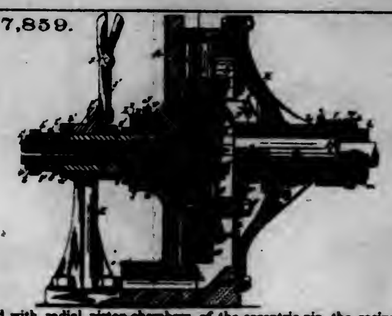
387,859. REVERSING-VALVE FOR ROTARY ENGINES. Augustus L. Case, Jr., Bristol, R. I. Filed Nov. 8, 1887. Serial No. 254,602. (No model.)

Claim.—1. In a rotary engine, the combination, with the rotary head provided with radial piston-chambers, of the eccentric-pin, the reciprocating pistons operatively connected with the eccentric-pin, the stationary valve provided with the inlet and exhaust ports, the reversing-valve provided with duplicate inlet-ports and an exhaust-port leading to the end of the valve, and the supplementary valve arranged within the reversing-valve, substantially as described.

2. In a rotary engine, the combination, with the rotary head provided with radial piston-chambers, of the eccentric-pin, the reciprocating pistons operatively connected with the eccentric-pin, the stationary valve provided with the inlet and exhaust ports, the reversing-valve provided with the projecting segment, and the supplementary valve provided with a segment adapted for engagement with the segment of the reversing-valve, substantially as described.

3. In a rotary engine, the combination, with the rotary head pro-

887,859.



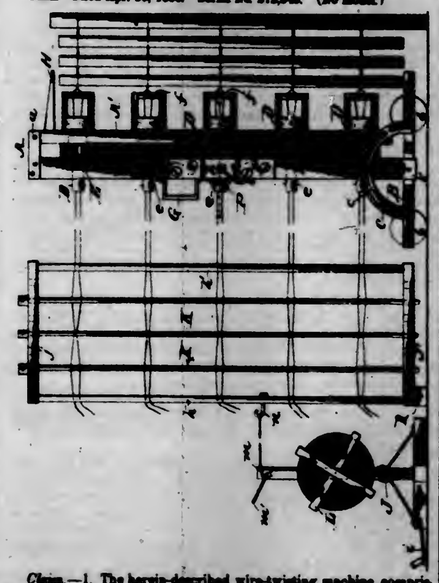
vided with radial piston-chambers, of the eccentric-pin, the reciprocating pistons operatively connected with the eccentric-pin, the stationary valve provided with the engaging-segment, the supplementary valve provided with a segment adapted for engagement with the segment of the reversing-valve, and the hand-lever provided with a holding-catch, substantially as described.

4. In a rotary engine, the combination, with the rotary head provided with radial piston-chambers and the reciprocating pistons, of the stationary valve provided with inlet and exhaust ports, and with the supplementary exhaust-ports, substantially as described.

5. In a rotary engine, the combination, with the rotary head provided with radial piston-chambers and the reciprocating pistons, of the stationary valve provided with the inlet and exhaust ports, the reversing-valve provided with duplicate inlet-ports and an exhaust-port leading to the end of the valve, and the supplementary valve operated by the movement of the said reversing-valve, substantially as described.

6. In a rotary engine, the combination, with the outer case and the rotary head provided with radial piston-chambers, of the reciprocating pistons, the stationary valve, the reversing-valve adapted to exhaust into the chamber of the outer case, and the supplementary valve, substantially as described.

887,860. FENCE-MACHINE. William A. Clary, North Fork, Tenn. Filed Apr. 30, 1888. Serial No. 272,349. (No model.)



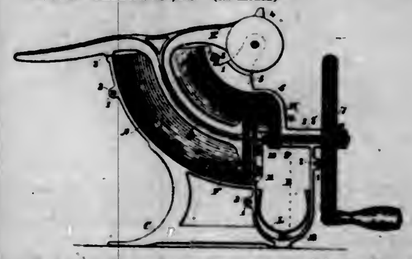
Claim.—1. The herein-described wire-twisting machine, comprising the uprights located a suitable distance apart and provided with a vertical series of registering apertures, one or more cross-pieces connecting said uprights, a supporting-frame carried by wheels and upon which the uprights are pivotally mounted, twisters extending through said apertures in the uprights, each of said twisters consisting of a hollow spindle provided with bearing-surfaces to operate in the uprights and having an angular portion between said bearing-surfaces, gear-wheels mounted on said angular portions of the twisters and located in the space between the inner faces of the uprights, gear-wheels meshing with said gears on the twisters and journaled in the space between the uprights, the gear on one of said twisters being also provided with a bevel-gear, and a bevel-gear provided with a crank, whereby the twisters are rotated, as set forth.

2. In a wire-twisting machine, the combination of the uprights suitably secured together and provided with a vertical series of registering bearings, a supporting-frame carried by wheels and on which the uprights are pivotally mounted, twisters provided with bearing-surfaces operating in said bearings, gear-wheels located between the uprights and mounted on said twisters between their bearing-surfaces, gears meshing with and connecting the gears on the twisters, the gear on one of said twisters being also provided with a bevel-gear, an outwardly-bent strap secured to an upright and extending over a recess in the same, and a bevel-gear journaled in said recess and meshing with the bevel-gear on the twister and provided with a crank, as set forth.

3. The herein-described twister, consisting of a hollow spindle provided with a flaring or enlarged discharge end, a cross-piece extending across said end and provided with a pair of apertures for the passage of the wire, said hollow spindle being provided with two bearing-surfaces, and a squared or angular portion located between said bearing-surfaces to receive a gear-wheel, substantially as described.

4. The combination, with a wire-twisting machine, of a tension-frame composed of end and bottom pieces, said end pieces being provided with apertures, and tension-bars extending across the frame and removably held in said top and bottom pieces, the wire passing through said apertures in the end pieces and in and out between the tension-bars, as described.

887,861. MACHINE FOR SHAVING ICE. Clemmey C. Clawson, Newark, N. J., assignor, by direct and mesne assignments, to the United States Machine and Inventions Company, of New York City. Filed Oct. 29, 1888. Serial No. 317,036. (No model.)



Claim.—1. The stationary frame or body of the machine, composed of, first, the tubular curved ice-holder, second, the chamber fixed to and forming a continuation of the said ice-holder and arranged beyond the lower end thereof transversely thereto, in part above and in part below the lower edge of the said ice-holder, and, third, the foot fixed to the said ice-holder and arranged under the same at the side of the lower part of the said chamber, in combination with the removable shaved-ice receiver in the lower part of the said chamber, the vertical knife-disk between the said chamber and the said ice-holder, the follower in the said ice-holder, and the specified means for moving the said knife-disk and the said follower, substantially as described.

2. In an ice-shaving machine, and in combination with the stationary ice-holder, the rotary knife-disk, and the movable follower, the stationary chamber arranged partly below and partly above the lower edge of the said ice-holder beyond its lower end and fixed to the said ice-holder, and the removable shaved-ice receiver set horizontally in said chamber, the chamber being provided with an opening in one of its upright walls for the insertion of the said receiver, with supports for upholding the same above the bottom of the said chamber, and with a drainage-outlet, and the said receiver being provided with a front plate which closes the said opening when the receiver is inserted in said chamber, substantially as described.

3. The combination, with the ice-holder, the follower, and the knife-disk, of the chamber provided with an opening in one of its upright walls and arranged at the lower end of the ice-holder on the opposite side of the knife-disk from the said follower, and the scoop-shaped receiver in said chamber, this chamber being provided with supports for the curved bottom of said receiver, which is nearly of equal width with said chamber, so as to be kept upright by the sides of the same, and whose front plate closes the said opening in the upright wall thereof, substantially as described.

4. The combination, with the rotary disk armed with knives, of the ice-holder in the form of a section of curved pipe, the follower, the lever, and the curved arm between the follower and the lever, substantially as described.

5. The combination, in an ice-shaving machine, with the cutting mechanism, of a curved conduit adapted to receive the ice and direct the same to the cutters, which stand in a plane substantially at right angles to the mouth of the said conduit, as set forth.

887,862. CORN-HARVESTER. William A. Cobbey, Lincoln, Nebr. Filed Feb. 4, 1888. Serial No. 262,932. (No model.)



Claim.—1. In a corn-harvester, the combination, with the carrying-frame and its wheels, one of which is a driving-wheel provided with a gear-wheel, of the ice-shaft having gear to mesh with the gear of the driving-wheel and a bevel-gear on its other end, a bevel-gear mounted on a vertical axis and arranged with the gear of the ice-shaft, a circular cutter secured on the bevel-gear with vertical axis and provided with gathering-fingers projecting beyond the edge of the circular cutter, substantially as described.

2. In a corn-harvester, the circular cutter composed of a disk with a circumferential cutting-edge provided with gathering-fingers projected beyond the circumferential cutting-edge thereof, substantially as described.

3. In a corn-harvester, the combination of the bevel gear-wheel D, the cutter D', composed of a disk with a circumferential cutting-edge, secured to the wheel D and provided with gathering-fingers d', projecting beyond the cutting-edge, and a reel, d^2, mounted on the axis of the wheel D, substantially as described.

4. In a corn-harvester, a rotating dropper formed of the bar I, having a crank in its end, and reverse curved fingers i, radially projecting therefrom and oppositely disposed, and pitman J, pivoted at one end to the crank on the bar and at the other end to loop j' on the frame, substantially as described.

5. In combination with the rotary stalk-cutter, the beam G, formed with a V-shaped notch, x, having a plated block arranged on the edge of the wall of the notch farthest from the cutter, and the converging knives m, secured to the lower edge of the beam directly in the rear of the notch x, to cut the stubble, substantially as described.

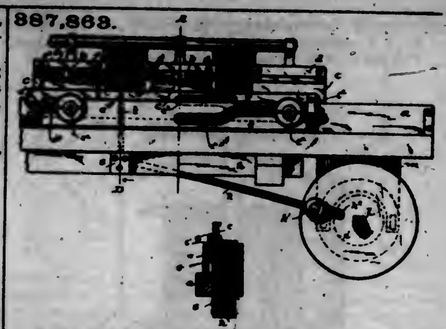
887,863. SHUTTLE AND OPERATING DEVICE THEREFOR FOR HARROW-WARE LOOMS. John Thomas Cooke and James L. Bottomley, Prestwich, near Manchester, County of Lancaster, England; Victoria Lines administratrix of said John Thomas Cooke, deceased. Filed Apr. 21, 1888. Serial No. 268,976. (No model.) Patented in England Aug. 6, 1884, No. 10,966; in France May 5, 1885, No. 168,709; in Belgium May 6, 1885, No. 68,704; and in Italy Oct. 31, 1885, No. 18,009.

Brief.—The front of the shuttle is supported by L-shaped flanges on strips secured to the front of the batten fitting into a correspondingly-shaped groove in the shuttle-body, and the beak is sustained and guided by the engagement of a rib thereon with grooves in rear strips, thereby steadying the shuttle and allowing its size and the amount of weft it carries to be increased. The beam or device which actuates the driving-planks is actuated from a link connected to a disk mounted on a square shaft reciprocated in any convenient manner, an arm on the batten carrying a roller which passes between the disk and a flange connected to the hub thereof, thereby sliding the disk upon the shaft or rotating with the movement of the batten.

Claim.—1. The combination, with the batten a and the grooved strips d and flanged strips c, of the shuttle b, having an angular slot in its under face near the front for the reception of said flanged strips c, and engaging at its rear side in the grooves of said strips d, substantially as described.

2. The combination, with the batten a and the grooved strips d and flanged strips c, of the shuttle b, having an angular slot in its under face near the front for the reception of said flanged strips c, and engaging at its rear side in the grooves of said strips d, and the driving-planks e e, substantially as described.

887,863.



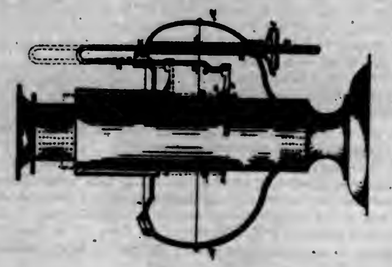
3. The combination, with the batten a and the grooved strips d and flanged strips c, of the shuttle b, having an angular slot in its under face near the front for the reception of said flanged strips c, and engaging at its rear side in the grooves of said strips d, and the driving-planks e, carrying pins d', connecting with the front of the shuttle, substantially as described.

4. The combination, with the batten a, the grooved strips d, supported at the back thereof, and the L-shaped strips c, supported at the front thereof, of the shuttle b, having a right-angular slot in its under face near the front for the reception of said L-shaped strips c, the horizontal portion of said slot extending rearwardly from the vertical portion, said shuttle also engaging at its rear side in the grooves of the strips d, substantially as described.

5. The combination, with the disk i, of the square shaft l, the batten a, having the arm m, the lower driver, h, the rod k, connecting said disk and lower driver, the driving-planks e e, shuttle b, and arm s, carried by said lower driver and engaging one of said planks, substantially as described.

6. The combination, with the square shaft l, the disk i, having hub i', and the flange p, all on said shaft, and means for oscillating the shaft l, of the batten a, arm m, connected thereto and carrying roller m', adapted to fit between said disk and flange, the lower driver, h, crank-pin k' in said disk, rod k, connecting said lower driver with said crank-pin, arm s, carried by said lower driver, the driving-planks e e, operated by said arm s, and shuttle b, driven by said planks, the whole arranged to operate substantially as described.

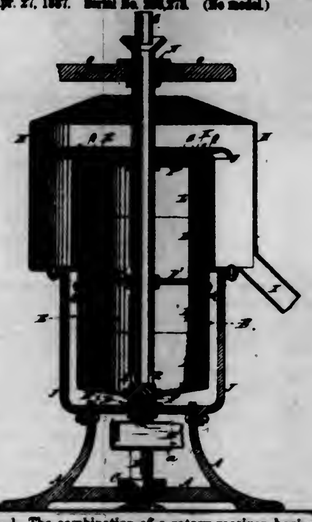
887,864. WICK-RAISER. Reuben Davis, Cleveland, Ohio. Filed Jan. 21, 1888. Serial No. 261,462. (No model.)



Claim.—1. The combination, in a wick-raiser, of the lamp-bowl having a center-draft tube with a vertically-moving rod having a spring-actuated prong which is provided with an incline and which passes down through an opening in the top of the bowl, and a clamp or grip which is secured to the lower end of the prong and which makes connection with the wick or wick-tube, substantially as described.

2. The combination of the lamp-bowl provided with a center-draft tube and provided with a tube which extends down through one side of the bowl with a vertically-moving rod provided with two prongs, one of which is made screw-threaded and to pass down through the tube in the side of the lamp-bowl and which has its shorter prong made elastic and provided with an incline, and a grip or clamp which is secured to the lower end of the shorter prong, and which clamp, when left free to move, makes a positive connection with the wick or wick-tube, and which is automatically moved back out of contact therewith when the rod is raised to a certain point, substantially as set forth.

387,865. CENTRIFUGAL FILTER. RICHARD L. DE LISSER, Brooklyn, N. Y., assignor to the Centrifugal Filter Company, of New York. Filed Apr. 27, 1887. Serial No. 236,373. (No model.)



Claim.—1. The combination of a rotary receiver having a solid bottom and walls, a lining of porous material on the inside of the receiver, a flange projecting inwardly and downwardly from the upper edge of the receiver, and a gutter for receiving and conducting away the purified liquid, substantially as set forth.

2. The combination of a rotary receiver having a solid bottom and walls, a lining of porous material on the inside of the receiver, a flange projecting both inwardly and outwardly from the upper edge of the receiver, and a gutter to conduct away the purified liquid, substantially as set forth.

3. The combination of a rotary receiver having solid walls and bottom, and a continuous circumferential flange attached to and projecting both inside and outside of the upper edge of the receiver, substantially as set forth.

4. The combination of a rotary receiver having solid walls and bottom and a lining of porous material, adapted to catch and retain the sediment, &c., placed on the vertical walls of the receiver and in the lower portion thereof, and a lining of a different kind of porous material, adapted to filter the liquid passing through it, placed at the upper part of the walls of the receiver, substantially as set forth.

5. The combination of a rotary receiver having greater height than diameter, closed at the bottom and having solid walls, a lining of porous material on the inside of the receiver, with a flange at the upper end of the receiver, and means for catching and conveying away the purified liquid, substantially as set forth.

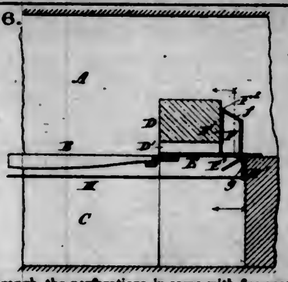
6. The combination of a rotary receiver having greater height than diameter, closed at the bottom and having solid walls, a lining of porous material on the inside of the receiver, and a flange at the upper end of the receiver, having holes in it within the wall of the receiver and outside the inner surface of the lining of the receiver, with means to catch and convey away the purified liquid, substantially as set forth.

7. The combination of a rotary receiver having solid bottom and walls, with a lining placed within the receiver, and a flange at the upper end of the receiver, the lining having a backing of material less pervious than itself to the passage of the liquids firmly adhering to the back side thereof, substantially as set forth.

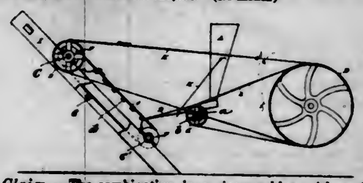
8. The combination of a rotary receiver having solid walls and bottom, with a continuous circumferential flange attached to the upper edge of the receiver, and a longitudinally bored or recessed shaft which extends through the receiver and on which it rotates, said shaft being provided with openings near its lower end adjacent to the bottom of the receiver, substantially as set forth.

387,866. SMOKE-CONSUMER. EDWARD DONEGANI, Montreal, Quebec, Canada, assignee of one-half to Daniel McKinnon Brodie, same place. Filed Nov. 18, 1887. Serial No. 255,545. (No model.) Patented in Canada Oct. 3, 1887, No. 27,732.

Claim.—In a furnace, and in combination, the bridge-wall resting upon the dead-plate and perforated at level of same, an air-heating chamber, also resting on dead-plate at rear of bridge-wall, communicating through the perforations in same with fire-grate, so that an amount of hot air, gases, &c., from the fuel can enter it, and having an inclined foraminous top, openings formed in the dead-plate to admit air from the ash-pit into said air-heating chamber, and a damper controlled from the outside of furnace to regulate the flow of air from the ash-pit to said chamber, as set forth.

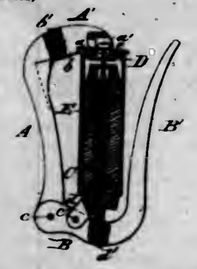


387,867. RICE-MACHINE. BURRE RAMEY, New Iberia, La. Filed Feb. 21, 1887. Serial No. 228,261. (No model.)



Claim.—The combination, in a rice-machine, with an inclined supporting-frame carrying the rollers C C', the pulley E, and the pulley F, of the endless apron having a nap surface, the pulleys D and G, belts K and L, the pulley G, provided with a spur-wheel, the hopper A, and the screen B, connected therewith, substantially as specified.

387,868. CARTRIDGE CAPPING AND DECAPPING IMPLEMENT. WILLARD M. FARROW, Holyoke, Mass. Filed Dec. 14, 1887. Serial No. 257,881. (No model.)



Claim.—1. In a device for capping and uncapping cartridge-shells, the pivoted hollow shell-post with an axially-moving plunger arranged therein, in combination with the curved lever and angular recessed body to which said lever is pivoted, the shell-post being pivoted to the lever and adapted to swing the shell into position with relation to the body for capping or uncapping, as described.

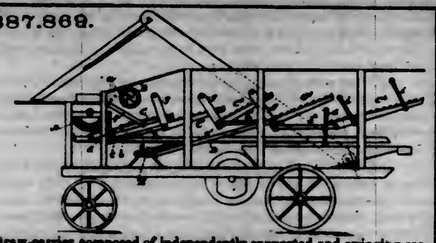
2. In a device for capping and uncapping cartridge-shells, the hollow shell-holder having an axially-moving plunger, said shell-post being pivoted to and in combination with the curved hand-lever provided with an adjusting-screw, so arranged that the position of the shell-holder with relation to the lever may be changed to bring the plunger in contact with the screw and force off the cap, substantially as set forth.

3. In a device for capping and uncapping cartridge-shells, the body provided with a recess to receive the cap when uncapping, and a screw to force the new cap into position, in combination with the oscillating shell-holder and curved lever pivoted together, all the parts being arranged to cap and uncap a cartridge-shell, substantially as set forth.

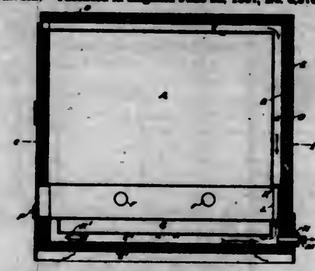
387,869. GRAIN-SEPARATOR. ELI W. FLAGG, Battle Creek, Mich., assignor to the Nichols & Shepard Company, same place. Filed Feb. 10, 1888. Serial No. 263,895. (No model.)

Claim.—The combination, with the pan of a grain-separator, of a straw-carrier composed of independently-supported and swinging sections, the forward section thereof being pivoted directly to the pan, and the adjustable supporting-links pivoted to said section and to the frame of the machine, substantially as and for the purpose described.

387,869.

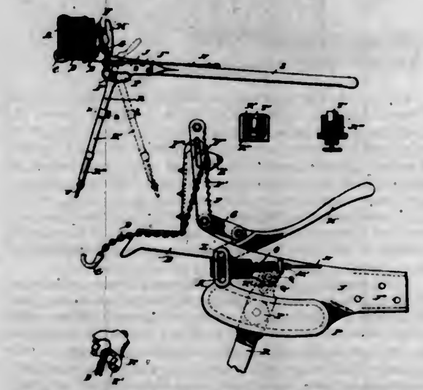


387,870. GAS-STOVE FOR DOMESTIC PURPOSES. JAMES GALLI, Leeds, County of York, England. Filed July 12, 1887. Serial No. 244,104. (No model.) Patented in England June 30, 1887, No. 8,870.



Claim.—In combination with the oven A and casing D, having the space C between them, the base H, the boiler G, located therein, and having the space C' between the base and the bottom of the boiler, and the pipe L, connecting the space C to the space C', substantially as shown and described.

387,871. CAR-MOVER. LEWIS R. GUTHRIE, Toledo, Ohio. Filed Feb. 4, 1888. Serial No. 263,627. (No model.)



Claim.—1. In a car-mover, an angle-plate, fulcrum-plates pivoted thereto by means of slotted hangers, being held in adjustment by movable bolts, and a leg pivoted to the fulcrum-plates and adapted to have the direction of its inclination changed by the different adjustments of the fulcrum-plates, as and for the purpose set forth.

2. In a car-mover, an angle-plate, movable serrated plates connected thereto, a hook connected by a flexible attachment to a block adjustable upon the serrated plates, and a lever pivoted to the angle-plate and connected with the serrated plates, as and for the purpose set forth.

3. In a car-mover, an angle-plate, fulcrum-plates connected therewith, and a leg pivoted thereto, composed of an upper section provided with a spring locking-dog and a lower section sliding within the upper section and provided with perforations into which the locking-dog engages, as and for the purpose set forth.

387,872. BOLTING-REEL. GEORGE A. GRAHAM, Milwaukee, Wis. Filed Dec. 10, 1887. Serial No. 258,262. (No model.)



Claim.—1. The combination, in a bolting-reel, of the division-boards forming longitudinal partitions in said reel and the inclined gather-boards arranged upon the inner edges of said division-boards and projecting in both directions therefrom, and forming the converging pockets upon one side of said partition and the diverging pockets upon the other for receiving and distributing the stock, substantially as described.

2. The combination, in a bolting-reel, of the longitudinal division-boards 12, the inclined gather-boards 14, secured upon the inner edges of said division-boards and projecting therefrom on both sides of the board, converging at one side toward the surface of the reel, and forming the pockets 16 upon that side, and the strips 20, secured to said gather-boards and forming a hopper-shaped opening for the pocket 16, substantially as described.

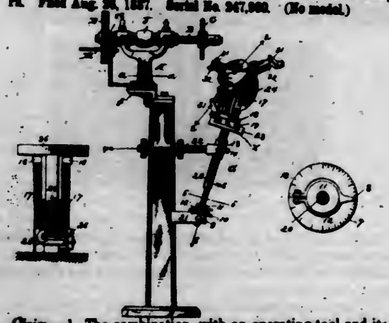
3. The combination, in a bolting-reel, of the longitudinal ribs 10, the cloth secured over said ribs, the longitudinal division-boards extending inwardly from said ribs toward the center of the reel, and the inclined gather-boards 14, arranged upon the inner edges of said division-boards and forming the converging and diverging pockets 16 and 18 upon the opposite sides of said division-boards, substantially as described.

387,873. WRENCH. HENRY G. T. GLADSTONE, Simcoe, Ontario, Canada. Filed Sept. 20, 1888. Serial No. 285,962. (No model.)



Claim.—In a wrench, a hollow-perforated sliding jaw provided with a movable cam triangular in outline and having one cutting-edge and confined within predetermined limits entirely within the sliding jaw by stops *b* and *d*, and also having a rod provided with a circular loop at its outer end and pivotally secured to said cam at its inner end, and a coiled spring encircling said rod and keeping the cam normally in contact with the handle, in combination with a straight smooth handle which extends through the perforated jaw and has a rigid jaw secured thereto, all constructed and combined to operate substantially as and for the purposes specified.

387,874. GRINDING-MACHINE. FRANK C. HALL, Philadelphia, Pa. Filed Aug. 26, 1887. Serial No. 247,992. (No model.)



Claim.—1. The combination, with an operating-tool and its support, of a vertically-arranged rod pivoted at one end to said support and carrying at its free end a chuck, a nut for elevating and lowering said rod, and an adjusting-arm connected to the rod and to the support, substantially as described.

2. The combination of the rod supporting at one end a chuck, a

pivoted sleeve surrounding said rod, and a nut bearing against said sleeve and supporting the rod, and an adjusting-arm connected to the rod and to the support, substantially as described.

3. The combination of the rod carrying at one end a chuck, a pivoted sleeve and nut supporting the rod at the opposite end, and a sleeve, 13, and arm supporting said rod near its chuck-carrying end, substantially as described.

4. The combination of the rod pivoted at one end, a chuck, and the slide 19, intermediate between the chuck and the pivoted rod, substantially as described.

5. The herein-described rod, pivoted at its lower end and carrying a chuck at its upper end, and adjusting-supports for varying the height of the rod and its vertical position, substantially as described.

6. The combination, with the rod, its pivoted sleeve, and elevating and lowering nut, of a split ring carrying an index and adjustably secured to said nut, substantially as described.

7. The combination of the rod pivoted at its lower end, a chuck, a rotatable plate, and horizontal slide intermediate between the chuck and the end of the rod, substantially as described.

8. The combination, with the chuck and its supporting-flange 36, of the adjustable friction-pawl 39, substantially as described.

9. The combination, with the chuck, its guide-plate, and pivots 16, of the arm 17 and screw-clamps for securing the guide-plate to the arm, substantially as described.

10. The combination, with the bearing 50 and shaft B, of caps 51, supported by the bearing and surrounding the shaft and having annular flanges, as 52, as and for the purpose specified.

11. The combination, with the bearing 50 and shaft B, of the split bushing 55, oil-cup, and set-screw 56, bearing upon said bushing, substantially as described.

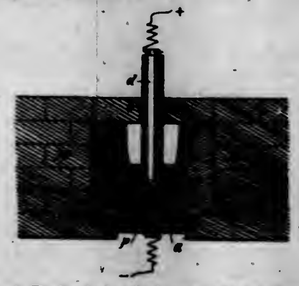
387,875. DEVICE FOR SETTING, GAGING, &c., THE TEETH OF SAWS. William H. Harris, Detroit, Mich. Filed Dec. 1, 1887. Serial No. 256,662. (No model.)



Claim.—1. A sawyer's implement made in flat form, consisting of a plate provided on one edge with a flange, b^1, said flange being recessed to admit the raker-gage B, and on the other edge with saw-sets, a jointer-groove, and an adjustable saw-tooth gage, consisting of a screw, D, moving in and out of a slot, d^5, all substantially as described.

2. A sawyer's implement provided with the flange b^1 and raker-gage B on one edge, and on the other edge with saw-sets, saw-tooth gages, a jointer-groove, and a swage, F, situated in the upper enlarged end of the saw-set C, substantially as described.

387,876. PROCESS OF PREPARING ALUMINIUM-BRONZE AND OTHER ALLOYS. Paul Héroult, Laufen-Uhwiesen, Switzerland. Filed Dec. 27, 1887. Serial No. 258,160. (Specimens.) Patented in France Apr. 15, 1887, No. 170,088; in Belgium Apr. 16, 1887, No. 77,100, and in England May 21, 1887, No. 7,626.



Claim.—1. The herein-described process of producing aluminium alloys by electrolysis in which carbon is the anode, the fused metal to be alloyed with the aluminium the cathode, and the fused alumina without a flux the electrolyte.

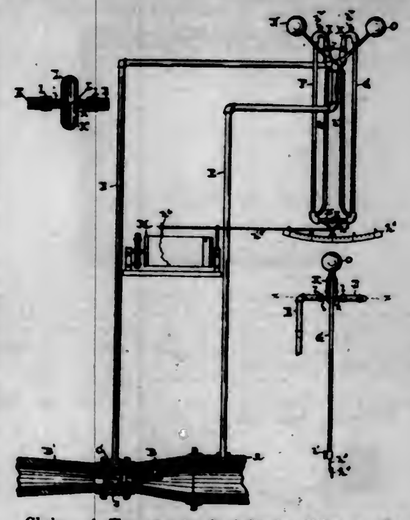
2. The herein-described process of producing aluminium alloys by electrolysis in which carbon is the anode, the metal to be alloyed with the aluminium the cathode, and alumina fused without a flux the electrolyte, said cathode and electrolyte being fused and maintained in a state of fusion by the electric current.

3. The herein-described electrolytic process of producing aluminium alloys, which consists in melting and electrolytically decomposing alumina located between a positive electrode of carbon and a negative electrode of the metal with which the aluminium is to be alloyed, said alumina and metal both being melted by the electric current, substantially as set forth.

4. The process of making aluminium alloys, which consists in fusing the metal with which the aluminium is to be alloyed and alumina without a flux to a carbon-crucible, electrically fusing the bath so constituted, and simultaneously electrolyzing the alumina in the presence of the carbon anode and the fused metal.

5. The continuous process of making aluminium alloys, which consists in feeding the metal with which the aluminium is to be alloyed and alumina without a flux to a carbon-crucible, electrically fusing the bath so constituted, and simultaneously electrolyzing the alumina in the presence of the carbon anode and the fused metal, and supplying the material and withdrawing the alloy without interruption of the process.

387,877. APPARATUS FOR INDICATING AND RECORDING PRESSURE OR DIFFERENCES OF PRESSURE. Clemens Herschel, Holyoke, Mass. Filed Mar. 30, 1888. Serial No. 268,728. (No model.)



Claim.—1. The apparatus for indicating differences of pressure herein described, consisting of two tubes containing mercury and located upon opposite sides of and equidistant from a common pivotal support, said tubes being in open communication with each other at one end and at their opposite ends being in open communication, respectively, with two sources of pressure, whereby differences of pressure will cause a displacement of the mercury in said tubes, and will thereby cause them to swing upon their pivot, and means, such as a pointer and graduated arc, for indicating the amount of the swinging movement of said tubes, combined and operating substantially as set forth.

2. The apparatus for indicating differences of pressure herein described, consisting of two tubes containing mercury and having open communication with each other at one end, each of said tubes at its opposite end being connected with a tubular trunnion, which trunnions have their axes in one and the same straight line and project laterally in opposite directions, suitable supports for said trunnions, whereby said mercury-tubes are permitted to have a free oscillatory movement thereon, and conduits connecting said trunnions, respectively, with the primary sources of pressure, arranged and operating substantially as set forth.

3. The apparatus for indicating differences of pressure herein described, the same consisting of two tubes containing mercury and having open communication with each other at their lower ends, two hollow arms to which said tubes are rigidly connected at their upper ends, said arms being connected together, but having no internal communication with each other, two tubular trunnions projecting laterally in opposite directions from said arms, respectively, the axes of which trunnions lie in one and the same straight line, two tubes or pipes leading from the respective sources of fluid or liquid under pressure, within the ends of which said tubular trunnions are mounted in such manner as to have a free revolving movement, a pointer connected to said mercury-tubes at or near their lower end, and a graduated arc or

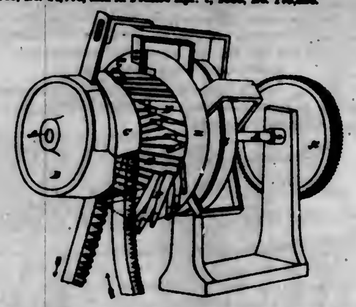
similar device located adjacent to the path of movement of said pointer, combined and operating substantially in the manner and for the purpose set forth.

4. The combination, with two tubes, as D E, having their adjacent ends located in one and the same straight line, of hollow arms I K, shaped substantially as shown and separated internally by partition L, tubular trunnions l^5, projecting laterally in opposite directions from said arms into the ends of said tubes, respectively, stuffing-boxes or similar devices for making a tight joint between said trunnions and tubes, while permitting the former to revolve freely within the latter, tubes F G, depending from said arms I K, said tubes being partially filled with mercury, pipe or tube H, connecting the lower ends of said tubes F G, brace, as A, connecting the lower ends of said tubes with arms I K, pointer k^6, and graduated arc k^7, arranged and operating substantially as and for the purpose described.

5. The combination, with two tubes, D E, and the gage F G H I K, constructed and operating substantially as described, of a recording apparatus connected to said gage, such as the rod k^5, marking-instrument k^6, and the cylinder M, for imparting a revolving movement to a sheet of paper, whereby a permanent record of the movements of said gage will be made, substantially as set forth.

6. The combination, with two tubes, D E, and the oscillatory gage composed of arms I K, and mercury-containing tubes F G H, applied to and operating in connection with said tubes D E, substantially in the manner described, said gage having the pointer k^6, of graduated arc k^7, having its zero-point located at or near one end thereof, and weights N O, secured to said gage, said weights being so adjusted relatively that said pointer k^6 will stand at the zero-point on said arc when the mercury stands at the same level in tubes F G, substantially as and for the purpose set forth.

387,878. MACHINE FOR MANUFACTURING RUCHING. Charles G. Bell, Arnot Hill, County of Nottingham, England. Filed Sept. 20, 1888. Serial No. 314,962. (No model.) Patented in England Dec. 1, 1885, No. 14,776, and in France Apr. 7, 1886, No. 175,286.



Claim.—1. The combination of the revolving supporting-surface for the frilling or ruching, the cam G, the two sets of fingers, both having a vibrating movement, and the revolving head for carrying the same, one set of the said fingers having also an endwise movement, and means, substantially as described, for causing said endwise movement, whereby the frill is carried down and tucked in beneath the edge of the supporting-surface and so held while it is set in form, substantially as set forth.

2. The combination, in a machine for forming frilling or ruching, of the revolving drum B, the guide C, the revolving head D, the fingers E and F, means for closing the fingers together to embrace the fabric between them, the cam G, and the incline H, substantially as described.

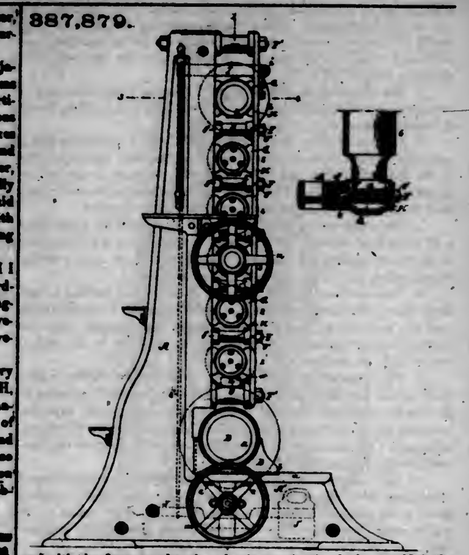
3. The combination of the driving-shaft, the revolving supporting-drum, the guide thereon, the revolving head fixed to the driving-shaft, the fingers F, mounted on the revolving head, means, substantially as described, for giving said fingers a vibratory and an endwise movement relatively to the supporting-drum, the fingers E, mounted on the head, and means, substantially as described, for giving said fingers a vibratory movement relatively to the drum, substantially as set forth.

387,879. CALENDERING-ROLLS. Sylvan A. Hoffman, Wilmington, Del., assignor to the Lobdell Car Wheel Company, same place. Filed Nov. 21, 1887. Serial No. 255,733. (No model.)

Claim.—1. The combination, in a calendering or like machine, of the fixed frames or housings, the series of upper rolls and their boxes, and removable front plates confining said boxes to the frames or housings, all substantially as specified.

2. In a calendering or like machine, the combination of the upper rolls and their supports with the lower roll and its bearing-blocks,

387,879.

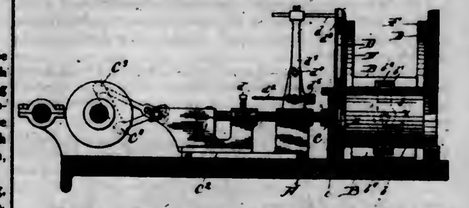


and with the frames or housings having projecting beds, on which the bearing-blocks are mounted, said beds being of such length as to allow the roll to be moved outward until it is clear of the upper rolls, all substantially as described.

3. The combination of the vertically-grooved frames or housings, the series of upper calendering-rolls and boxes therefor, plates confining said boxes to the frames or housings, and bolts having heads adapted to the grooves of the frames or housings, and nuts for securing the confining-plates, all substantially as described.

4. The combination, in a calendering or like machine, of the vertical frames or housings, the upper series of rolls, retaining-plates therefor, confining-bolts located between the journals of the rolls, and bearing-boxes having on their under sides flattened faces for the action of lifting-wedges, all substantially as specified.

387,880. CAN-HEADING MACHINE. John G. Rosmus, Haywood, Ill., assignor to Edwin Norton, same place, and Oliver W. Norton, Chicago, Ill. Filed Mar. 30, 1888. Serial No. 268,734. (No model.)



Claim.—1. In a machine for applying the heads or ends to can-bodies, the combination, with a can-body-holding device, of a piston for forcing the head upon the can-body, a can-head-supply chute through the mouth or base of which said piston reciprocates, adapted to guide the can-heads down in front of said piston and between the same and said can-body-holding device, a movable stop for arresting or holding all the can-heads but one in said chute, so that they may feed down one by one, and mechanism for operating said movable stop to release the can-heads in said chute when the piston makes its forward stroke and to arrest or support the can-heads when the piston makes its backward stroke, said piston supporting the can-heads when the same are released by said stop, whereby two or more can-heads are prevented from slipping down at a time between said can-body-holding device and piston, substantially as specified.

2. The combination, with a can-body-holding device, of a piston, a can-head-supply chute, a movable stop, d, a lever, and a pin or projection on the piston for operating said stop d, substantially as specified.

3. The combination, with a can-body-holding device, of a piston, a can-head-supply chute, a movable stop, d, a lever, and a pin or projection on the piston for operating said stop d, and a spring, d^3, substantially as specified.

4. The combination, with a can-body-holding device, of a sliding sleeve at the end thereof projecting to the end of the can-body and adapted to recede as the can-head is forced upon the can-body, substantially as specified.

5. The combination, with a device for forcing a can-head upon a can-body, of a can-body-holding device furnished with a sliding sleeve at its end, substantially as specified.

6. The combination, with a piston for forcing a can-head upon a can-body, of a can-body-holding device furnished with a sliding sleeve at its end, said piston being furnished with a flange or projection adapted to engage said sliding sleeve and push the sleeve in as the can-head is forced upon the can-body, substantially as specified.

7. The combination, with a piston having flanges or projections *c*, of a can-head chute, a can-body-holding device, and a sliding guide or sleeve for guiding the can-head upon the can-body, and a spring for extending said sleeve, substantially as specified.

8. The combination, with a piston or device for forcing a can-head upon a can-body, of a sliding or receding guide, *b*, adapted to fit over the can-body at its end and to recede longitudinally over the car-body as the can-head is forced upon the can-body by the piston, substantially as specified.

9. The combination, with a piston or device for forcing a can-head upon a can-body, of a sliding or receding guide, *b*, adapted to fit over the can-body at its end and to recede longitudinally over the can-body as the can-head is forced upon the can-body by the piston, said guide *b* having a groove or recess to receive the edge of the can-head flange, substantially as specified.

10. The combination, with a device for forcing a can-head upon a can-body, of a can-body-holding device furnished with a sliding sleeve at its end, said sliding sleeve having a groove or recess at its end to receive the edge of the can-head flange, substantially as specified.

11. The combination, with a two-part mold, B B, of a sleeve, *b*, sliding therein, and a piston, C, substantially as specified.

12. The combination, with a two-part mold, B B, of a sleeve, *b*, sliding therein, and a piston, said sleeve *b* having a groove or recess, *b'*, at its end, substantially as specified.

13. The combination, with a can-body chute, of a two-part mold adapted to open and close, and a movable can-body-supporting finger, as G, for holding the succeeding can while the mold closes upon the same, substantially as specified.

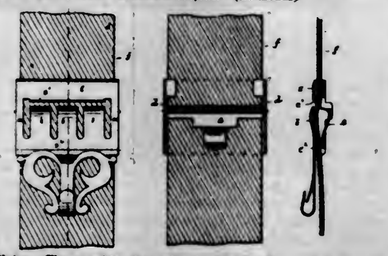
14. The combination, with a can-body-holding device B B, of chute F, movable finger G, rod *g*, having recess *g'*, spring-pin g^2, cam g^4, and spring g^5, substantially as specified.

15. The combination, with a can-body chute, of a two-part can-body-holding device furnished with a movable finger adapted to be retracted to permit the discharge of the can, and furnished with a spring for quickly extending the same to catch the receding can as it falls from the chute, substantially as specified.

16. The combination, with a can-body-holding device, of a piston, C, for applying the heads to the can-body, and a can-head chute, D, said piston C being furnished with a flange or projection, *c*, substantially as specified.

17. The combination, with a can-body-holding device, of a piston for applying the can-head thereto, a can-body chute, F, a movable gate, H, lever-arm *h*, pivoted link *h'*, and cam h^3, substantially as specified.

387,881. BUCKLE. FREDERICK W. HOFFMANN, New York, N. Y. Filed June 11, 1883. Serial No. 276,711. (No model.)



Claim.—The combination of a longitudinally and transversely slotted frame, *a*, having an inwardly-turned edge, *c'*, and provided with curved arms *b*, formed on its bar c^2, with the tongue *c*, pivoted to the frame and bearing against the arms *b*, substantially as specified.

387,882. CARPET-FASTENER. ROBERT W. HOWERTON, Dearborn, Mo. Filed May 30, 1888. Serial No. 275,423. (No model.)

Claim.—The molding A, having the groove B in its rear side, the upper edge of the molding being beveled to a sharp edge, C, in combination with the metallic points F, projecting rearward in the groove, the swiveled hooks G, arranged in the groove and having arms H to engage the free ends of the points, and the screws E, passing through downwardly and rearwardly inclined apertures in the molding and engaging the floor near the skirting, whereby the molding is drawn toward the latter and the beveled edge is caused to bite into the skirting to effect a tight joint therewith, substantially as specified.



387,888. AUTOMATIC AXLE-WASHER. CHARLES M. HUBBARD, Columbus, Ohio. Filed Feb. 21, 1888. Serial No. 264,617. (No model.)

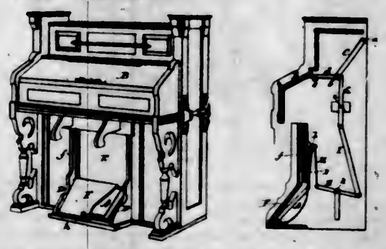


Claim.—1. The combination of the spindle, the nut placed upon its outer end, the hub, a box, a sleeve, and a washer, which is operated by the friction of the hub upon the box, and thus made to automatically take up the wear of the parts, substantially as shown.

2. The combination of the spindle provided with a groove, and a nut placed upon its outer end, with the screw-threaded sleeve provided with a stud or projection, the threaded box, and a washer which is operated by the friction of the hub upon the box, substantially as described.

3. The combination of the spindle provided with the flange D, the shoulder B, and a groove in one side of its inner end, the nut, the hub, the sleeve provided with a stud or projection to catch in the groove, and the washer which moves upon the spindle and is operated by the friction of the hub upon the box, substantially as set forth.

387,884. ORGAN-CASE. CHARLES H. RUSSELL, Birmingham, Conn., assignor to the Sterling Company, same place. Filed May 21, 1888. Serial No. 274,480. (No model.)



Claim.—1. In an organ-case substantially such as described, the abutments D D each side the pedal-opening, and between which the pedals A are arranged, the said abutments constructed each with a corresponding groove upon the inner face, said grooves inclined from their lower end to a point near the top of the pedals, thence running vertically outside of and parallel with the front of the case above the pedals, combined with a cover, F, arranged between said abutments, the said cover provided with trunnions *g g* at each end near the upper edge and like trunnions *g g* upon each end near the lower edge, the said trunnions extending into said grooves, and the grooves forming guides in which said trunnions will work, substantially as described, and whereby said cover may be guided in its opening and closing movement.

2. In an organ-case substantially such as described, the combination of the key-board cover B, arranged to slide backward and inward in opening, a pedal-cover, F, arranged between the pedal-abutments of the case, the said abutments each constructed with a groove, *f*, upon its inner face, said grooves inclined from their lower end to a point near the top of the pedals, thence running vertically outside of and parallel with the front of the case, and into which projections from the cover F extend as guides for the movement of the said cover F, a system of levers, substantially such as described, between the said key-board cover B and the said pedal-cover F, substantially as specified, and whereby the opening and closing movement of the key-board cover imparts a corresponding opening and closing movement to the pedal-cover.

387,885. MARBLEIZING WOOD. WILLIAM H. BURNHAM, Bristol, Conn., assignor to The E. Ingraham Company, same place. Filed Apr. 6, 1888. Serial No. 269,852. (No model.)



Claim.—1. A process of marbling wood, consisting in first applying a tough and elastic body-coating to the wood and then hardening it by exposing it to intense heat, then superimposing a coat of color upon the said body-coating, with which the colors do not blend, and then applying a coat of transparent varnish over the color, substantially as set forth.

2. A process of marbling wood, consisting in first coating the wood with japan and hardening the same by exposing it to intense heat, then superimposing paints floated upon water upon the said body-coating, with which they do not blend, and finally applying varnish over the paint, substantially as set forth.

3. A process of making marbled wood parts for composite structure, consisting in first coating a blank of wood with japan and then hardening the same by exposing it to intense heat, then superimposing paints floated upon water upon the said body-coating, with which they do not blend, then applying varnish over the marbling-paints, and then cutting the blank into one or more marbled parts, substantially as set forth.

387,886. TRUNK-LID SUPPORT. SUSAN JONES, Oxford, Miss. Filed May 24, 1888. Serial No. 275,015. (No model.)



Claim.—A combined hinge and trunk-lid support consisting of the upper plate, D, having the two end eyes, *d d*, and a middle excision, *d'*, a lower plate, E, having the eye *e* and end strips, *e' e'*, bent at e^2 e^2, and a pintle, F, passing through the eyes *d e d*, all substantially as shown and described.

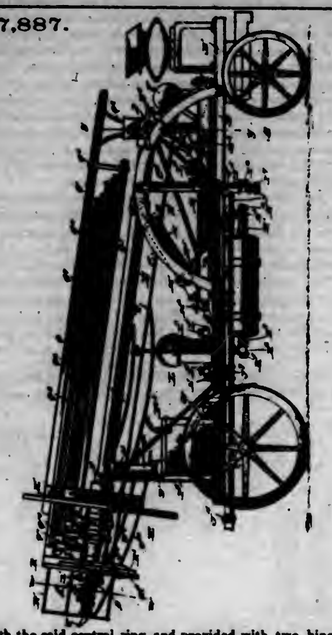
387,887. COMBINED WATER-TOWER, EXTENSION-LADDER, AND FIRE-ESCAPE. ACHILLES KALMBACH, ROWEN CRIPPEN, and MARION T. CARRIER, New Orleans, La., assignors to said Kalmbach, Crippen, and Joseph Schwartz, same place. Filed Mar. 17, 1888. Serial No. 267,457. (No model.)

Claim.—1. The combination, with telescoping pipes forming a water-tower, of hollow fixed trunnions on which one end of the exterior one of the said telescoping pipes is pivoted, piston-rods pivotally connected with the exterior one of the said telescoping pipes, cylinders containing pistons connected with the said piston-rods, trunnions on which the said cylinders are mounted to swing, and cylinders or tanks charged with a fluid under pressure or chemicals for creating gas, and adapted to be connected with the said cylinders, substantially as shown and described.

2. The combination, with telescoping pipes forming a water-tower, of hollow fixed trunnions on which is pivoted one end of the exterior one of the said telescoping pipes, and pipes provided with valves connected with the said hollow trunnions, substantially as shown and described.

3. The combination, with telescoping pipes forming a water-tower, of hollow fixed trunnions on which is pivoted one end of the exterior one of the said telescoping pipes, piston-rods pivotally connected with the lower end of the exterior one of the said telescoping pipes, cylinders mounted to swing and containing pistons connected with the said piston-rods, pipes provided with valves connected with the said fixed trunnions, and a turn-table on which the said trunnions and the said cylinders are mounted, substantially as shown and described.

4. The combination, with a truck provided with a platform, of a central ring secured on the said platform, an outer ring held concentric with the said central ring and provided with two hinged parts, extension-legs held on the said hinged parts of the exterior ring, and a turn-table mounted to turn on the said concentric rings, substantially as shown and described.



5. The combination, with a truck supporting at its front end two concentric rings and at its rear end a yielding fork, of a turn-table mounted to turn on the said concentric rings, fixed hollow trunnions held on the said turn-table, pipes leading to the said hollow trunnions from the centers of the said concentric rings, telescoping pipes forming a water-tower, of which pipes the exterior one is secured at its lower end on the said trunnions, its upper end resting on the said yielding fork, and an extension-ladder made in sections supported on the said telescoping pipes, substantially as shown and described.

6. The combination, with a truck supporting at its front end two concentric rings and at its rear end a yielding fork, of a turn-table mounted on the said concentric rings, fixed hollow trunnions held on the said turn-table, pipes leading to the said hollow trunnions from the centers of the said concentric rings, telescoping pipes forming a water-tower, of which pipes the exterior one is secured at its lower end on the said trunnions, its upper end resting on the said yielding fork, an extension-ladder made in sections supported on the said telescoping pipes, piston-rods pivotally connected with the exterior one of the said telescoping pipes, and a cylinder mounted to swing on the said turn-table and containing pistons connected with the said piston-rods, substantially as shown and described.

7. The combination, with a truck provided in its front with two concentric rings and at its rear with a yielding fork, of a turn-table held to turn on the said concentric rings, hollow trunnions held on the said turn-table, pipes connected with the said hollow trunnions and extending to the centers of the said concentric rings, telescoping pipes forming a water-tower, and of which pipes the exterior one is fulcrumed on the said trunnions, the upper end of the said exterior pipe resting in the yielding fork, a second fork engaging the upper end of the said exterior pipe, a piston-rod connected with the said second fork and carrying a piston, a cylinder in which operates the said piston, said cylinder being connected by a pipe with a source for supplying a liquid or gas under pressure, substantially as shown and described.

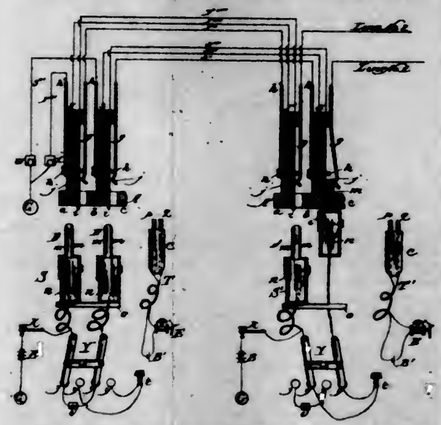
8. Telescoping pipes, of which the exterior one has its lower end fulcrumed, platforms held at the upper ends of the said exterior and the central telescoping pipes, arms secured to the outer ends of the said telescoping pipes, an extension-ladder made in sections supported at their upper ends on the said platforms and the said arms, brackets formed on the fulcrumed end of the said exterior pipe and supporting one of the sections, and an arm secured to the end of the next to lowermost section and sliding on the lowermost section of the said ladder, substantially as shown and described.

9. Telescoping pipes, of which the exterior one has its lower end fulcrumed, platforms held at the upper ends of the said exterior and the central telescoping pipes, arms secured to the outer ends of the said telescoping pipes, an extension-ladder made in sections supported at their upper ends on the said platforms and the said arms, brackets formed on the fulcrumed end of the said exterior pipe and supporting one of the sections, an arm secured to the lowermost section and through which the uppermost section of the said ladder freely passes, staples secured to the sections of the said ladder, and guide-rods passing through the said staples and secured to the succeeding section of the ladder, substantially as shown and described.

10. The combination, with telescoping tubes forming a water-tower, of a T held on the upper end of the central telescoping tube, a valve held on the said T, and a nozzle extending from the said T in such a manner that the said valve controls the outflow of the said T and the said nozzle, substantially as shown and described.

11. The combination, with telescoping tubes forming a water-tower, of a platform held at the outer end of the central telescoping tube, said platform being provided with a hinged part adapted to be folded upon the said platform, and beams held to slide on the under side of the said platform, substantially as shown and described.

387,888. MULTIPLE SWITCH-BOARD. Milo G. Kellogg, Hyde Park, Ill. Filed May 31, 1887. Serial No. 239,942. (No model.)



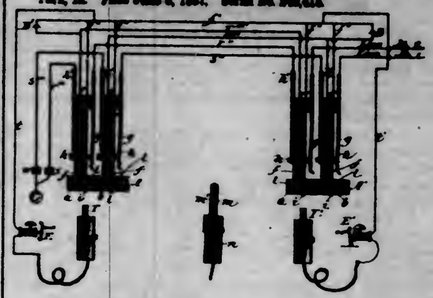
Claim.—1. A spring-jack switch containing a contact point or piece, a spring-lever normally bearing on said contact-point, and two insulated contact-pieces, all mounted on an insulating-strip, said lever being transverse to the front of said strip, said strip having through its front a transverse rectilinear hole in front of said lever, said insulated contact-pieces being mounted on one of the faces of said hole and adapted to be crossed with each other by the insertion of the switch-plug, substantially as set forth.

2. A spring-jack switch containing a contact point or piece, a spring-lever normally bearing on said contact-point, and two insulated contact-pieces, all mounted on an insulating-strip, said lever being transverse to the front of said strip, said strip having through its front a transverse rectilinear hole in front of said lever, said insulated contact-pieces being mounted on one of the faces of said hole and extending to or near the front of said hole, substantially as and for the purpose set forth.

3. In a multiple switch-board, the combination of a series of line-switches, a series of test-bolts, one pair for each switch, insulated from each other and from the switch, continuous circuit-connections between the similar test-bolts of the different boards, circuit-connections between the switches, plugging devices for connecting the subscribers' lines at the switches and for simultaneously crossing the test-bolts at the plugged switch, the test-plug having double contacts adapted to close the test-circuit through the pair of test-bolts at the tested switch and through both contacts of the test-plug, and a loop-circuit, including a battery and signal, connected with both contacts of the test-plug and adapted to be closed through the contacts of the plug, whereby a test-circuit is established through the test-bolts at both the plugged switch and the tested switch and through both contacts of the test-plug and the signal-circuit connected therewith, substantially as set forth.

4. In a multiple switch-board, the combination of the main lines, a series of switches at each board for each line, a pair of normally-closed contact-pieces at each switch for each line, a pair of test-bolts, *i* and *j*, at each switch, continuous connecting-wires *f''* for the bolts *i*, and continuous connecting-wires *f'''* for the bolts *j*, a switch-plug having two parallel insulated contact-pieces adapted to open the main-line contacts at the plugged switch and connect one of them with one contact-piece of the plug and to cross the test-bolts at the plugged switch, and a test-plug having double contacts adapted to close the test-circuit through the pair of test-bolts at the tested switch, and a loop-circuit connected with the contacts, including a battery and signal, substantially as set forth.

387,889. MULTIPLE SWITCH-BOARD. Milo G. Kellogg, Hyde Park, Ill. Filed June 6, 1887. Serial No. 240,413.



Claim.—1. In a telephone-exchange system, two or more multiple switch-boards to which the same telephone-lines are connected, local test-circuits having a pair of contact-points or test-bolts at the switches, one test-circuit for each line, each test-circuit containing a battery and connected to each board on each side of the battery, and said battery being normally open, and a switch-plug having insulated contacts crossing the test-bolts at the connected switches for automatically shunting the test-circuit around a tested switch through a line of less resistance when the main line is switched for conversation at another switch, in combination with a test-receiving instrument connected on one side to each test-circuit at one side of the battery, and a test-plug whereby the operator may at will connect the test-receiving instrument on its other side to any test-circuit at the other side of the battery, substantially as and for the purpose set forth.

2. In a telephone-exchange system, the combination of two or more multiple switch-boards for telephone-lines with series of switches, one switch for each telephone-line, and one switch of each series being on each board, circuit-closers, one circuit-closer for each switch, each circuit-closer being closed automatically by the insertion of a plug in its switch, local test-circuits, each test-circuit containing a test-battery and two contact-pieces and connected on the two sides of its battery to the two contact-pieces, respectively, of each of its circuit-closers on the several boards, a test-receiving instrument at each board, and switch-testing devices whereby the operator at any board may at will connect her test-receiving instrument into circuit with either of said test-circuits, the connection with said circuit being on the two sides of its test-battery, substantially as and for the purpose set forth.

3. In a telephone-line switch, the combination of the main-line contacts *g* and *h*, a pair of contact-points which are closed on the insertion of a switch-plug and opened on its withdrawal, said contact-points being mounted on one of the inner faces of the plug-hole and insulated from the contacts *g* and *h*, and one of said contact-points being also a test-plate for the line to which a test-plug may be applied, substantially as set forth.

4. A spring-jack switch containing within the plug-hole two main-line contact points or pieces which are normally in contact with each other, in combination with a pair of test-bolts arranged within the plug-hole on one of the inner faces of the plug-hole and insulated from each other and from the main-line contact-pieces, and a switch-plug having two parallel insulated contact-pieces, said plug being adapted, when inserted into the switch, to disconnect the main-line contact-pieces from each other and connect one of them to one of the contact-pieces on the plug and to cross the two test-bolts through the other contact-piece of the plug, substantially as set forth.

5. In a telephone-exchange system, multiple switch-boards provided with series of switches, one switch for each telephone-line, and one switch for each series arranged on each board, local-circuit closers, one circuit-closer for each switch, and each comprising separate contacts, whereby it is closed automatically by the insertion of a switch-plug into its switch, test-plates arranged one for each switch, each test-plate being one of the contact-points of the circuit-closer of its switch, or connected thereto, local test-circuits, one for each line, each test-circuit containing a test-battery and connected on the two sides of its battery to the two contact-pieces, respectively, of each of its

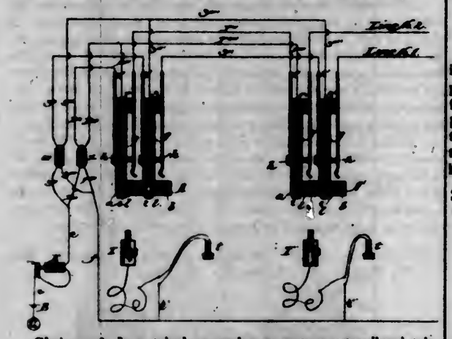
circuit-closers on the several boards, a test-receiving instrument at each board, and a plug for each test-receiving instrument, said plug being connected with a flexible conducting-cord to one side of the test-receiving instrument and adapted at the will of the operator to be brought into connection with any of the test-plates at her board, and the test-receiving instruments being connected on their other side with said local test-circuits with their batteries between the instruments and their test-plates, substantially as and for the purpose set forth.

6. In a telephone-exchange system, the combination of two or more switch-boards, the main lines and main-line circuits between the boards, the test-circuits, one for each line, including all the boards, a battery in every test-circuit, a common test-wire connected with all the test-circuits, test devices connected with said common test-wire, and test-bolts at each switch included in the test-circuits, substantially as set forth.

7. In a telephone-exchange system, the combination of test-circuits, the test-bolts at each switch connected with the test-circuit, a test-plug connected with a signaling device and with all the test-circuits at one end and adapted to close a circuit through the signaling device when the line is not switched, and circuit-connections of comparatively low resistance between the test-circuits at one board with the test-bolts at the other boards, whereby the test-circuit at the tested board is short-circuited when the line is switched at another board.

8. In a telephone-exchange system, the combination of the contact-pieces *f f* at the several switches, the common test-wire *f''* and branches *f'''*, which connect them, the contact-pieces *i* at the several switches, electrical connections between all the pieces *i* in a given line, a battery in each test-circuit, and a test plug and signal, substantially as set forth.

387,890. MULTIPLE SWITCH-BOARD. Milo G. Kellogg, Hyde Park, Ill. Filed Aug. 20, 1887. Serial No. 247,948. (No model.)

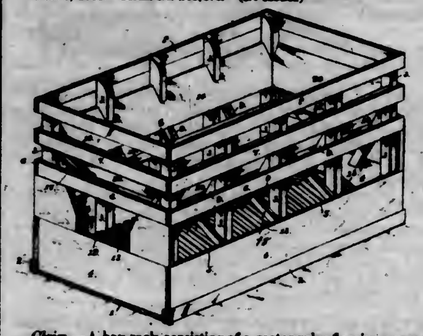


Claim.—1. In a telephone-exchange system, subscribers' telephone-lines normally grounded at the central office and grounded at their other ends, two or more switch-boards at the central office for said lines, each board having a switching device for each line, each switching device being adapted to temporarily disconnect its line from the office-ground and to connect the line with another line for conversation, a battery, and an automatic vibrator, or their equivalent, in the common ground-wire of said lines, induction-coils, one for each of said lines, one of the coils of each of said induction-coils being in the circuit of its line, individual test-wires, one for each line, in the circuit of each of which is the other coil of the induction-coil of the line, test-bolts, one for each of said lines on each of said boards, to each of which the individual test-wire of its line is connected on one side of its coil, a common or return wire to which said individual test-wires are connected on the other sides of the coils, and branch test-wires, one for each board, each having in its circuit a telephone or other test-receiving instrument, each branch wire being connected on one side of its test-receiving instrument to said common or return wire, and being connected on the other side to a flexible cord with a test-plug or other switch-testing device adapted to be brought into connection with any test-bolt at its board, whereby an operator at any board may connect her test-receiving instrument into a circuit with the test-wire of any line and determine whether the line is in use.

2. In a telephone-exchange system, telephone-lines connected to two or more switch-boards and adapted to be switched at either of them, induction-coils, one for each line, one coil of which is in the circuit of its line and the other coil of which is in an independent test-wire for said line, an intermittent electric-current producer in the circuit of each of said lines when it is not switched for conversation, but not otherwise, test-receiving instruments, one at each board, and switch-testing devices whereby any test-receiving instrument may at the will of an operator be placed in circuit with any of said test-wires, and she may thereby determine whether the line which belongs to said test-wires is switched for conversation.

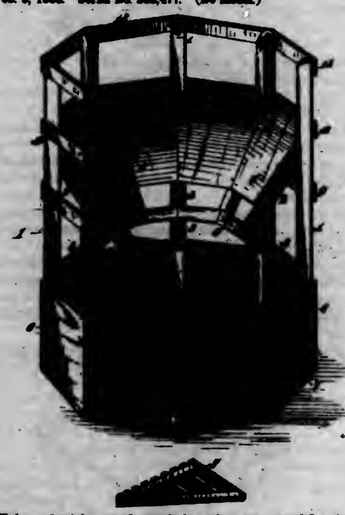
3. In a telephone-exchange system, a telephone-line, a local test-circuit for said line, an induction-coil for said line, one coil of which is in the main line and has an intermittent current passing through it when it is not switched for conversation, and the other coil of which is in said local test-circuit, a switching device or devices adapted at the will of an operator to switch said line for conversation, and while the line is so switched to cut off said intermittent current from said coil, a test-receiving instrument, and a switch-testing device or devices adapted to close said test-receiving instrument through said local test-circuit, substantially as and for the purpose set forth.

387,891. FEED-RACK. George W. Lisby, Gallatin, Mo. Filed Feb. 9, 1888. Serial No. 263,676. (No model.)



Claim.—A hay-rack consisting of a rectangular flooring supporting upon two of its opposite sides a series of vertical posts, each being provided about midway of its length, upon its inner side, with a bracket formed of two oppositely-inclined and meeting parts, a boarding supported by the inclined parts of said brackets, constituting a rest for the hay and an open throat, and an outer inclosing-boarding secured to said posts and provided with openings beneath the throat of the hay-support, as set forth.

387,892. FEED-RACK. George W. Lisby, Gallatin, Mo. Filed Feb. 9, 1888. Serial No. 263,677. (No model.)



Claim.—1. A hay-rack consisting of an octagonal flooring having vertical posts rising from its angles, a series of brackets composed of inclined arms 2, and diagonal braces 3, mounted on said posts and connected to said arms, a boarding, 5, attached to said arms, and a railing, 4, said boarding forming a downwardly-contracted support for the hay having an open throat raised above the floor, and an outer inclosing-boarding rising to a point below the throat of the rack and forming in conjunction with the vertical posts feed-openings, from which the

hay depending from the throat may be reached by the stock, substantially as described.

2. In a hay-rack, an octagonal flooring covered by triangular sections of slat-work 8, a series of vertical posts, 1, rising from the angles of the floor, a series of brackets composed of inclined arms 2 and braces 3, supported by the posts, an inner boarding, 5, and railing 4, inclosing the rack and forming a contracted open throat, said rack being raised above the floor, an outer boarding, 6, and rails 9, forming, in conjunction with the posts 1, feed-openings lying partly below the throat of the rack, from which the hay depending from the open throat may be reached by the stock, substantially as described.

387,893. CARRIAGE-TOP-PROP BLOCK. AUGUSTUS A. LINES, Homer, N. Y. Filed Apr. 20, 1888. Serial No. 271,970. (No model.)



Claim.—1. The combination, with the seat-rail arm, of a shell mounted on said arm and provided with a perforated head, a ring having a square perforation, a coil-spring the ends of which are secured, respectively, to the shell and ring, a lever for operating the shell, and the brace E, detachably secured to the head of the shell, substantially as set forth.

2. The combination, with the seat-rail arm and the top-braces, of a shell having a perforated head provided with a rim having a cut-out portion adapted to receive one end of the brace E, a ring provided with a square perforation, said ring fitting into one end of the shell, a coil-spring the ends of which are secured, respectively, to the shell and ring, and a lever for operating the shell to raise and lower the top, substantially as specified.

387,894. COMBINED BITT AND DECK-PIPE FOR VESSELS. FRANK S. MARTON, Providence, R. I. Filed May 14, 1888. Serial No. 273,886. (No model.)



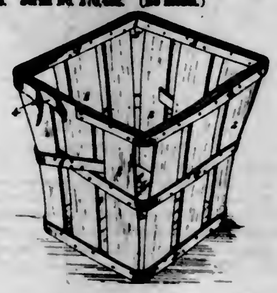
Claim.—1. A cast-iron windlass-bitt provided with a deck-pipe integral therewith, substantially as described.

2. A cast-iron windlass-bitt having a laterally-projecting flange and a deck-pipe rising from said flange and integral therewith, substantially as described.

3. The cast-iron windlass-bitt A, provided with the flange *a*, the deck-pipe E, rising from said flange, and the web E', uniting the deck-pipe and the bitt, substantially as described.

4. The combination, with the deck of a vessel, having the hole F, of a cast-iron windlass-bitt provided with a deck-pipe integral therewith and registering with the hole, the under surface of the bitt and deck-pipe being planed smooth and coated with cement, substantially as described.

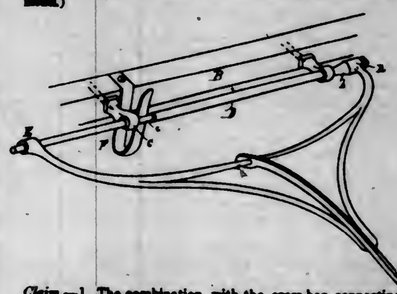
387,895. FRUIT-BASKET. JOSHUA H. MARVIL, Laurel, Del. Filed Apr. 12, 1888. Serial No. 270,492. (No model.)



Claim.—1. A polygonal fruit-basket comprising the vertical strips 2, flared outwardly at their upper portions, the top outer rim, 4, having parallel sides and bent corners and composed of a series of thin veneers lying one upon another, and the central hoop, 6, having overlapping portions extended upward in opposite directions and passed between and behind two of the vertical strips, substantially as described.

2. A fruit-basket comprising a wooden bottom block, a series of outwardly-flaring vertical strips nailed to said bottom, the inner and outer top rims and the central hoop having overlapping end portions and each secured to one vertical strip and extended upwardly and bearing upon and each secured to the two adjacent vertical strips, substantially as described.

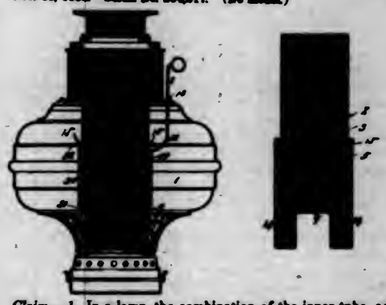
387,896. SHIFTING-BAR FOR SLEIGHS. ALEXANDER T. MCDONEL, Lansing, Mich. Filed Dec. 12, 1887. Serial No. 257,644. (No model.)



Claim.—1. The combination, with the cross-bar connecting the runners, and the draft-eyes secured thereto and provided with eyes in their free ends, of a combined shifting and coupling rod engaging into the eyes of the draft-irons and into the coupling-eyes of the shafts, and formed with a notch, as shown, the means for detachably securing one of said coupling-eyes to one end of said coupling, and a locking-spring secured to the cross-bar and engaging said notch to hold the coupling-rod in its adjusted position, substantially as described.

2. The combination, in a shifting-bar for cutters, of the draft-irons C, provided with eyes, the combined shifting and coupling rod D, slidingly engaging into the eyes of the draft-irons, the coupling-eyes E of the shafts detachably engaging with said rod, and the nut *a*, and tapered head *b*, for detachably securing one of said eyes, and the spring F, all arranged to operate substantially as described.

387,897. LAMP. FERDINAND MEYBERG, St. Louis, Mo. Filed Feb. 16, 1888. Serial No. 264,317. (No model.)



Claim.—1. In a lamp, the combination of the inner tube, adjustable sleeve on the tube, wick secured to the sleeve, and an arm connected to the sleeve and bearing against the body of the lamp to hold the sleeve to its adjustment, substantially as and for the purpose set forth.

2. In a lamp, the combination of the inner tube, sleeve fitting over the tube, wick secured to the sleeve, and a spring-arm secured to the sleeve and bearing against the body of the lamp to hold the sleeve to its adjustment, substantially as and for the purpose set forth.

3. In a lamp, the combination of the inner tube, sleeve fitting over the tube, wick secured to the sleeve, and an arm hinged to the sleeve, the arm having a straight portion above and below a bent portion, 12, substantially as and for the purpose set forth.

4. In a lamp, the combination of the inner tube, sleeve fitting over the tube, wick fitting over the sleeve, a ring provided with a hook and eye for securing the wick to the sleeve, and an adjusting-arm secured to the sleeve, substantially as and for the purpose set forth.

5. In a lamp, the combination of the inner tube, sleeve fitting over the tube, wick fitting over the sleeve, a metallic ring provided with a hook and eye for securing the wick to the sleeve, and an adjusting-arm to which the ring is secured, substantially as and for the purpose set forth.

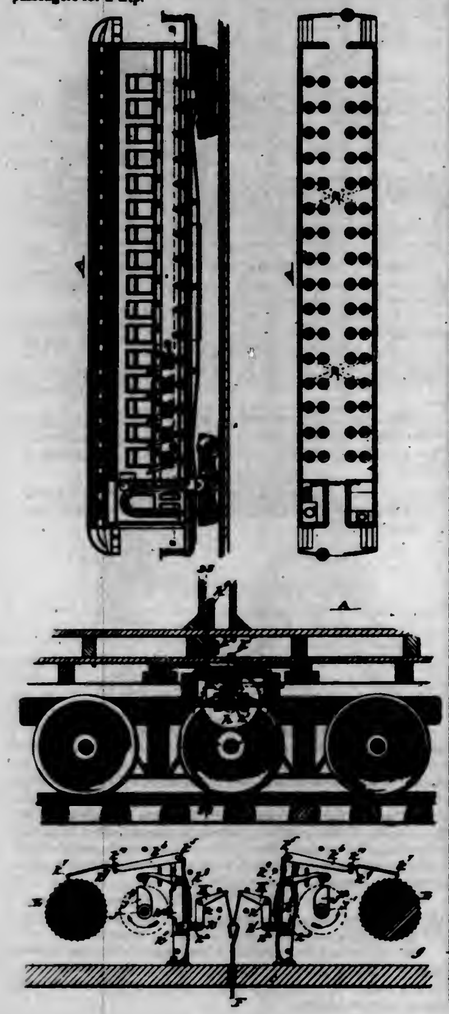
6. In a lamp, the combination of the inner tube, sleeve fitting over the tube, wicks 14, secured to the sleeve by a ring, 15, and an adjusting-arm secured to the sleeve, substantially as and for the purpose set forth.

7. In a lamp, the combination, with the central tube, 2, of the sleeve 3, wick 4, arm 8, hinged to the sleeve, and ring 5, carried by arm 8, and having hook and eye 6 7, for securing it around the wick, as described.

8. The combination, with the reservoir having central tube, 2, of the sleeve 3, carrying wicks 4 14, and having adjusting-arm 8, hinged on one side and carrying ring 5, for securing wick 4, and arm 20, hinged on the other side, carrying ring 18, for supporting the feed-wicks 14, substantially as set forth.

387,898. RAILWAY-PASSENGER MILEAGE-REGISTER. OSCAR E. HERMANN, St. Louis, Mo. Filed Feb. 20, 1888. Serial No. 264,842. (No model.)

Brief.—Operated by the wheels of a passenger-car and connected with the seats, so as to register the total mileage of full and half fare passengers for a trip.



387,898.



Claim.—1. In a railway passenger-car, the combination of a mileage-register and a car-seat provided with a movable part, and a connection leading from such movable part to said register, substantially as described.

2. The combination of a passenger-car, a mileage-register, and a train of gearing connecting the car-axle with the mileage-register, substantially as described.

3. The combination, in a railway passenger-car, of a mileage-register, a car-seat provided with a movable part, a connection leading from such movable part to said register, and a train of gearing connecting the car-axle with said register, substantially as described.

4. A railway passenger-car seat provided with one or more arms which can be turned downward to narrow the car-seat, in combination with a mileage-register and a connection leading from said register to a movable part in said car-seat, substantially as described.

5. A railway passenger-car seat provided with the arms b^3, in combination with a mileage-register and a connection leading from said register to a movable part in said car-seat, substantially as described.

6. A railway passenger-car seat provided with the arm b^3, in combination with a mileage-register and a connection leading from said register to a movable part in said car-seat, substantially as described.

7. A railway passenger-car seat provided with the arms b^3 and the arm b^4, in combination with the mileage-register and a connection leading from said register to a movable part in said car-seat, substantially as described.

8. The combination of the chair-back, the fixed arm *b*, the arm b^3, and the guard b^4, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

9. The combination of the chair-seat, the chair-back, the arm b^3, and the arm b^4, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

10. The combination of the chair-seat, the chair-back, the arm b^3, and the arm b^4, having the catch b^{20}, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

11. The combination of the chair-seat, the chair-back, the arm b^3, the gears b^9 b^{10} b^{11} b^{17}, the shaft b^{19}, and the rack-bar b^{18}, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

12. The combination of the chair-back, the chair-seat, the arm b^3, the pinion b^{17}, and the rack-bar b^{18}, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as and for the purpose set forth.

13. The combination of the chair-seat, the fixed side arm, *b*, and the adjustable guard b^4, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

14. The combination of the chair-seat, the chair-back, the arm b^3, the pinions b^{17} b^{20}, the rack-bar b^{18}, and the shaft b^{19}, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

15. The combination, in the car-seat, of the notched rack-bars b^{18} and the locking-bar E, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

16. The combination, in the car-seat, of the rack-bars b^{18}, the locking-bar, the key *d*, and the spring *c*, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

17. The combination, in the car-seat, of the arm b^3, the pinion b^{20}, the shaft b^{19}, the lug b^{22}, the arm C, the pinion b^{17}, and the rack-bar b^{18}, and the mileage-register, and a connection leading from said register to a movable part in the car-seat, substantially as described.

18. The combination of the shaft b^{19}, the lug b^{22}, the arm C, the lever *c*, the bearing *c'*, and the rod D, substantially as described.

19. The combination of the car-seat and the vertically-movable rod D, substantially as and for the purpose set forth.

30. The combination of the car-seat, the vertically-movable rod D, and the cord E, as described.

31. The combination of the car-seat, the vertically-movable rod D, and the cord F, substantially as described.

32. The combination of the car-seat, the vertically-movable rod D, and the cords E and F, substantially as described.

33. The combination of the arm h^3, the rack-bar h^{12}, the shaft h^{10}, the lug h^{20}, and the journaled spring-bar c^3, substantially as described.

34. The combination of the shaft h^{10} h^{10}, the lugs h^{20} h^{20}, the journaled spring-bar c^3, the lever c, the arm C, and the rod D, substantially as described.

35. The rod D, held freely in the lever c, to enable the car-seat to be rotated around the said rod, substantially as described.

36. The combination of the car, the car-seat, the rod D, the cord E and its bearings, and the spring c^2, and sign c^3, substantially as described.

37. The combination of the car, the car-seat, the rod D, the cord F and its bearings, and the mileage-register, substantially as described.

38. The combination of the car, the pinions H H, the gears h h, the shaft h', the pinions h^2 h^2, the shaft h^3, the pinion h^7, the gear h^8, and the shaft h^9, substantially as described.

39. The combination of the car-body, the car-truck, the elongated pinion h^7, and the gear h^8, substantially as described.

40. The combination of the shaft h^9, the gear h^{11}, the shaft I, the pinions i' i^2 i^3, and the pinions J j^4, substantially as and for the purpose described.

41. The combination of the car and the mileage-register, said register being in duplicate, as and for the purpose described.

42. The cam-shaft j, provided with the cams j^3, set around said shaft, as described.

43. The combination of the cord F, the bell-crank K, the link k^9, the arm k^4, the cam-shaft j, and the cam j^3, as described.

44. The combination of the bell-crank K, the link k^9, the arm k^4, the spring-hook k^6, the spring k^5, the ratchet-drum L, the cam-shaft, and the cam, substantially as described.

45. The combination of the spring-hook k^6, the bearing k^{10}, and the ratchet-drum, substantially as described.

46. The combination of the bell-crank K, the link k^9, and the pivoted arm k^4, as and for the purpose described.

47. The combination of the ratchet-drum and the spring-hook, substantially as described.

48. The combination of the lever M, the link k^9, the hook m^3, the shoulder m^4, the pivoted arm m^6, the spring m^5, and the cam-shaft and cam, substantially as described.

49. The combination of the arm m^6, the rod m^7, the lever m^8, the link m^{10}, the pawl m^{11}, the ratchet m^{12}, and the ratchet-drum L, substantially as described.

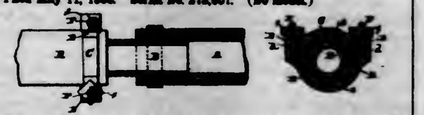
50. The combination of the ratchet-drum L, the ratchet m^{12}, the pawl m^{11}, and the spring-hook k^6, substantially as described.

51. In the mileage-register, the joint k', made movable toward and from the cam-shaft, as and for the purpose described.

52. The combination of the spring-hook k^6 and the adjustable stop N, as and for the purpose described.

53. The combination of the cam-shaft j, the train O, and the dial o, hands o', and graduations, substantially as described.

387,899. HOSE-COUPLING. James Miller, South Bend, Ind. Filed May 11, 1883. Serial No. 273,607. (No model.)



Claim.—The combination of the hose-sections and the sleeve B, engaging the same, with the yoke C, having perforated shoulders D, the clip E, having a curved portion, e, screw-threaded lugs F, passed through the perforations in shoulders D, and nuts f, all constructed and arranged substantially in the manner and for the purpose described.

387,900. PACKING FOR PISTON-RODS. Chauncey W. Hulls, Rochester, N. Y. Filed Mar. 24, 1888. Serial No. 268,407. (No model.)

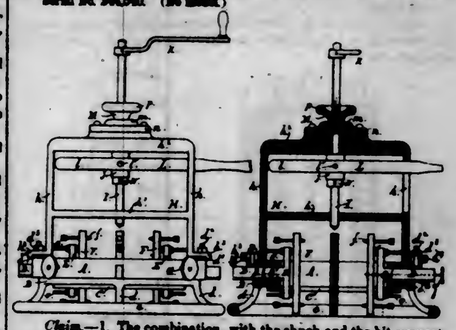


Claim.—1. The combination of the piston-rod, stuffing-box, and gland-bushing with the sleeve on said rod, the head F, conically recessed on its front face and radially slotted through the walls of such recessed portion, to permit the expanding thereof, and the interposed packing between said head and bushing, all constructed and arranged substantially in the manner and for the purpose described.

2. In a piston-rod packing, the combination of the gland-bushing, stuffing-box, and piston-rod, with the spring-controlled, conically-recessed, and slotted head F, the sleeve E, extending into the cylinder, and packing I, all constructed and arranged substantially in the manner and for the purpose specified.

3. The combination of head A, box B, rod C, and the gland-bushing, substantially as described, with the sleeve E, projecting into the cylinder, the slotted expansive head F, conically recessed in its front face and united to said sleeve, the spring G, and packing I, all constructed and arranged to operate substantially in the manner and for the purpose described.

387,901. CENTERING-MACHINE. Simon B. Mumma, Lewisville, Pa., assignor to Jacob M. Grider, same place. Filed July 16, 1887. Serial No. 244,540. (No model.)



Claim.—1. The combination, with the chuck and the bit-supporting frame, of means for adjustably securing said frame to the face of the chuck, for the purpose specified.

2. The combination, with the chuck and the bit-supporting frame projecting in front of the face thereof, of arms h^3, projecting from the bars h of the supporting-frame, channels formed on said chuck and arranged to receive the arms h^3, and means for adjustably securing said arms in the channels, substantially as and for the purpose specified.

3. The combination, with a chuck having a tool-supporting frame attached thereto, of the screws G, passing through the body of said chuck to prevent longitudinal movement of the same, substantially as specified.

387,902. DEVICE FOR VENTING BARRELS. William Hutton and Emil Beyer, Newark, N. J. Filed Nov. 3, 1886. Serial No. 217,763. (No model.)

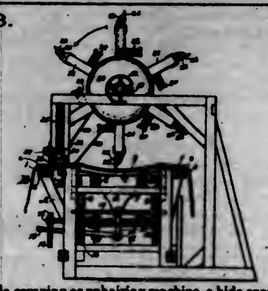


Claim.—In a vent, the combination of an angular portion, a, having a tapering portion adapted to be driven into a barrel, and a chamber into which the duct in said tubular portion opens, a portion, b, adapted to be secured to said portion a, forming a handle, c, which projects at right angles from said tubular portion, and provided with a raised portion having an opening therethrough and projecting into the chamber in the portion a, leaving a space therein, a valve arranged in said space and covering the opening in said raised portion, a packing-washer, and a fastening device, d, for holding said separable portions together, for the purposes set forth.

387,903. HIDE-SCRAPING MACHINE. August Utz, Milwaukee, Wis. Filed May 9, 1888. Serial No. 273,205. (No model.)

Claim.—1. In a hide scraping or unhairing machine, one or more rotating knives or scrapers, 25, in combination with a laterally-moving hide-supporting carriage, 2, and a vertically-moving bed-plate, 5, substantially as described.

887,903.



2. In a hide scraping or unhairing machine, a hide-supporting carriage, 2, adapted to travel laterally on ways thereof, in combination with an independent vertically-moving bed-plate, 5, for supporting the hide centrally while on the carriage 2, substantially as described.

3. In a hide scraping or unhairing machine, a series of rotating knives or scrapers, in combination with a carriage, 2, for supporting the hide, which carriage travels laterally on ways at right angles to the line of motion of the rotating knives, substantially as described.

4. In a hide-scraping machine, a movable frame, 7, in combination with latches 9 9, the springs 10 10, and means for tilting the latches against the resistance of the springs 10 10, substantially as described.

5. In a hide-scraping machine, the combination of a series of rotating knives and a hide-supporting bed-plate with the horizontal pressure-rollers 28 and 32, the roller 32 having its bearing at one end in a pivoted block, 33, and at the other end in a vertically-moving and adjustable block, 34, whereby said roller may be tilted and adjusted, substantially as described.

6. In an unhairing-machine, a series of radial arms, 21 21, in pairs on a rotating shaft, and the yokes 22 22, one yoke being secured adjustably to each pair of arms, substantially as described.

7. In a hide scraping or unhairing machine, the scraper carrying yokes 22 22, pivoted to the radial arms of a shaft and secured adjustably thereto by the bent arms 23 23 and set-screws 24 24, substantially as described.

8. In a hide scraping or unhairing machine, the frame 7 and lever 15, the inner end of which is connected to the bed-plate, in combination with the latches 9 9, springs 10 10, rods 11 11, tilting levers 12 12, rock-shaft 13, and pedal 14, all substantially as described.

9. In a hide scraping or unhairing machine, the combination of the bed-plate 5, springs 6 6, movable frame 7, and latches 9 9, substantially as described.

387,904. VACUUM-APPARATUS COUPLING. Hollan H. D. Parker, Chicago, Ill. Filed May 10, 1887. Serial No. 237,787. (No model.)



Claim.—In an apparatus for vacuum treatment, the combination of beveled ring A, having web a thereon extending to ring A' and secured thereto, with beveled ring B, having a like bevel and fitting into beveled ring A, all substantially as described, and for the purpose set forth.

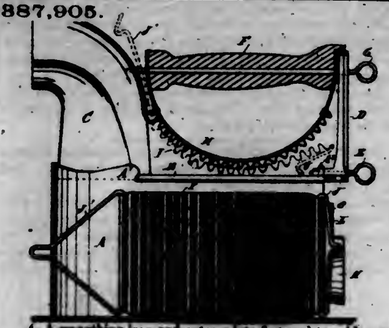
387,905. SAD-IRON. Horace S. Pease, Cincinnati, Ohio. Filed Oct. 4, 1887. Serial No. 251,422. (No model.)

Claim.—1. The combination, with the smoothing-iron A, having the detachable handle F, provided with a fluter, of the detachable transversely-corrugated elastic sheet-metal plate I, having hooks at its ends, one hook to engage the smoothing-iron at its heel, and the other hook adapted to snap around the wedge-shaped toe of the iron, the elasticity of the plate when in use drawing the two hooks toward each other and holding it in place, substantially as set forth.

2. In a smoothing-iron, the removable transversely-corrugated sheet-metal plate I, having pivoted hooks J J' at its ends, the elasticity of the plate serving when in use to draw the hooks toward each other, substantially as set forth.

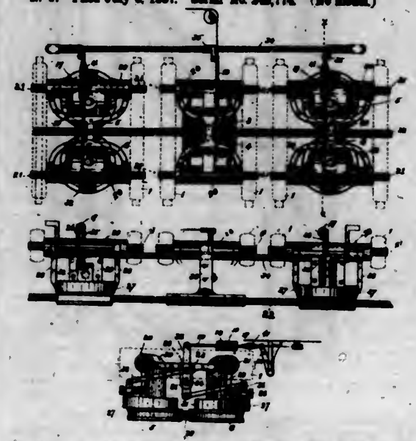
3. The combination, with the end-iron of the character described, having a pivoted draft-plate at its rear end provided with cross-bars, of the sheet-metal fluting-plate having hooks at its opposite ends to engage one of said cross-bars and the front end of the iron, substantially as set forth.

887,905.



4. A smoothing-iron and a top plate fastened to said smoothing-iron, in combination with a handle carrying a curved fluter, a pin for securing said handle to said plate, and a fluting-plate provided with hooks at each end, of which one extends over the front end of the handle, substantially as shown and described.

387,906. CABLE-GRIP FOR RAILWAY-CARS. John H. Pendleton, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed July 5, 1887. Serial No. 243,774. (No model.)



Claim.—1. The combination of a roller-grip and a positive grip, separate operating-levers therefor connected to the same source of operation, and the roller-grip provided with an elastic medium in its operating mechanism, whereby the rollers are held normally in advance of the jaws of the positive grip.

2. The combination of one or more positive grips, one or more roller-grips, a rock-shaft, crank-arms on the rock-shaft, rigid operating connections between the positive grip or grips and crank-arms, and shorter elastic connections between the roller grip or grips and crank-arms, whereby the said roller grip or grips are brought into play first, and the further movement of the rock-shaft causes the operation of the positive grip or grips, as set forth.

3. The combination, with a roller or auxiliary grip and a positive grip, each having suitable operating mechanism, of an elastic medium in the mechanism of the roller-grip, whereby its rollers are held in advance of the jaws of the positive grip, brakes for engaging said rollers, and springs of less inertia than said elastic medium for holding said brakes normally aloof, substantially as set forth.

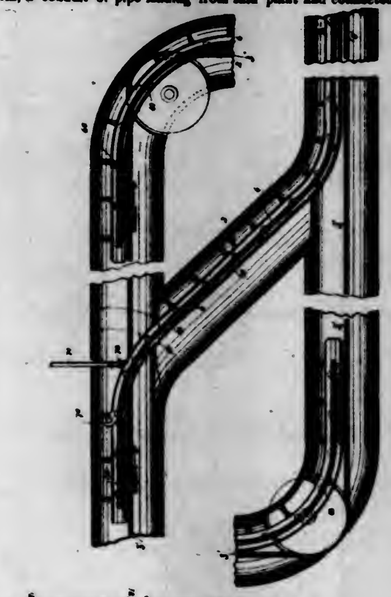
4. The combination, with the operating mechanism of a roller-grip and of a positive grip, of a rock-shaft, a rod connected at one end with the mechanism of the positive grip and at the other with the rock-shaft for operating the grip, a rod connected at one end with the mechanism of the roller-grip, a box on the other end of said rod, a rod having one end mounted in said box and the other connected with the rock-shaft, a follower on said rod, and a spring between said follower and the end of the box, whereby the roller-grip is brought to bear before the other, and means for rocking said shaft.

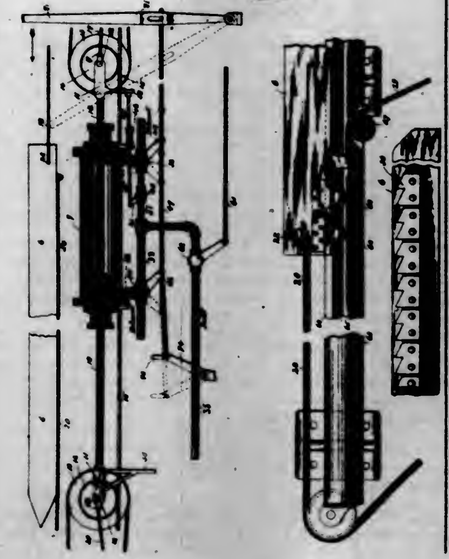
5. The combination, with the positive grip and one or more roller-grips, of a rock-shaft, crank-arms on said shaft, a rod connected with one of said crank-arms and with the mechanism of the positive grip,

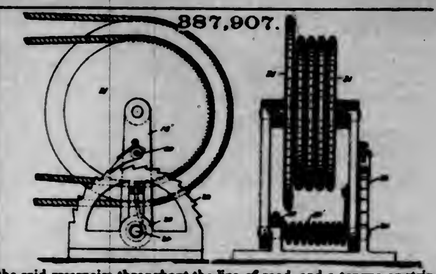
whereby the latter is operated, rods connected with the mechanism of the roller-grips, cylinders 19 on said rods, followers in said cylinders, rods connected with said followers and with the said crank-arms, a spring between said followers and the end of the cylinders, whereby the rods are held together, brakes to which the grip-operating mechanism is connected, and springs between said brakes and the rollers, whereby the latter are held in advance of the jaws of the positive grip, and the brakes held inoperative.

387,907. CABLE RAILWAY. JOHN H. PRESLETON, Brooklyn, engineer to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 19, 1887. Serial No. 258,344. (No model.)

Claim.—1. In a cable railway, the combination, with the main plant for compressing fluid and with engines having reciprocating pistons located at curves, crossings, and cross-over tracks, of auxiliary reservoirs located in the vicinity of said engines and connected therewith, a conduit or pipe leading from said plant and connected with







the said reservoirs throughout the line of road, and a tongue or strip guided by suitable ways and being connected with said pistons, whereby the motion of the latter is imparted thereto, substantially as and for the purposes set forth.

2. In a cable railway, the combination, with the plant for supplying fluid under pressure, of cylinders located at the curves, crossings, and cross-over tracks, having valves and ports and suitable mechanism for operating said valves, pistons in said cylinders, having their rods projecting from both ends of the latter, guideways arranged parallel with the tracks, tongues or strips arranged in said guideways, stationary pulleys, cables running over said pulleys and connected with said piston-rods and the tongues or strips, and a pipe or conduit leading from said plant and having communication with the valves of all of said cylinders, substantially as and for the purpose described.

3. The combination, with a pawl secured to the car, of the tongue or strip having means for engaging with said pawl, cables connected to one end only of said tongue, and means for drawing said cables in opposite directions, whereby the tongue is reciprocated, substantially as described, and for the purposes set forth.

4. The combination, with the cable-grip of the car, of a pawl pivoted thereto, a tongue or strip, a ratchet or rack on said tongue for engaging with said pawl, a suitable track for guiding said tongue, two cables secured to one end of said tongue and running in opposite directions, and means for imparting motion to said cables, whereby the tongue may be reciprocated, substantially as and for the purposes set forth.

5. The combination, with the cylinder having a piston and a rod projecting from both ends, of valves for communicating with the ports of said cylinder, an operating-rod connected with both of said valves, whereby one is closed when the other is opened, a tongue or strip, guides for said tongue, fixed pulleys at each end of said cylinder, and cables passing around said pulleys and connected with the said piston-rods and to the said tongue or strip, substantially as and for the purposes set forth.

6. In a cable railway, the combination, with the cylinder having ports with valves therefor, of a piston in said cylinder, a tongue or strip connected with said piston, a track or guide for guiding said tongue parallel with the rails, and an operating-rod pivotally connected with said valves and extending around the curve and pivoted to an operating-lever, said rod consisting of a number of sections connected together, as and for the purpose set forth.

7. In a cable railway, the track 63, having a hinged section, substantially as shown, and for the purposes set forth.

8. In a switch or branch track in a cable railway, the combination, with the main track and branch track or switch, of the guide-track 63, extending from one of said railway-tracks up the other and having a removable section hinged at 70 at the point where it passes from one track to the other, and a rod, 74, connected to said section and to the switch mechanism, whereby said section will be vibrated in unison with the switch, substantially as and for the purposes set forth.

9. The combination, with the cable-tunnel, of a grooved track extending parallel therewith and supported therein by means of brackets, a tongue, and wheels or rollers journaled to both sides of said tongue and fitting in said grooved track, substantially as and for the purposes set forth.

10. The tongue or strip having plates bolted to both sides and having journals and wheels mounted on said journals, substantially as and for the purposes set forth.

11. The combination, with the track 63, having upwardly-projecting edges with longitudinal grooves therein, of a tongue or strip, journals secured vertically on said tongue, and beveled-edge wheels mounted on said journals and fitting in said grooves, substantially as and for the purposes set forth.

12. The combination of the tunnel, the brackets secured therein, and the track 63, supported by said brackets.

13. The combination, with the tongue 6, having journals secured vertically thereto, of a track having projecting edges with longitudinal

grooves therein, wheels mounted on said journals and fitting in said grooves, and a ratchet on said tongue, substantially as set forth.

14. The combination, with the cylinder having a reciprocating piston, of a cable, 20, attached to said piston, a grooved track having a channel in its bottom supported above said cylinder, a flexible tongue supported on its edge in said track by horizontal wheels journaled to both sides of said tongue and fitting in said grooved track, a pulley mounted in said track below the tongue, and a cable, 19, connected with said piston and extending over said pulley and up said channel and secured to the end of said tongue, substantially as and for the purposes set forth.

15. The combination, with two piston-rods, of a tongue, a track for said tongue, fixed sheaves, sheaves carried by said piston-rods, pulleys mounted in said track, cables secured to said tongue and passing over said pulleys, and said traveling and fixed sheaves being reeved with the cables, and the cables being also connected to the pistons, substantially as and for the purposes set forth.

16. In a cable railway, the combination, with the engine having a reciprocating piston-rod and an inlet or supply pipe, and with the grip of the car, having a pawl pivoted thereto, of a longitudinal track extending parallel with the rod and a tongue or strip supported by said track and connected with said piston, whereby it is reciprocated therewith, a ratchet on said tongue for engaging said pawl, a valve in said supply-pipe, and a governor operated by the piston and adapted to actuate the said valve, substantially as and for the purposes set forth.

17. The combination, with the cylinder having a piston therein, of piston-rods in both ends of said cylinder, sheaves 13 on said rods, a tongue or strip, a track for said tongue, the sheaves 21 beyond both ends of said cylinder, cables attached to said tongue and passing around said sheaves 13 21, a supply-pipe, valves 33 34, adapted to communicate with the cylinder-ports, pipes 37 38, leading from said supply-pipe to said valves, a valve in each of said pipes 37 38, an operating-rod connected with said valves and springs for holding the same normally open, an operating-rod connected with the valves 33 34, whereby one is opened and the other is closed, and lugs or arms 56 on the pistons for alternately forcing the valves closed in the pipes 37 38 as the piston reciprocates.

18. The combination, with the strip or tongue, the car, and the engine having a throttle-valve, of a cable connected to said strip and engine for imparting motion to the former and a governor operated by said cable for actuating said throttle-valve, substantially as set forth.

19. In a cable-tightener, the combination, with the cable and pivoted standards 16', of sheaves on which the cable is rove mounted in said standards, a stationary ratchet, a pawl pivoted to said standard and adapted to engage with said ratchet, and a spring for forcing said standards in one direction, substantially as and for the purposes set forth.

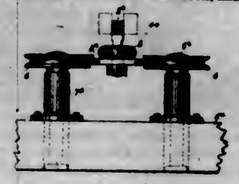
20. The combination, with the traveling sheaves 13 and the sheaves 21, of pivoted standards in which the latter sheaves are mounted, a tongue, 6, a cable rove on said sheaves and secured at one end to the tongue 6 and at the other to the piston 12, a stationary ratchet, a pawl pivoted to the standard and adapted to engage said ratchet, and a spring adapted to bear against said standards and tend to increase the distance between the sheaves 13 21, substantially as and for the purposes set forth.

387,908. CABLE RAILWAY. JOHN H. PRESLETON, Brooklyn, engineer to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 19, 1887. Serial No. 258,345. (No model.)

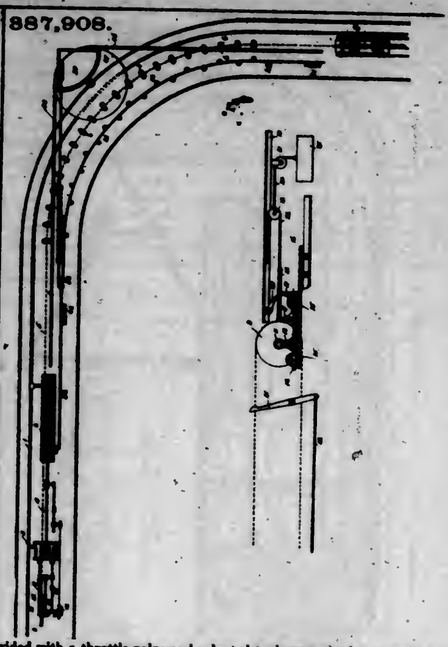
Claim.—1. In a railway, the combination, with the auxiliary traction device located at the curves, and the engine having a throttle-valve for operating said device, of an upwardly-projecting lever pivoted near one end of the curve, and a cable connecting said lever with said throttle-valve, whereby the latter may be operated, substantially as set forth.

2. The combination, with the endless traction-belt located at a curve, and a suitable engine provided with a throttle-valve and adapted to impart motion to said belt, of two upwardly-projecting levers, one pivoted near each end of the curve, a cable connected to one of said levers below its fulcrum and to the other above its fulcrum, and a rod connecting the latter lever with said throttle-valve, substantially as and for the purposes set forth.

3. In a railway, the combination, with a sprocket-wheel located at each end of a curve, a chain belt on said wheels, and an engine pro-



887,908.



vided with a throttle-valve and adapted to impart motion to one of said wheels, of two levers, 41 45, one near each end of said curve, a cable secured at one end to the former lever below the fulcrum, a link to which the other end of said cable is attached, and a rod pivoted to the throttle-valve and to lever 45 above its fulcrum, and attached to said link and the rod 34, having its end secured in said link, substantially as set forth.

4. The combination, with the valve 31 in the feed-pipe, of the push-rod 32, adapted to operate said valve, a link or slot in said rod, a stud adapted to slide in said link, a rod secured to said stud, a lug on said rod, and two springs bearing equally against both sides of said lug, whereby the stud is held normally in the center of said link or slot, substantially as set forth.

5. The combination, with the sprocket-wheels 8 9, arranged one at each end of the curve with their axes horizontal, of a chain belt adapted to travel over said wheels and having projecting edges, wheels arranged around the curve and having grooves for the reception of said edges, an upwardly-projecting tie on said chain for the attachment of a grip, and a suitable engine for imparting motion to said sprocket-wheels, substantially as set forth.

6. The combination, with the cross-ties and the chain 5, having projecting edges, of journal-boxes mounted on said cross-ties, vertical spindles in said boxes, and pulleys or rollers mounted on said spindles and having grooved peripheries for the reception of the projecting edges of said chain, substantially as set forth.

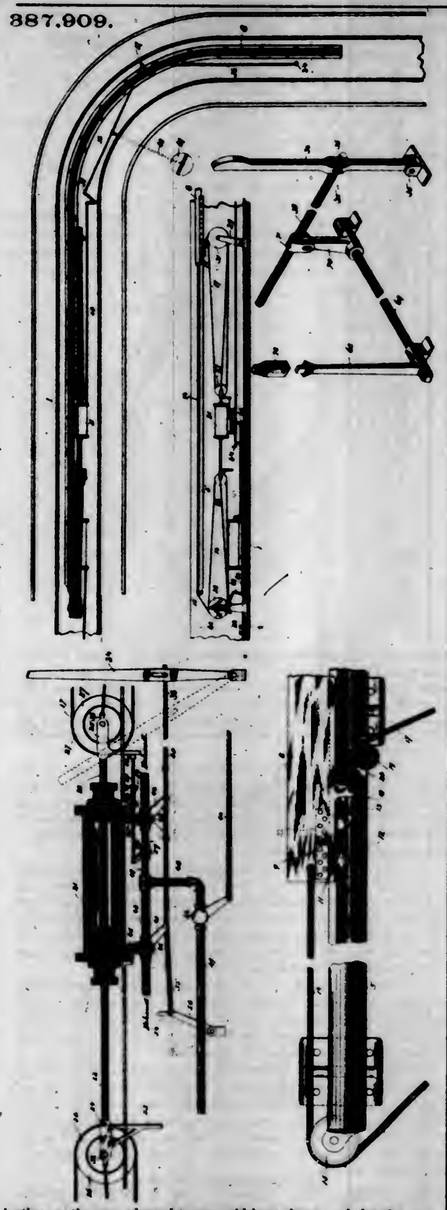
7. In a railway, the combination, with the engine and a reservoir for containing fluid under pressure, of a feed-pipe extending from said reservoir to the engine, a valve in said pipe, two levers, 41 45, pivoted below and extending above the track, a cable attached to the lever 41 below its fulcrum and connected with the lever 45 above its fulcrum, and a rod pivoted to the latter lever and to said crank-valve, substantially as set forth.

387,909. CABLE RAILWAY. JOHN H. PRESLETON, Brooklyn, engineer to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 19, 1887. Serial No. 258,346. (No model.)

Claim.—1. The combination, with the engine having valves for admitting pressure thereto and a reciprocating piston and with the car, of a track, a tongue or strip guided by said track and connected at one end with said piston, whereby it is reciprocated, a pivoted lever, a rod connecting said lever with the said valves of the engine, and a projection from said car for striking said lever whereby the valves are operated, and a grip on the car having means for engaging said tongue, substantially as set forth.

2. The combination, with the car and with the reciprocating piston, of valves for admitting pressure against said piston, a rod for operating said valves, a lever pivoted to said rod, piston-rods, a pro-

387,909.



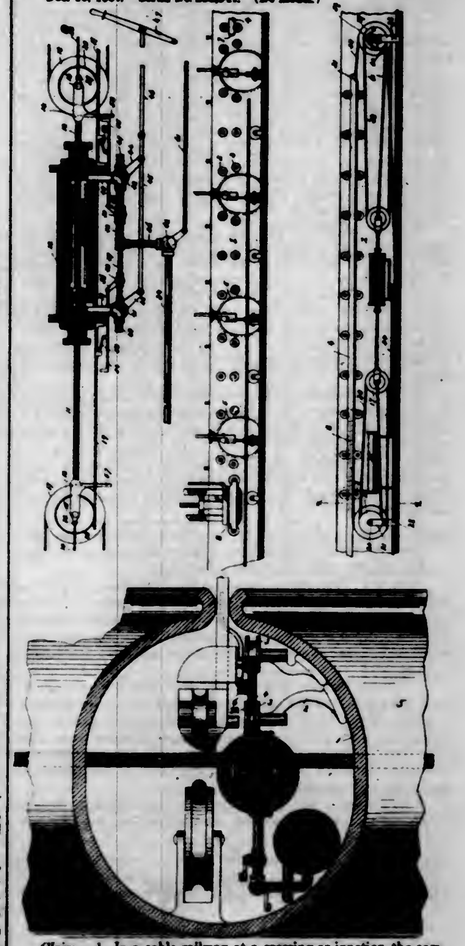
jection on the car adapted to run said lever down, and thereby operate the valves in one direction, and an arm carried by said piston-rod, adapted to contact with the said rod for operating the valves, and thereby operate the valves in the opposite direction.

3. The combination, with the car and the reciprocating piston, of valves for admitting pressure against said piston, having pipes leading thereto, a normally-open valve in one of said pipes, rods for operating said valves, a lever pivoted to one of said rods, a projection on the car adapted to run said lever down, and thereby operate the valves in one direction, and arms carried by said piston-rods and adapted to contact alternately with said valve-operating rods as the pistons reciprocate, and thereby operate the valves in the opposite direction, for the purposes described.

4. The combination, with the engine having valves, of a rod for operating said valves, an upwardly-projecting lever pivoted to said rod, a crank-arm pivoted to said rod and secured to a rock-shaft, and a lever extending upward from said shaft, substantially as set forth.

5. The combination, with an engine having a reciprocating piston and with the grip of the car having a pin, 52, of the tongue 8, having the guide-track 5, a ratchet on said tongue, valves 43 44, having operating-levers for admitting pressure to said engine, rods 36, 38, and 40, connected together by bell-cranks, and connected to the operating-levers of said valves and extending around the curve, the vertical lever 54, pivoted to one of said rods around the curve, for engaging with said pin 52, the man-hole, an upwardly-projecting lever in said man-hole, a rock-shaft secured to said lever and connected with the rods 36, 38, and 40 by means of a crank-arm, arm 53, link 55, connected to rod 40 and supported by a pivoted arm, a lug, 54, on said link for engaging with the arm 53, an inlet-pipe, a valve having an operating-crank in said pipe, a spring for holding said valve open, an arm, 56, carried by the piston-rod, for compressing said spring and closing the said valve, the governor 62, bell-crank 63, operated by said governor, a valve, 65, in the inlet-pipe, and a rod, 64, connected with said valve and bell-crank, all substantially as and for the purposes set forth.

387,910. CABLE RAILWAY. John H. Pershing, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 19, 1887. Serial No. 258,347. (No model.)



Claim.—1. In a cable railway at a crossing or junction, the combination, with the cable-tunnel of the lower cable and the tunnel of the upper cable, of pulleys or rollers supported in the tunnel of the lower cable in a line across the upper cable, and a tongue or strip supported and guided by said rollers and adapted to project across the upper cable, as set forth.

2. The combination, with the tunnel, of a series of grooved pulleys supported one above the other in said tunnel, a tongue or strip supported between said pulleys, and a ratchet or rack on said tongue, substantially as set forth.

3. The combination, with the tunnel, of brackets secured one above the other therein, and grooved pulleys mounted vertically on said brackets, a tongue or strip supported by said pulleys and guided by said grooves, and a ratchet-bar secured to the side of said tongue, the said tongue being pointed, substantially as and for the purposes set forth.

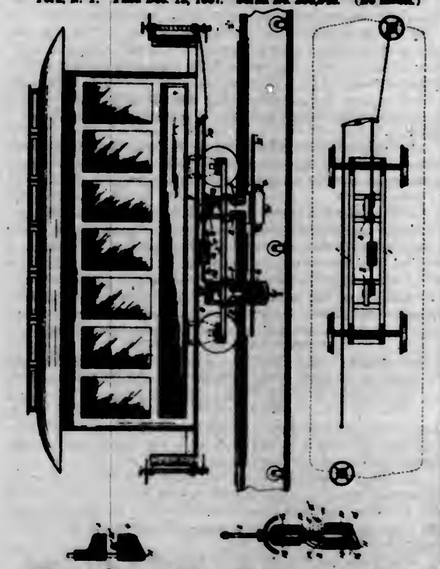
4. The combination, with a cylinder having a piston-rod projecting from both ends thereof, of the grooved pulleys, a tongue or strip supported by said pulleys, a ratchet-bar secured to said tongue near its end, fixed sheaves fore and aft of said cylinder, cables connected with the piston-rods, passing around said sheaves and secured to the tongue, and a groove or channel in the said tongue for the reception of one of said cables, substantially as and for the purposes set forth.

5. The combination, with the tunnel, of pulleys or rollers supported therein, and a rigid tongue or strip supported and guided by said pulleys or rollers, cables secured to the same end of said tongue, and sheaves arranged out of the plane of said pulleys and remote from each other, over which the said cables pass, substantially as set forth.

6. The combination, with the grip of a cable-railway car, and a reciprocating tongue, 4, having a rack thereon, of a pawl pivoted to said grip and adapted to engage said rack, a counter-balance for holding said pawl normally aloof, and a rod connected to said pawl, whereby it may be caused to engage and disengage said rack, substantially as set forth.

7. The combination, with the cylinder having a piston and a piston-rod projecting from both ends thereof, of brackets on the ends of said rods, a series of sheaves mounted in said brackets, stationary sheaves located fore and aft of said cylinder and in number equal to the sheaves in said brackets, a track, a tongue or strip supported by said track, and cables connected with each piston-rod and to the tongue and rove on the fixed and traveling sheaves at both ends of the cylinder, substantially as and for the purposes set forth.

387,911. GRIP FOR CABLE-RAILWAY CARS. John H. Pershing, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 19, 1887. Serial No. 258,348. (No model.)



Claim.—1. The combination, with two or more positive and roller or auxiliary grips, of a draw-bar for bringing all of them to bear and having an elastic or yielding medium, whereby one grip is brought to bear before the other.

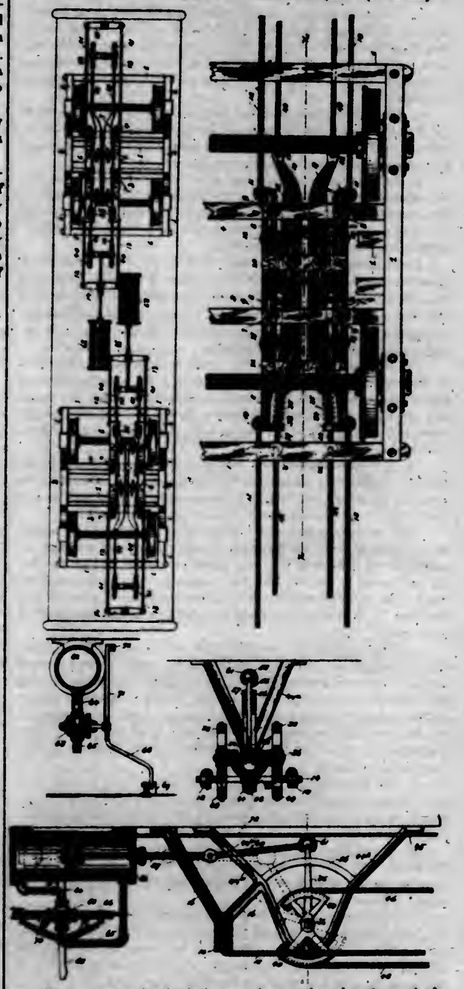
2. The combination, with the roller or auxiliary grip and a positive grip, of a draw-bar for causing the grips to engage the cable, brakes, springs between said brakes and the rollers, mechanism connected to said brakes and draw-bar for causing them to engage with the rollers, and an elastic medium in the draw-bar of greater inertia than the aforesaid springs.

3. The combination, with the roller or auxiliary grip and a positive grip, of a draw-bar connected with the operating mechanism of said grips and an elastic medium in said draw-bar between the points of connection with said grips, substantially as set forth.

4. The combination, with a roller-grip and a positive grip, of a draw-bar connected with the operating mechanism of said grips, an elastic medium in said draw-bar between the points of connection with the grip mechanism, and springs or cushions for holding the rollers normally in advance of the jaws, substantially as set forth.

5. The combination, with the fixed roller 5 and jaw 3 of the sliding shanks 2, having slots 8, of a cushioned roller, 6, and a jaw, 4, secured to said shanks respectively, a draw-bar, 10, pivoted bell-cranks having one arm secured to said bar 10 and the other in the slots 8, and an elastic medium in said draw-bar between the said bell-cranks substantially as set forth.

387,912. GRIP FOR CABLE-RAILWAY CARS. John H. Pershing, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 19, 1887. Serial No. 258,349. (No model.)



Claim.—1. A pair of grip jaws or shoes anchored to the car-body and adjustably secured to the car-truck, substantially as set forth.

2. A grip consisting of one or more sliding shoes or jaws having their adjacent end surfaces beveled or rounded to receive the cable

and cam-surfaces and stationary rollers bearing upon said cams, substantially as set forth.

3. The combination, with fixed rollers, of grip-jaws located between said rollers and having their adjacent faces beveled or rounded at the ends and inclined or cam surfaces, substantially as and for the purposes set forth.

4. The combination, with the track and the car-body, of longitudinally-adjustable blocks 5 6, secured to the track and car-body, the rollers 27 28, journaled in said blocks, and the grip-shoes located between said rollers and having their adjacent end faces beveled or rounded, and inclined or cam surfaces adapted to contact with said rollers, substantially as set forth.

5. The combination, with the blocks 5 6, of the rollers 27 28, journaled therein, the grip-shoes having inclined or cam surfaces 25 26 and slots 22 23, extending parallel with said cam-surfaces, and suspension-bolts in said slots, substantially as and for the purposes set forth.

6. The combination, with the blocks 5 6, of the rollers journaled therein, cross-bars on said blocks, and the grip-shoes having inclined or cam surfaces 25 26, adjustably secured to said cross-bars, substantially as set forth.

7. The combination, with the rollers 27 28, having fixed journal-bearings, of the grip-shoes located between said rollers and having slots 23 23 and cam-surfaces 25 26 in juxtaposition to said rollers, supports extending through said slots, and springs for forcing said cams in engagement with the rollers, substantially as and for the purposes set forth.

8. The combination, with the shoes having cam-surfaces 25 26 and slots extending parallel with said surfaces, of the stems 29 30, secured to said shoes, the arms 33 34, and springs between the shoes and said arms, substantially as and for the purposes set forth.

9. The combination, with the car-body and with the cross-bars 3 4, secured to the truck-frame, of the blocks 5 6, having longitudinal slots, supports secured to the bars 3 4 and extending through the said slots, and cables secured to said blocks and to the car-body, substantially as and for the purposes set forth.

10. The combination, with the rollers 27 28, of the shoes 18 19, located between said rollers and having cams 25 26 and slots parallel with the faces of said cams, supports for said shoes extending through said slots, and cables or rods connected to both ends of said shoes for forcing the cams into and out of engagement with the rollers, substantially as and for the purposes set forth.

11. The combination, with the truck having the cross-bars 3 4, of the blocks 5 6, having longitudinal slots, bolts extending through said cross-bars and slots and having washers upon which the blocks rest, pivoted levers secured to the car-body, and cables secured to said levers and to the ends of the blocks 5 6, substantially as and for the purposes set forth.

12. The combination, with the car-body and the truck, of the blocks 5 6, adjustably secured to the truck, brackets secured to the car-body, levers pivoted to said brackets, and cables secured to said blocks and to the pivoted levers, substantially as set forth.

13. The combination, with the truck, of the shoes 18 19, adjustably secured thereto, cam-surfaces on said shoes, fixed bearings for said cams and between which said shoes are located, springs for forcing said cams in contact with their bearings, a pivoted rock-shaft, crank arms or levers on said shaft, cables connecting said levers with the shoes 18 19, and suitable means for rocking said shaft, substantially as set forth.

14. The combination, with the truck, of the shoes 18 19, adjustably secured thereto, cam-faces on said shoes, fixed bearings for said cams and between which said shoes are located, springs for forcing said cams in contact with their bearings, pivoted rock-shafts, sectors extending upwardly and downwardly from said shafts, cables connecting the sectors of one side of the shafts with each other, and cables connecting the sectors of the opposite side with the shoes 18 19, substantially as set forth.

15. The combination, with a rock-shaft, of a pivoted journal-bearing in which said shaft is mounted, a lever, and a pivot extending transversely through said shaft and pivoting said lever thereto, substantially as set forth.

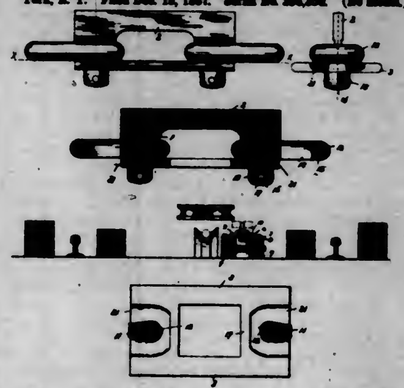
16. The combination of the pivoted piece 42, a rock-shaft mounted therein, a lever having a bifurcated end straddling said shaft, and a pivot extending through said bifurcated end and shaft, substantially as and for the purposes set forth.

17. The combination, with the bracket 44^, of the Y-shaped piece 42, pivoted thereto, a rock-shaft journaled in said piece, a lever having a bifurcated end straddling said shaft, a pin extending through said bifurcation and shaft, and a guide for restricting the oscillations of said lever to a vertical plane, substantially as set forth.

18. The combination, with the bracket 44^, of the piece 42, pivoted thereto, a rock-shaft journaled in said piece 42, a lever pivoted to the center of said shaft, and guide-rails at both sides of said lever for limiting its oscillations.

19. The combination, with the cylinder having a piston-rod and with the grip-shoes, of a rock-shaft connected to said grip-shoes and pivoted at its mid-length and a lever attached to said piston-rod and pivoted to said rock-shaft, substantially as set forth.

387,918. TRACTION-CABLE FOR RAILWAYS. John H. Pemberton, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 12, 1887. Serial No. 258,292. (No model.)



Claim.—1. The combination, with the link 13, of a link consisting of the fin 2 and lugs 11, substantially as and for the purpose set forth.

2. The combination, with the link 13, of a link consisting of the fin 2, lugs 11, made integral with said fin, and the plate 17, connected with said lugs, substantially as described.

3. The combination, with the lugs 11 and links 13, of flat bearing-surfaces 14 15 on said link, substantially as and for the purpose set forth.

4. The combination, with the links 13, of the fin 2, lugs for engaging with said links at each end of said fin, a projection from each of said lugs, and a plate having a cut-away portion fitted over said projections, substantially as and for the purposes set forth.

5. The combination, with the links 13, having flat bearing-surfaces 14 15, of a fin, 2, a lug at each end of said fin for engaging with links 13, bolts 16, projecting from said lugs, and having screw-threaded extremities with a hole therethrough, a plate, 17, having its central portion cut away, and holes for fitting over the bolts 16, and a tap, 18, and pin 16, for holding said plate in position, substantially as described.

6. The combination, with the grooved tracks, of a chain whose links have projecting edges for engaging in said grooves, and fins forming a continuous ridge along said chain, substantially as and for the purposes set forth.

7. The combination, with the links 13, of the wedge-shaped lugs 11, having rounded surfaces 12, a fin, 2, connecting said lugs together and made integral therewith, a bolt having a perforation and a screw-threaded portion projecting from said lug, a plate having its central portion cut away, a hole in each end of said plate for the reception of said bolts, nuts or taps on said bolts, edges 3 3 on said plate, projecting beyond the sides of the links 13, and inclined surfaces 21 on the ends of said plate, substantially as and for the purposes set forth.

387,914. CAR-STARTER. John H. Pemberton, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 13, 1887. Serial No. 258,351. (No model.)

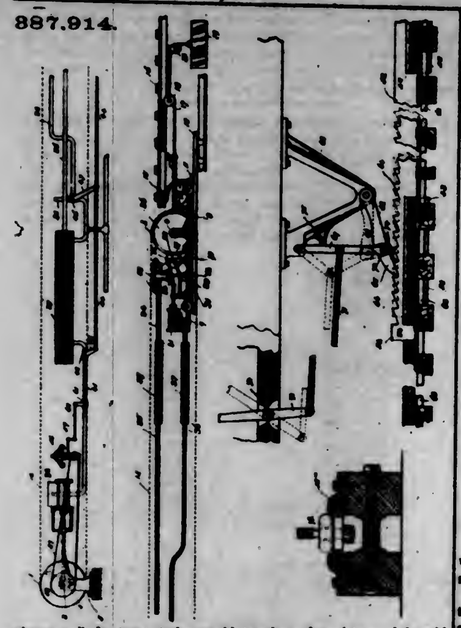
Claim.—1. The combination, with the friction-drum 26 and a pump, of a pivoted standard, a shaft journaled in said standard, a friction-wheel and a crank on said shaft, and a sucker-rod in said pump connected with said crank, substantially as set forth.

2. The combination, with the friction-drum 26 and a pump having a sucker-rod, of pivoted standards, a shaft journaled in said standards, a friction-wheel and a crank on said shaft, a pitman connecting said crank and sucker-rod, and a toggle pivoted at one end to said standards, substantially as set forth.

3. The combination, with the friction-drum 26 and a pump having a sucker-rod, of pivoted standards, a shaft mounted in said standards, a crank and a friction-wheel on said shaft, a pitman connecting said crank and sucker-rod, a toggle fixed at one end and pivoted to said standards at the other, and a spring for holding said toggle normally straight, substantially as set forth.

4. The combination, with the friction-drum and the pivoted standards, of a shaft mounted in said standards, a friction-wheel on said shaft, a toggle fixed at one end and pivoted to the standards at the other, a cylinder located above said toggle, and a piston-rod in said cylinder and connected to said toggle, substantially as and for the purposes set forth.

387,914.



5. The combination, with the pump and the endless belt, of a carriage, journal-boxes on said carriage, a shaft in said boxes, a sprocket-wheel and a friction drum or wheel on said shaft, standards, a shaft journaled in said standards, a crank and friction-wheel on said shaft, a sucker-rod in said pump, a pitman connected to said rod and crank, a stationary pulley, a cable passing over said pulley and connected at one end with said carriage, and a weight at the other end of said cable, substantially as set forth.

6. The combination, with the endless belt 12, a carriage mounted upon wheels, and a wheel mounted on said carriage and over which wheel said belt travels, of a ratchet-bar secured to said carriage, a stationary pawl for engaging with said ratchet, a stationary pulley, a cable passing over said pulley and connected with said ratchet, and a weight on said cable, substantially as set forth.

7. The combination, with the pipes 35 36, and the cylinder 33, and pump 21, having pipes leading therefrom, of the couplings or sleeves 37, connecting said pipes with the pipes 35 36, respectively, substantially as and for the purposes set forth

8. The combination, with the sprocket-wheels 1 2, an endless-chain belt adapted to travel over said wheels, shafts to which said wheels are keyed, and a friction-drum on one of said shafts, of a friction-wheel for engaging with said drum and having a crank for operating a pump, a reservoir, a pipe leading from said pump to said reservoir, an engine having a piston-rod and adapted to receive pressure from said tank, a crank connected with the wheel 1, and a pitman connecting said crank with said piston-rod, substantially as and for the purposes set forth.

9. The combination, with the reservoir for containing fluid under pressure, of the pivoted standard, a toggle pivoted at one end and hinged at the other to said standard, the cylinder 33, having a piston, a rod connected to said piston and toggle, and a pipe, 34, communicating with the reservoir and cylinder, substantially as and for the purposes set forth.

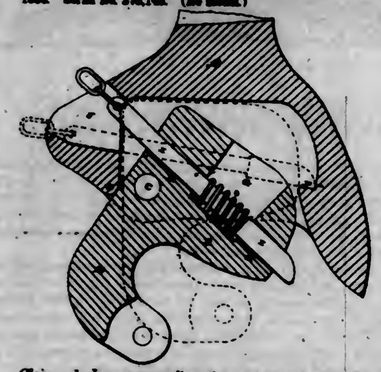
10. The combination, with the engine and the reservoir 39, of a pipe, 41, from said reservoir to the engine, the cylinder 33, having a piston, a toggle, 30, attached to said piston by a piston-rod, the pipe 35, communicating with said reservoir and cylinder, valves 43 44, having crank-arms in pipes 41 36, respectively, and a push-rod attached to said crank-arms, substantially as and for the purposes set forth.

11. The combination, with the reservoir 39, of the pipes 35 41, leading therefrom, a valve, 42, having a crank-arm in pipe 41, a valve, 44, having an exhaust-duct, 51, and a crank-arm in pipe 36, a push-rod attached to said cranks, a lever for operating said rod, and a spring for holding said valves normally closed, substantially as set forth.

387,915. FIRE-EXTINGUISHING COMPOUND. Ellen G. Peirce, Harvey S. Hughes, and William H. Shute, Texas, Iowa. Filed Oct. 20, 1887. Serial No. 252,633. (No specimens.)

Claim.—The herein-described fire-extinguishing compound, composed of two parts saleratus, one part saltpeter, two parts salt, one part sulphate of iron, and one part alum, as stated.

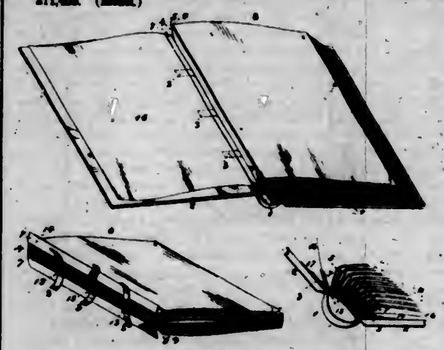
387,916. CAR-COUPLING. Gilbert W. Pike, West New Brighton, N. Y., assignor of one-half to R. B. Clark, same place. Filed May 26, 1888. Serial No. 275,142. (No model.)



Claim.—1. In a car-coupling, the combination of a pivoted hook with an automatic latching-bolt which passes through the hook and moves therewith, substantially as shown and described.

2. The combination of the draw-head, the pivoted hook placed therein, and the spring-actuated bolt which passes through the hook and engages with the shoulders upon opposite sides of the draw-head, whereby the strain upon the hook is transferred to the bolt, substantially as set forth.

387,917. BOOK. Thomas C. Ramsaw, Cincinnati, Ohio, assignor to Carpenter & Ramsaw, same place. Filed Aug. 20, 1888. Serial No. 282,488. (Model.)



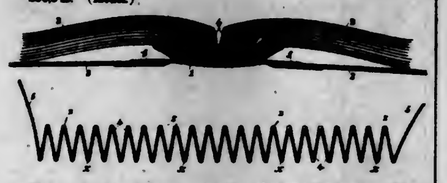
Claim.—1. A book having two or more folios or signatures, a continuous stub-strip crimped or folded alternately in opposite directions, and a strip to which each of the bent, curved, or creased portions which form the rear extremities of the stub or stub-strip is secured, the front crimps being left free, the signatures or folios of the book being separately secured to the several bent, curved, or creased portions which form the front extremities of the folds of the stub or stub-strip, the strip to which the rear extremities of the said folds are secured being in turn secured to the cover-leaves of the book, substantially as described.

2. In a book, the combination of the following elements, to wit: two or more folios or leaf-groups, 5, a strip, 4, crimped or folded alternately in opposite directions, so as to form a stub-strip, to the front extremities of which—that is, the bent, curved, or creased portions 5, which form or constitute the front edges or extremities of the several folds—are severally secured the said folios or signatures, the bridge-strips 3, to which the rear extremities of said stub-strip—that is, the bent, curved, or creased portions 6, which form or constitute the rear edges or extremities of the several folds—are secured, and the wing 7 of the stub-strip secured to the cover, substantially as set forth.

3. A book having two or more folios, signatures, or leaf-groups,

a continuous stub-strip crimped alternately in opposite directions, and a bridge-piece to which all of the crimped edges at the rear of the stub-strip are secured, the front crimps being perfectly free and each leaf-group being attached to a separate front crimp, substantially as set forth.

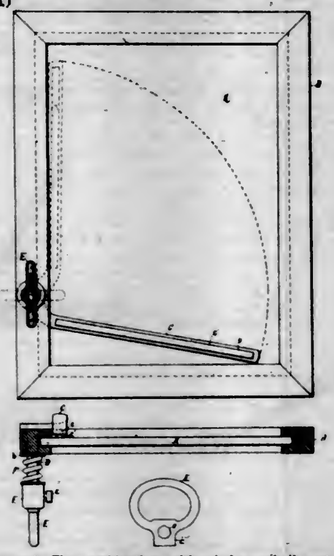
387,918. **BOOK.** Thomas G. Ramshaw, Cincinnati, Ohio, assignor to Carpenter & Ramshaw, same place. Filed Apr. 27, 1887. Serial No. 236,245. (Model.)



Claim.—1. A book having a back, a number of stubs formed from a single strip of material crimped or folded alternately in opposite directions, and a series of folios, signatures, or leaf-groups, the rear crimps of said stub-strip being stitched directly to the back, leaving the front crimps free, and each leaf-group being stitched to a separate front crimp, substantially as set forth.

2. A book having a back, a number of stubs formed from a single strip of material crimped or folded alternately in opposite directions, said stubs being secured to the back of the book by stitches passing directly through the bent or curved portions which unite the rear extremities of said folds, and the folios, signatures, or leaf-groups secured to the bent or curved portions which unite the forward extremities of the folds, substantially as and for the purpose set forth.

387,919. **WINDOW-CLEANING APPARATUS.** David G. Rhoads, Cleveland, Ohio. Filed Jan. 30, 1888. Serial No. 262,332. (No model.)



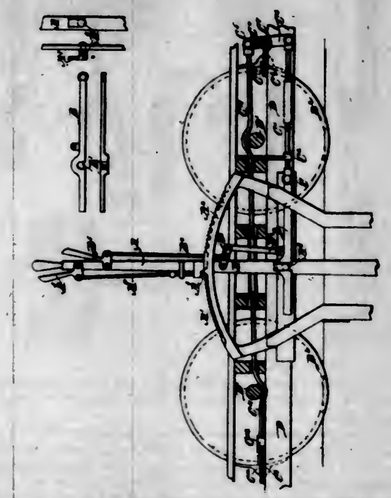
Claim.—1. The combination, with window, spindle extending through and journaled in the window frame or sash, and handle located inside the window and connected with the spindle for operating the same, of arm mounted on the spindle outside the window, said arm being adapted to sweep across the window-pane when actuated by the spindle, substantially as set forth.

2. The combination, with window, spindle, handle, and arm, substantially as indicated, of longitudinal recess on the inner face of such arm, a strip or pad, of rubber or other suitable material, seated in such recess, said pad being in position to engage the outer side of the window-pane, substantially as set forth.

3. The combination, with window, arm, spindle, and handle, substantially as indicated, of spring mounted on the spindle and located between the handle and window-frame, the tension of the spring tending to draw the spindle endwise and inward, so as to press the arm against the outside of the window-pane, substantially as set forth.

4. The combination, with window-frame, arm, and spindle, substantially as indicated, of handle mounted on the spindle, and spring located between the handle and window-frame, said handle being adjustable lengthwise of the spindle, whereby the tension of the spring may be regulated, substantially as set forth.

387,920. **GRIP AND BRAKE GEAR OF CABLE TRAM-CARS.** Howell H. Richards, Richmond, assignee of one-third to George Wilson Selby, Jr., Melbourne, Victoria. Filed Dec. 8, 1887. Serial No. 257,242. (No model.) Patented in Victoria Feb. 17, 1887, No. 4,936; in Tasmania Oct. 20, 1887, No. 883/9; in New South Wales Oct. 21, 1887, No. 209; in South Australia Oct. 21, 1887, No. 803; in New Zealand Oct. 26, 1887, No. 2,653; in England Nov. 26, 1887, No. 16,305, and in Queensland Feb. 6, 1888, No. 345.



Claim.—1. The combination, with the gripper hand-lever, of a pin or stud which is arranged at its side, and a gap-bar, which is attached to the wheel-brake mechanism, substantially as herein described and explained, and as illustrated in my drawings.

2. The combination, with the gripper hand-lever having a pin or stud at its side and the gap-bar which engages with it, of the tongue-lever, the connections of which are attached to the gap-bar to raise it clear of the stud when so desired, substantially as herein described and explained, and as illustrated in my drawings.

3. The combination, substantially as herein described and shown, with the gripper hand-lever provided with a pin or stud projecting from one side thereof, of a gap-bar, adjustable as to length, connected with the wheel-brake mechanism, for the purposes specified.

4. The combination, substantially as herein described and shown, with the gripper hand-lever provided with a stud or pin projecting from one side thereof, of a gap-bar resting on the stud, a connection between said bar and the gripper-lever, whereby the bar may be lifted off the stud, a connection between the bar and the brake mechanism at one end of the car, a cross-bar connected with the gap-bar, and connecting-rods for connecting said cross-bar with the brake mechanism at the other end of the car, as shown, and for the purposes specified.

5. The combination, substantially as herein described and shown, with the gripper hand-lever provided with a stud or pin projecting from one side thereof, of a gap-bar resting on the stud and adjustable as to length, a connection between the gap-bar and hand-lever, whereby said bar may be lifted off the stud, a connection between the bar and brake mechanism at one end of the car, a cross-bar connected with the gap-bar, and connecting-rods connecting said cross-bar with the brake mechanism at the other end of the car, for the purposes specified.

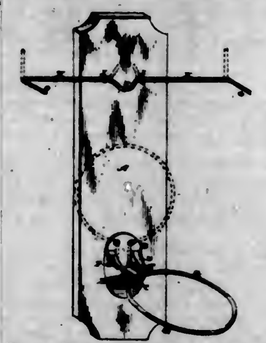
387,921. **COFFIN-LID.** John D. Ryder, Toronto, Ontario, Canada, assignor to Edward George Kelly, same place. Filed Dec. 24, 1887. Serial No. 258,997. (No model.)

Claim.—The combination, with a spring glass-stop, of a lug connected to the bottom of the lid or panel in such a position that it will come in contact with and press the glass-stop behind the edge of the glass when the lid or panel is adjusted in position, substantially as and for the purpose specified.

387,921.



387,922. **COMBINED WASH-STAND AND BRACKET.** George W. Smedley, Alliance, Ohio. Filed Apr. 16, 1888. Serial No. 270,814. (No model.)



Claim.—1. The combination of the support, the casting or forging B, secured thereto and provided with the horizontal shoulder C, and the bearings D, with the basin-holder, formed from a metallic rod which has its ends F turned outward, so as to catch in the bearings, substantially as shown.

2. The combination of a support, A, with the holding devices I, and the rod H, having a curved portion, J, at its center, and its ends O turned outward, substantially as set forth.

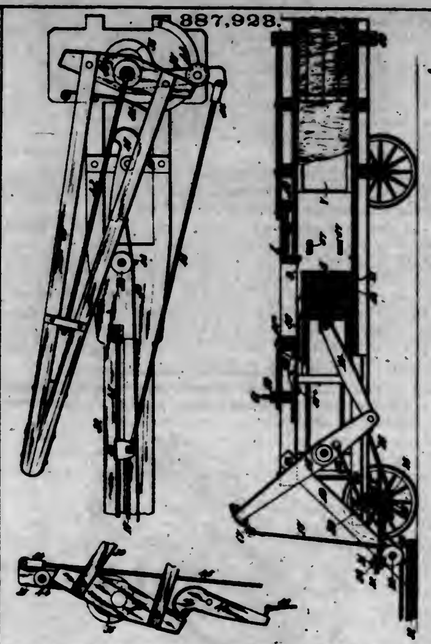
387,923. **BALING-PRESS.** Henry W. Schwarzburg, Henry F. Blank, and Joseph H. Altheide, Quincy, Ill. Filed Apr. 11, 1888. Serial No. 270,333. (No model.)

Claim.—1. The combination, with the press-frame and the reciprocating plunger having the laterally-projecting rib 56 extending longitudinally along its length, of the rocking friction-dog 55, pivoted intermediate its ends in the press-lining to form the tail-piece 55* to strike the rib, and thereby rock the dog and force its opposite end against said rib to ease the rebound of the plunger by friction, substantially as described.

2. The combination, with a portable wheeled press-frame having



387,928.



the upper and lower longitudinal side sills, of the braces having their upper ends pivoted to the upper side sills and adapted to be turned down to the ground and rest against the forward ends of the lower side sills and to be turned back to a position above the top of the press-frame, and a horse-power comprising a sill having a rabbeted end to pass between and bear against the lower ends of the braces when they rest on the ground, substantially as described.

3. The combination, with a baling-chamber and a horizontally-movable plunger supported in a press-frame mounted on wheels, of a pair of inclined braces pivotally attached to the forward end of the press-frame and extended to the ground, a cross-bar connecting the lower ends of said braces, a brace-plate attached to the under side of the press-frame, detachable rods connecting said brace-plate with the cross-bar of the inclined braces, a horse-power sill abutting against the lower ends of said inclined braces, and a horse-power mechanism for actuating the plunger in a direct line, substantially as described.

4. The combination, with a press having a horizontally-movable plunger, of a horse-power sill located in line with the press, an eccentric post attached to said sill, an eccentric-lever pivoted on said post and provided with a friction-roller, a rod pivoted to said eccentric-lever, a horizontally-movable slide connected to the other end of said rod, a cable connecting said slide with the plunger-lever, a double-armed lever mounted on the eccentric post, a sweep attached to said double-armed lever, and a retracting-lever having a cable connected with the plunger-lever, substantially as described.

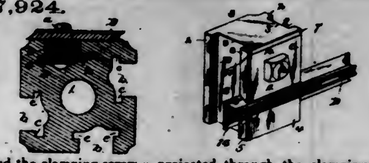
5. The combination, with the plunger 13 and its lever 15, of a horse-power comprising an eccentric post, 34, an eccentric-lever, 37, provided with friction-roller 44, the spring-stop 51, the double-armed lever 38 and sweep 39, the rod 45, pivotally connected with the eccentric-lever, the slide 46, connected to said rod, the guide-rod 47, the cable 18, connecting the slide and plunger-lever, the retracting-lever 48, and the retracting-cable 50, substantially as described.

6. The combination of the plunger 13 and its lever 15, the cables 18 and 50, guide-pulleys 30, 31, and 52, the retracting-lever 48, the eccentric post 34, eccentric-lever 37, rod 45, slide 46, guide-rod 47, double-armed lever 38, and sweep 39, substantially as described.

387,924. **TOOL-HOLDER FOR CUTTER-HEADS.** Samuel J. Shiner, Milton, Pa., assignor to Samuel J. Shiner & Sons, same place. Filed Dec. 14, 1887. Serial No. 257,844. (No model.)

Claim.—1. The tool-holder herein described, consisting of the body-section B, formed with a stem, 3, having side flanges, 2, to set in a T-shaped slot, an outer projecting dovetailed jaw, 4, on one end, a projecting flange, 7, on the other end, and a threaded bolt-hole, 9, the clamping-plate 6, formed with flaring edges 10 11, to set flush in its bed formed by the jaw 4 and flange 7, and an elongated bolt-hole,

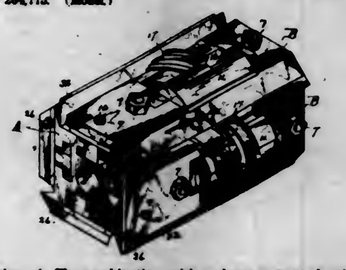
387,924.



12, and the clamping-screw *a*, projected through the clamping-plate into the threaded hole of the stem to force the clamping-plate on the bit and under the jaw, substantially as described.

2. The combination, with a cutter-head formed with T-shaped slots in its faces, of an adjustable tool-holder consisting of a body-section, B, having a stem with side flanges to fit the T-shaped slots of the cutter-head, and having a projecting clamping-jaw, 4, on one end and a projecting flange, 7, on the other end, and a threaded bolt 9, through its stem, a clamping-plate, 6, formed with flaring edges, and an elongated bolt-hole, 12, a clamping-screw, *a*, to hold the parts together, and a cutter-tool between the jaw of the part B and the clamping-plate, substantially as described.

387,925. CUTTER-HEAD. SAMUEL J. SHIMER, Milton, Pa., assignor to Samuel J. Shimer & Sons, same place. Filed Feb. 21, 1888. Serial No. 264,775. (Model.)



Claim.—1. The combination, with a planer or cutter-head stock, of a holding-plate removably secured to the said stock and formed with an adjusting-plate seat, and adapted to receive a knife under the adjusting-plate, an adjusting-plate, shorter than the holding-plate and knife, formed with parallel diagonal slots, an adjusting-screw let in the end of the holding-plate and engaging with the adjusting-plate, and a knife formed with studs to engage the diagonal slots of the adjusting-plate, substantially as described, and for the purpose stated.

2. The combination, with a planer or cutter-head stock, of a holding-plate removably secured to the said stock and formed with a seat to take an adjusting-plate, and a knife between the adjusting-plate and the face of the stock, an adjusting-plate, shorter than the knife, arranged to slide lengthwise in the plate-seat of the holding-plate, an adjusting-screw held in a bearing in the end of the holding-plate against retraction and progression, and with its threaded stem engaging a threaded receptacle in the adjusting-plate, and a knife on the adjusting-plate formed with studs to engage the diagonal slots of the adjusting-plate, substantially as described.

3. The combination, with a cutter-head stock formed with countersinks 3, a holding-plate having studs to set in the countersinks of the head, and having a seat to receive a knife-adjusting plate, and a knife having studs, of an adjusting-plate arranged over the knife and formed with diagonal slots to engage the studs of the knife, an adjusting-screw to reciprocate the adjusting-plate, a plate to hold the screw in its bearing, and a clamping-screw to clamp the end of the holding-plate, the plate over the neck of the screw, and the end of the knife, substantially as described.

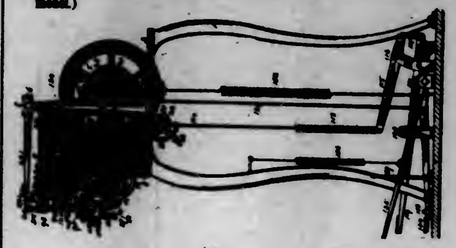
4. The combination, with a cutter-head stock, its surface-cutting knife, and the holding-plate, of a beader-bit mounted on the exterior of the holding-plate, substantially as described.

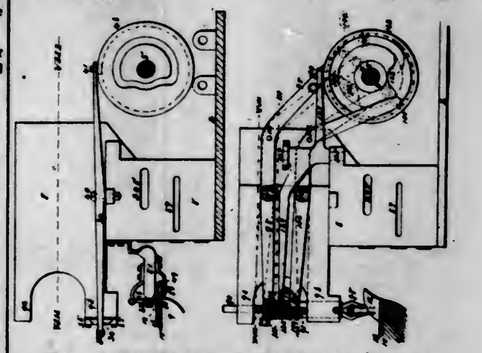
5. The combination, with a cutter-head stock, the knife, and the holding-plate, of a beader-bit seat rigidly secured to the exterior of the holding-plate and formed with a bit-bed having a curved surface and inclined edge flanges, a sectional annular beader-bit arranged on a bit-bed, and a clamping-piece to hold the beader-bit in the bed in inclined position, substantially as described.

6. The combination, with the holding-plates and the surface-planing knives of a cutter-head, of two or more sectional annular bits mounted on the back of the holding-plate and arranged to incline lengthwise in alternation to provide clearance-space, substantially as described.

7. In a cutter-head, the combination, with the holding-plates of the surface-knives, of a beader-bit seat, 11, of hard metal, secured to the exterior of the holding-plate, and formed with a knife-seat, 12, a clamping-plate, 19, and a bolt, 20, to hold the clamp on a bit in the seat, substantially as described.

387,926. LASTING-MACHINE. CHARLES SUMNER and JOHN T. AVERY, St. Louis, Mo. Filed Feb. 2, 1888. Serial No. 262,903. (No model.)





Claim.—1. In the herein-described lasting-machine, the combination of two rollers adapted to bear against the side of the upper upon the last and two wheels adapted to bear upon the top of the down-turned edge 12 of the upper, thus forming points of bearing for the work.

2. The combination, in the herein-described lasting-machine, of the two rollers bearing upon the side of the work, two wheels bearing upon top of the work, and a device, substantially as described, adapted to give intermittent rotary motion to one of the wheels, for the purpose set forth.

3. In the herein-described lasting-machine, the combination of the two rollers and two wheels bearing, respectively, against the side and top of the work and the fixed finger bearing upon the insole in advance of the folded part of the edge 12, substantially as set forth.

4. The combination, in the herein-described lasting-machine, of the side bearing-roller, 14, supported on a sliding bar, and a spring having bearing against the bar to keep the roller in contact with the work and allow the necessary horizontal movement of the work at this point.

5. The combination of the sliding bar 16, carrying a side bearing-roller, 14, and an adjustable spring, 19, bearing against the inner end of the bar, for the purpose set forth.

6. The combination of the roller 14, supporting slide-bar 16 therefor, spring 20, with end 19 bearing against the bar 16, spur-wheel 21 on the spring, and locking-bolt 24, securing the wheel in position, substantially as and for the purpose set forth.

7. The combination of the slide-bar 16, carrying bearing-roller 14, the spring 20, with end 19 resting against the end of the slide-bar 16, the spur-wheel 21, arm 23, with jointed end 26, segment rack or quadrant 25, a tooth on the jointed end 26 engaging the quadrant, and a bolt, 24, on the arm 23 engaging the spur-wheel, substantially as and for the purpose set forth.

8. In the herein-described lasting-machine, the top bearing feed-wheel, 28, supported on a slide, 34, and arranged to rotate on the backward movement of the slide, and a device, substantially as described, adapted to prevent the rotation of the feed-roller on the forward movement of the slide.

9. In the herein-described lasting-machine, the combination, with the feed-wheel, arranged to operate as set forth, the slide 34, on which the wheel is supported, actuating-lever 39, and spring-connection 37 between the slide and free end of the lever, substantially as and for the purpose set forth.

10. In the herein-described lasting-machine, the feed-wheel 28, slide 34, bearing the wheel, lever 39, spring 37, connecting the free end of the lever and the slide, and adjustable stop-bar 45, limiting the backward movement of the slide, substantially as set forth.

11. In the herein-described lasting-machine, the combination of the feed-wheel 28, ratchet-wheel 30, fixed to said roller, pawl 31, engaging the ratchet-wheel, and slide 34, upon which the roller has bearing, all substantially as and for the purpose set forth.

12. In the herein-described lasting-machine, the combination of the feed-wheel having capacity for rotating in only one direction and having reciprocating motion in the direction of the feed of the work, and the toothed wheel 52, bearing on the edge 12 of the upper, with pawl 53, preventing its backward rotation, for the purpose set forth.

13. The combination of the two guide-rollers 14 and 40, the feed-wheel 28, the wheel 52, reciprocating slide 34, supporting the feed-wheel, slide-actuating lever 39, spring-connection 37 between the lever and slide, and adjustable stop device 44 45, substantially as set forth.

14. The combination of the pusher 54, bearing intermittently against the side of the work, and the reciprocating folder 67, working over the pusher and adapted to force the edge 12 over the insole and fold it down on the insole, substantially as set forth.

15. The combination of the folder, a tilting block, 70, giving bearing to the folder and provided with an extension or tail, 84, and the cam 197, having a projecting part, 86, acting on the tail 84, substantially as and for the purpose set forth.

16. The combination of the pusher, the folder, the side guide-rollers, 14 40, and combined guide and feed wheels 28 and 52, acting to hold the upper in position on the last, substantially as set forth.

17. The combination, with the gripper-shaft 90, of a single lever, 98, having a pin, 100, at one end, said lever engaging at the other end the collar 94 on the shaft, a rotary cam, 102, whereby the lever is actuated directly by engagement with pin 100 to lower the shaft, and a spring, 113, attached to said lever to raise the shaft, substantially as shown and described, and for the purpose set forth.

18. The combination, with the shaft 90, carrying the grippers, of the sleeve 91, having on it a cog-wheel, 128, and a lever having a fixed segment-rack engaging the cog-wheel, and a spring connecting said lever to a fixed point and adapted to draw it to one side to cause the rotary motion of the gripper, substantially as and for the purpose set forth.

19. The combination, with the shaft 90 and sleeve 91, of the levers 96, 106, and 127, each having positive movement in one direction by means of cams and movement in the other direction by means of springs, substantially as and for the purpose set forth.

20. The combination of a shaft carrying pivoted gripper-jaws at its lower end and forced downward by a cam-lever and cam and carried upward by a spring, and a sleeve on the shaft having positive upward motion by a lever and cam and downward motion by a spring, substantially as and for the purpose set forth.

21. The combination of a shaft carrying grippers, having pivoted jaws and a spring for pressing them outwardly or opening them, said shaft and grippers being capable of vertical and rotary motion, and a sleeve capable of vertical motion on the shaft, but not of independent rotation, and constructed to force the jaws of the gripper together by downward movement on the shaft, substantially as set forth.

22. The combination of the shaft 90, the lever 96, engaging a collar fixed on said shaft, the actuating-cam 102, having a cam-groove, 101, receiving a stud, 100, on said lever, and having an enlargement, 122, and the spring 113, acting to draw the stud 100 aside in the enlargement, as and for the purpose set forth.

23. The combination of the sleeve 91, a lever, 106, whose free end engages in a circumferential groove of the sleeve, the actuating-cam 102, having a cam-groove, 103, receiving a stud, 108, on the lever, and having an enlargement at 123, and a spring, 124, drawing the stud upward in said enlargement of the cam-groove; as and for the purpose set forth.

24. The combination of the cog wheel or gear 126 on the sleeve 91, the lever 127, having a cog-segment engaging with the gear, a cam moving the lever in one direction, and a spring moving it in the other, substantially as and for the purpose set forth.

25. The combination of the crimping-lever 127, the spring 132, by which it is drawn in one direction, the lever 133, rod 134, and treadle 135, substantially as and for the purpose set forth.

26. The combination of the sleeve 91, shaft 90, gripper 87, gear and segment 126 and 128, lever 127, cam 102, and spring 132, substantially as and for the purpose set forth.

27. The combination, in a lasting-machine, of a gripper with a spring opening the jaws of the same, a rod or shaft carrying the gripper, a lever and cam adapted to depress the shaft, and a spring adapted to lift the shaft, a sleeve turning with the shaft and having vertical motion thereon and adapted to close the jaws of the gripper, as set forth, a lever and cam adapted to lift the sleeve, a spring adapted to lower the sleeve, a cog-gear on the sleeve, a lever having a cog-segment engaging the cog-gear on the sleeve, a cam adapted to swing the lever in one direction, and a spring adapted to swing the lever in the other direction, substantially as set forth.

28. A lasting-machine having a tack-hopper with an inclined trough-chute, with inclines 168 at each side of the chute and slot 170 in the bottom, substantially as and for the purpose set forth.

29. The combination, in the tack-hopper of a lasting-machine, of the hopper with narrow mouth, an inclined chute with side inclines, 168, and slot 170, the lower end, 171, with aperture 172 for the heads of the tacks, and the tack-race forming an extension of the chute and slotted throughout its length for the shank of the tack, substantially as set forth.

30. In a lasting-machine, the combination of the tack-race 173 with slot 170, adapted to receive the shank of the tacks, and the tack-deliverer 175, with its marginal recesses 176 and guard-lip 177, for the purpose set forth.

31. In a lasting-machine, the combination of the tack-deliverer 175, having marginal slots or recesses 176, the guard-lip 177, and the jointed section 179, allowing the escape of the tack from the front slot of the deliverer, substantially as set forth.

32. In a lasting-machine, the combination, with the rotary tack-deliverer, of the ratchet-clutch 185 187, cog-wheel 186, held down by spring 189, and fixed cog-rack engaging with the cog-wheel, substantially as set forth.

33. In a lasting-machine, the combination of the rotary tack-deliverer and the tack-guide 178, receiving the point of the tack as the deliverer moves downward with the tack-hopper and removing the tack from the slot as the deliverer moves backward with the hopper.

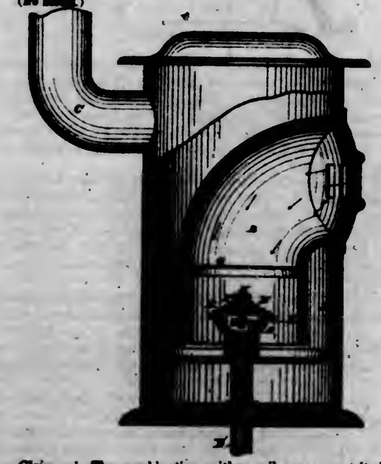
34. The combination, in a lasting-machine, of the tack-carrier composed of spring-jaws, a slide-bar, 207, to which the jaws are pivoted, and a cam adapted to actuate the slide-bar, substantially as set forth.

35. In a lasting-machine, a tack-driver, 215, a spring, 216, acting to force the driver downward, a spring-catch, 220, engaging the driver when in its lower position, a lever-arm, 221, in which the catch has bearing, and a suitable device to retract the catch and release the driver, substantially as shown and described.

36. The tack-driver, a spring pressing the driver down, a lever having a retractible latch, a cam imparting to the lever a reciprocating motion, and a slide-bar with a finger adapted to retract the latch and actuated by a cam projection, substantially as and for the purpose set forth.

37. A lasting-machine having the following combination: guide-rollers and combined guide and feed wheels for the work; a gripper and crimper on a rotary shaft having positive downward motion and upward motion by means of a spring, a sleeve upon and turning with the gripper-shaft, having independent positive upward motion and downward motion by means of a spring, a cog-gear on the sleeve engaged by a cog-rack on a lever having positive motion in one direction and moved in the other direction by a spring, a spring-pusher and a folder, and means, substantially as set forth, to feed and drive the tack, as set forth.

387,927. OIL-CUP FOR BURNING CRUDE PETROLEUM-OIL. ROBERT W. SMITH, Toledo, Ohio. Filed Sept. 19, 1887. Serial No. 250,105. (No model.)

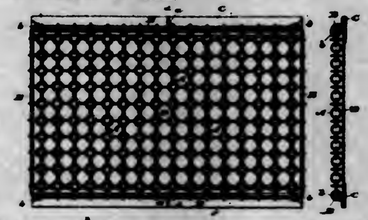


Claim.—1. The combination, with an oil-cup open at its bottom and provided there with an oil-inlet pipe, of a series of disks, one resting on another above the top of the cup and clamped down to place, substantially as set forth.

2. In a stove, the combination, with a downdraft-flue, the lower

end of which is a combustion-chamber, of a screen or perforated diaphragm, G, between the flue and combustion-chamber, and an overflow oil-cup below the screen open at its bottom and provided there with an oil-inlet pipe, and a series of disks at the top of the cap clamped down to place, substantially as set forth.

387,928. DOOR-MAT. William Smith, Toronto, Ontario, Canada, assignor to James Wilson, trustee, same place. Filed Feb. 28, 1887. Serial No. 229,172. (No model.)



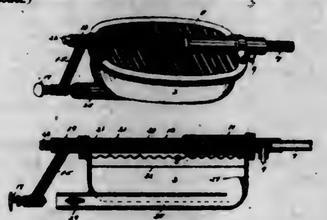
Claim.—1. A wire mat composed of a series of rings, A, linked together, in combination with the plate C, having lugs *b*, and the frame B, inserted through the outer rings of the mat and through lugs *b*, formed in the plates C, substantially as and for the purpose specified.

2. A wire mat composed of a series of rings, A, linked together, in combination with the grooved plates C, having lugs *b*, and a frame, B, inserted through the outer rings of the mat and through lugs *b*, formed in the plates C, substantially as and for the purpose specified.

3. A wire mat composed of a series of rings, A, linked together, in combination with the plates C, jointed at *d* and formed with lugs *b*, and a frame, B, jointed at *a* and inserted through the outer rings of the mat and through lugs *b* in the plates C, substantially as and for the purpose specified.

4. A wire mat composed of a series of rings, A, linked together, combined with a bottom, D, arranged beneath said mat, with a space between the two, and a cocoa matting, E, attached to said bottom, substantially as and for the purpose specified.

387,929. HYDROCARBON VAPORIZER AND BURNER. Wilbur F. Steele, Steele, Dakota. Filed May 7, 1888. Serial No. 273,108. (No model.)



Claim.—1. In a hydrocarbon vaporizer and burner, the combination, with a burner and a valve for regulating the supply of vapor or gas thereto, of a superheater or retort which is straight from end to end, arranged horizontally over and close to said burner and provided with a closely-fitting internal core, whereby the vapor or gas is spread out in a thin sheet or film and adapted to be readily superheated, substantially as described.

2. In a hydrocarbon vaporizer and burner, the combination, with the mingling-chamber 3, provided with the perforated metal plate 5, of the superheater or retort arranged horizontally over said chamber and provided with a closely-fitting core, 19, the tube 15, the needle-valve 17, and the tube 25, arranged opposite said valve and communicating with the lower part of said mingling-chamber, substantially as described.

3. In a hydrocarbon vaporizer and burner, the combination, with the mingling-chamber 3, provided with the perforated metal plate 5, of the vaporizer 11, and the superheater or retort 13, communicating with said vaporizer and provided with an internal closely-fitting core, 19, and arranged horizontally over said chamber, substantially as described.

4. In a hydrocarbon vaporizer and burner, the combination, with the mingling-chamber 3, provided with the perforated plate 5, the vaporizer 11, formed of an enlarged piece of pipe, the superheater or retort 13, formed of a smaller pipe than that of said vaporizer and arranged horizontally over said chamber and provided with an internal closely-fitting core, 19, substantially as and for the purpose described.

5. A hydrocarbon vaporizer and burner provided with a mingling-chamber, 3, a tube, 25, arranged horizontally beneath and communicating with the interior of said chamber, and the curved abutment or deflecting-surface 27, arranged within said chamber near the inner end of said tube, substantially as and for the purpose described.

6. In a hydrocarbon vaporizer and burner, the combination of the mingling-chamber 3, the tube 25, arranged horizontally beneath and communicating with said chamber, the perforated retarding-plate 31, arranged within said chamber and formed with perforations decreasing in size toward the end of said chamber which is nearest the inner open end of said tube, substantially as described.

7. In a hydrocarbon vaporizer and burner, the combination of a mingling-chamber provided with a curved abutment or deflecting-surface on its interior surface, a tube communicating with said chamber and arranged with its open inner end in proximity to said abutment, and a perforated retarding-plate formed with perforations decreasing in size toward the end of said chamber which is nearest the end of said tube, substantially as described.

8. A hydrocarbon vaporizer and burner provided with a mingling-chamber, 3, a tube, 25, a spreader, 29, an abutment or deflecting-surface, 27, a retarding-plate, 31, formed with different-sized perforations, and a perforated burner-plate, 5, substantially as described.

9. In a hydrocarbon vaporizer and burner, the combination of the mingling-chamber 3, the vaporizer 11, the superheater or retort 13, arranged horizontally over said chamber, the tube 15, provided with the valve 17, the tube 25, arranged horizontally beneath and communicating with said chamber and having its outer open end arranged opposite said valve, and the spreader 29, arranged within said tube, substantially as and for the purpose set forth.

10. In a hydrocarbon vaporizer and burner, the combination, with the mingling-chamber 3, of the superheater or retort 13, which is straight from end to end and arranged horizontally over said chamber, and provided with the core 19, having the series of rings 21, substantially as and for the purpose described.

387,930. CARPET-STRETCHER. John Story, Goderich, Ontario, Canada. Filed Apr. 2, 1888. Serial No. 269,402. (No model.)



Claim.—1. The herein-described carpet-stretcher, composed of the two bars A and C, the one having the slotted end *d* and the other a slotted end, *c*, so that their ends form a male and female joint, the one part fitting into the other and the two pivoted together by a pin, and the curved ratchet-bar E, pivoted in the slot *f*, substantially as shown and described.

2. A carpet-stretcher composed of two members, A and C, the first having at its lower end the stretcher-point B and at its upper the slotted part *d*, the latter having the needle-point D at its lower end and the slotted part *c* at the other, the two slotted parts forming a male and female joint, the said male and female joint fitting the one part upon and over the other and the two hinged together by a pin, and the ratchet-bar E, pivoted in one of the slotted joints and engaging in the beveled edge of the opposite slotted joint, all substantially as and for the purpose set forth.

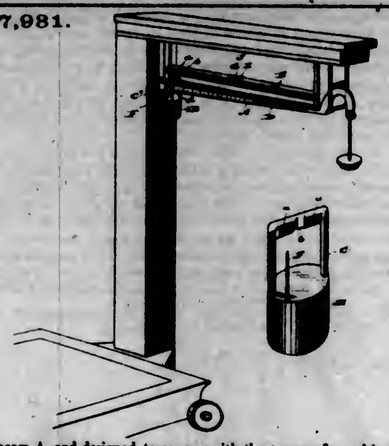
387,931. WEIGHING-SCALE. Arthur Taylor, Toronto, Ontario, Canada, assignor of one-half to William Stone, same place. Filed Oct. 20, 1887. Serial No. 252,913. (No model.)

Claim.—1. In a beam-scale, an adjustable weight suspended on an inclined plane formed in the balance-beam, in combination with a stationary bar having notches formed in it to correspond with the indicating-marks in the beam, and a bail carrying the weight and having a tongue, substantially as and for the purpose specified.

2. An inclined scale-beam, A, and an adjustable weight, B, provided with a bail, C, having one or more rollers, *a*, journaled in it and designed to rest upon an inclined plane formed in the beam A, in combination with the stationary bar D, having notches *d* formed in it to correspond with the indicating-marks in the beam A, and designed to engage with the tongue *b*, formed in the bail C, substantially as and for the purpose specified.

3. An inclined scale-beam, A, an adjusting weight, B, provided with a bail, C, having a tongue, *b*, and designed to rest upon an inclined plane formed in the balance-beam A, and a pointer, F, to indicate the indicating-points on the beam A, in combination with a stationary bar, D, notched to correspond with the indicating-points in

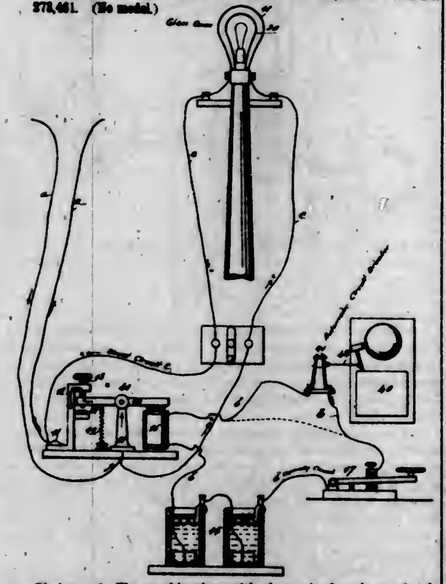
387,981.



the beam A, and designed to engage with the tongue formed in the bail C, substantially as and for the purpose specified.

4. A plate, I, the double-hinged plates J, and a plate, G, connected to the plate I by the double-hinged plates J, and having pivots *e* formed on it, in combination with the bar K, the lugs *g*, made in the plate I, which is adjustably supported by the bar K, having raised marks formed on its surface, substantially as and for the purpose specified.

387,982. FLASH-LIGHT SIGNAL. William H. Thompson, Richmond, Va. Filed Apr. 19, 1887. Renewed June 20, 1888. Serial No. 278,461. (No model.)

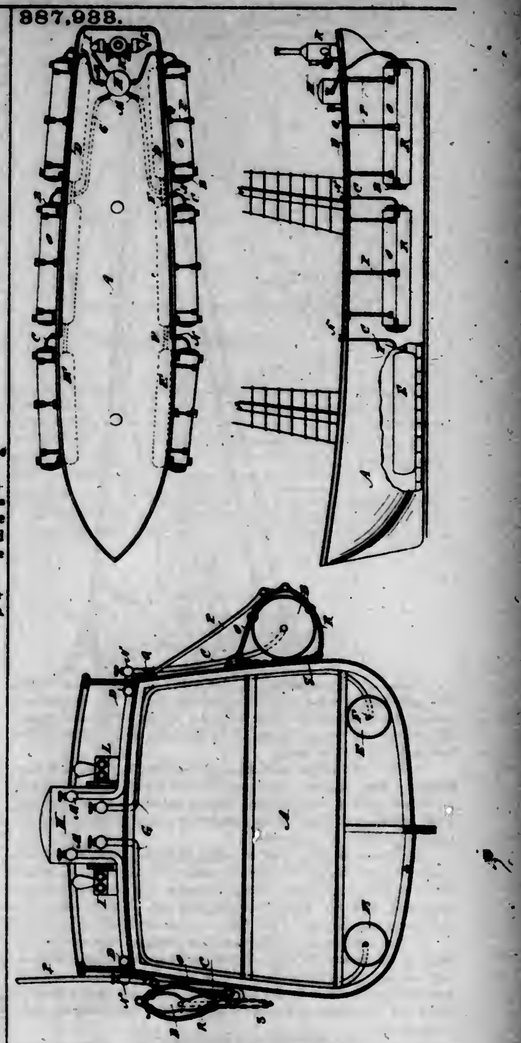


Claim.—1. The combination, with the main fire-alarm circuit *a a*, of the main circuit-breaker 20, forming a shunt, the extended circuit *c c*, the incandescent lamp 30, included in the latter, the local circuit, and the breaking-key 17, all connected and operating substantially as described, and for the purpose set forth.

2. The combination of the automatically-operated gong 40, the automatic circuit-breaker 41, and rod 42 connecting them with the local circuit *b b*, main-circuit breaker 20, main circuit *a a*, extended main circuit *c c*, and incandescent lamp 30, all as shown and described.

387,988. MEANS FOR BOOTING UP VESSELS. William D. T. Travis, Burlington, N. J. Filed Mar. 20, 1888. Serial No. 268,775. (No model.)

387,988.



Claim.—1. The combination, with a vessel, of a collapsible gas-buoy arranged on the outside of the vessel, a folding cap adapted to cover the top of the buoy, and a folding shield to protect the under side of the buoy, the said cap and shield being attached to the vessel, substantially as described.

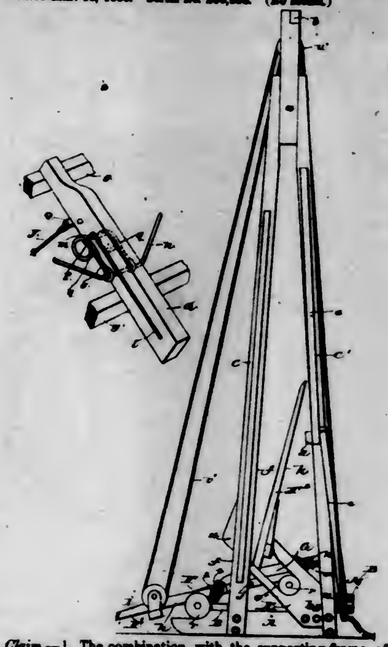
2. The combination, with a vessel and a collapsible buoy arranged on the outside of the same, of a pointed protector for the buoy hinged to the vessel, and a brace hinged to the protector and adapted to engage an abutment on the vessel, substantially as herein shown and described.

3. A protector for collapsible buoys for vessels, consisting of a cap-plate adapted to be hinged to the vessel, and a shield or bottom plate hinged to the cap-plate and having its free end connected to said cap by a flexible connection, substantially as described.

4. The combination, with a vessel and a collapsible gas-buoy connected to the same, of a buoy-covering cap hinged to the vessel, a buoy-shield hinged to the cap, a flexible connection between the cap and shield, and means for adjusting and supporting the cap and shield, substantially as described.

5. The combination, with a vessel, of a curved cap and shield connected to the vessel and adapted to fold together and to embrace a collapsible buoy, substantially as described.

387,934. HAY-STACKER. James J. Wabaman, Carrollton, Mo. Filed Mar. 10, 1888. Serial No. 266,826. (No model.)



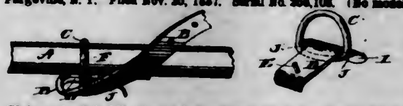
Claim.—1. The combination, with the supporting-frame, of the fork consisting of main portion and pivoted section, the slotted and notched bar G, the pivoted link connected to said section and engaging said slot and notch, and devices for disengaging the link from the slots and notch, as set forth.

2. The combination, with the supporting-frame, of the fork consisting of main portion and pivoted section, the slotted and notched bar G, the pivoted link connected thereto and engaging said slot and notch, a bell-crank lever having a portion in said notch, and a cord for operating said lever, as set forth.

3. The combination, with the supporting-frame, of the fork consisting of main portion and pivoted section, the slotted and notched bar G, and the pivoted link connected thereto and engaging said slot and notch, said link being provided with side guide portions and devices for disengaging the link from the slot and notch, as set forth.

4. The combination of the base, the converging standards erected thereon, the inclined block E, secured on the base between the standards and having the slots *d'*, the blocks *x*, secured to the front standards and having inclined faces, the fork having rollers adapted to move in the slots *d'* and against the blocks *x*, and the cable controlling the fork, as set forth.

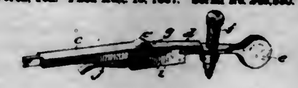
387,935. HOLDBACK FOR VEHICLES. Edward Walrath, La Fargeville, N. Y. Filed Nov. 26, 1887. Serial No. 256,103. (No model.)



Claim.—1. A holdback-catch consisting of an oval ring adapted to be secured upon the shaft and the sliding wedge-plate having the tongue near its forward thick end, substantially as set forth.

2. The combination, with the shaft having the longitudinal groove formed in its lower side, of the oval ring secured upon the shaft by the screws and the sliding wedge-plate having the upwardly-projecting tongue near its forward thick end and the wide outwardly-curved rear end, substantially as set forth.

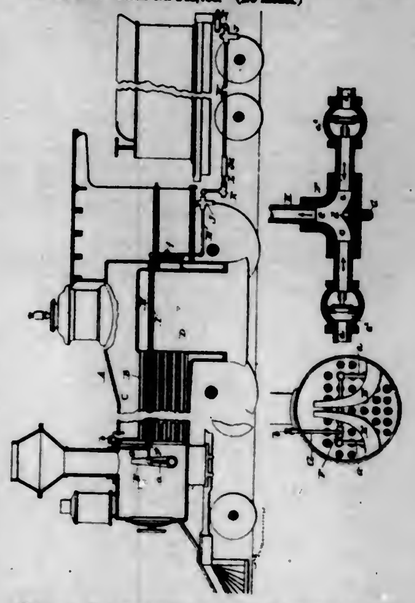
387,936. PASSENGER MILEAGE-RECORDER. Samuel M. West, Fort Worth, Tex. Filed Aug. 13, 1887. Serial No. 246,893. (No model.)



Claim.—1. The combination, with a roller mounted in a suitable case and winding thereon a sheet of paper fed from beneath, of a series of crayon-holders supported above the roller, the same being constituted of the part *c*, having lip *c'*, and the part *d*, weighted and formed with the portion *g*, the two parts being united by a link, to which a spring is secured, which bears against the part *d*, and means connecting with the seat of the coach for operating said holders, substantially in the manner described.

2. The combination, with a roller mounted in a suitable case and winding thereon as it turns a sheet of paper fed from beneath, of a series of crayon-holders supported above the roller, the same being constituted of the part *c*, having lip *c'*, and the part *d*, weighted and formed with the portion *g*, the two parts being united by a link, to which is secured a spring bearing against part *d*, the rods and bell-cranks, the spring-seats, means for operating the roller from the axle of the car, and the spring bearing upon the roller, by which the paper or other sheet is prevented from slipping, substantially as described.

387,937. CAR-HEATER. Robert Weslar, Chicago, Ill. Filed June 18, 1887. Serial No. 241,756. (No model.)



Claim.—1. In a car-heating apparatus, the combination, with a locomotive and its exhaust-nozzles E E, of a hollow box or casing, F, located within the smoke-box, pipes *a a*, communicating with the exhaust-nozzles and entering the box F from opposite sides, a discharge-pipe, H, and a live-steam pipe, G, also connected with the box in line with the discharge-pipe.

2. In a car-heating apparatus, the combination, with the locomotive and its boiler and exhaust-nozzles, of a hollow box, F, located within the smoke-box of the locomotive, pipes *a a*, each connected with one of the nozzles and entering the box F from opposite sides, passages *c c* within the box F, extending from pipes *a a* toward each other and merged to form an outlet, *e*, a pipe, H, extending from said outlet, and a live-steam pipe, G, connected at opposite ends with the boiler and the box F and arranged in line with the outlet.

3. In combination with a locomotive and its exhaust-nozzles, a hollow box, pipes connected at opposite ends with the hollow box and the nozzles, valves located in the said pipes and adapted to open inwardly toward the box, a live-steam pipe, and a discharge-pipe also connected with the box, all substantially as shown.

4. The herein-described trap J, comprising a steam inlet and outlet, *g*, a water-chamber, *h*, a hollow plug, *j*, secured to the lower end of chamber *h*, a plug, *i*, secured to the upper end of the trap, a valve-stem, *k*, and a valve-plug, *l*, loosely connected to the stem *k*.

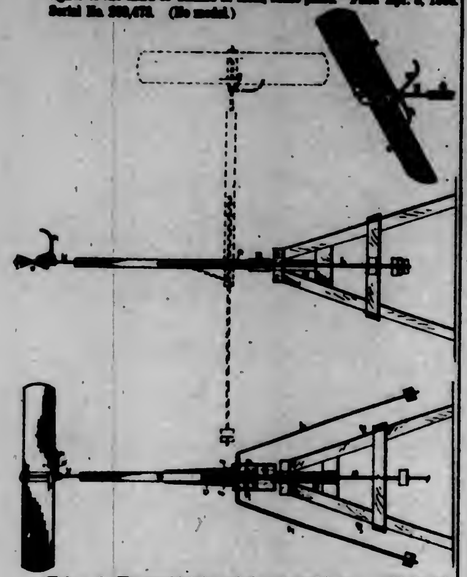
5. In combination with the trap-casing having a through steam-passage and a water-chamber, an expansible rod or stem, *k*, secured at one end to the casing, and a valve-plug loosely connected with the stem and adapted to close the water-outlet.

6. In combination with the trap-casing having a through steam-passage and a water-chamber communicating therewith, plugs *i* and *j* at the upper and lower ends of the casing, and valve-stem *k*, screwing at its upper end into the plug *i*, and provided at its lower end with a valve-plug, *l*, adapted to close the water-discharge outlet.

7. In combination with the trap-casing having steam-passages *g g* and a water-chamber, *h*, plugs *i* and *j*, screwing at opposite ends into the casing, a valve-stem, *k*, secured to plug *i*, and provided at its lower end with socket *m* and slot *n*, and a valve-plug, *l*, provided with stem *o* and pin *p* and adapted to fit within the end of the valve-stem.

8. In a car-heater, the combination, with one or more cars, of a main steam-supply, a distributing-pipe, a supplemental steam-generator located within one of the cars and connected with and adapted to supply steam to the main distributing-pipe, and a water-tank surrounding and forming a part of the supplemental generator, all substantially as shown.

387,938. WINDMILL. David A. Wermuth, Anthony, Kans., assignor of one-third to Elmore B. Reid, same place. Filed Apr. 3, 1888. Serial No. 269,672. (No model.)

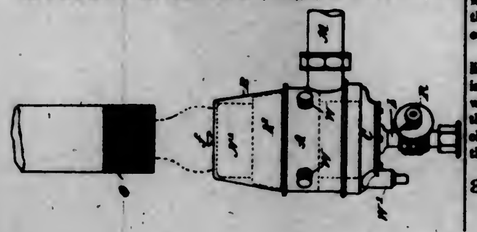


Claim.—1. The combination of the pivoted lever provided with counterbalancing-weights at its lower end, connecting-rods for connecting the pump-rod to the lever, the fan placed upon the upper end of the lever and adapted to be revolved by the wind through a portion of a circle at right angles to the length of the lever, and stops secured to the lever for limiting the turning movement of the fan, substantially as shown.

2. The combination of the pivoted lever provided with weighted rods at its lower end and connected to the pump-rod, the fan placed upon the upper end of the lever and adapted to be revolved by the wind through a portion of a circle at right angles to the length of the lever, and two stops secured to the upper end of the lever and projecting therefrom at different angles in the rear of the fan, so as to limit its turning movement, substantially as described.

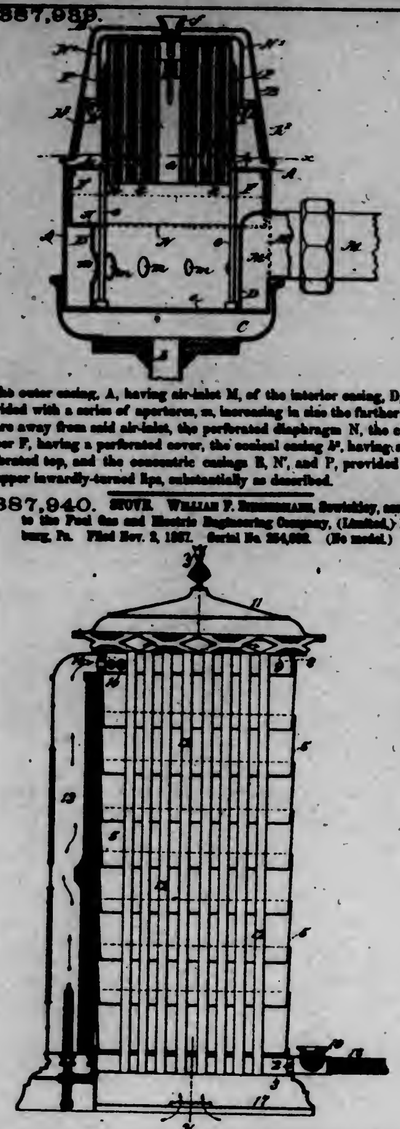
387,939. OIL-LAMP FOR LIGHT-HOUSES. John R. Wigham, Monkstown, County of Dublin, assignor to the Rees Patent Lighting Company, (Limited,) Dublin, Ireland. Filed Apr. 4, 1887. Serial No. 233,594. (No model.) Patented in England Nov. 6, 1884, No. 14,666.

Claim.—In a multiple-wick lamp having several concentric wick-tubes and intermediate concentric air-passages, the combination, with



the outer casing, A, having air-inlet M, of the interior casing, D, provided with a series of apertures, *m*, increasing in size the farther they are away from said air-inlet, the perforated diaphragm N, the chamber F, having a perforated cover, the central casing A^2, having a perforated top, and the concentric casings B, N', and P, provided with upper inwardly-turned lips, substantially as described.

387,940. STOVE. William F. Zimmermann, Sewickley, assignor to the Peal Gas and Electric Engineering Company, (Limited,) Pittsburg, Pa. Filed Nov. 2, 1887. Serial No. 254,602. (No model.)



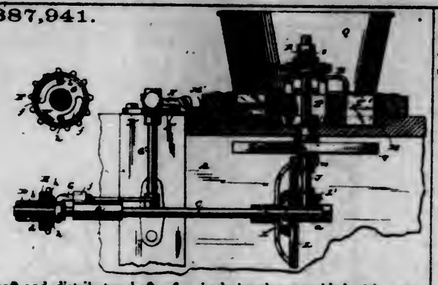
Claim.—1. In a stove, a heating-chamber composed of two or more cup-like sections, the bottom of each being provided with an opening, said sections being adapted to be fitted together telescopically, whereby the sides of said sections form the walls of the chamber and the bottoms form baffle-plates, in combination with two or more open-ended tubes traversing the cup-like sections, substantially as set forth.

2. In a stove, a heating-chamber composed of two or more cup-like sections, the bottom of each section being provided with an opening, said sections being adapted to be fitted together telescopically, whereby the sides of said sections form the walls of the chamber and the bottoms form baffle-plates, in combination with a combustion-chamber connected to the top section and an escape-flue connected to the bottom section, substantially as set forth.

387,941. SEED-SOWER. Hans Andersen, Racine, Wis. Filed Aug. 20, 1887. Serial No. 248,042. (No model.)

Claim.—1. In a seed-sower, the combination, with the main drive-

387,941.



shaft and distributer-shaft, of a single bracket provided with a step for said distributer-shaft and having each of its ends in the form of a bearing for said main shaft, substantially as set forth.

2. In a seed-sower, a distributer having the outer ends of its wings provided with right-angle flanges, substantially as set forth.

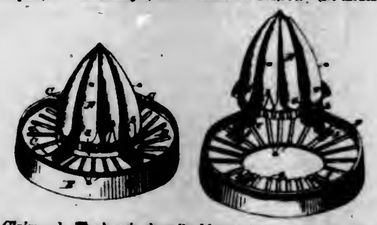
3. In a seed-sower, the combination of a distributer, a seed-box having delivery-openings and a central circular flange having one side thereof provided with vertical seed-passages, a series of vertical cut-offs for the seed-passages, an annulus provided a series of radial flanges and arranged adjacent to the cut-offs, and suitable mechanism for rotating the distributer and annulus, substantially as set forth.

4. In a seed-sower, the combination of a drive-shaft, a hub keyed thereto and provided with clutch-teeth, a shell loose on the shaft and interiorly provided with lugs *e*, a sprocket-wheel secured to the shell and having lugs *g* that enter the same, springs arranged between the lugs on said shell and those on the sprocket-wheel, and suitable means for actuating the loose section of the clutch mechanism, substantially as set forth.

5. In a seed-sower, the combination of the feed-box M, provided with the arm M', flange P, and spouts *p*, the pivoted dog N, rack N', distributer K, shaft J, sleeve R, having depending arms R', cut-offs S, annulus T, provided with the radial flanges T', the lever U, and suitable means for driving said distributer and shaft, substantially as set forth.

6. In a seed-sower, the combination of the shaft C, hub D, provided with clutch-teeth *b*, the shell E, having lugs *e*, sprocket-wheel F, having the slots *f* and lugs *g*, the spiral springs *i*, spanner-arm G, crank-shaft G', hand-lever H, spring-dog H', and serrated bracket B', substantially as set forth.

387,942. LEMON-JUICE EXTRACTOR. Edwin Baldrey, Philadelphia, Pa. Filed May 2, 1888. Serial No. 272,583. (No model.)



Claim.—1. The herein-described lemon-juice extractor, composed of a cone having ribs which are sharpened and having arms extending therefrom and forming a prolongation of some of the ribs, substantially as and for the purpose described.

2. The herein-described lemon-juice extractor, comprising the cone having a well-defined margin at its lower edge, and having the ribs and the channels between the ribs extending from the said margin to the apex of the cone, and having juice-channels formed in the face of the margin only and extending from the top to the bottom of the said margin, substantially as shown.

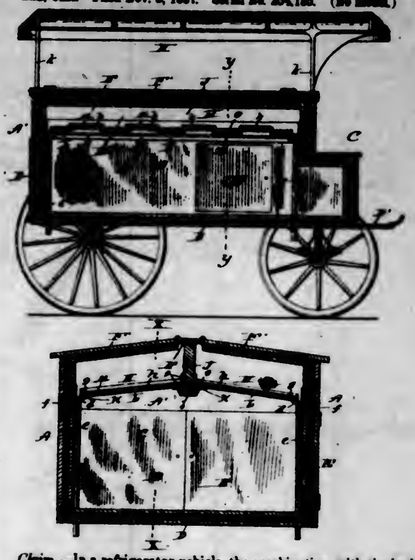
3. The combination, with the cone having the ribs *a* and arms C integral with the cone, of the drainage-plate, substantially as and for the purpose described.

4. The combination, with the cone having the ribs *a*, and the bed or drainage-plate having a central opening which is about equal to the diameter of the base of the cone, the bed being set below the cone to form a slot for the egress of the juice, of the arms extending from the cone, substantially as and for the purpose described.

5. The combination, with the cone having the ribs *a* and arms C, of the flaring drainage-plate having the channels *c*, substantially as and for the purpose described.

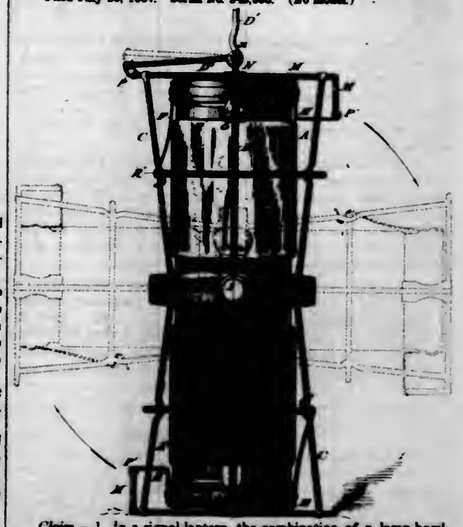
6. The herein-described lemon-juice extractor, composed of the cone having the ribs *a*, and having a margin at its base which is provided with juice-channels, the flaring bed having the channels *c* and having a depending rim, and the arms interposed between the bed and cone and forming base-cutters, substantially as and for the purpose specified.

387,948. REFRIGERATOR-VEHICLE. Wilbur R. Beard, Cincinnati, Ohio. Filed Nov. 3, 1887. Serial No. 254,185. (No model.)



Claim.—In a refrigerator-vehicle, the combination, with the body of the vehicle, which forms a refrigerating-chamber, G, of the central longitudinal partition, J, inserted in the vehicle over the refrigerating-chamber and removable therefrom, ice-pans supported directly over the refrigerating-chamber by the partition J, and the sides of the vehicle-body and drip-pipes attached to these pans and leading outside of the vehicle, substantially as described.

387,944. LASTING. John H. Burrell, Jr., Philadelphia, Pa. Filed July 20, 1887. Serial No. 245,036. (No model.)



Claim.—1. In a signal-lantern, the combination of a lamp-bowl provided with hollow filling-tubes, a bail rigidly secured to said tubes and having pivotal arm attachments, a ring pivotally mounted on said tubes, and a frame carried by said ring and provided with globes of different colored glass, substantially as and for the purpose set forth.

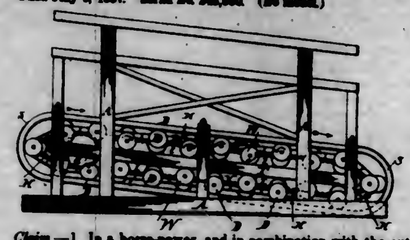
2. In a signal-lantern, the combination of a lamp-bowl with tubes, a bail rigidly secured thereto, a ring pivotally mounted on said tubes and having the globes A A', the wire frame C, formed with the rib R', hinged cage E, and catch F, the latter adapted to catch with said rib R', substantially as described.

3. In a signal-lantern, the combination of a lamp-bowl with tubes, a bail rigidly secured thereto, one of the arms of said bail having an extension, D^2, a rotary frame having an upper rib, M, and a catch, P, adapted to bind said rib M and extension D^2, substantially as described.

4. In a signal-lantern, the combination of a lamp-bowl, a bail rigidly secured thereto, a rotary frame having the notches N N in the side of its upper rib, M, whereby said rotary frame is locked to said bail, substantially as described.

5. In a signal-lantern, the combination of a lamp-bowl, a bail rigidly secured thereto, a rotary frame pivotally secured to said lamp-bowl and carrying globes, the said frame having the cage E, and catches Q Q, secured to the upper rim, M, substantially as described.

387,945. HORSE-POWER. George R. Bent, Harvard, Mass. Filed July 6, 1887. Serial No. 243,003. (No model.)



Claim.—1. In a horse-power, and in combination with the outer track having upper and lower portions, B C, and the track T between the same, the chain, the lugs, and the wheels pivoted to the ends of the lugs on different horizontal planes, substantially as described.

2. In a horse-power, the combination of the lugs H, the links L and V, the wheels W and D, the bolts N, and nuts *o* and *o'*, substantially as described.

3. In a chain horse-power, the combination of the wheels, each set pivotally secured to the lugs of the tread in different horizontal planes, with the tracks having upper and lower portions, B and C, and the central track, T, between them, whereby one set of wheels moves its entire circuit on the outside track and the other moves its entire circuit in a different plane and on an inner track, substantially as described, and the frictionizing of the wheels and their reversion are prevented.

4. In a horse-power, in combination with the track-wheels and the tread, the angle-bolts N, substantially as and for the purposes set forth.

5. In a horse-power, the combination of the following elements, namely: the track having upper and lower portions, B and C, and a central track, T, between them, and the track-wheels securely pivoted to the lugs of the tread, one set of wheels moving its entire circuit on one track and the other set moving on the other track, whereby reversion and frictionizing of the wheels in passing from the upper to the lower part of the track are avoided.

6. In a horse-power, in combination with the wheels pivoted in different horizontal planes, the tracks arranged on different planes, the outer track adapted for the wheels pivoted in one plane and the inner track for those pivoted on another plane, whereby any reversion in the revolution of the wheels is prevented.

387,946. STAPLE-MACHINE. Horace R. Cunningham, Bridgewater, Pa., assignor to the Acme Staple and Machine Company, of New York. Filed May 16, 1884. Renewed June 22, 1888. Again renewed Mar. 3, 1888. Serial No. 265,163. (No model.)

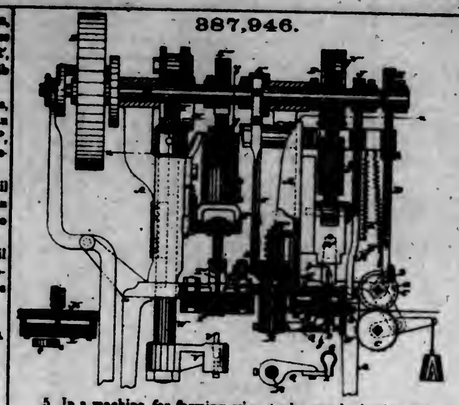
Claim.—1. In a machine for forming wire staples, the die L, having a vertical opening, in combination with a plunger, M, movable arm Q, having opening *c*, and oscillating shaft R, substantially as described.

2. In a machine for forming wire staples, a holder for the wire, and a bending and reducing plunger, in combination with a movable arm, Q, for carrying the bent wire to the staple-shaping dies, substantially as and for the purpose set forth.

3. In a machine for forming wire staples, a support for the wire, a bending-plunger, and shaping-dies, in combination with an oscillating holder, having adjustable arm, carrying the bent wire as it leaves said die to the shaping-dies, substantially as and for the purpose set forth.

4. In a machine for forming wire staples, a holder or carrier for the primarily-shaped staple, in combination with an oscillating shaft, a pinion, toothed segment, and returning-spring, substantially as and for the purpose set forth.

387,946.

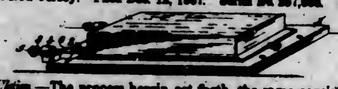


5. In a machine for forming wire staples, staple-shaping dies, a plunger between the dies, and a punch for forcing the primarily-shaped staple into said dies and completing the shape thereof, combined and operating substantially as and for the purpose set forth.

6. In a machine for forming wire staples, feed-rollers, a cutter, a support for the wire, a bending-plunger, a die, a holder and carrier for the bent wire, staple shaping and pointing dies, a plunger within the dies, and a punch for forcing the bent wire into said dies, said parts being combined and operating substantially as and for the purpose set forth.

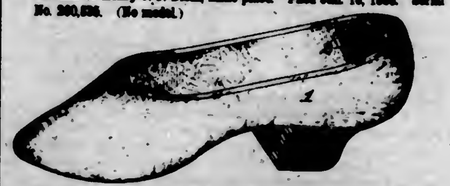
7. Feed-rollers, a cutter, a support for the wire, a bending-plunger, a die, a holder, and carrier for the bent wire, staple shaping and pointing dies, a plunger within the dies, and a punch for forcing the bent wire into said dies, in combination with connected arms and heads, and eccentrics and a cam, said eccentrics and cam being on the same shaft, substantially as and for the purpose set forth.

387,947. METHOD OF SECURING BLOCKS OF PLASTIC MATERIAL WHILE PLANING THEM INTO SHEETS. Frazer Green, Newburyport, Mass., assignor to the Arlington Manufacturing Company, of New Jersey. Filed Dec. 12, 1887. Serial No. 257,602. (No model.)



Claim.—The process herein set forth, the same consisting in imposing a block of plastic material upon the smooth surface of a suitable bed-plate, applying heat and pressure thereto to expel the air and effect intimate contact, forming a flange upon one or more edges of the block, and applying pressure to said flange or flanges, substantially as described.

387,948. SHOE. Charles R. Dubbs, Pittsburg, Pa., assignor of one-half to Henry J. P. Diehl, same place. Filed Jan. 16, 1888. Serial No. 260,836. (No model.)



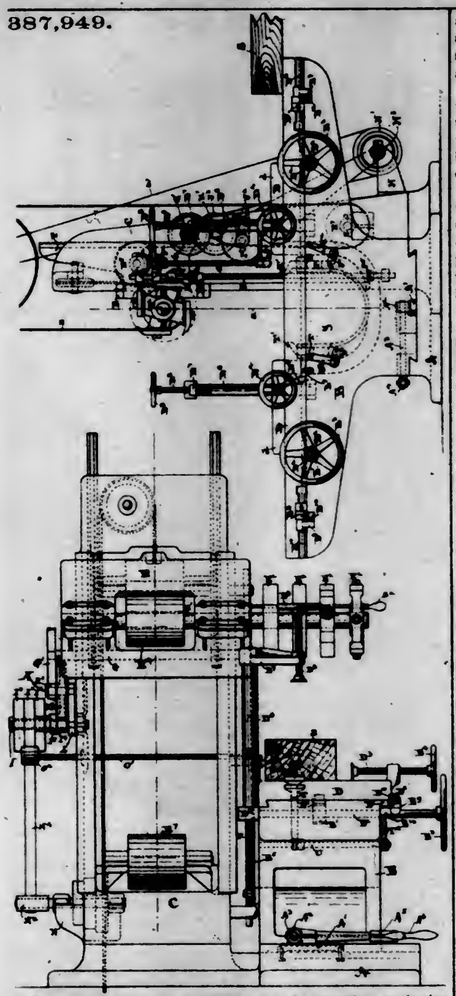
Claim.—A shoe or slipper provided with a strip of elastic material connected at its ends to the inside of the upper portion of the shoe, forming a band that is normally in front of the counter, and adapted to be expanded when in use to lie against said counter and to hold the shoe to the foot, substantially as set forth.

387,949. TENONING-MACHINE. William H. Doane, Cincinnati, Ohio. Filed Feb. 17, 1888. Serial No. 264,416. (No model.)

Claim.—1. In a tenoning-machine having power-driven cutters cutting vertically in relation to the timber and feed mechanism for moving the cutters vertically by the driving-power to cut tenons during each movement, in combination with mechanism, substantially as described, for automatically controlling and confining the feed motion within upper and lower limits of action, substantially as set forth.

2. In a vertical tenoning-machine, in combination with the cutter-gateway and its feed mechanism for moving the same vertically by the driving-power to cut tenons during each movement, a con-

387,949.



ating connection, an actuating dog or dogs upon said shaft, and mechanism actuated by the gateway in its vertical movement to rotate said shaft and actuate said belt-shifter in both directions to control and limit the feed movement, substantially as set forth.

6. In a vertical double-acting tenoning-machine, in combination with the vertically-moving cutters and horizontally-moving platen, a table or supporting-frame having a central gap or depression, into which the cutters descend, or supporting-frame adjustable upon the base-plate or supporting-pedestal horizontally in the axial line of the cutter-mandrel, substantially as set forth.

7. The combination, in a vertical double-acting tenoning-machine, with the sole-plate, the column, and the gateway vertically guided upon said column, of a table or supporting-frame having a central gap or depression, into which the cutters descend, guided upon the sole-plate, and a rack-and-pinion device connecting said sole-plate and table, whereby the table may be moved and adjusted laterally in the line of the cutter-mandrel, substantially as set forth.

8. In a vertical double-acting tenoning-machine, in combination with the vertically-moving cutters and a table or supporting-frame having a central gap or depression, into which the cutters descend, a platen or platens for carrying the work, adjustable longitudinally upon said table in a horizontal plane of the cutter-mandrel toward and from the gap, substantially as set forth.

9. In a vertical double-acting tenoning-machine, in combination with the vertically-moving cutters and a table or supporting-frame having a central gap or depression, into which the cutters descend, two platens or work-holding surfaces adjustable longitudinally upon said table at opposite sides of said depression, and connected across the same outside the limits of the cutters, substantially as set forth.

10. In a vertical double-acting tenoning-machine, a table or supporting-frame having a central gap or depression, into which the cutters descend, adjustable in the line of the cutter-mandrel, in combination with a work-carrying platen or platens adjustable longitudinally upon said table perpendicularly to the cutter-mandrel, substantially as set forth.

11. In a vertical double-acting tenoning-machine, a table or supporting-frame having a central gap or depression, into which the cutters descend, provided with longitudinal surface guides, a work-carrying platen adjustable on said guides toward or away from the cutters, and a rack-and-pinion device interposed between said table and platen for moving the latter, substantially as set forth.

12. The combination, in a vertical double-acting tenoning-machine, of a relatively-fixed table having surface guides, a work-supporting platen movable on said guides, a stop between the table and platen limiting the movement of the platen toward the cutters, and a stop projecting upward at or near the central depression of the table in the path of the platen, above the line of the platen-surface, and downward below the limit of interference with the platen, as a gage to determine the position and adjustment of the work upon the platen, substantially as set forth.

13. In a vertical double-acting tenoning-machine embodying vertically-fed cutters and a relatively-fixed table having a central depression, into which the cutters pass, through and below the work, a double platen with an interval between its platen-surfaces corresponding with said depression, said platen being adjustable longitudinally at right angles with the cutter-mandrel, stops limiting the movement of the platens in either direction toward the cutters, and two gage-stops, arranged one at each side of the table-depression and adjustable from a lower limit of non-interference upward into or above the plane of the platen-surfaces, respectively, to determine the adjustment of a sill or joint timber from either end upon either platen-surface, substantially as set forth.

14. In a vertical double-acting tenoning-machine, the combination, with the vertically-fed cutters, of a relatively-fixed table and a platen movable thereon toward and from the cutters, and a catch between said platen and table, adjustable longitudinally on said platen and acting to allow the platen to pass without engagement backward, but to engage in the forward movement and limit the same, substantially as set forth.

15. In a vertical double-acting tenoning-machine, in combination with a relatively-fixed supporting-table, a work-carrying platen provided with a fixed stop limiting its movement toward the cutters, and an adjustable stop limiting its movement in the opposite direction, substantially as set forth.

trolling device for governing said feed, and connecting mechanism between the gateway and controlling device, whereby the movement of the gateway automatically controls the feed at and within the proper limits of its own action, substantially as set forth.

3. In a vertical tenoning-machine embodying, in combination, a cutter-head and gateway, power feed mechanism and connections between the same, whereby the feed is controlled and automatically stopped at proper limits of its action, and a hand-lever connected with said feed mechanism, whereby the feed may be controlled by hand, as desired, independently of the power-connection, substantially as set forth.

4. In a vertical tenoning-machine embodying a cutter-head and gateway, power-feed mechanism, and an adjustable driving-belt connection with said feed, whereby the shifting of the belt upon and between fast or loose pulleys operates to control and limit the action of the feed, the combination of a bell-crank having one arm attached to and actuating the belt-shifter and the other extended as a hand-lever for the operator, and mechanism connecting said bell-crank with the cutter-gateway, whereby the movement of the latter near its extreme limits rotates said bell-crank from either limit back to a central or normal position where the belt is held upon its idler, substantially as set forth.

5. In a vertical tenoning-machine embodying a cutter-gateway, power feed mechanism, and a feed-belt adjustable upon fast and loose pulleys to control and limit the action of the feed, the combination of a belt-shifter, a vertical pivot-shaft with which said shifter has an actu-

387,950. SLEIGH-KNEE. Owen L. Dodge, Corinth, Mich. Filed Apr. 11, 1888. Serial No. 270,266. (No model.)

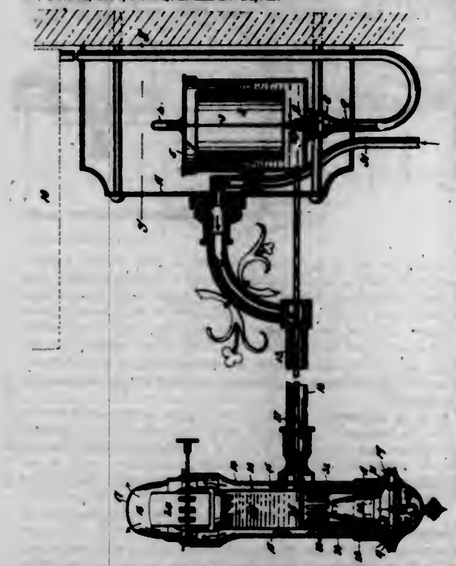


Claim.—1. In a sleigh-knee, the combination, with a bracket for attachment to the runner, provided with a trunnion formed integral with the bracket and extending clear across its upper end, of a bracket for attachment to the beam, provided with the flanges C on its upper edge, the semicircular bearing B for the trunnion, and the retaining-leg *b* at one end, and the cap provided with the retaining-leg *d*, and the flanges *d'*, which form a continuation of the said flanges on the bracket, substantially as and for the purpose set forth.

2. In a sleigh-knee, the combination, with a bracket provided with flanges *c* for attachment to the runner, the trunnion at its upper end formed integral with said bracket and extending clear across it, and the stop *f* for limiting the rocking and end movements of the said trunnion, of a bracket for attachment to the beam, provided with the flanges C on its upper edge, the semicircular bearing B for the trunnion, and the retaining-leg *b* at one end, and the cap provided with the retaining-leg *d*, and the flanges *d'*, which form a continuation of the said flanges on the bracket, substantially as and for the purpose set forth.

3. In a sleigh-knee, the combination, with a bracket for attachment to the runner, provided with a trunnion formed integral with and extending across the upper end of the bracket with its ends projecting on each side of said bracket, of a second bracket for attachment to the beam, provided with a long semicircular bearing for the said trunnion, and a lug at one end for retaining one of the projecting ends of the trunnion, and a loose cap bolted to the said beam-bracket for retaining the other projecting end of the trunnion, substantially as and for the purpose set forth.

387,951. RESERVOIR-LAMP. William A. Evans and John H. Ross, Dublin, Ireland, assignors to the Ross Patent Lighting Company, (Limited,) same place. Filed Mar. 16, 1887. Serial No. 231,015. (No model.) Patented in England Feb. 13, 1886, No. 2,022, and May 19, 1887, No. 7,291; in India July 15/28, 1887, No. 111/1869; in Victoria July 19, 1887, No. 5,136; in South Australia July 28, 1887, No. 942; in Queensland July 26, 1887, No. 899; in New South Wales Aug. 2, 1887, No. 30; in Italy Aug. 6, 1887, XLII, 247; in Brazil Aug. 11, 1887, No. 494; in Spain Nov. 11, 1887, No. 7,122/11,722, and in Austria-Hungary Dec. 23, 1887, No. 34,949 and No. 56,749.

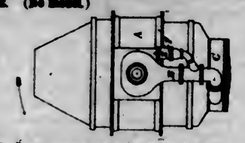


Claim.—1. The combination, with a lamp provided with a burner and burner-cap, an inner tubular casing, 23, having an oil-chamber, 25, and apertures 30 below said chamber, an apertured drip-cup, 18, and a cone, 22, within said tubular casing at the base, of the vertical air-pipe 32, having an injector-nozzle, 28, furnished with a needle-valve, 29, at its lower end, the tubular connections 13 and 27, the reservoir 1, and compressed-air pipe 31, substantially as shown and described, and for the purposes set forth.

2. The combination, with a lamp provided with a burner and burner-cap having an outer slotted tubular casing, 14, an inner tubular casing, 23, provided with an oil-chamber, 25, apertures 30 below said chamber, and a cone attached at the base, and the detachable apertured drip-cup 18, of the vertical air-pipe 32, provided at its end with a valve-controlled injector-nozzle, 28, the compressed-air pipe 31, and reservoir 1, together with means for connecting the oil-chamber 25 with the reservoir and the air-pipe 32 with the compressed-air pipe 31, substantially as shown and described.

3. The combination, with a burner, of a tube extending below said burner, an oil-chamber being formed in said tube, and said tube being apertured below the reservoir, an outer casing for said tube and burner, a cone in the lower end of said tube, an injector-nozzle at the base of said cone, a pipe connecting said injector-nozzle with an air-compressor, and a pipe connecting the oil-chamber with an oil-reservoir substantially as shown and described.

387,952. APPARATUS FOR INTRODUCING SAND OR OTHER POWDERED OR GRANULATED SUBSTANCES INTO BESSEMER CONVERTERS. James J. Fessenden, Johnstown, Pa., assignor to the Cambria Iron Company, of Pennsylvania. Filed May 11, 1883. Serial No. 273,882. (No model.)



Claim.—1. In an apparatus for introducing sand or other powdered or granulated substances into a Bessemer converter with the blast, the combination of a wind-box, a blast-pipe with a tangential passage to the wind-box, and an inclined deflecting-plate located in the bottom of the wind-box, substantially as set forth.

2. A sand-receptacle located on the side of the blast-pipe of a Bessemer converter, in combination with a passage connecting the sand-receptacle with the blast-pipe at some point between the converter-trunnions and the wind-box, a controllable valve located between the sand-receptacle and the blast-pipe, and an opening for introducing the sand, provided with a tightly-fitting lid or cover, substantially as set forth.

3. The combination of a sand-receptacle located on the side of a Bessemer converter, a controllable valve located in the outlet of the aforesaid sand-receptacle, a passage connecting the aforesaid sand-receptacle with the blast-pipe of the converter at some point between the trunnion and the wind-box, a blast-pipe entering the wind-box in a tangential direction, and a deflecting-plate located in the bottom of the wind-box, substantially as specified and set forth.

387,953. MACHINE FOR MAKING AND PRINTING TUBES OR SHUCKS FOR PAPER BOXES. George M. Griswold, New Haven, Conn. Filed Aug. 3, 1883. Serial No. 203,914. (No model.)



Claim.—1. In a paper-box machine, the combination, with folding and gumming mechanism, substantially as described, to fold the edges of a stock-strip over upon its upper face and to gum one of its edges which are overlapped, of a vertically-reciprocating type-bed car-

rings located below the strip in position for printing the folded and gummed end thereof, whereby the type is isolated from the gum, a movable cutter located outside of the said carriage and below the strip, inking apparatus located below the strip, and a platen and a stationary cutter located above the strip, substantially as set forth.

2. In a paper-box machine, the combination, with folding and gumming mechanism, substantially as described, to fold the edges of a stock-strip over upon its upper face and to gum one of its edges which are overlapped, of a vertically-reciprocating type-bed carriage located below the strip in position for printing the lower face of the folded and gummed end thereof, whereby the type is isolated from the gum, a platen located above the strip and over the said bed, a vertically-reciprocating-cutter located below the strip and outside of the said carriage which intermittently lifts it, a stationary knife located above the strip and outside of the platen and co-operating with the said movable knife, and means, substantially as described, located above the strip for depressing the cutter to let the strip pass over it, substantially as set forth.

3. In a paper-box machine, the combination, with folding and gumming mechanism, substantially as described, to fold the edges of a stock-strip over upon its upper face and to gum one of its edges which are overlapped, of a vertically-reciprocating type-bed carriage located below the strip in position for printing the lower face of the folded and gummed end thereof, whereby the type is isolated from the gum, a platen located above the strip and over the said bed, a vertically-reciprocated frictionally-supported cutter located below the strip, a stationary cutter located above the strip and outside of the platen, frames connected with the movable cutter, and cams located above the strip and engaging with the said frames to depress the movable cutter to allow the printed strip to pass over it, substantially as set forth.

387,954. PORTABLE COOLING APPARATUS FOR HOUSES. Ramsom F. Hounsom, Boston, Mass. Filed Feb. 20, 1888. Serial No. 265,737. (No model.)



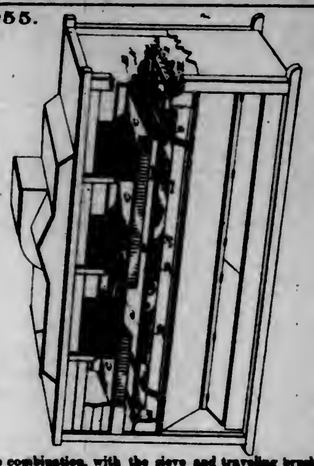
Claim.—1. An air-cooling apparatus adapted to be located in an upper plane of a room or apartment, and consisting of an outer inclosing shell or casing provided with an ice-chamber in its upper interior and a cold air and water chamber in its lower interior, and having perforations opening into the ice-chamber, and also perforations opening into the cold-air chamber, and water-tubes communicating with the ice-chamber and extending into the cold-air chamber, whereby the heated and impure air of the apartment passes into contact with the ice and cold surfaces of said tubes and is cooled and purified thereby.

2. In an air-cooling apparatus, the combination, with an outer inclosing perforated shell, of a perforated transverse partition forming an ice-compartment and a cold-air chamber within the shell, a nest of cold-water tubes communicating with the ice-chamber and with each other and depending from said partition into the cold-air chamber, and a main discharge-tube, which receives from said nest of tubes the water from the melting ice and discharges it into any suitable receptacle.

387,955. MIDDLINGS-PURIFIER. James Bentable, Hornby's Mills, Ontario, Canada. Filed Sept. 2, 1886. Serial No. 212,497. (No model.)

Claim.—1. The combination of the sieve, the traveling brush-ways constructed in relatively-movable sections or parts for holding said brush in contact with said sieve, and means for adjusting portions of said ways, whereby the brush may be allowed to fall out of contact with a portion of said cloth and allow it to become obstructed, substantially as set forth.

387,955.

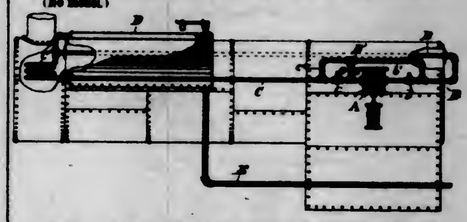


2. The combination, with the sieve and traveling brush, of the ways A, provided with grooves *a*, and hinged gates D, substantially as and for the purpose specified.

3. The combination, with the sieve and traveling brush, of the pivoted knocker G, having its tail end projected above the plane of the head of the brush, substantially as and for the purpose specified.

4. The combination, with the sieve and ways A, of the cross-bar O, the forked arm N, secured thereto, the knocker G, pivoted between the forks of said arm, and the traveling brush, all substantially as shown and described, and for the purpose specified.

387,956. RAILWAY-CAR HEATER. Joseph B. Lamson and Joseph Young, Oakland, Cal. Filed July 6, 1887. Serial No. 243,403. (No model.)



Claim.—1. In a railway-car heater, a three-way valve to the spindle of which is attached a wing or vane, in combination with pipes *b'* and *c'*, which lead into and are connected, respectively, with the pipes B and C, and the pipe S, connecting the inlet of the three-way valve with the outlet of the compressor, said three-way valve being located at the junction of the pipes *b' c'* S, and being suitably connected to the three pipes to receive air from the compressor and convey it into pipes B C, according to the position of the wing or vane, substantially as described.

2. In a railway-car heater, the compressor A, actuated by steam from the locomotive, the pipes B and C, for conducting air from the compressor, and the pipes *b', c'*, and S, connecting the pipes B and C to the compressor, in combination with a three-way valve, to the spindle of which is attached a wing or vane, located at the junction of the pipes *b' c'* S, substantially as described.

3. In a railway-car heater, an air-compressor actuated by the locomotive to which it is attached, having pipes C B, for conveying air into and through the smoke-box and steam-space of the boiler, and a discharge-pipe, E, suitably connected to the pipes B C to receive the heated air and convey it to the train, in combination with a three-way valve to the spindle of which is attached a wing or vane, and the pipes *b' c'*, which connect the three-way valve, respectively, with the pipes B C, the pipe S, connecting the discharge of the compressor with the inlet of the three-way valve, the three-way valve being located at the junction of the pipes *b', c'*, and S, and suitably connected to the three pipes for conveying air from the compressor through the three-way valve and pipes *b' c'* into pipe B or pipe C, substantially as described.

4. In a railway-car heater, a receiver provided with a suitable discharge-pipe, a pipe or coil of pipes located in the smoke-box, connected to the receiver, and suitably connecting the coil with the compressor, of a pipe or coil of pipes located in and passing through the boiler and suitably connected to the compressor for conveying air from the compressor through the boiler to the receiver, in combination with a three-way valve to the spindle of which is attached a wing or vane, and the pipes *b' c'*, which connect the three-way valve, respectively, with the pipes B C, the pipe S, connecting the discharge of the compressor with the inlet of the three-way valve, the three-way valve being located at the junction of the pipes *b', c'*, and S, and suitably connected to the three pipes for conveying air from the compressor through the three-way valve to the pipes B and C, substantially as described.

5. In a railway-car heater, the combination of an air-compressor, a receiver having a suitable discharge-pipe, the smoke-box of a locomotive, pipes or coils of pipes located in and passing through the smoke-box, the boiler of a locomotive, and pipes or coils of pipes located in and passing through the boiler, the pipes and coils located in the smoke-box and boiler being suitably connected to the compressor for conveying air through the smoke-box and boiler to the receiver, in combination with a three-way valve to the spindle of which is attached a wing or vane, and the pipes *b' c'*, which connect the three-way valve, respectively, with the pipes B C, the pipe S, connecting the discharge of the compressor with the inlet of the three-way valve, the three-way valve being located at the junction of the pipes *b', c'*, and S, and suitably connected to the three pipes for conveying air from the compressor through the three-way valve to the pipes B C, and a stop cock or valve located on the pipe B between pipe *b'* and the compressor, and another stop cock or valve located on pipe C between its connection with pipe *c'* and the compressor, substantially as described.

387,957. APPARATUS FOR FACILITATING THE READING OF GEOGRAPHICAL GLOBES. Pierre René Meunier and Claude Durand, Lyons, France. Filed Oct. 24, 1887. Serial No. 252,372. (No model.) Patented in France Apr. 7, 1887, No. 182,672, and in Belgium Apr. 7, 1887, No. 77,698.



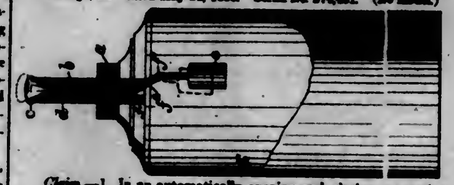
Claim.—The combination, with a geographical or school globe, of the graduated arc G, pivoted at points in the prolonged axis of the globe, and provided with an index-slide, M, and a pointer, E, and the graduated circle H, fixed with respect to and concentric with the axis of the globe, said pointer E being adapted to move over said ring H, substantially as set forth.

387,958. POCKET FOR GARMENT-STAYS. Louis Mendelowitz, New York, N. Y. Filed Apr. 7, 1888. Serial No. 269,973. (No model.)



Claim.—A pocket for removable stays, consisting of an outer textile tape having one side surfaced with cement, a paper strip cemented on one side along said tape, and an inner textile tape cemented at its longitudinal edges to the edges of the outer tape, leaving an unobstructed longitudinal opening between the paper strip and the inner tape to receive a removable stay, with the cemented edges of said textile tapes projecting laterally for sewing the pocket to a garment, substantially as described.

387,959. AUTOMATICALLY-CLOSING CAN. George A. Poole, Chicago, Ill. Filed May 21, 1888. Serial No. 274,661. (No model.)



Claim.—1. In an automatically opening and closing can or bottle, a tube, in combination with a cork and a weight within the can, which are united by a rod having an inclined part or parts, *f'*, to operate upon the end of said tube, substantially as specified.

2. In an automatically opening and closing can, a tube, in combination with a cork and a weight within the can, arranged eccentrically to the axis of the tube, and connected to the cork by a rod having an inclined part, *f'*, to operate upon the end of the tube, substantially as specified.

387,960. AUTOMATICALLY-CLOSING CAN. George A. Poole, Chicago, Ill. Filed June 30, 1888. Serial No. 278,060. (No model.)



Claim.—1. In an automatically opening and closing can or bottle, a tube, in combination with a cork and a weight within the can, which are united by a chain or like flexible connection, substantially as specified.

2. In an automatically opening and closing can or bottle, a tube, in combination with a cork and weight within the can, which are united by a chain or like flexible connection, and means whereby the contents of the vessel may be discharged through said tube, substantially as specified.

387,961. RETURN-VENT PROTECTOR FOR PLUMBERS' TRAPS. William B. Ryan, Boston, Mass. Filed Feb. 20, 1887. Serial No. 228,260. (No model.)



Claim.—1. In a plumber's trap, the combination, with the return vent-pipe, of a buoyant ball placed within a cage beneath the open mouth of the vent-pipe and adapted to close the same when the outlet-pipe becomes obstructed and the water rises within the trap, substantially as set forth.

2. In a plumber's trap, the combination, with the vent-pipe D and the screw-cap C, through which it passes, of the cage G, depending from the under side of the cap C, and the buoyant ball *b*, inclosed within said cage and supported thereby beneath the open mouth of the vent-pipe, substantially in the manner and for the purpose described.

3. The combination, with a plumber's trap provided with a casing or receptacle, B, connected therewith, of the screw-cap C, fitting within the top of the casing B and having the cage G secured to and depending from its under side, the vent-pipe D, passing through the cap C, and the ball *b*, inclosed within the cage G and supported thereby beneath the open mouth of the vent-pipe, substantially as and for the purpose set forth.

387,962. CLEARING ATTACHMENT FOR PLOWS. Melvin R. Butler, Rockland, Pa. Filed Feb. 3, 1888. Serial No. 262,940. (No model.)

Claim.—1. In a plow attachment, the combination of the standard having a forwardly-extending arm provided with fingers, the lever pivoted to the standard having a wrist-pin, the wheel having a cam-groove in which the wrist-pin works to vibrate the lever, and a cutter-bar suspended from the lever, having knives working against the fingers, substantially as described.

2. The combination, with the plow and beam, of the standard

387,962.



having fingers, the lever pivoted to the standard having a wrist-pin, a cutter-bar suspended on the lever, having knives working over the fingers, and a wheel journaled to the standard, having a cam-groove in which the wrist-pin works to vibrate the lever, substantially as described.

3. In a plow attachment, the combination of the standard having a forwardly-extending arm provided with fingers and formed with a cutter-recess, the lever pivoted to the standard having a wrist-pin, the wheel having a cam-groove in which the wrist-pin works to vibrate the lever, a cutter-bar suspended from the lever, having knives, and the retaining-plate, substantially as described.

4. In a plow attachment, the combination of the standard having a forwardly-extending arm provided with fingers and formed with a cutter-recess, the lever pivoted to the standard, having a wrist-pin, the wheel having a cam-groove in which the wrist-pin works to vibrate the lever, a cutter-bar suspended from the lever, having knives, the bearing-plate, and the retaining-plate, substantially as described.

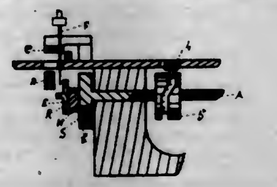
5. The combination of the standard having a socket and fingers a cutter-bar having knives, a lever on which the cutter-bar is suspended, having a collar occupying the socket, a pivot-pin by which the lever is hinged to the standard, and a wheel, by which the lever is operated to reciprocate the cutter-bar, substantially as described.

6. In a plow attachment, the combination of the standard, a sweep secured to the standard, and a carrying-wheel supporting the attachment and sweep at the proper height, substantially as described.

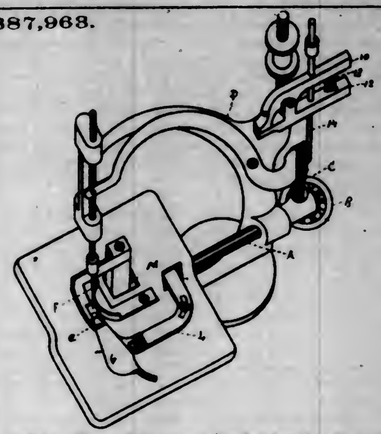
7. The combination of the standard having forwardly-extending arm formed with fingers, guard-extension secured to the upper finger, cutter-bar, lever, wheel, and mechanism by which the wheel is caused to operate the lever, substantially as described.

8. The combination of the standard having fingers, the cutter-bar, the lever pivoted to the standard, the link by which the cutter-bar is suspended on the lever, a wheel having a continuous serpentine groove, and a wrist-pin by which the lever is connected with the cam-groove, substantially as described.

387,963. **WELT-GUIDE FOR SEWING-MACHINES.** Rollin D. Tucker, Lynn, Mass. Filed June 24, 1885. Serial No. 169,631. (No model.)



387,968.



Claim.—In a sewing-machine, a welt or braid guide arranged to permit movement up to and back from the needle-hole, and a pivoted lever adapted to impart said movements to the guide, said lever being held adjustably upon its pivot-pin, whereby it is adapted to regulate the amount of movement of the guide relatively to the movement of the feed-clamps, substantially as described.

387,964. **BELT OR ENDLESS APRON FOR ORE-CONCENTRATORS.** Isaac A. Woodbury, East Cambridge, Mass. Filed Mar. 9, 1887. Serial No. 230,215. (No model.)



Claim.—1. A belt or endless apron for ore-concentrators, having overflow-apertures through it the mouths or edges of which are elevated above the pulp-holding surface, substantially as hereinbefore described.

2. An endless apron or flexible traveling concentrating-surface with raised sides, having overflow-apertures the mouths or edges of which are above the surface and below the line of said raised sides, substantially as hereinbefore described.

3. In a wet-ore concentrator, a belt or traveling concentrating-surface with dividing strips or partitions and overflow-apertures through said partitions, substantially as hereinbefore described.

4. A belt or traveling concentrating-surface for ore-concentrators, having raised sides, intermediate dividing strips or partitions, and overflow-apertures, substantially as hereinbefore described, for operation as set forth.

5. A belt or endless traveling concentrating-surface composed of independent compartments with overflow-apertures adapted to discharge the water or fluid matter from each compartment through their bottoms and independently of the other compartments forming the said concentrating-surface.

387,965. **POCKET-BOOK CLASP.** Simon Zeh, New York, N. Y. Filed June 7, 1888. Serial No. 276,382. (No model.)



Claim.—The combination, in a clasp for pocket-books and similar articles, of the base-plate stamped from sheet metal integral with the stud and the radial spring, and slitted on converging lines at each side of the spring to form radial spurs located respectively between the edges of the spring and the outer edges of the base-plate, said spurs having their inner edges parallel with the edges of the spring and extending from the point of junction of the spring with the plate about the center of the latter, with a cap-plate pivoted to the base-plate and having a tail-piece to act on the spring, substantially as described.

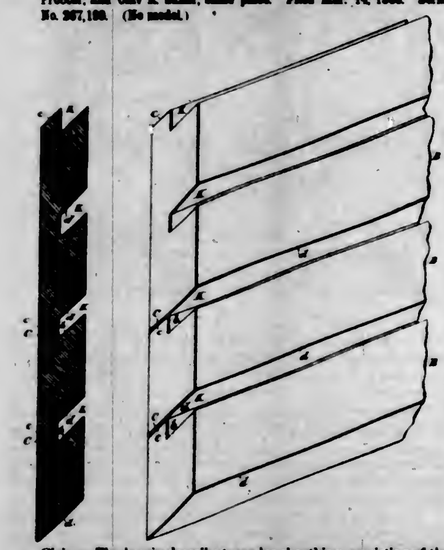
387,966. **COMBINED GAGE AND SQUARE.** Robert K. Benwell, Hamlin, Conn., assignor of one-half to George P. Hill, same place. Filed Apr. 12, 1888. Serial No. 270,658. (No model.)



Claim.—1. As an improved article of manufacture, the device herein set forth, consisting of a square having a T-headed flange provided at intervals on opposite sides of its center with jogs *c c*, the arms A and member B, a mortise-opening, F, the opening D, having jogs *d d*, and the miter-opening E, having walls of different angularity, substantially as described.

2. The combination, in a device for laying off lumber, of a square having a T-headed flange, said flange being provided at intervals on opposite sides of its center with jogs *c c*, substantially as shown.

387,967. **COMBINED WOODEN SHEATHING AND LATH.** Theodore H. Brown, Viroqua, Wis., assignor to Henry C. Forsyth, H. P. Proctor, and Clay B. Sinner, same place. Filed Mar. 14, 1888. Serial No. 267,199. (No model.)



Claim.—The herein-described wooden sheathing, consisting of the lathe B, grooved at a uniform angle on one edge and on the edge proper, and likewise cut or beveled on the rear edge at the same angle, whereby the rabbets K are formed when the lathe are fitted together, substantially as and for the purposes set forth.

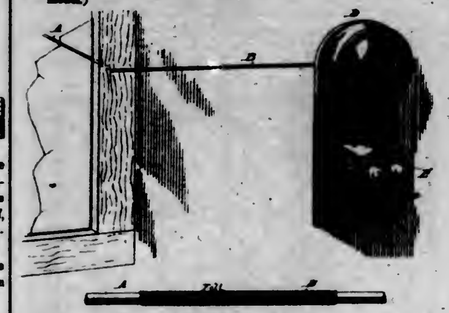
387,968. **ROLLER-BLOTTER.** Moses B. Campbell and James Shaw, Renton, Wn., assignors to the Shaw Manufacturing Company, same place. Filed Apr. 17, 1888. Serial No. 270,982. (No model.)

Claim.—1. The combination, with a suitable support, of springs secured at one end to said support, and a frame carrying a roller blotting-pad secured to the other end of said springs, substantially as described.

2. The combination, with hollow blocks, of spiral springs secured therein at one end, and a frame carrying a roller blotting-pad secured to the other end of said springs, substantially as described.



387,969. **INSULATION FOR MECHANICAL-TELEPHONE CONDUCTORS.** Frances R. Clark, New York, N. Y., assignor, by direct and mesne assignments, of one-fourth to Charles A. Hess and William J. Townsend, same place. Filed June 22, 1888. Serial No. 277,300. (No model.)

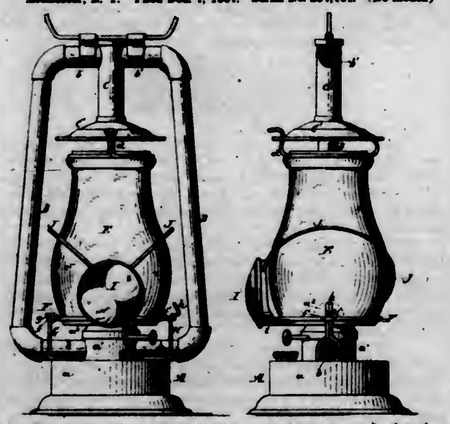


Claim.—1. In a mechanical or acoustic telephone conductor, the combination of a covering of felt upon the conductor at points where the same comes in contact with any substance with said conductor, substantially as described and shown.

2. In a mechanical or acoustic telephone conductor, the combination, with the conductor, of felt interposed between the conductor and any substance with which such conductor may come in contact, substantially as shown and described.

3. In a mechanical or acoustic telephone conductor, the combination, with the conductor, of a support or guard covered with felt, substantially as described and shown.

387,970. **TUBULAR LANTERN.** Frederick Dietz, New York, N. Y., assignor, by direct and mesne assignments, to The R. E. Dietz Company, same place, and the Steam Gauge and Lantern Company, Rochester, N. Y. Filed Dec. 7, 1887. Serial No. 257,161. (No model.)



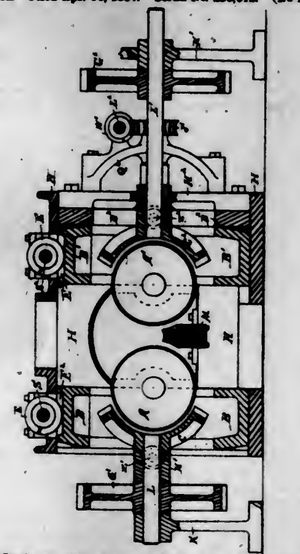
Claim.—1. The combination, with a tubular lantern, of a detachable globe-supporting plate having its margin provided with an upwardly-projecting frame and a lens secured in said frame, substantially as set forth.

2. The combination, with a tubular lantern, of a detachable globe-supporting plate having its margin provided with an upwardly-projecting frame and a lens secured in said frame, and fastenings secured to the base of the lantern and engaging with the detachable plate,

whereby the latter and its lens are held against displacement in the frame, substantially as set forth.

3. The combination, with the globe-supporting plate, of a lens-frame secured to said plate, a lens seated in said frame, and guard wires secured to the lens-frame and to the globe-supporting plate, substantially as set forth.

387,971. MACHINE FOR STRAIGHTENING, GRINDING, AND POLISHING METAL BARS. JOHN FARMER, Glasgow, County of Lanark, Scotland. Filed Apr. 30, 1887. Serial No. 236,612. (No model.)



Claim.—1. In the machine shown and described for treating metal bars, as specified, the combination of the feed-rolls A A', rolls R R', straightening-rolls O O', grinding and polishing wheels D D', table T, anvil-bar M, and index-pointer a^2, having the adjustable rods a a', substantially as and for the purpose set forth.

2. In the machine shown and described for treating metal bars, as specified, the combination of the feed-rolls A A', rolls R R', straightening-rolls O O', grinding and polishing wheels D D', table T, and anvil-bar M, substantially as and for the purpose set forth.

387,972. THILL-COUPLING. WILLIAM B. POLSON, Salt Lake City, Utah, assignor of one-half to William H. Folsom, same place. Filed Mar. 30, 1888. Serial No. 268,983. (No model.)



Claim.—1. The combination, in a thill-coupling, of a clip having ears provided with internally-threaded perforations and adapted to receive between them the shaft-loop, a bearing pin or bolt, consisting of two portions adapted to engage each other, and sleeves embracing the ends of said bolt or pin and engaging the threads in the said ears, substantially as set forth.

2. The combination, in a thill-coupling, of a clip provided with parallel ears having perforations internally threaded and adapted to receive between them the shaft-loop, a bearing pin or bolt having a central depressed portion and bearing-shoulder c, and sleeves embracing the ends of said pin or bolt and engaging the threads of the said ears, substantially as set forth.

3. The combination, in a thill-coupling, of a clip provided with parallel ears having perforations internally threaded, a bearing pin or bolt, sleeves embracing the ends of said bolt and engaging the threads in the said ears, and nuts embracing said sleeves to bear against said ears, substantially as set forth.

387,973. WATCH-BALANCE. CHARLES K. GILES, Chicago, Ill. Filed Dec. 2, 1887. Serial No. 256,632. (No model.)

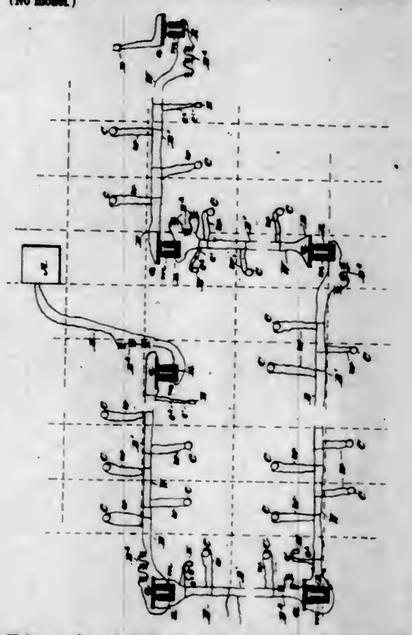
Claim.—1. In a balance-wheel, the combination, with the main cross-bar and the divided rim attached thereto, of the S-shaped cross-bar secured centrally to the main cross-bar and having its ends attached to the arms of the rim, substantially as and for the purposes specified.

387,978.



2. In a balance-wheel, the combination, with the main cross-bar A, and the arms B B', attached thereto and each composed of a single piece, of the S-shaped cross-bar C, attached centrally to the cross-bar A and consisting of two symmetrical halves, each composed of a member, C', and a member, C^2, the latter being of a material expansive to a degree equal to or less than the material of the former, substantially as and for the purposes specified.

387,974. ELECTRIC CLOCK-SYNCHRONIZING SYSTEM. CHARLES J. HENAHEE, Philadelphia, Pa., assignor to the Philadelphia Time Telegraph Company, same place. Filed Jan. 10, 1887. Serial No. 223,860. (No model.)



Claim.—1. In a clock-synchronizing system, the combination of the regulator, the main sectional circuit, the relays connected to the respective sections of said circuit, the local batteries, the synchronizers, and the clocks, together with the electric bells connected to said sections and the switches, the parts being combined, constructed, and adapted to operate substantially as and for the purpose set forth.

2. In a clock-synchronizing system, the combination of the regulator, the main circuit composed of a series of sections, the relays connected to said sections, the local batteries, the synchronizing devices, and the clocks, together with the recorder at the end of the main circuit and the electric bells connected to said sections and provided with switches, substantially as and for the purpose set forth.

387,975. LINE OR CORD FOR SUSPENDING PICTURES, &c. GEORGE HOOKHAM, Birmingham, County of Warwick, England, assignor of one-half to William Henry Tonks, same place. Filed Nov. 2, 1887. Serial No. 254,193. (No model.) Patented in England June 9, 1886, No. 7,933, and Sept. 16, 1886, No. 10,982.

Brief.—The object of the invention is to produce an improved cord which shall possess the qualities of strength, durability, and pliability, and which shall be water-proof.

387,975.



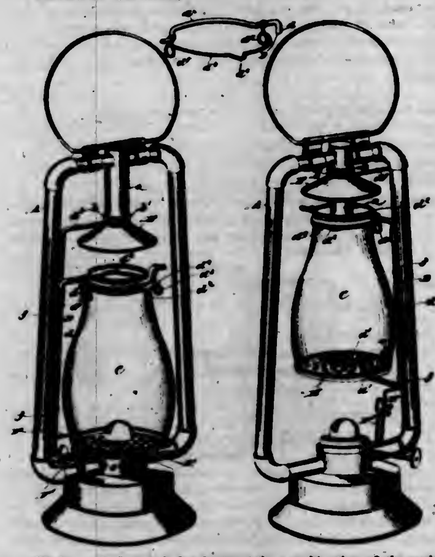
Claim.—1. A line or cord for suspending pictures and other articles, consisting of a core of waterproofed vegetable fiber having wound thereon a helical wire covering, substantially as described.

2. A line or cord for suspending pictures and other articles, consisting of a solid core of vegetable fiber, a waterproofed strip of woven fabric covering said core, and a helical coil of wire wound upon said strip, substantially as described.

3. A line or cord for suspending pictures and other articles, consisting of a core of waterproofed vegetable fiber and a helical coil of wire convex in cross-section wound upon said core, substantially as described.

4. A line or cord for suspending pictures and other articles, consisting of a core of waterproofed vegetable fiber and a helical coil of wire wound upon said core, the convolutions of which are slightly separated, substantially as described.

387,976. LANTERN. WILBUR W. HOUGHTON, Newport, Vt., assignor to William C. Whitney, same place. Filed Nov. 15, 1887. Serial No. 255,243. (No model.)



Claim.—1. In a tubular lantern, the combination of the main frame and the sliding globe-frame capable of vertical and lateral movement and composed of a side wire extending along the sides of the main frame and having each end turned at an angle and bent into semicircular form, a globe-cost secured to the lower end, and a semicircular piece of spring-wire secured to the other end, substantially as and for the purpose described.

2. The combination of the main frame and a sliding globe-frame composed of the side wire having its ends of semicircular form bent at an angle, a globe-cost secured to the lower end, and a semicircular piece of spring metal hinged to the upper end and forming with the upper end a clamping device, said semicircular piece of spring metal being adapted to be swung up and down to release or clasp the globe, substantially as described.

3. The combination of the main frame and a sliding globe-frame provided at its lower end with a globe-cost and at its upper end with a clamping device composed of a portion of the sliding globe-frame bent into semicircular form and a semicircular piece of spring metal hinged to said semicircular portion of the sliding globe-frame and adapted to be swung up and down to release or clasp the globe, substantially as described.

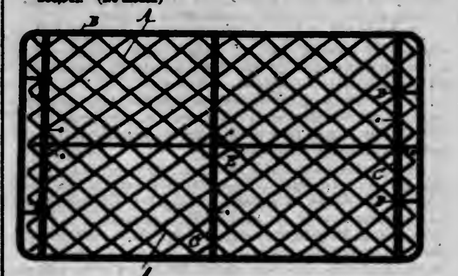
4. In a tubular lantern, the combination of the main frame, the sliding globe-frame capable of lateral and vertical movement, and a bracket and spring-catch composed of a single piece of wire and adapted to hold the globe in an elevated or depressed position, substantially as described.

387,977. MARBLEIZED WOOD. WILLIAM S. BURHANS, Bristol, Conn., assignor to The E. Ingraham Company, same place. Filed Apr. 6, 1888. Serial No. 269,897. (No specimens.)



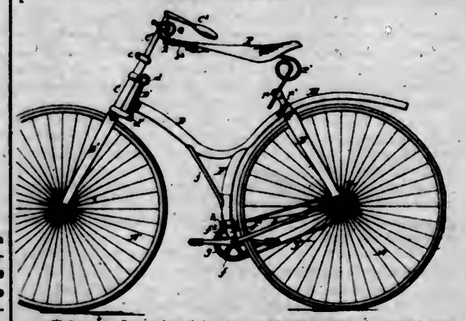
Claim.—Marbled wood consisting of a form or base of wood and a coating composed of a body of japan hardened by heat after its application to the wood, a superimposed coat of marbling-colors which are not blended with the said coating of japan, and an exterior coat of transparent varnish.

387,978. MAT. EDWIN R. LAMBE, Chicago, Ill., assignor of two-thirds to John Roth, same place. Filed Mar. 24, 1888. Serial No. 268,241. (No model.)



Claim.—A strip of crimped metal doubled upon itself, so as to form the mesh of a mat, in combination with retaining-rods, frame, and the strengthening-bar E, substantially as described herein.

387,979. VELOCIPEDE. BENJ. G. LAFFIN, Friendship, N. Y., assignor to the Pope Manufacturing Company, Portland, Me. Filed Feb. 3, 1888. Serial No. 263,247. (No model.)



Claim.—1. In a velocipede, the combination, with the main frame, a rear driving-wheel, and a front steering-wheel, of a bracket or support secured to the main frame, a bar or frame adjustably secured to said bracket and supporting the driving-gear, and a brace or braces pivoted with their rear ends to the frame of the driving-wheel, near the center of the latter, and secured with their front ends to said adjustable supporting-bar, the latter and its supporting-bracket being curved concentric with the pivot of said brace or braces, substantially as set forth.

2. The combination, with the front steering-wheel, the rear driving-wheel, and the reach D, provided with a backward extension, E, forming a mud-guard for the driving-wheel, of a depending tube or bracket, F, secured with its upper end to the reach, and a supporting-bar, f, adjustably secured to said depending tube and supporting the driving-gear, substantially as set forth.

3. The combination, with the front steering-wheel, the rear driving-wheel, and the reach, of a depending bracket, F, secured to the reach, a bar arranged in said bracket and supporting the crank-shaft and provided with a series of notches or recesses, and a transverse bolt attached to the depending bracket and engaging in one of said notches or recesses, substantially as set forth.

4. In a velocipede, the combination, with a journal bearing or box and its supporting-frame, of a screw-bolt held against longitudinal movement in one of said parts, and a screw-threaded lug or projection arranged on the other part and made laterally adjustable on the screw-bolt by turning the latter, substantially as set forth.

5. In a velocipede, the combination, with the fork or frame and a screw-bolt held against longitudinal movement in the fork, of a bearing-box provided with a lug having a threaded opening engaging with said screw-bolt, and means whereby the screw-bolt is held against turning after being adjusted, substantially as set forth.

6. In a velocipede, the combination, with the fork provided with perforated lugs *f f*, and a split lug, *l*, having a clamping-bolt, *m'*, of a bearing-box provided with lugs *k k*, and having screw-threaded openings, a screw-bolt, *m*, passing through the lugs of the fork and bearing-box and provided with an annular groove in which the clamping-bolt *m'* engages, substantially as set forth.

7. The combination, with the fork or frame and a screw-bolt held against lengthwise movement in said fork, of a bearing-box provided with a screw-threaded lug or lugs traversing said screw-bolt and arranged eccentrically on one side of the center of the bearing-box, whereby the position of the bearing-box on the bolt is changed upon reversing the box in the fork, substantially as set forth.

8. In a velocipede, the combination, with the two jointed or pivoted parts of the main frame, of a flexible saddle attached with one end to the front part of the main frame and with its opposite end to the rear part thereof, substantially as set forth.

9. In a velocipede, the combination, with the jointed or pivoted front and rear wheel-frames, of springs attached, respectively, to said front and rear frames, and a saddle suspended at both ends from said springs, substantially as set forth.

10. In a velocipede, the combination, with the pivoted or jointed front and rear wheel-frames, of a saddle attached with its ends to said front and rear frames, respectively, and capable of independent vertical adjustment at either end, substantially as set forth.

11. In a velocipede, the combination, with the two jointed or pivoted parts of the main frame, of a saddle attached at its rear end to the rear part of the main frame and at its front end to the front part of the main frame by a joint or coupling capable of adjustment toward and from the axial line of the pivot connecting the two parts of the main frame, substantially as set forth.

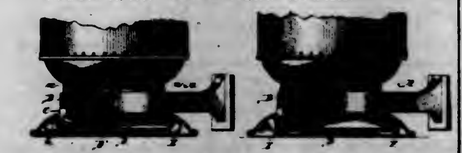
12. The combination, with the two jointed or pivoted parts of the main frame, of a saddle attached at its rear end to the rear part of said main frame, and a scroll or volute spring connecting the opposite end of the saddle with the front part of the main frame, substantially as set forth.

13. The combination, with the jointed or pivoted front and rear frames of a velocipede and a saddle, of a coiled spring supporting the rear end of the saddle and having its lower branches adjustably secured to the rear part of the main frame, and a volute or coiled spring supporting the front end of the saddle and adjustably secured to the front part of the main frame, substantially as set forth.

14. The combination, with the main frame, the inclined steering-head, and handle-bar post made vertically adjustable in the steering-head, of a saddle provided at its rear end with a coiled spring having inclined branches arranged parallel with the handle-bar post and adjustably secured to the main frame, a volute or coiled spring adjustably secured to the handle-bar post, and a universal joint or coupling connecting the front end of the saddle with said volute spring, substantially as set forth.

15. The combination, with the main frame, the steering-head, and the adjustable handle-bar post, of a saddle provided at its rear end with a coiled spring adjustably secured to the main frame and at its front end with a strap, a volute spring adjustably secured in a clamp secured to the handle-bar post, a coupling connecting said volute spring with the strap at the front end of the saddle and composed of a frame carrying a vertical bolt to which the branches of the volute spring are attached, and a horizontal bolt to which the strap of the saddle is attached, substantially as set forth.

387,980. ROTATABLE SIGNAL-LANTERN. Gustave Madsen, Chicago, Ill., assignor to the Adams & Westlake Company, same place. Filed Feb. 18, 1888. Serial No. 264,695. (No model.)



Claim.—1. In a rotatable signal-lantern, the combination of a ring supporting the lantern and having recesses in its edge, a yielding cross-handle secured in the bottom of the lantern and having at one end a catch engaging in said recesses in the supporting-ring, and a spring tending to hold said catch in engagement with said recesses.

2. In a rotatable signal-lantern, the combination of a ring supporting the lantern and having recesses in its edge, a yielding cross-handle at one end, a catch engaging in said recesses in the supporting-ring, a spring tending to hold said catch in engagement with said recesses, and a fixed cross-handle extending beneath the yielding cross-handle.

387,981. ROTATABLE SIGNAL-LANTERN. Gustave Madsen, Chicago, Ill., assignor to the Adams & Westlake Company, same place. Filed Feb. 18, 1888. Serial No. 264,696. (No model.)



Claim.—1. In a rotatable signal-lantern, the combination of a ring supporting the lantern and having a series of recesses in its edge, a cross-handle rigidly secured in the bottom of the lantern, a vertically-sliding catch, and a spiral spring surrounding the catch and holding it in engagement with said recesses in the supporting-ring, substantially as set forth.

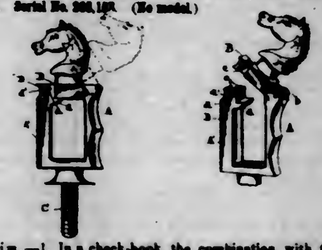
2. In a signal-lantern, the combination of a ring supporting the lantern and having a series of recesses in its upper edge, a cross-handle rigidly secured in the bottom of the lantern, a vertically-sliding catch having a downwardly-projecting thumb-piece, and a spring tending to keep said sliding catch in engagement with said recesses in the supporting-ring, substantially as described.

387,982. CAN FOR LIQUID GLUE. Charles M. Martin, Gloucester, Mass., assignor to the Le Page's Liquid Glue and Cement Company, same place, and Portland, Me. Filed Dec. 8, 1887. Serial No. 257,260. (No model.)



Claim.—The combination, in a can for adhesive material, with the removable sheet-metal screw-cap, of a flat strip of sheet metal bent to form a bow and soldered at its ends to the outside of the cap, a separate metallic handle passing vertically through a hole in the cap and in contact with the bow and soldered to the cap and to the bow, and a brush at its lower end, substantially as set forth.

387,983. CHECK-HOOK. James S. Matherette, Sherman, Tex., assignor to Edward H. Winchester, Dorchester, Wis. Filed Mar. 22, 1888. Serial No. 268,169. (No model.)



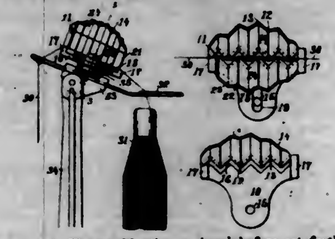
Claim.—1. In a check-hook, the combination, with the frame having the lugs *a a* and the spring, of the cross-bar pivoted at one end and having side depressions near its other end to receive the said lugs, and having its end adapted to be engaged by the said spring, substantially as described.

2. The herein shown and described check-hook, composed of the U-shaped frame having a threaded stem projecting from its lower end, and having the lugs *a a* and *b b* extending from its vertical branches,

the spring D, and the cross-bar pivoted at one end between the lugs *b b*, and having side depressions near its other end to receive the lugs *a a*, and having its end adapted to be engaged by the spring D, and provided with the thumb-piece or horse-head E, substantially as specified.

387,984. THREAD-TENSION DEVICE. Arthur W. Matthews, Fall River, Mass., assignor of one-half to William H. Goldsmith, same place. Filed Apr. 13, 1887. Serial No. 234,561. (No model.)

Brief.—The object of the invention is to produce an improved device for imparting to the thread a certain degree of tension in order to prevent its too free delivery.



Claim.—1. The combination, as hereinbefore set forth, with a pair of corrugated presser-plates having capacity of relative adjustment and each formed with a flaring lip, the device for holding the plates in adjustment, the said plates disposed with the ribs or elevations of one opposite the depressions of the other plate, means for supporting said presser-plates in operative positions, substantially as described.

2. The combination, as hereinbefore set forth, with a frame provided with an upright corrugated presser-plate and formed with a transverse slot near the basal line of the presser-plate for the lint to fall through, of a frame provided with a similar upright corrugated presser-plate and mounted upon the said first frame and having capacity of adjustment thereon, and provided with the device for holding the movable plate in adjusted position, substantially as herein described.

3. The combination, with the swiveled thread-guide holder 33, provided with an arm 35, of the frame 10, formed with the perforation 15 and provided with the presser-plate 11, the frame 18, formed with slot 19 and provided with the presser-plate 21, the bolt 20, for holding the said frames in adjustment, substantially as and for the purpose herein described.

4. The combination, with the frame 10, provided with the corrugated presser-plate 11, of the frame 18, provided with the presser-plate 21 and having capacity of adjustment, and means for holding the same when adjusted, substantially as herein described.

5. The combination, with the frame 10, formed with the discharge-opening 16 and provided with the corrugated presser-plate 11, of the frame 18, provided with the corrugated presser-plate 21 and having capacity of adjustment and provided with the device for retaining it in adjustment, substantially as herein described.

6. The combination, with the frame 10, formed with the perforation 15 and provided with the presser-plate 11, of the frame 18, formed with the slot 19 and provided with the presser-plate 21, the set-screw 20, for holding the frames together, substantially as herein described.

387,985. CORN-HUSKER. Theodor H. Meseke, Elsbrara, Nebr. Filed Aug. 6, 1887. Serial No. 246,261. (No model.)

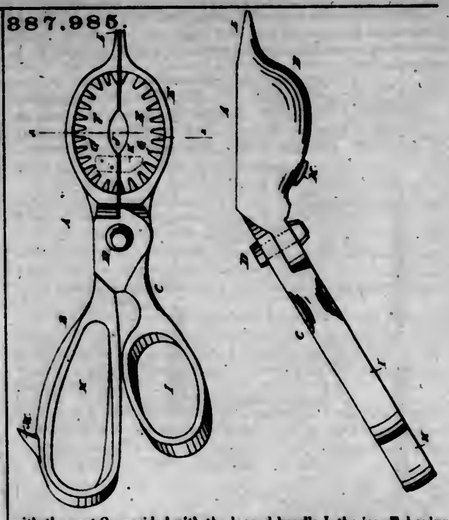
Claim.—1. A corn-husker consisting of parts B and C, pivoted together and provided with handles, and having the curved jaws E and F, which are constructed with inwardly-projecting teeth and cut away on the lower side, as shown, whereby when the said jaws are closed they form together a cup-like device having an aperture, J, as shown and described.

2. In a corn-husker, the part B, having the curved or hollow jaw E, provided with the teeth G and cut away at J, and the pointed prong L, in combination with the part C, having a similar jaw, F, provided with teeth G and cut away at J, the guide K, the pointed prong L, and the pivot D, substantially as shown and described.

3. In a corn-husker, the part B, provided with the looped handle H, the curved or hollow jaw E, cut away at J and having the teeth G, the pointed prong L, and the sharp-edged lug M, in combination



387,985.



with the part C, provided with the looped handle I, the jaw F, having teeth G and cut away at J, the pointed prong L, the guide K, and the pivot D, substantially as shown and described.

387,986. MOLD FOR CASTING TEETH OF DIAMOND SAWS. Willard F. Myer, New York, N. Y., assignor to David Tulloch, same place. Filed Feb. 18, 1888. Serial No. 264,691. (No model.)



Claim.—1. The combination, with the two sides of the mold, of the overhanging clamping-strips having apertures between them to admit the metal and the bolts for securing said clamping-strips together, substantially as set forth.

2. The combination, with the mold consisting of upper and lower sections, of the clamping-plates and bolts for removably holding together the sides of the lower section, said plates extending above the lower section to assist in holding the upper section, substantially as set forth.

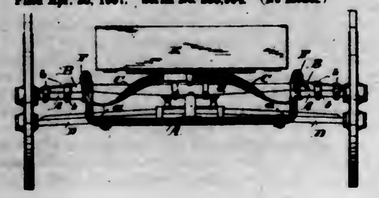
3. The combination, with the mold, of the inclined pins passing through the sides thereof for holding the diamonds, substantially as set forth.

4. The combination, with the mold, of the hollow screws passing through the sides thereof and the wires projecting from said screws to hold the diamonds, substantially as set forth.

5. The combination, with the mold, of the hollow screws with wires projecting therefrom, extending through the sides of the mold in an inclined position to hold the diamonds, substantially as set forth.

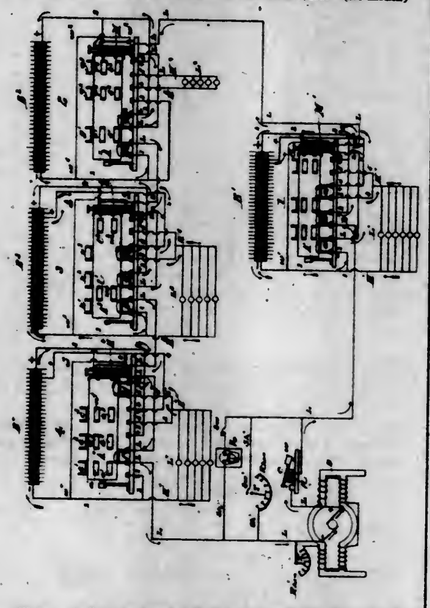
6. The combination, with the mold formed of parts divided vertically and horizontally, of lateral clamping-bolts and vertical clamping-bolts, such vertical clamping-bolts passing through the parts at their adjoining faces, whereby the vertical bolts are released by loosening the lateral bolts, substantially as set forth.

387,987. SIDE-BAR VEHICLE. Edwin D. Olin, Avondale, Ohio. Filed Apr. 25, 1887. Serial No. 235,994. (No model.)



Claim.—The combination of the boot rear axle, the rigid side bars clipped upon the rear axle and front bolster, the wagon-body, and the cross-springs connecting the body and side bars, substantially as shown and described.

387,988. APPARATUS FOR CHARGING AND DISCHARGING SECONDARY BATTERIES. Mathias Pfatteicher, Philadelphia, Pa., assignor of one-half to William T. Brown and William Kirk, Jr., both of same place. Filed Nov. 18, 1887. Serial No. 255,469. (No model.)



Claim.—1. In a system for charging and discharging secondary batteries, the combination of a charging-generator having leads running to two or more independent stations with circuit-controlling apparatus at each station under the control of an operator at the charging-station, said circuit-controlling apparatus consisting of rotatable cylinders having electrical contacts for cutting the batteries into the charging-circuit and additional contacts for cutting the lamps into the battery-circuit, substantially as described.

2. In a system for charging and discharging two or more secondary batteries, the combination of a charging-generator having mains leading to the batteries at outlying stations, with means at each station for cutting out the batteries in any desired order, and lamps or other translating devices in loop-circuits having connections for cutting them into the battery-circuits, substantially as described.

3. In an apparatus for charging and discharging secondary batteries, the combination of two or more switch-drums having electrical contacts arranged in a prearranged order, and means, as described, for rotating said drums together, substantially as described.

4. In an apparatus for charging and discharging secondary batteries, the comination of switch mechanism for cutting the battery into the charging-circuit with shunts for cutting out a portion of the battery during the process of charging, substantially as described.

5. In an apparatus for charging and discharging secondary batteries, the combination of two or more circuit-changing drums having circuit-making contacts for connecting the charging-generator or the lamps to the batteries at pleasure with electro-magnets or solenoids, one for each drum, said magnets or solenoids being in circuit with the charging-generator and adapted to control the rotation of the drums, substantially as described.

6. In an apparatus for charging and discharging secondary batteries, the combination of a charging-generator having two shunts about its poles, one containing a variable resistance and the other a voltmeter, with one or more secondary batteries located at outlying stations, each having a circuit-changing device adapted to cut out the charging-generator and to cut in the lamps on insertion of the proper resistance in the first-named shunt, substantially as described.

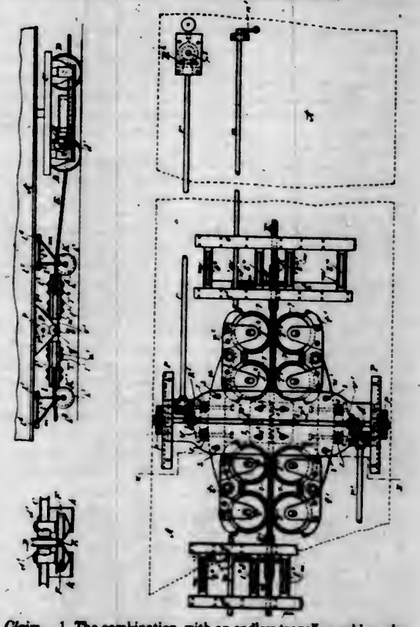
7. In an apparatus for charging and discharging secondary batteries, the combination of the following elements: a charging-generator having two normally-open shunts about its poles, leads or mains running to one or more outlying points having secondary batteries to be charged, lamps or other translating devices to be supplied with electricity, switch mechanism consisting of a rotatable cylinder or cylinders carrying contacts adapted to cut in the battery or batteries and lamps at will, and electro-magnets or solenoids located in the main circuit, substantially as described.

8. In an apparatus for charging and discharging secondary batteries, the combination of a charging-generator having mains leading to one or more outlying stations containing secondary batteries and lamps or other translating devices, with a switch mechanism at each station for cutting in the batteries or lamps at will, and a differential solenoid or electro-magnet having one differential branch in the charging-circuit and the other in a normally-closed shunt through the batteries, substantially as described.

9. A switch for controlling the relation of a charging-generator, a secondary battery, and a consumption-circuit, consisting of a series of contacts arranged on a variable surface, one set for connecting and disconnecting the charging-generator to the battery, another set for connecting and disconnecting lamps, and a third set for connecting both the charging-generator and the battery to the lamps or translating devices, substantially as described.

10. A switch for controlling the relation of a charging-generator, a secondary battery, and a consumption-circuit, consisting of movable contacts arranged to connect the secondary battery and the consumption-circuit in circuit with the charging-generator, with an additional set of contacts for cutting out part of the battery during the process of charging, substantially as described.

387,989. TRACTION DEVICE FOR CABLE RAILWAYS. John H. Pendleton, Brooklyn, assignor, by direct and mesne assignments, to the Rapid Transit Cable Company, New York, N. Y. Filed Aug. 6, 1883. Renewed June 13, 1888. Serial No. 276,992. (No model.)



Claim.—1. The combination, with an endless traveling cable and a gripping apparatus for the same upon the under portion of the car, of the wheel D upon a horizontal axis, the wheels F upon a vertical axis and having conical projections upon their under sides, and the frame d', connected with the car-truck, substantially as and for the purposes set forth.

2. In combination with the car and its trucks, a gripping apparatus upon the bottom of the car, the guide-plates k k, inclined upwardly at their ends and connected with the truck-frame and the guide-roller D above such guides k, and the frame d' for the same, connected with the truck-frame, substantially as set forth.

3. The wheel K, formed in two parts, each of which is provided with a supporting-shaft, in combination with tubular bearings for the shaft, the links for sustaining said tubular bearings, and mechanism, substantially as specified, for swinging the bearings to separate the two parts of the wheel or to bring the two parts of the wheel together and sustain the cable, substantially as set forth.

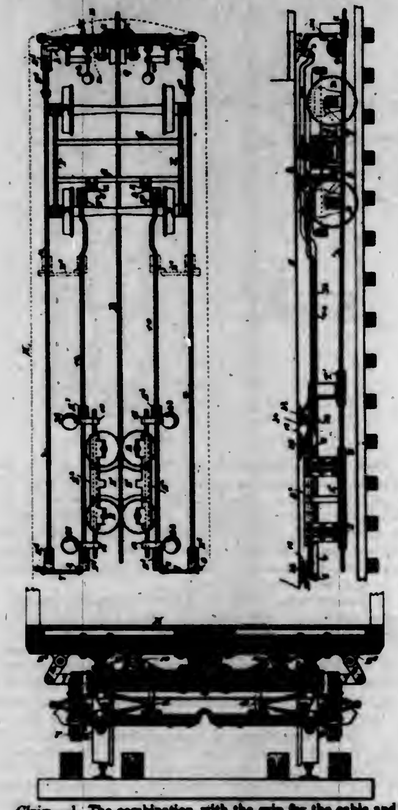
4. The combination, with the two parts of the wheel K and the shafts for the same, of the bearings J^2 J^2, supporting-links l l P P, the bearing-bars P P, the shafts P, the bronze m, and the links n^2 n^2 n^2, the shaft n, and crank n^2, substantially as specified.

5. The combination, with the gripping-blocks s s', of the screws f f', for actuating the same, the wheels p and p, the shaft P^1, the frames F, and plate F', and the gearing for giving motion to the respective parts, substantially as set forth.

6. The gripping-wheels in pairs and the respective yokes for the same adapted to bear upon the cylindrical portions of the wheel, the equalizers v v', connecting the respective pairs of yoke, the followers, and the springs between the followers and the equalizers, substantially as set forth.

7. The combination, with the gripping-blocks and the screws for actuating the same, of the clamping-wheels, the yokes and the equalizers for the same, the followers, and the springs between the followers and the equalizers, and mechanism, substantially as specified, for rotating the screws, substantially as set forth.

387,990. ATTACHMENT FOR CARS ON CABLE RAILWAYS. John H. Pendleton, Brooklyn, assignor, by direct and mesne assignments, to the Rapid Transit Cable Company, New York, N. Y. Filed Nov. 5, 1888. Renewed June 13, 1888. Serial No. 276,993. (No model.)



Claim.—1. The combination, with the grip for the cable and the truck-wheels for the car, of shafts supported in hanging brackets below the car-platform, cranks and connection for suspending the gripping devices and the frames for the same, and a crank and link resting at its end upon a portion of the truck that does not rise or fall, substantially as set forth.

2. The combination, with the car-truck and car, of shafts and hanging brackets beneath the car-platform for supporting the shafts, rollers for guiding the cable and a frame for supporting the same, cranks upon the shafts for supporting the frame and rollers, and crank-connections between the shafts and the cross-bearer or other part of the truck that does not rise or fall in relation to the truck, substantially as set forth.

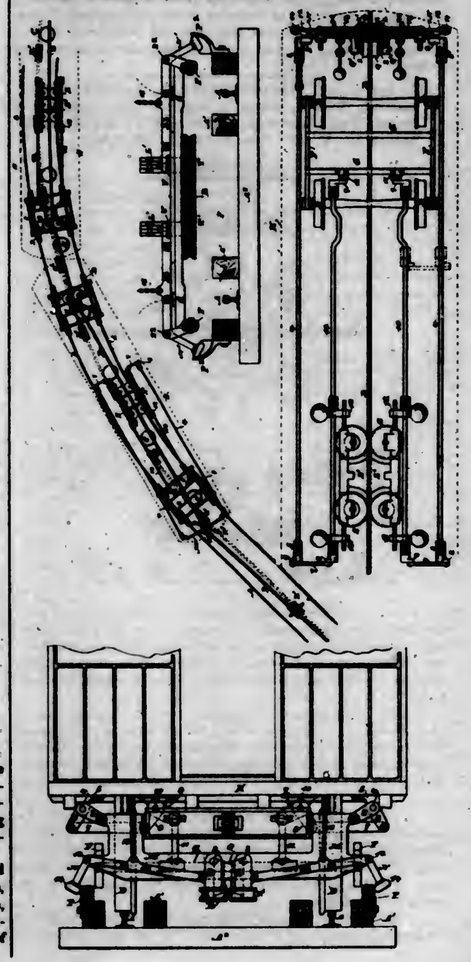
3. The combination, with a traction-cable, of guide-rollers for the same supported by the car, and a gripping device and cranks and shafts and hanging brackets beneath the car-platform, and a connection from one or more of the cranks to a portion of the truck that does not rise or fall, whereby the respective parts of the guide-roller frame and gripping devices are sustained at a definite distance from the truck regardless of the rise and fall of the car in consequence of varying loads upon the same, substantially as set forth.

4. The combination, with the gripping device, of the independent horizontal grooved guide-wheels T T' for supporting the cable and allowing it to move freely, substantially as set forth.

5. The combination, with the guide-wheels for the cable, of a frame for supporting such guide-wheels, mechanism for suspending the said frame and guide-wheels beneath the car, and a counterpoise tending to raise the said frame and guide-wheels, substantially as set forth.

6. The combination, with a traction-cable, of a grip for the same, a frame for supporting the grip mechanism for suspending the grip and its frame beneath the car at a uniform height in relation to the track, and a counterpoise tending to lift the frame and grip, substantially as set forth.

387,991. CABLE RAILWAY. John H. Pendleton, Brooklyn, assignor, by direct and mesne assignments, to the Rapid Transit Cable Company, New York, N. Y. Filed Nov. 5, 1888. Renewed June 13, 1888. Serial No. 276,991. (No model.)



Claim.—1. The combination, with a gripping device upon a car, of the guide-rollers K K′ at or near the end of the car, whereby the cable occupies nearly a straight line from end to end of the car and said guide-rollers also carry the cable in its proper relation to the stationary guide-rollers in passing around a curve, substantially as set forth.

2. The combination, with the traveling cable and the stationary guide-rollers for the same, of a grip upon the car, the guide-rollers K K′ near the end of the car, and the roller Q, adjacent to the guide-rollers and limiting the upward movement of the cable, substantially as set forth.

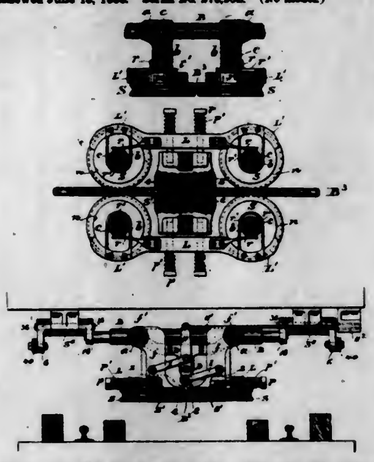
3. The combination, with the traveling cable and the stationary guide-rollers for the same, of a grip upon the car and the horizontal guide-rollers T T′ upon the truck of the car near the king-bolt of the same, for the purposes and substantially as set forth.

4. The combination, with the traveling cable, of guide-roller upon the truck, bearings for the axis of the same, levers for supporting the bearings, stationary cams upon the track, levers pivoted upon the truck and against which the stationary cams act, and links connecting the said levers with the bearings for the guide-rollers, substantially as set forth.

5. The combination, with the guide-rollers K, K′, and Q, of the cross-frame M, the stocks L, receiving the axles of the rollers K K′, the pivots connecting the stocks to the cross-frame, levers pivoted upon the cross-frames, and connecting-rods between the levers and the stocks, substantially as set forth.

6. The combination, with a traveling cable, the track, and guide-rollers for the same, of two or more cars forming a train, a gripping device for the cable upon each car, horizontal guide-wheels T T′ upon the trucks of the cars near the king-bolts, and guide-rollers K K′ at the extreme ends of the train, for the purposes and substantially as set forth.

387,992. GRIPPING DEVICE FOR CABLE RAILWAYS. John H. Pendleton, Brooklyn, assignor, by direct and mesne assignments, to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 13, 1886. Renewed June 13, 1888. Serial No. 276,982. (No model.)



Claim.—1. The combination, with a rigid grip and mechanism for moving the same, of grip-wheels, pendent journal-boxes for the same, brakes for applying friction to the wheels, yielding connections between the grip and the brakes, and springs upon the brakes pressing upon the pendent journal-boxes of the grip-wheels, substantially as set forth.

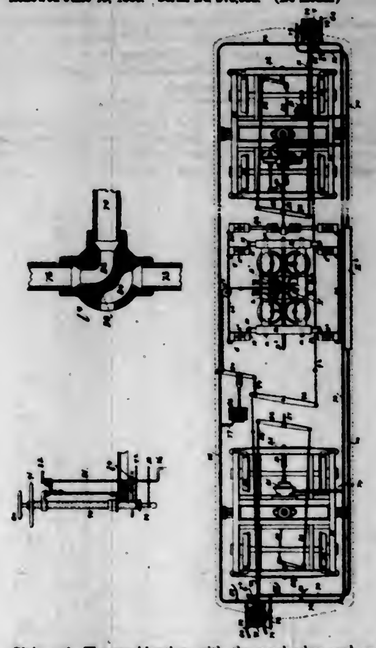
2. The combination, with the rigid gripping devices and the arms by which they are suspended, of pivot-bolts, a frame extending across between the pivot-bolts, a lever pivoted to the said frame, links between the lever and the gripping devices, supports for the pivot-bolts, and a connection to the lever for moving the same, substantially as set forth.

3. The combination, with the gripping-jaws and the arms for suspending the same, of pivot-bolts passing through the arms, grip-wheels, a separate pendent journal-box for suspending each grip-wheel from the pivot-bolts, and mechanism substantially as specified, for acting upon the gripping-wheels and jaws to grasp the traction-cable, substantially as specified.

4. The combination, with the grip-wheels B, of the brake-bars L, the hanging journal-boxes *b* and frames A, the springs *r*, the loops *r′*, and mechanism, substantially as specified, for acting upon the brake-beams L to move the grip-wheels toward the traction-cable and to apply friction to such grip-wheels, substantially as set forth.

5. The cross-bars E, cranks 18, shafts 36, and hanging standards S′, and mechanism for moving such shafts and cranks, in combination with the pivot-bolts *c*, passing through the cross-bars E, the frames A, journal-boxes and grip-wheels B, the grip-jaws S′ and their suspending-arms to the pivot-bolts, the frame D, extending across between the pivot-bolts, the lever H, links I, and brake-bars L, substantially as set forth.

387,993. GRIPPING DEVICE FOR CABLE RAILWAYS. John H. Pendleton, Brooklyn, assignor, by direct and mesne assignments, to the Rapid Transit Cable Company, New York, N. Y. Filed Dec. 13, 1886. Renewed June 13, 1888. Serial No. 276,983. (No model.)



Claim.—1. The combination, with the car-brakes and an independent pneumatic device for applying the brake or releasing it, of the grip mechanism, a cylinder or bellows for actuating the grip pneumatically or releasing the same, and the connecting pipes or tubes and a four-way cock that directs the pneumatic action in applying and releasing the brake and grip, respectively, and in unison, whereby the brake cannot be applied without releasing the grip, and vice versa, substantially as specified.

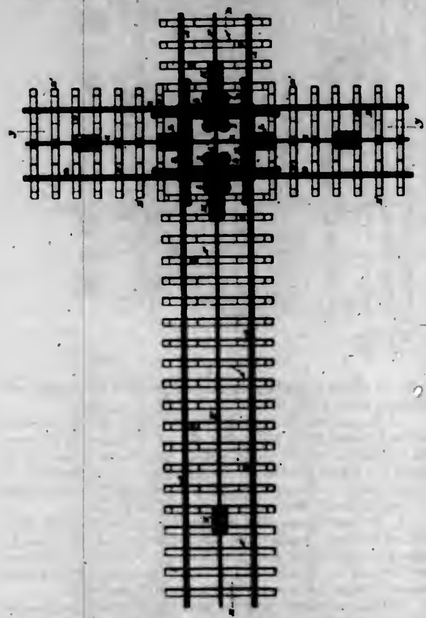
2. The combination, with the car, of a pneumatic reservoir or vessel containing air under pressure or from which the air is exhausted, a four-way cock having one opening to the atmosphere, a pipe connecting the said cock with the pneumatic vessel, grip mechanism and brake mechanism, and separate pneumatic appliances for actuating each grip and brake mechanism, respectively, a pipe leading from the pneumatic grip mechanism to the four-way cock, and a pipe leading from the pneumatic brake mechanism to the four-way cock, so that the cock directs the pneumatic action in applying and releasing the brake and grip, respectively, and in unison, whereby the brake cannot be applied without releasing the grip, and vice versa, and a hand-wheel and staff for operating the brake-mechanism when necessary, substantially as specified.

3. The combination, with the car, of a pneumatic reservoir or vessel containing air under pressure or from which air is exhausted, a four-way cock having one opening to the atmosphere, a pipe connecting the said cock with the pneumatic vessel, grip mechanism and brake mechanism, and separate pneumatic appliances for actuating each grip and brake mechanism, respectively, a pipe leading from the pneumatic grip mechanism to the four-way cock, and a pipe leading from the pneumatic brake mechanism to the four-way cock for applying the grip and releasing the brake, or the reverse, by one movement of the cock in one direction or the other, and a hand-wheel, staff, chain, and connection for applying the grip mechanism by hand, substantially as set forth.

4. The combination, with the car, of a pneumatic reservoir or vessel containing air under pressure or from which air is exhausted, a four-way cock having one opening to the atmosphere, a pipe connecting the said cock with the pneumatic vessel, grip mechanism and brake mechanism, and separate pneumatic appliances for actuating each grip and brake mechanism, respectively, a pipe leading from the pneumatic grip mechanism to the four-way cock, and a pipe leading from the pneumatic brake mechanism to the four-way cock, whereby the brake can be applied and the grip released, or the reverse, by the movement of the cock, a staff, hand-wheel, and chain for operating the brake mechanism by hand, and a hand-wheel and tube surrounding the staff, and a chain connecting such tube with the grip mechanism, substantially as set forth.

5. The combination, with the brake and its pneumatic actuating mechanism, of a cable-gripping mechanism and pneumatic device for actuating the same and a cock and mechanism for actuating the same and regulating the pneumatic action automatically for dropping the cable or in grasping said cable, substantially as set forth.

387,994. CABLE RAILWAY. John H. Pendleton, Brooklyn, assignor, by direct or mesne assignments, to the Rapid Transit Cable Company, New York, N. Y. Filed Jan. 26, 1887. Renewed June 13, 1888. Serial No. 276,984. (No model.)



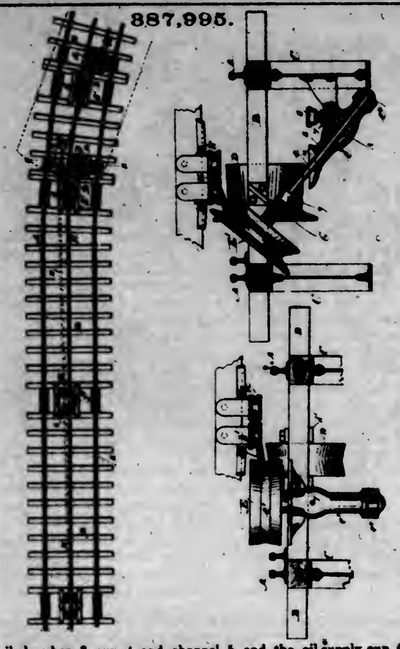
Claim.—1. The combination, with the intersecting tracks and the respective cables, of frog-plates or rails that are separated at 3, for allowing the cable F to be raised through such separation or opening, and pairs of guide-rollers to guide the cable and prevent contact with the frog-plates or rails, substantially as set forth.

2. The combination, with the intersecting tracks and frog-plates or rails having openings at 3, of the guide-rollers I in pairs, the supporting-wheels, the cables F and K, the rollers L, for holding down the cable K at the crossing, and the blocks for supporting the inclined rails of the track, the intersection being elevated, substantially as set forth.

387,995. CABLE RAILWAY. John H. Pendleton, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Apr. 13, 1887. Renewed June 13, 1888. Serial No. 270,988. (No model.)

Claim.—1. The combination, with the track, the traction-cable, the car, and the guide-wheels *b b′* near the end of the car, of the wheels between the center and the inner rail of the curved track, against which the cable travels in passing the curve, and adjacent wheels to support the weight of the cable, substantially as specified.

2. The combination, with the guide-wheel having inclined or conical faces for the traction-cable, of the tubular bearing *c*, having an oil-chamber, 3, cup 4, and channel 5, and the oil-supply cup 6 and pipe 7, substantially as set forth.



3. The combination, with the railroad structure and traction-cable, of the guide-wheel F, having a long conical surface at the side of the wheel toward the outer rail of the track at the commencement of a curve, substantially as and for the purposes set forth.

4. The combination, with the guide-wheel D upon a horizontal axis, and having the long conical surface, of the grooved guide-wheel E, the inclined axis for the same, the bearing G, and the collar 9, substantially as and for the purposes set forth.

387,996. GRIPPING DEVICE FOR CABLE RAILWAYS. John H. Pendleton, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Apr. 13, 1887. Renewed June 13, 1888. Serial No. 270,986. (No model.)

Claim.—1. The combination, with the car wheels and axles and a frame supported by the axles, of the vertical plates 3 4 4, the gripping-jaws at the lower ends of the plates, the screw G, screw-wheel, worm-pinion, and shaft for actuating the worm-pinion, the bevel-gears and hand wheels or cranks, and the couplings, substantially as set forth.

2. The combination, with the cable and grip and the car wheels and axles, of a pump and a reservoir into which air is pumped, and frictional gearing upon the axle by which the inertia of the car in stopping is availed of in compressing atmospheric air into the reservoir, substantially as set forth.

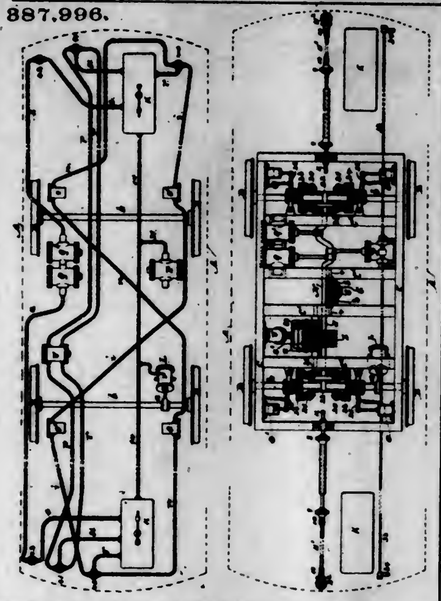
3. The combination, with the traction-cable, grip, car wheels and axles, of a reservoir containing air under pressure, an air-engine operated thereby, and mechanism connecting the same with the axle, substantially as specified, whereby the air-engine is employed to start the car gradually before gripping the cable, substantially as set forth.

4. The combination, with the cable, car wheels and axles upon a cable railway, of a reservoir upon the car for holding air under pressure, a pump for forcing air into the reservoir while the car is in motion, a pump that is brought into action when the car is to be stopped, and mechanism connecting the pump with the axle, so that the resistance of the air in the pump overcomes the momentum of the car, substantially as set forth.

5. The combination, with the traction-cable, grip, car wheels and axle, of an air-reservoir, a pump operated from one of the axles for forcing air into the reservoir, bevel-gearing and frictional connections between the same and the axle, a crank-shaft connected with the



387,996.



bevel-gearing, and an air-pump that forces air into the reservoir, and serves also as a brake to stop the car, and a cock for bringing the air-pump into action or disconnecting it, substantially as set forth.

6. The combination, with the car wheels and axles, of bevel-gearing and a shaft driven by the gearing, frictional connections between the bevel-gearing and the axle, levers and air-cylinders, and air-reservoir and cock for bringing into action either one of the frictional connections between the gearing and the axle, substantially as specified.

7. The combination, with the car wheels and axles, of a reservoir for containing air under pressure, air-engine cylinders, the crank-shaft, and bevel-gearing between the same and the axle, a frictional connection between the axle and gearing, and an air-cylinder, piston, and lever, and a pipe and cock to admit air from the reservoir and operate the frictional connection thereby, substantially as set forth.

8. The combination, with the cable and grip and the car-wheels and axles, of bevel-gearing and a frictional connection between the same and the axles, an air-cylinder and lever to actuate the frictional connection, a screw-pinion and wheel to actuate the gripping device, and a frictional connection for rotating the worm-pinion and gripping-screw, substantially as set forth.

9. The combination, with the cable-grip, the car-wheel and axles, and a friction-wheel revolved by a connection to the axle, of friction-pinions geared together, a swinging frame carrying the same, an air-reservoir, an air-cylinder and connecting-pipes, and a four-way cock, by which air under pressure is caused to press one of the frictional pinions into contact with the revolving friction-wheel, and thereby open or close the cable-grip, substantially as set forth.

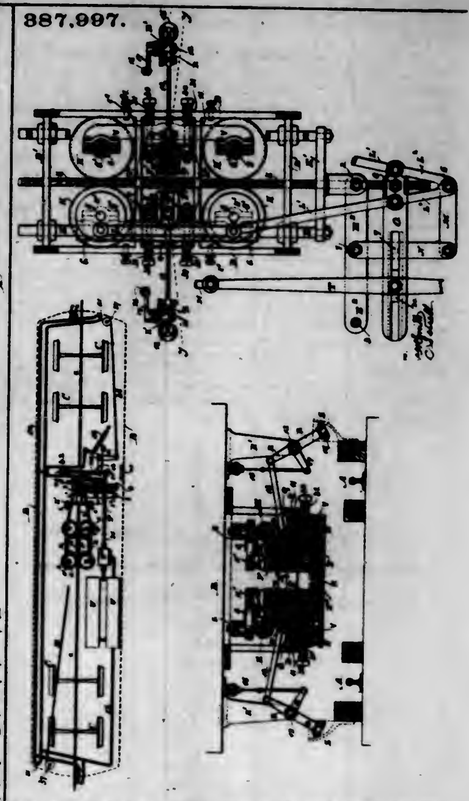
387,997. GRIPPING DEVICE FOR CABLE RAILWAYS. JOHN H. PRENDERGAST, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Apr. 28, 1887. Renewed June 13, 1888. Serial No. 276,987. (No model.)

Claim.—1. The combination, with the grooved wheels H for grasping the cable and the cranks and connecting-rods moved by the same, of slides for supporting the wheels and their journal-boxes, and a frame fixed to the under side of the car and supporting the slides, substantially as set forth.

2. The combination, with the grooved wheels H for the cable, their shafts and boxes, of the slide-rods E, from which the boxes are suspended, the stocks F, hanging from the rods E, the frame for supporting the slide-rods E, and the double-inclined grip-blocks Q, supported by the frame, and the rollers P upon the stocks F, substantially as set forth.

3. The combination, with the grooved wheels H and their shafts and boxes, of the slide-rods E, from which the boxes are suspended, the stocks F, also suspended by the rods E, the double-inclined grip-blocks, the yoke-bars V, extended from one box to the other, and the

387,997.



bolts and springs connecting the yokes to the stocks of the grip, substantially as set forth.

4. The combination, with the wheels H, their shafts and boxes, of the slide-rods E, the frame upon the car for supporting the same, the hanging stocks, the double-inclined grip-blocks pivoted to the frame, the swinging levers and connecting-rods for moving the grip-blocks, and the rollers upon the stocks adjacent to the double inclines of the grip-blocks, substantially as set forth.

5. The combination, with the wheels H, against which the cable acts, of the shafts, cranks, links, and connecting-rods, the frame L^2, links M N, link P^2, and pivot 3, for connecting the link P^2 to the car, the slide-rods E, and cross-head E', connected to the link P^2, and the frame for supporting the rods P^2, substantially as set forth.

6. The combination, with the lever O and the wheels H, cranks and connections for moving said lever O, of the connecting-rod T, having a pivot-block sliding in a slot in the lever O, the air-pump and reservoirs, and mechanism, substantially as specified, for moving the connecting-rod T and varying the stroke of the pump, substantially as set forth.

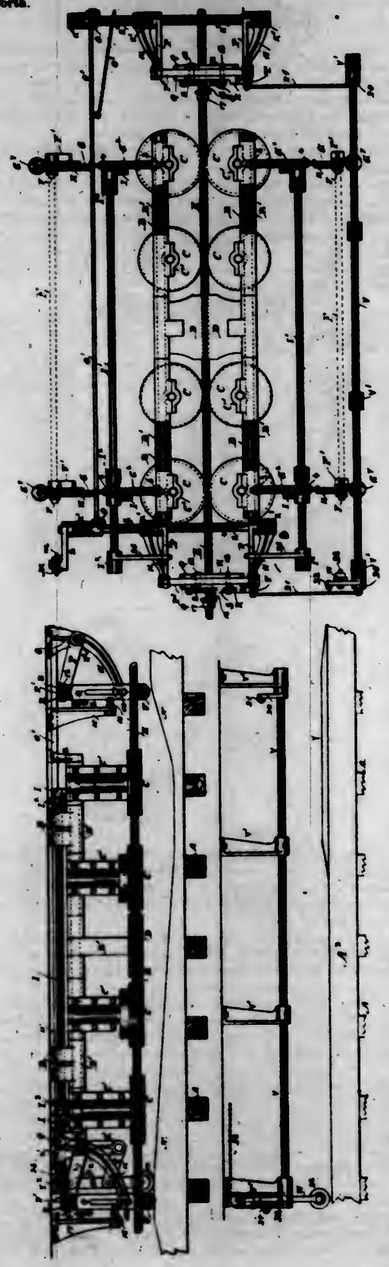
7. The combination, with the reservoir, air-pump, and connecting-rod, of the slotted lever O, the wheels H, against which the cable acts, the cranks and connecting-rods for moving the lever O, the three-armed lever W, and connections to the hand-wheels and shafts for moving the connecting-rod and varying the stroke of the pump, substantially as set forth.

8. The combination, with the pump and reservoir and the wheels against which the cable acts, of the cranks, connecting-rods, and levers for moving the air-pump and an air cylinder and piston, and the pipes and cocks for varying the stroke of the pump by the action of the air-pressure and for applying a resistance to the rotation of the wheels for causing the cable to start the car, substantially as set forth.

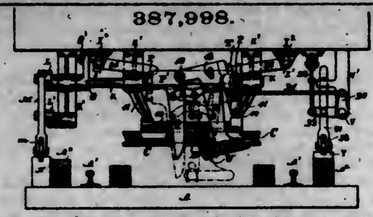
9. The combination, with the wheels between which the cable passes and the cranks and connecting-rods, of the lever O, the lever W, the connections between the same, the shoe 44 and the stationary segment 45, to apply friction as resistance to the rotation of the wheels for giving motion to the car, substantially as set forth.

387,998. BRAKE FOR PICKING UP AND DROPPING CABLES IN CABLE RAILWAYS. JOHN H. PRENDERGAST, Brooklyn, assignor to the Rapid Transit Cable Company, New York, N. Y. Filed Apr. 28, 1887. Renewed June 20, 1888. Serial No. 277,063. (No model.)

Claim.—1. The combination, with the hangers and shafts B', of the wheels C, the bearings C', through which the shafts B' pass, the levers G and toggle-bars G^2, and stationary cams or inclines H', for moving the wheels C apart and dropping the cable, substantially as set forth.



387,998.



2. The combination, with the wheels C, their hanging bearings and shafts B', of the levers G, toggle-bars G^2, hooks I, and shafts I', substantially as set forth.

3. The combination, with the wheels or cable-grip, of the pick-up mechanism composed of the fixed side Q, swinging side R, and cross-head P', the arms P, and shaft K, substantially as set forth.

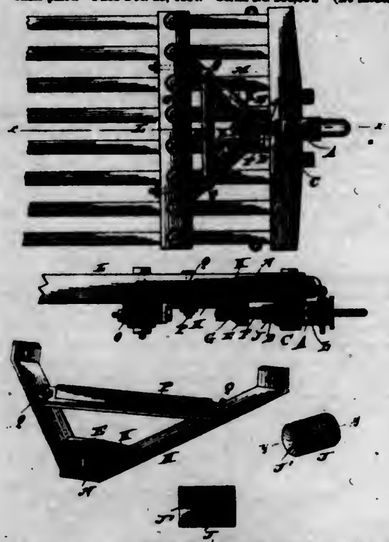
4. The shaft K and hangers and the arms P, in combination with the cross-head P' and fixed side Q, of the pick-up hanging from the same, the swinging side R, pivoted at 12 to the cross-head P', the lifting-roller U, the toggle-links S, connecting the parts Q and R, and the pawl T, for holding up the swinging side R' of the pick-up, substantially as set forth.

5. The combination, with the shaft K and hangers, of the arms L L', roller-bar M, and roller *m*, the arms P, cross-head P', fixed side Q and swinging side R, of the pick-up, and mechanism, substantially as specified, for opening the pick-up and for swinging the same beneath the cable, and the incline N, for moving the parts and lifting the cable, substantially as set forth.

6. The cable-grip and levers for opening and closing the same, in combination with the pick-up, having two arms that are closed below the cable, and levers for moving the same up and down, and stationary inclines on the track to actuate the levers that raise the cable and close the grip, or the reverse, substantially as specified.

7. The cable-lift composed of the fixed side Q, swinging side R, and roller U, in combination with the lever-arms for raising and lowering the same, substantially as specified.

387,999. CAR-COUPLING. JAMES RIBLE, Pittsburg, Pa., assignor of two-thirds to Sylvester A. Cosgrove and Charles W. Sorrel, both of same place. Filed Dec. 29, 1887. Serial No. 259,504. (No model.)



Claim.—1. In a car-coupling, the combination, with a draft-plate fixed to the car-body, a sliding draw-head, a draw-bar working loosely in the draft-plate and the draw-head and having end stops, cushioning-springs on the draw-bar between its rear end stop and the draft-plate and between the draw-head and the draft-plate, respectively, of a spool placed loosely on the draw-bar between the draw-head and the draft-plate, substantially as described.

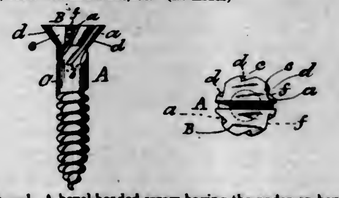
2. In a car-coupling, an angular metallic draft-sustaining brace having its end at the apex of the angle bent downward at a right

angle and apertured to form a transverse draft-plate, and the metal at opposite sides of said draft-plate bent downward to form parallel strengthening-brackets at right angles thereto, substantially as described.

3. The combination, with the longitudinal beams of a car-bottom and the bolster, of an angular brace carrying a draft-plate, bolts connecting the ends of said brace with the bolster, a rigid transverse bar bridging the angular brace, and bolts each passing through an end of the transverse bar, the corresponding arm of the brace, and the longitudinal car-beam thereabove, substantially as described.

4. In a car-coupling, an angular draft-sustaining brace having its forward angle end bent down to form a draft-plate, in combination with a re-enforcing plate welded or riveted to the outer face of the draft-plate, substantially as described.

388,000. **COUNTERSINKING-SCREW.** JOHN T. RIDER, South Oil City, Pa., assignor of one-half to Charles H. Dumon, same place. Filed Dec. 12, 1887. Serial No. 258,206. (No model.)

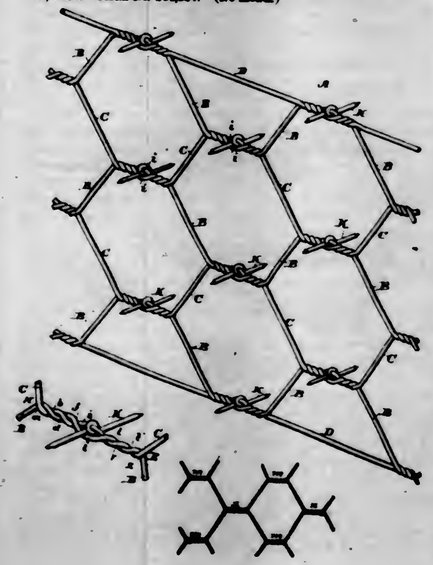


Claim.—1. A bevel-headed screw having the under or beveled side of its head provided with one or more grooves extending from the top to the bottom of the beveled surface of said head, said grooves continuing some distance down the smooth stem of said screw and terminating in said stem below the head of said screw, substantially as and for the purpose described.

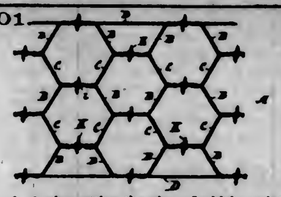
2. A screw having the under side of its head provided with one or more slots or grooves extending diagonally across the under surface of said screw-head and across a portion of the smooth surface of the stem of said screw, and terminating in said stem below the head of said screw, one side of said grooves or slots being provided with cutting or grinding edges, whereby when said screw is screwed into wood said cutting-edges will countersink a place for the head of said screw, substantially as set forth.

3. The screw A, having the under side *c* of its head provided with a groove and a cutting or grinding edge, said groove extending below said screw-head and along the stem C of said screw, and gradually running out and terminating on said stem C, substantially as shown and described.

388,001. **WIRE-NETTING.** BENJAMIN STARLIN, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Aug. 19, 1886. Serial No. 211,267. (No model.)



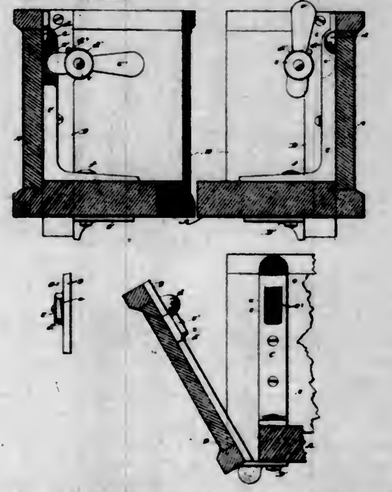
388,001



Claim.—1. A wire-netting the wires of which are interlocked between the meshes by twists, severally comprising a right-hand turn, a left-hand turn, and an intermediate eye, in combination with a wire barb composed of a separate piece of wire provided with pointed ends, said wire barb being passed through said eye and turned around one of the wires thereof, substantially as described.

2. A barbed-wire netting composed of straight selvage-wires and intermediate warp-wires, the warp-wires being united at intervals by twists which severally comprise a right-hand turn, a left-hand turn, and an intermediate eye, one of said warp-wires at each side of the netting being united at intervals with the adjacent selvage-wire by twists which severally comprise a right-hand turn, a left-hand turn, and an intermediate eye, said netting being provided with wire-barbs which are passed through said eyes and twisted around one of the wires thereof, substantially as described.

388,002. **END-GATE.** FERDINAND BELLE, Akron, Ohio, assignor to the Belle Gear Company, same place. Filed Dec. 5, 1887. Serial No. 257,022. (No model.)



Claim.—1. The combination, with a vehicle-body and an end-gate hinged to the body, of metal knees secured inside the body next the end-gate, and securing bolts or rivets extending through the knees and through the wood-work and lower member of the hinge, substantially as set forth.

2. The combination, with a vehicle-body, end-gate, hinge, and knee, substantially as indicated, of loops on the knees, and ears on the straps of the hinges for entering such loops to hold the body sides from spreading, substantially as set forth.

3. The combination, with a vehicle-body, end-gate, hinge, and knee, substantially as indicated, of loops on the knees, and ears on the hinge-straps, said ears having conical sides adapted to draw the vehicle sides inward, substantially as set forth.

4. The combination, with a vehicle-body, end-gate, knees, and hinges, substantially as indicated, of latches pivotally secured to the hinge-straps, recesses in the knees for receiving the latches, and stops to hold the latches in their latched or unlatched position, the parts being arranged substantially as set forth.

388,003. **METER FOR ALTERNATING ELECTRIC CURRENTS.** OLIVER B. SHALLENBERGER, Rochester, Pa. Filed June 6, 1888. Serial No. 276,277. (No model.)

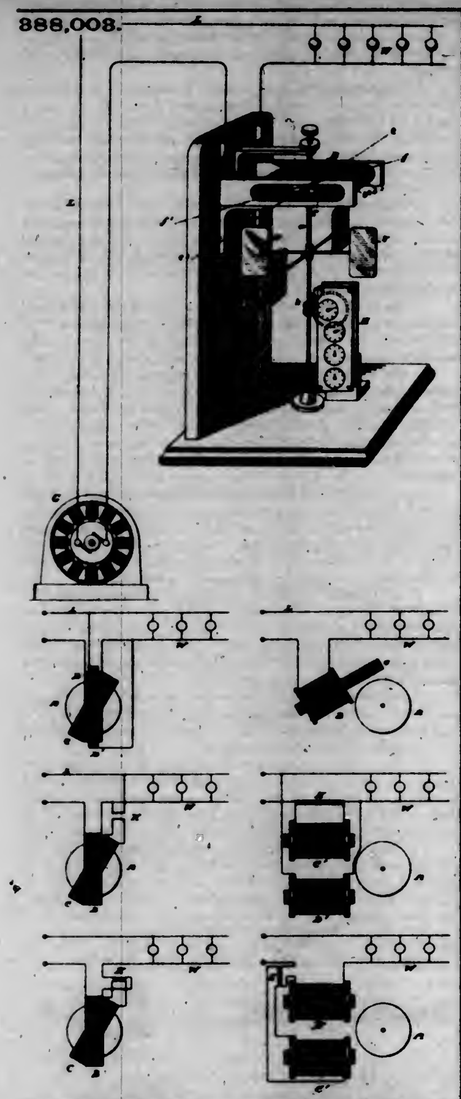
Claim.—1. The combination of a rotating armature, an inducing-circuit polarizing said armature when traversed by alternating electric impulses, a second inducing-circuit receiving currents from the first circuit and polarizing said armature in a different direction, and a counting, registering, or indicating device actuated by the movements of the armature.

2. The combination of a rotating armature, an inducing-circuit polarizing said armature when traversed by alternating electric impulses, a second inducing-circuit receiving currents by induction from the first circuit and polarizing said armature in a different direction, a retarding device applied to the armature, and a counting, registering, or indicating device actuated by the movements of the armature.

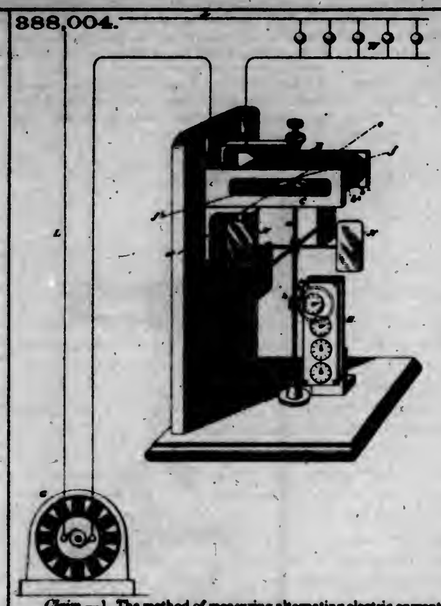
3. The combination of a rotating armature, an inducing-circuit polarizing said armature when traversed by alternating electric impulses, a magnetic medium acted upon by the same current and establishing a line of polarization intersecting the first line, and a counting, registering, or indicating device actuated by the movements of the armature.

388,004. **METHOD OF MEASURING ALTERNATING ELECTRIC CURRENTS.** OLIVER B. SHALLENBERGER, Rochester, Pa. Filed June 6, 1888. Serial No. 276,278. (No model.)

388,003.



388,004.



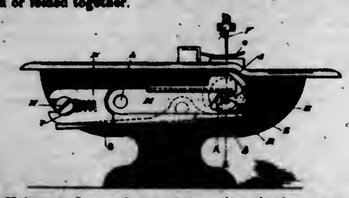
Claim.—1. The method of measuring alternating electric currents, which consists in establishing by such currents two distinct lines of alternating polarization, establishing thereby in a movable armature two corresponding lines of alternating polarization of non-synchronous phases, causing the armature to rotate by the mutual attractions of the lines of polarization and registering or indicating the movements of the armature.

2. The hereinbefore-described method of measuring alternating electric currents, which consists in establishing by such currents lines of magnetic force of varying intensity, deriving from said currents other currents, the phases of which differ in time therefrom, establishing thereby polarization in the movable body, producing mechanical motion by the mutual attractions between the different lines of polarization, and measuring the amount of such motion.

3. The method of measuring alternating electric currents, which consists in producing by such currents a line of polarization traversing the movable element of an electric meter, establishing by induction from the same current a second line of polarization at an angle to the first, thereby causing the movable element to revolve by the attraction between the second line of polarization and the portion of the first contained in the movable element, and in registering the rotations of the movable element.

388,005. **FEEDING MECHANISM FOR SEWING-MACHINES.** ROLLIN D. TURNER, Lynn, Mass. Filed Sept. 28, 1886. Renewed Dec. 3, 1887. Serial No. 256,941. (No model.)

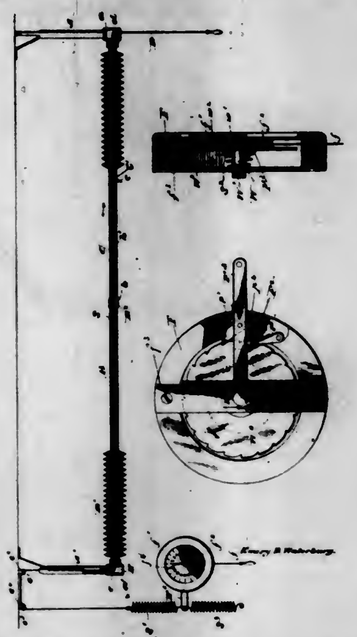
Brief.—The invention is an improvement upon that shown in Patent No. 320,896, granted June 23, 1885. The clamping feed device has an upper jaw and a lower jaw or feed-dog, which jaws are operated by the two cams on the rotary shaft, whereby they are caused to grasp and feed, intermittingly, the goods as they are being stitched. This is particularly adapted for feeding when two or more pieces are lapped or folded together.



Claim.—1. In a sewing-machine, a clamp having upper and lower jaws supported on a block, cams for lifting and depressing said clamps and for moving the block forward, a spring-lever adapted to give a yielding pressure to the said clamps, and means for returning the block, substantially as described.

2. In a sewing-machine, the combination of the block M, having upper jaw, *c*, the block H, having lower jaw, *a*, the spring-lever *b*, and cams on the main shaft, all substantially as described.

388,006. BILLIARD-TALLY. Henry D. Watrous, Denver, assignor of two-thirds to Stephen W. Keene, Aspen, and Silas R. Hastins, Denver, Colo. Filed Feb. 16, 1888. Serial No. 264,206. (No model.)



Claim.—1. The combination of the tubular hangers or brackets having hollow T-connections on their lower ends, in which the two ends of a tube are secured, the sliding rod within said tube having a gravity pawl or pin working in a slot in the lower portion thereof, the pull-cord connected to one end of said sliding rod, and the cord and spring secured to the opposite end of said rod and in connection with a register, substantially as described.

2. The combination, with the tubular hangers having hollow T-connections on their lower ends to support a tube, B, of a sliding rod, C, having a gravity-pawl, a lower depending pin working within a slot within said tube, and central collar, B^2, a pull-cord connected to one end of said rod, the resisting-spring connected to the opposite end, and the cord E, also connected to the opposite end of the rod C at one end, and at its opposite end in connection with and operating a register, substantially as described.

3. The combination, with the tube B, supported as set forth, of the rod C, moving therein, having the gravity-pawl and stop-pin playing in the slot in said tube, and the connection with said rod, substantially as and for the purpose set forth.

4. The combination, with the tube B, supported as set forth, of the rod C, moving therein and having the connections, and retractile spring, as set forth, provided with a gravity-pawl which prevents the backward return of the counters after passing thereover, substantially as described.

5. The combination, with the tube B, supported as set forth, and carrying the counters, of the rod C, having the connections, as set forth, and a stud or pin, *b*, playing in a slot in the said tube B and adapted to force the counters back to their normal position, substantially as described.

6. The combination, with the tube B, supported as set forth, adapted to have the point-counters mounted thereon, of the rod C, having the connections, as set forth, and the stud or pin *b*, playing in the slot in the lower portion of said tube for the purpose of returning the point-counters to their normal position, and a collar, B^2, surrounding the tube B, against which said stud or pin *b* engages, for the purpose set forth.

7. The combination, with the tube B, supported as set forth, of the rod C, having the stud *b* and gravity-pawl *c*, a pull-cord, D, connected to one end of said rod, a retractile spring, S, secured to the opposite end thereof, and a cord, E, secured to the opposite side of the said rod C, the springs S' and S^2, and the arm or lever F^2 of the register, substantially as described.

8. The combination, with the tube B, a rod, C, therein and its connections, as set forth, of the springs S' and S^2, the arm or lever F^2 of the recorder, the ratchet-wheel W^2 and its hub, the dial-plate, the spindle W, and the hand *f'*, secured thereto, substantially as described.

9. The combination, with the point-counting mechanism, of a game-register consisting of a dial, a hub mounted in rear of the dial and carrying a ratchet-wheel, an actuating-lever fulcrumed on the hub and carrying a pawl to engage the teeth of the ratchet-wheel, a spindle connected frictionally with the ratchet-wheel and protruding beyond the dial, and a hand carried by said spindle, substantially as described.

10. In a register, in connection with the point-tally, as set forth, the arm F^2, the block or supporting-piece W', having the shoulder, as set forth, the spindle W, the spring S^2, the ratchet-wheel W^2, the pawls P and P', having the springs *p* and *p'*, arranged as set forth, the pulley w^2, the dial-plate f^2, the hand or indicator *f'*, and the pull-cord *f*, connected to the pulley w^2, substantially as described.

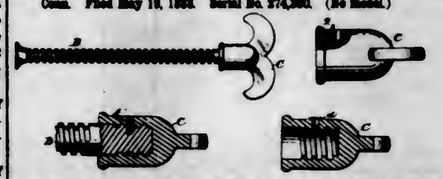
11. In a billiard-counter, the combination of the tube, supported as set forth, having the point-counters marked thereon, of a rod within said tube having mechanism in connection therewith for returning the point-counters to their normal position and preventing their return when once adjusted, the said rod having suitable connections with a game-register, substantially as described.

12. In a billard-counter, a tube supported as set forth, having a rod therein relatively acting with the point-counters upon said tube, and having an operating pull-cord and a cord in connection with the game-register, substantially as described.

13. The combination, substantially as before set forth, of the point-counters mounted to slide on a slotted tubular support, the rod mounted to slide in said support and provided with a fixed pin, pull-cords D and E, connected to the ends of said rod, a game-register provided with an actuating-lever, and a spring interposed between cord E and said lever.

14. The combination, with a tube carrying point-counters, of a rod therein, constructed as set forth and having cord-connections, as described, a spring, S, secured to said rod, and the springs S' and S^2, secured to the lever-arm of a game-register in connection with one of the cords attached to the said rod, substantially as described.

888,007. CLAMP-SCREW. Parden A. Whitney, Southington, Conn. Filed May 19, 1888. Serial No. 274,260. (No model.)



Claim.—The herein-described clamp-screw, consisting of the screw B and the separately-formed head C, of malleable metal, and the fastening-pin *f*, with a portion of the metal in the screw-head set over the end of said pin, substantially as described, and for the purpose specified.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

Ex parte Gillette.

Decided July 25, 1888.

1. Rejection of Combination Claim—To whom Appealable.

An applicant whose claim for a combination has been rejected on the ground of illegitimacy and that it covers a mere aggregation of devices or elements has the right to appeal to the Examiners-in-Chief. Although such rejection is a vital formal objection, it also relates to the merits, and applicant has the right by appeal to all the tribunals provided by law to test the validity of such claim.

2. Readmission of Claim Voluntarily Erased Irregular.

Should applicant not avail himself of this right but eliminate his claim for the combination, his drawings and specification should also be amended by canceling all reference thereto. The admission of a subsequent amendment restoring such a claim for the combination was erroneous and irregular.

3. Practice of Requiring Division Instead of Treating the Combination Claim Disapproved.

The practice of selecting one of the elements of a combination claim, as if it were claimed separately, and some other element which is claimed specifically outside of the combination and requiring division *disapproved*. Such practice denies an applicant the legal right to an appeal on his combination claim. (*Ex parte Hyams*, MS., v. 36, p. 260; *ex parte Gessner*, *Ib.* 277.) By taking such appeal applicant forfeits no right, nor is his status changed with reference to the remaining claims in his application.

4. Examiners-in-Chief—No Jurisdiction over the Question of Division.

A recommendation or statement incorporated in the decision of the Examiners-in-Chief touching the question of division, which is a matter appealable to the Commissioner and not to the Examiners-in-Chief, is unwarranted, and in effect would contravene the practice settled by the present Commissioner. Such practice should not be challenged or repudiated by a subordinate tribunal.

5. Under Rule 139—Duty of Board.

Under the organization of the various tribunals of this Office and the system in force it follows as a necessity that the recommendation which the Examiners-in-Chief may make under Rule 139 must relate exclusively to the particular matter brought before them on appeal, or over which they have jurisdiction.

On petition.

BED-SPRINGS.

Application of Wilbur L. Gillette filed July 11, 1887, No. 244,001.

Mr. Thomas P. Simpson for the applicant.

Hall, *Commissioner:*

Applicant petitions for relief from the action of the examiner refusing to admit an amendment.

As originally filed the application showed and described a bed-spring placed loosely on a bed-slat, and a so-called "key" for clasping the spring closely onto the slat. Three claims were made—one for the bed-spring, another for the so-called "key," and a third for a combination of the bed-spring and the key.

Pursuant to the practice existing at the time of the filing of the application the examiner referred the application to the Committee on Division, with his opinion that it contained two different and separate subjects of invention—to wit, the bed-spring and the key. Respecting the combination claim, the examiner stated that there was no proper combination, but simply an aggregation of the two separate devices—the spring and the key. The Committee on Division, without giving reasons, advised the examiner that division should be required. The examiner accordingly required the applicant to divide, for the reasons which he had given to the Committee. At this stage in the proceeding applicant, whose combination claim had been practically rejected, although the rejection was in the nature of a vital formal objection, was not bound to submit to such rejection, but had the right to insist that a combination did exist and that his claim was in proper form.

In this connection I desire to repeat what has heretofore been said with reference to the practice upon this subject. As stated by me in *ex parte Hyams*, (MS. Dec., 36, p. 260,) there has existed in the Office a practice of requiring division between an element of a combination and some other element whenever, in the opinion of the examiner, the combination claimed did not exist or was illegitimate.

In other words, refusing to recognize the claim for a combination, the examiner selects one of the elements thereof, as if it were claimed separately, and some other element which is claimed specifically, outside of the combination, and requires division. I am advised that a practice of this character exists to greater or less extent in the Office; but I have not been able to ascertain that it is general, or that it has been specifically recognized in any of the decisions. * * * The examiner in the present case, by ignoring applicant's claim for a combination and treating it as a claim for the blower, in effect requires a division between the claim for the carburetor and another subject of invention which applicant does not claim at all. I am of opinion that applicant has a right to present his claim for the combination, and that such claim cannot be legally disposed of in any other way than by either allowing or rejecting it. He has the right to appeal from a rejection of the claim and to obtain the judgment of the Examiners-in-Chief and the Commissioner, and if the practice alluded to were followed in this case it would practically deny him that right, because if he is required to divide he is deprived of the right to take this appeal, for the reason that the Office refuses to give him a second rejection until this formal and vital requirement of division is first carried into effect.

In the case of *ex parte Herr*, I had occasion to use the following language with reference to claims which were in the same condition as those in the present case: "The applicant has a claim for a combination between the several parts of his machine. The question of the validity of this claim is not before me, and he has the same right to assert the claim that he has that of his process claim. The case will go back to the examiner for reconsideration. * * If there be no combination between different parts of the mechanism, the examiner will apply the principles hereof to the mechanism also."

This view of the question was also recognized in the later case of *ex parte Wilhelm Gessner*, (MS. Dec., 36, p. 277.) In this case the applicant, when

notified that division was required for the reason that the Office recognized no combination, was at liberty, if he believed the combination did exist, to request reconsideration by the examiner, and to insist that his claim should be allowed or rejected the second time, and upon the second rejection he would have been entitled to an appeal, and of course could have carried such appeal to the Supreme Court of the District of Columbia before he would have been deprived of any right.

It must be remembered that by appealing from the adverse decision of the Primary Examiner an applicant does not forfeit any right nor deprive himself of his status in the Office with reference to his application or the remaining claims. He pays an appeal fee, and has the unquestioned right to take the ultimate decision of the highest tribunal as to the validity of a claim. Had this applicant taken an appeal and the decision of the Primary Examiner been reversed on the question of the legitimacy of his combination, of course the other requirement of the examiner relating to division, which was based upon that question, would have been obviated, the vital objection removed, and the examiner would have been required to act upon the merits of the claims, the combination claim having been passed upon so far as its legitimacy was concerned.

This question has been presented to me in other relations—as, for instance, when an applicant claims the right of uniting claims for a new process and a new product under the exceptional clauses recognized in *ex parte Blythe*. In such case, if the examiner be of opinion that either the process or the product is not new, and that therefore the case is taken out of the exceptional clauses in that decision, and applicant is required to divide his application, he still has the right to insist that the process and product are both new and that the one cannot be executed without the other, &c. If, instead of complying with the requirement for division and yielding to the opinion of the examiner, he persists in his claim, he has the right to a second action, from which he can take an appeal, in the same manner as above indicated. Applicant in taking such appeal forfeits no right, and when the appeal has been determined he is entitled to further consideration, to be explained.

In *ex parte Hyams* I called attention to the inconvenience which would arise in many instances:

> I am well aware that it would be improper to permit an applicant to include in an application a dozen different and distinct claimed inventions for the purpose on his part of requiring the Office to make a separate examination for each one found to be patentable, or to procure such an examination upon each of the separate inventions by the payment of a single fee. Such a practice would be in distinct violation of the spirit of the law, and would not be tolerated. (*Ex parte Rice*, 1874, C. D., 44.) But I know of no rule or practice of the Office that can deny to an applicant the right to present a claim for a combination in connection with a claim for an element in that combination, claiming each to be new and himself to have been the inventor thereof.

It may be said that a difficulty lies in the way of this view of the subject growing out of Rule 64, which requires that after formal questions are disposed of an examination on the merits shall extend to all the claims, and the examiner—

> must if possible, in his first letter to the applicant, state all his objections, whether formal or otherwise, and until the formal objections are disposed of further action will not be taken upon the merits without the order of the Commissioner.

But in explanation of this apparent difficulty, which is only apparent and not real, it must be remembered that the action of the Primary Examiner in rejecting the claim to a combination under these circumstances, which he believes has no existence, is in fact the presentation of a vital objection to the consideration of the case upon the merits, and the rejection of the combination claim may be regarded as a preliminary examination and rejection of the question of legitimacy independent of the entire merits. Should this action be overruled and the ultimate decision hold the combination to be a legitimate one, then the case goes back to the examiner for general examination upon the merits, the vital objection having been removed. This view of the subject not only harmonizes with the rule just cited, but is also in full accord with the general practice of the Office and the principles of the statute which allow to every applicant the right to appeal a question of merits to the Supreme Court of the District of Columbia. But in the case now before me the applicant, instead of insisting upon the validity of his combination and requiring further action upon it, complied with the requirement of the examiner by canceling two of the claims—one for the combination of the spring and the key, and the other for the key—retaining only the claim for the spring. This action on his part was more than a mere amendment to the claim or specification, for the effect of it was to eliminate from the specification everything that was not necessary to a proper understanding of the claim for the spring. I see no reason why the examiner at that stage of proceedings ought not to have required a cancellation of the drawing of the key and any reference to it. If he allowed it to remain, it could only have been done with a view to explaining the nature or character of the spring and how it could be applied to the bed-slat. After this action by the applicant the claim for the spring was rejected on references for want of novelty. Applicant then presented another claim for the spring, and also one for a more specific combination of the spring and the key. The latter claim was admitted to the application erroneously and irregularly, in my judgment, for the applicant had once elected not to prosecute a claim for this combination. No reason is stated by the examiner for the admission of the claim. It may have occurred to him that the applicant should have an opportunity to test his former decision declaring the combination illegitimate. However that may be, the amendment was admitted, the claim for the spring was rejected on references for want of novelty, and the combination claim was rejected for the reason that no proper combination existed. The reason given by the examiner for the rejection of the combination claim was as follows:

> No co-operation exists between the key and the peculiar form of spring.

After this action applicant changed the title of his application to "Improvements in Bed-Spring Keys," canceled the claims for the combination and for the spring, and presented one for the bed-spring key alone. This claim the examiner refused to enter, holding in effect that the applicant had elected to retain the spring and eliminate the key, and, having secured an examination on the merits of the claim for the spring, the spring must remain the subject of this application and the key could not be restored to it to form part of the invention. Instead of insisting upon his right or taking such steps as would bring the matter before the Commissioner, the applicant expressly acknowledged that the examiner was right in requiring him to eliminate the claim for the key, and that the claim for the spring was met by the references. He canceled the claim for the key and retained and argued the validity of the claim for the combination, which, as stated, he had previously voluntarily withdrawn from his application, but was permitted by the examiner to reintroduce it. The examiner rejected the combination claim for the same reasons heretofore stated, this being the only claim in the application. Applicant appealed from this decision to the Commissioner. The appeal was dismissed as being one relating to the merits of the application, and the applicant was advised that the appeal must go to the Examiners-in-Chief. Following this, applicant offered an amendment canceling his sole claim, that for the combination of the spring and the key, and although he had expressly admitted that the examiner was correct in refusing to admit and consider a claim for the key again presented such a claim as the only one in the application. Although the subject-matter of this claim had been previously eliminated, the examiner readmitted the claim, but refused to consider it, and put the applicant to his petition to the Commissioner. Thereupon applicant erased the claim for the key, and restored the claim for the combination of spring and key, which had been rejected on the merits, as just stated, and took an appeal to the Examiners-in-Chief from the second rejection of that claim by the examiner. In my judgment, this last amendment restoring the combination of spring and key ought not to have been permitted, the applicant having elected to amend his case and change the status of his application; but that question is not before me.

The appeal went to the Examiners-in-Chief, where the action of the Primary Examiner in rejecting the claim for a combination of the spring and key was affirmed. The Examiners-in-Chief in their opinion say:

> The examiner has correctly held that the spring and the key do not form a legitimate combination. But the seating or clamp part of the spring being novel, and the key solely adapted to attach and detach the same being also novel, we think that claims for each might be allowed under Rule 40 of the Revised Rules of April 13, 1885, as they are dependent upon each other, the clamp-lock requiring the key and the key not being of any earthly use except to act upon the lock. They both relate to the same subject-matter, and belong together, and it would be bad policy and poor practice to issue separate patents for each, which in the hands of different holders would control each other.
>
> We therefore recommend that applicant be allowed to amend and claim both.

I am glad to say that this expression of the opinion of the Board was not unanimous. Examiner-in-Chief Fisher, while properly concurring in the decision as to the want of combination, declined to join in the suggestion as to amendment. It is apparent at this point that if the applicant had in the first instance appealed to the Examiners-in-Chief from the requirement of the Primary Examiner as to division, founded upon the illegitimacy of the combination claimed, and had then gone back to the examiner, he could have elected either of the claims, for the spring or for the key, as he saw proper; but he has had innumerable actions and has repeatedly canceled the claim for the spring and for the key, and at last, after all this indulgence, was permitted to reintroduce the combination claim which he had previously canceled, upon which he has taken an appeal to the Examiners-in-Chief. They have rejected the claim upon its merits; applicant has acquiesced in that decision, and now returns to the Primary Examiner, and, gladly following the friendly recommendation of the majority of the Examiners-in-Chief, presents two claims, one for the spring and another for the key. The examiner refused to enter and consider this amendment for the following reasons: *First*, because the amendment seeks to reinstate a subject of invention which applicant had by election removed from the application; *second*, because the recommendation of the Examiners-in-Chief was beyond their jurisdiction, and therefore imposed upon him no duty.

The question presented is whether applicant, after having had these various actions and voluntarily canceling his claims to the key and to the spring, shall be admitted to the same position he would have originally occupied if, before canceling any of his claims, he had insisted upon the validity of his combination claim and taken an appeal to the Examiners-in-Chief, had been rejected there, had then gone back to the examiner in obedience to the requirement of division, and had elected which of the claims—that for the key or that for the spring—he would prosecute. It will be seen that he could not be permitted to claim both, because division was required. He, however, insists upon restoring claims for both the key and the spring and ignoring the requirement of division, and in this respect he has the indorsement of the Board of Examiners-in-Chief.

It appears to me that the question is hardly open to serious consideration. If applicant had presented an amendment at this stage of the proceeding, claiming the key alone or the spring alone, it would have had more merit and been entitled to more consideration than to present claims for both under these circumstances. But unquestionably the applicant can have no right to insist upon a consideration of both of these claims, for, as I think the examiner has correctly held, they are separate and independent subjects of invention in every essential particular. The Examiners-in-Chief have themselves held that there is no combination whatever between them, and, finally, the applicant has voluntarily canceled them from the application, which is quite as conclusive a reason why they ought not now be considered by the Office, except when presented in a new application. There is nothing to show that the applicant may not successfully prosecute a claim to either one of these alleged inventions, so far as public use or any other question of that character is concerned.

In noticing the recommendation of the Examiners-in-Chief in their decision, I am not unmindful of the variableness of the practice on the subject of division heretofore, and that various tribunals of the Office entertain distinct opinions and settled convictions on that point, and I am aware that it is difficult when rendering decisions or expressing official opinions to avoid leaning in the direction of personal views and convictions; but it is evident that uniformity of action and harmony of practice require that such views

and opinions shall yield to the settled practice of the Office, at least for the time being. The effect of the recommendation made by the majority of the Examiners-in-Chief distinctly contravenes the practice of division as settled by the present Commissioner and verges upon an assumption of his jurisdiction. No one will question that the matter of division relates to form and not to merits, subject, of course, when the division depends upon the illegitimacy of a combination, to the right of appeal, as hereinbefore explained. An appeal from the action of the examiner requiring division, such action being a vital objection to form, comes directly before the Commissioner, and his decision is final upon that subject. If the Board of Examiners-in-Chief can recommend that distinct subjects of invention be admitted which the examiner has required to be eliminated, or which applicant has elected to eliminate, then they verge upon the original jurisdiction of the Primary Examiner. Under the organization of the various tribunals of this Office and the system in force it must follow as a necessity that the recommendation the Examiners-in-Chief may make under Rule 139 must relate to and embrace some part or feature of the particular invention which the applicant has chosen or elected to make the subject of his application, and which is brought before that tribunal by appeal.

As previously stated, it is not only evident, but the Examiners-in-Chief have unanimously held that no combination exists between the key and the bed-spring. While they have not declared that the two are wholly separate and distinct subjects of invention, they have expressed the belief that they may properly be united in a single application, and that to require them to be covered by separate patents would be "bad policy and poor practice." Their language is as follows:

We think that claims for each might be allowed under Rule 40 of the Revised Rules of April 18, 1888, as they are dependent upon each other, the clamp-lock requiring the key and the key not being of any earthly use except to act upon the lock. They both relate to the same subject-matter and belong together, and it would be bad policy and poor practice to issue separate patents for each, which in the hands of different holders would control each other.

It is to be observed that Rule 40 was not changed in any respect in the last edition of the Rules of Practice, (April 18, 1888,) although in decisions of the present Commissioner a construction has been placed upon it which prevents two inventions being examined in a single application. The policy and practice in this particular have been settled, for the present at least, and when so settled they ought not to be challenged or repudiated by the subordinate tribunals of the Office, and especially in the manner above indicated.

The spring when attached to the slat becomes part of a bed or bed-mattress. Until it is attached it is simply an article of manufacture, made so not only by manufacturers, but by inventors themselves, and constitutes a distinct class of invention in the Office. The key is in no sense—physical, mechanical, or patentable—a part of such spring in either its free or attached condition. The spring may be fastened to the slat by other means, but perhaps not so conveniently as by a key or implement adapted to that purpose. The key is a simple tool of limited use. It is scarcely correct to say that it possesses "no earthly use" except to act upon the lock, because it can have a hundred other uses: but undoubtedly its principal or more important use is to fasten or lock such spring to the slat whenever it is desired to accomplish that purpose. It is an article of manufacture, and has no other patentable quality any more than a nail or pin. The two articles are no more dependent upon each other in a patentable sense than a tack and a tack-hammer, one being the thing driven, the other the thing by which it may be driven. Even were it true that the key had no other earthly use than to lock this slat, it would not therefore necessarily become dependent in a patentable sense upon the spring. It would be a simple tool, so simple that it has but a single use. Its commercial value would be limited to that use, as no person would purchase it except when it was desired for that particular purpose to which it could be applied. This, however, is a case of adaptation, which may be illustrated in an infinite variety of ways without ever approaching a patentable dependency or combination.

The only serious question I have had in the matter is whether the applicant ought not to be permitted to present an amendment containing a claim for one or the other of these articles; but in view of the fact that he has voluntarily eliminated these inventions from his application and has had such numerous actions from the Office, I think I shall not recommend anything of that character in the case.

I affirm the action of the Primary Examiner in refusing to enter and admit for consideration the last amendment offered by applicant.

EX PARTE GENTRY.

Decided July 26, 1888.

SIGNATURES TO SPECIFICATIONS.

The law knows but one Christian name. The middle names are mere matters of ornament or of social distinction; hence the omission of the middle name, or of the initial of the middle name, is wholly immaterial. But an omission to write the Christian name in full is fatal.

APPEAL from the Primary Examiner.

COMPOSITION OF MATTER FOR REMEDIAL COSMETIC OR CREAM.

Application of N. Kate Gentry filed March 13, 1888, No. 267,107.

Mr. R. M. McDermott for the applicant.

HALL, *Commissioner:*

When the Primary Examiner took this application up for consideration he found that the applicant had signed her name to the petition, specification, and oath as "N. Kate Gentry," which he held to be incomplete and defective, and he required that applicant should furnish a new oath signed with her full name.

There is no reference in the statute to the subject; but Rule 40 provides that—

The specification must be signed by the inventor * * * and the signature must be attested by two witnesses. Full names must be given, and all names, whether of applicants or witnesses, must be legibly written.

There is no doubt but that the Commissioner of Patents, under the direction of the Secretary of the Interior, has authority to adopt such a rule.

Applicant has appealed from this requirement of the examiner, and insists that "N. Kate Gentry" is her full name. The argument is that persons having two or three Christian names are not required, under the designation "full name," to write out all of their given names, and that it is just as proper to write "N. Kate Gentry" as it would be "Norah Kate Gentry," if *Norah* be her given name.

This view of the subject is erroneous, because it fails to comprehend the legal meaning of the term "full name." The law knows but one Christian name. The middle names are mere matters of ornament or of social distinction, and hence it is well settled that an omission of the middle name, or of the initial of the middle name, is wholly immaterial. (See *Gaines et al.* v. *Stiles*, 14 Peters, 322.)

In the execution of deeds and other instruments, where there is no law requiring parties to execute by their full names, such parties may sign their names by initials or in the manner in which they ordinarily sign them. The question of identity always arises with regard to such instruments. It does not follow because names are identical that they were signed by the same person, although identity of names is *prima facie* evidence of the identity of persons. (See *Stebbins* v. *Duncan et al.*, 108 U. S., 32.) In the present case the presumption is that the applicant has a full name, and that such full name consists of the first Christian name and the surname *Gentry*. She can write Norah, or whatever name may be represented by the initial N. with the other Christian name "Kate" in full, followed by her surname Gentry, or she could write "Norah Gentry," either of which would be the full name; but in view of the fact that the law knows but one Christian name, and that is the first one, an omission to write that in full is fatal to all the rest.

The action of the Primary Examiner is affirmed.

DECISIONS OF STATE COURTS.

Supreme Judicial Court—State of Massachusetts.

RUSSIA CEMENT COMPANY *v.* LE PAGE.

Decided June 19, 1888.

1. TRADE-MARK—CHANGED BY ADDITIONAL WORDS.

The mere addition of the word "improved" will not justify the use of a Trade-Mark otherwise objectionable on the ground of resemblance to a trade-mark in use by another person.

2. SAME—USE OF REGISTRANT'S OWN NAME.

A person cannot make a trade-mark of his own name, and thus debar another having the same name from using it in his business honestly and without any intention to wrongfully appropriate the good-will of a business already established.

3. SAME—SAME.

But although one may honestly use his own name as a Trade-Mark, although the incidental result may be to injure the business of another, he cannot resort to any artifice, or do any act calculated to mislead the public as to the identity of the business or article, and thus produce injury to such other person beyond that which results from the similarity of name.

4. SAME—SAME—DEPRIVED OF RIGHT TO USE BY SALE OF TRADE-MARK.

One may so sell or part with the right to use his own name as a description of a manufactured article as to deprive himself of the right to use it as such, and confer such right upon another, and in such case he will be enjoined from such use of his own name.

5. SAME—SAME.

Where one Le Page had used the Trade-Mark "Le Page's Liquid Glue" to indicate a particular kind of glue manufactured by him, and had thereafter formed a corporation to which he sold his business, with the right to use the Trade-Marks belonging to or in use by him, which corporation continued to manufacture the same glue under the same name, and he subsequently left the corporation and engaged in the manufacture of glue in the same town, using the name "Le Page's Improved Liquid Glue" to advertise the article produced by him, *Held* that he should be enjoined from so using such name and from describing his business as "Le Page's Liquid Glue Co.," whether with or without any addition, without deciding that he may not use the words "liquid glue" or other appropriate words to describe his product, or state in that connection that he is himself the manufacturer of it.

ON report.

Mr. E. R. Hoar and *Mr. Causten Browne* for the complainant.

Mr. William Gaston, *Mr. Francis Forbes*, and *Mr. Frank L. Washburn* for the defendant.

STATEMENT OF THE CASE.

The action was brought to enjoin defendant from using a certain alleged Trade-Mark claimed to be the property of the plaintiff. The case comes on to be heard before Judge Gardner, who refused the injunction and ordered the bill dismissed. The plaintiff appealed, and at his request the case was reported for the consideration of the full court.

Judge DEVENS delivered the opinion of the court.

The plaintiff and defendant are manufacturers of liquid glue, and the defendant, whose name is Le Page, uses the same name as that used by plaintiff to describe his glue and by which to advertise it, except that he introduces therein the word "Improved." The introduction of this word into the name of the article manufactured by him does not justify its use if in other respects the plaintiff has just ground to object to it. (Sebast. Tradem., 52; *Frazer* v. *Frazer Lubricator Co.*, 18 Ill., App., 462, On App., 9 West. Rep., 768; *Gillis* v. *Hall*, 2 Brewst., 342.)

A person cannot make a Trade-Mark of his own name and thus debar another having the same name from using it in his business if he does so honestly and without any intention to appropriate wrongfully the good-will of a business already established by others of the name. Every one has the absolute right to use his own name honestly in his own business for the purpose of advertising it, even though he may thereby incidentally interfere with and injure the business of another having the same name. In such case the inconvenience or loss to which those having a common right to it are subjected is *damnum absque injuria*. But although he may thus use his name, he cannot resort to any artifice or do any act calculated to mislead the public as to the identity of the business, firm, or establishment, or article produced by them, and thus produce injury to the other beyond that which results from the similarity of name. (*Holloway* v. *Holloway*, 13 Beav., 209; *Meneely* v. *Meneely*, 62 N. Y., 427; *Gilman* v. *Hunnewell*, 122 Mass, 139; *Rogers* v. *Rogers*, 1 New Eng. Rep., 411; 53 Conn., 121.) While this is the general rule, it is also true that one may so sell or part with the right to use his own name as a description or designation of a manufactured article as to deprive himself of the right to use it as such and confer this right upon another. A name used as an adjective of description is not nec-

essarily understood by the public as any assertion that the person whose name is used is the maker of the articles. One who has carried on a business under a trade-name and sold a particular article in such a manner by the use of his name as a Trade-Mark or a trade-name as to cause the business or the article to become known or established in favor under such name may sell or assign such trade-name or Trade-Mark when he sells the business or manufacture, and by such sale or assignment conclude himself from the further use of it in a similar way. (*Horton Mfg. Co.* v. *Horton Mfg. Co.*, 18 Fed. Rep., 816; *McLean* v. *Fleming*, 96 U. S., 245; 24 L. ed., 828; *Joseph Dixon Crucible Co.* v. *Guggenheim*, 2 Brewst., 321; *Probasco* v. *Bouyon*, 1 Mo. App., 241; *Oakes* v. *Tonsmierre*, 4 Woods, 555; *Celluloid Mfg. Co.* v. *Cellonite Mfg. Co.*, 32 Fed. Rep., 94; *Ainsworth* v. *Walmsley*, L. R., 1 Eq., 524; *Shaver* v. *Shaver*, 54 Iowa, 208; 37 Am. Rep., 194; *Frazer* v. *Frazer Lubricator Co.*, 9 West Rep., 763; 18 Ill., App., 462.)

A person may be enjoined, therefore, from using his own name as a description of an article of his own manufacture and from selling the article under that particular name when he has parted with the right thus to apply it. (*Gillis* v. *Hall*, 2 Brewst., 342: *Kidd* v. *Johnson*, 100 U. S., 619; 25 L. ed., 770.) It is not upon the ground of the invasion of the trade-name adopted by another but by reason of the contract he has made that he is deprived of the right himself to use his name as all others of the same name may use theirs.

The recent case of *Hoxie* v. *Chaney*, (8 New Eng. Rep., 709; 143 Mass., 592,) which has been decided since the decree orignally made in the case at bar was rendered, is quite conclusive in regard to it. It was there held that "A. N. Hoxie's Mineral Soap" and "A. N. Hoxie's Pumice Soap" were trade-marks, and assignable as such, and that they did not necessarily mean that the soaps were made by A. N. Hoxie. Where one who had adopted these trade-marks, or, more properly, trade-names, for his manufacture, entered into a partnership with another under articles by which he contributed the good-will of the business he was carrying on, with the tools, implements, and fixtures, and on the dissolution of this partnership conveyed to his partner "all my right, title, and interest in and to all and singular the partnership property belonging to the firm, meaning hereby to sell and convey all my interest in the entire assets of the firm." It was further held that these trade-names became by the articles of copartnership a part of the property of the firm, and that the right to use them as such passed by the bill of sale, and that the partner so conveying had parted with his own right so to do. Upon the evidence in the case at bar it appears that "Le Page's Liquid Glue" was the name adopted by Brooks & Le Page for the light glues manufactured by them, a special word—such as "straw," "carriage," &c., indicating for what especial use the particular light glue was designed—being inserted before the word "Glue;" that they manufactured glues under this name, and that at a subsequent period, in 1882, they formed the plaintiff corporation, to which they sold their business, and which continued the manufacture of these glues under the same name. The defendant was a member of the corporation and a director thereof until February, 1886, when he left it, and shortly after engaged in the manufacture and sale of glue at Gloucester, where the plaintiff's business has always been carried on, using the name "Le Page's Improved Liquid Glue" to advertise the article produced by him. When Brooks & Le Page sold their business to the plaintiff, they in express terms sold "the right to use the Trade-Marks belonging to or in use by said copartnership." When Le Page (with Brooks) sold to the corporation, and when he left the corporation, it must be held that the name "Le Page's Liquid Glue" was a trade-name or trade-mark—and it is not important which term is used—indicating the liquid glue which the plaintiff was manufacturing. The right to use it as such was necessarily an exclusive use, as it was intended thus to distinguish the plaintiff's goods from those of others. As a Trade-Mark belonging to the corporation, the defendant, while an officer thereof, had himself sought to obtain registration for it at the United States Patent Office.

We are of opinion, therefore, that the defendant should be enjoined from using the words "Le Page's Improved Liquid Glue," or "Le Page's Liquid Glue," to describe the article manufactured by him, and from describing the company under whose name he conducts his business as "Le Page's Liquid Glue Company," whether with or without any addition thereto.

While the plaintiff has not sought to prevent the defendant from manufacturing glue, in order to avoid misunderstanding we add that while the defendant cannot use the words adopted as a trade-name for the article manufactured by him, we do not decide that he may not use the words "liquid glue," or other appropriate words, to describe his product or to state in that connection that he is himself the manufacturer of it.

Decree for the plaintiff.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 44—No. 8. TUESDAY, AUGUST 21, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	825
FRAUDULENT PRACTICES BY ATTORNEYS	825
NOTICE	825
ISSUE OF AUGUST 21, 1888	826
DESIGNS	826
TRADE-MARKS	826
LABELS	826
PATENTS GRANTED	827
REISSUES	942
DECISIONS OF THE COMMISSIONER—	
Wright v. Daggett	943
Faure v. Bradley and Crocker v. Cowles and Cowles	945

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGlehan, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado.*

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

44 O G—8—1

Issue of August 21, 1888.

Patents	379	No. 388,006 to No. 388,384, inclusive.
Designs	20	No. 18,539 to No. 18,558, inclusive.
Trade-Marks	22	No. 15,786 to No. 15,807, inclusive.
Labels	3	No. 5,080 to No. 5,082, inclusive.
Reissue	1	No. 10,954.
Total issue	425	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nebraska	2	1
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	1	.....	New Hampshire	3	.....
California	5	1	New Jersey	16	1
Colorado	2	.....	New Mexico Terri'y	.....	.....
Connecticut	14	.....	New York	74	5
Dakota Territory	2	.....	North Carolina	1	.....
Delaware	.....	.....	Ohio	17	2
District of Columbia	2	.....	Oregon	2	.....
Florida	.....	.....	Pennsylvania	31	3
Georgia	1	1	Rhode Island	7	.....
Idaho Territory	.....	.....	South Carolina	1	.....
Illinois	30	1	Tennessee	4	.....
Indian Territory	.....	.....	Texas	4	.....
Indiana	9	.....	Utah Territory	.....	.....
Iowa	6	.....	Vermont	2	.....
Kansas	7	.....	Virginia	3	.....
Kentucky	3	1	Washington Terri'y	.....	.....
Louisiana	2	.....	West Virginia	3	.....
Maine	1	.....	Wisconsin	7	.....
Maryland	11	1	Wyoming Territory	.....	.....
Massachusetts	37	4	United States Army	.....	.....
Michigan	13	.....	United States Navy	.....	.....
Minnesota	5	.....			
Mississippi	.....	.....	Total to citizens of the United States	357	21
Missouri	17	.....			
Montana Territory	1	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	13	.....
Australia	.....	.....	Hawaii	.....	.....
Austria-Hungary	.....	.....	Netherlands	.....	.....
Belgium	2	.....	New South Wales	1	.....
Bermuda	.....	.....	New Zealand	2	.....
Brazil	.....	.....	Russia	.....	.....
Canada	5	.....	Scotland	.....	1
Chili	.....	.....	South Australia	.....	.....
Columbia, U. S. of	.....	.....	Spain	.....	.....
Cuba	.....	1	Sweden	1	.....
Denmark	.....	.....	Switzerland	4	1
England	11	1			
Finland	.....	.....	Total to citizens of foreign countries	42	4
France	3	.....			

DESIGNS.

18,539.—COLLAR.—*Gates H. Barnard*, New York, N. Y. Application filed July 30, 1888. Serial No. 281,479. Term of patent 7 years.

18,540.—CANE-HEAD.—*Jacob Eichel*, Evansville, Ind. Application filed March 20, 1888. Serial No. 267,907. Term of patent 7 years.

18,541 to 18,546, inclusive.—CARPET.—*Edwin Fisher*, New York, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Applications filed July 23, 1888. Serial Nos. 280,816, 280,817, 280,820, 280,821, 280,823, and 280,825. Term of patents 3½ years.

18,547 and 18,548.—HOT-WATER HEATER.—*Edward Gurney*, Toronto, Ontario, Canada. Applications filed June 23, 1888. Serial Nos. 278,049 and 278,050. Term of patents 14 years.

18,549.—BEVELED GLASS.—*Obed Charles Hawkes*, Birmingham, county of Warwick, England. Application filed July 11, 1888. Serial No. 279,670. Term of patent 14 years.

18,550.—CAMPAIGN-CARD.—*Frank E. Houst*, Brattleborough, Vt. Application filed July 18, 1888. Serial No. 280,336. Term of patent 7 years.

18,551.—CAR-TRUCK FRAME.—*John Stephenson*, New York, N. Y. Application filed July 20, 1888. Serial No. 280,573. Term of patent 14 years.

18,552 to 18,557, inclusive.—CARPET.—*Charles W. Sweapp*, New York, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Applications filed July 23, 1888. Serial Nos. 280,810 to 280,815, inclusive. Term of patents 3½ years.

18,558.—HANDKERCHIEF.—*S. Bowen Turpin*, Washington, D. C. Application filed July 9, 1888. Serial No. 279,470. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,786.—PRINTS AND COTTON PIECE-GOODS.—*Arnold Print Works*, North Adams, Mass. Application filed July 3, 1888. Used since June 25, 1888.

"The figure of a yellow seal having a notched edge and associated with the words and figures 'YELLOW SEAL 2400 CLOTH.'"

15,787.—PRINTS AND COTTON PIECE-GOODS.—*Arnold Print Works*, North Adams, Mass. Application filed July 3, 1888. Used since June 25, 1888.

"The figure of a silver seal having a notched edge and associated with the words 'SILVER SEAL MOURNINGS.'"

15,788.—WHISKY.—*Blake, Bruce & Co.*, Omaha, Nebr. Application filed July 6, 1888. Used since January, 1885.

"The representation of a medallion with the letters 'S. T.' thereon and surrounded by a wreath of rye or other cereal, and the words 'SWEET THORN.'"

15,789.—MEDICINE FOR THE TREATMENT OF GONORRHŒA AND GLEET.—*John S. Broas*, Jersey City, N. J. Application filed March 29, 1888. Used since January 1, 1888.

"The figures '4-11-44.'"

15,790.—METALLIC PAINT MANUFACTURED FROM THE RED OXIDE OF IRON.—*Clinton Metallic Paint Company*, Kirkland, N. Y. Application filed April 19, 1888. Used since April 1, 1887.

"The representation of a barrel having on its head the words 'METALLIC CLINTON PAINT.'"

15,791.—CANDLES.—*The Dearborn Manufacturing Company*, Chicago, Ill. Application filed August 4, 1887. Used since March, 1887.

"The word 'LUMEN.'"

15,792.—CLEANSING SOAP OR COMPOUND OF AN ABRASIVE CHARACTER.—*Electron Manufacturing Company*, Philadelphia, Pa. Application filed July 6, 1888. Used since June 1, 1887.

"The word 'ELECTRON.'"

15,793.—GINGHAMS, TICKINGS, AND COTTON GOODS.—*John Farnum & Co.*, Philadelphia, Pa. Application filed July 17, 1888. Used since July 1, 1888.

"The word 'WICO.'"

15,794.—TEA.—*Joseph Friess*, New York, N. Y. Application filed April 28, 1888. Used since April 5, 1888.

"The representations of caravans consisting of camels and sledges, respectively, transporting packages of merchandise."

15,795.—CIGARS.—*Gumersindo Garcia Cuervo*, Havana, Cuba. Application filed June 18, 1888. Used since 1867.

"The words 'LA FLOR DE LUISITA' supported by a picture exhibiting two young girls sitting at a table with an old man conversing and drinking, the picture being entwined in the limb of a tree covered with flowers or blossoms, upon which birds are perched."

15,796.—MEDICINAL PREPARATION TO BE USED EITHER AS A POTION OR A LOTION.—*George F. Hutchison & Co.*, Hamilton, Ohio. Application filed May 5, 1888. Used since January 1, 1888.

"The words 'OMNI CURANT.'"

15,797.—TOILET POWDER.—*George Lorenz*, Toledo, Ohio. Application filed July 14, 1888. Used since September 1, 1887.

"The word 'LUXURY.'"

15,798.—SHUCKED RAW AND HERMETICALLY-SEALED OYSTERS.—*J. Ludington & Co.*, Baltimore, Md. Application filed July 13, 1888. Used since 1850.

"The words 'SEA SIDE.'"

15,799.—EXTRACTS OF MEATS.—*Julius Maggi & Co.*, Kempthal, Switzerland. Application filed April 28, 1888. Used since January 1, 1887.

"A design in the nature of a four-pointed star, having in its center a square or rectangular field, within which a Greek cross is placed."

15,800.—FLOUR.—*Donald McCulloch Gedge*, San Francisco, Cal. Application filed May 4, 1888. Used since February 1, 1888.

"The representation of a crown and coat of arms upon a flag or banner arranged or displayed upon a shield and having a lozenge-shaped figure above the shield."

15,801.—CONDENSED MILK.—*New York Condensed Milk Company*, New York, N. Y. Application filed July 9, 1888. Used since June 28, 1888.

"The word 'CHAMPION.'"

15,802.—PERFUMES AND ODORIFEROUS AND FLAVORING EXTRACTS.—*Nonantum Worsted Company*, Newton and Boston, Mass. Application filed June 6, 1888. Used since January, 1888.

"The words 'LADY GREY.'"

15,803.—PERFUMES AND ODORIFEROUS AND FLAVORING EXTRACTS.—*Nonantum Worsted Company*, Newton and Boston, Mass. Application filed June 6, 1888. Used since January, 1888.

"The words 'LONG BRANCH.'"

15,804.—WOOLENS, JEANS, AND LIKE GOODS.—*The Old Kentucky Woolen Mills Company*, Louisville, Ky. Application filed June 20, 1888. Used since 1875.

"The words 'OLD KENTUCKY.'"

15,805.—STEEL PENS.—*Ormiston & Glass*, Edinburgh, Scotland. Application filed July 12, 1888. Used since December 1, 1887.

"A representation of the terrestial globe and a pen-holder and pen used as a lever under the globe."

15,806.—PEARL BUTTONS.—*Ostheimer Brothers*, Philadelphia, Pa. Application filed June 26, 1888. Used since February, 1888.

"The representation of a star with the letters 'G N O B S.'"

15,807.—HYDRAULIC CEMENT.—*Joseph Robinson & Co.*, Knothill, near Carlisle, county of Cumberland, England. Application filed July 21, 1887. Used since 1828.

"The word 'ROBINSON'S.'"

LABELS.

5,680.—Title: "CARTER'S FANCY," (FOR FLOUR.)—*J. C. Carter*, Atlanta, Ga. Application filed July 25, 1888.

5,681.—Title: "ELECTRO CHEMICAL," (FOR INK.)—*Thaddeus Davids Company*, New York, N. Y. Application filed June 2, 1888. (Trade-Mark Registered.)

5,682.—Title: "MALONE PASTE."—*Whittelsey & Company*, Malone, N. Y. Application filed July 25, 1888.

PATENTS

GRANTED AUG. 21, 1888.

388,008. ELECTRIC SIGNALING. CLEMENT ADER, Paris, France. Filed Jan. 26, 1888. Serial No. 261,979. (No model.) Patented in England Dec. 20, 1887, No. 17,202.



Claim.—1. The combination, with an electric signaling circuit, of a telephonic receiver in said circuit, a local battery in circuit with said receiver, and a rheotome arranged to interrupt the current from said local battery with a rapidity corresponding to the vibrations of an audible note, whereby a sound is produced in said receiver which remains uniform as long as no current arrives over the line and is varied audibly upon the passage of a line-current.

2. The combination, with an electric signaling circuit divided at the receiving-station into two branches, of a telephonic receiver in one of said branches, a local battery in circuit with said receiver and supplying a current thereto, and a rheotome arranged to interrupt the current from said battery with a rapidity corresponding to the vibrations of an audible note.

3. The combination, with an electric signaling circuit divided into two branches, of a telephonic receiver in one of said branches, a rheotome adapted to direct the current into said branches alternately with a frequency corresponding to the rapidity of vibration of an audible note, and a local battery in circuit with said branches and supplying a uniform current thereto, whereby the current from said battery is interrupted by said rheotome and produces a continuous sound in said receiver, which sound is varied audibly upon the passage of a line-current.

4. The combination, with an electric signaling circuit, of two telephonic receivers connected therewith, a local battery in circuit with one of said receivers and supplying a current thereto in one direction relatively to the line, a local battery in circuit with the other of said receivers and supplying a current thereto in the contrary direction, and two rheotomes constructed to vibrate at different velocities and arranged to interrupt the local currents traversing said receivers, respectively, whereby two different sounds are produced in said receivers, which remain uniform as long as no current arrives over the line and are varied inversely to one another upon the passage of a line-current, the sound in the one being increased and the other diminished by a positive current, and the sound in the other increased by a negative current.

5. The combination, with an electric signaling circuit, of a telephonic receiver connected therewith, a local battery in circuit with said receiver and supplying a uniform current thereto, two rheotomes constructed to vibrate at different velocities, corresponding to audible notes of different pitch, and arranged to interrupt the current traversing said receiver, and electrical circuit-connections between said local battery, receiver, and rheotomes and the line, so arranged that the polarities of the currents interrupted by the rheotomes are relatively reversed, whereby a positive current arriving over the line will cause a note of one pitch to be heard in said receiver and a negative current will cause a note of the other pitch to be heard.

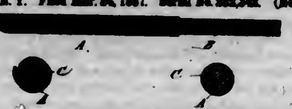
6. The combination, with an electric signaling circuit divided into two branches, of a telephonic receiver in one of said branches, a local battery in circuit with said branches and regulated to supply a current thereto of equal intensity with the currents normally arriving over the line, and a rheotome arranged to interrupt the current from said battery with a rapidity corresponding to the vibrations of an audible note.

7. The combination, with an electric signaling circuit divided into two branches, of two telephonic receivers, one in each of said branches, a local battery in circuit with said branches and regulated to supply a current thereto of equal intensity with the currents normally arriving over the line, and a rheotome arranged to interrupt the current from said battery with a rapidity corresponding to the vibrations of an audible note, whereby a continuous sound is produced in both receivers so long as no current arrives over the line, and is extinguished in one receiver upon the passage of a positive current and in the other upon the passage of a negative current.

8. The combination, with an electric signaling circuit divided into two branches, of two telephonic receivers, one in each branch, two local batteries intercalated in said branches with their poles reversed relatively to the line, and a rheotome arranged to interrupt the currents from said batteries with a rapidity corresponding to the vibrations of an audible note.

9. The combination, with an electric signaling circuit divided into two branches, two telephonic receivers, one in each branch, a rheotome adapted to direct the current into said branches alternately with a frequency corresponding to the rapidity of vibration of an audible note, and two local batteries intercalated in said branches with their poles reversed relatively to the line.

388,009. COMBINED NEEDLE AND CORD. ELMER A. BAILEY, New York, N. Y. Filed Mar. 24, 1887. Serial No. 232,342. (No model.)



Claim.—A combined needle and cord composed of a piece of sheet metal wrapped around the end of the cord and compressed to form a practically solid mass, and pointed at the end opposite the one in which the cord is held, substantially as herein shown and described.

388,010. HYDRANT. PETER W. BAILEY, Seneca Falls, N. Y. Filed Mar. 10, 1888. Serial No. 266,894. (No model.)

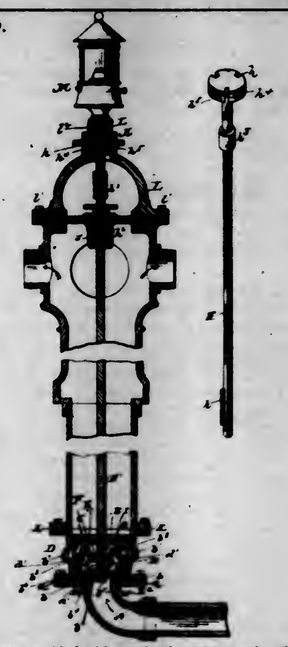
Claim.—1. In a hydrant, the combination of the casing, having suitable waste-apertures and inlet-elbow, with the cap L, having the splines *l*, the vertical rod H, having the threaded and slotted head h^4, the nut K, working upon said head, the collar G, secured to the lower end of the rod H, the toggle-joint connecting said collar with the valves b^3 of the bucket B, and the bucket B, having the valves b^3 and b^4, whereby said valves are operated, substantially as described.

2. In a hydrant, the combination of the casing, having a suitable inlet-elbow, with the raised valve-seat *a'*, the cap L, having the splines *l*, the vertical rod H, having the threaded and slotted head h^4, the nut K, working upon said head, the bucket B, screwed upon the raised valve-seat *a'* of casing D, the bar I across the top of the bucket B, the collar G, secured to the lower end of the rod H, the toggle-joint secured to said collar, and the valve b^3 of the bucket B, whereby the internal mechanism may be withdrawn without digging up the hydrant, substantially as described.

3. In a hydrant, the casing D, having waste-apertures and inlet-elbow, with raised valve-seat *a'*, upon which is screwed the bucket B, in combination with the bucket B, having suitable waste and inlet valves, the inlet-valve b^3, having the groove b^5, whereby the same is held in position, substantially as described.

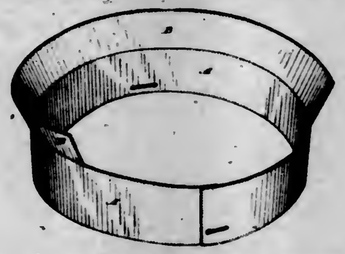
4. In a hydrant, the combination of the casing D, with cap L, having splines *l*, with a neck extending above said splines, to which is secured the lamp M, the vertical rod H, having the threaded and slotted head h^4, the nut K, working upon the head h^4 of the rod H, the collar G, secured to the lower end of the rod H, the toggle-joint connecting said collar with the valves b^3, the bucket B, having the valves b^3 and b^4, whereby said valves are operated without detaching the lamp or lighting device.

388,010.



5. A hydrant provided with a suitable casing, having the raised valve-seat *a'*, in combination with the bucket B, screwed upon said valve-seat, the cap L, having the splines *l*, with a neck extending above said splines, to which is secured a signal device, the vertical rod H, having the threaded and slotted head h^4 and the spline *h*, the nut K, working upon said head, the bar I across the top of the bucket B, the collar G, secured to the lower end of the rod H, the toggle-joint secured to said collar, and the valve b^3 of the bucket B, substantially as described, and for the purpose set forth.

388,011. APPAREL-COLLAR. GATES H. BARNARD, New York, N. Y. Filed May 15, 1888. Serial No. 273,914. (No model.)



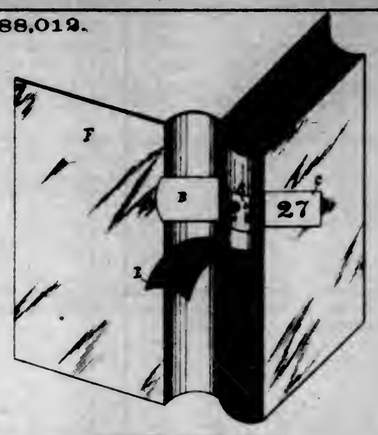
Claim.—A bandless three or four ply collar of substantially uniform width, having secured to its upper edge a shorter supplemental flaring collar, as set forth.

388,012. IDENTIFYING-LABEL FOR BOOKS. JAMES M. BUNN, Brooklyn, N. Y. Filed Jan. 28, 1888. Serial No. 261,680. (No model.)

Claim.—1. In the manufacture of books, the method of affixing a suitable identifying-mark, which consists in suitably affixing upon or to the inner part of the case, lining, or back of the book a label, A, bearing said identification-mark, and having a protecting-flap, B, and covering the same by securely and permanently applying thereto the outer part of the book, and suitably affixing upon or to the outer part of the book the label C, bearing a duplicate of said identifying-mark, substantially as and for the purposes set forth.

2. The label A, bearing an identifying-mark and having the protecting-flap B, in combination with the detachable label C, bearing a duplicate of said identifying-mark, substantially as and for the purposes set forth.

388,012.



388,013. CHECK-ROWER. LORENZO D. RAMSEY, Peoria, Ill. Filed July 19, 1888. Serial No. 280,263. (No model.)



Claim.—1. In a check-rower, the combination, with the pinion having horizontal axis, of the rack-bars having the rack portions thereof located above and below the pinion, but their hook-engaging ends located side by side and in the same horizontal plane, and the hooked rods R, which engage with and move said bars, substantially as described.

2. In a check-rower, the combination, with the rack-bars and the intermeshing pinion, of the radially-slotted disk connected to said pinion, the pin adjustably held in said slot, and the pitman joining said pin directly to the planter feed-slide, substantially as described.

3. In a check-rower, the combination of the rack-bars and the rack-bar support consisting of the plate adapted to be secured to one of the frame-beams formed with the shelves E', upon which rest the rack-bars, and the encircling strap portion having the detachable part E^2, substantially as described.

4. In a check-rower, the combination of the rack-bars, the pinion mounted on a shaft, F', turned by the racks, the support E for the rack-bars, having an upturned plate in which one end of the shaft is supported, the shelves E', upon which the bars slide and are supported, and the divided separable strap E^2 E^3, between which the other end of the shaft has a bearing, substantially as described.

5. In a check-rower, the combination, with the reciprocating bars having the angular paths therein, of the rod R, having the hook R', provided with the lateral projections R^2, as and for the purpose set forth.

6. In a check-rower, the combination, with the hooked rod, of the reciprocating bars having the paths A' and the holes A^2 therein, the contiguous walls A^3 of which are depressed, one with a rounded surface and the other with the shoulder A^4, for the purpose described.

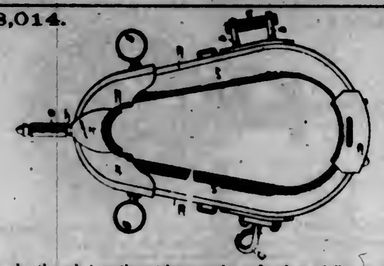
7. The combination, with the check-rower head having the sheave M, of a dolling-finger connected to the head and adapted when forcibly moved to force the check-row wire out from the groove of said sheave, for the purpose specified.

8. The combination, with the check-rower head having the sheave M, of the dolling-finger N, pivoted concentric with said sheave and projecting up by the periphery of the sheave and provided with the handle N'.

388,014. HORSE-COLLAR. CARL BLOM, Merrill, Wis. Filed Jan. 10, 1888. Serial No. 260,304. (No model.)

Claim.—1. The collar having the hinge-sockets at its upper end, in combination with the check-hook having an eye at its lower end and let into the lug-eyes or hinge-barrel, the shield having apertures and a threaded nut in one of them, and a pintle-rod having a buckle at one

388,014.

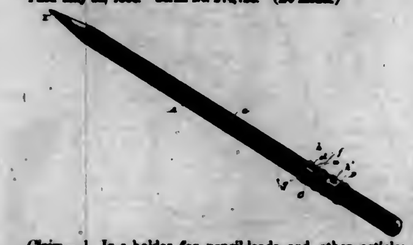


end and a threaded portion at its opposite end, substantially as specified.

2. The combination, with a collar composed of two hinged sections, of a pintle for the said hinge having a loop at one end and a hinged tongue to form a buckle, whereby the said pintle may serve a twofold function, substantially as specified.

3. The combination with a collar having a hinge at its upper ends to unite the sections, of a check-hook having its lower end adapted to enter the barrel of the hinge, and a pintle-rod for the said hinge also passing through and securing the said hook therein, substantially as specified.

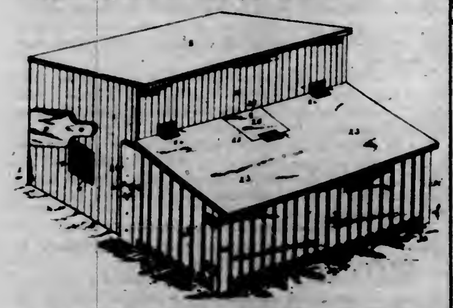
388,015. HOLDER FOR PENCIL-LEADS, &c. GLARE W. BOHAN, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed May 28, 1888. Serial No. 274,726. (No model.)



Claim.—1. In a holder for pencil-leads and other articles, the combination of a tubular longitudinally-slotted sheath, a stem for reception of the lead or other article, movable longitudinally in the sheath and provided with a guide-fin which projects through the slot in the sheath and is formed on said projecting part with an inclined cam or wedge face, and a sliding clamping-sleeve mounted on the exterior of the sheath, engaging said fin, and provided with a bearing face or shoulder to coact with the cam or incline on the fin, substantially as and for the purposes hereinbefore set forth.

2. The combination of the tubular longitudinally-slotted sheath, the stem B, provided with fin *d*, formed as described, the clamping-sleeve C, and the sleeve D, under the arrangement and for joint operation as hereinbefore set forth.

388,016. CHICKEN-COOP. JAMES H. BREWER, Annapolis, Ind. Filed Mar. 13, 1888. Serial No. 267,072. (No model.)

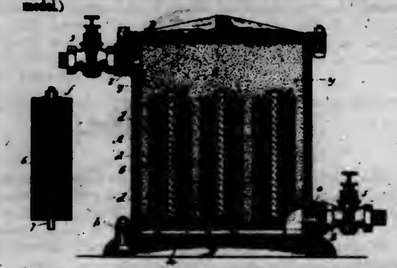


Claim.—1. A chicken-coop consisting of the main body 1, having the doorway 9 and ventilating-roof, the fooding-compartment composed of the detachable lattice-work comprising the end and side sections hinged together, and the inclined roof 23, hinged to the front wall of the main body and arranged over the fooding-compartment, substantially as described.

2. A chicken-coop consisting of the main body 1, having the doorway 9, the fooding-compartment composed of detachable lattice-work comprising the end and side sections hinged together, and the inclined roof 23, hinged to the front wall of the main body over the fooding-compartment, and having the scuttle-hole 26 and door 27 arranged directly over the doorway in the main body, substantially as described.

3. A chicken-coop consisting of an inclined roofed structure and a fooding-compartment inclosed by a detachable lattice-work comprising palings having the adjacent edges of their lower ends gained or cut out to provide passages for the exit and entrance of small chickens, substantially as described.

388,017. FILTER. FREDERIC W. BROWNLOW, Manchester, County of Lancaster, England. Filed Mar. 31, 1887. Serial No. 233,003. (No model.)



Claim.—1. As a new article of manufacture, a filtering medium consisting of a cylinder of solid homogeneous compressed carbon, provided with a central longitudinal tubular opening extending entirely through the same, and having a perforated tube of non-corrosive metal fitted tightly in said tubular opening, its ends projecting therefrom, one of said ends being closed, a suitable packing placed over the end of the tubular opening from which the closed end projects and around said end, and a nut fitted to the projecting end and screwed down against the packing, the opposite end of said tube being open and arranged to make connection with a filter, substantially as specified.

2. A filtering medium consisting in the combination of a compressed homogeneous carbon cylinder composed of two or more sections, each section having a central longitudinal tubular opening, and a perforated non-corrosive metal tube passed through said tubular openings and uniting the said sections together, said tube fitting tightly in said opening and having its ends projecting from the cylinder, one of said ends being closed and fitted with a nut and the other end being open and arranged to be connected with a filter, substantially as specified.

3. The combination of the filter-case A, provided with a suitable entrance-port, a filtering medium placed in said case and connected with the bottom thereof, said filtering medium consisting of a homogeneous compressed-carbon cylinder provided with a central longitudinal tubular opening, and a perforated non-corrosive metallic tube connected at one end with the bottom of the case and passed through the cylinder of compressed carbon, its upper end being closed and fitted with a nut by which the cylinder and tube are fastened together, substantially as specified.

4. A multiplex filter consisting of the combination of the filter-case A, provided with a suitable entrance-port, filtering media placed in said case, said media consisting of separate cylinders of homogeneous compressed carbon having central longitudinal tubular openings and perforated non-corrosive metallic tubes, each of which has one end passed through the bottom of the case, and each of said tubes being passed through a carbon cylinder, its end projecting therefrom being closed and fitted with a nut, by which the cylinder is connected with the tube, substantially as specified.

5. The combination, in a filter, of a case, A, provided with a suitable entrance-port, a filtering medium consisting of one or more cylinders of homogeneous compressed carbon, a perforated tube of non-corrosive metal having one end passed through the bottom of the case, said tube being also passed through a suitable tubular opening in the cylinder, and one of its ends projected out of the cylinder and closed and fitted with a nut, and a body of granulated carbon placed in the case and around the filtering medium, substantially as specified.

388,018. CURTAIN-FASTENER. WILLIAM H. BOSSELMAN, Columbia, Texas. Filed Nov. 26, 1887. Serial No. 256,126. (No model.)

Claim.—1. The herein-described carriage-curtain fastening, comprising a hook or pin upon which the curtain is hung, and a return-bend spring the inner portion of which is secured to the frame of the carriage, and the outer portion of which is bent downward nearly to the pin and binds the selvage of the curtain, when inserted thereunder, closely against the frame, substantially in the manner and for the purpose described.

2. A carriage-curtain fastening comprising a return-bend spring.

388,018.



D, and a pin, C, the spring D being arranged to embrace and bind the selvage of the curtain against the carriage-frame after the same is hung upon the pin, substantially as and for the purpose described.

388,019. LAMP-BURNER FLAME-EXTINGUISHER. Lowell J. Bullard, New York, N. Y. Filed Dec. 3, 1887. Serial No. 256,942. (No model.)



Claim.—1. In a flame-extinguishing device for lamps or burners, the flaps A A and the bifurcated lever C, provided with connecting-rods D D and with a detent angular boss or lug, E, and pivoted at the base to bear against an opposing angular spring, L, in combination with the spring L and a dome or bearer, and operative substantially as described.

2. In a flame-extinguishing device for lamps or burners, the flaps A A, terminally and pivotally connected together and attached to the perforated base at the narrow sides of the wick-tube at its junction with the gallery, in combination with the bifurcated lever C, provided with connecting-rods D D and with a detent angular boss or lug, E, and pivoted at the base and bearing against an opposing angular spring, L, and with such spring L and a dome or burner, and constructed substantially as described.

388,020. CLASP. Lowell J. Bullard, New York, N. Y. Filed Jan. 7, 1888. Serial No. 260,107. (No model.)



Claim.—1. An inwardly-opening clasp provided with introverted prongs upon its fixed jaw and corresponding apertures in its movable jaw adapted to engage such prongs, such movable jaw being actuated by a spring to engage the prongs and apertures, substantially as described.

2. A double clasp consisting of a cuff-end spring-clasp, a sleeve-end spring-clasp, and a connecting-shank common to both clasps, the sleeve-end clasp being inwardly opening and provided with prongs upon its fixed jaw and with corresponding apertures in its movable jaw for engagement with such prongs upon an interposed fabric, substantially as described.

388,021. TRIP-SLING. James Byrne, Baltimore, Md. Filed Oct. 26, 1887. Serial No. 253,220. (No model.)

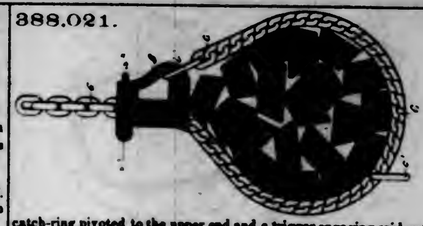
Claim.—1. A trip-sling for a hoisting apparatus, constructed in the form of a hollow cylinder, substantially as described, in combination with a catch suitably hinged or pivoted to the cylinder, and a trigger also pivoted to said cylinder, said catch and trigger operating together, substantially as described.

2. A trip-sling for a hoisting apparatus, constructed in the form of a hollow cylinder, in combination with a catch suitably hinged or pivoted to the cylinder, and a trigger also pivoted to the cylinder, substantially as shown, and a hoisting-rope arranged to pass freely through the cylinder, substantially as described.

3. A trip-sling for a hoisting apparatus, constructed in the form of a hollow cylinder, in combination with a catch suitably hinged or pivoted to the upper end of the cylinder, a trigger hinged or pivoted to the lower end of the cylinder and engaging with the catch, substantially as shown, and a hoisting-chain arranged to pass freely through the cylinder and provided with a stop-link, substantially as described.

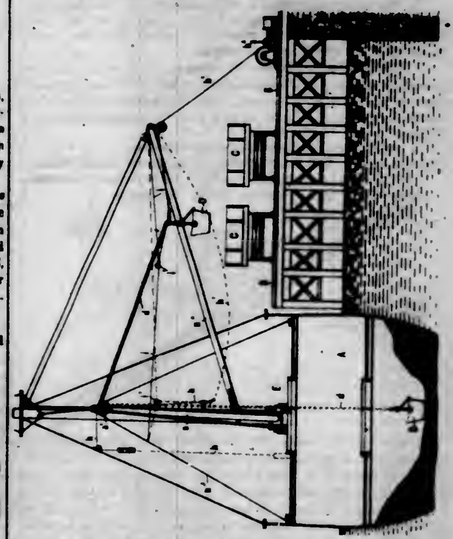
4. A trip-sling for a hoisting apparatus, consisting of a sleeve made of a single piece of metal, substantially as shown, bent into the form of a tube, and having its upper ends secured together and its lower ends constructed to form supports for a pivot, in combination with a

388,021.



catch-ring pivoted to the upper end and a trigger engaging said catch-ring pivoted to the lower end, substantially as described.

388,022. CLUTCH FOR HOISTING-CHAINS. James Byrne, Baltimore, Md. Filed Feb. 18, 1888. Serial No. 264,442. (No model.)



Claim.—1. In a hoisting apparatus, a hoisting-chain-clutching device consisting of a ring, of metal or other suitable material, having a lever, as *f'*, pivoted to the ring, so as to rock vertically, in combination with a suspending-rope for the device attached to the short arm of the lever, and which rope also operates to release the lever, substantially as described.

2. In a hoisting apparatus, a clutching device for the hoist-chain, consisting of a ring, of metal or other suitable material, having one side open to slip over the hoist-chain, and projecting ends to support a pivot, in combination with a lever pivoted to the ends, a traveling suspending-rope attached at its lower end to the short arm of the lever, and the hoist-chain *d*, arranged and operating together, substantially as described.

3. In a hoisting apparatus, the combination of a clutching device for the hoist-chain suspended by a rope, as *h*, the carriage rope or cable *i*, to which the rope *h* is loosely suspended, so as to slide thereon, and the hoist-chain *d*, for the purpose set forth.

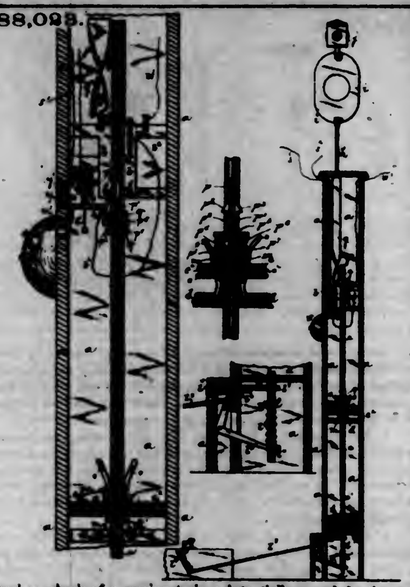
4. In a hoisting apparatus, a clutching device for the hoist-chain, in combination with the rope *h*, by which it is suspended, the crom-rope *i*, upon which the rope *h* is arranged to slide, the hoist-chain *d*, and means attached to the clutching device for hauling the load to the dump, substantially as set forth.

388,023. RAILWAY-SIGNAL. Thomas P. Corey, Danville, Ky. Filed Mar. 9, 1887. Serial No. 230,209. (No model.)

Claim.—1. In a signal apparatus, the combination of a signal-rod carrying the signals with an operating-rod engaging therewith and means for starting said rod into activity through virtue of a blow automatically delivered against the sustaining support of said rod, substantially as described.

2. In a signal apparatus, the combination of an operating-rod with lazy-tongs attached at one end to said operating-rod and at the other end to a lifting device which is operated by the expansion of a spring that has been compressed by force communicated from the

388,023.



wheel or wheels of a passing train, substantially as and for the purpose set forth.

3. In a signal mechanism, the combination of the operating-rod, expanding-levers attached to the lower end of said rod, another rod attached to the lower end of said expanding-levers, a forked arm embracing said rod and having a yielding connection therewith, and a tripping-lever connected to said arm, substantially as and for the purpose set forth.

4. In a signal apparatus, the combination of an operating-rod having one or more teeth or ratchets in its sides with a lever or levers for engaging said rod and supporting the same and means for withdrawing the levers from support of the rod by a blow automatically delivered against them, substantially as and for the purpose set forth.

5. In a signal apparatus, the combination of an operating-rod having a notch or notches therein, and arms pivoted to the signal-box for engaging said notch, with a loose collar or ring embracing said rod, substantially as and for the purpose set forth.

6. In a signal apparatus, the combination of an operating-rod, and a collar embracing said rod, having socket or sockets p' therein, with levers p' and p^2, attached to said rod for engaging said sockets, substantially as and for the purpose set forth.

7. In a signal apparatus, the combination of an operating-rod having one or more notches therein, arms engaging said notches, a loose collar surrounding said rod, and means for raising said collar and for maintaining it in its raised position, substantially as and for the purpose set forth.

8. In a signal apparatus, the combination of an operating-rod, a loose collar on said rod having one or more teeth or notches on its periphery, a lever for engaging said collar, and means for operating said lever, substantially as and for the purpose set forth.

9. In a signal apparatus, the combination of a signal-rod carrying the signal, an operating-rod, and electrical mechanism for releasing a weight, so that it may drop from its support and start said operating-rod into activity, substantially as described.

10. In a signal apparatus, the combination of the button *b'*, key *w*, a lever, *r*, and a wire connecting said lever and button with an electro-magnet, and electrical connection between said magnet and the arm *r*, and a circuit-breaker between said parts, substantially as described.

11. In a signal apparatus, the combination of an operating-rod having an enlarged head thereon with the key within the course of said head and adapted to be closed thereby and operate a circuit, substantially as described.

12. In a signal apparatus, the combination of an operating-rod having a block or enlarged head thereon, a key connected with the line-wire with which said head or block comes in contact, a pivoted lever having a bell-hammer on one end, an electro-magnet for operating said lever, and circuit-connections and a circuit-breaker between said key and magnet, substantially as and for the purpose set forth.

13. In a signal apparatus, the combination of a signal-rod carrying the signals and means for operating said rod with electrical mechanism operated by the train for releasing a weight, so that it may drop and thus start said operating means into activity, substantially as and for the purpose set forth.

14. In a signal apparatus, the combination of a button having a connection with the signal-box, an arm connected with the line-wire, and an arm carrying an insulating-disk with means for operating said parts by the train, substantially as and for the purpose set forth.

15. In a signal apparatus, the combination of the lever 1, having the pedal 3 attached to one end, a lever, 7, having an electrical connection with the line-wire, and means for connecting said lever 1 and arm 7 with a button, 10, having an electrical connection with the signal-box, substantially as and for the purpose set forth.

16. In a signal apparatus, the combination, with a lever, 2, having a pedal, 4, attached to one end, of an arm carrying an insulating-disk moved by said lever, and a button, 10, having a connection with the signal-box, substantially as described.

388,024. VENTILATING-COVER. James Davis, Mitchell, Dak. Filed July 6, 1887. Serial No. 243,866. (No model.)



Claim.—A ventilating-cover for milk-pans, consisting of the convex top 2, having ventilating-apertures and provided on its under side with the stops 6, having depending lugs 10, the horizontal portion of said stops being adapted to rest upon the top edge of a pan to provide an air-space between the pan and cover, and the depending lugs being adapted to prevent lateral motion to said cover by entering the pan and resting against its inner side, substantially as described.

388,025. HAY-RACK. William R. Deakin, Jamestown, Mo. Filed Apr. 24, 1888. Serial No. 271,760. (No model.)



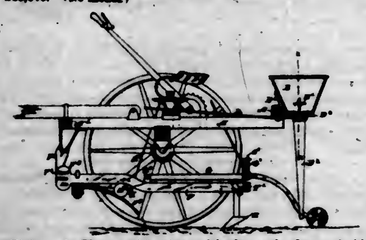
Claim.—1. A folding hay and grain frame for wagons, consisting of longitudinal sills and side pieces and transverse sills pivoted thereto and made in two sections hinged together, substantially as described.

2. In a folding hay and grain frame, the combination of the longitudinal sills, transverse sills pivoted thereto and projecting outside of the longitudinal sills, and the side bows pivoted to the cross-sills, substantially as described.

3. In a folding hay and grain frame, the combination of the longitudinal sills, the cross-sills made in sections hinged together, and the diagonal brace-rods connecting the longitudinal sill with the cross-sills, substantially as described.

4. In a folding hay and grain frame, the combination of the longitudinal sills, the hinged cross-sills, and the standards pivoted to the longitudinal sills to fold thereon, substantially as described.

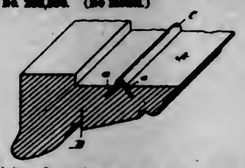
388,026. COMBINED SEEDING AND CULTIVATING MACHINE. William Dennison, Rockford, Ill. Filed Nov. 16, 1886. Serial No. 219,079. (No model.)



Claim.—1. The combination, with the main frame A A', of the seed-hopper E, secured thereto, the adjustable seed-spouts D^2, depending from said seed-hopper, the bars G, the curved pieces G^2, the horizontal rod H', and section-rollers H^2, substantially as described, and for the purpose specified.

2. The combination, with the bar J, of the rock-shaft J^2, provided with the transverse groove J^3 and marking-tooth J^4, the arm K, weight K', and handle K^2, substantially as set forth.

388,027. PICTURE-FRAME. Ebenezer Peterson, Cincinnati, Ohio, assignor of one-half to Albert Metz, same place. Filed Oct. 17, 1887. Serial No. 252,554. (No model.)



Claim.—A picture-frame having one or more cuts or grooves, *a*, in the rabbeted portion thereof, in combination with an elastic strip of material, as C; the two edges of said strip being inserted into said grooves, substantially as set forth.

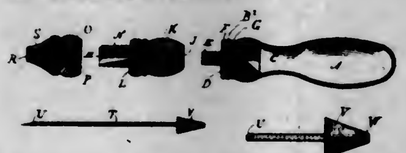
388,028. CENTRIFUGAL REEL. William R. Dunlap, Cincinnati, Ohio. Filed Dec. 24, 1887. Serial No. 258,922. (No model.)



Claim.—1. The combination, in a flour-bolt, of the inner and outer cylinders, the adjustable beaters mounted upon and around the inner cylinder, the inner cylinder-shaft bored and slotted, as shown, the diagonally-grooved hub D *d*, sleeved upon the said shaft, the links G, connecting said hub and beaters, with the rod C, having transverse pin projecting through the slot in the shaft and into the groove in the hub, and a lever to actuate said rod for the purpose of revolving the hub and changing the position of the beaters, substantially as shown and described.

2. The combination, substantially as specified, of the cylinder A, the beaters F, mounted upon and around said cylinder, the beater-shafts having arms *f*, the diagonally-grooved hub D, the links G, connecting the hubs and arms *f*, the bored and slotted shaft E, the rod C, having pins *c*, the forked lever E, for actuating said rod, and segment E', to retain the lever in position.

388,029. SYRINGE. J. Asbury Dunn, Chicago, Ill. Filed Oct. 22, 1887. Serial No. 253,154. (No model.)



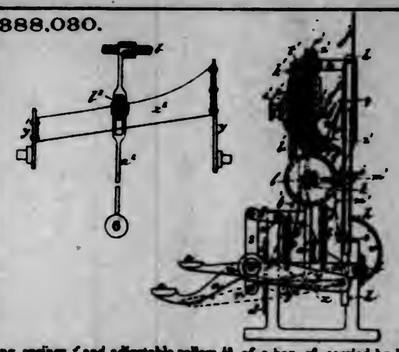
Claim.—In a medicinal syringe, the combination of the body of a syringe with a compressible packing-piece, a needle which passes through said packing-piece, and a compression-piece which is connected with the body of the syringe and partially inclosing the packing, the parts so constructed and related that the needle is secured to the syringe solely by the pressure of the compressible packing, substantially as described.

388,030. CASH REGISTER AND INDICATOR. Leo Berlam, St. Louis, Mo. Filed Oct. 5, 1887. Serial No. 251,602. (No model.)

Claim.—1. The combination, with a series of pivoted key-levers, *a*, having springs *f*, of a bar, *x*, carried by pivoted levers *y y'*, extending in the same direction as said key-levers, having spring *z*, connecting-rod *c'*, toothed rack *b'*, engaging with toothed wheel *d'*, having pawl *i'*, engaging with ratchet-wheel *h'*, fixed to spindle *f'*, index-hand *p'*, and primal disk *b'*, marked with divisions on its face, substantially as and for the purpose described.

2. The combination, with a series of pivoted key-levers a^2, hav-

388,030.



ing springs *f* and adjustable rollers b^2, of a bar, z^2, carried by levers *y y'*, having springs *z*, connecting-rod *c'*, toothed rack *b'*, engaging with toothed wheel *d'*, having pawl *i'*, engaging with ratchet-wheel *h'*, fixed to spindle *f'*, index-hand *p'*, and primal disk *b'*, marked with divisions on its face, substantially as and for the purpose described.

3. The combination, with a key-lever and a vertical rod adapted to display an indicating-tablet, of a compound sheave composed of two pulleys of different diameters secured to move together and have connections with the key-lever and with the vertical rod, whereby a varied range of movement of the key-lever and vertical rod is obtained, substantially as described.

4. The combination, with two or more pivoted key-levers *a* and vertical rods A, carrying indicating-tablets *j*, and having projecting pins or studs *q*, of compound sheaves or pulleys *l m*, spindle *k*, cords or chains *l' m'*, and hinged wing *n*, substantially as described.

5. The combination, with two or more vertical rods, A, carrying indicating-tablets *j*, and having projecting pins or studs *q*, and with means for raising the rods vertically, of a hinged wing, *n*, adapted to engage with said pins when the rods are raised, and formed with a bottom web or flange, *p*, substantially as described.

6. In a cash register and indicator, the combination, with a series of key-levers, of a graduating compound bar adapted to be actuated by and extending in the same direction as said key-levers, and having a pivot or hinge the axis of which extends in the direction of the width of the bar, substantially as described.

7. In a cash register and indicator, the combination, with a plurality of key-levers, of a graduating compound bar adapted to be actuated by and extending in the same direction as said key-levers, and having a pivot or hinge the axis of which extends in the direction of the width of the bar, a rotatable wheel connected with the registering mechanism, and direct connections between said wheel and graduating-bar to rotate the former, substantially as described.

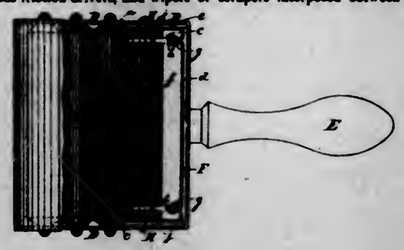
8. In a cash register and indicator, the combination, with a plurality of key-levers, each provided with a contacting device or roller adapted to be adjusted to and from the fulcrum of the lever, of a pivoted bar adapted to be contacted by said contacting devices to be actuated thereby, substantially as described.

9. The combination, with a plurality of key-levers, of a pivoted compound bar adapted to be contacted by the levers and extending in the same direction as said levers, substantially as described.

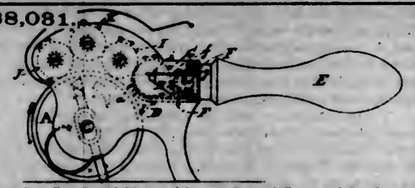
388,031. HAND-PRINTING ROLLER-MACHINE. John H. Burnham, St. Louis, Mo. Filed Oct. 25, 1887. Serial No. 253,262. (No model.)

Claim.—1. In a hand-printing roller-machine, the combination, with a fountain, of a fountain-roll having at its ends friction-drivers, and wipers or scrapers interposed between the fountain-roll and the said friction-drivers, substantially as and for the purposes set forth.

2. In a hand-printing roller-machine, the combination, with the inking-roller, of a fountain or reservoir, a fountain-roll having at its ends friction-drivers, and wipers or scrapers interposed between the



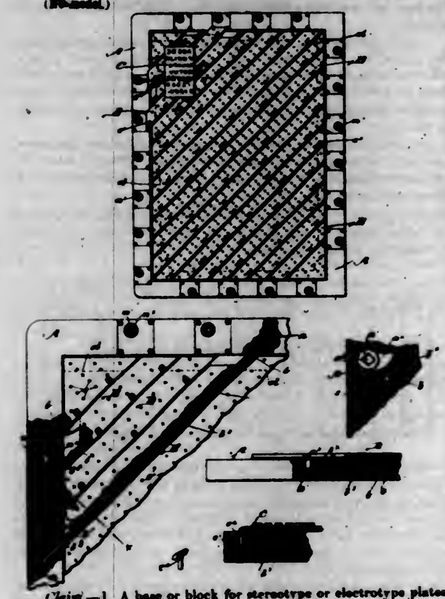
388,031.



fountain-roll and said friction-drivers, substantially as and for the purposes specified.

3. In a hand-printing roller-machine, the combination, with the fountain, the inking-roller, the fountain-roll of less length than said inking-roller, and the friction-drivers on the ends of the fountain-roll outside of the fountain and in contact with said inking-roller for preventing the ink from spreading beyond the end of the said inking-roller, of the adjustable plate having tongues interposed between the friction-drivers and the friction-roll, substantially as and for the purposes specified.

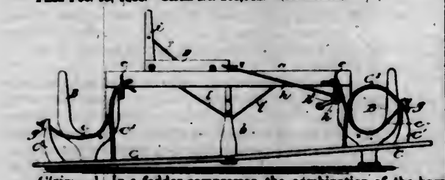
388,032. BLOCK FOR LOCKING STEREOTYPE-PLATES FOR PRINTING. Herman Fleming, Jr., Chicago, Ill., assignor of one-half to Daniel W. Ryan, same place. Filed Nov. 11, 1887. Serial No. 254,603. (No model.)



Claim.—1. A base or block for stereotype or electrotype plates, having its upper surface composed of a series of separate sections made relatively movable and provided with pin-holes arranged in check or cross rows, substantially as and for the purpose specified.

2. A base or block for stereotype or electrotype plates, composed of a series of separate relatively-movable sections provided with pin-holes, a frame for supporting such sections, and means, substantially as described, for locking the sections respectively in their various positions, substantially as and for the purpose specified.

388,033. FODDER-BINDER. Jeremiah Frame, Centown, Ohio. Filed Feb. 13, 1888. Serial No. 263,912. (No model.)

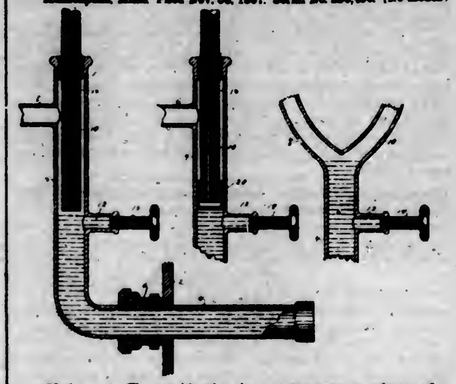


Claim.—1. In a fodder-compressor, the combination of the bars *a*, the inverted yokes B, secured to the bars *a* at their ends to support the said bars, the yokes forming a holder for the fodder, the vertical bar *b* dependent from the frame, the treadle-bars C, pivoted at their inner ends to the bar *b*, having the upright posts C' rigidly secured to them at their outer ends, and the compressor-ropes C^2, one end made fast to the treadle-bars, the other end adapted to be passed over the fodder in the yokes and removably attached to the upright posts C', substantially as herein set forth.

2. In a fodder-compressor, the combination of the horizontal bars *a*, the inverted yokes B, secured to the bars *a* at their ends to support the said bars, the vertical dependent bar *b*, dependent from the frame, the treadle-bars C, and the compressor-ropes C^2, one end made fast to the treadle-bars and the other end adapted to be passed over the fodder in the yokes and removably attached to the upright posts C', the upright posts C', having open slots in the free ends for holding the outer ends of the hand-cords *c*, also having the notch *g* on the outer side near the top end, to which the free ends of the compressor-ropes C^2 are removably attached, substantially as herein set forth.

3. In a fodder-compressor, the combination of the bars *a*, the inverted yokes B, secured to the bars *a* at their ends to support the said bars, the yokes forming a holder for the fodder, the vertical bar *b*, dependent from the frame, the treadle-bars C, pivoted at their inner ends to the bar *b*, having the upright posts C' rigidly secured to them at their outer ends, the compressor-ropes C^2, one end made fast to the treadle-bars, and the other adapted to be passed over the fodder in the yokes, and removably attached to the upright posts C', the carrying-frame D, comprising standards *i*, horizontal bars *j*, braces *j'*, and cross-pieces *k*, the said cross-pieces resting on the horizontal bars *a* of the binder-frame, a windlass secured to the yokes, and a cord connecting the windlass and the carrying-frame, substantially as herein set forth.

388,034. TEMPERATURE-REGULATOR. Henry J. Gerhardt, Minneapolis, Minn. Filed Nov. 30, 1887. Serial No. 256,460. (No model.)



Claim.—1. The combination, in a temperature-regulator, of a chamber, a body of expansible liquid contained therein, a regulating-piston, 14, for increasing or decreasing at will the capacity of said chamber, and thereby predetermining the degree of temperature at which the valve will open or close, a valve resting directly upon said liquid and adapted to be moved by the liquid as it expands or contracts in volume, and a valve-port adapted to be opened or closed by said valve.

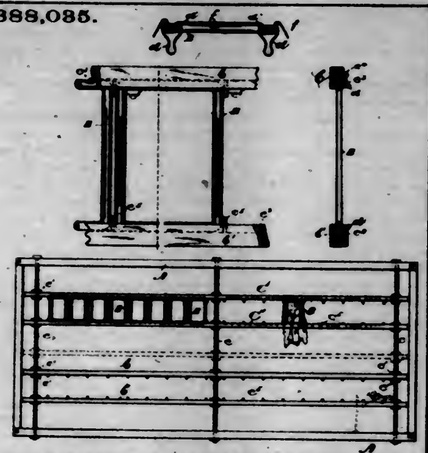
2. The combination, in a temperature-regulator, of the tube 4, the body of liquid contained therein, the regulating-piston 14, connected with said tube and adapted to increase or decrease the interior capacity of said tube 4, and thereby to raise or lower the surface line of the liquid in said tube, the pipe 8, connected with said tube 4, and the pipe 10, extending into said tube and adapted to be closed and opened by the rising and falling of said liquid, substantially as described.

388,035. HOLDING-FRAME FOR EMBROIDERING-MACHINES. Friedrich Graef, Newark, N. J., assignor to Herman Bornemann, same place. Filed June 16, 1888. Serial No. 276,902. (No model.)

Claim.—1. A fabric-stretching frame provided with sides oval in cross-sections, in combination with binding-clamps having yielding jaws applied to the thin edges of said oval sides and turned at right angles thereto, so that said clamps bind the ends of the oval sides of said frame, for the purposes set forth.

2. The combination, in a vibrating or tambour frame, of pairs of grooved and recessed holding-strips adjustably arranged in said frame, with threaded rods secured to said frame on which said holding-strips move, and holding-nuts arranged on said rods and engaging with the said holding-strips, substantially as and for the purposes set forth.

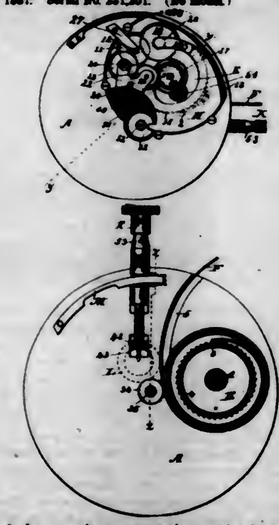
388,035.



3. The combination, in a vibrating or tambour frame, of pairs of holding-strips constructed and arranged to hold a series of removable fabric-stretching frames, said stretching-frames projecting or fitting one into the other, and binding-clamps, whereby the corners of the fabric to be embroidered are held upon and stretched across said frames, substantially as and for the purposes set forth.

4. The combination, with a vibrating or tambour frame of an embroidering-machine, of pairs of adjustable holding bars or strips extending longitudinally in said frame, and constructed and arranged to hold a series of fabric-stretching frames removable therein and to be moved toward and from each other, adjusting devices, whereby said pairs of bars are moved toward and from each other and are held rigidly in position when thus adjusted, and a series of fabric-stretching frames removably arranged between said holding-bars, for the purposes set forth.

388,036. WATCH. HERMUND HAMMARLUND, Chicago, Ill. Filed Mar. 17, 1887. Serial No. 231,261. (No model.)



Claim.—1. In a watch-movement, the combination of the barrel having its periphery provided with ratchet-teeth, and the mainspring coiled in said barrel, with a flexible spring-strip having its inner end provided with a hook adapted to normally bear against said ratchet-teeth and its outer end provided with a pull-button, whereby said strip is adapted to be drawn out from the watch and uncoiled to turn the barrel and wind up the mainspring, substantially as described.

2. In a watch-movement, the combination of the dial-plate A, having a channel cut therein, the barrel having its periphery provided with ratchet-teeth, and the mainspring coiled in said barrel, with a flexible spring-strip having its inner end provided with a hook adapted to normally engage with said ratchet-teeth and adapted to be drawn out and uncoiled to wind up the mainspring and to be returned with its hook sliding over said ratchet-teeth to resume its normal coiled condition within the watch, substantially as set forth.

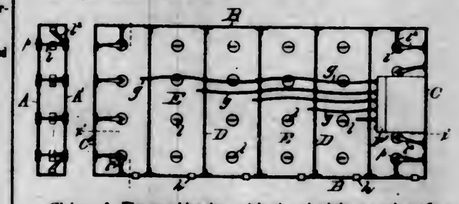
3. The combination, with the mainspring, the barrel, and the winding indicator-hand, of the rocker H, carrying the two sets or trains of gearing, one being the uptrain, driven from the barrel, and the other the downtrain, driven from the arbor of the mainspring, a gear carried by the spindle of the winding indicator-hand and in position to be alternately engaged by one and the other of said two trains of gearing, a spring, 28, tending to throw the rocker into position to bring the uptrain into engagement with the gear-wheel on the winding indicator-hand, and the winding-spring for turning the barrel, so as to wind up the mainspring, and in so doing relieve the rocker from the tension of the mainspring and permit the spring 28 to shift the rocker, which latter when subject to the tension of the mainspring is shifted in an opposite direction by the same, substantially as described.

4. The combination, with the pivoted regulator-arm for regulating the hair-spring, of the rotary disk provided with a spirally-formed groove wherein the regulator-arm engages, said spirally-grooved rotary disk being provided with a hub, 26, which is received in an opening through the back cap when the latter is closed, substantially as described.

5. The combination, with the pivoted regulator-arm for regulating the hair-spring, of the rotary disk provided with a spiral groove, wherein the regulator-arm engages, said spirally-grooved rotary disk being provided with a hub, 26, having on its outer end a scale which is visible through the back cap when the latter is closed, substantially as described.

6. The combination, with the center pinion by which the center hand-carrying arbor is turned, of the center hand-carrying arbor, 50, split longitudinally for a portion of its length, substantially as and for the purpose described.

388,037. AIR-MATTRESS. JOHN B. HAMER, Elizabeth, N. J., assignor of one-half to Otis A. Glazebrook, same place. Filed July 23, 1887. Serial No. 245,033. (No model.)



Claim.—1. The combination, with the air-tight covering of an air-mattress, of air-tight partitions dividing the interior of the mattress into separate air-tight compartments, an air-pump provided with an inlet-opening and an internal air-chamber, and independent tubes connecting the air-chamber of said pump with the separate air-tight compartments of the mattress, respectively, substantially as and for the purpose set forth.

2. The combination, with an air-tight mattress, of a pump-chamber inclosed wholly within the air-tight covering of the same, having an outlet and outlet-valve opening therein, and a movable lid, also inclosed wholly within such air-tight covering, the chamber being provided with an inlet-valve and opening extending through the covering of the mattress, and the lid being adapted to operate like a bellows to draw the air into the pump-chamber through such inlet-valve, and to discharge it within the mattress through such outlet-valve, as and for the purpose set forth.

3. The combination, with the air-tight covering of an air-mattress, of air-tight partitions dividing the interior of the mattress into separate air-tight compartments, a pump-chamber and movable lid inclosed wholly within such air-tight covering, the chamber having an inlet-valve admitting air thereto, and a series of outlet-valves connected within the mattress to the separate compartments, as and for the purpose set forth.

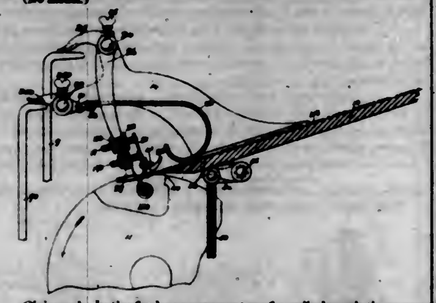
4. The combination, with the covering of an air-tight mattress and partitions forming air-tight compartments therein, of the stay D', consisting in a strip of woven fabric folded and cemented into T shape longitudinally, the central double portion being secured to the edges of the partitions, and the extended edges being secured to the covering of the mattress upon the opposite sides of the partition, substantially as herein set forth.

5. The combination, with the covering of the mattress, of stays *l*, passed through slits in the same and having feet *l'* folded upon the outside of the covering and connected thereto, and the washers *p*, secured to the covering over the feet and around the stay, inside of the covering, substantially as herein shown and described.

6. The combination, with an air-mattress, of the lock-sections *o* and *i*, provided, respectively, with the spring-bolts *d'* and the sockets *f'*, the whole arranged and operated substantially as herein set forth.

7. The combination, with an air-mattress, of the lock-sections *o* and *i*, provided, respectively, with the spring-bolts *d'*, having studs *b*, and with the sockets *f'*, and the wedge *w*, adapted to separate the bolts by pressure between their studs *b*, as and for the purpose set forth.

388,038. FEED-GUIDE FOR PRINTING-MACHINES. JOHN T. HAWKES, Taunton, Mass. Filed May 23, 1887. Serial No. 239,268. (No model.)



Claim.—1. In the feed-gage apparatus of a cylinder printing-press or other machine in which the cylinder receiving the sheet has a continuously rotating or oscillating motion, one or more oscillating arms, as 26, mounted upon a rock-shaft, as 24, journaled in suitable brackets or supports, as 14, not connected with the impression-cylinder, and carrying under guides, as 29, and adjustable front guides, as 21, all combined and adapted to be simultaneously withdrawn in the direction in which the sheet is to move at the proper time for its passage, whereby the edge of the sheet is properly gaged, located, and supported from contact with the moving impression-cylinder until clamped thereon by the cylinder-grippers in a smooth and unscrrugated condition, substantially as set forth.

2. In the feed-gage apparatus of a cylinder printing-press or other machine in which the cylinder receiving the sheet has a continuously rotating or oscillating motion, one or more oscillating arms, as 26, carrying under guides, as 29, adjustable front guides, as 21, and over guides, as 22, all mounted on a shaft, as 24, journaled in brackets attached to a feed-board, and combined and adapted to be operated, as described, substantially as and for the purpose set forth.

3. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, and adjustable front guides, as 21, all combined and adapted to be operated as described, substantially as and for the purpose set forth.

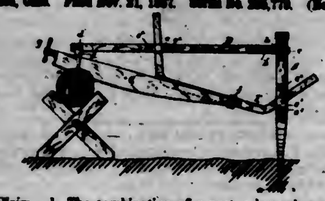
4. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, adjustable front guides, as 21, and over guides, as 22, all combined and adapted to be operated as described, substantially as and for the purpose set forth.

5. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with an impression-cylinder having a bevel upon its gripper-edge, as 110, upon which the grippers may close without any portion of them extending beyond the circumferential line of said cylinder, and a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, and adjustable front guides, as 21, all combined and adapted to be operated as described, substantially as and for the purpose set forth.

6. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, in combination with an impression-cylinder having a bevel upon its gripper-edge, as 110, upon which its grippers may close without any portion of them extending beyond the circumferential line of said cylinder, and a lifting feed-board, as 10, one or more oscillating arms, as 26, carrying under guides, as 29, adjustable front guides, as 21, and over guides, as 22, all combined and adapted to be operated as described, substantially as and for the purposes set forth.

7. In the feed-gage apparatus of a cylinder printing-press or other machine requiring sheets of paper fed to it, one or more oscillating arms, as 26, carrying under guides, as 29, and adjustable front guides, as 21, all carried on a feed-board and adapted to be simultaneously withdrawn in the direction the sheet is to move at the proper time for the passage of the sheet, in combination with one or more drop-fingers, as 32, whereby the edge of the sheet is properly gaged, located, and supported from contact with the impression-cylinder and held by said drop-fingers during the last closing of the cylinder-grippers, until required to be clamped upon the impression-cylinder, thereby preserving the sheet in a smooth and unscrrugated condition, substantially as set forth.

388,039. SAWING APPARATUS. JAMES S. HEDDENBURG, Olmsted, Ohio. Filed Nov. 21, 1887. Serial No. 255,770. (No model.)



Claim.—1. The combination of a post, a brace-bar substantially horizontal, an angle-bar engaging with each, and a saw having sliding bearing on said angle-bar, substantially as set forth.

2. The combination of a post, a horizontal brace-bar engaging with the material to be cut, an angle-bar movably secured to said post and bar, and a saw having sliding bearing on said angle-bar, substantially as set forth.

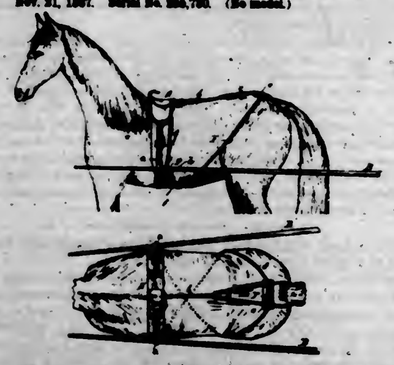
3. The combination of a post secured vertically in the earth, a brace-bar secured to said post and engaging with the material to be cut, an angle-bar having a straight central portion and an angular end portion, said angle-bar engaging with said post and brace, and a saw having sliding bearing on said angle-bar, substantially as set forth.

4. The combination of post A, provided with sleeve *d'*, horizontal brace-bar B, having its one extremity secured to said post and its opposite extremity engaging with the material to be cut, said bar provided with a sleeve, an angle-bar fitting in said sleeve, and a saw having sliding bearing on said angle-bar, substantially as set forth.

5. The combination of post A, provided with a sharp lower extremity and having sleeve *d'*, horizontal brace-bar B, having its one extremity secured to said post and its opposite extremity provided with dog *d*, said bar also provided with sleeve *e*, angle-bar F, provided with loosely-fitting sleeve *f*, said angle-bar having its extremities fitting in sleeves *e d'*, and saw G, pivoted at one extremity to said sleeve *f*, substantially as set forth.

6. The combination of post A, provided with a sharpened lower extremity and provided near its upper end with mortise *a'*, brace-bar B, having extremity *b* fitting in said mortise and provided near said extremity with mortise *b'*, bolt *c*, passing through said post and extremity into said mortise, said bar B having secured to its opposite extremity the double-pointed dog *d*, said bar and brace having, respectively, sleeves *e d'*, angle-bar F, having a right-line central portion and angular end portions, the latter fitting, respectively, in said sleeves, sleeve *f*, having loose sliding bearing on the right-line central portion of said angle-bar, and saw G, pivoted to said sleeve *f*, substantially as set forth.

388,040. HARNESS. JAMES S. HEDDENBURG, Olmsted, Ohio. Filed Nov. 21, 1887. Serial No. 255,780. (No model.)



Claim.—1. In a harness, the combination, with a crupper and pad secured thereto, of a holdback loosely passing between the two,

extending down on either side of the horse, crossing under the same, and adapted to be attached to the thills, substantially as set forth.

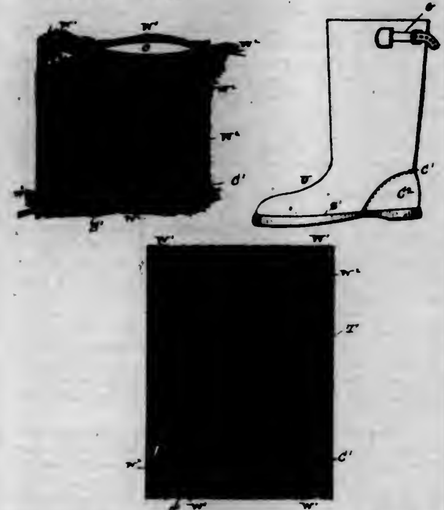
2. The combination of crupper *c*, pad *c*, an opening formed intermediate of the two, and holdback F, fitted loosely in said opening and adapted to encircle the horse and be attached to the thills, substantially as set forth.

388,041. BOTTOM BAR FOR WINDOW-SHADES. Mason A. Hoosier, Sugar Grove, Ill. Filed Dec. 22, 1887. Serial No. 258,662. (No model.)



Claim.—In combination, the small rod *c*, angular in cross-section, the metallic bar having the much larger and spacious angular chamber *b*, to receive loosely and retain such rod, and the curtain end loosely lapped thereon, and the hollow slitted tube *c*, slipped over such bar, all as shown and described.

388,042. WOVEN FELTED BOOT. Jurgen C. Hillman, Hagaman's Mills, N. Y., assignor of two-thirds to Isaac L. W. Reynolds, same place, and Charles B. Knox, Johnstown, N. Y. Filed Nov. 30, 1887. Serial No. 256,516. (No model.)



Claim.—1. The method for producing a fabric-boot body, consisting in weaving the same in continuity, and then securing and cutting off the warp and woof threads where projecting beyond the sides and the sole part thereof, as and for the purposes specified.

2. The herein-described method for producing a fabric-boot body, consisting in weaving the same in continuity, then securing and cutting off the warp and woof threads, and then felting or felting the same, as and for the purposes specified.

3. The method for producing a fabric boot, consisting of weaving the same in continuity, then cutting off and securing the woof and warp threads and felting or felting the body, and then attaching an exterior sole to the bottom part, as and for the purposes specified.

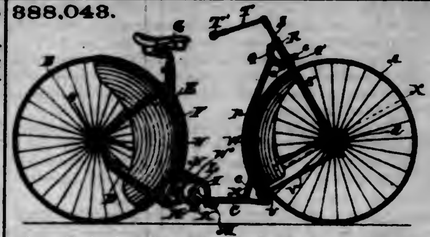
4. A fabric boot produced from woven material, with its top, upper, counter, and sole parts made in a single piece, having the warp-threads where projecting beyond the body secured and cut off, and its warp-threads where subtending the bottom opening secured and cut off with the material felted or felted, and provided with a supplemental sole, S^2, and re-enforce counter C^2, substantially in the manner as and for the purposes set forth.

388,043. VELOCIPEDE. Herbert R. Howe, Neenah, Wis. Filed Apr. 2, 1888. Serial No. 269,302. (No model.)

Claim.—1. In a velocipede, a cross-bar, U, centrally pivoted to the frame, with two connecting-rods, V V, and tiller S, the connecting-rods V V being each pivoted at one end to the cross-bar U and at the other end to the axle or a fork of the tiller, the points at which the rods V V are pivoted to the cross-bar U being the same distance from each other as the points at which these rods are pivoted to the axle or the forks of the tiller, substantially as described.

2. In a velocipede, an upright, P, having an arm, Q, pivoted to

388,048.

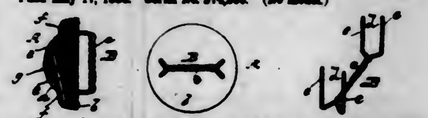


a sleeve, R, the sleeve R, and the tiller S, with the arm Q' of the upright P, having a slot, *b*, substantially as and for the purpose set forth.

3. The combination of the tiller S, sleeve R, upright P, pivoted to the sleeve R, and arm Q', provided with slot *b*, with connecting-rods V V and cross-bar U, pivoted on the frame, all arranged and connected substantially as described.

4. In a velocipede, a sprocket-wheel, I, supported in a bracket, H, and the bracket H, secured adjustably to the horizontal part C of the frame by means of a bolt, K, adapted to be inserted in any set of the many apertures in said bracket H, whereby said sprocket-wheel I may be adjusted horizontally and vertically, substantially as described.

388,044. HARNESS-ROSETTE. Orrin P. Howe, Streator, Ill. Filed May 17, 1887. Serial No. 274,302. (No model.)



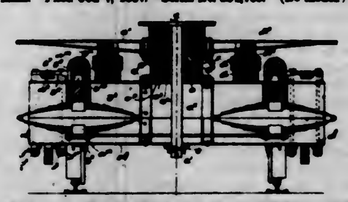
Claim.—The within-described staple for harness-rosettes, consisting of two pieces of wire twisted together, forming a thickened horizontal portion, the extended single ends bent at right angles to the main portion and adapted to be secured to the rosettes, substantially as and for the purpose set forth.

388,045. BARREL-HEATER. Evan D. Hughes, Wheeling, W. Va. Filed Apr. 20, 1887. Serial No. 236,004. (No model.)



Claim.—The herein-described barrel-heater, comprising the furnace having the fire-box at one end, an opening in its top wall over the fire-box, a drum having a removable cover arranged above the opening in the furnace, and a partition or bridge-wall extending from the rear end of the fire-box through the opening in the furnace, whereby the heat passes directly from the fire-box into the drum and out of the chimney, causing the drum to be heated to an even temperature at all times, as and for the purpose described.

388,046. PASSENGER-CAR TRUCK. Lucius K. Jewett, Boston, Mass. Filed Oct. 7, 1887. Serial No. 251,703. (No model.)



Claim.—1. In a car-truck, a transom, arch-bars, a bolster, and elliptical springs to support the said bolster, and links to sustain the said springs, combined with a saddle-bar to be embraced by and support the said links away from and within the arch-bars and with a support for the said saddle-bar, substantially as described.

2. In a car-truck, a transom, a^2, arch-bars and links, a bolster, a^{10}, and elliptical springs to support the said bolster, combined with a saddle-bar comprising the bars b^2 b^3, and with a support for the bar b^2 within the arch-bar, the bar b^2 being supported by the arch-bar substantially as described.

3. In a car-truck, a center plate comprising two parts, each provided with one or more annular grooves, combined with balls c^4, fitted loosely into the said grooves in contact with each other and adapted to sustain the center load of the car, the said balls being free to move in said grooves, substantially as described.

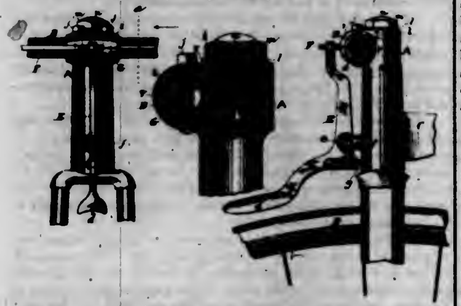
4. In a car-truck, the upper curved plate, d^2, provided with a groove in its lower face, the lower curved plate comprising the spring-supported part d', having a groove in its upper face, and the part d, combined with balls d^3, fitted into said grooves and adapted to receive part of the load, substantially as and for the purpose specified.

5. The combination, with a car-truck having a transom, a^2, of a bar, *e*, extended across and under said transom, and braces e^2, to rigidly fasten the car-truck to the car-body, substantially as described.

6. The combination, with a car-truck having a transom, a^2, of a bar, *e*, extended across and under said transom, and braces e^2, to rigidly fasten the car-truck to the car-body, and bolts e^3, and trusses e^{12}, substantially as described.

7. In a car-truck, the pedestals a^3, combined with the pedestal tie-bar composed of the channel-bars *f f'*, the channel-bar *f* being fitted into the channel-bar *f'*, as and for the purpose specified.

388,047. VELOCIPEDE. Ivar Johnson and Claus Hansen, Worcester, Mass.; said Hansen assignor to said Johnson. Filed Oct. 31, 1887. Serial No. 253,513. (No model.)



Claim.—1. In a velocipede, the head A, having the bearing G, made, substantially as described, to receive the handle-bar, said bearing in turn having adjustable threaded openings to receive the fastening-bolts *j*, the usual center bolt, *n*, and the lock-nut *m*, preferably having a washer, *l*, under the same, in combination with the detachable cap *i*, also having suitable openings to receive the aforesaid fastening-bolts *j* and adapted to fit over the handle-bar and bearing G, also having a horizontal flange, *k*, extending back therefrom over the head, said flange being provided with a vertical slot or opening to receive the center bolt, the handle-bar having transverse openings through the same corresponding to those in the bearing and cap for the same purpose, and the fastening-bolts *j*, said bolts *j* serving the double purpose of holding the forward part of cap *i*, as well as the handle-bar, from rotary and longitudinal movement, substantially as set forth.

2. In a velocipede, the head A, having the bearing G, made, substantially as described, to receive the handle-bar, and the slots or openings *p*, to receive the projections *o* on the cap *i*, said bearing also having suitable openings to receive the fastening-bolts *j*, the center bolt, *n*, and lock-nut *m*, preferably having a washer, *l*, under the same, in combination with the detachable cap *i*, adapted to fit over the bearing G and handle-bar, and having a horizontal flange, *k*, extending back therefrom over the head, also having the projections *o* upon the under side thereof, and suitable openings to receive bolts *j*, said flange *k* also having a vertical slot or opening to receive the center bolt, the handle-bar having transverse openings through the same corresponding to those in the bearing and cap for the same purpose, and the fastening-bolts *j*, substantially as and for the purpose set forth.

3. The velocipede-brake E, having a horizontal opening or socket in the back side thereof below its pivot, in combination with the spring *g*, fitted therein, and the head A, substantially as and for the purpose set forth.

388,048. VELOCIPEDE. Ivar Johnson and Andrew Fyrberg, Worcester, Mass.; said Fyrberg assignor to said Johnson. Filed Dec. 29, 1887. Serial No. 259,391. (No model.)

Claim.—1. In a velocipede, the combination of the rotatable

388,048.



foot-treadle frame thereof and the central pivot bolt or shaft upon which it turns with a suitable spring, *h*, fitted over said shaft, attached at one end to the shaft and at its other end to the frame, and the plate or washer *m*, interposed between said treadle-frame and the crank-arm, and having the shoulders *l l'*, or their equivalents, adapted to strike against the foot-guard h^3, substantially as and for the purpose set forth.

2. The combination of the crank-arm A, treadle-bolt *j*, fastened to said arm and having a peripheral groove at its inner end, foot-treadle C, made with the hollow sleeve *k* and having the laterally-projecting flange k^2 at the inner end thereof, spring *h*, disposed within the aforesaid peripheral groove and having its ends connected, respectively, with said foot-treadle and bolt *j*, and plate *m*, having the shoulders *l l'* so arranged that the flange k^2 will come in contact therewith when the foot-treadle is rotated, substantially as and for the purpose set forth.

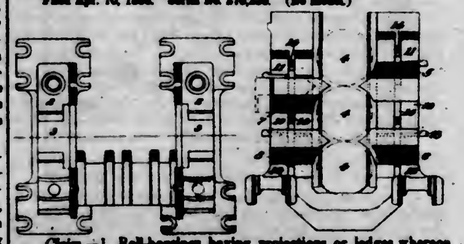
3. The combination of the crank-arm A, treadle-bolt *j*, fastened to said arm, provided with the key m^2 near the arm, and having the peripheral groove *i* at its inner end, foot-treadle C, made with the hollow sleeve *k* and having the lateral projecting flange k^2 at its inner end, spring *h*, disposed within the aforesaid peripheral groove around bolt *j* and having its ends connected, respectively, with the foot-treadle and said bolt, and plate *m*, arranged between the crank-arm and treadle, having the circular flange m^4 fitting over the end of the treadle-sleeve, also having the shoulders *l l'*, and so arranged that the flange k^2 will come in contact therewith when the treadle is rotated, substantially as and for the purposes set forth.

4. The combination of the crank-arm A, treadle-bolt *j*, provided with the key m^2, and foot-treadle C, made with the central sleeve, *k*, and having the lateral projection k^2 at its inner end, with the plate *m*, having the central opening, *m'*, radial slot m^3, and lateral flange m^4, and interposed between the crank-arm and treadle, substantially as and for the purposes set forth.

5. In a velocipede, a dust-guard interposed between the crank-arm and foot-treadle, consisting of a plate, *m*, formed upon or fastened to the treadle-bolt, and having a laterally-projecting rim or flange, m^4, extending over the inner end of the treadle-sleeve, substantially as set forth.

6. The combination of the treadle C, bolt *j*, having the longitudinal slot *q* in its outer end, the usual lock-nut, *o*, and the bearing *p*, or its equivalent, having the longitudinal projection or pin *s*, with the washer *n*, having the internal flange, *r*, and peripheral notches *t*, or their equivalents, substantially as and for the purpose set forth.

388,049. ROLL-HOUSING. William R. Joyce, Braddock, Pa. Filed Apr. 10, 1888. Serial No. 270,220. (No model.)



Claim.—1. Roll-housings having projections or ledges whereon the rest-bar is supported, and on which it is movable to or from the rolls, substantially as and for the purpose set forth.

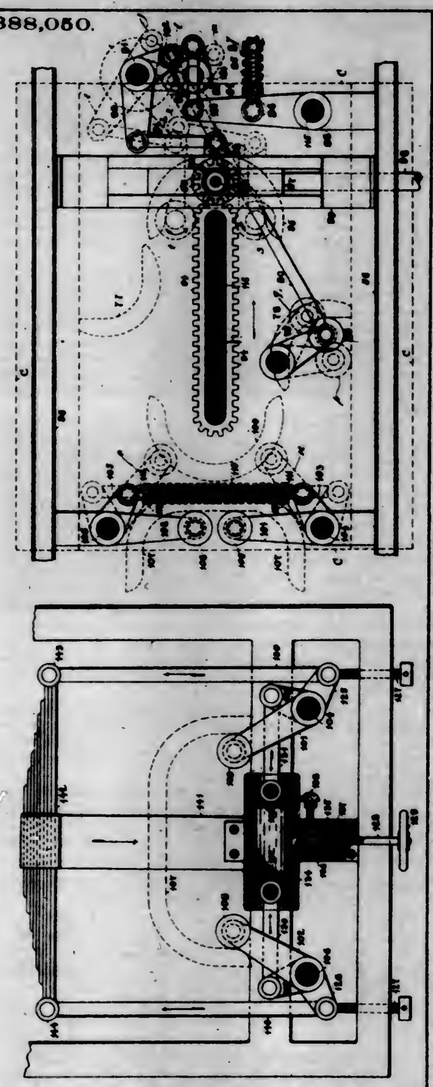
2. Roll-housings having projections or ledges whereon the rest-bar is supported, and on which it is movable to or from the rolls, and upright keys, whereby the rest-bar is secured to the housings, substantially as and for the purpose set forth.

3. Roll-housings having projections or ledges whereon the rest-bar is supported, and on which it is movable to or from the rolls, and wedges insertible between the rest-bars and projections on the housing, substantially as and for the purpose set forth.

388,050. OPERATING MECHANISM FOR TYPE-BEDS OF CYLINDER PRINTING-MACHINES. Conrad Kahler and Leonard R. Rosecrans, Chicago, Ill., assignors to themselves and John J. Kahler, same place. Filed Sept. 22, 1887. Serial No. 250,496. (No model.)

Claim.—1. In a flat-bed press, a bed-driving mechanism consist-

388,050.



ing of a rack centrally located and attached directly to the bed or form-carriage, a sliding frame carrying a single driving-gear meshing with said rack, rock-shaft 81, lever 90, and rod 91, connecting said shaft and sliding frame, and means for automatically operating the frame, substantially as set forth.

2. In a flat-bed press, a cushioning device consisting of springs, fixed air-cylinders, and an automatic governor, substantially as described.

3. The reciprocating bed C, provided on its under side with a rack, 94, and having at the end of the rack a curved shoe, and a shoe on one side of the rack, in combination with a pinion, 93, sliding frame 97, and an operating mechanism for moving the frame to start the pinion on its travel around the end of the rack, substantially as described.

4. The bed C, provided with the rack 94 on its under side, and having a shoe at the end of the rack and a shoe at the side thereof, pinion 93, roller 96, and sliding frame 97, in combination with the arm 79, roller 89, rock-shaft 115, and connecting-rod 80, for operating the mechanism to move the sliding frame and start the roller around the end of the rack without straining the parts, substantially as specified.

5. The bed C, provided with a rack, 94, on its under side, and having a shoe at the end and side of the rack, pinion 93, roller 96, and sliding frame 97, in combination with the arm 79, roller 89, rock-shaft 115, connecting-rod 80, arm 102, rock-shaft 81, arm 90, and connecting-rod 91, attached to the sliding frame for operating the sliding frame at the start of the pinion around the end of the rack, substantially as specified.

6. The shoe 78, secured to the under side of the bed C, in combination with the arms 79, roller 89, rock-shaft 115, and connecting-rod 80, for operating a mechanism to move a sliding frame carrying the driving-pinion for the bed-rack, substantially as specified.

7. The sliding frame 97, carrying the driving-pinion for a rack of a printing-press bed, in combination with the rod 91, arm 90, rock-shaft 81, arm 102, and a connection between the arm 102, and operating devices moved from the travel of the bed for shifting the sliding frame, substantially as and for the purposes specified.

8. The shoe 78, arms 79, roller 89, rock-shaft 115, and connecting-rod 80, in combination with the arm 102, lever 90, and rod 91, for starting a sliding frame carrying a driving-pinion, substantially as described.

9. The lever 84, compression-spring 85, and sliding rod 86, in combination with the arm 82 and connecting-rod 83, for locking a sliding frame carrying a driving-pinion for a printing-press bed-rack, substantially as and for the purpose specified.

10. The lever 84, compression-spring 85, and sliding rod 86, in combination with the arm 82, connecting-rod 83, rock-shaft 184, and gears 181 and 183, for operating the arm 82, with the movement of a sliding frame carrying the driving-pinion of a printing-press bed-rack, substantially as and for the purpose specified.

11. The rock-shaft 81, arm 90, and rod 91, connected with a sliding frame carrying a rack-driving pinion of a printing-press bed, in combination with the gears 181 183, rock-shaft 184, arm 82, connecting-rod 83, lever 84, compression-spring 85, and sliding rod 86, for moving the sliding frame and locking it in position, substantially as and for the purposes set forth.

12. The shoe 78, arms 79, roller 89, rock-shaft 115, connecting-rod 80, arm 102, rock-shaft 81, lever 90, and connecting-rod 91, in combination with the gears 181 183, rock-shaft 184, arm 82, connecting-rod 83, lever 84, compression-spring 85, and sliding rod 86, for moving a sliding frame to start a driving-pinion and for locking the frame and pinion at the limit of their movements, substantially as and for the purposes specified.

13. The combination, with a reciprocating bed or form-carriage, C, provided with a rack, 94, on its under side, of a driving-pinion, 93, carried by a sliding frame, 97, devices for starting the sliding frame at the commencement of the travel of the pinion around the end of the rack, and the arm 82, connecting-rod 83, rock-shaft 184, and gear-wheels 181 and 183, for locking the sliding frame at the limit of its movement in either direction endwise, substantially as and for the purpose specified.

14. The shoe 107 and arms 101 and 102, each having a roller at its outer end, in combination with the rock-shafts 104 and 106, and arms 108 and 105, for operating the cushioning device at the limit of the end movement of a bed or form-carriage, substantially as specified.

15. The cushioning device for a bed or form-carriage of a printing-press, consisting of an air-cylinder, 134, compression-pistons 132 and 133, secondary cylinder 135, and cut-off piston 136, operated by the movement of the bed or form-carriage for cushioning purposes with variable speed, substantially as specified.

16. The air-cylinder 134, pistons 132 and 133, and secondary cylinder 135, in combination with the cut-off piston 136, compression-spring 137, adjusting-stem 138, and devices for operating the compression-piston from the movement of a bed or form-carriage for a printing-press, substantially as and for the purposes specified.

17. The shoe 107, arms 101 and 102, each having a roller at its outer end, rock-shafts 104 and 106, and arms 108 and 105, in combination with the connecting-rods 130 and 131, compression-pistons 132 and 133, air-cylinder 134, secondary cylinder 135, and cut-off piston 136, for cushioning the bed or form-carriage of a printing-press at the end of its movement under variable rates of speed, substantially as specified.

18. The arms 101 and 102, each carrying a roller at its outer end, rock-shafts 104 and 106, and arms 125 and 126, in combination with the adjusting-screws 127, for regulating the position of the arms 101 and 102, substantially as and for the purpose specified.

19. The arms 101 and 102, each having a roller at its outer end, rock-shafts 104 and 106, and arms 125 and 126, in combination with the connecting-rods 139 and 140 and spring 142, substantially as and for the purpose specified.

20. The shoe 107, arms 101 and 102, each carrying a roller at its outer end, rock-shafts 104 and 106, and arms 125 and 126, in combination with the connecting-rods 139 and 140 and spring 142, substantially as and for the purpose specified.

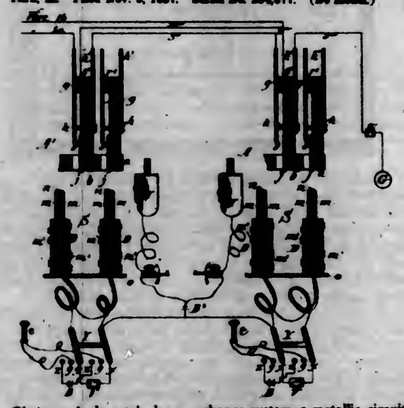
21. The shoe 107, arms 101 and 102, each carrying a roller at its outer end, rock-shafts 104 and 106, arms 125 and 126, connecting-rods 139 and 140, and spring 142, in combination with the arms 108 and 105, connecting-rods 130 and 131, compression-pistons 132 and 133, air-cylinder 134, secondary cylinder 135, and pressure-pistons 136, for cushioning a bed or form-carriage at the end of its movement, substantially as specified.

388,051. NUT-LOCK. William Kaul, Rush, Ohio. Filed May 1, 1888. Serial No. 272,494. (Model.)



Claim.—A nut-locking plate for rail-joints, having slotted elastic end arms, in combination with a chair on each rail, provided with the button F on the inside of the bank G, as and for the purpose specified.

388,052. MULTIPLE SWITCH-BOARD. Milo G. Kellogg, Hyde Park, Ill. Filed Nov. 9, 1887. Serial No. 254,677. (No model.)

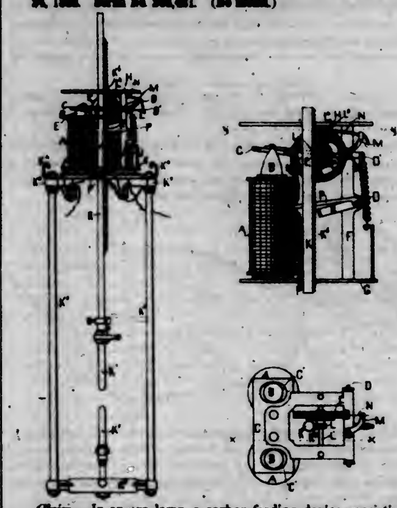


Claim.—1. In a telephone exchange system, a metallic circuit-line, a switch for said line containing two contact-pieces to which the two sides or branches of the line are respectively connected, and a loop-plug, with the two conductors of its double conducting-cord connected to its two contact-pieces, respectively, said plug being adapted to be inserted into said switch, and when inserted to connect its two contact-pieces with the two contact-pieces of the switch, in combination with a test-receiving instrument connected on one side to one of the conductors of said double cord and on the other side to a switch-testing device adapted to be brought into connection with a contact-piece of the line, and a battery in the circuit between the switch-testing device and the contact-piece of the plug connected therewith, substantially as set forth.

2. In a telephone-exchange system, metallic circuit-lines, multiple switch-boards for said lines, switches for said lines, one switch on each board, each switch containing two contact-pieces, to which the two sides or branches of the line are respectively connected, and pairs of loop-plugs at each board, each plug being adapted to be inserted into any switch, and when inserted to connect its two contact-pieces with the two contact-pieces of the switch, respectively, the two contact-pieces of one plug being connected with the contact-pieces of its mate, respectively, by two conductors with flexible cords, in combination with test-receiving instruments, one at each board, each instrument being connected on one side to one of the conductors connecting each pair of cords and on its other side to a switch-testing device adapted at the will of the operator to connect it with any line for testing, and a battery in the test-circuit thus established, substantially as set forth.

3. In a telephone-exchange system, metallic circuit-lines, multiple switch-boards for said lines, switches for said lines, one on each board for each line, each switch containing three contact-pieces, two of which are normally in contact, and the third piece being insulated from the others, (except by the line connections,) one branch of each line passing successively through the pairs of contact-pieces of its switches, which are normally connected, and from the last contact-piece to the ground, the other branch of the line being connected to said third contact-pieces of its switches on the different boards, in combination with loop-plugs, with two flexible conductors connected to the two branches of another line, said plugs being each adapted to be inserted into the switches at the boards where they are located, and when one is inserted into a switch to disconnect the pair of contact-pieces of the switch, which are normally in contact, and connect the two contact-pieces of the plug with the two contact-pieces of the switch, which are then connected with the two branches of the line-test-receiving instruments, one at each board, each instrument being connected on one side to one of the flexible conductors of each plug and on its other side to a switch-testing device adapted at the will of the operator to be brought into connection with any of said third contact-pieces of the switches at her board, and a battery in the test-circuit thus established, substantially as set forth.

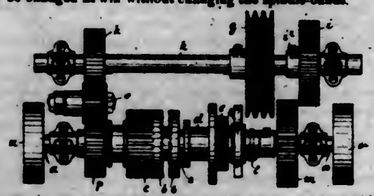
388,053. ARC LAMP. Virgil C. Kellis, Chicago, Ill. Filed Mar. 24, 1888. Serial No. 268,681. (No model.)



Claim.—In an arc lamp, a carbon-feeding device consisting of a rack upon the carbon rod, a pinion meshing therewith, a shaft carrying such pinion, a ratchet-wheel on the shaft, a friction-pulley loose on such shaft, but secured thereto by a dog which engages the ratchet-wheel, said shaft with pinion-pulley and ratchet-wheel journaled upon a lever-armature which is pivoted at one side of the carbon rod and at one end suspended over the electro-magnet core and at the other influenced by a counter-spring, a friction-chain about each pulley, fixedly held at one end and at the other secured to a pivoted arm which is downwardly drawn by a spiral spring, and a stop which engages such arm when the armature has descended a certain distance, the engagement of said arm loosening the chain on said pulley, and thus permitting the carbon rod to descend until the current passing through the carbons weakens the current through the electro-magnet and permits the armature to rise until the chain again grasps the pulley.

388,054. SPINNING-MULE. William H. Kendall, Bradford, and Walter H. Hemmy, Haverhill, Mass. Filed Apr. 12, 1887. Serial No. 234,794. (No model.)

Brief.—The object of the invention is to provide improved means whereby the direction of rotation of the spindles of a spinning-mule may be changed at will without changing the spindle-bands.



Claim.—1. The shaft *a*, provided with the gear *m*, in combination with the shaft *h*, provided with the adjustable gear *i* and gear *k*, the intermediate gear, *o*, gear *p*, the sleeve *s*, and pin *t*, substantially as shown and described.

2. The sleeve *s*, provided with gear *p*, in combination with the shaft *c*, provided with gear *m*, the pin *t*, the shaft *h*, provided with adjustable gear *i*, band-pulley *g*, and gear *k*, and the intermediate gear, *o*, substantially as and for the purposes set forth.

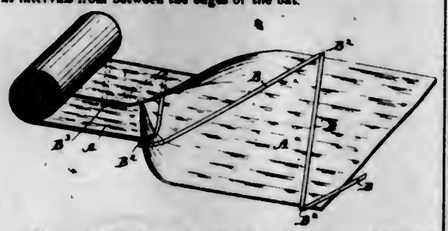
388,055. CURTAIN RING OR HANGER. J. William Lesley, Everett, Mass. Filed Apr. 11, 1888. Serial No. 270,314. (No model.)



Claim.—In a curtain ring or hanger, the ring having a roller-receiving recess, combined with a yoke fitted into the roller-receiving recess, the arms of the said yoke having journal-receiving sockets or openings and laterally-extended journal-bearings, as described, and the roller journaled in the yoke, substantially as and for the purposes set forth.

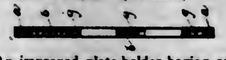
388,056. COTTON OR OTHER BATTING. Willard I. Lewis, Walpole, Mass. Filed Dec. 19, 1887. Serial No. 258,262. (No specimens.)

Brief.—For the purpose of readily finding the edges of the roll of batting and of avoiding tearing the same in opening out the roll, a strip of paper is applied, as shown and described, the paper projecting at intervals from between the edges of the bat.



Claim.—A roll of batting composed of a sheet of fibers folded upon itself parallel with its length, and having a strip of paper applied thereto in a zigzag manner and projecting beyond one edge of the sheet on one side of the latter as folded, substantially as shown and described.

388,057. PLATE-HOLDER. William H. Lewis, Brooklyn, assignor to the E. & H. T. Anthony & Company, New York, N. Y. Filed Jan. 28, 1888. Serial No. 262,294. (No model.)



Claim.—1. An improved plate-holder having an outer frame, within which are placed recessed bars on opposite sides of the frame, with which engage plate-holding bars movable toward and from each other, the said bars being provided with pivoted and laterally-swinging latches, which engage with the recesses in the said bars within the frame, the bars having plate-confining ledges on their edges, substantially as set forth.

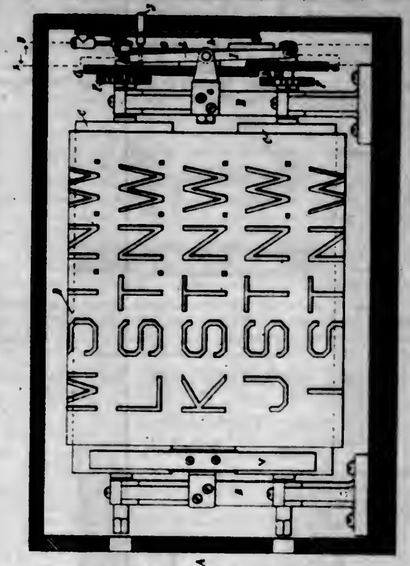
2. The combination, in a plate-holder, of a frame, *a*, notched bars *b*, movable plate-holding bars *c*, and pivoted laterally-swinging latches *c*, adapted to engage with the notches in the bars *b*, substantially as set forth.

3. An improved plate-holder having an outer frame, within which are supported plate-holding bars movable toward and from each other, one of said bars being provided with spring-latches attached to it, and which engage with notches on the frame, whereby the bars are pressed toward each other by spring action, substantially as set forth.

4. An improved plate-holder having an outer frame, within which are supported plate-holding bars movable toward and from each other, and provided with plate-retaining ledges on their edges, one of said bars being provided with spring-latches attached to it, and which engage with notches on the frame, whereby the bars are pressed toward each other and the plate held by spring action, substantially as set forth.

5. In a plate-holder, the combination of movable plate-holding bars constructed and arranged to be clamped at predetermined places to the sides of the frame of the plate-holder, and springs movable with the bars, and which engage at differing places, depending on the position of the bars with the sides of the frame, and whereby the bars are pressed toward each other by spring action and the plate so held, substantially as set forth.

388,058. STATION-INDICATOR. Marcus L. Mann, Brooklyn, N. Y. Filed Jan. 3, 1888. Serial No. 259,804. (No model.)



Claim.—1. In a station-indicator, the combination, with an apron and apron-rollers, of the fixed spur-wheels F and loose cog-wheels G, both mounted on the shafts of said rollers, each of said loose wheels having a spur to engage the proper spur-wheel, the shifting-lever I, engaging the loose cog-wheels, the slide-rod J, engaging the shifting-lever, the driving-shaft H, gearing with both loose wheels, and a means for imparting an intermittent motion to the driving-wheel, the whole adapted to operate substantially as herein described.

2. In a station-indicator, the combination, with an apron and apron-rollers, of the driving-wheel H, arranged to impart motion to said rollers, the two ratchet-wheels K, having reversed teeth, the pawl-arm O, carrying pawls for engaging said ratchet-wheels, respectively, the case L, inclosing the ratchet-wheels and having openings to receive said pawls, and a means for imparting a vibrating motion to said arm, the whole adapted to operate substantially as herein described.

3. In a station-indicator, the combination, with an apron and apron-rollers, of the driving-wheel H, the ratchet-wheels K, having reversed teeth, the pawl-arm O, and pawls for engaging the ratchet-wheels, respectively, the whole inclosing case L, the reversing-lever P, having a fork, Q, to engage the pawl-arm, and the stops R, for regulating the position of the reversing-lever, the whole adapted to operate substantially as herein described.

388,059. STEAM-ENGINE. Richard H. Mather, Windsor, Conn. Filed Apr. 26, 1887. Serial No. 236,002. (No model.)

Claim.—1. A steam-cylinder, in combination with a double steam-piston consisting of two single hollow pistons and an intermediate slotted connection, which are formed of a single piece of metal and have a continuous bearing-surface within said cylinder from end to end of said pistons, substantially as and for the purpose specified.

2. A double steam-piston consisting of two single pistons and an intermediate cylindrical connection, all formed of a single piece and being of uniform diameter, but cut away in the middle of said connection and provided with a slotted cross-head, in combination with a steam-cylinder within which said piston has a continuous bearing-surface from end to end of said piston, substantially as and for the purpose specified.

3. In a steam-engine, a steam-cylinder having a continuous interior bearing-surface from end to end, and having central openings into the crank-shaft chamber, in combination with a double steam-piston consisting of two hollow steam-tight single pistons and an intermediate slotted connection which has an external bearing-surface against the interior of said cylinder continuously with said single pistons, substantially as and for the purpose specified.

4. In a steam-engine, a crank-shaft, a crank, a crank-shaft chamber through which the exhaust-steam is conducted, two steam-cylinders having a common axis and opening into said chamber, and a double

388,059.



steam-piston reciprocating in said cylinders and provided with a slotted cross-head, in combination with a crank-pin box consisting of two cylindrically-concave blocks which are set upon opposite sides of the crank-pin at a distance from each other, whereby a portion of the bearing-surface of said crank-pin is exposed to lubrication between said blocks, substantially as and for the purpose specified.

5. In a steam-engine, a double steam-piston consisting of two single pistons and an intermediate cylindrical connection, all formed of a single piece of metal and having a uniform diameter, but cut away in the middle of said connection and provided with a central slotted cross-head, in combination with a crank-pin box consisting of two separate blocks having cylindrically-concave bearing-surfaces and provided with a removable lip, substantially as and for the purpose specified.

6. In a steam-engine, a steam-piston which is formed of a single piece of metal and contains a slotted cross-head, in combination with a crank-pin box which is formed of two cylindrically-concave blocks and is provided with a removable lip, substantially as and for the purpose specified.

7. In a steam-engine, a double steam-piston consisting of two single pistons and an intermediate cylindrical connection, all formed of a single piece and being of uniform diameter, but cut away in the middle of said connection and provided with a central slotted cross-head, in combination with a crank-pin box which is provided with a removable lip, substantially as and for the purpose specified.

8. A steam-piston cylinder which is formed of a single piece of metal and contains a slotted cross-head, in combination with a crank-pin box which is provided with a removable lip, substantially as and for the purpose specified.

9. A double steam-piston consisting of two single pistons and an intermediate cylindrical connection, all formed of a single piece and being of uniform diameter, but cut away in the middle of said connection and provided with a central slotted cross-head, in combination with a steam-cylinder, within which said piston has a continuous bearing-surface from end to end of said piston, in combination with a crank-pin box which is adapted to reciprocate in said cross-head, substantially as and for the purpose specified.

10. In a steam-engine, a crank, a crank-shaft, a crank-shaft chamber which extends from one to the other of the main bearings and is provided with inlet and outlet ports, a steam-cylinder having central openings into said chamber and having a continuous bearing-surface from end to end of said cylinder, and a double steam-piston consisting of two single pistons and an intermediate slotted cross-head, which are formed of a single piece of metal and have a continuous bearing-surface within said cylinder from end to end of said piston, said cross-head being a part of the only channel of communication between said ports, in combination with a crank-pin box consisting of two cylindrically-concave blocks which are set in said cross-head upon opposite sides of the crank-pin at a distance from each other, whereby a portion of the crank-pin is exposed in said channel between adjacent edges of said blocks, substantially as and for the purpose specified.

11. In a steam-engine, an exhaust-chamber which extends from one to the other of the main bearings of the crank-shaft and consists of two compartments, one of which has an inlet-port and the other of which has an outlet-port, in combination with a steam-piston having a central cross-head provided with a slot which is the only channel of intercommunication between said compartments, substantially as and for the purpose specified.

12. In a steam-engine, a crank and crank-shaft, a crank-shaft chamber having an outlet-port, two steam-cylinders having a common axis and opening into said chamber, and a steam-piston reciprocating in said cylinders and said chamber and having a central transverse aperture for the accommodation of a sliding crank-pin box, in combination with a valve-casing which opens into said chamber and two hollow valve-pistons which reciprocate in said casing, all being so disposed that the exhaust is conducted through said valve-pistons and casing and through said crank-shaft chamber and steam-piston aperture, substantially as and for the purpose specified.

13. In a steam-engine, an exhaust-chamber consisting of two compartments whose only channel of intercommunication is a slotted cross-head of the steam-piston, substantially as and for the purpose specified.

388,060. STOOL. William J. Melvin, Boston, Mass. Filed May 10, 1888. Serial No. 273,633. (No model.)



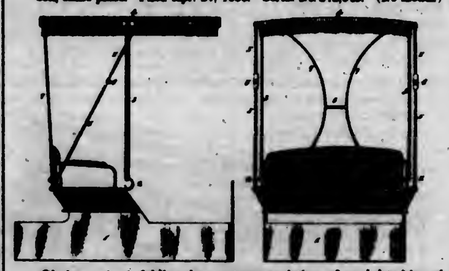
Claim.—1. In a stool, the combination, with a base and an upright, of a bracket pivotally secured to the said upright to turn in a substantially horizontal plane, a seat, and a seat-supporting frame, *b*, pivotally supported by said bracket and capable of being turned in a substantially vertical plane, whereby the said seat may be brought from an elevated position to one near the floor, substantially as described.

2. In a stool, the combination, with a base and an upright, of a bracket pivotally secured to the said upright to turn in a substantially horizontal plane, a seat, and a seat-supporting frame, *b*, pivotally supported by said bracket and capable of being turned in a substantially vertical plane, whereby the said seat may be brought from an elevated position to one near the floor, and a locking device to lock the seat-supporting frame in elevated position, substantially as described.

3. In a stool, the combination, with a base adapted to be secured to the floor, of a bracket pivotally secured thereto and provided with ears, a seat-supporting frame extended through said ears, adjustable collars on said frame, a flange on one of said collars to engage said bracket, and a seat on said supporting-frame, substantially as described.

4. In a stool, the combination, with a base adapted to be secured to the floor, of a bracket pivotally secured thereto and provided with ears, a seat-supporting frame extended through said ears, adjustable collars on said frame, a flange on one of said collars to engage said bracket, and a seat adjustable on said supporting-frame, substantially as described.

388,061. FOLDING BUGGY-TOP. William G. Miller, Boonville, Mo., assignor of one-half to Wilbur T. Johnson and William Morris Johnson, same place. Filed Apr. 27, 1888. Serial No. 272,049. (No model.)



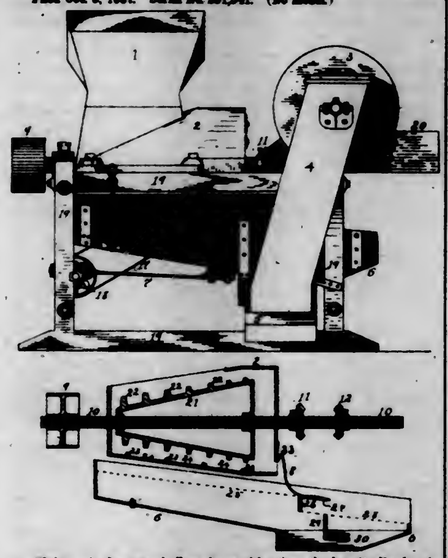
Claim.—1. A folding buggy-top consisting of uprights hinged substantially at the middle of the top and to the body of the buggy at the front part of the seat, jointed braces hinged to the top in front of said uprights and to the buggy back of said uprights, and one or more rods hinged to the back of the top and to the back of the buggy-seat.

2. A folding buggy-top consisting of uprights hinged substantially at the middle of the top and to the body of the buggy at the front part of the seat, jointed braces hinged to the top in front of said uprights

and to the baggy back of said uprights, and a lateral bracing pivoted to said top and baggy.

3. The combination, as hereinbefore set forth, of the baggy-top 4, the standards 3, hinged near the middle thereof and pivoted at or near the front part of the seat, the jointed braces 5, hinged to the top in front of said standards and to the baggy back of said standards, and the lateral braces 7, hinged to the back of the baggy-top and to the back of the seat.

388,062. CORN-SHELLER. ALEXIS B. MONTGOMERY, Decatur, Ill. Filed Oct. 5, 1887. Serial No. 251,541. (No model.)

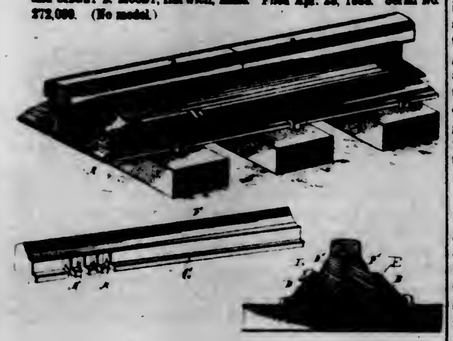


Claim.—1. In corn-sheller, in combination, the longitudinal main shaft carrying the shelling-cone, the transverse intermediate shaft geared with the main shaft, the transverse fan-shaft, and the transverse screen-reciprocating shaft, power-transmitters connecting the fan and screen shafts with the intermediate shaft, as and for the purpose set forth.

2. In corn-sheller, in combination, the longitudinal shaft carrying the shelling-cone and having the shifting bevel-wheels, the transverse intermediate shaft having a gear-pinion adapted to mesh with either of the shifting-wheels, the transverse fan-shaft and the transverse screen-reciprocating shaft, power-transmitting bands connecting the fan and screen shafts with the intermediate shaft, as and for the purpose set forth.

3. In a screen for corn-shellers, in combination, screen-sheet 25, terminating on transverse offset 26, screen-sheet 28, extending from the bottom of the offset in a line approximately parallel with a continuation of sheet 25, rods 27, projected over sheet 28 in line with sheet 25, and flexible flap 8, affixed to the sheller-casing and resting in part on the rods, as and for the purpose set forth.

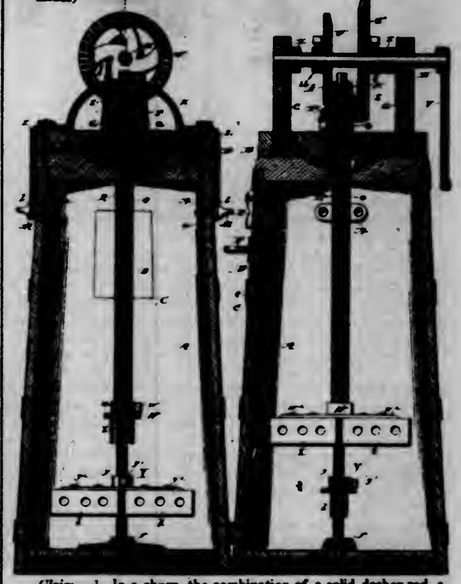
388,063. RAILWAY-RAIL JOINT OR CHAIR. JAMES M. MOODY and SIDNEY B. MOODY, Harwich, Mass. Filed Apr. 28, 1888. Serial No. 272,099. (No model.)



Claim.—1. The combination, with a railway-rail, of the chair provided with tapered side flanges, B B, having inclined grooves H H in their inner sides, the single wedge F, arranged between the rail and each side flange and provided with a series of inclined grooves, K, in their outer sides adapted to register successively with the grooves H, the upper ends of the said grooves being flush at their inner sides with the outer edges of the wedges, whereby the grooves K are invisible except when registering with the grooves H and the keys engaging the registering grooves H and K, substantially as and for the purpose specified.

2. The combination, with the railway-rail, of the chair provided with a depression or groove, C, and the apertures I I, the vertical side flanges, B B, having grooves H therein, the wedges arranged between the rail and the side flanges and having grooves in their outer sides adapted to register with the grooves H, and the railway-spikes arranged in the aligned grooves and apertures I, and engaging notches in the base or flanges of the rail, all substantially as and for the purpose specified.

388,064. CHURN. WILLIAM H. MOORE and CALVIN H. MOORE, Adairsville, Tenn. Filed Jan. 3, 1888. Serial No. 259,616. (No model.)



Claim.—1. In a churn, the combination of a solid dasher-rod, a hollow dasher-rod surrounding the solid rod, the shaft and gearing, substantially as described, whereby said rods are rotated in opposite directions, a transverse dasher attached to and adjustable upon the hollow rod from its lower end to the inner surface of the top of the churn, and a similar dasher attached to the solid rod and adjustable thereon from the lower end of said rod to the lower end of the hollow rod, substantially as specified.

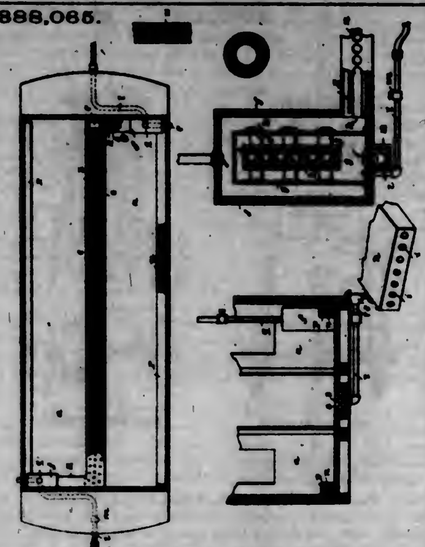
2. In a churn, the combination, with the driving-shaft mounted in the standards G, the crank-handle V, and the bevel gear-wheels T and U on said shaft, of the hollow rod O, having suitable bearings in the churn-top, the bevel gear-wheel P thereon, meshing with the bevel gear-wheel T, the transverse dasher attached to said hollow rod and adjustable thereon from the lower end of said rod to the inner side of the top of the churn, the solid rod R, stepped at the bottom of the churn, running up within the hollow rod, having near its top the bevel gear-wheel S, meshing with the bevel gear-wheel U, and the transverse dasher attached to the solid rod and adjustable thereon up to the lower end of the hollow rod, substantially as specified.

388,065. RAILWAY-CAR HEATER. THOMAS H. MOORE, Pittsburg, Pa. Filed Mar. 8, 1888. Serial No. 266,626. (No model.)

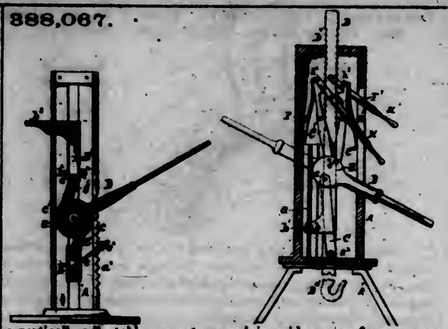
Claim.—1. In a car-heater such as described, the combination consisting of the heaters *f*, having an air chamber and pipe, *g*, for conducting a supply of air thereto, the steam-chest *g*, having centrally located therein a porous non-metallic slab, *h*, the trough *b*, arranged in the center of the car *a*, the pipes *c*, arranged in the said trough *b*, the small chambers *c* at each end of the same, the perforated distributing-pipes *n*, communicating with the heaters *f*, and a pipe, *o*, connecting the steam-chest *g* of the heater with the small chamber *c*, substantially as set forth and described.

2. In a car-heater, the combination of the heaters *f*, arranged at opposite ends of a car and each having a steam-chest arranged centrally therein to leave an intermediate air-space between said steam-chest and the exterior shell of the heater, the side troughs, *p*, having the perforated pipes *n* housed therein, one of said pipes communicating with the air-space of the heater at one end of the car and the other pipe with the air-space of the other heater at the opposite end of said car, and the central trough, *b*, having pipes communicating with the steam-chests of both heaters, substantially as described, for the purpose set forth.

388,065.



388,067.



388,066. SHELF. SAMUEL J. HERBERT, Hunterdon, N. J. Filed Feb. 24, 1888. Serial No. 265,169. (No model.)



Claim.—1. The combination, with the shelf and its supporting end pieces, of movable plates supplied to both ends of the shelf and having their inclined faces toward the front and rear edges of the shelves, substantially as set forth.

2. The combination, with the shelf and its supporting end pieces, of movable locking-plates seated in the recesses and between the sides of the shelf and projecting from the ends of the shelf into the supporting end pieces, substantially as set forth.

3. The combination, with the shelf having recesses *a* in its ends, of slotted guard-plates attached to the ends of the shelf and movable locking-plates seated in the recesses and projecting through the guard-plates, substantially as set forth.

388,067. LATCHING-JACK. B. FRANKLIN BROWN, Detroit, Mich., assignor of two-thirds to Edward Brennan and Murtaugh P. Brennan, both of same place. Filed Sept. 23, 1887. Serial No. 250,253. (No model.)

Claim.—1. In combination, a case or frame, a vertically-sliding bar in said case or frame, a lever-head mounted in said case or frame, a vertically-adjustable support secured in said case or frame, means for locking the adjustable support in different adjustments, and a link, and a bar-operating connection, each connected eccentrically at one end to the lever-head, their opposite ends being in engagement with the sliding bar and the support, respectively, substantially as set forth.

2. In combination, a case or frame, a vertically-sliding bar mounted in the case or frame, a vertically-adjustable support, a spring-stop, *c*, adapted to lock the support in different adjustments, a lever-head mounted in the case or frame between the sliding bar and the adjustable support, and connections which are connected at one end to the lever-head, and their opposite ends being in engagement with the sliding bar and the adjustable support, respectively, substantially as set forth.

3. In combination, a case or frame, a vertically-sliding bar mounted in said case or frame, and provided with ratchet-teeth or notches, a lever-head mounted in the case or frame, a link eccentrically connected at one end with the lever-head and connected at its opposite end with a suitable support, a pawl eccentrically connected at one end with the lever-head and resting in engagement with the ratchet-teeth or notches at its opposite end, a retaining-pawl in engagement with the sliding bar, springs for holding the pawls in engagement with the sliding bar, and levers for throwing the pawls out of engagement with the sliding bar, substantially as set forth.

4. In combination, a case or frame, a vertically-sliding bar mounted in the case or frame, and provided with ratchet-teeth or notches at its edges, a lever-head mounted in the case or frame, a link-support for the lever-head, the said link-support being connected with the lever-head eccentrically, two pawls eccentrically connected with the lever-head and in engagement with the opposite edges of the sliding bar, the one to act as a retaining-pawl and the other as an operating-pawl, springs for holding the pawls in engagement with the ratchet-toothed bar, and levers for throwing the pawls out of engagement with the ratchet-toothed bar at pleasure, substantially as set forth.

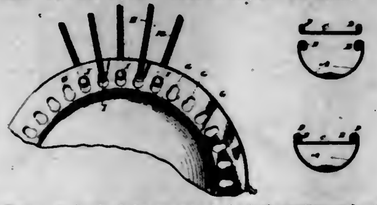
5. In combination, a case or frame, a vertically-movable ratchet-toothed bar mounted in the frame, a lever-head mounted in the frame and embracing the opposite ends of the ratchet-toothed bar, a link-support for the lever-head, a pair of pawls connected eccentrically with the lever-head, springs to hold the pawls in engagement with the ratchet-toothed bar, levers for throwing the pawls out of engagement with the ratchet-toothed bar at pleasure, and a guide connected with the ratchet-toothed bar and extending into a guide-groove to steady the said ratchet-toothed bar, substantially as set forth.

6. In combination, a case or frame, a vertically-notched bar mounted in the frame, a lever-head mounted in the frame, a link-support for the lever-head, a pawl eccentrically connected with the lever-head and in engagement with the notched sliding bar, and a lever pivoted to the case or frame and provided with a projection adapted to engage the pawl and throw it out of engagement with the notched bar, substantially as set forth.

7. In combination, a case or frame, a vertically-sliding bar mounted therein and provided with ratchet teeth or notches, a lever-head, a link connected eccentrically at one end with the lever-head and connected at the other end with a suitable support, and a pawl eccentrically connected at one end with the lever-head and resting in engagement with said ratchet or notches at its opposite end, substantially as described.

8. In combination, a casing or frame, a vertically-sliding bar mounted therein and provided with ratchet teeth or notches, a lever-head mounted in said casing or frame substantially in line with the vertical axis of said sliding bar, a link connected eccentrically at one end with the lever-head and connected at its opposite end with a suitable support, and a pawl eccentrically connected at one end with the lever-head and resting in engagement with said ratchet-teeth or notches at its opposite end, whereby the points of connection of said link and pawl with said lever-head may be brought substantially in line with the vertical axis of the sliding bar, substantially as set forth.

388,068. VEHICLE-WHEEL. ALBERT H. OVERMAN, Chicopee, Mass. Filed Dec. 19, 1884. Serial No. 150,727. (No model.)



Claim.—1. A wheel-rim composed of a body portion and a tread located between the same and below the edges thereof, each edge of the said body portion and each edge of the tread being bent at an angle to adapt their adjacent edges to be interlocked for supporting the tread, substantially as set forth.

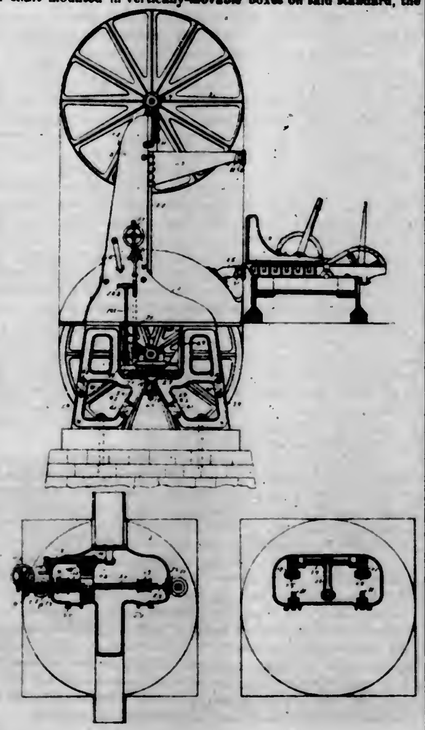
2. A hollow wheel-rim composed of a body portion the edges whereof are bent inward to form hooks opening upward, and a tread located within such body portion and below the edges thereof, and having its edges bent to form hooks opening downward, which are embraced by those of the body portion, substantially as set forth.

3. In a vehicle-wheel, the combination, with an axle, of two slotted hub-flanges rigidly secured thereto, wire spokes having headed hooks at their inner ends and hooked in alternation into the opposite faces of each of the flanges through the slots thereof, and means for adjustably attaching the outer ends of the spokes to the wheel-rim, each spoke being entirely independent in its attachment to its flange from every other spoke, substantially as set forth.

388,069. BAND-SAW MILL. WILLIAM F. PARMS, Minneapolis, Minn. Filed Mar. 2, 1886. Serial No. 203,943. (No model.)

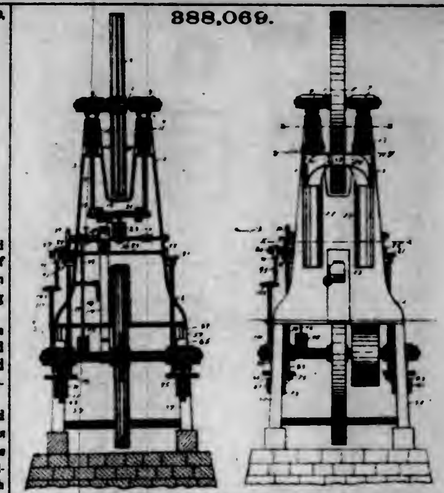
Claim.—1. The combination, in a band-mill, of the cast-metal main standard provided at its top with the independent standards 3, projecting vertically therefrom and formed integrally therewith, the vertically-movable boxes mounted on said standards, the upper shaft mounted in said boxes, and the upper wheel arranged upon said shaft between said standards 3, substantially as described.

2. The combination, in a band-mill, with the standard, of the upper shaft mounted in vertically-movable boxes on said standard, the





388,069.



upper wheel secured upon said shaft between said boxes, and the upper guide-frame, 25, projecting from said standard upon opposite sides of said wheel, and the saw-guide secured to said frame at its outer end, substantially as described.

3. The combination of a band-mill, with the standard, of the upper shaft mounted in vertically-movable boxes on said standard, the upper wheel arranged upon said shaft between said boxes, the U-shaped guide-frame 25, mounted in vertical ways upon said standard and extending upon opposite sides of said wheel, and the saw-guide secured upon said frame, substantially as described.

4. The combination, in a band-mill, of the hollow standard, the upper shaft mounted in vertically-movable boxes thereon, the wheel mounted upon said shaft between said boxes, the U-shaped guide-frame 25, mounted in vertical ways upon said standard, the sheaves 29 and 31, arranged within said standard near the upper and lower ends of said way, the shaft 33, arranged in said standard, provided with the spools 35, and the cables 37, secured to said guide-frame, passing over said sheaves and around said spools, substantially as described, and for the purpose set forth.

5. The combination, in a band-mill, with the hollow standards provided with the vertical ways 27, the U-shaped guide-frame mounted in said ways, the sheaves 29 and 31, arranged in said standard near the upper and lower ends of said ways, the shaft 33, mounted in said standard and provided with the spools 35 and 41, the cables 37, secured to said guide-frame, passing over said sheaves and around said spools 35, and the cable 43, wound upon said spool 41 and provided with the counterbalance-weight 45, all substantially as described.

6. The combination, in a band-mill, with the standard, of an arm secured thereto and projecting toward the saw, and provided at its outer end with an inclined groove, a block mounted in said groove and adapted to be adjusted therein, and be thereby moved toward and from the standard, and provided in its outer face with a transverse groove, and a saw-guide, 53, mounted in said transverse groove and adapted to be adjusted therein across the face of said block, substantially as described.

7. The combination, in a band-mill, with the main standard, of the upper shaft mounted in vertically-adjusted boxes thereon, the upper wheel arranged upon said shaft between said boxes, the U-shaped guide-frame 25, adjustably mounted upon said standard and projecting therefrom upon opposite sides of said wheel, and provided at its outer end with an inclined face having a groove therein, a block mounted in said groove and adapted to be adjusted therein, and a saw-guide adjustably mounted upon said block, substantially as described.

8. The combination, in a band-mill, with the hollow standard provided with the independent oppositely-projecting portions 3 3, the vertically-movable boxes mounted in bearings upon said independent portions of the standard, the pivoted levers 13, arranged within said standard and connected with said sliding boxes and projecting through slots in the walls of the standard, the shaft 19, provided with the short arm 17, connected with said levers 13, and also provided with the arm 21, having the weight-receiving box 23 suspended thereon, substantially as described.

9. The combination, in a band-mill, of the lower shaft, bearing-blocks supporting its opposite ends, the lower wheel secured upon said lower shaft between said boxes, suitable frames supporting said boxes, one of said frames being provided with a movable portion through which the saw may be carried in applying it to or removing it from said lower wheel, substantially as described.

10. The combination, in a band-mill, of the lower shaft, boxes supporting the ends thereof, the lower wheel mounted upon said shaft between said boxes, suitable supports for said boxes, one of said supports being provided with a movable portion formed in separate sections, which, when moved, forms an opening in said support through which the saw may be carried in applying it or removing it from said lower wheel.

11. The combination, in a band-mill, of the lower shaft, boxes supporting the ends thereof, the lower wheel mounted upon said shaft between said boxes, the frames 57, supporting said boxes and provided with the legs 59, and the movable blocks 61 in said legs 59, substantially as described, and for the purpose set forth.

12. The combination, in a band-mill, of the lower shaft, boxes supporting the ends thereof, the lower wheel mounted and secured upon said shaft between said boxes, means for simultaneously raising or lowering both of said boxes, and means for independently raising or lowering one of said boxes, and means for horizontally adjusting one of said boxes.

13. The combination, in a band-mill, of the shaft mounted upon the vertically-movable boxes, the revolving nuts engaging threaded rods supporting said boxes, the gear-wheels 75, secured upon said nuts, the shafts 79, provided with pinions engaging said gear-wheels, and provided also with bevel-gears 81, the shaft 83, having the pinion 85, engaging the bevel-gear on one of said shafts 79, the sleeve 87, having a pinion, 89, engaging the bevel-gear 81 on the other of said shafts 79, and the sleeve 91, splined upon the shaft 83 and adapted to engage the sleeve 87 or to be disengaged therefrom, whereby both the said shafts 79 may be simultaneously operated to raise or lower both of said boxes, or one of said shafts may be operated independently of the other, substantially as described.

14. The combination, in a band-mill, with the lower shaft and wheel, of the vertically-movable frames 65 and means for adjusting the same, the boxes 95, mounted upon said frame 65 and adapted to be laterally adjusted thereon, the threaded rod 97, secured to one of said boxes, the threaded worm-wheel 99, engaging said rod, and the shaft 101, for operating said worm-wheel, said rod 97, worm-wheel, and shaft being mounted upon and moving with said frame, substantially as described.

15. The combination, in a band-mill, with the standard having its front and rear sides counterparts of each other, of the upper wheel centrally mounted upon said standard, the lower wheel mounted beneath said upper wheel and the upper and lower guides mounted centrally upon said standard between said upper and lower wheels, substantially as described.

16. The combination, in a band-mill, of the standard having its front and rear sides counterparts of each other, the adjusting and operating devices constructed to be mounted on either side of said standard, the upper wheel mounted centrally upon said standard, the lower wheel arranged beneath said upper wheel, and the upper and lower saw-guides arranged centrally upon said standard between said upper and lower wheels, substantially as described.

17. The combination, in a band-mill, of the standard having its front and rear sides counterparts of each other, the upper wheel centrally mounted upon said standard, the lower wheel arranged beneath said upper wheel, the upper and lower guide-supports arranged centrally upon said standard between said upper and lower wheels, and the reversible guides mounted on said supports, substantially as described.

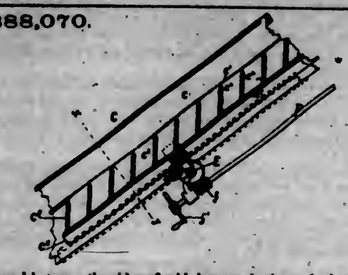
388,070. DUST-TRUNK FOR COTTON-OPENERS. HAVEN C. PERHAM, Lowell, Mass. Filed Jan. 28, 1888. Serial No. 262,194. (No model.)

Brief.—The dust-trunk has a bottom common to all the pockets, said bottom being supported by arms attached to transverse shafts actuated by worm-and-pinion gearing. The sides of the trunk are extended downward, so as to form with the said bottom an inclined chute when said bottom is lowered. The dust-pockets can thus be emptied without stopping the opener.

Claim.—1. A dust-trunk for cleaning fibers, provided with a grating and with a fiber-passage above said grating, and with dust-pockets arranged below said grating, and with a bottom common to all said pockets, normally closing the bottoms of said pockets and arranged between the sides of said dust-trunk and above the lower edges of said sides, and adapted to be lowered away from the lower ends of said pockets and to form with the sides of said trunk a dust-passage for the contents of all said pockets, as and for the purpose specified.

2. An inclined dust-trunk for cleaning fibers, provided with a grating and with a fiber-passage above said grating, and with dust-pockets arranged below said grating, and with a bottom common to all said pockets, normally closing the bottoms of said pockets and arranged between the sides of said dust-trunk above the lower edges of said sides, and adapted to be lowered away from the lower ends of said pockets, and to form with said sides an inclined dust passage or chute down which the contents of said pockets may be forced by their own gravity and discharged at the lower end of said chute, as and for the purpose specified.

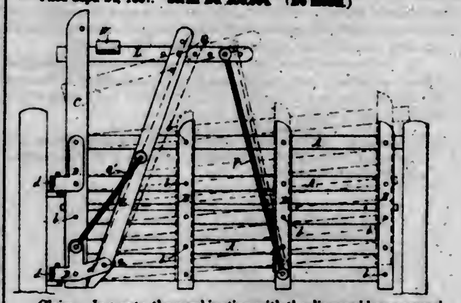
388,070.



3. A dust-trunk for cleaning fibers, provided with a grating and with a fiber-passage above said grating, with dust-pockets arranged below said grating, and with a bottom common to all said pockets arranged between the sides of said trunk, in combination with means, substantially as described, of holding said bottom against the lower ends of said pockets, or, at will, of drawing said bottom away from the lower ends of said pockets to empty said pockets and to cause said bottom to form with the sides of said trunk a dust-passage for the contents of said pockets, as and for the purpose specified.

4. A dust-trunk for cleaning fibers, provided with a grating, with a fiber-passage above said grating, with dust-pockets arranged below said grating, and with a bottom common to all said pockets and arranged between the sides of said trunk above the lower edges of said sides, transverse shafts supported below said trunk and provided with arms pivoted to said bottom, a worm-gear secured on each of said shafts, and a longitudinal shaft provided with worms engaging said worm-gears, whereby the turning of said worm-shaft will cause said bottom to close all of said pockets, or, at will, will move said bottom away from the lower ends of said pockets, as and for the purpose specified.

388,071. FARM-GATE. DAVID W. PETTINGTON, Denver, Pa. Filed Sept. 24, 1887. Serial No. 250,564. (No model.)



Claim.—In a gate, the combination, with the diagonal bars secured to the bottom of the rear battens, and the tension members connecting said bars and battens, of the weighted lever pivoted to the upper ends of the diagonal bars, and the supporting-rods connecting the said lever and the forward part of the gate, substantially as and for the purpose specified.

388,072. CABLE RAILWAY. EDWARD C. PHILLIPS, Garden City, Kans., assignor to the Phillips Recessional Cable Grip Construction Company, Chicago, Ill. Filed Oct. 15, 1887. Serial No. 252,262. (No model.)



Claim.—1. A conduit having its side longitudinally slotted and provided with a flange above said slot for greater protection against the entry of foreign matter, substantially as set forth.

2. A movable roller for the cable to rest on when running freely.

in combination with fixed shoulders and a pivoted clamping-piece for gripping the rope, a slide to which both said roller and said pivoted piece are attached, and mechanism for raising and lowering said slide, for the purposes set forth.

3. A vertically-movable slide and mechanism for operating it, in combination with a clamping device and a lifting device, both attached to said slide, a cable running in the interval between said devices, and fixed shoulders arranged below said cable, substantially as and for the purpose set forth.

4. A hand-lever, a longitudinally-movable rod jointed thereto, a shaft having at one end an arm jointed to said rod and at the other a disk and wrist-pin, a slide engaging with said wrist-pin and raised and lowered thereby, a clamping-piece and roller on said slide, and a pair of fixed shoulders arranged to assist said clamping-piece in gripping a cable, substantially as set forth.

388,073. TRACK DEVICE FOR HANDLING CARS. Ephraim Pierpoint, Clintonville, Ill. Filed Nov. 14, 1887. Serial No. 255,144. (No model.)

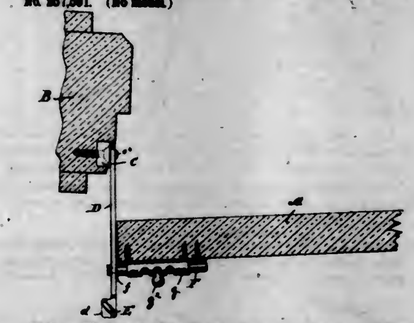


Claim.—1. The combination of the unobstructed rails of a main line with the rails of a secondary line, one of which latter abuts against and the other for a distance runs parallel with one of the main-line rails, and both higher than but neither crossing the main-line rails.

2. The combination of the unobstructed rails of a main line with the rails of a secondary line, one of which latter abuts against and the other for a distance runs parallel with one of the main-line rails, and both higher than the main-line rails, and the short and elevated rail between and abutting against neither of the main-line rails and parallel with said secondary rail which abuts against the main rail.

3. The combination of the rails of a main line with the elevated rails of a secondary line, one of them lying for a considerable distance parallel with and near to one rail of the main line, and a plate which lies on the inside of the other rail of the main line.

388,074. DOOR-CHECK. Dennis A. Reardon, South Boston, and Charles A. Gardner, Hyde Park, Mass. Filed Dec. 12, 1887. Serial No. 257,991. (No model.)



Claim.—The furcated bar D, provided at its outer end with thumb-screw E and at its inner end pivoted to a block or plate, C, in combination with a bolt provided near its outer end with a recess or groove, substantially as and for the purposes set forth.

388,075. BUTTON-HOLE TAB. Sallie A. Sarber, Allentown Pa. Filed Apr. 26, 1888. Serial No. 272,160. (No model.)



Claim.—1. As a new article of manufacture, a button-hole tab comprising a sheathing of smooth fabric having a scallop in its upper end for engaging the shank of the button on its lower side, an elastic cord, E, secured by a cord, T, to form a loop, the whole located within said sheathing and its free end extending normally into said scallop and adapted to engage said shank upon its upper side, and a line of stitches, *c*, passing through the two thicknesses of said sheathing and extending within said loop from the cord T to the lower edge of said scallop, as and for the use and purpose described.

2. The elastic loop E, in combination with the folded sheathing composed of a smooth fabric, the cover upon the exterior of said sheathing, both said jackets being provided with a scallop in their upper folded ends, two sets of button-hole stitches, *a*, uniting the sheathing and cover around the edge of said scallop, one set on either side of the interior space, a line of stitching, L, at each side uniting the four edges of sheathing and cover, and a line of stitches, *c*, passing through the four thicknesses and extending longitudinally within said loop from its inner end to the bottom of the scallop, the whole arranged and adapted for use substantially as described.

3. As a new article of manufacture, the herein-described button-hole tab, the same comprising the sheathing O, the elastic loop E therein, the lower ends, E', of said loop being connected by a cord, T, and extending from said point of connection laterally outward, and the stitches *c'*, securing said ends within said sheathing, in combination with a cover upon the exterior of said sheathing and secured thereto by side stitches, L, said tab having an ordinary button-hole, H, extending through the four thicknesses of sheathing and cover and located below and in line with the loop E, and a line of stitches, *c*, passing through the four thicknesses of said sheathing and cover and extending longitudinally within said loop from the cord T to the upper end of the tab, as and for the use and purpose set forth.

388,076. EXTENSION-LEG FOR WATER-CLOSET SEATS AND OTHER SEATS. Charles B. Sumner, Baltimore, Md., assignor to Henry Mollenus & Co., same place. Filed Aug. 6, 1887. Serial No. 246,468. (No model.)



Claim.—In an extensible leg, a perforated standard having flanges on its sides and provided with projecting steps, the tops of which are inclined, while their bottoms are substantially horizontal, in combination with a bolt and nut and a slotted and serrated foot-section having flanges on its sides and steps the reverse of those on the standard and registering therewith, all constructed substantially as described, whereby the nut is prevented from turning by the flanges on the foot-section, and the foot-section is prevented from turning by the flanges on the standard, substantially as set forth.

388,077. CHECK-ROW ATTACHMENT. Levi Sowles, Grand Haven, Mich. Filed Mar. 7, 1888. Serial No. 266,494. (No model.)



Claim.—1. In a corn-planter and in combination with the crank and its actuating devices, the lever interposed between said crank and the slide controlling the feeding device, said bar being supported upon a pivot in line with but transverse to the axis of the crank, and provided with a slotted or furcated end projected across the face of the crank disk or wheel, substantially as described.

2. In a check-row attachment such as described, the combination, with the shaft C and centrally-arranged gears and crank, of the lever slotted or furcated for the reception of the crank-pin, and supported upon a transverse pivot in line with the axis of the crank but below the latter, said lever being also provided with a transverse pin or bearing projected between the cheeks or bearings on the slide-bar, substantially as described.

3. In a check-row attachment such as described, the combination, with the crank and actuating devices for intermittingly rotating the former, of a lever pivotally attached to the bracket supporting the crank on a center in line with and transverse to the axis of the crank, said lever being provided on one end with a furcated portion projected across the face of the crank and embracing the crank-pin, and at the other with a transverse pin for engaging steps on the slide-bar, substantially as described.

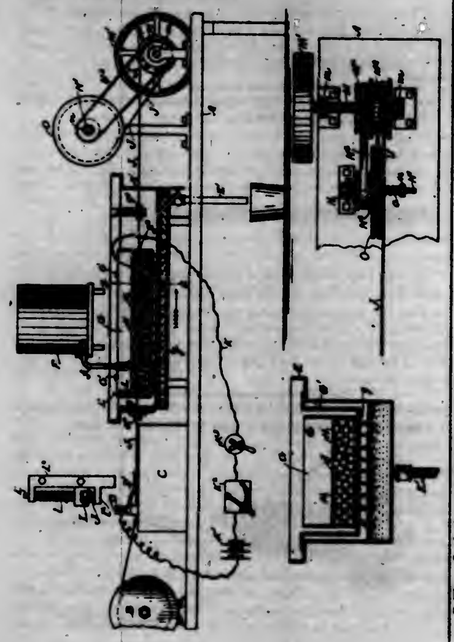
4. In a check-row attachment such as described, the combination, with the bracket secured to the cross-bar A and supporting the crank above said bar, of the lever pivotally attached to said bracket beneath the bar A and provided with two arms, the one carrying the pin for operating the feeding devices depending beneath the supporting-bar A, and the other extending across said bar A and provided with a furcated or slotted portion engaging the crank-pin, substantially as described.

5. In a check-row attachment wherein the operating-crank is arranged and supported at or near the middle of the cross-bar A, and is driven from a shaft, C, through gears, substantially as described, the combination, with said crank and the actuating devices therefor, of the lever I, pivoted beneath the bar A in line with the axis of the crank, and provided with the furcated end 3, for the reception of the crank-pin, and the pin or stud 4, for engaging the steps 11 on the slide-bar, as and for the purpose set forth.

6. The improved sectional steps or bearings 11, for application to the slide-bar B, constructed, substantially as described, in two sections, one formed with the recess therein and the other with the wings or flanges for entering said recess on either side of the bolt, and both provided with the depending flanges grooved for the reception of the edges of the bar B, and a clamping-bolt engaging the sections to draw them together and clamp their flanges upon the bar B, substantially as described.

7. The improved adjustable and removable steps 11, formed in two sections, each provided with flanges or grooved portions fitting the edges of the bar B, and interlocking projections, one of said sections carrying the bearing or step-pin and provided with an extended bearing on the top of bar B, in rear of said step-pin, and a bolt engaging both sections to hold them together and clamp them upon the bar B, substantially as described.

388,078. MACHINE FOR TEMPERING METAL WIRES AND STRIPS. Freemont Smedley, Chicago, Ill. Filed Jan. 19, 1888. Serial No. 261,513. (No model.)



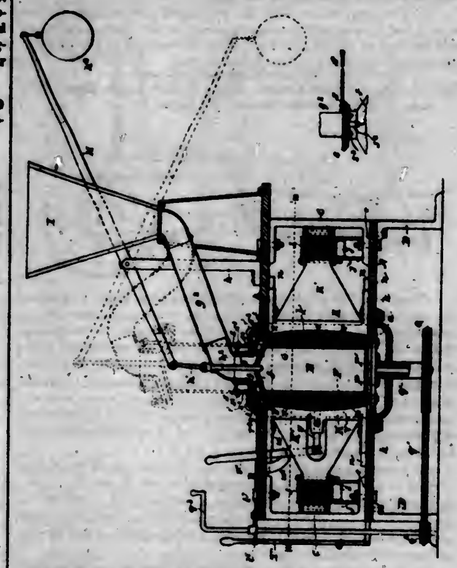
Claim.—1. The combination, with a machine for tempering metal wires and strips, of a feed mechanism consisting of a feed-pulley upon which the wire is first trained, with means, as a shaft and pulley, for driving the same at a uniform rate of speed, and a receiving-spool journaled upon a frictional bearing upon a shaft or spindle adjusted to rotate at a higher rate of speed than that of the feed-pulley, whereby the spool may be revolved at a greater or less speed in proportion as the coil is wound thereon, substantially as shown and described.

2. In a machine for tempering metal wires and strips, the combination of means, as an electric current, for heating the wire, means, as a cooling-bath, for chilling the same, a feed-pulley for drawing the strip through the tempering apparatus at a uniform rate of speed, and a receiving-spool journaled by means of a frictional bearing upon a spindle, with means for normally rotating said spindle at a higher rate of speed than that of the feed-pulley, substantially as shown and described.

3. In a machine for tempering metal wires and strips, the combination of means, as an electric current, for heating the wire, means, as a cooling-bath, for chilling the same, a feed-pulley, M', means, as a shaft, M, and pulley M', for rotating said feed-pulley, spindle N', means, as a pulley, N', and belt N', for normally rotating said spindle at a higher rate of speed than the shaft M, and a receiving-spool secured to said spindle by means of a frictional bearing for winding said strip as it is drawn through the machine, substantially as shown and described.

4. In a machine for tempering metal wires and strips, the combination of means, as an electric current, for heating the wire, means, as a cooling-bath, for chilling the same, a feed-pulley, M', means, as a shaft, M, and pulley M', for rotating said feed-pulley, spindle N', means, as a pulley, N', and belt N', for normally rotating said spindle at a higher rate of speed than the shaft M, and a receiving-spool loosely mounted upon said spindle, and means, as a nut and spring, for regulating the tension of the wire or strip to be wound thereon by increasing or decreasing the friction, substantially as shown and described.

388,079. MACHINE FOR BULGING PAPER BARRELS. John F. Shedlin, Akron, Ohio. Filed May 18, 1887. Serial No. 238,470. (No model.)



Claim.—1. In a paper-barrel machine, the combination, with the outer staves thereof provided with curved feet or extensions and with their actuating mechanism, of guideways for said feet, substantially as described.

2. The combination, with the outer movable staves provided with the extensions or feet, of the guide-plates having the curved ways in which said feet move, substantially as and for the purpose described.

3. A series of outer movable staves, in combination with face-plates secured thereto having beveled edges which interlock one with another, substantially as specified.

4. The combination of the outer stave having the tubular socket,

the pin or plug for forming the bung-hole, and means for operating said pin, substantially as set forth.

5. The combination, with the inner staves provided with the guide-pins and operating-pins, of the stationary plate provided with slots for receiving and guiding said guide-pins, a rotary plate provided with slots for receiving said operating-pins, and means, substantially as described, for operating said rotary plate, as and for the purpose described.

6. The combination, with the inner series of staves having the guide-pins g g^3 and the rollers thereon, of the oscillating scroll-plate with its two scroll-slots p p, and the stationary plate with its oblique and radial slots p', and pins projecting through said slots, substantially as and for the purpose described.

7. The combination, with the two contiguous inner staves and their divided pin, of the slotted scroll-plate and means, substantially as described, for operating said scroll-plate, as and for the purpose set forth.

8. The combination, with the adjustable hollow cover, of the ring-gate located on and movable relative to said cover, means for operating said gate, and means, substantially as described, for raising and lowering said hollow cover, as and for the purpose specified.

9. The combination, with the hollow cover having the central inlet, of the tank or reservoir, the flexible pipe connecting said tank and cover, the ring-gate and its operating mechanism, and a [illegible] mechanism connected to the cover, substantially as set forth.

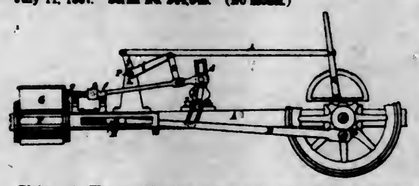
10. The hollow cover or top having the central inlet-aperture and provided with the bevel-wheel placed around the neck of said opening, in combination with the ring-gate and interposed mechanism for operating the same, substantially as set forth.

11. The combination, with the hollow cover having the central inlet and its surrounding beveled gear-wheel, of the ring-gate and the vibrating crank-arms connected to said gate at one end and provided with toothed segments meshing with the gear-wheel, substantially as and for the purpose specified.

12. The combination, with the top plate and the hollow cover, of the locking-bolts, the pivoted levers for operating said bolts, the connecting-link for actuating said levers, and the vertical lever for operating said link, substantially as described.

13. The combination, with the perforated plate secured to the stave K and formed with a recess or groove, of the gauze or pervious covering secured to said plate and having its edge lying in said groove, substantially as and for the purpose described.

388,080. VALVE-GEAR. HENRY F. SHAW, Boston, Mass. Filed July 11, 1887. Serial No. 244,065. (No model.)



Claim.—1. The combination of two eccentrics, K and L, fixed on the same axle or shaft, the center of one, K, of the eccentrics being in substantially the same radial direction from the center of the axle or shaft as the crank-pin, and the eccentrics being set quartering, or approximately so, with reference to each other, a lever, H, pivoted on the frame of the engine and connected with the eccentric K by means of a rod, M, a link, I, pivoted to said lever H, and means, substantially as the lever J, fixed to said link, whereby the link is connected with the other eccentric by means of a rod, N, substantially as and for the purposes set forth.

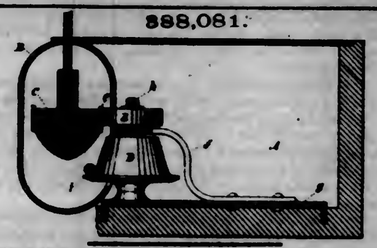
2. In combination with a crank-pin, c, and two eccentrics, K and L, fixed on an axle or shaft, as specified, two rods, M and N, a lever, H, pivoted on the frame of the engine, a reversing-link, I, pivoted to the lever H, an arm or lever, J, fixed to said link, a block, d, to slide on said link, a rod, O, and valve-stem g, substantially as and for the purposes set forth.

3. In combination with an eccentric, K, fixed on an engine shaft or axle, C, a rod, M, a lever, H, pivoted on the frame of the engine, and a reversing-link, I, pivoted to the lever H and connected with the slide-valve for operating the same and admitting steam to the cylinder, substantially as specified.

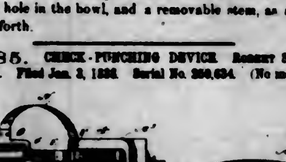
388,081. CABLE RAILWAY. ABRAHAM A. SIBLEY and WILLIAM BEMLEY, Jerseyville, Ill. Filed Dec. 27, 1887. Serial No. 259,157. (No model.)

Claim.—In a cable railway, the combination of a conical cable-carrier with an anti-friction roller, the latter adapted to impinge upon the side of the grip-jaw, both being journaled upon the same stud or spindle, as set forth.

388,081.



388,082. APPARATUS FOR PAINTING SHINGLES. LOUIS SIEBERT, Chicago, Ill. Filed May 1, 1888. Serial No. 272,262. (No model.)



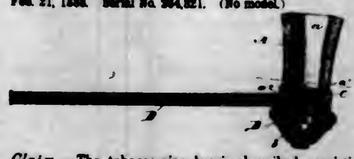
Claim.—An apparatus for the purpose described, consisting of a box, A, for holding paint in bulk, and provided at its side with an inclined brush, B, having guard-plate b, having an opening at its bottom, and a brush, C, placed horizontally above brush B, all substantially as set forth.

388,083. LIFTER FOR CUSPIDORS AND THE LIKE. WILLIAM H. SMITH, Danbury, Conn. Filed Nov. 2, 1887. Serial No. 254,094. (No model.)



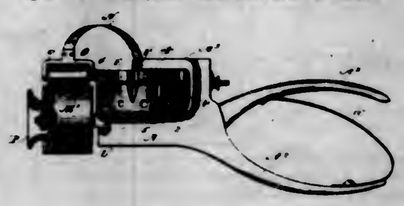
Claim.—The combination, with the spring-connected legs, of the hooks projecting from the ends of said legs, the points of said hooks extended outward beyond the plane of the legs, and the heels of said hooks extended inward beyond the plane of the legs, substantially as specified.

388,084. TOBACCO-PIPE. HANS J. SÖRENSEN, Chicago, Ill. Filed Feb. 21, 1888. Serial No. 264,821. (No model.)

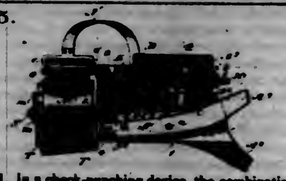


Claim.—The tobacco-pipe herein described, consisting of the tubular bowl provided near its lower end with a lateral opening for the stem, the removable drip-cup attached to the bowl by means of a tongue-and-groove connection and having an internal tubular part extending into the bowl and provided with lateral holes which register with the hole in the bowl, and a removable stem, as and for the purpose set forth.

388,085. CHECK-PUNCHING DEVICE. ROBERT SPENCER, Chicago, Ill. Filed Jan. 3, 1888. Serial No. 259,634. (No model.)



388,085.



Claim.—1. In a check-punching device, the combination of pivoted jaws, handles for operating said jaws, a rotary die-carrier and die-plate sustained by one of said jaws, a series of movable dies within said die-carrier, and a movable die-operating block or plunger, substantially as described.

2. In a check-punching device, the combination, with pivoted jaws and handles for operating said jaws, of a rotary die-plate and a die-carrier provided with dies, said carrier being sustained by and outside of said jaws, and one of said jaws being extended across the rear ends of the dies, substantially as described.

3. In a check-punching device, the combination, with pivoted jaws and handles for operating said jaws, of a rotary die-plate and a die-carrier provided with open-ended chambers and dies held within said chambers, said die-carrier being mounted upon and outside of said jaws, and one of said jaws being extended beneath the rear ends of said dies, substantially as described.

4. In a check-punching device, the combination of a rotary die-carrier and die-plate and pivoted jaws, one of said jaws being provided with a standard for sustaining the die-carrier and die-plate, substantially as described.

5. In a check-punching device, the combination of a rotary die-plate, a die-carrier connected with said plate, pivoted jaws, one of which is provided with a base-plate whereon the die-carrier rests, and with a standard for holding the die-carrier in proper position, and a series of dies movably held with said die-carrier, substantially as described.

6. In a check-punching device, the combination of a rotary die-carrier having a series of chambers formed therein, a die-plate fixed upon the hub of said die-carrier, a series of movable dies provided with lugs and held within said die-carrier, and a guard-plate for checking the movement of said dies, said guard being located between said lugs and the die-plate to restrict the movement of the dies toward the die-plate, substantially as described.

7. In a check-punching device, the combination of a rotary die-carrier having a series of chambers, a series of punches mounted within said chambers, and a fixed guard-plate having a single slot therein to release the dies, substantially as described.

8. In a check-punching device, the combination, with the pivoted jaws and handles for operating said jaws, of a die-plate, a die-carrier provided with a series of movable dies, a fixed guard-plate slotted to release said dies, and a die-operating block or plunger having a retracting-hook for entering the slot of the guard-plate and withdrawing said dies from the die-plate, substantially as described.

9. In a check-punching device, the combination of a rotary die-carrier and die-plate, pivoted jaws, one of said jaws being provided with a standard for sustaining the die-carrier and die-plate, and a gage held within the space between the die-carrier and die-plate and having a shank projecting through said standard, substantially as described.

10. In a check-punching device, the combination of a rotary die-carrier and die-plate, pivoted jaws, one of said jaws being provided with a standard for sustaining the die-carrier and die-plate, a gage provided with a screw-threaded shank extending through said standard, and an adjusting-nut for determining the position of said gage, substantially as described.

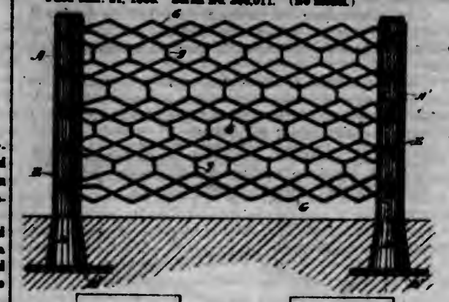
11. In a check-punching device, the combination, with the jaws of the punch and a rotary die-carrier and die-plate held thereby, of feed-rollers and a sustaining-frame detachably connected with the jaws, substantially as described.

12. In a check-punching device, the combination, with a rotary die-carrier and die-plate, of feed mechanism comprising a sustaining-frame, a shaft projecting from said frame, a lower roller journaled upon said shaft, a spring-bar extending from said frame, and an upper feed-roller carried by said spring-bar, substantially as described.

13. In a check-punching device, the combination, with the die-carrier and die-plate, of two feed-rollers, the lower roller being provided with a pawl and the axle of said lower roller being provided with a ratchet, substantially as described.

14. In a check-punching device, the combination, with the jaws of the punch, handles for operating said jaws, and a rotary die-carrier and die-plate held by said jaws, of two feed-rollers, one of said rollers being provided with a head-plate at its outer end, an axle for sustaining said roller projecting from the front end of the punch, and a pawl and notched wheel for said roller, substantially as described.

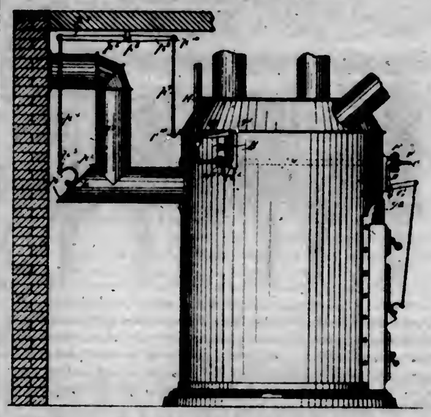
388,086. FENCE-POST. RANSOM B. BROOKS, Clifton Springs, N. Y. Filed Mar. 21, 1888. Serial No. 268,011. (No model.)





Claim.—As a new article of manufacture, the hollow fence-post A, whose rear face is open and whose base B is conical, terminating in a base-plate, B', the said post having a series of transverse slots, D, and adapted to hold the wires by means of the links K, and the wedges F, concaved at f' and perforated at f^2, for the purpose and in the manner specified.

388,087. AUTOMATIC REGULATOR FOR FURNACES AND STOVES. EDWARD G. STEVENS and ABBOTT B. STEVENS, Clinton, Mass., assignors to the Ridgway Furnace and Stove Company, Nashua, N. H. Filed Jan. 30, 1888. Serial No. 262,704. (No model.)



Claim.—1. The combination, in a furnace-regulator, of a metal tube expansible under heat, an inclosed tube of less expansible metal, a plate, B, against which the outer tube bears, a lever, D, having the hole e and recess e^2, the dial E, having the studs or legs e', and the indicator-nut F, which screws upon the end of the inner tube and locks it against the lever D, substantially as described.

2. The combination, in an automatic regulator for furnaces and stoves, of the metal tube A, expansible under heat and connected at each end with a plate supporting a lever, D, substantially as set forth, the said plate, a tube inclosed within said expansible tube, the ends of which extend without the furnace, and nuts mounted upon or having standards or legs connecting said ends with the said levers D, all substantially as described.

3. The combination, in a furnace-regulator, of the expansible tube A, the plate B, having the hole a^3, the recess a, and shoulder a', the non-expansible inner tube extending through the hole a^3, the lever D, pivoted to said plate, as described, and having a hole, d, the lever G, operated by the lever D, as specified, the dial E, mounted upon the standards or posts e', the ends of which enter the holes, or recesses e^2 of the lever D, and the indicator-nut F, which screws upon the end of the inner tube, substantially as described.

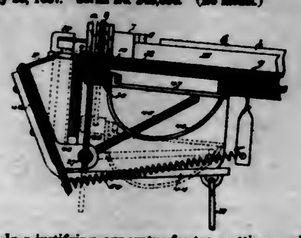
4. The combination, in a furnace-regulator, of the lever D, having the recess e^2, the tubes A C, connected with each other as speci-

fied, the dial E, having the lugs d', and the indicator-nut F, all substantially as described.

5. The combination, with the tubes A and C, of the dial-disk E, having the sleeve e', the indicator-nut F, having the sleeve f', and the balls interposed between the said disk and nut, substantially as set forth.

6. The combination, in an automatic regulator for furnaces and stoves, of the expansible tube A, the tube C, inclosed within the expansible tube, and the pipe H, for connecting the inclosed tube C with the outer air, all substantially as described.

388,088. JUSTIFYING APPARATUS. JOSEPH THORNE, Port Richmond, N. Y., assignor to the Thorne Machine Company, of New York. Filed July 23, 1887. Serial No. 245,008. (No model.)



Claim.—In a justifying apparatus for type-setting machines, the combination, with the galley and its support having the raised slotted head 10, of the fence and bridge plate 8, moving vertically in the slot in said head and arranged to be moved downward flush with the upper surface of the head to admit the type to the galley and upward so as to project above the head to support the line of type, the vibrating packer P, and connections between the packer and the bridge and fence plate, whereby the plate is moved downward as the packer is moved inward, and vice versa, substantially as described.

388,089. WASH-TUB. FRANCIS J. THERASON and FRANK A. WELLS, Allegheny, Pa. Filed Jan. 26, 1887. Serial No. 225,514. (No model.)



Claim.—1. In combination with the wash-tray, the top frame resting upon its upper edge and the bolts E', passed through the top frame and suitably stopped by a head above said frame, and terminating at the lower end in a hook which is integral with the bolt and which reaches underneath the tray, and a clamping-nut on each bolt, whereby the tray may be bound between the top frame and the hook end of the bolt, substantially as set forth.

2. In combination, the wash-trays successively adjacent, a continuous top frame overlapping their adjacent edges, clamping-anchors independent of the supports and of each other underlapping the lower adjacent edges of the trays, the clamping bolts passing between the trays and connecting the top frame with the clamping-anchors, respectively, and provided with clamping-nuts, substantially as and for the purpose set forth.

3. In combination, substantially as hereinabove set forth, the wash-trays arranged successively adjacent, the three-legged stools arranged one underneath and adapted to support independently each tray, a continuous top frame overlapping the adjacent edges of the trays, the clamping-anchors lapping said trays underneath and extending between the said triangular frames, and the clamping-bolts connecting the frame with the said anchors and provided with the clamping-nuts.

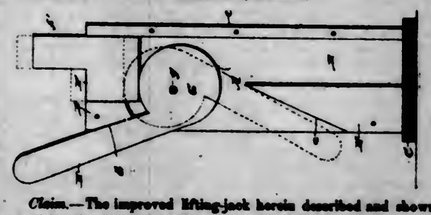
4. In combination with the wash-trays successively adjacent, top frame lapping over the adjacent edges, bolts passing through the top frame down between the trays, and the clamping-washers F^{10}, having apertures for the bolts large enough to allow the latter lateral play thereof, and the clamping-nuts below such washers, substantially as set forth.

5. In combination with the trays successively adjacent, the top frame lapping over the adjacent edges, the bolts passing through the top frame between the trays, and the clamping-washers loosely fitted on the lower ends of the bolts, and which are bent upward near their ends, substantially as set forth.

6. In combination with the wash-trays successively adjacent, a continuous top frame overlapping their adjacent edges and extending beyond their margins, respectively, at their opposite ends, clamping-anchors independent of the supports and of each other underlapping the lower adjacent edges of the trays, the clamping-bolts between the trays connecting the top frame with the clamping-anchors, respectively, and provided with clamping-nuts, and the bolts E', passed through the top frame beyond said opposite ends of the trays and stopped by suitable head above the frame and terminating at the lower end in a hook which reaches underneath the tray, and a clamping-nut on each bolt to bind the tray between the top frame and the hook end of the bolt, whereby the end bolts, E', co-operate with the intermediate bolts to bind the whole length of the top frame closely upon all the trays, substantially as set forth.

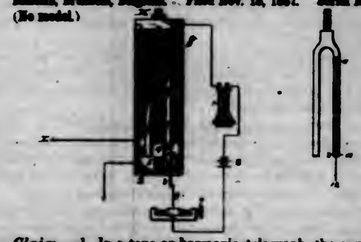
7. In combination with the wash-trays successively adjacent, the separate stools upon which the trays respectively rest, having each their legs connected at the top by bars forming a supporting-surface for the trays, respectively, the top frame continuous and overlapping the adjacent edges of the trays and projecting beyond their extreme edges, the clamping-anchors independent of the supporting-stools and of each other underlapping the lower adjacent edges of the trays between the stools, the clamping-bolts between the trays connecting the top frame to the clamping-anchors and provided with suitable clamping-nuts, and the clamping-bolts E' beyond the extreme ends of the trays passed through the projecting margin of the top frame and suitably stopped by head above the same, and having the lower end formed into a hook which reaches underneath the tray, and a clamping-nut on each of said bolts to bind the tray between the top frame and the hooked end of the bolt, whereby the intermediate bolts and their anchors co-operate with the end bolts and their hooks to bind the top frame closely upon the top of the trays throughout the whole length without extending a clamp across the bottom of the tray, where it rests upon the stool, substantially as set forth.

388,090. LIFTING-JACK. WILLIAM TURNER, Dunbarton, Mo. Filed Apr. 26, 1888. Serial No. 271,992. (No model.)



Claim.—The improved lifting-jack herein described and shown, comprising the side plates, B B, the base-block C, connecting the lower ends of the same, the vertical strip c, connecting the rear edges of the plates and closing the space between the same, the block D at the upper front corners of the plates B B, having a downwardly and inwardly inclined lower edge, d, the block E at the lower front corners of said plates, having an inwardly and upwardly inclined upper edge, e, the lifting-block F, sliding between the block D and the strip c, and the eccentric-block pivoted between the side plates below the lifting-block and the block D, and having a lever-handle projecting outwardly between the inclined edges of the blocks D and E, as specified.

388,091. HARMONIC TELEGRAPHY. FRANÇOIS VAN EYSBERMEN, Brussels, Belgium. Filed Nov. 15, 1887. Serial No. 255,393. (No model.)



Claim.—1. In a tone or harmonic telegraph, the combination, with a tuning-fork operated by the main-line currents, of an extension on said fork, a local circuit controlled by the extension, and a telephone in said local circuit, substantially as described.

2. In a tone or harmonic telegraph, the combination, with a tuning-fork controlled by the main-line currents, of an extension on said fork, an adjustable contact-pin in a local circuit, and a telephone also in the local circuit, substantially as described.

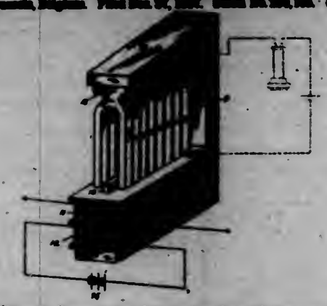
3. The combination, with a tuning-fork, of an extension attached to the fork and tuned in harmony with the fork, substantially as described.

4. The combination, with a tuning-fork, of an extension attached to the fork and tuned in harmony therewith and an adjustable contact-piece included in a local circuit also tuned in harmony with the fork, substantially as described.

5. The combination, with a tuning-fork, of an extension one end of which is attached to the fork, and pins between which the free portion of the finger vibrates, the finger being tuned in harmony with the fork and the pins arranged with relation to the nodal points of the finger, substantially as set forth.

6. The combination, with a magnetized tuning-fork, of an extension attached thereto and tuned in harmony therewith, a local circuit including the extension, an adjustable contact controlling said local circuit and operated by the extension, and a telephone in said circuit, the arrangement being such that the local circuit will be varied only when the fork vibrates to its full amplitude, substantially in the manner and for the purposes set forth.

388,092. TELEGRAPH-RECEIVER. FRANÇOIS VAN EYSBERMEN, Brussels, Belgium. Filed Nov. 27, 1887. Serial No. 256,164. (No model.)

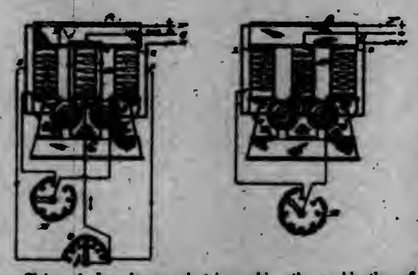


Claim.—1. In a tone or harmonic telegraph, a receiving-instrument consisting of a bent metallic frame having upon one end an extended core-piece, a main-line coil surrounding said core-piece, and a series of tuning-forks having varying fundamental rates of vibration, arranged upon the other end of the frame and extending into proximity with the core-piece, substantially as described.

2. In a tone or harmonic telegraph, a receiving-instrument having a single electro-magnet and core therefor, and a series of tuning-forks arranged to be operated by said magnet, and a local battery and coil connected therewith surrounding said core, substantially as described.

3. In a tone or harmonic telegraph, a receiving-instrument consisting of a bent magnetized frame, a series of forks secured to and constituting one pole of the frame, and a core-piece secured to and constituting the other pole of the frame and controlling all the forks, substantially as described.

388,093. DYNAMO-ELECTRIC MACHINE. MONTGOMERY WARD, New York, N. Y. Filed Feb. 27, 1888. Serial No. 265,591. (No model.)



Claim.—1. In a dynamo-electric machine, the combination of a field-magnet, two armatures between the poles of said magnet, and a central regulating-pole between the armatures, substantially as set forth.

2. In a dynamo-electric machine, the combination of a field-magnet, two armatures between the poles of said magnet, a central magnet between the armatures, and means for reversing the magnetism of said central magnet, substantially as set forth.

3. In a dynamo-electric machine, the combination of a field-magnet, two armatures between the poles of said magnet, a central magnet between the armatures, and means for varying and reversing the magnetism of said central magnet, substantially as set forth.

4. In a dynamo-electric machine, the combination of a field-magnet, two armatures between the poles of said magnet, a central magnet between the armatures, and means for varying and reversing the magnetism of said central magnet, substantially as set forth.

5. In a dynamo-electric machine, the combination of a field-magnet, two armatures between the poles of said magnet, the same being electrically connected in series, and a regulating-pole between the armatures, substantially as set forth.

6. The combination of a field-magnet, two armatures connected in series between the poles of said magnet, two main conductors extending from opposite terminals of the series, a compensating conductor extending from the conductor joining the armatures, and a central regulating-pole between the armatures, substantially as set forth.

7. The combination of a field-magnet, two armatures connected in series between the poles of said magnet, two main conductors extending from opposite terminals of the series, a compensating conductor extending from the conductor joining the armatures, and a central regulating-magnet between the armatures, provided with means for varying and reversing its magnetism, substantially as set forth.

8. The combination of a field-magnet, two armatures connected in series between the poles of said magnet, two main conductors extending from opposite terminals of the series, a compensating conductor extending from the conductor joining the armatures, and a central magnet between the armatures, having coils included in said compensating conductor, substantially as set forth.

9. The combination of a field-magnet, two armatures connected in series between the poles of said magnet, two main conductors extending from opposite terminals of the series, a compensating conductor extending from the conductor joining the armatures, a central magnet between the armatures, a shunt between the two main conductors, and a conductor extending from at or near the point of connection of the compensating conductor to a point on said shunt and including coils of said central magnet, substantially as set forth.

10. The combination of a field-magnet, two armatures connected in series between the poles of said magnets, two main conductors extending from opposite terminals of the series, a compensating conductor extending from the conductor joining the armatures, a central magnet between the armatures, a shunt between the two main conductors, resistance-coils in said shunt, and a conductor extending from at or near the point of connection of the compensating conductor, including coils of said central magnet, and terminating in an arm adjustable along said resistance-coils, substantially as set forth.

11. The combination of a field-magnet, two armatures connected in series between the poles of said magnet, two main conductors extending from opposite terminals of the series, a compensating conductor extending from the conductor joining the armatures, a central magnet between the armatures, a shunt between the two main conductors, resistance-coils in said shunt, a conductor extending from at or near the point of connection of the compensating conductor, including coils of said central magnet, and terminating in an arm adjustable along said resistance-coils, and coils on said central magnet included in said compensating conductor, substantially as set forth.

388,094. SECTIONAL ADJUSTABLE PRESSURE-BAR AND CHIP-BREAKER FOR WOOD-PLANING MACHINES. CHARLES S. WARNER, Gloversville, N. Y. Filed May 11, 1888. Serial No. 273,842. (No model.)

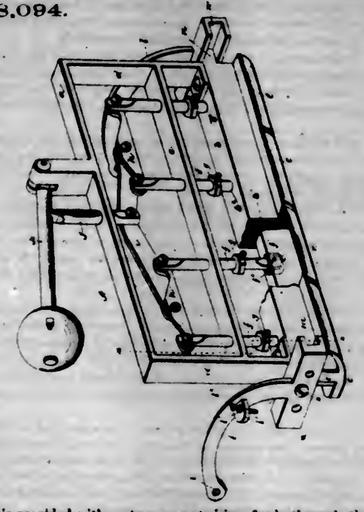
Claim.—1. A pressure-bar for wood-planing machines, comprising a frame, a grooved bottom rail therein, a suitable number of shoes having shanks arranged in said grooved rail, an equalizer composed of two levers, to the ends of which the shoes are flexibly connected, and a third freely-moving lever, to which the said two levers are pivoted, and a counterbalancing device, substantially as described.

2. A frame, A, composed of a top rail, a grooved bottom rail, an intermediate cross-rail, and suitable connections, combined with a series of shoes having shanks arranged in said grooved rail, a three-lever equalizer, and stems flexibly connected to the shoes and to the equalizer, and a counterbalancing device, whereby individual self-adjustment is permitted to each shoe, substantially as described.

3. A frame composed of a top rail and a grooved bottom rail, combined with a series of shoes having shanks fitted loosely in said bottom rail, stems flexibly pivoted to said shanks about midway of their lengths and provided with adjustable detents for limiting the descent of the shoes, a three-lever equalizer loosely arranged in said frame, and to which said stems are flexibly connected, and a counterbalancing device applied to said equalizer, substantially as described.

4. A frame, A, comprising a top rail and a grooved bottom rail, combined with an equalizer composed of the levers A A, the lever i, to the ends of which said first-named levers are pivoted, and which

388,094.

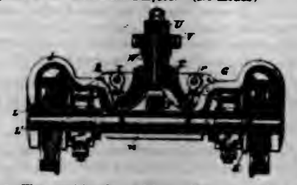


lever *i* is provided with a stem or post rising freely through the top rail of the frame, the equaliser being thus freely suspended within the frame, a counterbalancing device applied to the equaliser stem or post, and shoes arranged in the grooved bottom rail, and stems connected flexibly to the shoes and to the levers *h h*, substantially as described.

5. A pressure-bar for wood-planing machines, composed of a frame having a bottom rail, shoes therein, and an equaliser to which such shoes are connected, combined with pivotal arms or brackets having grooved ways *m*, receiving lugs on the bottom rail, and set-screws for fixing the bottom rail in adjusted position in said ways, to vary the proximity of the pressure-bar to the cutter-head, substantially as described.

6. A pressure-bar for wood-planing machines, composed of a frame having a bottom rail, shoes therein, and an equaliser to which such shoes are connected, combined with pivotal arms or brackets having grooved ways *m*, receiving lugs on the bottom rail, and set-screws for fixing the bottom rail in adjusted position in said ways, to vary the proximity of the pressure-bar to the cutter-head, and set-screws on the sides of the brackets or arms to vary the height of the pressure-bar from the bed of the planing-machine, substantially as described.

388,095. CAR-TRUCK. James H. Wheely, Phillipsburg, N. J. Filed July 26, 1887. Serial No. 245,675. (No model.)



Claim.—1. The combination, with a railway-car axle and wheels, of a metallic safety-frame consisting of arches over the wheels and an intermediate connecting part over the axle, and constructed with supernumerary bearings normally embracing the axle, but out of contact with it, and adapted in case of breakage to fall into contact therewith.

2. The combination, with a railway-truck, of a metallic safety-frame connected thereto, extending transversely thereof over the axle and wheels, and consisting of arches over the wheels and an intermediate connecting part over the axle, constructed in one piece and formed with supernumerary bearings normally embracing the axle, but out of contact with it, and adapted in case of breakage to fall into contact therewith.

3. The combination, with a railway-truck, of a safety-frame fixed thereto, extending transversely thereof over the axle and wheels, and constructed with supernumerary bearings just outside of the wheels, between them and the axle-boxes, normally embracing the axle, but out of contact with it, and adapted in case of breakage to fall into contact therewith.

4. The combination, with a railway-truck, of a safety-frame fixed thereto, extending over the axle and wheels, and constructed with arches over the wheels and an intermediate portion over the axle, and with supernumerary bearings on opposite sides of each of the wheels, said bearings normally embracing the axle, but out of contact with it, and adapted in case of breakage to fall into contact therewith.

5. A safety-frame for railway-trucks, consisting of arches to pass over the wheels, an intermediate connecting portion, and braces connecting with the upper parts of said arches to stiffen the frame.

6. A safety-frame for railway-trucks, consisting of arches over the wheels, an intermediate connecting portion, and forked supernumerary bearings forming downward continuations of the arches, and adapted to embrace the wheels while normally out of contact therewith.

7. The combination, with a railway-truck, of a safety-frame extending transversely thereof over the wheels and axle, and constructed with a channeled portion or hood extending over and partly inclosing the axle, with a strap connected thereto and passing beneath the axle.

8. A car-axle constructed with supernumerary journals outside of the wheels and between them and the usual journals.

9. A car-axle constructed of increased diameter where it passes through the wheels, and with this increased diameter extended to each side of the wheels a distance sufficient to constitute supernumerary journals in addition to the usual journals.

10. The combination, with a railway-truck, of a safety-frame extending over the axle and wheels, constructed with thrust-bearings adapted to limit the lateral movement of the wheels and axle relatively to the truck, thereby relieving the bruises of thrust.

11. The combination, with a railway-truck, of a safety-frame extending over the axle and wheels, constructed with thrust-bearings coming closely adjacent to and laterally facing the wheels, and adapted to limit the lateral play of the latter relatively to the truck, thereby relieving the bruises of thrust.

388,096. CAR-WHEEL. James H. Wheely, Phillipsburg, N. J. Filed Sept. 6, 1887. Serial No. 248,986. (No model.)



Claim.—1. A car-wheel consisting of a wheel-center having a rim with its periphery cylindrical and of uniform diameter from side to side, combined with a tire fitted over said rim, and screws for fastening said tire passed through said rim from opposite sides of the web.

2. A car-wheel constructed of three parts—a wrought-metal hub, a removable tire, and an intervening fully of cast metal welded to said hub and formed with a radially-corrugated web of sinuous contour at its junction with the rim.

3. A car-wheel constructed with a web having an annular hollow or core around its hub, and formed with a radially-corrugated web of sinuous contour having its greatest sinuosity at its junction with the rim, and the corrugations diminishing continuously thence toward the hub.

4. A car-wheel constructed with a radially-corrugated web of sinuous contour at its junction with the rim and with radial ribs projecting to opposite sides of the web, and those on the opposite sides arranged to coincide with one another in planes intersecting the web.

5. A car-wheel constructed with a radially-corrugated web and with radial ribs projecting therefrom at intervals on opposite sides thereof, whereby pockets of varying depth are formed against the rim on both sides of the wheel, with screws passed through the rim in the deeper pockets, and a removable tire fitted to said rim and secured by said screws.

6. A car-wheel consisting of a removable tire, combined with a wheel-center formed of a solid hub of forged or wrought metal and an outer portion or fully of cast metal welded to said hub.

7. A car-wheel constructed with a wheel-center formed of a solid hub of wrought metal having a deep peripheral groove and an outer portion or fully of cast metal cast into said groove and forming a welded joint therewith, whereby the two parts of the wheel-center are united permanently and by a weld of extensive surface.

8. A car-wheel constructed with a wheel-center formed of a solid hub of wrought metal having a deep peripheral groove, the sides of which are undercut, and an outer portion or fully of cast metal cast into said groove, whereby the two parts of the wheel-center are united by means of a dovetailed connection.

9. A car-wheel constructed with a wheel-center formed of a solid hub of wrought metal having projecting flanges on its outer and inner faces forming a deep peripheral groove between them, and an outer portion or fully of cast metal cast into said groove and made of greater width than the space between the flanges, whereby it is seated against the hub not only at the bottom of said groove but also against the peripheries of said flanges.

10. A car-wheel constructed with a wheel-center formed with a solid hub of wrought metal having projecting flanges on its outer and inner faces, forming a peripheral groove between them, and the inner flange of greater diameter than the outer one, and an outer portion or fully of cast metal cast into said groove and bearing against said flanges, whereby the inner flange serves to strengthen the fully against lateral strains.

11. A car-wheel consisting of a removable tire, combined with a wheel-center formed with a solid hub of wrought metal having projecting flanges on its opposite sides, forming a deep peripheral groove between them and undercut on their approaching faces, with a cast-metal outer portion or fully cast into said groove, made with a wide bearing against said flanges, and formed of two inclined webs and an intermediate core.

12. A car wheel and axle provided with reciprocal shoulders at the inner side of the hub to prevent the displacement of the wheel inwardly along the axle, combined with a key seated in the hub and axle to prevent the twisting of the wheel on the axle.

13. A car wheel and axle, combined with a headed key seated in the axle and hub, with its head abutting against the inner end of its keyway in the axle and receiving the abutment of the wheel-hub, whereby the wheel is kept from turning on the axle and its displacement inwardly along the axle is prevented.

14. A car wheel and axle, combined with a spring-key seated in a keyway in the axle, with its outer end abutting against the end of said keyway and its head bearing against the outer side of the hub.

15. A car-wheel having an inclined notch in its bore and a radial recess in its outer face, combined with an axle having a coinciding keyway, and a spring-key seated in said keyway with its head bridging said notch and lying in said recess.

16. The combination, with a car-wheel, of a thrust-washer secured removably to the face of its hub and projecting beyond the latter to receive the thrust.

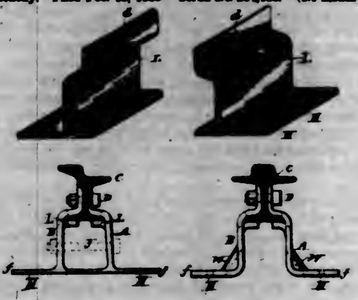
17. The combination, with a car-wheel, of a thrust-washer of anti-friction metal secured to the face of its hub and projecting beyond the latter to receive the thrust.

18. The combination, with a car-wheel, of a thrust-washer having bosses entering sockets in the hub and fastened by screws entering through said bosses and countersunk therein beneath the plane to which the washer is to be worn down.

19. The combination, with a car-wheel, of a thrust-washer having bosses entering sockets in the hub and countersunk recesses for the screw-heads in said bosses, and divided into two portions, in order that it may be put around the axle, the line of division passing diametrically through said bosses, in order that the same screw may fasten both halves.

20. The combination, with a car-wheel, of a thrust-washer secured to the face of its hub, and constructed in two parts hinged together, in order that it may be put around the axle.

388,097. RAIL-CHAIR FOR GIRDER-RAILS. Reuben W. Wells, Johnstown, Pa., assignor to The Johnson Street Street Rail Company, of Kentucky. Filed Feb. 16, 1888. Serial No. 264,152. (No model.)



Claim.—1. A two-part chair for girder-rails, shaped to fit against and support the webs of the same, and provided with lugs, as L, stamped out to support the lower flanges of the rails, substantially as and for the purposes set forth.

2. A two-part chair for girder-rails, provided with lugs for clamping the flanges of the rails and with hollow side braces, both lugs and braces formed integral with the metal of the chair, substantially as and for the purposes set forth.

388,098. CENTER-BOARD FOR VESSELS. Robert W. Wells, Bennyton, assignor of one-half to Alden Schanze, South Norwalk, Conn. Filed Jan. 26, 1888. Serial No. 261,967. (No model.)



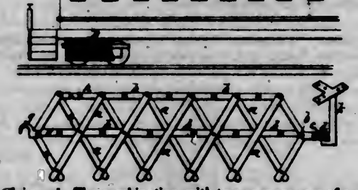
Claim.—A center-board for vessels, having at its forward lower corner a casting, 6, provided with a slot, 5, which extends from the lower edge upward and forward.

388,099. COMPOSITION FOR POLYCHROMATIC-PRINTING BLOCK. William G. White, Anerley, County of Surrey, and Robert A. A. White, Croyford, County of Kent, England. Filed Feb. 21, 1888. Serial No. 264,893. (No specimens.)

Claim.—1. A mixture for blocks to be used in polychromatic printing, consisting of petroleum jelly, a solution of resin in turpentine, Gallipoli oil, fat, and a dye, substantially in the proportions described.

2. A mixture for blocks to be used in polychromatic printing, consisting of petroleum jelly, a solution of resin in turpentine, Gallipoli oil, fat, a dye, substantially in the proportions described, and a mordant.

388,100. ATTACHMENT FOR RAILWAY-CARS. John H. Williams, Alden, N. Y. Filed Dec. 19, 1887. Serial No. 258,304. (No model.)

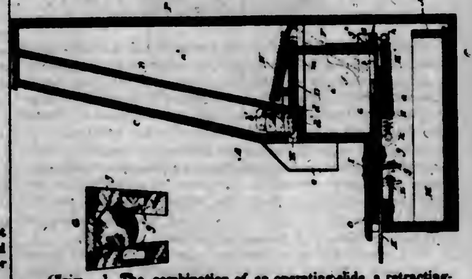


Claim.—1. The combination, with two or more cars of a railway-train, of extensible sections of fence attached, respectively, at the sides of the cars and capable of being extended outward in V form, to inclose the entrance to said cars, in the manner and for the purpose specified.

2. The combination, with a railroad-car, of a section of extensible fence composed of pivoted bars in the form of lazy-tongs, with pivoted links connecting the tops and center of the bars, as and for the purpose specified.

3. The combination, with the extensible sections D of fence having a hook, *g*, at their outer ends, of the portable standard L, provided with feet, to be self-supporting, and with a catch to receive the hook *g*, as and for the purpose specified.

388,101. SELLING-MACHINE. John A. Williams, Kansas City, Mo. Filed Jan. 31, 1888. Serial No. 262,882. (No model.)



Claim.—1. The combination of an operating-slide, a retracting-spring therefor, a coin-holding slide provided with arms extending across the plane of the operating-slide and adapted to sustain a coin intermediate of said slides to lock them together, a delivery-slide, a lever for connecting the coin holding and delivery slides, and a spring

for returning the delivery-slide to its normal position, substantially as set forth.

2. The combination of an operating-slide, a retracting-spring therefor, a coin-holding slide having a coin-sustaining projection extending through an opening in the operating-slide, and a stop located in the path of the coin sustained on said projection, substantially as set forth.

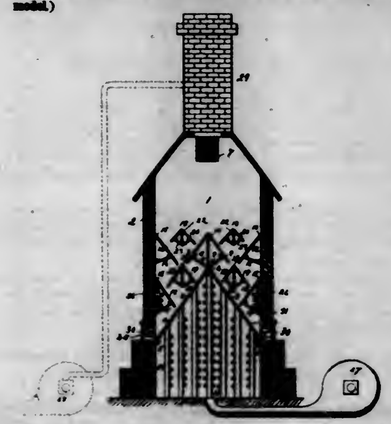
3. In combination, the operating slide or pull provided with a central opening and a forwardly-projected tongue therein, a coin-holding slide provided with arms extending through the opening on the said pull or slide and set far enough apart to allow the said tongue to pass freely between them, and a guideway to direct a coin into position on the arms in front of said tongue, substantially as set forth.

4. In combination, a suitable case, a horizontal operating slide or pull, a delivery-slide supported in the case, a vibrating bar or lever connecting the ends of said slides, a coin-holding slide in position to engage a coin, a spring to retract the coin holding and delivery slides, and a spring to retract the operating slide or pull, substantially as set forth.

5. In a vending apparatus, the combination of the case provided with an inclined hopper adapted to support the packages or articles to be sold one above the other, and with an opening in the bottom of the hopper in front of the articles, an operating slide or pull, a coin-holding slide adapted to be locked to the operating-slide, a delivery-slide extending across the bottom of the hopper, a lever connecting the operating and the delivery slides, the delivery-slide being adapted to be withdrawn from beneath the articles by the operating slides or pull, and to be returned by the spring to force the articles out of the case, substantially as set forth.

6. The herein-described case, consisting, essentially, of the extended lower section, *a*, provided with a lock-drawer and an opening in its top for the reception of coins, the less-extended middle section, *a'*, and the tapered upper section, *a²*, the slanting package-rest secured in said upper section parallel with its said tapered portion, an opening for the discharge of the packages, and a shield over the discharge-opening, substantially as set forth.

388,102. WOOD-DRYING KILN. ARMAND WYCKOFF and HENRY L. WYCKOFF, Elmira, N. Y. Filed Sept. 9, 1886. Serial No. 213,126. (No model.)



Claim.—1. In a kiln for drying kindling-wood, a casing having an inclosed chamber and an exhausting apparatus for taking away air and vapor from the top thereof, in combination with main deflecting slatted tables 3, situated in the lower part of the chamber, heating-coils arranged beneath the tables, inclined slatted tables 13, situated at the sides of the chamber opposite tables 3, other heating-coils arranged beneath tables 13, and inclined deflectors of inverted-V shape, also of slats, and arranged to direct the material to the said tables and to form open spaces throughout the mass of wood being dried, and means for furnishing air to the heaters, whereby it is first heated and then passed through the entire mass of wood, the slatted tables and deflectors facilitating such passage, substantially as set forth.

2. A casing inclosing a chamber, 1, having openings 24 formed at its opposite sides, and oppositely-inclined tables 2, formed of slats 4, terminating opposite said openings, in combination with a series of smaller grated inclined deflectors arranged above and at the sides of said tables 2 and delivering thereon, and a series of steam-receiving pipes or coils below each of said tables, and an exhaust fan or blower, substantially as described.

388,103. BALANCED SLIDE-VALVE. JAMES G. ARMOR, Cherokee, Kans. Filed Mar. 2, 1888. Serial No. 265,951. (No model.)

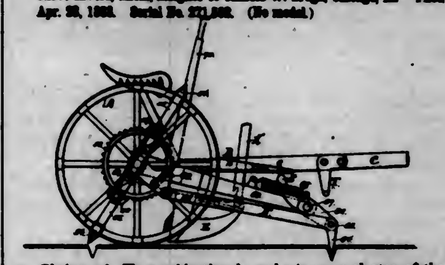


Claim.—1. The combination of the slide-valve, the disks arranged one on top of the other and removable from the valve, the upper disk having the central recess, the packing fitting in said recess and bearing against the top of the steam-chest, the spring-arms projecting beyond the disks, the expansion-rings encircling said disks and bearing on the spring-arms, the latter serving to normally force the expansion-rings upward, substantially as described.

2. The combination of the valve, the disks secured on the upper side thereof, the spring-arms G, arranged on the lower disk, projecting beyond the sides thereof, and having their arms bent to form the arms H and lips I, the springs K on the upper side of arms G, the expansion-ring S, encircling the disk and bearing on the spring K, the expansion-ring T, bearing on the ring S, and expansion-ring U, encircling the ring T and bearing on the lips I, substantially as described.

3. The combination, with the slide-valve, of the disk B on the upper side thereof, said disk having the central recess or cavity and the radial openings F, communicating therewith, the springs G, arranged on disk B and having their outer ends extending through openings F and provided with the arms H and lips I, the crossed springs K on the upper side of springs G, the upper disk, L, the central screw extending through the same, through the centers of the springs, and through the lower disk and engaging the valve, the screws M, connecting the upper disk to the lower disk, the expansion-rings S T, encircling the disk, one of said rings bearing on the springs K, and the expansion-ring U, encircling the upper ring, T, and bearing on lips I, substantially as described.

388,104. CHECK-ROW CORN-PLANTER. LEWIS A. ASPINWALL, Three Rivers, Mich., assignor to Charles W. Bruce, Chicago, Ill. Filed Apr. 23, 1888. Serial No. 271,962. (No model.)



Claim.—1. The combination, in a check-rower planter, of the wheels loose on the axle with the markers and their arms permanently connected to the axle, a ratchet-wheel upon one of the driving-wheels, and pawls for connecting the axle with the driving-wheel, and with mechanism, substantially as specified, connected to said parts for correcting the position of the markers, substantially as set forth.

2. The driving-wheels and axle, in combination with the markers and their arms permanently connected to the axle, a ratchet-wheel and pawls for connecting the axle to one of the driving-wheels, a prong, connecting-rod, crank, and pawl for turning the markers by the movement of the machine when the prong is thrust into the ground, and thereby rectifying the position of the markers, substantially as set forth.

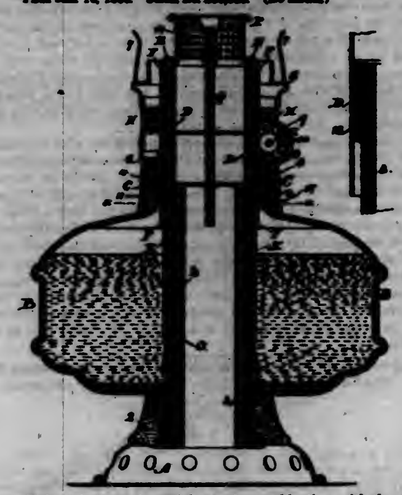
3. The combination, with the axle and markers to which they are connected, of a crank upon the axle, a connecting-rod and prong, a frame and lever for raising or lowering the prong, and a crank forming a connection between the prong and the frame, and a stationary finger or bracket acting upon the arm or finger of the crank to raise the prong out of the ground at the proper moment, substantially as set forth.

4. The combination, with the markers and the axle to which they are connected, of the cam upon the axle, the hopper and dropping mechanism connected therewith, and the plow, and the valve within the plow for dropping the corn, substantially as set forth.

5. The combination, with the driving-wheels loose upon the axle and the markers permanently connected to the axle, and the pawls and ratchet-wheel for connecting the driving-wheel to the axle, of the crank 65 upon the axle and a pawl upon the crank, a connecting-rod

and prong, and the flange 67, for acting upon the pawls, the frame 68 and lever for raising or lowering the same, a crank forming the connection between the prong and the frame, a bracket for raising the crank and prong, and a spring, 69, for returning the parts to their normal position, substantially as set forth.

388,105. ARGAND LAMP. LEWIS J. ATWOOD, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place. Filed Jan. 16, 1888. Serial No. 260,933. (No model.)



Claim.—1. In an Argand lamp, the combination, with the glass reservoir or oil-fount having a cylindrical or nearly cylindrical central glass air-tube integral therewith and extending to the top of the reservoir, or nearly so, of a sheet-metal air-tube surrounding the glass air-tube and extending down into the reservoir and firmly attached to such glass air-tube, so as to form an internal wick-tube and a guide for the wick, substantially as set forth.

2. The combination, in an Argand lamp, with the glass reservoir having a central glass air-tube, 3, and a glass rim, 4, in one piece, of a sheet-metal air-tube, D, surrounding and secured to the glass air-tube 3 and extending down into the reservoir, and also above such air-tube 3, and the sheet-metal collar C, over the glass rim 4, and having an interior cylindrical portion, 5, that is concentric to and parallel with the sheet-metal air-tube D, the collar being secured to the glass rim 4, substantially as and for the purposes set forth.

3. The combination, in an Argand lamp, with the glass reservoir having an air-tube, 3, and rim 4, of a sheet-metal air-tube, D, surrounding and fastened to the air-tube 3, the sheet-metal collar C, having an internal cylinder, 5, that is concentric with the sheet-metal air-tube D, and is connected to the rim 4, and the external wick-tube, F, passing down within the collar C, provided with slots and intervening springs to form a friction for retaining the parts in place, substantially as set forth.

4. The combination, in an Argand lamp, with the glass reservoir having a central glass air-tube, 3, and rim 4, of a sheet-metal air-tube, D, fastened to the air-tube 3 and extending downward in the reservoir, the collar C, having an internal cylinder, 5, and connected to the rim 4, the wick-tube F, passing down within the collar C and extending up to the top of the wick-tube, or nearly so, the air-distributer, chimney-holder, and deflector, the wick-raiser supported by the air-distributer, and the rank-cylinder surrounding the wick and having perforations for the teeth of the wick-raiser, substantially as set forth.

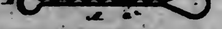
5. The combination, in an Argand lamp, with the glass reservoir having a central glass air-tube and a rim around the upper end, of a collar connected to the rim and having a cylindrical interior and a metal tube or band that is concentric with the collar and surrounds the glass air-tube of the reservoir and is permanently attached around the same, substantially as set forth.

6. The combination, in an Argand lamp, with the reservoir having central air-tube and rim all in one piece of glass, of a sheet-metal air-tube surrounding and fastened to the glass air-tube, a sheet-metal collar with an internal cylinder that is connected to the glass rim and concentric with the sheet-metal air-tube, and the external wick-tube passing down within the collar, substantially as set forth.

7. The combination, in an Argand lamp, with the reservoir having a central air-tube and rim in one piece of glass, of a hollow metallic collar having a cylindrical interior and receiving the glass rim and connected thereto, and a sheet-metal air-tube concentric with the collar and permanently affixed to the glass air-tube, substantially as set forth.

8. The combination, in an Argand lamp, with the glass reservoir having a central glass air-tube, 3, of a sheet-metal air-tube, D, extending down into the reservoir and fastened to such air-tube 3, and the sheet-metal collar C, having an interior cylindrical portion, 5, that is concentric to and parallel with the sheet-metal air-tube D, the collar being secured to the glass, substantially as set forth.

388,106. GUY-FASTENER. THOMAS E. BARROW, Mansfield, Ohio. Filed May 21, 1887. Serial No. 238,333. (No model.)



Claim.—A self-fastener consisting of a main portion and an engaging device, substantially as described, for attaching the cord, said main portion having a recessed side piece and a contiguous straight side piece forming a series of openings for the adjustment of the cord.

388,107. TWO-WHEELED VEHICLE. JOHN S. BARSHEY, Bellefonte, Pa. Filed July 13, 1887. Serial No. 244,178. (No model.)

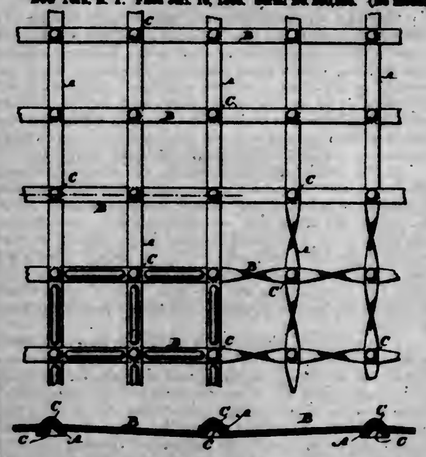


Claim.—1. The combination of the axle, the shafts connected directly thereto, and having portions curved upward in front and rear of the axle, and springs connected to the shafts in front and rear of the axle, and carrying the body of the vehicle, all substantially as specified.

2. The combination, in a two-wheeled vehicle, of the axle, shafts connected directly thereto, springs connected to the shafts, seat-irons, and brackets connected to the springs, a seat secured to said seat-irons, and a foot-board secured to the brackets, all substantially as described.

3. The combination, in a two-wheeled vehicle, of the axle, the shafts connected thereto, the springs connected to the shafts, the seat-irons and seat secured to the springs and located directly above the axle, and a foot-board carried by brackets curved and bent so as to clear the axle and the shafts as the springs yield, all substantially as set forth.

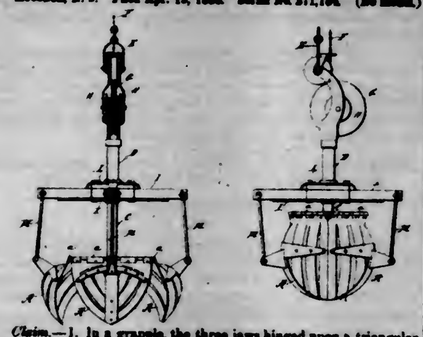
388,108. METALLIC RAILING AND GUARD. ADELBERT BATAILLE, New York, N. Y. Filed Jan. 16, 1888. Serial No. 260,932. (No model.)



Claim.—1. A guard or grating formed of straight intersecting bars interwoven at regular intervals, the bars or strips having hollow tents or projections at the intersections, setting the one within the other, to hold the bars firmly at such intersections, substantially as set forth.

2. The metallic bars or strips for ornamental gratings or guards having hollow projections or tents, the one fitting within the other, at regular intervals, adapted to form the connections at the intersections of the bars when placed together, substantially as set forth.

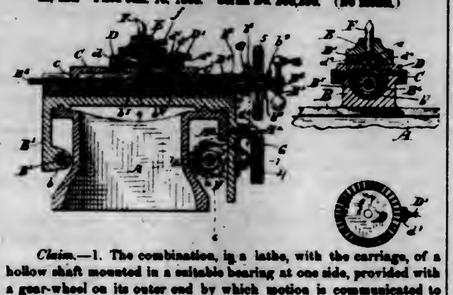
388,109. SELF-ADJUSTING GRAPPLE. ALEXANDER BERGEN, Rebstown, N. J. Filed Apr. 19, 1888. Serial No. 271,104. (No model.)



Claim.—1. In a grapple, the three jaws hinged upon a triangular base, and a tripod connected with said jaws by the hinged rigid rods and mounted upon a ball-and-socket joint, the parts being combined and arranged for operation, substantially as shown and described.

2. In a grapple, the open-work jaws hinged upon a triangular base-piece, the tipping or tilting tripod connected with said jaws by the hinged rigid rods, the operating rods or sleeves, and hoisting chains or cables connected with the tripod and jaws, all combined and arranged substantially as and for the purposes set forth.

388,110. LATHE FOR TURNING ARTICLES HAVING LONGITUDINALLY-CURVED SURFACES. CHARLES A. REISSNER, Indianapolis, Ind. Filed Jan. 10, 1888. Serial No. 260,260. (No model.)



Claim.—1. The combination, in a lathe, with the carriage, of a hollow shaft mounted in a suitable bearing at one side, provided with a gear-wheel on its outer end by which motion is communicated to said shaft and another gear-wheel on its inner end, a sliding part mounted on said carriage, provided with a slot through which said gear-wheel on the inner end of said hollow shaft projects, a circular plate pivoted on the top of said sliding part and formed with cogs around its edge engaging with said gear-wheel, and the tool-holder mounted on said circular plate, substantially as set forth.

2. In a turning-lathe, the combination, with the carriage thereof, of a hollow shaft mounted in a suitable bearing thereon, a sliding part, C, mounted on the top of said carriage, the screw-threaded rod B^2, mounted in said hollow shaft and engaging with a screw-threaded perforation at one side of said sliding part, the gear-wheel b^7, mounted to slide on said hollow shaft and extending up through a slot in said part C, the circular plate D, pivoted on the top of said part C, provided with cogs engaging with said gear-wheel b^7, and the tool-holder carrying the tool mounted on said circular plate, substantially as set forth.

3. In a lathe, the combination of the carriage carrying a hollow shaft at its top and a chain of gearing on its side engaging with said hollow shaft for driving the same, a solid shaft mounted within said hollow shaft formed with a screw-threaded end, the sliding part C, mounted on top of said carriage and provided with an ear, *c*, having screw-threaded perforation arranged to engage with said screw-threaded end of the shaft B^2, the gear-wheel b^7, mounted to slide on said hollow shaft B^2, the circular plate D, pivoted to said part C and provided with cogs engaging with said gear-wheel b^7, and the tool-holder mounted on said circular plate D, substantially as set forth.

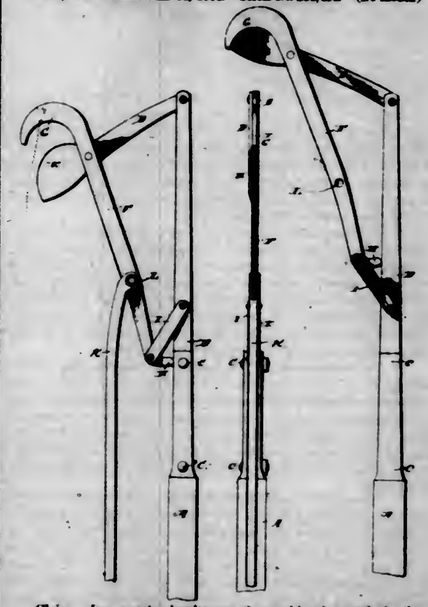
4. The combination, in a turning-lathe, with the carriage and mechanism for supporting the tool, of a circular plate pivoted on the top of said carriage, the gearing for operating said plate, the tool-holder mounted to slide on the top of said plate, means, substantially as described, for adjusting it in front of or behind the center of said plate, and the tool mounted in said tool-holder, substantially as described, and for the purposes specified.

5. The combination, in a lathe, with the carriage thereof and mechanism for supporting and operating the tool, of a tool-holder adjustably mounted on a pivoted part on said carriage and provided with a vertical socket, and the tool mounted in said socket of said tool-holder in a vertical position, substantially as described, and for the purposes specified.

6. The combination, in a turning-lathe, of the carriage, the means for driving the same, a shaft extending through a portion formed in the front side of said carriage and provided with a gear-wheel on each end, the inner one of which engages with a rack-bar on the bed of said lathe, the hollow shaft B^2, journaled at the top of said carriage and having a gear-wheel mounted on its outer end, and a chain of gearing connecting said two gear-wheels, the circular plate D, pivoted on the top of said carriage and provided with cogs around its edge, and the gear-wheel b^7, mounted on said shaft and engaging with said circular plate, substantially as set forth.

7. The combination, in a turning-lathe, of the shaft A^2, means for driving the same, the miter gear-wheel *a*, mounted to slide thereon, the carriage arranged to slide on the bed of said lathe, carrying a short shaft, B^4, in a bearing mounted in its front side, the gear-wheel 3, mounted on said short shaft and engaging with a wheel, *a*, the device b^3, engaging with said wheel *a* to hold it into connection with the wheel 3, the wheel 4, mounted on the outer end of said shaft B^4, the shaft B^2, mounted in the top of said carriage carrying the wheel 5, the swinging frame G, carrying a chain of gearing arranged to connect said wheel 5 with said wheel 4 when it is desired, and the mechanism for supporting and operating the tool mounted on the top of said carriage and connected to said shaft B^2, substantially as set forth.

388,111. PRUNING IMPLEMENT. ANDREW ESTERBROOKS, Hebron, Nebr. Filed Jan. 11, 1888. Serial No. 260,461. (No model.)

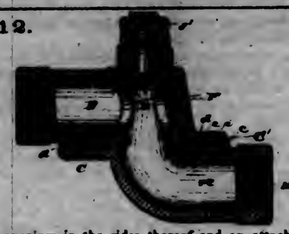


Claim.—In a pruning implement, the combination, with the shank B, having a suitable handle at its lower end, the knife-arm D, pivoted to the upper end of said shank, and the convex knife E on the outer end of said arm, of the arm F, having the edgeless hook G on its upper end and pivoted below said hook to the arm D, just to the inner side of the knife E, the pivoted links I, connecting suitable points of the shank and arm F, and the inwardly-standing step forming the lower end of said arm and acting as both an upper and lower stop for the hook and knife, substantially as specified.

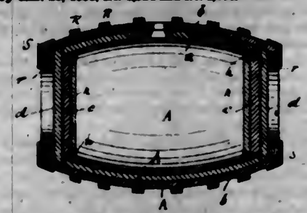
388,112. FLEXIBLE PIPE-COUPLING. BENJAMIN BROWNER, Wilkes-Barré, Pa. Filed Nov. 14, 1887. Serial No. 255,261. (No model.)

Claim.—In a pipe-coupling, the combination of the two shells A and B, each provided with an annular flange in line with one wall of said shell, the said flanges being the one provided with V-shaped recesses and the other with annular projections fitting the recesses of the other, the said shell A also having the tapering projection provided with openings in the sides thereof and, an attaching-bolt, the shell B being provided with the stuffing-box around the said bolt, and the nuts J J', substantially as described.

388,112.



388,113. PAPER BARREL. ADOLF BEAR, Cologne, Prussia, assignor to Keiser & Co., Barmbold, Germany. Filed Feb. 28, 1888. Serial No. 265,593. (No model.) Patented in Germany Nov. 22, 1887, No. 43,288; in France Dec. 24, 1887, No. 187,888; in England Jan. 17, 1888, No. 745; in Belgium Jan. 31, 1888, No. 83,519, and in Austria-Hungary Mar. 20, 1888, No. 3,934 and No. 1,792.

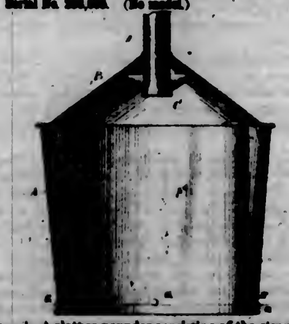


Claim.—1. A paper barrel composed of end rings, paper heads within and on said end rings, and a paper shell formed of a series of sheets pasted upon each other, said sheets being provided with tapered notches in opposite edges, substantially as herein shown and described.

2. A paper barrel composed of end rings, heads on and within said end rings, and a paper shell composed of a series of sheets of paper pasted upon each other, said sheets having tapered notches in opposite edges, part of the shell thus formed projecting beyond the heads, and additional rings placed against the outer edges of the heads and the inner surfaces of those parts of the shell projecting beyond the heads, substantially as herein shown and described.

3. A paper barrel composed of the end rings, A, the disks *c* within said rings A, an inner paper shell, *a*, extending to the outer edges of said rings A, the disks *d*, secured on the disks *c* and extending to the outer circumference of the shell *a* at the ends, the outer paper shell, *b*, extending beyond the outer disks, *d*, and additional rings, *r*, placed against the outer disks, *d*, and within that part of the outer shell, *b*, projecting beyond the disks *d*, substantially as herein shown and described.

388,114. WASHING-MACHINE. DAVID R. BRAMBALL, Rayne, assignor of one-half to William W. Dunn, Crowley, La. Filed Oct. 21, 1887. Serial No. 253,033. (No model.)



Claim.—1. A clothes-pounder consisting of the circular upwardly-flared body having perforations near its lower edge and provided with a conical top having a socket for a suitable handle, and a cylindrical imperforate shell secured within the body, substantially as specified.

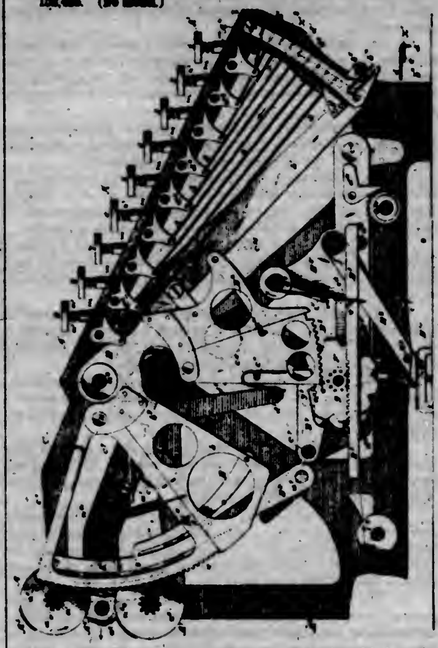
2. A clothes-pounder comprising the upwardly-flared body having perforations near its lower edge, the imperforate shell, the bolts G, inserted through the lower edges of the shell and the body, and the sleeves H, surrounding the bolts between the shell and the body, as set forth.

388,115. PLAYING-CARD. SAMUEL BRENTNALL, New York, N. Y. Filed Mar. 9, 1888. Serial No. 266,751. (No model.)



Claim.—A card-package consisting of a pack of ordinary playing-cards and a series of cards provided with perforated lines forming fields or spaces, substantially as herein shown and described.

388,116. CALCULATING-MACHINE. WILLIAM S. BURROUGHS, St. Louis, Mo., assignor, by direct and mesne assignments, to the American Arithmometer Company, same place. Filed Jan. 10, 1888. Serial No. 260,468. (No model.)



Claim.—1. The combination of a series of numbered independent indicators, a series of independent keys to each indicator, connections between each of the series of keys and each indicator, said connections being arranged to insure the movement of each indicator upon the movement of any key of its series and including a series of steps to each series of keys adjustable by but independent of the keys, arranged to vary the extent of movement of the indicator according to the position of the key struck, substantially as described.

2. The combination of a series of independent indicators, a series of keys to each indicator, connections whereby each indicator is operated on the movement of any key of its series, connections whereby each indicator on completing a revolution turns the adjacent indicator of higher order one step, and means for disconnecting the indicators from the connections after each number is registered to permit the connections to assume a position to operate the indicators to register another number, substantially as described.

3. The combination of the series of independent numbered indicators and a series of independent keys having, uniform movements connected with each indicator and constructed to operate two or more of the indicators simultaneously when released by the action of two or more keys, and locking and releasing devices operated by but independent of the keys for releasing and regulating the movement of the indicator-operating devices, substantially as described.

4. The combination, with the series of indicators and with a series

of keys connected with each indicator, of a series of levers each connected to turn the indicator by its movement, and locking and releasing and regulating devices arranged between each lever and its keys, whereby the lever is released and its movement regulated according to the position of the key struck, substantially as set forth.

5. The combination, with the indicators and pinions and independent keys arranged in series, of actuating-levers carrying racks engaging with the pinions and regulating devices between each lever and each series of keys, the keys capable of movement independently of said devices, substantially as specified.

6. The combination, with the keys, indicators, and intermediate operating-connections between each key and each indicator, of means, substantially as described, for moving the indicators to throw them out of gear with the said connections upon their return motion, substantially as set forth.

7. The combination, with one or more keys, a series of levers, indicators, and pinions, of devices for throwing the indicators out of connection with the levers after the indicators have been operated by the movements of the keys, substantially as set forth.

8. The combination, with the indicators and pinions and with the operating levers and racks, of appliances for throwing the pinions and racks out of gear after the movement of the indicators, for the purpose specified.

9. The combination, with the indicators, a series of keys to each indicator, and a series of levers for operating the indicators, of appliances for throwing the indicators out of gear with the operating devices when the latter are moved in one direction, substantially as specified.

10. The combination, with the keys, a series of independent rack-levers and indicators, of a frame supporting the indicators and adjustable to and from the said levers, substantially as set forth.

11. The combination, with the series of operating rack-levers, the shaft a^2, and indicators supported by said shaft a^2, of a vibrating frame provided with edges bearing against the shaft and constructed to move the latter to and from the levers, substantially as specified.

12. The combination, with the indicators, keys, and a series of levers acting upon the indicators, of a cross-bar and means for moving the bar to restore the levers to their normal positions, substantially as specified.

13. The combination, with the indicators, a series of independent operating rack-levers, and series of keys, of a cross-bar arranged to move the levers to their normal position after they have been lifted by the action of the keys, substantially as set forth.

14. The combination, with the indicators and actuating-levers and independent keys, of a frame carrying a cross-bar arranged to strike the actuating-levers, and a handle connected to operate said frame, substantially as set forth.

15. The combination, with the indicators and a series of independent rack-levers, of a frame carrying a cross-bar for moving said levers, and devices whereby to throw the indicators in and out of gear with the levers, substantially as specified.

16. The combination, with the indicators, a series of independent keys to each indicator, and a series of independent intermediate connections, of a regulating device between the said connections and the keys, constructed to insure and determine the movement of the connections, substantially as set forth.

17. The combination, with the indicators and a series of independent keys to each indicator, of a separate connection for moving each indicator, and a lock connected to be operated by each key of the series, whereby each connection is held in its operative position, substantially as set forth.

18. The combination, with the series of keys, indicators, and intermediate connections, of a lock for securing each connection, and connections between each key and the lock, whereby said lock is operated by each key of the series, substantially as specified.

19. The combination, with the series of independent indicators, a series of keys to each indicator, and an operating-lever to each series of keys, of a locking-plate and connections between each key and said plate, substantially as set forth.

20. The combination, with the indicators, keys, operating connections, and locks, of stops, each connected to be operated by one of the keys and arranged to limit the movement of the operating-connections according to the key depressed, substantially as specified.

21. The combination, with the indicators, keys, and operating-connections, of a series of stops for limiting the movements of said connections, each connected to and movable by one of the keys, substantially as set forth.

22. The combination, with the operating-lever and a series of keys, of a corresponding series of stops arranged to limit the movements of the lever, and connections between each key and one of the stops, substantially as specified.

23. The combination of the operating-lever carrying an arm provided with a lip, 3, a series of stops and connections between the stops and keys, whereby any one of the stops may be thrown into the path of the lip, substantially as specified.

24. The combination, with the operating-lever and a series of keys, of a lock for securing the lever in its elevated position, a series of stops for limiting the downward movements of the lever, and connections between each key and the lock and one of the stops, substantially as specified.

25. The combination of a frame having a stationary shoulder, the operating-lever, keys, notched bar, stops connected to be operated by the keys, and a strip, b^3, pivoted to the lever, constructed to engage with said stationary shoulder on the frame, and provided with a lip, 3, arranged to engage with the stops, substantially as specified.

26. The combination, with each indicator and a series of keys to each indicator, of a series of independent intermediate connections, a spring for operating each connection to a limited extent independently of the key, a detent, and means for releasing the latter to permit the connection on one indicator to move independently of the key and operate its indicator when the adjacent indicator completes its revolution, substantially as specified.

27. The combination, with a series of indicators, a series of keys, and connections, of means for operating the latter upon the movement of any key or keys, the said connections being provided with parts capable of a limited movement independent of the other parts, with locking devices, and with means for releasing the latter as each indicator completes a revolution, substantially as set forth.

28. The combination, with a series of indicators, of a corresponding series of actuating devices, and connections whereby the actuating device of one indicator is moved one step, whether in motion or at rest, as the adjacent indicator completes its movement, substantially as set forth.

29. The combination, with the series of indicators and series of keys and series of independent actuating-connections between the keys and indicators, of means, substantially as described, for turning each indicator one step independently of the key action as the next lower indicator completes a revolution, substantially as described.

30. The combination, with the indicators and keys, of actuating-levers constructed to move the indicators under the action of the keys, and each lever consisting of two parts, one having a limited movement independent of the other under the action of a spring, a look for holding the two parts in connection, and connections between the indicators and locks, whereby each movable portion is released to automatically actuate the adjacent indicator as the next indicator completes its revolution, substantially as set forth.

31. The combination, with the indicating-disks and keys, of levers, each provided with a part geared with one of the indicators and capable of a limited movement to turn the latter, with a locking-lever, and connections between the latter and the adjacent indicator, substantially as and for the purpose set forth.

32. The combination, with the indicators, of operating-levers in two parts, and locking-levers E' and E², substantially as specified.

33. The combination, with a series of indicators, keys, and intermediate connections, of one or more additional series of indicators, and means for throwing either series into connection with the operating devices, substantially as set forth.

34. The combination of a series of indicators, a series of keys to each indicator, and connections whereby each indicator may be set by the action of any key of one series, and a device for restoring the connections to their normal positions at the will of the operator, substantially as set forth.

35. The combination, with the series of keys, of two or more registering devices, each consisting of a series of numbered indicators, and series of intermediate independent operating-connections, and means for turning the registering devices to bring either one of the same into connection with the operating devices, substantially as set forth.

36. The combination of a series of indicators, and operating-keys and connections for moving said indicators, and operating appliances independent of the keys and indicators, whereby each indicator is moved one step by said appliances independently of the keys as the adjacent indicator completes its revolution, and devices operated by the indicators for throwing said appliances into action as each indicator completes its revolution, substantially as described.

37. The combination, with two or more series of keys, of a series of printing-indicators and independent connections, whereby each indicator is controlled by each key of one of the series, and means for throwing the indicators out of gear with the connections, substantially as set forth.

38. The combination, with the series of keys and registering device operated therefrom, of an independent printing-recorder, and connections whereby the latter is moved from the same keys and to the same extent as the said registering device, and means for throwing each register out of gear with the connections, substantially as described.

39. The combination, with the series of disks provided with lateral pins, of levers B, racks hung to said levers, and locking-levers E', and springs c', substantially as described.

40. The combination of the disks provided with pins a^2, levers carrying racks pivoted thereto, springs c', locking-levers E', and levers E², substantially as described.

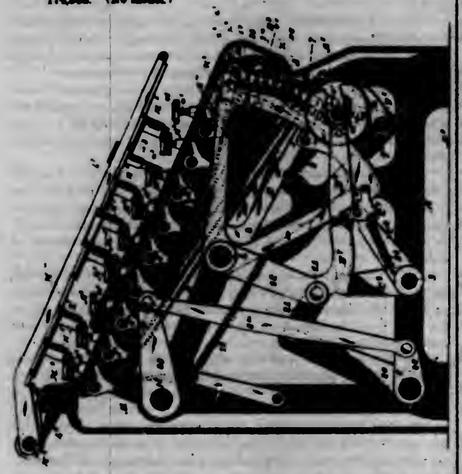
41. The combination, with the register and the recorder, of levers each carrying two series of racks capable of independent movement, one gearing with the register and the other with the recorder, and rack-operating devices, substantially as described.

42. The combination, with the levers B, carrying racks pivoted thereto, and locking-levers E', of two adjustable registers, and levers E², constructed to operate with the disks of each register, substantially as described.

43. The combination of the keys, indicating-register, intermediate connections, and printing-recorder, frame E³, carrying the same, and toggle-levers d^3 d^4, substantially as described.

44. The combination, with the independent keys arranged in series, and indicators and connections, of levers d^2, slotted plate c, and rods d, connected to the levers and having terminal stops, substantially as described.

388,117. CALCULATING-MACHINE. William S. Burroughs, St. Louis, Mo., assignor, by direct and mesne assignments, to the American Arithmometer Company, same place. Filed Aug. 17, 1888. Serial No. 174,562. (No model.)



Claim.—1. The combination, with the register of a mechanical calculator provided with a series of independently-adjustable wheels, with a series of keys to each wheel, each wheel having two series of numbers from 0 to 9 in line with each other on the periphery of the wheel, but in reverse order, of a sight-plate adjustable so as to exhibit the numbers of either series without showing those of the other series, and register-wheel-operating devices whereby each wheel is moved a distance equal to that between the adjacent numbers of one series at each movement, substantially as described.

2. The combination, with a register consisting of a series of wheels, each provided with two series of numbers from 0 to 9 alternating in one line with each other on the periphery of the wheel, but in reverse directions, of numbered keys and connections whereby the wheels can be turned by operating the keys in one direction to set up a minuend corresponding to the numbers on the keys, and reversing devices and connections whereby the wheels are reversed from the second action of the keys in striking the subtrahend to indicate a number corresponding to the difference between the minuend and subtrahend, substantially as described.

3. The combination of the register having wheels provided with two series of numbers from 0 to 9 in reverse order, keys, intermediate operating devices between each key and its wheel, and adjustable bearings for the register to carry the wheels to and from the said operating devices, substantially as described.

4. The combination, with a series of register-wheels provided with two series of numbers arranged in reverse order, of a series of keys to each wheel and wheel-operating devices constructed to be set in different positions, according to the key struck, adjustable bearings for the wheels, whereby they may be moved into and out of connection with said devices, and a restoring device whereby the operating devices may be simultaneously restored to their normal position after being set by the keys and after the wheels are in connection therewith, substantially as described.

5. The combination of a series of wheels numbered with two series of numbers in reverse order, a series of keys to each wheel, intermediate operating devices whereby each wheel is operated to an extent determined by the key struck, actuating devices independent of the keys, whereby each wheel is turned one step as the next lowest wheel completes its revolution, and adjustable bearings for the wheels, whereby they may be carried into and from connection with the operating devices, substantially as described.

6. The combination, with the series of indicator-wheels, of a lever, B, to each wheel, provided with steps, step-adjusting keys connected with said steps, an actuating-sector for each wheel carried by each lever, and appliances, substantially as described, for imparting a limited movement to each lever to turn the wheel one step, for the purpose set forth.

7. The combination of the registering-wheels, a series of keys, pivoted levers B, each carrying a series of stops actuated by the series of keys, a movable toothed segment carried by each lever, and a movable bearing supporting each lever, substantially as set forth.

8. The combination, with each registering-wheel and with each series of keys and stop devices, of an adjustable lever supporting the said stop devices and a movable toothed segment gearing with a pinion connected with the lever, and a movable locking-arm carried by the segment and serving in connection with the stop devices to determine the movement of the segment and the wheel, substantially as set forth.

9. The combination, with the indicator-wheels, their actuating-segments, stop devices, and movable levers B, carrying the segments, of arms having bearings for the levers and lock-bars constructed to hold said arms in one position and to be operated by pins upon the wheels to release the arms to take a different position, substantially as set forth.

10. The combination, with register-wheels, movable bearings for the register-wheels, the operating-segments, and restoring-bar, of a cam moving with said bar, an arm connected to the bearings of the register-wheels, and an adjustable bearing upon the arm adapted to be thrown into and out of contact with the cam, for the purposes set forth.

11. The combination, with the indicator-wheels, operating-segments, and levers B, of a shaft carrying arms F², affording bearings for the levers B, springs bearing against the arms to throw them outward, and a movable bar, 33, arranged to be brought against the arms to swing them simultaneously inward, substantially as set forth.

12. The combination, with a mechanical calculator having a register, of a movable frame provided with guides and adjustable fingers arranged to be brought in contact with the parts of the machine actuating and regulating the movements of the register, substantially as set forth.

13. The combination, with the key-board and registering devices of a mechanical calculator and with the keys thereof, of a frame capable of being moved to and from and across the keys and provided with a series of adjustable fingers, substantially as set forth.

14. The combination of a mechanical calculator, a movable frame carrying a series of adjustable fingers, and a registering device, R³, arranged to register the number of the movements of the frame, substantially as set forth.

388,118. CALCULATING-MACHINE. William S. Burroughs, St. Louis, Mo., assignor to the American Arithmometer Company, same place. Filed Mar. 17, 1886. Serial No. 195,583. (No model.)

Claim.—1. The combination of a series of register-wheels, a series of keys to each wheel, a separate stop connected to be set by each key, and connections between each wheel and its stops, constructed to turn the wheels and arranged to be moved by hand each to an extent determined by the position of one of the stops, substantially as described.

2. The combination, with the registering-wheels and a series of independent keys to each wheel, and intermediate wheel-operating devices, of a series of stops and connections between each series of keys and each stop, substantially as described, whereby the stops are set in different positions on operating the keys to vary the extent to which the wheels may be thereafter turned by the operating devices, substantially as described.

3. The combination, with the series of keys and independent registering-wheels of a mechanical calculator, one wheel to each series of keys, of regulators for regulating the turning of each wheel and operating devices between the keys and said regulators, whereby the parts of the latter are set in different positions prior to the said devices being operated to turn the wheels, substantially as described.

4. A mechanical calculator provided with a series of register-wheels and independent stops and with series of keys, and connections for setting the stops in different positions prior to turning the wheels, whereby each wheel is turned to an extent according to the position

388,118.



to which its stop is set prior to turning the wheel, substantially as described.

5. The combination, with the independent register-wheels of a mechanical calculator, of a series of keys and a series of stops connected to be adjusted by each series of keys, wheel-operating devices for turning each wheel, governed in extent of movement by the stops, and an adjustable carrier for throwing the wheels into and out of connection with the turning devices, substantially as described.

6. The combination, with the independent register-wheels, series of independent keys and connections, and wheel-actuating devices for operating the wheels from the adjustment of the keys, of a restorer for restoring said connections simultaneously to normal position, substantially as described.

7. The combination of the register-wheels and their operating devices, keys, and stops, and register-carrier, and carrier-moving devices, substantially as described, for throwing the wheels out of connection with said devices when they are being set and into connection therewith, and for simultaneously restoring the devices to normal position, substantially as described.

8. The combination, with the independent register-wheels, a series of stops to each wheel, and wheel-operating devices between each series of stops and each wheel, and keys adjustable independently of the stops of a movable register-carrier and actuating devices, substantially as described, whereby the wheels and operating devices are automatically thrown out of connection before the devices are set and then are thrown into connection, substantially as described.

9. The combination of the register-wheels, a series of independent keys to each wheel, intermediate wheel-operating devices, and a single handle for moving all the wheel-operating devices simultaneously, substantially as described.

10. The combination, with the register-wheels, racks for rotating them, a lever for moving the racks while in gear with the wheels a series of stops for arresting the movement of each rack, and a series of keys to each rack, whereby the different stops are moved, substantially as described.

11. The combination of the register-wheels, operating-racks, stops which may be adjusted to limit the movement of each rack, and appliances for throwing the wheels and racks out of gear while the racks are being set in position, substantially as described.

12. The combination of the series of register-wheels and a series of racks gearing therewith, a hand-lever whereby to move the racks to turn the wheels, and appliances for putting the wheels into and out of operative connection with the racks, substantially as described.

13. The combination, with the register and series of operating-levers, of a series of retainers for supporting the levers in their normal position without interfering with their further upward movement, a detent for holding each lever against such upward movement, and an actuating device connected with each lever and between each lever and the detent of the adjacent lever, for transferring motion to said detent, substantially as described.

14. The combination of the series of register-wheels, a series of keys to each wheel, a rack-lever constructed to turn each wheel, appliances for applying power to raise and lower the rack-lever, and a series of stops adapted to be arranged in different positions to define the movements of each lever, and connections between each series of stops and one of the series of keys, substantially as described.

15. The combination of the register-wheels, wheel-operating devices, means for throwing the said devices and register into and out of connection, and retainers for retaining said devices in one position, series of stops, a series of keys to each series of stops, and connections independent of the stops between each series of keys and one of the retainers, whereby the latter may be moved by the movement of any key of the series, substantially as described.

16. The combination, with the series of wheels, keys, and wheel-operating devices, of stops for limiting the movements of said devices, a retainer for holding each device in its normal position, a series of keys, and connections independent of the stops, whereby each retainer may be operated by any key, and a restoring device whereby all the retainers are returned to position simultaneously, substantially as described.

17. The combination, with the stops and keys, of independent levers connected to the stops, and a spring interposed between each lever and a bearing to retain the lever in whichever position it is set and prevent its ready displacement, substantially as described.

18. The combination, with the keys, stops, levers, and connections between the levers and stops, of independent bars having connections with each key of the series, and appliances for moving all the bars simultaneously to restore the parts to position, substantially as described.

19. The combination of a series of keys and springs for lifting the same, levers, stops, and connections between each lever and its stop, a bar having bearings for moving the levers simultaneously in one direction, and a spring having its bearing on each lever and holding it to either position to which it is set by the key or bar, substantially as described.

20. The combination, with the series of independent racks and stops, of an operating-frame and yielding connections between each rack and the frame, whereby the latter may be moved with some of the racks upon the motion of other racks having been arrested, substantially as described.

21. The combination of the racks having bearings and a rack-operating frame provided with arms D', carried by the frame, and springs for holding the arms in frictional contact with the bearings on the racks, substantially as described.

22. The combination of the racks having bearings, an independent retainer for each rack, and an operating-frame having parts bearing frictionally on the bearings of the racks, substantially as described.

23. The combination of the racks and an operating-frame carrying arms D', said arms having shoulders, and springs arranged to force each arm against a bearing on the adjacent rack, substantially as described.

24. The combination of the racks and means for moving them positively, and a register having a wheel engaging with each rack, and devices whereby each register-wheel is automatically moved out of connection with each rack prior to the movement of the latter in one direction and all the wheels are put into gear with all the racks upon the reverse simultaneous movement of all the racks, substantially as described.

25. The combination, with the racks and register, of a frame and yielding connections between the latter and the racks, and devices connected with the frame and the register, whereby the register and racks are thrown out of gear on the movement of the frame in one direction, substantially as described.

26. The combination of the racks, the rack-operating frame connected to have a limited movement independently of the racks, a register constructed to be operated by the racks, and connections whereby the register and racks are thrown out of gear on the movement of the frame in one direction, substantially as described.

27. The combination of the movable register and carrier, and rack-operating frame having cam-edges, the register-carrier having arms bearing on said cam-edges as the frame moves in one direction, and capable of being turned away from the frame as the latter moves in the opposite direction, substantially as described.

28. The combination of the keys, register, and carrier therefor and the operating-racks and the series of stops to each rack, whereby to permit the racks to be moved in one direction independently of the register to positions determined by the stops, and to then all simultaneously move in the other direction in connection with the register substantially as described.

29. The combination of the series of racks, register, rack-frame constructed to throw the register-wheels into and out of connection with the racks, a catch for holding the frame, and appliances for moving the catch as the rack-frame descends, substantially as described.

30. The combination of the wheels A, the rack-levers provided with studs a^2, and the levers D^3, carrying the arms D', each arm having a shoulder, g, and a spring for throwing out each arm, substantially as described.

31. The combination of the racks, the rack-frame provided with cam-edges 2 3 4, the register having wheels A, a shaft, a, sliding bearings for said shaft, and arms a^3, arranged to bear on the said cam-edges, and a stop limiting the turning of the arms in one direction substantially as described.

32. The combination, with the register-wheels and pins and operating-racks and series of keys, of detents supported by the main frame and arranged to contact with and limit the movements of the said racks, and in position to contact with the pin of the adjacent wheel as the latter completes a revolution, and a motor whereby each rack is moved one step when released by the action of the adjacent wheel, substantially as described.

33. The combination, with the series of keys and wheels of a register and with racks turning the same, of a series of stops to each rack, detents supported independently of the racks and limiting the normal movement of the racks, and devices whereby each stop is displaced to permit the rack to move one step whenever the adjacent wheel moves beyond a complete revolution, substantially as described.

34. The combination of the series of racks, series of detents suspended from fixed supports, and register-wheels, each provided with a pin arranged to make contact with and move one of said detents out of position as the wheel completes a revolution, and the series of motors for moving the racks, substantially as described.

35. The combination of the racks and pins b^5, suspended forked detents, and register-wheels having pins w, substantially as described.

36. The combination of the register-wheels and racks for moving them, of detents supported independently of the racks for limiting the movement of the racks, and appliances for moving said detents while the wheels are being moved by the racks, substantially as described.

37. The combination, with the register-wheels, racks, stops, and devices for moving the racks positively to their normal positions, of detents suspended from fixed bearings for arresting the racks, keys and connections for setting the stops, devices whereby each detent is moved out of position as each wheel completes a revolution, and independent motors for moving each rack when released by the detent, substantially as described.

38. The combination of the register-wheels, racks, detents suspended independently of the racks, rack-moving frame, and springs arranged to move the racks independently of the frame, substantially as described.

39. The combination of the wheels and pins w, the rack-moving frame, racks and spring-motors, and detents having inclined edges arranged to be struck by the pins w, substantially as described.

40. The combination, with the register H, keys and connections, and racks and power devices for moving them, and motors for moving them independently of the power, and a printing-recorder having wheels connected to be operated by the said racks, substantially as described.

41. The combination, with the sight-register H, keys and connections, and racks and power devices for moving them, and motors for moving the racks independently of the power, and a recorder having wheels, and connections whereby said recorder is operated by the said racks, substantially as described.

42. The combination of the shaft C, registers H, recorder J, rack-levers I, and B, and yielding connections between the levers, substantially as described.

43. The combination, with the register H, recorder J, and a device for turning some of the wheels of the recorder, of rack-levers B I, and yielding connections between the same, substantially as described.

44. The combination, with the recording-wheels, register-wheels detents, and connections, of an adjustable support for the register-wheels, and an operating-lever, O^3, and intermediate devices whereby the movement of the lever serves to throw the register in and out of operation with the connections, substantially as described.

45. The combination, with the register-wheels A, pins w, and operating-racks, and means for throwing the racks and wheels into and out of connection, of detents F, hung to fixed supports and provided with bearings for the racks, and with inclined edges and shoulders for engaging the pins w, substantially as described.

46. The combination, with the register H and actuating devices and automatic appliances for throwing them into and out of gear, and hand appliances for also throwing them into and out of gear, substantially as described.

47. The combination, in a mechanical calculator, of series of keys and connections between each series of keys, and a regulator having a series of stops, whereby the latter may be set by the keys to determine the positions to which the parts shall be subsequently moved to set the register, substantially as described.

48. The combination of series of keys, stops, and their connections, a register, and devices which are brought against the stops to set the register, and a restoring device whereby all the keys may be set to their normal positions before the register is moved, substantially as described.

49. The combination of the keys, independent levers, stops, and connections between the levers and stops, and devices whereby the levers may all be brought to their normal positions after being set by the keys, substantially as described.

50. The combination, with the keys, stops, registers, and actuating devices, of a key, W, arranged upon the key-board and connected with the stops to reset the same, substantially as described.

388,119. CALCULATING-MACHINE. WILLIAM S. BURROUGHS, St. Louis, Mo., assignor to the American Arithmometer Company, same place. Filed Nov. 30, 1887. Serial No. 256,868. (No model.)

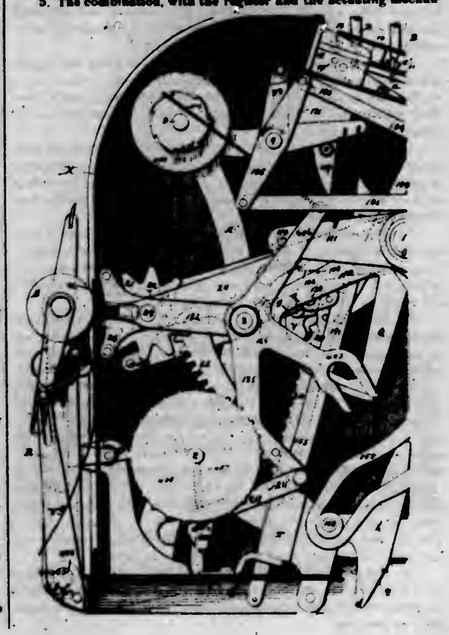
Claims.—1. The combination, with the register and register-actuating devices of a calculator, of a key-board capable of movement and provided with a series of adjustable keys, and movably supported upon the frame of the machine to bring the keys that have been set into operative connection with the register-actuating devices upon the movement of the board after such setting of the keys, substantially as described.

2. The combination, in a calculating-machine, of a series of register-wheels, wheel-actuating devices, a frame supporting the same, a movable key-board mounted to have a limited movement on the frame, and a series of adjustable keys carried by said key-board, whereby such keys as are set by hand are brought into connection with the wheel-actuating devices on the movement of the key-board after such setting of the keys, substantially as described.

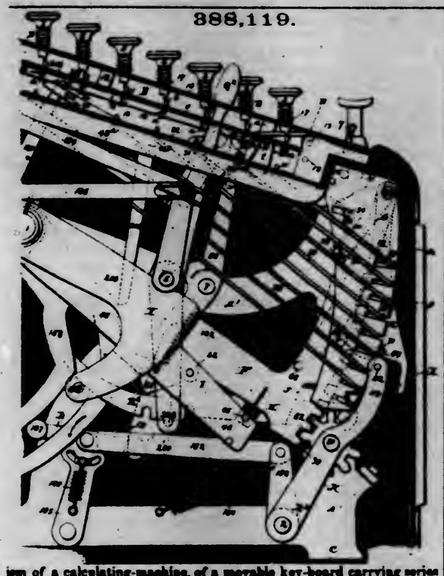
3. The combination, with the register, actuating-levers F, and stops limiting the movements of said levers, of a movable key-board carrying series of adjustable keys, and connections between each stop, and one of the keys arranged to be operated by such key after it is set and upon the movement of the board, substantially as described.

4. The combination, with the register, the retainers, the operating-levers, and the regulators thereof, of a movable key-board carrying series of keys, and connections between each series of keys and one of the retainers, and connections between each key and a stop of the corresponding regulator, the latter connections arranged in position to be actuated only by the keys that are set and on the movement of the board, substantially as described.

5. The combination, with the register and the actuating mechan-



388,119.



ism of a calculating-machine, of a movable key-board carrying series of adjustable operating-keys, substantially as and for the purpose set forth.

6. The combination, with the register-actuating levers F and a retainer for each lever, of a movable key-board, series of keys carried thereby, movable studs arranged to contact with such keys as have been set, and a connection between the studs of each series of keys and the retainer of the co-operating lever F, substantially as described.

7. The combination, with the register-actuating devices, of a movable key-board and series of keys adjustably carried thereby to contact with said devices upon the movement of the board after the adjustment of the keys, substantially as described.

8. The combination, with the frame of the machine, register, and register-actuating devices, of a key-board sliding on said frame, and series of keys adjustably mounted upon said board, and adjustable into and out of operative relation to said devices, substantially as described.

9. The combination, in a calculating-machine, with the register and actuating devices, of the sliding key-board, series of keys, and a locking-slide to each series to hold the keys after being set in operative relation to the register-actuating devices, substantially as described.

10. The combination, with a series of keys, each having a bearing or shoulder, of a locking-slide arranged to be moved by the setting of any of the keys, and adapted to engage all of said shoulders to hold any key after it is set and until moved by the setting of another key, substantially as described.

11. The combination of a series of spring-actuated keys, a locking-slide and spring for moving the same, and a shoulder and an incline on each key, the incline arranged to bear on and force back the slide as a key is depressed until said slide engages with the shoulder and locks the key, substantially as described.

12. The combination of the movable key-board, series of keys, locking devices for holding the keys in position after they are set, and an automatic unlocking device for replacing the keys as the key-board is restored to its normal position, substantially as described.

13. The combination, with the rack-levers having bearings, of a series of pinions having studs, a swinging frame carrying said pinions a pawl with two shoulders, one engaging with a stud on one of the pinions, a spring-actuated lever, L, with which the other shoulder engages, and detents M engaging with the bearings on the rack-levers, and in position to contact with the levers L, substantially as described.

14. The combination, with the rack-levers and detents affording bearings therefor, of striking-levers L, pawls for holding said striking-levers out of contact with the detents, and a series of pinions gearing with the rack-levers, and each provided with a stop arranged to contact with the adjacent pawl, substantially as described.

15. The combination, with the rack-levers, actuating automatic motors and detents, and keys and register of a mechanical calculator, of spring-actuating striking-levers for operating said detents, substantially as described.

16. The combination, in a mechanical calculator having a rack-lever, keys, and a register, and with a detent for restraining the movement of the rack-lever, of a striking-lever, a detent for holding it back, and releasing mechanism, substantially as described.

17. The combination, with the rack-levers and the carrying-pinions, of detents affording bearings for said levers, striking-levers, and actuating-springs, pawls for normally holding the striking-levers out of contact with said detents, and studs on the pinions arranged to contact with the pawls, substantially as described.

18. The combination, with the detents, the striking-levers, springs, and pawls for holding the levers away from the detents, of studded pinions for moving the pawls to release the striking-levers, and a movable resetting-bar arranged to contact with all of said levers, substantially as described.

19. The combination, in a calculating-machine having register-wheels, of levers F, each consisting of two sections jointed to permit a limited play of one in respect to the other, the rear section in gear with the wheels of the register, a spring tending to maintain a bearing of one section against a bearing of the other, a movable bar for swinging the rear sections to carry the bearings out of contact, and a lifter provided with motor-springs for operating the forward sections of the levers, substantially as described.

20. The combination, with the register and jointed rack-operating levers F of a calculating-machine, of pivoted side arms carrying a cross-bar, 45, for elevating the front ends of the levers, and also carrying a cross-bar, 110, for depressing the rear sections of the levers, substantially as described.

21. The combination, with a mechanical calculator having a movable key-board and with an operating-driver, T, of a detent for holding the driver in an inoperative position, and connections between the detent and the movable key-board, whereby the detent is displaced as the key-board is moved after setting its keys, substantially as set forth.

22. The combination, with the registers, pinions 60, frame K, and reciprocating cam *k*, of a rod, 162, a lever, *k*, pivoted thereto, and a spring for holding it in its normal position, a movable arm, Q, and the arm 171, provided with lugs 170 200, adapted to be brought, respectively, below and above one end of the lever, according to the position of said arm, substantially as set forth.

23. The combination, with the keys, register-wheels, and rack-levers F, of a movable frame carrying a series of pinions, 60, intermediate frame-adjusting devices, and a lever, Q^3, connected with the adjusting devices of said frame to regulate the position of the frame, substantially as set forth.

24. The combination, in a calculating-machine and with the register, operating devices, keys, and movable key-board carrying said keys, of a lock holding said key-board in place, and connections between the lock and a movable part of the machine for holding the lock in place until all parts of the machine are in their normal position, substantially as set forth.

25. The combination, with a calculating-machine, its actuating-lever, driver, and parts carried therewith, of a pawl bearing on one of the moving parts to permit a return movement after a movement is begun in either direction, and devices, substantially as described, for reversing the pawl and throwing it out of retaining action at the limit of each movement, substantially as described.

26. The combination, with a calculating-machine having keys and a register and intermediate connections, of a driver, a reciprocating rack connected with the driver and having shallow teeth or notches along its length and deeper notches at the ends, and a reversible pawl adapted to said rack, substantially as set forth.

27. The combination, with keys, registers, intermediate connections, and the operating-driver of a calculating-machine, of a spring connected to move the driver in one direction, a treadle to move the driver in the opposite direction, and intermediate yielding spring-connections between the treadle and driver, substantially as set forth.

28. The combination, with the calculating-machine having keys, a register, connections, and an operating-treadle and motor, of a detent for locking the treadle in its position after the power is stored in the motor, and detent-releasing devices, whereby the detent is withdrawn when the motor power is required, substantially as set forth.

388,120. SULKY-PLOW. Squire M. Campbell, Urbana, Ill. Filed June 11, 1888. Serial No. 276,682. (No model.)

Claim.—1. In a wheel-plow, the combination, with the frame and the tongue pivoted to swing horizontally, of a connection between said tongue and the lever for regulating the depth of the plow, whereby said lever will be moved by the horizontal movement of the tongue, substantially as described.

2. In a wheel-plow, the combination, with the frame and the tongue pivoted to swing horizontally, of a connection between said tongue and the lever for regulating the depth of the plow, whereby the lever will be moved to normal position by the horizontal movement of the tongue, and a trip for releasing said lever to permit of the independent movement of the plow, substantially as described.

3. In a wheel-plow, the combination, with the frame, the plow pivoted thereto, and the lever controlling its vertical movements, of the tongue pivoted to the frame to swing horizontally thereon, and a connection between the tongue and lever, whereby the plow will be moved by the horizontal movement of the tongue, substantially as described.

4. In a wheel-plow, the combination, with the frame, the plow pivoted thereto, the lever controlling its movements, and the rear wheel mounted in bearings to swing vertically, of the tongue pivoted to the frame to swing horizontally, and connections between the tongue and lever and lever and rear wheel, whereby the depth of the plow will be regulated by the horizontal movement of the tongue, substantially as described.

5. In a wheel-plow, the combination, with the frame, the plow pivoted thereto, and the lever controlling its vertical movements, of the tongue pivoted to the frame to swing horizontally, a connection between the tongue and lever, whereby the plow will be moved to normal position by the horizontal movement of the tongue, and a trip for releasing said lever to permit of the independent movement of the plow, substantially as described.

6. In a wheel-plow, the combination, with the frame, the plow pivoted thereto, the lever controlling its movements, and the rear wheel mounted in bearings to swing vertically, of the tongue pivoted to the frame to swing horizontally, connections between the tongue and lever and lever and rear wheel, whereby the depth of the plow will be regulated by the horizontal movement of the tongue, and a trip for releasing the connection between the tongue and lever for permitting the independent adjustment of the plow, substantially as described.

7. In a wheel-plow, the combination, with the frame and plow and the lever for regulating the depth of the plow, pivoted to the frame, of the tongue pivoted to the frame to swing horizontally, a connecting rod or link pivoted to the tongue, a catch thereon for automatically engaging the lever to carry it to normal position when the tongue is moved horizontally and permit its release for independent adjustment, and an adjustable stop for limiting the movement of the lever when so released, substantially as described.

8. In a wheel-plow, the combination, with the frame, the plow, the lever for regulating the depth of the same, and the tongue pivoted to the frame to move horizontally, of a connecting rod or link pivoted to the tongue and engaging the lever, and a lever pivoted to said connecting-rod, also engaging said first-mentioned lever and forming a toggle to return the plow to normal position when the connecting-rod is disengaged to permit a slight downward movement of the plow, substantially as described.

9. In a wheel-plow, the combination, with the frame, the plow, the lever for regulating the depth of the same, and the tongue pivoted to the frame to move horizontally, of a connecting rod or link uniting the tongue and lever, and an adjustable connection between the connecting-rod and tongue for regulating the extent of movement of the same, substantially as described.

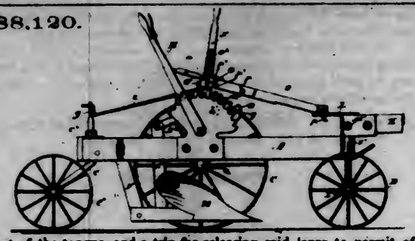
10. In a wheel-plow, the combination, with the frame, the plow, the lever for regulating the depth of the same, and the tongue pivoted to the frame to move horizontally, of the adjustable plate moved by the tongue and the connecting-rod or pitman connecting said plate and lever, as and for the purpose set forth.

11. In a wheel-plow, the combination, with the frame, the plow, the lever for regulating the depth of the same, and the tongue pivoted to the frame to move horizontally, of the adjustable plate moved by the tongue, the connecting-rod or pitman connecting said plate and lever, and an adjustable connection between said rod and plate, substantially as described.

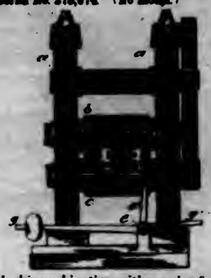
12. In a wheel-plow, the combination, with the frame, the plow, the lever for regulating the depth of the same, having the two stops or pins thereon, and the tongue pivoted to the frame to move horizontally, of a connecting-rod pivoted to the tongue and engaging the forward stop or pin on the lever to adjust the lever, and resting on the rear pin when the lever is thrown forward to prevent its engagement in a direction to cause the further forward movement of the lever, substantially as described.

13. In a wheel-plow, the combination, with the frame, the plow and beam relatively stationary, the plow-beam pivotally connected to said frame to swing vertically, and a lever controlling its vertical movements, of the tongue pivoted to swing horizontally, and a connection between the tongue and lever, whereby the plow will be moved by the horizontal movement of the tongue, substantially as described.

388,120.



388,121. GUIDE FOR ROLLING-MILLS. Lewis Chapman, Colinsville, Conn., assignor to The Collins Company, same place. Filed May 31, 1888. Serial No. 275,674. (No model.)



Claim.—1. In combination with a pair of rolls, the fixed guide located adjacent to the rolls and in a plane passing between the adjacent faces of the rolls, and the adjustable guide borne on an arm rising from a rock-shaft held in bearings adjacent to the rolls, all substantially as described.

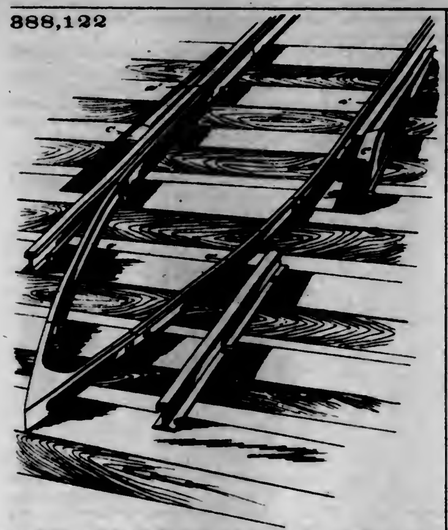
2. The combination, with a pair of rolls, of the fixed guide located adjacent to the rolls and in a plane passing between the adjacent faces of the rolls, the rock-shaft pivoted in bearings adjacent to the rolls and having an upright arm with a transverse socket in which is clamped a shank projecting from the movable guide, the movable guide having a shank, the head-block pivoted to the body of the guide and vertically adjustable on the shank, the head-block having a head-piece with a socket in the face, all substantially as described.

388,122. SAFETY-GUARD FOR RAILROAD-BRIDGES. James B. Collins, New York, N. Y., assignor to William J. Harden, Chicago, Ill. Filed Mar. 21, 1888. Serial No. 267,949. (No model.)

Claim.—1. In a safety-guard for railroad-bridges, the combination, with the bridge and the track laid upon it, of a pair of parallel



388,122



guards arranged beside the track and having their ends flared apart and provided with posts or stops in line with the sides of the bridge, substantially as shown and described, and for the purpose set forth.

2. The combination, with the bridge and the main-track rails, of the side guards, *b*, provided with flared ends *b'* and posts or stops *b²*, and the rerailing-plates *c* and their guard-rails *c'*, meeting at the center of the track, substantially as and for the purpose set forth.

388,123. COAT. MAX COHEN, New York, N. Y. Filed June 21, 1888. Serial No. 277,760. (No model.)



Claim.—As an improved article of manufacture, a coat having a shoulder-lining composed of a yoke, C, adapted to the back, the shoulders, and front parts of the coat, in combination with the free depending strap *d* at the back of the coat-yoke, the free depending straps *d' d'* at the front of this yoke, the arches *e e*, the horizontal stitching *g g g*, and the oblique shoulder-stitching *i i*, the upper edge of said yoke being stitched to the collar *a*, and the sides to the body of the coat, as set forth.

388,124. MILK-BOX. EDWARD J. COLBY, Chicago, Ill. Filed Sept. 5, 1887. Serial No. 248,793. (No model.)



Claim.—1. In a milk-box, the combination of the box having a hinged door and lock and a hinged lid with ledges secured along the top of said box, funnels which are suspended from said ledges and apertures in the top of said box which open into said funnels.

2. In a milk-box, a registering-scale consisting of a circle of indicating-marks, a circle of apertures, and an internal hand or arm which may be made to register with any one of said apertures to indicate the quantity of cream or milk desired.

388,125. CORKSCREW. LEROY W. FAIRCHILD, New York, N. Y. Filed Apr. 26, 1888. Serial No. 272,181. (No model.)



Claim.—1. The combination, in a corkscrew, of the tube A, provided with the slots *h* and *f* for the shank of the screw B, and the slot *g* at the side for the guide-pin *e*, with the yoke C, provided with the guide-pin *e*, and having the screw B pivoted thereto, as shown, whereby the shank of said screw is made to project through the slot *h* when turned into position for use, substantially as shown and described.

2. In combination with the tube A, provided with the slots *f*, *g*, and *h*, the yoke C, provided with the guide-pin *e*, and having the screw B pivoted thereto, and the spring *t*, connected at one end to the yoke C and at its opposite end to the end of tube A, or to the interior of the handle in any equivalent manner, whereby the screw B will be drawn back within the case or handle, as set forth.

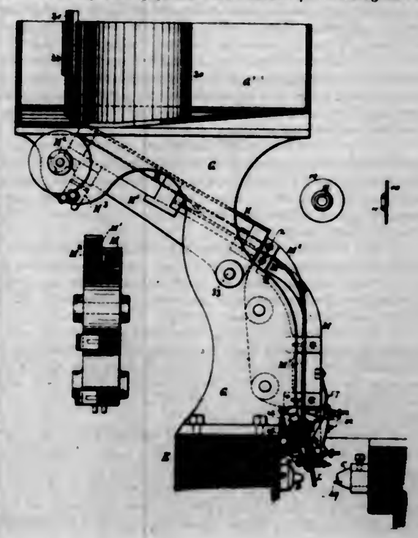
3. The combination of the slotted tube A, having the sliding yoke with the shank of the screw B pivoted thereto, so that its end *n* shall project through the slot *h* and above the wall of tube A, with the cap I, secured rigidly on the tube A, and the detachable cap I', arranged to screw onto the opposite end of tube A, and thereby clamp the shank of the screw B between it and the adjoining end of tube I, substantially as shown and described.

4. A pocket-corkscrew consisting of a tubular handle, a sliding yoke having the screws pivoted thereto, and a spring arranged to draw the yoke and screw back within the handle, and a detachable cap for closing the handle, all constructed and arranged to operate substantially as shown and described.

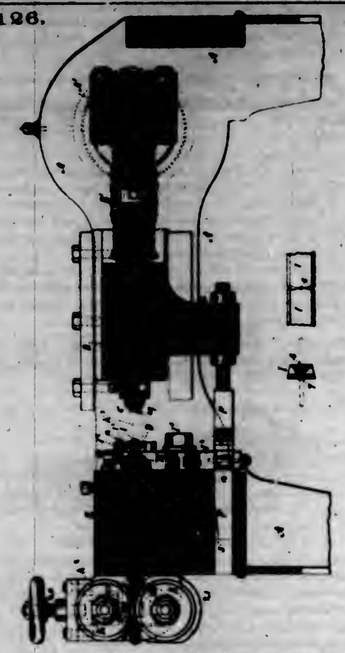
5. The combination, in a corkscrew, of the slotted tube A, with the sliding screw B therein, and having the cap I fastened on one end, with the detachable cap I', arranged to screw onto the opposite end and abut against the end of tube I, so as to cover and completely close all slots or openings in the implement when closed, substantially as shown and described.

388,126. MACHINE FOR MAKING DECORATIVE NAILS. HENRY P. FISKE, Waterbury, Conn., assignor to the American Ring Company, same place. Filed Sept. 28, 1887. Serial No. 250,472. (No model.)

Claim.—1. The combination, in a machine for making decorative nails, of a reciprocating gate and die, a tubular punch acting with the



388,126.



die to shape the sheet-metal head and close the metal around the end of the wire-nail shank, means for feeding the wire through the tubular punch, and cutters acting outside of and beyond the tubular punch for forming the point of the nail and separating the completed nail from the wire and forming the neck of the next nail-head, substantially as set forth.

2. The combination, in a decorative-nail machine, of grooved fingers between which the sheet-metal blank is supplied, a tubular punch and die for shaping the sheet-metal head, horizontally-actuated mechanism for moving the die, feeding mechanism for supplying the wire through the tubular punch, and cutters acting outside the tubular die for cutting off the finished nail and simultaneously forming the point and preparing the neck or head portion for the next nail, substantially as set forth.

3. In a machine for making decorative nails, the combination, with the die and tubular punch, of means for feeding the wire and cutters constructed as specified and acting outside of the tubular die for simultaneously separating the finished nail from the wire, forming the point thereof and a neck or head at the end of the wire for the next nail, substantially as set forth.

4. The combination, with the die and punch for forming the sheet-metal head and mechanism for reciprocating the die, of fingers grooved to receive the edges of the sheet-metal blank head and pivots for the fingers, upon which they can swing and open laterally to clear the die when forming the sheet-metal head, substantially as specified.

5. The combination, with the punch and die for forming sheet-metal nail-heads, of grooved fingers for holding the sheet-metal head-blank; pivots upon which the fingers swing in opening laterally to clear the die, and pivots upon which the fingers swing longitudinally of the machine as the die moves in forming up the sheet-metal head, substantially as set forth.

6. The combination, with the die and punch, of the fingers L, the gudgeon-bolts 40, and tubular stocks 41, forming pivots for the fingers, the stationary axis L', and the adjusting-cam, substantially as set forth.

7. The combination, with the pivoted swinging fingers and the springs for closing the same, of the dies for shaping the sheet-metal head and the incline 50, for opening the fingers as the parts are moved, substantially as set forth.

8. The combination, in a machine for making decorative nails, of an inclined feed-slide having a slot at the bottom and an opening at one side of the slot that allows the sheet-metal blank that is in proper position for the head-forming dies to pass away to the fingers and to separate from the blanks that are not in the proper position, substantially as set forth.

9. The combination, with the fingers for receiving and supplying the blank and the head-forming dies, of a slide through which the blanks are supplied and an automatic escapement mechanism, substantially as described, for allowing one blank at a time to pass from the slide to the fingers and thence to the dies, substantially as set forth.

10. The feeding-pan having an opening in the bottom and a ring-30, and adjustable gate 31, in combination with the feed-slide H, for receiving the nail-head blanks, and the guide-bars for conveying the blanks to the heading mechanism, substantially as specified.

11. The combination, with the guide-bars for conveying the head-blanks and the dies for pressing up said blanks, of the escapement-lever I", having the prongs P for holding up the blanks between the guide-bars, and the swinging fingers slotted to receive the edges of the blanks, substantially as set forth.

12. The combination, with the dies for pressing up the nail-head, of the guide-bars for the blank heads, swinging fingers below the guide-bars for receiving the blanks and holding them on line with the dies, an escapement-lever to allow one blank at a time to pass down to the fingers, and a stop-pin on the escapement-lever for holding up the blank, substantially as specified.

13. The combination, in a machine for making nails with ornamental sheet-metal heads, of dies for closing the cup of the sheet-metal head around the neck in the end of the wire, feeding mechanism, substantially as set forth, for feeding along the wire, and dies for cutting off and pointing the complete nail and simultaneously forming the neck for the next nail, substantially as set forth.

388,127. MACHINE FOR PRESSING CLOTH. DAVID OMMEN, Worcester, Mass. Filed June 6, 1888. Serial No. 276,053. (No model.)



Claim.—1. In combination, a cylinder, a jacket enveloping the same, two pressing devices co-operating with the cylinder, a moistening device arranged to moisten the jacket between the pressing devices, devices for guiding the cloth around said moistening device as it passes from one pressing device to the other, and a second moistening device arranged to moisten the cloth as it passes from one pressing device to the other, the last-mentioned moistening device being arranged to moisten the cloth upon the opposite side to that which comes in contact with the jacket.

2. In combination, the cylinder, the two pressing devices co-operating therewith, the jacket enveloping the cylinder, the moistening device for throwing moisture upon the jacket between the two pressing devices, and means whereby the cloth is guided around the said moistening device, substantially as described.

3. In combination, the cylinder, the two pressing devices co-operating therewith, means whereby the cloth is guided away from the cylinder as it passes from one pressing device to the other, and a moistener arranged within the loop of the cloth between the two pressing devices, whereby the cloth as it passes from one pressing device to the other is moistened upon the surface which comes next to the cylinder, substantially as described.

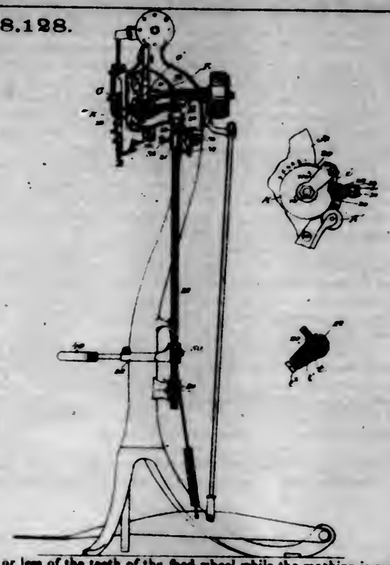
4. In combination, the cylinder, its co-operating pressing devices, means whereby the cloth is guided away from the cylinder as it passes from one pressing device to the other, and a moistening device arranged within the loop of the cloth between the pressing devices, substantially as described.

5. In combination, a cylinder, two co-operating pressing devices, means whereby the cloth is guided away from the cylinder as it passes from one pressing device to the other, a moistening device arranged within the loop of the cloth as it passes from one pressing device to the other, and a moistener arranged without said loop, whereby the said cloth as it passes from one pressing device to the other may be moistened upon both sides, substantially as described.

388,128. NAILING-MACHINE. LOUIS GOSSE, Winchester, assignor to James W. Brooks, Cambridge, principal trustee, and Frank F. Stanley, Boston, Mass., associate trustee. Filed Apr. 30, 1888. Serial No. 272,318. (No model.)

Claim.—1. In a nailing-machine, the feed-wheel K, the pawl-carrier, pawl to move it, the measuring-shield, the rod or shaft 22, and intermediate connections between it and the said shield, combined with the knee-lever vertically adjustable on the said shaft and under the control of the operator, and adapted to be readily moved to cover

388,128.



more or less of the teeth of the feed-wheel while the machine is running, to thus vary the length of the nail or fastening, as may be required.

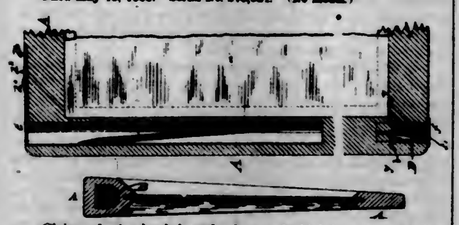
2. In a nailing-machine, the feed-wheel K, the pawl-carrier, pawl to move it, the measuring-shield, the rod or shaft 22, and intermediate connections between it and the said shield, combined with the knee-lever made in two parts, one adjustable on or with relation to the other and under the control of the operator, and carried by the said shaft, and adapted to be readily moved to cover more or less of the teeth of the feed-wheel while the machine is running, to thus vary the length of the nail or fastening, as may be required.

3. The feed-wheel, the shield 29, the lever 26, and the segmental gear 34, and adjustable stops 35 36, combined with the rock-shaft 22, and with means under the control of the leg of the operator to move the said rock-shaft, substantially as described.

4. In a nailing-machine, the rod or shaft 22, to control the feed of the wire, combined with the arm 42, adjustable thereon, and with the independent longitudinally-adjustable end piece carried thereby, substantially as described.

5. In a nailing-machine, the rod or shaft 22, to control the feed of the wire, and a leg, lever, or arm to actuate it, combined with a friction device composed of a block, spring, and screw to hold the said shaft in adjusted position, substantially as described.

388,129. SCHOOL-SLATE. JULIUS HACKENBERG, Passaic, N. J. Filed May 15, 1888. Serial No. 273,981. (No model.)

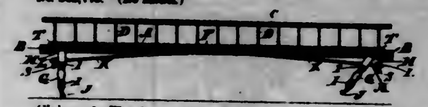


Claim.—1. A school-slate the frame of which is made thicker at one side and tapering toward its other side, and provided with a longitudinal receptacle in the thicker side and a sliding lid for said receptacle, substantially as set forth.

2. A school-slate the frame of which is made thicker at one side and tapering toward its other side, and provided with a longitudinal receptacle in the thickened portion and a slotted lid for the receptacle, said lid being guided along a fixed and headed stud of the frame, substantially as set forth.

3. A school-slate the frame of which is made thicker at one side and tapering toward the other side, and provided with a pencil-sharpening device secured into a socket in the thicker portion of the frame, substantially as set forth.

388,130. CRIB. PERRY C. HANSARD, Kenosha, Wis., assignor of one-half to Johnson A. Jackson, same place. Filed Feb. 2, 1888. Serial No. 262,773. (No model.)



Claim.—1. The frame of a crib or couch and the thereto-hinged legs G G, adapted to be held in position as legs by elastic brace-rods K K, in combination with the cross-bars L L, supported on brace-rods K K and bearing against the pins T T, and the casters S S, adapted to serve as feet for the crib when the legs are folded down upon the frame, substantially as described.

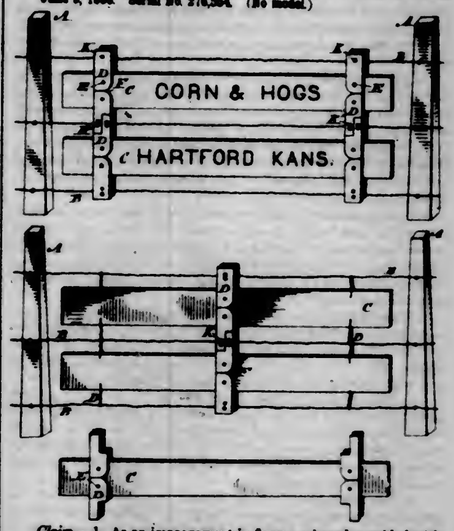
2. In a combined crib and bed provided with swinging legs, the combination of elastic stay-rods K K, provided with shoulders M M, in combination with pins O O, fixed in the legs G G, and the cam P, provided with flange R, substantially as described.

388,131. FOLDING HEAD-PIECE FOR COTS. PERRY C. HANSARD, Kenosha, Wis., assignor of one-half to Johnson A. Jackson, same place. Filed Feb. 2, 1888. Serial No. 262,776. (No model.)



Claim.—The combination of a cot and head-piece, bent staples connecting the head-piece and cot, the two tangs of the staple being partly driven into the frame of said cot at one side of said head-piece and embracing between them a spindle or upright of said head-piece, whereby the latter may be folded flat onto the cot or supported at a radial angle thereto, substantially as described.

388,132. FENCE. WILLIAM I. F. HARDEN, Hartford, Kans. Filed June 9, 1888. Serial No. 276,364. (No model.)



Claim.—1. As an improvement in fences, a board provided with pairs of pivoted cleats for securing it in open spaces between the parts of the fence, said cleats being adapted to fold on opposite sides of the board for convenient transportation and handling, substantially as set forth.

2. The combination, with the fixed wires or strips of a fence, of a series of boards fitted together by a succession of pivoted cleats adapted to fold on opposite sides of the boards, and serving to attach them to the fence, substantially as set forth.

388,133. CLEANER FOR GUN-BARRELS. JAMES HASTINGS, Torrington, Conn., assignor to the Union Hardware Company, same place. Filed June 11, 1888. Serial No. 276,749. (No model.)

388,133.



Claim.—1. A cleaner for gun-barrels and other tubes, consisting of a brush of wire bristles pivotally secured between their ends to a shank adapted for holding the same and for attachment to a cleaning-rod, said bristles being arranged side by side and forming a circular brush around the shank, all combined substantially as specified.

2. A gun or tube cleaner composed of the shank *a*, having a groove about its end, in combination with a brush of bristles adapted to surround the shank and be received in its concave end, and a ring for surrounding the bristles and for holding said bristles to said shank, substantially as set forth.

3. A gun or tube cleaner composed of the shank *a*, adapted to be attached to a cleaning-rod at one end and having a circumferential groove at the other end, a brush or cleaner composed of wire bristles *c*, each of which bristles is centrally looped or recessed and adapted to fit into the groove of the shank, and whose arms are bent at an obtuse angle to each other, and whose ends are pointed, and a ring, *d*, encircling the brush of bristles at their central loop or recess to hold the same in place upon the shank and permit a seesaw motion to said bristles, substantially as set forth.

4. The combination, with the shank *a*, adapted to be secured to a cleaning-rod and having a shoulder, 3, grooved end 4, and stem 5, of a ring, *b*, having a grooved end adapted to fit upon and be secured to the stem 5, the brush of wire bristles *c*, centrally looped or recessed at 6 and fitting around the shank in a solid mass, the arms of which bristles are at an obtuse angle to each other and pointed, and an encircling ring, *d*, which forms a loose joint, but secures the brush of wire bristles to the shank *a*, substantially as set forth.

5. A gun or tube cleaner composed of the shank *a*, adapted to be attached to a cleaning-rod at one end and having a circumferential groove at the other end, a brush or cleaner composed of wire bristles *c*, each of which bristles is centrally looped or recessed and adapted to fit into the groove of the shank, and whose arms are bent at an obtuse angle to each other, and whose ends are pointed, and a ring, *d*, encircling the brush of bristles at their central loop or recess to hold the same in place upon the shank, and a ring, *f*, surrounding the brush of bristles and adapted to move endwise upon the same, substantially as specified.

388,134. BOOT OR SHOE. WILLIAM T. HOOKER, London, England. Filed Jan. 5, 1888. Serial No. 259,992. (No model.) Patented in England Jan. 20, 1888, No. 1,069.



Claim.—The herein-described boot or shoe, provided with a fly or flap having a scalloped or serrated edge, *c*, the scallops or serrations of the said fly or flap being projected on lines of different inclinations to the edge of the fly or flap, substantially as described.

388,135. ROTARY TRACK-CROSSING. FRED J. HOYT, Chicago, Ill., assignor to the Hoyt Railroad Track Crossing Company, same place. Filed Mar. 20, 1888. Serial No. 268,207. (No model.)

Claim.—1. A rotary track-crossing provided on its face or faces with a rail placed to form a close and continuous connection with the rail of a main or branch track, in combination with a switch-lever mechanism and a locking mechanism to automatically lock the crossing in position when turned, substantially as described.

2. In combination with the rotary track-crossing having a longitudinal shaft, the locking device composed of a spring-bar adapted to enter the end of the said shaft, mechanism for turning said crossing,



and lever mechanism connected to said bar and the switch, whereby when the crossing is turned the same is automatically locked in place, substantially as described.

3. In combination with a rotary track-crossing, a spring-lock, lever mechanism for operating said lock, and a switch-stand provided with a latch to engage with the lock-lever, whereby, when the lock is released, it is held disengaged until the crossing is turned, substantially as described.

4. The T-bar, the lever mechanism for releasing said bar, in combination with a rotary crossing provided with a longitudinal shaft having recesses cut into one end thereof, and a spring or springs secured to said shaft and bar to draw the bar within the said recesses of the shaft, substantially as described.

5. In combination with a rotary track-crossing, switch-stand, and lever mechanism, a lock, and mechanism for operating said lock, consisting of the vertical rod V, handle V', in connection with a lug, *s*, in the switch-pulley, and pulleys for the cable connecting the lock and its lever mechanism, substantially as described.

388,136. DUST-GUARD FOR AXLE-BOXES. JOHN W. HYATT, Newark, N. J. Filed Apr. 27, 1888. Serial No. 272,041. (No model.)



Claim.—1. In an axle-bearing, the channel E, supplied with loose metallic shot to fit closely about the axle, as and for the purpose set forth.

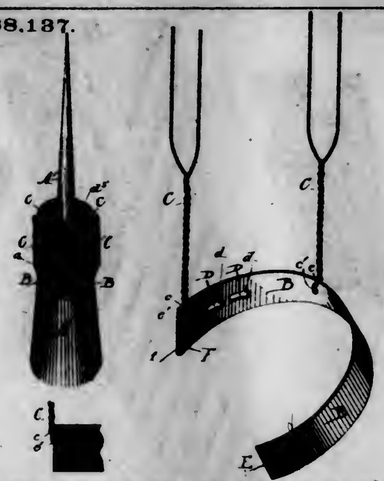
2. The combination, with an axle-bearing, of a collar applied to the end of the bearing and provided with the channel E, supplied with loose metallic shot, substantially as herein set forth.

3. In an axle-bearing consisting in a shell containing anti-friction rollers, the combination, with such shell, of the channel E, provided with loose metallic shot, and the apertures F, extending from the channel within the shell to drain the oil thereto, substantially as set forth.

388,137. BRUSH. RICHARD W. ILIFF, Hinsdale, Ill. Filed Feb. 28, 1887. Serial No. 228,614. (Model.)

Claim.—The improved bridle for paint-brushes herein described

388,137.



and shown, comprising the flexible band B, having its ends adjustably connected, one of the ends having an upturned flap, F, forming a seat, *f*, for the other end, the band being further provided with vertically-aligned openings *c c'*, and the flexible wires passed outward through said openings and twisted above the same, as specified.

388,138. LETTER-SCALE AND COIN-TESTER. Edgar Kinsey, Saybrook, Conn. Filed Sept. 2, 1887. Serial No. 248,568. (No model.)



Claim.—In weighing-scales, the combination of the plate A, constituting the scale-beam, and pivoted or fulcrumed at one edge between its ends to the suspending-clip C, and provided with the weight B and the clip C^3 at opposite ends of said beam, respectively, and having a graduated scale, one or more, in the form of the arc of a circle of which the fulcrum is the center on its side face, as described, with a pointer, D, constituted by an extension of the suspending-clip over the side face of the beam, and adapted to range over the graduated scale, as and for the purpose specified.

388,139. COTTON-CHOPPER. Clark T. McIntosh, Dadeville, Ala. Filed May 29, 1888. Serial No. 275,461. (No model.)



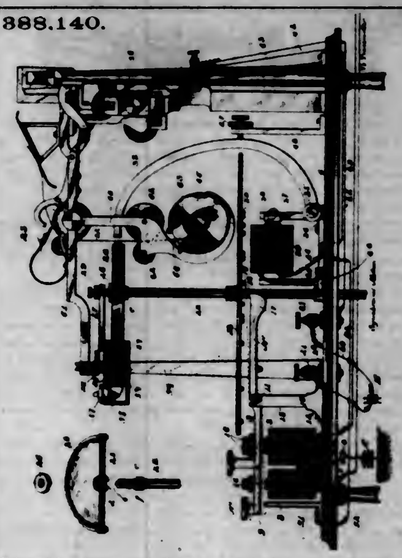
Claim.—In a cotton-chopper, the axle *d*, with gear-wheels C, and the shaft *e*, with pinion *f* and pulley *g*, in combination with the shaft *h*, having pulley i and bolt A, and the hoes D, connected to said shaft, the adjustable hanger F, in which the shaft has its bearings, and the plow and standards connected to the hanger, substantially as and for the purpose set forth.

388,140. ELECTRICAL TYPE-WRITER. James F. McLaughlin, Philadelphia, Pa. Filed Aug. 24, 1887. Serial No. 247,704. (No model.)

Claim.—1. An electrical type-writer comprising a series of circuit-controlling key-levers, a current-conducting revolving disk provided with a series of stops arrested by the movement of any key-lever, and an electric circuit including said key-levers and disk operated by the movement of any key-lever.

2. An electrical type-writer comprising a series of circuit-controlling key-levers, a revolving current-conducting disk provided with a series of stops and arranged to be arrested in its rotation by a movement of any one of said key-levers, an electric circuit including said

388,140.



disk and key-levers, and electro-magnetic letter-spacing mechanism, substantially as described, also included in and controlled by said electric circuit.

3. An electrical type-writer comprising a series of circuit-controlling key-levers, a revolving current-conducting disk provided with a series of stops and arranged to be arrested in its rotation by a movement of any key-lever, an electric circuit including said key-levers and disk, electro-magnetic printing mechanism, substantially as described, included in and controlled by said electric circuit, and electro-magnetic letter-spacing mechanism, substantially as described, also included in said electric circuit and arranged to be operated thereby at a determinate instant after the printing mechanism.

4. An electrical type-writer comprising a series of pivoted armature key-levers, electro-magnets for attracting said key-levers, and a revolving disk provided with stops arrested by the attraction of any key-lever, as specified.

5. An electrical type-writer comprising a series of pivoted armature key-levers, electro-magnets for attracting said key-levers, circuit-closing mechanism for directing the current through a particular magnet, and a revolving disk provided with stops arrested by the attraction of any key-lever.

6. An electrical type-writer comprising a series of pivoted armature key-levers and electro-magnets for attracting said key-levers and a main-line circuit severally including said electro-magnets, in combination with a transmitter provided with circuit-closing keys for directing the current through a particular actuating electro-magnet and a local circuit operated by the movement of any of said key-levers, as specified.

7. An electrical type-writer comprising a series of pivoted armature key-levers, electro-magnets for attracting said key-levers, and a revolving stop wheel or disk arrested by the actuation of any key-lever, in combination with a series of circuit-closing keys for directing the current through a particular magnet, as specified.

8. An electrical type-writer comprising a series of pivoted armature key-levers, electro-magnets for attracting said key-levers, a revolving stop disk or wheel arrested by the attraction of any key-lever, and a local circuit operated also by any movement of said key-levers.

9. An electrical type-writer comprising a series of pivoted armature key-levers, electro-magnets for attracting said key-levers, a revolving stop current-conducting disk or wheel arrested by the attraction of any key-lever, and a local circuit operated also by any movement of said armature key-levers, in combination with a transmitter provided with a series of circuit-closing keys for directing the current through a particular electro-magnet, as specified.

10. In an electrical type-writer, a series of current-conducting pivoted key-levers, each included in an electric circuit, a revolving current-conducting disk, also included in said electric circuit and provided with a series of spirally and relatively arranged stops, an electric circuit, and a suitable source of electricity, the whole being arranged so that the movement of any key-lever will cause its engagement with its corresponding stop and will simultaneously effect the operation of an electrical circuit by electrical contact with said stops, as specified.

11. An electrical type-writer comprising a series of pivoted armature key-levers having their rear extremities terminating in the same vertical plane, electro-magnets for actuating said key-levers, a revolving disk provided with a series of spirally and relatively arranged stops, circuit-closing mechanism for said magnets, the circuit, and a suitable source of electricity, the whole being arranged so that the separate energization of all the magnets will cause a separate movement of all the key-levers, a separate engagement thereof with a single and different stop, and the separate arrestation of the said revolving disk, as specified.

12. An electrical type-writer comprising a series of pivoted armature key-levers having their rear extremities terminating in the same vertical plane and each provided with an automatic retracting agency, electro-magnets for actuating said key-levers, a revolving disk provided with a series of spirally and relatively arranged stops, circuit-closing mechanism for said magnets, and the circuit and a suitable source of electricity, the whole being arranged so that the separate energization of all the magnets will cause a separate movement of all the key-levers, a separate engagement thereof with a single and different stop, and the separate arrestation of the said revolving disk, as specified.

13. In an electrical type-writer, the combination, with a series of pivoted current-conducting key-levers, each included in an electric circuit, and carrying each a symbol of the key-board, of a revolving current-conducting disk, also included in said electric circuit and provided with a series of spirally and relatively arranged stops, each stop corresponding to one or more symbols of the key-board, and a type-wheel revolving in unison with the stop-disk and provided with a series of type-letters circularly and relatively disposed around the periphery thereof, each type-letter corresponding to one of the symbols of the key-board and to one or more escapements on the disk, as specified.

14. In an electrical type-writer, the combination, with a series of pivoted armature key-levers carrying each a symbol of the key-board, electro-magnets for actuating said key-levers, a main-line circuit severally including said electro-magnets, and circuit-closing mechanism for directing a current through a particular magnet, of a revolving disk provided with a series of spirally and relatively arranged stops, each stop corresponding to one or more symbols of the key-board, and a type-wheel revolving in unison with the stop-disk and provided with a series of type-letters circularly and relatively disposed around the periphery thereof, each type-letter corresponding to one of the symbols of the key-board and to one or more stops on the disk, as specified.

15. In an electrical type-writer, the combination, with a series of current-conducting pivoted key-levers each included in a local electric circuit, of a revolving current-conducting disk, also included in said local circuit and arrested by the movement of any key-lever, a local circuit, the electrical connections, an electro-magnet and armature included in said local circuit, and a pivoted impact-lever operated by said armature.

16. In an electrical type-writer, the combination, with a series of pivoted current-conducting key-levers each included in a local circuit and carrying a symbol of the key-board, of a revolving current-conducting disk, also included in said local circuit and provided with a series of spirally and relatively arranged stops, each stop corresponding to one or more symbols of the key-board, a type-wheel revolving in unison with said disk and provided with a series of type-letters circularly and relatively disposed around its periphery, each type-letter corresponding to one of the symbols of the key-board and to one or more of the stops on the disk, a local circuit, electro-mechanical devices included in said circuit, a pivoted impact-lever provided with a retracting agency operated by said devices, and a traveling paper-feeding mechanism, as specified.

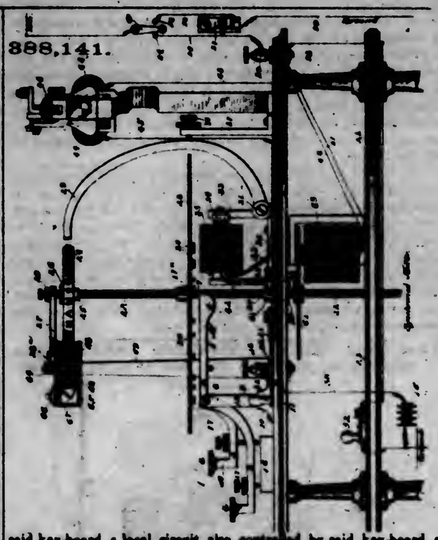
17. The combination, with the series of current-conducting pivoted key-levers included in a local circuit, of a revolving current-conducting disk, the local circuit, a magnet and its armature included in said circuit, and a pivoted impact-lever operated by said armature and provided with a retracting agency, a type-wheel revolving in unison with the disk and arranged to be arrested simultaneously therewith, a traveling paper-feeding mechanism, and an inking-roller normally in contact with said wheel.

18. The combination, with a circuit-controlling armature spacing-key lever, of an electro-magnet controlling the movement of said spacing-lever, and a local circuit including spacing mechanism controlled by said spacing-lever, whereby the spacing mechanism may be operated by a mechanical and electro-magnetic actuation of the spacing-lever.

388,141. ELECTRICAL TYPE-WRITER. James F. McLaughlin, Philadelphia, Pa. Filed Sept. 13, 1887. Serial No. 249,784. (No model.)

Claim.—1. An electrical type-writer comprising a circuit-controlling key-board, a current-conducting revolving stop-disk controlled by

388,141.



said key-board, a local circuit also controlled by said key-board, a main-line circuit, and switches and connections for connecting and disconnecting the main and local circuits.

2. An electrical type-writer comprising a circuit-controlling key-board, a current-conducting revolving stop-disk controlled by said key-board, a local circuit including printing mechanism, and also controlled by said key-board, a main-line circuit, and switches and connections for connecting and disconnecting the main and local circuits.

3. An electrical type-writer comprising a series of circuit-controlling key-levers, a current-conducting disk provided with a series of stops and arranged to be arrested by the movement of any key-lever, an electric circuit including said key-levers and disk, and operated also by a movement of any key-lever, an electro-magnetic unison-brake, also included in said electric circuit, and a revolving armature-disk controlled by said brake.

4. An electrical type-writer comprising a circuit-controlling key-board, a current-conducting revolving stop-disk controlled by said key-board, a local circuit including letter-spacing mechanism and also controlled by said key-board, a main-line circuit, and switches and connections for connecting and disconnecting the main and local circuits.

5. An electrical type-writer comprising a series of circuit-controlling key-levers, a revolving current-conducting disk provided with a series of stops and arranged to be arrested in its rotation by a movement of any key-lever, an electric circuit including said key-lever and disk, and operated also by a movement of any key-lever, electro-magnetic printing mechanism, substantially as described, included in and controlled by said electric circuit, an electro-magnetic unison-brake, also included in and controlled by said electric circuit, a revolving armature-disk controlled by said brake, and electro-magnetic spacing mechanism, substantially as described, also included in said electric circuit and arranged to be operated at a determinate instant after the operation of the printing mechanism.

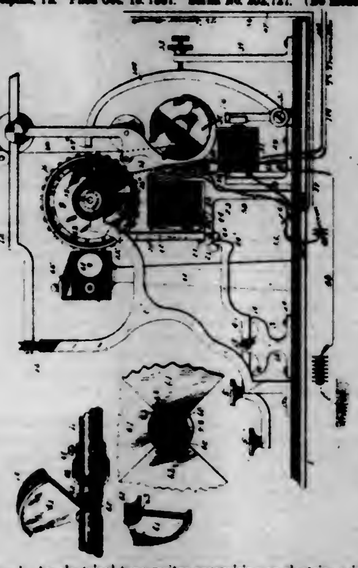
6. In a printing-telegraph, two or more instruments located, respectively, at two or more stations of a line-circuit, and each comprising, essentially, a series of circuit-controlling key-levers, a rotary current-conducting disk and type-wheel upon a common shaft, an electro-magnetically-actuated printing-lever, an electro-magnetic unison-brake controlling the rotation of said shaft, and electro-magnetic spacing mechanism, substantially as described, in combination with a line-circuit, including said key-levers, disk, and the actuating electro-magnets of the brake, printing-lever, and spacing mechanism, and a synchronal motor for revolving the shafts of the respective instruments.

7. In a printing-telegraph, two or more instruments located, respectively, at two or more stations of a line-circuit, and each comprising, essentially, a series of circuit-controlling key-levers, a rotary current-conducting disk and type-wheel upon a common shaft, an electro-magnetically-actuated printing-lever, an electro-magnetic unison-brake controlling the rotation of said shaft, and electro-magnetic spacing mechanism, substantially as described, in combination with a line-circuit, including said key-levers, disk, and the actuating electro-magnets of the brake, printing-lever, and spacing mechanism, a synchronal motor for revolving the shafts of the respective instruments, switches, annunciators, and circuit-connections for the line-circuit.

8. In a printing-telegraph, two instruments located, respectively, at two stations of a line-circuit, and each comprising a series of circuit-controlling key-levers, a revolving current-conducting disk provided with a series of stops, whereby it may be arrested in its rotation by a movement of any key-lever, and an electro-magnetic unison-brake controlling the rotation of said stop-disk, in combination with a line-circuit including the said key-levers, stop-disk, and the actuating electro-magnets of said brake, and switches and circuit-connections for said line-circuit.

9. In a printing-telegraph, two instruments located, respectively, at two stations of a line-circuit, and each comprising a series of circuit-controlling key-levers, a revolving current-conducting disk provided with a series of stops, and a type-wheel rotating in fixed relation to said disk upon a common shaft, said disk being arrested in its rotation by a movement of any key-lever, a synchronal motor for said shaft, and an electro-magnetic brake also controlling the rotation of said shaft, in combination with a line-circuit, including said key-levers, disk, and the actuating electro-magnet of the said brake, and switches and circuit-connections for the said line-circuit.

388,142. ELECTRICAL TYPE-WRITER. James P. McLaughlin, Philadelphia, Pa. Filed Oct. 13, 1887. Serial No. 252,737. (No model.)



Claim.—1. An electrical type-writer comprising an electric main-line circuit, electro-magnets severally included in said main-line circuit, circuit-controlling mechanism for directing current through a particular electro-magnet, stop-levers severally controlled by said electro-magnets, and mechanical key-levers, also for severally controlling said stop-levers.

2. An electrical type-writer comprising an electric main-line circuit, electro-magnets severally included in said main-line circuit, stop-levers controlled severally by said electro-magnets, mechanical key-levers, also for severally controlling said stop-levers, and a local circuit operated by a movement of any stop-lever.

3. An electrical type-writer comprising a series of armature stop-levers, electro-magnets for severally actuating said stop-levers, a main line circuit including said electro-magnets, circuit-controlling mechanism for said main-line circuit, a series of mechanical key-levers, also for severally controlling said stop-levers, and a local circuit controlled by the movement of any stop-lever.

4. An electrical type-writer comprising a series of pivoted armature stop-levers, electro-magnets for severally attracting said stop-levers, a series of mechanical key-levers for severally actuating said stop-levers, and a revolving cylinder provided with stops arrested by the movement of any stop-lever.

5. An electrical type-writer comprising a series of pivoted armature stop-levers, electro-magnets for severally attracting said stop-levers, circuit-controlling mechanism for directing current through a particular magnet, a series of mechanical key-levers severally controlling said stop-levers, and a revolving cylinder provided with stops arrested by the movement of any stop-lever.

6. An electrical type-writer comprising a series of armature stop-levers, electro-magnets for severally actuating said stop-levers and included in a main-line circuit, and a series of mechanical key-levers, also for severally actuating said stop-levers, in combination with a transmitter provided with circuit-controlling keys for directing current through a particular electro-magnet and a local circuit operated by the movement of any stop-lever.

7. An electrical type-writer comprising a series of armature stop-levers, electro-magnets for severally actuating said stop-levers, a mechanical key-board, also for severally actuating said stop-levers, and a revolving stop-cylinder arrested by the actuation of any stop-lever, in combination with a series of circuit-closing keys for directing the current through a particular electro-magnet.

8. An electrical type-writer comprising a series of armature stop-levers, electro-magnets for severally actuating said stop-levers, a series of mechanical key-levers, also for severally actuating said stop-levers, a revolving stop-cylinder arrested by the actuation of any stop-lever, and a local circuit operated also by a movement of any stop-lever.

9. An electrical type-writer comprising a series of circuit-controlling armature stop-levers, electro-magnets for severally attracting said stop-levers, circuit-controlling mechanism and an electric circuit for directing current through a particular electro-magnet, a series of mechanical key-levers for severally actuating said stop-levers, a rotary type-wheel and rotary cylinders in fixed relation to each other, contact-lugs upon said cylinders corresponding to types upon the said type-wheel, and a local circuit including a printing-magnet and controlled by said stop-levers and lugs, as specified.

10. In an electrical type-writer, the combination, with a rotary type-wheel and metallic cylinders rotating with the same provided with metallic contact-lugs corresponding with the types upon said type-wheel, of a circuit-controlling stop-lever for each lug, pivoted to move in the plane of rotation of and to intercept the lug, an electro-magnet controlling each stop-lever, a mechanical key-lever controlling each stop-lever, and a local circuit including a printing electro-magnet and controlled by said stop-levers and lugs.

11. In an electrical type-writer, the combination, with a local circuit including electro-magnetic printing mechanism, a series of circuit-controlling stop-levers therefor, and rotary cylinders provided with contact-lugs in operative relation and corresponding to said stop-levers, of a system of levers controlling the action of said stop-levers electro-magnetically and a system of levers for mechanically actuating said stop-levers.

12. In an electrical type-writer, the combination of a rotary type-wheel and cylinders rotating with the same, provided with lugs corresponding with the types upon the type-wheel, with an independent gravity stop-lever for each lug, pivoted to move in the plane of rotation of the lug, but normally out of contact with the same, and an electro-magnet for each stop-lever in operative relation to the latter for moving the same into the path of its corresponding lug, and a mechanical key-lever also controlling each stop-lever, substantially as described.

13. In an electrical type-writer, the combination of a type-wheel and cylinders rotating with the same about a common axis and provided upon their surfaces with lugs corresponding to the types upon the wheel, with an independent stop-lever movable about a pivot to intercept the lug at a definite point, said pivot being located in the line of impact of the lug with the lever, and an electro-magnet for each stop-lever for actuating the same, and a mechanical key-lever also controlling each stop-lever, substantially as described.

14. In an electrical type-writer, the combination of a type-wheel and cylinders rotating with the same about a common axis and provided with stop-lugs corresponding to the types upon the wheel with a stop-lever for each lug, an electro-magnet for each stop-lever for controlling the same electrically, and a key-lever for each stop-lever for controlling the same mechanically, substantially as described.

15. An electrical type-writer comprising a series of armature stop-levers, electro-magnets for severally actuating said stop-levers, a series of mechanical key-levers, also for severally actuating said stop-levers, a revolving stop-cylinder arrested by the actuation of any stop-lever, and a local circuit operated also by a movement of any stop-lever.

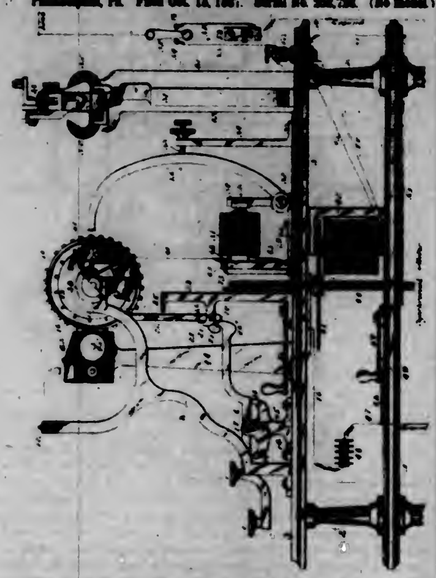
16. In a type-writer, the combination of a rotary shaft having a series of segmental recesses with separating-ribs between the same, with the sectorial parts of the type-wheel having their hub portions seated in the segmental recesses and with their edges in contact with each other, and a clamp for securing the sectors together and to the shaft, substantially as described.

17. In an electrical type-writer, the combination of a rotary shaft with segmental recesses and ribs between the same all around the portion of the shaft, with sectorial sections of the type-wheel seated in the recesses with their radial edges in contact with each other, and a sleeve fitting over the shaft and over the hub-sections of the type-wheel for clamping the same, substantially as described.

18. In an electrical type-writer, the combination of the shaft of a rotating type-wheel and the shaft of the transmitter with a rotary shaft geared and imparting motion to both the type-wheel shaft and transmitter-shaft, and a synchronal motor for actuating said rotary shaft.

19. In an electrical type-writer, the combination, with a transmitting-instrument having a circuit-controlling spacing-key, of a receiving-instrument provided with a circuit-controlling spacing stop-lever, a magnet for actuating said stop-lever and controlled by the transmitter spacing-key, a fixed contact for said spacing stop-lever, a local circuit including said stop-lever and fixed contact, and spacing-magnets in said local circuit.

388,143. ELECTRICAL TYPE-WRITER. James P. McLaughlin, Philadelphia, Pa. Filed Oct. 13, 1887. Serial No. 252,738. (No model.)



Claim.—1. In an electrical type-writer, the combination, with a type-wheel and metallic cylinders, all rotating in unison, metallic lugs upon said cylinders corresponding to the types upon the type-wheel, of circuit-controlling stop-levers, one for each lug, a printing and a spacing magnet included in a local circuit with the cylinders and stop-levers, a key-board controlling said stop-levers, a line-circuit, and switches and connections whereby the local circuit may be connected with the line-circuit.

2. The combination, with a circuit-controlling key-board, of stop-cylinders controlled by said key-board, a local circuit also controlled by said key-board, printing and spacing mechanism controlled by said local circuit, a main-line circuit, and switches and connections for connecting and disconnecting said local circuit with the main-line circuit.

3. In an electrical type-writer, the combination of a type-wheel and cylinders of conducting material rotating with the same about a common axis and provided with metallic lugs corresponding to the types upon the wheel, with an independent metallic stop-lever for each lug, normally out of contact with the cylinder, but movable into the path of the lug, an electro-magnet and a printing-lever actuated thereby, a sluggish spacing-magnet for moving the paper after the imprint has been made, and a key-board for actuating the stop-levers to stop the type-wheel and cylinders and to close the circuit of the magnets, substantially as described.

4. In an electrical type-writer, the combination of a type-wheel and metallic cylinders rotating with the same about a common axis and provided upon their surfaces with metallic lugs corresponding to the types upon the wheel, with circuit-controlling stop-levers, one for each lug, a printing and a spacing magnet included in a local circuit with the cylinders and stop-levers, and a mechanical key-board for controlling the stop-levers, substantially as described.

5. In an electrical type-writer, the combination of a type-wheel and cylinders rotating with the same about a common axis and provided with stop-lugs corresponding to the types upon the wheel, with a stop-lever for each lug, having one straight arm movable into the path of the lug and the other arm provided with a hook or nose, and a key-lever for each stop-lever, having a hook or nose at one end engaging the nose on the stop-lever, substantially as described.

6. In an electrical type-writer, a pivotal support for the operating-key levers, consisting of a casting having upon a central stem or branch a series of parallel slots for the reception of the levers, and a series of lugs alternating with the slots for the reception of a pivotal rod common to all the levers, and two lateral branches constituting the common front and back stops, respectively, substantially as described.

7. In an electrical type-writer, the combination of a series of levers in operative relation to the type-keys, with a pivotal support for the stop-levers, consisting of a casting having a longitudinal rib divided into alternate slots and lugs, the latter being connected by a web serving as the front stop of the levers, substantially as described.

8. A pivotal support for a series of independent levers, consisting of a casting having a longitudinal rib divided into alternate lugs and slots, the former being connected by a web serving as the front stop of the levers, and a flange parallel to the rib, serving as a back stop for the levers, substantially as described.

388,144. THILL-COUPLING. Lewis Miller and Maurice L. Wright, Mexico, N. Y. Filed Mar. 24, 1888. Serial No. 268,227. (No model.)



Claim.—1. A thill-coupling composed of a shackle-eye formed in two sections, one of which is rigidly attached to or integral with the thill-iron and the other section hinged to the rigid section, a clamp for holding the hinged eye-section in its closed position, and a safety-guard connected to the thill-iron and adapted to embrace the said hinged eye-section, as set forth.

2. In combination with the axle-clip and shaft-shackle projecting therefrom, the thill-iron 1, formed with the rigid eye-section *a*, the eye-section *a'*, hinged on the rear portion of the rigid eye-section and formed with the forwardly-projecting tongue *b*, and the latch *l*, hinged on the thill-iron and formed with the rearwardly-projecting guard *l*, extending between the rear of the eye-sections *a a'* and axle-clip and below the said clip, substantially as described and shown.

3. In combination with the thill-iron 1, formed with the eye-section *a*, the eye-section *a'*, hinged on the section *a*, and having the forwardly-projecting tongue *b* provided with the recess *r*, and the latch *l*, hinged to the thill-iron, the ball *c*, connected to the said latch and adapted to enter into the recess *r*, and the rubber cushion *e*, seated in said recess, substantially as described and shown.

4. In combination with the thill-iron 1, formed with the rigid eye-section *a*, and the eye-section *a'*, hinged on the rear portion of the rigid eye-section and formed with the forwardly-projecting tongue *b*, the latch *l*, hinged to the thill-iron and formed with the thumb-piece *f* and with the rearwardly-extending guard *l*, embracing the rear portions of the eye-sections *a a'*, and the ball *c*, connected to the latch and embracing the tongue *b*, substantially as described and shown.

388,145. METALLIC ALLOY. Hermann Cottenham and Charles Lagoux, Geneva, Switzerland, assignors to the Usine Genevoise de Dégrossissage d'Or, same place. Filed Apr. 19, 1888. Serial No. 271,212. (No specimens.)

Claim.—1. An alloy composed of gold, palladium, rhodium, copper, nickel, manganese, silver, and platine, for the purpose specified.

2. An alloy composed of thirty to forty-five parts of gold, twenty to thirty parts of palladium, one-tenth of a part to five parts of rhodium, ten to twenty parts of copper, one to ten parts of nickel, one-tenth of a part to five parts of manganese, one-tenth of a part to five parts of silver, and one-tenth of a part to two and a half parts of platine, substantially as described, and for the purpose specified.

388,146. METALLIC ALLOY. Hermann Cottenham and Charles Lagoux, Geneva, Switzerland, assignors to the Usine Genevoise de Dégrossissage d'Or, same place. Filed Apr. 19, 1888. Serial No. 271,213. (No specimens.)

Claim.—1. An alloy composed of gold, palladium, rhodium, copper, manganese, silver, and platine, for the purpose specified.

2. An alloy composed of thirty to forty parts of gold, thirty to forty parts of palladium, one-tenth of a part to five parts of rhodium, ten to twenty parts of copper, one-tenth of a part to five parts of manganese, one-tenth of a part to five parts silver, and one-tenth of a part to five parts of platine, substantially as described, and for the purpose specified.

388,147. METALLIC ALLOY. HERMANN GUTZKOW and CHARLES LAGRIVE, Geneva, Switzerland, assignors to the Usine Genevoise de Dégrossissage d'Or, same place. Filed Apr. 28, 1888. Serial No. 271,941. (No specimens.)

Claim.—1. A metallic alloy composed of gold, palladium, copper, silver, cobalt, wolfram, rhodium, and platine, for the purpose specified.

2. A metallic alloy composed of thirty to forty parts of gold, thirty to forty parts of palladium, ten to twenty parts of copper, one-tenth of a part to five parts of silver, one-tenth of a part to two and a half parts of cobalt, one-tenth of a part to five parts of wolfram, one-tenth of a part to five parts of rhodium, and one-tenth of a part to five parts of platine, for the purpose specified.

388,148. ADJUSTABLE CHAMFER-GAGE FOR DRAWING-KNIVES. HARRY H. PERKINS, Kewanee, Ill. Filed Apr. 3, 1888. Serial No. 269,418. (No model.)



Claim.—1. The combination of the connected laterally-adjustable shoes, the clamping-arms E, pivoted thereon, and the set-screws to operate said clamping-arms, substantially as described.

2. The combination of the shoes having the ears C, the clamping-arms passing between said ears, the rod F, passing through aligned openings in the ear C and in the clamping-arms, and thereby serving to connect the shoes together and forming pivots for the clamping-arms, and the set-screws in the rear ends of the clamping-arms, to operate the same, substantially as described.

3. The combination of the shoes B, having the ears C and the rearward-extending portions D beyond said ears, the clamping-arms E, passing between said ears, the rod F, extending through aligned openings in the ears and in the clamping-arms, and the set-screws G, engaging threaded openings in the rear ends of the clamping-arms and adapted to bear upon the rearward-extending portions D of the shoes, for the purpose set forth, substantially as described.

388,149. BOOK-MARK AND CLASP. SAMUEL POWELL, Chicago, Ill., assignor to Cameron, Amberg & Co., same place. Filed Sept. 12, 1887. Serial No. 249,410. (No model.)

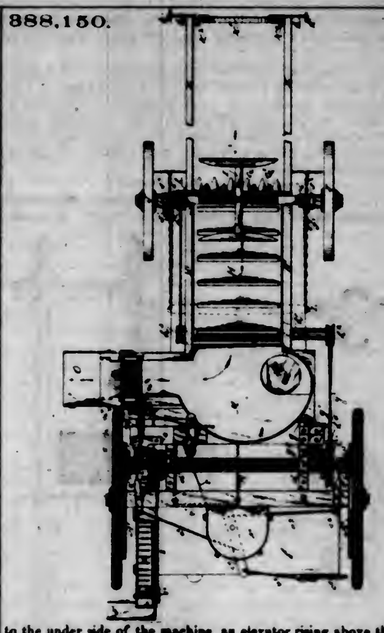


Claim.—1. A book-mark and clasp, comprising, in combination, a clasp having clamping-jaws adapted to embrace the free edges of the book-covers, and to be pivotally secured to one of said covers, and a finger or marker pivotally connected to said clasp, substantially as described.

2. A book-mark and clasp, comprising, in combination, a clasp having clamping-jaws, whereby to embrace the free edges of the cover when the book is closed, and means for pivotally connecting the same to the book, and a marking-finger connected to said clasp and having a lateral movement on its support, substantially as set forth.

3. A combined book-mark and clasp, comprising a clasp having clamping-jaws adapted to embrace the free edges of the book-covers when the book is closed, and a pivotal connection whereby to secure the clasp to the book-cover, and a marking-finger pivoted to the clasp at a point intermediate its clamping-jaws, substantially as described.

388,150. CORN-HARVESTER. HORACE R. REEVES, Sanborn, Iowa. Filed May 22, 1888. Serial No. 273,970. (No model.)

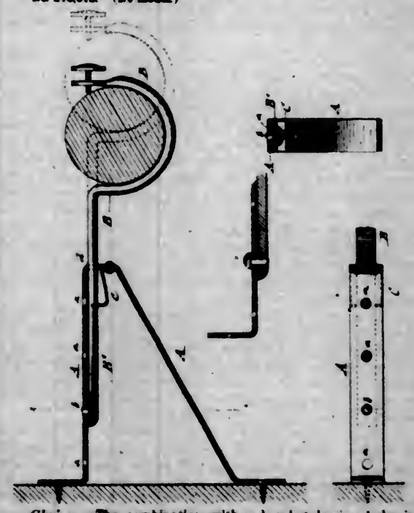


Claim.—1. The combination, with the cutting mechanism at the front of the machine and an elevator in close contact therewith, of a horizontal platform provided with a raised rim and having an aperture, as described, a step secured to the frame-work beneath said aperture, husking mechanism at the side of the platform and machine, a falling apron in front of the husking mechanism, and a cord secured to the apron, all as described, and for the purpose set forth.

2. The combination, with the husking mechanism and a downwardly-inclined chute arranged in the rear thereof, of a box secured to the under side of the machine, an elevator rising above the top of the machine at the rear, and a swiveled trough for communication at will with either the box or the elevator, substantially as described.

3. The combination, with the husking mechanism and a downwardly-inclined chute arranged in rear thereof, of a box provided with a falling end-gate secured to the under side of the machine, an operating-cord secured to the end-gate, an elevator rising above the top of the machine at the rear, a lateral downwardly-inclined trough attached to the upper end of the elevator, and a swiveled trough beneath the husking mechanism for communication at will with either the box or the elevator, substantially as described, and for the purpose set forth.

388,151. CURTAIN-POLE BRACKET. HENRY REUSS, New York, and THEODORE LEBEGERN, Brooklyn, N. Y. Filed June 23, 1888. Serial No. 278,012. (No model.)



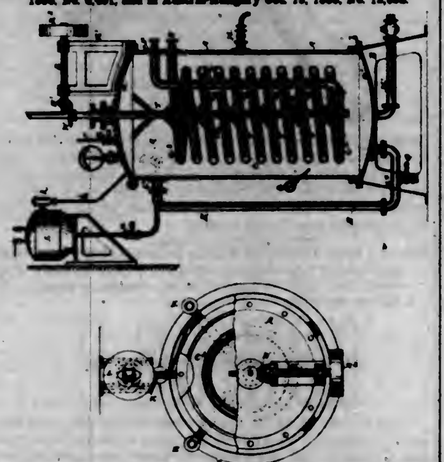
Claim.—The combination, with a bracket having holes in its horizontal portion, of a pole-supporting arm guided in said bracket, a pin for connecting the supporting-arm to one of said holes, and a spring attached to the bracket and retaining the supporting-arm firmly in position, substantially as set forth.

388,152. NON-MAGNETIC ALLOY. ALFRED H. RAMSAY, Porte Martel, Switzerland, assignor to C. Hegmann-Thiébaud & Fils, same place. Filed May 26, 1888. Serial No. 275,169. (No specimens.)

Claim.—1. A metallic alloy composed of tin, copper, lead, zinc, iron, nickel, and manganese, for the purpose specified.

2. The alloyage of 0.62 part of tin with 58.10 parts of copper, 0.09 part of lead, 18.90 parts of zinc, 1.28 parts of iron, 20.62 parts of nickel, and 0.26 part of manganese, for the purpose specified.

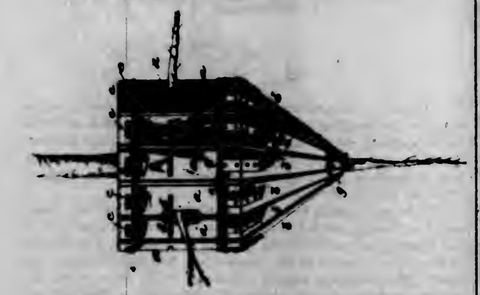
388,153. PASTEURIZING BEER, WINE, &c. HERMANN SCHAARWÄCHTER, Barmen-Rittershausen, Prussia, Germany. Filed Dec. 8, 1886. Serial No. 221,694. (No model.) Patented in Germany Oct. 26, 1885, No. 36,041; in France Apr. 10, 1886, No. 182,600; in England May 12, 1886, No. 6,691, and in Austria-Hungary Oct. 19, 1886, No. 19,532.



Claim.—1. In an apparatus for pasteurizing beer, wine, &c., the combination consisting of the cylinder A, supported on bracket B, and containing the pipe c', with coils c^2 c^2, the pipe E, having one end thereof connected with the bottom of said cylinder A, the other end connected near the top thereof, the rotary cleansing-tube T, extending axially through the coil c^2 c^2, the perforated arms u, connected with said rotary pipe T, and the gearing W W', and shaft X, adapted to operate the said tube T, substantially as shown and described.

2. The combination, in an apparatus for pasteurizing beer, wine, &c., of the regulating-vessel L, connected to cylinder A by pipe N, with cock M, and safety-valve K', connected with cylinder A, substantially as shown and described.

388,154. DEVICE FOR TRANSPLANTING TREES. THOMAS E. STANLEY and CALVIN D. GULLEY, Fort Worth, Tex. Filed May 29, 1888. Serial No. 275,462. (No model.)



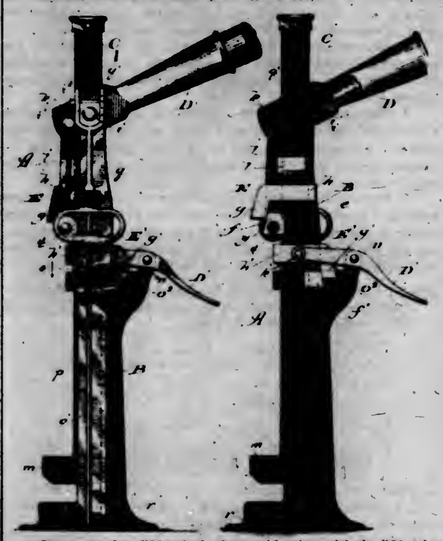
Claim.—In a device for transplanting trees, the combination, with a suitable head having pins or spikes around its edge, of a series of staves having transverse slots, with which the pins engage, and recessed on their edges to form openings for the roots to pass, and means for holding the staves together, substantially as and for the purpose set forth.

388,155. ART OF MANUFACTURING RINGS FOR LOOM-TEMPLES. EDWARD S. STEBBINS, Hopedale, Mass., assignor to the Dutcher Temple Company, same place. Filed Mar. 30, 1887. Serial No. 232,946. (No model.)



Claim.—The herein-described improvement in the art or method of manufacturing temple-rings, which consists, first, in providing the periphery of the said ring with one or more annular grooves or depressions for the reception of the point of the drill, and, second, boring the holes for the reception of pins with the point of the drill in said groove or depression, whereby the said drill is prevented from glancing off or being displaced, substantially as described.

388,156. LIFTING-JACK. AXEL A. STRÖM, Austin, Ill. Filed Mar. 19, 1888. Serial No. 267,694. (No model.)



Claim.—1. In a lifting-jack, the combination, with the lifting-bar and standard, of an operating-lever fulcrumed on the standard, with its short arm extending beyond one side of the lifting-bar, and a friction-clutch comprising a collar on the bar, having a lip projecting from it at the side where the short arm of the lever extends, and a wedge on one side of the lifting-bar in line with the space between the said bar and lip and linked to the short arm of the lever, substantially as described.

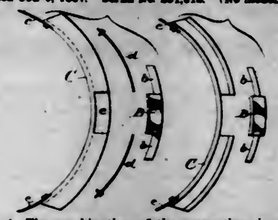
2. In a lifting-jack, the combination, with the lifting-bar and standard, of a lever, D, fulcrumed on the standard, with its short arm extending beyond one side of the lifting-bar, and a friction-clutch, E, comprising a collar, A, on the bar, having a beveled lip, *g*, projecting from it at the side where the short arm of the lever extends, and a block, *f*, on one side of the lifting-bar in line with the space between the said bar and lip, and linked to the short arm of the lever, substantially as described.

3. In a lifting-jack, the combination, with the lifting-bar, standard, and a lifting-clutch, of a retaining-clutch comprising a collar on the bar having a lip projecting from it on one side, and a wedge-block entirely on one side of the lifting-bar in line with and below the space between the said lip and bar, and confined in its operative position against material vertical play, substantially as described.

4. In a lifting-jack, the combination of a lifting-bar, C, a standard, B, having a chamber, c^2, reduced laterally toward one end, a lifting-clutch, and a retaining-clutch, E', comprising a collar, A', having a lip, *g'*, on one side, a lever, D', engaging with the collar, and a block, *f'*, confined in the chamber c^2 on one side of the bar below the said lip, substantially as described.

5. In a lifting-jack, A, the combination of a standard, B, having the expanded portion *c*, bounded by sides *q*, having recesses *q'* in their upper ends, a lifting-bar, C, a guide-bearing, *l*, for the bar, a friction-clutch, E, comprising a collar, A, on the bar, having a lip, *g*, on one side and a block, *f*, below the said lip against the bar, and a lever, D, fulcrumed in the recesses *q'* and linked to the block *f*, substantially as described.

388,157. WATCH-CASE SPRING. CHARLES TIBER, Hartford, Conn. Filed Oct. 6, 1887. Serial No. 251,612. (No model.)



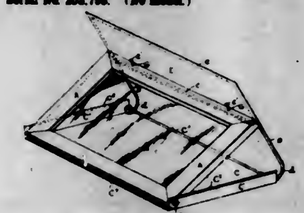
Claim.—1. The combination of the supporting-rim C, recessed substantially as described, the catch having arms *b b* resting in the recess of said rim, and the spring or springs for pressing against the catch, substantially as described, and for the purpose specified.

2. The combination of a watch-case, the supporting-rim, the spring-pressed catch mounted therein, and the dust-band secured to the respective ends of said rim, substantially as described, and for the purpose specified.

3. The combination of the supporting-rim stationarily affixed in a watch-case, the catch moving inwardly and outwardly and supported in said movement by said rim, and the spring or springs for pressing against said catch, substantially as described, and for the purpose specified.

4. The combination of the supporting-rim having lateral flanges forming a groove or recess at the outer edge of said rim, the catch having its body working in a notch in the upper flange of said rim, and the arms *b b*, working within the groove on each side of said notch, substantially as described, and for the purpose specified.

388,158. DRAWING AND TRACING APPARATUS. WILLIAM P. THOMPSON, Liverpool, County of Lancaster, England. Filed Oct. 20, 1887. Serial No. 252,766. (No model.)



Claim.—1. The combination of the tray C, formed of tinned iron having side pieces, C' C', turned up and perforated with holes C³ C³, and the frame A, carrying fixed thereon the pivots *a a*, having their shanks resting freely in holes C³ C³, substantially as and for the purpose described.

2. The combination of the tray C, formed of sheet metal with bright reflecting upper surface, with tracing glass and frame A B, placed at a suitable angle thereto, substantially as described, whereby the almost perfect reflection of a mirror is obtained without the fear of fracture or the use of heavy and expensive framing required with ordinary mirror-glass reflectors.

3. The combination, with the reflector C, of the frame A, folding flat over same, and the shade E, and supporting-legs D, bent at *d*, so as to fold flat over frame A.

4. The combination of the shade E with the legs D, rigid therewith, whereby one adjustment only is required for both the legs and shield, instead of separate adjustments, as formerly.

5. The combination of reflector C, transparent drawing-frame A B, hinged thereto, legs D, hinged to said frame, and shield E, rigidly fixed to legs D and arranged to fold over the glass A.

6. The combination of the plate C, having sides C' turned up at right angles and to the height of the folded apparatus, (glass frame A B and shield E,) whereby the plate C acts as a box to inclose the other parts, substantially as described.

7. The combination of a sheet-metal base, C, having back wire, C², and legs D, having their lower ends turned round wire C² and their upper ends connected by plate E, carrying button-holes *e'*, with the frame A, also hinged to base C and carrying the buttons G, attached thereto.

388,159. HOSE-NOZZLE. EDWIN R. TOMLINSON, Bridgeport, Conn. Filed Mar. 9, 1888. Serial No. 266,603. (No model.)

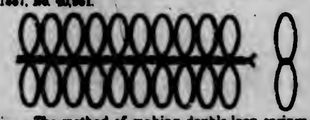
Claim.—The combination, with the hose-nozzle having cheek-piece formed therewith, of the frame pivoted to said cheek-piece and having stops adapted to abut, respectively, on opposite sides of said



388,159.

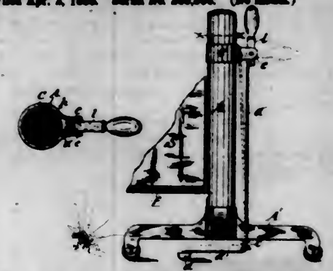
cheek-piece, the cone secured to an arm projecting from said frame and adapted to be carried by the swing of the latter into inverted position immediately beyond the nozzle, the shaft extending from the frame, and the rubber roller mounted on said shaft and adapted to be swung across and against the end of the nozzle, substantially as and for the purposes hereinbefore set forth.

388,160. PROCESS OF MAKING DOUBLE-LOOP SPRINGS. HERMANN TOELKE, Hohen-Limburg, Westphalia, Prussia, Germany. Filed Nov. 3, 1887. Serial No. 254,307. (Model.) Patented in Germany Feb. 25, 1887, No. 40,661.



Claim.—The method of making double-loop springs, which consists in winding two wires side by side round a smooth bar, shifting them off from the bar, and drawing the product, now appearing as a double screw or spiral spring, asunder, forming, apparently, two interlaced spiral springs, and passing it between two rollers or pressing it flat under some other convenient pressing apparatus.

388,161. FOLDING SCREEN. HENRY C. TRIPP, Auburn, N. Y. Filed Apr. 2, 1888. Serial No. 269,309. (No model.)

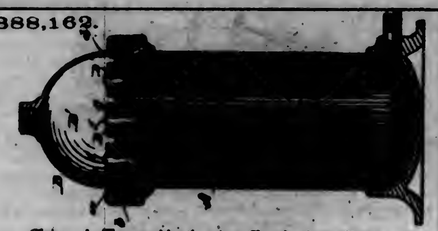


Claim.—1. In combination with the folding screen S and movable standard A, supporting one end of said screen, the slide-rod *a*, connected to the standard and having its lower end adapted to engage the floor, the spring *c*, pressing the rod downward, and the lever *l*, fulcrumed on the standard and connected with the upper end of the slide-rod, substantially as described and shown.

2. In combination with the folding screen S and movable standard A, supporting one end of said screen, the slide-rod *a*, connected to the standard and provided with the offset *a'*, terminating with the foot *d*, the collar C, secured to the standard and formed with ears *c c*, the lever *l*, pivoted on said ears and connected to the slide-rod, and the spring *c*, pressing the rod downward, substantially as described and shown.

388,162. FILTER. FRANK E. WAY, Springfield, Ohio, assignor, by direct and mesne assignments, to the Pasteur Chamberland Filter Company, same place. Filed Nov. 21, 1887. Serial No. 255,994. (No model.)

388,162.



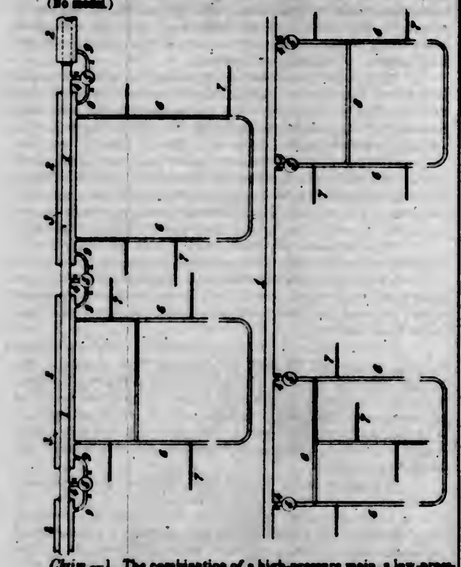
Claim.—1. The combination, in a filter having a filtering-chamber, a cap or partition having an opening therein, and a filtering-tube, one end of which is adapted to project through said opening, of a flexible coupler adapted to fit into the cast or pocket about said opening, provided with laterally-projecting flanges, as described, said coupler being adapted to receive the end or nozzle of said filtering-tube and hold the same in position in the opening in said cap or partition, and at the same time permit the said tube to be readily removed or replaced, substantially as described.

2. The combination, in a filter, with a cap having a series of pockets therein, a flexible coupler in each of said pockets, provided with laterally-projecting flanges, as described, and a central opening adapted to register with an opening in the bottom of said pocket, of filtering-tubes having projecting nozzles adapted to be projected through said openings and held in position by said flexible couplers in such a manner that they may be readily removed therefrom, substantially as described.

3. The combination, with the cap having one or more pockets therein, each pocket having a projecting flange in the mouth thereof, of a flexible coupler adapted to fit into said pocket and provided with a central opening and the laterally-projecting flanges, as described, and a tube or pipe adapted to be inserted into said opening, substantially as specified.

4. The combination, in a filter having a filtering-tube with a nozzle thereon and a cap or partition through which said tube is adapted to discharge, of a flexible coupler having the main body adapted to rest in contact with said partition and a central opening therein, and an annular flange about the central opening, said opening being adapted to register with the opening in said partition and to receive the nozzle of said filtering-tube and retain the same by the elasticity of said coupler or permit it to be removed when desired, and a flange or projection to prevent the coupler from being withdrawn from its position when the tube is removed or inserted, substantially as specified.

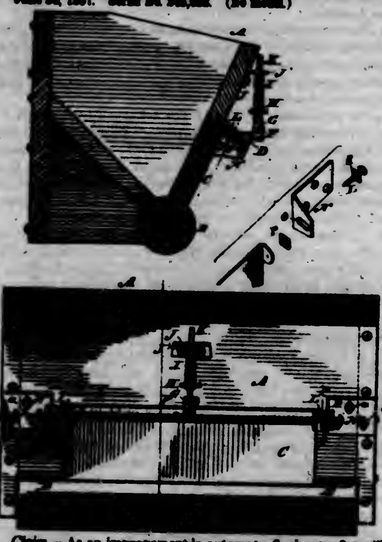
388,163. SYSTEM OF GAS-DISTRIBUTION. GEORGE WESTINGHOUSE, Jr., Pittsburg, Pa. Filed Aug. 15, 1884. Serial No. 140,687. (No model.)



Claim.—1. The combination of a high-pressure main, a low-pressure main communicating therewith at two or more points, two or more pressure-regulators, each governing an avenue of communication between the high and the low pressure main, and a low-pressure distributing-main connected at both of its ends or at two or more points to the low-pressure main and provided with a series of service-pipes, substantially as set forth.

2. The combination of a high-pressure main and a low-pressure distribution system composed of two or more interconnected lines of mains, said system communicating with the high-pressure main by two or more independent connections, each governed by a separate pressure-regulator, substantially as set forth.

388,164. AUTOMATIC FEED-GATE. ROSS H. WHITNEY, Avenue City, Mo., assignor of one-fourth to Lawrence Wilson, same place. Filed June 23, 1887. Serial No. 242,022. (No model.)



Claim.—As an improvement in automatic feed-gates for mills, the combination, with the yielding feed-gate, of the horizontally-adjustable pivot-screws L L, slotted supporters N N for said screws, the nuts P R on said screws and clamping the same to the supporters, and the screws *a a* for vertical adjustment of the supporters N N and gate, substantially as set forth.

388,165. PLOW. ANDREW WIRD and HERMAN LÜDERS, Sweet Home, Tex. Filed June 9, 1888. Serial No. 276,660. (No model.)



Claim.—1. The combination, with the plow-beam, the slotted and braced standard, and the adjustable land-bar, of the winged attachment J, formed with perforated lugs, the plow-point formed with upper and lower extensions and secured to said attachment, and the transverse bolts which secure the said attachment and point to the standard, substantially as described.

2. The combination, with the plow-beam, the slotted and braced standard, and the adjustable land-bar, of the winged attachment J and plow-point secured to the said standard, substantially as described.

388,166. GUN-SIGHT. GEORGE W. WOOD, Granville, N. Y., and JAMES W. CARVER, Peulet, Vt.; said Carver assignor to said Wood. Filed Oct. 3, 1887. Serial No. 251,205. (No model.)

Claim.—1. In a gun-sight, the combination, with a main frame and a frame sliding in and vertically adjustable on said main frame, of a supplemental and laterally-sliding frame on the supplemental frame, and a vertically-adjustable sight-plate carried by the supplemental and laterally-sliding frame, substantially as herein shown and described.

388,166.



2. The combination, with the frame E, of a frame, C, sliding vertically thereon, a supplemental frame, F, sliding laterally on said frame C, and a block, G, sliding vertically in said frame F, and a plate with sight-hole secured to said block G, substantially as described, for the purpose specified.

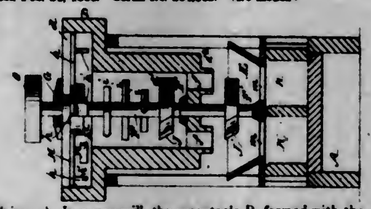
3. The combination, with the frame E, of a frame, C, sliding vertically thereon, a frame, F, sliding laterally on said frame C, and a block, G, sliding vertically on said frame F, and a plate secured to said block, a sight-hole passing through said plate and block, substantially as and for the purpose described.

4. The combination, with the frame E, having screw-spindle *h*, of a frame, C, provided with a lug, *a*, engaging said screw-spindle *h* and having a horizontal screw-spindle, *f*, a frame, F, engaging said screw-spindle *f* and having a vertical screw-spindle, *h*, and a block, G, engaging said screw-spindle and having attached thereto the sight-plate with sight-hole *k*, the said frames and block C, F, and G, adapted to slide, all substantially as and for the purposes described.

5. The combination, with the frame E, having a graduated scale on its sides, of a frame, C, sliding vertically in said frame E and provided with a graduated scale on its lower part, a frame, F, sliding laterally on said frame C and provided with a graduated scale on its lower part, a vertically-sliding block on the laterally-sliding frame F, and a plate having a sight-hole secured to said block, substantially as herein shown and described.

6. A gun-sight consisting of the frame E, the closed sight A, vertically and laterally adjustable on the said frame, as herein described, and the open sight B, below the closed sight, and vertically and laterally adjustable on the frame E, substantially as herein shown and described.

388,167. PUG-MILL. Henry Woodcock, Perth Amboy, N. J. Filed Feb. 21, 1888. Serial No. 264,903. (No model.)

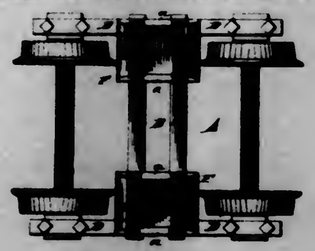


Claim.—1. In a pug-mill, the receptacle D, formed with the pan *d* and mill *d'*, below the same and of less diameter than the pan, in combination with the shaft F, arms *h*, and blades *h'*, to work in the pan, the arms *i i*, to work in the mill, and the propeller J, attached to the shaft below the arms *i i* for forcing the clay out of the mill, substantially as described.

2. The receptacle D, formed with pan *d* and mill *d'*, and the hopper E and receptacle K K, in combination with the shaft F, provided with arms *h h' i*, and propeller J in the receptacle D, and the propeller J', arranged to work in the hopper E, substantially as described.

388,168. SAFETY-SHOE FOR CAR-TRUCKS. Abram M. Woodruff, Superior, Nebr. Filed Jan. 25, 1888. Serial No. 261,886. (No model.)

Claim.—The combination, with the central transverse timbers, B, and the longitudinal brace D of a truck, of the head-blocks E, secured

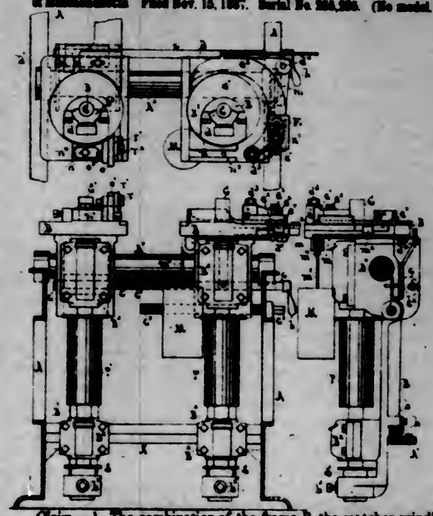


388,168.



to said timbers and brace, and the shoe F, bolted to the said head-block, timbers, and brace, the said shoe being provided with downwardly-extending longitudinal flanges *a*, and having a central horizontal and flat bearing-surface and inclined and flaring end surfaces, *b b'*, between the said flanges, substantially as herein shown and described.

388,169. PLANING-MACHINE. Solomon A. Woods and John R. Thomas, Boston, Mass., assignors to The S. A. Woods Machine Company, of Massachusetts. Filed Nov. 15, 1887. Serial No. 255,359. (No model.)



Claim.—1. The combination of the frame B, the matcher-spindle C, carried thereby and supported and sliding transversely upon the girt A^3, and having the hole or bearing a^3, which encompasses the girt, made compressible by being slotted through one side, and the cam c^3, mounted in and moving with said frame B and arranged to compress said bearing around said girt and secure said frame thereto in the desired position, substantially as described.

2. The combination of the frame B, the matcher-spindle C, carried thereby and supporting and sliding transversely upon the girt A^3, and having the hole or bearing a^3, which encompasses the girt, made compressible by being slotted through one side, the revolubie shaft *c*, mounted in a fixed position in the main frame A and provided with a spline-groove lengthwise thereof, and the cam c^3, mounted in and moving with said frame B around and along said revolubie shaft and provided with a spline to fit the groove in the latter, and arranged to compress said bearing around said girt and secure said frame thereto in the desired position by turning shaft *c*, substantially as described.

3. The combination of the cutter-head spindle C, the chip-breaker E, partly surrounding the same and swinging upon its pivot d^3, the lever *m*, swinging upon its fulcrum d^5 and taking a bearing behind and against said chip-breaker, and the cord m^2 and weight M, connected to said lever and arranged to press it against said chip-breaker, substantially as described.

4. The combination of the cutter-head spindle C, the chip-breaker E, partly surrounding the same and swinging upon its pivot d^3, the lever *m*, swinging upon its fulcrum-pivot d^5 and projecting therefrom along the chip-breaker toward pivot d^3, and taking a bearing behind and against said chip-breaker between pivots d^3 and d^5, and pressure-producing mechanism connected to the outer end of said lever and arranged to give it a yielding pressure against said chip-breaker, substantially as described.

5. The combination of the cutter-head spindle C, the chip-breaker E, partly surrounding the same and swinging upon its pivot d^3, the lever *m*, swinging upon its fulcrum-pivot d^5 and projecting therefrom along the chip-breaker toward pivot d^3, and taking a bearing behind and against said chip-breaker between pivots d^3 and d^5, and the cord m^2 and weight M, connected to said lever and arranged to press it against the chip-breaker, substantially as described

6. The combination of the cutter-head spindle C and the chip-breaker E, partly surrounding the same, swinging upon its pivot d^3 in a plane transverse to the axis of the spindle C, and formed of two members or parts united together by a telescoping or sliding joint opening and closing longitudinally of the chip-breaker and located upon the same side of the spindle C as pivot d^3, opposite the path of the work, whereby the extension of the members upon each other enlarges the diameter of the space within the curve of the interior of the chip-breaker, substantially as described.

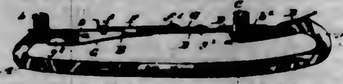
7. The combination of the cutter-head spindle C, the chip-breaker E, partly surrounding the same, swinging upon its pivot d^3, and formed of two members, e' e^2, made longitudinally extensible one upon the other, the lever *m*, swinging upon its fulcrum-pivot d^5 and taking a bearing behind and against said chip-breaker, and pressure-producing mechanism connected to said lever and arranged to press it against said chip-breaker, substantially as described.

8. The combination of the cutter-head spindle C, the horizontal table D', provided with the transverse groove *n*, the block *n'*, having the tongue n^2 sliding therein transversely to the path of the lumber and adjustably secured thereto, and provided with the horizontal groove across its face, and the plate d', provided with the tongue *o*, sliding in said horizontal groove, adjustably secured to said block, and having a vertical edge presented to the path of the cutter, forming therewith a throat or mouth-piece against the lumber, substantially as described.

9. The combination of the cutter-head spindle C, the horizontal table D', provided with the transverse groove *n*, the block *n'*, having the tongue n^2 sliding therein transversely to the path of the lumber and adjustably secured therein, and the block *r'*, provided with tongue *r*, fitting and sliding vertically in a groove connected to the outer face of block *n*, and arranged with a pressor foot or shoe at its lower end adapted to bear upon the top of the lumber while the cutter-head is acting upon its edge, substantially as described.

10. The combination of the cutter-head spindle C, formed with a flat lower end, the step S, provided with the upper chamber, s', which receives the spindle, and the lower central chamber, s^2, of smaller diameter than and beneath the spindle, and the plate s^3, provided with the central hole, s^4, and one or more grooves, s^5, in one surface and edge and arranged in said step with said grooves downward to form the rest for the end of the spindle, and the cover for oil-chamber s^3, substantially as described.

388,170. SKATE. John H. Young, Concord, N. H. Filed May 26, 1888. Serial No. 275,287. (No model.)



Claim.—1. The combination of a sole-plate having a transverse depression for the reception of the adjustable sole-clamps, the said adjustable sole-clamps provided each with an upward-projecting leg at or near their inner ends, an adjusting-plate adapted for longitudinal movement and having oppositely-inclined slots for the reception of the legs of said adjustable sole-clamps, their inner ends being nearer together than their forward ends, and suitable operating mechanism for the said adjusting-plate, substantially as described.

2. In adjusting mechanism for skates, the combination of the adjustable sole and heel clamps, an adjusting-plate for operating the former provided with a serrated slot, and an actuating-lever to which is pivotally connected one end of the adjustable heel-clamp, and having at one end a cam-pivot for operating within the said serrated slot, all substantially as and for the purpose set forth.

3. In adjusting mechanism for skates, the combination, with the adjustable sole and heel clamps, of an adjusting-plate and actuating-lever for operating the same, and means whereby the said clamps may adapt themselves to various widths of boots, comprising a cam-pivot secured to one end of the said actuating-lever and a serrated slot formed in said adjusting-plate in which said cam operates, substantially for the purpose specified.

388,171. ICE-CREEPER FOR RUBBERS. Charles S. Ashton, Philadelphia, Pa. Filed Mar. 6, 1888. Serial No. 266,304. (No model.)

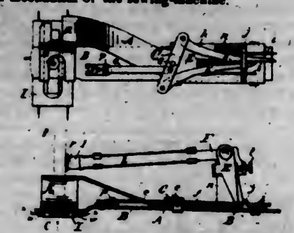


Claim.—1. The improved ice-creeper for horses, consisting of the plate D, having a recess to receive a toe-calk and provided on its inner edge with a hook, G, for engaging a horseshoe, and on its front edge with the eyed legs K K' and the loop L', connecting with said legs, and a strap, M, as shown and described.

2. In an ice-creeper for horses, the combination, with a base-plate adapted to the horse's shoe, of a hook adapted to engage the shoe and having a shank adjustable on the base-plate, and a set-screw for locking the hook in its adjustment, having a square-pointed head adapted to serve also as an ice-spur, substantially as described.

388,172. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. William H. Armbruster, Charleston, Ill., assignor, by direct and mesne assignments, to Edwin J. Teal, New Haven, Conn. Filed June 13, 1887. Serial No. 241,167. (No model.)

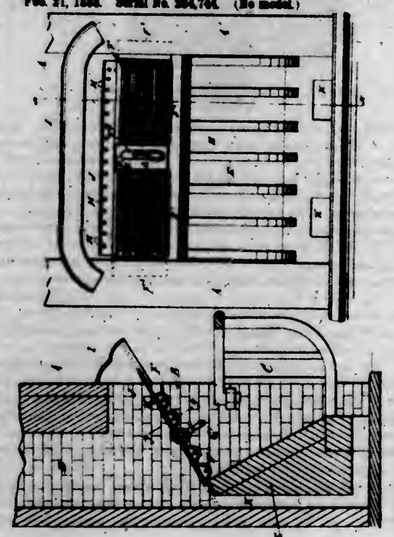
Brief.—The attachment is supported by the presser-bar. The device for holding the fabric consists of the plate I, having two fixed pins at one end and two at the other end which may be retracted or extended. (See Fig. 4.) The longitudinal feed is produced by the ordinary feed mechanism of the sewing-machine.



Claim.—1. In a sewing-machine attachment for working button-holes, the combination, with the presser-foot bar, the stitch-forming and the feeding mechanism of a sewing-machine, of the body A, having means for securing it to the presser-foot bar, carrier B, arranged to slide longitudinally thereon and having the downwardly-projecting tapering annular flange *d*, the slotted cloth-clamp mounted on said flange, bar C, arms *f* and A, each having a hooked shoulder, *k*, and a spring, *i*, guide-bar *j*, lever E, and lever F, having adjusting-screw *t*, all arranged to co-operate in the manner and for the purpose specified.

2. In a sewing-machine attachment for working button-holes, the combination, with the presser-foot bar, the stitch-forming and the feeding mechanism of a sewing-machine, the body A, secured to the presser-foot bar, and the reciprocating cloth-clamp carrier B, having hole *b* and tapering annular flange *d*, of the plate I, having slot *u*, adapted to engage said flange *d*, fixed pins *y w*, and sliding pins *x x'*, arranged to be retracted within the plate, all substantially as and for the purpose specified.

388,173. FIRE-PLACE. Robert R. Bubber, Lexington, Mo. Filed Feb. 21, 1888. Serial No. 264,764. (No model.)



Claim.—1. In a fire-place, the combination, with a grate having a rearwardly-inclined back, of a corrugated top plate held above the grate, a fixed hood held in front of and above the said corrugated top plate, and a flat plate held to slide on top of the said corrugated plate, so as to increase or diminish the opening between said corrugated top plate and the said hood, substantially as shown and described.

2. In a fire-place, the combination, with a grate having a rearwardly-extending back and opening into the chimney, of a corrugated top plate held above the said grate and resting on the top of the back, a fixed hood held in front of and above the said corrugated plate, a plate provided with openings and held to slide on top of the said corrugated plate, and a handle secured on the said plate and projecting through a slot in the said corrugated plate, substantially as shown and described.

3. In a fire-place, a grate having an inclined back and provided with air-inlet channels extending behind the grate and up into the chimney, in combination with a corrugated plate held above the said grate and provided with flanges resting in the side walls, the lower end of the said corrugated plate resting on the top of the said back, a hood held in front of and above the said corrugated plate, a plate held to slide on the top of the said corrugated plate, and a handle secured to the said plate and projecting through a slot in the said corrugated plate, said sliding plate being adapted to open or close the opening between the said hood and the corrugated plate, and also to open and close the inner openings of the said channels, substantially as shown and described.

388,174. CIGAR-ROLLING MACHINE. CLARK W. BOBAR, New York, N. Y. Filed Mar. 30, 1888. Serial No. 268,969. (No model.)



Claim.—1. In cigar-rolling machines, a cigar-receiving mold formed of a set of spring-closed individually-yielding power-driven rolls with an opening at one end for the endwise insertion and withdrawal of the cigar, in combination with a spreader individually connected to each roll, whereby all of said rolls are simultaneously spread apart at that end of the mold through which the cigar is inserted and withdrawn, substantially as and for the purposes hereinbefore set forth.

2. The combination, with spring-closed, yielding, power-driven rolls, inclosing a cigar-mold space, access to which is had from one end of the rolls, and mechanism for spreading said rolls apart so as to open the mold at that end, of a support movable to and from said end to permit the cigar to be inserted in and withdrawn from the mold, and a tip-forming thimble carried by said support, substantially as hereinbefore set forth.

3. The spring-closed power-driven cigar-mold rolls, supported at one end only and inclosing at their other end an opening through which the cigar is inserted and withdrawn from between them, and mechanism for spreading the rolls apart, in combination with a support movable to and from the said entrance end of the rolls, and a tip-forming thimble carried by said support, substantially as and for the purposes hereinbefore set forth.

4. The combination of the rolls D, the slotted standards B C, in which said rolls are supported at one end only, the spreader F, the driving-shaft, and the gearing for communicating motion from said shaft to said rolls, substantially as and for the purposes hereinbefore set forth.

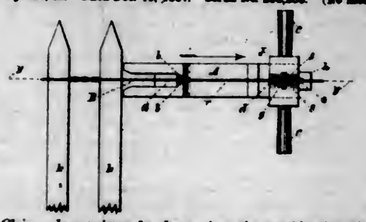
5. The combination, with the spring-closed power-driven rolls inclosing a cigar-mold space, access to which is had from one end of the rolls, and mechanism for spreading the rolls apart, of a support movable to and from this end of the rolls, and a tip-forming thimble and a cutter for shaping the point end of the wrapper, both of which are carried by said support, substantially as and for the purposes hereinbefore set forth.

6. The combination, with the spring-closed power-driven cigar-mold rolls, inclosing at one end an opening through which the cigar is inserted endwise between them, and mechanism for spreading the rolls apart, of the thimble head-stock located at this end of the rolls and movable therefrom so as to leave said opening unobstructed, and the thimble carried by and adjustable upon said head-stock, substantially as and for the purposes hereinbefore set forth.

7. The combination of the rolls A, inclosing a mold-space into which a cigar is inserted endwise from one end of the rolls, the support and tip-forming thimble carried thereby, located at and movable from this end of the rolls so as to uncover the entrance end of the mold, and the ejector adapted to operate upon the cigar from the opposite end of said mold, said thimble-support and ejector being connected to move simultaneously and together, substantially as and for the purposes hereinbefore set forth.

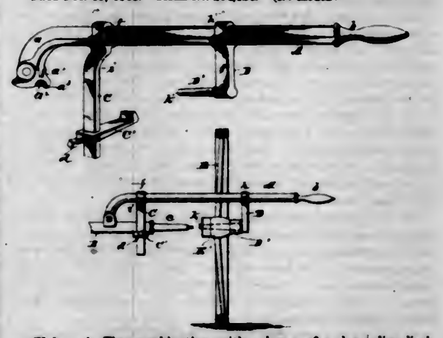
8. The combination of the rolls, the table, and the guide-plate pivoted or hinged above the plane of the table and adapted to tilt with relation to the table, substantially as and for the purposes hereinbefore set forth.

388,175. TWISTER FOR FENCE-WIRES. JOHN M. BOEHM, Jeffersonville, Ill. Filed Dec. 19, 1887. Serial No. 258,253. (No model.)



Claim.—In a twister for fence-wires, the combination of a bar, A, having a bifurcation, B, crotch *a*, pins or guides *b b*, channels *d*, anti-friction rollers *g*, and handles *c*, all constructed and adapted to operate substantially as and for the purpose set forth.

388,176. LIFTING-JACK. CHARLES R. BRADLEY, Dawson, Pa., assignor to L. L. Gerard and William H. Egbert, both of same place. Filed Feb. 15, 1888. Serial No. 264,121. (No model.)



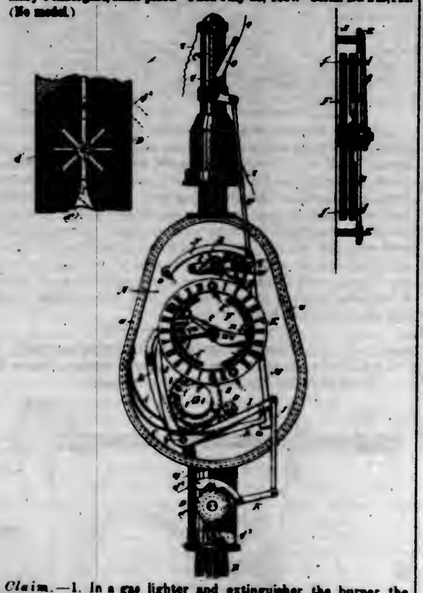
Claim.—1. The combination, with a lever, of a depending limb having a laterally-projecting arm thereon and a bracket-arm having a spindle thereon, substantially as set forth.

2. The combination, with a lever, of a depending sliding limb, an arm adjustably secured thereto, and a sliding bracket-arm having a spindle thereon, substantially as set forth.

3. The combination, with a lever provided with a pivoted block on one end, of a depending limb, a vertically-adjustable arm placed on this limb, a sliding bracket-arm mounted on the lever, and a spindle affixed to the lower end of this bracket-arm, substantially as set forth.

4. The combination, with a lever bent at one end, and a block that is hollowed on its lower side and is pivoted to rock on the lower end of the bent portion of the lever, of a depending limb which has an offset in its body, an arm which is adjustably located on this limb to project from one side, and a sliding bracket-arm provided with a spindle which extends from its lower end toward the block pivoted to the bent end of the lever, substantially as set forth.

388,177. AUTOMATIC GAS LIGHTING AND EXTINGUISHING DEVICE. RICHARD F. BRINSWELL, San Francisco, Cal., assignor, by direct and mesne assignments, of two-thirds to Henry H. Allen and Mary Pendergast, same place. Filed July 23, 1887. Serial No. 245,141. (No model.)



Claim.—1. In a gas lighter and extinguisher, the burner, the valve controlling the admission of gas to the burner, a pivoted lever, and connections with the valve for operating it, in combination with a lighting apparatus for lighting the gas at the burner, a pivoted spring-actuated lever and connections with the lighting apparatus for operating it, and the rotary cams for operating the two levers successively, whereby the gas is turned on and off at the valve and lighted and extinguished at the burner, substantially as described.

2. In a gas lighter and extinguisher, the burner, the valve controlling the admission of gas to the burner, a pivoted lever, and connections with the valve for operating it, a lighting apparatus for lighting the gas at the burner, a pivoted lever, and connections with the lighting apparatus for operating it, and a spring engaging said lever, in combination with a rotary cam for operating the two levers successively, whereby the gas is turned on at the valve and lighted at the burner, and a second succeeding rotary cam for operating the first lever, whereby the gas is turned off at the valve and extinguished at the burner, substantially as described.

3. In a gas lighter and extinguisher, a burner and a pivoted electrical sparking-lever, and an actuating-spring for said lever, in combination with rotating cams and pivoted bell-crank lever, one end of which is in the path of said cams, whereby it is operated, a spring actuating said bell-crank lever, a pivoted curved lever having rack-teeth, and gearing with which it meshes to regulate its movement, a link connecting the bell-crank lever with the curved lever, and a link connecting said curved lever with the sparking-lever, substantially as herein described.

4. In a gas lighter and extinguisher, the burner, a rotary valve controlling the admission of gas to the burner, and a pivoted electrical sparking-lever having a spring to return it to position, in combination with succeeding rotary cams, independent bell-crank levers having each one end in the path of the cams, whereby each is operated successively by each cam, springs for returning levers to position, a pawl-and-ratchet mechanism for operating the valve, connecting levers and links between said mechanism and one of the levers, and connecting-links between the other of said levers and the sparking-lever, substantially as described.

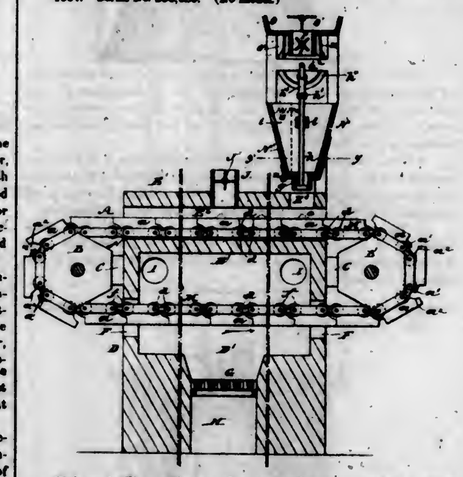
5. In a gas lighter and extinguisher, the burner, a rotary valve controlling the admission of gas to said burner, and a pivoted electrical sparking-lever having a spring to return it to position, in combination with succeeding rotary cams mounted adjustably, a fixed dial by which said cams are accurately adjusted, independent bell-crank levers having each one end in the path of the cams, whereby each is operated successively by each cam, springs for returning the levers to position, a pawl-and-ratchet mechanism for operating the valve, connecting levers and links between said mechanism and one of the levers, and connecting-links between the other of said levers and sparking-lever, substantially as described.

6. In a gas lighter and extinguisher, a burner, a gas-conduit, a valve by which the admission of gas to the burner is controlled, and an electrical sparking-lever for lighting the burner, in combination with a fixed dial and a hand moving over said dial to indicate the time, a wheel moving with the hand, cams adjustably secured to the wheel, pivoted levers operated by the cams, and connections from said levers by which the valve and the sparking-lever are operated, substantially as herein described.

7. In a gas lighter and extinguisher, a burner, a casing having passages for the gas in its walls, and a pipe communication at the bottom of said passages, and a burner at the top, in combination with the rotary valve controlling the inlet of the gas, the sparking-lever for lighting the gas at the burner, rotary adjustable cams on the face of the casing, the fixed dial, whereby the cams may be adjusted to the proper time, the pivoted levers operated by the cams, and connections between said levers and the valve and sparking-lever, substantially as herein described.

8. In a gas lighter and extinguisher, a burner, a gas-conduit, a valve controlling the admission of gas to the burner, and an electrical sparking-lever for lighting the gas at said burner, in combination with rotary cams, pivoted spring-actuated levers operated by said cams, connections from said levers to the valve and sparking-lever, whereby they are operated, and the adjustable rotary disk T, having the lug *t*, adapted to come in contact with the levers, whereby they are held out of position during any given period, substantially as herein described.

388,178. DRIER. ARTHUR DIBB, New York, N. Y. Filed May 18, 1887. Serial No. 238,023. (No model.)



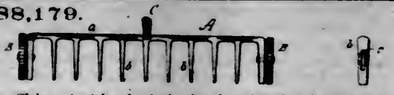
Claim.—1. The sections *a* of porous refractory material secured to suitable frames and connected together to form an endless apron, and the drums B B', over which the apron passes, in combination with the furnace having openings F to the fire-box for the lower part of the apron and a drying-oven above, the hopper N, and means for dropping the material from the hopper to each of the sections *a*, substantially as described.

2. The furnace formed with the apertures F and oven F' above the bridge E, in combination with the drums B B' and the endless drying-apron A, arranged to pass through said apertures and oven over the bridge E, substantially as shown and described.

3. The hopper N, having numerous apertures in its bottom and plungers working therein and a hinged side held normally closed by springs, in combination with a rotary feed-valve in the upper primary hopper and means, substantially as described, whereby the outward movement of the side N' throws the feed-valve out of action, substantially as described.

388,179. LAWN-RAKE. JOSEPH W. CALEF, North Boston, assignor of one-half to William T. Andrews, Boston, Mass. Filed Apr. 14, 1888. Serial No. 270,657. (No model.)

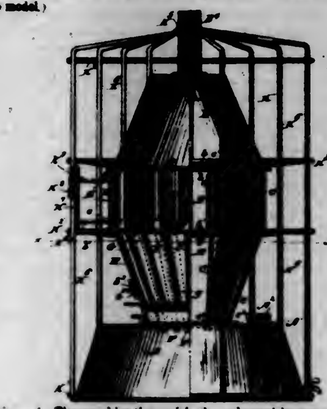
388,179.



Claim.—1. A hand-rake having slotted teeth and wheels provided with bearings which are adjustable in said slot, substantially as set forth.

2. The hand-rake A, composed of the back *a*, teeth *b b*, and handle D, combined with the wheels B B, mounted in the adjustable block *d*, the slots *c c*, and the fastening-nuts *e*, substantially as described.

388,180. CAR-HEATER. GEORGE W. CARTER and WILLIAM T. PICKETT, Canyonville, Oreg. Filed July 13, 1887. Serial No. 244,209. (No model.)

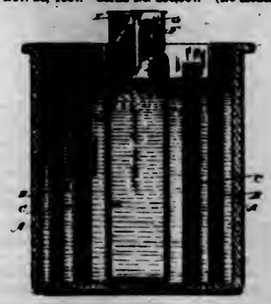


Claim.—1. The combination, with the enlarged base-reservoir A, of the base-section B, middle section, B', and crown-section B², each provided with flanges and tie-rods or bolts C, located outside of and around the stove, passing through the base and through said flanges, substantially as described.

2. The combination, with the water-reservoir base A, of the stove-sections B B' B², rings D D', secured between the sections B B', and pipes E, communicating with the reservoir, passing through the ring D, and terminating below the deflector-plate D', substantially as described.

3. The combination, with the water-reservoir base A, of the stove-sections B B' B², rings D D', secured between the sections B B', pipes E passing through, and pipes F terminating beneath the ring D, substantially as described.

388,181. GALVANIC BATTERY. HOWARD CASSARD, Baltimore, Md. Filed Nov. 23, 1887. Serial No. 256,267. (No model.)



Claim.—1. A galvanic battery consisting of a jar having an acidulated exciting-fluid, a porous cell or bottle immersed in the same and containing an oxidizing agent, and an oxidizable metal and an electrode, both immersed in the same exciting-fluid, substantially as and for the purpose described.

2. A galvanic battery consisting of a jar having an acidulated exciting-fluid, a porous cell immersed within the same and having an oxidizing agent and a hermetically-sealed mouth, and an oxidizable metal and an electrode, both immersed in the exciting-fluid outside of the porous cell, substantially as and for the purpose described.

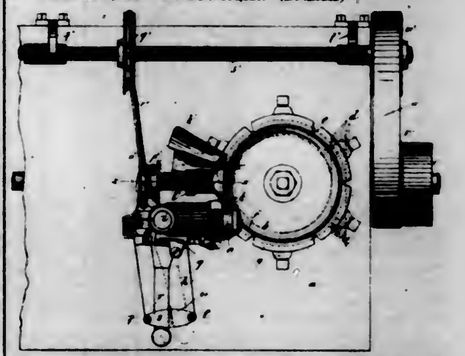
3. The combination, with a galvanic battery, of a cover formed as a cup with a liquid seal, and a heat tube communicating with the fusing-cell of the battery and trapped in the liquid seal, substantially as and for the purpose described.

388,182. LAST-BLOCK FASTENER. WILLIAM OSBY, New York, N. Y., assignor to himself and Paul D. Reed, same place. Filed June 20, 1887. Serial No. 242,073. (No model.)



Claim.—The improved last, consisting of the body, the last-block having in its under side a slot, 14, open at its upper end, the block being formed with a countersunk recess, and the fastener having a shank connected with the last-body and constructed with a flattened head, the under side of said head being fitted to the wall of the countersunk recess, and the head and slot being suitably formed relatively to permit the removal of the block when the head is turned into alignment with said slot, the head when turned into alignment with the slot presenting no projection beyond the line of the base-wall of the slot 14 for a short distance below the upper open end thereof, whereby in removing the block it may be slipped back a short distance before it is lifted, substantially as set forth.

388,183. TRIMMING DEVICE FOR KNITTING-MACHINES. EDGAR C. COVELL, ELISHA S. CRAM, and WILLIAM R. SHERMAN, Laconia, N. H. Filed June 7, 1888. Serial No. 276,289. (No model.)



Claim.—1. The improvement in the art of manufacturing and finishing a knit fabric, which consists in picking or running a single course of stitches of a previously-knit fabric on the needles of a knitting-machine, leaving an edge or portion of such fabric projecting from the needles, and then proceeding with the knitting in such single picked-on course, and simultaneously therewith trimming off such single projecting edge, substantially as hereinbefore set forth.

2. The improvement in the art of manufacturing and finishing a knit fabric, which consists in picking or running on the needles a previously-knit fabric, then proceeding with the knitting of the same, and simultaneously trimming off such projecting edge, leaving a course or fractional part of a course of loops of such trimmed-off edge in the line of loops or stitches by which the previously-knit fabric was picked on the needles, and fulling such first-mentioned course or fractional part of a course into said last-mentioned course or line of loops, as set forth.

3. The combination, with a needle-head and its needles, of trimming-knives, substantially as described, located in close proximity to the needles, whereby an edge projecting from the needles may be trimmed off close to the main fabric as the knitting progresses, substantially as hereinbefore set forth.

4. A rotary trimming-knife, *c'*, having a concaved face, said concave form of face extending from its periphery or cutting-edge inward toward its center, substantially as and for the purpose hereinbefore set forth.

5. The combination, with the needle-head and its needles, of a stationary knife and a rotary knife, *c'*, adapted to co-operate therewith, said rotary knife having a concaved face, and said concave form of face extending from the periphery or cutting-edge of the knife inward toward its center, whereby provision is made for the operation of the knife close to the needles without interference with the beards or hitches of the latter, substantially as and for the purpose hereinbefore set forth.

6. The combination, with the needle-head and needles of a knitting-machine, of a rotary and a stationary trimming-knife adapted to trim an edge projecting from the needles, said rotary knife having a concaved face, and said stationary knife being provided with the guiding-finger *j'*, for bringing the projecting edge into proper position to be trimmed off, substantially as set forth.

7. The combination, with the needle-head and needles of a knitting-machine, the needle-head being provided with clamping-sections beveled on their upper outer edges, of a rotary and a stationary trimming-knife adapted to trim an edge projecting from the needles, said stationary knife being provided with a guiding-finger, *j'*, arranged close to the beveled edge of the clamping-sections, for bringing the projecting edge into proper position to be trimmed off, substantially as set forth.

8. The combination, with the needle-head and needles of a knitting-machine, of a trimming mechanism, substantially as set forth, for trimming off a projecting edge of a fabric picked on the needles, a movable support for said trimming mechanism, means for operating the trimming mechanism and needle-head, and devices, substantially as explained, for moving said support to bring the trimming mechanism into operative or inoperative position, substantially as set forth.

9. The combination, with the needle-head and needles of a knitting-machine, of a trimming mechanism adapted to trim off an edge of a picked-on web projecting from the needle, the guiding-finger *j'*, and guide or head *k'*, substantially as and for the purposes set forth.

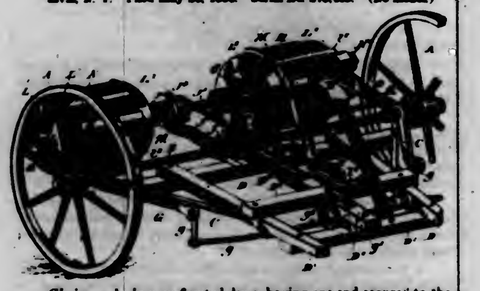
10. The combination, with the needle-head and needles of a knitting-machine, of a trimming mechanism comprising a rotary knife having a concaved face and a stationary knife adapted to co-operate with said rotary knife for trimming off an edge of a fabric projecting from the needles, and means for adjusting said trimming-knives nearer to or farther from the needles, substantially as set forth.

11. The combination, with the rotary cutter and its shaft, of the fast and loose pulleys, having their faces formed substantially as herein shown and described, and means for adjusting the position of said shaft and pulleys for shipping the belt, as set forth.

12. The combination, with the rotary and stationary cutter, of the oil-cup *n'*, provided with a "packing" in contact with the rotary knife, for applying a lubricant to the cutters, as set forth.

13. The combination, with the rotating head, of the push-back, clearing-wheel, and trimming device, located in the rear of the clearing-wheel and front of the push-back, as set forth.

388,184. POWDER-DUSTING MACHINE. EARL A. DOREMUS, Batavia, N. Y. Filed May 28, 1888. Serial No. 275,023. (No model.)



Claim.—1. In a perforated drum having one end secured to the solid metallic head peripherally attached to the drum-head mounted upon the drum-carrying shaft, the feed-opening in the metallic head, provided with longitudinal ribs upon each side thereof, and the feed-cover inclosing the opening and adapted for sliding in grooves in the ribs, in combination with the drum-operating mechanism, arranged substantially as described, and for the purpose hereinbefore set forth.

2. The drum-head having the hub attached thereto, the set-screw in the hub, the hub-carrying shaft, the peripheral metallic head, the perforated shell, the drum-head made adjustable upon the shaft, the head peripherally attached to the drum-head, and the drum-supporting frame, in combination with the operating mechanism, arranged substantially as described, and for the purpose hereinbefore set forth.

3. The perforated drum, the longitudinal slide-ribs upon the periphery of the same, the feed-distributing slides adjustably held in position by the ribs, the drum shaft, and the drum-supporting frame, in combination with the operating mechanism, arranged substantially as described, and for the purpose hereinbefore set forth.

4. The perforated drum, the shaft carrying the same and having the sprocket-wheel mounted thereupon, the carrying and operating wheels, and the revolving wheel-axle having the sprocket-wheel and cloth mounted thereupon, in combination with the raising and lowering mechanism, all arranged and operating substantially as described, and for the purpose hereinbefore set forth.

388,185. BLUE AND COLORING-MATTER. CARL DUISBERG, Elberfeld, Germany. Filed Dec. 14, 1885. Serial No. 185,865. (Specimens.) Patented in Germany Nov. 19, 1885, No. 33,892; in England Nov. 24, 1885, No. 14,494, and in France Dec. 19, 1885, No. 173,062.

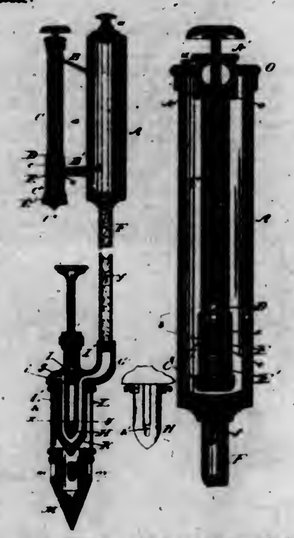
Claim.—The coloring-matter herein described, which is produced by the action of tetrazo-diphenoldiethyl ester (ether) upon the alpha-naphthol alpha-mono sulpho-acid, and which is a black amorphous powder with a bronze hue, forming a violet solution when dissolved in water, being changed with alkali to red, and with concentrated sulphuric acid produces a deep indigo-green-blue color, and dyes cotton not mordanted in an alkaline-soap bath blue, fast to soap and mineral acids, differing from the homologous product of the Letters Patent No. 357,273 by the composition of $2(CH_2)$, substantially as described.

388,186. STEM WINDING AND SETTING WATCH. JULES DUPLAIN, Montreal, Quebec, Canada. Filed June 12, 1888. Serial No. 276,513. (No model.)



Claim.—The combination, in a watch arranged for stem-winding and hand-setting by the crown, of a stem, A', having a collar, *m*, said stem being attached to the crown, with crown *g* and with spring *s*, having catch *k*, and opening *r*, through which the end *l* of the stem A' passes, the whole substantially as described.

388,187. SELF-HEATING SOLDERING-IRON. THEODORE W. EVERELS, Martinsburg, W. Va. Filed Mar. 20, 1888. Serial No. 267,888. (No model.)



Claim.—1. A self-heating soldering-iron having the hollow handle A, the pump-barrel C, plunger D, valve-chamber C', communicating with the interior of the handle, and the spring-actuated valve E, substantially as and for the purpose set forth.

2. A self-heating soldering-iron having a hollow handle and a force-pump located inside of said handle, substantially as and for the purpose set forth.

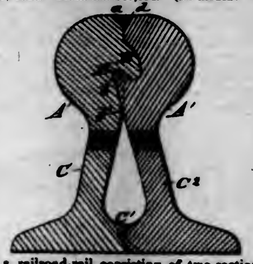
3. A self-heating soldering-iron having a base-piece, G, a U-shaped gas-generator, H, a gas-chamber, *g*, and opening *i*, and a pointed valve, I, substantially as and for the purpose set forth.

4. The combination, with the U-shaped gas-generator H, of the hood K, having a conical tip provided with the slits *k*, substantially as and for the purpose set forth.

5. The combination, with the U-shaped gas-generator H, having the chamfers *h'*, of the hood K, having a conical end provided with slits *k*, a perforated shield, L, surrounding the hood, and a hollow tip, M, having openings *m*, substantially as and for the purpose set forth.

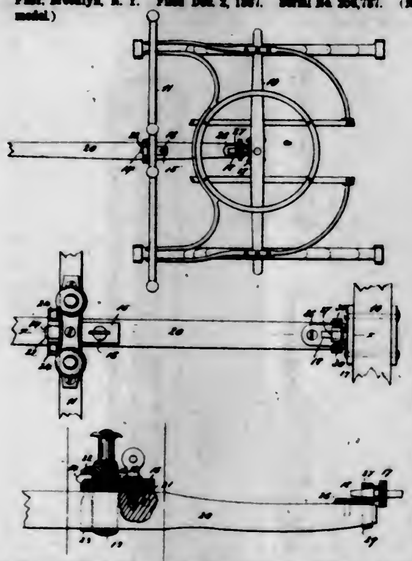
6. A self-heating soldering-iron consisting of the hollow handle A, provided with a pump, the pipe F, containing the wicking *f*, the base-piece G, having the gas-chamber *g* and opening *i*, the gas-generator H, communicating with the pipe F and the gas-chamber *g*, the valve I, the hood K, shield L, having pan L', and hollow tip M, substantially as and for the purpose set forth.

388,188. **RAILROAD-RAIL.** Jeremy A. Ewing, Jackson, Ohio. Filed Feb. 20, 1888. Serial No. 265,051. (No model.)



Claim.—In a railroad-rail consisting of two sections, A and A', having independent outwardly-inclined webs, the combination, with the section A, provided with a vertical head-surface, *a*, longitudinal downward-curved rib B, head-recess *b*, and base-recess C, of the interlocking section A', provided with a vertical head-surface, *d*, recess *d'*, the upwardly-inclined rib E, and base projection *e*, all combined substantially as and for the purpose specified.

388,189. **POLE ATTACHMENT FOR VEHICLES.** William P. Fish, Brooklyn, N. Y. Filed Dec. 2, 1887. Serial No. 256,757. (No model.)



Claim.—1. The combination, with a vehicle running-gear, of longitudinally-extending spurs carried thereby and a pole provided with eyes, one in advance of the other, to receive the said spurs, adapted to receive said spurs, substantially as described.

2. The combination, with a vehicle running-gear provided with forwardly-extending spurs and a rearwardly-extending projection, of a pole provided with eyes adapted to receive the spurs, and with a plate formed with a threaded aperture, and a binding-screw which passes through an aperture formed in the rearwardly-extending projection of the running-gear and engages the threaded aperture of the pole-plate, substantially as described.

3. The combination, with a pole, of plates connected thereto and formed with eyes, a plate arranged for connection with the vehicle running-gear and formed with a forwardly-extending spur and a rearwardly-extending and apertured projection, a set-screw arranged to pass through the aperture of the rearwardly-extending projection and to engage the threaded aperture formed in one of the pole-plates, and a second plate or iron, also arranged for connection with the vehicle running-gear and formed with a forwardly-extending spur or dowel arranged to enter the eye of the second pole-plate, substantially as described.

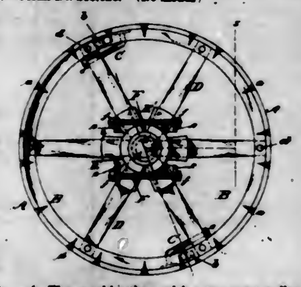
4. The combination, with a pole, of a plate, 21, a clip, 23, by which the plate is connected to the pole, an eye, 22, formed upon the plate, a second plate, 26, a clip, 29, by which the plate is connected to the pole, an eye, 27, formed upon the plate, an iron or plate, 12, arranged for connection with the draw-bar of the vehicle running-gear, a pole-socket, 13, a forwardly-extending spur or dowel, 14, and a rearwardly-extending plate, 15, a binding-screw, 16, passing through an aperture formed in the plate 15 and engaging a threaded aperture formed in the plate 21, and a plate or iron, 17, arranged for connection with the bottom-bed and formed with a forwardly-extending spur or dowel, 18, that is arranged to enter the eye 27, substantially as described.

5. In a pole attachment, the iron 12, having a pole-socket, 13, a forwardly-projecting spur, 14, and a rearward extension, 15, having an aperture, substantially as set forth.

6. The combination, in a pole attachment, with the iron 12, having a pole-socket, 13, a forwardly-projecting spur, and a rearward extension, 15, having an aperture, of the pole-plate having an eye, 22, receiving said spur, and a screw-threaded aperture to register with the aperture in the said extension, and a set-screw, 16, for said apertures, substantially as set forth.

7. In a pole attachment, the combination, with the rear pole-iron, 26, having a longitudinal eye, 27, and a pole-clip, 29, of the running-gear plate 17, having a forwardly-projecting spur, 18, to enter said eye, substantially as set forth.

388,190. **SPLIT PULLEY.** Wallace L. Field, Menasha, Wis., assignor of three-fourths to John Strange, same place. Filed Feb. 4, 1888. Serial No. 263,089. (No model.)



Claim.—1. The combination, with a two-part pulley, of the bent bolts C, secured, respectively, to each part and passing through a spoke on the other part, substantially as described.

2. A two-part pulley having a rim, A, composed of two semicircular sections, each section being united to a semicircular folly, B, the rim overlapping the folly at one end and the folly projecting beyond the rim at the other end, and dowel-pins *b*, uniting the meeting ends of the follies, substantially as described.

3. A two-part pulley having a hub made in halves and united by bolts, each half having weakened portions, whereby it is caused to clamp the shaft in radial lines, some of which are not parallel with the bolts, substantially as described.

4. In a two-part pulley, a hub made in halves, each half having bosses E cored out to form sockets for the spokes and separated to leave weakened portions *z* between them, the bosses nearest the meeting edges of the halves of the hub being provided with lugs *e* to receive the clamping-bolts, substantially as described.

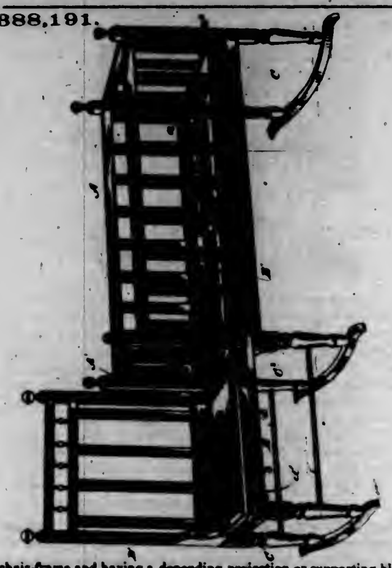
388,191. **COMBINED CRADLE AND ROCKING-CHAIR.** William Fuel and Rudolph Pfaehler, Lost Haven, Pa. Filed May 5, 1888. Serial No. 273,008. (No model.)

Claim.—1. The combination of the cradle-frame, the chair-frame movable into and out of the cradle-frame, and the chair-seat pivotally supported on the chair-frame, whereby it may be turned for use at right angles to the cradle-frame, or may when not in use be adjusted into line with and telescoped in said cradle-frame, substantially as set forth.

2. The combination of the cradle-frame having ways for the chair-frame extending to one end of the cradle-frame, and having each end of the frame practically recessed, the chair-frame fitted to said ways, and the seat pivotally supported on the chair-frame and having a back fixed to it and fitted to the recess of the cradle-frame, the chair-frame being movable into the cradle-frame, substantially as set forth.

3. The combination of the cradle-frame, the chair-frame movable within said cradle-frame, and the seat pivotally supported on the chair-frame and having a depending projection or supporting-block at its front edge, the chair-frame being provided with a bar or bearing for engagement by said supporting-block, substantially as set forth.

388,191.



4. In combination with the cradle-frame and the chair-frame, the seat on said chair-frame, and the back supported pivotally on said chair-frame, whereby it may be turned from its normal position to one at right angles thereto, the chair-frame being movable with reference to the cradle-frame, whereby the chair-back when adjusted to its latter position may be adjusted flat against the end of the cradle-frame, substantially as set forth.

5. The combination, with the chair-frame having a headed stud or studs and the seat pivotally supported on said frame, and having a piece or plate fixed to it and notched to engage the said stud below its head, substantially as set forth.

6. The combination of the chair-frame having the headed studs, the seat, the bar or plate fixed to the under side of the seat and having slots to receive the headed studs, and the pivot-bolt, substantially as set forth.

7. In a combined chair and cradle, the combination of the cradle-frame, the chair-frame movable into and out of the cradle-frame, and the seat pivotally supported on the chair-frame and having a depending projection or block at or near its front edge, the front bar of the chair-frame being arranged for engagement by and to provide a bearing for the supporting-block when the seat is adjusted to position for use, substantially as set forth.

8. The combination, in a combined cradle and chair, of the cradle-frame, the chair-frame movable into and out of the cradle-frame, the seat, the bolt pivoting said seat to its frame, and the spring on said bolt, substantially as set forth.

9. The chair-frame having a cross-bar formed with a recess in its upper side having beveled or inclined walls, the seat supported on said frame and having a bar or plate fitted to enter the recess in the cross-bar, and the pivot-bolt passed through the base-wall of the recess, substantially as set forth.

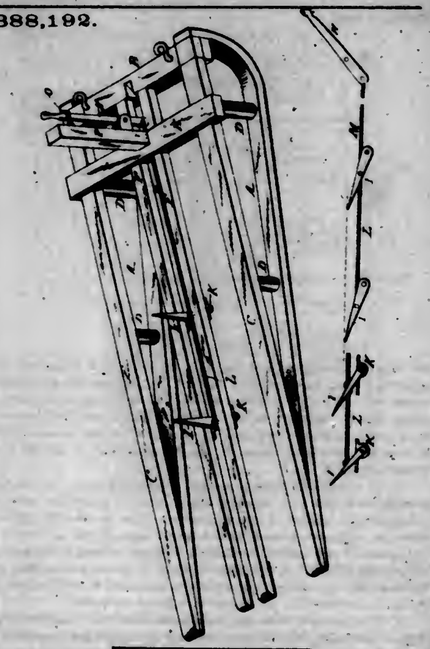
388,192. **DUMPING-SLED.** Richard Gibbs, Auburn, Ind. Filed May 7, 1888. Serial No. 273,603. (No model.)

Claim.—1. The combination, in a sled, of runners having plates inclined from above the bend at the front to nearly the level of the ground at the rear, cross-bars at the front connecting said runners, and intermediate string-pieces inclined from front to rear, the rear ends of said pieces resting on the ground, substantially as described.

2. The combination, with a sled having an upper platform inclined from front to rear, of movable teeth extending above the surface of said platform when turned up, and a holder to retain said teeth in upright position.

3. In a farm-sled, the combination of the runners, an inclined platform consisting of longitudinal bars to support the load, pivoted teeth extending above the platform when turned up, connecting links and rods, as described, and a lever connected to said rods by which the teeth may be manipulated, as set forth.

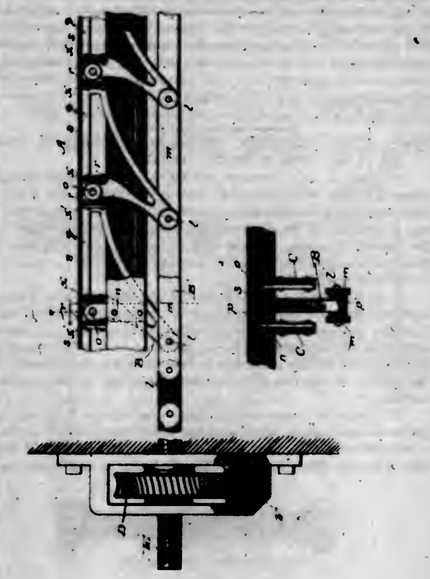
388,192.



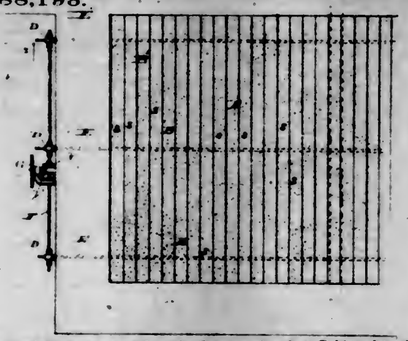
388,193. **MALT-KILN FLOOR.** William Griesser, Chicago, Ill. Filed May 19, 1887. Serial No. 238,764. (No model.)

Claim.—1. A malt-kiln floor formed in sections *s*, each having flanges *r* extending from its lower side near opposite edges, beams C, upon which the sections are supported at the flanges *r*, brackets B, hinged to the supports C near corresponding edges of the sections and extending across and secured to the lower sides of the said sections, and means, substantially as described, for actuating the brackets, substantially as and for the purpose set forth.

2. A malt-kiln floor formed in sections *s*, each having flanges *r* extending from its lower side near opposite edges, beams C, upon whic



388,193.



the sections are supported at the flanges *r*, brackets B, hinged to the supports C near corresponding edges of the sections and extending across and secured to the lower sides of the said sections, a reciprocating bar, F, transverse to the sections and to which the brackets are pivotally connected near their lower ends, and means, substantially as described, for reciprocating the bar F, substantially as and for the purpose set forth.

3. In a malt-kiln floor, a section, *s*, having flanges *r* extending from its lower side near opposite edges, at which flanges the section is supported, a bracket, B, hinged near one corner to the said support below the said section and toward a lateral edge thereof and extending across the said section, to which it is rigidly secured, a transverse reciprocating bar, F, to which the bracket is pivotally connected at its lower end, and means, substantially as described, for reciprocating the bar F, substantially as and for the purpose set forth.

4. In a malt-kiln floor, the combination of sections *s*, each having flanges *r* extending from its lower side near opposite edges, supporting-beams C, upon which the sections rest directly at their flanges *r*, brackets B, rigidly secured to the under sides of the sections and hinged near the edges thereof, at which the sections are tilted for dumping, to the supporting-beams, reciprocating bars F, pivotally connected with the brackets near their lower ends, threaded extensions E upon the reciprocating bars, internally-threaded coupled gear-wheels D upon the threaded extensions, a shaft, F, having worm-threads engaging with the gear-wheels D, and means for turning the shaft F, substantially as and for the purpose set forth.

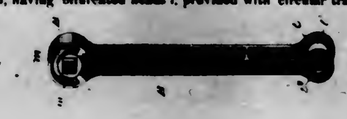
5. A malt-kiln floor comprising, in combination, sections *s*, having vertical flanges *r*, supporting-beams C, upon which the sections rest directly at their flanges, brackets B, rigidly secured in transverse rows to the under surfaces of the sections between the flanges *r* and hinged to the supporting-beams near the edges of the sections upon which they are tilted for dumping, transverse reciprocating bars F, one for each transverse row of brackets, to which they are pivotally connected, and all connected from their adjacent extremities to be operated simultaneously, and means, substantially as described, for reciprocating the bars F, substantially as and for the purpose set forth

388,194. CONVEYER. William Greenbon, Chicago, Ill. Filed Oct. 14, 1887. Serial No. 252,251. (No model.)

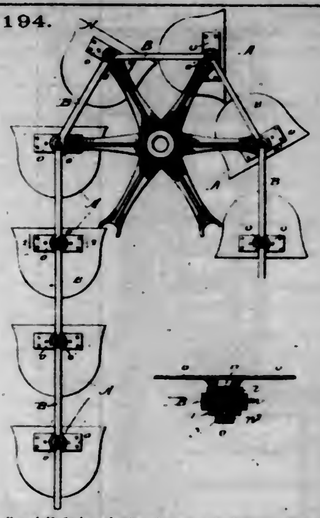
Claim.—1. In a conveyer, endless chains and scoops having arbors provided with non-pivotal bearings for links of the endless chains extending from the scoops in one direction, and pivotal bearings for the ends of the adjacent links extending from the scoops in the opposite direction, whereby each scoop is caused to maintain a fixed position with relation to the direction in which it travels, substantially as described.

2. In a conveyor, endless chains carrying scoops having arbors, each provided with two pivotal bearings and a non-pivotal bearing, and links, each provided at one end with circular openings to fit upon the pivotal bearings of the arbor of one scoop, and at the opposite end with a non-circular opening to fit upon the non-pivotal bearing of the arbor of an adjacent scoop, substantially as and for the purpose set forth.

3. A conveyor comprising, in combination, scoops A, linked together in endless series, plates upon the scoops having arbors *a'*, provided with circular bearings *n* and n^2, and angular bearings *n'* and links B, having bifurcated heads *l*, provided with circular transverse



388,194.



openings l' and l^2, fitting the bearings *n* and n^2, respectively, and solid heads *m*, provided with angular transverse openings *m'*, fitting the bearings *n'*, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

388,195. LAMP-STANDARD. William H. Harrison and J. Gilbert Meehan, Meriden, Conn., assignors to Edward Miller & Company, same place. Filed Mar. 3, 1888. Serial No. 266,546. (No model.)



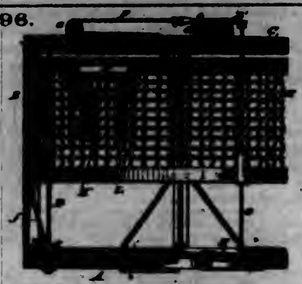
Claim.—1. In a lamp-standard, the combination of the outer tube and an inner tube or rod arranged vertically within said outer tube, the one fixed, the other adjustable, a cramp substantially of ring shape arranged in a chamber in the stationary tube and supported therein upon a bearing, so as to be free to swing up and down, and also free for a certain amount of rotation, the said cramp surrounding the inner tube and adapted to engage therewith, so as to partake of the rotation which may be imparted to said tube, and a cam stationary in said cramp-chamber, upon which the free side of said cramp is adapted to ride under rotation imparted to it, substantially as described, and whereby such rotation of the inner tube and cramp will impart corresponding rise or fall to the cramp.

2. The combination of the outer tube, A, a concentric chamber, E, forming substantially a part of said outer tube, the inner tube, B, vertically adjustable within said outer tube and through said chamber, the said chamber constructed with the horizontal ledge G upon one side and with a stationary cam, I, presenting inclined surfaces J upon the side of the inner tube substantially opposite the said ledge G, with the ring-shaped cramp F around said inner tube, constructed with a projection from one side to rest upon said ledge, and upon its opposite side with the projection K, adapted to engage said cam, the said inner tube constructed of non-cylindrical shape, and the inside of the cramp of corresponding shape, substantially as described.

388,196. ANIMAL-TRAP. William H. Harden, Cadiz, Ga., assignor of one-half to Isaac R. Hagan and Wilson C. McCall, same place. Filed June 13, 1888. Serial No. 276,902. (No model.)

Claim.—1. The combination, with the top and bottom sections, A and C, and the intermediate pillars, B, of the falling cage E, arranged between the pillars and the top and bottom sections, the cord F, attached to the top of the cage and passing through a hole and around a pulley, *a*, of the top section, catch-bar *b*, having a notch in the same and attached to the cord, lip *c*, fixed to the top section and adapted to engage with the said notch, the vertical push-rod G, resting beneath the catch-bar *b* and extending through the top section to the bottom, and the treadle H, attached to the push-rod and forming a part of the floor of the bottom section, substantially as shown and described.

388,196.



2. The combination, with the top and bottom sections, A and C, and the pillars B, connecting them, the guide-rods D, also connecting the top and bottom sections parallel with the pillars, and having spiral springs *r* wound around their lower ends, the falling cage sliding on the guide-rods, spring-catch *f*, attached to the lower ends of the pillars and adapted to engage the cage when down, and suspending and tripping mechanism, substantially as shown and described.

3. The falling cage E, having side inlet, I, having at its inner end an inclined door, *g*, and at its outer end a cut-off door, A, fulcrumed horizontally and having its inner end turned up, as described.

4. The falling cage E, having the top inlet, J, with horizontally-hinged doors K K, provided with counter-weights L L, for holding them together, substantially as shown and described.

388,197. HANDLE ATTACHMENT FOR FILES AND SIMILAR TOOLS. Daniel Harkins, Hudson, Mass. Filed May 8, 1888. Serial No. 273,179. (No model.)



Claim.—1. A file or similar tool having two or more working-surfaces and provided with a shank projecting from one end, and also provided with two transverse notches formed in the end of said file a distance apart equal to the thickness of said file, in combination with a handle provided with a transverse hole through which said shank is adapted to pass, and also provided with two ribs so located and of such a size as to enter and fit said notches in the end of said file or similar tool when it is desired to use one of its broader surfaces, or between which the end of the file is adapted to enter and be held in position thereby when it is desired to use one of its narrower surfaces, and a nut mounted upon the outer end of said shank to clamp said handle to said file or similar tool at right angles to its working-surfaces.

2. A file or similar tool having a threaded shank projecting from one end, and also provided with a transverse notch on either side thereof cut into or formed in the end of said file, in combination with a handle provided with a transverse hole through which said shank is adapted to pass, and also provided with two parallel ribs so located and of such a size as to enter and fit said notches in the end of the said file or similar tool, and a nut mounted upon the outer end of said shank to clamp said handle to said file or similar tool at right angles to one of its working-surfaces.

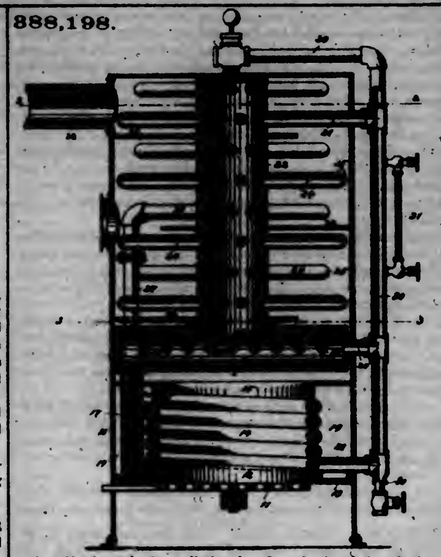
388,198. STEAM-BOILER. Samuel P. Hedges, Greenport, N. Y. Filed Jan. 27, 1888. Serial No. 262,113. (No model.)

Claim.—1. The combination, with an inverted-T-shaped stand-pipe provided with a series of horizontally-projecting tubes, of a coil encircling the fire-box, connected with said stand-pipe, and an outer delivery-pipe connected with said stand-pipe and the coil, substantially as shown and described, whereby a constant and thorough circulation is obtained, as set forth.

2. The combination, with an inverted-T-shaped stand-pipe provided with radiating horizontal capped tubes, of a coil encircling the fire-box and connected with the vertical member of the stand-pipe, and a delivery-pipe connected with the stand-pipe above the coil-connection, substantially as shown and described.

3. The combination, with an inverted-T-shaped stand-pipe and a

388,198.

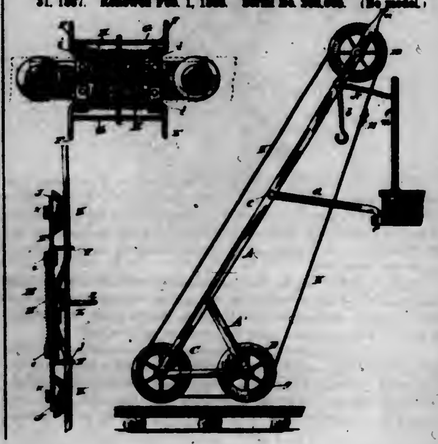


series of horizontal tubes radiating therefrom, having their ends closed, of a coil encircling the fire-box, connected with the vertical member of the stand-pipe, an outer delivery-pipe connected to the vertical member of the stand-pipe above the coil-connection, and a tubular connection between the horizontal member of the stand-pipe, the coil, and delivery-pipe, all combined to operate substantially in the manner set forth.

4. The combination, with an inverted-T-shaped stand-pipe provided with a series of horizontally-projecting tubes, a coil encircling the fire-box connected with the stand-pipe, and a steam-delivery pipe connected with the stand-pipe above the coil-connection, of a series of segmental baffle-plates alternately arranged above the horizontal member of the stand-pipe and top of the boiler, substantially as shown and described.

5. The combination, with an inverted-T-shaped stand-pipe, a series of horizontal tubes projecting from the same, a coil encircling the fire-box and connected with the stand-pipe about centrally thereof, and a supply-pipe connected to the vertical member of said stand-pipe near the top and to the horizontal member and coil, of a series of spaced segmental baffle-plates alternately arranged above the horizontal member of the stand-pipe and top of the boiler-casing, substantially as shown and described.

388,199. APPARATUS FOR PLACING TORPEDOES ON RAILROAD-TRACKS. Joseph R. H. Hedges, Baltimore, Md., assignor of one-half to the Vindust Manufacturing Company, same place. Filed Jan. 31, 1887. Renewed Feb. 1, 1888. Serial No. 262,695. (No model.)



Claim.—1. In apparatus for placing torpedoes on railroad-tracks, the combination of a yoke or frame and an auxiliary frame, grooved wheels journaled in said yoke, a similar wheel journaled in the auxiliary frame, having a continuous channel or recess, an endless band traversing said wheels, and a torpedo-clamp carried by the band, adapted to be tripped and to automatically embrace the flanges of a rail, substantially as described.

2. In torpedo-placing apparatus, the combination of the frame A, the grooved wheels B C, the auxiliary frame, and grooved wheel D, having continuous channel *g*, the endless band traversing these wheels and provided with trip-finger I, and the torpedo-clamp having spring-actuated arms held apart by said finger, substantially as described.

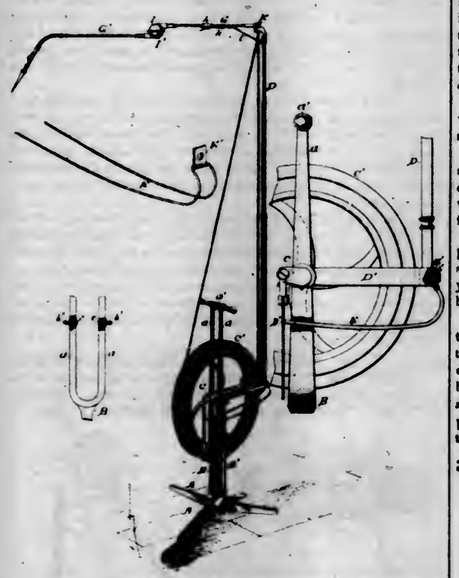
3. In torpedo-placing apparatus, the combination, with the endless belt or band, of a clamp holding at each end a torpedo and having spring-actuated arms for embracing a rail, and devices or means for holding said arms apart, adapted to be automatically tripped or released, substantially as and in the manner described.

4. The combination, with the endless band, of the finger I, loosely held thereto, having its ends bent and formed centrally with the portion *l*, and the clamp E, provided with bent spring-actuated arm F F, having rib G, under which the ends of the trip-finger are turned, the whole operating in the manner set forth and described.

5. The combination, with an oblong strip of metal having at opposite sides the loops *i i*, of the bent arms F F, held in said loops and having rib G, and the springs surrounding said arms, with one of their ends bearing upon the ribs and the other upon the plate, substantially as described.

6. The combination, with the frame, supported as shown, of the hook *b* and springs N, substantially as and for the purpose described.

388,200. DENTAL ENGINE. JOHN HOOD and STEPHEN H. REYNOLDS, Boston, Mass. Filed Jan. 12, 1888. Serial No. 260,490. (No model.)



Claim.—1. In a dental engine, the combination of the base A, a bifurcated and rotating standard, B, the extension-bar D, with bifurcated arms extending at an angle from and pivoted to the bifurcations of said standard, and the handle *a'*, connecting the two parts of the standards above its attachment to the extension-bar, substantially as shown and described.

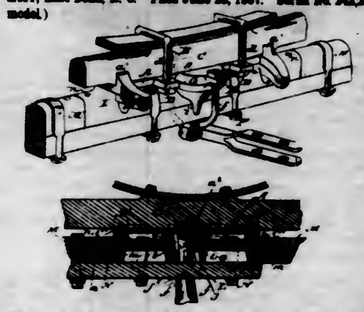
2. In a dental engine, the combination, with the standard and extension-bar having a bifurcated connection with said standard at right angles to the body of the bar, of the double spring E, attached to the bar and adjustable upon the standard, as specified.

3. In a dental engine, the combination of the extension-bar D with the shaft-carrying case G, the sleeve *h*, placed upon said case, the spring-dog *i*, attached to the sleeve, the rack *k*, sliding through the sleeve and engaging with the spring-dog, and the connecting-rod *l*, pivoted at one end to the rack and at the other to the extension-bar to form an adjustable brace for retaining the shaft-case G in any desired position with relation to the extension-bar, as specified.

4. In a dental engine, the combination of the shaft-cases G and G' with the cups I and I', attached by sleeves to said cases and connected together by flanges, forming a universal joint, the parts being adapted to turn one upon the other, substantially as shown and described.

5. In a dental engine, the shaft-cases G and G', united by a globular universal joint, in combination with the shaft inclosed in said cases, consisting of two rigid parts, H and H', within the cases, and the flexible wire coil J, connecting the rigid parts within the globular joint, substantially as shown and described.

388,201. FIFTH-WHEEL. JONATHAN G. HUEY and LEMUEL H. HUEY, Bent Bend, N. C. Filed June 20, 1887. Serial No. 242,200. (No model.)



Claim.—1. The combination of the axle-iron, the lower fifth-wheel section secured thereon and having a king-bolt opening formed through it leading to the axle-iron and provided with a keyway or slot; and the upper fifth-wheel section having a king-bolt provided with a key fitted to the keyway of the lower section, such king-bolt being extended through the opening in the lower section and bearing at its lower end on the axle-iron, substantially as set forth.

2. In a vehicle, a central metallic cap-section provided in its end with sockets fitted to receive the inner ends of the wooden axle-cap sections, substantially as set forth.

3. The combination of the axle-iron, the lower fifth-wheel section secured centrally thereto, the axle-cap formed in sections arranged on opposite sides of and secured at their inner ends to the lower fifth-wheel section and the upper fifth-wheel section, substantially as set forth.

4. The upper and lower fifth-wheel sections, combined with the perch-iron provided with a yoke having its arms extended upon opposite sides of the lower section and secured to the upper section, such yoke being provided with a central upwardly-projected stud, *f'*, all being adapted for use substantially as set forth.

5. The improvement in vehicles herein described, consisting of the lower section having its ends provided with sockets to receive the ends of the wooden axle-cap sections, and provided between its ends with a turn-table portion and concentrically thereof with a king-bolt opening having a keyway or slot, and the upper section having a socket to receive the turn-table portion of the lower section and provided with the king-bolt, formed with a key or feather, substantially as set forth.

388,202. INHALER. ALBERT E. IVES, Missoula, Mont. Filed Jan. 4, 1888. Serial No. 259,603. (No model.)

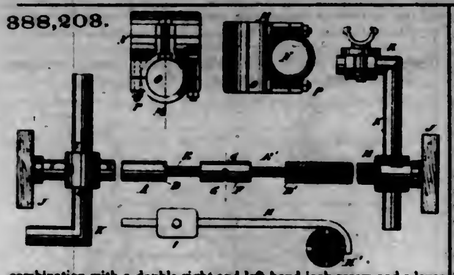


Claim.—The improved instrument for applying powdered medicinal substances to the nasal, throat, or lung cavities, the same consisting of the powder-receptacle having small perforations in its top and a suitable handle, the compressible air-bulb, and the flexible tube connecting it with said bulb, as shown and described, whereby the compression of the latter forces air into contact with the powder in the receptacle, whence it is expelled in jets that carry along some of the fine impalpable portion of the powder, as specified.

388,203. SUPPORT FOR ROCK-DRILLS. PATRICK KELLY, Poughkeepsie, assignor to Addison C. Rand, New York, N. Y. Filed May 13, 1887. Serial No. 238,126. (No model.)

Claim.—1. An extensible tunnel-bar divided into two parts, in

388,203.



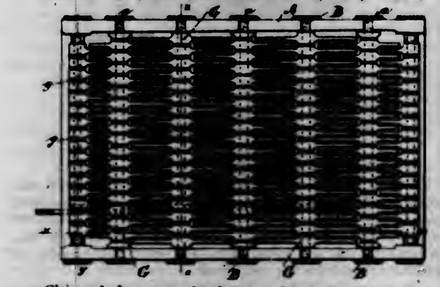
combination with a double right and left hand jack-screw and a lever and adjustable weight thereon for adjusting said bar and preserving said adjustment, substantially as described.

2. The combination, with an extensible tunnel-bar, of a drill-supporting arm bent at its upper end to an angle with the axis of said arm, substantially as described.

3. The combination, with an extensible tunnel-bar, of a drill-supporting arm bent at its upper end to an angle with the axis of said arm, and a three-part hub bored horizontally and vertically and adapted to support said arm upon the tunnel-bar, substantially as described.

4. The combination, with a rock-drill, of an extensible tunnel-bar, a bent drill-supporting arm, and a hub or supporting-bearing for said arm, substantially as described.

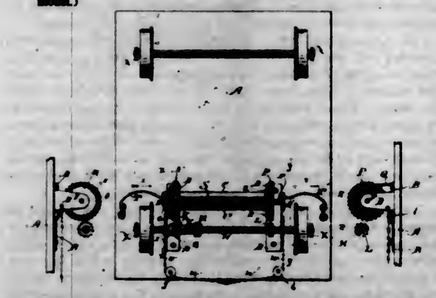
388,204. GRATE FOR FURNACES. THOMAS KIRKWOOD, New York, N. Y. Filed Nov. 4, 1887. Serial No. 254,203. (No model.)



Claim.—1. In a grate for furnaces, the combination, with supporting cross-bars, of fuel-bars formed in series with intermediary or dividing grooves *g*, whereby said fuel-bars are adapted to be separated, substantially as set forth.

2. In a grate for furnaces, the combination, with supporting cross bars B, of the fuel-bars G, cast onto the said cross-bars and formed in series with intermediary dividing-grooves *g*, whereby the said fuel-bars are rigidly attached to the said cross-bars and are adapted to be separated, substantially as set forth.

388,205. CAR BRAKE AND STARTER. DALLAS KNOWLTON, Brantford, Ontario, Canada. Filed Jan. 4, 1888. Serial No. 259,601. (No model.)



Claim.—1. In a car brake and starter, the combination, with one of the wheel-axles, a fixed driving and a loose winding pinion on said axle, and a clutch mechanism for locking the loose pinion to the axle, of a shaft, connected bearings therefor adjustable toward and from the wheel-axle, a spring at either end of said bearings to hold the same in a normal position away from the wheel-axle, a loose winding-wheel and a driving-wheel on said shaft adapted to gear with the winding or driving pinion on the wheel-axle, a spring coiled on the shaft and connected with the winding and driving wheels, a ratchet-and-pawl mechanism to lock the winding-wheel against rotation in one direction, a fixed stop to lock the driving-wheel against rotation, and actuating mechanism to move either end of the connected shaft-bearings toward the wheel-axle, substantially as and for the purposes described.

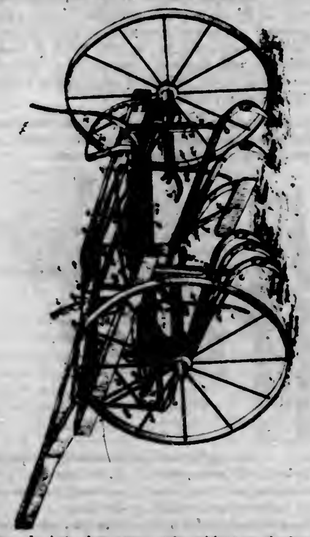
2. In a car brake and starter, the combination, with one of the wheel-axles, a fixed driving and a loose winding pinion on said axles, and a friction-clutch mechanism for locking the loose pinion to the axle, of a shaft, connected bearings therefor adjustable toward and from the wheel-axle, a spring at either end of said bearings to hold the same in a normal position away from the wheel-axle, a loose winding-wheel and a driving-wheel on said shaft adapted to gear with the winding or driving pinion on the wheel-axle, a spring coiled on the shaft and connected with the winding and driving wheels, a ratchet-and-pawl mechanism to lock the winding-wheel against rotation in one direction, a fixed resilient stop to lock the driving-wheel against rotation, and actuating mechanism to move either end of the connected shaft-bearings toward the wheel-axle, substantially as and for the purposes specified.

3. The combination, with the frame C, arranged to slide in bearings, and the springs T and T' at opposite ends of said frame, of the chains W and W', connected with the frame ends, and the lever Y, connected with said chains, whereby either end of the frame may be displaced against the stress of its spring and thereby automatically returned into its normal position, substantially as and for the purposes specified.

4. The combination, with the frame C, arranged to slide in bearings, the springs T and T' at opposite ends thereof, the pendent resilient stop Q, the shaft F, mounted in said frame, and the spring-actuated wheel P, provided with pins projecting from one face thereof engaging the stop Q, of the chains W W', connected with either end of the frame, and the lever Y, connected with both chains, substantially as and for the purposes specified.

5. The combination, with the wheel-axle, a fixed driving and a loose winding pinion on said axle, and the friction-clutch I K V U, of the sliding frame C, the shaft F, mounted therein, the power-spring S, a winding and driving wheel at opposite ends of said spring and connected therewith, said wheels being adapted to mesh with the winding and driving pinions, respectively, on the wheel-axle, the springs T and T', arranged at opposite ends of the frame C and connected therewith, the fixed stop Q, the ratchet and pawl M O, and the operating-chains W W', said parts being arranged for operation substantially as and for the purposes specified.

388,206. CULTIVATOR. JACOB W. KRAUS, Sterling, Ohio. Filed May 9, 1888. Serial No. 273,372. (No model.)



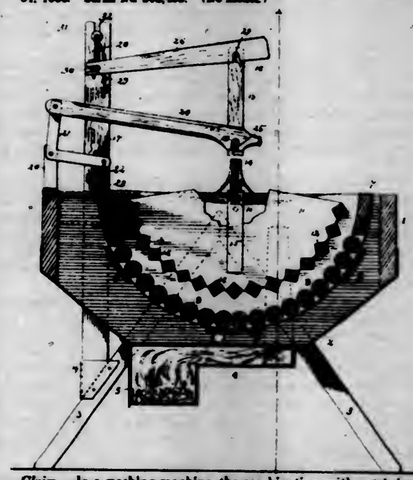
Claim.—1. As an improvement in cultivators, the lever having a spring inclosed in its upper end, the sleeve fitted on and inclosing said end of the lever and having coincident apertures, in combination with the rack-bar, substantially as shown and described.

2. In a cultivator, the combination, with the cultivator-frame, the short axles, the arms projecting forwardly therefrom, and the connecting-rods, of the curved arm G, having a looped end, and the plate or lug secured to said frame and around which said loop is passed, substantially as shown and described.

3. The combination, with the frame and the drag-bars, of the U-shaped hanger-bars b^3, the collars b^4, passed around connecting-bars of said drag-bars, the eyes or staples d, the curved lever D, the arm D', and the lever E, connected to said former lever, substantially as shown and described.

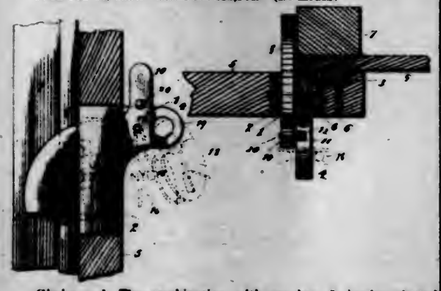
4. In a cultivator, the combination, with the frame and the rocking bar, of the rear hanger-bars having the bars provided with T-shaped ends, the spring encircling said bars, the sleeves having apertured cheeks, the U-shaped collars, and the cross-pins, substantially as shown and described.

388,207. WASHING-MACHINE. John W. Lanwell, Augusta, Kans., assignor to himself and Joseph Hadley, same place. Filed Jan. 31, 1888. Serial No. 262,462. (No model.)



Claim.—In a washing-machine, the combination, with vat 1, having post 20 and removable uprights 17, of removable reciprocating rubbers 7 and 11, the latter having uprights 15, with cross-bars 16, and the operating mechanism consisting of the bell-crank lever 21, link 22, detachable connecting-bar 24, with notch 25, engaging bar 16, crank-shaft 28, with handle 31, mounted in uprights 17, and detachable connecting-bar 26, with notch 27, engaging cross-bar 16 in uprights 15, substantially as described.

388,208. SEAL-LOCK. George W. Lewis, Portsmouth, Va., assignor to himself, Alexander P. Orne, and Leroy C. Goodwin, same place. Filed Oct. 17, 1887. Serial No. 252,871. (No model.)



Claim.—1. The combination, with car-door 5, having slotted casing 2, of eccentric locking-block 1, pivoted therein, lip 10, having hole 13, soft-metal pin 11, and arm 4, projecting from the side of the car adjacent to lip 10, substantially as described.

2. In seal-locks, as a new article of manufacture, a car-door fastening consisting of slotted metallic casing 2, having projection 4, and the locking-block 1, having lip 10, with perforation 13, and eccentrically pivoted in said casing, substantially as described.

3. The combination, with slotted casing 2, having projection 4, and locking-block 1, eccentrically pivoted in said casing, having lip 10, with perforation 13, of a fragile seal, substantially as set forth.

388,209. STATION-INDICATOR. George C. Logan, New Orleans, La. Filed May 31, 1888. Serial No. 275,045. (No model.)



Claim.—1. In a station-indicator, the combination, with a drum and an endless indicating-belt carried by said drum, of an air-cylinder below the drum, a piston reciprocating in said cylinder, a trip-rod connected to the piston, a pawl on the trip-rod for engaging the drum to rotate the same, and a latch on the said trip-rod and engaging the drum to lock it in position, substantially as described.

2. In a station-indicator, the combination, with a drum provided with pins projecting from its ends, and an indicating endless belt carried by said drum, of an air-cylinder below the drum, a piston in the said cylinder, a trip-rod secured to the piston and projecting past the drum, a spring-pressed pawl carried by the trip-rod and engaging the pins of the drum to rotate the same by the movement of the said rod, and a latch carried by the trip-rod and engaging the pins on the drum for holding it in the position to which it has been moved, substantially as herein shown and described.

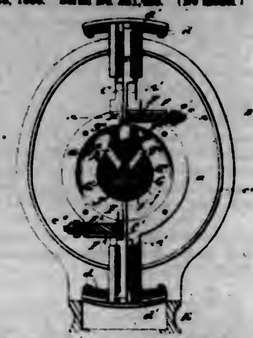
3. In a station-indicator, the combination of a polygonal drum provided with lugs projecting from the angles of the drum, an indicating-belt consisting of flat boards united a short distance apart by links to receive the lugs on the drum between them, and means for rotating said drum, substantially as herein shown and described.

4. In a station-indicator, the combination, with a polygonal drum provided with pins projecting from its ends and with lugs projecting from the angles of the drum, and an endless belt carried by the drum and consisting of spaced slats united by links, of an air-cylinder below the drum, a valved piston in the said cylinder, a trip-rod secured to the piston and projecting past the drum, a spring-actuated pawl mounted on the trip-rod and engaging the pins on the end of the drum, and a pivoted latch on the trip-rod above the said pawl and engaging the said pins to hold the cylinder in the position into which it has been moved, substantially as herein shown and described.

5. In a station-indicator, the combination, with a drum and an endless indicating-belt carried by the said drum, of an open-top cylinder below the drum, a centrally-apertured piston provided with a tubular piston-rod and with ports leading from the central aperture, a valve in the said piston and provided with a rod extending into the tubular piston-rod and adapted to be engaged by a projection carried by the frame, and means for operating the drum from the said piston, substantially as herein shown and described.

6. In a station-indicator, the combination, with a casing, a drum journaled in the upper part of the casing, and an endless indicating-belt carried by the drum, of an open-top air-cylinder in the lower part of the casing, a centrally-apertured piston provided with a tubular rod and with ports leading from the central aperture, a spring surrounding the tubular rod between a collar on the piston and a guide for the piston-rod, a valve in the piston provided with a rod projecting through the tubular rod, a fixed projection in the casing against which the upper end of the said valve-rod abuts, and means for operating the drum from the piston, substantially as herein shown and described.

388,210. ROTARY ENGINE. John Marvin, Northport, N. Y. Filed Dec. 12, 1886. Serial No. 221,423. (No model.)



Claim.—1. The combination, with the cylinder of a rotary engine, of an eccentric surrounding the same, radial vanes working in the cylinder and connected to the horizontal flange e^2 of the eccentric by the anti-friction wheels e^3, carried by the vanes, one upon the outer and the other upon the inner surface of said flange, substantially as shown and described.

2. The plate A B of the cylinder placed upon a fixed hollow shaft and provided with radial vanes C, connected to the surrounding eccentric D, and formed with tangential boxes F', adjacent to the vanes, in combination with the packing following F', fitted in the boxes, substantially as described.

3. The shaft G, formed with steam-passages and with the projections f between the steam-ports, in combination with the packing J, rings j K K', and the cylinder placed thereon, and the vanes C C, and eccentric D for operating the vanes, substantially as described.

4. The cylinder placed upon the fixed shaft G and provided with radial vanes, in combination with the eccentric D, and the yoke L', for connecting the shaft M to the cylinder, substantially as described.

388,211. BARBER'S CHAIR. Fred Mergenthaler, Chicago, Ill., as signor to himself and Hugo Heintzler, same place. Filed Feb. 5, 1887. Serial No. 226,694. (No model.)



Claim.—In a tilting-chair, the combination, with the pivoted rod F, arm H, connected therewith, and rod I, connecting said arm with the chair-seat, of the arm E, rigidly connected at one end with the rod F, treadle B, pivoted to the other end of said arm, rack a, for engaging the lower end of said treadle, and a stop to limit its motion relative to the arm E, substantially as described.

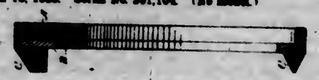
388,212. BUTTON. Frederik Meyers, Brooklyn, N. Y., assignor to himself and John H. Pratt, Jr., same place. Filed Jan. 17, 1888. Serial No. 261,060. (No model.)

Claim.—1. In a self-fastening button, the combination, with a face-plate, of a back-plate formed with a centrally-apertured neck or projection, a spring whose bow is interposed between the plates, said spring having an eye projecting downwardly into the neck or projection of the back-plate and registering with the back-plate opening, and a stud or shank for engagement with said eye, substantially as described.



2. In a self-fastening button, the combination, with a face-plate, of a black-plate connected thereto and formed with a centrally-apertured neck or projection, 13, a spring, 14, formed from a wire bent to form a circular section, 3, and then inward, as at 4, downward, as at 5, outward and again inward, as at 6, upward, as at 7, and outward, as at 8, and a shank formed with a pointed head, and an annular groove, 16, which is arranged to receive the sections 6 of the spring 14, substantially as described.

388,213. HORSESHOE. Charles Miller, New York, N. Y. Filed Jan. 16, 1888. Serial No. 261,104. (No model.)

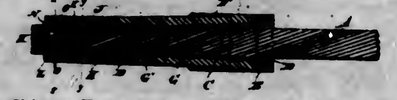


Claim.—1. A blank for horseshoes, consisting of a steel strip bent into proper form with a thin strip of wrought-iron welded to its under side, substantially as described.

2. A horseshoe having its body portion formed from steel with a thin strip of wrought-iron welded to its under side, and having calks welded to the under side of said strip, substantially as described.

3. A horseshoe having its body portion formed from steel with a thin strip of wrought-iron welded to its under side, and having steel calks welded to the under side of said strip, substantially as described.

388,214. AXLE-SPINDLE AND BEARING. Charles V. Mosher, Fairmount, Ind. Filed Sept. 20, 1887. Serial No. 250,188. (No model.)



Claim.—1. The conical spindle provided with the reduced portion D, of the sleeve H, locked to the reduced end of the spindle, to turn therewith, and provided with an enlarged and apertured end, L, the nut K, screwed on the end of the reduced portion of the spindle, and provided with recess N, and the pins O in the recess N and apertures of the end L of the sleeve H, substantially as herein shown and described.

2. In a vehicle-spindle and bearing, the combination, with the bearing F, having the outwardly-flaring openings G G', of the spindle C, having the reduced portion D, screw-threaded at its outer end and provided with the groove I, the sleeve H, having the enlarged end L and provided with the pin J, the nut K, having the annular recess N, and the pins O, substantially as herein shown and described.

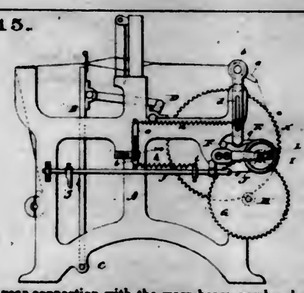
388,215. LET-OFF MECHANISM FOR LOOMS. James Mosher, Goldstick, R. I. Filed Mar. 3, 1888. Serial No. 266,576. (No model.)

Brief.—As the tension on the warp varies the sliding bar is correspondingly set, so that the lay in its forward movement will carry the bar through different distances. As the bar is thus driven forward by the lay the tension-bar is correspondingly pressed against the warps, which immediately react as soon as the strain is removed and press the tension-bar back to its former position, and thus, by means of the attached cord, turning a pulley which can move in but one direction, and through suitable gearing turning the warp-beam as well.

Claim.—1. In a loom, the combination of the warp-beam and lay, the wheel I, in gear-connection with the warp-beam, a pawl and ratchet to prevent the rotation of the said wheel I in one direction, but leave it free to rotate in the opposite direction, the tension-bar a, its lever d, extending from said tension-bar, a frictional band, e, having one end in connection with said lever and extending around said wheel I in frictional contact therewith, the spring A, and an extension from said band to a point forward of the lay, the said extension constructed to engage the lay in the forward or beating movement of the lay, substantially as described.

2. In a loom, the combination of the warp-beam and lay, the

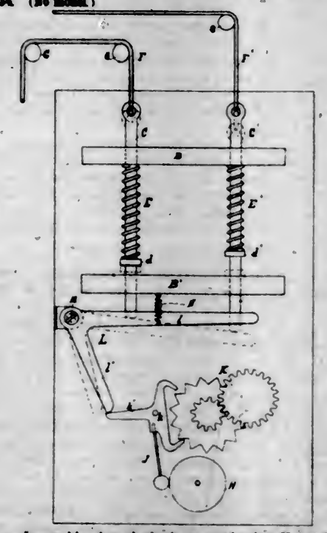
388,215.



wheel I, in gear-connection with the warp-beam, pawl and ratchet to prevent the rotation of the wheel I in one direction, but leave it free to rotate in the opposite direction, the tension-bar *a*, over which the warps pass, lever *d*, extending from the said tension-bar, a frictional band, *e*, having one end in connection with said lever and extending around said wheel I in frictional contact therewith, an extension from said band to a point forward of the lay, the said extension constructed to engage the lay in the forward or beating movement of the lay, the two-armed lever *o l*, having the arms thereof of different lengths, differential springs *h n*, each hung by one end to the respective arms *o l* of the said lever, the other end of the spring *h* engaged with the said band, the other end of the said spring *n* hung to the lever *d* between the tension-bar and the point where the said band is attached to said lever *o l*, substantially as described.

3. In a loom, the combination of warp-beam and lay, the wheel I, in gear-connection with the warp-beam, said wheel provided with a pawl and ratchet to prevent the rotation of the said wheel I in one direction, but leave it free to rotate in the opposite direction, the tension-bar *a*, its lever *d*, extending from said tension-bar, a frictional band, *e*, having one end in connection with said lever and extending around said wheel I in frictional contact therewith, and an extension from said band to a point forward of the lay, the said extension constructed to engage the lay in the forward or beating movement of the lay, the said pawl hung on a stationary pivot, with a cam-shaped spring, *i*, and a pin, *f*, projecting from said pawl and adapted to work over said cam-shaped spring, substantially as described.

388,216. COMBINED FIRE AND BURGLAR ALARM. WILLIAM B. MURRAY, Minneapolis, Minn., assignor to Nathan Underwood, Jr., and Edward D. MacDonald, same place. Filed Nov. 10, 1887. Serial No. 254,734. (No model.)



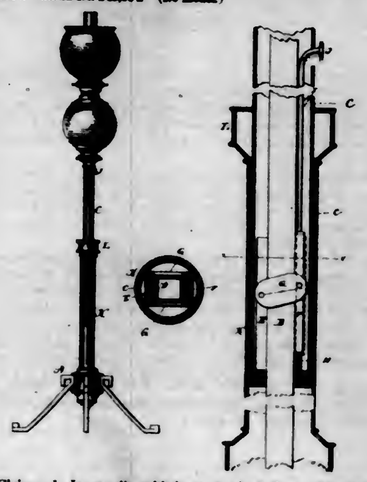
Claim.—In combination, clock-alarm mechanism K *k k'* J H, tension device B B' C E *d*, bell-crank lever L, fulcrumed at M and having its arm *l* in the path of the movable part C of said tension device, and having its other arm in engagement with the lever-arm *k'* of the clock-escapement *k* when in its normal position, a retraction-spring, N, for returning said lever to its normal position, and the tight combustible cord F, attached at one end to the movable part C of said tension device, extending directly or indirectly to the parts of a room or building likely to take fire or to be disturbed by burglars, as and for the purpose set forth.

388,217. MANUFACTURE OF SODIUM-CHLORATE. RUDOLF K. MURRAY, Seaforth Hall, near Liverpool, County of Lancaster, and GEORGE RUDDLESDIN, Northwich, County of Chester, England. Filed Apr. 17, 1888. Serial No. 270,982. (No specimens.) Patented in England Oct. 31, 1888, No. 5,139; in Germany Nov. 6, 1888, No. 47,739; in Belgium Nov. 12, 1888, No. 82,180; in France Nov. 12, 1888, No. 194,886, and in Austria-Hungary Jan. 6, 1894, No. 43,033 and No. 57,978.

Claim.—1. The process of manufacturing chlorate of soda by treating magnesia mixed with water with chlorine, and subsequently effecting the decomposition of the resulting magnesian liquor by means of caustic soda or carbonate of soda, or mixtures of the same, substantially as described.

2. The process of manufacturing chlorate of soda by treating magnesia mixed with water with chlorine, then boiling down the resulting magnesian liquor to crystalline cut magnesium-chloride, and then decomposing the liquor by means of caustic soda or carbonate of soda, or mixtures of the same, substantially as described.

388,218. LAMP-STANDARD. WILLIAM PATNER, Meriden, Conn., assignor to the Meriden Brass Company, same place. Filed July 11, 1887. Serial No. 243,894. (No model.)



Claim.—1. In an adjustable lamp-standard, the combination of a stationary upright, B, a tube, C, surrounding said upright, and carrying the lamp, and having a collar, D, at its inner end, the said surrounding tube movable longitudinally on said upright, a shoe, E, fixed to said collar and so as to bear upon one side of said upright, a shoe, F, upon the opposite side of said upright, but free for limited vertical movement, diagonal links G, connecting the fixed shoe E on one side of the upright with the movable shoe F on the opposite side of said upright, and a spring supported by said collar and arranged to bear yieldingly in a vertical direction upon said movable shoe F, substantially as described.

2. In an adjustable lamp-standard, the combination of a stationary upright, B, a tube, C, surrounding said upright and carrying the lamp and having the collar D on its inner end, the said surrounding tube movable longitudinally on said upright, a shoe, E, fixed to said collar and so as to bear upon one side of said upright, a shoe, F, upon the opposite side of said upright, but free for limited vertical movement, diagonal links G, connecting the fixed shoe E on one side of the upright with the movable shoe F on the opposite side of said upright, and a spring supported by said collar and arranged to bear yieldingly in a vertical direction upon said movable shoe F, with a jacket fixed to the base and surrounding the lower part of said tube with a connection from said movable shoe F to a point in the said tube above the said jacket, substantially as described.

388,219. WELL. HENRY PERKINS, New York, N. Y. Filed Apr. 19, 1888. Serial No. 271,189. (No model.)

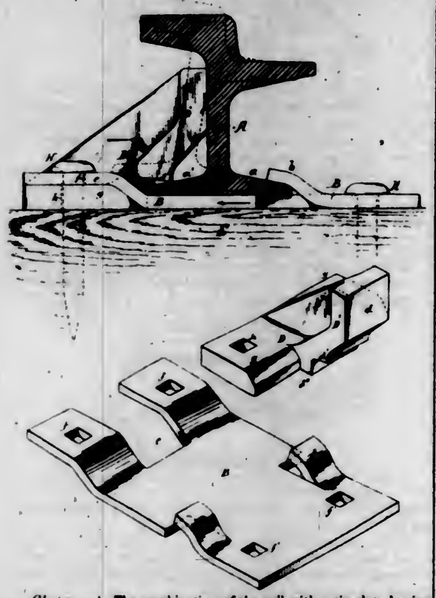
Claim.—1. A cylindrical well-curb support, 1, having perforations 7, cutting-tooth 5, flange 2, with angle-iron annular support 3, and brace-rods 4, substantially as described.

388,219.



2. A well constructed with the cylindrical curb-support 1, having perforations 7 and cutting-tooth 5, and flange 2, with angle-iron annular support 3, and brace-rods 4, and the masonry curbing 6, resting on flange 2, substantially as shown and described.

388,220. RAIL-FASTENING. JAMES GOBIN, Jr., Philadelphia, Pa., assignor to William Wharton, Jr., and Company, Incorporated, same place. Filed May 4, 1888. Serial No. 272,764. (No model.)



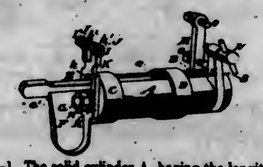
Claim.—1. The combination of the rail with a tie-plate having lips which overlap one of the base-flanges of the rail, and with a brace-piece adapted to bear against the opposite side of the rail and transversely detachable from the tie-plate, substantially as described.

2. The combination of a rail with a tie-plate having lips overlapping one of the base-flanges of the rail with a brace-piece adapted to bear against the opposite side of the rail and having side wings provided with spike-holes, and tongues on the tie-plate overlapping the said side wings of the brace-piece, and also provided with spike-holes, so that when the spikes are driven through these holes the tie-plate and brace will be secured to the rail and to each other, substantially as set forth.

3. The combination of a rail and a tie-plate having lips at one side adapted to overlap one of the base-flanges of the rail, with a brace-piece adapted to bear against the opposite side of the rail and having side wings with spike-holes therein, and tongues on the tie-plate overlapping the side wings of the brace-piece and provided with spike-holes, the spike-holes of the tongues overlapping the spike-holes of the brace-piece, whereby the spike or bolt acts as a wedge to draw the tie-plate and brace-piece together, substantially as described.

4. A struck-up metallic tie-plate having portions cut out and struck up to form lips *b b*, with a cut-out portion, *c*, to form tongues, said tongues being struck up into the position and for the purpose described.

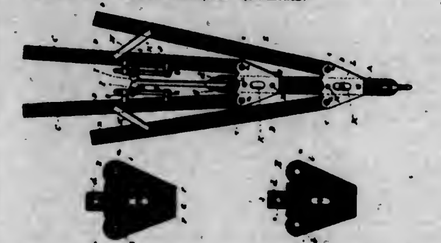
388,221. SAW-SWAGE. REMELAIN B. REMER and OMAR A. ADAMS, Lakeview, Mich. Filed Jan. 6, 1888. Serial No. 259,892. (No model.)



Claim.—1. The solid cylinder A, having the longitudinal groove *c*, the anvil F, arranged on the bottom of said groove, the bands C D, and the end-beveled die E, in combination with suitable mechanism for holding the saw-blade, as and for the purpose set forth.

2. In a saw-tooth swage, the combination of a cylinder, A, with fixed uprights at one end, adjustable upright at the other, and clamp screws and nuts to hold the saw-blade adjustably, as described.

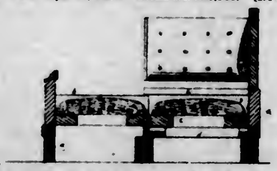
388,222. HARROW. MARION M. REMER, Gossett, Ill. Filed Mar. 20, 1888. Serial No. 267,944. (No model.)



Claim.—1. In a harrow, the combination, with the central beam, the front and rear pairs of wing-beams, and the braces I, of the coupling-plates having the parallel longitudinal ribs providing the bearing portion and having the lateral wings, and the plate having the parallel ribs, the lateral wings, and the rear lug, *d*, provided with the upwardly-projecting cylinder-stud *e*, the said plates placed in pairs above and below the beam, substantially as specified.

2. In a harrow, the combination, with the central beam and the wing-beams, of the coupling-plates, the links shorter than the distance between pivotal points of the front and rear wing-beams, the bearing-rods secured in the brackets Z, and the adjustable braces having the eyebolts S, the nuts *h*, and the washers having the elongated opening, substantially as specified.

388,223. EXTENSION-LOUNGE. BERNHARD REMPEL, Brooklyn, N. Y. Filed Apr. 17, 1888. Serial No. 270,919. (No model.)



Claim.—The combination, in a sofa-frame, of a drawer sliding back and forth in said frame, ledges *c c* at each end of said sofa-frame, and a detached seat-frame normally suspended on said ledges and adapted to be lowered to the space occupied by the drawer when the latter is drawn out to form the bed, substantially as described.

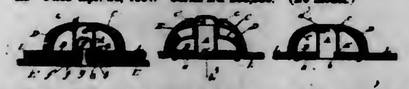
388,224. PRINTER'S GALLEY. FREDERICK SMILEY, Brooklyn, N. Y. Filed Nov. 10, 1887. Serial No. 254,751. (No model.)

Claim.—As an improved article of manufacture, a printer's galley consisting of the angular side and end pieces, B B', having the vertical longitudinal rib A on the horizontal member *b'* of the said side and end pieces, and the bottom A, having its edges bent upward over and upon the said rib, as set forth.

388,224.



388,225. SEPARABLE BUTTON. MADISON D. SHIPMAN, De Kalb, Ill. Filed Apr. 20, 1887. Serial No. 235,530. (No model.)

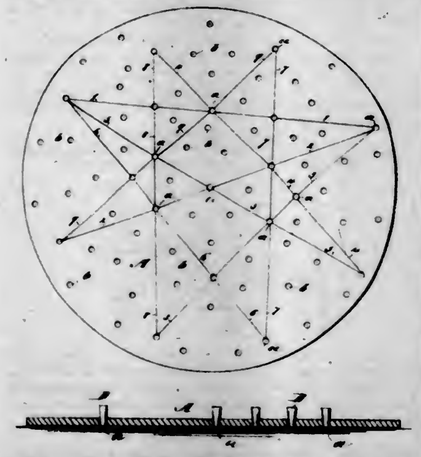


Claim.—1. In a button-head of a separable button, the combination, with the shell, which is secured to the lower or under side of the material and contains within it a stud-receiving tube and a spring-catch which works in an opening made in a side wall of said tube for engagement with a coacting stud, of a second shell clamping on the upper side of the material and secured to the shell below the material by clinching, and the outer or inclosing shell, E, secured by clinching to said second or upper shell, substantially as and for the purposes set forth.

2. In a separable button, a button-head comprising the stud-holding tube A, provided with notch *a'* in its side and a spring-catch having its catching portion in said notch, the shell C, secured to the base-flange of said tube and adapted to be applied to the lower side of the material, and the shell D, applied on the upper side of the material, the said shells being secured together with the material between by clinching, substantially as and for the purposes set forth.

3. In the button-head of a separable button, the combination, with a stud-receiving tube having an annular base-flange and a notch or opening in its side wall neighboring its base-flange, and the spring-catch, which has its body portion exterior to said stud-receiving tube and its catching portion seated in the notch of said tube, of the shell C, which has its lower edge secured to the base-flange of said tube and its wall inclosing both the said tube and spring-catch, and also clamping on the under side of the fabric, and the coacting shell D, clamped on the upper side of the material and secured by its upper end with the upper end of the lower side shell, C, substantially as and for the purposes set forth.

388,226. PUZZLE. LOUIS E. SIMPSON, New York, N. Y. Filed Nov. 12, 1887. Serial No. 254,946. (No model.)

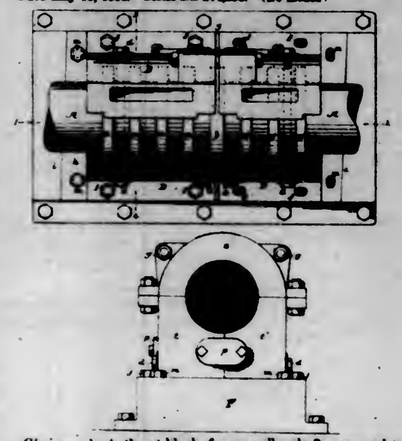


Claim.—1. A puzzle consisting of a board provided with a series of pin-apertures arranged in intersecting lines and baffle-apertures promiscuously arranged upon the board contiguous to said lines of pin-apertures, substantially as shown and described.

2. A puzzle consisting of a board provided with series of five pin-apertures arranged in nine intersecting lines and baffle-apertures promiscuously arranged upon the board contiguous to said lines of pin-apertures, substantially as shown and described.

3. In a puzzle, the combination, with a board provided with series of five pin-apertures arranged in nine intersecting lines and baffle-apertures promiscuously arranged upon the board contiguous to said lines of pin-apertures, substantially as shown and described, of a series of nineteen pegs adapted for insertion in the pin-apertures, substantially in the manner and for the purpose herein set forth.

388,227. THRUST-BLOCK. SIMMONS H. SMITH, Philadelphia, Pa. Filed May 18, 1888. Serial No. 274,253. (No model.)



Claim.—1. A thrust-block for propeller-shafts, recessed to receive the collars or flanges of the shaft, and having that portion below the horizontal center of the shaft made in parts divided longitudinally in a vertical plane, so that they can be removed transversely without disturbing the shaft, all substantially as specified.

2. A thrust-block for propeller-shafts, grooved for the reception of the collars or flanges of the shaft, and made in parts divided longitudinally in a vertical plane, so that each part can be removed transversely without disturbing the shaft, all substantially as specified.

388,228. ANTI-FRICTION BEARING. THOMAS H. SUMNER, Philadelphia, Pa., assignor, by direct and mesne assignments, to John F. Vom same place, and John W. Barry, Bridgeville, Pa. Filed Jan. 12, 1888. Serial No. 260,501. (No model.)



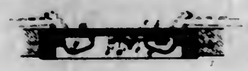
Claim.—1. The combination of a shaft or journal and its box, rollers forming the bearings for said shaft or journal, and bearing-blocks on which said rollers are free to swing, all substantially as specified.

2. The combination of the shaft or journal and its box, the anti friction rollers, bearing-blocks on which said rollers are free to swing, and opposite bearings between which the rollers are confined longitudinally, all substantially as specified.

3. The combination of the shaft or journal and its box, the anti-friction rollers, and rounded bearing-blocks located midway of said rollers and adapted to recesses in the top of the box, all substantially as specified.

388,229. BOLT. CARL W. F. THOST, Hamburg, Germany. Filed Mar. 30, 1888. Serial No. 268,942. (No model.)

Claim.—1. The combination, with the two leaves of a folding door, of the retractible bolts for holding the leaves closed, the weighted lever *c*, for drawing back said bolts, springs for automatically opening the door-leaves, a spring-click secured to one of the said bolts, and the locking-roller operated from a central station, substantially as and for the purpose set forth.



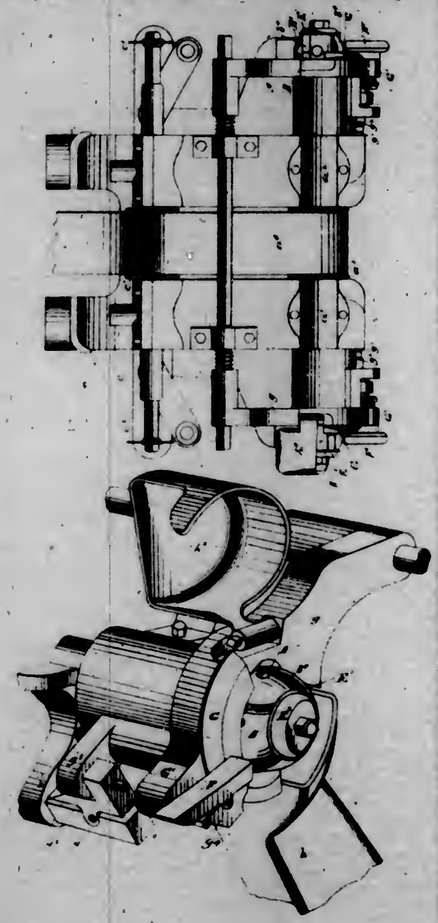
388,229.



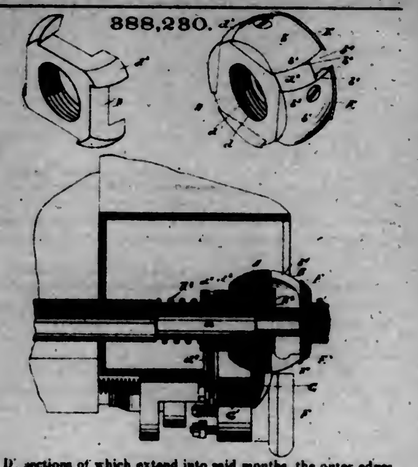
2. The combination, with the two leaves of a folding door, of the retractible bolts for holding the leaves closed, the weighted lever *c*, for drawing back said bolts, pivoted to one of the door-leaves and provided with an extension engaging with a catch on the other door-leaf, springs for opening the door-leaves, a spring-click secured to the upper fastening-bolt, the locking-roller engaging with said spring-click, and a disengaging-catch for releasing the said roller and spring-click, substantially as and for the purpose set forth.

388,230. HEEL-TRIMMING MACHINE. CHARLES H. TRASK, Lynn, Mass. Filed Dec. 6, 1887. Serial No. 256,903. (No model.)

Claim.—1. In a heel-trimming machine, the combination of a rotary cutter having the cross-mouths *b'*, with a top-lift edge-rest



388,230.



block, *D'*, sections of which extend into said mouths, the outer edges of which sections are flush or substantially flush with the cutting-edges of the cutters and form the top-lift edge-rest D, as and for the purposes described.

2. In a heel-trimming machine, the combination of a rotary cutter having the mouths or cross-recesses *b'* in front of the cutting-edges thereof with the top-lift edge-rest block *D'*, having sections extending into said mouths, and the outer surfaces of which are substantially flush with the portions of the cutting-edges of the cutter with which they are in line and form a top-lift edge-rest, D, which block *D'* is adjustable lengthwise the cutter to vary the length of the cutting-sections thereof, as and for the purposes described.

3. The combination, in a heel-trimming machine, of a rotary cutter having the cross recesses or mouths *b'*, the rand cutter or cutters E, integral with the blades of the cutters, and the rotary top-lift edge rest block *D'*, having sections which extend into said mouths or recesses to shield or mask sections of the cutting-edges of the cutting-blades, the outer surfaces of which form a top-lift edge-rest, D, substantially as described.

4. The combination, in a shoe-trimming machine, of a rotary duplex cutter having blades or knives of a length to provide two cutting edges or sections, whereby it is adapted to be used with one section as a right trimmer and with the other section as a left trimmer, and having cross recesses or mouths *b'* in front of the cutting edges or blades of the knives, with the rotary top-lift-edge-rest block *D'*, having sections extending into said mouths or recesses to mask or shield the unused section of the blades or knives, the outer surfaces of which section form the top-lift edge-rest D, as and for the purposes described.

5. In a trimming-machine for boots and shoes, the combination of a block, B^3, having dovetail tongues B^3, and the dovetail recess *b* at the forward end of each tongue, with the blades *B'*, having dovetail recesses to fit the dovetail tongue, and undercut recesses to receive the undercut ends *b* of the tongues B^3, as and for the purposes described.

6. The combination, in a trimming-machine for boots and shoes, of the rotary cutter having the cross recesses or mouths *b'*, the edge-rest block *D'*, having sections to mask or shield portions of the cutting-edges of the knives or blades of the cutter, and an abutment or rest connected with the said top-lift edge-rest and located in a position to be moved by the work which is presented to the action of the cutter, whereby the position of the edge-rest is automatically varied during the rotation of the trimmer, substantially as described.

7. The combination, in a boot and shoe trimming machine, of a rotary trimmer having cross recesses or mouths *b'*, and the top-lift edge-rest D, connected with the said trimmer and having sections which act to mask or shield portions of the cutting edges or blades of the knives or trimmers, with the heel-tread rest G, substantially as described.

8. The combination, in a boot and shoe trimming machine, of a rotary trimmer having cross recesses or mouths *b'*, and the top-lift edge-rest block *D'*, connected with said trimmer and having sections which act to mask or shield portions of the cutting edges or blades of the knives or trimmers, with the heel-side rest F, substantially as described.

9. The combination, in a boot and shoe trimming machine, of a rotary trimmer having cross recesses or mouths *b'*, and the top-lift edge-rest block *D'*, connected with the said trimmer and having sections

which act to mask or shield portions of the cutting edges or blades of the knives or trimmers, with the rand-guide E, substantially as described.

10. The combination, in a boot and shoe trimming machine, of a rotary trimmer having cross recesses or mouths b^4, and the top-lift edge-rest block D', connected with the said trimmer and having sections which act to mask or shield portions of the cutting edges or blades of the knives or trimmers, with the tread-rest G and the rand-guide E, substantially as described.

11. The combination, in a boot and shoe trimming machine, of a rotary trimmer having cross recesses or mouth b^4, and the top-lift edge-rest block D', connected with the said trimmer and having sections which act to mask or shield portions of the cutting edges or blades of the knives or trimmers, with the tread-rest G and the heel-side rest F, substantially as described.

12. The combination, in a boot and shoe trimming machine, of a rotary trimmer having cross recesses or mouths b^4, and the top-lift edge-rest block D', connected with the said trimmer and having sections which act to mask or shield portions of the cutting edges or blades of the knives or trimmers, with the heel-side rest F and the heel-rand guide E', substantially as described.

13. The combination, in a boot and shoe trimming machine, of a rotary trimmer having cross recesses or mouths b^4, and the top-lift edge-rest block D', connected with the said trimmer and having sections which act to mask or shield portions of the cutting edges or blades of the knives or trimmers, with the tread-rest G, the heel-side rest F, and the rand-guide E', substantially as described.

14. The combination, in a boot and shoe trimming machine, of the rotary cutter having blades or knives the cutting-edges of which are longer than the length of the cut which it is desired to make or of the work which it is desired to trim, having mouths or sections b^4, and the laterally-movable top-lift edge-rest block D', sections of which shield or mask portions of the cutting-edges of the knives or blades of the cutter, with the tread-rest G, movable lengthwise the axis of the cutter, substantially as described.

15. The combination, in a boot and shoe trimming machine, of the rotary cutter having blades or knives the cutting-edges of which are longer than the length of the cut which it is desired to make or of the work which it is desired to trim, having mouths or sections b^4, and the laterally-movable top-lift edge-rest block D', sections of which mask or shield portions of the cutting-edges of the knives or blades of the cutter, with the heel-side rest F, movable lengthwise the axis of the cutter, substantially as described.

16. The combination, in a boot and shoe trimming machine, of the rotary cutter having blades or knives the cutting-edges of which are longer than the length of the cut which it is desired to make or of the work which it is desired to trim, having mouths or sections b^4, and the laterally-movable top-lift edge-rest block D', sections of which mask or shield portions of the cutting-edges of the knives or blades of the cutter, with the tread-rest G and heel-rest F, movable lengthwise the axis of the cutter, substantially as described.

17. The combination, in a heel-trimming machine, of the rotary cutter having cross recesses or mouths b^4, the rest-block D', adapted to rotate with the cutter and having sections which mask or shield portions of the cutting-edges of the knives or blades thereof, and the arm g, moving lengthwise the axis of the cutter in opposition to spring-pressure and connected with the rest D, substantially as described.

18. The combination, in a heel-trimming machine, of the rotary cutter having cross recesses or mouths b^4, the rest-block D', adapted to rotate with the cutter and having sections which mask or shield portions of the cutting-edges of the knives or blades thereof, the arm g, movable lengthwise the axis of the cutter in opposition to spring-pressure and connected with the rest D, and the tread-rest G and heel-side rest F, carried by said arm, substantially as described.

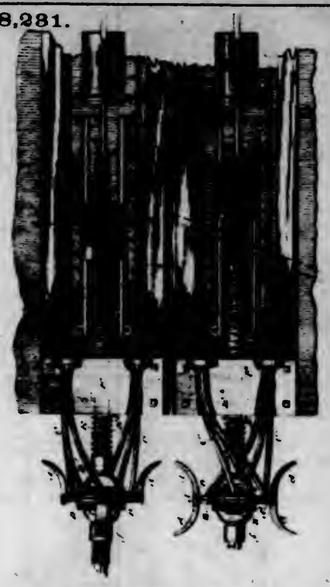
19. The combination of the rotary trimmer having the blades b' and rand-cutters E, integral with said blades, with the rand-guide E and the counter-guide E^3, substantially as described.

20. The combination of the rotary trimmer, the exhaust-passage H, formed by the casting A, which is cut away at A^2, as described, the arm g, movable lengthwise the axis of the cutter, and the hinged hood h^4, attached to said arm to be movable therewith and to swing upon a vertical arc in relation thereto, as and for the purposes described.

21. The combination, in a duplex trimming-machine, of the cutters B B', the exhaust-passages H, arranged in relation to said cutters, as specified, and connected with a common chamber containing an air-exhausting fan or device, said chamber and exhaust device, and the hoods h^4, substantially as described.

22. The combination, in a trimming-machine, of a rotary trimmer having cross recesses or mouths b^4, the rest D, having the hub d^3, and groove d^4, with the movable block G' and the connecting plate or piece d^7, substantially as described.

388,231. CAR-COUPLING. JOHN P. TURNEY, Arlington, Oreg. Filed Dec. 8, 1887. Serial No. 257,262. (No model.)



Claim.—1. The combination, with the cars of a train, of pneumatic couplings for connecting the cars, and a series of pneumatic tubes corresponding to the couplings and extending to the cab of the engineer, a reservoir for compressed air, and a switch conduit or valve mechanism for directing the air-blast through any of said tubes to any one of the couplings, substantially as shown and described.

2. The combination, with a series of tubes extending throughout the train, of a face-plate, A, in the cap having openings through the same connecting with the said tubes, a reservoir for compressed air, a tube, c, leading from the reservoir to the center of the face-plate, and a swinging hollow arm or conduit, B, having a channel-way, b, adapted to connect the tube c with any one of the tubes C, substantially as and for the purpose described.

3. The pneumatic car-coupling consisting of hooked and slotted draw-bar E, the coupling-head consisting of face-plate D, with hook-shaped guide-arms d, the socket-ring D', sleeve E', with bulbous end and bolt E^2, and spiral spring E^3, substantially as and for the purpose described.

4. A car-coupling consisting of a rotary adjustable hook-shaped draw-bar, E, and a spring-seated coupling-head surrounding and loosely connected to the same, substantially as and for the purpose described.

5. A car-coupling having face-plates combined with pneumatic tubes opening through said face-plates, the said openings being adapted, as described, to register with those of the next car and form continuous channels when the cars are coupled, substantially as and for the purpose described.

6. The combination of a rotary adjustable draw-bar, E, having pin or lug i, the sleeve G, with cam-groove g and slides h, the guides H H, spiral spring I, the piston-rod J, connected to the sleeve G, and the piston and cylinder K, and suitable pipes for transmitting a pneumatic pressure to the said cylinder, substantially as and for the purpose described.

7. The combination, with the pneumatic car-couplings and the series of continuous tubes connecting with the same, of a register or commutator for throwing any one tube into communication with any other tube, substantially as and for the purpose described.

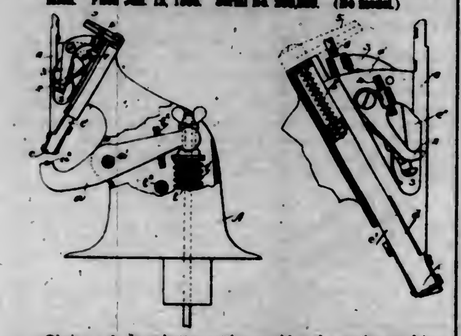
8. The combination, with the continuous tubes, of the register or commutator consisting of stationary section I, with passage-ways l and m m' through it, the two rotary adjustable heads L' L^2, with corresponding passage-ways and bevel-wheels, and the adjustable shaft M, with bevel-wheel M', adapted to be thrown alternately into engagement with the bevel-wheels of the two heads, substantially as and for the purpose described.

9. The combination of the middle section, I, of the register having through-channels l and terminal channels m m', the adjustable heads L' L^2, tubes N N', connecting with the terminal channels m m', and the two cylinders K K', connecting with the tubes N N', substantially as and for the purpose described.

10. The combination of the register L L' L^2 and the communicating tubes, the shaft M, with notched disk M^2, lever and rods O O', detent O^2, sliding block n, and curved guide p, substantially as and for the purpose described.

11. The combination, with a series of longitudinal tubes and a register or commutator consisting of stationary section I, with passage-ways and movable heads L' L^2, connected to the longitudinal tubes, of an adjusting mechanism for rotating said heads, having an indicator-disk notched to represent the openings in the heads, and locking mechanism for said disk, substantially as and for the purpose described.

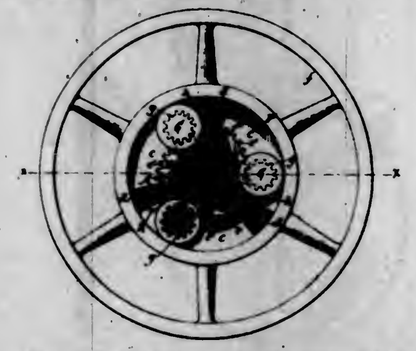
388,232. BUTTON-SETTING MACHINE. JOHN H. VEITCH, Boston, Mass., assignor to the Peninsular Novelty Company, Grand Rapids, Mich. Filed Jan. 12, 1888. Serial No. 260,859. (No model.)



Claim.—1. In a button-setting machine, the stationary driver, movable anvil, yielding carrier, and raceway movable simultaneously with the carrier, combined with two feed-dogs, 2 3, adapted to act alternately upon the fastenings in the raceway at the rear side thereof, the adjusting-screws 4 and 6 for the feed-dogs, and the studs or projections 5 7, substantially as described.

2. In a button-setting machine, the stationary driver, yielding carrier, and raceway, and alternately movable feed-dogs 2 3, combined with the movable jaw carrying the anvil, the treadle-rod t, the adjusting-screw t^3, and the stud t^4, substantially as described.

388,233. CLUTCH. CHRISTIAN WIEBOLD, Buffalo, N. Y. Filed Apr. 30, 1888. Serial No. 272,202. (No model.)

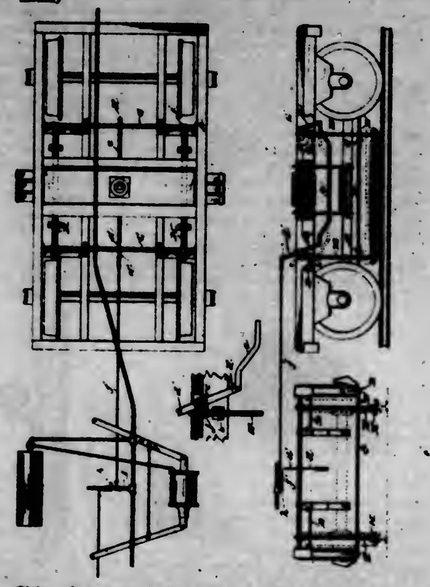


Claim.—1. The combination, with the hub A, provided with cam-shaped ribs e, having teeth e', of a ring, F, surrounding the hub, and friction-rollers G, arranged between the hub and ring and provided with teeth g, meshing with the teeth of said cam-ribs, substantially as set forth.

2. The combination, with the hub A, provided on its face with recesses c, separated by projections d, said cam-shaped ribs e, formed on the hub in the recesses c, and having gear-teeth e', of a ring, F, surrounding the hub, and friction-rollers G, arranged in the recesses c, and provided with a contracted portion having gear-teeth g, which engage with the teeth of the cam-ribs e, substantially as set forth.

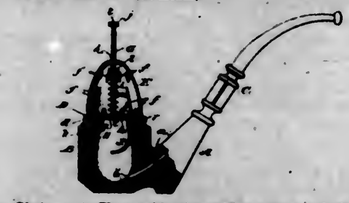
3. The combination, with the hub A, provided with cam-shaped ribs e, having gear-teeth e', of a ring, F, surrounding the hub, friction-rollers G, arranged between the hub and ring and provided with gear-teeth g, and springs A, secured to the hub and bearing against the friction-rollers, substantially as set forth.

388,234. CAR-BRAKE. HAM. A. WHITNEY and HOWARD B. BENTON, Minneapolis, Minn. Filed June 16, 1887. Serial No. 240,893. (No model.)



Claim.—In a car-truck, the combination of the frame, rock-shafts journaled thereto and having intermediate arms projecting transversely therefrom and trip-arms projecting from near the ends thereof, posts suspended from the frame in suitable guides, carrying buffer wheels or beams on their lower ends and provided with suitable nuts on their upper ends for engagement with said trip-arms, straps connecting the several rock-shafts together, and another strap connecting one of said rock-shafts with the valve-lever of the air-pipe, substantially as shown and described.

388,235. TOBACCO-PIPE. THOMAS B. WHITLEDGE, GEORGE W. KEMPER, and HERMAN BEHRENS, St. Mary's, Mo. Filed Sept. 13, 1887. Serial No. 249,567. (No model.)



Claim.—1. The combination, with an apertured pipe-cap, of a pusher-rod, a pruner-disk carried by said rod, a bowl-cleaning arm carried by said disk, and a retracting-spring, arranged for operation substantially as shown and described.

2. The combination, with a ring adapted to fit a pipe-bowl, of an apertured dome-shaped cap hinged thereto, a pruner-rod held to slide in said cap, an apertured pruner-disk carried by said rod, a bowl-cleaning arm carried by said disk, a retracting-spring on said rod, and a spring-catch on the cap and ring, substantially as and for the purpose described.

3. The combination, with a cap hinged to a ring adapted to fit a pipe-bowl and provided with a web, g, said cap and web being apertured to form bearings A, of a rod, G, provided with a shoulder, i, a disk, H, a bowl-cleaning arm, J, and a spring, m, substantially as and for the purpose described.

4. The combination, with a cap hinged to a ring adapted to fit a pipe-bowl and provided with a web, g, said cap and web being apertured to form bearings A, and said web having slot S, of a rod, G, provided with shoulders i' and i, a disk, H, a bowl-cleaning arm, J, and a spring, m, substantially as and for the purpose described.

5. The combination, with a pipe-bowl, of an opening and closing apertured cover or lid provided with a pusher-stem having suitable

bearings in said lid, and having secured thereto a bowl-cleaning arm, *J*, substantially as described.

6. The combination, with the pipe-bowl, of an opening and closing apertured cover or lid, a sliding pusher-stem having bearings in said cover or lid, a spring for forcing said stem upward, and a bowl-cleaning arm connected to the pusher-stem, substantially as described.

7. The combination, with the pipe-bowl, of an opening and closing apertured cover or lid provided with a pusher-stem having suitable bearings in said lid for movement with and against a spring-pressure, and having secured thereto a pusher-disk, H, and a bowl-cleaning arm, *J*, substantially as and for the purpose described.

8. The combination, with the pipe-bowl, of an opening and closing apertured lid or cover of dome shape provided with a pusher-stem having bearings *h h* in said lid, provided with a pusher-disk, H, a bowl-cleaning arm, and a spiral spring, *m*, arranged between a shoulder, *l*, on the pusher-stem and the lower bearing, *h*, substantially as and for the purpose described.

388,236. PAPER-REEL. HOMER T. WILSON, Harrodsburg, assignor to the Merchants Roll Paper Printer and Cutter Company, Lexington, Ky. Filed Mar. 12, 1888. Serial No. 267,071. (No model.)



Claim.—1. In a paper-reel, the combination, with standards A A A, adapted to receive paper rolls of different widths, of shelves B B, uniting said standards and approximately parallel to a plane tangent to the lower side of said rolls, and vertically-adjustable tearing-bars fixed upon the upper surface of said shelves, respectively, whereby paper from said rolls passing along said shelves beneath said bar may be drawn out to any desired extent and then torn off along the edge of the bar.

2. In a paper-reel, the combination, with a paper roll revolubly and removably mounted in suitable supports, of a support for the paper when unrolled, a printing-roller suitably mounted and approximately tangent to the last-named support, said roller being adapted to be revolved by the passage of the paper between its surface and the surface of said tangent support and to imprint designs upon said paper, and ink-pad rollers revolubly mounted in contact with the surface of said printing-roller.

3. The combination, with a paper roll, *C*, revolubly mounted in supports provided with grooves *P*, of the plane shelf B, for supporting the unrolled paper, the open box K, hinged to said shelf and containing the revolubly-mounted printing-roller L and inking-rollers N, the auxiliary roller M, and the tearing-bar E, mounted upon said shelf between springs G and wing-nuts H, substantially as set forth.

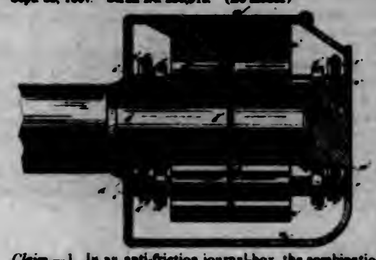
4. In a paper-reel, the combination, with a paper roll mounted upon a rotary axis and a support for the paper coming from said roll, of a swinging printing-roller to rest upon the paper while passing over said support, to be rotated by the movement of the paper, and to be swung out of contact with the paper when desired.

388,237. SAND-BAND FOR WHEEL-HUBS. AARON WRIGHT, Hudson, N. Y., assignor of three-fourths to Gilbert Wright, Louis W. Grout, and Edwin Grout, all of same place. Filed May 1, 1888. Serial No. 272,553. (No model.)



Claim.—A wheel-hub having its inner end annularly recessed around the eye therein, the said recess being surrounded by the marginal plain surface of the hub, in combination with the metallic oil-cup, which is adapted to serve the additional function of a sand-band, having its inner edge flanged, as shown, to receive a packing and be secured to the said plain portion of the hub, and its outer edge curved inwardly and in close relation to the axle or spindle, substantially as and for the purposes specified.

388,238. CAR-AXLE BOX. DELOS ALLEN, Chicago, Ill. Filed Sept. 28, 1887. Serial No. 250,519. (No model.)



Claim.—1. In an anti-friction journal-box, the combination, with the outer frame and the boxing formed with a circular opening, and the shaft passed through the center of this opening, of a series of rollers placed around the shaft within the boxing and rolling in contact with both, a series of separating-rollers placed between the others and having their ends extended beyond the same, and a pair of disks formed at the ends of the journal-box, upon which these separating-rolls travel, substantially as and for the purpose set forth.

2. In an anti-friction journal-box, the combination, with the shaft, of a series of rollers placed around it, a circular boxing in which they run, a series of smaller separating-rollers placed between the others, and a pair of disks upon which the ends of these latter rollers are carried, and confining-rings placed around them, substantially as shown and described.

3. The combination, with the casing *a*, formed or provided with the disks *d*, the circular boxing *a'*, and shaft *b*, of the rollers *b'*, the separating-rollers *c c*, having their ends extended and provided with the enlargements *b'*, and the confining-rings *e*, formed with flanges *e'*, to fit the grooves c^2 in the separating-rollers, substantially as and for the purpose set forth.

388,239. PUMP. GEORGE W. ARNOLD and WILLIAM C. HILL, Mount Pleasant, Pa. Filed Dec. 2, 1887. Serial No. 256,513. (No model.)



Claim.—1. In a pump, the combination of the conical tube A, adapted to be secured in an opening in a barrel, the shell screwed to the outer end thereof and having an air-compressing pump attached thereto, the tube D, passing through the tube A and the shell, the tube H, having the spout K near its upper end, and the stop-cock L in the tube H at the inner end of the spout, substantially as and for the purpose specified.

2. In a pump, the combination of the conical tube A, the tube D, passing through the same and leaving an annular air-passage at the lower end of the said tube A, the shell B around the upper end of the tube D, forming the air-chamber E, which communicates with the interior of the tube A, the air-compressing pump connected to the shell, and the tube H, inserted in the upper end of the tube D and passing through a packing-box, I, and leaving the spout K attached thereto, substantially as and for the purpose specified.

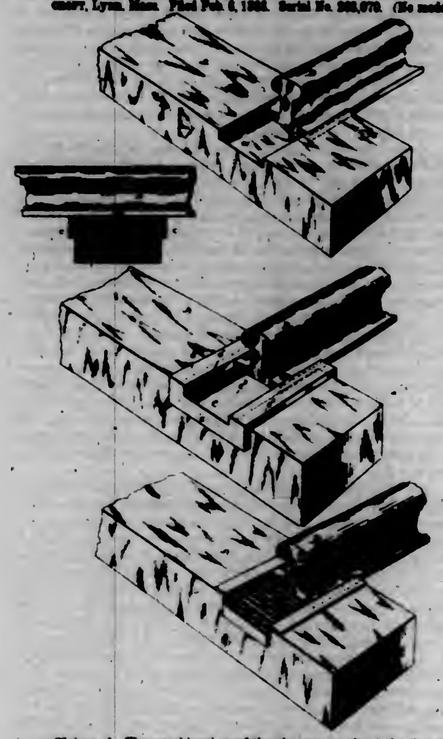
3. In a pump, the combination of the conical tube A, the shell attached thereto and having a tube, P, on the side, the air-chamber E within the shell, having the perforations F in the bottom, which communicate with the tube A, the fluid-conducting tube passing through the tube A and the shell, and the air-compressing pump attached to the tube P, substantially as and for the purpose specified.

4. In a pump, the tube A, adapted to be inserted in the bung of a barrel and interiorly tapped at its upper end, the shell screwing at its lower end into the tube A and having the lateral flange C, the packing-ring *a* between the flange C and the upper end of the tube A, the fluid-conducting tubes passing through the tube and shell, and the air-pump connected to the interior of the shell, substantially as specified.

5. In a pump, the combination of the tube A, the shell secured in the upper end thereof and having a perforated bottom, the tube D, passing through the tube A and the shell and rigidly attached at its upper end to the shell, the adjustable tube H, sliding within the tube D and having a spout at its upper end, and the air-pump attached to the shell, substantially as specified.

6. In a pump, the combination of the tube A, shell B, connected thereto, the tube D, having the telescoping sections G and G', one of which passes through the tube A and shell B and is attached to the latter, and the air-pump connected to the shell and communicating with the space between the tube and the shell, substantially as specified.

388,240. CONSTRUCTION OF RAILROADS. EDWARD H. AMESBURY, Lynn, Mass. Filed Feb. 6, 1888. Serial No. 263,670. (No model.)



Claim.—1. The combination of the sleepers or ties A, having the recesses or channels *a*, the metal chair C, having the flanges *c*, and the side walls, *c'*, which are placed in said recesses or channels, with the rail B, the bases of which are placed on said chair between the side walls thereof, as and for the purposes described.

2. The combination of the sleepers A, having the cross channels or recesses *a*, the metal chair C, having the side walls, *c'*, and the outwardly-extending flanges c^2, and the rails B, the bases *a'* of which rest upon said chairs between the walls *c'*, as and for the purposes described.

3. The combination of the ties or sleepers A, having the cross channels or recesses *a*, the chair C, having the downward-extending flanges *c*, the walls *c'*, and the outwardly-extending flanges c^2, with the rails B, the bases *a'* of which rest upon the side chairs and each other, and the said walls *c'*, substantially as described.

4. The combination of the sleepers A, having the cross recesses or channels *a*, the chairs C, having the downward-extending flanges *c*, the walls *c'*, and the outwardly-extending flanges c^2, one or more plates interposed between the chair and the sleeper, and the rails B, the bases of which rest upon the upper surface of the chair between the walls *c'*, substantially as described.

5. The combination of a chair having the corrugated base or rail-supporting surface, with one or more additional corrugated re-enforcing plates, substantially as described.

388,241. RAIL-FASTENING. GEORGE H. BABER, Philadelphia, Pa., assignor to William Wharton, Jr., and Company, Incorporated, same place. Filed May 4, 1888. Serial No. 272,771. (No model.)



Claim.—1. The combination of the rail with the tie-plate having lips overlapping one side of the base-flange of the rail, and having a raised lip and opening on the opposite side of said base-flange, with a brace-piece adapted to bear against the rail, and having a tail-piece adapted to said opening and confined to the rail by said lip of the tie-plate, all substantially as set forth.

2. The combination of the rail, the tie-plate having lips overlapping the base-flange of the rail, and having a raised lip, *c*, and opening *c'*, with a brace-piece provided with a tail-piece thicker than the said tie-plate and inserted beneath the lip *c*, so that as the pressure is applied to the tie-plate the brace-piece will be firmly locked in position, substantially as described.

388,242. PNEUMATIC INTERMITTENT CIRCUIT-CLOSER. WILLIAM C. RAMSEY, New York, N. Y., assignor to Josiah C. Reed, same place. Filed Feb. 7, 1887. Serial No. 226,851. (No model.)



Claim.—1. The combination, in a pneumatic instrument for sending intermittent impulses of electricity into a conductor, of a tympan in a case having an air-passage extending around the tympan, so that the air-waves will act first on one side of the tympan and afterward on the opposite side of it, an electrode in the center of the tympan and at each side thereof connected with one pole of a battery, and two electrodes connected with the other pole of the same battery and placed opposite to each other and to the intervening electrode on the tympan.

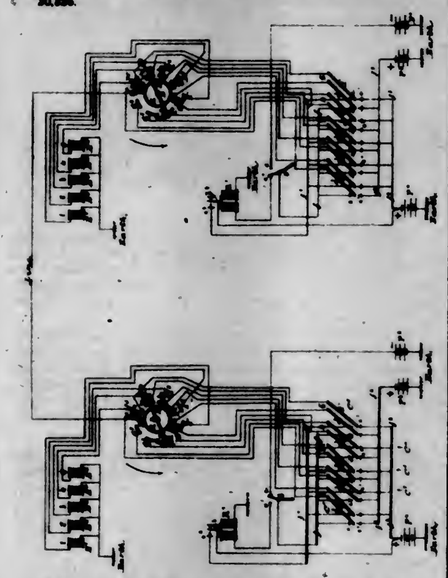
2. The apparatus, substantially as herein described, for reproducing vocal and other sounds, consisting of a tympan, a case for containing the same having an air-passage around the tympan, so that the air-waves will act first on one side of the tympan and afterward on the opposite side of it, an electrode in the center of the tympan connected with one pole of a battery, and two electrodes at opposite sides of the intervening electrode on the tympan, circuit-connections through such electrodes, a receiving telephonic instrument, and electric circuit-connections through such receiving-instrument, substantially as specified.

388,243. SHUTTLE-HEDDLE FOR LOOMS. Reuben Randalph, Woonsocket, R. I., assignor of one-half to Thomas C. Cooper, same place. Filed Nov. 28, 1887. Serial No. 256,286. (No model.)



Claim.—The combination, with the box A and the swell B, having the beveled end *e'*, of the reciprocable hinge-leaves D D', having the ribs *a a*, and the swell head portions *c* and *d d'*, the spring-plate C, secured between the leaf D and the box and having its end extending upon the portion *c*, the bolts *b*, and the nuts, substantially as specified.

388,244. PRINTING-TELEGRAPH. Jean M. E. Raudot, Paris, France. Filed Apr. 4, 1888. Serial No. 269,569. (No model.) Patented in France Jan. 6, 1883, No. 146,716; in Belgium Jan. 20, 1888, No. 80,893; in England Jan. 20, 1888, No. 486, and in Germany Feb. 4, 1888, No. 39,896.



Claim.—1. The combination, in a receiving-instrument, of a series of fingers with a combiner moving relatively to them and formed with rows of indentations (or equivalents) traversed by the fingers and arranged to be engaged by the latter according to as many different combinations as there are characters to be transmitted.

2. The combination, in a receiving-instrument, of a series of fingers, a combiner moving past them and formed with rows of indentations (or equivalents) traversed by the fingers and arranged relatively to the latter according to as many different combinations as there are characters to be transmitted, and electro-magnetic means for bringing the respective fingers into operative connection with the rows of indentations according to any desired combination, whereby when the combiner reaches the position corresponding to the particular combination for which the fingers are prepared it presents an indentation to each one of the series of fingers.

3. The combination, in a receiving-instrument, of a series of fingers, a combiner moving past them and formed with rows of indentations (or equivalents) traversed by the fingers and arranged relatively to the latter according to as many different combinations as there are characters to be transmitted, electro-magnets for actuating the respective fingers to bring them into operative connection with the rows of indentations, and a distributer for connecting said magnets successively with the line-circuit, whereby the combination, according to which said fingers are prepared for the combiner, is determined by the successive electric impulses acting upon said magnets.

4. The combination, in a receiving-instrument, of a combiner consisting of rows of indentations, a series of fingers traversed by said combiner and capable of being displaced to different positions relatively thereto according to as many different combinations as are to be transmitted, and electro-magnetic means for so displacing them.

5. The combination, in a receiving-instrument, of a combiner consisting of inversely-indented disks, a series of fingers traversed by said disks and each capable of being displaced from one disk to the other, having inversely-arranged indentations, and electro-magnetic means for so displacing them.

6. The combination, in a receiving-instrument, of a combiner consisting of two inversely-indented disks, a series of fingers traversed thereby normally in contact with one of said disks and capable of being displaced into contact with the other, electro-magnetic means for so displacing one or more of them according to any one of the different combinations for which the combiner is adapted, and mechanical means for restoring the displaced fingers to their normal position after the prepared combination has been translated.

7. The combination, in a receiving-instrument, of a combiner consisting of two inversely-indented disks, a series of tilting fingers traversed thereby normally in contact with one of said disks, but capable of being displaced into contact with the other, and the several fingers arranged to bear laterally upon one another in either position, whereby the first of the series cannot tilt upon encountering an indentation until all the others simultaneously encounter indentations, whereupon all the fingers tilt together, and electro-magnetic means for displacing the fingers according to different combinations.

8. The combination of electro-magnets for receiving the successive electric impulses constituting a signal, mechanical parts moved thereby, by which said signal is stored, and the relative positions of which constitute an image of the transmitted signal, a series of fingers, mechanism for transferring the impress of the signal from said storing parts to said fingers by displacing the latter according to the combination indicated by the positions of said parts, and a combiner consisting of inversely-indented disks traversing said fingers, one of them in contact with the fingers in their normal positions and the other in contact with the displaced fingers.

9. The combination of electro-magnets for receiving the successive electric impulses constituting a signal, a corresponding series of storing-switches capable each of occupying three positions and of being displaced from the first to the second position by the action of its corresponding magnet, a cam adapted to engage those of the switches that are in the second position and to move them to the third position, a series of fingers adapted to be displaced by the latter movement of the switches, and a combiner consisting of inversely-indented disks traversing said fingers, one of them in contact with the fingers in their normal positions and the other in contact with the displaced fingers.

10. The combination of two inversely-indented combiner-disks, a series of fingers arranged successively thereagainst, a cam on the front disk adapted as it passes said fingers to shift them all to the rear disk, a series of storage-switches corresponding to said fingers and each capable of occupying three positions, a series of electro-magnets adapted each to shift the corresponding switch from its first to its second position, and a cam revolving with the disks and adapted to engage all the switches that are in the second position and throw them as it passes to the third position, thereby displacing the corresponding fingers to the front disk.

11. The combination of two inversely-indented combiner-disks, a series of fingers arranged successively thereagainst, a series of storage-switches corresponding to said fingers and each capable of occupying three positions, a series of electro-magnets adapted each to shift the corresponding switch from its first to its second position, a cam revolving with the disks and adapted to engage all the switches that are in the second position and throw them as it passes to the third position, thereby displacing the corresponding fingers from the rear to the front combiner-disk, and another cam following the first and adapted to restore all the displaced switches to their first positions.

12. The combination of two inversely-indented combiner-disks, a series of fingers arranged successively thereagainst, a series of storage-switches in the form of elbow-levers, each capable of occupying three positions, a series of notched springs engaging said switches in their first positions, a series of electro-magnets adapted each to shift the corresponding switch from its first to its second position, and a cam adapted to engage those of the switches that are in the second position and to move them to the third position, thereby displacing the fingers from the rear to the front combiner-disk.

13. The combination, in a receiving-instrument, of a combiner consisting of two inversely-indented disks, a series of tilting fingers traversed thereby normally in contact with one of said disks, but capable of being displaced into contact with the other, and the several fingers arranged to bear laterally upon one another in either position, whereby the first of the series cannot tilt upon encountering an indentation until all the others simultaneously encounter indentations, whereupon all the fingers tilt together, a lever bearing against the series of fingers, and a spring pressing said lever against them and tending to tilt them.

14. The combination, to form a printing-telegraph receiver, of a series of fingers, a combiner moving past them and formed with rows of indentations (or equivalents) traversed by the fingers and arranged relatively to the latter according to as many different combinations as there are characters to be printed, a series of printing-types moving synchronously with said combiner, and a printing mechanism for bringing a band of paper against any of said types, actuated by the engagement of said fingers with said combiner, whereby when the combiner reaches the position corresponding to the particular combination for which the fingers are prepared the type for printing the character indicated by that combination is in the position to be printed, and the simultaneous engagement of the fingers with the combiner acts to effect the printing of said character.

15. The combination, to form a printing-telegraph receiver, of a series of tilting fingers, a rotary combiner formed with rows of indentations traversed by the fingers and arranged relatively to the latter according to as many different combinations as there are characters to be printed, electro-magnetic means for bringing the respective fingers into operative connection with the rows of indentations according to any desired combination, a type-wheel revolving synchronously with said combiner and having its types arranged so that as each different combination on the combiner comes into coincidence with the fingers the corresponding type reaches the printing position, and a printing mechanism actuated by the simultaneous engagement of the fingers with the combiner, and adapted thereupon to bring a band of paper against one of the types.

16. The combination, to form a printing-telegraph receiver, of a combiner consisting of inversely-indented disks, a series of fingers traversed by said disks and each capable of being displaced from one disk to the other, having inversely-arranged indentations, electro-magnetic means for so displacing them, a type-wheel revolving synchronously with said combiner, and a printing mechanism actuated by the simultaneous engagement of the fingers with the combiner, and adapted thereupon to bring a band of paper against one of the types.

17. The combination, to form a printing-telegraph receiver, of a series of tilting fingers, a rotary combiner formed with rows of indentations traversed by the fingers and arranged relatively to the latter according to as many different combinations as there are characters to be printed, whereby for each different combination the simultaneous dropping of all the fingers into said indentations will take place at a different point in the revolution, electro-magnetic means for bringing the respective fingers into operative connection with the rows of indentations according to any desired combination, a type-wheel revolving synchronously with said combiner and having its types arranged so that as each different combination on the combiner comes into coincidence with the fingers the corresponding type reaches the printing position, and a printing mechanism connected mechanically to the fingers and actuated by the simultaneous dropping thereof into indentations in the combiner, and adapted thereupon to bring a band of paper against one of the types.

18. In a printing-telegraph receiver, the combination of a continuously-revolving type-wheel, an impression-arm adapted, when released, to move into engagement with the type-wheel, and thereby in passing to press a band of paper against one of the types thereof, a detent normally restraining said impression-arm, automatic translating mechanism for determining the instant at which to release the impression-arm in order to print the proper type, connected to and actuating said detent, and a restoring mechanism consisting of a cam moving with the type-wheel and a lever engaged thereby, which moves back the impression-arm.

19. In a printing-telegraph receiver, the combination of a continuously-revolving type-wheel, a toothed wheel revolving therewith, an impression-arm adapted, when released, to move into engagement with the teeth of said toothed wheel and to be carried thereby past the type-wheel, thereby bringing a band of paper against one of the types thereof, a detent for normally restraining said impression-arm, and a restoring mechanism for moving back said arm.

20. In a printing-telegraph receiver, the combination of a continuously-revolving type-wheel, an impression-arm adapted, when released, to move into engagement with the type-wheel, and thereby in passing to press a band of paper against one of the types thereof, a detent normally restraining said impression-arm, a feeding-roller mounted on the axis around which said arm vibrates and formed with ratchet-teeth, a pawl engaging said teeth and carried by said arm, whereby the paper is advanced with said arm during the printing movement thereof, a second pawl engaging said teeth and preventing the backward movement of said roller during the return of said arm, and a restoring mechanism for moving back said arm.

21. The combination, with a printing-telegraph receiver, of a synchronizing mechanism consisting of a fly-wheel in connection with the revolving printing-shaft, an electro-magnetic brake acting against said fly-wheel, and a circuit-closer in the circuit traversing the coils of said magnet, operated to close the circuit at regular intervals.

22. The combination of a distributer at the transmitting-station, a distributer said printing-receiver at the receiving-station, and a synchronizing mechanism for the two sets of apparatus, consisting of circuit-closers on both apparatus for closing the circuit at each revolution and an electric brake applied to the governed apparatus, whereby the acceleration of speed acquired by the latter is neutralized by the action of said brake, and the brake is applied for a duration proportional to the advance of the governed over the governing apparatus.

23. The combination, to form a distributer, of a series of contacts arranged annularly, a second series of contacts, also arranged annularly and angularly adjustable relatively to the first series, a revolving arm moving over said contacts, and conducting-brushes mounted on said arm and sweeping said contacts.

24. A manipulator consisting of circuit-closing springs vibrating between two opposite contact-buttons, the buttons of one series being connected to the positive pole of a battery and those of the opposite series being connected to the negative pole of another battery, in combination with a distributer serving to connect the respective springs to the line successively, whereby the successive impulses transmitted are of one polarity or the other, according to the order in which the springs are depressed.

25. A manipulator consisting of a series of finger-keys, two circuit-closing springs under each key, connections between the first spring of each key and the line-circuit, whereby these springs serve for transmitting the signals to the distant station, a receiving-instrument at the sending-station, and connections between the second spring of each key and this instrument, whereby these springs serve to reproduce the transmitted signal in this instrument.

26. The combination of a manipulator consisting of a series of finger-keys and two circuit-closing springs under each key, a receiving-instrument, and a distributer consisting of a revolving arm carrying contact-brushes, a series of successive contacts connected to the first springs of the respective keys and swept by the first brush, whereby the currents from these keys are sent to line successively, and two series of successive contacts arranged in pairs and swept by the other brush, the contacts of one series being connected with the second springs of the respective keys and the contacts of the other series being connected to the electro-magnets of the receiving-instrument.

27. The combination, with the distributer, of a series of keys, each consisting of a circuit closing or breaking spring or springs, a finger key or lever for operating it or them, a metronome electro-magnet, and an armature mounted on said key and arranged to make contact with said magnet when the key is depressed, and thereby to hold the key depressed as long as the magnet remains active.

28. The combination of a manipulator consisting of five keys assembled in one instrument, a distributer for connecting said keys successively to line, a receiving-instrument having five magnets for receiving the five successive currents, and a distributer at the receiving-station for distributing the five successive currents to the respective magnets, whereby thirty-two different signals may be transmitted by depressing the manipulator-keys in different combinations.

388,245. METHOD OF WORKING METALS BY ELECTRICITY. Nikolas Benardos, St. Petersburg, Russia. Filed June 6, 1888. Serial No. 276,279. (No model.)



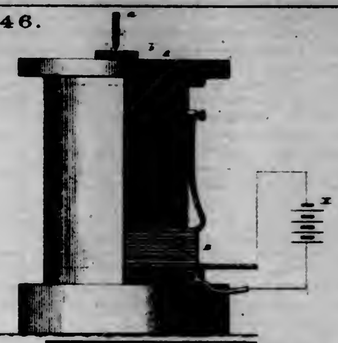
Claim.—In the hereinbefore-described process of welding or working metals by means of the electric arc, the method of improving the metal and enhancing the efficiency of the arc, which consists in subjecting the same to the influence of an electro-magnet, in the field of which the arc is maintained during the welding operation, substantially as and for the purposes hereinbefore set forth.

388,246. APPARATUS FOR WORKING METALS BY ELECTRICITY. Nikolas Benardos, St. Petersburg, Russia. Filed June 6, 1888. Serial No. 276,280. (No model.)

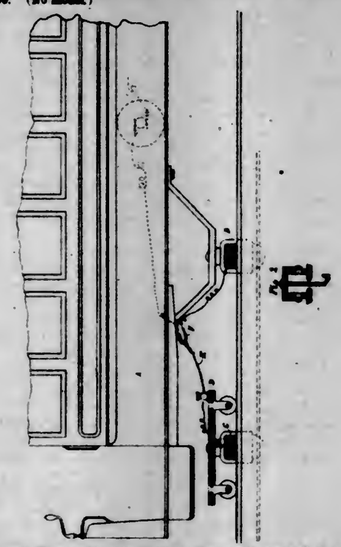
Claim.—1. An electro-magnetic anvil or supporting-table for metals to be worked or welded by the electric arc, in combination with appliances for forming said arc, substantially as hereinbefore set forth.

2. An anvil or supporting-table for metals to be worked or welded by the electric arc, made of material suitable to form the core of an electro-magnet, surrounded by an insulated coil, which is included in the circuit of the said arc, substantially as and for the purposes hereinbefore set forth.

388,246.



388,247. CURRENT-COLLECTOR FOR ELECTRIC RAILWAYS. Josiah L. Blackwell, New York, N. Y. Filed July 3, 1883. Serial No. 278,959. (No model.)

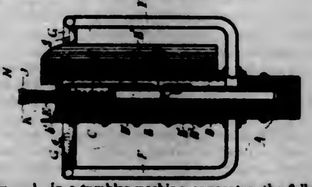


Claim.—1. The combination, with an electrically-propelled vehicle provided with a normal contact device, of a supplementary contact device provided with a truck adapted to ride on the surface of the conduit, and a wire for connecting it to the vehicle.

2. The combination, with an electrically-propelled vehicle having a normal contact device and an exposed hook or connection-point in electrical communication with the propelling-motor, of a supplementary contact device having a truck adapted to ride upon the surface of the conduit, with means for connecting it to the said exposed point.

3. A supplementary contact device for an electric railway having a truck adapted to ride on the surface of a conduit, and a contact-piece thinner than the width of the slot, so as to be inserted therein at any point.

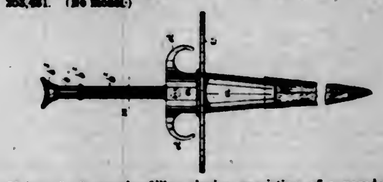
388,248. TUMBLER-WASHER. Andrew Blair, Philadelphia, Pa. Filed Oct. 17, 1887. Serial No. 252,857. (No model.)



Claim.—1. In a tumbler-washing apparatus, the following elements in combination: a tube, D, provided with holes or openings D^2, a sleeve or sliding tube, C, adapted to slide under pressure over the tube D, and likewise provided with holes or openings D', the said holes or openings so relatively disposed to each other that when pressure is communicated to the sleeve C said sleeve will slide over the tube D until the holes or openings in the respective tubes are in line with each other and form outlets for the escape of the water from the tube D to an outer tube or casing, B, an outer tube or casing, B, provided with a series of perforations for the escape of water to the interior of the tumbler, and with internally-extending horizontal rubbers adapted to come in contact with the inner side of the tumbler, and a spring, H, for raising and supporting the sleeve or sliding tube C when pressure is removed therefrom and preventing the further escape of water, the whole arranged and operating substantially as described, and for the purposes set forth.

2. In a tumbler-washing apparatus, in connection with a water-supply, the combination of the tube B, mounted on the coupling A, having attached thereto rubbers B^2, for cleaning the interior of the tumbler, and provided with a series of orifices or perforations along its length and at its top for the discharge of water to the interior of the tumbler, the tube D, mounted on the coupling A, closed at its upper end and provided along its length with holes or openings D^2, a sleeve or sliding tube, C, fitting closely over the tube D, and provided along its length with holes or openings D^2, and adapted under pressure to slide over the tube D, said holes or openings D' and D^2 so relatively disposed to each other as to come in line when pressure is communicated to the sleeve C, and form outlets for the escape of water from the tube D to the tube B, the hollow rod or stem E, mounted on the sleeve or sliding tube C, the rod I, mounted on the tube D, extending up through the top of the sleeve C and into the hollow rod or stem E, mounted on the sleeve C, when the latter is forced downward, a spiral spring, H, on the rod I, for raising and supporting out of section the sleeve C when pressure is removed from the same, and cutting off the flow of water from the tube D, a set-screw or pin on the tube D, operating in the slot or opening in the sleeve C, to steady and guide the sleeve C when forced over the tube D, the rotary head J, mounted on the upper end of the rod or stem E, and a cushion, N, on said rotary head, on which to seat the tumbler, the pipes or conduits F F', supporting and opening into the perforated annular tube G, and the perforated annular tube G, from which water is discharged directly to the exterior of the tumbler through the orifices or perforations g in the same, the whole arranged and operating substantially as described, and for the purposes set forth.

388,249. POWDER-FILLER. George Blan, Newark, N. J., assignor to Lilie H. Bates, same place. Filed Oct. 26, 1887. Serial No. 253,491. (No model.)



Claim.—1. A powder-filling device consisting of a powder-receptacle having finger-hooks thereon, and a guard around said receptacle between the hooks and the end of said receptacle which is inserted into the powder, and a plunger working within said powder-chamber, whereby the powder is expelled from said powder-chamber, substantially as specified.

2. A powder-filling device consisting of a powder-receptacle provided with finger-hooks thereon, a guard around the same arranged between said hooks and the end thereof which is inserted into the powder, said end being tapering and also provided with a powder-chamber within the same, and a plunger working within said powder-chamber, substantially as and for the purposes set forth.

3. A powder-filling device consisting of a powder-receptacle provided with finger-hooks thereon and a powder-chamber within the same, and a spring-actuated plunger moving within said powder-chamber and normally held by the action of the springs away from the mouth or open end of said chamber, substantially as and for the purposes set forth.

4. A powder-filling device consisting of a powder-receptacle provided with hooks thereon, and a guard arranged around said receptacle between the hooks and the end thereof, and provided with a powder-chamber within the same, within which moves a spring-actuated plunger, substantially as and for the purposes set forth.

5. A powder-filling device consisting of a powder-receptacle having a powder-chamber within the same and finger-hooks thereon, and a plunger moving within said powder-chamber, provided with a slot, b^2, therein, and a detent engaging with said slot, for the purposes set forth.

6. A powder-filling device consisting of a powder-receptacle provided with a powder-chamber therein and finger-hooks thereon, and a tubular plunger moving within said powder-chamber, provided with a slot, b^2, therein, a spring arranged within said tubular plunger, and a stop, b^3, substantially as and for the purposes set forth.

7. A powder-filling device consisting of a powder-receptacle provided with a powder-chamber therein and finger-hooks thereon, a spring-actuated plunger moving within said powder-chamber and provided with a slot, b^2, therein, and a set-screw arranged in said powder-receptacle and adapted to engage with said slot b^2 in the plunger, substantially as and for the purposes set forth.

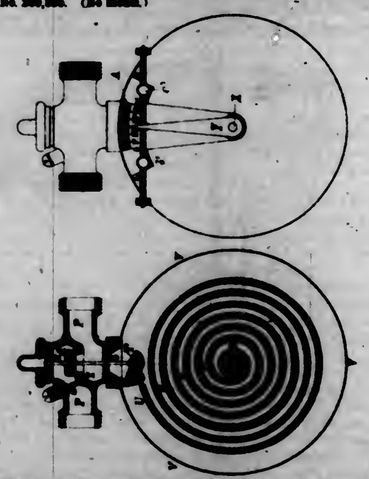
8. A powder-filling device consisting of a powder-receptacle provided with a powder-chamber therein, finger-hooks thereon, and a guard arranged between said finger-hooks and the end of the powder-receptacle, which is inserted into the powder, a spring-actuated plunger working within said powder-chamber, provided with a slot, b^2, therein, and a set-screw adapted to enter said slot b^2 and limit the movement of the plunger, substantially as and for the purposes set forth.

9. A powder-filling device consisting of a powder-receptacle, *c*, having a powder-chamber, *c'*, therein, finger-hooks *d* thereon, and a guard, *e*, thereround, a tubular plunger moving within said powder-chamber, provided with slots b^2 and b^3, a spring arranged within said tubular plunger, which has a stop, b^3, thereon, and a set-screw arranged in said receptacle and adapted to enter said slot b^2 to limit the movement of said plunger, substantially as and for the purposes set forth.

10. A powder-filling device consisting of a powder-receptacle, *c*, having a powder-chamber, *c'*, therein, finger-hooks *d*, cast integrally with said powder-receptacle, and a guard, *e*, arranged thereround between said hooks *d* and the end *e'* the receptacle which is inserted into the powder, said end being tapering, a tubular plunger moving within said powder-chamber, having a spring arranged therein, and slots b^2 and b^3, a stop, b^3, and a set-screw arranged in said receptacle and adapted to enter into engagement with said slot b^2 to limit the movement of the plunger, substantially as and for the purposes specified.

11. A powder-filling device consisting of a powder-receptacle provided with a powder-receiving chamber therein, the sides of which are parallel, the outside of said receptacle tapering toward the mouth of said chamber, and a plunger moving reciprocally within said chamber, for the purposes set forth.

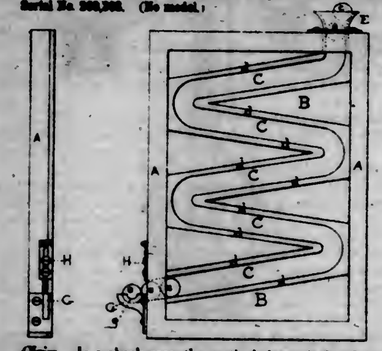
388,250. AUTOMATIC TEMPERATURE-REGULATOR. Otto Blum, Stuttgart, Wurtemberg, Germany. Filed Apr. 8, 1886. Serial No. 198,080. (No model.)



Claim.—1. The combination, with a hollow cylindrical case and a cock mounted thereon, said cock having within it a valve and valve-stem by the motion of which the flow of a current of gas passing through said cock is controlled, of a spiral spring within said case, attached by its inner end to a shaft within the interior of said case and having its outer end bearing upon a lever pivoted to said cock, said spring being composed of two strips of two different kinds of metal, of equal length and of different dilatability, so arranged that the more expansive metal is placed within, so that as the spring is heated it will tend to unwind and as it grows cooler will tend to wind up, a lever pivoted to said cock, moved by said spiral spring, and itself bearing upon and moving said valve-stem to control the flow of gas as aforesaid, an index-hand mounted upon said shaft without the said case and moving upon a graduated arc upon the exterior of said case, and two screws working in nuts attached to said case, one screw on either side of said index-hand, to limit its motion, substantially as and for the purposes set forth.

2. The combination, with the cylindrical case V and the cock P, mounted upon said cylindrical case, the valve Q and its stem, the screw *c*, and the hole *c* within said cock, of the lever T, pivoted to said cock, the spring U, attached by its inner end to the shaft X and bearing with its outer end upon the lever T, the shaft X, journaled in said cylindrical case, the index-hand Y, mounted upon said shaft, moving upon the graduations A, the graduated arc A, and the screws *b* and *c*, working in nuts upon said case and limiting the motion of said index-hand, all substantially as and for the purposes set forth.

388,251. CHECK-CASE. George R. Bowen, Auburn, N. Y., assignor of one-half to John H. Lynch, same place. Filed Jan. 11, 1888. Serial No. 260,268. (No model.)



Claim.—In a check-case, the vertical zigzag inclosed track C C, formed of the channeled strips *d d*, and provided with a cover to retain the checks from falling forward, in combination with an external fixed receiver, G, adapted to hold one check at a time, said receiver extending upward at the back of the check to its middle point, and provided with the recesses *g* in its sides to enable the check to be grasped, substantially as described.

388,252. HYDRAULIC DREDGING APPARATUS. Alfred R. Bowers, San Francisco, Cal. Original application filed Dec. 9, 1879. Renewed Apr. 16, 1879. Divided and this application filed Aug. 6, 1887. Serial No. 246,269. (No model.)

Brief.—A rotary excavator in combination with and mounted transversely to a suction-pipe, said excavator being provided with devices whereby it is enabled to work with an axial feed or swing in both directions, also with peripheral devices that enable it to cut in a plane perpendicular to its axis of rotation, and with fenders to prevent its cutting-edges from catching against obstructions.

Claim.—1. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices constructed to work with an axial or end feed, and means for giving to said excavator an axial swing.

2. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices and detachable cutting-edges.

3. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices, and fenders to protect said devices.

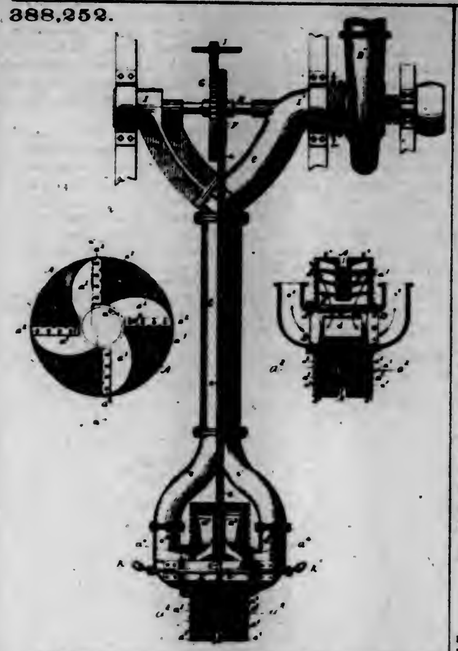
4. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices, and a device for excluding substances too hard and coarse to pass through the raising and discharging apparatus.

5. In combination, a suction-pipe, a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices, detachable cutting-edges, and fenders to protect said edges.

6. In combination, a suction-pipe, a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices and detachable cutting-edges, and a device for excluding coarse hard substances from the suction-pipe.

7. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices having an inward delivery through themselves to said pipe.

388,252.



8. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices armed with detachable cutting-edges and having an inward delivery through themselves to said pipe.

9. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices having an inward delivery to said pipe, and fenders to protect said devices.

10. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices having an inward delivery, and a device for excluding coarse hard substances from said pipe.

11. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices having an inward delivery, detachable cutting-edges, and fenders to protect said edges.

12. In combination, a suction-pipe, a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices having an inward delivery and detachable cutting-edges, and a device for excluding coarse hard substances from said pipe.

13. In combination, a suction-pipe and rotary excavator having its axis transverse to said pipe, said excavator being provided with bottomless buckets having axial excavating-edges.

14. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with bottomless buckets having detachable side or axial cutting-edges.

15. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with bottomless buckets having side or axial cutting-edges, and fenders to protect said edges.

16. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with bottomless buckets having side or axial cutting-edges, and a device to exclude coarse hard substances.

17. In combination, a suction-pipe and a rotary excavator having its axis transverse to said pipe, said excavator being provided with bottomless buckets having detachable side or axial cutting-edges, and fenders to protect said edges.

18. In combination, a suction-pipe, a rotary excavator having its axis transverse to said pipe, said excavator being provided with bottomless buckets having detachable side or axial cutting-edges, and a device for excluding coarse hard substances from the suction-pipe.

19. In combination, a suction-pipe, a rotary excavator having its axis transverse to said pipe, said excavator being provided with axial excavating devices, a chain-wheel, and an endless chain actuated by a chain-wheel in the axis or center of oscillation of said suction-pipe.

20. In combination, a suction-pipe and rotary excavator, consisting of a chain-wheel provided with axial excavating devices constructed to work with an axial or end feed, and means for giving to said excavator an axial swing.

21. In combination, a suction-pipe and a rotary excavator consisting of a chain-wheel provided with axial excavating devices and detachable cutting-edges.

22. In combination, a suction-pipe and a rotary excavator consisting of a chain-wheel provided with axial excavating devices, and fenders for the protection of said devices.

23. In combination, a suction-pipe and a rotary excavator consisting of a chain-wheel provided with axial excavating devices, and a device for excluding coarse substances from said pipe.

24. In combination, a suction-pipe and a rotary excavator consisting of a chain-wheel provided with detachable axial excavating-edges, and fenders to protect said edges.

25. In combination, a suction-pipe and a rotary excavator consisting of a chain-wheel provided with axial excavating devices, detachable cutting-edges, and a device for excluding coarse substances from the suction-pipe.

26. A rotary excavator consisting of a chain-wheel provided with axial excavating devices, and fenders for the protection of said devices.

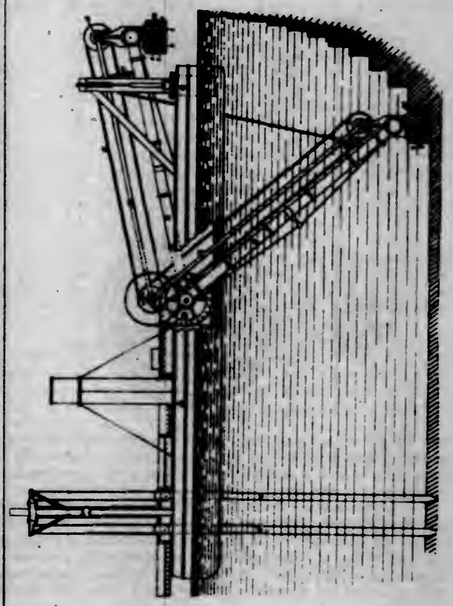
27. A rotary excavator provided with axial excavating devices on each end to excavate in each direction and deliver the spoil inward between said devices.

28. A rotary excavator provided with axial excavating devices, and with detachable fenders for the protection of said devices and to prevent them from catching against obstructions, and with means for giving to said excavator an axial swing.

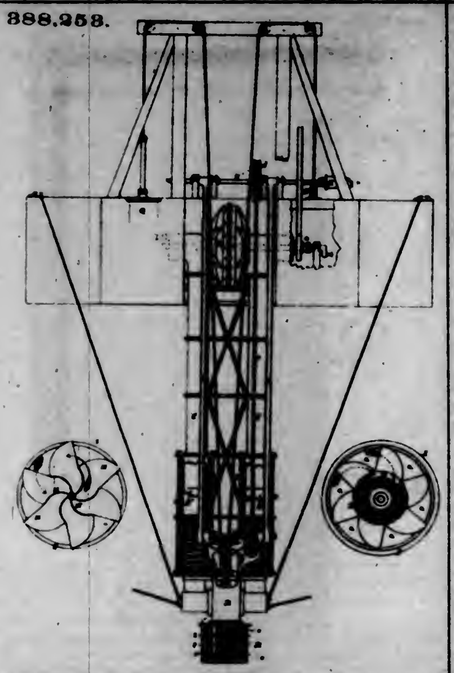
388,253. DREDGING-MACHINE. Alphonso B. Bowers, San Francisco, Cal. Original application filed Dec. 9, 1878. Renewed Apr. 16, 1888. Divided and this application filed Apr. 30, 1888. Serial No. 272,262. (No model.)

Brief.—An excavating implement working with a side feed mounted on a swinging suction pipe or ladder, so as to preserve a horizontal position of its bottom cutting-edges at whatever angle the pipe or ladder may be placed and make a level or nearly level cut the whole width of the excavator and length of swing, strengthening and stiffening the suction-pipes and combining them by trusses and braces into a rigid structure or ladder for the support of the excavator and to resist the various strains thereon.

Claim.—1. In combination, a swinging suction-pipe, an excavator with side cutting-edges constructed and arranged to work with a side feed, and a device to hold said excavator in position to make a



388,253.



horizontal cut and level bottom at the different angles in which the suction-pipe is placed in the process of dredging.

2. In combination, a swinging suction-pipe, an excavator with bottom cutting-edges constructed and arranged to work with a side feed, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which the suction-pipe is placed in the process of dredging.

3. In combination, a swinging suction-pipe, ladder, and excavator with side cutting-edges constructed and arranged to work with a side feed, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which the suction-pipe is placed in the process of dredging.

4. In combination, a swinging suction-pipe, a hollow excavator with side cutting-edges constructed and arranged to work with a side feed, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which the suction-pipe is placed in the process of dredging.

5. In combination, a swinging suction-pipe, ladder, and hollow excavator with side cutting-edges constructed and arranged to work with a side feed, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which said pipe and ladder are placed in the process of dredging.

6. In combination, a swinging suction-pipe, a rotary excavator with side cutting-edges constructed and arranged to work with a side feed, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which the suction-pipe is placed in the process of dredging.

7. In combination, a swinging suction-pipe, ladder, and rotary excavator with side cutting-edges constructed and arranged to work with a side feed, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which the pipe and ladder are placed in the process of dredging.

8. In combination, a swinging suction-pipe, a hollow rotary excavator with side cutting-edges constructed and arranged to work with a side feed, and with inward delivery through itself to said pipe, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles at which the pipe is placed in the process of dredging.

9. In combination, a swinging suction-pipe, ladder, a hollow rotary excavator with side cutting-edges constructed and arranged to work with a side feed and with inward delivery through itself to said pipe, and a device to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which said pipe and ladder are placed in the process of dredging.

10. In combination, a swinging section of suction-pipe provided with swinging or hinged joints at or near each end thereof, an excavating implement at the outer end of said pipe, and a swinging parallel bar constructed and arranged to form with said pipe and excavator a swinging parallelogram with parallel movements to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which said pipe and bar are placed in the process of dredging.

11. In combination, a swinging ladder, an excavating implement hinged to its outer end, and a swinging parallel bar constructed and arranged to form with said ladder and excavator a swinging parallelogram with parallel movements to hold said excavator in position to make a horizontal cut and level bottom at the different angles in which said ladder and bar are placed in the process of dredging.

12. A ladder for dredging purposes constructed with hollow or tubular sides united by cross-bars and stiffened by vertical trussing and diagonal bracing.

13. Pipes C C, one or both being employed for suction, said pipes being also properly trussed and braced to serve as a ladder, in combination with an excavating implement constructed and arranged to work with a side feed.

14. Pipes C C, one or both being employed for suction, said pipes being also braced to serve as a ladder, in combination with a hollow excavating implement constructed and arranged to work with a side feed.

15. Pipes C C, one or both being employed for suction, said pipes being also properly trussed and braced to serve as a ladder, in combination with a rotary excavator.

16. Pipes C C, one or both being employed for suction, said pipes being also braced and trussed to serve as a ladder, in combination with a hollow rotary excavating implement with inward delivery through itself to said conduit.

17. Pipes C C, one or both being employed for suction, said pipes being also properly trussed and braced to form a ladder, a rotary excavator at the outer end thereof, and a device for holding said implement in position to make a horizontal cut and level bottom at the different angles in which said ladder is placed in the process of dredging.

18. In combination, a swinging suction-pipe, a hollow rotary excavator with inward delivery through itself to said pipe at the outer end thereof, and an endless chain for actuating said excavator.

19. In combination, a suction-pipe having a telescoping section provided with a spiral spring passing around said section constructed and arranged to yield to heavy pressure and allow the pipes to telescope and to extend the telescoping section when the pressure is removed.

20. In combination, a suction-pipe having a telescoping section, a spiral spring to extend said section, and sliding guide rods to keep the telescoping section in line.

21. The combination of a suction-pipe and excavator constructed to be raised and lowered by swinging in a vertical plane, said excavator being provided with devices to effect a side feed, and with an automatic device to hold the excavator in position to cut and make a level bottom, at whatever angle the suction-pipe may be placed in the process of dredging.

388,254. SNAP-HOOK. Everal Bradley, Trumansburg, N. Y. Filed June 2, 1888. Serial No. 275,819. (No model.)



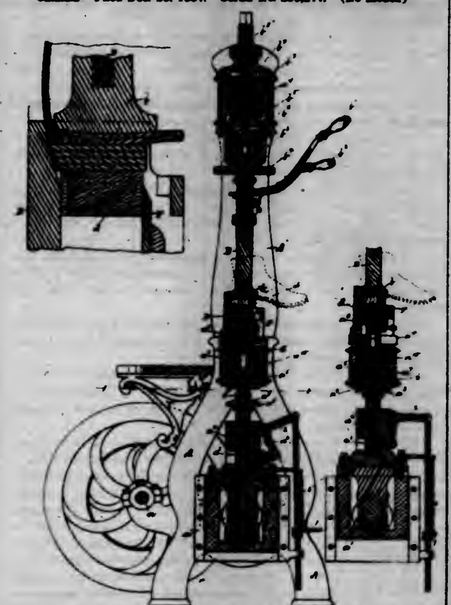
Claim.—1. The combination, with the hook-body A, provided with a loop, B, and forwardly-extending hook C, and beveled shoulders *b*, of the spring-actuated hook C, provided with a shoulder, *b'*, the free ends of the said hooks C C being curved outwardly in opposite directions, and the shoulders *b b'* being correspondingly laterally enlarged, substantially as herein set forth.

2. The combination, with the hook-body A, provided with perforated ears *a a*, a loop, B, and forwardly-projecting hook C, and beveled shoulder *b*, one of the said ears *a* being provided with a shoulder, *f'*, of a movable hook, C', provided with a lateral beveled shoulder, *b'*, and a downward extension, *e*, this portion C' being pivoted between the said perforated ears *a a*, and also provided with a lateral lug, *f*, and a spiral spring inserted in a cavity in the body A and adapted to bear against the said extension *e* and hold the hooks closed, substantially as described.

3. The combination, with the body A, provided with a loop, B, and a hook, C, and a pair of perforated ears, *a a*, and a slightly-curved portion, *f*, between these ears, of a movable hook, C', pivoted between the said ears *a a* and provided with a downward extension, *e*,

and a spiral spring, E, inserted in a cavity in the body A, and adapted to press with its rear end upon the said extension *e* and hold the hooks normally closed, the rear end of the said spring being turned in toward its center, as at *g*, substantially as described.

388,255. HEEL-MACHINE. Guillaume Barbe, Quebec, Quebec, Canada. Filed Dec. 20, 1887. Serial No. 258,277. (No model.)



Claim.—1. In a heeling-machine, the double-jointed arm B, composed of the parts b^3 and the swinging part carrying the shoe *b*, connected by a link and two pins, in combination with heel-block D, the handle b^7 being fast to the link and the handle b^8 being fast to the swinging part of the arm, substantially as and for the purpose specified.

2. In a heeling-machine, mold D and driver-plate a^4, and mechanism, substantially such as described, for moving driver-plate a^4 within mold D for a certain part of the stroke of the driver-plate a^6 and moving mold D and driver-plate a^4 together during the latter part of the stroke of the driver-plate a^6, the mold, driver-plate, and actuating mechanism being combined and operating substantially as described.

3. In a heeling-machine, mold D, heel-block *d*, driver-plate a^4, and breasting-knife F, the breasting-knife being fast to the driver-plate a^4, in combination with plungers a^3 and a^{10} and actuating mechanism, substantially such as described, by which plunger a^3 is moved independently of plunger a^{10} during the first part of the stroke of plunger a^3, but these plungers are moved together during the latter part of the stroke, all substantially as and for the purpose specified.

4. In combination, heel-block *d*, mold D, driver-plate a^4, and especial mechanism for combining them, consisting of spline G and plungers a^3 a^{10}, all substantially as described.

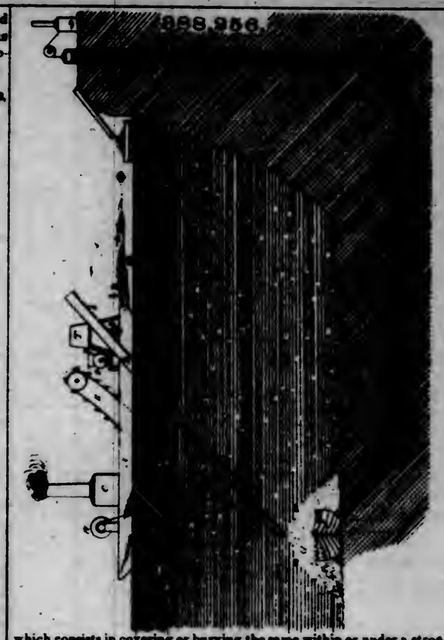
5. The improved heeling-machine above described, consisting of the heel-clamp *b d*, mold D, driver-plate a^4, and breast-knife F, with actuating mechanism, substantially such as described, to impart the differential motion to the driver-plate a^4 and mold D.

6. In a heeling-machine, the stationary spline G, supporting the heel-block *d*, the plunger a^3, supporting the driver-plate a^4, and the plunger a^{10}, supporting the mold D, in combination with plunger a^4, block a^5, and block a^2, all substantially as described.

388,256. RECOVERING VALUABLE CONTENTS FROM SUNKEN SHIPS. John H. Brown, Baltimore, Md., assignor to Morgan R. Wise, Salero, Ariz. Filed Jan. 12, 1888. Serial No. 260,540. (No model.)

Claim.—1. The method of recovering treasure or valuables lost at sea by enveloping or burying in its position under water the treasure or thing to be recovered in a strong water-proof crust or coating, then making an opening from above water-surface into said inclosing-coating, and removing the inclosed contents through said opening, substantially as described.

2. The method of recovering goods or treasure from deep water,



388,256.

which consists in covering or burying the same within or under a strong water-proof composition which will set or harden under water around and over the thing to be procured, then making an entrance into the incasing material from a point above water and removing the same through said entrance or passage-way, substantially as set forth.

3. The process of removing valuables from under water, which consists of covering and incasing the same in a strong water-proof covering, then tunneling under and into said covering and removing said valuables through said tunnel, substantially as set forth.

4. The herein-described method of recovering the contents from a sunken ship, which consists in forming a béton monolith covering over and around the ship, then opening a passage-way into said monolith and removing the inclosed contents of the ship through said opening, substantially as set forth.

5. The method of removing the contents of a sunken ship, which consists in first entirely incasing the ship with impermeable material, then making a passage-way from above water into the ship and removing the contents of the ship through said passage-way, substantially as set forth.

6. The method of recovering the contents from a sunken ship, by first covering the ship with béton or its equivalent, then making a passage-way into said béton covering and ship and removing the contents of the ship through said passage-way, substantially as set forth.

7. The method of gaining entrance into and removing the contents out of a sunken ship, which consists in first entirely covering the ship with béton or its equivalent, then sinking a shaft on adjacent land or in adjacent water away from swift currents of water to a depth below the level of the river or sea bed, then tunneling to a point under or near the sunken and incased ship, then cutting up into the ship and removing its contents through said tunnel and shaft, substantially as set forth.

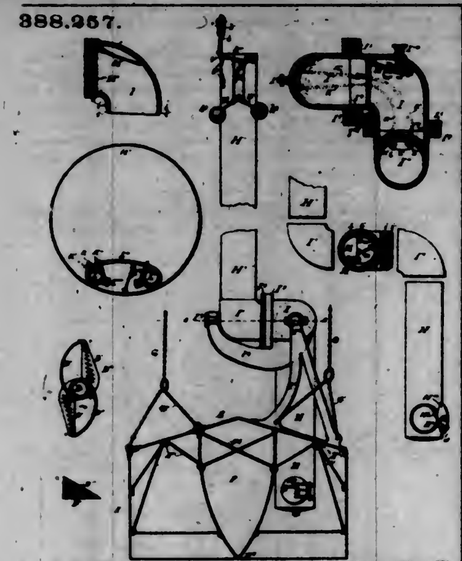
8. The method of procuring valuables sunk in water, which consists in inclosing the same in quick-setting cement during the successive intervals of still water between ebb and flow of tides, then making a passage-way into the inclosed space and removing said valuables through said passage-way, substantially as set forth.

9. The process of removing valuables from sunken vessels, which consists in incasing the sunken vessel in a monolith covering, making a passage-way into said monolith, exhausting the inclosed water therefrom, and then removing the other contents through said passage, substantially as set forth.

388,257. APPARATUS FOR RECOVERING VALUABLE CONTENTS FROM SUNKEN SHIPS. John H. Brown, Baltimore, Md., assignor to Morgan R. Wise, Salero, Ariz. Filed May 16, 1888. Serial No. 267,440. (No model.)

Claim.—1. A diving-bell or caisson provided with a fixed por-

388,257.



tion of shaft H, in combination with a swinging floating portion, H', these parts being united by flexible connections to constitute a universal joint and to permit the passage of men therethrough to and from the caisson, substantially as described.

2. A portable caisson, in combination with an air-filled shaft closed at top and bottom and having a flexible portion whereby water-currents may carry it into an inclined position below water-surface, and whereby the inclosed air will cause it to float or its upper end to rise above water-surface whenever such currents cease, substantially as set forth.

3. A submerged caisson, in combination with a jointed shaft attached thereto and adapted to yield or leave its vertical position when struck by moving ships to permit passage over or past it, and to automatically return to its vertical position again when such colliding ship has passed it, substantially as set forth.

4. A portable caisson provided with a shaft having air-tight doors at its top and bottom and a rope or connection from the top of the shaft to the latch of the lower door, whereby the lower door may be unlatched while the shaft and caisson are full of water to permit the water to be driven down out of the shaft by compressed air, and by which rope said lower door may be pulled shut and water prevented from returning to the air-lock when air-pressure is lowered therein, substantially as set forth.

5. A portable caisson provided with a shaft having an air-tight door at its top, a door or doors near its bottom, means for admitting compressed air into the shaft and thereby driving the water down out of the shaft, and the means for preventing the return of the water into the shaft when out by the closing of a lower door or valve, so that when the air-pressure therein is lowered the upper door can be opened and entrance be made from the top through the shaft into the air-lock, as set forth.

6. A portable caisson provided with an air-lock at its lower end, having its two air-tight doors and an additional air-tight door at the top of the shaft, whereby the water may be driven down out of the shaft and caisson by compressed air, substantially as set forth.

7. A passage-way or shaft of a diving-bell or portable caisson composed of upper and lower vertical portions, an intermediate horizontal portion, and air-lock doors at the top and bottom ends, and also an air-lock door in the intermediate horizontal portion, substantially as set forth.

8. A vertical shaft of a diving-bell or portable caisson having a horizontal section which includes the upper end of the air-lock, a door hinged to swing horizontally therein, and with a horizontal landing or terminus of the vertical portions of the shaft upon each side of said upper air-lock door M, as set forth.

9. A passage-way or shaft of a diving-bell or portable caisson having between and connecting its cylindrical end portions three connected elbows, the middle one of which lies in a horizontal plane, its two ends in vertical planes at right angles to each other and adapted to rotate or oscillate in their bearing connections with the adjacent elbows, whereby the upper portion of the shaft is free to move in any direction from a perpendicular, while the lower portion remains in vertical position, as set forth.

10. A passage-way or shaft of a diving-bell or caisson provided with a door at its top end adapted to be automatically released and closed by the rising thereto of water to prevent the water from entering the shaft, substantially as set forth.

11. An entrance-shaft of a diving-bell or caisson provided with a hinged spring-actuated door at its upper end, in combination with floats adapted to be lifted by approaching water, whereby the door is released and closed to prevent the admission of water into the shaft, substantially as set forth.

12. An entrance-shaft, H', of a caisson provided with a hinged door, *A*, having a lug or crank, A^x, spring A^2, latch-bar A^y, and catch A^3, in combination with floats A^5, levers A^7, and rods A^6, substantially as shown.

13. A diving-bell or caisson, K, having a rigid shaft, H, and a swinging portion, H', in combination with a floating buoy, B', attached thereto by a chain or cable, B^2, substantially as and for the purpose set forth.

14. A diving-bell or portable caisson having a centrally-fixed compartment adapted to hold weights or material for sinking the caisson, said compartment being tapered to a narrow edge or point at its lower end, substantially as set forth.

15. A diving-bell or portable caisson comprising an external shell, in combination with an internal central weight-receiving compartment, F, wide at its top and narrow at its bottom, substantially as set forth.

16. A diving-bell or portable caisson comprising an external metallic shell and an internal central weight-receiving compartment, F, terminating in a narrow or pointed lower end, in combination with a system of intermediate braces, E''

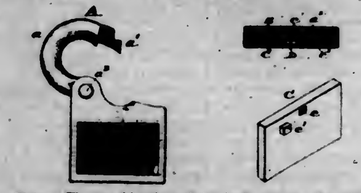
17. A diving-bell or portable caisson comprising an outside shell, K, a central weight-receiving compartment, F, surrounded by an annular working-chamber, E', substantially as set forth.

18. In combination with the shaft of a caisson, an inside ladder composed of tubular sides spaced apart and connected by rungs or rounds secured thereto to constitute the ladder, said tubular sides being adapted to convey compressed air into the caisson, and also to serve as conduits for electric-light and telephone wires, substantially as set forth.

19. A ladder within the shaft of a caisson, composed of tubular sides adapted to convey compressed air from an outside air-compressor into the interior of the caisson, in combination with electric conducting-wires inclosed within and protected by the tubular sides of said ladder and their connections, substantially as and for the purpose set forth.

20. The combination, with a caisson, of a ladder whose tubular sides are adapted to convey compressed air down the shaft of the caisson and to also serve as conduits for electric wires, and ropes for manipulating mechanism within the air-lock or caisson, substantially as set forth.

388,258. SEAL-LOCK. Lewis A. Brown, St. Louis, Mo. Filed Apr. 6, 1888. Serial No. 269,893. (Model.)



Claim.—The combination of the lock-case, the bow having the projection a', the locking-plate having the perforation *c* and the projection c', and the seal and the spring-catch D, substantially as described.

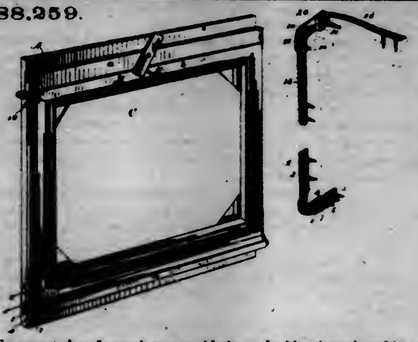
388,259. CAMERA ATTACHMENT. Frank A. Brownell, Rochester, N. Y., assignor to the Eastman Dry Plate and Film Company, same place. Filed Oct. 1, 1887. Serial No. 251,212. (No model.)

Claim.—1. The combination, in a camera, of the frame A, ground-glass frame B, and intermediate connections such as described, consisting, essentially, of a double pivoted or hinge joint, 1, on one side of the frame B and a sliding and pivoted connection, 20, on the opposite side, substantially as described.

2. In a camera attachment, the combination, with the frames A and B, of the links interposed between and pivoted to both frames on one side thereof, and links pivoted to one of said frames on the side opposite the first-named links, and provided with ways for the reception of pins on the other frame, substantially as described.

3. In combination with the frame A, provided with ways for a plate-holder, the ground glass B, adapted to enter between said ways,

388,259.



and connected to frame A on one side by a double pivoted or hinge connection, 1, and on the opposite side by pivoted links having curved grooves or ways for the reception of retaining-pins, substantially as described, whereby the frame B can be oscillated on the double-hinge connection, so as to occupy a position in rear of or against the frame A, as set forth.

4. In a camera attachment such as indicated, the combination, with the frame A, of the frame B, carrying arms 2, and links 3, the latter pivoted to said arms and to the frame A at a point intermediate the positions occupied by the pivots connecting links 3 and arms 2 when the latter are at the extremes of their movement, substantially as described.

5. In combination with frames A and B and the interposed pivoted links 3, the slotted and pivoted links 10, and the pins engaging said slotted links, substantially as described.

6. In combination with the frame A and its ribs or ways *a*, the frame B, adapted to enter between said ribs and connected to the frame A by pivoted links 3 on one side, and a detachable connection on the opposite side, substantially as described.

7. In combination with the frame A, the adjustable frame B, carrying inwardly-projecting arms 2 on one side and at opposite ends thereof, and links 3, pivotally attached to said arms and to the frame A, and provided with a stop to limit the outward or downward movement of said links, substantially as described.

8. In a camera attachment such as described, and in combination with the frame attached on one side to the frame A by a movable or adjustable connection, the links 10, pivotally connected at one end to the frame A and provided with downwardly or inwardly slotted portions, and pins mounted upon the frame B and engaging said slotted portions of the links 10, substantially as and for the purpose set forth.

9. In a camera attachment such as described, and in combination with the frame B, attached at the lower side to the frame A by a hinge or pivoted connection which will permit said lower side to be adjusted toward and from the frame A, the slotted folding links 10, and the detachable pins on frame B, engaging said links, substantially as described, to sustain the upper side of the frame B in adjusted position and permit it to be detached and swung back, as set forth.

10. In a camera attachment such as described, the combination of the frame B, provided with pins 12 on the ends of one side and arms 2 on the opposite side, links 3, pivoted to arms 2 and the frame A, and links 10, pivoted to the frame A and provided with slotted portions 11 for the reception of pins 12, substantially as described.

11. In combination with the frame B, attached to frame A by a double connection, 1, and provided with pins 12, the slotted and pivoted links or arms 10, provided with angular bearing-blocks, and the springs resting upon or bearing against said bearing-blocks, substantially as described.

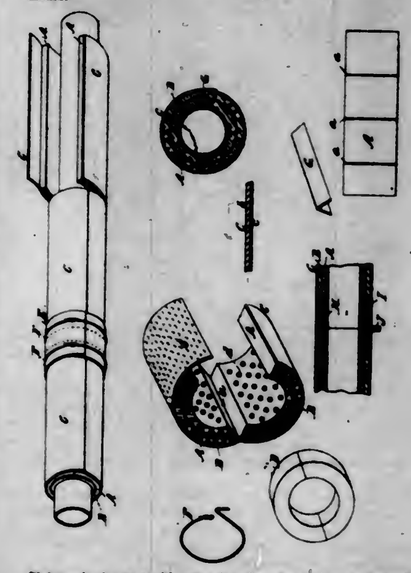
12. In a camera attachment such as described, and in combination with the pivoted arm or link 10, slotted for the reception of a pin, 12, on a movable frame, the angular bearings applied to or formed on said arm, and a spring engaging said bearings to retain said arm in adjusted position, substantially as described.

13. In a camera attachment such as described, and in combination with the frame B, connected on the lower side to the frame A, as described, to permit said lower side to be adjusted toward and away from frame A, the spring-plate mounted in the frame B and carrying pins for engaging links or supports connected to frame A, substantially as described.

14. The combination, with the frame A, of the camera-box provided with ways or supports for the plate-holder, a ground-glass frame connected at opposite sides to the frame A, so as to swing behind and parallel with the rear face of frame A or against the latter, and a spring or elastic pressure device, S, attached to and carried by the said ground-glass frame and adapted to engage the plate-holder, substantially as described.

15. The combination, in a camera and with frame A and its ways or supports for the plate-holder and a ground-glass frame supported upon frame A, and adapted, through its connections therewith, to be swung between the said ways or supports or in rear of and parallel therewith, of the springs S, projecting from the inner face of the ground-glass frame to bear against the plate-holder, said springs being adapted to enter the opening in frame A when the ground-glass frame is closed, substantially as described.

388,260. COVERING FOR STEAM PIPES AND BOILERS. PHILIP CAREY, Cincinnati, Ohio. Filed Apr. 30, 1888. Serial No. 272,332. (No model.)



Claim.—1. A removable covering for steam-pipes and the like, composed of a porous fire-proof composition saturated with still-wax and made into hinged sections united around the pipe, substantially as and for the purpose specified.

2. In a removable covering for steam-pipes and the like, the semi-cylindrical portions of porous fire-proof composition having embedded therein sheets of wire-netting, and saturated with still-wax, substantially as and for the purpose specified.

3. The herein-described removable covering for steam-pipes and the like, composed of the porous fire-proof sections A, into which wire-netting B is embedded, united by hinge-strings *a*, and the corrugated enveloping-paper C, lined with canvas at its lap, and which said sections are saturated with still-wax, substantially as and for the purpose specified.

4. The combination, with the portions A and enveloping material, C, of the heat-retaining strip G, applied at the joint, substantially as described.

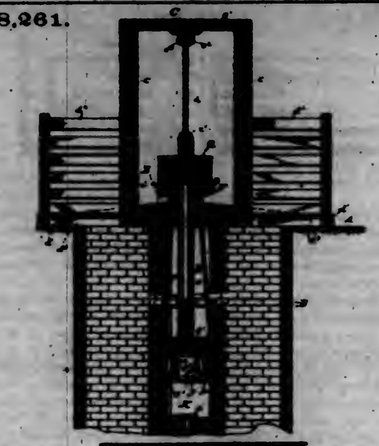
5. The combination with the abutting sections of a removable covering, of interposed elastic wings, and the enveloping-strip covering the joint and held in place by the wire ties, substantially as described.

6. The combination, with a pipe or steam-chamber and its non-conducting covering, of a drain-cup within the covering, provided with an escape-tube passed through an opening in the covering, substantially as and for the purpose specified.

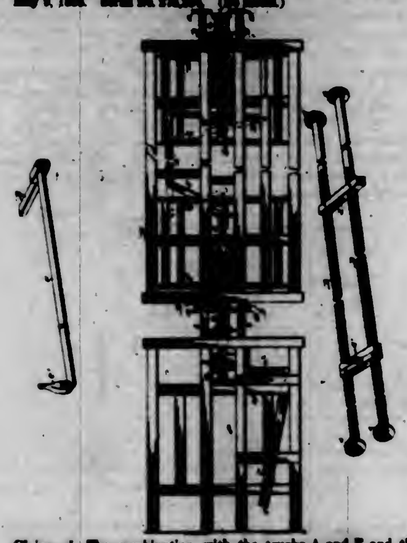
388,261. AUTOMATIC WATER-ELEVATOR. FRANK J. CARR, Arrington, Kans. Filed Aug. 13, 1887. Serial No. 246,806. (No model.)

Claim.—In an automatic water-elevator, the combination, with the hinged platform having the trough secured thereon, and the discharge-tube, of the piston J, having the downwardly-opening valves *j j*, the leather band surrounding said piston, the curved bars j^3 between the piston and leather, and the flat springs j^3, secured at their upper ends to the piston and at their lower ends to the bars j^3, substantially as specified.

388,261.



388,262. CAR-BRAKE. JAMES J. CARTER, Moberly, Mo. Filed May 9, 1888. Serial No. 273,324. (No model.)



Claim.—1. The combination, with the trucks A and B and the sliding bars D on the truck B, for actuating the brakes, of the sliding draw-bar *a*, the movable block E, and the push-bars *b*, substantially as and for the purpose described.

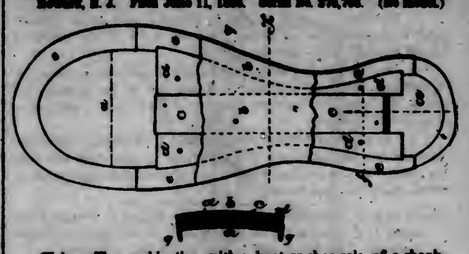
2. The combination, with the trucks A and B and the sliding bars D on the truck B, adapted to have connection with the brakes, of the sliding draw-bar *a*, the push-bars *b*, the block E, the horizontal lever C, and the vertical lever C', extending within convenient reach of the engineer, substantially as and for the purpose described.

3. The combination, with the truck, the lever *g*, connected with the brake-bars, and the sliding bars D, having the stop *d'*, of the lever H, the rod I, and the lever J, substantially as and for the purpose described.

4. The combination, with the car-trunk, the lever *g*, connected with the brake-bars, and the sliding bars having the stops *d* and *d'*, of the lever H, the rod I, and the lever J, substantially as and for the purpose specified.

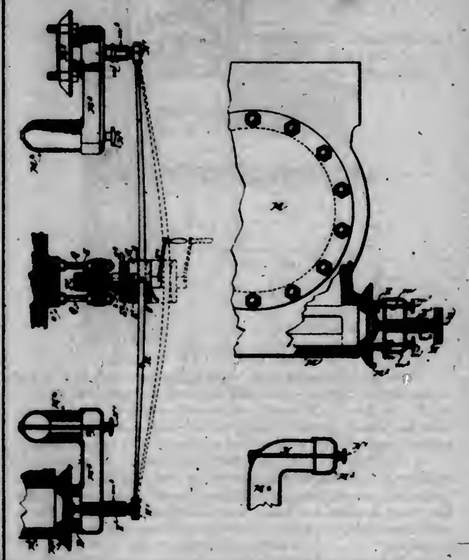
5. The combination, with the truck A, the sliding draw-bar *a*, the movable block E, and the push-bars *b*, of the truck B, the sliding bars D, extending from one end to the other of the truck and having the stops *d* and *d'*, the springs K, for holding the bars D in a normal position, the brake-bars, the rods, and the lever *g*, connecting the brake-bars, the lever H, the rod I, and the lever J, substantially as and for the purpose set forth.

388,263. SHANK FOR BOOTS OR SHOES. CHARLES GOODYEAR, Newark, N. J. Filed June 11, 1888. Serial No. 276,703. (No model.)



Claim.—The combination, with a boot or shoe sole, of a shank-stiffener formed of one piece of Malacca wood secured to said sole, longitudinal holding-pieces secured to the inner sole for holding said shank-stiffener laterally, and a cross-piece attached to the sole for holding said stiffener longitudinally, substantially as and for the purposes set forth.

388,264. CYLINDER RELIEF-VALVE. GEORGE H. CORLISS, Providence, R. I.; Emily A. Corliss administratrix of said George H. Corliss, deceased. Filed Feb. 4, 1888. Serial No. 262,973. (No model.)



Claim.—1. The combination, with the exhaust-valve bonnet M^3, of a relief-valve, E, and means for holding it with yielding force, said relief-valve being arranged and adapted to open outward from the exhaust-valve bonnet against the force of the controlling means.

2. In combination with an exhaust-valve box, a bonnet, M^3, valve E, and means, as a weight or spring, for holding said valve upon its seat with yielding force, said valve being adapted to open outward from said exhaust-valve box against the force of said controlling means.

3. The valve E, operating means H, bonnet M^3, and discharge-pipe M^5, combined with each other and with the exhaust-valve box M' of a steam-engine, all arranged and adapted to serve as and for the purpose specified.

4. The valve E, valve-stem F, bonnet M^3, and pipe M^5, provided with a sleeve, m^2, combined with each other and with means H for applying a yielding force upon said valve-stem to hold the valve upon its seat, all substantially as herein specified.

5. In a cylinder-relief, the combination, with the two exhaust-valve bonnets and two relief-valves and relief-valve stems, of a spring centrally supported and adapted to exert equal pressure upon the two valve-stems on the same side of the cylinder, all substantially as herein specified.

6. The elliptical spring H, clasp G, shoes H' H', valves E E, and valve-stems F F, combined with each other and with means S for de-

pressing said spring to apply pressure to said valve-stems, all substantially as herein specified.

7. The clasp G, screw S, gear S^2, pinion T, and crank T, combined with each other, as shown, and with a nut, P, the whole arranged and adapted to serve as specified.

8. The bracket P, provided with a nut, P, and ears on either side of said nut, combined with rods Q Q, cylinder M, and cylinder side flange, M^6, adapted to serve for a support for the clasp G, and spring H, as herein specified.

9. The bonnet M^2, relief-valve E, means H for holding with yielding force, and discharge-pipe M^4, combined with each other and with the stud-bolts *m m* and hand-nuts *m'* to form a steam-tight joint, all substantially as herein specified.

388,265. STEAM-ENGINE VALVE. GEORGE H. CORLISS, Providence, R. I.; Emily A. Corliss administratrix of said George H. Corliss, deceased. Filed Feb. 4, 1886. Serial No. 262,060. (No model.)



Claim.—1. The valve A, provided with cylindrical ends A' A' and an opening, A^3, through one of said ends, in combination with the bonnet M^2 and the valve E, opening outward from said valve, so as to promote the passage of fluid outward to relieve the cylinder from undue pressure and to forbid its return, all substantially as herein specified.

2. The valve A, provided with an axial passage, A^3, and centrally located rib *a*, combined with a spring, B, extending through and beyond the valve and being journaled at each end outside and independently of said valve, and having a central bearing against said rib *a* and at no other point within said valve, all arranged and operating as specified.

3. The valve A, provided with an axial passage, A^3, and central rib or bearing, *a*, and a spring, B, extending through and beyond said valve, as shown and described, combined with each other and with a valve-stem, C, and bonnet M^2, whereby said spring is journaled at each end entirely outside of and independently of said valve and taken as a bearing only at the center of said valve against said rib *a* to hold the valve upon its seat.

4. The valve-stem C, axially bored, as shown, combined with the valve A and with a spring, B, and adapted to serve, as specified, as a bearing for end of said spring.

388,266. CONSTRUCTION OF PERMANENT WAYS. GEORGE COWDERY and ERWIN R. THOMAS, Burwood, near Sydney, New South Wales. Filed Aug. 10, 1886. Serial No. 211,309. (No model.) Patented in England June 30, 1886, No. 8,902.

Claim.—1. The combination, with a railroad-rail, of a metal sleeper or cross-tie, having upwardly-extending and inturned lugs to engage the base of the rail, an inclined or tapering bed-piece slotted



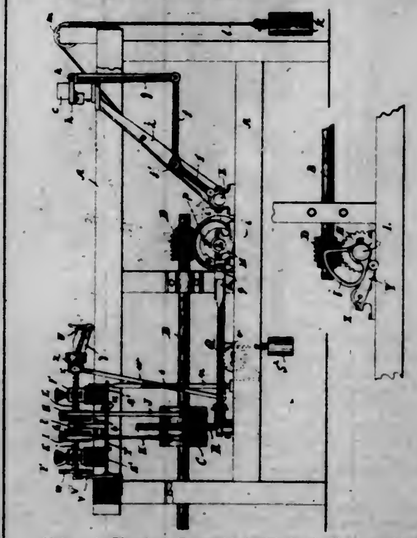


to receive the adjacent rail-gripping lug or lugs, an anti-creeping pin passed vertically through the base of the rail and the bed-piece, and a split key to lock said pin and the adjacent portion of the base of the rail, the bed-piece, and the adjacent clip together, substantially as set forth.

2. As an improvement in the permanent way of railroads, the combination of a railroad-rail of substantially T form in cross-section and having a vertical slot or hole in one base, a sleeper or cross-tie having downturned edges, a pair of oppositely-facing lugs or clips integral with said sleeper or tie and extending upwardly therefrom and having inturned top portions, a horizontally tapering or inclined bed-piece to support the rail in horizontally-inclined position, said bed-piece being slotted or recessed at each end to receive and embrace and grip the lugs or clips on the tie, and having near one end a vertical slot or hole therethrough, an anti-creeping pin passed through said vertical holes in the base of the rail and in the bed-piece, respectively, and having a beveled head, and a split key adapted to grip the rail, bed-piece, and adjacent clip together and having a beveled under face or side to grip the anti-creeping pin, substantially as set forth.

388,267. YARN-HANKING MACHINE. JOSEPH DART, Brooklyn, N. Y., and WILLARD I. LEWIS, Walpole, Mass.; said Lewis assignor to said Dart. Filed July 2, 1887. Serial No. 243,264. (No model.)

Brief.—The object of the invention is to produce a machine for twisting and hanking skeins of yarn by imparting a certain number of revolutions to one end of the skein while the other end is held stationary, and then causing the two ends to be brought together, so that one end can be passed through the other.



Claim.—1. The shaft E, provided with hook U, in combination with the double friction-flange G, pulleys H and I, belts J and K, pulley C on the driving-shaft B, the pawl V, and flange W, provided with a projection, V', substantially as and for the purposes set forth.

2. The combination of the shaft B, worm D, worm-wheel N, shaft L, double cam P, lever Q, provided with pin *q*, rock-or-shaft R, spring-lever S, double friction-flange G, weight S^5, arm *r*, shaft E, and pulleys H I, substantially as and for the purposes set forth.

3. The lever Z, provided with the box or form *c*, shaft X, and crank Y, in combination with the cam *j* on shaft L, substantially as and for the purpose set forth.

4. The bell-crank *f*, lever or rod *g*, and slide A, in combination

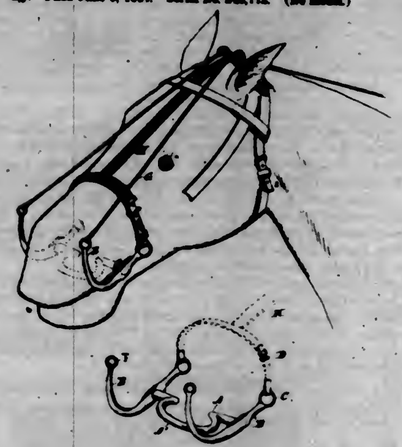
with the lever Z; box or form *c*, and cam *i* on shaft L, substantially as and for the purpose set forth.

5. The combination of the cam *u* on shaft L, the rods or levers *v w*, shaft E, sliding sleeve *x*, connecting-rod *y*, and the hook U, substantially as and for the purpose set forth.

6. In a twisting and hanking machine, the combination of the shaft B, having pulley C, the shaft E, having a double friction-flange, G, feathered thereon, the pulleys H and I, loosely mounted on the shaft E, the belts J K, the hook U, mounted upon the end of the shaft E, and means, substantially as specified, to engage either of the pulleys with the flange G, substantially as described.

7. In a twisting and hanking machine, the combination of the rotary shaft E, the hook U, mounted on said shaft and adapted to carry one end of the skein of yarn or warp, a hollow form or box, *c*, adapted to carry the other end of the yarn, a lever upon which said box is mounted, and means, substantially as specified, for automatically rotating said lever to cause the box *c* to advance and pass over the hook U, substantially as described.

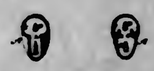
388,268. OVERCHECK BRIDLE-BIT. GUY DAVIS, Harrodsburg, Ky. Filed June 9, 1887. Serial No. 240,772. (No model.)



Claim.—1. An overcheck-bit having side bars, B, with forwardly-projecting arms E, and overchecks G, attached to the forward ends of said arms, and the muzzle-strap D, attached to the upper part of the bit, and the face-strap H, substantially as herein set forth.

2. The combination of the bit A, having the downturned part A', the forwardly-disposed arms E, and overchecks G, with the muzzle-strap D and face-straps H, substantially as herein set forth.

388,269. ARTIFICIAL TOOTH. ABNER W. DAY and LEWIS A. ROGERS, Grand Rapids, Mich. Filed Feb. 21, 1888. Serial No. 264,869. (Model.)



Claim.—A metallic shell, A, which conforms to the shape of the lingual side of the tooth, and is provided with the headed pins D and the turned-in parts which catch in the teeth, in combination with the artificial tooth, which is formed while soft upon the shell and then baked, so as to make them practically one, substantially as shown.

388,270. MUSIC-HOLDER. GOTTLIEB DUNNEBERG, Hamilton, Miss. Filed Apr. 21, 1888. Serial No. 271,209. (No model.)

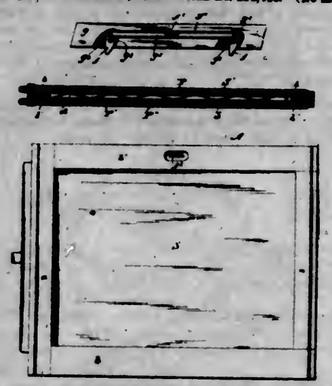
Claim.—The combination of the supporting-board provided with a groove which extends from one end to the other, and keepers which project across the top of the groove, with the two slides which are placed side by side in the same groove, and which overlap each other at their inner ends, and the holding devices applied to the outer end of each one of the slides, substantially as shown and described.



388,270.



388,271. PHOTOGRAPHIC-PLATE HOLDER. GEORGE EASTMAN, Rochester, N. Y., assignor to the Rochester Dry Plate and Film Company, same place. Filed Oct. 1, 1887. Serial No. 251,213. (No model.)



Claim.—1. In a plate-holder such as described, and in combination with its grooved and flanged side bars, movable dogs or clamps supported upon the flanged side bar and devices connecting said dogs for simultaneously projecting them over the edge of the plate or withdrawing them at will, substantially as described.

2. A plate-holder such as described, consisting, essentially, of an open frame composed of end and side pieces grooved near opposite faces for the accommodation of slides or shutters, one of said side bars being provided with a longitudinal groove intermediate the two shutters, and the other with a flange and co-operating plate-holding dogs, substantially as described.

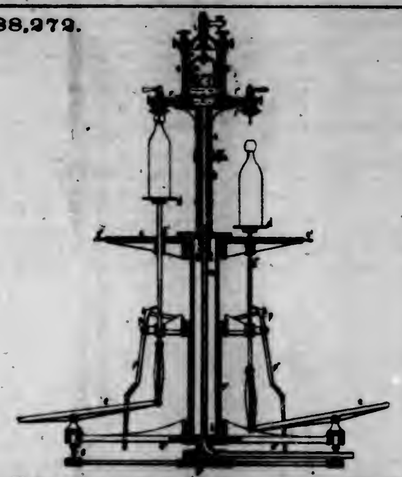
3. The combination, in a plate-holder such as described, and with the side bars, the one grooved and the other provided with a shoulder or flange and locking-dogs, of the plates and interposed elastic cushion or pad, the whole resting at one edge in the groove of one side bar and at the opposite edge between the flange and dogs on the other side bar, substantially as and for the purpose set forth.

4. In a plate-holder such as described, the combination, with the recessed side bar, of the pivoted dogs and connecting-bar and the covering strip or plate, substantially as described.

5. In a plate-holder such as described, the combination, with the recessed side bar provided with a shoulder or flange to receive the edge of the plate, of the dogs pivotally supported in the recesses, the connecting-bar with thumb-piece or handle, and the top or outer section applied to the side bar to cover the dogs and form a groove or way for the exposing-slide, substantially as described.

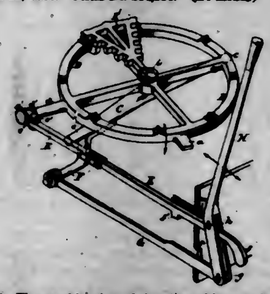
388,272. BOTTLING AND CASK-FILLING APPARATUS. LUDWIG A. ROSSKOPF, Worms, Hesse, Germany. Filed July 13, 1887. Serial No. 244,161. (No model.)

388,272.



Claim.—In apparatus for filling bottles, casks, barrels, or other like receptacles with gaseous liquids, the combination of a vessel or chamber, *c*, with supply-pipe *a* and air-passage *l*, having a valve therein, a float connected to said valve, a tap or cock, *f*, with plug *h*, having the perforations *h'* and *h²*, passage *f'*, leading from the bottom of the vessel *c* to the perforation *h'*, and passage *f² g f*, connecting the top of the said vessel with the perforation *h²*, substantially as and for the purpose described.

388,273. FURNACE-GRATE. Stephen J. Gavin, Philadelphia, Pa., assignor to Stephen Morris and Edward W. Morris, both of same place. Filed Sept. 26, 1888. Serial No. 214,980. (No model.)



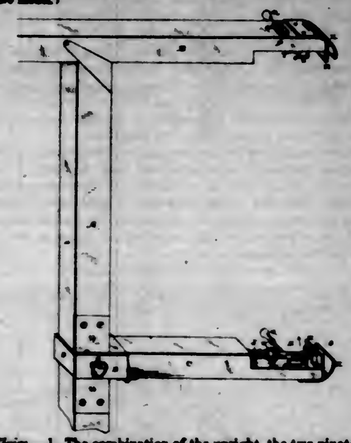
Claim.—1. The combination of the pivoted hanger-bar, the grate-frame pivoted thereto, and a retainer to prevent the dumping of the grate, with a shaker-rod connected to said grate-frame and projecting through an opening in the front plate or casing of the furnace, said rod having a stop-lug whereby movement of the rod is arrested before the grate has been vibrated to such an extent as to free it from the control of the retainer which prevents the dumping of the grate, all substantially as specified.

2. The combination of the pivoted hanger-bar and its crank, a grate pivoted to said bar, a retainer for preventing the dumping of the grate, a shaker-rod connected to the grate-frame and having a stop-lug to restrict its movement, a dumping-lever, and a rod connecting said lever to the crank of the hanger-bar, all substantially as specified.

3. The combination of the pivoted hanger-bar and its crank, a grate pivoted to said bar, a retainer to prevent the dumping of the grate, a shaker-rod, E, connected to said grate and serving as a means of vibrating the same, a stop to limit the movement of said rod, a rod, G, connected to the crank of the hanger-bar, and a lever connected to both of said rods E and G, all substantially as specified.

4. The combination of the pivoted hanger-bar and its crank, a grate hung to said bar, a retainer for preventing the dumping of the grate, a dumping-lever and rod, the rod E, connected to the grate-frame and having a stop-lug, and a slot-and-pin connection between said rod E and the dumping-lever, whereby the stop-lug of the rod may be freed and further movement of said rod permitted, all substantially as specified.

388,274. HAIR-BAG CATCHER. Joseph H. Gallehue and William P. Dorman, Marion, Va. Filed Feb. 28, 1888. Serial No. 265,977. (No model.)

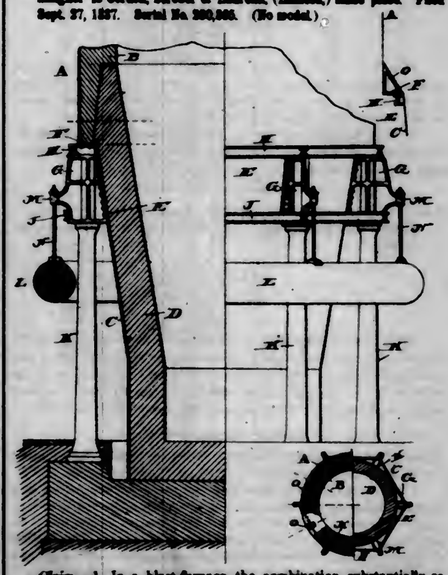


Claim.—1. The combination of the upright, the two pivoted arms connected thereto, the notched spring-actuated rods H, provided with handles Q, the guides through which the rods pass, and the keepers Y Z, between which the handles catch, substantially as shown.

2. The combination of the pivoted arms and the spring-actuated endwise-moving rods H, provided with shoulders, with suitable guides, through which the rods pass, the outer ends of the rods being given a slight lateral play in their guides, so as to disengage the shoulders from the guides, substantially as described.

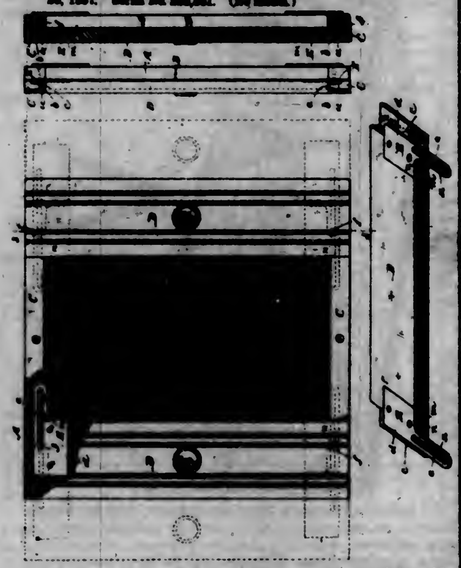
3. The combination of the pivoted arms, the spring-actuated rods H, provided with handles J and shoulder L, and the guides through which the rods move, the rods being adapted both to have a turning movement in their guides, so as to turn the shoulder in the direction of the advancing train, and having a slight lateral play at their outer ends in the angular guides, substantially as set forth.

388,275. BLAST-FURNACE. Peter W. Gennet, Philadelphia, Pa., assignor to Gordon, Strobel & Laureau, (Limited,) same place. Filed Sept. 27, 1887. Serial No. 250,955. (No model.)



Claim.—1. In a blast-furnace, the combination, substantially as set forth, of a bosh-shell, a stack-shell of greater diameter than the bosh-shell, a horizontal mantel joining the top of the bosh-shell and the bottom of the stack-shell, brackets G, engaging the mantel and bosh-shell, straight beams H, engaging under the mantel tangent to the bosh-shell and connected at their ends to said brackets, columns K, isolated from the bosh-shell and with their upper ends engaging the brackets directly below the mantel, and beams J, extending from bracket to bracket and secured thereto at the front beam of said brackets.

388,276. EXTENSION-CURTAIN. Edwin L. Gray, Burlington, Vt., assignor to the Porter Manufacturing Company, same place. Filed Jan. 20, 1887. Serial No. 225,221. (No model.)



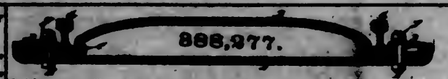
Claim.—1. The combination, with the screen-frame and the guide-rails C, provided with tongues and grooves on their interior opposite edges, as described, of the sliding extension-strips D, overlapping the guide-rails externally and formed on their inner faces with guide-recesses, the slotted metal plates E, secured to the inner faces of said strips, so that their upper longitudinal edges shall project above the bottom of said guide-recesses to form guide-tongues which bound said recesses on one side, and the stop pins or studs secured to the screen-frame and extending crosswise through the slots in said plates, as and for the purposes hereinbefore set forth.

2. The slotted metal guide-plates E, formed with shoulders a, in combination with the recessed extension-strips D, the guide-rails C, the screen-frame, and the stop-pins, these parts being constructed and arranged for joint operation as hereinbefore set forth.

388,277. METALLIC RAILWAY-TIE. Andrew J. Hampson, New York, N. Y., assignor to Maunsell and Edward H. Patterson, Jr., same place. Filed Jan. 16, 1888. Serial No. 260,893. (No model.)

Claim.—1. A metallic railway-tie which consists of a metallic tie-

388,277.



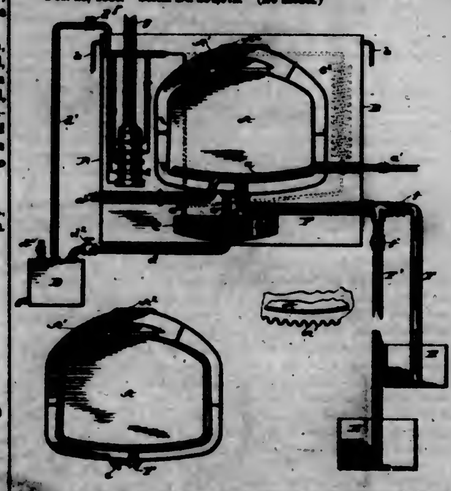
bridge extending from rail to rail and bent upward to prevent the approach of the rails to each other, and provided with a lip beyond the rails to prevent their outward movement, substantially as described.

2. The tie-bridge B, bent at C, and again bent at D, thereby locking the rail between the bends of the tie, substantially as described.

3. The combination of the tie-bridge B, bent at C and D, and the bolt H, substantially as described.

4. The combination of the tie A, tie-bridge B, and rail G, locked thereto, substantially as described.

388,278. DISTILLING APPARATUS. William L. Hoxie, Hartford, assignor to the Hoxie Vacuum Company, Hartford, Conn. Filed Feb. 28, 1888. Serial No. 265,672. (No model.)



Claim.—1. The herein-described still and condenser, consisting of two receptacles, one within the other, the still being within the condenser, and the two located within a third receptacle containing a cooling medium for the condenser.

2. The combination, with a condenser and a liquid-cooling tank surrounding the same, of a liquid vacuum-pump connected with said condenser and discharging into the cooling-tank of the condenser, substantially as described.

3. The herein-described still and condenser, consisting of two receptacles, the former being located within the latter, the discharge from the condenser being at the lowest point of the same, the still opening into the condenser at the top, and the space between the two gradually decreasing toward the condenser-discharge, substantially as described.

4. The herein-described still and condenser, consisting of two receptacles, said still being located within the condenser and having its walls composed of two thicknesses of material with an air-space between them, substantially as described.

5. The combination, with a vacuum-still, condenser, and tank containing a cooling medium in which the condenser is located, of an air-pump and a tortuous passage within said tank between the condenser and air-pump, substantially as described.

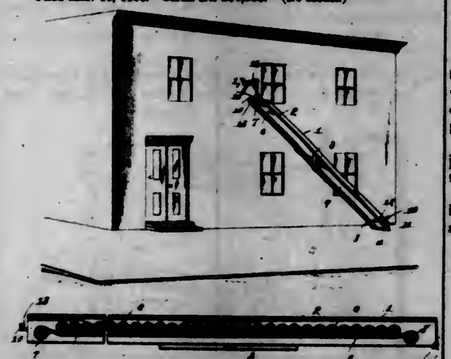
6. The combination, with a still and condenser consisting of two receptacles, one within the other, the still being located within the condenser and opening into the same, of a tank containing a cooling-liquid for said condenser, a receptacle, also within said tank, containing a helical partition, the said condenser being connected with the said receptacle near the inner end of said partition, and an air-pump connected with said receptacle near the outer end of said partition, substantially as described.

7. The combination, with a still and condenser, of a receptacle containing a tortuous passage connected with said condenser, a tank in which said receptacle is located, and a liquid air-pump connected with said receptacle and discharging into said tank, substantially as described.

8. The combination, with a still and condenser, of a tank surrounding said condenser, and a liquid air-pump connected with said condenser and discharging into said tank, substantially as described.

9. The combination, with a still and condenser consisting of two receptacles, the still being located within the condenser and discharging into the condenser at the top, and the condenser discharging at the bottom, the space between the two receptacles gradually decreasing toward the condenser-discharge, of a liquid-cooling tank surrounding the condenser and a liquid air-pump connected with the condenser and discharging within the tank, substantially as described.

388,279. FIRE-ESCAPE. William H. Howard, Houston, Tex. Filed Mar. 16, 1888. Serial No. 267,262. (No model.)



Claim.—1. In a fire-escape, the combination of a chute formed of two side rails and transversely-journaled anti-friction rollers forming the bottom of the chute, with a brake-strap bearing against the rear sides of the rollers and having means for tightening it against them, as shown, and for the purposes specified.

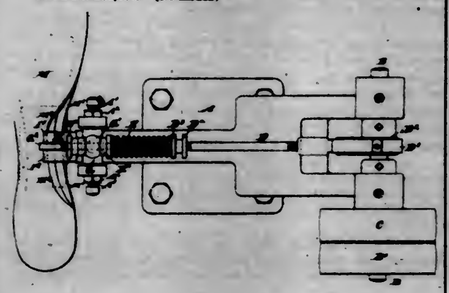
2. In a fire-escape, the combination of two side rails having hand-rails or moldings upon the forward edges, anti-friction rollers journaled transversely between the side rails, forming the bottom of the chute, rollers journaled transversely in the top and bottom of the chute, and a brake-strap secured with its ends to the rollers bearing against the rear sides of the anti-friction rollers and winding upon the lower roller, as shown, and for the purposes specified.

3. In a fire-escape, the combination of a chute having anti-friction rollers journaled transversely to form a bottom, and having a strap or bail at the upper end formed with a central loop, and a bracket or arm having a four-pronged swiveled hook in its outer end, as shown, and for the purposes specified.

4. In a fire-escape, the combination of an arm or bracket having a four-pronged swiveled hook at its outer end, and a chute having a strap or bail at its upper end formed with a central loop engaging the prongs of the hook, and having a transverse foot-rail provided with spikes for entering the ground, as shown, and for the purposes specified.

5. In a chute fire-escape, the combination of side rails having the rear edges connected by cross-braces and having molded hand-rails upon the forward edges, anti-friction rollers journaled transversely between the rails to form the bottom of the chute, a roller journaled in the upper end of the chute, a roller journaled transversely in the lower end of the chute and having a ratchet-wheel and pawl and a crank, and a brake-strap secured to the rollers at the ends of the chute and bearing against the rear sides of the anti-friction rollers and winding adjustably upon the lower roller, as shown, and for the purposes specified.

388,280. MACHINE FOR TURNING THE CHANNEL-LIPS OF INSOLES. Samuel H. Howland, New York, N. Y. Filed Jan. 24, 1888. Serial No. 261,737. (No model.)





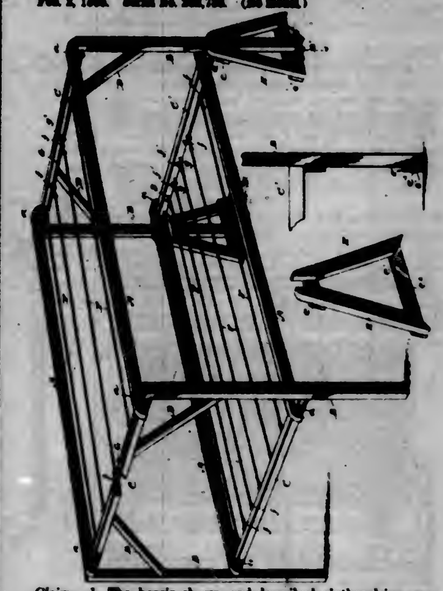
388,280.

Claim.—1. In a machine for turning the channel-lips of insoles the beveled guide I' and table J', in combination with each other and with the jaw G', reciprocated relatively to the table, adapted to turn over and press down the lip of an insole, substantially as and for the purposes herein specified.

2. In combination with the guide I', table J', and reciprocating jaw G', the spring E, eccentric F', and rod D, arranged to operate the jaw with a yielding force, as herein specified.

3. The duplicate guides I' I', in combination with the reciprocating jaw G', table J', and means, K, for adjusting the guides and table, arranged to serve substantially as herein specified.

388,281. CLOTHES-DRIER. John R. Jefferis, Salem, Ill. Filed Feb. 2, 1888. Serial No. 262,702. (No model.)

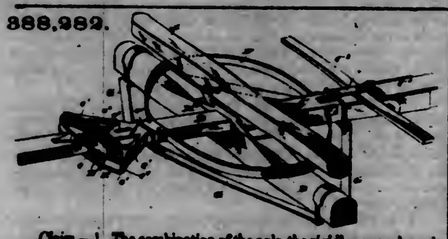


Claim.—1. The herein shown and described clothes-drier, composed of the end sections having posts and upper and lower cross-bars, and having brace-bars D, the upper and the lower side bars having their ends fitted to the upper and the lower cross-bars, the line-supporting rods secured to the cross-bars, the lines extending from one end section to the other and having hooks at their ends, which are adapted to catch over and slide on the said rods, and the truss-stands composed of the two oppositely-inclined legs E and the upper and the lower cross-bars, the upper cross-bar, *c*, coming under the end cross-bar, C, and the lower cross-bar, *c'*, resting against the end of the post B and held thereto by an interlocking-pin, substantially as set forth.

2. The combination, with the end section having a post and cross-bar, of the truss-stand composed of two oppositely-inclined legs, the upper ends of the legs being separated and embracing the sides of the post, an upper cross-bar uniting the legs near their upper ends and bearing against the under side of the cross-bar, and the lower cross-bar uniting the lower ends of the legs and resting against the post, and the interlocking-pin connecting the post and the lower cross-bar substantially as and for the purposes described.

388,282. RUNNING-GEAR FOR WAGONS. Hiram Kibbe and James Lamberson, Gouverneur, N. Y. Filed Feb. 20, 1888. Serial No. 264,993. (No model.)

388,282.



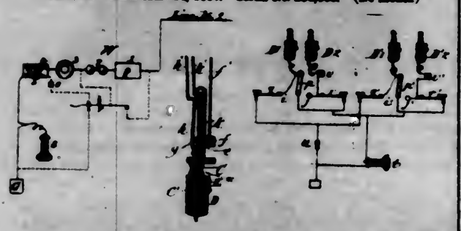
Claim.—1. The combination of the axle, the rigidly-secured reach-beam B and tongue-beam C, projecting at opposite sides of the axle, the bolster, the blocks H and H', arranged and operating as described, and the semicircular bars F, secured at their front and rear ends to the opposite sides of the tongue-beam and reach, respectively, to form guides or supports for the outer ends of the bolster, substantially as set forth.

2. The combination, with the axle-beam D, of the sectional reach-bar, the plates *c'*, the laterally-extended slotted circular plates E', having forward extensions, *e'*, with the slots *f'* therein, the inner steel pins passing through one of the sections of the reach-bar and engaging with the slots *e'*, and the pin or stud *d'*, carrying rollers on its upper and lower end engaging with the slotted portion of the said circle-plates E' and with the indentations *c'* in the slots of said circle-plates, substantially as described.

3. The combination, with the axle-beam D, of the tongue-beam C, the bolster A, the blocks H and H', and the braces G and F, arranged and connected to said parts, as set forth.

4. The combination, substantially as described, of the tongue C, provided with side plates having circular openings, the tongue-beam C, having side plates provided on their inner faces with circular bosses to fit the openings in the side plates of the tongue, and the securing-bolt passing through the axial center of the said circular bosses.

388,283. MULTIPLE SWITCH-BOARD. Silas G. Kellogg, Hyde Park, Ill. Filed Mar. 14, 1887. Serial No. 230,933. (No model.)



Claim.—1. In a telephone-subscriber's station outfit, the combination of a battery-transmitter, a battery, and a switch, said switch having a pair of contact-points which are closed when the switch is in position for the telephone to be used, and not otherwise, the transmitter being in the circuit of the line and being shunted by a branch or derived circuit, in which are said battery and said pair of contact-points, substantially as set forth.

2. In a telephone-subscriber's station outfit, the combination of a resistance, (of whatever kind,) a battery, and a switch, said switch having a pair of contact-points which are closed when the switch is in position for the telephone to be used, and not otherwise, the resistance being in the circuit of the line, and being shunted by a branch or derived circuit in which are said battery and said pair of contact-points, substantially as set forth.

3. In a telephone-subscriber's station outfit, a battery-transmitter and the primary of its induction-coil in the circuit of the line, a switch having a pair of contact-points, and a battery, said battery and said pair of contact-points being in a branch or derived circuit which shunts said transmitter and primary of its induction-coil, and said pair of contact-points being closed when the switch is in position for the telephone to be used, and not otherwise, substantially as set forth.

4. In a telephone-exchange system, a telephone-line grounded at its outer end, a battery-transmitter with the primary of its induction-coil, a battery, and a switch at the subscriber's station, said switch having a pair of contact-points which are closed when the switch is in position for the telephone to be used, and not otherwise, said transmitter, with its induction-coil, being in the circuit of the line, and said battery and said pair of contact-points being in a branch or derived circuit which shunts said transmitter with its primary of the induction-coil, in combination with a test-receiving instrument at the central office grounded on one side, and a switch-testing plug or device connected to said instrument on its other side, whereby an operator may at will connect it to the circuit of said line, substantially as set forth.

5. In a telephone-exchange system, a telephone-line grounded at its outer end, a resistance, (of whatever kind,) a battery, and a switch at the subscriber's station, said resistance being in the circuit of the line, said switch having a pair of contact-points which are closed when the switch is in position for the telephone to be used, and not otherwise, and said battery and said pair of contact-points being in a branch or derived circuit which shunts said resistance, in combination with a test-receiving instrument grounded on one side, and a switch-testing plug or device connected to said instrument on its other side, whereby an operator may at will connect it to the circuit of said line, substantially as set forth.

6. In a telephone-exchange system, the combination of a telephone-line grounded at its outer end, two or more switch-boards, at either of which said line may be switched for conversation, and test-receiving instruments, one at each board, each instrument being grounded on one side and connected on its other side to a switch-testing plug or device to connect it for testing with the circuit of the line, with a resistance, (of whatever kind,) a battery, and a switch at the subscriber's station, said resistance being in the circuit of the line, said switch having a pair of contact-points which are closed when the switch is in position for the telephone to be used, and not otherwise, said battery and said pair of contact-points being in a branch or derived circuit which shunts said resistance, substantially as set forth.

7. In a telephone-exchange system, two telephone-lines grounded at their outer ends and connected together at the exchange-office for conversation, a battery, and a switch at the subscriber's station at each line, each switch sending a current to line from its battery when the switch is in position for the telephone to be used, and not otherwise, and said batteries being so connected that their currents go in opposite directions through the circuit, in combination with a test-receiving instrument at the central office grounded on one side, and a switch-testing plug or device connected to the other side of said instrument, whereby an operator may at will connect it to the circuit of either line, substantially as set forth.

8. In a telephone-exchange system, two or more switch-boards, at either of which the same lines may be switched for conversation, two lines temporarily connected together at one of said boards, a battery, and a switch at the subscriber's station of each line, each switch sending a current to line from its battery when the switch is in position for the telephone to be used, and not otherwise, and said batteries being connected so that their currents go in opposite directions through the circuit, in combination with test-receiving instruments, one at each board, each instrument being grounded on one side and connected on its other side to a switch-testing plug or device, whereby an operator may at will connect it to the circuit of either line, substantially as set forth.

9. In a telephone-exchange system, two telephone-lines grounded at their outer ends and connected together at the central office for conversation, a clearing-out commutator in the circuit of said lines at the central office, a battery, and a switch at the subscriber's station of each line, each switch sending a current to line from its battery when the switch is in position for the telephone to be used, and not otherwise, and said batteries being so connected that their currents go in opposite directions through the circuit, in combination with a test-receiving instrument at the central office grounded on one side, and a switch-testing plug or device connected to the other side of said instrument, whereby an operator may at will connect it to the circuit of either line, substantially as set forth.

10. In a telephone-exchange system, a pair of central-office cords with plugs adapted for use with the line-switches, in combination with an operator's telephone and a switch, said cords being normally, or when not in use for conversation between two subscribers, disconnected from each other, and one of them grounded through the operator's telephone, and said switch having contact-points to disconnect said cord from its ground-connection through the telephone, and at the same time connect it with the other cord for conversation.

11. In a telephone-exchange system, a pair of central-office cords with plugs adapted for use with line-switches, in combination with an operator's telephone, a switch, and a key, said cords being normally, or when not in use for conversation, disconnected from each other and one of them grounded through the operator's telephone, said key having a pair of contact-points normally open, but closed at the will of the operator, said points being in a branch circuit from the other cord through the telephone to the ground, and said switch having contact-points to disconnect said first-mentioned cord from the ground and connect it with the other cord for conversation.

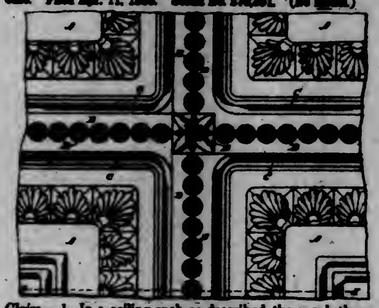
388,284. SODA-ASH FURNACE. John F. Kemmey, Elkton, Md., assignor of two-thirds to Thomas Groom and Andrew Rusk, both of same place. Filed Aug. 30, 1887. Serial No. 248,188. (No model.)

388,284.



Claim.—The inclosure B, having within the same the furnace F, the adjacent charging-chambers D D', with partition E between them and the boiler A, the pit C below said boiler, the said inclosure B having the openings H H in the sides of the charging-chambers, and the pit having side openings, J J, said parts being combined substantially as and for the purpose set forth.

388,285. METALLIC CEILING. William R. Kinnear, Columbus, Ohio. Filed Apr. 11, 1888. Serial No. 270,301. (No model.)

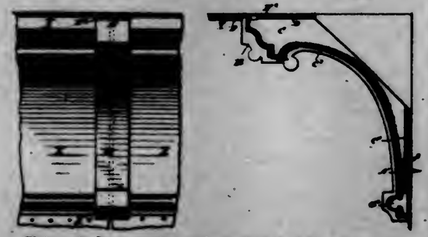


Claim.—1. In a ceiling such as described, the panels thereof constructed from continuous sheets, having margins raised above the body and a connecting portion between the body of the panel and the margins, which extend across the corners formed by the prolongation of the inner edge of the margins, substantially as described, whereby tearing of the material in the said corners where the panels are stamped is prevented.

2. In a ceiling such as described, the panels thereof constructed from continuous sheets and having margins raised above the body and a connecting portion between the body of the panel and the margins having rounded corners, substantially as described.

3. In a ceiling such as described, the combination of the panels thereof, constructed from continuous sheets and having margins raised above the body, and provided at the corners with angular recesses cut therein, and a connecting portion between the body of the panels and the margins, which extend across the corners formed by the prolongation of the inner edges of the said margins, and ornamental drops fitted to the angular recesses in the corners of the panels, provided with extensions at the base for extending under the margins of the panels, substantially as described.

388,286. METALLIC CEILING. William R. Kinnear, Columbus, Ohio. Filed Apr. 26, 1888. Serial No. 271,602. (No model.)



Claim.—1. In a cornice such as described, the combination of the separate pieces composing the cornice, a skeleton for maintaining the shape of the meeting ends of the said pieces, a shield for concealing the junction, and suitable fastenings for connecting the skeleton and shield, substantially as described.

2. In a cornice such as described, the combination of the separate pieces composing the cornice, a skeleton for maintaining the shape of the meeting ends of the said pieces, being rigidly attached to the walls of the structure to which the cornice is applied and having an undercut portion, and a shield for concealing the junction of the said pieces, shaped to fit the undercut portion of the skeleton, the being retained in position thereby, substantially as described.

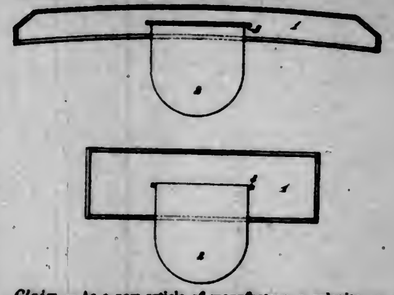
3. In a cornice such as described, the combination of the separate pieces composing the cornice, a skeleton for maintaining the shape of the meeting ends and being partly cut away to form steps, and a shield shaped to correspond to the form of the skeleton, for concealing the junction of the said pieces, and provided with lugs to engage the said steps on the skeleton, for adjustment of the parts, substantially as described.

4. In a ceiling such as described, provided with a styling, a cornice, the sides of which are adapted to receive the ends of the separate pieces of which the styling is composed, provided with end extensions for suspending the same, and thereby supporting the ends of the said styling-pieces, substantially as described.

5. In a ceiling such as described, provided with a cornice and styling, a bracket for concealing the junction of the pieces composing the cornice and the styling, corresponding to the shape of the former and provided with an extension passing over the latter and under the edge of the adjoining panels, for concealing and supporting the ends of the separate pieces composing the said styling, substantially as described.

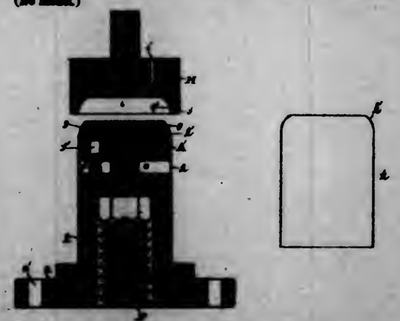
6. In a ceiling such as described, provided with a cornice and styling, the combination of brackets for concealing the meeting ends of the pieces composing the cornice, and cross-bars extending across the styling for supporting the ends of the pieces composing the same, and provided with end extensions adapted to extend under the top of the said bracket and the edge of the adjoining panels, substantially as described.

388,287. COLLAR OR CUFF. Ezra Knapp, Adams, Mass. Filed Nov. 7, 1885. Serial No. 182,193. (No model.)



Claim.—As a new article of manufacture, a xyloidin or other pyroxyline collar or cuff having a cape of textile fabric cemented thereto at or adjacent the center of the article, said cape being fastened by means of an auxiliary strip of xyloidin or other pyroxyline material placed along the attaching-edge of the textile fabric and projecting beyond the ends thereof, substantially as shown and described.

388,288. DIE FOR THE MANUFACTURE OF CANS. George W. Knapp, Baltimore, Md. Filed June 27, 1888. Serial No. 278,319. (No model.)

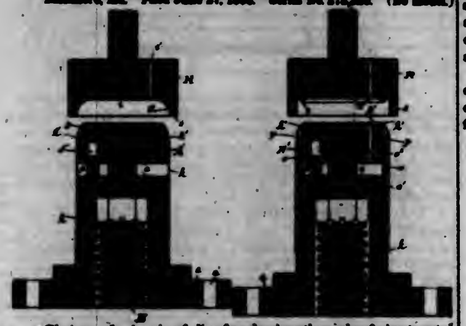


Claim.—1. A pair of dies for shaping the ends of sheet-metal cans consisting of a base part, A, provided with a vertically-movable die-head, A', having a turned-off or rounded top rim, *g*, in combination with a punch part, B, having a downward rim, *j*, the inner circumference, *f*, of which is conserved as a counterpart to the said rounded top rim, as set forth.

2. A pair of dies for shaping the ends of sheet-metal cans, consisting of the base part A, having a central bottom cavity, *h*, with a central opening in its top, a die-head, A', above the base part, having a turned-off or rounded top rim, *g*, a bolt, *d*, passed through said central opening and connecting the die-head and base part, and a spring, H, occupying the bottom cavity and pressing up against the said bolt, in combination with a punch part, B, having a downward rim, *j*, the inner circumference, *f'*, of which is conserved as a counterpart to the said rounded top rim, as set forth.

3. Two pairs of dies for shaping the ends of sheet-metal cans, the first pair consisting of the base part A, provided with a vertically-movable die-head, A', having a turned-off or rounded top rim, *g*, and a punch part, B, having a downward rim, *j*, the inner circumference *f*, of which is conserved as a counterpart to the said rounded top rim, in combination with the second pair, consisting of the base cylinder, L, having at the top a solid rigid center, *n*, with a vertical wall, *o*, and around the said center an annular seat, *p*, the outer edge of which is highest and forms an annular channel, and the punch Q, having a downward rim provided with two annular vertical faces, *s'* and L', and between them an annular channel, *p'*, which is the counterpart of the said annular seat on the base part, for the purpose set forth.

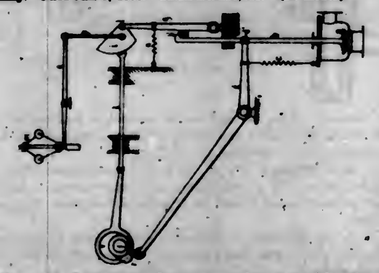
388,289. DIE FOR FORMING CAN-BODIES. George W. Knapp, Baltimore, Md. Filed June 27, 1888. Serial No. 278,320. (No model.)



Claim.—1. A pair of dies for shaping the ends of sheet-metal cans, consisting of the base part N, having at its top a cup, *o*, with an inwardly-beveled rim, and a die-head, N', having a beveled top rim, *p'*, and occupying said cup and yielding vertically therein, in combination with a punch part, R, having a downward rim, *s*, and an annular V-shaped ridge, *t*, in a cavity within said downward rim.

2. A pair of dies for shaping the ends of sheet-metal cans, consisting of the base part N, having at its top a cup, *o*, with an inwardly-beveled rim, a die-head, N', having a beveled top rim, *p'*, and occupying said cup, and a spring to lift the die-head from its seat, in combination with a punch part, R, having a downward rim, *s*, and an annular V-shaped ridge, *t*, in the cavity within said downward rim.

388,290. VALVE-GEAR. Heinr Kliemann, Hanover, Prussia, Germany. Filed Jan. 3, 1888. Serial No. 259,665. (No model.)



Claim.—1. A valve-gear for power-engines, comprising the valve *a*, having the stem *b*, with shoulder *b'*, the pawl *g*, with shoulder *h*, the springs *c* and *n*, or equivalent weights, and the two reciprocating parts *d* and *k*, actuated by the engine, all combined and operating together substantially as and for the purpose set forth.

2. A valve-gear for power-engines, comprising the valve *a*, having the stem *b*, with shoulder *b'*, the pawl *g*, with shoulder *h*, the springs *c* and *n*, or equivalent weights, the two reciprocating parts *d* and *k*, actuated by the engine, the eccentric center *i*, or its described equivalent, a governor, *m*, and parts connecting the center *i*, or its equivalent, with the governor, all combined and operating together substantially as and for the purpose specified.

388,291. TWO-WHEELED VEHICLE. Frank B. Lay, Kalamazoo, Mich. Filed July 5, 1887. Renewed Mar. 22, 1888. Serial No. 268,033. (No model.)



Claim.—1. In a two-wheeled vehicle, the combination of a fulcrumed body, thills, and the hangers, comprising the two parallel spiral springs, a cap at both ends intending across the ends of each spring, and two eyed bolt-pin rods, one arm of each passing in opposite directions through one end of the caps and through one spring, and the other arm of each passing in like manner through the other end of the caps and through the other spring, the free ends of said arms being retained by nuts or heads, substantially as set forth.

2. The combination of a two-wheeled vehicle, thills, and fulcrumed body or seat-bars with the double spiral spring-hangers on each side jointedly attached to the thills and body, substantially as set forth.

388,292. TWO-WHEELED VEHICLE. Frank B. Lay, Kalamazoo, Mich. Filed Apr. 7, 1888. Serial No. 269,989. (No model.)



Claim.—1. The spring-hangers for suspending a vehicle-body or seat-bars, said hanger comprising the upper and lower equalizers having the central hole, and the two springs side by side and jointedly attached at the ends to the ends of the equalizers, substantially as set forth.

2. The combination of a wheeled axle, thills, fulcrumed body or seat-bars, and the elastic hangers comprising the equalizers, one jointedly attached to the thills, the other jointedly attached to the body, and springs jointedly attached at the ends to the equalizers each side of the center or pivotal attachment of said equalizers to the thills and body, substantially as and for the objects set forth.

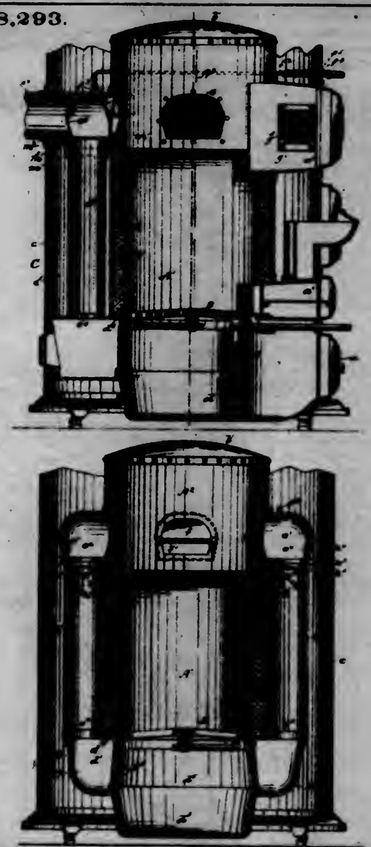
3. The combination of a wheeled axle, thills, a fulcrumed body or seat-bars provided with a suitable number of hooks, the upper equalizers pivotally attached to the thills, the lower equalizers pivotally and detachably attached to the seat-bar hooks, and the springs jointedly attached at the ends to the ends of the equalizers, substantially as set forth.

388,293. HEATING-FURNACE. Frank A. Magee and Sylvester Van Vleet, Chelsea, assignors to the Magee Furnace Company, Boston, Mass. Filed Oct. 2, 1888. Serial No. 286,126. (No model.)

Claim.—1. In a furnace, the combination of the outer shell or casing, C, the inner shell, *b*, the air-heating chamber *c* between the two shells, the fire-pot A', and combustion-chamber A^2, inclosed by the inner shell, *b*, a top plate, *b'*, the base having the deep section *d* and the semi-circular extension D for the flue *d'*, the said flue, the flue-plate d^2, the openings *e* through the side of the shell *b*, the connections *f*, the pipes f^2, the plate d^3, having the openings e^2 e^3, the pipe e^4, the direct escape-pipe e^5, and the damper *a*, substantially as described.

2. In a hot-air furnace, the combination, with the combustion-chamber and fire-pot section of the furnace, of a base-section which is provided with a central depressed ash-pit portion and an outwardly and upwardly flaring substantially semicircular portion, d^2, formed together in a single casting, and which is provided, also, with vertical

388,293.



curved plate d^4, extending from the upper extremity of the depressed portion to the upper extremity of such base-section and separating the ash-pit portion from the base-flue portion of such base-section, substantially as described.

3. In a hot-air furnace, the combination, in the base-section thereof, of the one-part lower portion, having the central depression provided with the bottom plate, d^3, and having also the outwardly and upwardly flaring portion or prolongation d^2, the covering-plate d^4, provided with the openings c^4 c^4 at the sides, and with the rear opening, c^5, and the intermediate imperforate plate, d^4, extending from the top of the central depression to the bottom of the covering-plate d^4, and separating the ash-pit chamber from the semicircular base-flue, substantially as described.

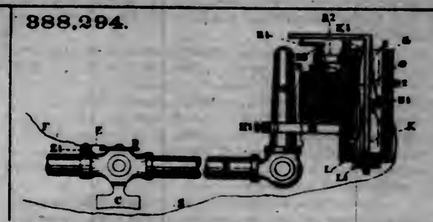
4. The combination of the combustion-chamber, formed with entrance a^2, the plates g', forming the vertical walls to the passage a^2 and having perforations g^3, the chambers g, formed by the plates g' g^3, and the perforations or holes g^4 in the plate g^3, providing air-inlets to the chambers g, substantially as described.

5. In a heating furnace or stove, the combination, with the pipe c^2, of the ring h, fitted within such pipe below the upper extremity thereof, and having the upper indrawn portion or contraction, h', forming, in connection with the inner face of the pipe, the recess or pocket h^2, and the box or section c', having at its lower extremity an inner and an outer depending flange, the outer flange embracing the exterior surface of the pipe c^2, and the inner flange extending into the recess or pocket h^2, between the body of the pipe and the upper extremity or contraction, h', of the ring h, substantially as and for the purposes specified.

388,294. ELECTRIC GAS-LIGHTER. JOHN J. HEDGWIN, Ithaca, N. Y. Filed June 24, 1887. Serial No. 242,344. (No model.)
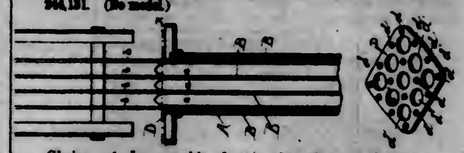
Claim.—An electric gas-lighting apparatus organized with a cock and burner, a primary-circuit breaker connected to that cock and arranged to close the electric circuit when the gas is turned on, a gas-

388,294.



lighter consisting of an electro-magnet placed in that circuit and arranged to attract an armature which in moving causes the circuit to be broken and the gas to be lighted by the resulting spark, and a secondary-circuit breaker arranged to break the circuit by the heating and consequent expansion by the gas-flame of some of the parts of that secondary-circuit breaker.

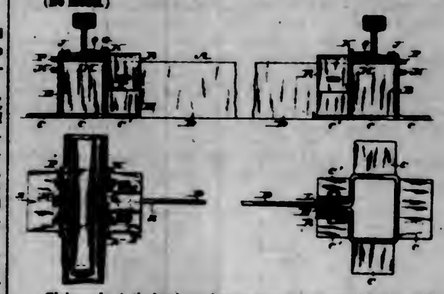
388,295. MACHINE FOR THE MANUFACTURE OF CONDUITS. HERMAN HERMAN, Boston, Mass. Filed July 13, 1887. Serial No. 244,131. (No model.)



Claim.—1. In a machine for manufacturing multiduct pipes or conduits, the combination, with the mold-box having a series of mandrels or formers, a, of a series of tamps, B, a series of rods for operating said tamps, and a plate, D, having a series of holes, d, for guiding the tamp-rods, and a series of larger holes, d', to receive the upper ends of the mandrels and bring them into and hold them in proper or true positions, substantially as set forth.

2. In a machine for making multiduct pipes or conduits, the combination, with a mold-box having a series of mandrels or formers, a, of a series of reciprocating tamps and tamp-rods, and a reciprocating plate, D, having a series of holes, d', to receive the mandrels, and a series of holes, d, to permit of the passage of the tamp-rods, but not of the tamps, so that the latter will lift the said plate and cause it in its descent to strike or jar the mandrels and center the same, substantially as set forth.

388,296. RAILROAD TIE AND RAIL FASTENING. JAMES B. HILLHOUSE, Philadelphia, Pa. Filed Dec. 14, 1887. Serial No. 257,963. (No model.)



Claim.—1. A tie having a box at one end, in combination with a chair resting on said box and having a forked portion secured to said tie, substantially as described.

2. A tie having a box at one end, in combination with a chair resting thereon, and a cheek-piece, the latter having a depending forked portion secured to said tie, substantially as and for the purpose set forth.

3. A wrought-metal tie formed of a single piece of material and having the box B, with base-pieces C C, substantially as and for the purpose set forth.

4. A tie having the box B at one end, in combination with the chair G, having curved cheek-pieces J J on one side and upright pieces K K on the opposite side, and wings P overlapping the box, substantially as and for the purpose set forth.

5. A tie having the box B at one end, with slot therein, in combination with the chair G, having cheek-pieces J and uprights K, and a tongue, M, entering said slot N, substantially as and for the purpose set forth.

6. The chair G, having wings P, which overlap the top of the supporting-box, substantially as described.

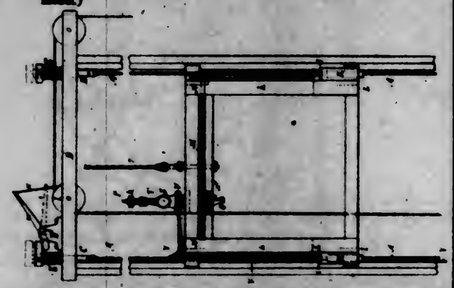
7. The tie D, with the box B and lip E, in combination with the chair G, having fork L embracing said tie and lip E and secured to the same, substantially as and for the purpose set forth.

8. The chair G, having fork L, substantially as described.

9. The tie D, with the box B and lip E, in combination with the chair G, having the fork L, and the cheek-piece Q, with depending fork R, the latter embracing fork L, and the bar D and lip E, substantially as and for the purpose set forth.

10. In a railroad-tie, a bar connecting opposite ties, in combination with a chair having a fork which embraces said bar, and a cheek-piece having a fork which embraces the fork of the chair, substantially as described.

388,297. SAFETY APPARATUS FOR ELEVATORS. JOSEPH A. HOYER, Boston, Mass. Filed Mar. 1, 1888. Serial No. 265,702. (No model.)



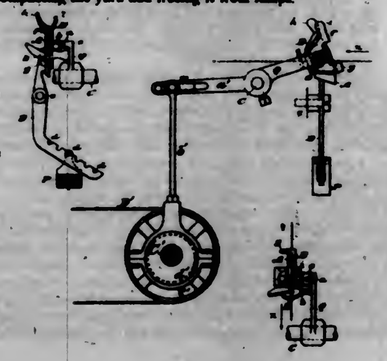
Claim.—1. In an elevator, the cabin A A, the headed slides B C, provided with springs and supported substantially as described, and the guides or bosses K K, fixed to the car and each provided with a jaw, as shown, and having a slide, L, arranged therein and provided with a follow jaw, as set forth, in combination with a mechanism operated by the governor, essentially as described, it consisting of the connection-rods A A, arms N N, shaft M, arms N', link i, and lever O, pivoted to the car, the governor receiving its motion from a rope suspended in the well and passing around the grooved wheel U and over sheaves V W, secured to the car, all as shown, and essentially as set forth.

2. The combination of the car and the clamp with the cables A A, the slides B B, supported essentially as shown, the springs B K, the lever G, the shipper-wheel, and the rope connecting said lever and wheel, as set forth.

3. In an elevator safety device, the box or guide K, chambered, as shown, and provided with the jaw a, incline c, and guide l, in combination with the slide L, having the jaw c and slot f, through which extends the bolt g and connects the slide to the box, all substantially as represented.

388,298. DEVICE FOR CLEANING AND COMPACTING YARN AND FOR TESTING THE STRENGTH OF THE SAME. HENRI GIFFARD and CHARLES FRANÇOIS, Hohwarth, France. Filed Mar. 30, 1888. Serial No. 269,024. (No model.) Patented in France Sept. 21, 1887, No. 185,925; in England Sept. 28, 1887, No. 12,939, and in Belgium Feb. 28, 1888, No. 82,859.

Brief.—The object of the invention is to produce a device for testing the strength of yarn or thread in order to discover flaws therein before it goes to the loom, and at the same time for rubbing and compacting the yarn and freeing it from lumps.



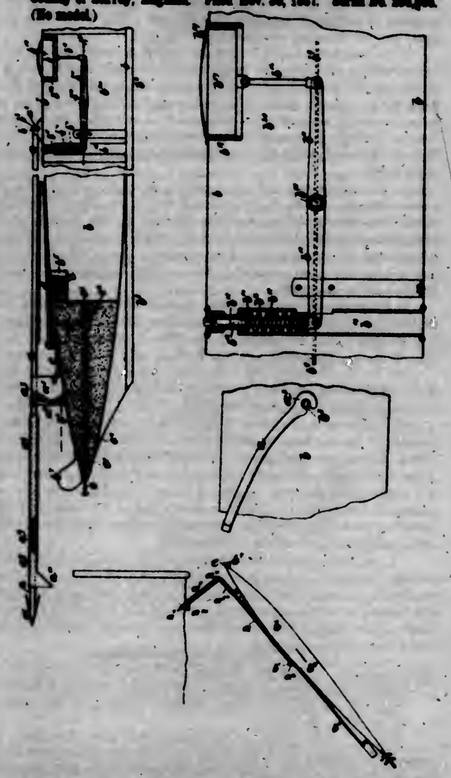
Claim.—1. In a device for cleaning and compacting yarn and for testing the strength of same, the combination, with a jaw, as B, and means for vibrating said jaw, of a jaw, as A, arranged face to face with jaw B and held up to the same by a yielding pressure, and means for holding said jaw up to jaw B, substantially as and for the purposes set forth.

2. In a device for cleaning and compacting yarn and for testing the strength of same, the combination, with a jaw, as B, and means for vibrating said jaw, of a jaw, as A, arranged face to face with jaw B and held up to same by a yielding pressure, and means for holding said jaw up to jaw B, one of said jaws being furnished with a scraper, substantially as described, for removing lumps from the yarn.

3. The combination, with the vibrating jaw B, provided with an aperture, O, and shoulders or lugs f g, to prevent the escape of the yarn, and means for vibrating said jaw, of the jaw A, mounted on the lever D, the said lever, and the weight P, whereby said jaw A is held up to the jaw B with a yielding pressure, substantially as set forth.

4. The combination, with the rock-shaft C and its arm Q, as described, of the jaw B, coupled to said arm, said jaw being provided with yarn-retaining lugs f and g, the jaw A, arranged face to face with said jaw B, and means, substantially as described, for holding the jaw A up to jaw B with a yielding pressure, substantially as set forth.

388,299. MEANS FOR OPERATING HARBOR TORPEDOES. JAMES O'HEAR, London, and RICHARD A. GRAHL, 26 Rhodrell Road, Rushford, County of Surrey, England. Filed Nov. 26, 1887. Serial No. 256,408. (No model.)



Claim.—1. The combination of a torpedo, a detachable harpoon carried thereby for engaging with the defenses of the object to be destroyed, and a line connecting the torpedo and the harpoon after their separation, substantially as set forth.

2. The combination of a torpedo and a harpoon connected by a separable bearing and adapted to engage the defenses of the object to be destroyed, a connecting-line to control the subsequent movement of the torpedo, and suitable driving mechanism, substantially as set forth.

3. In combination with a torpedo, a harpoon, a plate on the torpedo having a trigger pivoted thereto, means for releasing the trigger from the harpoon, detachable connection between the harpoon and

torpedo, and a spring for forcing the torpedo away from the harpoon when the latter attaches itself, substantially as and for the purpose set forth.

4. In combination with a marine torpedo, a suitable device having a lance-head provided with cars adapted to lie back while the head is passing through the net-links of the netting defenses of a vessel and to spring open again as soon as it has passed clear through, detachable connection between the lance-head device and the torpedo, and a line connecting them together, substantially as and for the purpose set forth.

5. A torpedo provided with means for enabling it to attach itself to or make use of the netting defenses of a vessel and to be directed underneath such netting or over the boom, said means consisting of a harpoon projecting from the forward part of the torpedo, detachable connection between the harpoon and torpedo adapted to operate when the harpoon strikes the netting, means for directing the torpedo into a divergent course, a line connecting the harpoon and torpedo, and means for regulating its depth of immersion, substantially as set forth.

6. In combination with a torpedo, a harpoon, a plate secured to the torpedo, a forked trigger pivoted to said plate, a projection on the torpedo with which said trigger engages, said harpoon being adapted to rest between the forks of the trigger, a spring situated between the latter and the plate, a sleeve on the forward part of the harpoon, a plate on the end of the said sleeve, a detachable connection between the rear end of the harpoon and the torpedo, a spring adapted to be compressed by an inward thrust of said sleeve, whereby the harpoon is disengaged from the torpedo and a line connecting the latter and the harpoon, substantially as set forth.

7. In combination with a torpedo, a harpoon, oval trunnions and round bearings connecting the harpoon and the torpedo, hitching mechanism near the forward end of the harpoon detachably securing the latter to the torpedo, means for engaging said hitching mechanism, a spring or springs adapted to be compressed between the harpoon and torpedo, whereby the former will be forced away from the latter when they are detached, and a line connecting them together, substantially as set forth.

8. In combination with a torpedo, a harpoon, a sleeve fitted loosely thereon, a plate on the forward end of the sleeve, hitching mechanism detachably securing the harpoon to the torpedo and adapted to be engaged by said sleeve, detachable connection between the rear end of the harpoon and the torpedo, a spring interposed between them, and a line connecting them together, substantially as and for the purpose set forth.

9. In combination with a driven torpedo having a firing-pin on its point, as explained, a spring, b, situated at one side of the firing-pin, whereby premature action of the latter is prevented when the torpedo strikes the netting or other defenses of a vessel, as set forth.

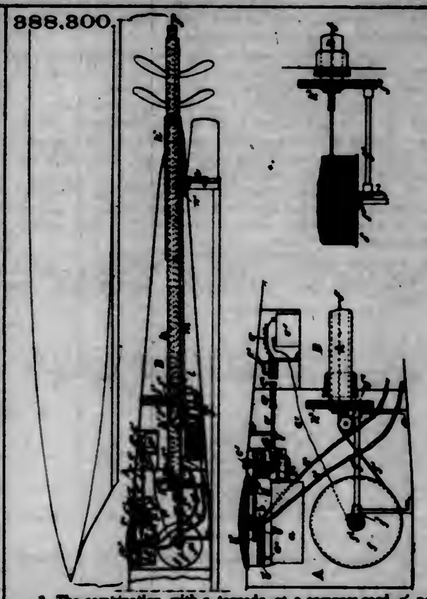
10. In combination with a torpedo, means for regulating the depth of immersion, consisting of fins b^9 on both sides of the torpedo secured to a horizontal shaft, b^{10}, passing through the latter, beam-lever b^{11}, secured to the shaft, vertical rod b^{12}, hinged to the lever, plunger b^{17}, having hinge-connection with the rod b^{12}, cylinder b^{13}, in which said plunger is adapted to be raised or depressed, elastic cover b^{16} on said plunger, effectually excluding water from the cylinder, tube b^{15}, within which the front portion of the lever is adapted to play, a spring, b^{14}, within the tube, bearing on the end of the lever, and an adjusting device provided with a shoulder against which the spring bears, substantially as shown and described.

11. In combination with a torpedo having a detachable harpoon and the devices for controlling the torpedo when the harpoon strikes the netting or other defenses of a vessel, a spring interposed between the torpedo and harpoon, adapted to direct the torpedo in a downward course when it is released from the harpoon, substantially as and for the purpose set forth.

388,300. ELECTRIC STEERING APPARATUS FOR TORPEDO-BOATS. James O'Kelly, London, and Bernard A. Gillies, 28 Hinchell Road, Hamhead, County of Surrey, England. Filed Jan. 3, 1888. Serial No. 259,932. (No model.)

Claim.—1. In a torpedo, the combination, with the rudder, a wheel for controlling the rudder and interlocking mechanism between the rudder-wheel and propeller-shaft controlled by an electro-magnet, of a compass and a pivoted arm over the same carrying the ends of said magnet's conductors, the said compass carrying a conductor adapted to contact with said arm and complete circuit of the magnet, substantially in the manner described.

2. The combination, with the herein-described steering mechanism controlled by the contact of the compass-conductor with the pivoted arm, of means for controlling the rotation of said arm from a distant place, consisting of clock mechanism gearing with a pinion on the arm's axis, a check or brake engaging a wheel in the clock mechanism, and an electro-magnet controlled by a make and break at the distant place for operating the brake to release said clock mechanism, as set forth.



3. The combination, with a torpedo, of a compass-card, a', non-conducting circle a^9, vertical pins a^{10} a^{11}, axis b, arm b', conducting-wires b^2 b^3, clock-work mechanism for rotating the arm b', brake c, rod c', armature c^2, electro-magnet c^3, spring c^4, batteries c^5 b^4 b^5, conducting-wire f', electro-magnets i i^9, arms j j^9, shafts j^3, wheels j^4 j^5, worm or screw k', wheel l, chain, cord, or wire m, rudder-wheel n', and similar steering-controlling mechanism on the discharging ship or station connected by the conducting-wire f' with the above-mentioned mechanism of the torpedo, substantially as herein shown and described.

4. In combination with steering mechanism contained within a torpedo, a conducting-wire, f', connected therewith and with mechanism on the discharging ship or station, consisting of compass-card a', hand or arm b', axis b, conducting-wires b^2 b^3, clock-work mechanism for rotating the arm b', and brake apparatus c, c', c^2, c^3, c^4, and c^5, substantially as herein described.

5. In combination with a torpedo, a wire, f', connecting the torpedo with a discharging ship or station and serving the double purpose of a mechanically-propelling wire and an electric conducting-wire to connect the steering-regulating apparatus on the discharging ship or station with that in the torpedo, substantially as herein described.

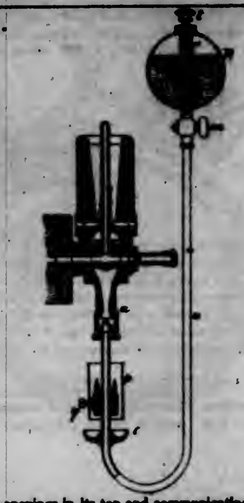
6. In the steering mechanism of ships and torpedoes, the combination of a compass-card, a', non-conducting toothed circle a^9, pinion a^8, lever a^6, vertical pins a^{10} a^{11}, axis b, arm b', link b^7, wires b^2 b^3, batteries b b^5, electro-magnets i i^9, arms j j^9, shafts j^3, wheels j^4 j^5, power worm or screw k', horizontal wheel l, chain, cord, or wire m, and rudder-wheel n', substantially as herein shown and described.

388,301. APPARATUS FOR HEATING THE IGNITING-TUBES OF GAS-MOTOR ENGINES. Eugene A. Otto, Cologne, Prussia, assignor to the Gas Motoren Fabrik Deutz, Deutz-on-the-Rhine, Germany. Filed Feb. 9, 1888. Serial No. 263,673. (No model.) Patented in England Dec. 20, 1887, No. 17,099; in Belgium Jan. 16, 1888, No. 80,268, and in Italy Mar. 31, 1888, No. 22,302.

Claim.—1. An apparatus for heating the igniting-tube of a gas-motor engine, consisting of a closed receptacle charged with combustible liquid, a pipe leading downward therefrom to a Bunsen or similar burner, and means for heating the pipe to volatilize the liquid before it issues into the said burner, a vertical internally-screw-threaded tube in the upper part of the receptacle containing the liquid, and a screw-rod adjustable in the tube to more or less close the upper end of the pipe leading to the burner, substantially as described.

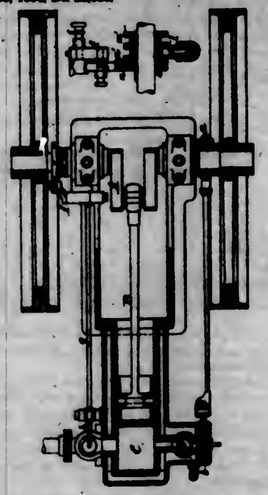
2. An apparatus for heating the igniting-tube of a gas-motor engine, consisting of a closed receptacle charged with combustible liquid, a pipe leading downward therefrom to a Bunsen or similar burner, an internally-screw-threaded tube in the upper part of the said receptacle, a vertical screw-rod adjustable in said tube to more or less close the upper end of the pipe leading to the burner, and a heater on the pipe to volatilize the liquid before it enters into the burner, composed of an annular chamber arranged around the pipe beneath the burner

388,301.



and having jet-openings in its top and communicating by an opening with the interior of the pipe, and a screw-plug for controlling said opening, substantially as shown and described.

388,302. MOTOR-ENGINE WORKED BY COMBUSTIBLE GAS, VAPOR, OR SPRAY. Eugene A. Otto, Cologne, Prussia, assignor to the Gas Motoren Fabrik Deutz, Deutz-on-the-Rhine, Germany. Filed Feb. 9, 1888. Serial No. 263,672. (No model.) Patented in England Dec. 12, 1887, No. 17,102; in Belgium Jan. 14, 1888, No. 80,267, and in Italy Feb. 29, 1888. No. 22,302.



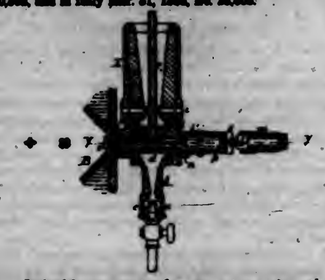
Claim.—1. In a gas-motor engine of the type described, the combination, with the cylinder and crank-shaft, of an igniting-slide driven by an eccentric on the crank-shaft and an escape-valve worked by an automatically-movable cam on the crank-shaft to only effect the opening of the escape-valve once in every two revolutions, substantially as described.

2. In motor-engines worked by combustible gas, vapor, or spray that operate with a cycle of four strokes, a discharge-valve that is worked by a cam on the engine-shaft, arranged to slide laterally thereon, so as only to act upon the valve at every second revolution of the engine-shaft, substantially as and for the purposes set forth.

3. In motor-engines worked by combustible gas, vapor, or spray that operate with a cycle of four strokes, a cam, n, for working the discharge-valve of the engine, which is situated upon a sleeve, o, on the engine-shaft, arranged to slide longitudinally thereon, and having a double groove, m m', in which works a stationary pivoted stud, l, so that at one revolution the stud works in the one groove and causes the cam to act upon the lever f of the discharge-valve, so as to open this, while at the next revolution the stud passes into the second groove, and thereby shifts the sleeve, so that the cam revolves without acting upon the lever f, substantially as herein described.

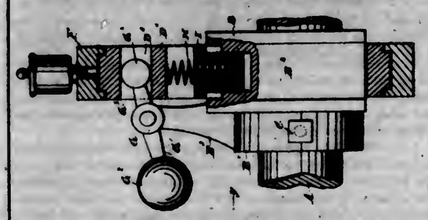
4. In motor-engines worked by combustible gas, vapor, or spray that operate with a cycle of four strokes, the combination of an igniting slide or valve, b, worked directly from the engine-shaft A by an eccentric, c, and a discharge-valve, f, worked directly from the engine-shaft A by a cam, n, on a sleeve, o, that is slid laterally thereon, so as only to actuate the discharge-valve at every alternate revolution, substantially as herein described.

388,303. IGNITING APPARATUS FOR GAS-MOTOR ENGINES. Eugene A. Otto, Cologne, Prussia, assignor to the Gas Motoren Fabrik Deutz, Deutz-on-the-Rhine, Germany. Filed Feb. 9, 1888. Serial No. 263,668. (No model.) Patented in Germany Nov. 3, 1887, No. 43,699; in England Jan. 16, 1888, No. 698; in Belgium Jan. 28, 1888, No. 80,383, and in Italy Mar. 31, 1888, No. 22,302.



Claim.—In igniting apparatus for gas-motor engines, the combination of a passage, A, communicating with the engine-cylinder and with an igniting-tube, r, heated externally by a Bunsen burner, a valve, v, closing said passage and connected, first, to a piston, s, having one or more channels communicating with the atmosphere, and, secondly, to a second piston, h, acting as a valve for closing the outer end of the passage A immediately after the valve v has been forced open for igniting the compressed charge, and means for operating the valve and pistons, substantially as and for the purposes herein described.

388,304. OUT-OFF-VALVE GEAR. Gustave B. Race, Everly, Iowa. Filed Mar. 16, 1888. Serial No. 267,371. (No model.)

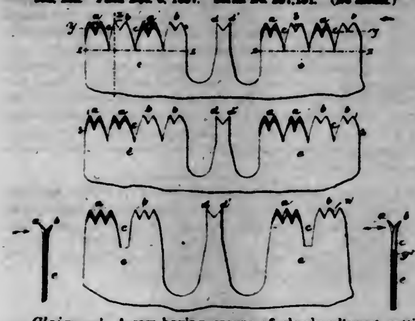


Claim.—1. The combination, with a shaft-block having two of its sides parallel to form ways, of an eccentric having a transverse opening formed with parallel side walls fitting said ways to allow the eccentric to slide thereon, an expansion-spring within said opening and bearing against one end wall thereof and against the adjacent end of the block, and a vertically-swinging lever at right angles to the block and eccentric, weighted at its outer end and engaging the eccentric at its inner end to throw the eccentric against the action of the spring, substantially as set forth.

2. The combination, with the engine-block B, having ways B^2 B^2, a hub, B', and a standard, B^3, of the eccentric D, having a transverse central opening the side walls of which fit the said ways to allow the eccentric to slide thereon, and a recess, D^2, near the outer end of said opening, a lever, G, pivoted between its ends to the standard B^3, parallel with the axis of the block, having a weight at its outer end, and engaging the recess D^2 with its inner end to slide the eccentric in the direction of the length of its opening, and an expansion-spring for returning the eccentric to its normal position, substantially as set forth.

3. In a cut-off for steam-engines, the combination, with a block secured to the main driving-shaft, of an eccentric held to slide on the said block, and a weighted lever fulcrumed on the said block and engaging the said eccentric, a cap-nut screwing upon a sleeve, c, on the said block, and a spring resting with one end in the said cap-nut and with its other end against the said eccentric, substantially as shown and described.

388,305. SAW. John J. Ralya and Samuel L. Reddick, Anderson, Ind. Filed Dec. 6, 1887. Serial No. 257,131. (No model.)



Claim.—1. A saw having groups of closely-adjacent cutting-teeth in which the outer cutting-edges of the outer teeth of the group incline slightly inward toward the adjacent teeth of the group, and in which all the teeth of each group are set in one and the same direction and those of the adjacent group of the same gang are set in the opposite direction, substantially as shown and described.

2. A saw having in the same elevated base a gang of cutting-teeth composed of two groups of teeth, all the teeth of one of each groups being set in one direction and all of those of the other group being set in the opposite direction, and also drag-teeth closely flanking such gang at each side on the same elevated base, substantially as shown and described.

3. A saw having groups of adjacent cutting-teeth having outer edges inclined inward toward the adjacent teeth of the group, all of each group being set in one and the same direction, the line of such set or bend being below the bottom of the notches *n*, all as set forth.

4. A saw having groups of closely-adjacent cutting-teeth, the outer edges being inwardly inclined, all set in one direction, and similar adjacent follow groups set in the opposite direction, both such groups being set at a line or point below the base of the teeth, all substantially as set forth.

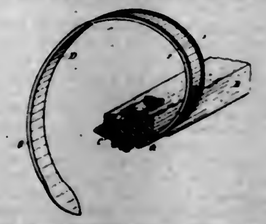
5. A saw having its cutting-teeth set in groups, each group being set in a different direction from that of its next adjacent group, and having the opposite surfaces of its plate reduced or corrugated into grooves substantially at right angles to the length of the plate, these grooves or channels being opposite each other on opposite sides of the plate and inclining away from each other from the bottom of the notches or cuts which are between the teeth, substantially as set forth, and for the purposes described.

6. A crescent-saw having teeth sharpened at their tips to a double bevel, as set forth, and made in gangs composed of two groups, those of one group being all sharpened on one side of the plate and those of the other on the opposite side, and all of each group being set below the base of its teeth, substantially as set forth.

7. A saw having gangs of teeth closely adjacent in groups and sharpened to a double bevel, as set forth, all the teeth of one group being sharpened at the same side and set in one direction and those of its adjacent group sharpened at the other side and set in the opposite direction, such gangs alternating with drag-teeth.

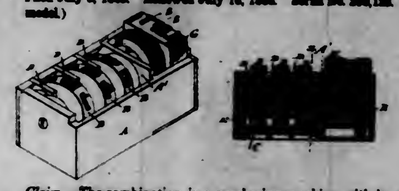
8. In a saw having groups of small teeth at the top of elevated bases and having a deep open space, *i*, between such bases, transverse grooves A, made in the body of the plate below such spaces, as and for the purpose set forth.

388,306. SPRING-TOOTH HARROW. Hiram C. Reed and Asa Clark, Kalamazoo, Mich., assignors to D. C. and H. C. Reed & Company, same place. Filed Jan. 30, 1888. Serial No. 262,264. (No model.)



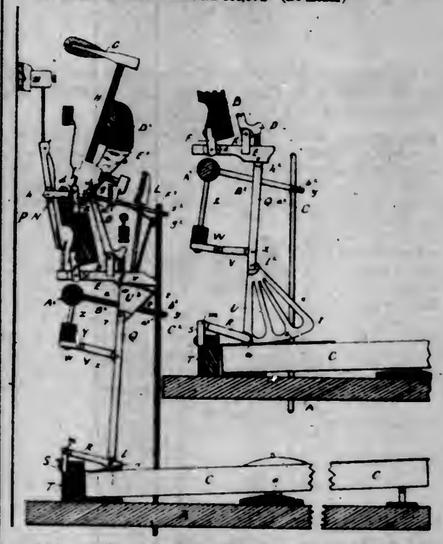
Claim.—The combination of a harrow-beam, a tooth or share, a clip channeled on the under side, and the binding-bolts, substantially as set forth.

388,307. CONSECUTIVE-NUMBERING MACHINE. James H. Rhemarde, Memphis, Tenn., assignor to Joseph Wetter, same place. Filed July 6, 1888. Renewed July 16, 1888. Serial No. 280,122. (No model.)



Claim.—The combination, in a numbering-machine, with its numbering-wheels and with a plunger or vertically-reciprocating type-block actuating said wheels in manner substantially as described, of a type-wheel interposed between the numbering-wheels and plunger and mounted upon a journal projecting from the latter, to be carried thereby at each depression thereof into line of print with the numbering-wheels, substantially in the manner and for the purpose herein set forth.

388,308. PIANO-FORTE. John P. Richardson, Cambridge, assignor to the Mason & Hamlin Organ and Piano Company, Boston, Mass. Filed June 16, 1888. Serial No. 166,574. (No model.)



Claim.—1. In a piano-forte action, in combination, key C, push-rod Q, plate or block U, pivoted to said rod, jack D, and hammer M, for the purpose specified.

2. In a piano-forte action, in combination, key C, push-rod Q, plate or block U, pivoted to said rod and having a curved edge, *s*, eccentric to its pivot, jack D, and hammer M, for the purpose specified.

3. In a piano-forte action, in combination, key C, push-rod Q, plate or block U, pivoted to said rod, jack D, hammer M, and swiveling rail A^1, connected to said rod Q and to the pedal of the piano-forte, for the purpose specified.

388,309. ROTARY ENGINE. James C. Robertson, Eli F. Townsend, and William G. Root, Morrisdale Mines, Pa. Filed Mar. 30, 1888. Serial No. 268,201. (No model.)

Claim.—1. The combination, in a rotary engine of the cylindrical case A, having the exhaust-openings G, the rotary pistons journaled in the case A, arranged between the exhaust-openings, and having the peripheral groove, the shoulder or abutment M, having the cam-faces N O, extending in opposite directions, the latter being provided with the opening P and the said rotary piston being provided with the openings R, communicating with the opening P, the valve-case to which fluid-pressure is introduced, and the valve pivoted in the valve-case and bearing in the peripheral groove of the rotary piston, substantially as described.

2. The combination of the circular case A, having the exhaust-openings G, and the channel H, communicating therewith, the rotary

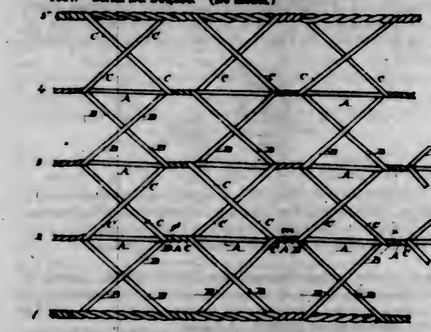
388,309.



piston journaled in case A and having the peripheral groove, the shoulder or abutment M, with the cam-faces N O, extending in opposite directions, the latter having the opening P and the rotary piston being vertically divided with the openings R, communicating with the opening P, the circular valve-case secured to the case A and having the opening T on the face of the piston, the inlet-opening A' and the opening Z, communicating with channel H, and the valve E', pivoted in the valve-case near its center, the shorter end of said valve bearing against the inner side of the valve-case, and the outer end thereof being adapted to bear in the bottom of the peripheral groove, substantially as described.

388,310. WITHDRAWN.

388,311. WIRE FENCE. Benjamin Scahler, Clinton, Mass., assignor to the Clinton Wire-Cloth Company, same place. Filed July 21, 1887. Serial No. 244,893. (No model.)

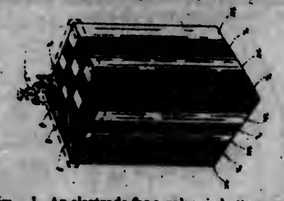


Claim.—1. In a wire fence composed of longitudinal body-wires A and oblique filling-wires B C, the herein-described joint between said wires, comprising a single complete coil of the body-wire and one and a half coils of each filling-wire, the three wires being twisted together and coiled around each other, and the center of the body-wire coil being in the center of the joint.

2. The improved wire fence herein described, composed of a series of horizontally-arranged body-wires, A, and oblique filling-wires B and C, connecting said body-wires, the joint between said wires comprising a single complete coil of the body-wire and one and a half coils of each filling-wire, the three wires being twisted together and coiled around each other, and the center of the body-wire coil being in the center of the joint, the coils of each body-wire being twisted alternately in opposite directions.

3. The improved wire fence herein described, composed of a series of horizontally-arranged body-wires, A, the upper and lower members whereof comprise a number of strands twisted into a cable, and oblique filling-wires B and C, connecting said body-wires, the joint between said wires comprising a single complete coil of the body-wire and one and a half coils of each filling-wire, the three wires being twisted together and coiled around each other, and the center of the body-wire coil being in the center of the joint, the coils of each body-wire being twisted alternately in opposite directions.

388,312. BATTERY-ZINC. Benjamin Scahler, Clinton, Mass., assignor of one-half to Charles Dubreuil, same place. Filed Feb. 17, 1888. Serial No. 264,264. (No model.)



Claim.—1. An electrode for a galvanic battery, comprising zincs, interposed felts, and metallic connections between the zincs.

2. An electrode for a galvanic battery, comprising a number of zincs and a number of felts disposed in alternation, the zincs being connected by metallic connections.

3. An electrode for a galvanic battery, comprising a number of zincs and a number of felts disposed in alternation in juxtaposition and saturated with an acid solution, said zincs being connected by metallic connections.

388,313. HORSE-BOOT. Charles C. Sheild, Peter J. Sheild, and Frank L. Sheild, Ionia, Mich. Filed Apr. 14, 1888. Serial No. 270,679. (No model.)



Claim.—1. A covering for horses' hoofs, comprising a sponge-lined casing having the shape of the hoof, and a sponge-lined pad made separate from the casing but connected thereto, the said pad comprising a vertical portion, *g*, an integral horizontal portion, *g'*, and a wire, I, arranged in said vertical and horizontal portions to maintain the shape of the pad, as set forth.

2. A covering for horses' hoofs, comprising the metallic casing A, having the shape of a horse's hoof and sufficiently larger than the same, whereby it may be lined with sponge and the sponge lining stitched to the inside of the casing, said casing being made of a single piece and entirely covering the front and sides of the hoof, and the sponge-lined leather pad G, entirely separate from the metallic casing and covering the rear and bottom of the hoof, said pad having the sponge lining stitched thereto and comprising the part *g*, concaved to fit against the rear outer part of the heel of the hoof, and the flat projection *g'*, integral with the part *g* and extended at an angle thereto and fitting under the frog of the hoof, and the strap K, connecting the pad G to the sponge-lined casing, as set forth.

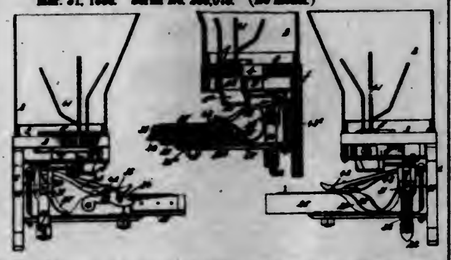
3. A covering for horses' hoofs, comprising the metallic casing A, having the shape of a horse's hoof and sufficiently larger than the same, whereby it may be lined with sponge and the sponge lining stitched to the inside of the casing, said casing being made of a single piece and entirely covering the front and sides of the hoof, and the sponge-lined leather pad G, entirely separate from the metallic casing and covering the rear and bottom of the hoof, said pad having the sponge lining stitched thereto and comprising the part *g*, concaved to fit against the rear outer part of the heel of the hoof, and the flat projection *g'*, integral with the part *g* and extended at an angle thereto and fitting under the frog of the hoof, and the strap K, connecting the pad G to the sponge-lined casing by having one end connected to one side of the casing, then passing through loops attached to the pad and having its other end adjustably connected to the outer side of the casing by a buckle, and a wire, I, inclosed within the pad G to maintain the shape thereof.

4. The combination of the casing A, provided with the three series of openings C, D, and E, having its upper edge bent over out-

wardly on itself at *c'*, and its lower edge bent over outwardly on itself at *c²* and re-enforced by the wire B, and the heel-pad consisting of a leather backing and sponge lining attached to the rear of the casing between the ends thereof, substantially as specified.

5. The combination of the casing A, having the openings C, D, and E, the sponge lining F, the leather backing having the concave upper part, *g*, and the lower flat projection, *g'*, kept in form by the wire I and rivets *i*, the sponge lining A, the loops J, the strap K, secured by rivets *k k* to the casing, the buckle L, strap *l*, and wires M, substantially as specified.

388,314. CIGAR-MAKING MACHINE. ABRAHAM H. SHOOK, Lancaster, Pa., assignor of one-half to Samuel Kaufman, same place. Filed Mar. 31, 1888. Serial No. 269,075. (No model.)



Claim.—1. In a cigar-bunching machine, the combination, with a feed-hopper having in its bottom or floor a feed-chamber, 4, of an upper cut-off or pivoted valve, 5, closing said chamber, a movable cut-off or valve below the floor of the hopper, containing a second feed-chamber, 12, of suitable dimensions to contain the tobacco received from chamber 4, means for alternately actuating said upper and lower cut-offs, whereby the former shall close chamber 4 above when the latter opens it below, and vice versa, a third chamber formed in a stationary plate and arranged beneath the lower cut-off out of line with chamber 4, whereby feed-chamber 12 may discharge therein when the lower cut-off closes chamber 4, and a cut-off, 15, for closing the bottom of the chamber in said stationary plate, substantially as described.

2. In a cigar-bunching machine, the combination, with a feed-hopper having a feed-chamber in the bottom thereof, of an upper cut-off closing said chamber, a cut-off plate moving beneath the floor of the hopper and having a second feed-chamber which may be caused to register with that in the hopper-floor, a stationary plate below the second feed-chamber, having a chamber, 12ª, a valve below and pivotally mounted upon the stationary plate, the said valve being normally closed to prevent exit from the chamber 12ª by a spring-actuated lever, and a bracket-arm operating said lever and the cut-off plate and upper cut-off in such manner as to bring the feed-chambers to register when the upper cut-off and valve of the lower cut-off plate are closed, substantially as described.

3. In a cigar-bunching machine, the combination, with a hopper having in its floor a feed-chamber, 4, of an upper cut-off or valve, 5, a movable cut-off or valve, 9, below the hopper-floor, and having a second feed-chamber, 12, and means for alternately operating said upper and lower cut-offs, said feed-chamber 12 being of dimensions to receive and hold the loose tobacco received from feed-chamber 4, and being, moreover, provided with a movable block, 43ª, adjustable between the parallel sides of one end of chamber 12, said block having a recess supplementing the form of the bunch, substantially as described.

4. In a cigar-bunching machine, the combination, with a segmental table and with an apron overlying the same, of a bracket-arm having uprights, a bunching-bar journaled in supports on said uprights and sweeping over the table beneath the apron, a friction-clamp lying upon the said apron, and a lift at or near the inner angle of the table to raise the inner end of the bunching-bar against the downward tension of a spring, substantially as described.

5. In a cigar-bunching machine, the combination, with a table of segmental form having a recess and with an apron lying thereon, said apron being parallel to the chord of the arc formed by the outer edge of the segmental table, of a bunching-bar lying on said table beneath the apron, a bracket-arm carrying said bunching-bar and having supports therefor, in which said bunching-bar is vertically movable, and a lift upon the inner angle of the table, with which said bunching-bar comes in contact to raise the inner end, substantially as described.

388,315. INSECTICIDE. JAMES T. SUTTON, Jefferson, Tex. Filed Nov. 7, 1887. Serial No. 254,316. (No specimens.)

Claim.—The herein-described insecticide, consisting of bisulphide of carbon, pulverized sulphur, solution of saltpeter, solution of cyanide of potassium, benzine or naphtha, kerosene-oil, and sulphuric ether, mixed together in substantially the proportions specified.

388,316. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. JACOB L. SMITH, Rochester, Pa. Filed Jan. 19, 1888. Serial No. 261,242. (No model.)



Claim.—1. The combination, with the face-plate of a sewing-machine formed with slots and grooves, said having a set-screw mounted therein, the end of which projects into the main slot, and with the needle-bar having vertical movement in said face-plate, of the T-extension removably secured to the lower end of the needle-bar, having flanges formed with one side thereof and a slot in the opposite side, an inwardly-projecting guide-key mounted between and held by said flanges of the extension, the horizontally-arranged transversely-sliding needle-holding block mounted in the lower part of the T-extension, provided with a groove engaging the guide-key, and with a stud passing through the slot in said extension, the needle carried by said sliding needle-block, the lever C, pivoted to the vertical member of the extension, having its lower end apertured to engage the stud or pin of the sliding needle-holding block and its upper end provided with a guideway, the smaller lever, D, pivoted to the upper part of the lever C and having a stud projecting from one side thereof, which engages with and moves in the guideway in the upper end of the lever C, and provided with a slot in its opposite end, and a spring having its lower end bent into a loop and surrounding and held by the fulcrum-screw of the lever C and its upper end in engagement with the slotted end of the lever D, substantially as described.

2. The combination, with the face-plate having slots and grooves therein, and a set-screw having its end projecting into the main slot thereof, and with the needle-bar, of the T-extension having the upper end of its vertical member provided with a socket for removable attachment to the lower end of the needle-bar and its horizontal member forming a tubular bearing, the sliding needle-holding block mounted in the horizontal member of the T-extension, the needle carried by said needle-holding block, the lever C, pivoted to the vertical member of said extension and engaging at its lower end with the sliding needle-holding block, the lever D, pivoted on the upper end of the lever C, and the spring secured at its lower end to the fulcrum of the lever C and its free end engaging with the lower end of the lever D, substantially as described.

388,317. CHAIN-WHEEL. RALPH J. SMITH, Sunderland, County of Durham, England. Filed Feb. 15, 1887. Renewed Jan. 9, 1888. Serial No. 260,234. (No model.) Patented in England Feb. 20, 1886, No. 4,161.



Claim.—In a chain-wheel, in combination with the disks A and B, having the radial ribs E E on their inner faces and united by the internal boss or hub, C, the whelps or bosses F, made in semicircular series and bolted in place, substantially as shown and described.

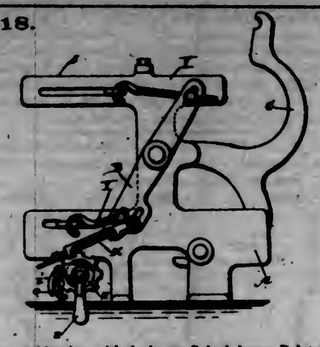
388,318. SHEDDING MECHANISM FOR LOOMS. GEORGE W. STAFFORD and SAMUEL B. BARNEY, Providence, R. I., assignors to the George W. Stafford Manufacturing Company, same place. Filed Oct. 11, 1887. Serial No. 252,257. (No model.)

Brief.—The rear ends of the lifter-bars have more movement than the front ends, and consequently impart increased movement to the rear heddle-frames. The faces of the step-bars are inclined to avoid lost motion, and the faces are formed as a series of steps to avoid the crowding together of levers. A pressure-plate and wire is used for each latch-lever.

Claim.—1. The lifting-wire *a*, having an open loop on its upper end and its lower end plain, in combination with plate-lever F, racks N N', having projections *d*, and cross-wire *r*, substantially as and for the purpose set forth.

2. The combination of the pattern-cylinder R, ratchet-wheel H, pawl-bar K, handle Z, having the curved finger, and the pawl O, with mechanism to operate pawl-bar K, substantially as described, and for the purpose specified.

388,318.



3. The combination, with the levers C, jack-levers D, latches E E', lifters S S', and means for actuating said lifters, of the step-bars P P' having their inner surfaces inclined, as described, substantially as and for the purpose specified.

4. The combination of the levers C, jack-levers D, latches E E', and lifters S S', with a pivotal shaft, T, levers B B', links Y, connecting the opposite ends of the lifters to the said levers B B', the link Y intermediate the rear end of the lifter S and the upper end of the rear lever, B', being connected with the said lever B' at a greater distance from the pivotal shaft than the link Y connecting the forward end of said lifter with the upper end of the lever B, and the step-bars P P', having their inner surfaces parallel to the axis of the shaft T, substantially as and for the purpose set forth.

388,319. HARNESS-REPAIRING REVIVE FOR LOOMS. GEORGE W. STAFFORD and SAMUEL B. BARNEY, Providence, R. I., assignors to the Geo. W. Stafford Manufacturing Company, same place. Filed Oct. 31, 1887. Serial No. 253,897. (No model.)



Claim.—The combination, with the frames A, cross-bars N N', and shaft D, of a series of levers, B B', placed side by side on said shaft, every alternate lever being extended out beyond the shaft to receive the connections of an upper series of springs, C, and the intermediate levers having catches J on their under sides between the shaft D and their ends, to hold connections for a lower series of springs, C', and the springs C C', substantially as and for the purpose set forth.

388,320. WOOD-WORKING MACHINE. SAMUEL F. TROTTER, Biddeford, Me. Filed June 4, 1888. Serial No. 275,551. (No model.)

Claim.—1. The cutting-tool J, to which a rotary motion is imparted, in combination with the tool-holder G, supported by a block, H, adjustable on the plate I in front of the machine, an oscillating motion being imparted to the tool-holder G, substantially as shown and described.

2. The tool-holders G, carrying rotating cutting-tools J, in combination with bars *g*, sliding blocks *n*, sliding bar *l*, bar *k*, and disk *j*, mounted upon shaft *i*, that also carries drum *h*, driven by belt *g*, for imparting a horizontal oscillating motion to the tool-holders, substantially as shown and described.

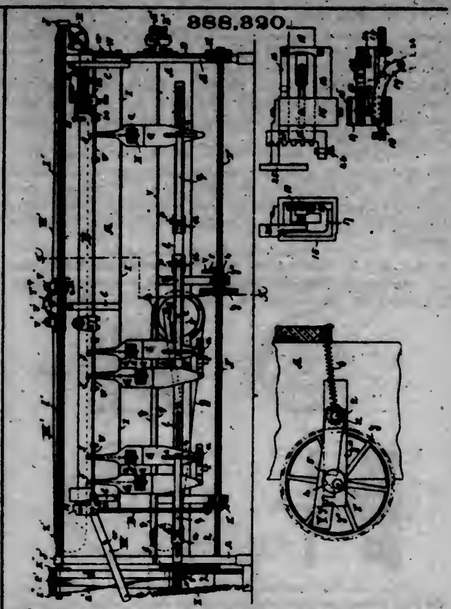
3. The oscillating tool-holders G, supported by blocks H, adjustable on plate I in front of the machine and carrying rotating cutting-tools J, in combination with the pulleys K, belts Q, drums L, mounted in frames M, belt A', tightening-pulley B', and pulley B, for imparting a rotary motion to the cutting-tool J, substantially as shown and described.

4. The angle-iron table S, working in guides C, in combination with bar D, arms E, mounted upon shaft F, to which an intermittent rotary motion is imparted for lowering the table, and levers W and springs X, for returning the table to its normal position, substantially as shown and described.

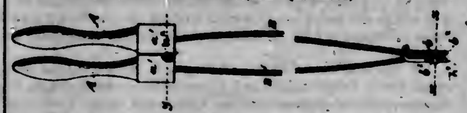
5. The pinion *x*, mounted on shaft Z, to which a rotary motion is imparted, in combination with the lever Y, provided with recess *y'*, and pin *b'*; bar *y''*, provided with a pin, *y'''*, and eccentric *b* on shaft F, and spring 6, for throwing the pinion *x* into and out of gear with the wheel *y* on shaft F, substantially as shown and described.

6. The clamping device consisting of a rectangular piece, 15, hollow block 16, with a space, 17, between, to fit onto the angle-iron table S, and a slide, 18, provided with an arm, 19, for attachment to a lever fulcrumed at 20, the front end of the slide being provided with a toothed plate, 21, substantially as shown and described.

388,320.

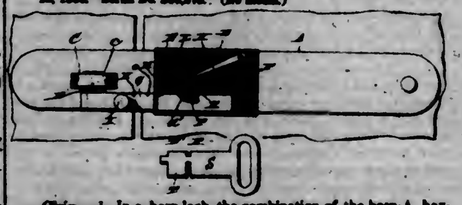


388,321. TRANSPLANTER. CHRIST B. TOBEY, Artondale, Ark. Filed May 26, 1888. Serial No. 275,153. (No model.)



Claim.—Tongs for planting sweet-potato sprouts and cuttings, which consist of the handles A A, pivoted near their front ends, and the spring-wires B B', the latter made with the stub *b*, slot *b'*, jaws *b²* *b³*, and side loop, *b⁴*, substantially as shown and described.

388,322. HASP-LOCK. LUTHER TRAPER, Girard, Ill. Filed Jan. 10, 1888. Serial No. 260,576. (No model.)



Claim.—1. In a hasp-lock, the combination of the hasp A, having a notch, B, the lock-case mounted on the hasp, the notched bolt operating in the case and adapted to close the said notch in the hasp, and the spring-actuated latch engaging in the notches of the bolt to lock it in any desired position, substantially as specified.

2. In a hasp-lock, the combination of the hasp having a notch in its free end, the bolt having the shouldered notch M and the outer notch, N, and the spring-actuated latch adapted to engage in either of these notches, substantially as and for the purpose hereinbefore specified.

3. In a hasp-lock, the combination of the hasp having a notch, B, engaging a pin, the bolt G, having the shouldered notch M, the outer notch, N, and the intermediate notch, O, and the latch engaging in either of the said notches, substantially as specified.

4. In a hasp-lock, the combination of the hasp A, having the notch B, the case D, disposed thereon and having a key-slot, *d*, in the outer end, the pins E and F, engaging the case to secure it in place on the hasp, the bolt G, having one or more notches, and the shouldered notch P within the case, the hold or handle I on the bolt, the spring-actuated latch engaging in either notch, and the key to raise the latch out of engagement and release the bolt, substantially as and for the purpose specified.

5. In a hasp-lock, the combination, with the hasp having a notch, the bolt to close the said notch, and the latch engaging in notches in the bolt, of the key, having the lateral webs T T', adapted, when turned, to engage the bolt and the latch, respectively, thereby lifting the latch and retracting the bolt, substantially as and for the purpose specified.

388,323. OSCILLATING HOOK FOR SEWING-MACHINES. Jasper Varney, Tiffin, Ohio, assignor of one-third to George S. Tingling, same place. Filed Oct. 27, 1887. Serial No. 253,093. (No model.)



Claim.—1. The combination of the oscillating hook, the bobbin, the bobbin-head provided with an annular flange, *c*, and the thread-guide pivoted in the recess formed by the said flange in the face of the bobbin-head and provided with a centrally-located aperture for the passage of the thread, substantially as described.

2. The combination of the oscillating hook, the bobbin-head therein and provided with a bobbin-spindle projecting from its rear face, and a rearwardly-extending flange, I, and a forwardly-extending flange, *c*, the latter forming a depression in the face of the bobbin-head, and the said flange I being smaller in diameter than the flange *c*, for the purpose described, a thread-guide pivoted to the said bobbin-head in the depression in its face, and the bobbin placed upon the said spindle and having one of its disks enlarged, the said bobbin-head being perforated at *i* for the passage of the thread, substantially as described.

3. The combination of the oscillating hook, the bobbin-head provided with a bobbin-spindle, and a rearwardly-extending flange, I, slightly smaller in diameter than the bobbin-head proper, forming a shoulder, *n*, through which a perforation, *i*, is made for the passage of the thread, the bobbin secured upon the said spindle and having one of its disks equal in size to the said bobbin, and resting on the interior surface of the oscillating hook-cylinder head, and a thread-guide, substantially as described.

4. The combination of the oscillating hook, the bobbin, the bobbin-head perforated at *g*, and provided with a pin, *g'*, projecting into the said perforation and around which the thread is passed, the said bobbin-head being also provided with an aperture, *i*, for the passage of the thread, the bobbin, and the thread-guide, substantially as described.

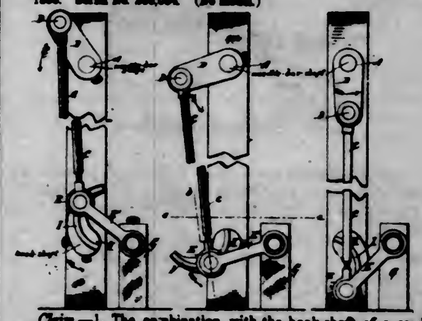
5. The combination of the bobbin-head recessed at *g*, a pin, *g'*, formed on said bobbin-head and projecting into the said recess *g* in the same, a tubular spindle projecting from the rear face of the bobbin-head, a bobbin placed upon this spindle, and a spring-actuated angular lever pivoted in the free end of this spindle and adapted to exert a forward yielding pressure upon the bobbin, whereby a variable tension is exerted upon the thread as it passes between the forward disk of the bobbin and the pin *g*, substantially as described.

6. The combination, with a bobbin-head provided with a flange, c_1 forming a depression in the face of the bobbin-head, of a thread-guide pivoted in the said depression and provided with a radial arm which engages with the said flange *c*, the thread-aperture in the said thread-guide being centrally located with reference to the bobbin-head, and a bobbin, substantially as described.

7. The combination, with the oscillating hook, bobbin-head provided with a depression in its face, and a rearwardly-extending spindle, the said bobbin-head also being provided with an opening, *g*, into which projects a bent radial pin, *g'*, a thread-guide pivoted in the said depression in the face of the bobbin-head, and being perforated centrally for the passage of the thread, the said thread-guide also having a radial arm, *c*, which serves to hold it closed, and a bobbin held upon the said spindle, substantially as described.

8. The combination of the oscillating hook, the bobbin-head placed therein and provided with a rearwardly-extending spindle, a thread-guide upon said bobbin-head, and a bobbin placed loosely upon said spindle, the forward disk of said bobbin being somewhat smaller than the bobbin-head and the rear disk being equal in diameter to the bobbin-head and adapted to rest upon the interior surface of the oscillating hook, as and for the purpose herein set forth.

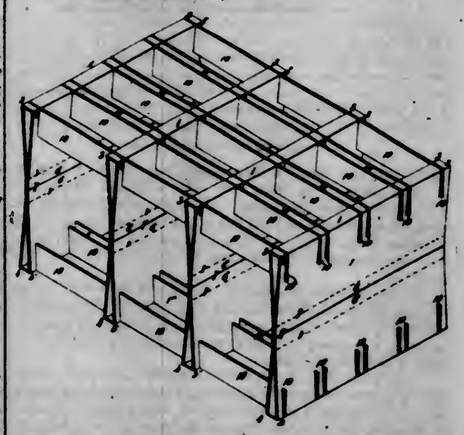
388,324. SEWING-MACHINE. Jasper Varney, Tiffin, Ohio, assignor of one-third to George S. Tingling, same place. Filed Mar. 3, 1888. Serial No. 266,054. (No model.)



Claim.—1. The combination, with the hook-shaft of a sewing-machine, of a cam-arm secured to the rear thereof, an oscillating arm working on a fixed bearing, a slotted head or tumbler mounted on a pin working in a boss on said arm and riding upon the curved arm or cam, and the pitman pivoted at its lower end upon the said boss and connecting with the crank-pin of the needle-bar shaft, whereby an accelerated motion is imparted to the hook-shaft, substantially as specified.

2. The combination, with the needle-bar shaft and the oscillating hook-shaft, of the adjustable crank secured to the needle-bar shaft, the adjustable curved cam secured to the hook-shaft, the oscillating arm secured to a fixed bearing on the frame of the machine, its slotted head riding on the curved cam and the connecting-pitman, whereby the parts may be adjusted to give an accelerated movement to the hook-shaft at the proper relative positions of the crank-shaft and said hook-shaft, substantially as specified.

388,325. BOTTLE-CASE. Ross L. Walker, St. Louis, Mo., assignor of one-half to Gabriel Hoyt, Brooklyn, N. Y. Filed Jan. 30, 1888. Serial No. 262,591. (No model.)



Claim.—1. The combination, in a bottle-case, of folded partitions 1, scored at 2 3, the portions between said scores constituting the bases of triangles, and having paired slots, and cross-partitions occupying said slots, substantially as set forth.

2. The combination, in a bottle-case, of hollow partitions of flexible material, each comprising a central fold and two side folds extending from the central fold, and cross-partitions, substantially as and for the purpose set forth.

3. The combination, in a bottle-case, of partitions having paired slots, said partitions being scored and folded in two places at the top and two places at the bottom, and cross-partitions occupying said slots, substantially as shown and described.

4. The combination, in a bottle-case, of slotted partitions formed of single strips of material, the longitudinal edges 6 of the strips being doubled over and secured near the middle of the strips by rows of stitching, said strips being folded in two places at top and bottom, respectively, forming a triangular space in the partition at both top and bottom, and cross-pieces occupying the slots of the partitions, substantially as shown and described.

5. The combination, in a bottle-case, of folded partitions bent in two places at their slotted tops and bottoms, and having their folded longitudinal edges 6 secured to the middles of the strips of which the partitions are made by rows of stitching, and paired cross-pieces occupying the said slots of said partitions, substantially as and for the purpose set forth.

388,326. PAPER-HOLDER FOR DUPLICATING DEVICES. Robert J. Wallace, Denver, Colo. Filed July 16, 1887. Serial No. 244,304. (No model.)



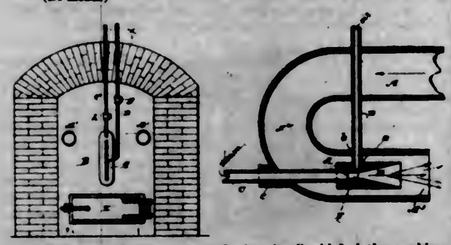
Claim.—1. The paper-holder consisting of the supporting-frame, the supports for the paper at either end, the paper passing about said supports as a band, the said supports being arranged in the extreme lower portion of said frame and in the same plane, whereby they form bearing-supports for the frame and bring the paper into close and proper position to the supporting-surfaces, substantially as described.

2. In combination, a paper-holder consisting of a suitable frame, the plate *c* and the roller at either end thereof, and the paper encircling said rollers and plate in the form of a belt, substantially as described.

3. The paper-holder consisting of the supporting-frame, the support for the paper at either end of said frame, the thumb-socket arranged upon the supporting-frame, substantially as described.

4. In combination, the paper-holder consisting of the supporting-frame; the support for the paper at either end of said frame, the paper arranged about said supports in the form of a belt, and the thumb-socket upon the frame arranged diagonally thereof, substantially as described.

388,327. APPARATUS FOR BURNING LIQUID AS A FUEL. Alfred Wilkie, Toledo, Ohio. Filed May 26, 1887. Serial No. 239,691. (No model.)



Claim.—1. In an apparatus for burning liquid fuel, the combination, with a combustion-chamber, of an air-pipe starting from a point near the rear end of the chamber and terminating in a downwardly and rearwardly projecting discharge end, the latter being below the main body of the pipe, whereby the latter is subjected to the direct heat of the burning fuel, a lateral branch pipe for supplying air to said pipe, a mixing-nozzle located within the discharge end of the pipe, and steam and oil pipes discharging into said nozzle, substantially as set forth.

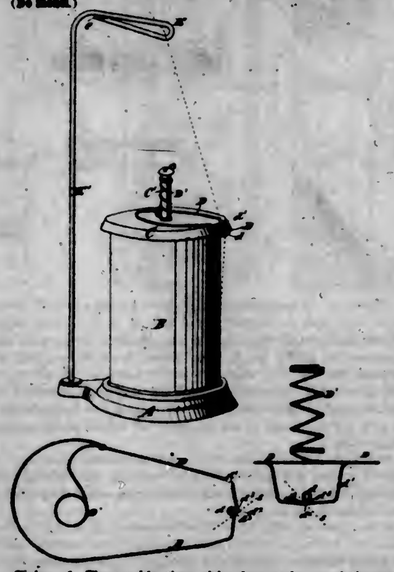
2. In an apparatus for burning liquid fuel, the combination, with a combustion-chamber, of a central air-induction pipe located within the combustion-chamber and having branches extending parallel to the central pipe to receive air at the front end of the combustion-chamber and discharge it into this chamber hot, a mixing-nozzle located in the air-pipe near the the discharge end thereof, and steam and oil pipes discharging into said nozzle, substantially as set forth.

3. In an apparatus for burning liquid fuel, an air-induction pipe having a cylindrical straight body and a lateral branch pipe that extends parallel to this main pipe, the cylindrical straight body or center pipe curving downwardly to discharge its heated contents below the main pipe and its lateral branch, a mixing-nozzle located within the discharge end of the pipe, and steam and oil pipes discharging into said nozzle, substantially as set forth.

4. In an apparatus for burning liquid fuel, an air-induction pipe having a central cylindrical body and two lateral branches resting in the same plane as the central pipe, the center pipe curving downwardly and rearwardly to enter the combustion-chamber below the three parallel portions of this air-induction pipe to discharge its contents, a mixing-nozzle located within the discharge end of the pipe, and steam and oil pipes discharging into said nozzle, substantially as set forth.

5. In a furnace for burning oil as a fuel, the combination, with the combustion-chamber, of the furnace and the central air-pipe having two lateral branches, the central pipe being curved at its discharging end, of a mixing-nozzle attached to oil and steam pipes, through which oil and steam are discharged through the moving column of hot air into the combustion-chamber.

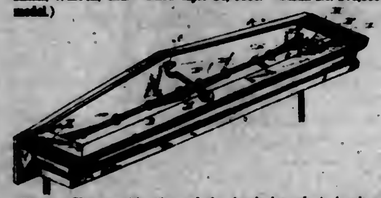
388,328. THREAD-UNWINDER FOR SEWING-MACHINES. Chas. E. Wilkinson, Matteawan, N. Y. Filed Feb. 3, 1888. Serial No. 262,861. (No model.)



Claim.—1. The combination, with a base and a spool thereon, of a cap applied to the upper end of the spool, an upper thread-guide above the spool, and a flier, D, formed of wire and having at the outer end an inward bend forming the thread-eye *d*, and the overlapping portions d^3, forming between them an opening, d^2, through which the thread from the spool may be entered laterally into the said eye, substantially as herein described.

2. In an unwinding attachment for spools, the combination, with the cap, of the flier pivoted to the said cap with one end and projecting with its opposite end beyond the periphery of the cap and formed with the downward bend, which terminates in an inward-projecting eye completely surrounding the thread passed vertically therethrough, and overlapping portions, as d^3, one arranged above the other to form an opening, as d^2, whereby the thread may be laterally passed through said opening into the eye, substantially as set forth.

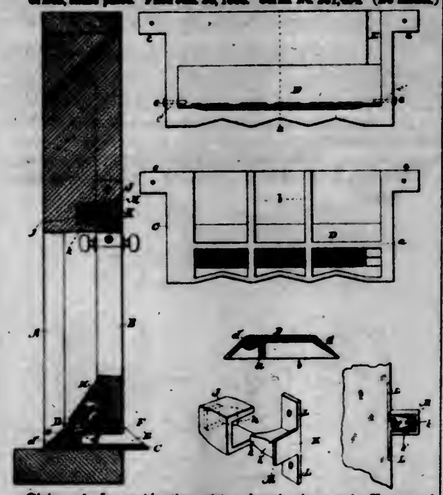
388,329. HANGER FOR WINDOW-CURTAINS. Charles A. Williams, Warren, Ind. Filed Apr. 16, 1888. Serial No. 270,998. (No model.)



Claim.—The combination of the back board, A, having screw-eyes D C D, the removable cornice-frame having pins E E and hook-

ing device F, the hooked and removable hanger-rod G, the locking-screw K, and the screw-eyes N N, adapted to guide the curtain-cords M, all constructed and combined to operate substantially in the manner and for the purpose herein shown and set forth.

388,830. COMBINED THRESHOLD AND WEATHER STRIP. GEORGE R. WILLIAMSON, Braidwood, Ill., assignor of one-half to Hattie Grimm, same place. Filed Jan. 30, 1888. Serial No. 261,694. (No model.)



Claim.—1. In combination with a door having a strip, H, secured near its base, and an inclined flexed shoe, F, at its bottom edge, a threshold made in one piece, having a longitudinal recess in its upper side, a strip, D, having an inclined projection on the bottom side, wherewith the said shoe engages, and pivot-pins *c*, secured in each end of the strip D and passing through the ends of the threshold, said strip D occupying said recess, whereby its upper side is adapted to lie flush with the upper side of the threshold, all substantially as shown and described.

2. A hollow threshold having a recess in its top opening into the hollowed portion, a longitudinal rib between the sides of the recess, transverse ribs, and a strip pivoted in said recess and resting upon the ribs, substantially as set forth.

3. A hollow threshold having a longitudinal rib, *e*, near its front edge, a strip having a rounded edge bearing between said rib and the front of the threshold and rounded bearings in the latter, in combination with the door having a strip near its base under which said strip is adapted to fit, substantially as set forth.

4. In combination with a strip pivoted to the threshold of a door, the door having an inclined strip secured near its base, means for forcing the strip of the threshold into the recess behind the strip of the door, and a guide on the door adapted to fit in a socket in the door-frame, substantially as and for the purpose set forth.

5. In combination with a strip pivoted to the threshold of a door, the door having an inclined strip secured near its base, means for forcing the strip of the threshold into the recess behind the strip of the door, a guide-piece on the door having inclined sides, and a socket in the door-frame complementary thereto, substantially as and for the purpose set forth.

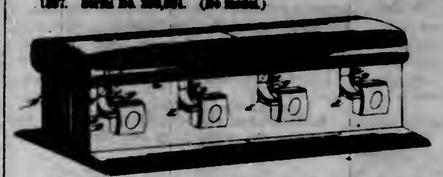
388,831. SEED-PLANTER. FRANK W. ATHEY, Stanton County, assignor of one-half to William W. Ayers, Dermot, Kans. Filed Dec. 13, 1887. Serial No. 257,736. (No model.)



Claim.—1. The combination, in a seed-planter, with the frame A, suitable furrow-openers, D D, and coverers E E, of the loose ground-wheels C C, axle B, ratchet-wheel *b*, pawls *c c*, bevel gear-wheel 1, adjustable bevel gear-wheel 2, short vertical shaft 3, disk 5, and foot-lever *l*, all constructed and arranged as described, for the purpose specified.

2. In a seed-planter, the combination, with the short vertical shaft 3, of the seed-disk 5, secured to the top thereof and having openings 6 therein, removable and adjustable plates 7, having perforations 8 therein, with lip 9, and seed-hopper F, having a narrow bottom and A-shaped partition, substantially as described, for the purpose specified.

388,832. NUT-LOCK. GEORGE H. BALDWIN, Bowers, Mich., assignor of one-half to Lewis Zimmerman, same place. Filed Dec. 31, 1887. Serial No. 259,591. (No model.)



Claim.—In a nut-lock, the combination of the nuts, the fish-plate having a socket-groove in its upper edge which rests against the rail's heads, and recesses extending downwardly and outwardly from said groove on the side of the adjacent nuts toward which the latter unscrew, and the locking-dogs provided with journals at their tops resting in said groove, and arms extending downward in the recesses and lying against the edges of the corresponding nuts, substantially as specified.

388,833. TELEGRAPH-RECEIVER. WILLIAM T. BARNARD, Baltimore, Md. Filed Apr. 20, 1887. Serial No. 235,033. (No model.)



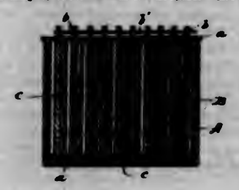
Claim.—The combination, with a vibrating fork, of a resonant body upon which the fork acts mechanically to produce the signals, and adjusting devices whereby the resonant body may be adjusted so as to be struck by the vibrating fork when vibrating at its full normal speed, whereby the effects of induction may be avoided, substantially as described.

388,834. TOOL-HOLDING BOX. GEORGE H. BARTLETT, Short Hills, N. J., and OTHO PEAK, Dover, Mass.; said Peak assignor to said Bartlett. Filed Feb. 9, 1888. Serial No. 263,504. (No model.)



Claim.—As a novel article, a tool holder or receptacle consisting of two exterior slabs or layers grooved upon their inner faces and one or more intermediate layers grooved upon both faces, said layers being secured together with the grooves therein opposite each other to form a series of compartments or cells, a bottom secured to the lower end of the slabs or layers, and a cover connected with the upper or opposite ends thereof, said cover being recessed in its inner face to receive the ends of tools which project from the recesses, substantially as described.

388,835. SECONDARY BATTERY. JOHN BEATTIE, Jr., Westport Mass. Filed May 2, 1887. Serial No. 236,833. (No model.)



Claim.—1. In a secondary battery, a plate composed of lead and an amalgam of any metal except lead in combination with a plate composed of zinc and an amalgam of any metal except zinc, for the purpose set forth.

2. In a secondary battery, a plate amalgamated throughout its entire body with an amalgam of lead and any other metal except lead in combination with a plate amalgamated throughout its entire body with an amalgam of zinc and any metal except zinc, substantially as set forth.

3. In a secondary battery, a lead plate consisting of an amalgam of lead, arsenic, sodium, and mercury, in combination with a zinc plate composed of an amalgam of zinc, mercury, lead or tin, and sodium, substantially as set forth.

388,836. PROCESS OF FORMING INGOTS. JAMES B. D'A. BELL, Jersey City, N. J., assignor to the Gold Ingot Company, of New York. Original application filed Mar. 30, 1887, Serial No. 232,502. Divided and this application filed June 22, 1888. Serial No. 277,572. (No model.)



Claim.—1. The process herein described for forming a continuous ingot-bar in separable sections divided by notches, which consists, first, in filling a vertical mold-section with fluid metal; secondly, applying at the top of such filled section a packing or washer perforated to permit the passage of the metal; thirdly, superposing a bottomless mold-section, and, fourthly, filling the same with fluid metal and continuing the application of bottomless mold-sections and perforated washers at the joints of such sections as long as desired, substantially as herein set forth.

2. The process herein described for forming an ingot, which consists, first, in filling a vertical mold-section with fluid metal; secondly, applying to the top of such filled section a perforating yielding packing having its edge projected into the mold; thirdly, superposing a bottomless mold-section thereon, and, fourthly, filling the same with fluid metal, as and for the purpose set forth.

388,837. DREDGING APPARATUS. ALPHONSO B. BOWERS, San Francisco, Cal. Original application filed Dec. 5, 1870. Renewed Apr. 16, 1879. Divided and this application filed May 1, 1888. Serial No. 272,513. (No model.)

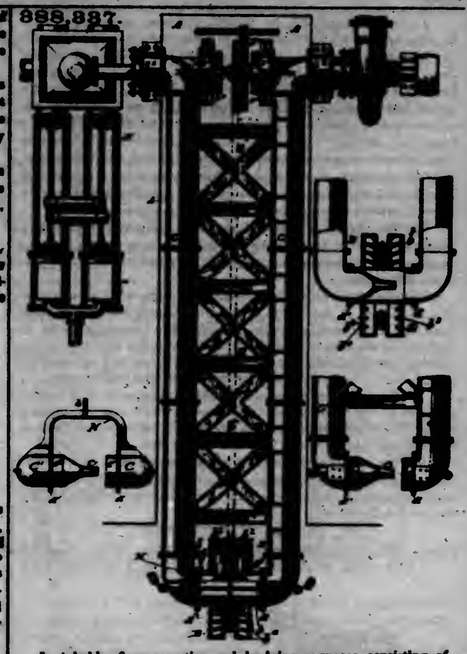
Brief.—It consists in part of an excavator of any suitable form mounted on the outer end of a ladder constructed with tubular sides trussed and bound together to give the necessary stiffness in the usual form of a dredge-ladder, each side having at its inner upper end a bearing in the same axial line with the other, on which bearings the ladder swings in a vertical plane. It consists, also, in part in utilizing the hollow sides of this ladder as conduits for conveying water and spoil, and in other details of construction, as set forth.

Claim.—1. A ladder for excavating and dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity and mounted on trunnions to swing in a vertical plane, one of these sides being utilized as a suction-pipe and the other as a force-pipe, through which water is injected into the suction-pipe.

2. In combination, a ladder for excavating and dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity and mounted on trunnions to swing in a vertical plane, one of these sides being utilized as a suction-pipe and the other as a force-pipe, through which water is injected into the suction-pipe, and an excavator constructed and arranged to deliver its spoil to said suction-pipe.

3. In combination, a ladder for excavating and dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity and mounted on trunnions to swing in a vertical plane, one of these sides being utilized as a suction-pipe and the other as a force-pipe, through which water is injected into the suction-pipe, and a rotary excavator constructed and arranged to deliver its spoil to said suction-pipe.

4. In combination, a ladder for excavating and dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity and mounted on trunnions to swing in a vertical plane, one of these sides being utilized as a suction-pipe and the other as a force-pipe, through which water is injected into the suction-pipe, and a hollow rotary excavator with inward delivery through itself to said suction-pipe.



5. A ladder for excavating and dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity, and mounted on trunnions to swing in a vertical plane, one of these sides being utilized as a receiving and discharging pipe and the other as a force-pipe, through which water is injected into said discharge-pipe.

6. In combination, a ladder for excavating and dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity, one of these sides being utilized as a receiving and discharging pipe and the other as a force-pipe, through which water is injected into the discharge-pipe, and an excavator constructed and arranged to deliver its spoil to said receiving and discharging pipe.

7. In combination, a ladder for dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity, one of these sides being utilized as a receiving and discharging pipe and the other as a force-pipe, through which water is injected into the discharge-pipe, and a rotary excavator constructed and arranged to deliver its spoil to said discharge-pipe.

8. In combination, a ladder for excavating and dredging purposes, consisting of tubular sides suitably trussed and bound together to give the necessary rigidity, one of these sides being utilized as a receiving and discharging pipe and the other as a force-pipe, through which water is injected into the discharge-pipe, and a rotary excavator with inward delivery through itself to said discharge-pipe.

9. A swinging ladder for dredging purposes, consisting of hollow or tubular sides suitably trussed and bound together to form a rigid structure and mounted on hollow trunnions, on which it swings in a vertical plane, one of the sides being utilized as a suction-pipe and communicating through its hollow trunnion, and a suitable connection with a suction-pump capable of raising and discharging spoil, the other side communicating through its hollow trunnion with the discharge of a force-pump and serving as a conduit through which water may be injected into the suction-pipe.

10. A swinging ladder for dredging purposes, consisting of hollow or tubular sides suitably trussed and bound together to form a rigid structure and mounted on hollow trunnions, on which it swings in a vertical plane, one of these sides being utilized as a suction-pipe and communicating through its hollow trunnion and a suitable connection with a suction-pump capable of raising and discharging spoil, the other side communicating through its hollow trunnion with the discharge of a force-pump through which water may be injected into the suction-pipe, in combination with elbows on the lower ends of said hollow sides, forming continuations of said pipes, the force-pipe being provided with an injection-nozzle through which water is forced into the mouth of the suction-pipe.

11. A swinging ladder for dredging purposes, consisting of tubular sides suitably trussed and bound together to form a rigid structure and mounted on hollow trunnions, on which it swings in a vertical plane, one of these sides being utilized as a suction-pipe and communicating through its hollow trunnion and a suitable connection with a suction-pump capable of raising and discharging spoil, the other side communicating through its hollow trunnion with the discharge of a force-pump through which water may be injected into the suction-pipe, in combination with elbows on the lower ends of said hollow sides, forming continuations of said pipes, these elbows being provided with bearings forming journals for the support of a hollow rotary excavator with inward delivery through itself to the suction-pipe.

12. The combination, in a device for raising spoil, of a rotary excavator provided with cutting edges or blades, a suction pipe and pump, and an injection-pipe through which water may be forced into said suction-pipe.

13. The combination, in a device for raising spoil, of a suction pipe and pump, an excavator having a cutting-edge or cutting-edges constructed and arranged to work with a side feed or swing of the ladder in lateral planes from side to side across the longitudinal axis of the excavation and deliver its spoil to this pipe, and an injection-pipe through which water may be forced into said suction-pipe.

14. The combination, in a device for raising spoil, of a suction pipe and pump, a rotary excavator provided with axial excavating-blades that deliver its spoil to this pipe, and an injection-pipe through which water may be forced into said suction-pipe.

15. The combination, in a device for raising spoil, of a suction pipe and pump, a rotary excavator with inward delivery through itself to this pipe, and an injection-pipe through which water may be forced into said suction-pipe.

388,338. **FENCE.** JESSE BESSEY, Lewisburg, W. Va. Filed June 2, 1888. Serial No. 275,881. (No model.)



Claim.—1. In a fence, the inner crossed stakes, A A, connected at their intersection by a suitable tie-wire, *a*, the outer crossed stakes, C C, arranged, respectively, parallel with the rails A and connected at their upper intersecting ends by the tie-wire *d*, the said outer stakes being connected to the inner stakes at their points of intersection by the tie-wires *e e*, in combination with the upper or rider rail arranged in the angle between the upper ends of the outer stakes, the intermediate rail arranged in the upper angle formed by the intersection of the inner stakes, and the lower rails, E E, arranged between the adjacent sides of the parallel stakes and bearing on the tie-wires *e e*, which connect the said stakes, substantially as specified.

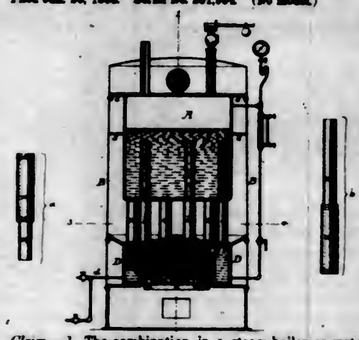
2. In a fence, the inner and outer crossed stakes, A A and C C, respectively, connected at their intersections by suitable tie-wires, and the upper and intermediate rails, D and B, respectively arranged in the angles formed by the intersections of the said rails A A and C C, in combination with the parallel horizontal rails E E, arranged side by side below the intermediate rails and secured at their ends between the adjacent lower ends of the said stakes, whereby the bottom of the fence is fortified against the attacks of confined animals, substantially as specified.

388,339. **FOOD FOR CATTLE.** GUSTAF A. BRINK and ALBERT V. RENSTRÖM, Stockholm, Sweden. Filed May 17, 1888. Serial No. 274,170. (No specimens.)

Claim.—1. The herein-described composition of matter as a food for cattle, the same consisting of dried skim-milk curds, (casein,) cereal-meal, and oil-cake, as set forth.

2. As an improved food for cattle, a cake or solidified mixture of dried skim-milk curds, (casein,) cereal-meal, oil-cake, and bone-meal.

388,340. **STEAM-BOILER.** JAMES G. BRYAN, Philadelphia, Pa. Filed Jan. 26, 1888. Serial No. 261,964. (No model.)

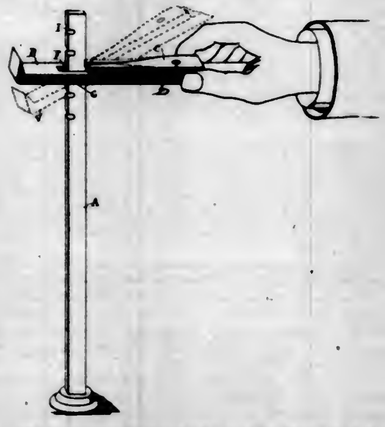


Claim.—1. The combination, in a steam-boiler or water-heater, of the water-vessel, the annular water-jacketed fire-pot, and pipes *a* and *b* extending between the vessel and water-jacket, said pipes *b* projecting upward in the water-vessel and the pipes *a* projecting down into the water-jacket, all substantially as specified.

2. The combination of the water-vessel, the fire-pot beneath the same, an outer casing, and horizontal partitions having openings on opposite sides of the axis of the water-vessel, whereby the products of combustion are caused to circulate beneath, around, and above said vessel, all substantially as specified.

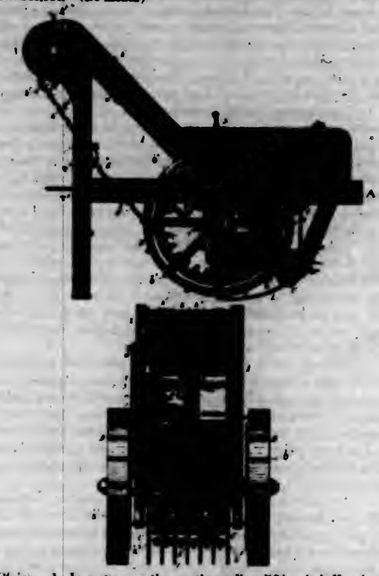
3. The combination of the water-vessel, the water-jacketed fire-pot and connecting-pipes, each comprising two portions, one larger in diameter than the other, the larger portion having right and left screw-threads adapted to openings in the casings of the water-vessel and jacket, all substantially as specified.

388,341. **WAGON-JACK.** JOHN A. COREY, Rockville, assignor of one-half to Charles D. Chase, Shannock, R. I. Filed Feb. 4, 1888. Serial No. 262,862. (No model.)



Claim.—The standard A, having a series of recesses in its edge, in combination with the lever B, made with the mortise and pin, and the swinging latch C, pivoted to said lever, substantially as and for the purpose set forth.

388,342. **SELF-LOADING STONE-GATHERER AND POTATO-DIGGER.** HENRY CRANE, Addison, N. Y. Filed Aug. 31, 1887. Serial No. 248,208. (No model.)



Claim.—1. In a stone-gatherer, the endless lifting-belt K, adapted for lifting a mass of stones, composed of a series of long metal plates extending across the machine and provided with lifting-teeth curving forward and hooked together, as described, to form a continuous compact bed for supporting and carrying up the stones, and having but a narrow space between the plates for the escape of dirt, such belt extending from end to end of the swinging elevator-frame, all substantially as shown and described.

2. The described means for lifting the pinion-shaft to raise its gear or pinion D out of engagement with the internal gear C, consisting of the combination of the movable shaft E, hinged lever *c*, bent lever 4, and link 3, all as shown and described.

3. In combination, the frame A, the side pieces, U U, secured thereto, the arched plate or cover R, and lifting devices, as described, connected to hooks *p*, extending from the rake-head through such cover.

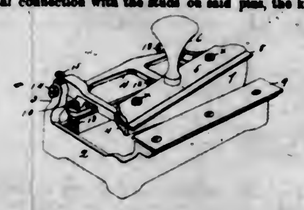
4. In combination, the driving-gear C, the endless chain K, operated by a gear-shaft, E, which is adapted to be lifted to take its gear D out of engagement with the driving-gear, and the rake-teeth L, also adapted to be lifted and held in their raised position.

5. In combination, the stone-gathering chain K, constructed as described, its supporting-frame, shaft E, its gear D, and sprocket-wheels H, ratchet *g*, and spring-pawl *e f*, the combination serving to arrest the working of the chain when the machine is backed, all substantially as shown and described.

6. In combination with the two-wheeled chain-carrying frame having its preponderance of weight forward of the axle, the adjustable post V, held in guides on the frame and adapted to slide thereon and to be secured at any desired portion, as and for the purposes set forth.

388,343. **ENVELOPE-OPENER.** FRANCIS CURTIS, Springfield, Mass. Filed Mar. 7, 1887. Serial No. 230,094. (No model.)

Claim.—1. The bed 2, having the posts 3 thereon, the eccentrically-studded pins 14, passing through said posts, the knife-frame having a pivotal connection with the studs on said pins, the knife 8, attached to said frame, and the cutter-plate 9, attached to the bed opposite said knife, combined and operating substantially as set forth.



2. An envelope-opener consisting of the bed 2, having a box form, as described, and the posts 3 thereon extending above the border of said bed, the cutter-plate 9, secured on the latter, the knife-frame 4, having a pivotal connection with said posts, the knife 8 and the gage 7, attached to said knife-frame, the adjusting-screws 16, engaging with the rear edge of said knife, the screw 10, engaging with said frame and bed, and the spring 13, combined and operating substantially as set forth.

3. In combination, the knife-frame 4, having the grooves *s s* therein, the knife-clamp 5, the gage 7, having arms thereon entering said grooves, and the screws 17, passing through said frame against said arms.

388,344. **CIRCUIT-CLOSER FOR CALL SYSTEMS.** CHARLES R. DEY, Denver, Colo. Filed Apr. 19, 1887. Serial No. 236,342. (No model.)



Claim.—1. The combination, in an electric call, of spring-actuated push-pins, a movable frame engaged to said pins, and two cam-shafts provided with connecting-rods, substantially as specified.

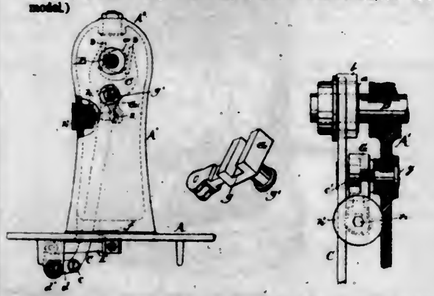
2. The combination, in an electric call, of slotted spring-actuated push-pins, a movable frame engaged to said pins, and two cam-shafts and connecting-rods for actuating said frame and pins, substantially as described.

3. The combination, in an electric call, of the inclosing-casing having a series of circuit-closers at its back, the partition at the rear of said casing, the shouldered push-pins and springs, a movable frame engaged to said pins, substantially as described.

4. The combination, in an electric call, of spring-actuated push-pins, a series of circuit-closers, a movable frame, cams, and connecting-rods for actuating said frame, substantially as specified.

5. The combination, in an electric call, of spring-actuated push-pins, a series of circuit-closers, a movable frame, cams provided with a handle, and connecting-rods, substantially as described.

388,345. **FEEDING MECHANISM FOR SEWING-MACHINES.** PHILIP DIEHL, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed July 1, 1886. Serial No. 206,810. (No model.)



Claim.—1. The rotating needle-bar-actuating shaft located in the overhanging arm of the machine, a cam or eccentric thereon, the rocking shaft located below the cloth-plate, the feeding bar or device jointed to an arm of the said rocking shaft, and the link C, bifurcated or forked at its upper end to embrace the said cam or eccentric, the said link having a stud at one side and jointed at its lower end to an arm secured directly to the said rocking shaft, combined with the independent pivoted feed-regulating lever G, having a slotted or grooved way therein to co-operate with the said stud, and a device to move the said lever, the said rotating shaft moving the upper end of the link

about its pivot or fulcrum, the pin *c'*, and causing the said link to be moved longitudinally a greater or less distance according to the position of the slot or groove of the regulating-lever, substantially as described.

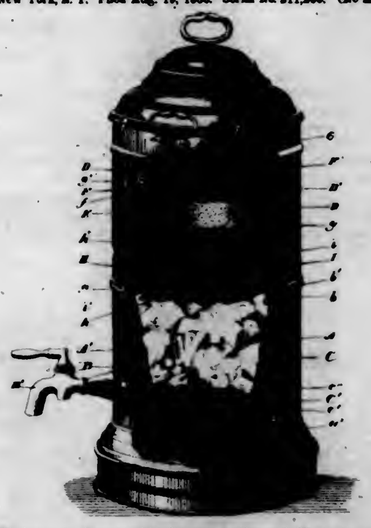
2. The rotating needle-bar-actuating independent shaft, its cam or eccentric, the feeding-bar, the rocking shaft D, having arms to which it is jointed, and the link C, forked at its upper end to embrace the said cam or eccentric and jointed at its lower end directly to an arm of the said rocking shaft and having at one side a roller-stud, combined with the independent pivoted feed-regulating lever grooved or slotted at one side to receive the stud of the lever C, the screw-rod attached to the regulating-lever, and the internally and externally threaded nut *h'*, by which to adjust the said lever, substantially as described.

388,346. LIGHTING DEVICE FOR TOILET-MIRRORS. Howard S. Duff, Philadelphia, Pa. Filed Oct. 25, 1887. Serial No. 253,227. (No model.)



Claim.—The combination of the mirror F, having opposite projecting trunnions *b*, the central supporting-post, A, constituting a socket for application to a gas-burner, the branches B, spreading laterally from the upper end of said post to receive between them the lower portion of the mirror, and having sockets *d* for the reception of the trunnions, wings D, extending laterally beyond the mirror and terminating in burners *a*, substantially as described.

388,347. WATER COOLER AND FILTER. James H. Dumont, New York, N. Y. Filed Aug. 19, 1886. Serial No. 211,269. (No model.)



Claim.—1. In a combined water cooler and filter constructed substantially as shown, an ice-receptacle adapted to be suspended within the chamber for the filtered water, said ice-chamber having a filter or strainer, whereby the impurities which may be in the ice are prevented from entering the chamber for the filtered water, substantially as shown, and for the purposes set forth.

2. The combination, in a combined water cooler and filter, of an ice-chamber adapted to be suspended below the filter and within the chamber for the filtered water, said ice-chamber being provided at its upper edge with a projecting flange and with a depending bottom portion with perforations, a covering therefor of textile fabric, and a perforated disk for holding said fabric in place, substantially as shown.

3. In a combined water cooler and filter, a lower vessel provided with interior and exterior walls, so as to provide an air-space between the same, the interior walls constituting a vessel for the filtered water, said vessel having a horizontal portion, *b*, and a vertical portion, *b'*, formed integral therewith, which extends above the upper edge of the lower vessel, in combination with the portion *b'* of the filter, and an ice-receptacle having at its upper edge an outwardly-projecting flange which engages with the portion *b*, so as to support the same within the chamber for the filtered water, substantially as shown.

4. In a combined water cooler and filter, an upper vessel having a partition-plate, so as to form a chamber for the unfiltered water, said partition having an opening within which is secured a filtering-vessel and an upwardly-projecting wall for maintaining an imperforate covering-plate in position, a pan supported under said filtering-vessel by means of a frame, and an ice-receiving receptacle adapted to occupy a position in the lower portion of the filter, the parts being combined and organized substantially as shown.

5. A combined water cooler and filter comprising a receptacle for the unfiltered water, the bottom thereof having a central opening within which is secured a filtering-vessel, the upper edge of said vessel being surrounded by a primary strainer, a chamber for the filtered water, and an ice-receptacle suspended within the chamber for the filtered water, said ice-receptacle having a strainer, the parts being combined substantially as shown.

6. In combination with a water cooler and filter, a chamber, D, provided with a transverse partition having a central opening therein, an upwardly-projecting flange attached at intervals to said partition, so as to provide a passage-way beneath the same, a vessel maintained by said partition so that the upper edge will extend above the partition, and a cap adapted to fit over the flange, and a primary strainer confined between said flanges, substantially as shown, and for the purposes set forth.

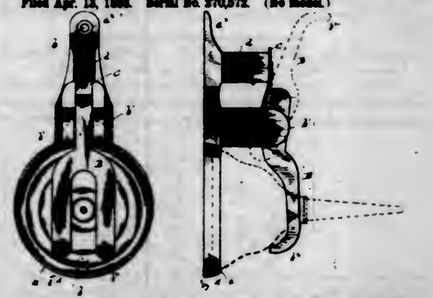
7. In a filter, a removable ice-receptacle adapted to be supported within the chamber containing the filtered water, consisting of the side walls provided at their upper edges with an outwardly-projecting flange and at the base thereof with a depending portion having a perforated bottom, a perforated covering-plate provided with a handle, and one or more layers of textile fabric interposed between the bottom and covering-plate, the parts being organized substantially as shown.

8. In a combined water cooler and filter, a base comprising an exterior vessel, upon the upper edge of which is formed a bead, *a*, a vessel for filtered water attached thereto, so as to provide a dead-air space, the upper edge, *b'*, extending above the bead *a*, and a horizontal projecting portion, *b*, below the bead, a vessel provided with a flanged upper edge and a perforated bottom, and an upper vessel adapted to be supported upon the upper edge of the lower vessel, substantially as shown, and for the purpose set forth.

9. In a combined water cooler and filter, the combination of the vessel A, provided with an interior wall, which extends above the upper edge of the outer wall and is provided with a horizontal portion, and an ice-chamber provided at its upper edge with an outwardly-projecting flange, which engages with a horizontal portion of the inner wall, substantially as shown.

10. In a water-filter for domestic use, an upper chamber or receptacle, D, provided near its central interior portion with a transverse partition, a vessel, E, supported by said partition and provided with an upwardly-projecting portion, which extends above said partition-plate, an upwardly-projecting screw-threaded flange with downwardly-projecting feet attached to said partition-plate, and a screw-threaded cap, F, adapted to hold in place a packing placed within the upwardly-projecting flange F, substantially as shown, and for the purpose set forth.

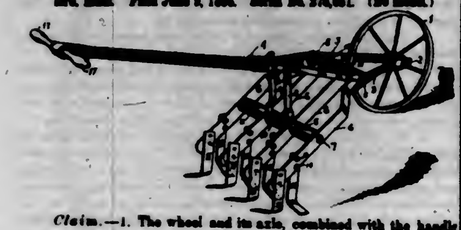
388,348. OIL-CAN HOLDER. Elmira A. Dumont, Mitchell, Dak. Filed Apr. 13, 1888. Serial No. 270,572. (No model.)



Claim.—1. The combination, with the ring or bracket and the arm or extension, of the pivotally-secured arm having curved fingers, and coupled between posts or gudgeons of said arm or extension, and the spring secured to the post or stud and bearing against one side of said arm when the latter is lowered and against the other side thereof when raised, substantially as shown and described.

2. The herein-described improved oil-can holder, comprising the circular ring or bracket, the stationary arm or extension having the posts or gudgeons, the arm having curved fingers projecting therefrom and pivotally secured between two of said posts or gudgeons, and the spring secured to one of said posts and bearing against one side of one end of said arm when the latter is lowered and against the other side thereof when raised, substantially as shown and described.

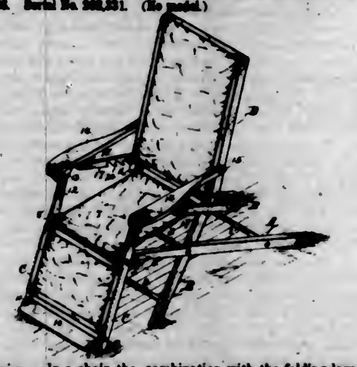
388,349. WHEELED PULVERIZER. Bernard Blasdy, Chelmsford, Mass. Filed June 9, 1888. Serial No. 276,691. (No model.)



Claim.—1. The wheel and its axle, combined with the handle connected to said axle, the knife-carriers connected to said handle by a pivot and secured firmly together at a distance from said pivot, the knives constructed substantially as described and detachably connected to said knife-carriers, and the slotted links connecting said handle with said knife-carriers, substantially as described, and for the purposes specified.

2. The wheel and its axle, combined with the handle connected with said axle, the knife-carriers connected to said handle by a pivot and secured firmly together at a distance from said pivot by a bolt, 7, the links connecting said bolt with said handle, and a plurality of sets of knives with substantially horizontal blades whose upper surfaces are inclined upwardly and backwardly, and with the forward set placed higher than the backward set, substantially as described, and for the purposes specified.

388,350. CHAIR. Eli Bellhouse, Cherokee, Iowa. Filed Jan. 30, 1888. Serial No. 262,331. (No model.)



Claim.—In a chair, the combination with the folding legs pivoted together and extended above their pivotal connection and provided with cross-bars in the ends of the said extensions, the ends of the cross-bars being projected beyond the outer faces of the extensions, the foot-rest frame having its side pieces pivoted to the projecting ends of the front cross-bar and extended above the pivotal connection, the arms pivoted at the front to the extensions of the foot-rest and at the rear pivoted to the side rails of the back, the back having the lower ends of its side pieces formed with open-end slots to rest on the extended ends of the rear cross-bar of the front legs, and the ball hinged to the under side of the arms or to back part of upper end of foot-rest frame and formed with a rack to engage the ends of the rear cross-bar, and the rear ends united by a cross-bar, all substantially as described.

388,351. BURNISHER AND SEAT-WHEEL. Alonzo C. Bovee, Camden, N. J. Filed Feb. 6, 1888. Serial No. 263,151. (No model.)

Claim.—1. A burnisher having a slotted sliding bar, a box in said slot, a spring-arm with end in said box, an inclined rider having recesses *a* and *b* and provided with an arm pivoted to the body of the burnisher, said parts being combined substantially as and for the purpose set forth.

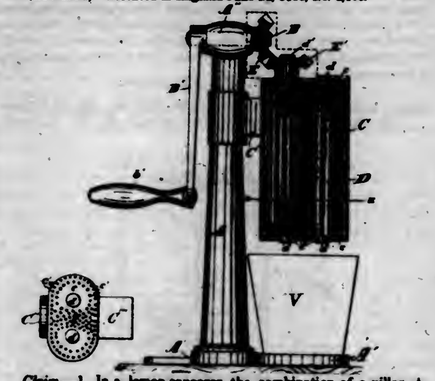


2. A burnisher, A, with grooves G^2 in the inner wall of the body thereof, and provided with the sliding bar C, having the pins G^3, substantially as and for the purpose set forth.

3. In a burnisher, substantially as described, the spring I, connected with the screw E and arm F, as stated.

4. In a burnisher, substantially as described, the rider or incline G, provided with a cam, G', as stated.

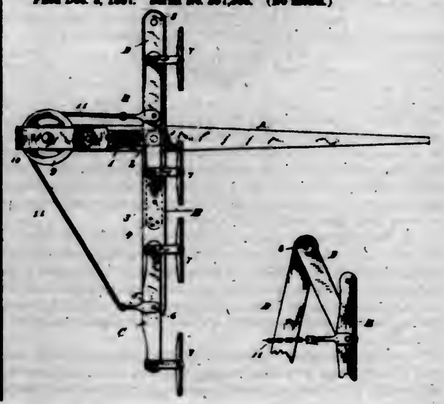
388,352. LEMON-SQUEEZER. Charles M. Postit, Marlow, County of Bucks, England. Filed Dec. 26, 1886. Serial No. 282,847. (No model.) Patented in England June 21, 1886, No. 8,179.



Claim.—1. In a lemon-squeezer, the combination of a pillar, A, provided with a base, A', and hub A'', a shaft, B, journaled in said hub, a crank, B', secured to the shaft, a casing, C, firmly secured to said pillar and provided with mouth C', spout C'', and perforated bottom *c*, the fluted rollers D, geared together and journaled in the ends of said casing, and the bevel-gears E E', connecting said shaft B and one of the rollers D, substantially as set forth.

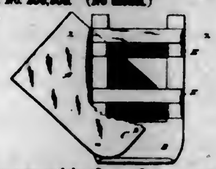
2. In a lemon-squeezer, the combination of the casing C, secured to a stand and provided with a mouth, spout, and perforated bottom, rollers D, journaled within said casing, geared together, and having surfaces adapted to engage fruit fed between them, and gearing adapted to give motion to said rollers, substantially as set forth.

388,353. DRAFT-EQUALIZER. Matt Frahram, Cherokee, Iowa. Filed Dec. 9, 1887. Serial No. 257,306. (No model.)



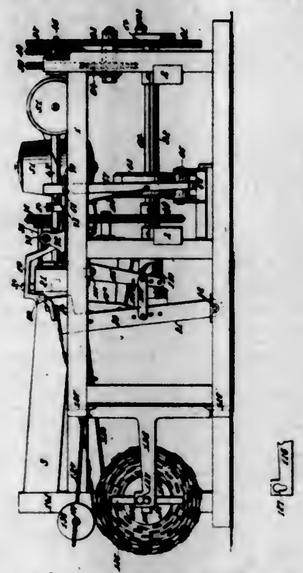
Claim.—In a four-horse draft-equalizer, the combination, with the tongue A, of the lever B, pivotally mounted on the tongue with the arms two to one and provided with the strengthening-plate 3, the evener D, having its outer end pivoted to the end of the short arm of the lever, the doubletree E, pivoted to the inner or free end of the evener D, the sheave 9, mounted on the rear end of the tongue, the doubletree C, pivoted to the end of the long arm of the lever, and the cord 11, arranged on the sheave and having one end connected to the center of the doubletree on the evener and the other end connected to the clevis of the doubletree on the end of the long arm of the lever.

388,854. MATCH-BOX. Henry Gass, Mobile, Ala. Filed Dec. 3, 1887. Serial No. 256,602. (No model.)



Claim.—As a new article of manufacture, a match box or receptacle consisting of the following essential elements: the body composed of a rigid bottom piece and rigidly upwardly-extending arms, strengthening bead or beads extending transversely from arm to arm, and a lid or cover bent in U shape to fit over and envelop the body, and pivotally connected at its ends to the bottom piece, substantially as shown and described.

388,855. MACHINE FOR MAKING FENCES. Miller T. Greenleaf, Gadsey, Ill. Filed Dec. 6, 1887. Serial No. 257,138. (No model.)



Claim.—1. In a machine for making fencing, the combination, with a feed-table having parallel ledges for the support of the slats or palings, and provided with plates arranged below said ledges and beveled as described, of a feeding-frame arranged between the ledges of the table and composed of parallel bars having trunnion-pins projecting outward to engage with the beveled plates, and means for reciprocating said frame, substantially as described.

2. The combination, with a feed-table having supports upon which the ends of the pickets rest, of a feed-frame arranged beneath said supports and provided with trunnion-pins, a pitman reciprocating said frame, plates having an upward bevel at their ends and provided with notches in their adjacent edges, and descending bevels adjacent to said notches and pins, preventing longitudinal movement of said plates, substantially as described.

3. The combination, with a feeding-table having supports for the ends of the pickets, of a cross-beam arranged at a right angle to the longer sides of the feed-table, said cross-beam having a delivery-chute adapted to receive the pickets singly, and separable feed-rolls having constant rotation within said chute, substantially as described.

4. The combination, with a rectangular feed-table having one side formed by a cross-beam having a delivery-chute adapted to receive the single pickets, of separable feed-rolls revolving within said chute, and a pair of feed-rolls revolving upon shafts having rigid bearings and rotating between the delivery-chute and a channel in the cross-beam communicating with the same, substantially as described.

5. The combination, with the twisting-heads of a fence-machine, of sleeves within which the shafts of the twisters revolve, spool-cylinders mounted on said sleeves, and tension devices each composed of a divided ring; the parts thereof having apertures to receive fastening-screws by which they are united and drawn into contact with or clamped upon the sleeves, and provided also with openings for the passage of the wires, substantially as described.

6. The combination, with the twisting-heads and with sleeves mounted on the shafts thereof, of spool-cylinders mounted on and revolving with said sleeves, and tension devices having passages for the wires and clamped upon said sleeves between the spool-cylinders and the twisters, said tension devices having rotary adjustment upon the sleeves, whereby the tension is varied, substantially as described.

7. The combination, with the twister-shafts and the sleeves in which they rotate, of spool-cylinders carried by said sleeves, two separate trains of intermeshing pinions revolving the twister-shafts and sleeves independently, a power-gear communicating constant revolution to the sleeves, a train of pinions giving movement to the twister-shafts, two of said pinions being mounted on movable bearings linked to the bearing of the adjacent pinion, and a pitman connected to a crank-pin on the power-gear and to the journal of one of the movable pinions, substantially as described.

8. The combination, with two independent trains of gearing revolving the twister-shafts and the sleeves carrying the spool-cylinders and having adjustable tension devices, of a power-gear, a train of gears communicating constant rotation therefrom to the sleeves, and a train of gearing communicating motion to the shafts from the same power-gear, one of said gears having its journal connected by a pitman to a crank-pin on the power-gear and by a link to the journal of each of the intermeshing gears, substantially as described.

9. A take-up for fencing-machines, consisting of a central section, strips linked thereto, one upon each side thereof, one of said links near each end of the take-up being prolonged to extend through slots in one of said strips, and having the points of said prolonged ends adapted to engage the web, substantially as described.

10. A take-up for fence-machines, consisting of a flat central piece or section, strips linked thereto on opposite sides, two of said links being prolonged to extend through slots in one of said strips, a head having beveled lugs, between which one end of the central section is fastened, a removable collar having similar lugs to engage the other end of the central section, a wedge or key lying in a slot in the central section to hold the collar, and a movable bracket supporting a journal on the outer end of said section, substantially as described.

11. The combination, with a series of twisting-shafts, of a series of sleeves having rotation about said shafts and carrying spools, a power-gear, a train of gears intermediate between said power-gear and the pinions of said shafts, links connecting the journals of the adjacent gears, and a pitman driven by the power-gear and connected to the end of the journal of one of said intermediate gears, substantially as described.

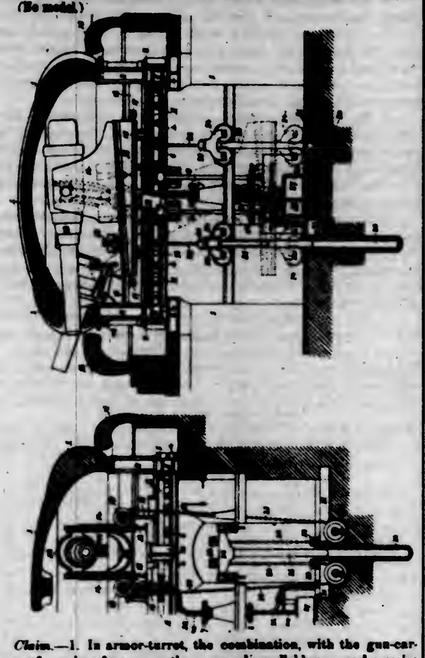
12. The combination, with a main or power gear, of a train of gears driven thereby, links connecting the axis of the main gear and the movable journals of the gears in the train, a pinion on one of the twisting-shafts having a rigid bearing to which the last gear of the train is linked, a spool-carrying sleeve revolving with a constant speed about said shaft, and a connection between the main or power gear and one of the gears of the train, whereby the gear linked to the shaft of the power-gear is caused to travel back and forth upon an arc of the power-gear, substantially as described.

13. The combination, with the spacing-frame having a rack, of the auxiliary frame having a push-pawl engaging said rack, a holding-pawl adapted to trip the push-pawl when raised, a rotating disk having adjustable pins at intervals impinging on said holding-pawl, and means for vibrating the auxiliary frame, substantially as described.

14. The combination, with the vibrating spacer having a rack, of the auxiliary frame having a push-pawl engaging said rack, a holding-pawl adapted to trip the push-pawl when raised, a wheel or disk having teeth and provided with removable pins projecting from its face, a lever having one end engaged by said pins, a movable journal of one of the picket-feeding rolls raised by said lever, and a lug on the main shaft by which intermittent rotation is given to said wheel, substantially as described.

15. The combination, with the spacer having a rack and a vibrating auxiliary frame having a push-pawl, of a spring-actuated bell-crank engaging the rack, an intermittingly-rotated wheel having adjustable pins projecting from its face toward the other end of the bell-crank, a pitman having a slotted end engaging a pin on the auxiliary frame and provided with a pocket opening out of said slot, a spring on the pitman below the slotted end lying in the path of a pin on the spindle, and a take-up mechanism with which the pitman is connected, substantially as described.

888,856. OPERATING MECHANISM FOR TURRET-GUNS. Hermann Gruson, Buckau-Magdeburg, Prussia, Germany, assignor to the Grusonwerk, same place. Filed June 26, 1887. Serial No. 242,693. (No model.)



Claim.—1. In armor-turret, the combination, with the gun-carriages, of a series of permanently-arranged parallel beams and a series of laterally-arranged removable beams mounted on the parallel beams and supporting the carriages when in position for action, substantially as described.

2. The combination, in a revolvable turret having a number of guns arranged at the side of the center thereof, of a vertically-moving piston on which said guns are adapted to be placed, a cylinder formed in the bottom of the turret beneath the path of the guns, in which said piston works, and a pump for operating said piston, whereby said guns may be independently lowered below the turret and raised into operative position, substantially as described.

3. The combination, with a revolvable turret having a number of guns arranged at the sides of the center thereof, of an elevator permanently located beneath the turret and the path of the guns for independently lowering the guns below the turret and raising them into position for action, said elevator having a cross-head, on which said guns are placed, and a pump for operating said elevator, substantially as described

4. The combination, with a revolvable turret having provisions for a number of guns, of a vertically-moving piston permanently located beneath the path of said guns, trucks mounted on said piston, on which said guns are adapted to be placed, and a pump for operating said piston, substantially as described.

5. The combination, in an armor-turret having pressure-cylinders formed in the bottom thereof, of the pistons working in said cylinders, cross-heads 22, mounted on said pistons, chains secured to said cross-heads and to the gun-carriage, said carriage, and the pulleys located on the supporting-beams and in the bottom of the turret, over which said chains pass, substantially as described.

6. The combination, in an armor-turret, of the vertically-movable pistons having cross-heads thereon, the chains connected with said cross-heads and the gun-carriage, said carriage, pulleys located, respectively, on the gun-supporting beams and at the bottom of the turret, over which said chains pass, and a series of clamps secured to the bottom of the turret beneath said cross-heads for retaining the chains in their adjusted positions, substantially as described.

7. In an armor-turret, the combination, with the vertically-moving pressure-piston and the gun-carriage, of the pulleys mounted on the supporting-beams adjacent to said carriage, pulleys mounted in the bottom of said turret adjacent to said piston, chains connected to the upper end of said piston and to the gun-carriage, and a series of removable supporting-beams upon which the carriage rests when in its elevated position, substantially as described.

8. The combination, with the pressure-piston, the cross-head 23, the clamps 29, carried thereby, the chains 22, secured by said clamps, the pulleys 19 20, situated, respectively, above and below said cross-head, around which said chains pass, the fixed clamps 28, for holding said chains in the desired position, and the base of the gun-carriage to which said chains are attached, substantially as set forth.

9. The combination, with the pressure-piston having a cross-head thereon and the gun-carriage, of the chains interposed between and having connection therewith, the pulleys 20 below said carriage, around which said chains pass, the beams 21, by which said pulleys are held down, the pulleys 19, adjacent to said carriage, around which said chains also pass, the beams 16, by which said pulleys are supported, and the clamps 28, located between the lower pulleys and the upper end of the piston, substantially as set forth.

10. The combination, in an armor-turret, of vertically-moving pistons having trucks secured removably on their upper ends, cylinders formed in the bottom of the turret, in which said pistons work, guns located above the pistons and adapted to be placed on said trucks, and a pump for operating said pistons, substantially as described.

11. The combination, with the gun-carriage, of the removable supports for retaining it in its elevated position, the chains secured to the sides of said carriage, wheeled trucks located beneath the carriage and to which said chains are attached, pulleys located above and below said trucks, over which said chains pass, and pistons engaging said trucks, whereby the same are raised and lowered, substantially as described.

12. The combination, with the gun-carriage having a cylinder thereon and a piston working in said cylinder, of a fluid-pressure cylinder located beneath the carriage, a pipe for conveying fluid under pressure from said pressure-cylinder to the cylinder on the carriage, a stationary core, and a movable core-box interposed between said cylinders for cutting off the pressure as the carriage revolves, substantially as described.

13. The combination, with the gun-carriages having cylinders thereon, pistons working in said cylinders, and a pipe through which fluid under pressure is supplied to said cylinders, of a stationary cylindrical core having ducts formed therein and a movable core-box having openings therein communicating with said ducts in the core, said core and core-box interposed between the cylinders, whereby the pressure is automatically cut off from said carriage-cylinders, substantially as described.

14. The combination, with the carriage-cylinder, pressure-cylinder, and connecting-pipe, of a cylindrical core fixedly secured on said pipe, a movable core-box surrounding said core and having openings registering with ducts formed in the core, and cocks situated between the core and carriage-cylinders for cutting off the supply from the carriage-cylinders when the pipes are to be uncoupled, substantially as described.

15. The combination, with the revolvable turret and the gun mounted therein, of a pressure-cylinder mounted on the carriage of said gun and moving with the same for operating said gun, a fixed fluid-pressure cylinder formed in the bottom of the turret, a weighted piston working therein, pipes leading out from said cylinders, and a universal connection between the pipes which are affixed to the movable and fixed portions of the turret, substantially as described.

16. The combination, with the revolvable turret, the gun mounted therein, and the movable pressure-cylinder and piston for operating said gun, of the fixed fluid-pressure apparatus, pipes connecting said pressure apparatus with said cylinder, and a universal connection between the portions of the pipes which are affixed, respectively, to the movable and the fixed portions of the turret, substantially as set forth.

17. The combination, with the revolvable turret, the gun mounted therein, and the pressure-cylinder and piston carried thereby for operating the gun, of the stationary fluid-pressure apparatus, pipes connecting said pressure apparatus and cylinder, and a capstan for revolving the turret, the stem of the capstan being made hollow for the passage of the fluid-pressure pipes, substantially as set forth.

18. The combination, with a revolvable turret, the gun mounted therein, and the pressure-cylinder and piston carried thereby for operating the gun, of stationary pressure apparatus and pipe for conveying fluid under pressure from the pressure apparatus to the pressure-cylinder, and a universal connection between the portions of said pipe which are connected, respectively, with the cylinder and the pressure apparatus, substantially as set forth.

19. The combination, with a revolvable turret, the gun mounted therein, and a cylinder and piston carried by said turret for operating the gun, of a stationary pressure apparatus, a pipe for conveying fluid

under pressure from said apparatus to said cylinder, and a universal connection between the portions of said pipe, connected, respectively, with said apparatus and cylinder, said connection being situated concentrically with the center of motion of the turret, substantially as set forth.

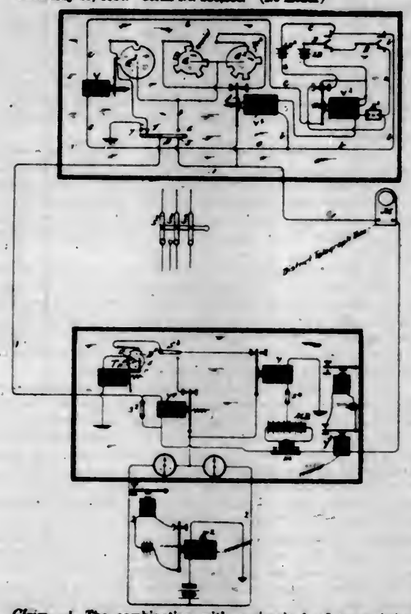
20. The combination, with the revolvable turret, the gun mounted therein, and the cylinder and piston carried thereby for operating the gun, of a stationary pressure apparatus, pipes connecting said apparatus and cylinder, a hollow box, and a core fitted therein so as to be capable of relative rotation, having ducts for maintaining constant communication between the pressure apparatus and cylinder, substantially as set forth.

21. The combination, with the revolvable turret carrying the gun, the cylinder and piston for operating said gun, the inlet and outlet pipes 37 39, and the core-box 35, having ducts 36 and 40, with which said pipes respectively communicate, of the core 34, having ducts 33 and 42, communicating, respectively, with the duct 36 and the channel 41, the pipes 32 and 43, communicating with said ducts 33 and 42, and pressure apparatus with which said pipes communicate, substantially as set forth.

22. The combination, with the turret having more than one gun mounted removably therein and a pressure-cylinder and piston for operating each gun, of a stationary pressure apparatus having a single pipe, 32, for conveying therefrom fluid under pressure, having a separate branch communicating with each of said cylinders, each of said branches being formed in sections united by a coupling and provided with a stop-cock for preventing the escape of the pressure-fluid when the sections of the branch pipe are uncoupled, substantially as set forth.

23. The combination, with the gun-support, the cylindrical core having a duct, 33, whose inner end terminates concentrically therewith, and a duct, 42, terminating at the side of said core, of the core-box 35, having a cylindrical cavity in which said core is revolubly fitted, a duct, 36, whose inner extremity opens opposite the inner end of the duct 33, and a duct, 40, whose inner end opens opposite an annular groove, 41, all constructed and arranged to operate substantially as and for the purpose set forth.

388,357. FIRE-TELEGRAPH. John H. Gurr, Brooklyn, N. Y. Filed May 25, 1887. Serial No. 239,262. (No model.)



Claim.—1. The combination, with a circuit, 1, of transmitting and receiving instruments in ground branches or connections from the same and a switch for transferring the transmitting-instrument from a ground wire or connection into the circuit 1, or vice versa, as and for the purpose described.

2. The combination, with a circuit, 1, containing transmitting and receiving apparatus for one class of signals, of ground-connections including transmitters for another class of signals, switches for transferring such grounded instruments to or from the circuit 1, and a switch for breaking the ground-connection containing the receiver.

3. The combination, with the metallic circuit 1, of transmitting-instruments in normally-open ground branches, a switch normally contained in and completing the circuit 1, and a normally-open contact for said switch connected to the said branch at a point between the transmitters and the break in the ground branch, as and for the purpose described.

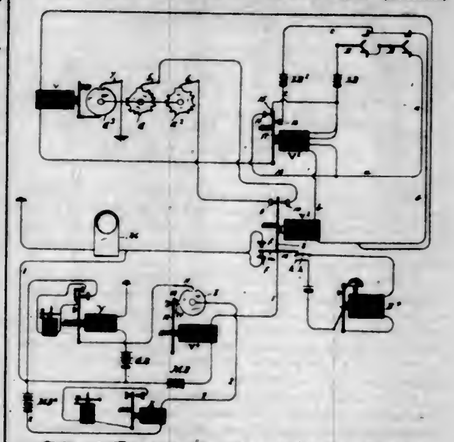
4. The combination, with a normally-closed circuit, as described, having transmitters and receivers included in each normally-closed circuit, of a ground branch from said circuit normally open, a transmitter in said ground branch at a point between the break in the branch and the line, and a switch connected to line and having a contact-point joined to the ground branch at a point between the transmitter and the break, as and for the purpose described.

5. The combination, with the circuit 1, having grounds over which suitable transmitters operate to send signals to an instrument in the ground-connection on another point on said circuit, of a switch for transferring said transmitter to the circuit 1 and an electro-magnet controlled from a central office for operating said switch, as and for the purpose described.

6. The combination, with the circuit 1 and instruments G G² of any character, having ground-connections from said circuit, of a switch for changing said instruments into the circuit 1, a magnet-controlling said switch responsive to reversals of current on the circuit, and apparatus at the central office for producing such reversals, as and for the purpose described.

7. The combination, with the complete metallic circuit 1, containing instruments M and Y², of a battery, M-B, normally charging said circuit, a pole-changer for reversing said battery on the circuit, an independent set of instruments working over grounds from said circuit, and an electro-magnetically-controlled switch for switching the transmitters working over the grounds into the metallic circuit.

388,358. AUTOMATIC FIRE-TELEGRAPH. John H. Gurr, Brooklyn, N. Y. Filed Oct. 27, 1887. Serial No. 253,505. (No model.)



Claim.—1. The combination, with an all-round metallic main-line circuit, of a branch containing a transmitting apparatus, a branch containing a receiver of the signals sent by said transmitting apparatus, a magnet in the main line governing the operative condition of said receiver, and a circuit-controller in said line, whereby the action of the magnet and the condition of the receiver may be governed, as and for the purpose described.

2. The combination, with an all-round metallic circuit, of a branch from the same containing a transmitter, a second branch containing a receiver of the signal sent by said transmitter, a second circuit governed by said receiver, a magnet in the main line governing the continuity of said second circuit, and a circuit-controller, also in said main line, for effecting a momentary change in the condition of the main-line magnet, so as to change the condition of the second circuit, as and for the purpose described.

3. The combination, substantially as described, with an all-round metallic circuit, 1 1, and a circuit, 2, of fire-alarm signal-wheel G, of any suitable character, connected to a branch from circuit 1, a special signal-wheel, G², also connected to a branch of the same, a relay apparatus whose relay-magnet is also in a branch, a controller-magnet for governing the operative condition of the relay apparatus, and a circuit-controlling device connected to circuit 1 for changing the electrical condition of the line, and consequently the condition of said controller-magnet, as and for the purpose described.

4. The combination, with an all-round metallic circuit, 1, having signal-transmitting apparatus in a ground-connection from the same, of a relay apparatus having its magnet also in a ground-connection, a mechanism for governing the operative condition of said relay apparatus, an electro-magnet in the main circuit controlling said mechanism, and a circuit-controller in the main circuit governing the operation of said magnet, as and for the purpose described.

5. The combination, with an all-round metallic circuit, 1, and a circuit, 2, of a relay-magnet in a ground-connection from circuit 1, and having contacts connected with circuit 2, and a magnet, V⁴, in the metallic circuit for governing the operation of the relay devices, as and for the purpose described.

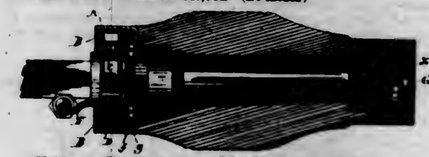
6. The combination, with the all-round metallic circuit 1, of a receiving-instrument, Y, in a branch from the same, a transmitting apparatus in another branch for sending signals of different character or significance, as described, and controlling-magnet V⁴ in the main-line circuit for governing the operative condition of the instrument Y, as and for the purpose described.

7. The combination, with an all-round metallic circuit, 1, having district-telegraph apparatus M connected therewith, of fire or burglar alarm transmitters in branches from said line, a special or derangement signal wheel also connected with the branch, a relay-circuit, 2, a receiving apparatus, Y, for the fire or burglar alarm, and the derangement-signal apparatus, a controller-magnet, V⁴, in the main telegraph-circuit 1, for governing the operative condition of the apparatus Y in relaying signals, and a circuit-controller in the main telegraphic circuit 1, controlling the action of the magnet V⁴.

8. The combination, with an alarm-bell, B⁴, on the outside of an electrically-protected building, of a fire-alarm signal-transmitting wheel having local controlling-circuits, a special or derangement signal-transmitting wheel having local controlling circuits formed in part over the controlling-circuits for the former, and a controlling-magnet for said alarm-bell, connected with a portion of the controlling-circuits for the fire-alarm independent of the controlling-circuits of the special-signal wheel, as and for the purpose described.

9. The combination, substantially as described, of a fire-alarm-signal transmitter, local controlling-circuits therefor, a special or derangement signal transmitter, controlling-circuits for the latter formed, in part, over the controlling-circuits for the former, a circuit-controller at the building to be protected and connected with the line, a local controlling-circuit for the latter controller, a main telegraph-line connecting said transmitting-wheels with a central office, a fire-department circuit, a relay apparatus for relaying the fire-signals from the main circuit to the fire-department circuit, and a controlling-magnet for determining the operative condition of the relay apparatus, said magnet being connected to the main telegraph-line and being governed by the circuit-controller connected with the line at the building to be protected, as and for the purpose described.

388,359. AXLE-LUBRICATOR. James H. Hewet, Viroqua, assignor of one-half to Harlan P. Procter, Vernon County, Wis. Filed Sept. 4, 1887. Serial No. 248,044. (No model.)



Claim.—1. The sections *a* and *b*, with the nozzle and spout, and the cup or conductor forming the self-feeding lubricator-box, for the purpose described.

2. The revolving collars A and B and keys *c c*, for interlocking the same, substantially as shown and described.

3. The flanges *f* and *g* on outside of revolving collar A and inside of cap D, which cause the interlocked collars A and B to revolve with the wheel, as hereinbefore set forth.

4. In combination with the point-head, its cover, and the collar G, secured thereto by springs *x* and having two inclines on its face with opening *g'* on each side between them, substantially as and for the purpose set forth.

5. The combination of the self-feeding lubricator-box, the revolving collar A, with serrated flange *f*, also revolving collar B, with keys *c c*, for interlocking the two collars A and B, the wheel-hub and cap with serrated flange *g*, and the rim or collar G, Fig. 5, substantially as set forth.

388,360. FURNACE. Alexander J. Hill, Rockford, Ill. Filed Aug. 22, 1887. Serial No. 247,889. (No model.)

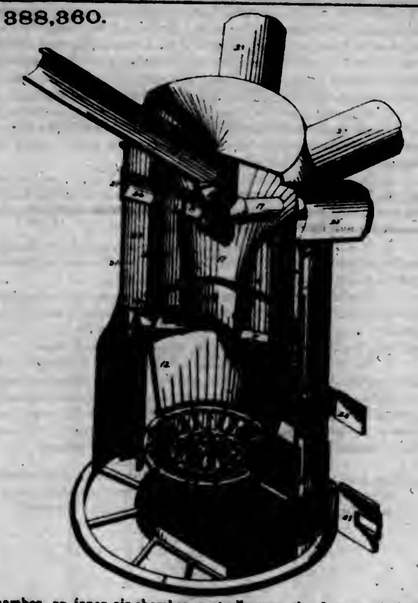
Claim.—1. In a hot-air furnace, the combination of an outer air-chamber, an inner air-chamber centrally over the fire-pot, air-flues connecting the outer and inner chambers, a fire-chamber between the air-chambers, a smoke-flue centrally in the dome, and radial gas-flues connecting the fire-chamber and central smoke-flue, substantially as and for the purpose set forth.

2. In a hot-air furnace, the combination of an outer air-chamber, an inner air-chamber, furnace-chamber between the inner and outer air-chambers, a smoke-flue centrally in the dome, radial smoke-flues connecting the furnace-chamber and central smoke-flue, and radial tubes connecting the jacket and outer wall of the furnace in line with the smoke-flues connecting the furnace-chamber and central smoke-flue, substantially as and for the purpose set forth.

3. In a hot-air furnace, the combination of an outer air-chamber and inner air-chamber centrally over the fire-pot, air-flues connecting the outer and inner chambers, the said connecting-flues extending through the fire-chamber and downwardly along the side of the fire-pot toward the base of the furnace, substantially as set forth.

4. In a hot-air furnace, the combination of an outer air-chamber, an inner air-chamber centrally over the fire-pot, air-flues connecting the outer and inner chambers, said outer and inner chambers meeting in the dome, and a fire-chamber between the said air-chambers, the said fire-chamber being formed by an outer wall-section resting on the top of the fire-pot, an inner wall-section supported centrally over the fire-pot, an upper outer wall-section resting on the top of the first-named outer wall-section, and an inner upper wall-section resting on the top of the said inner wall-section and on the top of the said upper outer wall-section, substantially as set forth.

388,360.



388,361. RELIEF-TYPE PRODUCTION. James W. Hoke, St. Louis, Mo., assignor to the Hoke Engraving Plate Company, of Missouri. Filed Mar. 30, 1888. Serial No. 269,078. (No model.) Patented in England Nov. 26, 1887. No. 16,304.



Claim.—1. As a new article of manufacture, an engraving-plate having a base-plate with a smooth, hard upper surface and a soft, friable coating of minute particles of powdered matter loosely bonded together and having these particles of the coating next the base-plate more strongly bonded to it than the particles above them are bonded either to them or to each other.

2. As a new article of manufacture, an engraving-plate composed

of a base-plate having a smooth, hard upper surface, a soluble mineral bond, and a soft, friable coating of fine earthy particles loosely bonded together and more strongly bonded to the base-plate by said soluble mineral bond, so that the particles of the coating next the base-plate adhere thereto more strongly than the particles above them adhere either to them or to each other, as and for the purposes described.

3. As a new article of manufacture, an engraving-plate having a soft, friable coating composed of minute earthy particles bonded together and to a base-plate having a smooth, hard upper surface by soluble glass, for the purposes set forth.

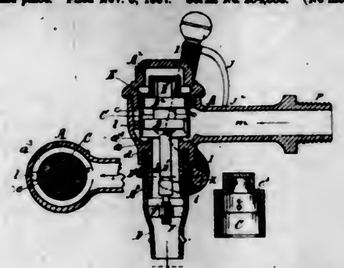
4. In combination with a base-plate having a smooth, hard upper surface, a coating composed of soluble glass, silicate of magnesia, and sulphate of barium, in substantially the proportions herein recommended, as and for the purposes described.

5. In combination with a base-plate having a smooth, hard upper surface of soluble glass and a mixture of pulverized earths of different specific gravities, as and for the purposes described.

6. The herein-described process of making an engraving-plate having a coating bonded by a soluble glass, consisting in introducing the bond in solution into contact with all the particles of the coating and then drying the coating by heat, substantially as directed.

7. The herein-described process of making and finishing an engraving-plate having its coating bonded by a soluble glass, consisting in reducing the earthy matter used to a fine powder, and subsequently introducing the bond in solution into contact with all the earthy particles of the coating, drying the coating on a base-plate by heat, and finally removing the crust, all substantially as herein directed.

388,362. FAUCET. Albert P. Howes, Worcester, Mass., assignor of two-thirds to Edmund Converse and Ambrose T. Matthews, both of same place. Filed Nov. 5, 1887. Serial No. 254,353. (No model.)



Claim.—1. A faucet having a primary valve that closes in the direction of the flow, an auxiliary valve or cup provided with small orifices in its side, arranged over said valve and fitting an annular seat around the primary valve-seat, and having a chamber above the valve from which the liquid is forced by the action of opening the valve, and into which the liquid must return through limited space as the valve closes, for the purpose set forth.

2. The combination, substantially as described, with the faucet body or shell A, having the valve-seat *a*, inlet-passage *m*, and discharge-passage *a'*, of the valve-puppet B, the cup C, arranged over said valve with its flange extending downward and surrounding said valve-puppet, and having the chamber E between said cup and valve, substantially as and for the purpose set forth.

3. The combination, substantially as described, of the faucet-body A, having the valve-seats a a^2, the valve-puppet B, having the depending spindle B' and auxiliary disk B^2, the cup C, having orifices *c* in its side, arranged over said valve and closing upon the seat a^2 around said valve, and a movable discharge-nozzle having a step that engages the valve-spindle, for the purposes set forth.

4. The combination, substantially as described, of the shell A, valve-puppet B, cup C, inverted over and surrounding said valve-puppet, movable nozzle D, sliding upon the body-extension A', having the engaging step F, arranged across the interior of said nozzle below said extension, the lever I, fulcrumed on a projection of the body at K with its ends engaging a projection upon the exterior of said nozzle, for the purpose set forth.

5. In a faucet, the cup C, provided with a shoulder or lug, C', disposed for engaging with the valve-puppet at an intermediate point in its movement to lift the flange of the cup from its seat a^2, as described, in combination with the valve-puppet, puppet-lifter, discharge-nozzle, and faucet-body, whereby the faucet is adapted for delivering the liquid in greater or less force and volume, substantially as set forth.

6. The combination, with the valve B and valve-operating nozzle D, of the bearing-step provided with an adjusting screw-stud, F, for the purpose set forth.

7. The bridge or bearing-step F', separately constructed with the ends of its arms slightly inclined, in combination with the faucet-body A, valve B, and valve-operating nozzle D, internally bored with an intermediate beveled surface to match the end of said arm, and against which said arms are wedged for retaining the step in position, as set forth.

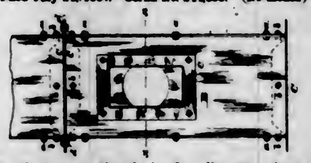
8. In a faucet wherein the valve is lifted by a step in connection with the discharge-nozzle, the valve-stem having a cavity, *f*, in combination with the valve-operating step and discharge-nozzle in its lower end, and the adjustable supporting-stud F, having its point *f'* of less diameter than said cavity, substantially as described, and for the purpose set forth.

388,363. REACH-BAR FOR VEHICLES. Henry M. Hosmer, Eldon, Iowa. Filed May 3, 1888. Serial No. 272,619. (No model.)



Claim.—The combination, in a reach-bar for vehicles, of a bar, B, provided with a longitudinal series of perforations, and at its front end with a transverse strap rigidly secured thereto, the ends thereof projecting beyond the vertical edges and bent upwardly and turned inward, as shown, the adjustable portion D having side pieces which embrace the vertical edges of the bar B, straps H, formed on or secured to the outer edges thereof to engage with the upwardly and inwardly turned ends of the strap C, the rear ends of the side pieces being connected to each other, said connecting portion being provided with a central perforation, and a bolt for connecting the parts adjustably to each other, substantially as shown, and for the purpose set forth.

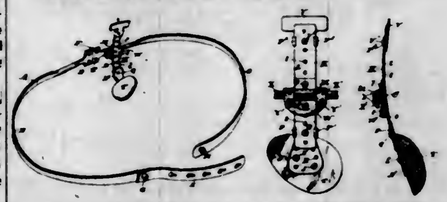
388,364. HOT-AIR FLUE. Samuel B. Judkeufts, Philadelphia, Pa. Filed July 21, 1887. Serial No. 244,855. (No model.)



Claim.—1. A connecting device for adjacent sections of a hot-air flue, consisting of two plates each having an opening in its center, the walls whereof are turned up and adapted to enter the end of one of the sections and secured thereto by bolts or rivets, the flange or rim of the plate being substantially flat throughout its length and projecting beyond the diameter of the section, as stated.

2. A device of the character named consisting of a plate with turned-up inner portions adapted to be secured to one of the sections of a flue, and having a flange or rim substantially flat throughout its length, with openings, whereby it is adapted to be secured to an attachment of said flue, as stated.

388,365. TRUSS. Henry W. Kreiss, Summerville, S. C. Filed Mar. 2, 1888. Serial No. 265,973. (No model.)

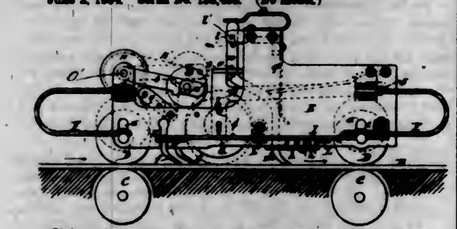


Claim.—1. The combination, with the body of an abdominal truss, of the sectional pad-holder, the intermediate section hinged to the body of the truss, and the end sections of said pad-holder secured adjustably to said intermediate section, substantially as specified.

2. The combination, with the body portion of a truss, of the hinged sectional pad-holder, the securing-hinge connecting the middle portion of the pad-holder to the body portion, and the adjustable U-shaped clamp secured to the body portion on opposite sides of the hinged pad-holder, substantially as specified.

3. In an abdominal truss, the combination, with the body portion, of the pad-holder comprising the hinged middle or intermediate portion and the adjustable end portions secured thereto by rivets and provided with guides for limiting the lateral movements of the end portions, substantially as specified.

388,366. MAIL-STAMPING APPARATUS. Emil Laase and Gustave W. Hey, Syracuse, assignors, by direct and mesne assignments, to the International Postal Supply Company, New York, N. Y. Filed June 2, 1884. Serial No. 133,695. (No model.)



Claim.—1. In a machine for stamping or marking mail-matter, the combination, with the supporting-feed bed, of a stamp normally out of the path of movement of the mail-matter, and a stamp tripper or releaser normally in said path.

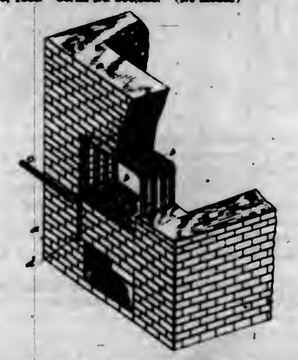
2. In a machine for marking mail-matter, the combination of an oscillating frame carrying a marking-roller, and a lever provided with a catch for engaging the oscillating frame and extending into the path of the moving mail-matter.

3. In a machine for marking or stamping mail-matter, the combination, with a supporting-feed bed, of a stamp normally out of the path of the movement of the mail-matter, and a stamp tripper or releaser normally in said path and opposite the letter-bed, substantially as specified.

4. The frame H, having cap *o* and pin *b*, the catch-lever *m*, having catch *p* and pin *o'*, the trigger A, having the shoulder *k*, the roller G, and spring G', combined with the means *f*, and connections, substantially as described, for tripping the trigger, and with the cam *d*, for returning the frame H to the control of the trigger, as set forth.

5. The combination, with the marking-roller and a movable frame supporting said roller, of cams and stud-pins connected, respectively, to said parts and in contact with each other to raise the frame automatically with the rotation of the roller, and springs bearing on the roller-journal to force the roller off from the letter-bed when the frame is raised as aforesaid, substantially as specified.

388,367. FEED-WATER HEATER AND LINING FOR FURNACE-MOUTHS. Ira B. Lamprey and Alden C. Bowers, Lake Village, N. H., assignors to the Lamprey Manufacturing Company, same place. Filed Mar. 5, 1888. Serial No. 266,226. (No model.)

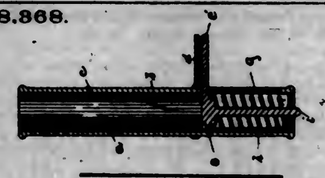


Claim.—The combination, with a furnace and its mouth, of the series of pipes extending along the opposite sides and top of said mouth, and the inlet and outlet pipes connected to the respective ends of said series of pipes, substantially as shown and described, whereby water in said pipes is heated and the said mouth is braced or supported, as set forth.

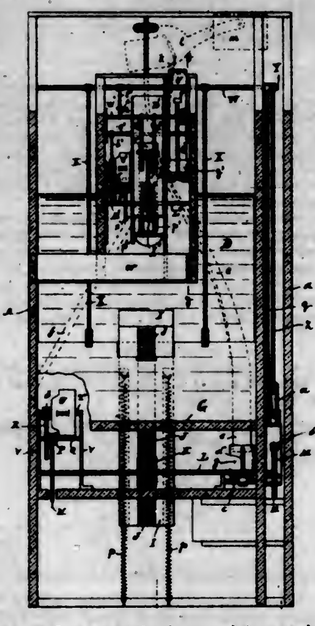
388,368. WHIP-SOCKET. James Lathrop, Berwick, Conn., assignor of one-half to William L. Beach, same place. Filed Apr. 2, 1888. Serial No. 269,312. (No model.)

Claim.—A whip-socket with a laterally-projecting fixed jaw, having in combination therewith a movable jaw actuated by a spring within the barrel of the socket, substantially as set forth.

388,368.



388,369. AUTOMATIC SALESMAN AND CHANGE-MAKER. George D. Moses, Milton Chase, and De Forest W. Chase, Haverhill, Mass. Filed Mar. 5, 1888. Serial No. 266,362. (No model.)



Claim.—1. In an automatic salesman and change-maker, the combination of the following elements: a box or case, A, provided with a shelf or support, D, set on an angle, a bar, I, chute *e*, shafts W Y, rods X, levers Z *q*, pawl *b*, shaft *c*, rod *d*, pan *g*, ratchet-wheel M, shaft L, and clock-work mechanism, substantially as and for the purposes set forth.

2. A case or box, A, provided with an adjustable shelf or support, D, partition G, and chute *e*, in combination with bar I, rack J, springs *p p*, pinion K, shaft L, provided at one end with clock-work mechanism and at the other end with a pawl-wheel, M, pawl *b*, shaft *c*, rod *d*, and pan *g*, substantially as and for the purposes set forth.

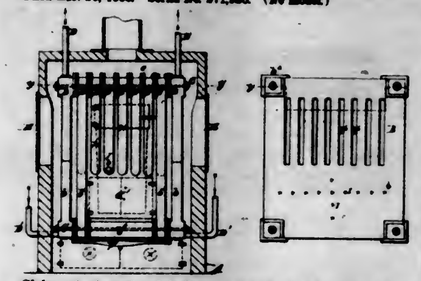
3. The shaft W and rods X X and *q*, in combination with the pawl *b*, ratchet-wheel M, shaft L, pinion K, rack J, bar I, and clock-work mechanism, substantially as and for the purposes set forth.

4. The combination of a case or box, A, having a shelf or support, D, set on an angle for supporting the goods or packages, and a bar, I, for retaining them in place, with change-compartments consisting of a shelf or support set on an angle, bars or rods I', for retaining the change in place, a chute and pan, said pan being arranged below the chute, the rods X', shaft W', arm *r*, bar *s*, arm *t'*, shaft Y, rod A, pawl *b*, ratchet-wheel M, shaft L, and clock-work mechanism, whereby one package in passing out of the box stops the mechanism, substantially as shown and described.

5. In an automatic salesman, a chute provided with an opening to receive coins of all sizes and formed with ledges of shelves on each side, forming channels of various widths, the widest being at the upper side and the narrowest at the under side, said channels being of different lengths and each provided at its lower end with an opening, substantially as and for the purposes set forth.

6. In an automatic salesman, the chute *e*, in combination with the lever *j*, shaft *i*, rod or bar *k*, slotted lever *l*, and sign-board *m*, substantially as and for the purposes set forth.

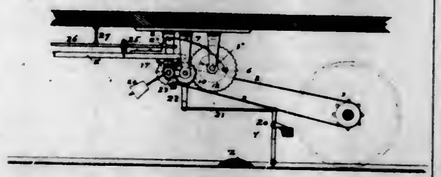
388,370. SECTIONAL BOILER. John D. Moray, Detroit, Mich. Filed Apr. 26, 1888. Serial No. 271,980. (No model.)



Claim.—1. A sectional boiler composed of end sections, B, extending from top to base, adjacent sections B', extending from top to base at their forward and rear ends, but bridging the fire-chamber between the ends, and sections B^2, bridging the fire-chamber and extending from top to base at their rear ends, said sections united at their upper and lower ends by communicating hubs, and each of said sections provided with tubes b^4 and flue-spaces b^5, substantially as shown and described.

2. A sectional boiler composed of end sections, B, extending from top to base, adjacent sections B', provided with water-legs that depend from said sections at front and rear, and the sections B^2, provided with water-legs depending from the rear of said sections, the tops of the sections and the bottoms of the sections B and the water-legs of sections B' and B^2 being united by communicating hubs, and each of said sections provided with flues b^3 and tubes b^4, substantially as shown and described.

388,371. AUTOMATIC STATION-INDICATOR FOR RAILWAY-CARS. Thomas W. Mumnos, San Francisco, Cal. Filed Apr. 18, 1888. Serial No. 271,062. (No model.)



Claim.—1. In a station-indicator for railway-cars, the combination of a suitable case, the card-rest H, located in the front part of said case, card-elevator consisting of rod G, arms G', inwardly-bent ends G^2, and fingers G^3 on said ends for taking hold of the card, a sliding rod, C, to which the card-elevator is attached, springs K K, located in front and above the card-rest, movable back rod I, between which back rod and springs the card rests while being exhibited, and means for elevating the rod to release the card, substantially as set forth.

2. In a station-indicator for railway-cars, separate name-bearing cards or plates, and a card-elevating device consisting of a vertically-sliding frame having fingers to engage slots in the cards, in combination with a card-rest, H, springs K K, and a back rod or support, I, between which and springs K a card is held while being exhibited, said rod or support being elevated by the movement of the card-elevating device, whereby the card is released and caused to fall back, as described.

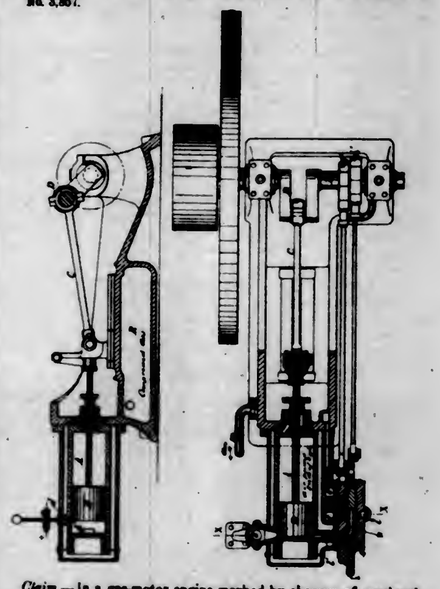
3. In a station-indicator, a case having sight-openings B^2 B^3, a stack of name-bearing cards or plates, the rest H, a card-elevating device adapted to engage the foremost card and set it on the rest, and the springs K K and movable back support, I, the card standing between springs K and support I while being exhibited, the support I being elevated by the movement of the card-elevating devices to release the card, in combination and for operation as hereinbefore set forth.

4. In combination with an indicator, the indicator-operating rod C, the push-bar E, continuously-running shaft $1^\times$, crank, and pitman-bar 7, driven from the car-axle, and mechanism adapted to set or bring the push-bar and pitman-bar into engagement, as described, which is actuated or set in motion by steps on the surface of the roadway, whereby the said pitman-bar is caused to operate the rod C, as hereinbefore described.

5. In combination with the push-bar E for operating an indicator in a railway-car, the shaft $1^\times$, driven continuously from the car-axle, the pitman-bar 7, operated from shaft $1^\times$, rock-shaft 14, geared to shaft $1^\times$, carrying tappets 16, and clutches 18 19, one of which is geared into the continuously-driven shaft, and mechanism, substantially as described, for throwing the sliding part of said clutch into and out of action with its continuously-running fellow at intervals of time, whereby the said pitman-bar is made to engage and move the push-bar a given distance, as hereinbefore set forth.

6. The combination of the continuously-driven shaft $1^\times$, crank and pitman-bar receiving motion therefrom, rock-shaft 14, tappets 16, clutches 18 19, the former being loose and also geared into the crank-shaft, and the latter being fast but free to slide on the rock-shaft, the segment 23, fixed incline 28, and stud 29 on the clutch as means for throwing the same alternately into and out of action, and the setting-lever Y, adapted to be acted on by fixed stops on the roadway and to throw the said segment Y into operation, substantially as set forth.

388,372. GAS-MOTOR ENGINE. Nikolaus A. Otto, Cologne, Prussia, assignor to the Gas Motoren Fabrik Deutz, Deutz-on-the-Rhine, Germany. Filed Oct. 10, 1887. Serial No. 251,945. (No model.) Patented in Germany Aug. 27, 1887, No. 43,185; in England Sept. 5, 1887, No. 12,187; in Belgium Sept. 21, 1887, No. 78,948; in Italy Nov. 12, 1887, XLIV, 190, and in Austria-Hungary Mar. 3, 1888, No. 37,627 and No. 3,857.



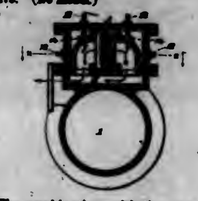
Claim.—In a gas-motor engine worked by charges of combustible gas and air under pressure, the method of forcing into a reservoir containing air under pressure a quantity of combustible gas sufficient for one cylinder-charge, such quantity being situated next the inlet-port of the engine in a part of the reservoir of restricted area, so that it will practically not mix with the air in the reservoir and will be entirely introduced into the cylinder by the pressure of the air on the opening of the inlet valve or slide, substantially as herein described.

388,373. CHURN. Robert C. Rasmuss, McLeansborough, Ill. Filed Apr. 16, 1888. Serial No. 270,827. (No model.)



Claim.—The combination of the standard A, provided with notches F, rockers B, standards C, braces D, and handle E, with the body H, the suspending-straps I, and the cross-rod G, substantially as described.

388,374. SLIDE-VALVE. William A. Rasmuss, Memphis, Tenn., assignor of one-half to John R. Rundle, same place. Filed Feb. 13, 1888. Serial No. 264,479. (No model.)



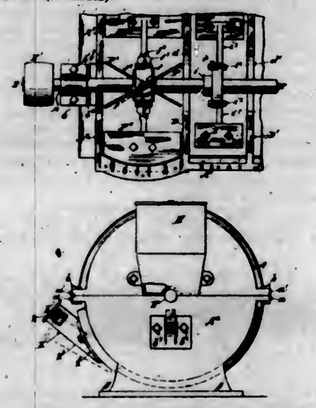
Claim.—1. The combination, with the steam-chest having the ingress and exhaust ports, of the two steam-chambers located within said chest and at both ends and having vertical faces 3, elongated toward each other and arranged parallel with two ports therein communicating with the ports in the chest, respectively, and valves fitted between said elongated faces 3, connected together and having cavities 11 on both sides adapted to cover both ports in each face.

2. The combination, with the steam-chest having ports 8 9 and the valve, of the steam-chambers in said chest having ports 6 7, communicating with ports 9 8, respectively, and set-screws bearing upon the tops and sides of said steam-chambers, substantially as set forth.

3. The combination, with the steam-chest having ports 8 9 and the slide-valve, of the steam-chambers in said chest, having ports 6 7, communicating with ports 9 8, respectively, and set-screws bearing upon the tops and sides of said chambers and projecting through the plates of the chest, substantially as set forth.

4. The combination, with the steam-chest having ports 8 9 and the slide-valve, of the steam-chambers in said chest, having ports 6 7, communicating with ports 9 8, respectively, elongated bearings upon the tops of said chambers, and set-screws bearing upon said elongated bearings and upon the sides of said chambers and projecting through the plates of the chest, substantially as set forth.

388,375. APPARATUS FOR REDUCING AND PULVERIZING FUEL. Hamilton Rudgen, Brooklyn, N. Y., assignor to the Pulverized Coal and Furnace Company, of New York. Filed Nov. 6, 1885. Serial No. 181,966. (No model.)



Claim.—1. In a machine for pulverizing fuels, &c., the combination, substantially as hereinbefore set forth, with the pulverizing-chamber, of a blowing-compartment having spherical side walls, and a rotating shaft carrying one or more rotary fans having laterally-adjustable blades which are curved on their peripheries to correspond to the walls of the blowing-compartment.

2. In a machine for pulverizing fuel, &c., the combination, substantially as hereinbefore set forth, with the cylindrical pulverizing-chamber, the shaft, and rotary beaters, of a blowing-compartment having spherical side walls placed at one end of said chamber and connected therewith, and a rotary blowing-fan rotating upon the same shaft as the rotary beaters, and having laterally-adjustable blades the peripheries of which are curved to correspond to the walls of the blowing-compartment.

3. In a machine for pulverizing fuels, &c., the combination, substantially as hereinbefore set forth, with the pulverizing-chamber, of a blowing-compartment having spherical side walls, and a rotary blowing-fan in its interior, the blades of which are laterally adjustable and curved on their peripheries to correspond to the walls of the compartment.

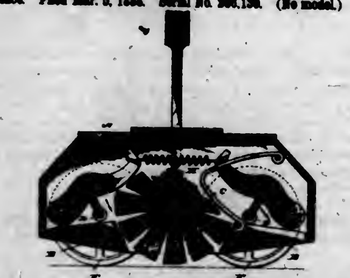
4. In a machine for pulverizing fuels, &c., the combination, substantially as hereinbefore set forth, with the blowing-compartment, of a sliding tangential discharge-pipe, whereby the angle of discharge of the pulverized material may be varied at pleasure.

5. In a machine for pulverizing fuels, &c., the combination, with the pulverizing-chamber, of a blowing-compartment connected therewith, and rotary blower-fan, the blades of which are adjustable at any angle to the axis of rotation.

6. In a machine for pulverizing fuels, &c., the combination, substantially as hereinbefore set forth, with the blowing-compartment, of an adjustable tangential discharge-spout, whereby the angle of discharge may be varied at pleasure, provided with a curved flange fitting over the periphery of said compartment, said flange being formed with slots in its side, and bolts in the side walls of the compartment passing through the said slots, whereby the said discharge-spout may be caused to slide upward or downward at pleasure.

7. In a machine for pulverizing fuels, &c., the combination, substantially as hereinbefore set forth, with the exterior shell of the machine, composed of removable sections, of a removable sectional lining fitting into and corresponding with the sections of the shell, and having the longitudinal edges countersunk to receive bolt-heads, and a series of angle-irons bolted into recesses in said cylinder-sections to which the longitudinal edges of said lining are bolted.

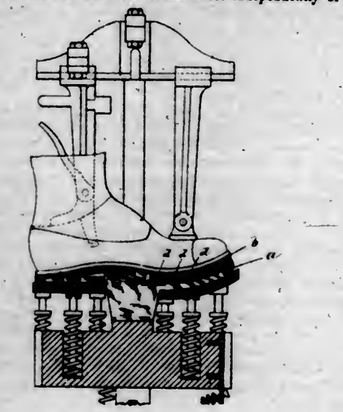
388,376. CARPET-SWEEPER. Hiram W. Ex Tus, Goshen, Ind., assignor of two-thirds to Henry A. Gore and Edward W. Walker, same place. Filed Mar. 5, 1888. Serial No. 266,139. (No model.)



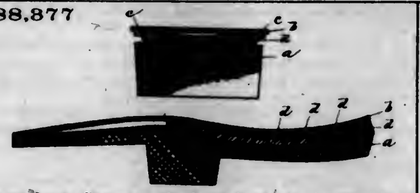
Claim.—The combination, with the case having journal-apertures, as described, of the levers G, pivoted at their lower ends to the side walls of the case, the U-shape journals E, having their outer ends secured to the drive-wheels and their inner ends secured to the levers E, about midway of the length of the latter, and the spiral spring H, connecting the upper ends of the said pivoted levers and the rotative brush, substantially as specified.

388,377. PAD FOR SOLE-LAYING MACHINES. Aaron F. Smith, Lynn, Mass., assignor to the Boot and Shoe Sole Laying Company, Portland, Me. Filed Dec. 24, 1887. Serial No. 258,900. (No model.)

Claim.—1. In a sole-laying machine, a flexible sheet, as *b*, formed to constitute a sole-pressing surface, and provided with a series of transverse metal ribs attached to the sheet independently of each



388,877

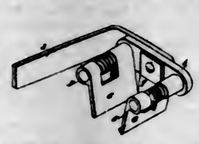


other and extending across the sheet, whereby the sheet is stiffened crosswise, but left free to bend lengthwise, as set forth.

2. In a sole-laying machine, the combination, with the yielding sole-pressing pad *c*, of the flexible sheet *b*, having the transverse independently-attached metal ribs extending across it, as set forth.

3. The flexible sheet *b*, provided with the independently-attached metal ribs *d*, having concave inner surfaces, as set forth.

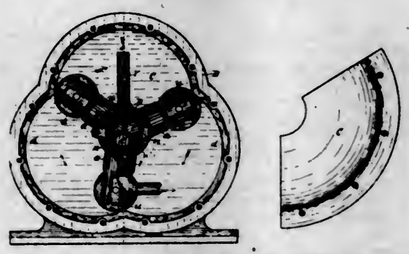
388,878. VEHICLE-WHEEL SCRAPER. Joseph Sparrow, Atchison County, Kans. Filed Apr. 30, 1888. Serial No. 272,264. (No model.)



Claim.—1. The combination, as hereinbefore set forth, to form a scraper for wheels as they rotate, of an arm, 3, secured to the vehicle, a cross-piece, 4, secured to said arm, and spring-actuated plates 6 6, carried by said cross-piece and bearing against the side of the fellies.

2. The combination, as hereinbefore set forth, to form a scraper for wheels as they rotate, of an arm, 3, a cross-piece, 4, secured to said arm and having lugs projecting therefrom, spring-actuated plates 6 6, supported by said lugs, and the plate 7.

388,879. ROTARY ENGINE. Lachelle J. Strait, Kalamazoo, Mich. Filed Feb. 10, 1888. Serial No. 263,602. (No model.)



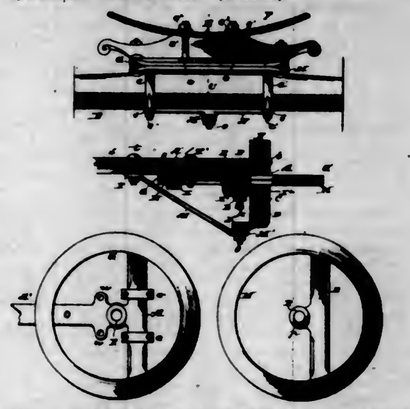
Claim.—1. In a rotary engine, the combination of a power-shaft having an internal chamber, independent hollow cylinders communicating with one end of said chamber and radiating from the shaft, induction and eduction ports leading into the other end of said chamber, an individual wheeled piston in each cylinder, extending into said chamber, which is common to them all, and inclines for the wheels to traverse, substantially as set forth.

2. In a rotary engine, a power-shaft having the internally-cored chamber and the ports leading into it, independent cylinders radiating from said chamber, an individual piston in each cylinder, the contiguous ends of said pistons being in said chamber and V-shaped and having a wheel at the outer end of each, and suitable inclines for the wheels to traverse, substantially as set forth.

3. The combination of a power-shaft having the internal steam-chamber, a series of cylinders radiating therefrom and communicating therewith, and being equidistant from each other, a wheeled piston in each cylinder, and inclines representing portions of like circles arranged in relation to the cylinders and pistons, as stated, whereby said pistons all operate in unison, substantially as set forth.

4. The combination of the power-shaft having the internal steam-chamber and the ports leading into it, the bearing portion of the shaft where the ports are being tapered, the fixed collar, and the internally-flared adjustable box, whereby the wear can be taken up to prevent steam leaking from the ports through the bearings, substantially as set forth.

388,880. VEHICLE-GEAR. Henry C. Swan, Oshkosh, Wis. Filed Apr. 11, 1888. Serial No. 270,269. (No model.)



Claim.—1. In vehicle-gears, the combination, with an elongated reach-plate having a transverse plate and a top circle-plate at its front end, the said reach-plate having a perforation therein, of the lower circle-plate having a centrally-located integral pin, and a bracket-plate secured to the reach and provided with lips which overlap the under surface of the lower circle-plate, substantially as set forth.

2. In vehicle-gears, the combination, with a top circle-plate having an integral reach-plate projecting from it, and a lower circle-plate provided with a pin having swivel engagement with a perforation made in the integral reach-plate near the radial center of the top circle-plate, of a bracket-plate secured to the reach-plate by suitable means, and adapted to retain the lower and upper circle-plates in place and take up wear, substantially as set forth.

3. In vehicle-gears, the combination, with a spring, a head-block, a reach, a top circle-plate, and a reach-plate integral with this top circle-plate, of a lower circle-plate, a bracket-plate, a set-bolt secured in this bracket-plate, an axle, a wooden axle-stock, clamping-plate bolts to hold the axle-stock, axle, and clamping-plate together, a depending pin formed on the clamping-plate, and a diagonal brace that engages this pin and is attached to the reach-plate and reach, substantially as set forth.

4. In vehicle-gears, the combination, with the reach-plate perforated to receive a cylindrical pin, and a lower circle-plate with its transverse axle-plate that is provided with a cylindrical pin, of a bracket-plate secured to the lower side of the reach-plate and having a lug which is adapted to loosely secure the lower circle-plate in position, substantially as set forth.

388,881. CASTER-SOCKET. William P. Tracy, Grand Rapids, Mich. Filed Feb. 25, 1888. Serial No. 265,269. (No model.)



Claim.—1. A caster-socket made in two parts combined with a retainer for the caster-spindle, consisting of a metal shell provided with parallel slots therein, with the intermediate part bent in to form a spring, the socket having a contracted lower opening for preventing displacement of the retainer, substantially as described.

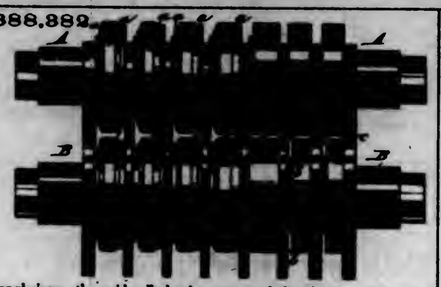
2. A caster-socket made in two parts, having projections or ribs on the outer periphery of each, combined with a ring for holding the parts together and notched to fit the ribs, substantially as described.

388,882. ROLLS FOR CONVERTING OLD RAILS INTO ANGLE IRON. Abraham Vaughan, Terre Haute, Ind., assignor to Firman Hippart, same place. Filed June 14, 1888. Serial No. 277,087. (No model.)

Claim.—A pair of rolls for reworking old rails and stub ends into

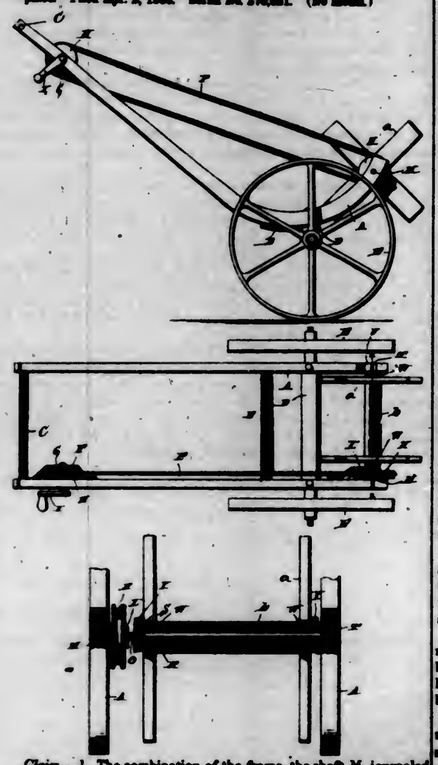


388,882.



angle-iron, the said rolls having passes of the shapes designated at 1, 2, 3, 4, 5, 6, and 7, substantially as shown and described.

388,883. WIRE-REEL. William L. Wilson and Edward Walton, Charlton, Iowa, assignors of one-third to William D. Wilson, same place. Filed Apr. 3, 1888. Serial No. 270,021. (No model.)



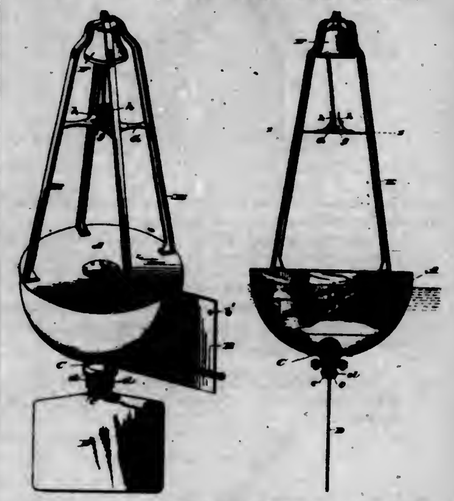
Claim.—1. The combination of the frame, the shaft M, journaled in one side thereof, the shaft R, journaled in line with shaft M and having one end detachably connected thereto, said shaft R being adapted for the attachment of a reel or spool, and means, substantially as described, to rotate the shaft M, substantially as set forth.

2. The combination of the frame, the shafts G M, journaled therein, the wheels or pulleys and chains or belts connecting said shafts, said shaft G having crank I, the shaft R, having one end journaled in the frame and having its opposite end detachably secured to shaft M, the spool *a* on shaft R, and the collars secured to said shaft and engaging the spool, substantially as described.

3. The combination of the frame, the shafts G M, journaled therein, the sprocket or other wheels and chain, rope, or belt connecting the said shafts, the shaft R, having one end journaled in the frame and having its opposite end detachably secured to the shaft M, and the spool *a*, secured to the said shaft R, substantially as described.

4. In a wire-reel, the side bars, A, having the upward-curved ends, the axle D, secured to the under side of the said bars in advance of the curved ends thereof, the reel-shaft and reel mounted in the curved ends of the side bars above and in rear of the axle, and the wheels mounted on the axle, substantially as described.

388,884. SOUNDING ALARM-BUOY. Albert L. Woodworth, Norfolk, Va. Filed Apr. 26, 1888. Serial No. 271,896. (No model.)



Claim.—1. The combination, in a bell-buoy, of a float having a mooring-fin and a fin at an angle therewith, for the purpose set forth.

2. The combination, in a bell-buoy, of a float and superstructure mounted thereon, from which a bell is rigidly suspended, and a clapper for said bell pivoted beneath the same, said clapper being operated solely by the movement of the buoy, substantially as shown, and for the purpose set forth.

3. The combination, in a bell-buoy, of a float provided with a mooring-fin which extends from the top to the base thereof, and a depending fin secured to the base of the buoy at an angle with the mooring-fin, substantially as shown.

4. The combination, in a buoy, of a hemispherical float having a fin rigidly secured thereto, said fin being provided with means for attaching a mooring-cable thereto, a depending fin, D, secured to the base of the buoy, so as to be adjustable thereon, and a superstructure carrying a bell and clapper, said clapper being pivoted below the bell, substantially as shown, and for the purpose set forth.

5. The combination, in a bell-buoy constructed substantially as shown, of a casting, C, serving as a weight for the buoy, and means for attaching thereto a depending fin, means for mooring the buoy to maintain said fin normally at an angle with the current, and a superstructure carrying a bell and pivoted clapper, substantially as set forth.

6. The combination, in a buoy, of a superstructure having a bell rigidly secured to the upper portion thereof, a platform beneath said bell having bearings to which a clapper is pivoted, and springs for holding the clapper out of contact with the bell after the blow has been struck, substantially as shown, and for the purpose set forth.

7. In combination with a buoy, a superstructure having a bell rigidly secured thereto and a clapper pivotally attached to bearings mounted on the platform beneath the bell, so that the clapper will oscillate when the center of gravity of the buoy is changed, substantially as described, and for the purpose set forth.

388,885. BIRD AND PACKING BOX. Charles I. Wooster, Berlin, N. J. Filed Mar. 29, 1888. Serial No. 268,856. (No model.)



388,385.

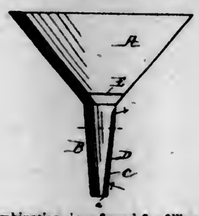


Claim.—1. A convertible packing and bird box having in its end concentric kerfs, whereby bird-nest doors or openings of different sizes may be readily made, substantially as described.

2. A convertible packing and bird box having kerfs in its ends and having a covering for said kerfs, the said covering having thereon lines or marks corresponding to said kerfs, substantially as described.

3. A convertible packing and bird box consisting of a body having a hinged lid, kerfs in its ends, and a covering for said kerfs, the said covering having thereon lines or marks corresponding in number and location with said kerfs, substantially as and for the purpose set forth.

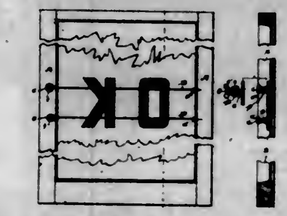
388,386. BOTTLE-FUNNEL. CHRISTIAN XANDER and WILLIAM THOMAS, Washington, D. C. Filed June 14, 1888. Serial No. 277,120. (No model.)



Claim.—The combination, in a funnel for filling vessels, provided at its shank with a vent-tube formed by indenting the shank longitudinally and covering said indentation with a piece of metal provided with air-induction apertures, the top of the tube forming the exit for the air, substantially as set forth.

REISSUES.

10,952. WINDOW-SIGN. GEORGE H. RANDOM, Cleveland, Ohio. Filed May 16, 1888. Serial No. 274,092. Original No. 362,360, dated May 3, 1887.



Claim.—1. In window-signs, the combination, with wires stretched across the window, of letters or characters forming the sign, the same being mounted on the wires, such letters and characters being detachably secured to the wires and made adjustable toward or from the window, substantially as set forth.

2. In window-signs, the combination, with wires stretched across the window and having removable letters or characters adjustably secured to such wires, of suitable devices for tightening the wires from one end of the same, said wires being detachably secured to the window at its other end, substantially as and for the purposes shown and described.

3. In window-signs, the combination, with wires stretched across the window, and letters or characters forming the sign mounted on the said wires, substantially as indicated, of a spindle mounted in the window sash or frame and a ratchet and pawl for tightening the wires, the parts being arranged substantially as described.

4. In window-signs, the combination, with wires stretched across the window and letters or characters forming the sign, the same being mounted on the said wires, of screw-threaded studs attached to the respective letters, said studs being provided with jam-nuts for embracing the wires, substantially as set forth.

5. In window-signs, the combination, with wires stretched across the window, letters or characters forming the sign mounted on such wires, and suitable devices for tightening the wires, of a screw-eye for holding the one end of the wire, said screw-eye having an elongated eye or slot, and a cross-bar attached to the wire, said cross-bar being adapted to span the slot and to pass through the slot when turned lengthwise of the same, substantially as set forth.

PHOTO LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

WRIGHT *v.* DAGGETT.

Decided August 9, 1888.

1. EXAMINATION OF WITNESSES—ADMISSIBILITY OF EVIDENCE.

It is well settled that when a party has had an opportunity to cross-examine a witness and has neglected to do so the case is the same in effect as if he had cross-examined, otherwise the admissibility of the evidence would be made to depend upon his pleasure whether he would cross-examine or not, which would be a most uncertain and unjust rule.

2. SUPPRESSING DEPOSITIONS.

The manner of taking depositions and the whole conduct of such proceedings rest with the Federal courts, and parties taking testimony should apply to the district judge for an order to compel the attendance of witnesses. Before a deposition should be suppressed when a witness fails to present himself for cross-examination the court will look into the character of the deposition, and from that determine whether the aggrieved party ought not to have applied to the district court for an order compelling attendance, instead of resorting to a motion to suppress, which motion, while noticed at the time the deposition was taken, was not urged until the hearing of the case upon the question of priority before the Patent Office.

APPEAL from Examiners-in-Chief.

BOOK-STAPLING MACHINE.

Application of Christopher Wright filed August 5, 1884, No. 139,705. Application of John F. Daggett filed April 19, 1884, No. 128,494.

Mr. H. Harrison and *Messrs. Foster & Freeman* for Wright.

Mr. John G. Elliott for Daggett.

HALL, *Commissioner:*

Priority of invention was awarded by the Examiner of Interferences to Wright, and upon appeal to the Examiners-in-Chief this decision was reversed, and priority was awarded to Daggett, from which award Wright now appeals to the Commissioner.

A motion was filed before the Examiner of Interferences to suppress the deposition of one King, taken on behalf of Daggett. This motion was based on the grounds entered upon the record by counsel for Wright at the time such deposition was taken; but the motion was not urged until the hearing, and was not decided until the decision was made upon the merits of the case. The Examiner of Interferences suppressed the deposition and awarded priority to Wright, as said above. On appeal the Examiners-in-Chief, following the equity practice in cases of this character, regarded the admissibility of the deposition as open for their consideration, and, as I understand, saw proper to consider it as a part of the evidence.

When the action of the Examiner of Interferences in suppressing a deposition is made part of his final decision upon the merits of the case, I think the better practice is to regard such question as a part of the merits, to be passed upon by each of the appellant tribunals as they may adjudge to be proper. Ordinarily, such motions should be disposed of preliminarily, so as to enable the party whose deposition has been suppressed to retake it if possible.

It appears from the record in this case that the witness King lived in Montague, Mich., and came to Chicago at the request of Daggett for the purpose of giving his deposition without being formally subpœnaed; that after his examination-in-chief was concluded counsel for Wright proceeded to cross-examine him. The cross-examination occupied several days and was long and wearisome; much of it was wholly irrelevant, and in some portions there are indications of a purpose to prolong unnecessarily the examination and to wear out the witness. Finally, on Friday night, the witness advised the officer and the attorneys that he had received information of his wife's illness, and that his business seriously required his attention, and urgently requested that counsel for Wright would make every reasonable effort to conclude the cross-examination on that day. The counsel who was conducting the cross-examination, while stating that he did not desire to unnecessarily detain the witness, manifested no attempt to expedite matters, but insisted upon adjourning and that the witness should come back on the following day. An evening session was suggested; but this the examining attorney would not accede to. The cross-examination was resumed and continued until 5:50 p. m., when witness himself requested counsel for Wright to proceed, stating that he was compelled to go home that night, and expressed a willingness to stay and testify until 9 p. m., but that he should refuse to come back to testify. This latter statement he afterward qualified by saying that he was willing to return at such time as would not interfere with his business, but would not name any exact date. At 7:40 p. m. counsel for Wright stated that he had material questions to ask the witness, which he could not complete by 9 p. m., and requested an adjournment until 9:30 or 10 a. m. on the next day. At this stage, when an adjournment was decided upon, counsel for Daggett requested the witness to sign the record and to present himself at 10 a. m. the next day if he should be in the city. Counsel for Wright objected to witness signing the record, and insisted that he was not through with his cross-examination, and that the witness must be present on the next day at the hour named in the adjourn-

ment. The witness signed his examination, but did not appear the next day, nor has he ever since presented himself or been called upon, so far as the record shows, although counsel for Wright had expressed a willingness to adjourn until some future day upon which the witness would agree to return and testify.

An examination of the record convinces me that if the case had been on hearing before a judge such a long and unnecessarily prolix examination would not have been permitted. The court would have assumed the authority of closing the cross-examination, unless the attorney could confine himself to more reasonable limits. There is nothing in the record showing what additional questions or to what matter the counsel desired to direct the attention of the witness by further examination, nor does it appear in what way he has been injured or his rights affected by a failure to cross-examine, except, broadly, that he has not examined to his heart's content.

It is clear that Daggett is in nowise responsible for the failure to complete this cross-examination. The witness himself appears to have been candid and patient, and the only cause for the failure is the length of the cross-examination.

It is well settled that when a party has had an opportunity to cross-examine a witness and has neglected to do so the case is the same in effect as if he had cross-examined, for otherwise, as observed by Lord Ellenborough, the admissibility of the evidence would be made to depend upon his pleasure whether he would cross-examine or not, which would be a most uncertain and unjust rule.

The matter of suppressing a deposition rests largely in the discretion of the tribunal to which it is offered:

> In equity it seems that a deposition is not of course inadmissible, even if there has been no cross-examination and no waiver of the right. Thus, if a witness, after being examined on the direct interrogatories, should refuse to answer the cross-interrogatories, the party producing the witness will not be deprived of the benefit of his direct testimony, for upon application to the court the witness would have been compelled to answer. But if the witness should secrete himself to avoid a cross-examination, there the court might suppress the direct examination. In such case a cross-examination is still possible, and the very conduct of the witness in secreting himself has a just tendency to render his direct examination suspicious. (Weeks' Law of Depositions, § 493, and cases cited.)

It is to be remembered that the Commissioner of Patents had no power in the matter of taking testimony of witnesses, no control over the taking of their depositions, nor over their conduct while such depositions are being taken. The whole matter is left in the hands of the Federal courts of the district in which the testimony is being taken, and either of the parties has full authority to apply to the district judge for orders compelling the attendance and controlling the conduct of witnesses. In this case, had counsel for Wright been anxious to cross-examine this witness and to complete such cross-examination, he could have applied to the judge of the district court; or, if the witness had passed beyond jurisdiction into another State, he could have applied there and have obtained an order for the final cross-examination, and I have no doubt that if he had seriously desired to complete this examination an arrangement could have been made to effect it.

Taking the case altogether, I am of opinion that the deposition ought not to have been suppressed. In thus holding I do not mean to say that a witness can at any time become the judge as to whether a cross-examination has passed beyond legitimate bounds and excuse himself from further attendance, for this cannot be recognized for a moment; but when a deposition taken under these circumstances has been filed before the court or before the Office, I am satisfied that before it will be suppressed the court will look into the character of the deposition, and from that determine whether the aggrieved party ought not to have taken some other method of curing the evils complained of than resorting to a motion to suppress, and especially is this true in the Office of the Commissioner of Patents, where, as just stated, there is no power or authority to rectify matters of that kind.

The issue in this case is defined as follows:

> The actuating-cams and the shaft thereof, in combination with the former and plunger projecting between and engaging said cams, substantially as described.

The invention is of such a character that when the inventor had conceived the movement of the former and the plunger projecting between, both operated by engagement with cams arranged face to face, the conception was complete, and all that remained relative to the arranging and adjusting of the slots of the cams and of the cams upon the shaft so as to time the movement of the former and the plunger constituted nothing but mechanical work. The principle of the cam is so thoroughly understood and so familiar and common that, having once conceived the broad idea of operating the former and the plunger by means of two cams upon the same shaft, the invention was complete and the reduction to practice in the arrangement of the cams, as just stated, involved nothing but the skill of a mechanic.

It appears that Daggett had been familiar with machines of this class for some years and had operated them. His attenton was turned to improvements upon them, and I think the evidence is very satisfactory that he had conceived the invention before he came to Chicago and was brought into business relations with Wright. On the other hand, Wright had never had anything to do with mechanism of this character until he met Daggett, had never given it a thought, and had made no attempts whatever to construct that kind of machinery or to make improvements in that direction.

The question presented in the conflicting evidence introduced by both parties is really one of originality—which of these two was the first to conceive this invention and disclose it to the other. I am not going into the evidence, for that has been done by the Examiners-in-Chief and in a manner entirely satisfactory to me. I am satisfied that the evidence, when fairly and properly considered, establishes the fact that Daggett, having conceived this invention, submitted the subject to Wright for the purpose of inducing him to use his skill as a mechanic to attempt to construct a model or machine in which the two cams would be used upon a shaft to operate the former and plunger, but that Wright was for some time unable to do it. The two men worked together, consulted with each other, and Wright probably had more to do in giving directions to the artisans who finally constructed the machines than Daggett did; but in all this his relation was simply that of an agent or mechanic who was constructing a machine according to the plan and conception of the man who had invented it.

I affirm the decision of the Examiners-in-Chief in awarding priority of invention to Daggett.

FAURE v. BRADLEY AND CROCKER v. COWLES AND COWLES.

Decided August 14, 1888.

STATEMENT.

Motion to dissolve interferences for the following reasons: *First*, that the foreign patents set forth by Faure in his preliminary statement are not patents for the invention in issue. *Second*, that the invention in issue is a broader invention than that patented to Faure in the foreign patents set forth in his preliminary statement, and that on the principle of reissues he is barred from making claims broader than those contained in his foreign patents.

1. FOREIGN PATENTS—EVIDENCE.

The question whether the invention covered by foreign patents is the same as that involved in interference, and therefore that such patentee is not entitled to the dates of such foreign patents, must be determined by the evidence adduced on the trial. The Examiner of Interferences has the exclusive right to determine the competency, construction, scope, and legal meaning of the foreign patents or of any other evidence introduced and to decide whether they cover the same invention as that involved in the interference.

2. LIMITED CLAIMS IN FOREIGN PATENTS NOT A BAR.

Foreign patents containing limited claims will not bar an applicant from securing in this country claims for a broader invention, provided he can maintain and substantiate them in an interference contest.

3. DUTIES OF EXAMINER OF INTERFERENCES DISTINGUISHED FROM PRIMARY EXAMINER.

The Examiner of Interferences is a Primary Examiner; but under the organization of the Patent Office the examiner in charge of the interference possesses no jurisdiction over the question of the patentability of the inventions or the declaration of interferences, but he has exclusive jurisdiction of the trial of the issues when declared. The Primary Examiner when considering the merits of an application or declaring an interference must look alone to the language of the applications.

4. MOTION TO DISSOLVE CANNOT BE PREDICATED UPON PRELIMINARY STATEMENT.

The application is the procedure to obtain a patent, and, strictly speaking, a motion to dissolve an interference cannot be predicated upon something found in a preliminary statement, or anything *dehors* the application.

5. NO APPEAL FROM DECISION AFFIRMING "RIGHT TO MAKE THE CLAIMS."

The Primary Examiner having held that Faure had the right to make the claims and was not barred by the state of the art or publications, he could not do otherwise than overrule the motion to dissolve. From such decision no appeal lies.

APPEAL on motion.

ELECTRIC FURNACES AND METHODS OF OPERATING THE SAME.

(Interference No. 12,615.)

Application of Camille A. Faure filed May 10, 1886, No. 201,687. Patent granted Charles S. Bradley and Francis B. Crocker February 2, 1886, No. 335,499. Patent granted Eugene H. Cowles and Alfred H. Cowles June 9, 1885, No. 319,795.

Mr. Alfred Shedlock for Faure.

Messrs. Paine & Ladd for Bradley and Crocker and for Cowles and Cowles.

HALL, *Commissioner:*

On the 16th of November, 1886, Interference No. 11,064 was declared between the patents of Bradley and Crocker and Cowles and Cowles and Faure's application. A motion was made to dissolve this interference upon the ground that in view of certain foreign patents to Faure he had no right to make the claims set forth in his pending application. This motion, having been remanded to the Primary Examiner, was by him refused. An appeal taken from this decision to the Examiners-in-Chief was dismissed for want of jurisdiction, whereupon an appeal was taken to the Commissioner, who, in a decision dated June 10, 1887, dismissed the appeal on the ground that no appeal could be taken from such a decision. (See *Faure* v. *Bradley and Crocker* v. *Cowles and Cowles*, 40 O. G., 243.) Afterward it appears that this interference was dissolved *pro forma*, and the three pending interferences were simultaneously declared January 18, 1888, viz:

The present interference, No. 12,615, including the application of Faure, filed May 10, 1886, No. 201,687, patent to Bradley and Crocker, granted February 2, 1886, No. 335,499, and patent to Cowles and Cowles, granted June 9, 1885, No. 319,795, title, "electric furnaces and methods of operating the same." Interference No. 12,616, including the application of Faure, filed May 10, 1886, No. 201,688, and patent to Bradley and Crocker, granted February 2, 1886, No. 335,499, title, "reducing substances by means of electricity." Interference No. 12,618, including the application of Faure, filed May 10, 1886, No. 201,687, and patent to Cowles and Cowles, granted June 9, 1885, No. 319,795, title, "electric furnaces and methods of operating the same."

It is unnecessary to set out the issues.

In his preliminary statement, Faure, who is a foreigner and whose invention was made in a foreign country, sets up as his dates of invention patents issued to him in England in 1882 and 1883, and depends upon the dates of such patents under a well-settled rule of law.

March 9, 1888, Bradley and Crocker and Cowles and Cowles filed a motion to dissolve these interferences for the following reasons: *First*, that the foreign patents set forth by Faure in his preliminary statement are not patents for the invention in issue. *Second*, that the invention in issue is a broader invention than that patented to Faure in the foreign patents set forth in his preliminary statement, and that on the principle of reissues he is barred from making claims broader than those contained in his foreign patents.

This motion was sent to the Primary Examiner and denied by him, and now the parties moving have appealed to the Commissioner. Faure's attorneys have filed a motion to dismiss the appeal for the reason that no appeal lies from a decision of the Primary Examiner holding that he (Faure) has the right to make the claims. The question presented is whether such an appeal lies from the action of the examiner.

It is difficult if not impossible to see why the former decision of the Commissioner of June 10, 1887, is not conclusive of the present appeal. The Primary Examiner in considering the former motion held that the interference was properly declared and that Faure had the right to make the claims. Even though Faure took out foreign patents upon too limited claims, that fact would not bar his right to make broader claims here if he could maintain and substantiate them in an interference contest. Having held that Faure had the right to make the claims and was not barred by the state of the art or publications, he could not do otherwise than overrule the motion to dissolve, as the present interference in three counts is practically the same as the original interference. But Cowles and Cowles and Bradley and Crocker insist that they have a right to appeal to the Commissioner from such decision, because—

the decision to the effect that the invention covered by his (Faure's)

foreign patents is different from the inventions in issue is not a decision denying the right of Faure to make the claims. It is only a denial that his pending applications, when read, as they must be read, in the light of his foreign patents, describe and claim the inventions in interference. It leaves him absolutely free to make the claims, like other inventors, either on an invention made by him in the United States or on an invention made by him abroad and imported into the United States.

The difficulty with this view of the subject is that it confounds the duties of the examiner who declares the interference with those of the examiner who tries it. The Examiner of Interferences is a Primary Examiner; but under the organization of the Patent Office the examiner in charge of the interference possesses no jurisdiction over the question of the patentability of the inventions or the declaration of interference, but he has exclusive jurisdiction of the trial of the issues when declared. The Primary Examiner, when considering the merits of an application or declaring an interference, must look alone to the language of the applications. The application is the procedure to obtain a patent, and, strictly speaking, a motion to dissolve an interference cannot be predicated upon something found in a preliminary statement, or anything *dehors* the application.

Much is said in the argument in this case about reading Faure's application in the light of his foreign patents; but this is an inapt manner of stating the matter. His application cannot be read in any other light than its own for the purpose of declaring or dissolving an interference. The application is the absolute foundation of the applicant's rights. It would be strange, indeed, if the claims of an application could be modified or limited by some other document or statement. Such an idea seems controverted by the appellants, Bradley and Crocker and Cowles and Cowles, in the very proposition submitted, for they concede that Faure must be left absolutely—

free to make the claims, like other inventors, either on an invention made by him in the United States or on an invention made by him abroad and imported into the United States.

Then we must be bound by his application and nothing else in declaring an interference, and so, also, in considering a motion to dissolve. Faure's foreign patents cannot affect the phraseology of his specifications or broaden or limit the claims which are set forth in his application. The application comes into the Office alone, without luggage or companionship, and it must be so regarded at all stages until it is rejected or allowed.

What, then, is the proper course in view of the questions presented by Bradley and Crocker and Cowles and Cowles? They insist that the invention covered by Faure's foreign patent is not the same as that involved in the issues in interference, and that therefore Faure is not entitled to the dates shown by them in this contest. If this be true, no one will deny that Faure cannot avail himself of the dates of those foreign patents; but how are we to determine if it be true that the foreign patents do not cover the same invention? Appellants say we desire to establish the fact before the Primary Examiner on a motion to dissolve, and if he holds against us on the fact then we claim the right to appeal to the Commissioner and take his ultimate judgment. But the complete answer to this is that such a question relates to a consideration of the evidence adduced on the trial of the issue in interference, with which the Primary Examiner has nothing to do. The latter declares the issue in interference upon the statements of the application, which set forth only that the applicant claims to be the first original inventor, with a description of the invention. When this interference, declared upon the application alone, is made, the jurisdiction of the Primary Examiner ceases and the case goes to the Examiner of Interferences for more specific (preliminary) statements as to dates of invention and for evidence and trial—allegation, proof, and decision. If after a preliminary statement had been received or some of the proof had come in one of the parties should move to dissolve because something in the statement or proof showed that one party could not take as early a date as claimed in the preliminary statement and ask to have his motion referred to the Primary Examiner to decide, it would be an attempt to ask the Primary Examiner to exercise the jurisdiction of the Examiner of Interferences and decide a question of priority upon a part of the evidence only.

Now, Faure has pleaded the dates of his foreign patents as the dates of the invention involved in these issues. He has the right to bring in those patents as evidence in support of his allegation. They either will or will not support it. He also has a right to bring in with them the English law to show the legal effect and construction of those patents, so that the Office may know just what invention is covered by them, what is the meaning, breadth, scope, and extent of the claims, &c. This whole subject belongs to the Examiner of Interferences as a trial court and is entirely foreign to the jurisdiction of the Primary Examiner, who declares the interference. The Examiner of Interferences has the exclusive right to determine the competency, construction, scope, and legal meaning of the foreign patents or of any other evidence introduced, and to decide whether they cover the same invention as that involved in the interference. If he finds they do not, Faure is left to stand upon his record date, or such evidence as he may introduce as to disclosure, &c., in the United States, if he relies upon that in his preliminary statement. If Bradley and Crocker and Cowles and Cowles desire, they may submit the case upon the record of Faure's British patents and raise the question by a sort of demurrer to the evidence; but even then the case must go to and be tried by the Examiner of Interferences and not be determined by a motion to dissolve, which must be remanded to and be decided by the Primary Examiner declaring the interference.

The foreign patents of Faure are not yet in evidence. They have simply been set up in his preliminary statement as entitling him to their dates as his earliest dates of invention. In interference proceedings we do not have formal pleadings, demurrers, &c. No demurrer to this preliminary statement is recognized; and, more than this, the statements are not expected to be drawn with the same particularity as formal bills and answers in equity. Many things—such as the statutes and practice of foreign countries relating to patents issued thereby—may be shown in evidence, though not formally pleaded. Faure would be entitled to introduce this evidence if he desired, so that I see no way in which the questions presented by the present motion can be raised properly except upon the merits of the interference after all the evidence is in. If on such hearing the Examiner of Interferences should hold that the foreign patents do cover the same inventions as those involved in the issues, an appeal would bring the whole question before the Examiners-in-Chief and the Commissioner.

Much is said in argument about the question of *res adjudicata*. It must be apparent from what has been said above that no question of law or fact relating to priority of invention, or to whether the inventions covered by the foreign patents are identical with the subject-matter of the present issues, has as yet been decided. The Primary Examiner has had no proper jurisdiction of either of these questions, his jurisdiction being limited to the consideration of the sole question whether, upon the face of the applications and the patents of the respective parties, there is a legitimate interference. He has held that there was, and so the motion to dissolve the interference was overruled. Not having the right to decide upon the legal effect of the foreign patents as evidence and not having made a decision as to that, there can be no appeal from him upon such a question, so that no such matter has been passed upon or has become *res adjudicata*, and all questions as to the operation, construction, and effect of Faure's foreign patents are still open in all particulars, and will be disposed of in the regular order of trial when the cases shall be heard on their merits.

The appeal is dismissed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 44—No. 9. TUESDAY, AUGUST 28, 1888. PRICE—$5 per year.

CONTENTS.

	Page.
THE OFFICIAL GAZETTE	947
FRAUDULENT PRACTICES BY ATTORNEYS	947
PUBLISHERS' CATALOGUES	947
ISSUE OF AUGUST 28, 1888	947
DESIGNS	948
TRADE-MARKS	948
LABELS	948
PATENTS GRANTED	949
REISSUES	1062
DECISIONS OF THE COMMISSIONER—	
Osgood v. Badger v. Bennett	1065
DECISIONS OF THE U. S. COURTS—	
Shipman Engine Company *et al.* v. Rochester Tool Works, (Limited,) *et al*	1067
Hat Sweat Manufacturing Company v. Porter, Crofut & Hodgkinson	1070

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No. 155 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado.*

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Issue of August 28, 1888.

Patents	190—No. 388,267 to No. 388,806, inclusive.	
Designs	24—No. 18,559 to No. 18,582, inclusive.	
Trade-Marks	13—No. 15,808 to No. 15,820, inclusive.	
Labels	2—No. 5,683 to No. 5,684, inclusive.	
Reissues	4—No. 10,953 to No. 10,956, inclusive.	
Total issue	433	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	5	....
Arizona Territory	1	....	Nevada	....	....
Arkansas	1	....	New Hampshire	3	1
California	1	....	New Jersey	16	....
Colorado	3	....	New Mexico Terr'y	....	....
Connecticut	15	....	New York	79	3
Dakota Territory	4	....	North Carolina	....	....
Delaware	....	....	Ohio	33	....
District of Columbia	6	....	Oregon	....	....
Florida	1	....	Pennsylvania	47	2
Georgia	1	....	Rhode Island	6	....
Idaho Territory	1	....	South Carolina	2	....
Illinois	40	1	Tennessee	3	....
Indiana	7	....	Texas	6	....
Iowa	7	....	Utah Territory	....	....
Kansas	8	....	Vermont	1	....
Kentucky	6	....	Virginia	1	....
Louisiana	1	....	Washington Terr'y	....	....
Maine	3	....	West Virginia	2	....
Maryland	7	....	Wisconsin	9	....
Massachusetts	49	2	Wyoming Terr'y	....	....
Michigan	16	....	U. S. Army	....	....
Minnesota	3	....	U. S. Navy	....	....
Mississippi	2	....			
Missouri	17	3	Total to citizens of the United States	414	12
Montana Territory	1	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	....	....	Germany	4	....
Barbadoes	....	....	Holland	....	....
Belgium	....	....	Ireland	....	....
Bermuda	....	....	Mexico	....	....
Brazil	....	....	Russia	1	....
Canada	5	....	Scotland	2	....
Canary Islands	1	....	Spain	1	....
Colombia, U. S. of	....	....	Sweden	....	....
Cuba	1	....	Switzerland	1	....
Denmark	....	....	Victoria	....	....
Ecuador	....	....			
England	13	3	Total to citizens of foreign countries	30	3
France	1	....			

DESIGNS.

18,559.—CARPET.—*Morton F. Beale*, Boston, assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Application filed July 23, 1888. Serial No. 280,801. Term of patent 3½ years.

18,560.—FONT OF TYPE.—*Henry Brehmer*, New York, N. Y., assignor to *David Wolfe Bruce*, same place. Application filed July 12, 1888. Serial No. 279,985. Term of patent 14 years.

18,561.—CHECKREIN-HOOK.—*George S. Cascaden*, Phœnixville, Pa. Application filed March 14, 1888. Serial No. 267,186. Term of patent 14 years.

18,562.—SURFACE ORNAMENTATION OF WALLS.—*Louis Clémencet*, West Hoboken, N. J., assignor to *Warren, Lang & Co.*, New York, N. Y. Application filed August 3, 1888. Serial No. 281,891. Term of patent 3½ years.

18,563 to 18,565, inclusive.—CARPET.—*Edwin Fisher*, New York, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Applications filed July 23, 1888. Serial Nos. 280,818, 280,819, and 280,824. Term of patents 3½ years.

18,566.—BASKET.—*William Haley*, Beaver Falls, Pa. Application filed August 3, 1888. Serial No. 281,914. Term of patent 14 years.

18,567 to 18,569, inclusive.—CARPET.—*Henry Horan*, East Orange, N. J., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Applications filed July 23, 1888. Serial Nos. 280,798 to 280,800, inclusive. Term of patents 3½ years.

18,570.—CARPET.—*Winthrop L. Jacobs*, East Orange, N. J., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Application filed July 23, 1888. Serial No. 280,797. Term of patent 3½ years.

18,571.—CAMPAIGN BUTTON.—*Joseph M. Jones*, Paris, Ky. Application filed July 27, 1888. Serial No. 281,140. Term of patent 3½ years.

18,572.—BOTTLE.—*Alfred Kohn*, Chicago, Ill., assignor to *Glaser, Kohn & Co.*, same place. Application filed July 18, 1888. Serial No. 280,337. Term of patent 3½ years.

18,573.—CORSET.—*Joseph Koon*, New Haven, Conn., assignor to *Lewis Schiele & Company*, New York, N. Y. Application filed July 16, 1888. Serial No. 280,100. Term of patent 14 years.

18,574.—CAMPAIGN BUTTON.—*Rudolph Liebmann*, New York, N. Y. Application filed July 26, 1888. Serial No. 281,131. Term of patent 3½ years.

18,575 to 18,578, inclusive.—CARPET.—*Edward Poole*, New York, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Applications filed July 23, 1888. Serial Nos. 280,805 to 280,808, inclusive. Term of patents 3½ years.

18,579.—FAN, HANDKERCHIEF, &c.—*Daniel Rhodes*, Washington, D. C. Application filed July 25, 1888. Serial No. 281,021. Term of patent 3½ years.

18,580.—BISCUIT OR CRACKER.—*David F. Stauffer*, York, Pa. Application filed February 7, 1887. Serial No. 226,879. Term of patent 14 years.

18,581.—METAL PLATE—*Thomas Stone* and *George M. Stone*, Newark, N. J., assignors to *Hall & Carpenter*, Philadelphia, Pa. Application filed June 27, 1888. Serial No. 278,350. Term of patent 7 years.

18,582.—HANDKERCHIEF.—*Henry G. Worthington*, Washington, D. C. Application filed June 12, 1888. Serial No. 276,883. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

15,808.—ZEPHYR-FINISH GERMANTOWN WOOL.—*Isaac D. Allen & Co.*, Boston, Mass. Application filed June 30, 1888. Used since October 28, 1884.

"The word 'BERNHARDUS' and the representation of a ram's head."

15,809.—PULMONARY SIRUP FOR HUMAN USE.—*William Robert Ashurst*, Farningham, county of Kent, England. Application filed May 18, 1888. Used since February 1, 1888.

"The representation of a horse rampant."

15,810.—COMPOUND OF SULPHATE OF QUININE, SULPHURIC AND SALICYLIC ACIDS, ALCOHOL, AND COCHINEAL.—*Theodore Blank*, St. Louis, Mo. Application filed May 5, 1888. Used since August 17, 1880.

"The representation of a crown with four arches and one middle piece, of which each arch has ten shaded circles and the middle piece five shaded circles, which represent precious stones."

15,811.—GUNPOWDER, AMMUNITION, AND EXPLOSIVES.—*Charles W. Curtis*, London, England. Application filed July 11, 1888. Used since 1880.

"The word 'DIAMOND.'"

15,812.—CERTAIN NAMED MEDICAL REMEDIES.—*Frederick Eberlein*, Chicago, Ill. Application filed June 30, 1888. Used since January, 1888.

"The word 'KOENIG'S.'"

15,813.—PORTLAND CEMENT.—*John C. Gostling & Company*, (*Limited*,) London, England, and New York, N. Y. Application filed November 29, 1887. Used since August 13, 1875.

"The words 'PORTLAND CEMENT' and the representation of the globe with an equatorial band or belt."

15,814.—EMBOSSED SHEET-METAL STOVE-BOARDS.—*A. Irving Griggs*, New York, N. Y. Application filed July 13, 1888. Used since May, 1887.

"The word 'DAISY.'"

15,815.—MINERAL CEMENT.—*Kaw Valley Cement Company*, Kansas City, Mo. Application filed June 26, 1888. Used since June 13, 1888.

"A diamond or lozenge shaped figure inclosing the letter 'F.'"

15,816.—LAGER-BEER, FLUID MALT, EXTRACT OF MALT, AND A MALT PREPARATION.—*The G. Manz Brewing Company*, Philadelphia, Pa. Application filed June 21, 1888. Used since February 20, 1888.

"The representation of a flag with eleven alternate red and white stripes and thirteen stars on a blue field, and bearing the words 'UNCLE SAM,' and a diamond-shaped figure in the middle of the flag, inclosing the conventional representation of Uncle Sam."

15,817.—CURE FOR CERTAIN NAMED DISEASES.—*Paul John Muilberger*, Springfield, Mo. Application filed March 12, 1888. Used since January 15, 1888.

"The words 'RED LIGHT' and the representation of a railroad-lantern with a red globe."

15,818.—HEAVY SHOES FOR MEN.—*Puckard & Grover*, Brockton, Mass. Application filed June 23, 1888. Used since May 20, 1888.

"The figure of a man in the common uniform of a policeman, with a club in his hand."

15,819.—OINTMENT OR SALVE.—*Samuel Richard Payne*, Athens, Pa. Application filed May 22, 1888. Used since April 30, 1888.

"The word 'MONARCH.'"

15,820.—NON-ALCOHOLIC BEVERAGE CONTAINING FRUIT PROPERTIES.—*Charles H. Sagar*, Auburn, N. Y. Application filed July 24, 1888. Used since January 8, 1888.

"The word 'FRUL.'"

LABELS.

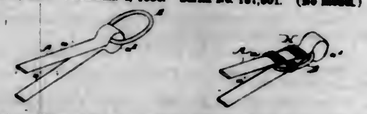
5,683.—Title: "THUJA SOAP."—*Charles F. Lord*, New York, N. Y. Application filed July 9, 1888.

5,684.—Title: "WADLEIGH'S LITTLE VEGETABLE PILLS."—*F. R. Wadleigh*, Alton, N. H. Application filed August 3, 1888.

PATENTS

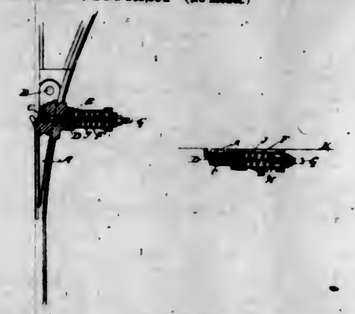
GRANTED AUG. 28, 1888.

388,387. **HAIR-CRIMPER.** NATHANIEL ALLEN, Lowell, Mass., assignor, by mesne assignments, of one-half to Abbie R. York, trustee, same place. Filed Jan. 4, 1888. Serial No. 257,991. (No model.)



Claim.—The combination of the crimper formed of a strip having rounded edges and doubled upon itself and bent at its closed end into a circle or closed loop, and an elastic band looped into said circle or closed loop, as and for the purpose specified.

388,388. **TRAMWAY-SWITCH.** CHARLES R. ANDERSON, Denver, Colo., assignor to Augustus L. Perry, same place, Demmore H. Sanders, Salt Lake City, Utah, and William H. Johns, Sioux City, Iowa. Filed Feb. 27, 1888. Serial No. 265,334. (No model.)



Claim.—1. In a street-tramway switch, the combination of a movable tongue or point, a spiral spring, a mechanical connection from the spring to the tongue below the level of the latter, a closed box or casing containing the spring and secured directly to the frog, and a screw for adjusting the tension of the spring, substantially as set forth.

2. In a street-tramway switch, the combination of a movable tongue, A, a pin, C, a rod, D, with disk E, a closed box or casing, F, with lid and adjustable screw G, and disk H, together with a spiral spring, J, substantially as and for the purpose described.

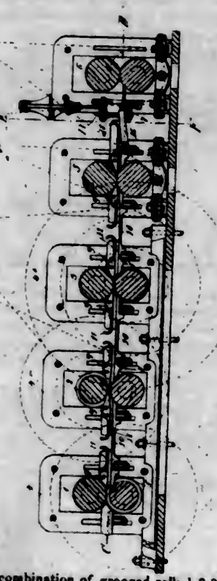
388,389. **ROLLING-TRAIN.** WILHELM RAMSER, Kattowitz, Silesia, Prussia, Germany. Filed Jan. 24, 1888. Serial No. 261,771. (No model.) Patented in Germany June 18, 1887, No. 43,941; in England July 4, 1887, No. 9,647; in Belgium July 4, 1887, No. 78,056; in France July 4, 1887, No. 184,897, and in Luxemburg Jan. 12, 1888, No. 843.

Claim.—1. In a rolling-mill, the combination of grooved rolls 1, 2, and 3, with a dressing-roll, 5, and a polishing-roll, 6, all arranged one behind the other, the last-mentioned rolls 5 and 6 being movable in the direction of their axles, substantially as described and shown.

2. In a rolling-mill, the combination of the grooved rolls 1 2 3 and the dressing-roll 5 and the polishing-roll 6, with the guides 8 and 9, the lower, 8, being provided with a fixed bridge, 10, leading to the next roll, and the upper, 9, with hinge-like fastened guide levers or bars 11, opening upward, for the purpose as described.

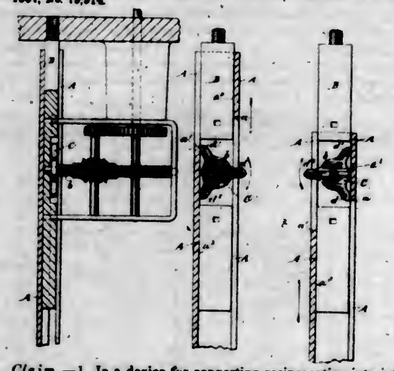
3. In a rolling-mill, the combination of grooved rolls 1 2 3, dressing-rolls 5, polishing-rolls 6, guides 8 9, with cog-wheels 12 and 13 and conical-shaped pulley-drums 14 15, all substantially as described.

388,389.



4. In a rolling-mill, the combination of grooved rolls 1 2 3, cog-wheels 12 13, guides 8 9, dressing-rolls 5, polishing-rolls 6, and conical-shaped pulley-drums 14 15, with a scraper, 7, substantially as described and shown.

388,390. **MECHANICAL MOVEMENT.** CHARLES C. BARTON, Edinburgh, Scotland. Filed Oct. 19, 1887. Serial No. 252,862. (No model.) Patented in France Dec. 13, 1887, No. 187,572, and in Belgium Dec. 14, 1887, No. 79,914.



Claim.—1. In a device for converting reciprocating into intermittent rotary motion, a reciprocating bar provided with a shoulder and a bearing-face, in combination with an angular wheel arranged

to be turned by the contact of said shoulder and to be locked by the said face, substantially as described.

2. In a device for converting reciprocating into intermittent rotary motion, an angular wheel, in combination with a reciprocating bar provided with a shoulder and with a bearing-face on opposite sides of said wheel, the shoulders being arranged to alternately contact with and turn the wheel, and the bearing-faces to alternately lock the wheel against rotation after each movement by one of the shoulders, substantially as described.

3. In a device for converting reciprocating into intermittent rotary motion, an angular wheel, in combination with a reciprocating bar provided with bearing-faces a^3 a^3, having shoulders a a', arranged on opposite sides of the wheel and one in advance of the other, substantially as described.

4. In a device for converting reciprocating into intermittent rotary motion, the combination of the frame-piece B, the angular wheel C, having its shaft journaled in piece B, and the reciprocating sheath partially surrounding and guided by the frame-piece B and provided with bearing-faces having shoulders a a' projecting into the paths of the angular portions of the wheel, substantially as described.

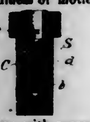
388,391. **SHIFTING SEAT FOR VEHICLES.** Ebony H. Bates, Washington, D. C. Filed Sept. 16, 1886. Serial No. 213,697. (No model.)



Claim.—The combination, with the bar a, pivoted to the rear seat and fulcrumed at b, and the bar d, pivoted at e to the extended end c, of the rear seat-bar, the bars f and i, pivoted to the front seat, crossing one another, as shown, the forward and lower end of the bar i being pivoted on the vehicle-body and the lower end of the bar f to the bar d, for the purpose set forth.

388,392. **STEP FOR SPINNING-SPINDLES.** John Booth, Central Falls, R. I. Filed Aug. 1, 1887. Serial No. 245,757. (No model.) Patented in England Mar. 15, 1887, No. 3,965.

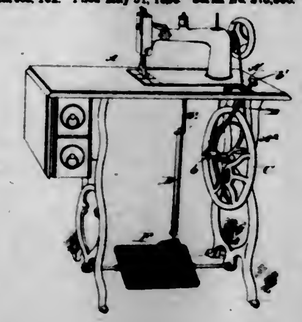
Brief.—The object of the invention is to provide a spindle-step which shall be efficient, durable, and economic of manufacture, and shall obviate any undue unsteadiness of motion of the spindle, while allowing slight lateral play.



Claim.—1. The combination, with a case, of a step of hard or vulcanized rubber rigidly secured at substantially its lower end in the case, the point at which the foot of the spindle is seated in the step being an appreciable distance above that at which the step is rigidly secured in the case, as set forth.

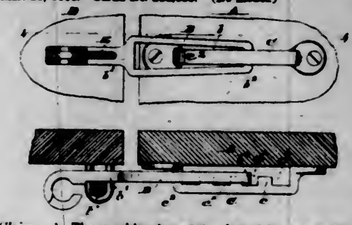
2. The combination, with a case, of a step of hard or vulcanized rubber rigidly secured at substantially its lower end in the case, the point at which the foot of the spindle is seated in the step being an appreciable distance above that at which the step is rigidly secured in the case, and the bore of the case above the point at which the step is secured therein being considerably larger than the diameter of the step, as set forth.

388,393. **MOTOR FOR SEWING-MACHINES.** Emma F. Burgess, San Marcos, Tex. Filed May 31, 1888. Serial No. 275,660. (No model.)



Claim.—In an attachment for the stand of a sewing-machine adapted for interchangeable motors, the depending hook designed to receive and support when out of use either the pitman or the inclined hand-rod, substantially as described.

388,394. **HASP-LOCK.** Lewis A. Brown, St. Louis, Mo. Filed Mar. 20, 1888. Serial No. 268,088. (No model.)

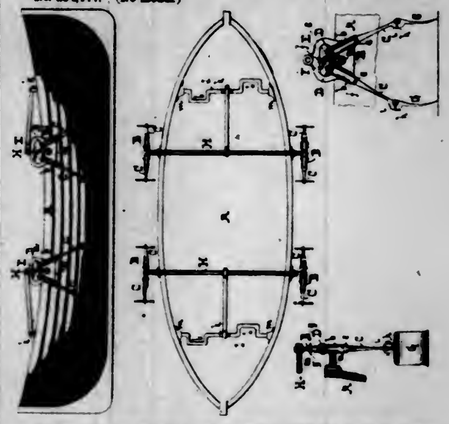


Claim.—1. The combination of the slotted hasp and the notched elongated staple C, substantially as described.

2. The combination of the door, the slotted hasp, the elongated notched staple C, the jamb D, the staple E, and fastening F, substantially as described.

3. The combination of the part A, the hasp B, having the slot b wider at one end than at the other, as described, and the notched elongated staple C, as described.

388,395. **PROPELLING APPARATUS FOR BOATS.** Alfred Buck and Augustus Burkhard, Baltimore, Md. Filed Nov. 3, 1887. Serial No. 254,177. (No model.)



Claim.—In combination with a boat, a stud projecting laterally from the side thereof, a frame resting on the said stud so as to vibrate on the same, the said frame having sockets which diverge in a downward direction, arms carrying independently-vibrating paddles, which arms pass loosely through the said sockets, a beveled cog-wheel at the upper end of each arm, a central beveled cog-wheel on a rotative stem in gear with the cog-wheels on the two arms, and a spring-handle attached to the said stem with its outer end adapted to lock with a part of the said frame, substantially as and for the purpose specified.

388,396. **CAR-COUPLING.** Howard H. Burden, Troy, N. Y. Filed Feb. 15, 1888. Serial No. 264,127. (No model.)



Claim.—1. In a car-coupling, the combination, with a frame and movable knuckle, of a lever or its equivalent arranged to operate upon the knuckle to throw it open, substantially as and for the purposes set forth.

2. In a car-coupling, the combination of a frame, movable knuckle and locking-pin, with a lever or its equivalent arranged to operate upon the knuckle to throw it open, as and for the purposes set forth.

3. In a car-coupling, the combination, with a frame, movable knuckle, and locking-pin, of a lever or its equivalent arranged to operate upon the knuckle to throw it open, and a device arranged to operate both locking-pin and lever, as and for the purposes set forth.

388,397. **PORTABLE FROG OR CAR-REPLACER.** William O. Cook, Chicago, Ill. Filed May 19, 1888. Serial No. 273,916. (No model.)



Claim.—1. A portable frog or car-replacer provided with a shoulder for raising blind-wheels, substantially as described.

2. In a portable frog or car-replacer, the combination of piece A, having shoulder E, with piece B secured thereto, substantially as described.

3. In a portable frog or car-replacer, the combination of piece A, having shoulder E and lug F, with piece B, having lug F', the lugs fitting into the grooves in the sides of the rail and preventing the frog from tilting or tipping, substantially as described.

388,398. **COTTON SCRAPER AND SWEEP.** William R. Crain, Columbia, Tenn. Filed May 26, 1888. Serial No. 275,099. (No model.)



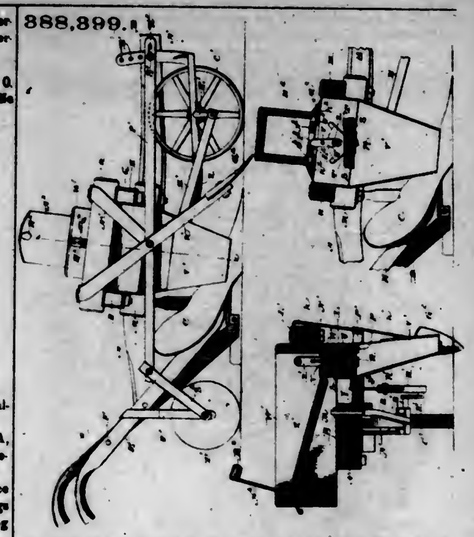
Claim.—1. The combination of the beam A, the yokes C on opposite sides thereof, said yokes having the right-angled arms D and the oblique arms E, the latter being bolted at their outer ends to the beam, the beams N, pivoted to and laterally adjustable on the arms D of the yokes, and the extensible arms G, connecting said beams to the beam A, substantially as described.

2. The combination of the beam A, the yokes C on opposite sides thereof, said yokes having the right-angled arms D and the oblique arms E, the latter being bolted at their outer ends to the beam, the beams N, pivoted to and laterally adjustable on the arms D of the yokes, the arms G, secured to and laterally adjustable on the beam A and having the vertical curved standards H at their outer ends, provided with the adjusting-opening I, the bolts L, engaging said openings and the beams N, and thereby adjustably securing said beams to said standards, the handles having the front ends pivotally connected to beam A, and the brace-rods pivoted to said handles and to the beams N, as set forth.

388,399. **PLANTER.** John A. Cummins, Crawford, Nebr. Filed July 8, 1887. Serial No. 243,733. (No model.)

Claim.—1. The combination, with a plow, of the frame G, attached to the plow-beam and projecting laterally therefrom, the said frame having the hopper, the pivoted adjustable bottom board, Z', and the box L, the shaft R, journaled in the said box, the segmental block S, attached to the said shaft and arranged in the box or cups, the crank-arm P, attached to the inner end of the shaft, the arm Z, having its rear end pivotally attached to the frame G, the said arm carrying the wheel C and being provided at its front end with the upturned portion A', bolted to the front end of the plow-beam, the shaft of wheel C, having the crank-arm, and the pitman connecting the said crank-arm to the crank-arm P, substantially as described.

2. The combination, in a planter, of the frame G, adapted to be attached to the beam of the plow and having the planting mechanism, the standard K', attached to the outer end of frame G, laterally adjustable thereon, and adapted for the attachment of the furrow-opener, the plates N', connecting the said standard to the frame, and also laterally adjustable on the latter, the arm Z, having its rear end pivotally connected to the frame G, the wheel C, journaled in the said arm, and actuating-connections between said wheel and the planting mechanism, substantially as described.



3. The combination, with a plow, of the frame G, attached to the beam and extending laterally therefrom, the said frame having the planting mechanism and the furrow-opener, the arm Z, having its rear end pivotally connected to the frame G and having its front end upturned, as at A', and secured to the plow-beam, the wheel C, journaled in arm Z and connected to the planting mechanism, the guard-arm P', attached to the front portion of arm Z and to the standard K' and extending rearwardly therefrom, the frame S^2, pivoted to the rear end of guard-arm, the wheel or roller journaled in the said frame, and the link or loop connecting the pivoted frame S^2 to one of the plow-handles, substantially as described.

4. In a planter, the frame G, having the parallel beams M and N, adapted to receive the plow-beam between them, and thereby attach the said frame to the said plow-beam, one of the said beams being adjustable in the frame G, so as to clamp the other beam throughout the length of the clamping-beam, substantially as described.

5. The combination of the hopper, the planting mechanism located at one end thereof, and the bottom board, Z', arranged longitudinally in the hopper and having its end adjacent to the planting mechanism pivoted, whereby the said board may be inclined and caused to feed the contents of the hopper to the planting mechanism, substantially as described.

6. The combination of the hopper having the reciprocating seed-slide N^1, the oscillating block S, arranged below the slide, and the fulcrumed arm W, having its lower end connected to the block S and its upper end engaging the slide, substantially as described.

7. The combination of the hopper having the reciprocating seed-slide N^1, provided with the opening P^3, the oscillating blocks S, arranged below the slide, and the fulcrumed arm W, having its upper end engaging the opening P^3 of the slide and its lower end slotted and engaging a pin projecting from the block S, substantially as described.

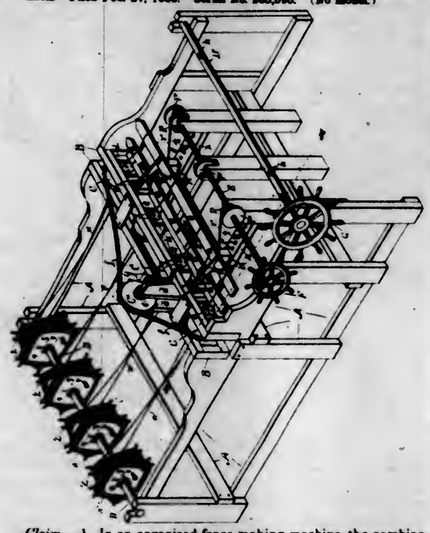
8. The combination, with the plow, of the frame G, projecting from one side of the beam and having the planting mechanism, the standard K', attached to the outer end of frame G and having the furrow-opener, the frame S^2, attached to the plow in rear of the frame G and having the roller T, and the guard-arm P', attached to the front of the plow-beam and to the standard K' and frame S^2, substantially as described.

9. In combination with the handles, the link U', depending from the handles, the wheel or roller T, the pivoted frame S^2, in which the roller is journaled and to which the link U' is attached, and the guard-arm P', connecting the frame S^2 to the frame of the machine, as set forth.

10. In combination with the hopper, the planting mechanism

located at one end thereof, the pivoted bottom board, Z, arranged longitudinally in the hopper, and the catch or projection for supporting the said board in the inclined position, as set forth.

388,400. **FENCE-MAKING MACHINE.** Lyman T. Curtis, Flint, Mich. Filed Feb. 27, 1888. Serial No. 265,380. (No model.)

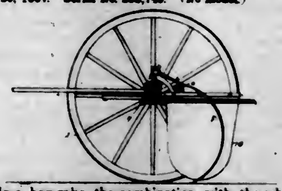


Claim.—1. In an organized fence-making machine, the combination of the main frame, the shaft journaled therein, said shaft having the series of reels journaled thereon, said reels having the U-shaped links pivoted thereto, and means for producing friction between said reels, the frame B, the series of twisting-heads attached thereto, and mechanism for driving said twisting-heads, as and for the purposes specified.

2. In a fence-weaving machine, the combination of the main frame, the frame B, having the series of twisting-heads, the mechanism for driving said twisting-heads, the carriage mounted on the main frame, the hooks A, made fast to said carriage, the engaging-arms n, adjustably pivoted at one end, the shaft and cords for advancing said carriage, and the cord and weight for returning said carriage, as and for the purposes specified.

3. In a fence-weaving machine, the reel having the U-shaped links pivoted thereon, as and for the purposes specified.

388,401. **HORSE HAY-RAKE.** Barney Dumaurier, Grafton, Dak. Filed Oct. 29, 1887. Serial No. 253,749. (No model.)



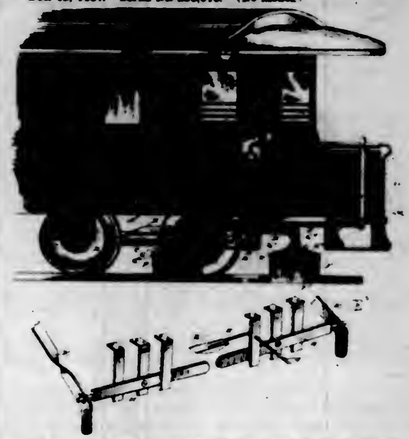
Claim.—In a hay-rake, the combination, with the wheels 2 and axle 4, of the tilting frame 6, pivoted upon said axle, the teeth 8, carried by said frame and moving therewith, and the end plates or guards, 10, secured to said frame 6, between the outer rake-teeth and the wheels and moving with said frame and teeth, substantially as described.

388,402. **BUTTON.** Ezra S. Dodge, Providence, R. I. Filed Aug. 20, 1887. Serial No. 248,221. (No model.)



Claim.—A cuff-fastener having a shoe, A, hollow post B, provided with a flaring base, *a*, and the perforated head C, the perforated disk *f*, the flaring perforated spring-plate D, provided with the perforation *d*, having the slits *e*, pin E, provided with the notch *e*, supplementary button G, and chain F, connecting the supplementary button to the head *g* of the pin, substantially as described.

388,403. **STREET-RAILWAY-TRACK CLEANER.** Charles R. Doty, Rock Falls, assignor to Edgar R. Andrews, Sterling, Ill. Filed Dec. 15, 1887. Serial No. 258,013. (No model.)



Claim.—1. In combination with the brush F, the holder G, provided with lugs G', and centrally-seated stem G^2, provided with the groove G^3, substantially as shown, and for the purpose described.

2. In combination with the axle C of a street-car, the arms E, pivotally seated at their inner ends on said axle, and the brush F, suitably seated on the depending end E^2 of said arm, substantially as shown, and for the purpose described.

3. In combination with the carrying-axle C of a street-car, the arms E, pivotally seated at their inner ends on said axle and provided with the slot E', the brush F, suitably attached to the outer ends of said arms, the lever H, suitably fulcrumed to the frame A, the rock-shaft J, provided with the arm K, adapted to engage the inner ends of the levers H, and means, substantially as shown, for operating and holding said shaft J, for the purpose described.

388,404. **SETTING MECHANISM FOR WATCHES.** August Fischer, Winchester, Ill. Filed Mar. 2, 1888. Serial No. 265,996. (No model.)



Claim.—1. In a watch such as described, the combination of the hands of the watch, an attachment for setting the hands independently, adapted to engage each separately when moved in opposite directions, and a bezel adapted to be rotated in both directions for moving the setting attachment, substantially as described.

2. In a watch such as described, the combination of the hands of the watch, two rings adapted to be moved in both directions and to move the hands in one direction only, and intermediate connections for causing the said rings to move in opposite directions, substantially as described.

3. In a watch such as described, the combination of the hands of the watch, two rings provided with cogs upon the opposite edges and adapted to be moved in both directions and to move the hands in one direction only, and an interposed cog-wheel the cogs of which are geared with the cogs of the said rings to move them in opposite directions synchronously, substantially as described.

4. In a watch such as described, the combination of the hands of the watch, two crown ratchet-wheels provided with cogs upon the opposite edges and the teeth inclined in the same direction on both wheels and adapted to engage said hands only when moved in the direction of the inclination of the said spurs, and an interposed cog-wheel geared with said wheels to move them in opposite directions synchronously, substantially as described.

5. In a watch such as described, the combination of the hands of the watch, two rings provided with cogs upon the opposite edges and adapted to move in opposite directions, intermediate connections between the said hands and rings for causing the hands to be moved by the rings when moving in one direction only, an interposed cog-wheel geared with the said wheels to move them in opposite directions synchronously, and a bezel adapted to be rotated in both directions for moving the said rings, substantially as described.

6. In a watch such as described, the combination of the hands of the watch, a setting mechanism for setting the hands separately, a bezel adapted to be rotated in both directions for operating the setting mechanism, and a spring locking attachment for retaining the said dial in position, substantially as described.

7. In a watch such as described, the combination of the hands of the watch, a setting mechanism for setting the hands separately, a bezel adapted to be rotated in both directions for operating the setting mechanism and provided with a serrated edge, and a spring-actuated foot adapted to set in the said serrations and lock the said dial, substantially as described.

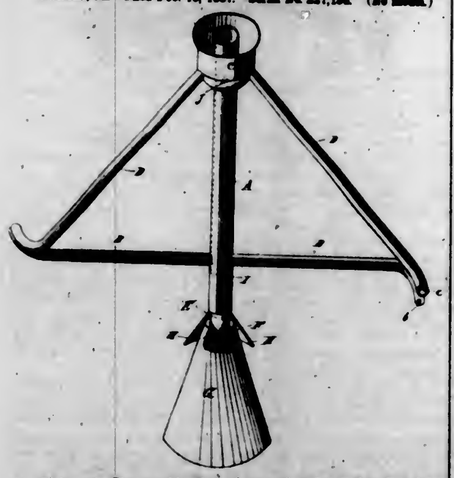
388,405. **BADGE-HOLDER.** Gerald B. Fraser, Peoria, Ill. Filed Apr. 4, 1888. Serial No. 269,632. (No model.)



Claim.—1. A badge-holder formed of a single plate of metal having tongues or points a^2 cut therefrom, the bases of said tongues or points being integral with the body A, and the outer ends of said points or tongues extending to approximately the edges of said body, said body being provided with a suitable attaching device, substantially as described.

2. A badge-holder formed of a single plate, A, of metal, having the folded edge *a*, and having the tongues or points a^2 formed integrally therewith near the outer edges, and provided with a suitable pin, B, substantially as described.

388,406. **SULPHURIC-ACID DISTRIBUTER.** Shuyler Fraser, Natrona, Pa. Filed Feb. 10, 1887. Serial No. 227,128. (No model.)

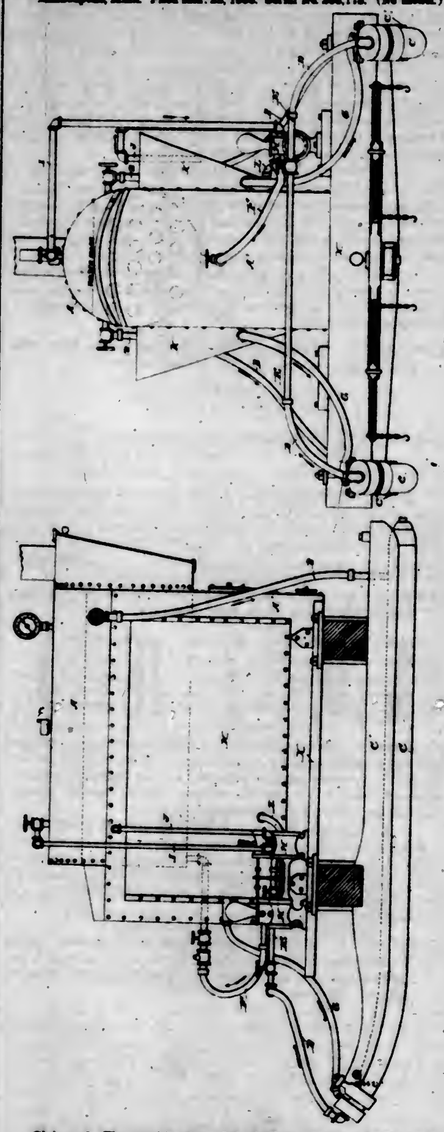


Claim.—1. The combination of a supply-tube, outlet-pipes from said supply-tube, and having a reduced opening, and overflow-pipes connected with the supply-tube and having a different-sized opening from the opening in said outlet-pipes, substantially as described.

2. The combination of a supply-tube having an overflow reservoir or basin, outlet-tubes connected with the supply-tube, and overflow-tubes connected with the reservoir, substantially as described.

3. The combination of a standard, G, a supply-pipe having a bearing in the standard G, acid-throwing arms in said supply-pipe, and a shield interposed between the arms and the step, substantially as described.

388,407. **DEVICE FOR MAKING SLED-ROADS.** Henry B. Frey, Minneapolis, Minn. Filed Mar. 22, 1888. Serial No. 268,173. (No model.)



Claim.—1. The combination of the hollow runners, a boiler, and the pipes connecting the runners at or near each end with the boiler, whereby there is maintained a circulation through the boiler and runners, substantially as described.

2. In a device for making sled-roads, the combination of the hollow runners, a boiler, the circulating-pipes between the boiler and the runners, and a pump for maintaining circulation, substantially as described.

3. In a device for making sled-roads, the combination of the hollow runners, and the circulating-pipes connecting the runners and the boiler, which they enter below the water-level, substantially as described.

4. In a device for making sled-roads, the combination, with a sled and a boiler mounted thereon, of a receptacle upon the outside of the boiler adapted to receive snow, which is melted therein, substantially as described.

5. In a device for making sled-roads, the combination, with a sled and a boiler mounted thereon having a fire-box, of the snow-receptacles converging toward their lower portions and supported upon the outside of the fire-box, substantially as described.

6. In a device for making sled-roads, the combination, with a sled having hollow runners and a boiler mounted thereon, of circulating-pipes between the boiler and runners, a pump to maintain the circulation in said pipes, a snow-receptacle in proximity to the boiler wherein the snow is melted, and a water-pipe, L, between the said receptacle and the pump, substantially as set forth.

7. In a device for making sled-roads, the combination, with a sled having hollow runners, and a boiler mounted thereon, of circulating-pipes between the boiler and the runners, a pump to maintain circulation in said pipes, a snow-receptacle, a steam-pipe, I, between the boiler and the pump, and an exhaust-pipe, J, delivering from the pump into the snow-receptacle, substantially as described.

8. In a device for making sled-roads, the herein-described hollow runner, consisting of the pipe C, bent at one end, in combination with the block or bar C', grooved on its under face to receive the pipe C, substantially as set forth.

388,408. VEHICLE. RICHARD F. GOODRICH, Jackson, Mich. Filed Apr. 21, 1888. Serial No. 271,499. (No model.)



Claim.—The combination of a rear axle bent between its ends so as to allow the body of the vehicle to swing below the centers of the rear wheels, a straight forward axle, and a body the floor of which is bent upward at the forward end to leave a space vertically over the forward axle, substantially as shown, and for the purpose described.

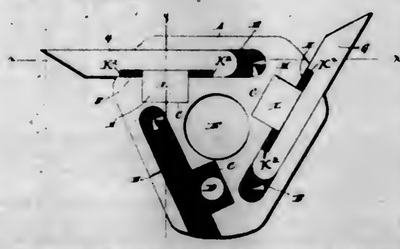
388,409. HINGE. JOHN M. GRAY, Fort Leavenworth, Kans. Filed Apr. 16, 1888. Serial No. 270,794. (No model.)



Claim.—1. The combination, in a hinge, of a fixed leaf, a sliding leaf, and a base-plate with a curved arm secured to the fixed leaf and adapted to pass through the sliding leaf and the base-plate when the parts are swung to, whereby the parts are locked together, substantially as and for the purpose described.

2. A hinge comprising a fixed leaf, a sliding leaf provided with a straight piece forming projections, a base-plate having retaining-strips which provide ways in which the projections of the sliding leaf slide, a spring secured to the base-plate and bearing against the straight piece of the sliding leaf, and a curved arm secured to the fixed leaf substantially as and for the purpose described.

388,410. CUTTER-HEAD FOR GROOVING-MACHINES. JULIAN T. GRZYBOWSKI, Grand Rapids, Mich., assignor of one-half to R. R. Butterworth and James Lowe, same place. Filed Nov. 1, 1887. Serial No. 253,990. (No model.)

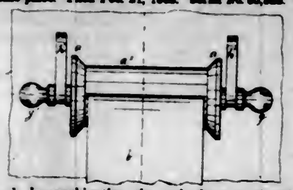


Claim.—1. The cutter-head having the grooves B, the cutters having their shanks fitted in the grooves, the clamping-bolts having their heads locking the shanks, and the limiting shoulders or stops K^2 on the shanks on each side of the bolt-heads, the distance between the shoulders or stops being greater than the size of the bolt-heads, so as to allow a limited longitudinal play of the shanks of the cutters, as set forth.

2. The combination of the cutter-head having the grooves B, the cutters having the shanks fitted in the said grooves and provided with the longitudinal recesses K, the stops or shoulders K^2 at the ends of the recesses, and the clamping-bolts having the heads bearing against the recessed portions of the sides of the cutters, the recesses being longer than the heads of the bolts, whereby the latter may be adjusted longitudinally, substantially as described.

3. The combination of the cutter-head having the grooves B, and the recesses C, communicating with the said grooves, the cutters having their shanks fitted in the grooves B and provided with the longitudinal recesses K, the sides of which are inclined, the stops or shoulders K^2 at the ends of the recesses, the clamping-bolts having their heads fitted in the grooves C and bearing against the sides of the recesses K, and the clamping-nuts screwed to the threaded ends of the bolts, substantially as described.

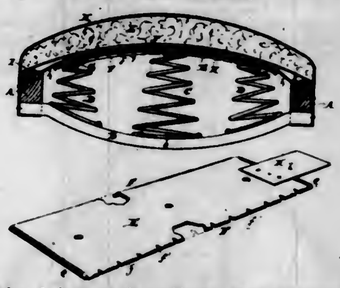
388,411. CALENDAR OR MEMORANDUM-ROLL. HENRY S. HACK, Taunton, Mass., assignor, by mesne assignments, to Emily F. Hack, same place. Filed Feb. 21, 1883. Serial No. 85,888. (No model.)



Claim.—1. In combination, the end pieces, *a a'*, each having a hole through it, the roll *b*, with its hollow spindle *f*, and the two finger-pieces *g g'*, each extending through one of the end pieces and into but only partly through the hollow spindle *f*, as and for the purpose specified.

2. In combination, the backing A, the metal devices A', and pieces *a a'*, roll *b*, with its hollow spindle *f*, and the two finger-pieces *g g'*, extending each through one of the metal devices A' and one of the end pieces, *a a'*, and into but only partially through the hollow spindle *f*, as and for the purpose specified.

388,412. CAR-SEAT. HENRY S. HALE, Philadelphia, Pa. Filed Jan. 7, 1887. Serial No. 223,662. (No model.)



Claim.—1. In a seat, the combination of the box-frame, a series of bow-shaped cross-bars secured to the under side of said frame and having the middle curvature downward, a series of springs supported on each cross-bar, flexible strips secured to the upper parts of said springs, flexible connections between said strips and seat-frame, by which the said strips are caused to curve upward in the middle, and a seat-cushion or upholstering supported above said strips and with its curvature in the opposite direction to that of the cross-bars.

2. In a seat, the combination of the box-frame, a series of bow-shaped cross-bars secured to the under side of said frame and having the middle curvature downward, a series of springs supported on each cross-bar, wide flexible strips of sheet metal secured to the upper parts of said springs, flexible textile connections between said strips and seat-frame, by which the said strips are caused to curve upward in the middle, and a seat-cushion or upholstering supported above said strips and with its curvature in the opposite direction to that of the cross-bars.

3. In a seat, the combination of the box-frame, a series of bow-shaped cross-bars secured to the under side of said frame and having the middle curvature downward, a series of springs supported on each cross-bar, flexible strips of sheet metal made wide and having their lateral edges curved downward secured to the upper parts of said springs, flexible textile coverings secured to and connecting said strips,

and seat-frame by which the said strips are caused to curve upward in the middle, and a seat-cushion or upholstering supported above said strips and with its curvature in the opposite direction to that of the cross-bars.

4. In a seat, the combination of the main or box frame, cross-bars secured to the bottom of said frame, springs supported on said cross-bars, wide flexible sheet-metal supporting-strips secured to the tops of said springs, and narrow textile bands extending over said metallic strips and secured on its ends to the box-frame, and upholstery directly supported upon said wide sheet-metal strips.

5. In a seat, the combination of the main or box frame, cross-bars secured to the bottom of said frame, springs supported on said cross-bars, wide flexible sheet-metal supporting-strips secured to the tops of said springs, and narrow textile bands extending over said metallic strips and secured on its ends to the box-frame, and rivets uniting said fabric to the sheet-metal strips, and upholstery directly supported upon said wide sheet-metal strips.

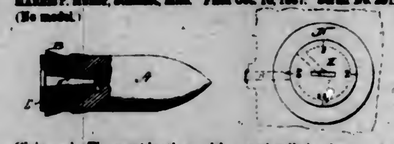
6. In a seat, the combination of the main or box frame, cross-bars secured to the bottom of said frame, springs supported on said cross-bars, wide flexible sheet-metal supporting-strips having their lateral edges curved downward secured to the tops of said springs, and narrow textile bands extending over said metallic strips and secured on its ends to the box-frame; and upholstery directly upon said wide sheet-metal strips.

7. In a seat, the combination of the main or box frame, cross-bars secured to the bottom of said frame, springs supported on said cross-bars, wide flexible sheet-metal supporting-strips having their lateral edges curved downward and notched secured to the tops of said springs, and narrow textile bands extending over said metallic strips and secured on the ends to the box-frame.

8. A flexible supporting-strip for a car-seat cushion, consisting of a flexible sheet-metal strip having its edges curved downward and notched to make it extremely flexible and prevent injury to the textile covering when in use, substantially as and for the purpose specified.

9. In a seat, the frame A, in combination with downward-curved cross-bars secured to it at the bottom, upwardly-curved cushion-supporting strips and a series of springs interposed between them, supported upon said bars and of different sizes, the largest or highest being in the middle, whereby the vertical capacity of the seat gradually increases from the edges to the center.

388,413. PROJECTILE. JOSEPH R. HAWLEY, Hartford, Conn., and HARRIS P. HUNT, Summit, Minn. Filed Oct. 10, 1887. Serial No. 251,986. (No model.)



Claim.—1. The combination, with a projectile having a movable sabot, of a cap in front of the sabot and a time-fuse having a revoluble plug between the cap and bursting charge, said plug having a time-charge in a groove in front of the cap, substantially as described.

2. The combination, with the projectile, of the movable sabot consisting of a central core surrounded by rings, a pin connecting the core and body of the projectile, a cap in front of the core-piece, and a time-fuse having a revoluble plug provided with a burning charge connecting the cap and bursting charge of the shell, substantially as described.

3. The combination, with a projectile, ring-sabot, and core-piece on which the rings are mounted, of a pin connecting the core and sabot in such manner that the pin is sheared off in firing the gun, substantially as described.

4. The combination, with a projectile, of a sabot consisting, essentially, of rings or washers, the rings gradually increasing in diameter from front to rear, substantially as shown.

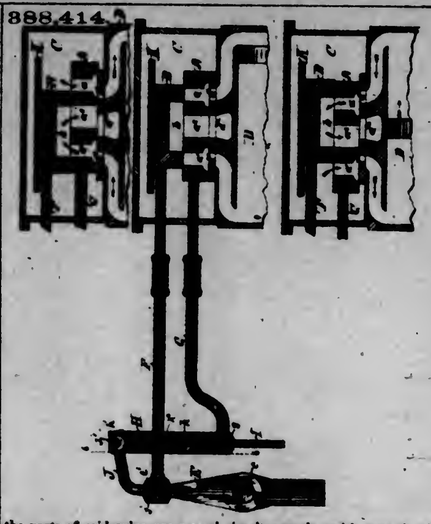
5. The combination, with a projectile, of a series of leather washers gradually increasing in diameter toward the rear and surrounding a core-piece, said core-piece being attached to the projectile, substantially as described, so as to compel the rotation of the projectile.

388,414. STEAM-ENGINE VALVE. JOHN HEATH, Janesville, Wis. Filed Feb. 14, 1888. Serial No. 263,964. (No model.)

Claim.—1. The combination of the two-part valve, the lower valve having two steam-inlet ports and an exhaust-port, and the upper valve having an exhaust port or passage therein, in combination with the cylinder having two entrance-ports and an exhaust-port and operating-connections to move said valves simultaneously and in opposite directions with respect to each other in admitting and exhausting steam, substantially as described.

2. The combination of the two-part valve, the single rocker-arm, and the intermediate connections, substantially as described, whereby

388,414



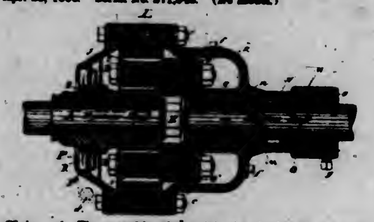
the parts of said valve are moved simultaneously and in opposite directions with respect to each other.

3. The combination, in a two-part valve-gear, of the main rocker-arm, a second rocking arm or beam connected to and actuated by said first-mentioned rocker-arm, and the valve-rods, whereby the movement of the main rocker-arm, which moves one of said valve-rods, also moves the other valve-rod in the opposite direction, substantially as described.

4. In a two-part valve-gear, the combination of two rocker-arms, two valve-rods pivotally connected one with each of said rocking arms, and a link-connection between said rocking arms, substantially as described.

5. The combination, with the valve and steam-chest in which it is mounted, of a steam-plate rigidly supported above said valve, the side supporting-plates of said steam-plate, and the fastening-bolts securing said steam-plate and side plates together around the valve and passing through said steam-plate outside said side supporting-plates and into the cylinder-face, substantially as described.

388,415. DEVICE FOR GEARING ENGINE-SHAFTS DIRECTLY TO THE DRIVEN MACHINE. EDWARD H. HEWINS, Boston, Mass. Filed Apr. 28, 1888. Serial No. 271,840. (No model.)



Claim.—1. The combination, with the shafts of a motor and a dynamo-electric machine, of a set of gears connecting the same and consisting of a gear on the dynamo-shaft, a stationary internal gear surrounding it, and intermediate loosely-mounted pinions carried by the engine-shaft, as herein set forth, whereby the two shafts are maintained in alignment and the dynamo driven at a higher speed than the engine.

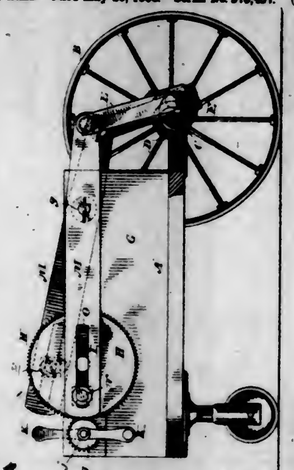
2. The combination, with a dynamo-shaft having a gear, C, an engine-shaft carrying the loosely-mounted pinions I I, engaging therewith, and a stationary surrounding casing or box forming an oil-chamber and provided with an internal gear, L, with which the pinions engage, as set forth.

3. The combination, with the shaft of a dynamo-machine, and the hub B, secured thereto and provided with a gear, C, of an engine-shaft in alignment therewith, a hub, G, secured thereon, pinion-gears I, carried by the hub and engaging with the gear C, and an inclosing stationary box or casing forming an oil-chamber and provided with the internal gear, L, with which the pinions engage, as set forth.

4. The combination, with the driving-shaft of an engine and the

shaft of a dynamo-electric machine in alignment therewith, of a system of multiplying gears mounted concentrically with the said shafts and connected to them so as to drive the dynamo-shaft at a higher speed than the engine-shaft, as herein set forth.

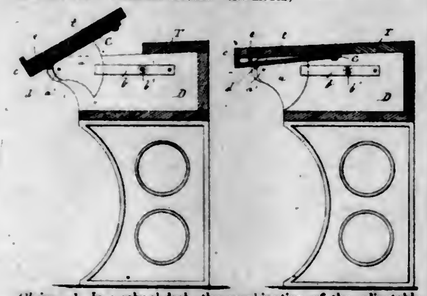
388,416. MECHANICAL MOTOR. Pleasant Hoskett, Stafford County, Kans. Filed May 29, 1888. Serial No. 275,437. (No model.)



Claim.—1. The combination of the driving-wheels, the driving-levers, the pitman-rods hinged to the shorter ends of the driving-levers, and the wrist-pins secured to the driving-wheels and adapted to slide in slots in the ends of the longer arms of the driving-levers, substantially as set forth.

2. The combination of the vehicle-body, the wheels, the axle rigidly secured to the wheels, the cranks on the axle, the standard on the vehicle-body, the driving-wheels mounted thereon, the driving-levers, the pitman-connections between the driving-levers and the cranks on the axle, and the wrist-pins extending through slots in the longer arms of the driving-levers for connecting the levers to the driving-wheels, substantially as set forth.

388,417. SCHOOL-DESK. Moses W. Kidder, Lincoln, Mass. Filed Feb. 14, 1888. Serial No. 264,010. (No model.)



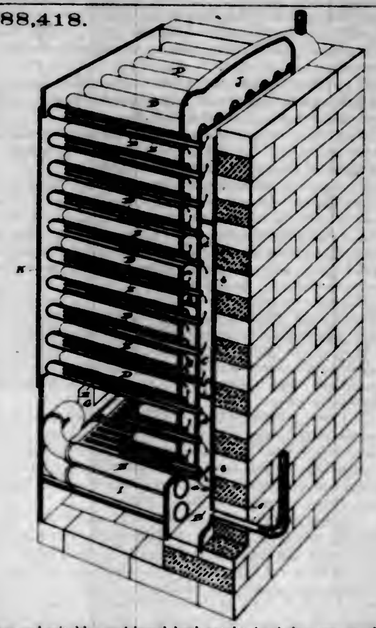
Claim.—1. In a school-desk, the combination of the adjustable top, the sector-shaped hinge-plates secured to the under side of said top and turning upon a pin at the center, the friction-clamp consisting of a bar secured at one end to the side of the desk and bearing at its other end upon the hinge-plates, and the adjusting-screw passing through the clamp-bar and engaging the side of the desk, as and for the purpose set forth.

2. In a school-desk, the combination, with a hinged desk-top, of one or more levers secured to the under side of the desk-top, a ledge normally supported by said levers in position flush with the desk-top, and a stud on the desk eccentric to the pivot and adapted to engage the levers to throw the ledge upward when the desk-top is raised, substantially as set forth.

388,418. SECTIONAL WATER-HEATER. William Kirkwood, Guelph, Ontario, Canada. Filed Dec. 15, 1887. Serial No. 257,257. (No model.)

Claim.—1. Two vertical chambers arranged parallel with each other and suitably partitioned, horizontal tubes being connected to the walls of and arranged in groups, as described, to connect with the interior of one chamber, which is bridged by horizontal tubes of a smaller diameter connected to the walls of and communicating with the interior of the other chamber, the said tubes extending into the tubes connected to the wall of the former chamber, so that fluid entering the latter will flow through the larger tubes and find its way through the smaller tubes into the other chamber in one group and vice versa in the next group, substantially as and for the purpose specified.

388,418.



2. Two vertical chambers arranged parallel with each other and suitably partitioned, horizontal tubes being connected to the walls of and arranged in groups, as described, to connect with the interior of one chamber, which is bridged by horizontal tubes of a smaller diameter connected to the walls of and communicating with the interior of the other chamber, the said tubes extending into the tubes connected to the wall of the former chamber, so that fluid entering the latter will flow through the larger tubes and find its way through the smaller tubes into the other chamber in one group and vice versa in the next group, in combination with the dome J, into which the said chambers communicate, substantially as and for the purposes specified.

3. The tubes D, closed at one end and connected at their opposite open end to the wall *a*, and containing smaller tubes, E, open at both ends, but connected to the walls *d* at one end, so that the chambers B C will be connected through the tubes specified, in combination with horizontal partitions formed across the chambers B C, and alternating, as shown, and the pipes H I, arranged beneath the lower partition around the furnace, substantially as and for the purpose specified.

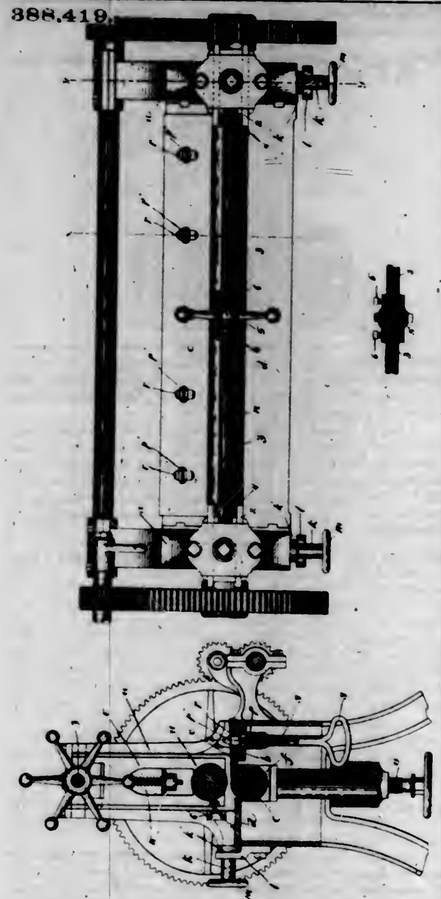
388,419. LEATHER-SPLITTING MACHINE. David Knox, Lynn, Mass. Filed Jan. 7, 1888. Serial No. 260,042. (No model.)

Claim.—1. In a leather-splitting machine, the combination of the supporting-frame, the splitting-knife thereon, the adjustable upper roll, *a*, the lower roll mounted in spring-supported boxes, and the independently adjustable wedge-bars arranged above the boxes and supporting the same against the upward pressure of their springs, whereby said boxes may be adjusted independently.

2. The combination, with the knife and the lower roll and its boxes, of the springs *g g*, whereby said boxes are pressed upwardly, the wedge-bars *h h*, located above said boxes in slots extending across the end pieces of the frame and terminating in threaded bolts, and the adjusting-nuts *k k*, engaged with said bolts and with the frame of the machine, said wedge-bars supporting the boxes against the upward pressure of their springs and enabling the boxes to be independently adjusted, as set forth.

3. The combination, with the knife and the lower roll and its boxes, of the springs *g g*, whereby said boxes are pressed upwardly,

388,419.



the wedge-bars *h h*, located above said boxes in slots extending across the end pieces of the frame and terminating in threaded bolts, the adjusting-nuts *k k*, engaged with said bolts and with the frame of the machine, said wedge-bars supporting the boxes against the upward pressure of their springs and enabling the boxes to be independently adjusted, and the screws *o*, whereby the tension of the springs *g* may be adjusted to correspond with adjustments of the wedge-bars, as set forth.

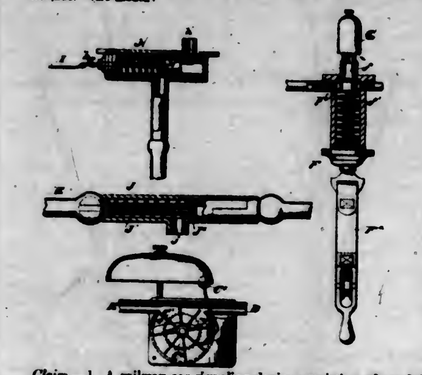
4. The combination of the knife-bed having slots or apertures b^3, the knife having slots *r*, made longer than the slots b^3, the bolts *p*, having oblong heads formed to enter said slots *r*, but of greater length than the slots b^3, whereby, when said heads are in the slots *r*, they will be supported by the bed, and the nuts *s*, engaged with said bolts and adapted to bear on the under side of the bed, as set forth.

5. The combination of the knife-bed, the knife having oblong slots, the bolts having oblong heads adapted to fit said slots, and the square portions which prevent the bolt from turning in the slots, and the nuts adapted to engage said bolts and having handles, all arranged and operating substantially as described.

6. In a leather-splitting machine, the combination, with the knife, the lower roll, and the adjustable upper roll, of a pointer or index movable with the upper roll, and a fixed scale or graduated plate on the frame of the machine, as set forth.

7. In a leather-splitting machine, the combination, with the knife, the upper roll, and the wedges whereby the upper roll is adjusted, of the two-part screw-threaded rod engaged, as described, with said wedges, and the connecting device or hub to which the parts or sections of the screw-threaded rod are detachably secured, whereby the said wedges may be independently adjusted, as set forth.

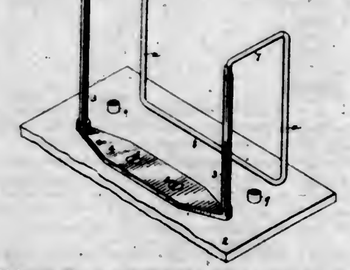
388,420. RAILWAY-CAR SIGNAL. Charles P. Lauren and Richard V. R. Gill, Detroit, Mich. Filed Mar. 15, 1888. Serial No. 267,219. (No model.)



Claim.—1. A railway-car signaling device consisting of conduits D E, connecting the brake mechanism or other source of air-pressure with the cars, a signaling device, C, located in the locomotive at the juncture of said conduits, said signaling device consisting of a wheel, C', located in chamber *c*, ratchet-wheel C^2, and escapement C^3, connected with the bell-clapper C^4, and points in the conduit E for permitting the escape of the compressed air, thereby creating a draft and operating the signal, substantially as described.

2. A railway-car signaling device consisting of conduits D E, connecting a source of air-supply with the cars, and a signaling device, C, located in the locomotive at the juncture of said conduits and adapted to be operated by the passage of air along said conduits, and an escape, F, in the conduit E, consisting of an orifice having a whistle, G, mounted thereon, a valve, F', in the line of the conduit, having an annular passage around it for the circulation of air through said conduit, a spring, *f'*, normally closing said valve, and a strap, F^2, for opening said valve, substantially as described.

388,421. LETTER FILE AND BINDER. Benjamin Lawrence, New York, N. Y., assignor to Louisa Lawrence, same place. Filed June 5, 1888. Serial No. 276,096. (No model.)



Claim.—1. The combination of tubular upright impaling-wires and a transfer-frame composed of downwardly-projecting legs, rearwardly-extending portions, and a cross-connection, substantially as set forth.

2. The combination of a board or tablet having tubular upright impaling-wires and holes or sockets 9 9 in rear thereof, with a transfer-frame composed, essentially, of the parts 6 6, 7 7, and 8, substantially as set forth.

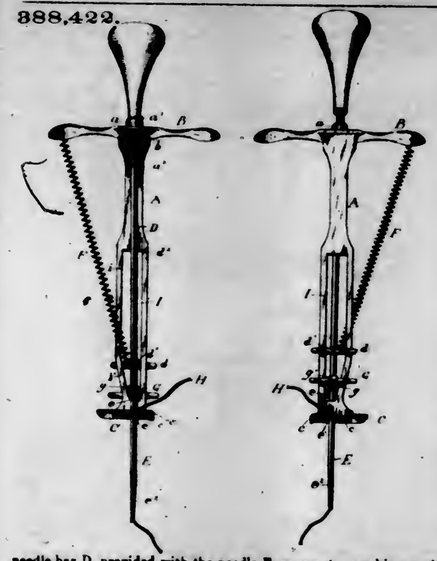
3. A transfer-frame for use in connection with receiving-wires, as 3 3, composed of the parts 6 6, 7 7, and 8, substantially as set forth.

4. A transfer-frame for use in connection with receiving-wires, as 3 3, composed of the parts 6 6, 7 7, *a a*, and 8, substantially as set forth.

388,422. FABRIC-TURFING IMPLEMENT. Dio Lewis, Prescott, Ark. Filed June 1, 1888. Serial No. 275,704. (No model.)

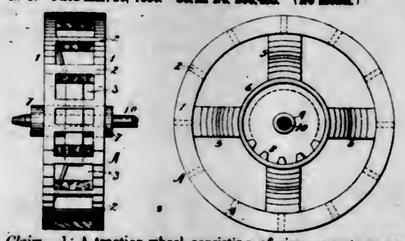
Claim.—The combination of the plate A, provided with the fixed sleeve a^2, and slot 1, having the incline *i'*, foot C, provided with the slot *c*, cross-head bar B, provided with the elongated perforation *b*,

388,422.



needle-bar D, provided with the needle E, gage-nut *a*, working on the threaded part of said needle-bar, bolt *d''*, secured in said needle-bar, acting as the lower stop, bar G and sleeve *g*, regulating the length of the stitch, spring F, its lower end attached to said needle-bar near its lower end and its upper end to the extreme end of said cross-head bar, substantially as shown and described, and for the purposes set forth.

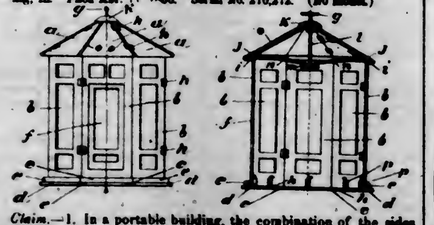
388,423. TRACTION-WHEEL. George R. Lewis, Seneca Falls, N. Y. Filed Mar. 26, 1888. Serial No. 268,488. (No model.)



Claim.—1. A traction-wheel consisting of rims, cross-bars connecting the rims, and spokes carrying upon their inner ends a ratchet-case and hub all cast in one piece, substantially as described.

2. A traction-wheel consisting of a hub, a ratchet-case surrounding and integral with the hub, spokes extending outward from the ratchet-case and integral therewith, and the outer periphery of the wheel integral with the outer ends of the spokes and provided with openings through the periphery, substantially as described.

388,424. PORTABLE HOUSE. Andrew Lindblad, Grand Crossing, Ill. Filed Apr. 11, 1888. Serial No. 270,372. (No model.)



Claim.—1. In a portable building, the combination of the sides *b* and roof-division *a*, provided with cleats *i* and *j* on their lower sides, in combination with the collar *k*, rod *l*, disk *m*, and rods *n*, substantially as and for the purpose specified.

2. In a portable house, the floor made of divisions *c d*, the sides secured to the floor by bolts *p*, and roof made of divisions *a*, in combination with the connecting-rods *n*, disk *m*, collar *o*, and tightening-rod *l*, substantially as and for the purposes specified.

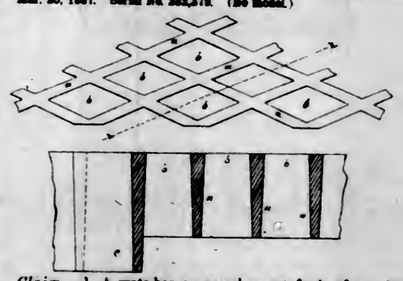
388,425. BASKET. Elizabeth H. Little, Boston, Mass. Filed Apr. 21, 1888. Serial No. 271,412. (Model.)



Claim.—1. As an improved article of manufacture, the herein-described basket, made of rope or cord and consisting of the coil A, forming the bottom, and the Turk's-head knot B, forming the side, said bottom and side consisting of a single rope or cord, substantially as and for the purpose set forth.

2. As an improved article of manufacture, the herein-described basket, made of rope or cord and consisting of the coil A, forming the bottom, the Turk's-head knot B, forming the side, laid handle C, and the rosette D, produced by forming the ends C' of the handle and the end A''' of the rope or cord which forms the bottom and sides into a wall and crown knot, said ends being frayed out or unraveled at D', substantially as and for the purpose described.

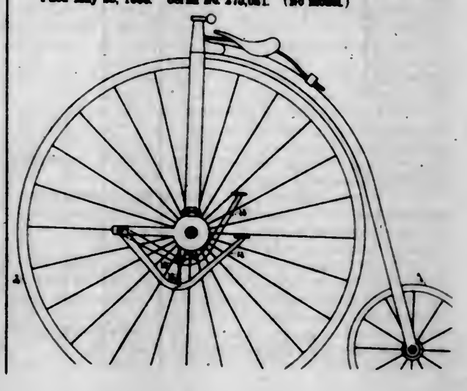
388,426. GRATE-BAR. James Marsh, New York, N. Y. Filed Mar. 25, 1887. Serial No. 232,579. (No model.)



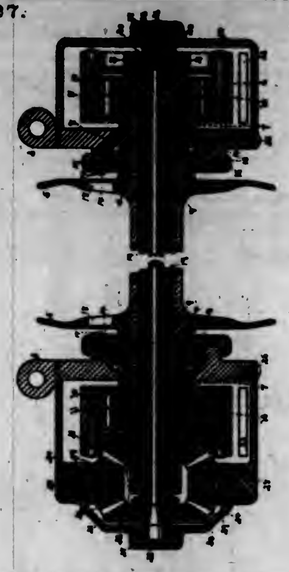
Claim.—1. A grate-bar composed, as set forth, of a series of shallow diagonal ribs, forming diamond-shaped air-spaces, and a pair of extra deep zigzag stiffening-ribs formed by the downward extension of the outside zigzag portions of the shallow diagonal ribs.

2. A grate-bar composed, as set forth, of the diagonal ribs *a*, forming diamond-shaped air-spaces *b b*, and a pair of extra deep stiffening-ribs, *c c*, formed by the downward extension of the outside zigzag portions of the shallow diagonal ribs extending only along the longitudinal sides of said grate-bars.

388,427. VELOCIPEDE. John M. Marlin, New Haven, Conn. Filed May 25, 1888. Serial No. 275,021. (No model.)



388,427.



Claim.—1. The combination of the wheel having hub projections 4 4 extending horizontally outward beyond its flanges 5 5, the steering-fork pivotally attached to the disks 3 3 at its lower end on each side of the wheel, the disks 3 3, supported upon the wheel-hub extensions by running-bearings, and the clutch-drums 11 11, supported on said wheel-hub extensions by running-bearings outside of the fork-bearings 3 3, and having clutches adapted to alternately connect them to and release them from the wheel-hub, substantially as described.

2. The combination of the wheel having hub projections 4 4 extending horizontally outward beyond its flanges 5 5, the steering-fork pivotally attached to its bearing-disks 3 3 at its lower ends, the disks 3 3, supported upon the wheel-hub projections by running-bearings, the clutch-drums 11 11, supported by running-bearings outside of the fork-bearings 3 3, and having clutches adapted to alternately connect them to and release them from the wheel-hub, and the central tie-rod or shaft, 26, connecting the opposite bearing-disks 3 3 together by frame-supports extending from its ends around and outside of the clutch-drums, substantially as described.

3. The combination of the wheel 2, having lateral hub-extensions 4 4, the fork-bearings 3 3, supported upon said hub-extensions, the clutch-drums 11 11, provided with clutches arranged to alternately connect and disconnect them from said hub-extensions as they reciprocally rotate, the shaft 19, connected directly to one clutch-drum and extending thence through and beyond the opposite end of the wheel-hub, and the intermediate gears, 21 30 32, connecting said shaft to the other clutch-drum, substantially as described.

4. The combination of the fork-bearings 3 3, taking a running-bearing upon wheel-hub extensions 4 4, the clutch-drums 11 11, provided with clutches arranged to alternately connect and disconnect them from the hub-extensions, the tubular shaft 19, extending beyond the ends of the wheel-hub and connected to one drum 11 directly at one end, and to the other drum 11 by intermediate gears, 21 30 32, at the other end, and the tie-rod 26, extending through the center of tubular shaft 19, and sustained at the ends by frame-supports extending from bearings 3 3 around outside of said clutch-drums and gears, substantially as described.

5. The combination of the tubular wheel-hub, the fork-bearings 3 3, the clutch-drums 11 11, their connecting tubular shaft 19, extending through the wheel-hub, and the central tie-rod, 26, extending through the tubular shaft, provided with adjustable cone-bearings 22 22 for shaft 19, and sustained by frame-supports upon the fork-bearings, substantially as described.

6. The combination of the tubular wheel-hub, the tubular revolving shaft 19, extending through the same, and the central tie-rod sustained at its ends by frame-supports and provided with cone-bearings 22 22 for shaft 19, and itself made adjustable in its frame-supports by the nuts 27 27, substantially as described.

7. The combination of the disk 3, the gage-ring 15, the collar 16, secured by screws to disk 3, and the separable grooved sleeve 7, surrounding the wheel-hub extension and clamped thereto and forming the ball-bearing, substantially as described.

8. The combination of the wheel-bearings 3 3, attached to the lower end of the steering-fork and formed in disk shape, the cup-shaped frame-supports 24 24, having their open ends fitting around said disks and attached thereto, and the central tie-rod, 26, supported in said cup-shaped pieces and passing through the wheel-hub, substantially as described.

9. The combination, with the frame-support 24, of the stud 28, carrying pinion 30, and also the end of tie-rod 26, which passes through the wheel-hub, substantially as described.

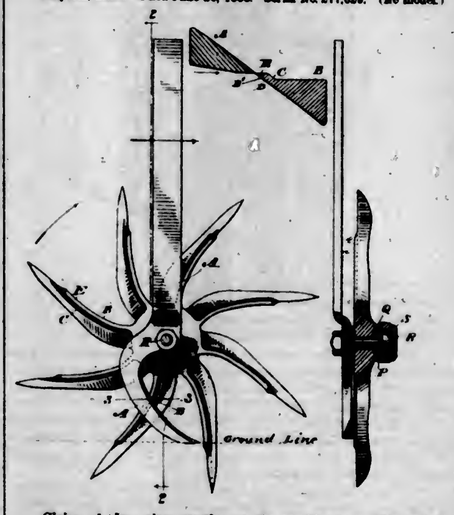
10. In combination with the fork-bearing 3, the cup-shaped frame-support 24, attached thereto and passing around and inclosing clutch-drum 11 and supporting one end of tie-rod 26, whereby the same becomes both part of the supporting-frame and an inclosing dust cap or guard, substantially as described.

11. The combination, in the inclosing cup-shaped frame-piece 24, of the bevel-gear 21, attached to shaft 19, centrally located in said cup, and the pinions 30 30, mounted upon studs 28, one or both of which studs are arranged to be inserted radially through the outer wall of said cup from the outside, whereby the said pinions are enabled to be mounted on said studs after gear 21 is introduced into place in said cup-shaped support, substantially as described.

12. The combination of the wheel-hub having the spoke-flange 5 around it and supported by a shoulder of the tube upon its inside face, and also having the extension 4, the ball-bearing sleeve 7, taking a bearing against said spoke-flange, and the collar 6, screwed onto said extension and bearing against and clamping sleeve 7 against flange 5, substantially as described.

13. In a velocipede having the large wheel forward of the small one, and a seat for the rider over the same, the combination of the wheel-hub, clutch-drums arranged to simultaneously lock themselves to the hub when the latter turns backward, and the shaft 19, and reversing-gears connecting said drums positively together and preventing them from simultaneously turning backward, substantially as described.

388,428. ATTACHMENT FOR PLOWS. Charles W. McCormick, Emporia, Kans. Filed June 30, 1888. Serial No. 277,699. (No model.)



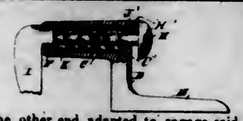
Claim.—1. In a plow attachment, the combination, with a colter having a shear-blade, of a walking wheel provided with earth-penetrating points arranged on lines forward of the axis of the wheel, so as to penetrate the earth substantially in a direct line, as set forth.

2. A walking wheel for a plow attachment, having its arms provided with a ledge or shear part, B, having parallel sides, substantially as set forth.

388,429. TRACE-FASTENER. Charles H. McDonald, Springfield, Ohio, assignor of one-half to William A. Hance, same place. Filed Apr. 28, 1888. Serial No. 271,703. (No model.)

Claim.—1. In a trace-fastener, the combination, with a barre having a standard and a foot-piece open at one end and provided with a hole and a notch at the other end, the hole being smaller than the interior of the barrel, of a bolt slidingly and rotatably fitted within the barrel, having a head at the one end of the barrel which slides therein

388,429.



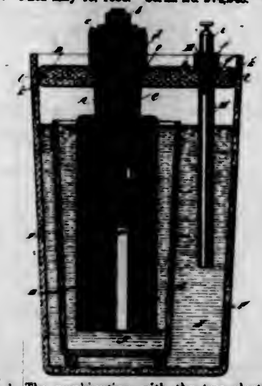
and an arm at the other end adapted to engage said notch, and a spiral spring within the barrel and around the bolt and arranged to force the bolt longitudinally.

2. In a trace-fastener, the combination, with a barrel having one end thereof notched and provided with an interior shoulder, and the other end open, of a bolt slidingly and rotatably mounted in said barrel and having an arm at one end and a shoulder near said end, and a head at the other end which engages said notch, and a spring which forces the bolt longitudinally by pressing against the shoulder of the bolt and the shoulder in the barrel.

3. In a trace-fastener, the combination, with a barrel open at one end and provided at the other end with a hole and a notch, the hole being smaller than the interior of the barrel, of a bolt slidingly and rotatably mounted in said barrel and provided at one end with an arm adapted to engage said notch and at the other end with a head having a projection, whereby the bolt may be moved longitudinally and rotated by manipulating the head and its projection, and a spiral spring within the barrel and around the bolt and arranged to force the bolt longitudinally.

4. In a trace-fastener, the combination, with a barrel having a standard and a foot-piece open at one end and provided with a hole and a notch at the other end, the hole being smaller than the interior of the barrel, of a bolt bent at one end to form an arch and provided at the other with a head which occupies the bent end of said barrel, and a spiral spring arranged within the barrel and around the bolt and adapted to urge the bolt longitudinally.

388,430. GALVANIC BATTERY. Abraham V. Middleton, New York, N. Y. Filed May 18, 1888. Serial No. 274,242. (No model.)



Claim.—1. The combination, with the two electrodes, of two electrolytes for said electrodes, composed, respectively, of sulphate of mercury in dilute sulphuric acid and nitrate of mercury in dilute nitric acid, substantially as described.

2. The combination, with the two electrodes separated by a porous wall, of two electrolytes for said electrodes, composed, respectively, of sulphate of mercury in dilute sulphuric acid and nitrate of mercury in dilute nitric acid, substantially as described.

3. The combination, with a carbon electrode and a zinc electrode, of two electrolytes for said electrodes, composed, respectively, of sulphate of mercury in dilute sulphuric acid and nitrate of mercury in dilute nitric acid, substantially as described.

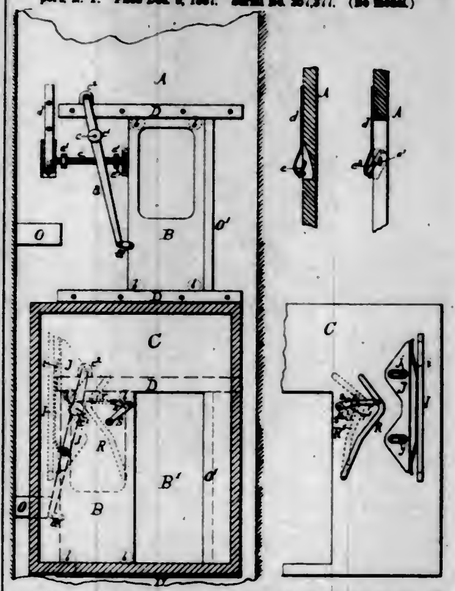
4. The combination, with the electrode B, having a flaring recess in its upper end, of the tapering conducting-plug A, entering said recess and secured therein, substantially as described.

5. The combination, with the electrode B, having a flaring recess in its upper end, of the tapering conducting-plug A, entering said recess, and the vertical rod C, passing through and securing the two together, substantially as described.

6. The combination, with the electrode B, having a flaring recess in its upper end, of the conducting-plug A, entering said recess, the disk *c*, located at the upper end of the plug A, and the rod C, passing through and securing the three together, substantially as described.

7. The combination, with the electrode E, of the cap *f*, of insulating material, seated in a recess formed in the upper side of the cover D and covering the upper end of the electrode, and the rod H, passing through the cap and secured to the electrode, substantially as described.

388,431. AUTOMATIC ELEVATOR-GATE. Aaron Miller, Brockport, N. Y. Filed Dec. 9, 1887. Serial No. 257,377. (No model.)



Claim.—1. In combination, the door, the cab, two separate and distinct cams located thereon, a lever articulating upon a fixed pin in or attached to the side of the elevator-casing and arranged to be actuated by such cams and to operate the door, such cams so formed and positioned on such cab and in relation to such lever that one of them shall serve only to open the doors and the other to close the doors, and means for causing either one of such cams to assume an operative position or not, as desired, and that, too, from the inside of the cab and without disturbing the other cam.

2. In combination, the door, the cab, two separate and distinct cams located thereon, a lever articulating upon a fixed pin in or attached to the side of the elevator-casing and arranged to be actuated by such cams and to operate the door, one of such cams consisting in a yielding or spring cam so formed and positioned on such cab and also in relation to the lever engaged thereby that such door shall be closed only thereby as the cab leaves the floor on which such door is located, such cam yielding so as to cushion the force with which such door is closed, the other one of such cams consisting in a pivotal cam located on the outside of the cab, and means for swinging or operating such pivotal cam from the inside of the car or cab, so that such pivotal cam may be caused to engage such lever or not, as may be desired, and such pivotal cam so formed and arranged, as shown and described, on such cab, and also in relation to such lever, that such door may be opened only by such cam or not, as may be desired.

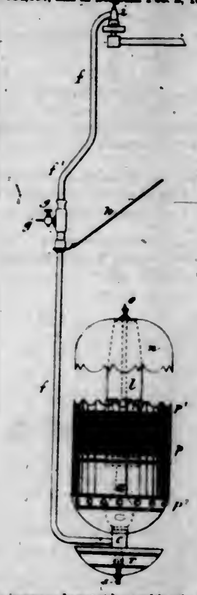
3. In combination, the door, the cab, a yielding or spring cam, and a lever, such cam located on such cab and arranged to operate such lever and to yield or give somewhat under the pressure produced by such lever thereon, such lever articulating upon a fixed point in or attached to the side of the elevator-casing, such lever arranged to operate such door and to receive at its fulcrum the vertical thrust of such cam.

4. In combination, the door, the cab, a pivotal cam, and a lever, such cam located on such cab and arranged to operate such lever, such lever articulating upon a fixed stud in or attached to the side of the elevator-casing, such lever arranged to operate such door and to receive at its fulcrum the vertical thrust of such cam, and means for swinging or operating such pivotal cam from the inside of the car or cab, so that such pivotal cam may be caused to engage such lever or not, as may be desired.

5. In combination, the door, the cab, a yielding or spring cam, and a lever, such cam located on such cab and arranged to operate such lever and to yield or give somewhat under the pressure produced by such lever thereon, such lever articulating upon a fixed stud in or attached to the side of the elevator-casing, such lever arranged to operate such door and to receive at its fulcrum the vertical thrust of such cam, such yielding or spring cam provided with bearing-surfaces extending over the entire course traversed by the stud on such lever engaged thereby, so that such lever shall be engaged by such cam in any position that such door may occupy, whereby the level of the floor onto which such door opens can neither be approached nor left without closing such door.

6. In combination, the door, the cab, a cam thereon, and a spring-actuated swinging latch passing by and bearing against the edge of such door in locking the same.

388,432. PORTABLE COMBINATION GAS HEATING, COOKING, AND VAPORIZING APPARATUS. Herbert P. Miller, London, County of Middlesex, England. Filed Jan. 17, 1888. Serial No. 261,012. (No model.) Patented in England Aug. 8, 1888, No. 9,264; in France June 8, 1887, No. 184,697, and in Belgium Feb. 2, 1888, No. 80,492.



Claim.—An improved portable combination gas heating, cooking, and vaporizing apparatus, consisting of atmospheric burner *a*, with spindle *k*, threaded collar *b*, nipple *b'*, plain collar *c*, tail-piece *d*, screw-spindle *e*, supply-pipe *f*, tap *g*, jet *g'*, screen-plate *h*, nozzle *i*, socket-rod, *k'*, with base-plate k^2, terra-cotta tube *l*, cap-plate *m*, dome *n*, nut *o*, cage *p*, crown or rim *p'*, tripod base *q*, and vaporizer *r*, with screw-pin *s*, all respectively constructed, combined, arranged, and fitted substantially in the manner and for the purposes hereinbefore described and shown.

388,433. FISHING-ROD HOLDER. Absolom F. Meisselbach and William Meisselbach, Newark, N. J. Filed May 5, 1888. Serial No. 273,003. (No model.)

Claim.—1. In a fishing-rod holder, the combination, with the standard provided with a fastening device at its lower end and a ball at its upper end formed integral therewith, of a carrier provided with arms for supporting the fishing-rod, and a split socket at the junction of such arms, one half of the said socket being formed integral with the carrier, and the other half consisting of a removable cap secured thereto by means of ears *r* upon both halves of the split socket, and screws *b'* and b^3, substantially as shown and described.

2. In a fishing-rod holder, the combination, with a standard forked at its lower end and provided with a seat, *o*, of a clamp-yoke pivoted thereto and provided with a clamp-screw, as and for the purpose set forth.

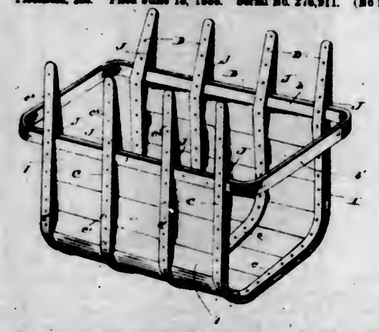
3. In a fishing-rod holder, the combination, with the standard *c*, forked at its lower end and having seats *o o'* thereon, of the clamp-yoke *e*, pivoted thereto and provided with the clamp-screw *e'*, substantially as and for the purpose set forth.

4. In a fishing-rod holder, the combination, with the carrier having arms a a^2, provided, respectively, with forks a' a^3, of a standard connected to such carrier by means of a ball-and-socket joint constructed as described, and a fastening device upon the base of the standard, as and for the purpose set forth.

5. In a fishing-rod holder, the combination, with the carrier having arms a a^2, provided, respectively, with forks a' a^3, having a covering, a^4, as described, of a standard connected to such carrier by means of a ball-and-socket joint constructed as described, and a fastening device upon the base of the standard, as and for the purpose set forth.

6. In a fishing-rod holder, the combination, with the carrier having arms a a^2, provided, respectively, with forks a' a^3, of a leaf-spring, *s*, pivoted at one end upon the fork a^3, and having a fork, *s'*, secured to its other end, as and for the purpose set forth.

388,434. WOOD RACK AND CARRIER. William H. Moody, Pittsfield, Me. Filed June 13, 1888. Serial No. 276,911. (No model.)



Claim.—1. A wood rack and carrier composed of the horizontal bar B, forming handles *b'* at the ends, the transverse bars connecting the side rails of the frame B, and strips I, secured to the transverse bars, forming the bottom and sides of the device, substantially as described.

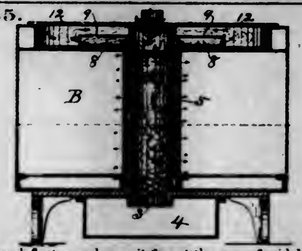
2. A wood rack and carrier composed of the horizontal frame B, having the integral handles *b'* thereon, the transverse equidistant bars C, secured to and having the projections D above the said frame, and the strips I, secured to said transverse bars and forming a bottom to the device, and sides thereto up to the frame B, substantially as specified.

3. The herein-described wood rack and carrier composed of the horizontal frame B, having the integral handles *b'*, the inner and outer transverse bars C, having the upstanding ends D, and the wooden strips I, secured between the said transverse bars, substantially as specified.

388,435. CHARCOAL-BURNING COOKING-STOVE. Charles Mosher, Syracuse, N. Y. Filed Aug. 4, 1887. Serial No. 246,099. (No model.)

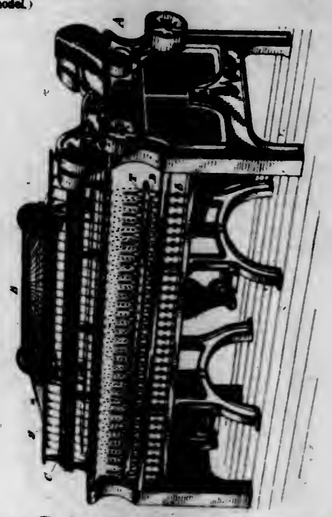
Claim.—The combination, in a stove, of an oven provided with an oval fire-pot passing vertically through the center thereof and formed tapering at its upper portion and provided at its lower portion with a suitable grate and an ash-pan below said grate, an oval perforated wall surrounding the fire-pot and extending upward the height of the oven and sufficiently separated from the fire-pot to form a radiating-chamber, a convex deflector-cover situated at the top of the fire-pot, horizontally-mounted deflecting flues arranged at opposite sides of the fire-pot and connecting therewith a short distance be-

388,435.



low the convex deflector, and an exit-flue at the rear of said deflector-cover, all constructed and operating substantially as described.

388,436. ART OF PREPARING YARN FOR FILLING, &c. Roscius C. Newell, Palmer, Mass. Filed June 24, 1886. Serial No. 206,175. (No model.)



Claim.—1. The improvement in the art of preparing yarn for filling or other purposes, which consists in winding the yarn from beams onto shuttle-bobbins while simultaneously therewith increasing or diminishing the twist therein, substantially as described.

2. The improvement in the art of preparing yarn for filling or other purposes, which consists in winding the yarn upon beams and re-winding it therefrom upon bobbins while simultaneously therewith increasing or diminishing the twist therein to regulate the amount of said twist, substantially as described.

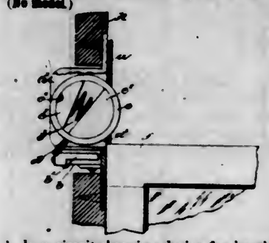
388,437. HAND-STAMP. Henry H. Norrington, West Bay City, Mich. Filed June 29, 1887. Serial No. 242,924. (No model.)



Claim.—1. In an organized hand-stamp, the combination of the case, the printing-base attached thereto having central opening, the yoke passing over said case, the handle and spring for operating said yoke, and the spool located in said case on the revolving shaft, said shaft journaled in the vertical end portion of said yoke and having a thumb-wheel at one end, the spool having mounted on its periphery a series of printing characters and an interposed series of reading characters, the spool adapted to be plunged into and withdrawn from the opening in the printing-base, as and for the purposes specified.

2. In combination with the case having the opening D', the detachable base having the opening D, the yoke encircling the case, the spool located in said case on the shaft *f*, said shaft journaled in the depending ends of said yoke, the printing and reading characters mounted alternately on the periphery of the spool, the handle and coiled spring for lowering and raising the spool within the case, substantially as specified.

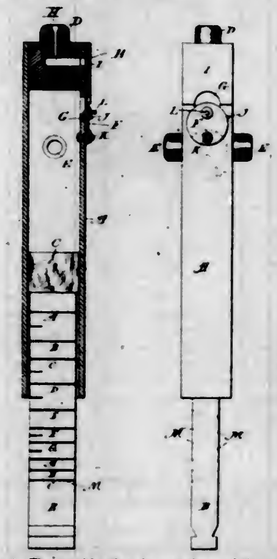
388,438. CIRCUIT-CHANGING DEVICE FOR BURGLAR-ALARMS. Frank H. Nutter, Malden, Mass. Filed June 20, 1888. Serial No. 278,174. (No model.)



Claim.—1. In a circuit-changing device for burglar-alarms, the fixed contact-spring and its support, combined with the open ring or ferrule, having within it two independently-movable spring-controlled blocks, c' c^2, and the pin c^4, upon which the said ring or ferrule moves, substantially as described.

2. The ring or ferrule c and the blocks c' and c^2, placed therein and normally held separated by the spring c^3, combined with the pin c^4, upon which the ring or ferrule moves eccentrically on the main frame, substantially as described.

388,439. CUCKOO. George R. Olney, St. Louis, Mo. Filed Mar. 24, 1887. Serial No. 232,813. (Model.)



Claim.—1. The combination, in a cuckoo, of the mouth-piece D, having the air-passage H, the air-exit G, and the pivoted cap F, substantially as described.

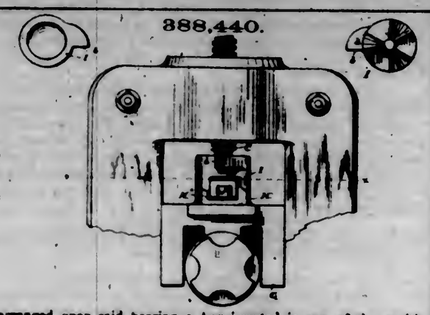
2. In a cuckoo, the main air-chamber having, in addition to the mouth-piece D, the air-passage H, and the main air-exit G, the major third and the minor-third openings E E, substantially as and for the purpose described.

3. The combination, in a cuckoo, of the mouth-piece having the air-passage H, the main air-exit G, capable of being enlarged and diminished, and the major-third and minor-third openings, substantially as described.

388,440. PROTECTING DEVICE FOR ROLLING-MILLS. James Paton, Cleveland, Ohio. Filed June 20, 1888. Serial No. 278,427. (No model.)

Claim.—1. In combination with a set of rolls, the face of the upper bearing provided with cams, a cap with corresponding cams

388,440.



arranged upon said bearing, a key inserted in one of the cavities formed by the notches thereof, and means for holding said key, with the cams bearing one upon the other and subjected to the action of the screw in the housing, substantially as and for the purpose set forth.

2. In combination with a set of rolls, the bearing G, provided with cams, the cap I, having corresponding cams, of the loop L, supported by said bearing and surrounding the cams thereof, the key J, guided in said loop, the wedge M and set-screw N, for retaining said key within the cavities formed by said cams, substantially as and for the purpose set forth.

3. The loop L, terminating in a sleeve having a horizontal slot extending through said sleeve for the displacement of a wedge, M, said wedge acting upon the key J and the set-screw N upon the wedge, in combination with the cap I, interposed between the bearing G and the screw C, substantially as described, and for the purpose specified.

388,441. VEHICLE-SEAT. John M. Perkins, South Bend, Ind. Filed Nov. 9, 1887. Serial No. 254,697. (No model.)

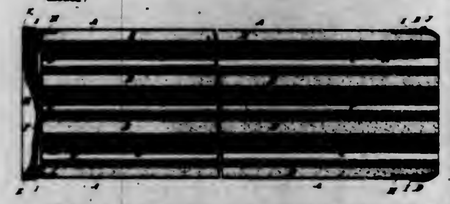


Claim.—1. In a vehicle-seat, a base provided with a double groove composed of an inclined groove to receive the back and a groove back of the former one to receive a fillet, substantially as described.

2. In a vehicle-seat, in combination with the back, the base provided with the inclined groove to receive the back, and a slot above said groove to receive a filling, whereby the access of dirt or moisture to the lower groove is prevented, substantially as described.

3. In a vehicle-seat, in combination with the back made of any suitable material, the base of the seat-frame provided with an inclined groove, C, to receive the back, a deeper inclined groove, D, set back of the groove C, to receive a fillet, said fillet, and suitable means for securing said fillet in place against the back, and a slot above the inclined groove C, to also receive a fillet, substantially as described.

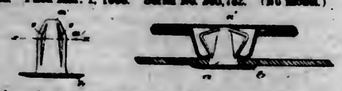
388,442. UNDERGROUND ELECTRIC CONDUIT. Edward H. Phipps, New Haven, Conn. Filed Apr. 4, 1888. Serial No. 269,609. (No model.)



Claim.—1. A combined ring and perforated diaphragm for the ends of multitubular conduit-sections, the ring and diaphragm being made in one piece and, the ring having a sleeve, a hollow shoulder, and one member of a universal joint, and the diaphragm having perforations and being located within and between the two ends of the ring, substantially as set forth.

2. A conduit-section having a metal shell, a cement or composition filling therefor provided with two or more parallel passages and two rigid metallic rings respectively located in opposite ends of the shell and adapted to form the opposite members of a universal joint, one of such rings having a diaphragm made integral with it and adapted to inclose the end of the section, and having openings respectively arranged in alignment with the passages of the filling, substantially as set forth.

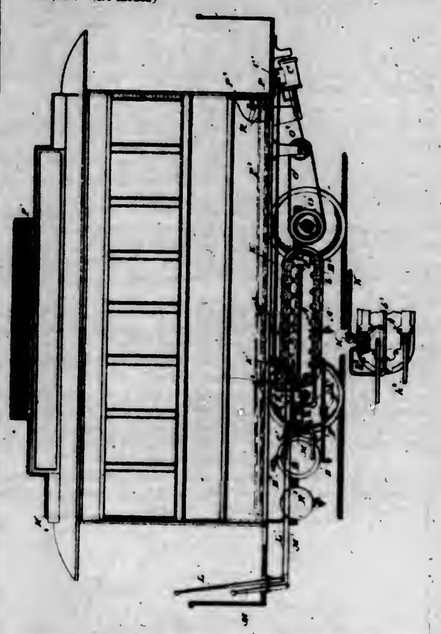
388,443. BUTTON-FASTENER. Clark M. Platt, Waterbury, Conn. Filed Mar. 1, 1888. Serial No. 265,782. (No model.)



Claim.—1. A rivet having a head and a shank having variably-reduced grooves extended longitudinally for a portion of the distance between its head and its entering end or point, as and for the purpose described.

2. A tubular rivet having a head and shank grooved longitudinally part way between its head and its entering end or point to weaken it, substantially as described.

388,444. PROPELLING AND HEATING STREET-CARS. William B. Prall, Washington, D. C., assignor to the National Tramway Motor Company, New York, N. Y. Filed Mar. 31, 1888. Serial No. 269,087. (No model.)



Claim.—1. In an apparatus for propelling street-cars, the combination of a superheated-water tank, a heat-storage tank provided with evaporating and expanding tubes surrounding the same, and said pipes provided with valves connecting the superheated-water tank with said tubes, substantially as shown and described.

2. The combination, with a superheated-water tank, a heat-storage tank provided with evaporating-tubes surrounding the same, and an evaporating tube or coil within the same, of pipes provided with controlling cocks or valves forming communications between the superheated-water tank and the said tubes, substantially as shown and described.

3. The combination of the superheated-water tanks, the heat-storage tank, the evaporating-tubes, the pipes connecting the superheated-water tank and the evaporating-tubes, and the back-pressure pipe provided with the back-acting valve F, substantially as shown and described.

4. The combination of the superheated-water tank and the heat-storage tank provided with evaporating-tubes, said tanks being connected by means of pipes communicating with the upper and lower portion of the water-tank, said pipes being controlled by a valve or valves in such a manner as to cause the flow of either superheated water from the bottom or saturated steam from the top of the superheated-water tank into the evaporating-tubes.

5. The combination of the superheated-water tank and the heat-storage tank provided with evaporating-tubes, pipes connecting the water-tank with the evaporating-tubes, pipes connecting the evaporating-tubes with the engine, and valves controlling said pipes operated by one common lever in such a manner as to admit water or steam to the evaporating-tubes at the same time that steam is admitted from the tubes to the engine, and to shut off the supply of water or steam to the evaporating-tubes simultaneously with cutting off the supply of steam to the engine.

6. The combination, with the superheated-water tank, the heat-storage tank provided with the evaporating-tubes within and around the same, and pipes connecting the water-tank with the evaporating-tubes, of a three-way valve placed in said pipes, so arranged that the water or steam from the superheated-water tank may be admitted either through the evaporating-pipe within the storage-tank or be shut off therefrom and caused to enter the evaporating-tubes around the storage-tank, substantially as shown and described.

7. The combination of the superheated-water tank, the heat-storage tank provided with evaporating-tubes, the pipes connecting the water-tank with the evaporating-tubes, the engine, and a condenser connected with the exhaust of the engine, substantially as shown and described.

8. The combination of the superheated-water tank, the storage-tank provided with the evaporating-tubes, pipes connecting the water-tank with the evaporating-tubes, the engine, the condenser, the radiating pipes or coils within the car, and pipes connecting the condenser, the radiating-coils, and the exhaust of the engine, substantially as shown and described.

9. A heat-storage tank provided with evaporating-tubes on the outside thereof, said tubes being covered with non-heat-conducting material, substantially as shown and described.

10. A heat-storage tank provided with evaporating-tubes within and outside of the same and non-heat-conducting material over the other tubes, substantially as shown and described.

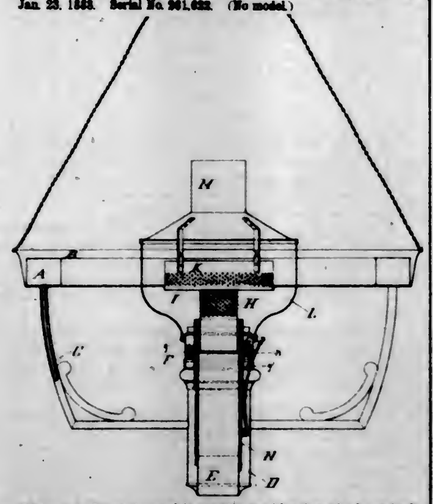
11. A heat-storage tank provided with an evaporating-chamber, b^3, evaporating-tubes b, and non-heat-conducting material on the outside of said tubes, substantially as shown and described.

12. A heat-storage tank provided with an evaporating-chamber, b^3, and evaporating-tubes b and b^2, substantially as shown and described.

13. The combination of the tank B, the tank A, provided with the evaporating-tubes, the pipes connecting tank B with said tubes, the three-way valves H and H', and the steam-valves K', the said valves H and K' being operated together, and the pressure-reducing valve h', substantially as shown and described.

14. The combination of the tanks B and A, the tank A being provided with evaporating-tubes, the pipes c and c', connecting the tank B with said tubes, provided with valves H, H', and h', and the pipe F, provided with valve F', substantially as shown and described.

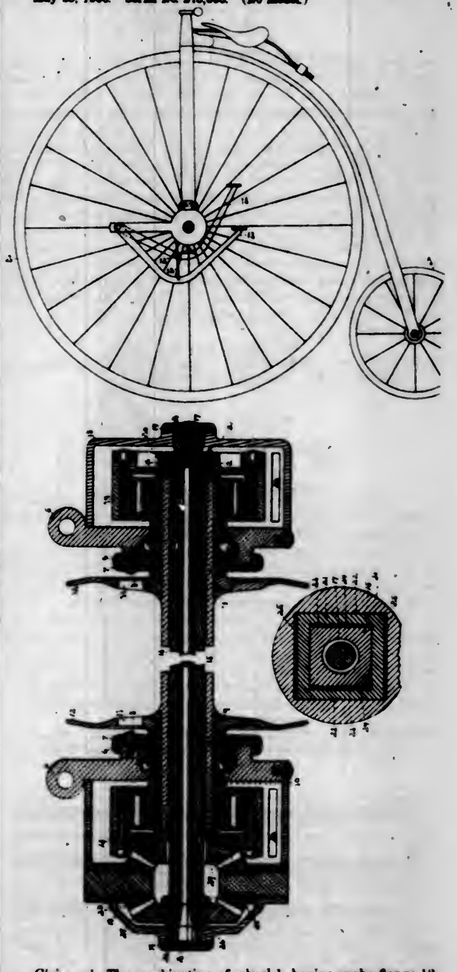
388,445. CENTRAL-DRAFT LAMP. Frank Reino, Meriden, Conn., assignor of one-half to Edward Miller & Company, same place. Filed Jan. 23, 1883. Serial No. 361,632. (No model.)



Claim.—1. In an Argand lamp, the combination of a lamp-body, an annular opening or collar in the top of said lamp-body, a detachable burner portion adapted to engage in said opening, a notch or recess in the periphery of said detachable portion, and a wick-adjusting draw-bar or handle adapted to move in said notch or recess, substantially as described.

2. In an Argand lamp, the combination of a lamp-body, a central air-supply tube passing through said lamp-body, an annular opening or collar in the top of said lamp-body, a detachable burner portion adapted to engage in said annular opening, a notch or recess in the periphery of said detachable portion, a wick-adjusting sleeve surrounding said central air-supply tube, and a draw-bar or handle attached to said sleeve and adapted to move in said notch or recess, substantially as described.

388,446. VELOCIPEDE. David H. Rice, Brookline, Mass. Filed May 25, 1883. Serial No. 375,060. (No model.)



Claim.—1. The combination of wheel 1, having spoke-flange 12, with an opening, 11, through the same, and the ball-bearing on which it runs, having the part thereof on one side of the balls formed of two rings or collars embracing the balls, and secured to each other by screws 8 on the side next to said spoke-flange and in position to be brought opposite the opening therein, substantially as described.

2. The combination of the wheel-hub having extensions 9 9, and supported by bearings thereon in the machine-frame, the clutch-drums supported and revolving upon said extensions, the shaft 15, passing through the wheel-hub, supported upon a running-bearing independently of the latter, and provided with mechanism connecting it with one clutch-drum and reversing its motion with relation thereto, and

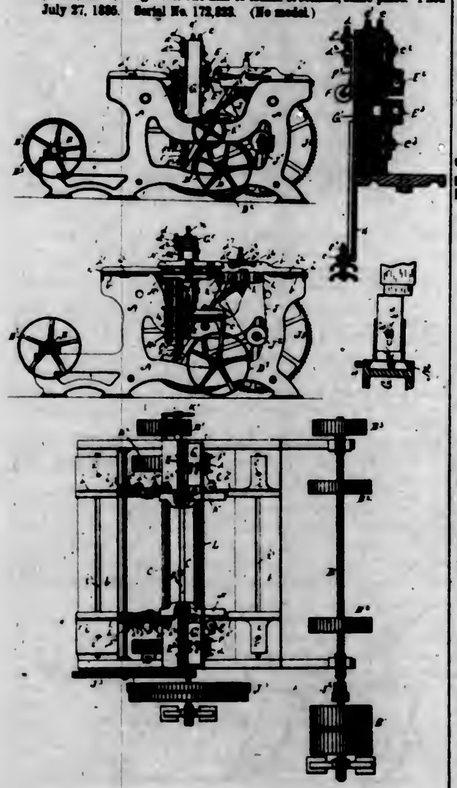
a universal joint connecting said shaft to the other clutch-drum, arranged to allow said shaft to adapt itself to the variations between its running-bearing and that of the drum while being driven by the latter, substantially as described.

3. The combination of the drum 14, having the axial hole through the same provided with two opposite flat parallel faces, the sleeve 21, provided with corresponding exterior flat parallel faces, 22, fitting against the same and free to move laterally parallel thereto in the hub of the drum, and also provided with two internal flat parallel faces substantially at right angles to said external ones, and the shaft 15, provided with two flat parallel external faces fitted against the said internal ones of the hub and free to move laterally parallel thereto in the sleeve, the whole forming a universal-joint mechanism arranged to drive the shaft by the drum, or vice versa, substantially as described.

4. The combination of the wheel-hub having extensions 9 9, and supported by bearings thereon in the machine-frame, the clutch-drums supported and revolving entirely upon said extensions, the shaft 15, passing through the wheel-hub, supported upon a running-bearing independently of the latter and connected to one clutch-drum and revolving therewith, the gear-wheel 27, attached to the other end of said shaft, the gear-wheel 29, attached to the other clutch-drum and carried by it, and the pinion 28, connecting said gear-wheels and having its axis placed vertically in the machine-frame, whereby the gear 29 is free to adjust itself thereto, substantially as described.

5. The combination of the wheel-hub having extensions 9 9, and supported by bearings thereon in the machine-frame, the clutch-drums supported and revolving entirely upon said extensions, the shaft 15, passing through the wheel-hub, supported upon a running-bearing independently of the latter and connected to one clutch-drum and revolving therewith, the gear-wheel 27, attached to the other end of said shaft, the gear-wheel 29, attached to the other clutch-drum and carried by it, and the two pinions 28 28, connecting said gear-wheels and having their axes placed vertically in the machine-frame, whereby the gear 29 is free to adjust itself thereto, substantially as described.

388,447. BLIND-FINISHING MACHINE. Lewis Rivers, Worcester, Mass., assignor of one-half to Adam Cruikshank, same place. Filed July 27, 1886. Serial No. 172,223. (No model.)



Claim.—1. The combination, with the movable heads G, carrying a series of revolving cutters, and an endless chain by which the work is fed to said cutters, said chain being moved in a fixed way, of the side guides, j' and j'', attached to plates i, said plates i being laterally adjustable to correspond with the position of said movable heads, substantially as described.

2. The combination, with the movable heads G, carrying a series of revolving cutters, and an endless chain moved in a fixed way between said heads, of the side guides, $j'j''$, laterally adjustable to correspond with the position of the movable heads, side friction-rolls, j^3, journaled in arms j^4, top friction-rolls, j^5, journaled in arms j^6, said arms j^4 j^6 being attached to the side guides, as described.

3. The combination of a fixed chainway, an endless chain moving in said way, by which the work is fed, a series of revolving cutters supported by a pair of movable heads, and a pair of movable heads laterally adjustable with reference to said fixed chainway, substantially as described.

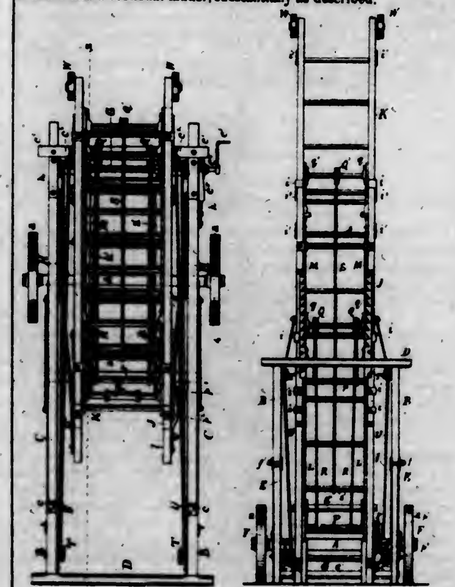
4. The combination of a fixed chainway and an endless chain moving in said way, by which the work is fed, a series of revolving cutters supported by a pair of movable heads, a pair of movable heads laterally adjustable with reference to said chainway, and an actuating-screw provided with a right and left hand screw-thread, whereby the movable heads are conjointly adjusted, substantially as described.

5. The combination, with a pair of horizontal cutters, of the plates M', sliding vertically in ways, the upper and lower pressure-bars, N and N', attached to said sliding plates, and the adjusting-screws n and n', substantially as described.

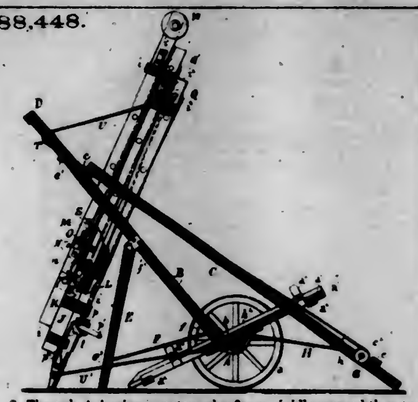
6. The combination, with a pair of movable heads, G, each carrying revolving cutters and each laterally adjustable, of a graduated brace-rod, m, as and for the purpose described.

388,448. EXTENSION FIRE-LADDER. Thomas W. Russell, Union Bridge, Md. Filed Nov. 19, 1887. Serial No. 255,670. (No model.)

Claim.—1. The axle A, having a rectangular frame rigidly secured thereto, said frame having a rabbet formed on its side pieces and being provided with posts secured to said pieces, combined with the beams B and C and a sectional ladder, substantially as described.



388,448.



2. The axle A, having a rectangular frame rigidly secured thereto, said frame having a rabbet formed on its side pieces and being provided with posts secured to said pieces, combined with the beams B and C, braces E, rods F and H, and a sectional ladder, substantially as described.

3. The beams C C, having the shaft G mounted in suitable bearings thereon and provided with a ratchet-and-pawl mechanism, the beams B B, provided with pulleys at their free ends, the braces E, rods F and H, and the axle A, combined with a sectional ladder and ropes attached to the upper ends of the stiles of one of the sections and leading over the said pulleys to the shaft G, to be wound thereon substantially as set forth.

4. The ladder-sections I J K, having the guides *i*, and a system of ropes and pulleys operated by a revolving shaft having a ratchet-and-pawl mechanism for extending said ladder-section, combined with a truck, rods connecting the foot of the section I with the axle of said truck, beams B and C, suitably connected and braced to said truck, and ropes leading from the top of the section I over pulleys at the upper end of the beams B to a shaft mounted in the beams C near their lower ends, substantially as and for the purpose specified.

5. The ladder-sections I J K, having the guides *i* and stops *i'*, and a system of ropes and pulleys for operating said sections, the sections I and J being also provided with ratchet-plates L and M, combined with the spring-pawls N, mounted on the stiles of the sections J K and adapted to engage with the teeth of said ratchet-plates, and a catch consisting of a spring-actuated hook, substantially as described, for holding the pawl out of engagement with the ratchet-teeth, as specified.

388,449. METALLIC LATHING. Benjamin Scarlis, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed June 2, 1887. Serial No. 240,040. (No model.)

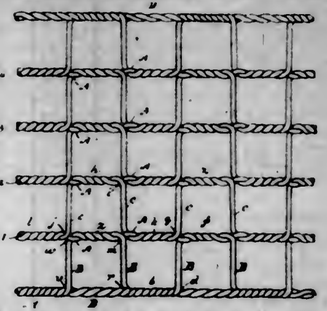


Claim.—1. As a new article of manufacture, a metallic lathing having a body composed of wire-cloth and provided at intervals with furrings formed integral therewith and extending across the same, said furrings being closed or nearly closed on the side adjoining the body of the cloth, substantially as described.

2. As a new article of manufacture, a metallic lathing having a body composed of wire-cloth A of lateral and longitudinal strands and provided at intervals with furrings B, formed integral therewith and extending laterally across the same, said furrings being closed or nearly closed on the face of the cloth, in combination with small staples *s*, embracing a lateral strand at the extreme rear of the furring and extending into the wall, substantially as described.

3. As a new article of manufacture, a metallic lathing having a body composed of wire-cloth A of lateral and longitudinal strands and provided at intervals with furrings B, formed integral therewith and extending laterally across the same, said furrings being closed or nearly closed on the face of the cloth, in combination with small staples *s*, embracing a lateral strand at the extreme rear of the furring and extending into the wall, and a larger staple, *m*, embracing a number of lateral strands in the body of the cloth and furring and also extending into the wall, substantially as described.

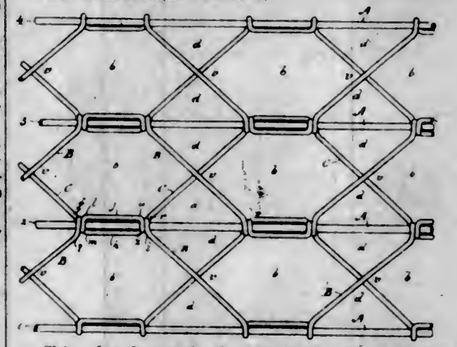
388,450. WIRE FENCE. Benjamin Scarlis, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Aug. 24, 1887. Serial No. 247,702. (No model.)



Claim.—1. In a fence of the character described, the combination of the body-wire A and filling-wires B C, said body-wire being alternately twisted with said filling-wires to form the connecting-joints *e k f*, substantially as described.

2. The improved fence herein described, the same consisting of the body-wires A, filling-wires B C, and selvage-wires D, the body-wires being alternately twisted with the filling-wires B C to form the joints *e k f*, and the exterior filling-wires, B, along each edge of the fabric, with the selvage D to form the joints *t b*, the whole being combined and arranged substantially as described.

388,451. WIRE FENCE. Benjamin Scarlis, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Aug. 27, 1887. Serial No. 248,096. (No model.)



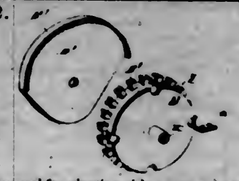
Claim.—In a fence of the character described, the combination of the body-wire 2 and filling-wires B C, the wire B being coiled around said body-wire, as shown at *i i*, and provided with the loop A between its said coils, and the wire C coiled around said body-wire, as shown at *l u*, and provided with the loop *j* between its said coils, the coils *i i* of the wire B and the coils *l u* of the wire C respectively engaging each other in addition to passing around the body-wire, substantially as described.

388,452. COMBINED CORN AND COTTON PLANTER. James D. Schofield, Rodgers, Tex., assignor to James P. Reed, same place. Filed Mar. 29, 1888. Serial No. 268,818. (No model.)

Claim.—1. The combination, in a planter, of the hopper, the seed-wheel extending into the bottom of the hopper and having the peripheral seed cups or depressions and the peripheral projecting teeth, means, substantially as set forth, to rotate the said seed-wheel, and the plate D', having the curved flange E', adapted to cover or uncover the peripheral teeth on the upper side of the seed-wheel, whereby the



388,452.



machine may be used for planting either corn or cotton, substantially as described.

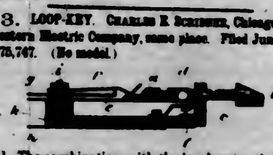
2. The combination, in a planter, of a hopper, the revolving shaft K' therein, having the stirring-arms L', the revolving shaft X, arranged under the bottom of the hopper, the seed-wheel secured to said shaft, having the seed cups or depressions and the peripheral projecting teeth, the upper side of said seed-wheel extending through an opening in the bottom of the hopper, and the cut-off plate D', having the flange E', adapted to cover or uncover the peripheral teeth of the seed-wheel, for the purpose set forth, substantially as described.

3. The combination, in planter, of the hopper, the revolving seed-wheel extending into the bottom of the same and having the peripheral seed cups or depressions and the peripheral projecting teeth, and the plate D' on the axis of the seed-wheel and having the curved segmental flange E', extending over the seed-wheel, substantially as described.

4. The combination, in a planter, of the standard P, the boot inclosing the lower end of said standard and having the slots T, the bolt extending through the said standard engaging the said slots and having the clamping-nuts to secure the boot at any desired vertical adjustment on the standard, said boot having the furrow-opener, substantially as described.

5. The combination, in a planter, of a hopper having the bottom provided with the lower flat portion, N, and the curved portion O, and provided with the bottom opening, C, the shaft K', revolving in the hopper over the flat portion thereof and having the radial stirring-arms, the revolving shaft X, having the seed-wheel provided with the peripheral seed cups or depressions and with the peripheral teeth, said seed-wheel having its upper side extending through the opening C, and the plate D', having the curved flange E', adapted to cover or uncover the peripheral teeth of the upper side of the seed-wheel, substantially as described.

388,453. LOOP-KEY. Charles R. Scribner, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 1, 1888. Serial No. 275,747. (No model.)



Claim.—1. The combination, with the insulated spring or contact piece *c*, rigidly mounted at one end, of contacts *h* and *l* on opposite sides of one end or portion of said spring *c*, a guide, *d*, mounted upon said spring *c* and serving to support wedge *a* and its handle *b*, said handle extending through an opening in the facing *e*, said opening being somewhat larger than the shank of the handle, whereby on depressing said handle the spring *c* is separated from contact *h* and closed upon contact *l*, substantially as described.

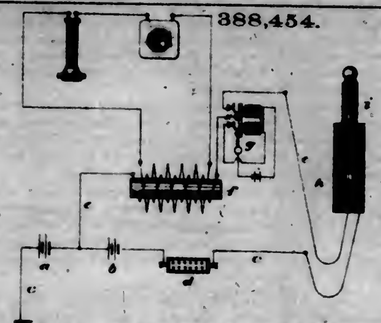
2. The combination, with the handle *b*, of the wedge of insulating material *a*, carried thereby, said handle being mounted upon spring *c* in the guide *d*, and the spring *f*, adjusted to close upon its contact *g*, whereby on inserting the wedge under spring *f* spring *f* may be lifted from its normal contact, while on depressing the handle the position of spring *c* with respect to its contacts may be changed, substantially as described.

3. The combination of two or more listening-in and calling keys mounted upon the same strip, each of said keys consisting of the following elements: a wedge, *a*, and a handle, *b*, mounted upon a spring, *c*, a contact, *h*, with which contact-spring *c* is normally connected, a contact-spring, *f*, adjusted to close upon its normal contact, said spring being lifted therefrom on the insertion of the wedge, and the contact-strip *l*, common to the different keys, substantially as described.

4. The facing *e*, provided with openings for the handles of several keys, said opening being larger than the handles inserted through the same, respectively, in combination with springs *c*, one for each handle, each spring *c* being provided with a guide for its said handle, and a common contact-strip, *l*, whereby on depressing any handle the spring *c* thereof will be closed upon contact-strip *l*, substantially as described.

388,454. ELECTRIC RESISTANCE-MEASURING APPARATUS. Charles R. Scribner, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 1, 1888. Serial No. 275,751. (No model.)

388,454.



Claim.—1. A resistance-measuring apparatus consisting, essentially, in a circuit including two batteries of substantially equal electro-motive force and a rheostat, a shunt-wire, including a current-indicating apparatus connected between said batteries at one end and at a point of the circuit beyond the rheostat at the other end, and a connecting device for closing said circuit with the circuit to be tested, substantially as described.

2. A resistance-measuring apparatus consisting, essentially, in the circuit *e*, including batteries *a b* and rheostat *d*, the shunt-circuit *c*, branched from point between said batteries *a b*, said branch or shunt *c* including the primary of an induction-coil, and a rheotome, a telephone included in the secondary coil of said induction-coil, and a switching device for connecting the terminals of circuits *c c* together while connection is made with the circuit to be tested, substantially as described.

388,455. METAL WHEEL. Eli Shaboneau, Toledo, Ohio. Filed Apr. 26, 1888. Serial No. 271,897. (No model.)

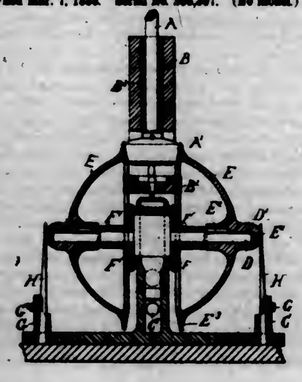


Claim.—1. In a metal wheel, a hub, a collar thereon having transverse perforations through the right-angled portion, in combination with return-spokes passed through the perforations and embracing the intermediate metal, as and for the purpose set forth.

2. In a metal wheel, a hub, a collar having an annular portion formed with an integral key or lug in parallel relation, a flange having perforations, spokes passed through the perforations, and a cap formed with grooves coincident with the keys or lugs, as and for the purpose set forth.

3. In a metal wheel, a hub, collars upon each end thereof having radial flanges formed with an annular depression, perforations through the flanges opening into the annular depression, and radial grooves from the perforations to the periphery thereof, in combination with caps secured upon the end of the collars and having radial grooves corresponding with the grooves in the flange, as and for the purpose set forth.

388,456. DRIVING DEVICE. Philip M. Sharples, West Chester, Pa. Filed Mar. 7, 1888. Serial No. 266,207. (No model.)

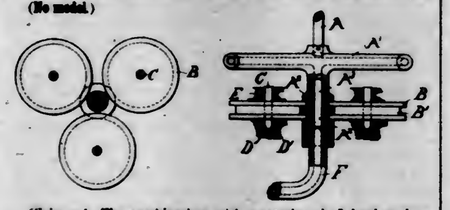


Claim.—1. The combination, with a shaft provided with a bevel-pinion, of wheels secured to separate shafts at right angles thereto and adapted to gear with said bevel-pinion at obliquely-opposite points, said shafts being out of line and adapted to be revolved in opposite directions, substantially as set forth.

2. The combination, with a shaft provided with a pinion, A', of a rotating shaft at right angles thereto, a wheel, E, feathered to the free end of said shaft and adapted to engage said pinion, and a spring, H, attached to a fixed point and in contact with the projecting hub of said wheel, substantially as and for the purpose set forth.

3. The combination, with a shaft provided with a pinion, A', of separate shafts at right angles thereto and rotated in opposite directions, wheels feathered to the outer ends of said shafts and adapted to engage said pinion, and springs attached to fixed points and adapted to press directly against the projecting hubs of said wheels, substantially as and for the purpose set forth.

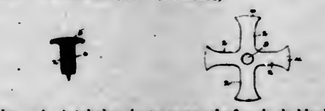
388,457. ANTI-FRICTION STEP FOR SHAFTS. Philip M. Sharples, West Chester, Pa. Filed Mar. 10, 1888. Serial No. 266,894. (No model.)



Claim.—1. The combination, with a rotating shaft having circular grooves A^1, of a disk of larger diameter than said shaft, with grooved face engaging said circular grooves, substantially as and for the purpose set forth.

2. The combination, with a rotating hollow shaft having intermediate circular groove or grooves and communicating with a fixed pipe, F, of one or more disks adapted to engage said grooves and to revolve in a plane at right angles to said shaft, substantially as set forth.

388,458. RIVET. Samuel W. Sherry, Boston, Mass. Filed Feb. 21, 1888. Serial No. 264,760. (No model.)



Claim.—1. A tubular rivet composed of a single blank having several independent adjacent upturned portions, 2, broadened upper ends, 4, the independent cap 5, and headed tack 6, substantially as described.

2. A tubular rivet strengthened by a detached independent tack or core placed loosely within it, the end of the said tack or core protruding from the bottom of the rivet, substantially as described.

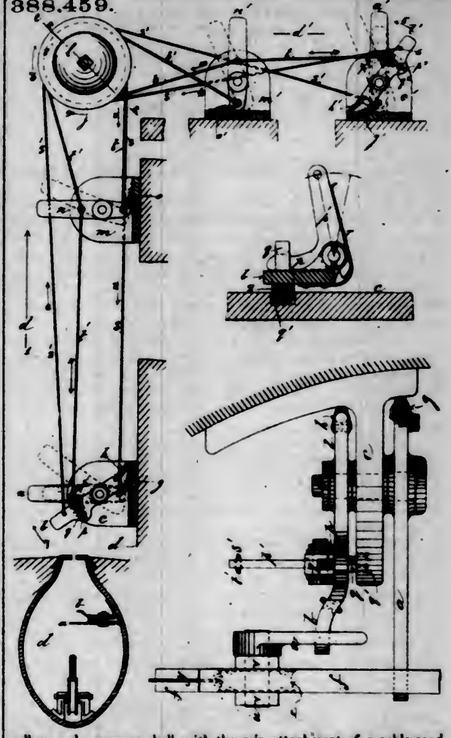
388,459. SIGNALING APPARATUS FOR CABLE STREET-RAILROADS. Henry W. Smith, St. Louis, Mo. Filed Jan. 19, 1888. Serial No. 261,271. (No model.)

Claim.—1. The combination of an arm or lever having a spring and pivoted to a bracket secured within the tunnel of a cable street-railroad, a chain or cord attached to said lever and to a sheave or pulley, and a spring located between the pulley and a gong or bell, with the grip attachment of a cable-road car, substantially as and for the purpose set forth.

2. The combination of two outermost arms or levers having springs and pivoted to a bracket within the tunnel of a cable street-railroad, one of said levers being provided with a locking device, a chain or cord attached to each of said levers and to a sheave or pulley, a spring located between the pulley and a gong or bell, an arm or lever intermediate to the outermost levers and the pulley, and a chain or cord attached to the intermediate lever and to the locking device of one of the outermost levers and attached to a sheave or pulley, with the grip attachment of a cable-road car and with a lever and spindle mounted thereon, said spindle having a drum or sheave from which a cord or wire extends to the spring mechanism of a gong or bell on the dummy, substantially as and for the purpose set forth.

3. In two cross-tracks of a cable street-railroad, the combination of the outermost arms or levers and intermediate lever and their appendages of one track and the corresponding parts of the other track, chains or cords extending, respectively, between the levers and locking device of one track to those of the other track and secured to intermediate sheaves or pulleys, and a spring located between one of said

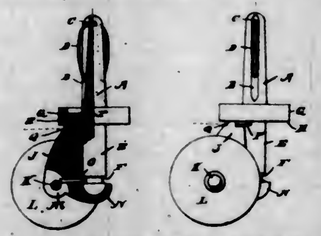
388,459.



pulleys and a gong or bell, with the grip attachment of a cable-road car and with a lever and spindle mounted thereon, said spindle having a drum or sheave from which a cord or wire extends to the spring mechanism of a gong or bell on the dummy, substantially as and for the purpose set forth.

4. The combination of a lever and spindle mounted on the grip attachment of a cable-road car, said spindle having a drum or sheave from which a cord or wire extends to the spring mechanism of a gong or bell on the car, with a pivoted lever or other intercepting device within the tunnel, substantially as and for the purpose set forth.

388,460. CASTER. Charles Stroud, Hamilton, Ohio. Filed Feb 27, 1888. Serial No. 265,445. (Model.)



Claim.—1. In a furniture-caster, the combination, substantially as set forth, of a foot-stem provided at its lower end with a bearing of oscillation, and at its upper end with a circular flange having a peripheral curtain, a wheel-housing united to said foot-stem and engaging said bearing of oscillation, and provided with an upward projection within said curtain, an axle carried by said housing, and a pair of floor-wheels on said axle.

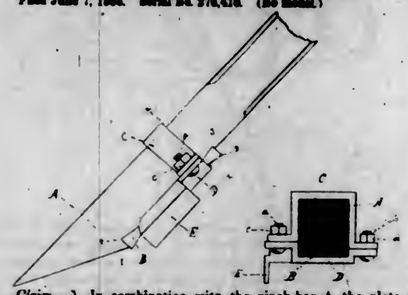
2. In a furniture-caster, the combination, substantially as set forth, of a foot-stem fitted for attachment to furniture, and having a rounded lower end provided with a circumferential groove, a wheel-housing provided with a stem-bearing engaging the lower end of the foot-stem, a wheel-axle carried by said housing, and a pin also carried by said

housing with its forward end engaging said circumferential groove and with its rear engaging said wheel-axle.

3. In a furniture-caster, the combination, substantially as set forth, of a foot-stem provided at its top with a circular flat flange having a peripheral curtain, and at its bottom with a bearing of oscillation and a circumferential groove, a journal-box engaging the stem just below said flange, a housing provided with a stem-bearing and with an upward projection engaging said journal-box within said curtain, and having a rearwardly-open notch in rear of the foot-stem, a wheel-axle carried by said housing and crossing said notch, a pair of floor-wheels upon said axle, and a pin carried by the housing at its notch and engaging its forward end with the circumferential groove of the foot-stem and its rear end with the wheel-axle.

4. In a furniture-caster, the combination, substantially as set forth, of a stem adapted for insertion into a leg-socket in furniture and to be held against rotation therein, and provided with one or more vertical longitudinal grooves or spring-spaces in its peripheral surfaces, and a spring secured to said stem and lying in each groove or spring-space and presenting a convexly-curved side located partly within the circumference of the stem and partly beyond such circumference.

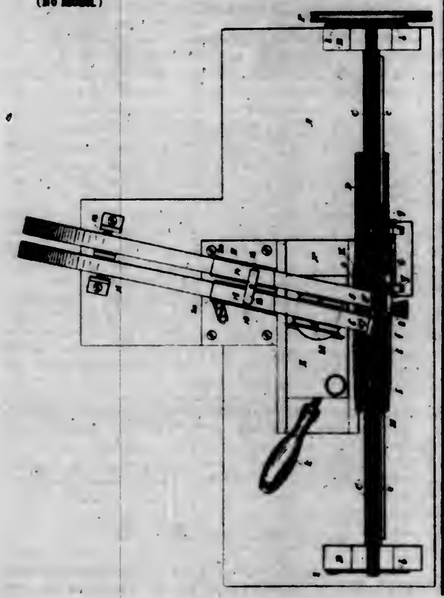
388,461. PINCH-BAR. Alexander Stonedale, Walcott, Iowa. Filed June 7, 1888. Serial No. 276,410. (No model.)



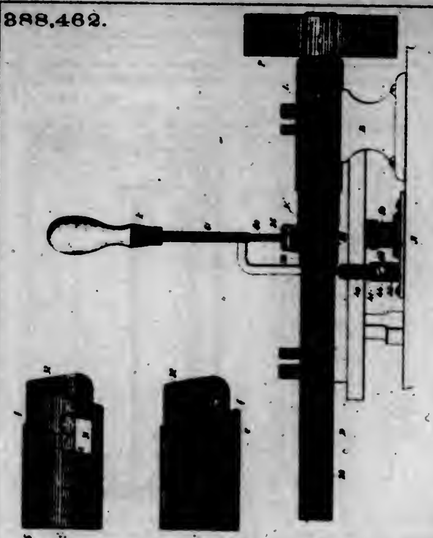
Claim.—1. In combination with the pinch-bar A, the plate B, with its sharpened corners 1, 2, 3, and 4, secured to said pinch-bar by the stirrup C D, bolts *a* and *b*, and nuts *c* and *d*, substantially as described.

2. In combination with the pinch-bar A and plate B, the stirrup C D, with vertical plate E, secured upon said pinch-bar by the bolts *a* and *b* and nuts *c* and *d*, substantially as described.

388,462. MACHINE FOR MAKING PAPER TUBES. Charles S. Talmyr, Washington, D. C. Filed Dec. 6, 1887. Serial No. 257,120. (No model.)



388,462.



Claim.—1. In a machine for making tubes from strips of paper or other material, the combination, with the rotatory core, of the stationary feed-cams having oblique or helical faces for acting against the edges of the strips as they are wound upon said core, substantially as described.

2. The combination, with the rotatory core, of the stationary feed-cams having oblique or helical acting faces, said cams being in different positions relative to the length of said core, so that the strips will break joints, substantially as described.

3. The combination of the rotatory core, the feed-cams for acting on the edge of the strips as they are wound, the reels, the vessel for glue or other adhesive substance between said reel and core, and the roller for applying a coating of glue to one of said strips, substantially as described.

4. The combination of the rotatory core, the feed-cams having helical edges for acting on the strips as they are wound upon said core, and the guide and tension for said strips, substantially as described.

5. The combination of the core supported in bearings at one end only and the feed-cams for acting on the edges of the strips as they are wound upon said core and pushing the tube as formed off the free end of said core, substantially as described.

6. The combination, with the rotating core for winding strips of paper into the form of a tube, of the feed-cams comprising a sleeve or cylinder having helical acting edges formed therein, one for each strip composing the tube, substantially as described.

7. The combination of the rotatory core, the feed-cams having helical acting edges, and the spring-finger, substantially as described.

8. The combination of the rotating core, the feed-cams, the roller bearing against the meeting edges of the outer strip, and the spring for pressing said roller against the paper tube, substantially as described.

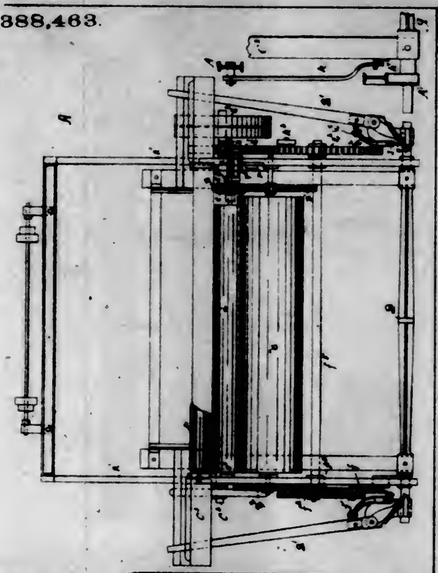
9. In a machine for forming tubes from strips of paper or other material, the combination, with feeding devices for advancing the strips as they are wound, of the core or mandrel circular in cross-section where the tube is formed and changing gradually to the form of a polygon, substantially as described.

388,463. LOOM. Henry Talbe, Paterson, N. J. Filed Mar. 21, 1887. Serial No. 231,937. (No model.)

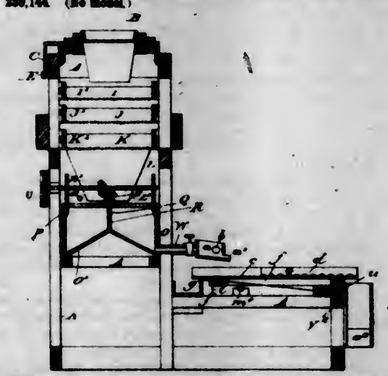
Claim.—1. The combination, with spindle D and spring thereon, and the bracket for supporting the spindle, of the flanges C C, adapted to impinge on the opposite sides of gear B, the gear B, the roller *d*, supported by the spindle, the roller *b*, gear B', nut M, and means for actuating roller *b* and its gear B', substantially as and for the purpose set forth.

2. The combination, with bar J, and screw H, arranged in said bar, by which the lever K^9 is raised or lowered to make the action of the cam thereon more or less forcible, of the lever K^9, bracket K, and bolt K', picker-stick *g'*, loop g^3, shaft *g*, the cam K^4, shaft J^9, and gear thereon, shaft O, the gear on said shaft, and the spring g^4, substantially as and for the purpose set forth.

388,463.



388,464. ORE-SEPARATOR. James Talley, Denver, Colo., assignor to Sarah B. Talley, same place. Filed May 23, 1887. Serial No. 239,144. (No model.)



Claim.—1. In an ore-separator, the combination of the double or twofold hopper, consisting of two separate divisions, each provided with an outlet, a frame supporting both divisions and provided with two pivotal pins on each of two opposite sides, bearings for such pins, and mechanism for lifting the frame and the pins alternately from and returning them to their bearings, substantially as set forth.

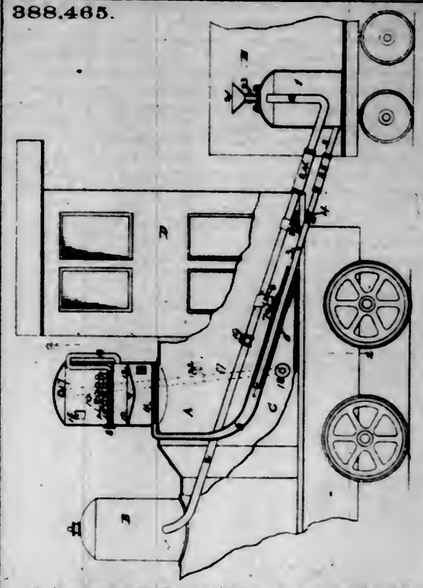
2. In an ore-separator, the combination of a series of amalgamating-pans having removable corrugated bottoms *d*, and the caps *e*, secured to the pans, substantially as set forth.

3. In an ore-separator, the combination of the longitudinal amalgamating-pans having removable corrugated bottoms with caps *e*, a pan table or carrier, and mechanism, as described, for giving the pan table and the pans thereon movements in two directions at a right angle to each other, substantially as set forth.

388,465. APPARATUS FOR THE MANUFACTURE OF GASEOUS FUEL. Andrew Tregroot, Pittsburg, Pa., assignor of two-thirds to John T. Mears, same place. Filed Apr. 6, 1887. Serial No. 233,895. (No model.)

Claim.—1. In apparatus for the manufacture of a gaseous fuel and illuminant, the combination of an oil-reservoir, a steam-pipe leading thereto and delivering thereinto above the oil-level, an oil-feed pipe leading therefrom, an incasing superheater-pipe into which the oil-feed pipe delivers, a branch pipe which connects the steam-pipe and the pipe which incases the oil-feed pipe, and suitable valves for controlling the several pipes, substantially as and for the purposes specified.

388,465.



2. In apparatus for the manufacture of gaseous fuel and illuminants, the combination of an oil-reservoir, a steam-pipe leading thereto and delivering thereinto above the oil-level, an oil-feed pipe leading therefrom, a superheater-pipe which incases the oil-feed pipe and into which the feed-pipe delivers, said latter pipe delivering into a carbureting-chamber, a carburetor having a lower deposit and an upper purifying-chamber, a branch pipe which connects the pipe that incloses the oil-feed pipe with the main steam-pipe, and suitable valves for controlling the several pipes, substantially as and for the purposes specified.

388,466. HOLDBACK FOR VEHICLES. James P. Van Duser, Boston Harbor, Mich. Filed Jan. 16, 1888. Serial No. 260,647. (No model.)

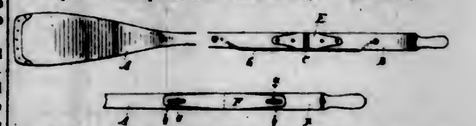


Claim.—1. A holdback attachment for vehicles, consisting of the holder A, provided with the tongue A', the spring A^3, with its beveled leg *a*, secured to the under side of a thill of a vehicle, in combination with the hook B, comprising the beveled leg B', the lug B^2, and the socket *b*, as and for the purposes specified.

2. In a holdback attachment for vehicles, the holder A, provided with the spring A^3, with its beveled leg *a*, the tongue A', and the side A^2, separated from said tongue and spring a distance equal to the thickness of a side of the hook B, secured to a thill of a vehicle, in combination with the hook B, as and for the purposes specified.

3. In holdback attachment for vehicles, the hook B, composed of the leg B', beveled at each end on the same side, the lug B^2, extending downward at an obtuse angle, the socket *b*, and the two sides embracing said elements and extending outward a short distance beyond the lug B', in combination with the holder A and the breeching of the harness, as and for the purposes specified.

388,467. SPRING-JOINTED BOAT-OAR. Charles S. Van Fleet, Troy, Pa. Filed Apr. 13, 1888. Serial No. 270,513. (No model.)

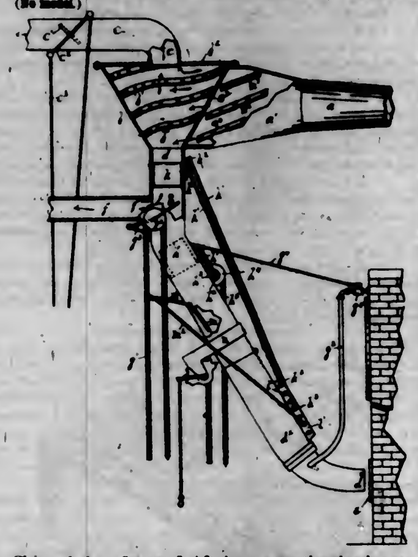


Claim.—1. A boat-oar consisting of two hinged sections having a spring uniting the said sections and serving to overcome the yield due to the hinge when the oar is in use, substantially as and for the purpose specified.

2. In a boat-oar, the combination of the blade-section, the handle-section, the hinge connecting the same together, and a leaf-spring, F, applied to the side opposite the hinge and connected at or near its end to both sections, substantially as described.

3. The combination, in a spring-jointed boat-oar, of the sections A B, the hinge E, connecting said sections, the spring F, applied to the side opposite the hinge, and the rail G on said oar and adapted to receive the oar-lock, all arranged to operate substantially as described.

388,468. FURNACE FUEL-FEEDER. Andrew Warne, Buffalo, N. Y. Filed Feb. 17, 1887. Renewed Nov. 28, 1887. Serial No. 256,126. (No model.)



Claim.—1. In a furnace fuel-feeder, a separating-chamber consisting of an inverted-cone-shaped receptacle having a conduit for surplus air, and the conduit leading to the mill, provided at its entrance to said cone-shaped receptacle with inclined diverting-flanges, substantially as shown and described.

2. In a furnace fuel-feeder, the combination, with the fuel-conduit, of the steam-pipe for injecting steam into the conduit and having a valve the movement of which is controlled by a valve in said conduit, substantially as and for the purpose stated.

3. In a furnace fuel-feeder, a separator consisting of an inverted-cone-shaped receptacle provided upon its interior inclined surface with a helical or worm flange, substantially as and for the purpose stated.

4. In a furnace fuel-feeder, the combination, with a separator consisting of an inverted-cone-shaped receptacle provided upon its interior inclined surface with a helical or worm-shaped flange, of a conduit, *c*, leading to the mill, provided at its entrance to the cone-shaped receptacle with inclined diverting-flanges c^2, substantially as and for the purpose stated.

5. In a furnace fuel-feeder, the combination, with the inverted-cone-shaped receptacle provided with the helical or worm flange, of the conduit *c*, for surplus air, leading therefrom, provided with a valve for regulating the quantity of surplus air to be discharged, substantially as shown and described.

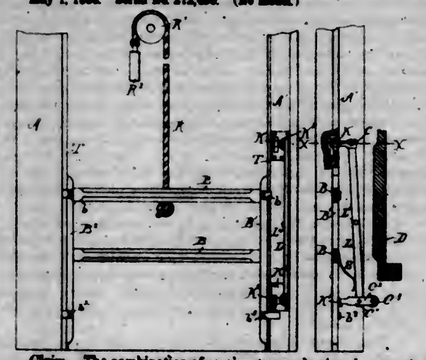
6. In a furnace fuel-feeder, the combination, with the cone-shaped receptacle having a helical or worm flange and the conduit *d*, together with its branches, of the hinged deflectors *h h*, for regulating the even distribution of the fuel to the said branches, substantially as shown and described.

7. In a furnace fuel-feeder, the combination, with the main conduit *d* and the auxiliary conduit *f*, leading to the shavings-room, of the pivoted valve *g*, adapted to close either one of said conduits, as desired, substantially as shown and described.

8. In a furnace fuel-feeder, the combination, with the main conduit and its branches, of the pivoted dividing-valve *h*, operated by the segmental gear h^1, worm h^2, pulley h^3, and the chain or belt, substantially as shown, and for the purpose stated.

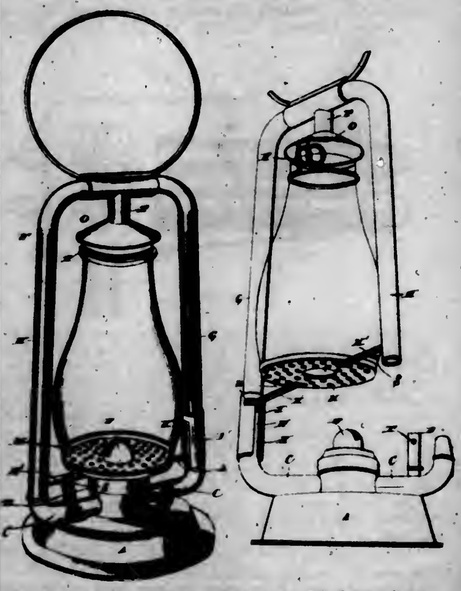
9. In a furnace-fuel-feeder, the combination, with the valve *g*, operating to close either of the two conduits *d* and *f*, of the steam-valve, its steam-pipe leading into one of the branch conduits d^1, and connections from the said steam-valve to the said valve *g*, whereby the injected steam is automatically cut off when the said latter valve closes one of the said conduits *d f*, substantially as and for the purpose stated.

388,469. ELEVATOR. George A. Weld, Winchester, Mass. Filed May 1, 1888. Serial No. 272,469. (No model.)



Claim.—The combination of an elevator-car having the cam-piece D, the lever L, having an arm, C, and the arm C', having an extension, C^2, the pivoted latches or stops, and the hatchway-gate having the arm b^2, all substantially as described, and for the purpose set forth.

388,470. TUBULAR LANTERN. William C. Whitney, Newport, Vt. Filed Nov. 14, 1887. Serial No. 255,126. (No model.)



Claim.—1. The combination, in a lantern, of the lower tube communicating with the burner and having the vertical ends D E of the upper tube having the devices to secure the globe, and having one of its arms connected to the end E and adapted to be swung horizontally and moved vertically thereon, the other arm of the upper tube being adapted to connect and disconnect with the end D, substantially as described.

2. The combination of the bowl having the tube C communicating with the burner and provided with the vertical ends D E, the tube F, having the depending arms G H, said arm G being secured on the end E, adapted to slide vertically and to turn thereon, and said arm H being adapted to connect with and disconnect from the end D, the sleeve I, secured to end E and having the vertical slot K and the horizontal

slot L communicating with the upper end thereof, the base-plate M, secured between the arms G H, and the bracket or arm N, projecting from the arm G and adapted to work in the slots K L, substantially as described.

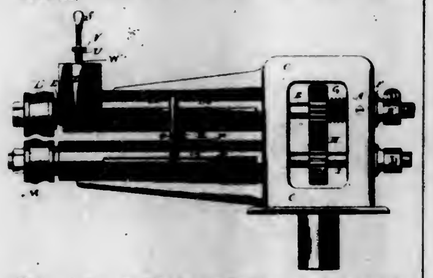
3. The combination, in a lantern, of the tube C, communicating with the burner and having the vertical ends D E, the upper tube, F, having the depending arms G H, the former being connected to end E and movable vertically and revolubly thereon, and the latter being adapted to connect with end D, the base-plate or diaphragm M, secured between the said arms of the upper tube, and the spring-catch T, to lock the said upper tube to the lower tube, substantially as described.

4. The combination, in a tubular lantern, of the lower tube, C, attached to the bowl thereof and having the vertical ends D E, the upper tube, F, having the depending arms G H, said arm G being fitted on end E and adapted to move vertically and rotate thereon, the sleeve I, attached to end E and having the vertical slot K and the horizontal slot L communicating therewith, the base-plate or diaphragm M, the arm N, connecting the same to the arm G and adapted to engage the slots K L, the arm N', connecting said diaphragm with the arm H and having the stud S, and the spring-catch T, to engage said stud S when the upper tube is lowered, substantially as described.

5. In a lantern, the bowl having the burner and the lower tube, C, communicating therewith and provided with the upturned ends D E, in combination with the upper tube, F, having arm G, movable vertically and revolubly on the end E, and having the arm H, adapted to fit on the end D, a catch or locking device for holding the parts when in this position, and the globe-cone fitted to the upper tube, substantially as described.

6. In a tubular lantern, the bowl or base, the burner, and the lower tube, C, having ends D E, in combination with the upper tube F, having one arm, G, movable vertically and revolubly on the end, the other arm, H, of the upper tube fitting over the end D when the parts are in their normal position, a catch or locking device for holding the parts in this position, and the globe-supporting cone fitted to the upper tube, as set forth.

388,471. MACHINE FOR BEADING SHEET METAL. William J. Bayer, Southington, Conn. Filed Dec. 3, 1887. Serial No. 256,806. (No model.)



Claim.—1. In a machine for beading sheet metal, the combination, with a box cast in one piece and having at its rear end a continuous or solid wall provided with two openings and furnished at its forward end with two horns, of two shafts respectively located in such horns and each extending into such box and carrying a bead-roller, a coupler secured to the opposite faces of the horns and adjustable upon them, an operating-head for working the upper shaft, and an operating-screw flexibly connected with such head, substantially as set forth.

2. In a machine for beading sheet metal, the combination, with two parallel horns, each inclosing a shaft carrying a bead-roller, of a coupler binding such horns together and composed of two parts respectively secured to the opposite faces of the horns, substantially as set forth.

3. In a machine for beading sheet metal, the combination, with two parallel horns, each inclosing a shaft carrying a bead-roller, of a coupler binding such horns together, the horns being provided with ribs and the coupler with recesses to receive the same, the coupler being arranged to slide horizontally upon the horns, substantially as set forth.

4. In a machine for beading sheet metal, the combination, with two shafts, each carrying a bead-roller, of two rigid horns respectively inclosing each shaft, whereby each shaft is supported virtually throughout its length, and a coupler consisting of two parts applied to the opposite faces of such horns and united between the horns, substantially as set forth.

5. A machine for beading sheet metal, having two parallel horns, each provided with two ribs respectively located upon its opposite sides, and a coupler engaging with each rib and binding the horns together against pressure tending to spread them apart, substantially as set forth.

6. A machine for beading sheet metal, having two parallel horns, each provided with two ribs respectively located upon its opposite sides, and a coupler consisting of two slotted blocks, and a screw uniting them and applied to the horns to couple them together against pressure tending to spread them apart, substantially as set forth.

7. A machine for beading sheet metal, having two horns, a rocking driving-shaft extending through the upper horn, a yoke located upon such horn, an operating-head secured to the adjacent end of the shaft, an operating-screw mounted in the yoke, a rocking block pivoted to such head, and connection between such block and the screw, substantially as set forth.

388,472. WALL-PAPER. Frederick Dick, New York, N. Y. Filed May 31, 1887. Serial No. 239,572. (No specimens.)

Claim.—1. As a new manufacture, the herein-described compound waterproofed paper, composed of a base-sheet of paper treated with a waterproofing material and having a thinner sheet for the reception of the paste secured thereto, substantially as set forth.

2. As a new manufacture, the herein-described compound waterproofed paper, composed of a base-sheet of paper treated with a waterproofing material and having a thinner sheet of paper for the reception of the paste secured thereto on one side and another decorated surfacing-sheet attached to the other side thereof, substantially as set forth.

3. As a new manufacture, the described compound waterproofed and embossed paper, composed of an embossed base-sheet of paper treated with a waterproofing material and having a surfacing-sheet of thinner paper for the reception of the paste secured thereto, substantially as set forth.

4. As a new manufacture, wall-paper comprising an interior waterproofed base-sheet of paper and a thinner backing-sheet, and another sheet attached to the opposite side of the waterproofed base-sheet, substantially as set forth.

388,473. GRATE. Frank S. Bussell, Pittsburg, Pa. Filed Oct 29, 1886. Serial No. 217,502. (No model.)



Claim.—1. The combination, with a grate having a vertical fire-front, F, of end plates or pieces, G, secured to the said front by pins and slots at the ends of the front, whereby said end pieces are adjustable longitudinally of the front to vary the length thereof, substantially as and for the purposes described.

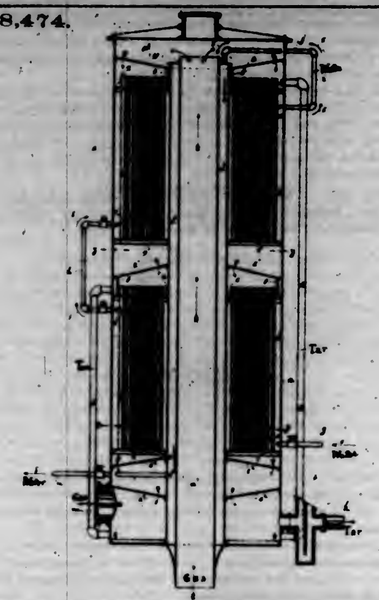
2. The superposed and adjustable grate-frames A and B, the frame A having an opening, *e*, extending from its back toward the front thereof, and the frame B having a similar opening, *f*, registering with the hole *e*, substantially as and for the purposes described.

3. A grate for fire-places having a gas-burner space, *e*, open at the back of the grate and extending toward the front thereof, and a removable grating for covering said space, substantially as and for the purposes described.

388,474. GAS-CONDENSER AND TAR-SEPARATOR. Frederick Bessel, New York, N. Y. Filed Apr. 4, 1888. Serial No. 269,615. (No model.)

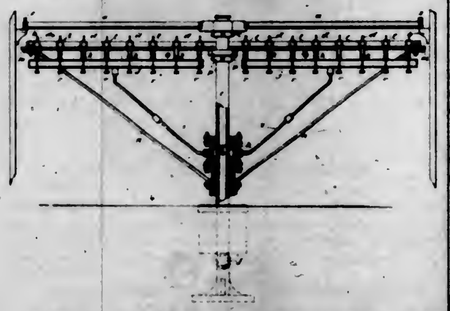
Claim.—1. In a gas-condenser and tar-separator, the combination of an upright outer casing, a gas-exit pipe, annular tiers of surrounding tubes, horizontal annular plates forming or inclosing water and gas tight chambers through which the tubes pass, conical perforated shields above each tier, alternate shields being inverted, tar-pipes extending from above each horizontal annular plate to the bottom of the apparatus, water-pipes connecting the several spaces between the tiers of tubes with a water-inlet, and a gas-exit pipe near the bottom of the casing, substantially as specified.

388,474.



2. In a gas-condenser and tar-separator, the combination of an upright outer casing, a central vertical gas-exit tube extending from the bottom of the purifier nearly to the top thereof, tiers of annular series of vertical tubes surrounding said central tube, perforated plates over each end of the latter tubes and forming in each tier a water-space around the tubes thereof, and forming between the several tiers and above and below them annular chambers connected with said tubes, a truncated conical perforated shield in each of said chambers, alternate shields being inverted, a pipe extending from the bottom of each of the upper annular chambers to the bottom of the lower one, and water-connections for each tier of tubes, and a gas-exit provided near the bottom of the casing, substantially as specified.

388,475. APPARATUS FOR THE MANUFACTURE OF LAMP-BLACK. Samuel Cabot, Jr., Boston, Mass., assignor to Godfrey L. Cabot, Worthington, Pa. Filed Mar. 16, 1884. Serial No. 124,627. (No model.)



Claim.—1. The combination, in a multiburner-lamp, of a central supporting-standard with adjustable collars thereon, an external ring with the burner-tubes supported on said ring, and braces extending from said collars to the same, substantially as described.

2. A central vertical standard provided with adjustable clamping-collars and connecting-rods, a multiburner-lamp supported thereon, and a collection-plate having adjustable bearing on said vertical standard, substantially as described.

3. The combination, with a central vertical standard, of a multiburner-lamp supported thereby, an adjustable collar having a gas-chamber surrounding the standard, said collar provided with packing-borne at each end, and the standard having apertures to permit gas-escape into the collar, and connecting-pipes leading from the collar to the burners, substantially as described.

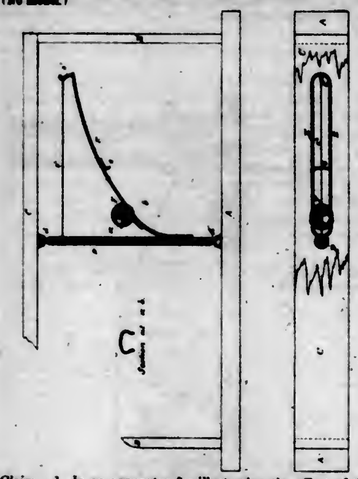
4. A revolving multiburner-lamp provided with an external ring of angle-iron braced to a central standard, with burner-tubes supported thereby, substantially as described, and an endless driving-chain resting in the angle of said external ring and encircling the same and the pulley of a suitable motor.

5. The multiburner-lamp composed of parallel tubes *l l*, external ring, *m*, supporting-bars *o o*, extending across the ring from side to side under the tubes *l*, an adjustable support under the center of said bars, and a suitable gas-supply device, all arranged and combined substantially as set forth.

6. In a multiburner-lamp, the combination of a supporting-standard, provided with clamping-collars and stay-rods, with a revolving hopper, a revolving scraper, and an air-blast, substantially as described.

7. The combination, with a collection-plate, of rotating scrapers to operate thereon, an inclined hopper beneath the scrapers and rotating with them, and a circular stationary deposit-chamber, with which said hopper communicates by a chute, substantially as described.

388,476. APPARATUS TO ILLUSTRATE CENTRIFUGAL FORCE. John Coffin, Johnstown, Pa. Filed Apr. 12, 1888. Serial No. 270,492. (No model.)



Claim.—1. In an apparatus for illustrating the effect of the central forces on heavenly bodies, the combination of a main frame, a vertical spindle pivotally supported by the main frame, a tramway convexly curved toward the vertical spindle, and a ball resting on the tramway, substantially as specified and shown.

2. In an apparatus for illustrating the effect of the central forces on the heavenly bodies, the combination of a pivotally-supported vertical spindle and a radial tramway attached to the said vertical spindle and being convexly curved toward it, substantially as specified and described.

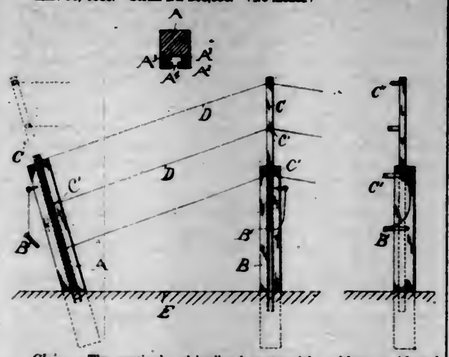
3. In an apparatus for illustrating the effect of central forces, the combination of a vertical pivoted revolving spindle, a radial tramway firmly attached thereto, and a ball free to roll on the said tramway, substantially as specified and described.

388,477. ELECTRICAL CONDUCTOR. William A. Conner, Pittsburg, Pa. Filed Feb. 21, 1888. Serial No. 264,746. (No model.)



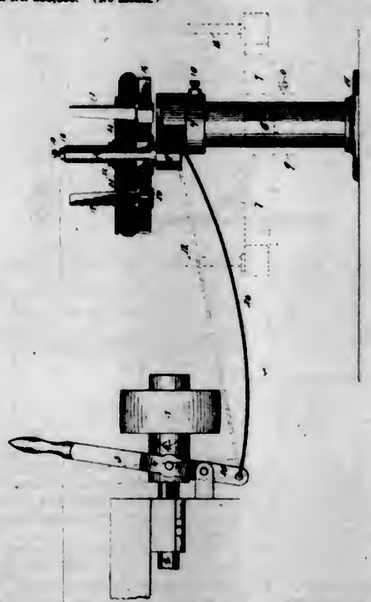
Claim.—An electric cable having a central conductor or core and a number of insulated conductors arranged spirally around the central conductor, and each having a cross-section greater in breadth than thickness, and composed of a number of wires, substantially as described.

388,478. CLOTHES-DRIER. George Cox, Reading, Pa. Filed Mar. 30, 1888. Serial No. 268,994. (No model.)



Claim.—The vertical and inclined posts with guideways A^3 and A^4, in combination with the sliding bars having clothes-lines secured thereto, substantially as set forth.

388,479. REEL-STAND AND STOP FOR WIRE-WORKING MACHINES. Louis J. Crecelius, St. Louis, Mo. Filed Nov. 21, 1887. Serial No. 255,809. (No model.)



Claim.—1. In combination with the driving clutch or stop of a wire-machine, a reel mechanism consisting of a supporting-post, an arm swiveled to the post, a reel supported on the arm, and a connection between the arm and clutch or stop, substantially as and for the purpose set forth.

2. In combination with the driving clutch or stop of a barb-wire machine, the reel mechanism consisting of a supporting-post, arms swiveled to the post, reels supported on the arms, and ropes connecting the arms to the clutch or stop, substantially as and for the purpose set forth.

3. In a wire-working machine, the combination, with a driving-clutch, of a feed-reel mechanism consisting of a post, arms swiveled on the post, spindles on the outer ends of said arms, and reels on said spindles consisting of sleeves fitting over the spindles, horizontal arms secured to the spindles, and vertical arms secured to the horizontal arms, and a connection, 25, between the swiveled arm and the driving-clutch, substantially as and for the purpose set forth.

4. In a feed-reel mechanism for wire-machines, the combination of the post, arms swiveled on the post, spindles on the outer end of the arms, sleeves fitting over the spindles, screws in the upper ends of the sleeves, having conical points fitting in conical holes in the upper ends of the spindles, and horizontal arms on the sleeves, substantially as and for the purpose set forth.

5. In a feed-reel mechanism for barb-wire machines, the combination of the post, arms swiveled on the post, spindles on the arms, sleeves fitting over the spindles, horizontal arms secured to the sleeves, vertical arms secured to the horizontal arms, collars 22, fitting over the sleeves, and arms 23 on the collars, substantially as and for the purpose set forth.

388,480. STEP FOR VELOCIPEDES. George H. Day, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed Dec. 21, 1887. Serial No. 258,593. (No model.)



Claim.—1. An improved adjustable step and attachment, consisting in a spring-loop and extended supporting arms and braces, a bolt and nut, and a shoe-piece resting upon the arms and secured by the bolt.

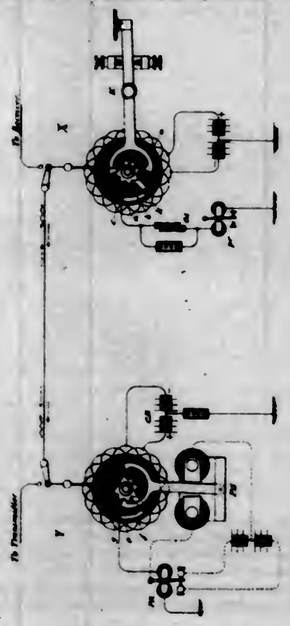
2. An improved adjustable step and attachment, consisting in a spring-loop and supporting-arms, a bolt and nut, and a shoe-piece resting upon the arms and secured by the bolt, and further secured by a lug and pin-trip between the arms.

3. An improved shoe-piece for a bicycle-step, constructed with a roughened upper surface, a bolt, lug, and a trip part, and side edge rests.

4. An improved adjusting and a supporting device for a velocipede-step, constructed with a spring-loop and extended arms and downward braces, as *b b*, and a bolt and nut.

5. The combination, with a portion of a velocipede-frame, as A, of a step attachment, as B, a shoe-piece, as C, a bolt and nut, as D D', and a pin-trip, as E E C', constructed to operate essentially as set forth.

388,481. TELEGRAPHY. Patrick B. Delany, New York, N. Y. Filed Dec. 3, 1887. Serial No. 256,867. (No model.)



Claim.—1. The combination of a main line, transmitting mechanism for sending alternating currents over the line, a receiving polarized relay; a moving contact-maker connected with the line, its actuating mechanism controlled by the relay, and contacts *e f* respectively connected with sources of energy of opposite polarity, over one of which contacts the trailer passes at each movement of the relay-armature, whereby a counter-current is sent into the line after each received impulse.

2. The combination, with a main line and current-transmitting devices, of a receiver having a receiving-relay, contacts connected with sources of electricity of opposite polarity, and a contact-maker connected with the line and controlled by the relay, which contact-maker successively crosses said contacts as the relay is successively actuated.

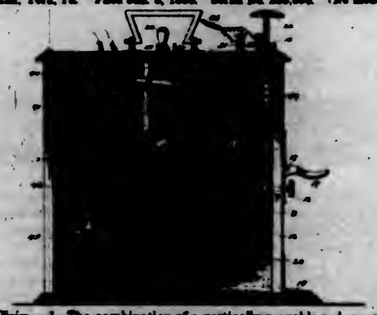
3. The combination, with the main line and transmitting devices for sending currents of alternating polarity, of a receiver having a trailer connected with the line, a table of contacts traversed by the trailer, and the alternate contacts *e f* of which are respectively connected with opposite poles of a source of electric energy and the intermediate contacts on which the trailer normally rests connected to earth through the polarized relay, and the trailer-actuating devices controlled by the relay-armature.

4. The combination at a receiving-station of the receiving-relay actuated by impulses received from the distant transmitting-station, the contact-maker, which moves in response to said received impulses, contact-maker-actuating devices controlled by the relay, a line connected with the contact-maker, the contacts *e f*, traversed by the contact-maker, and a source of electric energy with which said contacts are respectively connected and from which counter or neutralizing impulses are sent into said line, as set forth.

5. The combination of a line, a relay located at a receiving-station and responding to impulses received from the distant transmitting-station with which relay the line is normally connected, a contact-maker connected with the line and moving in response to said received impulses, contacts traversed by said contact-maker, the contact-maker-actuating devices controlled by the relay, and a source of electric energy with which said contacts are respectively connected, whereby upon the reception of an electrical impulse upon the relay the line is briefly connected with one of said battery-connected contacts, substantially as set forth.

6. The combination at a receiving-station of a receiving-relay actuating by impulses received from the distant transmitting-station, a contact-maker moving in response to said impulses, contact-maker-actuating devices controlled by the relay, a line connected to the contact-maker, alternate contacts traversed by the contact-maker, and sources of electric energy of opposite polarity with which said alternate contacts are respectively connected, whereby impulses are sent into the line connected to the contact-maker as it passes over each electrically-connected contact.

388,482. DENTAL ELECTRIC APPARATUS. Charles A. Brasham, York, Pa. Filed Jan. 3, 1888. Serial No. 259,696. (No model.)



Claim.—1. The combination of a vertically-movable rod, a spring for normally holding said rod elevated, a lever acted upon by the rod, an induction-coil provided with a regulator controlled by the lever, a circuit-closer in the primary circuit in operative relation to the lever, and a lock for engaging the rod and holding it at any degree of depression.

2. The combination of a sliding rod, an adjustable collar for regulating the degree of thrust of said rod, an induction-coil, and regulating devices therefor controlled by said rod.

3. The combination of a sliding rod, battery-elements carried thereby and frictionally secured thereto, and a locking device for maintaining the elements in a fixed position, whereby the rod may be reciprocated independently of the elements.

4. The combination of a sliding rod, battery-elements carried by said rod, an electric lamp, circuit-connections between the elements and lamp, a second circuit, a circuit-closer therein actuated by a movement of the rod, an induction-coil in said second circuit, a regulator for the induced current controlled by the rod, and means for locking the rod when shifted.

5. In a dental apparatus, the combination of a battery induction-coil and rheostome, distributing-electrodes outside the instrument in the secondary circuit, a circuit-closer in the primary circuit, a lamp-circuit electric lamp connected therewith by flexible connections, and a circuit-closer for controlling the lamp-circuit.

6. The combination of metallic spring 30, provided with an insulated spot on one face thereof, metallic spring 31, co-operating with spring 30 and normally bearing on the insulated spot, and a push-piece for forcing the springs together, whereby a scraping contact may be made with the metal adjacent to the spot.

7. The combination of a source of electricity, a distributing-electrode in circuit with one pole thereof, a pair of dental forceps, and a clip in circuit with the other pole, said clip being provided with gripping-jaws to engage the handle of the forceps, and means for locking the jaws in engagement with the handle.

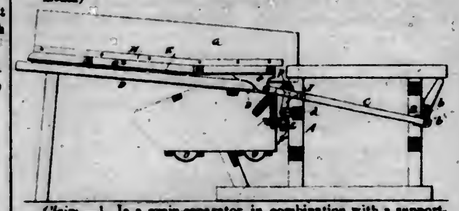
8. In a dental electric apparatus, the combination of an electric conductor provided at its terminals with distributing-electrodes adapted to convey the current to a patient to be operated upon, a resistance-coil in circuit with said conductor near one of the terminals to moderate the effect of the current on the part of the body to which the said terminal is applied, and a connector for connecting and disconnecting one of the electrodes to said conductor.

9. In a dental electric apparatus, the combination of a generator of electricity, an electric circuit, a distributing-electrode at one circuit-terminal, a pair of dental forceps at the other circuit-terminal, and an adjustable rheostat in the forceps branch, as and for the purpose set forth.

10. In a dental electric apparatus, the combination of a generator of electricity, an induction-coil, primary and secondary circuits, a distributing-electrode at one secondary terminal, a pair of dental forceps at the other secondary terminal, and an adjustable resistance-coil in the secondary circuit, as and for the purpose set forth.

11. In a dental electric apparatus, the combination of an electric circuit, a distributing-electrode in said circuit for conveying the current to the patient to be operated upon, and a resistance-coil in juxtaposition with said electrode to moderate the effect of the current on the portion of the patient's body to which said electrode is applied, for the purpose set forth.

388,483. GRAIN-SEPARATOR FOR THRASHERS. Joseph T. Fenton, Hopetown, Pa. Filed May 13, 1887. Serial No. 238,069. (No model.)



Claim.—1. In a grain-separator, in combination with a supporting-frame, a shaking screen suspended therefrom, a shaking-shoe suspended from said frame, a pitman connected with said screen and with driving mechanism, and a pivoted rocking lever fulcrumed on the frame, one end of which is loosely connected with the pitman and the other end loosely connected with the said shoe, substantially as and for the purposes described.

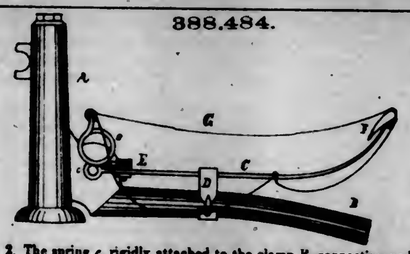
2. In combination with a shaking screen, a pitman provided with a perforated pivot, substantially as shown, a shaking-shoe provided with a perforated pivot, and a lever, J, fulcrumed to the frame and with each of its extremities extending into a perforation in one of said pivots, substantially as described, for the purposes set forth.

3. In combination with a supporting-frame, a shaking screen, E, shaking-shoe M, shaking floor D, connected with said shoe, a pitman, C, connected with the screen and with driving mechanism, and a rocking lever, J, fulcrumed to the frame and having its upper end loosely connected with the pitman and its lower end loosely connected with said shoe, substantially as set forth and described.

388,484. SADDLE FOR VELOCIPEDES. Arthur L. Garford, Elyria, Ohio. Filed Sept. 12, 1887. Serial No. 249,081. (No model.)

Claim.—1. In a saddle for a bicycle or tricycle, the combination of the movable fulcrum *d*, with the spring C, supported near its middle by said fulcrum, and its front end attached to the front end of the porch or backbone, and rear end to the frame of back end of seat, all as above set forth, and substantially as described.

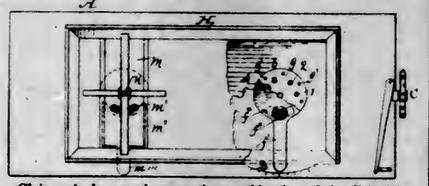
388,484.



2. The spring *c*, rigidly attached to the clamp E, connecting and in combination with the front ends of the spring C and seat to the saddle, all as above set forth, and substantially as described.

3. The combination of the flat spring C, fulcrum *d*, clamp E, coil-spring *e*, frame F, and cover or seat G, for the purposes above set forth, and all substantially as described.

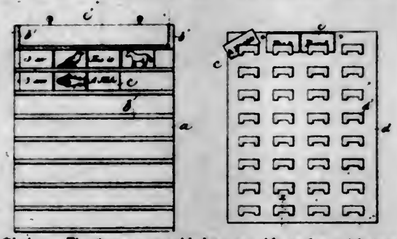
388,485. BROADCAST SEED-SOWER. THOMAS GREEN, Bancroft, Iowa. Filed Nov. 4, 1887. Serial No. 254,362. (No model.)



Claim.—1. In a seed-sower, the combination of the disk *f*, having a handle, *f'*, a hole, *f''*, and a pin, *f'''*, and a disk, *g*, having a series of pin-holes, *g'*, and a graduated series of seed-vents, 1 2 3 4, to operate in the manner set forth, for the purpose of regulating the quantity of seed sown and also the throw or cast of the seed.

2. The hopper H, having circular openings in its bottom, and covers *m*, having curved slots *m'* fixed over said circular openings, the disks *f*, having perforations *f''* and pins *f'''*, and the disks *g*, having pin-holes *g'*, and a graduated series of seed-vents, 1 2 3 4, constructed and combined to operate in the manner set forth, for the purpose of regulating the quantity of seed sown and also the throw or cast of the seed.

388,486. EDUCATIONAL APPARATUS. ISAAC F. HALL, Leominster, Mass. Filed Feb. 23, 1888. Serial No. 265,381. (No model.)



Claim.—The frame *a*, provided on one side or face with transverse guides and on its other side with holding-pieces *f*, combined with the card-holder *d*, adapted to be connected with the frame by the said holding-pieces, substantially as described.

388,487. SUSPENDING OVERHEAD ELECTRIC WIRES. ALFRED R. HARRIS, London, England. Filed Mar. 4, 1887. Serial No. 229,731. (No model.) Patented in England Dec. 29, 1886, No. 17,022.



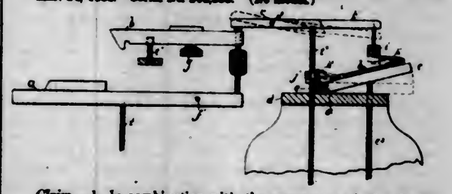
Claim.—The combination, with a series of telegraph or telephone poles for suspending or connecting the line-wire, of a pair of movable bars normally held to place by springs and applied to the opposite sides of the pole near its top, as set forth, and adapted to recede from each other and relieve the strain on the wire under stress of weather, all substantially as set forth.

388,488. FRUIT-JAR. GEORGE H. HARVEY, Pittsburg, Pa., assignor to Albert C. Hills, same place. Filed June 28, 1887. Serial No. 242,857. (No model.)



Claim.—A jar having spiral lugs, a lid having a recess below which is a vent, a gasket having a vent, said gasket being fitted in the recess, and a clamp having a portion of its lower face enlarged, all combined, arranged, and operating with relation to each other substantially as herein described, and for the purpose set forth.

388,489. MANUAL COUPLER FOR ORGANS. JAMES HUEBLER, Chicago, Ill., assignor to The W. W. Kimball Company, same place. Filed Mar. 24, 1888. Serial No. 268,230. (No model.)



Claim.—1. In combination with the upper manual of a double-bank organ and the extended lovers *c'*, fulcrumed at *f*, the regulators *i*, two-armed couplers *h*, and collared tracker-pins i^3, substantially as specified.

2. In combination with the connected upper and lower manuals of a double-bank organ and the extended lovers *c'*, fulcrumed at *f*, the regulators *i*, two-armed couplers *h*, and collared tracker-pins i^3, substantially as specified.

3. In combination with the lower manual of an organ and extended lovers *c'*, fulcrumed at *f* and connected with said manual, the regulators *i*, two-armed couplers *h*, and collared tracker-pins i^3, substantially as specified.

388,490. REED-ORGAN. JAMES HUEBLER, Chicago, Ill., assignor to The W. W. Kimball Company, same place. Filed Mar. 24, 1888. Serial No. 268,236. (No model.)



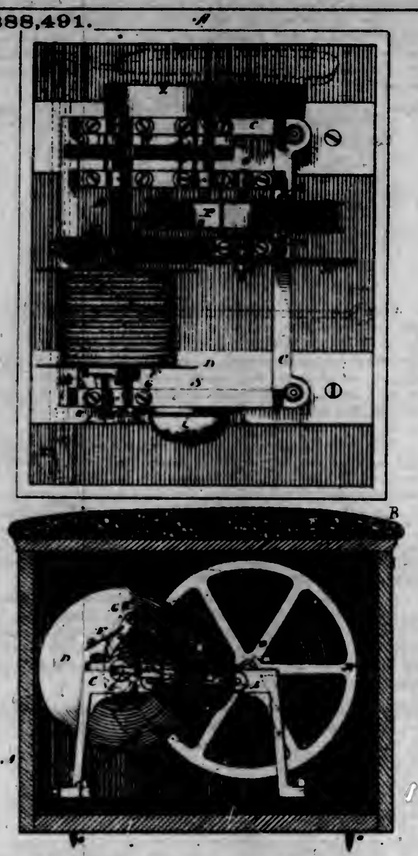
Claim.—1. In a reed-organ, a thin sounding-board, *a*, provided with a board, *m*, on its inner or under and valve-seat side, deepened-valve air-chamber, and an enlarged wind-chest under said thin board *a* and discharging end, substantially as specified.

2. In a reed-organ, a thin sounding-board, *a*, provided with a board, *m*, on its inner or under and valve-seat side, deepened-valve air-chamber, enlarged wind-chest under said thin board *a*, and discharging end and rigid and enlarged walls *b k l*, substantially as specified.

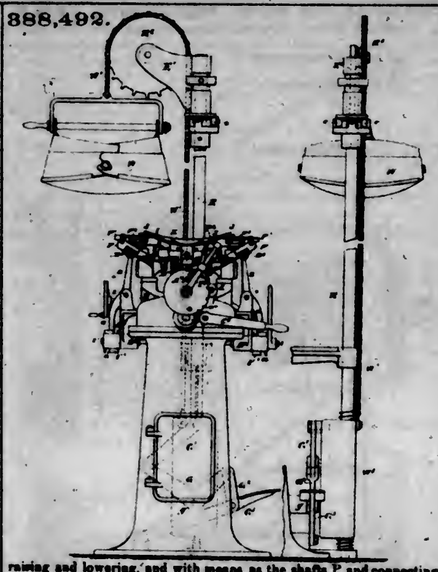
388,491. FIRE-ESCAPE. LOVI HILL, Muney, Pa. Filed May 8, 1888. Serial No. 273,194. (No model.)

Claim.—The combination of the box A, the frame C, adapted to be secured to the floor of a building, the winding-drum and lowering-cord secured thereto, the drum-shaft E, connected with the drum by ratchet-and-pawl mechanism, the pinion I loose upon the shaft E, but fixed to the winding-drum, the wheel N, geared to the pinion *I* and fixed upon the shaft O, the coiled spring, also secured at one end to the shaft O, a centrifugal governing mechanism upon one end of the frame and geared with the shafts E and O, and an alarm mechanism upon the opposite end of the frame connected by a crank and link with the shaft E, whereby safety lowering may be accomplished and a fire-alarm sounded and the lower cord automatically taken out, all substantially as set forth.

388,491.



388,492.



raising and lowering, and with means, as the shafts F' and connecting-sleeve, and obliquely-grooved bosses F^3 F^4, for moving them apart and together, all arranged for joint operation, substantially as herein specified.

7. In a hat-brim shaper, the shaping-pieces J at the front and back of the brim, each formed in two separate pieces knuckled together, with liberty to shift their centers, as shown, in combination with the cheeks F^5, engaging with the exteriors of the knuckles, as shown, and with the screw F^6, for moving their centers into and out of coincidence, arranged for joint operation, so as to change the contours of the outer edge of the brim by widening or narrowing the quarters, as herein specified.

8. In a hat-brim-shaping apparatus, the sand-pan W, in combination with the pulley E^3, chain W', link G', bell-crank lever G, and means for operating the latter by the foot, so as to raise and depress the sand-pan by a toggle action, as herein specified.

388,493. FEED-TROUGH. JOSEPH M. HUGHES and ARTHUR P. W. WARE, Cedar City, Mo. Filed Apr. 11, 1888. Serial No. 270,333. (No model.)



Claim.—1. The combination of the trough having a cleat, l, secured to one side, the panel arranged over the trough, and the bail pivoted to the panel and adapted to contact with the trough and rest upon the cleat, as set forth.

2. The combination of the trough, the panel arranged over the same, the cross-bars M, pivoted to the panel and resting on the trough, and the bar N, connecting the free ends of said cross-bars, as set forth.

3. The combination of the trough having recesses in its rear edge, the panel arranged over the trough, the cross-bars hinged to the panel and passing through the recess in the trough, and the bar secured to the trough and passing over the cross-bars pivoted to the panel, as set forth.

4. The combination, with the feed-trough, of the oscillating panel arranged over the same, the cover or frame hinged to the panel and composed of a longitudinal bar and a series of cross-bars, and a series of offsets or blocks secured to the panel between the inner ends of the cross-bars, as set forth.

388,492. MACHINE FOR SHAPING HAT-BRIMS. LOUIS H. HOTZ, Danbury, Conn. Filed Feb. 28, 1888. Serial No. 265,604. (No model.)

Claim.—1. In a hat-brim shaper, the detachable and exchangeable head composed of pieces I J K M, capable of sliding one upon another and engaging with the adjustable pieces D^4 of a machine to allow of treating a wide range of sizes and widths of brim, as herein specified.

2. In a hat-brim shaper, the filling-piece O, hook-slides O^2, and holding means O^3, arranged to serve with a detachable head composed of parts overlapping and sliding one upon another, equipped for attaching to suitable mechanism for moving and holding them when not in use, as herein specified.

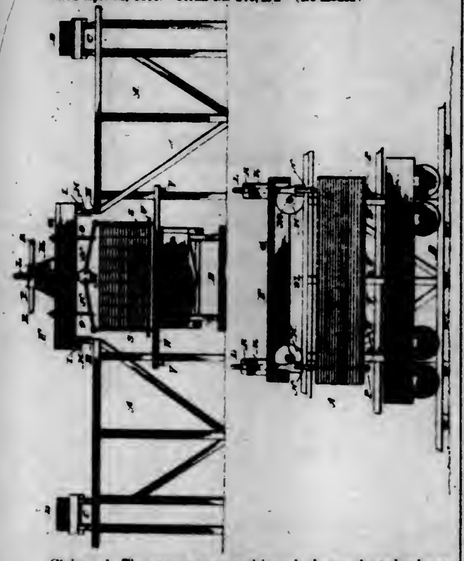
3. In a hat-brim shaper, the levers Z and operating-shaft U, with their right and left grooves *u*, in combination with the parts I J, adapted for varying the conditions simultaneously at the front and rear portions of the brim, substantially as herein specified.

4. In a hat-brim shaper, the side-shaping pieces M, in combination with the levers L^2 and connecting means, as the pinions L' and racks N', arranged to smooth and vary the form of the roll of the brim, as herein specified.

5. In a hat-brim shaper, the parts I J K M, overlapping one upon another, with provisions for varying their position, as specified, and the wheel or segment A^4, having notches, as shown, in combination with each other and with the lever F^8, dog F^9, and with the stop A^5, arranged to prevent the motion from being carried too far, as herein specified.

6. In a hat-brim-shaping apparatus, the side pieces, M, each with two wings, M^2, pivoted thereto, with liberty to turn to a limited extent, in combination with means, as the rack N' and pinion L', for

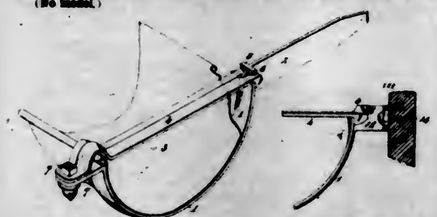
388,494. CAR-LOADER. William H. Jennings, Roberts, Fla. Filed Apr. 12, 1888. Serial No. 270,494. (No model.)



Claim.—1. The apparatus comprising a jack-car adapted to be run on an elevated track above the railroad-track, the elevating-screws depending from the platform of the jack-car, the nuts or hubs engaging said screws, the arms N, connected to the said screws, the links S, pivotally connected to the outer ends of said arms, and the cross-bars U, adapted to connect the lower ends of the said links, substantially as described.

2. The apparatus comprising the jack-car adapted to be run on an elevated track, the hooks O, depending from said car, the elevating-screws L, the nuts or hubs engaging said screws and supported on the jack-car platform, the arms N, pivoted to the lower ends of the elevating-screws, the links S, pivoted to said arms, the latter being adapted to be engaged by the hooks O, and the cross-bars U, adapted to connect the lower ends of the links, substantially as described.

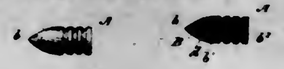
388,495. EAVES-GUTTER HANGER. Moritz Koch, St. Louis, Mo. Filed June 17, 1887. Renewed Feb. 2, 1888. Serial No. 262,825. (No model.)



Claim.—1. In an eaves-gutter hanger, the combination of the trough-bed 1, the spike 2, the cross-T attachment 5, with pendent bevel edges 6, under which the heel of the tie-strap 4 engages, said tie-strap having a catch-lug, 8, at its heel and fastened by the screw locking-bolt 9, that couples the tie-strap and trough-bed in front, substantially as described, and for the purpose set forth.

2. In an eaves-gutter hanger, the combination of the trough-bed, its attachment-bracket, the cross-T attachment 5, with its pendent bevel edges, which with the catch-lug on end of the tie-strap lock the heel of said strap and the projecting lugs of the trough-bed and tie-strap that are coupled by the locking-bolt 9, arranged to secure open unbridged troughs in the hanger, substantially as described, and for the purpose set forth.

388,496. BULLET. Frazier P. Lamotte, Pittsburg, Pa. Filed Apr. 7, 1888. Serial No. 269,909. (No model.)



Claim.—A needle-pointed bullet having the steel-pointed core B, with a shoulder or offset, *d*, and a leaden body, the said body extending over the shoulder or offset and covering a portion of the conical end of the core, whereby said core is prevented from coming in contact with the barrel of the fire-arm, substantially as specified.

388,497. ADJUSTABLE BLOCK FOR STRETCHING HATS. John R. McLoughlin, Utica, N. Y. Filed Apr. 10, 1888. Serial No. 270,297. (No model.)

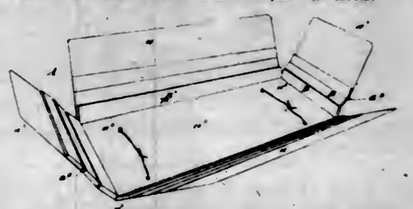


Claim.—1. In an adjustable hat-block, the combination, with a rigid section secured to a platform or table, of a movable section pivoted at its base by means of a horizontal rock-shaft, to which it is rigidly fixed, mounted in bearings upon the table or platform, whereby the upper end of the movable section may be moved inward toward the rigid section for the purpose of contracting the crown of the block, or outward for the purpose of expanding it, substantially as and for the purpose described.

2. In an adjustable hat-block, the combination, with a hollow rigid section secured upon a table or platform and connected with a steam-supply for the purpose of adapting it to receive steam in its interior, of a movable hollow section, also connected with a steam-supply and rigidly secured at its base to a horizontal rock-shaft mounted in bearings upon the table or platform and provided with a lever, whereby it may be oscillated and the crown of the movable section moved toward or away from the fixed section, substantially as and for the purpose described.

3. The combination, in a hat-block, of the fixed section A, secured to a table or platform, the movable section A', secured at its base to a rock-shaft, H, the rock-shaft H, mounted in bearings upon the table or platform, the lever L, for oscillating same, provided with the spur and thumb-screw S, and the curved slotted arm T, secured to the table, substantially as and for the purpose described.

388,498. FILING-CASE. Benjamin H. Morgan, Leavenworth, Kans. Filed Mar. 22, 1888. Serial No. 268,088. (No model.)



Claim.—1. A filing-case having a rigid face portion and side and end folds adapted to overlap upon the said face portion and each other, having longitudinal side and transverse end grooves at the folding-joints, and a re-enforce rigid strip upon the inner sides of said folds parallel in relation to and above said grooves and adapted to overlap in said grooves in unison with said side and end folds upon said face portions, as specified.

2. A filing-case having a rigid face portion and flexible side and end folds adapted to overlap upon the said face portion and each other, having longitudinal side and transverse end grooves at the folding-joints, and a series of independent rigid re-enforce strips upon the inner sides of said folds parallel in relation to said longitudinal and said transverse grooves, said folds having intermediate grooves between said independent rigid strips, for the purpose described.

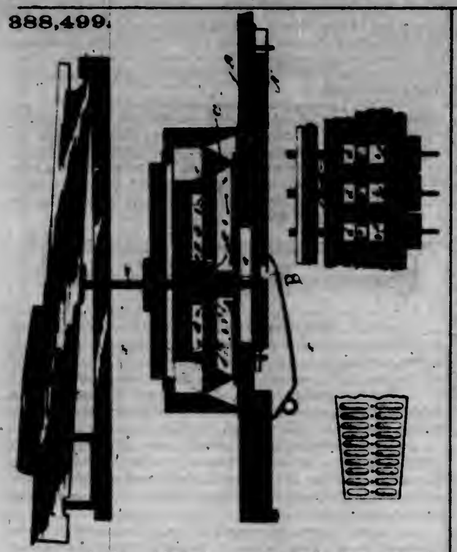
388,499. REED-ORGAN. Gustav B. Newman, Chicago, Ill. Filed June 14, 1888. Serial No. 277,062. (No model.)

Claim.—1. In a reed-organ, the combination, with the usual cells, of supplemental cells, the usual cells being provided with ports communicating with the supplemental cells at both front and rear of said cells, substantially as described.

2. In a reed-organ, the combination, with the usual cell-board, of a supplemental cell-board having a series of cells closed at their ends and arranged above the cells of the cell-board, the top of the usual cell-board being provided with the front and rear perforations leading into the cells of the supplemental cell-board, substantially as described.

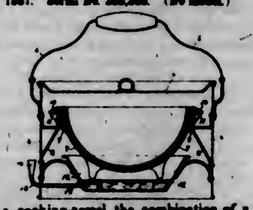
3. In a reed-organ, the combination, with the reeds A^3 and the cell-board B, having cells *b*, and having perforations *b'* and *b''*, of the

388,499.



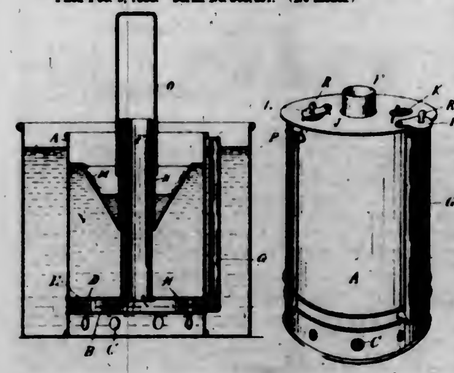
supplemental cell-board D, having a series of cells, *d*, communicating at their ends with the cells *b* of the usual cell-board B, substantially as described.

388,500. COOKING-VESSEL. Charles J. Parker, Alberton, Md. Filed Nov. 16, 1887. Serial No. 255,393. (No model.)



Claim.—In a cooking-vessel, the combination of a casing the ends of which are open, a cover for the upper end of said casing, a cooking-vessel suspended in the said casing, an evaporating-pan, 12, suspended in said casing and under said cooking-vessel in such position that a space will be formed between the sides of the said evaporating-pan and the inside of said casing, whereby the heated gases from the heat-source and the steam from the evaporating-pan will mingle and impinge on the cooking-vessel, and the tube 13, with its outer end, 14, open and above the level of the water in the evaporating-pan, substantially as shown, and for the purpose set forth.

388,501. CREAMING-CAN. Clarence W. Parks, Moscota, Mich. Filed Feb. 9, 1888. Serial No. 263,491. (No model.)



Claim.—1. In a creaming-can, the combination, with the can, of a false bottom forming an air-chamber near the bottom thereof, a spiral partition secured in that air-chamber to form a circulating-flue, the outer tube communicating with the outer end of said flue, and an inner tube communicating with the inner end of that flue and extending centrally within the can, projecting through the cover thereof, substantially as described.

2. In a creaming-can, the combination, with the can, of a false bottom forming an air-chamber near the bottom thereof, a spiral partition secured in that air-chamber to form a circulating-flue, the outer tube communicating with the outer end of said flue, an inner tube communicating with the inner end of that flue extending centrally within the can and projecting through the cover thereof, and a water-circulating chamber formed below the bottom of the can, substantially as described.

3. In a creaming-can, the combination of the can A, having the extension below its bottom having perforations, of the false bottom D, forming an air-chamber on the bottom of the can, a spiral-flue strip secured in that air-chamber, an outer tube communicating at the periphery with that air-chamber, an inner tube communicating with the center of that air-chamber and rising centrally therefrom through the top of the can, and a tight cover provided with ventilating-apertures having hinged shutters, all combined to operate substantially as described.

388,502. GATE. Jacob W. Parlin, Fancy Prairie, Ill. Filed Apr. 28, 1888. Serial No. 271,783. (No model.)



Claim.—1. The combination, with the gate and supports for the inner end of the gate, of the casting D, having the lateral arms *d*, and having its lower end bent to embrace the lower edge of a rail of the gate, the pivoted catch *h* to bear on the upper edge of the said rail and hold it down, and the supporting-rods E and F, the rod E being adjustably connected with the said arms, substantially as described, for the purpose specified.

2. The combination, with the gate and supports for the inner end of the gate, of the casting D, having the lateral arms *d*, and having the pivoted catch *h* at its upper end, the roller H at the lower end of the casting, the rod F, forming a journal for the said roller H, and having its lower end bifurcated, and the rod E, adjustably connected with the said arms D and with the gate-supports, substantially as described.

3. The combination, with the gate-post and the gate, of the fixed support for the inner end of the gate, the casting having a lateral arm that is provided with a series of openings, the rod F, having the casting pivoted on its upper end, and the rod E, adjustably interposed between the casting and the gate-post, substantially as and for the purpose described.

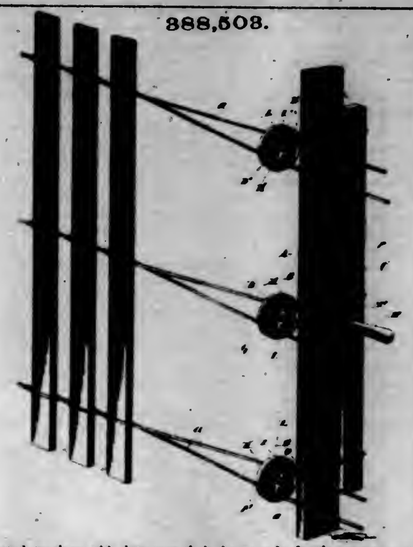
4. The combination, with the gate-post, the gate, and the bolts C and C', of the support *g*, the casting D, having a roller and lateral arms extending in opposite directions, which are provided with a series of openings, and having a pivoted catch, the rod E, adjustably interposed between the casting and the upper bolt, and the rod F, pivotally connected with the casting and having its lower end bifurcated, substantially as described.

5. The combination, with the gate-post, the gate, and the bolts C and C', of the frame G, having the roller *g* swiveled upon the bolt C, the casting D, having the oppositely-disposed arms *d*, which have a series of openings, and having its lower end bent up to embrace a rail of the gate, the roller H, the rod F, having its upper end connected with the casting and forming a support for the roller H, and having its lower end bifurcated and adapted to fit in an opening in the bolt C', the rod E, adjustably interposed between the casting and the bolt C, and the pivoted catch *h*, substantially as and for the purpose described.

388,503. FENCE-MACHINE. William Pieper, Hicksville, Ohio. Filed July 17, 1888. Serial No. 280,280. (No model.)

Claim.—1. The combination, in a fence-machine, of the revolvable twisting heads or disks having the radial open slots, and the locking-plates pivoted on said twisting heads or disks and having the arms

388,503.



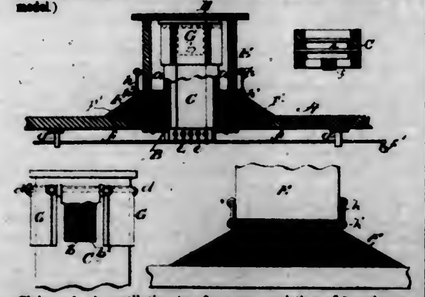
adapted to close said slots near their inner ends, for the purpose set forth, substantially as described.

2. The combination, in a feeder-machine, of the revoluble twisting heads or disks having the open slots to receive the fleece-wires, the locking-plates pivoted on said heads or disks and having the right-angled arms at their ends adapted to close the slots near the inner ends thereof for the purpose set forth, and the detent to engage and secure the said locking-plates, substantially as described.

3. The combination of the bar A, the arms or plates B, projecting from one side thereof and having the open slots D E on opposite sides, the revoluble twisting-heads pivoted to the said arms or plate and having the open slots, said head being further provided with the arms O, the operating-bar and the arm projecting from the same and pivotally connected to the arms O, substantially as described.

4. The combination of the arm A, the plates or arms B, secured thereto and projecting from one side thereof and provided with the slots D E, the twisting heads or disks pivoted at the outer ends of said arms or plates and having the radial open slots, the locking-plates K, pivoted to the said piston disks or heads and having the arms L, projecting in opposite directions, for the purpose set forth, the operating-bar P, and means, substantially as described, connecting said operating-bar to the piston heads or disks, whereby the latter may be partly rotated simultaneously, substantially as described.

388,504. VENTILATING CARS. Hiram Pendyer, Washington, D. C., assignor of fifty-one one-hundredths to Joseph P. Collins and James R. Hicks, same place. Filed Dec. 20, 1887. Serial No. 258,235. (No model.)



Claim.—1. A ventilating-top for cars, consisting of a casing provided with side openings and secured to the top of a car over an opening in said car, swing-blinds pivoted above said openings, and a cap or hood extending over said casing and projecting downward below said blinds, in combination with the encircling screen F and a series of slats pivoted at the said car-opening and connected to an operating-rod, substantially as set forth.

2. In a car-ventilator, a casing provided with side openings having screens and secured over an opening in the top of the car, vertical swing-blinds hung over said openings, a cap extending over said casing, and a dust-screen connected thereto by hooks and eyebolts, in combination with a series of slats connected to an operating-rod, substantially as shown and specified.

388,505. THERMAL CIRCUIT-CLOSER FOR FIRE-ALARMS. Ramon S. Perez and Ramon S. Rodrigo, Vitoria, Spain. Filed Mar. 26, 1888. Serial No. 268,988. (No model.) Patented in Belgium Mar. 4, 1887, No. 76,973; in France Mar. 9, 1887, No. 182,881; in Luxemburg Mar. 10, 1887, No. 514; in England Mar. 12, 1887, No. 3,702; in Spain Mar. 30, 1887, No. 10,776; in Italy Aug. 30, 1887, No. 20,913, and in Portugal Nov. 3, 1887, No. 1,189.



Claim.—1. The combination, with a body of large mass, of a body of small mass tensioned thereon, said bodies being expansible by heat, and contacts adapted to be brought in operation by loss of tension of said body of small mass upon a sudden rise of temperature.

2. The combination, with a metallic frame, of a metallic wire stretched thereon, and contacts adapted to be brought into operation by loss of tension of said wire upon a sudden rise of temperature.

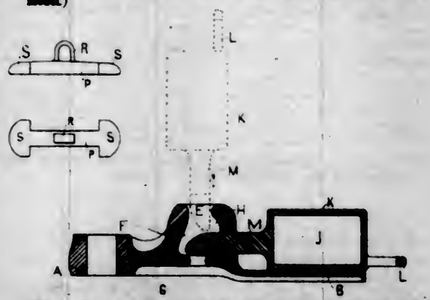
3. The combination, with a metallic frame, of a metallic wire stretched thereon, a stationary contact, a movable contact opposed to said stationary contact, and a spring adapted to press said movable contact onto said stationary contact upon a sudden rise of temperature, said wire holding said contacts apart by its tension.

4. The combination, with a metallic frame, C, of buttons D on the extremities of said frame, a wire, H, stretched around said buttons, contact-plate G, spring F, and contact K, substantially as set forth.

5. The combination of a support, A B B, a metallic frame, C, buttons D thereon, a wire, H, stretched around said buttons, bracket X on said frame, spiral spring F within said bracket, plate G, supported by said spring and insulated, and contact-screw K, supported by said bracket, substantially as set forth.

6. The combination of a base-plate, A, two bars, B, thereon, said bars being perforated and recessed on their opposing faces, a metallic frame, C, supported between said bars, buttons D D on the extremities of said frame, an endless wire, H, stretched around said buttons, a bracket, X, on said frame C, and insulating-plate J, supported by said bracket, a spiral spring, F, supported by frame C, a plate, G, on said spring, pins on said plate G, an adjustable contact-screw, K, on said plate J, and terminals M N in electric connection with said contact-screw J and plate G, respectively, substantially as and for the purpose set forth.

388,506. COUPLING DEVICE FOR STREET-CARS. F. Arthur Pierce, Chicago, Ill. Filed Jan. 9, 1888. Serial No. 260,197. (No model.)

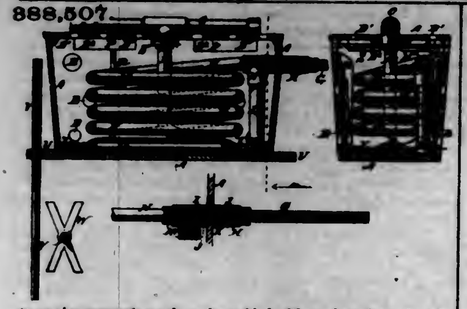


Claim.—In a coupling device for vehicles, the combination of a coupling-piece having an internal cavity with a narrow slot above and a vertical slot in front with a coupler provided with a head to rest in said cavity, a narrow portion, M, adapted to rest in the vertical slot, and an eye on the back of said coupler, whereby it may be elevated into a vertical position, so that its head may be inserted into the narrow slot, as described, and a supporting-plate projecting from said coupling-piece and adapted to support the coupler when the same is in position.

388,507. APPARATUS FOR BURNING HYDROCARBON OIL. George R. Grymes, Boston, Mass. Filed Dec. 27, 1887. Serial No. 259,154. (No model.)

Claim.—1. In an improved apparatus for the combustion of hydrocarbon oils, the following elements: a casing with projecting legs

388,507.

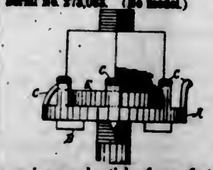


to receive supporting-rods, and provided with graduated openings in the side walls thereof, whose diameters increase from the bottom upward, for the purpose described, an interior convex dispenser integral with the bottom, a foraminous removable top engaging with said casing, a retort of a helicoform character provided at its inlet with an annular chambered coupling suspending a vaporizing-chamber, and further provided at its outlet with terminals diverging at right angles and perforated to emit vapor and to permit ignition of the same, means to uphold said retort, substantially as described, a non-destructible absorbent material surrounding said dispenser to accelerate the heating of said retort, and the threaded vertical rods and supporting-base thereof, in conjunction with said projecting legs, to regulate the position of said apparatus in the fire-pot of the stove or furnace with which it may be employed, all arranged substantially in the manner and for the purpose specified.

2. In an apparatus for burning hydrocarbon oils, the casing A, forming the combustion-chamber, provided with graduated apertures B, for admitting air, and elongated enlarged apertures B^2, contiguous to its top, admitting a preponderance of warmer air, and the convex dispenser Q, integral with the bottom, all arranged and combined to operate in conjunction with the retort N, provided with extended terminals O O, the orifices P P therein for the egress of vapor, the coupling H, connected to said retort, provided interiorly with a feed-duct, J, and exteriorly with a pendent vaporizer, L, and the feed-pipe G, establishing communication from the fuel-supply to said retort, substantially for the purpose and in the manner specified.

3. In an apparatus for the burning of hydrocarbon oils, the combination, with the vaporizer L, the coupling H, provided with an annular space, I, to preserve a low temperature of oil, and adapted to receive the feed-pipe G, provided with a drip-duct, J, the retort N, the perforated terminals O O, thereto connected, and the supporting-bar S, combined to coact with the foraminous casing A, provided integrally with a convex dispenser, Q, apertures B and F, lugs U, and threaded graduating supporting-rods V, and base W, thereto united, substantially as and for the purpose set forth.

388,508. NUT-LOCK. William Sleeper, Jr., Troy, N. Y. Filed May 7, 1888. Serial No. 273,083. (No model.)



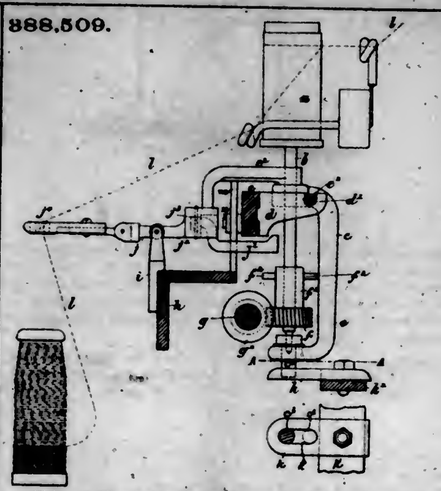
Claim.—1. As an improved article of manufacture, a nut-locking washer made of a single piece of flexible metal, consisting of a plate provided with a central bolt-hole and means for preventing the washer from turning on the bolt, and having a peripheral lug projecting from the nut side of the washer, and on the same side a boss around the bolt-hole raised above the base of the lug, substantially as described.

2. A nut-locking washer composed of an integral malleable casting having a central bolt-hole and means for preventing the washer from turning on the bolt, and provided with a peripheral lug projecting from the nut side of the washer and having the end of the lug thicker than the body part and inclined outward from the center of the washer, substantially as described.

388,509. STOP-MOTION FOR TWISTING-FRAMES, &c. Pierre Smith, Jr., and Smith Ashton, Keighley, County of York, England. Filed Nov. 2, 1887. Serial No. 254,073. (No model.) Patented in England May 19, 1887, No. 7,209.

Brief.—The object of the invention is to provide improved devices for stopping the rotation of the vertical delivery-roller in twisting-frames, &c., upon the breaking of a thread.

388,509.

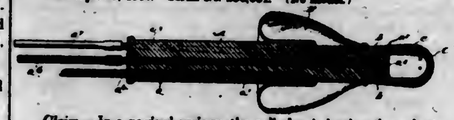


Claim.—1. The combination, in a stop-motion for preventing waste in twisting and other frames, of a swing-frame, *c*, the delivery-roller *a* and its spindle *b*, carried by such frame, pins f^3, gear-pinion *f*, driving-wheel *g'*, supports *d*, and guide *k* for the swing-frame *c*, trigger-lever *m*, and trap-lever *j*, having an eye, j^4, extension j^2, and hinge j^1, all substantially as set forth.

2. The combination, in a stop-motion for waste-prevention in twisting-frames and like apparatus, of a swing-frame, *c*, the delivery-roller, spindle *b*, gear *g'*, driving-gear *f* and its pins or projections f^3, capable of being engaged with or disengaged from said gear *g'*, a trigger-lever, *m*, the placing and displacing of which engages and disengages the gears *f* and *g'*, and a trap-lever, *j*, having an extension, j^2, hinge j^1, and eye j^4, substantially as shown, for the purpose set forth.

3. In a stop-motion for twisting-frames and like apparatus, the combination, with a balanced trap-lever, *j*, having a hinged end, j^1, of a swing-frame, *c*, having an arm, *c'*, a trigger for supporting said arm, spindle *b*, gear *f*, pins f^3, and delivery-roll *a*, substantially as shown and described.

388,510. VAGINAL SYRINGE. David J. Terrell, Kokomo, Ind. Filed Apr. 25, 1887. Serial No. 236,021. (No model.)

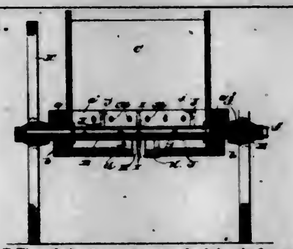


Claim.—In a vaginal syringe, the cylinder A, having three ducts, *a a' a²*, the soft-rubber bag B, surrounding and secured to the cylinder at the upper or front end thereof, said bag being constructed conical in form with the smaller end of the cone facing the front end of the cylinder, whereby the said bag when inflated and inserted beyond the labia forms a tapering wedge or stop-plug to dilate the walls of the vagina and also close or stop up the channel and prevent the fluids from escaping from the vagina, and thus the bag may be held in position without the use of the hand, the duct *a* communicating with the vagina, the tube a^2 connecting with the duct *a* and running to a suitable place of deposit, the nipple C on the front or upper end of the cylinder beyond the bag B, the latter being located at one end only of the cylinder, so as to have the other end thereof projecting from the vagina, which projecting portion forms a convenient hand-hold to withdraw the syringe, the tubes a^4 a^5, connecting with the ducts *a'* a^2, suitable clamps, D, provided on the pipes a^4 a^5 a^6, the bulb W, having the tube w^2 and the pipe *w*, the ends of the tubes a^4 a^5 being detachably connected to the tube w^2 of the syringe, whereby the bulb W may be detached from the pipes a^4 a^5 for the purpose set forth, or when in use the clamp D of air-tube a^4 may be closed, so that the vagina may be supplied with fluid from the bulb W through the tube a^5, or when the clamp of fluid-tube a^5 is closed the bag B may be supplied with air or gas from the bulb W through the air-tube a^4, as set forth.

388,511. FERTILIZER-DISTRIBUTER. William W. Terrebone, Hampton, Va. Filed Apr. 9, 1888. Serial No. 270,014. (No model.)

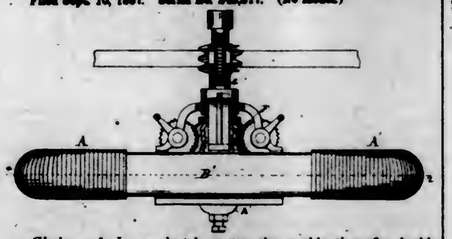
Claim.—In a fertilizer-distributer, the combination, with the hop-

388,511.



per, the wheels F F', and the frame composed of the shafts and cross-beams, of the hollow axle turning in the semicircular blocks *b*, and having the wheel F, fixed on its left end, and the solid journal E, secured in the right end of said axle, and the nut *f*, retaining the wheel F' on said journal, on which the said wheel turns loosely, substantially as specified.

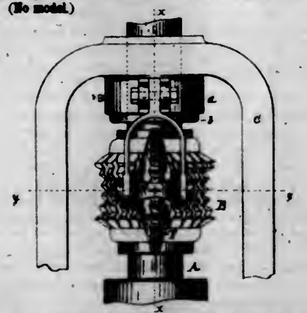
388,512. ELECTRIC MOTOR. JEAN T. VAN GEMERT, New York, N. Y., assignor to the Van Gestel Manufacturing Company, of New York. Filed Sept. 10, 1887. Serial No. 249,317. (No model.)



Claim.—1. In an electric motor, the combination of a double field-magnet composed of two semicircular electro-magnets, A A', whose like poles are respectively joined to two pole-pieces, B B', formed to substantially continue the lines of the magnetic circuit, and having semicircular channels *c c* in their faces, which admit and embrace the disk-armature, with the armature D, having hollow radial arms *d d*, and a core composed of two thin bands of iron corrugated in opposite directions, as herein described.

2. In an electric motor, the combination of the double electro-magnets A A' and pole-pieces B B' with the disk-armature D, rotating in the same plane as the field-magnet, and having a core composed of two strips of thin iron, *m* and *n*, one corrugated longitudinally and the other transversely, which are coiled together spirally upon the hollow arms *d d*, as set forth.

388,513. COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES. JEAN T. VAN GEMERT, New York, N. Y., assignor to the Van Gestel Manufacturing Company, of New York. Filed Sept. 10, 1887. Serial No. 249,318. (No model.)



Claim.—1. A collector or commutator for dynamo-electric machines or electric motors, consisting of a worm-gear placed upon the armature-shaft of the machine, the face of the gear being composed of bars of copper or other suitable material mutually insulated and placed parallel with the shaft, the same being connected severally with the different coils of the armature, and two collector-wheels of similar conductive material having teeth which correspond and mesh with the thread of the worm placed on diametrically-opposite sides of the worm, and having their axes at right angles with the worm-shaft, the said wheels being connected with the two extremities of the external electric circuit.

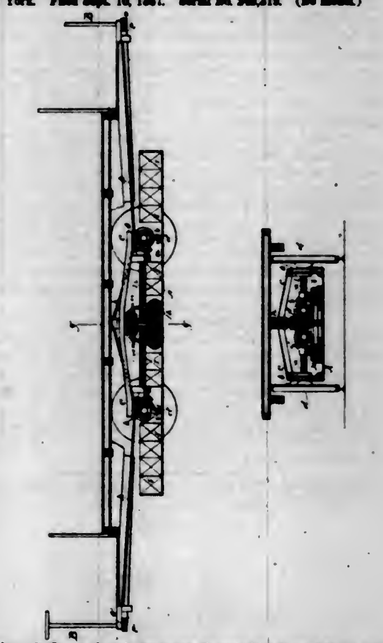
2. In a dynamo-electric machine or electric motor, the combination of a bar-commutator whose face is constructed in the form of a worm-gear, with two collector-wheels having teeth around their peripheries formed to mesh with the worm-commutator, the said collector-wheels being adjustably attached to the frame of the machine on opposite sides of the commutator and being insulated from said frame, but electrically connected with the two extremities of the external electric circuit.

3. In a dynamo-electric machine or electric motor, the combination of the commutator B, situated upon the armature-shaft and having its face in the form of a screw-gear, with the collector-wheels F F' gearing therewith, and the arms E E' supporting said wheels, as above described.

4. The combination of a bar-commutator, B, having a screw-thread cut about its face, and the collector-wheels F and F', which have teeth around their faces which mesh with the thread upon the commutator, with the hinged supporting-arms E E', the ring *a*, and hub *b*, as herein set forth.

5. In a dynamo-electric machine or motor, the combination of the worm-shaped commutator B and the collector-wheels F F', gearing therewith, with the frame *d*, insulators *c*, hinged arms E E', springs K, ring *a*, and hub *b*, all as above described and set forth.

388,514. ELECTRIC TRAM-CAR. JEAN T. VAN GEMERT, New York, N. Y., assignor to the Van Gestel Manufacturing Company, of New York. Filed Sept. 10, 1887. Serial No. 249,319. (No model.)



Claim.—1. In an electric tram-car, the combination of the truck of the car with a platform detachably suspended from the axles, an electric motor and electric batteries mounted upon said platform, and suitable gearing connecting the motor with the axles of the car, as herein described.

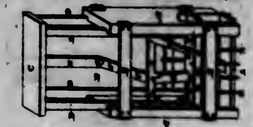
2. In an electric tram-car, the combination of the platform or box A, motor M, shafts *m* and *n*, gears *m' m'' n' n''*, clutches H H', and rod *h*, with the axles of the car and wheels of the car, as described.

3. In an electric tram-car, the combination of the axles *a a*, and the box or platform A, removably attached thereto, with the motor M, suitable gearing connecting the motor with the axles, and the frame *c*, supporting said gearing, all arranged as and for the purpose set forth.

4. In an electric tram-car, the combination of the truck of the car and the platform A, attached to the axles thereof, and the batteries S and motor M, mounted upon said platform, with the gear-wheels *m' m'' n' n''* upon the axles *a a* of the truck, and the clutches H H', operated by the rod *h* from the platform of the car by means of the hand-wheel B and pinion *o*, and rack *p*, to connect said gear-wheel with either axle, in the manner described.

5. In an electric tram-car, the combination of the axles of the car *a a* with the bearings *h*, links or hooks *i i*, platform A, and motor M, geared to said axles, as and for the purpose set forth.

388,515. MOLE AND GOPHER TRAP. CHARLES VAN WORMER, Auburn, Ind. Filed June 6, 1887. Serial No. 240,503. (No model.)



Claim.—The combination of the frame A, provided with a cross-piece, H, the vertically-movable and weighted frame C D, provided with spikes at its lower end and placed inside of the one A, the hanger E, secured at its upper end to the frame, the toggle-levers F G loosely fastened to the hanger E at one end and to the stationary cross-piece H of the frame A at the other, the latch I, pivoted to the frame A at one end and made to catch over a pin on the levers, the connecting-rod K, fastened to the latch I at one end, and the tripping device fastened to the lower end of the rod K, substantially as shown.

388,516. HOVE-TRUCK. ROBERT G. WEBER, Dayton, Ohio. Filed May 3, 1888. Serial No. 272,888. (No model.)

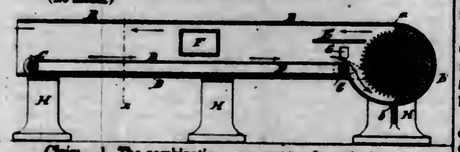


Claim.—1. In an elevating-truck, the combination of the frame B, mounted on casters, the platform A, pivoted supporting-blocks C C, brace D, to engage notches in the under rails, and detachable lever G, to engage the staple *s* of the forward supporting-block, substantially as set forth.

2. The lever G, having notch *t*, in arrangement with the pivotal block C, provided with staple *s* to engage said lever, substantially as and for the purposes specified.

3. The supporting-plate E, with orifice to embrace the rail of the frame B, and an orifice, *o*, for the pivot of a caster, substantially as set forth.

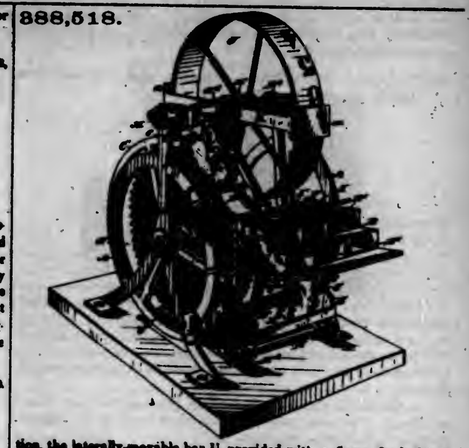
388,517. MACHINE FOR REDUCING FEATHERS. CESAR WOLFF, Frankfort-on-the-Main, Germany. Filed Sept. 3, 1887. Serial No. 248,703. (No model.)



Claim.—1. The combination, in a machine for stripping feathers, of a rotary toothed picking and blowing drum, a stationary casing, within which said drum works and which is furnished with an internal toothed concave, an endless apron arranged to move toward said drum, and a trunk which forms a prolongation of said casing and in which there is an opening above the apron, but distant from the drum, for the introduction of the feathers, substantially as herein described.

2. The combination, with the rotary toothed drum A and the endless apron C, of the casing B, containing said drum and apron, and furnished with a toothed concave, *a b*, confronting to said drum, and provided with the openings F G and partition E, substantially as herein described, and for the purpose set forth.

388,518. INDICATING AND CALCULATING MACHINE. PHILIP TOY, Dayton, Ohio. Filed Dec. 13, 1886. Serial No. 220,911. (Model.)



Claim.—1. The combination of the pivoted key-frame B with a key, B', pivoted thereto, a supplemental frame, F, pivoted to frame B and arranged to be rocked by said key, an arm on said supplemental frame, a fixed plate engaged by said arm to lock said frames B F until said key moves said arm out of the way of said plate by rocking the frame F, a wheel bearing numerals on its periphery, and intermediate devices whereby said wheel is operated by said frame, substantially as set forth.

2. The combination of the shields *m*, bar K, and rod L with the pivoted frame E, the key and key-frame whereby frame E receives motion, the laterally-movible bar U, provided with a flange for locking said key-frame, and the obliquely-beveled pin 1, carried by said key-frame and arranged to come in contact with a similar bevel on the bar U as the key-frame descends, for the purpose set forth.

3. The pivoted frame E, provided with a shoulder, E', in combination with a peripherally-toothed wheel, C, engaged and locked by said shoulder, a key-frame and key arranged to rock said frame E for effecting said locking, and a peripherally-graduated attachment of said toothed wheel, whereby it becomes an indicating or computation wheel, substantially as set forth.

4. In combination with a key and key-frame, a segment moving with said frame, a pinion and indicator-wheel driven by said segment, a locking device for said key-frame relieved by said key, a computation-wheel provided with teeth for step-by-step forward motion, and a pawl attached to said key-frame for driving said teeth, substantially as set forth.

5. A key and key-frame, in combination with an indicator-wheel, J, intervening gearing whereby said wheel is turned forward or backward as said key-frame vibrates downward or upward, shields *m*, for covering the numbers on said wheel, a pivoted frame, E, operated by said key and key-frame, a pivoted bar which carries said shields, and a rod connecting said bar to said lower frame, in order that the depression of the key and key-frame may move the indicator-wheel on its axis a certain distance and then uncover the numeral thus presented by its periphery, substantially as set forth.

6. In combination with a key and key-frame, a pawl carried by said key-frame, a toothed wheel moved step by step by said pawl, a graduated spiral carried by said wheel, a toothed indicator-plate engaged and turned by said spiral, and a spring-catch which allows said plate to be turned back to zero at will, substantially as set forth.

7. A vibratory key-frame and a spring-pressed pawl which is carried thereby and adapted to be withdrawn by hand, in combination with a toothed computation-wheel which is driven by said key-frame and pawl, an additional graduated wheel, J, and intervening devices whereby the latter wheel is operated by said key-frame, the said pawl serving to lock the key-frame against upward motion by its engagement with the teeth of said computation-wheel, substantially as set forth.

8. An indicator-wheel having two reverse sets of numerals on its periphery, in combination with a pivoted bar, shields on said bar for simultaneously covering or uncovering the same numerals at front and back, and mechanism for turning said wheel and rocking said bar, substantially as set forth.

388,519. FINGER-SHIELD. ARTHUR ARMSTRONG, Ishpeming, Mich. Filed Apr. 2, 1888. Serial No. 269,254. (No model.)



Claim.—1. A finger-shield formed of a curved strip of metal adapted to receive the end of the finger, and a leather contact-surface carried by the said metallic strip, substantially as specified.

2. In a finger-shield for players of stringed instruments, the combination of the curved strip A, the leather covering B, and a coating of Venice turpentine and pitch applied to the leather covering, substantially as specified.

388,518.

tion, the laterally-movible bar U, provided with a flange for locking said key-frame, and the obliquely-beveled pin 1, carried by said key-frame and arranged to come in contact with a similar bevel on the bar U as the key-frame descends, for the purpose set forth.

3. The pivoted frame E, provided with a shoulder, E', in combination with a peripherally-toothed wheel, C, engaged and locked by said shoulder, a key-frame and key arranged to rock said frame E for effecting said locking, and a peripherally-graduated attachment of said toothed wheel, whereby it becomes an indicating or computation wheel, substantially as set forth.

4. In combination with a key and key-frame, a segment moving with said frame, a pinion and indicator-wheel driven by said segment, a locking device for said key-frame relieved by said key, a computation-wheel provided with teeth for step-by-step forward motion, and a pawl attached to said key-frame for driving said teeth, substantially as set forth.

5. A key and key-frame, in combination with an indicator-wheel, J, intervening gearing whereby said wheel is turned forward or backward as said key-frame vibrates downward or upward, shields *m*, for covering the numbers on said wheel, a pivoted frame, E, operated by said key and key-frame, a pivoted bar which carries said shields, and a rod connecting said bar to said lower frame, in order that the depression of the key and key-frame may move the indicator-wheel on its axis a certain distance and then uncover the numeral thus presented by its periphery, substantially as set forth.

6. In combination with a key and key-frame, a pawl carried by said key-frame, a toothed wheel moved step by step by said pawl, a graduated spiral carried by said wheel, a toothed indicator-plate engaged and turned by said spiral, and a spring-catch which allows said plate to be turned back to zero at will, substantially as set forth.

7. A vibratory key-frame and a spring-pressed pawl which is carried thereby and adapted to be withdrawn by hand, in combination with a toothed computation-wheel which is driven by said key-frame and pawl, an additional graduated wheel, J, and intervening devices whereby the latter wheel is operated by said key-frame, the said pawl serving to lock the key-frame against upward motion by its engagement with the teeth of said computation-wheel, substantially as set forth.

8. An indicator-wheel having two reverse sets of numerals on its periphery, in combination with a pivoted bar, shields on said bar for simultaneously covering or uncovering the same numerals at front and back, and mechanism for turning said wheel and rocking said bar, substantially as set forth.

3. As an improved article of manufacture, a finger shield formed of a curved metallic strip and a leather covering inclosing its central portion, substantially as specified.

888,520. FEED-TROUGH. William Ansems, Rockburg, Wis. Filed Jan. 27, 1888. Serial No. 262,100. (Model.)



Claim.—1. A feed and drinking trough comprising a trough divided into two compartments, a hopper supported in one compartment and extending to within a short distance of the bottom thereof, and an open-bottom box hinged at one side of the other compartment and provided with a door in its top, substantially as herein shown and described.

2. The combination, with a trough, of an open-bottom box hinged at one side of the trough and provided with a door in its top, substantially as herein shown and described.

3. In a feed and water trough, the combination, with the standards B^2 and A^2, the bottom A, and sides B E, of a box, F, having an open bottom hinged to one side piece extending horizontally above the bottom and nearly to the opposite side, a partition, d^2, longitudinally dividing said box, and a door, c, located in the top thereof, substantially as shown and described.

4. In a feed and water trough, the combination, with the standards B^2 and A^2, the bottom A, and outwardly-inclined sides B E', of a box, F, having an open bottom, and inclined front and hinged to one side piece extending horizontally above the bottom and nearly to the opposite side, a door, c, located in the top of the box, and means, substantially as shown and described, for securing the box in a horizontal position, as and for the purpose set forth.

888,521. THILL-COUPLING. Omar P. Barker, Peoria, Ill. Filed May 28, 1888. Serial No. 274,668. (No model.)



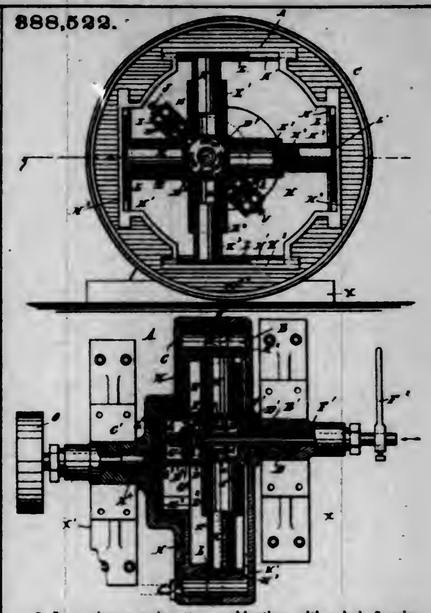
Claim.—1. A thill-coupling or horse-detacher comprising the thill-irons E, having heads *g*, stationary jaws B, the clips *a*, securing said jaws to the axle and provided with eyes *m*, the jaws C, pivoted to the fixed jaws and having operating-springs, the guide-eyes *n n* at or near the center of the axle, and cord or chain F, passed down through openings in the vehicle-body, through the eyes *n* and clip-eyes *m*, and secured to the pivoted jaws, the said cord or chain having knots or stops above the opening in the vehicle-body, substantially as set forth.

2. A vehicle-coupling or horse-detacher comprising the thill-irons E, having heads *g*, stationary jaws B, clips *a*, securing said jaws to the axle and provided with eyes *m*, the jaws C, pivoted to the fixed jaws and having operating-springs, the guide-eyes *n* and *n* at or near the center of the axle, a cord or chain, F, passing downward through openings in the vehicle-body, through the eyes *n* and the clip-eyes *m*, and secured to the pivoted jaws, the said cord or chain having knots or stops above the openings in the vehicle-bottom, a set-screw passing through the outer end of the upper jaw in contact with the inner face of the lower jaw, and a locking-block pivotally attached to said set-screw, all combined to operate substantially as and for the purpose specified.

888,522. ROTARY ENGINE. Joseph R. Bradshaw, Sarel, Ontario, Canada. Filed Feb. 13, 1888. Serial No. 264,671. (No model.)

Claim.—1. In a rotary engine, the combination, with a hub forming a valve-seat having ports and an exhaust-chamber, of a valve held on the said seat and operating over the said ports, a series of cylinders secured radially on the said hub and into which lead the said ports, pistons having central openings operating in the said cylinders, and a wheel held eccentrically to the said hub, and on the rim of which the said pistons operate, substantially as shown and described.

888,522.



2. In a rotary engine, the combination, with a hub forming a valve-seat having ports and an exhaust-chamber, of a fixed valve held on the said seat and operating over the said ports, cylinders secured radially on the said hub and into which lead the said ports, pistons operating in the said cylinders, a plate secured to the outer end of each piston, and a wheel provided with slots in which operate said plates, said wheel being held eccentrically to the said hub, substantially as shown and described.

3. In a rotary engine, the combination, with a hub forming a valve-seat having ports and an exhaust-chamber, of a fixed valve held on the said seat and operating over the said ports in the valve-seat, cylinders secured radially on the said hub and into which lead said ports, pistons operating in the said cylinders, plates secured to the outer ends of said pistons, a wheel provided with slots in which said plates travel, said wheel being held eccentrically to the said hub, and a casing made in two parts, forming bearings for the said hub and the said wheel, and also serving as an exhaust-chest connected with the said exhaust-chamber, substantially as shown and described.

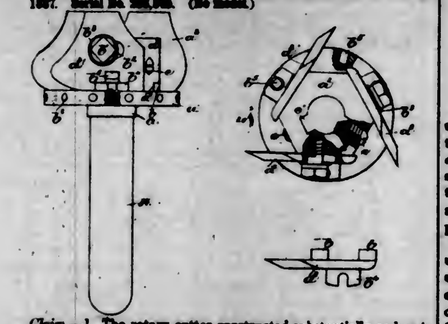
4. In a rotary engine, the combination, with a hub forming a valve-seat having ports and an exhaust-chamber, of an inlet-valve held on the said valve-seat and provided with an inlet-port and an outlet-port operating over the said ports in the valve-seat, an inlet-pipe supporting said valve, an offset formed on the said valve and provided with radial openings connected with the said pipe, a governor-valve consisting of a cap held to slide on the said offset over the said openings and an annular inclined flange secured to the said cap, and weighted slides having inclined slots engaging the said annular flange of the governor-valve, so as to move the latter forward or backward in its bearings to open and close the said openings in the valve, substantially as shown and described.

5. In a rotary engine, the combination, with a hub having a valve-seat and having a rotary motion, of a valve held on the said valve-seat and operating on the ports of the said valve-seat; an inlet-pipe carrying said valve and discharging into openings formed in an offset on the said valve, a cap held to slide on the said offset to open and close the openings in said offset, an annular inclined flange formed on the said cap, weighted slides having inclined slots engaging the said inclined flange, said weighted slides being mounted to slide radially on the said hub, and springs pressing against said weighted slides, substantially as shown and described.

6. In a rotary engine, the combination, with a hub having a valve-seat and having a rotary motion, of a valve held on the said valve-seat and operating on the ports of the said valve-seat, an inlet-pipe carrying said valve and discharging into openings formed in an offset on the said valve, a cap held to slide on the said offset to open and close said openings in it, an annular inclined flange formed on the said cap, weighted slides having inclined slots engaging the said inclined flange, said weighted slides being mounted to slide radially in the said hub,

springs pressing against the said weighted slides, and set-screws for regulating the tension of the said springs, substantially as shown and described.

888,523. ROTARY CUTTER. Charles H. Benjamin, Boston, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 31, 1887. Serial No. 253,903. (No model.)

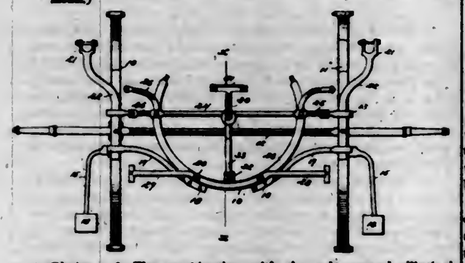


Claim.—1. The rotary cutter constructed substantially as herein described, it comprising a disk or plate, a cutter-head, and a knife secured to both the said disk or plate and cutter-head and capable of adjustment by movement of either the said disk or cutter-head, the one with relation to the other, substantially as described.

2. In a rotary cutter constructed substantially as herein described, the combination, with a shaft, of a disk or plate loosely mounted thereon, a cutter-head, and a knife secured to both the said cutter-head and disk or plate and capable of adjustment by movement of the said disk or cutter-head, the one with relation to the other, substantially as described.

3. A rotary cutter comprising a disk or plate, *c'*, a cutter-head provided with a rabbet to form a groove with the said plate or disk, and a knife secured to the said disk or plate and having lugs to enter the said groove, substantially as described.

888,524. RUNNING-GEAR FOR VEHICLES. Adam Bone, Murfreesborough, Tenn. Filed May 31, 1888. Serial No. 275,612. (No model.)



Claim.—1. The combination, with the axle, spaced elliptical springs clipped upon the same, a cross-bar uniting the springs, and thill-irons projected from said cross-bar, of a fifth-wheel having the lower section attached to the said cross-bar, a second short cross-bar secured to the upper section of the wheel, a king-pin passing through said cross-bars, and arms radiating from the upper cross-bar and the upper section of the wheel, substantially as shown and described.

2. The combination, with the axle, spaced elliptical springs clipped upon the same, a main cross-bar uniting the springs, and thill-irons projected from said cross-bar, of a fifth-wheel having the lower section attached to the said cross-bar, a second short cross-bar secured to the upper section of the wheel, a king-bolt passing through said cross-bars, a bifurcated guide-rod pivoted upon the king-bolt and attached to the upper wheel-section, and arms radiating from the short cross-bar, the king-bolt, and wheels, substantially as and for the purpose specified.

3. The combination, with the axle, spaced elliptical springs clipped upon the same, a main cross-bar uniting the springs, thill-irons projected forwardly from said cross-bar, and step-carrying bars projected rearwardly therefrom, of a fifth-wheel having the lower section attached to said cross-bar, a second short cross-bar secured to the upper wheel-section, a king-bolt passing through said cross-bars, a bifurcated guide-arm pivoted upon the said king-bolt and attached to the upper wheel-section, braces connecting the wheel and springs, and supporting-arms radiating from the short cross-bar, the king-bolt, and wheel, substantially as shown and described.

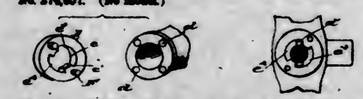
888,525. STOPPER FOR BOTTLES. William A. Bell, Philadelphia, Pa. Filed May 1, 1888. Serial No. 272,473. (No model.)



Claim.—1. In a bottle-stopper, the cork A, the screw-threaded casing *b*, the tube B, the nozzles C C', the thumb-screw D, fitted through the adjustable cap *p* and having secured on the end thereof the cork *c*, and the vent-plug *c*, in combination with the adjustable sleeve F, a screw-thread provided on the interior of the sleeve F, adjustable on the screw-thread of the casing *b*, the legs *h*, fastened to the sleeve F, and hooks *i* on the extremity of legs *h*, in the manner and for the purposes hereinbefore substantially set forth and described.

2. A bottle-stopper having a metal casing around the name or the upper part thereof, said casing provided with screw-threads, a tube extending longitudinally through the stopper, connected at its upper end with two nozzles and provided with a thumb-screw having a cork of rubber or other suitable material secured on the lower end thereof for the purpose of drawing or stopping the flow of the liquid passing down about midway between the two nozzles to the point of connection between the main tube or orifice with the two nozzles, the mouth of one of the nozzles provided with a vent regulated by a thumb-screw to admit air or not, as desired, the mouth of the other nozzle being open, in combination with an adjustable sleeve provided with screw-threads on the interior thereof, fitted or to be fitted on the screw-thread around the stopper, said sleeve being provided with fasteners having hook projections at their extremities adapted to catch under the rim of the neck of the bottle.

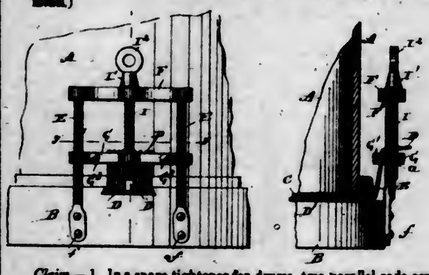
888,526. RIGHT AND LEFT HAND STOP AND WASTE FAUCET. William Bemis, Brooklyn, N. Y. Filed May 23, 1888. Serial No. 274,607. (No model.)



Claim.—1. The combination, with the faucet-casing having two sets of pin-receiving apertures approximately at right angles to each other in one end surrounding the key-bore, and the key extending through said bore and having transverse projections on its projecting end, of an adjustable ring-washer having pins registering with either set of said apertures, according to the position desired, and provided with internal lugs between and against which said transverse projections play, and the nut on the key holding the washer on the casing, whereby by changing the position of said ring-washer the faucet may be changed from a right to a left hand faucet, substantially as set forth.

2. The combination, with the faucet-casing having an annular recess in one end around its bore and two sets of pin-receiving apertures approximately at right angles to each other in the inner wall of said recess, and the key extending through the bore and having opposite transverse projections on the projecting end at said annular recess, and an adjustable ring-washer fitting in said annular recess and having pins registering with either set of said apertures, and internal lugs between which said key projections play, and the nut screwed on the end of the key over the washer and closing it, substantially as set forth.

888,527. SNARE-TIGHTENER FOR DRUMS. John H. Bouker, Jr., New York, N. Y. Filed July 10, 1888. Serial No. 279,236. (No model.)



Claim.—1. In a snare-tightener for drums, two parallel rods connected at one end by a cross-bar having an opening, two connected
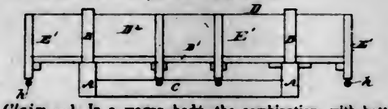
jaws, one of which is provided with a screw-threaded opening, and a screw-threaded rod in engagement with the openings in the cross-bar and jaw aforesaid, substantially as shown and described.

2. In a snare-tightener for drums, two parallel rods connected at one end by a cross-bar having a smooth opening, two connected jaws, one of which is provided with a screw-threaded opening and also provided on each end with a smooth opening, and a screw-threaded rod in engagement with the smooth opening in the cross-bar and in the screw-threaded opening in the jaw, the said parallel rods being engaged with the openings in the respective ends of the jaw aforesaid, substantially as shown and described.

3. In a snare-tightener for drums, two parallel rods connected at one end by a cross-bar having a smooth opening, two connected jaws, one of which is provided with a screw-threaded opening and a smooth opening in each end, a screw-threaded rod in engagement with the opening in the cross-bar and with the screw-threaded opening in the jaw aforesaid, the face of one of the jaws being serrated or roughened, the parts being connected substantially as shown and described.

4. In a snare-tightener for drums, the rods E E and connecting-cross-bar F, said bar being provided with an opening, in combination with the jaws G G', the jaw G being provided with smooth end openings which engage, respectively, the rods E, said jaws being provided with openings in alignment, which are engaged, respectively, by the screws G^2, the jaw G being provided with an opening in alignment with the opening in the cross-bar F, and the shouldered and screw-threaded rod I in engagement with the openings in the jaw and cross-bar aforesaid, substantially as shown and described.

388,528. WAGON-BODY. Felix Burgess, Darlington, Wis. Filed Feb. 17, 1888. Serial No. 264,346. (No model.)

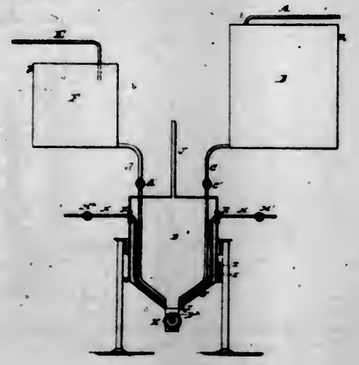


Claim.—1. In a wagon-body, the combination, with bottom boards, of interlocking transverse connecting-bars secured to the under side of the bottom and provided with pivoted buttons, substantially as and for the purpose described.

2. In a wagon-body, the combination, with bottom boards having their contiguous edges tongued and grooved, interlocking transverse connecting-bars secured to the under side of the bottom, forming a lap-joint, and a pivoted button upon the connecting-bars, adapted to cover the joint of said bars, right-angular brace-bars attached to the sides and embracing the bottom, and means for securing said bars to the bottom, substantially as and for the purpose specified.

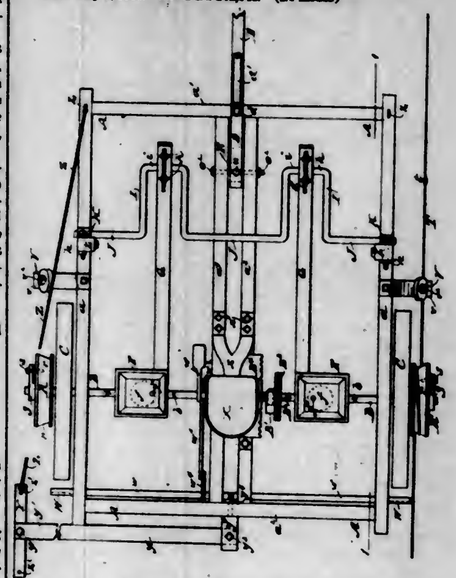
3. In a wagon-body, the combination, with bottom boards having their contiguous edges tongued and grooved, of the transverse connecting-bars d' d^3, secured to the respective bottom boards, and constructed with rabbeted ends to form a lap-joint, d^4, the pivoted buttons E E, secured upon said bars and spanning the joints at one side of the joint between the aforesaid bottom boards, the right-angular brace-bars E' E', attached to the sides and embracing the bottom, and set-screws h h, passing through their horizontal arms into contact with the bottom, substantially as described, whereby when said buttons are placed at right angles to the length of connecting-bars each half of the body composed of the posts above specified may be raised from the framing, in the manner hereinbefore described.

388,529. PROCESS OF OBTAINING CREOSOTE, &c. Franklin S. Clark, Charleston, S. C. Filed Apr. 27, 1887. Serial No. 236,209. (No model.)



Claim.—The process herein described, which consists in mingling caustic-soda solution containing creosote or analogous phenoloid bodies with pyroligneous acid, thereby occasioning a reaction between the mingled bodies, and depositing creosote, and forming acetate of soda by the union of the soda solution and the acetic acid of the pyroligneous-acid solution, substantially as described.

388,530. CHECK-ROW PLANTER. John Clark, Sheffield, Iowa. Filed May 5, 1888. Serial No. 272,941. (No model.)



Claim.—1. The combination, in a check-row planter, of a frame or sulky, a cranked axle or shaft journaled thereon, one or more planting-prods hung to said shaft, an oscillatory cranked shaft journaled on the frame, and a sway bar or bars connected to the prod or prods and hung on the crank-wrists of the oscillatory shaft, substantially as shown and described, whereby as the prod-shaft is rotated the prod or prods will be reciprocated vertically to enter and leave the ground, and will also be inclined toward the front and rear to avoid dragging in the soil, as set forth.

2. The combination, in a check-row planter, of a frame or sulky, a cranked axle or shaft journaled thereon, one or more planting-prods hung to the shaft, an oscillatory cranked shaft journaled in boxes vertically adjustable on the frame, and a sway bar or bars connected at one end to the prod or prods and hung at their other ends in boxes adjustable on the sway-bars toward and from the prod or prods and fitting the wrists of the oscillatory shaft-cranks, substantially as shown and described, whereby as the prod-shaft is rotated the prod or prods will be reciprocated vertically to enter and leave the ground, and the prods will also be inclined toward the front and rear to avoid dragging in the soil, and whereby also the sway-bars and prods may be adjusted to assure this action when the prods are set for planting at varying depths, as herein set forth.

3. In a check-row planter, the combination, with a frame, a cranked axle or shaft journaled thereon, and a wheel on said shaft operative by a check-row wire, of a prod or prods hung to wrists of the shaft-cranks, and said wrists provided with a pin, as c^3, a self-closing jaw at the extremity of the prod, and connections from said jaw operative by the pin c^3 for opening the jaw to drop the seed, substantially as herein set forth.

4. In a check-row planter, the combination, with a frame, a cranked axle or shaft journaled thereon, and a wheel on said shaft operative by a check-row wire for rotating the shaft, of a prod or prods hung on wrists of the shaft-cranks, which have pins c^3, and said prods provided with a self-closing jaw, M, of a shaft, O, journaled in the prod or prods and having a crank, o, a pitman connecting said crank to the jaw M, and said shaft O having an arm, o^3, operative by the pin c^3, to open the jaw to drop the seed, substantially as herein set forth.

5. In a check-row planter, the combination, with a frame and a cranked axle or shaft journaled thereon, of a prod or prods hung to said shaft, and said prods having jaws M N, one pivoted to the other and both vertically adjustable together to control the depth of the planting, of a shaft, O, in the prod, provided with a crank, o, and arm o^3, the latter operative by a pin on the crank-wrist to open the self-closing jaw of the prod, and said jaw connected to the crank o by a pitman vertically adjustable on said crank to accommodate the bodily vertical adjustment of the prod-jaws, substantially as herein set forth.

6. In a check-row planter, the combination, with a frame, a cranked axle or shaft journaled thereon, and a wheel on said shaft operative by a check-row wire for rotating the shaft, of a prod or prods having seed-hoppers and journaled on wrists of the shaft-cranks, said wrists provided with a pin, c^3, a self-closing jaw at the extremity of the prod, a seed-delivering wheel journaled in the prod-hopper and adapted for intermittent rotation by the pin c^3 to drop seed into the prod, and connections from the self-closing jaw of the prod operative by the wrist-pin c^3 for opening the jaw to drop the seed, substantially as described, for the purpose set forth.

7. In a check-row planter, the combination, with a frame, a cranked axle or shaft journaled thereon, and a wheel on said shaft, of a prod or prods journaled on a wrist or wrists, b', of the shaft, and said wrists provided with a pin, c^3, a seed-delivering wheel, P, on the prods, having peripheral pins p and operative by the pin c^3 to drop the seed, a shaft, O, journaled in the prod and having a crank, o, and arm o^3, and a self-closing jaw, M, in the prod and connected to the shaft-crank o, substantially as shown and described, whereby the jaw M will be opened to deliver one hill of seed and will then close prior to dropping of the next hill of seed into the prod, and both the seed-dropping wheel and the prod-jaw will be operated from the same crank wrist-pin, as herein set forth.

8. In a check-row planter, the combination, with a frame, a cranked shaft journaled thereon, a planting prod or prods hung to the wrist or wrists of said shaft for reciprocation thereby to enter and leave the ground, and a wheel on the shaft operative by a check-row wire to turn the shaft and operate the prods, of an arm fixed to the prod-shaft and a fastening device adapted to hold the extremity of the arm at different positions at the face of the wire-wheel, substantially as described, for the purposes set forth.

9. In a check-row planter, the combination, with a frame or sulky, a cranked shaft journaled thereon and carrying reciprocating planting-prods, and a wheel loose on the shaft provided with a slot, i', and receiving the check-row wire, of an arm, S, fixed to the shaft, and a fastening device, as s, holding said arm to the wire-wheel as its slot i', substantially as herein set forth.

10. In a check-row planter, the combination, with a frame or sulky, a cranked shaft journaled thereon, a planting prod or prods hung to the shaft and vertically reciprocated thereby to enter and leave the ground, substantially as specified, of a wheel, R, held on the prod-shaft to rotate therewith, and provided with a laterally-inclined peripheral face, r, receiving the buttoned check-row wire, and a peripheral slot, r', and a wire-button clutch-wheel, U, journaled in the slot r', and provided with end flanges, u' u', formed with radial teeth, admitting the check-row wire between them while the wire button lodges between said flanges, and a guide leading the wire to the center or higher portion of the inclined wheel-face r of the wheel R, substantially as described, for the purposes set forth.

11. A check-row wire-wheel for a seed-planter made with a laterally-inclined peripheral face and a slot opening at its periphery, and a check-wire-button clutch-wheel journaled in said slot and provided with end flanges formed with teeth admitting the check-row wire between them, while the button lodges between the end flanges, substantially as described, for the purposes set forth.

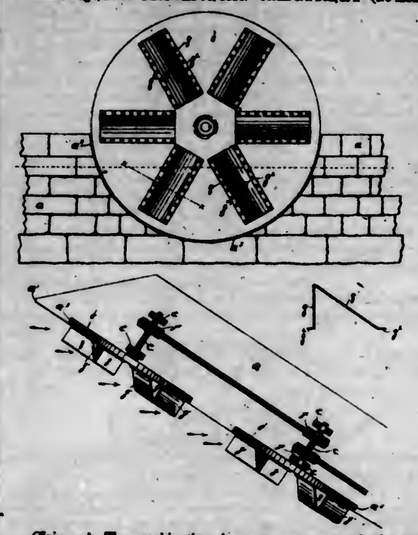
12. In a check-row planter, the combination, with a frame or sulky, a cranked shaft journaled thereon, a planting prod or prods hung to said shaft, and a wheel on the shaft provided with a laterally-inclined face receiving the check-wire, of a wheel, V, held adjustably to the frame and guiding the wire to the center or higher part of the inclined face of the wire-wheel, substantially as herein set forth.

13. In a check-row planter, the combination, with a frame or sulky, of a cranked shaft journaled thereon, a planting prod or prods hung to said shaft for vertical reciprocation thereby, and a wheel on the shaft receiving the check-row wire for operating the prods, and said prods provided with jaws vertically adjustable to regulate the depth of the planting, substantially as herein set forth.

14. In a check-row planter, the combination, with a frame or sulky, of a cranked shaft journaled thereon, a planting prod or prods hung to said shaft for vertical reciprocation thereby, an oscillating cranked shaft journaled to the frame, sway-bars connecting the prods with the crank-wrists of the oscillating shaft, a wheel on the prod-shaft receiving the check-row wire for operating the prods, and said prods provided with vertically-adjustable jaws to regulate the depth of the planting, substantially as described, for the purposes set forth.

15. In a check-row planter, the combination, with a frame, a cranked shaft journaled thereon, a planting prod or prods hung to said shaft for vertical reciprocation thereby, and a wheel on the prod-shaft receiving a check-row wire for operating the prods, of a wheel, P^2, fast on the prod-shaft, and a lever, V', hung to said shaft and provided with a catch-bar, P^3, adapted to the wheel P^2, for raising the prods, substantially as herein set forth.

388,531. CURRENT WATER-WHEEL. Leander Cole, Suspension Bridge, N. Y. Filed Jan. 31, 1888. Serial No. 262,494. (No model.)



Claim.—1. The combination, in a current water-wheel, of the body b of the wheel, being a circular thin head or plate having its whole surface on either side flat or level, and being firmly fastened to the shaft c, with the paddles, blades, or buckets g g', extending most of the way from the circumference or rim of the body b to its center, and made of sheet or plate metal, in the angular form described and shown, g g g^3 g^3, having the projecting front g and brace-back surface g', and the bent edges g^3 g^3, and being attached at their edges g^3 g^3 onto the side of the body b, in the positions shown, and the shaft c, working in journals c c, supported on the pier a, or other suitable foundation, the wheel-surface b, and the paddle or bucket's outer surface, g, and a portion of the inner surface of the brace-back g', together being adapted to receive a portion of the current of the river when the wheel is supported, as described, on the shaft c at the side of the pier a, more or less diagonally in the current of the river, all substantially as and for the purposes set forth.

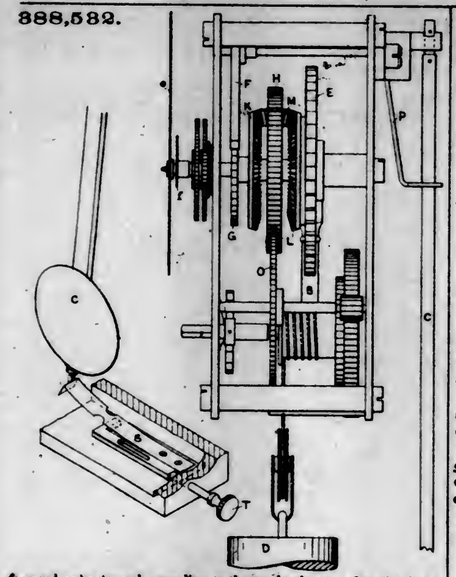
2. In a current water-wheel, the combination of the pier a, having the recess a^3, with the wheel's flat body b, working in said recess, and the shaft c, on which the body b is pinned or fastened, working in journals c c, suitably supported on the pier, and the blades or paddles g g' g^3 g^3, having the front projection, g, and the slanting brace-back g', and being riveted or fastened at their edges g^3 g^3 onto the flat head or body b, in the positions shown, and extending from the rim of the body b nearly to the shaft c, all substantially as and for the purposes set forth.

3. In current water-wheels, the combination of the angular-shaped blades, paddles, or buckets g g' g^3 g^3, with the flat thin head or body b, pinned upon the end of the shaft c, and the shaft c, working in journals c c, supported on the pier a, and the plurality of these wheels connected by any well-known mechanical means, as by the chain band and pulley-wheels f f on their shafts c c, each wheel having upon the current side of its body b the said angular-shaped blades or buckets g g', fastened on at their edges g^3 g^3, and made to reach from the rim of the body b nearly to the shaft c, and having the front projection surface of the blade or paddle g and the slanting brace-back g' in form, the body b and the paddle's outer surface, g, being adapted to receive the current when the wheels are hung at the side of the pier set in a diagonal direction to the course of the current, all substantially as and for the purposes set forth.

388,532. SPEED-INDICATOR. Hermican Comany, Pawtucket, R. I. Filed Apr. 14, 1888. Serial No. 270,698. (No model.)

Claim.—1. A differential speed-indicator consisting of a clock-gear for keeping time, a gear for connection with and operation by an engine, and a differential gear in mesh with both the clock-gear and engine-gear, and provided with indicator-hands arranged to move

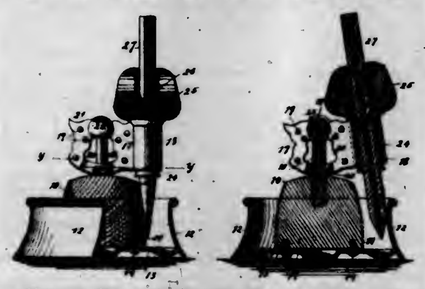
388,532.



forward or backward according to the predominance of motion in the clock or engine gear, substantially as described.

2. A differential speed-indicator consisting of a clock-gear for keeping time, a gear for connection with and operation by an engine, and a differential gear consisting of a bevel-wheel, L, connected to the engine-gear, a bevel-gear, K, connected with the clock-gear, and an intermediate gear, H, carrying upon a radial axis within its plane a bevel-pinion, M, arranged in mesh with both the bevel-gears L and K, and a set of indicator-hands connected to the gear H, substantially as and for the purpose described.

388,533. LEAD-PENCIL SHARPENER. GEORGE H. COURSEN, Baltimore, Md. Filed June 6, 1888. Serial No. 276,282. (No model.)



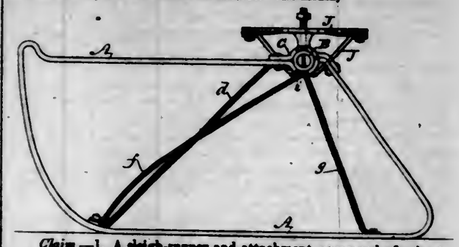
Claim.—1. The combination, with a fixed essentially-conical body having a file-like outer face, of a swinging arm pivoted upon the body, provided with a pencil-holding tube, said arm having a rotary motion, substantially as shown and described.

2. The combination, with a fixed essentially-conical body having a file-like outer face, of a swinging arm pivoted upon the body, a pencil-holding tube integral with said arm, and a finger-piece loosely supported by said tube, substantially as shown and described.

3. The combination, with a fixed essentially-conical body having a file-like outer face, and a post projected from the upper surface of the body, of a swinging arm universally pivoted upon said post, a pencil-carrying tube integral with said arm, a sleeve loosely mounted in said tube, and a finger-piece secured to said sleeve, substantially as shown and described, whereby the arm may be worked upon and revolved around the post, as and for the purpose specified.

4. The combination, with a fixed essentially-conical body having a file-like outer face, a cup-like base, and a post projected from the upper face of the body, of a swinging arm universally pivoted upon the post, a limiting-link, and a pencil-carrying tube integral with said arm, a sleeve loosely mounted in said tube, and a finger-piece secured to said sleeve, all combined to operate substantially as shown and described.

388,534. SLEIGH. JOHN W. OTT and HENRY OTT, Earlham, Iowa. Filed Feb. 4, 1888. Serial No. 263,016. (No model.)

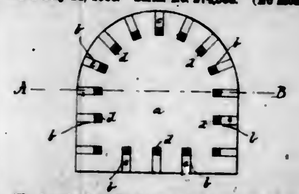


Claim.—1. A sleigh-runner and attachment composed of a bent bar, A, a brace, *d*, and rods *f* and *g*, terminating in an eye, *h*, and a cap, C, in combination with an axle, B, substantially as shown and described, for the purpose stated.

2. The combination of the bent bar A, the cap C, the brace *d*, and the braces *f* and *g*, united at their top ends and terminating in an eye, *h*, for the purpose stated.

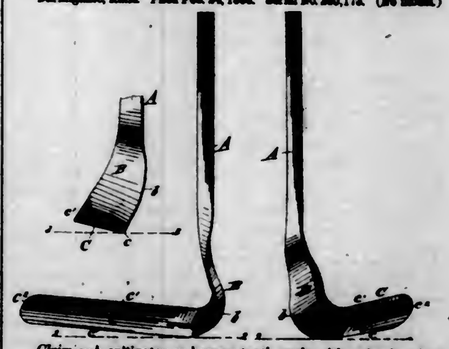
3. The flexible sleigh comprising the runners A, braces *d*, *f*, and *g*, an eye, *h*, at the ends of said braces *f* and *g*, a frame, J, an axle, B, caps C, blocks *k*, and washers and bolts, constructed, arranged, and combined substantially as and for the purpose stated.

388,535. MANUFACTURE OF NAIL-DIES FOR NAILING-MACHINES. EDWARD CROCKER and CHARLES W. STORER, Brockton, and CHARLES D. NASH, Whitman, Mass., (administrators of EDWARD MORTON, deceased,) assignors to the American Nailing Machine Company, of Maine. Filed May 21, 1888. Serial No. 274,532. (No model.)



Claim.—The herein-described manner of making perforated nail-dies, consisting in first slitting or grooving the outer periphery of the dies and afterward partially filling up such slits or grooves by the metal pieces *c c c*, and thereby producing the polygonal perforations *d d d*, or equivalent manner, as herein described.

388,536. CULTIVATING HARROW-TOOTH. CARLOS C. CRESS, Buringame, Kans. Filed Feb. 24, 1888. Serial No. 265,173. (No model.)



Claim.—A cultivator or harrow tooth made with a shank, a laterally-extending blade which in direction of its length inclines backward from the axis of the shank, and is sharp at its front edge, and is transversely inclined, so as to be higher at its rear than at its front edge, and said blade connected to the shank by a bend having a vertically and rearwardly curved or inclined sharp front edge, *b*, substantially as described, for the purposes set forth.

388,537. CHURN. WILLIAM H. CHESNUT, Louisville, Ky. Filed Mar. 27, 1888. Serial No. 268,654. (No model.)

388,537.



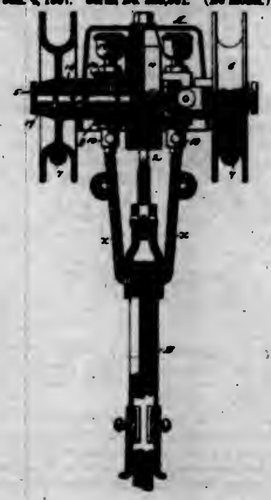
Claim.—1. The combination, with standards and a churn-body journaled thereon, of a treadle, a pitman connecting the treadle and churn-body, and a pin constructed to pass through an opening in one standard and engage the churn-body for locking the latter against movement, substantially as set forth.

2. The combination, with a frame and a churn-body mounted on said frame, of a plate having a series of open slots secured to the churn-body, and a pin provided with laterally-projecting lugs adapted to be passed through an oval perforation in the frame and into one of the series of slots in the plate, substantially as set forth.

3. The combination, with a frame and a churn-body, of plates secured to the sides of the churn-body, and carrying trunnions upon which said body oscillates, one of said plates being provided with wings, treadles pivoted to the frame, rods pivotally connecting the treadles and plates, and a pin passing through a perforation in the frame and entering an open slot in said plate, substantially as set forth.

4. The combination, with standards and a churn-body journaled thereon, the latter having a series of recesses on one side thereof, of a treadle, a pitman connecting the treadle and churn-body, and a pin constructed to pass through one standard and enter one of the recesses in the churn-body, whereby the latter can be locked in a horizontal or inclined position.

388,538. TRAVELER OR TROLLEY. LEE DAVY, Pittsfield, N. J. Filed Jan. 4, 1887. Serial No. 223,961. (No model.)



Claim.—1. The combination, with two substantially parallel electric conductors, of grooved collecting-wheels adapted to travel in contact with said conductors and carried by a frame provided with laterally-extending journals, upon which said wheels are mounted to have a lateral sliding as well as a rotary motion thereon, substantially as described.

2. An overhead trolley consisting of the frame A, composed of two parts supported by grooved wheels, and having plates 2, projecting downward from said parts and toward each other, and a flexible connecting-plate, 3, between the plates 2, substantially as described.

3. An overhead trolley having a frame, A, composed of two parts supported by wheels, and having plates 2 projecting downward from said parts and toward each other, and the flexible spring connecting-plate 3 between the plates 2, in combination with a hollow shield, B, pivotally hung from one of said plates 2, and the conductor passing through the shield, substantially as described.

4. A trolley provided with a frame supporting an insulating-block at each end, journal-pins extending from each block and supporting wheels, and conductors supported by the frame in electrical connection with the wheels, substantially as set forth.

5. The combination, with the insulated blocks and journals of the frame, of wheels turning on the journals, and pivoted contact-pieces bearing upon the wheels and electrically connected with conductors supported by the frame, substantially as set forth.

6. The combination of the insulated journals, wheels, pivoted contact-pieces, and springs and adjusting devices, substantially as described.

388,539. SELF-THREADING LOOM-SHUTTLE. JEAN B. DASSELIN, Fall River, Mass. Filed Oct. 6, 1887. Serial No. 251,617. (No model.)

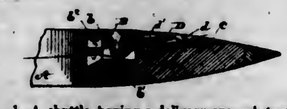


Claim.—1. A self-threading shuttle having a recess, *a*, a plate lining the front wall of said recess, an opening through the plate, and an opening through the shuttle-body extending forward in an inclined direction to the side of the shuttle-body and communicating with the delivery-eye of the shuttle, said eye being located forward of the recess or nearer the shuttle-point, and a threading-slit through the plate and the shuttle-body communicating with the opening in the plate and with the delivery-eye and intersecting the latter throughout the length thereof, substantially as described.

2. A self-threading shuttle having a recess, *a*, a plate lining the front wall of said recess, an opening through the plate, and an opening through the shuttle-body extending forward in an inclined direction to the side of the shuttle-body and communicating with the delivery-eye of the shuttle, said eye being located forward of the recess or nearer the shuttle-point, and a threading-slit through the plate and the shuttle-body communicating with the opening in the plate and with the delivery-eye and intersecting the latter throughout the length thereof, and a headed thread-post in said recess of the shuttle, substantially as described.

3. The combination, with a shuttle having a recess, *a*, and an opening in said recess substantially in line with the spindle communicating with the delivery-eye of the shuttle, of a headed thread-post located in said recess and provided with thread-engaging notches on the under side of the head to prevent the thread from becoming disengaged from the head of the post, substantially as described.

388,540. SELF-THREADING SHUTTLE FOR LOOMS. JEAN B. DASSELIN, Fall River, Mass. Filed Mar. 19, 1888. Serial No. 267,690. (No model.)



Claim.—1. A shuttle having a delivery-eye substantially in line with the spindle, a substantially-straight delivery-passage leading from the spindle-recess to the said eye, and a threading-slit communicating with said passage, substantially as described.

2. A shuttle-thread guide consisting of a tubular metal shell having an opening along its upper side for the admission of the thread, and provided with the slit d^2 and a projection, d', substantially as described.

3. The combination, with a shuttle having a recess, C, forward of the point of the spindle, a delivery-passage leading to said recess, and a threading-slit communicating with said passage, of a thread-

guide located in said delivery-passage, consisting of a tubular shell having an opening along its upper side for the admission of the thread, and the spiral projection *d* at its outer end, the said spiral projection being located in the recess C, substantially as described.

4. The combination, with a shuttle-body having recesses *b* and C forward of the point of the spindle, a threading-slot leading to the recess *b*, and the threading-slit *c*, of the threading-post B in the recess *b*, and a thread-guide between recesses *b* and C, having a longitudinal opening to admit the thread, and the spiral projection *d*, substantially as described.

5. The combination, with a shuttle-body having recesses *b* and C forward of the point of the spindle, a threading-slot leading to the recess *b*, and the threading-slit *c*, of the thread-post B in the recess *b*, and a thread-guide between recesses *b* and C, having a longitudinal opening to admit the thread, the slot d^2, and projection d^3, substantially as described.

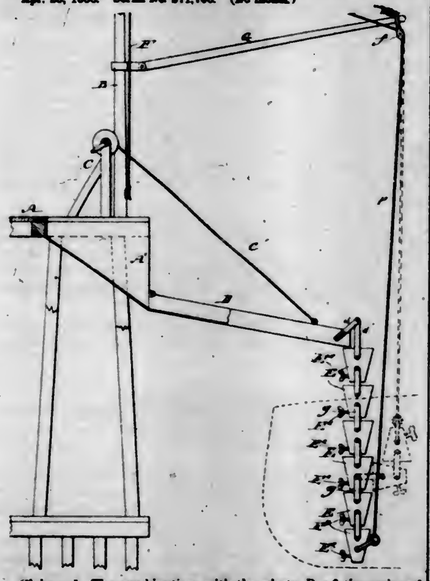
388,541. **COMMODE, EARTH-CLOSET, OR SIMILAR APPLIANCE.** Charles L. Doll, St. Joseph, Mo. Filed Nov. 2, 1887. Serial No. 254,053. (No model.)



Claim.—1. In a commode, earth-closet, or similar appliance, the combination, with the body thereof divided into two compartments, one for urine and one for feces, of a detachable metal shield inclined rearward, having a central concavity in its upper surface and extending from side to side of the body beneath the seat-aperture, embracing the top of the partition, and an outlet-pipe leading from said urine-compartment, substantially as shown and described.

2. A commode, earth-closet, or similar appliance, provided with a separate compartment for urine and for feces, the dividing-wall inclined rearward and extending from side to side of the body beneath the seat-aperture, and provided with a central concavity in its upper edge in alignment with the seat-aperture, and means, substantially as shown and described, for conveying the urine from the appliance, as set forth.

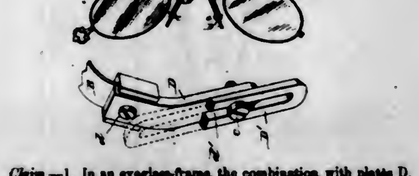
388,542. **COAL-CHUTE.** John H. Du Bois, Hoboken, N. J. Filed Apr. 25, 1888. Serial No. 271,760. (No model.)



Claim.—1. The combination, with the chute D, of the series of tapering hoppers E, connected together by the links *g*, of sufficient length to hold the lower end of each hopper above the upper end of the adjacent hopper, whereby the series of hoppers may be swung out of action one at a time, substantially as described.

2. The hinged chute D, having the connected series of hoppers E, in combination with the boom G, mast B, rope F, and pulleys *f f'*, substantially as described.

388,543. **HARVESTER-GUARD RENOVATOR.** George W. Ean, Holtsville, Ind. Filed June 23, 1888. Serial No. 277,867. (No model.)



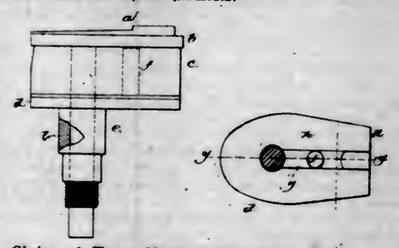
Claim.—1. In harvester-guard renovators, the combination, with the guard, of an anvil-plate fitted in its knife-slot and a swage formed with a slot or groove having opposite swaging-edges or shoulders normally fitting the opposite edges of the guard near its knife-slot, substantially as described, whereby when the guard is heated and the plate and swage adjusted to it and the swage is forced home the dulled edges of the guard will be upset and re-formed, as herein set forth.

2. In harvester-guard renovators, the swage made with a slot or groove forming opposite swaging-edges normally fitting opposite edges of the guard near its knife-slot, substantially as herein set forth.

3. In harvester-guard renovators, the swage made with a tapering semicircular slot or groove, forming opposite swaging-edges normally fitting opposite edges of the guard near its knife-slot, substantially as herein set forth.

4. In harvester-guard renovators, the combination, with the swaged guard, of a gage having a tongue adapted to the knife-slot of the guard, and also having a shoulder and face adapted to the shoulder and face of the guard fitting the cutter-bar, substantially as described, for the purposes set forth.

388,544. **RIVELING-MACHINE.** Adelbert R. Ellis, Lawrence, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 10, 1888. Serial No. 266,859. (No model.)



Claim.—1. The combination, with a nail-box having a rod and hole and a driver-plate, of a guide-pin adjustably connected to the driver-plate to enter the hole in the nail-box, substantially as described.

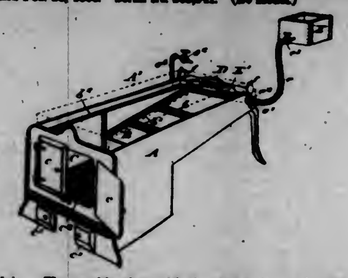
2. In a nail-box, the combination, with a driver-plate having a tubular shank, of an adjustable guide-pin connected to the said plate, substantially as described.

388,545. **NOSE-GUARD FOR EYEGLASSES.** George H. Burnham, Rockport, Me. Filed Mar. 30, 1888. Serial No. 268,969. (No model.)

Claim.—1. In an eyeglass-frame, the combination, with plates D, rigidly attached to the lens-frames, of the longitudinally-slotted nose-plates D', and the clamp-screws *c*, for securing the latter in any desired adjustment, substantially as described.

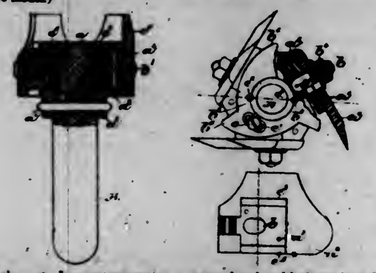
2. The combination, with the eyeglass-spring and its attaching-screws, of the arms D, overlapping the ends of the spring and secured thereto by said screws, and the nose-plates pivoted and sliding upon the inner adjacent faces of the said arms, and screws for adjusting said sliding plates and forming the pivots thereof, substantially as set forth.

388,546. **SUGAR-EVAPORATOR.** Edward S. Burbridge, Warsaw, N. Y., assignor to the Variety Machine Company, same place. Filed Feb. 24, 1888. Serial No. 265,241. (No model.)



Claim.—The combination, with the evaporator-arch, of the supplementary heater underneath the pan at its rear end and below the smoke-exit flue, the supply-receptacle, the flexible pipe-connection, the heater inlow-pipe, the removable cap-collar screw-threaded upon the heater, the discharge-pipe attached to the collar, and the stop-cocks for regulating the flow of the fluid, all arranged substantially as described, and for the purposes set forth.

388,547. **ROTARY CUTTER.** Hadley P. Fairfield, West Medford, and Charles H. Benjamin, Boston, assignors to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 31, 1887. Serial No. 253,942. (No model.)



Claim.—1. In a rotary cutter, a cutter-head and knives pivotally secured thereto, combined with a cam plate or disk to act on and adjust the said knives simultaneously, substantially as and for the purpose specified.

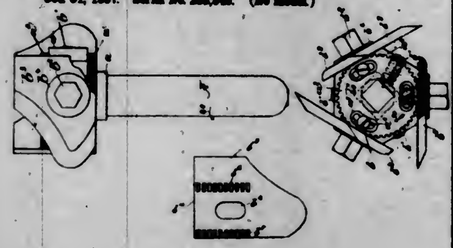
2. The combination, with a shaft, of a thimble or sleeve, *a*, mounted thereon, a cutter-head, knives secured thereto, and a cam plate or disk, b^3, substantially as described.

3. The combination, with a shaft, of a thimble or sleeve, *a*, mounted thereon, a cutter-head, knives pivotally secured thereto, and a cam plate or disk, b^3, substantially as described.

4. The combination, with a shaft, of a thimble or sleeve, *a*, provided with cam projections or flanges, a cutter-head, knives pivotally secured thereto, a cam plate or disk, b^3, and means to firmly fasten the said knives to the cutter-head, substantially as described.

5. The combination, with a shaft, of a thimble or sleeve, *a*, provided with cam projections or flanges, a cutter-head, knife-carrier pivoted thereto, and knives fixed to said carriers, a cam plate or disk, b^3, having a slot, *c'*, means to secure said plate to the cutter-head, and means to firmly fasten the said knives to the cutter-head, substantially as described.

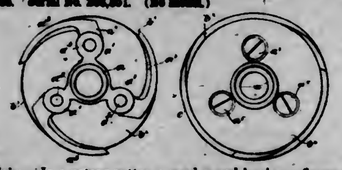
388,548. **ROTARY CUTTER.** Hadley P. Fairfield, West Medford, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Oct. 31, 1887. Serial No. 253,943. (No model.)



Claim.—1. The herein-described rotary cutter comprising a cutter-head and a cutting knife or blade attached thereto, combined with a toothed gear or plate to adjust the position of the knife or blade on the cutter-head, substantially as described.

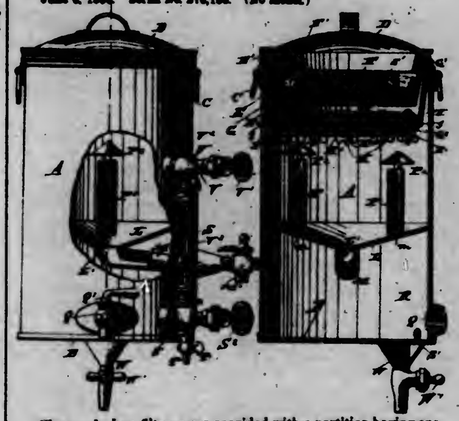
2. A rotary cutter comprising a cutter-head and two or more knives provided with teeth on their inner faces, combined with a toothed gear wheel or plate to engage the teeth on the said knives and adjust the position of the knives simultaneously, substantially as described.

388,549. **ROTARY CUTTER.** James F. Freeman, Lawrence, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 30, 1888. Serial No. 268,951. (No model.)



Claim.—In a rotary cutter, a rand-guard having a flange or stop and a cutter-carrier or head, combined with a pivoted knife or blade, the said flange or stop determining the correct working position of the blades, substantially as described.

388,550. **OIL-FILTER.** George W. Gallaway, Rye, N. Y. Filed June 6, 1888. Serial No. 276,188. (No model.)



Claim.—1. In a filter, a can provided with a partition having one or more overflow-pipes, as specified, in combination with one or more filtering-pans mounted above said partition, substantially as described.

2. In a filter, the combination of a can with a pan, G, said pan being provided with an inner lower flange having openings, a ring and felt having openings adapted to register with the openings aforesaid, and bolts and nuts for engaging the parts, substantially as described.

3. In a filter, the combination of a can with a pan, G, said pan being provided with an inner lower flange having openings, rings I I', and felt or fabric H H', said rings and felt being provided with openings adapted to register with the openings aforesaid, and bolts and nuts for engaging the parts, substantially as described.

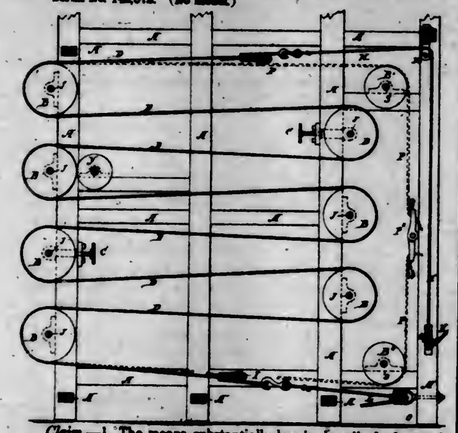
4. In a filter, a can provided with a sloping partition, L, having one or more overflow-pipes, and a pipe, M, having a cock, M', and a pipe and cock, Q Q', located below the partition, in combination with an upper and a lower filtering-pan, both mounted above the partition, the upper pan being provided with a reticulated bottom, the lower pan having a felt or fabric bottom, substantially as described.

5. In a filter, a can provided with a sloping partition, L, having one or more overflow-pipes, a pipe, M, located below the partition and connected therewith, as specified, side pipe, Q, and bottom pipe, W, both communicating with the can below the partition, the pipes M Q W being provided with cocks, as specified, in combination with one or more filtering-pans mounted above said partition, substantially as described.

6. In a filter, a can provided with a sloping partition, L, having one or more overflow-pipes, a pipe, M, located below the partition and connected therewith, as specified, side pipe, Q, and bottom pipe, W, the said pipes M Q communicating with the can below the partition aforesaid, each of said pipes being provided with a cock, a glass gage, S, connected at its lower end near the base of the lower compartment

of the can and at its upper end with the upper compartment, in combination with a series of filtering-pans mounted above the partition, substantially as described.

388,551. APPARATUS FOR STRETCHING BELTS. MARMION GANDY, Liverpool, County of Lancaster, England. Filed Sept. 2, 1884. Serial No. 148,072. (No model.)



Claim.—1. The means substantially herein described of stretching belts as part of the process of manufacturing and preparing them for the market, which means consist of a frame, a series of shafts carried by said frame placed at suitable distances apart, a series of stretching-pulleys mounted upon each of said shafts, and stretching devices with which said pulleys are provided.

2. In a belt-stretching machine, the combination of a frame, a series of shafts carried by said frame and placed at suitable distances apart, a series of stretching-pulleys mounted upon each of said shafts, and mechanism, substantially as described, independent of the belt and the tension applied thereto, for communicating motion to said pulleys, substantially as described.

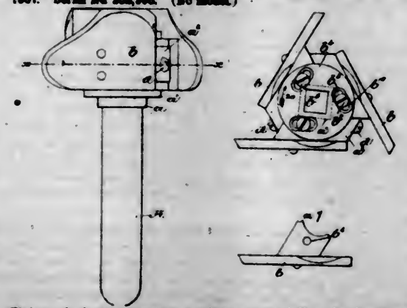
3. In a belt-stretching machine, the combination of two or more shafts mounted one above the other upon the opposite ends of a suitable frame, said shafts being provided with a series of loose pulleys and combined with tension-screws, substantially as described.

4. In a belt-stretching machine, a frame carrying a series of shafts and pulleys placed at suitable distances apart, combined with bearing-rollers *y*, substantially as and for the purpose set forth.

5. In a belt-stretching machine, the combination of a plurality of stretching-shafts provided with tension-screws, and upon each of which are mounted pulleys of different diameters, by which the capacity of the machine for stretching endless belts of different lengths on the same shafts is materially augmented, substantially as described.

6. In the process of stretching belts, the means substantially herein described of securing the ends of the belt, while at the same time the belt is kept taut and is permitted to run freely around the pulley in the operation of stretching, which means consists of the adjustable clasp into which the respective ends of the belt are drawn and secured substantially as described.

388,552. ROTARY CUTTER. CHARLES W. GILDDEN, Lynn, assignor to James W. Brown, trustee, Cambridge, Mass. Filed Oct. 31, 1887. Serial No. 253,993. (No model.)



Claim.—1. A rotary cutter consisting, essentially, of a head and two or more blades thereon, combined with means, substantially as described, to simultaneously and automatically adjust the blades with relation to the head, and with means to confine the blades in an adjusted position, for the purpose set forth.

2. The herein-described rotary cutter, it consisting, essentially, of a cutter-head having a radial guideway, and a knife-carrier fitted therein, combined with a disk having a slot eccentric to the center of the said disk, and with means for adjustment secured to the knife-carrier and adapted to be acted upon by the said slot, substantially as described.

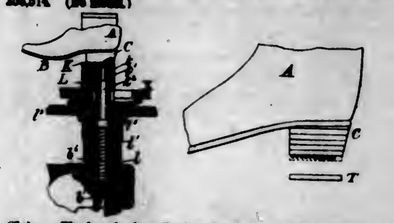
3. The combination, with a shaft, of a rotary cutter adapted to be secured thereto, the said cutter comprising a cutter-head having radial guideways, a knife-carrier fitted therein, a disk, b^4, provided with slots arranged eccentric to the center of the said disk, and screws to unite said knife-carrier and disk, substantially as described.

4. In a rotary cutter, a cutter-head having radial guideways and a knife-carrier fitted in each guideway, combined with a disk, b^4, having cam-slots b^5, and a screw inserted through each slot and adapted to be acted upon by it to move the knife-carrier, substantially as described.

5. The combination, in a rotary cutter, of a tangentially-adjustable knife-carrier with an actuating disk or plate therefor to adjust the said knife-carrier, substantially as described.

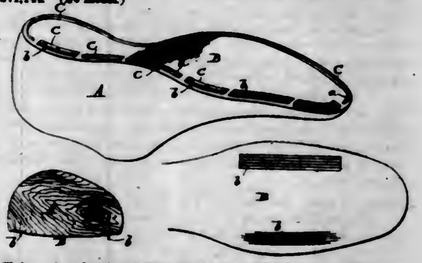
6. The combination, with a shaft, of a rotary cutter comprising a cutter-head, c^6, radially-adjustable knife-carriers carried thereby, the disk b^4, provided with cam-slots b^5, and disk c', having like slots to register with the cam-slots b^5, and screws b^6, substantially as described.

388,553. MODE OF ATTACHING HEELS AND TOP LIFTS TO BOOTS OR SHOES. CHARLES W. GILDDEN, Lynn, assignor to James W. Brown, trustee, Cambridge, Mass. Filed Dec. 20, 1887. Serial No. 258,514. (No model.)



Claim.—The herein-described method of attaching a heel and top lift to a sole of a boot or shoe, which consists in driving the nail from the heel into the sole to secure the heel to the sole, and while the heel is yet under pressure and the nail at rest further compressing the heel bodily in the direction of its length and of the nails, leaving the heads of the nails projecting from the end of the consolidated heel, and thereafter blinding the top lift upon the protruding heads of the nails, substantially as set forth.

388,554. LAST. HENRY M. GOODNOW, Rochester, N. Y., assignor to William S. King, Minneapolis, Minn. Filed Apr. 19, 1888. Serial No. 271,144. (No model.)



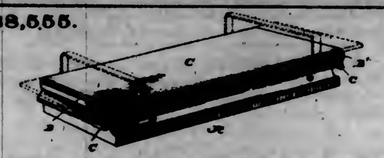
Claim.—1. A last having its sole-face provided with metallic pieces formed with sharp edges or teeth facing toward the outer edges of the last.

2. In combination with a last having a groove or grooves in its sole-face near its edges, a metallic piece or pieces secured to the sole of the last within the line of said groove or grooves and presenting angular edges toward the edges of the last.

3. A last having its sole-face provided with a groove or grooves formed with sharp angular edges to their inner walls, substantially as set forth.

388,555. BLACKBOARD-ERASER. HARRY C. GOODRICH, Chicago, Ill., assignor to Thomas Kane & Company, of Illinois. Filed June 19, 1888. Serial No. 277,202. (No model.)

388,555.



Claim.—The herein-described blackboard-eraser, consisting of the block or body A, the two U-shaped clasps pivoted to its ends, and the facing of felt material applied to and bent over the ends of the block and confined against the ends by the clasps, as described and shown.

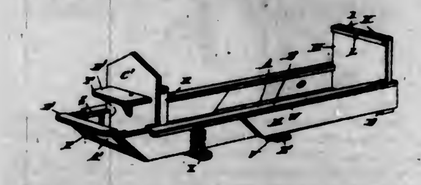
388,556. GLASS-MOLD. WILLIAM HALEY, Beaver Falls, Pa., assignor of one-half to John Carlon, same place. Filed Mar. 20, 1888. Serial No. 268,212. (No model.)



Claim.—1. In a mold, the hinged main body part and a two-part handle portion, the latter being provided with surfaces adapted to be locked in the hinged portion of the mold.

2. The combination, in a mold, of the duplex sliding plugs and a two-part handle portion interposed between the plugs.

388,557. WAGON-BED. ANDREW H. HALL, Raymond, Dak. Filed May 31, 1888. Serial No. 275,612. (No model.)



Claim.—1. In a wagon-bed, the combination of the bottom A, the sides M, detachable therefrom and having the guideways at their front ends on their inner sides, the front board, A', inserted in the said guideways, the cross-bar *D* on the under side of the bottom, at the rear end thereof, having its ends bearing against the under edges of the sides M, the cross-bar E under the center of the bottom, having its ends engaged by keepers V, that depend from the sides, and the bolster having the standards bearing against the outer sides of the body, substantially as described.

2. The combination, with the wagon-body having the vertical guide-ways in opposite sides at its front end, of the board C', detachably fitted in said guideways and having the cast on its front side, substantially as described.

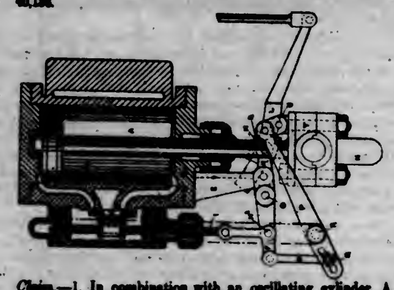
3. The combination of the wagon-body, the end-gate hinged to the rear end thereof, the sliding frame in the body, and the devices, substantially as set forth, to secure said sliding frame to the end-gate when the latter is extended horizontally, substantially as described.

4. The combination, with the body or box, of the end-gate hinged thereto, the sliding frame having the rearward-extending arms adapted to be connected to the end-gate to secure the latter in a horizontal position, said frame being further provided with the transversely-extending bar C', and the wings detachably secured to the sides of the bed or body and supported by the bar C', substantially as described.

5. The combination of the bed or body, the end-gate hinged thereto and adapted to be extended to a horizontal position from the rear end of the body, and the rack-frame having the arms or hooks at its lower end adapted to engage keepers at the outer end of the end-gate, substantially as described.

6. The combination of the bed or body, the end-gate hinged to the rear end thereof, the frame or devices to secure said end-gate in a horizontal position, the wings detachably connected to the sides of the bed or body, the vertical boards C' near the front end of the bed or body, the standard adapted to be secured to said board, having its cross-bars at its upper end, and the rack-frame adapted to be secured to the rear end of the end-gate, substantially as described.

388,558. VARIABLE EXPANSIVE AND REVERSING MOTION FOR OSCILLATING-CYLINDER ENGINES. JOHN W. HAMLEY, Stoke-on-Trent, County of Stafford, England. Filed Oct. 14, 1887. Serial No. 252,355. (No model.) Patented in England Mar. 30, 1886, No. 3,927; in France Dec. 15, 1886, No. 180,886, and in Germany Dec. 31, 1886, No. 40,126.



Claim.—1. In combination with an oscillating cylinder, A, the reversing-lever X, curved link L, slide-block K, and lever H, linked or jointed to the block K and to the valve-rod I, and pivoted on a fulcrum oscillating with cylinder A, substantially as described.

2. The combination of reversing-link L, slide-block K, and lever H, connecting same to the valve-rod with fulcrum G, having motion taken from the piston-rod, but reduced in amount.

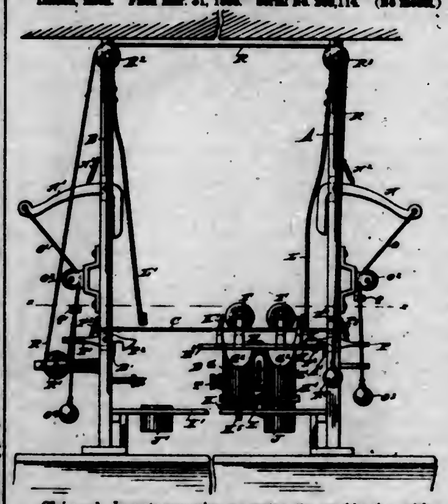
3. The combination, in an oscillating engine, of the fulcrum G of the lever H, (whereby the slide-block is connected to the valve-rod,) with lever F, fulcrumed on a point rigidly fixed to the cylinder, and devices O P U, for transmitting a reduced motion from the piston-rod, substantially as and for the purposes described.

4. The combination, in an oscillating engine, of the lever H, that gives motion to the valve-rod, with a fulcrum, G, having a motion corresponding to that of the piston-rod, but reduced, whereby the necessary additional travel of the valve is obtained to allow for lap and lead and to work expansively.

5. The combination, in a valve-gear for eccentric engines, of the lever F, carrying the fulcrum of the valve-rod-actuating lever H, link O, slotted lever Q, and link U, connecting Q to the piston-connections, whereby the motion of the piston in a reduced form is transmitted to the valve-rod-actuating lever H.

6. The mechanism for regulating the lead in oscillating engines, consisting of a lever, F, carrying the fulcrum of the valve-rod-actuating lever H, a lever, P, oscillating on a point, R, oscillating with the cylinder and linked to the piston-rod connections, with a rod, O, capable of being attached to lever P at any required point between limits by means of a linking device, Q.

388,559. STORE-SERVICE APPARATUS. HERBERT HERBERT, Lake Linden, Mich. Filed Mar. 31, 1888. Serial No. 269,114. (No model.)



Claim.—1. In a store-service apparatus, the combination, with a carrier provided with two open-bottom compartments, of a bottom

for alternately closing the lower ends of the compartments carried by the carrier, and means for preventing the bottom from moving with the carrier as it nears the end of its route, substantially as described.

2. In a store-service apparatus, the combination, with a track, of a carrier provided with two compartments and a bottom adapted to close said two compartments alternately, substantially as shown and described.

3. In a store-service apparatus, the combination, with a carrier provided with two open-bottom compartments, of a bottom fitted to slide on the carrier and provided with downwardly-projecting lugs, and a stationary plate with which the lugs of the bottom engage to prevent it from moving with the carrier, substantially as described.

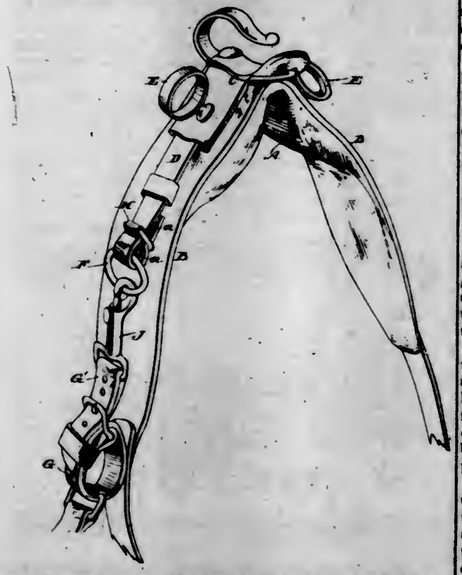
4. In a store-service apparatus, the combination, with a track, of the carrier D, provided with the plate E, having the upwardly-projecting lugs K K', and on which are mounted the wheels F, traveling on the track, the springs L L' for engaging the lugs K K' of the carrier, the pivoted and spring-held levers N N', and the cords O O', substantially as herein shown and described.

5. In a store-service apparatus, the combination, with a carrier provided with two compartments and a track on which the said carrier is held to travel, of a spring-catch at each end of the track for locking the said carrier in place at either end of the track, a spring operating on the said carrier to force it from one end of the track to the other, a lever acting on the said spring to give it the necessary tension, a rope connected with the said lever, a block secured on the said rope and adapted to operate on the said spring-catch so as to release the carrier after the said spring has received the necessary tension, and a second rope connected with one of the said ropes and extending to the other end of the track, substantially as shown and described.

6. In a store-service apparatus, the combination, with a track and two fixed plates held at either end of the said track, of a carrier provided with two compartments and traveling on the said track, and a bottom adapted to close alternately the lower ends of the said two compartments, said bottom being held to slide on suitable guideways secured to the said two compartments, substantially as shown and described.

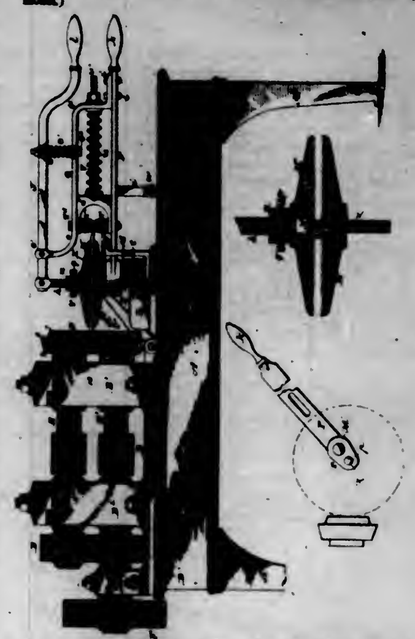
7. In a store-service apparatus, the combination, with a track and two fixed plates held at either end of the said track, of a carrier provided with two compartments and traveling on the said track, a bottom adapted to close alternately the lower ends of the said two compartments, said bottom being held to slide on suitable guideways secured to the said two compartments, and vertically-sliding bolts operated by the said plates and adapted to lock said bottom in place under either compartment, substantially as shown and described.

888,560. HARNESS. Marshall M. Hitt, Luray, Va. Filed Jan. 30, 1868. Serial No. 362,360. (No model.)



Claim.—In a gig-saddle, the skirts B and tug-straps D, held by the terrets E, and folded under at the lower ends and secured permanently to the skirts, in combination with the ring F, trace-loop G, and snap-hook J, secured to said loop, substantially as described.

888,561. MACHINE FOR MAKING DISKS FOR HARROWS. William J. Hogan, Johnstown, Pa., assignor to The Cambria Iron Company, of Pennsylvania. Filed May 11, 1868. Serial No. 372,804. (No model.)



Claim.—1. The combination, with a set of rolls, of clamping-plates and a device for automatically clamping said plates upon a disk, substantially as set forth.

2. The combination, with a set of rolls, of a lever, clamping-plates revolubly supported thereon, one of said plates being spring-actuated, and a spring-actuated sliding block adapted to slide in the lever, substantially as set forth.

3. The combination, with a set of rolls, of a laterally-swinging lever, clamping-plates revolubly supported in the short arm of the lever in order that the position of the plates relative to the rolls may be varied, and a spring-actuated block adapted to slide in the lever, said block having rollers therein adapted to bear yieldingly against the periphery of a disk held by the clamping-plates, substantially as set forth.

4. The combination, with a set of rolls, of a lever pivotally supported on a fixed block, a spring-actuated lever pivoted on said lever, and clamping-plates revolubly supported on each of the levers, substantially as set forth.

5. The combination, with a frame, housings mounted on this frame and boxes adjusted to play in them housings, of two shafts that are geared to revolve toward each other, and a roll-head secured to each shaft, these rolls being formed with duplicate-shaped ends to permit their reversal and the use of either set of the roll-head ends, substantially as set forth.

6. The combination, with a frame, a saddle-block secured to this frame, a lever pivoted upon the saddle-block so as to swing sidewise, and two mated clamping-plates revolubly supported by the pivoted lever near its fulcrum-point, of a bracket-arm attached to the top face of the swinging lever by one end, and a handle-bar pivoted to the other end of this bracket-arm and pivotally attached to the upper bifurcated end of a bolt which is swivel-connected to the top clamping-plate by its other or lower end, substantially as set forth.

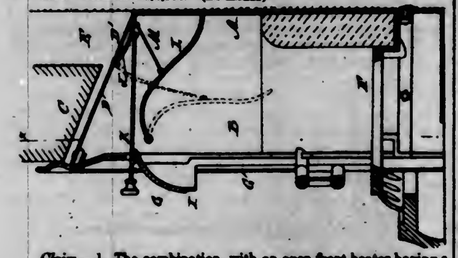
7. The combination, with a clamping-plate supported to receive on the end of a lever and having its top face grooved concentrically to reduce its bearing-surface, of another clamping-plate similarly grooved and loosely connected to a handle-bar by a swivel-bolt, which allows the upper clamping-plate to rotate with the lower end and be vertically moved by a handle-bar, substantially as set forth.

8. The combination, with two rolls supported and adapted to rotate toward each other, the ends of which are formed to roll a beveled edge upon an inserted flat circular metal plate, of a pair of clamping-plates that are held from a lateral displacement of their edges and are adapted to clamp a metal disk between them, and grooved thimbles which are supported to rotate and are by spring action caused to bear against the revolving edge of a clamped disk at a point opposite the axial centers of the rolls, substantially as set forth.

9. The combination, with a frame, a saddle-block, a lever pivoted on the saddle-block and provided with a depending arm and its pivoted roller or wheel that bears upon the upper face of the frame, and a pair of mated clamping-plates that are prevented from edgewise displacement and are adapted to clamp a harrow-disk between them, of a bracket-arm that is attached to the top surface of the pivoted lever, a handle-bar pivoted to the bracket-arm, a sliding block, a spiral spring that bears against the sliding block, grooved thimbles revolubly mounted on the sliding block, a swivel-bolt that connects the top clamping-plate with the handle-bar, and a spring which presses the top plate toward the lower plate, substantially as set forth.

10. The combination, with a pair of rolls supported and rotated toward each other, which are shaped to produce a beveled edge on a harrow-disk, of two clamping-plates which are adapted to clamp the body of a metal disk concentric with their edges and present its periphery to the adjacent faces of two revolving rolls, and a milling or grinding device that is supported to engage the beveled edge of this disk and remove slight inequalities from it while it is being rotated, substantially as set forth.

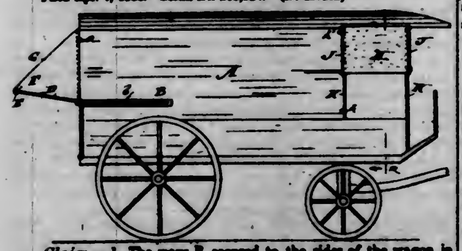
888,562. OPEN-FRONT HEATER. John Hogan, Brooklyn, N.Y., assignor of one-half to Robert B. Rogerson, same place. Filed Apr. 13, 1868. Serial No. 370,208. (No model.)



Claim.—1. The combination, with an open-front heater having a smoke-outlet in its rear upper part, of a downward-swinging deflector-plate hinged at its forward edge near the front of the heater below the said outlet and inclined or curved rearwardly and downwardly to the back wall of the heater, space for draft being left between the front hinged edge of the deflecting-plate and the front of the heater, and a rod for operating the deflector, whereby the products of combustion may be deflected to the front of the heater and then to the outlet, or pass directly to the outlet between the rear side of the deflector and back of heater, according to the position of the deflector, the said outlet, however, being never closed by said deflector, substantially as set forth.

2. The combination, with an open-front heater having a flue-opening in its top, of a hinged damper adapted to the flue-opening, a hinged baffling and deflecting plate below the damper, a link connecting the damper and baffling and deflecting plate, and means for adjusting them conjointly, substantially as described.

888,563. WAGON-CURTAIN. John H. Hogan, Brooklyn, N. Y. Filed Apr. 7, 1868. Serial No. 369,897. (No model.)



Claim.—1. The ways B, secured to the sides of the wagon in horizontal position, and the blocks C, placed in said ways, in combination with the arms D, attached to said blocks, the rod E, and curtain G, all arranged to operate substantially as described.

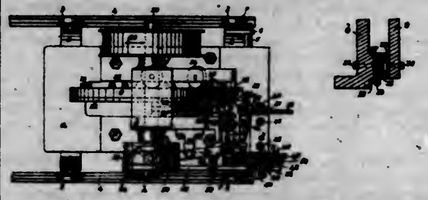
2. The arms D D, held by sliding blocks C, and the horizontal ways B, in combination with the rod E, tube F, and curtain G, substantially as described.

888,564. EINERARD. Garnet B. Johnson, New York, N. Y. Filed Oct. 4, 1867. Serial No. 351,621. (No model.)



Claim.—The herein-described inkstand, as an improved article of manufacture, consisting of a base provided with an aligned series of ink-wells, lids thereafter hinged to the top of the base, an eye attached to the back of each lid between the hinge-joint and the free front edge of the lid, a series of like posts fixed to and projecting upward from the top of the base between successive lids and just outside the two end lids, said posts having heads on their upper ends formed with transverse holes in a common line a short distance in front of the line of hinge-joints, and a slack cable fastened immovably at either end in the holes of the two outside posts and running loosely through the holes in the intermediate posts and through the said eyes on the lids substantially as specified.

888,565. METAL-ROLLING MACHINE. Daniel B. Kenyon, Boston, Mass. Filed June 6, 1868. Serial No. 376,171. (No model.)



Claim.—1. In an organized metal-rolling mill, cutters or automatic mechanism for severing the metal blanks from the rod prior to rolling or forging them, in combination with plate or platen dies arranged and adapted to roll-forge metal articles by rotating said blanks between their adjacent die-faces, for the purpose set forth.

2. In an organized metal-rolling mill, feed-rolls or automatic mechanism for feeding the blank metal into the machine, in combination with plate or platen dies arranged and adapted to roll-forge articles from said blank metal by rotating it between their adjacent die-faces, for the purpose set forth.

3. In an organized metal-rolling mill, automatic blank-feeding mechanism and automatic blank-severing mechanism, in combination with plate or platen dies arranged and adapted to roll-forge metal articles by rotating said blanks between their adjacent die-faces, for the purpose set forth.

4. In an organized system or metal-rolling mill, a furnace or means for heating the metal rod, and automatic rod-feeding mechanism and automatic blank-severing mechanism, in combination with plate or platen dies arranged and adapted to roll-forge metal articles by rotating them between their adjacent die-faces, for the purpose set forth.

5. In an organized system or metal-rolling mill, a reel or support for the metal rod, and a furnace or means for heating said rod, and automatic rod-feeding mechanism and automatic rod-severing mechanism, in combination with the plate or platen dies arranged and adapted to roll-forge metal articles by rotating them between their adjacent die-faces, for the purpose set forth.

6. In an organized system or metal-rolling mill, a reel or support for the metal rod, and automatic rod-feeding mechanism and automatic blank-severing mechanism, in combination with plate or platen dies arranged and adapted to roll-forge metal articles by rotating them between their adjacent die-faces, for the purpose set forth.

7. In an organized system or metal-rolling mill, a support for the metal being worked and automatic feeding mechanism, in combination with plate or platen dies arranged and adapted to roll-forge metal articles by rotating them between their adjacent die-faces, for the purpose set forth.

8. In an organized system or metal-rolling mill, a reel or support for the metal rod and automatic cutters for severing the blanks from said rod, in combination with plate or platen dies arranged and adapted to roll-forge metal articles from said blanks by rotating them between their adjacent die-faces, for the purpose set forth.

9. In an organized system or metal-rolling mill, a furnace or means for heating the metal blanks and automatic blank-feeding mechanism,

in combination with plate or platen dies arranged and adapted to roll-forge metal articles by rotating said blanks between their adjacent die-faces, for the purpose set forth.

10. In an organized system or metal-rolling mill, a furnace for heating the rod or bar and automatic cutters for severing metal blanks therefrom, in combination with plate or platen dies arranged and adapted to roll-forge metal articles by rotating said blanks between their adjacent die-faces, for the purpose set forth.

11. In a metal-rolling machine, the combination of a stationary plate or platen die and a movable plate or platen die, for the purpose herein set forth.

12. In a metal-rolling machine, a stationary plate or platen die and a movable plate or platen die, combined with each other and with mechanism for operating said movable die, for the purpose set forth.

13. In a metal-rolling machine, a stationary plate or platen die and a movable plate or platen die, combined with each other and with mechanism for operating said movable die, and with mechanism for adjusting the distance between said dies, for the purpose herein described.

14. In a metal-rolling machine, a stationary die and a movable die, combined with each other and with mechanism for operating said movable die and with mechanism for feeding into said dies the metal blanks to be roll-forged thereby, for the purpose herein set forth.

15. In a metal-rolling machine, a stationary die and a movable die, combined with each other and with mechanism for operating said movable die and with rod-feeding mechanism and with rod-severing mechanism, for the purpose herein set forth.

16. In a metal-rolling machine, the combination of a supporting frame or bed, a stationary die thereon, a shaft and suitable bearings therefor, a die-carrier supported by said shaft, and a die on said carrier, all arranged to operate substantially as herein set forth.

17. In a metal-rolling machine, the combination of a supporting frame or bed, a cut-off stand and its cutters, a shaft and suitable bearings therefor, a cut-off cam on said shaft, and connecting mechanism whereby said cutters are operated by said cam, substantially as set forth.

18. In a metal-rolling machine, the combination of a supporting frame or bed, a feed-stand and its feed-rolls, a shaft and suitable bearings therefor, a feed-cam on said shaft, and connecting mechanism whereby said feed-rolls are operated by said cam, substantially as set forth.

19. In a metal-rolling machine, a frame or bed, a shaft suitably supported thereon, a cut-off cam on said shaft, a pivoted rocker-lever supported by said frame or bed and operated by said cam, a cut-off stand and a stationary cutter thereon, a cutter-bar operated by said rocker-lever and reciprocating on said stand, and a cutter on said bar, all combined to operate substantially as set forth.

20. In a metal-rolling machine, a frame or bed, a cut-off stand having cutters thereon and suitable connecting mechanism for operating said cutters, in combination with a rod-guide having a limitable movement and means for retaining it in a proper normal position, to operate substantially as set forth.

21. In a metal-rolling machine, a frame or bed, a shaft suitably supported thereby, a feed-cam on said shaft, a pivoted vibrating lever supported by said bed and operated by said cam, a feed-pawl connected with said lever, a feed-stand having feed-rolls thereon, and a feed-ratchet to be operated by said pawl and revolve said feed-rolls, all arranged and combined substantially as described, to operate as specified.

22. In a metal-rolling machine, a feed-stand having feed-rolls on shafts connected by gearing and having a connecting feed-ratchet, and notched disk provided with a detent having a pin or projection, as described, in combination with a feed-pawl and its operating mechanism and its supporting slotted arm and spring, and the cam-lever or means for throwing said pawl and detent into or out of action or engagement with said feed-ratchet and notched disk, substantially as herein described, and for the purpose specified.

23. A stationary die and a series of movable dies, all provided with working-faces and adapted to roll-forge metal articles having circular cross-sectional area, combined with each other and with mechanism for operating said series of movable dies, substantially as herein set forth.

24. A frame and its stationary die combined with an adjusting-wedge and means for moving the same, substantially as and for the purpose specified.

25. In a machine for roll-forging metal articles having circular cross-sectional area, and having mechanism for severing said metal articles from its rod or bar, the combination, with said mechanism, of means, substantially as described, for admitting of a longitudinal or fore-and-aft adjustment of the same, for the purpose herein specified.

26. In a machine for roll-forging metal, a frame or bed and a carved plate or platen die secured thereon, combined with a die-carrier supported so as to revolve on said frame or bed, and having a series of carved plate or platen dies secured on said carrier and moving therewith, to operate substantially as herein specified.

27. A frame and a revolving die-carrier, in combination with anti-friction rollers, to operate substantially as and for the purpose set forth.

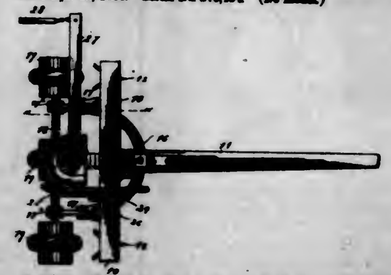
28. In an organized system of roll-forging metal, a furnace or means for heating said metal, in combination with a rolling-machine having dies arranged and adapted to roll-forge metal into circular cross-sectional form by rotating said metal between the adjacent and converging faces of said dies, and carrying-wheels arranged and adapted for transporting said rolling-machine to and from said heating-furnace, for the purpose set forth.

29. A machine for roll-forging metal in the manner described or having circular cross-sectional area and having supporting carrying-wheels, combined with rails or tracks and mechanism for locking said machine stationary thereon, for the purpose specified.

30. The feed-stand and its feed-rolls and shafts connected by gearing, as described, and the feed-ratchet, combined with the larger gear meshing with said feed-gears and operated by said ratchet, whereby with a small movement of the latter a long length of metal rod may be fed into the machine by the said feed-rolls, for the purpose set forth.

31. In a metal-rolling machine, dies for cross-rolling or roll-forging metal articles having circular cross-sectional area from metal blanks separated from the rod or bar, said dies consisting of carved plates or platens having their forming, reducing, and spreading surfaces entirely within working-grooves running in a line coincident with the travel of the moving die, whereby the metal blank is bodily confined and guided while traveling in a planetary manner and being rolled therein, substantially as set forth.

388,566. DITCHING-MACHINE. Isaac H. Kinney, Beloit City, Idaho, assignor to himself, and George A. Lowe, Salt Lake City, Utah. Filed Apr. 10, 1882. Serial No. 270,154. (No model.)



Claim.—1. The combination, with a plow-beam provided with a series of plows upon the under side, of a shaft held parallel with said beam, rollers mounted to revolve upon said shaft in alignment with the plows, and a means, substantially as described, for raising and lowering the beam relatively to the shaft, as and for the purpose specified.

2. The combination, with a plow-beam having plows attached to the under side, of a shaft parallel with the plow-beam, held in hinged connection therewith, rollers mounted to revolve upon said shaft in alignment with said plows, a rack pivoted upon said beam, and a lever upon said shaft, whereby the beam and plows may be raised or lowered, as and for the purpose specified.

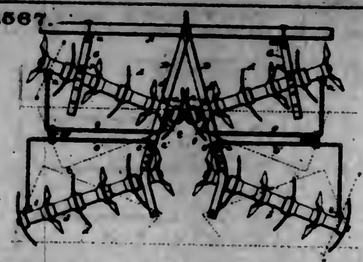
3. The combination, with a plow-beam having plows adjustably attached to the under side thereof and a shaft supported by hinge-connections to and parallel with the plow-beam, of adjustable rollers mounted to revolve upon said shaft, a segmental rack pivoted to said beam, and a lever engaging said segmental rack fast upon the shaft, substantially as and for the purpose specified.

4. The combination, with a plow-beam, of plows secured to the under side of said beam, a shaft provided with arms and held parallel with the plow-beam by hinged connections, a segmental rack pivoted to said beam, a lever held to the shaft and engaging said rack, rollers journaled upon the said shaft in alignment with the plow, a coat projected upward and rearward from the plow-beam, a marker-beam pivoted beneath the coat extending longitudinally and parallel with the shaft beyond the end of the same, and a marker attached to the extremity of said marker-beam, substantially as and for the purpose specified.

388,567. HARROW. Charles La Dow, Albany, N. Y. Filed July 27, 1882. Serial No. 231,173. (No model.)

Claim.—1. In a harrow, leading gangs of revolving cutters set at angles to the draft and arranged to throw the earth outwardly, in combination with following gangs which throw the earth inwardly, whereby the furrow left between the leading gangs is filled by the following gangs, as set forth, the pair of gangs on each side of the draft-line being free to revolve and vibrate independently of the opposite pair.

388,567.



2. In a harrow, the combination of four rotary gangs of cutters set at angles to the draft, the pair of gangs on each side of the central draft-line being disconnected from the opposite pair and arranged one in front of the other, and connected together by yoke-frames or equivalent devices, so as to form a section which may vibrate independently of the other section, substantially as set forth.

3. In a harrow, four gangs of revolving cutters set at angles to each other, the pair of gangs on each side of the central draft-line being arranged one in front of the other and to cut in reverse directions, whereby the end-thrust of one gang counteracts that of the other, in combination with yoking or equivalent mechanism, whereby said gangs in each pair are united to form a section which may vibrate independently of the other section.

4. The combination of draft devices and four gangs of rotary cutters set at angles to the draft, the pair on each side of the machine being arranged one in front of the other and to cut in reverse directions, whereby the end-thrust of one of said gangs counteracts that of the other, flexible connections between the front and rear gangs of each pair which permit their free vibration, and connections between each pair and the draft attachment of the machine, whereby each of said pairs of gangs forms a section of the harrow which is free to vibrate independently of the opposite section, and said cutters forming the sole support for their draft-frame.

5. The combination, with a draft beam or frame, of cutter-gangs arranged in pairs on each side of the draft-line, the gangs in each pair cutting in reverse directions and being placed one in front of another, and both connected to each other and to the draft beam or frame, said cutters supporting the draft-frame in which they are mounted.

6. The combination, with a draft beam or frame, of cutter-gangs arranged in pairs on each side of the draft-line, the leading gangs in the pairs being set to throw the earth from the center of the machine, and with their adjacent inner cutters in close proximity to each other, so as to cut a central furrow, and the rear gangs being set to throw the earth toward the center of the machine, and their adjacent inner cutters placed so as to throw the earth into said central furrow, said cutters supporting and guiding the frame in which each gang is journaled.

7. In a harrow, two vibratory pairs of gangs placed on opposite sides of a central draft-line, the gangs of each pair being placed one in front of another, cutting in reverse directions, and so arranged that the cutters of the rear gang cut out the spaces left between the cutters of the leading gang, in combination with a draft-frame mounted upon and supported by said cutter-gangs.

8. The combination, with a frame or draft-beam, of cutter-gangs supporting said frame and arranged in pairs on each side of the central draft-line, the gangs in each pair being placed one in front of another and adjustably connected with each other.

9. The combination, with a cross or draft beam arranged at right angles to the draft-line, of cutter-gangs in rear thereof supporting the draft-frame and arranged in pairs placed on each side of the draft-line, the gangs in each pair being arranged one in front of another and each connected to said cross-bar by an adjustable draft-connection.

10. In a harrow, the combination of pairs of cutter-gangs arranged on opposite sides of a central draft-line, the gangs of each pair being placed one in front of another and cutting in reverse directions, and each pair being capable of vibrating independently of the other pair, said cutter-gangs being weighted by the draft-frame to enforce their action.

11. In a harrow, the combination, with pairs of cutter-gangs arranged on opposite sides of the draft-line, the gangs of each pair being placed one in front of another, cutting in reverse directions and adjustably connected with each other, of devices for adjusting the angle of the gangs to the line of draft, said adjusting devices being supported by the cutter-gangs.

12. The combination, with a frame or draft devices, of revolving cutter-gangs arranged in pairs on opposite sides of the draft-line, each pair of gangs being capable of vertical vibration, but the individual gangs being incapable of vertical vibration.

13. The combination, with front and rear gangs, of interposed angular connecting-frames or yokes O O', each having a long and short arm for connection with its gang.

14. The combination, with front and rear gangs and angular connecting frames or yokes O O', hinged or flexibly connected with each other and each having long and short arms for connection with its gang, of mechanism for adjusting the angles of the gangs.

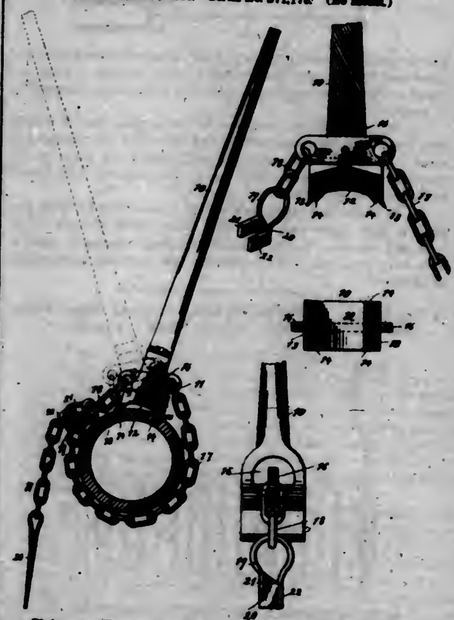
15. In a harrow, the combination of a rigid transverse draft bar or frame, A, extending across the front of the machine, vibratory pairs of cutter-gangs in rear thereof arranged on opposite sides of a central draft-line, and adjustable draft-connections or draw-bars extending rearwardly from said transverse bar to each of said pairs of gangs, said gangs supporting the entire draft-frame.

16. The combination, with the cross or draft bar A, of cutter-gangs arranged in pairs on each side of the draft-line, the bars B B, connected with the cross-bar and each gang, the bars C C, connected with the cross-bar and the leading gangs, and connections between the front and rear gangs of each pair.

17. In a harrow without a pole and carrying-wheels, gangs of rocking cutters which support the harrow-frame, in combination with a transverse bar or guard arranged in front of the leading gangs, for the purpose set forth.

18. The combination of the front and rear gangs, the draft-arms B B and C C, connecting devices O O' between the front and rear gangs, and the adjusting and locking pins.

388,568. CHAIN-WRENCH. James Hagmeyer, Long Island City, N. Y. Filed Apr. 19, 1882. Serial No. 271,179. (No model.)



Claim.—1. The combination, with a lever having a head with a recessed under surface and teeth formed at the ends of said recess and a transverse slot above said head, of a chain provided with a keeper, and a plate centrally pivoted in said slot uniting the chain, as and for the purpose specified.

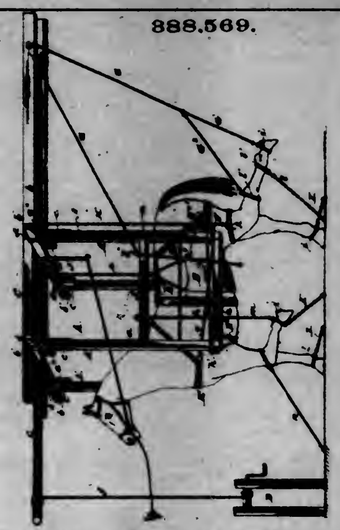
2. In a chain-wrench, the combination, with chain-sections and a uniting pivoted flat link or plate, of a keeper permanently attached to one chain-section, having legs projected at right angles from opposite sides, one essentially in advance of the other, substantially as and for the purpose specified.

388,569. [illegible]-RACK. Samuel M. Hamer, Sidney, Ohio. Filed Apr. 4, 1882. Serial No. 268,616. (No model.)

Claim.—1. The pen or rank consisting of the overhead parallel cross-pieces and the pendent frames, the lower ends of the uprights of which are connected together, and yokes placed astride said cross-pieces, between which the upper ends of the uprights are pivoted, substantially as set forth.

2. The pen or rank consisting of the overhead parallel cross-pieces

388,569.

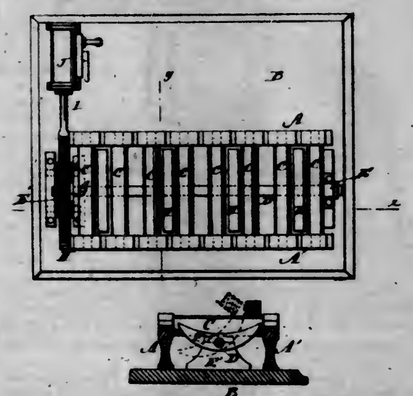


and the pendent frames, and the yokes or hangers between which the upper ends of the uprights are pivoted, which hangers or yokes are placed astride of and adjustable upon said cross-pieces, substantially as specified.

3. In a shoeing-rack, the pen or rack comprising the side frames, with their uprights beveled outward and downward and connected to upper cross-bars to swing outward, and provided with stops to prevent the inward swinging beyond a perpendicular plane of the frames, substantially as set forth.

4. In a shoeing-rack, the pen or rack comprising side frames provided at their upper ends with yokes fitted astride of upper cross-bars, said cross-bars having series of adjusting apertures or perforations near their ends, and pins entering said apertures, substantially as specified.

388,570. INGOT-MANIPULATOR. Orlando P. Mason, Bellaire, Ohio. Filed July 11, 1888. Serial No. 279,805. (No model.)
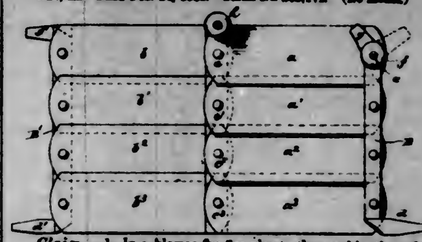


Claim.—1. The combination, with the table formed of the rollers C, of the shaft D, provided with cross-arms F, adapted to swing upward between the rollers, substantially as specified.

2. The combination, with the rollers C, forming the table, of the shaft D, the arms F, carried by the shaft and arranged to extend upward between the rollers, and rack and pinion mechanism for turning the shaft D, substantially as specified.

3. The combination, with the rollers C, forming the table, of the shaft D, the arms F, carried by the shaft and arranged to extend upward between the rollers, rack and pinion mechanism for turning the shaft D, and the steam or hydraulic cylinder F for moving the rack, substantially as specified.

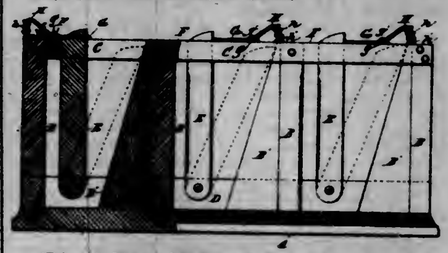
388,571. FOLDING FIRE-SCREEN. James H. McElhose, Danville, Ill. Filed Feb. 24, 1888. Serial No. 265,171. (No model.)



Claim.—1. In a blower for fire-places, the combination of two series of plates arranged to overlap each other, a central strip pivoted to the overlapping ends of the plates, and strips pivotally connected with the outer ends of the series of plates, substantially as described.

2. In a fire-blower, the combination of the parallel plates a a' a^2 and b b' b^2 b^3, the strip A, the pivotal rivets c c' c^2 c^3, connecting the plates with the strip A, and the strips B B', provided with lateral hooks and pivotally connected with the outer ends of the series of plates, substantially as described.

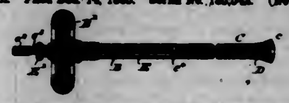
388,572. STANCHION. Henry C. Myers, Stafford, N. Y. Filed May 15, 1888. Serial No. 274,013. (Model.)



Claim.—1. The combination, with the supporting-frame having the upper beams, C, and lower beam, D, of the swinging stanchion E, the locking-bail G, having the offsets g, inclined stem H, and downward spring-supporting lever, the spiral spring h, the spring-retaining pin h', and the staples g', substantially as described.

2. The combination, with the supporting-frame having the upper and lower beams and the swinging stanchion, of the stop-block F between the upper beams, and the spring f within said block for opening said stanchion, substantially as described.

388,573. JEWELER'S LATHE-CHUCK. Horace H. Moseley, Elgin, Ill. Filed Dec. 14, 1888. Serial No. 293,542. (No model.)



Claim.—1. The combination, with a hollow split chuck, C, and a hollow chuck-spindle, B, provided with a hand-wheel, of a stop, D, and a longitudinally-adjustable stem, E, attached to the stop, said stem being extended through the hollow spindle to a point exterior to the said spindle and the hand-wheel thereon, substantially as and for the purposes set forth.

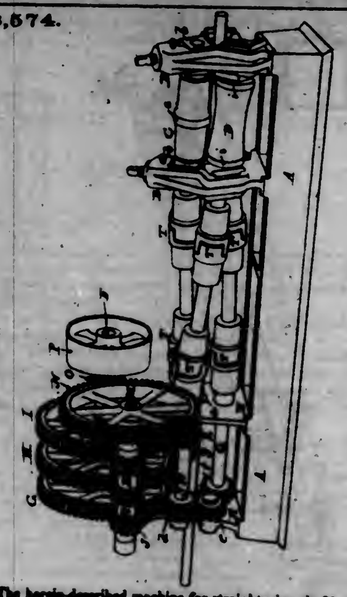
2. The combination, with a hollow split chuck, C, of a stop, D, and a longitudinally movable and rotatable stem, E, attached to the stop, and having a screw-threaded part engaged with an interiorly-threaded part connected with the chuck-head, substantially as and for the purpose set forth.

3. The combination, with a hollow split chuck, C, and a hollow chuck-spindle, B, of a stop, D, a longitudinally movable and rotatable stem, E, attached to the stop, and having a guide-collar, e^2, and a screw-threaded portion, e^3, and a nut, F, detachably secured to the outer end of the said spindle, substantially as and for the purpose set forth.

388,574. MACHINE FOR STRAIGHTENING SHAFTING. Walter J. Reinhardt, Cumberland, Md., assignor of one-half to Marvin McKaig, same place. Filed Apr. 4, 1888. Serial No. 269,576. (No model.)

Claim.—1. The combination of a convex roll and two concave rolls arranged about a given line, the convex portion of one roll being opposite the concave portions of the other two rolls and adapted to bend or spring a shaft or like body into the concave faces thereof.

388,574.



2. The herein-described machine for straightening shafting, consisting of convex roll C, concave rolls D D, and gearing, substantially such as shown as described, for imparting rotary motion to said rolls in the same direction, the three rolls being grouped about a common line and each having its axis arranged at an angle to said line.

388,575. SIFTER. Louis M. Hennessy, Frederick, Md. Filed June 14, 1887. Serial No. 241,292. (No model.)

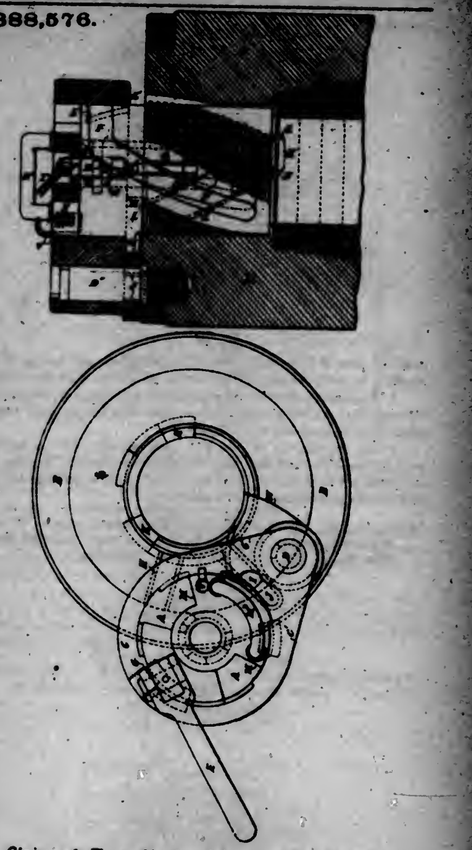


Claim.—1. In a sifter, the combination, with a suitable box provided with horizontal slots in three of its sides, of a sieve within the box, projections attached to three sides of the sieve and lying in said horizontal slots, whereby the sieve may be oscillated as described, said box being also provided with a vertical slot from one of the first-mentioned slots to the edges of the box, whereby one of said projections may be raised from its slot to rotate the sieve about the remaining two projections as an axis, substantially as set forth.

2. In a sifter, the combination, with a suitable box provided with horizontal slots in three of its sides and a vertical slot from the edge of the box to one of said horizontal slots, of a rearwardly-inclined sieve having an open front, projections passing from the sides of the sieve through two of said horizontal slots in two opposite walls of the box, a handle projecting through the rear wall of the sieve through the horizontal slot in the corresponding box-wall, permitting both horizontal and vertical motion to the handle, and an inclined chute adapted to limit the rotation of the sieve about said projections and to receive its contents when it is so rotated.

388,576. BREECH MECHANISM FOR GUNS. Thomas Hodgkinson, Westminster, England, assignor to the Hotchkiss Guns and Ammunition Company, (Limited,) same place. Filed June 11, 1888. Serial No. 276,726. (No model.)

388,576.



Claim.—1. The combination of the gun, the breech-block closing its rear end, the segments of screw-threads winding partly around the breech-block, the corresponding segments in the breech of the gun, the carrier-ring by which the breech-block when withdrawn from the gun can be conveyed away to one side, the pin projecting inward from this ring, and the groove in the breech-block, into which the pin enters, formed at one end parallel with the screw-threads and at the other parallel with the edges of the screw-segments.

2. The combination of the gun, the breech-block closing its rear end, the segments of screw-threads winding partly around the breech-block, the corresponding segments in the breech of the gun, the lever-handle for turning the breech-block, the carrier-ring capable of being turned around a pin which is on one side of it and projects backward from the gun, the pin projecting inward from the ring, and the groove in the breech-block, into which this pin enters, formed at one end parallel with the screw-threads and at the other parallel with the edges of the screw-segments.

388,577. LASTING-MACHINE. Thomas O'Brien, Rochester, N. Y., assignor to William S. King, Minneapolis, Minn. Filed Apr. 23, 1888. Serial No. 271,888. (No model.)

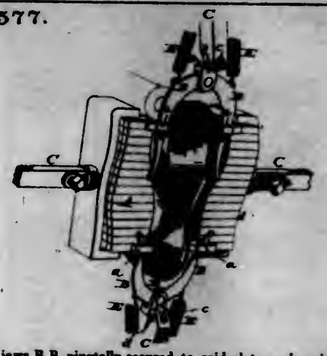
Claim.—1. In a lasting-machine, the combination, with side jaws provided with legs or guides, of end jaws consisting of two independent blades or wipers, B, movable between the legs or guides, and an intermediate plate or block, D, projecting beyond the inner edges of the blades or wipers B, substantially as and for the purpose set forth.

2. In combination with a movable supporting-bar, plate or block D, carried thereby, jaws B B, pivotally attached to said plate or block, and guides arranged at the outer edges of the jaws, substantially as described and shown.

3. In combination with a supporting-bar, plate D, and jaws B B, carried by said bar, and springs extending from the jaws to the bar and serving to draw the jaws apart.

4. In combination with bar C, plate D, pivotally connected with

388,577.

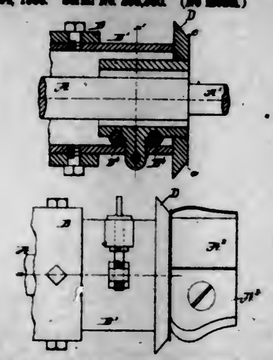


said bar, jaws B B, pivotally secured to said plate, and springs E E, attached to said jaws and serving to draw them away from each other.

5. In a lasting-machine, in combination with plate D, having its forward edge provided with notches, jaws B B, having their inner edges likewise provided with notches.

6. The combination of jaws A A, provided with lugs *a a*, bar C, plate D, carried by said bar, jaws B B, pivotally attached to plate D, and springs E E, extending from bar C to jaws B B and serving to hold the latter in contact with the lugs *a a*.

388,578. TREAD-GUARD FOR CUTTER-HEADS. JOSEPH L. PARKER, Boston, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 24, 1888. Serial No. 268,202. (No model.)



Claim.—1. The combination, with a rotary cutter and its shaft, of a tread-guard or rest and an independent race or support therefor, made adjustable at right angles to the axis of the rotary cutter, whereby the said guard or rest may be placed in proper working position with relation to the said cutter, substantially as described.

2. The combination, with a rotary cutter, its shaft, and the tread-guard or rest, of a race or support therefor, the stock of the cutter and the guard or rest being connected by a stud-and-slot connection, substantially as and for the purpose described.

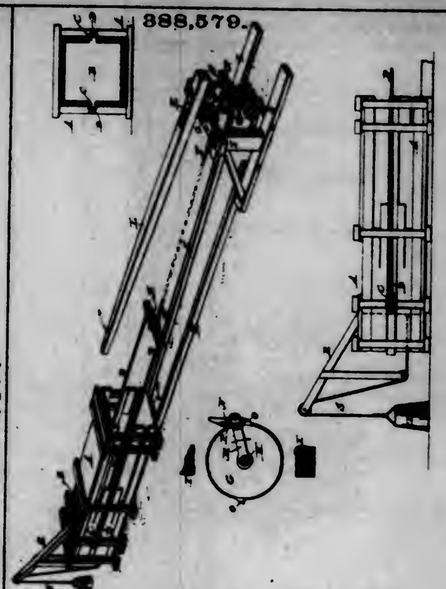
3. The combination, with a rotary cutter, its shaft, and tread-guard or rest, of the race or support therefor, with means for adjusting the said race or support eccentrically with relation to the said cutter, substantially as described.

388,579. BALING-PRESS. CHARLES PETERSON, Maple Plain, Minn. Filed Dec. 22, 1887. Serial No. 258,716. (No model.)

Claim.—1. In a baling-press, and in combination with a suitable supporting-frame and baling-chamber, the reciprocating follower, the weighted retracting-cord connected to said follower, the winding-drum, and the chain or cable connecting the same with the follower, the shaft provided with a sweep and with an arm, M, the dog attached to said arm and arranged to engage the drum, and a trip device automatically releasing said dog, substantially as shown.

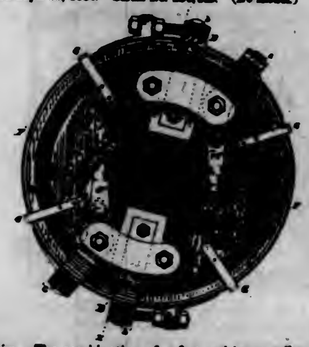
2. In a continuous baling-press, the combination of the open-ended bale-chamber having the feed-opening at its top, the reciprocating follower, the weighted retracting-cord connected to said follower, the side rods, D, also connected to the follower, the chain F, connected to said rods, the winding-drum connected with the chain, the rotary sweep and its arm, an intermediate dog connecting the arm and drum, and a stationary device acting upon the dog to trip the same and release the drum during each revolution.

388,579.



3. In a continuous baling-press, the open-ended bale-chamber A, having the feed-opening in its top, the reciprocating follower therein, the side rods, D, extending from the follower toward and beyond the delivery end of the chamber, and a winding mechanism connected with said rods, whereby the bales issue from the delivery end of the bale-chamber in the direction of the winding mechanism.

388,580. FRICTION-CLUTCH. SYLVESTER H. PITKIN, Akron, Ohio. Filed Sept. 22, 1887. Serial No. 250,445. (No model.)

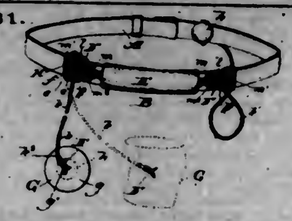


Claim.—The combination of a fast and loose pulley, one of said pulleys being provided with a flange and the other with two parallel bands which encircle said flange, two fixed arms carrying wrist-pins, two pivoted levers carrying wrist-pins, the sliding sleeve and the links connecting said sliding sleeve to the pivoted levers, the two ends of one of said bands being attached, respectively, to the wrist-pin carried by the fixed arm and the wrist-pin carried by the pivoted lever mounted on one of said pulleys, and the two ends of the other band being respectively attached to the wrist-pin carried by the fixed arm and the wrist-pin carried by the pivoted lever mounted on the same pulley, the fixed arm and pivoted lever of one band being secured to the pulley diametrically opposite the fixed arm and pivoted lever of the other band, the inner ends of said levers having universal bearings in links pivoted to the sliding sleeve on the shaft, said levers being arranged to simultaneously either draw said bands upon the pulley-flange or to release them therefrom, substantially as described.

388,581. ELECTRIC BELT. HARRY P. PRATT, Chicago, Ill., assignor to The Pratt Electro Therapeutic Supply Company, same place. Filed Apr. 19, 1888. Serial No. 270,191. (No model.)

Claim.—1. In an electric belt, the combination of a girdle portion.

388,581.



A, a longitudinally-expansible and transversely-compressible battery, B, comprising cells C, flexibly connected together, and electrodes connected by suitable conductors with the opposite poles of the battery, substantially as described.

2. In an electric belt, the combination of a girdle portion, A, a longitudinally-expansible and transversely-compressible battery, B, comprising cells C, flexibly connected together, clasps *m*, attached to the opposite poles of the battery, buckles *m'* on the girdle portion, elastic bands *l*, connecting the clasps *m* and buckles, and electrodes connected by suitable conductors with the clasps *m*, substantially as described.

3. In an electric belt, the battery F, comprising, in combination, cells C, composed each of an element, *r*, surrounded by absorbent material, *q*, to contain the exciting-liquid, and an element, *p*, of substantially the oval form shown, and provided with the extension *o*, links *n*, connecting the cells from opposite elements, and end links, *n*, having eyes *n²*, substantially as described.

4. In an electric belt, the battery B, comprising, in combination, cells C, composed each of an element, *r*, surrounded by absorbent material, *q*, to contain the exciting-liquid, and an element, *p*, of substantially the oval form shown, and provided with the extension *o*, links *n*, connecting the cells from opposite elements, rings *n'* on some or all of the links, and end links, *n*, having eyes *n²*, substantially as described.

5. In an electric belt, the combination, with the girdle portion A, of a battery, B, inclosed in a moisture-proof case and having its terminals projecting from opposite ends of the said case and connected with the girdle portion, a sliding case, E, on the girdle portion, disconnected from the said moisture-proof case, whereby the case E may be shifted to cover or uncover the case containing the battery, and electrodes connected by suitable conductors with the opposite poles of the battery, substantially as described.

6. In an electric belt, the combination, with the battery, of a mechanically-operated circuit breaker or interrupter, substantially as described.

7. In an electric belt, the combination, with the battery, of a circuit breaker or interrupter, H, comprising a housing, *f*, containing loosely conducting material, *f'*, and contacts *e*, extending into the housing, substantially as described.

8. In an electric belt, the combination, with the battery, of a circuit breaker or interrupter, H, comprising a housing, *f*, containing loosely conducting material, *f'*, and contacts *e*, extending into the housing and provided with eyes *d'*, substantially as described.

9. In an electric belt or the like, the combination, with the battery, of a conductor to which an electrode is connected, and a clamp, F, at an end of the conductor, formed with spring-arms *i'*, having hooks *i²* at their extremities, extending outwardly in opposite directions, substantially as described.

10. In an electric belt or the like, the combination, with the battery, of a conductor to which an electrode is connected, and a clamp, F, at the end of the conductor, formed with a coil, *i*, and spring-arms *i'*, having hooks *i²* at their extremities, extending outwardly in opposite directions, substantially as described.

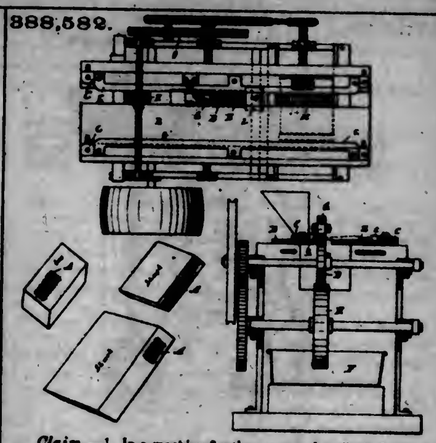
11. In an electric belt or the like, the combination, with the battery, of an electrode, G, connected with a pole of the battery by a suitable conductor and self-supporting on the part of the body to which it is applied, substantially as described.

12. In an electric belt or the like, the combination, with the battery, of an adhesive electrode, G, connected with a pole of the battery by a suitable conductor, substantially as described.

13. In an electric belt or the like, the combination, with the battery, of an adhesive electrode, G, comprising a plaster having a metallic plate on its adhesive surface and an eye, *g'*, extending from the said plate through the plaster, and a conductor connected at one end with a pole of the battery, and carrying at its opposite end a clamp, F, formed with spring-arms *i*, terminating in hooks *i²*, inserted into the eye *g'*, substantially as described.

388,582. MACHINE FOR SAWING MATCH-BOXES. CHARLES H. PERKINS and HENRY W. WHALEN, Detroit, Mich., assignors to the Diamond Match Company, New Haven, Conn. Filed May 13, 1887. Serial No. 238,013. (No model.)

388,582.

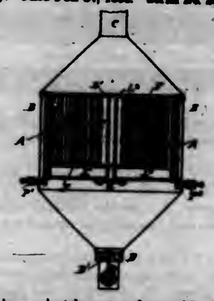


Claim.—1. In a machine for the purpose described, the combination, with the giving and sanding devices, of the bed B, formed in two parts, and the guides adjustably secured to said bed, substantially as and for the purpose specified.

2. In a machine for the purpose described, the combination, with the giving and sanding devices, of the bed B, the parallel guides, and the spring-guides *c*, secured to said parallel guides, substantially as and for the purpose specified.

3. In a machine for the purpose described, the combination, with the giving and sanding devices, of the bed B, the adjustable parallel guides, and the spring-guides *c*, secured to said parallel guides, substantially as and for the purpose specified.

388,583. ELECTRIC MOTOR. KARL RAAB, Kaiserslautern, Bavaria, Germany. Filed Feb. 27, 1888. Serial No. 265,655. (No model.)



Claim.—1. In an electric motor, the combination of an inclosing-case, two spiral coils of German silver encircling each other, with their similar ends connected together, and with their similar opposite ends connected to the line-wire, so that the current must pass through and heat the coils, and an anemometer operated by the current of air formed by the heat of the coils within the case.

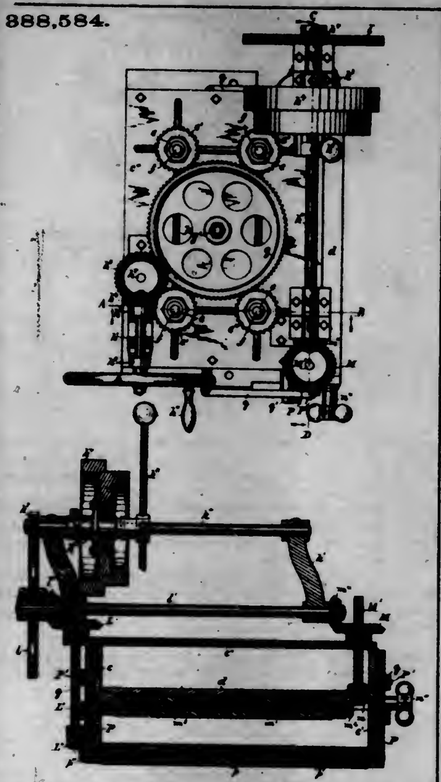
2. In an electric motor, the combination of an inclosing-case, two spiral coils of small-resistance material encircling each other and connected together and to the line-wire, so that the current must pass through and heat the said coils, and an anemometer operated by the air-current induced by the said heated coils.

3. In an electric motor, the combination of an inclosing-case, two spiral coils of small-resistance material encircling each other and connected together and to the line-wire, so that the current must pass through and heat the said coils, a shunt of conducting material having greater resistance than the spiral coils, and also included in the circuit, and an anemometer operated by the current induced by the said heated coils, substantially as and for the purpose set forth.

388,584. GAGE AND FEED ATTACHMENT FOR RUBE PLANING-MACHINES. SAMUEL S. RAYMOND and SYLVESTER H. ROBERTS, Manchester, N. H., and WILBUR W. GARDY, Lowell, Mass. Filed Apr. 19, 1888. Serial No. 271,143. (No model.)

Claim.—1. The frame *c d d'*, having journaled in its top portion the internally-screw-threaded bushings *e e*, provided with pinions *d d*, combined with the vertically-adjustable gage *d' d'*, the screw-shafts *f f*,

888,584.



secured to said gage and screwed through the bushings *c c*, and means for operating said pinions and screw-shafts, as and for the purpose set forth.

2. The frame *c c' c'*, having the bushings *c c* journaled in its top portion and provided with connected pinions *d d*, as described, combined with the set-screws *f f*, and the vertically-adjustable gage *d d'* and its positively-actuated feed-roller m^2, as and for the purpose set forth.

3. The frame *c c' c'* and the vertically-adjustable gage *d d'*, in combination with the positively-operated feed-roller m^2, journaled in said gage, and the scraper N, pivoted to said gage and having its free end bearing on the said feed-roller, as and for the purpose set forth.

4. The frame *c c' c'* and the gage *d d'*, vertically adjustable relative to said frame, combined with the positively-operated feed-roller m^2, journaled in the said gage, the rotary cutter-shaft *a*, and the positively-operated and vertically-yielding lower feed-roller, *p*, arranged below the feed-roller m^2 and in front of the rotary cutter-shaft *a*, as and for the purpose set forth.

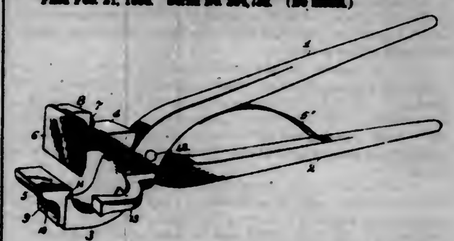
5. In combination with the rotary beam planer-knives *a' a'* and the table-tops *b b'*, the detachable frame *c c' c'*, having vertically-adjustable gage *d d'*, arranged as described, and the spring-pressed anti-friction roller *i'*, and positively-operated feed-roller m^2, journaled in said gage, and the vertically-yielding and positively-operated feed-roller *p*, arranged below the roller m^2 and in front of the beam planer-tool, substantially as and for the purpose set forth.

6. The frame *c c' c'* and the vertically-adjustable gage *d d'*, having the positively-operated feed-roller m^2, in combination with the vertically-yielding and positively-operated lower feed-roller, *p*, and mechanism for imparting a rotary motion to it, consisting of the rotary shaft *l'*, having pinion *l'* secured to it, the gear L, journaled in the frame portion *c'*, and the shaft L', affixed to said gear and having secured to its lower end the pinion L', meshing in the pinion *p'* on the lower roller, *p*, substantially as and for the purpose set forth.

7. The frame *c c' c'* and the vertically-adjustable gage *d d'*, having screw-threaded spindles *f f f f*, adapted to work in screw-threaded hubs on the pinions *d d d d*, in combination with mechanism for operating said gage and its pinions, consisting of the crank or handle *k'* and shaft *k'*, secured to it, the pinion k^2, secured to said shaft and meshing in the loose gear k^3, and the pinion k^4, secured to gear k^3 and meshing in the gear *g*, that meshes in the teeth of the respective pinions *d d d d*, substantially as and for the purpose set forth.

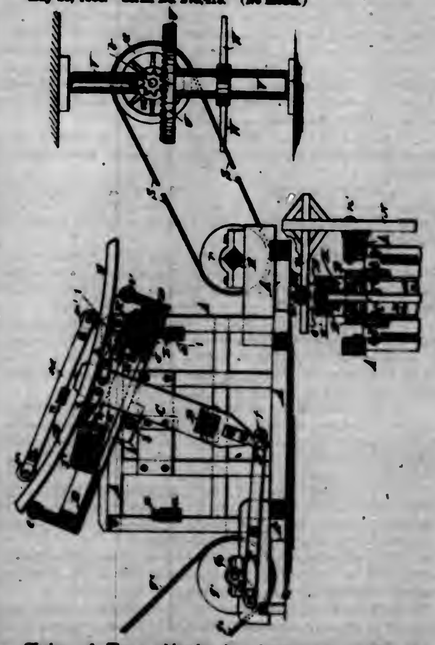
8. The frame *c c' c'* and the vertically-adjustable gage *d d'*, having the positively-operated upper feed-roller, m^2, journaled in it, as described, in combination with the vertically-yielding and positively-operated lower feed-roller, *p*, journaled in the vertically-movable bars or bearings P P, as described, and the levers *q q*, connected to said bearings and having their ends connected to the frame of the device by means of the springs *q' q'*, substantially as and for the purpose set forth.

888,585. HOOF-PARER. ROBERT P. EMLEY, Bloomington, W. Va. Filed Feb. 21, 1888. Serial No. 264,732. (No model.)



Claim.—A hoof-parer consisting in the pivoted handles 1 2, having reversely-curved ends 3 and 4, the former of which has a bottom on its outer end and a projection, 12, on its outer side extending outwardly and forwardly to a point approximately in line with the inner edge of the bottom, and the knife 6 on the front face of the end 4, substantially as set forth.

888,586. HORSE-POWER. ALLEN SANDERS, Victoria, Tex. Filed May 30, 1888. Serial No. 275,419. (No model.)



Claim.—1. The combination, in a horse-power machine, of a frame, a tilting carriage thereon, a lever fulcrumed on the frame, connections from said lever to machinery to be driven thereby, a weight box or boxes held to the lever and traveling on the carriage during its tilting movement, and mechanism for rocking the lever, and thereby tilting the carriage, substantially as described, for the purpose set forth.

2. The combination, in a horse-power machine, of a frame, a tilting carriage thereon, a lever fulcrumed on the frame, connections from said lever to machinery to be driven thereby, a weight box or boxes held to the lever and traveling on the carriage during its tilting move-

ment, a longitudinally-ranging head-bar on the lever tilting the carriage as the lever is rocked, a lever fulcrumed on the frame and carrying a cross-head resting on the head-bar of the carriage-tilting lever, and mechanism connected to the lever having the cross-head for operating it from an adjacent horse-power or other motor, substantially as described, for the purposes set forth.

3. The combination, in a horse-power machine, of a frame, a tilting carriage, B, thereon, provided with a floor-slot, *b'*, a lever, C, fulcrumed on the frame and projecting through said slot, two boxes, H I, carrying weights and held to the lever C to travel on the carriage B, connections from the lever C to machinery to be driven, and mechanism for rocking the lever and tilting the carriage, substantially as herein set forth.

4. The combination, in a horse-power machine, of a frame, a tilting carriage, B, thereon provided with a floor-slot, *b'*, two boxes, H I, carrying weights and held to the lever C, to travel on the carriage B, a pitman, F, connected to the lever and to a cranked driving-shaft, a head-bar, E, on the lever, and a lever, N, fulcrumed to the frame and provided with a cross-head, M, operating on the head-bar E, for rocking the lever C and tilting the weight-box carriage, substantially as herein set forth.

5. The combination, in a horse-power machine, of a frame, a tilting carriage thereon, a lever fulcrumed on the frame, connections from said lever to machinery to be driven, a weight box or boxes held to the lever and traveling on the carriage during its tilting movements, a head-bar, E, on the lever, a lever, N, fulcrumed on the frame and provided with a cross-head, M, operating on the head-bar E, and a pitman, O, connected to the lever N and to power mechanism driven from an adjacent motor, substantially as herein set forth.

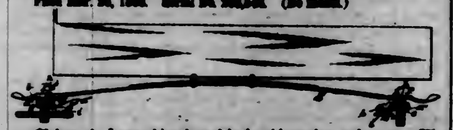
6. The combination, in a horse-power machine, of a frame, a tilting carriage thereon provided with anti-friction wheels *c c'* at opposite ends, a lever, C, fulcrumed to the frame and connected to machinery to be driven, and provided with a curved head-bar, E, resting on the carriage-wheels *c c'* to tilt the carriage, substantially as herein set forth.

7. The combination, in a horse-power machine, of a frame, a tilting carriage thereon, a lever, C, fulcrumed to the frame and connected to machinery to be driven, a head-bar, E, on said lever resting on the carriage to tilt it as the lever is rocked, a lever, N, fulcrumed on the frame and operated from an adjacent power, a cross-head, M, on said lever N, provided with anti-friction wheels *m m'*, resting on the head-bar of the lever C, substantially as herein set forth.

8. The combination, in a horse-power machine, of a frame, a tilting carriage thereon, a lever fulcrumed on the frame, connections from said lever to machinery to be driven, a weight box or boxes held to the lever and traveling on the carriage as it is tilted, mechanism for rocking the lever and tilting the carriage, and spring-buffers on the frame relieving the shock of the tilting movements of the carriage, substantially as herein set forth.

9. The combination, in a horse-power machine, of a frame, a tilting carriage thereon, a lever fulcrumed on the frame, connections from said lever to machinery to be driven, a weight box or boxes connected to the lever and mounted on wheels and traveling on the carriage during its tilting movement, and mechanism rocking the lever and tilting the carriage, substantially as herein set forth.

888,587. VEHICLE-SPRING. ARTHUR SHERMAN, Cazenia, N. Y. Filed Mar. 26, 1888. Serial No. 268,546. (No model.)

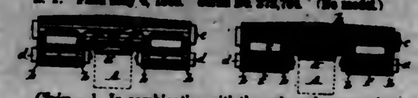


Claim.—1. In combination with the side spring and cross-spring, the shackle-eye *e*, formed on the end of the cross-spring, the saddle *a*, riding on said eye and formed with the perforated segmental rocker-seat *c* on top and with pendent perforated ears *c' c'* at the ends of the eye, the coupling-bolt A, extending through said ears and intervening eye, the plate P, secured to the end of the side spring and formed with the concave bearing *d*, riding on the seat *c*, and provided with the perforated ears *f f*, and the coupling-bolt A, passing through said ears and intervening rocker-seat, substantially as described and shown.

2. In combination with the side spring and cross-spring, the shackle-eye *e*, formed on the end of the cross-spring, the saddle *a*, provided with perforated ears *c' c'*, the cushion *i*, interposed between the end of the shackle-eye *e* and adjacent ear *c'*, the coupling-bolt A, extending through said ears and intervening shackle-eye and cushion, and the plate P, attached to the end of the side spring and coupled to the saddle *a*, substantially as set forth and shown.

3. In combination with the side spring, cross-spring, and the saddle *a*, connected to the end of said cross-spring and formed with the rocker-seat *c*, the plate P, formed with the recessed seat *c* for the end of the side spring, and formed, also, with the concave bearing *d*, riding on the seat *c*, and with perforated ears *f f*, and the coupling-bolt A, passing through said ears and intervening rocker-seat, substantially as described and shown.

888,588. VEHICLE-SPRING HANGER. ARTHUR SHERMAN, Cazenia, N. Y. Filed May 4, 1888. Serial No. 272,704. (No model.)



Claim.—1. In combination with the axle and cross-springs at opposite sides thereof, saddles rigidly secured to the top of the end portions of the axle and provided with lugs perforated at right angles to the axle, hangers riding on said lugs, bolts extending completely through the length of the hangers and through the aforesaid lugs, and couplings connecting the cross-springs to said hangers, as set forth and shown.

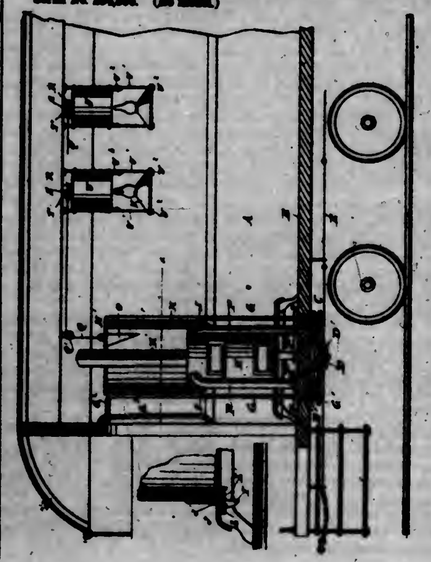
2. In combination with the axle and cross-springs at opposite sides thereof, the saddles *a a*, secured to the top of the end portions of the axle and formed with the perforated lugs *a' a'*, and the hangers *h h*, riding on said lugs and each formed with the central eye, *e*, and pendent ears *b b* at its ends, the bolt *c*, extending completely through the length of the hanger and through the aforesaid lugs, and bolts *d' d'*, passing through the pendent portions of the ears and connecting thereto the eyes *f f* of the springs, substantially as described and shown.

888,589. ART OF ORNAMENTING CARDS. CHARLES SHUMANN, Brooklyn, N. Y. Filed Nov. 29, 1887. Serial No. 255,412. (No model.)

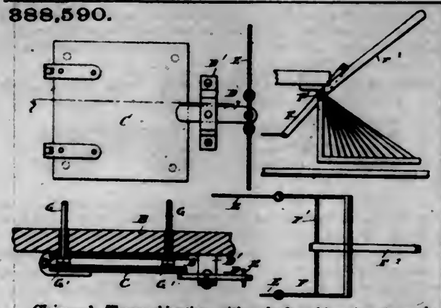


Claim.—The method herein described of ornamenting cards in relief, which consists in placing a sheet of ornamental paper coated with adhesive material in a die having raised letters or ornaments with sharp and raised cutting-edges, then placing the sheet to be ornamented upon the coated surface of the ornamental paper and subjecting both to a heavy pressure, thus cutting and sticking the latter to the sheet all at once and the same operation, as described.

888,590. SAFETY ATTACHMENT FOR CAR-HEATERS AND CAR-LAMPS. GEORGE P. SHAVER, Dover, N. H. Filed Apr. 12, 1887. Serial No. 234,692. (No model.)



388,590.



Claim.—1. The combination, with a platform hinged to the under side of the car-bottom and a catch for holding said platform in a horizontal position, of rods supported on said platform and passing through the base of the car-heater, and a hood supported by said rods and adapted to inclose the car-heater, substantially as shown and described.

2. The combination, with a platform hinged to the under side of the car-bottom and a catch for holding said platform in a horizontal position, of rods secured on said platform and passing through the base of the car-heater, a hood supported by said rods and adapted to inclose the car-heater, and catches on the hood for locking said hood to the base of the car-heater, as set forth.

3. The combination, with a platform hinged to the under side of the car-bottom and a pivoted catch engaging said platform to hold it in a horizontal position, of links or chains connected with said pivoted catch, and a lever fulcrumed on the cow-catcher of the locomotive and extending at an angle, said lever being connected with said links or chains connected with said catch, substantially as shown and described.

4. The combination, with a car-heater and the base supporting said car-heater and having apertures, of rods passing through said apertures and a hood secured to said rods and adapted to slide over said car-heater, substantially as shown and described.

5. The combination, with a car-heater and the base supporting said car-heater and having apertures, of rods passing through said apertures and a hood secured to said rods and adapted to slide over said car-heater, and catches for locking said hood to said base, substantially as shown and described.

6. The combination, with a car-heater provided on the inside of its top with guides, a slide held in said guides and adapted to close the chimney-opening, and a base supporting said car-heater, of rods passing through said base, a hood supported by said rods and adapted to fit over said car-heater, and a wedge fastened to the inner side of the top of the hood and adapted to operate said slide in the top of the car-heater, substantially as shown and described.

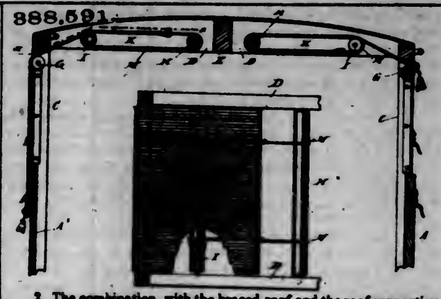
7. The combination, with rods secured to the roof of a car and hooks fastened to the lower ends of said rods, of a lamp adapted to slide with its base on said rods, being supported on said hooks of the rods, a hood adapted to slide on said rods and fitting over said lamp, and spring-catches secured to said hood and adapted to lock said lamp to said hood, substantially as shown and described.

8. The combination of rods secured to the roof of a car, a lamp supported by and fitted to slide on the said rods, and a hood suspended from the top of the car and guided on the said rods when detached from the top of the car, substantially as herein shown and described.

9. The combination, with the platform C, pivoted to the under side of the car-bottom, and means for holding said platform in position, of the rods G, supported on said platform C, the hood H, supported by said rods G and adapted to fit over the car-heater, the rope Q, connected with the top of said hood H, the spring-pin R, secured to said rope Q, the slotted arm T, and the hood U, supported by said pin R and adapted to slide over the lamp V, substantially as shown and described.

10. The combination, with a hood, H, and means for supporting the same, of the lamp V, suspended from the top of the car, the rope Q, connected to the hood, the spring-pin R, secured to the rope, and the hood U, supported by the pin R and adapted to slide over the lamp V and to be locked thereto, substantially as herein shown and described.

388,591. VESTIBULE-TOP CURTAIN. John H. Brabaker, Brooklyn, N. Y. Filed Mar. 8, 1888. Serial No. 266,880. (No model.)

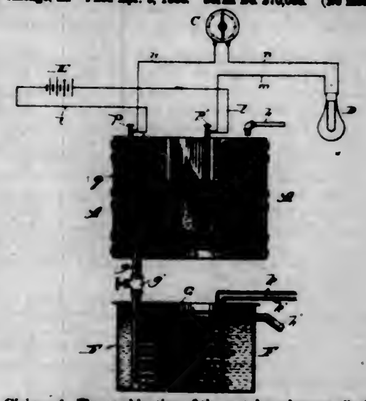


Claim.—1. The combination, with the braced roof and the roof-supporting posts forming the open sides of a vehicle, of a guide-roller mounted across the top of a side opening, a spring shade-roller journaled to and beneath the braced roof, and a curtain running over the guide-roller and arranged to be rolled up under the roof by the spring-roller, substantially as described.

2. The combination, with the braced roof and the roof-supporting posts forming the open sides of the vehicle, of a guide-roller mounted across the top of a side opening, another guide-roller mounted beneath the middle part of the roof, a spring-roller mounted beneath the roof in front of the latter guide-roller, a curtain passed around the two guide-rollers, and cords connecting the curtain to the spring-winding roller, substantially as described as described.

3. The combination, with the roof of a vehicle and the roof-supporting posts, of a guide-roller journaled between the posts a short distance below the cross-braces of the top, a spring-roller journaled beneath the top, and a curtain connected to said spring-roller and passing between the guide-roller and the cross-brace, substantially as herein shown and described.

388,592. ICE OR REFRIGERATING MACHINE. John R. Barse, Chicago, Ill. Filed Apr. 9, 1888. Serial No. 270,098. (No model.)



Claim.—1. The combination of the metal condenser-coil of an ice or refrigerating machine and positive and negative electrodes connected by a suitable conductor, whereby water containing, inherently, a substance having a corroding effect on metal, passed into contact with the electrodes, is prevented from corroding the coil, substantially as described.

2. The combination of the metal condenser-coil of an ice or refrigerating machine, a vessel or chamber containing positive and negative electrodes connected by a suitable conductor, and water-conducting mains leading to and from the said vessel, whereby water containing, inherently, a substance having a corroding effect on metal, passed through the said vessel in contact with the electrodes, is prevented from corroding the coil, substantially as described.

3. The combination of the metal condenser-coil of an ice or refrigerating machine, a vessel containing positive and negative electrodes connected by a suitable conductor, water-conducting mains leading to and from the said vessel, whereby water containing, inherently, a substance having a corroding effect on metal, passed through the said vessel in contact with the electrodes, is prevented from corroding the coil, and an extraneous auxiliary battery, E, connected with the electrodes, substantially as described.

4. The combination of the metal condenser-coil of an ice or refrigerating machine, a vessel containing positive and negative electrodes connected by a suitable conductor leading beyond the vessel, a device such as the incandescent electric lamp D in the circuit, and water-conducting mains leading to and from the said vessel, whereby water containing, inherently, a substance having a corroding effect on metal, passed through the said vessel in contact with the electrodes, generates electricity utilized at the device D, and is prevented from corroding the coil, substantially as described.

5. The combination of the metal condenser-coil of an ice or refrigerating machine, a vessel containing positive and negative electrodes connected by a suitable conductor leading beyond the vessel, a device such as the incandescent electric lamp D and an indicator, C, in the circuit, and water-conducting mains leading to and from the said vessel, whereby water containing, inherently, a substance having a corroding effect on metal, passed through the said vessel in contact with the electrodes, generates electricity utilized at the device D, and the condition of which is indicated at the indicator C, and is prevented from corroding the coil, substantially as described.

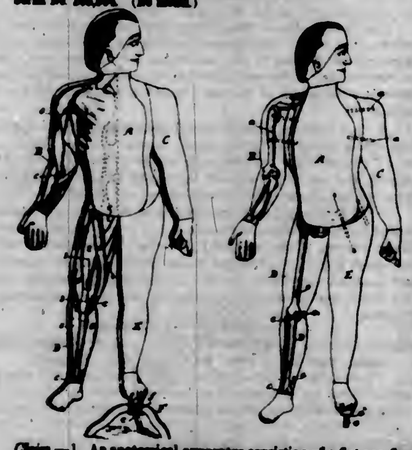
6. The combination of the metal condenser-coil of an ice or refrigerating machine, a vessel containing positive and negative electrodes connected by a suitable conductor leading beyond the vessel, a device such as the incandescent electric lamp D and an indicator, C, in the circuit, an extraneous auxiliary battery, E, connected with the electrodes, and water-conducting mains leading to and from the said vessel, whereby water containing, inherently, a substance having a corroding effect on metal, passed through said vessel in contact with the electrodes, generates electricity utilized at the device D, and the condition of which is indicated at the indicator C, and is prevented from corroding the coil, substantially as described.

7. The combination of the condenser of an ice or refrigerating machine, comprising a tank, F, provided with water-conducting mains leading to and from it, and containing a metal coil, G, and an electrode, e, positive to the metal of the coil contained in the tank and connected with the coil by a suitable conductor, whereby water containing, inherently, a substance having a corroding effect on metal, passed through the tank in contact with the coil and electrode e, is prevented from corroding the coil, substantially as described.

8. The combination of the condenser of an ice or refrigerating machine, comprising a tank, F, provided with water-conducting mains leading to and from it, and containing a metal coil, G, and an electrode, e, positive to the metal of the coil contained in the tank, conductors n and m, leading, respectively, from the coil and the electrode e, and a device such as the incandescent electric lamp D in the circuit, whereby water containing, inherently, a substance having a corroding effect on metal, passed through the tank in contact with the coil and electrode e, generates electricity utilized at the device D, and is prevented from corroding the coil, substantially as described.

9. The combination of the condenser of an ice or refrigerating machine, comprising a tank, F, provided with water-conducting mains leading to and from it, and a metal coil, G, a porous vessel, B, of insulating material in the tank surrounded by the coil, and an electrode, e, electro-positive to the coil in the vessel B, and connected by a suitable conductor with the coil, whereby water containing, inherently, a substance having a corroding effect on metal, passed through the tank in contact with the coil and electrode e, is prevented from corroding the coil, substantially as described.

388,593. ANATOMICAL APPARATUS. Elias Smith, Peoria, Ill., assignor of one-half to Fred Klaible, same place. Filed Feb. 28, 1888. Serial No. 265,804. (No model.)



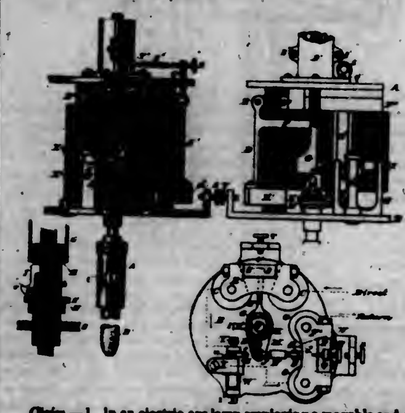
Claim.—1. An anatomical apparatus consisting of a flat non-flexible base or frame having the outline of the human body and a plurality of thin plates having the form of the various organs, muscles, and parts of the human body, said plates being movably attached upon said base.

2. An anatomical apparatus consisting of a flat non-flexible base or frame, a plurality of thin plates having the form of the muscles, organs, or parts of the body, and pins or hooks inserted in the base or frame for removably securing said plates in position upon said base or frame.

3. An anatomical apparatus consisting of a base or backing having the outline of the human body, and provided with a plurality of plates and with a pivot at its lower end, in combination with a tripod or equivalent support having a socket or hole to receive said pivot, whereby said apparatus is sustained in an upright position and is made capable of rotation on said tripod.

4. A base or backing for anatomical apparatus, consisting of a flat non-flexible base having the outline of the human body and divided into parts, and means, substantially as described, for removably uniting said parts, so that the same may be separated for convenience in packing.

388,594. ELECTRIC-ARC LAMP. Lewis W. Sperry, Hewlett Point, and Frederick P. Jaquith, Hewlett, N. Y. Filed Oct. 12, 1888. Serial No. 178,003. (No model.)



Claim.—1. In an electric-arc lamp employing a movable and a stationary carbon, a holder for the movable carbon provided with a screw-threaded stem, a rotating sectional nut with which such stem engages, said nut being in combination with a concentric ratchet, and a pawl actuated by the movement of the armature of a shunt-magnet, when constructed and arranged to operate substantially in the manner set forth.

2. In an electric-arc lamp, a vertically-movable non-rotating carbon-holder having a screw-threaded stem, a hollow cylindrical nut-carrier provided with a concentric ratchet, and a sectional nut adapted to engage with the thread of the screw-stem of the carbon-holder which passes through the center of said carrier, and about which said carrier revolves, a concentric collar for supporting said carrier, which collar is connected with or attached to the armature of the main magnets, substantially as shown, whereby a rising-and-falling movement may be imparted thereto, in combination with a reciprocating or oscillating arm carrying a pawl which actuates said ratchet by means of the vibrations of the armature of a shunt-magnet with which said arm is connected, substantially as shown, and for the purposes set forth.

3. The combination of the carbon-holder having stem J and guide-lugs F' F', with the tubular guideway D', having the parallel ribs F' F', which co-operate with lugs F' F', substantially in the manner described, and for the purposes set forth.

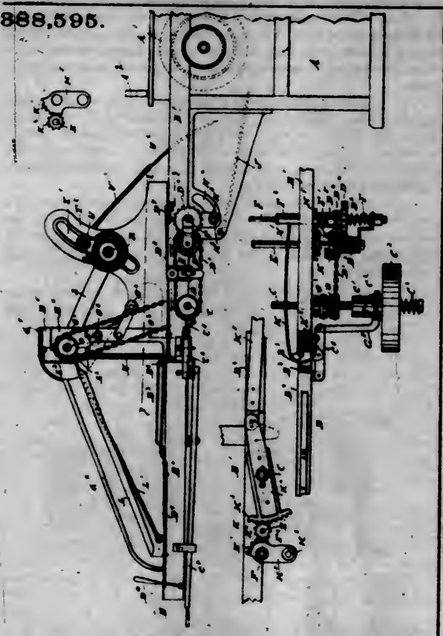
4. In a regulator for arc lamps, the combination of the magnets C C, shunt-coils O O, swinging pendulum-rods N' and D, armatures H' and d, stirrup G, collar H, cylinder b, and nut I, cylinder Z, insulating-piece n, and brush X, substantially as set forth.

5. In a regulator for arc lamps, the combination of the magnets C C, swinging rod D, armature H', arm P, stirrup G, collar H, cylinder b, and nut I, provided with thumb-piece d' and screw-threaded carbon-holder, substantially as described.

6. In a regulator for arc lamps, the combination of the magnets C C, shunt-coils O O, swinging pendulum-rods N' and D, armatures H' and d, stirrup G, collar H, cylinder b, and nut I, cylinder Z, insulating-piece n, brush X, crank-pin i, pitman c, and turn-buckle H', substantially as and for the purposes set forth.

388,595. BAND-CUTTER AND FEEDER FOR THRASHING-MACHINES. John H. Swisher, Cartinge, Mo. Filed Oct. 27, 1887. Serial No. 253,262. (No model.)

388,595.



Claim.—1. In a band-cutter and feeder for thrashing-machines, the combination, with endless horizontal slat belts, of a vertical partition held between the said slat belts, a second set of endless slat belts held above the first-named slat belts, a swinging table over which passes the last-named set of slat belts, fixed knives held on the under side of said table at each side of the partition, and pushing prongs or fingers secured to the ends of the slats of the central slat belt of the last-named set of slat belts, substantially as shown and described.

2. In a band-cutter and feeder for thrashing-machines, the combination, with endless slat belts traveling horizontally, of a vertical partition held between said slat belts, an inclined adjustable table held above said slat belts, an endless belt passing over said table and provided on the ends of each slat with a pushing prong or finger, and fixed knives held on the under side of said table alongside the said pushing prongs or fingers, substantially as shown and described.

3. In a band-cutter and feeder for thrashing-machines, the shaft O, carrying the rollers P^2 and P^3, the shaft R, carrying the rollers R^2 and R^3, the arms S, fulcrumed on said shaft O and carrying said shaft R, and the table S', connecting said arms S with each other, in combination with the slat belts P, P', and Q, the pushing-fingers Q', secured to the ends of the slats of the belt Q, each pushing-finger being provided with a foot traveling on said table, and the knives V^3, held on the under side of said table between the slat belts P Q and Q P', substantially as shown and described.

4. The combination, with the power-shaft, the endless feed-belt or carrier operated from said shaft, and a clutch for throwing the same into and out of gear, of the continuously-operated transversely-reciprocating spreader-bar at the delivery end of the belt, and gearing connecting it at all times with the power-shaft, said gearing being unaffected by the action of the said clutch, whereby the spreader will continue to operate after the feed-belt has been stopped, substantially as set forth.

5. The combination of the power-shaft, the horizontal endless feed-belt or carrier operated therefrom, a clutch mechanism for connecting it with and disconnecting it from the power-shaft, an inclined endless belt above the first-named belt and driven continuously from the power-shaft independently of the horizontal belt, with the two continuously-operated transversely-reciprocating spreader-bars at the delivery ends, respectively, of said belts, and having spreading-fingers curved or inclined downwardly, and a table common to both spreaders, the upper spreading-fingers operating across the table in advance of the lower fingers, whereby both spreaders and the upper belt will be operated when the lower feed-belt is disconnected from the power-shaft by means of its clutch mechanism, substantially as set forth.

6. In a band-cutter, the combination, with the endless slatted belt or carrier, the continuously-rotated shaft P at the delivery end of the said belt, a sleeve loose on said shaft, a roller on the sleeve around which the said delivery end of the belt passes, and a clutch-connection between the said continuously-rotated shaft and the sleeve thereon, of links or arms secured to the said sleeve, a grain-spreader bar mounted in said links or arms, and operating-connections between the shaft P and the said spreader-bar for continuously operating it, substantially as set forth.

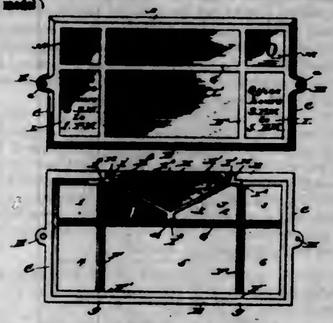
7. In a band-cutter and feeder for thrashing-machines, the main shaft C, the wide gear D^2, driven continuously therefrom, the shaft F, the sleeve F^2, through which said shaft passes, and provided with a clutch adapted to be engaged with or disengaged from a clutch, D^3, held on said shaft, the gear D^4, meshing with the said wide gear and connected to the said clutch D^3 on the shaft F, the roller G', secured on said sleeve, and the endless slat belts G, passing over said roller, the shaft H^2, supported in arms fulcrumed on said sleeve F^2, the prongs H', held on said shaft, the mechanism I, for imparting a sliding motion to said shaft H^2 from said rotary shaft F, and means, substantially as described, for disconnecting the clutch F^3 from the clutch D^3, whereby the motion of the slat belts G ceases, while the crosswise sliding motion of the shaft H^2 and its prongs H' continues, as set forth.

8. In a band-cutter and feeder for thrashing-machines, the sleeve F^2, the arms H^3, fulcrumed on said sleeve F^2, the shaft H^2, mounted in the free ends of said arms H^3, and having a crosswise sliding motion, in combination with the mechanism K, for imparting a swinging motion to said arms H^3, whereby said shaft H^2, with its prongs H', is raised or lowered, substantially as shown and described.

9. In a band-cutter and feeder for thrashing-machines, the combination, with the table G^2, provided on top and in its middle with a ridge, G^3, of the partition G^5, provided on its lower edge with pins engaging said ridge, said partition G^5 being hinged at the upper corner of its inner end to a cross-beam of the main frame, so that said partition G^5 can be disengaged from said ridge and swung upward and on the thrashing-machine, substantially as shown and described.

388,596. COMBINED DOOR-PLATE AND LETTER-BOX DOOR.

RALF STARNER, Chicago, Ill. Filed May 4, 1888. Serial No. 272,169. (No model.)



Claim.—1. In a combined door-plate and letter-box door, the combination, with a main frame divided into compartments, of a Y-shaped frame pivoted to the main frame and provided with a hook at each end and at the apex of the angled portion for securing a plate thereto to cover one of the said compartments, substantially as described.

2. In a combined door-plate and letter-box door, the combination, with a main frame having angular recesses in one of its side bars, of a Y-shaped frame provided with angular pivots and with a hook at each end and at the apex of the angled portion for securing a plate thereto, substantially as herein shown and described.

3. In a combined door-plate and letter-box door, the combination of the frame formed of the side bar A, provided with recesses H and K^4, the bar B, the end bars C, cross-bars F, longitudinal bar G, the panels M L L', the Y-shaped frame I, pivoted in the recesses H and provided with hooks I^2 z, the door J, held by the said frame, and the spring K', adapted to close the said door, substantially as specified.

388,597. LUMBERMAN'S BOOT. JOHN H. STURDEY, Boston, Mass. Filed Jan. 17, 1888. Serial No. 117,572. (No model.)

Claim.—The described lumberman's boot, having the long permeable felted leg A, formed in one with the felted foot B, such foot being provided with a sole, an intermediate semi-rigid sole-layer, D,



388,597.



and an external water-proof covering, C, of rubber compound permanently vulcanized thereon, substantially as set forth.

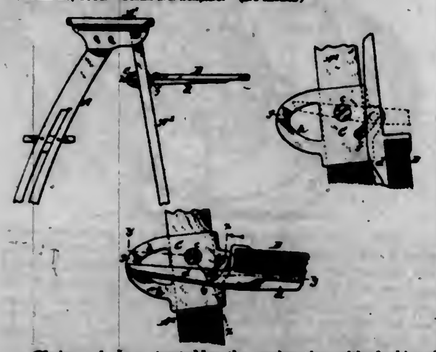
388,598. APPARATUS FOR PLACING HYDRAULIC AND OTHER PIPES IN TRENCHES. BARNA A. SEARING, Waterbury, Conn. Filed Apr. 28, 1888. Serial No. 271,892. (No model.)



Claim.—1. The herein-described apparatus for placing pipes in trenches, consisting of a pair of beams adapted to extend across the trench and rest upon each side, the said beams upon their adjacent faces each constructed with a recess, F, combined with ropes G, attached by one end upon one side of each recess and extending across the recess, and one or more pulleys on each beam upon the side of the recess opposite to which the rope is attached, the ropes working upon said pulleys, substantially as described.

2. The combination of a pair of beams adapted to extend across the trench into which the pipe is to be placed, the beams each constructed with a recess, F, upon their adjacent faces, each beam constructed with longitudinally-projecting arms B C at its respective ends, the said arms provided with transverse bars H, pulleys on each beam at one side of the said recess, and ropes G, attached by one end to the other side of said recesses and extending across said recesses and over said pulleys, substantially as and for the purpose described.

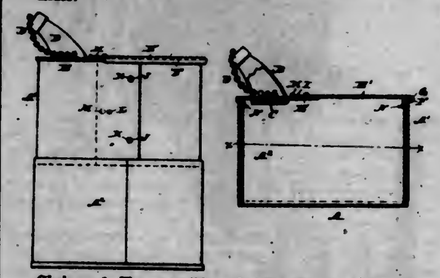
388,599. STEP-LADDER. CHARLES H. SPERRY, Silver Creek, assignor to the Empire Manufacturing Company, Forestville, N. Y. Filed Jan. 26, 1888. Serial No. 262,224. (No model.)



Claim.—1. In a step-ladder, the combination, with the hinged standard A^3 and the folding shelf B, of brackets or supports C, secured to the standard and provided with steps *g* and shelf-supporting arms *d*, pivoted to said brackets and engaging with their rear ends under the steps *g* of the brackets, whereby the shelf is supported in an elevated position, substantially as set forth.

2. The combination, with the standard and a folding shelf, of brackets or supports C, secured to the standard and provided with oblique or inclined slots *f*, shelf-supporting arms *d*, provided with pivots or studs *e*, arranged in said slots, and steps *g*, arranged on said brackets in rear of the pivots *e*, and with which the rear ends of the supporting-arms *d* engage, substantially as set forth.

388,600. PORTABLE TEA AND COFFEE POT. EMMA R. C. THOMPSON, Chicago, Ill. Filed July 11, 1887. Serial No. 243,977. (No model.)



Claim.—1. The expansible and contractible tea and coffee pot comprising an upper and a lower communicating section, one section being expansible and contractible horizontally to fit within the outside of the other section, substantially as and for the purpose set forth.

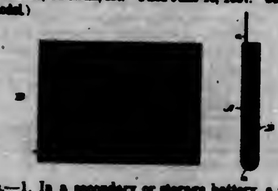
2. The expansible and contractible tea and coffee pot comprising a lower and an upper communicating section, one section sliding upon the other, while the upper section is formed into two parts horizontally expansible and contractible, substantially as and for the purpose set forth.

3. In an expansible and contractible tea and coffee pot, the combination of the lower and upper communicating sections, one section having a shoulder upon its inside near the upper end, while the other section is contractible horizontally, to enable it to rest at its lower edge upon said shoulder of the lower section, substantially as set forth.

4. In a tea and coffee pot, the upper section thereof provided with a bridge upon the inside at the top and with a spout secured integrally to said upper section and projecting above the top, substantially as and for the purpose set forth.

5. The tea and coffee pot comprising the lower and upper communicating sections, one section having a rib fitting in a groove in the other section and an inwardly-projecting shoulder near its upper edge, while the said other section is made in two parts horizontally contractible and expansible by projections or pins and apertures to permit the said other section to be supported upon the said shoulder of the first-named section and the telescoping of the first-named section within the latter section, substantially as set forth.

388,601. ELECTRODE FOR SECONDARY BATTERIES. SYLVANUS L. THAYER, St. Louis, Mo. Filed June 16, 1887. Serial No. 240,998. (No model.)



Claim.—1. In a secondary or storage battery, a sheet of perforated metal base or folded and a conducting-wire frame comprising vertical and horizontal wires attached to its inner side to form an outer covering or envelope for the electrode, substantially as set forth.

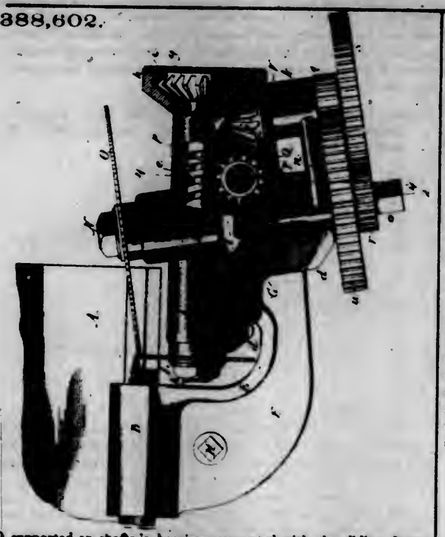
2. An electrode for a secondary or other battery, composed of an exterior perforated plate or envelope having attached to it internally a suitable conducting-wire and an interior perforated and corrugated plate, there being a suitable composition between the plates, and the whole being held or pressed together, substantially as set forth.

388,602. PORTABLE METAL-SAWING MACHINE. CHARLES W. THOMPSON, Chicago, Ill. Filed June 25, 1888. Serial No. 278,477. (No model.)

Claim.—1. A guide, as G, adapted to be secured to the material to be cut, in combination with a sliding frame, as I, carrying two saws, as L and O, supported by shafts in bearings connected with the sliding frame, substantially as and for the purpose specified.

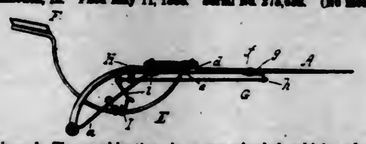
2. A guide, as G, adapted to be secured to the material to be cut, in combination with a sliding frame, as I, carrying two saws, as L and

388,602.



O, supported on shafts in bearings connected with the sliding frame, and shaft K, provided with a screw-thread, *e*, and worm-pinion *f*, and screw-threaded shaft P, substantially as and for the purposes specified.

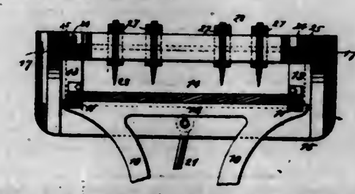
388,603. TWO-WHEELED VEHICLE. Joseph W. Vernon, Monmouth, Ill. Filed May 11, 1888. Serial No. 273,632. (No model.)



Claim.—1. The combination, in a two-wheeled vehicle, of the shafts and seat-supporting bars, the latter being hung at their forward ends, a longitudinal bar adjustably hung on the under side of each shaft, a double-hooked iron connected to each seat-bar, and a link depending from the rear end of each longitudinal bar and adapted to engage either of said hooks to change the point of suspension of said seat-bar, substantially as set forth.

2. The combination, in a two-wheeled vehicle, of the shafts, bar C, secured thereto and having loops depending therefrom, curved seat-bars hooked at their forward ends to engage said loops, guides H, and threaded perforated plates *g*, depending from each shaft, a rod, G, supported in said guides and threaded to engage said plates, a double-hooked iron, I, secured to each bar H, and a link, *i*, connected to the rear end of each bar G, and adapted to engage either of the hooks of the iron below, substantially as set forth.

388,604. MACHINE FOR PUNCTURING SHEET METAL. George F. Wahlbe and Herman G. Grey, Brooklyn, N. Y. Filed June 6, 1888. Serial No. 276,213. (No model.)



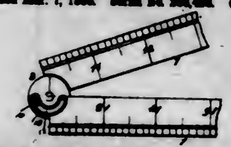
Claim.—1. In a machine for puncturing sheet metal, the combination, with standards, a bed supported by said standards, and corner-posts attached to the same, of an outer frame reciprocating upon said posts, tool-carrying bars adjustably mounted in said reciprocating frame, clamps adjustably secured upon the said tool-carrying bar, and means, substantially as shown and described, for reciprocating the outer frame, as and for the purpose specified.

2. In a machine for puncturing sheet metal, the combination, with standards, a bed supported upon said standards, and posts perpendicularly projected from the same, of an outer frame reciprocating upon said posts, provided with a longitudinal opening in the sides and ends, a tool-carrying bar adjustably supported in said reciprocating frame, clamps adjustably secured to said tool-carrying bar, and means, substantially as shown and described, for reciprocating the outer frame, as and for the purpose specified.

3. In a machine for puncturing sheet metal, the combination, with standards, a table supported upon said standards, and corner-posts perpendicularly projected from said standards, provided with perpendicular ribs, of a reciprocating outer frame having perpendicular grooves produced therein to receive the ribs of the posts, horizontal openings in the sides and ends exposing the table, longitudinal slotted tool-carrying bars adjustably secured in the outer reciprocating frame, clamps surrounding said reciprocating bar, provided with an opening aligning the slot in the said bar for the reception of the tool, and means, substantially as shown and described, for securing the clamp to the bar and the tool in the clamps, as and for the purpose specified.

4. The combination, with a table and a reciprocating frame surrounding said table, of a series of longitudinal slotted tool-carrying bars adjustably secured in said frame, clamps surrounding said bar and sliding thereon, provided with an aperture aligning the slot in the tool-carrying bar and a projection on the upper end, a set-screw passing through the clamp to an engagement with the tool-carrying bar, and a second set-screw passing through the projection of the clamp, adapted to bind the upper end of the tool, substantially as and for the purpose specified.

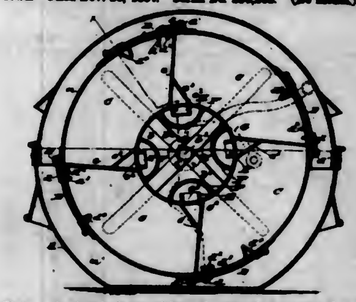
388,605. CARPENTER'S RULE. Hiram H. Wales, Boston, Mass. Filed Mar. 7, 1888. Serial No. 266,496. (No model.)



Claim.—1. A carpenter's rule having a joint consisting of a circular projection on one leg of the rule centrally pivoted between the two projections on the other leg of the rule, one of the projections having a beveled edge concentric with the pivotal point of the joint, and an adjusting-pin transverse to the projections and provided with a beveled clamping-surface engaging said beveled edge, substantially as described.

2. A carpenter's rule having a joint consisting of circular projection 2, having a beveled edge, 16, centrally pivoted between circular projections 3, and the clamping-pin 17, having beveled projection 18, engaging beveled edge 16 and screw-threaded end 19 with thumb-nut 20, substantially as described.

388,606. WASHING-MACHINE. John R. Wilfong, Red Oak, Iowa. Filed Nov. 30, 1887. Serial No. 256,502. (No model.)



Claim.—1. A tubular washing-wheel having a central transverse opening and a series of compartments arranged around said opening and communicating therewith, substantially as described, whereby provision is made for allowing the water in the compartments to flow into the central opening and from thence out through the ends thereof into the receptacle in which the wheel is mounted, as set forth.

2. A tubular washing-wheel having a central transverse opening and provided with a series of compartments arranged around the said opening, each compartment being provided with an apertured door and with an aperture in its bottom opening into the central transverse opening of the wheel, substantially as herein shown and described.

3. In a washing-machine, the combination, with a tubular wheel having a central transverse aperture and provided with a series of compartments having apertures in their bottoms, of doors for closing the said compartments provided with apertures, guards over the apertures in the compartments and doors, and bridges at the hinged ends of the doors, substantially as described.

4. In a washing-machine, the combination, with a tubular wheel having a central transverse opening and provided with a series of compartments having openings in their bottoms and closed by doors, of shields F, secured within the transverse aperture of the wheel over the openings in the bottoms of the compartments thereof, substantially as herein shown and described.

5. In a washing-machine, the combination, with a tubular wheel having a central opening, *b*, and a series of apertured compartments, C, of the guards E and the shields F, substantially as and for the purpose set forth.

6. The herein-described tubular washing-wheel, consisting of the tubular wheel B, having the central transverse opening, *b*, and divided into compartments C by the inclined partitions *c*, the said compartments having apertures in their bottoms, the apertured and hinged doors D, for closing the said compartments, guards d' and d^2 over the openings in the compartments and doors, respectively, the guards E around the openings in the central opening, *b*, and the shields F over the guards E, as specified.

388,607. PIPE-WRENCH. David B. Wheeler, North Carondelet, Pa. Filed Apr. 16, 1888. Serial No. 270,703. (No model.)

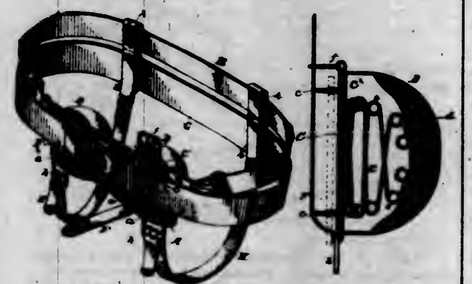


Claim.—1. The combination of handle A, having a stud, *a*, and shoulders C on its front end and a revolvable angular block mounted on stud *a*, and having grooves in its ends for engaging shoulders C, with the angular jaw pivoted to handle A, and the operating-handle therefor, all constructed and arranged substantially in the manner and for the purpose described.

2. In a pipe-wrench, the combination of the handle and its pivoted jaw with a supplementary adjustable handle having an angular head loosely connected with the pivoted jaw and adapted to open the latter when the handles are opened, all constructed and arranged substantially as and for the purpose described.

3. The combination, with the handle having a toothed slot and the jaw pivoted thereon, of a supplementary handle having a slotted head adjustably engaging the slotted handle and also loosely engaging the pivoted jaw, whereby the jaw is opened when the handles are opened and forcibly closed when the latter are closed, all constructed and arranged to operate substantially in the manner as and for the purpose described.

388,608. TRUSS. Joachim Wiler, Garrett, Ind. Filed Feb. 27, 1888. Serial No. 265,469. (No model.)



Claim.—1. The combination, with the slotted plate A, of the pads having the perforated lugs *c* passed through the slots in the plate A, the spring-pins C, and a suitable belt, substantially as set forth.

2. The combination, with the slotted plate A, of the belt B, the pads having the perforated lugs *c*, the spring-pins C, the straps F, and the belt G, substantially as described.

3. The combination, with the slotted plate A, of the belt B, attached to said plate, the pads having the perforated lugs *c* passed through the slots in plate A, the spring-pins C, the straps F, the belt G, the buckles *h*, attached to the pads, and the thigh-straps H, having the loops *h'*, through which pass loosely the belts G and B, substantially as described.

4. A pad for a truss, composed of the base-plate C, the plate C', the cover D, clamped between the two plates, the cushion *d*, and the M-shaped springs E, having a coil at each angle and arranged side by side with their fixed ends secured alternately in opposite sides of the plate C', and their free ends bearing against the under side of the cushion, substantially as and for the purpose set forth.

388,609. LAMP-WICK. Adolfo Sáenz Yáñez, Havana, Cuba. Filed Sept. 20, 1887. Serial No. 249,497. (No model.)



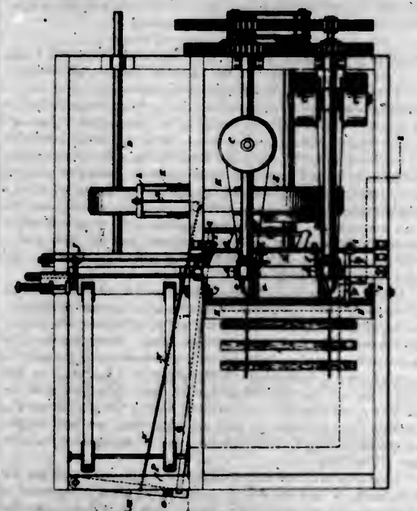
Claim.—1. The combination, with the wick-tube open at both ends, of a supplemental open-ended casing or mouth-piece within the outer end of the said tube and of less external diameter than the internal diameter of the tube to form the longitudinally-extending space *f* between the inner wall of the tube and the outer wall of the mouth-piece and the spacing projections or lugs, substantially as set forth.

2. The combination, with the wick-tube open at both ends and having lateral perforations and the spacing projections or lugs through it near its upper end, of the mouth-piece extending down within the tube at its upper end to a point just above the perforations, the mouth-piece being open at both ends and of less external diameter than the internal diameter of the tube to form the longitudinally-extending space *f* between its outer side and the inner side of the tube, substantially as set forth.

3. The combination, with the wick-tube open at both ends and having the wick extending up into the tube, and a granular or powdered filling extending from the wick to the upper end of the tube, of the mouth-piece open at both ends of less diameter than the bore of the tube and embedded in the said filling, and spacing projections or lugs between the mouth-piece and the inner wall of the tube, substantially as set forth.

4. The combination, with the wick-tube open at both ends and having perforations through its walls near its upper end, and the mouth-piece open at both ends and extending downwardly into the upper end of the tube to a point adjacent to said perforations, and the spacing projections or lugs between the mouth-piece and tube, of the granular or powdered material filling the upper end of the tube to a point just below the perforations, and also filling the mouth-piece and space *f* between it and the inner side of the tube, substantially as set forth.

388,610. MACHINE FOR MAKING FENCE. Joseph Brown, Quincy, Ill., assignor, by mesne assignments, to the Automatic Fence Loom Company, of New Jersey. Filed Nov. 2, 1887. Serial No. 254,095. (No model.)



Claim.—1. In a fence-machine, the combination, with the twisters, of a belt-tightener or equivalent device for governing the trans-

mission of power to the machine, levers or pawls for controlling the operation of the same, arranged to be held out of action by the wires leading from the reels to the points of twisting, and a device or devices connecting the levers or pawls with the belt-tightener or its equivalent, whereby the machine is automatically stopped whenever either of the wires breaks or runs out, substantially as described.

2. In a fence-machine, the combination, with the twisters, of a belt-tightener or equivalent device for governing the transmission of power to the machine, stop mechanism for controlling the operation of the same, and levers or pawls normally sustained or supported, respectively, by the wires leading from the reels to the point of twisting and by the pickets in their passage through the machine, and adapted when released or dropped by the failure of either a wire or wires or of the proper supply of pickets to bring the stop mechanism into action, as set forth.

3. In a fence-machine, the combination, with the twisters, of a belt-tightener or equivalent device for governing the transmission of power to the machine, a rock-shaft or bar operating or controlling the same, and levers or pawls for controlling the operation of the rock-shaft or bar, the said levers or pawls being normally sustained or supported by the wires and pickets, respectively, and adapted by their release to set in operation the rock-shaft, and thereby disconnect the motive power, substantially as set forth.

4. The combination, in a fence-machine, of levers or pawls carried by the twisting-heads or their shafts and arranged to be normally restrained against the force of gravity or a spring by the wires passing from the reels to the twisters, a rock-shaft or bar provided with fingers or arms, with which the levers or pawls engage when released, and a belt-tightener or equivalent device operated by the rock-shaft for controlling the transmission of power to the machine, substantially as described.

5. The combination, in a fence-machine, of an automatic picket-feeding device with a movable piece located in the path of movement of the pickets that are fed into the machine and restrained by them as they successively pass through and from the twisters, a belt-tightener or equivalent device for governing the transmission of power to the machine, and intermediate mechanism for causing the release of the movable piece to act upon the belt-tightener, whereby the machine is stopped automatically when the proper supply of pickets fails, substantially as described.

6. The combination, in a fence-machine, of a pawl or lever supported by the forward ends of the pickets in their progress through and from the wire-twisters with stop mechanism adapted to be operated by the release of the pawl when not supported by the pickets, substantially as set forth.

7. The combination, with the automatic picket-feeding device and the reciprocating guideway or pushing-head, of a pawl or lever adapted to engage with the guideway or head when not supported by the pickets and a power-detaching device brought into operation by the pawl or lever when moved by the guideway, substantially as described.

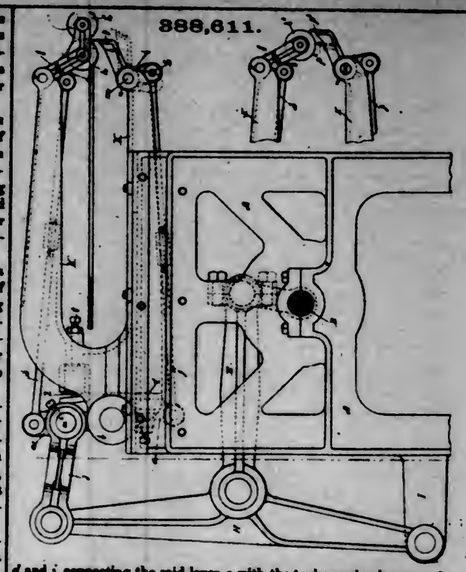
8. The combination, in a fence-machine, of the pawls *m m'*, the rock-shaft R, provided with the arms *l l'*, and the belt-tightener operated by the rock-shaft, substantially as described.

388,611. LEATHER-STRETCHING MACHINE. William R. Adams, Lynn, Mass. Filed Apr. 17, 1888. Serial No. 270,911. (No model.)

Claim.—1. In a machine for stretching leather, the combination, with a stationary support or frame, of a sliding frame mounted thereon and provided with movable stretching-tools, a two-armed tool-actuating lever mounted on said sliding frame and connected by adjustable rods with said stretching-tools, said lever having a limited movement independently of said frame, an operating-lever pivoted to said stationary frame and connected with the said tool-actuating lever and a crank with which said operating-lever is connected, whereby one part of the movement of the said operating-lever will vibrate the tool-actuating lever to operate the stretching-tools, and the other part of the movement of the said operating-lever will reciprocate the said sliding frame, as set forth.

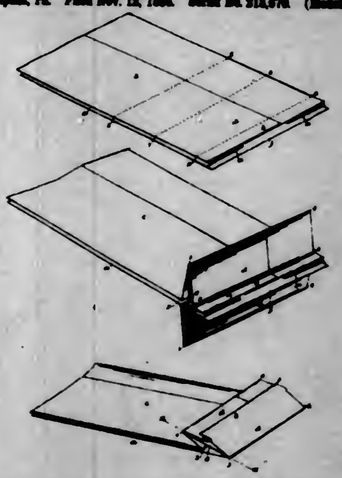
2. The combination, with the sliding frame K, of the two-armed tool-actuating lever *a*, mounted on said frame at its rear end, the tool-carrying levers *f* and *l* at the forward end of said frame, the stretching-tools carried by said levers, the rods *d* and *j*, connecting the opposite arms of said lever *a* with the said tool-carrying levers, and the operating-lever H, connected with the said lever *a*, and stops on said sliding frame to limit the independent or vibrating movement of the said lever *a*, whereby the tool-actuating lever is adapted to serve as a medium through which the said operating-lever can both reciprocate the said sliding frame and actuate the stretching-tools, substantially as set forth.

3. In a leather-stretching machine, the combination, with the sliding frame K, of the two-armed tool-actuating lever *a*, mounted on said frame at its rear end, the tool-carrying levers *f* and *l* at the forward end of said frame, the operating-lever H, connected with the said lever *a*, the stretching-tools carried by the said levers *f* and *l*, the rods



d and *j*, connecting the said lever *a* with the tool-carrying levers, and the yielding blocks *g g'*, serving as elastic or cushioning stops to limit the vibratory movements of the said lever *a* independently of the sliding frame on which it is mounted, substantially as set forth.

388,612. ART OF MAKING PAPER BAGS. Daniel Auten, Cleveland, Ohio, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Nov. 12, 1886. Serial No. 218,670. (Model.)



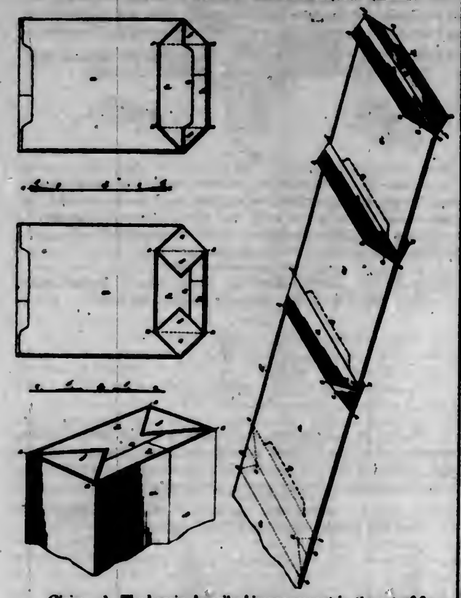
Claim.—1. The herein-described method of forming a square-bottom bag from a bellows-sided tube, which consists in distending or carrying apart and folding the sides of the tube at the lines 3 4, which define two edges of the bag-bottom, while the mouth of the bottom-forming end of the tube remains in a closed or substantially closed condition, substantially as described.

2. The herein-described method of forming a square-bottom bag from a bellows-sided tube, which consists in distending or carrying apart and folding the sides of the tube at the lines 3 4, which define two edges of the bag-bottom, while the mouth of the bottom-forming end of the tube remains in a closed or substantially closed condition, and then folding over and securing to the bottom the portion *b*, substantially as described.

3. The herein-described method of forming square-bottom bags from a continuous tube, which consists in cutting the material to form the lip *f*, then distending or carrying apart and folding the sides of

the tube upon the lines 3 4, which define two edges of the bag-bottom, while the mouth of the bottom-forming end remains in a closed or substantially closed condition, then covering the tube upon the line 6 4, and then folding over and securing to the bottom the projecting portion *b*, substantially as described.

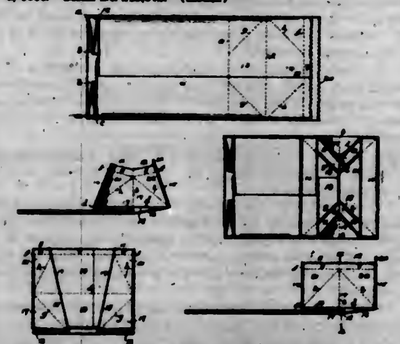
388,613. ART OF MAKING PAPER BAGS. Daniel Auten, Cleveland, Ohio, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Nov. 12, 1886. Serial No. 218,671. (Model.)



Claim.—1. The herein-described improvement in the art of forming a satchel-bottomed bag from a continuous tube, which consists in distending or carrying apart and folding the sides of the tube at the lines 2 3, which define two edges of the bag-bottom, while the main part of the tube is retained in its flat condition, substantially as described.

2. The herein-described improvement in the art of forming a satchel-bottomed bag from a continuous tube, which consists in distending or carrying apart and folding the sides of the tube at the lines 2 3, which define two edges of the bag-bottom, while the main part of the tube is retained in its flat condition, and then covering the tube and folding over the lip *e* and folding inward the projecting points *f* and securing them to the bottom of the bag, substantially as described.

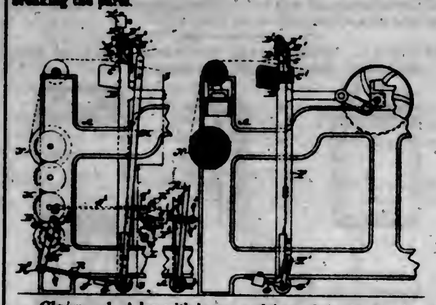
388,614. PAPER BAG. Daniel Auten, Cleveland, Ohio, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Oct. 8, 1886. Serial No. 215,572. (Model.)



Claim.—A bellows-sided bag having a rectangular bottom closed by a single transverse seam, and having the triangular portions 18 19 lying inside said bottom, substantially as described.

388,615. TAKE-UP MECHANISM FOR LOOMS. Frederic A. Allison, Philadelphia, Pa. Filed Jan. 4, 1887. Serial No. 223,978. (No model.)

Brief.—The pivoted reed is held in position, commonly, by the action of the weighted elbow-levers. When the lay moves forward, however, the reed meets the fell of the cloth and is pushed rearwardly, and this movement of the reed is utilized by suitable connections to set the actuating-pawl of the take-up mechanism, which as the lay retreats is moved by the action of the weighted elbow-levers in restoring the reed to proper position. A yielding connection is interposed in the pawl-actuating mechanism to prevent an undue strain from breaking the parts.



Claim.—1. A lay with bosses, and journals having bearings in said bosses, in combination with a frame carrying a reed, and slotted arms connecting said frame and journals, arms connected at their upper ends to said frames and provided at their lower ends with pins, weighted levers each having a bifurcated end in which said pin works, a vertical arm secured to one of said journals, so as to oscillate therewith, a winding-drum with pinion on its journal, and mechanism, substantially as described, connected to said pinion and vertical arm, for converting the oscillating motion of the arm into the rotary movement of the drum, substantially as described.

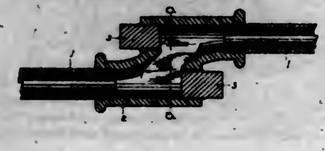
2. A lay, in combination with the journals *D'*, having bearings in bosses connected to said lay, a frame secured to said journals, a reed in said frame, the arms F, secured to said frame and provided with the pins P at their lower ends, the weighted levers G, each having a bifurcated end, the vertical arm H, secured to one of said journals *D'*, so as to oscillate therewith, a winding-drum having a pinion on its journal, a train of gearing with ratchet-wheel, a pivoted lever with a pawl, and a rod connected to said arm H and adapted to oscillate the said pivoted lever, substantially as and for the purpose set forth.

3. A lay with bosses and a frame having a reed therein, in combination with journals having bearings in said bosses, the vertical arm H, secured to one of said journals, the rod J, the arm K, having the pawl K', a winding-drum with pinion thereon, and a train of gearing between said arm K and pinion of winding-drum, the said train having a ratchet adapted to be operated by said pawl K', so as to rotate said winding-drum, substantially as described.

4. A lay with bosses, and journals having bearings in said bosses, in combination with a frame carrying a reed, and arms connecting said frame to said journals, the vertical arm H, secured to one of said journals, the rod J, connected to the arm H and having the collar R thereon, the arm K, loosely fitted on the rod J, the spring Q, located on said rod J between the collar R and arm K, the nut R', the pawl K' on arm K, a train of gearing having the ratchet L, adapted to be operated by said pawl K', and a winding-drum having a pinion operated by said train of gearing, substantially as described.

5. A lay with bosses D² and journals *D'*, in combination with the vertical arm H, the arm K, with pawl K', an operating-rod connecting said arms H and K and having a collar with clamping-screw thereon, a winding-drum having a pinion, a train of gearing with a ratchet adapted to operate said drum, and a spring between said arm K and said collar on operating-rod, normally adapted to bear against said arm K, but adapted to yield in case of unusual resistance of the ratchet-wheel, due to strain on the winding-drum.

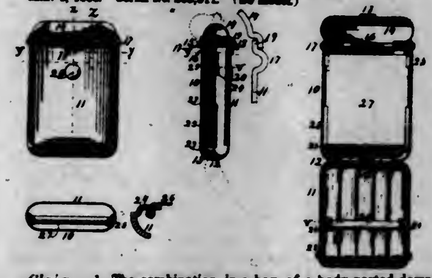
388,616. FLUID-CONDUIT. Seneca L. Bailey, Lowell, Mass. Filed Feb. 20, 1888. Serial No. 264,893. (No model.)



Claim.—1. A pipe-coupling having at its opposite ends screw-threaded pipe-receiving openings offset from each other, and a single unobstructed chamber forming a communication between said openings, said coupling having also a mud-hole at each end directly opposite or in line with said pipe-receiving openings and adapted to be closed by removable stoppers or plugs, substantially as set forth.

2. A pipe-coupling having at its opposite ends screw-threaded pipe-receiving openings offset from each other, and a single unobstructed chamber forming a communication between said openings, said coupling having also a mud-hole at each end directly opposite or in line with said pipe-openings, combined with two pipes screwed into said pipe-openings and with two removable stoppers or plugs closing said mud-holes, substantially as set forth.

388,617. CIGARETTE-CASE. JULES BERTHE, Louisville, Ky. Filed Mar. 1, 1888. Serial No. 265,811. (No model.)



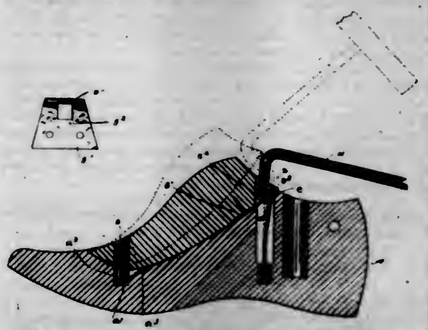
Claim.—1. The combination, in a box, of a body parted down its side edges and across its lower end and hinged together at its lower end, and a lid hinged to the upper end of one of the parts and provided with a spring-catch to engage the other part and fitted to close entirely around the upper ends of both parts, substantially as shown and described.

2. The combination, in a box made of sheet metal, of a body parted down its sides and the parts hinged together, each of the parts being provided with inward-projecting lips along its edges, the said lips being shaped with angles or ledges to engage the inner corner of the opposite edges of the box, and the lips upon one part of the box alternating along the line of juncture with the lips of the opposite part, substantially as shown and described.

3. The combination, in a box made of sheet metal, of a body parted down its sides and the parts hinged together, each of the parts being provided with inward-projecting lips along its edges formed with ledges, as described, certain of the said lips extending still farther inward beyond the ledges and punctured with T-shaped openings, and an elastic strap provided with metallic heads adapted to engage the said lips at the T-shaped openings, substantially as shown and described.

4. The combination, in a box made of sheet metal, of a body parted down its sides and the parts hinged together, each of the parts being provided with inward-projecting lips along its edges, formed with ledges, as described, and the lower lips bent backward, forming shelves, substantially as shown and described.

388,618. LAST. JOHN C. BENFORD and WARREN I. BENFORD, Berlin, Mass.; Clara T. Stetson administratrix of said Warren I. Stetson deceased. Filed May 26, 1888. Serial No. 275,515. (No model.)



Claim.—1. The body of the last provided with a shoulder, a^2, and a latch, combined with the block having a pin or stud at its under side at or near its lower end to co-operate with the said shoulder, and at its upper end a shoulder or projection, b^2, to be engaged by the said latch, substantially as described.

2. The body of the last and its attached latch having a beveled upper end, combined with the block of the last, provided at its upper end with a shoulder or projection, b^2, and a bar, b^3, substantially as and for the purpose described.

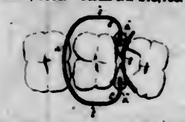
3. The body of the last provided with the spring-latch *c*, fixed thereto, and the block B, separated from the body of the last by a curved cut, as *a*, combined with a pin, *b*, at or near the lower end of the block, and the plate b' at or near the upper end of the block, and the latch *c*, engaging the said block, substantially as described.

388,619. DENTAL MATRIX. HENRY P. BOOTH, Chippewa Falls, Wis. Filed Jan. 26, 1888. Serial No. 262,262. (No model.)



Claim.—In combination, an artificial wall for a dental cavity, consisting of, a strip, *c*, placed between the teeth and substantially at right angles to the row of teeth, and two wedges, *d d*, inserted between the strip and tooth adjacent thereto, and provided with a connecting-spring, *a*, as and for the purpose described.

388,620. DENTAL MATRIX. HENRY P. BOOTH, Chippewa Falls, Wis. Filed June 1, 1888. Serial No. 276,702. (No model.)



Claim.—In combination, an artificial wall for a dental cavity, consisting of a strip, *c*, placed between the teeth and substantially at right angles to the row of teeth, and two wedges, *d d*, pivoted to a connecting-spring, *a*, as and for the purpose described.

388,621. DOOR-CHECK. BENJAMIN F. BOOSER, Randolph, Mass. Filed May 2, 1888. Serial No. 272,256. (No model.)



Claim.—1. A door stop and check, consisting of the combination of a base-frame adapted to be attached to the floor, a pivoted spring-actuated lever-catch, D, arranged at the outer end of the frame, and a sliding abutment, B, arranged upon the top of the frame and bearing against the upper end of the lever-catch, and having a spring for forcing it forward of greater power than the spring of the catch, as and for the purpose described.

2. A door stop and check, consisting of the combination of the base-frame A, slide B, with lug *b* and tongue *c*, spring C, arranged to bear against the lug, the lever-catch D and spring *d*, and a sliding connection for holding the slide B to the frame A, as and for the purpose described.

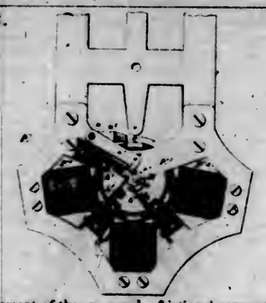
388,622. ELECTRIC MOTOR FOR SELF-WINDING CLOCKS. FRANK W. BRADBURY, Chicago, Ill. Filed May 26, 1888. Serial No. 275,062. (No model.)

Claim.—1. The combination, with a clock mechanism and an electric-motor armature for winding the same, of a detent for arresting the armature in a predetermined position with reference to the magnetic field of the motor upon its retrograde movement and a connection between the armature and the arresting-detent, substantially as described.

2. The combination, with a clock mechanism and an electric-motor armature for winding the same, of a detent for arresting the armature in a predetermined position with reference to the magnetic field of the motor upon its retrograde movement.

3. In a self-winding clock having an electric motor with a rotating armature, the combination, with the armature-drum, of a pivoted arresting-detent intercepting the path of the armature-drum upon the

388,622.



backward movement of the same and a frictional connection between the armature-shaft and said detent for throwing the same out of the path of the armature-drum during the forward movement of the latter, substantially as set forth.

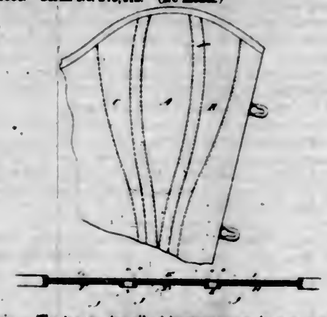
4. In a self-winding clock, the combination, with a rotary electric motor for winding the clock mechanism having the armature-bars $c' c'$, of the arresting-detent a^2 for intercepting the paths of the same, the frictional lever *a'*, moving with the arresting-detent, and the flange or disk upon the armature-shaft engaging the end of the frictional lever, substantially as described.

5. In a self-winding clock having a rotating electric motor, the combination, with the motor, of an arresting device for the armature of the same stopping the armature in a predetermined position other than a dead or neutral point upon the cessation of the winding.

6. In a self-winding clock mechanism having a rotating electric motor for winding the same, the combination, with the driving-spring of the clock tending to normally reverse the direction of rotation of the motor upon the cessation of winding, of an arresting device acting in conjunction with said spring to arrest the armature of the motor in a predetermined position other than a dead-point of the motor at the cessation of the winding, substantially as described.

7. In a clock mechanism having a winding electric motor with a rotating armature, the combination, with the armature-drum, of a pivoted arresting-detent intercepting the path of the armature-drum upon the backward movement of the same, and a frictional connection between the armature-shaft and said detent for throwing the same into the path of the armature-drum during the retrograde movement of the latter, substantially as described.

388,623. CORSET. MORRIS P. BRAY, Ansonia, Conn. Filed July 9, 1888. Serial No. 279,412. (No model.)



Claim.—The herein-described improvements in corsets, consisting in the breast portion constructed in several sections, each section composed of an inner thickness and an outer thickness, one of said thicknesses no greater in width than the width the section is to occupy in the corset, the other thickness of greater width than the one thickness, and a stiffening fabric of substantially the same size and shape as the said one thickness between the said two thicknesses, the said three thicknesses forming each section stitched together, the greater breadth of one thickness forming a margin of single thickness, and the said sections united by stitching the adjacent margins together, combined with an overlay over the said stitched margins, substantially as described.

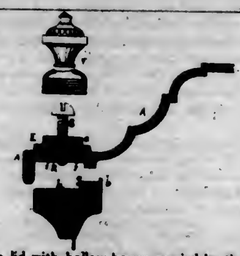
388,624. FASTENER FOR COFFINS. MAX BERGER, New York, N. Y. Filed Feb. 23, 1888. Serial No. 264,966. (No model.)

Claim.—1. The combination of the body and metallic lid of a burial-case and securing-screws therefor with yielding retainers for the screws carried by the lid.

2. The combination of the body and lid of a burial-case and securing-screws for the lid with hollow bosses carried by the lid and containing yielding material through which the retaining-screws pass.

3. The combination of the body and lid of a burial-case and retaining-screws therefor with hollow bosses on the lid, socketed escutcheons to fit on the said bosses, and screws passing through the escutcheons and bosses.

388,624.



388,625. CANNON-PINION FOR WATCHES. LEONARD C. BRIGGS, East Saginaw, Mich. Filed Dec. 22, 1887. Serial No. 258,765. (No model.)



Claim.—The combination, with a journal, B, of uniform dimensions from top to base of the pinion-seat, with the exception of a groove, *b*, of a pinion having at the lower end of its split hub an indentation, *a'*, and an inwardly-turned flange or burr, substantially as described.

388,626. WIRE-TIGHTENER. DAVID T. BROWN, Walker, Mo. Filed May 12, 1888. Serial No. 273,749. (No model.)



Claim.—1. A wire-tightener comprising a head or body provided with a gripper for the wire, formed of two arms or sections pivoted with relation to each other, and a holder to which said head or body is journaled, substantially as set forth.

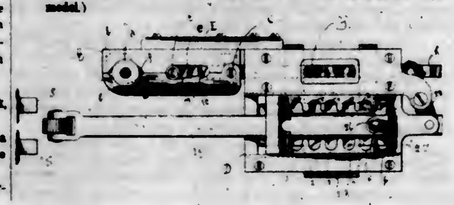
2. A wire-tightener comprising a head or body, a holder to which said head or body is journaled, the gripper formed of two arms connected to the head or body and pivoted with relation to each other, and an adjustable connection between the said arms, whereby they may be clamped firmly together when twisting the wire, substantially as set forth.

3. The improved wire-tightener consisting of a holder, and a head or body portion journaled to said holder and provided with a gripper having near its outer end a transverse opening for the wire to be stretched, and having its edges inclined or curved toward such end, substantially as set forth.

4. The improved wire-tightener comprising a head or body, a gripper consisting of arms connected with said head or body and pivoted with relation to each other, the holder to which such head or body is journaled, and the handle whereby to turn such part, substantially as set forth.

5. The wire-tightener herein described, consisting of the head or body, the handle by which to turn it, and the holder to which it is journaled, the gripper consisting of arms connected with the head or body and pivoted with relation to each other, such arms having near their outer ends slots or notches forming a guide-opening, and having such ends inclined or curved, and the adjustable connection whereby said arms may be clamped together, substantially as set forth.

388,627. ELEVATOR. WILLIAM F. BULLOCK and WILLIAM F. HARRIS, Lynn, Mass. Filed Sept. 3, 1887. Serial No. 248,005. (No model.)



Claim.—1. The combination of the rod 25, the indicator 27, each adapted to be moved independent of the other, an operating-lever for locking the rod *h* and indicator together, cams S on the elevator-well for engaging and moving the rod 25, and a clutch mechanism, in connection with the indicator, adapted to be set in motion by moving the rod 25 and to automatically grasp the shipper-cord, substantially as described.

2. The combination of the movable rod 25 and independently-movable indicator 27, engaging cams S, the connecting-link 28, the rod *h*, and a clutch mechanism, substantially as described.

3. The combination of the rod 25, the frame D, slide 23, and movable indicator 27, substantially as described.

388,628. PROCESS OF MAKING BATTERY-ZINCS. ROBERT L. CARR and PARKER BORDEN, Fall River, Mass. Filed Dec. 15, 1887. Serial No. 257,972. (No model.)



Claim.—1. The improved process of constructing battery-zincs herein described, the same consisting, essentially, of forming a body consisting wholly or in part of an amalgam of zinc and mercury, and a cap consisting of pure or approximately pure zinc, and having a conducting-wire cast therein and projecting at two sides thereof, placing said body, cap, and wire in a closed vessel, and submitting them to heat to unite them, substantially as set forth.

2. That improvement in the process of constructing battery-zincs which consists in forming a body composed wholly or in part of an amalgam of zinc and mercury, and having a socket in its upper portion, and a cap composed of pure or approximately pure zinc and provided with a conducting-wire cast or fused into the same, placing said body and cap in a closed vessel with a portion of the cap and wire in said socket, and submitting them to the action of heat to unite them, substantially as described.

3. That improvement in the process of constructing battery-zincs which consists in tinning the conducting-wire, casting a pure or approximately pure zinc cap around the same, leaving the ends of said wire projecting, and then uniting said cap and wire to the body of the zinc by the action of heat, a proper flux being employed between the united parts, substantially as set forth.

388,629. METAL STRAP FOR PACKING-BOXES. SPENCER C. CARY, Baldwin, N. Y. Filed Oct. 15, 1886. Serial No. 216,304. (Model.)



Claim.—1. A metal box-strap provided with longitudinal stiffening-corrugations along and immediately upon its edges, substantially as and for the purpose set forth.

2. A metal box-strap having longitudinal stiffening-corrugations and its extreme edges downwardly turned to project beyond its under face, substantially as and for the purpose described.

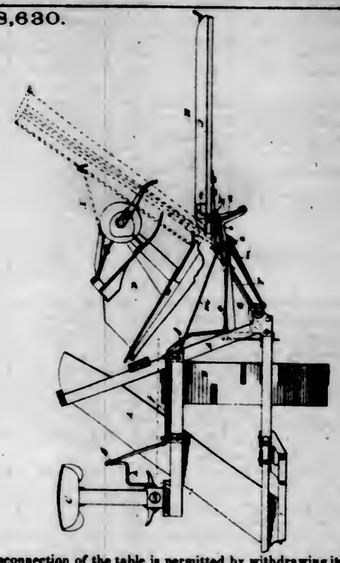
388,630. BUNDLE-CARRIER FOR GRAIN-BINDERS. HENRY J. CASE, Auburn, N. Y., assignor of one-half to D. M. Osborne & Company, same place. Filed July 30, 1886. Serial No. 209,577. (No model.)

Claim.—1. In combination with a grain harvesting and binding machine, a socket or bearing near its front on the stubble side, and the horizontal or approximately horizontal sheaf-carrying table provided with the arm or journal seated in said socket or bearing, said arm and socket having a downward inclination toward the harvester, substantially as described, whereby the rear end of the table is caused to swing outward as it descends.

2. In combination with a grain harvesting and binding machine, the horizontal or substantially horizontal bundle carrying table, and a supporting shaft or journal attached to said table and seated in bearings on the frame, its axis extending at right angles to the line of travel with an inclination upward from the machine.

3. In combination with a harvesting and binding machine, a sheaf-carrier and a connecting pivot or journal, substantially as described, having its axis of rotation inclined from the horizontal and adapted to permit the carrier to be turned thereon from a horizontal operative position to an upright position, bottom side up, whereby the passage of the machine through narrow openings is permitted.

4. A harvesting-machine provided with a socket inclined from the horizontal, in combination with a sheaf-carrying table having the supporting journal or pivot fixed rigidly thereto, seated in the socket and retained solely by gravity, as described, whereby the instantaneous disconnection of the table is permitted by withdrawing its journal from the socket.



5. A harvesting and binding machine having the inclined sockets or bearings attached thereto, in combination with the sheaf-carrying table having the journal fixed rigidly thereto, seated in the bearings and adapted for instantaneous withdrawal at will.

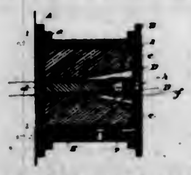
6. In combination with a harvester and binder, the sheaf-carrying table pivoted thereto to fall at its rear end, a spring-actuated latch jointed to the table and carried thereby, the fixed arm on the main frame to engage the latch and maintain the table in operative position, and the operating rod or chain connected to said latch, and serving, as described, the twofold purpose of disengaging the latch from the arm that the table may fall and of acting through the latch to lift the table from its depressed to its operative position.

7. In combination with a harvesting and binding machine, a sheaf-carrying table pivoted thereto to fall at its rear end, the pivoted latch and its actuating-spring connected to the table, a rigid arm, *e*, with which said latch engages to sustain the table, the operating-rod connected to the latch, and controlling devices connected to said rod and located adjacent to the driver's seat, whereby the driver is enabled to disengage the latch and permit the fall of the table, and subsequently to restore the table positively to its elevated position.

8. In combination with a downwardly-swinging table, the guard or bundle-detaining device hinged to its edge, and mechanism, substantially as described, actuated by the swinging of the table, for permitting said guard to turn downward out of action as the table descends.

9. The pivoted falling table, in combination with the fixed arm *e*, the arm *a*, latch *b*, and spring *c*.

388,631. ELECTRIC FIRE-ALARM SIGNAL-BOX. HENRY A. CRANE, Evart, Mich. Filed Mar. 31, 1888. Serial No. 269,126. (No model.)



Claim.—1. In an electrical fire-alarm signal-box, the combination of two springs forming a part of the electric circuit, blocks *c c* of insulating material for supporting said springs within the box, and an intermediate stationary or immovable block of insulating material for maintaining the springs apart, substantially as described.

2. In an electrical fire-alarm signal-box, the combination, with two springs insulated from each other and forming a part of the electric circuit, of insulators attached to the springs and having openings reaching thereto, and a key for closing the circuit, substantially as and for the purpose described.

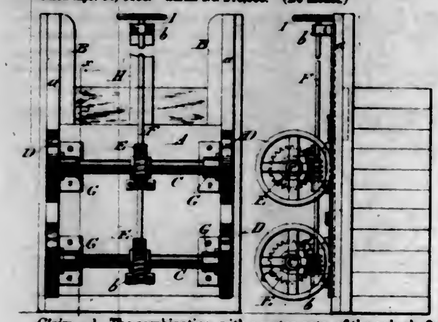
3. An electrical fire-alarm signal-box having arranged therein two springs forming a part of the electric circuit, the said springs having attached thereto blocks of insulating material, having openings therein adapting them to receive and interlock with a key, substantially as described.

4. An electrical fire-alarm signal-box having arranged therein two springs insulated from each other and forming a part of the electric circuit, the said springs having attached thereto blocks of insulating material formed with openings reaching to the springs, and having bevel-shaped recesses in their outer edges, so as to adapt them to receive and interlock with a key, the end of which is conical or bevel shaped, substantially as described.

5. In an electrical fire-alarm signal-box, the combination, with the box and a suitable lock therefor, of two springs forming a part of the electric circuit, the insulators attached to the springs, and a key having a conical or arrow-shaped end for making electrical contact between the springs, substantially as described.

6. In an electric fire-alarm signal-box, the combination, with the box and a suitable lock therefor, of the blocks *c c* and *d*, the springs C C, the insulators attached to the springs having openings communicating therewith, and a key for closing the circuit, substantially as described.

388,632. WATER-GATE. CLEVELAND J. CHENEY, Lowell, Mass. Filed Apr. 17, 1888. Serial No. 270,966. (No model.)



Claim.—1. The combination, with a water-gate, of the axle-shafts carried thereon and provided with terminal eccentric journals, the wheels on said journals, and a mechanism for rotating the axle-shafts, substantially as and for the purpose described.

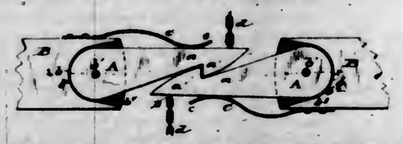
2. The axle-shafts having terminal eccentric journals, and also having gears, the wheels on said journals, the water-gate carrying the axle-shafts, and the vertical worm-shaft for actuating the gears, substantially as described.

3. The combination of the gate A, the horizontal shafts C C, carried in bearings G G on said gate, said shafts having terminal eccentric journals, *c*, the wheels D D, the gears E E, and the worm-shaft F, substantially as described.

4. The combination, with a water-gate, of the axle-shafts C, having eccentric journals *c*, said shafts being carried in bearings on the gate, and suitable devices for rotating the shafts to remove the gate from its seat, substantially as described.

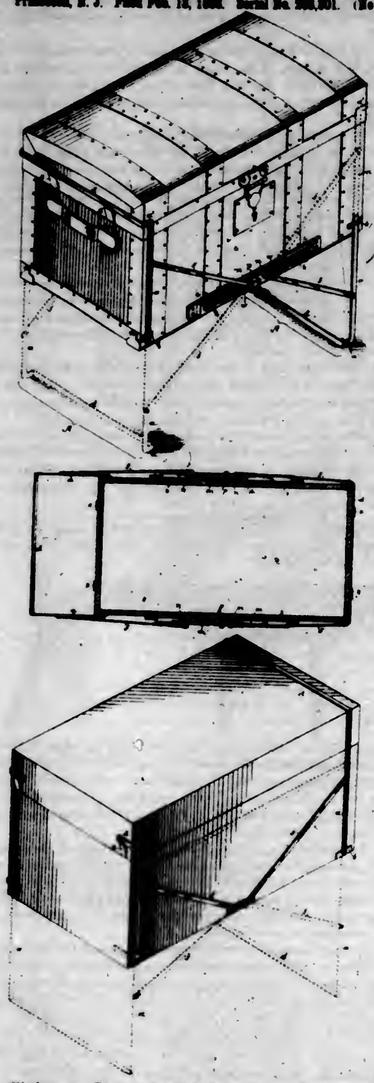
5. The combination of the gate A, the shafts C C, having journals *c c*, the wheels D D, the gears E E on the shafts, the worm-shaft F, the start H, secured to the gate, and the tracks *a a* for the wheels, substantially as described.

388,633. CAR-COUPLING. GEORGE W. CRICO, Montvale, N. J. Filed Apr. 11, 1888. Serial No. 270,206. (No model.)



Claim.—In a car-coupling, the combination, with the draw-bar having a recess formed near one end, the rear portion of the said recess forming a shoulder, and the under portion of the said draw-bar extending out and forming an arm, of the coupler-heads fitting in the said recess and resting against the shoulder formed in the recess and moving upon and supported by the arm formed by the elongated portion of the draw-bar, whereby, when the cars are coupled, all jar will be taken from the coupler-head, and in turning a curve the coupler-head will be supported by the arm on the draw-bar, substantially as and for the purpose specified.

388,634. ATTACHMENT FOR TRUNKS. CLIFTON W. CLIFTON, Princeton, N. J. Filed Feb. 13, 1888. Serial No. 263,801. (No model.)



Claim.—1. The combination of a trunk with opposite frames carried thereby and constructed to embrace the ends of the lid of the trunk when elevated, said frames being adjustable, so as to project beneath the trunk and provide supports for the same, all substantially as specified.

2. The combination of a trunk with opposite frames pivoted thereto near the lower outer corners, whereby they can be turned down to serve as supports for the trunk or be turned up so to constitute braces for the same, all substantially as specified.

3. The combination of the trunk, the opposite frames carried thereby and adjustable so as to form either supports or braces, and brace-bars serving to confine said frames when adjusted to either of their extreme positions, all substantially as specified.

4. The combination of a trunk with vertically-adjustable supporting and bracing frames connected to the trunk at its opposite ends, each frame comprising opposite side bars bent at their upper ends and connected by a transverse bar, all substantially as specified.

5. The combination of a trunk having a shouldered lid with op-

posite vertically-adjustable frames which, when depressed, form supports for the trunk and when raised engage with the shoulders on the lid and confine said lid to the body of the trunk, all substantially as specified.

6. The combination of the trunk having retainer-plates, the opposite frames pivoted to the trunk at the lower outer corners, and brace-rods pivoted to the side bars of the frames and engaging at their free ends with the retainer-plates on the trunk, all substantially as specified.

7. The combination of the trunk, the opposite frames pivoted to the same at its lower outer corners, the brace-bars hung to the side bars of said frames, the retainer-plates for the free ends of said brace-bars, and slotted guide-plates therefor, all substantially as specified.

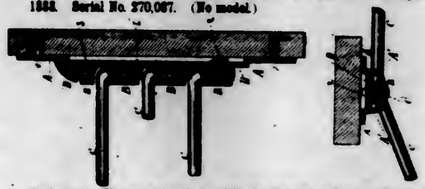
8. The combination of the trunk having a retaining-plate and slotted guide-plate with the pivoted end frames having brace-bars with locking-pins at their inner ends, said pins being provided with buttons contained between the guide-plate and retainer-plate, all substantially as specified.

9. The combination of the trunk, its guide-plate and retaining-plate, the pivoted end frames and their brace-bars having locking-pins with buttons thereon, and springs for acting upon said buttons to cause the engagement of the pins with the openings in the retainer-plate, all substantially as specified.

10. The combination of the trunk, its retaining-plate and guide-plate, the opposite pivoted end frames and their bracing-bars having locking-pins with buttons thereon, and a pivoted locking-lever constructed to engage said buttons, all substantially as specified.

11. The combination of the trunk, the opposite adjustable frames, the brace-bars therefor, and the guide-plate having reversely-inclined slots on opposite sides of the center for receiving and locking said brace-bars in either of their extreme positions, all substantially as specified.

388,635. CLOTHES-DRIER. George Conover, Waterbury, Conn., assignor to the American Ring Company, same place. Filed Apr. 9, 1888. Serial No. 270,067. (No model.)



Claim.—1. The combination, with the slotted wall-plate A, of the bridge-pieces B, made therewith and having intervening spaces, the horizontally-movable rod-arms C, having bent ends adapted to pass between and within the bridge-pieces, and a key, D, adapted to pass within the bridge-pieces and back of the ends of the arms to hold the same in place, substantially as set forth.

2. The combination, with the slotted wall-plate A and the bridge-pieces B, having intervening spaces and made with said plate, of the movable rod-arms C, adapted to be received between and within said bridge-pieces, and the headed key D, grooved lengthwise upon its face and crosswise at intervals corresponding to the space between the bridges, substantially as set forth.

3. The combination, with the slotted wall-plate A and the bridge-pieces B, having intervening spaces and made with said plate, of the movable rod-arms C, adapted to be received between and within said bridge-pieces, and the headed key D, grooved lengthwise upon its face and crosswise at intervals corresponding to the space between the bridges and having the lug 2 on its back, substantially as set forth.

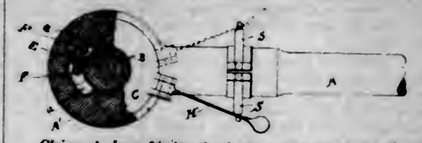
388,636. DEVICE FOR PASTING COP-BOTTOMS ON SPINNING MACHINES. William Cooper, Oldham, and John Cordingley, Hollingwood, County of Lancaster, England. Filed Apr. 19, 1887. Serial No. 236,262. (No model.) Patented in England Aug. 23, 1886, No. 10,737, and in Germany Apr. 30, 1887, No. 42,088.

Brief.—The object of the invention is to improve the paste-boxes employed for pasting cop-bottoms in spinning machinery, in order to apply the paste more efficiently and economically.



Claim.—A device for pasting cop-bottoms, comprising a box to contain the paste, a wheel to revolve partly in the paste in the box and partly out of the box, and an elongated spreading-brush alongside the wheel, substantially as described.

388,637. DRILLING DEVICE. Abner K. Cross, Boston, Mass. Filed Nov. 11, 1887. Serial No. 254,908. (No model.)

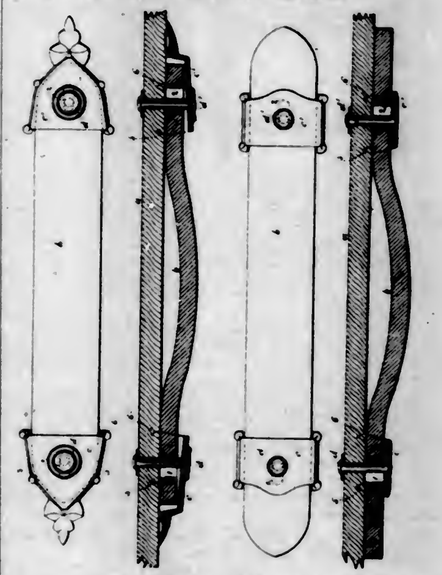


Claim.—1. In a friction-clutch, the combination of a shaft and a lever having a head fitting loosely about the shaft with a friction-roller or clamping-piece placed in a double-tapering chamber formed in either the shaft or the head of the lever, and means whereby the friction-roller may be placed at will in either end of said chamber and there retained in contact with both the shaft and the hub, thus serving to transmit motion from one part to the other, the motion being right or left handed, according to the position of the roller in the chamber.

2. In a reversible friction-clutch, the combination of the spindle B, hub A', provided with a double-tapering chamber, *a a*, and roller E, with the washer C, having the arms F F, and spring-lever H, substantially as and for the purpose specified.

3. In a friction-drill, the combination of the spindle B, feeding-screw K, collar B', and washer D, with a handle, A, its hub A', fitting about the spindle B and provided with a double-tapering chamber, *a a*, the roller E, and the washer C, having the arms F F and spring-lever H, and catch S, all constructed and operating substantially as and for the purpose specified.

388,638. TRUNK-HANDLE. George Croom, New York, N. Y. Filed May 18, 1888. Serial No. 274,249. (No model.)

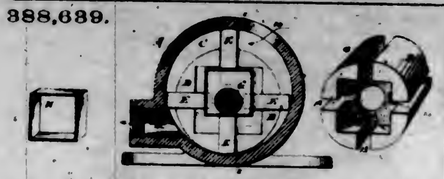


Claim.—1. The combination, with the body or shell of the trunk and a leather handle, of metal end caps or bridge-pieces having penetrating-points made integral therewith and adapted to pass into the body of the trunk, and rivets or bolts passing through the end caps, leather handle, and body of the trunk to hold the parts together, substantially as specified.

2. The combination, with the body or shell *a* of the trunk, of the leather handle *b*, slotted at its ends, the metal end caps or bridge-pieces *c c'*, having penetrating-points upon their under side and made integral therewith, and adapted to pass into the body of the trunk, and riveted pins or bolts *d d'*, passing centrally through the metal end caps, and through the slots in the handle, and through the body of the trunk to hold the parts securely together and in place, substantially as set forth.

388,639. ROTARY PRESSURE-BLOWER. Gilbert Crowell, Brooklyn, N. Y. Filed Nov. 30, 1887. Serial No. 256,148. (No model.)

Claim.—1. In a rotary engine, the combination, with its casing, hub, and blades, of a spring of hollow polygonal form adapted to bear upon each of the blades, substantially as described.



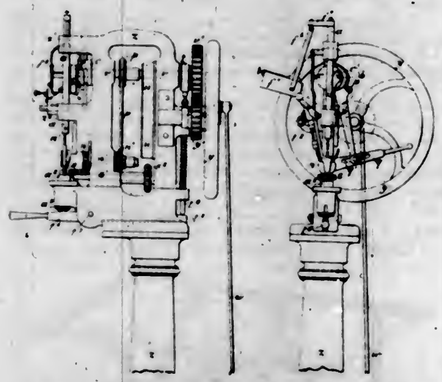
2. The herein-described spring, consisting of a plurality of leaves connected together in hollow polygonal form, each leaf constituting an independent spring.

3. In a rotary engine, the combination, with its casing, its revoluble hub, and four blades carried thereby, of a spring of hollow polygonal form adapted to bear upon each of the blades, and also to be moved independently thereof, substantially as described.

4. The combination of a cylinder or casing, a hub revoluble therein, carrying two or more blades adapted to reciprocate with respect to the hub, and said hub provided with a recess, I, and a spring of hollow polygonal form seated in said recess to bear upon said blades, substantially as described.

5. The combination, with a cylinder, a hub provided at its ends with recesses I, and in its periphery with radial slots, and blades seated in said slots and adapted to reciprocate independent of the hub, of a spring of hollow polygonal form seated in each of said recesses and adapted to bear upon the blades, substantially as described.

388,640. NAILING-MACHINE FOR BOOTS OR SHOES. John R. Cutlan, Wellingborough, County of Northampton, England. Filed Dec. 9, 1887. Serial No. 257,412. (No model.) Patented in England May 19, 1884, No. 7,202.



Claim.—1. In a boot-nail-driving machine, the combination, with the plate *g*, having the slot *g'* and an aperture, *o*, of the slide *h*, having the slot *f* at an angle to the slot *g'*, and also having the slot transversely to the slot *g'*, substantially as set forth.

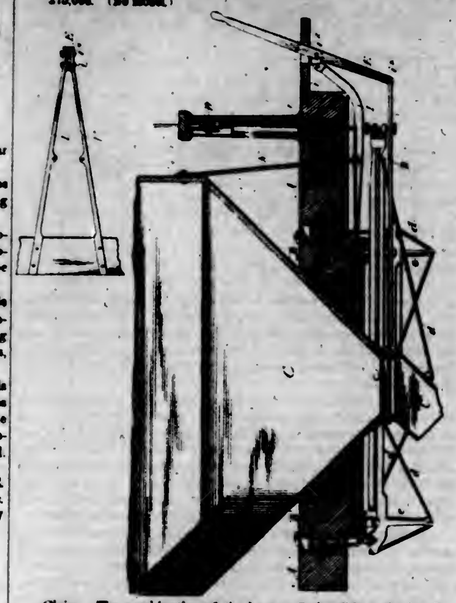
2. In a boot-nail-driving machine, the combination, with the slide *h*, having the slot *i* therein for supplying one nail at a time under the nail-driver, of the cam *c*, the plunger *a*, the nail-driver *a'*, the rocking nail-reservoir f^{x}, and the forked arm f^{5}, the said plunger *a* rocking the nail-reservoir by means of said forked arm f^{5}, substantially as set forth.

3. In a boot-nail-driving machine, the combination, with a cam, *c*, nail-reservoir f^{x}, nail-feed-regulating slide *h*, and slotted plate *g*, of a tube, *n*, plunger *a*, carrying the nail-driver *a'* at its lower end and having the forked arm f^{5} connected to its upper end for rocking the nail-reservoir, and the loose jaws *k* and *l*, kept closed by spring *m*, substantially as set forth.

4. A boot-nail-driving machine worked with the main actuating-axis *v*, having the two eccentrics *t* and *p* and the double cam *c* thereon, a nail-driver actuated from the eccentric *t*, and the regulating-wheel operated with the eccentric *p*, and a nail-feeding device operated by the double cam *c*, substantially as set forth.

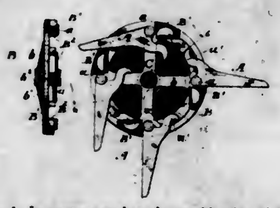
5. A boot-nail-driving machine constructed with a gripping device consisting of an arm, f^{6}, actuated by eccentric *t* through the rod *t'*, having spring f^{9} inserted in the slotted end, an upright rod, f^{8}, gripped at f^{9}, and the lever-arm f^{7}, which supports the rest a^{2} at the moment the driver *a'* is driving in the nail, substantially as set forth.

388,641. MEANS FOR OPERATING THE SLIDES OF GRAIN-HOPPERS. John Dahl, Chicago, Ill. Filed May 25, 1888. Serial No. 275,008. (No model.)



Claim.—The combination of the hopper C, the slide *c*, the bar D, attached at one end to the slide *c* and pivoted at the other to the lower end of the lever E, the said lever itself pivoted between the outer ends of the curved bars I I', the said curved bars themselves having their inner ends fastened to the square frame B, and the vertical bars *L*, connecting the middle portions of said curved bars with the hopper C, adapted to operate the slide *c*, substantially as described.

388,642. PACKING MECHANISM FOR GRAIN-BINDERS. John S. Davis, Cleveland, Ohio. Filed Nov. 5, 1887. Serial No. 254,603. (No model.)



Claim.—1. In a rotary packer, the combination of the revolving disk, the arms A, pivoted thereon, the fixed cam upon which the arms trail, and the yielding noiseless cushions on the disk, against which the arms strike when thrown out by the cam, substantially as hereinbefore set forth.

2. The combination of the packer-casing consisting of a stationary and a revolving disk, a cam on the stationary disk, arms pivoted on the revolving disk and trailing over the cam, and yielding cushions against which the arms fall when released by the cam, substantially as hereinbefore set forth.

3. The combination of the disk and the ductile-metal clips rising therefrom with the cushion-blocks held in close embrace between the disk and clips, the latter being so firmly pressed against the blocks as to constantly hold them in place, substantially as set forth.

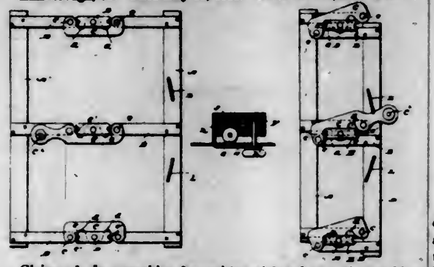
4. The combination of the cast-metal skeleton frame or spider *b* with the sheet-metal disk *b'*, embracing the hub and secured to the rim of the spider, substantially as described.

5. The combination of the cast-metal skeleton frame or spider *b* and the sheet-metal disk *b'*, secured thereto, as described, with the annular rim or ledge b^{3}, covering the joint of the spider and disk at their edges, substantially as hereinbefore set forth.

6. The combination of the revolving packer-disk carrying the pivoted arms and cushions with the stationary disk having the fixed

cam-track and the roller *d'*, arranged substantially as and for the purpose hereinbefore set forth.

388,648. FENCE-MAKING MACHINE. ALEXANDER K. DUNCAN, Hillsborough, Pa. Filed May 18, 1888. Serial No. 274,207. (Model.)



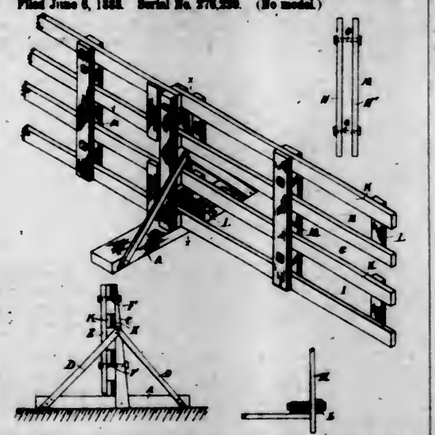
Claim.—1. In a machine for making picket fences, the combination of a pair of bars, links pivotally connected to the bars, twister-plates pivoted centrally to the links and having perforations in each end thereof for the reception of the wires, and a lever for moving the bars toward and from one another, substantially as described, for the purpose set forth.

2. In a machine for making picket fences, the combination of a pair of bars, each having a series of arms fixed thereto, links pivoted to the ends of the arms and having notches or recesses formed in one edge thereof, a lever pivoted to an arm of one bar and to a corresponding arm of the other bar, and twister-plates pivoted centrally to the links at a point between the notches thereof, the ends of said plates having wire-receiving openings and spanning the notches or recesses in the links, substantially as and for the purpose described.

3. The combination of a tension-bar having a series of recesses, a roller fitted in each recess, and a yielding friction-plate arranged to bear against wires passing between itself and the roller and provided with a regulating-screw, substantially as and for the purpose described.

4. The combination of a tension-bar having a series of recesses formed in one of the lateral faces thereof, an annularly-grooved roller fitted in each recess of the bar, and a yielding friction-plate secured at one end to the bar and having a regulating-screw passing through its unconfined or free end, substantially as and for the purpose described.

388,644. PORTABLE FENCE. ELIJAH DEBOTH, Newark, Ohio. Filed June 6, 1888. Serial No. 276,230. (No model.)



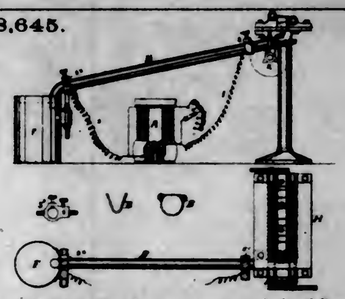
Claim.—1. A portable fence formed of a base-board, a post secured thereto, a movable post in parallel relation therewith, and bolts passed through each post, in combination with separable and removable panels held in vertical position between the posts, and from horizontal movement by strips attached to each section of the panels, as and for the purpose set forth.

2. A portable fence formed of separable panels held in fixed relation by a central clamp and in vertical position by being clamped between posts, as and for the purpose set forth.

388,645. APPARATUS FOR HARDENING AND TEMPERING BY ELECTRICITY. PHILIP DIXON, Elizabeth, N. J. Filed Jan. 21, 1888. Serial No. 261,443. (No model.)

Claim.—1. An apparatus for hardening or tempering, consisting

388,645.



of the combination of a chute or conveyer, a feeder delivering the articles to be hardened or tempered thereto, a source of electric currents having its circuit through the chute or conveyer, whereby the latter is heated, an agitator or vibrator moving the conveyor and causing the articles to pass through the same, and a vessel for containing the cooling bath, into which the articles may be delivered from the chute.

2. In an apparatus for hardening or tempering, the combination, with a chute or conveyer through which the articles to be operated upon may be passed, of a source of electricity having its respective poles connected with different points in the length of said chute or conveyer.

3. In an apparatus for hardening or tempering needles and similar articles, the combination of a heating chute or conveyer, a source of electric currents having its circuit through said conveyer, and a vibrator applied to the chute, substantially as described.

4. In an apparatus for hardening or tempering needles and similar articles, the combination of an inclined heating chute or conveyer, and a source of electric currents having its circuit through said conveyer.

5. In an apparatus for hardening or tempering needles and similar articles, the combination of a heating chute or conveyer, a source of electric currents having its circuit through said conveyer, a vibrator applied to the chute, and a transparent cover for said chute or conveyer.

6. The combination, in a device or apparatus for hardening or tempering needles or similar articles, of a chute or conveyer through which the articles are to be passed, a source of electricity having one pole connected with the chute at a given point, and an adjustable contact device connected with the other pole of the source, through which connection may be made at different points along the length of the chute.

388,646. TOBACCO-FRAME. JOSEPH F. DEREY, St. Vincent, Ky. Filed May 14, 1888. Serial No. 273,879. (No model.)



Claim.—1. The rack comprising the central longitudinal bar and the frame supported upon the uprights or supports connected to said bar and frame and disposed in pairs, of which the end ones incline toward each other in the direction of the length of the rack, substantially as set forth.

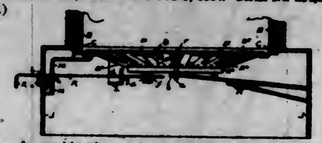
2. The rack consisting of the single central longitudinal piece or bar having applied transversely thereto, near its ends, cross pieces or bars adapted to engage with the usual bolster-standards of an ordinary wagon running-gear, to which single longitudinal bar or piece are connected the lower ends of obliquely-disposed uprights or legs, also connecting with and supporting in an elevated position a horizontal rectangular frame, substantially as set forth.

3. The rack consisting of the central longitudinal bar or piece provided near its ends with transverse or cross pieces having notched or recessed ends, and the frame secured or supported upon obliquely-disposed supports or uprights, of which the end ones incline toward each other in the direction of the length of the rack, substantially as set forth.

4. The rack consisting of the central longitudinal bar or piece provided with cross pieces or bars having notches in their ends, and the rectangular horizontal frame provided with a chain at its middle,

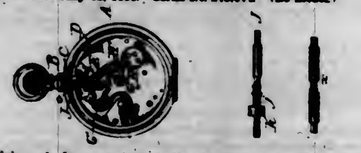
about and at one end, and secured upon obliquely-disposed supports or uprights, the lower ends of which are secured to the said longitudinal bar and to blocks or cleats interposed between said uprights or supports, substantially as set forth.

388,647. FIRE-GRATE FOR FURNACES, STOVES, &c. CALVIN C. DUNKLEE, Boston, Mass. Filed Oct. 3, 1887. Serial No. 251,303. (No model.)



Claim.—In combination, an inner circular grate, A, having a horizontal rectangular eye, *d*, and a central pivot, *a*, turning in a bearing, *b*, of a stationary support, H, an outer annular grate, B, surrounding inner grate, A, and having a vertical circular eye, *h*, and a rest, G, for grate A, supports F at and about a circular opening, C, for grate B, an operating-rod, K, and a fixed support, L, for said rod K, having a vertical circular eye, *g*, said rod extending through and engaging said several eyes *d*, *h*, and *g*, whereby, through the rod K, the grates A B can be rotated on their said respective supports simultaneously in opposite directions and the inner grate dumped, all substantially as described, for the purpose specified.

388,648. STEM-WINDING WATCH. SILAS A. DURGIN, Sheldon, Dak. Filed May 12, 1888. Serial No. 273,674. (No model.)



Claim.—1. In a watch, a winding-bar having an adjustable collar for releasing the snap-spring, substantially as described.

2. A winding-bar for watches having a partially-threaded stem, in combination with a threaded collar upon such stem adapted to bear upon the snap-spring, substantially as and for the purpose set forth.

3. In combination with a hunting-case watch having stem winding and setting mechanism, a winding-bar having a collar for operating to release the case-snap, and connected to the yoke and winding-pinion, whereby the winding and setting mechanism and the case-releasing spring are operated directly by said bar without setting-levers, substantially as described.

388,649. LIQUID-FUEL BURNER. CHARLES J. ECKSTEIN, Grand Crossing, Ill. Filed Feb. 17, 1887. Serial No. 227,917. (No model.)



Claim.—1. The combination, with the fire-box of a stove or furnace and a suitable delivery-pipe for liquid fuel, of a liquid-fuel burner comprising a top plate extending over the fire-box and provided with an opening for the escape of the products of combustion, and a burner-bar immediately beneath said top plate, said bar having a recess formed lengthwise thereof, and being closed except for a space adjacent its lower front edge, substantially as described.

2. In a liquid-fuel burner, the combination, with a suitable delivery-pipe, of a burner-bar having a recess formed lengthwise thereof in its lower front portion, and a depending front plate adapted to close the front of the burner-bar, substantially as described.

3. The combination, with the fire-box of a stove or furnace, and with a suitable delivery-pipe, of a liquid-fuel burner comprising a top plate extending over and completely closing the fire-box and provided with an opening for the products of combustion, a burner-bar suspended beneath said top plate and completely within the fire-box, and provided along its lower portion with an overflow-edge adapted to receive and distribute the liquid fuel, and a deflecting-plate extending from a point near the lower portion of the burner-bar to the opening of the top plate, substantially as described.

4. In a liquid-fuel burner, the combination, with the burner-bar having a shallow channel extending lengthwise thereof and having an overflow-edge at its lower front portion, of a deflecting-plate extending from the lower front portion of said burner-bar to the upper back part thereof and in proximity thereto, so as to form a combustion-chamber between said bar and plate, substantially as described.

5. In a liquid-fuel burner, the combination, with a fuel-delivery pipe, of a burner-bar having its lower front portion provided with a shallow channel and an overflow-edge lengthwise thereof, a front plate adapted to close the front of the burner-bar, and a deflecting-plate extending from beneath and in front of said burner-bar to a point behind the same and separated a slight distance therefrom, substantially as described.

6. In a liquid-fuel burner, the combination, with the fuel-delivery pipe, of a recessed burner-bar having its lower front portion provided with a slightly-upturned overflow-edge, and having its main body extending upwardly, and a supporting-plate, upon which said burner-bar is removably held, substantially as described.

7. In a liquid-fuel burner, the combination, with a suitable supporting-plate adapted to cover the fire-box of the stove, of a recessed burner-bar provided at its lower front portion with an overflow-edge, a dependent front plate for closing the front of the burner-bar, and a deflecting-plate, said several parts being carried by the supporting-plate, substantially as described.

8. In a liquid-fuel burner, the combination, with the supporting-plate adapted to cover the top of the fire-box and provided with a central recess, of a burner-bar arranged to be slipped through said recess and detachably sustained by the supporting-plate, substantially as described.

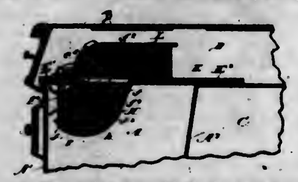
9. The combination, with the fire-box of a stove or furnace and a liquid-fuel burner comprising a burner-bar adapted to fit completely within the fire-box, of a supporting-plate for sustaining said burner-bar, said plate being adapted to cover the fire-box and being formed of separate sections suitably connected together, whereby the burner and the top plate can be readily inserted into and removed from the stove or furnace, substantially as described.

10. In a liquid-fuel burner, the combination of a suitable supporting-plate provided with a depending front plate or wall, a recessed burner-bar having an upturned distributing-edge in proximity to said depending front wall or plate, and a deflecting-plate extending from in front of the lower portion of the burner-bar to a point behind the top thereof, said deflecting-plate being provided with end walls extending to the supporting-plate, substantially as described.

11. In a liquid-fuel burner, the combination, with a burner-bar and a suitable plate for sustaining said bar and adapted to cover the fire-box of the stove, of an upper top plate provided with a register-valve, substantially as described.

12. In a liquid-fuel burner, the combination, with a burner-bar, of a top plate provided with an expanded liquid-fuel chamber, G, and suitable delivery and discharge pipes leading into and from said chamber, substantially as described.

388,650. LIQUID-FUEL BURNER. CHARLES J. ECKSTEIN, Grand Crossing, Ill. Filed Feb. 17, 1887. Serial No. 227,918. (No model.)



Claim.—1. The combination, with the fire-box of a stove or furnace, of a liquid-fuel burner comprising a suitable fuel-delivery pipe, and a burner-bar extending from end to end of the fire-box and movably sustained therein, and provided upon its exterior with ribs adapted to receive and distribute the fuel, substantially as described.

2. In a liquid-fuel burner, the combination, with a suitable fuel-delivery pipe and with suitable supports, of a burner-bar journaled in said supports and provided with a series of longitudinal ribs having slightly-upturned distributing-edges, substantially as described.

3. In a liquid-fuel burner, the combination, with a suitable fuel-delivery pipe and with suitable supports, of a burner-bar journaled in said supports and provided with a series of recesses, *f*, and intermediate ribs, *f' f² f³*, substantially as described.

4. In a liquid-fuel burner, the combination, with a suitable fuel-delivery pipe and suitable supports, of a burner-bar, F, journaled in said supports and provided with the longitudinal recesses *f*, the intermediate ribs, and the end plates, *f⁴*, substantially as described.

5. In a liquid-fuel burner, the combination, with a suitable top plate, E, and deflecting-plate H, of the end plates, *h*, and the burner-bar F, removably journaled in said end plates, substantially as described.

6. In a liquid-fuel burner, the combination, with the top plate, E, of the burner-bar F, suitable supports wherein said burner-bar is removably journaled, and a guard-plate, I, substantially as described.

7. In a liquid-fuel burner, the combination, with a suitable plate, E, arranged over the fire-box, and a suitable burner-bar beneath said plate, of a deflecting-cover located above the top plate and extending over the burner-bar, substantially as described.

8. In a liquid-fuel burner, the combination, with the top plate, E, having an opening, E^3, therein, and a burner-bar beneath said opening, of a deflecting-cover, L, extending backwardly over the opening E^3 on the top plate, E, substantially as described.

9. In a liquid-fuel burner, the combination, with a suitable top plate, E, having an opening, E^3, therein for products of combustion, and having a suitable burner-bar beneath said opening, of a deflecting-cover, L, extending above said opening in the top plate and provided at its front with a register-valve, substantially as described.

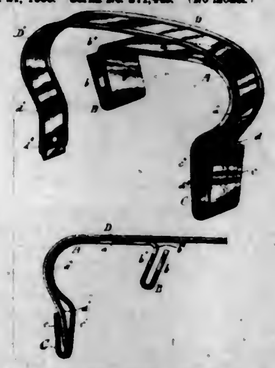
388,651. PAPER-CUTTER. LEO BERLACH, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Jan. 3, 1888. Serial No. 259,507. (No model.)



Claim.—1. In combination with the ends or standards in which the roller is journaled, lugs on the ends or standards, a knife having end portions fitting in the lugs in a horizontal position, arms having slot-and-pin connection with the ends of the knife, and a spring or weight for operating the arms, substantially as and for the purpose set forth.

2. In a paper-cutter, the combination of the ends provided with lugs 4, arranged in horizontal series, as shown, roller journaled in the ends, knife provided with ends fitting in the lugs, lever pivoted to the ends or standards and having slot-and-pin connection with the ends of the knife, projections on the arms, and springs connected to the ends or standards, the free ends of which bear against the projections on the arms, substantially as and for the purpose set forth.

388,652. FORMING-TOOL. WILLIAM W. BIERNSON, Astoria, Ill. Filed Apr. 21, 1888. Serial No. 271,463. (No model.)

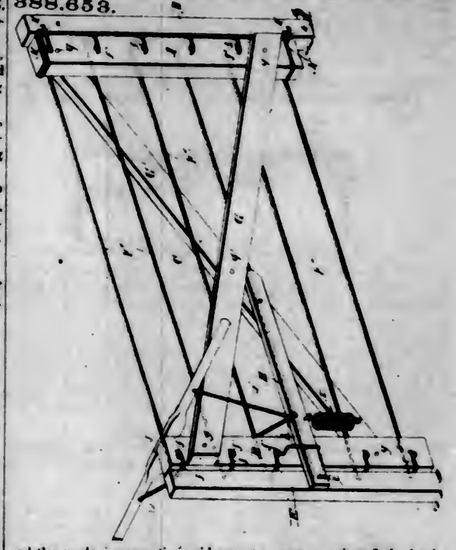


Claim.—The forming-tool described, comprising a curved metal bar, A, having its ends bent in opposite directions to form two sockets, B and C, the openings of said sockets being at the convex side of the bar, substantially as described.

388,653. GATE. DAVID BERLAND, Cedar Hill, Tex. Filed Apr. 17, 1888. Serial No. 270,898. (No model.)

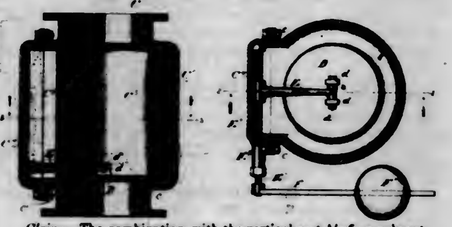
Claim.—The combination, with the gate composed of the latch-upright, hinge-upright, longitudinal wires, and cross-braces, of the spring-depressed latch H, pivoted to the brace G just in front of the crossing part of the opposite brace, the double-armed lever J, pivoted through its center to the inner surface of the top of the latch-upright,

388,653.



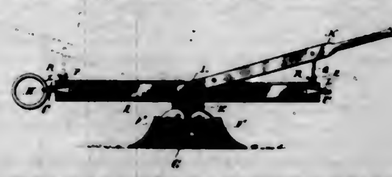
and the cords *j*, connecting said arms to a proper point of the latch, substantially as specified.

388,654. STEAM-EXHAUST-PIPE VALVE. JOHN BRWOOD, Chicago, Ill., assignor of two-fifths to James G. Bestering, same place. Filed Apr. 3, 1888. Serial No. 269,432. (No model.)



Claim.—The combination, with the vertical part A' of an exhaust-pipe leading from a steam-engine and a branch pipe, B, taken from said exhaust-pipe, of the valve C, located in the vertical part of the exhaust-pipe beyond the point at which the branch B is taken, said valve C comprising the laterally-recessed shell C', provided with a horizontal seat, *c'*, the rotatable shaft E', passing through a stuffing-box, E^3, the valve D, the arm E, secured to the shaft E' and pivotally attached to the middle of the valve proper, D, the exterior weight-arm, F, and the movable weight F', substantially as described.

388,655. REVERSIBLE PLOW. CHARLES H. FARLEY, Addison, W. Va. Filed Apr. 20, 1888. Serial No. 271,264. (No model.)



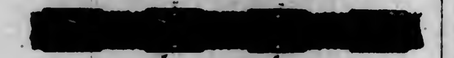
Claim.—1. In a reversible plow, the combination of the double-ended beam, the standard depending from the center of the same, the right and left hand plowshares arranged in reverse positions, and the longitudinal draft-rod on one side of the plow-beam and having the traveling draft-ring, substantially as described.

2. The combination, in a reversible plow, of the double-ended beam, and the draft-rod arranged longitudinally on one side thereof and having the clevises formed in its ends, the ends of said draft-rod being secured to and vertically adjustable on the ends of the plow-beam, substantially as described.

3. The combination, in a reversible plow, of the double-ended beam, the longitudinal draft-rod having the clevises formed in its ends and secured to the ends of the beams, said clevises having the laterally-adjusting notches, and the draft ring or link arranged on the draft-bar and adapted to be engaged by the notches in either of the clevises, substantially as described.

4. The combination, in a reversible plow, of the double-ended beam, the longitudinal draft-rod having its ends secured to the ends of the beam and forming the clevises, the latter having the notches on their inner sides, the draft ring or link adapted to slide on the draft-rod and engage either of the clevises, and the locking-plates I, pivoted to the draft-rod at its ends, for the purpose set forth, substantially as described.

388,656. WIRE ROPE OR CABLE. HENRY W. FARLEY, Urbana, Ill. Filed May 3, 1888. Serial No. 273,076. (No model.)



Claim.—1. A wire rope or cable having an inclosing-covering of alternate metallic and flexible abutting sections.

2. A wire rope or cable having incasing-rings molded upon the strands thereof and locked thereto by projections applied to the rope, substantially as described.

3. A wire rope or cable having metal rings cast upon the strands thereof at suitable distances apart in fixed relation thereto, and having a bound covering of flexible lubricating material between the said rings, whereby the entire surface of the rope is covered by alternating metal and non-metallic casing, substantially as described, for the purpose specified.

4. A wire rope or cable having metal rings cast upon the strands thereof and in fixed relation thereto at suitable distances apart, and having a flexible material bound upon the unringed surface of the rope of a diameter less than that of the said rings, whereby the said flexible covering is protected from wear, as herein set forth.

5. A wire rope or cable having metal rings cast upon the strands thereof at suitable distances apart, and locked in relation thereto by metal pins or wedges driven into the rope between its strands and projecting from its surface into the metal of the ring, substantially as described.

6. The improved article of manufacture herein described, consisting of a wire rope having metal rings cast upon the surface of the strands thereof at suitable distances apart, and having a lubricating material consisting of cotton waste bound upon the unringed parts by means of a wire tie, as herein set forth.

388,657. POT FOR CONDIMENTS AND THE LIKE. ROBERT H. FERLAY, Glasgow, County of Lanark, Scotland. Filed Apr. 18, 1888. Serial No. 271,029. (No model.) Patented in England Oct. 28, 1887, No. 14,689.



Claim.—The combination of a tube or cylinder, *a*, open at both ends, neck *b*, fitted within its upper end, a closure for the neck, casing *c*, having a ledge, *f*, at its lower end for the bottom of cylinder *a* to rest on, cover *g*, inclosing the neck *b* and secured to the casing *c*, and a piston or expeller contained within the body *a*, substantially as shown and described.

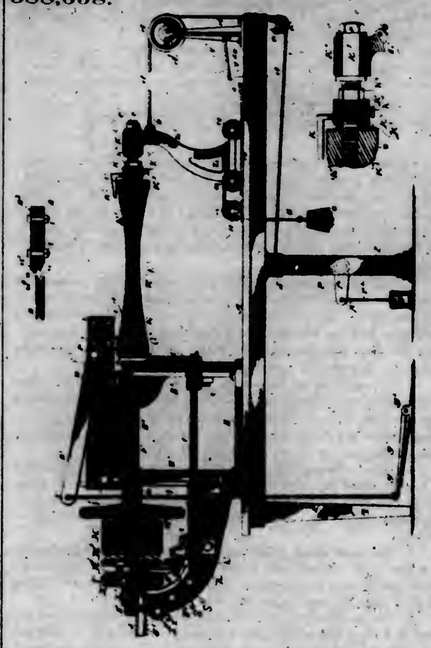
388,658. MACHINE FOR MAKING WIRE SPRINGS. OSCAR R. FOSTER, Utica, N. Y. Filed Mar. 31, 1888. Serial No. 269,044. (No model.)

Claim.—1. In a spring-winding machine, the combination, with a shaft and a former secured thereto, of a movable lug mounted on the former, a latch arranged on the former in the path of the wire and caused by the wire to force the lug outward, and a tripping mechanism actuated by said lug for arresting the motion of the shaft, substantially as set forth.

2. In a spring-winding machine, the combination, with a shaft and a former secured thereto and provided with a device arranged to be actuated by the pressure of the spring-wire to be wound on the former, of a clutch on the shaft and intermediate mechanism actuated by the device on the former for operating the clutch, substantially as set forth.

3. In a spring-winding machine, the combination, with a former mounted on a shaft and carrying a spring-actuated lug, of a latch arranged on the former in the path of the wire to be wound and caused by the wire to force the lug outward, and a clutch on the shaft and

388,658.



intermediate mechanism actuated by the lug moving the clutch, substantially as set forth.

4. In a double-cone-spring-winding machine, the combination, with a shaft, a truck, and a sectional former, one section of which is secured to the shaft and the other section mounted on the truck, of a loose pulley mounted on the shaft, a clutching device arranged to interlock with the pulley, a clutch-operating device, and a lug and a latch arranged on one section of the former, the latch being in the path of the wire to be wound and caused by the wire to force the lug outward to engage the clutch-operating device, substantially as set forth.

5. In a wire-spring-winding machine, the combination, with a housing-frame, a shaft carrying a section of the spring-former, and a movable truck carrying another section of the former, of mechanism for rotating the former, and tripping devices actuated by contact with a projection carried by the former for arresting the motion of the shaft, substantially as set forth.

6. In a cone-spring-winding machine, the combination, with a shaft carrying one section of a spring-former, of a truck, a stud journaled in a bearing on said truck, a section of the spring-former secured to said stud, a collar secured on the stud, and a locking-finger secured to the collar and overhanging the end of the adjacent spring-former section, substantially as set forth.

7. In a cone-spring-winding machine, the combination, with a former composed of two separable sections, a shaft to which one of said sections is attached, a stud to which the other section is attached, and a truck having a bearing in which said stud is journaled, of a bent locking-finger attached to the stud and overlapping the end of the adjacent former-section.

8. The combination, with a frame, a shaft journaled therein, a former-section secured to one end of said shaft, a loose pulley mounted on the shaft, a clutch arranged to engage the pulley, a truck having a bearing, a stud journaled in said bearing, and a former-section secured to the stud, of a lug and a latch arranged on one section of the former, the latch being in the path of the wire to be wound and caused by the wire to force the lug outward, and clutch-operating devices actuated by the lug, substantially as set forth.

9. The combination, with the shaft mounted in a stationary frame, a stud journaled in a movable support, and former-sections secured to said shaft and stud, of a pulley loosely mounted on the shaft, a sliding clutch secured on said shaft, a lug and a latch arranged on the former-section secured to the shaft, the latch being in the path of the wire and caused by the wire to force the lug outward, and clutch-operating devices moved by the lug for operating the clutch, substantially as set forth.

388,659. ORE-CONCENTRATOR. WILLIAM A. FRANK and THOMAS WEEKS, Pinal, Ariz. Filed Aug. 3, 1886. Renewed Dec. 12, 1887. Serial No. 257,682. (No model.)



Claim.—1. The combination, in an ore-concentrator, of a trough-body having a plane bottom with a series of openings through it, a series of screens secured upon the said bottom across the said openings, and perforated with fine holes located in lines along the trough, and provided with V-shaped strips rising abruptly above the plane of the trough-bottom and located beside the lines of holes, substantially as shown and described.

2. The combination of a trough-body having a plane bottom with a series of openings through it, a series of sheet-metal plates removably secured to the said body-bottom across the said openings and perforated with fine holes located in lines along the trough, and slanting-sided strips secured upon each of the said plates along beside the said holes, substantially as shown and described.

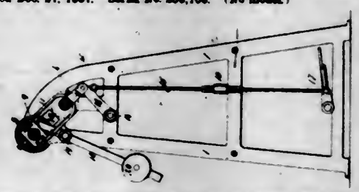
3. A trough having its bottom divided into a series of spaces alternately plane and grooved, and having fine perforations located in lines along the bottoms of the said grooves, the sides of the said grooves being slanted and rising abruptly above the plane portions of the bottom, substantially as shown and described.

4. The combination of a trough having fine perforations located in a longitudinal line in its bottom, and a gate fitted to slide across the trough close beneath the perforated portion, and having its front edge diagonal to the line of holes, substantially as shown and described.

5. The combination of a trough having fine perforations located in a line in its bottom, and a gate fitted to slide close beneath the perforated portion in a direction transverse to the said line and having its front edge diagonal to the said line.

6. The combination, in an ore-concentrator, of a sheet-metal bottom, D, having lines of upwardly-tapering perforations in it, and slanting-sided strips E, secured upon the said bottom beside the lines of perforations, substantially as shown and described.

388,660. IRONING-MACHINE. GEORGE J. FRITZ, St. Louis, Mo. Filed Dec. 27, 1887. Serial No. 259,106. (No model.)



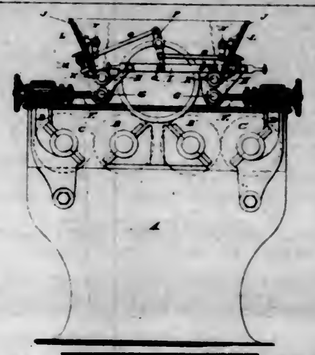
Claim.—1. In an ironing-machine, the combination of the frame having inclined slots 10, a shaft mounted in fixed bearings, a movable shaft, roller on the shafts, sliding boxes in which the movable shaft is journaled, and means for shifting the movable shaft, consisting of an independently-movable lever pivoted to the frame at 19, and having a bearing at one end against the under side of one of the sliding boxes, and a weight at the other end of the lever, said movable shaft being moved by the said lever in one direction, and yokes secured to the boxes, pivoted arms connected to the yokes, and a treadle, to which the arms are connected, for moving the shaft in the other direction, substantially as and for the purpose set forth.

2. In an ironing-machine, the combination of the shaft 2, mounted in fixed bearings, movable shaft 3, rollers on the shafts, sliding boxes 9, fitting in slots 10 of the frame, yokes 11, pivoted to the boxes and encompassing shaft 2, arms 13, pivoted to the yokes and to the frame, operating-treadle, and adjustable rods 16, connecting the arms to the treadle, substantially as shown and described.

388,661. ROLLER GRINDING-MILL. WILLIAM D. GRAY, Milwaukee, Wis., assignor to R. P. Allis & Co., same place. Filed July 25, 1884. Serial No. 138,751. (No model.)

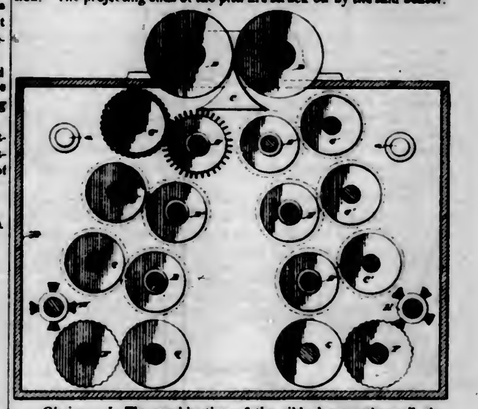
Claim.—In a roller grinding-mill, the combination of a hopper, a feed-controlling gate, a lever, P, connected by intermediate devices with said gate, a stationary grinding-roll, a movable grinding-roll, a roll-adjusting mechanism embracing a movable bar or arm, l, and widely-separated stops or shoulders *a* and *b* on said arm to actuate the gate-controlling lever, whereby the rolls are closed before the gates are opened and the rolls opened before the gates are closed.

388,661



388,662. MACHINE FOR DISINTEGRATING HEMP, RAMIE, &c. JOSHUA J. GREEN, New York, N. Y. Filed Feb. 6, 1888. Serial No. 263,154. (No model.)

Brief.—The stalk is split into halves by a knife, and each half passes down to similar devices. Said devices consist of a ribbed presenting-roll, between which and a tucker-blade roll the stalk is broken, and a beater within the tucker-blade roll, revolving in a contrary direction. The projecting ends of the pith are struck off by the said beater.



Claim.—1. The combination of the ribbed presenting-roll, the tucker-blade roll, and the beater, substantially as and for the purposes hereinbefore set forth.

2. The combination of the feed-rolls, the splitting-knife, the ribbed presenting-roll, the tucker-blade roll, and the beater, substantially as and for the purposes hereinbefore set forth.

3. The combination, with the ribbed presenting-roll, of the tucker-blade roll, consisting of end disks, *a*, and connecting-blades *b*, and the beater located within and rotatable independently of said tucker-blade roll, substantially as and for the purposes hereinbefore set forth.

388,663. MACHINE FOR DISINTEGRATING HEMP, JUTE, RAMIE, &c. JOSHUA J. GREEN, New York, N. Y. Filed Feb. 6, 1888. Serial No. 263,155. (No model.)

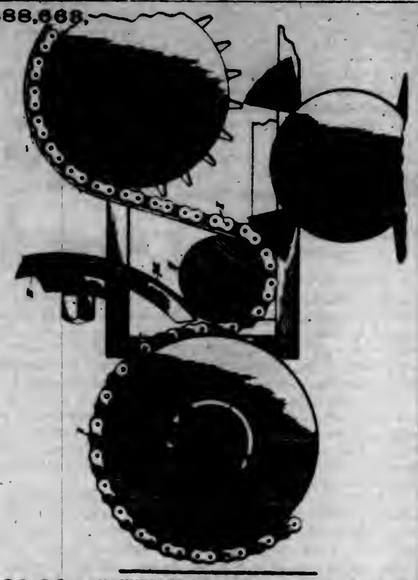
Brief.—As the stalk enters the machine a splitting-knife divides it into two halves, each of which, as it passes beyond said knife, is operated upon by duplicate machinery at the ends of the frame. Said machinery consists, essentially, of a feed-apron and a skeleton apron moving more rapidly than the feed-apron; and the stalk is carried between these aprons and bent sharply around a bar, thus causing the pith to break into sections and to protrude between the bars of the skeleton apron, to be struck off by a revolving beater.

Claim.—1. The combination of the feed-apron, the skeleton apron, the breaker bar or roll, and the beater, substantially as and for the purposes hereinbefore set forth.

2. The combination of the guide-plate, the feed-apron, the breaker-bar, the beater, and the skeleton apron, substantially as and for the purposes hereinbefore set forth.

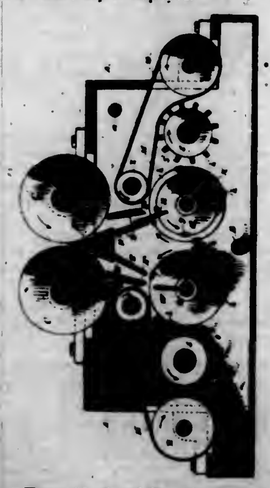
3. The combination of the feed-rolls, the splitting-knife, the guide-plate, the feed-apron, the skeleton apron, the breaker-bar, and the beater, substantially as and for the purposes hereinbefore set forth.

388,663.



388,664. MACHINE FOR TREATING HEMP, RAMIE, &c. JOSHUA J. GREEN, New York, N. Y. Filed June 16, 1888. Serial No. 277,367. (No model.)

Brief.—The stalk is split into two halves, each half passing down between guide-plates, the lower edge of one of which serves as a breaker, about which the stalk is sharply bent. Thence the stalk passes between an apron and a scraping-roll moving faster than the feed devices, thus putting a tension on the stalk. The projecting end of the pith, as it separates from the stalk at the breaker, is nipped and broken off by a beater having a fixed blade within; or a compound beater consisting of two beaters, one revolving within the other and in an opposite direction, may be employed.



Claim.—1. The combination of the guides, the breaker, the beater, the tension-roll, and the apron, substantially as and for the purposes hereinbefore set forth.

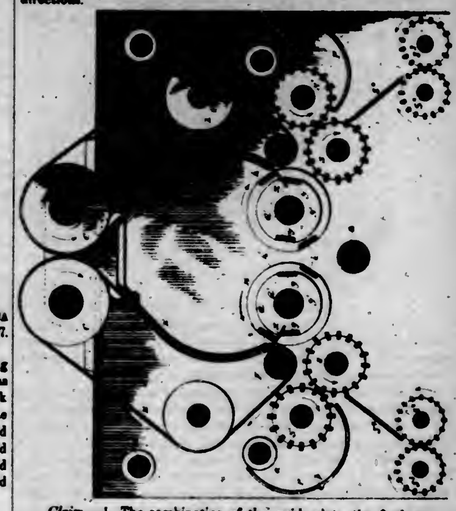
2. The combination of the feed-rolls, the splitting-knife, the guides, the breaker, the beater, the tension-roll, and the apron, substantially as and for the purposes hereinbefore set forth.

3. The compound beater consisting of the rotating beater proper, H, with bars A, and the fixed or stationary blade W within the rotating beater proper, with its acting edge arranged with reference to the bars A, substantially as and for the purposes hereinbefore set forth.

4. The compound beater consisting of the rotating beater proper, H, with bars A, and the stationary blade W within the said beater proper, in combination with the guides, the breaker, and the tension devices, substantially as and for the purposes hereinbefore set forth.

388,665. MACHINE FOR TREATING HEMP, RAMIE, &c. JOSHUA J. GREEN, New York, N. Y. Filed May 28, 1888. Serial No. 274,778. (No model.)

Brief.—The stalk is split into two halves, each half passing between the feed-apron and a guide-plate to and about a breaker-bar, and between a pair of scraper-rolls revolving faster than the feed-apron travels. As the stalk passes about the breaker-bar the pith breaks and the end projects into the path of a compound beater consisting of two beaters, one within the other and revolving in opposite directions.



Claim.—1. The combination of the guide-plate, the feed-apron, the breaker bar or roll, the scraper-rolls, and the beater, substantially as and for the purposes hereinbefore set forth.

2. The combination of the guide-plate, the feed-apron, the breaker bar or roll, the beater, and the two sets of scraper-rolls S S' and S² S².

3. The combination of the feed-rolls, the splitting-knife, the feed-apron, the guide-plate, the breaker bar or roll, the scraper-rolls, and the beater, substantially as and for the purposes hereinbefore set forth.

4. The compound beater composed of the two beaters G H, the one within the other, rotating synchronously, but in opposite directions, substantially as and for the purposes hereinbefore set forth.

5. The compound beater composed of the two synchronously but oppositely-rotating beaters G H, the one within the other, in combination with the guide-plate, the feed-apron, the breaker bar or roll, and the scraper-rolls, substantially as and for the purposes hereinbefore set forth.

388,666. THERMOSTATIC VALVE FOR INCUBATORS. MILLER T. GREENLEAF, Quincy, Ill. Filed Nov. 22, 1887. Serial No. 255,869. (No model.)



Claim.—1. In an incubator, the combination, with a box or hatching-compartment having a ventilator-plate mounted upon a central axis having knife-edge bearings, of a thermostat composed of two metals of different expansibility curved into circular form, one end of said thermostat being rigidly mounted upon the top of the compartment and the free end bearing against the top of one of the knife-edge bearings, substantially as described.

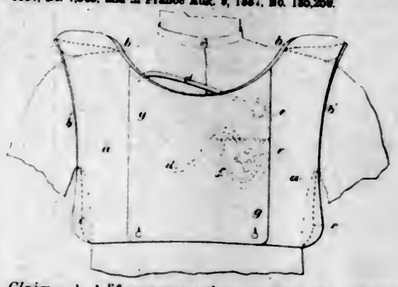
2. In an incubator, a ventilator-plate having central knife-edge

bearings, a thermostat composed of brass and steel or other metals having different indices of expansion bent into nearly circular form, an adjustable support, to which one end of said thermostat is rigidly fastened, and a set-screw for adjusting said support to bring its free end nearer to or farther from the knife-edge bearing, substantially as described.

3. A ventilator-plate having a bracket attached, provided with a strip of metal lying lengthwise of said plate and at right angles to its surface, and a ball straddling said strip and soldered thereto, substantially as described.

4. A ventilator-plate having a bracket consisting of a strip, 12, having oppositely-extending pieces 13 soldered on one surface of the ventilator-plate, and a ball, 14, straddling the strip and soldered thereto, substantially as described.

388,667. **LIFE PRESERVER OR BUOY.** Frederick Gresson, Springfield Place, Bradford, County of York, England. Filed Aug. 15, 1887. Serial No. 246,966. (No model.) Patented in England May 25, 1887, No. 7,585, and in France Aug. 9, 1887, No. 185,259.

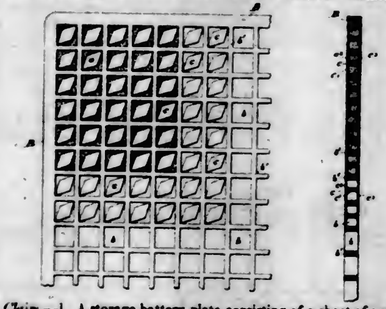


Claim.—1. A life preserver or buoy consisting of a continuous tubular-shaped bag, *a*, of water-proof material, provided with three apertures, *b b' b'*, for the neck and arms, respectively, and suitable inflating means, substantially as set forth.

2. A life preserver or buoy consisting of a continuous tubular-shaped bag, *a*, of water-proof material, provided with three apertures *b b' b'*, for the neck and arms, respectively, a longitudinal partition, *c*, extending entirely around the bag, whereby the bag is divided into two parallel air chambers or compartments, which extend around the front and back, and under and over the arm-apertures, and suitable means for inflating said compartments, substantially as shown and described.

3. A life preserver or buoy consisting of a continuous tubular-shaped bag, *a*, of water-proof material, provided with three apertures, *b b' b'*, for the neck and arms, respectively, a tube, *d*, provided with a tap-valve, *e*, a pocket, *f*, for supporting the tube and valve when not in use, and a turn-down flap, *g*, for covering and protecting the tube, substantially as and for the purpose set forth.

388,668. **STORAGE-BATTERY PLATE.** Charles D. P. Gibson, New York, N. Y. Filed Apr. 23, 1888. Serial No. 271,563. (No model.)

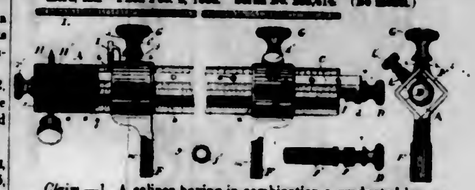


Claim.—1. A storage-battery plate consisting of a sheet of metal having transverse openings, a button of the same material extending through each opening and having an enlarged head at each end, and active material filling the spaces in the openings about the buttons.

2. A storage-battery plate consisting of a sheet of metal having openings, buttons placed in each opening, consisting of a central stem and enlarged heads, and active material placed in each opening about the said buttons.

3. A storage-battery plate consisting of a sheet of metal having rectangular openings, buttons of metal extending through each opening and consisting of central stems and flattened ends of diamond shape, said ends being approximately flush with the respective surfaces of the plate, and active material about the buttons.

388,669. **MICROMETER-CALIPER.** Edgar J. Hamlet, Baltimore, Md. Filed Feb. 2, 1888. Serial No. 262,414. (No model.)

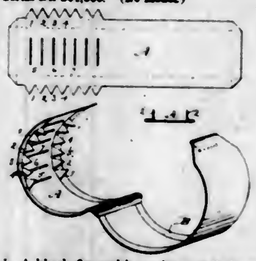


Claim.—1. A caliper having in combination a graduated bar, an adjustable slide-bar extending lengthwise of the graduated bar and provided with pin-holes along its length, and slot c at one end, the screw *c'*, an initial caliper-point, a clip-head, F², surrounding the graduated bar and provided with the socket *b*, a thumb-pin to connect with the pin-holes in the slide-bar, and also provided with a caliper-point, and an adjusting-screw, D, for moving the said slide-bar endwise.

2. A caliper having in combination a graduated bar having in one end a bore, *o*, a clip-head surrounding the graduated bar and provided with thumb-screw for tightening it, and having a gage, I, a piston, *o'*, in the end bore, a spring, *g*, bearing against the piston, and a scratch-point, H, passing laterally through the graduated bar, and also through the said piston.

3. A caliper having in combination a graduated bar having in one end a bore, *o*, a clip-head surrounding the graduated bar and provided with thumb-screw for tightening it, and having a gage, I, a piston, *o'*, in the end bore, a tightening thumb-nut *r'*, to draw on the piston, and a scratch-point, H, passing laterally through the graduated bar, and also through the said piston.

388,670. **HORSE-TAIL TIE.** Charles D. Haldeman, Des Moines, Iowa, assignor of one-half to Clarence B. Jones, same place. Filed Jan. 23, 1888. Serial No. 261,869. (No model.)



Claim.—1. A blank for making a horse-tail tie, consisting of a metal plate having scallops on its edges and transverse parallel slots, substantially as shown and described, for the purpose stated.

2. A horse-tail tie consisting of a semicircular elastic metal band having series of teeth extending inward on its opposite sides at one end portion, and parallel slots extending across the band between the series of teeth, and a plain mating semicircular band hinged to the toothed band and provided with a hook on its free end adapted to engage the said slots in the toothed section, substantially as shown and described.

388,671. **STOCK-CAR.** Charles Hagen, Buffalo, N. Y., assignor of two-thirds to Henry Bunting and Leonard B. Crocker, both of same place. Filed Mar. 30, 1888. Serial No. 267,889. (No model.)



Claim.—1. The combination, with the walls of a stock-car provided with longitudinal slats A', separated by open spaces between each slat, of a series of movable slats, B, connected together and separated by open spaces between each slat, the slats B being adapted to fit into the open spaces between the slats A' and close said openings, screw-shanks *d*, secured to the movable slats and extending through

vertical slots *c*, formed in one of the stationary slats A', and clamping-nuts *f*, engaging with said screw-shanks, whereby the movable slats B are tightly clamped in rear of the stationary slats A', or into the spaces between the slats A', as desired, substantially as set forth.

2. The combination, with the car-walls composed of a series of longitudinal slats, A', separated by open spaces and having inner beveled edges, of a series of movable slats, B, connected together and having outer beveled edges and adapted to fit into the open spaces between the slats A', screw-shanks *d*, attached to the movable slats and passing through slots *c*, formed in the slats A', and clamping-nuts *f*, applied to said screw-shanks and bearing against the slats A', substantially as set forth.

388,672. **GRINDING-MACHINE.** Frank C. Hall, Philadelphia, Pa. Filed Feb. 21, 1888. Serial No. 264,741. (No model.)



Claim.—1. In combination with a grinding-wheel, a pivoted standard, and a spring connected thereto, an arm pivoted adjustably to the upper end of the standard, and a laterally-extending plate on the end of said arm, having lugs for holding the blade to be ground, all substantially as described.

2. In combination with a grinding-wheel, a pivoted standard, and a spring engaging therewith, an arm, H, pivoted adjustably to the standard, and a laterally-extending plate on the end of the arm H, having inwardly-projecting spurs *l l*, projecting upwardly at a slight angle, all as described.

3. In combination with a grinding-wheel, an arm, as H, carrying a gage or blade-holder pivoted adjustably to an arm, F, said arm having studs, and a spring bearing on one of the studs, all substantially as described.

4. In combination with the grinding-wheel and the adjustably-pivoted arm, as H, the gage consisting of a plate, K, cut away on its upper edge, forming projections *n n* on either side, and having a spur, *m*, on its outer face, said spur and projections forming a notch for holding scissor-blades, substantially as described.

388,673. **NAIL-PLATE FEEDER.** George T. Harden and Benoni S. Grant, Middleport, Ohio; said Harden assignor to James S. Baggan, same place. Filed Mar. 5, 1887. Serial No. 229,772. (No model.)

Claim.—1. In a nail-plate feeder, the combination, with the adjustable rock-shaft C, of a transverse bar adjustably connected with the front end of the nail-machine, in connection with which the feeder is used, and a bearing for the front end of said shaft supported by said transverse bar and capable of adjusting itself to the angular direction of the shaft when the latter is adjusted, substantially as and for the purpose described.

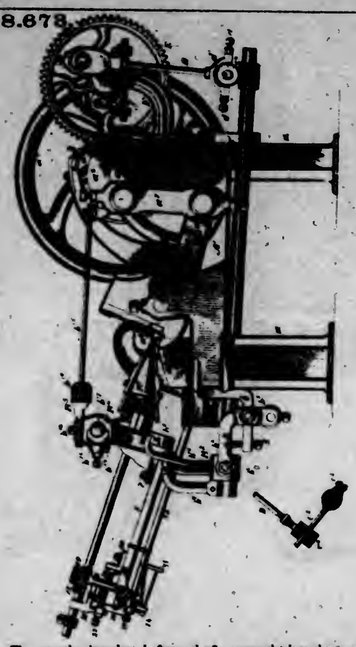
2. In a nail-plate feeder, the combination, with the brackets by which the feeder is connected with the nail-machine and with the rock-shaft of the feeder, of a transverse bar or shaft, b^3, supported on said brackets by intermediate connections, and a bearing for the rock-shaft supported by said bar or shaft b^3 and capable of adjusting itself to a change in the angular direction of the rock-shaft, substantially as shown and described.

3. In a nail-plate feeder, the combination, with the brackets *b b*, the saddle B, and intermediate connections, of the transverse shaft b^3, pivotally mounted in the saddle, and the rock-shaft C, passing through said shaft b^3 and having a bearing therein, substantially as shown and described.

4. In a nail-plate feeder, the combination, with the brackets *b b*, the saddle carried thereby through intermediate connections, of the transverse shaft b^3, pivotally mounted in said saddle, and the barrel-stock mounted on said transverse shaft and capable of vibrating or swinging thereon, substantially as shown and described.

5. In a nail-plate feeder, the combination of the angular brackets *b b*, the bearing-blocks b^2, adjustably mounted on the horizontal arms of said brackets, the transverse rod b^3, carried by said bearing-blocks, the saddle B', mounted on the rod b^3 and capable of swinging thereon, the transverse shaft b^3, pivotally mounted between the horizontal arms of the saddle, and the barrel-stock mounted on said shaft and capable of swinging thereon, substantially as shown and described.

388,673.



6. The angular bracket *b*, formed of a wrought-iron bar and having the upper end of its vertical arm bent into hook shape and adapted to be attached to the bed of a nail-cutting machine by a bolt passing through its hooked end, substantially as shown and described.

7. In a nail-plate feeder, the combination, with the barrel and its stock, of a reciprocating rack working through the barrel-stock to impart oscillatory motion to the barrel, and a hinged guard arranged to cover the guideway of the rack and to protect the latter, substantially as shown and described.

8. In a nail-plate feeder, the combination, with the rock-shaft C, and with the reciprocating rack that oscillates the barrel, of the vibrating arm formed with a clamp-socket at its lower end for the reception of said shaft, the said socket being formed by bending the end of the arm around upon itself, whereby it is adapted to be adjustably clamped upon the shaft by a screw or bolt passing through the arm and through the bent end, substantially as and for the purpose described.

9. In a nail-plate feeder, the combination, with the wheel E, its shaft E' and crank E^2, and with the rock-shaft C, of the arms c^2, adjustably clamped upon the said shaft, the collar c^4 on said arm and capable of oscillating thereon, and the pitman D, connecting said collar with the crank E^2, substantially as and for the purpose described.

10. In a nail-plate feeder, the combination, with the rock-shaft C and its arm c^2, of the collar c^4 on said arm, the forked pitman D d', connected with said collar by pointed screws *d d*, passing through the arms of its fork, and the crank E^2 on the shaft of wheel E, with which the pitman is connected at its opposite end, substantially as shown and described.

11. The feeding-fork for nail-plate feeders herein shown and described, consisting of two main parts, 9 10, each having horizontal arms by which they are pivoted or hinged together, and grasping-jaws at their upper ends, in combination with an arm projecting from the barrel-stock, to which arm one of said parts is hinged, to swing or vibrate forward and backward, substantially as shown and described.

12. The feeding-fork herein shown and described, consisting of the two parts 9 10, each having horizontal arms by which they are pivoted or hinged together, and grasping-jaws at their upper ends, one of said jaws being spring-seated, substantially as shown and described.

13. The combination, in a nail-plate feeder, of the bar 8, projecting from the barrel-stock, the part 9 of the feeding-fork hinged to said arm to swing forward and backward, the part 10 hinged to the part 9 to swing toward and from the same, the said parts 9 10 being provided with jaws to grasp the nipper-rod, a spring to throw the connected parts 9 10 forward, and a push-bar, 34, between the nail-machine and a horizontal arm that projects below the connection between

the arm 8 and the part 9, whereby, when the barrel-stock moves toward the machine, the jaws will first be closed to grasp the nipper-rod and then moved toward the machine, substantially as shown and described.

14. In a nail-plate feeder, the combination of two grasping-jaws hinged together and adapted to open and close by a swinging movement in a horizontal plane and capable of vibrating in a vertical plane, and a push-rod operating upon the arm of one jaw, for imparting motion to said jaws in both directions, substantially as and for the purpose described.

15. The combination, with the barrel of a nail-plate feeder, of the holding-bars *p p* and the plates *q q*, to which they are attached, the said plates being pivotally connected to the barrel by screws *u u*, substantially as shown and described.

16. The combination, with the barrel of a nail-plate feeder, of the holding-bars *p p* and the plates *q q*, to which they are secured, the said plates being pivotally connected to the barrel by spherical-headed screws *u u*, and springs *v v*, to press the points of said holding-bars together, substantially as shown and described.

388,674. **BOOK-SUPPORT FOR SHELVES.** Mark W. Harrington, Ann Arbor, Mich. Filed Mar. 30, 1888. Serial No. 269,009. (No model.)



Claim.—1. A book-support for shelves, comprising in combination a body portion to support a book placed against it, a foot on said body portion adapted to press upon the upper surface of the shelf in use, an arm projecting from the body portion below said foot to permit the entrance of the edge of the shelf, and said body portion being arched or extended upwardly in front of said foot and above said arm, whereby the support may rock forward and is made self-clamping upon the shelf, substantially as described.

2. A book-support for shelves, comprising in combination a body portion to support a book placed against it, a foot on said body portion adapted to press upon the upper surface of the shelf in use, an arm projecting from the body portion below said foot to permit the entrance of the edge of the shelf and beyond said foot, whereby the center of gravity is in front of the center of rotation, and said body portion being arched or extended upwardly in front of said foot and above said arm, whereby the support may rock forward and is made self-clamping upon the shelf, substantially as and for the purpose set forth.

388,675. **WAGON-BODY.** Richard C. Hart, Quincy, Mo. Filed Feb. 2, 1888. Serial No. 262,719. (No model.)



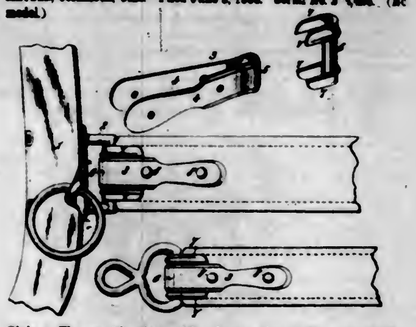
Claim.—1. The wagon-body brace consisting of the brace having the thickened lower end portion, having a web tapering from the upper end of said thickened portion upward, said brace also having a series of steps arranged at intervals throughout its length, substantially as set forth.

2. The combination, with a wagon-body bottom, of the angle-plate forming the bottom of a socket in said bottom, and the brace applied to the side of the body and resting in said socket upon said angle-plate, said angle-plate projecting beyond said bottom, adapting it to rest upon the bolster, substantially as set forth.

3. The combination, with the wagon-body bottom, of the angle-plate forming the bottom of a socket in said bottom and offset from the side edge and under side thereof, substantially as set forth.

4. The combination, with the wagon-body bottom having a socket, of the angle-plate forming the bottom of said socket and projecting or offset from the under side and side edges of said bottom, the brace having its lower end let into said socket and provided with steps and a web, and the side having recesses or sockets which receive said steps and web, said side having a wearing-plate opposite the bolster-standard, substantially as specified.

388,676. **WEAR-PLATE FOR HARNESS-HOOKS.** William B. Hayden, Columbus, Ohio. Filed June 6, 1888. Serial No. 276,026. (No model.)



Claim.—The combination, with a harness-iron, of a wear-saddle, 6, having clip-plates 7, a clip, 3, the loop of which rests directly upon said saddle, and a strap embraced by said clip and by the ends of the clip-plates, substantially as described.

388,677. **MEASURING-VESSEL.** George Hayn, New York, N. Y. Filed Mar. 1, 1888. Serial No. 266,573. (No model.)



Claim.—1. A bottle provided with graduating lines or marks indicating measure, radiating from a point, essentially as shown and described.

2. A liquid-receptacle, of glass, having upon its outer surface designating-lines radiating from a common center or index-point, adapted to indicate the amount of liquid taken and being taken from the vessel, essentially as shown and described.

3. A liquid-receptacle, of glass, having to its outer surface a set of radial lines with a common center, the lines diverging and located at such angles as to indicate the amount of contents being poured out, or as poured out, by coinciding with the level of the contents of the vessel when it is inclined in the act of pouring, essentially as shown and described.

4. A vessel or liquid-holder having to its face a set of radiating lines so arranged that the level of liquid therein may be brought to coincide with line after line of the set in the act of pouring as the vessel is tilted, the several lines of the set diverging and graduated to indicate measurement of quantity through coincidence of line and level of liquid, essentially as shown and described.

5. A liquid-receptacle funnel-shaped at the junction of body and neck, and provided with the radial lines B, for measurement, essentially as shown and described.

6. A liquid-receptacle, A, having its neck formed with the lateral grooves C, and upon its outer surface the radial lines B, essentially as shown and described.

7. A liquid-receptacle provided with graduating lines or marks indicating measure, radiating from a common center, and also lines or marks indicating measure, arranged horizontally, whereby quantities may be measured in the act of pouring and amount of contents noted when the vessel is at rest, essentially as shown and described.

8. A liquid-receptacle provided with radial lines or converging lines or marks indicating measure as the vessel is tilted or inclined, and also parallel lines or marks indicating measure when the vessel is perpendicular, essentially as shown and described.

388,678. **ART OR METHOD OF KNITTING STOCKINGS.** Samuel Hemmall, Philadelphia, Pa. Filed Oct. 27, 1887. Serial No. 253,512. (No model.)

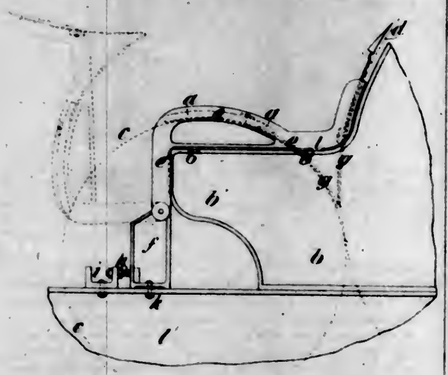
Claim.—The mode herein described of forming a toe upon a stocking, said mode consisting in forming upon the foot opposite projecting tapering tongues by narrowing the web first upon the needles of one

388,678.



half of the machine and then upon the needles of the other half, then forming stitches around the entire set of needles, and then uniting the adjacent edges of the continuous band thus produced, all substantially as specified.

388,679. **CARDING-ENGINE.** John M. Rutherford, Manchester, County of Lancaster, England. Filed Jan. 4, 1888. Serial No. 259,791. (No model.) Patented in England July 24, 1884, No. 10,518.



Claim.—1. In a carding-engine, the combination of the main and doffer cylinders, under framing, and side frames having flat or level surfaces, with the doffer-cover resting upon said flat or level surfaces, standards or blocks to which the doffer-cover is hinged, and means for adjusting the said standards upon the framing, substantially as set forth.

2. In a carding-engine, the combination of the main and doffer cylinders, side frames, and under framing, with the doffer-cover and parts to which said cover is hinged in front of the main axis of the doffer, so that when the cover is lifted all parts move clear from the doffer, substantially as described.

3. In a carding-engine, the combination of the main and doffer cylinders, under framing, the side frames having horizontal surfaces, in combination with the doffer-cover, making-up pieces, and side pieces resting upon the said horizontal surfaces, standards to which the said side pieces are hinged, and means for adjusting the standards, substantially as described.

388,680. **INKING APPARATUS FOR PRINTING-MACHINES.** Richard M. Hoe, New York, (Mary S. Hoe executrix of said Richard M. Hoe, deceased,) and Dominick Wesselius, Brooklyn, assignors, by direct and mesne assignments, to Robert Hoe, Peter S. Hoe, Stephen D. Tucker, and Theodore H. Mead, New York, N. Y. Filed Nov. 28, 1882. Serial No. 77,679. (No model.)

Claim.—1. The combination, with the main frame of the printing-machine, of the ink-distributing apparatus and its vertically-movable horizontally-sliding supporting-carriage, substantially as described.

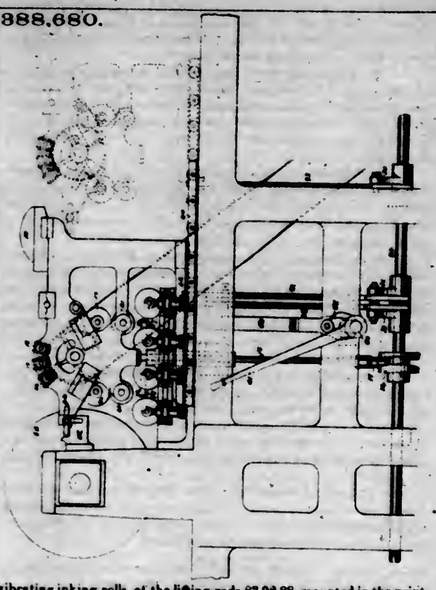
2. The combination, with the ink-distributing apparatus and its movable supporting-carriage, of the independent roller-frames 40, substantially as described.

3. The combination, with the ink-distributing apparatus, its movable supporting-carriage, and its elevating mechanism, of the independent roller-frames 40, substantially as described.

4. The combination, with the main frame of the printing-machine, of the ink-distributing apparatus, its vertically-movable horizontally-sliding supporting-carriage, and clamping devices, substantially as described, for rigidly supporting said ink-distributing apparatus and its carriage in its adjusted position during the printing operation.

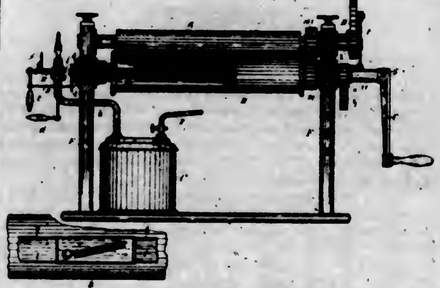
5. The combination, with the movable ink-distributing apparatus, carriage, and the devices supported by said carriage for actuating the

388,680.



vibrating inking-rolls, of the lifting-rods 83 92 88, mounted in the printing-machine frame, substantially as described.

388,681. **PHOTOGRAPHIC BURNISHING-MACHINE.** Alfred H. Humphrey, Meadon, Mich. Filed Jan. 30, 1888. Serial No. 262,257. (No model.)



Claim.—1. The combination of the revoluble cylinders, gear-connected, one provided with a pinion, the other with a connected pinion and crank revoluble on its axle, a gear with which the crank-pinion meshes, a segmental gear meshing with one of the cylinder-pinions, and a connecting-rod between the segmental gear and the gear which meshes with the crank-pinion, whereby the cylinders rotate first one way and then the other while the crank is turned in one direction, substantially as set forth.

2. The combination of the gear-connected cylinders, one having a detachable pinion, the other having a connected crank and pinion rigidly attached to its axis by a set-screw, a gear meshing with the crank-pinion, a segmental gear meshing with the detachable pinion, and a connecting-rod between the segmental gear and the gear which meshes with the crank-pinion, substantially as set forth.

3. A gas or vapor burner for heating purposes comprising two concentric tubes, revoluble one in the other, and each provided with lines of perforations adapted to register with each other, in combination with the feed and burnishing cylinders, substantially as set forth.

4. A gas or vapor burner for heating purposes comprising the concentric tubes, one of which is adapted to rotate, and each provided with the lines of perforations, and one having the slots in its said line of perforations, in combination with the feed and burnishing cylinders substantially as set forth.

5. A gas or vapor burner comprising the concentric tubes adapted to be rotated one within the other, or vice versa, each having the lines of perforations, and the inner one having the slots, and provided with

a lever, a stop to limit the play or throw of said lever, and a supporting-frame, all combined with the cylinders between which the photograph passes, substantially as set forth.

6. In combination, the revoluble hollow cylinders between which the photograph is to be passed, means for rotating said cylinders, the concentric tubes in the burnishing-cylinder, each having the line of perforations, and one revoluble in the other, and provided with a lever to rotate it and a stop to limit the throw of said lever, substantially as set forth.

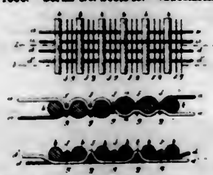
7. In combination, two revoluble hollow cylinders, means to rotate them, the concentric tubes having the spiral lines of perforations, the inner one provided with the slots in the line of its perforations, said tubes being in the burnishing-cylinder, and means to supply gas or vapor within the inner tube, substantially as set forth.

8. In combination, the revoluble hollow cylinders, the concentric tubes in the burnishing-cylinder having the spiral lines of perforations registering with each other, the inner tube revoluble in the latter and provided with a lever to rotate it by, a vapor-generator, the handle of which operates the spindle to control the flow of vapor, having an arm adapted to contact with the lever of the inner tube, and the supporting standards or frame, substantially as set forth.

9. In combination, the hollow cylinders between which the photograph is passed, the tubes therein having the lines of perforations, one revoluble within the other, the revoluble one having a lever, a vapor-generator having an indicator denoting the throw of the lever which controls the flow of vapor, and an arm attached to said lever and adapted to contact the lever of the revoluble tube, substantially as set forth.

10. The combination of two hollow cylinders between which the photograph is passed, a tube in one of said cylinders having the line of perforations, and a gas or vapor apparatus for blowing the gas or vapor into said tube, substantially as set forth.

388,682. **CARPET FABRIC.** John Humphries, Philadelphia, Pa. Filed Feb. 27, 1888. Serial No. 265,349. (Specimens.)



Claim.—1. The within-described carpet fabric, in which each set of warp-threads comprises figuring-warps and binding-warps, and each set of weft-threads comprises a filling or stuffer thread and two binding-threads, one of said binding-threads confining the figuring-warp of the face only and the other confining the figuring-warp of the back only, all substantially as specified.

2. The within-described carpet fabric, in which each set of warp-threads comprises figuring-threads and binders, and each set of weft-threads comprises a filling or stuffer thread, a fine thread confining the figuring-warps of the face, and a thick thread confining and covering the figuring-threads on the back of the fabric, all substantially as specified.

388,683. **HYDRAULIC ELEVATOR.** Edwin Hunt, Cleveland, Ohio. Filed Aug. 26, 1887. Serial No. 247,920. (No model.)

Claim.—1. In a hydraulic elevator, the combination, with a water-cylinder having communicating bores of unequal diameter and pistons adapted to reciprocate in said bores to hoist or assist in hoisting the load, of blocking mechanism for holding one or both pistons stationary, substantially as set forth.

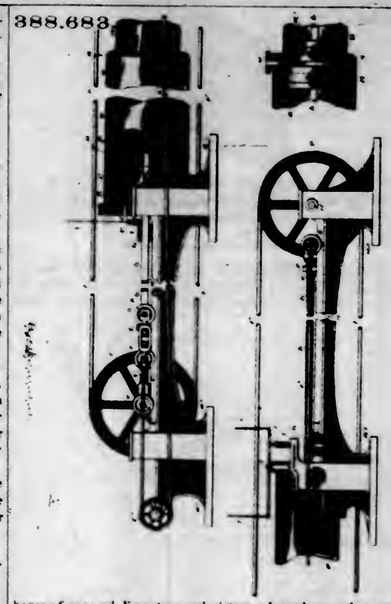
2. In a hydraulic elevator, the combination, with a water-cylinder having communicating bores of unequal diameters and pistons adapted to reciprocate in said cylinder, of a piston-rod extending from each piston, a flexible cable connecting said rods, and wedge or wedges for holding one or both pistons stationary, substantially as set forth.

3. The combination, with water-cylinder having bores of unequal area and piston of unequal area operating in opposite directions in the bores of said cylinder, with suitable mechanism, substantially as indicated, for transmitting and utilizing the power of the pistons in elevating the load, of wedges for blocking the respective pistons, and suitable levers and cables for operating the wedges from the cage of the elevator, substantially as set forth.

4. The combination, with water-cylinder and piston, substantially as indicated, of openings through the pistons and valves for closing such openings, said valves opening inward, valve-stems projecting outward beyond the face of the pistons, and stops for engaging such valve-stems to open the valves whenever the pistons shall have exceeded their normal outward movement, substantially as set forth.

5. The combination, with a water-cylinder having communicating

388,683.



bores of unequal diameters and pistons adapted to reciprocate in the bores of said cylinder, of a piston-rod extending from each piston and a cable connecting the piston-rods, substantially as set forth.

6. The combination, with a water-cylinder composed of two communicating bores of unequal diameter, and pistons adapted to reciprocate in the bores of said cylinder, of piston-rods extending from each piston, yokes secured to said piston-rods, and cables connecting said yokes, substantially as set forth.

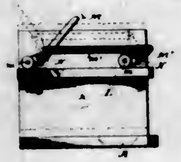
7. The combination, with a water-cylinder composed of a large and small communicating chamber, and having a water-inlet entering these chambers between the pistons and pistons of different areas in the cylinder, of piston-rods, yokes secured to said rods, and cables connecting said yokes, substantially as set forth.

8. The combination, with a frame having ways thereon, a water-cylinder supported by said frame, said cylinder being composed of a large and small chamber, pistons of different areas in said chambers, and piston-rods extending from the pistons, of a set of reciprocating sheaves connected with one piston, a reciprocating yoke connected with the other, a cable connecting the piston-rods, a set of stationary sheaves, and a cable string over the stationary and reciprocating sheaves, substantially as set forth.

388,684. **CORN-HARVESTER.** Preston R. Hunt, Plattsville, assignor of one-half to Albert J. Cory, Tawawa, Ohio. Filed Mar. 10, 1888. Serial No. 266,847. (No model.)

Claim.—1. In a wheeled corn-harvester, the combination, with a circular cutter mounted horizontally in the front side of the main frame and mechanism for operating the cutter, of a receptacle for cut stalks in rear of the cutter, two sets of belts in front of the receptacle, one on each side, the belts of each set traveling in the same plane, one vertically over the other, for directing the stalks to the cutter and thence to the receptacle, two wheels having radiating arms arranged in the same horizontal plane, one at each side of the receptacle, between the two belts composing each set, for directing the stalks to the belts, and mechanism, substantially as described, for operating the belts and feed-wheels.

2. In a wheeled corn-harvester, the combination, with the frame having a floor formed of transverse slats, as described, of a swinging rack having bottom slats adapted to fit between the slats of the floor,



388,684.



a wheel-guard to which the rack is pivoted, cam-levers pivoted to one side of the rack coupled together by a bar and provided with friction-rolls at their lower ends and a fixed segmental track mounted on the main frame at one side of the machine, upon which said friction-rolls travel, for the purpose stated.

388,685. **SHOE-REST.** Charles W. Hutchinson and Edwin A. Tracy, Berwick, Conn., assignors to William A. Allen, same place. Filed June 27, 1888. Serial No. 278,246. (No model.)

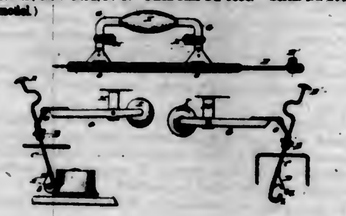


Claim.—1. A shoe-support consisting of two overlapping plates having coincident slots to provide adjustment relative to each other and upturned ends to clasp the shoe, as set forth, in combination with a stand having a threaded end extending through said slots, a binding-nut on said threaded end for interlocking said plates and stud, and a socketed stand for supporting the described shoe-support, all substantially as and for the purpose specified.

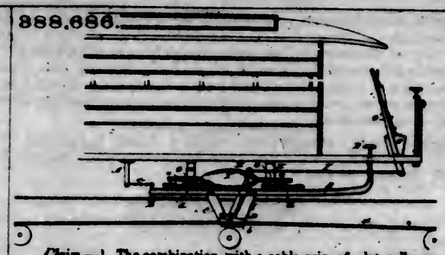
2. A shoe-support formed of two metallic plates having upturned ends to clasp a shoe-sole and coincident slots, whereby adjustment relative to each other may be attained, a threaded supporting-stud projecting through said slots, and a binding-nut on said threaded stud having one side formed as a rib somewhat less in width than said slots, substantially as and for the purpose specified.

3. In combination with bar *d*, a collar fitted adjustably on said bar, a clamping-screw, *f*, a stud with milled head seated in said collar, a shoe-support formed of two overlapping slotted plates with upturned ends, as set forth, and a nut on said stud for clamping together the plates of said shoe-support, all substantially as and for the purpose specified.

388,686. **CABLE-GRIP FOR TRACTION RAILWAYS.** Orlando H. Jaquith, New York, N. Y. Filed Jan. 24, 1888. Serial No. 261,772. (No model.)



388,686.



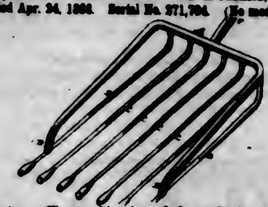
Claim.—1. The combination, with a cable-grip, of a laterally-projecting counter-balance arranged to work in a plane at right angles to the cable, substantially as and for the purpose described.

2. The combination, with a cable-grip, of a laterally-projecting counter-balance arranged to work in a plane at right angles to the cable, and links or double hinges connecting the counter-balance and grip and having their axes parallel with the cable, substantially as and for the purpose described.

3. The combination, with a cable-grip, of a laterally-projecting counter-balance arranged to play at right angles to the cable and a sliding connection between the two arranged to yield in the direction of the draft, substantially as and for the purpose described.

4. The combination, with a grip hung upon an axis parallel with the cable, of a rigidly-attached bar extended above the platform and provided with a treadle-head, substantially as and for the purpose described.

388,687. **CORN-SCOOP.** John A. Jessmon, Union County, Miss. Filed Apr. 24, 1888. Serial No. 271,704. (No model.)



Claim.—The combination of the body A, made heaviest at its center and lightest at its front ends, and having its front ends, D, curved downward and secured to the two outer tines, with the tines C, provided with the balls G upon their outer ends, and which have their rear ends curved upward and secured to the central portion of the body, and the handle F, substantially as shown.

388,688. **SWITCH FOR TRACKS FOR CARRYING IRON.** Erwin A. Kerr, Girard, Ohio. Filed May 14, 1888. Serial No. 273,886. (No model.)



Claim.—1. The combination, with the main track A, and side track, B, of the switch C, which is pivoted at a point higher than the said main track, and beveled at its free end, and provided with ears *c c*, whereby it is adapted to be lowered, so as to rest upon the main track, and to be held in place thereon when in use, as shown and described.

2. The combination, with the main track A and the slotted support E, of the switch C, pivoted to the support E, and provided with the horizontally-projecting pin *c'*, and lever-connections for throwing said switch into and out of register with the main track, as herein shown and described.

3. The combination, with the main track A, secured to the support E, having the vertical slot *e*, of the side track, B, provided with the vertically-tilting switch C, having the horizontally-projecting pin *c'*, the lever D, pivoted to the support E, and connected at one end to the vertically-tilting switch C by the rod *d*, and provided at its other end with the adjustable weight W, whereby said vertically-tilting

switch is held in a raised position above the main track, as shown and described.

4. The combination, with the vertically-tilting switch C, having its free end beveled, of the rod *d'*, weighted lever D, rod *d*, lever F, and cord or chain G, whereby the said vertically-tilting switch is thrown into and out of register with the main track, substantially as shown and described.

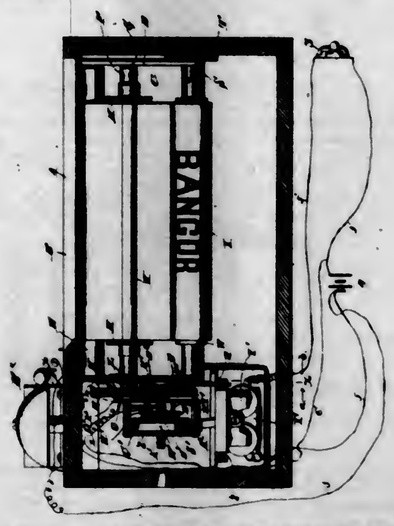
388,689. CARRIAGE-TOP. Salem R. Kimball, Jackson, Penn., assignor of one-half to Francis Asbury Williams, same place. Filed Jan. 16, 1888. Serial No. 261,147. (No model.)



Claim.—1. In a carriage-top, the combination, with the front bow restricted to the canopy or cover, and the middle bow, of the additional braces connected to said front and middle bows, and, in addition, to yielding or flexing inward, each having an offset near its lower end and inwardly curved above its flexing or yielding point or joint, permitting the braces, as the top folds down, to rest upon the middle bow and sustain the top in the lowered position, substantially as set forth.

2. In a carriage-top, the combination, with the front bow restricted to the canopy or cover, and the middle bow, of the additional braces connected to said front and middle bows, and each being formed with a spring and an offset near its lower end and inwardly curved above said spring, substantially as set forth.

388,690. ELECTRIC RAILWAY-STATION INDICATOR. Gideon H. Kirwan, Wilkes-Barré, Pa. Filed Mar. 27, 1888. Serial No. 268,700. (No model.)



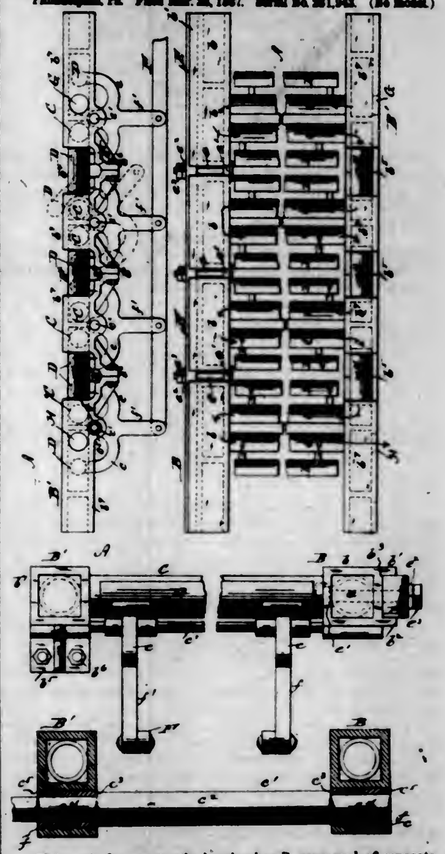
Claim.—1. The combination of the station-indicator, the motor to operate the same, and provided with the switch-wheel and arm or contact, the armature having the arm to engage and disengage the motor, for the purpose set forth, the electro-magnet to operate the armature, the battery, the circuit-closer, the bell, and the open circuits connecting the electro-magnet to the circuit-closer and the battery and connecting the bell, the switch, and the battery, substantially as described.

2. The combination, in a station-indicator, of the shaft F, the wheel M, loose thereon, the motor having the operating-wheel engaging wheel M, the clutch to connect the said wheel to the said shaft, the lever to operate said clutch, the shaft W, the spring U, connected thereto, and the scroll or apron rolled on the shaft W and connected to the shaft F, whereby when the latter is rotated the scroll will be unrolled from the shaft W onto the shaft F and the spring will be wound, substantially as described.

3. The combination of the spindle S, the spring U, attached thereto, the shaft W, having one end journaled in a suitable bearing and detachable therefrom, the opposite end of said shaft being secured to the spindle, the operating-shaft F, the scroll normally rolled on the shaft W, and having its free end detachably connected to shaft F, the wheel M, loose on shaft F, the clutch to secure said wheel thereto, and the motor having the wheel engaging said wheel M, substantially as described.

4. The combination of the station-indicator, the motor to operate the same, provided with the switch-wheel and with the revolving cam L', having the notch M', the annunciator connected in open circuit with the switch-wheel and with a battery, the armature having the arm provided with the stop to engage the notch in the cam, and the electro-magnet to operate the said armature, said electro-magnet being connected in open circuit with the battery and with a circuit-closer, substantially as described.

388,691. GRATE-BAR. Gideon L. Kinney and James Reagan, Philadelphia, Pa. Filed Mar. 22, 1887. Serial No. 231,943. (No model.)



Claim.—1. In a grate, the bearing-bar B, composed of separate sections connected together so as to permit of independent expansion and contraction of the same, grate-bars C, connecting the sections of bar B to another bearing-bar, B', rocking or shaking bars D, having their shafts mounted in bearings secured to the bearing-bars B and B', and actuating mechanism for the rocking bars D, substantially as set forth.

2. A grate composed of hollow supporting or bearing bars B B', composed of separate sections, hollow grate-bars C, connecting the sections of bars B B', rocking or shaker bars D, having shaft-bearings in boxes secured to bearing-bars B B', and actuating mechanism for said shaker-bars, substantially as set forth.

3. In a grate, the combination of bearing-bar B, composed of separate hollow sections frictionally secured to a bar, E, to admit of independent expansion and contraction of said sections, bearing-bar B', composed of separate hollow sections having pipe-couplings *b'* and flanges and bolt-connections *b' b'*, hollow grate-bars C C, connecting the sections of bars B B', shaker-bars D D, having shaft-bearings in boxes secured to the sections of bars B B', and actuating mechanism for said shaker-bars, substantially as set forth.

4. In a grate, the combination of bearing-bars B B', one of which is composed of sections, each section having a flange and a bolt-connection with a supporting-bar, grate-bars connecting the sections, rocking arms or shakers for the grate-bars, and actuating mechanism for the shaker-arms, substantially as and for the purpose set forth.

5. In a grate, the combination, with bearing-bars B B' and parallel grate-bars C C, grouped in pairs, of separate rocking or shaking bars D D, grouped in pairs, each pair mounted upon a common shaft with a pair of grate-bars between them and adapted to move in reverse directions to provide open spaces between the pairs of grate-bars, and actuating mechanism for bars D D, substantially as set forth.

6. In a grate, the combination of bearing-bars B B', grate-bars C C, separate rocking or shaker bars D D, arranged in pairs, and each pair mounted upon a common shaft having bearings in boxes secured to bars B B', and actuating mechanism for shaker-bars D D, substantially as set forth.

7. The sectional water-bars B B', combined with connecting tubular bars C, rocking bars D, having shafts mounted on bars B B', and actuating mechanism for bars D D, substantially as set forth.

8. In a water-grate, the combination of bar B, composed of hollow sections connected to a supporting-bar, E, grate-bars C, bar B', composed of sections having pipe-couplings *b'*, and flange-bolted connections, rocking bars D, and actuating mechanism for bars D, substantially as set forth.

9. In a grate, the combination of a bearing-bar, B, composed of sections having edge flanges, *b' b'*, a bar, E, adapted to said flanges, and bolt-connections *c*, passing between said sections and engaging at one end with the sections and at the other with bar E, substantially as and for the purpose set forth.

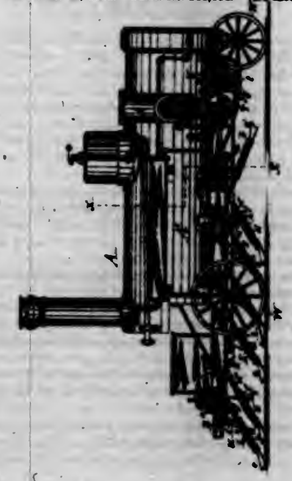
10. In a grate, the combination of a bearing-bar, B, composed of separate sections, a rod, E, upon which said sections are strung or supported, and bolt-connections engaging at one end with the sections and at the other with said bar E to divide or space the sections from one another and secure them to said bar, substantially as set forth.

11. In a grate, the combination of bearing-bars B B', having openings *f*, thimbles *e'* in said openings, angular shafts C, having round journals adapted to said thimbles, rocking bars secured to said shafts, and actuating mechanism for the latter, substantially as set forth.

12. A grate composed of two parts, each part having sectional bearing-bars B B', grate-bars having shaft-bearings in boxes secured to bars B B', connecting-bars B B', rocking bars, and separate shaking devices for the rocking bars of each part of the grate, substantially as set forth.

13. A grate composed of sectional bearing water-bars B B', tubular grate-bars, inlet and outlet pipe-connections, and a drain or drip pipe with cock leading from the said outlet-pipe, substantially as set forth.

388,692. TRACTION-ENGINE. Edward M. Kimlin, Lacona, N. Y. Filed Mar. 22, 1888. Serial No. 268,004. (No model.)



Claim.—1. The combination, with an engine mounted on wheels, of longitudinally-reciprocating bars actuated by said engine and propelling-legs connected to said bars, as and for the purpose specified.

2. The combination, with an engine mounted on wheels, of longitudinally-reciprocating bars actuated by said engine and propelling-legs hinged to said bars, substantially as described and shown.

3. The combination, with an engine mounted on wheels, of bars connected movably longitudinally to the supporting-frame of the engine, a driving-shaft arranged transversely on the engine, eccentrics on said driving-shaft, pitmen connecting said eccentrics with the longitudinally-movable bars, and propelling-legs hinged to said bars, substantially as described and shown.

4. The combination, with the engine mounted on wheels, of the bars B B, arranged lengthwise the engine and movable longitudinally, the driving-shaft C, arranged crosswise of the engine, the clutch-faces D D, rigidly attached to said driving-shaft, sleeves E E, mounted loosely on said shaft at opposite sides of the clutch-faces, clutches F F, adapted to slide longitudinally on said sleeves and locked circumferentially thereon, eccentrics *a a*, rigidly secured to the sleeves, and pitmen *b b*, connecting said eccentrics with the bars B B, and propelling-legs L L, connected to said bars, substantially as described and shown.

5. In combination with the engine mounted on wheels and reciprocating bars arranged lengthwise of the engine and actuated thereby, propelling-legs hinged to said bars, and cables or chains having branches connected, respectively, with the successive propelling-legs for lifting the same simultaneously out of their operative position, as set forth.

6. In combination with the engine mounted on wheels, and reciprocating bars arranged lengthwise of the engine and actuated thereby, propelling-legs pivoted to said bars, windlasses pivoted to the frame of the engine, and cables or chains wound at one end on said windlasses, and having the opposite end portions provided with branches connected with the successive propelling-legs, substantially as described and shown.

7. A traction-engine comprising a driving-shaft separate and distinct from the axles of the carrying-wheels, power-transmitting devices mounted independent of each other on said shaft, and adapted to be thrown in and out of gear therewith and transmit either propelling motion to the carriage of the engine or power to machines remote from the engine, a windlass mounted on the carriage of the engine and adapted to be thrown in and out of gear with the aforesaid shaft, and a cable or chain extended from said windlass, substantially as specified.

8. On a traction-engine of the class herein specified, the combination, with the driving-shaft C, separate and distinct from the axles of the carrying-wheels, and power-transmitting device on said shaft adapted to be thrown into and out of gear therewith, and to either propel the carriage of the engine or transmit motion to machines remote from the engine, of the worm H on the said driving-shaft, the gear-wheel I, adapted to be thrown into and out of gear with the worm, the drum or windlass J, turning with the said gear-wheel, and a cable or chain wound at one end on the said drum, substantially as and for the purpose set forth.

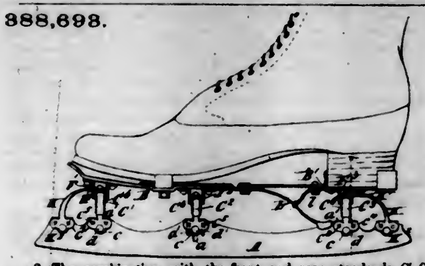
9. The combination, with the engine mounted on wheels, of the driving-shaft C, worm H, rigid on said shaft, the shaft *g*, arranged adjustably toward and from the said worm, the gear-wheel I, and drum J, journaled on the shaft *g*, a cable or chain wound at one end on said drum, and braces adapted to sustain the engine in its position, as set forth.

10. The combination, with the engine mounted on wheels, of the driving-shaft C, worm H, and clutch-faces D D, rigidly attached to said shaft, the sleeves E E, mounted loosely on said shaft and provided with splines *h*, the clutches F F, sliding on said splines, eccentrics *a a*, secured to the sleeves E E, the bars B B, arranged movably longitudinally, pitmen *b b*, connecting the eccentrics with the said bars, propelling-legs L L, connected to the bars B B, the gear-wheel I, adapted to be thrown in and out of gear with the aforesaid worm, the drum J, turning with the gear-wheel I, and the cable or chain *i*, wound on said drum, all combined substantially as described and shown, for the purpose set forth.

388,693. SKATE. Joseph A. La Chapelle, St. Martin, Quebec, Canada. Filed Jan. 24, 1888. Serial No. 261,722. (No model.)

Claim.—1. In a skate, the combination, with the blade and foot-plates, of standards set on and secured to the blade and fork-shaped, so as to extend outward and upward on each side of same, vertical pins carried between sides of and on cross-piece of standard, a single spring coiled alternately around each of such pins, boxes projecting downward and secured on the under side of the foot-plates and perforated to fit over such pins and resting on said springs, and a connecting-bar passing through such projecting boxes and secured to the tops of the sides of the standards, all as shown and described, and for the purpose set forth.

388,693.



2. The combination, with the front and rear standards, C C², rigidly secured to the blade A and carrying pins D, mounted on them, and springs E, wound around said pins alternately, of curved forked stays K, secured to the ends C² C² of the standards and to the blade A, as and for the purposes set forth.

3. The combination, with the blade A and standards C C², and stays K K, with flattened ends *c* K², riveted to such blade, of dogs or projections formed on inner side of such flattened ends, and vertical grooves *d'* in blade, in which such dogs fit, as and for the purposes set forth.

4. The combination, with the blade and foot-plates of a skate, and, in combination, the standards C C², secured rigidly to the blade, with stays K K, to prevent longitudinal movement, of the standard C², carrying pins D D and spring E, and secured to blade so as to allow of vertical movement, as shown.

388,694. CONSTRUCTION OF PAVEMENTS. Israel L. Landis, Lancaster, Pa. Filed July 16, 1888. Serial No. 280,087. (No model.)



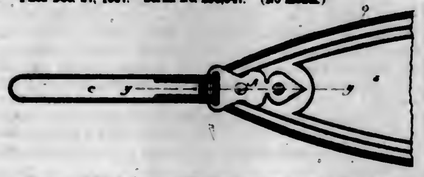
Claim.—1. The combination, with the binding-plates of a street-pavement, of the inwardly-extending links and a connecting tie-link whereby the parts may be forcibly drawn together and locked, substantially as specified.

2. The combination, with the binding-plates, of the tie-link perforated, as described, and provided with an eye through which a stake may be driven to secure the parts together, substantially as specified.

3. The combination, with the binding-plates and the connected links D, of the clutch-links engaging the said plates and connected with the said links D, substantially as and for the purposes set forth.

4. The combination, with the binding-plates, of the sleeves covering the joints between the same and the connecting-links secured to said sleeve and connected with each other by tie-links, substantially as specified.

388,695. HARNESS-SADDLE. Andrew H. Larkin, Portland, Me. Filed Dec. 27, 1887. Serial No. 258,047. (No model.)



Claim.—In a harness-saddle, the combination of the skirt and pad with the metal loop-plate A, made as described and secured to the point or lower end thereof, substantially as and for the purposes set forth.

388,696. METHOD OF MAKING CANNON. Joseph P. Lavigne, New Haven, Conn. Filed Jan. 30, 1888. Serial No. 262,463. (No model.)

Claim.—1. A method of making cannon, consisting in preparing a tube to form the inner wall of the gun, then casting a filling over such tube, and then casting an envelope forming the outer wall of the gun over the tube and filling, so as to hermetically seal the latter between the tube and envelope, substantially as set forth.

2. A method of making cannon, consisting in preparing a tube to form the inner wall of the gun, then casting a filling over such

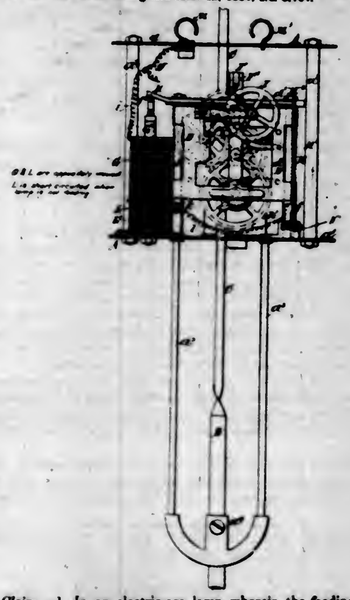
388,696.



tube, and then casting an envelope forming the outer wall of the gun over the tube and filling, the ends of the tube being fused by the envelope, substantially as set forth.

3. A method of making cannon, consisting in hermetically inclosing a cheap metallic filling between the inner and outer walls of a gun by beveling the ends of a tube forming the inner wall of the gun, then casting the filling over such tube, then casting an envelope forming the outer wall of the gun over the tube and filling, the beveled ends of the tube being fused in the last step, whereby the tube and envelope are virtually transformed into one piece of metal, substantially as set forth.

388,697. ARC LAMP. John Lea, London, England, assignor to Hugh Watt, same place. Filed Jan. 19, 1888. Serial No. 261,261. (No model.) Patented in England Mar. 12, 1887, No. 3,767.



Claim.—1. In an electric-arc lamp wherein the feeding of the carbon or carbons is effected by means of clock-work, a brake which acts upon a wheel of the said clock-work to control the movement thereof, and through which the current flows to and through the said wheel when the arc is normal, and which is actuated by a magnet or solenoid in a shunt from the main circuit, so that as the resistance through the arc increases the pressure of the brake upon the said wheel will be diminished, or the brake will be taken off, substantially as and for the purposes set forth.

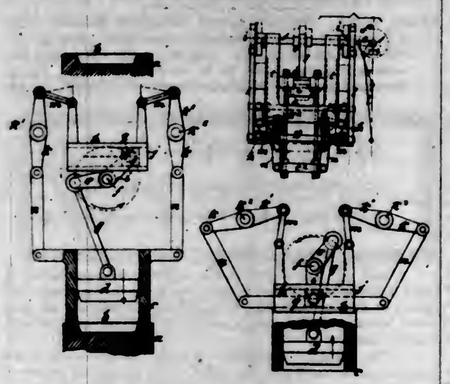
2. In an electric lamp wherein the feeding of the carbon or carbons is effected by means of clock-work, the combination, with a brake which is actuated by a magnet or solenoid in a shunt from the main circuit to control the movement of the said clock-work, of a resistance-coil which will be switched into the said shunt when the brake is taken off, and will be short-circuited when the said brake is applied, substantially as and for the purposes set forth.

3. The combination, with the magnet or solenoid G, arranged in a shunt from the main circuit for actuating the brake H³, of a resistance-coil, L, wound in the reverse direction to the said magnet or solenoid and having a core within it, so that the extra resistance switched into the said shunt will energize the said core and counteract the said controlling-magnet or solenoid G, substantially as and for the purpose set forth.

4. The combination, with the clock-work for feeding the carbon or carbons and the magnet or solenoid E, for raising the said clock-work to form the arc, of the magnet or solenoid G, arranged in a

shunt from the main circuit, the lever H, carrying the brake H³ and connected with the armature or core G', the spring K, the coil L, arranged to be included in the said shunt to increase the resistance therein, or to be short-circuited by means of the said brake, and provided with the core L', arranged to act upon the said armature or core G', all substantially as and for the purposes set forth.

388,698. STAMPING-PRESS. Frank M. Leavitt, Brooklyn, N. Y. Filed Jan. 13, 1888. Serial No. 260,610. (No model.)



Claim.—1. In a press of substantially the described kind, the combination, with a fixed die, a reciprocating plunger, and a reciprocating and pressing blank-holder, of a toggle-link, *k*, a link connected to the toggle-link, a driving-crank connected by a reciprocating bar to the link, and a second toggle-link connected to first toggle-link and to the blank-holder, arranged and operating substantially as and for the purpose herein shown and described.

2. In a stamping or drawing press, the combination, with a fixed die and a reciprocating plunger and a reciprocating and pressing blank-holder, of a toggle-link, *k*, a toggle-link, *n*, connecting said blank-holder with said toggle-link *k*, a reciprocating driver or cross-head, *h*, a link, *m*, connecting said cross-head to said toggle-link *k*, and two driving-cranks, *e i*, set in opposite or nearly opposite positions, and one connected to said plunger and the other to said cross-head, arranged and operating substantially as and for the purpose herein set forth.

3. In a press, the combination, with the fixed die *a*, reciprocating plunger *d*, and reciprocating and pressing blank-holder *c*, of a centrally-arranged driving crank-shaft, *f*, and two cranks, *e i*, pitman *g*, connecting crank *e* and plunger *d*, cross-head *h*, connected to crank *i*, with the toggle-link *k*, toggle-link *n*, connecting said toggle-link *k* to the blank-holder, and link *m*, connecting the toggle-link *k* to the cross-head, substantially as herein shown and described.

388,699. DAMPER-REGULATOR. Frazer Lemmon, Philadelphia, Pa. Filed Mar. 17, 1888. Serial No. 267,994. (No model.)

Claim.—1. In a damper-regulator, the combination, with the weighted lever E, support I, and its connections, of the foundation-plate A, having steadying-pins *a a'*, one of which is movable, and the flanged piston-cylinder B, having notches *b'*, substantially as described.

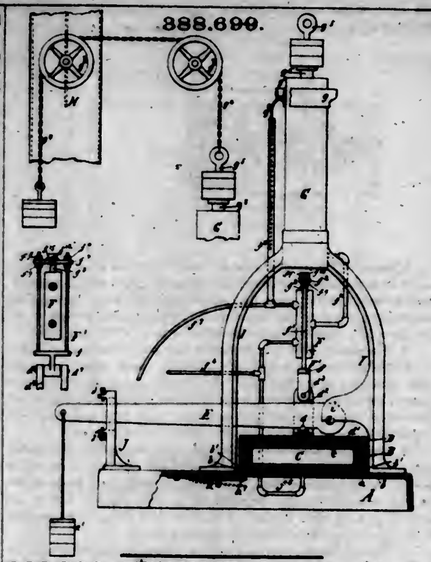
2. The combination of the damper-motor G and its support I, weighted lever E, cylinder B, piston C, hood D, having lugs d^2, side-rod frame F', and valve F, arranged in line with and below the motor G and within the support I, substantially as and for the purpose described.

3. The combination of the exhaust-pipe f^1, the open branch pipe f^2, leakage-pipe f^3, grooved collar *g*, and motor G, substantially as described.

4. A damper-regulator comprising a cylinder, B, piston C, weighted hood D, having lugs d^2 and pin d^3, valve side-rod frame F', valve F, damper-motor G, arranged in the axial line of the valve and piston, pipes f^2 f^3, and pipe f^1, for supplying both the valve F and cylinder B, substantially as and for the purpose described.

5. The combination, with the cylinder B, piston C, lever E, valve F, and motor G, of the protecting finishing-hood D, provided with a knife-edge bearing, *d*, and constructed with a diameter sufficiently large with respect to the diameter of the cylinder to provide a space between itself and the cylinder, and thereby be capable of sliding laterally to accommodate the changes in position of the lever, substantially as described.

388,699.

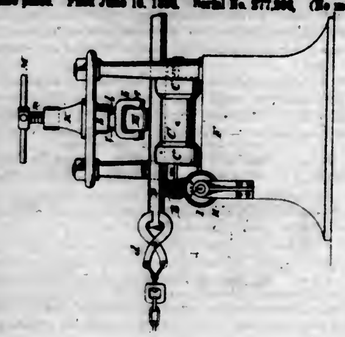


388,700. SHEATHING-PAPER. Thomas Hardman, New York, N. Y. Filed June 7, 1888. Serial No. 276,572. (No model.)

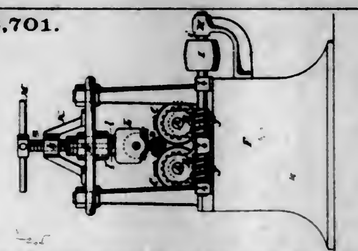


Claim.—Building and sheathing paper whose surface is provided with nail-guide lines C, substantially as and for the purpose described.

388,701. STRAIGHTENING-MACHINE. William A. McCoy, Beaver Falls, Pa., assignor to the Hartman Steel Company, (Limited), same place. Filed June 16, 1888. Serial No. 277,206. (No model.)



388,701.



Claim.—1. The combination of rotary supports for a shaft, rod, &c., to be straightened, arranged at a distance apart, with a pressure-roller arranged to act upon the rod or shaft at a point between its rotary support and on the opposite side, and adjusting devices to adjust the rotary supports and pressure-roller to or from each other.

2. The combination of two rotary supports for a shaft, rod, &c., to be straightened, arranged at a distance apart, with a pressure-roller arranged to act upon the rod or shaft at a point between its rotary support and on the opposite side, and adjusting devices to adjust the rotary supports and pressure-roller to or from each other, and means to rotate said rotary supports with a uniform speed.

3. The combination of two grooved supporting-rollers having supporting parts arranged at a distance apart and upon which the rod or shaft to be straightened rests, mechanism to rotate said grooved rollers, and a pressure-roller arranged above said grooved rollers and adapted to press upon the rod or shaft in a direction corresponding to the grooved portions of said supporting-rollers.

4. The combination of two grooved supporting-rollers having supporting parts arranged at a distance apart and upon which the rod or shaft to be straightened rests, mechanism to rotate said grooved rollers, and a pressure-roller arranged above said grooved rollers and adapted to press upon the rod or shaft in a direction corresponding to the grooved portions of said supporting-rollers, and means for adjusting said pressure-roller to or from the grooved rollers.

5. The combination of two grooved supporting-rollers having supporting parts arranged at a distance apart and upon which the rod or shaft to be straightened rests, mechanism to rotate said grooved rollers, and a pressure-roller arranged above said grooved rollers and adapted to press upon the rod or shaft in a direction corresponding to the grooved portions of said supporting-rollers, and means for adjusting said pressure-roller to or from the grooved rollers, and means for pulling the rod or shaft longitudinally between the rollers.

6. In a machine for straightening rods, shafts, &c., the combination of supports for the rod, shaft, &c., arranged at a distance apart and adapted to support the rod, shafts, &c., at different places along its length, means to rotate the rod, shaft, &c., and a pressure-roller bearing upon the rod, shaft, &c., at a point in its length intermediate to the supports therefor.

7. In a machine for straightening rods, shafts, &c., the combination of supports for the rod, shaft, &c., arranged at a distance apart and adapted to support the rod, shafts, &c., at different places along its length, means to rotate the rod, shaft, &c., a pressure-roller bearing upon the rod, shaft, &c., at a point in its length intermediate to the supports therefor, an adjustable head for said roller, movable to or from said supports, and a screw-feed for said head to adjust it with reference to the supporting of the rods, shaft, &c., being acted upon.

8. In a machine for straightening rods, shafts, &c., the combination of a main frame, two parallel grooved supporting-rollers adapted to support the rod, shaft, &c., at two places along its length, gearing connecting said rollers to make them rotate in the same direction, power mechanism to rotate said rollers, a pressure-roller arranged above said supporting-rollers and above the grooved portions thereof, and adjusting devices to adjust the pressure-roller to or from the supporting-rollers.
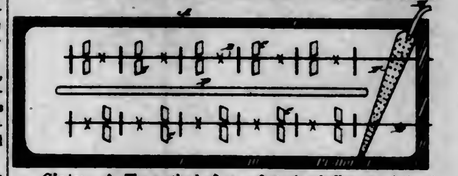
9. A straightening-machine which consists of two grooved rollers and a friction-roller which bears upon the shaft or other material to be straightened over the space formed by the groove of said grooved rollers, and mechanism for rotating said grooved rollers.

388,702. INSECT-POWDER BLOWER. EDGAR W. MESSERSEAU, Brooklyn, N. Y. Filed Feb. 11, 1888. Serial No. 263,736. (No model.)



Claim.—The combination consisting of the main body of the box, the lid or cover composed of the exterior vertical and annular portion provided with the exterior horizontal and annular web, the leather, rubber, or textile fabric of the bellows held between the said web and the interior web forming a part of the interior vertical portion, the latter held in position by means of solder or indentation made in both the vertical and interior vertical portions aforesaid, two or more depending arms extending from the interior web, said arms adapted to support the lower portion of the depending spring, the upper end of the latter resting within the cup held against and to the bellows by means of the rivet, and the depressing-plate secured to the exterior of the device, substantially as shown and described.

388,708. TREATING PLANTS CONTAINING INDICAN. PAUL F. P. MUMMA, Port Orotava, Tenerife, Canary Islands. Filed Apr. 30, 1886. Renewed Feb. 21, 1888. Serial No. 264,732. (No model.) Patented in India Feb. 7, 1881, No. 97, and June 26, 1883, No. 181; in Queensland Oct. 19, 1883, No. 7, and in France Feb. 11, 1884, No. 160,599.



Claim.—1. The method of manufacturing indigo, consisting in the introduction into the indigo-liquor during the process of manufacture of caustic ammonia, which combines with the indican of the plant under treatment and produces a product of superior quality, substantially as described.

2. The method of manufacturing indigo by introducing nitrate or nitrite of ammonia into the indigo-liquor during the process of manufacture to accelerate the action of alkalies on the indigo-liquor and to act on the gluten of the plant which is in solution, substantially as described.

3. The method of manufacturing indigo by introducing ammonia into the indigo-liquor and oxidizing the indigo-liquor during the process of manufacture, substantially as set forth.

4. The method of manufacturing indigo by introducing ammonia and atmospheric and ozonized air into the indigo-liquor during the process of manufacture, substantially as set forth.

5. The method of manufacturing indigo by introducing ammonia into the indigo-liquor and agitating, oxidizing, and ozonizing the indigo-liquor during the process of manufacture, substantially as set forth.

388,704. ROAD-CART. LEVAN MILLER, Delaware, Ohio. Filed Apr. 19, 1888. Serial No. 271,153. (No model.)



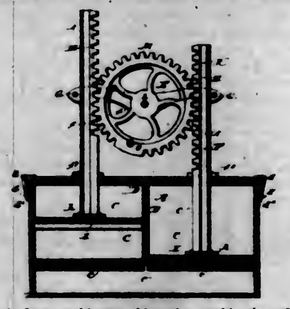
Claim.—1. The combination, in a road-cart, of the shafts A, provided with cross-bars B and C, an axle curved upwardly centrally, a brace bar or rod, F, with a central member, *f*, brace-bars L, extending from the axle to the cross-bar B, converging spring-bars K K, pivotally attached to the cross-bar B, the rear ends thereof being secured to a bar, I, attached to the upper portion of the rear spring, an overhanging rest mounted upon the rear ends of the spring-bars K, and a body suspended from the bar I and pivotally from the spring-bars K by means of spring-connections N, the parts being organized substantially as shown, and for the purpose set forth.

2. The combination, in a road-cart constructed substantially as described, of the converging spring-bars K K, upon which the seat is mounted, loops *l l*, to which the front ends of the spring-bars are pivotally secured, said loops being connected to the cross-bar B, so as to have a rocking movement thereon, and an elliptical spring connecting the rear portion of the spring-bars to the axle, substantially as shown, and for the purpose set forth.

388,705. FINGER-BAR. LORENZO D. MERRIAM, Rockford, Ill. Filed July 7, 1887. Serial No. 243,641. (No model.)

Claim.—The combination, with the finger-bar, of the rib fixed to the under face of the bar, the said finger-bar and rib being provided with rivet-holes, the rib having its rivet-holes farther separated than the holes in the finger-bar, whereby the bar is retained in its curved form, substantially as set forth.

388,706. WASHING-MACHINE. WILBUR F. MOORE, Franklin, Ky. Filed Sept. 24, 1887. Serial No. 250,003. (No model.)

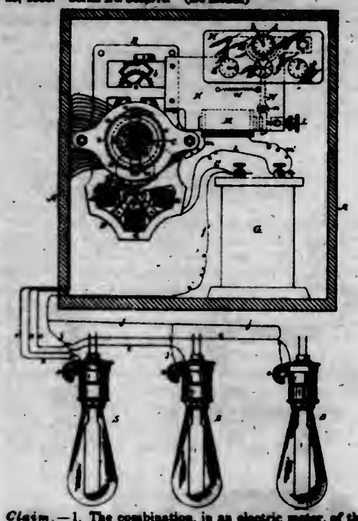


Claim.—1. In a washing-machine, the combination of the suds-box A, having the compartments C C, top bar secured on the upper side of the suds-box, castings F F, secured to the upper side of the bar and comprising the vertical arms *f f* and the horizontal arms *f'*, provided at the centers with aligned bearings *f''*, vertical sliding-dasher shafts H H, operating between the vertical arms of the adjacent castings F, and having the dashers I I on the lower ends to operate in the compartments C, the shaft journaled in the aligned bearings *f''*, and the gear-wheel M, secured on the said shaft and adapted to mesh with gear-teeth on the inner sides of the said dasher-shafts, whereby when the said wheel is rotated one of the shafts will ascend and the other will descend simultaneously, substantially as and for the purpose specified.

2. In a washing-machine, the combination, with the suds-box A, having the compartments C C, of the top bar, D, arranged across the said box, the parallel castings F F, secured to the upper side of the said bar, and having a horizontal arm, *f'*, provided with a bearing, *f''*, the vertical dasher-shafts H H, guided by the said castings and having gear-teeth on the inner sides, and the dashers I I on the lower ends to operate in the compartments C, shaft L, journaled in the bearings *f''* and extending forward beyond the same, the gear-wheel M, secured to the said shaft between the castings and meshing at opposite sides with the gear-teeth on the dasher-shafts, the lever N, secured on the front end of the shaft L, and having the depending arm P at the center, and the forwardly-extending bar O, secured to the wheel at the lower part and adapted to have the lower end of the arm P secured thereto, all constructed and arranged substantially as and for the purpose specified.

3. In a washing-machine, the combination, with the suds-box A, having the compartments C C, of the top bar, D, the castings F F, comprising the vertical arms *f f*, provided at the lower ends with the plates *f''*, adapted to be secured to the top bar, and the horizontal arm *f'*, provided at the center with the aligned bearings *f''*, the vertical arms *f* being also provided on the inner sides with the ribs or projections G', the vertical dasher-shafts H H, provided in the front and rear sides with grooves K K to receive the ribs or projections G', and also having the gear-teeth on the inner sides and the plates *h h* on the lower ends, the dashers I I, secured to the plates *h h* and adapted to operate in the compartments C C, shaft L, journaled in the bearings *f''*, gear-wheel M, secured to the said shaft and meshing with the gear-teeth on the dasher-shafts, and the lever N, secured to the shaft L and having a depending arm, P, connected at the lower end to the gear-wheel, all constructed and arranged substantially as specified.

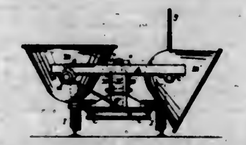
388,707. ELECTRIC METER. HENRY G. MORRIS, Philadelphia, Pa., assignor to the Brush Electric Company, same place. Filed Feb. 25, 1888. Serial No. 265,378. (No model.)



Claim.—1. The combination, in an electric meter, of the registering mechanism, a magnet for actuating the same, a commutator controlling the said magnet and having independent terminals connected to the different lamps of the system, an actuating-spring for said commutator, an electric motor, and winding-gear operated thereby and connected to the commutator-actuating spring, all substantially as specified.

2. The combination, in an electric meter, of registering mechanism, a magnet for actuating the same, a commutator controlling said magnet and having independent terminals connected to the different lamps of the system, an actuating-spring for said commutator, an electric motor and winding-gear operated thereby and connected to the commutator-actuating spring, and a single battery supplying the circuits both for the register-operating magnet and for the winding-motor, all substantially as specified.

388,708. DUMPING-CAR. JOHN W. MERRITT, Denver, Colo., assignor to the Colorado Iron Works, same place. Filed May 1, 1888. Serial No. 272,464. (No model.)



Claim.—1. In combination, a suitable truck frame and wheels, and a receptacle-carrying frame centrally supported on the truck-frame, the receptacles pivotally supported upon opposite sides of the central support to swing outwardly, said frame being balanced by the receptacles upon opposite sides, substantially as described.

2. In combination with a suitable truck frame and wheels, a receptacle-carrying frame, as A A' D D', swiveled to said truck-frame, so as to have movement in a horizontal plane, and the receptacles pivotally supported upon opposite sides of said receptacle-carrying frame, substantially as described.

3. In combination, the truck-frame, the beam F, the bars D D', the block E, the supporting-pin *d'*, the beams A A', and the receptacles pivoted thereto, substantially as described.

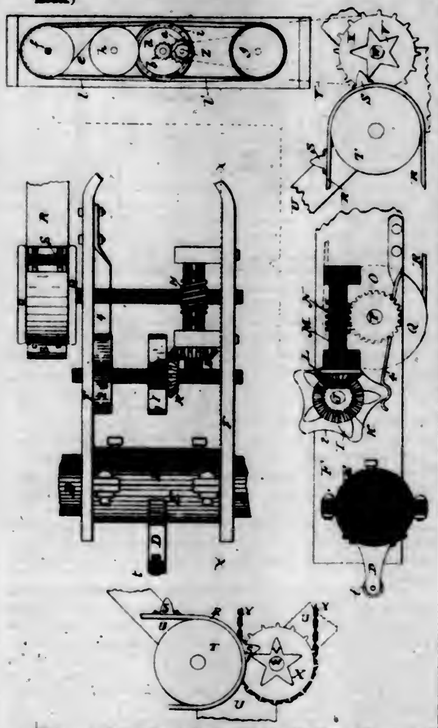
4. In combination, the receptacle-supporting frame centrally swiveled, the receptacles pivoted thereto and upon opposite sides of the swivel, the journals of said receptacles being outside the central vertical plane, and limiting-stops for the receptacles, whereby they will remain normally in upright position and swing outwardly when released, substantially as described.

5. In combination, the frame A A', the receptacles pivoted therein,

and the collar or head *d* upon one of the journals and provided with holes to receive a suitable operating-bar, substantially as described.

6. In combination, the pivoted receptacles, the collar or head *d*, provided with teeth, and the catch *e*, substantially as described.

388,709. STREET OR STATION INDICATOR. Charles F. Nicklas, Los Angeles, Cal. Filed Oct. 6, 1887. Serial No. 251,894. (No model.)



Claim.—1. In a station-indicator, the combination, with a car and its indicator proper, of an endless studded belt mounted upon the car and connected by intermediate mechanism with the apron of the indicator, and an arm mounted upon the car-axle to actuate the studded belt and impart an intermediate motion thereto.

2. In a station-indicator, the combination, with a car and its indicator, of a star-wheel, V, a band communicating motion from the star-wheel V to the indicator, a second star-wheel, I, mounted upon the car, a connection between the two star-wheels, and an arm mounted upon an axle of the car and adapted to strike the star-wheel I at each revolution.

3. In a station-indicator, the combination, with a car and its indicator, of a star-wheel, V, a band communicating motion from the wheel V to the indicator, a second star-wheel, I, mounted upon the car, an arm carried by the car-axle and adapted to strike the wheel I, a belt, R, provided with spurs S to actuate the star-wheel, and gearing for transmitting motion from the star-wheel I to the belt R.

4. In combination with a car and its indicator, an arm, D, carried by the car-axle, a star-wheel, I, located in the path of the arm, a second star-wheel, V, also journaled in the car, a belt, R, provided with spurs S and arranged to actuate the wheel V, a band, Y, communicating motion from the star-wheel to the indicator, and a spring, 4, adapted and arranged to prevent the accidental operation of the indicator.

5. In combination with a car and its indicator, the arm D, secured to the car-axle, a shaft, J, journaled in the frame-work and provided with star-wheel I and bevel-gear K, a shaft, M, also journaled in the frame and provided with worm N and gear L, a shaft, P, arranged parallel with shaft J and provided with gear O and band-wheel Q, a frame, U, provided with band-wheel T and shaft W, star-wheel V and sprocket-wheel X, mounted upon the shaft, a belt, R, provided with spurs S and passing about the wheels Q T, and a chain or band, Y, passing about the sprocket-wheel X and about the wheel of the indicator proper.

6. In an indicator, the combination, with a casing, of the rollers *f g*, journaled therein and connected with their shafts by reversely-acting pawls and ratchets, an apron, *c*, secured at opposite ends to the rollers *f g*, and mechanism for imparting motion to the apron.

7. In combination with the casing, the rollers *f g*, journaled therein, an intermediate roller, D, an apron, *c*, secured at its ends to the rollers *f g* and passing over the face of roller *d*, belts *l* and *l'*, passing, respectively, about the rollers *f*, *g*, and *d*, all substantially as shown, and mechanism for imparting motion to the apron.

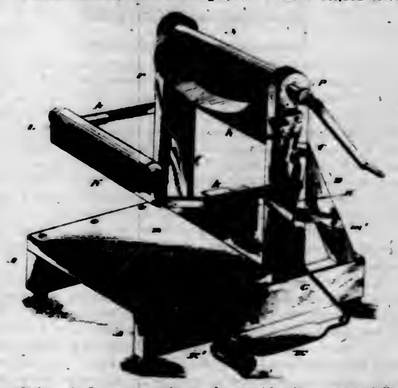
8. In combination with a casing, the rollers *f g*, journaled therein and provided with ratchets *o o'*, an intermediate roller, *d*, provided with pulley *i*, an apron, *c*, connected at opposite ends with the rollers *f g*, pulleys *m* and *n*, mounted loosely upon the shafts of the rollers *f g* and provided with pawls *r r'* to engage the ratchets *o o'*, belts *l l'*, passing about the pulleys *m*, *n*, and *i*, all substantially as shown, and mechanism for imparting motion to the apron.

9. In combination with a casing, rollers *f g*, journaled therein, an apron, *c*, secured at its ends to the rollers, a roller, *d*, interposed between the rollers *f g*, a roller, A, arranged parallel with roller *d* and adapted to press the apron upon the latter, and mechanism for imparting motion to the apron.

10. In combination with a suitable frame-work or casing, rollers *f g*, journaled therein and provided with pawls *r r'*, apron *c*, secured to the rollers *f g*, pulleys *m* and *n*, mounted upon the roller-shafts and provided with ratchets *o o'*, intermediate rollers, *d* and A, the former provided with pulley *i*, belts *l l'*, connecting the pulleys *m* and *n* with the pulley *i*, a gear-wheel, *b*, secured to the shaft of roller *d*, and a gear-wheel, *a*, and sprocket-wheel Z, mounted in the casing, all substantially such as shown.

11. In combination with a car and its indicator proper, a bracket or frame, F, journaled upon one of the car-axles, a rod, G, pivoted at one end to the car and connected at its other end to the bracket or frame F, and mechanism for actuating the indicator-apron, mounted partly upon the bracket or frame F, whereby the car-trucks are permitted to rise and fall independently of the car-body without affecting the operation of the indicator.

388,710. MOP-WRINGER. Elbridge H. Noble and Charles R. Warren, Postville, Iowa. Filed Aug. 4, 1887. Serial No. 246,144. (Model.)



Claim.—1. In a mop-wringer, the combination, substantially as set forth, of a supporting-frame provided with vertical standards having a roller mounted in their upper ends, a transverse rod, A, journaled in the standards, having a lifting-arm secured to one of its ends and a crank-arm secured to its opposite end, a treadle attached to the lower part of the frame and connected to the lifting-arm, a bail, K, pivoted to the lifting-arm and to the crank *h'*, said bail carrying a roller, L, and provided with inwardly-projecting plates *k*, and guides M, secured to the upper part of the standards, with which the plates *k* are adapted to engage.

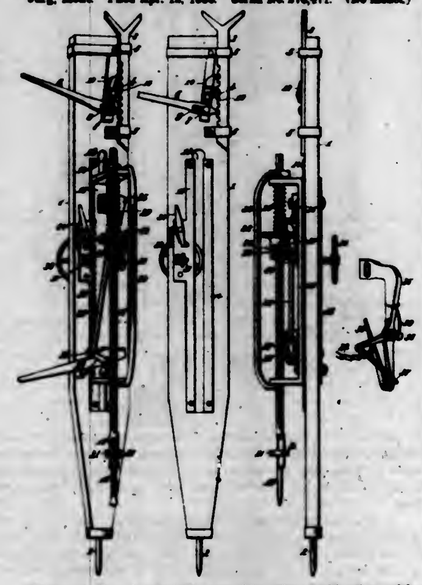
2. In a mop-wringer, the combination, substantially as described, of the frame, the transverse rod A, the lifting and crank arms H and *h'*, secured to the ends of said rod A, the serrated pawl *l*, attached to the lifting-arm, the stop *g*, with which said pawl *l* is adapted to engage, the bail carrying a roller and having inwardly-projecting plates *k*, the guide M, adapted to be engaged by the plates *k* of the bail, a treadle attached to the lower part of the frame having members E and E', and a link-rod, G, connecting the free end of the member E of the treadle with the lifting-arm H.

3. In a mop-wringer constructed substantially as described, the combination of a swinging bail having a roller journaled therein and provided with inwardly-projecting plates *k*, and guides M on the standards of the frame, with which said plates *k* engage, said guides having outward projections *o* and *o'* and pawls *p*, as set forth.

4. In a mop-wringer, the combination, substantially as described, of the frame having standards carrying a roller in their upper ends, the transverse rod having bearing in said standards, the lifting and crank arms respectively attached to the opposite ends of the said rod, the bail pivotally attached to the crank and lifting arms and carrying a roller, and a treadle connected to the lifting-arm.

5. In a mop-wringer, the combination, with the frame having standards carrying a roller, the lifting and crank arms on opposite sides thereof, and the swinging bail carrying a roller attached at its ends to the lifting and crank arms, of the angle-iron *a*, secured to the one side of the base-frame, forming a bearing and having a downward projection, *a'*, at its outer end, the treadle composed of the members E and E', and the rod G, connecting the free end of the member E with the lifting-arm, substantially as described.

388,711. ROCK-DRILLING MACHINE. John A. Parmley, Radersburg, Mont. Filed Apr. 12, 1888. Serial No. 270,471. (No model.)



Claim.—1. In a hand drilling-machine, the combination, with a drill-frame vertically adjustable upon a supporting-post, of a spring-actuated drill-stock mounted in said frame, a clevis fulcrumed on the frame and connected to the drill-stock, and a lever straddled by the clevis and having its fulcrum upon the pivotal point of the latter, substantially as described.

2. In a hand drilling-machine, the combination of a supporting-post, a drill-frame adjustable along the post, a spring-impelled drill-stock, a clevis pivoted to the drill-frame, a rod pivoted to the clevis and connected with the drill-stock, a hand-lever straddled by the clevis and fulcrumed upon the pivot of the latter, a ratchet-wheel on the drill-stock, a bracket-arm secured to the drill-frame and having an elastic arm arranged in the path of the ratchet-wheel, and an inclined spring-impelled trigger pivoted on said bracket-arm, substantially as described.

3. The combination, with the supporting-post having the drill-frame adjustable thereupon, of guides on the end portion of the post, a rack-bar sliding on the post in said guides and having a bifurcated outer end, a pivot or fulcrum on the post, a swinging and longitudinally-movable hand-lever provided with a longitudinal slot engaging the pivot or fulcrum, and pawls on the post engaging the sliding rack-bar, substantially as described.

4. In a hand drilling-machine, the combination, with a supporting-post having a longitudinal slot, of a drill-frame having its supporting-bolts adapted to slide in said slot, a pinion meshing with a rack on the drill-frame, a spring-actuated drill-stock, a lever fulcrumed on the drill-frame, and a clevis straddling said lever and connected to the drill-stock by a connecting-rod, substantially as described.

5. In a hand drilling-machine, the combination, with a supporting-post, of a longitudinally-adjustable drill-frame, a spring-actuated drill-stock moving therein and having a ratchet, a clevis pivotally mounted on said frame and connected to the drill-stock by a pivoted connecting-rod, a lever straddled by the clevis and having the pivot of the clevis, an elastic detent engaging with a ratchet, and a spring-actuated trigger pivotally mounted on the bracket-arm carrying the detent, said trigger being inclined relatively to and lying in the path of the ratchet during part of its upward stroke, substantially as described.

388,712. FRAME FOR PHOTOGRAPHS, PICTURES, &c. Hilarius Patterer, Jersey City, N. J. Filed Nov. 18, 1887. Serial No. 255,189. (No model.)



Claim.—1. The frame A, having an opening, *a*, combined with the back board, B, and the glass *b*, carried by said back board, and with a picture-holder on said back board and behind said glass, whereby the picture and glass may be carried by the back board wholly independent of the frame, substantially as described.

2. The combination of the frame A, having an opening, *a*, back board, B, having cleats *f*, and recesses in said cleats for the reception of a picture, whereby the picture may be carried by the back board and independent of the frame, substantially as described.

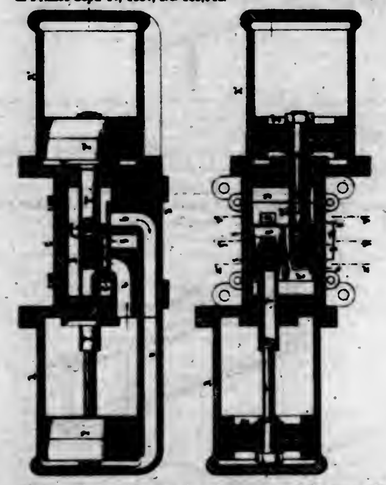
3. The combination of the open frame A, hinged back board, B, having recessed cleats *f f*, and glass *b*, held on said cleats in front of the picture-recesses of said cleats, substantially as described.

388,713. PRINTER'S TYPE. James G. Pavyer, St. Louis, Mo. Filed June 14, 1887. Serial No. 241,374. (No model.)



Claim.—A type having the foot or bottom of the base solid and of the full area of the type and recess in the side, leaving the type solid at each of the four vertical corners and a supporting-wall beneath the center of the face.

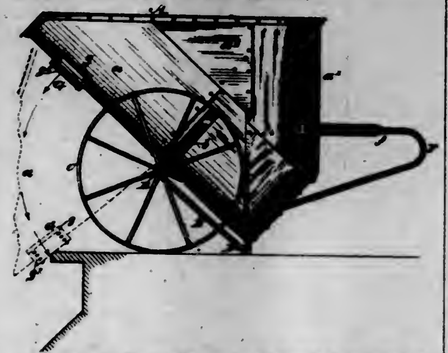
388,714. PISTON METER. Pierre Perret, Chaux-de-Fonds, Switzerland. Filed May 31, 1888. Serial No. 275,572. (No model.) Patented in France Sept. 17, 1887, No. 185,911.



Claim.—The combination, in a fluid-motor, of the two cylinders, the chest interposed between and secured to the inner adjacent ends of the cylinders, the ports leading respectively from the chest to the front and rear ends of the cylinders, the two sliding valves arranged side by side and both located above the said ports to the cylinders, the two sleeves sliding respectively through the opposite ends of the chests and each secured directly to one of the sliding valves, from which they extend in opposite directions, and the pistons having rigidly-attached piston-rods extending into and sliding within the sleeves

and provided with shoulders, substantially as and for the purposes described.

388,715. BARROW. William H. Pearl, West Hentmont, Pa. Filed Apr. 21, 1888. Serial No. 271,296. (No model.)



Claim.—1. The wheelbarrow herein described, consisting of a body portion composed of the bottom part, *a*, curved in a transverse direction to its length, the back parts, *a'*, and the sides a^2, connecting said bottom and back parts and provided with an axle and wheels, handle, and feet, said parts being combined substantially as described.

2. In a wheelbarrow, a body portion consisting of a bottom piece, *a*, curved in a transverse direction to its length, the back part, *a'*, and the sides a^2, connecting said bottom and back, said parts being combined substantially as and for the purpose set forth.

3. A wheelbarrow having the body A with bottom part, *a*, curved in a transverse direction to its length, the axle B, and wheels C, a handle secured to the body on the side opposite to the discharge side, and a bumper secured on the central line of said bottom part, *a*, said parts being combined substantially as described.

4. In a wheelbarrow, the combination of the body portion, an axle with wheels, feet D, and brace-bar E, connecting said feet D to the axle, substantially as and for the purpose set forth.

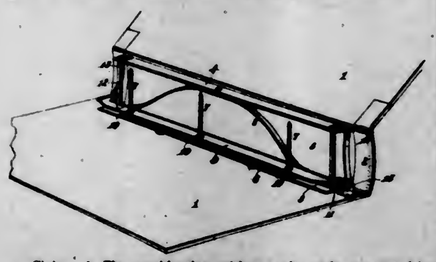
388,716. FUSE-LIGHTER. William H. Randall, Chicago, Ill. Filed June 6, 1888. Serial No. 276,232. (No model.)



Claim.—1. A fuse-lighter consisting of a strand of wire coiled upon a candle-wick and formed into hooks for inclasping the fuse, substantially as shown and described.

2. A fuse-lighter having a coiled portion for securing a compact and inflammable candle-wick and right-angular portions provided with outer hooked ends, as shown and described.

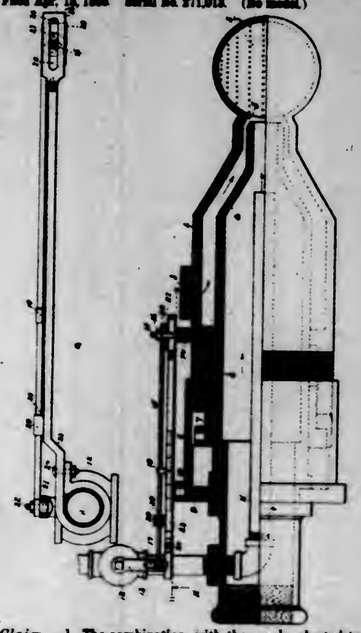
388,717. TEMPORARY BINDER. William D. Ready, New York, N. Y. Filed Mar. 28, 1887. Serial No. 232,680. (No model.)



Claim.—1. The combination, with opposite stubs connected by notched guide-rods, of pins projecting from one of said stubs, a clip mounted on said guide-rods and adapted to be moved endwise to engage the notched ends of said rods, said clip being provided with perforations to engage the pins that project from one of the stubs, and a spring to force the clip onto said pins when disengaged from the guide-rods, substantially as described.

2. The combination of the stubs 3 and 4, of unequal width, the pins 7, connected with the wider stub and projecting slightly above the narrow stub, the guide-rods 12, having notches 13, the clip 9, mounted on said guide-rods and provided with perforations 10, to engage the pins, and the spring 8, to force the clip onto said pins, substantially as described.

388,718. HYDROCARBON-BURNER. Joseph Ross, Oil City, Pa. Filed Apr. 13, 1888. Serial No. 271,013. (No model.)



Claim.—1. The combination, with the nozzle adapted to reciprocate for regulating the admission of steam, and a pipe having the valve for governing the admission of oil, of a scale and a rod connected to said nozzle and valve and carrying an index-hand, as set forth.

2. The combination, with the nozzle capable of reciprocating, and the oil-pipe having a cock, of a lever for operating said cock, a lug on said nozzle, a rod connecting said lever and lug, a fixed strip or rod, 23, and a scale and index-hand carried by said strip 23 and rod, respectively, as set forth.

3. The combination, with the nozzle 1, having a lug thereon, and the oil-pipe having a cock thereon, of a lever for operating said cock, and two approximately parallel rods having a scale and index-hand, respectively, the one of which rods being secured to said oil-pipe and the other to said lever and lug, substantially as set forth.

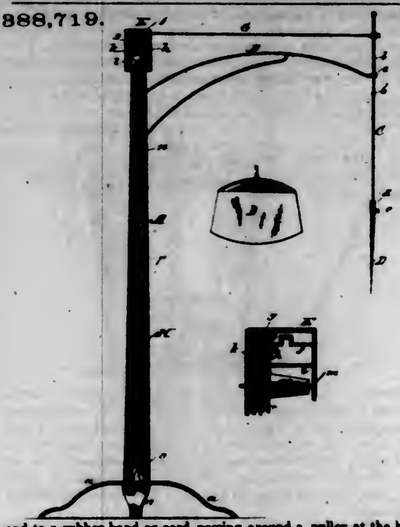
4. In a hydrocarbon-burner, the combination, with the nozzle 1, adapted to reciprocate for regulating the admission of the steam, and the oil-pipe 11, having a cock, of a lever having a slot for operating said cock, a lug on said nozzle, a pin projecting from said lug, the rod 18, having a perforation at one end, fitting over said pin, an anti-friction roller journaled to the other end of said rod and working in said slotted lever, the rod or strip 23, secured to said oil-pipe and having a slotted end fitting over said pin, and an index-hand and scale carried by said rods 18 and 23, as set forth.

5. In a hydrocarbon-burner, the combination, with the nozzle 1, the oil-pipe 11, having a cock, and a lever, 13, for operating said cock, of the lug 14 on the nozzle 1, having the pin 15, provided with a nut, the rod 18, secured to lever 13 and having the index-hand thereon, and perforated plate 20, fitting over said pin, the rod or strip 23, having a scale thereon, riveted around said oil-pipe, and having a plate at right angles to its face, provided with a slot, through which said pin passes, one of said rods being bent to make it parallel with the other, and a washer between said rods, as set forth.

388,719. FLY FAN OR BRUSH. Henry Reisner, White, Tex. Filed Apr. 5, 1887. Serial No. 233,702. (No model.)

Claim.—1. In an automatic fly fan or brush, a suitable hollow post terminating at its upper end in a casing, a crank-shaft and conical pulley located therein, and gearing connecting the crank-shaft with the pulley-shaft, in combination with a cord connected to the pulley

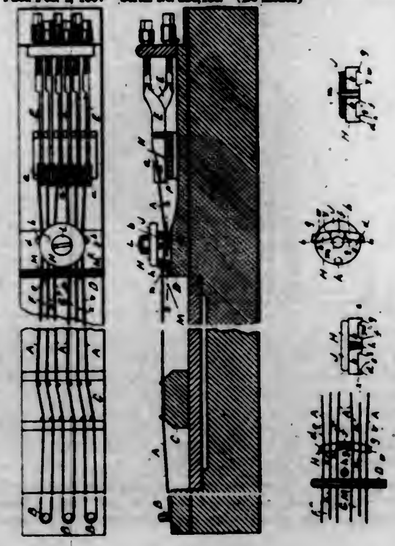
388,719.



and to a rubber band or cord passing around a pulley at the base of the post, said rubber cord or band at one end being connected thereto, a pitman-rod connecting the crank-shaft with the arm carrying the fan or brush, said arm being adjustably connected to its pivotal support, substantially as and for the purpose set forth.

2. The improved fly-fan described, consisting of the hollow post A, provided with legs *a*, and enlarged at its upper end to form a casing, B, arm B, connected to said post, near the top thereof, and braced, as shown, the fan-carrying arm C, pivoted to said arm, transverse shafts *i m*, and crank-shaft *f*, journaled in said casing, pinion *g* on the shaft *f*, gear-wheel *h* and pinion *k* on the shaft *i*, the gear-wheel *l* and conical pulley F on the shaft *m*, the pitman-rod G, connecting said crank-shaft and arm C, the pulley *o*, journaled in the bottom of said post, cord *n* within said post and secured at one end to the larger end of said conical pulley, and the elastic band H, arranged within said post, passed under said pulley *o*, and secured at one end to the interior of said post and at the other to the other end of the cord *n*, all substantially as shown and described, and for the purpose specified.

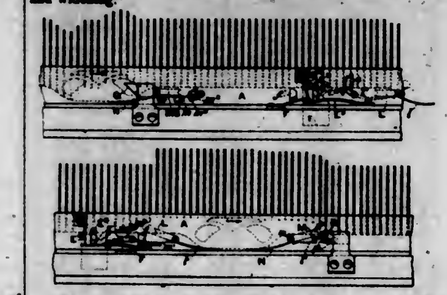
388,720. PIANO-FORTE. John P. Richardson, Cambridge, assignor to the Mason & Hamlin Organ and Piano Company, Boston, Mass. Filed Feb. 1, 1887. Serial No. 226,189. (No model.)



Claim.—The combination, with the strings of a piano representing two notes, of a plate or bar, J, having an under bearing-edge, *i*, for the strings and legs *d f g* A, by which it rests upon the iron frame and secured thereto by a screw passing through a central opening in the plate, the legs *d f g* having side bearing-edges, for the purpose specified.

388,721. CIRCULAR-KNITTING MACHINE. Harry C. Reisner, Philadelphia, Pa., assignor of one-half to Thomas A. Pearce, same place. Filed May 10, 1887. Serial No. 237,778. (No model.)

Brief.—The invention consists in the improved means for raising needles to the idle level collectively as well as individually and for depressing them in the same manner during the process of narrowing and widening.



Claim.—1. The combination, with the cam-cylinder, of the lifting-cam E, arranged in guides formed within the ring D, means, substantially as set forth, whereby said cam may be raised and maintained raised during a portion of the cylinder's rotation, and the cam G, whereby on reaching the desired limit the cam E is thrown down flush with the top of said ring, as and for the purposes specified.

2. The combination, with the lifting-cam E, arranged with reference to the ring D substantially as set forth, of the cam-cylinder having the slot E^2, pin E', a spring arranged beneath said pin, a detent engaging with said spring, and means, substantially as set forth, whereby said detent may be tripped and the spring permitted to rise at a definite point in the rotation of the cylinder, as and for the purposes specified.

3. The combination, with the cam-cylinder having vertical cavities in its ring D, of the lifting-pawls L M, pivoted within said cavities and provided with actuating-springs *l* N, respectively, the spring-fingers engaging beneath the under side of said pawls, the stems carrying said fingers and extending out through the periphery of the cam-cylinder, and means, substantially as set forth, whereby said fingers may be raised and lowered and secured in a raised position.

4. The combination, with the spring-actuated lifting-pawl, of the spring-actuated finger on which it rests, the stem and winch connected therewith, and the funnel-shaped cam *f'*, adapted when thrown into play to engage with and move said winch into the position for raising the finger, as and for the purposes set forth.

5. The combination, with the depressing-pawl, of the springs $A' A^2$, arranged substantially in the manner set forth, to hold the pawl at a definite angle on either side of its central position, substantially as specified.

6. The combination, with the depressing-pawl, of a fastening device, substantially as set forth, whereby said pawl may be rigidly secured to operate as a cam, in the manner specified.

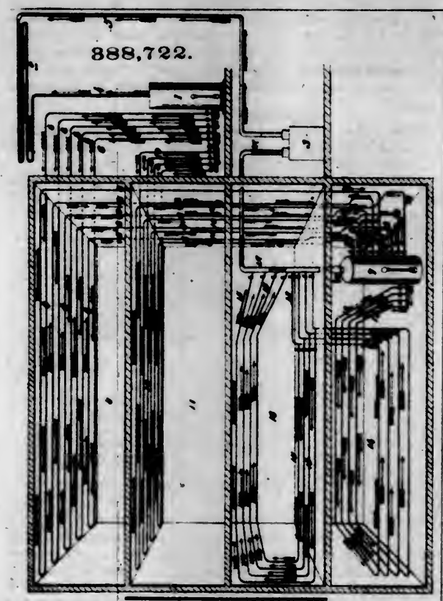
7. The combination, with the depressing-pawl, of the pin P', collar U', nut P^3, and spring *s*, substantially as and for the purposes set forth.

388,722. AMMONIA SYSTEM FOR COOLING ROOMS, &c. John Ring, St. Louis, Mo. Filed Apr. 28, 1887. Serial No. 236,576. (No model.)

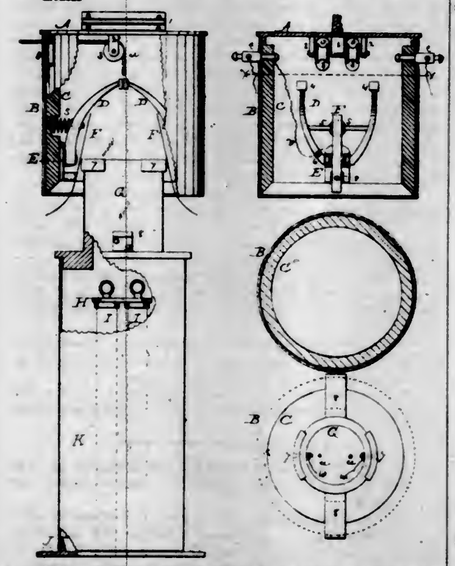
Claim.—1. In combination with a pump, an accumulator and a receiver, pipes forming a communication between said receiver and the accumulator, and a pipe forming a communication between the accumulator and receiver, the area in cross-section of the inlet-pipe of the accumulator being greater than the area of the outlet-pipe, and said pipes being arranged, respectively, to cool one or more rooms, substantially as set forth.

2. In an ammonia cooling system, the combination of the receiver 1, condenser 2, pump 3, pipe 5, pipe 6, communicating with the receiver and located within a room, accumulator with which the pipes 6 communicate, pipes 13, located within a room and communicating with the accumulator, pipes 15, communicating with the pipes 13 and located within a room, 16, and a pipe, 12, with which the pipes 15 communicate, substantially as and for the purpose set forth.

388,722.



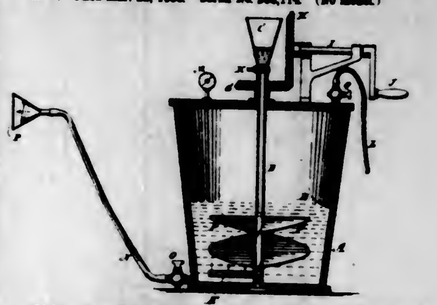
388,723. ELECTRIC-ARC-LIGHT SUPPORT. Benjamin Schardt and Gronen Journ, Dayton, Ohio, assignors of one-third to John R. Fletcher, same place. Filed Jan. 25, 1883. Serial No. 261,236. (No model.)



Claim.—1. The hood comprising the top plate, A, with clamp 1 for the suspending-cable and lugs 2 for the pulleys, the metallic outer cylinder, B, and the wooden or insulating inner cylinder, C, in combination with the spring-actuated connecting-pieces D D, pivoted to the said insulating-cylinder, the spring-plate connections F F, attached thereto, and the connecting-plate 7 7 of the shield, attached to an electric lamp to form two circuits alternately with the generator, one external to the lamp and the other through the same, substantially as set forth.

2. The shield comprising the wooden part G, having plates 7 7 and the arresting-lugs 8 8, the metallic cylinder K, and the flange J, for attachment to the top plate of an arc lamp, substantially as set forth.

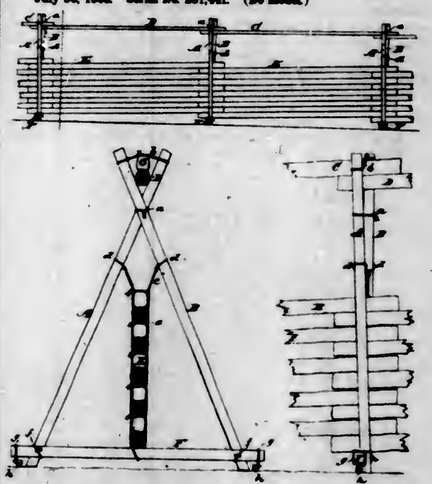
388,724. MIXING APPARATUS. Richard Schuch, New York, N. Y. Filed Mar. 22, 1888. Serial No. 268,114. (No model.)



Claim.—1. A liquid-mixing apparatus consisting of the reservoir A, having a delivery-outlet, N, a vertical axially-rotating liquid-conducting-tube, D, having rigidly-attached stirrer-blades F, and a lateral arm, E, below said blades, provided with perforations, a gear, G, fixed on the tube, a liquid-holding hopper, C, connected with the upper end of the tube above said gear and provided with a stop-cock, K, and a rotary gear, H, for revolving the gear fixed on the tube, substantially as described.

2. A liquid-mixing apparatus consisting of the reservoir A, having the valved outlet N at its bottom and an air-forcing tube, L, at its top, the vertical axially-rotating liquid-conducting tube D, having the rigidly-attached perforated arm E, and screw-blades F, revolving with the tube in a horizontal plane, a gear, G, fixed on the tube above the top of the receiver, a liquid-holding hopper, C, mounted upon the upper end of the tube above the said gear and provided with a stop-cock, K, and a gear, H, for revolving the gear fixed to the tube, substantially as described.

388,725. FENCE. Nathaniel Shapteall, Flint, assignor of one-half to John J. Kinney, Angola, Ind. Filed Jan. 27, 1887. Renewed July 30, 1888. Serial No. 281,441. (No model.)



Claim.—The herein-described fence, consisting of the crossed posts A B, binding-wire *a*, transverse anchor-bar F, wire *c*, passed under said bar and having its ends secured to said posts, rails E, supported by said wire *c*, the loops *f*, pivotally securing said bar to the lower ends of the posts, the stakes A, and wire loops *g*, embracing the ends of said bar and secured to said stakes, whereby said posts, rails, and anchor-bar are free to vibrate laterally, all substantially as shown and described, and for the purposes specified.

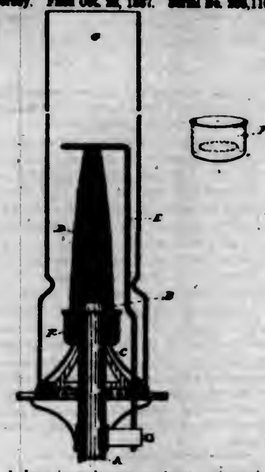
388,726. ARTIFICIAL-STONE COMPOSITION. Charles A. Shaw, Philadelphia, Pa., assignor of one-half to John W. Shaw, Central City, Nebr. Filed June 14, 1888. Serial No. 277,103. (No specimens.)

Claim.—1. The within-described compound of rock-salt, muriatic acid, and sal-ammoniac as a binder for an artificial-stone composition.

2. A compound in which a body, such as clay, sand, loam, &c., is mixed with a chemical binder composed of rock-salt, sal-ammoniac, and muriatic acid, substantially as described.

3. A compound of rock-salt, muriatic acid, and sal-ammoniac, mixed with a body material and with coal-tar, substantially in the manner and proportions set forth.

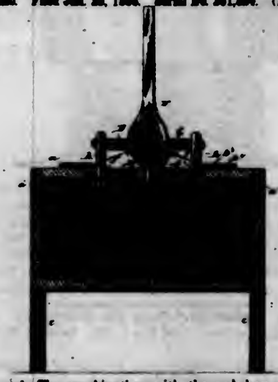
388,727. INCANDESCENT GAS-LAMP. Henry Shaw, New Orleans, La., assignor to the Wabash Incandescent Gas Light Company, of New Jersey. Filed Oct. 28, 1887. Serial No. 253,116. (No model.)



Claim.—1. In an incandescent gas-lamp, a protecting-cup adapted to receive and protect the lower end of a fragile mantel, substantially as described.

2. The combination of the burner and the incandescent mantel suspended above the burner and having its lower edge below the burner-outlet and the protecting-cup below and surrounding the lower edge of said mantel to shield it from injury, substantially as described.

388,728. WASHING-MACHINE. Josiah Shepherd, Jeffersonville, Ohio. Filed Jan. 26, 1888. Serial No. 261,894. (No model.)



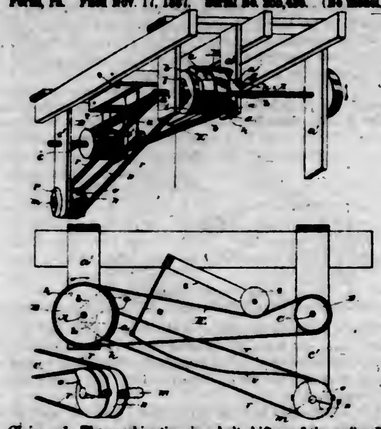
Claim.—1. The combination, with the suds-box, of the lid, the rotatable circular turn-table mounted in the lid and forming in connection with the same a complete cover for the suds-box, the lever mounted on the turn-table, and the plunger connected to the lever and extending through the turn-table into the suds-box, as specified.

2. The combination, with the suds-box and the cover making a steam-tight joint therewith, of the turn-table attached to the cover, the shaft journaled thereupon, the lugs rising from said turn-table, the lever-handle pivoted on said shaft, the transverse bars secured to said lever above its pivotal point, the plunger-rods, and the plungers, substantially as specified.

3. The combination, with the suds-box and the lid of the turn-table comprising the upper plate, *b*, and the lower plate, *b'*, secured together by bolts, the lever mounted on the turn-table, and the plungers connected to the lever, as set forth.

4. In a washing-machine, a suds-box having the door *a*, provided with a circular opening having the beveled recess *b*, the turn-table B, comprising the outer plate, *b*, having the beveled edge *b'* to rest in the recess *b*, and the inner plate, *b'*, connected to the outer plate by pins and bolts and engaging under the lid or cover *a* around the opening therein, and the plunger and operating-connections mounted on the turn-table, as set forth.

388,729. BELT SHIFTER AND TIGHTENER. Samuel Shive, Perin, Pa. Filed Nov. 17, 1887. Serial No. 255,436. (No model.)



Claim.—1. The combination, in a belt-shifter, of the pulley B, the belt E, the guard-plates having the arms hinged or pivoted to the axis of the pulley, and the revolubie disk loose on the same shaft with pulley B, and having the steps to swing the guard-plates around the pulley, and thereby cause the same to pass between the pulley and the belt and release the latter therefrom, substantially as described.

2. The combination of the shaft A, having the pulley B, the countershaft C, having the pulley D, the endless belt connecting the pulleys B and D, the guard-plates having the arms pivoted to the shaft A, the disk journaled on shaft A, adapted to engage and operate the guard-plates, the pivoted frame having the pulley or roller adapted to bear upon the belt to tighten the same, the shaft *n*, and connecting-straps between the same and the disk and the frame *s*, whereby the said disk may be caused to interpose the guard-plates between the pulley D and the belt and simultaneously cause the frame *s* to raise the pulley or roller from the belt, substantially as described.

3. The combination, in a belt-shifter, of the pulley B, the belt E, the guard-plates having the arms pivoted to the axis of the pulley and adapted to be swung thereon, for the purpose set forth, and the stops to retain the guard-plates in position, substantially as described.

388,730. ROLLER-MILL. Alpheus J. Sheets, Bloomville, Ohio. Filed Jan. 31, 1888. Serial No. 262,826. (No model.)

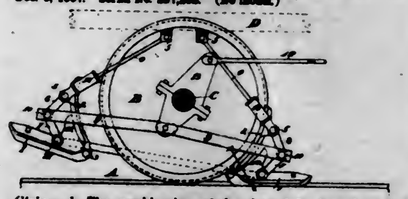


Claim.—1. The combination, with the case and the rolls journaled therein at an angle, as described, of the feeder-box pivoted in said case above the upper roll, the shaker-bar *i* on the pivot of said box, and the cam on the shaft of the upper roll and acting on said shaker-bar, substantially as described.

2. The combination, with the case and the roll B, journaled therein, of the movable rolls C, the bars D, forming bearings therefor, the bars E, pivotally connected with the case at one end and pivotally connected with the bars D, the bars G, a yielding connection between said bars G and E, and the rock-shaft K, journaled on said case, with its ends acting on the bars E, substantially as shown and described.

3. The combination, with the case, the rolls B C, the bars D, and the bars G, of the bars E, pivotally connected with the said case and with the bars D, the set-screws H, tapped through the bars G and bearing on the bars E, the tension-screws I, and the springs *e* on said screws, substantially as shown and described.

388,731. CAR-BRAKE. Joseph W. Sims, Cincinnati, Ohio. Filed Dec. 8, 1887. Serial No. 257,202. (No model.)



Claim.—1. The combination of the shoes 1 2, pivoted at their forward points and connected by link-levers 6 7, and hinged to a connecting-rod, 9, suspended upon the oscillating lever 13, for raising and lowering the brake and simultaneously to move the toggles, substantially as specified.

2. In combination with the brake-shoes 1 2, hinged together and suspended by an operating-lever, the suspension-rod 4, attached to the car-frame, and the link 9, connected to a lever attached to the car-axle, substantially as specified.

3. In combination with the shoe-brakes 1 2, hinged together, lever mechanism for lowering, raising, and spreading the same, and the extensible suspension-rod 4, connected to the car and to the brake-shoe, substantially as herein specified.

4. In combination with the compound shoe-brake 1 2, hinged together and operated by lever spreading and raising and lowering mechanisms, the suspension-rod 4, connected to the shoe by the spring and housing, whereby the oscillation of the rod 4 may take place without affecting the application of power to the brake, substantially as specified.

5. In combination with the brake-shoes 1 2, pivoted together, the extension-rod 4, formed of two sections, one connected to the brake and the other to the platform of the car, with a housing supporting a spring to form the extensible suspension-rod, substantially as specified.

6. In combination with an oscillating lever, 13, journaled upon the running-gear of the car, a track and wheel brake composed of the shoes 1 and 2, pivoted together, a toggle mechanism connecting said shoes with each other and with the oscillating lever 13, and means, substantially as described, for suspending the brake-shoes and operating devices, substantially as set forth.

7. In combination with a track and wheel brake composed of the shoes 1 and 2, pivoted together, the oscillating lever 13, journaled upon a car running-gear, a toggle mechanism connecting the shoes and oscillating lever, an extensible suspension-rod, 4, the hand-lever 15, and the connecting-rod 14, substantially as described.

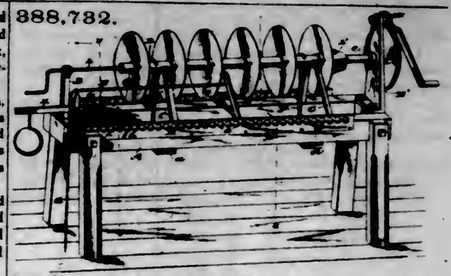
8. The combination, with two sets of track and wheel brakes suspended in front and rear of the wheel and composed of shoes 1 and 2, pivoted together, of an oscillating lever, 13, journaled on the car running-gear, toggle links or levers connecting the shoes of each set together and connecting both sets to said oscillating lever, and means for actuating said lever, substantially as described.

9. The combination of the pivotally-connected shoes 1 and 2, suspended in sets in front and rear of the car-wheels, and having bearing-surfaces conforming, respectively, to the track and wheels, oscillating levers 13, journaled on the car running-gear, links or levers 6, 7, and 9, connecting said shoes to the oscillating levers, extensible suspension-rods 4, and means for actuating the oscillating levers, substantially as described.

388,732. MACHINE FOR GRINDING HARROW-DISKS. Edward A. Sloat, La Fargeville, N. Y. Filed May 17, 1888. Serial No. 274,151. (No model.)

Claim.—1. The combination, in a device for sharpening disks, of a frame having supports and means for attaching a disk-carrying shaft thereto, side strips, E, having a series of perforations, *e*, a cutter

388,732.



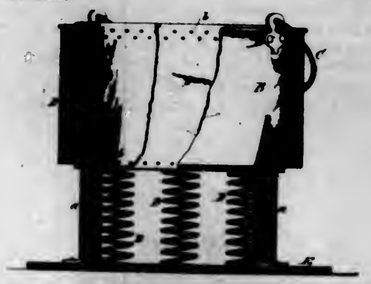
having a cross-bar which engages with the perforations *e*, and a chuck connected to the driving-shaft for rotating the disk-carrying shaft, substantially as shown, and for the purpose set forth.

2. In a device for sharpening harrow or cultivator disks, a frame having bearings for the support of the disk-carrying shaft, and mechanism for rotating said shaft, side strips, E, provided with perforations *e*, a cutter attached to a cross-bar which engages with said perforations, and a weighted lever and chain, G, connected to said lever and cutter, substantially as shown, and for the purpose set forth.

3. The combination, in a device for grinding or sharpening disks, shaft-supports attached to the main frame, so as to hold the disk-carrying shaft in its bearings, a driving-shaft provided with a chuck for engaging with one end of the disk-carrying shaft, and the cutter adjustably secured to a frame and held automatically in engagement with one of the disks by a weighted lever connected to the cutter, the parts being organized substantially as shown, and for the purpose set forth.

4. The combination, in a device for sharpening disks constructed substantially as shown, of a frame provided with perforated side pieces, E E, of a cutter having a horizontal bar, one end of said bar being screw-threaded and provided with an adjusting-nut, the cutter projecting from the opposite end of said bar, substantially as shown, and for the purpose set forth.

388,733. VESSEL FOR TRANSPORTING BREAKABLE GOODS. Lena Sloan, Wausau, Wis. Filed May 30, 1888. Serial No. 275,467. (No model.)



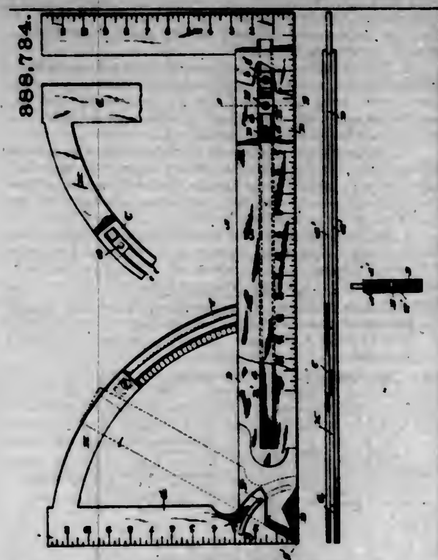
Claim.—A transporting-vessel comprising a casing, a bail to said casing, a support for the casing, including a base of greater diameter than the casing, and standards, and an interior vessel moving loosely within the casing, mounted on springs resting on the base, with its bottom normally below the bottom edge of the casing, and said interior vessel provided with apertures at top and bottom for tying cords, all substantially as shown and described, and for the purpose specified.

388,734. COMBINED SQUARE AND PROTRACTOR. Joseph D. Smith, Rising City, Nebr. Filed May 5, 1888. Serial No. 272,887. (No model.)

Claim.—1. The combination, in a carpenter's square having a slotted arc-shaped member, C, of the arm G, with a projecting arc-shaped member, H, adapted to be connected to the arm C by a set-screw, the lower end thereof having a slot, *g*, above its point, and a pin, F, connecting the parts to each other, substantially as shown, and for the purpose set forth.

2. The combination, in a carpenter's square, of the side pieces, A', connected to each other rigidly at one end by an angle-block, B, and near the opposite end by a rivet, a slotted L-square connected thereto so as to be longitudinally adjustable, one of the side pieces A' having a slotted arc-shaped member, C, the arm G, having a curved member, H, means for connecting the same to the member C, and a segmental slot, *g*, through which a pin, F, passes, the parts being organized substantially as shown, and for the purpose set forth.

388,735.



388,735. SPOKE-SOCKET. Melvin L. Smith, Batavia, N. Y. Filed Apr. 24, 1888. Serial No. 271,976. (No model.)



Claim.—The combination of the felly having a circular recess, E in its inner side, and provided with notches H in the base of said recess, the spoke having its tenon entering the felly, and the casting fitting in the recess E, having lugs G, engaging the notches H, the lugs I, adapted to be pressed into the sides of the felly, and the upwardly-projecting lips J, having concave inner faces and bearing against the opposite sides of the spoke, as specified.

388,736. STEAM BELL-RINGER. Gardner B. Snow, Buffalo, N. Y. Filed Oct. 24, 1887. Serial No. 253,193. (No model.)



Claim.—1. In a single-acting engine adapted for use as a motor for ringing bells, the combination, with the cylinder and piston, of a relief-passage communicating with the space in the cylinder at one end, an exhaust-pipe at the opposite end portion of the cylinder, an exhaust-port and a nozzle of less diameter than the exhaust-pipe, placing the said exhaust-port in communication with the exhaust-pipe to discharge the first leakage and produce a partial vacuum and withdraw the leakage around the piston, substantially as described.

2. In a single-acting engine adapted for use as a motor for ringing bells, the combination of the piston, the cylinder having a relief-passage communicating with the space above the piston, and a port for the discharge of the exhaust at the opposite end of the piston, and an exhaust-pipe communicating with the said port by a passage, *a'*, of less diameter than the exhaust-pipe to produce a partial vacuum and withdraw the leakage around the piston, substantially as described.

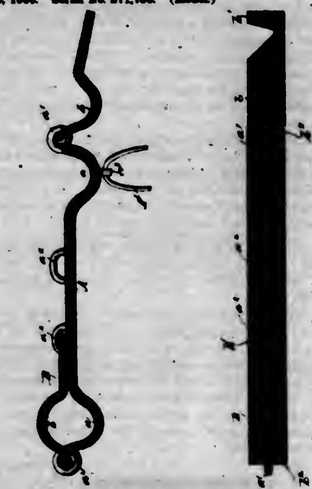
3. In a single-acting engine adapted for use as a motor for ringing bells, the combination of a passage for removing exhaust-steam from below the piston and leakage from around it, and a relief-passage communicating with the space in the cylinder above the piston, and also having a separate communication with the cylinder at an intermediate point traversed by the piston, both passages leading to a common exhaust-pipe, substantially as described.

4. In a single-acting engine adapted for ringing bells, the combination of a connecting-rod jointed to a guide-block with a grooved or scored piston, said grooves or scores being adapted to register with the relief-passage, said piston operating with the guide-block by contact only, whereby lateral pressure of the piston upon the cylinder is avoided, substantially as set forth.

5. In a single-acting engine adapted for ringing bells, the combination of the telescopic connecting-rod E F G, connected to the guide-block H by a universal joint, with a piston operated by contact with said guide-block, substantially as described.

6. In a single-acting engine adapted for ringing bells, the pin *b*, passing transversely through the piston B below its packing-ring, and thus placed wholly within the cylinder-cavity below the piston, in combination with the link D, as a means for connecting the piston B and valve V, substantially as described.

388,737. BOTTLE. Benjamin Smith, Doniphan, Nebr. Filed Apr. 20, 1888. Serial No. 271,784. (Model.)



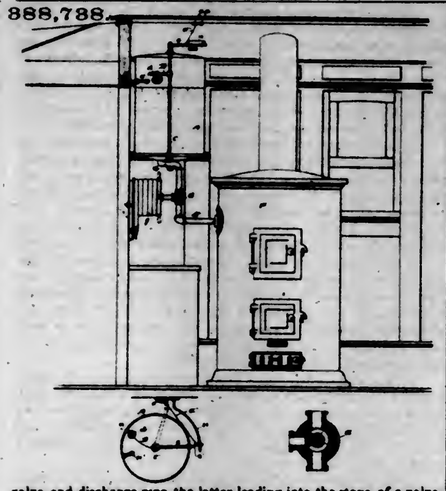
Claim.—1. In an anti-kicking device, the combination, with the main bar, having bends, end eyes, and staples, of the end hasps attached to the eyes of the main bar and having bends and hooked ends adapted to engage the staples of the said bar, substantially as described.

2. In an anti-kicking device, the combination, with the main bar, having bends, end eyes, and staples, of the end hasps attached to the eyes of the main bar and having bends and hooked ends adapted to engage the staples of the said bar, and the link also attached to one side of the bar, substantially as described.

388,738. FIRE-EXTINGUISHER FOR RAILWAY-CARS. Frank R. Squire, Cleveland, Ohio. Filed Apr. 16, 1887. Serial No. 235,266. (No model.)

Claim.—1. The combination, with a car-heating stove, reservoir,

388,738.



valve, and discharge-pipe, the latter leading into the stove, of a valve-stem extending through the chamber of the reservoir, a spring connected with the valve-stem inside the reservoir, a frangible vessel carried by the spring, a stop for engaging and giving tension to the spring in opening the valve, and a breaker made to engage the frangible vessel with the recoil of the spring, substantially as set forth.

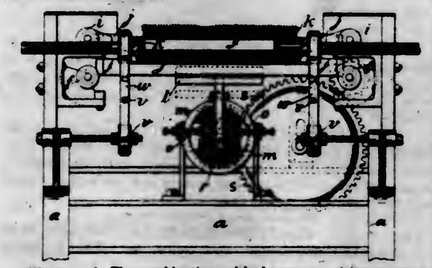
2. The combination, with stove-fire extinguisher, valve, lever, and primary and secondary cords, of a curved plate for holding the cord on the valve-lever in opening the valve, and removed at its rear end from the arc of the circle described by the lever to permit of the cord drawing off of the lever when the valve is open, substantially as set forth.

3. The combination, with a stove, a reservoir having therein a frangible vessel containing a chemical, a lever adapted, when moved, to break the frangible vessel containing a chemical and liberate the chemical, and a discharge-pipe connecting the reservoir with the stove, of a hose connected with the discharge-pipe and a three-way cock, the latter adapted to shut off the contents of the reservoir from the hose or stove, as desired.

4. The combination, with stove, reservoir, discharge-pipe, valve, and valve-stem, of a spring connected with the valve-stem, a stop for engaging and giving tension to the spring in opening the valve, a bottle or frangible vessel located inside the reservoir in position to be broken by the recoil of the spring or spring attachment when the spring is drawn off the stop, substantially as set forth.

388,739. **DEVICE FOR LOWERING THE FALLERS IN GILL-BOXES, &c.** Jos Stark, Halifax, County of York, England. Filed Mar. 17, 1888. Serial No. 267,585. (No model.) Patented in England Dec. 13, 1887, No. 17,126.

Brief.—As each faller arrives at the end of the upper set of screws it is received upon the horizontal portion of a T-headed bar and gently lowered to the other set of screws, after which the bar is raised by a cam acting against a pin in the vertical part of said bar. The sides of said vertical part are frictionally held between spring-pressed clamps, the weight of the faller being sufficient to force the bar down. The faller is also received upon lugs of two endless belts between which the bar is placed. The upper surface of the horizontal part of the bar is covered with leather.



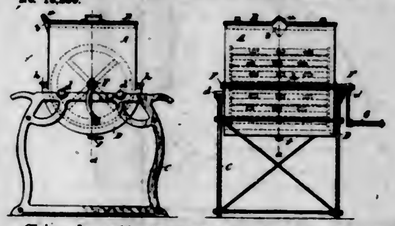
Claim.—1. The combination, with the upper and lower screws and the fallers, of a bar which, as the fallers arrive at the end of the upper screws, receives and automatically carries each faller down to the lower screws, means for raising said bar, and frictional supports therefor, substantially as set forth.

2. The combination, with the upper and lower screws and the fallers, of the bar for carrying the fallers down from the upper to the lower screws, spring-clamps which bear frictionally on the said bar, whereby its own weight is neutralized by friction, and means for raising said bar after its descent, substantially as set forth.

3. The combination, with the upper and lower screws and the fallers, of the T-headed bar *l*, provided with a pin, *t*, the horizontal clamping-bars *n*, which bear on opposite sides of the upright of said bar *l*, their springs *o*, and the cam *p*, arranged to take under said pin *t* in lifting said bar, substantially as set forth.

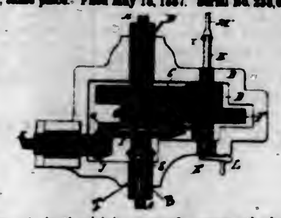
4. The combination, with the screws and fallers, of the endless chains or belts *u*, arranged at the ends of the screws, and provided with properly-spaced lugs *v* to receive the fallers from the upper screws, substantially as and for the purposes set forth.

388,740. **CHURN.** Richard Stockdale, Halton, and Thomas Stockdale, Darwen, County of Lancaster, England. Filed May 5, 1888. Serial No. 272,901. (No model.) Patented in England Dec. 11, 1886, No. 16,290.



Claim.—In combination, a supporting-frame, C, having bearings, a receptacle, A, having a water-jacket, D, and discharge-opening *e*, said receptacle having also studs *d* and *d'*, arranged at different points on its opposite ends to rest in the bearings upon the frame C, whereby the said receptacle is sustained and allowed to have a tilting movement on the studs, a shaft, F, and a beater carried thereby, substantially as described.

388,741. **MOWING-MACHINE.** E. Fowler Stoddard and Arthur F. Brown, Dayton, Ohio, assignors to the Stoddard Manufacturing Company, same place. Filed May 18, 1887. Serial No. 238,097. (No model.)



Claim.—1. In the driving-gear of a mower, the beveled pinion I, provided with a series of hollow bosses extending from the periphery of said pinion to its hub, with their bores communicating with the shaft upon which said pinion is journaled, said bores being provided at their outer ends with feeding-nozzles extending therein to form traps, substantially as described.

2. In the driving-gear of a mower, the combination, with the beveled pinion on the pitman-driving shaft, of the beveled gear-wheel meshing therewith, revolving loosely upon the axle of the machine, and provided with a hub carrying at its end opposite the pinion a bearing-washer locked thereto, which bears against a second and non-revolving bearing-washer interposed between said locked washer and beveled gear and adjustably connected to a fixed point of the frame, whereby the end-thrust is entirely borne by said washers and kept from being thrown upon other parts of the driving-gearing, substantially as described.

3. The lever P, journaled to the frame of the machine and carrying at its upper end a collar, O, encircling the hub H and provided with an adjusting-bolt, R, and the chilled washer M, locked to the collar O, in combination with the washer N, locked upon the end of the projecting hub H, which carries the driving-pinion I G, the parts constructed and arranged substantially as and for the purpose specified.

4. The ratchet-sheave V, provided on its inner side with the segmental rib *l*, in combination with the spring-projected bolt E, having a stop-shoulder, *j*, the pedal-locking dog E, and lifting-lever A', the parts constructed and arranged substantially as and for the purpose specified.

5. The spring ratchet-sheave V, provided on its inner side with the segmental rib *l*, in combination with the spring-projected bolt E, having a stop-shoulder, *j*, the pedal-locking dog E, and lifting-lever A', the parts constructed and arranged substantially as and for the purpose specified.

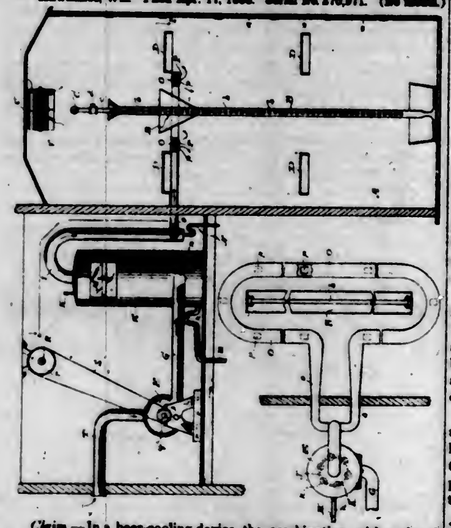
6. The coupling-arm G, having its upper end channeled, in combination with the extension H', provided with the ball *e*, and tongs to fit the channels of the coupling-arm, substantially as described.

7. The combination, with the main frame of a mower and its coupling-arm provided with a ball, of the box consisting of the two parts I J, separated from the frame and recessed to form a socket for the ball, the lower part of which box rests upon the main frame and is provided with a dowel to fit into a corresponding hole in the main frame, and bolts for uniting the parts, substantially as described.

8. The combination, with the lifting-sheave provided with a segment-flange, of a wiper-rack pivoted to the main frame and separate from said sheave, a pinion engaging with said rack, and a coupling-shaft interposed between said pinion and the eccentric driving-gear shaft, substantially as described.

9. The combination and arrangement of the sheave V, with its flange *f*, the wiper-arm *f'*, wiper-rack *k'*, shell *g'*, the bearing K', with its hollow spindle *e'*, the pole L', the coupling-shaft M', with its pinion N', engaging with the rack, and the eccentric-shaft E, and driving-gearing on the eccentric and main shafts, substantially as and for the purpose specified.

388,742. **DEVICE FOR COOLING BEER.** J. Pius Thomas, Milwaukee, Wis. Filed Apr. 17, 1888. Serial No. 270,971. (No model.)



Claim.—In a beer-cooling device, the combination, with a closed chamber, of a beer-cooler and beer-supply pipe contained therein, and a wind-trunk surrounding said cooler and provided with openings, and adjustable slides for regulating the size of said openings at will, and means, substantially as described, for forcing cooled air through said wind-trunk and its openings into said closed chamber on both sides of said beer-cooler.

388,743. **SAFETY CAR-TRUCK.** Henry D. Thompson, West Swanzey, N. H., assignor of one-fourth to George W. Ryer, Brooklyn, N. Y. Filed Jan. 27, 1888. Serial No. 262,102. (No model.)

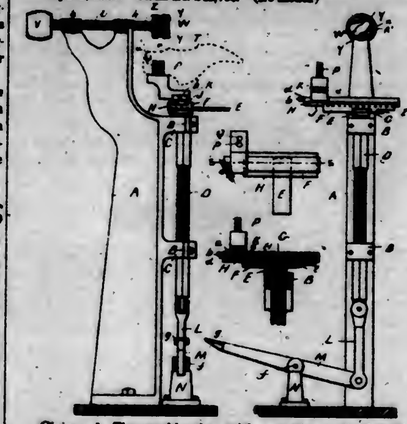


Claim.—1. The combination, with a car-truck having outer flanged wheels and intermediate flanged wheels thereon, of a railway truck having outer truck-rails and intermediate truck-rails, substantially as specified.

2. The combination, with a single truck provided with outer and intermediate truck-rails, of a car-truck the axles of which are provided with outer flanged car-wheels and intermediate flanged car-wheels of lesser diameter than the outer car-wheels, substantially as specified.

3. The combination, with a single railroad-truck having outer track-rails and intermediate track-rails of greater height than the outer rails, of a car-truck the axles of which are provided with flanged outer wheels and flanged intermediate wheels of lesser diameter than the flanged outer wheels, substantially as specified.

388,744. **ANVIL HEEL-SHOULDERING MACHINE IN THE MANUFACTURE OF LASTS.** William Thompson, Brockton, Mass. Filed Sept. 3, 1887. Serial No. 248,703. (No model.)

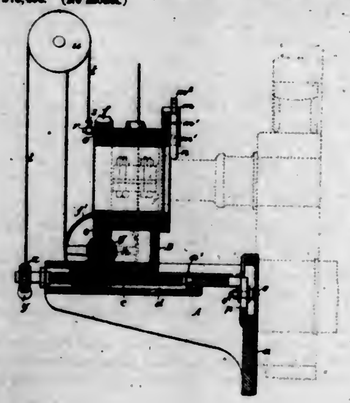


Claim.—1. The combination, with a cutting-tool adapted to be operated in any suitable manner, of a holder, K, for a boot or shoe last provided with two pins or studs, P Q, one pin, Q, of larger diameter than the other, said holder being arranged to be moved toward and away from said cutting-tool, for the purpose specified.

2. The combination, with a cutting-tool adapted to be operated in any suitable manner, of a holder, K, for a boot or shoe last provided with two pins or studs, P Q, one of larger diameter than the other and arranged to be adjusted on a plate or bed, H, arranged to move back and forth on a plate, F, which plate F is arranged to move back and forth on a suitable holder at right angles to the line of movement of said plate H, for the purpose specified.

3. The combination, with a cutting-tool adapted to be operated in any suitable manner, of an adjustable holder, K, for a boot or shoe last provided with two pins or studs, P Q, one of larger diameter than the other, said holder being arranged to move back and forth on a plate or bed, H, which bed H is attached to a rod or bar, D, connected to and operated by a lever or treadle, for the purpose specified.

388,745. **DEVICE FOR TURNING CRANK-PINS.** Thomas Urbahn, Berlangichut, Tambof, Russia. Filed May 20, 1888. Serial No. 273,493. (No model.)



Claim.—1. In a machine-tool for the purposes above specified, a hollow spindle or sleeve provided with a tool holder or pocket and means for rotating the said spindle or sleeve upon or about its axis and feeding or moving it longitudinally, substantially as set forth.

2. The combination of a bracket, A, a head-stock, B, a hollow spindle or sleeve, *c*, having a tool holder or pocket, *m*, means for rotating said spindle or sleeve, and means for feeding or moving the same longitudinally, substantially as and for the purpose set forth.

3. The combination of the bracket A, having planed surfaces *a a'* and slots a^3, the head-stock B, the screw *c* and means for intermittently rotating the same, and the movable or adjustable center *o*, substantially as and for the purpose described.

4. The combination, with the bracket A, head-stock B, hollow spindle or sleeve *c*, and worm-wheel *f*, of the screw *c* and the ratchet *x*, provided with a counter-weight and connected with the said worm-wheel by a cord or chain, *t*, substantially as and for the purposes set forth.

5. The combination, with the head-stock B and hollow spindle or sleeve *c*, of the worm-wheel *f*, the worm *g*, the spindle *h*, and means for rotating the same, substantially as and for the purpose specified.

6. The hollow spindle *c*, provided with a tool holder or pocket, *m*, and screws m' m^2, substantially as described.

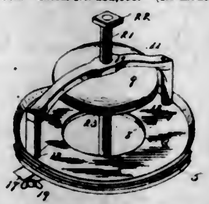
388,746. ELECTRODE FOR STORAGE-BATTERIES. Jean T. Van Gheyel, New York, N. Y. Filed Nov. 10, 1887. Serial No. 254,770. (No model.)



Claim.—1. In an element for storage-batteries, the combination of the base-plate of metal having low electrical resistance and the covering of lead or lead alloy integral throughout, united at openings through the base-plate from opposite sides thereof, and provided with the series of receptacles at opposite sides containing active material, substantially as set forth.

2. In an element for storage-batteries, the combination of the open-work or perforated base-plate of metal having low electrical resistance and the covering of lead or lead alloy integral throughout, united from opposite sides of the base-plate at openings therethrough, provided with the series of receptacles at opposite sides containing active material, and having the thickened rim, substantially as set forth.

388,747. WELL-BUCKET. John L. Van Hook, Round Rock, Tex. Filed Oct. 11, 1887. Serial No. 252,035. (No model.)

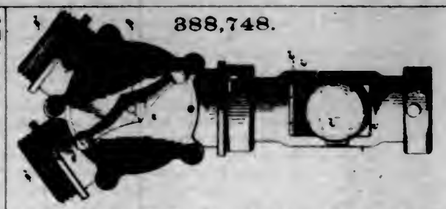


Claim.—The combination of the cylinder or body, the flaring bottom rim or hoop provided on its inner surface with suitable screw-threads, and also having on its lower peripheral portion diametrically-opposite lugs or projections, the perforated bottom piece provided with suitable threads upon its peripheral portion, the upper curved or arched guide-arm having a central perforation and provided with screw-threaded ends having shoulders bearing against the upper side of the bottom of the bucket, said ends also passing through perforations in the rim of the bottom, the lower curved or arched guide-arm having central perforation and provided with laterally-extending perforated ends extending outwardly a greater distance than the periphery of the bottom of the bucket and adapted to bear against the lugs upon said bottom, nuts adapted to engage the screw-threaded ends of said upper guide-arm, the valve or disk having a central perforation or hole, and the valve-rod passing through said central perforation and rigidly secured thereto.

388,748. HOSE-CONNECTION. Morton W. Webb, Charleston, S. C. Filed Aug. 6, 1887. Serial No. 246,327. (No model.)

Claim.—1. The combination, with a cylindrical casing having three or more outlets, of a valve revolubly supported in the center of said casing and adapted to close any one of the openings, and a handle for locking said valve over or away from the said openings, substantially as set forth.

2. The combination, with a cylindrical casing having three or more outlets and a removable cap having a series of sockets therein, of a V-shaped valve revolubly supported in the center of said casing



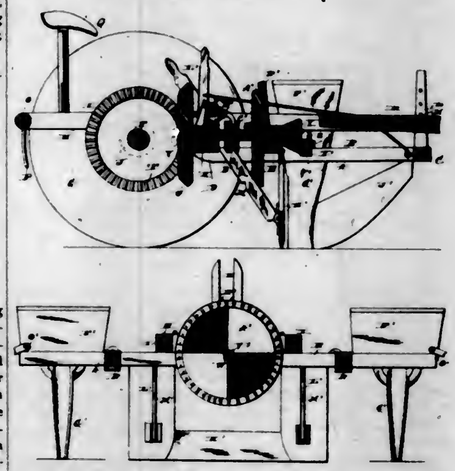
388,748.

and adapted to close any one of the openings, a handle connected with the valve, and a rod or pin in the handle adapted to enter one of the sockets in the removable cap, whereby the valve is locked in position, substantially as set forth.

3. The combination, with a cylindrical casing having three or more outlets, a valve revolubly supported in the center of said casing and adapted to close any one of the openings, and a handle connected with the valve, said handle provided with means whereby the valve is locked, of a pipe connected to said casing and provided with an outlet, a hinged valve for closing said outlet, a spiral spring resting on said valve, and a set-screw for regulating the tension of said spring, substantially as set forth.

4. The combination, with a cylindrical casing having three or more outlets, a removable cap having a series of sockets therein, a V-shaped valve revolubly supported in the center of said casing and adapted to close any one of said openings, and a handle connected with the valve, said handle provided with a pin or similar means adapted to enter the socket in the cap, whereby the valve is locked, of a pipe connected to said casing and provided with an outlet, a hinged valve for closing said outlet, a spiral spring resting on said valve, and a set-screw for regulating the tension of the spring, substantially as set forth.

388,749. CHECK-ROW CORN-PLANTER. Isaac F. Wilson, Penns, Bobr., assignor of one-half to Christopher Wog, same place. Filed Apr. 2, 1888. Serial No. 269,346. (No model.)

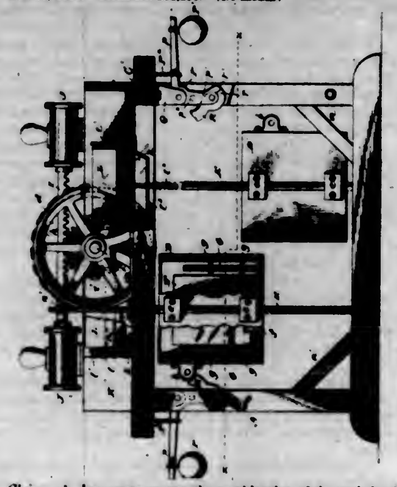


Claim.—1. In a check-row corn-planter, the combination, with the frame and dropper attachment, of an indicator-wheel divided into sections, each of which sections is distinguishable from the adjoining sections and provided with a complete set or series of indicator-points and a pointer.

2. An indicator for seed-planters, comprising a wheel having a beveled periphery upon which are arranged a number of series of inverted numerals, and the inner face of this wheel is provided with a series of differently-colored quadrants, in combination with a pointer secured to the frame of the planter and projecting with its hooked end over the beveled periphery of the wheel.

3. The combination, with the main and top frame secured to the axle of the drive-wheels, of the intermediate gearing, the indicator-wheel, substantially as described, the seed-boxes, the reciprocating seed-slides, the swinging depressor, the notched handles secured to the depressors, and the keepers for the handles.

388,750. WATER-MOTOR. James Wilson, New Preston, Pa., assignor of one-half to James Henry Cunningham, same place. Filed Jan. 21, 1888. Serial No. 261,530. (No model.)



Claim.—1. In a water-motor, the combination of the tank having openings in its bottom, the valves extending about the full height of the tank and having the edges parallel and the sides slightly converging, the stems depending from the valves, the two carriers connected together and adapted to reciprocate alternately in a vertical direction and strike against the said stems, and the two weighted levers adapted to alternately engage with the carriers and hold them while the one is loading and the other is unloading, substantially as and for the purpose specified.

2. The combination, with the counterbalancing carrier or bucket and the valves F, of the brackets O, the rods N, and the adjustable stops *n'*, substantially as and for the purpose described.

388,751. SOLE-EDGE BURNISHER. Christopher Amasken, Boston, Mass. Filed May 31, 1888. Serial No. 275,633. (No model.)



Claim.—In a sole-edge-burnishing machine, the combination of the head-block B, having springs E E and pivot D, with the self-adjusting burnishing-tool C, pivoted to the head-block B, and having lips projecting from its burnishing-face C and adapted to move longitudinally on the edge of the sole, all operating together substantially as described, and for the purpose set forth.

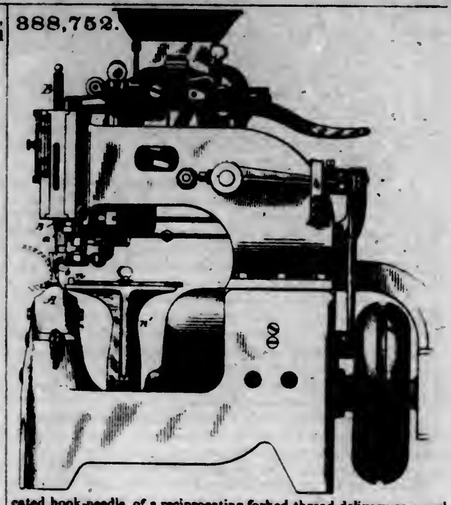
388,752. WAX-THREAD SEWING-MACHINE FOR STITCHING UPPERS TO SOLES. George Ambors, Jr., Lincoln, assignor to the Campbell Machine Company, Pawtucket, R. I. Filed Oct. 19, 1887. Serial No. 252,817. (No model.)

Claim.—1. The combination, with a hook-needle, of a forked thread-delivering arm located at and restricted in its movements to the rear side of said needle and its path, substantially as described, whereby free space is afforded at and closely adjacent to the front or opposite side of said needle and path for the presence of materials in the process of stitching, for obviating the liability of their displacement heretofore incident to the contact therewith of a thread-delivering arm.

2. The combination, with a longitudinally and axially recipro-



388,752.



cated hook-needle, of a reciprocating forked thread-delivery arm and a vibrating thread-controlling arm, substantially as described, whereby when said needle is elevated and its hook presented at the rear side of the needle-path thread will be delivered to the needle-hook by said arm without materially projecting any portion of said arm beyond the path of the needle, and the thread properly controlled while carried by the delivery-arm to said needle, and also during the rotative movement of the latter in carrying downward a loop of thread.

3. The combination of a hook-needle with a thread-delivering arm provided with a thread-eye, and also with a notched finger, and having an intervening space between said eye and finger for occupation by the needle during the delivery of thread to its hook, substantially as described.

4. The thread-delivering arm having a thread-eye, a slotted finger, and a guard on top of said finger and extending toward said eye, substantially as described.

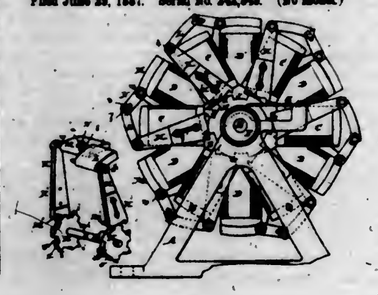
5. The combination, with the cylindrical needle-bar and the slotted guide-bearing, in which said bar is longitudinally and axially reciprocated, of a semi-cylindrical cross-head axially coupled to said bar and fitted to said bearings and to the slot therein, substantially as described.

6. The combination, with a longitudinally and axially reciprocated needle-bar having a cross-head thereon, in which said bar can rotate, of a guide-bearing to which said bar and cross-head are mounted, and bearing-surfaces on said bar above and below said cross-head, substantially as described.

7. The combination of a needle-bar having a spiral guide-face thereon, a guide engaging with said face, a screw for forcing said guide against said face, and a clamp-screw for confining said guide in position, substantially as described.

8. The combination of the needle-bar provided with a V-shaped spiral guide-groove, a cylindrical guide-bearing in which said bar is reciprocated longitudinally and axially, a stud or pin V-shaped at its end occupying said spiral groove, a set-screw for forcing said stud longitudinally, and a clamp-screw for confining said stud against rotation, substantially as described.

388,753. ELECTRIC MOTOR. John Batley, Philadelphia, Pa. Filed June 29, 1887. Serial No. 243,043. (No model.)



Claim.—1. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a friction-wheel secured to the motor-shaft, a series of friction-levers operating on the friction-wheel, and a series of armatures to actuate said friction-levers.

2. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a friction-wheel secured to the motor-shaft, a series of friction-levers operating on the friction-wheel, and a series of armatures to actuate said friction-levers, a source of electric energy, separate circuits for each of said magnets, and suitable switches to cut out of circuit one or more of said electro-magnets.

3. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a friction-wheel secured to the motor-shaft, a series of friction-levers operating on the friction-wheel, a series of armatures to actuate said friction-levers, a separate battery to each magnet, circuits connecting each battery with its electro-magnet, a commutator to throw said magnets into or out of circuit, and separate switches to cut out one or more of said batteries.

4. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a friction-wheel secured to the motor-shaft, a series of friction-levers operating on the friction-wheel, a series of armatures to actuate said friction-levers, a source of electric energy, separate circuits for each of said magnets, suitable switches to cut out of circuit one or more of said electro-magnets, and a commutator to put said magnets into or out of circuit.

5. The combination of two series of electro-magnets arranged in circles, a motor-shaft having two friction-wheels, two sets of armatures, one for each set of magnets, friction-levers actuated thereby and operating in connection with the friction-wheels to rotate the shaft, a source of electric energy, separate circuits for each series of electro-magnets, and commutators to alternately put each of said series of electro-magnets into and out of circuit.

6. The combination of two series of electro-magnets arranged in circles, a motor-shaft having two friction-wheels, two sets of armatures, one for each set of magnets, connections between the armatures of the two series, so that when one is attracted the other is raised, friction-levers actuated thereby and operating in connection with the friction-wheels to rotate the shaft, a source of electric energy, separate circuits for each series of electro-magnets, and commutators to alternately put each of said series of electro-magnets into and out of circuit.

7. The combination of two series of electro-magnets arranged in circles, a motor-shaft having two friction-wheels, two sets of armatures, one for each set of magnets, friction-levers actuated thereby and operating in connection with the friction-wheels to rotate the shaft, a source of electric energy, separate circuits for each series of electro-magnets, commutators to alternately put each of said series of electro-magnets into and out of circuit, and switches to cut out of circuit one or more of the electro-magnets of each series.

8. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a friction-wheel secured to the motor-shaft, a series of friction-levers operating on the friction-wheel, a series of armatures to actuate said friction-levers, a source of electric energy, separate circuits for each of said magnets, suitable switches to cut out of circuit one or more of said electro-magnets, and means, substantially as set forth, to actuate said friction-levers when their operating electro-magnets are cut out of circuit.

9. The combination of two series of electro-magnets arranged in circles, a motor-shaft having two friction-wheels, two sets of armatures, one for each set of magnets, friction-levers actuated thereby and operating in connection with the friction-wheels to rotate the shaft, a source of electric energy, separate circuits for each series of electro-magnets, commutators to alternately put each of said series of electro-magnets into and out of circuit, and means, substantially as set forth, to actuate said friction-levers when their operating electro-magnets are cut out of circuit.

10. The combination of two series of electro-magnets arranged in circles, a motor-shaft having two friction-wheels, two sets of armatures, one for each set of magnets, connections between the armatures of the two series, so that when one is attracted the other is raised, friction-levers actuated thereby and operating in connection with the friction-wheels to rotate the shaft, a source of electric energy, separate circuits for each series of electro-magnets, commutators to alternately put each of said series of electro-magnets into and out of circuit, switches to cut out of circuit one or more of the electro-magnets of each series, and means, substantially as set forth, to actuate said friction-levers when their operating electro-magnets are cut out of circuit.

11. The combination of a motor-shaft, a notched friction-wheel secured thereto and electro-magnets, a pivoted armature therefor, and a pivoted friction-lever actuated thereby and having its operating-face curved to work in contact with the raised portions of the friction-wheel.

12. The combination of a motor-shaft, a notched friction-wheel secured thereto, an electro-magnet, a pivoted armature therefor, a pivoted friction-lever actuated thereby and having its operating-face curved to work in contact with the raised portions of the friction-wheel, and stops, substantially as set forth, to prevent the friction-wheel revolving faster than required by the vibrations of the friction-lever.

13. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a notched friction-wheel secured to the motor-shaft, a series of levers to act upon said friction-wheel by rolling contact and having projections which work in the notches of the friction-wheel to positively thrust it at the last portion of the vibration of said levers, and a series of armatures to vibrate said friction-levers.

14. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a notched friction-wheel secured to the motor-shaft, a series of levers to act upon said friction-wheel by rolling contact, and having projections which work in the notches of the friction-wheel to positively thrust it at the last portion of the vibration of said levers, and a series of armatures to vibrate said friction-levers, and adjusting devices to adjust the contact portion of the friction-levers to or from the friction-roller.

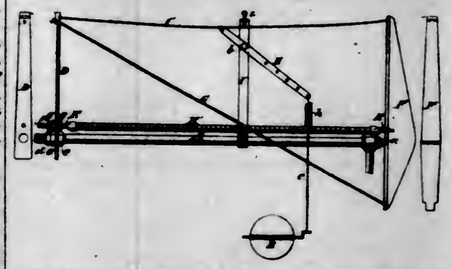
15. The combination of a series of electro-magnets arranged in a circle, a motor-shaft, a friction-wheel secured to the motor-shaft, a series of friction-levers operating on the friction-wheel, a series of armatures to actuate said friction-levers, and adjusting devices to adjust the contact-surface of the friction-levers to or from the friction-wheel.

16. In an electromotor, the combination of a series of stationary actuating electro-magnets, a series of pivoted vibrating armatures therefor, a separate source of electrical energy to each of said magnets, and switches to cut out one or more of said electro-magnets from its source of energy.

17. In an electromotor, the combination of two series of actuating electro-magnets, a series of pivoted vibrating armatures therefor, a separate source of electrical energy to each electro-magnet, and switches for simultaneously cutting out of circuit one or more corresponding electro-magnets from each series.

18. In an electromotor, the combination of a series of radially-arranged actuating electro-magnets, a separate source of electrical energy for each of said magnets, a motor-shaft, a circuit-breaker on said shaft, and separate circuits controlled by said circuit-breaker to simultaneously make or break all of the circuits, so that all of the magnets are simultaneously energized or demagnetized.

388,754. THERMOTIC VALVE-CONTROLLER. GEORGE W. BLAKE, New York, N. Y., assignor to Butzler & Blake, same place. Filed May 1, 1888. Serial No. 272,672. (No model.)



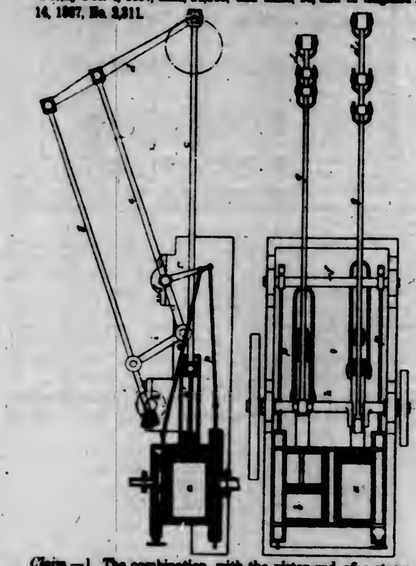
Claim.—1. The combination, with a steam or hot-water pipe and a damper or valve, of a support connected with said pipe, a rigid bar having one end connected with said support, a lever having its fulcrum at the other end of said bar and bearing against said pipe, a flexible bar applied lengthwise between said support and lever, and a connection between said flexible bar and the damper or valve, substantially as herein described.

2. The combination, with a steam or hot-water pipe and a damper or valve, of a flexible bar connected with the latter, two supports for the ends of said flexible bar, connected with the pipe at distant points, one of said supports being a lever, against which said pipe expands lengthwise, and a rod or link forming a direct connection between said lever and the other support for the flexible bar, the connection of said rod or link with the lever being on the opposite side of its fulcrum to that on which its supports the flexible bar, substantially as herein described.

3. The combination, with a steam or hot-water pipe and a damper or valve, of a flexible arm connected with said pipe, a rigid bar having one end connected with said arm, a lever having its fulcrum at the other end of said bar and bearing against said pipe, a flexible bar applied lengthwise between one arm of the said lever and the said flexible arm, a connection between the opposite arm of said lever and the said flexible bar, and a connection between said lever and the damper or valve, substantially as herein described.

4. The combination, with a steam or hot-water pipe and a damper or valve, a support connected with said pipe, a rigid bar having one end connected with said support, a lever having its fulcrum at the other end of said bar and bearing against said pipe, and two flexible bars, the fulcra of which is in opposite directions, applied lengthwise between said lever and support, of a lever fulcrumed on one of said flexible bars, a connection between said lever and the other of said flexible bars, and a connection between said lever and the damper or valve, substantially as and for the purpose herein described.

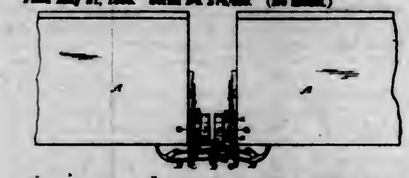
388,755. STEAM-ENGINE. JEAN BERNARD, Langon, Gironde, France. Filed Feb. 17, 1888. Serial No. 264,371. (No model.) Patented in France Dec. 14, 1885, No. 172,749; in Belgium Jan. 28, 1887, No. 76,131; in Austria-Hungary Jan. 31, 1887, No. 8,691 and No. 34,381; in Italy Feb. 4, 1887, XXI, 31,188, and XLII, 16, and in England Feb. 14, 1887, No. 2,311.



Claim.—1. The combination, with the piston-rod of a steam-engine, of the pitman *c*, rod *d*, lever *e*, oscillating on fulcrum *f*, and rod *g*, coupled to a crank in the driving-shaft, and rod *i*, connecting said rod *g* and lever *e*, substantially as and for the purposes set forth.

2. The combination, with the piston-rod of a steam-engine, of the pitman *c*, rod *d*, lever *e*, oscillating on fulcrum *f*, and rod *g*, coupled to a crank in the driving-shaft, and rod *i*, connecting rod *g* and lever *e*, a rod, *r*, oscillating on fulcrum *f*, and valve-rods *o* and *p*, coupled to rod *r*, substantially as and for the purposes set forth.

388,756. CAR-COUPLING. ARTHUR W. BURNHAM, Ballston, N. Y. Filed May 31, 1888. Serial No. 274,469. (No model.)



Claim.—1. The combination of a jaw, B, pivoted at its rear end to a suitable support, with the jaw D, pivoted at its rear end to the jaw B, a loose connection for uniting the jaws, and a lever connected to the jaws for raising or lowering them together or adjusting the upper jaw independently of the lower one, substantially as shown.

2. The combination of the pivoted head B, the jaw D, pivoted thereto, the coupling-chains F G, the levers H, and the ratchets I, substantially as set forth.

388,757. FURNACE FOR BAKING SHOUTED-LIGHT CARBONS. JOHN BURNS, Rochester, N. Y., assignor of one-half to Roland W. Fredricks, Lost Haven, Pa. Filed Apr. 4, 1887. Serial No. 233,993. (No model.)



Claim.—1. The combination, in a furnace, of a series of vertical retorts having beveled upper ends, with the key-blocks R and beveled blocks R' R², and the bricks and masonry constituting the top, whereby the same is keyed and supported, substantially as set forth.

2. The combination, in a furnace, of the vertical retorts beveled at their lower ends and setting in annular beveled recesses in the floor of the combustion-chamber, substantially as specified.

3. The combination, in a furnace, as described, of the vertical retorts beveled at their lower ends and setting in annular beveled recesses and beveled at their upper ends, substantially as and for the purposes set forth.

4. The combination, in a furnace, of the vertical retorts beveled at their ends and setting in annular grooved recesses and provided with covers and having communication with the combustion-chamber extending from the fire-box to the rear of the furnace, of the open-mouthed pots for holding the carbons, whereby the pots can be surrounded with sand at the sides and top, and likewise the interstices between the carbons in the pot be filled with the sand and the gases from the carbon escape from the open-mouthed pots into the combustion-chamber at a point above the pots, substantially as described.

5. The combination, in a furnace, of the vertical retorts beveled at top and bottom, the flat roof supported thereby, the gas-conducting pipes leading from the retorts to the combustion-chamber, and the return-flues leading to the smoke-stack, and the bands, whereby the parts are bound together, the whole arranged to operate substantially in the manner specified.

388,758. NECK-YOKE RING. RAMON K. BURT, Madison, Kans., assignor of one-half to Albert J. Gustin, Lincoln, Nebr. Filed Mar. 15, 1888. Serial No. 267,202. (No model.)



Claim.—A neck-yoke ring having upright bars *b*, with cross-bar *b*, the bolt *c*, provided with roller *d*, inclosed between the bars *b b*, and said roller having on each side thereof spaces K *f*, as and for the purpose set forth.

388,759. INCRUSTATION-PREVENTIVE. DUNCAN H. CAMERON, Woodville, Ontario, Canada, assignor of one-half to David Annis, same place. Filed June 26, 1888. Serial No. 278,311. (No specimens.) Patented in Canada Sept. 17, 1885, No. 32,479.

Claim.—A boiler-cleansing compound of a decoction of five parts, or thereabout, of the leaves and bark of cedar; two parts, or thereabout, of the leaves and bark of tamarack, and one part, or thereabout, of the leaves and bark of each hemlock, oak, and sumac, said decoction produced by steaming the ingredients in a closed vessel and then decanting the liquid and using the same in the proportions specified, substantially as set forth.

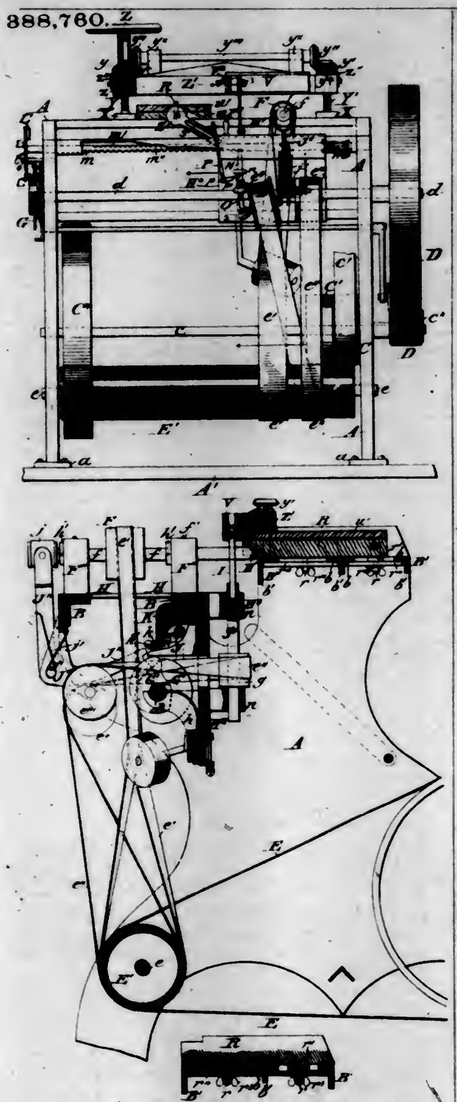
388,760. DOVETAILING-MACHINE. NATHAN S. CLEMENT, Northampton, Mass., assignor to William B. Hale, trustee. Filed Nov. 21, 1887. Serial No. 255,513. (No model.)

Claim.—1. The combination of the horizontal reciprocating hollow auger-bits H' on carriage H, the upright auger-bits I and I', and mallop-cutter J' on vertical reciprocating carriage H², with the adjustable gage R and end gages. S and T, constructed and operating substantially as and for the purpose described.

2. The adjustable gage R, against which one edge of the stock rests, having screw-bolts *r*, depending from its lower edge, pins *r'* on the under side of the ribs *b* of the bed B' and through which the bolts *r* go, thumb-nuts *r²*, guide-head P', integral with the gage, in combination with the ribs *b* and webs *b'* of the bed, substantially as and for the purpose described.

3. The combination of the revolving cam G, cam-plate L, having the incline L' thereon, and fixed to rotative feed-rod *m*, having feed-notches, with a spring-holding dog, N, attached to part H² of carriage H, as and for the purpose described.

388,760.



4. The combination of the cam-shaft *d*, cam G, reversible cam-plate L, having the inclines L′ and L″ on its inside face and fixed to the rotative feed-rod *m*, having opposite notches, *m*′ and *m*″, differing in their distance apart, spring-holding dog N, secured to the part H⁴ of carriage H, with the upright reciprocating carriage H‴, carrying the auger-bits I I′ and scallop-cutter J′, substantially as described.

5. The combination of the hand-lever P, pivoted to H⁴ at *p*, and having a right-angled lifter, *p*′, and dog N, with the carriage H, having hand-hold P′ thereon, whereby the carriage is free to be reciprocated back to its first position, substantially as described.

6. The external eccentric-bushings F′, having notches A′ therein, bearing F‴, having holding-screws *f*′, in combination with the hollow auger-shaft *f*, substantially as and for the purpose described.

7. The combination of the revolving cam G″, pivoted and bent lever J″, bracket K, having removable spring-stop *k*′, lever J‴, and sleeve *j*, with the shaft *f* and auger H′, substantially as and for the purpose described.

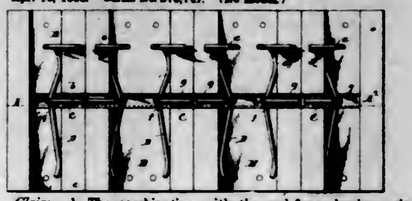
8. The cutting-block V, having holes V′ and V″ and the circular scallops v′ v″, and notches v‴ and v⁴, arranged to slide on the clamping-bar Z′, in combination with the reciprocating carriage H, having holding-dog v²⁰, pivoted thereto, substantially as and for the purpose described.

9. The revolving cam-shaft *d*, having longitudinal groove 2, cam G′, key 1, and lifter J, in combination with carriage H‴, carrying auger-bits I and I′ and scallop-cutter J′, substantially as described.

10. The adjustable gage S, having screw-bolts *s*², with the head T, part circle disk *s*′, rotatable and adjustable on bolt *s*² and held fast to gage S by nut *t*, as described.

11. The transverse reciprocating carriage H, in combination with the vertical reciprocating carriage H‴, which is attached to, reciprocates in, and carried by the carriage H, substantially as described.

388,761. **BEE-HIVE.** Thomas M. Cobb, Grand Rapids, Mich. Filed Apr. 16, 1888. Serial No. 270,741. (No model.)

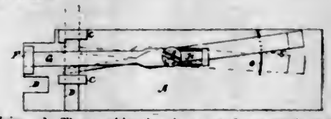


Claim.—1. The combination, with the end frame having a slot, as described, of the adjoining frame provided with a hook, as shown, and the keeper having a cam-surface engaging said hook, substantially as described.

2. The combination, with the frames formed with staples or hooks, of the end frames formed with a flange having a slot and channel, as described, and the keeper formed with cam-surface engaging said hook and seated in said channel, substantially as described.

3. The combination, with the side A³ of the surplus-honey chamber having a flange formed with channel *d* and slot *b*, of the sections *a*′, provided with staples or hooks, as shown, the plates B, formed with slots and channels, and the keepers formed of wire bent to form the cam-surface *f*, substantially as and for the purpose specified.

388,762. **SASH-FASTENER.** William P. Coldren, Philadelphia, Pa. Filed Dec. 17, 1885. Renewed Feb. 24, 1888. Serial No. 265,161. (No model.)

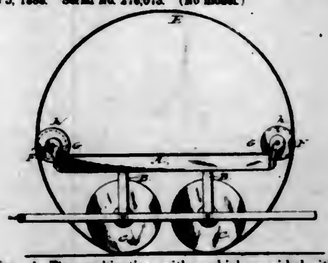


Claim.—1. The combination, in a sash-fastener adapted to be attached to the lower sash of a window, of a bolt adapted to engage with the window-casing, a bolt adapted to engage with the upper sash, and a lever or handle engaging with both bolts and adapted to operate either of them without moving the other, substantially as and for the purpose set forth.

2. The combination of bolt G, handle M, having transverse slots Q R, and projection O, adapted to hold the bolt either open or closed, substantially as and for the purpose set forth.

3. The combination of bolt D, lever M, and stop S, adapted to hold the bolt either open or closed, substantially as and for the purpose set forth.

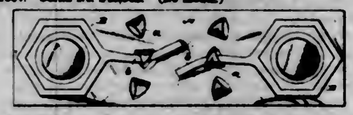
388,768. **ROAD-VEHICLE.** Milton M. Cosner, Linneus, Mo. Filed June 5, 1888. Serial No. 276,073. (No model.)



Claim.—1. The combination, with a vehicle provided with rollers serving the purpose of wheels, of an elastic cylinder serving as a flat bearing for said wheels as it bears upon an ordinary road, substantially as set forth.

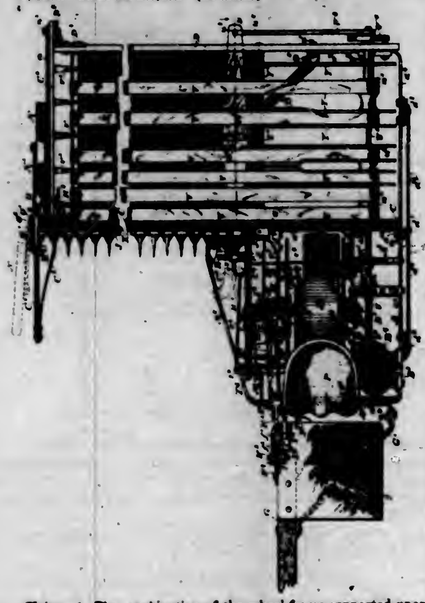
2. The combination, with a wheel-vehicle and the elastic cylinder described, of anti-friction rollers provided with guide-flanges on their ends to bear against the edge of the said elastic cylinder, as and for the purpose set forth.

388,764. **NUT-LOCK.** Orrees B. Cosee, Salem, Ohio. Filed Aug. 6, 1887. Serial No. 246,262. (No model.)



Claim.—The combination, in a nut-lock, of the plate having the series of locking-lugs arranged as shown and described, and the locking device adapted to embrace a nut upon a bolt, and having the curved arm adapted to be secured by the said locking-lugs on the flat plate, substantially as specified.

388,765. **HARVESTER.** John S. Davis, Cleveland, Ohio, assignor to Adlon H. Sumner, same place. Filed Mar. 7, 1885. Renewed July 5, 1887. Serial No. 243,446. (No model.)



Claim.—1. The combination of the wheel-frame supported upon the axle of the driving-wheel, and the tongue pivoted to a bracket on the front of the frame, one of the pivot-lugs of said bracket terminating at its front end in a segmental gear-rack, with a rocking lever mounted on the tongue and provided with a segmental gear meshing into the rack on the frame-bracket and a locking-detent taking into a notched rack secured on the tongue, and a driver's seat supported by a standard fulcrumed on the main axle, and which, extending to the rear thereof, engages fixed points on the wheel-frame, substantially as hereinbefore set forth.

2. The combination of the main frame supported by and vertically adjustable upon the axle of a driving-wheel, a ratchet-standard secured to the frame, a spring-pawl pivoted upon the axle and engaging the ratchet, a sliding bolt on the foot-board, and a link-rod connecting the bolt and pawl, substantially as hereinbefore set forth.

3. The combination of the main frame of a harvester, supported upon the axle of the driving-wheel and vertically adjustable thereon, with a lever fulcrumed upon the axle and connected at one end to the frame and adapted at its other end to receive the weight of the driver, which tends to lift the frame and assist in the operation of vertically adjusting it, substantially as hereinbefore set forth.

4. The combination of the main frame of a harvester, supported upon the axle of the driving-wheel and vertically adjustable thereon, with a driver's seat mounted upon one end of the seat-standard fulcrumed upon the axle, the other end being connected to the frame, substantially as and for the purpose hereinbefore set forth.

5. The combination of the main frame of a harvester, supported upon the axle of a driving-wheel and connected at its rear to the outer front corner of a grain-platform, with a driver's seat located in front of the driving-wheel, and a seat-standard fulcrumed upon the axle and connected at its rear end to the main frame in rear of the axle, substantially as and for the purpose hereinbefore set forth.

6. The combination of a main frame, supported upon the axle of a driving-wheel, with a seat-supporting standard fulcrumed upon the axle and connected at its lower end to the frame, and the upper part vertically adjustable independently of the frame, substantially as hereinbefore set forth.

7. A seat-supporting standard fulcrumed upon the axle of the driving-wheel and connected at its lower end to the frame, the standard being composed of two parts united by a pivot, one part being adjustable relatively to the other, with means for holding it in its adjusted position, substantially as hereinbefore set forth.

8. The combination of a main frame supported upon the axle of a driving-wheel, a driver's seat located immediately over the front of the wheel, and a bifurcated seat-standard pivoted upon the axle at each side of the wheel and connected at its lower ends to the frame, substantially as hereinbefore set forth.

9. A sectional seat-standard the lower part or section of which is pivoted upon the axle and terminates above it in a segmental ratchet, the upper part which carries the seat being pivoted to the lower one at a point above the axle and provided with a pawl which engages the ratchet, and means for holding it out of engagement therewith, substantially as hereinbefore set forth.

10. The combination of a main frame supported by and vertically adjustable upon the axle of a driving-wheel, and a projection or resistance-point on the frame with a seat-standard fulcrumed on the axle and curved at its lower end, which bears against the projection or resistance-point, substantially as and for the purpose hereinbefore set forth.

11. The combination of a segmental ratchet-casting pivoted upon the axle of the driving-wheel and having a projecting lug, to which the lower end or section of the seat-standard is rigidly fastened, with the upper section of the standard pivoted to the casting and provided with a pawl which engages the ratchet, substantially as hereinbefore set forth.

12. A bifurcated seat-standard each member of which is made in two sections, the lower sections being pivoted upon the axle of the driving-wheel and provided with ratchets at their upper ends, the upper sections pivoted to the lower ones and adjustable thereon, and carrying pawls which take into the ratchets, a rock-shaft pivoted between the upper sections, depending arms on the rock-shaft, link-rods connecting the arms to the pawls, and a finger-lever secured to the rock-shaft and extending forward under the seat, substantially as hereinbefore set forth.

13. The combination of a main frame supported upon the axle of the driving-wheel with a seat-standard fulcrumed upon the axle, its lower curved end passing through a stirrup secured to the main frame and bearing against the roller in the stirrup, substantially as and for the purpose hereinbefore set forth.

14. A resistance block or stirrup for the seat-lever of a harvester, consisting of the base-plate having studs projecting from its ends, a roller mounted upon one of the studs, and a guard-plate secured against the ends of the studs, substantially as hereinbefore set forth.

15. The combination of the axle of a driving-wheel, means for supporting and adjusting the main frame thereon, a winding-drum which controls the adjustment of the grain end of the platform free to revolve on the axle, a lever to revolve the drum, and a sliding clutch to lock the drum to the axle, substantially as hereinbefore set forth.

16. The combination of a winding-drum free to revolve on the axle, a lever to rotate the drum, a sliding clutch to lock the drum to the axle, a lever to operate the clutch pivoted to the drum-lever, and a spring tending to keep the clutches into locking engagement, substantially as hereinbefore set forth.

17. The combination of the main frame of a harvester and a grain-platform attached thereto with mechanism, substantially as described, whereby the driver in his seat and with one hand by means of a single lever and the clutch-shifter carried thereby may effect the vertical adjustment of the main frame and the grain end of the platform on their supports simultaneously, or he may adjust the platform end alone, substantially as hereinbefore set forth.

388,766. **VALVE.** Alfred D'Lamot, New York, N. Y., assignor of one-half to James K. Prothingham and Herman W. Winans, same place. Filed June 21, 1888. Serial No. 277,294. (No model.)



Claim.—The combination, with the wall W, of a force-pump, the valve-seat A, secured therein, and the valve-stem I, secured in said

seat, as specified, of the gum packing B, interposed between the said seat A and the valve C, the valve C, working upon said stem I and said seat A, and carrying the said packing B, the gum bush P within said valve C and around said stem I, the ring G, holding said bush in place in said valve, the screws S, securing said ring G in proper position, the washer V, and the nut R, holding said washer upon the said valve-stem I, to limit the upward motion of said valve, all substantially as and for the purpose set forth.

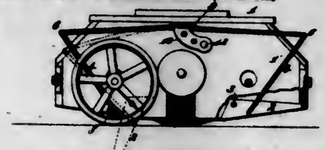
388,767. OIL-CUP. BENJAMIN J. DOWD, Somerville, assignor to the Star Brass Manufacturing Company, Boston, Mass. Filed Apr. 2, 1888. Serial No. 269,264. (No model.)



Claim.—1. The cup having a body, B, and the base and cap formed with the threaded tubular stems *a* and *c*, said base having the transverse opening F through it, and the nipple G thereto to render the oil-feed visible, in combination with the valve having on its rod the threaded enlargement L, screwing within stem *a*, and with the threaded stop P, screwing into cap C, substantially as set forth.

2. The base A, with tubular stem *a*, and depending extension E, with valve-nipple G at the bottom of said stem, and the cap C, provided with threaded central stem portion engaging with stem *a* to hold the body B in position, in combination with the valve-rod J K L M, the adjustable stop P, engaging with the cap C, and the sleeve S, interposed between the stop and the part L of the rod, substantially as set forth.

388,768. CARPET-SWEEPER. WALTER J. DREW, Grand Rapids, Mich., assignor to The Bissell Carpet Sweeper Company, same place. Filed Feb. 2, 1888. Serial No. 262,722. (No model.)

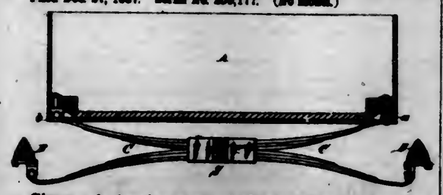


Claim.—1. The combination, with a carpet-sweeper casing and its pivoted dust-pan, of an angular wire having a fixed point of attachment to the casing and connected with the pan and forming in itself a pressure-bar to open the pan by pressing upon the wire, and which by its inherent elasticity will automatically close the pan, substantially as described.

2. The combination, with a carpet-sweeper casing and its dust-pan, of an angularly-bent spring-wire secured to the casing and extending from its point of attachment toward the side of the casing and then turned downward and connected to the pan and constituting in itself a pressure-bar to open the pan and by its inherent elasticity automatically closing the pan, substantially as described.

3. The combination, with a carpet-sweeper casing and its dust-pans, of a single piece of spring-wire secured to the casing and angularly bent and extending to and connected at its opposite extremities to the pans to form pressure-bars for opening the pans, and which by their inherent elasticity automatically close the pans, substantially as described.

388,769. VEHICLE-SPRING. WILLIAM H. BOELEN, St. Louis, Mo. Filed Dec. 27, 1887. Serial No. 258,177. (No model.)



Claim.—1. A spring composed of two sections which are connected together at their heel ends by a connection which holds the sections in the same relative position, but which permits them to move in and out, substantially as described.

2. The combination of a spring composed of two sections which have their central portions placed in or almost in contact with each other, with a connection which unites the central portions of the sections together so as to retain them in the same relative position, but which connection allows the sections a free in-and-out play, substantially as described.

3. The combination of a spring composed of two sections with a connection which is secured to one section and through which the other section passes, but which is not secured thereto, so as to allow the sections an in-and-out movement, substantially as set forth.

4. A vehicle-spring composed of two or more sections, each section having two or more flexion-arms and having their heel ends inclosed in a common sleeve operating to hold the ends of the sections in the same relative position to each other, and at the same time permit them to approach and recede from each other in action.

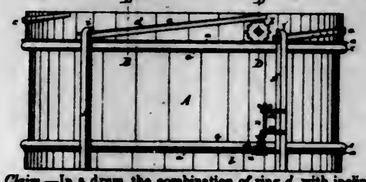
5. A vehicle-spring composed of two sections united at their heel ends by a sleeve, in combination with a body and running-gear of a vehicle, for the purpose set forth.

388,770. TRUCK-BAR. JOSEPH H. FISHER, Deerfield, Ill. Filed July 14, 1888. Renewed July 2, 1888. Serial No. 278,057. (No model.)



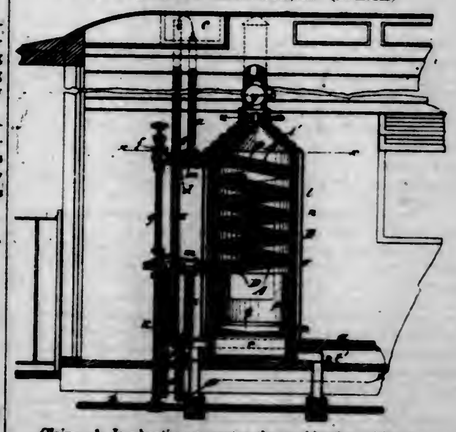
Claim.—A new tool or truck-bar consisting of the bar part D, the prongs or jaws B C, and the roller E, pivoted in the bar so as to project below the same and form a fulcrum, as specified.

388,771. MILITARY DRUM. BERNHARD PLESS, Mühlhausen, Thuringia, assignor to Heilbrunn Söhne, Erfurt, Germany. Filed Nov. 30, 1887. Serial No. 256,474. (No model.) Patented in Germany June 10, 1886, No. 34,994; in Austria-Hungary Jan. 28, 1888, No. 36,925; in England June 30, 1886, No. 8,868, and in Italy June 30, 1886, No. 20,256.



Claim.—In a drum, the combination of ring *d*, with inclined surfaces *e e* around the upper drum-head, with rod *f* attached to the lower drum-head and sliding upon the inclined surfaces *e*, and with means of turning the ring *d*, substantially as and for the purpose specified.

388,772. HEATING APPARATUS. EDWARD R. GOLD, New York, N. Y. Filed Aug. 25, 1887. Serial No. 247,793. (No model.)

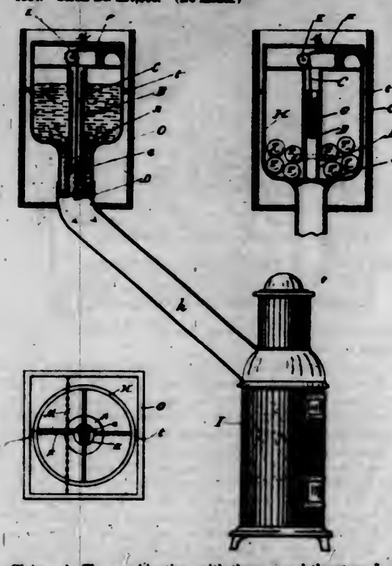


Claim.—1. In a heating apparatus, the combination, with a water-coil and a steam-coil arranged one within the other, of a stove within which the double coil is placed, a source of steam connecting to the steam-coil, and a water-circulating system connected to the water-coil, substantially as set forth.

2. The combination, with the coil A and circuit-pipes *a*, connecting to the terminals thereof, of the inner heating-coil, D, inclosed in coil A, with its ends projecting from the ends thereof, a source of steam connected to one end of said steam-coil, and a trap connected to the opposite end of the same, substantially as shown and described.

3. The compound coils D A, in combination with a stove, B, inclosing and arranged to heat said coils, water-circuit pipes *a*, connecting to coil A, and a steam-supply pipe, *g*, connecting to one end of the coil D, with a valve, *f*, in the connection, and a trap, *i*, on the opposite end of the coil, substantially as herein shown and described.

388,773. FIRE-EXTINGUISHER. ISAAC H. GOODNIGHT, Kempton, assignor of one-half to J. T. Lindsay, Frankfort, Ind. Filed Feb. 17, 1887. Serial No. 227,999. (No model.)



Claim.—1. The combination, with the car and the stove I, of a fire-extinguisher comprising the following elements, viz: the frame O, secured to the car above the stove, the reservoir H, pivoted within said frame, the tube A, communicating with the reservoir and stove, the sliding tube B, valve A, attached to said tube and held down to close communication between the reservoir and stove by cord or chain C, fixed pulley D, drum E, pawl F, and the spring G, to operate upon the valve to press it open when the cord C is loosened by the movement of the car, all constructed and arranged substantially as shown and described.

2. The swinging reservoir H, pivoted within the frame O, secured to the car, the stove I, and the tube A, connecting the stove and reservoir, in combination with the valve A, the cord C, pulley D, drum E, and ratchet F, all for holding the valve closed, and the chain M and spring G for automatically opening the valve, all substantially as shown and described.

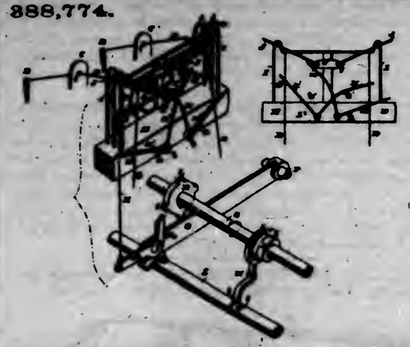
388,774. STOP-MOTION FOR KNITTING-MACHINES. ROBERT B. SCOOTHAM, Philadelphia, Pa., assignor of two-thirds to A. Taylor & Son and Abraham Lincoln Goodyear, all of same place. Filed Feb. 2, 1888. Serial No. 262,787. (No model.)

Brief.—The object of the invention is to provide improved devices for stopping the knitting-machines upon the breaking of a thread or the occurrence of a knot.

Claim.—1. The combination of the rotary needle-head with two or more guides over which the thread is guided, one or more loose bars resting upon and supported by the thread guided by said guides, a loosely-supported lever arranged below said loose bars, a trip actuated by said lever when the bar drops upon it, a rotating part in connection with the knitting-machine having a projection or tooth adapted to strike said trip, and mechanism, substantially as described, actuated by the trip to stop the rotation of the needle-head.

2. The combination of the rotary needle-head with two or more guides over which the thread is guided, one or more loose bars resting upon and supported by the thread guided by said guides, a loosely-supported lever arranged below said loose bars, a trip actuated by said lever when the bar drops upon it, a rotating part in connection

388,774.



with the knitting-machine having a projection or tooth adapted to strike said trip, and mechanism consisting of a movable bar, a spring to move said bar, a catch to hold said bar against the spring, and a support for the trip adapted to actuate the catch and actuated by the trip, and means, substantially as set out, actuated by the movable bar to stop the rotation of the needle-head.

3. The combination of the rotary needle-head, a thread-guide, a loosely-supported lever, a pivoted forked lever between the fork of which the thread passes, adapted to operate the loosely-supported lever when a knot in the thread passes into the fork, power devices to rotate the needle-head, power-arresting devices controlled by the loosely-supported lever when moved by the forked lever, consisting of a trip connected to the loosely-supported lever, a rotating part in connection with the machine, having a projection or tooth adapted to strike the said trip, and mechanism, substantially as described, actuated by the trip to stop the machine on the knot in the thread passing to the needles.

4. The combination of the rotary needle-head, a thread-guide, a loosely-supported lever, a pivoted forked lever between the fork of which the thread passes, adapted to operate the loosely-supported lever when a knot in the thread passes into the fork, power devices to rotate the needle-head, power-arresting devices controlled by the loosely-supported lever when moved by the forked lever, consisting of a trip connected to the loosely-supported lever, a rotating part in connection with the machine, having a projection or tooth adapted to strike the said trip, and mechanism, substantially as described, actuated by the trip, consisting of a movable bar, a spring to move said bar, a catch to hold said bar against the action of the spring, and a support for the trip adapted to actuate the catch, and means, substantially as set out, actuated by the bar to stop the machine on the knot in the thread passing to the needles.

5. The combination of a rotary knitting-head, power stop-motion mechanism to rotate it, two or more thread-guides, I, arranged parallel, the stand or frame F, located between the upright portions of said thread-guides I, floating bars or arms J, pivoted to said frame F, the loosely-pivoted lever G, arranged below said bars or arms, and also pivoted to said frame F, a trip device controlled by said loosely-pivoted lever G, and stop-motion mechanism, substantially as set out, controlled by said trip device to stop the rotation of the needle-head if the thread should break and allow the bar J to fall.

6. The combination of a rotary knitting-head, power stop-motion mechanism to rotate it, two or more thread-guides, I, arranged parallel, the stand or frame F, located between the upright portions of said thread-guides I, floating bars or arms J, pivoted to said frame F, the loosely-pivoted lever G, having the parallel arms G′, arranged below said bars or arms, and also pivoted to said frame F, a trip device controlled by said loosely-pivoted lever G, and stop-motion mechanism, substantially as set out, controlled by said trip device to stop the rotation of the needle-head if the thread should break and allow the bar J to fall upon the arms G′.

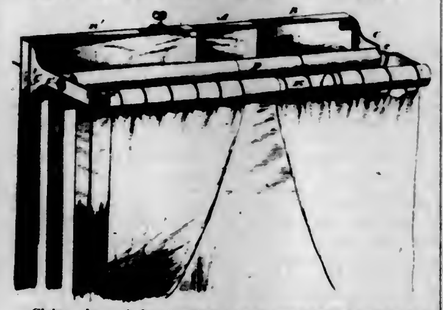
7. The combination of a rotary knitting-head, power stop-motion mechanism to rotate it, a thread-guide, I, the stand or frame F, located between the upright portions of said thread-guide I, the forked levers K′, the loosely-pivoted lever G, pivoted to the said frame F, a trip device controlled by said loosely-pivoted lever G and having the parallel arms G′, stop-motion mechanism, substantially as set out, controlled by said trip device to stop the rotation of the needle-head if the thread should be knotted and the levers K′ should strike the arms G′, and stop L, located on the frame of the machine to hold the levers K′ normally in place.

8. The combination of a rotary knitting-head, power mechanism to rotate it, two or more thread-guides, I, arranged parallel, a frame or stand, F, located between the upright portions of said thread-guides

I, forked levers K', loosely-pivoted lever G, pivoted to the frame F, having parallel arms G', and short arm *g*, trip M, supporting-arm O, upon which the trip M is pivoted, link or wire H, connecting said trip M with the short arm *g*, shaft Q, carrying toothed wheel R, adapted to operate the trip M, lock T, spring V, shifting-lever W, clutch X, and pulley Z.

9. The combination of a rotary knitting-head, power mechanism to rotate it, two or more thread-guides, I, arranged parallel, a frame or stand, F, located between the upright portions of said thread-guides I, floating bars or arms J, pivoted to said frame F, loosely-pivoted lever G, pivoted to the frame F, having the parallel arms G', and short arms *g*, trip M, trip-supporting arm O, upon which the trip M is pivoted, link or wire H, connecting said trip M and short arm *g*, shaft Q, carrying toothed wheel R, adapted to operate the trip M, lock T, spring V, shifting-lever W, clutch X, and pulley Z.

388,775. **WINDOW-SHADE BRACKET.** Thomas Gorsuch, Gorsuch, Pa. Filed Apr. 19, 1888. Serial No. 271,166. (No model.)



Claim.—In a window-bracket, a back consisting of two flat hollow sections, B and B', movably mounted on an inclosed solid flat supporting-strip, A, and carrying bracket-arms C C, secured to the ends of said sections B and B' and projecting outwardly at right angles therefrom, in combination with an outer roller, E, and an inner roller, D, mounted in said bracket-arms, and each consisting of two tubular sections movably mounted on an inclosed solid bearing-rod, substantially as described.

388,776. **WINDOW-DRESSER.** George F. Hall, Newark, N. J. Filed Apr. 21, 1888. Serial No. 271,434. (No model.)



Claim.—1. In a window-dresser, the combination, with the shank, of the arms extended from the opposite sides of the shank, the jaws pivoted separately thereto and extended inward toward one another, such jaws being provided with lever-arms extended inwardly therefrom and having slotted ends lapped upon one another, and a rod connected at one end to such slotted ends and extended to the base of the shank, substantially as herein set forth.

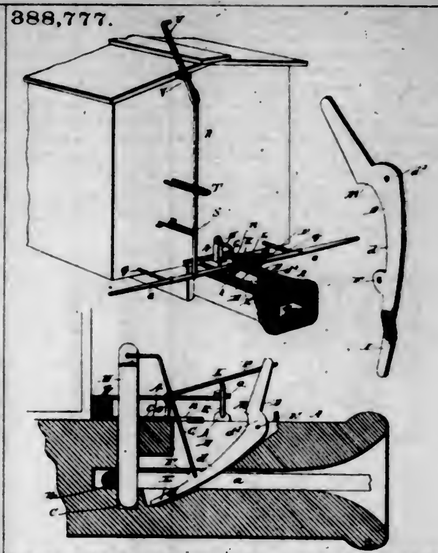
2. In a window-dresser, the combination, with a shank and a pair of jaws carried thereby, of sockets in the jaws for carrying removable holders and a rod arranged and adapted to be operated to actuate the jaws from the base of the shank, substantially as set forth.

3. In a window-dresser, the combination, with the tubular shank H, of the arms C, extended from the opposite sides of the shank, the jaws A, pivoted to such arms and extended inwardly to contact with one another, the butts of such jaws being provided with lever-arms A', extended inward therefrom, a rod, G, inserted within the tubular shank and connected with both of such lever-arms, a spring, *f*, within the base of the tubular shank operating to hold the jaws in their operative position, and the lever-handle T, carried upon the shank near its base and acting in opposition to the spring, substantially as herein described.

388,777. **CAR-COUPLING.** Henry B. Johnson, Clay Centre, Kans., assignor of one-half to Rasin Isms, same place. Filed May 24, 1888. Serial No. 274,966. (No model.)

Claim.—1. In a car-coupling, the combination, with the draw-head having a longitudinal slot therein, of the bent operating-lever D, mounted in the slot and having a toe, I_f on its lower end, and the pin

388,777.



E in rear of the lever and connected thereto, substantially as and for the purpose specified.

2. In a car-coupling, the combination, with a draw-head having a slot, B, therein, of the operating-lever mounted in the slot and having an inclined lever-arm connected to the coupling-pin, and the loop or arm mounted on the upper side of the draw-head and adapted to bear against the upper arm of the lever, and having cranks whereby it may be operated, substantially as specified.

3. In a car-coupling, the combination, with the draw-head, of the operating-lever mounted therein and having a shoulder, M, on its rear side, the coupling-pin mounted in rear of the lever, the connecting-rod between the lower arm of the lever and the said pin, and the rock-shaft mounted on the draw-head, and having a loop to bear against the upper arm of the lever and adapted to engage the said shoulder, substantially as specified.

4. In a car-coupling, the combination, with the draw-head, of the vertical pin, the operating-lever connected thereto, the rock-shaft having a loop to bear against the lever and crank-arms on its ends, and the horizontal levers mounted on suitable brackets or supports on the car and connected at their inner ends to the said cranks, substantially as specified.

5. In a car-coupling, the combination, with the draw-head, the pin, the operating-lever connected thereto, and the rock-shaft having a loop and cranks, as described, of the horizontal levers connected to the said cranks, the vertical uncoupling-lever mounted on the end of a pivoted loop and connected at its lower end to one of the horizontal levers, and the handle connected to the upper end of the uncoupling rod and operating in a keeper on the car-body, substantially as specified.

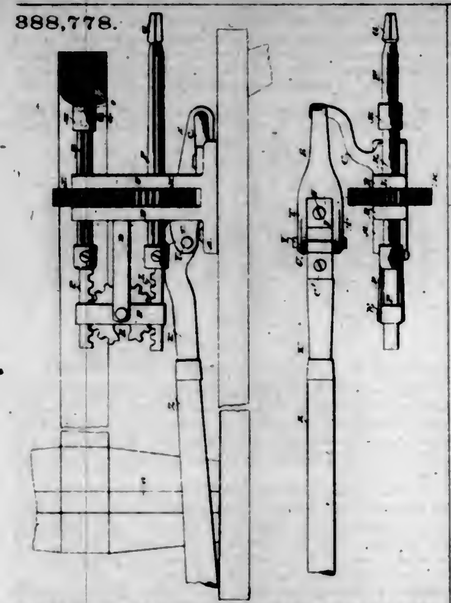
6. In a car-coupling, the draw-head having a slot, B, the pin mounted in the draw-head, the operating-lever mounted in the slot and connected to the pin, the rock-shaft adapted to operate the lever and having a crank on its ends, and the horizontal levers connected to the said cranks, combined with the vertically-movable uncoupling-lever mounted on the end of the swinging loop and seated at its lower end in an aperture in one of the levers, the guide-bracket to guide the uncoupling-lever, and the loose handle mounted in a keeper on the car and connected at its lower end to the upper end of the uncoupling-lever, substantially as and for the purpose specified.

388,778. **TIRE-BOLTER AND CUTTER.** William A. Johnson, Aurora, Ill., assignor of one-half to A. Walter Johnson, Council Bluffs, Iowa. Filed May 10, 1888. Serial No. 273,206. (No model.)

Claim.—1. The combination, in a machine for bolting tires, of the frame, the two shafts sliding longitudinally therein and oppositely movable, and gearing between the same to impart a rotary motion from one to the other, one of said shafts having a socket adapted to receive the nut of a bolt, substantially as described.

2. The combination of the base or frame having the standards B, the shafts F K, journaled in said standards and movable longitudinally in their bearings, said shafts having the rack-bars, and one of said shafts being provided with the socketed head, for the purpose

388,778.



set forth, the gear-wheel journaled in a suitable support and meshing with the rack-bars, and the gear-wheels feathered or splined on the shafts and meshing with each other, substantially as described.

3. The combination of the frame or base, the link S, having one end pivotally connected to the frame and the other provided with a cutting jaw or blade and an adjustable stop, and the lever X, pivoted to the free end of the link and having a cutting jaw or blade, substantially as described.

4. The combination of the base plate or frame, the link S, pivoted or hinged thereto and having the adjustable stop D' on one side and the cutting jaw or blade V on the opposite side at its free end, and the lever X, pivoted to the free end of the link, adapted to be engaged by the adjusting stop or bolt, and having the cutting blade or jaw C, adapted to operate in conjunction with the blade V, substantially as described.

388,779. **SAW-ROD.** John M. Kemmerle, Philadelphia, Pa., assignor to Thomas Devlin & Co., same place. Filed Apr. 7, 1888. Serial No. 269,910. (No model.)



Claim.—1. A saw-rod consisting of yokes, rods with flaring ends, and a buckle, each of the yokes having a loop adapted to embrace one of the frame-pieces of the saw, an eye the walls of which engage the flaring ends of the rods, and a neck which connects said yoke and eye and has the end of a rod seated on its face, said parts being combined substantially as described.

2. The combination of the yokes, each with an upturned eye and a grooved neck having a recess therein, the rods having flaring ends, and a buckle, substantially as described.

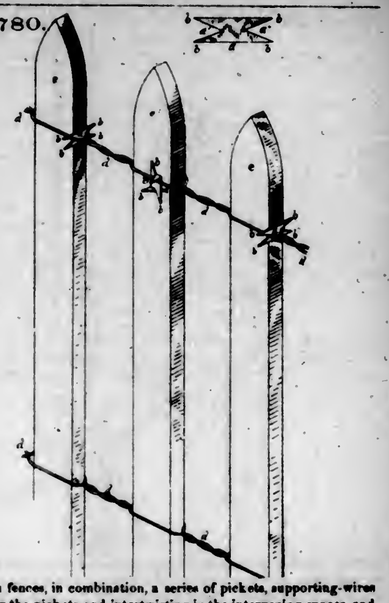
3. The combination of the yokes C, each having a loop part, *a*, an eye, *b*, connected by the neck *c* to said loop *a* and turned up as to said loop, the neck *c* having on its upper face the groove *d*, the buckle E, and rods D, each screw-threaded at one end and flaring, as at *e*, at the other end, substantially as and for the purposes described.

388,780. **PICKET AND BARBED FENCE.** James Locher, Decatur, Ill. Filed Nov. 21, 1887. Serial No. 255,676. (No model.)

Claim.—1. In fences, in combination, a series of pickets, supporting-wires embracing the pickets and intertwisting in the intervening spaces, and barbs on the wire in the intervening spaces projecting beyond the pickets on both sides of the fence, as and for the purpose set forth.

2. In fences, in combination, a series of pickets, supporting-wires embracing the pickets and intertwisting in the intervening spaces, and barbs supported against edges of pickets by the wires and adapted to project beyond the faces of the same, as and for the purpose set forth.

388,780.



3. In fences, in combination, a series of pickets, supporting-wires embracing the pickets and intertwisting in the intervening spaces, and the cleft barbs fitting against edges of pickets, with their clefts astride the supporting-wires, as and for the purpose set forth.

4. In fences, in combination, a series of pickets, supporting-wires embracing the pickets and intertwisting in the intervening spaces, cleft barbs fitting against edges of pickets, with their clefts astride the supporting-wires, and barbs on the faces of pickets sustained by an embracing-strand of wire, as and for the purpose set forth.

388,781. **BANJO.** John F. Luscomb, Boston, Mass. Filed June 16, 1886. Renewed Feb. 16, 1888. Serial No. 264,185. (No model.)



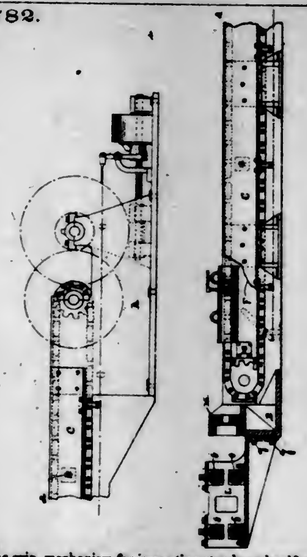
Claim.—1. The body of a banjo composed of inner and outer metal bands, A^9 A^5, and an intermediate wooden band, A^4, the inner metal band having an outer peripheral shoulder or ridge, *a*, and the intermediate wooden band a projection beyond the upper edge of the inner band, and the whole combined with a parchment head stretched across and applied to the wooden band and metal bands, substantially as described, for the purpose specified.

2. A banjo having a wooden neck, C, made and provided with a series of wooden cross-pieces, E, secured in cross saw-cuts at the back of the neck, substantially as described, for the purpose specified.

388,782. **MACHINE FOR DRAWING METALS.** William A. McCoy, Beaver Falls, Pa., assignor to the Hartman Steel Company, (Limited,) same place. Filed Jan. 28, 1888. Serial No. 262,212. (No model.)

Claim.—1. A drawing-machine for drawing metals, which consists of two drawing-chains, one on each side of the carriage which

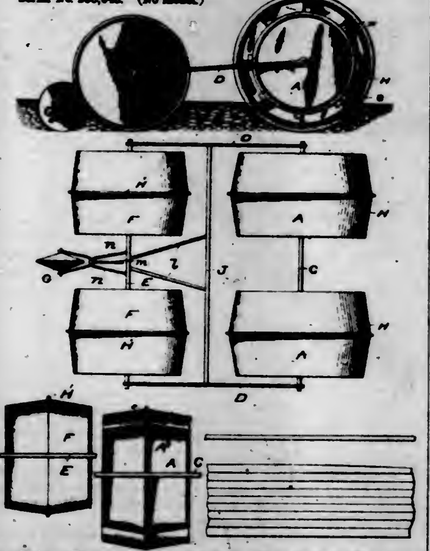
388,782.



supports the grip, mechanism for imparting steady and uniform motion to said chains, and pins or other devices for connecting said carriage with each of said chains, substantially as and for the purpose described.

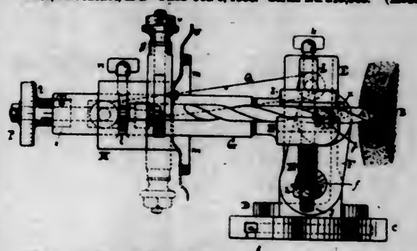
2. The above-described drawing-machine, provided with a die, a grip, and two chains for imparting motion to said grip, so combined and arranged that the center of the die, the grip, and the center of each and every pin in the two chains is on a direct line with draft, as herein described, and for the purpose specified.

388,783. BOAT. Herbert R. McGuire, Pearington, Miss., assignor of one-half to John Wesley Cowart, same place. Filed Nov. 19, 1887. Serial No. 255,643. (No model.)



Claim.—The combination, in a boat, of the side bars, D, connecting the front and rear axles, and the cross-bar J, connecting the said side bars, substantially as specified, the drive-wheels having an inner air-tight section with a periphery of keel shape and arranged at intervals from the outer section, the central flange between the two sections, the transverse strips, also between the two sections, forming the buckets, and the transverse bars L, secured to the inner sides of the said strips and on the periphery of the said inner air-tight section, the shaft for said wheels, the smaller air-tight wheels in rear of the drive-wheels, also having peripheries of keel shape and a vertical central external flange, the steering-wheel in a plane between the said smaller wheels, the stay-rods therefor, and the tiller *m*, substantially as specified.

388,784. TWIST-DRILL-GRINDING ATTACHMENT. Frank Hoffman, Pawtucket, R. I. Filed Oct. 6, 1888. Serial No. 287,302. (Model.)



Claim.—1. In a drill-grinding attachment, the clamping device herein shown, consisting of the fixed grooved jaw H and the movable jaw I, which has the post and arm L, and the thumb-screw *k* and the bolt J, secured to said jaw I and passing freely through an opening in the jaw H, and provided with a nut, *k*, and spring K, substantially as described.

2. The combination of the jaws H I and the bolt J, having the nut *k* and spring K, arranged and operating substantially as specified.

3. The combination of the link F, the pivot *f*, the head-piece E, and the main bar G, provided with drill-clamping mechanism and mounted on the link F by the pivot *g*, substantially as described.

4. The combination of the head-piece E, having the slot *e*, the sliding nut *t*, and screw *s*, the rod Q, pivot *r*, and block N, connected to the bar G, the link F, pivoted at *f* to said head-piece, and the bar G, pivoted at *g* to said link F and provided with a drill-clamping device, substantially as shown.

5. The combination of the head-piece E, having the slot *e*, the nut *t*, the screw *s*, the rod Q, the pivot *r*, the block N, the link F, the bar G, having the lugs *o o'*, the pivots *f g*, and the feed-screw O, substantially as specified.

6. In a drill-grinding device, the combination of a head-piece, a main bar provided with drill-clamping, drill-feeding, and drill-straining mechanism, a link oscillating on a fixed pivot of the head-piece and having at its traveling end a pivot by which it connects with the main bar and gives to said main bar a reciprocating motion longitudinally, and a connecting-rod pivoted at one end in the plane of the main bar and vertically adjustable at its opposite end upon said head-piece, all arranged and operating for the purpose of forming an angle and a curved clearance upon the lip of a drill, substantially as specified.

388,785. PRECAUTIONARY DEVICE FOR POISON-BOTTLES. Frank H. Nutter, Minneapolis, Minn. Filed Apr. 11, 1888. Serial No. 270,260. (No model.)



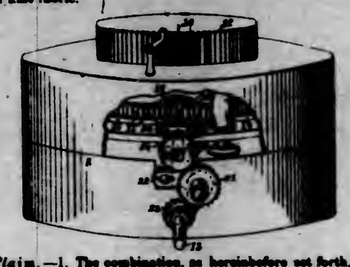
Claim.—1. In a device of the character described, a plate, C, having pricking-points on its upper face and an attaching corkscrew at its opposite side, substantially as set forth.

2. In a device of the character described, a centrally-apertured plate, C, having pricking-points on its upper face, the corkscrew having its shank passing through said aperture and provided with an eye, the spring-collar *d*, and the flexible connection D, connecting said eye and collar, substantially as set forth.

3. The combination, with a bottle-stopper or cork, of a plate having pricking-points on its outer face and a fastener on its under face entering the cork and securing the plate on top thereof, substantially as set forth.

388,786. Knitting-Machine. Nathaniel W. Pierce, Pawtucket, R. I., assignor of one-half to George H. Church, New York, N. Y. Filed Feb. 28, 1887. Serial No. 229,115. (No model.)

Brief.—The invention consists in improved means for dividing the needles vertically in predetermined series to produce a particular pattern of knit fabric.



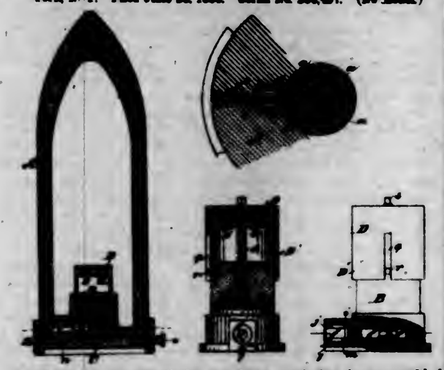
Claim.—1. The combination, as hereinbefore set forth, with a rotary needle-cylinder provided with a driving-shaft having a pinion, of the needles, a cam-cylinder having a cam-groove for the needles, a rotary needle-lifter adapted to engage the needles, an arbor for turning the needle-lifter and provided with a cog-wheel, and an idle-gear wheel in mesh with the cog-wheel and pinion respectively, substantially as herein described.

2. The combination, as hereinbefore set forth, with a needle-cylinder and needles, of a cam-cylinder for the needles provided with removable sections 27, the rotary needle-lifter 16, supported near the needles and acting to lift the needles, and means for rotating said needle-lifter, substantially as herein described.

3. The combination, as hereinbefore set forth, with a rotary needle-cylinder and needles and the needle-lifter, of the cam-cylinder 14, provided with the cam-groove 15, and the auxiliary cam-tracks 29 and 30, having a support and provided with means of adjustment, substantially as described.

4. The combination, as hereinbefore set forth, with a needle-cylinder provided with the drive-shaft 18, having the pinion 23, of the needles and the cam-cylinder therefor, the rotary needle-lifter 16, having the arbor 19, provided with the cog-wheel 20, and the idle-pinion 21, gearing with said cog-wheel and pinion, substantially as herein described.

388,787. Multiple Primer for Shells. Nat. W. Pratt, Brooklyn, assignor to the Pneumatic Dynamite Gun Company, New York, N. Y. Filed June 23, 1888. Serial No. 278,497. (No model.)



Claim.—1. A projectile for carrying an explosive charge provided with a series of independent plungers for exploding the fulminates, a series of independent fulminates mounted clear of the plungers, and a lock for normally holding said plungers positively against movement toward the fulminates, but automatically unlocked when the projectile leaves the gun, each plungers being then kept from impingement against the fulminates by inertia, substantially as described.

2. A projectile provided with a series of plungers for exploding a fulminate, a series of fulminates in position to be exploded by said plungers, and a case for containing said plungers and fulminates, having an adjustable end to vary the distance between the striking-point of the plungers and the fulminates, whereby to regulate the time utilized to explode the charge after the projectile strikes an object or is embedded therein.

3. A projectile provided with a plurality of plungers for exploding a fulminate, a spring-seated bolt for locking the plungers in position when placed in the projectile or in the barrel of a gun, and a temporary collar adapted to be placed upon the butt of the projectile when out of the gun to hold the bolt in its locking position, substantially as described.

4. A primer-case for projectiles provided with a plurality of plungers for exploding a fulminate, a spring-seated bolt for locking the plungers in position, and a spring-pin for normally holding the bolt in its locking position, and adapted to be disconnected to free the bolt when the case is inserted in place in the projectile by the engagement of the spring with the wall of the projectile, substantially as described.

5. In a projectile, the combination, with a case having chambers containing plungers for exploding a fulminate, of a lead to said case provided with the fulminate and sustaining it a distance removed from the points of the plungers, and an adjusting-screw for adjusting the position of the lead to vary the distance between the fulminate and plungers, substantially as described.

388,788. Hose-Nozzle Supporter. Oliver P. Prescott, Boston, Mass., assignor to himself, Charles S. Prescott, and John W. Prescott, same place. Filed June 6, 1888. Serial No. 276,286. (No model.)

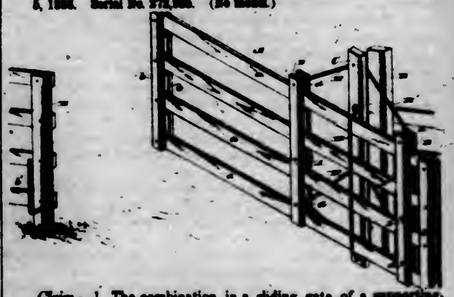


Claim.—1. The described hose-nozzle supporter, consisting of the base B, with its diverging legs A A A, forming a portable tripod, in combination with the standard provided at its upper end with spring-actuated clamp-jaws I J, to hold the nozzle, and with a bolt and thumb-screw, O S, adapted to secure said standard frictionally to the base when adjusted, substantially as set forth.

2. The legs A and the base B, formed with a concave socket and with a central aperture, Q, as described, in combination with the hose-supporting standard having slotted bulb D, the screw-eye P therein, and the bolt O and thumb-screw S, engaging with said screw-eye, substantially as set forth.

3. The hollow standard, made in two parts, E F, united transversely, one of said parts prolonged to form the curved jaw I, in combination with the jaw J and its handle K, cast integral and pivoted in bearings in the parts E F, and with a pressure-spring, M, substantially as set forth.

388,789. Gate. John R. Rowe, La Fontaine, Kans. Filed May 8, 1888. Serial No. 273,295. (No model.)

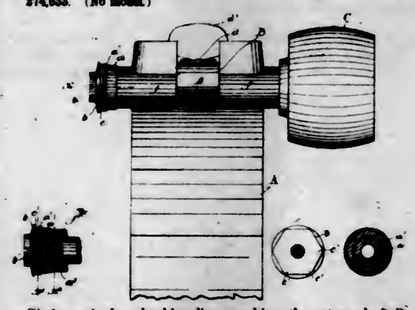


Claim.—1. The combination, in a sliding gate, of a supporting-post, B, having a post, C, pivotally secured thereto, vertical battens D D, held apart from each other by blocks *d d*, said battens being

located on each side of the post C, and equidistant therefrom, brace-rods E and E', F and F, and G and G, extending from the battens to the pivoted post C, and rollers I, upon which the gate slides, whereby a thoroughly-braced gate-support is provided, adapted to resist upward or downward strain upon the gate-support, substantially as shown, and for the purpose set forth.

2. The combination, in a horizontally swinging and pivoted gate, of the post C, suitably pivoted to the supporting-post B, vertical battens D, and brace-rods E, F, and G, extending from the post C to the battens, as shown, supporting-wheels I, secured between said battens, upon which the gate slides, and a bar, H, with inwardly-bent ends secured to the pivoted post C, substantially as shown, and for the purpose set forth.

388,790. **HEEL-BEADING MACHINE.** Joshua H. Ryder, Brockton, Mass., assignor of one-third to George V. Scott, same place, and George H. Dotes, Plymouth, Mass. Filed May 22, 1888. Serial No. 274,633. (No model.)



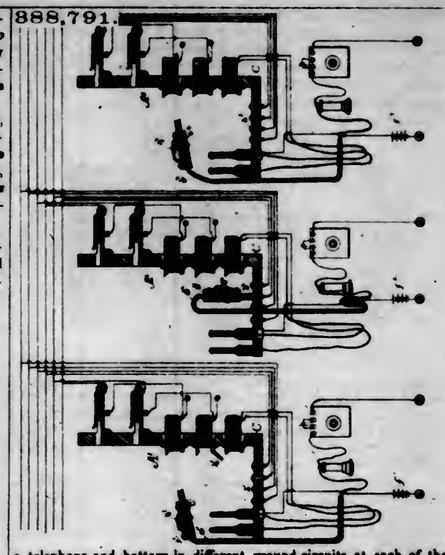
Claim.—1. In a heel-beading machine, the rotary shaft B and rand-guide *b*, a heel-beading tool formed integral with the said rand-guide *b*, and having one or more cam-like surfaces or projections, as *c'*, substantially as described.

2. The rotary shaft B and the rand-guide *b*, combined with the heel-beading tool having cam-like surfaces or projections *c'*, and the independent milled edge heel-rest *a*, substantially as described.

3. In a heel-beading machine, the following instrumentalities: the rotary shaft B and the rand-guide *b*, a heel-beading tool, *c*, fast thereon, combined with the heel-rest *a*, having the milled or roughened edge *a'* and loose on the shaft B, substantially as and for the purpose set forth.

4. In a heel-beading machine, the following instrumentalities: the rotary shaft B and the rand-guide *b* and heel-beading tool *c*, fast thereon, combined with the heel-rest *a*, having the milled or roughened edge *a'* and provided with a sleeve-like extension, a^2, which turns in a bearing in a part of the frame-work independent of the shaft B, substantially as described.

388,791. **SWITCH-BOARD FOR TELEPHONE-EXCHANGES.** Charles E. Scribner, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 22, 1884. Serial No. 125,222. (No model.)



Claim.—1. The switch-boards, each having the usual switching apparatus and its group of telephone-lines, and trunk-lines between said boards, in combination with half-connection or branch terminals *b*, placed within reach of the switchmen at the different boards, whereby any switchman may test to determine whether any line of another group called for at his own board is busy.

2. The combination, substantially as hereinbefore set forth, with an electric circuit of a telephone-exchange, of a switch and an annunciator placed in said circuit at the central office, and one or more branch or half connections permanently connected with said electric circuit before the line of said circuit reaches the said switch, a half-connection terminal of said electric circuit being placed near each of the switch-boards of the lines of other groups, and means at each of said switch-boards of other groups, whereby a telephone and battery, respectively, may be alternatively connected with and disconnected from the said electric circuit.

3. In a telephone-exchange, the contact-plug *c*, provided with a key, *g*, in combination with a battery, *f*, and a telephone, and a terminal, *b*, of a branch or half connection, *a*, substantially as and for the purpose specified.

4. In a telephone-exchange system, two or more switch-boards and telephone-lines grouped upon the different switch-boards, each line being provided with a spring-jack switch and annunciator upon one of the switch-boards and extending from the annunciator to ground, each line being provided with an open branch or half connection extending to a stud or contact-piece, *b*, upon each of the other boards, a telephone and battery in different ground-circuits at each of the boards, said circuits being connected with different strands of the same cord, said cord terminating in a switching device for connecting battery or telephone at will with the contact-terminal of the said switching device, whereby an operator at one board may throw down the annunciator of any line except of the lines grouped upon his own board.

5. A telephone-line grounded at the subscriber's station and at the central office, annunciators or signal devices included in said line, one at the subscriber's station and one at the central office, and a branch or half connection from said line at a point between the signal-instruments, said branch extending to a contact or terminal, *b*, in combination with a contact-plug, *c*, and its double cord, one cord including in its circuit a telephone and the other cord including in its circuit a battery, whereby an operator at will may connect the telephone or battery with the line, substantially as and for the purpose specified.

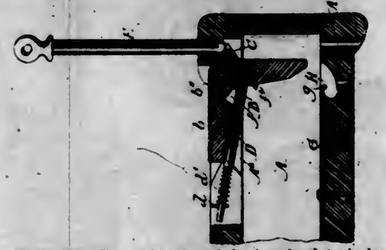
6. The combination, with telephone-lines, each including a spring-jack switch and an annunciator, of switch-boards, upon which the spring-jack switches and annunciators are arranged in groups, a branch or half connection extending from each line to a terminal stud upon each of the boards, except the board upon which its spring-jack switch and annunciator is placed, said terminals being arranged at the different boards in groups, and numbered to correspond with their lines, respectively, a contact-plug connected with a double-stranded cord at each of the boards, one strand containing a battery and the other a telephone, said connecting-plug being provided with a key, *g*, whereby the operator at any board may, by applying the contact-plug to the terminal of any line, determine by listening at any telephone whether the line is in use, and by closing the key *g* send current to line, substantially as and for the purpose specified.

7. The combination, with telephone-lines, of their individual spring-jack switches and annunciators grouped upon different switch-boards, a branch connection from each line on the line side of its spring-jack extending to a different terminal at each of the other boards, trunk-wires between the boards, a telephone and source of electricity at each of the boards, and switching apparatus, whereby an operator at any given board may test a line grouped at any other of the boards, and, having tested, throw down the shutter of said line and direct the operator answering the signal to connect said line with a particular trunk-wire, substantially as and for the purpose specified.

8. In a telephone-exchange system, the combination, with two or more switch-boards, of telephone-lines, each telephone-line being provided with a spring-jack switch and an annunciator on one of the boards only, and each line being provided with a terminal or stud upon each of the other boards, trunk-lines between the different boards, a telephone and battery connections at each of the boards, the terminal of said battery and the terminal of said telephone being each upon the same movable switch or contact plug, and switching apparatus at each of the boards, whereby an operator at one of the boards may throw down the shutter of any line located at another board, and whereby any two lines of the exchange may be connected together, substantially as described.

9. The combination, with telephone-lines from the different subscribers' stations terminating in spring-jacks and annunciators at their respective boards, of branches from all of the lines terminating in studs upon the other switch-boards, trunk-lines connecting the different switch-boards together, connecting cords and plugs with which the lines of the different boards may be connected together through the medium of the trunk-lines, switching devices in connection with the operator's telephone and calling generator to connect with the studs or terminals of the said branch connection, whereby an operator at one board may signal an operator at another board over the line wanted, to complete the connection.

388,792. **CAR-COUPLING.** Levi Showalter, Bostown, assignor of one-fourth to Reuben B. Showalter, Lancaster, Wis. Filed May 18, 1888. Serial No. 274,274. (No model.)



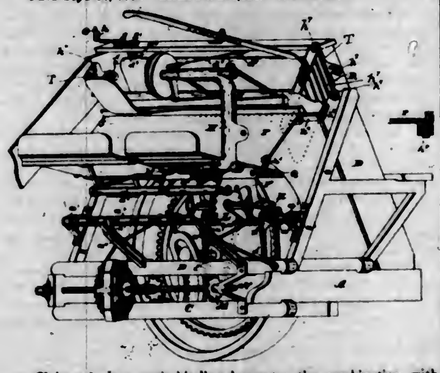
Claim.—1. The combination of the draw-head A, the latch B, having the toe C, the thrust-rod D, and the spring *d'*, substantially as and for the purposes described.

2. In a car-coupling, the spring G, in combination with the draw-head A, having the recess H, substantially as described.

3. In a car-coupling having the draw-head A, the combination of the latch B, having the pocket *f*, with the thrust-rod D, the spring *d'*, and the eyelet *d*, substantially as and for the purposes described.

4. In a car-coupling, the tumbling latch B, in combination with the spring G, and the draw-head A, provided with the recess H, substantially as and for the purposes described.

388,793. **GRAIN-BINDING HARVESTER.** Albertus O. Sleeper, Canton, Ohio, assignor to the Peerless Reaper Company, same place. Filed Sept. 30, 1886. Serial No. 214,856. (No model.)



Claim.—1. In a grain-binding harvester, the combination, with the harvester-frame, of a binder-supporting frame having a hinge-connection with the harvester-frame about the binder and packer actuating shaft, a binder-deck, one part of which is connected with the harvester-frame and another part with the binder-frame, the parts being so connected together as to be held in operative position while the binder-frame is being folded, and means for raising and lowering the binder-deck during the progressive movement of the machine, whereby the binder may be raised to pass obstructions or folded over upon the machine, substantially as set forth.

2. In a grain-binding harvester, the combination, with a binder-frame pivotally secured to the harvester about the binder and packer actuating shaft, and a binder-deck, one part of which is connected with the harvester-frame and another part with the binder-frame, the parts being so connected as to be held in operative position while the binder-frame is being folded, of gearing connecting the binder and packer actuating shaft with a drive-shaft, and a lifting device leading from the binder-frame to a point within reach of the operator, by which the binder-frame may be moved bodily about the binder and packer actuating shaft as an axis without throwing the gearing out of operative adjustment, substantially as set forth.

3. The combination, in a grain-binding harvester, of a binder-supporting frame having a hinge-connection with the harvester about the binder and packer actuating shaft, a binder-deck, one part of which is connected with the harvester-frame and another part with the binder-frame, the parts being so connected together as to be held in operative position while the binder-frame is being folded, a crank having a spring-actuated clutch and a lifting-connection between the binder-supporting frame and the crank, whereby the operator may raise the binder without disconnecting the shaft from its driver to pass over obstructions during the progressive movement of the machine or fold the binder over upon the machine and sustain it in said position for convenience in operating and transporting it, substantially as set forth.

4. The combination, with a grain-binding harvester, of a binder-supporting frame having a hinge-connection with the harvester about the binder and packer actuating shaft, binder-supporting standards, a binder-deck, one part of which is connected with harvester-frame and another part with the binder-frame, the parts being so connected together as to be held in operative position while the binder-frame is being folded, and means by which the operator may raise the binder from the standards and lower it onto the standards, substantially as set forth.

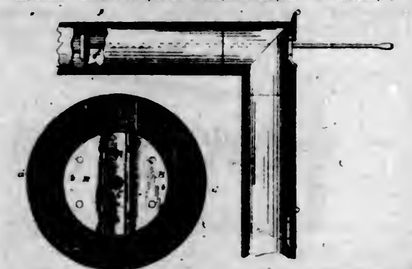
5. In a grain-binding harvester, the combination, with a binder adapted to be raised up and folded upon the machine, of a grain-deck composed of an upper and lower section having a yielding and sliding connection at the point of engagement and a cross-bar supported on the harvester-frame, upon which the upper section is loosely mounted and adapted to rock and slide longitudinally, substantially as set forth.

6. In a grain-binding harvester, a grain-adjuster provided with a hinge consisting of a bracket having perforations to receive a bolt, on which the adjuster turns, and also having a tail-piece provided with a slot in the arc of a circle adapted to receive loosely a bolt at right angles to the hinge-bolt for the purpose of allowing the movement of the adjuster in two directions, as set forth.

7. In a grain-binding harvester, a grain-adjuster having a vertical hinge, h^1, a horizontal hinge, h^2, and a circular slot, h^3, substantially as described, and for the purpose set forth.

8. In a grain-binding harvester, the combination of the hinge-pieces E and F, the former provided with the groove *d'* and flange d^2, and the latter with the groove d^3 and flange *d*, adapted to engage the flange d^2 and groove *d'* of the piece E, respectively, and the sleeve G, as a hinge and a support for the actuating-shaft and the binder, substantially as set forth.

388,794. **STOVE-PIPE OR FLUE CLEANER.** Russell G. Smith, Watertown, Dak., assignor of one-half to Herschel M. Smith, Minneapolis, Minn. Filed Dec. 8, 1887. Serial No. 257,289. (No model.)



Claim.—1. In a chimney-cleaner, the combination, with the head-block adapted to have a handle applied thereto, and the two wings hinged thereto, of the spring to limit the inward movement of the wings and assist in opening them, substantially as and for the purpose specified.

2. The combination, with the head-block, of the wings composed of a rigid center, which is hinged to the head-block, and the flexible edge, substantially as described.

3. The combination, with the oblong-shaped head-block apertured to receive a handle, and the two wings hinged to the head-block near its opposite edges and held open by said head-block, of the spring for limiting the inward movement of the wings, substantially as and for the purpose described.

388,795. **HAY OR GRAIN COCK WEATHER-SHIELDS.** John A. Symmes and Luther B. Symmes, Sherbrooke, Quebec, Canada. Filed July 22, 1887. Serial No. 244,906. (No model.) Patented in Canada Apr. 5, 1887, No. 26,400, and in England May 6, 1887, No. 6,690.

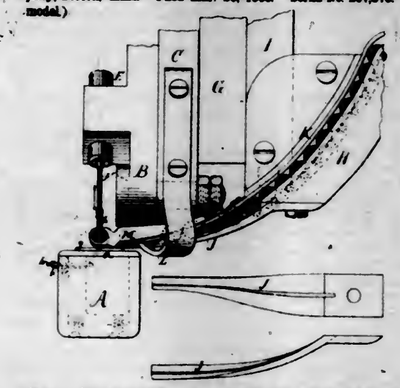
388,795.



Claim.—1. A cover for hay-cocks or grain-stacks, consisting of a rigid water-proof shield, of concavo-convex shape, formed, without a seam, of paper-pulp, substantially as described and shown.

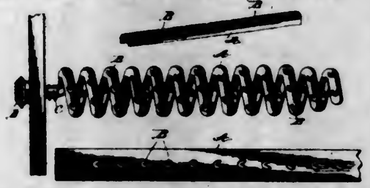
2. A cover for hay-cocks or grain-stacks, consisting of a rigid seamless radially-corrugated water-proof paper-pulp shield of concavo-convex shape, substantially as described and shown.

388,796. BUTTON-SEWING MACHINE. RENWELL THOMPSON, Bridgeport, Conn., assignor to the Morley Button Sewing Machine Company, Boston, Mass. Filed Mar. 30, 1888. Serial No. 267,570. (No model.)



Claim.—In a button-sewing machine, the combination, with its stitch-forming mechanism and work-table, of a button-pusher and swinging button-trough having on its end a button-clamping spring, M, the said spring having in its clamping end a downward bend, whereby the outermost button is separated from the next one, and a perforation which is less in diameter than the button-heads, all substantially as described, and for the purpose set forth.

388,797. METHOD OF CONSTRUCTING PICKER-STEMS. GEORGE B. TODD, Chicago, Ill., assignor to the Todd Cotton Harvester Company, of Illinois. Filed Dec. 13, 1887. Serial No. 257,763. (No model.)



Claim.—1. The herein-described methods for producing picker-stems for cotton-harvesters, the same consisting in winding into a spiral coil a toothed strip of metal and then securing to one end thereof a gear-wheel, substantially as and for the purpose described.

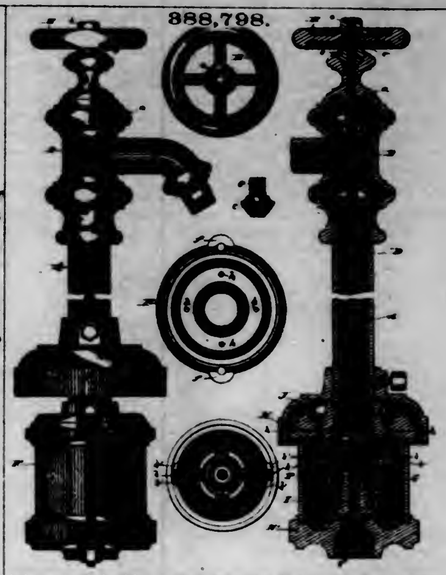
2. The herein-described methods for producing picker-stems for cotton-harvesters, the same consisting in first stamping, cutting, or otherwise forming teeth in or upon a flat strip of sheet metal, then bending said strip transversely of its length with the teeth upon the concave side thereof, then winding said strip into a spiral coil, and finally securing to one end of said coil a gear-wheel or its equivalent, substantially as described.

3. As a new article of manufacture, a picker-stem, the body of which is composed of a strip of toothed metal coiled spirally and having a gear-wheel or its equivalent secured to one end thereof, substantially as described.

388,798. HYDRANT. AARON J. TYLER, Albion, N. Y. Filed May 4, 1888. Serial No. 272,793. (No model.)

Claim.—1. The combination, with a stand-pipe, a water-chamber, B, attached to the upper end thereof, the head of this water-chamber

388,798.



being provided with a conical depression in its upper face, *g* valve-casing attached to the lower end of stand-pipe and provided with a valve-seat, *g*, waste-apertures being formed through this valve-seat, a vertically-movable valve in the casing F, adapted to close against the seat *g* and close the waste-apertures, a valve-rod for operating this valve, this valve-rod being journaled in the head of the water-chamber and provided with a conical enlargement, *c*, adapted to fit the conical depression in the head of the water-chamber, substantially as described.

2. In a hydrant, the combination of the stand-pipe provided with a water-chamber on its upper end and a valve-casing on its lower end, a vertically-working valve in the said casing, a valve-rod for operating this valve, this valve-rod being journaled in the head of the water-chamber and provided with a collar, *d*, a conical nut, *c*, screwed to the upper end of the valve-rod and adapted to fit closely a conical depression in the head of the water-chamber, a hand-wheel screwed on this nut *c*, and a lock-nut, *b*, screwed on the projecting end of the valve-rod, substantially as described.

3. The combination, with a stand-pipe, water-chamber, and a valve-rod, of the valve-casing consisting of a vertical cylinder, G, secured between two heads, H H', the upper head, H, being provided with waste-apertures *h*, the valve I, working vertically in the cylinder G, and consisting, essentially, of the upper ring, *n*, and lower disk, *l*, connected by vertical pillars *m*, the said valve being adapted to alternately close the waste and inlet openings, and the packing-rings, substantially as and for the purpose herein set forth.

4. The combination, with the stand-pipe, and the valve-casing F, secured to the lower end of the stand-pipe, this valve-casing consisting of a short cylinder and two heads, H H', these heads being provided, respectively, with the valve-seats *g g'*, the former valve-seat being provided with waste-apertures *h* and surrounding the outlet in the head H, of the vertically-working valve I, inclosed in the said casing F and consisting of the upper ring, *n*, and a disk, *l*, connected with the said ring by vertical pillars *m*, packings secured to the said ring *n* and disk *l*, and a valve-rod for operating the said valve I, this valve I being adapted to alternately close against the valve-seats *g g'*, substantially as described.

388,799. SCHUTTBOLLERAD. AARON J. TYLER, Albion, N. Y. Filed May 14, 1888. Serial No. 273,890. (No model.)



Claim.—1. The combination of a rule, a plate, F, pivoted thereto near its inner end, the rear end of the said plate being provided with lateral arms and the arms being provided with adjustable needle-points, substantially as described.

2. The combination of a rule, a plate, F, pivoted thereto near its inner end, provided with lateral arms, these arms being provided with internally screw-threaded bosses *f*, and screws G G', working in these bosses, these screws being provided with needle-points, substantially as described.

3. The combination of a rule provided with a graduated arc, *b*, a plate, F, pivoted to this rule near its inner end, this plate F being provided with a pointer, F', and an adjustable needle-point carried by the plate F, substantially as described.

4. The combination of a rule, a plate provided with two lateral arms, F', and a pointer, F', the said arms being pivoted to the rule, adjustable needle-points carried by the said lateral arms, an indicator-plate provided with a graduated arc, around which the said pointer F' moves, and a pivotal screw and thumb nut for holding the parts in any adjusted position, substantially as described.

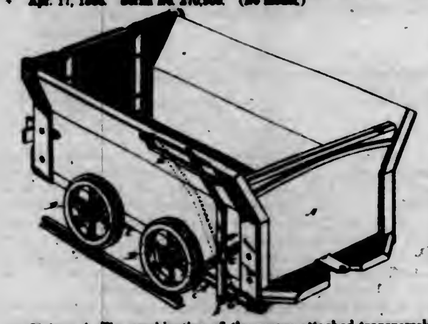
388,800. CHAMOIS-HOLDER. ANDREW T. VERMILYE, Schenectady, N. Y. Filed May 4, 1888. Serial No. 272,809. (No model.)



Claim.—1. As an article of manufacture, a chamois-holder consisting of a rod or bar having a right-angular spur and keeper erected from each end, the spurs being pointed and edged on one side, substantially as described.

2. The combination, with a bar, A, of end spurs, C, and bracket-arms B erected therefrom, and stems provided with spur-seats and vertically adjustable in the ends of the bracket-arms, substantially as described.

388,801. COAL-WAGON. JOHN R. WILSON, Greensburg, Pa. Filed Apr. 17, 1888. Serial No. 270,598. (No model.)



Claim.—1. The combination of the sprags attached transversely at proper points on one side the bottom of a pit-wagon, and mechanism, substantially as described, whereby the said sprags can from a point above or at the side of the wagon be drawn simultaneously outward between the spokes thereof, substantially as specified.

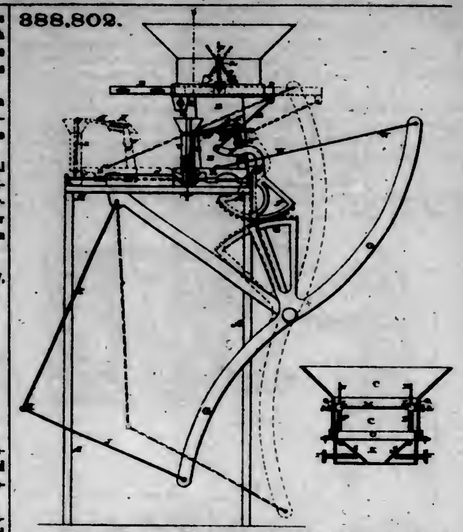
2. The combination of the transverse sprags sliding in bearings secured at proper points along one side of the under surface of the bottom of a pit-wagon, the angle-levers pivoted at their bends to said bottom, and a lever pivoted to the side of the wagon with its upper end rising thereabove, which lever is connected in such manner with said angle-levers as to move them simultaneously in the same direction, substantially as specified.

3. The combination of the transverse sprags C, arranged on one side of the wagon, the guide and retaining bearings c, the angle-levers D, the link-bar E, provided with the outstanding arm *e*, the pivoted lever F, provided with the engaging opening *f* near its lower end, and the limiting-staple H, all constructed and arranged substantially as and for the purpose specified.

388,802. GEAR-BUNCHING MACHINE. MARSH A. WRIGHT, Columbus, Ohio, assignor to Parmary R. Wright, same place. Filed Oct. 28, 1887. Serial No. 253,618. (No model.)

Claim.—1. In a bunching-machine, the combination of the hopper, the slide, a pivoted lever connected thereto by means of a rigid connecting-rod, the carriage, an operating-lever connected thereto by a rigid connecting-rod, and which lever operates the lever which moves the slide, and a treadle whereby the carriage and the slide are automatically moved at the same time in opposite directions, substantially as shown.

388,802.



2. The combination of the hopper, the slide which is moved back and forth through the bottom thereof, the rigid connecting-rod E, and the pivoted lever F, provided with teeth at its lower end, the carriage, the connecting-rod W, the lever G, which operates both the carriage and lever, and the treadle connected to the lower end of the lever G, substantially as described.

3. The combination of the slide which moves back and forth through the hopper, the carriage, the two pivoted levers, which are connected at their upper ends to the slide and carriage by rigid connecting-rods, and the treadle, the two levers being geared together, so as to cause the slide and carriage to move simultaneously in opposite directions, substantially as set forth.

4. The combination of the carriage, the funnel connected thereto, a shaper or former placed inside of the funnel and having a vertical movement, a spring-actuated lever connected to the shaper or former, a stop for moving the lever when the carriage is returned to position, and the apron, substantially as specified.

5. The combination of the carriage, the lever for moving it, the funnel secured to one end of the lever, the shaper or former placed inside of the funnel, the slides connected to the shaper or former, the connecting-rods Z, pivoted spring-actuated levers A', the adjustable blocks connected to the levers, the stops, and the apron, substantially as shown.

6. The combination of the funnel, the carriage connected thereto, the shaper or former provided with springs W', pins X, connected to the slides Y, and which pass through slots in opposite sides of the funnel, the wings, connecting-rods Z, spring-actuated levers A', provided with adjustable blocks D', the stops E', and the apron, substantially as described.

7. The combination of the support for the hopper, the hopper, the slide provided with a pocket, and the guide K, provided with an adjustable wing or wings, substantially as set forth.

8. The combination of the hopper, the slide provided with a pocket, the plunger, the rods connected to the plunger, the springs placed around the rods, and the journals or bearings through which the rods pass, substantially as specified.

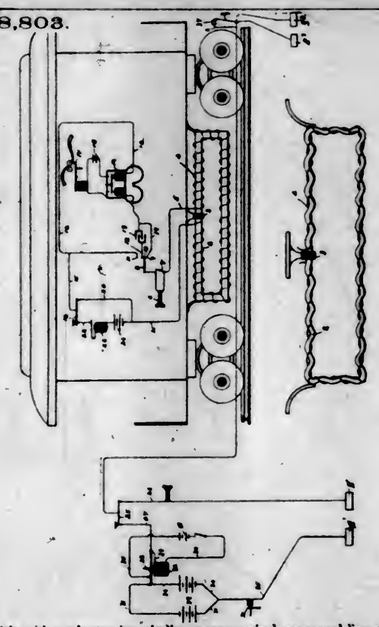
9. The combination of the hopper, the journals placed therein, the slide provided with a pocket, the plunger having the rods N, connected to opposite ends, and the springs around the rods, the journals being connected together by the cross-rod M, substantially as shown.

10. The combination of the hopper, the slide provided with a pocket, the plunger O in the hopper, the rods N, which extend upward from the plunger, the pivoted journals through which the rods N pass, the springs placed around the rods, and the pins which are passed through the rods, substantially as described.

388,803. RAILWAY-TELEGRAPHY. GRANVILLE T. WOODS, Cincinnati, Ohio. Filed July 14, 1887. Serial No. 244,268. (No model.)

Claim.—1. In a system of electric communication of the character described, in combination with a fixed line-conductor arranged in or parallel with the path of the vehicle, a transmitting and receiving coil having its convolutions brought into planes approximately paral-

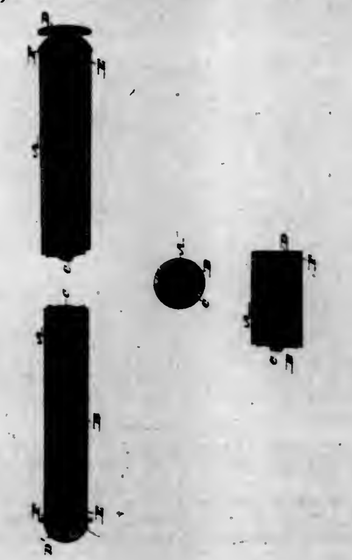
388,803.



lel with said conductor by winding upon a spiral or waved line core, substantially as set forth.

2. In a system of communication of the character described, a receiving and transmitting apparatus adapted to be carried by the car in inductive proximity to the line-conductor, consisting of a metallic core in rectangular form, as shown, bent to a spiral or waved line in the direction of its axial length with disconnected ends, and having an insulated wire helix wound thereon in a spiral corresponding with the longitudinal contour of the bar and circuited through the signal receiving and transmitting instruments upon the car, substantially as set forth.

388,804. RUST-PREVENTER FOR FIRE-ARMS. CHARLES I. WORCESTER, Berlin, N. J. Filed May 3, 1888. Serial No. 272,664. (No model.)



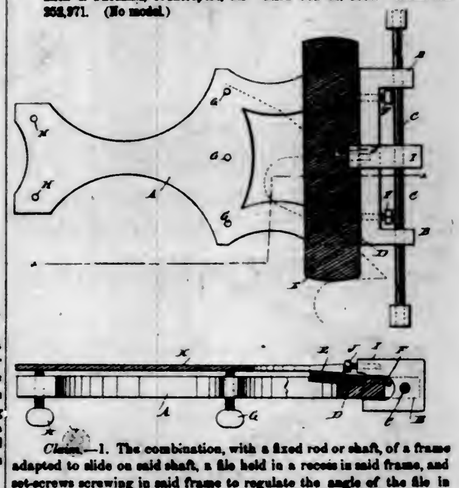
Claim.—1. A gun-plug composed of oil absorbing or containing material and provided with caps at the ends thereof adapted to engage the ends of the gun-barrel, substantially as and for the purpose set forth.

2. The gun-plug B, made of oil-absorbent material, having the end caps, D D', adapted to engage the ends of the barrel, and the rod C, connecting said plug and caps, substantially as and for the purpose set forth.

3. The sectional gun-plug B, consisting of one or more parts of oil absorbing or containing material, a sectional jointed rod carrying said plug, and end caps adapted to engage the ends of the barrel, said parts being combined substantially as described.

4. A gun-plug of oil absorbing or containing material, end caps adapted to engage the ends of the gun-barrel, washers between caps and plug, and a rod in said plug connecting said caps, said parts being combined substantially as described.

388,805. DEVICE FOR DRESSING THE TEETH OF SAWS. WALLACE C. YEOMANS, Centerport, Pa. Filed Oct. 21, 1887. Serial No. 253,971. (No model.)



Claim.—1. The combination, with a fixed rod or shaft, of a frame adapted to slide on said shaft, a file hold in a recess in said frame, and set-screws screwing in said frame to regulate the angle of the file in relation to the teeth to be filed, substantially as shown and described.

2. The combination, with a fixed shaft and a gage secured to said shaft, of a frame adapted to slide on said shaft, a file held in a recess on said frame, and set-screws screwing in said frame and against the saw-blade, so as to regulate the angle of said file in relation to the teeth to be filed, substantially as shown and described.

3. The combination, with a fixed shaft, a guide-piece held on said shaft, and a set-screw screwing in said guide-piece, of a frame adapted to slide on said shaft and having a groove extending parallel with said shaft, a file held in said groove, and set-screws screwing in said frame and against the saw-blade to regulate the angle of the file in relation to the teeth of the saw, substantially as shown and described.

388,806. DRUM. EDWARD ZOELLER, Louisville, Ky. Filed June 21, 1888. Serial No. 277,709. (No model.)

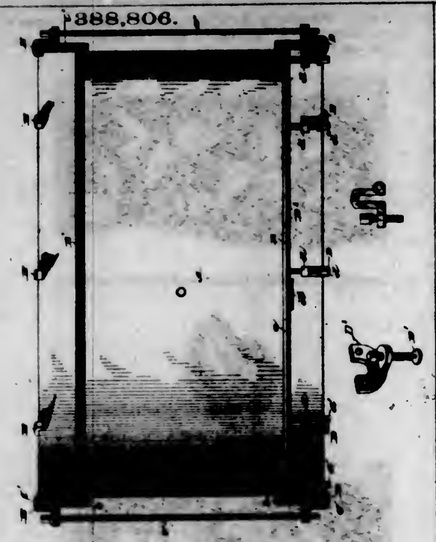
Claim.—1. As a new article of manufacture, a bracket for drums, consisting of a body provided at one end with a tapped lug to overhang the drum-head and receive a set-screw, and at the other end with a lug to engage the head-tightening device, substantially as described.

2. The combination, substantially as described, of a drum the rim at one end of which is provided with brackets having tapped lugs overhanging the heads, set-screws seated in said lugs, and means interposed between the inner ends of the screws and head to protect the latter from abrasion.

3. The combination, substantially as described, of a drum the rim at the snare end of which is provided with brackets having tapped lugs overhanging the head, set-screws seated in said lugs, and a ring seated loosely upon the head beneath the screws and arched at opposite sides to bridge the snares.

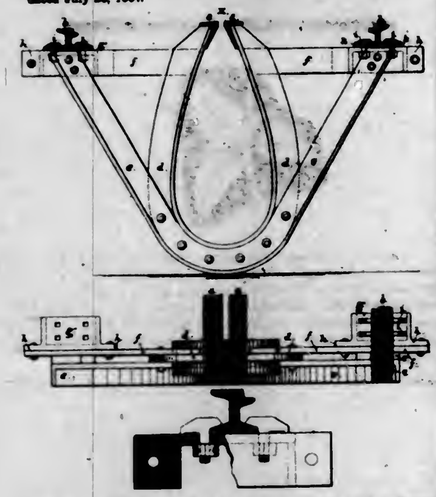
4. The combination, substantially as described, of a drum cylinder or barrel provided at one end with an inwardly-projecting flange on which the snare-head rests, the heads, the rims, the brackets, one set of which is provided with tapped lugs to overhang the snare-head, the tightening means, set-screws fitting the tapped lugs, and means interposed between the lower ends of said screws and the snare-head to protect the latter from abrasion.

388,806.



REISSUES.

10,953. CABLE RAILWAY. GEORGE W. DOUGLAS, San Francisco, Cal. Filed Sept. 7, 1887. Serial No. 248,042. Original No. 367,137, dated July 26, 1887.



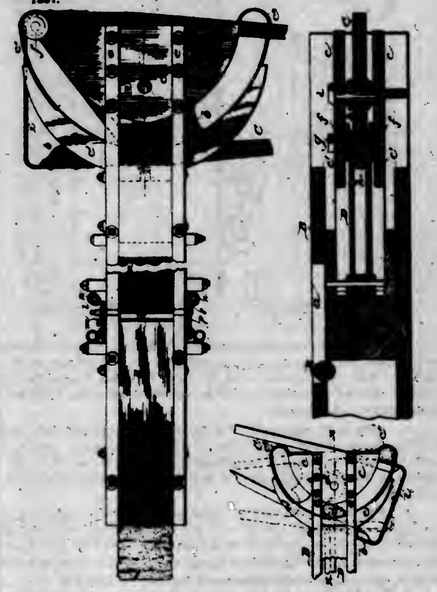
Claim.—1. The transverse frame or section for cable railways consisting of a loop formed of T-iron bent into the shape of the tube or tunnel with the horizontal flange inwardly, in combination with the yoke of angle-iron bent to fit the lower curve of the loop, having its vertical flange bolted to the vertical flange of the loop around the curve, and its ends extending upwardly to a point beneath the rails and connected with the upper ends of the loop by transverse tie-bars bolted to both, substantially as herein described.

2. The improved track and slot-iron supporting frame for cable railways, consisting of a loop formed of T-iron and an exterior yoke of angle-iron, the two being bent into the same curve at the lower part and bolted together around the curve, so as to present a base comprising the two horizontal flanges, the upper ends of the yoke and loop diverging, so as to support the track and slot rails, respectively, in combination with the uniting bars or braces, substantially as herein described.

3. The improvement in cable railways, consisting of the transverse slot-irons and track-supporting frames formed of T-iron and angle-iron, as shown, in combination with the rail-supporting chairs bolted to the frames, and having the double-headed bolts constructed to rest upon the flanges of the rail and the top of the chair, substantially as herein described.

4. The herein-described bolt or fastening for holding down a rail to its chair or support, consisting of a body having a threaded shank for a nut, a hook or projecting head for the rail-flange, and an offset or lateral extension opposite to the hook or head, substantially as herein set forth.

10,954. HAY-PRESS. WILLIAM A. LAIRLAW, Cherokee, Kans. Filed July 7, 1888. Serial No. 279,387. Original No. 366,081, dated Mar. 8, 1887.



Claim.—1. In a hay-press of the class hereinbefore described, the combination of the curved bars $c' c'$, arranged as specified, and conical plates c c, whereby a curved slot having an eccentric middle portion is formed between them, the curved straps that connect such parts $c' c'$, the pivoted sweep having the head recessed, the follower, pitman, and bolt, and flanged anti-friction rollers and central roller, all as shown and described.

2. In a hay-press of the class hereinbefore described, the combination, with the follower and the press-box having slatted sides, of the cylindrical roller, lever-arms pivoted to the outer sides of the press-box, the springs, and ratchet and pawl, all constructed and arranged as shown and described.

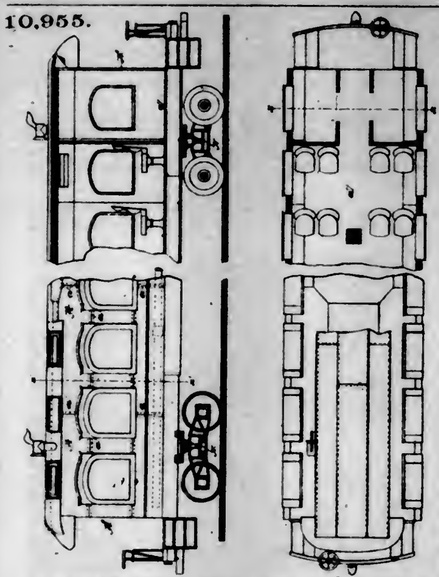
10,955. RAILWAY-CAR. CHARLES M. SMITH, Boston, Mass., assignor, by mesne assignments, to the Steel Car Company, Denver, Colo. Filed June 25, 1888. Serial No. 278,121. Original No. 366,519, dated July 12, 1887.

Claim.—1. A car-body composed of metal plates riveted together, and having its top, bottom, and sides of different curvatures, combined with keelsons extended longitudinally from end to end of the car-body, and the floor *a*, supported on the said keelsons, and cross-braces for the keelsons, substantially as described.

2. A car-body composed of metal plates riveted together, and having its top, bottom, and sides of different curvature and provided with window-spaces along its sides, combined with metallic dormer-window frames L, bolted or riveted to the metallic body, as set forth, and the cap $L' L^2$ and sliding-sash, the latter, when lifted, entering the space g^4 in the said cap, substantially as described.

3. The metallic car-body composed of metal plates riveted together, and having its top, bottom, and sides of different curvature, and the floor *a*, combined with two or more keelsons at each side of the longitudinal center of the car, the said keelsons being provided with openings for the circulation of air in the spaces below the floor and between it and the body and the keelsons, substantially as described.

10,955.



4. The metallic car-body composed of plates or sheets riveted together, and having its top, bottom, and sides of different curvatures, and the floor *a*, combined with keelsons extended longitudinally through the car-body and beyond the ends to support the platform, substantially as described.

5. A car-body composed of metal plates riveted together, and having its top, bottom, and sides of different curvature, combined with keelsons *c c'*, extended longitudinally from end to end of the car-body, and the floor *a*, supported on said keelsons, substantially as described.

6. A car-body composed of metal plates riveted together, and having its top, bottom, and sides of different curvatures, and flanged braces D, secured to the inside of the car-body, combined with keelsons extended longitudinally from end to end of the car-body, and the floor *a*, supported on said keelsons, substantially as described.

7. The metallic car-body having its top, bottom, and sides of different curvatures, and the braces D, provided with flanges 10, combined with the rods R, connecting the said braces, substantially as described.

8. A car-body composed of sheet metal riveted together to form a shell, the latter in cross-section being in arcs of circles of different radii, the arc comprising the top or roof part of the car-body being smaller than that of the sides of the car-body between the floor-line and window-sills, while the arc for the bottom of the car-body below the floor is of greater radius than the sides below the window-sills, substantially as described.

10,956. PROCESS OF MAKING ELECTROTYPE-DIES. JAMES W. TOWER, Medford, Mass. Filed Mar. 29, 1888. Serial No. 268,966. (Original No. 260,513, dated June 20, 1882.



Claim.—The process of making an intaglio electrotype-die, which consists in producing the desired design in intaglio and in the rough by hand in a metal block or plate, then taking from the mold thus made a soft-metal counterpart, then finishing such counterpart by producing the desired ornamentation thereon by hand, and finally taking an electrotype from said finished counterpart to form the die or mold, substantially as set forth.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

OSGOOD *v.* BADGER *v.* BENNETT.

Decided August 15, 1888.

1. CONTROL OF COMMISSIONER OF PATENTS OVER WITNESSES.

The Commissioner of Patents has no control over witnesses. Their production, attendance, and conduct are under the control of the United States courts. If a witness fails to attend or refuses to answer questions without the fault or interference of the adverse party, application should be made to the Federal court for such orders as the circumstances demand. (*Wright v. Daggett*, 44 O. G., 943.)

2. SUPPRESSING DEPOSITIONS.

It should be an extreme case which would justify the Commissioner of Patents in suppressing a deposition on motion of a party who omits to take the proper steps to secure such orders from the courts as would protect him in taking the depositions.

3. BOUND BY HIS ELECTION.

A party who omits to cross-examine, relying upon his motion before the Commissioner to suppress the depositions, elected what course to pursue and is bound thereby. A court of law or equity might relieve him from the consequences of his election and by process compel the witness to appear for cross-examination, or the Commissioner of Patents could order the witness to be produced for cross-examination, under penalty of suppressing his deposition.

4. ORDERS PROCURED BY FRAUD.

Orders procured by fraud which affect the rights of person or property or are injurious to the persons affected should be vacated; but an order recognizing the right of a party to secure and present to the court all his evidence in support of his allegations, which in no sense invades or affects the rights of his adversary, should not be disturbed.

5. EXTENDING TIMES—GOOD FAITH—DILIGENCE.

Courts are uniformly liberal in extending times for the taking of testimony, provided the parties act in good faith and are reasonably diligent; but the degree of diligence required in procuring evidence before trial is not so great as that required to secure a new trial. Especially is this true when the evidence has actually been procured and is in the presence of the court before the trial begins.

6. THE PATENT OFFICE NOT A COURT OF GENERAL JURISDICTION.

Practitioners before the Patent Office are not required to be learned and experienced lawyers, or to possess any special qualifications. Consequently greater indulgence should be shown applicants in matters touching the management and presentation of their cases. While the rules and practice of courts of equity govern here as far as applicable, cases may arise in which they should not be rigidly enforced.

ON motion.

STORE SERVICE APPARATUS.

Application of Edwin P. Osgood filed May 20, 1884, No. 132,204. Application of George A. Badger filed May 12, 1884, No. 131,088. Application of George W. Bennett filed January 10, 1883, No. 81,480.

Messrs. Joyce & Spear for Osgood.

Mr. William Cranch McIntire for Bennett.

Mr. N. W. Stearns, Mr. A. P. Brown, and *Mr. M. S. Hopkins* for Badger.

HALL, *Commissioner:*

Heretofore a motion was made on behalf of Badger (who has assigned his invention and the contest in interference is being conducted and prosecuted by the assignee) to open up the case and permit the taking of certain depositions as evidence-in-chief. It was asserted by the moving party that the evidence sought to be taken was newly-discovered evidence, which, with reasonable diligence, could not have been discovered in time to have been taken under the dates fixed for the taking of testimony. The witnesses whose depositions were desired were William E. Badger, George A. Badger, Mrs. Flora A. Ford, and Walter N. Ford.

The motion was presented, supported by affidavits, and on April 10, 1888, was sustained by the Commissioner as to the witnesses Flora A. Ford and Walter N. Ford and denied as to the others. The parties began the taking of the depositions at Boston on the 25th of April, Flora A. Ford being first produced and sworn. The examination-in-chief was concluded with the forty-ninth interrogatory. The cross-examination appears to have been directed principally to a development of the private life and affairs of the witness and her family, their residence, movements, what clothes were bought, where, and of whom bought, &c. The witness declined to answer a number of questions, for the alleged reason that the matters were private and wholly unconnected with the subject-matter in controversy, and the counsel have put on the record their objections and insistments in the shape of arguments and statements to the examining officer.

On April 25, 1888, a motion was made by counsel for Badger to protect the witness from this course of cross-examination, and the district judge, sitting as circuit judge, ordered that "the cross-examination of the witness as to her past life prior to the year 1875 is not to be further pursued, unless further authorized by the court upon subsequent application," dated April 29, 1888. After this order the witness declined to answer other questions—viz., interrogatories numbered 106, 158, 165, and 167, all relating to her private matters—where she had lived, and if she were married to a Mr. Marsh, &c. To compel her to answer these questions Bennett's counsel made application to the United States circuit court, and on April 30, 1888,

Judge Colt refused the motion and ordered that the witness need not answer the cross-interrogatories, "or any other questions inquiring as to where or the persons with whom she lived after 1880."

After this the cross-examination continued until the 2d of May, when 393 cross-interrogatories had been propounded, many of them of the same character as those considered by the judges, which the witness declined to answer for the same reasons as before, and because she claimed the benefit of the judges' orders. At this point the counsel for Bennett gave notice that he would the next day make a motion before the Commissioner of Patents to vacate the order made April 10, authorizing the taking of these depositions and to strike out the deposition, for the reason that it appeared from the testimony of Flora A. Ford now taken that the alleged testimony was not "newly-discovered," as claimed in the motion on which that order was granted; also, because witness had refused to answer certain questions, &c. The counsel also asked the examining officer to adjourn the further taking of the deposition until the motion could be submitted to the Commissioner and decided. The examining officer declined to adjourn the taking of the deposition. Counsel for Bennett then withdrew and declined to proceed further, and the deposition was signed. The deposition of Walter N. Ford was then taken; but there was no cross-examination. These depositions have been duly certified and are now part of the printed record in the case.

The present motion filed by counsel for Bennett is to vacate the order of April 10, 1888, granting leave to Badger to take the testimony of Flora A. Ford and Walter N. Ford, and that the testimony of those two witnesses be stricken from the record upon the grounds (1) that such order was obtained by misrepresentation and concealment of relevant facts which show that the evidence was not newly-discovered evidence, &c., and (2) on the ground that Flora A. Ford has refused to answer proper and material cross-interrogatories. The latter part of the motion can apply only to the deposition of Flora A. Ford. In his motion Bennett asks that if this motion to vacate the original order and suppress the depositions be denied, then an order be made requiring the witnesses to be produced at an early date for further cross-examination.

I see no reason to suppress the depositions for the reason assigned, viz: that the witness, Flora A. Ford, refused to answer certain cross-interrogatories. The parties conducting the examination were practically in the presence of the United States circuit court. Two orders relating to the examination and the conduct of the witnesses were procured, and others might easily have been obtained; but the orders were favorable to the witness, and, as far as I can see, she appears to have been candid and willing to testify except when the cross-examination trenched upon ground as to which she claimed protection under the judges' orders. As stated in *Wright* v. *Daggett* (44 O. G., 943,) the Commissioner of Patents has no power or control over witnesses. Their production, attendance, and conduct are under the control of the United States courts, and if the witness fails to attend or refuses to answer questions without the fault or interference of the adverse party application should be made to the Federal judge for such orders as the circumstances require. It should be an extreme case that would justify the Commissioner in suppressing a deposition on motion of a party who omits to take the proper steps to secure such orders of the judges as would protect him in taking the depositions. A party by a long and irrelevant cross-examination might harass and vex a witness until he or she would refuse to answer, and then, without applying to the judges, decline to proceed further and move to suppress the deposition for the refusal to answer, which he himself had really occasioned.

In the present case I am satisfied that the witness was willing to answer all relevant and material questions. Orders had been obtained protecting her against irrelevant inquiries and a forced disclosure of private affairs. Afterward she claimed the benefit of that protection as to other interrogatories. Being unlearned and unskilled in legal proceedings, she may have erred and extended her privileges where she ought not. In such case the proper course was again to submit the question to the Federal judge; but this was not done, and in view of witness's apparent candor and the length and character of the cross-examination I see no occasion to interfere and suppress the deposition.

As to the deposition of Walter N. Ford, no attempt was made to cross-examine this witness, although every requisite requiring it had been observed and all parties could have been present. The omission to do so was in consequence of Bennett's conclusion to urge a motion before the Commissioner of Patents to vacate the original order allowing this "newly-discovered evidence" to be taken on behalf of Badger or his assignee. Having determined upon this course, Bennett deemed that it would prejudice the status of this motion before the Commissioner to cross-examine any further; so he omitted it. In doing this he elected what course to pursue and is bound by it. A court of law or equity possessing full powers as to such matters might, on a proper showing, relieve him from the consequences of his election and order a cross-examination and compel the witness by process to appear; but the only power possessed by the Commissioner is to suppress the deposition or to make an order requiring the reproduction of the witness for cross-examination under penalty of the suppression of the deposition. In the present status of the case I am not willing to suppress the deposition, and no showing is made upon which to make the conditional order, if it could be made.

Finally, should the original order allowing these two depositions to be taken "as newly-discovered evidence" be vacated and the depositions thrown out?

There is no doubt about the courts having the power to vacate and set aside orders that have been procured by mistake or fraud; but almost universally such motions to vacate relate to orders affecting the rights of person or property, and are in some manner injurious to the person affected. Thus an order appointing a receiver is one that invades the custody and possession of property in the hands of one of the parties; if procured under a mistake or by fraud it should be vacated. So of many other orders affecting the rights of parties; but the right of one party to secure and present to the court all his evidence in support of his allegations is one which in no sense invades or affects the rights of his adversary. It is as much his right to present all his evidence to the court as it is to have a court that can hear and pass upon it. It is true that rules are established and orders made from time to time for the orderly taking of evidence and limiting the times within which it must be taken; but courts are uniformly very liberal in extending and enlarging these periods provided the parties act in good faith and are reasonably diligent; and it may be safely asserted that the degree of diligence required in procuring evidence before trial is not so great as that required to secure a new trial. Especially is this true when the evidence has actually been procured under an order and is in the presence of the court before the trial begins.

In the present case a motion was made by Badger to be allowed to take these depositions, supported by affidavits showing that it was newly-discovered evidence, relevant and material to the issue. It was argued at great length and most exhaustively. The motion was granted, and in due course the depositions were taken, and they are now before the Office and form part of the record. The case has not been tried, and each party is entitled to have considered all the evidence that can be legally procured and presented when the trial shall be had.

Bennett's motion is in effect a motion to rehear the original motion made by Badger for permission to take this testimony, and it proceeds upon the "newly-discovered evidence" brought out in Mrs. Ford's deposition, from which it is claimed that her evidence was not newly-discovered evidence. Thus Bennett uses and employs Mrs. Ford's deposition, as such, to establish certain facts, in order that he may prevent its use by Badger on the merits. In other words, the present motion is to show that, had this new evidence been before the Commissioner at the hearing of Badger's motion to take such evidence, the decision of the Commissioner would have refused it and not have permitted the depositions to be taken. Now this may be true; but it does not follow that the former order should have been decided differently or that it should now be vacated for such reason. The intervening time and delay cannot be recovered or avoided. The parties cannot be restored in that respect. The depositions have been taken and are here before the Office, and the case has yet to be tried. The party taking them has gone to the trouble and expense of procuring and printing them. I do not believe that such orders are ever reversed or vacated under such circumstances. They rest wholly in the discretion of the courts and are not capable of appeal and review. It is said, however, that the order was procured by fraud, &c.; but I do not find any evidence of fraud in the case. Badger's motion was supported by affidavits. Several were made by persons who were simple people, and their statements were too meager to have been made with any other motive than to state truly what was within their knowledge. Other affidavits were made by attorneys, and there is nothing to show that they were not candid and truthful in all that they stated. In some particulars their statements were not quite specific as to certain dates; but the inaccuracy appears to have been unavoidable. There is nothing in the record that satisfies me there was any purpose anywhere on the part of Badger or the affiants to deceive or mislead the Commissioner. In a clear and gross case of fraud possibly the order obtained ought to be vacated; but even then, if there existed any other mode of punishment, that, perhaps, should be resorted to rather than to exclude from consideration competent and relevant evidence taken under such order and produced before the trial. The force of these considerations will be still further apparent when it is remembered that the Commissioner of Patents is not a court of general jurisdiction. The practice of the Patent Office, though peculiar, does not require practitioners to be learned and experienced lawyers or to possess any special qualifications. Consequently, greater indulgence should be shown to applicants in matters touching the management and presentation of their cases; and while the rules and practice of courts of equity, where practitioners are supposed to be learned and experienced, are, to some extent and as far as applicable, to govern here, yet it must follow that cases may arise where they should not be so rigidly enforced.

Counsel for Bennett has shown great diligence and research in examination of the law and precedents in support of his motion; but not an instance has been found where an order of the court enlarging the time for taking evidence or allowing newly-discovered evidence to be taken before trial has ever been vacated and the evidence stricken out after it had been regularly taken and filed in court pursuant to such order.

The motion is denied, but without prejudice to Bennett's right to take evidence in rebuttal of that of the two Fords last taken.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Northern District of New York.

SHIPMAN ENGINE COMPANY *et al.* *v.* ROCHESTER TOOL WORKS, (LIMITED,) *et al.*

Decided April 14, 1888.

1. SHIPMAN—HYDROCARBON-FURNACE.
   Letters Patent No. 304,365, granted to Albert H. Shipman, September 2, 1884, for hydrocarbon-furnace, adjudged valid and to have been infringed.
2. INVENTION—WHEN IMPARTED BY A COMBINATION.
   Shipman combined in effectual relations an automatic regulator, which was not novel in itself, with the atomizers of earlier patents. This combination presents one test of patentable invention if it produced a new result due simply to the combination.
3. PUBLIC RECOGNITION AN INDICATION OF INVENTION.
   The circumstance that Shipman's apparatus immediately commended itself to the public is persuasive that what he did by way of improvement was not such an obvious thing as to deprive it of the merit of invention.

WALLACE, *J.*:

This suit is brought to restrain infringement of Letters Patent No. 304,365, dated September 2, 1884, granted to Albert H. Shipman, for hydrocarbon-furnace.

The defense of prior public use, based upon the experiments made with the apparatus of Marvin E. Otis,

need not be considered, as the record discloses nothing to modify the opinion expressed at the hearing of the cause that this defense only presents an instance of an experimental use which did not and could not demonstrate a practical realization of the apparatus of the patent. The real question in the case is whether there was any patentable novelty in Shipman's apparatus in view of the prior state of the art. He makes no pretensions to being a pioneer in utilizing liquid fuel as a substitute for coal or other bulkier or more expensive fuels for producing heat or steam. He assumes to have invented certain improvements in hydrocarbon-furnaces, which consist of a combination of devices for regulating more efficiently the rate of combustion by the degree of steam-pressure in the boiler. Although he contemplated the application of his devices more particularly to steam-engines designed for driving light machinery, what he devised and what his patent describes is an improvement in a hydrocarbon-burner for use under a steam-boiler of any kind, effected by a combination of parts, each of which was old and well known when he took up the subject, several of which had previously been used in such burners to perform in combination the functions they perform in his apparatus, but all of which had never before been combined together in the same apparatus.

The patent describes a steam-boiler which may be of any known form; an oil-reservoir which is to contain the liquid fuel and from which the liquid fuel is drawn upward; two pipes, one leading from the reservoir for conducting the oil and the other leading from the boiler for conducting the steam; a steam oil-atomizing jet, which is an atomizer formed by arranging the orifices of the pipes in such relation to each other that the steam will suck up the oil from the reservoir and spray the oil with which it comes in contact, and a steam-regulator which operates automatically by the pressure of steam in the boiler to diminish or entirely cut off the supply of steam in the atomizing-jet.

The regulator is described in the specification as follows:

In order to provide for the regulation of the steam-pressure in the boiler, I combine with the pipe K, which supplies steam to the atomizer, the regulator L'. The regulator consists of a flexible diaphragm, N', Figs. 3 and 4, arranged, in connection with a valve, s'', to operate to reduce the supply of steam to the atomizer when the pressure in the boiler becomes too great. The diaphragm N' forms one side of a chamber, into which the steam is admitted through a pipe, f''', communicating with the boiler or steam-dome through a hollow boss, b'''. The diaphragm is provided at its center with a boss, w'', into which the stem of the valve s'', Fig. 3, is screwed. The head of the valve is fitted to a suitable valve-seat, r''', Fig. 3, and it operates when the diaphragm N' is pressed outward, as represented by the dotted lines in Fig. 3, by the steam in the chamber, to diminish or entirely cut off the supply of steam to the atomizer. The amount of pressure which will be required to accomplish this result may be regulated by screwing the valve s'' in or out of the boss w''. As shown in the drawings, this can only be effected when the pipe K is removed, the intention being to adjust the regulating-valve at the factory before the engine is sent out and to prevent any subsequent alteration of it. The practical effect of the regulator is that, if the pressure in the boiler rises above any given point at which the valve is set, the supply of steam to the atomizer is entirely cut off and the fire goes out. It will be noticed, also, that if the water should be entirely evaporated from the boiler there will be no more steam to supply the atomizer, and the fire in this case also will be extinguished. Provision is thus made for insuring entire safety under any circumstances which may arise.

I have demonstrated by practical trials under various circumstances that the regulator above described is highly efficient and never fails to produce the desired results.

In starting an engine provided with my improved regulator, I obtain a pressure of air in the boiler by means of an air-pump, or by turning the engine backward.

I am aware that the supply of steam and liquid fuel to the furnace of a steam-boiler has been heretofore controlled by a diaphragm-regulator operating to control valves in the supply-pipes; but such construction I do not claim, as in my invention the delivery of the liquid fuel is controlled by varying or cutting off the supply of steam to the atomizing device by a regulator operated by the pressure of the steam in the boiler.

The construction of the regulator herein shown forms no part of the present invention, as it is my intention to file a separate application for Letters Patent on the novel features thereof.

The claims of the patent are as follows:

1. The combination, with a steam-boiler, of an oil-reservoir, a steam oil-atomizing jet, an oil-conduit, and the steam-supply pipe K, and a steam-regulator operating to vary or cut off the supply of steam from the boiler to the atomizer, substantially as and for the purposes set forth.

2. The combination, with a steam-boiler, of an oil-reservoir, the steam oil-atomizing jet i, and oil-conduit h, located above the oil-reservoir, and arranged to draw oil therefrom, and a steam-supply regulator through which the steam passes on its way from the boiler to the atomizer, substantially as and for the purposes set forth.

The prior state of the art is illustrated by United States patents granted to Van Norman, Brown, and Morrison, dated August 1, 1865; to Joseph K. Caldwell, dated September 12, 1871, and March 19, 1872; to Abner Burbank, dated November 5, 1878; to J. L. Kite, dated March 8, 1881; to Park and Heath, dated October 11, 1881, and to E. N. Dickerson, Jr., dated April 18, 1882.

The patent to Van Norman, Brown, and Morrison is cited by the defendant as showing all the devices of Shipman's apparatus in combination. That patent describes a complicated apparatus for commingling oil vaporized in a retort with superheated steam. The apparatus is a hydrocarbon-furnace in which the steam is carried from a boiler through a coil in the fire-box, by which it becomes superheated, and is then delivered to a steam jacket or chamber, which adds heat to a retort already heated by the fire below it. Oil is delivered by means of another coil into the retort, and after being there vaporized the gas escapes through small holes in the retort, mingles with the superheated steam escaping through small holes in the steam-jacket, and they are burned together. It does not contain an atomizer in any sense. It does contain an automatic regulator which operates by pressure in the boiler to shut off the steam in the coil. The apparatus is so remote in principle, as well as in detail of construction and arrangement, from Shipman's apparatus that it could never have suggested any important feature in his. The patent does not contribute any light of value upon the case and only encumbers the record.

The patent to Park and Heath was not deemed of sufficient importance to be commented upon in the argument of counsel at the hearing; but in the brief which has since then been submitted for the defendants it is cited as describing an apparatus which contains an atomizer, a steam-generator and furnace, and an automatic regulating device in combination with these parts. The apparatus contains an injector in which three tubes are located concentrically—one for oil, one for steam, and one for air, all three of which materials are to be burned together. The defendants' expert says:

The steam does not meet the oil in the manner of the Shipman apparatus.

In other words, there is no atomizer. The regulator is described in the specification as one by which—

the amount of fuel and the combustion are steadily maintained without regard to the amount of pressure in the boiler—

and in this respect differs radically in principle from Shipman's regulator.

The patents to Caldwell, Burbank, and Kite do not show any apparatus in which an automatic regulator is employed; but the regulator in the apparatus of each is a common stop-cock, to be manipulated by hand. The hydrocarbon-furnace of each of these patents contains the combination of steam-boiler, oil-reservoir, oil and steam pipes, and atomizer arranged and constructed substantially as described in Shipman's patent, and operating together to perform all the functions of his apparatus, if his did not contain a regulator. In the first Caldwell patent the specification states:

This invention consists of an arrangement of two or more pipes adjustably connected together in such manner that the passage of steam, heated or superheated, through one pipe produces a vacuum in the other pipe, by means of which oils of any gravity are drawn out, driven into a mist or spray, and, combining with the steam, form into hydrocarbon vapor.

The later Caldwell patent describes an oil-pipe leading to an oil-reservoir located on a lower plane, a steam-pipe leading from a boiler, and an arrangement of orifices of the two pipes at a right angle to each other, so as to make an atomizer substantially touch, as is described in his earlier patent. The specification states that he uses these devices in connection with the boiler which supplies steam to an engine, and that the dry steam crossing the orifice of the oil-pipe causes a sufficient vacuum in the latter to induce the hydrocarbon to rise, and the moment it reaches the orifice it is forced into spray by, and is intimately mixed with, the steam. The devices thus combined resemble the devices of the Shipman apparatus so closely that it is unnecessary to refer to the other prior patents which do not contain an automatic regulator.

The patent to E. N. Dickerson, Jr., describes apparatus which approximates much more nearly to Shipman's apparatus than anything shown in the other prior patents. His specification states that the invention—

relates to a method of automatically regulating the combustion or heat produced by a hydrocarbon-burner under boilers or other similar places where pressure is generated; and it consists in combining with the naphtha or naphtha and water supply pipes leading to such burner a valve or valves controlled automatically by the pressure produced by the combustion, and so arranged as to automatically control the supply of liquid fuel without completely cutting off the same.

The apparatus described contains a fire-box under the boiler in which a naphtha burner or retort is located. In this retort water from the steam-boiler and naphtha are burned together. The vaporized oil is conducted through an orifice in the retort by a pipe terminating under the retort, where it escapes and where combustion takes place. Two pipes enter the retort, one connecting with the steam-generator and the other with the naphtha-reservoir, from which the naphtha flows by gravity into the retort.

The regulator is described as follows:

H represents a valve controlling the water-supply, and J a valve controlling the naphtha-supply. K is a connecting-rod moved vertically by the Clark damper L, which may be made adjustable by sliding weight. The steam controlling valves H and J are controlled by adjustable nuts. The upward movement of the rod K may be limited by an adjustable stop, F, for a purpose to be explained.

The specification then describes the operation of the apparatus, as follows:

In the ordinary condition, and before steam has been generated, water and naphtha will be allowed to flow into the burner and be there consumed, thereby heating the boiler and making steam. As soon, however, as the pressure in the boiler is sufficient to counterbalance the weight M, the rod K will begin to rise, thereby shutting off the water and naphtha supply. The extent to which this supply is reduced can be determined by the adjustment of the stop F, because it will be undesirable to shut off the flow altogether, as doing so would necessitate kindling the fire afresh. By having the positions of the valves relatively adjustable the apparatus may be so arranged that the water will be entirely shut off, leaving a limited supply of naphtha, which will burn at the point G (under the retort) and keep the apparatus hot and ready to start fresh when the steam falls in the boiler.

From this description it is obvious that not only is there no atomizer in the Dickerson apparatus, but the mode of operation necessitated by the differences between his apparatus and Shipman's is different from Shipman's. In Shipman's apparatus the oil-supply is controlled solely by the steam-supply, and when the steam-supply is diminished or wholly shut off the oil-supply is thereby likewise diminished or cut off. The regulator is not applied to the oil-pipe; but the flow of oil is controlled by the steam-suction, which is automatically regulated in the steam-pipe. As in Dickerson's apparatus the oil-supply is not obtained by suction, but by gravity, his regulator required to be applied to the oil-pipe as well as the steam-pipe, and it is therefore so devised as to cut off the supply of naphtha by shutting off the naphtha-supply pipe.

Undoubtedly Shipman has only combined in effective relations an automatic regulator that was not novel in itself with the atomizers of earlier patents. One test of invention in such cases is whether a new result has been obtained by the combination of old parts as distinguished from an aggregation of old results. The new combination of Shipman can meet this test, because it is perfectly clear that this combination enables the steam-supply pipe to perform a new function in an atomizer—that is, to exercise a varying suction upon the oil-pipe graduated by the degree of steam-pressure in the boiler. That Shipman's apparatus is exceedingly useful cannot be disputed. Certainly the defendants who have appropriated it completely can hardly dispute the proposition. Everybody recognizes the advantage of having the fuel-supply and the steam-pressure reciprocally regulated, so that when the pressure in the boiler reaches the designated point of safety or convenience the diminished fuel-supply will relieve the pressure, and when it falls below the proper point the increased supply will bring it back to the required power. Dickerson devised one set of contrivances, adapted to his particular form of burner, to accomplish this object. Shipman devised another set, adapted to the particular form of atomizer employed in his furnace, to accomplish it. There was inventive thought in the idea that he could make a valve in the steam-pipe of existing atomizers to do the work of a valve in both the steam-pipe and the oil-pipe of Dickerson's apparatus. Still more was there inventive thought in the idea that he could make any form of existing regulators lend a new function to the steam-pipe of existing atomizers.

It is a significant fact that Shipman's apparatus immediately commended itself to the public for its practical efficiency, and has met with an extensive and increasing patronage both in this country and abroad, while none of the devices described in the prior patents have ever gone into public use. This circumstance, while it suggests that the former devices may not have been practically operative, is persuasive that what Shipman did by way of improving them was not such an obvious thing as to deprive it of the merit of ranking as invention.

A decree is ordered for the complainants.

U. S. Circuit Court—District of New Jersey.

HAT SWEAT MANUFACTURING COMPANY v. PORTER, CROFUT & HODGKINSON.

Decided April 16, 1888.

1. BILL OF COMPLAINT EXHIBITS A CASE FOR EQUITY COGNIZANCE—WHEN.

A bill for a discovery and account, and for a decree for the payment of the royalties and damages sustained, and for an injunction against the use by the defendants in the meantime of any of the inventions recited in the license, exhibits a case for equity cognizance.

2. SAME.

If the sole object of the bill was to enforce the payment of the royalties, the complainant would have an adequate remedy at law; but as discovery is sought as well, and an order to compel the defendants to perform their covenants or abstain from the use of the patents, and as the denial of equitable relief might result in a multiplicity of suits, equity jurisdiction is attained even in the absence of irreparable damage.

MOTION for preliminary injunction.

Mr. John R. Bennett, *Mr. Roscoe Conkling*, and *Mr. A. Q. Keasbey* for complainant.

Mr. Edmund Wetmore for defendants.

WALES, *J.*:

The question presented for consideration is, does the bill exhibit a case for equity cognizance.

The defendants insist that the complainant has an adequate remedy at law. The bill sets forth these facts. The complainant is a Pennsylvania corporation, having its general place of business in Philadelphia. The defendants are citizens of New Jersey. On the 7th of March, 1884, the complainant, being the owner of several patents, all of which relate to sweat-bands for hats or caps, the manufacture thereof, and the machinery used in making them, licensed the defendants to use the patents on certain terms and conditions, among which were the payment of royalties, the rendering of monthly accounts with remittances of cash, and a stipulation that the agents of the complainant should be allowed at all reasonable times to inspect their books for the purpose of verifying their accounts, and to have free access to the premises where the patented machines were operated or stored to verify their number and examine their condition. The defendants also covenanted not to dispute the validity of any of the patents. After accepting the license the defendants made many thousand dozens of hat-bands under the patents, paid the royalties as they fell due, and performed all of their covenants up to June 1, 1887, since which time they have refused to pay royalties, render accounts, or fulfill any part of their agreement with the complainant, although they have continued to use and are still using the patented machines. The complainant has issued 145 licenses, which are all in force and complied with except those of the defendants and four other licensees, against whom similar motions are now pending. The bill further charges that the defendants have combined with certain other licensees of the complainant and with other parties who are infringing these patents, and have formed an association for the contribution of money to embarrass the complainant by expensive litigation and to destroy its license system. The damages claimed for these unlawful acts are estimated at $7,500; and it is also claimed that if the defendants are permitted to continue the violation of their agreement the complainant will receive irreparable injury. The bill prays for a discovery and account, and for a decree for the payment of the royalties and the damage sustained, and enjoining the defendants in the meantime from using any of the inventions recited in the agreement of license.

The defendants do not deny the material allegations of the bill, with the exception of the charge of combination or conspiracy, but excuse their conduct by the statement that they were induced by the false and fraudulent representations of the complainant's agent to execute the agreement of license, and it was therefore void. They also contend that the object of the bill is to enforce the payment of the royalties for which the complainant has an adequate remedy at law. It is admitted that if this were the sole object of the bill it could not be sustained; but the complainant is seeking for something more than a mere naked account. A discovery is sought for as well, and an order to compel the defendants to perform their covenants, or to abstain from the use of the patents, since such use, under all the circumstances of the case, will cause irreparable damage. They assume the right to use the patented machines without compensation, a right acquired under a contract which they now repudiate. By their acts they are endangering the license system of the complainant, and unless promptly restrained will give encouragement to other licensees to imitate their example. Actions at law for the royalties as they fall due would not afford complete relief to the complainant. A new action would be necessary every month, not only against the defendants, but against other licensees who are now acting in like manner by repudiating their contracts with the complainant, and are still using the rights acquired under them. To refuse the injunction would lead to a multiplicity of suits, which may be prevented on a final hearing of this case. The complainant is also entitled to a discovery. These are recognized heads of equity jurisdiction even in the absence of irreparable damage. Injunctions have been granted in this class of cases on a much narrower basis than is here presented. (*Woodward* v. *Weed*, 1 Blatch., 165; *Wilson* v. *Sherman*, Id., 536; *Goodyear* v. *Congress Rubber Co.*, 3 Blatch., 449; *Eureka Co.* v. *Bailey Co.*, 11 Wall., 488; *McKay* v. *Mace*, 23 Fed. R., 76; *Pope Man. Co.* v. *Owsley*, 27 Fed. R., 100; *McKay* v. *Smith*, 29 Fed. R., 295.)

An injunction should therefore be issued unless the defendants within 15 days after notice of the order herein entered shall give bond with two or more sureties, to be approved by a commissioner of the court, conditioned to render monthly accounts according to the terms of their contract with the complainant, and to file such accounts, duly verified, in the office of the clerk of this court, and to pay the amount of any final decree which may be rendered against them, the penalty of the bond to be in such sum as may be agreed on by the parties, or, if they are unable to agree, as may be fixed by the court,

1888

MAY THRU AUG

VOL 43 & 44

PATENT OFFICE

UNITED STATES

OFFICIAL

GAZETTE